SCOMM

#11:1

SUBCOMMITTEE ON TAXATION

AND REVENUE

November 6, 1975

AGO 513294

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Agenda for November 6th

MORNING

9:00	Introduction and opening remarks Chairman John Huber
9:30	Remarks Vice Chairman Steve Cowper
10:00	Discussion with Milton Lipton and Dick Kilgore, W.J. Levy Consultants Corporation, New York
12:00	Break for lunch

AFTERNOON

	Presentations by Committee Staff
1:00	Frank Fleeks Tax Counsel
2:00	Ed Sterner Research Analyst
	Discussion

A Talk with Dick Kilgore of Levy Associates 7/29/75
in New York

Senator Huber, Senator Colletta, Judy Whitney-Assistant to Representative Bradner.

Levy Associates has said, for many years now, that you people in Alaska should be reviewing very carefully the corporate income tax because we can see, just off the top of our heads a number of problems with the way it is structured now. Whether that will get you an appropriate amount of income from Prudoe Bay we don't know but it should.

We have no lawyers on the staff here, so we can not address ourselves to the legal questions involved. We hope to make a real contribution through our knowledge of the oil industry and how various ways of apportioning, etc. may work for the oil and how much you may get out of it by taking various approaches to the Corporate Income Tax. Perhaps we can have some interchange with legal people who can answer some of the legal questions.

We have been following what is happening in Alaska and notice that the Department of Revenue has taken some steps to try to get more out of the Corporate Income Tax. They have noticed that a lot of corporations are accounting on a real line basis and showing losses on their operations in Alaska and therefore paying no Corporate Income Tax at the present time.

Formula Apportionment Basis. Really what you end up doing is that you get relatively little in the way of Corporate Income Taxes. Interstate Compact, COP ACT, Uniform Division Act, with its 3 formula thing takes

the percentage of sales, property and payroll [illegible] of the company's operation and then apportions the income to Alaska. Looking at the whole thing, it is unfortunate, but, that method turns out to be a very inappropriate kind of device for apportioning income to Alaska especially with Alaska having oil for leasing operations. Almost every factor really doesn't work.

I do not know how you people have looked at this or what knowledge you have of it, but... Looking at it briefly.

A lot of what I am going to give you is tenative but this is very clear to us, that there are so many problems in using such a formula in this case that it is not appropriate.

PROBLEMS AND THEN AVENUES FOR GETTING AROUND THIS. We have just gotten the materials on what other states are doing and are still thinking it through and seeing what other states are doing in this area and how they have come to grips with this thing. We are really just getting started in this area.

1) Sales factor. When looking at the oil producing operations, you find out that very little crude oil production is sold in Alaska. Most of it results in intregrated operations and therefore there is no sale in Alaska. It actually goes to an affileate refinery down in California or wherever it may be. So you end up with the sales part of this being zero. There are virtually no sales. (Noticed that your own Revenue people assume in their own projections of what you are going to get out the Corporate Income Tax that you are going to get 0% on sales from Prudhoe Bay, also. No sale just a transfer.)

Senator Huber and Mr. Killgore agreed that Alaska is unique in several ways and almost has to be looked at as a foreign country rather than just another state.

So sales is almost completely knocked out of the formula but you are still dividing by three. Utterly disasterous for Alaska. You need the sales factor.

2) Payroll factor. Almost as bad because what we are talking about is income from oil production and there are really very few people involved. Once we get through with Alyeska there ought to be none. When the real production starts it takes very few people to keep the whole production operation going. The big employment in the oil industry is in what? refinery ? Actually no, it is in marketing, home office, distribution, and this kind of thing. Employment in Alaska in all these areas as compared to elsewhere is going to be very small, meaning there will be a very very small percentage of the employment in Alaska. Yet, the profit in the future will be very big. So you have to have a formula that does not involve people or payroll or you will only get a very small portion of income allocated that way, but the income will really be generate from the oil production. The payroll factor is very very small. .

Department of Revenue says .08% on payrolls..

We have been trying to build up sort of a hypothetical oil company model that will be something on the scale of ARCO to show what they have outside Alaska and what they have inside and so forth.

Colletta would like to see this done with Sohio.

Huber: Have you looked to see how the particular relationships between the companies and the pipeline itself enhances or further degrades us under the Interstate Compact Act?

Kilgore: No we have not because of the way they operate. They may not be direct employees but rather employees of contractors with the apparent companies. We haven't looked into it but have notes on it and it is a potential problem. They just use contractors and for the other people that are not on the payrolls that is a problem.. I still think that if you looked at all the employees that are not directly on the payrolls you would still come up with only a very small ratio so it really doesnt help very much.

3) Property factor.. Probably the best way of the three but it still is not the solution. If you look at the oil exploration producing operations what you find is a lot of losses all over the place. One drills dry holes endlessly so there are a lot of expenses that are completely unproductive and are not put into the property accounts of the oil companies; they are just written off as losses. So looking at what gets left in those successful producing adventures such as Prudhoe Bay, and even with the very high costs involved you just don't have that much money actually spent. You still get a relatively small fraction because they have tremendous amounts of money invested in mining all over the place. There is an incrediable amount of money spend in marketing. You wouldn't believe the amount of money spent on gasoline station sites alone, and so on.

What you get are three factors, none of which are really good factors for income to Alaska.

Sales are virtually zero, payrolls you can hardly see, and property which is somewhat better but still by our own figures nowhere near the percentage of income that you would really allocate to Alaska if you did it on oil in place.

Department of Revenue. 12% on the property tax, .08% on payrolls, 0% on sales. Two of which you can not see, dividing by 3 and you end up with 4%. That is 4% of the company's total taxable income allocated to Alaska.

Preliminary numbers. Direct allocation. 1/3 of their net income being on oil production. Looking at where they may be when Prudhoe Bay production comes in, looking at their other operations and then looking at Alaska. The apportionment formula your own people would say 4% but on a generous basis it might come out to be 10%. (33% against 10%).

It is very clear that because of the nature of oil producing operations in Alaska that this formula is really inappropriate. You will end up way below what really is the profitability of oil production.

Huber: Donaldson of Sohio said that they own 52% of the North Slope Reserves and as such are a larger sharer in the pipeline that most.

B.P. remains the prim lease holder. They just sold their production. Very complicated. B.P. gets a certain percentage of production after a certain point.

Huber: In some of the definitions we put out. Any portion of the ABC plan is taxable as an interest. Just wonder if that right to purchase the gas reserves is covered.

I would be inclined to suspect that Sohio would not fit under that.

Huber: The conclusion is that Alaska needs to find a way to tax oil producers in the State of Alaska based upon the profitability of their Alaska operations the same as though they were an Alaska corporation doing the producing, selling, or whatever it is.

What is a fair share? In effect it is around 9% of what really is producing profit in Alaska.

Most obvious and what we have always thought of is, would be some sort of direct allocation scheme. It would appear, if you look at the law, (I don't have the Alaska Statutes but I have asked for it) and I am sure that you have it also - Uniform Division. This would imply that you could ask the administrator to keep reasonable various kinds of things like separate accounting, and other factors that you would need.

Must get at what the producting revenues are. Without worrying about the legalities and whether this could be done. Look at Prudhoe Bay production and what the individual company's production is and price it out that way and call it the revenue being generated from production. The pipeline should be separate accounting and you should deal with that as another tax issue.

Real question of how to handle the allocation of profit. May be a problem for the state. A lot of pretty serious questions on cost allocation.

Losses that companies have sustained in prior periods. How do you handle that? They have been making investments, drilling dry holes,

have intangible costs on drilling development at least for Federal Income tax purposes. They have been running losses and the question is how do you handle the carriage forward of this things.

Overhead. Things done for production in Alaska are done in Huston, Texas which adds another serious problem of how do you directly allocate those things. The more we think of these things the more we see potential problems.

In other states (and a reason why we try to look at what other states are doing) there seem to be provisions where one allocates costs on bases of revenue or something of that sort. Perhaps you can get around this by some simple formulas which would be reasonably acceptable and would give you a half way decent allocation of costs associated with the Alaska operation which really take place somewhere else and are really appropriate to charge against the Alaska cost.

Huber: Are you familiar with an income type taxation by any other producting countries?

Vertually every country has an income tax but in many countries the income tax and royality tax distiction has a blur. Back in the old days where there was a 50%/50% royality and income tax they were in a position to be rather arbitray about it. They said that the revenue was the posted price. That has changed but that is not our situation as we have the Constitution, Interstate Compact, etc.

Huber: Is there a way that we can get out of the Interstate Compact?

Yes, it is my undertand that you can get out of it. This is the kind of question that legal people in Alaska should be looking at. Dont rely on us for this kind of thing. Milton asked the Department of Revenue people when he was in Alaska and they said that yes you could get out.

Direct allocation. There are very clearly serious administrative problems. These can not be minimized, but perhaps it can still be done.

On the revenue side it would appear straight forward. One could just say that production times whatever the posted price is in Prudhoe Bay but the legal question you have to ask is, "Does that cause any future problem with any other state?" The companies <u>are</u> going to feel that they are being double taxed on sales. Here and in California there is a potential legal problem.

If you go "value added" and another state does apportionment based on total revenue which does not exclude the cost of coming in there is a potential problem. Maybe not.

The payroll factor would really be appropriate to the state of Texas because the oil companies have substantial payrolls is Huston and Dallas. The apportionment method would be good for them but Texas does not have a corporate income tax.

Cost allocation is not just a simple thing. Many different things have to be considered; however in concept it is the way to go.

Huber said that he will be sure that Levy Associates gets all the material that his committee works up that would relate to what they are doing.

Colletta: Asked some questions but he was too far from the micophone to pick up the questions, but basically he was concerned that Alaska be able to run Prudhoe gas off the big pipeline that goes to the Cordova area. There will be no way that we will be able to take any of the gas unless the company wants us to. There is a direct distiction. You can enter into any kind of contact that you want to with one exception that there will be no break in the area of regulation by Federal power. Louisana had to run a small line along side the large line to get by those regulations.

Huber: New pipeline committee with W. Bowman, chairman, is to find out all that is effected by the pipeline and that gas must be available to Alaska. There was discussion on how to protect gas for Alaskans and it was decided that this area will not be over looked, by the above mentioned committee nor any other group.

Colletta: If there are too many complications we could in the lease ask them to lay a small line along side the large one (pipe at our expense)

Kilgore agreed to furnish the committee with material on CH_4 and CH_3OH which he has. (Methol alcohol and methol burned instead of gasoline).

We will be looking at what other countries (non-Arab) are doing along with what other states are doing.

Discussed Witherspoons study.

Direct allocation is a fair way of doing it as long as the practical and legal problems are not so overwhelming. Other alternatives would have to be taken if there are legal problems, so we should not be concentrating all of our efforts in this one area.

If Alaska's law is like these others, I don't know why the Dept of Revenue went along with Sales, payroll and property as the three factors. One or two of them could be substituted for other factors that do relate, fairly. We are trying to think of other factors to modify the plan. Maybe "crude production" should be one of the factors..

Huber: Did you receive any of the materials that Bill Macguire had gotten on the taxes in the Cook Inlet? Do write to him for them.

We are looking at other states and so far it does not look like any other state has gone this direct route but then none of them have the problem at the scale that you do.

Huber: Milton informed me that you were working on a formula to be sure that Alaska received her full share in the Corp Income Tax.

Failing all else Alaska could go the Severance Tax route, but that would only be if other formulas can not be worked out.

Huber: The income tax should be our largest source of income so we will have to find a way to change the law so that it can be beefed up.

I agree that we must find a way of using the Corp Income Tax.

A Note on
ALASKA'S GROSS PRODUCTION TAX

1. At committee hearings during the week of April 14, 1975, we suggested that the Legislature might now appropriately review the gross production tax on oil and natural gas. Oil and gas prices have risen appreciably since tax rates were last enacted, and are pointed higher. Louisiana, for one, has increased its severance tax on oil to 12 1/2 percent of wellhead value and on gas to 11 1/2 percent or not less than 7 cents per mcf.

Natural Gas

2. SB 295 would increase Alaska's gas production tax from 4 to 10 percent or not less than 5 cents per mcf. The proposed rate would not seem to be out of line, considering that Cook Inlet gas prices are apparently now being negotiated in the range of 33 to 38 cents. Given the comparative fuel value of natural gas, the increased production tax could well be passed on and absorbed in export and Lower-48 markets.

3. It should be noted that a significant proportion of Cook Inlet gas is consumed in Kenai/Anchorage. For these consumers, any increased production tax would mean higher gas prices. The increase to consumers would be proportionately less than the increase to producers at wellhead, however, because of relatively high delivery costs already being borne by Alaskan consumers. The Legislature will have to balance the potential increase in production tax revenues (on the order of $6 million per year) against the higher cost to consumers within Alaska. (See table following for disposition of current natural gas production as between Alaskan and "export" markets.)

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ALASKAN NATURAL GAS DISPOSITION
DECEMBER 11, 1974

(Billion Cubic Feet)

Field	Reserves	Committal		Uncommitted
Kenai	2,400	440	Alaska Pipeline	
		1,038	Collier Chemical	
		400	Socal-Arco	
		228	LNG	
		2,106		294
North Cook Inlet	1,500	532	LNG	968
McArthur River	800	87	Pacific Lighting	713
Beluga River	973	373	Chugach Electric	
		600	Pacific Lighting	
		1,592		1,681
Beaver Creek	400	113	Pacific Lighting	287
Swanson River	300			300
Sterling	200			200
Miscellaneous	395			395
TOTALS	6,968	3,811 (55%)		3,157 (45%)

Source: Division of Oil and Gas, Department of Natural Resources

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ALASKAN SEVERANCE TAX COMPUTATION
MARCH, 1975

(Cents Per Barrel of Taxable Oil)

Gross Production	Cents-per-barrel Tax (Adjusted for WPI)[a]		Percent-of-value Tax ("Old" Oil Price)[b]	
	28°	34°	28°	34°
300 b/d well	27.1	30.3	21.5	23.0
1,000 b/d well	30.9	34.5	24.5	26.2
1,500 b/d well	35.1	39.2	27.8	29.8

a Assume December, 1973 Wholesale Price Index = 146.2 as initial effective WPI. March, 1975 WPI = 230.2. Percentage increase of 57.5 is applied to statutory tax base.

b Statutory rates as follows:

1-300	b/d	5%
301-1,000	b/d	6%
1,001-up	b/d	8%

Crude Oil

4. The current statutory rates for oil gross production tax are set out in the table above. As shown, the cents-per-barrel tax is typically applicable since it exceeds the percent-of-value tax.

5. Revision of the oil production tax might be considered from two standpoints. First, to take account of the wellhead price increases that have occurred recently. Second, to spread further the percent-of-value tax rates that apply to the various average-daily-production brackets, so as both to reduce the tax rate on wells of low productivity and to increase the tax rate on wells of progressively higher productivity.

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6. Typical postings (e.g., 28° API at Cook Inlet Pipeline) have risen from $2.705 per barrel in 1972 to $4.305 as from December, 1973. The State has, of course, benefited from the application of extant statutory rates to higher crude prices. But the increases in crude prices, by increments that substantially exceed past experience, suggest that the gross production tax rates could well be increased. Further, "old" crude prices are likely to move still higher, either through decontrol or through administrative increases in the ceiling; the ceiling price for oil produced under enhanced recovery may be raised apart from other action on "old" oil; and the uncontrolled price for "new" crude is at least twice the current ceiling price on "old" oil.

7. This is not to say that a gross production tax should be looked at as an income tax. But to the extent that historical relationships between wellhead values and production costs have changed significantly, the rate of production taxation could well be reconsidered.

8. At the same time, the tax rates could be further spread so as to mitigate the impact on wells with relatively low average daily production. With Cook Inlet production on the decline, the State should be concerned to optimize total recovery. The Commissioner now has the authority to reduce or suspend royalty payments in hardship cases [AS 38.05.140(d)]; reduction of gross production tax for wells with low producibility would similarly tend to prevent early abandonment. (See table following for the current distribution of wells and of total production by average daily production per well.)

9. By way of illustration, the step-schedule of gross production tax rates might be amended somewhat as follows:

	Percent of Value	
Barrels Daily	Possible Revised Rates	Present Rates
0-100	3	5
101-300	6	
301-1,000	8	6
1,001-3,000	10	8
3,000+	12	

The thought here is to reduce the tax rate for lowest productivity wells, raise it somewhat for wells in the middle range, and increase the tax rate progressively for the more productive wells.

AVERAGE DAILY ALASKAN OIL PRODUCTION
JANUARY, 1975

Barrels Daily	Number of Wells	Total Barrels Per Day (Thousands)
0-100	17	17.8
101-200	15	16.3
201-300	13	14.9
301-500	32	25.3
501-1,000	49	41.9
1,001-2,000	34[a]	38.6
2,001-3,000	15	22.0
3,001+	13	12.9
Total	188	189.8

Note: Number of wells includes only those whose production falls within the indicated production brackets. Total barrels per day is the total output of all wells whose production falls within the indicated production brackets.

a Includes one Prudhoe Bay well.

10. A change such as this would increase gross production tax revenues now by some $1/2 million. The gain in revenue from current production would be less than the increase in percent-of-value tax rates since Cook Inlet operations now are on the cents-per-barrel basis. But under a revised percent-of-value tax rate schedule, Alaska will benefit fully from any subsequert increases in Cook Inlet "old" crude prices, whereas the cents-per-barrel tax schedule would only escalate with the proportion of old-to-new crude prices in the BLS index. The cents-per-barrel alternative could be eliminated, or it could also be revised to set a floor consistent with a revised percent-of-value tax rate schedule.

AGO 513311

11. The major impact of a change such as the above in Alaska's gross production tax on State revenues would come with the beginning of Prudhoe Bay production. As discussed on many previous occasions, the intention, however, ought not to be to tailor the production tax to Prudhoe, but to design the tax so as to be compatible with both current and incoming production, and with the uncertain circumstances of production from fields yet to be discovered. It is the significantly increased value of U.S. crude oil -- as already reflected in "new" crude prices and as probably pending for "old" oil as well -- that warrants reconsideration of Alaska's production tax at this time.

12. We stress that the numbers set out above are only meant to be illustrative and the basis for consideration. We would urge that any proposed change in the step-schedule of production tax rates be reviewed with the Division of Oil and Gas for their evaluation of possible effects on both abandonment in declining fields and development in new fields.

13. There are pros and cons to the question of revision of the gross production tax at this time. U.S. crude prices are very much up in the air; Administration action and/or Congressional enactment may or may not permit further price increases, and the timing of decision is itself uncertain. And as noted, Alaska's immediate revenue gains would not be that large. For these reasons, it may be advisable to defer Legislative action to the next session.

14. On the other hand, the Legislative record (through Committee Hearings) should show that the matter is under review so that bad faith cannot be charged should an ad valorem tax be enacted with carryforward credit against gross production tax and then the gross production tax be subsequently increased.

15. Further, if U.S. crude price increases are allowed and accompanied by some form of excess profits taxation that allows offset for state severance taxes, Alaska ought not to be left too long with the gross production tax question unresolved.

16. On balance, we do not feel that immediate action is imperative, nor the cost of some delay too great. The more pivotal consideration would be to come up with as good a tax structure as possible.

17. One final observation. Average monthly well production is currently being calculated not by direct metering, but by allocation of lease production among all wells on the lease in proportion to the wells' test rates. By regulation, wells are tested at least every six months. This practice ought to be specified in the statute as an alternative to direct metering where the latter is not practicable.

W. J. Levy Consultants Corp.
May 5, 1975

AGO 513313

October 6, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Counsel

SUBJECT: Alaska Mineral Severance Tax, SB 294.

This memo is a summary of what has happened up to this date on SB 294. It is submitted for your information.

Review of the letters submitted and testimony at the hearing held on May 9, 1975, reveals that mining industry representatives, municipal utility officials, ancillary industry representatives, and interested individuals were unanimously opposed to the tax. The only testimony in favor of the tax was from the Department of Revenue.

The Department of Revenue Position

The Department of Revenue representatives stated that there is a severance tax on all of the state's renewable and non-renewable resources, oil and gas, timber, fishing, etc., except the "hard" mineral industry. The industry, at present, is taxed through a mining license tax, which is a tax on net income. From Commissioner Gallagher's testimony, the hard mineral industry grossed $62,000,000 for the 1974 fiscal year. The sources were as follows:

Sand and Gravel	$42,000,000
Coal	14,000,000
Other	6,000,000
Total	$62,000,000

From the approximately 200 licenses issued only two paid tax. One from the coal industry and one from the platinum industry. The amount collected brought the state $30,000 in revenue. The mining license tax is considered ineffective.

The present law is an additional new income tax. The Department considers it a tax on efficient procedures. Their position is that if a graduated severance tax is imposed it will fall on all producers of hard minerals in the State except those who sever less that $100,000 worth of minerals in a year. SB 294 would serve to tax a non-renewable resource,

extract revenue from those producers who ship out-of-state or to foreign countries, provide easier administration, and would provide additional revenues from a source that other taxes may not be able to touch. Instead of $30,000 the anticipated revenue is $3,500,000.

SB 294 is considered prospective because of the low level of hard mineral activity in the State. Passage would allow the hard mineral industry to plan rationally its tax cost if further development takes place.

In answer to criticism that the bill was like the British Columbia Royalty tax, the Department of Revenue stated the following. The B.C. bill is a two step royalty linked to international price for the refined mineral and a Canadian wholesale price index. The royalty is in addition to Federal and provincial taxes and cannot be taken as a deduction in computing the taxes. The proposed mineral severance tax would be deductable on Federal and State Income Tax returns, the effect being that the tax would be paid half by the Federal and State governments and half by the taxpayer.

In talking to John Messenger, Assistant Attorney General, it was sensed that it is still the intent of the Department to go forward with the bill. Attempts will be made to make it more palatable.

Mining Industry Position

From testimony and the letters the industry's position is that passage of SB 294 will discourage current and future exploration for minerals. They consider the mineral severance tax a gross receipts tax and as such it is inherently unfair. They also stated that because the proposed tax would add another cost to the already heavy burden of exploring and developing minerals in Alaska, only those prospects having the greatest potential will be exploited. Marginal deposits would be left untouched.

Ancillary Industry Position

Testimony was given by Jim Dotson of the Alaska Air Carriers Association. He represented the view of the air taxi and air charter firms in the State. A large amount of the revenue of his members is derived from providing support to survey teams, geological teams, and others doing the summer exploration work. He had been informed that just because SB 294 had been proposed, two large summer contracts for 1975 had been cancelled. His position was that passage of SB 294 would seriously reduce the air carriers' revenue with a consequent reduction in air service in the State.

Utilities Position

Letters were received from Fairbanks Municipal Utilities System and Golden Valley Electric Corporation, since they are two of the largest consumers of coal for electric generating purposes. Their position is that the proposed tax would be passed on to them and increase their operating costs. This in turn would lead to a rate increase for their customers.

Native Corporations Position

In our Anchorage staff meeting on September 24, 1975, Representative Anderson gave the Native Corporations' position. He stated that SB 294 would make it more difficult to go to the capital market to obtain funds for exploration and development. He also stated that the proposed bill had caused delays in current negotiations with financial institutions.

It should be noted that the Adminstration, by Governor Hammond's letter of May 8, 1975, states that further hearings would be held " . . in order to jointly develop a rational tax . . "

Listed below are the names of the companies and persons who wrote to the Committee.

Mineral Severance Tax Project

Digest of Letters

Date	Correspondent
4/25/75	Dr. Johl Morris
4/17/75	Perry, Knox, Kaufman Inc. M.A. Kaufman
4/30/75	Cominco American J.C. MacLean
4/11/75	Rodney A. Blokestad
4/10/75	U.S. Borax J.E. Stephens
4/18/75	Heflinger Mining & Equipment Company Carl F. Heflinger
4/12/75	Eagle Creek Lodge Don Bennett
4/8/75	GVEA R.L. Hufman
4/4/75	Alaska Miners Association - Fairbanks Branch Mark Ringstad
4/11/75	MUS Robert Hanson
5/5/75	John E. Clark
5/6/75	Ketchkian Pulp Company Edward W. Borger, Sr.
5/6/75	Alaska Gold Company W.A. Glovinovich
5/19/75	C.C. Hawley & Association W.E. Shoemaker

ALASKA STATE LEGISLATURE

MEMORANDUM

November 3, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Tax Counsel

SUBJECT: Severance Taxes -- Legal Analysis

INTRODUCTION

Review of data available to the staff revealed that everyone is familiar with the concept of severance taxes. However, no one has done a legal analysis of just what severance taxes are for the use of the working legislator. It is the purpose of this memorandum to provide the members of the subcommittee with a concise legal analysis predicated on the use of the severance tax to derive substantial revenues from the state's renewable and nonrenewable resources.

There is confusion in the use of the term severance tax. It should be understood from the outset that gross production tax and severance tax are the same. These taxes come under the general heading of privilege or occupation taxes. These taxes are excise taxes: " . . . taxes imposed

by public authority for the purpose of raising revenue on the performance of an act, the enjoyment of a privilege, or the engaging in an occupation . . ." 33 C.J.S. 110-111.

The severance tax is not a tax levied directly on persons or property and is clearly distinguishable from ad valorem property taxes and income taxes. The Supreme Court of Montana in ruling on the validity of a license tax imposed on the privilege of engaging in mining, the tax being based on production stated:

> "The state in effect says to producers: Your operations deplete the natural resources of the state, and to the extent that you remove from the earth the natural wealth which nature has provided it, and to that extent impoverish it, you are required to pay a license tax for the use and benefit of the state, for the privilege of extracting such natural wealth. The tax provided is not, therefore, on metals, minerals, or mine products, but rather upon the business of producing metals or precious stones, based on annual production." State ex rel Snidone v. State Board of Equalization, 17 P.2d 68, 72 (1932)

The United States Supreme Court in distinguishing between a property tax and an excise tax imposed upon a product of a working corporate mine stated: ". . . [It] is not a tax upon property as such because of its ownership, but a true excise levied on the results at the business of carrying on mining operations . . . " Stanton v. Baltic Mining Co., 240 U.S. 103, 114 (1916). Because of this

difference, any constitutional requirement relating to imposition of property taxes does not affect the levying of severance taxes. 103 A.L.R. 18, 20.

At present, the State of Alaska levies a gross production tax/severance tax on oil and gas under AS 43.75. The meaning of gross production tax and severance tax as used in the memorandum is as follows:

Gross Production Tax -- A severance tax levied as an occupation tax. The tax is usually imposed at a certain sum per unit of mineral removed. Williams and Meyers, Manual of Oil and Gas Terms, 208.

Severance Tax -- A tax imposed on persons engaged in severing from the soil natural resources, such as timber, oil, natural gas, ore, or the like, based on the quantity or value of the product. 32 A.L.R. 827.

LEGAL ATTACTS ON AND LEGAL DEFENSE OF SEVERANCE TAXES

There is no doubt that the state has the right to levy severance taxes. Much of the litigation is based on the premise that the severance tax is invalid because by imposing a tax on quantity or value of the product, that imposition was arbitrary discrimination which violated both the due process and equal protection clauses of the constitution.

Attempts have been made to convert the severance tax into a property or income tax, in order to bring the severance tax within those taxes constitutional provisions of equality. Also in this vein, allegations have been made that severance was an incidental step in a general manufacturing process and not subject to a privilege or occupation tax.

The courts have generally struck down the arguments advanced above. The United States Supreme Court in ruling on a Louisiana severance tax law based on the taxation of crude oil by its gravity weight laid down the general rules, which are still in effect:

> "The states have a wide discretion in the imposition of taxes. When dealing with their proper domestic concerns, and not trenching upon the perogatives of the national government or violating the guaranties of the Federal Constitution the states have the attribute of sovreign powers in devising their fiscal systems to insure revenue and foster their local interest. The states in the exercise of their taxing power, as with the exertion of other powers, are subject to the requirements of the due process and the equal protection clauses of the 14th Amendment, but that amendment imposes no iron rule of equality, prohibiting the flexibility and variety that are appropriate to schemes of taxation. The state may tax real and personal property in a different manner. It may grant exemptions. The state is not limited to ad valorem taxation. It may impose different specific taxes upon different trades and professions and may vary the rates of excise upon various products. In levying such taxes, the state is not required to resort to close distinctions or to maintain a precise, scientific uniformity with reference

> to composition, use, or value. To hold otherwise would be to subject the essential taxing power of the state to an intolerable supervision, hostile to the basic principles of our government and wholly beyond the protection which the general clause of the 14th Amendment was intended to assure . . ." Ohio Oil Company v. Conway, 281 U.S. 146, 159, 74 L.Ed. 775, 782 (1930).

If the severance tax is alleged not to be a privilege or occupation tax, the "Tennessee Doctrine" comes into effect. That doctrine states that ". . . a privilege is whatever the legislature declares to be a privilege and taxes as such . . ." Burke v. Memphis, 94 Tenn. 692, 30 S.W. 742.

LIMITATIONS ON LEGISLATIVE POWERS

The wide discretion that the legislature has in imposing taxes are subject to limitations. While the state may classify broadly the subjects of taxation, Ohio Oil Co., supra, in doing so it must proceed on a rational basis. The general rule was stated by the United States Supreme Court in Royster Guano Co. v. Virginia, 253 U.S. 412, 415, 64 L.Ed. 989, 40 S. Ct. 560. The rule is: ". . . The state must proceed upon a rational basis and may not resort to a classification that is palpably arbitrary. The rule often has been stated to be that the classification must rest upon some ground of difference having a fair and substantial object of the legislation . . ." The general rule on

classification has recently been upheld by the U.S. Supreme Court in a Florida case. The Florida law under attack exempted widows from property tax but not widowers. In upholding the classification Justice Douglas stated for the majority that:

> ". . . We have long held that where taxation is concerned and no specific federal right, apart from equal protection, is imperiled, the states have large leeway in making classifications and drawing lines which in their judgment produce reasonable systems of taxation." Lehnhausen v. Lake Shore Auto Parts Co., 410 U.S. 356, 35 L.Ed. 2d 351, 93 S. Ct.1001. " A state tax law is not arbitrary although it 'discriminates in favor of a certain class . . . if the discrimination is founded upon a reasonable distinction, or difference in state policy,' not in conflict with the Federal Constitution. Allied Stores v. Bowers, 358 U.S. 522, 3 L.Ed. 2d 480, 79 S. Ct. 437. This principle has weathered nearly a century of Supreme Court adjudication, and it applies here as well . . ." Kahn v. Shevin, 416 U.S. 351, 40 L.Ed. 2d 189, 94 S. Ct. 1734 (1974)

Even though classification imposes limitations on the legislature, that limitation will not invalidate a properly drawn law. The state can classify as long as classification is rational, not arbitrary, and all taxpayers occupying the same status or falling into the same class are treated alike.

LEGAL JUSTIFICATION FOR INCREASED RATE OF SEVERANCE TAX

If a high rate of severance tax is imposed by the legislature, the opponents to the levy are sure to attack it on the basis that the tax is unreasonable, arbitrary,

prohibitory and confiscatory. This line of attack on "excessive taxation" through due process has uniformly met the response: ". . . where a statute is in every other respect a valid exercise of the taxing power, the judiciary has no power to declare the statute unconstitutional, even though the tax completely destroys a legitimate and useful business . . ." Morganti, 14th Amendment, Due Process, The Taxing Power, Case Note, 52 Journal of Urban Law, 620 (1974).

The U. S. Supreme Court, beginning with McCulloch v. Maryland, 17 U.S. (4 Wheat) 316, 428 (1819) and continuing up to the present in City of Pittsburgh v. Alco Parking Corp. et al., 417 U.S. 369, 41 L.Ed. 2d 132, 94 S. Ct. 2291 (1974) have held to this view. In an 1869 case involving a federal statute increasing a tax upon circulating notes of state banks the Supreme Court said:

> ". . . The judicial cannot prescribe to the legislative departments of the government limitations upon the exercise of its acknowledged powers. The power to tax may be exercised oppressively upon persons, but the responsibility of the legislature is not to the courts, but to the people by whom its members are elected. So if a particular tax bears heavily upon a corporation, or a class of corporations, it cannot for that reason only, be pronounced contrary to the Constitution. . . " Veazie Bank v. Fenno, 75 U.S. (8 Wall) 533.

The Alaskan legislature imposed a license tax upon the manufacture of fish oil and fertilizer. The grounds used to

attack the tax was that it would destroy the plaintiff's business, taking the plaintiff's property without just compensation. The U. S. Supreme Court upheld the tax:

> " . . . Even if the tax should destroy a business, it would not be made invalid or require compensation upon that ground alone. Those who enter upon a business take that risk . . . We know of no objection to exacting a discouraging rate as the alternative to giving up a business, when the legislature has the full power of taxation . . ." Alaska Fish Salting and Products Co. v. Smith, 255 U.S. 44, 65 L.Ed. 489, 41 S. Ct. 219 (1921).

The most current case dealing with this question is City of Pittsburg v. Alco Parking Corp. et al., supra. Here the city passed an ordinance placing a 20 percent gross receipts tax on private commercial operators of parking facilities. The tax was responsible for nine out of fourteen private commercial operators not being able to conduct business at a profit. In a unanimous decision validating the ordinance, the U. S. Supreme Court held:

> " . . . The claim that a particular tax is so unreasonably high and unduly burdensome as to deny due process is both familiar and recurring, but the Court has consistently refused either to undertake the task of passing on the 'reasonableness' of a tax that otherwise is within the power of Congress or of state legislative authorities, or to hold that a tax is unconstitutional because it renders a business unprofitable . . ."

Article IX, Section 1, of the Alaska Constitution, gives to the State the power of taxation. It is, without doubt, within the power of this legislature to impose a new severance tax. The rate of the severance tax, whether high or low, is within the discretion of the legislative body.

CONCLUSION

It is within the power of the legislature to levy a gross production/severance tax. The subject of the severance tax can be a broad classification. The severance tax cannot be based on an arbitrary classification and the classification must proceed on a rational basis. The courts of the several states and the U. S. Supreme Court have consistently upheld high rates of taxation even though the rate will materially affect legitimate and useful business. A carefully drawn statute with high rates will withstand legal attacks from the affected industry.

ALASKA
STATE LEGISLATURE

MEMORANDUM

10/9/75

TO: Senator John Huber, Chairman
Committee on Taxation and Revenue

FROM: Franklin Fleeks
Tax Counsel

SUBJECT: Notes on meeting with Michael Tanzer, Economist

Persons present:
Michael Tanzer, Consultant
Hugh Malone, Chairman of House Finance Committee
Steve Cowper, Member of Committee on Taxation and Revenue
and House Finance Committee
James Rhode, House staff
Norman Baily, House staff
Franklin Fleeks, Senate staff

The purpose in attending the meeting was twofold. The first was to hear what the consultant, Michael Tanzer, had to say. The second was to exchange ideas, cement relations and to determine that the course being set by the House and Senate was parallel.

The following items were discussed at the meeting.:

Discussion with House Representatives

In prior talks with the House staff, it was found that there was not much support for the Multistate Compact. Since this staff had heard only the Administration's side, which was favorable to the Compact, the House staff was asked to state their objections. Their main objection to the Compact is that it is not a good tool to tax the oil and gas revenues coming to the State. The allocation formula is not adequate to

return to the State its fair share of tax revenue. No objections were voiced to the Compact's validity in taxing other multistate business activity. The House staff as well as this staff believes that the Compact's procedures and enforcement can be strengthened. Both staffs have experienced difficulty in securing hard data on which to base their analysis. It was the consensus that the Agencies have the data but the data is not in an easily accessible form. It was agreed that any data received by the two staffs that might be useful to the other would be shared. This has already been implemented.

The political implications of the proposed tax was also discussed. From the House side it is believed that one large stumbling block will be the Native Regional Corporations. In order to persuade the Native Representatives to go along, it must be anticipated that some form of exemption must be written into the statute. (It must be stressed that this exemption is still very much in the discussion stage.) The type of exemption discussed can be constructed to exclude all Alaskan Corporations and include the multistate corporations.

It was the consensus of the staffs, after this discussion, that we are moving on parallel paths and there is no significant difference in our policies or aims.

Discussion with Michael Tanzer

The meeting with Tanzer was basically to orient him to the situation in Alaska, to let him see the developments himself, to see what additional

information he would need, and to set up a timetable for completion of his work. He stated that his basic approach would be the one set out in his August memo. All assumptions will be weighted to the conservative side to forestall any oil industry argument and, if possible, the data used would come from the oil industry. He will use as his period 20 years; from which he will make three computations.

He was asked to explain his idea of an "excess profits tax". He stated that this was just a label, not a concept. Members of the staffs had constitutional problems with the idea of a state "excess profits tax".

The remaining time was spent dealing with the technical details, i.e. how many computations, what type of format, who would provide what, etc. The timetable agreed on was a final report by December 15, 1975, with an interim report submitted for comment.

Conclusions and Recommendations

Dr. Tanzer is qualified to give an analysis of the oil industry. One of the plus factors is that this analysis will be from a point of view that the legislature has not seen. Even with Tanzer's report going to the House members, I would still recommend that our staff, Ed Sterner in particular, make an in-house analysis. The in-house analysis will provide a comparison to Tanzer's analysis and any other analysis that will be submitted.

Miscellaneous

After meeting with Tanzer, I spent the remainder of the time in Fairbanks looking for data from sources known to me personally. Vic Fischer of

ISGER and his editor Ron Crowe were especially helpful, allowing me full access to their files. Other data, consisting of books, prospectus, statistics, etc. were obtained from my personal sources.

ALASKA
STATE LEGISLATURE

MEMORANDUM

October 16, 1975

TO: Senator John Huber, Chairman
Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Tax Counsel

SUBJECT: Value Added Tax

At each of the meeting held, whether formal or informal, the topic of a value-added tax has been discussed. Though all participants had heard of a value-added tax, its concept and operation was not clearly defined. The purpose of this memo is to try to bring clarity to the subject.

History

The value added tax (VAT) is an out growth of multistate turnover taxes used in Europe. The multistate turnover tax was first introduced in Germany during World War I.[1] France adopted the value added tax in 1954. With the formation of the European Common Market (EEC) and its emphasis on harmonizing the various nations taxes, the vehicle chosen was the value-added tax. At present, all of the member states of the EEC have enacted value-added taxes.[2] In the United States, only the state of Michigan had a modified VAT. The modified VAT was repealed when Michigan revamped its law in 1967.[3]

Discussion

Just what is a value-added tax? The simple definitions is that it is a tax on 'value added' by the taxpayer. The most accurate definition found is that VAT is a net turnover tax with prior tax deduction.[4] What must be emphasized is that VAT is a sales tax collected in multistages. "...It is a method of collecting a sales tax that insures that the tax is shifted to the consumer..."[5] As another writer states "...The value-added tax is neutral as to businesses because it does not apply to businesses; rather it is a retail sales tax on the consumers of goods and services and not a tax on the producers or sellers of goods and services..."[6]

The way the tax works is as follows. A producer or seller of goods or services multiplies his total sales by the applicable rate. From this amount, by the tax credit system, the producer or seller subtracts the amount of tax he paid on his purchases and pays the net amount to the government.7

Application of the Tax to Alaska

The question to be asked is: Can a value-added tax increase significantly the revenues from multistate corporations and oil and gas?

Even though the tax has only been used in one state, Michigan, there is nothing in the Federal or State laws that would bar a VAT. Under Article IX, Section 1, of the Alaska Constitution, the State can enact a VAT law.

An Alaskan VAT tax would have one fatal flaw if applied to raise tax revenue from the multistate corporations and oil and gas. That fatal flaw is that the VAT is a sales tax. Under current Supreme Court decisions, Alaska cannot apply a sales tax on goods produced her and sold out of the state. The United States Supreme Court has stated:

> "...The vice of the statue as applied to receipts from interstate sales is that the tax includes in its measure, without apportionment, receipts derived from activities in interstate commerce; and that the exaction is of such a character that if lawful it may in substance be laid to the fullest extent by States in which the goods are sold as well as those in which they are manufactured. Interstate commerce would thus be subjected to the risk of a double tax burden to which intrastate commerce is not exposed, and which the commerce clause forbids..."[8]

In a 1972 New Mexico case where the state levied on proceeds from contracts entered into outside the state with out of state clients, the U.S. Supreme Court in a unanimous decision stated: "...But a tax levied on the gross receipts from sales of tangiable personal property in another state is an impermissible burden on commerce..."[9]

Conclusion

The purpose for which a value-added tax would be enacted is to raise significent tax revenues from multistate corporations and oil and gas.

Because the VAT is a sales tax and under current U.S. Supreme Court decisions the rate cannot be applied to total sales outside Alaska, the VAT would not generate significent additional tax revenues. It is my conclusion that enactment of a VAT tax would serve no useful purpose for the State of Alaska.

Sources

1. Norr and Hornhammer, The Value-Added Tax in Sweden, 70 Columbia Law Review 381 (1970)

2. Gordon T. Butler, The Value-Added Tax; A New $40 Billion Tax For the United States, 50 Texas Law Review 267 (1972)

3. Michigan Complied Laws Annotated, Chapter 206, Income Tax Act of 1967

4. Butler, supra

5. Butler, supra

6. Stanley Surrey, Value-added Tax: The Case Against, 48 Harvard Business Review 77-94, Nov.-Dec. 1970

7. Norr, supra; Butler, supra

8. J.D. Adams Mfg. Co. vs Storen, 304 US 307, 82 L.Ed 1365, 58 S.Ct 913.

9. Evco vs Franklin Jones, 459 US 91, 34 L.Ed 2d 325, 93 S.Ct 349 (1972).

E. Stone 10/23/75

A Brief Review of the Multistate Tax Compact

A) What The Compact Does (And Does Not Do)
B) The Economic And Financial Effects Of The Compact
C) The Allocation Formula
   1) The Property Factor
   2) The Payroll Factor
   3) The Sales Factor
   4) The Adjustment Provision
D) Preliminary Results from Compact Membership
E) Alternatives to the Compact
F) Conclusion

A) What the Compact Does

Basically, the Compact provides a means which has not been available in the past to enforce a state's corporate income tax laws. By providing for a general uniformity between the tax laws and regulations of the member states, corporations (and other multistate taxpayers) can be forced to provide the same income reports to all of the states. This makes it possible for states to pool their auditing resources and more carefully check the accuracy and consistency of multistate taxpayer reports. This basic uniformity also helps avoid disputes based on charges of double taxation, charges which could develope if every state's tax laws were significantly different. If disputes as to the proper allocation of incomes do arise, a method of arbitration is provided by the Compact. What the Compact does not do is depart any significant way from past policy in the treatment of multistate corporations. Thus the Compact is basically an agreement between states to ensure the effective and fair taxation of multistate businesses.

B) The Economic And Financial Effects Of The Compact

The Compact has two significant characteristics which a state by itself does not have. First, the enforcement capabilities of the Compact provide a tool by which states can approach a greater equity in the treatment of interstate and intrastate businesses. Without the Compact

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it is possible for some multistate corporations to shift their net incomes to non- or low-tax states, something that one-state businesses can not do. Second, the basically uniform allocation of a corporation's income between states combined with the arbitration mechanism reduces the possibility of significant double taxation to its practical minimum. This eliminates the claim that multistate taxpayers should have special (lower) tax treatment due to the double taxation possiblity, and allows the state to tax at whatever rate it deems reasonable.

C) The Allocation Formula

The advantages of enforceability and equity are bought at the price of basic uniformity in the allocation formulas and regulations of the member states. Although the details of the formula may be shaped by each state, the basic formula which all member states must use is given in Article IV, Sec. 9 of the Compact. The following is a discussion of the three factor formula of property, payroll, and sales, as it relates to Alaska.

1) The Property Factor: This factor, according to the Multistate Tax Compact, Article IV,10 includes, "... the average value of the taxpayer's real and tangible personal property owned or rented and used in this state during the tax period." The Alaska Administrative Code, 15AAC10.120(a) states that the property factor numerator "...shall include the average value of the taxpayer's real and tangible personal property in this state during the tax period used, is available for use, or is capable of being used for the production of business income." For most businesses the above definitions are adequate, however, they do not clearly include mineral reserves in the property factor of extractive industries. Although they imply that reserves may be included, it is suggested that

the phrasing adopted by the Multistate Tax Commission, Feb. 13, 1973, be included in the updated revenue code (to be proposed by the Dept of Revenue in the near future) as follows: "Property held as reserves or standby facilities or property held as a reserve source of material shall be included in the factor. For example, a plant temporarily idle or raw material reserves not currently being processed are includable in the factor" (Commission Reg. IV. 10.(b),).

This would remove any doubt concerning the inclusion of oil, gas, and mineral reserves in the property factor of extractive industries. With the clear inclusion of mineral reserves in the property factor of multi-state taxpayers, the property factor should fairly reflect the property interests of a business in this state. (Note: The Alaska Code might also specifically state by what method mineral reserves will be valued, e.g. the same method as for ad valorem tax purposes. This might help avoid debate as to what valuation of reserves should be used.)

2) The Payroll Factor: Fortunately for Alaska, this factor is based upon the "total compensation paid" to the taxpayer's employees rather than the number of employees paid by the taxpayer. Thus, the higher salaries paid in Alaska will be reflected in a higher portion of the payroll factor being allocated to Alaska than if a simple head count were used. This is economically justified by the fact that government services are also made more expensive than in other states. No significant changes to the payroll factor appear to be needed.

3) The Sales Factor: According to the Multistate Compact, both sales which occur in the state and sales which are predominantly due to "income

producing activity" in the state are allocated to the state (Article IV. 15 and IV.17.((a)(b).). The Administrative Code, 15AAC 10.280., defines an "income producing activity" as "the act or acts directly engaged in by the taxpayer for the ultimate purpose of obtaining gains or profit." The major exclusion from this allocation rule is "income producing activity" performed by an independent contractor. Such activity is not included in the sales factor because the contractor pays the income tax on that activity. For most business activities in the state this is a fair and reasonable method for the allocation of gross sales. The complex contractual arrangements between the several large pertroleum corporations active in the state (and their vertical integration) make the allocation of their sales and "income producing activities" more difficult to determine. It is clear that the Multistate Tax Compact is referring to just the type of activity which extractive industries are pursuing in Alaska when it refers to "income producing activities." It is suggested that the Alaska Administrative Code for Revenue contain specific reference to the extractive industries and examples of how sales from their "income producing activity" should be allocated to Alaska.

4) The Adjustment Provision. This provision allows for unique situations which may arise in relation to specific states or businesses. Article IV. 18. of the Compact states:

> If the allocation and apportionment provisions of this Article do not fairly represent the extent of the taxpayer's business activity in this state, the taxpayer may petition for or the tax administrator may require, in respect to all or any part of the taxpayer's business activity, if reasonable:
>
> (a) separate accounting;
> (b) the exclusion of any or more of the factors;
> (c) the inclusion of one or more additional factors which will fairly represent the taxpayer's business activity in this state; or

(d) the employment of any other method to effectuate an equitable allocation and apportionment of the taxpayer's income.

Thus, in special cases (e.g. the sales factor for a vertically integrated industry cannot be made to reflect the industry's actual activity in the state) the adjustments can be made without affecting the Compact or allocation formulas in general. Such adjustments must be made only with very good reason and with great care, because their "reasonableness" may be challenged in the courts or during arbitration. The general uniformity of the Compact, however, is not a straight jacket.

D) Preliminary Results From Compact Membership

Although the Multistate Tax Compact did not go into effect in Alaska until July 1, 1970, and the current Administrative Code relating to the Compact did not go into effect until July, 1972, some tentative obesrvations can be made. In 1970-71, the first year under the Compact, and in 1973-74, the first year in which extensive enforcement of the Compact allocation was implemented, corporate income tax revenues jumped 14.41 and 18.34 percent respectively over previous years. This compares with growth rates of 6.48 and 7.84 percent in fiscal years 1970 and 1971 respectively (Figures from "Revenue Projection Detail", 12/19/74). It is not clear just what portion of the greater increases in fiscal years 1971 and 1974 were merely due to surges in economic growth in Alaska, but it is possible that part of the extra growth in tax collections was due to the Compact and its enforcement. A more concrete example of the Compact's value is seen in the additional corporate income tax billings being sent to five or six major multistate (oil) corporations. These are based on Department of Revenue audits which the provisions of the Compact facilitate. Two of these billings are for well over one million dollars each, totalling approximately three million. The final amounts of the other billings

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have not yet been determined. Note that this compares with the $134,860 originally paid by 3 of the 10 oil producers operating in the state in fiscal year 1973 (April 17, 1975 memo by Kathy Hollier, Research Analyst, Department of Revenue). In addition to these billings, the state has already received over $150,000 and has approximately $2.5 million in pending assessments due from other multistate taxpayers' operations in Alaska. Thus, preliminary evidence indicates that the Compact is assisting the Department of Revenue in obtaining significant increases in corporation net income tax revenues. As Alaska's Administrative Code for the Compact is fine tuned to Alaska's needs, it is probable that the Compact will be even more helpful in the future.

E) Alternatives To The Compact

It is possible that the State could choose to develop its own tax allocation formulas and regulations independent from other states. The object of such an independent approach would be to allocate a greater share of multistate taxpayers' incomes to the state than is possible under the Compact. There are three major problems with this approach. First, if Alaska's corporate income tax varies in major ways from other states, Alaska would have to enforce the tax without the close assistance of other states. If past experience is any guide, the state would likely loose money rather than gain it. Second, if the formula caused the tax burden of multistate tax-payers to be significantly higher that intrastate taxpayers, the long term economic effect would be to discourage new investment in the state. Such a possibility should be considered carefully in view of the state's current employement situation. Third, and perhaps most important, all of the legal battles concerning the legal standing and equity of the new tax approach would have to be fought. These

battles have largely been fought and won for the basic formula and approach used in the Multistate Tax Compact. Thus, for enforcement, economic equity, and legal reasons, such an independent course would be difficult to pursue.

It might be suggested that the state withdraw from the Compact but maintain the basic tax approach of the Uniform Division of Income for Tax Purposes Act (UDITPA - the basis of the Compact). This would gain the state nothing in the way of really new tax options while weakening its enforcement ties with other states. Such an approach would seem to the worst of both worlds.

Finally, the state could remain within the Multistate Tax Compact, refine the state's implementing code, and make any further adjustments needed through the Compact's adjustment provisions. In those industries, specifically extractive industries, which may impose special burdens on the state and/or on future citizens of the state, severance taxes and/or ad valorem taxes could be used to supplement revenues from the net income tax.

F) Conclusion

The Multistate Tax Compact generally appears to be well suited for the needs of Alaska. Preliminary indications are that the Compact is assisting the Department of Revenue in the enforcement of the state's corporate net income tax. The allocation formula lends itself to a basically equitable treatment of both intrastate and interstate taxpayers while allowing for special or unusual cases. If such revenues are considered too low in certain industries, additional separate taxes should be used.

TITLE: LEGAL ANALYSIS OF THE MULTISTATE TAX COMPACT

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REQUESTED BY: Senator John Huber, Chairman
Committee on Taxation and Revenue

DATE SUBMITTED: 10/16/75

STATEMENT OF FACTS

The Committee on Taxation and Revenue's staff in it initial review of corporate income taxation has put special emphasis on taxation of multistate corporations, under the present Alaska income tax statutes. Alaska is one of forty five (45) states and the District of Columbia which levies an income or franchise tax based on the net incomes of corporations and other similar organizations. Alaska's tax base is tied to the Federal income tax net income figure.

The State of Alaska is a member of the Multistate Tax Compact. The Compact was drafted in 1966 and became effective in 1967 after seven (7) states had adopted it. Alaska became a member on July 1, 1970. The purposes of the Compact are: 1) To facilitate proper determination of State and local tax liability of multistate taxpayers by equitable apportionment of tax bases and, 2) To avoid duplicative taxation.

On this, the initial review of the corporate income statutes, it has been tentatively decided that more revenue can be raised from the multistate corporations by use of the Compact. The method of accomplishing this would be through strict enforcement of the present allocation formula or through changes to the present allocation formula.

Questions Presented

1) Is Alaska's participation in the Compact legal under the United State Constitution?

2) Will the use of an allocation formula on income derived in Interstate commerce run afoul of the Commerce Clause and Fourteenth (14th) Amendment Due Process Clause of the Constitution?

3) Can the income from a subsidiary of a multistate corporation be unitized with the parent corporation for purposes of applying the allocation formula?

Brief Answer

Legality of the Compact

Under the correct interpretation of the U.S. Supreme Court, the Compact is legal. The Compact does not increase the political power of the states.

Use of Allocation Formula

The allocation formula set out in 15 AAC 10, Multistate Tax Compact, only levies taxes on that portion of the taxpayers net income arising from its activities within Alaska. The taxes imposed by the allocation formula are not a direct burden on interstate commerce and do not conflict with the Due Process Clause.

Unitizing Income of Subsidiaries and Parent Corporations

When the operation of business done within the state is dependent upon or contributes to the operation of the business without the state, the operations are unitary. The income from a subsidiary of a multistate corporation can be unitized with the parent corporation.

Applicable Statutes

Article I, Section 10, Clause 3 of U.S. Constitution

No state shall, without the consent of Congress ... enter into any agreement or compact with another state ...

Article I, Section 8, Clause 3 of U.S. Constitution

The Congress shall have power . . . to regulate commerce .. among the several states . . .

Fourteenth Amendment of U.S. Constitution - Due Process Clause

No state shall make or enforce any law . . . nor shall any state deprive any person of the life, liberty, or property,, without due process of law.

AS 43.19.010. Article IV

Article too long to reproduce

15 AAC 10 Multistate Tax Compact.

Compact too long to reproduce

Discussion

Legality of the Compact

Even though the words of the Constitution seem to prohibit all compacts entered into without the consent of Congress, current judicial interpretation limits the all or nothing aspect of the Article. The United States Supreme Court in 1893 laid down the rule in Virginia v. Tennessee, 148 US 503 (1893), 37 LE 537, which states: "...Looking at the clause in which the terms "compact" or "agreement" appear, it is evident that the prohibition is directed to the formation of any combination tending to the increase of political power in the states, which may encroach upon or interfere with the just supremacy of the United States..."

The several states have entered into the Compact as a means of insuring that the states power to tax multistate corporations will not be interfered with by Congressional action. Congress has set some restrictions in Pub Law 82-272 (15 USCS 381) and has made studies. Each session has seen the matter come up, but with the exception of Pub Law 86-272 , nothing has been done.

The Compact does not increase the political power of the states. The states have the power to tax. In entering into the Compact they are facing the economic reality that much of the business in the country is carried out by multistate corporations. In order to derive a fair amount of tax from those corporations, the states have entered into the

Compact to ensure equitable apportionment among themselves and avoidance of duplicative taxation.

Consent of Congress can also be implied. Virginia v. Tennessee supra. Since the Compact's inception in 1967, there has been continuing Congressional action on the matter. That action has not resulted in any legislation approving or disproving the Compact, of which Congress is well aware. "..It seems fair to say that Congress impliedly consents to the existence of any compact of which it has knowledge and has not been negated by legislators..." The Compact meets the test of Constitutionality.

Use of Allocation Formula

The use of the allocation formula has been attacked on the following grounds by the multistate corporations: 1) It is a tax on the privilege of engaging in interstate commerce, 2) It is inherently discriminatory and 3) It results in a multiple tax burden. The first raises an issue under the Commerce Clause and the second and third raises issues under the 14th Amendment Due Process Clause of the U.S. Constitution.

Both issues have been extensively litigated and most decisions have been returned in favor of the allocation formula. A tax that is a direct burden upon the operation or act of interstate commmerce is unconstitutional. The mere act of carrying on business in interstate commmerce does not except a corporation from state taxation.

The U.S. Supreme Court stated in the leading case of Northwest States Portland Cement Co. vs. State of Minnesota, 358 US 450, 3 Led 2d 421, 79 S.Ct. 357: "...We conclude that net income from the interstate operation of a foreign corporation may be subjected to state taxation provided the levy is not discriminatory and is properly apportioned to local activities within the taxing state forming sufficient nexus to support the same..." In the case of General Motors Corp. vs Wasnington, 377 US 436, 440-441 (1964), the U.S. Supreme Court following Northwest stated this controlling test:

> "...A careful analysis of the cases in this field teaches that the validity of the tax rests upon whether the state is exacting a constitutionally fair demand for that aspect of interstate commerce to which it bears a special relation. For our purposes the decisive issue turns on the operating incidence of the tax. In other words, the question is whether the state has executed its power in proper proportion to appellant's consequent enjoyment of the opportunities and protections which the state has afforded ... As was said in Wisconsin vs J.C.Penny, 311 US 435, 444 (1940), 'the simple but controlling question is whether the state has given anything for which it can ask return'...

The U.S. Supreme Court has sustained the above decisions in Colonial Pipeline Co. vs Treigle, -US-, 44 L Ed 2d 1, 95 S.Ct. -.

Since the taxes imposed are only levied on that portion of the taxpayers net income which arises from its activities within the taxing state, they do not conflict with the Due Process Clause. Northwest supra. The use of an allocation formula that is nondiscriminatory, properly apportioned,

and related to local state activity to tax multistate corporations will not run afoul of the Commerce and 14th Amendment Due Process Clauses of the U.S. Constitution.

Unitizing Income of Subsidiaries and Parent Corporations

One of the major problem areas in taxing multistate corporations is where the activities done in the taxing state are carried out by a subsidiary of the parent multistate corporation. This issue has been decided principally in state courts. As noted in the immediate prior discussion, the allocation formula has been upheld.

The general test was stated by the California Supreme Court in Edison California Stores vs McColyes, 30 Cal. 2d 472, 183 P2d 16 (1947). It states "...If the operation of the portion of the business done within the state is dependent upon or contributes to the operation of the business without the state, the operations are unitary ... A more particular statement of the test is that a business is unitary if these circumstances are present: 1) Unity of ownership, 2) Unity of operations as evidenced by central purchasing, advertising, accounting and management division, and 3) Unity of use of its centralized executive force and general system of operations..."

The test was followed in Chase Brass and Copper Co. vs Franchise Tax Board, App. 86 Cal Rptr 350 (1970), dismissed 400 US 961 (1970). Chase was a wholly owned subsidiary of Kennecott Copper Corp. Kennecott did

no business in California. Applying the above test, the California Supreme Court found the business between Kennecott and Chase Brass unitary. The same rationale was followed by the Oregon Supreme Court in Coca Cola Co. vs Dept of Revenue, 533 P2d 792 (1975).

Following the lead of the various state courts, the income from a subsidiary of a multistate corporation can be unitized with the parent corporation for purposed of applying the allocation formula. The power to impose the tax on a unitary business flows from the authorized method of determining income from the taxpayers activities within the state, and authority to pursue the method is present whenever activities are partially within and partially without state, whether or not integrel parts of the system are seperately incorporated, or the accounting system of the taxpayer does not clearly reflect the income. Edison California Stores, supra.

Conclusion

From a legal point of view the Multistate Tax Compact is valid under the United States Constitution. Use of an allocation formula that is not discriminatory will forestall any attack under the Commerce and Fourteenth Amendment Due Process Clauses. It is also possible to unitize the income from a subsidiary of the multistate corporation with the parent.

There is an area in which the Multistate Tax Compact is inadequate for the State of Alaska. That area is the taxation of oil and gas revenues.

Only a small amount of tax revenue would be generated if the Compact were used exclusively to get to the multistate oil companies' profits. For taxation of the multistate oil companies another type of tax is needed, ie severance, value added, ad valorem, in addition to the Compact.

Franklin D. Fleeks

Tax Counsel

ALASKA
STATE LEGISLATURE

MEMORANDUM

November 4, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation and Revenue

FROM: Edwin B. Sterner
Committee Research Analyst

SUBJECT: Special Oil (and Gas) Taxation: The Economic Basis for the Taxation of Oil (and Gas) in Excess of Normal Corporation Income Tax Levels

I. Economic Rents -- both High and Low

II. The Oil Industry Rent Position

III. What is an "Extraordinary" Rent

IV. Characteristics of a Tax on "Extraordinary" Rents

V. Some Possible Tax Approaches

ECONOMIC RENTS

In its most simple form, an economic "Rent" is what a person can collect because he has something someone else wants. How much the rent will be depends on how strongly the other person wants it. That Rent could be cut if another seller offers the same thing at a lower price or offers a similar thing, a "substitute," at a lower price. The rent could increase if another buyer comes along who will pay more for the item than the first buyer. In general, three

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factors must be present to ensure high rents. First, consumers of the item insist on having a certain amount of the item; that is, demand is inelastic. Second, supply is fixed or artificially controlled. Third, the supply of substitutes at competitive prices is inadequate. A classic example is land on Manhattan Island. There are many buyers who want that location very much (even now); the supply of land is fixed -- the Island is not growing; and the supply of substitutes, at competitive prices, e.g., land on Long Island, is not so great as to reduce Manhattan rents to typical national levels. On the other hand, raw sewage does not rate a very high rent. Demand is almost nonexistent, the supply is more than adequate given current demand, and superior substitutes (if wanted are easy to come by. Current technologcial developments, however, may soon change this situation.

THE OIL INDUSTRY RENT POSITION

What must be determined is whether oil belongs with Manhattan Island or raw sewage.

It is apparent that producers of oil, OPEC members and otherwise, are now in a position to collect rents much greater than the cost of producing the oil. That fact by itself does not tell us much. What we really need to know is why the producers are in such a position. First, demand for energy is quite inelastic. For the economy to function

at any particular level, a certain amount of energy is basically needed (even though some corners may be cut and over the long term more efficient energy use may develop). Second, adequate substitutes for OPEC oil at competitive prices are currently not available and current demand tends to bid substitutes' prices up to levels on par with OPEC prices. Third, the supply of oil by OPEC members is artificially controlled so that changes in demand do not cause changes in price. Thus, as demand for OPEC oil falls due to development of substitutes or more efficient energy use, only the quantity of OPEC oil purchased falls, not the price. In theory, if the OPEC price controls were to be maintained perfectly, OPEC would continue to insist on its official "posted price" for oil even if so many substitutes are developed that demand for OPEC oil at the posted prices falls to zero. As long as OPEC is able to sell their oil at high prices, Alaska oil will also yield high rents. This is the case because consumers in Chicago, for instance, will be willing to bid up the price of Alaska oil until it costs the same as OPEC oil delivered to Chicago.

Oil rents are collected now because the three necessary factors are present. Demand is inelastic, there are no substitutes adequat to meet demand, and supply is limited (but in this case, artificially).

Whether all three factors will be present in the future is not so clear. The surge in OPEC oil prices has definitely touched off an unprecedented search for, and technological development of, non-OPEC sources of energy. Great Britain and much of Scandinavia will probably be more than self sufficient by 1980 or shortly thereafter. Alaska will be producing an additional 1.2 to 2 million barrels a day and the decline in production of currently developed fields in the U. S., which is already slowing, may be stopped or reversed. Uses of coal are now increasing and by the 1980's commercial coal gasification and shale oil production may be on line. In short, the supply of energy substitutes will almost certainly be growing very significanly during the next decade.

The trend for demand of oil and gas energy from OPEC sources is not so clear. Even if alternate supplies of oil should greatly increase, the ability of OPEC to collect extraordinary rents will not have been reduced if demand for oil has also grown by large amounts. If demand is stable or grows slowly, however, the increase in substitutes could place severe pressure on OPEC. The greater use of coal gasification, atomic and other alternate energy sources will likely continue to retard the growth in demand for oil as an energy source. If the demand for oil produced energy does remain steady or grows slowly, the increase in supplies of

energy from all sources will make it possible for more and more nations or industries to turn to alternate sources when OPEC raises its prices. In short, a rise in OPEC prices will cause a greater drop in consumption of OPEC energy than in the past -- demand will be more "elastic."

Should demand become so elastic that more revenues could be gained by lowering oil prices than by raising them, some OPEC countries might find the temptation to cut prices too great to resist. The resulting decrease in OPEC oil prices would cause the value of Alaska oil to fall as well, since a consumer will not pay more for the substitute, namely Alaska oil, than he does for the original item.

As demand for OPEC, or more specifically, Arab oil falls (the demand curve "shifts") and becomes more "elastic" due to the greater availability of substitutes, pressure upon the artificially controlled supply and prices of OPEC oil will gradually increase. Just how much pressure OPEC can take is open for debate, however, some idea can be gained from the current OPEC situation. In spite of the rapid increases in the price of oil, internal development programs and greater imports have already or soon will absorb most of the "petrodollar" surpluses in all but a few countries, principally Saudi Arabia, Kuwait, Qutar and United Arab Emirates. If these countries are to continue their newly acquired "lifestyles" they cannot significantly

cut their oil production. This means that if demand for OPEC oil falls, the four surplus countries will be pressured to bear the largest burden of production cuts. There are already indications that they are not entirely willing to shoulder this burden. Realizing that any decrease in quantities demanded at higher prices would be largely absorbed by it, Saudia Arabia refused to agree to the very large price increases proposed by Iran and others and finally settled for an official ten percent increase, which with "technical adjustments" works out to something less than that. Furthermore, Kuwait, Qutar and the UAE are all greatly expanding their production capacities.

Indonesia lost $1.5 billion in 1974 revenues due to reduced demand for its oil and plans to increase 1975 production from 1.2 billion b/d to 2 million b/d (Int'l Petroleum Ency. '75, p. 92). Libya's production has fallen from 3.3 million b/d in 1970 to 1.5 million b/d in 1974 and to less than 1.0 million b/d by the end of 1974. Just to return to 1973 levels of 2.2 million b/d, Libya must increase current production by over a million barrels per day (Int'l Petro. Ency. '75, p. 126). If these and other countries insist on expanding production in the face of only slowly growing demand, the already taxed patience of the few balance of payments surplus countries may be stretched to the breaking point. Small amounts of price cutting have already appeared in the form of adjusted gravity ratings and changes and

through ninety day delays of payment for oil received, which amounts to a three or more percent reduction in price.

Thus, if demand for OPEC oil continues to remain fairly stable or grow only at a slow rate and increasing availability of substitues causes that demand to be more sensitive to price changes (more elastic), OPEC may find it is impossible to maintain fixed price levels in the face of growing desires by several OPEC members to produce more oil. If demand should resume its rapid growth of the past and the development of substitutes lags, OPEC might not only be able to increase production but also continue to increase prices. Although current world conditions tend to favor a downward pressure on oil prices, the situation next year or five years from now may be quite different. Thus, a tax system that yields fair returns to the state and oil producers only at a particular oil price (e.g., $10, or $12, or $7) should be avoided. As rents due to higher or lower prices expand or contract, so should the tax.

WHAT IS AN "EXTRAORDINARY" RENT

We have all heard from one source or another that oil industry profits are "too high" or that OPEC oil prices are "too high." What is meant by "too high" or "extraordinary?" In some cases high prices and/or profits are actually encouraged. Patents are designed to ensure a controlled supply of a new invention so high rents can be charged if

demand for it is great. So one may wonder why there is concern because oil producers or companies are collecting higher rents than a few years ago. Intuitively, it appears that this concern stems from a feeling that their "high" profits are basically due to a fortunate circumstance rather than any inventive or entrepreneurial acumen or skill. This is characterized by the use of the term "windfall" profit or gain. However, if a company were only making a three percent return on investment and suddenly circumstances changed so its return tripled to nine percent, such a windfall would not be protested, while a tripling of profits from ten to thirty percent would be. So the notion of a "windfall" is coupled to a notion of what a "fair" return is. Roughly, eight to twelve percent returns after taxes are considered generally acceptable (although desired return rates are rising). The Pipeline Consent Decree of 1941 has limited pipeline income to seven percent of investment. Exxon returns on stockholder equity in 1974 and the first half of 1975 (on an annual basis) were 19.98 and 13.82 percent respectively after taxes (based on figures, pp. 55 and 59, Preliminary Prospectus, Sept. 30, 1975, Exxon Pipeline Co., Exxon Corp.).

It now appears that Britain will be allowing a return on the risky North Sea oil investment of approximately 20 percent after taxes (The Economist, March 1, 1975, p. 70). Current bond yields on AA corporate bonds (the most secure) are around nine percent (BP Pipeline issue of Feb. 1, 1975,

was at 8 5/8 percent). Thus, the riskier the investment, the higher the "fair" after tax return: bonds -- nine percent, typical corporate investment -- eight to twelve, riskier investments such as oil -- somewhat more, and the North Sea -- 20 percent. It should also be said that high profits as a result of high rents often serve a useful purpose. Since high profits could be made in the hand calculator business, large investments have been made, increasing the availability and ranges of quality while reducing the price of calculators. Currently higher profits on the production of oil and gas are now pulling capital investment into that area. Thus combining the notions of what returns are "fair," what returns are "extraordinary," and the realization that extraordinary returns do serve a purpose, a tiered system of taxation might seem appropriate.

Thus, one might levy taxes up to a given return on capital at "normal" income tax levels (e.g., Alaska's nine percent rate). Above that rate of return, a very high tax rate could be levied, while leaving enough rent to draw the extra levels of capital needed for development of the state's oil and gas resources. For example, if one assumes that a fifteen to twenty percent return after federal taxes is "fair," and that effective federal tax rates will range between 35 and 45 percent, then a before federal tax return of roughly 30 percent might be considered the point above which extraordinary rents are being obtained and extraordinarily high tax rates could be applied.

CHARACTERISTICS OF A TAX ON "EXTRAORDINARY" RENTS

Rents are based on inelastic demand, a lack of substitutes, and limited supply. Future development in demand and the availability of substitutes are basically not under OPEC's control. OPEC took advantage of a situation which may be quite different in the future (better or worse). Due to this uncertainty, the tax on oil production income must above all be flexible, and that is the underlying goal of the the following desired tax characteristics (keeping in mind that what is desirable is not always practical).

A. The tax should automatically expand and contract with the price (rent) of the oil produced.

B. Prices which yield only "normal" rates of return should be taxed at the same rate as other corporate income.

C. Taxes on rates of return above "normal" can be quite high, but should leave some of the rent to encourage further capital development.

D. "Extraordinary" tax levels should disappear if "extraordinary" rents disappear, and expand if rents expand, thus avoiding cutting into "normal" profit levels.

SOME POSSIBLE TAX APPROACHES
COMMENTS AND EVALUATION

The following examples are for one year's production. The figures are simplified for ease of calculation. The more complicated equation and assumptions of a complete model are included at the end for those interested.

The figures in the examples are based on the following simplifying assumptions:

1. The pipeline tariff fee is $2.90/bbl and field operating costs are $0.10/bbl, a total production cost of $3.00/bbl.

2. The North Slope capital investment (does not include pipeline) is $2 billion, straight line depreciated for 20 years ($100 million per year).

3. Gross revenue equals price per bbl times quantity.

4. Quantity equals 1.2 million bbl/day times 365 equals 438 million barrels for the year.

5. Royalties equal 12.5 percent of gross revenue.

6. 100 percent equity in the field owned by corporations (eliminates interest costs but not a very realistic assumption).

7. Tax rates were chosen that would yield roughly $1 to 3 billion per year.

A. A Flat Cents (dollars) per Barrel Tax

This is the easiest form of production tax to levy and administer. It does not, however, come close to meeting the

desirable characteristics described above. It does not react to price level changes or, as the example shows (line 9), to levels of profitability.

B. Gross Severance Tax, at a Percent of Value (e.g., 35 percent)

This is only slightly more complicated than the flat cents per barrel tax in that the Department of Revenue would be required to determine the price per barrel of Alaska oil. Frequent postings of world prices for crude oil at many ports make this a fairly easy task and is already being done for Alaska's current severance tax. The tax does react somewhat to higher and lower prices. It does not react very well to profitability, allowing profits to range quite widely depending on price and costs of production (from 0.4 percent at $6/bbl to 104 percent at $14/bbl in the example).

C. Adjusted Gross ("Net") Tax at a Percent of "Net" Revenue (e.g., 60 percent)

This tax is perhaps somewhat more difficult to administer than the current production tax. In addition to transportation costs (which are already netted out to get the "wellhead value") and royalty costs, an adjusted gross tax would also substract depreciation, interest payments, and perhaps some approximation of operating costs. "Net" is used in quotes because a true net tax would try to account for every expense involved in producing the oil and gas, a most complicated task. Capital, transportation, and royalty

costs for oil and gas production so overwhelm the current operating costs, that unless the tax is trying to squeeze the last drop of "blood from the turnip," a net tax is not necessary. (Furthermore, a true net tax would allow "indirect" costs to be charged against production of Alaska oil, and careful accounting can make such costs appear huge.) Transportation, royalty, depreciation, and interest payments are all fairly easily determined. An estimation of operating costs based on salaries subject to Alaska income taxes could also be made without much difficulty.

By using the adjusted gross revenues as the base for a tax on oil, the possibility of the tax forcing the producer into a losing position is almost eliminated. Thus a higher rate of tax can be levied to capture a greater part of the "extraordinary" rents. Unfortunately, this higher rate is applied against "normal" profit levels as well, resulting in both very low and very high profit levels. In the example, profits range from 18 percent at $6/bbl to 79 percent at $14/bbl, an improvement over the previous example (0.4-104 percent) but still a very wide range.

D. Adjusted Gross ("Net") Tax at a Percent of "Net" Revenue at Graduated Rates

This tax would be no more difficult to administer than the adjusted gross tax at a flat rate (example C), it just takes more math calculations.

The graduated rates make it possible to tax the "extraordinary" rents at higher levels than lower rent levels. The graduated rates are also more responsive to price and cost changes, and the higher rates can be structured to fall as rents fall.

Thus, this tax complies fairly well with all the desirable criteria except one. It does not assure that normal rates of return (profits) are only taxed at normal tax levels. Using tax package "D" at the seven dollar price as an example: The tax package as presented allows an after state tax profit of 806 million dollars. Assuming a two billion dollar investment, this allowed a return (before federal taxes) of 40 percent. If the investment costs were actually 4 billion, the return would only be 20 percent, and after federal taxes only 11 to 13 percent.

This package also does not reflect the equity investment which a company has in a field or well. If the field were financed one-half through 10 percent bonds and one-half through retained earnings (stockholder equity), this package would allow a 79 percent return on investment at 7 dollars per barrel rather than the 40 percent shown in the example D (see special example 1).

E. Adjusted Gross ("Net") Tax, graduated rates, first step tied to return on investment

This tax package corrects for the short comings in graduated rate example "D." This package might be slightly

more difficult to administer than "D" because the equity, total capital cost, and interest payment figures play a more important role in calculating the tax levy. These figures should, however, be carefully checked for any adjusted gross tax, if it is being accurately and fairly (for both the corporation and the State) administered.

In this tax, the higher rates come into effect as soon as the rate of return on a well or field passes a given level (e.g., 30 percent). This protects low profit wells or fields while continuing to tax "extraordinary" rents at high levels. It also limits the benefits of debt financing, by allowing the lower tax rates only for returns on equity (see special examples E. 1 and 2), not against a set rate of return as in D.

CONCLUSION

The high rents which are currently being obtained by oil producers are based on conditions which could change for better or worse. Due to the uncertain future of oil prices, the state should adopt a tax formula which automatically captures a large part of high rents yet reacts to falling prices and profits as well. An adjusted gross (or net) tax, based on the market price of oil, with rates tied to the return on investment, seems to fill the requirements of flexibility while retaining a fairly simple method of administration. By tying the rates to levels of capital investment and the

revenue required to obtain a fair return on that investment, the tax package recognizes the wide variation of capital costs, methods of financing, and levels of production present in the State of Alaska.

General Taxation and Investment Return Model

Equations:

$$II = \sum_{1}^{20} \frac{II_n}{(1+r)^n} \qquad K_E = \sum_{1}^{20} \frac{k_{en}}{(1+r)^n}$$

$$II_n = P_n(Q_n) - (F_n + M_nQ_n) - (t_{f_n} + t_{m_n}Q_n) - D_n - R_n - T_n$$

$$Y_n = P_n(Q_n) - (F_n + M_nQ_n) - (t_{f_n} + t_{m_n}Q_n) - D_n - R_n$$

Definitions:

II = Present Discounted Value of all profits from the investment for 20 years

K_E = PDV of all capital investments for 20 years

r = discount rate

II_n = profit from the investment in year "n"

k_{e_n} = capital investment - equity - made in year "n"

P_n = price per bbl (or MCF) in year "n"

Q_n = Quantity sold in year "n"

F_n = fixed costs of operation in year "n"

M_n = marginal costs of opearation in year "n"

t_{f_n} = fixed transportation costs in year "n"

t_{m_n} = marginal transportation costs in year "n"

D_n = depreciation in year "n"

R_n = interest costs in year "n"

T_n = tax levy in year "n" - see "tax packages" below

Tax Packages:

1. Flat Rate $T_n = XQ_n$ — X = tax rate, e.g. $5/bbl
2. % of Gross Revenues (Gross Severance) $XP_nQ_n = T_n$ — X = % tax rate, e.g. 50%
3. % of Adjusted (Net) Gross $T_n = XY_n$ — X = % tax rate, e.g. 80%

Tax Packages (cont.):

4. Variable Rate Adjusted (Net) Gross

$$T_n = Q_n X_1 \left(\frac{Y_n}{Q_n}\right) + Q_n X_2 \left(\frac{Y_n}{Q_n} - 1.00\right) + Q_n X_3 \left(\frac{Y_n}{Q_n} - 2.00\right) + \ldots$$

$$Q_n X_m \left(\frac{Y_n}{Q_n} - (m-1)1.00\right)$$

$X_1 \ldots X_m$ = marginal tax rate on each dollar (or part of a dollar) of adj. gross, or net, income

5. Variable Rate Adjusted (net) Gross tax - with 1st rate used as a substitute for net income tax

$$T_n = Q_n X_1 \left(\frac{Y_n}{Q_n}\right) + Q_n X_2 \left(\frac{Y_n}{Q_n} - \frac{ZK_{en}}{Q_n}\right) + Q_n X_3 \left(\frac{Y_n}{Q_n} - \frac{ZK_{en}}{Q_n} - 1.00\right)$$

$$+ \ldots Q_n X_m \left(\frac{Y_n}{Q_n} - \frac{ZK_{en}}{Q_n} - (m-2)1.00\right)$$

$X_1 \ldots X_m$ = marginal tax rate on each increment of adj. gross, or net, income

Z = return on capital to which only the normal income tax rate applies, e.g. 30%

K_{e_n} = total current value of equity capital in year "n"

NOTE CONSTRAINT: no factor may be less than zero

in # 4 : $Q_n X_m \left(\frac{Y_n}{Q_n} - (m-1)1.00\right)$

in # 5 : $Q_n X_m \left(\frac{Y_n}{Q_n} - \frac{ZK_{en}}{Q_n} - (m-2)1.00\right)$

6. Time differentials in tax

All of the above tax levies can be modified by a time factor. Examples:

1). $.20(n)T_n = T'_n$ for n=1 to 5

means that in the first year of operation, the tax is only 20% of the levy calculated, 2nd year - 40%, etc., and in the 5th year $T'_n = .20(5)T_n = T_n$.

2). $.5T_n = T'_n$ for n=1 to 5

means that in the first five years, the tax will be only one-half normal.

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Special Examples

	"D" as is	D1	Notes on D1	E as is	E1	Notes on E1	E2	Notes on E2
Price per barrel - in dollars	7	7						
1 Gross revenue for year - in millions	3066	3066		3066	3066		3066	
2 Total production cost - in millions	1314	1314		1314	1314		1314	
3a Depreciation - in millions	100	100		100	100		100	
3b Interest on debt	—	100	(1 Billion debt at 10% interest)	—	100	(1 Billion debt at 10% interest)	—	No debt
4 Royalty payments - in millions	383	383		383	383		383	
5 Total operation costs 2+3(a+b)+4 in millions	1797	1897		1797	1897		1797	
6 Net revenues for year, 1 minus 5	1269	1169		1269	1169		1269	
6a Net revenue per barrel in dollars (on 87.5% of production = 383.25 MM bbls)	3.31	3.05		3.31	3.05		3.31	
6b Net revenue needed per barrel to yield 30% return pre-tax, in dollars (Equity capital/383.25 Million bbl)	1.57	.78	(1 Billion equity capital invest.)	1.57	.78	(1 Billion equity capital invest.)	3.13	(4 billion equity capital invest.)
7a Tax per barrel, (on 383.25 Million barrels)								
1) on first part [D = 1st $1 or part, 10%] [E = revenue to 30% return - 9%]	.10	.10		.14	.07	(9% x 78¢)	.28	(9% x $3.13)
2) on 2nd part [D = 2nd $1 or part, 25%] [E = 1st $1 or part above 30% - 60%]	.25	.25		.60	.60	(60% x $1)	.11	(60% x $.18)
3) on 3rd Part [D = 3rd $1 or part, 60%] [E = 2nd $1 or part above 30% - 85%]	.60	.60		.63	.85	(85% x $1)	—	
4) on 4th Part [D = 4th $1 or part, 85%] [E = 3rd $1 or more above 30% - 95%]	.26	.04	(95% of 5¢)	—	.26	(95% x 27¢)	—	
5) on 5th Part [D = 5th $1 or more, 90%]	—	—		—	—		—	
Total tax per barrel - in dollars	1.21	.99		1.37	1.78		.39	
7 Tax levy in millions 7a Total x 383.25 Million	463	379		525	682		149	
8 After tax revenue, 6 minus 7, in millions	806	790	(Revenue reduced by only 16 million)	744	487	(Revenue reduced by 257 million)	1120	
9 Return to investment, #8/Equity capital, in percent	40	79	(1 Billion equity, 790 MM profit)	37	49		29	(4 Billion equity, 1,120 MM profit)
10 Return to state	846	762		908	1065		532	

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D. Adjusted Gross ("Net") Tax, - at graduated (Variable) rates

Price per barrel - in dollars	4	5	6	7	8	9	10	11	12	13	14
1. Gross revenues for year - in millions	1752	2190	2628	3066	3504	3942	4380	4818	5256	5694	6132
2. Total production cost - in millions	1314	1314	—	—	—	—	—	—	—	—	1314
3. Depreciation - in millions	100	100	—	—	—	—	—	—	—	—	100
4. Royalty payments - in millions	219	274	328	383	438	492	547	602	657	711	766
5. Total operation costs 2+3+4	1633	1688	1742	1797	1852	1906	1961	2016	2071	2125	2180
6. Net revenues for year, 1 minus 5	119	502	886	1269	1652	2036	2419	2802	3185	3569	3952
6a. Net revenue per barrel in dollars (on 82.5% of prod.)	0.31	1.31	2.31	3.31	4.31	5.31	6.31	7.31	8.31	9.31	10.31
7a. Tax per barrel (on 383.25 Million barrels)											
1) on 1st $ in part, 10%	.03	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
2) on 2nd $ or part 25% (marginal rate 15%)	—	.08	.25	.25	.25	.25	.25	.25	.25	.25	.25
3) on 3rd $ or part 60% (" " 35%)		—	.19	.60	.60	.60	.60	.60	.60	.60	.60
4) on 4th $ or part 85% (" " 25%)			—	.26	.85	.85	.85	.85	.85	.85	.85
5) on 5th $ or part, 90% (" " 5%)				—	.28	1.18	2.08	2.98	3.88	4.78	5.68
Total tax per barrel - in dollars	.03	.18	.54	1.21	2.08	2.98	3.88	4.78	5.68	6.58	7.48
7. Tax levy, in millions 7a total X 383.25	11.5	69	207	463	797	1142	1487	1831	2177	2522	2867
8. After tax revenue, 6 minus 7	107.5	433	679	806	855	894	932	971	1008	1047	1085
9. Returns to investment ($\frac{1}{2}$ Billion) in percent	5.4	22	34	40	43	45	47	49	50	52	54
10. Returns to state 4+7	230.5	343	535	846	1235	1634	2034	2433	2834	3233	3633

E. Adjusted Gross ("Net") Tax, graduated rates, 1st step tied to return on investment,

1-5 Same as in examples A and D											
6. "Net" revenues for year (1 minus 5)	119	502	886	1269	1652	2036	2419	2802	3185	3569	3952
6a. "Net" as % of investment ($\frac{1}{2}$ Billion)	5.9	25	44	63	+						197%
6b. "Net" revenue per bbl in dollars (on 82.5% of production)	0.31	1.31	2.31	3.31	4.31	5.31	6.31	7.31	8.31	9.31	10.31
6c. Net rev. per bbl needed to yield 30% return pre-tax, dollars	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
7a. Tax per barrel (on 383.25 Million barrels)											
1) on rev. needed to yield 30% return - 9%	.03	.12	.14	.14	.14	.14	.14	.14	.14	.14	.14
2) on 1st $ or part above 30% return - 60%	—	—	.44	.60	.60	.60	.60	.60	.60	.60	.60
3) on 2nd $ or part above 30% return - 85%			—	.63	.85	.85	.85	.85	.85	.85	.85
4) on 3rd $ or part + above 30% return - 95%				—	.70	1.65	2.60	3.55	4.50	5.45	6.50
Total tax per barrel - in dollars	.03	.12	.58	1.37	2.29	3.24	4.19	5.14	6.09	7.04	7.99
7. Tax levy in millions 7a total X 383.25	11.5	46	222	525	878	1242	1606	1970	2334	2698	3062
8. After tax revenue, 6 minus 7 in millions	107.5	456	664	744	774	794	813	832	851	871	890
9. Return to investment $\frac{1}{2}$ Billion - in percent	5.4	23	33	37	39	40	41	42	43	44	445
10. Returns to state 4+7	230.5	326	550	908	1316	1734	2153	2572	2991	3409	3828

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PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Alaska State Legislature

SPECIAL COMMITTEE ON
TAXATION AND REVENUE

POUCH V
JUNEAU, ALASKA 99811
(907) 465-3775

Senate

SENATORS
JOHN HUBER, CH.
JOE ORSINI
PAT RODEY

April 2, 1976

Attached for your perusal is a report on methanol provided to me by Senator Tillion. In my opinion, this is one of the best works on methanol to date, and I urge you to study it.

John Huber

AGO 513371

Draft 7 10/75
uncorrected

THE INTRODUCTION OF METHANOL AS A NEW FUEL INTO THE U. S. ECONOMY

William J. Barr

Frank A. Parker

For

The Foundation for Ocean Research
La Jolla, California

Corrected, augmented version will be out from printers by 4/76
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INTRODUCTION

No single problem will have a greater effect on the form and structure of America than the manner in which the nation copes with management of our energy resources.

The very existence of our free enterprise system, as we know it, will depend on prompt, strong, national decisions in the field of energy.

We firmly believe that there is a great danger in looking for simple and utopian solutions to problems of such complexity.

It is our strong feeling that solutions which appear to have a high probability of mitigating some of the economic and social consequences of this present dilemma in the field of energy should be supported both by government and the private sector.

Initially, we felt that arguments toward development of a methanol-based energy economy were quite fascinating. That's why we supported this report in order to present in one compendium arguments summarizing present knowledge in the field.

With the completion of this project, a review of this report has convinced us that methanol may in fact be the only fuel that can have any short-term impact in rearranging the economic and geopolitical forces in the energy field in the next decade.

We believe that methanol plants and distribution facilities can and should be started immediately through individual and

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governmental partnership and that a careful and thorough review of this report will lead unbiased and unprejudiced reviewers to the same conclusion.

We hope that in a small way Southern California First National Bank's support of this project may help to start national action.

Richard T. Silberman
President
Southern California First National Bank

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FORWARD

This document and associated activity was stimulated in its preparation by earlier considerations developed by Jeffery Frautschy, a trustee of the Foundation for Ocean Research, and myself. Examination of the development of the National Research and Development energy program indicated to us certain curious anomalies. The principal one is the heavy emphasis by industry and government in money and previously expended research effort on far out technology and the low emphasis on largely established but currently unemployed technologies.

The hard fact seems to be that the problems of introduction of new energy sources on a large scale are more formidable than the technological problems. Therefore commitment to an energy solution, which requires large investment in research and development before facing the problems of introduction, is in effect a delaying action.

We must seek a fuel based on known domestic sources and on an existing acceptable level of technology. If R&D then can benefit efficiency of production and cost, it can proceed in parallel with solving the problems of introduction. Complete national dependence on new continuing R&D has no more place in a completely rational national energy program than does continued reliance on a diminishing finite world petroleum resource.

The starting point in our analysis of energy problems is the same as most other serious thinkers on the subject. It is

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based on:

1. The short time finite character of presently utilized sources of energy.

2. The desire to achieve independence from foreign sources of energy supplies.

3. The severe problems and mounting costs associated with the elimination of harmful local environmental effects.

4. The pervasive problem of maintaining global environmental stability: this is primarily the concern with the irreversible and continual injection of carbon dioxide into the environment by the use of fossil fuel.

There is an intense national debate on the energy problem with all its economic implications for many diverse interest groups and the environmental implications for many other groups. The two sets overlap to a considerable extent. The intensity of the debate obscures the four salient and fundamental points made above. This is most unfortunate and if it continues, it will be an effective block in meeting the national energy objectives.

Continuing delay in basing our essential energy requirements on sources other than petroleum will only exacerbate what already is a crisis situation.

In evaluating energy alternatives in the light of fundamental concerns expressed here, one and only one candidate fuel, methanol, qualifies for massive early introduction. Therefore this report is devoted primarily to consideration of methanol. It recognizes its historical values in energy applications, the technical feasibility of its production and use, and it proposes solutions to the infrastructure problem. This fuel is adequate for all power needs

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and can be used in automotive applications as well as for stationary sources. Other than a specific proposal for its massive introduction there is little that is original in this document. Because we believe that methanol has proved itself, our purpose is to bring together in one document what is known and to urge national direction and commitment to a priority program of methanol production and use.

William A. Nierenberg

President
Foundation for Ocean Research

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ABSTRACT

The use of methanol as an alternative to distillate fuel oil for public utility combustion turbines provides an immediate opportunity to extend the U.S. supplies of petroleum. The existing requirements as well as the rapidly developing needs for increased peak and intermediate electric generating capacity by virtue of delays in conventional and nuclear power plant construction are accelerating the demand for clean liquid fuels. Available data and information indicate that relative to raw materials resources, operating performance, production technology, and economics the prospective use of methanol is also most encouraging to meet the future demands of the automotive fuel market in addition to the ready market of the electric utilities. Methanol can be produced by well-known technologies from natural gas, oil well flare gas, coal, or cellulose all of which are indigenous to the U.S. economy. In view of the major advantages to be had through introducing a much needed fuel obtained from abundant domestic materials, it is vital that means are explored for actively initiating and stimulating the necessary large scale field demonstration programs to accomplish this goal.

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OVERVIEW

The current energy situation in the U.S. has focused attention on the diminishing availability of our petroleum and natural gas resources and the ultimate finite limitations of these materials as well as many others as sources of energy in this country. For years the continued successful discovery of major oil and gas deposits in the U. S. were principally responsible for a high rate of industrial development in the U.S. through the availability of low cost fuels. Coal was eventually displaced, except for public utility and coke production owing to cost as well as the fluid characteristics of oil and natural gas which are more favorable for commercial application. Towards the end of the 1930's when fewer giant oil fields were being discovered in the U.S. huge quantities of low cost petroleum became available from Canada, Venezuela and the Middle East. At the end of World War II the plentiful Middle East petroleum resulted in continued flow of low cost crude to the U.S. Industrial development both here and abroad expanded greatly through 25 years of productive post war economy.

More recently the attitude of the producing countries has changed to one of active control of the flow of crude from their wells to the consuming nations. This altered outlook coupled with a reduced rate of oil discovery and production in the U.S. and increasing costs of foreign oil has highlighted the nation's critical energy situation. By virtue of the continued rate of energy consumption, the country has re-examined the energy alternatives open and the options that can be realistically considered for the present, the foreseeable future, and the far-distant future.

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The 1973 known U.S. recoverable reserves* of petroleum consist of 48 billion barrels (2 trillion gallons) and include the so-called proved reserves plus the reserve economically recoverable by established secondary-recovery methods. In addition there are the statistically projected undiscovered recoverable resources, known marginal and submarginal resources not economically recoverable at present, and undiscovered marginal and submarginal resources not economically recoverable at present.[58, 69, 70]

Supplementing the above, there are also natural gas liquids derived from natural gas the reserves of which are generally in proportion to those of natural gas. These natural gas liquids plus crude oil constitute the so-called petroleum liquids. Table I is a tabulation of both of these liquid energy resources in the U.S.[58, 69, 70]

Natural gas for many years has been an inexpensive fuel source owing to an artificially low well-head price maintained by the federal government through the 1938 Natural Gas Act for purposes of stimulating its use. Current demand approaching 25 trillion cubic feet annually is now approximately 10% of all known domestic reserves. As a consequence, curtailment is now a way of life with the natural gas distribution companies. Total proved reserves of U.S. natural gas in 1967 reached a high of 293 trillion cubic feet and reserves since then have declined each year except in 1970 when the Alaskan North Slope fields were brought into inventory. Proved reserves amounted to 250 trillion cubic feet at the end of 1973. In order to maintain the nation's current production level it would be necessary to add new reserves of approximately 22.6 trillion cubic feet annually. This is almost an impossible

* See Appendix I

TOTAL U.S. PETROLEUM RESOURCES

Known recoverable reserves 48 billion bbls.	Undiscovered recoverable resources 200 billion bbls.
Known marginal and sub marginal resources 40 billion bbls.	Undiscovered marginal and sub marginal resources 300 billion bbls.

TOTAL U.S. NATURAL GAS LIQUIDS RESOURCES

Known recoverable reserves 7 billion bbls.	Undiscovered recoverable resources 30 billion bbls.
Known marginal and sub marginal resources Not estimated	Undiscovered marginal and sub marginal resources 60 billion bbls.

TABLE I

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task since during the past 29 years the average annual additions to our reserves have only been 16 trillion cubic feet. (see Table II)

Coal, although abundant in the U. S., suffers from neglect as well as high cost in underground operations. Further, the current technology of mining does not lend itself to rapid expansion of production. Although reserves are huge and estimated by various activities to be sufficient for the far distant future at current consumption levels, because of a severe loss of market in recent years the industry has been unable to generate or attract sufficient capital to develop additional production capacity. In addition, approximately 80% of all coal deposits are too high in sulphur to meet today's environmental standards which necessitate either cleaning the coal or cleaning the products of combustion. Production today of approximately 600 million tons annually is about equally divided between underground and strip mining. The former employs approximately 110,000 miners each producing approximately 11 tons per day, with slight prospect of increasing production without adding to the work force.[70] This daily rate is down from 15 tons per day achieved in earlier years due to more stringent safety requirements.[70] Unfortunately the several years of planning, engineering and construction preparatory to opening a coal mine preclude any immediate rapid addition to the nation's supply above ground. Strip mining on the other hand with its 35,000 employees[70] provides the nation with a means of accelerating coal production without resorting to large increases in personnel. The average production per man per day averages 35 tons.[70] The technology is not without problems owing to the present limited production of the manufacturers of large drag lines and earth moving equipment.

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TOTAL U.S. NATURAL GAS RESOURCES[70]

Known recoverable reserves 250 trillion cu. ft.	Undiscovered recoverable resources 1100-2200 trillion cu. ft.
Known marginal and submarginal resources Not estimated	Undiscovered marginal and submarginal resources 850 trillion cu. ft.

TABLE II

TOTAL U.S. COAL RESOURCES

Known recoverable reserves 220 billion tons	Undiscovered recoverable resources Not estimated
Known marginal and submarginal resources 1,400 billion tons	Undiscovered marginal and submarginal resources 1,600 billion tons

TABLE III

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TOTAL U.S. OIL SHALE RESOURCES

Known recoverable reserves 50 billion bbl.	Undiscovered recoverable resources Not estimated
Known marginal and submarginal resources 2,000 billion bbl.	Undiscovered marginal and submarginal resources 4,000 billion bbl.

TABLE IV

only a small fraction of these deposits are in the U.S. There has been renewed interest in Canadian deposits of these sands and recent exploitation has resulted in the successful development of a 50,000 barrel per day commercial oil plant in that country. The process economics are again a major deterrent to further expansion.[61, 124]

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A number of other well-known large scale energy sources such as nuclear and solar will ultimately contribute importantly to our energy supply. Although fission will play a more and more significant role in generating electricity, environmental restrictions in siting and safety as well as waste disposal will continue to stretch out lead times until solved. Hopefully, on a far longer time scale, the nuclear breeder reactor will one day make nonfissionable material fissionable thus expanding the supply of nuclear fuels.

On an even greater time scale, beyond the year 2000, fusion with the aid of considerable long term research plus several major scientific "breakthroughs" could eventually begin to play a role.

A long range goal should be the utilization of solar energy on a very large scale. Other than for agricultural purposes and for lumber and paper, utilization of this vast source awaits a technological development that will make it an economic source of energy. The quantity of solar energy annually striking on the earth is greatly in excess of our requirements. Fortunately there are at hand means to capture the solar energy associated with the earth's vegetation. This body of material constitutes a vast reservoir of energy which is continually replenished. The carbon and hydrogen constituents provide the basis for an unlimited variety of chemical compounds whose energy is available to man.

Considerable quantities of heat are potentially available from the elevated temperatures of the earth's core.[70] At depths of from 10 to 20 miles the temperatures range from 200°C to 1000°C. Investigators calculate that the amount of this so-called geothermal energy is as much as 2000 times the heat available from the coal resources of the world. Unfortunately this energy is only of interest commercially where it has been localized near the earth's surface. The engineering problems in utilizing high temperature sources at 10 to 20 miles below the surface are extremely difficult. Notwithstanding, there have been commercially successful undertakings in California, in particular, to use geothermal energy for electric power generation.

Paramount among the present and foreseeable options available to the nation is that of increased exploration and production of the energy source materials as well as conservation in the application. The latter is well known to consumers in the form of curtailment of energy-using activities. The former primarily revolves around seeking oil and gas under the oceans adjacent to our coasts by offshore drilling techniques, undertaking secondary and tertiary extraction of petroleum from existing fields, improving underground coal mining techniques to eliminate the approximately 50% of the deposit left behind after mining, and capturing the large quantity of gas presently being vented or flared from our petroleum fields, both onshore and offshore.

The geologically favorable areas in the U.S. for the occurrence of petroleum are as yet little explored. In continental U.S. and Alaska plus adjacent continental shelves there is about 1,860,000 square miles of such land. It has been estimated by the U.S. Geological Survey that less than

20% of this land has been explored for petroleum. The recent 1974 U.S.G.S. study estimates that offshore in the Atlantic, Pacific, Gulf of Mexico and Alaskan waters there remain 130 billion barrels of undiscovered recoverable resources.[70] For natural gas offshore, similar estimates by U.S.G.S. in 1974 are as high as 450 trillion cubic feet.[70]

As recently as 1973 we have vented and flared onshore 250 billion[116] cubic feet of gas annually which is equivalent to 50 million barrels of oil. On the outer continental shelf in the Gulf of Mexico estimates indicate we may be venting and flaring an additional 50 billion cubic feet annually.[44]

Additional programs are addressing the problem of utilizing agriculture and animal waste, municipal trash,[68] refuse and sludge, and forest products waste. All essentially are concerned with converting organic materials by heat to a synthetic gaseous, liquid, or solid fuel.[18, 19, 21, 29]

There is not a shortage of energy in the U.S. but rather a shortage of technical capability and engineering technology to promptly and economically convert on a commercial scale the existing energy to a form useful in our society. The aforementioned cheap crude and natural gas provided little in the way of incentive to carry out the engineering and construction of large scale plants to convert coal to gaseous or liquid fuels or the design and development of chemical systems and plants for sourcing fuels from municipal waste. Most processes[19] in these areas have been well demonstrated in the laboratory; essentially none have even been scaled to a size capable of daily production of thousands of tons of products.

Following World War II owing to the existence of plentiful quantities of all solid, liquid, and gaseous fuels in the form of coal, petroleum, and

natural gas, the business decision to exploit energy in the form of liquids and gases was quite clear. The post-war construction of addition networks of gas pipelines stimulated the transmission and utilization of natural gas in all parts of the country as contrasted to earlier years when the principal consumers were located near producing fields.

With the reduction of interest in coal for other than electric power, metallurgical purposes, and heat, little commercial effort was expended on applications other than at a few isolated institutions. Investigators had in earlier years examined the characteristics of the coal and had recognized it as a source of organic chemicals of almost unlimited variety. Many of these chemicals could be used as fuels as they were primarily carbon and hydrogen compounds. Among the early fuels produced was methanol (methyl alcohol) which in the 19th century had been derived primarily from wood. This material, which became one of the basic chemicals of the industry, was also recognized as an efficient clean burning liquid fuel. However its use as a fuel did not become widespread in modern times as coal was less expensive as was also manufactured gas from coal. With the advent of petroleum in the last century, there came into being a high energy liquid fuel which was less expensive than methanol and relatively clean burning. With competition from oil as well as from the growing natural gas business which soon displaced manufactured gas, methanol's acceptance as a fuel was limited. However, as a basic chemical for the chemical industry its growth continued rapidly. After it was demonstrated in the middle of the last century that it could be produced from methane, or synthesized from

carbon monoxide and hydrogen, selecting inexpensive natural gas as feedstock for the process was the logical choice. The technology of producing methanol from coal although technically satisfactory was not competitive with low cost natural gas.

Present conditions reflecting the shortage of natural gas as a feedstock for methanol are leading to coal again as a source raw material. Concurrently shortages of petroleum point to an immediate need for synthetic fuels to replace or supplement distillate and gasoline. Methanol is again the leading candidate to serve as an alternative fuel to distillate and gasoline. This high energy, clean burning fuel which is now produced by the U. S. chemical industry in quantities exceeding a billion gallons[11] annually is available today to meet limited demands of the automotive market to demonstrate its application as an additive to gasoline, and, also to show its practical application to the public utility combustion turbine as a substitute fuel to distillate for peak electric power generation.

ENERGY POLICY

Although scientists and engineers have been predicting a major shortage of petroleum products before the end of the century and although there have been groups of experts, Presidential panels, and high-level committees that have studied all aspects of the energy problem little has been done but talk. All have concluded that the increased demand coupled with the reduced supply of U.S. oil have made it necessary to rely more heavily on increased imports. For a number of years the foreign oil was available to the U.S. at an attractively low price so that the cost of energy derived from petroleum did not change appreciably. However, as our demand increased for foreign oil, the oil producing countries (OPEC) began to feel that they were being treated inequitably. This attitude coupled with the Israeli/Arab conflict and the strong U.S. support of Israel, culminated in the 1973 oil embargo by the Arab countries and a doubling in the price of oil. This created an immediate crisis which quickly resulted in the shortage of gasoline as the lines formed at filling stations. The time had come to act decisively.

The first emergency action in response to the embargo was the formation of the Federal Energy Office (FEO) by President Nixon late in 1973. This office has concerned itself principally with the conservation of supplies and their equitable distribution, the promotion of usable energy resources, defacto price controls, and the development of plans to meet the energy needs of the nation. This office was assembled on a crash

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basis and was staffed principally by people on loan from other federal agencies; in addition, however, the Administration found it necessary to call heavily on the petroleum industry to furnish it with people who were expert about petroleum problems and the petroleum business.

On May 7, 1974, the Congress converted the Federal Energy Office into the Federal Energy Administration, with essentially the same charter. However, the termination date of this agency is June 30, 1976, at which time unless extended it will cease to exist. Also, dealing with the energy matters, the Congress created the Energy Research and Development Agency (ERDA) on October 11, 1974, to bring together in one place within the government the various federal activities dealing with energy research and development matters. This included the Atomic Energy Commission, the Department of Interior, the National Science Foundation, and other energy research groups elsewhere in the government.

Finally the Congress passed on December 31, 1974, the "Federal Non-Nuclear Energy Research and Development Act of 1974." Its basic purpose is to develop on an urgent or "crash" basis the technological capability to support the broad range of energy policy options through conservation and the use of domestic energy resources. This Energy Research and Development Agency was further instructed by the Congress to conduct large demonstrations of practical manufacturing processes of potentially useful energy sources and the development of the necessary technologies. ERDA was directed to proceed on a crash basis with these programs making commitments similar in magnitude, scope, and urgency to those undertaken in the Manhattan project and the Apollo program. Also, the President

created the Federal Energy Council under the chairmanship of the Secretary of Interior to develop hard Administration and congressional policies on all aspects of the energy program in the various parts of the government.

1974 saw the creation of these administrative bodies in the government to cope with the energy crisis, however, there has been little progress in the development of firm government policies that have come from any of these groups. The first important action was the creation of Project Independence under FEO. The objective of this project was to develop means whereby the U.S. would be free of dependence on foreign petroleum resources by 1985. It has never been given more than token recognition. Towards the end of the Nixon Administration, energy policy immediately became the victim of infighting between Treasury and State and other governmental departments and the Congress. After much discussion of the objectives of Project Independence, there emerged a new policy of "interdependence" whereby the principal oil consuming nations of the world would act in concert on important energy issues. However, there have been contradictions to this concept, such as the imposition of import levies and a conflicting suggestion that the government put a "floor" price on foreign oil to protect the investments of the U.S. oil companies and encourage further exploration. As a consequence it has never gained wide acceptance abroad.

There are still no firm policies with respect to the development and conservation of petroleum produced energy, with much confusion among all federal agencies concerning energy matters. There does, however, appear to be one issue that transcends the political and administrative problems: there is unanimity with the objective of being independent of foreign sources of energy just as soon as possible. Looking at

the various alternatives, this full freedom could be achieved by 1990 to 2000 but will require a major national effort and a huge capital investment over that period. To accomplish this at all and certainly by the latter part of this century, the government is going to have to make hard decisions now with respect to the policies and paths it elects to follow and what products to concentrate on.

The government has a program directed toward the development of synthetic fuels, which, while not large, is looking at a wide variety of possible options. If anything, the government seems to be shot-gunning their research and development by simultaneously looking at many technical alternatives for products and processes rather than narrowing down the options to a few and spending the requisite resources on the most promising. Even with these decisions and a narrowing of options each of the most likely processes will involve major capital outlays necessary to carry it through the demonstration phase.

A particularly important option is to make a long term policy commitment to methanol as a principal synthetic fuel for gasoline blends for automotive fuels and for a replacement to distillate for electrical gas turbines. The synthesis of methanol using coal as a feedstock has been done commercially. It is clearly the best and most acceptable liquid synthetic fuel and is the only fuel that can be introduced into the economy in sufficient quantities in the next 10 to 15 years. It is the opinion that with the necessary level of effort, methanol can be produced in sufficient quantities from coal by 1985-1990 which would virtually eliminate the U.S. dependence on foreign petroleum. This dependence can be achieved for a capital investment of

$20 billion for plant and equipment, expended over the next 15 years. Using coal as a feedstock it is anticipated that it will be priced at an acceptable cost.

To construct a single large plant will require an investment of about $500 million. This sort of investment, however, with an uncertain market, is so large that guarantees will have to be made in order to raise the requisite capital. The guarantees are sufficiently large that it is anticipated the government may have to guarantee these investments. In addition, because of the ever present danger of price competition where the Arab countries deliberately decrease the price of their crude to a point that forces the synthetics off of the market; it is anticipated that some price protection must be given as well. This protection can only come from actions taken by the government.

In summary, after reaching a policy decision on the methanol option several decisive steps must be taken. Several processes must be selected for major demonstration and exploitation, national priorities must be given for the early completion of the developments, and they must be directed to proceed on a high priority basis similar to the Apollo program or the Manhattan project. The government must develop the means to obtain the capital that will be required. Finally, the position of the government with respect to price protection will have to be formulated in such a way to make the decision to proceed financially acceptable to private investment.

CRITERIA FOR A NEW FUEL IN THE U.S. ECONOMY

The emphasis today on examining all the implications of introducing a new fuel into our economy necessitates establishing standards and guidelines which will not only serve to meet technical, economic, and performance criteria but also the constraints imposed by environmental, social, and political considerations. We are no longer simply faced with problems of measuring performance of an internal combustion engine operating on a new blend of gasoline; a gas turbine running on a modified light distillate; or an industrial burner utilizing a residual fuel. Other factors are weighed in the evaluation and requirements must be met. Answers must be found to such questions as:

1. From what materials will the fuel be sourced?
2. What other needs in our economy are met by products sourced from the same materials?
3. Is the process for producing the fuels a part of a proven technology?
4. Is the availability of skilled manpower sufficient to meet the manning requirements for production without causing severe dislocations in our industrial society?
5. Are the materials such as water available in the quantities needed for this process and at the time and at the location involved?
6. Can the new fuel take advantage of the existing distribution and marketing system for petroleum fuels?

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7. Can the fuel be used in conjunction with petroleum or is complete replacement required?
8. Will the fuel satisfy the needs of existing power plants as well as the anticipated requirements of engines under development?
9. Can the fuels be sourced from abundant materials located in a politically stable environment?
10. Are the raw material resources compatible with long term forecasts of demand for the fuel?
11. Are the investments needed and the costs of producing the fuel to a reasonable standard of quality currently competitive with those of petroleum fuels and are they in a comparable range for the future with those projected for petroleum fuels?
12. Are the waste disposal and reclamation aspects of producing the fuel such that they can be solved within the required level of financial investment return?
13. Is the source of fuel material of a nature that regulatory commissions, existing legislation, and leasing policies will require licenses, permits, and concessions to extract the material?
14. Is the cost of producing this fuel sensitive to inherently difficult-to-predict factors relating to such matters as strip mining legislation and actions of conservation commissions?
15. Can an acceptable environmental impact study be prepared?

16. Are the lead times for the total system, i.e., from applying for a permit to extracting raw materials to introducing the fuel to the market, of the order of a few years, or 5 to 10 years, or 10 to 20 years?

17. Are the storage, transportation, and handling characteristics amendable to conventional methods?

18. Have extensive field tests been conducted with this fuel under actual operating conditions and for a sustained period of time sufficient to provide reliable test data?

19. Have extensive laboratory investigations been conducted on its compatibility with various materials and the hazards and toxicity of this fuel both in production as well as in application?

20. Are the products of combustion within the environmental standards set for oxides of nitrogen, carbon monoxide, and aldehydes?

21. Will an on-going research and development program be required to fill numerous and essential information gaps?

The emergence of methanol as an alternative liquid fuel in our economy is well supported by the favorable answers to the above questions. Not only is this fuel capable of meeting the criteria established by these questions but it has the added benefit of being available now. Although not plentiful in terms of the quantities that will eventually be required, the 1 billion gallons of methanol produced annually makes it one of the 15 largest volume chemicals produced in the U.S.[125]

SCENARIOS

Clearly the development, production, introduction, and acceptance of methanol or a synthetic fuel in our economy must be examined against particular time frames. As was noted earlier, many developments underway show encouraging possibilities for various synthetic fuels and sources of energy over an extended period of time. However to establish some perspective for viewing methanol in our economy, three time frames have been selected: 1975-1980, 1980-1990, and 1990 and beyond. These periods are selected to focus on the immediate action that will be called for to introduce substitutes for petroleum-derived fuels; the on-going energy developments which will materialize after five years; and the long range opportunities and developments which are estimated to require at least fifteen years and probably considerably more to reach fruition.

The nation's need for an immediate alternative clean fuel to gasoline and distillate is as much dictated by political considerations as by decreased availability of energy to meet our current demand. Such an alternative need not be a total replacement for gasoline or distillate. The merits of using a fuel that can be blended with conventional petroleum fuels is in itself a powerful tool for extending our current oil supplies. In addition, blends will permit taking advantage of existing petroleum distribution and marketing systems particularly relative to automotive use.

Although any synthetic fuel is likely to differ in cost from that of gasoline or distillate, the crucial consideration is the current differential in cost which is the price we are paying to enlarge our fuel supplies. Beyond that we must look at the cost projected for the petroleum fuels

compared to estimated costs for a much needed new fuel which will serve to supplement our existing supplies. It is quite evident that the easily-found, low-cost oil and gas deposits have already been discovered. Future costs of locating and producing oil will escalate considerably and these reserves will clearly not be available in the 1975-1980 time frame.

Many of the well known sources of petroleum such as shale, tar sands, and coal, although excellent sources of oil over the next few decades, are not a part of the 1975-1980 scenario. As mining techniques of shale are perfected, as extraction methods and non-conventional oil sands technology is further developed, and as coal gasification processes come on stream, these increased energy deposits will be converted into petroleum-like or synthetic fuels. Meanwhile efforts must be accelerated to introduce those existing fuels which are available today by known technologies from our various sources of energy.

Exploratory studies have shown there is in the future potential for such processes as enzymatic hydrolysis of cellulose waste to glucose and then a conversion to ethanol fuel. At present this process is in the laboratory and will require a number of years to be commercialized.[130] Other studies are focused on processes for liquifying coal but are still years removed from commercial plants and the introduction of this liquid fuel into our economy.

In the 1980-1990 period there should begin to appear a variety of processes to produce technically acceptable synthetic solid, liquid, and gaseous fuels some of which may be attractive commercially. Synthetic coke developments are progressing; coal gasification and coal liquification

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research is a part of many petroleum and coal companies' programs; the nuclear breeder reactor potential should begin to materialize; and the pyrolysis processes for converting municipal, agricultural, and forest products waste to liquid synthetic fuels should result in many plants operating on a commercial scale.[53, 54, 55] Notwithstanding the growing shortage of petroleum and natural gas, continuous discoveries coupled with imports of liquified natural gas will tend to offset a part of the reduction. It will, however, be quite clear as we progress into this time period that the availability of petroleum and natural gas as we know them today will be markedly curtailed. Offshore and arctic drilling costs are almost an order of magnitude more expensive than on land. Further, the transportation costs become increasingly expensive as oil prospecting and discoveries become more successful in the remote areas. The Alaskan reserve which it is estimated will be supplying between 7% and 13% of the U.S. demand by 1985 will be pumping 2 million barrels per day through a $5.5 billion dollar pipeline. With 17 billion barrels of recoverable crude, this will be a capital investment cost of 32 cents per barrel to transport this oil from Prudhoe Bay to Valdez.

Advances in the mining of coal together with the opening of new mines in the 1980's will have increased annual production to over 1 billion tons. Increased mining of low sulfur coal will bring environmentally acceptable solid fuels into the market in greater amounts. Increased production of sulfur-containing coal can provide the needed feedstock for coal-to-methanol plants. By the middle of the decade it should be possible to have operating a minimum of 10 plants using a proven gasification

technology to provide a synthetic gas for manufacturing methanol at a rate of 5000 tons per day (40,000 barrels/day) per plant. It has been estimated that a demonstration plant producing methanol from coal could be operating by 1978 if pursued on a high priority schedule.[1]

The 1980-1990 period will be one in which plant construction and operations will proceed following modifications as a result of knowledge gained in operations. Financial consideration will be the major factor since economies of scale will necessitate large costly plants for coal conversion to synthetic fuels. Plants for conversion of municipal waste,[76,77,78] trash, refuse, and sludge will be limited in size only by the availability of feedstock. This will be a period in which use of synthetics, petroleum, and natural gas fuels will proceed concurrently. The introduction of new fuels into the U.S. economy unless dictated by public law will be evolutionary and as such the social impact and the industrial readjustments involved will need be assessed as this will be a period in which the conventional petroleum industry as we know it today will have stabilized.

Beyond 1990 the full impact of the synthetic fuels will be felt in our economy as well as the trend toward an all-electric economy. Mass transportation although an important factor in the nation's operation is highly sensitive to the geographical environment and population distribution. The need for automotive transportation will continue. Electric energy for mass transportation and other industrial, commercial, and domestic application will develop slowly. Our use of gaseous fuels will be limited to those applications in which solids and liquids are unacceptable. Natural gas as such beyond 1990 will constitute a source of raw materials for chemicals rather than a fuel for energy.

Beyond 1990 research is expected to focus on electrical energy and its generation directly from nuclear fuels, low sulfur fuels, and hopefully, fusion. Appreciable progress will be made to eliminate energy wasting processes that dissipate heat in converting from one form of energy to another. A direct conversion to electricity would solve much of this problem. Concurrently the liquid fuel industry will be sourcing such fuels as methanol from high sulfur coal and from waste, trash, and refuse. The latter is directly correlated with population and industry activity. As population growth increases less rapidly and as industry becomes more conservation conscious, there will of course be less waste available. Consequently it is foreseen that many liquid fuels from these materials will reach a predictable maximum.

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METHANOL AND METHANOL BLENDS

Methanol is a clear water-white liquid with an alcohol odor. It retains its liquid properties over a wide temperature range; freezing occurs at -100°F and boiling at atmospheric pressure at 149°F. Compared to 100 octane gasoline, methanol has a somewhat lower boiling point and freezing point, is a little more dense, and contains about 50% of the heating value. It readily absorbs water and also mixes with water in any ratio without phase separation. In the absence of water it will dissolve in many hydrocarbons. Specifically, methanol is completely miscible in an aromatic gasoline at room temperatures while its solubility in a gasoline, such as octane, is 3%. The stability of methanol-gasoline-water solutions decreases with lowering temperatures. (See Table V)

Such characteristics of methanol and methanol-gasoline blends as vapor pressure have been studied. The cold start problem of conventional automotive engines primarily relates only to the use of 100% methanol and can be corrected by carburetor modifications. The addition of more volatile hydrocarbons into the methanol are other solutions to this difficulty.[3,5,6,9] Methanol does not have the lubricity properties generally associated with petroleum derived fuels. Consequently in systems engineered to utilize self-lubricating methods, the use of methanol requires a lubricating additive or different pumps.

The problems associated with using 100% methanol as an engine fuel can be grouped essentially into four categories. With the possible exception of the fourth listed below, the problems are of an engineering nature and their solutions lie in engineering changes that can readily be

PROPERTIES OF METHANOL AND GASOLINE[1]

	Methanol	Gasoline
Spec. Gravity (^{o}F)	.792	.74
Heating Value (High)	9,770 BTU/lb	21,000 BTU/lb
Air/Fuel Ratio (Stoich.)	6.45	15.3
Energy, Air/Fuel Mixture (Stoich.)	94.5 BTU/cu.ft.	95.5 BTU/cu.ft.
Heat of Vaporization	502 BTU/lb.	116 BTU/lb.
Octane Number (Research)	106	91
Octane Number (Motor)	92	84
Freezing Point	-144° F	-100° F
Boiling Point	149° F	100° F - 400° F

TABLE V

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made.

1. Methanol has a low volatility compared to gasoline and will boil at 149° F. Consequently for engines equipped with carburetors some means of adding heat or increasing volatility is needed to start the engine at low temperatures. Fuel injection equipped engines and combustion turbines should not be effected by this characteristic.

2. Methanol's high heat of vaporization (502 BTU per lb.) dictates the need for additional heating devices or means to heat the manifold of the engine in order to provide satisfactory mixtures of vaporized fuel and air for ignition. This would not constitute a problem in a combustion turbine engine.

3. Owing to a heat of reaction (9,770 BTU per lb.) equal to only 50% of gasoline, capacities of auto fuel tanks and associated fuel equipment must be somewhat larger toaccomodate larger volumes of liquid.

4. Methanol appears to be incompatible with certain materials generally used in engine construction. The resulting chemical reactions may produce corrosion and objectionable deposits in the system.

The use of methanol-gasoline blends also presents a number of problems which are somewhat different in nature to those associated with use of 100% methanol. These consist of:

1. Mixtures of liquid systems obey certain laws. If the mixtures

behave ideally, the vapor pressure of the mixture will be the sum of the partial pressures of each constituent. Furthermore the partial pressure of each constituent will be proportional to its mole fraction in the liquid mixture at all compositions. A liquid system that behaves in this manner is said to obey Raoult's Law.[126] A mixture of gasoline and methanol does not behave as an ideal liquid and does not obey Raoult's Law but shows a positive deviation. This deviation can amount to some 3 pounds per square inch above that expected by Raoult's Law for methanol quantities of 2 to 10% volume added to gasoline. This in itself is of no major concern except that the engineering of a conventional auto engine is designed for a vapor pressure (Reid Vapor Pressure) of about 10 psi at 100° F. with a prescribed blend of gasoline. An increase of 3 psi is estimated to produce enough pressure to cause vapor lock in the fuel system.[9] Either an engineering change in the engine fuel system or a chemical change in the fuel would be required to insure satisfactory operation. Figure 1 shows the influence on vapor pressure of methanol blended with gasoline[9] containing some aromatic components.

2. Methanol's solubility in gasoline and phase stability is dependent upon the composition of the gasoline as well as the water present and the temperature. Presumably the presence of aromatic and higher alcohols improves solubility according to published information.[1, 9] Researchers in this area are not unanimous in agreeing[23]

EFFECT OF METHANOL ON
GASOLINE VAPOR PRESSURE[9]

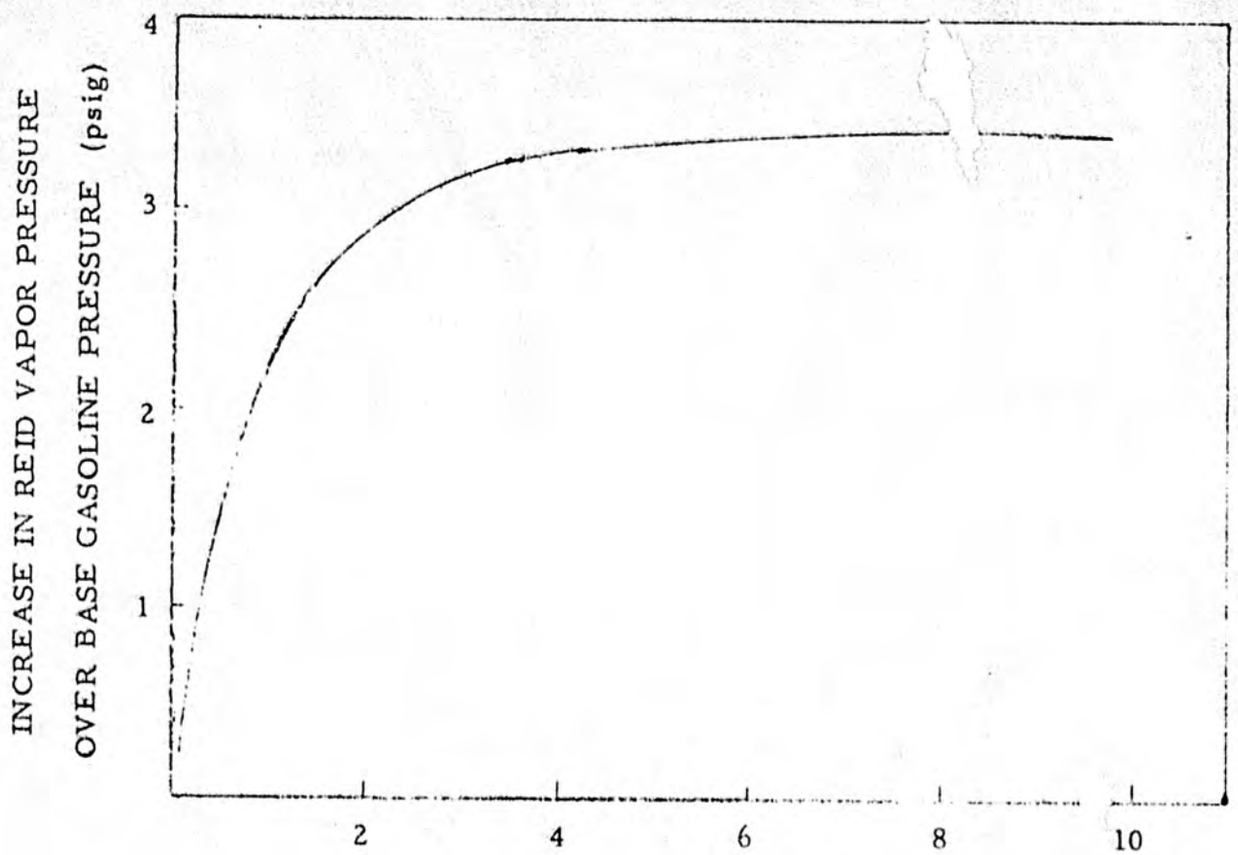

FIGURE 1

that this constitutes a major problem; furthermore should it prove to be of importance it is felt the solution is straightforward. Ultimately the widespread use of methanol - gasoline blends may necessitate better housekeeping in storage and distribution in order to minimize the presence of water.

A problem area common to both the use of 100% methanol as a fuel and blends of methanol and gasoline is that of exhaust emissions. Attempts have been made to analyze the performance of vehicles and engines fueled by both.[3,14,24,25,90,9] However there does not appear to be any major program focused on a precise comparison of performance and emissions in progress on a substantial number of vehicles which could provide statistically meaningful information. It is encouraging however that the test results reported by various organizations[9,90] show lower emissions of hydrocarbons, carbon monoxide, and oxides of nitrogen with methanol as compared to gasoline. On the other hand aldehyde emissions (formaldehyde) were higher than with gasoline.[90]

APPLICATIONS AND PERFORMANCE

Methanol and ethanol have been used as a substitute for gasoline several times in this century particularly during periods of war when[59] gasoline was in short supply. It has also been used successfully as a blend or supplement to gasoline in high performance engines. Owing to the recent shortages of gasoline and the questionable long term outlook for petroleum as a fuel, attention has recently been focused on methanol again as a possible alternative for automobiles. It can be produced at a competitive cost and can be stored and distributed as a liquid fuel in the same way as gasoline. Such companies as Volkswagen have examined using methanol both in carburetor and fuel injection pump engines and have converted a number of standard production vehicles to methanol operation.[90] Volkswagen has also tested[90] methanol in a stratified charge engine and obtained power output increases of up to 10%. A passenger car turbine developed in that organization has also been converted to methanol fuel with quite satisfactory results.

One of the main elements of today's electric power generating stations are oil fired combustion turbines for use in meeting peak load[1,4,65] demands. These units frequently have capacities as high as 25% of a public utility system's total capacity and although they may produce only 5% or 6% of the annual electric power output, yet account for 14% or 15% of the cost of fuel consumed. For the most part the public utilities are using No. 2 distillate fuel oil in combustion turbines. However, a wide range of fuels[108] including gas and methanol are compatible with this equipment. Total 1973 consumption of oil by these units in the United States approximated

280,000 barrels per day.[1,4] Studies by the Atomic Energy Commission indicated that this demand may reach 1 million barrels per day by 1980.[1] The use of methanol as an alternative fuel to oil in this application is clearly encouraging since the "low pollution" fuels for electric power generation such as natural gas, low sulfur coal, and low sulfur oil are in very limited supply. In the face of increasing demand they will continue to command a premium in the market place.

In addition to the peaking cycle application of combustion turbines, there are major technology changes occuring which will involve utilizing additional combustion turbine capacity. Public utility electric power generation can be patterned according to three types of loads: the base load which is the load met by continuously operating generators, the intermediate load which is served by power generating units running 12 to 14 hours per day for a five day week, and the peak loads which are met by units operating a few hours per day at the peak demand period. Prior to 1960 these loads have been met by conventional fossil fuel boilers and steam turbines. The newest equipment installed at the utility was used to meet the base load, older equipment was used intermittently for the intermediate load, and the oldest equipment would be used only a few hours per day at the peaks. During the 1960's the technology changed and the combustion turbines were installed for peak loads and supplemented with hydro and pumped storage systems as shown below. The new base load fossil fuel plants were designed in the 1960's for large capacities at very high operating pressures (600 megawatts and 3000 psi).[127]

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Load	% Capacity (Kw)	% Load (Kwh)	Equipment
Base (24 hr/day)	53	64	Fossil fuel boilers and steam turbines.
Intermediate (12 to 14 hr/day)	27	30	Fossil fuel boilers and steam turbines.
Peak (1 to 3 hr/day)	20	6	Combustion turbines, hydro, pumped storage.

During the 1970's the technology again changed. Nuclear energy plants are now providing a part of the base load. High pressure fossil fuel generating capacity is also still being installed. Unfortunately it will be difficult to shift these units to intermediate load generation as they become older since the technical difficulties associated with running intermittently with supercritical fossil plants and nuclear plants are considered to be impractical owing to the severe thermal stresses produced by cyclical operation.

Consequently the intermediate load capacity will no longer be filled by older base load generating units but will have to be met by equipment specifically tailored to the part time service. One of the more promising systems to meet the intermediate load is a more efficient combustion turbine-steam turbine combination which involves the combustion turbine exhausting into a heat recovery steam turbine. Installations of this type system are expected to grow at the rate of 30% per year through 1985. The preferred fuel for these units is No. 2 distillate fuel oil with natural gas as an alternative. Among the immediate advantages is that the combustion turbine can be installed and put into service prior to the installation of the steam turbine.

The important characteristics of these combination units meet the principal requirements of any energy system needed to fulfill the intermediate (part-time) supply of power. They are:

Low cost of equipment per kilowatt of capacity
Rapid start-up and shut-down and flexibility of output
Availability and storage of required fuel.

As more installations are made there will be a coming need for large quantities of combustion turbine fuels for part-time service. Furthermore there will be a need for utilities to locate these intermediate load facilities at optimum sites in order to minimize costs of fuel sourcing and power distribution. In short, the current trend in public utility hardware is creating a large new market now and in the future for clean combustion turbine fuels. Hitherto natural gas or distillate fuel oil have been available in adequate amounts to meet the demand. It is now evident that these will no longer be available in sufficient quantities and that a clean fuel is needed which can be sourced from an abundant material at economically acceptable costs in a politically stable environment. Methanol can meet these needs.

The current performance of conventional gasoline and diesel fuels has been the result of a long series of development programs undertaken by the major petroleum companies of the world. Concurrently by improving the design of the internal combustion engine, fuels have been upgraded to provide selectively the desirable combustion and operating characteristics for improved performance in these engines. These characteristics primarily consist of such items as good inherent anti-knock characteristics to permit use of higher compression ratios, high volatility hydrocarbons to aid in

starting and warm-up, additives to reduce corrosion in storage, reaction products which do not leave excessive deposits nor toxic emissions, and flame speeds and limits of flammability sufficiently wide to support a wide range of air-fuel ratios.

The performance characteristics of a fuel can be considerably altered through the use of additives or through blending a number of fuels to achieve enhanced performance. For example, it is well known that the use of aromatics or tetraethyl lead will improve the anti-knock or pre-ignition characteristics of gasoline. More recent work indicates that some rare-earth compounds will yield close to the same results in suppressing pre-ignition in gasoline-like fuels in internal combustion engines.[60]

Suitable means are also available for decreasing the heat of vaporization to improve ignition characteristics in starting internal combustion engines at low temperatures. Supplemental elements to pre-heat fuels as well as additives such as benzene have overcome the unusually high heat of vaporization in methanol.

Investigators have found that blends of gasoline, methanol, and water do not show good phase stability at low temperatures.[1,15,9] However, it appears that the presence of higher alcohols improves this situation as well as the presence of aromatics in the blend. Although the solution of the problem appears to be straightforward, an experimental program is necessary to establish the basis for formulating blends.

Experimental test programs have been conducted using as fuel a mixture primarily of methanol plus some higher alcohols[5,34] in a conventional

public utility steam boiler electric generating plant. A 50 megawatt generator at New Orleans Public Service Inc. was operated for 2 weeks on an alcohol boiler fuel mixture. No environmental problems such as unburned hydrocarbons, sulfur oxides, or particulate emissions occurred. Furthermore the CO concentration and oxides of nitrogen were less than the emissions with natural gas or oil. Encouraging as these results are, the more appealing use for public utility application is in the combustion turbines now being employed by many power generation companies. With methanol as a fuel, lower turbine blade erosion and reduced deposit build-up is expected. The lower combustion flame temperature should provide reduced nitrogen oxide formation and indications are that substantial increases in running time of turbines between maintenance overhaul can be achieved.

The combustion turbine and automotive use of methanol require extensive field testing as published data indicates tests to date have been on a limited basis. To the extent that performance information is available, the results are highly encouraging in both applications. The conducting of large scale tests with many vehicles and drivers will provide excellent statistically meaningful information on the application of methanol as an alternative to gasoline for automotive use.

The General Electric Company combustion laboratories have run methanol fuel tests in the laboratory under simulated operating conditions and found that with appropriate valve, piping, and combustion chamber volume changes to reflect the lower energy per gallon of methanol the operating performance was good. Gas turbine operating experience with

fuel oils has shown that basic corrosion and deposit problems exist in the turbine because of ash-forming substances that may be present in the oil. These problems are more severe with residuals and crude oils because they contain inherently larger quantities of the troublesome substances. It is not expected that these problems will develop with the use of methanol owing to its clean burning properties.

Of some concern, according to the General Electric combustion tests, is the lack of lubricating qualities in methanol which are inherent in fuel oils. A fuel pump for #2 distillate utilizes the lubricity of the fuel. Consequently the pumping of methanol would require supplemental lubrication or pumps designed for methanol.

It should be pointed out that contaminants in the inlet air or as salt water entrained in the fuel can also cause erosion, corrosion, and fouling of the turbine compressor.[110]

Considerable laboratory testing of engines, vehicles, and gas turbines has been performed by numerous investigators throughout the country. A number of universities[23] and research organizations have conducted laboratory scale and road tests with vehicles using blends of methanol and gasoline to ascertain the combustion performance as well as the characteristics of the emission products. Encouraging results have been obtained. It is however necessary to conduct large scale tests over a period of the order of a year with many vehicles and drivers to obtain statistically meaningful information. There are available in all municipalities fleet vehicles which are particularly appropriate for such an undertaking.

Police department cars, public utility cars, postal service autos, and city transportation vehicles such as buses, trucks, and motor pool fleets are typical of those groups which can be used for obtaining excellent data on performance, driver reactions, and life tests. Simultaneously these fleet tests can be used to secure data on the combustion emission products over an extended period of time under actual field conditions.

This field testing needs to be conducted concurrently with on-going laboratory tests as the optimization of engine performance relative to the selection of the most acceptable blend will undoubtedly require engine modifications. The engineering of these modifications will depend to a large extent on the laboratory test results. Since the field testing may reveal difficulties unforeseen in the laboratory, the coordination of a joint laboratory and field program will contribute to a rapid solution of any such problem. On a longer term basis with interest directed at eventually using 100% methanol in autos, the need for technical support of a laboratory program is mandatory.

The laboratory tests at General Electric involved burning methanol in individual combustors identical to those used in combustion turbines. More recently there have been operational tests made at Florida Power Corporation[33] involving burning of methanol for approximately 12 hours to generate electricity. These tests included starting and running a simple cycle machine converted to accept a flow of methanol greater than than that required for distillate. Owing to the standard pumps that were available at the time of the test, this combustion turbine realized only 85% of the maximum power output. This was not considered a significant problem. The combustion and emission characteristics of these methanol tests proved to be excellent.

The oxides of nitrogen were only 30% of #2 distillate fuel emissions. The carbon monoxide produced, although higher than for distillate, was well below the environmental standards. These CO emission results are at the same level of ppm as are obtained when water injection is used to suppress NO_x emissions with distillate fuel. Although the scope and duration of these tests was not sufficient to provide definitive data, no undesirable effects were observed. Localized high temperature areas or excessive deposits, erosion, or corrosion did not occur.

In view of these recent encouraging results with installed public utility combustion turbines, extended operating tests are now necessary to demonstrate over sustained periods that methanol is in fact an excellent alternative fuel to distillate and in many ways superior in performance. A demonstration of this nature must be of sufficient duration to reveal unforeseen problems as well as to permit the scaling of the results to larger capacity machines and to greater time periods. Examination of current practices with existing installations indicate that a 500 hour operation should provide the basis for a reliable analysis of methanol's performance in combustion turbines under load. Further discussions with turbine manufacturers and public utility personnel indicate that a unit of 20 or 30 megawatt capacity would be of sufficient size to allow the results to be scaled to machines of the 70 megawatt and larger size. A 500 hour demonstration test with this unit will consume approximately 2,000,000 gallons of methanol and should provide representative information on the interaction

of this fuel with gaskets, seals, pumps, and associated plumbing of the system. Further information that would be forthcoming from this test would relate to storage facilities and handling of the methanol in a public utility environment. The latter is not expected to present major problems as combustion turbine manufacturers have had experience in developing and operating combustion turbines burning such fuels as naphtha which involves handling similar problems of an unusual nature.

SOURCES

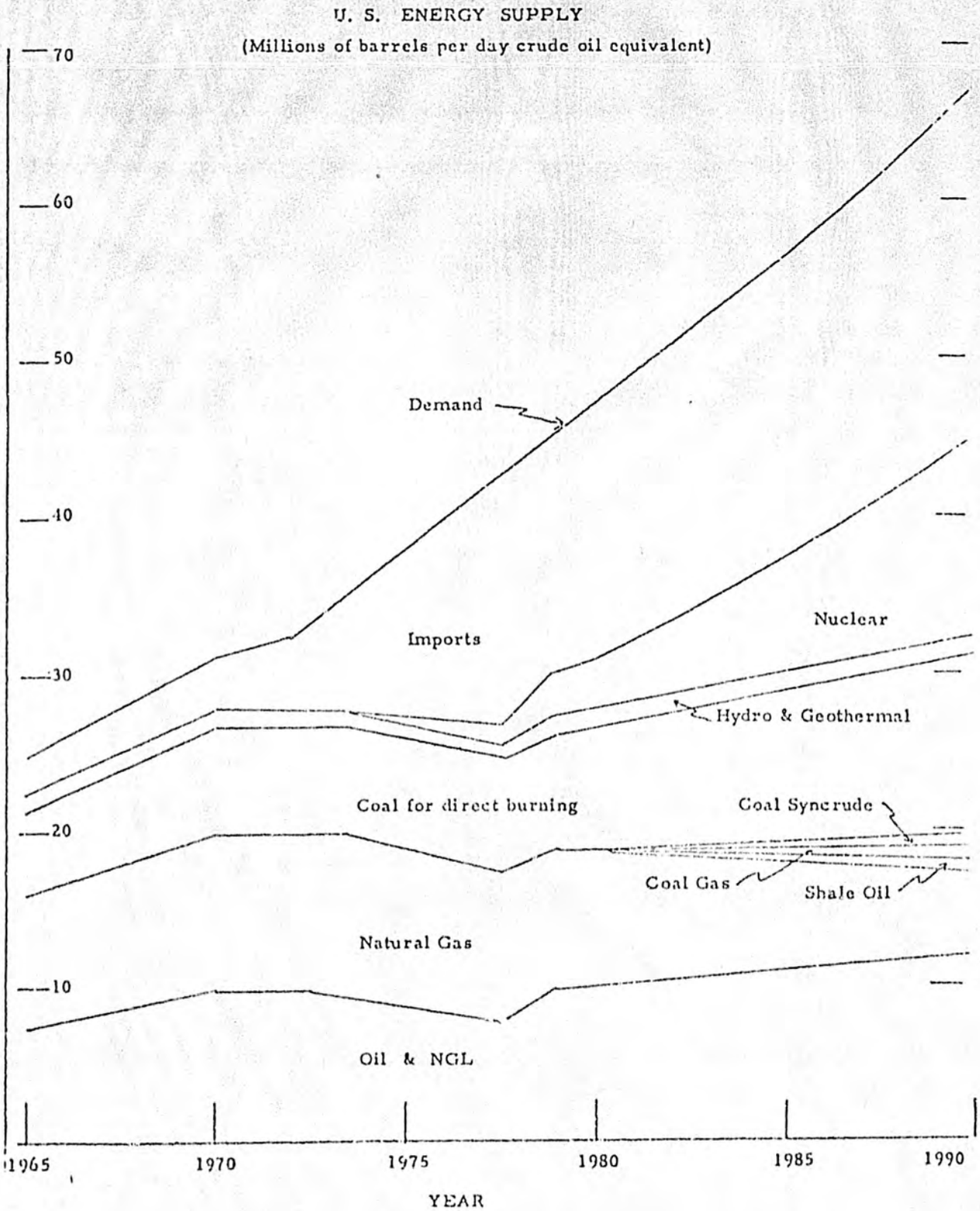
The principal problem associated with all synthetic fuels is that the source of the raw material is needed in very large quantities. Figure 2 shows the U.S. demand for energy and how it will probably be met through 1990. The only practical materials to be used as sources for synthetic fuels such as methanol are coal, natural gas, oil shale, tar sands, peat, forest products, agricultural materials and waste.

COAL

The known recoverable reserves of coal in the United States make it the primary source of energy. These reserves are estimated in hundreds of billions of tons (see Table) which by current annual consumption standards should be sufficient for over 300 years. It must be noted however that "coal" ranges in quality from so-called lignite through bituminous and sub-bituminous to anthracite. The aspects of quality not only involve energy content but also sulfur and water content as well as physical properties. In addition, there is a residual ash after processing which adds to transportation, disposal, and environmental problems. Fortunately all known forms of coal lend themselves to being converted into liquid or gaseous fuels by one or more chemical processes which substantially consist of the addition of hydrogen atoms to produce hydrocarbons.

Studies of constructing and operating methanol-from-coal plants indicates that mining operations and related activities for a 5,000 tons/day methanol plant plus associated SNG plant of 185 million cu. ft./day would

FIGURE 2



(Shell Oil - Mar. 1974)

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require approximately 1000 operating employees.[1] Although this labor force would probably present fewer problems in an Eastern or Midwestern coal region, in the Western U.S. this would be a quite different situation particularly if the site is in a sparsely populated region. An in depth study is required to evaluate the regional social and economic implications of such an undertaking since the mine would be selected with the design of operating it for 20 to 30 years.

It is estimated that for a single plant such as the above an investment of approximately five hundred million dollars may be required including interest during construction.[1] By comparison a 1972 methanol plant of 80 million gallons annual output (700 tons/day) using conventional natural gas feedstock costs $60 million.[128]

The problem of using coal as a source of methanol is inherently wrapped up in mining or extraction plus gasification. Heretofore these two problems have been approached separately since for many years mining did not present the technological and economic difficulties that are involved when coal is converted to a usable gas for the synthesis of methanol and other liquid fuels. In recent years progress has been made in processes for gasifying large quantities of coal.[1,2] Unfortunately the coal extraction has not progressed as rapidly. During the past few years the annual production of underground mines has still exceeded strip mining tonnage. The difficulties in coal mining and extraction stem from limitations of underground and surface equipment, improvements in working laws and regulations, and shortage of miners. While strip mining personnel were

continuously improving daily production per man, underground production fell off. Much of the fall off in production has been an outgrowth of the federal safety and health laws and regulations. Among eastern U.S. coal mining companies, many now have 5 year programs to again achieve the daily production of 15 tons per day per man they enjoyed in 1969 by upgrading underground equipment and methods. On a more forward looking basis there are development programs which are expected to be completed in the 1975-1980 period which, if successful, will involve controlled gasification of coal in-situ with recovery of the synthesis gas at the surface of the ground followed either by further processing at that site or pipeline distribution. Although the probability of success is uncertain the value if successful is so large to the nation that the program is worth pursuing. Most prominent among organizations taking this approach are the Livermore Applied Technology Group of ERDA.[12, 13] Conceptually in-situ mining is an important move. Placing additional manpower underground over and above the present 110,000 miners will not produce the extraction of 1.2 billion tons of coal recommended by Project Independence. Even if the initial tests prove successful the technique may not become commercially practical before 1990.

NATURAL GAS

Natural gas, from which methanol is produced is now in critical supply and will only be available in the near future in very limited quantities as a feedstock for methanol production. Although this material is a raw

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material for methanol its use for this purpose will be superceded by demands for other chemical production. As was mentioned earlier the known recoverable reserves are small compared to the annual consumption in the U.S. and may be exhausted in 10 years. There have been estimates made by the U.S. Geological Survey of undiscovered recoverable resources based on the frequent association of oil and gas that are usually present in large segments of the earth's crust. Generally 6,000 to 8,000 cu. ft. of gas is found with each barrel of oil.[58] Using the estimate of undiscovered recoverable resources of petroleum of 200 billion barrels and a ratio of 6,000 cu. ft. per barrel, a total of 1,200 trillion cu. ft.[58] should be undiscovered recoverable resources. Experts differ widely on estimates of undiscovered resources since there is a high degree of uncertainty involved. Among the considerations which must be recognized are that oil and gas are not always associated; also the several trillion tons of coal in the U.S. may contain as much as 8,000 trillion cu. ft. of entrapped methane gas; and some of the carbonaceous shales associated with coal may contain an additional 4,000 trillion cu. ft. of gas.[58] Clearly only a small percentage of this is recoverable and would probably not be available until beyond 1990. It has been well publicized however that about 260 trillion cu. ft. of methane gas is probably contained in the existing mapped and explored coal resources of the U.S. This is based on the U.S. coal resources of 1.3 trillion tons above 3,000 feet which are capable of being mined by underground methods. 200 cu. ft. of gas per ton of coal is considered a reasonable estimate. However again it is only a fraction

of this gas that can be recovered since probably as much as 10 to 20% is retained in the coal. Consequently, any consideration of natural gas as a source material for methanol fuel must for practical purposes in the 1975-1980 time frame be confined to competing for the approximately 250 trillion cu. ft. of known recoverable reserves.

There is however an aspect of natural gas which must be examined more carefully. As recently as 1973 the U.S. was venting and flaring on shore over 250 billion cu. ft. of gas annually (1.1% of U.S. annual).[116] Offshore in the Gulf of Mexico in 1973 there was being vented and flared 57 billion cu. ft. according to studies of the U.S. Geological Survey.[44] The economics of using this offshore natural gas involves the cost of building pipelines into the Gulf and pressurizing it in order to introduce it into an existing pipeline. Consequently beyond a specific offshore distance it is not economically practical to bring the gas ashore. However, it may be feasible to collect this gas and manifold it offshore at which point it could be processed in a barge mounted plant into a liquid fuel such as methanol. Since accelerated offshore petroleum drilling is imminent, the merits of conducting such an analysis are obvious. The USGS estimates for the offshore U.S. are between 131 and 1,031 billion barrels of petroleum liquids and between 676 and 2,328 trillion cu. ft. for natural gas. The current vent and flare gas in the Gulf of 57 billion cu. ft. is 2% of the 1973 production in the Gulf of 2,882 billion cu. ft. By comparison this would indicate there is a possible 13 trillion to 26 trillion cu. ft. or 2% that may be ultimately vented and flared offshore U.S. that could be collected for synthesizing liquid fuels such as methanol.

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SHALE

The availability of energy from oil shale has been well known for many years. From time to time especially during periods of oil shortage there has been considerable interest in mining and extracting oil from them. Geologists and petroleum engineers differ as to their estimates of the oil that can be recovered from U. S. sources. Among the difficulties involved in making accurate estimates is the variation in oil content of these shales. It is as low as 0 in some areas and reaches as high as 60 gallons per ton in others. In the major Colorado, Utah, and Wyoming basins where these shales are predominant, 25 to 65 gallons per ton is the range of yields. These three areas are estimated to contain deposits of 600 billion barrels of petroleum. However for economic reasons exploitation must be directed at the higher grade shales (averaging 30-35 gallons per ton) which lie in beds at least 25 feet thick and within 1,000 feet of the surface. Estimates indicate approximately 160 billion barrels are available. Further studies on the practical aspects of recovering this oil point to possibly 80 billion barrels as being available. An indication of the poor prospects of this material as an economic source of energy are the estimates for utilizing the oil shale in the well known Green River formation of Colorado, Utah, and Wyoming. Of 1,800 billion barrels of total oil content, all except 5% is considered to be too low grade, too deeply buried, or too poorly defined to be worth developing. If this 5% or 90 billion barrels is further restricted for economic purposes to beds at least 30 feet thick with average oil content of at least 30 gallons per ton, it has been calculated that by means of known underground mining methods 60% or approximately 50 billion barrels of the inplace oil can be recovered.

The National Petroleum Council has made a study of those shale deposits that could be considered for successful exploitation before 1985. Their conclusions show that the only area to merit consideration is the Piceance Basin of Colorado in which they estimate 20 billion barrels could be extracted.

The use of oil shale as a source material for oil or methanol presents many chemical engineering problems. Shale does not contain oil, but rather a material known as kerogen composed of carbon, hydrogen, nitrogen, sulfur, and oxygen. There is little geological relationship between shale oil and petroleum. The kerogen of the average rich kerogen shale is intimately mixed with inorganic clays, sands, and carbonates. Owing to the approximately 10% nitrogen and 1% to 8% sulfur contained in the kerogen, both must be removed before it can be converted to petroleum.

Effective methods and techniques have been developed for mining, crushing, and heating oil shale. One such consists of pulverizing the shale in a kiln by means of heated ceramic balls which reduce the shale to the consistency of talcum powder while bringing it up to an elevated temperature. Owing to an approximately 10% increase in physical dimensions in the extraction process, the shale presents a waste disposal problem as yet unsolved. A projected 50,000 barrel per day plant in Colorado which will mine a 4,000 acre region estimated to contain 800 million tons of oil shale with 30 or more gallons of recoverable crude will need to process 70,000 tons of shale per day.[61]

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Although petroleum from oil shale may ultimately be commercialized, the prospects of utilizing this as a source for petroleum or synthetic fuels prior to 1985 are remote. To put this industry into proper perspective with our current economy, if the nation wished to obtain 1 million barrels per day of petroleum from oil shale, it would require mining approximately 1.4 million tons of shale per day. This is equivalent to developing a shale mining operation equal in size to the entire present U.S. coal business.

TAR SANDS

The tar sands as a source raw material for producing synthetic fuels such as methanol offer a more unattractive situation than oil shale. The U.S. deposits are quite small and estimated at a few billion barrels for known recoverable reserves and possibly 10 billion barrels for undiscovered marginal and submarginal resources not economically recoverable at present. For over 50 years several small scale efforts to utilize these sands have been made and failed. The most recent effort pursued by Great Canadian Oil Sands Ltd.[124] has incurred large financial losses while conducting an open pit mining operation producing 50,000 barrels per day. The possible use of in-situ mining of these sands is currently being explored.

AGRICULTURAL AND FOREST PRODUCTS WASTE

One of the most promising means of producing methanol is to source it from agricultural and forest products and waste. This is in essence utilizing solar energy to provide a continuously renewable supply of raw

materials. The attractiveness of this approach has many obvious merits. The raw materials are renewable and can be collected with fewer problems than those associated with underground mining, the renewable materials are geographically mobile, and the total system contributes to less pollution of the environment.

The Office of Energy Resources of the State of Maine[67] has made an analysis of converting the state's wood and wood waste to methanol. They have concluded that 3 tons of wood will yield approximately 0.86 tons of methanol. The wood is first converted to synthesis gas by partial oxidation yielding approximately 0.7 tons of gas for 1 ton of wood waste plus 0.2 tons of oxygen. The synthesis gas is then converted to methanol using the water-gas shift reaction. The yield is approximately .28 tons of methanol per ton of wood.

Maine has 17 million acres of forest land from which 3.2 million cords of pulpwood and 0.41 million cords of lumber are taken each year (10 million tons green). The annual rate of removal amounts to 0.5 cords per acre since harvesting is conducted on only a smaller fraction of the land. In addition to this removal of timber, there is a substantial amount of slash, dead trees, limbs, and material under 4 inches in diameter left behind. Estimates indicate about 40% of the tree is not removed from the woods. Consequently in addition to the wood removed, there are approximately 3.8 million tons per year of wood trash from the trees which are actually cut. (1 cord dry weighs approximately 1.5 tons; 1 cord green wood weighs 2.9 tons.)

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In addition to the slash there are substantial quantities of dead and diseased trees, scrub growth, and other growth not harvested. This has been estimated to be 15% of the total volume removed for commercial purposes. However experts differ on these figures, Studies performed by the State of Maine in the field through interviewing techniques with foresters show that a minimum of 5 cords per acre per year of wood could be taken out continuously from Maine woods.[67] It must be pointed out that current forestry practices, procedures and methods would need to be altered to achieve this level.

There are in addition to the above mill wastes and sawdust which are unutilized. When the national statistics on these wastes[83] are translated into Maine's operating level, it appears that there should be some 1.2 million tons of unutilized mill residues available annually for use as feedstocks for synthetic fuel manufacture.[66]

Supplementing the slash and mill wastes, Maine has 5 million acres of spruce-fir forests infested with the spruce budworm. This diseased timber is now in its third year and after six years of infestation it is expected to have almost no commercial value. The total quantity of wood involved including the commercial as well as the slash is about 208 million cords (312 million tons). At such time as the timber is no longer of value for pulpwood or saw logs it is still acceptable for use as a chemical feedstock. This quantity of wood is capable of being converted into 89 million tons of methanol (27 billion gallons.).[67]

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Present plans to construct a hydroelectric dam on the St. John River in Maine (Dickey-Lincoln Reservoir) will flood 86,000 acres of woodlands. There are 5.5 million tons of wood in trees which would be harvested under normal circumstances. This wood can be converted into 1.58 million tons (480 million gallons) of methanol.[67] In addition there is the growth not normally harvested which could be cut. This quantity approximately equals that of the wood harvested.

In summary the Maine forests have the potential to yield the following quantities of methanol:

Source	Quantity of Wood (millions tons/yr)	Quantity of Methanol (millions tons/yr)	Quantity of Methanol (million gal/yr)
Slash and logging waste from present practices	3.8	1.08	328
Potential slash, brush, waste wood 5 cords/ acre/yr on 17 million acres	132	38	11,500
Unused mill wastes and and sawdust	1.2	.34	103
TOTAL	137.0	39.42	11,931

On a continuous basis these forests can provide 39.42 million tons (11.931 billion gallons) of methanol per year. This represents 1200% of present total U.S. production.

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There is provided by the diseased timber situation and the hydro-electric project a one time opportunity to produce 90.5 million tons (27.48 billion gallons) of methanol which is equal to a 25 year supply at current U.S. production rates (Table VI).

Spruce budworm infested area	312 million tons of wood	89 million tons of methanol	(27.0 billion gals.)
Dickey-Lincoln flood area	5.5 million tons of wood	1.5 million tons of methanol	(480 million gals.)
TOTAL	317.5 million tons of wood	90.5 million tons of methanol	(27.480 billion gals.)

MUNICIPAL SOLID WASTE

The solid waste explosion in municipalities has become a major problem for environmentalists and local governments. The conventional approach to obtaining a solution has been to acquire additional land areas for the land fill operation. However this practice is being greatly restricted as acceptable sites must be located at greater distance from the urban areas. Concurrently with public concern over the solid waste situation is the recognition that this waste is a potential energy resource which is being lost. The City of Seattle[76,77,78] has investigated the technical feasibility of gasifying municipal solid waste and synthesizing methanol or ammonia from the gas produced. The process considered is essentially the Purox process of Union Carbide Corporation. They have also examined the technical feasibility of using methanol as a fuel substitute in city vehicles and other applications. Plants capable of processing 600 tons per day and

1,500 tons per day were considered in the analysis. The larger plant resulted in more favorable economics. A 1,500 tons per day plant using the Seattle waste composition would produce about 83,000 gallons (280 tons) per day utilizing the Imperial Chemical Industries low-pressure process for synthesizing methanol. This is a 19% yield per ton of wet refuse. The composition of the average day's refuse feedstock was determined to be 47% carbon, 33% oxygen, 6% hydrogen, 1.2% nitrogen, 0.3% sulfur, and 12% ash. Depending upon various compositions of their refuse (25% to 30% weight moisture) Seattle found yields varied from about 16.9% to 21.5%. The cellulose content of solid waste and ultimately of course the carbon content determine the amount of methanol or ammonia that can be produced. Consequently any potential local legislative action or economic constraints which would result in an alteration of waste composition would produce a change in yield. Similarly any major seasonal variation in the content of the municipal waste would have an effect on the yield.

The City of Seattle's analysis indicated that the success of this type of enterprise rests heavily upon obtaining favorable long-term committments for the purchase of methanol and ammonia. Both methanol and ammonia historically have fluctuated widely in price; the former having swings as great as 10 cents to 48 cents per gallon in recent years. These swings are coupled with reduced and excessive demand for these two chemicals which serves to contribute to the difficulty of making this a viable business. A second key factor in the economics is the acceptance by the municipality of the need of a

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financial credit for solid waste disposal to offset production costs of methanol and ammonia. Not only is this a credit for refuse collection but also for reducing the daily tons of municipal waste going into a city's landfill. The City of Seattle in its analysis considered a $4.90 per ton credit for waste processed. It was found that without this credit that too high a market price must be realized for methanol and ammonia.

The total municipal waste currently being generated in this country has been estimated[68,117] at between 3.0 and 3.6 lbs. per person per day. This would project to a total national figure of approximately 140 million tons per year in 1974. On the basis of a 19% yield on conversion to methanol, this quantity of municipal waste would yield a potential 26 million tons (7900 million gallons) per year.

WOOD WASTES

The total U.S. growing stock logging residues in 1970 totaled 20 million cords (30 million tons)[83] of which about one-third was located on the Pacific Coast. In addition to these, a recent study[83] on the Pacific Coast indicated that residues from nongrowing stock approximately equaled those above from growing stock.

The north coastal region of California is a major source of wood residue created by their large logging operations. The largest percentage of this waste is either burned or used as landfill. This material is created seasonally and heretofore has received little attention as collection and conversion costs required investments in capital

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equipment which would only be used a part of each year. The use of mobile processing units may make the use of this waste material economically feasible.

A survey[21] of the North Coastal Regional timber industry indicates that over 1,161,000 tons of wood waste is created annually. In the Six River National Forest an average of 70 tons per acre of residue were reported on a total of 4,150 acres cutover each year.

The California Forest Protective Association and the Western Timber Association[21] through a survey of 69 members estimate this wood waste can be loaded for an average of 50 cents per ton. They further estimate it can be hauled out of the woods for 30 cents per ton mile. These are average values and vary greatly between the lowest and highest estimates.

The Select Committee of Manpower Development[21] and the Select Committee on North Coast Timber Economy[21] have developed plans to construct a mobile pyrolysis-distillation system plant which would move by rail and utilize flat cars and tank cars. As wood waste is consumed in an area the unit would be moved to another site.

The North Coastal area annually produces sufficient wood waste to support an operation producing 400,000 tons per year of methanol (120 million gallons). A further analysis will be required to determine if the plant investment and operating costs will result in a methanol cost that is competitive with other sources. (See Table VI)

On a national basis the potential of methanol from wood appears very favorable. The 500 million acres of U.S. commercial timberlands contain some 715 billion cubic feet of sound wood. This represents approximately 25 billion tons of wood (wet). 649 billion cubic feet are growing stock and 66 billion are nongrowing. The annual growth of these timberlands is estimated to be some 18.6 billion cubic feet (670 million tons). This total inventory does not include wood in limbs and stumps nor that on land classified as non-commercial. (Commercial timberland by definition has the capability of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands.

Currently from this forest inventory there is harvested annually 12 billion cubic feet (420 million tons) of wood of which 11 billion is from growing stock and 1 billion from nongrowing stock of rough, rotten, and salvable dead trees. The logging residues from the growing stock constitute 5 to 10% of that harvest and amount to 1.6 billion cubic feet. Another 1.6 billion cubic feet of residues is estimated to be produced by the nongrowing stock. Much of this residue is unutilized since it is unsuited for most purposes other than pulp or particleboard.

The primary processing plants and sawmill operations also produce wood waste as was mentioned earlier. Two of the principal uses for these plant wastes are wood pulp, fuel, and particleboard which consume 2.8 billion cubic feet (52 million tons). There remains however 1 billion cubic feet (19 million tons) annually unused at the saw-

mills and other plants plus the annual volumes of unused residues from the past. Additional residues accumulating at these primary plants and mills are some 2 billion cubic feet (38 million tons) of bark which currently constitutes a waste disposal problem. At present approximately 70% of this material is burned or dumped.

In addition to primary plants and sawmills there are secondary plants creating wood residues. The U.S. annual production of these residues is estimated at 900 million cubic feet (19 million tons) most of which is unused. In general much of this residue is burned or dumped as waste. Precise figures on any secondary use of these residues are not available.

In summary, on an annual basis there is available in the U.S. from unutilized forest waste the following:

3.2 billion cubic feet of logging waste

1.0 billion cubic feet of primary plant waste: slabs, edgings, sawdust, veneer cores

2.0 billion cubic feet of primary plant bark

.9 billion cubic feet of secondary plant waste; shavings, trimmings, sawdust

---

Total = 7.1 billion cubic feet = 130 million tons of wood which can be converted into 38 million tons of methanol

It should be noted that none of these residue figures take into consideration the forest waste from previous years since only Maine and Northern California have been able to collect data as to the quantities available.

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PEAT

The large supplies of peat throughout the world make it a potential source material for conversion to methanol. U.S. and Canada have approximately 37,000 and 11,000 square miles respectively of peat bogs varying in thickness from 5 to 25 feet. Peat is a product of decayed vegetation which was originally reeds, rushes, sedges, and mosses and analyses have shown carbon contents of the order of 60% in specimens dried at elevated temperatures. The water content is generally high and in low lying bogs may be 90%. The high water content and the need for drying has limited the commercial success of peat as a fuel. Average air dried peat of 25% moisture has been found to have 6,000 BTU per lb.[84]

Measurements in Germany of peat production (peat-winning) have been made. It was found that approximately 800,000 tons of air-dried peat are obtained per square kilometer in beds about 16 feet deep. (2.1 million tons per square mile.) For an assumed average depth of 5 feet for the U.S peat beds, calculations indicate the total supply to be 6.5 billion tons if the density and composition are that of the beds in Germany.

An early Ziegler process in Germany which focused on the pyrolysis and partial oxidation of peat have reported methanol yields of 65 gallons per 100 tons of air-dried peat.[84] This process however was concerned with other by-products and uses for peat rather than obtaining methyl alcohol. In view of the high carbon content of peat and the vast resources in the U.S., a more detailed analysis of applicable processes should be made to obtain data on yields of methanol and costs.

Total potential methanol yield is 4.2 billion gallons from U.S. peat.

FEEDLOT MANURE

The development of large cattle feedlots has produced the accumulation of large concentrations of manure in various sections of the country. Available figures indicate that some 28 million tons per year are generated of which possibly one-half is water. The Department of Agriculture statistics show that approximately 14 million head of cattle are now feeding in concentrated areas and are producing manure at a rate of 2 tons per year per head. The operators of these facilities are faced with the problem of disposing of this material as it has become costly to truck it to farms at any distance; the polluting effects of runoff after a recently fertilized land are objectionable; commercial fertilizers are preferable both economically and biologically; and some of the nutrient additives to the animal feed are undesirable waste products. Most disposal plans involve some type of chemical treatment, incineration, or land disposal method. Since this material is rich in cellulose, investigations have been directed at gasifying manure to produce a synthesis gas suitable as a feedstock for methanol or ammonia production. The Bureau of Mines reports having pyrolyzed cow manure at 400° to 900° C. to yield 11,000 scf of gas per ton. The reaction products contained 16.8% CO, 27.5% H_2, and 23.5% methane. The manure processed contained 3.6% water.[46,47,48,115]

The larger concentrations of cattle may number as high as 750,000. Studies have been made of somewhat smaller groups of the order of 200,000 head where the production of manure would be of the order of 1000 to 1200 tons per day. This capacity processing plant was selected as a tradeoff between transportation costs to collect the feedlot waste and the economies of scale in plant size.

AGO 513441

The process used by investigators has followed the lines of municipal solid waste conversion to a synthesis gas. The manure is ground, dried to about one-half of its original water content, and then fed to a pyrolysis unit at atmospheric pressure where it is heated to 1500° F. The reaction products are primarily CO, CO_2, H_2, and CH_4 plus char. The solids are physically separated and the CO_2 is chemically absorbed in a hot potash absorption process leaving a gas made up of CO, H_2, and CH_4. The process generated about 166 tons of synthesis gas from a total of 1100 tons of feedstock. Since the manure was approximately 50% water, the process produced about a 30% yield of gas based on dry manure. The heat of reaction of the manure was estimated to be 1110 BTU per pound at 1500° F.

In view of the quantity of raw material available yearly which on a dry basis is 14 million tons, it will require an economic analysis in depth to determine if this is a viable route to pursue for the conversion of feedlot waste to fuel. The process yields of methanol are likely to be low and the cost of feedstock is as yet an unknown quantity.

The gas produced has a composition of 42% CO, 44% H_2, and 13% CH_4. If it is assumed the synthesis gas generated can be suitably shifted in composition and converted to methanol on a 50% yield basis, the 1100 tons per day plant would yield 83 tons of methanol. This is an overall yield of 7.5% on a wet manure basis. Using the national figure of 28 million tons of feedlot waste available annually, the total U.S. potential for methanol production would be 2.1 million tons (620 million gallons) from this source.

SOURCES OF METHANOL

Material	Availability	Conversion	Quantity of Methanol (Millions) Tons/Yr	Gal/Yr
Coal	"Unlimited"	1 ton to .6 ton	"Unlimited"	
Offshore Vent & Flare Gas	52×10^9 cu. ft. /yr.	65%	1.6	485
Total U.S. Municipal Solid Waste	140×10^6 tons/yr.	1 ton to .19 ton	26	7,900
Calif. North Coast Timber Waste	1.16×10^6 tons/yr.	1 ton to .3 ton	.4	120
Maine Woods Slash & Waste	3.8×10^6 tons/yr.	1 ton to .3 ton	1.08	328
Maine Woods Potential Waste on 17 Million Acres	132×10^6 tons/yr.	1 ton to .3 ton	38	11,500
Maine Unutilized Mill Wastes & Saw-Dust	1.2×10^6 tons/yr.	1 ton to .3 ton	.34	103
U.S. Total Unutilized Mill Wastes, Saw-Dust, Logging Waste	7.1×10^9 cu. ft. /yr. (130×10^6 tons)	1 ton to .3 ton	38	11,500
Maine Spruce Budworm	312×10^6 tons (available one time)	1 ton to .3 ton	89 tons	27,000 gal
Dickey-Lincoln Dam Flood Area	5.5×10^6 tons (available one time)	1 ton to .3 ton	1.5 tons	480 gal
Peat	6.5×10^9 tons (available one time)	1 ton to .0021	13.8 tons	4,200 gal
Feedlot Manure	28.0×10^6 tons/yr.	1 ton to .075	2.1	620

AGO 513443

DEMAND

The consumption of fuel for transportation and electrical generating purposes has been growing at a substantial rate owing to the increase in number of vehicles, size of vehicles and engines, transportation needs of the population and the demands of a society heavily dependent upon electrical power. In recent years the total petroleum used in the U.S. can be grouped into the following major consuming areas:

Daily Consumption of Oil

Residential and Commercial	18%
Industrial	11.5
Electrical Energy Generation	7.0
Non-Energy Applications	10.5
Transportation	53.0

The 53% used for transportation translates into an annual usage of approximately 115 billion gallons of gasoline, diesel fuel, kerosene, aviation turbine fuel and other hydrocarbon fuels produced from petroleum. The total consumption of energy for transportation is actually somewhat higher since the natural gas (non-petroleum source) and the electrical energy contribution raise the figure slightly.[7]

Of the total energy consumed for fuel, estimates indicate that the following quantities of gasoline, kerosene, and distillate were used by motor vehicles (both highway and non-highway).

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U. S. TOTAL FUEL SUPPLY AND DEMAND
(000,000 Barrels)

	Gasoline		Kerosene		Distillate Fuel Oil		Residual Fuel Oil	
	Produced	Demand	Produced	Demand	Produced	Demand	Produced	Demand
1950	1,024	1,019	118	120	399	75	425	570
1960	1,522	1,525	137	133	667	695	332	578
1965	1,733	1,756	202	220	765	780	268	602
1970	2,135	2,165	313	358	897	927	257	804
1971	2,231	2,242	306	365	912	971	275	838
1972	2,352	2,382	313	379	963	1,066	292	925
1973	2,435	2,464	328	383	1,030	1,124	345	1,019

Investigators have already forecast that this consumption for transportation will become 11.5 million barrels (480 million gallons) equivalent per day in 1980.

PUBLIC UTILITIES

The U.S. electrical energy generation currently uses the energy[7] equivalent of 7.1 million barrels of oil per day of which 1.2 million is actually oil. 21% of this usage or .252 million barrels per day is consumed in the combustion turbines of public utility plants. By 1980 the total electrical energy generation requirements will reach 13.2 million barrels of oil equivalent per day. The combustion turbine requirements in that year are estimated to be 1.0 million barrels daily (42 million gallons).[1] Since methanol has 50% of the energy of distillate, this represents a requirement of 2.0 million barrels (84 million gallons) daily if all distillate peaking turbines were converted to methanol.

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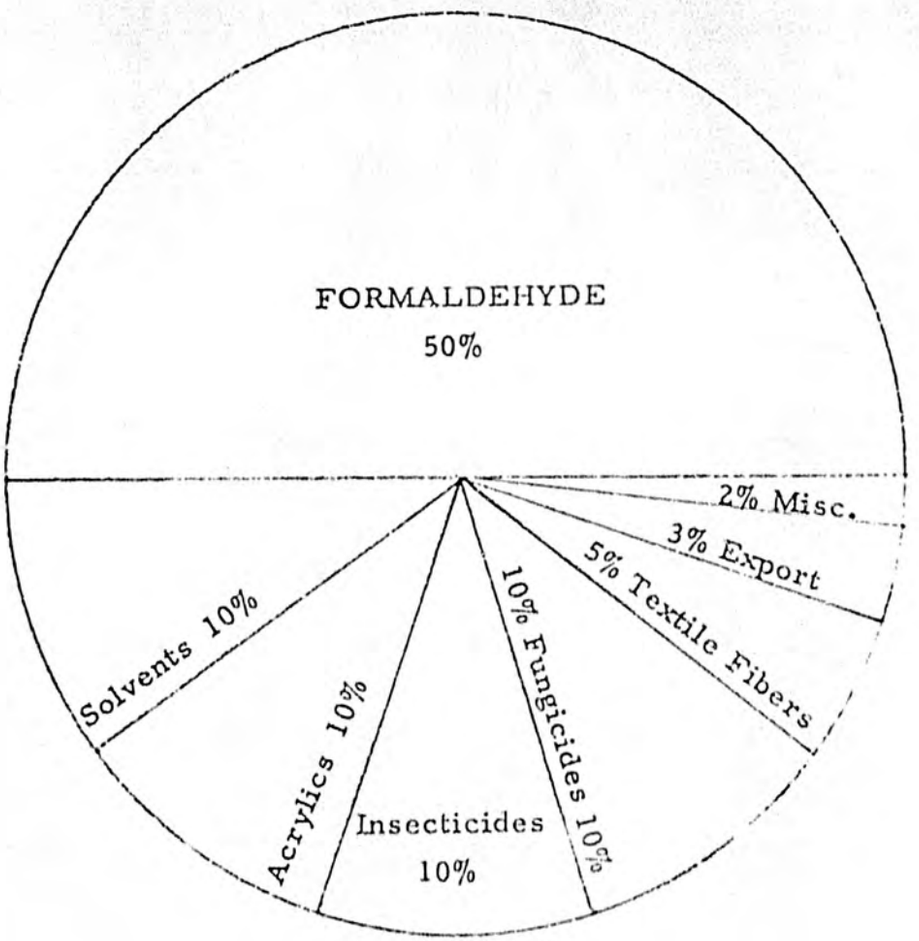
A potential problem area exists as regards the high demand for raw materials by the public utility and the steel industry. Public utilities consume annually approximately 250 x 10^6 tons of coal which is close to half of all the coal used in this country. The steel industry, which requires approximately 1 ton of coal (or equivalent energy) for each ton of steel produced, uses in excess of 100 x 10^6 tons of coal per year. This accounts for approximately 20% of the annual output of coal. As a result a new major demand for coal as a raw material for methanol production will be constrained as much by increasing industrial and public utility pressures as by mining limitations mentioned earlier.

CHEMICALS

A third area which will undoubtedly contribute to a competitive situation is the demand for methanol for chemical purposes. The United States consumption of methanol has been increasing at a rate of 8.5% annually for the past 10 years. Of the 1 billion gallons annually produced, 50% is as an intermediate for formaldehyde manufacturing, 10% in solvents, and 5% in the production of dimethyl terephthalate for textile fibers. Of the remaining 35%, the usage is almost equally divided among the acrylics (10%), the insecticides (10%), and the fungacides (10%) production together with 3% exported and 2% for a variety of miscellaneous chemical and fuel applications. (See Figure 3.)

Formaldehyde which accounts for approximately half of all the domestic methanol demand has been growing rapidly. Formaldehyde

ANNUAL CONSUMPTION OF METHANOL IN U. S.
(1 BILLION GALLONS)



Chemical Econ. Handbook
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FIGURE 3

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solution which is produced in excess of 5 billion pounds annually is used extensively in adhesives in particle boards and plywood manufacturing and hence is keyed into construction. Most methanol producers manufacture formaldehyde. Of the 18 formaldehyde producers in the U.S., seven do not have captive supplies of methanol. In addition to the formaldehyde market, the solvents market using methanol is growing as well as the[11] demand for dimethyl terephthalate. The former is used extensively in industry as a solvent for extracting, washing, drying, and crystallizing owing to its low price, high purity, and excellent properties. The latter is used widely as an intermediate in polyester fiber manufacturing. Production of dimethyl terephthalate is currently in excess of 1.5 billion pounds each of which utilizes 0.2 pounds of methanol.

CONVENTIONAL FUELS

Methanol as fuel for a conventional fired boiler has been successfully used in a test by a New Orleans public utility.[34] The clean burning characteristics were particularly encouraging. Although a potential large user of this fuel, the economics of this application are not encouraging when compared to other fuels for this use. The direct firing of the boiler with coal is superior economically than using as a fuel methanol produced from the same coal. Methanol derived from high sulfur coal would need compete with high sulfur coal plus scrubbers.

Less known but a potential user of methanol is the residential fuel business in rural areas. Although chemical companies are using 25% of

propane production as a raw material, the bottled fuel business is using 50% of the U.S. production of approximately 900,000 barrels (37.8 million gallons) per day and has held fairly constant for some time at about half [42] of this total. This fuel is used for home heating, water heating, and cooking. Propane has enjoyed considerable success as a fuel owing to its ease of distribution since its cost at the extraction plant was approximately 3 cents per gallong until the recent upsurge in demand began. About two-thirds of propane consumed comes from natural gas and the remainder from refining petroleum. (Imports are on the average of 43,000 barrels (1.8 million gallons) per day.) As a consequence of limits on natural gas and petroleum plus proposals to use propane to make SNG, the entire demand pattern is changing.[43] Unfortunately the chemical companies cannot readily shift to an alternative such as naphtha, for example, as it would double their investment to convert and would require two years. As a replacement for propane, methanol is an excellent, clean fuel particularly because of the continuous rise in the price of propane, and the simplicity in making the conversion from propane to methanol, and the ease with which methanol can be stored and distributed economically. Additional uses of propane as a fuel that could be met by methanol are in crop drying operations and poultry breeding. These are small but significant uses of propane.

COSTS

The Atomic Energy Commission and Esso Research and Engineering have calculated for large plant facilities that methanol produced in 1973 from natural gas at 40 cents per 1,000 cubic feet would cost in the neighborhood of $1.50 per million BTU at the plant.[3, 10] However owing to the rapid increase in construction costs in 1974 and the forecast for continued high costs, this figure is uncertain as far as the future is concerned. The AEC[1] calculates methanol produced from strip mined Western coal delivered at 20 cents per million BTU or produced from deep mined Eastern coal at 35 cents per million BTU on a scale of at least 5,000 tons per day will have a cost of $2.12 per million BTU for the former and $2.44 per million BTU for the latter.[1] The financing in this case would be utility financing at 10.5% return on rate base. The process selected, siting, coal type and cost, construction costs, and financing methods all clearly influence the cost of the methanol. The above two cases if investor financed at 12% discounted cash flow would yield methanol at $2.73 and $3.06 per million BTU.* By way of comparison, gasoline at 19 cents to 25 cents per gallon (Jan. - Feb. 1974 cost at refinery) is in the range of $1.52 to $2.00 per million BTU.

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*Since the AEC computations were made utilizing the Koppers-Totzek coal gasifiers and the thermal efficiencies and capital costs are comparable, it can be seen that a difference of 15 cents per million BTU in coal costs produce a cost differential of 32 cents per million BTU. This is equivalent to a 2 cent differential on a gallon basis.

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A number of other studies have been made focused on methanol production costs from coal and also from municipal solid waste. The Methanol Production Costs tabulation below shows the results of four of these studies: the AEC analysis using the Koppers-Totzek gasifier for Eastern bituminous coal plus the Imperial Chemical Industries methanol synthesis process[1]; an Oak Ridge National Laboratory Study[49, 111] of a plant process to produce 12,500 tons of methanol annually from bituminous coal (scaled down from 20,000 tons); an AEC analysis[1] using the Winkler gasifier for Western subbituminous coal in conjunction with the ICI methanol synthesis process; and a City of Seattle study[19, 76] employing the Union Carbide Purox process to pyrolyze municipal solid waste followed by synthesis of methanol from the gaseous products of the pyrolysis. In view of the wide range of premises that are involved in these studies, an additional tabulation of assumptions have been included.

The Methanol Production Costs tabulation has been constructed to provide information in 3 principal areas: total capital investment, annual operating costs exclusive of input feed stock, and cost of feed stock and energy. In addition to this information, there is included for each of the 3 areas the costs per million BTU output. The total of these last 3 costs provides the total cost per million BTU of methanol produced.

In order to avoid reconciling differences in methods of financing between studies, the capital costs per million BTU of methanol produced were determined in all cases by using 15% of the total capital investment as the annual capital cost. This is 10% for return on capital and 5% for depreciatio

METHANOL PRODUCTION COSTS

	AEC	ORNL	AEC	SEATTLE
1. Energy Output	5000 tons/day (1×10^{11} BTU)	12,500 tons/day (2.5×10^{11} BTU)	5000 tons/day (1×10^{11} BTU)	300 tons/day (5.6×10^{9} BTU)
2. Gasification Process	Koppers-Totzek	(Ref. 111)	Winkler	Purox
3. Input Fuel	9900 tons/day (2.1×10^{11} BTU) Eastern Bit. Coal 21.3×10^{6} BTU/Ton	14,900 tons/day (3.7×10^{11} BTU) Eastern Bit. Coal 25×10^{6} BTU/Ton	13,700 tons/day (2.37×10^{11} BTU) West. Subbit. Coal 17.2×10^{6} BTU/Ton	1500 tons/day (15×10^{9} BTU) MSW 5000 BTU/Ton
4. Thermal Eff.	46%	60-67%	41%	38%
5. Capital invest. ($ Million)	253	279-364	241	56
6. Ann. Oper. Cost ($ Million) Exclud. Coal	24	44	20	6.1
7. Capital Costs Per Million BTU Output (at 15% per Yr.)	$1.12	$0.51-.66	$1.08	$4.10
8. Operating Costs Per Million BTU Output (Ex. Coal)	$ .72	$ .53	$ .60	$2.44
9. Input Fuel Costs Per Million BTU Output	$ .73	$ .53	$ .47	$ 0
10. TOTAL COSTS Per Million BTU Output	$2.57	$1.57-1.72	$2.15	$6.54

AGO 513452

As would be expected, the Seattle study results in a considerably higher cost of methanol since the plant capacity is an order of magnitude smaller than that of the other three studies. The latter enjoy the economies of scale both in capital investment and operating costs.

The studies tabulated were selected particularly because they produced predominantly methanol. One of the difficulties in comparing various techniques for converting such materials as coal to methanol is that many processes yield a wide mix of fuel products whose economic evaluation complicates the determination of the cost of the methanol.

Each of the above plant costs were calculated[111] with slightly different assumptions. For example the two 5000 ton/day plants include in the total capital requirements a 10% project contingency on the plant investment while the 12,500 tons/day operation includes a 15% contingency on the total capital investment required. Interest during construction of the two 5000 tons/day operations was assumed as 9% per year of the total plant investment over a 1.875 year period; for the 12,500 tons/day plant, 15% interest is used during the construction period; for the 300 tons/day operation, interest during construction of 2 years was assumed at 8% per year of the construction costs. Summarized below in tabular form is a comparison of the assumptions employed by the referenced investigators in performing their calculations of the cost of methanol per million BTU.

TABLE OF ASSUMPTIONS

	AEC	ORNL	SEATTLE
A.	No Inflation Assumed	No Inflation Assumed	10% per year inflation allowance applied to 2 yr. period plant construction and storage; 4% inflation rate thereafter
B.	9% per year of total plant investment for average of 1.875 years	15% interest during construction	8% interest for 2 years during construction
C.	10% of total plant investment assumed on project contingency	15% for contingencies	10% of total capital requirements assumed on project contingency
D.	(Not Identified)	(Not Identified)	2% of total capital requirements assumed on cost to obtain money
E.	20% of total gross oper. cost is start-up cost	5% start-up cost	Unknown start-up cost
F.	2% of total plant investment is working capital	7 1/2% working capital	$1,000,000 working capital arbitrarily assumed
G.	90% plant service factor (330 days)	90% plant service factor (330 days)	100% plant service factor (365 days)
H.	Eastern Bituminous Coal Cost: 35 cents per million BTU ($7.35 per ton) 21 million BTU per ton as received; Western Subbituminous Coal: 20 cents per million BTU ($3.40 per ton) 17 million BTU per ton as received.	Eastern Bituminous Coal Cost: 32 cents per million BTU ($8 per ton) 25 million BTU per ton	Municipal solid waste at zero cost
I.	9% per year on debt	Capital costs of 15%/yr of total capital investment	8% revenue bonds for 15 years used to finance project
J.	All costs are 1973 dollars	All costs are 1973 dollars	All costs are 1974 dollars
K.	Maintenance labor at 1.5% of total plant cost	Unknown labor cost	Maintenance at 3.0% of total plant cost
L.	Process operating labor at $5/hr.	Unknown labor cost	Process operating labor at $10/hr.

AGO 513454

The ORNL plant which was originally calculated[49] at 20,000 tons/day of methanol was scaled by investigators to a 12,500 tons/day methanol plant.[111]

In order to secure a more comprehensive comparison of costs for various plant capacities, the preceding data of various investigators is scaled below to a common 15 billion BTU/day energy input plant. This size plant is equivalent to a 1,500 tons/day municipal refuse plant using a feed stock of 5,000 BTU/lb. The plants are scaled using the typical 0.6 power investment cost change for changes in plant size. Thus,

SCALING FACTOR

AEC (Koppers-Totzek)	$(2.1 \times 10^{11}/15 \times 10^{9})^{0.6}$	= 4.86
ORNL	$(3.7 \times 10^{11}/15 \times 10^{9})^{0.6}$	= 6.82
AEC (Winkler)	$(2.37 \times 10^{11}/15 \times 10^{9})^{0.6}$	= 5.25
SEATTLE (Purox)		= 1.0

When these factors are applied to scale the capital investments (line 5.) of the earlier table on Methanol Production Costs, the following results are obtained:

TOTAL CAPITAL INVESTMENTS SCALED TO 15 BILLION BTU/DAY

($ Million)

A.E.C. Koppers-Totzek	ORNL	A.E.C. Winkler	SEATTLE Purox
$52	$41-53	$46	$56

AGO 513455

This is of course a major extrapolation in plant design size and must not be accepted as a rigorous calculation. Furthermore the design figures for 5000 tons/day methanol plants are in themselves only approximations since no plant of this capacity has been constructed to produce methanol either from natural gas or coal. However it is quite evident that the above scaled total capital investments are comparable to gasify coal or pyrolyze municipal refuse and then synthesize methanol from the gases. As was noted previously, the economics of scale are evident as the small capacity Seattle (Purox)[19] process for converting municipal solid waste to methanol cannot compete economically with a coal conversion plant an order of magnitude larger even at a zero cost for waste feed stock.

Since the above indicates that the capital investments are comparable to convert coal or cellulosic waste to methanol when the input energies are equal, the principal differences in cost of the methanol produced should lie with the operating costs and the costs of the input material. If this can be substantiated by a more detailed analysis, then it should be possible to rapidly evaluate the costs using any other feedstock containing carbon and hydrogen. This of course presumes that these processes for gasifying or pyrolyzing feedstock will in fact function with other materials to be considered. In general, using municipal solid waste as source material is probably the most unfavorable feedstock owing to the presence of non-cellulosic foreign materials. The use of wood, agricultural waste, peat, etc. appears to offer fewer difficulties.

FOREST PRODUCTS COSTS

The cost to source methanol from forest products is difficult to obtain at present. In general the Union Carbide Purox system for municipal waste is the preferred route although not necessarily the reactor one would design for wood and wood chips. The State of Maine Office of Energy[67] Resources has studied the conversion of wood and wood waste to methanol and finds that 40% yields of methanol can be achieved in the laboratory with a possible 30% yield in the field. The costs calculated for the production of synthetic fuels from wood appear to be approximately those estimated for producing methanol from coal. However at this stage it is unknown as to what capital cost savings are inherent in having a wood based plant.

Among the major unknowns in utilizing wood and wood waste as a source material is the cost of harvesting and transporting the material to a plant. Investigators in Maine[112] have studied this problem and have calculated that by selective cutting using manual harvesting methods and private roads a cord of softwood pulp can be delivered 50 miles for $39.75 per cord (1975 dollars). This is a cost of $18.50 per ton. (1 cord of softwood weighs 2.15 tons.)

The breakdown by item of this cost is as follows:

Cutting	$8.00
Skidder (incl. equipment & man)	4.00
Saw	1.00
Taxes, Workman's compensation	2.00
Trucking	8.00
Stumpage	8.00
Access	2.00
Road Maintenance	1.50
Overhead	2.50
Camps	.75
Profit	2.00
	$39.75 per cord ($18.50 per ton)

AGO 513457

If a machine harvester is used to bring out the same ton 50 miles the cost is calculated at $12.07 per ton. The breakdown of this cost is as follows:

Equipment	$1.38
Trucking	2.41
Stumpage	3.72
Labor	1.14
Fuel	.26
Access	.95
Road Maintenance	.70
Camps	.35
Overhead	1.16
	$12.07 per ton

These costs could vary by ±25% as regards both geography and time. It also should be noted that in Maine this equipment is being used only 9 months of the year. This type of mechanical system has a capacity of harvesting and chipping 250 tons per day.

If the Union Carbide Purox system is applicable to convert wood chips to methanol, the capital investment cost should be $56 million for a system capable of handling an input of 15 billion BTU per day (1000 tons of wood) as described above. If comparable operating costs of $6.1 million per year are assumed, then the difference in cost between the municipal waste and wood as feedstock is simply one of cost and process yield. The annual quantity of wood for this size system would be 365,000 tons which at a cost of $12.07 per ton is $4.4 million. The total annual cost for a 1000 tons per day wood fueled system producing 285 tons of methanol per day is

1000 TONS PER DAY WOOD INPUT

$8.4 million	15% of Tot. Capital Investment of $56 million
6.1 million	Annual Operating Cost
4.4 million	Annual Wood Cost
$18.9 million	TOTAL Annual Cost

This is a cost of $2.10 per million BTU of methanol. ($1.38 per gallon.)

If this wood-to-methanol system were scaled using the 0.6 power of capacity scaling convention for plant investment, the total annual cost for a plant comparable in size to each of the two AEC plants above producing 5000 tons of methanol per day would be:

$$\text{Scaling factor} = (2.37 \times 10^{11} / 15 \times 10^{9})^{0.6} = 5.25$$

15,700 TONS PER DAY WOOD INPUT

$44.0 million	Capital Investment
96.0 million	Annual Operating Cost
69.5 million	Annual Wood Cost
$209.5 million	TOTAL Annual Cost

This is a cost of $6.40 per million BTU of methanol. ($0.98 per gallon.)

It is difficult at this stage to assess the comparative costs between methanol systems using various source materials. However the above calculation is conservative in that a direct scale up of operating costs by a factor of 15.7 was used. This is clearly excessive since there would be economics of scale in operating costs as well as in investment costs. The wood fuel cost was scaled by 15.7 since the source material would vary directly with plant capacity.

AGO 513459

The annual requirements of 5,700,000 tons of wood and wood waste can be readily met in an area such as Maine. (See Table VI). The costs listed above for harvesting and transporting wood over 50 miles are applicable as an area surrounding a plant of this size with a 50 mile radius would contain 1.3 million acres. This area should be sufficient to supply the major part of the plant's requirements.

A more complex cost problem is that related to forecasting the price of energy materials such as coal, wood, agricultural waste, petroleum, etc. as demand increases in the forthcoming years. The major advantage enjoyed by wood is that it is a renewable resource whose growth can be improved by scientific management.

OFFSHORE FLARE GAS COSTS

The 4 trillion cubic feet of natural gas estimated as being vented and flared in the Middle East and North Africa offers great potential as a source material if it can be economically delivered into the U.S. The two major avenues of exploiting this resource are liquifying the gas (LNG) at the well and transporting it in refrigerated bulk carriers or converting it to methanol and bringing it in conventional tankers to U.S. ports. The cost advantage of LNG versus methanol rests heavily on the shipping distance. Studies which compare the two alternatives conclude that the longer the shipping distance and the cheaper the waste natural gas, the more favorable are the economics for methanol. Investigations have shown that for shipment from the Persian Gulf the two processes have comparable economics when natural gas is available at 50 cents per million BTU. For more expensive

gas the economics favor LNG and for less expensive gas methanol is the preferred alternative. Estimates of the gas price have generally been in the neighborhood of 10 cents per million BTU in the Persian Gulf. For methanol delivered to the U.S. Gulf Coast it has been estimated[1] that a price of $1.15 to $1.25 per million BTU could be expected. (7.5 to 8.0 cents per gallon.) Although the prospects for inexpensive methanol from abroad appear attractive, to date little beyond the planning stage has occurred.[104]

The potential use for methanol production of the natural gas being vented and flared offshore U.S. rests not only on the economics but also on present regulations requiring that flaring be terminated. Although technically feasible to construct an offshore methanol plant with mobility capability, the economics of this alternative compared to a pipeline network will depend greatly on the quantity of the gas available and its distance offshore. In view of the approaching offshore drilling programs, an early analysis of this option cannot be avoided. The annual value, for example, of all the gas being produced in the Gulf of Mexico is rapidly approaching $3 billion evaluated at $1 per 1000 cubic feet. The 2% being vented and flared is of the order of $57 million based on the same value per 1000 cubic feet. Since this $57 million per year is currently being lost to the atmosphere, the problem is one of deciding how much the country is willing to spend to recover a source of energy of this value presently being lost each year.

FEEDLOT COSTS

The economics of computing cattle manure conversion to methanol were dictated by the existing concentrations of cattle in feedlots. The upper limits as mentioned earlier were 750,000 head with as many as 600,000 head concentrated in a 15 mile radius. A more realistic figure representative of this industry is of the order of 200,000 which would provide approximately 1,200 tons per day to a processing plant on a 330 day per year basis. (90% plant service factor.)

Since investigators[48] have had difficulty in assigning a cost to this raw material, evaluations in general have assigned a zero value to the cost of manure at the feedlot and employ only the cost of transportation in the raw material cost. These costs of course depend upon both distance and volume of material. The available information indicated that a potential plant site should be at no greater radius than 50 miles from the sources of wastes.

Based on an assumption of truck transportation of $0.05 per ton mile and an average haul of 20 miles an average charge of $1.00 per ton is calculated. This rate is reasonable for a high volume short distance trucking. For a plant size of 1100 tons per day input which is capable of gasifying the manure to a synthesis gas to be used for producing methanol, it has been calculated[47,48] that a total capital investment of $2,686,000 including $1,593,000 direct plant cost would be required. The annual operating costs for the plant exclusive of raw material would be $852,000 and the raw material costs would be $360,000 delivered to the plant.

This gasifying process is estimated[46, 47] to yield 8 million SCF per day (166 tons/day) at a cost of approximately $0.46 per thousand cubic feet of gas. At this stage the cost to synthesize methanol from this gas awaits further detailed information on the process and yields.

ENVIRONMENTAL IMPACT

The utilization of methanol as an alternative fuel for gasoline will require a thorough analysis of the environmental implications of the products of combustion and emission gases as well as the ecological impact of the large scale mining operations required. To date, the in-situ coal gasification programs have yet to be demonstrated to be feasible, although the current work is encouraging. The fracturing of coal and the maintenance and control of the combustion still require additional development. Since both coal (and oil shale) use large mining operations that clearly affect the areas negatively, it is necessary to develop programs for restoring the areas environmentally. Such programs can take the form of using a percentage of the revenue derived from the resource to restore the area. For example, in the western states a 60 foot seam of coal will yield approximately 100,000 tons per acre. At one cent per ton assessment for reclamation there would be available $1,000 per acre to restore the terrain. Alternatives to such a system would, for example, be the development of surface mining systems that would simultaneously couple extraction and reclamation processes and the combustion of coal and oil shale in-situ. In order to achieve satisfactory alternative fuels from coal and/or shale it is estimated that the country's mining capacity will have to triple in the next 25 years.

Laboratory tests as well as limited field evaluations have revealed that an auto fueled with methanol has considerably lower emissions than

a similar car operated with gasoline. Based on analyses of HC, CO, and aldehyde emissions and on the rate of formation of NO_2 from NO, it appears that the reactivity of the exhaust from a methanol-fueled auto is, in fact, lower than for gasoline. However, until more extensive tests are conducted it is premature to describe quantitatively the extent to which improved exhaust emission may be possible. Some of the more obvious explanations for lower emissions are the lower combustion temperatures which reduces the rate of formation of NO and the higher flame speed of methanol which permits retarding the spark.

The various investigations that have recently been conducted do not permit a precise side-by-side comparison. However in the interest of identifying some of the reported results a partial compilation of some emission products measured has been made.

Tabulated below are the results of a number of tests that have been conducted in various universities and industries to measure NO_x in auto emissions. Although these results are not conclusive there does appear to be evidence of a build-up of NO_x when the operation is richer than stoichiometric and a decrease of NO_x when leaner. The results indicate the need for more comprehensive fuel and engine studies in this area as regards not only NO_x but also CO, HC, and aldehyde emissions. The latter may prove to be particularly significant in the combustion turbine engine.

NO_x EMISSIONS WITH METHANOL AND GASOLINE
(grams/mile)

EXXON	SANTA CLARA	ARB	CONOCO	VW	STANFORD
6.4 g/mi[a] (gasoline)	0.67 g/mi[d]	1.30 g/mi[f]	4.0 - 10.0 g/mi[g] (gasoline, max power)	2800 ppm[i] (gasoline)	1.07 g/mi[k]
8.1 g/mi[a] (blend)			2.2 - 1.8 g/mi[g] (methanol, max power)	2200 ppm[i] (methanol)	
2.6 g/mi[b] (gasoline)	0.282 g/mi[e]		.8 - 8.0 g/mi[h] (gasoline, road load)	4400 ppm[j] (gasoline)	
2.3 g/mi[b] (blend)			.2 - 1.8 g/mi[h] (methanol, road load)	2500 ppm[j] (methanol)	
2.6 g/mi[c] (gasoline)					
1.7 g.mi[c] (blend)					

VW values are in parts per million

ARB - Air Resources Board

CONOCO - Continental Oil Company

AGO 513466

a 1967 auto, blend is 15% methanol and 85% gasoline, air-fuel ratio is slightly rich

b 1973 auto, blend is 15% methanol and 85% gasoline, air-fuel ratio is approximately stoichiometric

c Advanced model auto, blend is 15% methanol and 85% gasoline, air-fuel ratio is approximately stoichiometric

d 1972 Plymouth Valiant tuned for best emission performance

e 1970 Gremlin in 1974 Reduced Emission Devices contest - Santa Clara University

f Air Resources Board test on Santa Clara University auto

g 1973 Ford, for a range of speeds 30 to 70 miles per hour

h 1973 Ford, for a range of speeds 30 to 70 miles per hour

i Single cylinder engine with compression ratio of 8.5, air-fuel is stoichiometric, Volkswagen tests

j 4-cylinder engine with compression ratio of 8.5 operating at 3000 rpm.

k 1970 Gremlin in 1972 Reduced Emission Devices contest - Stanford University

SOCIOLOGIC-ECONOMIC IMPACT

The current market at retail levels for the annual 100 billion gallons of gasoline fuel consumed in U. S. is in excess of $30 billion per year. Investment in the chemical process industry formerly required one dollar in investment for each dollar in sales. Consequently the U. S. gasoline business represents an investment of over $30 billion. The development of an alternative fuel economy that would dislocate this business to any extent would produce severe financial problems. Current production of methanol is one billion gallons per year valued at a current market price of $380 million. In order to add, for example, only 2% methanol to gasoline would require an investment in facilities approximately $560 million. Correspondingly gasoline production facilities of 1 billion gallon capacity would be utilized less. The economic and social impact of adding and changing the utilization of one of the nation's major industries would have to be thoroughly studied.

Since the location of methanol production facilities may be in the area of the source of coal, shale, or forest products, there will be major problems of shifting populations into regions which are not prepared for major increases in population. Concurrently sufficient people must be found with the skills, or, who can be trained to handle equipment of this type. Finally the production of mechanical mining and earthmoving equipment is limited by virtue of the few companies producing large scale off-highway trucks, grader, scrapers, and loaders. In recent years as many

as 40% of these vehicles have been for the export market. A particularly severe limitation in this regard is the production of draglines for excavating since the number of manufacturers are few and individually they are of relatively small size. As regards off-highway trucks, in 1972 for those of greater than 45 ton capacity such as are used to transport materials in mining, construction, petroleum developments, and similar projects approximately 40% ($31,000,000) were exported of a total of $83,000,000 produced that year.[40]

It is estimated that 50% of the U.S. coal reserves are located on public lands. These include lands under the supervision of the Bureau of Land Management, the Forest Service, or the Bureau of Indian Affairs. Since the siting of a plant and selecting a coal source are critical to the success of the total program it is necessary to resolve any inherent problems such as those associated with Indian populations that may at present inhabit the areas. These problems may not only consist of physically disrupting the land but may also involve the utilization of other resources such as water, or the diverting of water, which had already been scheduled for other uses such as farming. It will be necessary for all competitive sites in each coal producing region to be evaluated from a socio-political acceptability standpoint and potential for commercialization in order to select the optimum site.

TOXICITY AND FIRE HAZARDS

The hazards and toxic effects from concentrated hydrocarbons is well known. While these organic substances vary as to their effect, in the vapor state they are generally poisonous and as liquids are equally so if taken internally.

Methanol is a Class 1B flammable liquid as defined by the National Fire Protection Association (NFPA) and U.S. Occupations Safety and Health Standards and has been handled safely for many years.[16,17] As a fire hazard the limits of flammability of the vapor of methanol in air are broad compared to gasoline. Liquid methanol must be kept away from heat, sparks, and open flame and when stored or handled should be adequately ventilated. Chemicals in any form can be safely stored, handled or used if the physical, chemical and hazardous properties are fully understood and the necessary precautions, including the use of proper safeguards and personal protective equipment are observed.

The Manufacturing Chemists Association[36] have developed comprehensive procedures and instructions for the safe handling and use of methanol. This material delineates the hazards and the engineering control of such hazards; employee education and training policies and procedures together with personal protective equipment instructions; instructions for fire-fighting and equipment to be employed; the handling, storage, and unloading of methanol; the labeling of storage containers to conform with the Federal Hazardous Substances Labeling Act and similar state and

municipal regulations, statutes, and ordinances; the cleaning of equipment and waste disposal; and the toxic effects and preventive measures.

Serious poisoning will rarely be encountered with methanol in circumstances other than from oral ingestion. However in circumstances of heavy exposure by inhalation or skin contact medical attention should be sought at once. Inhalation exposure of one to two hours at concentrations in the order of 50,000 parts per million can be fatal. Precautionary measures should be taken to maintain concentrations at levels not exceeding 200 ppm although the American National Standards Institute[38] has established an acceptable ceiling concentration of 600 ppm with an acceptable peak for a 30 minute exposure of 1000 ppm.

INTERNATIONAL AND POLITICAL IMPACT

The United States has been a net exporter of methanol notwithstanding the approximately 5 to 10 million gallons frequently imported in a year.[11] Tariff restrictions in recent years have limited imports but more recently these have been lifted for specific applications.[95]

In view of the existing petroleum situation it would be expected that imports would decline rapidly as the producing countries utilize the production in their local markets. Furthermore since most heavily industrialized countries are large consumers of petroleum as well as methanol, such countries as Japan, Italy and Canada who formerly exported to the United States would now compete for methanol in the world market as importers. Japan's production of methanol in 1969 was estimated to be of the order of 274 million gallons which is close to 30% of the U.S. production. This would rank that country as the world's second largest[11] producer. Japan's consumption is forecast to exceed 500 million gallons in 1975.

A major difficulty in assessing the European supply and demand situation (and hence the price) is the existence in the Soviet Union of the capability to shift plant production from methanol to ammonia. In the past when these Soviet plants were scheduled to produce methanol there had been as much as 60 million gallons of methanol available for export. On the other hand when production was concentrated on ammonia for fertilizer, there was no methanol for export.

U.S. has for years exported methanol to all parts of the free world. In 1969 exports totaled over 100,000,000 lbs. (16,000,000 gallons). Among the major countries to which shipments were made in that year were, in order of size, Mexico, Brazil, Australia, Colombia, Philippines, Venezuela, Canada, Germany, and South Africa.[11] This export market is generally unstable and depends upon the amount of excess capacity over demand in this country and in other exporting countries, the number of new plants installed in less developed countries, and the policy of the Eastern European countries toward methanol. As mentioned earlier Japan and the Soviet Union are major contributors to this instability. In order for the U.S. to move in the direction of a methanol-fueled economy with consequent large increases in U.S. production, it may be necessary to make changes in the tariffs since an international methanol surplus could readily result. If any of the Middle East countries decide to construct production facilities, the problem of surplus would be compounded.

POLITICAL AND ECONOMIC IMPACT

At present tax rates, a 30% reduction in the consumption of automotive fuel for transportation will produce a $3 billion decrease in the Federal Highway Administration revenues. This is equal to 1% of the total annual U.S. budget. The political and financial impact of reducing the use of gasoline and associated tax revenues will have to be thoroughly considered in weighing the implications of introducing an alternative fuel. Furthermore, if the government makes a committment to financially assist in developing large methanol from coal facilities, it will be competing for money which in turn will force interest rates higher producing higher costs of construction.

INTRODUCTION OF METHANOL INTO THE MARKET

The introduction of methanol into the automotive market will require an approach considerably different from that for public utilities. The latter are relatively few in number and are technically proficient and equipped to evaluate alternative fuels and make the decision to utilize a specific fuel providing the operating performance is satisfactory, the economics are acceptable, and it can be supplied and stored in sufficient quantities on a timely basis.

On the other hand the automotive market is one in which customer acceptance must be gained through price, availability, and proven performance. There is not an overly developed feeling of brand loyalty among car owners and at times when gasoline is in short supply any such loyalty disappears. However, where a shift from gasoline to a completely "new" fuel such as methanol is being stressed, there must be some inducement for the consumer to use methanol if gasoline is simultaneously available. Since an incubation period is going to be necessary before acceptance is achieved in any degree, the early introduction of methanol or a gasoline-methanol blend at the service station pumps is desirable. In view of the quantities of methanol now being produced from natural gas, there should be made available some of this production in order to begin introducing methanol to the consumer. An alternative course of action opens if methanol imports were to increase by virtue of European capacity or Soviet Union capacity increases or the addition of new plant facilities in the Middle East oil fields. This additional

source could provide methanol for the transition period until methanol-from-coal was available.

To accelerate the introduction, state or federal government inducement and assistance would aid considerably. California is currently considering legislative action which would require the introduction of methanol-[113] gasoline blends by 1980 for vehicle use in the state. It may be necessary also to underwrite a part of the financial investment involved if the early methanol plants costs are too costly for private enterprise. Such assistance may take the form of reduced federal taxes on methanol used for transportaion purposes or for public utility fuel. In any case notwithstanding the introductory difficulties, government aid will be needed in order to provide price support for methanol in the event the price of foreign crude oil is reduced with a resulting drop in gasoline prices in the U.S. Industry is particularly reluctant to embark on a program involving major commitments of personnel and funds if there is an obvious risk such as that existing in international oil prices. Some studies have concluded that a substantial commitment is necessary by the federal government in order to assure success in this area. Such commitments should include: organizing allocation programs where needed for resources, manpower, and equipment; removing institutional roadblocks in the production and use of energy resources; devising policies for related action by all branches of the government; devising financial incentives where needed; and supporting research and development when risks are too great for private investors.

PUBLIC UTILITY COMBUSTION TURBINE DEMONSTRATION

The specific program that is needed first is to launch methanol as an alternative fuel to distillate for the combustion turbines in public utility electric generating plants. This will require a demonstration to the electric power industry of a combustion turbine operating under load for a time period sufficient to conclusively show the favorable performance and characteristics of methanol as well as to uncover any unforeseen problems not revealed in laboratory tests.

This field program should be a joint effort of a public utility, combustion turbine manufacturer, producer of methanol, a sponsor and ERDA. The machine will need to be converted for methanol combustion. This will involve some minor modifications in fuel pumps, fuel flow systems, combustion liners, manifolds, as well as some fuel additives to improve lubricity of the methanol and explosion proofing of the unit. This conversion should be performed by the turbine manufacturer. A demonstration is desirable with a relatively new machine sufficiently large to scale the test results to a much larger turbine. A 20 or 30 megawatt unit appears to be satisfactory for this purpose. It is expected that a dual fuel unit which can burn natural gas is needed for starting purposes. Emission products will need to be monitored and measured for various air-fuel ratios and consequently a simple cycle machine would permit this to be accomplished more readily. The validity and integrity of the measurements of the products of combustion are important and should if possible be performed by an independent laboratory.

A 20 megawatt machine burns 4,000 gallons/hour of methanol. For a 500 hour test approximately 2,000,000 gallons will be consumed. However, since this will be a test in which electricity is generated and sold, the net fuel cost of the demonstration is the differential cost between distillate and methanol at the time the test is conducted.

The total daily production of methanol in the U.S. is 3,000,000 gallons. With the current slump in methanol sales owing to reduced construction in the nation, there are chemical manufacturers holding inventories as high as 12,000,000 gallons. Consequently the current period is excellent for conducting the test. A planned schedule should be developed, as soon as a public utility has agreed to conduct the test on one of its combustion turbines, to secure and store the methanol needed for the test. The most likely source of large quantities of methanol is the Gulf Coast which means that movement of the methanol will probably be by tanker or barge to a tank farm in the general area of the utility. Concurrently a commitment should be secured from the gas turbine manufacturer, who agrees to participate, as to his planned schedule of modifications for the demonstration unit.

Widespread publicity of the demonstration should be made to the public utility industry as to the first large scale demonstration of a synthetic fuel on an operational basis.

AUTOMOTIVE DEMONSTRATION

There has to date been published in the literature considerable amounts of fragmentary data on using methanol and methanol blends as

fuel in autos. Much of this work although limited experimentally has been encouraging. A series of definitive tests should now be considered to verify the widespread applicability of this fuel by undertaking a large field program involving fleets of vehicles to supply statistically meaningful performance and operating data.[129]

This vehicle test program should involve the selection of vehicle fleets utilizing either local government, municipal, or agency vehicle pools who have controlled operation and maintenance of their vehicles as well as limited geographical areas in which they operate.

The development of programs to evaluate various blends as well as pure methanol is essential. This would include obtaining data on such factors as carburetor settings, moisture levels in fuel, driver reaction, leaks and spillage, carbon monoxide and oxides of nitrogen and hydrocarbon emissions.

The fleet testing should be conducted for at least 1 year in order to secure performance through various seasons as well as wet and dry weather. Concurrently a laboratory test program should be conducted to support the field program. The goal of this work would be to obtain engine performance and emission information under controlled conditions and with specific fuel blends for the purpose of eventually being able to optimize the engines for methanol. A part of this program will be fuel studies to further enlarge knowledge of phase stability, material compatibility, handling and storage and distribution practices, additives, and other physical and chemical characteristics.

The need for continuous publicity as regards this fleet testing is vital in order to keep methanol before the public. Publicity should be focused on the sourcing in the near future of this fuel not from petroleum sources but instead from coal, municipal waste and trash, and forest products in the U.S.

Vigorous stimulation of the federal government to embark on a number of methanol-from-coal, methanol-from-waste, and methanol-from-forest products programs should be undertaken. Early introduction of methanol-gasoline blends should be aggressively pushed within the framework of any constraints growing out of the laboratory and fleet test programs. The assistance of federal, state, and local authorities and legislative bodies should be enlisted to further this goal through proposed legislation and planned energy programs.

A most encouraging conclusion growing out of this analysis is the recognition that the U.S. forests offer an excellent solution to one of the country's energy problems. Logging and mill wastes alone if converted to methanol using a 30% efficient process are sufficient to produce annually 11.5 billion gallons of methanol. This is equal to 5.7% of the total annual consumption of gasoline in the nation. Further, the State of Maine, Office of Energy Resources, study on wood reveals that the principal thrust of U.S. energy development should be in the direction of scientific management and development of forest resources. Their field studies show that from Maine's 17.7 million acres of forests there is the potential to remove with the aid of good methods and practices waste and undesirable growth in sufficient quantities to also produce 11.5 billion gallons of methanol each year within the state.

A similar study conducted in California's north coastal region in a limited area found that 1 million tons of wood waste were being created annually and constituted an excellent and large source of raw material for converting to methanol as a fuel supplement.

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APPENDIX I

In making estimates of energy resources of petroleum, natural gas, natural gas liquids, coal and other U.S. minerals, it becomes necessary to differentiate between deposits that (a.) are known and have been carefully evaluated, (b.) those that are known to exist but have not been measured, and (c.) those believed to exist based on geologic information but the precise location of which is unknown. Further, in order for the resource to be usable the deposits must be accessible. Consequently estimates must be such that the resources can be categorized based on current technical and economic capability for extraction.

A classification[58] of resources which provides reasonably well-defined categories is as follows:

a. Known recoverable reserves are deposits whose size and location have been determined. Furthermore they can be extracted or recovered by means of current engineering technologies on an economically acceptable basis.

Such terms as proved and inferred of the American Petroleum Institute and measured economic resources of the Department of the Interior are essentially equivalent to this category.

b. Undiscovered recoverable deposits are those that can be extracted economically with the present technology; however their specific location is unknown but is indicated by geological information.

c. Known marginal and submarginal deposits are those

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whose size and location are known but cannot be extracted either until improvements in the extraction technology occur, or, until economic conditions change.

d. Undiscovered marginal and submarginal resources are those whose presence and size are indicated by geological information but neither the specific location is known nor can extraction take place until the technology advances or the economics become more favorable.

On April 15, 1974 the Department of the Interior issued a news release defining mineral resources terminology which differs from that generally used by American Petroleum Institute and the oil industry. It was planned that U.S. Bureau of Mines and the Geological Survey would henceforth adopt this terminology. Currently it is understood that members of the oil industry and the American Petroleum Institute have preferred to continue with API defined terms.

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10/28/75

A Brief Review of the Multistate Tax Compact

A) What The Compact Does (And Does Not Do)
B) The Economic And Financial Effects Of The Compact
C) The Allocation Formula
   1) The Property Factor
   2) The Payroll Factor
   3) The Sales Factor
   4) The Adjustment Provision
D) Preliminary Results from Compact Membership
E) Alternatives to the Compact
F) Conclusion

A) What the Compact Does

Basically, the Compact provides a means which has not been available in the past to enforce a state's corporate income tax laws. By providing for a general uniformity between the tax laws and regulations of the member states, corporations (and other multistate taxpayers) can be forced to provide the same income reports to all of the states. This makes it possible for states to pool their auditing resources and more carefully check the accuracy and consistency of multistate taxpayer reports. This basic uniformity also helps avoid disputes based on charges of double taxation, charges which could develope if every state's tax laws were significantly different. If disputes as to the proper allocation of incomes do arise, a method of arbitration is provided by the Compact. What the Compact does not do is depart any significant way from past policy in the treatment of multistate corporations. Thus the Compact is basically an agreement between states to ensure the effective and fair taxation of multistate businesses.

B) The Economic And Financial Effects Of The Compact

The Compact has two significant characteristics which a state by itself does not have. First, the enforcement capabilities of the Compact provide a tool by which states can approach a greater equity in the treatment of interstate and intrastate businesses. Without the Compact

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it is possible for some multistate corporations to shift their net incomes to non- or low-tax states, something that one-state businesses can not do. Second, the basically uniform allocation of a corporation's income between states combined with the arbitration mechanism reduces the possibility of significant double taxation to its practical minimum. This eliminates the claim that multistate taxpayers should have special (lower) tax treatment due to the double taxation possiblity, and allows the state to tax at whatever rate it deems reasonable.

C) The Allocation Formula

The advantages of enforceability and equity are bought at the price of basic uniformity in the allocation formulas and regulations of the member states. Although the details of the formula may be shaped by each state, the basic formula which all member states must use is given in Article IV, Sec. 9 of the Compact. The following is a discussion of the three factor formula of property, payroll, and sales, as it relates to Alaska.

1) The Property Factor: This factor, according to the Multistate Tax Compact, Article IV,10 includes, "... the average value of the taxpayer's real and tangible personal property owned or rented and used in this state during the tax period." The Alaska Administrative Code, 15AAC10.120(a) states that the property factor numerator "...shall include the average value of the taxpayer's real and tangible personal property in this state during the tax period used, is available for use, or is capable of being used for the production of business income." For most businesses the above definitions are adequate, however, they do not clearly include mineral reserves in the property factor of extractive industries. Although they imply that reserves may be included, it is suggested that

the phrasing adopted by the Multistate Tax Commission, Feb. 13, 1973, be included in the updated revenue code (to be proposed by the Dept of Revenue in the near future) as follows: "Property held as reserves or standby facilities or property held as a reserve source of material shall be included in the factor. For example, a plant temporarily idle or raw material reserves not currently being processed are includable in the factor" (Commission Reg. IV. 10.(b),).

This would remove any doubt concerning the inclusion of oil, gas, and mineral reserves in the property factor of extractive industries. With the clear inclusion of mineral reserves in the property factor of multi-state taxpayers, the property factor should fairly reflect the property interests of a business in this state. (Note: The Alaska Code might also specifically state by what method mineral reserves will be valued, e.g. the same method as for ad valorem tax purposes. This might help avoid debate as to what valuation of reserves should be used.)

2) The Payroll Factor: Fortunately for Alaska, this factor is based upon the "total compensation paid" to the taxpayer's employees rather than the number of employees paid by the taxpayer. Thus, the higher salaries paid in Alaska will be reflected in a high portion of the payroll factor being allocated to Alaska than if a simple head count were used. This is economically justified by the fact that government services are also made more expensive than in other states. No significant changes to the payroll factor appear to be needed.

3) The Sales Factor: According to the Multistate Compact, both sales which occur in the state and sales which are predominantly due to "income

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producing activity" in the state are allocated to the state (Article IV. 15 and IV.17.((a)(b).). The Administrative Code, 15AAC 10.280., defines an "income producing activity" as "the act or acts directly engaged in by the taxpayer for the ultimate purpose of obtaining gains or profit." The major exclusion from this allocation rule is "income producing activity" performed by an independent contractor. Such activity is not included in the sales factor because the contractor pays the income tax on that activity. For most business activities in the state this is a fair and reasonable method for the allocation of gross sales. The complex contractual arrangements between the several large pertroleum corporations active in the state (and their vertical integration) make the allocation of their sales and "income producing activities" more difficult to determine. It is clear that the Multistate Tax Compact is referring to just the type of activity which extractive industries are pursuing in Alaska when it refers to "income producing activities." It is suggested that the Alaska Administrative Code for Revenue contain specific reference to the extractive industries and examples of how sales from their "income producing activity" should be allocated to Alaska.

4) The Adjustment Provision. This provision allows for unique situations which may arise in relation to specific states or businesses. Article IV. 18. of the Compact states:

> If the allocation and apportionment provisions of this Article do not fairly represent the extent of the taxpayer's business activity in this state, the taxpayer may petition for or the tax administrator may require, in respect to all or any part of the taxpayer's business activity, if reasonable:
>
> (a) separate accounting:
> (b) the exclusion of any or more of the factors;
> (c) the inclusion of one or more additional factors which will fairly represent the taxpayer's business activity in this state; or

(d) the employment of any other method to effectuate an equitable allocation and apportionment of the taxpayer's income.

Thus, in special cases (e.g. the sales factor for a vertically integrated industry cannot be made to reflect the industry's actual activity in the state) the adjustments can be made without affecting the Compact or allocation formulas in general. Such adjustments must be made only with very good reason and with great care, because their "reasonableness" may be challenged in the courts or during arbitration. The general uniformity of the Compact, however, is not a straight jacket.

D) Preliminary Results From Compact Membership

Although the Multistate Tax Compact did not go into effect in Alaska until July 1, 1970, and the current Administrative Code relating to the Compact did not go into effect until July, 1972, some tentative obesrvations can be made. In 1970-71, the first year under the Compact, and in 1973-74, the first year in which extensive enforcement of the Compact allocation was implemented, corporate income tax revenues jumped 14.41 and 18.34 percent respectively over previous years. This compares with growth rates of 6.48 and 7.84 percent in fiscal years 1970 and 1971 respectively (Figures from "Revenue Projection Detail", 12/19/74). It is not clear just what portion of the greater increases in fiscal years 1971 and 1974 were merely due to surges in economic growth in Alaska, but it is possible that part of the extra growth in tax collections was due to the Compact and its enforcement. A more concrete example of the Compact's value is seen in the additional corporate income tax billings being sent to five or six major multistate (oil) corporations. These are based on Department of Revenue audits which the provisions of the Compact facilitate. Two of these billings are for well over one million dollars each, totalling approximately three million. The final amounts of the other billings

have not yet been determined. Note that this compares with the $134,860 originally paid by 3 of the 10 oil producers operating in the state in fiscal year 1973 (April 17, 1975 memo by Kathy Hollier, Research Analyst, Department of Revenue). In addition to these billings, the state has already received over $150,000 and has approximately $2.5 million in pending assessments due from other multistate taxpayers' operations in Alaska. Thus, preliminary evidence indicates that the Compact is assisting the Department of Revenue in obtaining significant increases in corporation net income tax revenues. As Alaska's Administrative Code for the Compact is fine tuned to Alaska's needs, it is probable that the Compact will be even more helpful in the future.

E) Alternatives To The Compact

It is possible that the State could choose to develop its own tax allocation formulas and regulations independent from other states. The object of such an independent approach would be to allocate a greater share of multistate taxpayers' incomes to the state than is possible under the Compact. There are three major problems with this approach. First, if Alaska's corporate income tax varies in major ways from other states, Alaska would have to enforce the tax without the close assistance of other states. If past experience is any guide, the state would likely loose money rather than gain it. Second, if the formula caused the tax burden of multistate tax-payers to be significantly higher that intrastate taxpayers, the long term economic effect would be to discourage new investment in the state. Such a possibility should be considered carefully in view of the state's current employement situation. Third, and perhaps most important, all of the legal battles concerning the legal standing and equity of the new tax approach would have to be fought. These

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battles have largely been fought and won for the basic formula and approach used in the Multistate Tax Compact. Thus, for enforcement, economic equity, and legal reasons, such an independent course would be difficult to pursue.

It might be suggested that the state withdraw from the Compact but maintain the basic tax approach of the Uniform Division of Income for Tax Purposes Act (UDITPA - the basis of the Compact). This would gain the state nothing in the way of really new tax options while weakening its enforcement ties with other states. Such an approach would seem to the worst of both worlds.

Finally, the state could remain within the Multistate Tax Compact, refine the state's implementing code, and make any further adjustments needed through the Compact's adjustment provisions. In those industries, specifically extractive industries, which may impose special burdens on the state and/or on future citizens of the state, severance taxes and/or ad valorem taxes could be used to supplement revenues from the net income tax.

F) Conclusion

The Multistate Tax Compact generally appears to be well suited for the needs of Alaska. Preliminary indications are that the Compact is assisting the Department of Revenue in the enforcement of the state's corporate net income tax. The allocation formula lends itself to a basically equitable treatment of both intrastate and interstate taxpayers while allowing for special or unusual cases. If such revenues are considered too low in certain industries, additional separate taxes should be used.

ALASKA STATE LEGISLATURE

MEMORANDUM

October 20, 1975

TO: Senator John Huber, Chairman

FROM: Terry Berman, Assistant

SUBJECT: October 6, 1975, meeting with Sterling Gallagher, Commissioner of Revenue

The staff met with the Commissioner of Revenue to discuss the multistate tax compact and the severance tax.

Commissioner Gallagher discussed the information collection and processing that was being done with respect to multistate corporations and the changes in administrative procedures regarding collection. He also expressed interest in increasing the severance tax.

This meeting enabled us to begin obtaining needed information from the Department of Revenue.

AGO 513499

TITLE: LEGAL ANALYSIS OF THE MULTISTATE TAX COMPACT file copy

REQUESTED BY: Senator John Huber, Chairman
Committee on Taxation and Revenue

DATE SUBMITTED: 10/16/75

STATEMENT OF FACTS

The Committee on Taxation and Revenue's staff in it initial review of corporate income taxation has put special emphasis on taxation of multistate corporations, under the present Alaska income tax statutes. Alaska is one of forty five (45) states and the District of Columbia which levies an income or franchise tax based on the net incomes of corporations and other similar organizations. Alaska's tax base is tied to the Federal income tax net income figure.

The State of Alaska is a member of the Multistate Tax Compact. The Compact was drafted in 1966 and became effective in 1967 after seven (7) states had adopted it. Alaska became a member on July 1, 1970. The purposes of the Compact are: 1) To facilitate proper determination of State and local tax liability of multistate taxpayers by equitable apportionment of tax bases and, 2) To avoid duplicative taxation.

On this, the initial review of the corporate income statutes, it has been tentatively decided that more revenue can be raised from the multistate corporations by use of the Compact. The method of accomplishing this would be through strict enforcement of the present allocation formula or through changes to the present allocation formula.

Questions Presented

1) Is Alaska's participation in the Compact legal under the United State Constitution?

2) Will the use of an allocation formula on income derived in Interstate commerce run afoul of the Commerce Clause and Fourteenth (14th) Amendment Due Process Clause of the Constitution?

3) Can the income from a subsidiary of a multistate corporation be unitized with the parent corporation for purposes of applying the allocation formula?

Brief Answer

Legality of the Compact

Under the correct interpretation of the U.S. Supreme Court, the Compact is legal. The Compact does not increase the political power of the states.

Use of Allocation Formula

The allocation formula set out in 15 AAC 10, Multistate Tax Compact, only levies taxes on that portion of the taxpayers net income arising from its activities within Alaska. The taxes imposed by the allocation formula are not a direct burden on interstate commerce and do not conflict with the Due Process Clause.

Unitizing Income of Subsidiaries and Parent Corporations

When the operation of business done within the state is dependent upon or contributes to the operation of the business without the state, the operations are unitary. The income from a subsidiary of a multistate corporation can be unitized with the parent corporation.

Applicable Statutes

Article I, Section 10, Clause 3 of U.S. Constitution

No state shall, without the consent of Congress ... enter into any agreement or compact with another state ...

Article I, Section 8, Clause 3 of U.S. Constitution

The Congress shall have power . . . to regulate commerce .. among the several states . . .

Fourteenth Amendment of U.S. Constitution - Due Process Clause

No state shall make or enforce any law . . . nor shall any state deprive any person of the life, liberty, or property,, without due process of law.

AS 43.19.010. Article IV

Article too long to reproduce

15 AAC 10 Multistate Tax Compact.

Compact too long to reproduce

Discussion

Legality of the Compact

Even though the words of the Constitution seem to prohibit all compacts entered into without the consent of Congress, current judicial interpretation limits the all or nothing aspect of the Article. The United States Supreme Court in 1893 laid down the rule in Virginia v. Tennessee, 148 US 503 (1893), 37 LE 537, which states: "...Looking at the clause in which the terms "compact" or "agreement" appear, it is evident that the prohibition is directed to the formation of any combination tending to the increase of political power in the states, which may encroach upon or interfere with the just supremacy of the United States..."

The several states have entered into the Compact as a means of insuring that the states power to tax multistate corporations will not be interfered with by Congressional action. Congress has set some restrictions in Pub Law 82-272 (15 USCS 381) and has made studies. Each session has seen the matter come up, but with the exception of Pub Law 86-272 , nothing has been done.

The Compact does not increase the political power of the states. The states have the power to tax. In entering into the Compact they are facing the economic reality that much of the business in the country is carried out by multistate corporations. In order to derive a fair amount of tax from those corporations, the states have entered into the

Compact to ensure equitable apportionment among themselves and avoidance of duplicative taxation.

Consent of Congress can also be implied. Virginia v. Tennessee supra. Since the Compact's inception in 1967, there has been continuing Congressional action on the matter. That action has not resulted in any legislation approving or disproving the Compact, of which Congress is well aware. "..It seems fair to say that Congress impliedly consents to the existence of any compact of which it has knowledge and has not been negated by legislators..." The Compact meets the test of Constitutionality.

Use of Allocation Formula

The use of the allocation formula has been attacked on the following grounds by the multistate corporations: 1) It is a tax on the privilege of engaging in interstate commerce, 2) It is inherently discriminatory and 3) It results in a multiple tax burden. The first raises an issue under the Commerce Clause and the second and third raises issues under the 14th Amendment Due Process Clause of the U.S. Constitution.

Both issues have been extensively litigated and most decisions have been returned in favor of the allocation formula. A tax that is a direct burden upon the operation or act of interstate commmerce is unconstitutional. The mere act of carrying on business in interstate commmerce does not except a corporation from state taxation.

The U.S. Supreme Court stated in the leading case of Northwest States Portland Cement Co. vs. State of Minnesota, 358 US 450, 3 Led 2d 421, 79 S.Ct. 357: "...We conclude that net income from the interstate operation of a foreign corporation may be subjected to state taxation provided the levy is not discriminatory and is properly apportioned to local activities within the taxing state forming sufficient nexus to support the same..." In the case of General Motors Corp. vs Washington, 377 US 436, 440-441 (1964), the U.S. Supreme Court following Northwest stated this controlling test:

> "...A careful analysis of the cases in this field teaches that the validity of the tax rests upon whether the state is exacting a constitutionally fair demand for that aspect of interstate commerce to which it bears a special relation. For our purposes the decisive issue turns on the operating incidence of the tax. In other words, the question is whether the state has executed its power in proper proportion to appellant's consequent enjoyment of the opportunities and protections which the state has afforded ... As was said in Wisconsin vs J.C.Penny, 311 US 435, 444 (1940), 'the simple but controlling question is whether the state has given anything for which it can ask return'...

The U.S. Supreme Court has sustained the above decisions in Colonial Pipeline Co. vs Treigle, -US-, 44 L Ed 2d 1, 95 S.Ct. -.

Since the taxes imposed are only levied on that portion of the taxpayers net income which arises from its activities within the taxing state, they do not conflict with the Due Process Clause. Northwest supra. The use of an allocation formula that is nondiscriminatory, properly apportioned,

and related to local state activity to tax multistate corporations will not run afoul of the Commerce and 14th Amendment Due Process Clauses of the U.S. Constitution.

Unitizing Income of Subsidiaries and Parent Corporations

One of the major problem areas in taxing multistate corporations is where the activities done in the taxing state are carried out by a subsidiary of the parent multistate corporation. This issue has been decided principally in state courts. As noted in the immediate prior discussion, the allocation formula has been upheld.

The general test was stated by the California Supreme Court in Edison California Stores vs McColyes, 30 Cal. 2d 472, 183 P2d 16 (1947). It states "...If the operation of the portion of the business done within the state is dependent upon or contributes to the operation of the business without the state, the operations are unitary ... A more particular statement of the test is that a business is unitary if these circumstances are present: 1) Unity of ownership, 2) Unity of operations as evidenced by central purchasing, advertising, accounting and management division, and 3) Unity of use of its centralized executive force and general system of operations..."

The test was followed in Chase Brass and Copper Co. vs Franchise Tax Board, App. 86 Cal Rptr 350 (1970), dismissed 400 US 961 (1970). Chase was a wholly owned subsidiary of Kennecott Copper Corp. Kennecott did

no business in California. Applying the above test, the California Supreme Court found the business between Kennecott and Chase Brass unitary. The same rationale was followed by the Oregon Supreme Court in Coca Cola Co. vs Dept of Revenue, 533 P2d 792 (1975).

Following the lead of the various state courts, the income from a subsidiary of a multistate corporation can be unitized with the parent corporation for purposed of applying the allocation formula. The power to impose the tax on a unitary business flows from the authorized method of determining income from the taxpayers activities within the state, and authority to pursue the method is present whenever activities are partially within and partially without state, whether or not integrel parts of the system are seperately incorporated, or the accounting system of the taxpayer does not clearly reflect the income. Edison California Stores, supra.

Conclusion

From a legal point of view the Multistate Tax Compact is valid under the United States Constitution. Use of an allocation formula that is not discriminatory will forestall any attack under the Commerce and Fourteenth Amendment Due Process Clauses. It is also possible to unitize the income from a subsidiary of the multistate corporation with the parent.

There is an area in which the Multistate Tax Compact is inadequate for the State of Alaska. That area is the taxation of oil and gas revenues.

Only a small amount of tax revenue would be generated if the Compact were used exclusively to get to the multistate oil companies' profits. For taxation of the multistate oil companies another type of tax is needed, ie severance, value added, ad valorem, in addition to the Compact.

Franklin D. Fleeks

Tax Counsel

ALASKA STATE LEGISLATURE

MEMORANDUM

October 16, 1975

TO: Senator John Huber, Chairman
Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Tax Counsel

SUBJECT: Value Added Tax

At each of the meeting held, whether formal or informal, the topic of a value-added tax has been discussed. Though all participants had heard of a value-added tax, its concept and operation was not clearly defined. The purpose of this memo is to try to bring clarity to the subject.

History

The value added tax (VAT) is an out growth of multistate turnover taxes used in Europe. The multistate turnover tax was first introduced in Germany during World War I.[1] France adopted the value added tax in 1954. With the formation of the European Common Market (EEC) and its emphasis on harmonizing the various nations taxes, the vehicle chosen was the value-added tax. At present, all of the member states of the EEC have enacted value-added taxes.[2] In the United States, only the state of Michigan had a modified VAT. The modified VAT was repealed when Michigan revamped its law in 1967.[3]

AGO 513509

Discussion

Just what is a value-added tax? The simple definitions is that it is a tax on 'value added' by the taxpayer. The most accurate definition found is that VAT is a net turnover tax with prior tax deduction.[4] What must be emphasized is that VAT is a sales tax collected in multistages. "...It is a method of collecting a sales tax that insures that the tax is shifted to the consumer..."[5] As another writer states "...The value-added tax is neutral as to businesses because it does not apply to businesses; rather it is a retail sales tax on the consumers of goods and services and not a tax on the producers or sellers of goods and services..."[6]

The way the tax works is as follows. A producer or seller of goods or services multiplies his total sales by the applicable rate. From this amount, by the tax credit system, the producer or seller subtracts the amount of tax he paid on his purchases and pays the net amount to the government.7

Application of the Tax to Alaska

The question to be asked is: Can a value-added tax increase significantly the revenues from multistate corporations and oil and gas?

Even though the tax has only been used in one state, Michigan, there is nothing in the Federal or State laws that would bar a VAT. Under Article IX, Section 1, of the Alaska Constitution, the State can enact a VAT law.

An Alaskan VAT tax would have one fatal flaw if applied to raise tax revenue from the multistate corporations and oil and gas. That fatal flaw is that the VAT is a sales tax. Under current Supreme Court decisions, Alaska cannot apply a sales tax on goods produced her and sold out of the state. The United States Supreme Court has stated:

> "...The vice of the statue as applied to receipts from interstate sales is that the tax includes in its measure, without apportionment, receipts derived from activities in interstate commerce; and that the exaction is of such a character that if lawful it may in substance be laid to the fullest extent by States in which the goods are sold as well as those in which they are manufactured. Interstate commerce would thus be subjected to the risk of a double tax burden to which intrastate commerce is not exposed, and which the commerce clause forbids..."[8]

In a 1972 New Mexico case where the state levied on proceeds from contracts entered into outside the state with out of state clients, the U.S. Supreme Court in a unanimous decision stated: "...But a tax levied on the gross receipts from sales of tangiable personal property in another state is an impermissible burden on commerce..."[9]

Conclusion

The purpose for which a value-added tax would be enacted is to raise significent tax revenues from multistate corporations and oil and gas.

Because the VAT is a sales tax and under current U.S. Supreme Court decisions the rate cannot be applied to total sales outside Alaska, the VAT would not generate significent additional tax revenues. It is my conclusion that enactment of a VAT tax would serve no useful purpose for the State of Alaska.

Sources

1. Norr and Hornhammer, The Value-Added Tax in Sweden, 70 Columbia Law Review 381 (1970)

2. Gordon T. Butler, The Value-Added Tax; A New $40 Billion Tax For the United States, 50 Texas Law Review 267 (1972)

3. Michigan Complied Laws Annotated, Chapter 206, Income Tax Act of 1967

4. Butler, supra

5. Butler, supra

6. Stanley Surrey, Value-added Tax: The Case Against, 48 Harvard Business Review 77-94, Nov.-Dec. 1970

7. Norr, supra; Butler, supra

8. J.D. Adams Mfg. Co. vs Storen, 304 US 307, 82 L.Ed 1365, 58 S.Ct 913.

9. Evco vs Franklin Jones, 459 US 91, 34 L.Ed 2d 325, 93 S.Ct 349 (1972).

ALASKA STATE LEGISLATURE

MEMORANDUM

10/9/75

TO: Senator John Huber, Chairman
Committee on Taxation and Revenue

FROM: Franklin Fleeks
Tax Counsel

SUBJECT: Notes on meeting with Michael Tanzer, Economist

Persons present:
Michael Tanzer, Consultant
Hugh Malone, Chairman of House Finance Committee
Steve Cowper, Member of Committee on Taxation and Revenue
and House Finance Committee
James Rhode, House staff
Norman Baily, House staff
Franklin Fleeks, Senate staff

The purpose in attending the meeting was twofold. The first was to hear what the consultant, Michael Tanzer, had to say. The second was to exchange ideas, cement relations and to determine that the course being set by the House and Senate was parallel.

The following items were discussed at the meeting.:

Discussion with House Representatives

In prior talks with the House staff, it was found that there was not much support for the Multistate Compact. Since this staff had heard only the Administration's side, which was favorable to the Compact, the House staff was asked to state their objections. Their main objection to the Compact is that it is not a good tool to tax the oil and gas revenues coming to the State. The allocation formula is not adequate to

return to the State its fair share of tax revenue. No objections were voiced to the Compact's validity in taxing other multistate business activity. The House staff as well as this staff believes that the Compact's procedures and enforcement can be strengthened. Both staffs have experienced difficulty in securing hard data on which to base their analysis. It was the consensus that the Agencies have the data but the data is not in an easily accessible form. It was agreed that any data received by the two staffs that might be useful to the other would be shared. This has already been implemented.

The political implications of the proposed tax was also discussed. From the House side it is believed that one large stumbling block will be the Native Regional Corporations. In order to persuade the Native Representatives to go along, it must be anticipated that some form of exemption must be written into the statute. (It must be stressed that this exemption is still very much in the discussion stage.) The type of exemption discussed can be constructed to exclude all Alaskan Corporations and include the multistate corporations.

It was the consensus of the staffs, after this discussion, that we are moving on parallel paths and there is no significant difference in our policies or aims.

Discussion with Michael Tanzer

The meeting with Tanzer was basically to orient him to the situation in Alaska, to let him see the developments himself, to see what additional

information he would need, and to set up a timetable for completion of his work. He stated that his basic approach would be the one set out in his August memo. All assumptions will be weighted to the conservative side to forestall any oil industry argument and, if possible, the data used would come from the oil industry. He will use as his period 20 years; from which he will make three computations.

He was asked to explain his idea of an "excess profits tax". He stated that this was just a label, not a concept. Members of the staffs had constitutional problems with the idea of a state "excess profits tax".

The remaining time was spent dealing with the technical details, i.e. how many computations, what type of format, who would provide what, etc. The timetable agreed on was a final report by December 15, 1975, with an interim report submitted for comment.

Conclusions and Recommendations

Dr. Tanzer is qualified to give an analysis of the oil industry. One of the plus factors is that this analysis will be from a point of view that the legislature has not seen. Even with Tanzer's report going to the House members, I would still recommend that our staff, Ed Sterner in particular, make an in-house analysis. The in-house analysis will provide a comparison to Tanzer's analysis and any other analysis that will be submitted.

Miscellaneous

After meeting with Tanzer, I spent the remainder of the time in Fairbanks looking for data from sources known to me personally. Vic Fischer of

ISGER and his editor Ron Crowe were especially helpful, allowing me full access to their files. Other data, consisting of books, prospectus, statistics, etc. were obtained from my personal sources.

October 6, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Counsel

SUBJECT: Alaska Mineral Severance Tax, SB 294.

This memo is a summary of what has happened up to this date on SB 294. It is submitted for your information.

Review of the letters submitted and testimony at the hearing held on May 9, 1975, reveals that mining industry representatives, municipal utility officials, ancillary industry representatives, and interested individuals were unanimously opposed to the tax. The only testimony in favor of the tax was from the Department of Revenue.

The Department of Revenue Position

The Department of Revenue representatives stated that there is a severance tax on all of the state's renewable and non-renewable resources, oil and gas, timber, fishing, etc., except the "hard" mineral industry. The industry, at present, is taxed through a mining license tax, which is a tax on net income. From Commissioner Gallagher's testimony, the hard mineral industry grossed $62,000,000 for the 1974 fiscal year. The sources were as follows:

Sand and Gravel	$42,000,000
Coal	14,000,000
Other	6,000,000
Total	$62,000,000

From the approximately 200 licenses issued only two paid tax. One from the coal industry and one from the platinum industry. The amount collected brought the state $30,000 in revenue. The mining license tax is considered ineffective.

The present law is an additional new income tax. The Department considers it a tax on efficient procedures. Their position is that if a graduated severance tax is imposed it will fall on all producers of hard minerals in the State except those who sever less that $100,000 worth of minerals in a year. SB 294 would serve to tax a non-renewable resource,

extract revenue from those producers who ship out-of-state or to foreign countries, provide easier administration, and would provide additional revenues from a source that other taxes may not be able to touch. Instead of $30,000 the anticipated revenue is $3,500,000.

SB 294 is considered prospective because of the low level of hard mineral activity in the State. Passage would allow the hard mineral industry to plan rationally its tax cost if further development takes place.

In answer to criticism that the bill was like the British Columbia Royalty tax, the Department of Revenue stated the following. The B.C. bill is a two step royalty linked to international price for the refined mineral and a Canadian wholesale price index. The royalty is in addition to Federal and provincial taxes and cannot be taken as a deduction in computing the taxes. The proposed mineral severance tax would be deductable on Federal and State Income Tax returns, the effect being that the tax would be paid half by the Federal and State governments and half by the taxpayer.

In talking to John Messenger, Assistant Attorney General, it was sensed that it is still the intent of the Department to go forward with the bill. Attempts will be made to make it more palatable.

Mining Industry Position

From testimony and the letters the industry's position is that passage of SB 294 will discourage current and future exploration for minerals. They consider the mineral severance tax a gross receipts tax and as such it is inherently unfair. They also stated that because the proposed tax would add another cost to the already heavy burden of exploring and developing minerals in Alaska, only those prospects having the greatest potential will be exploited. Marginal deposits would be left untouched.

Ancillary Industry Position

Testimony was given by Jim Dotson of the Alaska Air Carriers Association. He represented the view of the air taxi and air charter firms in the State. A large amount of the revenue of his members is derived from providing support to survey teams, geological teams, and others doing the summer exploration work. He had been informed that just because SB 294 had been proposed, two large summer contracts for 1975 had been cancelled. His position was that passage of SB 294 would seriously reduce the air carriers' revenue with a consequent reduction in air service in the State.

Utilities Position

Letters were received from Fairbanks Municipal Utilities System and Golden Valley Electric Corporation, since they are two of the largest consumers of coal for electric generating purposes. Their position is that the proposed tax would be passed on to them and increase their operating costs. This in turn would lead to a rate increase for their customers.

Native Corporations Position

In our Anchorage staff meeting on September 24, 1975, Representative Anderson gave the Native Corporations' position. He stated that SB 294 would make it more difficult to go to the capital market to obtain funds for exploration and development. He also stated that the proposed bill had caused delays in current negotiations with financial institutions.

It should be noted that the Adminstration, by Governor Hammond's letter of May 8, 1975, states that further hearings would be held " . . in order to jointly develop a rational tax . . "

Listed below are the names of the companies and persons who wrote to the Committee.

Mineral Severance Tax Project

Digest of Letters

Date	Correspondent
4/25/75	Dr. Johl Morris
4/17/75	Perry, Knox, Kaufman Inc. M.A. Kaufman
4/30/75	Cominco American J.C. MacLean
4/11/75	Rodney A. Blokestad
4/10/75	U.S. Borax J.E. Stephens
4/18/75	Heflinger Mining & Equipment Company Carl F. Heflinger
4/12/75	Eagle Creek Lodge Don Bennett
4/8/75	GVEA R.L. Hufman
4/4/75	Alaska Miners Association - Fairbanks Branch Mark Ringstad
4/11/75	MUS Robert Hanson
5/5/75	John E. Clark
5/6/75	Ketchkian Pulp Company Edward W. Borger, Sr.
5/6/75	Alaska Gold Company W.A. Glovinovich
5/19/75	C.C. Hawley & Association W.E. Shoemaker

ALASKA
STATE LEGISLATURE

MEMORANDUM

September 23, 1975

TO: Senator John Huber, Chairman
Committee on Taxation

FROM: Ed Sterner, Research E.S.
Committee on Taxation

SUBJECT: Multistate Tax Compact

The basic concern over the Multistate Tax Compact is that the allocation formula for corporate net income would result in little or no oil (and other multistate corporate) income being allocated to Alaska. It appears that this is not the case if the allocation regulations are properly implemented.

THE PROPERTY FACTOR: Both the Compact and the implementing regulations specify that oil reserves should be included in the property factor, not just capital improvements. This would ensure that Alaska's oil reserves are represented in the allocation of oil net income.

THE SALES FACTOR: The Compact is also clear that the sale of Alaska's oil, even if it actually occurs elsewhere, should be allocated to Alaska. The implementing regulations also strongly suggest this point. However, slight word changes or additions might help clear up any doubt. The allocation of Alaska oil sales to Alaska would also help ensure that Alaskan interests are properly represented in the allocation of oil corporation net income.

THE CORRECTION FACTOR: Finally, if the allocation formula still does not represent the role of Alaskan oil (or other resources) in the oil industry, then Article IV. 18. allows for either the exclusion of factors in the formula, or the inclusion of new factors, or an entirely different method of allocation if necessary.

At its peak, Alaska oil will very likely be supplying 10% of the nation's oil (1.8 - 2 M barrels per day out of 18 - 20 M barrels per day). It is possible that Alaska oil will represent more than 10% of tne owned or leased reserves of most oil corporations since oil outside North America

AGO 513521

and Western Europe is generally nationalized. Assuming the crude oil price is only half the price of refined oil, oil reserves are only half the capital worth of the oil industry (both are very conservative estimates), and the salary factor is basically zero, Alaska would still get a large part of oil corporation's net income.

0% = salary factor
5% = property factor
5% = sales factor

$$\frac{0 + .05 + .05}{3} = \frac{.10}{3} = 3\ 1/3\%$$

It should be remembered that this would be 3.3% of corporation net income after royalties, ad valorem, and severance taxes are paid.

In short, the Multistate Tax Compact, if used properly, should work to the advantage of Alaska. In 1973, only 3 of 10 oil producers in the state paid corporate net income taxes. I cannot envision this happening again if the Compact is properly implemented by Alaska. I would hope to determine in the next few weeks what effort the Department of Revenue is making to assure that the allocation formulas are being applied fairly to Alaska.

MEMORANDUM

September 23, 1975

TO: Senator John Huber, Chairman
Committee on Taxation

FROM: Terry Berman, Assistant
Committee on Taxation TB

SUBJECT: Scope of work

The staff met to discuss the scope of our work. It was agreed that we look at the areas suggested by the letter of Senator Croft to Governor Hammond, dated January 24, 1975.

These are:

1) The corporate tax structure.

2) The corporate tax structure of the oil industry with particular emphasis on such things as percentage depletion allowance and investment tax credit.

3) The advantages and disadvantages of taxation of oil in place by elimination of the present exemption.

4) Possible revision of the severance tax law in light of increasing oil prices.

5) The difference between rates of taxation of oil and of gas.

6) Such other matters relating to taxation of the oil and gas industry in particular, and taxation in general, as it deems advisable.

At present, we would like to concentrate on the more general areas of taxation, particularly the corporate tax structure, leaving the taxation problems of specific industries to a later time. In this way, we hope to form a base from which to attack the more complex areas such as oil and gas.

Specifically, the staff will be looking at fitting resources into the income tax structure. Ed Sterner is examining the Multistate Tax Compact. Frank Fleeks intends to review corporate income tax structure by researching the statutes of other states. He will also write a set of definitions of the various taxes so that we can have a standard guide.

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I will be assisting Frank with his research and Ed with data analysis, taking charge of any programming that may be necessary. When they have finished their tasks, I will edit the reports and submit them to you.

ALASKA STATE LEGISLATURE

MEMORANDUM

September 19, 1975

TO: Senator John Huber, Chairman
Subcommittee on Taxation and Revenue

FROM: Staff
Subcommittee on Taxation and Revenue

SUBJECT: Letter from Representative Nels Anderson, Jr., Chairman
House Resources Committee, dated August 1, 1975

In his letter, Representative Anderson requested the subcommittee to make three studies: 1) Study and evaluate the canned salmon industry to determine possible additional tax, 2) A study to determine what a fair and reasonable price per pound is for Alaska's salmon resource, and 3) A study to determine if the scales used for weighing salmon should be changed to another type.

It is the consensus of the staff that only the first requested study is within the mandate of the subcommitte. The second requested study can be better handled by the Department of Fish and Game, Commercial Fisheries Division. The third requested study should be referred to the Department of Commerce, Weights and Measures Section, as they have the primary responsibility for inspection and certification of scales used in commercial transactions, which includes the fishing industry.

Attached is a draft copy of a reply to Representative Anderson for your review.

AGO 513525

ALASKA
STATE LEGISLATURE

MEMORANDUM

September 18, 1975

TO: Senator John Huber, Chairman
Sub-committee on Taxation and Revenue

FROM: Frank Fleeks
Tax Counsel for Sub-committee

SUBJECT: Meeting with officials of the Department of Revenue

The committee staff met with Fred Boetch, Deputy Commissioner of Revenue, and Gary Jenkins, Director of Audit. The purpose of the meeting was to establish lines of communications with the Department of Revenue. The discussion was general in nature with the committee staff members and the Revenue representatives giving a generalized view of what problems lay ahead.

The Revenue representatives promised complete cooperation in the obtaining of staff reports and other necessary data which they might have in their files. It was a short but fruitful session.

AGO 513526

A Talk with Dick Krigore of Levy Associates in New York 7/29/75

Senator Huber, Senator Colletta, Judy Whitney-Assistant to Representative Bradner.

Levy Associates has said, for many years now, that you people in Alaska should be reviewing very carefully the corporate income tax because we can see, just off the top of our heads a number of problems with the way it is structured now. Whether that will get you an appropriate amount of income from Prudoe Bay we don't know but it should.

We have no lawyers on the staff here, so we can not address ourselves to the legal questions involved. We hope to make a real contribution through our knowledge of the oil industry and how various ways of apportioning, etc. may work for the oil and how much you may get out of it by taking various approaches to the Corporate Income Tax. Perhaps we can have some interchange with legal people who can answer some of the legal questions.

We have been following what is happening in Alaska and notice that the Department of Revenue has taken some steps to try to get more out of the Corporate Income Tax. They have noticed that a lot of corporations are accounting on a real line basis and showing losses on their operations in Alaska and therefore paying no Corporate Income Tax at the present time.

Formula Apportionment Basis. Really what you end up doing is that you get relatively little in the way of Corporate Income Taxes. Interstate Compact, COP ACT, Uniform Division Act, with its 3 formula thing takes

the percentage of sales, property and payroll in Alaska of the company's operation and then apportions the income to Alaska. Looking at the whole thing, it is unfortunate, but, that method turns out to be a very inappropriate kind of device for apportioning income to Alaska especially with Alaska having oil for leasing operations. Almost every factor really doesn't work.

I do not know how you people have looked at this or what knowledge you have of it, but... Looking at it briefly.

A lot of what I am going to give you is tenative but this is very clear to us, that there are so many problems in using such a formula in this case that it is not appropriate.

PROBLEMS AND THEN AVENUES FOR GETTING AROUND THIS. We have just gotten the materials on what other states are doing and are still thinking it through and seeing what other states are doing in this area and how they have come to grips with this thing. We are really just getting started in this area.

1) Sales factor. When looking at the oil producing operations, you find out that very little crude oil production is sold in Alaska. Most of it results in intregrated operations and therefore there is no sale in Alaska. It actually goes to an affileate refinery down in California or wherever it may be. So you end up with the sales part of this being zero. There are virtually no sales. (Noticed that your own Revenue people assume in their own projections of what you are going to get out the Corporate Income Tax that you are going to get 0% on sales from Prudhoe Bay, also. No sale just a transfer.)

Senator Huber and Mr. Killgore agreed that Alaska is unique in several ways and almost has to be looked at as a foreign country rather than just another state.

So sales is almost completely knocked out of the formula but you are still dividing by three. Utterly disasterous for Alaska. You need the sales factor.

2) Payroll factor. Almost as bad because what we are talking about is income from oil production and there are really very few people involved. Once we get through with Alyeska there ought to be none. When the real production starts it takes very few people to keep the whole production operation going. The big employment in the oil industry is in what? refinery ? Actually no, it is in marketing, home office, distribution, and this kind of thing. Employment in Alaska in all these areas as compared to elsewhere is going to be very small, meaning there will be a very very small percentage of the employment in Alaska. Yet, the profit in the future will be very big. So you have to have a formula that does not involve people or payroll or you will only get a very small portion of income allocated that way, but the income will really be generate from the oil production. The payroll factor is very very small. .

Department of Revenue says .08% on payrolls..

We have been trying to build up sort of a hypothetical oil company model that will be something on the scale of ARCO to show what they have outside Alaska and what they have inside and so forth.

Colletta would like to see this done with Sohio.

Huber: Have you looked to see how the particular relationships between the companies and the pipeline itself enhances or further degrades us under the Interstate Compact Act?

Killgore: No we have not because of the way they operate. They may not be direct employees but rather employees of contractors with the apparent companies. We haven't looked into it but have notes on it and it is a potential problem. They just use contractors and for the other people that are not on the payrolls that is a problem.. I still think that if you looked at all the employees that are not directly on the payrolls you would still come up with only a very small ratio so it really doesnt help very much.

3) Property factor.. Probably the best way of the three but it still is not the solution. If you look at the oil exploration producing operations what you find is a lot of losses all over the place. One drills dry holes endlessly so there are a lot of expenses that are completely unproductive and are not put into the property accounts of the oil companies; they are just written off as losses. So looking at what gets left in those successful producing adventures such as Prudhoe Bay, and even with the very high costs involved you just don't have that much money actually spent. You still get a relatively small fraction because they have tremendous amounts of money invested in mining all over the place. There is an incrediable amount of money spend in marketing. You wouldn't believe the amount of money spent on gasoline station sites alone, and so on.

What you get are three factors, none of which are really good factors for income to Alaska.

Sales are virtually zero, payrolls you can hardly see, and property which is somewhat better but still by our own figures nowhere near the percentage of income that you would really allocate to Alaska if you did it on oil in place.

Department of Revenue. 12% on the property tax, .08% on payrolls, 0% on sales. Two of which you can not see, dividing by 3 and you end up with 4%. That is 4% of the company's total taxable income allocated to Alaska.

Preliminary numbers. Direct allocation. 1/3 of their net income being on oil production. Looking at where they may be when Prudhoe Bay production comes in, looking at their other operations and then looking at Alaska. The apportionment formula your own people would say 4% but on a generous basis it might come out to be 10%. (33% against 10%).

It is very clear that because of the nature of oil producing operations in Alaska that this formula is really inappropriate. You will end up way below what really is the profitability of oil production.

Huber: Donaldson of Sohio said that they own 52% of the North Slope Reserves and as such are a larger sharer in the pipeline that most.

B.P. remains the prim lease holder. They just sold their production. Very complicated. B.P. gets a certain percentage of production after a certain point.

Huber: In some of the definitions we put out. Any portion of the ABC plan is taxable as an interest. Just wonder if that right to purchase the gas reserves is covered.

I would be inclin[redacted] to suspect that Sohio would n[redacted] fit under that.

Huber: The conclusion is that Alaska needs to find a way to tax oil producers in the State of Alaska based upon the profitability of their Alaska operations the same as though they were an Alaska corporation doing the producing, selling, or whatever it is.

What is a fair share? In effect it is around 9% of what really is producing profit in Alaska.

Most obvious and what we have always thought of is, would be some sort of direct allocation scheme. It would appear, if you look at the law, (I don't have the Alaska Statutes but I have asked for it) and I am sure that you have it also - Uniform Division. This would imply that you could ask the administrator to keep reasonable various kinds of things like separate accounting, and other factors that you would need.

Must get at what the producting revenues are. Without worrying about the legalities and whether this could be done. Look at Prudhoe Bay production and what the individual company's production is and price it out that way and call it the revenue being generated from production. The pipeline should be separate accounting and you should deal with that as another tax issue.

Real question of how to handle the allocation of profit. May be a problem for the state. A lot of pretty serious questions on cost allocation.

Losses that companies have sustained in prior periods. How do you handle that? They have been making investments, drilling dry holes,

have intangeble costs on drilling development at least for Federal Income tax purposes. They have been running losses and the question is how do you handle the carriage forward of this things.

Overhead. Things done for production in Alaska are done in Huston, Texas which adds another serious problem of how do you directly allocate those things. The more we think of these things the more we see potential problems.

In other states (and a reason why we try to look at what other states are doing) there seem to be provisions where one allocates costs on bases of revenue or something of that sort. Perhaps you can get around this by some simple formulas which would be reasonably acceptable and would give you a half way decent allocation of costs associated with the Alaska operation which really take place somewhere else and are really appropriate to charge against the Alaska cost.

Huber: Are you familiar with an income type taxation by any other producting countries?

Vertually every country has an income tax but in many countries the income tax and royality tax distiction has a blur. Back in the old days where there was a 50%/50% royality and income tax they were in a position to be rather arbitray about it. They said that the revenue was the posted price. That has changed but that is not our situation as we have the Constitution, Interstate Compact, etc.

Huber: Is there a way that we can get out of the Interstate Compact?

Yes, it is my undertand that you can get out of it. This is the kind of question that legal people in Alaska should be looking at. Dont rely on us for this kind of thing. Milton asked the Department of Revenue people when he was in Alaska and they said that yes you could get out.

Direct allocation. There are very clearly serious administrative problems. These can not be minimized, but perhaps it can still be done.

On the revenue side it would appear straight forward. One could just say that production times whatever the posted price is in Prudhoe Bay but the legal question you have to ask is, "Does that cause any future problem with any other state?" The companies <u>are</u> going to feel that they are being double taxed on sales. Here and in California there is a potential legal problem.

If you go "value added" and another state does apportionment based on total revenue which does not exclude the cost of coming in there is a potential problem. Maybe not.

The payroll factor would really be appropriate to the state of Texas because the oil companies have substantial payrolls is Huston and Dallas. The apportionment method would be good for them but Texas does not have a corporate income tax.

Cost allocation is not just a simple thing. Many different things have to be considered; however in concept it is the way to go.

Huber said that he will be sure that Levy Associates gets all the material that his committee works up that would relate to what they are doing.

Colletta: Asked some questions but he was too far from the micophone to pick up the questions, but basically he was concerned that Alaska be able to run Prudhoe gas off the big pipeline that goes to the Cordova area. There will be no way that we will be able to take any of the gas unless the company wants us to. There is a direct distiction. You can enter into any kind of contact that you want to with one exception that there will be no break in the area of regulation by Federal power. Louisana had to run a small line along side the large line to get by those regulations.

Huber: New pipeline committee with W. Bowman, chairman, is to find out all that is effected by the pipeline and that gas must be available to Alaska. There was discussion on how to protect gas for Alaskans and it was decided that this area will not be over looked, by the above mentioned committee nor any other group.

Colletta: If there are too many complications we could in the lease ask them to lay a small line along side the large one (pipe at our expense)

Kilgore agreed to furnish the committee with material on CH_4 and CH_3OH which he has. (Methol alcohol and methol burned instead of gasoline).

We will be looking at what other countries (non-Arab) are doing along with what other states are doing.

Discussed Witherspoons study.

Direct allocation [redacted] a fair way of doing it as lon[redacted]s the practical and legal problems are not so overwhelming. Other alternatives would have to be taken if there are legal problems, so we should not be concentrating all of our efforts in this one area.

If Alaska's law is like these others, I don't know why the Dept of Revenue went along with Sales, payroll and property as the three factors. One or two of them could be substituted for other factors that do relate, fairly. We are trying to think of other factors to modify the plan. Maybe "crude production" should be one of the factors..

Huber: Did you receive any of the materials that Bill Macguire had gotten on the taxes in the Cook Inlet? Do write to him for them.

We are looking at other states and so far it does not look like any other state has gone this direct route but then none of them have the problem at the scale that you do.

Huber: Milton informed me that you were working on a formula to be sure that Alaska received her full share in the Corp Income Tax.

Failing all else Alaska could go the Severance Tax route, but that would only be if other formulas can not be worked out.

Huber: The income tax should be our largest source of income so we will have to find a way to change the law so that it can be beefed up.

I agree that we must find a way of using the Corp Income Tax.

SCOMM

#11:3

TO: Senate President Chancey Croft

FROM: John Huber, Chairman
Senate Special Committee on Taxation and Revenue

DATE: February 21, 1975

SUBJECT: Report on First Meeting with Milton Lipton on February 12, 1975

I am enclosing a copy of the transcript of the Senate Special Committee on Taxation and Revenue's first meeting with Milton Lipton on February 12, 1975. We feel that the contents should be of interest to all members of the Legislature and suggest that it be printed in the Journal as a means of making it available to all legislators as well as those people who have requested transcripts.

A transcript of our second meeting is in progress and will be available as soon as it is finished.

Sincerely yours,

John Huber, Chairman
Senate Special Committee on
Taxation and Revenue

JH:kb
Enclosure

May 31, 1975

Senator Chancy Croft
President of the Senate
Capitol Building
Juneau, Alaska 99811

Dear Chancy:

Attached is a letter from Bruce Kendall, Speaker of the Alaska State House of Representatives in 1963 and 1964, prepared in Journal form.

Due to the universal interest in the subject of oil and gas ad valorem taxation, I respectfully request that it be printed in the Senate Journal Supplement.

Sincerely yours,

John Huber

JH:kb
Attachment

May 19, 1975

Senator Chancy Croft
President of the Senate
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Chancy:

Enclosed is a letter from Robert Paschall, Consulting Valuation Geologist & Engineer, concerning HB 297.

Due to the universal interest of the subject matter, I request that it be printed in the Journal Supplement.

Sincerely yours,

John Huber

JH:kb
Enclosure

May 18, 1975

Senator Chancy Croft
President of the Senate
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Chancy:

Enclosed is a memorandum from Joseph P. Witherspoon, Professor of Law at the University of Texas School of Law in Austin, Texas, concerning the problems with the "SOHIO" Amendment to HB 297.

Due to its pressing importance to the pending legislation, I request that it be printed in the Journal Supplement.

Sincerely yours,

John Huber

JH:kb
Enclosure

AGO 513540

May 8, 1975

Senator Chancy Croft
President of the Senate
State Capitol Building
Juneau, Alaska 99811

Dear Chancy:

Attached is a letter from Robert Paschall regarding the viability of reserves estimation and property valuation for a non-producing field.

I request that it be printed in the Journal Supplement for the information of all interested parties.

Sincerely yours,

John Huber

JH:kb
Enclosure

May 7, 1975

Senator Chancy Croft
President of the Senate
State Capitol Building
Pouch V
Juneau, Alaska 99811

Dear Chancy:

Enclosed is a transcript of the testimony presented by Walter J. Mead before the Senate Resources Committee in conjunction with the Special Committee on Taxation & Revenue on April 16, 1975 at 1:30 p.m.

Due to the universal interest of the subject matter, I hereby request that it be printed in the Senate Journal Supplement.

Sincerely yours,

John Huber

JH:kb
Enclosure

April 30, 1975

Senator Chancy Croft
President of the Senate
State Capitol
Juneau, Alaska 99811

Dear Chancy:

I am enclosing the verbatim transcript of the April 7 testimony of Robert Paschall before the joint session of the Senate Special Committee on Taxation and Revenue, Senate Resources Committee and the House Sub-Committee on Revenue Sources.

As Mr. Paschall's testimony on ad valorem taxation of oil and gas reserves is of universal interest, I request that it be printed in the Senate Journal Supplement. The text is prepared in that manner.

Sincerely yours,

John Huber

JH:kb
Enclosure

April 30, 1975

Senator Chancy Croft
President of the Senate
State Capitol
Juneau, Alaska 99811

Dear Chancy:

I am supplying a copy of Walter J. Mead's April 22 and April 26 letters in which he analyzes SB 374 and HB 297.

This analysis has never been presented to either body of the Legislature before and does bear directly upon the oil and gas according to value taxation proposals which we have before us. I request that it be printed in the Senate Journal Supplement for the use of all concerned parties.

Sincerely yours,

John Huber

JH:kb
Enclosures

April 28, 1975

Senator Chancy Croft
President of the Senate
State Capitol
Juneau, Alaska 99811

Dear Chancy:

I am supplying a copy of the April 23, 1975 analysis of the ABC Plan as it fits Alaska, supplied to this Committee by Professor J. Henry Wilkinson, who testified recently before both the Senate and House Resources Committees, considering the ABC Plan as well as other aspects of oil and gas legislation pending before the Legislature.

I ask that this analysis be printed in the Senate Journal Supplement for the information of all legislators.

I believe you will agree that this method of raising the needed revenues presents one of the least desirable avenues we have before us, not the worst of all possible ways.

Sincerely yours,

John Huber

JH:kb
Attachment

April 14, 1975

Senator Chancy Croft
President of the Senate
Capitol Building
Juneau, Alaska 99811

Dear Mr. President:

Enclosed is a transcript of the testimony presented by Mr. Griswold before the Senate Resources Committee on April 10, 1975 at 1:30 p.m.

Due to the universal interest of the subject matter, I hereby request that it be printed in the Senate Journal Supplement.

Sincerely yours,

John Huber

JH:kb
Enclosure

March 28, 1975

Senator Chancy Croft
President of the Senate
Capitol Building
Juneau, Alaska 99811

Dear Mr. President:

I am enclosing the original transcript of the second Milton Lipton testimony with our Special Committee on Taxation and Revenue. It is prepared for printing in the Senate Journal Supplement.

Due to the universal interest of the subject matter, it is requested that it be printed in the Journal Supplement.

Sincerely yours,

John Huber

JH:kb
Enclosure

AGO 513547

March 24, 1975

Senator Chancy Croft
President of the Senate
Capitol Building
Juneau, AK 99811

Dear Senator Croft:

These are the four names received by telephone yesterday that are constitutional or tax lawyers who may be helpful in our present research in order of their desirability for our particular problem:

Paul Oberst
University of Kentucky
School of Law
(606) 257-1678

J. Nelson Young
University of Illinois
College of Law
(217) 333-0931

Paul V. Hartman
Vanderbuilt University
School of Law
(615) 322-2615

Jerome R. Hellerstein
New York University
School of Law
(212) 593-2526

AGO 513548

The following are other persons who have been referred to us or whom we have contacted in our search for problem solvers. These are listed in no particular order.

Professor Charles E. Rice
University of California at Berkeley

Professor William W. Van Alstyne
Duke University
School of Law
Durham, North Carolina

Henry J. Wilkinson, Jr.
Austin, Texas

One person we have contacted and who is available is Mr. Robert Welch, whose resume is attached. Also attached is the professional resume of Robert H. Paschall of Sacramento, California.

Sincerely yours,

John Huber

JH:kb
Attachments

March 24, 1975

Senator Chancy Croft
President of the Senate
Capitol Building
Juneau, Alaska 99811

Dear Senator Croft:

I am submitting herewith a copy of a letter from the Department of Law and from the Administrator of the Violent Crimes Compensation Board containing a breakdown of Committee Substitute for Senate Bill 23. I request that it be printed in the Supplemental Journal as back-up data for Committee Substitute for Senate Bill 23.

Sincerely yours,

JOHN HUBER

Enclosures
JH/mlm

AGO 513550

TO: Senate President Chancey Croft

FROM: John Huber, Chairman, Special Taxation and Revenue Committee

DATE: January 28, 1975

SUBJECT: First Report

The Senate Special Committee on Taxation and Revenue is pleased to inform you that we are organized and have started our work. Committee Secretary is Peggy Gray. Staff Assistant is Kathie Bybee. Committee Room is #108 in the Assembly and the telephone number is 465-3773. This office will be manned Monday through Friday from 8:00 a.m. to 6:00 p.m. and as required on weekends to meet our workload.

Committee members attended Finance Committee revenue briefings yesterday afternoon in the Governor's Conference Room, and I hasten to assure you that the Committee will follow your admonition covering topics 2, 3, 4, 5 and 6 of your letter of Committee formation and have reports to you which will at least have considered sufficient new revenues to provide the level of funding contemplated in the Projected Planning Model Computer Run 75-8, dated January 24, 1975, which assumes a $575 million budget oil flows in FY78 and $200 million additional required for 1976-77. It is noted that this assumption would miss a negative balance in the treasury any year without borrowing for operating or for regular budget needs. A copy of the computer runs mentioned, as presented to the Finance Committee yesterday, is enclosed for your information.

Subject No. 1, The Corporate Tax Structure, will be worked on during the session and will probably have some of its work extended into 1976. Serious work in this

area will require the cooperation of the Legislative Council in funding the necessary expert consulting staff needed for such a task. Hopefully we will make enough progress in this session to present some meaningful legislation to plug up the most flagrant loopholes in the corporate tax structure.

Sincerely yours,

John Huber, Chairman
Senate Special Committee on
Taxation and Revenue

JH:kb
Enclosure

AGO 513552

MEMORANDUM

LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA

POUCH Y — STATE CAPITOL
JUNEAU, ALASKA 99811

TO: Sen. John Huber

DATE: 25 February 1975

FROM: Stuart C. Hall, Legislative Counsel

SUBJECT: Professional Consulting Staff for Rev & Tax Committee

Yesterday morning I spoke by telephone with Mr. David Doerr, Senior Consultant to the Assembly Revenue & Taxation Committee of the California Legislature relative to his judgment as to individuals who might be of help to your committee. (Mr. Doerr, like the undersigned, is a former Ford Foundation Legislative Intern with the California Legislature and has been with the above committee as its principal staff member for about 15 years.)

Mr. Doerr recommends Mr. Ron Welch of Sacramento, retired from the State Board of Equalization, who is now doing private consulting particularly in the area of property taxation. He is nationally known and recognized in this area. His address is 3420 Potter Lane, Sacramento, CA 95821 Phone: 916 - 489-3432.

Also, Mr. Doerr recommends Professor George Break, Chairman of the Department of Economics at the University of California, Berkeley (Berkeley, CA 94720). Mr. Doerr says he is particularly good on general tax policy, is sold and "not far out".

He knows Mr. Bob Paschal, who you recall acted in an advisory capacity to the North Slope Borough during the 1973 Special Session; he, too, is with the State Board of Equalization in California (phone: 916 - 445-6464), and Mr. Doerr seems to think highly of him in the area of oil and gas propert taxation.

CALIF STATE BOARD OF EQUALIZATION
ASSMNT STANDARDS DIVISION
1020 N STREET PO BOX 1799
SACRAMENTO CALIF 95808

460 LOVELLA WAY
SACRAMENTO, CALIF 95819

3 LEVEL SCHEDULE
TRIPS TO ALASKA

25.00 HR FOR WORK AT HOME
250 PER DAY PLUS EXPENSES
300 " " " " AT OTHER CONVENIENCE

549-82

176 TO 232

AGO 513553

scomm

#11:4

February 27, 1976

Mr. Michael Tanzer
Tanzer Economic Associates
202 West 86th Street
New York, New York 10024

Dear Mike:

Enclosed, for your information, is the most recent bill filed in the Legislature concerning oil taxation. It is known as the Cowper bill.

Sincerely,

John Huber

Enclosure

ALASKA HOUSE OF REPRESENTATIVES

REPRESENTATIVE
STEVE COWPER
CHAIRMAN

POUCH V
JUNEAU, ALASKA
99811
PHONE
(907) 465-3795

SUBCOMMITTEE ON REVENUE SOURCES

20 February 1976

Senator John Huber, Chairman
Subcommittee on Taxation and Revenue
Legislative Council
Alaska State Legislature

Dear Senator Huber:

We received the final report of Tanzer Economic Associates, New York, on 26 January 1976 and the $5,000 balance under the original contract is due and payable.

The contractor will submit a billing for out-of-pocket expenses not yet reimbursed.

Sincerely,

Steve Cowper

jb

OK TO PAY

John Huber

AGO 513555

ALASKA STATE LEGISLATURE

MEMORANDUM

TO: Senator John Huber, Chairman
Subcommittee on Taxation and Revenue

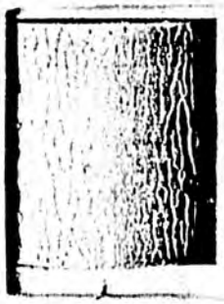
FROM: Joan Bailey
House Finance Committee DATE: 2/17/76

Mr. Tanzer enclosed this receipt for $21.30 from his previous trip to Alaska which, through an oversight, he did not enclose on that billing. I checked with Pat Costello in Administrative Services, and it definitely has not been paid. If you would approve it, I could forward it to Legislative Affairs for payment.

Thank you.

OK to PAY/APPROVED: John Huber
Senator John Huber





AGO 513556

C O N T R A C T

The Legislative Council, Alaska State Legislature, on behalf of Representative Steve Cowper, Chairman of the Oil and Gas Subcommittee of the Interim Subcommittee on Taxation, contracts with MR. MICHAEL TANZER of Tanzer Economic Associates, Inc., 302 West 86th Street, New York City, New York 10024, for professional consulting services in accord with the proposal of Tanzer Associates dated 13 May 1975.

Period of performance shall commence on the date that both parties have signed this contract and expire on 15 November 1975.

In consideration of services to be rendered, the Legislative Council shall pay the contractor the sum of Ten Thousand Dollars ($10,000), one-half to be paid no later than ten days after both parties have signed this contract and the balance to be paid upon delivery of the completed study on 15 November 1975. Out of pocket expenses for this study, such as for air fare, subsistence, and communications shall be charged as separate items and billed.

This contract shall be governed by the applicable laws of the State of Alaska.

Genie Chance

Senator Genie Chance
Chairperson
Legislative Council
310 K St., Suite 701
Anchorage, Alaska 99501

Date: 7-14-75

N. Spencer Hammond

N. Spencer Hammond
Administrator
Legislative Affairs Agency
Certifying Officer

Date: 7-14-75

Michael Tanzer

Michael Tanzer
Tanzer Economic Associates, Inc.
302 West 86th Street
New York City, New York 10024

Date: 7/14/75

cc: Representative Steve Cowper
Mr. Michael Tanzer
File

AGO 513557

LA11 0011 16.44 LA11 0020 16.44 07/28/75

SHARON MITCHELL: BUDGET, OIL & GAS SUBCOMMITTEE
INTERIM TAXATION SUBCOMMITTEE

TANZER CONTRACT		$10,000
"ACTUAL EXPENSES"		
AIR FARES (N.Y.-ANCH-DILLINGHAM-JUNEAU-SEATTLE-N.Y. AND N.Y.-ANCH-FBKS-PRUDHOE-BARROW-ANCH-SEATTLE-N.Y.)		1,352
SUBSISTENCE (350, 410)		760
COMMUNICATIONS (8 CALLS @ $46)		368
		2,480
REP. COWPER		
AIR FARE (FBKS-ANCH-FBKS AND FBKS-PRUDHOE-BARROW-FBKS)		341
PER DIEM		144
SEN. HUBER		
AIR FARE (FBKS-PRUDHOE-BARROW-FBKS)		183
PER DIEM		48
REP. ANDERSON		
AIR FARE (DILLINGHAM-ANCH-DILL-ANCH-DILL)		234
PER DIEM		96
		1,046
CONTINGENCY (10%)		353
TOTAL		/3,879
	R.	/3,900

LA11 0012 16.48 LA11 0021 16.48 07/28/75

OIL & GAS SUBCOMMITTEE BUDGET TOTAL SHOULD READ 13,900.
J. RHODE

AGO 513558

TANZER ECONOMIC ASSOCIATES, INC.
ECONOMIC CONSULTANTS
302 WEST 86TH STREET
NEW YORK, N.Y. 10024
(212) 421-1950
CABLE "TANZECON" NEW YORK

February 13, 1976

Senator John Huber
Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

Thank you for sending me a copy of the Rush Moody report on "Legal Analysis of Issues Relating to Natural Gas Transportation." I did indeed find it quite interesting and informative. While I am not competent to comment on the legal issues analyzed, I am happy to respond to your request for comments or recommendations on the report, as it may touch on economic questions. This letter represents my initial reaction to some of these matters:

1. As I understand the Moody report, a key legal conclusion is that the State should take royalty gas in kind rather than in value; otherwise, it may lose control in the future of this royalty gas because it will come under FPC regulation, and thus it would be possible that none of Alaska's natural gas would be available for consumption within the State.

2. From an economic point of view, I think the State would also be wise to take royalty gas (and maybe royalty oil also) in kind, so as not to lose the future option on having the royalty gas. This is particularly true because the real value of the royalty gas to the State may be much higher than its market value, for the following reasons.

3. First, at present the price of FPC regulated natural gas moving in interstate commerce is about one-fourth its real market value, as measured by prices on intra-state sales (50¢ versus $2.00 per MCF). While natural gas prices may be deregulated in a few years, there is no present certainty on this.

4. More important, in the long run I think it is generally agreed that the use of natural gas for its heat content as a fuel is a waste of a valuable resource, since its greatest value would be as a petrochemical feedstock. This suggests among other

things that over the long run natural gas prices will rise as it increasingly is reserved for its more valuable use.

5. But, because of the high profit rates the oil companies use in their DCF calculations (as discussed at length in my report), their decisions will tend to be made on short run profit considerations, which may not be best for the State. By way of hypothetical illustration, I constructed a case to show where it might be better for the State to have the gas stay in the ground until it became more valuable, while for the companies it would be more profitable to produce quickly. The hypothetical assumptions were that natural gas would sell at $2 per MCF in the 1980s, $6 per MCF in the 1990s, and $18 per MCF thereafter. Assuming a time value of money, or discount rate, for the companies of 20% per year and for the State of 10% per year, it turns out that if a gas field has a 20 year life, the companies would be best off producing all the gas in the 1981-2000 period, while the State would be better off with the gas produced in the 1991-2010 period. (See attached table.)

6. The problem of the State having a lower discount factor, and hence a longer time horizon, than the companies is of course a general one which may lead to conflicts of interest in many oil and gas areas. Thus, for example, it may be better for the State if all oil and gas were produced at a slower rate than the companies would like, and it is possible that this could be handled under conservation regulations. Specifically, however, with regard to its royalty gas, if the State decides it would be better off with gas production at a slower rate than the companies want, perhaps a way could be worked out to require the companies to leave the royalty gas in the ground until the State requests it, either for its own use or for resale. Alternatively, the State could perhaps exchange the royalty gas with companies for "future gas" to be delivered by them when desired by the State.

7. Another factor favoring taking of royalty gas in kind is that market prices of gas may not reflect the full economic cost to the State of not having the gas. In the short run, a lack of gas could mean costly shutdowns of industry and great consumer inconvenience. In the long run, the absence of an assured supply of gas might hinder the whole economic development of the State. Thus, the question of royalty gas cannot be divorced from questions of planning long-run economic development. But, at least keeping the option to take gas in kind does not foreclose future industrial development opportunities.

8. Also, I think taking royalty gas in kind would have the advantage that it will help the State learn more about the oil and gas business, from practical experience. With oil companies fully integrated from the raw material through petrochemicals, and with the allocation of costs between oil and gas production,

and between raw material production and other functions, often being arbitrary, it is important for the State to have a good grasp of the practical economics of the gas business as well as the oil business. This is vital for the State even if it is to simply maximize its benefits as a tax collector.

9. Finally, I certainly agree with the Moody Report's general recommendations that State leasing policies and taxation on natural gas should be reconsidered. In my opinion both of these questions call for detailed study of possible alternatives. Here I would only observe that tax rates in Texas and Louisiana, where the oil companies have widespread political support from small producers, would not normally be an adequate yardstick as to what rates of taxation could be imposed.

I hope these general comments will be of use to you. My thanks also for your kind words about my report.

Yours sincerely,

Michael Tanzer

Dr. Michael Tanzer,
President

P.S. As requested I have forwarded my expense bills, to Jim Rhode.

MT:lah

ALASKAN NATURAL GAS PRODUCTION:
HYPOTHETICAL EXAMPLE ILLUSTRATING
POSSIBLE CONFLICT OF INTEREST
BETWEEN THE STATE AND THE COMPANIES
OVER TIMING OF PRODUCTION

Assumptions:

(1) Prices of natural gas ($ per MCF): 1981-90, $2; 1991-2000, $6; 2001-2020, $18.

(2) Ignore in all cases investment and operating costs (Alternative interpretation: Prices are net of costs).

(3) Potential production = 1 MCF per year for 20 years.

(4) Discount factors for computing present value in 1980 of future income from gas: companies, 20% per year; State, 10% per year.

TOTAL VALUE OF INCOME FROM
20 YEARS OF GAS PRODUCTION ($):

	1981-2000	1991-2010	2001-2020
A. Gross Value (undiscounted)			
(a) First 10 years	20	60	180
(b) Next 10 years	60	180	180
(c) Total 20 years	80	240	360
B. 1980 Present Value, Discounted at 20% per year (company rate)			
(a) First 10 years	8.39	4.06	1.96
(b) Next 10 years	4.06	1.96	.32
(c) Total 20 years	12.45**	6.02	2.28
C. 1980 Present Value, Discounted at 10% per year (State rate)			
(a) First 10 years	12.29	14.22	16.43
(b) Next 10 years	14.22	16.43	6.32
(c) Total 20 years	27.51	30.65**	22.75

** = Most profitable production period

AGO 513563

ALASKA HOUSE OF REPRESENTATIVES

REPRESENTATIVE
STEVE COWPER
CHAIRMAN

POUCH V
JUNEAU, ALASKA
99811
PHONE
(907) 465-3795

SUBCOMMITTEE ON REVENUE SOURCES

3 February 1976

Mr. Myrt Charney, Director
Division of Administrative Services
Legislative Affairs Agency

Dear Mr. Charney:

We received the final report of Tanzer Economic Associates, New York, on 26 January 1976 and the $5,000 balance under the contract is due and payable.

The contractor will submit a billing for out-of-pocket expenses not yet reimbursed.

Sincerely,

Steve Cowper

jb

AGO 513564

January 30, 1976

Mr. Michael Tanzer
Tanzer Economic Associates
302 West 86th Street
New York, New York 10024

Dear Michael:

I am enclosing a copy of the Rush Moody report which was accomplished under a contract with our Gas Pipeline Impact Committee of which I am a member. I think you might find it interesting.

Any comments or recommendations you might have would be greatly appreciated. I wish to express my pleasure with the quality of work which you have done for this committee.

Sincerely yours,

John Huber

Enclosures

P. S. Because of budgetary considerations would you please submit your final billing as soon as possible.

ITINERARY

Tanzer Economic Associates
302 West 86th Street
New York City, NY 10024

Tel. (212) 362-0564 (2-5 p.m.) N.Y. time
(212) 799-7699 (After 6 pm)

MICHAEL TANZER

October 6	depart New York (JFK)	8:15am	Northwest
	arrive Anchorage	2:12pm	
	Overnight - Westward Hotel/Anchorage		
October 7	depart Anchorage	9:00am	Alaska
	arrive Prudoe Bay	10:35am	
	depart Prudoe Bay	9:00pm	Wien
	arrive Fairbanks	10:05pm	
	Overnight - Traveler's Inn/Fairbanks		
October 8	Conference/Fairbanks		
	Overnight - Traveler's Inn/Fairbanks		
October 9	depart Fairbanks	10:25pm	Pan Am
	arrive New York	10:45am	
October 13	Meeting in New York, 10:00am - Senator Huber		

HUGH MALONE

October 6	Kenai - Anchorage	traveler's convenience	
October 7	depart Anchorage	9:00am	Alaska
	arrive Prudoe Bay	10:35am	
	depart Prudoe Bay	9:00pm	Wien
	arrive Fairbanks	10:05pm	
	Overnight - Traveler's Inn/Fairbanks		
October 8	Conference/Fairbanks		
	Overnight - Traveler's Inn/Fairbanks		
October 9	depart Fairbanks	8:05pm	Alaska
	arrive Anchorage	8:55pm	
October 10	depart Anchorage	9:15am	Wien
	arrive Bethel	10:25am	

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JIM RHODE & NORMAN BAILEY

October 7	depart Anchorage	9:00am	Alaska
	arrive Prudoe Bay	10:35am	
	depart Prudoe Bay	9:00pm	Wien
	arrive Fairbanks	10:05pm	
	Overnight - Traveler's Inn/Fairbanks		
October 8	Conference/Fairbanks		
	Overnight - Traveler's Inn/Fairbanks		
October 9	depart Fairbanks	10:50pm	Wien
	arrive Anchorage	11:40pm	

STEVE COWPER

October 6	depart Fairbanks	5:25pm	Alaska
	arrive Anchorage	6:10pm	
October 7	depart Anchorage	9:00am	Alaska
	arrive Prudoe Bay	10:35am	
	depart Prudoe Bay	9:00pm	Wien
	arrive Fairbanks	10:05pm	
	Overnight - Traveler's Inn/Fairbanks		
October 8	Conference/Fairbanks		
	Overnight - Traveler's Inn/Fairbanks		
October 9	depart Fairbanks	10:50pm	Wien
	arrive Anchorage	11:40pm	
October 10	depart Anchorage	9:15am	Wien
	arrive Bethel	10:25am	

CLARK GRUENING

October 7	depart Anchorage	9:00am	Alaska
	arrive Prudoe Bay	10:35am	
	depart Prudoe Bay	9:00pm	Wien
	arrive Fairbanks	10:05pm	
	Overnight - Traveler's Inn/Fairbanks		
October 8	depart Fairbanks	7:00am	Alaska
	arrive Anchorage	7:50am	
	depart Anchorage	8:40am	Northwest
	arrive Chicago	6:24pm	
	depart Chicago	7:25pm	United
	arrive Washington D.C.	10:00pm	
October 12	depart Washington D.C.		
	arrive Seattle		
October 13	depart Seattle		
	arrive Juneau		
	depart Juneau		
	arrive Anchorage		

PAM: PLEASE SEND TWENTY (20) COPIES OF "SUMMARY OF ALASKA LEGIS-
LATION 1975". REBECCA

LATT 0012 19.07 LA01 0027 19.07 07/28/75

SHARON MITCHEL
TENATIVE WORK SCHEDULE FOR REP. COMPER

30 JUL-6 AUG FBKS
6-8 AUG KODIAK
9-14 AUG FBKS
30 AUG-7 SEP FBKS
10-20 FBKS

ALL DATES IN-BETWEEN ARE FOR PRIVATE BUSINESS

NOTE: REP. COMPER'S WORK FOR LEGISLATIVE BUDGET & AUDIT AND FOR HOUSE FINANCE MAY ALLOW HIM TO CHARGE TANZER RELATED TRAVEL TO OTHER ACCOUNTS.

J. RHODE

AGO 513569

C O N T R A C T

The Legislative Council, Alaska State Legislature, on behalf of Representative Steve Cowper, Chairman of the Oil and Gas Subcommittee of the Interim Subcommittee on Taxation, contracts with MR. MICHAEL TANZER of Tanzer Economic Associates, Inc., 302 West 86th Street, New York City, New York 10024, for professional consulting services in accord with the proposal of Tanzer Associates dated 13 May 1975.

Period of performance shall commence on the date that both parties have signed this contract and expire on 15 November 1975.

In consideration of services to be rendered, the Legislative Council shall pay the contractor the sum of Ten Thousand Dollars ($10,000), one-half to be paid no later than ten days after both parties have signed this contract and the balance to be paid upon delivery of the completed study on 15 November 1975. Out of pocket expenses for this study, such as for air fare, subsistence, and communications shall be charged as separate items and billed.

This contract shall be governed by the applicable laws of the State of Alaska.

Genie Chance

Senator Genie Chance
Chairperson
Legislative Council
310 K St., Suite 701
Anchorage, Alaska 99501

Date: 7-14-75

N. Spencer Hammond

N. Spencer Hammond
Administrator
Legislative Affairs Agency
Certifying Officer

Date: 7-14-75

Michael Tanzer

Michael Tanzer
Tanzer Economic Associates, Inc.
302 West 86th Street
New York City, New York 10024

Date: 7/14/75

cc: Representative Steve Cowper
Mr. Michael Tanzer
File

AGO 513570

LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA

POUCH Y — STATE CAPITOL
JUNEAU, ALASKA 99811

TO: Jim Rhode
Administrative Assistant

DATE: July 14, 1975

FROM: Helen Gowdy
Administrative Secy

SUBJECT: Contracts

Mr. Hammond had the Tanzer contract re-typed per the attached. Sending you the original and sufficient copies for whatever distribution you care to made.

In the future, Mr. Hammond would like all contracts to be signed first by the party under contract and then returned to this office for the remaining signatures.

So glad you are happy with your new office. Many changes being made here as you probably know.

James B. Rhode

James B. Rhode
AA to Rep. Malone, Chairman
House Finance Committee

cc: File

AGO 513571

SCOMM

#11:5

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

APPENDICES

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APPENDIX I

Ed Sleeve 10/23/75

A Brief Review of the Multistate Tax Compact

A) What The Compact Does (And Does Not Do)
B) The Economic And Financial Effects Of The Compact
C) The Allocation Formula
   1) The Property Factor
   2) The Payroll Factor
   3) The Sales Factor
   4) The Adjustment Provision
D) Preliminary Results from Compact Membership
E) Alternatives to the Compact
F) Conclusion

A) What the Compact Does

Basically, the Compact provides a means which has not been available in the past to enforce a state's corporate income tax laws. By providing for a general uniformity between the tax laws and regulations of the member states, corporations (and other multistate taxpayers) can be forced to provide the same income reports to all of the states. This makes it possible for states to pool their auditing resources and more carefully check the accuracy and consistency of multistate taxpayer reports. This basic uniformity also helps avoid disputes based on charges of double taxation, charges which could develope if every state's tax laws were significantly different. If disputes as to the proper allocation of incomes do arise, a method of arbitration is provided by the Compact. What the Compact does not do is depart any significant way from past policy in the treatment of multistate corporations. Thus the Compact is basically an agreement between states to ensure the effective and fair taxation of multistate businesses.

B) The Economic And Financial Effects Of The Compact

The Compact has two significant characteristics which a state by itself does not have. First, the enforcement capabilities of the Compact provide a tool by which states can approach a greater equity in the treatment of interstate and intrastate businesses. Without the Compact

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it is possible for some multistate corporations to shift their net incomes to non- or low-tax states, something that one-state businesses can not do. Second, the basically uniform allocation of a corporation's income between states combined with the arbitration mechanism reduces the possibility of significant double taxation to its practical minimum. This eliminates the claim that multistate taxpayers should have special (lower) tax treatment due to the double taxation possiblity, and allows the state to tax at whatever rate it deems reasonable.

C) The Allocation Formula

The advantages of enforceability and equity are bought at the price of basic uniformity in the allocation formulas and regulations of the member states. Although the details of the formula may be shaped by each state, the basic formula which all member states must use is given in Article IV, Sec. 9 of the Compact. The following is a discussion of the three factor formula of property, payroll, and sales, as it relates to Alaska.

1) The Property Factor: This factor, according to the Multistate Tax Compact, Article IV,10 includes, "... the average value of the taxpayer's real and tangible personal property owned or rented and used in this state during the tax period." The Alaska Administrative Code, 15 AAC10.120(a) states that the property factor numerator "...shall include the average value of the taxpayer's real and tangible personal property in this state during the tax period used, is available for use, or is capable of being used for the production of business income." For most businesses the above definitions are adequate, however, they do not clearly include mineral reserves in the property factor of extractive industries. Although they imply that reserves may be included, it is suggested that

the phrasing adopted by the Multistate Tax Commission, Feb. 13, 1973, be included in the updated revenue code (to be proposed by the Dept of Revenue in the near future) as follows: "Property held as reserves or standby facilities or property held as a reserve source of material shall be included in the factor. For example, a plant temporarily idle or raw material reserves not currently being processed are includable in the factor" (Commission Reg. IV. 10.(b),).

This would remove any doubt concerning the inclusion of oil, gas, and mineral reserves in the property factor of extractive industries. With the clear inclusion of mineral reserves in the property factor of multi-state taxpayers, the property factor should fairly reflect the property interests of a business in this state. (Note: The Alaska Code might also specifically state by what method mineral reserves will be valued, e.g. the same method as for ad valorem tax purposes. This might help avoid debate as to what valuation of reserves should be used.)

2) The Payroll Factor: Fortunately for Alaska, this factor is based upon the "total compensation paid" to the taxpayer's employees rather than the number of employees paid by the taxpayer. Thus, the higher salaries paid in Alaska will be reflected in a higher portion of the payroll factor being allocated to Alaska than if a simple head count were used. This is economically justified by the fact that government services are also made more expensive than in other states. No significant changes to the payroll factor appear to be needed.

3) The Sales Factor: According to the Multistate Compact, both sales which occur in the state and sales which are predominantly due to "income

producing activity" in the state are allocated to the state (Article IV. 15 and IV.17.((a)(b).). The Administrative Code, 15AAC 10.280., defines an "income producing activity" as "the act or acts directly engaged in by the taxpayer for the ultimate purpose of obtaining gains or profit." The major exclusion from this allocation rule is "income producing activity" performed by an independent contractor. Such activity is not included in the sales factor because the contractor pays the income tax on that activity. For most business activities in the state this is a fair and reasonable method for the allocation of gross sales. The complex contractual arrangements between the several large petroleum corporations active in the state (and their vertical integration) make the allocation of their sales and "income producing activities" more difficult to determine. It is clear that the Multistate Tax Compact is referring to just the type of activity which extractive industries are pursuing in Alaska when it refers to "income producing activities." It is suggested that the Alaska Administrative Code for Revenue contain specific reference to the extractive industries and examples of how sales from their "income producing activity" should be allocated to Alaska.

4) The Adjustment Provision. This provision allows for unique situations which may arise in relation to specific states or businesses. Article IV. 18. of the Compact states:

> If the allocation and apportionment provisions of this Article do not fairly represent the extent of the taxpayer's business activity in this state, the taxpayer may petition for or the tax administrator may require, in respect to all or any part of the taxpayer's business activity, if reasonable:
>
> (a) separate accounting:
> (b) the exclusion of any or more of the factors;
> (c) the inclusion of one or more additional factors which will fairly represent the taxpayer's business activity in this state; or

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(d) the employment of any other method to effectuate an equitable allocation and apportionment of the taxpayer's income.

Thus, in special cases (e.g. the sales factor for a vertically integrated industry cannot be made to reflect the industry's actual activity in the state) the adjustments can be made without affecting the Compact or allocation formulas in general. Such adjustments must be made only with very good reason and with great care, because their "reasonableness" may be challenged in the courts or during arbitration. The general uniformity of the Compact, however, is not a straight jacket.

D) Preliminary Results From Compact Membership

Although the Multistate Tax Compact did not go into effect in Alaska until July 1, 1970, and the current Administrative Code relating to the Compact did not go into effect until July, 1972, some tentative obesrvations can be made. In 1970-71, the first year under the Compact, and in 1973-74, the first year in which extensive enforcement of the Compact allocation was implemented, corporate income tax revenues jumped 14.41 and 18.34 percent respectively over previous years. This compares with growth rates of 6.48 and 7.84 percent in fiscal years 1970 and 1971 respectively (Figures from "Revenue Projection Detail", 12/19/74). It is not clear just what portion of the greater increases in fiscal years 1971 and 1974 were merely due to surges in economic growth in Alaska, but it is possible that part of the extra growth in tax collections was due to the Compact and its enforcement. A more concrete example of the Compact's value is seen in the additional corporate income tax billings being sent to five or six major multistate (oil) corporations. These are based on Department of Revenue audits which the provisions of the Compact facilitate. Two of these billings are for well over one million dollars each, totalling approximately three million. The final amounts of the other billings

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have not yet been determined. Note that this compares with the $134,860 originally paid by 3 of the 10 oil producers operating in the state in fiscal year 1973 (April 17, 1975 memo by Kathy Hollier, Research Analyst, Department of Revenue). In addition to these billings, the state has already received over $150,000 and has approximately $2.5 million in pending assessments due from other multistate taxpayers' operations in Alaska. Thus, preliminary evidence indicates that the Compact is assisting the Department of Revenue in obtaining significant increases in corporation net income tax revenues. As Alaska's Administrative Code for the Compact is fine tuned to Alaska's needs, it is probable that the Compact will be even more helpful in the future.

E) Alternatives To The Compact

It is possible that the State could choose to develop its own tax allocation formulas and regulations independent from other states. The object of such an independent approach would be to allocate a greater share of multistate taxpayers' incomes to the state than is possible under the Compact. There are three major problems with this approach. First, if Alaska's corporate income tax varies in major ways from other states, Alaska would have to enforce the tax without the close assistance of other states. If past experience is any guide, the state would likely loose money rather than gain it. Second, if the formula caused the tax burden of multistate tax-payers to be significantly higher that intrastate taxpayers, the long term economic effect would be to discourage new investment in the state. Such a possibility should be considered carefully in view of the state's current employement situation. Third, and perhaps most important, all of the legal battles concerning the legal standing and equity of the new tax approach would have to be fought. These

battles have largely been fought and won for the basic formula and approach used in the Multistate Tax Compact. Thus, for enforcement, economic equity, and legal reasons, such an independent course would be difficult to pursue.

It might be suggested that the state withdraw from the Compact but maintain the basic tax approach of the Uniform Division of Income for Tax Purposes Act (UDITPA - the basis of the Compact). This would gain the state nothing in the way of really new tax options while weakening its enforcement ties with other states. Such an approach would seem to the worst of both worlds.

Finally, the state could remain within the Multistate Tax Compact, refine the state's implementing code, and make any further adjustments needed through the Compact's adjustment provisions. In those industries, specifically extractive industries, which may impose special burdens on the state and/or on future citizens of the state, severance taxes and/or ad valorem taxes could be used to supplement revenues from the net income tax.

F) Conclusion

The Multistate Tax Compact generally appears to be well suited for the needs of Alaska. Preliminary indications are that the Compact is assisting the Department of Revenue in the enforcement of the state's corporate net income tax. The allocation formula lends itself to a basically equitable treatment of both intrastate and interstate taxpayers while allowing for special or unusual cases. If such revenues are considered too low in certain industries, additional separate taxes should be used.

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APPENDIX II

TITLE: LEGAL ANALYSIS OF THE MULTISTATE TAX COMPACT

REQUESTED BY: Senator John Huber, Chairman
Committee on Taxation and Revenue

DATE SUBMITTED: 10/16/75

STATEMENT OF FACTS

The Committee on Taxation and Revenue's staff in it initial review of corporate income taxation has put special emphasis on taxation of multistate corporations, under the present Alaska income tax statutes. Alaska is one of forty five (45) states and the District of Columbia which levies an income or franchise tax based on the net incomes of corporations and other similar organizations. Alaska's tax base is tied to the Federal income tax net income figure.

The State of Alaska is a member of the Multistate Tax Compact. The Compact was drafted in 1966 and became effective in 1967 after seven (7) states had adopted it. Alaska became a member on July 1, 1970. The purposes of the Compact are: 1) To facilitate proper determination of State and local tax liability of multistate taxpayers by equitable apportionment of tax bases and, 2) To avoid duplicative taxation.

On this, the initial review of the corporate income statutes, it has been tentatively decided that more revenue can be raised from the multistate corporations by use of the Compact. The method of accomplishing this would be through strict enforcement of the present allocation formula or through changes to the present allocation formula.

Questions Presented

1) Is Alaska's participation in the Compact legal under the United State Constitution?

2) Will the use of an allocation formula on income derived in Interstate commerce run afoul of the Commerce Clause and Fourteenth (14th) Amendment Due Process Clause of the Constitution?

3) Can the income from a subsidiary of a multistate corporation be unitized with the parent corporation for purposes of applying the allocation formula?

Brief Answer

Legality of the Compact

Under the correct interpretation of the U.S. Supreme Court, the Compact is legal. The Compact does not increase the political power of the states.

Use of Allocation Formula

The allocation formula set out in 15 AAC 10, Multistate Tax Compact, only levies taxes on that portion of the taxpayers net income arising from its activities within Alaska. The taxes imposed by the allocation formula are not a direct burden on interstate commerce and do not conflict with the Due Process Clause.

Unitizing Income of Subsidiaries and Parent Corporations

When the operation of business done within the state is dependent upon or contributes to the operation of the business without the state, the operations are unitary. The income from a subsidiary of a multistate corporation can be unitized with the parent corporation.

Applicable Statutes

Article I, Section 10, Clause 3 of U.S. Constitution

No state shall, without the consent of Congress ... enter into any agreement or compact with another state ...

Article I, Section 8, Clause 3 of U.S. Constitution

The Congress shall have power . . . to regulate commerce .. among the several states . . .

Fourteenth Amendment of U.S. Constitution - Due Process Clause

No state shall make or enforce any law . . . nor shall any state deprive any person of the life, liberty, or property,, without due process of law.

AS 43.19.010. Article IV

Article too long to reproduce

15 AAC 10 Multistate Tax Compact.

Compact too long to reproduce

Discussion

Legality of the Compact

Even though the words of the Constitution seem to prohibit all compacts entered into without the consent of Congress, current judicial interpretation limits the all or nothing aspect of the Article. The United States Supreme Court in 1893 laid down the rule in Virginia v. Tennessee, 148 US 503 (1893), 37 LE 537, which states: "...Looking at the clause in which the terms "compact" or "agreement" appear, it is evident that the prohibition is directed to the formation of any combination tending to the increase of political power in the states, which may encroach upon or interfere with the just supremacy of the United States..."

The several states have entered into the Compact as a means of insuring that the states power to tax multistate corporations will not be interfered with by Congressional action. Congress has set some restrictions in Pub Law 82-272 (15 USCS 381) and has made studies. Each session has seen the matter come up, but with the exception of Pub Law 86-272 , nothing has been done.

The Compact does not increase the political power of the states. The states have the power to tax. In entering into the Compact they are facing the economic reality that much of the business in the country is carried out by multistate corporations. In order to derive a fair amount of tax from those corporations, the states have entered into the

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Compact to ensure equitable apportionment among themselves and avoidance of duplicative taxation.

Consent of Congress can also be implied. Virginia v. Tennessee supra. Since the Compact's inception in 1967, there has been continuing Congressional action on the matter. That action has not resulted in any legislation approving or disproving the Compact, of which Congress is well aware. "..It seems fair to say that Congress impliedly consents to the existence of any compact of which it has knowledge and has not been negated by legislators..." The Compact meets the test of Constitutionality.

Use of Allocation Formula

The use of the allocation formula has been attacked on the following grounds by the multistate corporations: 1) It is a tax on the privilege of engaging in interstate commerce, 2) It is inherently discriminatory and 3) It results in a multiple tax burden. The first raises an issue under the Commerce Clause and the second and third raises issues under the 14th Amendment Due Process Clause of the U.S. Constitution.

Both issues have been extensively litigated and most decisions have been returned in favor of the allocation formula. A tax that is a direct burden upon the operation or act of interstate commmerce is unconstitutional. The mere act of carrying on business in interstate commmerce does not except a corporation from state taxation.

The U.S. Supreme Court stated in the leading case of Northwest States Portland Cement Co. vs. State of Minnesota, 358 US 450, 3 Led 2d 421, 79 S.Ct. 357: "...We conclude that net income from the interstate operation of a foreign corporation may be subjected to state taxation provided the levy is not discriminatory and is properly apportioned to local activities within the taxing state forming sufficient nexus to support the same..." In the case of General Motors Corp. vs Washington, 377 US 436, 440-441 (1964), the U.S. Supreme Court following Northwest stated this controlling test:

> "...A careful analysis of the cases in this field teaches that the validity of the tax rests upon whether the state is exacting a constitutionally fair demand for that aspect of interstate commerce to which it bears a special relation. For our purposes the decisive issue turns on the operating incidence of the tax. In other words, the question is whether the state has executed its power in proper proportion to appellant's consequent enjoyment of the opportunities and protections which the state has afforded ... As was said in Wisconsin vs J.C.Penny, 311 US 435, 444 (1940), 'the simple but controlling question is whether the state has given anything for which it can ask return'...

The U.S. Supreme Court has sustained the above decisions in Colonial Pipeline Co. vs Treigle, -US-, 44 L Ed 2d 1, 95 S.Ct. -.

Since the taxes imposed are only levied on that portion of the taxpayers net income which arises from its activities within the taxing state, they do not conflict with the Due Process Clause. Northwest supra. The use of an allocation formula that is nondiscriminatory, properly apportioned,

and related to local state activity to tax multistate corporations will not run afoul of the Commerce and 14th Amendment Due Process Clauses of the U.S. Constitution.

Unitizing Income of Subsidiaries and Parent Corporations

One of the major problem areas in taxing multistate corporations is where the activities done in the taxing state are carried out by a subsidiary of the parent multistate corporation. This issue has been decided principally in state courts. As noted in the immediate prior discussion, the allocation formula has been upheld.

The general test was stated by the California Supreme Court in Edison California Stores vs McColyes, 30 Cal. 2d 472, 183 P2d 16 (1947). It states "...If the operation of the portion of the business done within the state is dependent upon or contributes to the operation of the business without the state, the operations are unitary ... A more particular statement of the test is that a business is unitary if these circumstances are present: 1) Unity of ownership, 2) Unity of operations as evidenced by central purchasing, advertising, accounting and management division, and 3) Unity of use of its centralized executive force and general system of operations..."

The test was followed in Chase Brass and Copper Co. vs Franchise Tax Board, App. 86 Cal Rptr 350 (1970), dismissed 400 US 961 (1970). Chase was a wholly owned subsidiary of Kennecott Copper Corp. Kennecott did

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no business in California. Applying the above test, the California Supreme Court found the business between Kennecott and Chase Brass unitary. The same rationale was followed by the Oregon Supreme Court in Coca Cola Co. vs Dept of Revenue, 533 P2d 792 (1975).

Following the lead of the various state courts, the income from a subsidiary of a multistate corporation can be unitized with the parent corporation for purposed of applying the allocation formula. The power to impose the tax on a unitary business flows from the authorized method of determining income from the taxpayers activities within the state, and authority to pursue the method is present whenever activities are partially within and partially without state, whether or not integrel parts of the system are seperately incorporated, or the accounting system of the taxpayer does not clearly reflect the income. Edison California Stores, supra.

Conclusion

From a legal point of view the Multistate Tax Compact is valid under the United States Constitution. Use of an allocation formula that is not discriminatory will forestall any attack under the Commerce and Fourteenth Amendment Due Process Clauses. It is also possible to unitize the income from a subsidiary of the multistate corporation with the parent.

There is an area in which the Multistate Tax Compact is inadequate for the State of Alaska. That area is the taxation of oil and gas revenues.

Only a small amount of tax revenue would be generated if the Compact were used exclusively to get to the multistate oil companies' profits. For taxation of the multistate oil companies another type of tax is needed, ie severance, value added, ad valorem, in addition to the Compact.

Franklin D. Fleeks

Tax Counsel

AGO 529628

ALASKA
STATE LEGISLATURE

MEMORANDUM

APPENDIX III

October 16, 1975

TO: Senator John Huber, Chairman
Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Tax Counsel

SUBJECT: Value Added Tax

At each of the meeting held, whether formal or informal, the topic of a value-added tax has been discussed. Though all participants had heard of a value-added tax, its concept and operation was not clearly defined. The purpose of this memo is to try to bring clarity to the subject.

History

The value added tax (VAT) is an out growth of multistate turnover taxes used in Europe. The multistate turnover tax was first introduced in Germany during World War I.[1] France adopted the value added tax in 1954. With the formation of the European Common Market (EEC) and its emphasis on harmonizing the various nations taxes, the vehicle chosen was the value-added tax. At present, all of the member states of the EEC have enacted value-added taxes.[2] In the United States, only the state of Michigan had a modified VAT. The modified VAT was repealed when Michigan revamped its law in 1967.[3]

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Discussion

Just what is a value-added tax? The simple definitions is that it is a tax on 'value added' by the taxpayer. The most accurate definition found is that VAT is a net turnover tax with prior tax deduction.[4] What must be emphasized is that VAT is a sales tax collected in multistages. "...It is a method of collecting a sales tax that insures that the tax is shifted to the consumer..."[5] As another writer states "...The value-added tax is neutral as to businesses because it does not apply to businesses; rather it is a retail sales tax on the consumers of goods and services and not a tax on the producers or sellers of goods and services..."[6]

The way the tax works is as follows. A producer or seller of goods or services multiplies his total sales by the applicable rate. From this amount, by the tax credit system, the producer or seller subtracts the amount of tax he paid on his purchases and pays the net amount to the government.7

Application of the Tax to Alaska

The question to be asked is: Can a value-added tax increase significantly the revenues from multistate corporations and oil and gas?

Even though the tax has only been used in one state, Michigan, there is nothing in the Federal or State laws that would bar a VAT. Under Article IX, Section 1, of the Alaska Constitution, the State can enact a VAT law.

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An Alaskan VAT tax would have one fatal flaw if applied to raise tax revenue from the multistate corporations and oil and gas. That fatal flaw is that the VAT is a sales tax. Under current Supreme Court decisions, Alaska cannot apply a sales tax on goods produced her and sold out of the state. The United States Supreme Court has stated:

> "...The vice of the statue as applied to receipts from interstate sales is that the tax includes in its measure, without apportionment, receipts derived from activities in interstate commerce; and that the exaction is of such a character that if lawful it may in substance be laid to the fullest extent by States in which the goods are sold as well as those in which they are manufactured. Interstate commerce would thus be subjected to the risk of a double tax burden to which intrastate commerce is not exposed, and which the commerce clause forbids..."[8]

In a 1972 New Mexico case where the state levied on proceeds from contracts entered into outside the state with out of state clients, the U.S. Supreme Court in a unanimous decision stated: "...But a tax levi :d on the gross receipts from sales of tangiable personal property in another state is an impermissible burden on commerce..."[9]

Conclusion

The purpose for which a value-added tax would be enacted is to raise significent tax revenues from multistate corporations and oil and gas.

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Because the VAT is a sales tax and under current U.S. Supreme Court decisions the rate cannot be applied to total sales outside Alaska, the VAT would not generate significent additional tax revenues. It is my conclusion that enactment of a VAT tax would serve no useful purpose for the State of Alaska.

Sources

1. Norr and Hornhammer, The Value-Added Tax in Sweden, 70 Columbia Law Review 381 (1970)

2. Gordon T. Butler, The Value-Added Tax; A New $40 Billion Tax For the United States, 50 Texas Law Review 267 (1972)

3. Michigan Complied Laws Annotated, Chapter 206, Income Tax Act of 1967

4. Butler, supra

5. Butler, supra

6. Stanley Surrey, Value-added Tax: The Case Against, 48 Harvard Business Review 77-94, Nov.-Dec. 1970

7. Norr, supra; Butler, supra

8. J.D. Adams Mfg. Co. vs Storen, 304 US 307, 82 L.Ed 1365, 58 S.Ct 913.

9. Evco vs Franklin Jones, 459 US 91, 34 L.Ed 2d 325, 93 S.Ct 349 (1972).

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ALASKA STATE LEGISLATURE

MEMORANDUM

APPENDIX IV

November 3, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Tax Counsel

SUBJECT: Severance Taxes -- Legal Analysis

INTRODUCTION

Review of data available to the staff revealed that everyone is familiar with the concept of severance taxes. However, no one has done a legal analysis of just what severance taxes are for the use of the working legislator. It is the purpose of this memorandum to provide the members of the subcommittee with a concise legal analysis predicated on the use of the severance tax to derive substantial revenues from the state's renewable and nonrenewable resources.

There is confusion in the use of the term severance tax. It should be understood from the outset that gross production tax and severance tax are the same. These taxes come under the general heading of privilege or occupation taxes. These taxes are excise taxes: " . . . taxes imposed

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by public authority for the purpose of raising revenue on the performance of an act, the enjoyment of a privilege, or the engaging in an occupation . . ." 33 C.J.S. 110-111.

The severance tax is not a tax levied directly on persons or property and is clearly distinguishable from ad valorem property taxes and income taxes. The Supreme Court of Montana in ruling on the validity of a license tax imposed on the privilege of engaging in mining, the tax being based on production stated:

> "The state in effect says to producers: Your operations deplete the natural resources of the state, and to the extent that you remove from the earth the natural wealth which nature has provided it, and to that extent impoverish it, you are required to pay a license tax for the use and benefit of the state, for the privilege of extracting such natural wealth. The tax provided is not, therefore, on metals, minerals, or mine products, but rather upon the business of producing metals or precious stones, based on annual production." State ex rel Snidone v. State Board of Equalization, 17 P.2d 68, 72 (1932)

The United States Supreme Court in distinguishing between a property tax and an excise tax imposed upon a product of a working corporate mine stated: ". . . [It] is not a tax upon property as such because of its ownership, but a true excise levied on the results at the business of carrying on mining operations . . . " Stanton v. Baltic Mining Co., 240 U.S. 103, 114 (1916). Because of this

difference, any constitutional requirement relating to imposition of property taxes does not affect the levying of severance taxes. 103 A.L.R. 18, 20.

At present, the State of Alaska levies a gross production tax/severance tax on oil and gas under AS 43.75. The meaning of gross production tax and severance tax as used in the memorandum is as follows:

Gross Production Tax -- A severance tax levied as an occupation tax. The tax is usually imposed at a certain sum per unit of mineral removed. Williams and Meyers, Manual of Oil and Gas Terms, 208.

Severance Tax -- A tax imposed on persons engaged in severing from the soil natural resources, such as timber, oil, natural gas, ore, or the like, based on the quantity or value of the product. 32 A.L.R. 827.

LEGAL ATTACTS ON AND LEGAL DEFENSE OF SEVERANCE TAXES

There is no doubt that the state has the right to levy severance taxes. Much of the litigation is based on the premise that the severance tax is invalid because by imposing a tax on quantity or value of the product, that imposition was arbitrary discrimination which violated both the due process and equal protection clauses of the constitution.

Attempts have been made to convert the severance tax into a property or income tax, in order to bring the severance tax within those taxes constitutional provisions of equality. Also in this vein, allegations have been made that severance was an incidental step in a general manufacturing process and not subject to a privilege or occupation tax.

The courts have generally struck down the arguments advanced above. The United States Supreme Court in ruling on a Louisiana severance tax law based on the taxation of crude oil by its gravity weight laid down the general rules, which are still in effect:

> "The states have a wide discretion in the imposition of taxes. When dealing with their proper domestic concerns, and not trenching upon the perogatives of the national government or violating the guaranties of the Federal Constitution the states have the attribute of sovreign powers in devising their fiscal systems to insure revenue and foster their local interest. The states in the exercise of their taxing power, as with the exertion of other powers, are subject to the requirements of the due process and the equal protection clauses of the 14th Amendment, but that amendment imposes no iron rule of equality, prohibiting the flexibility and variety that are appropriate to schemes of taxation. The state may tax real and personal property in a different manner. It may grant exemptions. The state is not limited to ad valorem taxation. It may impose different specific taxes upon different trades and professions and may vary the rates of excise upon various products. In levying such taxes, the state is not required to resort to close distinctions or to maintain a precise, scientific uniformity with reference

> to composition, use, or value. To hold otherwise would be to subject the essential taxing power of the state to an intolerable supervision, hostile to the basic principles of our government and wholly beyond the protection which the general clause of the 14th Amendment was intended to assure . . ." Ohio Oil Company v. Conway, 281 U.S. 146, 159, 74 L.Ed. 775, 782 (1930).

If the severance tax is alleged not to be a privilege or occupation tax, the "Tennessee Doctrine" comes into effect. That doctrine states that ". . . a privilege is whatever the legislature declares to be a privilege and taxes as such . . ." Burke v. Memphis, 94 Tenn. 692, 30 S.W. 742.

LIMITATIONS ON LEGISLATIVE POWERS

The wide discretion that the legislature has in imposing taxes are subject to limitations. While the state may classify broadly the subjects of taxation, Ohio Oil Co., supra, in doing so it must proceed on a rational basis. The general rule was stated by the United States Supreme Court in Royster Guano Co. v. Virginia, 253 U.S. 412, 415, 64 L.Ed. 989, 40 S. Ct. 560. The rule is: ". . . The state must proceed upon a rational basis and may not resort to a classification that is palpably arbitrary. The rule often has been stated to be that the classification must rest upon some ground of difference having a fair and substantial object of the legislation . . ." The general rule on

classification has recently been upheld by the U.S. Supreme Court in a Florida case. The Florida law under attack exempted widows from property tax but not widowers. In upholding the classification Justice Douglas stated for the majority that:

> ". . . We have long held that where taxation is concerned and no specific federal right, apart from equal protection, is imperiled, the states have large leeway in making classifications and drawing lines which in their judgment produce reasonable systems of taxation." Lehnhausen v. Lake Shore Auto Parts Co., 410 U.S. 356, 35 L.Ed. 2d 351, 93 S. Ct.1001. " A state tax law is not arbitrary although it 'discriminates in favor of a certain class . . . if the discrimination is founded upon a reasonable distinction, or difference in state policy,' not in conflict with the Federal Constitution. Allied Stores v. Bowers, 358 U.S. 522, 3 L.Ed. 2d 480, 79 S. Ct. 437. This principle has weathered nearly a century of Supreme Court adjudication, and it applies here as well . . ." Kahn v. Shevin, 416 U.S. 351, 40 L.Ed. 2d 189, 94 S. Ct. 1734 (1974)

Even though classification imposes limitations on the legislature, that limitation will not invalidate a properly drawn law. The state can classify as long as classification is rational, not arbitrary, and all taxpayers occupying the same status or falling into the same class are treated alike.

LEGAL JUSTIFICATION FOR INCREASED RATE OF SEVERANCE TAX

If a high rate of severance tax is imposed by the legislature, the opponents to the levy are sure to attack it on the basis that the tax is unreasonable, arbitrary,

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prohibitory and confiscatory. This line of attack on "excessive taxation" through due process has uniformly met the response: ". . . where a statute is in every other respect a valid exercise of the taxing power, the judiciary has no power to declare the statute unconstitutional, even though the tax completely destroys a legitimate and useful business . . ." Morganti, 14th Amendment, Due Process, The Taxing Power, Case Note, 52 Journal of Urban Law, 620 (1974).

The U. S. Supreme Court, beginning with McCulloch v. Maryland, 17 U.S. (4 Wheat) 316, 428 (1819) and continuing up to the present in City of Pittsburgh v. Alco Parking Corp. et al., 417 U.S. 369, 41 L.Ed. 2d 132, 94 S. Ct. 2291 (1974) have held to this view. In an 1869 case involving a federal statute increasing a tax upon circulating notes of state banks the Supreme Court said:

> ". . . The judicial cannot prescribe to the legislative departments of the government limitations upon the exercise of its acknowledged powers. The power to tax may be exercised oppressively upon persons, but the responsibility of the legislature is not to the courts, but to the people by whom its members are elected. So if a particular tax bears heavily upon a corporation, or a class of corporations, it cannot for that reason only, be pronounced contrary to the Constitution. . . " Veazie Bank v. Fenno, 75 U.S. (8 Wall) 533.

The Alaskan legislature imposed a license tax upon the manufacture of fish oil and fertilizer. The grounds used to

attack the tax was that it would destroy the plaintiff's business, taking the plaintiff's property without just compensation. The U. S. Supreme Court upheld the tax:

> " . . . Even if the tax should destroy a business, it would not be made invalid or require compensation upon that ground alone. Those who enter upon a business take that risk . . . We know of no objection to exacting a discouraging rate as the alternative to giving up a business, when the legislature has the full power of taxation . . ." Alaska Fish Salting and Products Co. v. Smith, 255 U.S. 44, 65 L.Ed. 489, 41 S. Ct. 219 (1921).

The most current case dealing with this question is City of Pittsburg v. Alco Parking Corp. et al., supra. Here the city passed an ordinance placing a 20 percent gross receipts tax on private commercial operators of parking facilities. The tax was responsible for nine out of fourteen private commercial operators not being able to conduct business at a profit. In a unanimous decision validating the ordinance, the U. S. Supreme Court held:

> " . . . The claim that a particular tax is so unreasonably high and unduly burdensome as to deny due process is both familiar and recurring, but the Court has consistently refused either to undertake the task of passing on the 'reasonableness' of a tax that otherwise is within the power of Congress or of state legislative authorities, or to hold that a tax is unconstitutional because it renders a business unprofitable . . ."

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Article IX, Section 1, of the Alaska Constitution, gives to the State the power of taxation. It is, without doubt, within the power of this legislature to impose a new severance tax. The rate of the severance tax, whether high or low, is within the discretion of the legislative body.

CONCLUSION

It is within the power of the legislature to levy a gross production/severance tax. The subject of the severance tax can be a broad classification. The severance tax cannot be based on an arbitrary classification and the classification must proceed on a rational basis. The courts of the several states and the U. S. Supreme Court have consistently upheld high rates of taxation even though the rate will materially affect legitimate and useful business. A carefully drawn statute with high rates will withstand legal attacks from the affected industry.

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Alaska State Legislature

SPECIAL COMMITTEE ON
TAXATION AND REVENUE

POUCH V
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Senate

SENATORS
JOHN HUBER, CH.
JOE ORSINI
PAT RODEY

January 9, 1976

The Honorable Genie Chance
Alaska State Senator
Chairwoman
Legislative Council

Dear Senator Chance:

The Committee staff was assembled and on board by September 16, 1975. Their initial instructions were to review all current and proposed taxation and revenue statutes. The review was to see which statutes would lend themselves to change. After the initial review, the following topics were assigned to the staff for research: (a) Multistate Tax Compact; (b) Value-added tax; (c) Short-term Land Tax; (d) Oil and Gas Taxation; and (e) Wholesale Liquor Industry. Enclosed in your binders are the staff's reports on each of these areas.

There is continuing work to be done on all of the above but as the reports show, the basic data has been obtained or is in the process of being obtained. Major emphasis was placed on oil and gas taxation. In addition to proposing a raise in the severance tax rates, two additional new statutes are proposed. Explanation of the working drafts of the bills will give you the information needed for your deliberations.

The future projects that we hope to begin studying within the month are: (1) Review of Fisheries Operations with Emphasis on Processing, (2) Gas Pipeline Impact on Taxation and Revenue, (3) Oil and Gas Pipeline Income Taxation, (4) other Minerals Taxation, (5) Analysis of State Leasing Policy and other subject areas assigned to the Committee. As in the past these future projects will be handled on a task force basis. The staff members work as a team reinforcing each other's abilities.

I invite you to read these reports and will welcome any comment.

Sincerely yours,

John Huber

Senator John Huber
Chairman
Interim Committee on Taxation
and Revenue

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OIL AND GAS TAXATION REPORT

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INTRODUCTION

The drafting of any bill is difficult but when the bill is in the field of taxation that difficulty increases. In arriving at conclusions we have used all the available data we could find. This included but was not limited to American Petroleum Institute statistics, information in prospectus, federal government reports, reports from various state agencies, and various other publications dealing with the oil and gas industry.

Introduction to Bills

The Committee's staff has used as a guide the following principles:

(a) The economic activity must be vigorous enough to provide a sustained flow of tax revenues without impairing the activity itself.

(b) The tax revenue to be collected must be collected at a reasonable cost.

(c) The statute must be easy to administer in a fair and even handed manner, under straight forward rules that are easy for the taxpayers to understand.

One of the goals of any tax is obviously to produce state revenues. There exists a point where the state tax burden on any given taxpayer or industry will affect its competitive position.

At that point the taxpayer or industry will curtail its operations or shut down entirely. The proposed bills, though increasing the state tax do not reach that point. The increases in the tax are warranted because of the increase in profitability of the companies, caused by the increase in world oil prices.

The economic analysis prepared by Ed Sterner of the Committee's staff is also attached. His report and analysis show the economic impact of the proposed bills. The proposed bills are based on this analysis and are included in this report.

Oil and Gas Taxation at Present

Currently, the State of Alaska levies four taxes on oil and gas. The statutes are:

(1) AS 43.55 Oil and Gas Properties Production Tax

(2) AS 43.56 Oil and Gas Exploration, Production and Pipeline Transportation Property Taxes

(3) AS 43.57 Oil and Gas Regulation and Conservation Tax

(4) AS 43.58 Oil and Gas Reserves Ad Valorem Tax

The first three statutes were amended or adopted in the First Special Session of 1973. The last bill was adopted during the 1975 Regular Session. The intent of AS 43.58 was to be a stopgap measure passed to take care of state's shortfall in revenue until oil production begins on the Prudhoe Bay field.

The Committee staff recommends that no changes be made to AS 43.56 and AS 43.57. The statutes, in their present form, adequately serve the purpose for which they were passed.

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Proposed Statutes

Production Tax

It is proposed that the rates of AS 43.55, Oil and Gas Properties Production Tax, be raised. It is also proposed that the tax per barrel of oil also be increased. Because the producer is required to pay the higher of the two tax schedules, the cents per barrel tax provides a floor to the tax revenue which the state will receive for each barrel.

Since the 1973 Special Session, world events have raised the price of oil. This has been translated into increased profits by the producing companies. In order for the State of Alaska to procure its fair share of these profits, the tax rates must be raised. As the economic analysis shows, even this increase allows a fair return to the producers.

Net Proceeds Tax

In addition to the proposed raise in oil and gas production tax a new tax statute is submitted. The statute proposed is a "net proceeds" tax. This type of tax is currently being assessed, with local variations, in the following states: Colorada, Idaho, Montana, Nevada, and New Mexico.

The "net proceeds" tax is a net-income related, rather than a property or production related tax. It is an ad valorem tax. The proposed tax seeks to avoid the problems involved in valuing

reserves by equating the value of reserves to the value of oil and gas extracted in a calendar year. The producing oil and gas wells are the properties that are taxed, and not the net or gross proceeds, the latter being only the means of valuating the oil and gas wells for tax purposes.

From studies done by the staff, the current corporate income tax law does not reach the net profits of the out-of-state producing companies. The Multistate Tax Compact with its allocation formula is inadequate for production of revenue from resource companies. The allocation formula based on sales, property, and payroll does short change the State of Alaska. The major components of sales, property, and payroll are located outside of the state.

It is recommended that a tax be levied on income to the property. This is a net proceeds approach to resource taxation. The procedure begins with the gross proceeds from the sale of the product, deducting all allowable expenses. The allowable expenses are specifically set forth in the statute. Sales will be determined at the shipping point when the resource is shipped from Alaska. Administratively, the sales figure will be determined by the sale of the state's royalty oil on the open market and/or other indices as determined by the Department of Revenue.

The recommended tax would be in lieu of the state's corporate income tax.

Other Matters

It is projected that the recommended changes will bring to the State of Alaska tax revenues of $10 to 20 billion over a

twenty-year period from Prudhoe Bay alone. This represents a $5 to 15 billion increase over what current taxes would bring.

It is the staff's recommendation that a portion of these funds be dedicated to the future generations of Alaskans. At present this cannot be done because of the constitutional limitations on dedicated funds set out in Article IX, section 7 of the Alaska Constitution.

It is proposed that a constitutional amendment be drafted and submitted to the people of Alaska setting up a dedicated fund from oil and gas revenues.

A Review of Possible Oil
Taxation Proposals

I. The Current Tax Situation
II. An Oil Tax Base
III. Tax Proposal One: A Basic Profitability Tax on Producing Properties, "Oil and Gas Properties Net Proceeds Tax"
IV. Tax Proposal Two: An "Excess" Value Approach, "Excess Value Surtax"
V. Conclusion

I. The Current Tax Situation

In addition to the non-tax royalty income from oil or gas, the state receives tax revenue from the petroleum industry from gross severance taxes, property taxes on capital improvements (both state and local), corporate net income taxes, and the "temporary" ad valorem taxes on petroleum reserves. In the past, fairly stable prices and costs have allowed the state to use gross severance and property taxes to tax the petroleum industry at rates acceptable to both the industry and the state. Such stability has not recently characterized the petroleum industry and the future is far from clear.

While the gross severance tax and property taxes perform the function of providing a basic floor for the taxation of the petroleum industry, they do not have the flexibility needed to react and compensate for the rapid changes in the petroleum industry situation. The corporate net income tax at the national

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level provides the basis for a flexible national tax structure. However, Alaska's state experience has been that the income tax is a relatively ineffective means of attaining the oil corporations' profitability in the state.

Thus, what appears to be needed in Alaska is a substitute for the net income tax which will provide the flexibility needed to supplement the gross severance and property taxes. The following presents a proposed tax base and two proposals of how that base should be taxed. Each proposal is followed by a series of comments and questions. These are meant to encourage discussion of the proposals, not to limit the discussion. All observations and comments will be appreciated.

II. An Oil Tax Base

Due to the legal and enforcement problems connected with the income tax, the tax should be based upon the value of production as determined by the state, with the assistance of required returns from the companies. The deductions allowed would cover most expenses currently allowed under the net income tax; however, the deductions will be limited by statute.

As a starting point for discussion, the following base is proposed:

1. FOB price - AK Border or other convenient point

MINUS

2. Transportation costs - from wellhead to FOB point

MINUS

3. Direct production costs - wages and fringes of workers at field, maintenance, etc.

MINUS

4. Depreciation - of capital improvements

MINUS

5. Royalty payments to state

MINUS

6. Gross severance taxes, property taxes, conservation taxes

EQUALS

7. Adjusted value of production

Questions and Comments:

A. Should exploration and development costs be:

(1) Allowed as an operating expense?

*(2) Considered a capital expense and be depreciated?

(3) Left as an option to each company?

(4) Not allowed at all?

*A(2) It is felt that the capitalization approach may be the best alternative. Allowing exploration costs to be charged as part of current expenses only assists those with current income to charge against them. The capitalization approach would treat both current operators in Alaska and new entrants equally.

The option approach, A(3) might be a reasonable compromise which could encourage more exploration by current operators and

yet allow some benefit for new entrants. The total disallowance of exploration costs would be economically unfair and should only be used if the deduction proves to be a "fatal loophole."

B. Should indirect administrative costs:

(1) Be disallowed as above?

(2) Be allowed for by a statutory deduction (e.g. $0.10/bbl)?

*(3) Be allowed only if directly spent in Alaska (e.g., salaries and fringes of administrative personnel subject to Alaska withholding tax)?

*B(3) If past performance is any indicator, only administrative costs actually incurred in Alaska should be allowed. This should cover the major part of the marginal costs of operating in Alaska while avoiding a "fatal loophole" of the net income tax.

A statutory deduction such as suggested by B(2) might be included to compensate for out-of-state costs; however, in view of the dominance of capital, direct operating, and other costs, it does not seem necessary. Comment H also suggests a reason why full allowance of indirect expenses may not be necessary.

C. Should the "Adjusted Value of Production" be computed:

(1) By field?

*(2) By company?

*C(2) The inclusion of administrative costs, exploration costs, or any other costs which cannot be directly allocated to any specific field makes the calculation by company almost a

necessity. The companies might be required to report direct expenses by field and report other expenses separately. This would give the state the indicators of the marginal profitability of various sizes and locations of fields which might assist the state in future lease sales. It would also show when one company's "overhead" appears to be out of line when compared to other companies' overhead.

D. Should accelerated depreciation be:

*(1) Permitted (within limits)?

(2) Required?

(3) Prohibited?

*D(1) Due to the nature of the industry, flexibility in depreciation rates is desirable. A flat requirement or prohibition of accelerated depreciation would not be appropriate unless the flexibility is abused. New entrants into the Alaska petroleum producing industry will not have much use for accelerated depreciation. Those companies currently operating in the state may use it to defer taxes, thus lowering the effective tax rate until the capital costs are recovered. Minimum and maximum rates such as five and ten percent might be set, with exceptions being subject to review by the Department of Revenue. The alternative would be to link all depreciation to the probable life of the property as Nevada does, "The probable life of the property represented by the original cost shall be considered in computing the depreciation charge." (NRS 362.120(g)).

E. Should "losses" due to accelerated depreciation or immediate deduction of exploration expenses, if allowed or required, be applicable:

(1) Only against current income (no carry forward provision)?

*(2) Against profits from other Alaska fields or future years?

*E(2) It is possible that new entrants to Alaska (or those without Prudhoe Bay interests) may appear to have "losses" after special tax concessions. It would seem that if concessions are made, they should be equally available to all in the industry. To treat all companies equitably, such carry forwards must be allowed.

F. Should bonus bids be:

(1) Allowed as amortized deductions against the company's state-wide production?

*(2) Allowed as amortized deductions against profits of the fields to which they apply?

(3) Not allowed as deductions?

*F(2) Although it may seem most equitable to allow all bonus bids to be written off against future profits, this approach would place current producers, especially major Prudhoe Bay interests, at an unfair advantage. Knowing in advance that they will have sufficient income to write the bids off, they might be

willing to over-bid potential new entrants into Alaska. This point may become moot if the state turns to royalty or participation bidding for its leases.

G. Should interest payments on debt:

(1) Be allowed as an expense?

(2) Be partially allowed as an expense (e.g., a percent)?

(3) Not be allowed?

No position is taken on this issue. There are persuasive arguments on all sides. Typically, interest "foregone" by equity investment is not deductible, while interest payments on debt financing are deductible. In general, this tends to bias investors in favor of debt financing, especially if they can borrow at lower rates than they can loan due to their credit position. In particular, this tends to foster debt financing in areas with effective tax programs since the exemption of interest payments, in effect, exempts the profits up to the interest rates on the debt from taxes. The interest payments are made to lenders who are hopefully in a position or a jurisdiction where effective taxation can be minimized. Furthermore, this debt financing releases equity capital which can also be invested in jurisdictions with less effective tax programs.

On the other hand, not allowing the deduction of interest charges can result in a form of double taxation; first by taxing the interest payments as part of the borrower's profit, and second as part of the lender's income. Futhermore, should profit

margins fall, the taxpayer can be placed in the position of paying taxes while not having enough income after other costs to pay the interest on the debt.

Perhaps the fairest approach would be to allow deductions for both interest payments on debt and interest "foregone" on equity investment. This would lead into an administrative and accounting quagmire that would likely provide the "fatal loophole" which is to be avoided. Not allowing deductions for either interest payments or interest "foregone" also avoids causing biases in investment decisions. This does not seem "fair" in view of the position in which debt financed enterprises are placed. At fairly low tax rates, the no exemption route may be the approach to take to close a sometimes abused loophole. The case is clearly open to debate.

H. It should be noted that the "Adjusted Value of Production" does not include the short-term interest which can be earned from the cash flows generated by the petroleum production. Thus, the true value of the production is actually understated. This is paralleled by the understatement of expenses, since all indirect costs are not allowed. To some degree, these sources of income and expense offset each other and help minimize any inequities inherent in the tax.

I. For the purposes of this tax, should the "adjusted value" of all petroleum production, including both gas and oil be:

(1) Calculated and taxed separately?

*(2) Calculated and taxed jointly?

*I(2) Many of the costs of oil and gas production, both direct and indirect, cannot be accurately separated. Any allocation of the costs would often be arbitrary, and such a requirement would be difficult to administer.

J. Should activities other than production, such as refining, if pursued in Alaska be:

(1) Included in this tax approach?

*(2) Excluded from this tax and be taxed under the income tax?

*J(2) This tax is designed to tax the value of petroleum producing properties, not the profitability of refining and marketing operations. The more complex pricing structure of refined products, research, development capital, and operating costs of such "down stream" operations require a more complex tax approach to be equitable. Any attempt to modify the proposed tax and apply it to such operations would likely result in the opening of administrative and accounting problems which would result in an ineffective tax.

K. Should royalty payments to interests other than the state be:

(1) Exempted from taxation as are state royalties?

(2) Subject to tax like other production?

*(3) Subject to tax, with the tax paid on the royalty interest being allowed as an adjustment to the royalty holder's income tax?

*K(3) Royalty payments are a legitimate expense for producers. The object is to tax the royalty owner's oil income in the same manner as the producer's income, without harming the operator. The first alternative, K(1), would allow the operator to indicate his royalty costs, but would remove the royalty oil and gas from the tax base for this tax. This would mean that the value of the royalty oil and gas would only be subject to income taxes. This tax has been found to be less effective for multistate organizations than for domestic corporations. The second alternative, K(2), would keep royalty production under this tax but would be unfair to both the producer and the royalty interest holder. Its inclusion with other production value would make the producer's adjusted value of production appear too high and would subject royalty values to both this tax and net income taxes paid by the royalty owner. The third alternative, K(3), would retain royalties under this adjusted value tax approach and would avoid double taxation. As an example, the producer reports the gross value of production minus the deductions allowed by statute, including all royalties, and pays the appropriate tax. The producer also reports the gross value of the royalty production, minus allowable costs to be paid by the royalty owner, such as transportation, and pays the

appropriate tax. The tax paid on the royalty portion would be considered as part of the royalty payment and as an adjustment to the royalty interest's income tax due to crude oil and gas production activities.

Conclusion

The above issues must be settled before the final form of the tax can be determined. The preliminary revenue estimates found in the appendix use the asterisk marked alternatives and allow no deductions for interest payments. The various alternatives can have significant impact on how soon and how much revenue will be received by the state. The goal is to develop a tax approach that is basically fair to both the petroleum producers and the state.

III. Tax Proposal One: A Basic Profitability Tax on Producing Properties, "Oil and Gas Properties Net Proceeds Tax"

Once the tax base is determined, this tax will be applied to the "adjusted value of production." Since this tax is designed to tax the profitability of properties which the net income tax does not tax, the income tax rate of 9.4 percent would be appropriate. This would treat the profitability of the taxed properties in basically the same way as the current state income tax treats other corporate profits. The preliminary revenue estimates are based on the use of the 9.4 percent rate.

IV. Tax Proposal Two: An "Excess" Value Approach

There is a basic feeling among many people that profits from non-reproducible property, be they from real estate "speculation" or crude oil production, can be in some sense "too high" or "excessive." Such an excessive income is often expressed in terms of too high a return on capital investment. At first glance this seems fairly straight forward. However, there are two basic problems with this approach, the first of which kept the excess profits taxes of the Korean War in litigation into 1974.

First, one must determine just what the capital base is. Does the base include only equity capital or all capital? Are exploration costs part of the capital base? Is capital valued at original value or replacement value? These and other problems with the estimation of the capital base make such an approach a legal, administrative and enforcement nightmare.

Second, even if the capital base could be defined, a determination of just what is a "reasonable profit" is most difficult at best. Return rates vary from industry to industry and even within sectors of industries.

In hearings before the U. S. Senate Committee on Finance, January 22 and 23, 1974, a unanimous criticism (a rare event among Washington "experts") of such a tax was heard. Sheldon S. Cohen, former Chief Counsel, Treasury Dept., Charles W. Davis, former Commissioner of Internal Revenue Service, and William E. Simon, Secretary of Treasury, all concluded that an excess profits tax

based on historical profits or "reasonable profits" is basically unadministrable (pages 97, 105, and 63-4 respectively). For a more extensive discussion of determining the capital base and profit rate of return, please refer to Measurement of Corporate Profits, prepared by J. W. Allen, Economics Division, Library of Congress for the Senate Committee on Interior and Insular Affairs, March 1974 (Govt. Documents No. Y4. In. 8/13:93-39). There is fortunately another means to determine at least approximately when excess profits begin. It does not appear as straight forward as the returns to capital approach, but it avoids the litigation problems of the capital approach.

The alternative approach is a "long term price approach." The extensive back-up research for the Project Independence Report, issued November 1974 (Govt. Document FE 1:2:In 2/3 back-ups FE1:18 series), consistently indicates that a wide variety of energy resources can draw sufficient capital and compete with oil that is priced at a world level of $7.00/bbl (FOB New York City). In other words, any price for a barrel of oil or its energy equivalent of more than $7.00/bbl will yield profits in excess of those needed to develop the nation's energy resources. Inflation, since the report was issued, has probably increased this price to approximately $7.50 to $8.00/bbl. In its recent estimates of United States recoverable oil reserves, the American Petroleum Institute used a price of seven dollars per barrel (Oil and Gas Journal, 4/7/75, p. 45).

William L. Henry, vice president, Gulf Oil Corporation, in testimony before the Senate Committee on Finance (Feb. 13-14, 1975, also available as API reprint), also seems to accept as reasonable the administration's proposal to recognize a $7.00 price in 1977 (page 50 of reprint). Secretary Simon stated on Jan. 22, 1975, "We have made an estimate -- a judgment -- as to the 'long-term supply price,' i.e., the minimum price to producers that will be sufficient to induce an increase in our supplies of oil sufficient to make us energy independent by 1985. Our judgment is that the price required for this is around $7 to $8 at today's price levels, assuming the continuation of percentage depletion." (House Ways and Means Comm. Hearing, 1/22/75, H782-2, p. 83) At the European Common Market Summit, Dec. 1 and 2, 1975, in preparation for the Dec. 16 energy negotiations, Common Market leaders agreed upon a $7 per barrel price support. The Organization for Economic Cooperation and Development in its 240 page report suggests that oil can in general be obtained from offshore depths of 300-400 meters for $4/bbl, from depths of 400-2,000 meters for $5-8/bbl, and shale oil can be obtained for $4-7/bbl. The report also suggests that by 1980, landed costs for both North Sea and Alaskan (Prudhoe Bay) oil may be between $1.25 and $1.50 per barrel at 1973 prices (The Economist, 3/1/75, pp. 75-76). The OECD proposed a price floor of $4-6 per barrel. From industry, government, and independent sources, comes

the strong indication that the long term price of energy is probably around $7/bbl of oil or its energy equivalent, and even that may have to be artificially supported just as current oil prices are artifically supported by OPEC.

Faced with the possibility of falling energy prices, at least in real purchasing terms, an investor will look to investment which will yield an acceptable rate of return at the expected lower price. Investments will only be made in projects which require a higher than long term price if the investor thinks the capital can be recovered and a profit made before the price falls to the long term level. This may explain in part the low level of exploratory drilling in Alaska as compared to other parts of the nation. In Alaska, the lead time for bringing a new field into commercial production is often years. In Oklahoma or Texas the lead time may be months, not years, and profits are assured before any possible fall in energy prices. For a short term Alaska investment, accelerated depreciation could sometimes be allowed to enable faster, tax-free recovery of capital investment.

Thus, profits due to prices above the long term price are "excess" in the sense that they may enrich the investor, but they will not cause him to increase his investment in areas that will not earn an acceptable rate of return at the long term price. Specifically, if Alaska oil investment cannot yield an acceptable rate of return given a $7 or $8 California price for oil, then only short term oil investment will be made in Alaska.

The state's royalty, its gross severance tax, and state and local property taxes, being costs of production, and even the state's net income tax or a substitute for it, on income due to the long term price, all help determine whether or not Alaska oil development at a $7 price is worthwhile. If royalties, severance taxes, property taxes, and net worth taxes were all zero, the capital investment and operating costs could be much higher than they are now and still be competitive. However, there is a tax which does not have a bearing on whether oil development at the long term price is worthwhile -- a tax on income due to a price above the long term level. In this case, it is a tax on income due to a price of more than $7-8/bbl of oil or its energy equivalent in gas. Thus, in addition to the increase in severance tax rates, and the net property tax, it is proposed that an "excess value surtax" also be instituted.

Excess Value Surtax:

1. FOB price(s) at Alaska border or other convenient point times quantity

MINUS

2. Long term price of oil or gas equivalent times quantity produced and sold at the long term price or greater, plus any other quantities of oil or gas sold at less than the long term price times their respective prices. The prices are determined at same FOB point as item 1.

EQUALS

3. "Excess Value"

MINUS

4. Gross severance taxes or royalties to which the excess value is subject

EQUALS

5. "Excess Value" subject to surtax

5a. Royalties reported under 4, are also subject to Excess Value Surtax.

or if it can be shown that
for a specific field:

1. The long term price at FOB point times quantity produced

MINUS

2. Costs directly attributable to the field as determined under items 2 through 6 of the net properties tax, not including indirect administrative costs, even if incurred in Alaska, or royalty payments or gross severance tax payments due to a value higher than the long term price

EQUALS

3. Less than $1.00 per barrel of producer's equity (non-royalty) oil or gas equivalent produced from the field

THEN

4. "Excess Value" equals the quantity produced by the field and sold at a price equal to or greater than the price needed to yield net proceeds of $1.00 per barrel of producer's equity oil or gas equivalent times the actual price(s) at FOB point.

MINUS

5. The long term price plus the amount needed to yield net proceeds of $1.00 per barrel of producer's equity oil or gas equivalent times the quantity sold at a price equal to or greater than such a price.

MINUS

6. Gross severance taxes or royalties to which the excess value, as calculated under items 4 and 5, is subject.

EQUALS

7. "Excess Value" subject to surtax.

NOTE: The tax on the royalty share sold at more than the long term price would almost certainly be based on the first method, since costs charged to royalty interests, such as transportation, would not reach the $6.00/bbl mark.

COMMENTS

The excess value tax, as suggested, strives to tax only the income which does not have a direct impact upon the investor's long term plans. The alternative calculation is offered to provide for any short term investments which may be made in spite of their higher costs. The indirect administration or exploration costs allowed under the Oil and Gas Properties Net Proceeds Tax are not allowed under the surtax because this special alternative is aimed

at the extraordinary capital and direct operating costs of marginal fields. This alternative assures producers that the first dollar per barrel of profit on marginal fields will be taxed only at the net property value tax level, not the higher excess value level(s).

Should a producer find that his overall costs are greater than the long term price, it is unlikely that he will continue to explore in Alaska. It is next to impossible for the producer's operating costs to exceed the long term price. For a producer in the worst position of having direct costs for every field greater than the revenues which the long term price will yield, the tax would still exempt the first dollar per barrel of net worth from extraordinary taxation. Even if indirect administrative costs are as high as ten cents per barrel, this tax still exempts ninety cents. Furthermore, since even the higher excess value tax rates will leave a substantial part of the profit for the producer, he will still be able to recover other indirect costs such as unsuccessful exploration. These will be recovered after, rather than before, taxes are paid.

Possible Excess Value Surtax Rates

The Federal Administration proposal suggests rates for the "windfall" income which quickly rise to approximately 85-90 percent (House Comm. on Ways and Means, hearings Jan. 22, 1975, p. 46). Indonesia has imposed an excess profits tax on prices in excess of $5.83/bbl of 85 to 95 percent (Oil and Gas Journal, Jan. 20, 1975, p. 45).

It is apparent that other governments feel that very high tax rates can be sustained by the industry. Since the base upon which this tax would be calculated is not a true net income base, it is felt that the state rates should be at lower levels.

The calculations in the appendix are based on a 41 percent rate, in addition to the nine percent net property value tax, produces a total tax rate of 50 percent. Even this rate would not be too heavy, since the tax may be written off against the Federal income tax at a rate of 48 percent. In the appendix, the 41 percent rate is levied on value due to a price of more than $7.00 per barrel, or the net value greater than $1.00/bbl if costs are greater than $6.00/bbl. It would be possible to have graduated rates with a 20 percent surtax on the first dollar, or part of a dollar, of excess value per barrel, 30 percent on the second dollar, on up to 60 percent on the fifth dollar or part of a dollar or more. This would give some recognition to the fact that the long term price is an estimate.

The graduated rates would add some administrative complexity if oil and gas prices change frequently or multi-tiered price systems are maintained. The graduated system would make it in the state's interest not to have prices averaged and would require the Department of Revenue to have the operators report their production by each quantity and price level. For example, if two barrels of oil are sold at seven and thirteen dollars under the graduated tax, the first barrel has no excess tax, the second $2.60. If these

prices are averaged at $10/bbl, then the tax due on each barrel is $.90 or a total of $1.80. Under the flat 41 percent tax, both methods would yield $2.46 and it makes no difference (41 percent of $6.00 excess value).

Based on a $7.00 base and a $12.00 sales price the two approaches would be comparable:

	41 Percent Tax	Graduated Tax	
$7-8.00 (1st Dollar)	0.41	20%	0.20
8-9.00	0.41	30%	0.30
9-10.00	0.41	40%	0.40
10-11.00	0.41	50%	0.50
11-12.00	0.41	60%	0.60
Total	2.05		2.00

At eleven dollars per barrel the 41 percent and graduated taxes would yield $1.64 and $1.40 per barrel respectively and at thirteen dollars, $2.46 and $2.60 respectively.

An Example of the Surtax Alternatives
Given the 41 Percent Rate

A producer sells twenty five barrels of Alaskan oil or gas equivalent in California, five barrels for $12 each, five barrels for $9 each, five for $7.50 each, five for $7 each, and five for $5 each. Royalty interests own 12.5 percent of production and no severance tax is shown to simplify the example. Whenever oil or

gas is sold at less than the long term price, or under the alternatives, at a price not subject to the excess value tax, it is dropped from the calculation. This is indicated by a dash in the example. They are dropped so that oil or gas which is sold due to contracts or controls at a price lower than the long term price may not be averaged with higher priced oil or gas to reduce the excess value tax owed on production sold at higher than the long term price.

Quantity	Price	Gross Value	Long Term Value(7xQ)	Excess Value	Producer Equity	Producer Excess Value
5	12	60	35	25	.875	21.875
5	9	45	35	10	.875	8.75
5	7.50	37.50	35	2.5	.875	2.187
5	7	35	35	0	.875	0
5	5	25	35	--	--	--
		Total				32.81

If the cost of production and shipping to California totaled more than $6 per barrel, the alternate formula would be used. In this case, $7 costs are used.

Price	Gross Value	Costs/bbl + $1.00	Excess Value	Producer Equity	Producer Excess Val.
12	60	40	20	.875	17.50
9	45	40	5	.875	4.375
7.50	37.50	40	--	--	--
7	35	40	--	--	--
5	25	40	--	--	--
		TOTAL			21.88

Tax owed by the producer equals 21.88 times .41 = 8.97

The royalty owner would be subject to the first alternative in both cases since he only incurs transportation costs, which should not equal the long term price by themselves. Taking the total excess value from the first alternative, 37.5, times the royalty interest, .125, equals the royalty holder's excess value of 4.69. This value times the tax rate, .41, equals the royalty holder's surtax liability of $1.92.

Under the first alternative a total of $15.37 is paid on an excess value of $37.50. Under the second alternative, a total of $10.89 is paid on an excess value of $25.00.

It should continually be recognized that the excess value surtax is based on an estimate of the long term price of energy. Thus, the tax should have a provision for periodic correction and inflation adjustments of the long term price base. It is tentatively proposed that the Department of Revenue be empowered to make adjustments, up or down, in the base price each year. The proposed adjustments must be proposed along with the Administration's annual budget proposals and, unless disapproved or reduced by the Legislature, would automatically become effective within the next fiscal year. In no event, could the adjustment exceed the total increase in the national wholesale price index since the tax went into effect, minus any previous adjustment. Such a correction provision should cause the tax to disappear as the "windfall" disappears. Note that

the correction is not tied to the oil wholesale price index since oil prices can be manipulated by government or the OPEC cartel. This would probably bear less relation to the true long term price than the admittedly approximate correction based on the general wholesale price index.

V. Conclusion

This review presents the basic considerations behind the proposed oil taxation legislation. The basic "Oil and Gas Properties Net Proceeds Tax" is designed to allow producers to recover their costs before being taxed above the floor set by the severance tax, while avoiding the fatal loopholes of state net income taxation. The second tax, the "Excess Value Surtax," is designed to tax those profits not neeed to cause long-term investment in Alaska at a higher rate.

If prices and costs were to stabilize, perhaps the gross severance tax could be made equitable enough to remain the sole major source of petroleum tax revenue. Even a matrix system of severance tax rates related to both prices and quantities produced might be used. No gross tax, however, can reflect the significant difference between the development costs, operation costs, and commercial lives of various fields. Only some form of net value tax can reflect such variations.

In the near future, the State of Alaska will very likely be receiving one to two billion dollars in petroleum royalties and tax

revenues annually. This comes to $2,500 to $5,000 for every man, woman, and child in the state, putting Alaska in the ranks with Saudi Arabia and Libya and surpassed only by Kuwait and Abu Dhabi.

If Alaska is to avoid the ire of the rest of the nation (which could react by fixing Alaska petroleum prices separately), it must be able to show that its revenue is fairly obtained and does not have significant impacts upon national energy prices or supplies.

The proposed package of increased severance taxes, the "Oil and Gas Properties Net Proceeds Tax," and the "Excess Value Surtax" should be defendable and acceptable to the nation; defendable and reluctantly acceptable to private oil interests and most importantly fair to the people of Alaska and its future citizens, who must bear the impact of petroleum production in the state.

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

ALASKA
STATE LEGISLATURE

MEMORANDUM

December 22, 1975

TO: Senator John Huber

FROM: Franklin D. Fleeks
Tax Counsel

SUBJECT: Committee Staff Review of the Wholesale Liquor Industry

Submitted for your review and approval are the findings of the staff in regards to the wholesale liquor industry. The basic research was done by Janis C. Gull. I have prepared a synopsis of the findings. Since there is one important missing link, how the manufacturing distillers deal with the wholesale dealers, you will find our recommendations qualified.

FDF/kab

AGO 529674

State of Alaska
Legislative Council
Subcommittee on Taxation and Revenue
Chairman, Senator John Huber

Members:

Senator Joe Orsini
Senator Pat Rodey
Representative Nels A. Anderson, Jr.
Representative Steve Cowper
Representative Jim Duncan
Representative Clark Gruening

This study is in response to the directive of the Legislative Council to perform taxation and revenue studies in conjunction with the Senate Special Committee on Taxation and Revenue as charged by Senate President Chancy Croft, in a January 24, 1975 letter to Governor Hammond.

Approved:

Taxation and Revenue Report #1
Wholesale Liquor Industry

By: Franklin D. Fleeks, committee tax counsel; and Janis C. Gull, committee researcher

AGO 529675

December, 1975

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Attachments

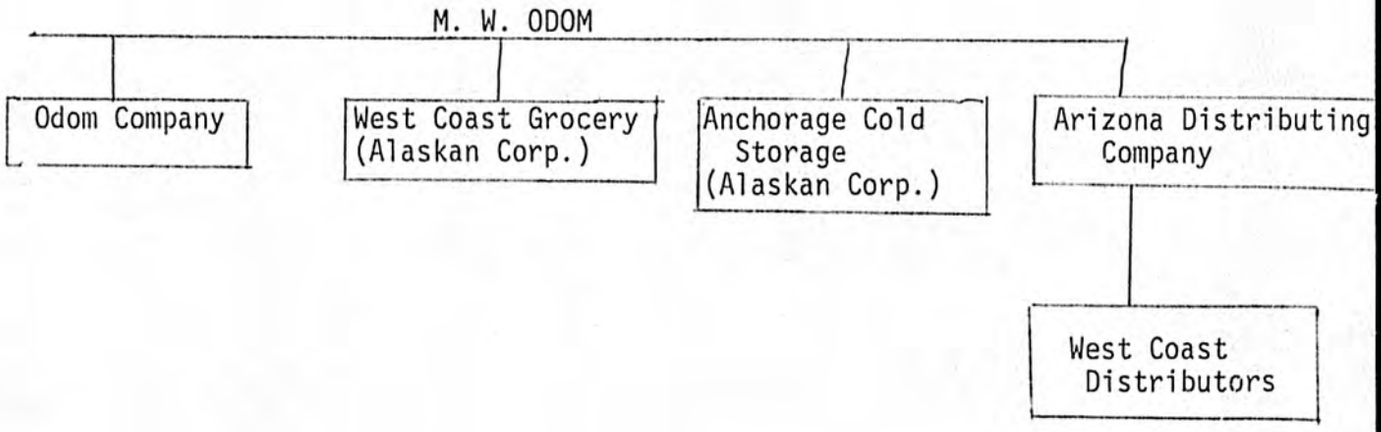
1. Memorandum from P. A. Wall, Director, Administrative Services Division, Department of Revenue, dated May 15, 1975
2. Copy of CSHB 246 am
3. Copy of HB 309

Introduction

The wholesale liquor industry in Alaska is dominated by three firms. Their percentage of the market based on FY 1975 gross receipts from the sale of liquor is as follows:

NAME	GROSS RECEIPTS	PERCENTAGE
K & L Distributors	$15,643,982	38.00
Alaska Distributors	10,042,458	24.40
Odom Corporation	15,251,651	37.05
All others	244,651	.55
	$41,162,932	100.00

One of the unique characteristics of the three major groups is outside ownership and control even though some of the corporate members are Alaskan corporations. K & L Distributors is controlled by the Levine Family of Bellevue, Washington, Alaska Distributors is controlled by Alex Shulman of Seattle, Washington, and the Odom Group is controlled by M. W. Odom of Seattle, Washington. The most complex structure is the Odom Group. Its structure is as follows:



There are currently twenty-two (22) wholesale liquor licenses issued. Under current Alaska law, AS 04.10.110, a general wholesale license is required for each distributing point. As shown below, the three major firms have more than one (1) distributing point and are thus multiple licensees.

The taxes and license fees collected by the Department of Revenue for the five past years are as follows:

Fiscal Year	Gross Income	License Fees	Excise Tax	*Income Tax
1975	$41,162,932	$81,850	$6,598,213	$72,834
1974	33,607,680	81,500	5,690,909	42,195
1973	31,426,323	80,200	5,234,678	52,042
1972	31,379,627	80,350	4,871,156	78,862
1971	30,816,351	80,600	4,936,399	46,045

* Furnished by the Department of Revenue based on 4 companies. Identities of the companies were not furnished

CORPORATE STRUCTURES

Alaska Bay Corp. and Aregah

These two entities hold general wholesale licenses and each has a warehouse. Their operations are located in Anchorage. Their respective gross incomes for 1974 were $49,430 and $20,997.

Mosesian Vinters

This wholesaler is owned in full by a religious order. It distills and distributes milk wine from its distillery in Palmer. Its gross receipts for 1974 were $32,514.

Service Transfer

The base of operations for this company is Sitka. They are the sole distributors of Olympia beer within the Sitka area. The corporation's gross receipts were $121,990 for 1974.

K & L Distributors

This is a family owned corporation dealing exclusively in alcoholic beverages. The corporation holds five wholesale liquor licenses. The five distribution points are: Bellevue, Anchorage, Fairbanks, Juneau and Soldotna. Its gross income including some Washington transactions was $15,643,892.

Alaska Distributors Co.

The corporation maintains three distribution points and hold three licenses. The distribution points are: Seattle, Anchorage and Fairbanks. This is a Washington-based corporation. Its gross income for 1974 was $10,042,458.

Odom Company

This corporation along with its related corporations, Anchorage Cold Storage, West Coast Distributors, and West Coast Groceries hold the remainder of the Alaskan wholesale licenses. Odom Co. has four distribution points located at: Seattle, Fairbanks, Juneau and Ketchikan. Its gross income for 1974 was $6,[illegible]00,022.

West Coast Grocery

This Odom company handles beer and wine in the Ketchikan area. Its gross income for 1974 was $279,023.

West Coast Distributors

This Odom company has four distribution points located at Seattle, Anchorage, Fairbanks and Juneau. Its gross income for 1974 was $4,953,451.

Anchorage Cold Storage

This Odom company does its principal business in the Anchorage area. For 1974 its liquor sales were $3,819,155.

The following chart summarizes the above information. I have combined the Odom Group below for informational purposes.

Name	Location	Wholesale Malt Beverage and Wine Gross	Excess Fee	License Fee	General Wholesale Gross	Excess Fee	License Fee
Anchorage Cold Storage	Anchorage				3,819,155	$5,000	$500
Odom	Seattle				4,308,540	5,000	500
Odom	Fairbanks				1,739,937	5,000	500
Odom	Juneau	83,853	1,000	100			
Odom	Ketchikan	67,692	1,000	100			
West Coast Groceries	Ketchikan	279,023	3,000	100			
West Coast Dist.	Seattle				1,863,310	5,000	500
West Coast Dist.	Anchorage				2,245,975	5,000	500
West Coast Dist.	Fairbanks				833,074	5,000	500
West Coast Dist.	Juneau	15,092	150	100			
Subtotals		445,660	5,150	400	14,805,991	15,000	1,500
Add Malt Bev. and Wine					445,660	5,150	400
TOTAL					15,251,651	20,150	1,900

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1974 EXCESS FEES AND LICENSE FEES PAID BY WHOLESALERS

Company	Location	Wholesale Malt Beverage and Wine Gross	Excess Fee	License Fee	General Wholesale Gross	Excess Fee	License Fee
Alaska Bay	Anchorage				49,430.00	none	500.00
Alaska Dist.	Seattle				2,727,177.03	5,000.00	500.00
Alaska Dist.	Fairbanks				2,327,399.82	5,000.00	500.00
Alaska Dist.	Anchorage				4,987,881.47	5,000.00	500.00
Alaska Dist.	Juneau		no 1974 license				
Anch. Cold Stor.	Anchorage				3,819,154.72	5,000.00	500.00
Aregah	Anchorage				20,996.99	none	500.00
K & L	Bellevue				3,397,189.00	5,000.00	500.00
K & L	Anchorage				8,132,905.00	5,000.00	500.00
K & L	Fairbanks				3,116,862.00	5,000.00	500.00
K & L	Juneau	123,241.00	1,500.00	100.00			
K & L	Soldotna				873,695.00	5,000.00	500.00
Mosesian	Anchorage	32,514.31	500.00	100.00			
Odom	Seattle				4,308,539.59	5,000.00	500.00
Odom	Fairbanks				1,739,936.71	5,000.00	500.00
Odom	Juneau	83,853.49	1,000.00	100.00			
Odom	Ketchikan	67,692.40	1,000.00	100.00			
Service Trans.	Sitka	121,990.10	1,500.00	100.00			
West Coast Dist.	Seattle				1,863.309.73	5,000.00	500.00
West Coast Dist.	Anchorage				2,241,974.84	5,000.00	500.00
West Coast Dist.	Fairbanks				833,074.34	5,000.00	500.00
West Coast Dist.	Juneau	15,091.90	150.00	100.00			
West Coast Gro.	Ketchikan	279,023.00	3,000.00	100.00			
		$723,406.20	$8,650.00	$700.00	$40,439,526.24	$65,000.00	$7,500.00

AGO 52962

CURRENT STATUTES

In the field of taxation and revenue the wholesale liquor industry is covered specifically by the following:

(a) AS 04.10.110 Wholesale License

(b) AS 43.60 Excise Tax on Intoxicating Liquor

The wholesale license fee is asserted on two categories: (a) the general license which covers hard liquor and (b) the wholesale malt beverage and wine license. The license fees are based on a sliding scale with the general license ranging from a minimum of $500 to a maximum of $5,000 and the wholesale liquor license ranging from a minimum of $100 to a maximum of $5,000.

Excise tax rates are based on gallonage. The rates are as follows:

(a) Malt beverages - 25 cents a gallon or fraction of a gallon.

(b) Wine or other liquor of 21 percent alcohol by volume or less -- 60 cents a gallon or fraction of a gallon.

(c) Other liquors having a content of more than 21 percent alcohol by volume - $4 a gallon.

Factors Favoring an Increase

In a memo dated May 15, 1975, a copy of which is attached, Mr. Wall of the Department of Revenue made an analysis of the liquor licenses and fees. He noted the last change in licenses and fees was in 1959. Since that time the industry under the general license has increased its total business volume from $15,490,169 to $40,439,526; a 161.07 percent increase.

Licenses and fees for the general license have gone from $66,500 in 1959 to $73,500 in 1974, an increase of $7,000 or 10.53 percent. It should also be noted that the last excise tax rate increase took place in 1961.

Gross income in the industry from 1971 - 1974 increased at a rate of one percent (1%). With the increase in population and income during the 1974 - 1975 periods, gross income increased twenty two percent (22%). Revenue received by the State from license fees increased less than one percent. Revenue from the excise tax increased by sixteen percent (16%). No judgment can be made in regards to the income tax because of not knowing if the four companies used were the major ones in the industry.

All economic indicators point to growth for Alaska in the years ahead. The wholesale liquor industry, in all certainty, will share in this growth. Each segment of the Alaskan economy should contribute its fair share of tax. Because of the nature of its products, the wholesale liquor industry creates a burdensome monetary and social cost to the State. An increase in rates will insure that the industry is contributing its fair share to the State revenues.

CONCLUSION

At present there are two bills in the legislative hopper, CSHB 246 am and HB 309, which will increase the State revenues. If the rates of excise tax proposed by HB 309 had been in effect for FY 1975, an additional $2,798,187 in revenue would have been yielded.

Comparison of Old Rates and Proposed Rates:
Base Year FY 1975

Item	Taxable Gallons	Present Rate	Proposed Rate	Tax at Present Rate	Tax At Proposed Rate	Increase
Distilled Spirits	1,122,016	$4.00	$4.50	4,488,064	5,049,072	561,008
Wine	766,351	0.60	1.00	459,811	766,351	306,540
Beer	7,702,555	0.25	0.50	1,925,639	3,851,278	1,925,639
				6,873,514	9,666,701	2,793,187

If SCHB 246 am had been in effect, an approximate addition of $330,000 would have been yielded.

The present system of policing the industry is working reasonably well, administratively. Further efforts by the Department of Revenue should be effected to make sure that the State's return under the Multistate Tax Compact is maximum yield. There is one major question remaining to be answered at the time of this report. The question pertains to the transactions between the manufacturing distiller and the wholesale distributors. During December, our staff will be looking into this question.

The staff recommends that the present bills be supported with the caveat, that if our further investigations reveal improprieties, a new or amended bill will be submitted.

ALASKA
STATE LEGISLATURE

MEMORANDUM

December 18, 1975

TO: Senator Huber and
Franklin D. Fleeks, tax counsel

FROM: Janis C. Gull

SUBJECT: Wholesale Liquor Industry

On November 18 I received a memorandum containing your Outline of Research Needed for Analysis of Liquor Tax. The following is a copy of that outline and my report on the research and findings of fact that were the direct results of said outline.

The three items indicated in RED are not included in this report as I was not able to obtain conclusive information and statistics relating to them.

I am currently at your disposal to discuss the context of this report and to supply any and all raw data entailed within.

JCG/kb

Janis C. Gull

AGO 529686

State of Alaska
Legislative Council
Subcommittee on Taxation and Revenue
Chairman, Senator John Huber

Members:

Senator Joe Orsini
Senator Pat Rodey
Representative Nels A. Anderson, Jr.
Representative Steve Cowper
Representative Jim Duncan
Representative Clark Gruening

This study is in response to the directive of the Legislative Council to perform taxation and revenue studies in conjunction with the Senate Special Committee on Taxation and Revenue as charged by Senate President Chancy Croft, in a January 24, 1975 letter to Governor Hammond.

Taxation and Revenue Report #1
Wholesale Liquor Industry

By: Janis C. Gull, committee researcher

Approved:

December, 1975

AGO 529687

ALASKA
STATE LEGISLATURE

9K
FAH 11-18-75

MEMORANDUM

TO : Senator John Huber Nov. 18, 1975

FROM : Franklin D. Fleeks, Tax Counsel

SUBJECT: Outline of Research Needed for Analysis of Liquor Tax

The following outline is submitted for your approval. The information sought will give a detailed picture of the wholesale liquor industry in Alaska. The study is limited to the wholesale distributors, most of wholm are out of state corporations.

A partial listing of sources to be contacted for information is as follows:

a. Dept. of Revenue - Excise Tax Division
b. Dept. of Revenue - Income Tax Division, Multi-state Tax Compact
c. Dept. of Revenue - Statistics on amount of tax collected
d. Alcohol Beverage Control Board
e. Bill McGuire - Adm. Asst. to Sen. Chancy Croft
f. Tapes of legislative hearings on last sessions bill
g. Lobbyist for distributors for their position
h. Washington State Liquor Control Board for comparison of wholesale prices
i. Transcript of anti-trust suit against the wholesale distributors.

AGO 529688

OUTLINE

I. Identification of the Taxpayers
   a. Who are the wholesale distributors who operate in Alaska?
   b. Are they domestic (Alaskan) corporations, subsidiaries of out of state corporations, or completely out of state corporations?
   c. Where are their major warehouses located; In Alaska or outside of Alaska?

II. Identification of the Problem
   a. How long since the rates have been changed?
   b. What are the present rates of taxation?
   c. How do Alaska's rates of taxation of the wholesale liquor industry compare to other states?
   d. What were the total amount of wholesale liquor sales in Alaska for the past five years?
   e. How many Alaskan employees are there?

III. Operations of the Wholesalers
   a. How is the wholesale price of liquor determined?
   b. Does the out of state corporation raise the wholesale price of liquor sold to its wholly owned Alaskan subsidiary in order to reduce the profit of the subsidiary?
   c. Is the wholesale price of liquor purchased by the distributors the same as their Seattle price less transportation costs to Alaska?

IV. Identification of the Type and Amount of Taxes Being Currently Received by the State
   a. How much was collected from the excise tax on liquor in the past 5 years?
   b. Are the distributors paying any income tax?
   c. Does the Multistate Tax Compact reach the distributors net profits from sales in Alaska?

V. Miscellaneous
   a. Should the tax be based on gallonage or the wholesale price?
   b. If the Multistate Tax Compact is not reaching the distributors, is their another way to collect the revenue?
   c. Should reform of the tax structure be tied to Alcoholic Rehabilitation?
   d. What increase in the rate of excise tax is recommended?

I. Identification of the Taxpayers

a. Who are the wholesale distributors who operate in Alaska?

b. Are they domestic (Alaskan) corporations, subsidiaries of out of state corporations, or completely out of state corporations?

c. Where are their major warehouses located; in Alaska or outside of Alaska?

The following is a complete list of all wholesalers presently doing business in the State of Alaska.

Alaska Bay Corporation
505 Ocean Dock Road
Anchorage, Alaska
Mail: Box 1872
Fairbanks, Alaska 99701

Alaska Distributors Company
4601 Sixth Avenue South
Seattle, Washington 98108

Alaska Distributors Company
P. O. Box 549
Fairbanks, Alaska 99701

Alaska Distributors Company
Box 4-1598
Anchorage, Alaska 99509

Anchorage Cold Storage, Co., Inc.
P. O. Box 39
Anchorage, Alaska 99501

Aregah Corporation
Box 3454
Anchorage, Alaska 99501

K & L Distributors, Inc.
300 120th Avenue, N. E.
Bellevue, Washington 98004

Mosesian Vinters
Ray N. Mosesian
Mail: Star Route A, Box 217-A
Anchorage, Alaska 99502

Odom Company
1258 First Avenue South
Seattle, Washington 98134

Odom Company
Alaska Railroad Industrial Area
Fairbanks, Alaska 99701

Odom Company
Box 410
Juneau, Alaska 99801

Odom Company
619 Stedman Street
Ketchikan, Alaska 99901

Service Transfer, Inc.
Box 178
Sitka, Alaska 99835

West Coast Distributors, Inc.
1258 First Avenue South
Seattle, Washington 98134

K & L Distributors, Inc.
4504 Lois Drive
Anchorage, Alaska 99503

K & L Distributors, Inc.
17 Adak Street
Fairbanks, Alaska 99701

K & L Distributors, Inc.
490 South Franklin Street
Juneau, Alaska 99801

K & L Distributors, Inc.
P. O. Box 337
Soldotna, Alaska 99669

West Coast Distributors, Inc.
Box 942
Anchorage, Alaska 99510

West Coast Distributors, Inc.
P. O. Box 732
Fairbanks, Alaska 99701

West Coast Distributors, Inc.
490 South Franklin Street
Juneau, Alaska 99801

West Coast Grocery Company
P. O. Box 118
Ketchikan, Alaska 99901

Of the preceding wholesale entities only four are totally Alaskan owned: 1) Alaska Bay Corporation; 2) Aregah; 3) Mosesian Vinters; and 4) Service Transfer. Of these, Alaska Bay Corporation and Aregah hold general wholesale licenses. Each corporation has one only warehouse, both of which are physically located in Anchorage. Their total combined gross income for 1974 was only $70,426.99. They also paid the minimum in licensing and excess taxes - $500 each.

Mosesian Vinters distills and distributes milk wine from its distillery in Palmer. They hold a malt- beverage and wine license and are owned in full by a religious order. Their total gross income for 1974 was $32,541.31.

Service Transfer has only one warehouse located in Sitka. They also hold a malt -beverage and wine license and distribute Olympia Beer solely in Sitka. To my knowledge they do not sell any other beverage. Their total gross 1974 income was $121,990.10.

The combined gross income for the two domestic malt liquor distributors for 1974 is $154,504.41. They also paid a total of $2,000 in excess fees and and $200 in license fees.

Considering the remaining eighteen wholesalers licensed to do business within the State of Alaska I have found that they are all subsidiaries of three larger Washington State corporate entities. The only exception to this might be considered to be the K & L distribution point in Bellevue, Washington. This particular location is the parent corporation to its four separate distribution points in Alaska.

Alaska Distributors Co.
4601 6th Ave. So.
Seattle, Washington

Owner: Alex Shulman

This corporation is based in Seattle, Washington. It maintains three Alaska licensed warehouses -- Seattle, Anchorage, and Fairbanks. Each pays license fees of $500 and the maximum of $5,000 in excess fees.

The corporation also has eight other distribution points in Alaska. However, these eight are all run by "commissioned sales persons", none of which have licensed warehouses or pay any withholding taxes. They order the exact quantity their customers require and deliver it immediately.

Alaska Distributors as a whole paid a total of $16,500 in licensing fees in 1974. Their total gross income for the same period was $10,042,458.32. Because their income tax returns are confidential, I could not find out the exact percentage of their gross or net income that actually went to the State of Alaska.

K & L Distributors, Inc.
300 120th N. E.
P. O. Box 1969
Bellevue, Washington 98004

Owners: The Levine family

K & L Distributors is a family owned corporation with its physical base located in Bellevue, Washington. It has five Alaska licensed warehouses: 1) Bellevue, 2) Anchorage, 3) Fairbanks, 4) Juneau, and 5) Soldotna. The Soldotna distribution point holds a malt-beverage and wine license only. All of the others hold general licenses. K & L pays a total of $2,100 in license fees as well as $21,500 in excess fees for these warehouses.

This corporation has set up a series of "sales representatives" to cover the outlying areas. As with Alaska Distributors, K & L's "reps" are "commissioned sales persons." There are eight separate "area" locations for these reps, but the quantitative number of personnel changes monthly.

All K & L products are shipped via the Bellevue warehouse to Alaska. They are not distributed elsewhere. The Bellevue distribution point does do a representative volume of business in Washington. This can be largely attributed to the fact that they are the exclusive distributor of both Budweiser and Olympia beer -- the number 1 and number 2 best sellers respectfully.

The Levine family is not involved in other business endeavors but is solely a liquor distributor. Their basic corporate structure is rather simple and appears to function very well.

ODOM
1258 First Avenue South
Seattle, Washington 98124

Owner: Mr. M. W. Odom

NOTE: M. W. Odom is the owner and president of a corporate conglomerate. He has set up and/or purchased an extensive series of separate corporations -- all of which have separate managerial staff and policies and tax structures. The end net proceeds of each entity is directed to the parent corporation. This creates a steady cash flow both within each corporation as well as the ability to extend monies to other internal corporations.

The following report entails his liquor interests within the State of Alaska and extends only to the "parent" warehouses in Seattle.

West Coast Grocery
P. O. Box 118
Ketchikan, Alaska 99901

President: M. W. Odom

This corporation distributes alcoholic beverages and general groceries in the Ketchikan area. It also does a healthy mail order grocery and liquor business. Hard liquor is handled by "commissioned sales persons" in this area and thusly the Ketchikan warehouse maintains a wholesale malt-beverage and wine license. It pays $100 in license fees and $3,000 in excess fees. The total gross income was $279,023 for 1974.

Anchorage Cold Storage
P. O. Box 39
240 First Avenue
Anchorage, Alaska 99501

President: M. W. Odom

This Odom entity has a standing staff of 185 persons. It handles produce, frozen meats and liquor. They hold one general wholesale license for their Anchorage location and pay the standing $500 as well as the $5,000 in excess fees. As indicated by the above address, this particular company was incorporated in the State of Alaska and is a domestic corporation. The total gross liquor sales for 1974 was $3,819,154.72.

Odom Company
1258 First Avenue South
Seattle, Washington 98134

President: M .W. Odom

This company is what I call Odom with a small "o". It is considered to be a separate corporation, as are the rest of his entities. It is <u>not</u> the parent corporation in Seattle. It appears that M. W. merely wanted to hang his name on it in lieu of Mucktuck Distributors or something else.

The company has four large warehouses. Both the Seattle and Fairbanks locations hold general wholesale licenses and pay the maximum in excess taxes ($500 - $5,000 each.) The Juneau and Ketchikan warehouses are malt-beverage and wine distribution points and pay the maximum licensing of $100 and $1,000 each. Odom's total 1974 gross income for all four warehouses was $6,200,022.19. The total licensing fee was $12,000 excess and $1,200 licenses. The management also maintains four "commissioned sales persons" in various small communities.

West Coast Distributors
1258 First Avenue South
Seattle, Washington 98134

President: M. W. Odom

This corporate structure is much the same as with the other Odom enterprises. They have four warehouses: Seattle, Anchorage, Fairbanks and Juneau, with the latter being a malt-beverage distribution point. West Coast pays $1,600 in license fees and $16,500 in excess fees. The total gross income was $1,953,450.81. They also distribute groceries, and sundries.

NOTE: Anchorage Cold Storage, West Coast Groceries, Coca-Cola, and West Coast Distributors are all housed in the same structural complex in Anchorage. This appears to facilitate each individual company in that they can and do "share" trucks, secretarial facilities (i.e., MTST, switchboard, etc.) and warehousing footage. The same procedure is used in Fairbanks and Seattle; however, there is a juggling of who is where (i.e., Anchorage Cold Storage is not in Fairbanks, and Odom Co. is not in Anchorage).

It is interesting to note that even though these corporations are located in the same complex, each company has: 1) its own managerial hierarchy; 2) different offices; 3) different phones; and 4) different mailing addresses. But in the process of "combining," during any given day a driver in an Odom truck can deliver Odom beer, Anchorage Cold Storage meat and West Coast sundries and liquor. The only difference is found in the invoices and billing.

ODOM (Big "O") corporation is by far the most complex of all of the distributors. The system does function rather well, and combined they compiled the following available statistics for the year 1974:

TOTAL GROSS SALES INCOME

General Wholesale	$14,805,989.95
Wholesale Malt and Wine	445,660.79

LICENSE AND FEES

General Wholesale	3,000.00
Excess fee	30,000.00
Malt Beer and Wine	400.00
Excess Fee	5,150.00
Total Licensing and Fees	$ 38,555.00

Fiscal Year 7-1-74
Through 6-30-75

Beer	1,807,803.7 gallons
Wine	259,456.8 gallons
Liquor	443,187.3 gallons

II. Identification of the Problem.

a. How long since the rates have been changed?

b. What are the present rates of taxation?

c. How do Alaska's rates of taxation of the wholesale liquor industry compare to other states?

d. What was the total amount of wholesale liquor sales in Alaska for the past five years?

Alaskan Statute 43.60.010 in regards to the liquor industry was instituted in 1961. There have been no changes made since its inception. The taxation rates established in 1961 are: wine: $0.60 per gallon; malt-beverages: $0.25 per gallon; hard liquor: $4.00 per gallon.

Please note that on 3/18/75 House Bill 309 was introduced by the Rules Committee by Request of the Governor and it was referred to the House Finance Committee. At the present time it is still held by Finance.

This new bill (309) would increase the current tax rates as follows: (1) malt beverages at a rate of $0.50 a gallon, (from $0.25); (2) wine or other liquor at a rate of $1,00 per gallon, (from $0.60); and (3) hard liquors at a rate of $4.50 a gallon (from $4.00).

In addition to HB 309, House Bill 246 am was introduced. CS for #246 was introduced by Community and Regional Affairs. It was referred to the Judiciary which in turn produced CSHB 246 am which was passed by the House and sent to Senate Commerce and Finance. The bill is currently held in this committee. CSHB 246 am is designed to change the wholesale license fees.

The current statute allows for general wholesale licenses of $500 per year and a maximum of $5,000 in excess fees on an income of $500,000 or over.

Also currently allowed is the malt-beverage and wine license fees of $100 with $1,000 maximum in excess fees on an income of $100,000 or over.

The new bill CSHB 246 am requests the same tax and excess structure and in addition thereto, a sum equal to one percent of the business transacted during the year for which the license is issued on the business transacted during any year. This bill has currently passed the House and is in the Senate Finance Committee.

In answer to question c, how do Alaska's rates of taxation of the wholesale liquor industry compare to other states, the following chart has been compiled:

Excise Tax Rates on Specified Alcoholic Beverages Levied by 31 License States and the District of Columbia Ranked According to Magnitude, and by the Federal Government*

As of January 14, 1975

(11-24-75)

Distilled Spirits		Table Wine		Dessert Wine		Beer	
State	Rate Per Gallon	State	Rate Per Gallon	State	Rate Per Gallon	State	Rate Per Gallon
1	2	3	4	5	6	7	8
Minn.	$4.39	Ga.	$1.50	Ga.	$2.50	S. Car.	.768
Alaska	4.00 (2)	Fla.	1.15	Fla.	1.60	Ga.	.322
Okla.	4.00	Tenn.	1.10	Tenn.	1.10	La.	.322
Tenn.	4.00	S. Car.	1.08	S. Car.	1.08	Okla.	.322
Fla.	3.75	Ark.	.75	Okla	1.00	Fla.	.320
Ga.	3.75	Neb.	.75	S. Dak.	.95	S. Dak.	.267
Mass.	3.36	Alaska (7)	.60	Minn.	.79	Alaska (7)	.250
N. Y.	3.25	Ky.	.50	Ark.	.75	Ark.	.234
S. Dak.	3.05	N. Dak.	.50	Neb.	.75	Texas	.165
N. J.	2.80	Okla.	.50	Alaska (10)	.60	N. Dak.	.160
S. Car.	2.72	Mass.	.46	Ill.	.60	Kansas	.150
Wisc.	2.60	Ind.	.45	N. Dak.	.60	Minn.	.129
Ariz.	2.50	Ariz.	.42	Kans.	.50	Tenn.	.110
Ark.	2.50	Del.	.40	Ky.	.50	Neb.	.100
Conn.	2.50	Md.	.40	Nev.	.50	Ind.	.095
L...	2.50	N. Mex.	.40	Mass.	.46	Md.	.090
N. Dak.	2.50	R. I.	.40	Ind.	.45	Mass.	.088
R. I.	2.50	Mo.	.30	Ariz.	.42	Conn.	.081
Ind.	2.28	Nev.	.30	Del.	.40	Ky.	.081
Del.	2.25	N. J.	.30	Md.	.40	Ariz.	.080
Calif.	2.00	S. Dak.	.30	N. Mex.	.40	N. Mex.	.080
D. C.	2.00	Minn.	.27	R. I.	.40	D. C.	.073
Ill.	2.00	Conn.	.25	Wisc.	.39	Ill.	.070
Mo.	2.00	Ill.	.23	Texas	.34	Del.	.065
Neb.	2.00	Colo.	.20	D. C.	.33	R. I.	.065
Texas	2.00	Kans.	.20	Colo.	.30	Wisc.	.065
Ky.	1.92	Wisc.	.195	Mo.	.30	Colo.	.060
Nev.	1.90	Texas	.17	N. J.	.30	Mo.	.060
Colo.	1.80	D. C.	.15	Conn.	.25	Nev.	.060
Kansas	1.50	La.	.11	La.	.21	N. Y.	.044
Md.	1.50	N. Y.	.10	N. Y.	.10	Calif.	.040
N. Mex.	1.50	Calif.	.01	Calif.	.02	N. J.	.033
Median of State Taxes	2.50		.40		.455		.089
Average of State Taxes	2.60		.51		.60		.152
Fed. Tax	10.50**		.17		.67		.29***

*Hawaii, the only other license state, levies an excise tax on alcoholic beverages of 20 percent of the wholesale price.

**Per proof gallon if withdrawn from bond at over 100° proof and per wine gallon if withdrawn from bond at not over 100° proof.

***Actual rate is $9.00 per 31 gallon barrel.

Source: Commerce Clearing House, State Tax Guide: All States

AGO 529700

As the chart indicates, Alaska ranks second in rates per gallon of distilled spirits, seventh in rates per gallon of table wine, tenth in rates per gallon for dessert wine and seventh in rates per gallon for beer.

Unlike most corporations in Alaska with only one or two "commissioned sales persons," the three large liquor distributors have a fairly large standing staff of them. None of these persons pay withholding taxes through the business. They are not listed as "employees" and their quantitative number varies from month to month. As of December 15, 1975, there appears to be at least 44 "commissioned persons" working in the state. The total number of Alaskans currently paying withholding taxes as full or part time employees is 382 persons, of these approximately 200 work in other capacities besides handling or dealing with liquor.

III. Operations of the Wholesalers

a. How is the wholesale price of liquor determined?

b. Does the out of state corporation raise the wholesale price of liquor sold to its Alaskan subsidiary in order to reduce the profit of the subsidiary?

c. Is the wholesale price of liquor purchased by the distributors the same as their Seattle price less transportation costs to Alaska?

As was indicated at the outset of this report I have not received conclusive information at this time about questions a and b.

Theoretically the wholesale price of liquor sold by distributors is exactly the same between Seattle and Alaska. The higher prices are incurred due to freight and extra handling as well as high overhead.

The Alaska Beverage Analyst (November, 1975) quotes both the Seattle and Anchorage prices as well as the Fairbanks price. On the surface it seems quite fair. However, if price gouging is taking place it appears to be on the true wholesale level. That is to say that the prices listed in the Alaska Beverage Analyst have already been hiked before the magazine was printed.

IV. Identification of the Type and Amount of Taxes being currently Received by the State

a. How much was collected from the excise tax on liquor in the past 5 years?

b. Are the distributors paying any income tax?

c. Does the Multistate Tax Compact reach the distributors net profits from sales in Alaska?

Excise tax received by the State of Alaska from the wholesale liquor industry is as follows:

EXCISE ALCOHOL TAX

Fiscal Year Ended	Net Collections	Dollar Increase over prior fiscal year	Percent Increase over prior fiscal year
6/30/75	$6,598,213.24	$907,304.59	15.94
6/30/74	5,690,908.65	456,230.55	8.72
6/30/73	5,234,678.10	363,521.68	7.46
6/30/72	4,871,156.42	(65,242.42)	(1.32)
6/30/71	4,936,398.84	511,479.26	11.56
6/30/70	4,424,919.58	481,813.95	12.22
6/30/69	3,943,105.63	Base Year	Base Year

The distributors are most definitely paying income tax. However, it is to be noted that for the year of 1974 the top four companies in the industry paid a total of $72,834.00 in income taxes based on a $36,839,823.32 gross income. All of the other companies' combined gross income total is so inconsequential as to be unmentioned at this point. As indicated before, I do not have the statistics on their corporate incomes. Therefore, I do not know what their net income was.

The wholesale liquor industry also paid out a total of $8,200.00 in license fees as well as an additional $73,650.00 in excess license fees.

Concerning the Multistate Tax Compact I have received the following information. The liquor industry is influenced by the Multistate Tax Compact. In the last year the effect of the Compact has been that an additional $3,222.00 was received from the industry. This figure can be directly attributed to the Multistate. The audit of the separate companies is generally felt to be more effective on the retail level.

Before the Multistate Tax Compact can rationally be considered it first has to be made more effective. I do believe that one of the methods to facilitate this change would be to utilize the thesis I will expand upon in Section Five. This method would be established on a percentage rate based on the wholesale price. I feel this would bring in far more income than the Multistate Compact.

Just recently (November 16) I received information about serious troubles with the liquor industry in Washington State. It seems that they have not been acting in accordance with the Washington laws and

with the Washington State Liquor Board Regulations. If indeed this is the case, then it necessitates a deeper investigation into the wholesale liquor distributors industry in relationship to, among other things, the Multistate Tax Compact.

V. Miscellaneous

a. Should the tax be based on gallonage or the wholesale price?

b. If the Multistate Tax Compact is not reaching the distributors, is there another way to collect the revenue?

c. Should reform of the tax structure be tied to Alcoholic Rehabilitation?

d. What increase in the rate of excise tax is recommended?

The first question of this section deals with a very interesting aspect. After researching, discussing with "experts," analyzing and much consideration, I'm of the opinion that the tax should be based on the original 1961 gallonage structure and/or the slightly higher tax recommended in HB 309 (1975). And that above that there should be a tax based on the wholesale price with a sliding scale toward the higher priced items.

Concerning the Multistate Tax Compact I feel that the above-mentioned system of a sliding scale based on the wholesale price would definitely be another viable way to collect revenue.

Alcoholic rehabilitation cannot be tied to the tax structure in the State of Alaska. The state constitution forbids any allocation or dedications of any revenue funds to one given entity.

Appendex

Definitions

There are two different classifications for wholesale licenses in the State of Alaska, 1) general wholesale licenses and 2) wholesale malt beverage and wine licenses. They are defined as follows:

(1) The holder of a general wholesale license may sell intoxicating liquors in the original package, and wine in bulk, in quantities of not less than five wine gallons to holders of licenses. A general wholesale license shall be required for each distributing point. The general wholesale license fee schedule is based upon the total amount of business transacted during any year and is $500 as a minimum license fee and is in payment for the first $50,000 of business transacted, and in addition, thereto, a rising scale up to but not over $5,000 in excess fees may be charged based on gross sales.

(2) The holder of a wholesale malt beverage and wine license may sell malt beverages and wine in the original packages and malt beverages and wine in bulk in quantities of not less than five wine gallons to holders of licenses. The malt beverages and wine license fee schedule is based on the total amount of business transacted in any year and is $100 as a minimum license fee, and based on the first $10,000 of business. Excess fees on a rising scale extend to $2,000 but not over and are attached to a $200,000 figure.

It is to be noted that both of these licenses are restricted by law in that they may not sell to a consumer.

Appendix

The following people were contacted and have contributed their expertice to this report:

The Department of Revenue

Commissioner Sterling Gallagher - income tax
Mr. Bob Stevenson - excise tax
Ms. Eddie Price - income tax
Mr. Bob Mitchell - multistate compact
Mr. Fred Boetsch - excise tax

Alcohol Beverage Control Board

Ms. Linda Brown - ABC director

Legislative Affairs - Anchorage

Mr. Bill McGuire - source material

Senate Finance Committee

Copies of Legislative hearings

Federal Court System

U. S. Attorney - antitrust suit in 1973

Anchorage Cold Storage

Mr. Bob Winslow - manager

K & L Distributor, Inc.

Ms. Winifred Nordquist exec. sec.

Alaska Distributors, Inc.

Mr. Jim Reckie - manager

The following is the total gross income for wholesale liquor sales in Alaska for the past ten years. The column on the right is dollars per year, and the left column is gallonage:

	Taxable Gallons	Total Gross Income
1974	8,839,890.46	$40,439,526.24
1973	7,532,690.60	32,919,173.66
1972	7,013,539.09	30,783,714.55
1971	not available	30,730,250.25
1970	5,995,406.16	30,141,016.99
1969	5,351,761.27	26,658,756.88
1968	4,769,086.71	23,500,115.31
1967	4,506,210.52	21,616,597.71
1966	4,149,523.00	18,771,534.47
1965	3,982,346.93	15,914,811.61

GENERAL WHOLESALE LICENSE FOR 1975

Locations of Warehouses

		Seattle	Anchorage	Fairbanks	Soldotna
(O/S Wash)	Alaska Distributors	x	x	x	
(O/S Wash)	K & L Distributors	x	x	x	x
(O/S Wash O)	Anchorage Cold Storage		x		
(O/S Wash O)	Odom	x		x	
(O/S Wash O)	West Coast Distributors	x	x	x	

Malt-Beverage

		Juneau	Sitka	Ketchikan	Palmer
(O/S Wash)	K & L Distributors	x			
(O/S Wash O)	Odom	x		x	
(O/S Wash O)	West Coast Distributors	x			
(O/S Wash O)	West Coast Grocery			x	

		Anchorage	Sitka	Palmer	
Domestic	Alaska Bay Corp.	x			General
Domestic	Aregah	x			General
Domestic	Mosesian Vinters			x	Malt
Domestic	Service Transfer		x		Malt (Oly)

MEMORANDUM State of Alaska

TO: R. D. Stevenson
Special Assistant
Department of Revenue

DATE : May 15, 1975

FROM: P. A. Wall
Director
Administrative Services Division
Department of Revenue

SUBJECT: CS for House Bill No. 246 am

CS for House Bill No. 246 am passed the House and has been referred to the Senate Commerce and Finance Committees.

The Committee Substitute relates to liquor licenses, fees, and municipal regulation of the sale of intoxicating liquor.

With relation to the amendment concerning liquor licenses and fees, this office has recently received the 1974 reports concerning the gross volume of business transacted by all wholesalers in Alaska for the calendar year 1974.

In order to up-date the statistics and provide the Legislature with a projection of increases in revenue that would be obtained by passage of the bill, the following information is submitted:

It is to be noted from AS 04.10.110 (a) concerning general wholesale licenses that the minimum license fee is $500 and is in payment for the first $50,000 of business transacted for one distributing point. Effective rate of the initial fee is 1% ($50,000 X .01 equals $500). The schedule then provides various brackets of gross receipts with increasing fees until the top amount of $500,000 is reached where the present additional fee is $5,000 or again an effective rate of 1% ($500,000 X .01 equals $5,000). There is presently no additional fee for receipts received in amounts over $500,000 for one distributing point.

Reference is now made to the attached schedule, prepared from statistics contained in reports furnished yearly to the Alcoholic Beverage Control Board of holders of General Wholesale Licenses and by holders of Wholesale Malt Beverage and Wine Licenses.

It is to be noted on the subject schedule that for 1959 all holders of General Wholesale Licenses paid initial fees in total amount of $7,000 and excess fees dependent upon the present schedule in total amount of $59,500 for grand total of fees in amount of $66,500 to pay all fees due on gross receipts at various distributing points totaling $15,490,169.50.

MEMORANDUM #2 State of Alaska

TO: [redacted]

DATE :

FROM:

SUBJECT:

Some 15 years later in 1974, all holders of General Wholesale Licenses paid initial fees of $7,500 and excess fees dependent upon the present schedule in total amount of $66,000 for a grand total of fees in amount of $73,500 to pay all fees due on gross receipts at various distributing points totalling $40,439,525.74.

In comparison 15 years apart, the holders of General Wholesale Licenses were, under the prevailing fee schedule, able to increase their total volume of business from $15,490,169.50 to $40,439,525.74, an increase of $24,949,356.24 or 161.07% increase, and yet pay in effect only $7,000 more fees, an increase of 10.53% in total fees. This is due to the top fee schedule being set at $5,000 for gross business of over $500,000 at each distributing point.

The present fee schedule is described in 35-4-21 (h) ACLA 1949 amended by Chapter 131, SLA 1957 and Chapter 197, SLA 1959. There have been no further amendments or changes to date on the fee schedule so described.

From the present fee schedule, a wholesaler who had business transacted, for example, at some distributing point under the present fee schedule of $4,000,000 would not pay more than the wholesaler who did total business at one distributing point of $510,000. Each under the present fee schedule would pay the top additional fee of $5,000.

During 1974 statistics available from the Alcoholic Beverage Control Board disclose that 13 holders of General Wholesale Licenses at various distributing points reported gross receipts in excess of $500,000.

The present schedule for the General Wholesale License fees is in essence a fee of 1% of the total amount of business transactions each year at each distributing point up to a total of $500,000. After that point no additional fees are incurred for gross receipts above $500,000.

You will note from AS 04.10.110 (b) concerning Wholesale Malt Beverage and Wine licenses that the minimum fee if $100 and is in payment for the first $10,000 of business transacted for one distributing point. Effective rate of the initial fee is 1% ($10,000 X.01 equals $100,000). The schedule then provides various brackets of gross receipts with increasing fees until the top amount of $400,000 is reached where the present additional fee is $5,000.

MEMORANDUM #3 State of Alaska

TO:

DATE :

FROM:

SUBJECT:

With respect the seven holders during 1974 of Wholesale Malt Beverage and Wine Licenses, only one holder did in excess of $200,000 in gross receipts at one distributing point; accordingly, the top bracket in the present schedule was not reached.

Based on the 1974 receipts of all wholesale licenses of firms doing business within the State, as reported to the Alcoholic Beverage Control Board, the provisions concerning the excess fee schedule that are incorporated in CS for House Bill No. 246 am would provide increased license fee revenues as follows:

GENERAL WHOLESALE

15 initial fees @ $500 (covering first $50,000 of gross receipts)		$ 7,500.00
Total Gross Receipts	$40,439,525.74	
Less: Gross Receipts covered by initial fee (15 X $50,000)	750,000.00	
Balance of gross receipts subject to 1% fee	$39,689,525.74	396,895.25
Total proposed fees (based on 1974 sales)		$404,395.25
Total fees under present schedule (based on 1974 sales)		73,500.00
Net increase in revenue on general wholesale licenses		$330,895.25

WHOLESALE MALT BEVERAGE AND WINE LICENSES:

7 initial fees @ $100 (covering first $10,000 of gross receipts		$ 700.00
Total Gross Receipts	$ 723,405.70	
Less: Gross Receipts covered by initial fee (7 @ $10,000)	70,000.00	
Balance of gross receipts subject to 1% fee	653,405.70	6,534.05
Total proposed fees (based on 1974 sales)		$ 7,234.05
Total fees under present schedule (based on 1974 sales)		9,200.00
Net decrease in revenue on wholesale malt beverage and wine licenses		$ 1,965.95

AGO 529713

MEMORANDUM #4 State of Alaska

TO: [illegible]

DATE :

FROM:

SUBJECT:

Summarizing the effect of the changes on both types of wholesale license fees is as follows:

Net increase in revenue on general wholesale license fees as compared to present fee schedules	$330,895.25
Net decrease in revenue on wholesale malt beverage and wine license fees as compared to present fee schedules	1,965.95
Net additional revenue pursuant to CSHB 246 am	$328,929.30

The new additional revenue based on 1974 sales would amount to $328,929.30. For your information the 1975-76 budget request for the Alcoholic Beverage Control Board was in amount of $275,200.

Original sponsor: Guy and Itta

Offered: 4/21/75
Referred: Judiciary

IN THE HOUSE

BY THE COMMUNITY AND REGIONAL AFFAIRS COMMITTEE

CS FOR HOUSE BILL NO. 246 am

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to liquor licenses, fees, and municipal regulation of the sale of intoxicating liquor."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 04.10.110 is amended to read:

Sec. 04.10.110. WHOLESALE LICENSE. (a) The holder of a general wholesale license may sell intoxicating liquors in the original package, and wine in bulk, in quantities of not less than five wine gallons to holders of licenses. The holder of a general wholesale license may not sell to a consumer. Liquor requiring internal revenue strip stamps shall have the stamps intact on the package. A general wholesale license shall be required for each distributing point. The general wholesale license fee schedule is based upon the total amount of business transacted during any year and is $500 as a minimum license fee, to accompany the application, and in payment of the fee for the first $50,000 of business transacted, and, in addition thereto, <u>a sum equal to one percent of the business transacted during the year for which the license is issued.</u> [ON THE BUSINESS TRANSACTED DURING ANY YEAR,

ABOVE $50,000 AND NOT OVER $75,000 ..... A FEE OF $ 250
ABOVE $75,000 AND NOT OVER $100,000 ..... A FEE OF $ 500
ABOVE $100,000 AND NOT OVER $125,000 ..... A FEE OF $ 750
ABOVE $125,000 AND NOT OVER $150,000 ..... A FEE OF $1000
ABOVE $150,000 AND NOT OVER $175,000 ..... A FEE OF $1250
ABOVE $175,000 AND NOT OVER $200,000 ..... A FEE OF $1500
ABOVE $200,000 AND NOT OVER $250,000 ..... A FEE OF $2000

 AGO 529715

ABOVE $250,000 AND NOT OVER $300,000 ..... A FEE OF $2500

ABOVE $300,000 AND NOT OVER $350,000 ..... A FEE OF $3000

ABOVE $350,000 AND NOT OVER $400,000 ..... A FEE OF $3500

ABOVE $400,000 AND NOT OVER $500,000 ..... A FEE OF $4500

ABOVE $500,000 ..... A FEE OF $5000]

(b) The holder of a wholesale malt beverage and wine license may sell malt beverages and wine in the original packages and malt beverages and wine in bulk in quantities of not less than five wine gallons to holders of licenses. The holder of a wholesale malt beverage and wine license may not sell to a consumer. The malt beverages and wine license fee schedule is based on the total amount of business transacted in any year and is $100 as a minimum license fee, to accompany the application, and in payment of the fee for the first $10,000 of business transacted, and, in addition, a sum equal to one per cent of the business transacted during the year for which the license is issued. [ON THE BUSINESS TRANSACTED DURING ANY YEAR,

ABOVE $10,000 AND NOT OVER $25,000 ..... A FEE OF $ 150

ABOVE $25,000 AND NOT OVER $50,000 ..... A FEE OF $ 500

ABOVE $50,000 AND NOT OVER $75,000 ..... A FEE OF $ 750

ABOVE $75,000 AND NOT OVER $100,000 ..... A FEE OF $1000

ABOVE $100,000 AND NOT OVER $150,000 ..... A FEE OF $1500

ABOVE $150,000 AND NOT OVER $200,000 ..... A FEE OF $2000

ABOVE $200,000 AND NOT OVER $300,000 ..... A FEE OF $3000

ABOVE $300,000 AND NOT OVER $400,000 ..... A FEE OF $4000

ABOVE $400,000 ..... A FEE OF $5000]

* Sec. 2. AS 04.10.200 is repealed and re-enacted to read:

Sec. 04.10.200. PUBLIC NOTICE. The board shall provide by regulation for adequate notice to inform the public of a proposed issuance of a new license or reissuance, renewal or transfer of an existing

license. The notice shall be bilingual when necessary. Notice shall be given by posting at the location of the premises, at the nearest post office, and at one other conspicuous location in the area for a period of at least 10 days a true copy of the application and by published notice by newspaper, radio and television. Where published notice is not feasible the board may make such exemptions from the requirement of publication as required.

* Sec. 3. AS 04.10.300 is repealed and re-enacted to read:

Sec. 04.10.300. PROTEST IN AREAS OUTSIDE MUNICIPALITIES. (a) An adult resident in an area outside a municipality who desires to protest the issuance, reissuance, renewal or transfer of any and all licenses for an establishment or establishments within two miles of his permanent place of abode or within the established village in which his permanent place of abode is located shall serve upon the applicant and the board a written statement of the reasons for his protest. Upon the receipt of the protest, the board may give notice and hold a hearing in the area in which the protestant resides, at which all persons interested may be heard.

(b) If the protest is made in writing to the board by at least 35 per cent of the adult residents having a permanent place of abode within the established village where the licensed premises is situated or is to be situated and within two miles of the established village, a special election conducted by the Department of Community and Regional Affairs held within the village is mandatory. If at the election the majority of the adult residents having a permanent place of abode within the established village and within two miles of the established village object to issuance, reissuance, renewal or transfer, the board may not issue, reissue, renew or transfer any licenses in, or within two miles of, the established village.

AGO 529717

(c) If the licensed premises is situated or is to be situated outside a municipality or established village and at the hearing the majority of the adult residents having a permanent place of abode within two miles of the premises object to issuance, reissuance, renewal or transfer, the board may, if in its opinion the public interest will be served by the refusal or if other grounds for refusal exist by law, refuse to issue, reissue or transfer the license.

(d) For purposes of this section, an "established village" means an unincorporated area where at least 25 people reside as a social unit, as determined by the Department of Community and Regional Affairs.

* Sec. 4. AS 04.10.350(a) is amended to read:

(a) A license issued under this chapter is renewable automatically if the fee is paid in accordance with secs. 40 - 140 of this chapter, <u>except as provided in sec. 300 of this chapter or</u> except in the case of conviction of the licensee under AS 04.15.100, pending the outcome of a board hearing or judicial determination as to the legality of issuing the license, or in the case of a lawful revocation in which event the license is renewable only as provided by law and regulation.

* Sec. 5. AS 04.15.070(a) is amended to read:

(a) A municipality may by ordinance provide rules and regulations governing the barter, sale and possession of intoxicating liquor within the municipality necessary to the orderly conduct of the business of selling intoxicating liquor. <u>When, under a local option election, the city clerk finds the majority of the voters are against the sale of intoxicating liquor, the municipality, by ordinance, may make the sale of intoxicating liquor within the municipality a misdemeanor whether the sale is made pursuant to license or otherwise.</u> The ordinance may not be inconsistent with this title or the rules and regulations promulgated under this title. No municipality may impose taxes other than

property taxes on liquor inventories and sales taxes on liquor sales when these taxes are levied on other property and sales within the municipality.

AGO 529719

HB 309

Introduced: 3/18/75
Referred: State Affairs and Finance 4-2-75

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

IN THE HOUSE

HOUSE BILL NO. 309

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to the excise tax on intoxicating liquors; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 43.60.010(a) is amended to read:

(a) Every brewer, distiller, bottler, jobber, retailer, wholesaler, or manufacturer who sells intoxicating liquors in the state or who consigns shipments of intoxicating liquors into the state, whether or not the liquors are brewed, distilled, bottled, or manufactured in the state, shall pay on all malt beverages (alcoholic content of one per cent or more by volume), wines, and hard or distilled liquors, the following taxes: (1) malt beverages at the rate of 50 [25] cents a gallon or fraction of a gallon; (2) wine or other liquor of 21 per cent alcohol by volume or less at the rate of $1.00 [60 CENTS] a gallon or fraction of a gallon; and (3) other liquors having a content of more than 21 per cent alcohol by volume at the rate of $4.50 [$4.00] a gallon.

* Sec. 2. This Act takes effect July 1, 1975.

AGO 529720

ALASKA
STATE LEGISLATURE

MEMORANDUM

TO : Senator John Huber Nov. 19, 1975

FROM : Franklin D. Fleeks, Tax Counsel

SUBJECT: Draft of Letter to Dept. of Rewenue

This draft letter is submitted for your comments and approval.

11-20-75 OK

Sterling Gallagher, Commissioner
Department of Revenue
Pouch S
Juneau, Alaska 99811

Dear Commissioner:

This letter is submitted in the interest of saving time for both the Dept. of Revenue's staff and the staff of the Subcommittee on Revenue and Taxation. In reviewing the various tax statutes and their effect the questions listed below came up. We have listed the questions under topic headings in the order of their relationship. ~~It will be~~ we would appreciated ~~that~~ If a question cannot be answered because the data is not available, ~~that~~ this fact be spelled out.

MULTISTATE TAX COMPACT

The Committee's legislative members have asked this

AGO 529721

basic question: Does the Compact generate sufficient tax revenues on income earned in the State of Alaska? At present, we do not have the data to give them an informative, rational answer. We have broken down our inquiry into industry classification because of your statutory limitation that specific companies cannot be named.

Your memorandum to our Committee, dated Nov. 4, 1975, covered your activity in the enforcement of the Compact in regards to the oil industry. Using the second paragraph of the memorandum as a guide, the following questions are submitted for the wholesale liquor industry and canneries operated by out of state corporations.

1. What were the total income taxes paid by both industries for the period 1970-1975 on a yearly basis?

2. Are the excise taxes paid by both industries subject to provisions of the Compact?

3. Can you ascribe any rise in revenue during the 1970-1975 period as directly attributable to the operation of the Compact?

4. As a comparison, what effect has the Compact had on the collection of income tax from multistate retail operations, i.e. J. C. Penny, Safeway, Pay n Save, N. C. Co./Nordstroms etc. The legislators feel that in this classification, retail sales, the allocation formula of the Compact should work best.

5. Have the new Multistate Tax Compact regulations been issued in final form?

MISCELLANEOUS OIL INDUSTRY QUESTIONS

1. Does the Dept. of Revenue keep any statistics or other data on the exploration and drilling expenses of the major oil producers in Alaska?

2. If the calculation of a tax on the oil industry required knowledge of the total capital and/or equity capital, could the Dept. of Revenue secure the information to administer the tax?

MISCELLANEOUS QUESTIONS

1. After your hearings on the Mineral Severance Tax has the Dept. of Revenue formulated a new position?

2. Does the Dept. of Revenue have a position on the raising of the excise tax on liquor?

3. Does the Dept. of Revenue have a position on taxation of profits made by real estate transactions?

4. When does the Dept. of Revenue contemplate the completion and publication of its corporate statistical study?

Thank you for your cooperation.

Very truly yours,

John Huber

John Huber
Chairman

AGO 529723

November 20, 1975

Sterling Gallagher, Commissioner
Department of Revenue
Pouch S
Juneau, Alaska 99811

Dear Commissioner:

This letter is submitted in the interest of saving time for both the Department of Revenue's staff and the staff of the Subcommittee on Taxation and Revenue. In reviewing the various tax statutes and their effect the questions listed below came up. We have listed the questions under topic headings in the order of their relationship. If a question cannot be answered because the data is not available, we would appreciate that this fact be spelled out.

MULTISTATE TAX COMPACT

The Committee's legislative members have asked this basis question: Does the Compact generate sufficient tax revenues on income earned in the State of Alaska? At present, we do not have the data to give them an informative, rational answer. We have broken down our inquiry into industry classification because of your statutory limitation that specific companies cannot be named.

Your memorandum to our Committee, dated November 4, 1975, covered your activity in the enforcement of the Compact in regards to the oil industry. Using the second paragraph of the memorandum as a guide, the following questions are submitted for the wholesale liquor industry and canneries operated by out of state corporations.

1) What were the total income taxes paid by both industries for the period 1970-1975 on a yearly basis?

2) Are the excise taxes paid by both industries subject to pro visions of the Compact?

3) Can you ascribe any rise in revenue during the 1970-1975 period as directly attributable to the operation of the Compact?

4) As a comparison, what effect has the Compact had on the collection of income tax from multistate retail operations, i.e. J.C. Penney, Safeway, Pay n Save, N.C. Company/Nordstroms etc. The legislators feel that in this classification, retail sales, the allocation formula of the Compact should work best.

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MISCELLANEOUS QUESTIONS

1) After your hearings on the Mineral Severance Tax has the Department of Revenue formulated a new position?

2) Does the Department of Revenue have a position on the raising of the excise tax on liquor?

3) Does the Department of Revenue have a position on taxation of profits made by real estate transactions?

4) When does the Department of Revenue contemplate the completion and publication of its corporate statistical study?

Thank you for your cooperation.

Very truly yours,

John Huber

JH:smm

Extra

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF REVENUE

OFFICE OF THE COMMISSIONER / POUCH S – JUNEAU 99811

December 5, 1975

The Honorable John Huber
Alaska State Legislature
Chairman, Special Committee on
Taxation and Revenue
Pouch V
Juneau, Alaska 99811

Dear Senator Huber:

Thank you for your letter expressing interest in the Multistate Tax Compact and several other aspects of our tax program. I have had my staff dig into the industries involved in order to determine the facts to answer your questions.

The following table answers your first question on the income taxes paid by the wholesale liquor industry and the canneries operated by out of state corporations.

Liquor Industry

Number of companies identified: 4

Income tax per originally filed returns for the group identified:

1970	$46,045
1971	78,862
1972	52,042
1973	42,195
1974	72,834

Canneries

Number of companies identified: 21

Income tax per originally filed returns for the group identified:

1970	(figures not available)
1971	$206,673
1972	711,530
1973	330,579
1974	306,872

AGO 529726

The answer to question two is that excise taxes are not subject to the provisions of Multistate Tax Compact since the Compact applies only to income and sales taxes. The income tax provisions allow for apportionment of income where income is earned in more than one state. Excise taxes are based on activity conducted directly in a particular state.

In answer to your third question, I have to really divide my remarks into two areas. The direct assessments made as a result of field audits conducted of multistate taxpayers and applying the Compact approach has resulted in assessments of $6,923,000 between June of 1973, when our multistate field audit program became active, through the end of October, 1975; a twenty-seven month period. I should note however, that much of the early phases of that period were devoted to developing the audit programs and scheduling audits. Now that the program is off and running and we are doing audits on a regular basis, the rate of revenue production should increase.

In addition, there is the indirect effect of enforcing the provisions of the Compact upon compliance by multistate corporate taxpayers. The fact that we are conducting such audits and enforcing such provisions will cause many taxpayers to file on a Multistate Compact basis voluntarily and that will, of course, bring in additional revenues, since the result of filing on a Compact basis will be to increase the tax liability of the corporation so filing. With respect to the two industries mentioned above, additional taxes of $3,222 were collected from the wholesale liquor industry and $76,223 was collected from the canneries industry as a result of the enforcement of the Multistate Tax Compact.

With respect to retail operations, most of the multistate retail stores operating in Alaska have filed apportioned returns under the Compact approach. The main result of auditing some of these corporations has been to combine their finance subsidiaries (who actually own the credit card operation and the accounts receivable and receive the finance charges) with the retail unit itself. Since a big share of the combined operations' profit comes from the finance charges, this area has been fruitful as well. One recent audit which has not yet been finalized indicates that a firm which paid in approximately $30,000 in corporate income taxes will owe an additional $80,000 by combining the finance company with the retail operation. In other words, it appears that the tax would almost quadruple by using this approach. We, of course, intend to apply the same rule to other multinational retailers with finance affiliates.

The new multistate regulations have not yet been issued in final form, but a hearing was held on their adoption on November 20. As soon as they have been reviewed by the Department of Law and approved they will be forwarded to the Lieutenant Governor's Office for adoption and will become effective 30 days thereafter. We expect this to take place in mid January.

The Department of Revenue does not have any statistics on exploration and drilling expenses of the major oil producers to the extent such expenses are incurred in Alaska. Of course, the corporate tax returns do indicate the intangible drilling expense deductions on a worldwide basis.

The calculation of a tax based on total capital of an oil company, to the extent it is employed in Alaska, might be possible since much of this information is available from our property tax records - although this is not necessarily the case since the property tax is based on current market value and capital investment would be indicated on corporate books at cost less depreciation. I think however, that it would be possible for the Department to secure the information to administer such a tax. Tax based on equity capital would be almost impossible to administer since the equity of the corporations is actually on a consolidated worldwide basis and the equity investment in a particular subsidiary or affiliate doing business in Alaska might not be the same as the equity of the total business operation. In addition, if that subsidiary or affiliate were in itself a multistate corporation then the equity would have to be apportioned in some manner. I think it would be very difficult to identify how much equity investment there might be in an oil company's operations in Alaska.

The hearings that were held on the Mineral Severance Tax on November 6 and 7 were extremely helpful to the Department of Revenue in that they supplied us with a lot of economic information and analyses that had not been previously available. As a result, we came to a consensus with the members of the mining industry, that basically a mineral severance tax is not appropriate at this time, but that there were changes needed in the present Mining License Act in order to clear up some of the ambiguities in that Act and make it more easily administerable and more equitable in its application. The mining industry was interested in providing tax incentives but the Department is not inclined at this time to recommend anymore incentives than presently exist in the mining license and income tax statutes.

The Department of Revenue is interested in raising the excise taxes on liquor and to that end recommended to the Governor the introduction of HB 309 last year which does raise the excise tax on distilled spirits from $4.00 to $4.50 per gallon; on wines from 60¢ to $1.00 and on beer from 25¢ to 50¢. We continue to support these increases.

I am not really sure I understand the question regarding the taxation of profits made by real estate transactions. Presently, such transactions are taxable through the Net Income Tax Act. A dealer in real estate pays the regular tax rate on any profits made in the sale of real estate just as any other businessman does. A casual investor in real property or an individual who sells his house is taxable on any profits at capital gains rates.

The corporate data base study is presently in the key punch stage and we are key punching information from 1973 and 1974 returns. We anticipate that this will be finished by the end of December and we will be able to publish some preliminary statistics in January. However, the key punching of audit adjustments covering years 1973 and 1974 has not been done and the programs have yet to be written to incorporate those adjustments in the corporate data base. As soon as those programs are ready we will begin capturing the data from audit adjustments and posting those to the data files. As 1975 income tax returns come in and machine time is available, data will be pulled from those returns and entered into the data base as well. You can, therefore, expect some time in January to receive some preliminary statistical reports for 1973 and 1974 based on returns as they were filed and not including any audit adjustments that may have been made.

We appreciate your interest in tax matters and as you know, are happy to see that the formation of the Special Committee on Taxation and Revenue and the establishment of a staff to conduct tax research on behalf of the legislature. We have met with your staff on several occasions and feel that the addition of this professional input into the legislative process will be very helpful in achieving a common goal of an equitable and easily administerable tax system which will provide the necessary revenues to fund state government.

Sincerely,

Sterling Gallagher
Commissioner

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

STATE OF ALASKA

LEGISLATIVE COUNCIL

Subcommittee on Taxation and Revenue

Chairman, Senator John Huber

REVIEW OF THE WHOLESALE LIQUOR INDUSTRY

Prepared by: Janis C. Gull
Staff Researcher

Franklin D. Fleeks
Tax Counsel

AGO 529730 +

ALASKA
STATE LEGISLATURE

MEMORANDUM

TO: Senator John Huber

FROM: Franklin D. Fleeks
Tax Counsel

SUBJECT: Committee staff review of the wholesale liquor industry

Submitted for your review and approval are the findings of the staff in regard to the wholesale liquor industry. The basic research was done was Janis C. Gull. A prepared synopsis of the findings follows. Since there is one important missing link: how the manufacturing distillers deal with the wholesale dealers, you will find our recommendations qualified.

AGO 529731

CURRENT STATUTES

In the field of taxation and revenue the wholesale liquor industry is covered specifically by the following:

(a) AS 04.10.110 Wholesale License

(b) AS 43.60 Excise Tax on Intoxicating Liquor

The wholesale license fee is asserted on two categories: (a) the general license which covers hard liquor and (b) the wholesale malt beverage and wine license. The license fees are based on a sliding scale with the general license ranging from a minimum of $500 to a maximum of $5,000 and the wholesale liquor license ranging from a minimum of $100 to a maximum of $5,000.

Excise tax rates are based on gallonage. The rates are as follows:

(a) Malt beverages - 25 cents a gallon or fraction of a gallon.

(b) Wine or other liquor of 21 percent alcohol by volume or less - 60 cents a gallon or fraction of a gallon.

(c) Other liquors having a content of more than 21 percent alcohol by volume - $4 a gallon.

FACTORS FAVORING AN INCREASE

In a memo dated May 15, 1975, a copy of which is attached, Mr. Wall of the Department of Revenue made an analysis of the liquor licenses and fees. He noted the last change in licenses and fees was in 1959. Since that time the industry, under the general license, has increased its total business volume from $15,490,169 to $40,439,526; a 161.07 percent increase.

Licenses and fees for the general license have gone from $66,500 in 1959 to $73,500 in 1974, an increase of $7,000 or 10.53 percent. It should also be noted that the last excise tax rate increase took place in 1961.

Gross income in the industry from 1971-1974 increased at a rate of one percent (1%). With the increase in population and income during the 1974-1975 periods, gross income increased twenty-two percent (22%). Revenue received by the state from license fees incresed less than one percent (1%). Revenue from the excise tax increased by sixteen ½ercent (16%). No judgment can be made in regard to the income tax because of not knowing if the four companies used were the major ones in the industry.

All econcomic indicators point to growth for Alaska in the years ahead. The wholesale liquor industry, in all certainty, will share in this growth. Each segment of the Alaskan economy should contribute its fair share of tax. Because of the nature of its products, the wholesale liquor industry creates a burdensome monetary and social cost to the state. An increase in rates will insure that the industry is contributing its fair share to the state revenues.

UNFINISHED ITEMS AND RECOMMENDATIONS

Review of the attached report and its underlying data revealed the following areas of concern.

Wholesale Price Determinations

Nothing was found indicating that the price charged to Alaskan subsidiaries was out of line. However, the staff has not received

data on the price charged by the distillers to the wholesalers. Inquiries have been made to the Alcohol, Tobacco, Firearms Division of the U. S. Treasury, the Washington State Liquor Control Board, and the National Alcohol Beverage Control Association. On receipt of the data a comparison will be made between the price charged by the distiller to the wholesaler and the price charged by the wholesaler to its Alaskan subsidiary. This comparison should provide answers on pricing policies of the major wholesalers. Work is continuing on this item.

AS 43.60.010(b) - Warehousing

This subsection was passed during the 1971 session, becoming effective July 1, 1971. This section provides that if consigned shipments of intoxicating liquors into Alaska are to warehouses in the state no tax is imposed until the liquor is removed from the warehouse for sale or consignment to retailers. The effect of this subsection is that at any one time the warehouses can contain both intoxicating liquors that have been taxed at the FOB point-Seattle and intoxicating liquors not taxed because of consignments to Alaskan warehouses.

Before passage of this amendment all liquor was taxed FOB point-Seattle. In enforcing the tax the Department of Revenue had a simple audit tool. After reviewing the wholesaler's books the department could cross-check the bills of lading of the shipper to verify the accuracy of the wholesaler's books.

The amendment eliminated this tool. Because the liquor in the warehouse can be taxed or nontaxed, the current system lends itself

to manipulation. The current system also puts an intolerable administrative burden on the Department of Revenue as they do not have sufficient personnel to adequately examine the industry.

Any tax that is imposed should have as its criteria equity, ease of administration, and be free from manipulative influences. The current law has none of these. In fact, it is a loophole that needs closing. It is the recommendation of the staff that AS 43.60.010(b) be repealed.

CONCLUSION

Because of the continuing research needed in establishing wholesale prices this conclusion is qualified. It is the staff's recommendation that subject to the above qualification, the bills, CSHB246am and HB 309, currently in the House Finance Committee, be supported and that AS 43.60.010(B) be repealed.

ALASKA
STATE LEGISLATURE

MEMORANDUM

TO: Senator Huber and
Franklin D. Fleeks, tax counsel

FROM: Janis C. Gull

SUBJECT: Wholesale Liquor Industry

On November 18 I received a memorandum containing your Outline of Research Needed for Analysis of Liquor Tax. The following is a copy of that outline and my report on the research and findings of fact that were the direct results of said outline.

I am currently at your disposal to discuss the context of this report and to supply any and all raw data entailed within.

AGO 529736

ALASKA STATE LEGISLATURE

OK FHH 11-18-75

MEMORANDUM

TO : Senator John Huber Nov. 18, 1975

FROM : Franklin D. Fleeks, Tax Counsel

SUBJECT: Outline of Research Needed for Analysis of Liquor Tax

The following outline is submitted for your approval. The information sought will give a detailed picture of the wholesale liquor industry in Alaska. The study is limited to the wholesale distributors, most of wholm are out of state corporations.

A partial listing of sources to be contacted for information is as follows:

a. Dept. of Revenue - Excise Tax Division
b. Dept. of Revenue - Income Tax Division, Multi-state Tax Compact
c. Dept. of Revenue - Statistics on amount of tax collected
d. Alcohol Beverage Control Board
e. Bill McGuire - Adm. Asst. to Sen. Chancy Croft
f. Tapes of legislative hearings on last sessions bill
g. Lobbyist for distributors for their position
h. Washington State Liquor Control Board for comparison of wholesale prices
i. Transcript of anti-trust suit against the wholesale distributors.

OUTLINE

I. Identification of the Taxpayers
   a. Who are the wholesale distributors who operate in Alaska?
   b. Are they domestic (Alaskan) corporations, subsidiaries of out of state corporations, or completely out of state corporations?
   c. Where are their major warehouses located; In Alaska or outside of Alaska?

II. Identification of the Problem
   a. How long since the rates have been changed?
   b. What are the present rates of taxation?
   c. How do Alaska's rates of taxation of the wholesale liquor industry compare to other states?
   d. What were the total amount of wholesale liquor sales in Alaska for the past five years?
   e. How many Alaskan employees are there?

III. Operations of the Wholesalers
   a. How is the wholesale price of liquor determined?
   b. Does the out of state corporation raise the wholesale price of liquor sold to its wholly owned Alaskan subsidiary in order to reduce the profit of the subsidiary?
   c. Is the wholesale price of liquor purchased by the distributors the same as their Seattle price less transportation costs to Alaska?

IV. Identification of the Type and Amount of Taxes Being Currently Received by the State
   a. How much was collected from the excise tax on liquor in the past 5 years?
   b. Are the distributors paying any income tax?
   c. Does the Multistate Tax Compact reach the distributors net profits from sales in Alaska?

V. Miscellaneous
   a. Should the tax be based on gallonage or the wholesale price?
   b. If the Multistate Tax Compact is not reaching the distributors, is their another way to collect the revenue?
   c. Should reform of the tax structure be tied to Alcoholic Rehabilitation?
   d. What increase in the rate of excise tax is recommended?

I. Identification of the Taxpayers

a. Who are the wholesale distributors who operate in Alaska?

b. Are they domestic (Alaskan) corporations, subsidiaries of out-of-state corporations, or completely out-of-state corporations?

c. Where are their major warehouses located; in Alaska or outside of Alaska?

The following is a complete list of all wholesalers presently doing business in the State of Alaska.

Alaska Bay Corporation
505 Ocean Dock Road
Anchorage, Alaska
Mail: Box 1872
Fairbanks, Alaska 99701

Alaska Distributors Company
4601 Sixth Avenue South
Seattle, Washington 98108

Alaska Distributors Company
P. O. Box 549
Fairbanks, Alaska 99701

Alaska Distributors Company
Box 4-1598
Anchorage, Alaska 99509

Anchorage Cold Storage, Co., Inc.
P. O. Box 39
Anchorage, Alaska 99501

Aregah Corporation
Box 3454
Anchorage, Alaska 99501

Mosesian Vinters
Ray N. Mosesian
Mail: Star Route A, Box 217-A
Anchorage, Alaska 99502

Odom Company
1258 First Avenue South
Seattle, Washington 98134

Odom Company
Alaska Railroad Industrial Area
Fairbanks, Alaska 99701

Odom Company
Box 410
Juneau, Alaska 99801

Odom Company
619 Stedman Street
Ketchikan, Alaska 99901

Service Transfer, Inc.
Box 178
Sitka, Alaska 99835

K & L Distributors, Inc.
300 120th Avenue, N. E.
Bellevue, Washington 98004

K & L Distributors, Inc.
4504 Lois Drive
Anchorage, Alaska 99503

K & L Distributors, Inc.
17 Adak Street
Fairbanks, Alaska 99701

K & L Distributors, Inc.
490 South Franklin Street
Juneau, Alaska 99801

K & L Distributors, Inc.
P. O. Box 337
Soldotna, Alaska 99669

West Coast Distributors, Inc.
1258 First Avenue South
Seattle, Washington 98134

West Coast Distributors, Inc.
Box 942
Anchorage, Alaska 99510

West Coast Distributors, Inc.
P. O. Box 732
Fairbanks, Alaska 99701

West Coast Distributors, Inc.
490 South Franklin Street
Juneau, Alaska 99801

West Coast Grocery Company
P. O. Box 118
Ketchikan, Alaska 99901

Of the preceding wholesale entities only four are totally Alaskan owned: 1) Alaska Bay Corporation; 2) Aregah; 3) Mosesian Vinters; and 4) Service Transfer. Of these, Alaska Bay Corporation and Aregah hold general wholesale licenses. Each corporation has one only warehouse, both of which are physically located in Anchorage

Mosesian Vinters distills and distributes milk wine from its distillery in Palmer. It holds a malt-beverage and wine license and is owned in full by a religious order.

Service Transfer has only one warehouse located in Sitka. It also holds a malt -beverage and wine license and distributes Olympia Beer solely in Sitka.

Considering the remaining eighteen wholesalers licensed to do business within the State of Alaska I have found that they are all subsidiaries of four larger Washington State corporate entities. The only exception to this might be considered to be the K & L distribution

point in Bellevue, Washington. This particular location is the parent corporation to its four separate distribution points in Alaska.

Alaska Distributors Co.
4601 6th Ave. So.
Seattle, Washington

Owner: Alex Shulman

This corporation is based in Seattle, Washington. It maintains three Alaska licensed warehouses -- Seattle, Anchorage, and Fairbanks. The corporation also has eight other distribution points in Alaska. These eight are all run by "commissioned sales persons", none of whom utilize licensed warehouses. It also appears that only a minimum amount of withholding taxes is being paid. They order the exact quantity their customers require and deliver it immediately. Because its income tax returns are confidential, I could not find out the exact percentage of the gross or net income that actually went to the State of Alaska.

It has been found that Alaska Distributors pays excise taxes in accordance with AS 43.60.010(b) which states that excise taxes imposed shall not be levied until the goods are sold and removed from the warehouse for sale as consignment to retailers.

K & L Distributors, Inc.
300 120th N.E.
P. O. Box 1969
Bellevue, Washington 98004

Owners: The Levine family

K & L Distributors is a family-owned corporation with its physical base in Bellevue, Washington. It has five Alaska licensed warehouses:

1) Bellevue, 2) Anchorage, 3) Fairbanks, 4) Juneau, and 5) Soldotna. The Soldotna distribution point holds a malt-beverage and wine license only. All of the others hold general licenses.

This corporation has set up a series of "sales representatives" to cover the outlying areas. As with Alaska Distributors, K & L's "reps" are "commissioned sales persons." There are eight separate "area" locations for these reps, but the quantitative number of personnel changes monthly.

All K & L products are shipped from the Bellevue warehouse to Alaska. They are not distributed elsewhere. The Bellevue distribution point does do a representative volume of business in Washington. This can be largely attributed to the fact that they are the exclusive distributor of both Budweiser and Olympia beer -- the number 1 and number 2 best sellers respectively.

The Levine family is not involved in other business endeavors but is solely a liquor distributor. Its basic corporate structure is rather simple and appears to function very well. As with Alaska Distributors, K & L also pays its excise taxes under As 43.60.010(b).

West Coast Grocery
P. O. Box 118
Ketchikan, Alaska 99901

President: Charles H. Hyde

This corporation distributes alcoholic beverages and general groceries in the Ketchikan area. It also does a healthy mail order

grocery and liquor business. Hard liquor is handled by "commissioned sales persons" in this area, and thus the Ketchikan warehouse maintains a wholesale malt-beverage and wine license.

West Coast Grocery - Ketchikan is a division of West Coast Grocery Company of Tacoma, Washington. It maintains a number of locations on the west coast. It appears that this corporation is also basically owned and operated by one family. Charles H. Hyde is the president, with William B. Hyde as vice president.

At this point in time I have not found out whether they are paying the excise taxes upon shipment from Tacoma or are utilizing AS 43.60.010.

ODOM
1258 First Avenue South
Seattle, Washington 98124

Owner: Mr. M. W. Odom

NOTE: M. W. Odom is the owner and president of a corporate conglomerate. He has set up and/or purchased an extensive series of separate corporations -- all of which have separate managerial staff, policies and tax structures. The end net proceeds of each entity is directed to the parent corporation. This creates a steady cash flow both within each corporation as well as the ability to extend monies to other internal corporations.

The following report entails his liquor interests within the State of Alaska and extends only to the "parent" warehouses in Seattle.

Anchorage Cold Storage
P. O. Box 39
240 First Avenue
Anchorage, Alaska 99501

President: M. W. Odom

This Odom entity has a full-time staff of 185 persons. It handles produce, frozen meats and liquor. It holds one general wholesale license for the Anchorage location. As indicated by the above address, this particular company was incorporated in the State of Alaska and is a domestic corporation.

Anchorage Cold Storage pays all of its excise taxes in Washington. It does not utilize AS 43.60.010(b). This is due to the fact that the company is actually purchasing the goods from Odom in Seattle and is then shipping them to Alaska. This procedure excludes it from section 2(b) of the statute because it only allows the wholesalers to withhold payment of excise taxes until such time as the liquor is sold. In the case of Odom - Anchorage Cold Storage, Odom is <u>selling</u> all liquor and malt beverages to that company in Seattle.

Anchorage Cold Storage merged with the parent Odom Company on April 18, 1974.

Odom Company
1258 First Avenue South
Seattle, Washington 98134

President: M. W. Odom

This company is what I call Odom with a small "o." It is considered to be a separate corporation, as are the rest of his entities.

It is not the parent corporation in Seattle. It appears that M. W. merely wanted to hang his name on it in lieu of Mucktuck Distributors or something else.

The company has four large warehouses. Both the Seattle and Fairbanks locations hold general wholesale licenses. The Juneau and Ketchikan warehouses are malt-beverage and wine distribution points. The management also maintains four "commissioned sales persons" in various small communities.

West Coast Distributors
1250 First Avenue South
Seattle, Washington 98134

President: M. W. Odom

This corporate structure is much the same as with other Odom enterprises. It has four warehouses, Seattle, Anchorage, Fairbanks and Juneau, with the latter being a malt-beverage distribution point. West Coast Distributors like Anchorage Cold Storage merged with Odom on April 18, 1974.

II. Identification of the Problem

a. How long since the rates have been changed?

b. What are the present rates of taxation?

c. How do Alaska's rates of taxation of the wholesale liquor industry compare to other states?

d. What was the total amount of wholesale liquor sales in Alaska for the past five years?

Alaskan Statute 43.60.010 was instituted in 1961. There have been no rate changes made since its inception. The taxation rates established in 1961 are wine: $0.60 per gallon; malt-beverages: $0.25 per gallon; hard liquor: $4.00 per gallon.

On 3/18/75 House Bill 309 (Appendix No. II) was introduced by the Rules Committee by Request of the Governor and it was referred to the House Finance Committee. At the present time it is still in that Committee.

This new bill (309) would increase the current tax rates as follows 1) malt beverages at a rate of $0.50 a gallon, (from $0.25); 2) wine or other liquor at a rate of $1.00 per gallon, (from $0.60); and 3) hard liquors at a rate of $4.50 a gallon (from $4.00).

In addition to HB 309, House Bill 246 am (Appendix No. III) was introduced. CS for #246 was introduced by Community and Regional Affairs. It was referred to the Judiciary which in turn produced CSHB 246 am which was passed by the House and sent to Senate Commerce and Finance. The bill is currently in this Committee. CSHB 246 am is designed to change the wholesale license fees.

The current statute allows for general wholesale license of $500 per year and a maximum of $5,000 in excess fees on an income of $500,000 or over.

Also currently allowed is the malt-beverage and wine license fees of $100 with $1,000 maximum in excess fees on an income of $100,000 or more.

The new bill, CSHB 246 am, requests the same tax and excess structure and in addition thereto, a sum equal to one percent of the business transacted during the year for which the license is issued on the business transacted during any year. This bill has passed the House and is in the Senate Finance Committee. A letter from Mr. P. A. Wall to R. D. Stevenson regarding the potential value of this bill is enclosed Appendix No. I.

In answer to question c, how do Alaska's rates of taxation of the wholesale liquor industry compare to other states, the following chart has been compiled:

As the chart indicates, Alaska ranks second in rates per gallon of distilled spirits, seventh in rates per gallon of table wine, tenth in rates per gallon for dessert wine and seventh in rates per gallon for beer.

Unlike many corporations in Alaska with only one or two "commissioned sales persons," the three large liquor distributors employ a fairly large standing staff of these "specialized" persons. None of them have to pay withholding taxes through the business. They are not listed as "employees" and their quantitative number varies from month to month. As of December 15, 1975, there appears to be at least 44 "commissioned persons" working in the state. The total number of Alaskans currently paying withholding taxes as full or part-time employees is 382 persons. Approximately 200 of these people work in other capacities besides handling or dealing with liquor.

III. Operations of the Wholesalers

a. How is the wholesale price of liquor determined?

b. Does the out-of-state corporation raise the wholesale price of liquor sold to its Alaskan subsidiary in order to reduce the profit of the subsidiary?

c. Is the wholesale price of liquor purchased by the distributors the same as their Seattle price less transportation costs to Alaska?

The wholesale price of liquor is determined by adding the distilling price to operating expenses, plus freight costs to the wholesaler (i.e., FOB Seattle), plus federal taxes and then net profit. This figure is then equated by gallons to exact a wholesale price per product.

I was not able to find conclusive evidence that the out-of-state corporations are raising the wholesale price of liquor to their Alaskan subsidiaries. There have been antitrust suits levied against the different wholesalers. However, it should be noted that all of the separate suits were settled out of court.

Theoretically the wholesale price of liquor sold by distributors is exactly the same between Seattle and Alaska. The higher prices are incurred due to freight and extra handling as well as high overhead.

The Alaska Beverage Analyst (November, 1975) quotes both the Seattle and Anchorage prices as well as the Fairbanks price. On the surface it seems quite fair. However, if price gouging is taking place it appears to be on the true wholesale level. That is to say that the prices listed in the Alaska Beverage Analyst have already been hiked before the magazine was printed.

IV. Identification of the Type and Amount of Taxes being currently Received by the State

a. How much was collected from the excise tax on liquor in the past 5 years?

b. Are the distributors paying any income tax?

c. Does the Multistate Tax Compact reach the distributors net profits from sales in Alaska?

Excise tax received by the State of Alaska from the wholesale liquor industry is as follows:

EXCISE ALCOHOL TAX

Fiscal Year Ended	Net Collections	Dollar Increase over prior fiscal year	Percent Increase over prior fiscal year
6/30/75	$6,598,213.24	$907,304.59	15.94
6/30/74	5,690,908.65	456,230.55	8.72
6/30/73	5,234,678.10	363,521.68	7.46
6/30/72	4,871,156.42	(65,242.42)	(1.32)
6/30/71	4,936,398.84	511,479.26	11.56
6/30/70	4,424,919.58	481,813.95	12.22
6/30/69	3,943,105.63	Base Year	Base Year

The distributors are definitely paying income tax. However, it is to be noted that for the year of 1974 the top four companies in the industry paid a total of $72,834.00 in income taxes to the state based on a $36,839,823.32 gross income. All of the other companies' combined gross income total is so inconsequential as to be unmentioned at this point. As indicated before, I do not have the statistics on their corporate incomes. Therefore, I do not know what their net income was.

The wholesale liquor industry also paid out a total of $8,200.00 in license fees as well as an additional $73,650.00 in excess license fees.

Concerning the Multistate Tax Compact I have received the following information. The liquor industry is influenced by the Multistate Tax Compact. In the last year the effect of the Compact has been that an additional $3,222.00 was received from the industry. This figure can be directly attributed to the Compact. However, the audit of separate companies is generally felt to be more effective on the retail level.

Before the Multistate Tax Compact can rationally be considered it first has to be made more effective. I do believe that one of the methods to facilitate this change would be to utilize the thesis I will expand upon in Section Five. This method would be established on a percentage rate based on the wholesale price. I feel this would bring in far more income than the Multistate Compact.

V. Miscellaneous

a. Should the tax be based on gallonage or the wholesale price?

b. If the Multistate Tax Compact is not reaching the distributors, is there another way to collect the revenue?

c. Should reform of the tax structure be tied to Alcoholic Rehabilitation?

d. What increase in the rate of excise tax is recommended?

The first question of this section deals with a very interesting aspect. After researching, discussing with "experts," analyzing and much consideration, I am of the opinion that the tax should be based on the gallonage structure currently recommended in HB 309 (1975) Appendix No. II. And that above this rate there should be a tax based on the wholesale price with a sliding scale toward the higher priced items.

Concerning the Multistate Tax Compact I feel that the above-mentioned system of a sliding scale based on the wholesale price would definitely be another viable way to collect revenue.

Alcoholic rehabilitation cannot be tied to the tax structure in the State of Alaska. The state constitution forbids any allocation or dedications of any revenue funds to one given entity.

Concerning a rate increase for liquor excise taxes, the 1975 Legislature has a bill pending in the House Finance Committee (House Bill No. 309). It was introduced by the request of the Governor.

Through my research I feel that at this point in time the new rates proposed will be adequate and that they are justified.

AGO 529753

APPENDICES

	Number
Letter from P. Wall to R. Stevenson	I
HB 309	II
HB 246 am	III
Locations of warehouses	IV
Definitions	V
Persons contacted	VI

AGO 529754

MEMORANDUM State of Alaska

APPENDIX No. I

TO: R. D. Stevenson
Special Assistant
Department of Revenue

DATE : May 15, 1975

FROM: P. A. Wall
Director
Administrative Services Division
Department of Revenue

SUBJECT: CS for House Bill No. 246 am
P. 1

CS for House Bill No. 246 am passed the House and has been referred to the Senate Commerce and Finance Committees.

The Committee Substitute relates to liquor licenses, fees, and municipal regulation of the sale of intoxicating liquor.

With relation to the amendment concerning liquor licenses and fees, this office has recently received the 1974 reports concerning the gross volume of business transacted by all wholesalers in Alaska for the calendar year 1974.

In order to up-date the statistics and provide the Legislature with a projection of increases in revenue that would be obtained by passage of the bill, the following information is submitted:

It is to be noted from AS 04.10.110 (a) concerning general wholesale licenses that the minimum license fee is $500 and is in payment for the first $50,000 of business transacted for one distributing point. Effective rate of the initial fee is 1% ($50,000 X .01 equals $500). The schedule then provides various brackets of gross receipts with increasing fees until the top amount of $500,000 is reached where the present additional fee is $5,000 or again an effective rate of 1% ($500,000 X .01 equals $5,000). There is presently no additional fee for receipts received in amounts over $500,000 for one distributing point.

Reference is now made to the attached schedule, prepared from statistics contained in reports furnished yearly to the Alcoholic Beverage Control Board by holders of General Wholesale Licenses and by holders of Wholesale Malt Beverage and Wine Licenses.

It is to be noted on the subject schedule that for 1959 all holders of General Wholesale Licenses paid initial fees in total amount of $7,000 and excess fees dependent upon the present schedule in total amount of $59,500 for a grand total of fees in amount of $66,500 to pay all fees due on gross receipts at various distributing points totaling $15,490,169.50.

Form SA 1

MEMORANDUM State of Alaska

TO: [illegible]

DATE :

FROM:

SUBJECT: P. 2

Some 15 years later, in 1974, all holders of General Wholesale Licenses paid initial fees of $7,500 and excess fees dependent upon the present schedule in total amount of $66,000 for a grand total of fees in amount of $73,500 to pay all fees due on gross receipts at various distributing points totaling $40,439,525.74.

In comparison 15 years apart, the holders of General Wholesale Licenses were, under the prevailing fee schedule, able to increase their total volume of business from $15,490,169.50 to $40,439,525.74, an increase of $24,949,356.24 or 161.07% increase, and yet pay in effect only $7,000 more fees, an increase of 10.53% in total fees. This is due to the top fee schedule being set at $5,000 for gross business of over $500,000 at each distributing point.

The present fee schedule is described in 35-4-21 (H) ACLA 1949 amended by Chapter 131, SLA 1957 and Chapter 197, SLA 1959. There have been no further amendments or changes to date on the fee schedule so described.

From the present fee schedule, a wholesaler who had business transacted, for example, at some distributing point under the present fee schedule of $4,000,000 would not pay more than the wholesaler who did total business at one distributing point of $510,000. Each under the present fee schedule would pay the top additional fee of $5,000.

During 1974 statistics available from the Alcoholic Beverage Control Board disclose that 13 holders of General Wholesale Licenses at various distributing points reported gross receipts in excess of $500,000.

The present schedule for the General Wholesale License fees is in essence a fee of 1% of the total amount of business transactions each year at each distributing point up to a total of $500,000. After that point no additional fees are incurred for gross receipts above $500,000.

You will note from AS 04.10.110 (b) concerning Wholesale Malt Beverage and Wine Licenses that the minimum fee if $100 and is in payment for the first $10,000 of business transacted for one distributing point. Effective rate of the initial fee is 1% ($10,000 X .01 equals $100.00). The schedule then provides various brackets of gross receipts with increasing fees until the top amount of $400,000 is reached where the present additional fee is $5,000.

MEMORANDUM State of Alaska

TO: [illegible]

APPENDIX

DATE :

FROM:

SUBJECT: P. 3

With respect the seven holders during 1974 of Wholesale Malt Beverage and Wine Licenses, only one holder did in excess of $200,000 in gross receipts at one distributing point; accordingly, the top bracket in the present schedule was not reached.

Based on the 1974 receipts of all wholesale licenses of firms doing business within the State, as reported to the Alcoholic Beverage Control Board, the provisions concerning the excess fee schedule that are incorporated in CS for House Bill No. 246 am would provide increased license fee revenues as follows:

GENERAL WHOLESALE:

15 initial fees @ $500 (covering first $50,000 of gross receipts)		$ 7,500.00
Total Gross Receipts	$40,439,525.74	
Less: Gross Receipts covered by initial fee (15 x $50,000)	750,000.00	
Balance of gross receipts subject to 1% fee	$39,689,525.74	396,895.25
Total proposed fees (based on 1974 sales)		$404,395.25
Total fees under present schedule (based on 1974 sales)		73,500.00
Net increase in revenue on general wholesale licenses		$330,895.25

WHOLESALE MALT BEVERAGE AND WINE LICENSES:

7 initial fees @ $100 (covering first $10,000 of gross receipts		$ 700.00
Total Gross Receipts	$ 723,405.70	
Less: Gross Receipts covered by initial fee (7 @ $10,000)	70,000.00	
Balance of gross receipts subject to 1% fee	$ 653,405.70	6,534.05
Total proposed fees (based on 1974 sales)		$ 7,234.05
Total fees under present schedule (based on 1974 sales)		9,200.00
Net decrease in revenue on wholesale malt beverage and wine licenses		$ 1,965.95

AGO 529757

MEMORANDUM State of Alaska

TO: F

APPENDIX

DATE :

FROM:

SUBJECT: P. 4

Summarizing the effect of the changes on both types of wholesale license fees is as follows:

Net increase in revenue on general wholesale license fees as compared to present fee schedules	$330,895.25
Net decrease in revenue on wholesale malt beverage and wine license fees as compared to present fee schedules	1,965.95
Net additional revenue pursuant to CSHB 246 am	$328,929.30

The new additional revenue based on 1974 sales would amount to $328,929.30. For your information the 1975-76 budget request for the Alcoholic Beverage Control Board was in amount of $275,200.

ACC 529758

APPENDIX No. II

Introduced: 3/18/75
Referred: State Affairs and Finance

IN THE HOUSE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

HOUSE BILL NO. 309

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to the excise tax on intoxicating liquors; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 43.60.010(a) is amended to read:

(a) Every brewer, distiller, bottler, jobber, retailer, wholesaler, or manufacturer who sells intoxicating liquors in the state or who consigns shipments of intoxicating liquors into the state, whether or not the liquors are brewed, distilled, bottled, or manufactured in the state, shall pay on all malt beverages (alcoholic content of one per cent or more by volume), wines, and hard or distilled liquors, the following taxes: (1) malt beverages at the rate of 50 [25] cents a gallon or fraction of a gallon; (2) wine or other liquor of 21 per cent alcohol by volume or less at the rate of $1.00 [60 CENTS] a gallon or fraction of a gallon; and (3) other liquors having a content of more than 21 per cent alcohol by volume at the rate of $4.50 [$4.00] a gallon.

* Sec. 2. This Act takes effect July 1, 1975.

APPENDIX No. III

Original sponsor: Guy and Itta

Offered: 4/21/75
Referred: Judiciary

IN THE HOUSE

BY THE COMMUNITY AND REGIONAL AFFAIRS COMMITTEE

CS FOR HOUSE BILL NO. 246 am

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to liquor licenses, fees, and municipal regulation of the sale of intoxicating liquor."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 04.10.110 is amended to read:

Sec. 04.10.110. WHOLESALE LICENSE. (a) The holder of a general wholesale license may sell intoxicating liquors in the original package, and wine in bulk, in quantities of not less than five wine gallons to holders of licenses. The holder of a general wholesale license may not sell to a consumer. Liquor requiring internal revenue strip stamps shall have the stamps intact on the package. A general wholesale license shall be required for each distributing point. The general wholesale license fee schedule is based upon the total amount of business transacted during any year and is $500 as a minimum license fee, to accompany the application, and in payment of the fee for the first $50,000 of business transacted, and, in addition thereto, <u>a sum equal to one percent of the business transacted during the year for which the license is issued.</u> [ON THE BUSINESS TRANSACTED DURING ANY YEAR,

ABOVE $50,000 AND NOT OVER $75,000 ..... A FEE OF $ 250
ABOVE $75,000 AND NOT OVER $100,000 ..... A FEE OF $ 500
ABOVE $100,000 AND NOT OVER $125,000 ..... A FEE OF $ 750
ABOVE $125,000 AND NOT OVER $150,000 ..... A FEE OF $1000
ABOVE $150,000 AND NOT OVER $175,000 ..... A FEE OF $1250
ABOVE $175,000 AND NOT OVER $200,000 ..... A FEE OF $1500
ABOVE $200,000 AND NOT OVER $250,000 ..... A FEE OF $2000

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ABOVE $250,000 AND NOT OVER $300,000 ..... A FEE OF $2500

ABOVE $300,000 AND NOT OVER $350,000 ..... A FEE OF $3000

ABOVE $350,000 AND NOT OVER $400,000 ..... A FEE OF $3500

ABOVE $400,000 AND NOT OVER $500,000 ..... A FEE OF $4500

ABOVE $500,000 ..... A FEE OF $5000]

(b) The holder of a wholesale malt beverage and wine license may sell malt beverages and wine in the original packages and malt beverages and wine in bulk in quantities of not less than five wine gallons to holders of licenses. The holder of a wholesale malt beverage and wine license may not sell to a consumer. The malt beverages and wine license fee schedule is based on the total amount of business transacted in any year and is $100 as a minimum license fee, to accompany the application, and in payment of the fee for the first $10,000 of business transacted, and, in addition, a sum equal to one per cent of the business transacted during the year for which the license is issued. [ON THE BUSINESS TRANSACTED DURING ANY YEAR,

ABOVE $10,000 AND NOT OVER $25,000 ..... A FEE OF $ 150

ABOVE $25,000 AND NOT OVER $50,000 ..... A FEE OF $ 500

ABOVE $50,000 AND NOT OVER $75,000 ..... A FEE OF $ 750

ABOVE $75,000 AND NOT OVER $100,000 ..... A FEE OF $1000

ABOVE $100,000 AND NOT OVER $150,000 ..... A FEE OF $1500

ABOVE $150,000 AND NOT OVER $200,000 ..... A FEE OF $2000

ABOVE $200,000 AND NOT OVER $300,000 ..... A FEE OF $3000

ABOVE $300,000 AND NOT OVER $400,000 ..... A FEE OF $4000

ABOVE $400,000 ..... A FEE OF $5000]

* Sec. 2. AS 04.10.200 is repealed and re-enacted to read:

Sec. 04.10.200. PUBLIC NOTICE. The board shall provide by regulation for adequate notice to inform the public of a proposed issuance of a new license or reissuance, renewal or transfer of an existing

license. The notice shall be bilingual when necessary. Notice shall be given by posting at the location of the premises, at the nearest post office, and at one other conspicuous location in the area for a period of at least 10 days a true copy of the application and by published notice by newspaper, radio and television. Where published notice is not feasible the board may make such exemptions from the requirement of publication as required.

* Sec. 3. AS 04.10.300 is repealed and re-enacted to read:

Sec. 04.10.300. PROTEST IN AREAS OUTSIDE MUNICIPALITIES. (a) An adult resident in an area outside a municipality who desires to protest the issuance, reissuance, renewal or transfer of any and all licenses for an establishment or establishments within two miles of his permanent place of abode or within the established village in which his permanent place of abode is located shall serve upon the applicant and the board a written statement of the reasons for his protest. Upon the receipt of the protest, the board may give notice and hold a hearing in the area in which the protestant resides, at which all persons interested may be heard.

(b) If the protest is made in writing to the board by at least 35 per cent of the adult residents having a permanent place of abode within the established village where the licensed premises is situated or is to be situated and within two miles of the established village, a special election conducted by the Department of Community and Regional Affairs held within the village is mandatory. If at the election the majority of the adult residents having a permanent place of abode within the established village and within two miles of the established village object to issuance, reissuance, renewal or transfer, the board may not issue, reissue, renew or transfer any licenses in, or within two miles of, the established village.

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(c) If the licensed premises is situated or is to be situated outside a municipality or established village and at the hearing the majority of the adult residents having a permanent place of abode within two miles of the premises object to issuance, reissuance, renewal or transfer, the board may, if in its opinion the public interest will be served by the refusal or if other grounds for refusal exist by law, refuse to issue, reissue or transfer the license.

(d) For purposes of this section, an "established village" means an unincorporated area where at least 25 people reside as a social unit, as determined by the Department of Community and Regional Affairs.

* Sec. 4. AS 04.10.350(a) is amended to read:

(a) A license issued under this chapter is renewable automatically if the fee is paid in accordance with secs. 40 - 140 of this chapter, except as provided in sec. 300 of this chapter or except in the case of conviction of the licensee under AS 04.15.100, pending the outcome of a board hearing or judicial determination as to the legality of issuing the license, or in the case of a lawful revocation in which event the license is renewable only as provided by law and regulation.

* Sec. 5. AS 04.15.070(a) is amended to read:

(a) A municipality may by ordinance provide rules and regulations governing the barter, sale and possession of intoxicating liquor within the municipality necessary to the orderly conduct of the business of selling intoxicating liquor. When, under a local option election, the city clerk finds the majority of the voters are against the sale of intoxicating liquor, the municipality, by ordinance, may make the sale of intoxicating liquor within the municipality a misdemeanor whether the sale is made pursuant to license or otherwise. The ordinance may not be inconsistent with this title or the rules and regulations promulgated under this title. No municipality may impose taxes other than

property taxes on liquor inventories and sales taxes on liquor sales when these taxes are levied on other property and sales within the municipality.

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APPENDIX No. IV

GENERAL WHOLESALE LICENSE FOR 1975

Locations of Warehouses

		Seattle	Anchorage	Fairbanks	Soldotna
(O/S Wash)	Alaska Distributors	x	x	x	
(O/S Wash)	K & L Distributors	x	x	x	x
(O/S Wash O)	Anchorage Cold Storage		x		
(O/S Wash O)	Odom			x	
(O/S Wash O)	West Coast Distributors	x	x	x	

Malt-Beverage

		Juneau	Sitka	Ketchikan
(O/S Wash)	K & L Distributors	x		
(O/S Wash O)	Odom	x		x
(O/S Wash O)	West Coast Distributors	x		
(O/S Wash O)	West Coast Grocery			x

		Anchorage	Sitka	Palmer	
Domestic	Alaska Bay Corp.	x			General
Domestic	Aregah	x			General
Domestic	Mosesian Vinters			x	Malt
Domestic	Service Transfer		x		Malt (Oly)

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APPENDIX No. V

Definitions

There are two different classifications for wholesale licenses in the State of Alaska, 1) general wholesale licenses and 2) wholesale malt beverage and wine licenses. They are defined as follows:

(1) The holder of a general wholesale license may sell intoxicating liquors in the original package, and wine in bulk, in quantities of not less than five wine gallons to holders of licenses. A general wholesale license shall be required for each distributing point. The general wholesale license fee schedule is based upon the total amount of business transacted during any year and is $500 as a minimum license fee and is in payment for the first $50,000 of business transacted, and in addition, thereto, a rising scale up to but not over $5,000 in excess fees may be charged based on gross sales.

(2) The holder of a wholesale malt beverage and wine license may sell malt beverages and wine in the original packages and malt beverages and wine in bulk in quantities of not less than five wine gallons to holders of licenses. The malt beverages and wine license fee schedule is based on the total amount of business transacted in any year and is $100 as a minimum license fee, and based on the first $10,000 of business. Excess fees on a rising scale extend to $2,000 but not over and are attached to a $200,000 figure.

It is to be noted that both of these licenses are restricted by law in that they, the licensees, may not sell to a consumer.

APPENDIX No. VI

The following people were contacted and have contributed their expertise to this report:

The Department of Revenue

Commissioner Sterling Gallagher - income tax
Mr. Bob Stevenson - excise tax
Ms. Eddie Price - income tax
Mr. Bob Mitchell - multistate compact
Mr. Fred Boetsch - excise tax

Alcohol Beverage Control Board

Ms. Linda Brown - ABC director

Legislative Affairs - Anchorage

Mr. Bill McGuire - source material

Senate Finance Committee

Copies of Legislative hearings

Federal Court System

U. S. Attorney - antitrust suit in 1973

Anchorage Cold Storage

Mr. Bob Winslow - manager

K & L Distributor, Inc.

Ms. Winifred Nordquist - exec. sec.

Alaska Distributors, Inc.

Mr. Jim Reckie - manager

Alaska Department of Revenue - Seattle Division

Mr. Albert Huntz - Manager, Seattle Field Office
Mr. Bob Loe - C. P. A. Revenue Field Auditor II

Washington State Liquor Control Board

Mr. Abraham Garcia - Warehouse Superintendent
Mr. James E. Hoing - Accounting Division, Controller

Odom Corporation in Seattle

Mr. Brooks Hanford - Lobbyist

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PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

ALASKA
STATE LEGISLATURE

MEMORANDUM

January 8, 1976

TO: Senator John Huber
Chairman, Interim Committee on Taxation and Revenue

FROM: Franklin D. Fleeks
Committee Tax Counsel

SUBJECT: Staff Analysis of Possibility of Taxing Short Term Land Gains

This staff analysis is submitted for the Committee's information and guidance in this area. It is hoped that it will serve as a working document and that the Committee members will inform the staff if further efforts should be expended in this area.

AGO 529768

Introduction

With the advent of the Transalaska Pipeline momentous changes have taken place in the Alaskan real estate market. Around each area impacted by the pipeline there have been huge increases in the price of land. Filing of plats for new subdivisions within the commuting areas of the major Alaskan population centers has also increased. We have also noted the large purchases of land in the Matanuska, Kenai, Homer and Fairbanks areas by so-called investors for purely speculative purposes.

This activity has caused increased social costs to the cities and boroughs and hampered rational land use development. It has also resulted in the reaping of large windfall profits through the rapid turnover of the land. In order to reach these windfall profits the staff has researched what other states and countries have been doing. The initial investigations were done by staff member Terry Berman. Contacts were initiated with Jonathon Rowe of the Public Citizen Tax Reform Research Group, and Jamie Love of Alaska Public Interest Research Group, and the Ontario Ministry of Treasury Economics and Intergovernmental Affairs. This staff analysis is submitted for your information and guidance in this area.

Policy Arguments

Uncontrolled land speculation is associated with increases in the price of land, depletion of open space, premature and unplanned development, and windfall profits. These factors present the state and its

local communities with problems in the social, economic and environmental spheres. One policy argument was stated succinctly in an article in the Washington Law Review which said:

> "In a speculative land market, land profits often include an unearned increment - an increase in value not attributable to the seller's efforts but to events outside his control . . . A major goal of land value increment taxation . . . is to minimize this unearned increment or recapture it so that it may inure to the benefit of society generally rather than solely to individuals . . . " [1]

The unearned increment referred to above usually translates into windfall profits for the speculator. One definition of windfall profits is that it is ". . . gain which exceeds what prevailing standards of economic morality suggest is a fair return from a particular investment or activity . . ."[2] It is not enough to define windfall profits, criteria must be set to analyze them. The same author states:

> ". . . windfall gain is judged excessive by reference to two criteria: the amount of capital or labor expended in the investment or activity, and the social benefit arising from that activity. By the first criteria, a gain is unjustified when it is unearned; by the second, it is unjustified when it is realized without corresponding public benefit, or perhaps at the public expense . . ." [3]

Another policy argument is regulatory in nature. The tax would limit profits from speculation discouraging rapid turnover of land. This would enhance the ability of the governmental units to foster better land use development.

Review of Current Statutes

Only one state, Vermont, currently has a comprehensive statute covering this area. Connecticut has a generalized statute which attempts to curtail some speculative activity. Other comparable legal systems having real estate gains taxes are the United Kingdom, Ontario (Canada), Australia and New Zealand. Only Vermont will be discussed here. In the appendix is an excerpt from an article which gives a synopsis of the others, and also a copy of a letter from Ontario.[4] It should also be noted that Montana and Washington also had this type of bill introduced in their 1975 sessions.

The Vermont "Tax on Gains from the Sale or Exchange of Land" is based on progressive rates that range from 60 percent, if land is held for less than a year, down to 10 percent if land is held five years but less than six years. After six years there is no tax. The tax only applies to land. Allocation must be made on gains from sales of land containing buildings and other structures. A maximum residential exemption of five acres is also provided. There is no allowance for losses to be offset against the gains.

Conclusion

Due to the accelerated growth of Alaska, windfall profits are being made from short term speculation in Alaska lands. This speculation

burdens the state and its instrumentalities with social costs attributable to that speculation. A tax modeled on the Vermont tax can serve to regulate this use of Alaskan land by limiting profits which will discourage rapid turnover and also serve as a revenue producing device to help pay for the social cost. If you believe further research should be done in this area, please inform the staff.

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Footnotes

1. M. M. Teachout, State Taxation - Use of Taxing Power to Achieve Environmental Goals: [illegible] Taxes Gains Realized From the Sale or Exchange of Land Held [illegible] than Six Years, 49 Wash. L. Rev. 1159.

2. Teachout, supra.

3. Teachout, supra.

4. R. Lisle Baker, Controlling Land Uses and Prices by Using Special Gain Taxation to Intervene in the Land Market: The Vermont Experiment, 4 Environmental Affairs, 427.

Appendix

Item	Number
Vermont Statute, Tax on Gains from the Sale or Exchange of Land	I
Excerpt of other comparable legal systems	II
Letter from Ministry of Treasury, Economics and Intergovernmental Affairs	III
Report of staff member, Terry Berman	IV

Chapter 236. Tax on Gains From the Sale or Exchange of Land

SECTION

10001. Tax imposed.
10002. Land.
10003. Rate of tax.
10004. Sale or exchange.
10005. Basis, gain and holding period.
10006. Liability for tax.
10007. Withholding at source; payment.
10008. Installment sales.
10009. Administration of tax.
10010. Criminal penalties.

§ 10001. Tax imposed

There is imposed, in addition to all other taxes imposed by this title, a tax on the gains from the sale or exchange of land in Vermont.—Added 1973, No. 81, § 8, eff. May 1, 1973.

§ 10002. Land and residences

(a) "Land" means all land, whether or not improved, but does not include land, not exceeding five acres, necessary for the use of a dwelling used by the taxpayer as his principal residence. Buildings or other structures are not included in this definition of land.

(b)(1) Also excluded from the definition of land of subsection (a) of this section is the land, not exceeding five acres, necessary for the use of a dwelling which is to be used as the purchaser's principal residence. As used in this section "purchaser's principal residence" means the principal dwelling of a person whose domicile is or will be established in the state of Vermont. This exclusion from the definition of land shall not apply unless the purchaser first executes, upon a form supplied by the commissioner of taxes, a certification that he is domiciled in Vermont or will be within sixty days, that the dwelling to be purchased will be used as his principal residence, and that he understands that as a Vermont domiciliary all of his income is subject to the jurisdiction of Vermont income tax laws.

(2) Additionally, where there is not on the land a dwelling completed and fit for occupancy as the purchaser's principal residence at the time of the transfer of title to the land so excluded from the definition of land:

(A) The purchaser shall certify that the dwelling shall commence to be constructed within one year of the date of transfer of title to the land and that it will be completed and occupied within two years from the date of such transfer.

(B) The deed or other transfer instrument shall state that the amount of the tax of which the transferor has been relieved by virtue of the purchaser's certifications is a lien running with the land in favor of the state of Vermont until either the amount of such tax has been paid or the purchaser has filed with the commissioner a statement under the penalties of perjury that the dwelling was constructed and occupied within the terms and conditions previously certified.

(3) In cases where the commissioner determines that any of such certifications were untrue, he shall collect from the buyer the tax upon the profit allocable to the wrongfully excluded land.

(c) If zoning or similar laws or regulations require a minimum of more than five acres for residential property, that number of acres, instead of five acres, shall be excluded from the definition of land under subsections (a) and (b) of this section, except that not more than ten acres shall be so excluded.

(d) Also excluded from the definition of land of subsection (a) of this section is the land owned by a development corporation or local development corporation as defined in Title 10, section 252(4) and section 302(4).—Added 1973, No. 81, § 8, eff. May 1, 1973; amended 1973, No. 209 (Adj. Sess.), eff. July 1, 1974.

1973 (Adj. Sess.) amendment. Amended section generally to adjust acreage surrounding a principal dwelling to reflect local zoning requirements; and to clarify transactions under which no gain is recognized.

§ 10003. Rate of tax

The tax imposed by section 10001 of this title shall be based upon the years held at the following rates on the gain, as gain is determined under section 10005 of this title:

Years land held by transferor	**Gain, as a percentage of basis (tax cost)*		
	0–99%	100–199%	200% or more
Less than 1 year	30%	45%	60%
1 year, but less than 2	25%	37.5%	50%
2 years, but less than 3	20%	30%	40%
3 years, but less than 4	15%	22.5%	30%
4 years, but less than 5	10%	15%	20%
5 years, but less than 6	5%	7.5%	10%

—Added 1973, No. 81, § 8, eff. May 1, 1973.

* Gain, as percent of basis, shall be rounded to the next highest whole percentage.

1. Constitutionality. It was not the function of the Vermont Supreme Court to pass upon validity of the legislative concern over land use and development or the wisdom of the means the legislature chooses to deal with it, in reviewing the constitutionality of land gains tax imposed by this chapter, but merely to determine whether the legislature may have acted in response to such a concern and whether, in so doing, it acted within its constitutional bounds. Andrews v. Lathrop (1974) 132 Vt. 256, 315 A.2d 860.

In action attacking constitutionality of tax imposed by this chapter, court would not hold that legislature could not have properly acted to restrict land speculation by means of the tax structure. Id.

2. Purpose. That tax imposed by this chapter taxes profits in sales of real property, to a decreasing degree as period of land retention increases and to an increasing degree as profit increases, is alone sufficient, for constitutional purposes, to support view that legislature could have had as a purpose the deterrence of land speculation. Andrews v. Lathrop (1974) 132 Vt. 256, 315 A.2d 860.

§ 10004. Sale or exchange

(a) As used in this chapter "sale or exchange of land" shall mean any transfer of title to land for a consideration. As used in this chapter "transfer" and "title" shall have the same meaning as "transfer" and "title to property" as used in section 9601 of this title, except as modified or enlarged by explicit provisions of this chapter and as limited herein to land. The transfer of an option for the sale or exchange of land shall be considered a transfer of title to land for the purposes of this chapter.

(b) Contracts for the sale of land constitute sales or exchanges of land for all purposes of this chapter. However, contracts shall not constitute sales or exchanges until some consideration has passed thereunder to or for the benefit of the seller or exchanger. The sale or exchange is considered to take place at the time any consideration whatsoever, of whatever nature, first passes under the contract. A mere promise to purchase, and amounts paid as earnest money, or amounts paid in deposit or amounts paid in escrow to which the seller has no immediate right, do not constitute the passing of consideration for the purposes of this chapter.

(c) Any sale or exchange of shares in a corporation or other entity, or of comparable rights or property interests in any other form of organization or legal entity, which effectively entitles the purchaser to the use or occupancy of land constitutes a sale or exchange of land.—Added 1973, No. 81, § 8, eff. May 1, 1973.

§ 10005. Basis, gain and holding period

(a) The provisions of the Federal Internal Revenue Code shall determine the basis (tax cost) of land sold or exchanged.

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(b) The amount realized from the sale or exchange shall be the full actual consideration therefor, paid or to be paid, including the amount of any liens or encumbrances on the land existing before the sale or exchange and not removed thereby. The amount realized from the sale or exchange shall be the gross amount thereof, reduced by any expenses of sale and commissions. In the event that a sale includes land and buildings or other structures, the amount realized shall be allocated between the land and the buildings or other structures on the basis of fair market value.

(c) The taxable gain from the sale or exchange is the amount realized minus the basis (tax cost) of the land as determined under subsection (a) of this section. No gain shall be recognized in cases where gain is not recognized under the Federal Internal Revenue Code, as amended, in relation to the sale or exchange of capital assets.

(d) The land sold or exchanged shall be deemed to have been held as determined under the Federal Internal Revenue Code. However, as to any person whose holding period is claimed by the seller or exchanger, such holding period shall not exceed the time for which such person has had actual and recorded title thereto in his own name, and shall include the time the land was so held prior to the effective date of this chapter. If a husband and wife are tenants by the entirety there may be added to the holding period the amount of time the land was held by one spouse alone before that spouse created the tenancy by the entirety. Notwithstanding any provision to the contrary under the Federal Internal Revenue Code, if a tenancy by the entirety is dissolved by reason of death, the holding period during the tenancy by the entirety will be added to the holding period of the surviving spouse owning the property in his or her own name. In the case of a gift, the holding period of the donee shall include the time that actual and recorded title was held by the donor.

(e) The taxable gain under this chapter from the sale or exchange of land shall not be reduced by any losses incurred in other transactions.—Added 1973, No. 81, § 8, eff. May 1, 1973; amended 1973, No. 187 (Adj. Sess.), eff. March 30, 1974.

1973 (Adj. Sess.) amendment. Subsection (d): Second sentence rephrased and added fourth sentence relating to a tenancy by the entirety dissolved by reasons of death.

§ 10006. Liability for tax

The person liable for the tax is the transferor (which includes the owner, seller, or other exchanger) of the land sold or exchanged.—Added 1973, No. 81, § 8, eff. May 1, 1973.

§ 10007. Withholding at source; payment

(a) The buyer or transferee of any land held by the seller or transferor for less than six years, shall withhold ten per cent of all consideration paid to the seller or transferor for such land, including ten per cent of all partial payments made pursuant to installment sales under section 10008 of this title. At the time any payment is made to the seller or transferor, the amounts withheld shall be remitted to the commissioner of taxes.

(b) Within 30 days of the sale or exchange of land, for which withholding is required under this section, the seller or transferor shall file a return with the commissioner of taxes setting forth the amount of the tax due pursuant to section 10003 of this title and the amount withheld by the buyer or transferee pursuant to subsection (a) of this section. The seller shall either remit with the return the balance of the tax due or make claim for a refund. Any refund not made by the commissioner within 15 days of receipt by him of a valid claim shall accrue interest at the rate of one-half of one per cent per month. For good cause shown and upon conditions set by him, the commissioner may extend the time for filing the return and paying the tax required by this chapter.

(c) Notwithstanding either subsection (a) or (b) of this section, the seller or transferor may, in advance of the sale or exchange, pay the tax imposed by this chapter or obtain a written ruling from the commissioner of taxes that no tax is due under this chapter. In either case the commissioner shall certify to the seller or transferor that such payment has been made or that no tax is due. Upon receipt by the buyer or transferee of such certification from the seller or transferor, the buyer or transferee shall not be required to withhold under subsection (a) of this section.

(d) All taxes required to be paid or withheld under this chapter shall constitute a personal debt of the person liable to pay or withhold the same to the state of Vermont to be recovered in an action on this statute.

(e) An action may be brought to recover the amount of the taxes to be paid or withheld in the manner prescribed for recovering amounts owed for taxes under chapter 151 of this title. The amount of taxes to be paid or withheld shall be a lien in favor of the state of Vermont upon all property and rights to property, whether real or personal, belonging to the person liable for the tax or for the withholding. The lien shall be enforced in the manner prescribed by section 5895 of this title.—Added 1973, No. 81, § 8, eff. May 1, 1973.

§ 10008. Installment sales

(a) For the purpose of this section "installment sale" means sale or exchange of land as defined in section 10004 of this title for which the total tax due under this chapter is greater than $2,000.00 and in which the parties agree in advance that payments shall be received by the seller or transferor in more than one installment on a date or dates other than the date of closing. A sale financed by a mortgage, deed of trust, or other financing arrangement in which the seller or transferor is paid in full on the date of the sale or exchange shall not be considered an installment sale. A lease-purchase agreement under which any part of the rental payments constitute a portion of the purchase price of the land shall be considered an installment sale, and for the purposes of this chapter the end of the holding period with respect to the sale or exchange shall be determined as of the date of the agreement.

(b) Notwithstanding any provision of law to the contrary, the tax under this chapter on any installment sale shall be due within 30 days of the date of payment of each installment paid to the seller or transferor. However, except for the first installment the seller or transferor may elect to file his return as part of his Vermont income tax return for any year in which subsequent installments are paid or due, and to pay the balance of such tax as part of such income tax; provided that, if the seller or transferor elects to file annual returns no interest shall accrue on any withholding as provided by section 10007(b) of this title.

(c) In an installment sale, the total amount of taxes due under this chapter shall be the amount that would have been due had the total purchase price been paid on the date the sale or exchange took place. The amount of taxes due on each separate installment, including the first installment, shall bear the same proportion to the total amount of taxes due as the amount of that installment bears to the total consideration.—Added 1973, No. 81, § 8, eff. May 1, 1973.

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§ 10009. Administration of tax

(a) The commissioner of taxes shall administer and enforce this chapter and this tax. He may issue, amend, and withdraw from time to time, reasonable regulations to assist such administration and enforcement.

(b) All the administrative provisions of chapter 151 of this title, including those relating to the collection and enforcement by the commissioner of the withholding tax and the income tax shall apply to the tax imposed by this chapter.—Added 1973, No. 81, § 8, eff. May 1, 1973.

§ 10010. Criminal penalties

(a) Any person who wilfully defeats or evades or attempts to defeat or evade the tax imposed by this chapter shall be imprisoned not more than one year or fined not more than $10,000.00 or five times the amount of the tax defeated or evaded or attempted to be defeated or evaded, whichever is larger, or may be both thus imprisoned and fined. A corporation or other taxable entity not being a natural person shall be subject to the fine provided by this section.

(b) Any officer, employee, director, trustee or other responsible person of a corporation or other taxable entity, and any other person, who counsels, aids, abets, participates in, or conceals the defeat or evasion of tax, or the attempt thereat, shall be subject to the penalties of subsection (a) of this section.

(c) The form for the payment of the tax under this chapter shall set forth in large type the penalties provided by this section.—Added 1973, No. 81, § 8, eff. May 1, 1973.

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TABLES AND INDEX

CONSULT POCKET PART TO VOL. 9

IV

December 10, 1975

TO: Senator John Huber

FROM: Terry Berman

SUBJECT: Land Gains Tax

The land gains tax, as enacted by the Vermont legislature in 1973, is a tax on profits made from short-term land holdings. One of the major reasons for the tax is the myriad of problems associated with land speculation. These include windfall profits, increases in land prices, increases in property taxes, depletion of open space, premature and unplanned development, and overall increases in the costs of goods and services.

It must be emphasized that only holdings of less than six years are subject to taxation. This includes only gains on land, exempting the first acre of land on which a principal residence is found. The rate of taxation is on a sliding scale, increasing directly with the percentage profit and inversely with the length of the holding. The longer one holds the land, the less she pays in taxes. Leaseholds of 99 years or longer are treated as transfers and subject to the tax.

The tax has two functions: 1) as a regulating device and 2) as a source of revenue. As a regulatory device, it discourages the rapid turnover of land. Speculators may find that the costs of holding land are not worth it. Subdividers will only want to subdivide if there is a ready market for homes. In turn, this leads to larger lot sizes, to less division and unnecessary development of land. The problems mentioned above (increased land prices and property taxes, accelerated and inefficient development, loss of community aesthetic wealth, and windfall profits) may be avoided.

The Vermont tax as a source of revenue creates a new basis for taxation by states. It hits those who have the capacity to pay at a time when they have liquid assets available for taxation.

AGO 529779

In Vermont, the tax was expected to yield between 1 and 1.5 million dollars in the first year, which would be about one percent of the total state revenue. This indicates that its function as a source of revenue has proved valuable.

There are several improvements that can be made on the Vermont tax if such a tax is considered by the Legislature. First, there should be an adjustment for inflation. Second, the distinction between land and structure needs to be clarified in terms of the gains made. Third, an exemption for land actively used in agriculture (which was included in a similar bill in Washington State) should be considered.

With such a tax, some of the social costs of unplanned growth and speculation may be shifted back to the speculator.

TB/kb

III

Ontario

Ministry of Treasury
Economics and
Intergovernmental
Affairs

(965-6869)

Queen's Park
Toronto Ontario
4th Floor,
Frost Bld. S.

December 12, 1975

Mr. Terry Berman,
Administrative Research Analyst,
Special Committee on Taxation
and Revenue,
Alaska State Legislature,
Senate,
Pouch V,
Juneau,
Alaska 99811

Dear Mr. Berman,

I enclose per your request copies of the Land Speculation Tax and Land Transfer Tax Acts. These statutes have been in force for some 20 months and each has been substantially amended once.

On April 9th, 1974, the Ontario Government began to tax land speculation and non-resident purchases of Ontario land. If you will bear with me, I will attempt to provide some of the background to these taxes as to why they were considered necessary and what our experience with them has been to date.

The Land Speculation Tax

Land and consequently housing prices had been rapidly escalating in Ontario since 1968. At one point in 1973, the escalation rate was 40% per year. There are of course several factors which contribute to this behaviour. Among them are a shortage of serviced land, rapid population growth, complexities of local zoning and building permit regulations, general anti-growth sentiment and last but not least simple speculation. Most of these factors are not susceptible to short-term solutions. However, land speculation is, and the Government therefore chose to act in this area.

The Land Speculation Tax is a tax on all land and buildings in the Province of Ontario. The tax is brought to bear where properties are bought and sold without any improvements being added.

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There are of course some basic exemptions, these being exemptions for an individual's principal residence, his principal recreation property (and up to 20 contiguous acres) and a special treatment for senior citizens who leave their home to live in nursing institutions but choose not to sell their principal residences at that time.

There are a variety of ways that transactions can become exempt and they are based on percentage content of buildings in the transaction; percentage value of any improvements; in the case of rental accommodation units the length of time the owner has held the property; and of course generous provisions covering family farms. In practice, these allowances work to make all commercial and industrial properties exempt.

A revised special treatment for developers has recently been added to the Act whereby a land owner who complies fully with a municipal plan of subdivision may sell the land to a builder tax free.

With regard to the administration of the tax, there have of course been problems with complexity of legislation, the fact that it is a new tax, points of interpretation and lack of taxpayer knowledge. However, generally the administration has been successful since it was decentralized into the provincial land registry offices in September of 1974.

The rate of tax was originally set at 50% which, when combined with deductibility for income tax purposes, produced maximum effective rates in excess of 80%. However, the Government of Canada has since ruled that the speculation tax is not deductible and therefore the rate has been reduced to 20% which when combined with the income tax can still produce maximum rates in excess of 80%.

You may be aware that several other jurisdictions levy a speculation tax, among them the State of Vermont, New Zealand, Mexico and Israel.

Land Transfer Tax

Because of its comparative attractiveness politically, socially and economically, Ontario has always enjoyed large amounts of foreign money and direct investment. These funds have been a large force in establishing the standard of living we enjoy today. However, with the advent of strong world-wide inflation and various currency problems, Ontario began to attract large quantities of money seeking a haven from inflation. For example, in 1973 alone, one European syndicate (primarily German) invested in excess of $400

Cont'd....

million in the Southern Ontario area in land and buildings. I must stress that these funds and others like them are not expanding the industrial and employment capacity in Ontario but are simply purchasing existing assets. When these financial pressures are coupled with speculation by residents, the result is an acceleration of already rapidly rising land and housing costs. Accordingly, the Government decided to act to stem this flow of "hot" money as well as attempt to curb domestic speculation.

The vehicle chosen for this was the Land Transfer Tax which for residents of Canada is a low tax (3/10 of 1% on the first $35,000 and 6/10 of 1% on the balance of the purchase price) payable on registration of title. The treatment of non-residents of Canada is to tax their purchases at a 20% rate. I must stress that the statute refers to non-residency of Canada, not Ontario. Any other definitions would be beyond the competence of a province. I must also stress that the tax is based on a need to restrain the inflow of non-productive money and not on xenophobia.

There was never any intention to restrain the flow of non-resident productive investment. However, it was determined at the outset that we would allow the exemption procedure to evolve over the summer of 1974 and to derive the final policy from experience. You will see from the legislation as amended that we seem to have arrived at a fairly workable solution to this problem. While there are still a few problems in the Act, primarily in the area of mortgage foreclosure, generally the system is running smoothly.

Revenue from both statutes has been very low as it should be if each does its job.

I realize my comments are perhaps a little vague. If you or your staff would like more information either generally or on specific details, I or my staff will be pleased to accommodate you.

Yours truly,

L.P. Leonard,
Senior Budget Advisor,
Taxation and Fiscal Policy
Branch

/sr
Encls.

[68] 32 V.S.A. ch. 231 (1970).

[69] The major non-taxable transfers are transfers to secure or discharge a debt, and some intra-family gratuitious transfers.

[70] Letter from Commissioner Robert Lathrop dated October 1, 1974. The tax is self-regulating to a degree. To the extent its land market effects curtail land value appreciation, the staggered rate schedule means less profit may be drawn off by the tax directly. If on the other hand, the effect of the tax is to cause land market effects that add to land value increments, the same rate structure will capture a larger portion for the state.

[71] *See* NETZER, ECONOMICS OF THE PROPERTY TAX 212-13 (1966); REPORT OF THE NATIONAL COMMISSION ON URBAN PROBLEMS, BUILDING THE AMERICAN CITY, 391-92 (Douglas Chmn. 1968); Harriss, *Alternative Bases for Real Estate Taxation*, in PROPERTY TAXES 219 (1940); Harvith, *Subdivision Dedication Requirements—Some Observations and an Alternative: A Special Tax on Gain from Realty*, 33 ALB. L. REV. 474 (1969); Lent, *The Taxation of Land Value*, 41 INTERNATIONAL MONETARY FUND STAFF PAPERS 89 (1967); Spengler, *The Taxation of Urban Land Value Increments*, 17 JOURNAL OF LAND AND PUBLIC UTILITY ECONOMICS 54 (1941); L. ROSE, TAXATION OF LAND VALUE INCREMENTS ATTRIBUTABLE TO REZONING (Econ. Research Center, University of Hawaii, 1971). Walker, *Taxation of Land Value Increases*, 38 TAX POLICY NOS. 8-9 (1971).

Land value increment taxation has been in use for some time outside the Anglo-Saxon countries in Israel, some African and Latin American countries, Denmark and Spain, and Taiwan, *See* Lent and Netzer, *supra*; communication from Orville F. Grimes, Jr., of International Bank for Reconstruction and Development, Jan. 14, 1975.

[72] In February, 1974, Representative Ora J. Halvorson introduced into the Montana legislature a modified version of the Vermont tax as House Bill No. 651. After being reported out favorably by the Taxation Committee, it was killed by the House on a 48-39 vote. Representative Halvorson indicates she intends to reintroduce the bill again in some form in the 1975 legislative session. Conversation with Representative Halvorson on July 23, 1974.

House Bill 651, as approved by the Committee on Taxation, was similar to the 1973 Vermont land gains tax (before the 1974 amendments) with several important differences. First, the Montana tax would be collected by a filing of a return and payment of any tax due when the transferor filed his Montana income tax return,

though losses, as in Vermont, would not apparently be available to offset gains. Second, the act would not apply to the sale, lease, or agreement to buy and sell land where the parties to the transaction enter into a covenant running with the land, which is revocable only after a period of at least six years, that the land will be used exclusively for agricultural purposes. Finally, the revenues obtained from the tax would be paid into the general fund, and not earmarked for special purposes as in Vermont.

[73] House Bill 502. The agricultural exemption may have questionable utility as a means of preserving farmlands. *See supra* note 67. Also, as in 1973 Vermont legislation, the proposed Washington bill provides a one-acre residential homesite exemption.

[74] For a readable brief history of the recent emergence of special real estate gain taxes in parts of the Anglo-Saxon World (Vermont), United Kingdom, Canada, Australia and New Zealand *see* D. Hagman and D. Misczynski, Special Capital and Real Estate Windfall Taxes (Screwts)—A Short Story (unpublished paper for the British Columbia Institute for Economic Policy Analysis Conference on the Pricing of Local Services and Effects on Urban Spatial Structure, June 26, 28, 1974, Vancouver, British Columbia, Canada.) The author wishes to acknowledge his debt to Professor Hagman in alerting him to these developments.

[75] The Land Speculation Tax Act was designed to curb escalating housing costs (close to 2 percent a month, compounded) by attacking land speculation which the government felt artificially fueled land price increases. Conversation on July 18, 1974 with Larry Leonard of the Tax and Fiscal Policy Branch, Ministry of Treasury Economics and Intergovernmental Affairs, Province of Ontario.

As to the Ontario tax itself, with one exception discussed below, there is no abatement for the length of time the land was held by the transferor.

Like the 1974 Vermont Tax, the Land Speculation Tax exempts the primary residence of the transferor, but it also extends that exemption to include transfers of the transferor's principal recreational property and up to 20 acres of surrounding land, unless the disposition is to a non-resident person as defined in Land Transfer Tax Act, 1974. (Ontario also enacted the Land Transfer Tax Act, 1974, which provides for a tax of twenty percent of the consideration paid for any transfer to or in trust for any transferee who is a nonresident. Statutes of Ontario, 1974, Chapter 8, as amended by 1974, Chapter 16. The tax was aimed at deterring foreign investment which had escalated the cost of Ontario land, especially in the To-

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ronto Area. Conversation with Larry Leonard, *supra*).

Like the proposed Montana legislation, the Ontario tax attempts to protect agricultural transfers, providing an exemption for land actively used in farming which is disposed of to a member of the transferor's family or to a farming corporation for the purpose of enabling the transferor to carry on farming.

Instead of providing a blanket exemption for structures, like Vermont, the Land Speculation Tax provides total exemption if the sale involves structures meeting certain specific criteria. For example, the disposition is exempt if it involves land on which the structures were constructed or renovated by the transferor, and such improvements meet certain threshold values, or land on which the structures account for 40 percent or more of the sale proceeds and are used for commercial, industrial or tourist resort purposes. Tax Act, Sections 1.-(1)(b); 4.(9); 4.(d).

Apartment rental property disposed of after April 9, 1977, constituting 40 percent of a parcel's fair market value, qualifies for a thirty percent reduction in the tax with an additional ten percent reduction for each year thereafter during which the property is held without disposition. Tax Act, Section 20.(1) and (2). This provision constitutes the closest analogue to the long term holding exemption provided by the Vermont rate schedule.

Finally, dispositions of subdivided land are exempt if the transferor assumes the liability for the tax and begins construction on at least half of the lots sold to him within nine months and on the remainder within eighteen months.

[78] On August 22, 1973 New Zealand enacted the Property Speculation Tax Act, 1973 (No. 18) applying to dispositions taking place after June 15 of that year.

The Act, as implied from its name, was designed to penalize property speculation which was not defined in the Act but has been defined by the inland revenue department as "the trafficking in land with a view to short term profits and without having contributed any worthwhile improvements in the period between purchase and sale." HEAD OFFICE, INLAND REVENUE DEPARTMENT, PROPERTY SPECULATION TAX EXPLANATORY NOTES AT 1. (November, 1973).

Unlike Vermont, but like Ontario, the Property Speculation Tax defines land to include structures on the land. Section 2(1). INLAND REVENUE DEPARTMENT, PROPERTY SPECULATION TAX EXPLANATORY NOTES at 1 (November, 1973).

Also like Ontario, the New Zealand Tax contains exemptions for certain land in which the transferor has constructed improvements

or undertaken renovation of certain threshold costs. Section 20 (no express provision applying to subdivision).

Like Vermont (as amended) the New Zealand Act provides an exemption for transfers of land acquired for the purpose of occupancy or construction of a residence, (provided profit was not a motive) though there is no requirement of construction within a limited time. The act also exempts certain transfers of business property (other than property involved in the business of land development). Section 19.

Finally, unlike Vermont, the New Zealand tax provides that losses arising from short term dispositions of land may offset subsequent gains until the loss is exhausted. Section 10.

[77] The British Finance Act 1974 contained a complicated set of provisions designed to tax certain gains arising on the disposal of land and buildings at ordinary income rather than more favorable capital gains rates. In addition to other exemptions where the total proceeds of all disposals of land and buildings by an individual in a tax year do not exceed £10,000, no part of the new gains would be subject to the special tax. Sections 38 and 39.

[78] 315 A.2d 860, 865-66 (Vt 1974). On the enactment issue, the Vermont Supreme Court held that since the trial court had found that the primary purpose of the land gains tax was to raise revenue to fund the tax relief program, it need not have originated in the House, since only "revenue bills" enacted to produce general revenue were required to originate there. The court also noted that since the revenue-raising provisions were germane to the subject matter of the whole bill, they could properly have been raised for consideration as an amendment by the Senate.

Appellants had also claimed that the tax was unconstitutionally discriminatory.

Their first two claims were: (1) that the one-acre residential exemption had discriminatory effects on rural landowners (since rural zoning regulations often required a five-acre minimum residential lot), and (2) that nonresidents were discouraged from purchasing property subject to the gains tax. (This latter argument is discussed in more detail below in the text.) The court found that appellants had failed to introduce any evidence to establish that such discrimination occurred.

Appellants next argued that sellers were already burdened with a Vermont income tax on gains derived from the sale or exchange of capital assets, including land. To this the court responded that the legislative intent to burden those already taxed was clear.

AGO 529787

ALASKA
STATE LEGISLATURE

MEMORANDUM

TO: Special Committee on Taxation and Revenue DATE: January 9, 1976

FROM: Ed Sterner

RE: Effect of price control provisions of the Federal "Energy Policy and Conservation Act" on Alaska state revenues

I. Brief description of Act's price provisions pertaining to Alaska

II. Possible effects of the price provisions on Alaska per barrel prices

III. Affects of possible price levels on Alaska State Revenues

AGO 529788

I. Price provisions pertaining to Alaska

Sections 401, 402 and 403 of the "Energy Policy and Conservation Act of 1973" pertain to the control of oil prices.

These provisions have been added to the "Emergency Petroleum Allocation Act of 1973." Section 401 adds two new sections numbered 8 and 9. The provisions critical to Alaska are contained under Section 8(a), (b), (d), (e), (f) and (g). Sections 402 and 403 make technical and administrative adjustments which are not of critical concern for this review.

Section 8(a) extends price controls for 40 months, beginning January of 1976, and mandates an initial average price for U. S. production of $7.66 per barrel. Section 8(b) provides for the continuation of "old" and "new" oil price differentials. "Old" oil prices may be increased only if the President can provide evidence showing that increased prices will encourage continued production in fields still regulated by "old" prices. As long as "old" oil prices are kept below $7.66, "new" oil may be sold at a higher price to ensure an average price of $7.66.

Sections 8(d), (e) and (f) provide for inflation and production incentive increases in the average price of $7.66 per barrel. In any year the President may raise the $7.66 price to compensate for inflation.

He may also increase the price an additional 3 percent to encourage additional production. The total price increases may not exceed ten percent in any year without being subjected to Congressional review.

Section 8(g) requires the President to submit a report to Congress on arctic petroleum production on April 15, 1977. If this report indicates that special regulations are needed for arctic petroleum development, Congress may exclude up to 2 million barrels of crude oil per day transported through the trans-Alaska pipeline from the $7.66 average price figure.

According to Section 8, at least the first 22 months of the Prudhoe Bay oil production will be regulated according to the average price control level (plus a possible 3 percent real increase each year) unless exempted by special provision.

II. Effect of price provision on Alaska oil prices

It is estimated that if "old" oil prices are continued at the current $5.25 level, "an initial ceiling price of approximately $11.28 per barrel could be applied to new oil." (Conference Report, Senate Report No. 94-516, p. 190). Prudhoe Bay oil will increase the quantity of new oil by 1.5 to 2.0 million barrels per day. In order to maintain the national average price at $7.66 (in 1975 dollars), the average new oil price will have to fall to around $10.07 a barrel. If 2 million barrels per day of additional new oil is found in other areas of the United States, new oil prices would have to fall to $9.27. If "old"

oil prices are allowed to rise, the "new" oil prices would have to fall even more. Should "old" oil prices be allowed to rise to the average price, "new" oil would have to fall to that same price.

Unless Prudhoe Bay oil is exempted from the national average limitation, it will probably have a price between $7.66 and $10.00 per barrel, in 1975 dollars, plus any production incentive increases.

III. Effect of price provision on state revenues

If the federal government had removed all price controls, the committee's proposed tax package would have collected approximately 21 billion dollars during the first 23 years of Prudhoe Bay production. State royalties would have been in the range of 8 billion dollars. If the regulations allow "old" and "new" prices to quickly converge at the weighted average of $7.66 per barrel, with only the 3 percent real increase allowed each year, tax revenues would be decreased by 6 billion and royalty income by 2 billion.

It is fairly unlikely that Congress can be convinced to give arctic oil special treatment. This is due to the healthy income which Prudhoe Bay can probably produce even at the $7.66 price. It is also highly unlikely, that "old" oil prices will be allowed to rise quickly to the average price. This would enable Prudhoe Bay oil to be sold at a higher than average price to off-set the lower than average "old" oil prices. Should Prudhoe Bay prices range around $2.00 per barrel above the national average, tax revenues would be around 18 to 19 billion with royalties of 7 billion.

If price controls had not been continued, Alaska's total oil revenues from Prudhoe Bay might have been around 29 billion. The lowest price control case under the present law with possible extensions would reduce revenues to around 21 billion. The most likely range under the controls is around 25 to 26 billion over the first 23 years of Prudhoe Bay operation.

scomm

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ALASKA
STATE LEGISLATURE

MEMORANDUM

March 16, 1976

TO: Senator John Huber
Chairman, Senate Subcommittee on Taxation and Revenue

FROM: Franklin D. Fleeks
Tax Counsel

SUBJECT: Oil and Gas Taxation -- Second Report

Submitted for your review and approval is the staff's second report on oil and gas taxation. In addition to Ed Sterner's work I would like to gratefully acknowledge the contributions of staff members Janis Gull, Dee Derr, and Karen Boness. Their assistance was invaluable.

AGO 529793

OIL AND GAS TAXATION -- SECOND REPORT

Prepared For

SENATE SUBCOMMITTEE ON TAXATION AND REVENUE

Prepared by: Franklin D. Fleeks
Tax Counsel

Edwin Sterner
Economic Research
Analyst

AGO 529794

Introduction

Since the initial report to the Legislative Council, the proposed bills affecting taxation of the oil and gas industry have been filed as:

1) SSSB 567; SSHB 638 -- An act concerning the oil and gas properties production tax.

2) SB 620; HB 699 -- An act relating to assessment and taxation of oil and gas properties net proceeds tax.

3) SB 621; HB 703 -- An act relating to assessment and taxation of oil and gas properties excess value surtax.

The Committee staff has prepared this report to facilitate candid and rational discussion. The report will describe how the proposed taxes will affect oil and gas developments in general. The appendix provides examples of how specific oil and gas fields are affected by both the current law and the proposed legislation.

Committee History

If you did not have an opportunity to review the initial report, the following is presented to acquaint you with the ideas and philosophies under which the bills were drafted.

To be perfectly frank, one of the goals of any tax is to produce state revenues. In proposing an increase in revenue the Committee staff used as a guide the following principles:

1) The economic activity must be vigorous enough to provide a sustained flow of tax revenues without impairing the activity itself.

2) The tax revenue must be collected at a reasonable cost.

3) The statute must be easy to administer in a fair and even-handed manner, under straight forward rules that are easy for the taxpayers to understand.

To effectively tax the oil and gas industry and to stabilize the state's taxing policy on the industry, any proposed tax should be based on the industries' profitability measured by values established and expenses incurred within the state. Research also determined that the present corporate income tax law, with its allocation formula, was not adequate for the job. A review of the filed bills, excluding the severance tax bill, shows that this has been accomplished. The bills also propose that the taxes, again excluding the severance tax bill, be in lieu of state corporate income taxes.

The proposed bills will tax the oil and gas industry on their Alaskan profitability at the regular state corporate income tax rates of 9.4 percent. The measures will also tax any excess value, determined on a profitability basis, not needed to implement long-term exploration and development at a 41 percent rate.

Brief Synopsis of the Proposed Bills

(a) SSSB 567; SSHB 638 -- Severance Tax

The purpose of this bill is to raise the graduated rate of the severance tax by adding two new levels and to provide a corresponding increase in the per barrel rates used as a floor. The effect of these raises will be to tax production from wells in excess of 3,000 to 9,000 barrels per day at an effective rate of between 8 and 12½ percent.

This addition will have an immediate effect on state revenues. From the records of the Department of Oil and Gas, there are 24 wells now producing over 3,000 barrels per day. These wells account for nearly 40 percent of the state's daily average production of 200,000 barrels. It is also projected that when production begins at Prudhoe Bay field, its wells will be subject to the effective rate of between 10½ and 12½ percent.

The severance tax proposal will generate approximately 20 percent more revenue from Cook Inlet production. Based on the Department of Revenue's estimates of Cook Inlet production and price levels, this will produce an increase of $5-6 million in the next fiscal year.

Based on estimates of Prudhoe Bay production and price levels for the fiscal year in which production starts, the proposal will yield approximately 50 percent more than the current severance taxes. For Prudhoe Bay this will result in a $1[illegible] million increase in severance taxes levied.

The Department of Revenue was also contacted and their wording was added to the proposed bill.

(b) SB 620; HB 699 -- Oil and Gas Properties Net Proceeds Tax

From the staff studies it was found that the current state income tax does not affect the oil and gas industry in the same way domestic Alaskan corporations are affected. In order to remedy this situation and also place the multinational/multistate oil and gas corporations on the same level with domestic Alaskan income tax paying corporations, the proposed bill has been submitted. It should be pointed out that from the outset the proposed tax will be in lieu of the current corporate income tax.

This is a tax based on the income to the property. To determine profitability certain statutory deductions incurred within the state are allowed. Accelerated write offs of drilling costs, capital expenditures and exploration costs are also allowed. Interest expenses and overhead costs incurred outside Alaska cannot be deducted. The rationale used was limiting the statutory deductions to those expenses incurred in the state and to plug the "fatal loopholes" through which the value subject to taxation would be reduced to inconsequential amounts.

(c) SB 621; HB 703 -- Oil and Gas Properties Excess Value Surtax

From studies done by Ed Sterner, a staff member of the Committee, Dr. Michael Tanzer, under contract to the Committee, and Gregg Erickson,

Director of Research Services, it has been proven that the producing Alaskan oil fields and the projected Prudhoe Bay oil field are tremendously profitable. The purpose of this tax is to tax the excess value not needed by the oil and gas industry to implement long term exploration and development in the state.

It should be stressed again that this is a tax on profitability. The discussion under (b) of this section is applicable. A detailed analysis of the workings of the tax is provided by Ed Sterner's attached report.

Conclusion

Unlike the major oil producing states in the lower 48, Alaskan oil is found principally on state lands. In supervising the exploitation of this nonrenewable resource, the Legislature and the Administration serve the people of Alaska in a fiduciary capacity. The state has a duty, created by its proprietary power and its taxing power, to act primarily for the benefit of the people of Alaska. In this fiduciary capacity, the Legislature and the Administration must not only provide for current state outlays but must also provide for future generations.

An individual oil and gas lease owner can will to his heirs the largesse from the nonrenewable resource found on his land. In this way, he provides his future generations with revenue from the nonrenewable resource. The individual's current revenue is used to build up his estate.

Unlike the individual oil and gas lease owner, the state cannot, by will, pass on its largesse from its nonrenewable oil and gas resource. The state cannot derive its just share through the current royalty payments. The state cannot provide to Alaskan citizens, now and in the future, their share of their legacy from the largest oil and gas field in North America without currently taxing the nonrenewable resource to provide for the legacy. As fiduciaries, strictly liable to the people of Alaska, the Legislature and Administration must see that this legacy is protected. The revenue produced will fund current outlays and provide the continuing legacy for all Alaskan citizens, both current and future generations.

PETROLEUM TAXATION: A SUMMARY

Prepared by:

Edwin Sterner

AGO 529801

PETROLEUM TAXATION: A SUMMARY

It is hoped that the following paper will add needed perspectives and explanations to the petroleum taxation debate. The paper contains a summary of the tax package proposed by the Special Committee on Taxation and Revenue and the arguments supporting it.

The Severance Tax

The tax package is comprised of three parts. The first part is the extension of the graduated scale of the severance tax. This is designed to take into account the broader range of production levels which will soon prevail in the state. It will bring the effective tax rates on highly productive wells into line with other major producing states. While wells producing 5,000 barrels per day or less would pay taxes at the current tax rates, wells producing 9,000 barrels per day would pay an effective rate of 12.5 percent. Wells producing 7,000 barrels per day would pay an effective rate of 11.4 percent. Thus, wells producing 6,000 to 9,000 barrels per day will pay 50-60 percent more in severance taxes than under the current severance tax law.

The Oil and Gas Properties Net Proceeds Tax

The second part of the package is the bill to bring the tax treatment of oil production profits into line with that of other Alaskan profits. Many methods have been used in the past to determine a person's or organization's ability to pay taxes and then to collect those taxes.

In a time when cash was only one of many means of exchange, property was considered the best indicator of an ability to pay taxes. As monetary exchanges came to dominate the economy, current income became a fairly accurate means to estimate ability to pay. Thus, income taxes have dominated property taxes. The oil industry, however, due to its vertical integration, sometimes has no real arms length cash transactions until the product reaches the retail level.

The Oil and Gas Properties Net Proceeds Tax is designed to avoid the short comings of the income tax. Since arms length cash payments are made for only a small portion of Alaska's crude, the Department of Revenue is empowered to make an assessment of the value of Alaska's gas and oil to the producers. The producers report their allowable expenses for the year. The net proceeds (the gross value minus the reported expenses) are taxed at the normal corporate income tax rate.

Many methods have been used in the past to tie taxes to an ability to pay: severance taxes, income taxes, gross receipt taxes, franchise taxes, property taxes, and sales taxes to name a few. The proposed tax bears an administrative similarilty to severance taxes and property taxes. Its economic effect is similar to that of an income tax. What is important is that it is simple to administer, fair and effective. An income tax, no matter how it is structured, is subject to legal attack since income in terms of actual cash transactions rarely occurs in the state. The net proceeds approach was chosen because a similar approach has been used successfully for many years in Nevada for mineral production, and Utah has implemented similar legislation for oil production.

The Excess Value Surtax

The petroleum industry has recently experienced a rapid and artificially induced increase in crude petroleum prices. This increase has produced large returns which many have called excessive. If these returns are likely to produce benefits to the state and its citizens commensurate with the high rate of return, perhaps these greatly increased returns should be taxed only at the regular tax rates. Other enterprises have or have had large returns to investments. First, one must determine how high prices or returns might tend to benefit the public as a whole and try to determine if the artificially high oil prices and returns are likely to produce such benefits. Second, one must determine if there are any private interests which would outweigh the public interest and dictate the application of only the low tax rates against the artificially high returns.

Public Benefits of High Returns

High returns to investment can be of benefit to all, either directly or indirectly. High returns, provided through the patent system, reward useful development and stimulate more. High returns can also reserve capital and natural resources for their best uses. For example, increasing returns in agriculture make possible greater investments in fertilizers and machines. By increasing the value of land for agricultural purposes farm land is protected from "urban sprawl" in some areas.

High prices which are the natural result of supply and demand factors give potential suppliers of substitutes (e.g., synthetic fuels, shale oil) a firm idea of the feasibility of developing and expanding

those substitutes. More generally, when high prices are the natural result of free market forces, they provide an accurate indication of the needs and demands of both the supply and consumption sectors.

The Petroleum Production Industry and High Returns

The current high returns to the production sector of the petroleum industry are the result of artificial prices and market controls, not a balance of supply and demand. They are the result of artificial prices not technological advancement. They are not preserving a resource for a better use. Indeed, the high returns may be causing the country to deplete a vital resource rashly and prematurely.

It is the high price of oil, not the high returns to its production, that may stimulate the development of substitutes. Even these substitutes will be developed only to the degree that continued high prices can be counted on.

The artificially high prices are making it difficult to determine the true needs of the supply sector, disrupting the orderly development of the resource from the most economic to the least economic. This confused development pattern is forcing the serious consideration of price floors to protect investment. Most recently, the European Commission has proposed a $7/bbl floor on oil entering the EEC (The Oil and Gas Journal, Jan. 26, 1976, p. 79).

The high returns are not the result of free enterprise and the functioning of a free marketplace. They are the result of artificial market manipulations and therefore do not serve the beneficial function which high returns due to free market conditions often do.

Other Interests and their Relation to High Returns

Even though the returns to production due to the artificial price levels may not serve their normal roles, there may be other reasons not to tax the higher profits at higher levels. Three major areas of consideration are: the need for capital in the oil industry; the effect of taxation on investment decisions; and most seriously, the legitimate interests of private resource owners in the state.

The proposal and the Supply of Capital from Alaska Oil and Gas Production (For charts on this section see Appendix A)

The need for capital in the oil industry will be great. A Sohio report, "Domestic Petroleum Industry Capital Needs and Availability 1975-1985," indicates that ". . . a return of 16 percent on stockholder equity of the domestic petroleum industry. . ." is needed to attract the required capital (p. 19). With $12 oil and the proposed tax package, Prudhoe Bay by the third year will be producing one-tenth of all the returns needed in the nation to produce that 16 percent return. This does not include the over $500 million in possible pipeline earnings or the depreciation of the field and pipeline.

The same report shows that in 1975 dollars approximately $30 billion will be needed annually for oil investment in the U. S. (Appendix, Table I). Given the proposed tax package, Alaska would be providing $900 million per year net from Prudhoe Bay, $500 million net from the Trans-Alaska Pipeline, $300 million in cash flows from exploration amortization

and Prudhoe Bay depreciation, $200-300 million in pipeline amortization, and $100 million from other gas and oil development in the state. If this two billion dollar cash flow is leveraged with a 40 percent debt-equity ratio, as suggested by the Sohio report (p. 17), Alaska's return would be providing an investment base of $3.3 billion annually, or over ten percent of the entire industry's needs.

Unfortunately, this is probably overstated since dividends tend to absorb "45 to 55 percent of net income," (p. 17, Sohio Report). Only $700 million of the approximately $1.4 billion in net returns from the field and pipeline will be available directly for reinvestment. This reduces the cash flows available from $2 billion to $1.3 billion and reduces the total available base including debt capital to $2.2 billion.

What would the capital availability be under current taxation levels? Although the proposed package may increase tax revenues by approximately $900 million, federal taxes would have absorbed 48 percent of that amount, so the net loss to the industry is approximately $470 million. Of this, $235 million would typically be distributed in dividends (in the case of Prudhoe Bay, a large portion to Her Majesty's Government in London). This leaves a net reduction in funds available for investment of $235 million. If this amount were leveraged at a 40 percent debt-equity ratio, the total amount not available directly to industry would be $390 million, or .0126 of total investment needed annually by the industry. The proposed tax package would reduce the total capital available including leveraged capital from $2.6 to $2.2 billion.

As the pipeline has demonstrated, major projects can have debt-equity ratios much higher than 40 percent, and in the case of the pipeline, 85 percent. Should overall development in Alaska be financed at a 50 percent debt-equity ratio, Alaskan development will still generate $2.6 billion in annual development capital. Should the state make part of its temporary surplus available for the underwriting of exploration in the state, it is most likely that a 50 percent leveraging of private funds in the more secure development and transport phases would be feasible. This presents the possibility that more capital might actually be available for oil development with the package than without.

Relative to the total capital needs of the industry, the impact of this tax package upon the availability of capital will be almost negligible. Even with the tax proposals, the generated cash flows and returns to stockholder equity will be substantial.

The Proposal and Future Development

In spite of the huge cash flows which current Alaskan development will generate there is a concern that the proposed legislation may discourage so much marginal development that the potential revenues lost would exceed the revenues actually raised.

First, one must determine just how much investment would have to be discouraged before the state would be losing tax revenues. The present tax and royalty structure yields 25-30 percent of net production income for the state and in theory 9.4 percent of transport facility net

income. Although this includes the state's royalty, it is hoped that royalties received by private interests would be reinvested in the state. If the average portion of net earnings retained by the state or private interests in the state was 25 percent or $900-$950 million and the average pre-tax return on investment was 25 percent, or $3.6-$3.8 billion, approximately $15 billion in investment would have to be discouraged before the annual loss of taxes might approach the annual gain in taxes from this proposal. This $15 billion investment would be enough to finance a three million dollar well every ten miles across the entire state.

Second, one must consider the likelihood that the investment will actually be discouraged. Conversations with petroleum industry officials indicate that in the foreseeable future they will primarily be interested in those geological formations most likely to support wells producing in the range of 1,000 barrels per day or more. This is an indication that they are interested only in wells that can recover their capital and provide an attractive return given a price of around $7 per barrel FOB on the west coast (e.g., Los Angeles). This is the industry's method of protecting itself against a future fall in prices (certainly a wise policy). Artificially high prices whose duration is indefinite will not cause the industry to make investments which may become marginal or losing ventures in the future. On the other hand, if a reserve can provide sufficient cash flows and net returns at $7 per barrel, any additional income due to the artificial price level will only be providing extra income; it will not be inducing an already viable investment.

Given the need for secure domestic supplies, it is virtually certain that viable reserves will be developed, even with a higher tax on the artificial price levels. In general, the proposed tax package will place its greatest burden on income which is not inducing greater investment, and at most, is "discouraging" investment that would not be made now anyway. (See Appendix B for graphic explanation.)

It is possible that the tax package may tilt the investment decision against some reserves that are at the edge (margin) of viability. This is probably just as well since it may keep the state or private interests from over-extending themselves based on predicted income from projects which end up being losing propositions. Most of those will very likely be merely delayed until the world price, supply, and demand situation stabilizes. The probability of a future, permanent reduction in development of the magnitude needed to offset the certain gains from the tax proposals is remote.

Third, one must balance the certain revenues received now, versus the possible revenues which may be lost in the future. When one compares the remote possibility of lost revenues against the certain current revenues which the tax proposal will provide, the argument against the higher tax rates on the artificially high prices becomes tenuous. Opponents of the higher tax rates are actually asking the state to sacrifice the certain current revenues to avoid the possible loss of future revenues. The same possibility applies to private resource holders.

The Proposal and Private Resource Interests

There is a legitimate concern that the proposed tax package could place private resource holders in a much less favorable position. Generally, this means that the private interest will receive less after taxes with the proposed tax package than without. It is important to determine how great such a reduction might be and whether such a reduction would outweigh the benefits to the state as a whole.

First, the severance tax proposal leaves wells producing up to 2,000 barrels per day at current tax levels. Wells producing 2,000-3,000 b/d are taxed at effective rates only slightly higher than current rates. Only the unusually large producers would be subject to significantly higher severance taxes.

The Net Proceeds Tax is designed to replace an ineffective net income tax. Domestic corporations would be paying this tax anyway. The proposal will be placing interstate corporations on an equal tax basis with the domestic corporations. Any taxes paid under the Net Proceeds Tax are in lieu of net income taxes. The impact of the tax on the private resource holder is also negligible.

The tax on value due largely to the artificial, posted price levels is the only tax which would adversely affect domestic interests. It is important to determine just how great that effect might be. As an example, take five wells producing 1,000 bbls per day with oil selling for $12 per barrel, $3 in transport costs per barrel, and a 20 percent royalty interest for the resource owner. Before taxes the royalty oil

is worth $3.3 million for the year, after transport costs are paid. The severance taxes and regular 9.4 percent income tax (under current law) or a net proceeds tax would be the same under both current law and the proposed package. After all state and federal taxes are paid under current law, the net after tax income would be $1.45 million. Under the proposed package, the net after tax income would be $1.1 million, or a 25 percent reduction in net income. The state on the other hand, would see its income jump from $.5 million to $1.2 million, or a 140 percent increase. (See Appendix C-1 and 2 for calculations).

The reduction in net income to potential resource owners is not nearly as great as some have suggested. Furthermore, the additional tax burden falls upon that portion of income due to the high posted prices of oil. This leaves untouched the income upon which future investment and income projections can be responsibly based.

Finally, the short term surpluses which the proposals may generate for the state could provide potential private resource holders with an alternative to the oil industry sources of capital to finance their exploration work. This could help them reduce or avoid the need to sell their resource through royalty or participation agreements at pre-discovery prices. Past experience clearly demonstrates the willingness of industry to pay far more for proven reserves than for the right to search among potential reserves. Should private resource holders be able to use this stronger bargaining position to increase their gross returns by only one third (e.g., royalty interest increased from 18 percent to 24 percent or participation from 40 percent to 53.2 percent), the entire

additional tax burden would be counterbalanced. In view of past royalty bidding, increases of much more than 33 percent are quite possible. (See Appendix C-3 for further explanation.)

Summary

Alaska will be a major supplier of national petroleum industry capital in the future. There are few other areas in the country, on or off shore, whose production is likely to provide for such rapid capital recovery. Furthermore, the excess value surtax is levied upon only part of net returns, over 75 percent of which would not be directly available for capital investment due to federal taxes and historic dividend policy. The net reduction in available capital which can be generated by Alaska operations is not significant when compared to national needs or tax benefits to the state.

The assertion that higher taxation might cause a marginal reduction in development great enough to cause a net loss of revenues to the state is most difficult to accept. When the time-value of money is considered and the certainty of present revenues is balanced with the possibility of future revenues, such assertions become untenable. The idea that one should sacrifice the "bird in the hand" for not two, but only one bird which might be received at some unspecified future time should be carefully examined before it is accepted. Prudent business practices would dictate that much of the capital produced by the state's petroleum resources will be exported from the state. Only through taxation can the state retain this capital, produced by its nonrenewable resource for present or future investment.

The severance tax and net proceeds tax proposals will have little or no adverse impact on private resource holders in the state. The excess value surtax could temporarily reduce their net returns by approximately 25 percent. Should competitive conditions return to the oil price market, the reduction will approach zero. The tax is designed to center its burden upon those net returns which cannot responsibly be relied upon when making future investment decisions. Finally, the state's financial strength achieved through this tax proposal will strengthen the position of private resource holders. The potential sources of capital provided by the state could enable private resource holders to partially or completely offset the additional tax burden they will temporarily face. These private resource holders would then continue to retain a greater portion of the return from their resource even after the return of competitive conditions.

The excess value proposal is not simply for a tax on high profits. It is for a tax on high profits which due to their artificial and possibly short-term nature will produce at best a very marginal benefit for Alaska and the nation. At worst, these artificial returns may be fostering a disorderly development of a vital natural resource. The excess value proposal is not simply for a tax on high profits. It is designed to retain for the people of Alaska at least a portion of the profits due to the market strength of the oil producing and exporting countries' cartel. The tax is designed to last as long as the cartel's strength lasts and to fall as the cartel's market power falls. The surtax is a levy, not on returns due to free enterprise but on returns due to the lack of it.

APPENDIX C-1

Effect of Proposed Tax on Private Resource Owners
(in thousands of dollars)

5 wells producing 1000 b/d
Price: $12/bbl
Transport cost: $3/bbl
Royalty interest of resource owner: 20%

	Current	Proposed	
Price/bbl	$12	$7 "long term"	$5 "excess value"
Gross after transport (annual)	3,285	1,466	1,825
Severance taxes (5.7%)	187	83	104
State net tax (9.4%)	291	129	162
Sub-total	2,807	1,248	1,559
Excess value tax (41%)	---	---	706
Federal income tax (48%)	1,347	599	410
Net income after taxes	1,460	1,092	
Net difference		(368)	
Percent net reduction		25%	

Ratio of net to gross income - current: .44
Ratio of net to gross income - proposed: .33

If x = gross under current law, and y = gross under proposed law, for net income to be equal:

$$.44x = .33y$$
$$1.33x = y$$

An increase of 33% in gross income would off-set the proposed tax increase (see chart next page)

Gross Returns to the Private Resource Holder

1. A reduction in pre-discovery expenses, either through reductions in bonus bids or exploration expenses (resource owner partially finances exploration), tends to increase the royalty or participation share which the industry is willing to offer for the right to explore for and use the resource owner's oil and gas.

A Department of Revenue example provides this possible comparison:

> For example, tract C29-11, one company would be indifferent to the State of Alaska acceptance of any of the following bids:
>
> (a) 16.67% royalty plus a bonus bid of $6,314,000 ($2,466/acre)
>
> (b) 20% royalty plus a bonus bid of $5,064,00 ($1,978/acre)
>
> (c) 40% royalty plus a negative bonus bid of $526,000 (-$987/acre)

2. If cash is not needed until after a discovery is made, producers are willing to bid far more for the rights to develop.

(a) Sale #13 (North Slope, 12/9/64) $7.66/acre

(b) Sale #14 (North Slope, 7/15/65) $15.25/acre

(c) Sale #18 (North Slope, 1/24/67) $34.87/acre

(d) Sale #23 (North Slope, 9/10/69) $2,181.66/acre

As the first example demonstrated, this increase in the bonus bids could be translated into significant increases in the royalty or participation share offered to the resource owner.

3. By combining a reduction of pre-discovery expenses with a delay in the sale of the resouce until after discovery, the resource owner's interest in oil or gas production can be greatly increased.

Division of Net Income -- $7 Price

Private Royalty Owner

Net To:	Current Law	Percent	Proposed Law	Percent
Royalty Interest	.30	11	.30	11
State	.43	16	.43	16
Federal	.92	33	.92	33
Producer	1.10	40	1.10	40
	2.75	100	2.75	100

Division of Net Income -- $7 Price

State Royalty Owner

Net To:	Current Law	Percent	Proposed Law	Percent
Royalty Interest (state)	.67	24	.67	24
State (as tax power)	.33	12	.33	12
Federal	.65	24	.65	24
Producer	1.10	40	1.10	40
	2.75	100	2.75	100

Division of Net Income -- $12 Price

Private Royalty Owner

Net To:	Current Law	Percent	Proposed Law	Percent
Royalty Interest	66	9	50	7
State	1.20	15	3.09	40
Federal	3.15	41	2.05	26
Producer	2.74	35	2.11	27
	7.75	100	7.75	100

State Royalty Owner

Royalty Interest (State)	1.50	19	1.50	19
State (as tax power)	.98	13	2.55	33
Federal	2.53	33	1.59	21
Producer	2.74	35	2.11	27
	7.75	100	7.75	100

Division of Net Income -- $12 Price

1977

Private Royalty Owner

Net To:	Current Law	Percent	Proposed Law	Percent
Royalty Interest	66	9	.52	7
State	1.20	15	2.93	38
Federal	3.15	41	2.12	27
Producer	2.74	35	2.18	28
	7.75	100	7.75	100

State Royalty Owner

Royalty Interest (state)	1.50	19	1.50	19
State (as tax power)	.98	13	2.42	31
Federal	2.53	33	1.65	22
Producer	2.74	35	2.18	28
	7.75	100	7.75	100

Division of Net Income -- $13.50 Price in 1982

Private Royalty Owner

Net To:	Current Law	Percent	Proposed Law	Percent
Royalty Interest	.70	9	.64	8
State	1.23	16	2.03	26
Federal	3.18	40	2.56	33
Producer	2.74	35	2.62	33
	7.85	100	7.85	100

Division of Net Income -- $13.50 Price in 1982

State Royalty Owner

Net To:	Current Law	Percent	Proposed Law	Percent
Royalty Interest (state)	1.58	20	1.58	20
State (as tax power)	1.00	13	1.69	22
Federal	2.53	32	1.96	25
Producer	2.74	35	2.62	33
	7.85	100	7.85	100

APPENDIX E

Pipeline Profits and their Relation to Production Profits

Much has been written and said concerning the inclusion or exclusion of the pipeline costs and profits in the calculation of the return on the Prudhoe Bay development. The eagerness of several concerns to build a heavily regulated gas line indicates that getting a product to market is not all that unprofitable, even if one does not own the product. It must be recognized, though, that the Prudhoe Bay development and the pipeline are mutually dependent. One would not have been built without the other, and in that sense, they may be viewed together.

In its simplest form, combining the returns to the production and transportation phases of petroleum supply is like combining the returns of an eastern coal mine and the Penn Central to see if coal mining is profitable. When a coal miner finds a deposit, he calculates how much he can afford to pay to get the coal to market. He asks the railroad how much it would charge to build a spur to his mine. If the two amounts overlap, they are in business. Neither offers to subsidize the other, even though neither would be developed without the other.

In the case of Prudhoe Bay, the amount the field could pay for transport and the amount the pipeline needs to charge overlap with much to spare. In the case of a coal mine, the coal miner would not offer the railroad some of these spare profits to beef up its return. In the case of gas, it is certain the producers will not offer the pipeline operators some of their return if the pipeline proves to be a marginal investment. When the producing concern and shipping concern are owned by the same company that relationship does not change. It is an economic

fact of life that reproducible capital such as a pipeline tends to receive competitive returns to capital, while owners of resources such as land or oil may collect what the markets will bear. A billion dollars worth of pipeline, no matter where it is built, would be allowed the same return and must stand on its own merits. A field, no matter where it is found, must be able to cover the transport charges needed to get its petroleum to market and must stand on its own merits.

It could be argued that as a regulated monopoly, any oil pipeline is forced to accept an artificially low rate of return. Since the artificially low charges make the returns to production seem artificially high, it would only be fair for the state to consider the overall return to both production and transportation when reviewing tax policies.

In order to accept the preceding argument, one must determine whether or not the returns to the pipeline are really lower than in other competitive industries. Housing is a competitive industry which uses high debt-equity ratios like those financing the Trans-Alaska Pipeline. As recent trends have shown, housing is at least as risky as pipeline construction. The following table compares a typical return on housing with a projected return on the pipeline.

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TABLE

Housing: $1,000,000 apartment complex, 90% debt financed, rent 1% of total value/month (12%/year), maintenance and management $10,000/year, property taxes $20,000 (2% or 20 mills).

Pipeline: $7.5 billion, 85% debt financed, 7% after tax return, operation and maintenance $70 million, property taxes $130 million (2% of assessed value).

	Housing	Housing	Pipeline (in millions)
Income	120,000	120,000	2,219 (5.06/bbl)
Expenses	30,000	30,000	200
Interest	76,500	76,500	637 (10% of 6.38 billion)
Net Cash Flow	13,500	13,500	1,382
Depreciation	(40 yr) 25,000	(20 yr) 50,000	215 (35 yr)
Taxable Income (loss)	(11,500)	(36,500)	1,167
Net Taxes (50% rate saved)	(5,750)	(18,250)	642 (55% state and federal
Net after taxes	(5,750)	(18,250)	525
Cash flow after taxes	19,250	31,750	740
Net Return to Equity - after Depreciation and Taxes	(5.75%)	(18.25%)	46.67%
Cash Return to Equity	19.25%	31.75%	65.78%
Net Return to Equity if no real depreciation and housing stands alone	13.5%	13.5%	---
Book Return to Equity*	8.85%	17.23%	46.67%

* If only one-third of the housing depreciation is real, and one-third of the taxes saved are merely deferred, the "book" return would show cash of $13,500 minus $8,500 depreciation plus $3,852 or $12,227 in taxes actually saved, or a book net of $8,852 or $17,227 respectively.

It is clear that if a 7 percent return on the entire value of the pipeline is allowed, it will fare quite well when compared to the housing industry. It would also be doing quite well when compared to the still profitable western and southern railroads, the trucking industry, or airlines. Although the book returns on housing range from 8 to 18 percent, the cash flows generated make the investments attractive. The same is true of the pipeline investment. The following table presents a comparison of the net returns and cash flows which the pipeline would generate at net return rates of 8-25 percent.

Pipeline Equity Yields at Rates Similar
To Other Competitive Industries

($7.5 Billion Pipeline, 15% equity)

(in millions)

	8% Equity Return	10% Equity Return	20% Equity Return	25% Equity Return
Income	1,252 ($2.86/bbl)	1,301 ($2,97/bbl)	1,552 ($3.54/bbl)	1,677 ($3.82/bbl)
Expenses	200	200	200	200
Interest	637	637	637	637
Net Cash Flow	415	464	715	840
Depreciation	215	215	215	215
Taxable Income	200	249	500	625
Taxes (55% state and federal)	110	137	275	344
Net after Taxes	90	112	225	281
Cash Flow after Taxes	305	327	440	49[illegible]
Net return to Equity	8%	10%	20%	25%
Cash return to Equity	27%	29%	39%	44%

It is clear that this pipeline, with a tariff between 3 and 4 dollars, would compare favorably with housing industry investments. The housing industry regularly attracts capital far in excess of $30 billion per year.*

It has been suggested that the high risk of the pipeline merits the incentive of a high potential return. The project is certainly huge but no more risky than housing. The major portion of the construction costs and cost overruns have come since the Yom Kippur war and the subsequent embargo and higher oil prices. The probability that the value of oil will not be able to cover a tariff of $3 to $4 is nil, and a minimum demand for the pipeline's services is assured. The greatest risk is that the ICC may not be too generous in setting tariff limits or that excess capacity may force tariff charges down. This is no greater a risk than that posed by local utility regulators, zoning boards, building inspectors, or a collapse in the housing market.

There is simply no economic basis, either in theory or fact, to support the averaging of the production and transport costs and returns related to Prudhoe Bay. Indeed the facts show that the pipeline stands on its own as a sound investment, just as all transport systems must. It is a truism that no transport system will be developed unless there is something to transport. This fact does not mean that incomes should

---

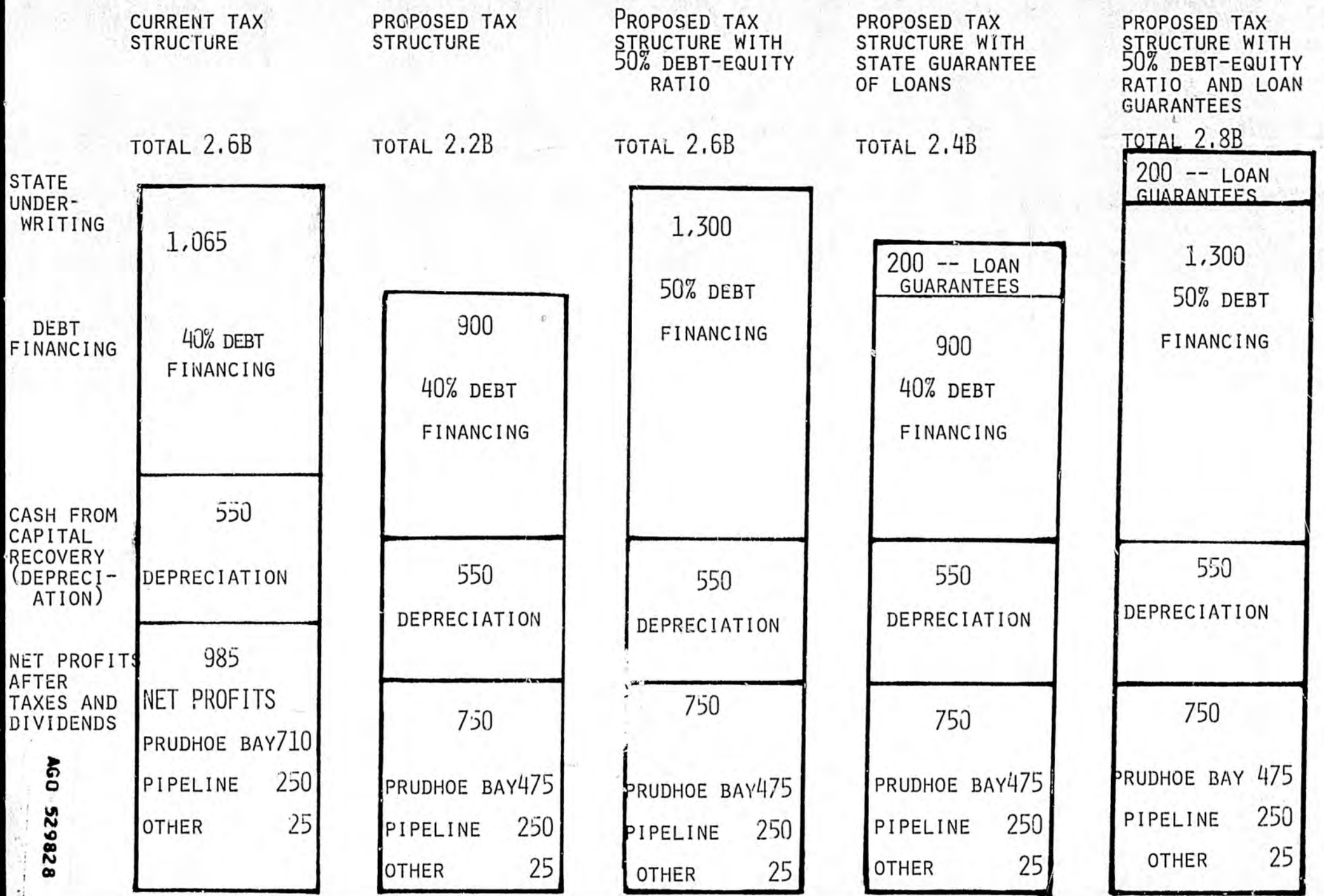
* 1.2 million units at $25,000 per unit is $30,000,000,000 per year. This does not include additions or improvements to older units or mobile home construction.

be averaged. The Trans-Alaska pipeline is no different. The costs and returns of the production and transport activities related to Prudhoe Bay should not be combined. Conclusions drawn from such an averaging would be no more accurate than the conclusion that eastern coal mines are not profitable because the Penn Central loses money. Furthermore, when the returns to the pipeline are properly looked at it is evident that it is a highly productive investment on its own, as is the field itself.

APPENDIX A

CAPITAL AVAILABILITY FROM ALASKA OPERATIONS

(IN MILLIONS)



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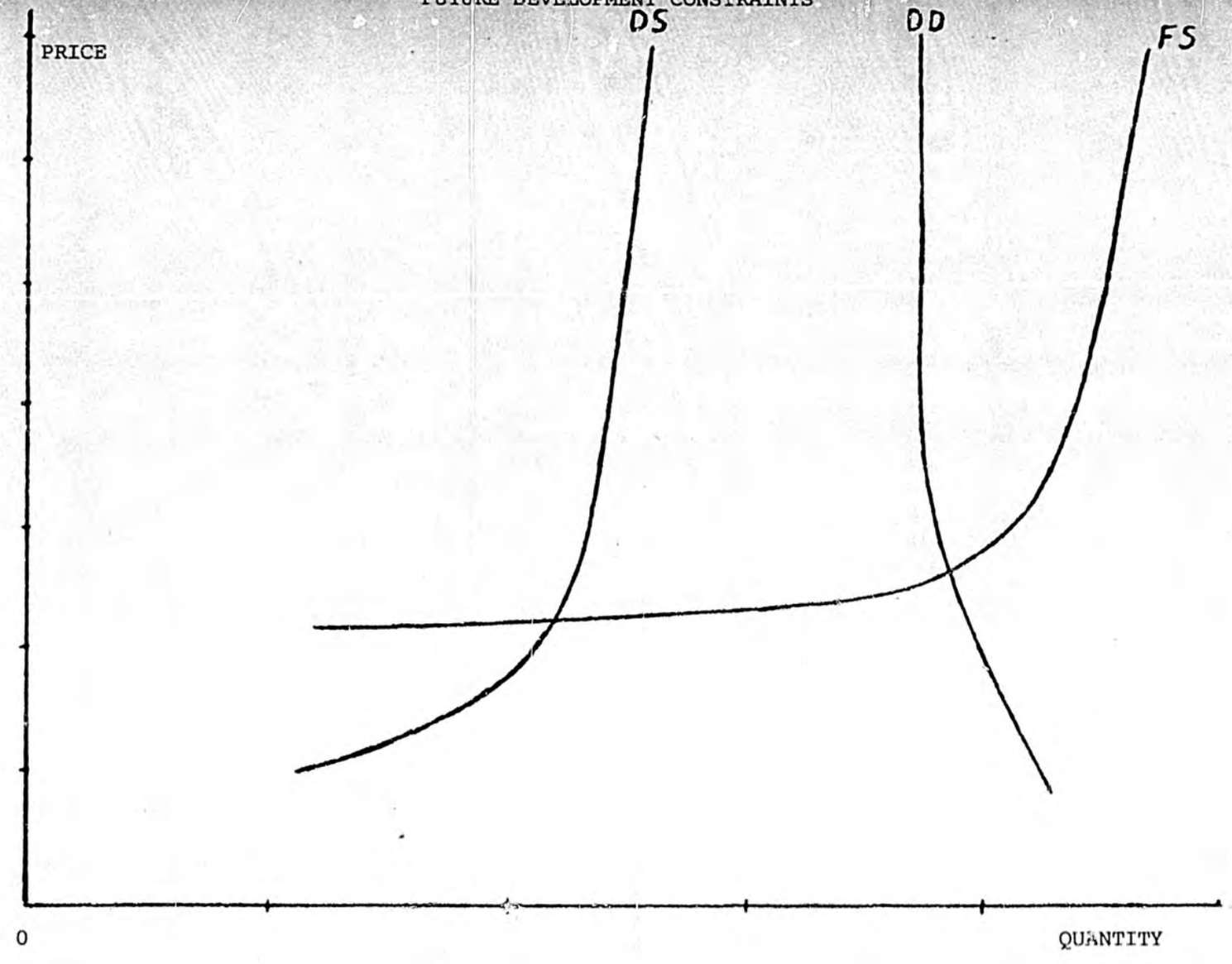
APPENDIX B-1

FUTURE DEVELOPMENT CONSTRAINTS



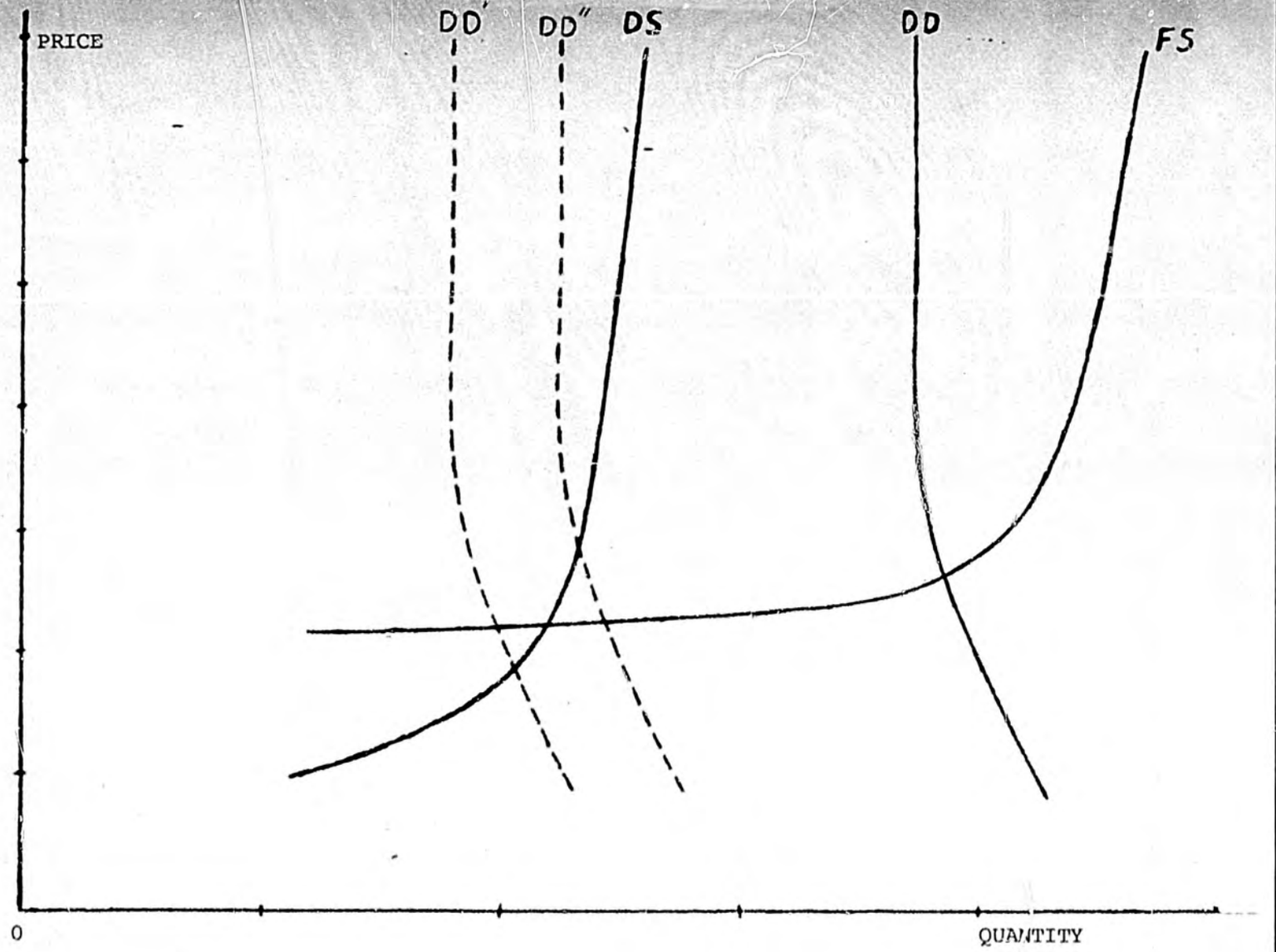
1. Domestic Demand (represented by line DD) varies little with price. Although people do buy less when oil prices go up, the amount consumed with very high prices (at the top of the line) is not much less than the amount consumed with very low prices (at the bottom of the line).

2. Domestic supply (DS) also varies little with price. Supplies may gradually increase as time passes and more investments are made. Over any short term (e.g., less than 2-3 years), however, supplies cannot be greatly increased even with very high prices (at the top of the DS line).

3. Foreign supplies (FS) are now necessary to fill the gap between domestic supply and demand. Until recently this was supplied at the fairly low prices indicated by the part of line FS that connects the domestic supply and demand lines.

APPENDIX B-2

FUTURE DEVELOPMENT CONSTRAINTS



1. In the past (as recently as the early 60's), demand for oil could have been met by domestic supplies. When demand was at a level represented by DD', foreign supplies were imported for convenience or were refined and exported as finished products.

2. When demand was at a level represented by DD", foreign supplies were imported because they were cheaper than potential domestic supplies.

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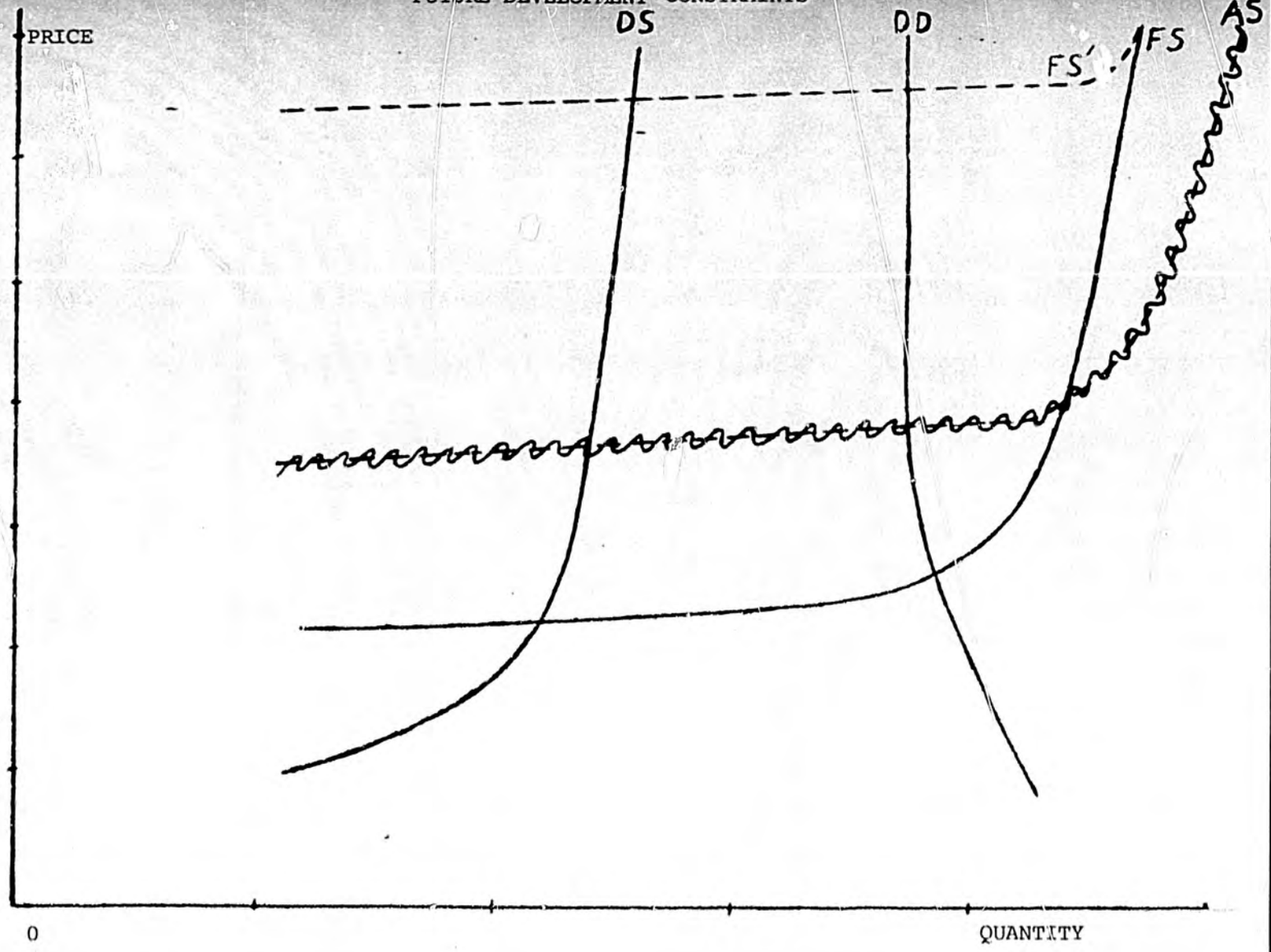
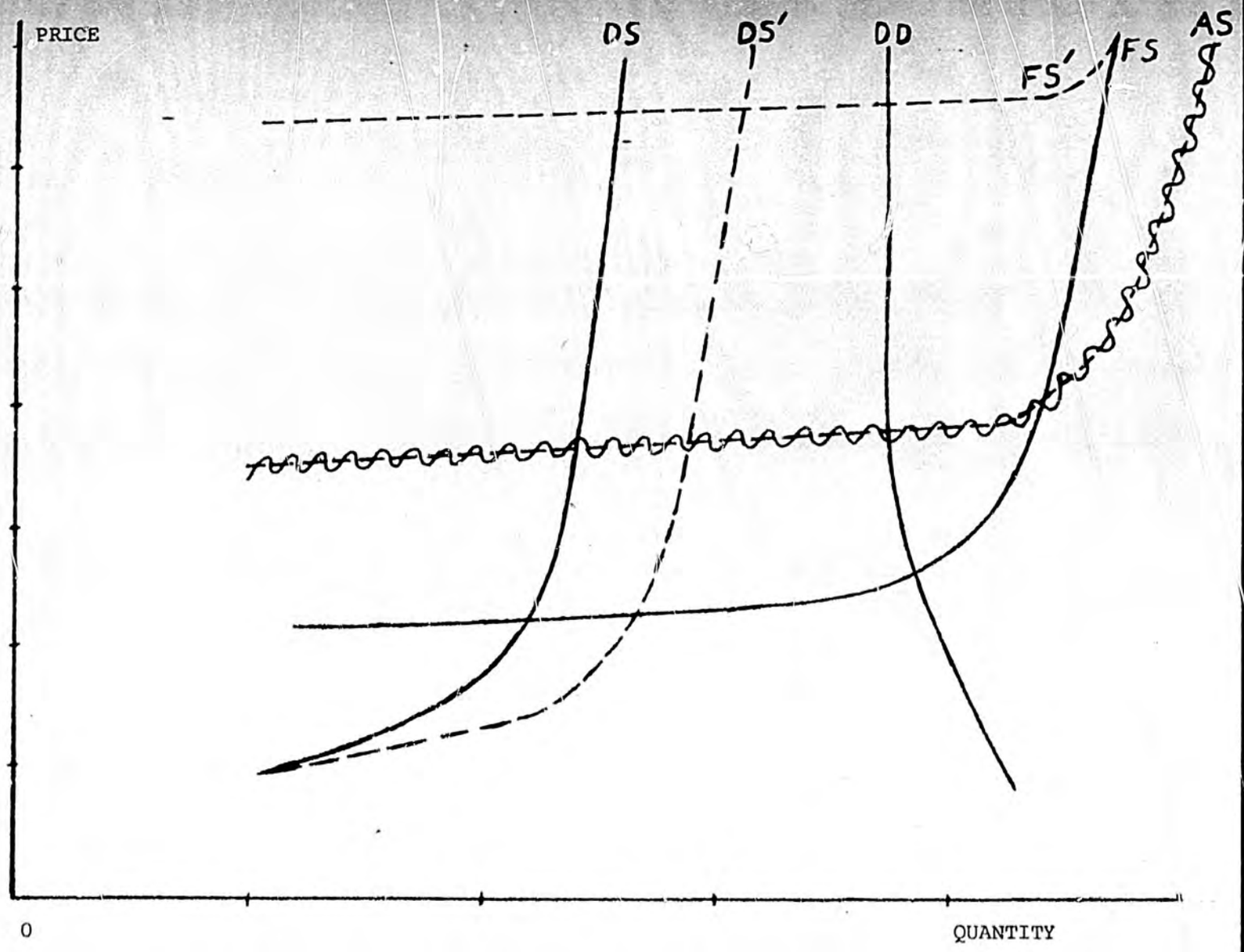
FUTURE DEVELOPMENT CONSTRAINTS



1. Alternate supplies (AS) could have filled the gap between domestic supply and demand, but foreign supplies were less expensive so foreign supplies were used instead.

2. Since domestic supply and demand do not change very much when prices rise, foreign suppliers could greatly increase their prices and still sell almost as much as before. Realizing this, they formed a cartel and posted an artificial price for oil. Foreign suppliers will supply as much (or as little) as consumers want to buy, but at the posted price shown by line FS'.



1. Domestic Demand (DD) varies little with price.

2. Domestic Supply (DS) also varies little with price.

3. Foreign Supplies (FS) are now necessary to fill the gap between domestic supply and demand.

4. Alternate Supplies (AS) could have filled the gap between domestic supply and demand.

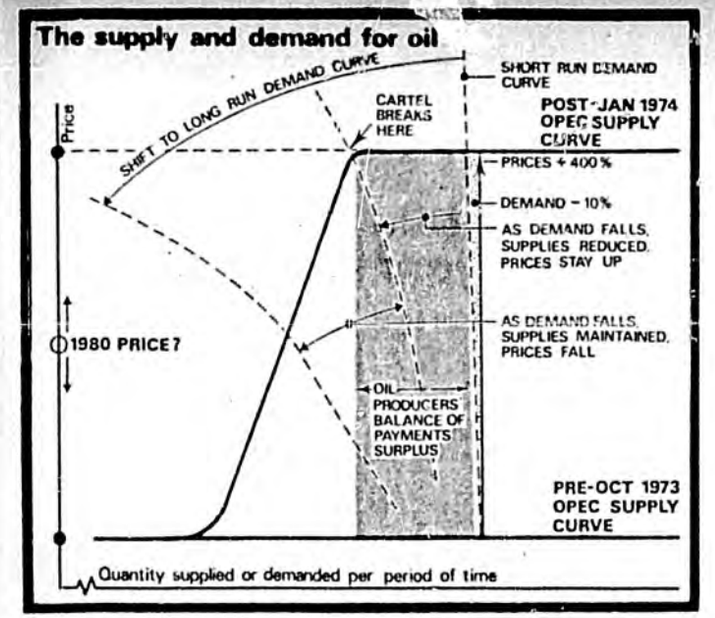
5. Foreign Suppliers will supply as much or little as consumers want to buy, but at the posted price shown by line FS'.

6. Increased domestic oil supplies (DS') may result from increased investment. To protect itself, the oil industry must select investments which will still pay for themselves if and when the cartel's market power weakens. National policy will certainly protect alternate sources of energy, or at least provide a price floor which may give them a change to compete. Thus, long-term oil investment must be made in light of the long-term price outlook, not a temporary, artificial surge in prices.

APPENDIX B-5

FUTURE DEVELOPMENT CONSTRAINTS

Conclusion and graph from:
The Economist, "The Oil Story,"
April 26, 1975, page 37.



It seems clear that by 1980 Britain will be able to get enough oil from the North Sea to supply its own oil needs and to start some exporting. But note:

(1) Development of the North Sea involves a large claim on resources for investment (about $15 billion or £6 billion to develop the 16 major British fields) before any oil is produced.

(2) When in production, North Sea oil may cost about $5–$6 a barrel to produce, which is far above the production costs of Middle East oil.

The advantage of North Sea oil depends on oil prices remaining high. Will they?

The best way to consider prospects for Opec oil prices is to look at the shape of the supply and demand curves for oil, illustrated in our diagram.

Before the Yom Kippur war the supply of oil was very elastic at a low price (supply is elastic if a 1% rise in price causes more than a 1% increase in amount supplied, inelastic if it causes less than a 1% increase). After the war the oil supply curve was jacked up sharply (the supply curve "shifted"), but our guess is that it has not been raised over its whole length.

The reason is that among Opec countries are some with large populations and low incomes—such as Algeria, Iran, Iraq and Venezuela—which can spend all the money they earn from oil exports; and some with small populations and high average incomes—such as Kuwait—which can earn far more than they wish to spend. As demand for oil falls because of high prices and the appearance of substitutes, countries like Kuwait will probably be very willing to cut output in order to keep up price. But countries with larger populations, and more need for money, will be less willing to agree to do so. They will be aware that by dropping the price from $10 to $9 a barrel they could undercut other Opec countries, and could sell at $9 all they could produce of a commodity which costs them only a few cents a barrel. So we have assumed that there is a "kink" or "cartel-breaking point" in the supply curve, with potential production from the more heavily populated countries who want to keep up oil exports and spend what they earn, to the left of it. To the right of the kink is the production countries are willing to cut; most earnings from this at present go into the "unwanted" balance of payments surpluses of Saudi Arabia, Kuwait etc.

Now look at the demand curve. In the short run, over a year or two, it is highly inelastic (a 1% rise in price makes very little difference to the amount demanded). Even a 400% increase in the raw material price has cut demand by only 10% so far.

As time goes on and alternatives are produced, even though they may be quite expensive, the demand curve will shift to the left (and possibly change its slope). If it shifts far enough to the left, the inelastic section of the supply curve will be reached; the cartel could then break and prices crumble. But nobody can know exactly whether or when this will happen. How far, that is, a country like Saudi Arabia will be willing to shoulder the burden of production cuts while the main benefits from higher prices go to other producers.

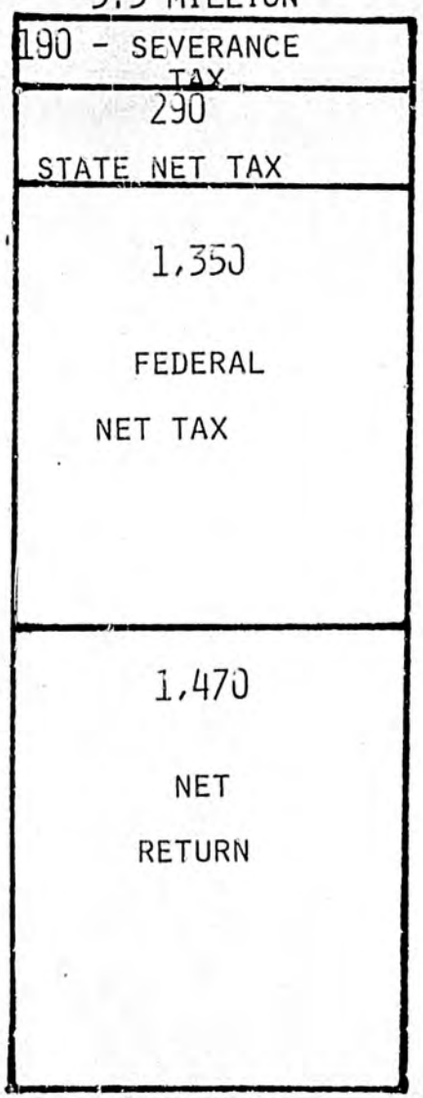
AGO 529833

APPENDIX C-2

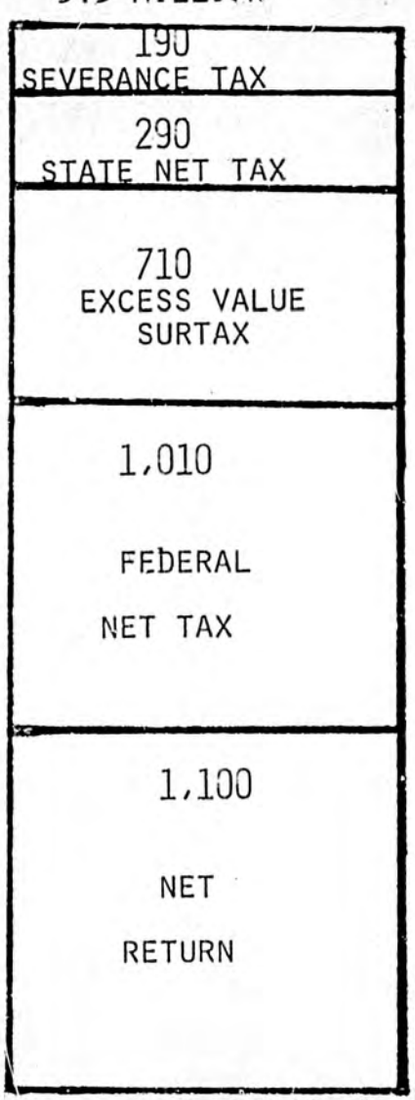
NET RETURNS TO PRIVATE RESOURCE OWNERS IN THE STATE

BASED ON $12.00 OIL

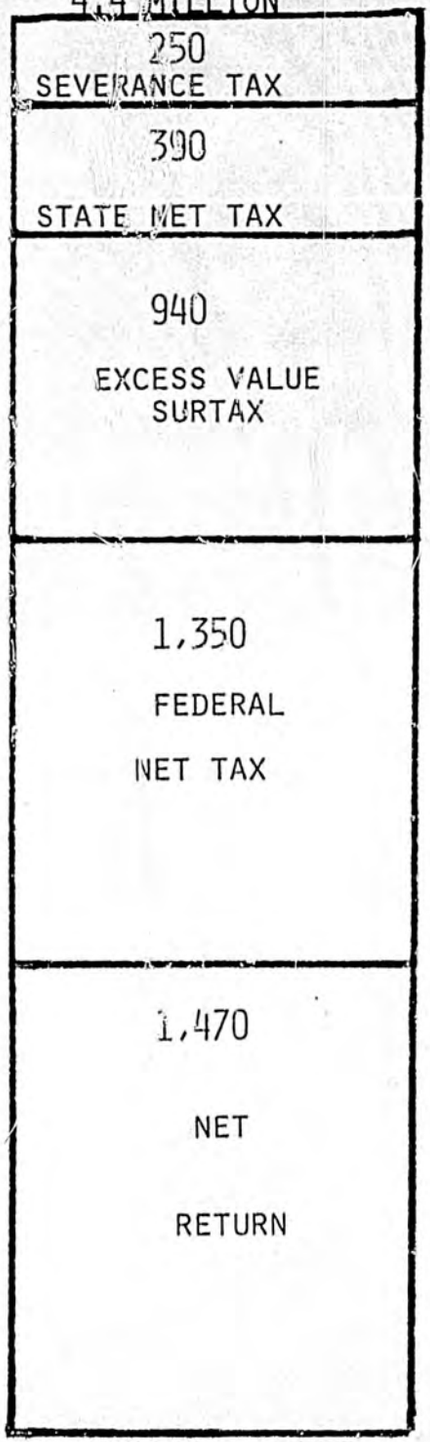
20% ROYALTY
CURRENT TAX
STRUCTURE
(IN THOUSANDS)



20% ROYALTY
PROPOSED TAX
STRUCTURE



26.6% ROYALTY-PROPOSED TAX STRUCTURE



AGO 529834

APPENDIX D-1

If Oil Sells For $7 in 1976

1000 b/d Well	Current Law	Proposed Law Book	Proposed Law cash basis (accounting for proposal's accelerated depreciation provisions)
Price	$7.00	$7.00 + 0 "excess"	$7.00 + 0 "excess"
Transport Costs	3.00	3.00	3.00
Royalty (1/6th)	.67	.67	.67
Producer's Severance Tax (.057)	.19	.19	.19
Operating Expense	.25	.25	.25
Capital Expense	1.00	1.00	1.40
Pre-tax net	1.89	1.89	1.49
State net tax	.18	.18(.04 deferred)	.14
State excess surtax	--	--	--
Federal net tax (.48% rate assumes U.S. & State capital treatment approximately equal)	.82	.82(.17deferred)	.65
Net to Producers	.89	.89	.70
Plus deferred taxes	.21	.21	
Plus accelerated dep.	___	___	.40
Net to Producers cash basis	1.10	1.10	1.10
Royalty Holders': Severance Tax	.04	.04	.04
State Net Tax	.06	.06	.06
Federal Net Tax	.27	.27	.27
Net	.30	.30	.30

APPENDIX D-2

If Oil Sells for $12.00 in 1976

1000 b/d Well	Current Law	Proposed Law Book		Proposed Law Cash Basis (accounting for proposal's accelerated depreciation provisions)	
Price	$7.00	$7.00 + 5 "excess"		$7.00 + 5 "excess"	
Transport Cost	3.00	3.00	--	3.00	--
Royalty (1/6th)	1.50	.67	.83	.67	.83
Producer's Severance Tax (.057)	.43	.19	.24	.19	.24
Operating Expense	.25	.25	--	.25	--
Capital Expense	1.00	1.00		1.40	
	5.82	1.89	3.93	1.49	3.93
State Net Tax	.55	.18	.37	.14	.37
State excess surtax	--	--	1.61	--	1.61
Federal Net Tax (48% rate assumes U.S. & State capital treatment approximately equal	2.53	.82	.94	.65	.94
Net to Producers	2.74	1.90		1.71	
Plus deferred Taxes	---	.21		---	
Plus Accelerated Dep.	---	---		.40	
Net to Producers cash basis	2.74	2.11		2.11	
Royalty Holder's:					
Severance Tax	.09	.09		.09	
State Net Tax	.13	.13		.13	
Excess Surtax	--	.32		.32	
Federal Tax	.62	.46		.46	
Net	.66	.50		.50	

APPENDIX D-3

If Oil Sells for $12.00 in 1977
(with wholesale index inflation of 6% annually)

1000 b/d Well	Current Law	Proposed Law Book		Proposed Law Cash Basis (accounting for proposal's accelerated depreciation provisions)	
Price	$12.00	$7.40	+$4.60 "excess"	$7.40	+$4.60 "excess"
Transport Costs	3.00	3.00		3.00	
Royalty (1/6th)	1.50	.73	.77	.73	.77
Producer's Severance Tax (.057)	.43	.21	.22	.21	.22
Operating Expense	.25	.25	--	.25	--
Capital Expense	1.00	1.00	--	1.40	--
	5.82	2.21	3.61	1.81	3.61
State Net Tax	.55	.21	.34	.17	.34
State Excess Tax	--	--	1.48	--	1.48
Federal Net Tax 48% rate assumes U.S. & State capital treatment approximately equal	2.53	.96	.86	.79	.86
Net to Producers	2.74	1.97		1.78	
Plus deferred taxes	--	.21		--	
Plus Accelerated Dep.	--	--		.40	
Net to Producers cash basis	2.74	2.18		2.18	
Royalty Holder's:					
Severance Tax	.09	.09		.09	
State Net Tax	.13	.13		.13	
Excess Surtax	--	.29		.29	
Federal Tax	.62	.47		.47	
Net	.66	.52		.52	

APPENDIX D-4

If Oil Sells for 13.50 in 1982 (2% inflation)
but Wholesale Index Inflation of 6% Annually

1000 b/d Well	Current Law	Proposed Law Book		Proposed Law cash basis (accounting for proposal's accelerated depreciation provisions)	
Price	$13.50	$11.20 + 2.30 "excess"		$11.20 + 2.30 "excess"	
Transport Costs	4.00	4.00		4.00	
Royalty (1/6th)	1.58	1.20	.38	1.20	.38
Producers Severance Tax (.057)	.45	.34	.11	.34	.11
Operating Expense	.35	.35		.35	
Capital Expense	1.30	1.30		1.80	
Pre-tax net	5.82	4.01	1.81	3.51	1.81
State net tax (.094)	.55	.38	.17	.33	.17
State excess surtax (.41)	--	--	.74	--	.74
Federal net tax (.48)	2.53	1.74	.43	1.53	.43
Net to Producers	2.74	2.36		2.12	
Plus deferred taxes	--	.26		--	
Plus accelerated dep.	--	--		.50	
Net to Producers cash basis	2.74	2.62		2.62	
Royalty Holders':					
Severance Tax	.09	.09		.09	
State Net Tax	.14	.14		.14	
Excess Surtax	--	.11		.11	
Federal Tax	.65	.60		.60	
Net	.70	.64		.64	

Assembly Bldg 104

Introduction

The wholesale liquor industry in Alaska is dominate by three firms: K & L Distributors, Alaska Distributors, and Odom Company. One of the unique characteristics of the three major groups is the out-of-state ownership and control of wholesale liquor even though some of the participating members are Alaskan corporations. K & L Distributors is controlled by the Levine Family of Bellevue, Washington, Alaska Distributors is controlled by Alex Shulman of Seattle, Washington and Odom Company is controlled by M. W. Odom of Seattle, Washington.

Details on the operations of the industry are contained in the attached report from staff researcher Janis C. Gull.

There are currently twenty-two (22) wholesale liquor licenses issued. Under current Alaska law, AS 04.10.110, a general wholesale license is required for each distributing point. As shown in the attached report three major firms have more than one (1) distributing point and are thus multiple licenses.

The taxes and license fees collected by the Department of Revenue for the past five years are:

Fiscal Year	Gross Income	License Fees	Excise Tax	*Income Tax
1975	$41,162,932	$81,850	$6,598,213	$72,834
1974	33,607,680	81,500	5,690,909	42,195
1973	31,426,323	80,200	5,234,678	52,042
1972	31,379,627	80,350	4,871,156	78,862
1971	30,816,351	80,600	4,936,399	46,045

1970

* Furnished by the Department of Revenue based on the largest four companies. Identities of the companies were not furnished.

West Coast Dist, alaska Dist. Odom ~~[illegible]~~ ~~[illegible]~~ K&L Anchorage Cold Storage

Janis 3773

AGO 529839

scomm

#11:7

Alaska State Legislature

Senate

JUNEAU, ALASKA

January 27, 1975

The Honorable Jay Hammond
Governor of Alaska
Pouch A
Juneau, Alaska 99811

Dear Governor Hammond:

On several occasions the Legislature's oil and gas consultants have suggested that the state should thoroughly explore our corporate tax laws with regard to the oil and gas industry. The last session of the Legislature directed the Legislative Council, by House Concurrent Resolution 78, to perform a tax study including this, as well as other areas. You indicated in your budget message that your Administration was considering introducing legislation in the field of corporate tax revision specifically affecting the oil and gas industry.

To expedite the work of the Legislature and to coordinate legislative activities with your Administration, I am today appointing a special committee to examine all aspects of state tax structure, with special regard to the oil industry. Specifically, I am asking the Special Committee on Taxation and Revenue to review the following areas:

1. The corporate tax structure.

2. The corporate tax structure of the oil industry with particular emphasis on such things as percentage depletion allowance and investment tax credit.

3. The advantages and disadvantages of taxation of oil in place by elimination of the present exemption.

AGO 529840

4. Possible revision of the severance tax law in light of increasing oil prices.

5. The difference between rates of taxation of oil and of gas.

6. Such other matters relating to taxation of the oil and gas industry in particular, and taxation in general, as it deems advisable.

The membership of the committee is: Senator John Huber of Fairbanks, Chairman; Senator Pat Rodey of Anchorage and Senator Joe Orsini of Anchorage, members. The Committee will coordinate its activities with the Chairman of the Senate Natural Resources and Senate Finance committees. In addition, it will meet with our oil and gas consultants and will meet with members of your Administration if you so desire. Obviously, a task of this magnitude will require cooperation between the Administration and the Legislature, and I would appreciate your extending to the Committee every consideration normally extended to standing committees of the Legislature.

A study of this type, if it is to be done with accuracy and thoroughness, will extend over a considerable period of time. However, I am asking the members of the Committee to expedite its work so that matters which could be considered at this Session of the Legislature will be ready for presentation to the Legislature by March 15, 1975. Those matters which the Committee cannot consider and report on during the First Session of the Ninth State Legislature will be coordinated with the Legislative Council for further analysis.

Very truly yours,

Chancy Croft
President of the Senate

January 30, 1975

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature
Juneau, Alaska 99811

Dear Mr. President:

I applaud the appointment of the Special Committee on taxation and revenue. It is most crucial that the areas of concern you enumerated be thoroughly evaluated during this Session if possible.

Members of my Administration have been instructed to accord the Committee every cooperation.

Very truly yours,

Jay S. Hammond
Governor

BP:cw

AGO 529842

SCOMM

#11:8

Testimony given by Mr. Charles Naughten before House Resources Committee April 15, 1975 and before Senate Resources Committee on April 16, 1975

Unfortunately, , this is not a good afternoon.

I am Charles Naughton, Assistant Director of Natural Resources for Koniag Incorporated; present to express our views on H.B. 102.

We cannot live with the impact of this Bill if implemented in it's present language. We feel that it is in direct conflict with the Congressional Legislative intent in section 2(b) of ANSCA. Under this section, the Native people through an instrument of corporations, were to upgrade and maintain their socio-economic stature. An implimentation of "102" would abort the very means allowing them to do this and also discourage them.

I will try to put light on the type of discouragement that could and very likely would precipitate as a result of tax on potential resources.

To illustrate, Chairman, I am a very young man, in thirty more years it is not inconceivable that I could be grossing 50 thousand annually. In other words have produced a little more than a half a million dollars in wages. At a 20 mill tax rate I would be required to pay over 11 thousand dollars above my present taxes this year, thats close to 3/4th of my present earnings in taxes alone. Therefore, the less I did the better off I would be. It would destroy my incentive to advance and the same analogy is true for the small corporations being taxed on their potential.

Unlike myself the corporations are still fetal and Koniags maturity depends upon it's ability to develop it's resources. For us there are no timber resources, doubtful economically feasible hard rock minerals and the fishing industry is becoming a regulatory abominable joke. Our only recourse is to rehabilitate our fisheris and develop our subsurface, particulary gas and oil.

Being taxed in our developmental stages, upon our potential returns, would within 3 years force our region into bankruptcy.

Because gas and oil are so important to our survival, and being taxed on our potential reserve will destroy us before we have a chance to grow. We definitely oppose it's enactment.

Koniag knows you will carefully consider these problems and thank you for this opportunity to be heard.

Chas

Chas Naughton

SCOMM

#11:9

STATEMENT OF JOHN A. CARVER, JR., PROFESSOR OF LAW AT THE UNIVERSITY OF DENVER COLLEGE OF LAW, TO COMMITTEES OF THE ALASKA LEGISLATURE CONSIDERING BILLS TO AMEND ALASKA STATUTES, RESPECTING TAXATION OF OIL AND GAS, JUNEAU, ALASKA, APRIL 15, 1975.

AGO 529855

My name is John A. Carver, Jr., and I appear on behalf of BP Alaska, Inc. I am a law professor at the University of Denver College of Law, and reside at 5639 Montview Boulevard, Denver, Colorado, 80207. My professional background relevant to the Committee's inquiry today derives principally from my governmental service as Assistant Secretary and Under Secretary in the Department of the Interior (1961-1966) and as a member of the Federal Power Commission (1966-1972).

It is not my purpose to discuss the pending legislation in terms of the power of the Alaska legislature constitutionally to tax reserves in place on an ad valorem basis. I will point out flaws in the legislation proposed, not with the idea that these flaws are incapable of being remedied, but rather for the purpose of laying a foundation for discussion of the policy implication in national energy supply terms.

As the Committee well knows, section 6(b) of the Statehood Act gave Alaska the right to select lands already leased by the United States for oil and gas development, the state selection being made subject to the federal leases. Upon patent, Alaska takes the right, title and interest of the United States under the lease. Under the final proviso of section 6(h), which provides, "that nothing herein contained shall affect the continued validity of any such lease, permit, license, or contract or any rights arising thereunder," the rights of lessees cannot be diminished by the selection process. (Emphasis added.)

AGO 529856

On their face the proposed measures seem to tax reserves underlying all Alaska-administered leases on the same basis, that is, without distinction based on whether the base fee interest was acquired under section 6(h) or under other selection procedures. The question I suggest is that a lessee from the federal government, when he acquired his lease with the federal government, acquired a "right" not to have the reserves taxed by the State of Alaska.

Should such a contention be sustained, Alaska, if it enacts one of these measures, would at best have a tax anomaly. The two classes of lessees being not substantially different, effort ought to be made not to adopt a scheme of taxation which has to be inequitably applied.

A roughly comparable dilemma, although not in the same direct legal terms, is presented when the State's right to select lands valuable for oil and gas not under lease or development contract by the United States is considered in the light of the provisions of section 28(b) of the Statehood Act, which amended 30 U.S.C. §191 to provide that 90% of the proceeds of federal oil and gas (and other) leases should be remitted to the State.

Alaska is the beneficiary of a 90% share of rentals, bonuses and royalties of federally leased public domain lands; it does not presently have a materially higher stake in the revenue derived from equivalent operations on the lands it selects. But

the clear and specific exemption of federal interests in the pending bill from an ad valorem reserve tax will result in differential treatment of the companies owning reserves.

The point is not that the State may not extend its tax this far and no further, but rather that the State should consider the policy consequences, and ask whether it wants business operations of its citizens, corporate or individual, taxed in this differential fashion, if other methods are available.

There is at least the potential of legal as well as policy problems in terms of what the Courts in the future may determine the Congress to have intended with respect to the Statehood Act's provision of 90% sharing and the right of state selection of already leased areas.

The interests of Alaska and the rest of the United States in these resources may require adjudication at some time in the future.

I was in the employ of the U. S. Senate as assistant to one of the Statehood Bill's chief sponsors, when the Statehood bill was enacted. I was closely involved with Alaska officials in working out the kinks and eliminating the frictions of implementing the provisions of the Statehood Act on a wide range of issues in the early 1960's. As I recall the problems we faced and the attitudes which prevailed in those days, much of Alaska was regarded as continuing to be peculiarly national, even after statehood. This was particularly true with respect to public land

AGO 529858

wildlife policies. I confess that I do not recall that anyone in those days had the prescience to see how vital the vast oil and gas reserves of the North Slope might become to relieve our country from the stranglehold of a more than 40% dependence on foreign oil under cartelized prices. On the contrary, at about that time the big struggle on oil policy was between the consuming states which wanted access to "cheap" foreign oil, even at the expense of loss of much of our domestic productive capability.

Courts frequently take advantage of the hindsight available to them, and they perhaps would listen to the argument that the allocation of 90% of the proceeds of federal leases and 100% of the proceeds of federal leases taken over by the state should represent the outer limit of what Congress intended should be the division of the benefits of these resources between Alaska and the consuming areas of the country or between Alaska and the federal government.

A test of this proposition might be far off in judicial terms; nevertheless, it ought to be considered by the Alaska legislature in the process of determining whether to pass the reserve value tax measure initially.

It is demonstrable that a tax on reserves in advance of their production adds to the fixed costs of the recovery operation. In more "normal" times we might have dealt with this circumstance purely in terms of the cut-off point of economic feasibility of the particular project. Today, however, we must

AGO 529859

see it more accurately in terms of a further charge upon the energy consumers, in this case the energy consumers of the rest of the United States. Given the high leverage of energy prices as additive to inflationary pressures, the question for the legislature is whether it should pioneer a program for this kind of tax on a nationally vital resource. When the oil finally moves, its cost and price will be augmented to the extent of this tax and the cost of carrying it. The potential of Alaska oil to put pressure on the OPEC cartel will be pro tanto reduced.

Bear in mind that I am not attacking the power or right of Alaska to tax. But taxes in advance of the stream of revenue from which they must be paid are like borrowings, equivalent to the sale of bonds secured by the stream of revenue. In exercising the policy choice to use the "pay-as-we-go" approach of these bills, rather than the "pay-as-you-go" approach of taxing only when the flow of revenue begins, the State is doing two things: It is shifting the cost of the "borrowing" to the lenders; and it is setting a precedent for financing governmental needs in resource-rich areas which if widely emulated would become nationally intolerable.

The first point becomes more clear if we think of how the cost of natural gas developments are treated. To the extent that gas reserves are owned by companies which market their gas under regulation by the FPC or by state regulatory

AGO 529860

commissions or both, a tax on reserves might well be capitalized and added in to the company's rate base, upon which it would be permitted to earn a return in its rates as soon as such treatment was approved. This is a way of transferring the cost from investors or lenders to customers which is being increasingly utilized as the capital funds available in the money markets become scarcer and more expensive.

The company in such situations becomes a conduit between ratepayers in the Lower Forty-Eight and the State Treasury of Alaska. Consumers, already hard-pressed by rising energy costs, could be expected to question such a development, particularly if it showed signs of spreading to other producing states. The objectionable features of such a program would be emphasized: the potential for taxing the same reserves over and over again, the absence of theoretical limit on the amount of the tax burden, the transfer of risk to consumers, and the saddling of costs of government unfairly on this particular nationally-needed resource.

It would be only rank legal speculation to specify the possible legal arguments, but I should perhaps list one. What is the difference between this kind of ad valorem tax and those efforts, notably and universally unsuccessful, of producing states to use their police power to assure a preference to their own citizens of resources physically in their states? Is interstate commerce burdened less by a taxing measure of this kind than it is by a regulatory scheme?

AGO 529861

I have no doubt whatever about this Committee and the Alaska legislature being fully aware of the problems presented by these pending measures, and I am sure this thicket would not even be approached, much less entered, in the absence of extremely pressing circumstances.

It is the purpose of my presentation, in summary, to suggest that you take into account in your deliberations the fact that the whole country is in serious straits for lack of petroleum from domestic sources, and of natural gas generally, and that it would be folly to divide ourselves into producing and consuming blocs on the model of the international scene. In addition, serious thought must be given to internal inequities, as among lessees similarly situated except as to the identity of their lessors or the time of their leases, and to the possibility that the program might be found to be at odds with the revenue-sharing and state selection pattern of the Statehood Act.

The adoption by Alaska of a resource managing pattern similar in all important respects to that of the federal government--bonus leasing, size of royalty, and life-of-field terms --is in the spirit of constructive uniformity. It should not be lightly abandoned.

AGO 529862

SCOMM

#11:10

for Copy

TESTIMONY BY ARTIC SLOPE REGIONAL CORPORATION ON HOUSE BILL NO. 297
BEFORE HOUSE RESOURCES COMMITTEE

My name is Jacob Adams. I am appearing before the Committee on behalf of the Arctic Slope Regional Corporation in my capacity as Vice-President in charge of Land Selection and Conveyance.

As I testified before this Committee approximately three weeks ago, ASRC is strongly opposed to legislation which would impose a tax on proven oil and gas reserves. I am appearing before you again today to restate our continuing opposition to this type of tax for the reasons that I will state, and to ask that you attempt to satisfy the state's short-term cash needs by implementing any of the various alternatives that we and others have previously suggested.

Today, I would like to put my testimony in proper perspective by repeating what Oliver Leavitt, Treasurer, of ASRC, told the Senate Resources Committee at the conclusion of my recent testimony before that group regarding the proposed tax on oil and gas reserves. Arctic Slope Regional Corporation is a corporation "doing business for profit" in the State of Alaska. Like any corporation doing business in Alaska, we are and should be subject to taxation for the priveleges and benefits afforded us by the Alaskan government. We will gladly pay taxes on any profits we realize - but we vigorously resist the enactment of a law that will require us to pay taxes on future revenue producing property years prior to the time that we will realize any cash return from the development and production of such properties. This is oparesive taxation which would severely impede the growth and development of our corporation, and would

undoubtedly adversely affect the development and production of the oil and gas reserves on the North Slope of Alaska. Further, based on our evaluation of the possible cost that the proposed legislation could inflict upon us, we are seriously concerned as to whether or not we could continue to function as a viable coporation. I'm sure that it is not your intent to put us out of business or cripple our operations, but I'm also sure that you can appreciate our concern that we might be an unintended casualty of your efforts to ensure that the State's short term cash needs are satisfied.

Statements recently made before the legislature by Mr. Robert Paschall and Professor Griswold indicate that a tax on proven reserves would return annually to the State only $100 - $200 million. Since this will presumably be less than enough to meet the State's short-fall cash requirements, other avenues will have to be pursued. The various alternatives available in this regard were set forth in my earlier testimony, and have been stated and restated by others in their testimony. I suggest that it would be in the best interest of both the state, the Alaska business community and the Alaskan citizenry if the proposed oil in place tax legislation were abandoned and one of the following alternative courses of action were pursued:

1) Indirect borrowing against future oil and gas royalties though what is commonly known as on "ABC" type transaction. We understand that the Committee has already been provided with an explanatory memorandum and sample exhibits regarding this technique.

2) Advance payment of severance taxes.

3) Sale of options to purchase state royalty gas and/or oil.

4) Issuance of revenue anticipation notes.

5) Sale of oil and gas leases.

Mr. Paschall, a California petroleum geologist, has testified that an ad valorem property tax has been used in his state for 60 years. He also predicted that such a tax applied to the Arctic Slope Regional Corporation's interest in the Kemik gas field would be approximately $89,000 annually in contrast to the $2.1 million tax which I previously estimated would be our liability.

Mr. Paschall is correct that California uses an ad valorem property tax approach to derive revenues from oil and gas interests. The tax is in lieu of severance tax. The net effect is approximately 7-8 percent of gross value which is comparable to the effect of severance tax in other oil producing states such as Texas or Oklahoma.

The mechanics of assessment of reserves in California cannot be, in our opinion, equitably applied to Alaska, especially in areas where there is no production history, such as in the Arctic.

Because of the long history of production in California and knowledge of specific reservoir characteristics, a reasonably accurate estimate of reserves can be made. This is not so in Alaska.

The only reserve estimates that can be made on fields such as Kemik or Gubik (which we have also selected) is a simple volumetric estimate that may prove to be much in error. We believe that the error would be on the high side or not in our favor since a volumetric method of

calculating reserves is generally optimistic. The point to be made here is that an assessment of reserves based on estimates of recoverable oil and gas that are made from very little information and virtually no experience and will immediately invite challenge and litigation.

Further, if the method of assessment (which is not spelled out in specific detail in this bill) provides only $89,000 on an estimated value of $106 MM, or $100 MM tax on a $5 MMM assessed valuation of Prudhoe Bay, and the state will obviously still be cash deficient and will have to seek additional ways to raise revenues. This will only further complicate the states financing methodology.

Finally, with all due respect to Mr. Paschall's expertise, I would like to point out that the determination of the fair market value of "proven" oil and gas reserves in Alaska will at best be a guessing game for some time to come. The very fact that the range of the possible annual tax cost upon Arctic Slope Regional Corporation could vary from $89,000 to $2.1 MM, depending on which assessment procedure you choose to employ, is as unsettling as it is uncertain and is clear evidence of the ambiqility and impracticality inherent in such a tax structure.

The legal morass that would undoubtedly evolve in administering its provisions prompt a suggestion that should you choose to enact such legislation, you might consider entitling it "The Attorneys Oil and Gas Annuity Bill."

Professor Griswold states that there would be "no constitutional problem by exempting Native interests from a tax on oil and gas reserves". We recall similar claims about the legality of the right-of-way leasing

act which caused a special session at taxpayers expense and was ultimately repealed.

I understand that if any portion of a law is found unconstitutional under Alaska law, the other provisions of a statute are not necessarily invalid and may apply. Thus, if a court were to find that excepting only native interests is unconstitutional and thereby strike that provision, ASRC or any other regional corporation's interest would be subject to the remaining provisions of the law or, in this case, be subject to an ad valorem tax.

We are not so naive or gullible to be lead down a path of roses only to get hung on a thorn bush.

We want to emphasize the impact of this tax on a net profits interest which is one of the most important provisions of several exploration agreements between regional corporations and various oil companies.

A simple definition of a net profits interest is a share of gross production from a property, measured by the net profits from the operations of the property.

In the case of the North Slope, net profits are determined by ascertaining the cumulative gross proceeds from all oil, gas and other substances produced, saved and sold and deducting from such gross proceeds, the cumulative total of all chargeable costs and expenditures incurred by the lessee pursuant to the net profits agreement. Chargeable costs and expenditures are specifically defined and included any cash considerations paid or to be paid pursuant.

to an exploration agreement including lease bonuses and rentals, proudction taxes and ad valorem taxes.

If a field is large and capable of reasonably rapid pay out, a 15 percent net profits interest is worth as much as a 45 percent working interest or perhaps even more.

A regressive tax - this ad valorem property tax - will prolong for years the time before our net profits become a reality. Moreover, a net profits interest is a property interest itself and therefore subject to an ad valorem tax, althou it is far beyond our knowledge as to how one would evaluate and as s the net profits interest before it actually materializes and produces income to ASRC.

As a fledgling corporation trying to provide financial benefits to thousands of native stockholders, we think this tax is very unfair and debilitating and therefore should not be enacted into law.

April 14, 1975

AGO 529873 B

SCOMM

#11:11

Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 3-13-75	Pump price 3-18-75	Pump price 3-19-74
Albany	44.9	56.9	49.9
Albuquerque	42.4	53.4	48.9
Amarillo	40.1	49.1	41.9
Atlanta	43.6	55.1	49.2
Baltimore	41.9	54.9	48.9
Birmingham	41.9	53.9	47.9
Boston*	43.6	55.1	49.2
Buffalo	44.9	56.9	49.9
Charlotte	41.9	54.9	48.9
Cheyenne	44.9	55.9	49.9
Chicago*	43.6	56.6	50.4
Cleveland	42.9	53.9	47.9
Corpus Christi	40.6	49.6	42.4
Dallas	40.6	49.6	42.4
Denver	43.9	54.9	49.9
Des Moines	43.0	54.0	49.9
Detroit	41.5	54.5	49.9
Fort Worth	40.6	49.6	42.4
Houston	40.6	49.6	42.4
Indianapolis	43.9	55.9	49.9
Jacksonville	41.9	53.9	47.9
Kansas City	43.4	54.4	49.9
Little Rock	41.5	53.0	48.9
Louisville	44.9	55.9	49.9
Los Angeles	40.5	51.5	50.5
Memphis	43.0	54.0	49.9
Miami	43.1	55.1	49.2
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Newark	45.1	56.1	50.2
New Orleans	40.9	52.9	46.9
New York*	45.9	58.9	52.9
Norfolk	41.1	54.1	48.2
Okla. City	42.4	53.0	48.9
Omaha	43.4	55.9	49.9
Philadelphia	41.9	54.9	47.9
Phoenix	43.6	54.6	50.9
Pittsburgh	41.9	54.9	47.9
Portland, Ore.	41.0	52.0	51.4
Salt Lake City	42.4	53.4	47.9
San Antonio	40.1	49.1	41.9
San Diego	41.5	52.5	50.3
San Francisco	41.5	52.5	51.0
Seattle	40.6	53.6	51.0
Spokane	40.7	53.7	52.1
Springfield, Ill.*	44.0	57.0	52.9
St. Louis	44.0	55.0	50.9
Tampa	43.1	55.1	49.2
Texarkana	40.1	49.1	41.9
Tulsa	42.4	53.0	48.9
Wichita	42.9	53.9	47.9
Wichita Falls	40.1	49.1	41.9
Week's avg.	**42.46**	**53.78**	**48.48**
Feb. avg.	**42.24**	**53.55**	**45.73**
Jan. avg.	**41.87**	**53.18**	**45.73**
1975 to date	**42.16**	**53.48**	
1974 to date	**35.10**	**46.37**	

+ Increase, – decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday of each week. They may differ from refiner's prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
- Regular (92 octane) 26.75-30.00
- Premium (99 octane) 28.75-32.00

California (rack) Los Angeles:
- Regular (91 octane) 26.00-31.50
- Regular (95 octane) 27.10-32.50
- Premium (100 octane) 28.40-33.50

Chicago:
- Regular (94 octane) 27.50-32.50
- Premium (100 octane) 30.00-35.00

Kerosine, distillate

Chicago:
- Distillate No. 1 ..... 27.50-33.50
- Distillate No. 2 ..... 26.50-32.00

Gulf Coast (cargoes):
- Kerosine (42-43) 26.25-27.50
- Distillate No. 2 ..... 26.00-27.00

Mid-Continent (Group 3):
- Kerosine (42-44) 27.00-30.25
- Diesel oil (38 d.i. & above) 26.50-29.00
- Distillate No. 1 ..... 26.00-29.25
- Distillate No. 2 ..... 24.50-26.75

New York Harbor (barges):
- Kerosine (42-44) 28.05-32.00
- Distillate No. 2 ..... 27.05-30.25
- Diesel fuel (48-52 d.i.) 27.80

Residual fuel

Mid-Continent (Group 3):
- No. 6 (max 1% S) $10.30
- No. 6 (over 1% S) ..... $ 9.30

Chicago:
- No. 6 (max 1% S) $13.86
- No. 5 (max. 1% S) $14.70

New York Harbor (barges):
- No. 6 (max. 0.3% S) $12.83-14.13
- No. 5 (0.3% S) $13.03-14.38

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	3-14 1975	3-7 1975	3-15 1974	3-14 1975	3-7 1975	3-15 1974	3-14 1975	3-7 1975	3-15 1974
Gasoline	200	115	158	10	5	10	210	120	168
Special Naphthas		3	32					3	32
Kerosine	5	3					5	3	
Distillate	108	135	251	5	5	10	113	140	261
No. 4 Fuel Oil	66	33	135				66	33	135
Residual	999	1,360	1,456	50	75	40	1,049	1,435	1,496
Jet Fuel (Naphtha)	25	25	9			8	25	25	17
Jet Fuel (Kerosine)	52	95	107	43	91	49	95	186	156
Asphalt	5	14	22				5	14	22
LP-Gas	104	112	132	13	24	20	117	136	152
Petrochem Feedstocks	17	15	16				17	15	16
Unfinished	43	26	91	20	5	14	63	31	105
Plant Condensate	88	58	94	5	5	10	93	63	104
Total Prod.	**1,712**	**1,994**	**2,503**	**146**	**210**	**161**	**1,858**	**2,204**	**2,664**
Canadian Crude	361	344	690	157	216	156	518	560	646
Other Foreign	2,311	2,365	1,336	496	313	435	2,807	2,678	1,971
Total Crude	**2,672**	**2,709**	**2,026**	**653**	**529**	**591**	**3,325**	**3,238**	**2,617**
Total imports	**4,384**	**4,703**	**4,529**	**799**	**739**	**752**	**5,183**	**5,442**	**5,281**

AGO 529874

Worldwide crude-oil and gas production

OIL (1,000 b/d)	Jan.* 1975	Dec. 1974	12-month average: Daily prod. 1974	12-month average: Daily prod. 1975	Change from: Vol	Change from: %	GAS (billion cubic ft): Jan. 75	GAS (billion cubic ft): Dec. 74
WESTERN HEMISPHERE								
Argentina	415	415	423	415	− 8	− 1.9	22.6	22.7
Bolivia	35	55	48	35	− 13	−27.1	11.2	12.8
Brazil	200	195	172	200	28	16.3	4.6	40.
Canada	1,587	1,700	1,823	1,587	− 236	−12.9	282.2	311.7
Chile	30	30	29	30	1	3.4	12.0	19.4
Colombia	160	165	186	160	− 26	−14.0	9.7	10.0
Ecuador	140	136	225	140	− 85	−37.8	0.2	0.2
Mexico	610	600	480	610	130	27.1	64.7	62.0
Peru	75	75	75	75	...	...	7.1	6.0
Trinidad	180	180	178	180	2	1.1	4.6	2.5
United States	8,637	8,645	8,907	8,637	− 270	− 3.0	1,831.3	2,011.2
Venezuela	2,748	2,832	3,288	2,748	− 540	−16.4	35.0	45.3
Total	**14,817**	**15,023**	**15,834**	**14,817**	**−1,017**	**− 6.4**	**2,285.2**	**2,507.8**
WESTERN EUROPE								
Austria	45	45	50	45	− 5	−10.0	5.2	4.9
Denmark	4	4	1	4	3	300.0	...	...
France	25	26	24	25	1	4.2	23.3	34.6
West Germany	120	120	128	120	− 8	− 6.3	51.1	50.4
Italy	20	20	20	20	...	...	36.0	50.0
Netherlands	30	24	28	30	2	7.1	214.9	234.
Norway	24	46	3	24	21	700.0	...	...
Spain	30	30	44	30	− 14	−31.8	...	...
United Kingdom	2	2	2	2	...	...	54.6	68.2
Yugoslavia	65	65	68	65	− 3	− 4.4	3.5	4.7
Total	**365**	**381**	**368**	**365**	**− 3**	**− 0.8**	**388.6**	**447.0**
MIDDLE EAST								
Abu Dhabi	770	1,222	1,220	770	− 450	−36.9	...	...
Bahrain	66	67	70	66	− 4	− 5.7	0.2	0.1
Dubai	298	256	140	298	158	47.0	...	...
Iran	5,544	5,915	6,103	5,544	− 559	− 9.2	64.4	76.2
Iraq	1,970	2,162	1,774	1,970	196	11.0	11.0	10.9
Israel	100	100	100	100	...	...	0.2	0.2
Kuwait	2,074	2,320	2,838	2,074	− 764	−26.9	7.0	0.1
Oman	290	282	299	290	− 9	− 3.0	...	...
Qatar	514	519	518	514	− 4	− 0.8	0.1	0.1
Saudi Arabia	7,898	8,043	7,517	7,898	381	5.1	...	...
Sharjah	60	60	...	60	60	...	...	...
Syria	155	155	87	155	68	78.2	...	...
Turkey	65	65	64	65	1	1.6	...	...
Total	**19,804**	**21,166**	**20,730**	**19,804**	**− 926**	**− 4.5**	**82.9**	**87.6**
ASIA-PACIFIC								
Afghanistan	...	...	...	...	...	...	6.2	7.8
Australia	472	473	389	472	83	21.3	14.3	13.4
Burma	20	20	23	20	− 3	−13.0	0.7	0.6
Brunei-Malaysia	340	330	320	340	20	6.3	1.9	2.2
India	150	150	148	150	2	1.4	2.2	1.6
Indonesia	1,345	1,230	1,416	1,345	− 71	− 5.0	16.7	17.5
Japan	15	15	15	15	...	...	7.4	7.1
New Zealand	...	...	...	...	...	...	1.2	1.1
Pakistan	9	9	9	9	...	...	12.9	12.2
Taiwan	3	3	3	3	...	...	4.7	5.0
Total	**2,354**	**2,230**	**2,323**	**2,354**	**31**	**1.3**	**68.2**	**68.5**
AFRICA								
Algeria	800	800	1,150	800	− 350	−30.4	1.4	1.7
Angola	20	20	20	20	...	...	5.0	4.7
Cabinda	150	150	148	150	2	1.4	...	...
Congo	35	35	33	35	2	6.1	0.6	0.6
Egypt	175	175	46	175	129	280.4	6.0	5.2
Gabon	190	190	156	190	34	21.8	1.4	1.5
Libya	970	975	1,912	970	− 942	−49.3	4.0	3.1
Morocco	1	1	1	1	...	...	0.1	2.5
Nigeria	1,984	2,063	2,198	1,984	− 214	− 9.7	8.8	6.1
Tunisia	105	105	70	105	35	50.0	6.2	6.4
Total	**4,430**	**4,514**	**5,734**	**4,430**	**−1,304**	**−22.7**	**33.5**	**31.8**
COMMUNIST								
China	1,300	1,300	1,160	1,300	140	12.1	14.9	15.6
Rumania	290	290	290	290	...	...	81.3	80.2
U.S.S.R.†	9,490	9,419	8,955	9,490	535	6.0	864.9	882.5
Other	110	110	110	110	...	...	35.0	44.6
Total	**11,190**	**11,119**	**10,515**	**11,190**	**675**	**6.4**	**996.1**	**1,022.9**
World Total	**52,960**	**54,433**	**55,504**	**52,960**	**−2,544**	**− 4.6**	**3,854.5**	**4,165.6**

*Figures adjusted. †Includes gas liquids. (Note: Thailand, Barbados and others under 500 b/d not included.)

AGO 529875

Worldwide crude-oil and gas production

OIL (1,000 b/d)	Jan.* 1975	Dec. 1974	12-month average: Daily prod. 1974	12-month average: Daily prod. 1975	Change from: Vol	Change from: %	GAS (billion cubic ft): Jan. 75	GAS (billion cubic ft): Dec. 74
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West Germany	120	120	128	120	− 8	− 6.3	51.1	50.4
Italy	20	20	20	20	...	...	36.0	50.0
Netherlands	30	24	28	30	2	7.1	214.9	234.2
Norway	24	46	3	24	21	700.0	...	...
Spain	30	30	44	30	− 14	−31.8	...	...
United Kingdom	2	2	2	2	...	...	54.6	68.2
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Indonesia	1,345	1,230	1,416	1,345	− 71	− 5.0	16.7	17.5
Japan	15	15	15	15	...	...	7.4	7.1
New Zealand	...	...	...	...	...	...	1.2	1.1
Pakistan	9	9	9	9	...	...	12.9	12.2
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Rumania	290	290	290	290	...	...	81.3	80.2
U.S.S.R.†	9,490	9,419	8,955	9,490	535	6.0	864.9	882.5
Other	110	110	110	110	...	...	35.0	44.6
Total	11,190	11,119	10,515	11,190	675	6.4	996.1	1,022.9
World Total	52,960	54,433	55,504	52,960	−2,544	− 4.6	3,854.5	4,165.6

*Figures adjusted. †Includes gas liquids. (Note: Thailand, Barbados and others under 500 b/d not included.)

AGO 529876

Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 3-18-75	Pump price 3-18-75	Pump price 3-19-74
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Albuquerque	42.4	53.4	48.9
Amarillo	40.1	49.1	41.9
Atlanta	43.6	55.1	49.2
Baltimore	41.9	54.9	48.9
Birmingham	41.9	53.9	47.9
Boston*	43.6	55.1	49.2
Buffalo	44.9	56.9	49.9
Charlotte	41.9	54.9	48.9
Cheyenne	44.9	55.9	49.9
Chicago*	43.6	56.6	50.4
Cleveland	42.9	53.9	47.9
Corpus Christi	40.6	49.6	42.4
Dallas	40.6	49.6	42.4
Denver	43.9	54.9	49.9
Des Moines	43.0	54.0	49.9
Detroit	41.5	54.5	49.9
Fort Worth	40.6	49.6	42.4
Houston	40.6	49.6	42.4
Indianapolis	43.9	55.9	49.9
Jacksonville	41.9	53.9	47.9
Kansas City	43.4	54.4	49.9
Little Rock	41.5	53.0	48.9
Louisville	44.9	55.9	49.9
Los Angeles	40.5	51.5	50.5
Memphis	43.0	54.0	49.9
Miami	43.1	55.1	49.2
Milwaukee	43.9	54.9	48.9
Minn.-St. Paul	44.0	55.0	50.9
Newark	45.1	56.1	50.2
New Orleans	40.9	52.9	46.9
New York*	45.9	58.9	52.9
Norfolk	41.1	54.1	48.2
Okla. City	42.4	53.0	48.9
Omaha	43.4	55.9	49.9
Philadelphia	41.9	54.9	47.9
Phoenix	43.6	54.6	50.9
Pittsburgh	41.9	54.9	47.9
Portland, Ore.	41.0	52.0	51.4
Salt Lake City	42.4	53.4	47.9
San Antonio	40.1	49.1	41.9
San Diego	41.5	52.5	50.3
San Francisco	41.5	52.5	51.0
Seattle	40.6	53.6	51.0
Spokane	40.7	53.7	52.1
Springfield, Ill.*	44.0	57.0	52.9
St. Louis	44.0	55.0	50.9
Tampa	43.1	55.1	49.2
Texarkana	40.1	49.1	41.9
Tulsa	42.4	53.0	48.9
Wichita	42.9	53.9	47.9
Wichita Falls	40.1	49.1	41.9
Week's avg.	42.46	53.78	48.48
Feb. avg.	42.24	53.55	45.73
Jan. avg.	41.87	53.18	45.73
1975 to date	42.16	53.48	....
1974 to date	35.10	46.37	....

+ Increase, – decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday of each week. They may differ from refiner's prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
- Regular (92 octane) 26.75-30.00
- Premium (99 octane) 28.75-32.00

California (rack) Los Angeles:
- Regular (91 octane) 26.00-31.50
- Regular (95 octane) 27.10-32.50
- Premium (100 octane) 28.40-33.50

Chicago:
- Regular (94 octane) 27.50-32.50
- Premium (100 octane) 30.00-35.00

Kerosine, distillate

Chicago:
- Distillate No. 1 ..... 27.50-33.50
- Distillate No. 2 ..... 26.50-32.00

Gulf Coast (cargoes):
- Kerosine (42-43) 26.25-27.50
- Distillate No. 2 ..... 26.00-27.00

Mid-Continent (Group 3):
- Kerosine (42-44) 27.00-30.25
- Diesel oil (58 d.i. & above) 26.50-29.00
- Distillate No. 1 ..... 26.00-29.25
- Distillate No. 2 ..... 24.50-26.75

New York Harbor (barges):
- Kerosine (42-44) 28.05-32.00
- Distillate No. 2 ..... 27.05-30.25
- Diesel fuel (48-52 d.i.) 27.80

Residual fuel

Mid-Continent (Group 3):
- No. 6 (max 1% S) $10.30
- No. 6 (over 1% S) ..... $ 9.30

Chicago:
- No. 6 (max 1% S) $13.86
- No. 5 (max. 1% S) $14.70

New York Harbor (barges):
- No. 6 (max. 0.3% S) $12.83-14.13
- No. 5 (0.3% S) $13.03-14.38

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	3-14 1975	3-7 1975	3-15 1974	3-14 1975	3-7 1975	3-15 1974	3-14 1975	3-7 1975	3-15 1974
Gasoline	200	115	158	10	5	10	210	120	168
Special Naphthas	....	3	32	....	....	....	....	3	32
Kerosine	5	3	....	....	....	....	5	3	....
Distillate	108	135	251	5	5	10	113	140	261
No. 4 Fuel Oil	66	33	135	....	....	....	66	33	135
Residual	999	1,360	1,456	50	75	40	1,049	1,435	1,496
Jet Fuel (Naphtha)	25	25	9	....	....	8	25	25	17
Jet Fuel (Kerosine)	52	95	107	43	91	49	95	186	156
Asphalt	5	14	22	....	....	....	5	14	22
LP-Gas	104	112	132	13	24	20	117	136	152
Petrochem Feedstocks	17	15	16	....	....	....	17	15	16
Unfinished	43	26	91	20	5	14	63	31	105
Plant Condensate	88	58	94	5	5	10	93	63	104
Total Prod.	1,712	1,994	2,503	146	210	161	1,858	2,204	2,664
Canadian Crude	361	344	690	157	216	156	518	560	646
Other Foreign	2,311	2,365	1,336	496	313	435	2,807	2,678	1,971
Total Crude	2,672	2,709	2,026	653	529	591	3,325	3,238	2,617
Total imports	4,384	4,703	4,529	799	739	752	5,183	5,442	5,281

AGO 529877

Fourth quarter trims '74 profits gain

Earnings of large oil firms top $13.4 billion in 1974—up 39.8%—but last-quarter profits drop 7.7%. Most executives see delining profits in 1975 due to inflation and to adverse tax and pricing actions.

THE larger American oil companies enjoyed another good year for profits in 1974, but they encountered a set of unfavorable trends indicating that earnings have peaked and are trending down.

Many executives expect 1975 and beyond to be a period of declining earnings, with possible steep inroads from inflation and unfavorable tax and price actions by Government.

The Oil and Gas Journal's survey of leading companies reveals a much slower fourth quarter pulled down potential 1974 earnings for most of the firms. The relatively poorer fourth quarter came after a series of strong quarterly performances.

The down trend is due to declining international earnings, softer domestic demand with accompanying lower product prices, higher taxes, and rising costs. Earnings were bolstered by strong chemical business and better prices for crude oil and natural gas.

The Journal survey shows that the larger companies as a group earned more than $13.4 billion in 1974, an increase of 39.8% over 1973. The same companies earned $9.5 billion in 1973, up 54.7% from 1972.

Approximately one-half of the companies surveyed earned less in the last quarter of 1974 than in the last quarter of 1973. The quarterly earnings of the group were 7.7% less than in 1973. One year ago, these companies were 68.8% ahead of the 1972 fourth quarter.

Downtrend. The outlook for 1975 U.S. oil earnings is fuzzy. Concern is rising over inflation, recession, and the likelihood of higher taxes.

Standard Oil Co. of California board chairman, H. J. Haynes, said his company's earnings outlook is clouded by inflation and by "uncertainties regarding the arrangements under which the company acquires oil from producing countries and the impact of tax changes under consideration by the U.S. and other governments."

"It is safe to say that we have crossed the profit peak and will be

The profits picture for 25 large U.S. oil companies

Thousands of dollars

Company	1974 Net profit*	1974 % Change from 1973	1974 % Change 1973 vs. 1972	1974 Without LIFO change Net profit*	1974 Without LIFO change % Change from 1973	4th quarter Net profit*	4th quarter % Change from 1973	4th quarter % Change 1973 vs. 1972
Exxon	$3,140,000	+ 28.5	+ 53.3	$3,140,000	+ 28.5	$ 778,000	− 1.1	+ 69.0
Texaco†	1,586,441	+ 22.8	+ 45.4	1,783,141	+ 38.0	319,779	− 29.5	+ 70.1
Gulf	1,065,000	+ 33.1	+ 79.1	1,065,000	+ 33.1	185,000	− 19.6	+ 98.3
Mobil	1,040,100	+ 22.5	+ 46.8	1,040,100	+ 22.5	136,300	− 51.0	+ 68.2
California Standard†	970,000	+ 15.0	+ 54.2	1,220,000	+ 44.6	293,000	+ 3.5	+ 94.2
Subtotal	**7,801,541**	**+ 25.3**	**+ 56.1**	**8,248,247**	**+ 32.4**	**1,712,079**	**− 15.3**	**+ 45.0**
Indiana Standard	970,300	+ 89.8	+ 36.4	970,300	+ 89.8	174,800	+ 43.9	+ 52.7
Shell	620,000	+ 86.5	+ 27.7	620,500	+ 86.5	158,200	+ 99.3	− 1.5
Atlantic Richfield	474,605	+ 75.7	+ 40.3	474,605	+ 75.7	96,893	+ 5.7	+ 47.4
Phillips	429,700	+ 86.5	+ 55.3	429,700	+ 86.5	84,500	− 2.5	+127.6
Sun	378,000	+ 64.4	+ 48.4	378,000	+ 64.4	54,000	− 28.0	+ 59.6
Continental†	327,600	+ 35.0	+ 42.6	398,600	+ 64.2	61,800	− 30.8	+ 91.6
Tenneco	321,468	+ 39.6	+ 13.4	321,468	+ 39.6	76,459	− 5.5	+ 14.4
Union	288,000	+ 59.8	+ 47.8	288,000	+ 59.8	55,500	+ 8.8	+ 55.5
Occidental†	284,000	+256.1	+665.6	341,000	+327.5	NA	NA	NA
Getty†	280,973	+108.1	+ 77.4	280,973	+108.1	58,618	+ 11.4	+115.0
Cities Service†	203,800	+ 50.3	+ 36.8	217,100	+ 60.1	46,400	+ 10.0	+ 49.8
Amerada Hess	201,858	− 7.6	+177.3	201,858	− 7.6	67,806	− 35.1	+471.9
Marathon†	170,493	+ 31.8	+ 62.2	§170,493	+ 31.8	40,917	− 27.6	+ 92.8
Ohio Standard	125,900	+ 69.9	+ 24.1	125,900	+ 69.9	28,600	+146.6	− 39.2
Kerr McGee†	116,408	+ 85.3	+ 52.7	126,537	+148.1	30,952	+ 65.3	+ 69.3
Skelly	113,297	+157.6	+ 17.0	113,297	+157.6	35,530	+111.3	+ 31.3
Ashland†¶	113,000	+ 34.1	+ 25.7	147,700	+ 73.3	38,600	+ 12.2	+ 52.2
American Petrofina¶	86,683	+134.6	+104.6	86,683	+134.6	22,418	+ 34.0	+218.2
Murphy†	56,611	+ 37.4	+239.9	81,086	+ 67.3	13,010	− 6.8	+181.0
Clark†	<7,200>	−123.6	+265.6	12,300	− 59.7	<7,600>	−193.8	+140.8
Subtotal	**5,565,986**	**+ 67.0**	**+ 51.9**	**5,786,100**	**+ 73.6**	**1,137,403**	**+ 6.7**	**+ 64.3**
TOTAL	**13,367,537**	**+ 39.8**	**+ 54.7**	**14,034,341**	**+ 46.8**	**2,849,482**	**− 7.7**	**+ 68.8**

*Excludes nonrecurring gains and losses. †Adopted LIFO inventory accounting for domestic activities in 1974. ‡Includes Getty's share of Mission Corp. and Skelly Oil Co. §Marathon LIFO change not available. ¶Fiscal year ending Sept. 30 and first quarter. **Includes revenue of Standard Ohio assets acquired July 1, 1973.

AGO 529878

Non-Communist world well completions—1970-1973 *(Continued)*

Area	Total wells 1973	Total oil wells	Total gas wells	Total footage	Total wildcats 1973	Oil disc.	Gas disc.	Wildcat footage 1973	Total wells 1972	Total wildcats 1972	Total footage 1972	Total wells 1971	Total wells 1970
Netherlands-North Sea	16	0	4	201,000	13	0	3	163,306	18	11	186,000	20	12
Norway-North Sea	17	7	2	207,000	13	4	2	158,288	16	14	188,500	14	15
Spain	19	1	1	170,724	19	1	1	170,724	13	7	146,500	13	0
Spitzburgen	0	0	0	0	0	0	0	0	0	0	0	1	0
Svalbard	1	0	0	11,000	1	0	0	11,000	2	2	17,200	0	0
Sweden	20	0	0	78,000	20	0	0	78,000	20	20	54,000	4	0
Switzerland	1	0	0	3,872	1	0	0	0	0	0	0	0	0
U.K.	19	5	0	87,500	15	0	0	69,075	10	10	63,000	11	8
U.K.-North Sea	76	20	27	745,000	40	11	3	392,120	70	25	722,000	63	58
Total	**400**	**69**	**137**	**3,616,218**	**217**	**21**	**25**	**2,118,626**	**459**	**210**	**4,062,377**	**418**	**362**
NORTH AFRICA													
Algeria	83	70	10	815,000	13	0	0	165,000	80	10	765,000	109	115
Egypt	46	29	0	343,600	15	2	0	121,200	58	26	446,000	43	67
Libya	74	28	0	467,000	25	3	0	197,000	77	34	661,000	87	250
Morocco	4	0	1	33,667	4	0	1	33,667	7	7	34,238	9	1
Tunisia	15	6	0	135,509	9	0	0	79,545	18	12	175,536	16	6
Total	**222**	**133**	**11**	**1,794,776**	**66**	**5**	**1**	**596,412**	**240**	**89**	**2,081,774**	**264**	**409**
OTHER AFRICA													
Angola	31	18	1	220,177	8	2	0	71,370	34	15	270,988	55	37
Cameroun	3	1	0	18,723	3	1	0	18,723	5	5	31,736	2	6
Congo	17	14	1	45,378	4	1	1	30,778	43	7	116,358	16	9
Dahomey	2	0	0	14,100	2	0	0	14,100	1	1	5,680	0	4
Ethiopia	5	0	1	19,701	5	0	1	19,701	3	3	.....	0	1
Equitorial Guinea	0	0	0	0	0	0	0	0	0	0	0	1	0
Gabon	44	30	2	347,578	15	3	1	124,547	36	17	267,671	36	26
Ghana	1	0	0	3,448	1	0	0	13,448	1	1	75	2	11
Ivory Coast	1	0	0	9,500	1	0	0	9,500	2	2	22,149	0	0
Kenya	0	0	0	0	0	0	0	0	0	0	0	2	1
Liberia	0	0	0	0	0	0	0	0	0	0	0	4	0
Malagasy	2	0	0	20,344	2	0	0	20,344	1	1	9,927	8	1
Mauritania	1	0	0	.....	1	0	0	.....	1	1	17,215	0	2
Mozambique	0	0	0	0	0	0	0	0	1	1	2,294	7	12
Nigeria	239	184	4	2,414,387	45	22	2	501,418	258	61	2,500,956	207	168
Port Guinea	1	0	0	8,850	1	0	0	8,850	0	0	0	0	0
Senegal	0	0	0	0	0	0	0	0	2	2	17,914	6	5
South Africa	18	0	0	78,582	18	0	0	78,582	10	10	99,451	16	15
Spanish Sahara	1	0	0	6,656	1	0	0	6,656	1	1	6,571	0	1
Togo	0	0	0	0	0	0	0	0	0	0	0	1	1
Zaire	9	6	0	63,476	5	2	0	36,868	6	6	71,821	4	0
Total	**375**	**253**	**9**	**3,280,900**	**112**	**31**	**5**	**954,885**	**405**	**134**	**3,441,749**	**389**	**300**
MIDDLE EAST													
Abu Dhabi	37	30	0	45,411	7	0	0	76,678	37	21	405,298	19	7
Cypress	0	0	0	0	0	0	0	0	0	0	0	0	1
Dubai	18	14	0	170,595	1	1	0	13,300	16	0	167,953	7	0
Iran	81	57	5	741,000	18	4	3	231,000	61	2	287,432	104	44
Iraq	16	16	0	117,595	0	3	0	28,611	0	0	0	17	6
Israel	2	0	0	23,480	2	0	0	23,480	0	0	0	7	10
Jordan	0	0	0	0	0	0	0	0	0	0	0	3	1
Kuwait	0	0	0	0	0	0	0	0	2	0	24,381	8	13
Neutral Zone	13	13	0	84,667	0	0	0	0	9	0	44,550	12	23
Oman	49	49	0	211,456	0	0	0	0	56	16	257,654	0	27
Qatar	9	8	0	67,458	1	0	0	6,930	8	6	64,632	10	7
Saudi Arabia	323	177	0	2,763,588	3	3	0	25,668	178	6	1,522,968	56	43
Sharjah	2	2	0	29,011	0	0	0	0	2	1	19,611	2	0
Turkey	59	28	1	400,452	30	6	0	65,220	56	29	403,368	48	60
Total	**609**	**394**	**6**	**5,049,733**	**65**	**17**	**3**	**470,887**	**425**	**81**	**3,197,847**	**293**	**254**
FAR EAST													
Brunei	3	0	0	20,193	3	0	0	20,193	2	2	11,030	0	4
Burma	4	0	0	39,255	4	0	0	39,255	3	3	35,741	0	3
India	5	2	2	30,918	4	2	2	16,168	5	3	20,008	0	0
Indonesia	501	275	31	2,250,571	169	21	7	1,004,578	312	137	1,171,000	422	84
Japan	40	2	4	324,800	36	2	1	292,320	10	10	98,347	4	107
Korea	5	0	0	38,589	5	0	0	38,589	0	0	0	0	0
Khmer	0	0	0	0	0	0	0	0	1	1	7,997	0	0
Malaysia	14	5	0	136,668	11	2	0	107,378	20	20	141,066	12	14
Pakistan	2	0	1	16,053	2	0	1	16,053	8	8	51,802	4	7
Philippines	11	0	0	68,986	11	0	0	68,986	9	9	50,232	17	2
Taiwan	22	1	1	220,337	22	1	1	220,337	6	6	74,444	9	5
Thailand	8	1	1	61,667	8	1	1	61,667	6	6	40,147	1	0
Timor	0	0	0	0	0	0	0	0	3	3	16,173	3	4
Total	**615**	**286**	**40**	**3,208,037**	**275**	**27**	**13**	**1,805,524**	**385**	**208**	**1,717,987**	**472**	**230**
OCEANIA													
Australia-Papua-New Guinea	83	3	16	646,274	67	0	3	511,657	139	93	1,072,893	98	125
New Zealand	0	0	0	0	0	0	0	0	11	11	56,470	9	9
Total	**83**	**3**	**16**	**646,274**	**67**	**0**	**3**	**511,657**	**150**	**104**	**1,059,363**	**107**	**134**
NORTH AMERICA													
Canada	4,621	975	1,640	16,776,595	2,219	199	567	8,419,550	3,548	1,633	13,223,396	3,175	3,108
U.S.	27,602	9,902	6,385	138,937,944	7,466	619	900	44,776,906	28,755	7,539	138,285,876	25,851	28,120
Total	**32,223**	**10,877**	**8,025**	**155,714,539**	**9,685**	**818**	**1,467**	**53,196,456**	**32,303**	**9,172**	**151,509,272**	**29,026**	**31,228**
GRAND TOTAL	**38,647**	**13,274**	**8,343**	**187,118,220**	**10,975**	**1,021**	**1,561**	**63,202,138**	**36,501**	**10,540**	**181,429,050**	**33,327**	**35,278**

AGO 529880

Non-Communist world well completions—1970-1973

Area	Total wells 1973	Total oil wells	Total gas wells	Total footage	Total wildcats 1973	Oil disc.	Gas disc.	Wildcat footage 1973	Total wells 1972	Total wildcats 1972	Total footage 1972	Total wells 1971	Total wells 1970
LATIN AMERICA													
Argentina	597	328	54	3,137,559	139	19	17	304,326	623	110	3,458,432	595	579
Bahamas	0	0	0	0	0	0	0	0	0	0	0	0	2
Barbados	0	0	0	0	0	0	0	0	0	0	0	2	0
Belize	3	0	0	14,664	3	0	0	14,664	5	5	23,907	0	0
Bolivia	14	8	2	90,689	4	1	2	30,390	14	8	189,294	18	33
Brazil	128	40	3	781,065	78	15	2	601,597	179	80	946,345	175	177
Chile	61	18	3	369,249	20	0	3	138,455	72	33	491,395	81	66
Colombia	46	27	3	366,513	20	2	3	209,703	56	20	423,860	71	58
Dominican Republic	0	0	0	0	0	0	0	0	0	0	0	0	2
Ecuador	58	49	0	529,672	8	2	0	66,888	59	20	459,993	81	37
Guatemala	0	0	0	0	0	0	0	0	1	1	11,781	0	0
Guyana	0	0	0	0	0	0	0	0	0	0	0	1	0
Honduras	3	0	0	31,940	3	0	0	31,940	3	3	24,952	1	0
Jamaica	0	0	0	0	0	0	0	0	1	1	7,608	0	1
Mexico	422	182	24	3,434,747	104	12	12	1,033,419	431	143	3,727,563	516	502
Nicaragua	0	0	0	0	0	0	0	0	0	0	0	3	8
Paraguay	0	0	0	0	0	0	0	0	6	6	21,232	11	0
Peru	89	66	0	789,332	31	15	0	376,418	117	25	696,151	121	135
Surinam	0	0	0	0	0	0	0	0	0	0	0	1	7
Trinidad-Tobago	212	175	10	955,622	15	3	5	113,860	196	23	837,678	220	135
Venezuela	427	366	0	3,306,691	63	33	0	546,031	371	64	3,038,490	464	589
Total	**2,060**	**1,259**	**99**	**13,807,743**	**488**	**102**	**44**	**3,467,691**	**2,134**	**542**	**14,358,661**	**2,361**	**2,331**
EUROPE													
Austria	74	29	24	454,332	21	2	4	182,181	74	21	401,339	53	60
Denmark-North Sea	4	0	0	36,000	4	0	0	36,000	3	1	10,800	3	3
Eire	4	0	1	37,000	4	0	1	37,000	3	3	32,780	3	0
France	14	4	1	174,720	11	2	0	137,284	27	11	162,248	11	17
Germany	47	3	20	463,045	22	1	3	201,202	48	26	513,095	62	59
Greece	3	0	0	27,500	3	0	0	27,500	2	2	12,745	1	2
Italy	35	0	11	445,110	24	0	4	389,391	77	43	843,170	94	89
Malta	1	0	0	7,250	1	0	0	7,250	3	3	25,000	1	0
Netherlands	49	0	46	466,285	5	0	3	49,305	73	12	684,000	64	39

(Continued on next page)

at a well in San Patricio County's White Point field. Mobil 1 Jones Unit in East White Point, 5 miles west of Portland, flowed 1,726 Mcfd and 144 bbl condensate daily on 14/64-in. choke from perforations at 12,215-12,318 ft.

A RECOMPLETION in South Texas opened a new gas sand for a new fault-block portion of East Jeffress-field.

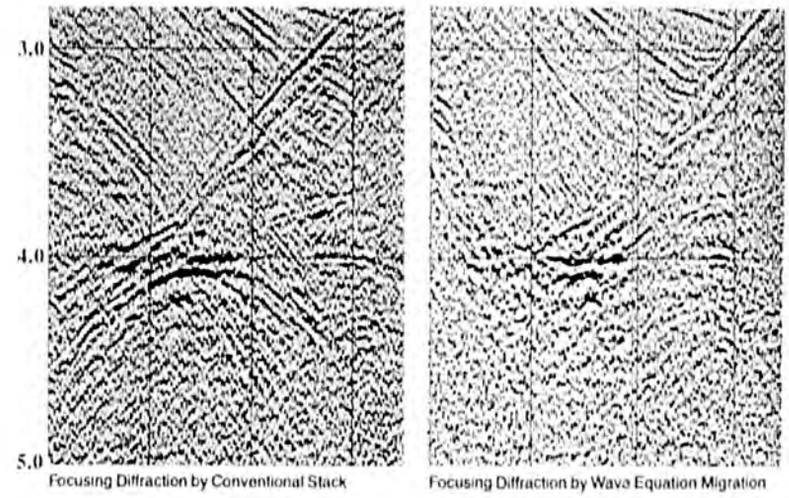
New well is in Hidalgo County, 5 miles southwest of McCook in Porcion 74, A-582. Well is the Coastal States Gas Co. 1 Castillo. Flow was 2,100 Mcfd and 14 bbl condensate daily from perforations at 11,145-11,472 ft in the Vicksburg Oligocene T, fault block A zone. Well originally paid at 12,043-12,130 ft in the Vicksburg-T sand.

The second well in North Julian field, Kenedy County, is also a success. Richard E. Haas completed 2 Clark & Sain in the 9,300-ft Frio Oligocene pay. Flow was 860,000 cfd and 13 bbl condensate through 12/64-in. choke.

Pay is at 9,172-81 ft. Location is 1 mile east of the discovery well, completed late last year.

WAVE EQUATION MIGRATION

Digicon successfully applies the Claerbout wave equation to the migration of conventional CDP stacked exploration data. This advanced development is one example of Digicon's high technology processing capability. Migration processing is available at any Digicon processing center: HOUSTON; SINGAPORE; and LONDON. You get more with Digicon.



Focusing Diffraction by Conventional Stack

Focusing Diffraction by Wave Equation Migration

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AGO 529881

Table 19.--Profit record of 27 large U. S. oil companies, first nine months of 1973 relative to 1972.

Company	Profits ($1,000)* 9 Months 1974	% Change From 1973	3rd Qtr 1974	% Change From 1973
Exxon	2,280,000	+ 37.7	800,000	+ 25.4
Texaco	1,428,162	+ 70.2	378,391	+ 23.1
Mobil	903,800	+ 58.2	277,800	+ 20.2
Calif. Standard	877,736	+ 56.6	299,506	+ 32.6
Gulf	815,000	+ 43.0	275,000	+ 31.0
SUBTOTAL	6,304,698	+ 50.2	2,030,697	+ 25.9
Indiana Standard	795,500	+104.1	296,500	+101.3
Shell	462,300	+ 82.5	216,000	+158.4
ARCO	377,712	+111.6	144,042	+140.9
Conoco	329,800	+115.0	120,200	+121.8
Sun	323,848	+109.1	105,675	+ 84.5
Phillips	317,600	+121.1	112,900	+109.6
Occidental	247,209	+360.2	86,834	+297.3
Tenneco	245,007	+ 64.1	73,405	+ 37.8
Union	232,500	+ 80.1	79,900	+ 57.6
Getty†	222,355	+169.8	86,526	+171.9
Cities Service	168,400	+ 80.1	45,800	+ 75.5
Amerada Hess	134,052	+ 17.7	38,203	- 12.9
Marathon	129,576	+ 77.7	48,745	+ 49.9
Pennzoil	113,983	+ 95.7	33,703	+ 80.3
Sohio	97,000	+ 55.2	37,000	+105.6
Kerr-McGee	93,154	+111.2	32,153	+143.7
Ashland‡	78,700	+ 27.1	27,300	+ 14.2
Skelly	77,800	+186.2	31,100	+280.0
American Petrofina	64,265	+217.8	31,944	+247.6
Murphy	55,615	+ 60.8	12,189	- 19.7
Clark	19,165	- 14.5	<3,435>	-137.5
Commonwealth	12,910	- 23.8	<14,772>	-281.3
SUBTOTAL	4,598,451	+ 98.5	1,641,912	+ 95.5
TOTAL	10,903,149	+ 67.4	3,672,609	+ 49.8

*Excludes nonrecurring gains and losses. †Includes Getty's share in Mission Corp. and Skelly. ‡Calendar-year basis.

Source: Oil and Gas Journal, November 11, 1974

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Worldwide crude-oil and gas production

OIL (1,000 b/d)	Dec.* 1974	Nov. 1974	12-month average Daily prod. 1973	12-month average Daily prod. 1974	Change from Vol	Change from %	GAS (billion cu ft) Dec. 1974	GAS (billion cu ft) Nov. 1974	GAS (billion cu ft) 1974 Total
WESTERN HEMISPHERE									
Argentina	415.0	415.0	420.0	413.0	− 7.0	− 1.7	22.7	25.2	278.4
Bolivia	50.0	50.0	47.0	49.0	2.0	4.3	12.8	12.9	152.2
Brazil	195.0	195.0	166.0	179.0	13.0	7.8	4.0	4.2	47.3
Canada	1,700.0	1,468.0	1,797.0	1,690.0	−107.0	− 6.0	311.7	301.7	3,341.7
Chile	30.0	30.0	32.0	29.0	− 3.0	− 9.4	19.4	19.2	212.3
Colombia	165.0	165.0	195.0	173.0	− 22.0	−11.3	10.0	10.1	105.8
Ecuador	55.0	56.0	218.0	153.0	− 65.0	−29.8	0.2	0.3	5.3
Mexico	600.0	600.0	465.0	551.0	86.0	18.5	62.0	58.6	686.4
Peru	75.0	75.0	71.0	76.0	5.0	7.0	6.0	6.5	73.3
Trinidad	180.0	180.0	166.0	178.0	12.0	7.2	2.5	4.8	65.0
United States	8,645.0	8,647.0	9,187.0	8,812.0	−375.0	− 4.1	2,011.2	1,971.2	22,376.9
Venezuela	2,832.0	2,818.0	3,366.0	2,976.0	−390.0	−11.6	45.3	45.0	1,456.5
Total	**14,942.0**	**14,699.0**	**16,130.0**	**15,279.0**	**−851.0**	**− 5.3**	**2,507.8**	**2,459.7**	**28,801.1**
WESTERN EUROPE									
Austria	45.0	45.0	49.0	46.0	− 3.0	− 6.1	4.9	5.2	87.6
Denmark	4.0	4.0	4.0	3.0	− 1.0	−25.0	0	0	0
France	25.0	25.0	26.0	23.0	− 3.0	−11.5	34.6	32.3	303.6
West Germany	120.0	121.0	129.0	121.0	− 8.0	− 6.2	50.4	51.6	674.1
Italy	20.0	20.0	19.0	19.0	....	....	50.0	33.0	572.2
Netherlands	24.0	24.0	29.0	30.0	1.0	3.4	234.2	241.7	2,867.5
Norway	46.0	57.0	32.0	35.0	3.0	9.4	0	0	0
Spain	30.0	30.0	15.0	37.0	22.0	146.7	0	0	0
United Kingdom	2.0	2.0	2.0	2.0	....	....	68.2	71.1	1,207.2
Yugoslavia	65.0	65.0	67.0	67.0	....	....	4.7	5.2	54.6
Total	**381.0**	**393.0**	**372.0**	**383.0**	**11.0**	**2.9**	**447.0**	**440.1**	**5,766.8**
MIDDLE EAST									
Abu Dhabi	1,222.0	1,204.0	1,299.0	1,412.0	113.0	8.7	0	0	0
Bahrain	67.0	67.0	68.0	67.0	− 1.0	− 1.5	0.1	0.1	3.3
Dubai	256.0	268.0	220.0	239.0	19.0	8.6	0	0	0
Iran	5,915.0	6,015.0	5,860.0	6,026.0	166.0	2.8	76.2	75.4	906.2
Iraq	2,162.0	1,812.0	1,954.0	1,850.0	−104.0	− 5.3	10.9	11.1	129.3
Israel	100.0	100.0	88.0	100.0	12.0	13.6	0.2	0.2	4.2
Kuwait	2,320.0	2,546.0	3,024.0	2,546.0	−478.0	−15.8	0.1	0.1	1.6
Oman	282.0	281.0	293.0	290.0	− 3.0	− 1.0	0	0	0
Qatar	519.0	519.0	570.0	518.0	− 52.0	− 9.1	0.1	0.1	1.7
Saudi Arabia	8,043.0	8,818.0	7,607.0	8,481.0	874.0	11.5	0	0	0
Sharjah†	60.0	60.0	....	30.0	30.0	....	0	0	0
Syria	155.0	155.0	105.0	132.0	27.0	25.7	0	0	0
Turkey	65.0	65.0	67.0	65.0	− 2.0	− 3.0	0	0	0
Total	**21,166.0**	**21,910.0**	**21,155.0**	**21,756.0**	**601.0**	**2.8**	**87.6**	**87.0**	**1,046.3**
ASIA-PACIFIC									
Afghanistan	....	....	....	....	....	....	7.8	7.6	92.8
Australia	473.0	459.0	369.0	389.0	20.0	5.4	13.4	14.2	160.1
Burma	20.0	20.0	20.0	20.0	....	....	0.6	0.6	6.1
Brunei-Malaysia	330.0	330.0	320.0	328.0	8.0	2.5	2.2	0.9	5.1
India	150.0	150.0	147.0	149.0	2.0	1.4	1.6	1.4	18.5
Indonesia	1,230.0	1,250.0	1,324.0	1,396.0	72.0	5.4	17.5	18.2	160.8
Japan	15.0	15.0	14.0	15.0	1.0	7.1	7.1	7.2	95.5
New Zealand	....	....	....	....	....	....	1.1	1.1	13.2
Pakistan	9.0	9.0	9.0	9.0	....	....	12.2	14.0	141.9
Taiwan	3.0	3.0	2.0	3.0	1.0	50.0	5.0	4.2	46.2
Thailand	0.2	0.2	0.2	0.2	....	....	0	0	0
Total	**2,230.2**	**2,236.2**	**2,205.2**	**2,309.2**	**104.0**	**4.7**	**68.5**	**68.3**	**740.2**
AFRICA									
Algeria	800.0	800.0	1,090.0	986.0	−104.0	− 9.5	1.7	1.8	20.6
Angola	50.0	20.0	17.0	20.0	3.0	17.6	4.7	5.2	40.7
Cabinda	150.0	150.0	145.0	149.0	4.0	2.8	0	0	0
Congo	35.0	35.0	42.0	32.0	− 10.0	−23.8	0.6	0.7	6.1
Egypt	175.0	175.0	167.0	144.0	− 23.0	−13.8	5.2	4.6	49.7
Gabon	190.0	190.0	151.0	177.0	26.0	17.2	1.5	1.5	15.2
Libya	975.0	961.0	2,187.0	1,491.0	−696.0	−31.8	3.1	3.2	41.0
Morocco	1.0	1.0	1.0	1.0	....	....	2.5	1.8	29.0
Nigeria	2,063.0	2,238.0	2,056.0	2,256.0	200.0	9.7	6.1	5.0	60.0
Tunisia	105.0	105.0	82.0	88.0	6.0	7.3	6.4	2.9	20.7
Total	**4,514.0**	**4,675.0**	**5,938.0**	**5,344.0**	**−594.0**	**−10.0**	**31.8**	**26.7**	**283.0**
COMMUNIST									
China	1,200.0	1,200.0	1,060.0	1,200.0	140.0	13.2	15.6	14.8	187.5
Rumania	290.0	290.0	290.0	290.0	....	....	80.2	77.8	935.7
U.S.S.R.‡	9,419.0	9,441.0	8,576.0	9,176.0	600.0	7.0	882.5	811.2	9,213.3
Other	110.0	110.0	100.0	110.0	10.0	10.0	44.6	41.2	500.8
Total	**11,019.0**	**11,041.0**	**10,026.0**	**10,776.0**	**750.0**	**7.5**	**1,022.9**	**945.0**	**10,837.3**
World Total	**54,252.2**	**54,954.2**	**55,826.0**	**55,847.2**	**21.0**	**0.04**	**4,165.6**	**4,026.8**	**47,474.7**

*Figures adjusted. †On stream July 1974. ‡Includes gas liquids.

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Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 2-18-75	Pump price 2-18-75	Pump price 2-19-74
Albany	44.9	56.9	47.9
Albuquerque	42.4	53.4	47.9
Amarillo	40.1	49.1	39.9
Atlanta	42.1	53.6	46.4
Baltimore	41.9	54.9	46.9
Birmingham	41.9	53.9	45.9
Boston*	42.1	53.6	46.4
Buffalo	44.9	56.9	47.9
Charlotte	41.9	54.9	46.9
Cheyenne	44.9	55.9	48.9
Chicago*	43.6	56.6	48.4
Cleveland	42.9	53.9	45.9
Corpus Christi	40.6	49.6	41.1
Dallas	40.6	49.6	41.1
Denver	43.9	54.9	48.9
+Des Moines	43.0	54.0	46.9
Detroit	41.5	54.5	47.9
Fort Worth	40.6	49.6	41.1
Houston	40.6	49.6	41.1
Indianapolis	43.9	55.9	47.9
Jacksonville	41.9	53.9	45.9
Kansas City	43.4	54.4	47.9
+Little Rock	41.5	53.0	45.9
Louisville	44.9	55.9	47.9
−Los Angeles	40.7	51.7	44.3
+Memphis	43.0	54.0	46.9
Miami	41.6	53.6	46.4
Milwaukee	43.9	54.9	46.9
+Minn.-St. Paul	44.0	55.0	47.9
Newark	43.6	54.6	47.4
New Orleans	40.9	52.9	44.9
New York*	45.9	58.9	50.9
Norfolk	39.6	52.6	45.4
+Okla. City	42.4	53.0	45.9
Omaha	43.4	55.9	47.9
Philadelphia	41.9	54.9	45.9
+Phoenix	43.6	54.6	44.9
Pittsburgh	41.9	54.9	45.9
−Portland, Ore.	41.5	52.5	45.9
Salt Lake City	42.4	53.4	46.9
San Antonio	40.1	49.1	39.9
−San Diego	41.3	52.3	44.3
+San Francisco	41.5	52.5	45.3
Seattle	40.8	53.8	46.1
+Spokane	40.9	53.9	47.1
+Springfield, Ill.*	44.0	57.0	49.9
+St. Louis	44.0	55.0	47.9
Tampa	41.6	53.6	46.4
Texarkana	40.1	49.1	39.9
+Tulsa	42.4	53.0	45.9
Wichita	42.9	55.9	45.9
Wichita Falls	40.1	49.1	39.9
Week's avg.	**42.31**	**53.62**	**45.88**
Jan. avg.	**41.87**	**53.18**	**45.73**
Dec. avg.	**41.42**	**52.74**	**42.02**
1975 to date	**41.99**	**53.30**	....
1974 to date	**34.43**	**45.70**	....

+ Increase, − decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday of each week. They may differ from refiner's prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
- Regular (92 octane) 26.75-30.00
- Premium (99 octane) 28.75-32.00

California (rack) Los Angeles:
- Regular (91 octane) 26.00-31.50
- Regular (95 octane) 27.10-32.50
- Premium (100 octane) 28.40-33.50

Chicago:
- Regular (94 octane) 27.50-32.50
- Premium (100 octane) 30.00-35.00

Kerosine, distillate

Chicago:
- Distillate No. 1 ..... 27.50-33.50
- Distillate No. 2 ..... 26.50-32.00

Gulf Coast (cargoes):
- Kerosine (42-43) 27.25-28.75
- Distillate No. 2 ..... 26.00-27.00

Mid-Continent (Group 3):
- Kerosine (42-44) 28.00-30.25
- Diesel oil (58 d.i. & above) 27.50-30.00
- Distillate No. 1 ..... 27.00-29.75
- Distillate No. 2 ..... 26.00-27.75

New York Harbor (barges):
- Kerosine (42-44) 28.05-32.00
- Distillate No. 2 ..... 25.35-30.25
- Diesel fuel (48-52 d.i.) 27.80

Residual fuel

Mid-Continent (Group 3):
- No. 6 (max 1% S) $10.30
- No. 6 (over 1% S) ..... $ 9.30

Chicago:
- No. 6 (max. 1% S) $13.86
- No. 5 (max. 1% S) $14.70

New York Harbor (barges):
- No. 6 (max. 0.3% S) $12.95-14.13
- No. 5 (0.3% S) $13.15-14.38

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	2-14 1975	2-7 1975	2-15 1974	2-14 1975	2-7 1975	2-15 1974	2-14 1975	2-7 1975	2-15 1974
Gasoline	102	154	118	5	5	....	107	159	118
Special Naphthas	3	....	....	....	....	....	3	....	....
Kerosine	3	5	....	....	....	....	3	5	....
Distillate	167	190	234	5	5	10	172	195	244
No. 4 Fuel Oil	102	63	70	....	....	....	102	63	70
Residual	1,348	1,379	1,670	75	60	50	1,423	1,439	1,720
Jet Fuel (Naphtha)	25	40	....	....	5	6	25	45	6
Jet Fuel (Kerosine)	110	87	69	65	50	48	175	137	117
Asphalt	5	....	28	....	....	....	5	....	28
LP-Gas	122	136	137	22	21	13	144	157	150
Petrochem Feedstocks	15	17	....	....	....	....	15	17	....
Unfinished	38	100	92	15	....	22	53	100	114
Plant Condensate	84	129	103	5	5	7	89	134	110
Total Prod.	2,124	2,300	2,521	192	151	156	2,316	2,451	2,677
Canadian Crude	401	543	646	192	142	160	593	685	806
Other Foreign	2,652	2,305	727	354	972	368	3,006	3,277	1,095
Total Crude	3,053	2,848	1,373	546	1,114	528	3,599	3,962	1,901
Total imports	5,177	5,148	3,894	738	1,265	684	5,915	6,413	4,578

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Worldwide crude-oil and gas production

OIL (1,000 b/d)	Nov. 1974*	Oct. 1974	11-month average Daily prod. 1973	11-month average Daily prod. 1974	Change from Vol	Change from %	GAS (billion cu ft) Nov. 1974	GAS (billion cu ft) Oct. 1974	GAS (billion cu ft) Cum. 1974
WESTERN HEMISPHERE									
Argentina	415.0	415.0	420.0	413.0	− 7.0	− 1.7	25.2	26.4	255.7
Bolivia	50.0	50.0	47.0	49.0	2.0	4.3	12.9	13.4	139.4
Brazil	195.0	195.0	166.0	177.0	11.0	6.6	4.2	3.7	43.3
Canada	1,468.0	1,597.0	1,794.0	1,689.0	−105.0	− 5.9	301.7	291.7	3,030.0
Chile	30.0	30.0	32.0	29.0	− 3.0	− 9.4	19.2	20.1	192.9
Colombia	165.0	165.0	196.0	174.0	− 22.0	−11.2	10.1	9.7	95.8
Ecuador	56.0	95.0	216.0	162.0	− 54.0	−25.0	0.3	0.4	5.1
Mexico	600.0	600.0	464.0	547.0	83.0	17.9	58.6	58.9	624.4
Peru	75.0	75.0	70.0	76.0	6.0	8.6	6.5	6.6	67.3
Trinidad	180.0	180.0	165.0	178.0	13.0	7.9	4.8	5.0	62.5
United States	8,647.0	8,777.0	9,201.0	8,838.0	−363.0	− 3.9	1,971.2	1,911.2	20,365.7
Venezuela	2,805.0	2,810.0	3,365.0	2,986.0	−379.0	−11.3	45.0	45.0	1,411.2
Total	**14,686.0**	**14,989.0**	**16,136.0**	**15,318.0**	**−818.0**	**− 5.1**	**2,459.7**	**2,392.1**	**26,293.3**
WESTERN EUROPE									
Austria	45.0	45.0	49.0	46.0	− 3.0	− 6.1	5.2	4.9	82.7
Denmark	4.0	4.0	4.0	2.0	− 2.0	−50.0	0	0	0
France	25.0	25.0	26.0	24.0	− 2.0	− 7.7	32.3	18.6	269.0
West Germany	120.0	120.0	129.0	122.0	− 7.0	− 5.4	51.6	50.4	623.7
Italy	20.0	20.0	20.0	19.0	− 1.0	− 5.0	33.0	32.9	522.2
Netherlands	24.0	39.0	29.0	31.0	2.0	6.9	241.7	234.2	2,633.3
Norway	57.0	44.0	35.0	33.0	− 2.0	− 5.7	0	0	0
Spain	30.0	30.0	15.0	37.0	22.0	146.7	0	0	0
United Kingdom	2.0	2.0	2.0	2.0	....	....	71.1	69.9	1,139.0
Yugoslavia	65.0	65.0	67.0	67.0	....	....	5.2	4.7	49.9
Total	**392.0**	**394.0**	**376.0**	**383.0**	**7.0**	**1.8**	**440.1**	**415.6**	**5,319.8**
MIDDLE EAST									
Abu Dhabi	1,204.0	1,169.0	1,325.0	1,430.0	105.0	7.9	0	0	0
Bahrain	67.0	68.0	68.0	67.0	− 1.0	− 1.5	0.1	0.1	3.2
Dubai	268.0	262.0	227.0	248.0	21.0	9.3	0	0	0
Iran	6,015.0	5,720.0	5,841.0	6,036.0	195.0	3.3	75.4	74.2	830.0
Iraq	1,812.0	1,877.0	1,937.0	1,821.0	−116.0	− 6.0	11.1	11.2	118.4
Israel	100.0	100.0	92.0	100.0	8.0	8.7	0.2	0.2	4.0
Kuwait	2,546.0	2,060.0	3,067.0	2,567.0	−500.0	−16.3	0.1	0.1	1.5
Oman	281.0	280.0	292.0	291.0	− 1.0	− 0.3	0	0	0
Qatar	520.0	525.0	580.0	519.0	− 61.0	−10.5	0.1	0.1	1.6
Saudi Arabia	8,818.0	9,052.0	7,699.0	8,522.0	823.0	10.7	0	0	0
Sharjah†	60.0	60.0	....	17.0	17.0	....	0	0	0
Syria	155.0	155.0	104.0	130.0	26.0	25.0	0	0	0
Turkey	65.0	65.0	67.0	65.0	− 2.0	− 3.0	0	0	0
Total	**21,911.0**	**21,393.0**	**21,299.0**	**21,813.0**	**514.0**	**2.4**	**87.0**	**85.9**	**958.7**
ASIA-PACIFIC									
Afghanistan	0	0	0	0	0	0	7.6	7.8	85.0
Australia	459.0	465.0	369.0	381.0	12.0	3.3	14.2	15.6	146.7
Burma	20.0	20.0	20.0	20.0	....	....	0.6	0.6	5.5
Brunei-Malaysia	365.0	365.0	318.0	341.0	23.0	7.2	0.9	0.8	2.9
India	150.0	150.0	147.0	149.0	2.0	1.4	1.4	1.5	16.9
Indonesia	1,135.0	1,250.0	1,317.0	1,386.0	69.0	5.2	18.2	17.1	143.3
Japan	15.0	15.0	14.0	15.0	1.0	7.1	7.2	7.1	88.4
Pakistan	9.0	9.0	9.0	9.0	....	....	14.0	13.9	129.7
Taiwan	3.0	3.0	2.0	3.0	1.0	50.0	4.2	4.3	41.2
Thailand	0.2	0.2	0.2	0.2	....	....	0	0	0
Total	**2,156.2**	**2,277.2**	**2,196.2**	**2,304.2**	**108.0**	**4.9**	**68.3**	**68.7**	**659.6**
AFRICA									
Algeria	900.0	900.0	1,107.0	1,045.0	− 62.0	− 5.6	1.8	1.7	18.9
Angola	20.0	20.0	17.0	20.0	3.0	17.6	5.2	5.1	36.0
Cabinda	150.0	150.0	144.0	149.0	5.0	3.5	0	0	0
Congo	35.0	35.0	41.0	35.0	− 6.0	−14.6	0.7	0.6	5.5
Egypt	175.0	175.0	178.0	141.0	− 37.0	−20.8	4.6	4.7	44.5
Gabon	190.0	190.0	146.0	177.0	31.0	21.2	1.5	1.5	13.7
Libya	961.0	1,069.0	2,226.0	1,539.0	−687.0	−30.9	3.2	3.1	37.9
Morocco	1.0	1.0	1.0	1.0	....	....	1.8	1.9	26.5
Nigeria	2,300.0	2,325.0	2,036.0	2,280.0	244.0	12.0	5.0	4.7	53.9
Tunisia	105.0	105.0	82.0	86.0	4.0	4.9	2.9	3.0	14.3
Total	**4,837.0**	**4,970.0**	**5,978.0**	**5,473.0**	**−505.0**	**− 8.4**	**26.7**	**26.3**	**251.2**
COMMUNIST									
China	1,200.0	1,200.0	1,060.0	1,200.0	140.0	13.2	14.8	15.6	171.9
Rumania	290.0	290.0	290.0	290.0	....	....	77.8	77.9	855.5
U.S.S.R.‡	9,441.0	9,369.0	8,558.0	9,158.0	600.0	7.0	811.2	808.4	8,365.4
Other	110.0	110.0	100.0	110.0	10.0	10.0	41.2	38.7	456.2
Total	**11,041.0**	**10,969.0**	**10,008.0**	**10,758.0**	**750.0**	**7.5**	**945.0**	**940.6**	**9,849.0**
World Total	**55,023.2**	**54,992.2**	**55,993.2**	**56,049.2**	**56.0**	**0.1**	**4,026.8**	**3,929.2**	**43,331.6**

*Figures adjusted. †On stream July 1974. ‡Includes gas liquids.

AGO 529885

Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 1-21-75	Pump price 1-21-75	Pump price 1-22-74
Albany	44.9	56.9	49.9
Albuquerque	42.4	53.4	43.9
+Amarillo	40.1	49.1	39.9
Atlanta	42.1	53.6	45.4
Baltimore	41.9	54.9	48.9
Birmingham	41.9	53.9	47.9
Boston*	42.1	53.6	45.4
Buffalo	44.9	56.9	49.9
Charlotte	41.9	54.9	48.9
Cheyenne	44.9	55.9	49.9
Chicago*	43.6	56.6	50.4
Cleveland	42.9	53.9	47.9
+Corpus Christi	40.6	49.6	39.9
+Dallas	40.6	49.6	39.9
Denver	43.9	54.9	48.9
Des Moines	41.0	52.0	43.9
Detroit	41.5	54.5	49.9
+Fort Worth	40.6	49.6	39.9
+Houston	40.6	49.6	39.9
Indianapolis	43.9	55.9	49.9
Jacksonville	41.9	53.9	47.9
Kansas City	43.4	54.4	47.9
Little Rock	39.5	51.0	42.9
Louisville	44.9	55.9	49.9
Los Angeles	40.7	51.7	43.9
Memphis	41.0	52.0	43.9
Miami	41.6	53.6	45.4
Milwaukee	43.9	54.9	48.9
Minn.-St. Paul	42.0	53.0	44.9
Newark	43.6	54.6	46.4
New Orleans	40.9	52.9	46.9
New York*	45.9	58.9	52.9
Norfolk	39.6	52.6	44.4
Okla. City	41.8	52.4	42.9
Omaha	43.4	55.9	49.9
Philadelphia	41.9	54.9	47.9
Phoenix	43.9	54.9	44.9
Pittsburgh	41.9	54.9	47.9
Portland, Ore.	41.9	52.9	44.1
Salt Lake City	42.4	53.4	46.9
+San Antonio	40.1	49.1	39.9
San Diego	41.3	52.3	43.9
San Francisco	41.4	52.4	44.9
Seattle	40.5	53.5	45.9
Spokane	40.5	53.5	46.9
Springfield, Ill.*	42.0	55.0	46.9
St. Louis	43.9	54.9	48.9
Tampa	41.6	53.6	45.4
+Texarkana	40.1	49.1	39.9
Tulsa	40.4	51.0	42.9
Wichita	42.9	53.9	47.9
+Wichita Falls	40.1	49.1	39.9
Week's avg.	**42.06**	**53.37**	**45.86**
Dec. avg.	**41.42**	**52.74**	**42.02**
Nov. avg.	**41.11**	**52.42**	**40.35**
1975 to date	**41.81**	**53.12**	
1974 to date	**34.39**	**45.67**	

+ Increase, – decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday of each week. They may differ from refiner's prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
- Regular (92 octane) 26.75-30.00
- Premium (99 octane) 28.75-32.00

California (rack) Los Angeles:
- Regular (91 octane) 25.00-31.50
- Regular (95 octane) 26.10-32.50
- Premium (100 octane) 27.40-33.50

Chicago:
- Regular (94 octane) 27.50-32.50
- Premium (100 octane) 30.00-35.00

Kerosine, distillate

Chicago:
- Distillate No. 1 ..... 27.50-33.50
- Distillate No. 2 ..... 26.50-32.00

Gulf Coast (cargoes):
- Kerosine (42-43) 29.00-31.00
- Distillate No. 2 ..... 28.00-29.00

Mid-Continent (Group 3):
- Kerosine (42-44) 28.00-30.25
- Diesel oil (58 d.i. & above) 27.50-30.00
- Distillate No. 1 ..... 27.00-29.75
- Distillate No. 2 ..... 26.00-27.75

New York Harbor (barges):
- Kerosine (42-44) 28.05-32.00
- Distillate No. 2 ..... 25.35-30.25
- Diesel fuel (48-52 d.i.) 27.80

Residual fuel

Mid-Continent (Group 3):
- No. 6 (max 1% S) $10.30
- No. 6 (over 1% S) ..... $ 9.30

Chicago:
- No. 6 (max. 1% S) $13.86
- No. 5 (max. 1% S) $14.70

New York Harbor (barges):
- +No. 6 (max. 0.3% S) $13.03-14.13
- +No. 5 (0.3% S) $13.25-14.38

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	1-17 1975	1-10 1975	1-18 1974	1-17 1975	1-10 1975	1-18 1974	1-17 1975	1-10 1975	1-18 1974
Gasoline	138	142	116	5	5		143	147	116
Special Naphthas	...	...	...	...	...	...	...	...	...
Kerosine	6	5	4	...	...	...	6	5	4
Distillate	370	260	358	5	5	10	375	265	368
No. 4 Fuel Oil	87	67	75	...	...	...	87	67	75
Residual	1,721	1,856	1,586	60	60	100	1,781	1,916	1,686
Jet Fuel (Naphtha)	40	40	11	5	5	7	45	45	18
Jet Fuel (Kerosine)	63	69	110	55	57	60	118	126	170
Asphalt	6	8	28	...	...	...	6	8	28
LP-Gas	135	131	98	22	23	12	157	154	110
Petrochem. Feedstocks	15	15	...	...	...	...	15	15	
Unfinished	107	45	102	...	25	32	107	70	134
Plant Condensate	64	77	96	5	5	6	69	82	102
Total Prod.	**2,752**	**2,715**	**2,584**	**157**	**185**	**227**	**2,909**	**2,900**	**2,811**
Canadian Crude	498	328	696	184	192	157	682	520	853
Other Foreign	2,623	2,234	1,199	497	440	119	3,120	2,674	1,318
Total Crude	**3,121**	**2,562**	**1,895**	**681**	**632**	**276**	**3,802**	**3,194**	**2,171**
Total Imports	**5,873**	**5,277**	**4,479**	**838**	**817**	**503**	**6,711**	**6,094**	**4,982**

AGO 529886

Total wells drilled in the United States*—December 1974†

Data compiled by API

State-district	Total completions Oil‡	Gas§	Dry holes	Total wells	Total footage	Total all types‖	Total footage‖	Total exploratory wells¶ Oil‡	Gas§	Dry holes	Total wildcats	Footage
Alabama	1	2	6	9	78,129	9	78,129	...	1	5	6	48,254
Alaska	5	....	1	6	54,356	6	54,356	1	...	1	2	18,541
Onshore	3	....	1	4	40,739	4	40,739	1	...	1	2	18,541
Offshore	2	....	....	2	13,617	2	13,617	...	...	....	....	.....
Arkansas	18	4	27	41	217,984	41	217,984	...	1	9	10	66,934
California	222	11	38	27	700,544	322	771,273	6	2	27	35	210,002
North	1	8	19	28	154,236	28	154,236	...	2	14	16	87,878
Central Coastal	29	....	1	30	112,204	32	120,430	4	...	1	5	31,012
East entral	186	2	18	206	396,984	251	436,815	2	...	12	14	91,112
South	2	....	....	2	7,487	5	29,359	...	...	....	....	.....
Offshore	4	1	....	5	29,633	6	30,433	...	...	....	....	.....
Colorado	17	19	45	81	491,127	81	491,127	...	2	30	32	184,020
Florida	....	....	2	2	19,008	2	19,008	...	...	1	1	6,646
Illinois	72	2	87	161	404,640	170	420,340	5	1	35	41	113,871
Indiana	10	2	18	30	48,733	30	48,733	1		10	11	21,169
Kansas	85	34	111	230	735,899	253	777,591	9	7	59	75	262,895
Kentucky	9	7	24	40	58,535	43	63,283	1		12	13	17,888
Louisiana	87	66	143	296	2,353,464	324	2,370,954	4	14	69	87	879,269
North	36	19	43	98	433,188	125	444,840	1	3	22	26	196,336
South	39	36	82	157	1,507,158	157	1,507,158	3	11	38	52	603,873
Offshore	12	11	18	41	413,118	42	418,956	...	...	9	9	79,060
Michigan	10	9	18	37	185,625	37	185,625	5	3	15	23	108,916
Mississippi	3	6	26	35	242,437	35	242,437	1		24	25	196,717
Missouri	7		2	9	5,636	59	8,995	...	...	2	2	4,868
Montana	10	36	57	113	294,727	113	294,727	2	5	44	51	142,702
Nebraska	2		18	20	99,213	20	99,213	2		12	14	66,408
New Mexico	41	31	21	93	527,560	93	527,560	2	3	14	19	142,292
East	32	11	17	60	398,238	60	398,238	2	3	12	17	132,344
West	9	20	4	33	129,322	33	129,322	...		2	2	9,948
New York	28	43	33	104	288,276	111	297,658		19	28	47	185,852
North Carolina			1	1	5,348	1	5,348			1	1	5,348
North Dakota	8		9	17	107,368	17	107,368	3		8	11	61,824
Ohio	60	142	25	227	920,717	227	920,717	3	29	4	36	159,790
Oklahoma	181	86	138	405	2,087,201	416	2,114,650	8	3	34	45	289,545
Pennsylvania	38	44	5	87	212,486	88	214,416	1	3	4	8	21,453
South Dakota			1	1	2,342	1	2,342			1	1	2,342
Tennessee	11	3	12	26	40,749	26	40,749	3	3	11	17	26,994
Texas	367	183	312	862	4,428,245	902	4,521,237	28	65	184	277	1,708,273
Dist. 1	14	10	9	33	118,490	34	120,395		5	8	13	59,302
Dist. 2	9	35	31	75	440,844	75	440,844	2	18	19	39	238,182
Dist. 3	53	17	31	101	561,140	101	561,140	7	11	18	36	304,111
Dist. 4	26	39	36	101	606,476	101	606,476	6	7	18	31	165,526
Dist. 5	4	4	8	16	84,711	17	85,825		2	5	7	29,501
Dist. 6	7	5	16	28	170,392	32	190,302		1	9	10	55,050
Dist. 7B	27	10	62	99	345,022	105	354,155	1		34	35	152,410
Dist. 7C	18	22	22	62	307,365	62	307,365	2		14	16	71,837
Dist. 8	76	10	10	96	615,241	105	638,382	2	4	7	13	132,984
Dist. 8A	56		15	71	395,222	89	431,961			8	8	73,809
Dist. 9	72	20	46	138	463,991	139	465,041	8	12	26	46	229,696
Dist. 10	5	6	15	26	187,417	26	187,417		2	7	9	80,371
Offshore		5	11	16	131,934	16	131,934		3	11	14	115,494
Utah	6	5	7	18	134,903	18	134,903	1	2	5	8	54,719
Virginia		17		17	85,571	17	85,571		6		6	31,443
West Virginia	8	38	10	56	180,849	58	1[illegible],849	...	2	7	9	36,496
Wyoming	41	1	64	106	678,221	108	6[illegible]7,961	5	1	48	54	383,917
Gulf of Mexico— Northern	...	...	3	3	19,199	3	19,199	...	...	3	3	19,199
Total—Dec. 1974	1,339	791	1,274	3,404	15,707,092	3,629	15,994,303	91	172	707	970	5,478,587
Total—Nov. 1974	1,088	626	1,053	2,767	11,794,937	2,906	12,027,247	58	82	582	722	3,930,077
Total 1974	12,718	7,200	11,930	31,848	151,651,515	33,070	154,236,372	813	1,186	6,761	8,760	51,069,932
Total 1973	9,902	6,385	10,305	26,592	131,391,452	27,602	138,937,944	619	900	5,947	7,466	44,776,906

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Nov. 23, 1974, through Dec. 27, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests and outpost (extension) tests. ‖Includes 63 strat tests and 162 service wells, 12,679 and 274,532 ft, respectively.

AGO 529887

Offshore bidding seminars slated

A SERIES of seminars will be held in February by ECON Inc. of New Jersey.

This series on offshore oil bidding will be held in the Royal Orleans Hotel in New Orleans on Feb. 13, the Houston Oaks on Feb. 18, and at the Dallas Hilton on Feb. 20. Meetings begin at 9 a.m. Contact John Andrews at 609-924-8778, ECON, Princeton, N.J.

MAPS

TWO oil and gas field maps of two of the country's most active drilling areas have been updated.

Map. 43, "Southeast United States Map Showing Jurassic Trend" and Map 2, "Official Oil and Gas fields of Oklahoma and Texas Panhandle" are available from E. C. Jacobson Co., 315 Mayo Bldg., Tulsa 74103. These maps show oil fields in green, gas fields in red with official names. Also shown are counties, county seats, township and range.

OKLAHOMA

ANOTHER field has been tapped in Central Oklahoma's busy Canadian County.

New area was found by Samedan Oil Co. at 1 Johnson estate in S½ N½ S½ NW 26-11n-10w. Flow was 3,912 Mcfd through 11/64-in. choke and 4½ bbl oil in 8 hr. Pay is from the Morrow Pennsylvanian through perforations at 12,314 ft. Open flow was 6,000 Mcfd.

In another important Oklahoma development. Helmerich & Payne will drill north of its Arbuckle Cambro-Ordovician discovery in Beckham County. This western area well will be the 1 Cupp-A in S½ S½ NE SW 22-10n-26w.

IRAN

ON p. 140 of the Dec. 30, 1974, issue of the Journal, the cumulative production figure for Lapco's Sassan field in Iran should read 313,623,494 bbl rather than 102,556,000 bbl.

This changes total Iranian cumulative to 18,972,000,310 bbl rather than 18,760,932,816 bbl.

This announcement is neither an offer to sell nor the solicitation of an offer to buy any of these securities. The offering is made only by the Prospectus.

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January 22, 1975

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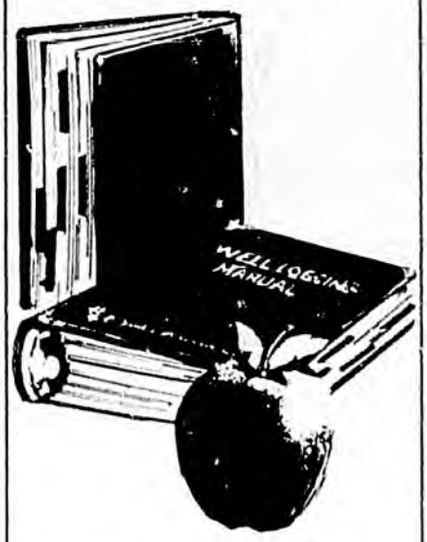

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	May 12-16	Calgary
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AGO 5298 88

Total wells drilled in the United States*—November 1974†

Data compiled by API

State-district	Total completions: Oil‡	Gas§	Dry holes	Total wells	Total footage	Total wells all types‖	Total footage‖	Total exploratory wells¶: Oil‡	Gas§	Dry holes	Total wildcats	Footage
Alabama	....	2	4	6	54,599	6	54,599	....	....	2	2	20,555
Arkansas	7	3	11	21	113,061	21	113,061	....	....	5	5	26,323
California	101	6	29	136	358,600	164	388,956	1	3	24	28	131,368
North	....	6	14	20	115,612	20	115,612	....	3	12	15	88,618
Central Coastal	10	....	2	12	41,271	14	44,343	....	....	2	2	8,625
East Central	77	....	13	90	164,639	116	191,923	1	....	10	11	34,125
South	9	....	....	9	20,928	9	20,928	....	....	....	....	.....
Offshore	5	....	....	5	16,150	5	16,150	....	....	....	....	.....
Colorado	10	15	31	56	349,087	56	349,087	3	4	24	31	189,560
Florida	....	....	2	2	25,684	2	25,684	....	....	2	2	25,684
Illinois	31	....	52	83	207,357	87	215,217	2	....	21	23	60,876
Indiana	15	1	25	41	76,744	42	78,814	2	....	15	17	35,648
Kansas	102	16	130	248	736,551	276	771,940	8	3	62	73	283,038
Kentucky	23	6	45	74	102,012	80	109,007	1	1	22	24	33,125
Louisiana	59	44	95	198	1,261,221	201	1,271,427	1	3	58	62	471,740
North	32	32	49	113	476,336	115	477,806	1	3	28	32	164,026
South	15	4	30	49	459,982	49	459,982	....	....	17	17	197,777
Offshore	12	8	16	36	324,903	37	333,639	....	....	13	13	109,937
Michigan	13	4	14	31	162,221	34	171,406	6	3	7	16	85,907
Mississippi	4	1	24	29	228,820	29	228,820	2	....	15	17	129,641
Missouri	....	....	4	4	9,992	13	11,640	....	....	4	4	9,992
Montana	....	21	36	57	143,375	57	143,375	....	7	28	35	97,339
Nebraska	2	....	17	19	95,738	19	95,738	1	....	15	16	78,228
Nevada	....	....	1	1	11,000	1	11,000	....	....	1	1	11,000
New Mexico	30	29	17	76	359,551	76	359,551	3	2	13	19	88,131
East	24	9	11	44	234,003	44	234,003	2	2	8	12	67,137
West	6	20	6	32	125,548	32	125,548	1	....	5	6	20,994
New York	21	43	6	70	170,537	75	177,577	....	....	....	....	.....
North Dakota	1	....	9	10	76,007	10	76,007	....	....	8	8	56,592
Ohio	69	130	24	223	895,585	224	895,795	....	2	7	9	40,406
Oklahoma	90	46	75	211	1,093,840	224	1,123,983	4	5	18	27	164,004
Pennsylvania	103	67	9	179	369,277	202	411 938	2	5	5	12	39,091
Tennessee	3	3	5	11	17,144	11	17,144	1	2	4	7	11,017
Texas	352	121	334	807	4,112,389	821	4,157,446	19	33	185	237	1,504,909
Dist. 1	37	21	28	86	329,874	91	340,858	2	9	19	30	137,446
Dist. 2	6	14	26	46	282,334	47	289,342	1	7	18	26	170,307
Dist. 3	33	6	33	72	443,682	72	443,682	2	1	23	26	209,861
Dist. 4	11	17	15	43	252,735	43	252,735	....	5	10	15	101,577
Dist. 5	2	....	11	13	79,407	13	79,407	....	....	8	8	63,202
Dist. 6	3	12	8	23	204,137	23	204,137	....	2	7	9	91,741
Dist. 7B	24	14	82	120	385,120	120	385,120	2	4	36	42	155,156
Dist. 7C	26	15	31	72	401,975	72	401,975	4	....	16	20	95,529
Dist. 8	91	9	26	126	727,809	128	733,474	3	3	10	16	167,268
Dist. 8A	54	....	13	67	383,205	71	398,764	2	....	8	10	67,877
Dist. 9	52	5	39	96	307,298	98	313,139	2	....	14	16	80,093
Dist. 10	13	8	15	36	260,482	36	260,482	1	2	9	12	110,521
Offshore	....	....	7	7	54,331	7	54,331	....	....	7	7	54,331
Utah	3	....	7	10	49,758	10	49,758	....	....	6	6	27,853
Virginia	....	8	....	8	37,230	8	37,230	....	....	....	....	.....
West Virginia	33	58	9	100	277,259	100	277,259	1	7	2	10	33,943
Wyoming	16	2	36	54	391,163	55	394,753	1	2	27	30	264,972
Gulf of Mexico—Northern	....	....	2	2	9,135	2	9,135	....	....	2	2	9,135
Total—Nov. 1974	**1,088**	**626**	**1,053**	**2,767**	**11,794,937**	**2,906**	**12,027,247**	**58**	**82**	**582**	**722**	**3,930,077**
Total—Oct. 1974	**1,131**	**551**	**1,241**	**2,923**	**14,080,534**	**3,054**	**14,392,760**	**67**	**93**	**661**	**821**	**4,779,364**
Cum. 1974	**11,379**	**6,409**	**10,656**	**28,444**	**135,944,423**	**29,441**	**138,242,069**	**722**	**1,014**	**6,054**	**7,790**	**45,591,345**
Cum. 1973	**8,805**	**5,535**	**9,134**	**23,474**	**118,185,567**	**24,438**	**120,422,776**	**558**	**744**	**5,269**	**6,571**	———

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Oct. 26, 1974, through Nov. 22, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests and outpost (extension) tests. ‖Includes 24 strat tests and 115 service wells, 8,102 and 224,208 ft., respectively.

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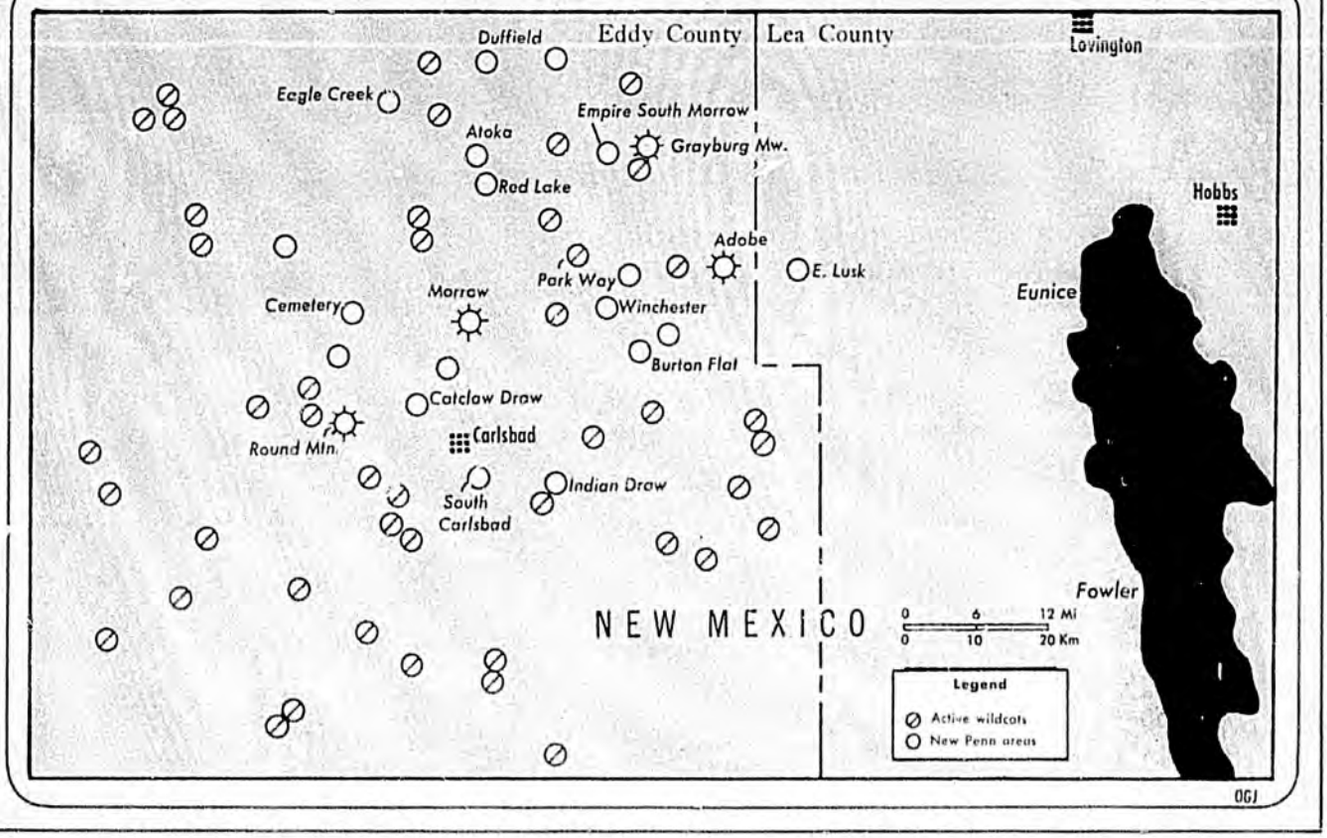
JOHN C. McCASLIN
Exploration Editor

Sweeping new gas exploration



No letup signs seen for Eddy County drilling

THE standard industry symbol for showing an active gas well or gas field is colored red.

Eddy County and adjoining Southeast New Mexican areas on the activity maps these days are nearly covered with red ink. Not since the early days of the Permian basin oil and gas industry has this corner of the Southwest seen so much action. The accompanying map tells the story with its multitude of drilling sites and new Pennsylvanian areas. Only Eddy is discussed here, but the adjoining Lea and Chaves areas are also quite busy. Wildcat symbols are the only ones shown on this map. It would be impossible to dot all of the active field wells in the area.

From Chaves County. Although Chaves County is not shown on this map, it lies just to the north of Eddy County.

The southern portion of this New Mexico area is also in on the gas exploration. Depco. Inc. 1 Toles-Federal, a 9,300-ft wildcat in southeastern Chaves, 10 miles east of Lake Arthur, was recently completed as a Morrow Pennsylvanian gas discovery. Flow was 1,612 Mcfd with gas-liquid ratio of 22,000:1. New strike is in 25-15s-27e, 1½ miles southeast of Atoka gas at Buffalo Valley. Perforations were made at 8,930-38 ft.

From Chaves County the drilling swath moves into Eddy County. Many discoveries have been made in recent months. Some of the newer ones include Tenneco Oil Co.'s 1 Federal Com. "33," the second well and ¾-mile south extension to Grayburg Morrow field. This Morrow gas area is 5 miles southwest of Loco Hills town. Flow was 15,408 Mcfd from perforations in the Morrow at 10,761-10,804 ft. Well is in 33-17s-29e.

Another well is Adobe Oil Co. 1 Hanadifin State Com., a workover well 12 miles southeast of Loco Hills town in eastern Eddy. Flow was 572,000 cu ft from Morrow perforations at 11,719-12,225 ft. This well is 3 miles northwest of dual Strawn oil and Morrow gas production in Lusk field.

Monsanto Co. 1 Round Mountain is a new gas discovery for Eddy in 28-21s-25e. Flow here was 1,859 Mcfd from the Morrow through perforations at 10,358-59 ft.

To prolific Lea County. The Southeast New Mexico Pennsylvanian gas play has also popped up in Lea County, the prolific area where most of New Mexico's oil production lies.

There are several wildcats drilling for Morrow gas in the western part of the county that are not shown on the map. But the area from Carlsbad northeast in Eddy County is where most of the action is concentrated. This Pennsylvanian program has been under way several years, but the big push was in 1974. And, there are no signs of any letup in 1975.

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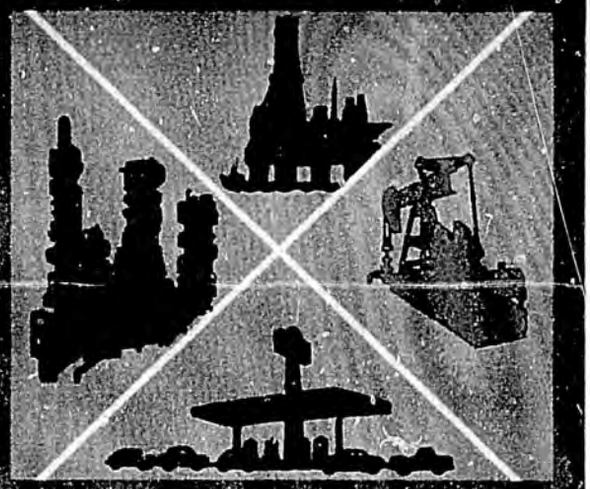
PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

FORECAST/REVIEW

AN OIL&GAS JOURNAL SPECIAL REPORT



Uncertainties plague '75 outlook for oil

AMERICANS face some hard decisions early in the new year on their consumption of petroleum products—decisions which make the outlook for demand highly uncertain.

The Ford Administration has made it clear that some form of restriction on consumption will be imposed to reduce the nation's use of high-cost imported oil and products. The most often mentioned goal is a reduction of 1 million b/d.

But just what form the restriction on consumption will take is not clear. Reports have mentioned higher tariff on imports, compulsory allocations, high taxes on crude or products especially on gasoline, or even gasoline rationing.

It's also not clear what base period will be used for the reduction—whether the cutback will be from 1974 actual import levels or the expected 1975 levels.

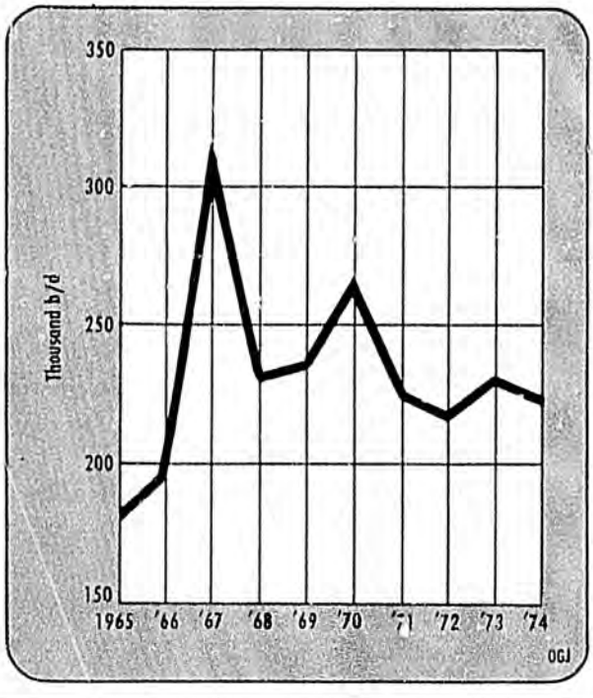
Turnaround? The base period used will determine the severity of the impact on the nation's economy.

The normal outlook is for petroleum demand in this country to turn upward again in 1975 after a historic decline in 1974. But since domestic production of oil and gas will continue to drop, the nation must rely more heavily on imports of high-priced crude and products this year to fill the gap.

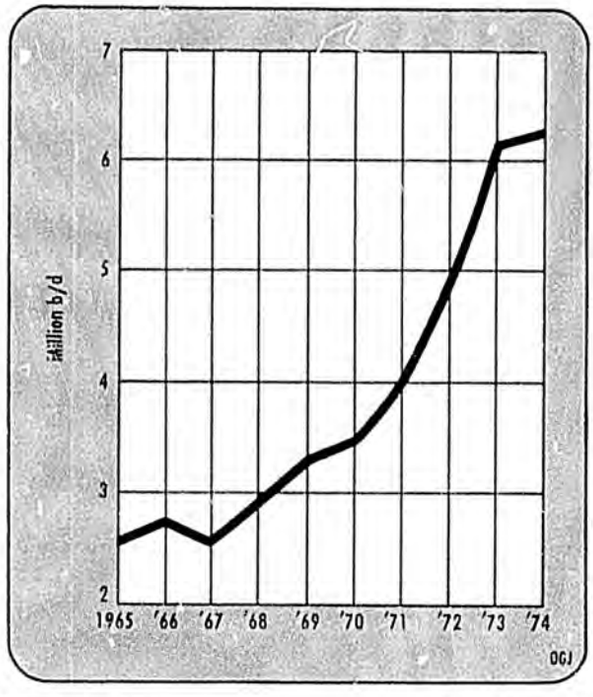
This means that a 1-million-b/d cutback from the 1974 import levels actually will represent a 1.4-million-b/d reduction from the expected 1975 import volumes. This would wipe out any growth in demand for 1975 and return consumption near the 1971 levels. But if the reduction is taken from anticipated 1975 levels, the actual impact would amount to only about 710,000 b/d less than in 1974.

In either case, the reduction would force considerable belt tightening throughout the economy. Motorists and householders would be faced with higher prices for the gasoline and heating oils they will be allowed to use. Industries and businesses where energy is an important item would find their

Exports turn down



Total imports level



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costs increased. The result would be further disruptions to an economy which is torn between an inflation or recession scenario.

What to expect. The uncertainty of governmental action makes any forecast of 1975 supply-demand for petroleum a hazardous exercise.

Journal editors believe that total domestic demand for 1975 would average 17,035,000 b/d or 1.8% higher than last year without giving consideration to federal compulsory conservation measures.

This would represent a turnaround from 1974 when demand averaged 16,735,000 b/d, a 3.1% decline from 1973 and the first time since World War II that petroleum demand has failed to show an increase. The decline reflected the tail end of the Arab embargo on oil shipments to this country and the effect of soaring prices for imported oil and products.

With ample crude oil now available on world markets—if buyers are willing or able to pay the high prices—Journal editors feel that demand will recover slightly from 1974 levels.

Oil economists last October, in estimating this turnaround, forecast a 4% gain for demand in 1975 over 1974, but economic events since have prompted most of them to pare this estimate sharply. The continuing slump in new auto sales, failure of housing to increase, growing numbers of unemployed, and the deepening of depressing factors throughout the economy make about a 2% gain in demand more probable. Winter weather so far also has not been as severe as anticipated thus keeping consumption of heating oils lower than expected.

But even this 1.8% growth will be reversed if the administration imposes some form of compulsory conservation of energy.

More problems. As for individual products, no shortages are anticipated under normal considerations, but 1975 probably will be far from normal.

Government policy could scramble the outlook. Federal policy, for example, likely will emphasize reducing the volume of imported products over crude since they are more expensive than crude oil and would represent greater dollar savings. Also, policy for domestic consumption likely will emphasize reduction in the use of gasoline.

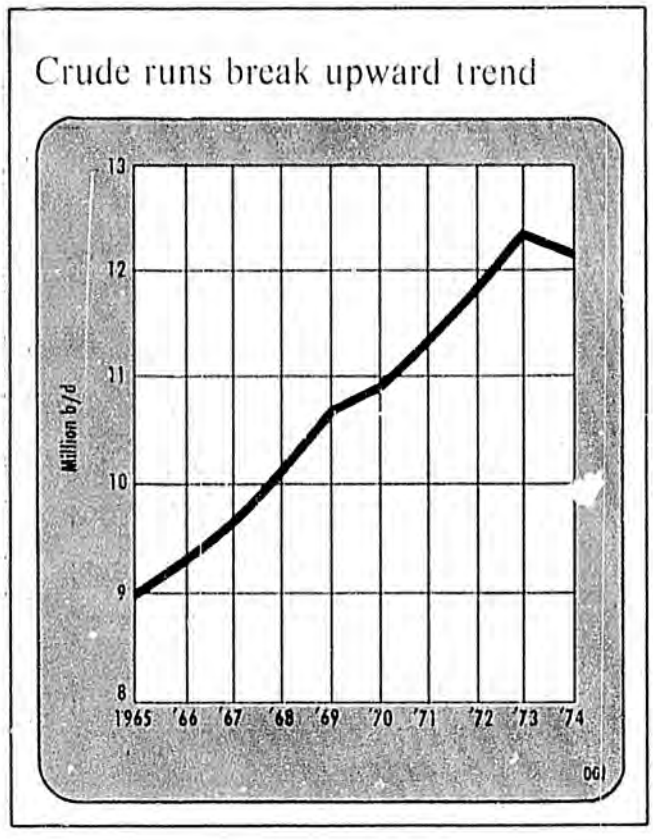
This double policy poses problems for the petroleum industry. Refiners will need the imported crude to operate their plants at necessary capacities, but they also will still need to import a heavy volume of residual particularly and in some cases middle distillates. The residual-making capacity of domestic refiners is limited. Also, refiners in processing a barrel of crude are forced by the nature of their plant arrangements to make from 40-45% gasoline, even while maximizing output of middle distillates or residual. If gasoline consumption thus is severely restricted, refiners may find themselves with gasoline overflowing storage and unable to sell it.

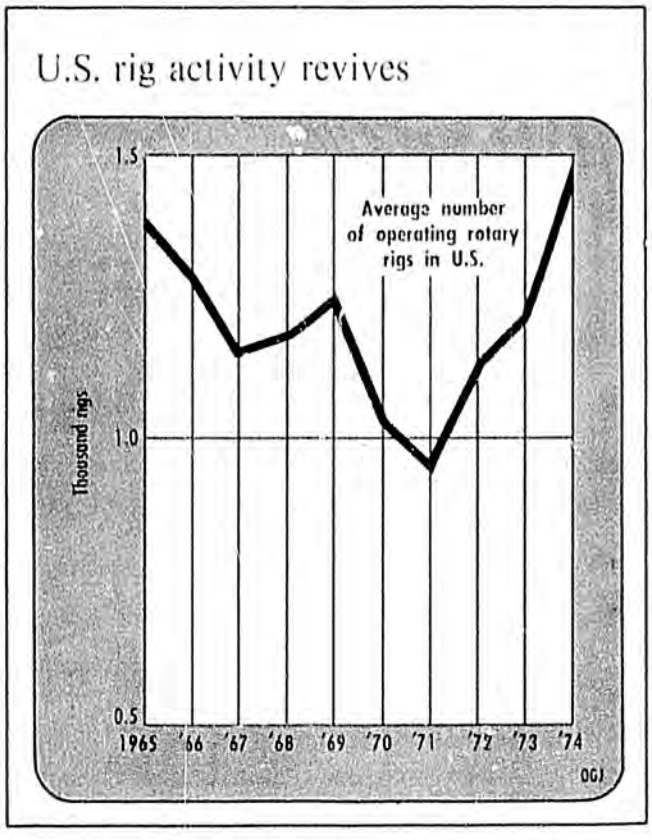
A look at '74. The year 1974 closed after setting historical trends under pressure from the Arab embargo, government regulations, and price changes throughout the petroleum industry.

Preliminary calculations indicate that supply exceeded demand in the U.S. during 1974. This allowed for some stock building to occur, with the possible exception of distillate and kerosine inventories. Estimates are 16,960,000 b/d for demand and 17,245,000 b/d for supply. These estimates yield reductions of 3.1% and 2.2%, respectively, when compared with 1973.

The supply came from domestic production of 10,495,000 b/d, including 8,800,000 b/d of crude and condensate and 1,695,000 b/d of natural-gas liquids. Imports added another 6,275,000 b/d, with crude shipments averaging 3,500,000 b/d and products 2,775,000 b/d.

Demand for the major products included gasoline consumption of 6,560,000 b/d, jet fuels 980,000 b/d, distillates 3,060,000 b/d (including kerosine), and residual 2,665,000 b/d. Do-





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mestic demand totaled 16,735,000 b/d with exports of 225,000 b/d during the year.

A look at '75. Imports and governmental involvement are the key questions that are currently unresolved for the 1975 outlook.

Many analysts are adopting a "wait and see" attitude in hopes that Washington policies will be more clearly defined before they settle on a forecast for 1975. However, most industry economists are predicting that normal demand will range from zero growth to a high of about 3%.

Journal editors are forecasting gasoline demand will average 6,625,000 b/d during 1975. This 1.0% increase over 1974 fails to bring gasoline demand back to the level reached in 1973. The major consideration influencing gasoline demand is the sales of new autos. Presently, new-car sales are very depressed. Sales closely follow auto production which closed the year 1974 down 24%. This factor may be tempered somewhat by recreational gasoline use. Drivers are becoming more accustomed to the current price level of motor gasoline and are expected to drive more unless new restraints are imposed.

Jet fuels are expected to increase by 1.1% over the calculated level for 1974. This increase puts aviation fuels back at their 1971 level of consumption. U.S. airline activity was at one of its lowest levels for both passenger and freight service in the month of November. Slight strength began to show in December air traffic, and some restoration of flights is expected during 1975.

Heating oils. The cold winter that was expected to force distillate demand up so far has failed to materialize. Even so, distillate demand (including kerosine) is forecast at 3,140,000 b/d. This is a relatively healthy increase of 2.6% in comparison with 1974. Continued declines in natural-gas production are expected to contribute to this increase. Factors which tend to moderate distillate demand include price-induced conservation measures being put to use by homeowners and businesses and the sluggish economy.

Residual-fuel-oil demand for 1975 is projected to increase 2.8% after decreasing 4.6% during 1974. This will place residual consumption at an average of 2,740,000 b/d for 1975 or about 75,000 b/d over calculated 1974 levels. The shortage of natural gas also is exerting an upward force on residual consumption.

Other product categories—liquefied gases, petrochemical feedstocks, lubricants, asphalt, petroleum coke, etc—are expected to increase about 7.0% in 1975. This level of demand would be 3,540,000 b/d, up 70,000 b/d from the calculated consumption in 1974.

Exports are projected by the Journal to decrease by 10,000 b/d, a decline of 4.4% from 1974. This is expected to happen as some suppliers with long-term contracts for primary products allow their contracts to expire. Most of the exports in this category are prohibited in the U.S. because of environmental considerations. Coke accounts for over 50% of the exports from the U.S.

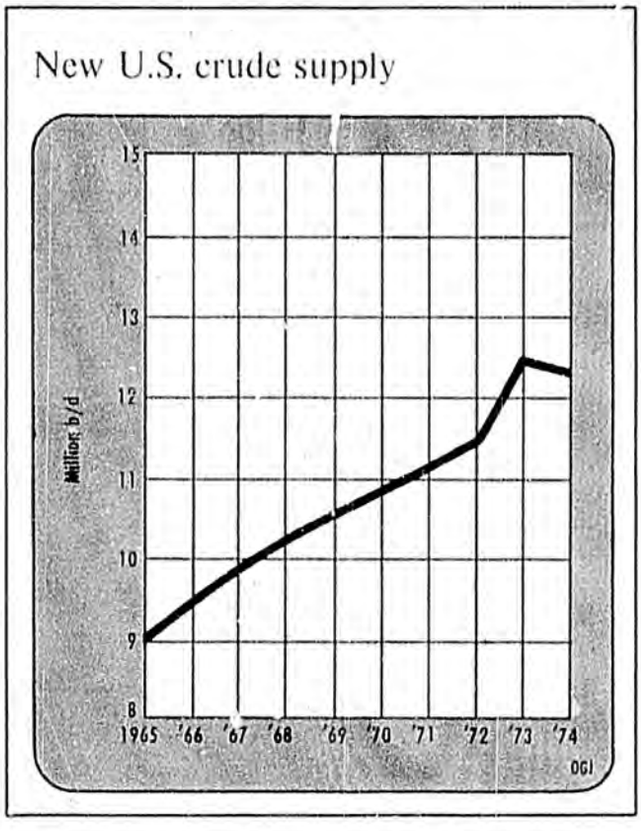
Lubricants are the other major segment of the exports.

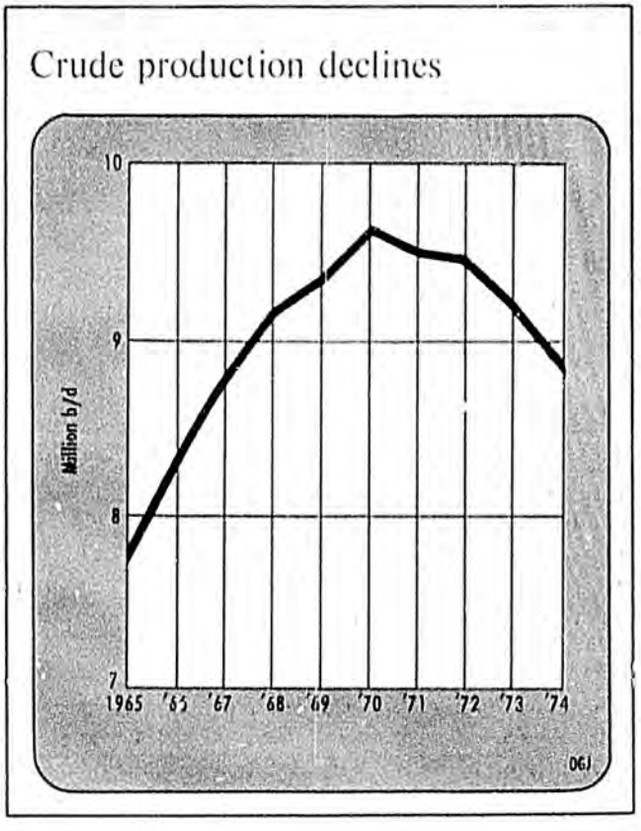
Rely on imports. The big supply question for 1975 is the same as it was in 1974—the level of imports.

The Journal forecast counts on the import level to reach an average of 6,675,000 b/d, including 3,800,000 b/d of crude and 2,875,000 b/d of refined products and unfinished petroleum. This import level will satisfy demand as well as allow for a small buildup in inventories.

Crude production in the U.S. is expected to continue its decline in 1975 but at a slower rate than in 1974. Production should average 8,550,000 b/d in 1975. This level of production is 2.8% less than in 1974. The decline between 1974 and 1973 amounted to 4.2%.

The lag time between increased drilling activities and the corresponding increase in crude-production rates has been longer than most industry analysts foresaw. It appears that the slowing decline rate is significant and





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Journal forecast: supply and demand

(Thousands of Barrels Daily)

	Forecast 1975	Preliminary 1974	% Change	1973	1972	1971
Domestic Demand						
Motor Gasoline	6,625	6,560	+1.0	6,673	6,376	6,014
Dist. 1-4	5,665	5,610	+1.0	5,702	5,439	5,145
Dist. 5	960	950	+1.0	971	937	869
Naphtha Jet	205	200	+2.5	217	242	249
Dist. 1-4	143	140	+2.1	152	156	164
Dist. 5	62	60	+3.3	65	86	85
Kerosine Jet	785	780	+0.6	833	803	743
Dist. 1-4	560	560		594	568	524
Dist. 5	225	220	+2.3	239	235	219
Other Kerosine	165	160	+3.1	216	234	249
Dist. 1-4	155	152	+2.0	212	230	244
Dist. 5	10	8	+25.0	4	4	5
Distillate	2,975	2,900	+2.6	3,080	2,913	2,694
Dist. 1-4	2,705	2,635	+2.7	2,770	2,641	2,428
Dist. 5	270	265	+1.9	310	272	266
Residual	2,740	2,665	+2.8	2,794	2,529	2,232
Dist. 1-4	2,320	2,255	+2.9	2,373	2,208	1,936
Dist. 5	420	410	+2.4	421	321	296
LP-Gas and LRG	1,400	1,370	+2.2	1,121	1,118	1,011
Dist. 1-4	1,338	1,310	+2.1	1,064	1,057	949
Dist. 5	62	60	+3.3	57	61	62
Misc. Product Demand	2,140	2,100	+1.9	2,333	2,164	2,033
Dist. 1-4	1,820	1,785	+2.0	2,078	1,918	1,796
Dist. 5	320	315	+1.6	255	246	237
Total Domestic Demand	17,035	16,735	+1.8	17,267	16,379	15,225
Dist. 1-4	14,706	14,447	+1.8	14,945	14,217	13,186
Dist. 5	2,329	2,288	+1.8	2,322	2,162	2,039
Exports	215	225	−4.4	229	223	224
Dist. 1-4	120	130	−7.7	129	135	134
Dist. 5	95	95	0	100	88	90
Total Demand	17,250	16,960	+1.7	17,496	16,602	15,449
Dist. 1-4	14,826	14,577	+1.7	15,074	14,352	13,320
Dist. 5	2,424	2,383	+1.7	2,422	2,250	2,129
Supply						
Crude and Lease Cond.	8,550	8,800	−2.8	9,187	9,441	9,463
Dist. 1-4	7,485	7,723	−3.1	8,065	8,289	8,270
Dist. 5	1,065	1,077	−1.1	1,122	1,152	1,193
NGL and Other HC	1,670	1,695	−1.5	1,738	1,744	1,692
Dist 1-4	1,637	1,661	−1.4	1,702	1,703	1,644
Dist. 5	33	34	−2.9	36	41	48
Imports Crude	3,800	3,500	+8.6	3,244	2,216	1,681
Dist. 1-4	2,964	2,730	+8.6	2,434	1,553	1,169
Dist. 5	836	770	+8.6	810	663	512
Products & Unfinished	2,870	2,775	+3.6	2,957	2,525	2,245
Dist. 1-4	2,670	2,575	+3.7	2,775	2,368	2,095
Dist. 5	205	200	+2.5	182	157	150
Processing Gain, Losses, Etc.	495	475	+4.2	505	444	439
Dist. 1-4	410	390	+5.1	409	357	353
Dist. 5	85	85	0	96	87	86
Total Supply	17,390	17,245	+0.8	17,631	16,370	15,520
Dist. 1-4	15,166	15,079	+0.6	15,385	14,270	13,531
Dist. 5	2,224	2,166	+2.7	2,246	2,100	1,989
Stock Change	140	285	−50.9	135	− 232	71
Dist. 1-4	340	502	−32.3	176	− 82	211
Dist. 5	− 200	− 217	−7.8	− 41	− 150	− 140
Crude Runs to Stills	12,250	12,150	+0.8	12,431	11,730	11,199
Dist. 1-4	10,400	10,306	+0.9	10,456	9,872	9,457
Dist. 5	1,850	1,844	+0.3	1,975	1,858	1,742

that 1976 may well see a stable if not increasing U.S. crude-production rate.

Natural-gas liquids continued a decline pattern similar to crude oil. Natural-gas liquids is projected to equal 1,670,000 b/d in 1975. This decline is 25,000 b/d from 1974. Once again the production is still declining but at a slower rate than in the past. A decline rate of 1.5% as compared with a reduction of 2.5% between 1973 and 1974.

Including a processing gain of 495,000 b/d, up 4.2% from the expected level of 1974, total supply should come to 17,390,000 b/d in 1975. This would allow for a small stock buildup over the course of the year. Crude runs to stills are projected to increase by about a percentage point and average 12,250,000 b/d during 1975.

A look back. The U.S. petroleum industry closed out 1974 with some cause for optimism in a period checked with pessimism. The disastrous shortages planned for by many turned into rather small losses viewed on an annual basis.

A quick rundown (for details see following tables) shows:

- Crude production declined 4.2% to average 8,800,000 b/d compared with 1973's average of 9,187,000 b/d. Two of the five districts were gainers. District 1 netted an increase of 10.1% or 11,000 b/d. District 4 showed a gain of 23,000 b/d, a 3.4% gain. Colorado, Montana, and Utah increased production with Wyoming holding about the same. The three biggest producers maintained their rank—Texas, Louisiana, and California.
- Marketed production of natural gas slid downward to average 61.1 billion cfd, a 1.5% decrease. Exports also declined to a level of 2.7 billion cfd.
- Refiners averaged running 12,150,000 b/d of crude compared with 12,431,000 b/d in 1974. Their plants operated at 82.1% of capacity as reported by the American Petroleum Institute.
- Crude imports into the U.S. set record levels during 1974. Total preliminary crude imports equal 3,500,000 b/d. Two of the traditionally large importers cut back their exports of crude to the U.S. substantially. Canada reduced crude exports to the U.S. by 136,000 b/d, a cut of about 14%. Calculated figures for Venezuela show a reduction of 43,000 b/d or 13%. The biggest increases in U.S. crude imports came from Nigeria and Iran. These countries showed gains of 207,000 b/d and 319,000 b/d respectively.
- Refined product imports declined during 1974. Gasoline nearly doubled in volume imported. The reductions occurred in the distillate and residual categories. Total product imports fell by 182,000 b/d, a reduction of about 6%.
- Rotary-rig activity was outstanding during 1974. The U.S. level of activity reached proportions not seen since 1963. California, Kansas, New Mexico, Oklahoma, Texas, and Wyoming all showed large gains in the average rotary-rig activity. Canadian rig activity declined during the year. The average rig activity fell by 25 rigs from the year previous. A decrease of 14% for the year.
- Refined product, natural-gas liquid, and crude stocks all increased during 1974. Gasoline stocks increased by 8,963,000 bbl or 4.2% during the

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year. Residual inventories added 8,300,000 bbl and crude stocks increased 15.5% to a total of 267,100,000 bbl, up 24,622,000 bbl from ending inventory level of 1973.

• The results of the continuing U.S. inflation and the rise in world oil prices are clearly reflected in the wholesale price index which jumped by about 23 points during the year. The crude-oil and refined-products price indices increased by 41 points and 91 points, respectively.

Gain in drilling. Drillers completed an estimated 33,373 wells including 9,335 wildcats, during 1974, drilling 158,401,000 ft of hole. These are preliminary estimates which if proved correct represent a 20.9% gain in completions and a 25% increase in wildcats over 1973.

A Journal survey, meanwhile, indicates oil operators plan to drill an estimated 35,503 wells this year, including 10,483 wildcats, and 171,774,000 ft of hole. This would be a 6.4% gain for total wells, a 12.3% gain for wildcats, and an 8.4% gain in footage drilled, all above the very good 1974 achievement.

The 35,503-well estimate for 1975 drilling is believed approaching capacity of the domestic drilling industry. It will require extremely efficient use of existing equipment if the goal is achieved.

Over the next few years, availability of rigs is expected to be the limiting factor in how fast drilling can be expanded. The 1974 activity and the forecast work in 1975 both are above previous estimates of industry capability.

Active rotary rigs in 1974 averaged 1,471 with the highest number of rigs at work in any one week totaling 1,664. Some observers believe that the industry must average over 1,600 rigs at work this year to achieve the forecast goal.

Texas, as usual, was by far the leader in new drilling last year with 10,309 well completions including 3,435 wildcats. The surprise, however, was the strong showing in some other states. Kansas, for instance, was in second place with 3,066 completions and 986 wildcats, ahead of Oklahoma with 3,063 completions and 391 wildcats and Louisiana with 3,001 completions and 834 wildcats.

Other leading drilling states included California with 1,993 completions and 233 wildcats; New Mexico with 1,138 completions and 218 wildcats; Ohio with 1,785 completions and 148 wildcats; Pennsylvania with 1,327 completions and 105 wildcats; and Wyoming with 1,072 completions and 453 wildcats.

Drilling plans for 1975 indicate nearly all the leading states will see even increased activity. Texas, for example, expects a program of 10,952 wells, Louisiana 3,387, Kansas 3,117, California 2,199, New Mexico 1,237, Oklahoma 3,147, Wyoming 1,147, and Pennsylvania 1,281.

All in all, the drilling segment of the oil industry should experience a busy time in the months ahead. This doesn't mean all is rosy. Operators must worry about enough rigs, tubular goods, and drilling sites and whether Congress will knock out the props by repealing percentage depletion, changing the expensing of intangible costs, or impose more severe price controls on crude oil.

Role of imports. Despite Project Independence, the nation's dependency on petroleum from abroad has remained roughly unchanged from 1973's figure of about 40% of U.S. oil demand. But the so-called security of imports has declined slightly.

A special study of imports during June-October period last year made by Petroleum Industry Research Foundation Inc. (Pirinc) noted that imports from the Arab nations have increased 3.5% and now account for 8.2% of total U.S. oil demand. This compares with 7.7% a year earlier. Imports from non-Arab Eastern Hemisphere sources, particularly Iran and Nigeria, have increased much more and now account for one-third of total U.S. oil imports compared with one-fourth a year ago.

This dependency on Eastern Hemisphere oil actually is greater when imports of products are examined. Export refineries in Canada, the Caribbean, and Europe use a certain amount of Arab crude oil to make the products which they ship to America. Pirinc estimated that the total direct and indirect dependency on Arab oil is equal to nearly 11% of total U.S. oil demand.

These increases in dependency on Eastern Hemisphere oil have been made at the expense of so-called more secure Western Hemisphere petroleum. Imports of crude and products from Canada, Venezuela, and the Caribbean have all declined significantly both in volume and as a percentage of total imports. Historically these imports have been considered politically and strategically more secure than those from the Eastern Hemisphere. This means that the reduction in U.S. oil demand and imports since the embargo has not made the nation less vulnerable to foreign oil interruptions than a year ago.

The Pirinc study also noted that imports of products are declining more than crude. All refined products during the study period showed declining imports from a year earlier with the principal decline occurring in residual, which dropped 18%.

Part of this decline was due to stepped-up production at U.S. refineries of residual fuel which may have increased by as much as 20%. An equally important reason was the declining fuel-oil demand by U.S. electric utilities due in part to a leveling off in power generation this year. Coal and nuclear's share in power generation increased at the expense of oil. As a result, residual-fuel-oil demand by utilities declined significantly.

Imports of gasoline and light fuel oil declined from all sources for two principal reasons: (1) foreign prices of these products have been higher than domestic prices in 1974, and (2) there now is sufficient domestic refining capacity to meet virtually all gasoline demand and a large share of distillate requirements. This is due to a combination of decreased demand and an increase in domestic refining capacity.

Pirinc concluded, however, that any significant volumetric decline in oil imports in 1975 is most unlikely to be achieved without forceful mandatory restrictions or large additional excise taxes.

The current comfortable supply position thus should not lead to complacency. Shell economists, for instance, warn in a special report that if energy-saving measures are abandoned in the face of apparent adequate supply, another crisis could easily be in the making. The report urges the adoption of national policies to cushion the effect of short-term fluctuations in supply including a mechanism for consuming countries to share shortages, greater reserve storage capacity, and better political relations with oil-producing countries. In the meantime, the nation must start moving on long-term solutions to energy supply and demand.

AGD 529895

U.S. production of crude oil and lease condensate

(Thousands of barrels daily)

	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	Total† 1859-1973
District I:												
Fla., N.Y., Pa., W.Va.	120	109	66	36	31	29	28	31	32	32	30	2,090,420
Total District 1	120	109	66	36	31	29	28	31	32	32	30	2,090,420
District II:												
Illinois	77	82	96	107	120	139	154	162	169	175	192	3,011,833
Indiana	13	14	17	18	21	21	24	28	31	30	31	447,266
Kansas	173	181	202	215	232	243	258	272	284	287	290	4,629,330
Kentucky	23	24	26	29	32	35	38	43	49	53	54	623,633
Michigan	48	40	36	33	32	33	35	37	39	40	43	639,653
Nebraska	18	20	24	28	31	33	36	37	38	47	52	350,455
North Dakota	54	55	56	59	60	62	68	69	74	72	70	436,377
Ohio	25	24	22	23	27	30	30	27	30	35	43	800,932
Oklahoma	485	523	567	584	613	616	611	632	615	557	555	11,191,736
Other	2	2	2	2	1	2	3	1	1	1	...	9,348
Total District II	918	965	1,048	1,098	1,169	1,214	1,257	1,308	1,330	1,297	1,330	22,140,563
District III:												
Alabama	35	33	27	21	20	21	21	20	22	22	23	1,853
Arkansas	45	49	51	50	49	49	53	58	65	71	73	1,397,833
Louisiana	2,050	2,256	2,455	2,562	2,485	2,314	2,233	2,122	1,848	1,630	1,502	15,660,381
Gulf Coast	1,990	2,146	2,334	2,438	2,355	2,181	2,094	1,971	1,699	1,478	1,356	‡
Rest of state	60	110	121	124	130	133	139	151	149	152	146	‡
Mississippi	140	154	167	176	178	176	160	157	151	154	155	1,514,217
New Mexico	265	276	302	324	351	354	351	346	340	327	311	3,173,954
Texas	3,450	3,546	3,565	3,351	3,424	3,156	3,097	3,067	2,898	2,742	2,704	39,447,383
Gulf Coast	790	793	716	654	694	631	609	591	539	515	524	‡
West Texas	1,795	1,829	1,769	1,646	1,634	1,497	1,453	1,427	1,352	1,262	1,212	‡
East Texas field	190	207	211	186	199	159	145	142	124	111	119	‡
Rest of state	675	717	869	865	897	869	890	907	883	854	849	‡
Total District III	5,985	6,314	6,567	6,484	6,507	6,070	5,915	5,770	5,324	4,946	4,768	61,345,621
District IV:												
Colorado	102	100	90	75	68	78	87	93	92	92	95	1,067,231
Montana	95	94	93	95	104	120	132	66	97	90	84	864,166
Utah	108	87	71	65	64	64	64	68	66	69	78	494,284
Wyoming	395	396	386	405	439	424	394	373	368	379	379	3,939,117
Total District IV	700	677	640	640	675	686	677	628	623	630	636	6,364,798
District V:												
Alaska	195	199	202	218	229	202	181	80	39	31	30	626,197
Arizona	2	2	3	3	5	7	9	8				15,922
California	880	921	951	982	1,020	1,028	1,026	984	946	867	820	16,784,056
Coastal region	208	216	212	237	222	180	176	191	190	182	178	‡
Los Angeles region	345	363	389	392	430	465	453	380	340	296	279	‡
San Joaquin Valley	327	342	350	353	368	383	397	413	416	389	363	‡
Nevada						1	1	1	1	1		2,949
Total District V	1,077	1,122	1,156	1,203	1,254	1,238	1,217	1,073	986	899	850	17,429,124
U.S. Total	8,800	9,187	9,477	9,461	9,636	9,237	9,094	8,810	8,295	7,804	7,614	109,370,526

*Preliminary †Thousands of barrels. ‡Not available.

Supply and demand of crude in the U.S.

(Thousands of barrels daily)

	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
SUPPLY:													
Crude imports	3,500	3,244	2,222	1,681	1,324	1,409	1,290	1,128	1,225	1,238	1,199	1,131	1,126
Crude production	8,800	9,187	9,477	9,463	9,637	9,238	9,095	8,810	8,295	7,804	7,614	7,542	7,332
Total new supply	12,300	12,431	11,699	11,144	10,961	10,647	10,385	9,938	9,520	9,042	8,813	8,673	8,458
DEMAND:													
Crude refinery runs	12,150	12,432	11,731	11,199	10,870	10,629	10,312	9,815	9,444	9,043	8,807	8,687	8,410
Crude transfers	17	19	12	17	14	14	14	12	12	13	12	11	14
Crude exports	3	2	1	1	14	4	5	73	4	3	4	5	5
Crude loss	12	13	13	12	11	11	11	9	10	10	10	10	9
Total crude demand	12,182	12,466	11,757	11,299	10,909	10,658	10,342	9,909	9,470	9,069	8,833	8,713	8,438
Stock change	+118	−35	−58	−46	+31	−11	+43	+29	+50	−27	−20	−40	+20

*Preliminary.

AGD 529896

Rotary-rig activity by states

	Peak No.	Low No.	Average rig activity 1974	1973	1972	1971	1970	1969	1968	1967	1966	1965
Alabama	18	7	12	13	15	8	7	6	3	2	2	1
Alaska	14	3	9	5	5	5	14	28	20	21	13	6
Inland	9	2	6	4	4	5	12	18	3	5	5	3
Offshore	5	0	3	1	1	0	2	10	17	16	8	3
Arkansas	21	13	18	15	15	15	13	16	7	8	10	11
Arizona	2	1	1	2	1	1	0	2	1	3	1	1
California	85	53	72	51	46	46	52	78	87	83	79	89
Inland	82	51	70	49	45	40	42	61	65	67	70	83
Offshore	4	1	2	2	1	6	10	17	22	16	9	6
Colorado	60	33	46	42	35	30	25	23	17	16	16	19
Florida	12	6	7	9	19	11	4	1	1	2	2	4
Georgia	3	0	0	1	0	0	0	0	0	0	0	0
Idaho	1	0	0	1	0	0	0	0	0	0	0	0
Illinois	12	1	7	6	14	13	14	17	22	30	30	24
Indiana	3	0	1	0	1	1	1	1	2	3	5	5
Iowa	1	0	0	1	0	1	0	0	0	0	1	0
Kansas	55	35	44	28	24	29	30	38	35	41	55	70
Kentucky	4	0	2	1	2	2	1	2	5	9	13	12
Louisiana	224	186	203	205	214	194	204	230	233	235	256	270
North	34	23	29	23	19	16	12	19	19	20	23	30
Inland waters	68	49	58	55	54	50	57	57	64	66	72	72
South	65	39	49	56	59	54	56	69	59	58	63	73
Offshore	77	57	67	71	82	74	79	85	91	91	98	95
Maryland	0	0	0	0	1	0	0	1	1	0	4	2
Michigan	32	12	24	20	17	12	11	10	10	10	9	11
Mississippi	33	23	29	29	37	39	43	40	36	33	34	35
Missouri	2	0	0	1	0	0	0	0	0	0	1	0
Montana	37	10	24	19	20	17	17	31	34	22	24	26
Nebraska	11	3	7	5	6	5	6	10	5	5	8	10
Nevada	3	0	1	0	0	1	0	0	2	1	1	2
New Mexico	94	67	79	62	55	47	40	64	68	56	60	65
New York	10	2	7	1	0	1	0	0	1	1	1	1
North Carolina	1	0	0	0	0	0	0	0	0	0	0	0
North Dakota	19	5	12	10	7	9	9	12	13	11	12	12
Ohio	44	18	30	36	22	17	24	22	22	18	14	22
Oklahoma	173	121	146	115	90	90	98	120	106	101	141	163
Oregon	0	0	0	0	0	0	0	0	0	0	1	1
Pennsylvania	19	9	14	11	8	9	9	7	5	7	10	9
South Dakota	2	0	1	1	1	1	2	1	1	0	0	2
Tennessee	2	0	0	0	0	1	2	1	0	1	1	0
Texas	612	423	508	376	322	291	302	322	329	340	387	425
Gulf Coast	161	97	128	109	91	79	73	77	88	90	103	112
Offshore	29	17	21	9	6	5	6	10	6	7	8	5
North	90	45	67	22	16	15	17	25	25	28	31	34
Panhandle	44	24	35	23	22	16	19	19	20	21	23	25
East	68	24	45	30	26	23	25	37	34	36	38	40
West Central	81	55	62	82	71	76	77	74	67	67	82	102
West	172	135	150	101	90	77	85	80	89	91	102	107
Utah	50	33	42	38	34	17	12	12	12	15	14	14
Virginia	3	0	2	1	0	1	1	0	0	0	0	1
Washington	0	0	0	0	0	0	0	0	0	1	1	0
West Virginia	30	1	16	20	16	17	16	18	16	15	19	24
Wyoming	140	87	107	70	60	45	71	81	56	44	48	50
Total U.S.	**1,664**	**1,350**	**1,471**	**1,194**	**1,087**	**976**	**1,028**	**1,194**	**1,150**	**1,134**	**1,273**	**1,387**
Canada West	268	57	151	175	148	120	131	149	150	144	156	163
Canada East	6	1	3	4	4	4	3	2	1	1	1	2
Grand Total	1,820	1,419	1,625	1,373	1,239	1,100	1,162	1,345	1,301	1,279	1,430	1,552

Source: Hughes Tool Co. Note: Peak and low figures may not add to totals.

AGD 529897

Drillers sank more wells than

Well forecast for 1975

State	1974 estimate: Total wells 1974	1974 estimate: Total wildcats 1974	1974 estimate: Total footage (1,000 ft)	1975 forecast: Total wells 1975	1975 forecast: Wildcat wells 1975	1975 forecast: Field wells 1975	1975 forecast: Total footage 1975 (1,000 ft)	Change from 1974 Total wells
Alabama	95	54	880	124	68	56	1,119	+ 29
Alaska	32	10	224	119	47	72	834	+ 87
Arizona	11	5	73	8	8	0	53	− 3
Arkansas	300	85	1,596	306	87	219	1,613	+ 6
California	1,993	233	5,115	2,199	288	1,911	5,650	+ 206
Onshore	1,923	227	4,911	2,117	281	1,836	5,428	+ 194
Offshore	70	6	204	82	7	75	222	+ 12
Colorado	823	344	4,982	901	389	512	5,425	+ 78
Florida	48	36	583	96	75	21	1,181	+ 48
Georgia	5	5	30	0	0	0	0	− 5
Idaho	2	2	9	0	0	0	0	− 2
Illinois	740	204	1,826	773	211	562	1,932	+ 33
Indiana	403	176	634	407	191	216	641	+ 4
Iowa	2	2	3	0	0	0	0	− 2
Kansas	3,066	986	8,953	3,117	1,017	2,100	9,102	+ 51
Kentucky	734	201	1,164	766	206	560	1,215	+ 32
Louisiana	3,001	834	22,453	3,387	1,095	2,292	25,560	+ 386
North	1,217	235	4,514	1,326	241	1,085	4,918	+ 109
South	1,091	402	11,357	1,168	467	701	12,159	+ 77
Offshore	693	197	6,582	893	387	506	8,483	+ 200
Maryland	2	2	13	0	0	0	0	− 2
Michigan	390	235	1,932	526	315	211	2,605	+ 136
Mississippi	463	291	3,802	534	341	193	4,386	+ 71
Missouri	55	22	69	24	16	8	30	− 31
Montana	648	368	2,026	691	375	316	2,218	+ 43
Nebraska	228	161	1,175	262	234	28	1,352	+ 34
Nevada	2	2	18	4	4	0	36	+ 2
New Mexico	1,138	218	6,228	1,237	248	989	6,831	+ 99
East	771	181	4,860	862	176	686	5,433	+ 91
West	367	37	1,368	375	72	303	1,398	+ 8
New York	311	0	440	327	14	313	463	+ 16
North Carolina	10	10	38	0	0	0	0	− 10
North Dakota	134	73	1,043	198	136	62	1,542	+ 64
Ohio	1,785	148	7,418	1,765	152	1,613	7,335	− 20
Oklahoma	3,063	391	16,837	3,147	447	2,700	17,299	+ 84
Pennsylvania	1,327	105	2,826	1,281	117	1,164	2,728	− 46
South Dakota	10	10	61	17	12	5	102	+ 7
Tennessee	110	75	176	112	77	35	178	+ 2
Texas	10,309	3,435	54,175	10,952	3,667	7,285	58,007	+ 643
District 1	616	242	2,308	593	201	392	2,228	− 23
District 2	741	450	4,375	866	499	367	5,113	+ 125
District 3	956	467	6,110	876	411	465	5,782	− 80
District 4	989	560	6,409	1,024	572	452	6,635	+ 35
District 5	141	80	773	147	86	61	785	+ 6
District 6	315	123	2,146	386	142	244	2,598	+ 71
District 7-B	1,313	465	4,287	1,390	482	908	4,565	+ 77
District 7-C	1,096	206	6,263	1,174	220	954	6,435	+ 78
District 8	1,439	167	8,747	1,498	212	1,286	9,108	+ 59
District 8-A	938	144	4,951	1,140	247	893	5,880	+ 202
District 9	1,103	289	3,327	1,023	296	727	3,119	− 80
District 10	502	98	3,174	520	112	408	3,167	+ 18
Offshore	160	144	1,305	315	187	128	2,592	+ 155
Utah	187	55	1,532	212	61	151	1,796	+ 25
Virginia	52	2	249	48	6	42	229	− 4
West Virginia	822	102	2,400	816	97	719	2,375	− 6
Wyoming	1,072	453	7,418	1,147	487	660	7,937	+ 75
Total U.S.	33,373	9,335	158,401	35,503	10,488	25,015	171,774	+2,130
Canada	4,552	1,270	15,630	3,881	727	3,154	12,996	− 671
West	4,290	1,247	15,065	3,618	725	2,893	12,594	− 672
Alberta	3,735	1,018	12,852	3,211	576	2,635	11,049	− 524
B.C.	163	74	865	129	28	101	685	− 34
Manitoba	47	16	154	45	20	25	147	− 2
North-Arctic	56	54	470	22	22	0	185	− 34
Saskatchewan	289	85	724	211	79	132	528	− 78
East	262	23	565	263	2	261	402	+ 1
Offshore	23	23	213	2	2	0	18	− 21
Ontario	239	...	352	261	0	261	384	+ 22

AGD 529898

considered in early-year planning

PRELIMINARY estimates of 1974 total well completions in the U.S. show that the industry drilled more wells than it has previously planned earlier in the year.

Total well completions for the year 1974 are estimated at 33,373, compared to the 32,616 earlier reported. The year's total wells included 9,335 wildcat completions. Total footage drilled in 1974 is estimated at 158,401,000 ft. The complete listing of 1974 well completions in all categories will be published by the API and printed in The Journal later in the quarter.

The outlook is very good for 1975. The industry looks for 35,503 wells to be drilled. This is an increase of 6.4% over 1974. Total wildcat completions for 1975 will near 10,488, up 12.4% over 1974. Total footage drilled in 1975 should reach 171,774,000 ft, up 8.2% over last year. The 1975 well count will include 25,015 field-development wells.

A comprehensive Journal survey of operators throughout the oil kingdom covered nearly 9,500 wells for 1974. The top 20 companies in the nation plan to drill 7,488 wells this year compared to 6,823 in 1974. The accompanying table notes the data for past years. Notice that 1975 will be the biggest year listed on this table.

Nearly every state shows an increase in total drilling. Only Arizona, Georgia, Idaho, Iowa, Maryland, Ohio, Virginia, and West Virginia expect fewer well completions. Largest well increases are in California, up 206, Louisiana, up 386, and Texas, up 643.

The bright drilling picture in the U.S. for 1974 was bolstered by the high number of rotary rigs working in various areas. This rig count will increase the 1975 count also. Not since the 1950's has the Anadarko basin of western Oklahoma and the Texas Panhandle seen such a flurry of drilling action. Most of the wells are looking for and are finding new gas reserves. Some of this success is in and around older producing areas, while other good news is being made in wildcat operations in newer areas.

The impact of the price increase for gas and oil is very evident throughout Oklahoma well drilling slated to increase by 84 wells.

The top 20 company scores

	Total wells					Wildcats	
State	1975 Forecast	1974	1973	1972	1971	1974	Forecast 1975
Alabama	26	13	21	36	23	6	11
Alaska	92	21	21	15	31	6	32
Arizona	0	1	0	10	2	1	0
Arkansas	18	24	15	20	30	9	5
California	1,112	1,053	567	839	1,431	53	59
Onshore	1,070	1,011	562	827	1,388	53	53
Offshore	42	42	5	12	43	0	6
Colorado	314	312	54	228	225	33	43
Florida	13	6	36	64	32	6	13
Georgia	0	2	2	0	0	2	0
Idaho	0	2	4	0	0	2	0
Illinois	41	68	88	39	84	12	7
Indiana	16	28	1	1	1	0	0
Kansas	209	212	60	322	50	14	23
Kentucky	1	4	3	20	3	0	0
Louisiana	1,332	1,021	862	1,156	1,044	222	241
North	274	159	66	82	166	22	18
South	477	467	471	491	507	46	53
Offshore	581	395	305	583	371	154	170
Maryland	0	0	0	0	0	0	0
Michigan	305	207	117	135	51	134	186
Mississippi	49	37	39	75	128	16	26
Missouri	0	1	8	0	0	1	0
Montana	62	41	34	50	40	12	30
Nebraska	8	3	3	6	7	0	0
Nevada	4	2	0	1	2	1	4
New Mexico	307	304	154	223	171	32	42
East	231	205	139	164	132	28	27
West	76	99	15	59	39	4	15
New York	14	50	4	9	2	0	0
North Carolina	0	3	0	0	2	3	0
North Dakota	22	30	11	13	19	4	6
Ohio	2	2	5	8	5	0	0
Oklahoma	375	470	223	291	326	36	74
Oregon	0	0	1	0	0	0	0
Pennsylvania	114	224	41	14	11	15	20
South Dakota	6	2	1	1	0	2	3
Tennessee	2	1	0	0	0	1	2
Texas	2,506	2,146	1,547	2,138	1,686	216	321
District 1	201	147	104	113	24	10	10
District 2	64	57	66	54	52	11	14
District 3	175	119	175	262	263	8	27
District 4	139	155	250	264	295	8	20
District 5	18	18	6	6	9	9	8
District 6	60	34	33	43	51	3	9
District 7-B	27	14	32	22	23	1	5
District 7-C	193	229	93	52	52	20	20
District 8	666	661	389	635	526	35	58
District 8-A	597	317	230	361	294	6	25
District 9	60	186	35	238	32	3	6
District 10	108	114	110	54	40	12	17
Offshore	198	95	24	34	25	90	102
Utah	138	149	100	10	41	23	14
Virginia	2	1	0	0	0	1	2
Washington	0	0	0	3	0	0	0
West Virginia	54	83	22	35	28	12	12
Wyoming	344	300	112	330	223	36	71
Total U.S.	7,488	6,823	4,156	6,203	5,696	911	1,247

AGD 529899

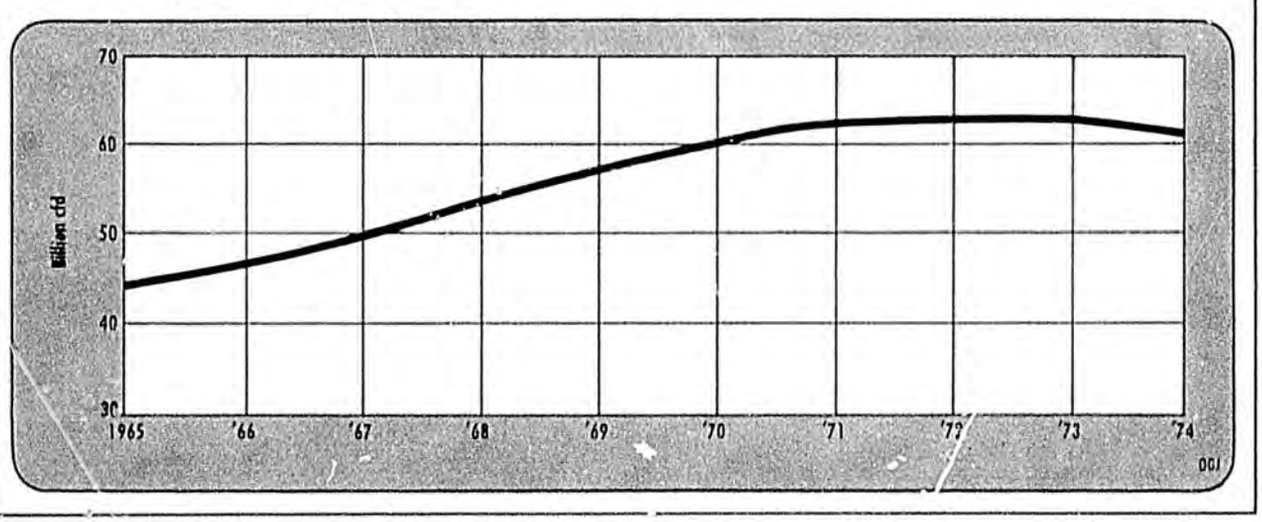
Marketed production of natural gas

(Million cubic feet per day)

	1974*	Actual 1973	1972	1971	1970	1969	1968	1967	1966	1965
Alaska	390	359	344	333	306	139	47	40	29	20
Arkansas	340	432	456	473	497	464	428	319	296	227
California	1,200	1,231	1,335	1,678	1,778	1,857	1,953	1,866	1,965	1,809
Colorado	370	377	320	297	290	325	332	320	326	346
Kansas	2,420	2,447	2,436	2,425	2,466	2,420	2,283	2,389	2,322	2,174
Louisiana	21,750	22,582	21,843	22,142	21,338	19,802	17,530	15,664	13,967	12,238
Michigan	110	122	94	70	106	99	111	92	105	95
Mississippi	225	273	285	325	345	360	369	382	381	457
Montana	150	154	92	90	117	113	53	71	99	77
Nebraska	10	11	10	10	16	19	22	23	27	29
New Mexico	3,425	3,339	3,332	3,199	3,121	3,118	3,181	2,925	2,770	2,568
Oklahoma	4,850	4,852	4,950	4,614	4,370	4,175	3,800	3,871	3,318	3,619
Texas	23,525	23,326	23,720	23,427	22,898	21,516	20,479	19,697	19,165	18,181
Utah	135	117	108	116	117	128	126	134	144	196
W. Virginia	570	572	589	641	664	635	647	579	585	568
Others	1,650	1,854	1,817	1,785	1,628	1,538	1,431	1,412	1,396	1,340
TOTAL	61,120	62,048	61,731	61,625	60,057	56,708	52,792	49,784	46,895	43,944
Volume Change	<928>	317	106	1,568	3,349	3,916	3,008	2,889	2,951	1,467
Percent Change	<1.5>	0.5	0.2	2.6	5.9	7.4	6.0	6.2	6.7	3.5
Imports	2,650	2,830	2,793	2,562	2,249	1,986	1,781	1,545	1,285	1,252
Exports	250	211	214	219	191	140	256	225	155	65

*Preliminary.

Marketed gas output stays level



U.S. employment, earnings, and price indices

	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965
U.S. Employment (000's)										
All manufacturing	19,835	19,820	18,933	18,529	19,349	20,167	19,781	19,447	19,214	18,062
Petroleum refining	150	147	151	152	154	145	150	148	148	148
Petroleum and natural gas production	279	264	262	262	270	280	276	276	282	287
Average Hourly Earnings										
All manufacturing	$4.28	$4.07	$3.81	$3.56	$3.36	$3.19	$3.01	$2.83	$2.72	$2.61
Petroleum refining	5.92	5.54	5.25	4.82	4.49	4.23	3.94	3.77	3.60	3.47
Petroleum and natural gas production	4.98	4.47	3.97	3.75	3.57	3.43	3.22	3.03	2.87	2.74
Price Indices (1967 = 100)										
Wholesale price index	157.7	134.7	119.1	113.9	110.4	106.5	102.5	100.0	99.8	96.6
Crude oil price index	174.4	133.2	116.1	111.1	108.9	105.8	100.7	100.0	98.6	97.9
Refined products price index	220.3	128.7	108.9	106.8	101.1	99.6	98.1	100.0	97.4	93.8

*Preliminary

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings. U.S. Department of Commerce, U.S. Bureau of Mines.

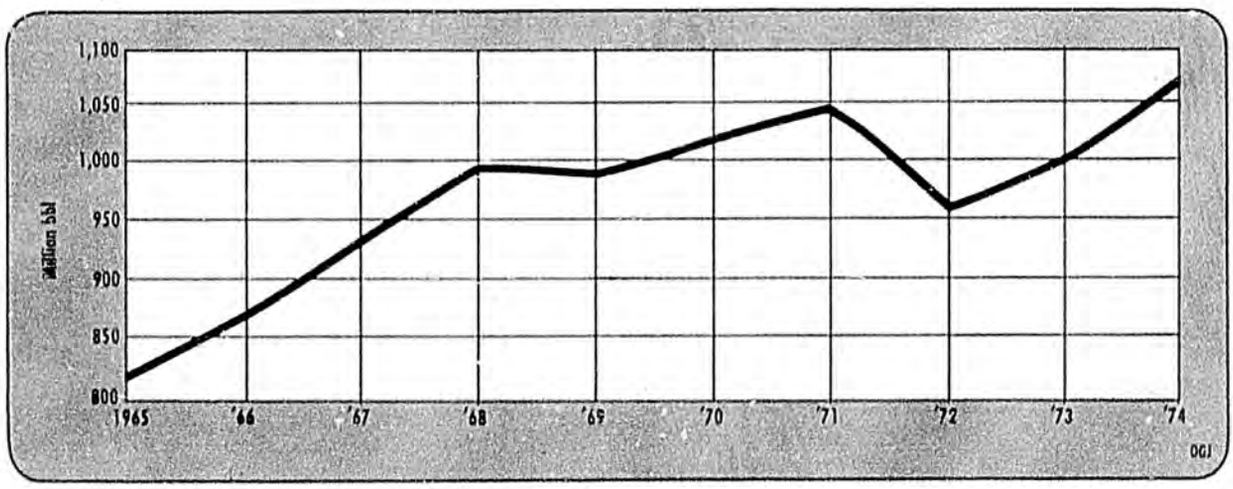
AGD 529900

Refinery runs by districts

(Thousands of barrels daily)

	% of capacity	1974*	% of total 1973	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
East Coast	80.7	1,246	10.7	1,327	1,161	1,181	1,147	1,252	1,176	1,145	1,143	1,089	1,106
Appalachian: Dist. 1	76.9	166	1.4	174	161	150	143	57	127	122	116	111	106
Total Dist. 1	80.2	1,412	12.1	1,501	1,322	1,331	1,290	1,309	1,303	1,267	1,259	1,200	1,212
Appalachian: Dist. 2	90.6	58	0.4	55	54	55	60	63	59	60	78	101	101
Ill., Ind., Ky.	83.6	2,152	18.2	2,267	2,134	2,054	1,995	1,868	1,830	1,778	1,731	1,632	1,579
Minn., Wis., Oak.	73.2	218	2.0	242	228	217	209	198	185	164	162	153	147
Okla., Kan., Mo.	88.8	920	7.4	921	904	904	899	884	885	847	818	759	744
Total Dist. 2	84.3	3,348	28.0	3,485	3,320	3,230	3,154	3,013	2,959	2,849	2,789	2,645	2,571
Texas:													
Inland	81.5	418	3.4	427	416	401	395	388	371	350	340	321	316
Gulf Coast	83.5	2,867	22.4	2,782	2,635	2,523	2,450	2,407	2,359	2,283	2,185	2,116	2,088
Louisiana Gulf	85.9	1,633	13.4	1,664	1,604	1,377	1,317	1,285	1,214	1,101	979	911	853
N. La.-Ark.	72.3	154	1.1	135	132	148	154	145	142	135	128	126	123
New Mexico	56.3	59	0.4	46	45	42	41	39	37	34	34	32	30
Total Dist. 3	83.4	5,131	40.7	5,054	4,832	4,491	4,357	4,264	4,123	3,903	3,666	3,506	3,410
Total Dist. 4	76.4	415	3.3	415	398	405	393	385	366	344	338	330	319
Total Dist. 5	77.8	1,844	15.9	1,976	1,858	1,742	1,676	1,658	1,567	1,452	1,392	1,362	1,295
Total U.S.	82.1	12,150	100.0	12,431	11,730	11,199	10,870	10,629	10,318	9,815	9,444	9,043	8,807

Total stocks head upward



Refined product, natural-gas-liquid, and crude stocks

(Thousands of barrels)

Refined product stocks	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965
Gasoline	222,380	213,417	217,149	223,771	214,348	217,392	211,526	207,715	194,177	183,058
Motor	218,600	209,478	212,894	219,352	209,255	211,199	204,496	199,790	186,393	174,717
Aviation	3,780	3,939	4,255	4,419	5,093	6,193	7,030	7,925	7,784	8,341
Special naphtha	4,800	4,521	5,232	5,384	6,193	6,292	5,829	5,742	5,583	6,209
Kerosine	14,500	21,022	19,111	24,438	27,848	26,780	23,480	25,008	24,004	24,080
Distillate	202,400	196,461	154,319	190,622	195,271	171,714	173,158	159,674	154,096	155,407
Residual	61,780	53,480	55,216	59,681	53,994	58,395	65,359	65,597	61,196	56,214
Kerosine jet fuel	24,400	22,945	19,346	20,747	20,989	19,517	15,373	13,174	12,139	10,361
Naphtha jet fuel	5,660	5,599	6,147	6,990	6,621	8,556	8,904	9,023	7,235	8,388
LRG	7,900	7,719	7,781	7,361	5,645	5,050	4,373	14,925	14,336	13,665
Unfinished oils	109,960	99,154	94,761	100,574	98,989	97,819	93,399	90,201	89,535	88,609
Other refined prod.	51,220	52,298	49,279	51,203	43,152	43,125	46,725	48,340	43,350	44,197
Total product stocks	705,000	676,616	628,341	690,771	673,059	654,640	648,126	629,339	595,651	580,188
Nat.-gas-liquids stk.	98,000	94,106	79,238	93,528	68,435	60,256	77,253	62,969	40,423	35,867
Crude stocks	267,100	242,478	246,395	259,648	276,367	265,227	272,193	248,970	238,391	220,289
Total stocks	1,070,100	1,013,200	953,974	1,043,947	1,017,861	980,123	997,572	941,338	874,465	836,344

*Preliminary. †Includes LRG for chemical use previously reported in petrochemical feedstocks.

AGD 529901

Crude imports by origin

(Thousands of barrels daily)

	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965
Bolivia	8	2	...	2	2	15.3	18.8	19.2	3.4	...
Chile	...	...	...	1	...	4.7	...	...	...	...
Colombia	...	2	5	9	20	42.6	32.7	32.5	39.5	41.7
Ecuador	60	47	...	...	...	...	...	...	...	...
Mexico	1	1	...	...	...	1.0	...	...	...	6.9
Trinidad	65	60	24	...	...	...	5.4	3.5	...	...
Venezuela	302	345	256	303	268	306.1	343.5	359.1	403.9	432.5
Latin America total	436	457	285	315	290	369.7	400.4	414.3	446.8	481.1
Algeria	203	120	87	13	6	1.0	5.3	4.0	3.8	8.9
Angola	50	48	16	4	...	...	...	...	...	...
Congo	4	...	...	...	...	...	...	...	...	...
Egypt	10	15	8	19	21	40.5	29.5	3.6	2.3	2.4
Gabon	30	...	...	...	...	...	...	...	...	...
Libya	5	133	110	53	47	133.9	113.6	41.9	69.0	41.6
Nigeria	655	448	244	95	48	49.2	8.6	3.9	11.3	14.5
Tunisia	5	18	7	...	...	...	...	...	...	...
Africa total	962	782	472	184	122	224.6	157.0	53.4	86.4	67.4
Kuwait	2	42	36	29	33	34.4	43.3	18.8	26.1	55.4
Saudi Arabia	338	462	174	115	17	34.7	51.8	81.3	125.4	132.2
Neutral Zone	...	...	...	...	23	43.5	29.4	11.0	19.3	26.7
Iran	535	216	136	106	33	41.9	57.8	65.2	84.5	78.5
Iraq	...	4	4	11	...	...	...	4.7	25.9	15.6
Qatar	7	7	3	...	...	0.5	...	...	0.5	11.9
Israel	...	1	...	...	...	...	...	...	...	...
United Arab Emirates	80	71	74	80	63	13.8	15.3	5.3	13.1	13.8
Middle East total	962	803	427	341	169	168.8	197.6	186.3	294.8	334.1
Canada	865	1,001	856	721	672	557.0	462.9	412.1	347.1	295.2
Far East	275	201	167	117	70	88.4	72.6	61.7	49.9	60.7
Total crude	3,500	3,244	2,207	1,678	1,323	1,408.5	1,290.5	1,127.8	1,225.0	1,238.5

*Preliminary

Imports of refined products

(Thousands of barrels daily)

	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965
Gasoline	195	132	68	59	67	62.2	59.0	42.7	48.1	37.1
Kerosine	3	2	1	1	4	2.6	0.5	0.1	0.6	0.3
Jet-fuel kerosine	160	167	162	150	125	110.7	85.8	73.8	51.4	36.9
Jet-fuel naphtha	30	36	33	30	19	14.1	19.4	14.9	34.4	45.2
Distillate	255	380	182	153	147	139.4	131.5	50.7	37.9	35.7
Residual	1,676	1,827	1,746	1,583	1,528	1,264.7	1,120.0	1,084.3	1,032.3	944.1
Unfinished oils	140	137	125	124	108	106.2	80.2	96.2	96.5	92.3
Other	1316	1276	1215	1145	97	57.5	52.9	45.9	46.9	37.7
Total U.S.	2,775	2,957	2,532	2,245	2,095	1,757.4	1,549.3	1,408.6	1,348.1	1,229.3

*Preliminary. †Includes plant condensate 1974, 103; 1973, 103; 1972, 86; 1971, 36.

Exports of refined products—and crude

(Thousands of barrels daily)

	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965
Gasoline	4	5	2.6	4.5	3.8	6.7	5.7	18.8	15.9	17.6
Distillate	3	9	3.3	7.6	2.5	3.1	4.2	11.7	12.0	10.0
Residual	12	25	33.0	36.2	54.2	46.3	54.7	60.1	35.3	40.8
Lubricants	35	35	41.1	43.4	44.1	44.9	49.2	51.2	46.9	45.7
Coke	115	96	85.1	74.0	83.7	63.1	53.3	44.6	39.6	32.4
Asphalt	1	1	0.9	0.8	1.0	1.3	1.2	1.3	1.3	1.1
LP-gas	25	27	31.4	25.7	27.3	35.1	29.0	25.4	22.4	20.6
Other refined products	27	31	24.8	30.6	28.6	28.2	28.8	21.3	21.0	14.7
Crude	3	2	0.5	1.4	13.6	3.9	4.9	72.7	4.0	3.0
Total U.S.	225	231	222.7	224.2	258.8	232.6	231.0	307.1	198.4	185.9

*Preliminary

AGD 529902

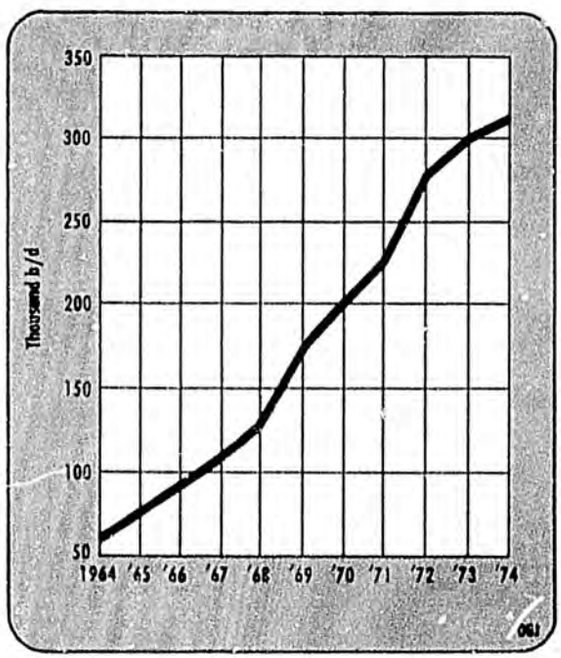
Production of natural-gas liquids, liquefied refinery gases

(Thousands of barrels daily)

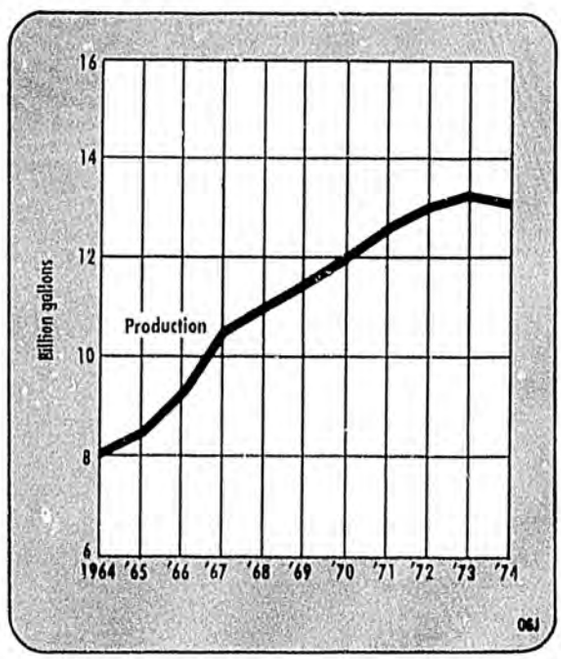
	1974*	1973	1972	1971	1970	1969	1968	1967	1966	1965
Ethane (from gas processing)	315	296	276	221	201	173	125	101	82	73
LP-gases:										
Propane	570	583	587	581	555	535	504	465	409	372
Butane	240	243	242	243	239	237	216	207	192	170
Butane-propane mix	10	10	10	11	16	16	34	42	36	24
Isobutane	90	92	92	88	84	74	81	80	73	67
Total LP-gases	910	928	931	923	894	862	835	794	710	633
Natural gasolines‡	400	443	427	453	452	423	404	382	356	356
Finished product and others§	60	70	81	96	113	117	140	132	136	119
Total natural-gas liquids	1,685	1,737	1,715	1,693	1,660	1,575	1,504	1,409	1,284	1,181
Liquefied refinery gas¶	348	350	332	331	319	313	323	306	291	293
Ethane (from refineries)	25	25	25	25	26	25	...	...	...	...
Total all products	2,058	2,112	2,072	2,049	2,005	1,913	1,827	1,715	1,575	1,474

‡Includes isopentane. §Includes plant condensate. ¶LRG figures, 1968 and earlier, include ethane. *Preliminary.

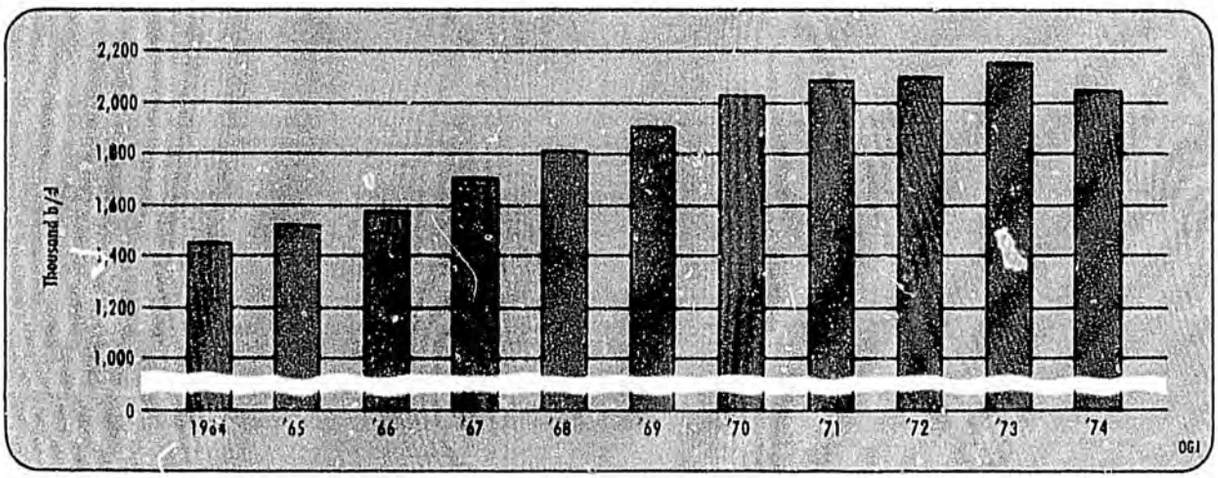
Ethane production rising



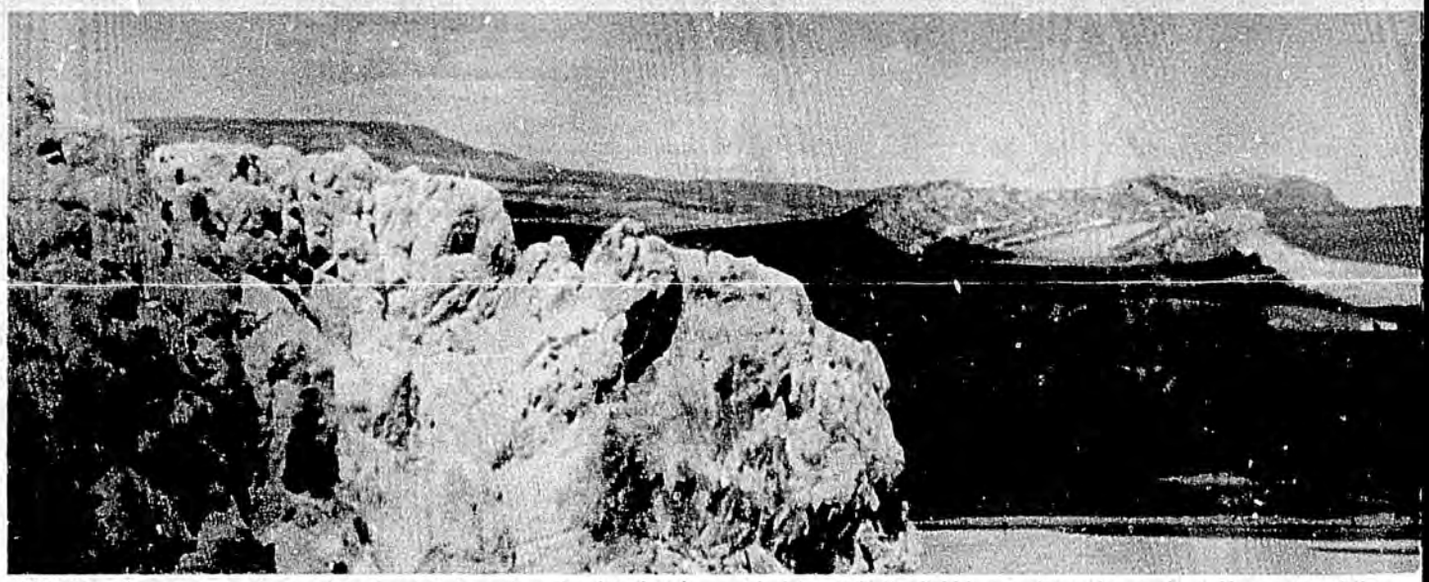
Total propane



Total production of NGL and LRG



AGO 529903



WITH U.S. oil reserves on the rapid decline and demand on the rise, American geologists are in the field in ever increasing numbers. Many areas of the

Here are the big U.S. reserves

MOST of the crude-oil production in the U.S. comes from the nation's giant oil fields. These fields lie in many states with Texas having the most. California and Louisiana are also great storehouses of oil.

Alaska's Prudhoe Bay field, not yet on stream, is one of the largest with reserves at from 10 to 20 billion bbl or more.

Newest field to pass the 1 billion-bbl production mark in the country is Oklahoma's Sho-Vel-Tum.

To be included on this select list of U.S. oil fields, a pool must have an ultimate reserve of 100,000,000 bbl or more. Many of the fields on the listing are of 1920-30 vintage, the golden years of U.S. oil production. Some of these fields are still producing respectable amounts of oil each year.

Figures are in thousands of barrels. Only crude oil is figured into this reserve tabulation.

State Field	1,000 bbl 1974 prod.	1,000 bbl Cum. prod.	1,000 bbl Est. reserves	Est. No. wells
ALABAMA				
Citronelle	4,866	112,122	37,877	416
ALASKA				
Granite Point	4,233	56,131	34,321	25
McArthur River	39,191	253,387	136,748	52
Middle Ground Shoal	9,033	87,695	97,000	33
Prudhoe Bay	2,181	6,674	*	3
Swanson River	9,741	154,297	51,197	42
*Reserves estimates range from 10 to 20 billion bbl.				
APPALACHIAN				
Allegany	400	166,400	1,415	2,100
Bradford	2,600	658,695	19,774	17,300
ARKANSAS				
Magnolia	446	152,870	7,130	56
Schuler and East	613	105,736	4,264	108
Smackover	2,860	508,507	21,493	2,611
CALIFORNIA				
SAN JOAQUIN VALLEY				
Belridge South	8,544	194,803	77,900	2,667
Buena Vista	4,003	617,240	32,427	1,137
Coalinga	6,483	632,959	65,887	2,219
Coalinga Nose	3,504	432,473	30,959	74
Coles Levee North	1,218	140,848	12,766	116
Cuyama South	1,471	208,617	11,002	135
Cymric	2,919	131,500	24,405	746
Edison	1,206	113,339	12,500	527
Elk Hills	789	283,788	1,031,000	93
Fruitvale	1,016	101,817	11,400	349
Greeley	677	107,973	3,100	47
Kern Front	3,235	134,691	30,300	952
Kern River	26,765	635,757	850,000	4,531
Kettleman North Dome	643	452,104	3,756	129
Lost Hills	2,165	119,092	21,700	1,149
McKittrick	6,538	206,314	43,022	952
Midway Sunset	4,920	1,197,423	420,191	6,027
Mount Poso	2,527	168,357	20,620	498
Rio Bravo	170	113,139	1,731	48
COASTAL AREA				
Cat Canyon East and West	6,064	174,126	48,100	590
Dos Cuadras	14 990	102,488	73,247	123
Elwood	40	103,266	479	12
Orcutt	1,776	148,789	13,035	176
Rincon	3,319	123,549	20,209	312
San Ardo	12,877	274,160	103,800	913
Santa Ynez*				
Santa Maria Valley	3,558	159,363	26,612	214
South Mountain	1,640	130,617	16,142	441
Ventura	11,393	793,393	88,500	809
*1-3 billion bbl				
LOS ANGELES BASIN				
Beverly Hills	4,656	78,834	31,384	128
Brea Olinda	3,388	343,585	24,212	721
Coyote East	674	98,135	5,300	67
Coyote West	2,143	232,141	18,361	161
Dominguez	1,110	258,272	10,162	131
Huntington Beach	19,035	923,820	118,800	1,118
Inglewood	3,588	296,656	25,100	432
Long Beach	2,598	878,213	20,605	733
Montebello	558	184,500	5,120	178
Richfield	1,476	164,852	16,372	304

AGO 529904



nation, once overlooked, will get a close investigation by earth scientists.

State Field	1974 prod.	1,000 bbl Cum. prod.	Est. reserves	Est. No. wells
Santa Fe Springs	753	600,697	11,218	242
Seal Beach	1,236	187,989	11,900	176
Torrance	2,747	182,332	17,591	364
Wilmington	65,382	1,681,810	697,935	2,335
COLORADO				
Rangely	20,284	513,615	158,379	369
FLORIDA				
Jay	33,166	75,383	237,617	85
ILLINOIS				
Clay City	2,713	307,937	17,063	2,138
Dale	389	100,403	4,597	495
Lawrence	812	362,201	4,600	2,631
Loudon	2,693	363,553	21,447	1,234
Main	870	223,974	2,100	3,101
New Harmony	1,380	155,355	14,645	980
Salem	2,783	355,773	14,227	1,228
KANSAS				
Bemis-Shutts	1,933	218,408	16,592	925
Chase-Silica	1,185	250,429	9,571	1,033
Eldorado	1,085	279,932	10,068	760
Hall-Gurney	1,821	127,244	12,756	1,175
Kraft-Prusa	866	117,824	7,176	590
Trapp	1,332	207,023	12,977	919
LOUISIANA, ONSHORE				
Avery Island	1,252	78,808	31,192	38
Bay DeChene	5,464	74,815	52,165	80
Bay St. Elaine	4,804	133,406	56,494	95
Bayou Sale	2,793	145,141	29,859	91
Black Bay West	7,068	91,538	58,462	145
Calliou Island	18,023	516,898	183,102	361
Cote Blanche Island	6,982	78,996	51,004	58
Delta Farms	916	110,053	9,947	41
Garden Island Bay	8,403	174,829	81,509	249
Golden Meadow	2,256	115,299	19,701	207
Grand Bay	3,934	152,533	52,467	161
Hackberry East	1,753	93,492	16,508	85
Hackberry West	2,944	117,896	22,104	158
Iowa	1,250	92,363	7,637	37
Jennings	280	111,689	3,311	84
Lafitte	5,727	212,532	45,463	244
Lake Barre	4,613	170,632	49,368	119
Lake Pelto	3,110	100,747	34,253	66
Lake Salvador	1,662	75,472	34,528	50
Lake Washington	6,488	198,674	76,326	144
Leeville	2,419	125,226	24,774	92
Paradis	4,057	103,213	26,131	75
Quarantine Bay	3,523	149,648	35,352	122
Romere Pass	2,218	80,347	24,653	37
Timbalier Bay	7,985	234,619	192,126	355
Venice	4,400	158,185	46,815	115
Vinton	2,994	122,886	17,114	177
Weeks Island	6,446	200,175	89,825	82
West Bay	6,679	176,543	63,457	198
W. Cote Blanche Bay	7,880	147,316	102,684	322
LOUISIANA, NORTH				
Caddo-Pine Island	3,348	313,014	26,986	7,370
Delhi	6,583	165,956	44,044	105
Haynesville (Ark., La.)	1,644	171,874	13,126	190
Homer	318	92,227	8,005	153
Rodessa, (La., Tex.)	351	175,474	4,526	145
LOUISIANA, OFFSHORE				
Bay Marchand Blk. 2 (Incl. onshore)	32,632	429,534	220,466	293
Eugene Island Blk. 126	4,429	89,207	35,803	53
Eugene Island Blk. 175	8,059	37,300	82,700	76
Eugene Island Blk. 276	4,687	46,769	118,231	60
Eugene Island Blk. 330	19,747	40,488	190,754	120
Grand Isle Blk. 16	13,156	211,052	138,948	92
Grand Isle Blk. 43	20,999	163,669	206,403	230
Grand Isle Blk. 47	3,972	65,069	34,931	71
Main Pass Blk. 35	2,155	79,768	20,232	77
Main Pass Blk. 41	10,396	144,519	135,481	100
Main Pass Blk. 69	7,973	191,010	68,990	132
Main Pass Blk. 306	5,573	31,942	118,058	134
Ship Shoal Blk. 204	5,732	27,140	77,860	58
Ship Shoal Blk. 207	6,223	44,419	130,581	53
Ship Shoal Blk. 208	10,559	92,506	132,494	86
South Marsh Island Blk. 73	5,020	40,848	64,152	37
South Pass Blk. 24 (Incl. onshore)	15,223	371,476	118,524	436
South Pass Blk. 27	11,568	258,926	126,074	342
South Pass Blk. 62	6,446	48,402	141,598	64
South Pass Blk. 65	10,105	46,193	143,807	62
Timbalier Bay Blk. 21	9,449	159,698	100,111	221
West Delta Blk. 30	22,586	312,462	137,538	216
West Delta Blk. 58	10,035	38,091	111,909	81
West Delta Blk. 73	7,654	128,219	146,781	96
MISSISSIPPI				
Baxterville	6,853	167,013	67,987	198
Heidelberg	5,039	115,229	34,771	263
Tinsley	2,543	196,017	23,983	184
MONTANA				
Bell Creek	9,345	68,819	47,126	228
Cut Bank	3,189	138,439	58,718	839
Pine	2,904	78,601	21,416	112
NEW MEXICO				
Caprock and East	484	92,810	7,190	614
Denton	1,561	124,675	15,325	188
Empire Abo	12,267	111,171	88,829	251
Eunice	4,079	126,215	31,776	806
Hobbs	4,722	221,451	33,232	412
Maljamar	5,854	104,105	60,895	819
Monument	387	210,412	29,588	114
Vacuum	13,152	274,986	125,014	972
NORTH DAKOTA				
Beaver Lodge	3,117	78,510	21,506	138
Tioga	953	56,253	29,480	215
OKLAHOMA				
Allen	2,540	126,921	13,079	1,500
Avant	360	106,602	2,398	645

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State Field	1974 prod.	1,000 bbl Cum. prod.	Est. reserves	Est. No. wells
Bowlegs	1,665	158,492	6,508	175
Burbank	3,685	504,039	36,961	1,070
Cement	1,280	140,236	14,764	1,465
Cushing	2,965	463,182	21,818	1,700
Earlsboro	620	216,424	3,576	200
Edmond West	625	155,147	4,853	450
Eola-Robberson	3,720	107,977	32,023	485
Fitts	2,565	150,873	12,127	635
Glenn Pool	1,980	309,421	10,579	1,035
Golden Trend	8,135	402,011	97,989	1,200
Healdton	7,575	294,240	25,760	1,460
Hewitt	6,595	218,986	31,014	1,180
Little River	330	159,901	5,099	165
Oklahoma City	2,000	733,896	16,104	265
Postle	6,780	70,560	60,102	285
Seminole Greater	1,010	199,456	10,544	255
Sho-Vel-Tum	34,250	1,002,456	247,544	8,040
Sooner Trend	9,810	199,414	50,586	2,975
St. Louis	1,100	216,145	8,855	610
Tonkawa	275	135,212	1,788	205
TEXAS				
District 1				
Darst Creek	1,731	141,384	18,616	864
Luling-Branyon	1,345	147,162	12,838	1,403
District 2				
Greta All	4,476	116,951	43,049	191
Lake Pasture	4,439	65,537	44,112	212
Refugio All	314	95,160	4,840	67
Tom O'Connor	25,667	496,410	203,590	830
West Ranch	14,560	76,469	298,531	624
District 3				
Anahuac	8,949	248,759	106,241	234
Barbers Hill	497	124,529	10,471	100
Conroe	21,737	540,659	134,341	588
Dickinson-Gilliock	1,839	107,953	42	70
Goose Creek & East	760	130,749	9,251	221
Hastings E&W	27,912	502,991	172,009	439
High Island all	1,204	130,859	19,141	98
Hull-Merchant	1,521	193,909	11,091	385
Humble all	1,473	161,839	28,161	413
Magnet Withers all	3,025	80,931	44,069	286
Old Ocean	577	121,307	8,693	37
Oyster Bayou	5,520	94,837	51,667	35
Raccoon Bend	2,002	91,721	33,279	135
Sour Lake	925	117,386	7,614	334
Spindletop	171	153,741	3,259	72
Thompson all	16,319	370,071	129,929	305
Tomball	2,932	103,647	32,217	216
Webster	24,762	412,958	162,042	148
West Columbia	1,018	157,514	12,486	193
District 4				
Aqua Dulce-Stratton	2,122	138,000	32,000	393
Borregas all	2,072	108,293	26,707	502
Kelsey all	2,125	107,518	42,482	344
Plymouth	802	116,718	8,282	103
Seeligson all	2,453	263,203	61,797	433
Tijerina-Canales-Blucher	3,867	100,528	64,472	182
White Point East	909	99,681	10,319	154
District 5				
Mexia	129	107,353	2,647	97
Powell	92	130,063	937	37
Van and Van Shallow	16,264	419,384	130,616	427
District 6				
East Texas	72,312	4,241,715	1,758,285	13,360
Fairway	13,741	123,703	76,234	97
Hawkins	39,630	535,697	289,303	464
Neches	4,819	60,132	39,868	166
Quitman all	3,360	80,205	29,469	246
Talco	3,773	237,534	32,466	608
District 7-B				
Eastland County	241	120,482	12,410	294
Stephens County	1,877	169,155	18,002	558
District 7-C				
Big Lake	500	124,664	10,336	101
McCamey	794	124,089	5,911	884
Pegasus	2,568	113,008	26,992	181
District 8				
Andector	6,538	128,037	56,963	93
Block 31	6,267	143,861	46,139	120
Cowden North	14,954	276,820	48,180	1,042
Cowden South, Foster Johnson	16,714	299,613	100,387	1,310
Dollarhide	5,843	150,205	59,795	147
Dune	7,448	126,476	73,524	899
Emma & Triple N	1,993	96,694	18,306	259
Fullerton all	6,756	238,417	61,583	579
Goldsmith all	17,431	578,658	96,342	2,761
Hendrick	654	252,215	2,785	196
Howard Glasscock	6,902	310,153	64,847	1,892
Tatan East	4,197	86,412	38,588	873
Jordan	3,426	102,424	27,576	336
Kermit	934	112,374	17,626	469
Keystone	5,101	272,902	47,098	792
McElroy	11,820	309,518	50,482	1,970
Means all	6,644	146,249	63,751	376
Midland Farms all	6,396	176,039	48,961	337
Penwell	1,485	84,967	15,033	472
Sand Hills	5,092	189,105	55,895	1,069
Shafter Lake	2,325	72,033	27,967	436
TLX all	3,656	236,342	28,658	730
Waddell	2,788	81,605	28,395	425
Ward South	546	96,643	3,357	472
Ward Estes North	6,170	310,174	64,826	1,966
Yates	18,192	605,446	994,556	584
District 8-A				
Anton	7,443	78,354	31,646	177
Anton Irish	4,800	73,727	41,112	146
Cogdell Area	10,237	187,918	132,082	386
Diamond M	6,864	197,028	77,972	461
Kelly-Snyder	76,433	616,472	491,640	680
Levelland	12,391	232,508	92,492	1,617
Prentice	5,932	93,846	46,154	308
Russell all	2,697	112,041	22,959	224
Salt Creek	13,093	126,663	103,337	119
Seminole all	20,102	219,347	95,653	375
Slaughter	47,033	595,465	194,535	2,526
Spraberry Trend	18,190	379,633	130,367	3,669
Wasson all	86,784	703,095	629,453	2,117
Welch	6,160	88,531	61,469	391
District 9				
Archer County	2,640	238,970	20,411	4,119
Cooke County	2,106	94,713	18,642	1,981
KMA	2,051	167,376	17,624	399
Walnut Bend	4,711	101,145	38,855	278
Wichita County	4,787	504,852	41,675	6,875
Wilbarger County	1,976	159,717	21,112	1,782
Young County	1,563	142,237	19,666	2,483
District 10				
Panhandle	12,347	1,283,585	131,415	10,268
UTAH				
Greater Altamont	21,898	46,197	228,435	223
Greater Aneth	7,927	259,554	55,558	403
Greater Red Wash	3,364	90,433	46,541	215
WYOMING				
Elk Basin (Wyo.-Mont.)	8,887	448,442	69,759	255
Garland	3,441	112,260	25,863	207
Grass Creek	2,764	140,295	24,605	248
Hamilton Dome	4,454	218,253	35,527	246
Hilight	7,358	48,299	85,552	165
Lance Creek	348	104,632	2,359	44
Lost Soldier	3,425	141,618	23,659	62
Oregon Basin	11,354	240,315	79,651	321
Salt Creek	13,284	542,518	82,113	1,329

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Source of U.S. Imports

(Average in 1,000 b/d)

Country of origin	Jan.	Feb.	Mar.	Apr.	May	June	6-month average	Percent of total
Crude oil								
Algeria	....	....	....	77	264	303	108	3.2
Bahamas	74	17	61	87	94	150	81	2.4
Canada	1,044	907	900	947	1,015	841	943	28.3
Ecuador	95	63	90	122	82	89	90	2.7
Indonesia	147	237	216	313	188	237	222	6.6
Iran	265	288	434	479	609	434	420	12.6
Netherlands Antilles	43	30	78	72	122	420	128	3.8
Nigeria	321	367	579	431	716	677	517	15.5
Saudi Arabia	....	....	....	122	304	377	135	4.1
Trinidad	61	57	56	113	146	147	97	2.9
Tunisia	1	....	....	27	83	37	25	0.8
Venezuela	473	372	398	407	357	399	401	12.0
Virgin Islands	19	25	18	66	63	42	39	1.2
Others	146	92	78	140	267	47	129	3.9
Total	**2,689**	**2,455**	**2,908**	**3,403**	**4,310**	**4,200**	**3,335**	**100.0**
Refined oil								
Algeria	....	....	....	63	17	10	15	0.6
Bahamas	143	167	214	165	130	122	157	6.5
Canada	228	229	209	191	205	120	197	8.2
Italy	109	146	136	90	105	63	108	4.5
Netherlands Antilles	608	638	442	386	404	124	432	17.9
Nigeria	21	31	29	10	3	37	22	1.0
Trinidad	117	119	201	146	200	171	160	6.6
Venezuela	768	793	781	625	480	436	646	26.3
Virgin Islands	443	359	275	243	276	354	325	13.5
Others	319	307	273	431	255	510	348	14.4
Total	**2,756**	**2,789**	**2,560**	**2,350**	**2,075**	**1,947**	**2,410**	**100.0**
Total petroleum								
Algeria	....	....	....	140	281	313	123	2.1
Bahamas	217	184	275	252	224	272	238	4.1
Canada	1,272	1,136	1,109	1,138	1,220	961	1,140	19.8
Ecuador	95	63	90	122	82	89	90	1.6
Indonesia	158	292	224	321	196	243	238	4.1
Iran	278	296	452	507	616	468	437	7.6
Italy	121	146	143	90	105	81	114	2.0
Netherlands Antilles	651	668	520	458	526	544	560	9.8
Nigeria	342	398	608	441	719	714	539	9.4
Saudi Arabia	....	....	....	139	312	427	147	2.6
Trinidad	178	176	257	259	346	318	257	4.5
Tunisia	1	....	....	27	83	37	25	0.4
Venezuela	1,241	1,165	1,179	1,032	837	835	1,047	18.2
Virgin Islands	642	384	293	309	339	396	364	6.3
Others	429	336	318	518	499	449	426	7.5
Total	**5,445**	**5,244**	**5,468**	**5,753**	**6,385**	**6,147**	**5,745**	**100.0**

Source: Federal Energy Office estimates.

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AGD 529907

Revised drilling forecast for 1974—U.S. and Canada

State	First half estimate—5 mos. actual				1974 12 mos. forecast				
	Total comp.	Wildcats	Field wells	Total ft (1,000 ft)	Total wells	Wildcats	Field wells	Total ft (1,000 ft)	All wells change from '73
Alabama	69	41	28	645	140	36	54	1,278	+ 38
Alaska	7	2	5	57	38	15	23	361	+ 3
Arizona	10	5	5	69	15	10	5	104	+ 7
Arkansas	145	38	107	795	329	169	160	1,939	+ 37
California	704	94	610	2,479	1,652	230	1,422	5,342	327
Onshore	668	86	582	2,400	1,561	214	1,347	5,051	+ 299
Offshore	36	8	28	79	91	16	75	291	+ 28
Colorado	455	163	292	1,821	925	427	498	3,702	+ 85
Florida (9 offshore last [illegible])	38	21	17	462	87	62	25	1,058	+ 20
Georgia	5	5	0	30	6	6	0	36	+ 3
Idaho	9	9	0	72	11	11	0	88	+ 5
Illinois	290	66	224	697	621	197	424	1,436	+ 10
Indiana	145	66	79	222	285	130	155	437	+ 26
Kansas	1,329	379	950	4,035	2,789	965	1,824	8,467	+ 675
Kentucky	328	94	234	553	702	171	531	1,184	+ 41
Louisiana	1,359	255	1,104	10,184	3,225	865	2,360	25,559	+ 285
North	513	54	459	1,730	1,014	142	872	3,419	+ 179
South	449	129	320	4,686	1,222	412	810	12,753	+ 31
Offshore	397	72	325	3,768	989	311	678	9,387	+ 75
Maryland	2	2	0	16	2	2	0	16	+ 1
Michigan	127	81	46	627	317	181	136	1,566	+ 36
Mississippi	223	157	66	1,791	500	347	153	4,016	+ 139
Missouri	11	11	0	10	12	12	0	11	+ 3
Montana	260	154	106	847	789	437	352	2,571	+ 142
Nebraska	94	61	33	498	210	140	70	1,112	+ 47
Nevada	1	1	0	7	2	2	0	14	+ 2
New Mexico	517	111	406	3,099	1,139	286	853	6,823	41
East	363	85	278	2,213	789	211	578	4,809	+ 200
West	154	26	128	886	350	75	275	2,014	− 159
New York	138	7	131	212	162	18	144	249	+ 1
North Carolina	10	10	0	38	11	11	0	42	+ 11
North Dakota	52	30	22	319	126	67	59	868	+ 2
Ohio	881	89	792	3,492	1,782	180	1,602	7,064	+ 278
Oklahoma	1,473	189	1,284	8,484	3,121	420	2,701	17,977	+ 718
Oregon	0	0	0	0	0	0	0	0	− 3
Pennsylvania	531	32	499	1,023	1,079	78	1,001	2,458	− 63
South Dakota	3	2	1	24	8	6	2	63	− 14
Tennessee	47	28	19	77	101	59	42	165	+ 1
Texas	4,976	1,563	3,413	26,024	10,323	3,353	6,970	54,570	+1,829
District 1	347	117	230	1,394	719	240	479	2,888	+ 198
District 2	341	182	159	1,917	728	400	328	4,093	+ 248
District 3	419	217	202	2,779	980	520	460	6,500	+ 146
District 4	460	189	271	2,987	961	419	542	6,240	+ 203
District 5	72	38	34	403	152	82	70	851	+ 67
District 6	140	53	87	919	331	120	211	2,172	+ 16
District 7-B	756	245	511	2,539	1,426	508	918	4,789	+ 521
District 7-C	429	95	334	2,475	844	184	660	4,710	− 25
District 8	693	66	627	4,401	1,460	162	1,298	9,579	+ 82
District 8-A	438	78	360	2,113	896	166	730	4,322	− 79
District 9	505	145	360	1,521	1,048	264	784	3,085	+ 140
District 10	261	36	225	1,586	536	75	461	3,258	+ 142
Offshore	115	102	13	990	242	213	29	2,083	+ 170
Utah	95	26	69	902	225	89	136	2,023	+ 29
Virginia	30	1	29	138	36	7	29	166	+ 27
West Virginia	308	50	258	1,007	787	109	678	2,451	+ 86
Wyoming	404	211	193	2,725	1,059	499	560	6,617	+ 139
Total U.S.	**15,076**	**4,054**	**11,022**	**73,481**	**32,616**	**9,647**	**22,969**	**161,833**	**5,014**
Canada	1,708	775	933	6,902	3,364	1,368	1,996	11,675	−1,541
Western	1,616	768	848	6,717	3,253	1,358	1,895	11,393	−1,486
Alberta	1,390	638	752	5,602	2,890	1,184	1,706	9,728	− 891
B.C.	127	57	70	596	166	72	94	873	+ 1
Manitoba	3	3	0	5	11	7	4	18	− 5
Northern	48	47	1	373	60	59	1	440	− 41
Saskatchewan	48	23	25	141	126	36	90	334	− 550
Eastern Offshore	7	7	0	75	10	10	0	110	− 20
Ontario	85		85	110	101		101	172	− 30
Eastern	0	0	0	0	0	0	0	0	− 5

AGO 529908

How gasoline prices fared in 52 cities

(First half average of major-brand regular in ¢/gal)

	Price ex. tax		Pump price	
	1974	1973	1974	1973
Albany	41.1	27.9	53.1	39.9
Albuquerque	39.4	26.9	50.4	37.9
Amarillo	34.2	24.9	43.2	33.9
Atlanta	37.9	26.1	49.4	37.6
Baltimore	38.7	26.1	51.7	39.1
Birmingham	38.6	25.9	50.6	37.9
Boston*	37.9	26.1	49.4	37.6
Buffalo	41.1	27.4	53.1	39.4
Charlotte	38.6	25.9	51.6	38.9
Cheyenne	33.3	27.1	44.3	39.1
Chicago*	40.7	27.4	53.7	40.4
Cleveland	39.6	26.9	50.6	37.9
Corpus Christi	34.7	24.2	43.7	33.2
Dallas	34.7	24.2	43.7	33.2
Denver	41.1	27.4	52.1	38.4
Des Moines	37.9	26.9	48.9	37.9
Detroit	38.9	25.4	51.9	38.4
Fort Worth	34.7	24.2	43.7	33.2
Houston	36.0	24.2	45.0	33.2
Indianapolis	40.8	26.2	52.8	38.2
Jacksonville	38.6	25.7	50.6	37.7
Kansas City	40.5	26.6	51.5	37.6
Little Rock	36.4	24.4	47.9	35.9
Louisville	41.8	27.4	52.8	38.4
Los Angeles	38.1	25.5	49.1	36.5
Memphis	37.9	25.7	48.9	36.7
Miami	37.4	25.4	49.4	37.4
Milwaukee	40.6	27.0	51.6	38.0
Minn.-St. Paul	38.9	27.9	49.9	38.9
Newark	39.4	27.9	50.4	38.9
New Orleans	37.6	24.4	49.6	36.4
New York*	42.6	28.9	55.6	41.9
Norfolk	35.4	23.7	48.4	36.7
Oklahoma City	39.3	26.3	49.9	36.9
Omaha	40.3	26.9	52.8	39.4
Philadelphia	38.6	25.9	50.6	37.9
Phoenix	38.3	27.0	49.3	38.0
Pittsburgh	38.6	25.9	50.6	37.9
Portland, Ore.	39.0	26.2	50.0	37.2
Salt Lake City	39.1	25.7	50.1	36.7
San Antonio	34.2	24.2	43.2	33.2
San Diego	37.8	26.3	48.8	37.3
San Francisco	38.8	26.2	49.8	37.2
Seattle	37.3	25.3	50.3	38.3
Spokane	37.8	24.9	50.8	37.9
Springfield, Ill.*	38.9	26.9	51.9	39.9
St. Louis	40.8	27.7	51.8	38.7
Tampa	37.4	25.4	49.4	37.4
Texarkana	34.2	23.8	43.2	32.8
Tulsa	37.3	25.8	47.9	36.4
Wichita	39.6	26.2	50.6	37.2
Wichita Falls	34.2	24.0	43.2	33.0
†Avg. for 6 months	38.30	26.02	49.58	37.27

*Pump price includes local tax ranging from 0.5 to 2.0¢/gal. †Jan. through June, not column totals. OGJ

Foreign posted crude prices

(Prices effective July 1, 1974)

	$/bbl
Algeria:	
All 44.00°-44.09°	16.216
Libya:	
All 40.00°-40.09°	15.768
Nigeria:	
All 34.00°-34.09°,	
Bonny	14.691
Forcados	14.691
All 27.00°-27.09°,	
Bonny	14.481
Middle East, Persian Gulf:	
Arabian, 34.00°-34.09°,	
Ras Tanura	11.651
Arabian, 31.00°-31.09°,	
Ras Tanura	11.561
Iranian, 34.00°-34.09°,	
Kharg Island	11.875
Iranian, 31.00°-31.09°,	
Kharg Island	11.635
Kuwait, 31.00°-31.09°,	
Mina al Ahmadi	11.545
Oman, 34.00°-34.09°,	
Mina al Fahal	12.298
Qatar, 40.00°-40.09°,	
Um Said	12.414
Qatar, 36.00°-36.09°,	
Halul Island	12.013
Iraq, 35.00°-35.06°,	
Khor al Amaya	11.671
Abu Dhabi, 37.00°-37.09°,	
Das Island	12.086
Abu Dhabi, 39.00°-39.09°,	
Jebel Dhanna	12.636
Abu Dhabi, 40.00°-40.09°,	
Zakum	12.565
Middle East, E. Mediterranean:	
Arabian, 34.00°-34.09°,	
Sidon	13.647
Iraq, 36.00°-36.09°,	
Tripoli & Banias	No posted price
Far East:	
Brunei, Seria Light 36°,	
Lutong, Sarawak	No posted price
Malaysia (Sarawak)	
Lutong, Sarawak (various)	12.60
Indonesia (all crude)	12.60
Canada: (Canadian dollars)	
Leduc-Woodbend (Alberta)	6.70
Redwater (Alberta)	6.58
Weyburn (Sask.)	6.17
Boundary Lake (B.C.)	6.12
South America:	
Bolivia (various)	16.00
Ecuador, 28.00°-28.09°,	
Esmeraldas	13.70
Venezuela, includes $1.9086/bbl freight premium, excludes low-sulfur premiums ranging up to $1.05/bbl, posted price	
15°	13.0458
20°	13.3457
25°	14.1792
30°	14.4928
35°	14.8064
40°	15.1201

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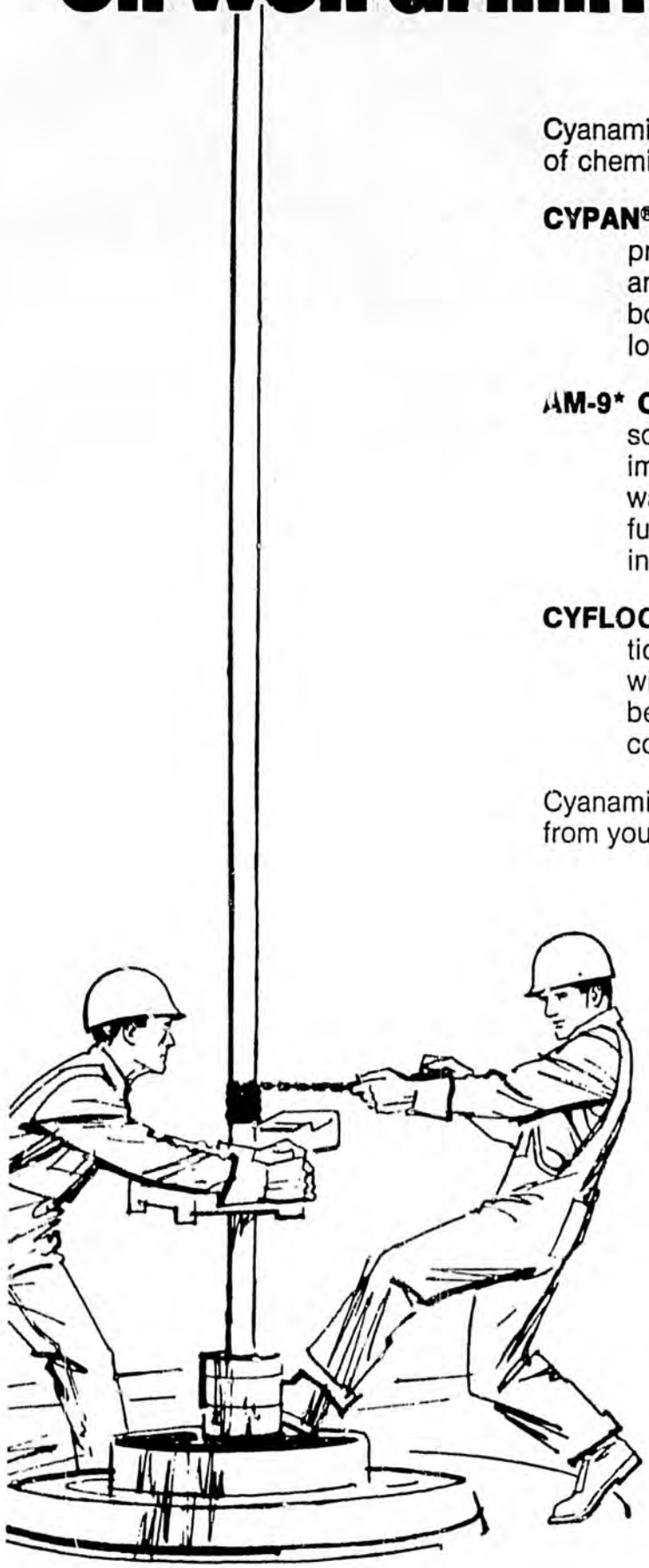

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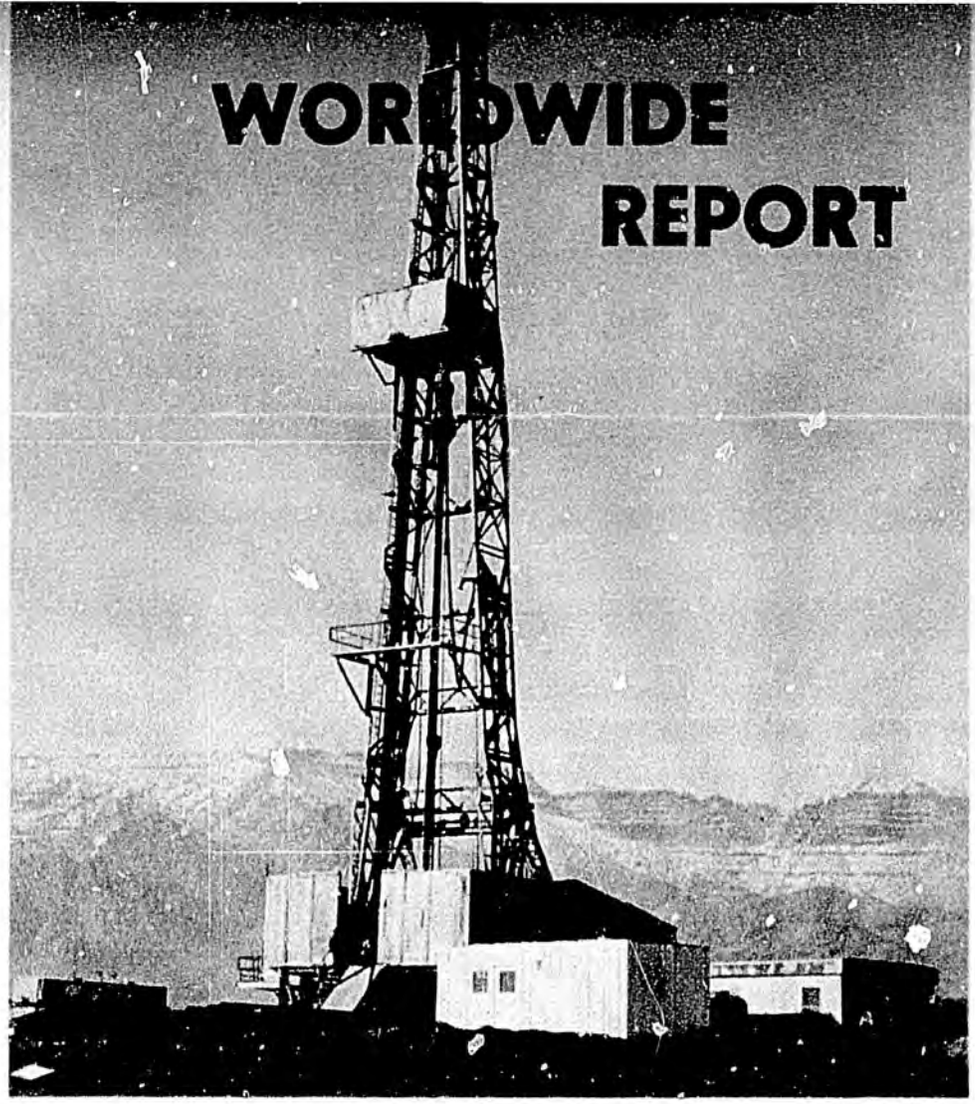

NATIONAL Iranian Oil Co. is directing a major drilling program at proving up gas reserves for a gas-injection program that will peak at 13 billion cfd. This rig is working in mountainous Central Iran.

Changes restructuring worldwide oil

FRANK J. GARDNER
International Editor

1974 WILL be remembered as the year of earthquake change in the structure and operational procedures of the oil industry.

It marked the transfer of power from the international oil companies to the producing-country governments. The year saw the economies of many consuming countries threatened as their oil bills mounted due to the politically controlled crude prices. And it saw the Organization of Petroleum Exporting Countries (OPEC) ascend to new heights in world power as oil prices continued to increase.

The effects of the unilateral OPEC price boosts, which continued throughout the year without letup, are just beginning to be felt. Their full impact will descend on the world economy in 1975, when international payment balances are totted up.

Through all the price pressure, Saudi Oil Minister Yamani emerged as the spokesman for those in the producing nations who were promoting a decrease in crude prices.

At the turn of the year, the Arab members of OPEC began to relax the embargos and production cutbacks they had imposed after the war of October, 1973. But the Dec. 23 announcement of yet-higher crude prices—128% higher, to be exact—stunned industrial (and nonindustrial) countries.

There followed many weeks of government-to-government oil-barter deals. It was every country for itself as the major powers dispatched their ministers to the Middle East to court the Arabs' favor.

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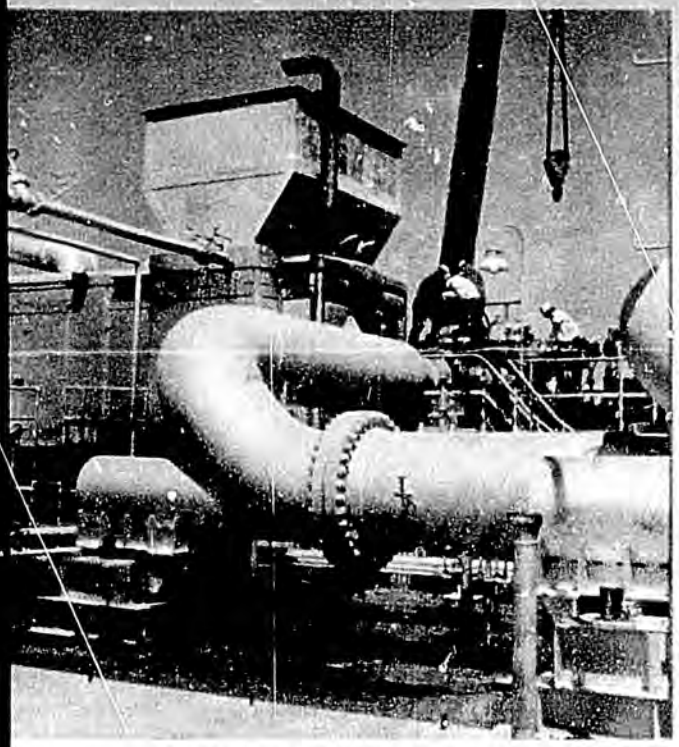

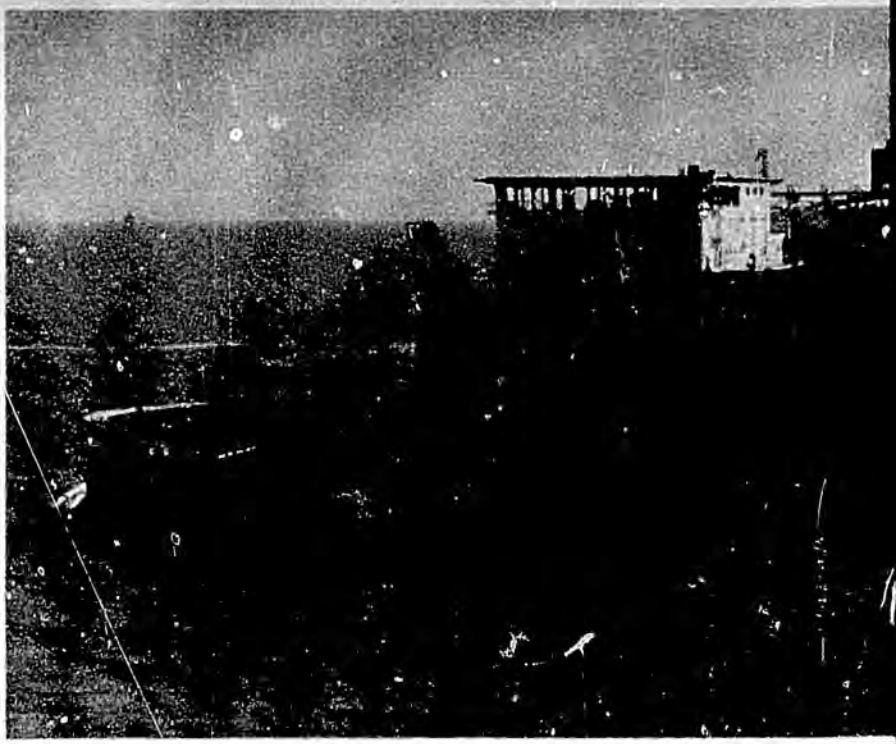

WATER injection, via this pump station (left) and others like it, helps maintain the amazing productive muscle of Saudi Arabia's giant Ghawar oil field, the world's biggest. Ghawar produced 4.6 million b/d during the first 6 months from 375 wells, hitting 9.96 billion bbl cumulative—

Britain, France, West Germany, Italy, Spain, and the developing countries sent their diplomats to secure their future supplies of oil. In return, they were peddling rice, steel, cement, rubber, plastics, fibers, arms, entire refineries and petrochemical complexes.

Had they not been still locked out by the Arab embargo, the U.S. and Holland might also have joined the parade to the Middle East.

Some impressive deals were sealed, but few have come to full fruition. France made a $2-billion arms-for-oil pact with the Saudis, and a $5-billion 10-year contract with Iran, the biggest and most important agreement ever reached between an oil-producer and a consumer country. It involved an exchange for crude of nuclear power plants (first in the Middle East), pipelines, refineries, gas-liquefaction plants, methane tankers, and a petrochemical complex.

The hand of the French then turned to Libya and signed a similar deal, said to be about equal to that with Iran.

Britain made a $275-million bargain with Iran, trading manufactured goods for 37 million bbl of Iranian crude. Italy jumped into the play and traded a broad spectrum of industrial goods and tanker-construction promises for 220 million bbl of Libyan oil. Japan promised a $1-billion loan to the Iraqis for industrial projects in return for 650 million bbl of crude over the next 10 years.

Ironically, neither trading side was certain it could fulfill the terms of the agreements. The materials offered the producing nations were often in short supply at home in the industrial countries, while the producers were far from certain how much crude they'd be lifting under the participa-

Refining capacity gains in non-Communist world

REFINING capacity in non-Communist countries outside the U.S. and Canada will be just over 40 million b/d on Jan. 1, 1975, according to the Journal's detailed worldwide survey.

The 40.3-million-bbl total compares with 38.3 million b/d on Jan. 1, 1974, for a 5.2% growth. Projected crude capacities for the next two years are 41.5 million b/d on Jan. 1, 1976, and 42.9 million b/d on Jan. 1, 1977.

Biggest increases in crude capacity the past year came in western Europe, where a 650,000-b/d gain was chalked up. The Asia-Pacific area increased crude capacity by just over 460,000 b/d, while the increase in the Middle East was just under 400,000 b/d.

Catalytic cracking capacity in non-Communist countries outside the U.S. and Canada will stand at 2.36 million b/d on Jan. 1, 1975. This is a slight increase over the 2.33 million b/d figure on Jan. 1, 1974. The next two years should see small additions, to 2.41 and 2.48 million b/d on Jan. 1, 1976 and Jan. 1, 1977.

Catalytic-reforming capacity for this part of the world stood at 3.57 million b/d at the beginning of 1974, and will be 3.77 million b/d on Jan. 1, 1975. Reforming capacity should increase to 3.99 and 4.17 million b/d at the beginnings of 1976 and 1977.

Hydroprocessing has shown good growth in these countries, and increased growth is anticipated. Capacity this coming Jan. 1 will be 11.3 million b/d, up from the 10.6-million-b/d figure of a year ago. The first of 1976 and 1977 should see combined hydroprocessing capacity grow to 11.6 and 11.9 million b/d.

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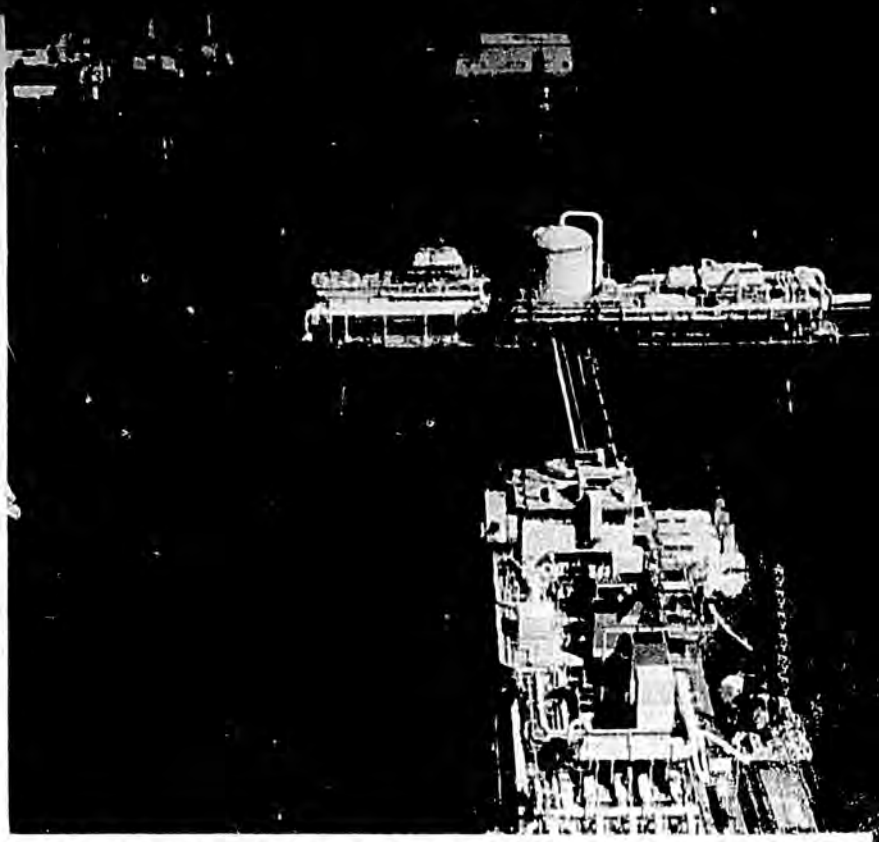

also a world record. At center, ARCO-Iiapco group's big 1-million-bbl crude-storage barge, ARCO Ardjuna, nears completion of its second year of operation off Java. At right new waterflood plant (upper left in photo) will boost oil flow from Fateh field off Dubai.

tion pacts that were then in force.

To remedy this, the Middle East states launched a campaign to increase their participation percentages. One by one throughout the year, they succeeded in boosting the old 25% share to 35, 55, and finally 60% which is now standard in all the gulf states. Today, this too is fading, as the 100% takeover is in fashion, and there's little doubt that in 1975, following the Saudis' lead, nearly all OPEC members will take over full control.

Auctions fail. Parallel with the participation campaigns, several OPEC states decided to offer their much-wanted crude at public auctions. Such public sales at the height of the late-1973 supply crisis had fetched as much as $20/bbl in Libya, Iran, and Nigeria.

But by February, crude prices had peaked, frozen, and started a slow decline. Some of the buyers at the 1973 auctions found themselves stuck with $17-20 oil that now was selling far lower. Some canceled the sales outright, while others solved the problem by simply not picking up the loot.

As a result of new buyer caution, the Arab auctions of spring, 1974, failed miserably. All had demanded at least the posted price, but bids at that level were few and far between. Kuwait got a top $9/bbl bid. Abu Dhabi drew few bidders and postponed its auction, as did Qatar.

At last, in mid-March, the embargo on the U.S. was lifted, but Denmark and Holland remained on the Arab black list. Crude markets began a slow return to normal, if total confusion can be called normal. The embargo on Holland was to remain until July.

At the same time, OPEC decided the time had come to freeze prices. Saudi Arabia, Abu Dhabi, and Qatar dropped 40¢ off the Arab marker crude in early November and jumped

Capacity (1,000 b/cd) January 1, 1975

Crude oil capacities	1-1-74	1-1-75	Projected 1-1-76	Projected 1-1-77
Asia-Pacific	8,933	9,397	9,600	9,900
Africa	1,092	1,245	1,500	1,800
Middle East	2,882	3,281	3,600	4,000
Latin America	7,266	7,635	8,000	8,400
Western Europe	18,110	18,758	18,800	18,800
Sub total	38,283	40,276	41,500	42,900
U.S. and Canada	15,171	17,323	18,000	18,500
Total, non-Communist	53,454	57,599	59,500	61,400

Capacity (1,000 b/cd) January 1, 1975

Catalytic cracking	1-1-74	1-1-75	Projected 1-1-76	Projected 1-1-77
Asia-Pacific	515	539	560	590
Africa	60	61	63	65
Middle East	108	119	130	150
Latin America	636	649	660	675
Western Europe	1,010	990	1,000	1,000
Sub total	2,329	2,358	2,413	2,480
U.S. and Canada	4,940	5,109	5,200	5,300
Total, non-Communist	7,269	7,467	7,613	7,780

Capacity (1,000 b/cd) January 1, 1975

Catalytic reforming	1-1-74	1-1-75	Projected 1-1-76	Projected 1-1-77
Asia-Pacific	850	909	1,000	1,100
Africa	139	156	180	200
Middle East	168	195	210	240
Latin America	329	283	300	330
Western Europe	2,088	2,226	2,300	2,300
Sub total	3,574	3,769	3,990	4,170
U.S. and Canada	3,568	3,809	4,000	4,200
Total, non-Communist	7,142	7,578	7,990	8,370

Capacity (1,000 b/cd) January 1, 1975

Hydroprocessing	1-1-74	1-1-75	Projected 1-1-76	Projected 1-1-77
Asia-Pacific	3,309	3,490	3,600	3,800
Africa	259	307	350	390
Middle East	552	986	620	650
Latin America	1,377	1,415	1,500	1,600
Western Europe	5,067	5,470	5,500	5,500
Sub total	10,563	11,268	11,570	11,940
U.S. and Canada	6,897	7,554	8,000	8,500
Total, non-Communist	17,460	18,822	19,570	22,040

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Worldwide oil at a glance

ASIA-PACIFIC									
Afghanistan	85,000*	3,530	15	0.2*					
Australia	2,300,000	38,000	373	370.6	0.7	11	722,170	137,550	159,850
Bangladesh		10,000				1	30,450		1,620
Brunei-Malaysia	2,500,000	22,000	519	327.0	0.6	3	123,200		5,700
Burma	65,000	150	595	23.0		2	28,300	2,000	
China Republic (Taiwan)	15,000	1,000	60	3.3		1	244,100	9,040	20,800
Guam						1	29,500		
India	834,000	2,500	1,500	149.0	0.7	10	555,100	32,100	26,658
Indonesia	15,000,000	15,000	2,710	1,457.0	10.0	8	427,700	19,500	23,000
Japan	30,000	1,700	1,044	12.3		45	5,133,840	307,030	527,550
Khmer Republic						1	12,540		1,800
Korea, South						3	425,000		27,700
New Zealand	75,000*‡	5,000‡	4	3.8	− 5.0	1	54,000		18,000
Okinawa (R.I.)						3	212,000		12,000
Pakistan	28,700	16,000	16	7.1	−16.5	3	79,210		2,500
Philippines						4	274,000	24,600	34,960
Singapore						5	845,650		20,000
Sri Lanka						1	34,400		3,400
Thailand	115,000	1,000	25	0.2		4	166,200	7,000	23,900
Vietnam, South†									
Total Asia-Pacific	**21,047,700**	**115,880**	**6,861**	**2,353.5**	**4.0**	**107**	**9,397,360**	**530,820**	**909,438**

*Condensate. †Revised. ‡Oil or gas discovered, but not developed.

EUROPE									
Austria	182,000	953	1,271	47.0	− 6.0	1	220,000	16,300	23,000
Belgium						8	866,700	64,800	95,100
Cyprus						1	15,000		2,740
Denmark	247,000	500	6	4.0		3	220,000		36,700
Finland						2	196,000	32,000	25,800
France	142,000*	5,800	295	20.2	−19.2	24	3,341,600	189,900	439,930
Germany, West	550,000	11,473	2,699	125.4	− 6.9	33	2,986,723	126,550	363,520
Greece†						4	411,000		22,000
Ireland†						1	56,000		13,200
Italy-Sicily	750,000	12,000	111	18.3	− 9.4	34	3,952,660	268,500	387,370
Netherlands	250,000	94,800	347	27.4	− 2.1	7	1,840,700	75,000	164,800
Norway	7,300,000	24,700	6	30.0	200.0	3	168,000		18,500
Poland**									
Portugal						2	110,000	12,000	15,600
Romania**									
Spain	293,000	600	24	38.0	90.0	9	1,165,000		136,700
Sweden						5	248,000		47,300
Switzerland						2	138,000		23,600
United Kingdom	15,700,000	50,000	57	1.9	22.6	20	2,782,980	205,300	410,010
Yugoslavia	400,000	2,000	1,100	69.0	− 2.8				
Total Europe	**25,814,000**	**202,826**	**5,916**	**381.2**	**3.0**	**159**	**18,718,363**	**990,350**	**2,225,870**

*Includes 76 million bbl condensate. †Oil or gas discovered, but not developed. **Not included in non-Communist total.

MIDDLE EAST									
Abu Dhabi	30,000,000	200,000	160	1,750.0	34.5				
Bahrain	336,000	6,600	211	68.0		1	250,000	34,200	15,200
Dubai	2,420,000	1,500	45	232.0	28.9				
Iran	66,000,000	330,000	369	6,128.0	0.6	5	789,000	36,000	60,665
Iraq	35,000,000	27,500	156	1,829.3	2.0	7	168,500		5,000
Israel	2,200	20	25	100.8*	−11.8	2	201,000		24,500
Jordan						1	21,223	4,403	
Kuwait	72,800,000†	32,000	692	2,600.0	− 7.4	5	646,000		19,600
Lebanon						2	53,500	7,250	7,300
Neutral Zone	17,300,000	7,500	449	485.4	− 4.3				
Oman	6,000,000	2,100	61	257.0	− 0.7				
Qatar	6,000,000	8,000	81	546.0	5.4	1	6,800		1,300
Saudi Arabia	164,500,000	55,000	670	8,400.0	11.7	3	610,300	8,210	20,490
Sharjah	1,500,000	1,500	3	50.0	100.0				
South Yemen (Aden)						1	169,100		9,000
Syria	1,500,000†	700	123	119.0	7.2	1	49,690		2,620
Turkey	500,000	250	313	65.3	0.5	4	315,500	28,600	29,660
Total Middle East	**403,858,200**	**672,670**	**3,358**	**22,670.8**	**7.0**	**33**	**3,280,613**	**118,663**	**195,335**

*Includes captured Sinai fields. †Revised.

AFRICA									
Algeria									
Angola-Cabinda									
Congo Republic									
Dahomey*									
Egypt									
Ethiopia*									
Gabon									
Ghana*									
Ivory Coast									
Kenya									
Liberia									
Libya									
Malagasay									
Morocco									
Mozambique*									
Nigeria									
Rhodesia									
Senegal									
Sierra Leone									
Sudan									
Tanzania									
Tunisia									
Union of S. Africa*									
Zaire†									
Zambia									
Total Africa									
WESTERN HEMISPHERE									
Antigua									
Argentina									
Bahamas									
Barbados									
Bolivia									
Brazil									
Chile									
Colombia									
Costa Rica*									
Cuba									
Dominican Republic									
Ecuador									
El Salvador									
Guatemala*									
Honduras									
Jamaica									
Martinique									
Mexico									
Netherlands Antilles									
Nicaragua									
Panama									
Paraguay									
Peru									
Puerto Rico									
Trinidad & Tobago									
Uruguay									
Venezuela									
Virgin Islands									
United States									
Canada									
Total W. Hemisphere									
Total Non-Communist									
Communist World									
Total World									

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7,700,000	229,000	826	888.8	−19.2	4	115,335		30,500
1,175,000	1,400	181	161.5	6.9	2	35,680		1,800
4,874,000	1,000	52	51.2	12.0				
3,700,000	3,500	437	118.3	−42.8	1	18,000		
					1	14,430		1,890
1,750,000	7,000	137	182.0	20.1	1	17,000		2,000
					1	28,000		6,500
					1	42,940		4,420
					1	48,000		4,000
					1	11,000		2,000
26,600,000	26,500	979	1,700.0	−21.6	6	76,400		8,000
					1	15,000		2,200
450	24	22	0.9		2	58,550	3,660	7,580
					1	17,000		2,500
20,900,000	45,000	1,088	2,300.0	15.0	1	60,000		6,500
					1	(not operating—not included in total)		
					1	15,000		1,320
					1	10,000		
					1	22,000		2,000
					1	16,100		4,200
1,100,000	1,500	55	85.0	3.5	1	25,000		3,300
					5	397,100	57,400	56,700
500,000	50				1	16,150		2,700
					1	24,620		5,600
68,299,450	314,974	3,777	5,487.7	− 7.2	40	1,083,305	61,660	155,710

*Oil or gas discovered, but not developed. †To go on production in 1976 at 25,000 b/d.

					1	16,000		2,000
2,346,000	7,500	4,095	422.0		14	720,718	101,185	51,370
					1	500,000		
25,000		8	0.3	100.0	1	3,000		
250,000	11,000	281	47.5	− 5.0	5	25,500		
775,000	914	1,247	172.2	1.2	10	961,800	183,000	21,000
200,000	2,800	316	28.6	−15.9	3	123,500	26,300	10,000
900,000	4,000	2,078	169.7	−16.0	6	172,100	48,500	2,000
					1	11,000		1,500
					3	121,970	14,570	11,700
					2	45,500		7,000
2,500,000†	5,000	843	232.0	12.5	4	44,350		
					1	14,000		2,600
					2	24,800		5,500
					1	14,000		1,800
					1	32,600		3,000
					1	10,400		2,500
13,582,000	15,000	3,201	513.5	17.1	6	760,000	109,000	35,300
					2	900,000	35,000	15,000
					1	13,200		2,600
					1	100,000		7,500
					1	5,000		
2,500,000	5,000	2,422	69.7	− 1.3	5	129,600	25,960	1,760
					3	283,800	47,800	75,500
2,500,000	6,000	3,020	181.3	9.9	2	461,000	26,500	27,000
					1	43,000	4,000	3,000
15,000,000**	43,000	12,450	3,025.0	−10.0	12	1,531,715	46,589	20,600
					1	590,000		
35,299,839	250,000	504,000	8,945.0	− 2.9	247	14,216,287	4,156,720	3,022,235
9,400,000	52,500†	21,202	1,682.0	− 6.5	42	1,877,550	399,150	309,090
85,277,839	402,714	555,263	15,488.8	− 1.7	381	23,752,390	5,224,274	3,641,555

*Oil or gas discovered, but not developed. †Revised. **Does not include Orinoco heavy oil belt's estimated 700 billion bbl. ‡Does not include Arctic gas.

604,297,189	1,709,064	575,175	46,382.0	2.0	720	56,232,031	6,933,167	7,127,908
**111,400,000	846,000‡		10,390.0	7.5				
715,697,189	2,555,064		56,722.0	3.0				

**Including Russia 82.4 billion, Mainland China 25 billion, others 3 billion. ‡Including Russia 812 trillion, Mainland China 25 trillion, Hungary 5 trillion, others 6 trillion.

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royalties to 20% and taxes to 85%. Net effect was a 55¢/bbl hike in average cost/bbl to the companies. Other OPEC nations voted at the December meeting in Vienna to join the three gulf states at the higher prices.

Solutions. What hope is there that the world can free itself of its OPEC chains? There are those who contend that crude prices can only continue in the ascendancy. Others differ. There are as many opinions as there are interviewees.

But there is hope. And it's a long-term proposition. But hope there is. The obvious solution, of course, is to find crude sources outside the OPEC orbit. Ironically, much of the relief to non-Communist consuming countries will come from big communist sources.

OPEC has three big markets—western Europe, Japan, and the U.S. And each of the three has something going for it in the way of new, non-OPEC sources.

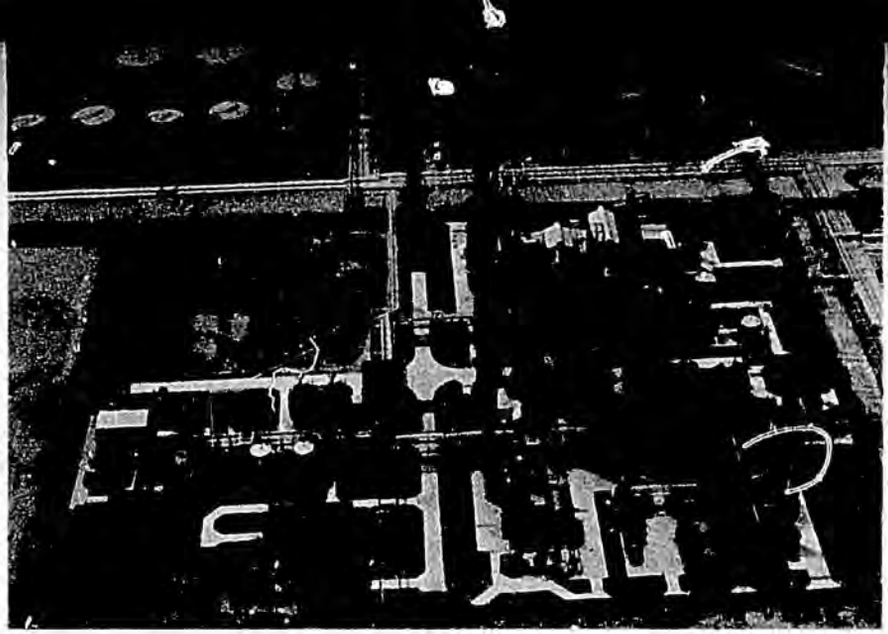
Western Europe pins much of its hopes, of course, on the North Sea, provided the government politicians will stand aside and let it develop. Conservative sources now see at least a 42-billion-bbl ultimate reserve for the sea. Less conservative ones peg it as high as 79-138 billion. Only time will tell.

But western Europe has yet another ace—Russia. Production there overtook the U.S. in latter 1974, making the Soviet Union the world's biggest producer with an average daily output of 9.4 million bbl in October, up 7% above 1973. Almost all of the gain has come from the western Siberian oil fields, where the Soviets are developing new production at a feverish pace. One field—Samotlor—produces more than half of all western Siberian crude. In mid-November, its output was 1.5-million b/d, 39% more than at the beginning of the year. This gives some idea of the pace of Russian development.

Russia is scoring natural-gas production gains that are every bit as important as her crude increases. During the first 10 months of 1974, gas output jumped 10% over the same time slot in 1973.

The Soviets have discovered that oil and gas is big business. And they're making money at it. Oil and gas sales have bailed the big country out of a deepening foreign exchange crisis and

AGD 529915



NEW 132,000-b/d refinery for Total Raf. Nederland N.V. at Vlissingen, Netherlands, helped boost western Europe crude capacity this year.

delivered a 1973 surplus of more than 260-million rubles. That's $359 million or £149 million.

Current oil reserves in the Soviet Union are estimated at 83.4-billion bbl, compared to 80 billion at the beginning of the year. Its gas reserves are set at a whopping 812-trillion cu ft, according to Soviet officials—that's 3.5 times Algeria's reserve, and 2.5 times those of Iran.

Russia must sell her oil and gas, and she eyes western Europe as a principal buyer. Already availability of new Russian gas supplies has disrupted the 1972 Eurogas agreement to supply Algerian gas to France, Belgium, West Germany, Austria, and Switzerland.

The Soviet Union, then, is western Europe's second big hope for oil and gas outside the OPEC circle.

Japan, too. OPEC's third-largest market also is vulnerable. In this instance, the two communist superpowers promise to sweep Japan completely out of the OPEC orbit in the years ahead.

Russia is building both a railway and a 620-mile big-inch pipeline from the Tyumen oil fields of western Siberia to her Pacific coast, where vast amounts of crude will be made available to Japan and other Pacific markets, including the U.S.

More importantly, Mainland China, already providing nearly 200,000 b/d to Japan, is expected to have at least 2 million b/d available for export by 1980, and, according to Japanese oil officials, the Chinese expect to be producing, and exporting most of, 8 million b/d in the mid-1980's. That would put it in a class with Saudi Arabia.

The Chinese, like the Russians, have discovered that oil and gas is big business.

U.S. doubtful. OPEC's largest marketplace, the United States, could also find relief from OPEC sources, although total relief is more doubtful.

Its greatest hopes of course, are offshore and the closed-in giant fields on Alaska's North Slope. The sparsely explored regions of Alaska's slope holds vast undiscovered reserves, and when the Alyeska pipeline is finished, these will be uncovered at a rapid rate. Plans now call for the line to bring 1.2 million b/d by late 1977.

Higher crude prices have stimulated the search for oil and gas in the Lower 48 as well. Active rigs in the U.S. during the first 9 months of this year were up by 26%, an indication that U.S. oilfinders have gone back to work in earnest.

Other forces. There are other, less tangible, forces eroding the OPEC image.

One is the very ubiquity of oil in the earth. Experience of the past few decades proves that oil and gas can and will be found in many parts of the world previously unsuspected as major sources. The North Sea is only one fantastic example of this. Reserves may not be as enormous as those of the Middle East, but 42-million bbl of oil is not to be sneezed at.

And another important discovery to watch is Mexico's Reforma trend in the southern states of Tabasco and Chiapas. Pemex has declined to officially estimate the reserves in Reforma, but some observers feel the find could be one of the giants of North America.

Another force at work is the improved technology that is constantly thrust into our oil-finder's hands. Their success ratios in the North Sea, the South American countries, and other parts of the world are enviable.

Prices a question. With so many forces working against it, OPEC may not be able to long afford the luxury of the attitudes displayed all this year.

International oil consultant Samuel Nakasian summed up the situation most succinctly when he told a New York seminar in mid-November:

"Fairly soon, OPEC must come to the realization that having achieved the discipline of its members to establish high price levels, it has also triggered the competition of new oil and gas supplies and other energy sources. At some point in the near future OPEC must consider whether its self-interest may not best be served by lowering prices in order to decelerate the development of competing sources of energy."

Abbreviations used with the refining tabulations

(All figures in barrels per calendar day.)

All figures are as of 1-1-75

Cracking processes:
- FCC—Fluid cat cracking
- TCC—Thermofor cat cracking
- HD—Houdriflow cat cracking

Hydroprocessing:
- DHC—Distillate hydrocracking
- RHC—Residual hydrocracking
- HDT—Catalytic hydrotreating
- HDS—Catalytic hydrodesulfurization

Other processing:
- A—Asphalt
- Alky—Alkylation
- C—Coking (t/d)
- L—Lube manufacture
- P—Polymerization
- V—Vacuum distillation
- W—Waxes

CALENDAR DAY FIGURES reported in this survey are refiners' averages for how many barrels each day a refinery unit yields on the average, including downtime used for turnarounds. These figures are what refiners actually run in a year, divided by 365. (Stream day figures represent the potential a refinery unit can yield when running full capacity).

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Worldwide refining

WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
ALGERIA	Sonatrach:					
	Arzew	54,600		16,000	1,000 HDT	10,300 V, 1,500 L, 1,300 A
	El Borma	600				
	Hassi Messaoud	3,135				
	Maison Carree	57,000		14,500		
	Total	115.335		30,500	1,000	
ANGOLA	Cabinda Gulf, Cabinda	2,800				
	Companhia de Petróleos de Angola (SARL), Luanda	32,880		1,800	5,850 HDS	1,800 V
	Total	35.680		1,800	5,850	
ANTIGUA	West Indies Oil Co. Ltd., St. John's	16,000		2,000	7,500 HDS	1,500 V, 750 A
ARGENTINA	Astrasur, Refinerías Patagónicas de Petróleo SA, Comodoro Rivadavia, Chubut	6,800				4,800 V, 5,300 A
	Destileria Argentina de Petróleo SA, Lomas de Zamora	1,800				1,200 V, 500 L
	Esso SAPA, Campana	91,900	17,600 FCC	8,000		49,700 V, 1,300 L, 500 C
	Galván	17,000				
	Ragor SAIC, Quilmes	600				
	Refinería de Petróleo Isaura SA, Bahía Blanca	12,580				
	Shell Compañía Argentina de Petróleo SA, Buenos Aires	115,000	21,000 FCC	9,000	25,000 HDT	
	Yacimientos Petrolíferos Fiscales:					
	Campo Durán	28,305				
	Dock Sud	5,975				1,572 V
	El Centauro, Tierra del Fuego	189				
	La Plata	289,000	44,973 FCC	17,185	3,800 HDT 9,435 HDS	64,158 V, 1,673 Alky, 3,450 L, 650 C, 9,230 A
	Luján de Cuyo	113,200	17,612 FCC	17,185	2,516 HDS	59,577 V, 1,000 C
	Plaza Huincul	5,032				
	San Lorenzo	33,337				9,435 V, 1,190 A
	Total	720.718	101,185	51,370	40,751	
AUSTRALIA	Amoco Australia Pty. Ltd., Bulwer Island	58,000	8,600 FCC	5,300	1,400 HDT 7,500 HDS	14,500 V, 1,400 Alky, 1,20 A
	Ampol Refineries Ltd., Lytton	60,000	19,000 FCC	13,000		26,000 V, 2,500 Alky, 1,500 P
	Australian Oil Refining Pty. Ltd., Kurnell	132,000	36,100 FCC	26,600		48,500 V, 3,200 Alky, 2,800 P
	Kurnell (lube refinery)				6,500 HDT	7,100 V, 3,600 L
	BP Australia Ltd., Westernport	57,000		18,000	15,300 HDT	3,150 V, 1,000 A
	BP Refinery (Kwinana) Pty., Kwinana	103,070	14,850 FCC	18,450	13,050 HDT 7,650 HDS	40,500 V, 2,200 L, 700 A
	Petroleum Refineries Australia Pty. Ltd., Adelaide	46,500		11,500	35,000 HDS	2,500 V, 2,600 A
	Altona	98,600	24,000 TCC	26,000	33,000 HDT 10,000 HDS	22,000 V, 2,000 Alky, 3,000 A
	Shell Refining (Australia) Pty. Ltd., Clyde	55,000	17,000 FCC	18,000	22,000 HDT 6,000 HDS	
	Geelong	92,000	18,000 FCC	17,000	36,000 HDT 11,000 HDS	
	Total Refineries Australia Ltd., Matraville	20,000		6,000	4,300 DHC 11,000 HDS	12,000 V, 1,700 A
	Total	722.170	137,550	159,850	219,700	
AUSTRIA	OMV AG, Schwechat	220,000	16,300 FCC	23,000	26,000 HDT 24,000 HDS	46,000 V, 2,300 L, 5,850 A
	Total	220.000	16,300	23,000	50,000	
BAHAMAS	Bahamas Oil Refining Co., Freeport	500,000				
BAHRAIN	Bahrain Petroleum Co. Ltd. Awali	250,000	34,200 FCC	15,200	61,700 HDS	164,000 V, 1,300 P, 2,400 A

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WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
BANGLADESH	Eastern Refinery, Chittagong	30 450	.....	1,620	2,410 HDS	.....
BARBADOS	Mobil Oil Barbados Ltd., Bridgetown	3,000	.....	.....	.....	400 A
BELGIUM	SAB Albatros, Antwerp	60,000	.....	10,700	14,300 HDS	.....
	Anglo-Belge des Petroles SA, Antwerpen-Kiel	4,900	.....	.....	.....	.....
	Belgian Shell NV, Ghent	9,400	.....	.....	.....	.....
	Esso Belgium NV, Antwerp	93,000	10,000 FCC	8,000	17,800 HDT 23,000 HDS	32,000 V, 20,500 A
	NV Societe Industrielle Belge des Petroles SA, Antwerp	321,400	54,800 FCC	28,400	55,800 HDT 53,900 HDS	117,200 V, 4,300 Alky, 1,560 P, 11,300 A
	Raffinerie Belge de Petroles, Antwerp	98,000	.....	19,000	27,000 HDT 10,000 HDS	14,000 V, 9,200 A
	SA Chevron Belgium, Feluy	140,000	.....	11,500	11,500 HDT 23,000 HDS	85,000 V, 9,000 A
	Texaco Belgium NV, Ghent	140,000	.....	17,500	46,000 HDT	.....
	Total	866,700	64,800	95,100	282,300	
BOLIVIA	Yacimientos Petrolíferos Fiscales Bolivianos:					
	Camiri	1,500	.....	.....	.....	.....
	Cochahamba	16,500	.....	.....	.....	500 L
	Sanandita	500	.....	.....	.....	.....
	Santa Cruz	3,000	.....	.....	.....	.....
	Sucre	4,000	.....	.....	.....	.....
	Total	**25,500**	.....	.....	.....	
BRAZIL	Petróleo Brasileiro SA:					
	Betim, Minas Gerais	60,500	13,000 FCC	.....	.....	29,000 V, 2,200 A
	Canoas, Rio Grande do Sul	60,500	13,000 FCC	.....	.....	29,000 V, 1,400 A
	Capuava, Sao Paulo	33,000	14,000 TCC	.....	.....	15,000 V
	Cubatao, Sao Paulo	175,000	45,000 FCC	10,500	.....	95,000 V, 600 C, 3,600 A
	Duque de Caxias, Rio de Janeiro	197,000	35,000 FCC	10,500	.....	82,000 V, 4,500 L, 2,200 A
	Mataripe, Bahia	77,000	22,000 FCC	.....	.....	41,000 V, 2,900 L, 1,400 A
	Paulina, Sao Paulo	330,000	39,000 FCC	.....	.....	82,000 V, 4,000 A
	Paredao, Manaus	10,000	2,000 FCC	.....	.....	3,000 V, 1,000 A
	Refinaria de Petróleo Ipiranga SA, Rio Grande	9,300	.....	.....	.....	1,000 A
	Refinaria de Petróleos de Manguinhos SA, Rio de Janeiro	9,500	.....	.....	.....	.....
	Total	**961,800**	**183,000**	**21,000**	.....	
BRUNEI	Sarawak Shell Berhad, Lutong	60.000	.....	.....	.....	.....
BURMA	Myanma Oil Corp., Chauk	6,800	.....	.....	.....	2,700 V, 50 (t/d) W
	Syriam	21,500	2,000 TCC	.....	.....	2,300 V, 700 L, 50 C
	Total	**28,300**	**2,000**	.....	.....	
CHILE	Empresa Nacional del Petróleo, Concepción	72,000	14,300 FCC	4,000	.....	38,000 V
	Concón	50,000	12,000 FCC	6,000	.....	24,000 V, 1,100 Alky, 1,300 A
	Magallanes	1,500	.....	.....	.....	.....
	Total	**123,500**	**26,300**	**10,000**	.....	
CHINA (TAIWAN)	Chinese Petroleum Corp., Kaohsiung	244,100	9,040 TCC	20,800	22,600 HDT 22,600 HDS	3,160 V, 810 Alky, 4,100A
	Total	**244,100**	**9,040**	**20,800**	**45,200**	
COLOMBIA	Colombian Petroleum Co., Tibú, North Santander	3,000	.....	.....	.....	.....
	Empresa Colombiana de Petróleos, Barrancabermeja	110,000	35,000 FCC	2,000	.....	55,000 V, 2.500 Alky, 3,300 L, 1.300 W, 3,500 A,
	Cartagena	50,000	13,500 FCC	.....	.....	30,000 V, 3,500 P
	International Petroleum (Colombia) Ltd., La Dorada	5,600	.....	.....	.....	.....

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Flopetrol is a major production testing company—600 trained people work out of thirty centers in sixty-four countries. Flopetrol crews are active—they see more and different jobs and get more experience in one year than some crews get in five.

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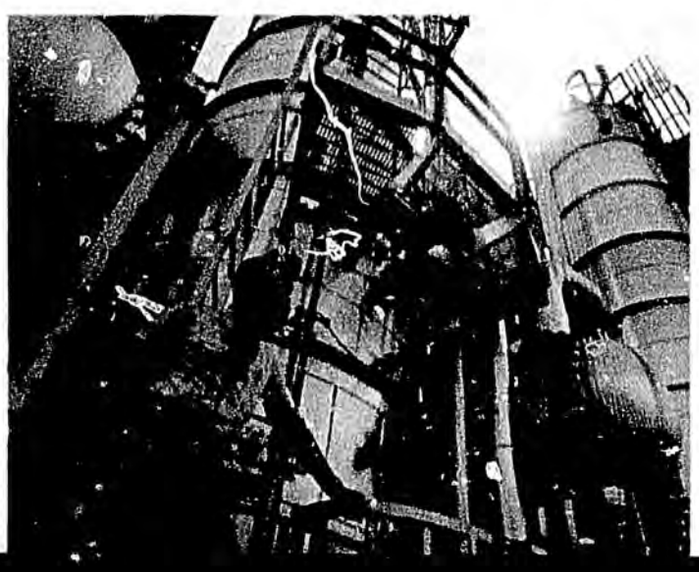
AGO 529919

The Fisher dc² computer: a month to install,



Celanese installed a Fisher digital control system to improve distillation column control and save energy. It did just that. Fast.

For starters, the system was delivered a week early. Since many of the usual software functions are built into standard dc² hardware, only application programming was needed. Celanese process engineer Dan Bennett programmed dc² in less than two weeks. The quick programming allowed time for thorough operator training before start-up.

Production pace required rapid start-up. Celanese had previously switched from pneumatic control to Fisher ac² analog control, bringing two distillation columns on line in only 12 hours. dc² supervisory control was then added in just one day.

AGD 529920



a day to start up, a year to pay off.

The Fisher control system gives the operators better control over their process and lets them run the computer, not vice-versa. The reflux rate has been reduced so that less process steam is needed. That alone saves two railroad cars of coal a month. And this saving pays for the system in one year.

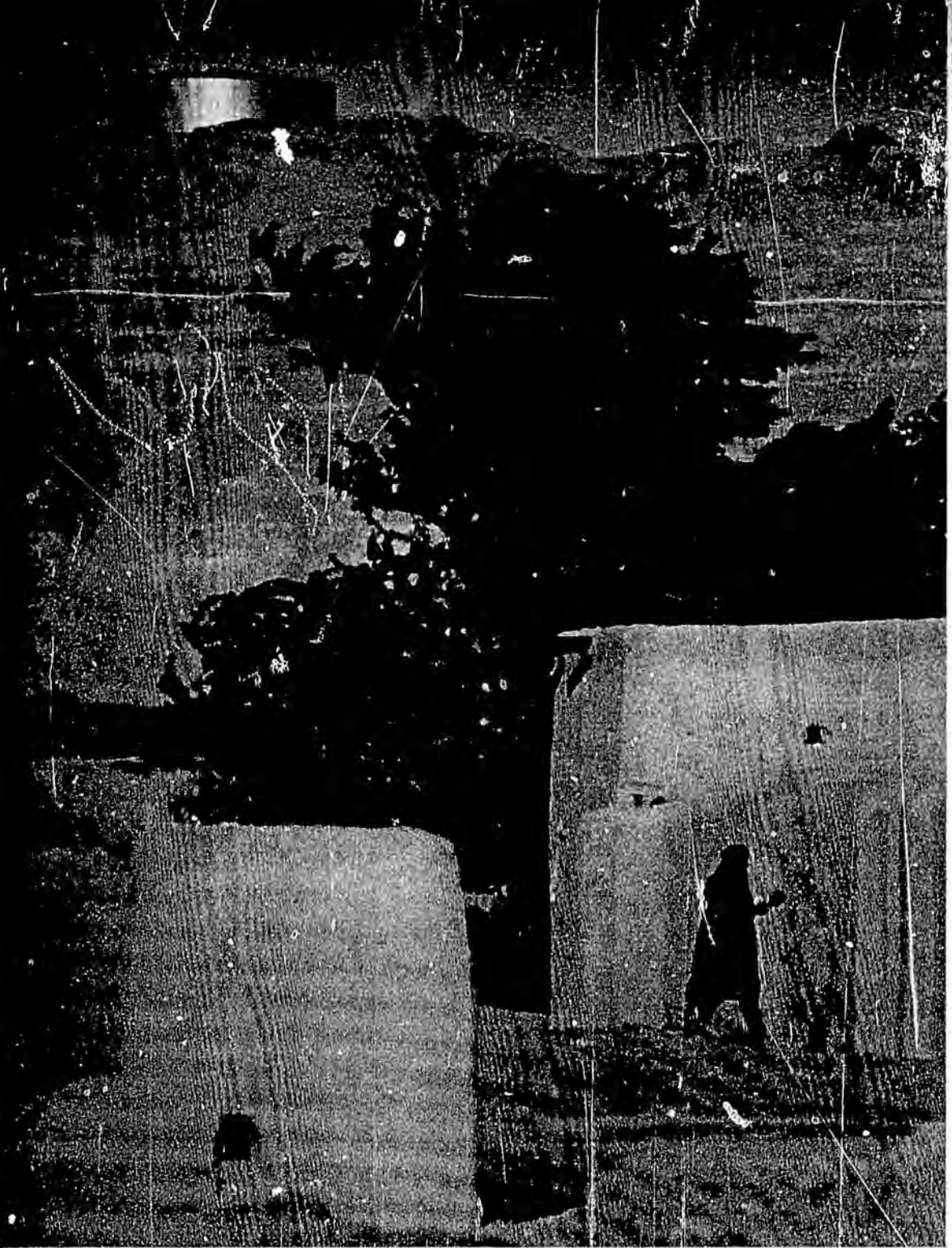
As Bennett put it, "After you figure out how much you can save with digital control, each day without it is wasting money. We chose Fisher because it was the fastest to install and the simplest to operate. We didn't want to know all about computers or hire people who did. We just wanted another control tool to help improve our profits." If that's what you want, call (515) 754-3825 collect for the name of your Fisher representative.

Fisher Controls Company, Marshalltown, Iowa 50158. Sales representation worldwide and manufacturing in Argentina, Australia, Canada, France, Germany, Japan, Mexico and United Kingdom.

FISHER® Controls

If it flows through pipe, chances are it's controlled by Fisher.

AGO 529921



Agha Jari has 130°F heat, 100 mph sandstorms

and 14 Solar gas turbine pump sets.

Agha Jari lies in the Zagros foothills of Iran. 14 Solar gas turbine pump sets work there in temperatures that can soar to 130°F at midday and where blinding sandstorms are not unusual.

Agha Jari is where Solar gas turbines first were installed outside North America in 1966. Since then more than 1000 of our pump, compressor, and generator sets have been sold for use outside the United States. Of our total of over 40 million operating hours of experience, more than 7 million hours have been recorded in places around the world as rough on machinery as the arid desert country of Iran.

So we build equipment that gives you maximum availability in all sorts of climates and extremes. Aboard offshore platforms in turbulent waters all over the world. Deep in the steaming jungles of Mexico. Or in frozen Arctic wastes.

Wherever you find them, Solar gas turbines are never far from our Power Support teams. In Iran, for example, Solar sets are kept in top condition by the full time service representatives from our Tehran office. In Beirut an additional 15 people support our Middle East customers with maintenance, parts, and diagnostic services. And recently we opened another service office in Dubai.

This is all part of Solar's worldwide commitment to insure our customers the highest productivity from their Solar gas turbine packages at the lowest cost. No matter where they are.

For more facts about gas turbine dependability and contract maintenance programs anywhere in the world, write Solar Division of International Harvester, Dept. X-137, San Diego, California 92138, U.S.A.

Solar Gas Turbines
equipped and ready for the unexpected

AGO 529922

WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
	Texas Petroleum Co., El Guamo	2,500	.....	.....	.....	.....
	Orito (with Petrolera del Rio)	1,000	.....	.....	.....	.....
	Total	**172,100**	**48,500**	**2,000**	.....	
COSTA RICA	Refinadora Costarrincense de Petróleo, Moín, Limón	11,000	.....	1,500	3,500 HDT	500 V, 300 A
CUBA	Instituto Cubano del Petróleo:					
	Cabaiguán	4,900	.....	.....	.....	.....
	Havana	75,000	14,570 FCC	8,100	12,600 HDS	22,140 V, 2,675 P, 6,000 A
	Santiago de Cuba	42,000	.....	3,600	6,000 HDS	
	Total	**121,970**	**14,570**	**11,700**	**18,600**	
CYPRUS	Cyprus Petroleum Refinery Ltd., Larnaca	15,000	.....	2,740	6,000 HDT	1,070 V, 500 A
DENMARK	A/S Dansk Shell, Fredericia	59,000	.....	12,000	14,000 HDT 8,000 HDS	.....
	Dansk Esso A/S, Kalundborg	71,000	.....	7,600	10,000 HDS	25,000 V, 9,000 A
	Gulf Oil Refining A/S, Skaelskor	90,000	.....	17,100	50,600 HDS	14,950 V
	Total	**220,000**	.....	**36,700**	**82,600**	
DOMINICAN REPUBLIC	Falconbridge Dominicana C por A, Bonao	15,500	.....	.....	7,000 HDS	.....
	Refinería Dominicana de Petróleo SA, Nigua	30,000	.....	7,000	12,000 HDT	.....
	Total	**45,500**	.....	**7,000**	**19,000**	
ECUADOR	Anglo-Ecuadorian Oilfields Ltd., La Libertad	30,400	.....	.....	.....	.....
	Corporación Estatal Petrolera Ecuatoriana, La Libertad	5,000	.....	.....	.....	.....
	Petróleos Gulf del Ecuador CA, La Libertad	8,000	.....	.....	.....	.....
	Texaco Petroleum Co., Lago Agrio	950	.....	.....	.....	.....
	Total	**44,350**	.....	.....	.....	
EGYPT	Refineries:					
	El Amiriya	26,000	.....	.....	.....	.....
	Mex	120,000	.....	.....	.....	.....
	Tanta	14,600	.....	.....	.....	.....
	Others	19,400	.....	.....	.....	.....
	Total	**180,000**	.....	.....	.....	
EL SALVADOR	Refinería Petrolera Acajutla SA, Acajutla	14,000	.....	2,600	9,500 HDT	725 A
ETHIOPIA	Ethiopian Petroleum S.C., Assab	14,430	.....	1,890	2,330 HDT	3,026 V, 697 A
FINLAND	Neste Oy, Naantali	56,000	11,000 TCC	6,800	7,700 HDT 7,400 HDS	15,000 V, 2,700 P, 5,900 A
	Porvoo	140,000	21,900 FCC	19,000	31,600 HDT 37,000 HDS 14,000 DHC	60,000 V, 7,500 P, 6,700 A
	Total	**196,000**	**32,900**	**25,800**	**97,100**	
FRANCE	Antar Petroles de l'Atlantique, Donges	143,000	11,200 TCC	28,700	43,000 HDS	6,800 V
	Valenciennes	62,000	.....	13,000	12,600 HDS	.....
	Vern-sur-Seiche	26,000	.....	7,400	.....	.....
	Compagnie Francaise de Raffinage, Gonfreville l'Orcher	484,000	24,300 FCC	64,380	71,600 HDT 85,000 HDS	56,000 V, 2,800 P, 7,400 L, 20,250 A
	La Mede	212,000	27,400 FCC	41,000	820 HDT 53,000 HDS	40,500 V, 820 P, 16,200 A
	Mardyk, Dunkerque	125,000	.....	22,000	37,000 HDT 17,300 HDS	.....
	Compagnie Rhenane de Raffinage, Reichstett-Vendenheim	75,000	.....	13,000	24,000 HDT 16,000 HDS	.....
	Elf Union:					
	Raffineria de L'ile de France, Mormant	75,000	.....	15,000	23,000 HDT 8,000 HDS	29,000 V
	Raffinerie du Vexin, Gargenville	136,000	.....	.....	.....	.....
	Raffinerie ELF, Feyzin	178,000	19,000 FCC	9,200	9,200 HDT	39,600 V
	Raffinerie ELF, Union Industrielle des Petroles, Ambes	43,000	8,700 FCC	4,600	4,600 HDT	22,000 V, 450 P

AGO 529923

Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
ESAF, Ambes	60,000	.....	8,000	.....	30,000 V, 2,400 A
Fos sur Mer	170,000	14,300 FCC	25,700	85,000 HDT 24,300 HDS	19,500 V, 2,000 A
Port Jerome	150,000	12,000 FCC	27,000	46,500 HDT 35,000 HDS	42,000 V, 5,600 L, 6,000 A
Mobil Oil Francaise, Frontignan	120,000	11,000 TCC	20,000	26,000 HDT 18,000 HDS	11,000 V, 1,000 A
Notre Dame de Gravenchon	72,500	.....	17,000	21,000 HDT 7,000 HDS	10,500 V, 4,000 L, 1,500 A
Raffinerie de Strasbourg, Herrlisheim-Drusenheim	95,000	.....	22,000	22,000 HDT 13,500 HDS	16,600 V, 6,000 A
Shell Francaise, Berre l'Etang	285,000	17,000 FCC	24,000	70,000 HDT 13,000 HDS	.....
Pauillac	90,000	24,000 FCC	15,000	32,000 HDT 13,000 HDS	.....
Petit Couronne	200,000	21,000	16,000	31,000 HDT 14,000 HDS	.....
Societe Francaise des Petroles, BP, Dunkirk	118,750	.....	13,500	.....	17,100 V, 4,200 L, 3,600 A
Lavera	243,200	.....	7,200	13,500 RHC 13,230 HDT 13,500 HDS	40,150 V, 2,740 A
Vernon	73,150	.....	11,250	18,000 HDT 10,800 HDS	5,050 V, 2,000 A
Societe de la Raffinerie de Lorraine (CFR 51%, Esso 40%, Elf Union 9%), Hauconcourt	105,000	.....	15,000	35,000 HDT 11,500 HDS	16,000 V, 9,100 A
Total	**3,341,600**	**189,900**	**439,930**	**991,450**	
GABON					
Societe Gabonaise de Raffinage, Port Gentil	17,000	.....	2,000	4,000 HDT	
GERMANY, WEST					
Caltex Deutschland GmbH, Raunheim	90,000	.....	3,500	8,600 DHC 6,500 HDT	28,000 V
Deutsche BP AG, Dinslaken	203,300	11,150 FCC	12,600	9,000 HDS	21,600 V, 5,600 A
Finkenwerder, Hamburg	103,900	.....	7,650	8,550 HDS	46,450 V, 2,400 A
Vohburg	104,500	10,800 FCC	16,200	25,200 HDT 13,300 HDS	21,600 V, 6,400 A
Deutsche Marathon Petroleum GmbH, Burghausen, Bavaria	70,000	.....	.....	10,000 HDT	550 C
Deutsche Shell AG, Godorf	165,000	.....	24,000	68,000 HDT 49,000 HDS	.....
Harburg-Grasbrook	85,000	12,000	9,000	16,000 HDT 12,000 HDS	
Ingolstadt	55,000	.....	8,000	17,000 HDT 17,000 HDS	.....
Monheim	7,000	.....	.....	.....	.....
Deutsche Texaco AG, Heide	105,000	8,000 TCC	14,000	14,000 HDT 26,000 HDS	35,000 V, 300 P, 3,500 A
Erdol Raffinerie Duisburg GmbH, Duisburg	37,800	.....	7,300	7,300 HDT 4,200 HDS	.....
Erdolraffinerie Ingolstadt AG, Ingolstadt-Donau	130,000	.....	29,500	42,000 HDT 6,500 HDS	.....
Erdol-Raffinerie Neustadt GmbH, Neustadt-Donau	144,000	11,700 FCC	17,700	26,500 HDT 21,000 HDS	24,000 V
Erdoel-Raffinerie Speyer, Speyer	57,800	.....	.....	.....	.....
Erdolwerke Frisia AG, Emden	47,500	.....	9,500	15,600 HDS	.....
Esso AG, Hamburg	110,000	8,000 FCC	14,000	33,000 HDT 22,000 HDS	15,000 V, 2,300 L, 9,000 A
Ingolstadt	100,000	15,000 FCC	13,500	31,500 HDT 34,000 HDS	26,000 V, 7,500 A
Karlsruhe	180,000	.....	30,000	54,000 HDT 58,000 HDS	45,000 V, 10,000 A
Koln	115,000	.....	9,000	10,000 HDT 12,000 HDS	17,000 V, 8,000 A
Gelsenberg AG, Gelsenkirchen-Horst	144,000	11,900 TCC	30,700	16,300 HDT 31,400 HDS	16,100 V, 370 L
Gewerkschaft Erdol-Raffinerie Deurag, Nerag, Misburg	54,000	.....	8,000	7,000 HDS	.....
Mobil Oil AG, Bremen	30,000	7,500 TCC	5,500	5,500 HDT 6,000 HDS	7,000 V, 800 L 1,200 A
Woerth	75,000	12,000 FCC	14,000	28,000 HDT 19,000 HDS	23,000 V, 5,000 A
Oberrheinische Mineralolwerke GmbH, Karlsruhe	128,000	.....	20,500	20,500 HDT 18,100 HDS	21,000 V, 11,300 A

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WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing	
	Occidental Oel GmbH, Brunsbuttel	7,500	.....	.....	.....	6,700 A	
	Essen	20,000	.....	.....	.....	10,000 V,	7,500 A
	Oelwerke Julius Schindler GmbH, Hamburg	7,950	.....	.....	.....	5,400 V,	5,000 L
	Saarland-Raffinerie GmbH, Klarenthal-Saar	55,243	.....	.....	.....	.....	
	Union Rheinische Braunkohlen Kraftstoff AG, Wesseling	125,000	.....	8,400	15,000 HDT 10,000 HDS	650 P	
	Veba-Chemie AG, Gelsenkirchen-Buer	215,700	4,900 FCC	22,800	31,300 HDT 10,900 HDS	6,300 V,	3,800 A
	Wintershall AG, Lingen, Emsland	95,000	13,600 FCC	15,600	17,600 HDT 12,000 HDS	31,800 V, 3,060 C,	800 P, 4,000 A
	Mannheim	113,530	.....	12,570	3,040 HDS		
	Salzbergen	5,000	.....	.....	800 HDT	5,000 V, 1,400 A	2,000 L,
	Total	**2,986,723**	**126,550**	**363,520**	**930,190**		
GHANA	Ghananian-Italian Petroleum Co., Tema	28,000	.....	6,500	6,500 HDT	.....	
GREECE	Hellenic Aspropyrgos Refinery SA, Aspropyrgos	98,000	.....	15,000	23,000 HDT 16,000 HDS	5,000 V,	2,000 A
	Motor Oil (Hellas) Corinth Refineries SA, Agii Theodori Corinth	140,000	.....	.....	25,800 HDS	12,000 V, 2,800 A	2,500 L,
	Petrola Hellas SA, Eleusis	100,000	.....	.....	.....	2,500 V,	1,300 A
	Thessaloniki Refining Co. AE, Thessaloniki	73,000	.....	7,000	12,400 HDT 11,700 HDS	6,800 V	
	Total	**411,000**	.....	**22,000**	**88,900**		
GUAM	Guam Oil & Refining Co., Apra Heights	29,500	.....	.....	.....	.....	
GUATEMALA	Refinería Petrolera de Guatemala-California Inc., Puerto Barrios	10,800	.....	2,500	1,900 HDT 1,400 HDS	.....	
	Texas Petroleum Co., Escuintla	14,000	.....	3,000	5,000 HDT	.....	
	Total	**24,800**	.....	**5,500**	**8,300**		
HONDURAS	Refinería Texaco de Honduras SA, Puerto Cortes	14,000	.....	1,800	5,000 HDT	.....	
HUNGARY	Szazhalmbatta (south of Budapest)	46,497	.....	.....	.....	.....	
INDIA	Assam Oil Co. Ltd., Digboi	12,100	.....	.....	.....	893 L, 425 A	32 C,
	Burmah Shell Refineries Ltd., Trombay, Bombay	111,000	17,000 FCC	7,000	.....	33,000 V,	10,000 A
	Caltex Oil Refining (India) Ltd., Visakhapatnam	32,000	9,100 FCC	.....	.....	15,200 V,	2,000 A
	Cochin Refineries Ltd., Cochin	66,000	.....	6,000	32,250 HDS	8,975 V,	3,442 A
	Hindustan Petroleum Corp. Ltd., Trombay, Bombay	70,000	6,000 FCC	.....	.....	19,440 V, 6,500 A	3,400 L,
	Indian Oil Corp Ltd., Barauni	60,000	.....	.....	.....	15,000 V, 270 C	910 L,
	Baroda	82,000	.....	7,000	.....	.....	
	Gauhati	16,000	.....	.....	.....	125 C	
	Haldia	50,000	.....	4,500	4,500 HDT 13,000 HDS	.....	
	Madras Refineries Ltd. Manali	56,000	.....	2,158	4,700 HDT 24,962 HDS	22,300 V, 4,270 A	4,600 L,
	Total	**555,100**	**32,100**	**26,658**	**79,412**		
INDONESIA	Lemigas, Cepu, Central Java	4,000	.....	.....	.....	.....	
	Pertamina: Balikpapan, Kalimantan	75,000	.....	.....	.....	13,000 V	
	Dumai, Central Sumatra	100,000	.....	7,000	.....	.....	
	Pangkalan Brandan, North Sumatra	4,500	.....	.....	.....	200 L,	300 A
	Plaju, South Sumatra	111,200	.....	16,000	.....	24,000 V, 173 P,	1,100 Alky, 1,200 A
	Sungei Gerong, South Sumatra	79,000	19,500 FCC	.....	.....	87,000 V, 1,200 P	650 Alky,
	Sungei Pakning South, Central Sumatra	50,000	.....	.....	.....	.....	

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Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing	
Sungei Pakning South, Central Sumatra	50,000	.....	.....	.....	.....	
Wonokromo, East Java	4,000	.....	.....	.....	1,500 A	
Total	**427,700**	**19,500**	**23,000**	.....		
IRAN						
National Iranian Oil Co.: Abadan	470,000	36,000 FCC	23,500	25,000 HDT	96,000 V, 1,400 L,	9,300 Alky, 10,500 A
Kermanshah	15,000	.....	2,750	2,750 HDT 3,100 HDS	.....	
Masjid Sulaiman	64,000	.....	.....	19,000 DHC	.....	
Shiraz	40,000	.....	6,215	5,225 HDT 3,120 HDS 9,280 DHC	18,400 V,	1,000 A
Tehran	200,000	.....	28,200	30,000 DHC	96,000 V, 7,300 A	2,100 L,
Total	**789,000**	**36,000**	**60,665**	**97,475**		
IRAQ						
Oil Refineries Administration: Basra	70,000	.....	.....	.....	.....	
Daura	71,000	.....	5,000 C	13,000 HDT	8,160 L,	1,815 A
K3-Haditha	7,000	.....	.....	.....	.....	
Khanaqin	12,000	.....	.....	.....	.....	
Mufthia	4,500	.....	.....	.....	.....	
Qaiyarah, Mosul	2,000	.....	.....	.....	970 A	
Iraqi Company for Oil Operations, Kirkuk	2,000	.....	.....	.....	.....	
Total	**168,500**	.....	**5,000**	**13,000**		
IRELAND						
Irish Refining Co. Ltd., Whitegate	56,000	.....	13,200	.....	.....	
ISRAEL						
Oil Refineries Ltd., Ashdod	66,000	.....	10,000	11,000 HDT 25,000 HDS	36,000 V	
Haifa	135,000	.....	14,500	15,500 HDT 25,000 HDS	28,000 V, 3,600 A	800 L,
Total	**201,000**	.....	**24,500**	**76,500**		
ITALY						
Amoco Italia, Cremona	100,000	.....	10,000	15,600 HDT 7,100 HDS	12 A	
ANIC SpA, Gela	90,000	21,000 FCC	12,000	16,000 HDT 25,000 HDS	30,000 V, 3,000 C	9,500 A
Anonima Petroli Italiana, Falconara Marittima	81,000	.....	10,000	10,500 HDT 12,000 HDS	13,000 V,	3,000 A-
ERG—Raffineria Edoardo Garrone, Genoa, San Quirico	147,000	.....	14,270	21,400 HDS	.....	
Esso Italiana, Augusta, Siracusa	210,000	40,000 FCC	15,300	23,500 HDT 25,000 HDS	189,200 V, 5,200 L,	7,700 Alky, 6,700 A
Gaeta Industrie Petroli SpA, Gaeta	39,900	27,000 FCC	11,250	10,800 HDT	225 L	
Gulf Italiana SpA, Bertonico	80,000	.....	12,350	29,450 HDS	4,370 A	
Industrie Chimiche Italiane del Petrolio SpA (Icip), Mantova-Frassino	65,000	.....	9,700	14,600 HDT 5,000 H	7,500 V,	5,000 A
Industria Italiana Petroli SpA, La Spezia	103,000	.....	21,100	24,600 HDT 13,000 HDS	10,300 V,	3,100 A
Rho	80,000	12,300 TCC	16,300	21,100 HDT 13,400 HDS	29,000 V, 1,560 L,	1,720 Alky, 4,650 A
Taranto	88,000	.....	16,700	23,500 HDT 13,000 HDS	13,300 V,	1,900 A
Industria Leganti Stradali del Affini (Ilsea), Como	7,885	.....	1,350	.....	.....	
Industria Raffinazione Olii Minerali (Irom), Porto Marghera	110,000	.....	18,000	18,000 HDT 18,500 HDS	.....	
Iplom—Raffineria Petroli SpA, Sarissola	31,200	.....	.....	.....	5,700 V,	2,850 A
Liquichimica SpA, Milan	12,000	.....	1,000	.....	.....	
Lombarda Petroli, Villasanta	23,500	.....	3,600	4,800 HDT	.....	
Mediterranea SpA, Milazzo, Sicily	505,000	45,000 FCC	10,000	10,000 HDT 20,000 HDS	80,000 V,	5,000 Alky
Mobil Oil Italiana SpA, Naples	130,000	14,000 TCC	12,500	12,500 HDT 13,500 HDS	7,500 V, 750 L,	3,500 Alky, 650 A

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WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing	
	Montedison, Brindisi	30,000	.....	.....	.....	.....	
	Priolo	300,000	25,000 FCC	9,500	9,500 HDT 17,000 HDS	40,000 V	
	Raffineria Dellepiane SpA, San Quirico, Genoa	20,000	.....	.....	.....	12,200 A	
	Raffineria del Po SpA, Sannazzaro d'Burgondi	122,000	22,000 FCC	24,000	24,000 HDT 12,000 HDS	50,000 V,	3,600 Alky
	Raffineria di Roma SpA, Rome	80,300	.....	12,300	18,900 HDT 8,500 HDS	9,300 V,	3,100 A
	Raffineria Olii Lubricanti (ROL), Viguzzola	1,425	.....	.....	.....	.....	
	Sanquirico SpA, Genova San Quirico	32,500	.....	1,500	11,500 HDS	.....	
	Saras—Raffinerie Sarde, Sarroch, Cagliari	360,000	50,000 FCC	30,000	30,000 HDT 60,000 HDS	5,000 Alky	
	Sarom Raffinazione SpA, Ravenna	332,000	.....	14,000	14,000 HDT	.....	
	Sarpom, Novara	235,000	12,200 FCC	27,200	107,300 HDT	22,800 V. 2,800 A	1,600 P,
	Societa Italiana Resine SpA, (SIR), Porto Torres, Sardinia	118,750	.....	11,700	14,400 HDS	.....	
	Societa Petrolifera Italiana, Arcola, La Spezia	18,400	.....	.....	.....	.....	
	Stanic SpA, Bari	90,000	.....	10,000	10,000 HDT 18,000 HDS	17,000 V	
	Leghorn, Livorno	125,000	.....	24,000	24,000 HDT 16,000 HDS	20,000 V,	7,000 L
	Total Italiana—Aquila, Trieste	111,000	.....	17,000	23,500 HDT 15,000 HDS	11,000 V, 4,700 A	1,200 L,
	Volpiano Refinery, Volpiano	72,800	.....	10,750	18,200 HDT 10,920 HDS	.....	
	Total	**3,952,660**	**268,500**	**387,320**	**884,570**		
IVORY COAST	Societe Ivoirienne de Raffinage, Abidjan	42,940	.....	4,420	6,465 HDT 3,345 HDS	.....	
	Total	**42,940**		**4,420**	**9,810**		
JAMAICA	Esso West Indies Ltd., Kingston	32,600		3,000	18,900 HDS	1,500 V,	670 A
JAPAN	Asia Kyoseki Co. Ltd., Sakaide, Kagawa	100,000	9,000 FCC	.....	12,600 HDT 13,500 HDS	36,000 V	
	Asia Oil Co., Hakodate	23,750	.....	1,170	2,700 HDT	.....	
	Yokohama	95,000	.....	12,600	11,700 HDT 6,300 DHC	.....	
	Daikyo Co. Ltd., Yokkaichi-City, Mie.	195,000	23,500 FCC	9,000	6,500 HDT 77,000 HDS	83,500 V, 7,878 A	4,200 L,
	Fuji Kosan Co. Ltd., Kainan	77,600	.....	.....	9,000 HDT 20,000 HDS	44,000 V, 17,500 A	13,600 L,
	Fuji Oil Co. Ltd., Sodegaura, Chiba	189,000	4,500 FCC	13,500	26,900 HDT 44,500 HDS	34,200 V	
	General Sekiyu Seisei KK, Kawasaki	52,300	.....	5,700	16,150 HDT	.....	
	Sakai	114,000	.....	23,800	72,200 HDT 29,450 HDS	50,400 V	
	Idemitsu Kosan Ltd., Chiba	310,000	34,000 FCC	35,000	43,000 HDT 108,000 HDS	60,000 V,	10,500 L
	Hokkaido	70,000	.....	11,000	13,000 HDT 17,000 HDS	.....	
	Hyogo	110,000	.....	15,000	22,000 HDT 65,000 HDS	.....	
	Tokuyama	140,000	15,000 FCC	15,000	15,000 HDT 30,000 HDS	20,000 V,	976 A
	Kansai Oil Co. Inc., Sakai City	110,000	.....	5,000	20,000 HDT 20,000 HDS	34,000 V	
	Kashima Oil Co., Kashima	162,000	12,600 FCC	5,400	92,700 HDS	60,300 V	
	Koa Oil Co. Ltd., Marifu	141,550	12,600 FCC	9,900	12,600 HDT 9,000 HDS 2,250 DHC	45,000 V, 270 A	225 C,
	Osaka	76,000	14,400 FCC	8,100	6,300 HDT 10,800 HDS	49,500 V	
	Kyokuto Petroleum Industries Ltd., Chiba	97,000	.....	7,700	8,000 HDT 6,700 HDS	67,000 V,	1,700 A
	Kyushu Oil Co. Ltd., Oita	170,000	9,000 FCC	9,000	67,000 HDS	91,000 V	

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	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
	Maruzen Oil Co. Ltd., Chiba	195,000	20,000 FCC	25,000	57,000 HDT 35,000 HDS	65,000 V, 10,000 A
	Matsuyama	50,000	.....	3,500	19,000 HDT	.....
	Shimotsu	37,500	6,500 FCC	7,000	7,000 HDT	14,460 V, 1,500 L, 4,000 A
	Mitsubishi Oil Co., Kawasaki	105,000	.....	12,000	10,000 HDT 12,500 HDS	5,800 V, 18,000 A
	Mizushima	220,000	20,000 FCC	33,700	48,600 HDT 73,000 HDS 45,000 RHD	97,000 V, 2,000 P, 2,770 L, 29,700 A
	Nichimo Sekiyu Seisei KK, Kawasaki	96,000	.....	10,400	7,200 HDT 40,500 HDS	19,800 V
	Nihonkai Oil Co. Ltd., Toyama City	60,000	.....	.....	.....	.....
	Nippon Mining Co. Ltd., Funakawa	13,370	.....	.....	.....	1,830 V, 840 L, 700 A
	Mizushima	222,310	18,360 FCC	21,740	2,840 DHC 4,520 HDT 64,560 HDS 27,190 RHD	32,550 V, 3,450 L, 5,810 A
	Nippon Oil Co. Ltd., Niigata	26,000	.....	5,100	18,500 HDT	2,000 V, 1,000 L, 425 A
	Nippon Petroleum Refining Co. Ltd., Kudamatsu	42,000	.....	5,200	8,100 HDT	4,500 V, 1,610 A
	Muroran	110,000	10,000 FCC	18,000	66,700 HDT 40,000 HDS	50,000 V
	Negishi	330,000	20,000 FCC	31,000	97,900 HDT 68,000 HDS	143,000 V
	Yokohama	70,000	5,600 FCC	3,300	10,600 HDT	25,000 V, 1,050 A
	Seibu Seikyu KK, Onoda	100,000	.....	8,000	37,000 HDT 9,000 HDS	.....
	Showa Sekiyu KK, Kawasaki	137,000	.....	20,000	30,000 HDT 42,000 HDS	.....
	Niigata	37,000	.....	4,000	11,000 HDT 2,000 HDS	.....
	Showa Yokkaichi Sekiyu KK, Yokkaichi	240,000	15,000	32,000	75,000 HDT 85,000 HDS	.....
	Taiyo Oil Co. Ltd., Kikuma	56,050	.....	4,500	.....	3,600 V
	Teiseki Topping Plant Co., Kubiki	4,410	.....	.....	.....	.....
	Tao Nenryo Kogyo KK, Kawasaki	190,000	36,000 FCC	14,400	137,700 HDS	110,700 V, 1,340 A
	Shimizu	41,300	.....	4,140	13,140 HDS	3,420 V, 255 L, 980 A
	Wakayama	177,700	20,970 FCC	32,400	3,900 HDT 104,400 HDS	71,550 V, 1,130 Alky, 5,410 L, 2,260 A
	Toa Oil Co. Ltd., Chita	100,000	.....	22,000	89,000 HDT 37,000 HDS	46,000 V
	Kawasaki	100,000	.....	11,000	33,000 HDT	.....
	Toho Oil Co. Ltd., Yanohama, Owase City	40,000	.....	.....	.....	.....
	Tohoku Oil Co., Sendai City	100,000	.....	13,000	69,000 HDS	60,000 V, 5,000 A
	Total	**5,133,840**	**307,030**	**527,550**	**2,458,700**	
JORDAN	Jordan Petroleum Refinery Co. Ltd., Zerqa	21,223	4,403 FCC	.....	.....	6,631 V, 615 A
KENYA	East African Oil Refineries Ltd., Mombasa	48,000	.....	4,000	16,000 HDT	.....
KHMER REPUBLIC	Societe Khmere de Raffinage de Petrole, Krung Kompong Som	12,540	.....	1,800	5,850 HDT	.....
KOREA	Honam Oil Refinery Co. Ltd., Yosu	160,000	.....	7,100	11,400 HDT	2,100 A
	Korea Oil Corp., Ulsan	210,000	.....	17,000	23,000 HDT 4,000 HDS	3,600 V, 2,100 A
	Kyung In Energy Co. Ltd., Inchon	55,000	.....	3,600	7,000 HDT	.....
	Total	**425,000**	.....	**27,700**	**45,400**	
KUWAIT	American Independent Oil Co., Mena Abdullah	132,000	.....	.....	32,000 HDS	112,000 V
	Arabian Oil Ltd. (Japan), Ras Al Khafji	30,000	.....	.....	.....	.....

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WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
	Getty Oil Co., Mina Saud	50,000	.....	.....	.....	5,000 C
	Kuwait National Petroleum Co., Shuaiba	134,000	.....	14,000	20,700 DHC 48,600 RHC 85,500 HDT 10,500 HDS	67,000 V
	Kuwait Oil Co. Ltd., Mina al Ahmadi	300,000	.....	5,600	.....	1,250 A
	Total	**646,000**	.....	**19,600**	**197,300**	
LEBANON	Iraq Petroleum Co. Ltd., Tripoli	36,000	7,250 FCC	4,400	6,730 HDT	12,730 V, 900 A
	Mediterranean Refining Co., Sidon	17,500	.....	2,900	2,900 HDT	.....
	Total	**53,500**	**7,250**	**7,300**	**9,630**	
LIBERIA	Liberia Refining Co., Monrovia	11,000	.....	2,000	1,000 HDT	500 A
LIBYA	American Overseas Petroleum Ltd., Nafoora	1,800	.....	.....	.....	.....
	Esso Standard Libya, Marsa El-Brega	8,000	.....	1,500	3,900 HDT	.....
	Mobil Oil Corp., Amal	1,800	.....	.....	.....	.....
	National Oil Co., Intisar	1,800	.....	.....	.....	.....
	Zavia	60,000	.....	6,500	17,720 HDS	.....
	Zeutina	3,000	.....	.....	.....	300 A
	Total	**76,400**		**8,000**	**21,620**	
MALAGASY	Societe Malagache de Raffinage, Tamatave	15,000		2,200	5,000 HDT	
MALAYSIA	Esso Malaysia Berhad, Port Dickson	22,200	.....	3,700	7,800 HDT 6,400 HDS	2,800 V, 1,100 A
	Shell Refining Co., Berhad, Port Dickson	31,000	.....	2,000	8,000 HDT 4,000 HDS	.....
	Total	**53,200**		**5,700**	**26,200**	
MARTINIQUE	Societe Anonyme Raffinerie des Antilles, Fort de France	10,400	.....	2,500	3,500 HDT 3,300 HDS	.....
	Total	**10,400**		**2,500**	**6,800**	
MEXICO	Petróleos Mexicanos:					
	Azcapotzalco	100,000	23,000 FCC	.....	26,000 HDS	50,000 V, 3,000 Alky, 650 P
	Cuidad Madero	169,000	23,000 FCC	15,000	18,000 HDT 15,000 HDS	50,000 V, 3,000 Alky, 650 P, 400 C, 15,000 A
	Minatitlán	233,500	24,000 FCC 21,000 TCC	12,000	21,000 HDT 29,000 HDS	32,000 V, 600 P, 3,000 L
	Poza Rica	27,000	.....	.....	5,000 HDT	.....
	Reynosa	20,500	.....	.....	.....	.....
	Salamanca	210,000	18,000 TCC	8,300	18,500 RHC 8,300 HDT 28,000 HDS	51,200 V, 7,100 L, 3,000 A
	Total	**760,000**	**109,000**	**35,200**	**168,800**	
MOROCCO	Societe Cherifienne des Petroles, Sidi-Kacem	8,550	3,600 TCC	1,080	1,080 HDT	.....
	Societe Am. Marocaine Italienne de Raffinage (Samir), Mohammedia	50,000	.....	6,500	6,500 HDT 2,200 HDS	.....
	Total	**58,550**	**3,660**	**7,580**	**9,780**	
MOZAMBIQUE	Sociedade Nacional de Refinacao de Petróleos, Salazar	17,000		2,500	2,500 HDT	5,000 V, 1,000 A
NETHERLANDS	BP Raffinaderij Nederland NV, Rotterdam	490,200	.....	19,800	158,400 HDT 18,000 HDS	.....
	Chevron Petroleum Maatschappij, Pernis	300,000	.....	39,000	39,000 HDT 38,000 HDT	25,000 V, 5,000 A
	Esso Nederland BV, Rotterdam	325,000	.....	48,000	80,000 HDT 62,000 HDS	

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WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
	Gulf Oil Raffinaderij NV, Rozenburg	94,000	.....	3,000	29,500 HDS	31,000 V, 3,300 L, 2,100 A
	Mobil Oil BV, Amsterdam	125,000	.....	24,000	36,000 HDT 29,000 HDS	.....
	NV Smid & Hollander, Amsterdam	6,500	.....	.....	.....	4,500 A
	Shell Nederland Raffinaderij NV, Pernis	500,000	75,000 FCC	26,000	130,000 HDT 55,000 HDS	.....
	Total	**1,840,700**	**75,000**	**164,800**	**674,900**	
NETHERLANDS ANTILLES	Lago Oil & Transport Co. Ltd., Aruba	440,000	.....	.....	123,000 HDT 115,000 HDS	230,000 V, 1,000 Alky
	Shell Curacao NV, Emmastad	460,000	35,000 FCC	15,000	100,000 HDT 25,000 HDS	.....
	Total	**900,000**	**35,000**	**15,000**	**363,000**	
NEW ZEALAND	New Zealand Refining Co. Ltd., Marsden Point, Whangarei	54,000	.....	18,000	32,000 DHT 5,000 DHD	.....
	Total	**54,000**	.....	**18,000**	**37,000**	
NICARAGUA	Esso Standard Oil SA Ltd., Managua	13,200	.....	2,600	10,600 HDS	1,900 V, 732 A
NIGERIA	Nigerian Petroleum Refining Co. Ltd., Alesa-Eleme, Port Harcourt	60,000	.....	6,500	.....	.....
NORWAY	A/S Norske Esso, Slagen, Tonsberg	110,000	.....	8,500	18,000 HDT 8,100 HDS	.....
	Valloy, Tonsberg	3,000	.....	.....	700 HDT	2,100 V, 700 L, 1,300 A
	A/S Norske Shell, Sola	55,000	.....	10,000	14,000 HDT 8,000 HDS	
	Total	**168,000**	.....	**18,500**	**48,800**	
OKINAWA	Nansei Sekiyu, Nishihara	93,000	.....	10,000	36,300 HDT	.....
	Okinawa Sekiyu Seisei Co. Ltd., Heianza Island	94,000	.....	.....	69,200 HDS	.....
	Toyo Petroleum Refining Co. Ltd., Nakagusuku	25,000	.....	2,000	2,000 HDS	
	Total	**212,000**	.....	**12,000**	**107,500**	
PAKISTAN	Attock Oil Co. Ltd., Rawalpindi	11,640	.....	.....	.....	1,200 V, 350 L, 13,000 A
	National Refinery Ltd., Korangi	12,570	.....	.....	1,635 HDT	5,650 V, 1,635 L, 1,800 A
	Pakistan Refinery Ltd., Karachi	55,000	.....	2,500	21,000 HDT	.....
	Total	**79,210**	.....	**2,500**	**22,635**	
PANAMA	Refinería Panamá SA, Las Minas, Colon	100,000	.....	7,500	30,000 HDT	14,000 V, 5,000 A
PARAGUAY	Refinería Paraguaya SA, Villa Elisa	5,000	.....	.....	.....	210 A
PERU	Petróleos del Perú, Conchán	8,500	.....	.....	.....	3,500 V, 1,000 A
	Iquitos	1,400	.....	.....	.....	.....
	La Pampilla	37,000	9,360 FCC	1,760	2,700 HDT	.....
	Pucallpa	2,700	.....	.....	.....	.....
	Talara	80,000	16,600 FCC	.....	.....	20,000 V, 1,000 L 2,000 A
	Total	**129,600**	**25,960**	**1,760**	**2,700**	
PHILIPPINES	Bataan Refining Corp., Limay	108,000	13,200 TCC	15,300	47,100 HDT 16,400 HDS	17,500 V, 4,300 A
	Caltex (Philippines) Inc., Batangas	70,000	11,400 FCC	8,600	15,200 HDT 15,200 HDS	18,100 V, 900 P
	Filoil Refinery Corp., Rosario	28,000	.....	3,060	7,060 HDS	8,500 V, 773 A

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	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
	Shell Philippines Inc., Batangas	68,000	.....	8,000	12,000 DHT 6,000 HDS	.....
	Total	**274,000**	**24,600**	**34,960**	**118,960**	
POLAND	Glinik Mariampolski	2,470	.....	.....	.....	.....
	Jasto	2,660	.....	.....	.....	.....
	Jealicze	3,880	.....	.....	.....	.....
	L. Warynski, Czechowice	13,300	.....	.....	.....	.....
	Mazovia, Plock	114,000	13,500	10,800	16,200 HDS	54,000 V, 9,000 C, 2,520 L, 5,400 A
	Trzebinia	9,500	.....	.....	.....	.....
	Total	**145,810**	**13,500**	**10,800**	**16,200**	
PORTUGAL	Sacor, Boa Nova, Porto	70,000	.....	15,600	25,800 HDT 9,400 HDS	10,000 V, 2,000 L, 700 A
	Cabo Ruivo, Lisbon	40,000	12,000 TCC	.....	5,500 HDS	320 A
	Total	**110,000**	**12,000**	**15,600**	**40,700**	
PUERTO RICO	Caribbean Gulf Refining Corp., Bayamón	37,800	7,800 FCC	5,500	16,100 HDS	14,200 V, 400 P, 1,000 A
	Commonwealth Oil Refining Co. Inc., Peñuelas	161,000	40,000 HF	70,000	88,000 HDS	65,000 V, 6,000 Alky, 2,400 P
	Yabucoa Sun Oil Co., Yabucoa	85,000	.....	.....	12,000 HDT 8,300 HDS	35,000 V, 5,400 L
	Total	**283,800**	**47,800**	**75,500**	**124,400**	
QATAR	National Oil Distribution Co., Umm Said	6,800	.....	1,300	2,200 HDT 700 HDS	.....
	Total	**6,800**		**1,300**	**2,900**	
RHODESIA	Central African Petroleum Refineries (Pvt.) Ltd., Umtali	20,000	(Not in operation; not included in total)			
RUMANIA	Brazi	76,000	.....	.....	2,025 DHT	.....
	Pitesti	57,000	.....	.....	86,400 DHT	15,570 L
	Sulpacu Barcau (Crisana oil field)	5,700	.....	.....	.....	.....
	Total crude capacity for all refineries: 320,000 b/cd. Other refineries at Borzetsi, Brazov, Cimpina, Darmanesti, G. Gheorghiu Dej—Onesti, Ploiesti, Telaejen.					
SAUDI ARABIA	Arabian American Oil Co., Ras Tanura	565,000	.....	12,500	22,800 HDS	100,000 V, 4,300 A
	Jeddah Oil Refinery Co., Jeddah	31,120	8,210 FCC	2,640	9,900 HDS	12,590 V, 250 A
	Riyadh Oil Refinery, Riyadh	14,180	.....	5,350	5,970 DHC 2,280 HDT	5,670 V, 550 A
	Total	**610,300**	**8,210**	**20,490**	**40,950**	
SENEGAL	Societe Africaine de Raffinage, Dakar	15,000	.....	1,320	.....	.....
SIERRA LEONE	Sierra Leone Petroleum Refining Co. Ltd., Freetown	10,000	.....	.....	.....	
SINGAPORE	BP Refinery Singapore Pte. Ltd., Pasir Panjang	25,650	.....	.....	.....	.....
	Esso Singapore Private Ltd., Pulau Ayer Chawan	230,000	.....	6,000	41,500 HDT	47,000 V, 5,000 L, 3,300 A
	Mobil Oil Malaya Sendirian Berhad, Jurong	175,000	.....	4,000	4,000 HDT 32,000 HDS	.....
	Shell Eastern Petroleum Ltd., Pulau Bukom	350,000	.....	10,000	90,000 HDT 20,000 HDS	.....
	Singapore Petroleum Co. Private Ltd., Pulau Merlimau	65,000	.....	.....	41,010 HDS	29,790 V, 1,000 A
	Total	**845,650**		**20,000**	**228,510**	
SOUTH AFRICA	Caltex Oil SA (Pty) Ltd., Cape Town	**46,000**	**10,400 FCC**	.....	30,500 HDT	21,000 V, 950 A
	Mobil Oil Refining Co. Southern Africa Pty. Ltd., Durban	100,000	14,500 FCC	16,000	18,500 HDT 22,000 HDS	28,000 V, 300 P, 2,000 A

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WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
	Durban*	.....	.....	.....	.....	3,000 L
	National Petroleum Refiners of South Africa (Pty) Ltd., Sasolburg	63,000	15,500 FCC	10,700	9,800 DHC 8,100 RHC 14,500 HDT	22,400 V, 4,400 Alky, 2,900 A
	Satmar Ltd., Boksburg North	3,100	.....	.....	.....	1,200 V, 600 A
	Shell & BP South African Petroleum Refineries Pty. Ltd., Durban	185,000	17,000 FCC	30,000	36,000 HDT 55,000 HDS	.....
	Total	**397,100**	**57,400**	**56,700**	**194,400**	
*South African Oil Refining Co. is owner; Mobil is operator.						
SOUTH YEMEN	BP Refinery (Aden) Ltd., Little Aden	169,100	.....	9,000	2,700 HDS	.....
SPAIN	Asfaltos Españoles SA (Asesa), Tarragona	18,000	.....	.....	.....	15,000 V, 11,700 A
	Cia. Española de Petróleos (Cepsa), San Roque, Cádiz	160,000	.....	27,000	27,000 HDT 9,000 DHC 8,000 HDS	.....
	Santa Cruz de Tenerife, Canary Islands	175,000	.....	16,500	10,800 HDS	10,620 V
	Cia. Ibérica Refinadora de Petróleos SA (Petroliber), La Coruña	120,000	.....	16,500	16,500 HDT 15,000 HDS	.....
	Empresa Nacional Calvo Sotelo, Puertollano	152,000	.....	16,000	1,900 HDT 30,000 HDS	12,000 V, 3,800 L
	Esso Petróleos Españoles SA, Castellón de la Plana	80,000	.....	7,600	14,000 HDT 28,000 HDS	.....
	Refinería de Petróleos de Escombreras SA, Cartagena, Murcia	220,000	.....	18,000	20,000 HDT 53,000 HDS	20,400 V, 3,000 L
	Refinería de Petróleos del Norte SA (Petronor), Somorrostro, Bilbao	160,000	.....	21,000	48,000 HDS	.....
	Union Explosivos Rio Tinto SA Huelva	80,000	.....	14,100	24,900 HDT	23,200 V, 1,900 L, 6,900 A
	Total	**1,165,000**	.....	**136,700**	**306,100**	
SRI LANKA	Ceylon Petroleum Corp., Sapugaskanda	34,400	.....	3,400	13,800 HDT	1,700 V, 850 A 1,900 HDS
	Total	**34,400**	.....	**3,400**	**15,700**	
SUDAN	Shell & BP Sudan Ltd., Port Sudan	22,000	.....	2,000	9,000 HDT	.....
SWEDEN	AB Nynas-Petroleum, Gothenburg	5,700	.....	.....	.....	4,500 V, 900 A
	Malmo	3,800	.....	.....	.....	.....
	Nynasham	28,500	.....	6,300	.....	4,500 V
	BP Raffinaderi (Goteborg) AB, Gothenburg	110,000	.....	24,000	44,000 HDT	.....
	Koppartrans Olje AB (Shell), Gothenburg	100,000	.....	17,000	27,000 HDT 16,000 HDS	.....
	Total	**248,000**	.....	**47,300**	**87,000**	
SWITZERLAND	Raffinerie de Cressier SA, Cressier	65,000	.....	13,000	22,000 HDT 8,000 HDS	.....
	Raffinerie du Sud-Ouest SA, Collombey	73,000	.....	10,600	17,300 HDT	.....
	Total	**138,000**	.....	**23,600**	**47,300**	
SYRIA	Homs Petroleum Refining Co., Homs	49,690	.....	2,620	.....	3,110 V, 1,920 A
TANZANIA	Tanzanian and Italian Petroleum Refining (Tiper) Co. Ltd., Dar es Salaam	16,100	.....	4,200	5,000 HDS	.....

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	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
THAILAND	Defense Energy Department, Bangkok	65,000	.....	10,000	18,000 HDS	400 A
	Fang refinery, Chieng Mai	1,200	.....	.....	.....	1,000 V 200 L
	Esso Standard Thailand Ltd., Sriracha	35,000	.....	4,900	17,000 HDT	5,700 V, 2,600 A
	Thai Oil Refinery Co. Ltd., Sriracha, Cholburi	65,000	7,000 FCC	9,000	32,000 HDT 10,000 HDS	14,500 V, 1,400 A
	Total	**166,200**	**7,000**	**23,900**	**77,000**	
TRINIDAD	Texaco Trinidad Inc., Pointe-a-Pierre	361,000	26,500 FCC	20,000	45,000 HDT 80,000 HDS	187,000 V, 2,200 Alky, 350 P, 4,000 L
	Trinidad and Tobago Oil Co. Ltd., Point Fortin	100,000	.....	7,000	22,000 HDT	7,000 V
	Total	**461,000**	**26,500**	**27,000**	**147,000**	
TUNISIA	Societe Tuniso Italienne de Raffinage (Stir), Zarzouna, Bizerte	25,000	.....	3,300	.....	.....
TURKEY	Anadolu Tasfiyehanesi AS, Mersin	90,000	.....	10,500	22,000 HDT 11,500 HDS	.....
	Istanbul Petrol Rafinerisi AS, Izmit	140,000	25,000 FCC	11,500	14,800 HDT 28,500 HDS	22,000 A
	Turkish Petroleum Co., Aliaga-Izmir	62,700	.....	6,490	7,500 HDT	36,700 V, 3,050 L
	Batman	22,800	3,600 TCC	1,170	.....	3,120 A
	Total	**315,500**	**28,600**	**29,660**	**84,300**	
UNITED KINGDOM	Berry Wiggins & Co. Ltd., Kingsnorth-on-the-Medway, Hoo, Kent	2,000	.....	.....	.....	5,000 V
	BP Refinery (Kent), Isle of Grain	229,900	16,200 FCC 18,000	40,050	14,750 HDS	61,650 V, 2,790 Alky, 3,600 L
	Burmah-Castrol Co., Ellesmere Port	25,280	.....	5,060	6,430 HDT 6,430 HDS	14,370 V,, 6,150 L,
	Conoco Ltd., South Killingholme, South Humberside	87,500	.....	30,000	106,000 HDS	1,110 C
	Esso Petroleum Co. Ltd., Fawley, Hampshire	391,000	81,000 FCC	50,500	33,300 HDT 66,500 HDS	62,000 V, 7,900 P, 7,100 L, 8,300 A
	Lindsey Oil Refinery Ltd., Killingholme, Grimsby	189,000	.....	27,400	39,600 HDT 30,500 HDS	14,200 V, 7,000 A
	Mobil Oil Co. Ltd., Coryton, Essex	175,000	9,500 TCC	33,000	42,000 HDT 33,000 HDS	43,000 V, 5,500 L, 1,700 A
	Phillips Imperial Petroleum Ltd., North Tees	100,000	.....	.....	.....	.....
	Philmac Oils Ltd., Eastham, Cheshire	13,000	.....	.....	.....	9,300 V, 7,300 A
	Shell U.K. Ltd., Heysham	39,000	.....	.....	.....	.....
	Shell Haven	200,000	.....	32,000	63,000 HDT 16,000 HDS	.....
	Stanlow	215,000	50,000	53,000	40,000 HDT 12,000 HDS	.....
	Teesport	125,000	.....	15,000	31,000 HDT 14,000 HDS	.....
	Total England	**1,791,680**	**174,700**	**286,010**	**554,510**	
	North Ireland					
	BP Refinery (Northern Ireland) Ltd., Belfast	32,300	.....	5,850	10,150 HDT 3,350 HDS	.....
	Total Ireland	**32,300**	.....	**5,850**	**13,500**	
	Scotland					
	BP Refinery (Grangemouth), Ltd., Grangemouth	186,200	16,200 FCC	21,600	27,000 RHC 54,000 HDT	76,500 V
	Shell U.K. Ltd., Ardrossan	6,000	.....	.....	.....	.....
	Total Scotland	**192,200**	**16,200**	**21,600**	**81,000**	
	Wales					
	BP Refinery Ltd., Llandarcy, Neath	174,800	14,400 FCC	13,050	6,300 HDT 13,950 HDS	51,100 V, 5,400 L, 800 A
	Esso Petroleum Co. Ltd., Milford Haven, Pembrokeshire	309,000	.....	43,000	32,000 HDT 56,000 HDS	.....
	Gulf Oil Refining Ltd., Milford Haven	103,000	.....	23,000	46,500 HDS	.....
	Texaco Ltd., Pembroke	180,000	.....	17,500	51,000 HDT	10,000 V
	Total Wales	**766,800**	**14,400**	**96,550**	**205,750**	
	TOTAL UNITED KINGDOM	**2,782,980**	**205,300**	**410,010**	**854,760**	

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	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
URUGUAY	Administración Nacional de Combustibles, Alcohol y Portland, La Teja, Montevideo	43,000	4,000 FCC	3,000	8,000 HDS	12,000 V, 400 C, 3,100 A
VENEZUELA	Chevron Oil Co. of Venezuela, Bajo Grande	61,500	.....	.....	.....	15,300 V, 7,000 A
	Cia. Shell de Venezuela, Cardón	348,000	32,000 FCC	.....	44,000 HDT 32,000 HDS	.....
	San Lorenzo	32,000	.....	.....	.....	.....
	Corporación Venezolana del Petróleo, Morón	30,000	.....	1,600	.....	.....
	Creole Petroleum Corp., Amuay	630,000	.....	13,000	17,000 HDT 230,000 HDS	345,000 V, 2,500 L, 35,000 A
	Quiriquire	110,000	.....	.....	.....	.....
	Mobil Oil de Venezuela, El Palito	102,000	.....	6,000	6,000 HDT	.....
	Phillips Petroleum Co., San Roque	5,100	.....	.....	.....	.....
	Sinclair-Venezuelan Oil Co., El Chaure	40,000	.....	.....	.....	.....
	El Toreño	5,400	.....	.....	.....	.....
	Texas Petroleum Co., Tucupita	10,000	.....	.....	.....	.....
	Venezuela Gulf Refining Co., Puerto la Cruz	157,715	14,589 FCC	.....	.....	2,268 Alky
	Total	**1,531,715**	**48,589**	**20,600**	**329,000**	
VIRGIN ISLANDS	Hess Oil Virgin Islands Corp., St. Croix	590,000	.....	.....	93,600 HDS	105,000 V
YUGOSLAVIA	Bosanski Brod	53,982	.....	5,861	945 HC	1,200 V, 666 A
	Lendava	10,447	.....	.....	.....	.....
	Novi Sad	12,500	.....	.....	.....	.....
	Pancevo	29,878	.....	3,996	8,793 HDS	.....
	Rijeka	96,135	.....	13,720	4,662 HDS	4,000 L, 866 A
	Sisak	76,627	2,997	2,664	2,464 HDS	1,000 A
ZAIRE	Sozir—Société Zairo-Italienne de Raffinage, Muanda	16,150	.....	2,700	4,500 HDS	.....
ZAMBIA	Indeni Petroleum Refinery Co. Ltd., Ndola	24,620	.....	5,600	9,000 HDS	2,400 V, 800 A

Worldwide production

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
ABU DHABI	Asab, 1965		17				450,000	83,400,000	40.0
	Abu al Bu Khoosh, 1973		(Started production at 20,000 b/d in Aug., 1974 from 2 wells)						
	Bab (Murban), 1960	8,500	22				110,000	1,428,300,000	38.0-40
	Bu Hasa, 1962	8,500	41				679,820		
	El Bunduq, 1965*	8,500	.....	.....	.....	15	.....	.....	.....
	Mubarras, 1971*	11,000	20	.....	.....	12	22,000	5,200,000	38.1
	Umm Shaif, 1958*	9,150	27	.....	.....	10	206,446	451,262,526	37.7
	Zakum, 1964*	9,100	33	.....	.....	8	284,531	531,691,675	40.1
	Total		**160**	.....	.....	**35**	**1,752,797**	**2,499,854,201**	
	*Offshore. †To go on production in April, 1975.								
AFGHANISTAN*	Angot, 1950	2,100							51
	Hodja-Gugerdeg, 1961	4,170-4,700							51
	Khulaja-Borhan, 1964								28
	Sar-i-pul, 1959	5,000	13	2	...	...	150†	138,900†	51
	Yatim Tagh, 1950	1,290-4,019							
	Total		**13**	**2**	...	...	**150**	**138,900**	
	*Data estimated. + Condensate. Note: Gas production estimated 250 MMcfd.								
ALGERIA	**Alrep**								
	Haoud Berkaoui, 1965	10,300	9	...	...	2	32,235	85,432,775	46.0
	Hassi Messaoud North, 1956	11,000	108	...	...	15	222,000	790,867,000	49.0
	C.P.A.								
	Gassi Touil and E., 1966	6,930	58	...	...	18	69,780	29,912,000	44.0
	Creps								
	Acheb, 1963	7,382	7	...	...	2	5,484	12,367,660	43.0
	Edjeleh, 1956	1,900- 3,000	40	...	90	62	19,775	154,352,000	35.0

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WORLDWIDE PRODUCTION

Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
El Adeb Larache, 1958	4,100	21	...	...	16	9,800	36,027,000	44.5
Hassi Mazoula, 1962	4,231- 4,400	1	9	...	7	8,844	15,002,000	41.0
Ohanet, S. (& N.), 1960	7,920	21	...	...	16	1,795	72,445,175	44.0
Tiguentourine, 1956	3,526	43	...	...	36	7,030	41,067,950	45.0
Tin Fouye, 1961	1,300- 2,040	35	9	...	5	7,562	139,359,000	39.0-41.0
Zarzaitaine, 1958	4,600	25	...	45	31	80,600	488,463,000	42.0
Petral								
Askarene, 1962	8,250	...	9	...	...	574	15,620,500	44.0
Guelta, 1962	7,810	4	...	...	3	555	16,199,575	44.0
Repal								
Hassi Messaoud, S., 1956	11,000	145	...	...	16	338,077	1,071,398,000	49.0
Nezla, 1965	8,500	2	...	...	3	2,359	18,861,000	48.0
Sepal								
El Gassi El Agreb, 1959	9,300	22	...	...	21	38,516	160,938,340	47.0
Sonatrach								
Djebel Onk, 1960	3,900	...	4	...	8	750	1,970,750	37.0
Djoua W., 1966	4,000	1	...	...	5	166	4,938,600	40.0
El Borma, 1967	2,495	8	...	...	...	3,341	3,807,487	45.0
Rhourde El Baguel, 1962	3,182	17	...	...	1	10,000	242,640,000	40.0
Timedratine, 1965	8,250	13	...	...	2	1,466	4,149,100	41.0
Tin Fouye Tabankort, 1966	4,500- 6,700	49	...	...	6	5,082	45,829,900	41.0
Rhourde Nouss, 1963	2,820	8	...	...	3	865	11,501,725	50.0
Others		25	...	...	16	22,149	20,741,385	
Total		660	31	135	294	888,805	3,483,891 922	

*Some data estimated.

ANGOLA

ANGOLA PROPER:								
Bento, 1972	7,500	2	...	...	...	2,440	1,109,874	26.1
Cabeca da Cobra, 1970	4,200	7	...	...	3	894	956,711	41.1
Mulenvos, 1966	6,500	1	6	...	3	721	3,556,771	22.6
N'Zombo, 1973	6,100-6,300	4	...	...		5,495	1,230,719	30.4
Quenguela Norte, 1968	4,900-6,200	22	4	...	24	5,457	22,424,773	31.0
Quinguila, 1972	4,100	11	...	...	...	5,227	2,114,647	35.9
Others	2,100-9,900	6	2	...	18	752	32,988,358	29.7
Subtotal		53	12	...	48	20,986	64,381,8[illegible]	
CABINDA:*								
Malongo, N., 1966	1,500-8,500	10	...	43	2	42,460	96,562,400	21.1-38.0
Malongo, 1., 1966	1,300-1,600	...	...	27	...	11,767	28,720,722	23.0-27.0
Malongo, W., 1969	1,800-8,750	20	...	16	12	86,210	84,227,042	18.0-34.0
Subtotal		30	...	86	14	140,437	209,510,164	
Total		83	12	86	62	161,423	273,892,017	

*All offshore

ARGENTINA

Chubut, 1907	2,500-6,000	...	5	...	1	75,981	572,500,524	22.8-24.5
Jujuy, 1969	11,000-15,000	25	...	...	...	24,824	22,012,654	23.0
La Pampa, 1968	5,000-5,500	17	...	...	...	12,894	15,899,134	...
Mendoza, 1932	7,500-8,000	?	800	...	31	112,289	523,212,915	...
Neuquen, 1918	3,000-6,000	50	300	...	50	48,153	184,154,078	30.0
Rio Negro, 1959	2,800-6,000	200	250	...	110	64,383	171,574,477	...
Salta, 1928	1,100-15,000	60	15	...	140	3,871	83,676,499	22.5-54.0
Santa Cruz, 1944	4,000-6,000	200	2,140	...	365	68,159	506,971,408	41.8
Tierra del Fuego, 1952	6,000-7,000	5	25	...	10	8,636	43,357,803	41.0
Others		...	...	...	...	2,845	240,976,417	
Total		560	3,535	...	707	421,945	2,364,335,909	

Note: Production data are as of 1-1-74 (source: AAPG), well data estimated.

AUSTRALIA

Alton, 1964	6,000	...	4	...	2	131	1,651,927	52.0
Barracouta, 1965*	4,700	...	...	...	2	3,600	8,656,000	62.8
Barrow Island, 1964*	2,200- 6,700	16	180	109	28	39,214	99,005,933	38.0
Halibut, 1967*	7,600	7	...	...	12	112,300	227,240,000	43.3
Moonie, 1961	5,800	1	2	17	2	1,358	17,503,000	44.0
Kingfish, 1967*	7,500	40	...	...	2	214,000	194,472,000	46.9
Total		64	186	126	48	370,603	548,528,860	

*Offshore.

AUSTRIA

Vienna Basin								
Matzen, 1949	4,200- 7,200	64	514	243	116	22,971	305,458,762	25.7
Muehlberg, 1942	3,900- 5,500	...	43	14	6	692	36,077,300	35.0
Pirawarth, 1957	1,600- 6,500	4	...	53	4	2,033	5,762,043	28.4
St. Ulrich, 1938	1,600- 4,300	2	124	...	133	1,504	36,674,736	33.0
Schoenkirchen & Prottes Tief, 1962	7,800-10,100	16	2	2	5	10,635	42,949,452	31.1
Gaiselberg, 1938	3,400- 6,500	...	34	...	25	1,050	28,007,056	24.8
Others		3	80	...	46	1,172	48,965,798	30.8
Molasse Zone								
Piberbach, 1968	3,500	6	...	...	1	780	1,728,108	39.0
Sattledt, 1971	5,580	...	8	...	3	1,330	62,020	37.0

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WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
AUSTRIA—Continued	Voitsdorf, 1962	6,900	3	18	...	6	3,045	14,695,345	35.8
	Others		2	36	...	8	1,847	8,266,282	34.0
	Total		100	859	312	353	47,059	529,346,902	
BAHRAIN	Awali, 1932	1,850-4,600	162	30	19	33	67,975	555,959,500	33.0
BARBADOS	Fisher Pond, 1966		...	3	...	...	215	85,629	....
	Woodbourne, 1966		...	2	...	...	95	43,952	....
	Others		...	3	...	...	31	11,205	....
	Total		...	8	...	...	341	140,786	
BOLIVIA	Camiri, 1927	3,936	18	1	55	...	1,665	43,344,808	52.0-55.0
	Caranda, 1960	3,936	41	...	5	...	6,169	43,984,299	49.5
	Caigua, 1973	3,936	2	...	...	...	4,072	275,435	47.0
	Colpa, 1961	9,184	26	...	...	...	4,753	10,228,431	46.0
	La Pena, 1965	8,856	19	...	...	...	7,501	4,998,057	43.0
	Monteagudo, 1966	4,592	29	...	1	...	8,395	13,961,698	48.0
	Rio Grande, 1961	9,184	30	...	...	...	13,543	14,907,796	62.0
	Tatarenda, 1962	2,296	5	13	...	...	888	5,472,335	
	Others		...	36	...	...	536	8,592,307	
	Total		170	50	61	...	47,522	145,765,166	
BRAZIL	Agua Grande, 1951	3,281- 6,562	40	44	...	80	18,800	221,808,000	38.0-42.0
	Aracas, 1965	3,281- 6,562	6	67	...	25	28,800	53,112,000	41.0
	Buracica, 1959	2,395-2,559	...	84	...	13	19,410	100,966,000	35.0
	Candeias, 1941	3,281- 6,562	10	24	...	100	5,682	63,804,979	30.0-31.0
	Carmopolis, 1963	2,460	...	190	...	7	19,240	53,735,000	24.0
	Cassarongongo, 1959	4,757	...	19	...	6	3,235	7,338,000	32.0
	Dom Joao, 1947	918	...	370	...	125	10,000	59,597,500	38.0
	Faz. Boa Esperanca, 1966	7,874- 8,530	3	4	...	...	2,700	5,869,500	38.0-40.0
	Imbe, 1964	2,132- 8,202	4	16	...	6	3,100	7,074,000	38.0-42.0
	Guaricema, 1968*	3,543	12	...	...	5	4,800	1,682,448	43.0
	Malombe, 1966	3,281	...	14	...	1	1,700	2,861,000	31.0
	Miranga, 1965	3,281- 6,542	34	77	...	33	32,000	104,373,599	39.0-41.0
	Riachuelo, 1961	1,476	...	50	...	8	2,000	4,481,000	28.0
	Siririzinho, 1967	1,640	...	80	...	4	5,500	11,574,000	30.0
	Taquipe, 1959	3,117- 3,937	8	55	...	15	8,500	56,460,500	40.0
	Others		...	40	...	75	6,722	24,934,000	
	Total		117	1,134	...	503	172,189	779,671,526	
	*Offshore								
BRUNEI-MALAYSIA	Ampa, SW, 1963*	7,068-8,155	81	...	...	34	111,399	246,442,177	41.0
	Bakau, 1971*	11,000	1	...	...	...	1,865	1,820,655	39.0
	Baram, 1967*	9,500	29	...	...	2	53,440	50,739,639	40.5
	Baronia, 1970*	11,000	1	...	...	...	2,500	1,570,333	42.0
	Champion, 1970*	4,300	30	...	...	3	35,853	24,315,492	23.0
	Fairley, 1969*	10,740	11	...	...	1	28,599	21,777,859	40.0
	Seria, 1928		345	...	...	170	39,051	823,663,692	34.0
	West Lutong, 1965*		21	...	...	3	53,440	63,031,656	39.5
	Others (Miri, Jerudong)							80,200,000	
	Total		519	...	...	213	326,147	1,313,561,503	
	*Offshore								
BURMA*	Chauk-Lanywa, 1902		2	290	...	...	2,000		
	Mann, 1970	3,955-6,934	30	5	...	...	10,000		
	Myanaung, 1965		...	80	...	...	6,000		
	Prome, ?		...	20	...	...	1,000	157,617,000	
	Yenangyaung, 1902	5,000	...	200	...	...	4,000		
	Total		32	595	...	..	23,000		
	*Data estimated.								

	Name of field and discovery date	Depth (ft)	No. of wells capable of production	Daily avg. 1st 6 mos. 1974	Cumulative 7/1/74	Gravity °API
CANADA	ALBERTA					
	Acheson, 1950	4,600- 5,100	98	12,626	60,617,582	38.0
	Bantry, 1948	3,250	104	5,388	18,000,100	25.0
	Bellshill Lake, 1956	3,000	142	5,500	18,442,414	27.0
	Bonnie Glen, 1952	3,950- 7,100	173	51,127	202,768,853	38.0-42.0
	Carson Creek, North, 1958	8,650- 8,750	60	18,577	46,301,440	44.0
	Cessford, 1952	3,000- 3,350	75	2,925	12,871,143	24.0-26.0
	Chauvin, 1952	2,050	37	3,055	4,746,712	22.0
	Clive, 1951	6,150- 6,250	130	6,444	18,113,655	40.0-41.0

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	Name of field and discovery date	Depth (ft)	No. of wells capable of production	Daily avg. 1st 6 mos. 1974	Cumulative 7/1/74	Gravity °API
CANADA—Continued	Crossfield, 1956	6,650	88	1,520	14,757,875	38.0
	Erskine, 1953	5,400	90	1,959	17,856,384	28.0
	Excelsoir, 1949	3,900	33	2,253	16,789,370	36.0
	Fenn-Big Valley, 1950	5,300- 5,400	314	27,080	143,335,501	26.0-32.0
	Garrington, 1954	6,600	95	1,550	12,815,104	39.0
	Gilby, 1953	5,850- 7,050	79	5,823	28,102,735	27.0-38.0
	Glen Park, 1951	6,300	10	2,487	9,953,847	38.0
	Golden Spike, 1949	5,050- 5,650	26	36,027	162,387,347	37.0
	Goose River, 1963	9,200	23	6,390	14 209,163	41.0
	Harmattan, East, 1957	8,600	107	8,210	33,700,531	38.0
	Harmattan Elkton, 1955	8,796- 9,000	67	5,224	31,228,165	38.0
	Hassar, 1957	4,800	35	2,898	11,728,501	36.0
	Innisfail, 1957	8,600	83	8,050	37,218,502	44.0
	Joarcam, 1949	3,250	281	7,680	72,669,447	38.0
	Joffre, 1953	5,000- 7,000	132	8,656	66,324,791	41.0-42.0
	Judy Creek, 1959	8,650- 8,850	214	61,853	172,505,676	41.0-42.0
	Kaybob, 1957	9,800	86	14,189	50,939,059	43.0
	Kaybob, South, 1962	6,900	95	8,592	21,910,984	42.0
	Leduc, 1947	4,200- 5,450	788	20,400	322,736,744	40.0
	Lloydminster, 1939	2,000	253	2,322	19,685,264	16.0
	Medicine River, 1956	7,050- 7,250	53	6,943	7,103,752	26.0-27.0
	Mitsue, 1964	5,650	236	42,413	91,138,488	43.0
	Nipisi, 1965	5,600	187	40,472	77,776,926	41.0
	Pembina, 1953	3,200- 5,100	3,059	138,817	788,717,635	37.0-38.0
	Provost, 1952	2,760- 2,868	291	6,535	14,466,742	38.0-42.0
	Rainbow, 1965	5,950- 6,400	23	80,149	159,779,420	38.0-42.0
	Red Earth, 1956	4,700	33	4,922	11,809,690	40.0
	Redwater, 1948	3,200	785	85,914	498,029,776	36.0
	Simonette, 1958	11,600	22	5,669	17,390,096	47.0
	Snipe Lake, 1962	8,550	93	8,625	27,997,923	37.0
	Stettler, 1949	5,200- 5,350	125	4,406	32,787,681	28.0-30.0
	Sturgeon Lake, 1952	8,850	18	2,689	11,287,562	37.0-38.0
	Sturgeon Lake, South, 1953	4,900- 8,500	143	15,676	66,544,960	36.0-38.0
	Sundre, 1955	9,050	47	3,490	20,194,299	32.0
	Swan Hills, 1957	7,450- 8,300	692	105,209	309,877,498	41.0-42.0
	Swan Hills, South, 1959	8,400	193	48,403	135,208,354	41.0
	Sylvan Lake, 1962	7,300- 7,450	33	3,170	9,388,540	28.0
	Taber, South, 1963	3,250	24	3,149	10,006,116	19.0
	Turner Valley, 1914	2,500- 9,000	170	2,763	123,261,023	40.0
	Virginia Hills, 1957	9,300	104	21,098	64,765,304	38.0
	Virgo, 1967	4,900- 4,950	96	8,669	21,205,254	29.0-43.0
	Wainwright, 1926	2,100	294	6,649	27,543,520	22.0
	Westrose, 1952	7,250	19	15,311	48,894,556	41.0
	Willesden Green, 1954	6,200	412	15,096	53,428,398	41.0
	Wizard Lake, 1951	6,450	35	41,443	127,563,345	38.0
	Zama, 1967	4,900	179	14,053	37,545,970	25.0-43.0
	Others	....	1,344	328,978	77,047,283	...
	Total		12,428	*1,398,516	*4,513,477,000	
	*All fields					
	BRITISH COLUMBIA					
	Aitken Creek, 1959	4,400	10	980	3,767,060	38.0
	Beatton River, 1958	3,800	16	934	5,603,475	
	Blueberry, 1953	6,950	33	1,519	9,572,747	40.0
	Boundary Lake, 1955	4,300- 4,600	331	20,994	98,792,611	...
	Inga, 1966	5,300	79	7,076	19,349,203	40.0
	Milligan Creek, 1950	3,750	29	4,385	33,440,736	41.0
	Peejay, 1959	3,900	105	7,756	44,301,107	30.0
	Weasel, 1965	3,800	23	3,392	9,365,619	40.0
	Others	....	974	4,966	15,685,443	...
	Total		1,600	52,002	239,878,001	
	MANITODA					
	Daly, 1951	2,550	148	1,354	16,470,140	32.0
	Virden-Roselea, 1953	2,030	243	3,671	27,769,636	30.0
	N. Virden-Scallion, 1953	2,010	244	6,509	46,144,893	35.0
	Routledge, 1955	2,130	106	1,200	11,914,892	35.0
	Others	....	80	247	2,038,185	...
	Total		821	12,981	104,337,746	
	SASKATCHEWAN					
	Alameda, 1956	4,420	87	1,492	12,723,136	40.0
	Battrum, 1955	2,900	155	6,539	33,938,885	19.0
	Coleville, 1951	2,700	196	4,384	25,226,109	13.0
	Dollard, 1953	4,600	57	8,219	61,580,255	23.0
	Fosterton, 1952	3,200	43	4,888	46,138,217	21.0
	Instow, 1954	4,500	48	5,096	33,212,924	23.0
	Midale, 1953	4,600	384	8,788	74,858,082	27.0
	North Premier, 1953	3,300- 3,500	67	5,197	16,010,837	23.0-24.0
	Steelman, 1954	4,590- 4,620	616	17,988	167,345,500	38.0
	Weyburn, 1955	4,600	575	23,066	182,071,094	28.0
	Others	....	4,084	130,343	648,870,821	...
	Total		6,312	216,000	1,301,975,860	

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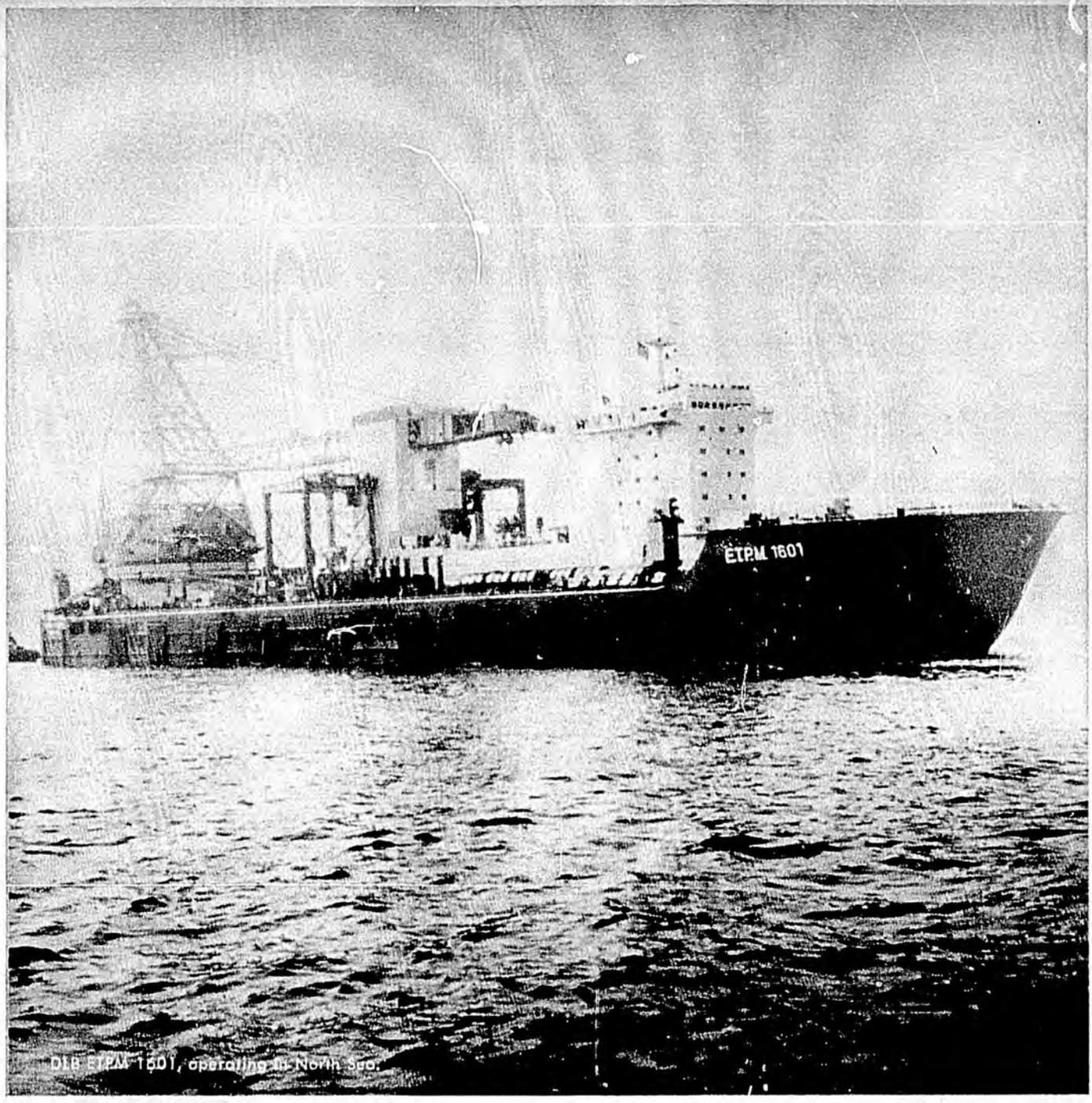

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	Name of field and discovery date	Depth (ft)	No. of wells capable of production	Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
CANADA—Continued	ONTARIO					
	All fields	....	....	2,000	53,100,080	...
	NEW BRUNSWICK					
	Stoney Creek	....	....	24	763,399	...
	NORTHWEST TERRITORIES					
	Norman Wells	....	41	1,000	16,372,517	...
	Total Canada		21,202	*1,682,523	*6,229,904,603	

*All

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
CHILE	MAINLAND								
	Cañadón, 1962	6,560	15	...	8	18	1,696	10,249,312	38.4
	Daniel, 1960	5,975	37	...	18	40	4,779	28,210,426	25.4
	Daniel Este, 1961	5,740	21	...	5	14	4,321	19,445,725	25.0
	Posesión, 1960	6,100	34	...	...	7	2,506	14,125,390	63.6
	Dúngenes, 1962	6,050	7	...	1	3	747	2,363,315	28.6
	TIERRA DEL FUEGO								
	Calafate, 1955	6,200	16	...	5	33	3,353	18,155,964	49.3
	Catalina Sur, 1961	5,890	3	...	5	31	358	5,444,898	44.0
	Cullen, 1954	5,840	26	...	14	50	2,399	34,999,991	41.8
	Tres Lagos, 1957	5,640	20	...	2	37	2,097	11,014,649	40.1
	Victor Sur, 1950	7,200	..	...	6	14	452	7,223,645	39.3
	Otros		40	...	33	121	5,940	50,338,645	
	Total		219	...	97	368	28,648	201,571,960	
CHINA (TAIWAN)	Tiehchenshan, 1962	8,500-18,000	26	...	...	2	2,652	4,639,533	53.0
	Others		34	...	...	16	619	1,094,524	
	Total		60	...	...	18	3,271	5,734,057	
COLOMBIA	Acae, 1964	10,600	4	3	3	4	4,436	12,178,267	30.5
	Bonanza, 1964	4,000	4	8	1	3	2,128	7,062,835	32.3
	Boquete, 1961	8,000	12	..	...	6	3,152	10,677,912	27.2
	Caribe, 1969	7,750	2	1	...	1	1,042	1,785,958	31.9
	Casabe, 1941	3,880	...	270	...	40	6,144	197,283,929	20.8
	Chucurí-BajoRio, 1958	10,100	..	1	...	1	843	71,694	28.1
	Cicuco, 1961	8,000	10	..	...	13	426	41,902,747	40.3
	Colorado, 1930	3,600	4	32	...	13	694	6,350,559	39.4
	Cocorna, 1963	2,000	..	14	...	4	1,021	3,320,170	12.5
	Cristalina, 1959	10,700	..	3	...	..	738	3,782,244	30.2
	Dina, 1962	2,900	4	5	...	7	3,318	5,974,218	21.5
	Galán, 1945	3,800	..	64	...	9	1,179	14,833,647	19.0
	Infantas, 1918	3,200	1	298	...	16	4,064	208,510,209	25.8
	La Cira, 1925	3,250	..	619	...	48	17,146	406,466,926	24.0
	Lisama, 1957	9,500	8	9	...	5	2,018	4,740,318	31.0
	Llanito, 1960	7,350	2	20	...	10	1,172	9,083,613	21.0
	Orito, 1963	6,600	20	4	23	25	37,513	97,247,798	33.6
	Ortega, 1953	4,300	...	7	...	1	486	9,618,429	26.0
	Palagua-Velasquez, 1946	4,925	..	222	34	102	18,144	190,190,233	19.0
	Payoa, 1962	8,000	20	...	11	18	5,970	59,762,445	33.6
	Peñas Blancas, 1958	8,200	..	6	...	..	529	6,388,189	29.6
	Provincia, 1962	8,000	20	...	13	14	17,442	96,202,409	33.0
	Ric Zulia, 1962	5,600	4	12	...	1	16,865	101,510,219	41.2
	San Antonio, 1971	9,500	..	4	...	..	909	1,435,498	30.7
	Tello, 1972	9,200	3	..	...	..	1,147	504,518	20.9
	Tibú, 1940	4,200	30	146	22	70	10,826	249,537,540	36.5
	Tisquirama-Totumal, 1955	9,500	...	9	...	..	443	3,161,482	22.0
	Yarigui, 1943	6,850	..	39	...	3	8,995	85,922,950	20.8
	Others	....	1	26	...	27	942	5,954,526	
	Total		149	1,822	107	441	169,732	1,841,461,482	
CONGO REPUBLIC (Brazzaville)	Emeraude Marine, 1969*	1,00	..	49	...	5	51,000	25,537,000	23.0
	Pointe Indienne, 1957	5,00	3	..	...	6	220	5,912,600	36.9
	Total		3	49	...	11	51,220	28,735,250	

*Offshore

DENMARK	Dan, 1971*	6,/00	6	...	...	2	(1)	1,641,000	30.4

*Offshore. 1Shut down temporarily—resumed production July 1, 197.

DUBAI	Fateh, 1966*	7,600- 9,000	24	...	9	...	132,892	199,104,476	31.8
	Fateh SW, 1970*	7,50 - 9,000	12	...	...	1	98,482	59,696,127	32.0
	Total		36	...	9	1	231,374	258,800,603	

*Offshore.

AGO 529940

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
ECUADOR	COASTAL:								
	Ancon, 1921	4,000	7	540	...	1,671	2,391	99,107,336	36.5-37.0
	Others	1,000- 3,000	18	156	...	308	408	9,124,979	30.5-37.0
	ORIENTE:								
	Aguarico, 1969	9,400	9	...	...	...	7,962	1,441,133	29.5
	Lago Agrio, 1967	10,120	20	...	...	6	47,301	29,716,724	28.6
	Sacha, 1969	9,900	58	...	...	16	79,132	62,129,165	29.7
	Shushufindi, 1969	9,400	11	...	24	15	94,668	50,806,826	31.7
	Total		**123**	**696**	**24**	**2,016**	**231,862**	**252,326,163**	
EGYPT	Abu Gharadig, 1972	9,500	2	...	...	11	1,475	4,290,295	36.0
	Abu Rudeis, 1957†	8,500	...	...	...	...	...	13,204,947	23.0
	Al Yusr, 1966	4,264	15	...	...	...	7,167	12,222,447	...
	Asl, 1948†	3,000	...	...	...	...	...	34,269,304	23.0
	Belayim (Land and Offshore), 1954†*	7,000- 8,500	...	...	...	...	...	224,777,435	28.0
	El Alamein, 1966	8,700	...	8	...	12	997‡	8,508,275	19.0
	El Morgan, 1965*								
	Kare n	5,500- 6,400	16	...	24	2	39,594	420,492,068	32.0
	Belayim	5,100- 5,700	5	...	4	...	8,594	6,974,854	27.0
	July, 1973*	9,000	3	...	...	...	13,056	2,450,589	34.0
	Kareem, 1968	2,200	...	8	...	12	997‡	8,508,275	19.0
	Ras Amer, 1965	4,264	1	3	...	...	866‡	2,860,411	20.0
	Ras Bakr, 1958	3,280	15	35	...	...	7,789‡	47,454,752	20.0
	Ras Gharib, 1938	2,100	...	90	..	12	7,298‡	217,179,819	25.0
	Razzak, 1972	7,700	11	...	...	2	17,302	11,742,447	36.0
	Sidri, 1959†	8,100	...	...	...	...	...	4,308,786	23.0
	Sudr, 1946†	....	...	...	...	...	...	39,198,071	23.0
	Uyun, 1968	....	...	90	...	...	1,653	1,237,389	...
	Yidma, 1971	9,000	...	5	...	...	5,300	7,065,576	43.5
	Others		10	2	...	1	444	325,104	...
	Total Egypt		**78**	**241**	**28**	**46**	**118,335**	**1,103,923,932**	

*Offshore. †These fields on Sinai Peninsula being produced by Israel, who refuses figures. Daily output is estimated at 120,000 bbl. Cumulative figures for the captured fields are carried forward for the record (data as of June 5, 1967). ‡Data are estimated.

FRANCE	**ALSACE** (All fields shut in)		...	...	...	...	....	26,368,290	
	AQUITAINE BASIN								
	Esso Rep fields:								
	Cazaux, 1959	8,200	3	25	...	2	4,045	43,339,866	34.1-37.5
	Lavergne, 1962	10,650	2	1	...	...	322	8,768,979	40.4
	Lugos, 1956	4,900	6	...	...	1	405	3,193,516	20.8
	Parentis, 1954	7,710	5	17	...	4	7,804	160,516,393	33.0
	Others	....	1	12	...	2	790	13,683,401	
	Erap fields:								
	Bonrepos, 1973	9,300	...	1	...	...	33	181,091	42.8
	Montastruc, 1973	9,810	1	...	...	...	755	21,652	42.0
	SNPA fields:								
	Lacq, 1949	2,165	11	21	...	15	1,161	22,309,479	20.6
	PARIS BASIN								
	Copesep fields	1,530-4,525	...	13	...	1	441	6,370,994	19.9-32.8
	Erap fields:								
	Chailly-en-Biere, 1958	5,575	...	20	...	12	474	7,518,015	35.3
	Chuelles, 1961	2,000	...	28	...	12	395	4,334,908	27.1
	Saint-Firmin, 1960	2,000	...	33	...	11	789	6,170,383	27.8
	Villemer, 1958	4,985	...	6	...	7	417	3,473,238	31.4
	Others		2	52	...	16	1,402	15,322,783	
	Petrorep fields:								
	Coulommes, 1958	6,070	4	27	...	11	937	10,390,097	32.6
	Total France		**35**	**256**	...	**94**	**20,170**	**331,963,085**	
GABON	Anguille Marine, 1962*	8,300	16	...	...	3	28,200	57,036,000	31.8
	Anguille, Northeast, 1968*	7,480	10	...	...	...	13,000	20,327,000	31.4
	Anguille, Northwest, 1968*	7,700	2	...	...	...	2,000	2,010,385	31.4
	Cap Lopez, N., 1962	6,700	4	...	...	5	5,900	16,401,500	23.9
	Gamba, 1963	3,000	31	...	...	12	29,584	98,604,344	32.4
	GBM, 1969	6,500- 7,500	...	...	...	2	(not yet producing)		33.0-33.8
	Ivinga, 1967	3,100	25	...	...	4	21,846	40,598,928	32.5
	Lucina Marine, 1971* Not yet on stream. Three oil wells finished at about 6,100 ft.								
	Pointe Clairette, 1956	4,000- 5,000	17	...	...	12	2,750	25,330,750	29.9
	Port Gentil Ocean, 1964*	8,100	3	...	...	2	3,750	10,233,750	33.6
	Tchengue, 1959	3,500	9	...	...	14	3,500	22,277,500	30.6
	Tchengue Ocean, 1962*	6,200	5	...	...	1	1,500	5,547,500	33.1
	Torpille Marine, 1968*	9,487	10	...	...	...	11,000	9,886,000	33.9
	Others		5	...	...	5	...	.....	
	Total		**137**	...	...	**60**	**123,030**	**308,253,657**	

*Offshore
Note: Elf data estimated.

AGO 529941

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
GERMANY, WEST	**BAVARIA**								
	Arlesried, 1964	4,900	...	12	...	5	2,469	6,822,519	47.0
	Darching, 1967	14,400	1	...	...	...	1,679	2,392,277	
	Moenchsrot, 1958	4,800	...	18	...	...	1,204	6,979,224	36.0
	Others		9	26	...	...	1,846	17,532,091	
	Total		10	56	...	5	7,198	33,726,111	
	EMSLAND								
	Emlichheim, 1944	2,600	...	99	...	...	3,385	28,192,364	25.0
	Georgsdorf, 1944	1,800- 2,600	45	163	...	4	8,610	65,802,957	24.0-29.0
	Meppen-Schwefingen, 1960	4,000	10	12	...	...	1,391	6,180,959	28.0-30.0
	Ruhlermoor, 1949	2,000- 4,700	10	246	...	10	12,520	88,402,752	25.0-34.0
	Ruhlertwist, 1949	2,350- 2,900	6	103	...	...	1,990	22,392,447	25.0
	Scheerhorn, 1949	3,550- 3,750	...	123	...	5	4,831	31,026,663	30.0
	Others		...	156	...	...	1,692	23,297,702	
	Total		71	902	...	19	34,419	265,295,844	
	SCHLESWIG-HOLSTEIN								
	Plon-Ost, 1959	6,400	2	55	...	1	7,311	32,835,310	36.0
	Preetz, 1962	8,350- 8,550	1	24	...	...	1,041	7,906,367	29.0
	Reitbrook, 1937	1,450- 2,100	6	38	...	9	2,021	31,561,860	29.0
	Others		1	81	...	4	1,472	41,921,770	
	Total		10	198	...	14	11,845	114,225,307	
	HANNOVER								
	Eldingen, 1949	4,750	...	27	...	...	1,622	13,961,896	35.0
	Hankensbuttel, 1954	4,450- 5,100	10	37	...	...	9,380	63,302,557	33.0
	Hardesse, 1958	6,050	9	11	...	...	849	3,316,343	34.0
	Hohne, 1951	4,300- 5,900	...	34	...	3	3,063	32,902,948	33.0-34.0
	Kuesebeck, 1958	5,100- 5,200	...	24	...	...	2,143	10,505,290	36.0
	Leiferde, 1956	2,600	2	34	...	...	2,458	15,162,434	34.0
	Luben, 1955	3,950	1	14	...	...	1,247	7,333,149	35.0-38.0
	Meckelfeld, 1938	1,000- 1,300	1	24	...	1	1,253	11,131,507	24.0-32.0
	Nienhagen-Haenigsen, 1899	800- 4,100	...	68	...	5	944	55,521,775	22.0-32.0
	Oelheim-Sud, 1968	1,650	9	4	...	...	1,190	2,921,707	33.0
	Oerrel-Wesendorf-Nord, 1954	4,450	...	38	...	...	1,077	7,560,590	
	Ruehme, 1954	1,950	...	39	...	1	1,019	5,534,848	
	Sinstorf, 1960	6,750- 7,150	...	20	...	...	2,356	12,880,869	
	Suderbruch, 1949	3,750- 7,550	...	60	...	...	1,138	19,137,035	19.0-38.0
	Vothop, 1952	2,950- 6,900	2	24	...	4	1,413	10,986,830	36.0
	Others		...	262	...	...	4,792	134,833,303	
	Total		34	720	...	14	35,944	406,993,081	
	UPPER RHINE VALLEY								
	Landau, 1955	3,950- 4,800	...	76	...	2	2,950	16,781,250	36.0
	Others		...	21	...	1	312	10,051,359	
	Total		...	97	...	3	3,262	26,832,609	
	WESER-EMS								
	Barenburg, 1953	2,300- 3,300	9	32	...	1	2,641	24,603,940	29.0
	Rockstedt, 1954	3,750	...	25	...	3	2,249	12,706,859	
	Bramberge, 1958	2,560- 3,300	56	6	...	...	2,992	50,431,806	29.0
	Dueste, 1954	2,600- 4,250	...	156	...	...	2,928	31,516,104	
	Gross Lessen, 1969	3,300	4	...	...	...	6,798	7,774,865	
	Sued-Oldenburg, 1950	1,700- 6,500	4	93	...	13	2,198	31,637,738	
	Voigtei, 1953	1,150- 1,500	2	68	...	12	1,545	19,147,778	31.0-34.0
	Wehrbleck, 1957	3,400	...	63	...	...	1,295	10,731,388	33.0
	Others		...	83	...	...	2,281	19,201,325	
	Total		75	526	...	29	24,927	207,751,803	
	Total Germany, West		200	2,499	...	84	117,595	1,054,824,755	
GUATEMALA	Rubel Santo, 1974	5,300	...	...	...	1	...	...	30.0
	Tortugas, 1974	2,400	...	...	...	2	...	...	35.0
	Total		...	...	...	3	...	...	
	Note: These two new fields, first for Guatemala, are not yet on production.								
ISRAEL	Heletz-Brur, 1955	5,200	...	18	...	1	660	11,005,015	29.0
	Kochav, 1963	5,500	...	7	...	2	169	3,682,581	26.5
	Total Israel			25		3	829	14,687,596	
ITALY	Gela, 1956*	10,720-10,870	35	27	...	19	10,227	76,588,397	6.5-15.1
	Pisticci-S. Cataldo, 1960	6,820- 6,880	7	...	...	3	842	3,704,005	11.4
	Torrente Tona, 1963	4,370- 4,430	1	3	...	1	232	780,278	25.7
	Malossa, 1973	18,080-18,190	1	...	...	...	630	6,123	52.0
	Ragusa, 1954	5,400- 5,440	5	...	...	18	142	7,669,100	31.1-55.2
	Others	5,690- 5,860	...	32	...	17	6,255	103,955,134	19.5
	Total		49	62	...	58	18,328	192,703,037	
	*Partly offshore.								

AGO 529942

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
INDIA*	**GUJARAT STATE**								
	Ankleshwar, 1960	2,953- 3,937		186					
	Bakrol, 1968	4,593- 4,921		2					
	Kadi, N., 1968	2,953- 3,909		9					
	Kadi, S., 1968	5,906- 6,552		6					
	Kalol, 1961	4,265- 5,[illegible]		106					
	Kathana, 1965	5,250- 5,[illegible]		6					
	Kholka, 1966	4,265- 5,577		5			78,000		
	Kosamba, 1963	1,968- 2,625		6					
	Nawagam, 1963	4,429- 6,562		63					
	Sanand, 1963	4,265- 4,593		13					
	Sobhasen, 1968	4,429- 5,906		9					
	Wovel, 1963	4,265- 4,593		1				512,512,000	22.0-48.0
	ASSAM STATE								
	Digboi, 1890	300- 7,500		733					
	Geleki, 1968	12,632-12,795		1					
	Lakwa, 1965	8,038-12,795		64					
	Moran, 1958	11,000		45			78,000		
	Nahorkatiya, 1953	9,500		251					
	Rudrasagar, 1961	10,171-10,500		39					
	Total			**1,545**			**156,000**		
	*Data estimated.								
INDONESIA	**Pertamina Unit I:**								
	Rantau, 1929	950- 4,540	110	2	115	227	28,732	190,020,630	48.0
	Paluh Tabuhan, 1937	3,727- 4,009	21	...	...	38	1,754	8,222,753	49.0
	Serang Jaya, 1926	4,600- 4,636	17	...	1	57	873	6,964,411	46.0
	Others		8	2	...	454	682	55,887,527	N.A.
	Total		**156**	**4**	**116**	**776**	**32,041**	**261,095,321**	
	Pertamina Unit II:								
	Bajubang, 1922	3,300	...	15	...	106	530	38,469,762	42.3
	Kenali Asam, 1931	3,800	6	45	6	187	1,520	85,835,617	24.2
	Tempino, 1931	2,700	2	55	...	118	1,655	80,388,225	42.3
	Tanjung Tiga, 1948	4,600	...	33	...	42	3,241	46,275,441	27.8
	Talang Akar, 1937	4,200	3	73	...	126	4,960	154,800,533	27.8
	Prabumulih Barat, 1953	4,740- 5,640	1	...	3	9	550	9,596,922	27.8
	Limau, 1928	4,500- 5,400	22	...	79	145	9,593	190,409,838	27.8
	Gunung Kemala, 1938	6,340	10	...	1	41	1,400	22,501,594	27.8
	Belimbing, 1964	5,280	3	...	8	10	3,057	14,795,963	27.8
	Kuang, 1967	4,800	1	...	6	9	1,153	3,700,848	27.8
	East Benakat, 1974		8	...	...	4	1,873	339,033	27.8
	Others		2	6	2	45	655	71,022,633	
	Total		**58**	**227**	**105**	**842**	**30,187**	**718,136,409**	
	Pertamina Unit III:								
	Jatibarang, 1970	3,500- 7,000	18	...	...	62	34,357	13,529,410	30.0
	Others		1	16	...	28	146	11,381,095	
	Total		**19**	**16**	...	**90**	**34,503**	**24,910,505**	
	Pertamina Unit IV:								
	Samboja, 1916	1,600	1	23	...	290	506	61,748,831	32.4
	Bunyu, 1923	2,020- 7,800	11	...	17	52	7,374	55,383,231	24.5-32.6
	Tanjung, 1938	2,500- 7,300	4	55	...	609	7,609	92,625,694	32.8
	Total		**16**	**78**	**17**	**951**	**15,489**	**209,757,756**	
	Pertamina Unit V:								
	Klamono, 1936	500	...	35	...	6	1,460	87,999,686	18 [illegible]
	Lemigas:								
	Kawengan, 1929	1,750- 2,700	...	21	...	116	516	83,978,364	39.0
	Others		2	32	...	332	466	26,649,194	
	Total Lemigas		**2**	**53**	...	**448**	**982**	**110,627,558**	
	P.T. Caltex:								
	Minas, 1944	2,400	...	193	...	80	420,356	1,744,146,961	33.3
	Petani, 1964	4,700	...	20	...	3	72,276	146,814,815	30.9
	Duri, 1941	600	...	349	...	93	29,451	242,557,885	21.6
	Pematang, 1959	2,800	...	20	...	3	53,562	122,864,047	31.3
	Bekasap, 1955	2,500	...	24	...	5	72,937	259,306,092	33.1
	Pungut, 1959	2,800	...	5	...	4	10,766	15,445,702	36.5
	No. Menggala, 1968	3,600	...	13	...	1	21,252	10,026,628	15.2
	Rangau, 1968	6,000	...	5	...	1	2,397	3,324,297	40.1
	So Bekasap, 1968	3,500	...	5	...	3	6,559	13,000,556	33.7
	Pematang Bow, 1969	5,000	...	3	...	1	1,532	1,552,949	35.8
	Kotabatak, 1952	4,700	...	30	...	11	22,713	34,957,610	29.7
	Tandun, 1970	3,000	...	4	...	1	2,852	4,726,130	32.7
	Mindal, 1971	3,200	...	3	...	1	627	1,543,369	24.0
	Pudu, 1972	5,500	...	5	...	1	9,634	4,909,493	35.5
	Bangko, 1970	1,500	...	34	...	2	111,889	102,103,311	31.1

AGO 529943

Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
So Balam, 1969	1,500	...	21	...	1	22,147	20,471,758	33.3
Petapahan, 1971	4,300	...	12	...	6	42,967	22,476,395	27.9
Suram, 1973	2,700	...	4	...	3	4,107	968,502	27.4
Sintong, 1971	2,400	1	13	...	1	19,079	14,792,112	28.3
Pinggir, 1973	3,200	...	3	...	2	3,369	853,806	34.9
So Menggala, 1968	4,000	...	3	...	...	10,361	4,223,803	33.7
So Pinggir, 1974	3,255	...	2	...	1	1,482	268,228	38.2
S.E. Balam, 1973	4,370	...	2	...	...	447	81,528	14.3
Kulin, 1973	1,400	...	16	...	1	3,131	1,406,999	18.6
Benar, 1973	2,200	3	...	...	1	8,771	3,124,739	21.8
N. Sintong, 1973	3,750	2	...	...	2	5,791	1,105,347	16.4
Aman, 1974	3,280	...	2	...	...	677	122,582	35.1
Others		...	...	...	4	...	2,369	N.A.
Total P.T. Caltex		**6**	**791**	**...**	**232**	**961,132**	**2,777,188,014**	
P.T. Calasiatic & Tipco:								
So Menggala, 1968	4,000	...	1	...	...	4,568	1,862,368	33.7
Lindai, 1974	1,100	...	3	...	1	658	118,949	28.3
Total C. & T.		**...**	**4**	**...**	**1**	**5,226**	**1,981,317**	
P.T. Stanvac Indonesia:								
Sago, 1940	1,800	...	86	...	31	7,568	104,315,945	35.0
Lirik, 1939	1,600	...	27	...	6	5,338	25,499,527	35.0
Andan, 1941	1,700	...	5	...	4	457	4,498,782	35.0
N. Pulai, 1951	1,800	...	23	...	17	3,507	29,002,008	35.0
Molek, 1956	2,600	...	14	...	4	1,378	5,026,572	35.0
Binio, 1972	1,514- 1,720	...	19	...	4	4,655	3,493,112	34.0
Talang Akar, 1922	2,800	9	20	4	512	618	240,611,496	35.0
Benakat, 1932	1,600	3	62	...	207	4,167	121,727,489	35.0
Selo, 1938	2,998	...	...	...	11	...	492,482	38.0
Jirak, 1930	900	7	29	...	175	3,614	50,167,839	36.8
Abab, 1951	6,000	9	4	12	55	8,451	31,151,631	33.9
Dewa, 1971	7,675	5	...	...	13	2,346	2,971,065	35.0
Ibul, 1970	5,600	7	...	4	18	4,768	12,879,796	38.0
Others		10	8	...	216	1,443	133,863,867	
Total P. T. Stanvac		**50**	**297**	**20**	**1,273**	**48,310**	**765,701,611**	
Asamera:								
Ice Tabue, 1971	2,112- 3,564	22	...	...	55	5,178	8,879,423	51.0
Julo Rayeo, 1929	2,520- 2,590	23	...	...	45	2,485	7,474,101	47.0
Tualang, 1973	2,648- 3,626	21	...	...	12	11,890	4,420,906	53.0
Alur Simon, 1972	3,212- 3,960	4	...	...	2	484	303,293	55.4
Others		2	1	...	29	165	4,848,906	
Total Asamera		**72**	**1**	**...**	**143**	**20,202**	**25,926,629**	
Pt. Si. (Corr. Block):								
Kluang, 1913	2,515	...	10	...	32	961	1,535,289	45.0
Others		1	10	...	95	254	21,857,963	
Total PT. SI. (C. Block)		**1**	**20**	**...**	**127**	**1,215**	**23,393,252**	
Hiapco:								
Cinta, 1971	4,500	2	12	...	1	53,018	38,138,786	31.8
Kitty, 1973	4,000	...	6	...	...	3,692	1,579,405	17.3-22.8
Total HAPCO		**2**	**18**	**...**	**1**	**56,710**	**39,718,191**	
ARCO:								
Ardjuna, 1971	2,418- 6,205	48	...	2	2	90,541	51,988,762	36.9
Total ARCO		**48**	**...**	**2**	**2**	**90,541**	**51,988,762**	
Union Oil:								
Attaka, 1972	4,200- 8,000	52	...	...	3	102,241	46,063,225	41.1
Total Union Oil		**52**	**...**	**...**	**3**	**102,241**	**46,063,225**	
Tesoro:								
Tarakan, 1906	200- 2,400	23	172	102	1,107	5,189	197,833,349	20.0-21.0
Sanga-Sanga, 1893	1,200	23	68	...	765	1,688	237,972,662	17.0-35.0
Total Tesoro		**46**	**240**	**102**	**1,872**	**6,877**	**435,806,011**	
A. A. R.								
Bula, 1971	500-600	...	23	...	16	1,581	1,822,722	23.6
Total A. A. R.		**...**	**23**	**...**	**16**	**1,581**	**1,822,722**	
Petromer Trend:								
Jaya, 1973	3,400	3	...	...	1	11,921	4,499,080	40 -42.1
Kasim, 1972	4,050	5	...	...	2	13,209	3,474,639	31.3-40.2
N. Kasim, 1973	5,400	1	1	...	2	13,090	2,369,334	27.4
Total Petromer Trend		**9**	**1**	**...**	**5**	**38,220**	**10,343,053**	
TOTAL INDONESIA		**537**	**1,808**	**362**	**6,788**	**1,446,917**	**5,592,460,022**	

AGO 529944

Taylor Made
RELEASABLE WIRELINE OVERSHOT



The Taylor Made Releasable Overshot is a simple and durable tool. It may be run on sub-surface wireline strings, pipe strings including continuous string tubing with built-in features to catch and release, by operator applying an up and down vertical motion.

The Taylor Made Releasable Overshot is designed to compliment heavy work loads for retrieving and fishing wireline equipment such as jarring, pulling and other rugged operations that may require this releasable tool.

The Taylor Made Releasable Overshot with its simplicity, allows fast assembly and grapple-cage size changes on location for even the most inexperienced Wireline operator. (The component parts cannot be assembled incorrectly.) It is made from the best materials available and supercedes other comparable overshots and pull tools in yield strength.

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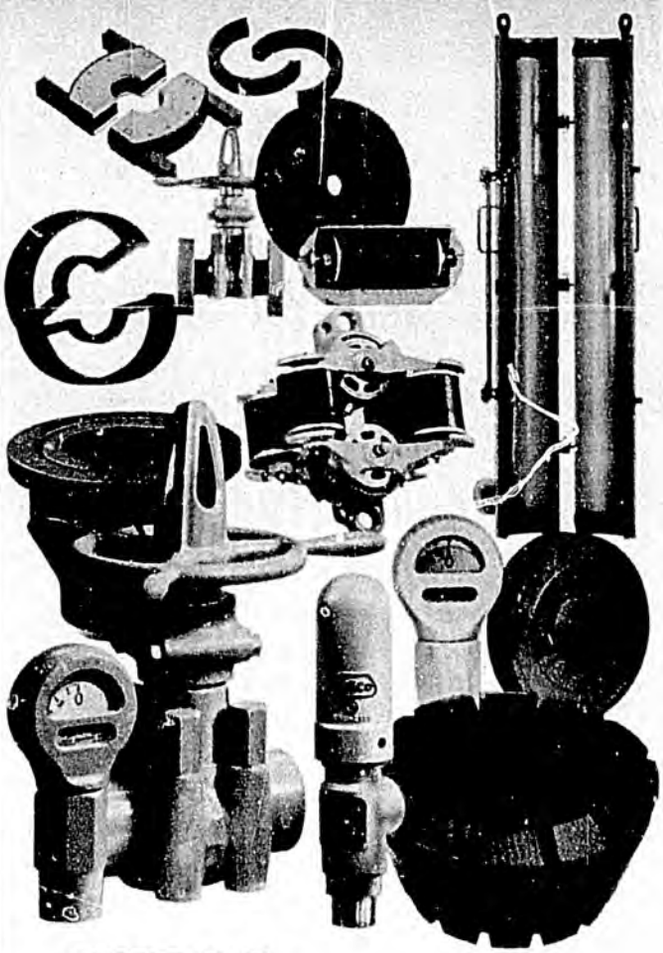

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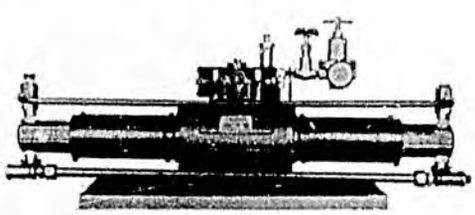

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AGD 529945

WORLDWIDE PRODUCTION

Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
IRAN								
Consortium-NIOC Fields								
Agha Jari, 1933	6,500	50	...	...	...	1,009,693	5,723,172,000	33.9
Ahwaz-Bangestan, 1971	14,000	6	...	...	...	83,027	28,369,000	24.3
Ahwaz-Asmari, 1958	9,000	40	...	...	...	872,900	1,229,566,000	32.1
Bibi Hakimeh, 1961	6,800	18	...	...	...	361,866	1,050,000,000	29.8
Binak, 1959	11,600	1	...	...	...	56,103	101,579,000	30.0
Gach Saran, 1928	7,000	30	...	...	...	911,562	3,294,836,000	31.2
Haft Kel, 1927	3,500	11	...	...	...	35,238	1,665,240,000	36.6
Karanj, 1963	7,800	8	...	...	...	316,481	478,075,000	33.8
Kharg Island, 1962	11,800	6	...	...	...	65,763	101,387,000	32.7
Kupal, 1965	14,000	2	...	...	...	20,796	13,965,000	32.1
Lab-e Safid, 1969	8,600	2	...	...	...	22,072	7,620,000	34.6
Mansuri, 1963	8,600	1	...	...	...	4,771	864,000	28.0
Marun, 1964	11,000	35	...	...	...	1,053,503	1,999,717,000	32.8
Masjid-e Suleiman, 1908	2,500	21	...	...	...	10,823	1,969,000	37.1
Naft Safid, 1935	6,000	12	...	...	...	33,469	259,465,000	35.7
Paris, 1964	5,700	12	...	...	...	422,916	555,901,000	33.9
Par-e Siah, 1967	6,000	1	...	...	...	7,411	13,106,000	37.4
Pazanan, 1961	9,000	6	...	...	...	34,293	133,379,000	35.5
Rag-e Safid, 1964	8,300	18	...	...	...	313,210	205,753,000	28.1
Ramshir, 1963	9,100	2	...	...	...	18,740	22,916,000	27.2
Total Consortium		**282**	...	...	...	**5,654,637**	**17,972,879,000**	
Sirip Fields:								
Bahregansar, 1960*	9,000-12,300	7	...	...	...	21,000	93,152,000	31.5
Hendijan, 1968*	9,950-11,000	5	...	...	...	22,000	28,605,000	31.5
Nowrouz, 1966*	8,587-10,850	10	...	...	...	32,000	40,267,000	20.9
Total Sirip *Offshore		**22**	...	...	...	**75,000**	**162,224,000**	
IPAC Fields:								
Cyrus, 1962*	1,000	7	...	...	6	24,448	42,896,898	18.9
Darius, 1961*	11,000	12	...	...	1	97,247	308,311,837	34.0
Total IPAC *Offshore		**19**	...	...	**7**	**121,695**	**351,208,735**	
Iminoco Fields:								
Rakhsh, 1969*	7,500-9,750	9	1	...	2	34,500	43,155,379	36.7
Rostam, 1966*	7,200-9,800	8	16	...	3	29,000	70,397,702	38.7
Total Iminoco *Offshore		**17**	**17**	...	**5**	**63,500**	**113,553,081**	
Lapco Fields:								
Sassan, 1966* *Offshore	7,500-8,100	14	...	...	...	195,000	102,556,000	34.1
NIOC Fields:								
Nafte Shah, 1923	2,000-3,000	7	...	...	...	18,000	58,512,000	43.0
Total Iran		**361**	**17**	...	**12**	**6,127,832**	**18,760,932,816**	
IRAQ								
Ain Zalah, 1939	5,200-6,500	3	...	...	22	10,885	155,880,296	31.0
Bai Hassan, 1953	4,800-5,400	3	...	...	29	29,778	225,292,600	35.0
Jambur, 1954	5,500-11,500	2	...	...	16	3,036	63,399,017	35.0
Kirkuk, 1927	2,800-4,200	50	...	...	140	930,257	6,260,137,562	36.0
Naft Kaneh, 1909	3,500	2	...	...	17	11,500	108,367,500	42.5
Rumaila, 1953	10,800	30	...	...	...	620,600	1,912,343,000	35.0
Rumaila, North, 1958	10,500	30	...	...	...	121,800	80,662,740	34.0
Zubair, 1949	11,000	33	...	...	...	101,400	666,076,000	34.2
Others		...	3	...	10	nil	33,168,740	
Total		**153**	**3**	...	**234**	**1,829,256**	**9,505,327,455**	
JAPAN								
Kubiki, 1954*	1,099- 6,370	122	...	...	7	830	10,560,910	31.0
Minami-Aga, 1964	7,278- 9,574	15	...	...	3	1,566	10,680,420	38.5
Sarukawa, 1958	1,914- 5,280	52	2	...	10	1,465	10,598,650	32.8
Others		246	607	...	39	10,108	94,255,650	
Total *Offshore.		**435**	**609**	...	**59**	**13,959**	**126,085,630**	
KUWAIT								
Ahmadi, 1953	4,800	78						
Bahrah, 1956	8,500	2						
Burgan, 1938	4,800	374						
Magwa, 1951	4,800	99						
Minagish, 1959	10,000	14				2,578,534	15,351,826,280	
Raudhatain, 1955	8,500	49						
Sabriyah, 1957	8,000	45						
Umm Gudair, 1962	9,300	31						
Total		**692**						

AGO 529946

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
LIBYA	Amal, 1959	9,900	...	...	100	19	104,248	470,117,625	36.0
	Arshad, 1966	10,100	1	...	...	6	551	6,450,538	48.0
	Bahi, 1968	3,600- 3,750	...	40	...	1	84,299	162,979,114	43.4
	Beda, 1959	4,000	29	...	...	3	4,737	75,083,714	36.0
	Belhaden, 1962	7,200	4	...	...	3	2,120	27,798,631	33.7
	Bu-Alawn, 1972	6,000	2	...	...	...	8,992	5,245,790	40.0
	Bu-Attifel, 1968	14,300	20	...	...	5	126,205	86,112,611	41.2
	Dahra, 1959	3,100- 3,700	6	39	...	91	30,704	362,269,654	37.0-41.0
	Defa, 1969	5,400- 5,900	73	...	...	27	156,760	321,621,945	35.6
	Dor-Mansour Unit, 1967	5,800- 6,400	1	4	...	2	4,066	17,826,828	32.2
	Ed Dib, 1970	3,500	...	3	...	1	281	2,896,921	38.0
	Elgiza, 1967	5,100	1	...	...	...	233	331,777	39.0
	Farigh, 1969	12,000	3	...	...	1	143	4,123,007	39.0
	Farrud, 1965	3,200	...	...	6	3	2,073	16,524,144	42.0
	Gialo, 1961	2,200- 6,300	4	157	...	41	203,072	1,089,858,569	35.7
	Intisar A, 1967	9,750	14	...	...	5	73,642	478,010,371	45.0
	Intisar B, 1974*	9,600	...	...	...	2	.....	.....	51.0
	Intisar C, 1967	9,650	4	...	...	3	36,725	57,536,476	37.0
	Intisar D, 1967	9,400	15	...	...	1	203,697	496,105,819	39.5
	Intisar E, 1968**	5,300- 7,100	...	...	...	2	.....	.....	24.0-39.0
	Intisar L, 1969**	7,800- 8,900	...	...	...	1	.....	.....	24.0-35.0
	*On production 1974. **On production 1975.								
	Jebel, 1962	8,100	18	...	...	16	23,394	103,716,669	37.0
	Kotla, 1963	5,500	6	...	...	2	6,742	36,802,175	34.0
	Lehib, 1966	9,100	...	...	...	14	10	29,589,370	49.0
	Majid, 1968	9,600- 9,800	6	...	...	1	9,657	23,738,262	40.5
	Nafoora, 1965†	2,200-10,000	82	...	...	6	114,289	529,228,044	36.0
	Ora, 1962	4,700- 7,500	...	1	...	1	3,547	61,922,484	37.0
	Ora AA, 1973	4,700- 7,500	3	16	...	13	438	76,946	36.0
	Ora BB, 1974	8,082	1	...	...	...	1,133	205,048	37.0
	Nasser (Zelten), 1959**	5,500- 7,600	44	...	83	65	163,884	1,674,885,524	40.0
	Raguba, 1961	5,400	45	...	...	27	70,423	402,113,159	43.0
	Rakb, 1962	2,600- 9,000	3	7	...	1	7,049	23,067,023	34.0
	Ralah, 1964	7,650	2	...	...	2	1,729	6,248,304	37.0
	Sahabi, 1968	10,300	2	5	...	2	4,263	14,514,527	39.0
	Sarir, 1961	9,000	68	...	...	25	162,609	783,109,159	37.2
	Samah, 1961	9,000	11	...	...	9	203,072	231,474,052	33.4
	Umm Farud, 1965	3,200	...	5	...	3	1,805	15,944,591	46.5
	Waha, 1960	6,600	...	50	...	16	118,199	516,833,784	36.1
	Zaggut, 1962	6,000	4	...	...	4	2,489	16,681,342	36.4
	Zelten (see Nasser)								
	Others		1	1	...	83	.....	97,847,123	...
	Total Libya		**462**	**328**	**189**	**507**	**1,937,280**	**8,250,894,116**	
	*Unitized with Augila. **Name change in 1974.								
MEXICO	**Poza Rica, Central Zone**								
	Atún, 1966†	9,040	8	...	...	...	4,938	27,852,560	37.0
	Bagre, 1973	10,919	5	...	...	...	5,307	1,259,361	...
	A. Camacho, 1952	5,340	2	...	8	...	390	2,445,526	35.0
	Cerro Carbón, 1960	9,396	1	...	14	...	721	2,857,055	...
	Hallazgo, 1955	10,170	...	...	52	...	5,342	56,683,646	25.0
	Jiliapa, 1958	7,390	2	...	32	...	2,102	22,858,897	34.0
	Miquetla, 1959	6,480	5	...	29	...	1,929	16,817,266	35.0
	Morsa, 1971	10,434	3	...	...	...	4,367	8,334,585	37.0
	Nvo. Progreso, 1955	7,185	1	...	9	...	625	6,575,349	31.0
	Poza Rica, 1930	7,090	22	...	116	...	55,874	1,062,515,052	35.0
	Remolino, 1962	10,745	...	...	32	...	2,254	15,285,703	...
	Riachuelo, 1972	10,798	3	...	...	...	1,847	988,595	...
	Sn. Andrés, 1956	10,410	5	...	137	...	30,634	241,954,825	29.0
	Others	...	68	18	180	...	2,949	35,080,306	...
	Nueva Faja de Oro, Central Zone								
	Acuatempa, 1955	4,085	14	...	...	...	1,676	22,357,159	21.0
	Alamo-Jardín P. Real	...	26	...	...	...	531	21,857,462	...
	Copal, 1957	4,610	13	...	...	...	775	1,153,343	15.0
	El Muro, 1966	3,966	9	...	...	...	4,189	9,247,024	17.0
	E. Ordóñez, 1952	5,220	10	...	...	...	2,704	51,301,534	21.0
	Mesa Cerrada, 1956	4,085	6	...	...	...	455	10,362,915	22.0
	Ocotepec, 1953	3,737	11	...	...	...	809	17,500,602	20.0
	Sta. Agueda, 1953	4,789	29	...	...	...	6,549	90,473,621	16.0
	Others	...	35	...	...	...	846	17,051,875	...
	Veracruz District, Central Zone								
	Angostura, 1953	4,405	8	...	...	...	463	21,545,836	15.0
	Matapionche, 1974	11,129	1	...	...	...	420	76,106	37.0
	Others	...	2	...	...	...	203	276,839	...
	Isthmus of Tehuantepec, Southern Zone								
	Agata, 1956	3,830	2	...	11	...	653	9,459,411	34.0
	Cuichapa, 1935	2,200	106	5	39	...	30,090	66,638,325	30.0
	El Burro, 1931	2,200	...	15	6	...	1,256	17,317,962	26.0
	El Plan, 1931	1,700	...	27	49	...	4,142	140,398,906	30.0
	Ixhuatl" Ote., 1965	3,952	11	4	...	...	1,366	4,134,584	22.0
	Los Soldados, 1953	4,492	12	...	10	...	2,541	18,378,141	32.0

AGO 529947

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
MEXICO—Continued	Moloacán, 1948	1,397	3	118	20	...	3,412	6,513,130	26.0
	Tonalá, 1928	1,770	3	19	13	...	1,387	71,920,815	28.0
	Others	....	14	19	1	...	978	51,484,229	....
	Tabasco, Southern Zone								
	Ayapa, 1973	8,200	5	...	...	...	2,165	63,673	....
	Blasillo, 1967	7,216	2	...	7	...	574	2,166,136	40.0
	Cactus, 1972	12,333	17	...	...	...	30,474	10,709,900	41.0
	Caracolillo, 1969	11,480	5	...	...	...	1,073	2,124,979	....
	Carrizo, 1962	4,820	3	...	10	...	1,760	6,758,641	25.0
	Castarrical, 1967	10,086	9	...	38	...	10,773	21,964,406	34.0
	Cinco Pdtes., 1960	6,862	39	...	92	...	27,444	187,537,807	35.0
	El Golpe, 1963	8,836	23	...	58	...	14,753	44,354,764	35.0
	La Venta, 1954	4,730	1	2	40	...	3,375	44,833,686	41.0
	Northeastern District, Northern Zone								
	Fco. Cano, 1949	5,780	4	...	1	...	321	4,456,456	48.0
	Monterrey, 1950	6,950	4	...	15	...	2,106	9,772,370	47.0
	Tigrillo, 1971	9,844	6	...	6	...	738	648,930	55.0
	Others	....	5	...	1	...	174	14,361,000	....
	Northern District, Northern Zone								
	Arenque, 1970†	11,362	11	...	...	...	22,286	14,476,930	26.0
	Barcodón, 1959	4,370	7	1	...	...	233	8,489,636	17.0
	Constituciones, 1956	6,300	45	...	43	...	6,521	42,777,280	17.0
	Ebano-Pánuco, 1901	1,450	174	124	169	...	7,124	928,232,465	12.0
	Tamaulipas, 1956	4,200	68	...	44	...	8,914	39,838,517	18.0
	Others	....	...	...	...	...	.....	24,481,837	....
	Southern District, Northern Zone								
	Cabo Nuevo, 1967*	5,753	2	...	...	...	1,111	10,292,296	16.0
	Isla de Lobos, 1963†	6,875	3	...	...	...	3,790	17,171,381	40.0
	Moralillo, 1948	5,270	18	...	...	...	586	12,731,752	21.0
	Naranjos-C-A, 1909	1,800	32	...	...	...	7,322	1,151,913,697	20.0
	Pontón, 1971	4,248	2	...	...	...	165	116,163	30.0
	Rancho Nuevo, 1960	6,435	4	...	...	...	228	1,976,135	28.0
	Soledad, 1973	5,222	16	...	...	...	292	54,485	....
	Solís, 1952	2,445	28	...	...	...	324	7,648,658	22.0
	Tiburón, 1965†	7,314	5	...	...	...	1,100	5,226,176	20.0
	Tres. Hnos., 1959	5,960	43	...	...	...	9,466	87,520,585	21.0
	Others	....	109	...	...	...	46	5,982,717	....
	Southern District, Southern Zone								
	Magallanes, 1957	4,240	11	1	151	...	14,640	97,894,473	27.0
	Mecoacán, 1958	7,110	16	...	15	...	3,763	28,320,250	23.0
	Ogarrio, 1957	5,790	56	...	50	...	17,763	82,871,715	38.0
	Otates, 1965	7,469	13	...	6	...	4,993	15,712,718	39.0
	Pajonal, 1967	9,840	2	...	9	...	2,141	2,689,284	27.0
	Rodador 1971	11,398	1	...	1	...	539	179,705	26.0
	Sabancuy, 1973	12,169	1	...	...	...	1,498	440,162	21.0
	Samaria (Cret), 1973	14,209	5	...	...	...	12,160	3,506,364	31.0
	Samaria (Terciario), 1960	2,624	2	...	13	...	1,470	4,434,585	23.0
	San Ramón, 1967	9,883	9	...	48	...	18,020	25,548,239	30.0
	Sta. Ana, 1959*	9,517	1	...	10	...	1,400	29,188,629	29.0
	Santuario, 1966	9,617	21	...	...	...	7,234	8,807,672	37.0
	Sitio Grande, 1972	13,766	15	...	...	...	65,979	16,303,422	35.0
	Tintal, 1968	5,904	6	...	...	...	815	2,049,666	22.0
	Tucán, 1968	10,824	1	...	10	...	1,637	4,831,151	36.0
	Tupilco, 1958	9,685	18	...	26	...	8,729	26,821,406	27.0
	Others	....	10	...	2	...	805	8,321,981	....
	Total Mexico	....	**1,318**	**353**	**1,623**	...	**513,548**	**5,218,204,025**	
*Partly offshore. †Offshore.									
MOROCCO	Haricha, 1957	3,000	1	...	...	...	12	2,754,380	40.0
	Sidi Fili, 1947	3,000	18	2	...	...	80	7,549,200	40.0
	Sidi Rhalem, 1961	5,600	...	1	...	...	800	5,435,000	40.0
	Total		**19**	**3**			**892**	**15,738,580**	
NETHERLANDS	De Lier-Monster, 1955	5,200	...	27	...	4	912	12,731,073	33.2
	Ijsselmonde/Ridderkerk, 1956	3,100- 5,000	...	46	...	11	6,254	63,119,533	18.0-24.2
	Schoonebeek, 1943	2,500	...	213	...	87	14,899	161,982,701	24.8
	Wassenaar-Meyendel, 1956	4,200	...	29	...	3	4,062	32,686,737	18.6
	Zoetermeer, 1957	3,200	...	14	...	4	750	6,781,252	16.4
	Others	....	...	18	...	23	514	8,561,606	....
	Total			**347**		**132**	**27,391**	**285,862,902**	
NEUTRAL ZONE	Hout, 1969*	4,500- 9,500	26	...	...	...	41,285	109,117,322	34.0
	Khafji, 1961*	4,500- 9,500	101	...	...	...	292,611	1,172,039,432	28.4
	So. Fuwaris, 1962	6,300	...	3	...	5	2,345	11,334,034	24.5
	So. Umm Gudair, 1966	9,100	9	7	...	1	52,343	105,576,540	24.3
	Wafra								
	Burgan, 1953	3,600	9	38	...	8	21,030	187,850,367	24.0
	Eocene, 1954	1,100- 2,200	5	215	...	95	18,917	350,320,592	18.5
	Ratawi, 1955	7,000	3	33	...	3	56,842	290,773,449	24.3
	Total		**153**	**296**	...	**112**	**485,3..**	**2,227,011,736**	
*Offshore.									

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WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
NEW ZEALAND	Kapuni, 1959	11,300-12,500	4	...	...	...	†3,780	4,357,500	49.0
	Others	....	....	....	....	....	.....	217,000	....
	Total		4	...	...	...	3,780	4,574,500	
*Condensate. Note: Offshore Maui field not yet on production.									
NIGERIA	**Gulf Oil**								
	Abiteye, 1970	5,750- 9,400	8	...	...	2	9,248	6,934,793	38.2
	Delta, 1965*	5,600- 9,400	17	...	...	2	37,634	44,435,338	27.9
	Delta South, 1965*	7,100- 9,200	16	...	...	3	54,084	103,501,132	38.1
	Isan, 1970*	5,800- 9,000	11	...	...	...	15,948	15,213,726	39.3
	Malu, 1969*	4,800- 6,300	15	...	...	...	18,838	28,199,249	39.2
	Meji, 1965*	5,200-10,900	16	...	...	...	22,667	38,584,255	32.6
	Meren, 1965*	5,000- 7,500	47	...	...	2	126,044	175,341,136	32.3
	Okan, 1964*	5,500- 8,900	42	...	...	4	72,395	205,723,519	34.9
	Parabe/Eko, 1968*	4,500- 8,200	23	...	...	2	32,518	42,547,183	37.0
	Mobil Oil								
	Asabo, 1966*	5,412	11	...	...	2	42,300	54,807,484	34.0
	Ekpe, 1966*	7,503	7	...	...	1	69,300	58,791,081	39.0
	Etim, 1968*	6,147	7	...	...	...	33,300	16,267,771	38.0
	Enang, 1968*	5,250	9	...	...	2	1,751	315,175	34.0
	Idoho, 1966*	8,536	3	...	...	1	5,480	18,211,373	40.0
	Inim, 1966*	5,914	7	...	...	...	44,100	29,769,407	37.0
	Ubit, 1968*	4,842	17	...	...	4	23,100	39,620,998	36.0
	Unam, 1968*	5,000	4	...	...	...	13,900	530,267	36.0
	Utue, 1966*	5,914	5	...	...	1	22,200	15,141,197	38.0
	Agip-Phillips (estimated)								
	Akri, 1973	8,000-10,000	8	...	...	...	16,569	n.a.	44.4
	Ebocha, 1965	9,200-10,100	21	...	...	...	39,173	48,728,741	42.3
	Idu, 1973	8,000-10,000	7	...	...	...	9,097	5,143,478	30.9
	Mbede, 1966	9,850-10,800	24	...	...	...	49,909	48,545,639	43.2
	Ofiafu/Obrikom, 1973	8,000-10,000	16	...	...	...	29,912	10,918,026	44.5
	Obigbo, 1969	.....	1	...	...	...	926	338,000	38.1
	Obigbo N., 1969		14	...	...	...	19,580	7,146,646	23.4
	Odugri, 1972	12,500	2	...	...	...	832	303,500	44.8
	Elf-Nigeria (ex Safrap)								
	Aghigho, 1972	6,000- 8,500	5	...	...	1	3,120	597,283	26.0
	Erema, 1972	9,800	1	...	...	1	416	24,946	35.0
	Obagi, 1964	1,000-10,000	26	...	...	4	63,835	74,961,418	24.0
	Odobo-Jatumi, 1966	6,000-11,000	5	...	...	2	7,333	1,770,871	35.0
	Okpoko, 1967	6,000- 7,500	3	...	...	...	5,892	1,355,367	22.0
	Upomami, 1965	6,000- 7,000	6	...	...	3	4,357	1,086,152	20.0
	Texaco-Chevron								
	Pennington, 1964*†	5,000-12,000	3	...	...	...	4,110	12,182,279	37.9
†Field shut in May 8, 1974, by government order. Production to resume in 1975.									
	Shell-British Petroleum (Midwest)								
	Ugh-Ogini, 1964	5,860	7	...	...	2	4,873	6,291,890	17.5
	Ugh-Uzere East, 1960	8,500	13	...	...	...	18,467	41,887,333	22.6
	Ugh-Uzere West, 1960	8,500	10	...	...	1	17,378	58,836,870	27.7
	Ugh-Olomoro, 1963	7,000-10,000	21	...	...	10	42,279	160,063,745	22.3
	Ugh-Oweh, 1964	12,300	11	...	...	...	13,221	58,798,402	26.8
	Ugh-Kokori, 1961	8,000- 9,800	20	...	...	2	73,217	160,741,361	44.9
	Ugh-Afiesere, 1966	8,000- 9,000	20	...	...	1	18,706	32,192,357	23.8
	Ugh-Eriemu, 1961	12,550	9	...	...	2	7,007	11,507,010	29.9
	Ugh-Ughelli E., 1959	11,800	7	...	...	1	21,373	52,220,488	33.6
	Ugh-Ughelli W., 1959	7,400-10,200	6	...	...	...	6,622	14,125,498	20.0
	Ugh-Utorogu, 1964	9,000	18	...	...	1	39,861	70,337,190	25.0
	Ugh-Oroni, 1964	12,000	6	...	...	1	6,878	10,716,902	19.0
	Ugh-Warri R., 1961	12,264	3	...	...	...	4,232	4,834,250	30.8
	Ugh-Evwreni, 1967	10,900	6	...	...	3	8,053	18,830,552	25.0
	Ugh-Rapele, 1965	12,934	3	...	...	...	9,408	8,753,470	25.0
	Ugh-Osioka, 1967	12,885	2	...	...	...	1,985	2,601,353	30.0
	Forc-Jones Cr., 1967	7,000- 9,000	28	...	...	1	126,933	160,616,935	25.0
	Forc-Odidi, 1967	10,980	19	...	...	1	58,437	38,488,800	30.0
	Forc-Egwa, 1967	9,350	15	...	...	...	28,246	32,367,979	37.0
	Forc-Yokri, 1971	10,859	2	...	...	...	2,496	523,3[illegible]7	24.3
	Forc-Estuary, 1969	7,000	51	...	...	1	132,500	134,037,504	25.0
	Forc-Batan, 1968	11,000	7	...	...	...	16,948	13,847,735	21.0
	Forc-Escravos Beach, 1969	9,391	8	...	...	...	13,128	9,396,840	36.0
	Forc-Ajuju, 1970	13,324	1	...	...	...	3,545	2,769,310	30.0
	Forc-Otumara, 1970	8,176	15	...	...	1	41,283	20,810,236	30.0
	Forc-Saghara, 1970	8,950	3	...	...	...	7,107	4,027,044	30.0
	Node-Sapele, 1970	12,788	10	...	...	1	45,165	20,854,110	41.0
	Node-Amukpe, 1970	12,378	2	...	...	...	6,863	4,682,011	41.0
	Node-Oben N., 1973	10,016	1	...	...	...	71	12,893	30.0
	Node-Oben, 1972	12,036	2	...	...	...	1,274	230,684	30.0
	Others	....	....	....	....	....	57	261,514	....
	Shell-British Petroleum (Eastern)								
	Phl-Bomu, 1968	6,700- 7,500	27	...	...	4	34,964	241,018,633	33.2
	Phl-Isimiri, 1964	5,900-11,000	5	...	...	...	6,533	17,073,605	28.8
	Phl-Imo R., 1959	5,800-10,100	37	...	...	3	72,437	244,172,825	32.0
	Phl-Ebubu, 1958	8,200	6	...	...	2	2,359	13,303,428	26.0
	Phl-Onne, 1965	10,384	2	...	...	...	1,830	2,281,468	30.0
	Phl-Nkali, 1963	12,000	5	...	...	1	3,647	13,355,420	41.0

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WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
NIGERIA—Continued	Phl-Obigbo N., 1963	6,500-10,000	16	...	...	3	20,780	80,982,506	24.2
	Phl-Obigbo, 1963	....	1	...	...	1	951	210,086	30.0
	Phl-Elelenwa, 1959	11,000	6	...	...	...	8,368	8,937,748	38.0
	Phl-Agbada, 1960	8,000-12,000	26	...	...	2	28,942	65,425,100	32.1
	Phl-Umuechem, 1959	5,500-10,700	15	...	...	...	16,624	97,494,795	37.6
	Phl-Apara, 1960	9,000	5	...	...	1	1,965	5,415,138	34.0
	Phl-Obele, 1964	10,000	3	...	...	7	767	1,826,971	22.0
	Phl-Bodo W., 1962	9,700	9	...	...	1	18,615	40,833,020	22.5
	Phl-Afam, 1956	6,000	11	...	...	2	11,337	22,999,177	45.0
	Phl-Korokoro, 1969	8,000- 9,800	7	...	...	1	13,325	56,898,741	35.2
	Phl-Yoria, 1970	11,917	13	...	...	...	32,144	16,986,040	30.0
	Phs-Alakiri, 1962	10,000	10	...	...	5	17,250	38,029,467	32.5
	Phs-Bonny, 1959	12,254	10	...	...	1	19,199	6,237,242	30.4
	Phs-Buguma Cr., 1960	12,195	6	...	...	...	10,871	6,679,915	35.0
	Phs-Cawth. Channel, 1963	11,000	10	...	...	2	46,894	97,632,450	39.0
	Phs-Ekulama, 1958	10,483	11	...	...	...	24,838	12,425,479	20.2
	Phs-Krakama, 1958	11,530	5	...	...	...	6,075	4,251,037	38.0
	Phs-Soku, 1958	11,500	22	...	...	...	41,004	32,365,903	35.0
	Phs-Oloibiri, 1956	8,000- 9,800	6	...	...	5	3,006	17,445,343	22.0
	Egb-Oguta, 1965	10,300	16	...	...	...	30,377	35,389,412	30.0
	Egb-Assa, 1961	11,300	2	...	...	...	970	1,033,503	17.5
	Egb-Egbema, 1960	10,470	6	...	...	...	11,978	22,618,410	28.0
	Egb-Ahia, 1965	11,500	12	...	...	1	20,611	44,614,750	35.5
	Cesw-Nun R., 1974	....	5	...	...	...	9,435	2,106,429	37.0
	Cesw-Diebu Cr., 1974	....	8	...	...	...	21,630	1,190,956	30.0
	Cesw-Adibawa, 1966	11,950	8	...	...	...	14,368	56,878	30.0
	Cesw-Ubie, 1970	14,380	4	...	...	...	7,516	2,625,824	3.00
	Cesw-Etelebou, 1971	12,000	6	...	...	...	23,232	6,700,680	30.0
	Cesw-Kolo Cr., 1974	12,000	14	...	...	...	33,710	9,532,919	30.0
	Others	....	...	...	...	...	.....	181,470	....
	Total Nigeria		1,088	...	...	103	2,296,035	3,544,936,991	
NORWAY	Ekofisk, 1970*	10,200-10,900	6	...	...	...	25,000	28,717,062	36.5
	*Offshore								
OMAN	Fahud-Natih, 1964	2,000- 6,080	56	...	...	21	112,566	396,109,520	32.5
	Huwaisa-Shuaiba, 1970	5,550	20	...	...	...	42,500	44,284,651	33.0
	Natih-Natih, 1962	7,500	23	...	...	7	48,841	185,267,598	31.3
	Yibal,Shuaiba, 1962	8,465	61	...	...	2	92,998	97,460,164	39.7
	Total		160	...	...	30	296,905	723,121,933	
PAKISTAN	Balkassar, 1946	8,200	...	3	1	...	1,761	19,980,993	24.3
	Dhulian, 1937	8,500	5	1	1	...	1,917	36,783,716	43.0
	Joya Mair, 1944	6,890	1	...	...	...	328	3,874,614	16.0
	Meyal, 1968	12,500	2	...	...	...	2,467	4,229,191	44.0
	Toot, 1968	13,600	2	...	...	...	590	1,240,207	35.2-37.5
	Total		10	4	2		7,063	66,108,721	
PERU	**COASTAL**								
	Talara Area, 1869-1943†	2,000- 9,000	90	1,104	...	4,200	11,100	534,269,000	25.0-40.0
	Lima Concessions, 1905	2,000- 9,000	54	900	...	1,138	23,000	160,527,000	32.0-35.0
	Others	500- 1,500	...	...	...	21	...	110,901,902	
	ORIENTE								
	Agua Caliente, 1939	1,000- 1,500	...	22	...	8	600	13,090,303	34.0
	Maquia, 1957	1,000- 1,500	6	6	...	2	1,050	6,608,585	37.0
	CONTINENTAL SHELF								
	Humboldt, 1960*	3,000- 7,500	45	68	...	17	29,750	38,161,750	38.0
	Litoral & Mirador, 1955*	1,500- 6,000	...	98	...	12	3,200	25,506,063	37.0-40.0
	Providencia, 1967	3,000- 6,000	...	18	...	22	950	9,451,253	38.0-40.0
	Others		1	...	...	2	50	549,000	
	SIERRA								
	Pirin, 1906		...	...	...	...	...	287,000	
	Total		196	2,216	...	5,422	69,700	899,351,856	
	*Offshore								
	†Includes La Brea y Parinas, Los Organos, and PDP-Belco.								
QATAR	Bul Hanine, 1970*	6,000	5	...	...	...	138,463	94,609,357	35.0
	Dukhan, 1940	6,550	56	...	...	4	251,000	1,460,050,000	41.1
	Idd El Shargi, 1960*	4,500- 8,250	10	...	...	4	24,088	140,572,915	35.5
	Mayden-Mahzan, 1963*	7,000- 7,600	10	...	...	1	132,518	376,634,216	38.0
	Total		81	...	...	9	546,069	2,071,866,488	
	*Offshore.								
SAUDI ARABIA	Abqaiq, 1940	6,670	64	...	...	2	870,659	4,629,594,964	38
	Abu Hadriyah, 1940*	9,930	9	...	...	3	102,105	280,909,047	35
	Abu Sa'fah, 1963*	6,650	10	...	...	6	121,479	255,863,778	30
	Berri, 1964†	7,450	42	...	...	6	639,517	609,627,402	33-38
	Dammam, 1938	4,620	18	...	...	...	17,793	534,855,162	34
	Fadhili, 1949	8,110	4	...	...	2	49,281	148,204,174	40
	Ghawar, 1948	6,700	378	...	...	70	4,653,452	9,958,791,384	35
	Harmaliyah, 1971	8,400	6	...	...	...	129,877	38,979,403	36

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WORLDWIDE PRODUCTION	discovery date Name of field and	(ft) Depth	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
SAUDI ARABIA—Continued	Khurais, 1957	5,100	8	...	...	1	23,594	45,736,418	33
	Khursaniyah, 1956	6,750	11	...	...	...	115,372	451,365,249	31
	Maharah, 1973*	7,000	...	...	...	1	.....	.....	34
	Manifa, 1957*	7,950	6	...	...	2	34,861	117,816,263	28
	Marjan, 1966*	5,200	1	...	...	6	1,894	632,396	32
	Mazalij, 1971	6,200	...	...	...	3	.....	.....	31
	Qatif, 1945†	7,050	19	...	...	4	93,656	432,287,560	31
	Qirdi, 1973	5,300	...	...	...	1	.....	.....	38
	Safaniyah, 1951†	5,100	83	...	...	13	1,019,123	2,841,434,660	27
	Shaybah, 1968	5,000	...	...	...	7	.....	9,870	42
	Zuluf, 1965*	5,800	11	...	...	1	193,446	87,645,208	32
	Karan, 1967*	5,500	...	...	...	1	.....	.....	22
	Jana, 1967*	7,400	...	...	...	2	.....	.....	35
	Juraybiat, 1968	7,600	...	...	...	1	.....	.....	29
	Rimthan, 1974	10,000	..	...	...	1	.....	.....	28-38
	Ramlah, 1974	9,500	...	...	...	1	.....	.....	33
	Total		**670**	...	...	**134**	**8,066,109**	**20,433,743,938**	
	*Offshore. †Partly offshore.								
SHARJAH	Mubarek, 1972	12,650-12,870	3	...	...	...	(*)	(*)	39.5-40.3
	*Note: field went on production in July, 1974 at 50,000-60,000 b/d.								
SPAIN	Ayoluengo, 1964	4,000	...	21	...	5	1,805	7,394,800	37.0
	Amposta Marina, 1971*	10,000	3	...	...	1	35,625	10,763,466	37.0
	Total		**3**	**21**	...	**6**	**37,430**	**18,158,266**	
	†Offshore.								
SYRIA†	Hamsch, 1956	6,000	...	...	...	1	.....	.....	21.0
	Jibissa, 1968	6,000	..	...	...	1	.....	.....	23.0
	Karatchouk, 1956	6,500	13	3	...	1	20,000		23.0
	Rumalan, 1956	6,500	4	...	...	1	10,000	216,300,000	25.0
	Souedie, 1959	6,500	80	23	...	31	125,000		25.0
	Total		**97**	**26**		**35**	**155,000**	**216,300,000**	
	†Data estimated.								
THAILAND	Boh Ton Kham (Chai Prakarn), 1953	700	...	12	...	12	14	202,000	16.0-17.0
	Mae Soon Luang, 1963	2,000- 2,500	1	12	...	5	184	454,100	32.0
	Total		**1**	**24**	...	**17**	**198**	**656,300**	
TRINIDAD & TOBAGO	Area 1								
	North Marine, 1959*	3,000-15,000	1	...	...	7	99	1,221	23.2
	Soldado, 1955*	2,150-11,000	131	21	88	83	51,323	262,819	24.8
	Area 2								
	Area IV + Guapo, 1913-1922	1,000-10,626	1	35	...	110	474	32,767	16.9-25.5
	Parrylands, 1913-1918		14	42	...	150	886	33,828	10.7-30.2
	Pt. Fortin Central & West, 1907-1916		18	33	...	136	773	29,846	20.4-45.1
	Area 3								
	Brighton, 1908†	700- 7,500	41	31	71	286	2,783	66,524	32.8
	Area 4	240-12,718							
	Palo Seco, 1926-1929		...	6	...	63	23	1,583	22.1
	Palo Seco Erin, 1915-1926		65	277	105	417	9,746	76,953	21.2
	Area 5	500-11,000							
	Forest Reserve, 1913		34	268	270	1,097	11,506	231,581	23.0
	Fyzabad, 1918-1920		15	213	14	325	3,954	151,196	20.8-32.7
	Pt. Fortin East, 1929		4	39	12	47	1,680	21,365	34.4
	Area 6	288-14,000							
	Coora-Quarry, 1936		9	99	66	352	3,109	78,940	20.4-24.1
	Area 7								
	Oropouche, 1944		13	17	6	33	2,007	3,920	19.8-38.6
	Area 8	1,300-11,067							
	Barrackpore, 1911		12	13	23	143	1,653	23,324	26.9-41.2
	Penal, 1936		29	47	9	87	1,954	55,864	37.5-55.7
	Wilson, 1936		4	25	4	37	364	18,719	26.4
	Area 9								
	Catshill, 1950		2	46	...	28	831	20,251	38.3-46.3
	Moruga North, West, 1956		1	30	..	73	335	9,216	25.0-31.4
	Trinity, 1956		1	13	17	40	491	12,992	32.2
	Area 10								
	Guayaguayare, 1903	500-10,750	10	155	59	321	5,943	72,996	33.7
	Area 11								
	Galeota, 1972*	1,100- 6,304	..	15	...	3	1,333	1,231	31.6
	Teak, 1972*	6,960-15,191	28	...	...	11	49,923	33,084	29.3
	Samaan, 1973*	8,719-11,780	14	...	...	1	23,841	10,131	36.8
	Others	3,000- 7,560	70	236	38	1,020	6,219	188,891	14.1-40.7
	Trinidad & Tobago Total		**517**	**1,661**	**782**	**4,870**	**181,250**	**1,439,242**	
	*Offshore. †Partly offshore.								

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WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Gas Lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
TUNISIA†	**AQUITAINE**								
	Ashtart, 1971*	9,450- 9,700	6	...	...	...	12,442	1,231,721	29.0
	Douleb, 1966	3,300	...	11	...	2	5,071	9,568,527	40.2
	Tamesmida, 1968	4,950	...	2	...	1	364	818,708	35.4
	ENI (Sitep)								
	El Borma, 1964	8,250- 8,900	35	...	...	15	52,300	198,080,058	42.5
	CFP								
	Sidi el Itayem, 1971	9,232	4	...	...	...	3,870	4,278,000	40.0
	TOTAL		**45**	**13**	**...**	**18**	**74,047**	**213,997,014**	
†Some data estimated. *Offshore; production began Dec., 1973.									
TURKEY	Ersan:								
	Kahta, 1958	3,500	...	5	...	1	721	3,446,651	11.5
	Mobil:								
	Bulgurdag, 1960	6,500	...	1	...	2	102	2,203,000	39.0
	Selmo, 1964	5,800	2	10	2	2	8,542	36,286,785	34.4
	Shell:								
	Barbes, 1972	7,200	6	...	...	1	4,897	3,310,512	29.6
	Beykan, 1964	5,200	13	...	...	4	11,039	36,323,667	33.2
	Katin, 1971	6,800	2	...	...	1	1,767	1,497,369	29.5
	Kayakoy, 1961	6,000	5	...	...	2	1,934	8,285,208	38.2
	Kayakoy West, 1964	5,300	4	...	...	3	3,341	11,959,801	34.0
	Kurkan, 1963	4,500	8	...	...	1	9,435	28,201,015	31.4
	Malatepe, 1970	5,000	4	...	...	1	867	2,251,492	32.7
	Malatepe W., ?	....	...	...	...	...	859	.....	31.3
	Piyanko, 1968	6,300	1	...	...	...	279	938,726	35.5
	Sahaban-Kurkan So., 1967	5,500	6	...	...	...	2,153	10,752,171	34.7
	Others	....	2	...	...	...	176	43,357	....
	TPAO:†								
	Adiyaman, 1971	5,600	...	12	...	2	2,745	2,585,590	26.6
	Garzan-Germik, 1951	5,100	...	38	...	32	2,974	26,346,869	25.0
	Magrip, 1961	6,400	...	13	...	12	1,161	11,212,275	19.3
	Raman, 1940	4,500	...	24	...	23	3,005	21,460,854	18.5
	Raman West, 1961	4,300	...	126	...	12	4,689	18,960,191	13.4
	Saricak, 1973	....	4	...	...	...	2,100	765,000	31.5
	Silivanka, 1962	7,500	...	14	...	1	1,547	3,244,058	19.6
	Yenikoy, 1973	....	8	...	...	...	551	200,000	31.0
	Others	....	...	6	...	...	412	2,784,625	....
	Total Turkey		**65**	**249**	**2**	**100**	**65,296**	**233,059,216**	
†Data estimated.									
UNITED KINGDOM	Beckingham, 1964	3,200- 6,600	...	8	...	...	442	415,327	....
	Bothamsall, 1958	3,300	...	6	...	7	224	2,024,707	....
	Egmanton, 1955	3,250	...	8	...	35	148	2,996,303	....
	Gainsborough, 1959	3,200- 4,600	...	25	...	17	502	2,431,270	....
	Kimmeridge, 1959	1,800	...	9	...	5	184	9,959,536	....
	Total		**...**	**56**	**...**	**64**	**1,500**	**17,827,143**	
VENEZUELA*	**STATE OF ANZOAETEGUI**								
	Araibel, 1954	8,970-10,516	6	...	...	30	1,319	26,189,621	38.7
	Boca, 1951	9,500	10	10	...	60	3,238	69,270,383	35.4
	Caico Seco, 1946	6,500- 7,300	13	6	...	61	4,890	44,814,504	35.5
	Chimire, 1948-52	7,000- 7,200	35	34	...	135	11,373	339,788,339	34.9
	Dacion, 1957	6,700	12	79	...	30	10,724	170,413,260	34.2
	Elias, 1954	5,000- 6,470	43	16	...	64	24,368	68,141,820	41.1
	El Roble, 1939	3,500-11,500	13	1	...	31	920	36,523,800	49.5
	Guara, 1946	5,000-10,000	24	158	...	200	22,465	490,605,725	27.3
	Guaria, 1940	5,000-10,000	3	...	...	27	2,326	43,614,990	50.2
	Guico, 1944	4,500- 7,000	2	29	...	48	2,075	82,607,375	26.9
	Inca, 1948	7,250	2	3	...	21	984	12,899,160	36.8
	Junta, 1954	6,720	...	7	...	16	609	22,433,285	20.4
	La Ceiba, 1946	9,480	18	6	...	10	7,250	27,528,250	43.1
	La Ceibita, 1963	9,870- 9,878	26	...	...	19	12,777	59,763,605	43.8
	Leona, 1938	2,200-12,800	11	73	...	128	11,040	130,298,600	22.4
	Mapiri Este, 1952	9,500	2	6	...	32	1,268	23,185,820	37.0
	Mata, 1954	9,000-12,500	75	77	...	325	34,006	439,336,190	33.3
	Merey, 1937	5,400- 5,700	9	255	...	120	22,400	173,304,000	11.1
	Nipa, 1945	6,000- 8,500	66	99	...	270	24,713	430,667,245	28.0
	Oficina, 1937	5,900	54	115	...	380	38,386	646,641,890	20.5
	Oscurote, 1952	9,513	9	28	...	45	8,374	109,956,510	20.3
	Rosa, 1958	1,250-11,412	2	...	...	1	961	7,079,297	51.7
	San Joaquin, 1939	6,560	20	2	...	52	2,804	77,666,460	46.4
	Santa Ana, 1936	8,500	28	3	...	54	6,290	86,656,850	37.9
	Santa Rosa, 1941	8,500	117	3	...	58	29,093	299,026,945	44.9
	Soto, 1950	9,500	29	13	...	151	7,093	160,473,945	36.8
	Tapuco, 1953	10,000	4	2	...	21	1,382	24,985,340	34.0
	Yopales, 1937	4,600	8	52	...	71	9,250	90,354,250	21.2

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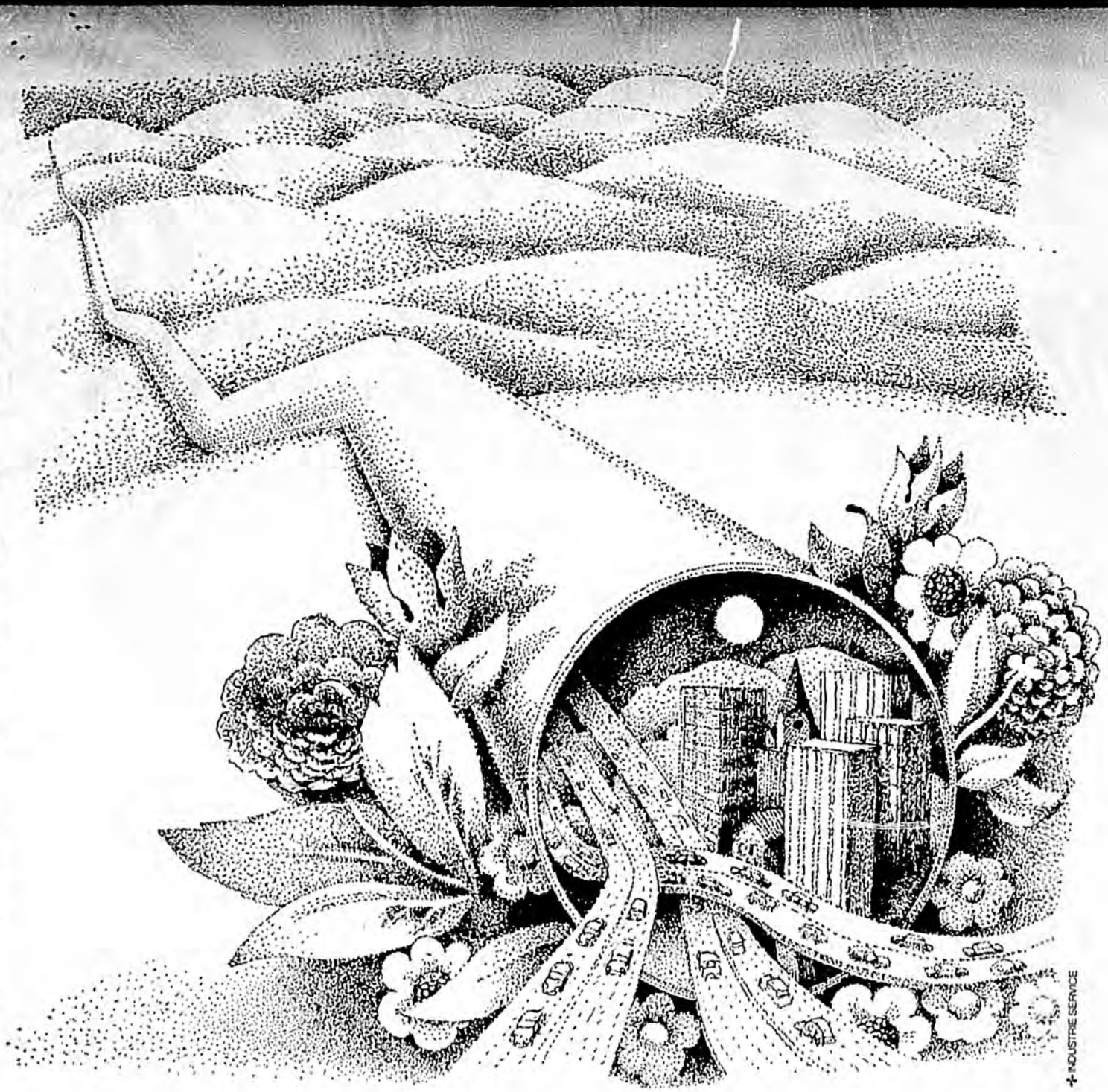

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AGO 529953

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of wells: Flowing	Pumping	Gas lift	Shut in	Production in bbl: Daily avg. 1st 6 mo. 1974	Cumulative 7/1/74	Gravity °API
VENEZUELA*—Continued	Zanjas, 1958	13,270	7	...	...	6	4,353	20,509,845	34.1
	Zapatos, 1955	11,500	15	...	...	47	9,831	111,995,315	37.0
	Zorro, 1953	11,100	10	4	...	12	5,019	57,754,935	25.0
	Zulus, 1957	12,710	7	...	...	11	2,012	14,827,380	33.4
	Zumo, 1954	9,200	5	25	...	17	4,791	68,747,715	16.8
	Others		75	31	...	273	21,071	186,607,915	
	Total		**760**	**1,137**	**...**	**2,626**	**349,455**	**4,654,670,564**	
	FEDERAL TERRITORY OF AMACURO								
	Tucupita, 1945	5,600	15	15	...	35	2,996	46,278,413	16.8
	Others		...	...	...	25	....	57,415,540	
	Total		**15**	**15**	**...**	**60**	**2,996**	**103,693,953**	
	STATE OF MONAGAS								
	Acema, 1960	12,520-13,750	35	14	...	34	23,084	56,140,600	26.4
	Aguasay, 1955	8,100-13,400	25	7	...	45	8,788	76,317,387	38.5
	Jobo, 1956	3,600- 4,000	7	99	...	37	37,560	59,580,400	11.9
	Morichal, 1958	3,312	...	106	...	62	28,610	111,442,650	10.4
	Oritupano, 1950	7,657	20	55	...	35	20,135	102,932,275	19.3
	Orocual, 1933	2,954	9	4	...	24	2,514	16,562,610	20.6
	Pirital, 1958	450- 1,100	...	58	...	8	2,594	18,276,810	17.2
	Quiriquire, 1928	7,000-7,200	...	350	...	110	15,420	723,929,300	16.3
	Santa Barbara, 1941	5,020- 6,500	15	105	...	215	3,500	157,605,325	27.8
	Tacat, 1953	1,830- 3,668	...	53	...	69	2,561	36,222,265	17.2
	Temblador, 1936	3,500- 4,500	4	40	...	6	5,282	98,149,430	20.0
	Others		15	68	...	205	5,661	399,066,265	
	Total		**130**	**959**	**...**	**850**	**157,709**	**1,855,225,377**	
	STATE OF GUARICO								
	Las Mercedes, 1942	1,200- 4,500	2	52	...	100	1,447	126,996,155	27.6
	Ruiz, 1949	4,450	4	23	...	11	1,000	30,775,650	33.1
	Budare, 1958	4,523	22	...	...	10	24,408	38,685,920	31.8
	Others		10	87	...	135	2,551	68,585,115	
	Total		**38**	**162**	**...**	**256**	**29,403**	**265,042,840**	
	STATE OF BARINAS								
	Tato Viejo, 1961	9,543	2	8	...	2	3,822	29,189,030	27.1
	Maporal, 1957	10,944	...	3	...	2	2,116	7,478,340	28.1
	Silvan, 1949	10,862	1	6	...	1	2,641	36,235,965	28.5
	Silvestre, 1948	8,850	1	26	...	12	9,552	105,944,980	24.8
	Sinco, 1953	8,500- 9,100	6	34	...	29	18,798	200,562,270	25.7
	Others		14	10	...	3	10,718	14,263,770	
	Total		**24**	**87**	**...**	**49**	**47,647**	**393,674,355**	
	STATE OF FALCON								
	Tiguaje, 1953	3,300	...	13	...	9	735	8,544,275	26.3
	Others		...	40	...	78	331	97,167,815	
	Total		**...**	**53**	**...**	**87**	**1,066**	**105,712,090**	
	STATE OF ZULIA								
	Bachaquero, 1930†	3,444	190	1,980	...	943	533,605	4,684,433,425	22.4
	Barua, 1958	10,500	4	1	...	1	3,667	12,585,955	19.8
	Boscan, 1946	6,500- 7,500	...	259	...	109	44,634	479,171,910	10.4
	Cabimas, 1917†	2,200	113	467	...	229	79,072	1,055,303,280	23.7
	Centro, 1957	12,568	67	6	...	54	113,000	349,199,000	33.6
	Cruces Manueles, 1916	300- 8,000	9	62	...	26	3,357	162,549,700	30.5
	Ceuta, 1956	9,600-11,000	27	34	...	34	63,700	232,117,500	29.5
	La Concepcion, 1953	3,148- 8,000	3	77	...	40	5,459	114,657,835	35.0
	Lago, 1958	11,450	26	...	...	17	38,346	121,610,290	31.5
	Lagunillas, 1926†	3,000	710	2,410	...	850	803,328	8,469,651,370	24.2
	Lama, 1957	8,320	158	70	...	88	259,774	1,819,755,610	32.8
	Lamar, 1958	13,003	62	11	...	37	131,569	669,111,285	34.1
	La Paz, 1925	4,268- 8,000	13	63	...	30	16,800	770,915,100	32.0
	Los Claros, 1960	9,328	...	7	...	7	4,352	29,169,980	10.4
	Mara, 1945	5,248	7	45	...	40	9,009	375,227,758	27.7
	Mena Grande, 1914	4,132	1	291	...	177	11,007	578,854,384	18.8
	Sibucara, 1948	13,451	...	1	...	3	1,203	39,289,095	35.3
	Tarra W., 1947	4,250- 5,500	6	14	...	14	3,113	63,340,750	38.3
	Tia Juana, 1928	3,000	124	1,656	...	326	296,566	2,734,086,916	18.8
	Others		19	6	...	23	11,306	28,525,378	
	Total		**1,539**	**7,460**	**...**	**3,048**	**2,432,867**	**22,998,556,521**	
	Venezuela total		**2,506**	**9,873**	**...**	**7,176**	**3,021,146**	**30,377,575,700**	
	†Partly offshore								
	*Data estimated								
ZAIRE	GCO, 1970*	11,825	...	...	...	5	.....	.....	30.0
	Mibale, 1973*	5,000- 6,000	...	...	...	3	.....	.....	31.0

*These offshore fields may go on stream at 25,000 b/d in 1976.

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Total wells drilled in the United States*—October 1974†

Data compiled by API

State-district	Total completions: Oil‡	Gas§	Dry holes	Total wells	Total footage	Total wells all types‖	Total footage‖	Total exploratory wells¶: Oil‡	Gas§	Dry holes	Total wildcats	Footage
Alabama	1	1	1	3	48,359	3	48,359	1	...	1	2	32,659
Alaska	1	1	....	2	10,895	2	10,895	...	1	....	1	695
Arkansas	7	....	15	22	124,451	23	132,432	1	...	9	10	71,752
California	86	9	29	124	402,371	142	416,195	3	3	13	19	111,410
North	....	8	19	27	163,926	27	163,926	...	3	9	12	77,107
Central Coastal	20	....	3	23	79,244	24	80,524	1	...	3	4	21,240
East Central	60	1	7	68	137,842	71	140,184	2	...	1	3	13,063
South	3	....	....	3	8,435	17	18,637	...	...	....	....	.....
Offshore	3	....	....	3	12,924	3	12,924	...	...	....	....	.....
Colorado	26	22	51	99	595,296	105	634,881	4	3	30	37	213,893
Florida	1	....	....	1	11,896	2	14,051	...	...	....	....	.....
Idaho	....	....	1	1	120	1	120	...	...	1	1	120
Illinois	31	2	30	63	138,896	63	138,896	...	...	8	8	20,977
Indiana	19	2	31	52	91,865	56	97,207	2	1	19	22	37,363
Iowa	....	....	2	2	3,385	2	3,385	...	...	2	2	3,385
Kansas	107	27	107	241	584,820	254	599,132	6	1	51	58	188,695
Kentucky	11	7	29	47	65,906	52	73,190	2	...	12	14	23,987
Louisiana	76	64	109	249	1,631,031	257	1,688,765	2	3	67	72	592,391
North	38	45	47	130	539,676	133	540,998	1	2	35	38	254,034
South	24	11	31	66	604,384	67	611,943	1	..	14	15	178,124
Offshore	14	8	31	53	486,971	57	535,824	...	1	18	19	160,233
Michigan	16	2	28	46	225,461	46	225,461	6	2	22	30	143,804
Mississippi	8	5	28	41	285,400	46	305,100	1	...	13	14	128,525
Missouri	....	....	3	3	7,572	13	9,353	...	...	3	3	7,572
Montana	5	23	62	90	281,696	90	281,696	..	5	39	44	158,158
Nebraska	5	1	28	34	174,708	34	174,708	1	...	24	25	127,385
New Mexico	27	31	21	79	429,687	79	429,687	...	4	11	15	93,922
East	25	19	20	64	375,869	64	375,869	...	4	11	15	93,922
West	2	12	1	15	53,818	15	53,818	...	...	....	....	.....
New York	13	....	....	13	18,270	18	24,805					
North Dakota	8	....	15	23	164,821	23	164,821	2	...	9	11	77,449
Ohio	47	61	16	124	517,865	125	522,167	1	8	1	10	44,680
Oklahoma	98	74	104	276	1,364,869	291	1,398,505	..	9	28	37	264,204
Pennsylvania	43	33	7	83	180,419	94	197,635	2	4	6	12	44,680
Tennessee	5	....	6	11	19,127	11	19,127	2	...	6	8	14,937
Texas	375	150	413	938	5,113,271	961	5,181,870	21	43	211	275	1,700,706
Dist. 1	9	1	6	16	53,533	17	58,653	...	...	5	5	19,172
Dist. 2	9	28	29	66	372,392	67	377,502	1	15	18	34	204,449
Dist. 3	41	13	55	109	634,903	109	634,903	1	9	33	43	312,769
Dist. 4	33	27	29	89	519,433	89	519,433	3	5	17	25	181,200
Dist. 5	....	....	10	10	70,149	10	70,149	...	...	8	8	67,729
Dist. 6	11	8	14	33	221,367	35	222,603	...	2	11	13	100,021
Dist. 7B	51	14	74	139	450,349	144	466,107	7	4	53	64	242,180
Dist. 7C	39	24	87	150	968,923	155	973,950	3	..	8	11	48,370
Dist. 8	57	9	32	98	691,065	100	696,690	2	3	7	12	110,396
Dist. 8A	63	3	24	90	502,714	95	530,081	4	...	16	20	149,995
Dist. 9	47	5	30	82	227,543	84	230,899	...	2	18	20	99,257
Dist. 10	15	17	12	44	305,971	44	305,971	...	3	7	10	91,822
Offshore	....	1	11	12	94,929	12	94,929	...	...	10	10	73,346
Utah	23	....	13	36	324,716	37	330,585	...	...	11	11	67,364
Virginia	....	4	1	5	26,862	5	26,862	...	...	1	1	6,972
West Virginia	1	26	7	34	95,059	34	95,059	..	3	3	6	21,255
Wyoming	91	6	75	172	1,064,417	176	1,070,788	10	3	51	64	503,401
Gulf of Mexico— Northern	....	....	9	9	77,023	9	77,023	...	...	9	9	77,023
Total—Oct. 1974	**1,131**	**551**	**1,241**	**2,923**	**14,080,534**	**3,054**	**14,392,760**	**67**	**93**	**661**	**821**	**4,779,364**
Total—Sept. 1974	**1,200**	**600**	**1,091**	**2,891**	**12,676,090**	**2,961**	**12,864,725**	**86**	**90**	**624**	**800**	**4,490,377**
Cum. 1974	**10,291**	**5,783**	**9,603**	**25,677**	**124,149,486**	**26,535**	**126,214,822**	**664**	**932**	**5,472**	**7,068**	**41,661,268**
Cum. 1973	**7,983**	**4,929**	**8,269**	**21,181**	**106,362,217**	**22,066**	**108,352,869**	**506**	**648**	**4,762**	**5,916**	.....

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Sept. 28, 1974, through Oct. 25, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests and outpost (extension) tests. ‖Includes 23 strat tests and 68 service wells, 12,059 and 300,167 ft., respectively.

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terranean during the winter.

Special instrumentation includes a navigation computer which integrates dead reckoning, satellite and LORAN C inputs and provides continuous positioning data. The ship's map position is reported with accuracy to within 150 ft. Navigation services are being provided on a direct contract basis from Survey Systems Inc., a Houston-based firm specializing in electronic positioning and surveying.

Gravity and magnetic data are recorded on magnetic tape in duplicate. The paired tapes are returned to Houston one at a time; the second remains on board until the first is reported intact at its Houston destination.

The ship stays in touch with Houston daily via a 1,000-w radiotelephone system.

Gravity and magnetic data can be used to enhance and clarify seismic data. They are also useful in developing a broad geophysical overview of a very large area. The seven maps returned from the Mediterranean and Atlantic survey of the Karen Bech will include Bouguer gravity, total magnetic intensity, bathymetric, gravity residual, free air gravity, regional gravity, and the second vertical derivative of magnetics.

Seismic survey being done in Kamishak Bay

SEISMOGRAPH Service Corp. is conducting a shallow-water seismic survey in the Kamishak Bay area of Cook Inlet in Alaska using a specially built pontoon-type boat.

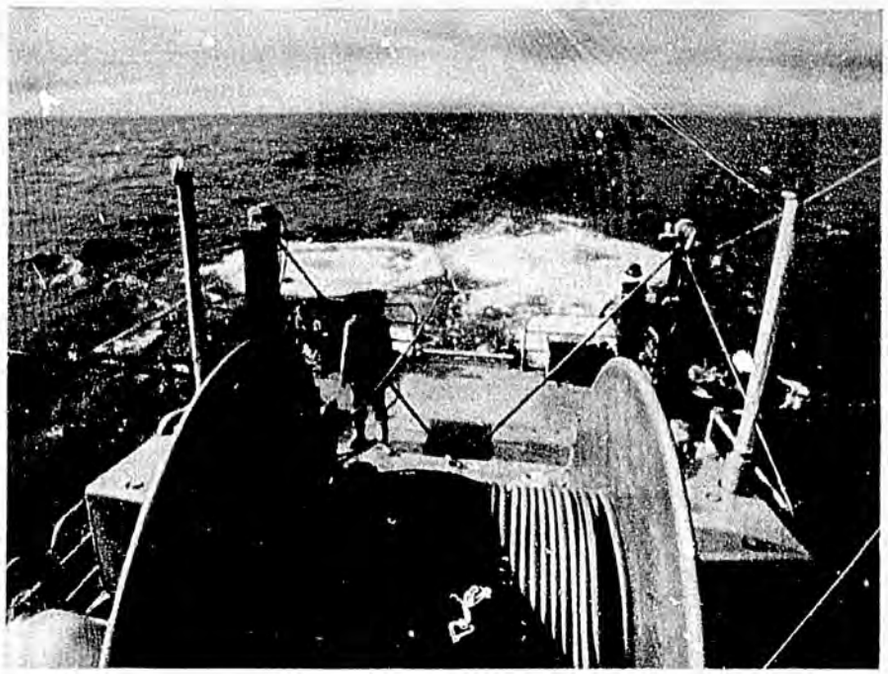
Of modular design, the boat, the Seisjet, was built by MonArk Boat Co. in Monticello, Ark., for ease of transport from prospect to prospect by Hercules aircraft. This is an especially important feature because of logistics difficulties common to exploration in the Arctic.

The craft is 60 ft long with an 18-ft beam and 30-in. draft fully loaded. The pontoons are 6 ft by 6 ft in cross section. Two GM 6B53 engines power Jacuzzi jet pumps to achieve 18 knots cruising speed. Fuel capacity is 2,500 gal.

Two twin-cylinder air guns, a mile of floating streamer-type cable with geophone drops, and 24-trace DFS III instrument comprise the seismic equipment.

Additionally, the boat is equipped with forward-scanning radar, Motorola miniranger for positioning, and Raytheon recording fathometer and digital depth finder. SSC's Anchorage Phoenix center is available to process data.

The Seisjet will begin work out of the inlet of St. Augustine Island where the crew will be housed in a relocatable camp.



IN ITS seismic exploration mode, Seisjet trails a floating cable 4,500 ft long, attached to which are 24 four-cluster hydrophone stations. At predetermined time intervals, shock waves are created by the firing of two underwater air guns, each of which builds up 6,000 lb of air pressure.

BOOKS

OFFSHORE OIL SCOUTS, January 1974 through July 1974, Status of the Offshore Oil Industry. Offshore Oil Scouts, 1609 Canal, New Orleans 70161. $15 in U.S., $30 overseas and Canada. Advance payment with order form is required.

This issue covers all data on Louisiana and Texas. Also available are computer-generated printouts of factual material pertaining to active OCS leases located Offshore Louisiana and Texas. Items which appear are: geographic area, block, OCS number, leased description, operator, etc. Price $75 printout of each sequence. Order from Offshore Oil Scouts, Box 61780, New Orleans 70161.

OIL SPILL PREVENTION AND REMOVAL HANDBOOK. Published by Noyes Data Corp., Mill Road at Grand Avenue, Park Ridge, N.J. 07656. 1974. By Marshall Sittig. 465 pp. $36.

This book attempts to organize and clarify the many ways and means made available for the removal of contaminating oil from surfaces and beaches. Special attention is called to the list of companies producing materials and equipment useful in cleaning oil spills and beaches.

WORLD SURVEY OF SULPHUR RESOURCES—SECOND EDITION. Published by The British Sulphur Corp. Lt., $17.55 (£75) surface mail, $18.72 (£80) airmail, Parnell House, 25 Wilton Rd., London SWiV 1NH, England.

Comprehensive update of 1966 first edition is arranged by major geographical regions on a country-by-country basis. It identifies sulfur resources in respect to mineral deposits, and covers recovery methods.

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Worldwide crude-oil and gas production

OIL (1,000 b/d)	Oct. 1974	Sept.* 1974	10-month average Daily prod. 1973	10-month average Daily prod. 1974	Change from Vol	Change from %	GAS (billion cu ft) Oct. 1974	GAS (billion cu ft) Sept. 1974	GAS (billion cu ft) Cum. 1974
WESTERN HEMISPHERE									
Argentina	415.0	415.0	418.0	413.0	− 5.0	− 1.2	26.4	32.4	230.5
Bolivia	50.0	50.0	47.0	49.0	2.0	4.3	13.4	12.6	126.5
Brazil	170.0	170.0	169.0	170.0	1.0	0.6	3.7	4.2	39.1
Canada	1,597.0	1,615.0	1,790.0	1,711.0	− 79.0	− 4.4	291.7	290.9	2,728.3
Chile	30.0	30.0	32.0	30.0	− 2.0	− 6.3	20.1	21.7	173.7
Colombia	170.0	170.0	199.0	176.0	− 23.0	−11.6	9.7	9.6	85.7
Ecuador	100.0	115.0	203.0	173.0	− 30.0	−14.8	0.4	0.8	4.8
Mexico	580.0	580.0	462.0	570.0	108.0	23.4	58.9	59.0	565.8
Peru	75.0	75.0	68.0	76.0	8.0	11.8	6.6	6.4	60.8
Trinidad	180.0	180.0	164.0	176.0	12.0	7.3	5.0	9.9	57.7
United States	8,777.0	8,734.0	9,206.0	8,857.0	−349.0	− 3.8	1,911.2	1,826.7	18,394.5
Venezuela	2,810.0	2,770.0	3,367.0	3,004.0	−363.0	−10.8	45.0	146.8	1,366.2
Total	**14,954.0**	**14,904.0**	**16,125.0**	**15,405.0**	**−720.0**	**− 4.5**	**2,392.1**	**2,421.0**	**23,833.6**
WESTERN EUROPE									
Austria	45.0	45.0	49.0	46.0	− 3.0	− 6.1	4.9	5.7	77.5
Denmark	4.0	4.0	4.0	2.0	− 2.0	−50.0	0	0	0
France	25.0	25.0	26.0	24.0	− 2.0	− 7.7	18.6	24.2	236.7
West Germany	120.0	120.0	130.0	122.0	− 8.0	− 6.2	50.4	57.9	572.1
Italy	20.0	20.0	15.0	19.0	4.0	26.7	32.9	40.1	489.2
Netherlands	39.0	39.0	30.0	31.0	1.0	3.3	234.2	229.5	2,391.6
Norway	44.0	50.0	36.0	31.0	− 5.0	−13.9	0	0	0
Spain	40.0	40.0	15.0	41.0	26.0	173.3	0	0	0
United Kingdom	2.0	2.0	2.0	2.0	.....	.....	69.9	83.3	1,067.9
Yugoslavia	65.0	65.0	68.0	67.0	− 1.0	− 1.5	4.7	3.8	44.7
Total	**404.0**	**410.0**	**375.0**	**385.0**	**10.0**	**2.7**	**415.6**	**449.5**	**4,879.7**
MIDDLE EAST									
Abu Dhabi	1,169.0	1,412.0	1,342.0	1,452.0	110.0	8.2	0	0	0
Bahrain	68.0	67.0	68.0	67.0	− 1.0	− 1.5	0.1	0.2	3.1
Dubai	262.0	235.0	236.0	237.0	1.0	..	0	0	0
Iran	5,720.0	5,836.0	5,824.0	6,038.0	214.0	3.7	74.2	75.6	754.6
Iraq	1,727.0	1,604.0	1,915.0	1,766.0	−149.0	− 7.8	11.2	9.7	107.3
Israel	100.0	100.0	101.0	100.0	− 1.0	− 1.0	0.2	0.1	3.8
Kuwait	2,060.0	2,225.0	3,115.0	2,569.0	−546.0	−17.5	0.1	0.2	1.4
Oman	280.0	285.0	291.0	292.0	1.0	0.3	0	0	0
Qatar	525.0	515.0	591.0	519.0	− 72.0	−12.2	0.1	0.1	1.5
Saudi Arabia	9,052.0	8,780.0	7,840.0	8,493.0	653.0	8.3	0	0	0
Sharjah†	60.0	60.0	.....	23.0	23.0	..	0	0	0
Syria	150.0	150.0	114.0	126.0	12.0	10.5	0	0	0
Turkey	65.0	65.0	66.0	65.0	− 1.0	− 1.5	0	0	0
Total	**21,238.0**	**21,334.0**	**21,503.0**	**21,747.0**	**244.0**	**1.1**	**85.9**	**85.9**	**871.7**
ASIA-PACIFIC									
Afghanistan	.....	.....	.....	.....	.....	..	7.8	7.8	77.4
Australia	465.0	471.0	368.0	373.0	5.0	1.4	15.6	14.8	132.5
Burma	20.0	20.0	20.0	20.0	.....	..	0.6	0.4	4.9
Brunei-Malaysia	375.0	375.0	316.0	368.0	52.0	16.5	0.8	0.2	2.0
India	150.0	150.0	148.0	149.0	1.0	0.7	1.5	0.4	15.5
Indonesia	1,385.0	1,350.0	1,310.0	1,430.0	120.0	9.2	17.1	13.7	125.1
Japan	15.0	15.0	15.0	15.0	.....	..	7.1	8.0	81.2
Pakistan	8.0	8.0	8.0	8.0	.....	..	13.9	11.2	115.7
Taiwan	3.0	3.0	2.0	3.0	1.0	50.0	4.3	3.2	37.0
Thailand	0.2	0.2	0.2	0.2	.....	..	0	0	0
Total	**2,421.2**	**2,392.2**	**2,187.2**	**2,366.2**	**179.0**	**8.2**	**68.7**	**59.7**	**591.3**
AFRICA									
Algeria	900.0	900.0	1,112.0	1,059.0	− 53.0	− 4.8	1.7	1.6	17.1
Angola	20.0	20.0	14.0	20.0	6.0	42.9	5.1	4.9	30.8
Cabinda	150.0	150.0	138.0	149.0	11.0	8.0	0	0	0
Congo	35.0	35.0	40.0	35.0	− 5.0	−12.5	0.6	0.6	4.8
Egypt	175.0	172.0	192.0	137.0	− 55.0	−28.6	4.7	5.0	39.9
Gabon	190.0	190.0	144.0	176.0	32.0	22.2	1.5	1.3	12.2
Libya	1,069.0	1,325.0	2,272.0	1,596.0	−676.0	−29.8	3.1	4.6	34.7
Morocco	1.0	1.0	1.0	1.0	.....	..	1.9	2.5	24.7
Nigeria	2,325.0	2,312.0	2,015.0	2,278.0	263.0	13.1	4.7	5.8	48.9
Tunisia	95.0	95.0	83.0	80.0	− 3.0	− 3.6	3.0	3.6	11.4
Total	**4,960.0**	**5,200.0**	**6,011.0**	**5,531.0**	**−480.0**	**− 8.0**	**26.3**	**29.9**	**224.5**
COMMUNIST									
China	900.0	900.0	860.0	900.0	40.0	4.7	15.6	16.0	157.1
Rumania	290.0	290.0	283.0	290.0	7.0	2.5	77.9	97.4	777.7
U.S.S.R.‡	9,396.0	9,393.0	8,525.0	9,125.0	600.0	7.0	808.4	760.0	7,554.2
Other	110.0	110.0	100.0	110.0	10.0	10.0	38.7	42.7	415.0
Total	**10,696.0**	**10,693.0**	**9,768.0**	**10,425.0**	**657.0**	**6.7**	**940.6**	**916.1**	**8,904.0**
World Total	**54,673.2**	**54,933.2**	**55,969.2**	**55,859.2**	**−110.0**	**− 0.2**	**3,929.2**	**3,962.1**	**39,304.8**

*Figures adjusted. †On stream July 1974. ‡Includes gas liquids.

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IMPORTANT NOTICE — Due to the increasing costs of paper, printing and postage, it will be necessary to adjust Classified Advertising rates effective with the February 3, 1975 issue. New rates will be: UNDISPLAYED CLASSIFIED: 57¢ a word per issue. DISPLAYED CLASSIFIED: $46 per column inch, one issue.

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1—350 HP White-Superior engine
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1 — 500 HP CLARK #CMA-6
1 — 1000 HP COOPER-BESSEMER #FM-6
1 — 1000 HP COOPER-BESSEMER #JM-4
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6' x 34'	400	Steel Horiz.	8,000
6' x 34'	300	Steel Horiz.	8,000
7' x 34'	300	Steel Horiz.	10,000
7' x 34'	200	Steel Horiz.	10,000
7' x 34'	150	Steel Horiz.	10,000
7' x 34'	100	Steel Horiz.	10,000
6' x 47'	147	Steel Horiz.	10,000
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4' x 20'	125	Steel Horiz.	2,000

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PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

OGJ's 1973 scoreboard

Net profits	9.67 billion	Up 53.4%	(27 companies)
Total assets	123.2 billion	Up 12.8%	(27 companies)
Return on total assets	7.9%	Up 2.1%	(27 companies)
Net liquids production	24.36 million b/d	Up 1.5%	(27 companies)
Runs to stills	22.96 million b/d	Up 6.6%	(25 companies)
Product sales	25.22 million b/d	Up 4.0%	(25 companies)
Net wells drilled	5,377	Down 3.3%	(18 companies)
Net gas production	45.6 billion cfd	Down 0.2%	(27 companies)

OGJ

Oils' high profits abroad bring trouble in the U.S.

W. A. Bachman
Senior Editor

Steven Kelley
Economics Editor

THE IRONY of oil industry profits is remarkable. Companies are earning more than ever but enjoying the rewards less.

For the first time in years, the industry as a whole is reporting earnings for 1973 and the first quarter of 1974 high enough to trigger significant expansion. Ordinarily this would be optimistic news all around.

But fuel shortages, foreign embargoes on oil exports to this country, and rising product prices have created a situation where the petroleum industry has become the whipping boy of politicians and consumer groups. This is true even though companies in other industries also are enjoying record profits.

As a result, oil executives in their annual reports, at their annual meetings, or in first-quarter 1974 announcements are going to great length to explain their earnings. The threats of punitive taxes and sweeping government regulation are forcing companies to make unprecedented analyses of their operations and revelations of just where the new funds come from and how they will be invested.

A vintage year. By now, it is well established that 1973 was a banner year for oil-industry profits. Reports now

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being made also show that earnings are running high so far in 1974.

The Oil and Gas Journal's survey of annual reports for large U.S. oil companies shows an average gain in earnings of 53% for 1973 over the previous year. A survey of 97 petroleum companies by New York's First National City Bank came up with the same percentage gain. A Chase Manhattan Bank study of worldwide profits produced a gain of 71%, but the survey included several European-headquartered companies which had still higher profits (OGJ, Apr. 22, p. 66).

How oil compares. But other industries also did well last year. The profits gain of 2,136 manufacturing firms surveyed by First National City Bank was 31%. The gain of 4,640 corporations in all industries was 23%.

The 53% gain for oil companies was exceeded by several other industry groups. Lumber was up 73%, nonferrous metals 69%, paper 67%, metal mining 63%, and iron and steel 61%. Meatpacking also had a 53% gain, and substantial increases were recorded by chemicals, aerospace, office machinery, and computers.

Measured by rate of return, oil-industry profits were more moderate. The Journal survey showed a return on stockholders' equity increased from 10% to 14.2% and the return on assets went from 7.9% to 10%. The return on net worth calculated by First National City increased from 10.8% to 15.6% which was only slightly greater than the 14.8% average return for all manufacturing. Over the last 10 years, the petroleum group averaged 11.8% compared with 12.4% for all manufacturing.

How they did it. Factors behind the growth in petroleum profits are little understood by the public, because the greatest impetus came from operations abroad.

Demand for petroleum products abroad increased at a greater rate than in the United States, and so did the prices of crude oil and refined products. The Chase Manhattan group of companies reported that 75% of their increased revenues occurred outside the United States and 85% of the profits growth came from abroad.

Currency devaluation and inflation played a large role in these increases. An estimated 25% of the profits growth was attributed to devaluation of the dollar, and one-sixth was attributed to increased value of inventories.

Other factors besides devaluation

How 27 large U.S. companies fared financially last year

Rank by assets		Net profits* ($ million) 1973	1972	% change	Gross op. rev.† ($ million) 1973	% change	% net profit to gross op. rev. 1973	1972
1.	Exxon	2,443	1,532	+ 59.5	25,724	+26.7	8.7	7.5
2.	Texaco	1,292	889	+ 45.3	11,407	+31.2	11.3	10.2
3.	Mobil	849	574	+ 47.9	10,160	+24.7	8.4	7.1
4.	Gulf	800	447	+ 79.0	8,417	+34.8	9.5	7.2
5.	California Standard	844	547	+ 54.3	7,762	+33.2	10.9	9.4
6.	Indiana Standard	511	375	+ 36.3	5,416	+20.3	9.4	8.3
7.	Tenneco	230	203	+ 13.3	3,910	+19.4	5.9	6.2
8.	Shell	333	260	+ 28.1	4,884	+19.8	6.8	6.4
9.	Atlantic Richfield	270	193	+ 39.9	3,983	+19.9	6.8	5.8
10.	Continental	243	170	+ 42.9	4,224	+23.2	5.8	5.0
11.	Phillips	230	148	+ 55.4	2,990	+19.0	7.7	5.9
12.	Sun	230	155	+ 48.4	2,286	+19.2	10.1	8.1
13.	Union	180	122	+ 47.5	2,552	+21.6	7.1	5.8
14.	Cities Service	136	99	+ 37.4	2,035	+ 9.3	6.7	5.3
15.	Getty‡	135	76	+ 77.6	1,601	+14.0	8.4	5.4
16.	Pennzoil United	84	59	+ 42.4	1,059	+19.4	7.9	6.7
17.	Ohio Standard	74	60	+ 23.3	1,482	+ 8.5	5.0	4.1
18.	Amerada Hess	246	46	+434.8	1,896	+42.1	13.0	3.5
19.	Marathon	129	80	+ 61.3	1,578	+23.5	8.2	6.2
20.	Ashland§	85	68	+ 25.0	2,053	+15.3	4.1	3.8
21.	Kerr-McGee	63	51	+ 23.5	728	+ 7.1	8.7	7.4
22.	Skelly	44	38	+ 15.8	580	+10.5	7.6	7.2
23.	Murphy	48	14	+242.9	499	+32.0	9.6	3.8
24.	Superior	33	5	+560.0	152	+ 5.6	21.7	3.6
25.	Louisiana Land	70	63	+ 11.1	180	+23.3	38.9	43.1
26.	American Petrofina	37	18	+105.6	448	+57.2	8.3	6.3
27.	Clark	30	8	+275.0	397	+35.8	7.6	3.0
	Total	9,669	6,300	+ 53.4	108,403	+23.5	8.9	7.2

*Excludes nonrecurring gains and losses. †Excludes nonoperating income and excise taxes ‡Getty

. . . and a summary of their worldwide operations for the past

Rank by assets		Net liquids production, Thousand b/d 1973	1972	% change	Crude runs to stills, Thousand b/d 1973	1972	% change
1.	Exxon	5,525	5,734	- 3.6	5,761	5,146	+12.0
2.	Texaco	4,286	3,777	+13.5	3,052	2,952	+ 3.4
3.	Mobil	2,522	2,399	+ 5.1	2,365	2,194	+ 7.8
4.	Gulf	3,140	3,214	- 2.3	1,976	1,945	+ 1.6
5.	California Standard	3,170	3,159	+ .03	2,248	2,109	+ 6.6
6.	Indiana Standard	875	815	+ 7.4	1,100	1,016	+ 8.3
7.	Tenneco	81	82	- 1.2	77	90	-14.4
8.	Shell	631	638	- 1.1	1,085	1,001	+ 8.4
9.	Atlantic Richfield	656	652	+ 0.6	746	753	- 0.9
10.	Continental	556	594	- 6.3	546	509	+ 7.2
11.	Phillips	365	363	+ 0.1	460	450	+ 2.2
12.	Sun	369	369	0	580	549	+ 5.6
13.	Union	380	365	+ 4.1	472	440	+ 7.3
14.	Cities Service	227	227	0	235	269	-12.6
15.	Getty†	420	433	- 3.0	239	230	+ 3.9
16.	Pennzoil United	47	42	+11.9	36	33	+ 9.1
17.	Ohio Standard	51	50	+ 2.0	382	400	- 4.5
18.	Amerada Hess	215	231	- 6.9	492	444	+10.8
19.	Marathon	441	453	- 2.6	313	286	+ 9.4
20.	Ashland‡	51	42	+21.4	338	327	+ 3.4
21.	Kerr-McGee	38	41	- 7.3	39	37	- 5.4
22.	Skelly	86	89	- 3.4	86	80	+ 7.5
23.	Murphy	52	49	+ 6.1	94	72	+30.6
24.	Superior	64	70	- 8.6			
25.	Louisiana Land	86	79	+ 8.9			
26.	American Petrofina	21	20	+ 5.0	136	97	+40.2
27.	Clark	2	2	0	104	105	- 1.0
	Total	24,357	23,989	+ 1.5	23,962	21,574	+ 6.6

*Sales. †Getty data includes interest in Skelly. ‡Fiscal year ended Sept. 30, 1973.

AGO 529960

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                *
  2 4.4 3
  1 2.9 2
    8.4 9
    8.0 0
    7.4 4
    5.1 1
    2.3 0
    3.3 3
  7 2.0 2 *
    3
  1 5.3 2
    8.8 9
    5.7 4
    4.4 7
    5.4 7
    3.7 5
    2.0 3
    2.6 0
  4 8.2 7 *
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                *
  9 6.6 9
  7 3.0 2   -
  2 3.6 7 *

  6 3.0 0
  4 8.2 7   -
  1 4.7 3 *
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AGO 529961

How 15 small companies fared

Company	Net profits ($ thousands) 1973	1972	% change
Corco	34,117	3,113	+995.9
Tesoro	19,874	13,047	+ 52.3
Mapco Inc.	19,598	13,065	+ 50.0
Quaker State	19,202	15,207	+ 26.3
General Crude Oil	17,013	14,177	+ 20.0
Pioneer Natural Gas	12,397	9,852	+ 25.8
Crown Central Pet. Corp.	8,441	1,317	+540.9
Helmerich & Payne Inc.	6,368	4,449	+ 43.1
Inexco Oil Co.	5,811	4,519	+ 28.6
Apco Oil Corp.	5,717	6,186	− 7.6
Woods Corp.	5,190	3,891	+ 33.4
Barber Oil & Gas Co.	3,221	2,648	+ 21.6
Western Co. of N. America	2,372	1,744	+ 36.0
Forest Oil Corp.	(1,037)	771	−234.5
White Shield Corp.	(2,750)	981	−380.3
Total	155,534	94,967	+ 63.8

and inflated inventories also accounted for increased earnings. Tanker rates soared to record highs from subnormal levels in 1972, making transportation operations of many companies very profitable. Petrochemical operations also enjoyed a substantial recovery during the year and once again became a strong profit center for a large number of firms.

The companies surveyed by the Journal report a 23.5% gain in gross operating revenues, while the average return on revenues advanced from 7.2% to 8.9%. Working capital of the group increased by 29.8% to $15.3 billion; and the companies put this to work by spending $13.7 billion on capital projects, a 21.2% gain over expenditures the year before.

Operating statistics for the group also are impressive. The companies on a worldwide basis reported liquids production of 24,357,000 b/d, an increase of 1.5%. They stepped up refinery runs by 6.6% to 22,962,000 b/d and product sales by 4% to 25,216,000 b/d. Natural-gas sales held about the same at 45.5 billion cfd. The number of net wells drilled, however, declined 3.3% to 5,558.

What companies say. The trends revealed in the surveys were echoed in comments of company executives in their annual reports.

Almost without exception this year, the reports dwelled at length on explanations of the world energy picture, the vast need for capital funds, and the concern over the political attitude of governments both in this country and abroad.

Cities Service executives declared that prices and profits are the basic issues in the long-term energy situation. Marathon said the most serious challenge before management is communicating the basic facts of the petroleum shortage to the public and of the overwhelming need for capital.

Every company in the Journal survey reported plans for substantial increases in capital investment, particularly in exploration, production, processing, and stepped-up activity in alternate energy sources. Many noted specifically that the investment needs far exceeded internal cash sources and will require outside financing. And this will make a high level of earnings vital.

Particular attention was given to U.S. earnings. Marathon and Sohio noted that profits from domestic operations actually declined. For Marathon, profits from U.S. operations dipped from $64.9 million to $61.8, while those from abroad increased from $14.9 to $67.6 million. For Sohio, the domestic decline was 4.8%, and the foreign gain 59.3%. Exxon said earnings in the U.S. were up 15.4%, about in line with the increase in product sales volume. Texaco's domestic profits were only 3.4% higher. Sun reported 80% of its added profits came from abroad, and the figure for Phillips was 81%. These joined many others in noting that their foreign earnings will help finance expansion projects in this country.

Time needed. Several companies showed a sensitivity in their annual reports to charges that industry capital spending is not showing results in greater energy reserves or rates of production.

The executives pointed out that current expansion projects require a longer lead time and require a much larger investment than formerly, thus tying up larger amounts of nonproductive capital. Lead times of 3-5 years or longer are needed in bringing new fields on production or putting refineries on stream.

Continental illustrated this trend by a special report in its annual on the North Sea. Capital investment to develop currently known North Sea oil and gas reserves, Continental said, will amount to an estimated $12-15 billion. Development costs per barrel of peak daily production capacity in the northern North Sea will average about $4,000. This is about 60% greater than the cost of developing discoveries in the Gulf of Mexico and 10 times the cost required for development of onshore discoveries in the Middle East.

California Standard's report left no doubt that much time and money will be needed to correct the U.S. energy imbalance. Socal executives suggested an energy program for the U.S. which probably represents a consensus of the industry. It includes policies to emphasize more efficient energy usage, encourage domestic exploration, expedite leasing of federal lands, speed refinery expansion, moderate environmental regulations, build deepwater terminals, research the best use of coal, shale, and tar-sands resources, and finally speed the construction of nuclear-fueled power plants.

The annual report taken as a group revealed one fact. The executives of the nation's oil companies realize they face the greatest challenge since the Drake well, and they are dedicated to meeting it.

BP, Imperial set U.K. ethylene plant

BP CHEMICALS and Imperial Chemical Industries have officially announced a joint-venture 500,000-metric-ton/year ethylene plant for Teesside, U.K. (OGJ, Oct. 1, 1973, Newsletter). Completion is scheduled for mid-1977.

A 500-mile pipeline will carry ethylene to BP's Grangemouth, Scotland, complex. Each company will provide its own feedstock, mainly naphtha. The plant, designed by Stone & Webster, will also be able to process natural-gas liquids.

AGO 529962

Working cap. ($ million) 1973	Working cap. % change	Funds from operations ($ million) 1973	Funds from operations % change	Cap. & expl. expend. ($ million) 1973	Cap. & expl. expend. % change	% return on stockholders equity 1973	% return on stockholders equity 1972	% return on total assets 1973	% return on total assets 1972	Total assets $ million 1973	Total assets $ million 1972	Total assets % change
3,486	+ 45.7	4,079	+ 43.0	2,235	+ 12.7	17.8	12.5	9.7	7.1	25,079	21,558	+16.3
1,723	+ 80.2	1,926	+ 46.0	1,334	+ 11.8	16.2	12.4	9.5	7.3	13,595	12,032	+13.0
564	− 11.7	1,363	+ 30.9	1,334	+ 13.0	14.9	11.2	7.9	1.2	10,690	9,217	+16.0
1,514	+ 4.8	1,560	+ 43.1	979	+ 14.0	14.4	8.3	7.9	4.8	10,074	9,324	+ 8.0
1,271	+ 60.3	1,250	+ 35.3	1,017	+ 16.9	14.5	10.5	9.3	6.8	9,082	8,084	+12.3
775	+ 13.5	971	+ 22.0	1,100	+ 16.9	12.4	9.9	7.3	6.1	7,018	6.186	+13.4
333	− 8.8	499	+ 15.8	392	+ 13.6	12.0	11.1	4.3	4.1	5,427	4,838	+12.2
752	+ 12.6	785	+ 17.3	581	− 1.7	10.7	8.9	6.2	5.0	5,381	5,172	+ 4.0
718	+ 53.4	573	+ 19.6	500	+ 37.4	8.7	6.5	5.3	4.2	5,109	4,629	+10.4
483	+ 44.6	554	+ 39.2	476	− 11.7	13.4	10.4	6.6	5.2	3,693	3,250	+13.6
612	+ 17.7	469	+ 27.8	329	+ 24.2	11.7	8.2	6.4	4.5	3,607	3,270	+10.3
357	+ 77.6	463	+ 34.6	284	+ 5.2	11.9	8.8	6.8	5.2	3,382	2,980	+13.5
357	+ 6.3	479	+ 18.0	391	+ 24.5	10.5	7.6	6.2	4.5	2,909	2,696	+ 7.9
277	+ 3.4	305	+ 17.3	402	+ 53.4	8.9	6.9	5.1	4.1	2,660	2,406	+10.6
228	− 14.0	362	+ 32.6	437	+ 60.1	8.5	5.2	5.7	3.5	2,355	2,182	+ 7.9
91	− 43.5	189	+ 21.9	293	+125.4	13.3	11.7	4.2	3.2	2,001	1,837	+ 8.9
327	+ 11.6	158	+ 6.0	193	+ 55.6	6.5	5.6	3.8	3.3	1,964	1,802	+ 9.0
417	+112.8	354	+100.0	242	+ 70.4	31.8	8.3	12.8	3.4	1,922	1,378	+39.5
105	+156.1	246	+ 33.0	169	− 12.0	14,6	10.1	8.2	5.3	1,572	1,514	+ 3,8
298	+ 7.1	177	+ 14.9	176	+ 43.0	15.5	13.4	5.9	5.3	1,437	1,170	+13.1
204	+ 3.0	125	− 1.6	113	+ 48.7	11 2	10.0	7.2	6.3	867	807	+ 7.4
91	− 20.9	136	+ 18.3	175	+ 7.3	7.4	6.7	5.5	5.0	803	748	+ 7.4
99	+ 47.8	111	+ 94.7	113	− 7.8	20.2	7.6	6.9	2.5	704	568	+23.9
43	+ 59.3	53	+ 29.3	30	6.3	9.0	1.5	4.9	0.9	660	572	+15.4
93	+ 93.8	106	+ 17.8	79	− 26.9	27.5	28.4	15.4	15.5	455	406	+12.1
72	+ 38.5	57	+ 62.9	135	+440.0	13.4	12.3	8.2	6.9	451	264	+70.8
42	+ 61.5	42	+100.0	15	+ 15.4	27.9	10.1	11.6	4.1	263	206	+27.7
15,332	+ 29.8	17,392	+ 34.2	13,729	+ 21.2	14.2	10.0	7.9	5.8	123,160	109,196	+12.8

data includes interest in Skelly. §Fiscal year ended Sept. 30, 1973.

2 years

Refined product sales Thousand b/d 1973	Refined product sales Thousand b/d 1972	Refined product sales % change	Number of employees 1973	Number of employees 1972	Number of employees % change	Net wells drilled 1973	Net wells drilled 1972	Net wells drilled % change	Net natural-gas production MMcfd 1973	Net natural-gas production MMcfd 1972	Net natural-gas production % change
6,178	5,701	+ 8.4	137,000	141,000	− 2.8				*9,767	*9,323	+ 4.8
3,472	3,381	+ 2.7	74,918	76,496	− 2.1	969	1,177	−17.7	*4,516	*4,685	− 3.6
2,482	2,409	+ 3.0	73,900	75,000	− 1.5	....	....	....	3,682	3,595	+ 2.4
1,781	1,677	+ 6.2	51,600	57,500	− 10.3	...	...	...	3,360	3,572	− 5.9
2,259	2,169	+ 4.1	39,269	41,497	− 5.4	266	370	−28.1	*1,579	*1,671	− 5.5
1,234	1,226	+ 0.7	46,589	46,627	− 0.1	1,208	1,130	+ 6.9	3,935	3,911	+ 0.6
125	122	+ 2.5	83,500	78,000	+ 7.1				972	935	+ 4.0
1,136	1,068	+ 6.4	32,080	32,871	− 2.4	440	513	−14.2	2,268	2,460	− 7.8
896	884	+ 1.4	26,284	27,756	− 5.6	309	356	−13.2	2,138	2,203	− 3.0
654	657	− 0.4	39,796	38,092	+ 4.5	486	458	+ 6.1	*1,451	*1,326	+ 9.4
690	733	− 5.9	33,429	35,265	− 5.2	267	199	+34.2	1,825	1,853	− 1.5
647	634	+ 2.1	24,979	26,384	− 5.3	241	198	+21.7	*1,523	*1,510	+ 0.9
487	458	+ 6.3	15,926	16,263	− 2.1	256	252	+ 1.6	1,534	1,634	− 6.1
374	396	− 3.1	18,000	21,400	− 15.9	135	159	−15.1	1,127	1,087	+ 3.7
273	298	− 8.4	11,258	12,317	− 8.6	179	163	+ 9.8	1,261	1,261	0
35	31	+ 12.9	10,732	9,618	+ 11.6	....	....	....	675	605	+11.6
385	408	− 5.6	18,823	21,111	− 10.8				110	145	−24.1
615	575	+ 7.0	4,867	4,714	+ 3.2	60	39	+53.8	743	763	− 2.6
349	321	+ 8.7	8,238	8,048	+ 2.4	....	....	....	419	429	− 2.3
474	452	+ 4.9	26,123	23,077	+ 13.2				312	172	+81.4
112	131	− 14.5	8,966	9,217	− 2.7	85	94	− 9.6	300	304	− 1.3
135	144	− 6.3	4,367	4,835	− 9.7	57	91	−37.4	512	516	− 0.8
154	147	+ 4.8	2,989	2,992	0	78	60	+30.0	71	66	+ 7.6
....	....	....	2,690	2,420	+ 11.2	73	63	+15.9	1,033	1,083	− 4.6
...	...	...	...	...	...	238	203	+17.2	385	390	− 1.3
149	119	+ 25.2	2,904	2,276	+ 27.6	30	33	− 9.1	50	56	−10.7
120	111	+ 8.1	3,095	1,567	+ 97.5	...	...	...	6	7	−14.3
25,216	24,242	+ 4.0	802,322	816,343	− 1.7	5,377	5,558	− 3.3	45,554	45,562	− 0.2

AGO 529963

1965 Net income	1965 %	1964 Net income	1964 %	1963 Net income	1963 %
63.4	22.2	59.4	23.0	52.4	22.7
35.8	15.5	23.7	14.0	18.1	11.7
90.1	8.1	47.1	7.3	44.0	7.0
100.6	10.2	84.5	9.1	77.5	8.6
8.7	27.8	2.1	8.9	1.5	6.8
96.2	10.2	100.1	11.1	87.4	10.5
1,021.4	11.9	1,050.6	12.6	1,019.5	12.8
57.7	6.9	43.0	5.6	43.0	6.1
427.2	11.2	395.1	11.0	371.4	10.9
25.1	14.6	20.7	14.7	18.8	15.8
60.1	11.3	60.4	11.8	49.1	10.2
320.1	9.1	294.2	8.8	271.9	8.6
6.4	6.1	4.3	4.9	4.8	5.7
127.7	9.9	115.0	9.3	108.1	8.9
234.0	13.4	198.2	12.3	179.9	12.0
34.0	8.8	25.7	7.1	24.2	7.0
391.2	11.1	345.3	10.5	322.1	10.5
219.3	8.1	194.9	7.5	183.1	7.3
49.7	12.7	43.8	12.0	38.9	11.4
85.5	10.1	68.5	8.8	61.2	8.4
636.7	14.9	577.4	14.6	547.6	15.6
112.8	10.4	92.9	14.7	55.2	9.9
4,203.7	11.2	3,846.9	10.8	3,579.7	11.0

quarterly financial statements filed with the Security

oil's top 22

revenue in taxes, exclusive of sales and excise levies in 1972. There were no comparable figures for other industries, but the year before the tax burden for oil and gas was 5.59¢, greater than the 4.58¢ for other U.S. mining and manufacturing corporations and the 4.17¢ for all other businesses.

Oil and gas companies paid lower income taxes per dollar of revenue, Pirinc said, due mainly to percentage depletion and intangible drilling cost deductions, but other types of taxes were greater than for other businesses. The main taxes in the other category paid by oil and gas companies were state and local property taxes and crude-oil and natural gas severance taxes.

Oil and gas companies paid $1.2 billion in federal income taxes in 1972 and $2.4 billion in other types of taxes. The effective federal income tax rate for the domestic oil industry rose from 19.1% in 1969 to 22% in 1970, 23.5% in 1971, and 25.6% in 1972, due largely to the effects of the Tax Reform Act of 1969, Pirinc reported.

In addition to its domestic tax payments, the U.S. oil industry also paid foreign income taxes totaling $7.2 billion in 1972, $5.8 billion in 1971, and $3.6 billion in 1970. The foreign income tax together with the domestic federal income tax liability gave the U.S. oil industry an effective worldwide income tax rate of 58% in 1972, according to Pirinc calculations.

Oxy, Libya sign exploration deal

OCCIDENTAL Petroleum Corp. has signed the first exploration agreement made by Libya since the Sept. 1, 1969, revolution and expects to be drilling in the new exploratory area this year.

Occidental, which, along with other operators in Libya, has experienced numerous problems dealing with the revolutionary government, will be operating under a production-sharing contract on 19 blocks covering 11 million acres.

Most of the blocks are in the Sirte basin, where Libya's present producing fields are located, and some cover concessions previously relinquished by others.

Terms of the contract are demanding, but Oxy believes much of the acreage has not been adequately explored. Oxy's current production in Libya was found on relinquished acreage.

Under terms of the agreement, the national oil company, Libyan National Oil Corp., will get 81% of future production and Oxy 19%. Oxy's share will be free of Libyan taxes and royalties.

Oxy will finance all exploration and pay 19% of development costs on commercial discoveries. Libya will pay 81% of development costs but will be reimbursed for this amount if production reaches a specified—but unannounced—figure. Oxy would make the reimbursement at a rate of 5%/year over 20 years without interest.

Production costs will be borne 81% by Libya and 19% by Oxy.

Subject to mutual agreement on prices, Oxy will have the option to purchase Libya's share of future production.

The agreement permits operations for 35 years if a commercial discovery is made on a block within 5 years. It does not effect Oxy's present concessions, held jointly by Oxy and Libyan National.

Oxy says it is contracting for two or three seismic crews to begin shooting operations this spring or summer and expects to have a rig in the field before the end of the year.

U.S. firms plan two more mobile rigs

U.S. drilling contractors plan to build two more mobile offshore rigs.

Sedco Inc., Dallas, will build still another of its 700-series semisubmersibles, and Storm Drilling S.A., a subsidiary of Houston-based Storm Drilling Co., has let contract for a new jack-up rig to Bethlehem Singapore Private Ltd.

Sedco's new unit, to be known as Sedco 708, will be leased to Sun Oil Co. for at least 2 years starting late in 1976. A shipyard contract has not yet been awarded, although Sedco is negotiating with Gulf Coast and West Coast yards.

Cost of the fully equipped rig will be in excess of $40 million, and Sun estimates its total cost for rig operation and related equipment and supplies will run about $75,000/day.

Sun said it made this long-term commitment in order to strengthen its exploration capability in deep waters off the continental U.S.

Sedco also announced it has received a 2-year drilling contract from a consortium including Shell, ARCO, and Mobil for use of the Sedco 706. The semisubmersible unit is being built at the Kaiser shipyard in California, with delivery scheduled the fall of 1975.

Delivery of Storm's new unit is scheduled in October 1975. It's to be rated to 25,000 ft in 250 ft of water.

Award of the latest contract brings to six the number of Bethlehem-designed offshore mobile units under construction or scheduled at Bethlehem's Singapore yard.

Other units under construction by Bethlehem include five semisubmersibles and four jack ups at its Beaumont, Tex., yard.

ACO529963B

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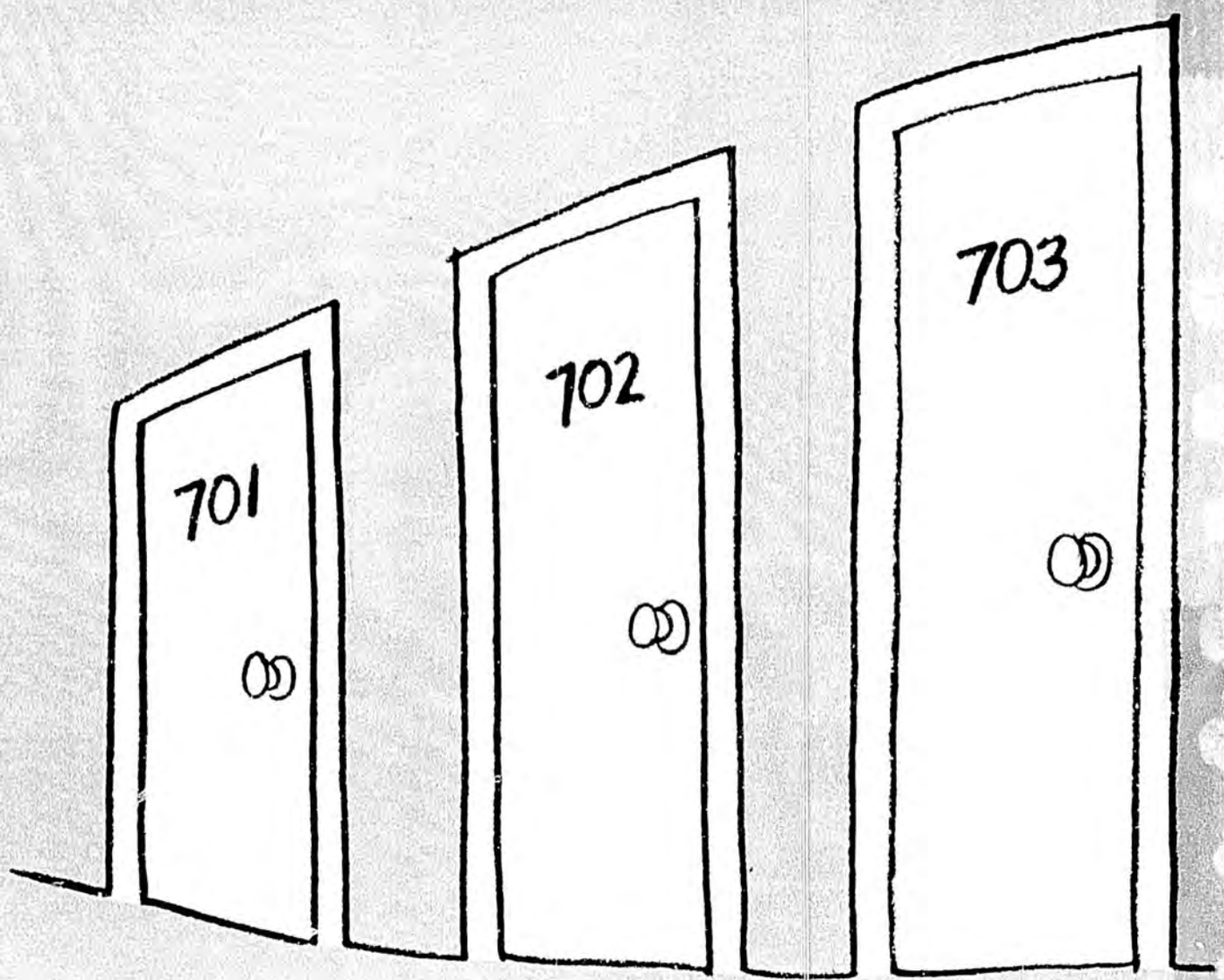

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Net income after tax and the rate of return on equity of 22 U.S. oil companies (1963-73)

$ millions

Company	1973 Net income	1973 % return*	1972 Net income	1972 %	1971 Net income	1971 %	1970 Net income	1970 %	1969 Net income	1969 %	1968 Net income	1968 %	1967 Net income	1967 %	1966 Net income	1966
Amerada Hess†	151.8	23.5	46.2	8.3	133.3	24.0	114.0	25.7	86.5	23.7	89.8	19.8	76.8	22.2	73.1	2
Ashland	98.3	17.3	68.0	13.5	40.5	8.8	52.0	11.7	56.9	13.3	53.6	14.6	48.4	15.5	45.0	1
Atlantic Richfield	270.2	8.9	192.5	6.5	210.5	7.3	209.5	7.5	230.1	8.5	105.8	7.8	130.0	10.2	113.5	
Cities Service	135.6	9.8	99.1	6.9	104.5	7.7	118.6	8.9	127.2	10.0	121.3	9.9	127.8	10.9	120.1	1
Clark	30.5	29.9	8.3	9.8	3.6	4.7	10.8	14.0	13.0	18.7	12.1	20.4	11.5	23.4	9.6	2
Continental	242.7	14.0	170.2	10.4	140.1	9.1	160.3	10.7	146.4	9.8	150.0	10.6	136.1	10.1	115.6	1
Exxon Corp.	2,440.0	18.5	1,531.8	12.5	1,516.6	13.1	1,309.5	12.0	1,242.6	12.3	1,276.7	13.0	1,155.0	12.3	1,090.1	1
Getty	135.0	8.8	76.1	5.2	120.1	8.5	103.2	7.8	105.8	8.3	98.3	8.3	118.2	10.5	92.3	
Gulf†	760.0	14.0	447.0	8.3	561.0	10.2	550.0	10.4	610.6	12.1	626.6	13.2	568.3	12.9	504.8	1
Kerr-McGee†	58.8	10.8	50.6	10.1	40.7	10.8	35.9	10.3	33.6	10.3	36.4	12.0	32.1	11.5	33.0	1
Marathon	129.4	15.2	79.8	10.2	88.7	11.7	86.5	11.8	89.4	12.1	83.3	12.7	73.9	12.3	68.8	1
Mobil	842.8	15.7	574.2	10.9	540.8	10.9	482.7	10.4	456.5	10.4	430.7	10.3	385.4	9.8	356.1	
Murphy	53.6	24.4	14.3	7.6	11.1	6.2	9.3	6.5	6.2	4.5	7.3	5.4	8.2	6.2	8.4	7
Phillips	230.4	12.1	148.4	8.1	132.3	7.6	132.3	7.8	127.8	7.7	129.9	8.0	164.0	11.0	138.4	1
Shell	332.7	10.9	260.5	8.9	244.5	8.7	237.2	8.6	291.2	10.9	312.1	12.3	284.9	13.8	255.2	1
Skelly	44.0	7.5	37.6	6.8	38.3	7.0	36.1	7.0	38.4	7.7	40.3	8.5	42.0	9.3	37.0	
Standard of Calif.	843.6	14.4	547.1	10.5	511.1	10.4	454.8	9.8	453.8	10.3	451.8	10.7	409.4	10.3	401.2	1
Standard (Ind.)	511.2	12.4	374.7	10.0	340.6	9.6	314.0	9.3	321.0	10.0	309.5	10.1	280.9	9.6	255.9	
Standard (Ohio)	74.1	6.6	59.7	5.6	58.8	5.7	64.4	6.3	51.9	5.3	70.1	13.0	67.1	14.5	56.9	1
Sun	230.0	12.3	154.7	8.8	151.6	8.9	139.1	8.4	152.3	9.4	164.4	10.9	156.2	15.2	100.6	1
Texaco	1,292.4	25.0	889.0	12.4	903.9	13.4	822.0	13.1	769.8	13.1	819.6	14.5	754.4	14.8	692.1	1
Union of Calif.	180.2	10.6	121.9	7.6	114.7	7.4	114.5	7.6	138.9	9.5	149.8	10.9	145.0	11.2	134.2	1
Totals	9,087.3	15.1	5,951.7	9.7	6,007.3	10.2	5,556.7	10.4	5,549.9	10.9	5,539.4	11.8	5,175.6	12.0	4,701.9	1

*Equity as of Sept. 30, 1973. †Full years income estimated on the basis of income reported for the first 9 months of 1973.

Source: Compiled by Office of Tax Analysis, Department of Treasury, from Standard and Poors's Industrial Survey, Moody's Industrial Manu Exchange Commission (10 Q Forms).

AGO 529964

Treasury cites 1968-72 U.S. profits dip for

DOMESTIC profits for 22 of the largest oil companies actually declined from $3.672 billion in 1968 to $3.563 billion in 1972, a study by the Treasury Department discloses.

During the same period, international profits for the same group of companies rose from $1.709 billion to $2.353 billion.

Also, the Treasury analysis shows, the 1973 earnings are "primarily attributable to foreign inventory profits from skyrocketing prices, increased profits from increases in foreign product prices, and efficiencies in foreign refinery and other operations unrelated to the prices paid by U. S. consumers."

Affirming a point made by the companies, Treasury says further "that the higher 1973 profits must be interpreted in the light of the lower-than-normal profits realized in 1972 and the several years immediately prior."

Profits overall for the 22 companies rose last year to $9.087 billion from $5.951.7 billion in 1972. At the same time the rate of return on equity jumped to 15.1%, after falling to 9.7%, the low point of the past decade, in 1972.

The 1973 figures are based on actual earnings for the first 9 months of the year, converted to an annual basis.

During the 1963-72 decade, rate of return peaked at 12% in 1967, then slumped each year thereafter until the shortage last year, made worse by the Arab embargo, firmed up world prices and profits.

A Federal Trade Commission report shows oil refiners' profits for the 12 months ending last September yielded a return of 10.5%, compared with a 12.4% return for all manufacturing. During the past decade, FTC figures show the oil-industry return to be at or below the average for other businesses.

The 1973 figures computed by Treasury show that some companies were much better situated than others to benefit from tight supply and rising prices. Clark Oil & Refining Corp.'s return shot up from 9.8%, as computed by Treasury, to 29.9%. Texaco's rose from 12.4% to 25%, Treasury said, although the absolute increase in profits didn't rise proportionately.

The next best performances were reported not by the international giants but by Murphy Oil Corp., which earned 24.4% on equity, and Amerada Hess Corp., which made 23.5%.

Exxon Corp. earned 18.5%, compared to 15.7% for Mobil Oil Corp., 14.4% for Standard Oil Co. of California, 14% for Gulf Oil Corp., 12.4% for Standard of Indiana, and 12.3% for Sun Oil Co.

At the lower end of the scale, Standard Oil Co. (Ohio) earned only 6.6%, Skelly Oil 7.5%, Getty Oil 8.8%, and Atlantic Richfield Co. 8.9%.

Taxes still high. Also last week, the Petroleum Industry Research Foundation Inc. released an updated report on, "The Tax Burden on the Domestic Oil and Gas Industry." It showed that domestic oil and gas companies paid an average of 5.6¢/dollar of gross

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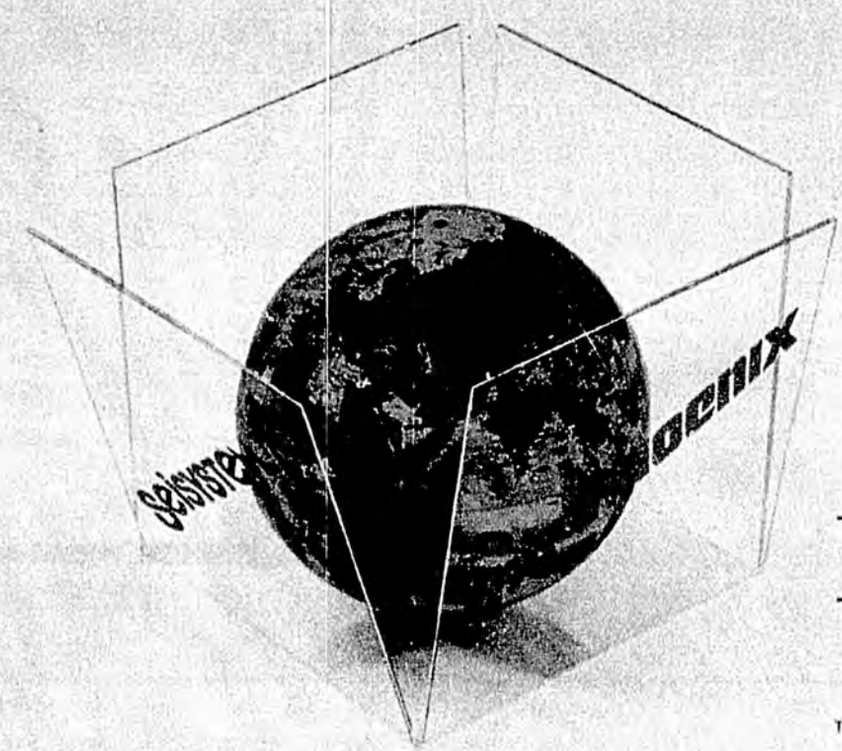

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AN OIL AND GAS JOURNAL SPECIAL REPORT



Progress painfully slow toward improved U.S. energy position

One year after the embargo, crude supplies are ample and product stocks in better shape—but the country's basic energy position has improved little. Election-year politics in Congress, coupled with widespread ignorance in Washington of the workings and needs of the petroleum industry and business in general, crippled most helpful moves on the federal level and brought still more controls.

A YEAR has passed since the Arab oil embargo accompanied by escalating prices exposed for all Americans to see the depth of their nation's costly energy insecurity. Subsequent events have confirmed the realization that the nation faces a long and expensive economic restructuring to improve its position.

At API time last year, the entire oil industry was scurrying to find crude supplies to replace volumes lost by the Arab export embargo to this country. For the first time in its modern history, spare U.S. oil-producing capability was inadequate to cover an emergency. Fears of an industrial and transportation shutdown were widespread.

At API time this year, the embargo has long been lifted, crude supplies worldwide are ample even if quadrupled in price, and product stocks in the United States are in better shape this season than a year earlier.

Nonetheless, the nation's basic energy position has improved very little over the year, even though the industry has taken many initial steps aimed at change. The time lag for such projects looking to energy independence inhibit spectacular early achievements.

Americans, however, can count some gains that augur well for the future. From the embargo experience, they have come closer to realizing that:

- The energy crisis is real and not contrived or arranged by the big oil companies to exploit the consumer.
- The days of cheap energy based on ample supplies of oil and gas are over for this country. New petroleum reserves and new energy sources must command higher prices to attract the vast amounts of capital needed for their development.
- Conservation through more-efficient use of fuels has become a necessary watchword for all consumers, industry and public alike.
- Importance of oil and gas in the nation's energy mix will continue for years, and continued imports of oil from abroad must be maintained until the nation can develop greater domestic sources.
- Outlines of a long-range energy mix are beginning to appear, emphasizing the necessity of bringing into play vast reserves of coal and of ultimate reliance on nuclear fuels for generating electricity.

What happened. The nation faced growing energy problems even before the Middle East

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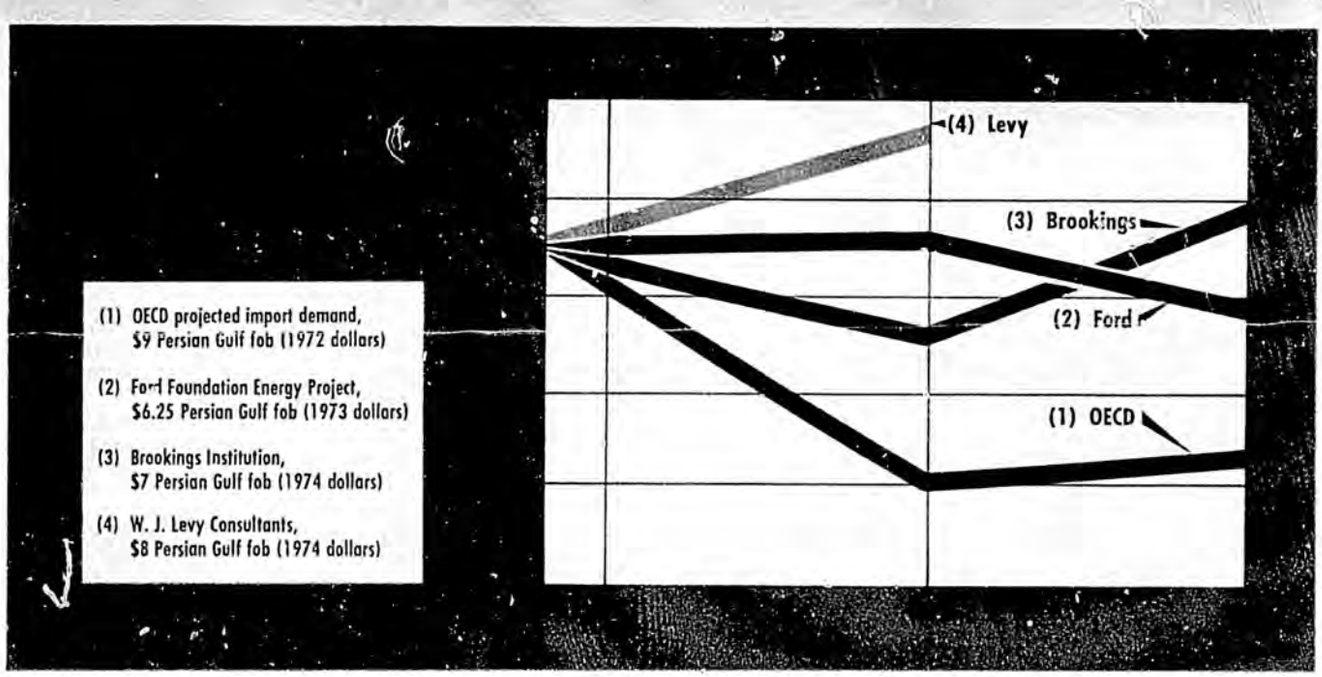

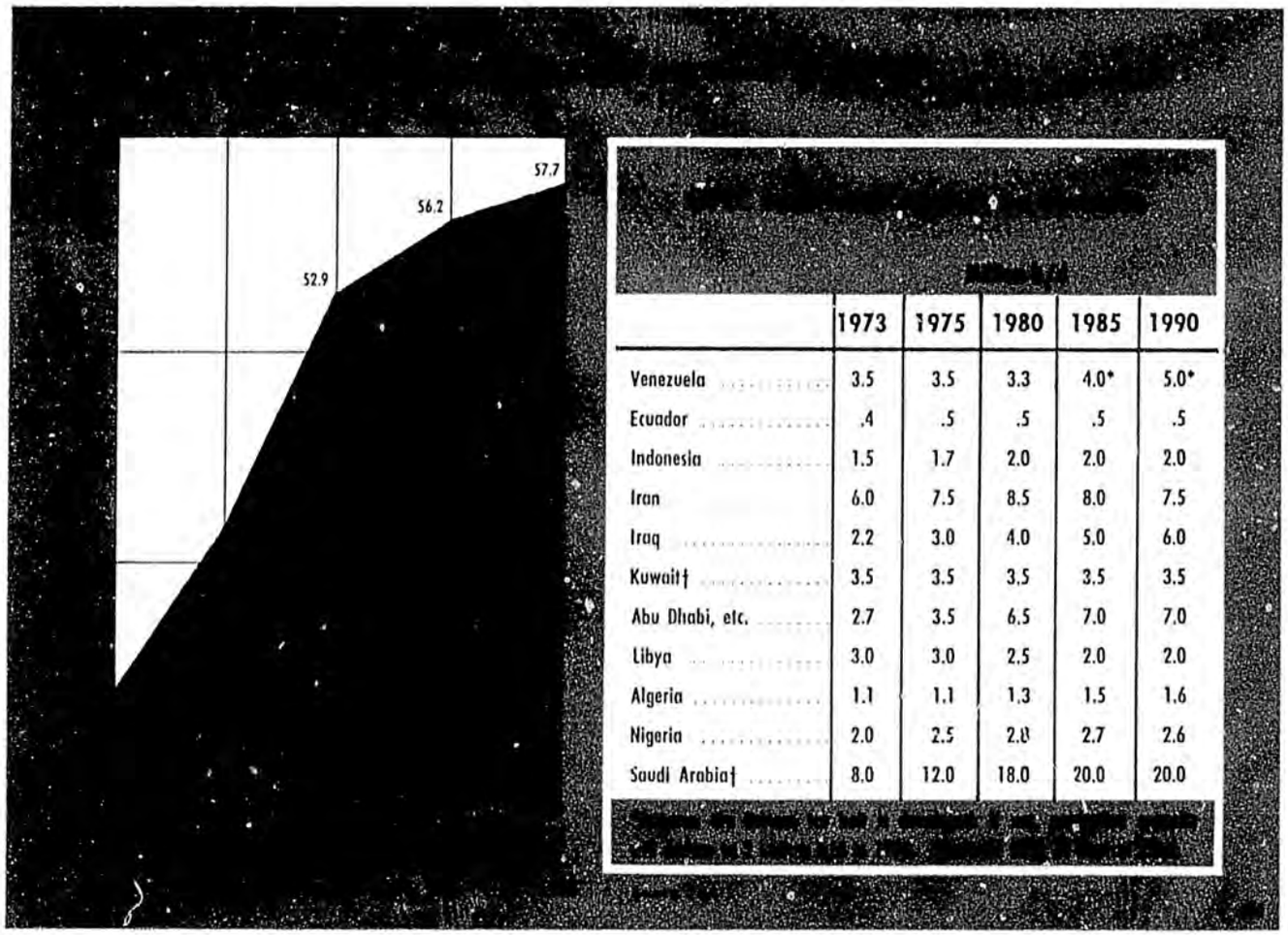

	1973	1975	1980	1985	1990
Venezuela	3.5	3.5	3.3	4.0*	5.0*
Ecuador	.4	.5	.5	.5	.5
Indonesia	1.5	1.7	2.0	2.0	2.0
Iran	6.0	7.5	8.5	8.0	7.5
Iraq	2.2	3.0	4.0	5.0	6.0
Kuwait†	3.5	3.5	3.5	3.5	3.5
Abu Dhabi, etc.	2.7	3.5	6.5	7.0	7.0
Libya	3.0	3.0	2.5	2.0	2.0
Algeria	1.1	1.1	1.3	1.5	1.6
Nigeria	2.0	2.5	2.8	2.7	2.6
Saudi Arabia†	8.0	12.0	18.0	20.0	20.0

conflict of October 1973 and the embargo that followed.

In the last 15 years, the United States has not adequately developed its domestic petroleum resources, while demand for petroleum continued to rocket upward.

In 1959, for example, 2,074 rotary rigs were active and 51,764 total wells were drilled. By comparison, in 1973 only 1,194 rigs were active and wells drilled slumped to 27,602. New crude reserves added by exploration in 1959 were estimated at nearly 3.7 billion bbl and by 1973 this had dropped to about 2.2 billion bbl.

The drain on petroleum reserves was enormous. Liquids production increased from 7,933,000 b/d in 1959 to 10,925,000 b/d in 1973;

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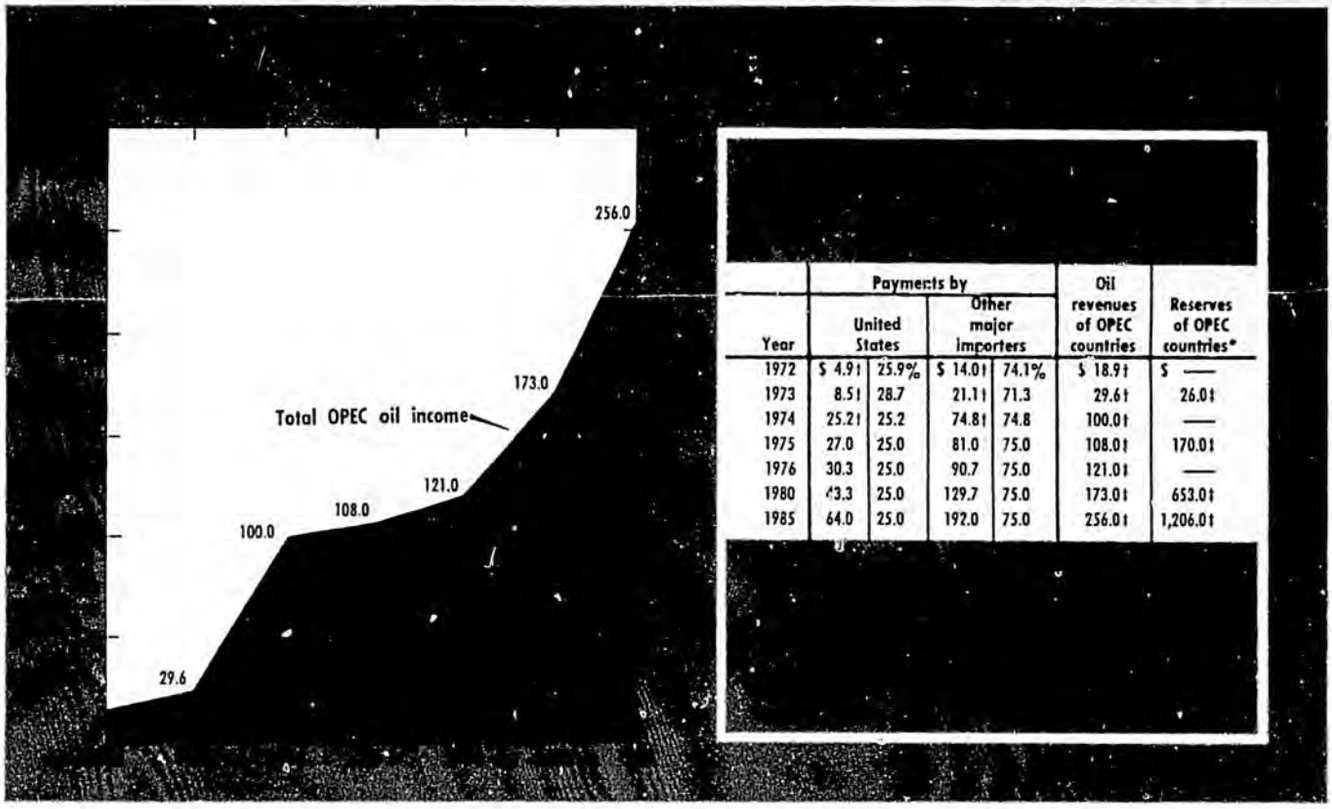
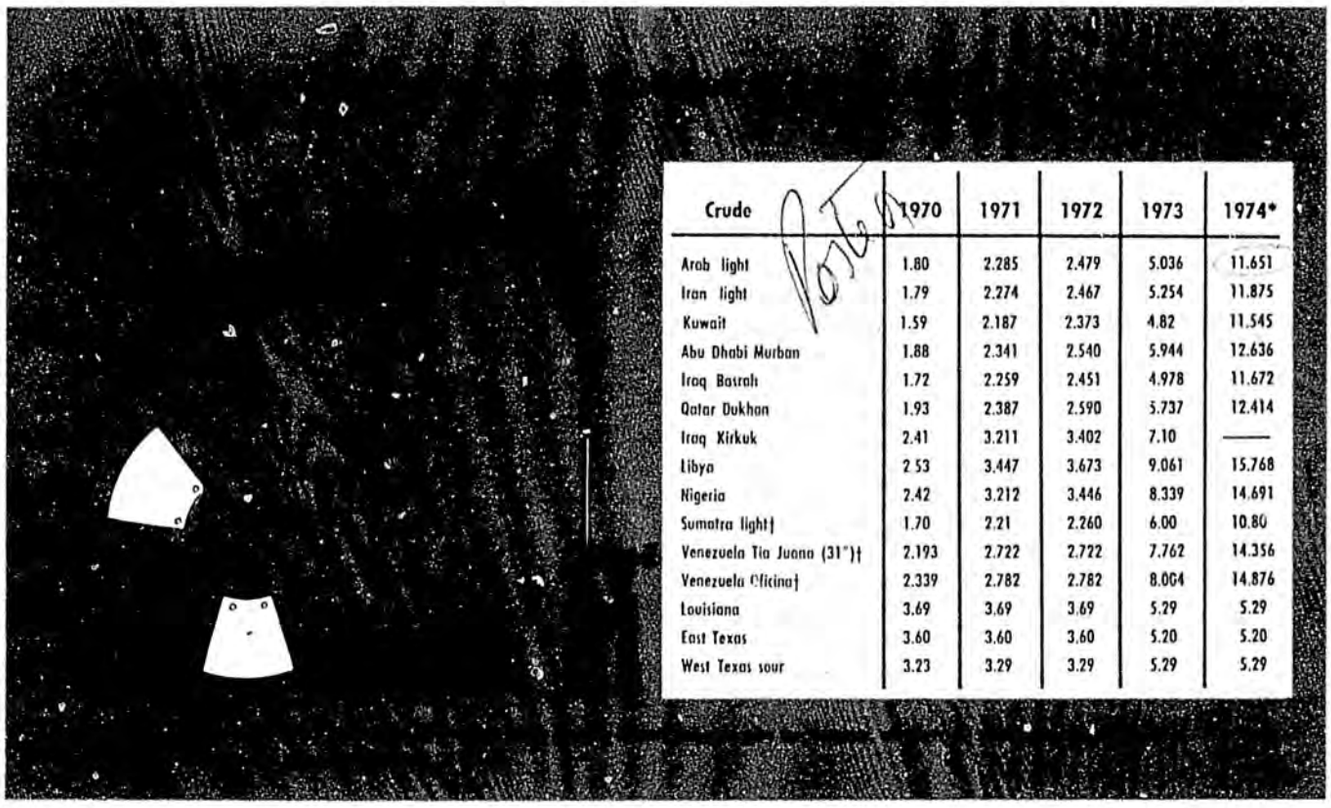


Year	Payments by United States		Payments by Other major importers		Oil revenues of OPEC countries	Reserves of OPEC countries*
1972	$ 4.9†	25.9%	$ 14.0†	74.1%	$ 18.9†	$ —
1973	8.5†	28.7	21.1†	71.3	29.6†	26.0†
1974	25.2†	25.2	74.8†	74.8	100.0†	—
1975	27.0	25.0	81.0	75.0	108.0†	170.0†
1976	30.3	25.0	90.7	75.0	121.0†	—
1980	43.3	25.0	129.7	75.0	173.0†	653.0†
1985	64.0	25.0	192.0	75.0	256.0†	1,206.0†



Crude	1970	1971	1972	1973	1974*
Arab light	1.80	2.285	2.479	5.036	11.651
Iran light	1.79	2.274	2.467	5.254	11.875
Kuwait	1.59	2.187	2.373	4.82	11.545
Abu Dhabi Murban	1.88	2.341	2.540	5.944	12.636
Iraq Basrah	1.72	2.259	2.451	4.978	11.672
Qatar Dukhan	1.93	2.387	2.590	5.737	12.414
Iraq Kirkuk	2.41	3.211	3.402	7.10	——
Libya	2.53	3.447	3.673	9.061	15.768
Nigeria	2.42	3.212	3.446	8.339	14.691
Sumatra light†	1.70	2.21	2.260	6.00	10.80
Venezuela Tia Juana (31°)†	2.193	2.722	2.722	7.762	14.356
Venezuela Oficina†	2.339	2.782	2.782	8.064	14.876
Louisiana	3.69	3.69	3.69	5.29	5.29
East Texas	3.60	3.60	3.60	5.20	5.20
West Texas sour	3.23	3.29	3.29	5.29	5.29

but petroleum demand was still not satisfied. It jumped from 9,749,000 b/d to 17,498,000 b/d. To close the gap, the nation's imports increased from 1,780,000 b/d in 1959 to 6,201,000 b/d in 1973. At this figure, imports represented about 35% of domestic supply.

Impact of the October 1973 embargo was not felt until mid-December because of the long supply lines to this country from the Middle East. And full effect of the reduced flow came in the first quarter of 1974 when average imports fell some 2.2 million b/d below expectations. The crisis was met only because U.S. consumption at the same time was reduced by 2.7 million b/d through the first quarter.

Economists just now have been able fully to

AGO 529967

World energy resources

	Billion (10^9) units	
	Proved and currently recoverable	Estimated remaining recoverable
United States		
Natural gas (1,000 cu ft)	279	1,447
Natural-gas liquids (bbl)	7.3	36
Crude oil (bbl)	38.1	335
Coal (short tons)	197	1,433
Shale oil (bbl)	77	1,068
Bitumens (bbl)	1	2
Uranium oxide (short tons at $15/lb)	580	1,620
Western Hemisphere (Incl. U.S.A.)		
Natural gas (1,000 cu ft)	407	3,340
Natural-gas liquids (bbl)	N.A.	70
Crude oil (bbl)	78	700
Coal (short tons)	220	2,310
Shale oil (bbl)	130	1,550
Bitumens (bbl)	80	500
Uranium oxide (short tons at $15/lb)	975	2,470
Europe (Excl. U.S.S.R.)		
Natural gas (1,000 cu ft)	171	480
Natural-gas liquids (bbl)	N.A.	13
Crude oil (bbl)	17.7	135
Coal (short tons)	78	415
Shale oil (bbl)	15	150
Bitumens (bbl)	N.A.	N.A.
Uranium oxide	450	570
Asia-Pacific (Inc. Europ. U.S.S.R.)		
Natural gas (1,000 cu ft)	964	4,300
Natural-gas liquids (bbl)	N.A.	120
Crude oil (bbl)	478	1,350
Coal (short tons)	880	3,565
Shale oil (bbl)	35	115
Bitumens (bbl)	N.A.	N.A.
Uranium oxide (short tons)	170	385
Africa		
Natural gas (1,000 cu ft)	193	1,700
Natural-gas liquids (bbl)	N.A.	48
Crude oil (bbl)	58.9	500
Coal (short tons)	10	120
Shale oil (bbl)	10	100
Uranium oxide (short tons)	425	570
Total world		
Natural gas (trillion cu ft)	1,735	9,740
Natural-gas liquids (billion bbl)	N.A.	259
Crude oil (billion bbl)	633	2,685
Syncrude from oil shale and bitumen (billion bbl)	270	2,315
Coal (billion short tons)	1,188	8,410
Uranium oxide (1,000 short tons at $15/lb)	2,020	3,995

Source: H. R. Linden & J. D. Parent, Institute Gas Technology.

OGJ

measure the embargo's impact on the economy. The National Petroleum Council, for instance, reports these effects:

- **Gross national product.** A 7% drop was experienced in GNP during the first quarter, whereas a modest increase generally had been expected. The impact especially was felt in slowed activity in autos, tourism, housing, construction and allied activities.
- **Employment.** The unemployment rate during the first quarter averaged 5.2% of the labor force, up 0.5 percentage points from the preembargo rate.
- **Prices.** The sharp, rapid increases in world oil prices during and after the embargo resulting from producer-country actions raised energy costs through the world economy. Each commodity and service became higher priced depending on its use of energy. About one-fourth of the increase in U.S. wholesale prices in 1974 has been attributed to increased energy costs. The higher price levels have revealed that, contrary to prior opinion, petroleum demand is elastic and to some degree reacts to price.
- **International trade.** The higher world oil prices became a big upsetting factor in changing the balance of payments between oil-producing and oil-consuming nations. In the case of the United States, NPC has estimated that the 1974 dollar outflow attributable to its oil imports will reach $25 billion and that total funds flowing into the producing countries will approach $100 billion. The Commerce Department reported that the soaring U.S. oil bill sent this nation's balance of payments into a $900-million deficit during the first half of this year. The department warned that continued deficits could lead to a weakened U.S. dollar compared with other currencies. This in turn could prompt more devaluations or further inflation in the United States.

A World Bank study projects the U.S. dollar outflow at $27 billion in 1975 with total OPEC revenues at $108 billion and U.S. outflow by 1980 at $43 billion and OPEC revenues at $173 billion. By 1985, the U.S. oil-import bill may reach $64 billion and OPEC revenue $256 billion.

OPEC currency reserves from this vast income will mount to $653 billion by 1980 and $1.206 trillion by 1985, according to this study.

The action taken. Americans had four options to meet the oil shortages created by the embargo and in so doing learned some valuable lessons about future approaches.

The options were: cut consumption sharply, convert to alternate fuels, increase domestic production on an emergency basis, and allocate short supplies among consumers on a priority basis.

AGO 529968

COAL: the sleeping giant

COAL is the sleeping giant in the world energy picture.

Dr. Karlheinz Bund, chairman of Rukrkohleag A.G. of Essen, West Germany, predicted at the 9th World Energy Conference in Detroit that technological progress will enable coal to overcome its present handicaps and assume a major world energy role.

Proved and probable coal reserves, according to Dr. Bund, are estimated to be at least 8,000 billion tons.

They amount to some 90% of the world's total fossil energy reserves compared with about 10% for crude oil and natural gas together.

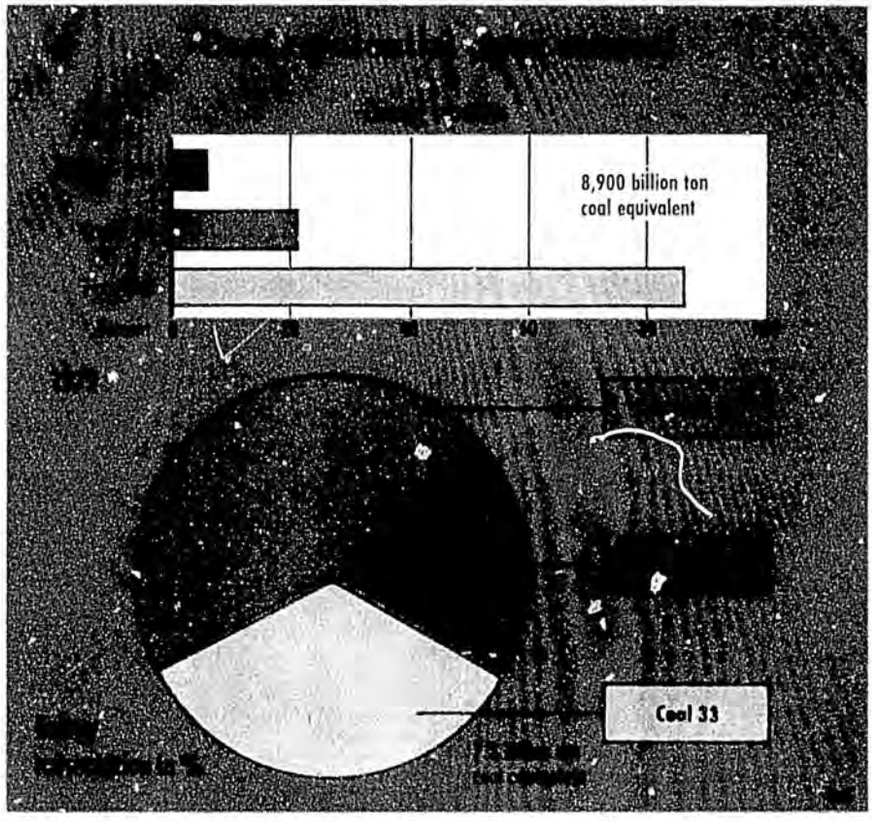
Dr. Bund declared that based on a recovery of only 50% of coal reserves, they will be sufficient for 2,000 more years at the present production level of 2.2 billion tons/year. Even if coal production should be doubled, the reserves still would last about 1,000 years.

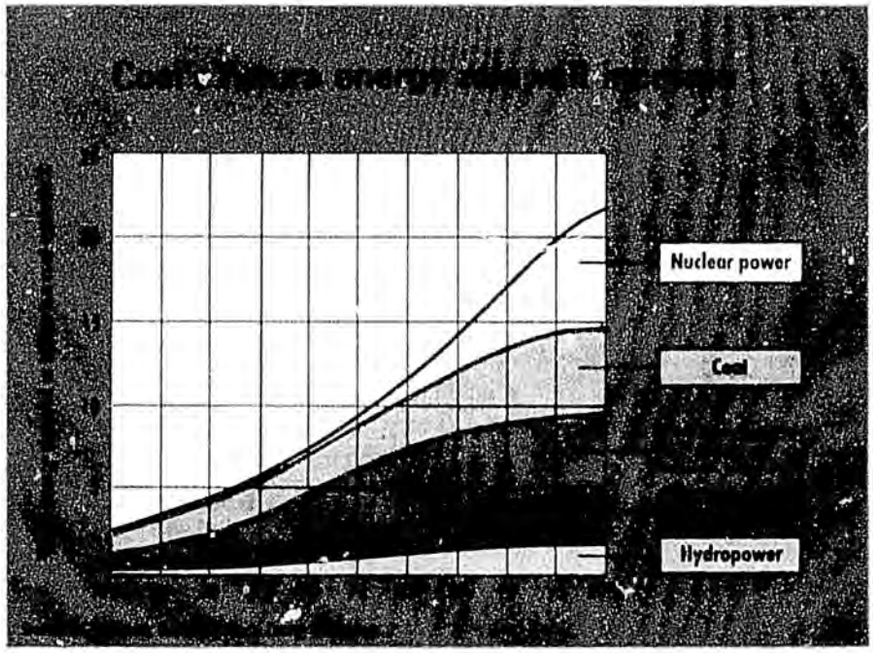
Coal reserves are not only abundant, he added, but also favorably distributed where oil and natural-gas reserves are limited and concentrated in a few areas.

However, coal has several severe handicaps regarding extraction and transport. Dr. Bund said these challenges were:

- The extraction and processing of coal is more difficult and labor intensive than the production of oil and gas. But new, and above all, labor-saving technical mining systems must therefore be expeditiously developed, tested, and introduced into the mines.
- The coal-mining industry, particularly opencast mining, is rated as hostile to the environment. New mining methods with appropriate reclamation standards can solve these problems.
- Transportation of coal over long distances is costly and requires a high level of investment. Efficient transport systems must be innovated, making possible a more-economical movement of coal over long distances.

Dr. Bund forecast that new technologies for coal gasification, liquefaction, and use in power generation will allow this fossil fuel to command a substantial energy role.





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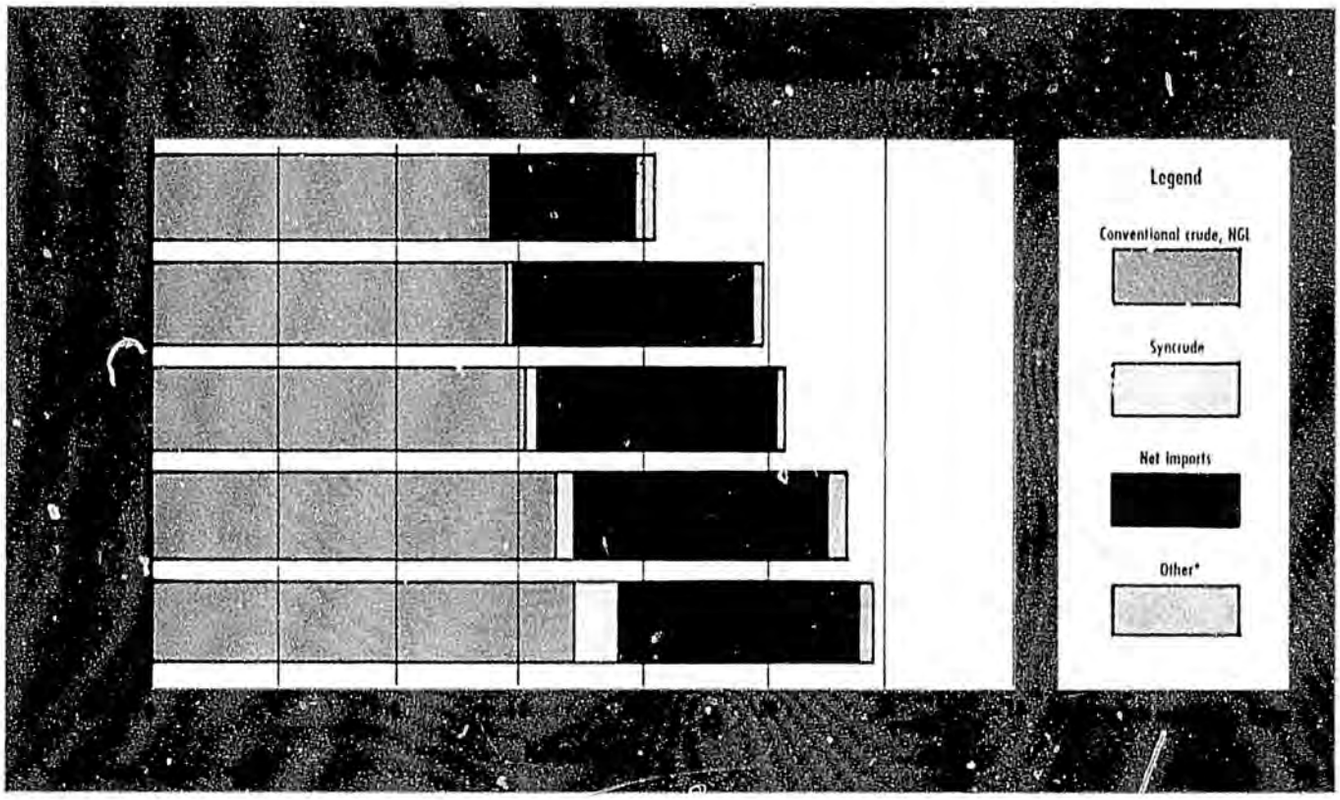
Due to consumer cooperation and some luck with the weather, Americans cut petroleum consumption by 2.7 million b/d in the year's first quarter. This was accomplished by such voluntary actions as car pooling, reduced space heating and lighting, more-efficient airline operations, etc. Such mandatory actions as reduced speed limits for autos also contributed.

NPC estimated that conservation and curtailment activity reduced consumption by 1,010,000 b/d in the 3 months. The warmer-than-normal weather helped reduce demand by 440,000 b/d. NPC estimated that other factors, such as high fuel prices, lowered economic activity, and unavailability of particular products contributed 1,150,000 b/d to reduced consumption.

Conversion to alternate fuels proved a disappointing factor in the crisis. Switching to coal on short notice proved complicated and difficult. NPC reported that actual oil savings from this source were only 61,000 b/d. Previous estimates of potential savings were as high as 120,000 b/d. However, imports of electricity from Canada accounted for 26,000 b/d giving a total of 87,000 b/d gained from conversion to or use of alternate fuels. A decline in petroleum exports ran this total to about 100,000 b/d.

The effects on various petroleum products from these cutbacks are interesting. Gasoline took a sharp reduction of 600,000 b/d for the quarter. Aviation fuels demand dropped 19,000 b/d, middle distillates and residual fuels each 780,000 b/d, and other products including exports 35,000 b/d.

Emergency production increases above normal rates were not employed during the short emergency period. A few oil fields in Texas and the Naval Petroleum Reserves were



Workable rigs (year-end)	Historical 1973	Projected 1974	1975	1976
Land rigs	1,502	1,502	1,541	1,559
Offshore rigs				
Stationary	75	81	88	96
Mobile-bottom supported	58	62	67	77
Floaters	15	21	32	41
Total offshore	148	164	187	214
Total all rigs	1,650	1,684	1,728	1,773
Net additions		34	44	45

New rig allocation	Historical 1973		Projected 1974		1975		1976	
New rigs manufactured								
Offshore mobile		49		50		50		
Remaining in U.S.			11		17		20	
Exported			38		33		30	
Fixed		86		112		128		
Remaining in U.S.			48		52		50	
Exported			38		60		78	
Total new rigs manufactured		135		162		178		
Less exports	76		93		108			
Less attrition	25		25		25			
Total unavailable		101		118		133		
Net rig additions		34		44		45		

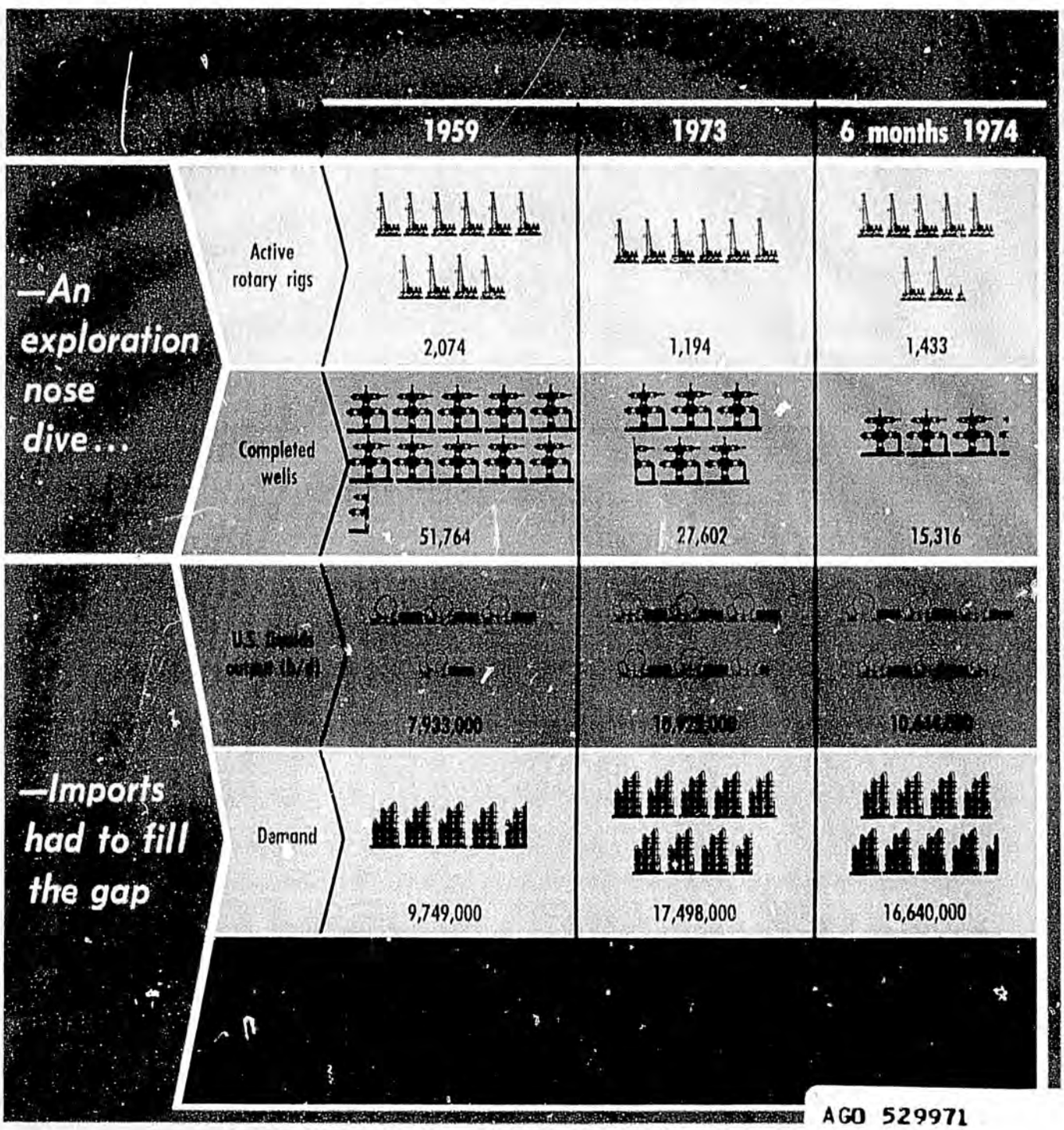
AGO 529970

considered potential sources of greater production. But these options came a cropper due to a balky Congress and equally reluctant state oil-regulatory agencies.

Instead, the Federal Energy Office undertook the job of allocating available petroleum products to cover essential activities and minimize adverse effects on agriculture and industry.

The lessons. What lessons for the future did the U.S. learn from this?

- Emergency conversion to other fuels offers little relief. The greatest opportunities are primarily in the electric-utility sector and even there are quite limited. The future in power generation is away from oil and gas to coal, and this trend will lower potential savings from conversion during an emergency, especially since the same trend also is expected in industry. NPC, however, recommends the Government encourage dual-fuel capability in industry and environmental variances to permit coal conversion.
- Emergency domestic oil production also will be limited. The potential from existing fields is small and will decline over time as these reserves are depleted. NPC recommends, however, that the federal Government should evaluate the potential of the Naval Petroleum Reserves, complete development of the reserves, and finalize plans for use in an emergency. State and federal agencies also are urged to cooperate in developing acceptable procedures to permit emergency production of other domestic fields to make even this small degree of protection available.
- It's doubtful that voluntary conservation and curtailment measures in the future will result in more savings than achieved early this





COMPLETION of the base for the 360-mile Alyeska haul road to the North Slope paves the way for intensive construction work on the line next year—and for a major boost in domestic oil supply in 1977.

year. Continued high fuel prices, it is felt, will make conservation a way of life in this country, leaving little room for further savings in an emergency. For this reason, NPC believes the nation should develop standby emergency consumption-reduction measures strongly oriented toward consumer education and cooperation. A mandatory rationing system should be carefully developed but its use withheld until the effectiveness of other measures is fully determined.

• **An emergency petroleum-storage system** is a serious need to give the nation adequate time in a crisis to react positively to any cutoff in imports. NPC observes that "efforts to implement such a program should begin immediately because of the long construction lead times involved."

First consideration of the storage system, according to NPC, should be to provide crude-oil security to domestic refiners. It is estimated that 500 million bbl of crude storage when combined with normally available inventories will provide 90 to 180 days of supply for a large percentage range of crude imports presently foreseen.

NPC believes crude storage could be created in Gulf Coast salt-dome projects and integrated with the crude-transportation system serving Gulf Coast deepwater terminals. Storage of fuel oil at strategic locations on the East Coast also would be needed to fit specific circumstances and specific logistical problems.

Important matters to be resolved in any storage system, NPC pointed out, are the extent of government or industry financing and the administration of emergency storage and its fill.

Cost of security storage will be considerable. The cheapest approach is storage in salt domes which could be provided for 60-85¢/bbl, if the volume to be stored exceeds 100 million bbl. This compares with a cost of $3.80 to $7/bbl for aboveground tank storage. Many salt domes on the Gulf Coast are capable of accommodating storage projects of several hundred million bbl and experience with such storage has proven it safe and reliable.

Leaching of several hundred million bbl of salt-dome storage could be completed in about 6 years, NPC estimated. Thus significant storage could be ready to fill about 1979.

The council recommends that security storage should not be drawn down until after (1) a proper declaration of an energy emergency by Government and (2) appropriate voluntary and mandatory standby consumption and reduction measures have been implemented.

New look at demand. Petroleum economists believe the U.S. economy as a result of the Arab action has now entered a transitional period between an era of abundant supplies of cheap energy and an era of high prices and insecure supply.

A sign of the times is what's happening to U.S. oil demand this year. It's experiencing no growth, in fact actually may decline by as much as 2% from 1973, the first downturn in many years. This trend is attributable to physical restraints early in the year and higher prices the rest of the time.

Because of increased drilling and recovery efforts, domestic oil and gas supply should decline at a slower rate this year than earlier anticipated. Import volumes should remain about equal with 1973, allowing the industry to meet current demand and rebuild inventories.

The 1974 demand experience may herald a

AGO 529972

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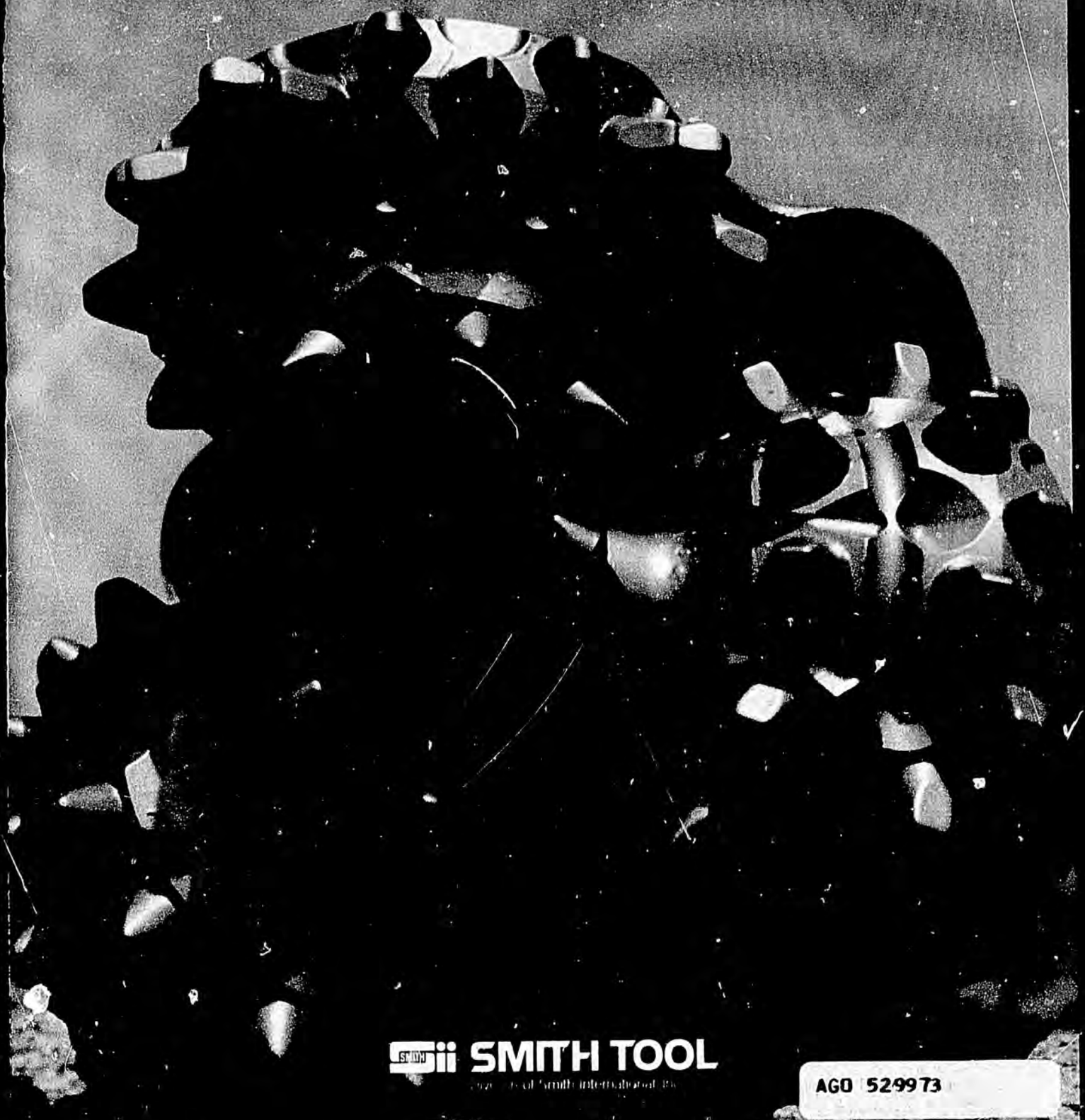

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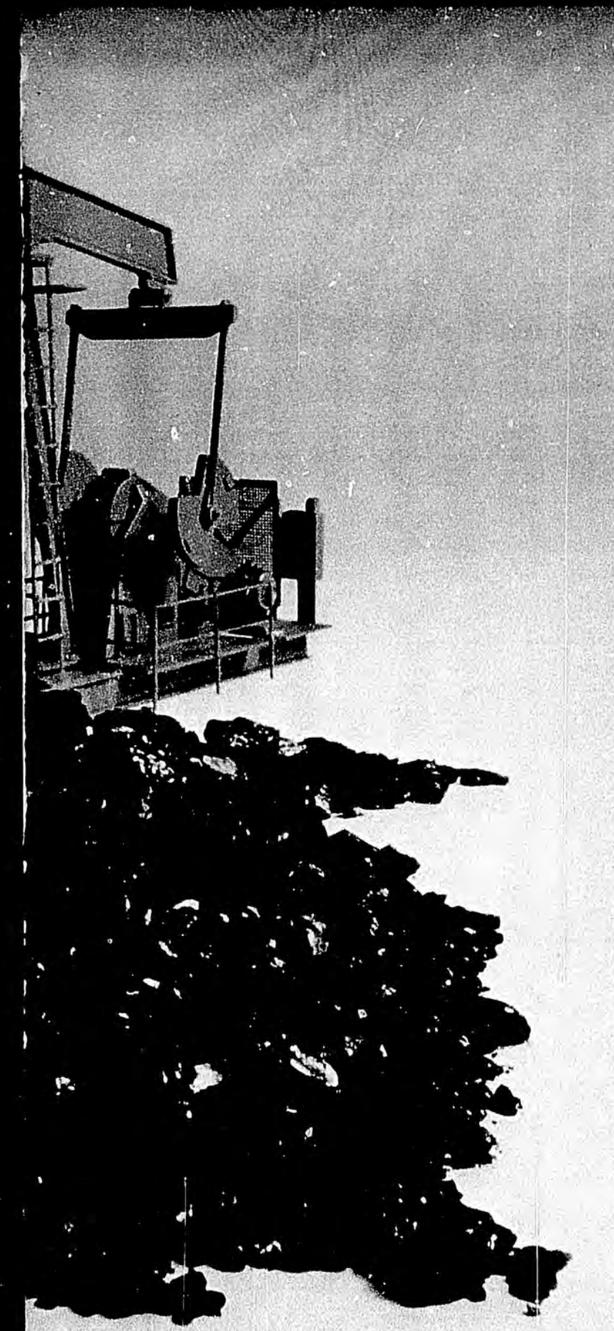

Already this department has eight feasibility or pilot study assignments, three of which are under construction. On the horizon are larger demonstration units. Then full-scale commercial plants.

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distinct slowdown in the growth of petroleum consumption. An NPC future demand study which reflects the opinions of many private observers is based on the assumption that conservation trends will be effective and the economy will just use less energy in the future than previously assumed.

The NPC forecast was put in a framework of three possibilities—high, low and medium range. In the medium case, energy consumption is projected to grow between 1972 and 1985 at an annual average rate of 3.2% with the high range being 3.6% and the low 2.6%. These projections are all below the annual growth rate of 4.5% over the last 5 years and of the 3.7% rate over the last 25 years.

Altered projects are also evident on the supply side. Conventional domestic liquids production is expected to reverse its recent decline and grow at an average rate of 1.3% hitting 13.2 million b/d by 1985 and 13.9 million b/d by 1990. Syncrude is not expected to reach significant volumes until the mid-1980s and should be 1.2 million b/d in 1990.

Imports, in the medium case, should increase gradually from the 1973 level to 8.4 million b/d in 1985 and then gradually decline to 8.1 million b/d in 1990.

Total oil supply in this case should grow at the rate of 2.8% a year reaching 20.6 million b/d in 1980. Then, over the next 10 years, growth rate should ease off to 1.4%/year putting supply at 23.4 million b/d in 1990.

Demand abroad. The same constriction in oil demand taking place in the U.S. this year is occurring throughout the non-Communist world. The Journal's estimate, based on interviews with oil-company economists and market analysts around the world, is for a drop of up to 3% in demand this years versus 1973.

Major consuming countries everywhere are being forced to squeeze the fat out of oil consumption. Balance-of-payments positions in all of them have deteriorated badly. And governmental initiatives have been assisted by the demand-damping effect of soaring prices on the individual consumer.

The Journal sees demand in western Europe as a whole dropping about 7% this year, the U.S. down by up to 20%, and Japan holding about even—despite its almost complete dependence on crude produced by the Organization of Petroleum Exporting Countries cartel. The rest of the non-Communist world will hold about even or perhaps decline slightly.

The Journal forecast assumes normal early-winter weather worldwide, and no coal strike in the U.S. Unusually cold weather in November and December could add some 500,000 b/d to non-Communist fourth-quarter demand. Likewise, a coal strike in the U.S. would add to demand, forcing increased oil imports and storage drawdowns.

Most market analysts expect demand to turn upward again—though modestly—next year. The composite estimate is for an increase of about 4% over 1974—far below pre-1974 gains.

Analysts all caution that trying to figure demand for 1974—even this late in the year—is difficult. Lack of a firm fix on stocks—especially in western Europe—makes it hard to determine how real demand is. There are no good primary figures available yet, and the volume of oil in secondary stocks is a complete unknown.

As a result, numbers that on their face seem to show a huge slide in demand might reflect in part a drawdown of primary and reseller stocks built up in anticipation of the late-1973 Arab oil cutback.

Future reserves. While the bulk of today's proved reserves is in the Middle East, at least one expert in the field says the bulk of those yet to be found will be proved outside the Middle East.

He is Ygnacio Bonillas, retired Standard Oil Co. of California executive. Bonillas puts current world reserves at 700 billion bbl and undiscovered reserves at 1 trillion bbl.

The Middle East today has 400 billion bbl of proved reserves, or about 60% of the world total. It has only about a third, however, of the undiscovered oil.

The U.S., which has roughly 6% of proved reserves, should contribute about 10% of the undiscovered oil. And a large new chunk, about 25%, will come from the vast but relatively poorly explored Sino-Soviet area, Bonillas predicts.

In the U.S., Bonillas counts on heavy new additions to reserves from Alaska and the Outer Continental Shelf and from a marked increase in percentage of oil recovered of that originally in place.

If the U.S. is to realize its potential in the undiscovered-reserve category, however, Bonillas says, it simply must speed up dramatically its opening and leasing of new geologic provinces. The discovery rate for oil and gas reserves in the U.S. is declining because the industry has been forced to keep on drilling in provinces that keep getting older and older. And with each discovery in such an area, conventional places to drill decline still further.

AGO 529977

The U.S., the ex-Socal executive declares, has fallen far behind any other region with offshore potential in leasing its offshore acreage. And the result is, he says, that the U.S. is just not making as many discoveries or finding as much oil as it should.

Bonillas cites the North Sea as an example of comparative leasing practices. Ten times more acreage is under lease in the North Sea than off the U.S.—despite the much larger shelf area with potential off the U.S. Offshore U.S. production peaked in 1971 at 1.7 million b/d and has been declining since then. In the North Sea, Bonillas says, production may reach 3-4 million b/d by 1980.

Vastly more acreage has been opened to exploration also off Africa, Southeast Asia, Australia, and Canada, although the U.S. has almost as much offshore territory as any of these areas, except for Africa.

Shortage seen for tubular goods

THE National Petroleum Council in a special study of oil-country tubular goods projects a shortage of 167,000 tons in 1974 but estimates supply and demand for steel goods will be in balance for 1975 and 1976.

This year's shortage is the chief factor in an expected drilling shortfall of some 11 million ft or 2,200 wells that possibly could be drilled with present number of drilling rigs.

The accompanying table gives the annual supply-demand breakdown for 1970-76. These considerations, however, should be borne in mind in interpretating the data:

- While total tonnage shipments projections for 1974-76 are believed reasonable, shipments less than estimates could cause a reduction in wells and footage drilled.
- Availability of imports is quite uncertain because worldwide growth in demand has overtaken the world basic steel and pipe-mill capacity. West German mills are committed to deliveries to the U.S.S.R., and substantial sales have been made by Japanese mills to the Peoples Republic of China.
- Oil and gas-well abandonments in the United States are a relatively small but important source of tubing and casing. These used tubular goods now bring prices comparable with new pipe because of the tight supply situation. Oil-well abandonments dropped from around 20,000 in 1972 to under 15,000 in 1973 and are projected to decrease even further. Gas-well abandonments which totaled about 4,000 a year in 1972 and 1973 are also expected to drop somewhat in 1974. The relative economics of abandonments for salvage vs. continued production will dictate the magnitude of this supply.
- The total tonnage of oil-country tubular goods shipped for domestic use cannot serve as a complete indication of supply-demand balance. The tight supply situation prevailing in 1974 and projected for 1975 includes grade and size availability as well as basic tonnage. All deep wells must use some high-strength casing and, if successful, high-strength tubing.
- The American Iron and Steel Institute indicates about 44% of the casing, tubing, and drill pipe shipped from U.S. mills in 1973 was high-strength material. The need for high-strength pipe is increasing and is projected to continue to rise beyond 1976. Since there is restricted capability for production of this material, there may be a continuing restraint on deep-well drilling.
- Drill pipe is in short supply but is not a measurable constraint to drilling activity. In 1973, drill pipe represented less than 8% of total U.S. output of high-strength oil-country tubular goods. Drill-pipe manufacture is limited by the capacity of the same equipment that is used to make high-strength casing. The problem of competing for mill space is made more acute because a length of drill pipe requires twice as much mill capacity to produce as a comparable length of high-strength casing. Thus, increases in drill-pipe production at present will reduce the output of twice that length of high-strength casing.
- Present attractive economics should encourage expansion of heat-treating capacity as well as basic carbon-steel tubular production, and only a small increase of both should bring tubular supply into balance with rig availability.

Oil-country tubular goods supply-demand projection

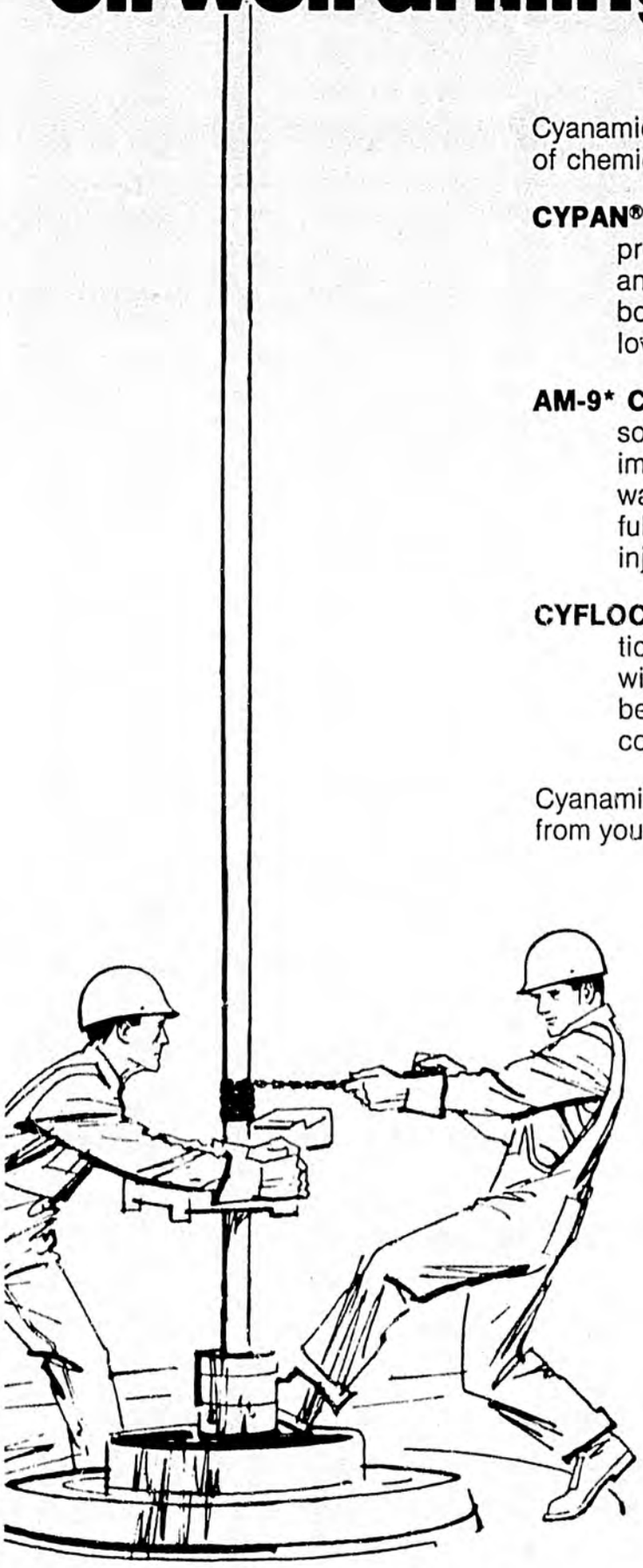
Thousand tons

	Historical				Projected		
	1970	1971	1972	1973	1974	1975	1976
Demand*	1,874	1,662	1,816	1,862	2,263	2,359	2,473
Supply							
Mill output	1,307	1,404	1,277	1,436	1,956	2,317	2,432
Mill inventory	....	....	....	300	150	....	....
Less exports	(88)	(81)	(95)	(198)	(300)	(300)	(300)
Plus imports	109	157	158	162	100	100	100
Miscellaneous†	546	182	476	429‡	523	492	341
Total	1,874	1,662	1,816	1,862	2,096	2,359	2,473
Shortage	....	....	....	....	167	....	....
To inventory§				267	333	250	100

*Based on maximum rig utilization. †Use from inventory, rejects, line pipe used as oil-country goods, secondhand pipe, unreported mill shipments and unidentified imports. ‡Based on 1970-72 average, 23% of demand assumed satisfied from miscellaneous sources. §Domestic shipments to pipe-user inventory. Source: NPC 06

AGO 529978

Hit the pay with Cyanamid oil well drilling chemicals



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AGO 529979

If the U.S. really wants a pronounced turnaround in domestic oil supply, Bonillas declares, it simply must open up its frontier areas —and at a much faster pace.

The job ahead. The options available to reduce U.S. dependency on overseas oil in an emergency are fairly clear.

In the short term, conservation of energy through more-efficient use of fuels and the ability to convert facilities to alternate fuels are important but at the moment limited. In the long run, a swing to heavy reliance on coal and nuclear energy, both abundant potential energy sources, will be imperative. But in both cases, full development of the nation's remaining petroleum resources is a paramount necessity.

What are the prospects of more oil and gas? They are good. Although critics have expressed disappointment at the failure of domestic oil production to make a dramatic rise in the wake of higher prices, these new price levels have sparked an upturn in drilling. And this is the necessary first step to changing production and reserve trends.

The National Petroleum Council has observed that "positive steps taken by Government, as a result of the Middle East disturbance, are in the direction of increasing the domestic energy supply." Advancing petroleum prices, accelerated offshore leasing, and approval of the Trans-Alaska pipeline have increased domestic activity, it noted.

Time, capital needed. "However, reversing the historic downward trend," NPC declared, "requires a major commitment of capital by the petroleum industry and substantial time before results are evident."

The decline in activity over the last 10 years cannot be reversed overnight. For one thing, available rigs have declined from 2,967 in 1963 to 1,824 in 1973. Many drilling contractors were forced to liquidate for lack of business, and their equipment was either exported or dismantled for spare parts.

Only activity showing any increase during the past decade was in number of gas wells drilled. These increased from some 4,800 wells in 1963 to nearly 6,400 wells last year. This was attributed largely to increased prices for natural gas in the intrastate market and the drilling needed to meet deliverability clauses of gas-sales contracts.

Drilling. The upturn in drilling started late last year and is expected to continue.

The average number of drilling rigs operating in 1973 was 1,194, but by year-end some 1,400 were operating. This level is believed to represent near maximum utilization of workable rigs available at that time, according to NPC.

By mid-1974, however, operating rigs had reached 1,500 with an average of 1,400. Rig activity is expected to rise by 1976, perhaps in 1975, to an average above 1,500, an increase of 27% over the 1973 average.

NPC forecasts that 31,800 wells will be drilled in 1974 compared with 27,551 last year, with footage drilled in 1974 reaching 160 million against 138 million. The industry should drill 33,600 wells and 172 million ft of hole in 1975 and 34,500 wells and 179 million ft in 1976.

Besides constraints imposed by lack of available rigs, domestic operators encountered severe shortages of oil-country tubular goods. NPC estimates these constraints caused deferment in 1974 of some 2,200 wells and 11 million ft of drilling.

The shortages of oil-country tubular goods arose from several causes: the substantial rise in drilling activity, a change in inventory and sales practices by the steel industry, the impact of price controls on the steel industry, and inability of steel mills to increase production rapidly.

Changes in steel-industry supply practices are an important factor in maldistribution of tubular goods. The NPC study explains what happened:

"For many years, the steel industry maintained inventories of oil-country tubulars in several strategic locations near the heaviest drilling activities. The makeup and quantities were based on customers' estimates of requirements and the sales experience of the steel industry.

"During the years of depressed drilling activity, these 'in-transit' inventories were more than adequate. While the convenience and economies to the customer-operator were obvious, the return on investment to the steel industry was unattractive. In the third quarter of 1973, each of the tubular-goods manufacturers announced that mill shipment of oil-country tubulars would be allocated based largely on each customer's purchase history, and that shipments to in-transits would be eliminated. As a consequence, each operator would have to maintain his own inventory.

"An effective drilling program must be backed up by a 'working inventory' of tubular goods, and therefore, a buildup of many individual inventories by oil companies has begun to replace the few strategic large ones. This change has substantially increased the total of

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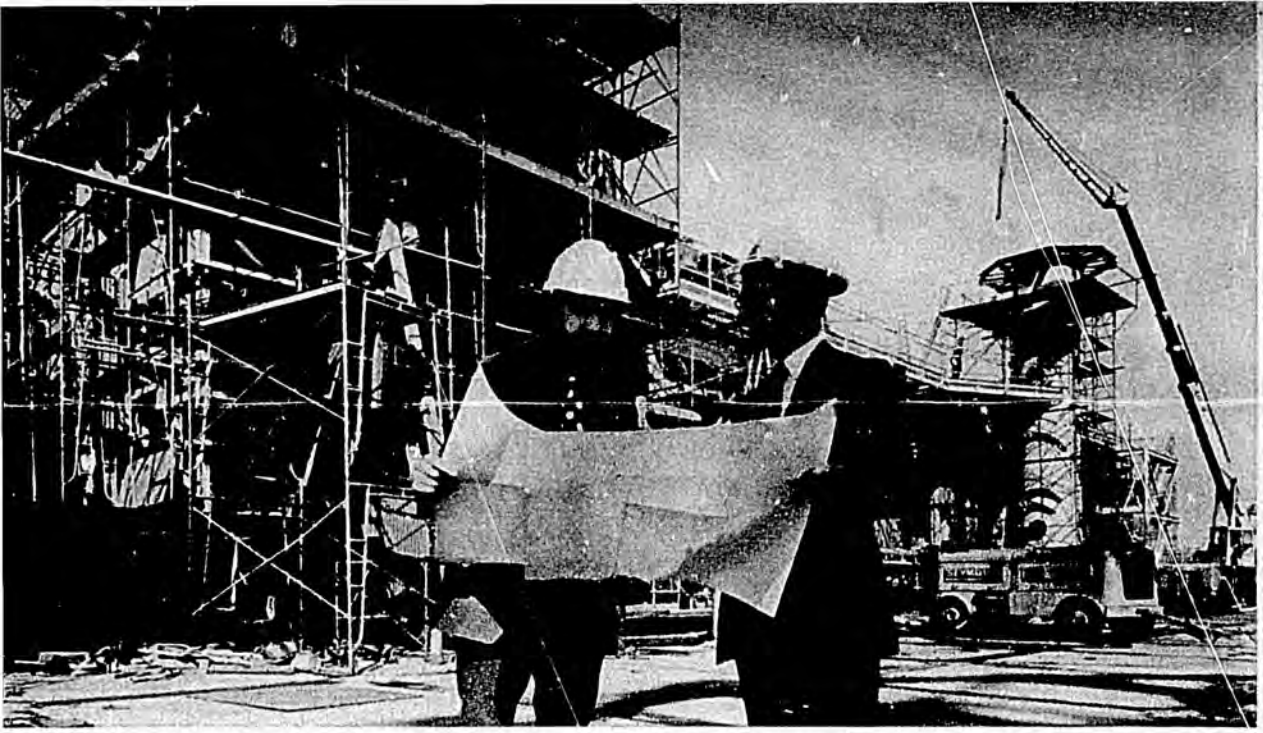
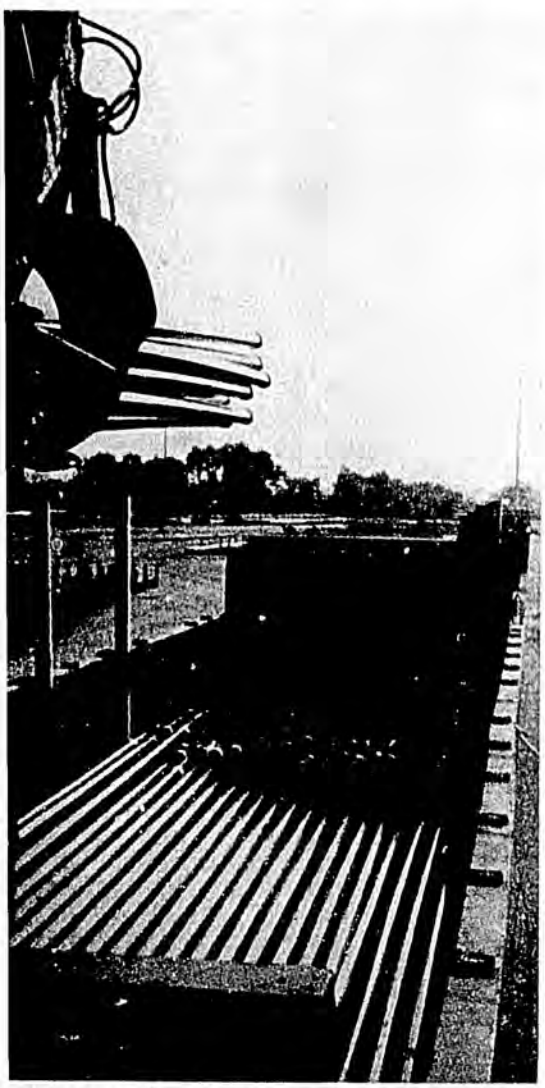


ION work is humming along the British coast as the first U.K. oil fields in the North Sea gear up oduction. These North-Sea production modules now are being installed in Shell-Esso team's Auk were built by William Press Production Systems Ltd at its Howdon, Wallsend, yard.



is coming for those U.S. shallow-well drillers handcuffed ısing. Output of 4½-in. O.D., the independent's bread and- will mount to 5 million ft by year-end from U.S. Steel's plant since its first shipment of this size casing last May.

inventories required overall. This, coupled with the large increase in demand, will cause oil-country tubulars to remain in short supply until the inventory transition is completed.

"With the removal of price controls, increased manufacturing of tubulars has begun which speeded up the inventory transition process. Once the shift is completed, the flow of tubulars for consumption should be adequate to support drilling-rig availability, although spot shortages of high-strength casing will probably continue through 1975."

NPC observes that after 1976 the industry's ability to expand drilling will be limited by capacity to manufacture rig equipment. This could become a serious problem, complicated both by rig-plant capacity and demand for rig exports. Total new rig manufacturing is expected to increase from 135 in 1974 to 162 in 1975 and 178 in 1976; but more than half of these are believed under contract for export. The net rig additions for domestic use thus are expected to be only 34 in 1974 and 44 in 1975 and 45 in 1976.

It is estimated that 250 new rigs will have to be manufactured in 1977 to meet expanded drilling goals and that rig expansion of 30%/year from 1976 through 1980 is necessary to reach a rig level of 2,400 by 1980 required to drill at the projected rate of 250 million ft. This rate of rig additions may not be attainable, and NPC estimates that a growth rate of 10-15% anually after 1976 is more reasonable. This would allow the industry to reach a rig population of 2,900 units and drill 300 million ft by 1985.

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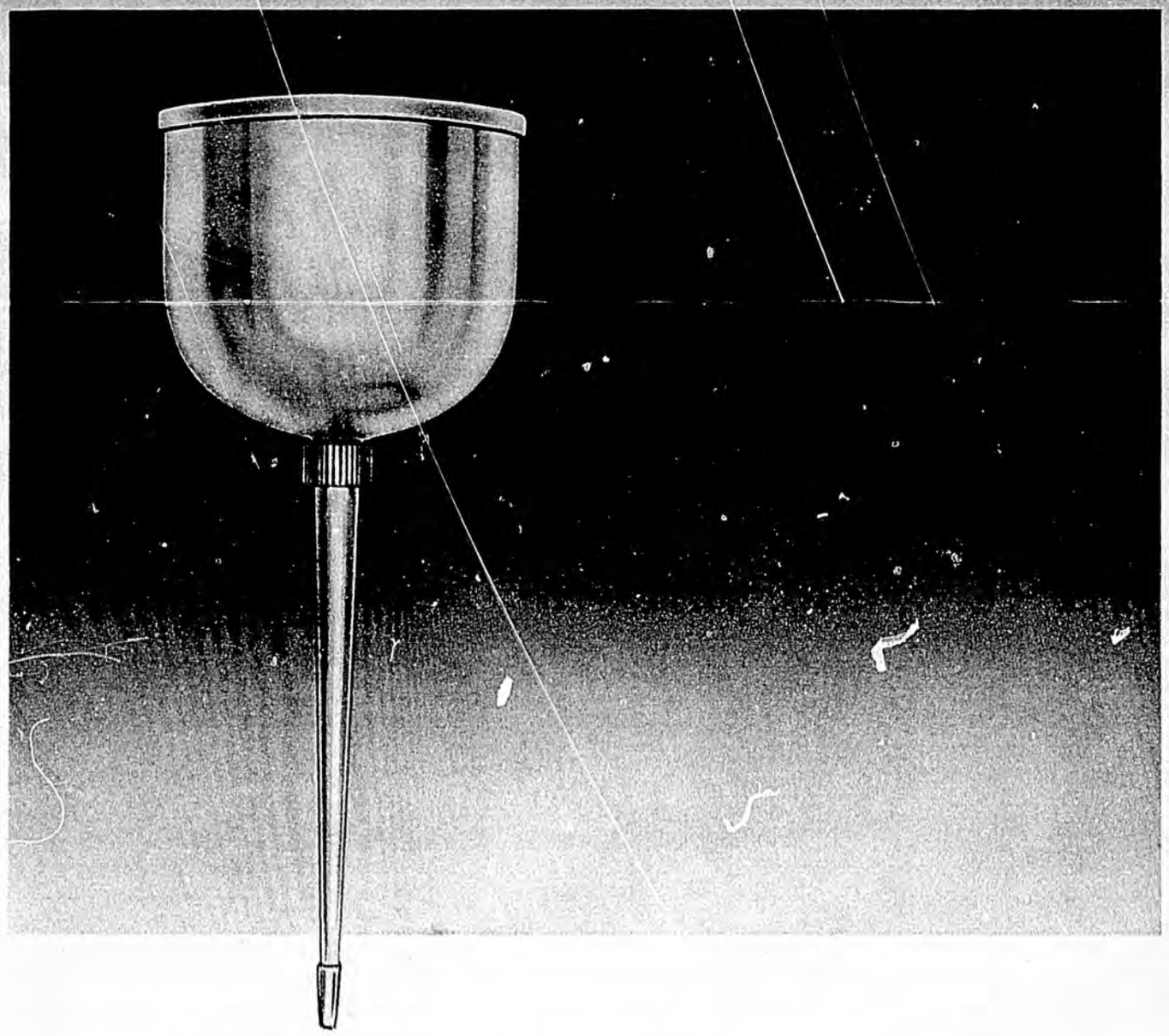

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The rod pump control that truly reacts to production, not to your walking beam.

Guiberson's revolutionary Monitrol® pump control system automatically and flexibly accomplishes efficient production of the maximum amount of fluid a rod-pumped well will yield or which the equipment is capable of lifting.

And Monitrol functions are based on input generated from actual fluid production. Although Monitrol will indicate changes in equipment condition, its operation is independent of equipment stress or expansion caused by weather, metal fatigue or other condition.

Monitrol gauges actual flow via a differential pressure sensor. An electronically computed flow percentile is compared on a minute-by-minute basis to a pre-set "standard." When all conditions permit satisfactory production, Monitrol signals the pump motor to continue. If well pump-off, rod part, excessive equipment wear or other condition lowers production below the standard, Monitrol signals the pump motor to stop.

A pumped-off well can be kept shut down for a fixed, pre-set length of time for well bore fillup, or an optional computer logic circuit board in the Monitrol can determine optimum downtime after each cycle.

Equipment failure will cause a series of shutdowns in rapid succession, which will cause Monitrol to stop the pump motor until manual remedial action is taken.

Two sets of numbers displayed on Monitrol panel permit easy spot analysis of equipment or formation condition. Data may also be transmitted to a central data acquisition station.

If you want a control that keeps an eye on equipment, but mostly assures economical production, you want Monitrol. For your installation call your Guiberson man or write Guiberson Operations, Oilfield Products Division, Dresser Industries, Inc., P.O. Box 46504, Houston, Texas 77005. 713/784-6011.

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DOWN TIME
PRODUCTION
PUMP UP
PRODUCTION
NON
SET DOWN TIME MINUTES
SET MIN PRODUCTION %
SET PUMP UP TIME MINUTES
SET NO OF CYCLES
AUTO
OFF
MANUAL
RESET
AGO 529985

However, whether these drilling goals are reached depends on rig manufacturers expanding plant capacity quickly and they cannot make decisions for the required capital investments unless assured of a continuing high level of demand for many years.

There are shortages of other materials, supplies, and equipment involved in expanding drilling—such diverse items for instance as barites, chemicals, frac sand, and wire rope. And demand is exceeding supply of pumping units and servicing rigs.

A similar situation on tubular goods, rigs, other equipment and supplies generally applies to industry activities in other areas of the world. The industry has the capability to search for oil around the world given the right economic climate and governmental cooperation.

What about oil. The big question remains: Is there enough oil and gas left to fill the world's energy needs?

For a generation, yes. Perhaps longer depending on the type of discoveries. But oil and gas are wasting resources with limitations. Eventually, the world will have to undergird its energy structure with other sources. Steps to develop these alternate sources should begin in earnest now.

A recent study made by the Institute of Gas Technology in Chicago and reported to the World Energy Conference in Detroit revealed vast world petroleum resources. It showed 633 billion bbl of oil currently proved and recoverable and another 2,685 billion bbl remaining recoverable. For natural gas 1,735 trillion cu ft is proved and recoverable and 9,740 trillion cu ft is remaining recoverable. In addition 270 billion bbl of syncrude from oil shale and bitumen are proved and 2,415 billion bbl remaining recoverable.

This study reports the United States has more than 38 billion bbl of proved oil reserves and 279 trillion cu ft of gas with 335 billion bbl of oil and 1,447 trillion cu ft of gas yet recoverable. Europe and Asia have 478 billion bbl of oil proved and 1,350 billion bbl recoverable with 964 trillion cu ft of gas proved and another 4,300 trillion recoverable. Africa has 58.9 billion bbl of proved oil reserves and 500 billion bbl recoverable with 193 trillion cu ft of gas proved and 1,700 trillion cu ft recoverable.

The United States stands in the best position of all major industrialized nations, with several unexplored potential petroleum areas. Although Gulf Coast offshore potential may level out in a few years, much importance is attached to continental shelf areas off the East Coast, Pacific Coast, and Gulf of Alaska.

A giant new field already has been discovered in the Pacific waters off Santa Barbara where development will resume this year following a prolonged shutdown for environmental reasons. But new reserves elsewhere in the Pacific and off the Atlantic shores will take years to discover and to develop.

Alaska's North Slope will come into production in 1977, probably with an initial output close to 2 million b/d. Once the oil pipeline is built and the gas pipeline is under construction, further exploration will resume along the northern continental shores from Point Barrow to the Mackenzie Delta and beyond.

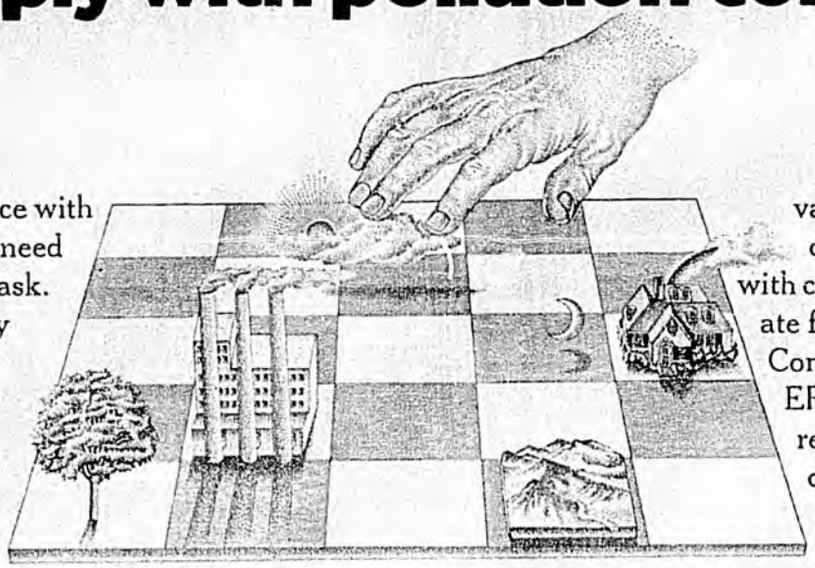
This Arctic region has great significance for the medium-range or long-range future. The technical know-how now being developed along Alaska's North Slope and into Canada's High Arctic Islands will find application off the



NORTH SEA reserves figures grow more impressive daily. And 1974's exploration bag includes the sea's biggest field yet—Statfjord in Blocks 33/9 and 33/12 in Norwegian waters. Production tests by the Mobil group at above well and two stepouts led to Norway industry ministry reserve estimate of 2 billion bbl of oil and 1.76 trillion cu ft of gas.

AGO 529986

Why move heaven and earth to comply with pollution controls?



Achieving compliance with environmental laws need not be a Herculean task. But without properly managed programs and acceptable environmental studies, financial resources can be wasted.

For superior accuracy and reliability in environmental assessments, industry and government are both depending on Environmental Research & Technology. ERT has proven many times that its methods for environmental modeling, monitoring, analysis and prediction set the standards for cost effectiveness in environmental diagnosis.

When a planned activity's total environmental effect must be evaluated, ERT offers complete environmental impact assessment. ERT provides precise appraisals of the impact of design, construction and future operations of any industrial project. Because of the close liaison ERT maintains between the project sponsor and the regulatory agencies, several of ERT's assessment efforts have resulted in landmark permit approvals within very short time spans.

The company's staff of over 350 includes experienced specialists in every major discipline of environmental science. ERT uses many specially developed state-of-the-art mathematical models to provide quantitative predictions of the impact of future developments. Typically, ERT specialists first model the current conditions in an area, then validate the model through carefully designed monitoring and advanced analytical techniques. The validated model can then be used with confidence to evaluate future conditions. Consider AIRMAP®, ERT's real-time air quality and meteorological network. Using analytical instrumentation, telemetry equipment and computer software programs, AIRMAP provides highly reliable measurements of current air quality and very accurate predictions of air quality up to 30 hours in advance. The same talent and technology responsible for the integrated AIRMAP programs is also available in its component parts — air diffusion analysis, stack and ambient air monitoring, and air quality impact assessments.

The company's bioassay techniques, chemistry and biology laboratories, and general field experience are valuable to every aspect of water quality evaluation. Specially designed software is merged with comprehensive data gathering to simulate the effects of industrial effluents on water quality. Unique mathematical models provide an assessment framework for evaluating the physical, chemical and biological integrity of water bodies. In addition, ERT has developed advanced techniques to analyze the hydrologic cycle, including precipitation, runoff, percolation through the soil and groundwater movement.

For more information on ERT and its leadership in the field of environmental science and technology, write Ms. Karen Mathiasen, Marketing Services, Environmental Research & Technology, Inc., 696 Virginia Road, Concord, MA 01742.

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North Cape of Norway and into the waters surrounding Greenland and the Svalbard or Spitzbergen group of islands.

In more-immediate prospect, however, is additional output from established oil-producing areas across the United States. In the past 115 years, a grand total of about 60 billion metric tons of oil has been discovered. Of that, about 14 billion tons has been produced and consumed. Of the remaining oil known to be in place, roughly 4.8 billion metric tons can be economically recovered at prices that were effective in 1972.

Now that new U.S. oil has increased in value to more than $10/bbl, more of the remaining oil can be recovered by various means. Some engineers estimate the target for eventual recovery at nearly 7 billion tons or 50 billion bbl.

Add to that prospects that were not explored or developed when oil prices were lower. Add further, marginal oil sands bypassed in thousands of wells.

None of these measures toward added recovery will contribute tremendous volumes individually. But when extrapolated by the multitude of prospects, such efforts by thousands of producers—coupled with vigorous offshore exploration and development—could reverse the U.S. oil decline. That is if the incentives remain.

North Sea spreads. Among the other industrialized nations with excellent oil and gas prospects relative to their own domestic needs stand Britain and Norway. They share the bulk of the new oil development in the North Sea.

The Netherlands enjoys a strong natural-gas position; and Germany, France, and Italy retain oil and gas potential which was by and large neglected during the lush period of cheap, plentiful foreign oil. Only Japan of all the major importers has little recourse for offsetting the economic drain with domestic output.

The North Sea is a prime example of what can happen. As one success follows another in oil and gas exploration in the waters of northwestern Europe, it is no longer appropriate to confine attention simply to the North Sea.

Hydrocarbons have now been reported in the Atlantic west of the Shetland Islands, in the Celtic Sea off southern Ireland, and in the Norwegian Sea between Norway and Greenland.

Proved gas reserves in the United Kingdom alone now stand at about 1.2 trillion cu m with potential in all British waters estimated at 3.3 trillion cu m, or in American terms 116 trillion cu ft.

Oil discoveries in the British and Norwegian sectors of the North Sea show even greater promise of improving Europe's energy self-sufficiency. On the U.K. side, existing reservoirs indicate an annual production rate of 100 million tons or 2 million b/d by 1980. This may be doubled with new discoveries by 1983. Norway's output, primarily from Ekofisk will approach 15 million tons next year together with about 40 million cu m of associated gas pipelined to the German coast.

Altogether, the North Sea is hailed as Britain's salvation in the current energy crisis, and its promised output will go far to aid all of Europe in a difficult period.

The new order of energy planning in the European Community calls for a daring, threefold increase in the use of natural gas from all sources by 1985. This would require the doubling of domestic production within the nine nations. Oil will remain the principal fuel as imports are supplanted by increasing production from the North Sea and elsewhere. But oil's share of total energy will decline from today's 58% to less than 40%, while natural gas assumes second position at 25% of total energy. European producers feel that these ambitious goals may be met on natural-gas production and usage by 1985.

The opportunities for successful petroleum exploration in many areas of the earth remain enormous in future potential.

Productive capacity. Of more critical near-term importance, perhaps, is productive capacity. And here's where the U.S. is really hurting. U.S. spare producing capacity has vanished. Only a handful of U.S. fields could produce substantially more oil than they are producing now. And most if not all of them are blocked from doing so in short order because of legal or physical bottlenecks. More oil is being produced than is being found. And Lower 48 production continues its slow decline.

On the other hand, the 11 member countries of the Organization of Petroleum Exporting Countries are adding rapidly to total OPEC producing capacity—whether or not they choose to use it.

FEA credits OPEC with productive capacity in 1973 of 33.9 million b/d. By 1975, FEA predicts, this figure will soar to 41.8 million b/d, and on up to 52.9 million b/d by 1980—with a comparative leveling off then for the next 10 years to 56.2 million b/d in 1985 and 57.7 million b/d in 1990.

The biggest single contributor to the OPEC climb will be Saudi Arabia. FEA plots the Saudi gain from 8 million b/d in 1973 to 12 million in 1975, 18 million in 1980, reaching 20 million in 1985 and holding there through 1990.

Other big gainers include Abu Dhabi and its Trucial Coast neighbors and Iraq. FEA sees Abu Dhabi et al jumping from 2.7 million b/d in 1973 to 7 million b/d in 1990 and Iraq gaining

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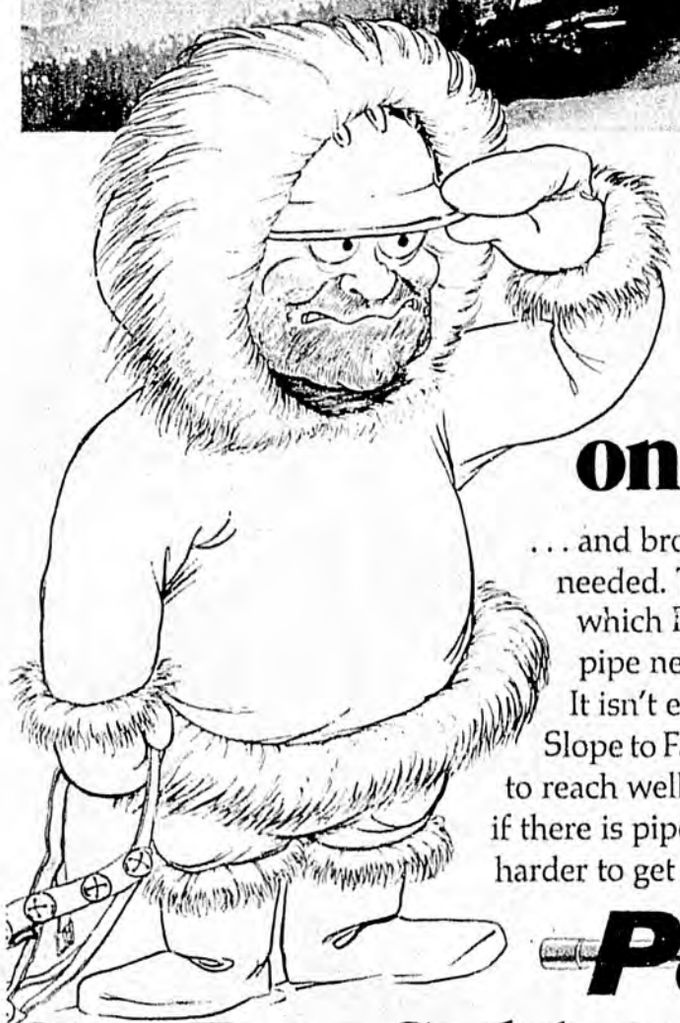

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Pete Sublett & Company

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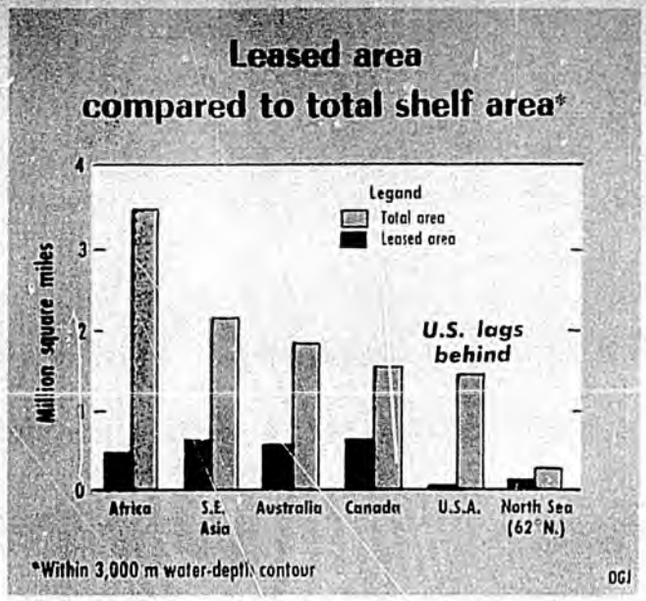

from 2.2 million to 6 million over the same period.

Modest gains are seen for Nigeria, Algeria, Iran, Indonesia, and Ecuador. Venezuelan capacity is seen dropping by 1980 then turning upward—but only if she begins development and production by then from the Orinoco heavy-oil belt.

Kuwait is forecast to hold steady at 3.5 million b/d of capacity. The only loser among the OPEC clan, FEA predicts, will be Libya which is expected to drop to 2 million b/d by 1990 from 3 million b/d in 1973.

U.S. decline slowed. While production (and productive capacity) continues to drop in the U.S., the drop is less steep than it would have been had not higher crude prices been permitted.

A broad Journal survey of U.S. oil companies came up with estimates ranging up to 200,000 b/d as the added volume of oil being produced Oct. 1 as a direct result of improved prices. That's some 2.27% of current total output of about 8.8 million b/d of crude and lease condensate. The concensus puts the figure at 100,000-200,000 b/d.

The impact of higher prices, however, is just beginning to show. All companies—from majors to the smaller independents—agree that the impact will balloon with time as new fields are developed and new enhanced-recovery projects begin to pay off.

In general, oil companies expect to see an increase in U.S. production (excluding the Alaskan North Slope) in the 1975-79 timeframe. The delay is due to the lengthy lead times required to bring new production on stream to make up for normal declines in existing wells.

Examples of industry response to higher crude prices are many and varied. They include:

- Accelerated exploration and leasing of wildcat acreage.
- Drilling of wildcat prospects and proved leases that were ignored or considered marginal at best under old prices.
- Expansion of secondary-recovery projects and stepped-up research on tertiary methods designed to increase ultimate recovery from known fields.
- Reactivation of wells that had been temporarily abandoned because they no longer were profitable at old prices.
- Lengthened life for stripper wells.

Cost is high. The industry must find over 600 billion bbl of reserves in the world between 1970-1985 to keep pace with demand, according to projections of Chase Manhattan Bank. That is about equal to present estimated proved world reserves.

The bank breaks down estimated capital costs for this tremendous task like this: About $400 billion to find these reserves and prepare wells for production and $370 billion for capital items beyond the wellhead, for a total of $770 billion. Other miscellaneous capital spending and debt service will boost that to $1.2 trillion in current dollars. A 10% annual inflation rate would increase this to $2.2 trillion over the 15-year period and a 15% inflation rate would put the total cost at $3.1 trillion.

Of the original uninflated $1.2 trillion, some $460 billion in terms of current dollars must come from profits, and at the 10% inflation rate this figure would rocket to $900 billion. If this inflated figure is attained, the oil industry would need profit growth of 21% a year based on 1970 earnings and 17% a year based on 1973's higher profits.

Some of the capital-spending categories are staggering. In the exploration area, nearly $150 billion would go for drilling contractors' on such items as platforms, workboats, other offshore vehicles, and services. Another $67 bollion would go for drilling contractors' services and $54 billion for lease equipment. Processing facilities would require $156 billion of which $110 billion would go for conventional refineries. Pipelines would take $36 billion.

Can this huge amount of capital funds be generated? Probably. Speaking only of the situation in the United States, the National Petroleum Council recently observed:

"It appears that adequate capital will be available to the petroleum industry to expand exploration and drilling in line with availability

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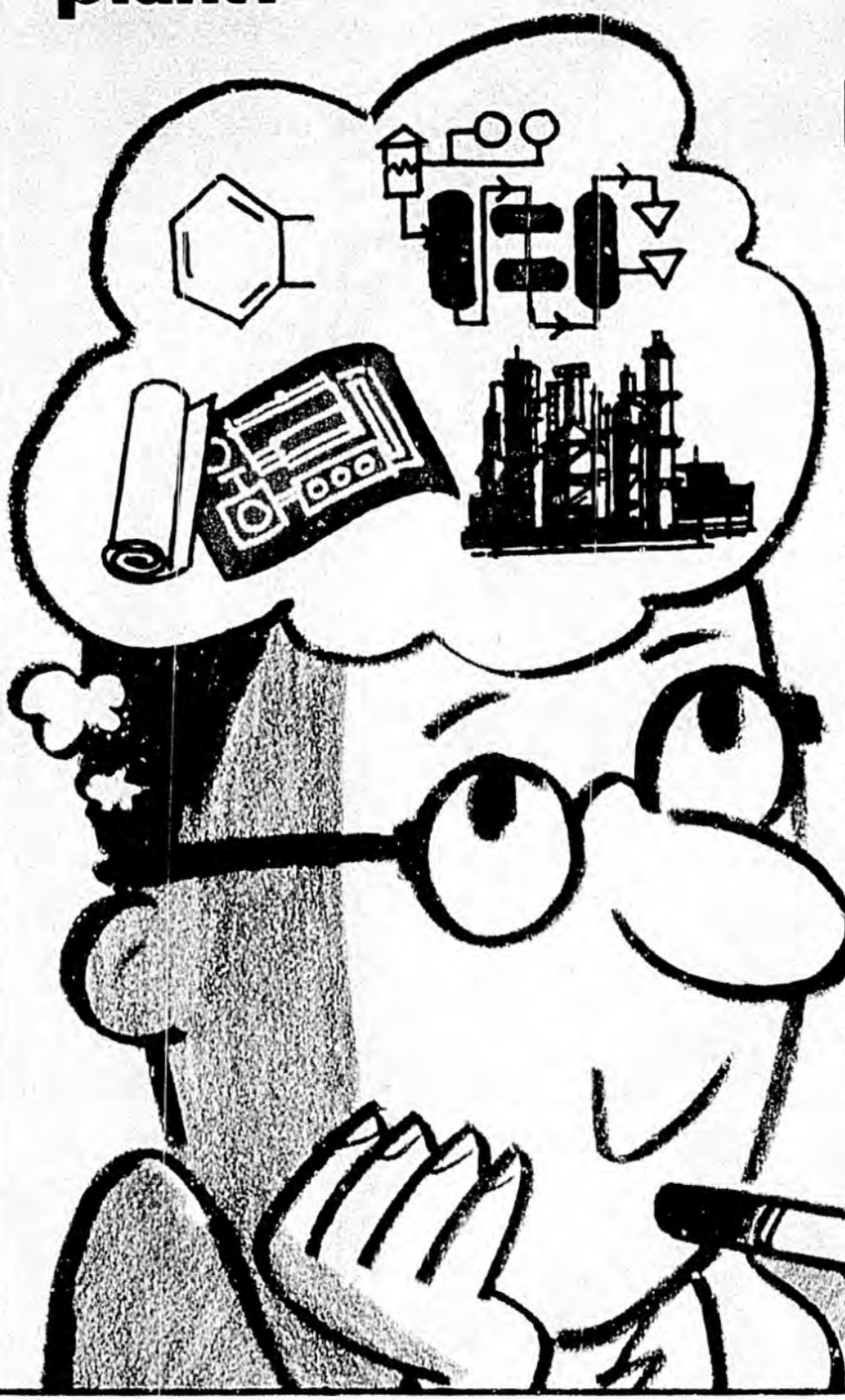

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of equipment and manpower during the 1974-76 period. Longer range, free-market prices of domestically produced hydrocarbons will be needed to generate sufficient internal capital to attract enough outside funds to increase exploration and drilling within the United States.

"Similarly, capital formation of all segments of the petroleum-service industry appears adequate to provide equipment and supplies for increased operations through 1976. But for the longer term, a clear energy policy leading toward increased development of indigenous energy supplies must be set forth to assure the service industry of steadily rising profits so that adequate plant expansion can begin soon and be financed."

The alternatives. The only real alternative for the United States and other consuming nations aside from developing greater domestic oil and gas resources is developing other sources of energy.

Reducing consumption or storing reserve supplies are short-term options. They are necessary. But used alone, conservation could adjust demand to supply only at heavy cost to human well-being and prosperity.

John W. Simpson and Philip N. Ross of Westinghouse Electric Corp., speaking to the World Energy Conference, declared that "at current growth rates, the world is simply running out of oil and gas. Since these are the fuels on which we depend for almost two-thirds of our energy needs, their potential depletion, as well as their current shortage, defines the true nature of the energy crisis.

"We must sharply reduce our disproportionate dependence upon oil and gas," they said, "by shifting to energy sources that are more plentiful—uranium and coal."

Nuclear admittedly is the greatest hope in long range. It already is accelerating under the new order of energy self-sufficiency. The European Community, for example, only recently stepped up its plans to multiply present nuclear capacity by a factor of nearly 20 by 1985. Electricity from the atom will meet 17% of Community needs by then compared with 1.5% now. The United States is off to a slower start, planning a ten-fold increase by that date.

These are impressive figures, but nuclear power will not become an important energy factor until much later. When Europeans and Americans join in learning how to harness the fast-breeder reactor and eventually nuclear fusion, giving mankind the same power that energizes the sun, a new era in world energy will have arrived.

Coal is widely hailed as the most plentiful fossil fuel. But in recent years, competition from lower-cost oil and more recently new environmental restrictions have contributed to a steady downturn in coal production in Europe. In the Netherlands, the last coal mine is due for closing shortly. German production is declining at about 10%/year with total output approaching the 100-million-ton level. French and Belgian production follow the same downward trends. In the U.S., with more coal reserves than all other Western industrialized nations, a similar decline resulted many years ago from the inroads made by domestic oil and particularly by natural gas priced too cheaply because of federal regulation.

Coal recently seemed ready for a strong revival. Then along came new environmental laws which denied to coal many of the markets it had managed to retain. The outlook today for reversing the coal-production trend is not good. Despite the ambitious U.S. Government program for increasing output from the present 550 million tons/year to 1 billion tons by 1985, the coal industry is still bound in inaction. Price restrictions were recently lifted, but all the other impediments remain.

The escalated prices for oil have made coal potentially competitive throughout the world, but the problems of accelerating coal production are staggering, forcing this resource to rank as a long-range option.

Other alternate hydrocarbons in the form of shale oil and tar sands show some promise in North America. Their potential contributions to energy supply, of course, cannot help Europe directly. But to the extent that they permit the withdrawal of the U.S. from buying competition for world oil, they remain of interest in Europe.

The reserves of these alternate American fuels are impressive. But the rate at which they can be produced entails significant limiting factors. Shale-oil production in the Rocky Mountains will be hampered by environmentalists, shortages of capital, and shortages of process water. The most optimistic outlook is for an ultimate production rate of about 1 million b/d. The Canadian tar sands may do better than that, but they suffer the problems of remoteness, high capital, and possible national export curbs.

With all the limitations shared by nuclear power, by coal, and by alternate fuels, the greatest portion of the short-term energy load remains where it has been for years—with conventional oil and natural gas. END

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PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Worldwide crude production

(Daily average in thousands of bbl)

	Sept. 1974	Aug.* 1974	9-month average Daily prod. 1973	9-month average Daily prod. 1974	Change from Vol	Change from %
WESTERN HEMISPHERE						
Argentina	405.0	405.0	418.0	411.0	− 7.0	− 1.7
Bolivia	50 0	50.0	47.0	49.0	2.0	4.3
Brazil	170.0	170.0	169.0	171.0	2.0	1.2
Canada	1,615.0	1,644.0	2,127.0	1,728.0	−399.0	−10.1
Chile	30.0	30.0	32.0	29.0	− 3.0	− 9.4
Colombia	170.0	170.0	199.0	177.0	− 22.0	−11.1
Ecuador	115.0	110.0	203.0	181.0	− 22.0	−10.8
Mexico	580.0	580.0	460.0	568.0	108.0	23.5
Peru	75.0	75.0	68.0	76.0	8.0	11.8
Trinidad	180.0	180.0	165.0	176.0	11.0	6.7
United States	8,734.0	8,926.0	9,210.0	8,945.0	−265.0	− 2.9
Venezuela	2,770.0	2,859.0	3,365.0	3,026.0	−339.0	−10.1
Total	**14,994.0**	**15,199.0**	**16,463.0**	**15,537.0**	**−926.0**	**− 5.6**
WESTERN EUROPE						
Austria	45.0	45.0	49.0	46.0	− 3.0	− 6.1
Denmark	4.0	4.0	4.0	4.0	....	....
France	25.0	25.0	26.0	23.0	− 3.0	−11.5
West Germany	120.0	117.0	131.0	122.0	− 9.0	− 6.9
Italy	20.0	20.0	15.0	19.0	4.0	26.0
Netherlands	39.0	25.0	30.0	30.0	....	....
Norway	50.0	47.0	36.0	30.0	− 6.0	−16.7
Spain	40.0	40.0	14.0	41.0	27.0	192.9
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	65.0	65.0	67.0	68.0	1.0	1.5
Total	**410.0**	**390.0**	**374.0**	**385.0**	**11.0**	**2.9**
MIDDLE EAST						
Abu Dhabi	1,412.0	1,479.0	1,342.0	1,484.0	142.0	10.6
Bahrain	67.0	66.0	68.0	67.0	− 1.0	− 1.5
Dubai	235.0	243.0	238.0	232.0	− 6.0	− 2.6
Iran	5,836.0	5,956.0	5,807.0	6,074.0	267.0	4.6
Iraq	1,604.0	1,718.0	1,939.0	1,770.0	−169.0	− 8.7
Israel	100.0	100.0	100.0	100.0	....	....
Kuwait	2,225.0	2,068.0	3,122.0	2,627.0	−495.0	−15.9
Oman	285.0	289.0	290.0	294.0	4.0	1.4
Qatar	515.0	516.0	591.0	518.0	− 73.0	−12.4
Saudi Arabia	8,780.0	8,276.0	7,845.0	8,429.0	584.0	7.4
Sharjah†	60.0	60.0	....	20.0	20.0	....
Syria	150.0	150.0	150.0	150.0	....	....
Turkey	65.0	65.0	65.0	65.0	....	....
Total	**21,334.0**	**20,986.0**	**21,557.0**	**21,830.0**	**273.0**	**1.3**
ASIA-PACIFIC						
Afghanistan	0	0	0	0	0	0
Australia	471.0	290.0	368.0	363.0	− 5.0	− 1.4
Burma	20.0	20.0	20.0	20.0	....	....
Brunei-Malaysia	378.0	375.0	314.0	367.0	53.0	16.9
India	150.0	150.0	148.0	149.0	1.0	0.7
Indonesia	1,420.0	1,350.0	1,299.0	1,459.0	160.0	12.3
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	8.0	8.0	8.0	8.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.2	0.2	0.2	0.2	....	....
Total	**2,464.2**	**2,210.2**	**2,174.2**	**2,383.2**	**209.0**	**9.6**
AFRICA						
Algeria	900.0	950.0	1,123.0	1,077.0	− 46.0	− 4.1
Angola	20.0	20.0	14.0	20.0	6.0	42.9
Cabinda	150.0	150.0	137.0	149.0	12.0	8.8
Congo	40.0	40.0	39.0	38.0	− 1.0	− 2.6
Egypt	172.0	170.0	207.0	133.0	− 74.0	−35.7
Gabon	210.0	210.0	143.0	182.0	39.0	27.3
Libya	1,325.0	1,273.0	2,259.0	1,656.0	−603.0	−26.7
Morocco	2.0	2.0	2.0	2.0	....	....
Nigeria	2,294.0	2,299.0	1,995.0	2,269.0	274.0	13.7
Tunisia	95.0	94.0	83.0	79.0	− 4.0	− 4.8
Total	**5,208.0**	**5,172.0**	**6,002.0**	**5,605.0**	**−397.0**	**− 6.6**
COMMUNIST						
China	900.0	900.0	860.0	900.0	40.0	4.7
Rumania	290.0	290.0	283.0	290.0	7.0	2.5
U.S.S.R.‡	9,393.0	9,042.0	8,496.0	9,091.0	595.0	7.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,693.0**	**10,342.0**	**9,739.0**	**10,391.0**	**652**	**6.7**
WORLD TOTAL	**55,103.2**	**54,299.2**	**56,309.2**	**56,131.2**	**−178.0**	**− 0.3**

*Figures adjusted. †On stream July 1974. ‡Includes gas liquids.

Worldwide gas production

(billion cu ft)

	Sept.	Aug.	1974 cum.
WESTERN HEMISPHERE			
Argentina	32.4	24.0	204.1
Bolivia	12.6	11.6	113.1
Brazil	4.2	4.0	35.4
Canada	290.9	268.3	2,436.6
Chile	21.7	11.9	153.6
Colombia	9.6	4.6	76.0
Ecuador	0.8	0.8	4.4
Mexico	59.0	59.0	506.9
Peru	6.4	6.4	54.2
Trinidad	9.9	4.7	52.7
United States	1,826.7	1,824.7	16,483.3
Venezuela	146.8	41.0	1,321.2
Total	**2,421.0**	**2,261.0**	**21,441.5**
WESTERN EUROPE			
Austria	5.7	5.3	72.6
Denmark	0	0	0
France	24.2	28.3	218.1
West Germany	57.9	59.7	521.7
Italy	45.1	58.2	456.3
Netherlands	229.5	135.3	2,157.4
Norway	0	0	0
Spain	0	0	0
United Kingdom	83.3	137.9	998.0
Yugoslavia	3.8	4.2	40.0
Total	**449.3**	**428.9**	**4,464.1**
MIDDLE EAST			
Abu Dhabi	0	0	0
Bahrain	0.2	0.3	3.0
Dubai	0	0	0
Iran	75.6	151.3	680.4
Iraq	9.7	10.0	96.1
Israel	0.1	0.2	3.6
Kuwait	0.2	0.2	1.3
Oman	0	0	0
Qatar	0.1	0.1	1.4
Saudi Arabia	0	0	0
Sharjah†	0	0	0
Syria	0	0	0
Turkey	0	0	0
Total	**85.9**	**162.1**	**785.8**
ASIA-PACIFIC			
Afghanistan	7.8	7.8	69.6
Australia	14.8	15.9	116.9
Burma	0.4	0.5	4.3
Brunei-Malaysia	0.2	0.3	1.2
India	0.4	0.2	14.0
Indonesia	13.7	1.7	108.0
Japan	8.0	8.5	74.1
Pakistan	11.2	11.1	101.8
Taiwan	3.2	4.1	32.7
Thailand	0	0	0
Total	**59.7**	**50.1**	**522.6**
AFRICA			
Algeria	1.6	0.9	15.4
Angola	4.9	2.8	25.7
Cabinda	0	0	0
Congo	0.6	0.6	4.2
Egypt	5.0	5.7	35.2
Gabon	1.3	1.3	10.7
Libya	4.6	4.3	31.6
Morocco	2.5	6.6	22.8
Nigeria	5.8	4.6	44.2
Tunisia	3.6	0.2	8.4
Total	**29.9**	**27.0**	**198.2**
COMMUNIST			
China	16.0	16.8	141.5
Rumania	97.4	77.1	699.8
U.S.S.R.‡	760.0	758.9	6,725.7
Other	42.7	26.9	376.3
Total	**916.1**	**879.7**	**7,943.3**
WORLD TOTAL	**3,962.1**	**3,808.8**	**35,355.5**

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Total wells drilled in the United States*—September 1974†

Data compiled by API

State-district	Total completions: Oil‡	Gas§	Dry holes	Total wells**	Total footage	Total wells all types‖	Total footage‖	Total exploratory wells¶: Oil‡	Gas§	Dry holes	Total wildcats	Footage
Alabama	1	2	5	8	57,499	8	57,499	..	1	4	5	36,513
Alaska	2		1	3	18,153	3	18,153	...	...	1	1	7,954
Arkansas	9	4	15	28	150,374	28	150,374	...	...	5	5	32,040
California	164	5	33	202	506,251	207	528,539	6	1	20	27	159,419
North	...	4	15	19	101,879	19	101,879	...	1	8	9	45,840
Central Coastal	29	...	7	36	150,923	38	157,425	3	...	5	8	57,721
East Central	124	1	9	134	223,102	134	223,102	2	...	6	8	50,608
South	9	...	2	11	25,157	12	25,782	...	...	1	1	1,250
Offshore	2	...	...	2	5,190	4	20,351	1	...	...	1	4,000
Colorado	15	2	36	53	271,582	53	271,582	...	...	25	25	123,527
Florida	1	...	5	6	67,520	6	67,520	1	...	5	6	67,520
Illinois	34	...	42	76	184,408	78	184,964	3	...	18	21	56,198
Indiana	14	4	26	44	64,158	45	65,774	3	2	14	19	24,326
Kansas	104	53	131	288	803,977	292	810,435	11	3	78	92	304,174
Kentucky	19	11	29	59	87,696	60	88,608	3	2	10	15	24,180
Louisiana	64	44	108	216	1,558,482	219	1,582,976	5	4	62	71	694,602
North	32	30	34	96	400,766	96	400,766	1	3	17	21	142,121
South	15	6	53	74	706,320	75	716,720	4	1	29	34	399,314
Offshore	17	8	21	46	451,396	48	465,490	...	...	16	16	153,167
Michigan	12	5	32	49	251,029	53	261,708	4	5	21	30	150,280
Mississippi	1	1	31	33	236,363	33	236,363	...	1	26	27	207,142
Missouri	...	...	2	2	4,555	2	4,555	...	...	2	2	4,555
Montana	4	4	44	52	162,226	52	162,226	2	...	30	32	115,286
Nebraska	3	...	14	17	87,507	17	87,507	...	...	10	10	50,478
New Mexico	33	50	29	112	647,131	112	647,131	...	3	12	15	111,605
East	28	24	21	73	495,831	73	495,831	...	3	10	13	101,684
West	5	26	8	39	151,300	39	151,300	..	...	2	2	9,921
New York	13	...	...	13	15,304	17	19,325	..	...	...	...	
North Dakota	3	...	8	11	85,388	11	85,388	3	...	5	8	64,710
Ohio	40	61	11	112	514,445	112	514,445	5	13	1	19	94,540
Oklahoma	108	86	120	314	1,732,553	323	1,763,243	7	5	28	40	289,048
Pennsylvania	102	57	8	167	335,129	191	370,719	2	6	6	14	52,225
South Dakota	1	...	3	4	22,166	4	22,166	...	...	3	3	13,080
Tennessee	7	...	7	14	19,696	14	19,696	4	...	7	11	15,527
Texas	375	144	301	820	3,996,237	833	4,047,568	24	39	203	266	1,561,457
Dist. 1	19	1	7	27	66,128	27	66,128	1	1	6	8	25,320
Dist. 2	1	19	23	43	271,123	43	271,123	...	9	19	28	179,950
Dist. 3	34	12	30	76	470,960	76	470,960	1	8	20	29	265,296
Dist. 4	13	29	16	58	371,276	58	371,276	...	9	9	18	119,306
Dist. 5	2	1	13	16	77,639	16	77,639	...	...	8	8	45,699
Dist. 6	3	5	17	25	195,165	25	195,165	...	1	11	12	93,305
Dist. 7B	66	16	61	143	451,240	149	469,020	8	2	50	60	224,462
Dist. 7C	37	24	25	86	401,417	88	405,817	3	1	14	18	51,933
Dist. 8	86	11	14	111	564,444	112	570,708	3	5	10	18	138,174
Dist. 8A	34	7	22	63	337,769	67	360,656	...	...	11	11	73,900
Dist. 9	53	3	44	100	290,066	100	290,066	7	2	24	33	133,669
Dist. 10	27	16	22	65	440,433	65	440,433	1	1	14	16	151,866
Offshore	...	...	7	7	58,577	7	58,577	...	...	7	7	58,577
Utah	10	...	2	12	75,444	12	75,444	...	...	1	1	5,015
Virginia	...	3	...	3	15,411	3	15,411	...	...	...	...	...
West Virginia	41	59	18	118	307,269	118	307,269	2	3	4	9	26,401
Wyoming	20	5	30	55	398,137	55	398,137	1	2	23	26	193,575
Total—Sept. 1974	**1,200**	**600**	**1,091**	**2,891**	**12,670,090**	**2,961**	**12,864,725**	**86**	**90**	**624**	**800**	**4,490,377**
Total Aug. 1974	**1,210**	**555**	**968**	**2,733**	**12,409,855**	**2,814**	**12,619,981**	**62**	**66**	**536**	**694**	**3,942,903**
Cum. 1974	**9,160**	**5,232**	**8,362**	**22,754**	**110,068,952**	**23,481**	**111,822,062**	**597**	**839**	**4,811**	**6,247**	**36,881,804**
Cum 1973	**7,193**	**4,375**	**7,311**	**18,879**	**94,668,545**	**19,604**	**96,459,242**	**457**	**565**	**4,185**	**5,207**	.....

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Aug. 24, 1974, through Sept. 27, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests and outpost (extension) tests. ‖Includes two strat tests and 68 service wells, 4,400 and 184,235 ft. **Excludes service wells, strat, and core tests.

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Worldwide crude production

(Daily average in thousands of bbl)

	Aug. 1974	July* 1974	8-month average Daily prod. 1973	8-month average Daily prod. 1974	Change from Vol	Change from %
WESTERN HEMISPHERE						
Argentina	405.0	405.0	419.0	411.0	− 8.0	− 1.9
Bolivia	50.0	50.0	48.0	48.0	....	....
Brazil	170.0	170.0	169.0	171.0	2.0	1.2
Canada	1,644.0	1,676.0	1,793.0	1,748.0	− 45.0	− 2.5
Chile	30.0	30.0	32.0	30.0	− 2.0	− 6.3
Colombia	170.0	170.0	199.0	173.0	− 26.0	−13.1
Ecuador	110.0	85.0	202.0	190.0	− 12.0	− 5.9
Mexico	160.0	600.0	459.0	572.0	113.0	24.6
Peru	75.0	75.0	68.0	76.0	8.0	11.8
Trinidad	170.0	170.0	164.0	172.0	8.0	4.9
United States	8,926.0	8,955.0	9,227.0	8,957.0	−268.0	− 2.9
Venezuela	2,850.0	2,940.0	3,362.0	3,056.0	−306.0	− 9.1
Total	**15,200.0**	**15,326.0**	**16,142.0**	**15,606.0**	**−536.0**	**− 3.3**
WESTERN EUROPE						
Austria	45.0	45.0	49.0	47.0	− 2.0	− 4.1
Denmark	4.0	4.0	4.0	4.0	....	....
France	25.0	25.0	26.0	24.0	− 2.0	− 7.7
West Germany	120.0	120.0	131.0	123.0	− 8.0	− 6.1
Italy	20.0	20.0	15.0	20.0	5.0	33.3
Netherlands	25.0	30.0	30.0	29.0	− 1.0	− 3.3
Norway	47.0	47.0	35.0	27.0	− 8.0	−22.9
Spain	41.0	40.0	13.0	41.0	28.0	215.4
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	65.0	65.0	67.0	67.0	....	....
Total	**394.0**	**398.0**	**372.0**	**384.0**	**12.0**	**3.2**
MIDDLE EAST						
Abu Dhabi	1,479.0	1,641.9	1,338.0	1,493.0	155.0	11.6
Bahrain	66.0	67.0	68.0	67.0	− 1.0	− 1.5
Dubai	245.0	245.0	233.0	240.0	7.0	3.0
Iran	5,956.0	6,064.0	5,810.0	6,103.0	293.0	5.0
Iraq	1,440.0	1,635.0	1,919.0	1,755.0	−164.0	− 8.5
Israel	100.0	100.0	100.0	100.0	....	....
Kuwait	2,076.0	2,286.0	3,072.0	2,678.0	−394.0	−12.8
Oman	289.0	288.0	288.0	295.0	7.0	2.4
Qatar	516.0	520.0	588.0	518.0	− 70.0	−11.9
Saudi Arabia	8,284.0	8,778.0	7,755.0	8,387.0	632.0	8.1
Sharjah†	50.0	50.0	0	8.5	8.5	....
Syria	150.0	150.0	150.0	150.0	....	....
Turkey	65.0	65.0	65.0	66.0	1.0	1.5
Total	**20,716.0**	**21,889.0**	**21,386.0**	**21,860.5**	**474.5**	**2.2**
ASIA-PACIFIC						
Afghanistan	0	0	0	0	0	0
Australia	290.0	313.0	367.0	350.0	− 17.0	− 4.6
Burma	20.0	20.0	20.0	20.0	....	....
Brunei-Malaysia	375.0	375.0	313.0	366.0	53.0	16.9
India	150.0	150.0	148.0	149.0	1.0	0.7
Indonesia	1,417.0	1,450.0	1,284.0	1,465.0	171.0	13.2
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	8.0	8.0	8.0	8.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.2	0.2	0.2	0.2	....	....
Total	**2,277.2**	**2,333.2**	**2,167.2**	**2,375.2**	**208.0**	**9.6**
AFRICA						
Algeria	850.0	900.0	1,122.0	1,019.0	−103.0	− 9.2
Angola	20.0	20.0	14.0	20.0	6.0	42.9
Cabinda	145.0	145.0	135.0	147.0	12.0	8.9
Congo	37.0	37.0	38.0	36.0	− 2.0	5.3
Egypt	155.0	160.0	206.0	113.0	− 93.0	−45.1
Gabon	155.0	160.0	140.0	161.0	21.0	15.0
Libya	1,394.0	1,583.0	2,256.0	1,785.0	−471.0	−20.9
Morocco	2.0	2.0	2.0	2.0	....	....
Nigeria	2,100.0	2,196.0	1,977.0	2,240.0	263.0	13.3
Tunisia	65.0	65.0	83.0	66.0	− 17.0	−20.5
Total	**4,922.0**	**5,268.0**	**5,973.0**	**5,589.0**	**−384.0**	**6.4**
COMMUNIST						
China	900.0	900.0	860.0	900.0	40.0	4.7
Rumania	290.0	290.0	283.0	290.0	7.0	2.5
U.S.S.R.‡	9,042.0	9,207.0	8,450.0	9,042.0	592.0	7.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,342.0**	**10,507.0**	**9,693.0**	**10,342.0**	**649.0**	**6.7**
WORLD TOTAL	**53,851.2**	**55,721.0**	**55,733.2**	**56,156.7**	**423.5**	**1.0**

*Figures adjusted. 10% stream July 1974. ‡Includes gas liquids.

Worldwide gas production

(billion cu ft)

	Aug.	July	1974 cum.
WESTERN HEMISPHERE			
Argentina	24.0	24.0	171.7
Bolivia	11.6	11.9	100.5
Brazil	4.0	4.7	31.2
Canada	268.3	260.2	2,145.7
Chile	11.9	19.1	131.9
Colombia	4.6	10.8	66.4
Ecuador	0.8	0.7	3.6
Mexico	59.0	55.0	447.9
Peru	6.4	6.1	47.8
Trinidad	4.7	5.2	42.8
United States	1,824.7	1,822.7	14,656.6
Venezuela	41.0	41.0	784.1
Total	**2,261.0**	**2,261.4**	**18,630.2**
WESTERN EUROPE			
Austria	5.3	5.4	66.9
Denmark	0	0	0
France	28.3	24.2	193.9
West Germany	59.7	58.9	463.8
Italy	58.2	55.1	411.2
Netherlands	135.3	203.2	1,927.9
Norway	0	0	0
Spain	0	0	0
United Kingdom	137.9	93.0	914.7
Yugoslavia	4.2	4.7	36.2
Total	**428.9**	**444.5**	**4,014.6**
MIDDLE EAST			
Abu Dhabi	0	0	0
Bahrain	0.3	0.5	2.8
Dubai	0	0	0
Iran	151.3	159.2	1,183.1
Iraq	10.0	10.1	86.4
Israel	0.2	0.1	3.5
Kuwait	0.2	0.1	1.1
Oman	0	0	0
Qatar	0.1	0.1	1.3
Saudi Arabia	0	0	0
Sharjah†	0	0	0
Syria	0	0	0
Turkey	0	0	0
Total	**162.1**	**170.1**	**1,278.2**
ASIA-PACIFIC			
Afghanistan	7.8	7.8	61.8
Australia	15.9	15.0	102.1
Burma	0.5	0.5	3.9
Brunei-Malaysia	0.3	0.3	1.0
India	0.2	0.3	13.6
Indonesia	1.7	1.8	100.1
Japan	8.5	16.1	66.1
Pakistan	11.1	9.1	90.6
Taiwan	4.1	4.0	29.5
Thailand	0	0	0
Total	**50.1**	**65.4**	**468.7**
AFRICA			
Algeria	0.9	1.7	13.8
Angola	2.8	3.0	20.8
Cabinda	0	0	0
Congo	0.6	0.4	3.6
Egypt	5.7	5.1	30.2
Gabon	1.3	1.2	9.4
Libya	4.3	4.2	27.0
Morocco	6.6	1.8	20.3
Nigeria	4.6	5.2	38.4
Tunisia	0.2	0.4	4.8
Total	**27.0**	**23.0**	**168.3**
COMMUNIST			
China	16.8	17.1	125.5
Rumania	77.1	78.2	602.4
U.S.S.R.‡	758.9	724.6	5,965.7
Other	26.9	38.0	333.6
Total	**879.7**	**857.9**	**7,027.2**
WORLD TOTAL	**3,808.8**	**3,822.3**	**31,587.2**

AGO 529995

Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 10-22-74	Pump price 10-22-74	Pump price 10-23-73
Albany	42.9	54.9	41.6
Albuquerque	43.9	54.9	37.9
Amarillo	40.1	49.1	33.9
—Atlanta	42.1	53.6	39.0
—Baltimore	39.6	52.6	40.6
Birmingham	39.9	51.9	39.6
—Boston*	42.1	53.6	39.9
Buffalo	42.9	54.9	41.6
Charlotte	39.9	52.9	40.6
Cheyenne	44.9	55.9	41.6
—Chicago*	41.6	54.6	42.1
Cleveland	40.9	51.9	39.6
Corpus Christi	40.6	49.6	33.9
Dallas	40.6	49.6	33.9
Denver	44.9	55.9	40.6
Des Moines	41.0	52.0	37.9
Detroit	39.5	52.5	41.6
Fort Worth	40.6	49.6	33.9
Houston	40.6	49.6	33.9
Indianapolis	41.9	53.9	41.6
Jacksonville	39.9	51.9	39.6
Kansas City	43.9	54.9	39.6
Little Rock	39.5	51.0	36.9
Louisville	42.9	53.9	41.6
Los Angeles	39.8	50.8	38.9
Memphis	41.0	52.0	37.9
—Miami	41.6	53.6	39.0
Milwaukee	41.9	52.9	40.6
Minn.-St. Paul	42.0	53.0	38.9
—Newark	43.6	54.6	40.9
New Orleans	38.9	50.9	38.6
New York*	44.6	57.6	44.6
—Norfolk	39.6	52.6	38.9
Okla. City	43.3	53.9	36.9
Omaha	41.4	53.9	41.6
Philadelphia	39.9	52.9	39.6
Phoenix	42.8	53.8	39.9
Pittsburgh	39.9	52.9	39.6
Portland, Ore.	41.8	52.8	39.9
Salt Lake City	42.9	53.9	38.6
San Antonio	40.1	49.1	33.9
San Diego	40.4	51.4	38.9
San Francisco	41.0	52.0	39.9
Seattle	40.4	53.4	39.9
Spokane	40.4	53.4	40.9
Springfield, Ill.*	42.0	55.0	40.9
St. Louis	42.0	53.0	40.6
—Tampa	41.6	53.6	39.0
Texarkana	40.1	49.1	33.9
Tulsa	40.4	51.0	36.9
Wichita	40.9	51.9	39.6
Wichita Falls	40.1	49.1	33.9
Week's avg.	**41.37**	**52.68**	**38.90**
Sept. avg.	**43.32**	**54.63**	**37.84**
Aug. avg.	**43.36**	**54.67**	**37.99**
1974 to date	**40.20**	**51.48**	
1973 to date	**26.96**	**38.46**	

+ Increase, — decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
Regular (92 octane) 26.75-30.00
Premium (99 octane) 28.75-32.00

California (rack) Los Angeles:
—Regular (91 octane) 25.00-31.50
—Regular (95 octane) 26.10-32.50
—Premium (100 octane) 27.40-33.50

Chicago:
Regular (94 octane) 28.00-33.00
Premium (100 octane) 30.00-35.00

Kerosine, distillate

Chicago:
+Distillate No. 1 ..... 27.50-33.50
+Distillate No. 2 ..... 26.50-32.00

Gulf Coast (cargoes):
Kerosine (42-43) 27.50-29.00
Distillate No. 2 ..... 26.50-28.00

Mid-Continent (Group 3):
Kerosine (42-44) 27.25-29.25
Diesel oil (58 d.i. & above) 27.00-30.00
Distillate No. 1 ..... 26.50-29.50
Distillate No. 2 ..... 25.50-27.50

New York Harbor (barges):
Kerosine (42-44) 28.05-33.75
Distillate No. 2 ..... 27.50-29.25
Diesel fuel (48-52 d.i.) 27.80

Residual fuel

Mid-Continent (Group 3):
No. 6 (max 1% S) $10.30
No. 6 (over 1% S) ..... $ 9.30

Chicago:
No. 6 (max. 1% S) $13.86
No. 5 (max. 1% S) $14.70

New York Harbor (barges):
No. 6 (max. 0.3% S) $13.03-14.13
+No. 5 (0.3% S) $13.41-14.38

API reports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	10-18 1974	10-11 1974	10-19 1973	10-18 1974	10-11 1974	10-19 1973	10-18 1974	10-11 1974	10-19 1973
Gasoline	259	225	153	10	10	....	269	235	153
Special Naphthas	....	....	....	....	....	....	....	....	....
Kerosine	5	5	....	....	....	....	5	5	....
Distillate	218	282	341	10	10	21	228	292	362
No. 4 Fuel Oil	40	53	63	....	....	....	40	53	63
Residual	1,663	1,511	1,687	50	50	41	1,713	1,561	1,728
Jet Fuel (Naphtha)	....	....	1	2	2	5	2	2	6
Jet Fuel (Kerosine)	98	160	125	58	56	56	156	216	181
Asphalt	21	19	40	....	....	....	21	19	40
LP-Gas	111	106	69	18	14	12	129	120	81
Petrochem Feedstocks	32	20	1	....	....	....	32	20	1
Unfinished	115	84	71	10	10	39	125	94	110
Plant Condensate	89	72	75	5	5	8	94	77	83
Total Prod.	**2,651**	**2,537**	**2,626**	**163**	**157**	**182**	**2,814**	**2,694**	**2,808**
Canadian Crude	541	459	698	242	101	55	783	551	763
Other Foreign	2,275	2,546	2,178	567	568	981	2,842	3,114	3,149
Total Crude	**2,816**	**2,996**	**2,876**	**809**	**669**	**1,036**	**3,625**	**3,665**	**3,912**
Total Imports	**5,467**	**5,533**	**5,502**	**972**	**826**	**1,218**	**6,439**	**6,359**	**6,720**

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Worldwide crude production

(Daily average in thousands of bbl)

	July 1974	June* 1974	7-month average Daily prod. 1973	7-month average Daily prod. 1974	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	405.0	406.0	419.0	412.0	− 7.0	− 1.7
Bolivia	50.0	50.0	48.0	49.0	1.0	2.1
Brazil	170.0	170.0	169.0	171.0	2.0	1.2
Canada	1,676.0	1,682.0	1,789.0	1,770.0	− 19.0	− 1.1
Chile	30.0	30.0	32.0	30.0	− 2.0	− 6.3
Colombia	175.0	175.0	199.0	175.0	− 24.0	−12.1
Ecuador	200.0	230.0	201.0	228.0	27.0	13.4
Mexico	600.0	575.0	457.0	568.0	111.0	24.3
Peru	75.0	75.0	67.0	76.0	9.0	13.4
Trinidad	170.0	170.0	164.0	172.0	8.0	4.9
United States	8,955.0	8,940.0	9,236.0	8,969.0	−267.0	− 2.9
Venezuela	2,940.0	2,944.0	3,360.0	3,086.0	−274.0	− 8.2
Total	**15,446.0**	**15,447.0**	**16,141.0**	**15,706.0**	**−435.0**	**− 2.7**
WESTERN EUROPE						
Austria	45.0	45.0	49.0	47.0	− 2.0	− 4.1
Denmark	4.0	4.0	4.0	4.0		
France	25.0	25.0	27.0	24.0	− 3.0	−11.1
West Germany	123.0	122.0	131.0	124.0	− 7.0	− 5.3
Italy	20.0	20.0	15.0	20.0	5.0	33.3
Netherlands	30.0	30.0	29.0	30.0	1.0	3.4
Norway	47.0	38.0	36.0	24.0	− 12.0	−33.3
Spain	44.0	44.0	12.0	42.0	30.0	250.0
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	65.0	65.0	67.0	68.0	1.0	1.5
Total	**405.0**	**395.0**	**372.0**	**385.0**	**13.0**	**3.5**
MIDDLE EAST						
Abu Dhabi	1,641.0	1,581.0	1,339.0	1,495.0	156.0	11.7
Bahrain	67.0	67.0	68.0	68.0		
Dubai	295.0	243.0	225.0	241.0	16.0	7.1
Iran	6,064.0	6,063.0	5,826.0	6,125.0	299.0	5.1
Iraq	1,635.0	1,584.0	1,903.0	1,784.0	−119.0	− 6.3
Israel	100.0	100.0	100.0	100.0		
Kuwait	2,286.0	2,869.0	3,075.0	2,764.0	−311.0	−10.1
Oman	288.0	296.0	287.0	296.0	9.0	3.1
Qatar	518.0	520.0	591.0	518.0	− 73.0	−12.4
Saudi Arabia	8,778.0	8,870.0	7,650.0	8,401.0	751.0	9.8
Sharjah†	50.0	.....	.....	.....	....	....
Syria	150.0	150.0	150.0	150.0		
Turkey	65.0	65.0	64.0	66.0	2.0	3.1
Total	**21,937.0**	**22,408.0**	**21,278.0**	**22,008.0**	**730.0**	**3.4**
ASIA-PACIFIC						
Afghanistan						
Australia	313.0	325.0	364.0	358.0	− 6.0	− 1.6
Burma	20.0	20.0	20.0	20.0		
Brunei-Malaysia	375.0	375.0	311.0	364.0	53.0	17.0
India	150.0	150.0	148.0	149.0	1.0	0.7
Indonesia	1,469.0	1,488.0	1,285.0	1,478.0	193.0	15.0
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	8.5	8.5	8.5	8.5	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.2	0.2	0.2	0.2	....	....
Total	**2,352.7**	**2,383.7**	**2,153.7**	**2,394.7**	**241.0**	**11.2**
AFRICA						
Algeria	900.0	950.0	1,110.0	1,044.0	− 66.0	− 5.9
Angola	20.0	20.0	14.0	20.0	6.0	42.9
Cabinda	145.0	145.0	133.0	148.0	15.0	11.3
Congo	37.0	37.0	37.0	36.0	− 1.0	− 2.7
Egypt	160.0	160.0	205.0	107.0	− 98.0	−47.8
Gabon	160.0	160.0	138.0	162.0	24.0	17.4
Libya	1,583.0	1,775.0	2,277.0	1,842.0	−435.0	−19.1
Morocco	1.0	1.0	1.0	1.0		
Nigeria	2,196.0	2,336.0	1,958.0	2,283.0	325.0	16.6
Tunisia	65.0	65.0	84.0	66.0	− 18.0	−21.4
Total	**5,267.0**	**5,649.0**	**5,957.0**	**5,709.0**	**−248.0**	**− 4.2**
COMMUNIST						
China	900.0	900.0	860.0	900.0	40.0	4.7
Rumania	290.0	290.0	283.0	290.0	7.0	2.5
U.S.S.R.‡	9,207.0	9,198.0	8,385.0	9,056.0	671.0	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,507.0**	**10,498.0**	**9,628.0**	**10,356.0**	**728.0**	**7.6**
WORLD TOTAL	**55,914.7**	**56,760.7**	**55,529.7**	**56,558.7**	**1,029.0**	**1.9**

*Figures adjusted. †On stream July 1974. ‡Includes gas liquids.

Worldwide gas production

(billion cu ft)

	July*	June	1972 cum.
	24.0	21.5	147.7
	11.9	12.0	88.9
	4.7	3.9	27.2
	260.2	259.7	1,877.4
	19.1	20.1	120.0
	10.8	11.9	61.8
	0.7	0.5	2.8
	55.0	53.9	388.9
	6.1	4.9	41.4
	5.2	4.8	38.1
	1,897.7	1,710.2	12,987.1
	41.0	35.0	743.1
	2,336.4	**2,138.4**	**16,524.4**
	5.4	8.9	61.6
	....	....	....
	24.2	22.1	165.6
	58.9	49.9	404.1
	55.1	49.9	353.0
	203.2	264.6	1,792.6
	....	....	....
	....	....	....
	93.0	98.5	776.8
	4.7	4.7	32.0
	444.5	**498.5**	**3,585.7**
	....	....	....
	0.5	0.4	2.5
	....	....	....
	159.2	149.6	1,031.8
	10.1	11.1	76.4
	0.1	0.2	3.3
	0.1	0.1	0.9
	....	....	....
	0.1	0.2	1.2
	....	....	....
	....	....	....
	....	....	....
	....	....	....
	170.1	**161.6**	**1,116.1**
	....	....	....
	7.8	7.9	54.0
	15.0	14.8	86.2
	0.5	0.4	3.4
	0.3	0.2	0.7
	1.8	2.1	13.4
	16.1	14.0	98.4
	9.1	8.6	57.6
	10.8	11.1	79.5
	4.0	3.2	25.4
	65.4	**62.3**	**418.6**
	1.7	1.9	12.9
	3.0	2.8	18.0
	....	....	....
	0.4	0.6	3.0
	5.1	4.5	24.5
	1.2	1.3	8.1
	4.2	4.9	22.7
	1.8	2.0	13.7
	5.2	4.7	33.8
	0.4	0.5	4.6
	23.0	**23.2**	**141.3**
	17.1	16.0	108.7
	78.2	77.1	525.3
	724.6	723.7	5,207.7
	38.0	31.9	306.7
	857.9	**848.7**	**6,148.4**
	3,897.3	**3,732.8**	**27,934.5**

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Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 9-17-74	Pump price 9-17-74	Pump price 9-18-73
Albany	45.9	57.9	39.9
Albuquerque	46.9	57.9	37.9
Amarillo	41.1	50.1	33.9
Atlanta	42.2	55.7	38.9
Baltimore	42.9	55.9	38.9
Birmingham	42.9	54.9	37.9
Boston*	44.2	55.7	38.9
Buffalo	45.9	57.9	39.9
Charlotte	42.9	55.9	38.9
Cheyenne	47.9	58.9	39.9
Chicago*	45.6	58.6	40.4
Cleveland	43.9	54.9	37.9
Corpus Christi	41.6	50.6	33.9
Dallas	41.6	50.6	33.9
Denver	47.9	58.9	38.9
+Des Moines	41.0	52.0	37.9
Detroit	42.5	55.5	39.9
Fort Worth	41.6	50.6	33.9
Houston	41.6	50.6	33.9
Indianapolis	44.9	56.9	39.9
Jacksonville	42.9	54.9	37.9
Kansas City	46.9	57.9	37.9
+Little Rock	39.5	51.0	36.9
Louisville	45.9	56.9	37.9
Los Angeles	41.1	52.1	37.9
+Memphis	41.0	52.0	37.9
Miami	43.7	55.7	38.9
Milwaukee	44.9	55.9	38.9
+Minn.-St. Paul	42.0	53.0	38.9
Newark	45.7	56.7	39.9
New Orleans	41.9	53.9	36.9
New York*	46.9	59.9	41.9
Norfolk	41.7	54.7	37.9
Okla. City	46.3	56.9	36.9
Omaha	44.4	56.9	39.9
Philadelphia	42.9	55.9	37.9
Phoenix	43.7	54.7	38.9
Pittsburgh	42.9	55.9	37.9
Portland, Ore.	43.2	54.2	38.9
Salt Lake City	45.9	56.9	36.9
San Antonio	41.1	50.1	33.9
San Diego	41.7	52.7	38.9
San Francisco	42.3	53.3	38.9
Seattle	41.7	54.7	39.9
Spokane	41.7	54.7	39.9
+Springfield, Ill.*	42.0	55.0	40.9
St. Louis	44.9	55.9	38.9
Tampa	43.7	55.7	38.9
Texarkana	41.1	50.1	33.9
+Tulsa	40.4	51.0	36.9
Wichita	43.9	54.9	37.9
Wichita Falls	41.1	50.1	33.9
Week's avg.	**43.38**	**54.70**	**37.99**
Aug. avg.	**43.36**	**54.67**	**37.99**
July avg.	**43.24**	**54.51**	**38.00**
1974 to date	**39.93**	**51.21**	
1973 to date	**26.95**	**38.52**	

+ Increase, − decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
Regular (92 octane) 28.00-32.00
Premium (99 octane) 30.00-34.00

California (rack) Los Angeles:
Regular (91 octane) 25.00-33.55
Regular (95 octane) 26.10-34.65
Premium (100 octane) 27.40-35.65

Chicago:
Regular (94 octane) 28.00-33.00
Premium (100 octane) 30.00-35.00

Kerosine, distillate

Chicago:
Distillate No. 1 ..... 27.50-34.00
Distillate No. 2 ..... 26.50-33.00

Gulf Coast (cargoes):
Kerosine (42-43) 27.50-29.00
Distillate No. 2 ..... 26.50-28.00

Mid-Continent (Group 3):
Kerosine (42-44) 24.50-28.75
Diesel oil (58 d.i. & above) 27.00-30.00
Distillate No. 1 ..... 24.50-29.50
Distillate No. 2 ..... 23.00-27.50

New York Harbor (barges):
Kerosine (42-44) 29.50-33.75
Distillate No. 2 ..... 26.25-29.20
Diesel fuel (48-52 d.i) 26.80

Residual fuel

Mid-Continent (Group 3):
No. 6 (max 1% S) $10.30
No. 6 (over 1% S) ..... $ 9.30

Chicago:
+No. 6 (max. 1% S) $13.86
+No. 5 (max. 1% S) $14.70

New York Harbor (barges):
No. 6 (max. 0.3% S) $13.39-14.13
No. 5 (0.3% S) $13.57-14.34

California (marine pipeline):
—Bunker C Los Angeles $4.76

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	9-13 1974	9-6 1974	9-14 1973	9-13 1974	9-6 1974	9-14 1973	9-13 1974	9-6 1974	9-14 1973
Gasoline	278	139	150	5	23	...	283	162	150
Special Naphthas	5	5	...	...	...	...	5	5	...
Kerosine	4	3	...	...	...	...	4	3	...
Distillate	143	76	160	5	12	...	148	88	160
No. 4 Fuel Oil	20	36	31	...	...	...	20	36	31
Residual	1,742	1,895	1,643	50	50	17	1,792	1,945	1,660
Jet Fuel (Naphtha)	...	...	5	5	5	5	5	5	10
Jet Fuel (Kerosine)	95	112	116	56	53	42	151	165	158
Asphalt	74	67	30	...	...	...	74	67	30
LP-Gas	106	105	85	13	16	12	119	121	97
Petrochem Feedstocks	31	14	39	...	...	...	31	14	39
Unfinished	91	110	113	33	25	10	124	135	123
Plant Condensate	112	68	109	5	5	8	117	73	117
Total Prod.	**2,701**	**2,630**	**2,481**	**172**	**189**	**94**	**2,873**	**2,819**	**2,575**
Canadian Crude	478	400	711	216	233	242	694	633	953
Other Foreign	2,077	2,573	2,062	626	659	600	2,703	3,232	2,662
Total Crude	**2,555**	**2,973**	**2,773**	**842**	**892**	**842**	**3,397**	**3,865**	**3,615**
Total Imports	**5,256**	**5,603**	**5,254**	**1,014**	**1,081**	**936**	**6,270**	**6,684**	**6,190**

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Worldwide crude production

(Daily average in thousands of bbl)

	June 1974	May* 1974	6-month average Daily prod. 1973	6-month average Daily prod. 1974	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	420.0	420.0	421.0	419.0	− 2.0	− 0.5
Bolivia	50.0	50.0	48.0	50.0	2.0	4.2
Brazil	170.0	170.0	169.0	170.0	1.0	0.6
Canada	1,836.0	1,732.0	1,786.0	1,840.0	54.0	3.0
Chile	30.0	30.0	33.0	30.0	− 3.0	− 9.1
Colombia	175.0	175.0	199.0	175.0	− 24.0	−12.1
Ecuador	230.0	227.0	199.0	233.0	34.0	17.1
Mexico	530.0	530.0	455.0	525.0	70.0	15.4
Peru	75.0	75.0	67.0	76.0	9.0	13.4
Trinidad	170.0	170.0	164.0	173.0	9.0	5.5
United States	8,940.0	8,939.0	9,243.0	8,973.0	−270.0	− 2.9
Venezuela	2,944.0	2,930.0	3,351.0	3,102.0	−249.0	− 7.4
Total	**15,570.0**	**15,448.0**	**16,135.0**	**15,766.0**	**−369.0**	**− 2.3**
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0	....	....
Denmark	4.0	4.0	4.0	4.0	....	....
France	25.0	25.0	27.0	24.0	− 3.0	−11.1
West Germany	124.0	123.0	131.0	125.0	− 6.0	− 4.6
Italy	15.0	15.0	14.0	15.0	1.0	7.1
Netherlands	30.0	30.0	30.0	30.0	....	....
Norway	38.0	30.0	36.0	20.0	− 16.0	−44.4
Spain	44.0	44.0	11.0	37.0	26.0	236.4
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	65.0	65.0	66.0	66.0	....	....
Total	**397.0**	**388.0**	**371.0**	**373.0**	**2.0**	**0.5**
MIDDLE EAST						
Abu Dhabi	1,581.0	1,632.0	1,338.0	1,470.0	132.0	9.9
Bahrain	67.0	66.0	68.0	68.0	....	....
Dubai	230.0	227.0	222.0	229.0	7.0	3.2
Iran	6,063.0	6,182.0	5,818.0	6,136.0	318.0	5.5
Iraq	1,584.0	1,592.0	1,871.0	1,810.0	− 61.0	− 3.3
Israel	100.0	100.0	100.0	100.0	....	....
Kuwait	2,869.0	2,845.0	3,031.0	2,846.0	−185.0	− 6.1
Oman	300.0	303.0	285.0	298.0	13.0	4.6
Qatar	518.0	519.0	589.0	518.0	− 71.0	−12.1
Saudi Arabia	8,870.0	9,017.0	7,464.0	8,336.0	872.0	11.7
Syria	150.0	150.0	121.0	142.0	21.0	17.4
Turkey	65.0	65.0	63.0	65.0	2.0	3.2
Total	**22,397.0**	**22,698.0**	**20,970.0**	**22,018.0**	**1,048.0**	**5.0**
ASIA-PACIFIC						
Australia	325.0	361.0	359.0	366.0	7.0	1.9
Burma	20.0	20.0	20.0	21.0	1.0	5.0
Brunei-Malaysia	375.0	375.0	309.0	363.0	54.0	17.5
India	150.0	150.0	148.0	150.0	2.0	1.4
Indonesia	1,522.0	1,530.0	1,271.0	1,485.0	214.0	16.8
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	8.0	8.0	8.0	8.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.2	0.2	0.2	0.2	....	....
Total	**2,417.2**	**2,461.2**	**2,132.2**	**2,410.2**	**278.0**	**13.0**
AFRICA						
Algeria	950.0	1,000.0	1,110.0	1,039.0	− 71.0	− 6.4
Angola	20.0	20.0	13.0	20.0	7.0	53.8
Cabinda	145.0	145.0	132.0	148.0	16.0	12.1
Congo	37.0	37.0	38.0	36.0	− 2.0	− 5.3
Egypt	160.0	150.0	200.0	97.0	−103.0	−51.5
Gabon	160.0	160.0	135.0	162.0	27.0	20.0
Libya	1,775.0	1,950.0	2,292.0	1,887.0	−405.0	−17.7
Morocco	1.0	1.0	1.0	1.0	....	....
Nigeria	2,335.0	2,250.0	1,953.0	2,271.0	318.0	16.2
Tunisia	65.0	65.0	84.0	66.0	− 18.0	−21.4
Total	**5,648.0**	**5,778.0**	**5,958.0**	**5,727.0**	**−231.0**	**3.9**
COMMUNIST						
China	900.0	900.0	860.0	900.0	40.0	4.7
Rumania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.	9,198.0	9,137.0	8,368.0	9,034.0	666.0	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,488.0**	**10,427.0**	**9,603.0**	**10,324.0**	**721.0**	**7.5**
WORLD TOTAL	**56,917.2**	**57,200.2**	**55,169.2**	**56,618.2**	**14,490.0**	**2.6**

*Figures adjusted. †Includes gas liquids.

Worldwide gas production

(Billion cu ft)

	June	May	1974 cum.
	21.5	21.0	123.7
	12.0	11.9	77.0
	3.9	3.6	22.5
	259.7	261.1	1,617.2
	20.1	23.2	100.9
	11.9	10.2	51.0
	0.5	0.4	2.1
	53.9	55.8	333.9
	4.9	3.8	35.3
	4.8	2.4	32.9
	1,710.2	1,711.4	11,089.4
	35.0	44.9	702.1
	2,138.4	**2,149.7**	**14,188.0**
	8.9	9.4	56.2
	....	....	....
	22.1	24.2	141.4
	49.9	65.8	345.2
	49.9	50.0	297.9
	264.6	305.5	1,589.4
	....	....	....
	....	....	....
	98.5	117.4	683.8
	4.7	3.7	27.3
	498.6	**576.0**	**3,141.2**
	....	....	....
	0.4	0.5	2.0
	....	....	....
	149.6	153.5	872.6
	11.1	11.1	66.3
	0.2	0.1	3.2
	0.1	0.2	0.8
	....	....	....
	0.2	0.3	1.1
	....	....	....
	....	....	....
	....	....	....
	161.6	**154.6**	**946.0**
	7.9	7.8	46.2
	14.8	11.4	71.2
	0.4	0.6	2.9
	0.2	0.2	0.4
	2.1	1.6	11.6
	14.0	15.5	82.3
	8.6	6.2	48.5
	11.1	14.0	68.7
	3.2	3.1	21.4
	62.3	**60.4**	**353.2**
	1.9	1.7	11.2
	2.8	2.9	15.0
	....	....	....
	0.6	0.4	2.6
	4.5	4.1	19.4
	1.3	1.2	6.9
	4.9	4.7	18.5
	2.0	2.5	11.9
	4.7	6.2	28.6
	0.5	0.6	4.2
	23.2	**24.3**	**118.3**
	16.0	15.9	91.6
	77.1	68.2	447.1
	723.7	741.3	4,483.1
	31.9	31.9	268.7
	848.7	**857.3**	**5,290.5**
	3,732.8	**3,822.3**	**24,037.2**

*Figures Adjusted.

AGU 529999

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6—138" x 16'9", 770 PSIG, 650° F., internally insulated. Excellent condition. Available shipment Michigan location. More detailed info available.

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E-31 Heat Exchanger, 770 psig @ 650° F., 23,800 sq. ft. surface, 1 pass both sides, 2191-¾" tubes x 0.075" M.W. thickness x 56 ft. long.

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E-2 Air Cooler, 770 PSIG design, 6 sections, 3 pass, 3 fans 30 HP each, 3 bays, 5700 sq. ft. bare surface, 110,166 sq. ft. extended surface.

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E-8 Air Cooler consisting of: depropanizer reflux condenser, debutanizer reflux condenser and propane product cooler, one structure, 2 fans 2 speed 20 HP each. More info. available. All excellent condition. Available shipment Michigan location.

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Mid-States Equipment Company
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136,222'	6⅝" O.D.	.188 wall, Grade B	$420.00/cft
63,218'	6⅝" O.D.	.203 wall, Grade B	$452.00/cft
46,775'	8⅝" O.D.	.156 wall, Grade B	$459.00/cft
104,141'	8⅝" O.D.	.188 wall, Grade B	$550.00/cft
36,143'	8⅝" O.D.	.203 wall, Grade B	$593.00/cft
3,000'	24" O.D.	.250 wall, 63.41#/ft	$2,335.00/cft
3,000'	24" O.D.	.312 wall, 79.06#/ft	$2,911.00/cft
4,000'	24" O.D.	.375 wall, 94.62#/ft	$3,465.00/cft
1,500'	24" O.D.	.500 wall, 125.49#/ft	$4,595.00/cft
1,000'	30" O.D.	.312 wall, 98.93#/ft	$3,700.00/cft
2,000'	30" O.D.	.375 wall, 118.65#/ft	$4,420.00/cft
750'	30" O.D.	.500 wall, 157.53#/ft	$5,868.00/cft
1,000'	36" O.D.	.312 wall, 118.92#/ft	$4,551.00/cft
2,000'	36" O.D.	.375 wall, 142.68#/ft	$5,440.00/cft
520'	36" O.D.	.500 wall, 189.57#/ft	$7,228.00/cft

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40 ton minimum lots. • Subject to prior sale.
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Ask for Byron Glass or Earle Cohen.
Complete stocks — pipe, valves and fittings.

AGD 530000

Worldwide crude production

(Daily average in thousands of bbl)

	May 1974	April* 1974	5-month average Daily prod. 1973	5-month average Daily prod. 1974	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	420.0	420.0	423.0	420.0	− 3.0	− 0.7
Bolivia	50.0	50.0	49.0	50.0	1.0	2.0
Brazil	170.0	170.0	169.0	170.0	1.0	0.6
Canada	1,732.0	1,810.0	1,802.0	1,822.0	20.0	1.1
Chile	30.0	30.0	33.0	30.0	− 3.0	− 9.1
Colombia	175.0	175.0	199.0	176.0	− 23.0	− 11.6
Ecuador	227.0	245.0	200.0	233.0	33.0	16.5
Mexico	530.0	530.0	454.0	524.0	70.0	15.4
Peru	75.0	75.0	67.0	75.0	8.0	11.9
Trinidad	170.0	170.0	164.0	172.0	8.0	4.9
United States	8,939.0	8,965.0	9,250.0	8,995.0	−255.0	− 2.8
Venezuela	2,930.0	3,044.0	3,337.0	3,133.0	−204.0	− 6.1
Total	**15,448.0**	**15,684.0**	**16,147.0**	**15,800.0**	**−347.0**	**− 2.5**
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0	.....	.....
Denmark	0.0	2.0	4.0	4.0	.....	.....
France	25.0	25.0	27.0	24.0	− 3.0	− 11.1
West Germany	123.0	123.0	131.0	125.0	− 6.0	− 4.6
Italy	15.0	15.0	15.0	15.0	.....	.....
Netherlands	30.0	30.0	30.0	30.0	.....	.....
Norway	27.0	13.0	35.0	17.0	− 18.0	− 51.4
Spain	40.0	40.0	9.0	37.0	28.0	311.1
United Kingdom	2.0	2.0	2.0	2.0	.....	.....
Yugoslavia	65.0	65.0	66.0	66.0	.....	.....
Total	**377.0**	**365.0**	**369.0**	**370.0**	**1.0**	**0.3**
MIDDLE EAST						
Abu Dhabi	1,632.0	1,616.0	1,344.0	1,448.0	104.0	7.7
Bahrain	66.0	67.0	68.0	68.0	.....	.....
Dubai	227.0	241.0	224.0	229.0	5.0	2.2
Iran	6,182.0	6,175.0	5,822.0	6,150.0	328.0	5.6
Iraq	1,592.0	1,882.0	1,853.0	1,855.0	2.0	0.1
Israel	100.0	100.0	100.0	100.0	.....	.....
Kuwait	2,845.0	2,836.0	3,072.0	2,842.0	−230.0	− 7.5
Oman	303.0	296.0	284.0	297.0	13.5	4.6
Qatar	519.0	519.0	595.0	518.0	− 77.0	− 12.9
Saudi Arabia	9,017.0	8,653.0	7,453.0	8,230.0	777.0	10.4
Syria	150.0	150.0	120.0	141.0	21.0	17.5
Turkey	65.0	65.0	62.0	65.0	3.0	4.8
Total	**22,698.0**	**22,600.0**	**20,997.0**	**21,943.0**	**946.0**	**4.5**
ASIA-PACIFIC						
Afghanistan	.....	.....	.....	.....	.....	.....
Australia	361.0	351.0	354.0	374.0	20.0	5.6
Burma	20.0	20.0	20.0	21.0	1.0	5.0
Brunei-Malaysia	375.0	375.0	307.0	360.0	53.0	17.3
India	150.0	150.0	148.0	150.0	2.0	1.4
Indonesia	1,530.0	1,500.0	1,254.0	1,477.0	223.0	17.8
Japan	15.0	15.0	15.0	15.0	.....	.....
Pakistan	9.0	9.0	9.0	9.0	.....	.....
Taiwan	2.0	2.0	2.0	2.0	.....	.....
Thailand	0.2	0.2	0.2	0.2	.....	.....
Total	**2,462.2**	**2,422.2**	**2,109.2**	**2,408.2**	**299.0**	**14.2**
AFRICA						
Algeria	1,000.0	1,000.0	1,109.0	1,056.0	− 53.0	− 4.8
Angola	20.0	20.0	13.0	20.0	7.0	53.8
Cabinda	145.0	150.0	132.0	149.0	17.0	12.9
Congo	37.0	34.0	36.0	35.0	− 1.0	− 2.8
Egypt	130.0	100.0	205.0	81.0	−124.0	− 60.5
Gabon	160.0	176.0	133.0	162.0	29.0	21.8
Libya	1,950.0	1,734.0	2,293.0	1,909.0	−384.0	− 16.7
Morocco	1.0	1.0	1.0	1.0	.....	.....
Nigeria	2,250.0	2,275.0	1,943.0	2,251.0	308.0	15.9
Tunisia	65.0	65.0	84.0	67.0	− 17.0	− 20.2
Total	**5,758.0**	**5,555.0**	**5,949.0**	**5,731.0**	**−218.0**	**− 3.6**
COMMUNIST						
China	860.0	860.0	650.0	860.0	210.0	32.3
Rumania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.†	9,137.0	9,028.0	8,327.0	8,992.0	665.0	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,387.0**	**10,198.0**	**9,352.0**	**10,242.0**	**890.0**	**9.5**
WORLD TOTAL	**57,130.2**	**56,824.2**	**54,923.2**	**56,494.2**	**1,571.0**	**2.9**

*Figures adjusted. †Includes gas liquids.

Worldwide gas production

(Billion cu ft)

	May	April	1974 cum.
	21.0	21.0	102.2
	11.9	14.1	65.0
	3.6	4.6	18.6
	261.1	271.2	1,357.5
	23.2	11.9	80.8
	10.2	5.0	39.1
	0.4	0.3	1.6
	55.8	56.3	280.0
	3.8	3.5	30.4
	2.4	4.9	28.1
	1,711.4	1,770.2	9,379.2
	44.9	140.1	667.1
	2,149.7	**2,303.1**	**12,049.6**
	9.4	10.1	47.3
	.....	.....	.....
	24.2	24.1	119.3
	65.8	60.2	295.3
	50.0	49.3	248.0
	305.5	271.2	1,324.8
	.....	.....	.....
	.....	.....	.....
	117.4	141.2	585.3
	3.7	5.0	22.6
	576.0	**561.1**	**2,642.6**
	.....	.....	.....
	0.5	0.1	1.6
	.....	.....	.....
	153.5	140.8	723.0
	11.1	11.0	55.2
	0.1	1.0	3.0
	0.2	0.1	0.7
	.....	.....	.....
	0.3	0.2	0.9
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
	154.6	**153.2**	**784.4**
	7.8	8.1	38.3
	11.4	10.2	56.4
	0.6	0.4	2.5
	0.2	.....	0.2
	1.6	1.8	9.5
	15.5	12.0	68.3
	6.2	9.0	39.9
	14.0	10.1	57.6
	3.1	3.8	18.2
	.....	.....	.....
	60.4	**55.4**	**290.9**
	1.7	2.0	9.3
	2.9	3.0	12.2
	.....	.....	.....
	0.4	0.2	2.0
	4.1	3.0	14.9
	1.2	1.0	5.6
	4.7	2.1	13.6
	2.5	1.5	9.9
	6.2	5.0	23.9
	0.6	0.2	3.7
	24.3	**18.0**	**95.1**
	15.9	16.0	75.6
	68.2	70.1	370.0
	741.3	737.7	3,741.8
	31.9	35.0	236.8
	857.3	**858.8**	**4,424.2**
	3,822.3	**3,949.6**	**20,286.8**

AGO 530001

Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 7-16-74	Pump price 7-16-74	Pump price 7-17-73
Albany	45.9	57.9	39.9
Albuquerque	46.9	57.9	37.9
+Amarillo	40.1	49.1	33.9
Atlanta	44.2	55.7	38.9
Baltimore	42.9	55.9	38.9
Birmingham	42.9	54.9	37.9
Boston*	44.2	55.7	38.9
Buffalo	45.9	57.9	39.9
Charlotte	42.9	55.9	38.9
Cheyenne	47.9	58.9	39.9
Chicago*	45.6	58.6	40.4
Cleveland	43.9	54.9	37.9
+Corpus Christi	40.6	49.6	33.9
+Dallas	40.6	49.6	33.9
Denver	47.9	58.9	38.9
Des Moines	42.9	53.9	37.9
Detroit	42.5	55.5	39.9
+Fort Worth	40.6	49.6	33.9
+Houston	40.6	49.6	33.9
Indianapolis	44.9	56.9	39.9
Jacksonville	42.9	54.9	37.9
Kansas City	46.9	57.9	37.9
Little Rock	41.4	52.9	36.9
Louisville	45.9	56.9	37.9
−Los Angeles	41.9	52.9	38.9
Memphis	42.9	53.9	37.9
Miami	43.7	55.7	38.9
Milwaukee	44.9	55.9	38.9
Minn.-St. Paul	43.9	54.9	38.9
Newark	45.7	56.7	39.9
New Orleans	41.9	53.9	36.9
New York*	46.9	59.9	41.9
Norfolk	41.7	54.7	37.9
Okla. City	46.3	56.9	36.9
Omaha	44.4	56.9	39.9
Philadelphia	42.9	54.9	37.9
+Phoenix	42.9	53.9	38.9
Pittsburgh	42.9	54.9	37.9
−Portland, Ore.	43.7	54.7	38.9
Salt Lake City	45.9	56.9	36.9
+San Antonio	40.1	49.1	33.9
+San Diego	41.9	52.9	39.9
+San Francisco	42.8	53.8	38.9
+Seattle	42.1	55.1	39.9
−Spokane	41.7	54.7	39.9
Springfield, Ill.*	43.9	56.9	40.9
St. Louis	44.9	55.9	38.9
Tampa	43.7	55.7	38.9
+Texarkana	40.1	49.1	33.9
Tulsa	42.3	52.9	36.9
Wichita	43.9	54.9	37.9
+Wichita Falls	40.1	49.1	33.9
Week's avg.	**43.48**	**54.75**	**38.03**
June avg.	**43.21**	**54.50**	**37.95**
May avg.	**41.93**	**53.20**	**37.78**
1974 to date	**38.83**	**50.11**	....
1973 to date	**26.09**	**37.35**	....

+ Increase, − decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
Regular (92 octane) 28.00-32.00
Premium (99 octane) 30.00-34.00

California (rack) Los Angeles:
+Regular (91 octane) 25.50-33.55
+Regular (95 octane) 27.00-34.65
+Premium (100 octane) 28.00-35.65

Chicago:
Regular (94 octane) 28.00-33.00
Premium (100 octane) 30.00-35.00

Kerosine, distillate

Chicago:
−Distillate No. 1 ..... 27.50-30.50
−Distillate No. 2 ..... 26.50-29.50

Gulf Coast (cargoes):
Kerosine (42-43) 27.50-29.00
Distillate No. 2 ..... 25.50-28.00

Mid-Continent (Group 3):
Kerosine (42-44) 22.50-28.75
Diesel oil (58 d.i. & above) 23.00-27.00
Distillate No. 1 ..... 22.00-27.50
Distillate No. 2 ..... 20.50-26.00

New York Harbor (barges):
+Kerosine (42-44) 29.50-33.75
+Distillate No. 2 ..... 25.75-27.55
+Diesel fuel (48-52 d.i.) 26.80

Residual fuel

Mid-Continent (Group 3):
No. 6 (max. 1% S) $9.25
No. 6 (over 1% S) $8.25

Chicago:
No. 6 (max. 1% S) $13.02
No. 5 (max. 1% S) $13.86

New York Harbor (barges):
+No. 6 (max. 0.3% S) $13.39-13.99
No. 5 (0.3% S) $13.59-14.57

California (marine pipeline):
Bunker C Los Angeles $5.01

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	7-12 1974	7-5 1974	7-13 1973	7-12 1974	7-5 1974	7-13 1973	7-12 1974	7-5 1974	7-13 1973
Gasoline	153	290	72	2	...	...	155	290	72
Special Naphthas	...	5	12	...	...	...	...	5	12
Kerosine	5	5	...	...	...	...	5	5	...
Distillate	133	100	64	5	...	5	138	105	64
No. 4 Fuel Oil	44	59	29	...	...	...	44	59	29
Residual	1,825	1,691	1,412	100	29	75	1,925	1,766	1,441
Jet Fuel (Naphtha)	...	...	...	...	5	...	...	...	5
Jet Fuel (Kerosine)	77	65	119	47	55	22	124	87	174
Asphalt	40	31	22	...	...	...	40	31	22
LP-Gas	112	141	119	16	23	21	128	162	142
Petrochem Feedstocks	5	15	...	...	...	...	5	15	...
Unfinished	126	137	65	53	46	46	179	183	111
Plant Condensate	83	115	116	10	10	10	93	125	126
Total Prod.	**2,603**	**2,654**	**2,030**	**233**	**168**	**179**	**2,836**	**2,833**	**2,198**
Canadian Crude	468	496	934	208	323	153	676	649	1,259
Other Foreign	2,282	1,864	1,429	840	682	448	3,122	2,312	2,109
Total Crude	**2,750**	**2,360**	**2,363**	**1,048**	**1,005**	**601**	**3,798**	**2,961**	**3,368**
Total Imports	**5,353**	**5,014**	**4,393**	**1,281**	**1,173**	**780**	**6,634**	**5,794**	**5,566**

AGO 530002

Worldwide crude production

(Daily average in thousands of bbl)

	April 1974	March* 1974	4-month average Daily prod. 1973	4-month average Daily prod. 1974	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	420.0	423.0	424.0	426.0	2.0	0.5
Bolivia	50.0	50.0	50.0	50.0	.....	.....
Brazil	170.0	170.0	169.0	170.0	1.0	0.6
Canada	1,810.0	1,881.0	1,819.0	1,845.0	26.0	1.4
Chile	30.0	30.0	34.0	30.0	− 4.0	− 11.8
Colombia	175.0	175.0	198.0	176.0	− 22.0	− 11.1
Ecuador	245.0	240.0	211.0	235.0	24.0	11.4
Mexico	530.0	520.0	453.0	523.0	70.0	15.5
Peru	75.0	75.0	67.0	75.0	8.0	11.9
Trinidad	170.0	170.0	163.0	173.0	10.0	6.1
United States	8,965.0	9,023.0	9,236.0	9,024.0	−212.0	− 2.3
Venezuela	3,044.0	3,179.0	3,313.0	3,186.0	−127.0	− 3.8
Total	**15,684.0**	**15,936.0**	**16,137.0**	**15,913.0**	**−224.0**	**− 1.4**
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0	.....	.....
Denmark	2.0	4.0	4.0	4.0	.....	.....
France	25.0	25.0	27.0	24.0	− 3.0	− 11.1
West Germany	125.0	125.0	131.0	126.0	− 5.0	− 3.8
Italy	15.0	15.0	15.0	15.0	.....	.....
Netherlands	30.0	30.0	30.0	30.0	.....	.....
Norway	13.0	17.0	34.0	14.0	− 20.0	− 58.8
Spain	35.0	35.0	7.0	33.0	26.0	371.4
United Kingdom	2.0	2.0	2.0	2.0	.....	.....
Yugoslavia	65.00	65.0	66.0	66.0	.....	.....
Total	**362.0**	**368.0**	**366.0**	**364.0**	**− 2.0**	**− 0.6**
MIDDLE EAST						
Abu Dhabi	1,616.0	1,489.0	1,332.0	1,401.0	69.0	5.2
Bahrain	67.0	68.0	68.0	69.0	1.0	1.5
Dubai	241.0	250.0	220.0	230.0	10.0	4.5
Iran	6,175.0	6,125.0	5,816.0	6,142.0	326.0	5.6
Iraq	1,871.0	1,812.0	1,803.0	1,820.0	17.0	0.9
Israel	100.0	100.0	100.0	100.0	.....	.....
Kuwait	2,836.0	2,841.0	3,136.0	2,841.0	−295.0	− 9.4
Oman	296.0	292.0	284.0	296.0	12.0	4.2
Qatar	519.0	518.0	597.0	518.0	− 79.0	− 13.2
Saudi Arabia	8,653.0	8,135.0	7,229.0	8,027.0	798.0	11.0
Syria	150.0	150.0	118.0	138.0	20.0	16.9
Turkey	65.0	65.0	62.0	66.0	4.0	6.5
Total	**22,589.0**	**21,845.0**	**20,765.0**	**21,648.0**	**883.0**	**4.3**
ASIA-PACIFIC						
Afghanistan	.....	.....	.....	.....	.....	.....
Australia	404.0	415.0	395.0	435.0	40.0	10.1
Burma	20.0	20.0	20.0	21.0	1.0	5.0
Brunei-Malaysia	375.0	350.0	305.0	356.0	51.0	16.7
India	150.0	150.0	148.0	149.0	1.0	0.7
Indonesia	1,413.0	1,440.0	1,236.0	1,424.0	188.0	15.2
Japan	15.0	15.0	15.0	15.0	.....	.....
Pakistan	8.5	8.5	8.5	8.5	.....	.....
Taiwan	2.0	2.0	2.0	2.0	.....	.....
Thailand	0.2	0.2	0.5	0.5	.....	.....
Total	**2,387.7**	**2,250.7**	**2,129.7**	**2,410.7**	**281.0**	**13.2**
AFRICA						
Algeria	990.0	980.0	1,109.0	962.0	− 14.7	− 13.3
Angola	20.0	20.0	14.0	20.0	6.0	42.9
Cabinda	150.0	150.0	132.0	149.0	17.0	12.9
Congo	35.0	35.0	32.0	34.0	2.0	6.3
Egypt	130.0	110.0	201.0	114.0	− 87.0	− 43.3
Gabon	165.0	165.0	129.0	162.0	33.0	25.6
Libya	1,734.0	1,882.0	2,301.0	1,898.0	−403.0	− 17.5
Morocco	1.0	1.0	1.0	1.0	.....	.....
Nigeria	2,300.0	2,290.0	1,938	2,257.0	319.0	16.5
Tunisia	70.0	70.0	85.0	70.0	− 15.0	− 17.6
Total	**5,595.0**	**5,703.0**	**5,942.0**	**5,667.0**	**−275.0**	**− 4.6**
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.†	9,028.0	8,948.0	8,280.0	8,942.5	662.5	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,278.0**	**10,198.0**	**9,255.0**	**10,192.5**	**937.5**	**10.1**
WORLD TOTAL	**56,895.7**	**56,300.7**	**54,594.7**	**56,195.2**	**1,600.5**	**2.9**

*Figures adjusted. †Includes condensate.

Worldwide gas production

(Billion cu ft)

	April	March	1974 cum.
Argentina	21.0	16.8	81.2
Bolivia	14.1	12.9	53.1
Brazil	4.6	3.5	15.0
Canada	271.2	268.4	1,096.4
Chile	11.9	12.0	57.6
Colombia	5.0	4.6	28.9
Ecuador	0.3	0.2	1.2
Mexico	56.3	56.4	224.2
Peru	3.5	7.9	26.6
Trinidad	4.9	4.8	25.7
United States	1,770.2	1,775.2	7,667.8
Venezuela	140.1	141.2	622.2
Total	**2,303.1**	**2,303.9**	**9,899.9**
WESTERN EUROPE			
Austria	10.1	9.6	37.9
Denmark	.....	.....	.....
France	24.1	24.4	95.1
West Germany	60.2	51.4	229.5
Italy	49.3	52.4	198.0
Netherlands	271.2	266.1	1,019.3
Norway	.....	.....	.....
Spain	.....	.....	.....
United Kingdom	141.2	135.4	467.9
Yugoslavia	5.0	4.9	18.9
Total	**561.1**	**544.2**	**2,066.6**
MIDDLE EAST			
Abu Dhabi	.....	.....	.....
Bahrain	0.1	0.2	1.1
Dubai	.....	.....	.....
Iran	140.8	141.7	569.5
Iraq	11.0	10.9	44.1
Israel	1.0	0.9	2.9
Kuwait	0.1	0.1	0.5
Oman	.....	.....	.....
Qatar	0.2	0.2	0.6
Saudi Arabia	.....	.....	.....
Syria	.....	.....	.....
Turkey	.....	.....	.....
Total	**153.2**	**154.0**	**618.7**
ASIA-PACIFIC			
Afghanistan	8.1	7.8	30.5
Australia	10.2	11.4	45.0
Burma	0.4	0.6	1.9
Brunei-Malaysia	.....	.....	.....
India	1.8	2.0	7.9
Indonesia	12.0	13.7	52.8
Japan	9.0	8.4	33.7
Pakistan	10.1	11.2	43.6
Taiwan	3.8	4.2	15.1
Thailand	.....	.....	.....
Total	**55.4**	**59.3**	**230.5**
AFRICA			
Algeria	2.0	2.1	7.6
Angola	3.0	2.3	9.3
Cabinda	.....	.....	.....
Congo	0.2	0.4	1.6
Egypt	3.0	2.9	10.8
Gabon	1.0	1.2	4.4
Libya	2.1	1.9	8.9
Morocco	1.5	2.0	7.4
Nigeria	5.0	4.7	17.7
Tunisia	0.2	0.4	3.1
Total	**18.0**	**17.9**	**70.8**
COMMUNIST			
China	16.0	15.6	59.7
Romania	70.1	77.1	301.8
U.S.S.R.†	737.7	776.6	3,000.5
Other	35.0	37.8	204.9
Total	**858.8**	**907.1**	**3,566.8**
WORLD TOTAL	**3,949.6**	**3,986.4**	**16,453.3**

AGO 530003

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20,000 bbl	Prime	July/August
20,000 bbl	Prime	July/August
15,000 bbl	Excellent	August
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AGO 530004

Worldwide crude production

(Daily average in thousands of bbl)

	Mar. 1974	Feb.* 1974	6-month average Daily prod. 1973	6-month average Daily prod. 1974	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	430.0	430.0	426.0	430.0	4.0	0.9
Bolivia	50.0	50.0	50.0	50.0	.....	....
Brazil	170.0	170.0	168.0	170.0	2.0	1.2
Canada	1,881.0	1,844.0	1,830.0	1,857.0	27.0	1.5
Chile	30.0	30.0	34.0	30.0	– 4.0	– 11.8
Colombia	175.0	176.0	198.0	176.0	– 22.0	– 11.1
Ecuador	230.0	228.0	219.0	228.0	9.0	4.1
Mexico	580.0	580.0	450.0	580.0	130.0	28.9
Peru	75.0	75.0	67.0	76.0	9.0	13.4
Trinidad	170.0	171.0	165.0	173.0	8.0	4.8
United States	9,023.0	9,047.0	9,238.0	9,044.0	–194.0	– 2.1
Venezuela	3,150.0	3,233.0	3,297.0	3,223.0	– 74.0	– 2.2
Total	**15,964.0**	**16,034.0**	**16,142.0**	**16,037.0**	**–105.0**	**– 0.7**
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0	.....	....
Denmark	4.0	4.0	4.0	4.0	.....	....
France	25.0	25.0	27.0	25.0	– 2.0	– 7.4
West Germany	125.0	125.0	132.0	125.0	– 7.0	– 5.3
Italy	15.0	15.0	15.0	15.0	.....	....
Netherlands	30.0	32.0	29.0	30.0	1.0	3.4
Norway	17.0	25.0	36.0	15.0	– 21.0	– 58.3
Spain	25.0	25.0	3.0	25.0	22.0	733.3
United Kingdom	2.0	2.0	2.0	2.0	.....	....
Yugoslavia	60.0	60.0	65.0	59.0	– 6.0	– 9.2
Total	**353.0**	**363.0**	**363.0**	**350.0**	**– 13.0**	**– 3.6**
MIDDLE EAST						
Abu Dhabi	1,489.0	1,273.0	1,318.0	1,329.0	11.0	0.8
Bahrain	68.0	69.0	68.0	69.0	1.0	1.5
Dubai	250.0	250.0	217.0	226.0	9.0	4.1
Iran	6,125.0	6,167.0	5,832.0	6,130.0	298.0	5.1
Iraq	1,812.0	1,802.0	1,699.0	1,803.0	104.0	6.1
Israel	100.0	100.0	100.0	100.0	.....	....
Kuwait	2,841.0	2,849.0	3,282.0	2,842.0	–440.0	– 13.4
Oman	292.0	295.0	281.0	295.0	14.0	5.0
Qatar	518.0	515.0	599.0	517.0	– 82.0	– 13.7
Saudi Arabia	8,135.0	7,795.0	7,185.0	7,818.0	633.0	8.8
Syria	100.0	50.0	113.0	75.0	– 38.0	– 33.6
Turkey	70.0	70.0	61.0	69.0	8.0	13.1
Total	**21,800.0**	**21,235.0**	**20,755.0**	**21,273.0**	**518.0**	**2.5**
ASIA-PACIFIC						
Australia	376.0	490.0	386.0	442.0	56.0	14.5
Burma	20.0	20.0	20.0	21.0	1.0	5.0
Brunei-Malaysia	350.0	350.0	302.0	350.0	48.0	15.9
India	150.0	150.0	149.0	152.0	3.0	2.0
Indonesia	1,440.0	1,435.0	1,218.0	1,428.0	210.0	17.2
Japan	15.0	15.0	15.0	15.0	.....	....
Pakistan	8.5	8.5	8.5	8.5	.....	....
Taiwan	2.0	2.0	2.0	2.0	.....	....
Thailand	0.2	0.2	0.2	0.2	.....	....
Total	**2,361.7**	**2,320.7**	**2,100.7**	**2,418.7**	**318.0**	**15.1**
AFRICA						
Algeria	980.0	980.0	1,107.0	952.0	–155.0	– 14.0
Angola	20.0	20.0	14.0	20.0	6.0	42.9
Cabinda	150.0	150.0	132.0	149.0	17.0	12.9
Congo	35.0	35.0	26.0	34.0	8.0	30.8
Egypt	110.0	110.0	195.0	109.0	– 86.0	– 44.1
Gabon	180.0	180.0	126.0	180.0	54.0	42.9
Libya	1,882.0	1,945.0	2,290.0	1,953.0	–337.0	– 14.7
Morocco	1.0	1.0	1.0	1.0	.....	....
Nigeria	2,290.0	2,260.0	1,932.0	2,249.0	317.0	16.4
Tunisia	70.0	70.0	85.0	70.0	– 15.0	– 17.6
Total	**5,718.0**	**5,751.0**	**5,908.0**	**5,717.0**	**–191.0**	**3.2**
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.†	8,948.0	8,838.0	8,260.0	8,922.0	662.0	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,198.0**	**10,088.0**	**9,235.0**	**10,172.0**	**937.0**	**10.2**
WORLD TOTAL	**56,394.7**	**55,791.7**	**54,503.7**	**55,967.7**	**1,464.0**	**2.7**

*Figures adjusted. †Includes gas liquids.

Worldwide gas production

	Mar. '74	Feb. '74	1974 cum.
	16.8	19.5	60.2
	12.9	13.1	39.0
	3.5	3.5	10.4
	268.4	274.5	825.2
	12.0	11.9	45.7
	4.6	9.6	23.9
	0.2	0.3	0.9
	56.4	55.7	167.9
	7.9	8.1	23.1
	4.8	4.8	20.8
	1,775.2	2,111.2	5,897.6
	141.2	169.7	482.1
	2,303.9	**2,681.9**	**7,596.8**
	9.6	9.6	27.8
	.....	.....	.....
	24.4	23.4	71.0
	51.4	51.4	169.3
	52.4	49.6	148.7
	266.1	241.0	748.1
	.....	.....	.....
	.....	.....	.....
	135.4	86.4	326.7
	4.9	4.9	13.9
	544.2	**466.3**	**1,505.5**
	.....	.....	.....
	0.2	0.3	1.0
	.....	.....	.....
	141.7	141.3	428.7
	10.9	11.1	33.1
	0.9	0.9	1.9
	0.1	0.1	0.4
	.....	.....	.....
	0.2	0.1	0.4
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
	154.0	**153.8**	**465.5**
	7.8	6.9	22.4
	11.4	10.9	34.8
	0.6	0.4	1.5
	.....	.....	.....
	2.0	1.9	6.1
	13.7	13.7	40.8
	8.4	8.4	24.7
	11.2	11.2	33.5
	4.2	4.1	11.3
	59.3	**57.5**	**175.1**
	2.1	1.9	5.6
	2.3	1.9	6.3
	.....	.....	.....
	0.4	0.5	1.4
	2.9	2.5	7.8
	1.2	1.1	3.4
	1.9	2.4	6.8
	2.0	1.9	5.9
	4.7	4.7	12.7
	0.4	0.4	2.9
	17.9	**17.3**	**52.8**
	15.6	14.9	43.7
	77.1	77.1	231.7
	776.6	709.5	2,262.7
	37.8	60.9	169.9
	907.1	**862.4**	**2,708.0**
	3,986.4	**4,239.2**	**12,503.7**

*Figures adjusted.

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Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):

Regular (92 octane)	28.00-30.00
Premium (99 octane)	30.00-32.00

Gulf Coast (cargoes for coastwise or export movements):

Regular (94 octane)	30.50-34.50
Premium (100 octane)	32.25-36.25

California (rack) Los Angeles:

Regular (91 octane)	24.50-33.55
Regular (95 octane)	24.70-34.65
Premium (100 octane)	26.00-35.65

Chicago:

Regular (94 octane)	31.00-36.00
Premium (100 octane)	33.00-38.00

Kerosine, distillate

Chicago:

Distillate No. 1	30.00-34.50
Distillate No. 2	29.00-33.50

Gulf Coast (cargoes):

—Kerosine (42-43)	26.00-28.50
—Distillate No. 2	24.00-26.50

Mid-Continent (Group 3):

Kerosine (42-44)	25.00
Diesel oil (58 d.i. & above)	24.75
Distillate No. 1	23.00
Distillate No. 2	22.00

New York Harbor (barges):

Kerosine (42-44)	27.50-33.75
Distillate No. 2	24.50-26.45
Diesel fuel (48-52 d.i.)	24.80

Residual fuel

Mid-Continent (Group 3):

+No. 6 (max. 1% S)	$9.00
+No. 6 (over 1% S)	$8.00

Chicago:

No. 6 (max. 1% S)	$12.60
No. 5 (max. 1% S)	$13.44

Gulf Coast (cargoes):

Bunker C fuel (0.6% S)	$4.95

New York Harbor (barges):

No. 6 (max. 0.3% S)	$13.36-13.39
—No. 5 (max. 1.0% S)	$12.17
No. 5 (0.3% S)	$13.56-14.57

California (marine pipeline):

Bunker C Los Angeles	$5.01

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	5-17 1974	5-10 1974	5-18 1973	5-17 1974	5-10 1974	5-18 1973	5-17 1974	5-10 1974	5-18 1973
Gasoline	281	151	77	43	4	....	324	155	77
Special naphthas	....	....	....	....	....	....	....	....	....
Kerosine	....	....	....	....	....	....	....	....	....
Distillate	251	168	153	5	5	....	256	173	153
No. 4 fuel oil	59	63	155	....	....	....	59	63	155
Residual	1,651	1,745	1,718	50	50	22	1,701	1,795	1,740
Jet fuel (naphtha)	....	....	4	....	....	10	....	....	14
Jet fuel (kerosine)	67	80	94	42	42	63	109	122	157
Asphalt	106	37	35	....	....	....	106	37	35
LP-gas	186	184	115	10	10	24	196	194	139
Petrochem feedstocks	20	20	7	....	....	....	20	20	7
Unfinished	100	209	82	83	13	27	183	222	109
Plant condensate	55	61	85	10	10	5	65	71	90
Total prod.	2,776	2,718	2,525	243	134	151	3,019	2,852	2,676
Canadian crude	647	652	557	201	149	268	848	801	825
Other foreign	1,774	1,505	1,729	717	696	524	2,491	2,201	2,253
Total crude	2,421	2,157	2,286	918	845	792	3,339	3,002	3,078
Total imports	5,197	4,875	4,811	1,161	979	943	6,358	5,854	5,754

Gasoline prices

(Suggested prices for major-brand regular)

	Price ex. tax 5-21-74	Pump price 5-21-74	Pump price 5-22-73
Albany	45.9	57.9	39.9
Albuquerque	43.9	54.9	37.9
Amarillo	38.7	47.7	33.9
Atlanta	40.2	51.7	38.9
Baltimore	42.9	55.9	38.9
Birmingham	42.9	54.9	37.9
Boston*	40.2	51.7	38.9
Buffalo	45.9	57.9	39.9
Charlotte	42.9	55.9	38.9
Cheyenne	45.9	56.9	39.9
Chicago*	45.6	58.6	40.4
Cleveland	43.9	54.9	37.9
Corpus Christi	38.2	48.2	33.9
Dallas	39.2	48.2	33.9
Denver	44.9	55.9	38.9
Des Moines	39.9	50.9	37.9
Detroit	42.5	55.5	39.9
Fort Worth	39.2	48.2	33.9
Houston	41.9	50.9	33.9
Indianapolis	44.9	56.9	39.9
Jacksonville	42.9	54.9	37.9
Kansas City	43.9	54.9	37.9
Little Rock	38.4	49.9	36.9
Louisville	45.9	56.9	37.9
Los Angeles	41.8	52.8	36.9
Memphis	39.9	50.9	37.9
Miami	39.7	51.7	38.9
Milwaukee	44.9	55.9	38.9
Minn.-St. Paul	40.9	51.9	38.9
Newark	41.7	52.7	39.9
New Orleans	41.9	53.9	36.9
New York*	46.9	59.9	41.9
Norfolk	37.7	50.7	37.9
Okla. City	43.3	53.9	36.9
Omaha	44.4	56.9	39.9
Philadelphia	42.9	54.9	37.9
Phoenix	41.7	52.7	37.9
Pittsburgh	42.9	54.9	37.9
Portland, Ore.	42.7	53.7	36.9
Salt Lake City	42.9	53.9	36.9
San Antonio	38.7	47.7	33.9
San Diego	41.7	52.7	36.9
San Francisco	42.5	53.5	36.9
Seattle	40.2	53.2	37.9
Spokane	41.0	54.0	37.9
Springfield, Ill.*	40.9	53.9	40.9
St. Louis	44.9	55.9	38.9
Tampa	35.2	47.2	38.9
Texarkana	38.7	47.7	33.9
Tulsa	39.3	49.9	36.9
Wichita	43.9	54.9	37.9
Wichita Falls	38.7	47.7	33.9
Week's avg.	41.97	53.27	37.76
Apr. avg.	38.73	50.01	34.41
Mar. avg.	36.93	49.20	34.52
1974 to date	37.14	48.41	....
1973 to date	25.87	37.12	....

+ Increase, — decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

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Worldwide crude production

(Daily average in thousands of bbl)

	Feb. 1974	Jan.* 1974	2-month average Daily prod. 1973	2-month average Daily prod. 1974	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	430.0	430.0	429.0	430.0	1.0	0.2
Bolivia	50.0	50.0	50.0	50.0	.....	.....
Brazil	170.0	170.0	168.0	170.0	2.0	1.2
Canada	1,844.0	1,845.0	1,819.0	1,845.0	26.0	1.4
Chile	31.0	31.0	34.0	31.0	– 3.0	– 8.8
Colombia	200.0	200.0	200.0	200.0	.....	.....
Ecuador	230.0	230.0	214.0	230.0	16.0	7.5
Mexico	485.0	485.0	450.0	485.0	35.0	7.8
Peru	75.0	75.0	67.0	75.0	8.0	11.9
Trinidad	165.0	165.0	165.0	165.0	.....	.....
United States	9,047.0	9,061.0	9,271.9	9,054.0	–217.0	– 2.3
Venezuela	3,220.0	3,274.0	3,283.0	3,248.0	– 35.0	– 1.1
Total	**15,947.0**	**16,016.0**	**16,150.0**	**15,983.0**	**–167.0**	**– 0.1**
WESTERN EUROPE						
Austria	50.0	50.0	50.0	50.0	.....	.....
Denmark	4.0	4.0	4.0	4.0	.....	.....
France	25.0	24.0	27.0	24.0	– 3.0	–11.1
West Germany	125.0	125.0	132.0	125.0	– 7.0	– 5.3
Italy	15.0	15.0	15.0	15.0	.....	.....
Netherlands	32.0	28.0	30.0	30.0	.....	.....
Norway	25.0	2.0	33.0	13.0	– 20.0	–60.6
Spain	20.0	20.0	3.0	20.0	17.0	556.7
United Kingdom	2.0	2.0	2.0	2.0	.....	.....
Yugoslavia	70.0	70.0	62.0	70.0	8.0	12.9
Total	**368.0**	**340.0**	**358.0**	**353.0**	**– 5.0**	**– 1.4**
MIDDLE EAST						
Abu Dhabi	1,263.0	1,210.0	1,314.0	1,235.0	– 79.0	– 6.0
Bahrain	69.0	70.0	68.0	70.0	2.0	2.9
Dubai	250.0	180.0	213.0	213.0	.....	.....
Iran	6,157.0	6,103.0	5,831.0	6,129.0	298.0	5.1
Iraq	1,802.0	1,794.0	1,553.0	1,798.0	245.0	15.8
Israel	100.0	100.0	110.0	100.0	– 10.0	– 9.1
Kuwait	2,849.0	2,838.0	3,562.0	2,843.0	–719.0	–20.2
Oman	295.0	299.0	280.0	297.0	17.0	6.1
Qatar	517.0	518.0	596.0	518.0	– 78.0	–13.1
Saudi Arabia	7,795.0	7,522.0	7,029.0	7,652.0	623.0	8.9
Syria	50.0	50.0	115.0	50.0	– 65.0	–56.5
Turkey	70.0	70.0	61.0	70.0	9.0	14.8
Total	**21,217.0**	**20,754.0**	**20,732.0**	**20,975.0**	**243.0**	**1.2**
ASIA-PACIFIC						
Afghanistan	.....	.....	.....	.....	.....	.....
Australia	490.0	464.0	404.0	476.0	72.0	17.8
Burma	20.0	20.0	20.0	20.0	.....	.....
Brunei-Malaysia	350.0	350.0	302.0	350.0	48.0	15.9
India	150.0	150.0	148.0	150.0	2.0	1.4
Indonesia	1,435.0	1,450.0	1,216.0	1,443.0	227.0	18.7
Japan	15.0	15.0	15.0	15.0	.....	.....
Pakistan	8.5	8.5	8.5	8.5	.....	.....
Taiwan	2.0	2.0	2.0	2.0	.....	.....
Thailand	2.0	0.2	0.2	0.2	.....	.....
Total	**2,470.7**	**2,459.0**	**2,115.7**	**2,464.7**	**349.0**	**16.5**
AFRICA						
Algeria	980.0	960.0	1,106.0	969.0	–137.0	–12.4
Angola	15.0	15.0	14.0	15.0	1.0	7.1
Cabinda	150.0	150.0	132.0	150.0	18.0	13.6
Congo	35.0	35.0	15.0	35.0	20.0	133.3
Egypt	80.0	80.0	199.0	80.0	–119.0	–40.2
Gabon	160.0	156.0	120.0	158.0	38.0	31.7
Libya	1,945.0	2,032.0	2,285.0	1,991.0	–294.0	–12.9
Morocco	1.0	1.0	1.0	1.0	.....	.....
Nigeria	2,185.0	2,185.0	1,930.0	2,185.0	255.0	13.2
Tunisia	82.0	82.0	85.0	82.0	– 3.0	– 3.5
Total	**5,633.0**	**5,696.0**	**5,887.0**	**5,666.0**	**–221.0**	**– 3.8**
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	280.0	280.0	275.0	280.0	5.0	1.8
U.S.S.R.†	8,838.0	8,948.0	8,236.0	8,896.0	660.0	8.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**10,088.0**	**10,198.0**	**9,211.0**	**10,146.0**	**935.0**	**10.2**
WORLD TOTAL	**55,723.7**	**55,463.7**	**54,453.7**	**55,587.7**	**1,134.0**	**2.1**

*Figures adjusted.
†Includes gas liquids.

Worldwide gas production

(Billion cu ft)

Feb. '74	Jan. '74	1974 total
19.5	23.9	43.4
13.1	13.0	26.1
3.5	3.4	6.9
274.5	282.3	556.8
11.9	21.8	33.7
9.6	9.7	19.3
0.3	0.4	0.7
55.7	55.8	111.5
8.1	7.1	15.2
4.8	11.2	16.0
2,111.2	2,011.2	4,122.4
169.7	171.2	340.9
2,681.9	**2,611.0**	**5,292.9**
9.6	8.6	18.2
.....	.....	.....
23.4	23.2	46.6
51.4	66.5	117.9
49.6	46.7	96.3
241.0	241.2	482.0
.....	.....	.....
.....	.....	.....
86.4	104.9	191.3
4.9	4.1	9.0
466.3	**495.2**	**961.5**
.....	.....	.....
0.3	0.5	0.8
.....	.....	.....
141.3	145.7	287.0
11.1	11.1	22.2
0.9	0.1	1.0
0.1	0.2	0.3
.....	.....	.....
0.1	0.1	0.2
.....	.....	.....
.....	.....	.....
.....	.....	.....
153.8	**157.7**	**311.5**
6.9	7.7	14.6
10.9	12.5	23.4
0.4	0.5	0.9
.....	.....	.....
1.9	2.2	4.1
13.7	13.4	27.1
8.4	7.9	16.3
11.2	11.1	22.3
4.1	3.0	7.1
.....	.....	.....
57.5	**58.3**	**115.8**
1.9	1.6	3.5
1.9	2.1	4.0
.....	.....	.....
0.5	0.5	1.0
2.5	2.4	4.9
1.1	1.1	2.2
2.4	2.5	4.9
1.9	2.0	3.9
4.7	3.3	8.0
0.4	2.1	2.5
17.3	**17.6**	**34.9**
14.9	13.2	28.1
77.1	77.5	154.6
709.5	720.1	1,429.6
60.9	71.2	132.1
862.4	**882.0**	**1,744.4**
4,239.2	**4,221.8**	**8,461.0**

AGO 530007

Refined-products prices

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

Light products are in cents per gallon. Residual prices are in dollars per barrel.

Gasoline

Mid-Continent (Group 3):
+Regular (92 octane) 30.00
+Premium (99 octane) 32.00

Gulf Coast (cargoes for coastwise or export movements):
+Regular (94 octane) 30.50-34.50
+Premium (100 octane) 32.25-36.25

California (rack) Los Angeles:
Regular (91 octane) 24.50-30.25
Regular (95 octane) 24.70-31.35
Premium (100 octane) 26.00-32.40

Chicago:
+Regular (94 octane) 31.00-36.00
+Premium (100 octane) 33.00-38.00

Kerosine, distillate

Chicago:
+Distillate No. 1 ..... 34.50
+Distillate No. 2 ..... 33.50

Gulf Coast (cargoes):
+Kerosine (41-43) 30.50-34.50
Distillate No. 2 ..... 27.00-38.00

Mid-Continent (Group 3):
+Kerosine (42-44) 24.00
+Diesel oil (58 d.i. & above) 23.75
+Distillate No. 1 ..... 23.00
+Distillate No. 2 ..... 22.00

New York Harbor (barges):
Kerosine (42-44) 24.50-33.75
Distillate No. 2 ..... 21.50-26.45
Diesel fuel (48-52 d.i.) 21.80

Residual fuel

Mid-Continent (Group 3):
No. 6 (max. 1% S) $7.00
No. 6 (over 1% S) $6.50

Chicago:
+No. 6 (max. 1% S) $11.70
+No. 5 (max. 1% S) $12.60

Gulf Coast (cargoes):
Bunker C fuel (0.6% S) $4.95

New York Harbor (barges):
No. 6 (max. 0.3% S) $5.61
No. 5 (max. 1.0% S) $5.16
No. 5 (0.9% S) $5.70-6.12

California (marine pipeline):
Bunker C Los Angeles $5.01

API imports of crude and products

(Thousands of barrels daily)

	DISTRICTS 1-4			DISTRICT 5			TOTAL U.S.		
	4-12 1974	4-5 1974	4-13 1973	4-12 1974	4-5 1974	4-13 1973	4-12 1974	4-5 1974	4-13 1973
Gasoline	136	156	82	10	10	...	146	166	82
Special naphthas	...	...	...	...	...	...	...	...	...
Kerosine	1	1	...	...	...	...	1	1	...
Distillate	128	135	140	10	10	3	138	145	143
No. 4 fuel oil	96	72	90	...	...	...	96	72	90
Residual	1,467	1,585	1,890	40	40	30	1,507	1,625	1,920
Jet fuel (naphtha)	5	5	5	8	8	10	13	13	15
Jet fuel (kerosine)	91	68	95	53	52	45	144	120	140
Asphalt	37	10	12	...	...	...	37	10	12
LP-gas	135	137	88	18	27	17	153	164	105
Petrochem feedstocks	8	8	51	...	...	...	8	8	51
Unfinished	181	171	99	55	28	20	236	199	119
Plant condensate	85	85	100	10	10	...	95	95	100
Total prod.	**2,370**	**2,433**	**2,652**	**204**	**185**	**125**	**2,574**	**2,618**	**2,777**
Canadian crude	589	691	682	231	186	260	820	877	942
Other foreign	1,486	1,315	1,515	549	392	194	2,035	1,707	1,709
Total crude	**2,075**	**2,006**	**2,197**	**780**	**578**	**454**	**2,855**	**2,584**	**2,651**
Total imports	**4,445**	**4,439**	**4,849**	**984**	**763**	**579**	**5,429**	**5,202**	**5,428**

Gasoline prices

(Major-brand regular)

	Price ex. tax 4-16-74	Pump price 4-16-74	Pump price 4-17-73
Albany	43.9	55.9	39.9
Albuquerque	37.9	48.9	37.9
Amarillo	31.9	40.9	33.9
Atlanta	35.7	47.2	37.9
Baltimore	40.9	53.9	38.9
Birmingham	40.9	52.9	37.9
Boston*	35.7	47.2	37.9
Buffalo	43.9	55.9	39.9
Charlotte	40.9	53.9	38.9
Cheyenne	38.9	49.9	39.9
Chicago*	43.6	56.6	40.4
Cleveland	41.9	52.9	37.9
Corpus Christi	31.4	41.4	33.9
Dallas	32.4	41.4	33.9
Denver	38.9	49.9	38.9
Des Moines	39.9	50.9	37.9
Detroit	40.5	53.5	39.9
Fort Worth	32.4	41.4	33.9
Houston	32.4	41.4	33.9
Indianapolis	42.9	54.9	37.9
Jacksonville	40.9	52.9	37.9
Kansas City	39.9	50.9	37.9
Little Rock	38.4	49.9	36.9
Louisville	43.9	54.9	37.9
+Los Angeles	40.8	51.8	35.9
Memphis	39.9	50.9	37.9
Miami	35.2	47.2	37.9
Milwaukee	42.9	53.9	38.9
Minn.-St. Paul	40.9	51.9	38.9
Newark	37.2	48.2	38.9
New Orleans	39.9	51.9	36.9
New York*	44.9	57.9	41.9
Norfolk	33.2	46.2	36.9
Okla. City	39.3	49.9	36.9
Omaha	42.4	54.9	39.9
Philadelphia	40.9	52.9	37.9
+Phoenix	40.5	51.5	37.9
Pittsburgh	40.9	52.9	37.9
+Portland, Ore.	41.1	52.1	36.9
Salt Lake City	36.9	47.9	36.9
San Antonio	31.9	40.9	33.9
+San Diego	40.3	51.3	36.9
+San Francisco	41.1	52.1	36.9
+Seattle	38.9	51.9	37.9
+Spokane	39.5	52.5	37.9
Springfield, Ill.*	40.9	53.9	40.9
St. Louis	40.9	51.9	38.9
Tampa	35.2	47.2	37.9
Texarkana	31.9	40.9	32.9
Tulsa	39.3	49.9	36.9
Wichita	41.9	52.9	37.9
Wichita Falls	31.9	40.9	33.9
Week's avg.	**38.86**	**50.15**	**37.56**
Mar. avg.	**36.93**	**48.20**	**37.30**
Feb. avg.	**34.45**	**45.75**	**36.79**
1974 to date	**35.87**	**47.14**	...
1973 to date	**25.38**	**36.92**	...

+ Increase, — decrease from previous week. *Pump price includes local tax ranging from 0.5 to 2.0 cents/gal.

AGD 530008

Worldwide crude production

(Daily average in thousands of bbl)

	Dec. 1973	Nov.* 1973	12-month average: Daily prod. 1972	12-month average: Daily prod. 1973	Change from: Vol.	Change from: %
WESTERN HEMISPHERE						
Argentina	420.0	415.0	433.0	418.0	− 15.0	− 3.5
Bolivia	47.0	47.0	44.0	47.0	3.0	6.8
Brazil	170.0	170.0	165.0	169.0	4.0	2.4
Canada	1,835.0	1,831.0	1,535.0	1,798.0	263.0	17.1
Chile	31.0	31.0	34.0	32.0	− 2.0	− 5.9
Colombia	200.0	200.0	198.0	199.0	1.0	0.5
Ecuador	210.0	210.0	79.0	204.0	125.0	158.2
Mexico	480.0	480.0	441.0	465.0	24.0	5.4
Peru	74.0	74.0	67.0	69.0	2.0	3.0
Trinidad	165.0	165.0	142.0	164.0	22.0	15.5
United States	9,092.0	9,110.0	9,451.0	9,189.0	−262.0	− 2.8
Venezula	3,330.0	3,384.0	3,220.0	3,364.0	144.0	4.5
Total	**16,054.0**	**16,117.0**	**15,809.0**	**16,118.0**	**309.0**	**2.0**
WESTERN EUROPE						
Austria	48.0	48.0	47.0	49.0	2.0	4.3
Denmark	4.0	4.0	4.0	4.0	....	....
France	25.0	25.0	30.0	26.0	− 4.0	− 13.3
West Germany	125.0	124.9	138.0	129.0	− 9.0	− 6.5
Italy	15.0	15.0	21.0	15.0	− 6.0	− 28.6
Netherlands	26.0	26.2	31.0	29.0	− 2.0	− 6.5
Norway	3.5	19.3	33.0	32.0	− 1.0	− 3.0
Spain	20.0	20.0	3.0	16.0	13.0	433.3
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	70.0	70.0	65.0	68.0	3.0	4.6
Total	**338.5**	**354.4**	**374.0**	**370.0**	**− 4.0**	**− 0.1**
MIDDLE EAST						
Abu Dhabi	1,016.4	1,153.0	1,050.0	1,298.0	248.0	23.6
Bahrain	68.6	68.7	70.0	68.0	− 2.0	− 2.9
Dubai	141.0	140.0	153.0	220.0	67.0	43.8
Iran	6,070.5	6,009.0	5,021.0	5,861.0	840.0	16.7
Iraq	2,136.5	2,026.0	1,446.0	1,964.0	518.0	35.8
Israel	50.0	....	108.0	88.0	− 20.0	− 18.5
Kuwait	2,555.8	2,582.0	3,285.0	3,024.0	−261.0	− 7.9
Oman	302.0	302.0	282.0	293.0	11.0	3.9
Qatar	460.4	467.0	482.0	570.0	88.0	18.3
Saudi Arabia	6,615.8	6,269.4	6,019.0	7,607.0	1,588.0	26.4
Syria	50.0	....	120.0	99.0	− 21.0	− 17.5
Turkey	70.0	70.0	65.0	66.0	1.0	1.5
Total	**19,537.0**	**19,086.7**	**18,101.0**	**21,158.0**	**3,057.0**	**16.9**
ASIA-PACIFIC						
Afghanistan	....	....	....	....	....	....
Australia	422.0	433.0	341.0	419.0	78.0	22.9
Burma	20.0	20.0	19.0	20.0	1.0	5.3
Brunei-Malaysia	340.0	340.0	276.0	320.0	44.0	15.9
India	150.0	150.0	151.0	148.0	− 3.0	− 2.0
Indonesia	1,400.0	1,391.0	1,060.0	1,324.0	264.0	24.9
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	8.5	8.5	8.5	8.5	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.3	0.3	0.3	0.3	....	....
Total	**2,359.8**	**2,359.8**	**1,872.8**	**2,256.8**	**384.0**	**20.5**
AFRICA						
Algeria	860.0	880.0	1,064.0	1,070.0	6.0	0.6
Angola	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	150.0	150.0	128.0	140.0	12.0	9.4
Congo	50.0	50.0	7.0	42.0	35.0	500.0
Egypt	30.0	30.0	212.0	165.0	− 47.0	− 22.2
Gabon	160.0	160.0	126.0	147.0	21.0	16.7
Libya	1,769.0	1,766.0	2,215.0	2,187.0	− 28.0	− 1.3
Morocco	1.0	1.0	1.0	1.0	....	....
Nigeria	2,255.2	2,238.3	1,817.0	2,053.0	236.0	13.0
Tunisia	82.0	82.0	83.0	83.0	....	....
Total	**5,372.2**	**5,372.3**	**5,665.0**	**5,902.0**	**237.0**	**4.2**
COMMUNIST						
China	860.0	860.0	600.0	860.0	260.0	43.3
Romania	275.0	275.0	275.0	275.0	....	....
U.S.S.R.	8,800.0	8,760.0	7,869.0	8,420.0	551.0	7.0
Other	110.0	110.0	100.0	110.0	10.0	....
Total	**10,045.0**	**10,005.0**	**8,844.0**	**9,665.0**	**821.0**	**9.3**
WORLD TOTAL	**53,706.5**	**53,295.2**	**50,665.8**	**55,469.8**	**4,804.0**	**9.5**

*Figures adjusted

Worldwide gas production

(Billion cu ft)

Dec. '73	Nov. '73	1973 total
21.2	22.2	241.9
13.5	13.4	151.5
4.2	3.5	48.1
276.7	266.6	3,241.4
11.9	12.8	238.2
10.0	9.9	126.2
0.4	0.5	6.4
60.1	55.8	686.2
7.1	6.6	65.9
11.1	12.1	137.4
1,901.7	1,899.8	22,854.0
168.4	172.0	1,741.4
2,486.3	**2,475.2**	**29,538.6**
6.8	4.6	72.2
....	....	....
20.7	22.2	258.5
49.8	61.2	590.1
50.2	38.6	486.9
200.7	140.1	2,589.7
....	....	....
....	....	....
101.6	90.1	1,151.6
5.0	3.4	66.2
434.8	**360.2**	**5,215.2**
....	....	....
1.0	1.2	20.3
....	....	....
144.6	143.3	1,689.3
11.2	12.0	155.3
0.1	0.1	3.1
0.2	0.1	50.6
....	....	....
0.1	0.1	7.4
....	....	....
....	....	....
....	....	....
157.2	**156.8**	**1,926.0**
4.0	13.3	80.7
15.2	12.5	149.3
0.3	0.7	6.7
....	....	....
1.0	2.0	18.1
7.2	13.0	129.1
7.1	8.1	87.2
7.0	7.8	128.1
2.0	2.1	28.7
....	....	....
43.8	**59.5**	**627.9**
1.6	1.7	119.7
1.8	2.0	24.2
....	....	....
0.1	0.5	2.9
2.0	3.2	30.7
0.0	0.1	1.6
5.0	4.9	43.2
1.7	1.9	37.2
4.5	4.2	60.4
4.6	4.6	20.8
21.3	**23.1**	**340.7**
12.0	12.8	158.1
110.4	77.4	1,302.6
673.2	720.1	8,262.7
60.9	27.6	631.1
856.5	**837.9**	**10,354.5**
3,999.9	**3,912.7**	**48,002.9**

AGO 530009

bitrarily, been assigned to this area.

CANADA

Arctic Canada's petroleum potential lies in five areas; the Baffin Shelf, northern part of Hudson Bay, Northwest Territories and Yukon mainland, the Beaufort basin (Mackenzie Delta), and the Arctic Islands.

It is estimated that these sedimentary basins hold a petroleum potential of 72 billion bbl of oil and 530 Tcf of gas. This comprises about 23% of the oil and 21% of the gas potential of the world's Arctic regions, Table 1.

The bulk of Canada's Arctic potential lies in the Beaufort basin and the Arctic Islands that together account for 81% of the oil and 86% of the gas potentials assigned to Arctic Canada. The Arctic Islands area itself contains potentials estimated at 46 billion bbl of oil and 357 Tcf of gas that comprise 64% of the oil and 67% of the gas potential of Arctic Canada or some 14% of the world's Arctic petroleum potential.

Baffin Shelf. The Baffin Shelf is a narrow belt of sediments lying offshore along the western edge of Baffin Bay and Davis Strait. Here, in waters up to 5,000 ft deep, geophysical data indicate the presence of a sedimentary section up to 20,000 ft thick. This section is assumed to consist largely of Cretaceous and younger deltaic complexes involved in a series of block faults that could provide structural traps.

A potential of 6 billion bbl of oil and 40 Tcf of gas has been tentatively assigned to the Baffin Shelf.

Table 1

Petroleum potential north of 60th parallel

	Oil potential (billion bbl)	Gas potential (Tcf)
World		
Russia	200	1,600
Alaska	40	300
Canada	72	530
Western Europe and other	7	55
Total	319	2,485
Canada		
Baffin Shelf	6	40
Hudson Bay	1	3
Mainland N.W.T. and Yukon	7	30
Beaufort basin	12	100
Arctic Islands	46	357
Total	72	530
Arctic Islands		
Lowlands	7	42
Fold belt	8	50
Sverdrup basin	25	215
Arctic Coastal plain	6	50
Total	46	357

Hudson Bay. The Hudson Bay basin is a remnant of a basin occupying a large depression on the pre-Cambrian shield. Generally, basins of this type have low hydrocarbon yields.

The present basin lies almost entirely under the waters of Hudson Bay and contains only a relatively thin section of early Paleozoic beds.

Considering the basin type and the age of the sediments, the potential here is small, in the order of 1 billion bbl of oil and 3 Tcf of gas.

Northwest Territories and Yukon mainland. The sedimentary area of the Northwest Territories and Yukon mainland is an extension of the western Canada basin.

The sedimentary section here thickens westward from the preCambrian shield into the Cordillera where several intermontane basins.

Exploration and development drilling, particularly for gas, is expected to increase markedly in the next few years as a result of both higher gas prices and the prospect of a gas pipeline extending to southern markets along the Mackenzie River valley.

A total potential of 7 billion bbl of oil and 30 Tcf of gas has been assigned to the Northwest Territories and Yukon mainland, exclusive of the Mackenzie Delta region.

Beaufort Basin (Mackenzie Delta). The Mackenzie Delta area appears to be a landward embayment of subbasin of the Arctic Coastal Plain basin, the bulk of which lies on the Continental Shelf.

This subbasin is referred to as the Beaufort basin, and is similar in many respects to the highly petroliferous Western Gulf Coast basin, which has a proved oil yield of over 80,000 bbl/cu mile of sedimentary rock and a considerably higher potential.

The Beaufort basin is bounded on the southwest by mountain ranges and on the southeast by a basement high, referred to as the Aklavik arch (Fig. 2).

To the north the sediments thicken rapidly, reaching a maximum of about 30,000 ft. Little is known of the offshore section. Geophysical data reportedly indicate the presence of structures suggestive of diapirs (salt domes, Fig. 3). END PART 1 OF 2

Fig. 2

Beaufort basin

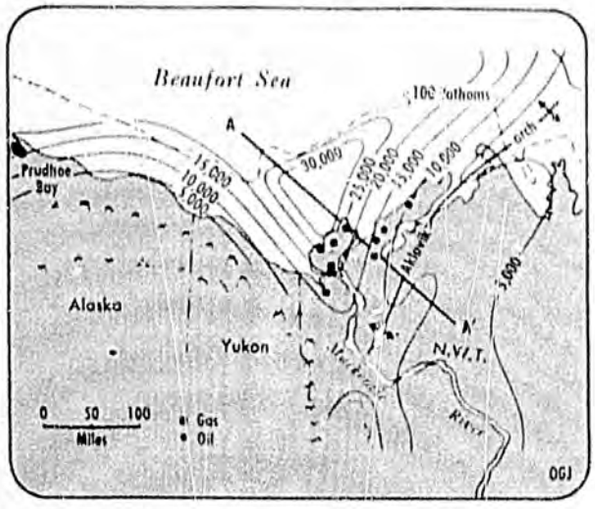
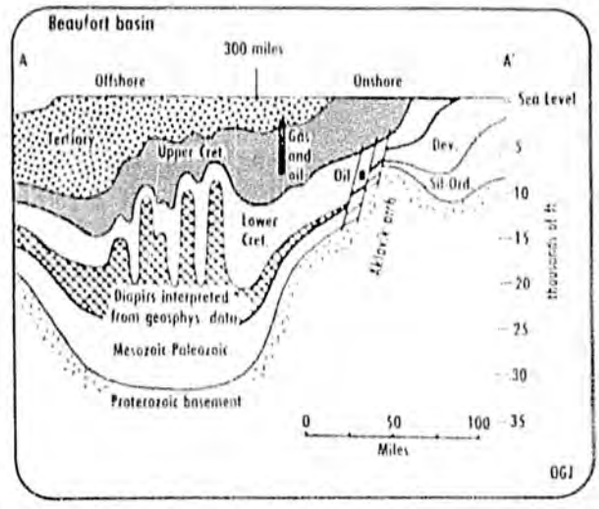


Fig. 3

Regional cross section



AGI 530010

Worldwide crude production

(Daily average in thousands of bbl)

	Nov. 1973	Oct.* 1973	Daily prod. 1972	10-month average Daily prod. 1973	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	415.0	415.0	433.0	418.0	− 15.0	3.5
Bolivia	47.0	47.0	43.0	47.0	4.0	9.3
Brazil	170.0	169.0	165.0	169.0	4.0	2.4
Canada	1,831.0	1,812.0	1,516.0	1,793.0	277.0	18.3
Chile	31.0	31.0	34.0	32.0	− 2.0	− 5.9
Colombia	200.0	200.0	198.0	199.0	1.0	0.5
Ecuador	210.0	210.0	66.0	204.0	138.0	209.1
Mexico	480.0	480.0	441.0	464.0	23.0	5.2
Peru	74.0	73.4	67.0	69.0	2.0	3.0
Trinidad	165.0	160.0	141.0	164.0	23.0	16.3
United States	9,110.0	9,123.0	9,461.0	9,193.0	−268.0	− 2.8
Venezuela	3,384.0	3,371.0	3,213.0	3,367.0	154.0	4.8
Total	**16,117.0**	**16,091.4**	**15,778.0**	**16,119.0**	**341.0**	**2.2**
WESTERN EUROPE						
Austria	48.0	48.0	47.0	49.0	2.0	4.3
Denmark	4.0	4.0	3.0	4.0	1.0	33.3
France	15.0	24.0	30.0	26.0	− 4.0	− 13.3
West Germany	126.0	126.4	138.0	130.0	− 8.0	− 5.8
Italy	15.0	15.0	22.0	15.0	− 7.0	31.8
Netherlands	26.2	27.0	27.0	29.0	2.0	6.5
Norway	38.0	38.0	34.0	36.0	2.0	5.9
Spain	20.0	20.0	3.0	15.0	12.0	400.0
United Kingdom	2.0	2.0	2.0	2.0		
Yugoslavia	70.0	70.0	64.0	68.0	4.0	6.3
Total	**374.2**	**374.4**	**370.0**	**374.0**	**4.0**	**1.8**
MIDDLE EAST						
Abu Dhabi	1,155.0	1,340.0	1,041.0	1,326.0	285.0	27.4
Bahrain	68.7	68.1	70.0	68.0	− 2.0	− 2.9
Dubai	140.0	214.0	145.0	227.0	82.0	56.6
Iran	6,009.0	5,978.0	4,964.0	5,842.0	878.0	17.7
Iraq	1,923.0	1,797.0	1,423.0	1,947.0	524.0	36.8
Israel		20.0	107.0	92.0	− 15.0	− 14.0
Kuwait	2,615.0	3,058.4	3,303.0	3,070.0	−233.0	− 7.1
Oman	300.0	304.0	282.0	292.0	10.0	3.5
Qatar	505.0	598.0	474.0	584.0	110.0	23.2
Saudi Arabia	6,269.4	7,797.9	5,956.0	7,699.0	1,743.0	29.3
Syria		20.0	119.0	104.0	− 15.0	− 12.6
Turkey	70.0	70.0	65.0	66.0	1.0	1.5
Total	**19,055.1**	**21,265.4**	**17,949.0**	**21,317.0**	**3,368.0**	**18.8**
ASIA-PACIFIC						
Afghanistan						
Australia	433.0	414.0	331.0	419.0	88.0	26.6
Burma	23.0	23.0	23.0	23.0		
Brunei-Malaysia	340.0	330.0	274.0	318.0	44.0	16.1
India	150.0	140.0	151.0	148.0	− 3.0	− 2.0
Indonesia	1,391.0	1,406.0	1,055.0	1,317.0	262.0	24.8
Japan	15.0	15.0	15.0	15.0		
Pakistan	8.0	8.0	9.0	8.0	− 1.0	11.1
Taiwan	2.0	2.0	2.0	2.0		
Thailand	0.2	0.2	0.2	0.2		
Total	**2,362.2**	**2,338.2**	**1,860.2**	**2,250.2**	**390.0**	**21.0**
AFRICA						
Algeria	880.0	1,020.0	1,061.0	1,089.0	28.0	2.6
Angola	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	150.0	150.0	125.0	139.0	14.0	9.4
Congo	50.0	50.0	7.0	41.0	34.0	485.7
Egypt	30.0	60.0	214.0	177.0	− 37.0	− 17.3
Gabon	160.0	160.0	125.0	146.0	21.0	16.8
Libya	1,766.0	2,383.7	2,215.0	2,226.0	11.0	0.5
Morocco	0.3	0.3	0.3	0.3		
Nigeria	2,200.0	2,190.4	1,809.0	2,031.0	222.0	12.3
Tunisia	83.0	83.0	83.0	83.0		
Total	**5,334.0**	**6,112.4**	**5,651.3**	**5,946.3**	**295.0**	**5.2**
COMMUNIST						
China	700.0	700.0	600.0	690.0	90.0	15.0
Romania	275.0	275.0	275.0	275.0		
U.S.S.R.	8,760.0	8,689.0	7,844.0	8,393.0	549.0	7.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
Total	**9,845.0**	**9,774.0**	**8,819.0**	**9,468.0**	**649.0**	**7.4**
WORLD TOTAL	**53,087.0**	**55,955.8**	**50,427.5**	**55,474.5**	**5,047.0**	**10.0**

*Figures adjusted

Worldwide gas production

(Billion cu ft)

	Nov. '73	Oct. '73	Cum. 1973
	22.2	21.7	220.7
	13.4	12.0	133.0
	3.5	2.9	43.9
	266.6	259.7	2,964.7
	12.8	19.7	226.3
	9.9	10.4	116.2
	0.5	0.4	6.0
	55.8	52.8	626.1
	6.6	6.7	58.8
	12.1	11.2	126.3
	1,899.8	1,900.1	20,952.3
	172.0	140.9	1,573.0
	2,475.2	**2,438.5**	**27,052.3**
	4.6	6.7	65.4
	...	...	...
	22.2	28.9	237.8
	61.2	50.4	540.3
	38.6	46.7	436.7
	140.1	200.7	2,389.0
	...	...	...
	...	...	...
	90.1	80.1	1,050.0
	3.4	4.9	61.2
	360.2	**408.4**	**4,780.4**
	...	...	...
	1.2	1.0	19.3
	...	...	...
	143.3	142.6	1,544.7
	12.0	11.7	144.1
	0.1	0.1	3.0
	0.1	0.2	50.4
	...	...	...
	0.1	0.0	7.3
	...	...	...
	...	...	...
	...	...	...
	156.8	**155.6**	**1,768.8**
	13.3	3.9	76.7
	12.5	16.0	134.1
	0.7	0.3	6.4
	...	...	...
	2.0	1.0	17.1
	13.0	7.6	121.9
	8.1	7.2	80.1
	7.8	7.1	121.1
	2.1	2.0	26.7
	...	...	...
	59.5	**45.1**	**584.1**
	1.7	1.7	81.2
	2.0	1.9	22.4
	...	...	...
	0.5	0.2	2.8
	3.2	2.7	28.7
	0.1	0.0	1.6
	4.9	4.9	38.2
	1.9	1.7	35.5
	4.2	4.2	55.9
	4.6	4.1	16.2
	23.1	**21.4**	**282.5**
	12.8	13.0	146.1
	77.4	110.4	1,192.2
	720.1	673.2	7,589.5
	27.6	60.9	570.2
	937.9	**857.5**	**9,498.0**
	3,912.7	**3,926.5**	**43,966.1**

AGD 530011

BOOKS

CRETACEOUS AND TERTIARY ROCKS OF THE SOUTHERN COLORADO PLATEAU. Edited by J. E. Fassett. Published as a Memoir of the Four Corners Geological Society, P.O. Box 1501, Durango, Colo. 81301. 218 p., 1973, $14 hardbound.

This handsome volume contains 19 papers and six abstracts on the economic geology, stratigraphy, and paleontology of the Cretaceous and Tertiary of the Four Corners area. Included for the first time are separate papers on the Dakota, Mesaverde, and Pictured Cliffs gas reservoirs of the San Juan basin authored by El Paso Natural Gas Co. geologists. Other papers deal with the economic potential of the Dakota sandstone in southwest Utah, the geology of the Project Wagon Wheel area, groundwater hydrology of the San Juan basin, and stratigraphic papers on the Dakota sandstone, the Gallup sandstone, and the Ojo Alamo sandstone. Included is a geologic road log from Durango to west and southwest of Shiprock including detailed discussion of the Upper Cretaceous sands outcropping around the northwest rim of San Juan basin.

This book offers a valuable and timely update of the geology of the Upper Cretaceous and Tertiary of the Four Corners area.

NUMBER TWO, PITFALLS IN SEISMIC INTERPRETATION. By Paul M. Tucker, Howard J. Yorston. Published by SEG, Box 3098, Tulsa, Okla. 74101. 50 pp. $2.50 to members, $3 to nonmembers. $2 orders of 50 or more per copy.

Many pitfalls in seismic interpretation are concealed in seemingly straightforward reflections. Some of these pitfalls are dug by nature and some are of our own doing. Many can be avoided. Pitfalls may be classified into three groups: those related to velocity, those related to the geometry of the reflectors, and those related to the recording, processing, and playback of the seismic data.

WATER ATLAS OF THE UNITED STATES. By James J. Geraghty et al. Published by Water Information Center, 44 Sintsink Drive East, Port Washington, N.Y. 11050. 1973. $35. 200 pp.

This undated atlas gives 122 maps in color on almost any water subject. Completely new is a group of 33 maps devoted to the nation's water quality and pollution problems.

ENCYCLOPEDIC DICTIONARY OF EXPLORATION GEOPHYSICS. By R. E. Sheriff. Published by SEG, Box 3098, Tulsa, Okla. 74101. 263 pp. 1973. $10 clothbound to members, $7 paperbound. $12.50 to nonmembers cloth, $9 paper.

This book contains 3,000 definitions of terms used in exploration geophysics, 203 illustrations, 12 tables, and 12 appendices.

ANADARKO BASIN EXPLORATION, OKLAHOMA. Compiled and edited by R. P. Brooks, Jr. Published by Petroleum Information, Box 1208, Dallas 75221 and Box 2612, Denver 80201. 1973. 246 pp.

The search for deep production in the Oklahoma part of the basin has been going on for several years. Recent discoveries have once again focused attention on the basin.

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Worldwide crude production

(Daily average in thousands of bbl)

	Sept. 1973	Aug.* 1973	9-month average Daily prod. 1972	9-month average Daily prod. 1973	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	410.0	410.0	429.0	417.0	−12.0	− 2.8
Bolivia	45.0	45.0	42.0	47.0	5.0	11.9
Brazil	168.0	168.0	165.0	168.0	3.0	1.8
Canada	1,745.0	1,809.0	1,487.0	1,793.0	306.0	20.6
Chile	31.0	31.0	34.0	32.0	− 2.0	− 5.9
Colombia	190.0	190.0	200.0	192.0	− 8.0	− 4.0
Ecuador	210.0	210.0	35.0	202.0	167.0	477.1
Mexico	470.0	470.0	441.0	460.0	19.0	4.3
Peru	67.0	67.0	66.0	67.0	1.0	1.5
Trinidad	165.0	165.0	141.0	165.0	24.0	17.0
United States	9,149.0	9,173.0	9,459.0	9,220.0	−239.0	− 2.5
Venezuela	3,395.0	3,385.0	3,207.0	3,363.0	156.0	4.9
Total	**16,045.0**	**16,123.0**	**15,706.0**	**16,126.0**	**420.0**	**2.7**
WESTERN EUROPE						
Austria	50.0	50.0	47.0	50.0	3.0	6.4
Denmark	4.0	4.0	3.0	4.0	1.0	33.3
France	27.0	27.0	31.0	27.0	− 4.0	−12.9
West Germany	130.0	130.0	139.0	131.0	− 8.0	− 5.8
Italy	22.0	20.0	22.0	20.0	− 2.0	− 9.1
Netherlands	34.0	30.8	31.0	30.0	− 1.0	− 3.2
Norway	35.0	35.0	35.0	35.0	....	....
Spain	23.0	23.0	3.0	20.0	17.0	566.7
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	70.0	70.0	63.0	71.0	8.0	12.7
Total	**395.0**	**391.8**	**376.0**	**390.0**	**14.0**	**3.7**
MIDDLE EAST						
Abu Dhabi	1,381.0	1,330.0	1,023.0	1,343.0	320.0	31.3
Bahrain	68.0	68.0	72.0	68.0	− 4.0	− 5.6
Dubai	273.0	293.0	132.0	238.0	106.0	80.3
Iran	5,793.0	5,702.0	4,879.0	5,808.0	929.0	19.0
Iraq	2,167.0	2,093.0	1,394.0	1,966.0	572.0	41.0
Israel	110.0	110.0	105.0	110.0	5.0	4.8
Kuwait	3,479.5	3,010.0	3,264.0	3,106.0	−158.0	− 4.8
Oman	302.1	298.0	282.0	290.0	8.0	2.8
Qatar	608.3	568.0	454.0	591.0	137.0	30.2
Saudi Arabia	8,533.5	8,425.0	5,806.0	7,829.0	2,023.0	34.8
Syria	120.0	120.0	118.0	120.0	2.0	1.7
Turkey	65.0	65.0	65.0	65.0	....	....
Total	**22,900.4**	**22,082.0**	**17,594.0**	**21,534.0**	**3,940.0**	**22.4**
ASIA-PACIFIC						
Afghanistan	....	....	....	....	....	....
Australia	427.0	439.0	314.0	418.0	104.0	33.1
Burma	20.0	20.0	19.0	20.0	1.0	5.3
Brunei-Malaysia	330.0	330.0	270.0	320.0	50.0	18.5
India	150.0	150.0	151.0	150.0	− 1.0	− 0.7
Indonesia	1,350.0	1,355.0	1,033.0	1,295.0	262.0	25.4
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	9.0	9.0	9.0	9.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.2	0.2	0.2	0.2	....	....
Total	**2,303.2**	**2,320.2**	**1,813.2**	**2,229.2**	**416.0**	**22.9**
AFRICA						
Algeria	1,100.0	1,100.0	1,057.0	1,105.0	48.0	4.5
Angola	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	140.0	140.0	124.0	135.0	11.0	8.9
Congo	45.0	45.0	6.0	39.0	33.0	550.0
Egypt	235.0	235.0	216.0	212.0	− 4.0	− 1.9
Gabon	155.0	155.0	125.0	142.0	17.0	13.6
Libya	2,286.0	2,108.0	2,228.0	2,259.0	31.0	1.4
Morocco	0.3	0.3	0.3	0.3	....	....
Nigeria	2,101.9	2,100.0	1,789.0	1,990.0	201.0	11.2
Tunisia	85.0	85.0	82.0	80.0	− 2.0	2.4
Total	**6,161.2**	**5,983.3**	**5,619.3**	**5,976.3**	**337.0**	**6.0**
Communist	47,806.8	46,900.3	41,128.5	46,255.5	5,127.0	12.5
China	630.0	630.0	570.0	610.0	40.0	7.0
Romania	275.0	275.0	275.0	275.0	....	....
U.S.S.R.	8,663.0	8,454.0	7,845.0	8,316.0	471.0	6.0
Other	110.0	110.0	95.0	110.0	15.0	15.8
Total	**9,678.0**	**9,469.0**	**8,785.0**	**9,311.0**	**526.0**	**6.0**
WORLD TOTAL	**57,484.8**	**56,369.3**	**49,913.5**	**55,566.5**	**5,653.0**	**11.3**

*Figures adjusted.

Gas production

(billions cu ft)

	Sept. '73	Aug. '73	Cum. 1973
WESTERN HEMISPHERE			
Argentina	23.6	20.0	176.8
Bolivia	12.1	14.2	112.6
Brazil	3.2	5.6	37.5
Canada	244.3	271.4	2,438.4
Chile	21.1	20.8	193.8
Colombia	9.5	12.6	95.9
Ecuador	0.5	0.6	5.1
Mexico	54.0	60.1	517.5
Peru	7.0	7.1	45.5
Trinidad	9.2	13.6	103.0
United States	1,811.9	1,870.3	17,152.4
Venezuela	141.1	140.2	1,260.1
Total	**2,337.5**	**2,436.5**	**22,138.6**
WESTERN EUROPE			
Austria	5.2	5.0	54.1
Denmark	....	....	....
France	17.1	16.0	196.7
West Germany	46.2	41.7	428.7
Italy	42.1	40.6	351.4
Netherlands	193.9	249.2	2,048.2
Norway	....	....	....
Spain	....	....	....
United Kingdom	76.8	98.3	879.8
Yugoslavia	3.6	5.0	52.9
Total	**384.9**	**455.8**	**4,011.8**
MIDDLE EAST			
Abu Dhabi	....	....	....
Bahrain	1.1	1.2	17.1
Dubai	....	....	....
Iran	143.7	143.7	1,258.8
Iraq	12.7	14.1	120.4
Israel	0.1	0.1	2.8
Kuwait	0.2	0.4	50.1
Oman	....	....	....
Qatar	0.1	0.1	7.2
Saudi Arabia	....	....	....
Syria	....	....	....
Turkey	....	....	....
Total	**157.9**	**163.2**	**1,456.4**
ASIA-PACIFIC			
Afghanistan	4.1	4.2	59.5
Australia	14.2	14.4	105.6
Burma	0.4	0.6	5.4
Brunei-Malaysia	....	....	....
India	1.1	1.2	14.1
Indonesia	8.9	9.8	101.3
Japan	6.1	6.7	64.8
Pakistan	8.2	9.4	106.2
Taiwan	1.9	2.3	22.6
Thailand	....	....	....
Total	**44.9**	**48.6**	**479.5**
AFRICA			
Algeria	1.6	8.0	77.8
Angola	3.2	1.2	18.5
Cabinda	....	....	....
Congo	0.4	0.6	2.1
Egypt	3.1	2.0	22.8
Gabon	0.1	0.1	1.5
Libya	6.2	3.0	28.4
Morocco	2.5	6.2	31.9
Nigeria	4.9	4.3	47.5
Tunisia	5.4	0.1	7.5
Total	**27.4**	**25.5**	**238.0**
Communist			
China	12.4	11.9	120.3
Romania	111.2	109.4	1,004.4
U.S.S.R.	653.1	701.2	6,142.2
Other	51.7	48.6	481.7
Total	**828.4**	**871.1**	**7,748.6**
WORLD TOTAL	**3,781.0**	**4,000.7**	**36,072.9**

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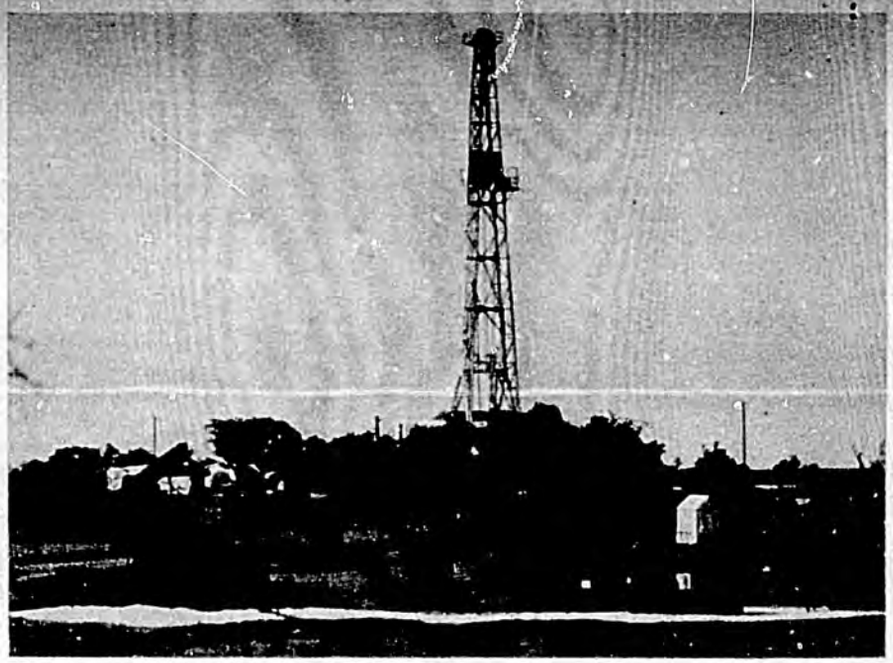

EARLY oil giant enjoys revival.

Activity sparks pioneer oil field

ONE of oildom's oil giants, Sho-Vel-Tum field in southern Oklahoma, is enjoying a prolific revival with new drilling in new zones. Here Continental Oil Co. is drilling below 8,035 ft to a 14,000-ft Arbuckle Cambro-Ordovician objective at 1 Harris Fletcher "B" in NE SE SW 6-2s-3w. Location is in an old producing area south of the main field area, a field that covers a large section of southern Oklahoma. (Staff photo)

Springer sand hunt intensifies

SPRINGER sand exploration in Oklahoma is picking up speed with new successes and new plans announced.

Apexco Inc. is deep in the play with completion reported at 1 Buell, C NW 11-11n-12w, northern Caddo County. Location is 10 miles southwest of new Springer production at North Niles field in western Canadian County. Open flow tests had 6,200 Mcfd from perforations at 13,904 ft.

Other exploration news in the western part of Oklahoma includes a rank wildcat in the only dry county in the state. Woods Petroleum Co. will drill to 5,000 ft at 1 Toler in C SW SE 14-1n-25w. Location is 40 miles from Henderson pay production in Tillman County. Well site is 6 miles north of Red River in Harmon County.

Production is reported at a well in Northwest Oakwood field, eastern Dewey County. Wessely Energy 1 Blaine Unit, C NE NE 11-17n-15w, 2 miles southwest of Morrow Pennsylvanian production, flowed gas and condensate on tests at 9,359-9,950 ft.

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AGO 530014

Worldwide crude production

(Daily average in thousands of bbl)

	Aug. 1973	July* 1973	8-month average Daily prod. 1972	8-month average Daily prod. 1973	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	410.0	408.0	429.0	418.0	− 11.0	− 2.6
Bolivia	45.0	45.0	41.0	47.0	6.0	14.6
Brazil	168.0	168.0	165.0	168.0	3.0	1.8
Canada	1,794.0	1,813.0	1,483.0	1,794.0	311.0	21.0
Chile	31.0	31.0	34.0	32.0	− 2.0	− 5.9
Colombia	190.0	190.0	201.0	193.0	− 8.0	− 4.0
Ecuador	210.0	210.0	22.0	201.0	179.0	813.6
Mexico	475.0	470.0	441.0	459.0	18.0	4.1
Peru	67.0	67.0	66.0	67.0	1.0	1.5
Trinidad	165.0	165.0	140.0	165.0	25.0	17.9
United States	9,173.0	9,199.0	9,457.0	9,229.0	−228.0	− 2.4
Venezuela	3,385.0	3,380.0	3,194.0	3,359.0	165.0	5.2
Total	**16,113.0**	**16,146.0**	**15,673.0**	**16,132.0**	**459.0**	**2.9**
WESTERN EUROPE						
Austria	50.0	50.0	47.0	49.0	2.0	4.3
Denmark	4.0	4.0	2.0	4.0	2.0	100.0
France	27.0	27.0	31.0	27.0	− 4.0	−12.9
West Germany	130.0	130.0	139.0	131.0	− 8.0	− 5.8
Italy	20.0	20.0	22.0	20.0	− 2.0	− 9.1
Netherlands	36.0	27.4	31.0	30.0	− 1.0	− 3.2
Norway	35.0	34.7	35.0	35.0	....	....
Spain	23.0	23.0	3.0	19.0	16.0	533.3
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	70.0	70.0	62.0	71.0	9.0	14.5
Total	**397.0**	**388.1**	**374.0**	**388.0**	**14**	**3.7**
MIDDLE EAST						
Abu Dhabi	1,350.0	1,367.6	1,001.0	1,345.0	344.0	34.4
Bahrain	68.0	68.0	72.0	68.0	− 4.0	− 5.6
Dubai	293.0	247.0	132.0	234.0	102.0	77.3
Iran	5,702.0	5,873.9	4,862.0	5,810.0	948.0	19.5
Iraq	2,093.0	2,083.1	1,383.0	1,942.0	559.0	40.4
Israel	100.0	100.0	100.0	100.0	....	....
Kuwait	3,010.0	3,281.3	3,234.0	3,060	−174.0	− 5.4
Oman	298.0	298.0	282.0	288.0	6.0	2.1
Qatar	568.0	605.1	452.0	588.0	136.0	30.1
Saudi Arabia	8,425.0	8,684.1	5,731.0	7,742.0	2,011.0	35.1
Syria	120.0	120.0	117.0	120.0	3.0	2.6
Turkey	65.0	65.0	65.0	65.0	....	....
Total	**22,092.0**	**22,793.1**	**17,431.0**	**21,362.0**	**3,931.0**	**22.6**
ASIA-PACIFIC						
Afghanistan	....	....	....	....	....	....
Australia	445.0	445.0	303.0	417.0	114.0	37.6
Burma	20.0	20.0	19.0	20.0	1.0	5.3
Brunei-Malaysia	330.0	330.0	268.0	319.0	51.0	19.0
India	150.0	150.0	151.0	149.0	− 2.0	− 1.3
Indonesia	1,347.0	1,334.0	1,061.0	1,288.0	272.0	26.8
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	9.0	9.0	9.0	9.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.2	0.2	0.2	0.2	....	....
Total	**2,318.2**	**2,305.2**	**1,783.2**	**2,219.2**	**436.0**	**24.5**
AFRICA						
Algeria	1,100.0	1,100.0	1,055.0	1,106.0	51.0	4.8
Angolia	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	140.0	140.0	123.0	134.0	11.0	8.9
Congo	45.0	45.0	6.0	38.0	32.0	533.3
Egypt	235.0	235.0	216.0	209.0	− 7.0	− 3.2
Gabon	155.0	154.2	124.0	140.0	16.0	12.9
Libya	2,108.0	2,189.4	2,240.0	2,256.0	16.0	0.7
Morocco	0.3	0.3	0.3	0.3	....	....
Nigeria	2,101.9	1,990.5	1,779.0	1,977.0	198.0	11.1
Tunisia	85.0	85.0	82.0	79.0	− 3.0	3.7
Total	**5,985.2**	**5,954.4**	**5,637.3**	**5,953.3**	**316.0**	**5.6**
COMMUNIST						
China	630.0	630.0	570.0	610.0	40.0	7.0
Romania	275.0	275.0	275.0	275.0	....	....
U.S.S.R.	8,525.0	8,454.0	7,805.0	8,273.0	468.0	6.0
Other	105.0	105.0	90.0	105.0	15.0	16.7
Total	**9,535.0**	**9,464.0**	**8,740.0**	**9,263.0**	**523.0**	**6.0**
WORLD TOTAL	**56,440.4**	**57,046.0**	**49,638.5**	**55,317.5**	**5,679.0**	**10.3**

*Figures adjusted

Gas production

(billions cu ft)

	Aug.'73	July '73	Cum. 1973
	20.0	19.8	153.2
	14.2	12.8	100.5
	5.6	4.9	34.3
	271.4	277.5	2,194.1
	20.8	21.2	172.7
	12.6	13.0	86.4
	0.6	0.7	4.6
	60.1	60.2	463.5
	7.1	7.2	38.5
	13.6	14.9	93.8
	1,870.3	1,871.2	15,340.5
	140.2	139.3	1,119.0
	2,436.5	**2,442.7**	**19,801.1**
	5.0	4.9	48.9
	....	....	....
	15.0	18.8	179.6
	41.7	48.7	382.5
	40.6	39.4	309.3
	249.2	251.1	1,854.3
	....	....	....
	....	....	....
	98.3	100.7	803.0
	5.0	4.9	49.3
	455.8	**468.5**	**3,626.9**
	....	....	....
	1.2	1.8	16.0
	....	....	....
	143.7	139.2	1,115.1
	14.1	14.2	107.7
	0.1	0.1	2.7
	0.4	4.3	49.9
	....	....	....
	0.1	1.1	7.1
	....	....	....
	....	....	....
	....	....	....
	163.2	**160.7**	**1,298.5**
	4.2	6.4	55.4
	14.4	11.9	91.4
	0.6	0.7	5.0
	....	....	....
	1.2	1.1	13.0
	9.8	10.9	92.4
	6.7	7.9	58.7
	9.4	10.3	98.0
	2.3	1.8	20.7
	....	....	....
	48.6	**51.0**	**434.6**
	8.0	7.9	76.2
	1.2	1.6	15.3
	....	....	....
	0.6	0.4	1.7
	2.0	1.9	19.7
	0.1	0.1	1.4
	3.0	2.7	22.2
	6.2	6.2	29.4
	4.3	4.8	42.6
	0.1	0.1	2.1
	25.5	**25.7**	**210.6**
	11.9	11.2	107.9
	109.4	111.7	893.2
	701.2	691.2	5,572.0
	48.6	50.6	430.0
	871.1	**864.7**	**7,003.1**
	4,000.7	**4,013.3**	**32,374.8**

AGO 530015

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1 — FRANKS EXPLORER 658, D/D, w/SKYTOP 96' hyd. derrick (2 yrs. old), mtd on FRANKS 4-axle, CUMMINS NHRS 320 diesel.
1 — FRANKS CRUISER 658 DTM, D/D, w/ FRANKS derrick, mtd. on FRANKS 4-axle, CUMMINS NH 250.
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1 — HOPPER HOIST GXXA, D/D, w/PENCO 96' hyd. mast 96-150-C (mast new 7-20-72) mtd. on HOPPER tandem, CUMMINS NH 220 diesel.
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Offers are invited for the sale of a complete National 130 drilling rig at present located in New Plymouth, New Zealand. The rig comprises: Ideal/Oweco 130 drawworks, National type 160 4 engine compound with Paxman 12 RPHX engines. Two complete Mitchell derricks, API 19, 140x30, complete with sub-structures and engine substructures. Two mud pumps, National E700 power ends with H1250K and G-1000-C fluid ends. Other equipment includes Ideal 754F crown block. Ideal 645F travelling block and 654-F-450 hook block assembly. 27½" and 20½" rotary tables, 10" and 12" B.O.P. stacks, 3000 PSI Koomey system, also A.C. generators, swivels, kellys, etc. Mud plant of tanks, Rumba shale shaker, desander, Swaco de-gasser and Gardner Denver FZ-FXZ mixing pumps. Included would be all spare parts held by Shell BP and Todd for the above rig. Additional drilling and handling tools are also available. For further particulars interested parties should contact:

Shell BP and Todd Oil Services Ltd.
P.O. Box 541,
New Plymouth, New Zealand.
Telephone 87609, Telex NZ3374.

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Quantity	Make	Model	Horsepower
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3	Clark	HLA-10	2500
6	IR	KVG-8	800
3	IR	KVG-6	600
2	Clark	HRA-6	600
9	Clark	RA-6	600
3	Clark	RA-5	500
3	CB	GMV	600
10	Clark	RA-32	300
12	IR	XVG	300

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AGO 530016

Worldwide crude production

	July 1973	June* 1973	7-month average Daily prod. 1972	7-month average Daily prod. 1973	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	418.0	418.0	430.0	421.0	− 9.0	− 2.1
Bolivia	50.0	50.0	40.0	50.0	10.0	25.0
Brazil	168.0	168.0	165.0	168.0	3.0	1.8
Canada	1,813.0	1,725.0	1,472.0	1,799.0	327.0	22.2
Chile	35.0	35.0	35.0	35.0	....	....
Colombia	200.0	200.0	201.0	200.0	− 1.0	− 0.5
Ecuador	210.0	192.5	16.0	198.0	182.0	....
Mexico	470.0	460.0	442.0	457.0	15.0	3.4
Peru	70.0	70.0	65.0	70.0	5.0	7.7
Trinidad	165.0	165.0	139.0	165.0	26.0	18.7
Venezuela	3,380.0	3,417.4	3,182.0	3,355.0	173.0	5.4
TOTAL	**6,979.0**	**6,900.9**	**6,187.0**	**6,918.0**	**731.0**	**11.8**
EUROPE						
Austria	48.0	47.0	46.0	47.0	1.0	2.2
Denmark	4.0	4.0	1.0	4.0	3.0	300.0
France	27.0	27.0	32.0	27.0	− 5.0	−15.6
West Germany	130.0	130.5	140.0	131.0	− 9.0	− 6.4
Italy	20.0	20.0	22.0	19.0	− 3.0	−13.6
Netherlands	27.4	30.0	32.0	29.0	− 3.0	− 9.4
Norway	35.7	40.0	34.0	36.0	2.0	5.9
Spain	23.0	23.0	3.0	19.0	16.0	533.3
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	70.0	70.0	61.0	71.0	10.0	16.4
TOTAL	**387.1**	**393.6**	**373.0**	**385.0**	**2.0**	**3.2**
MIDDLE EAST						
Abu Dhabi	1,367.6	1,328.0	981.0	1,344.0	363.0	37.0
Bahrain	68.3	68.7	72.0	68.0	− 4.0	− 5.6
Dubai	247.0	210.0	132.0	225.0	93.0	70.5
Iran	5,873.9	5,797.0	4,845.0	5,826.0	981.0	20.2
Iraq	2,083.1	2,020.0	1,398.0	1,919.0	521.0	37.3
Israel	100.0	100.0	110.0	100.0	−10.0	− 9.0
Kuwait	3,289.1	2,821.5	3,177.0	3,069.0	−108.0	− 3.4
Oman	298.0	286.0	281.0	287.0	6.0	2.1
Qatar	705.1	560.0	441.0	606.0	165.0	37.4
Saudi Arabia	8,691.9	7,521.3	5,949.0	7,644.0	1,995.0	35.3
Syria	120.0	120.0	117.0	120.0	3.0	2.6
Turkey	64.0	64.0	64.0	64.0	....	....
TOTAL	**22,908.0**	**20,896.5**	**17,267.0**	**21,272.0**	**4,005.0**	**23.2**
ASIA-PACIFIC						
Afghanistan	....	....	....	....	....	....
Australia	445.0	436.0	292.0	413.0	121.0	41.4
Burma	20.0	20.0	18.0	20.0	2.0	11.1
Brunei-Malaysia	330.0	320.0	264.0	317.0	53.0	20.1
India	150.0	150.0	151.0	149.0	− 2.0	− 1.3
Indonesia	1,253.0	1,275.3	998.0	1,220.0	222.0	22.2
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	9.0	9.0	9.0	9.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.2	0.2	0.3	0.2	− 0.1	−33.3
TOTAL	**2,224.2**	**2,227.5**	**1,749.3**	**2,145.2**	**395.9**	**22.6**
AFRICA						
Algeria	1,100.0	1,100.0	1,051.0	1,107.0	56.0	5.3
Angola	15.0	13.0	12.0	14.0	2.0	16.7
Cabinda	140.0	132.0	122.0	133.0	11.0	9.0
Congo (Brazzaville)	47.0	47.0	6.0	38.0	32.0	533.3
Egypt	235.0	177.0	216.0	205.0	−11.0	− 5.1
Gabon	150.0	150.0	124.0	138.0	14.0	11.3
Libya	2,189.4	2,289.0	2,261.0	2,277.0	16.0	0.7
Morocco	0.3	0.3	0.3	0.3	....	....
Nigeria	2,000.0	1,999.0	1,764.0	1,957.0	193.0	10.9
Tunisia	85.0	85.0	81.0	79.0	− 2.0	− 2.5
TOTAL	**5,961.7**	**5,992.3**	**5,637.3**	**5,948.3**	**311.0**	**5.5**
NONCOMMUNIST	38,460.0	36,410.8	31,213.6	36,668.5	5,454.9	17.5
United States	9,199.0	9,214.0	9,449.0	9,238.0	−211.0	− 2.2
TOTAL	**47,659.0**	**45,624.8**	**40,662.6**	**45,906.5**	**5,243.9**	**12.9**
COMMUNIST AREA						
China	600.0	600.0	550.0	600.0	50.0	9.1
Romania	275.0	275.0	275.0	275.0	....	....
Russia	8,454.0	8,371.0	7,764.0	8,230.0	466.0	6.0
Other	105.0	105.0	105.0	105.0	....	....
TOTAL	**9,434.0**	**9,351.0**	**8,694.0**	**9,210.0**	**516.0**	**5.9**
WORLD TOTAL	**57,093.0**	**54,975.8**	**49,356.6**	**55,116.5**	**5,759.9**	**11.7**

*Figures Adjusted.

Worldwide gas production

(Billions cu ft)

	July '73	June '73	1973 cum.
WESTERN HEMISPHERE			
Argentina	19.8	20.2	133.2
Bolivia	12.8	13.6	86.3
Brazil	4.9	6.2	28.7
Canada	277.5	252.7	1,922.7
Chile	21.2	24.0	151.9
Colombia	13.0	12.8	73.8
Ecuador	0.7	0.8	4.0
Mexico	60.2	60.1	403.4
Peru	7.2	6.1	31.4
Trinidad	14.9	13.6	80.2
Venezuela	139.3	140.2	978.8
TOTAL	**571.5**	**550.1**	**3,894.4**
EUROPE			
Austria	4.9	6.2	43.9
Denmark	....	....	....
France	18.8	18.1	163.6
West Germany	48.7	50.2	340.8
Italy	39.4	40.0	268.7
Netherlands	251.1	246.2	1,605.1
Norway	....	....	....
Spain	....	....	....
United Kingdom	100.7	101.7	704.7
Yugoslavia	4.9	6.0	44.3
TOTAL	**468.5**	**468.4**	**3,171.1**
MIDDLE EAST			
Abu Dhabi	....	....	....
Bahrain	1.8	2.1	14.8
Dubai	....	....	....
Iran	139.2	142.7	971.4
Iraq	14.2	15.1	93.6
Israel	0.1	0.2	2.6
Kuwait	4.3	5.0	45.9
Oman	....	....	....
Qatar	1.1	1.0	7.0
Saudi Arabia	....	....	....
Syria	....	....	....
Turkey	....	....	....
TOTAL	**160.7**	**166.1**	**1,135.3**
ASIA-PACIFIC			
Afghanistan	6.4	6.7	51.2
Australia	11.9	12.5	77.0
Burma	0.7	0.6	4.4
Brunei-Malaysia	....	....	....
India	1.1	1.0	11.8
Indonesia	10.9	11.0	82.6
Japan	7.9	7.6	52.0
Pakistan	10.3	11.0	88.6
Taiwan	1.8	2.0	18.4
Thailand	....	....	....
TOTAL	**51.0**	**52.4**	**386.0**
AFRICA			
Algeria	7.9	8.0	68.2
Angola	1.6	1.7	14.1
Cabinda	....	....	....
Congo (Brazzaville)	0.4	0.1	1.1
Egypt	1.9	2.0	17.7
Gabon	0.1	0.1	1.3
Libya	2.7	2.4	19.2
Morocco	6.2	2.0	23.2
Nigeria	4.8	5.6	38.3
Tunisia	0.1	0.2	2.0
TOTAL	**25.7**	**22.1**	**185.1**
NONCOMMUNIST	1,277.4	1,259.1	8,771.9
United States	1,871.2	1,889.3	13,470.2
TOTAL	**3,148.6**	**3,148.4**	**22,242.1**
COMMUNIST AREA			
China	11.2	12.0	96.0
Romania	111.7	110.9	783.8
Russia	691.2	688.4	4,870.8
Other	50.6	49.9	381.4
TOTAL	**864.7**	**861.2**	**6,132.0**
WORLD TOTAL	**4,013.3**	**4,009.6**	**28,374.1**

AGO 530017

BOOKS

OIL AND GAS INTERNATIONAL YEAR BOOK. Published by Walter R. Skinner, 388-389 10 Bolt Court, London EC4A 3HL, England. 1973. Post paid 8 pounds or $24. Via air 11 pounds or $33. 812 pp.

The 1973 edition of Skinner's Oil & Gas International Year Book (formerly Oil & Petroleum International Year Book) contains particulars of over 1,200 companies including a number of new companies in the gas industry. The book is recognized as the foremost reference work of its kind, with a coverage both worldwide and detailed. The many companies registered abroad are distinguished by an entry immediately beneath the title giving the date and place of incorporation; where the date of registration alone is mentioned, the company is registered in the United Kingdom.

Again, each company entry has been reviewed and, where necessary, revised in the light of additional information received since the previous volume. The information thus recorded is the latest available at the time of going to press.

This edition has been considerably enlarged with new features: (a) North Sea section showing map with major discoveries together with extensive list of U.K. concession participants, (b) a cross-reference Index to the titles of nearly 3,500 oil, gas and associate companies appearing in this volume, (c) refining, tanker and consumption tables. Established features —"Geographical Index," "Suppliers' Directory and Buyers' Guide," "World Production Table," "Professional Services," and "Australian Oil Map" have been retained and updated.

MINERAL EXPLORATION, MINING, AND PROCESSING PATENTS, 1972. By Oliver S. North. 812 South Ode St., Arlington, Va. 22204. 319 pp. 1937. $25.

This subject-classified, fully indexed volume of abstracts of the 1972 patent literature is of both immediate and long-term reference value to executives, research and planning engineers, and all professional personnel charged with responsibility in one or more of the following areas: exploring for metallic and nonmetallic minerals, mining mineral deposits, beneficiating ores and concentrating minerals, extracting metals from ores, refining primary metals, and supplying reagents and equipment to the minerals industry.

EUROPEAN MODEL CODE OF SAFE PRACTICE IN THE STORAGE AND HANDLING OF PETROLEUM PRODUCTS. PART I: OPERATIONS. Published by Applied Science Publishers Ltd., 22 Rippleside Commercial Estate, Barking, Essex, England. 1973. 84 pp.

SAND AND SANDSTONE. By Pettijohn-Potter-Siever, Published by Springer-Verlag, 175 Fifth Avenue, New York 10010. 1973. 615 pp. $14.50.

This book is the outgrowth of a week-long conference on sandstone organized by the authors in Banff, 196[illegible] under the auspices of the Alberta Association of Petroleum Geologists and the University of Alberta. It was again held in 1965 in Bloomington, Ind., at the University of Indiana. A 200-page syllabus was prepared for the second conference.

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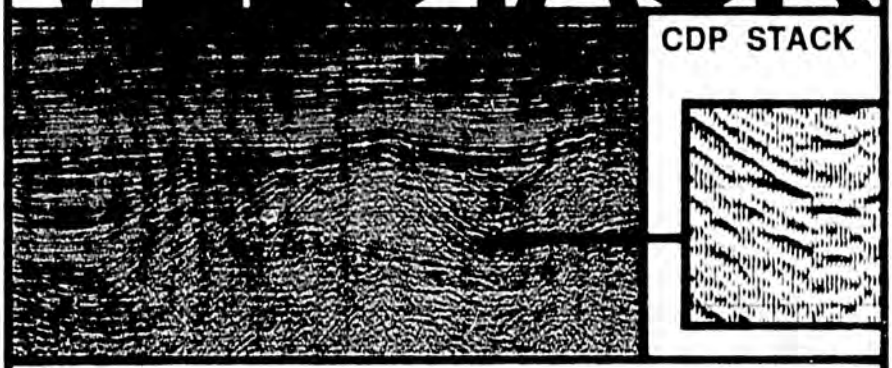

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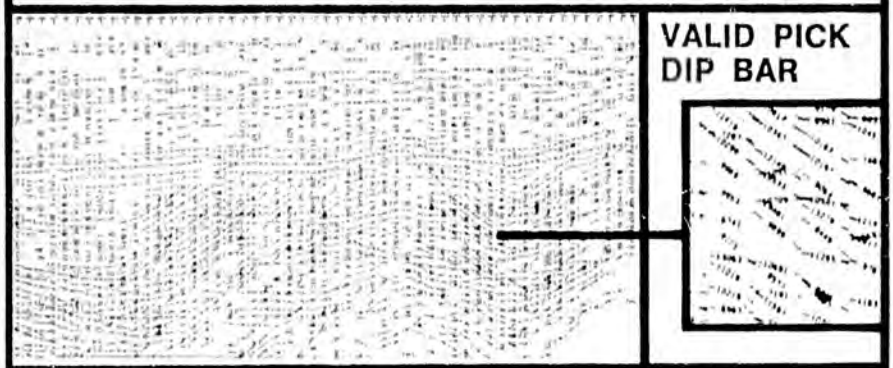

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AGO 530018

Worldwide crude production

(Daily average in thousands of bbl)

	June 1973	May* 1973	6-month average Daily prod. 1972	6-month average Daily prod. 1973	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	422.0	422.0	430.0	432.0	2.0	0.5
Bolivia	50.0	50.0	40.0	50.0	10.0	25.0
Brazil	165.0	165.0	168.0	165.0	— 3.0	— 1.8
Canada	1,900.3	1,731.0	1,461.0	1,809.0	348.0	23.8
Chile	35.0	35.0	32.0	35.0	3.0	9.4
Colombia	200.0	200.0	202.0	200.0	— 2.0	— 1.0
Ecuador	192.5	150.0	7.0	197.0	190.0	....
Mexico	475.0	475.0	442.0	468.0	26.0	5.9
Peru	70.0	70.0	66.0	70.0	4.0	6.1
Trinidad	165.0	165.0	141.0	165.0	24.0	17.0
Venezuela	3,373.0	3,415.0	3,166.0	3,338.0	172.0	5.4
TOTAL	**7,047.8**	**6,878.0**	**6,155.0**	**6,929.0**	**774.0**	**12.6**
EUROPE						
Austria	47.0	47.0	46.0	47.0	1.0	2.2
Denmark	4.0	4.0	....	4.0	4.0	....
France	30.0	30.0	32.0	30.0	— 2.0	— 6.3
West Germany	130.0	129.7	140.0	131.0	— 9.0	— 6.4
Italy	20.0	20.0	22.0	20.0	— 2.0	— 9.1
Netherlands	30.0	30.0	32.0	30.0	— 2.0	— 6.3
Norway	40.0	38.6	33.0	36.0	3.0	9.1
Spain	23.0	23.0	3.0	18.0	15.0	500.0
United Kingdom	2.0	2.0	2.0	2.0	....	....
Yugoslavia	70.0	70.0	60.0	70.0	10.0	16.7
TOTAL	**396.0**	**394.3**	**370.0**	**388.0**	**18.0**	**4.9**
MIDDLE EAST						
Abu Dhabi	1,298.0	1,384.0	984.0	1,335.0	351.0	35.7
Bahrain	68.7	68.4	73.0	68.0	— 5.0	— 6.8
Dubai	210.0	239.0	129.0	222.0	93.0	72.1
Iran	5,827.0	5,843.0	4,829.0	5,823.0	994.0	20.6
Iraq	2,020.0	2,046.0	1,475.0	1,891.0	416.0	28.2
Israel	110.0	110.0	120.0	110.0	— 10.0	— 8.3
Kuwait	2,855.0	2,825.0	3,239.0	3,036.0	—203.0	— 6.3
Oman	286.0	288.0	279.0	285.0	6.0	2.2
Qatar	560.0	586.0	435.0	589.0	154.0	35.4
Saudi Arabia	7,554.8	8,318.0	5,686.0	7,470.0	1,784.0	31.4
Syria	120.0	120.0	118.0	120.0	2.0	1.7
Turkey	70.0	70.0	64.0	69.0	5.0	7.8
TOTAL	**20,979.5**	**21,897.4**	**17,431.0**	**21,018.0**	**3,587.0**	**20.6**
ASIA-PACIFIC						
Afghanistan	....	....	....	....	....	....
Australia	436.6	431.0	322.0	408.0	86.0	26.7
Burma	20.0	20.0	18.0	20.0	2.0	11.1
Brunei-Malaysia	320.0	320.0	278.0	315.0	37.0	13.3
India	150.0	150.0	152.0	150.0	— 2.0	— 1.3
Indonesia	1,350.0	1,325.0	1,029.0	1,235.0	206.0	20.0
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	9.0	9.0	9.0	9.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.3	0.3	0.3	0.3	....	....
TOTAL	**2,302.9**	**2,272.3**	**1,825.3**	**2,154.3**	**329.0**	**18.0**
AFRICA						
Algeria	1,110.0	1,110.0	1,044.0	1,108.0	64.0	6.1
Angola	13.0	13.0	12.0	13.0	1.0	8.3
Cabinda	132.0	132.0	124.0	132.0	8.0	6.5
Congo (Brazzaville)	48.0	47.1	8.0	36.8	28.8	360.0
Egypt	210.0	216.0	218.0	200.0	— 18.0	— 8.3
Gabon	148.0	147.7	130.0	135.2	5.2	0.4
Libya	2,289.0	2,264.0	2,301.0	2,292.0	— 9.0	— 0.4
Morocco	0.3	0.3	0.3	0.3	....	....
Nigeria	1,998.0	1,948.4	1,759.0	1,941.0	182.0	10.3
Tunisia	85.0	85.0	80.0	85.0	5.0	6.3
TOTAL	**6,033.3**	**5,963.5**	**5,676.3**	**5,943.3**	**267.0**	**4.7**
NONCOMMUNIST	36,759.5	37,405.5	31,457.6	36,432.6	4,975.0	15.8
United States	9,206.0	9,216.0	9,437.0	9,242.0	—195.0	— 2.1
TOTAL	**45,965.5**	**46,621.5**	**40,894.6**	**45,674.6**	**4,780.0**	**11.7**
COMMUNIST AREA						
China	600.0	600.0	550.0	600.0	50.0	9.1
Romania	275.0	275.0	275.0	275.0	....	....
Russia	8,371.0	8,289.0	7,795.0	8,187.0	392.0	5.0
Other	105.0	105.0	105.0	105.0	....	....
TOTAL	**9,351.0**	**9,269.0**	**8,725.0**	**9,167.0**	**442.0**	**5.1**
WORLD TOTAL	**55,316.5**	**55,890.5**	**49,619.6**	**54,841.6**	**5,222.0**	**10.5**

*Figures adjusted. †On stream July 1972.

Worldwide gas production

(Billions cu ft)

	June '73	May '73	1973 cum.
WESTERN HEMISPHERE			
Argentina	20.2	19.2	113.4
Bolivia	13.6	12.4	73.5
Brazil	6.2	4.1	23.8
Canada	252.7	267.4	1,645.2
Chile	24.0	20.7	130.7
Colombia	12.8	11.1	60.8
Ecuador	0.8	0.5	3.3
Mexico	60.1	54.4	343.2
Peru	6.1	4.0	24.2
Trinidad	13.6	12.1	65.3
Venezuela	140.0	138.7	839.5
TOTAL	**550.1**	**544.6**	**3,322.9**
EUROPE			
Austria	6.2	7.8	39.0
Denmark	....	....	....
France	18.1	20.0	144.8
West Germany	50.2	56.0	292.1
Italy	40.0	41.9	229.3
Netherlands	246.2	246.1	1,354.0
Norway	....	....	....
Spain	....	....	....
United Kingdom	101.7	100.7	604.0
Yugoslavia	6.0	7.9	39.4
TOTAL	**468.4**	**480.4**	**2,702.6**
MIDDLE EAST			
Abu Dhabi	....	....	....
Bahrain	2.1	3.0	13.0
Dubai	....	....	....
Iran	142.7	141.2	832.2
Iraq	15.1	16.1	79.4
Israel	0.2	0.4	2.5
Kuwait	5.0	6.1	41.6
Oman	....	....	....
Qatar	1.0	1.1	5.9
Saudi Arabia	....	....	....
Syria	....	....	....
Turkey	....	....	....
TOTAL	**166.1**	**167.9**	**974.6**
ASIA-PACIFIC			
Afghanistan	6.7	7.5	44.8
Australia	12.5	11.4	65.1
Burma	0.6	0.7	3.7
Brunei-Malaysia	....	....	....
India	1.0	1.1	10.7
Indonesia	11.0	11.9	71.7
Japan	7.6	7.8	44.1
Pakistan	11.0	12.4	78.3
Taiwan	2.0	2.8	16.6
Thailand	....	....	....
TOTAL	**52.4**	**55.6**	**335.0**
AFRICA			
Algeria	8.0	8.7	60.3
Angola	1.7	1.9	12.5
Cabinda	....	....	....
Congo (Brazzaville)	0.1	0.2	0.7
Egypt	2.0	2.1	15.8
Gabon	0.1	0.1	1.2
Libya	2.4	2.9	16.5
Morocco	2.0	2.4	17.0
Nigeria	5.6	5.7	33.5
Tunisia	0.2	0.3	1.9
TOTAL	**22.1**	**24.3**	**159.4**
NONCOMMUNIST	1,259.1	1,272.8	7,494.5
United States	1,889.3	1,910.4	11,599.0
TOTAL	**3,148.4**	**3,183.2**	**19,093.5**
COMMUNIST AREA			
China	12.0	12.9	84.8
Romania	110.9	111.1	672.1
Russia	688.4	688.3	4,179.6
Other	49.9	59.8	330.8
TOTAL	**861.2**	**872.1**	**5,267.3**
WORLD TOTAL	**4,009.6**	**4,055.3**	**24,360.8**

AGO 530019

Aug 20 '73

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LEGAL

U.S. DEPARTMENT OF THE INTERIOR, Bureau of Land Management, Montana State Office, 316 North 26th Street, Billings, Montana 59101. Notice is hereby given that approximately 1557.51 acres of land in eight (8) parcels within the known geologic structures of DRY CREEK, BELFRY, and CLARK'S FORK NORTH Fields, situated in Carbon County, MONTANA, will be offered for competitive oil and gas leasing through sealed bids to the qualified bidder of the highest cash amount per acre at 10:00 a.m., M.D.T., September 18, 1973, with the bids being opened at 1:00 p.m., M.D.T., September 18, 1973. Special environmental stipulations will be required on all of the parcels. Full details of the lease offering, and how and where to submit bids, may be obtained from the Bureau of Land Management, 316 North 26th Street, Billings, Montana 59101.

LEGAL

SEALED BIDS will be received until 2:00 p.m., M.D.T., September 19, 1973, and opened at that time in the Colorado State Office, for competitive oil and gas leasing of 2,166.08 acres of land in eleven parcels within the known geologic structures of the Douglas Creek-Dragon Trail, White River Dome, and Wilson Creek Fields, Rio Blanco County, Colorado. The United States reserves the right to reject any and all bids. Lease offering and bid information may be obtained from the Bureau of Land Management, Room 700, Colorado State Bank Building, 1600 Broadway, Denver, Colorado 80202.

GAS ENGINEERS

(Overseas)

Several Gas Engineers required for initial assignment in the Hague and subsequent transfer to Saudi Arabia. Degree in Chemical Engineering and 5-10 years in process design, facilities planning and technical service of gas processing plants and LNG plants. Knowledgeable in metallurgical problems experienced in gas processing facilities. Should have supervisory background and growth potential. Will also consider for junior positions recent graduates whose studies include gas engineering or who have had limited experience in this field.

Good schools, hospitals, community and recreational facilities similar to any small community in the U.S.A. All inclusive benefits plan. Opportunities for substantial savings and extensive travel due to liberal vacations.

Send résumé outlining education, work experience and personal history to:

EMPLOYMENT SUPERVISOR

ARABIAN AMERICAN OIL COMPANY

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an equal opportunity employer

(Continued from p. 95)

east of State Line field and about 2 miles east-northeast of the above discovery. State Line was a 1972 discovery. Harding County lies in northwestern South Dakota on the southern rim of the huge basin.

TEXAS

ATHENS Devonian field in Reeves County, West Texas, has its second well.

New producer is Getty Oil Co. 1 State "28," 10 miles north of Toyah. The Delaware basin success flowed 81,000 Mcfd on calculated absolute open flow from perforations at 12,729-12,991 ft. Total depth is 13,500 ft. Location is in Section 28, Block 55, T-5, T&P Survey, ½ mile northwest of the field-opener, a well dug by Coastal States Gas Producing Co. at 1 Jean Spencer trust.

ELLENBURGER gas is reported at a Pecos County wildcat in West Texas.

New strike is Coastal States Gas Producing Co. 1 C. R. Downie, 35 miles south of Fort Stockton in the Delaware basin. Flow was 18,500 Mcfd on calculated absolute open flow through perforations at 21,300-22,268 ft. Location is in Sec. 7, Block R-3, GC&SF Survey. It is 3½ miles south of Grey Ranch field, a Devonian and Ellenburger pool.

DUAL Fusselman and Ellenburger gas production is reported at a new wildcat discovery in West Texas' Loving County.

Forest Oil Corp. completed the dual well at 1 El Paso-State, 4 miles southeast of Mentone, county seat. The well flowed 32,000 Mcfd on calculated absolute open flow, from perforations at 18,804-19,119 ft in the Fusselman Siluro-Devonian and 9,400 Mcfd from Ellenburger Cambro-Ordovician section at 21,298-21,479 ft. Location is in Section 54, Block 1, W&NW Survey.

DAVIDSON Ranch field in Crockett County, West Texas, has been extended to the east.

Extension success is Delta-Suburban of San Antonio 1-D McMullan, ¾ mile to the east of field production. The well flowed 1,075 Mcfd from perforations in the Pennsylvanian at 7,827 to 8,048 ft.

AGO 530020

Worldwide crude production

(Daily average in thousands of bbl)

	Jan. 1973	Dec.* 1972	12-month average: Daily prod. 1972	12-month average: Daily prod. 1973	Change from: Vol.	Change from: %
WESTERN HEMISPHERE						
Argentina	431.0	452.0	442.0	431.0	− 11.0	− 2.5
Bolivia	45.0	45.0	39.0	45.0	6.0	15.4
Brazil	165.0	165.0	169.0	165.0	− 4.0	− 2.4
Canada	1,788.0	1,726.0	1,579.0	1,788.0	209.0	13.2
Chile	35.0	34.0	32.0	35.0	3.0	9.4
Colombia	200.0	195.0	208.0	200.0	− 8.0	− 3.8
Ecuador	140.0	170.0	3.0	140.0	137.0	....
Mexico	460.0	450.0	439.0	460.0	21.0	4.8
Peru	70.0	70.0	62.0	70.0	8.0	12.9
Trinidad	165.0	160.0	125.0	165.0	40.0	32.0
Venezuela	3,262.0	3,284.0	3,169.0	3,262.0	93.0	2.9
TOTAL	**6,761.0**	**6,751.0**	**6,267.0**	**6,761.0**	**494.0**	**7.9**
EUROPE						
Austria	47.0	46.0	49.0	47.0	− 2.0	− 4.1
Denmark†	4.0	6.0	....	4.0	4.0	....
France	30.0	30.0	34.0	30.0	− 4.0	− 11.8
West Germany	130.0	137.0	139.0	130.0	− 9.0	− 6.5
Italy	20.0	20.0	24.0	20.0	− 4.0	− 16.7
Netherlands	33.0	30.8	33.0	33.0	....	....
Norway	38.0	23.8	10.0	38.0	28.0	280.0
Spain	2.5	2.5	2.5	2.5	....	....
United Kingdom	1.6	1.6	1.6	1.6	....	....
Yugoslavia	70.0	69.0	58.0	70.0	12.0	20.7
TOTAL	**376.1**	**367.1**	**351.1**	**376.1**	**25.0**	**7.1**
MIDDLE EAST						
Abu Dhabi	1,255.0	1,142.0	1,048.0	1,255.0	207.0	19.8
Bahrain	68.0	67.3	74.0	68.0	− 6.0	− 8.1
Dubai	240.0	240.3	130.0	240.0	110.0	84.6
Iran	5,809.0	5,643.0	4,706.0	5,809.0	1,103.0	23.4
Iraq	1,487.0	1,699.0	1,930.0	1,487.0	−443.0	− 23.0
Israel	120.0	120.0	120.0	120.0	....	....
Kuwait	3,765.0	3,090.2	3,772.0	3,765.0	− 7.0	− 0.2
Oman	280.0	281.0	280.0	280.0	....	....
Qatar	581.0	575.0	452.0	581.0	129.0	28.5
Saudi Arabia	5,878.0	6,699.1	4,621.0	5,878.0	1,257.0	22.4
Syria	120.0	120.0	115.0	120.0	5.0	4.3
Turkey	67.0	67.0	61.0	67.0	6.0	9.8
TOTAL	**19,670.0**	**19,743.3**	**17,309.0**	**19,670.0**	**2,361.0**	**13.6**
ASIA-PACIFIC						
Australia	413.0	439.2	361.0	413.0	52.0	14.4
Burma	20.0	20.0	18.0	20.0	2.0	11.1
Brunei-Malaysia	320.0	310.0	265.0	320.0	55.0	20.8
India	150.0	150.0	152.0	150.0	− 2.0	− 1.3
Indonesia	1,124.0	1,121.0	933.0	1,124.0	191.0	20.5
Japan	15.0	15.0	15.0	15.0	....	....
Pakistan	9.0	9.0	9.0	9.0	....	....
Taiwan	2.0	2.0	2.0	2.0	....	....
Thailand	0.3	0.3	0.3	0.3	....	....
TOTAL	**2,053.3**	**2,066.5**	**1,755.3**	**2,053.3**	**298.0**	**17.0**
AFRICA						
Algeria	1,100.0	1,100.0	951.0	1,100.0	149.0	15.7
Angola	13.0	12.5	12.0	13.0	1.0	8.3
Cabinda	130.0	130.0	124.0	130.0	6.0	4.8
Congo (Brazzaville)	7.5	7.5	0.5	7.5	7.0	....
Egypt	202.0	202.0	227.0	202.0	− 25.0	− 11.0
Gabon	140.0	140.0	129.0	140.0	11.0	8.5
Libya	2,306.0	2,215.0	2,455.0	2,306.0	−149.0	− 6.1
Morocco	0.3	0.3	0.3	0.3	....	....
Nigeria	1,932.0	1,920.0	1,695.0	1,932.0	237.0	14.0
Tunisia	85.0	85.0	82.0	85.0	3.0	3.7
TOTAL	**5,915.8**	**5,812.3**	**5,675.8**	**5,915.8**	**240.0**	**4.2**
Non-Communist	34,776.2	34,740.2	31,258.2	34,776.2	3,418.0	10.9
United States	9,465.0	9,485.0	9,115.0	9,465.0	350.0	3.8
TOTAL	**44,241.2**	**44,225.2**	**40,473.2**	**44,241.2**	**3,768.0**	**9.3**
COMMUNIST AREA						
Red China	600.0	600.0	510.0	600.0	90.0	17.6
Romania	280.0	280.0	280.0	280.0	....	....
Russia	8,077.0	8,006.0	7,620.0	8,077.0	457.0	6.0
Other	85.0	85.0	85.0	85.0	....	....
TOTAL	**9,042.0**	**8,971.0**	**8,495.0**	**9,042.0**	**547.0**	**6.4**
WORLD TOTAL	**53,283.2**	**53,196.2**	**48,968.2**	**53,283.2**	**4,315.0**	**8.8**

*Figures adjusted. †On stream July '72.

Worldwide gas production

(billions of cu ft)

Jan. '73	Dec. '72	1973 total
18.9	19.8	18.9
14.0	14.0	14.0
3.2	3.6	3.2
281.6	265.9	281.6
21.0	23.0	21.0
9.2	10.3	9.2
0.3	0.4	0.3
60.2	55.8	60.2
0.1	0.2	0.1
10.1	9.3	10.1
142.0	140.0	142.0
560.6	**542.3**	**560.6**
6.0	7.1	6.0
....	....	....
20.2	21.3	20.2
56.0	53.0	56.0
46.0	38.7	46.0
123.0	120.0	123.0
....	....	....
....	....	....
87.1	64.2	87.1
4.2	5.0	4.2
342.5	**309.3**	**342.5**
....	....	....
0.3	0.3	0.3
....	....	....
137.9	128.5	137.9
0.0	0.1	0.0
0.5	0.5	0.5
14.1	16.0	14.1
....	....	....
0.2	0.1	0.2
....	....	....
....	....	....
....	....	....
153.0	**129.3**	**153.0**
7.8	7.7	7.8
10.1	9.9	10.1
0.6	0.6	0.6
....	....	....
1.4	1.4	1.4
12.4	12.7	12.4
6.7	6.7	6.7
13.9	12.4	13.9
3.0	2.9	3.0
....	....	....
55.9	**54.3**	**55.9**
9.3	10.4	9.3
3.0	3.2	3.0
....	....	....
0.1	0.1	0.1
5.2	4.8	5.2
0.1	0.1	0.1
0.5	0.4	0.5
6.0	16.0	6.0
6.7	7.0	6.7
0.5	0.6	0.5
31.4	**42.6**	**31.4**
1,143.4	1,077.8	1,143.4
1,992.1	2,116.7	1,992.1
3,135.5	**3,194.5**	**3,135.5**
15.0	13.4	15.0
111.1	109.4	111.1
720.1	706.0	720.1
52.0	46.0	52.0
898.2	**874.8**	**898.2**
4,033.7	**4,069.3**	**4,033.7**

AGO 530021

Oxy plant will produce fuel oil from refuse

THE first solid-waste processing plant to produce commercial fuel oil will be designed and engineered by Occidental Petroleum Corp. under a $4-million program funded mostly by the Environmental Protection Agency.

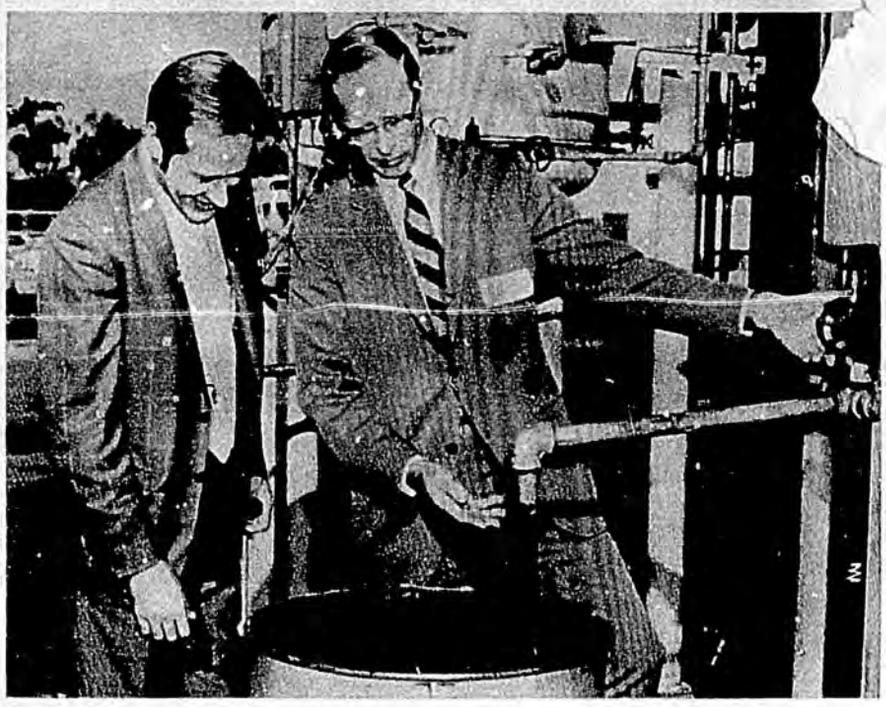
Oxy also will supervise construction of the 200-ton/day demonstration, or prototype, plant in San Diego County, Calif., and use the company's flash pyrolysis process.

The plant, scheduled for operation in late 1974, will convert 92% of the refuse into products, which include 1 bo/ton waste, or 200 b/d. Other products will be glass, metals, char.

The oil will be suitable for replacing No. 6 fuel oil which will be purchased by San Diego Gas & Electric Co. for power generation.

Oxy said that Kreisinger Development Laboratory of Combustion Engineering Inc. test-fired the low-sulfur pyrolytic oil produced earlier by Oxy and reported that the oil, or blends of it with No. 6 fuel oil, "can be successfully burned in a utility boiler with a properly designed fuels-handling and atomization system."

Oxy's Garrett Research & Development division, which has developed the pyrolysis process for converting solid wastes, such as garbage and trash, into marketable products, signed the agreement for the plant with the County of San Diego. Garrett Research will train the operators the first year, after which San Diego County will operate the plant.



DONALD E. Garrett, Occidental's executive vice-president for research and development, shows Director C. J. Houson of San Diego County's sanitation department how oil is made from garbage.

The EPA will contribute $2,962,000 toward financing of the plant, which will be virtually pollution-free. San Diego County will contribute $600,000, Oxy $300,000 and SDG&E $150,000.

The plant will be located in the Escondido area, about 32 miles north of San Diego, and will serve a population of 40,000.

The Garrett division, which has demonstrated the pyrolysis process at its La Verne, Calif., plant, expects the concept to be usable at a 2,000 ton/daily rate and thus serve a city of some 800,000. Such a plant, costing about $15 million, conceivably could pay for itself through waste-products sale—including 2,000 b/d of fuel oil.

The flash pyrolysis process involves heating solid waste to about 900° F. in the absence of oxygen and requires about 30 min to recover oil after the waste material is introduced.

Companies vying for tracts in Peruvian jungles

ABOUT a dozen international oil companines are at varying stages of negotiation with Peru's state-owned Petroperu for contract exploration blocks in three separate jungle regions.

The areas are the northern Maranon-Pastaza-Napo region where eight companies already signed up are concentrated, the central Ucayali area, and the Madre de Dios area in the southwestern jungle.

The most advanced negotiations are with Cities Service (Madre de Dios region), Signal Companies Inc. with West Germany's Deminex (Ucayali region), and Andes Petroleum Exploration Corp., a Japanese consortium (Madre de Dios region).

As yet there is no indication as to when these contracts might be signed. But an important part of the negotiations, especially for blocks in the north, involve the price to be paid for moving crude through a projected pipeline that would be owned solely by Petroperu.

Stiffer terms. Most negotiations are being conducted on the basis of a 45-55 split of crude in favor of Petroperu, with a 44-56 split when production exceeds 100,000 b/d.

The first contracts, beginning with Occidental Petroleum almost 2 years ago, were based on a 50-50 deal, but Peruvian terms have since stiffened.

The minimum work program for the first 4 years requires an investment of about $8-9 million.

Here's a breakout of regions and other companies negotiating for contracts:

- Central Ucayali—Total (France), Hispanoil (Spain), Kleinholz (West Germany), and Texaco's Germany subsidiary.
- Madre de Dios—Getty, Phillips, and Cayman Corp.
- Maranon—Kopex (Poland), negotiating for Block 2 in the far north, Deminex, Amerada Hess, and Oceanic Exploration/El Paso Natural Gas.

Some of these companies already are working on previously acquired blocks. Others, like Deminex and His-

AGO 530022

Total wells drilled in the United States*—Aug. 1974†

Data compiled by the American Petroleum Institute

State-district	Total completions: Oil wells‡	Gas wells§	Dry holes	Total wells excluding service wells, stratigraphic, and core tests: wells	Total wells excluding service wells, stratigraphic, and core tests: Footage	Total wells all types, August 1974‖: Wells	Total wells all types, August 1974‖: Footage	Total exploratory wells¶: Oil wells‡	Gas wells§	Dry holes	August 1974: Wells	August 1974: Footage
Alabama	...	...	2	2	25,372	2	25,372	...	...	2	2	25,372
Alaska	5	...	1	6	33,347	6	33,347	...	...	1	1	14,283
Onshore	2	...	1	3	24,870	3	24,870	...	...	1	1	14,283
Offshore	3	...	...	3	8,477	3	8,477	...	...	...	...	...
Arkansas	11	1	14	26	138,549	26	138,549	1	...	8	9	40,116
California	282	9	28	319	624,937	326	645,190	1	2	21	24	145,284
North	...	8	16	24	139,672	24	139,672	...	2	13	15	91,135
Central Coastal	15	...	4	19	51,809	19	51,809	...	...	3	3	8,624
East Central	257	1	6	264	379,596	265	381,746	1	...	3	4	27,435
South	5	...	2	7	59,454	10	51,450	...	...	2	2	18,090
Offshore	5	...	...	5	14,406	8	20,513	...	...	...	...	...
Colorado	11	12	24	47	302,317	47	302,317	2	3	18	23	144,560
Onshore	...	...	3	3	41,031	3	41,031	...	...	2	2	25,716
Offshore	...	...	...	...	...	...	...	...	...	...	...	...
Florida	...	...	3	3	41,031	3	41,031	...	...	2	2	25,716
Illinois	35	1	39	75	194,850	77	197,851	3	...	19	22	56,389
Indiana	11	...	17	28	40,335	28	40,335	1	...	12	13	19,763
Kansas	92	22	126	240	705,777	248	715,119	9	3	85	97	316,158
Kentucky	26	14	38	78	114,604	80	116,195	1	1	9	11	16,115
Louisiana	73	75	93	241	1,619,619	246	1,654,732	2	3	36	41	337,423
North	27	51	44	122	483,810	124	489,927	1	3	19	23	159,164
South	27	10	23	60	576,937	60	576,937	1	...	6	7	85,547
Offshore	19	14	26	59	558,872	62	587,868	...	...	11	11	92,712
Michigan	5	2	15	22	111,557	23	114,357	3	2	9	14	75,894
Mississippi	7	...	27	34	272,322	34	272,322	2	...	19	21	166,475
Missouri	...	...	2	2	2,977	2	2,977	...	...	2	2	2,977
Montana	4	17	32	53	169,778	53	169,778	1	2	28	31	119,710
Nebraska	4	...	11	15	78,597	15	78,597	1	...	6	7	37,882
New Mexico	29	70	39	138	812,519	140	813,279	...	8	24	32	144,905
East	18	25	30	73	485,352	74	485,672	...	8	17	25	108,645
West	11	45	9	65	327,167	66	327,607	...	...	7	7	36,260
New York	21	...	...	21	24,525	25	29,490	...	...	...	...	...
North Dakota	2	...	6	8	68,570	8	68,570	...	...	3	3	26,494
Ohio	38	61	14	113	400,582	113	400,582	1	8	3	12	50,415
Oklahoma	81	54	110	245	1,304,005	254	1,321,715	2	3	19	24	173,597
Pennsylvania	19	14	1	34	71,534	44	92,042	...	3	...	3	9,120
South Dakota	...	...	1	1	4,000	1	4,000	...	...	1	1	4,000
Tennessee	7	...	3	10	15,377	10	15,377	...	...	3	3	5,650
Texas	396	141	270	807	4,380,304	836	4,460,038	26	53	169	248	1,633,911
Dist. 1	17	8	12	37	131,815	37	131,815	2	2	7	11	50,062
Dist. 2	9	18	25	52	322,284	53	325,602	1	12	17	30	203,741
Dist. 3	31	16	47	94	610,451	95	611,293	3	13	37	53	419,630
Dist. 4	25	32	37	94	571,376	94	571,376	2	12	19	33	214,049
Dist. 5	4	2	14	20	96,749	20	96,749	...	1	6	7	43,373
Dist. 6	14	8	14	36	219,360	41	222,305	...	...	10	10	70,393
Dist. 7B	11	3	12	26	84,990	26	84,990	...	...	5	5	20,787
Dist. 7C	50	29	25	104	578,849	114	595,378	5	7	15	27	145,718
Dist. 8	100	8	15	123	713,539	125	723,092	9	2	4	14	145,586
Dist. 8A	70	1	18	89	480,951	98	526,819	1	...	12	13	76,217
Dist. 9	53	10	39	102	379,650	103	380,329	3	4	25	32	152,358
Dist. 10	12	5	3	20	109,270	20	109,270	...	...	3	3	19,385
Offshore	...	1	9	10	81,020	10	81,020	...	...	9	9	72,638
Utah	8	...	4	12	115,003	12	115,003	...	...	3	3	12,560
Virginia	...	2	...	2	10,336	2	10,336	...	...	...	...	...
West Virginia	13	58	7	78	208,654	78	208,654	1	4	1	6	19,415
Wyoming	30	2	41	73	518,477	75	532,826	5	1	33	39	318,719
Total—August 1974	**1,210**	**555**	**968**	**2,733**	**12,409,855**	**2,814**	**12,619,981**	**62**	**96**	**536**	**694**	**3,942,903**
Total—July 1974	**1,008**	**461**	**884**	**2,353**	**11,801,777**	**2,390**	**11,903,253**	**73**	**91**	**522**	**686**	**4,299,061**
Cum. 1974	**7,960**	**4,632**	**7,271**	**19,868**	**97,392,862**	**20,520**	**98,957,337**	**511**	**749**	**4,187**	**5,447**	**32,391,527**
Cum. 1973	**6,339**	**3,685**	**6,371**	**16,395**	**82,593,265**	**17,062**	**84,200,386**	**388**	**465**	**3,638**	**4,491**	...

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from July 27, 1974, through Aug. 23, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests and outpost (extension) tests. ‖Includes 10 strat tests and 71 service wells, 16,529 ft and 193,597 ft, respectively.

AGO 530023

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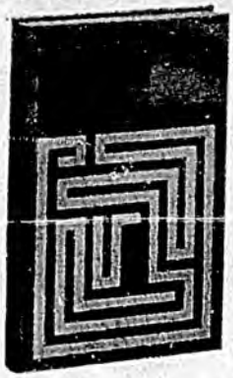

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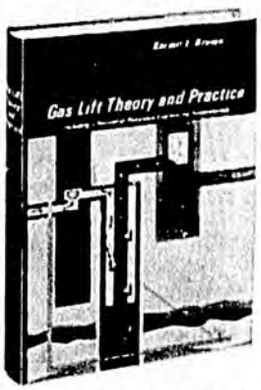

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AGO 530024

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Total wells drilled in the United States*—February 1974†

Data compiled by the American Petroleum Institute

State-district	Total completions: Oil wells‡	Gas wells§	Dry holes	Total wells excluding service wells, stratigraphic, and core tests: Wells	Footage	Total wells all types, February 1974‖: Wells	Footage	Total exploratory wells¶: Oil wells‡	Gas wells§	Dry holes	Wells	Footage
Alabama	2	2	8	12	128,166	12	128,166	1	1	6	8	82,790
Arizona	2		6	8	55,775	8	55,775			3	3	25,661
Arkansas	9	4	11	24	154,445	24	154,445	3		6	9	71,135
California	77	3	19	99	291,342	105	305,741	2	1	9	12	77,552
North		3	5	8	52,599	9	58,032		1	2	3	23,197
Central Coastal	9		6	15	67,889	17	70,469			3	3	27,369
East Central	54		7	61	134,842	63	139,778			4	4	24,378
South	8			8	20,569	9	22,019	2			2	2,608
Offshore	6		1	7	15,443	7	15,443					
Colorado	30	28	30	88	570,634	89	574,966	2		21	23	143,768
Florida	2		3	5	74,727	5	74,727			2	2	26,803
Georgia			2	2	13,602	2	13,602			2	2	13,602
Illinois	25	2	18	45	104,951	46	105,028	1		9	10	17,969
Indiana	12		12	24	34,646	26	39,642	1		9	10	13,380
Kansas	51	21	75	147	502,161	152	513,463	7	3	46	56	198,690
Kentucky	8	11	21	40	68,374	40	68,374	2		8	10	17,052
Louisiana	68	71	70	209	1,730,468	212	1,755,331		4	31	35	344,807
North	16	44	16	76	330,806	76	330,806		2	7	9	87,073
South	19	11	33	63	664,529	64	672,302		2	15	17	199,027
Offshore	33	16	21	70	735,133	72	752,223			9	9	58,707
Michigan	5	2	14	21	98,425	21	98,425	4	2	10	16	72,530
Mississippi	6	4	28	38	296,739	38	296,739	2	2	22	26	231,890
Missouri			2	2	1,865	2	1,865			2	2	1,865
Montana	4	11	31	46	137,350	47	140,243	1	4	26	31	102,823
Nebraska	1		16	17	88,986	17	88,986	1		12	13	68,127
New Mexico	21	29	18	68	409,860	69	413,210			12	12	58,805
East	20	15	14	49	292,536	50	295,886			9	9	42,788
West	1	14	4	19	117,324	19	117,324			3	3	16,017
New York	5	3		8	14,940	15	24,906					
North Dakota	3		3	6	33,104	6	33,104			2	2	10,234
Ohio	35	74	6	115	502,125	115	502,125		2	3	5	24,248
Oklahoma	38	63	83	234	1,426,962	239	1,446,262	4	7	27	38	290,535
Pennsylvania	63	33	5	101	197,602	113	220,087			5	5	23,416
South Dakota			1	1	7,514	1	7,514					
Tennessee	4		2	6	8,215	6	8,215			2	2	2,025
Texas	339	194	281	814	4,394,184	849	4,470,251	13	59	178	250	1,672,608
Dist. 1	20	8	26	54	235,422	54	235,422	1	2	16	19	116,055
Dist. 2	6	32	24	62	341,724	62	341,724	3	14	13	30	178,832
Dist. 3	25	15	39	79	579,188	79	576,188		10	27	37	342,468
Dist. 4	17	31	37	85	561,290	85	561,290	2	10	26	38	261,412
Dist. 5	7	4	8	19	117,361	19	117,361		3	6	9	87,750
Dist. 6	3	5	5	13	105,934	13	105,934		4	2	6	52,803
Dist. 7B	58	31	50	139	505,309	151	525,355	2	8	30	40	150,713
Dist. 7C	32	23	16	71	405,622	72	407,222	1	1	9	11	58,746
Dist. 8	85	11	8	104	591,301	104	591,301	2	2	5	9	94,826
Dist. 8A	31	1	13	45	247,908	52	271,340			7	7	41,262
Dist. 9	36	6	28	70	213,181	85	244,170	2	2	18	22	89,555
Dist. 10	18	23	15	56	353,389	56	353,389		1	7	8	87,203
Offshore	1	4	12	17	139,555	17	139,555		2	12	14	110,983
Utah	10	1	4	15	159,951	15	159,951	1		3	4	31,951
Virginia		9	1	10	45,245	10	45,245					
West Virginia	1	31	8	40	148,327	40	148,327		5	6	11	47,413
Wyoming	30	4	38	72	459,623	75	467,020	4	1	28	33	238,012
Total—February 1974	**901**	**600**	**816**	**2,317**	**12,160,308**	**2,399**	**12,361,735**	**49**	**91**	**490**	**630**	**3,909,691**
Total—January 1974	**763**	**577**	**803**	**2,143**	**10,391,797**	**2,209**	**10,507,480**	**51**	**71**	**469**	**591**	**3,390,989**
Cum. 1974	**1,664**	**1,177**	**1,619**	**4,460**	**22,552,105**	**4,608**	**22,869,215**	**100**	**162**	**959**	**1,221**	**7,300,680**
Cum. 1973	**1,535**	**893**	**1,664**	**4,092**	**21,628,601**	**4,269**	**22,084,270**	**107**	**96**	**1,022**	**1,225**	**—**

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Jan. 26, 1974, through Feb. 22, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ‖Includes three strat tests and 79 service wells, 5,799 and 195,628 ft, respectively.

AGD 530025

Industry gets more active in geothermal arena

THE nation's leading oil companies are becoming active in the field of geothermal energy, which experts predict will meet about 10% of western states' power needs by the year 2000. At the same time, natural-gas and chemical companies also are reported to be developing an interest in this field.

Most recent indication of this expanding oil-company interest in geothermal energy was the high bids entered at the January (1974) sale of federal geothermal area leases in California, by such firms as Shell Oil, Signal, Natomas, Union Oil, and Standard of California.

Some of those companies, and a number of others, also are actively acquiring leases, doing exploration work, or drilling in Oregon, Idaho, Nevada, Utah, New Mexico, Colorado, and Arizona, in addition to California.

Oil and natural-gas companies, however, face a different set of problems in the geothermal area, problems that grow out of the difference in techniques from those of the oil and gas industries. "But they are quickly learning the differences," according to Mike O'Donnell, executive vice-president of Geothermal Kinetics Inc., a leading geothermal drilling and exploration company headquartered in Phoenix, Ariz.

O'Donnell, whose firm is active in California, New Mexico, Utah, Idaho, and Arizona, agrees with a prediction of William H. Lyons, deputy undersecretary of Interior, who told a Congressional subcommittee studying geothermal energy that there will be abundant geothermal power by the end of this century.

"Well before the year 2000," O'Donnell said, "western utilities will be producing as much as 10% of their needs from geothermal wells."

Virtually every electric utility in the West has turned to geothermal studies to some degree or other, O'Donnell said.

Federal spending. Geothermal activity is quite likely to be accelerated if final approval is given proposed increases in government spending for research and development of known geothermal resource areas (KGRA's).

Commitments for federal-agency spending in this area have been raised for fiscal 1975 to around $45,000,000 from $14,232,000 in the current year. Further, the Atomic Energy Commission, with its fiscal 1975 commitment $10,700,000 up from $4,700,000, plans to request and spend $185,000,000 for geothermal R&D over the next 5 years.

Other federal agencies seeking larger geothermal budgets for fiscal 1975 include National Science Foundation, U. S. Geological Survey, Bureau of Reclamation, Bureau of Land Management, and Bureau of Mines.

This splintered federal effort underscores a proposal several months ago by a leading solar energy expert who suggested a federal NASA-type agency for energy, with total authority over all energy research and development. Dr. Aden B. Meinel, of the University of Arizona, a frequent consultant to government agencies on solar matters, said such a NASA-type agency could concentrate scattered activities with excellent results, and probably quicker than with piece-meal efforts.

Legislation furthering geothermal activities already has passed the Senate by an 82-0 vote, and would set up a Geothermal Resources Development Fund to guarantee loans secured by private and public utilities for exploration, development, construction, and operation of commercial geothermal generating facilities. Guarantees of 75% of loans, up to a maximum of $25,000,000 would be authorized.

Sen. Paul Fannin (R.-Ariz.) feels that the federal Government has been more of a hindrance than a help thus far in geothermal affairs, but that this bill would stimulate such activity.

While most of today's geothermal activity centers in such areas as California's Imperial Valley, and in Utah, Arizona, and New Mexico, exploration work is being done in the Northern Gulf of Mexico, off the Louisiana and East Texas coasts, where "a tremendous amount of work is going on, and where hot fluid is found with natural gas," according to O'Donnell. Wells in that area are around 17,000 to 20,000 ft in depth.

Another promising area is in Baja California, around Mexicali, where the first Mexican geothermal plant was to go on line late in March, climaxing 20 years' work. This region, just south of the U.S. border is believed to be a southern extension of the 120-mile long Imperial Valley geothermal area.

Although Old Faithful in Yellowstone National Park—America's best-known geyser—was first discovered in 1870, more than 80 years slipped by before Pacific Gas & Electric pioneered U.S. use of this great natural resource for power production. This plant, the world's largest, provides electricity for San Francisco residents.

Italy, meanwhile, had touched off the geothermal age as early as 1904, with a successful commercial natural-steam powered electric plant at Lardello. Five other foreign countries—China, Iceland, Japan, New Zealand, and Russia—now produce geothermal electricity.

Mobil has pair of Wilcox pays

MOBIL Oil Co. has a pair of new Wilcox pays in Clayton field, 13 miles southwest of George West in southern Live Oak County, South Texas.

The 2 Block 86 Unit tested through lower tubing perforations at 8,350-57 ft flowing 2,848 Mcfd and 41 bbl condensate on 14/64-in. choke. Flow rate through the upper tubing perforations at 7,612-32 ft was 888,000 cu ft of gas and some condensate. Location is in Section 331, CCSD&RGNG Survey, A-495.

In Lavaca County, McCormick Oil & Gas Co. has a Frio gas-discovery zone in Esperanza field. The 1 Williams et al. Unit, 3 miles southeast of Hope, flowed 1,106 Mcfd. Pay is at 3,150-56 ft on 12/64-in. choke. Well site is in the S. Thompson Survey, A-555. Esperanza field was opened in 1959 with pays in the Miocene, Yegua, and Wilcox, at 2,300, 2,800, 5,200, and 7,800 ft.

ITALY

ITALY'S AGIP has undertaken a sweeping new appraisal of the Po Valley in northern Italy—particularly deep prospects.

Company hopes today's sophisticated geophysical techniques will reveal prospects that went undetected in early-day exploration of the valley, which has yielded much of Italy's natural-gas production over the years.

AGIP now has seven seismic crews in the field. It says that although re-

AGO 530026

gaged in crude production alone. There is no series of data comparable to the QFR covering crude producers. This in itself is not fatal, since the major integrated companies which dominate the QFR category also produce most of the crude oil.

Still, the absence of nonintegrated crude producers raises a question. Average domestic crude prices from 1962–72 were perhaps half what they are today and were the subject of persistent complaints from the crude sector. Would not the inclusion of crude producers show a lower level of profitability for the petroleum industry as a whole?

In fact, the opposite appears to be true. Occasional tabulations of results in crude companies indicate that—during this period of presumably "low" crude prices—the crude producers as a group enjoyed rates of return far higher than either the integrated firms or the nonintegrated independent refiners. Throughout the period, there was a general presumption, never refuted by the companies themselves, that the integrated majors earned their profits primarily in crude production rather than in downstream refining and marketing. Indeed, it is often alleged that in some years several of the majors may have lost money downstream. Regardless of such allegations, it is clear that broadening the QFR industry category to include nonintegrated crude producers would raise the reported profitability of the industry.

TABLE 1.—RATES OF RETURN ON STOCKHOLDERS EQUITY, 1962–72

[In percent]

Year	All manufacturing	Petroleum refining	Motor vehicles	Primary iron and steel
1972	10.60	8.62	14.45	6.05
1971	9.67	10.32	13.02	4.53
1970	9.32	10.97	6.07	4.30
1969	11.47	11.72	12.62	7.62
1968	12.07	12.27	14.97	2.52
1967	11.72	12.52	11.67	7.72
1966	13.85	12.42	15.59	10.25
1965	12.90	11.85	19.52	9.75
1964	11.66	11.42	16.87	8.77
1963	10.25	11.30	16.72	7.00
1962	9.775	10.08	16.25	5.65
Average 1962–72	11.17	11.22	14.34	7.13

Source: Average of quarterly rates reported in FTC, "Quarterly Financial Reports."

TABLE 2.—TOTAL LIABILITIES AND NET WORTH, END OF YEAR, 1962 AND 1972

[Million dollars]

	Petroleum refining		Other manufacturing	
	[illegible]962	1972	[1]1962	1972
Current liabilities [2]	[illegible]	15,918	53,921	137,888
Long-term debt: [2]				
Banks	[illegible]	2,703	5,127	29,054
Other	4,798	13,711	28,182	82,796
Other noncurrent liabilities	1,547	6,566	5,445	21,914
Total, liabilities	11,997	39,486	92,675	271,652
Stockholders equity:				
Capital stock, etc.	14,053	19,867	59,135	98,565
Earned surplus	18,253	41,149	90,940	194,535
Total, net worth	32,296	60,731	150,125	293,100
Total liabilities and net worth	44,286	100,217	242,800	564,751

[1] Prior to 1965, QFR included an account, "Reserves not reflected elsewhere." The amounts in this account at the end of 1967 were $414,000,000 for petroleum refining and $1,751,000,000 for other manufacturing industries, in each case less than 1 percent of total liabilities and net worth. The QFR explanation when this account was dropped (1st quarter, 1965) was that 80–90 percent would be shifted into "other noncurrent liabilities" and the balance into "earned surplus." Accordingly, the 1962 figures have been restated on the basis of an 85–15 percent division.

[2] Restated by shifting payments on long-term debt due within 1 year from current liabilities to long-term debt, in order to better portray capital structures.

Source: FTC, "Quarterly Financial Reports", 4th quarter, 1962 and 1972.

Long-term debt: [2]
Banks
Other
Total
Stockholders equity:
Capital stock, etc
Earned surplus
Total
Total increase in

Stockholders equity
[2] Including repayments

Source: Table 2.

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High profits erode in third quarter

Increased taxes and costs, buyer resistance, lower production rates, and the lack of inventory profits and devaluation gains chip away at earnings. Profits for 27 large firms total $3.67 billion in third quarter — up 49.8%.

THOSE sharp increases in oil-company earnings recorded earlier in the year are eroding.

Although still substantial and in some instances hitting record highs, company earnings are running into such countervailing forces as increased taxes, higher costs, buyer resistance, lower production rates, and the absence of inventory profits and devaluation gains.

Higher profits, however, are still being supported by the higher level of domestic oil and gas prices, by spectacular performance of chemicals, and by improved margins.

These are the trends spotted in the Journal's quarterly review of earnings for the industry's larger firms. As a group, the larger companies showed net earnings for the year's first 9 months of $10.9 billion, up 67.4%. The total for the third quarter was $3.67 billion, up 49.8%.

Both 9-month and third-quarter percentage gains for the 27-company Journal group are well under the gains for the first and second quarters, 78.4 and 80.2% respectively.

The slippage for the international majors is more pronounced. Composite earnings gain for the five largest U.S. companies — Exxon, Texaco, Mobil, California Standard, and Gulf — declined from 71.5% in the first quarter to 65.3% in the second quarter—then dipped more sharply to 25.9% in the third.

Texaco, for example, recorded a profits gain of 123% in the first quarter; but by the third quarter its gain over a year earlier was running only 23%. Socal's 91.5% first-quarter gain had dwindled to 32%, and Gulf's 75% to 31%. Exxon had slipped from 39% to 25%, and Mobil from 66% to 20%.

Typical experience. The experience of Exxon Corp., the top industry performer, reveals most of the trends being encountered by oil-industry management this year.

Exxon's consolidated earnings for the first 9 months reached a record $2,280 million, up 37.7% from $1,656 million for the same period a year ago. Third-quarter earnings were $800 million, up 25.4% from the $638 million for 1973.

Exxon Chairman J. K. Jamieson said "worldwide chemical operations continued to be a major contributor" to the earnings. The performance, however, was helped by a 29% gain in domestic operations. These were boosted by higher prices for domestic crude and natural gas resulting from government policies designed to stimulate development of added supplies. The 9-month result was a $781-million profit from U.S. operations, compared to $606 million last year.

Exxon's response to these profits was the expenditure of $898 million in the 9 months for capital and exploration projects, including $291 million for offshore acreage purchases. This compares with $400 million spent in the same period of 1973.

Exxon expects the higher level of capital spending to continue for several years due to commitments on the trans-Alaska pipeline, North Slope development, and refinery expansion. "The amount of future spending approved in the first 9 months exceeds that authorized in any previous full year," Jamieson said, "and this is indicative of the higher level of capital requirements over the coming year which will be necessary to supply future demands for energy."

Jamieson reported that 9-month earnings abroad included inventory profits of $130 million realized in the first half of 1974 which are not expected to recur. Also, the increased

How 27 U.S. firms fared in third quarter

addition, Dorsey reported that accumulated about $130 million increased costs through Sept. 30 ch it had not been able to recover er Federal Energy Administration ing formulas.

her factors were a $19-million re-ctive tax increase in Venezuela, ered crude output in Kuwait and ador, and profits squeezes in ope and Latin America "caused a temporary surplus of oil pro-s in some markets."

her gainers. Among the predomi-ly domestic oil companies, Shell, ana Standard, Union, Phillips, and inental recorded substantial gains arnings.

ell Pres. Harry Bridges, however, ted out that extraordinary con-ns prevailing in the petroleum in-ry this year reduce the usefulness measuring performance against r period's.

nong these conditions, he listed tion, uncertain crude oil prices, nfluence of changing federal regu-ns on prices, crude-oil allocation, the timing of recovery of in-sed raw-material costs under ral regulations.

sensive search for new energy re-sources.

Of nearly $280 million invested so far this year in the search for oil and gas, about $173 million went for federal offshore leases and the rest to domestic drilling.

Union Chairman and Pres. Fred L. Hartley said the company increased domestic drilling about 30% for 167 net new wells which resulted in about 5,800 b/d more initial production. The higher crude oil price also made it economically possible for Union to keep marginal wells on production and bring back retired wells whose limited output previously had been uneconomic.

"So far we have kept on production about 170 Union-operated wells and have brought back about 70 previously idle wells which would have been abandoned at crude oil prices of 2 years ago. These marginal wells collectively are adding 1,100 b/d to our domestic production," Hartley said.

Union's 9-month earnings were $232.5 million compared with $129.1 million last year with third-quarter income of $79.9 million compared with $50.7 million.

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U.S. corporations and is necessary to finance Skelly's exploration and production program designed to help move the nation closer to energy self-sufficiency." Skelly's 9-month net was $77.3 million compared to $27.2 million in 1973.

Cities Service, with an 80% gain for the 9 months to $168 million, showed a return on average stockholder equity of 13.3% compared with 8.3% a year earlier.

Atlantic Richfield's 9-month earnings of $377 million represented a 15.5% annualized rate of return on shareholders equity.

Shell converts methane to protein at U.K. facility

METHANE has been successfully converted to protein at Shell Research's Sittingbourne Centre, U.K. Direct conversion to single-cell protein (SCP) was carried out in a continuous 80-gal pilot fermentation plant.

Shell SCP product has a protein content of around 75%. Its nutritive value and amino-acid spectrum approaches that of high-quality white fish meal, with a high proportion of sulfur amino acids. Animal-feed formulations would be similar to that of fish meal and methionine-supplemented soy flour.

Natural-gas feed for a SCP plant would require minimal pretreatment. Process uses mixed microbial cultures, providing more freedom in plant design than single-strain cultures.

Methane-air mixture is passed through an aqueous solution containing ammonia, phosphates and other trace mineral elements, and suspended bacteria. A broth comprising a 2-3% suspension of bacterial cells is drawn off continuously.

After separation, watery culture fluid is returned to the fermenter. SCP is dried to a powder.

Shell says that process economics and market assessments have been made. Initial nutritional and toxicological trails on protein concentrate for use in animal feeds have been satisfactorily completed.

Discussions have been initiated with Dutch authorities for construction of an integrated process and product development unit at Shell laboratories in Amsterdam.

Imperial, Shell, Elf ready tests in Canada's Far North

CANADIAN Far North areas drew three new tests last week as Arctic exploration began showing a modest upswing for the 1974-75 drilling season.

New drilling is scheduled by Imperial Oil Ltd., Shell Canada Ltd., and Elf Oil Exploration & Production Canada Ltd.

Imperial will resume its wildcat-drilling program off the Mackenzie Delta with a 13,000-ft test at B-44 Netserk, 69° 33' 3" N. Lat., 135° 55' 56" W. Long.

Staked on an artificial island in shallow waters, it is Imperial's third offshore test in the Beaufort Sea. Site is 8 miles north of F-28 Adgo, the company's second offshore test and the first offshore discovery in the North American Arctic (see map, OGJ, July 22, p. 24).

Hi-Tower Drilling Division's Rig 1 will drill the Netserk test.

Shell's new operation is L-24 Kugpik, a 10,700-ft delineation well at 68° 53' 31.52" N. Lat., 135° 22' 13.09" W. Long., on the Mackenzie Delta. Location is 2 miles northeast of Shell's O-13 Kugpik discovery of August 1973 which flowed a maximum rate of 1,355 b/d of oil and 800 Mcfd of gas through 23/64-in. choke from pay at 7,128 to 7,455 ft.

Adeco Drilling & Engineering Co. Ltd.'s Rig 5 holds the contract. It's one of three rigs Shell has under contract for its 1974-75 program on the Delta.

Banks wildcat. Elf, acting as operator for the Elfex group, staked a 12,000-ft wildcat on Banks Island as D-16 Kusrhaak, 73° 25' 3.5" N. Lat., 120° 5' 18.3" W. Long. There are no nearby discoveries.

Brinkerhoff Drilling Canada Ltd.'s Rig 19 will drill the test, part of an exploration program on 11.8 million acres of exploration permits in the western Canadian Arctic.

Elf's partners are Tenneco Oil & Minerals Ltd., Columbia Gas Development of Canada Ltd., Texas Eastern Exploration of Canada Ltd., Norlands Petroleum Ltd., and Panarctic Oils Ltd.

Canada price hike allowed pass-through

THE Federal Power Commission has bowed to the 39¢/Mcf gas-price increase (to $1/Mcf) imposed by the Canadian Government on exports to the U.S.

FPC approved a rate increase of $121,463,326 allowing Northwest Pipeline Corp. to pass through the higher costs of imports above the previous price of 61¢/Mcf.

Northwest receives 860 MMcfd from Westcoast Transmission Co., its Canadian supplier, at Sumas, Wash., and Kingsgate, B.C. The pipeline must start paying $121.5 million more for Sumas deliveries Nov. 1 and $13,940,113 more Jan. 1.

Northwest can't start passing through the higher rates for Sumas gas until Nov. 18, 45 days after the increase was filed with FPC. The difference will be placed in the pipeline's unrecovered purchased-gas cost account, and Northwest may attempt to recoup in a future rate filing.

Northwest said it knows of no other supply of gas in the volumes available from Canada, and so it has no choice but to pay the higher price. FPC decided it had no choice but to approve the increase.

Exxon resumes oil flow in Libya, LNG shipments to Spain

EXXON CORP.'S Esso Libya has resumed limited oil production in Libya and is resuming shipments of LNG to Spain's Gas Natural but not to Italy's Snam Progetti.

Oil production from Zelten, Raguba, and other fields producing a total of 255,000 b/d were shut in by the government in early October when Snam refused to accept an LNG price increase ordered by the Libyan Government. The boost was reported to be about $1.60/MMBTU from about 50¢/MMBTU. The Libyans refused to permit associated gas to be flared.

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PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Annual refining survey

AILLEEN CANTRELL
Director of Editorial Surveys

The following tabulation of operating refineries of the United States and Canada shows facilities on stream as of Jan. 1, 1974.

Projects completed after that date are listed in the construction table presented in the Worldwide Construction Survey issue, April 8. A list of shutdown refineries which are still operable is included below.

The list of operating plants is restricted to facilities charging whole crude, plus lube plants not charging whole crude.

Figures for most plants are expressed in barrels per stream day. However, a few companies reported only calendar-day figures. To arrive at consistant stream-day totals for states, calendar-day figures were converted to stream-day basis, using a 0.95 factor in the case of crude and vacuum units, and a 0.90 in the case of all other processes. This explains what may appear to be discrepancies in the addition of some columns. The letters NR means not reported.

Reprints of this survey are available at $2 per copy by writing Book Department, The Oil and Gas Journal, Box 1260, Tulsa, Okla. 74101.

Detailed breakdown by company, plant, and state starts next page. Included are:

- U.S. crude and downstream-processing totals by states, p. 84.
- Detailed U.S. survey, p. 85.
- Canadian processing totals by provinces, p. 104.
- Detailed Canadian survey, p. 104.

U.S. refineries: where, capacities, types of processing

LEGEND

Processes in table are identified by numbers

Cat Hydrorefining
1. Residual desulfurizing
2. Heavy gas-oil desulfurizing
3. Residual visbreaking
4. Cat cracker and cycle stock feed pretreatment
5. Middle distillate
6. Other

Cat Hydrotreating
1. Pretreating cat-reformer feeds
2. Naphtha desulfurizing
3. Naphtha olefin or aromatics saturation
4. Straight-run distillate
5. Lube oil "polishing"
6. Other distillates
7. Other

Aromatics/Isomerization
1. BTX
2. Hydrodealkylation
3. Cyclohexane
4. C_4 feed
5. C_5 feed
6. C_5 and C_6 feed

Cat Reforming

Semiregenerative:
1. Conventional catalyst
2. Bimetallic catalyst

Cyclic:
3. Conventional catalyst
4. Bimetallic catalyst

Other:
5. Conventional
6. Bimetallic

Cat Hydrocracking
1. Distillate upgrading
2. Residual upgrading
3. Lube-oil manufacturing
4. Other

Thermal Process
1. Gas-oil cracking
2. Visbreaking
3. Fluid coking
4. Delayed coking
5. Other

Alkylation
1. Sulfuric acid
2. Hydrofluoric acid

Cat Cracking
1. Fluid
2. Thermofor
3. Houdriflow

NR—Not reported

Three U.S. plants are shut down but are still in operating condition. Capacities are given in barrels per stream day.

Chevron Asphalt Co., Mobile, Ala., 6,500
Chevron Asphalt Co., Cincinnati, Ohio, 12,500
Mobil Oil Corp., East Providence, R.I., 10,000

These plants will be reactivated:

Anderson Refining Corp., Tucker, Tex. bought by J&W Refining, Palestine, Tex., 2,400 b/d.
Cosden Oil & Chemical Co., Hawley, Tex. bought by Tesoro Petroleum Corp. 6,500 b/d.
Danahoe Refining Co., Pettus, Tex. (same owner), 10,000 b/d.
Hess Oil & Chemical Corp., Port Isabel, Tex. (same owner) 14,300 b/d.
R. J. Oil & Refining Co. Inc., Terre Haute, Ind., bought by Crystal Oil Co. 7,700 b/d.
Somerset Refining, Troy Division, Troy, Ind. bought by Indiana Farm Bureau Coop. 15,000 b/d.
U.S. Oil & Refining Co., Long Beach, Calif. (same owner), 5,265 b/d.
Wickett Refinery Co., Wickett, Tex. bought by Adobe Oil & Gas Corp. and Tom Brown Inc., 6,000 b/d.

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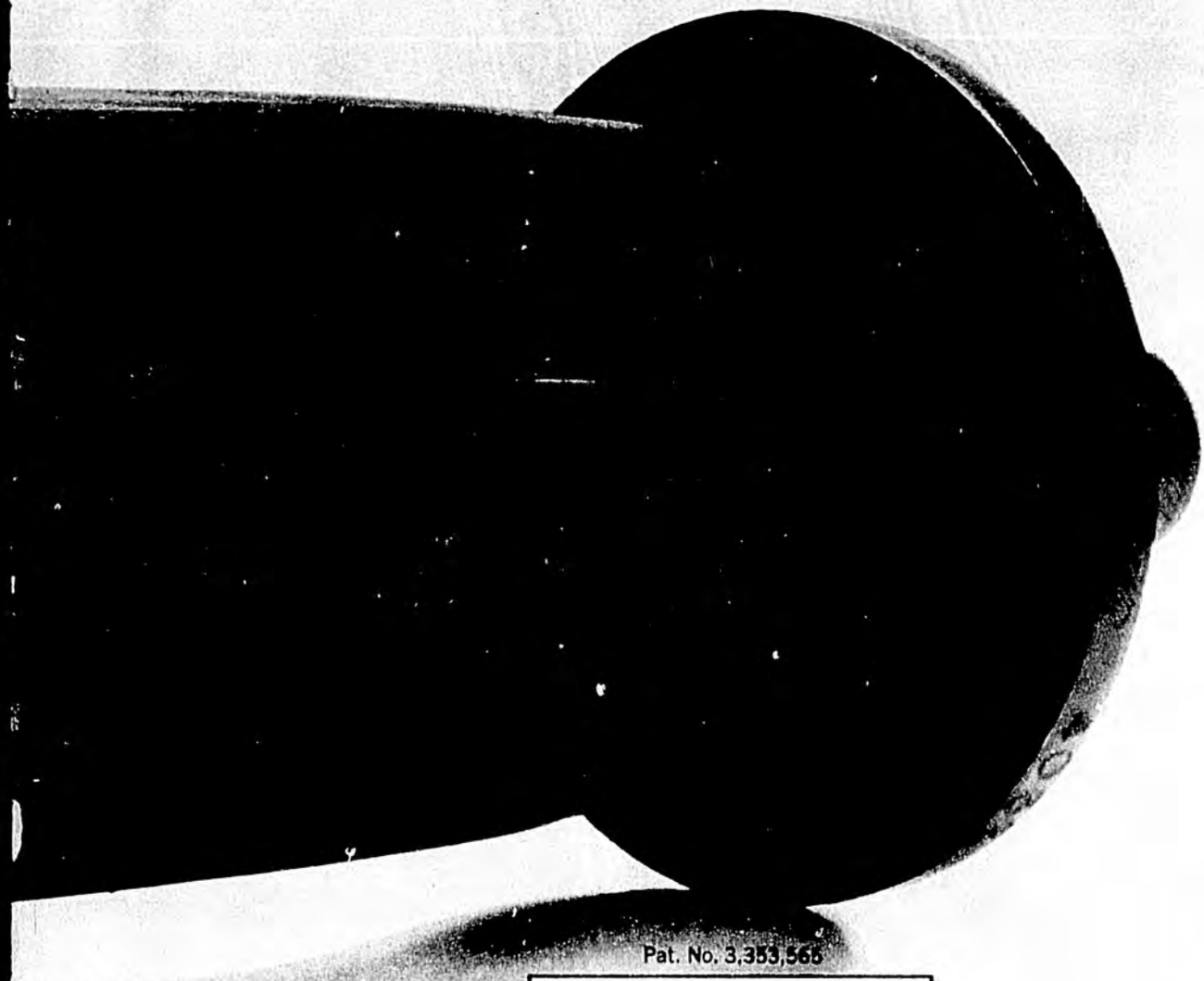
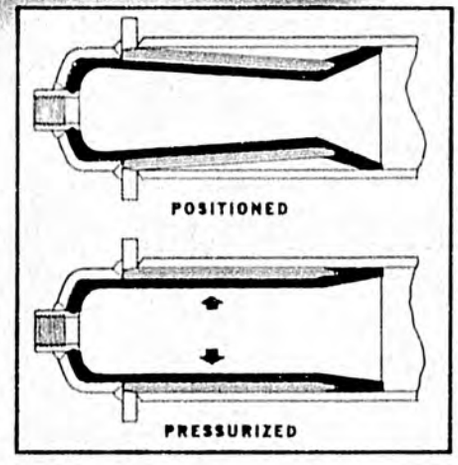
No threading.
No beveling. No kidding.



Pat. No. 3,353,565



slackens automatically as pressure is relieved.

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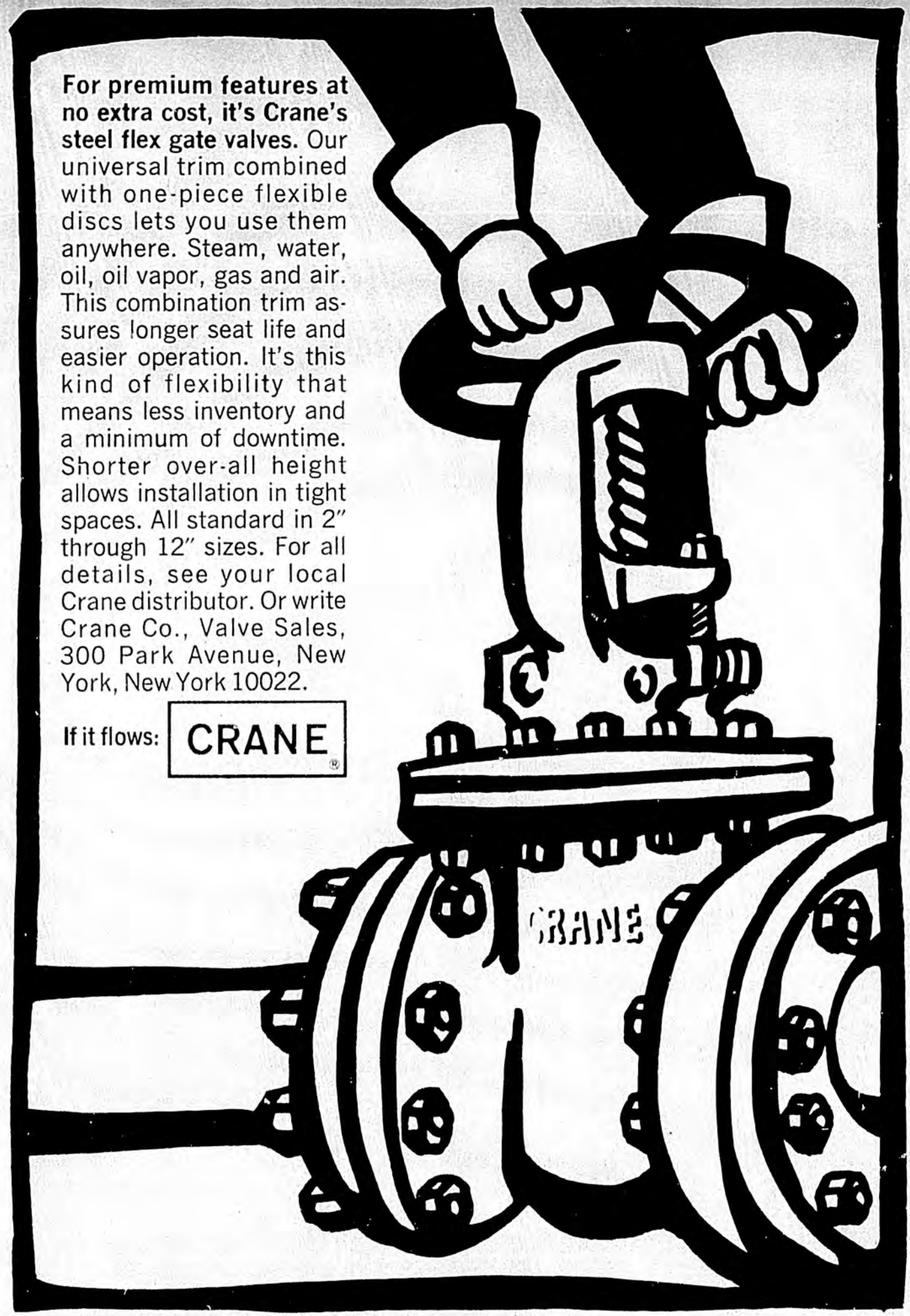

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Survey of operating refineries in the U.S. (state capacities as of Jan. 1, 1974)*

State	No. plants	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics/isomerization	Lubes	Asphalt	Coke (t/d)
Alabama	4	35,421	37,010	8,660	.....	.....	.....	1,400	.....	.....	5,000	.....	.....	.....	6,926	.....
Alaska	4	66,050	69,020	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	300	.....
Arizona	1	9,000	10,000	4,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	4	56,125	58,000	23,800	5,000	15,000	5,200	5,500	.....	5,000	8,000	4,000	.....	2,100	9,650	.....
California	34	1,809,295	1,894,800	958,200	452,820	481,610	122,730	476,540	317,629	138,250	662,020	83,390	12,490	23,770	98,410	15,165
Colorado	3	55,800	57,920	10,500	14,500	20,500	2,450	11,900	.....	.....	17,000	.....	.....	.....	3,300	400
Delaware	1	140,000	150,000	90,700	44,000	62,000	15,000	42,000	17,000	.....	110,000	8,000	.....	.....	.....	1,800
Florida	1	5,000	5,500	2,400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,500	.....
Georgia	2	14,375	15,130	.....	.....	.....	.....	.....	.....	1,200	.....	.....	.....	.....	9,300	.....
Hawaii	2	70,000	73,689	15,000	.....	14,100	8,900	.....	.....	.....	1,400	4,130	1,350	.....	1,300	.....
Illinois	11	1,151,500	1,206,390	415,730	143,300	390,270	81,240	312,280	66,500	107,000	435,280	89,020	10,200	5,600	42,800	4,380
Indiana	7	551,000	588,050	243,000	22,500	206,500	36,780	98,000	.....	29,500	213,000	35,700	6,500	8,670	47,000	730
Kansas	11	401,823	418,050	93,800	43,200	155,900	46,700	81,900	2,950	7,500	100,400	38,070	3,400	4,000	16,400	1,310
Kentucky	3	159,800	167,000	65,000	4,000	63,000	6,700	25,500	.....	.....	42,500	6,000	21,500	.....	13,500	.....
Louisiana	18	1,666,600	1,733,180	461,090	147,830	598,280	130,830	362,930	78,500	99,000	403,410	138,290	23,500	48,450	35,880	5,250
Maryland	2	23,500	24,740	13,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19,000	.....
Michigan	6	137,080	147,230	44,800	.....	38,000	9,950	32,750	.....	17,700	31,100	5,450	2,000	.....	11,650	.....
Minnesota	3	190,420	198,000	78,000	23,000	65,400	8,200	30,100	.....	27,000	65,100	11,500	.....	.....	42,000	1,300
Mississippi	5	289,700	298,390	152,563	6,700	70,500	6,350	70,700	62,000	.....	41,450	9,200	6,000	.....	7,270	320
Missouri	1	105,000	110,530	40,000	11,000	38,000	12,000	14,000	.....	.....	45,000	5,000	.....	.....	6,500	450
Montana	8	158,481	166,200	48,350	8,600	49,800	26,200	36,850	4,900	.....	104,400	10,400	4,700	.....	17,625	250
Nebraska	1	5,000	5,500	2,000	.....	2,000	600	1,000	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	5	619,000	646,131	318,380	40,340	249,440	63,830	100,440	.....	50,000	236,450	21,610	.....	6,400	71,000	975
New Mexico	6	55,359	57,130	12,500	1,250	12,200	5,060	11,700	.....	.....	11,450	3,100	.....	.....	2,240	.....
New York	2	107,600	111,000	43,000	.....	39,000	12,000	22,700	.....	20,000	26,100	4,800	2,500	.....	17,500	.....
North Dakota	2	52,658	55,530	.....	1,100	23,000	11,000	10,200	.....	.....	12,600	2,900	.....	.....	.....	.....
Ohio	7	572,400	606,500	173,500	27,800	200,000	52,100	170,700	82,000	42,000	159,000	35,300	.....	2,100	27,900	1,260
Oklahoma	12	481,000	497,695	156,110	69,070	184,100	42,230	112,490	4,500	.....	136,590	41,280	16,610	10,600	21,010	1,445
Oregon	1	14,000	14,740	15,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,600	.....
Pennsylvania	11	689,620	729,215	247,778	26,750	196,900	20,700	197,208	32,700	133,000	227,750	38,100	57,900	29,628	35,500	.....
Tennessee	1	29,000	30,000	.....	.....	12,000	.....	.....	.....	.....	.....	3,500	.....	.....	3,000	.....
Texas	40	3,732,875	3,896,560	1,277,560	344,750	1,199,370	268,535	980,510	151,170	289,500	1,427,650	211,160	172,410	86,020	64,720	6,025
Utah	6	133,150	140,620	34,800	.....	53,400	17,000	18,500	1,000	7,000	13,600	8,850	2,550	.....	4,700	.....
Virginia	1	53,000	55,790	28,000	14,000	26,500	4,000	8,000	.....	.....	22,000	.....	.....	.....	.....	710
Washington	7	346,500	361,100	132,700	36,000	89,280	27,330	76,890	35,000	20,500	133,780	21,330	2,900	1,900	9,600	1,500
West Virginia	3	19,550	20,500	8,675	.....	.....	.....	6,160	.....	4,440	7,510	.....	.....	6,600	.....	.....
Wisconsin	1	37,000	38,000	15,500	.....	9,700	1,000	8,200	.....	5,800	8,200	1,200	.....	.....	12,000	.....
Wyoming	10	172,605	181,210	65,110	4,440	52,830	16,420	30,990	.....	15,440	52,540	7,800	1,500	1,280	14,520	140
Total	**247**	**14,216,287**	**14,876,050**	**5,300,006**	**1,491,950**	**4,618,580**	**1,061,035**	**3,358,038**	**855,840**	**1,019,830**	**4,760,280**	**849,080**	**348,010**	**237,118**	**683,601**	**43,410**

*State totals include figures converted to calendar day or stream day basis.

AGO 530034

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
ALABAMA															
Hunt Oil Co.—Tuscaloosa	15,000	15,750	8,660				[1]1,400			[1]1,500 [4]3,500				5,200	
Marion Corp.—Mobile	15,000	15,500													
Vulcan Asphalt Refining Co.—Cordova	3,000	NR													
Warrior Asphalt Corp.—Holt	2,421	2,600												1,726	
Total*	35,421	37,010	8,660				1,400			5,000				6,926	
ALASKA															
Atlantic Richfield Co.—North Slope	4,800	NR													
British Petroleum Co.—North Slope	1,250	NR													
Standard Oil Co. of California—Kenai	22,000	NR												300	
Tesoro-Alaskan Petroleum Corp.—Kenai	38,000	39,500													
Total*	66,050	69,020												300	
ARIZONA															
Arizona Fuels Corp.—Fredonia	NR	10,000	4,000												
Total*	9,000	10,000	4,000												
ARKANSAS															
Berry Petroleum Co. (subsidiary of Crystal Oil Co.), Stephens	3,000	3,500	1,000											1,000	
Cross Oil & Refining Co., Smackover	4,850	5,000	2,000							[5]1,500			1,300	1,400	
Lion Oil Co., El Dorado	44,000	45,000	18,000	[*]5,000	[1]8,500 [2]6,500	4,000 1,200	[1]5,500		[5]5,000	[1]6,500	[1]4,000		800	6,000	
MacMillan Ring-Free Oil Co. Inc.—Norphlet	NR	4,500	2,800											1,250	
Total†	56,125	58,000	23,800	5,000	15,000	5,200	5,500		5,000	8,000	4,000		2,100	9,650	
CALIFORNIA															
Atlantic Richfield Co.—Carson	165,000	173,000	93,000	[1]12,500 [2]42,000 [4]30,000	[1]57,000	8,000	[1]34,000	[1]19,700	[5]18,000	[1]34,000 [2]18,000	[1]7,200	[2]2,490			1,800
Beacon Oil Co.—Hanford	12,000	12,100		[1]500 [2]2,750			[1]1,650								

*State total includes figures converted to stream day basis.

*State totals include figures converted from calendar day to stream day basis.

*State total includes figure converted to calendar day basis.

*Solvent. †State totals include figures converted to calendar-day basis.

AGO 530035

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Bat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Champlin Petroleum Co.—Wilmington	29,000	30,000	18,000	[4]10,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	575
Douglas Oil Co., of California—Paramount	35,000	36,000	21,000	.....	.....	.....	[2]6,400	.....	[5]9,800	[2]6,400	.....	.....	.....	14,000	.....
Santa Maria	8,200	8,500	7,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,800	.....
Edgington Oil Co.—Long Beach	29,000	29,500	19,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,500	.....
Edgington Oxnard Refinery—Oxnard	NR	2,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Exxon Co.—Benicia	87,000	95,000	53,000	[3]21,600	[1]43,000	14,000	[3]24,000	[1]22,000	[2]22,000	[2]60,000	[1]11,500	.....	.....	.....	900
Fletcher Oil & Refining Co.—Carson	15,800	16,200	.....	.....	.....	.....	[2]4,500	.....	.....	[1]4,500	.....	.....	.....	.....	.....
Golden Bear Division, Witco Chemical Corp.—Oildale	10,500	11,000	9,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,000	3,200	.....
Golden Eagle Refining Co. Inc.—Carson	NR	13,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gulf Oil Co.—Santa Fe Springs	51,500	53,800	25,000	[2]13,800	[1]13,500	300	[1]19,000	[1]11,000	.....	[1]12,000	[2]3,000	.....	.....	4,000	.....
Kern County Refining Inc.—Bakersfield	12,900	NR	.....	6,200	.....	.....	[1]2,500	.....	.....	.....	.....	.....	.....	.....	.....
Lunday-Thagard Oil Co.—South Gate	5,000	5,200	3,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,600	.....
MacMillan Ring-Free Oil Co. Inc.— Signal Hill	9,500	10,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mobil Oil Corp.—Torrance	123,500	130,000	95,000	[2]16,000 [4]46,640	[1]56,000	None	[1]17,500 [2]18,500	[1]18,000	.....	[1]23,000 [3]15,000 [6]25,000	[2]10,500	.....	.....	.....	2,800
Mohawk Petroleum Corp. Inc.—Bakersfield	22,100	22,800	.....	.....	.....	.....	[2]2,600	.....	.....	[1]2,600	.....	.....	.....	.....	.....
Newhall Refining Co. Inc.—Newhall	7,500	8,000	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	.....
Phillips Petroleum Co.—Avon	110,000	NR	74,500	[3]42,000	[1]47,000	NR	[1]32,500	[1]22,000	.....	[2]34,500	[1]10,500	[4]2,700	1,670	.....	1,200
Powerine Oil Co.—Santa Fe Springs	28,500	30,000	15,000	.....	[1]11,000	1,000	[1]6,300	.....	[2]8,000 [4]8,000 [5]8,000	[1]7,000	[2]2,300	.....	.....	5,000	.....
San Joaquin Refining Co.—Oildale	17,000	18,000	7,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,360	.....
Sequoia Refining Corp.—Hercules	27,000	28,300	5,900	.....	.....	.....	[1]5,800	[2]2,900	.....	[1]5,400	.....	.....	.....	.....	.....
Shell Oil Co.—Martinez	100,000	103,000	55,300	.....	[1]46,000	40,000	[3]25,000	[1]19,000	[4]50,000	[2]17,000 [5]6,300 [6]16,000 [*]11,000 [†]11,000	.....	.....	4,500	10,400	.....
Wilmington	96,000	101,000	60,000	[4]30,000	[1]35,000	5,000	[1]21,000	.....	.....	[2]28,000 [6]33,000 [*]11,000	[1]8,600	[4]3,800	.....	.....	1,800
Standard Oil Co. of California—Bakersfield	26,000	NR	.....	.....	.....	.....	[1]5,400	.....	.....	[1]5,400	.....	.....	.....	1,100	.....
El Segundo	230,000	NR	103,000	[4]54,000	[1]43,500	11,000	[2]60,000	[1]49,000	.....	[1]40,000 [4]12,000 [‡]18,000	[1]5,900	[4]1,500	.....	8,300	2,200
Richmond	190,000	NR	150,000	.....	[1]43,500	11,000	[2]70,500	[1]41,500 [4]26,000	.....	[1]44,000 [5]3,200	[1]9,200	[2]2,000	10,000	11,000	.....
Sunland Refining Corp.—Bakersfield	8,800	9,000	.....	.....	.....	.....	[3]1,000	.....	.....	.....	.....	.....	.....	.....	.....

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Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Tenneco Oil Co.—Bakersfield	1,200	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texaco Inc.§—Wilmington	75,000	NR	.....	[4]48,000	[1]28,000	NR	[1]35,000	[1]20,000	[4]13,000	[1]20,000	[1]4,400	.....	.....	.....	1,650
Toscopetro Corp.—Bakersfield	26,570	27,000	17,000	[3]7,000	[2]10,000	2,000	[1]14,500	[1]13,300	.....	[1]5,000	[1]1,800	.....	.....	.....	210
Union Oil Co. of California—															
Los Angeles	108,000	111,000	83,000	[2]20,000	[1]45,000	7,000	[2]29,000	[1]21,000	.....	[1]37,000 [6]33,000	[1]8,000	.....	.....	10,000	.....
San Francisco	111,000	115,000	38,500	[4]42,500	.....	.....	[2]26,000	[1]30,000	.....	[1]21,000 [6]9,000 ¶14,000	.....	.....	3,600	6,150	1,850
West Coast Oil Co.—															
Bakersfield	16,000	NR	.....	[2]2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,000	.....
Total‖	1,809,295	1,894,800	958,200	452,820	481,610	122,730	476,540	317,620	138,250	662,020	83,390	12,490	23,770	98,410	15,165

*Gasoline. †Turbine fuel. ‡Jet fuel. §All figures are calendar day. Stream-day figures not reported. ¶Turbine aromatics saturation ‖State totals include figures converted to stream-day or calendar day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

COLORADO

Gary Western Co.—(Gilsonite) Grand Junction	8,300	8,500	.....	[3]8,500	.....	.....	[4]1,600	.....	.....	[1]2,500	.....	.....	.....	.....	400
Continental Oil Co.—Commerce City	30,000	31,000	7,000	.....	[1]14,000	500	[6]6,500	.....	.....	[1]7,000 [4]7,500	.....	.....	.....	3,300	.....
The Refinery Corp.—Commerce City	17,500	NR	3,500	[2]6,000	[1]6,500	NR	[1]3,800	.....	.....	.....	.....	.....	.....	.....	.....
Total*	55,800	57,920	10,500	14,500	20,500	2,450	11,900	.....	.....	17,000	.....	.....	.....	3,300	400

*State totals include calendar day figure converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

DELAWARE

Getty Oil Co. (Eastern Operations) Inc.— Delaware City	140,000	150,000	90,700	[3]44,000	[1]62,000	15,000	[2]42,000	[1]17,000	.....	[1]45,000 [2]10,000 [4]25,000 [6]30,000	[1]8,000	.....	.....	.....	1,800
Total	140,000	150,000	90,700	44,000	62,000	15,000	42,000	17,000	.....	110,000	8,000	.....	.....	.....	1,800

FLORIDA

Seminole Asphalt Refining Inc.— St. Marks	5,000	5,500	2,400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,500	.....

GEORGIA

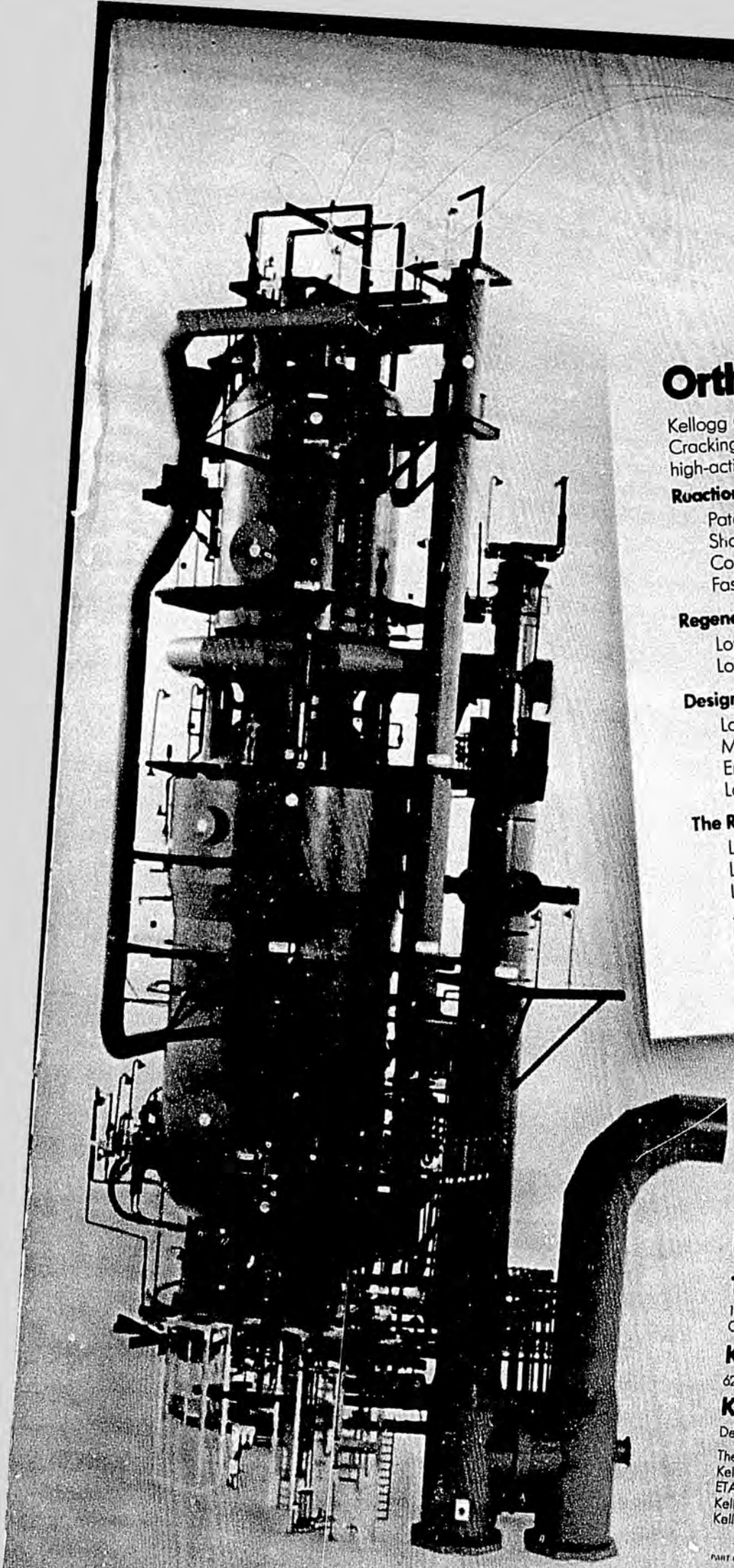
Amoco Oil—Savannah	12,000	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,000	.....
Young Refining Corp.— Douglasville	NR	2,500	.....	.....	.....	.....	.....	.....	[5]1,200	.....	.....	.....	.....	1,300	.....
Total*	14,375	15,130	.....	.....	.....	.....	.....	.....	1,200	.....	.....	.....	.....	9,300	.....

*State total includes figures converted to stream day or calendar day basis.

HAWAII

Hawaiian Independent Refinery Inc.—Barber's Point	30,000	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

AGO 530038



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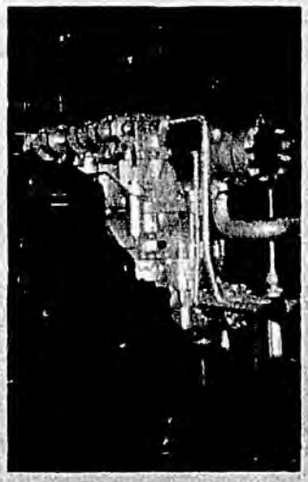

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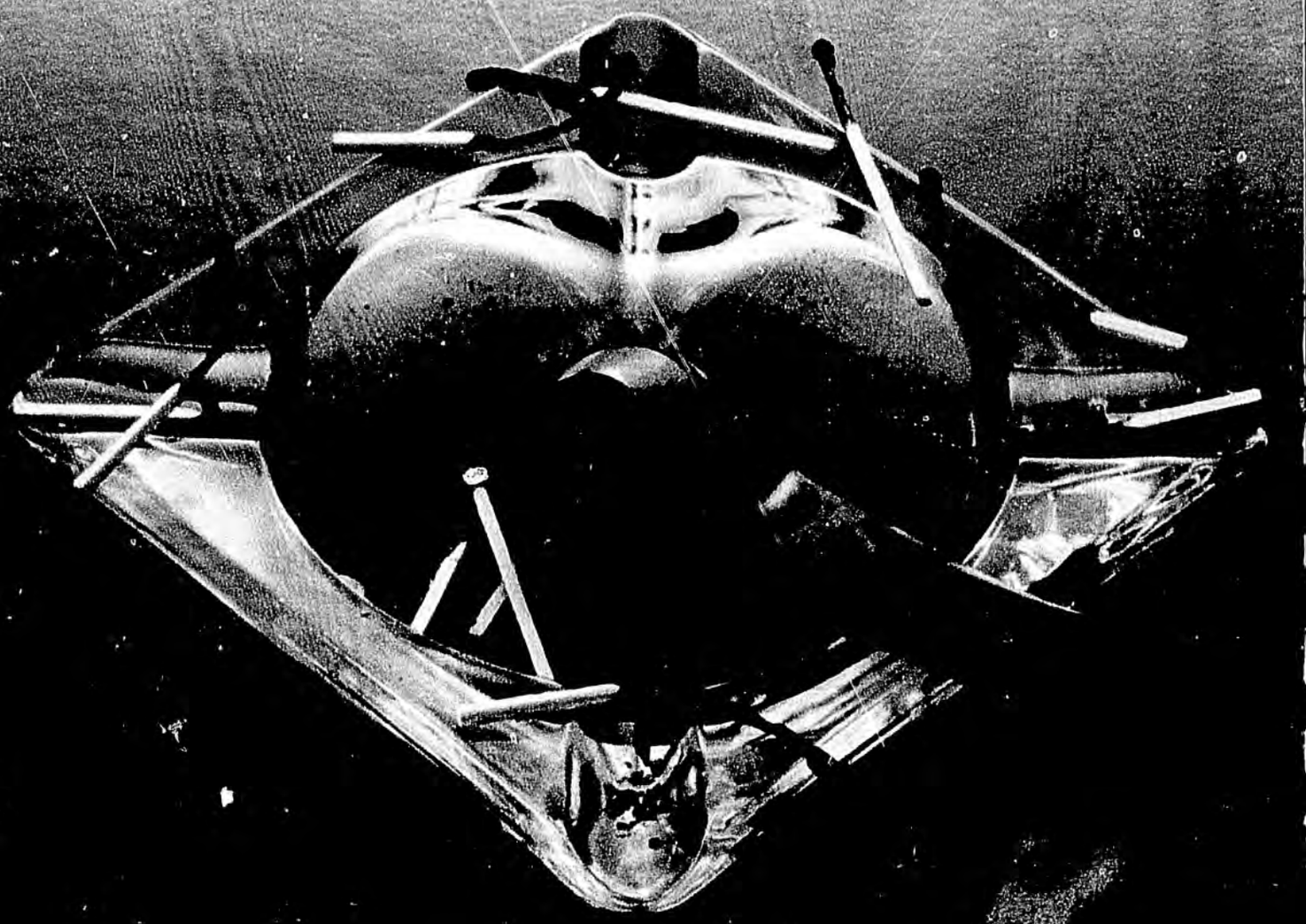

AGO 530040

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Standard Oil Company of Calif.—															
Barber's Point	40,000	NR	15,000	.....	[1]14,100	8,900	.....	.....	.....	[3]1,400	[2]4,130	[4]1,350	.....	1,300	.....
Total*	70,000	73,689	15,000	.....	14,100	8,900	.....	.....	.....	1,400	4,130	1,350	.....	1,300	.....

*State totals include figures converted to stream day basis.

ILLINOIS

Amoco Oil Co.—Wood River	107,000	NR	40,000	.....	[1]38,000	4,000	[3]12,300	.....	.....	[1]15,600	[1]5,500	.....	.....	10,800	.....
Clark Oil & Refining Corp.—															
Blue Island	68,000	70,000	27,000		[1]24,000	1,000	[2]30,500	[1]11,000	.....	[1]20,500	[2]6,000	.....	.....	4,500	.....
Hartford	36,000	38,000	15,000	[4]13,000	[1]26,000	1,000	[2]9,200	.....	.....	[1]9,200 [4]10,000	[2]7,500	.....	.....	.....	450
Marathon Oil Co.—Robinson	195,000	205,000	62,000	[1]2,800 [4]19,000	[1]36,500	8,000	[1]14,000 [3]33,300	[1]22,000	[6]6,000	[1]22,000	[2]7,600	.....	.....	.....	900
Mobil Oil Corp.—Joliet	175,000	186,000	82,000	[4]28,000	[1]66,000	NR	[2]46,200		[5]69,000	[1]67,000	[2]22,000	.....	.....	.....	1,700
Shell Oil Co.—Wood River	260,000	268,000	91,500	[2]21,000	[1]80,000	18,000	[1]22,000 [3]65,000	[1]33,500	[4]32,000	[2]64,000 [5]7,000 [6]49,000 [*]34,000 [†]6,000	[1]19,400	[1]2,900 [4]4,000	5,600	22,500	.....
Texaco Inc.‡—Lawrenceville	84,000	NR	24,000	[1]9,000	[1]31,000	NR	[1]24,000	.....	.....	[1]24,000	[1]3,000	.....	.....	2,700	.....
Lockport	72,000	NR	14,000	[4]27,000	[1]30,000	NA	[1]19,000	.....	.....	[1]19,000	[1]4,400	.....	.....	.....	300
Union Oil Co. of California—															
Lemont	152,000	NR	55,000	[4]19,500	[1]52,000	8,000	[2]32,000	.....	.....	[1]32,000 [2]2,700 [3]4,500 [4]7,000 [6]34,500 [§]2,500	[1]12,800	[1]3,300	.....	2,000	1,000
Wireback Oil Co.—Plymouth	1,500	1,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yetter Oil Co.—Colmar	1,000	NR	1,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total¶	1,151,500	1,206,390	415,730	143,200	390,270	81,240	312,280	66,500	107,000	435,280	89,020	10,200	5,600	42,800	4,380

*Turbine. †Special fuels. ‡All figures are calendar day. Stream-day figures not reported. §Benzene concentrate treater. ¶State totals include figures converted to stream-day basis. Cat-cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

INDIANA

Amoco Oil—Whiting	315,000	NR	140,000	[4]14,500	[1]118,000	28,000	[4]56,000	.....	[6]4,500	[1]104,000 [4]39,000 [7]18,000	[1]23,000	[4]6,500	8,670	31,000	730
Atlantic Richfield Co.—															
East Chicago	126,000	140,000	70,000	.....	[1]48,000	2,000	[1]20,000	.....	[5]25,000	[1]20,000 [2]2,000	[1]6,000	.....	.....	10,400	.....
Gladieux Refinery Inc.—															
Fort Wayne	10,000	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indiana Farm Bureau Cooperative Association Inc.—Mt. Vernon	15,000	15,200	6,000	.....	[1]5,000	780	[1]3,000	.....	.....	[1]3,000	[2]1,500	.....	.....	.....	.....
Laketon Asphalt Refining Inc.—															
Laketon	8,500	NR	5,000											2,600	
Mobil Oil Corp.—East Chicago	47,000	50,800	8,000	[3]3,500 [4]4,500	[2]20,500	1,500	[2]11,000	.....	.....	[1]14,500	[1]3,200	.....	.....	.....	.....
Rock Island Refining Corp.—															
Indianapolis	29,500	31,000	14,000		[1]15,000	NR	[2]8,000			[1]12,500	[2]2,000			3,000	
Total*	551,000	588,050	243,000	22,500	206,500	36,780	98,000		29,500	213,000	35,700	6,500	8,670	47,000	730

*State totals include figures converted from calendar day to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

AGO 530041

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
KANSAS															
American Petrofina Inc.—															
El Dorado	25,000	NR	.....	.....	[1]11,000	500	[1]4,000	.....	.....	[1]4,000	[2]2,000	.....	.....	2,000	.....
Apco Oil Corp.—Arkansas City	25,000	26,000	5,000	.....	[1]9,000	3,000	[2]6,300	[1]2,950	.....	[1]6,800	[1]2,500	.....	.....	1,400	.....
CRA Inc.—Coffeyville	35,000	36,000	12,500	[3]8,500	[1]13,500	700	[3]8,600	.....	[5]3,000	[1]11,800	[2]4,500	.....	1,500	.....	300
Phillipsburg	20,000	21,000	7,500	.....	[1]7,000	350	[4]3,500	.....	[1]4,500	.....	[2]1,570	.....	.....	2,000	.....
Derby Refining Co.—Wichita	25,873	27,000	8,800	[4]3,800	[2]10,450	2,100	[2]5,000	.....	.....	[1]5,000	[2]3,000	.....	.....	.....	160
Mid America Refinery Co. Inc.—															
Chanute	3,100	3,300	1,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mobil Oil Corp.—Augusta	50,000	52,000	17,700	[1]4,100	[2]20,700	2,800	[4]10,000	.....	.....	[1]10,000	[2]3,800	.....	.....	8,000	.....
National Cooperative Refinery															
Association—McPherson	54,150	57,000	.....	[4]17,000	[1]20,000	1,000	[6]7,000*	.....	.....	[1]8,000	[2]6,000	[4]2,000	.....	.....	350
North American Petroleum Corp.—															
Shallow Water	5,000	NR	2,500	.....	[2]2,250	2,250	.....	.....	.....	.....	[2]1,200	.....	.....	.....	.....
Phillips Petroleum Co.—															
Kansas City	85,000	NR	15,000	.....	[1]32,000	16,000	[1]16,000	.....	.....	[6]27,500	[2]7,500	.....	2,500	3,000	.....
Skelly Oil Co.—El Dorado	73,700	75,000	23,000	[4]9,800	[1]30,000	18,000	[2]21,500	.....	.....	[1]23,000 [3]4,300	[2]6,000	[1]1,400	.....	.....	500
Totalt	401,823	418,050	93,800	43,200	155,900	46,700	81,900	2,950	7,500	100,400	38,070	3,400	4,000	16,400	1,310

*Nonregenerative. †Total includes figures converted from calendar-day to stream day.

KENTUCKY															
Ashland Petroleum—Catlettsburg	132,000	138,000	55,000	[3]4,000	[1]54,000	1,000	[2]22,500	.....	.....	[1]22,500 [2]9,000 [3]3,000 [4]1,500 *3,500	[1]6,000	[1]4,000 [2]2,500 †3,000 [4] [5] [6]12,000	.....	10,000	.....
Louisville	25,000	26,000	10,000	.....	[1]9,000	NR	[3]3,000	.....	.....	[3]3,000	.....	.....	.....	3,500	.....
Somerset Refinery Inc.—Somerset	2,800	3,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	159,800	167,000	65,000	4,000	63,000	6,700	25,500	.....	.....	42,500	6,000	21,500	.....	13,500	.....

*Coal-tar, light oil. †Cumene. Cat-cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

LOUISIANA															
Atlas Processing Co.—Shreveport	29,000	NR	600	.....	.....	.....	10,000	.....	.....	[1]10,000 [3]1,800 [6]4,800	[1]1,000	.....	.....	.....	.....
Bayou State Oil Corp.— Hosston	3,500	NR	2,000	[5]1,500	.....	.....	.....	.....	.....	.....	.....	.....	1,250	500	.....
Calumet Refining Co.—Princeton	2,400	2,400	4,100	.....	.....	.....	.....	.....	.....	[7]2,400	.....	.....	1,700	480	.....
Canal Refining Co.—Church Point, La.	2,500	2,600	.....	.....	.....	.....	[3]1,500	.....	.....	.....	.....	.....	.....	.....	.....
Cities Service Oil Co. —Lake Charles	268,000	NR	60,000	[4]28,000	[1]125,000	20,000	[2]46,000		[1]6,000 [4]30,000	[1]46,000 [4]14,000	[1]33,000 [2]2,300	.....	7,000	.....	1,000
Continental Oil Co.—Westlake	83,000	85,000	8,000	[1]7,000 [4]10,000	[2]30,000	7,000	[2]18,500			[1]19,000 [7]3,000	[1]4,600	.....	.....	.....	500
Cotton Valley Solvents Co.— Cotton Valley	7,750	[1]8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Evangeline Refining Co. Inc.— Jennings	4,300	4,000	.....	.....	.....	.....	600	.....	.....	.....	.....	.....	.....	.....	.....
Exxon Co.—Baton Rouge	445,000	460,000	165,000	[4]45,000	[1]160,000	NR	[3]99,500	[1]21,000	.....	[3]3,900 [5]23,800 [6]80,000 [7]2,200	[1]33,100	.....	15,000	28,900	2,160

AGO 530042

Thanks to Rochester Gas & Electric, one of the best things in town is still 3 feet under.

When RG&E puts a pipeweld through x-ray nondestructive testing, they do it with KODAK INDUSTREX Film. The image holds up. The pipeline stays down.

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Good Hope Refineries Inc.—Good Hope	29,450	NR	.....	.....	.....	.....	[1]3,500	.....	.....	[1]3,500	.....	.....	.....	.....	.....
Gulf Oil Co.—Alliance Refinery, Belle Chasse	180,400	186,000	55,000	[4]16,000	[1]78,000	NR	[1]37,500	.....	[4]16,000 [5]22,000	[1]41,000	[2]28,400	[1]11,100 [2]5,400	.....	.....	840
Venice	28,700	29,100	.....	.....	.....	.....	[1]18,000	[1]11,500	.....	[1]14,400	.....	.....	.....	.....	.....
Kerr McGee Corp.—Cotton Valley	7,500	8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
LaJet Inc.—St. James	NR	11,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Murphy Oil Corp.—Meraux	92,500	95,400	14,500	.....	[1]10,500	500	[6]18,000	.....	.....	[1]22,500	[2]2,900	.....	.....	.....	.....
Shell Oil Co.—Norco	240,000	250,000	90,000	[4]18,000	[1]95,000	2,000	[1]18,000 [3]23,500	[1]28,000	[4]25,000	[2]26,000	[1]14,100	.....	.....	6,000	900
Tenneco Oil Co.—Chalmette	NR	97,000	23,000	[4]9,000	[1]22,000	NR	[2]35,000	[1]18,000	.....	[1]24,000	[2]5,000	[1]7,000	.....	.....	350
Texaco Inc.*—Convent	140,000	NR	35,000	[2]12,000	[1]70,000	NR	[1]30,000	.....	.....	[2]55,000	[1]12,500	.....	.....	.....	.....
Total†	1,666,600	1,733,180	461,090	147,830	598,280	130,830	362,930	78,500	99,000	403,410	138,290	23,500	48,450	35,880	5,250

*All figures are calendar day. Stream day figures not reported. †State totals include figures converted to calendar day or stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

MARYLAND

Amoco Oil Co.—Baltimore	10,000	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,000	.....
Chevron Asphalt Co.—Baltimore	13,500	NR	13,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,000	.....
Total*	23,500	24,740	13,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19,000	.....

*State total includes figures converted to stream day basis.

MICHIGAN

Bay Refining-Dow Chemical USA—Bay City	17,000	NR	.....	.....	[5]5,500	2,750	.....	.....	.....	.....	[1]750	.....	.....	.....	.....
Crystal Refining Co.—Carson City	6,200	NR	2,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lakeside Refining Co.—Kalamazoo	6,000	NR	.....	.....	.....	.....	[4]2,000	.....	.....	.....	.....	.....	.....	.....	.....
Marathon Oil Co.—Detroit	58,000	64,000	25,000	.....	[1]21,500	3,900	[1]16,000	.....	[4]12,500	[1]16,500	[1]3,500	[1]2,000	.....	8,650	.....
Osceola Refining Co.—West Branch	NR	9,500	.....	.....	.....	.....	[1]1,350	.....	.....	[2]1,200	.....	.....	.....	.....	.....
Total Leonard Inc.—Alma	40,850	43,000	17,000	.....	[1]11,000	NR	[1]3,400 [2]10,000	.....	[4]3,800 [5]1,400	[1]13,400	[2]1,200	.....	.....	3,000	.....
Total*	137,080	147,230	44,800	.....	38,000	9,950	32,750	.....	17,700	31,100	5,450	2,000	.....	11,650	.....

*State totals include figures converted to stream day or calendar day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

MINNESOTA

Continental Oil Co.—Wrenshall	23,500	24,000	.....	.....	[1]8,500	1,000	[2]3,600	.....	.....	[1]3,600	.....	.....	.....	.....	.....
Koch Refining Co.—Pine Bend	106,920	110,000	40,000	[4]23,000	[1]22,500 [2]14,400	500 5,200	[3]16,500	.....	[5]7,000	[1]16,500 [2]4,000 [4]26,000	[1]8,500	.....	.....	20,000	1,300
Northwestern Refining Co., Division of Ashland Oil Inc.—St. Paul Park	60,000	64,000	38,000	.....	[1]20,000	1,500	[1]10,000	.....	[4]20,000	[1]10,000 [6]5,000	[2]3,000	.....	.....	22,000	.....
Total	190,420	198,000	78,000	23,000	65,400	8,200	30,100	.....	27,000	65,100	11,500	.....	.....	42,000	1,300

MISSISSIPPI

Amerada-Hess Corp.—Purvis	28,500	30,000	.....	[6]6,700	[2]14,500	NR	[1]5,700	[6]3,000	.....	[1]5,450	.....	.....	.....	.....	320
Southland Oil Co.—Crupp	4,200	3,200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,440	.....

AGO 530044

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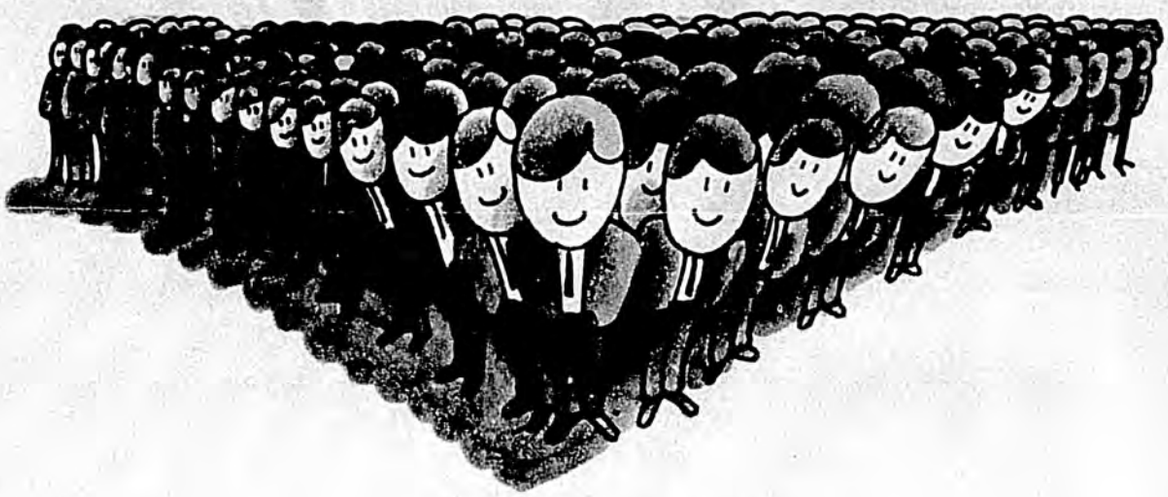

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AGO 530045

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Lumberton	6,000	4,263	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,345	.....
Sandersville	11,000	8,297	4,563	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,485	.....
Standard Oil Co. of Kentucky*— Pascagoula	240,000	NR	148,000	.....	[1]56,000	2,000	[2]65,000	[1]59,000	.....	[1]36,000	[1]9,200	[1]6,000	.....	.....	.....
Total	289,700	298,390	152,563	6,700	70,500	6,350	70,700	62,000	.....	41,450	9,200	6,000	.....	7,270	320

*Calendar day figure converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

MISSOURI

Amoco Oil Co.*—Sugar Creek	105,000	NR	40,000	[4]11,000	[1]38,000	12,000	[3]14,000	.....	.....	[1]18,000 [4]27,000	[1]5,000	.....	.....	6,500	450
Total	105,000	110,530	40,000	11,000	38,000	12,000	14,000	.....	.....	45,000	5,000	.....	.....	6,500	450

*Total includes figure converted from calendar day to stream day basis.

MONTANA

Big West Oil Co.—Kevin	5,123	5,500	750	[1]1,200	.....	.....	[1]1,000	.....	.....	[1]1,000	.....	.....	.....	325	.....
Cenex—Laurel	42,000	44,000	15,400	.....	[1]15,000	3,000	[2]6,800	.....	.....	[2]10,000 [4]15,000	[2]3,200	[4]2,100	.....	.....	.....
Continental Oil Co.—Billings	52,500	56,000	12,200	.....	[1]14,000	7,000	[1]2,500 [2]10,500	.....	.....	*39,000	[2]3,800	[4]2,600	.....	3,500	.....
Exxon Co.—Billings	45,000	46,000	18,000	[3]5,200	[1]19,000	15,000	[1]14,500	[1]4,900	.....	[2]15,500 [6]20,000	[2]3,400	.....	.....	13,000	250
Jet Fuel Refinery—Mosby	1,000	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phillips Petroleum Co.— Great Falls	5,700	NR	2,000	.....	[1]1,800	1,200	[2]600	.....	.....	[1]700 [6]1,000	.....	.....	.....	800	.....
Tesoro Petroleum Corp.— Wolf Point	2,500	2,650	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Westco Refining Co.—Cut Bank	4,658	5,000	.....	[1]2,200	.....	.....	[2]950	.....	.....	[1]1,200 [6]1,000	.....	.....	.....	.....	.....
Total†	158,481	166,200	48,350	8,600	49,800	26,200	36,850	4,900	.....	104,400	10,400	4,700	.....	17,625	250

*Light oil. †State totals include calendar day figures converted to stream day basis.

NEBRASKA

CRA Inc.—Scottsbluff	5,000	5,500	2,000	.....	[1]2,000	600	[3]1,000	.....	.....	.....	.....	.....	.....	.....	.....

NEW JERSEY

Amerada-Hess Corp.—Fort Reading	70,000	75,000	30,000	.....	[1]30,000	15,000	[1]6,500	.....	.....	[1]6,500	[1]4,480	.....	.....	.....	.....
Chevron Oil Co.—Perth Amboy	88,000	92,000	50,000	.....	[3]30,000	8,000	[2]14,000	.....	.....	[1]14,000 [4]20,000	[1]3,000	.....	.....	25,000	.....
Exxon Co.—Linden	275,000	286,000	143,000	[2]2,200	[1]120,000	20,000	[3]42,000	.....	[2]50,000	[1]42,000 [2]14,000 [6]39,000	[1]8,500	.....	.....	46,000	.....
Mobil Oil Corp.—Paulsboro	98,000	100,500	62,600	[4]23,700	[2]25,000	NR	[6]23,500	.....	.....	[1]23,500 [6]33,000	[2]2,300	.....	6,400	.....	975
Texaco Inc.*—Westville	88,000	NR	29,500	[2]13,000	[1]40,000	NR	[1]13,000	.....	.....	[1]17,000 [6]23,000	[1]3,000	.....	.....	.....	.....
Total†	619,000	646,131	318,380	40,340	249,440	63,830	100,440	.....	50,000	236,450	21,610	.....	6,400	71,000	975

*All figures are calendar day. Stream day figures not reported. †State total includes figures converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

AGO 530046

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-Isomerization	Lubes	Asphalt	Coke (t/d)
NEW MEXICO															
Caribou Four Corners Inc.—Kirtland	2,200	1,400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Famariss Oil Corp.—Monument	5,000	NR	.....	.....	.....	.....	650	.....	.....	.....	.....	.....	.....	.....	.....
Navajo Refining Co.—Artesia	20,930	NR	4,500	[1]1,250	[2]5,200	NR	[1]1,870	.....	.....	[1]2,200	[2]1,400	.....	.....	1,400	.....
Plateau Inc.—Bloomfield	5,100	5,200	.....	.....	.....	.....	[1]2,250	.....	.....	[1]2,250	.....	.....	.....	.....	.....
Shell Oil Co.—Ciniza	20,000	21,000	8,000	.....	[1]7,000	3,500	[1]7,000	.....	.....	[2]7,000	[2]1,700	.....	.....	840	.....
Thriftway Co.—Bloomfield	2,129	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total†	55,359	57,130	12,500	1,250	12,200	5,060	11,770	.....	.....	11,450	3,100	.....	.....	2,240	.....
NEW YORK															
Ashland Petroleum Co.—Tonawanda	65,000	67,000	25,000	.....	[1]20,000	NR	[2]11,500	.....	[4]20,000	[1]12,000 *1,500	[1]2,000	[1]2,500	.....	10,000	.....
Mobil Oil Corp.—Buffalo	42,600	44,000	18,000	.....	[2]19,000	6,000	[2]11,200	.....	.....	[1]12,600	[1]2,800	.....	.....	7,500	.....
Total	107,600	111,000	43,000	.....	39,000	12,000	22,700	.....	20,000	26,100	4,800	2,500	.....	17,500	.....
NORTH DAKOTA															
Amoco Oil Co.—Mandan	48,000	NR	.....	.....	[1]23,000	11,000	[3]8,200	.....	.....	[1]11,000	[2]2,900	.....	.....	.....	.....
Westland Oil Co.—Williston	4,658	5,000	.....	[1]1,100	.....	.....	[1]2,000	.....	.....	[1]1,600	.....	.....	.....	.....	.....
Total*	52,658	55,530	.....	1,100	23,000	11,000	10,200	.....	.....	12,600	2,900	.....	.....	.....	.....
OHIO															
Ashland Petroleum Co.—Canton	60,000	62,000	24,000	.....	[1]22,000	NR	[2]11,000	.....	[4]20,000 [5]12,000	[1]12,000	[2]7,000	.....	.....	10,000	.....
Findlay (operated seasonally)	10,000	20,000	8,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,000	.....
Gulf Oil Co.—Cleves	42,100	43,500	13,000	.....	[1]18,000	9,000	[1]10,000	.....	[5]5,000	[1]11,000	[2]4,500	.....	.....	2,900	.....
Toledo	50,300	51,000	12,500	.....	[1]20,000	2,000	[1]11,000	.....	[5]5,000	[1]11,000	[2]5,500	.....	.....	2,000	.....
Standard Oil Co. of Ohio—Lima	165,000	175,000	51,000	[4]15,000	[1]35,000	10,500	[3]50,000	20,000	.....	[1]59,000	.....	.....	2,100	.....	610
Toledo	120,000	125,000	43,000	[4]12,800	[1]55,000	16,500	[3]47,700	36,000	.....	[2]38,500	[1]11,300	.....	.....	7,000	650
Sun Oil Co.—Toledo	125,000	130,000	22,000	.....	[1]50,000	7,500	[1]25,000 [2]16,000	[1]26,000	.....	[1]27,500	[1]7,000	.....	.....	.....	.....
Total	572,000	606,500	173,500	27,800	200,000	52,100	170,700	82,000	42,000	159,000	35,300	.....	2,100	27,900	1,260
OKLAHOMA															
Allied Materials Corp.—Stroud	5,500	5,800	2,800	.....	.....	.....	.....	.....	.....	.....	.....	.....	900	1,210	.....
Apco Oil Corp.—Cyril	12,000	12,500	5,000	.....	[1]6,000	1,500	[1]1,000	.....	.....	[1]1,000	[2]1,350	.....	.....	1,300	.....
Champlin Petroleum Co.—Enid	49,500	52,000	18,000	[3]3,700	[1]19,500	1,950	[2]15,000	.....	.....	[1]20,400	[2]4,500	[6]6,000	1,100	1,400	165
Continental Oil Co.—Ponca City	117,000	120,000	34,500	[1]13,500 [4]18,500	[1]44,600	NR	[2]31,300	.....	.....	[1]32,800 [7]2,700*	[2]9,700	[4]5,000	2,300	3,000	500
Kerr-McGee Corp.—Wynnewood	32,000	34,000	10,000	.....	[1]11,500	2,000	[2]7,500	[1]4,500	.....	[1]7,500 [7]4,000†	.....	.....	.....	3,500	.....
Midland Cooperatives Inc.—Cushing	19,000	19,814	7,000	[4]4,000	[1]7,000	3,000	[1]4,500	.....	.....	[1]4,500 [2]2,000 [3]1,000 [6]1,000	[2]2,000	.....	.....	.....	80

†Total includes figures converted from calendar day to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed.

*Coal tar, light oil. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

*State total includes figure converted from calendar day to stream day basis.

Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

AGO 530047

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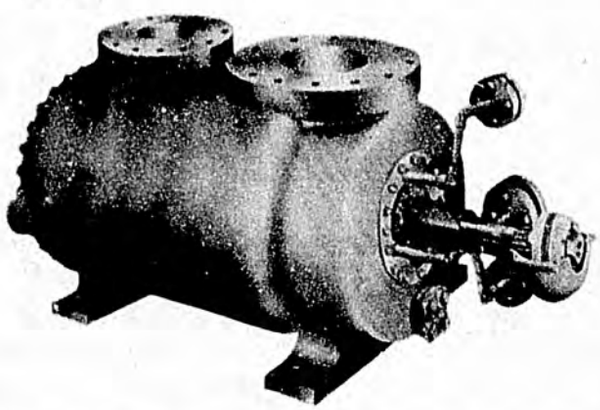

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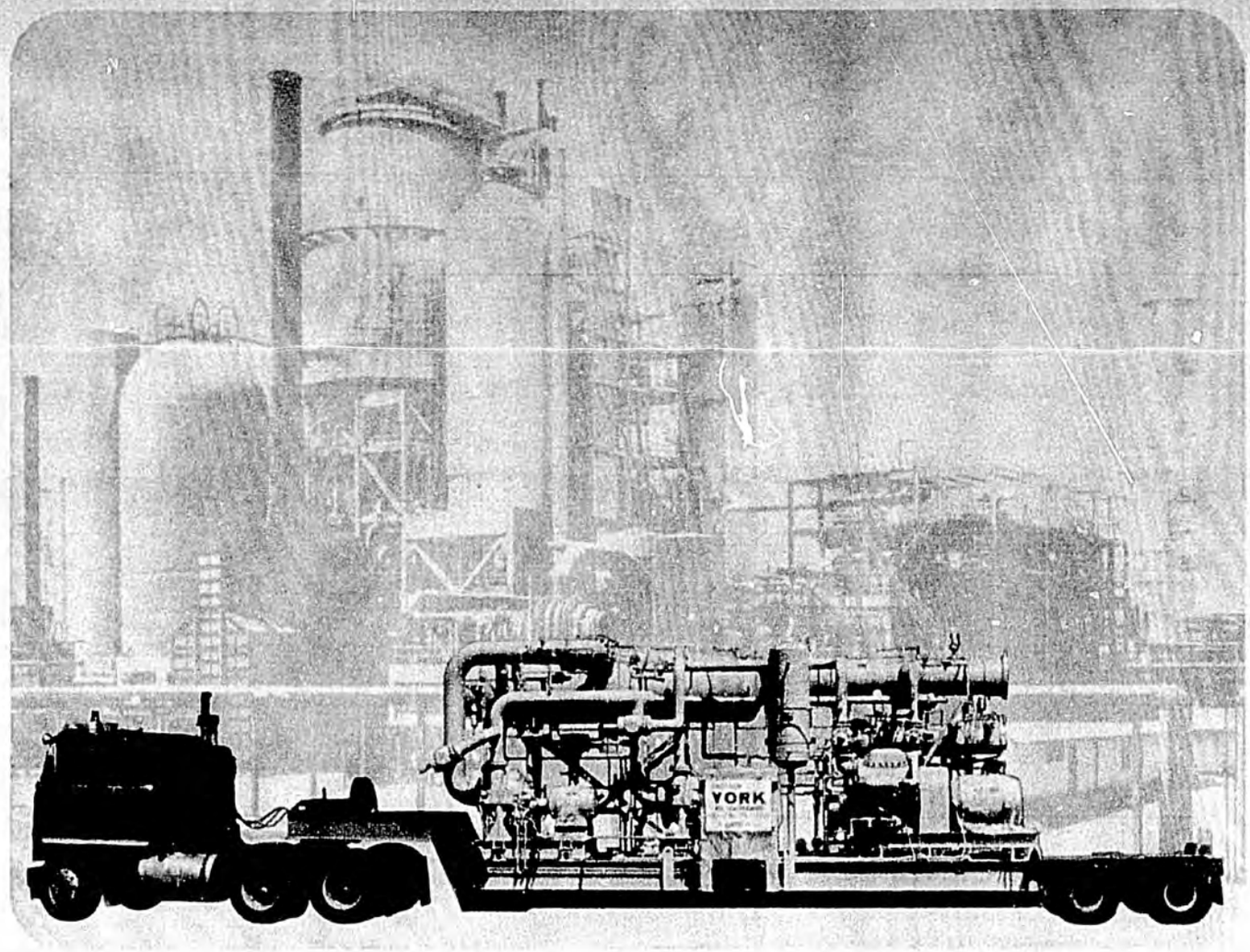
AGO 530048



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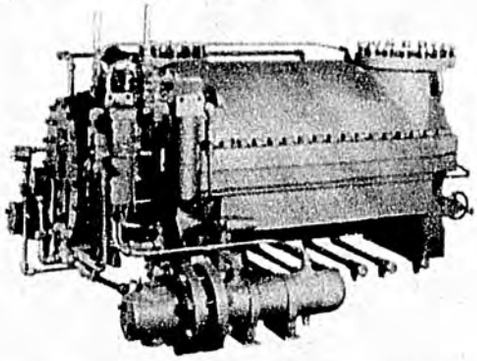

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YORK DIVISION OF BORG-WARNER CORPORATION BORG WARNER

P. O. BOX 1592, YORK, PENNSYLVANIA 17405

AGO 530049

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
OKC Refining Inc.—Okmulgee	21,500	NR	3,200		[2]8,000	2,000					[2]1,500			1,400	
Sun Oil Co.—Duncan	48,500	50,000	17,000	[4]12,000	[1]25,000	10,500	[2]7,800			[1]7,800	[2]5,800				400
Tulsa	88,500	90,000	31,500	[4]8,200	[1]30,000	1,400	[2]23,000 [3]7,000			[1]28,000 [5]6,500	[2]6,000	[1]2,000 [2]950 [4]2,100	6,300	4,200	300
Texaco Inc.‡—West Tulsa	50,000	NR	14,500	[1]6,000	[1]18,000	NR	[2]8,000			[1]8,000	[1]3,000	[4]500			
Tonkawa Refining Co.—Tonkawa	6,000	NR													
Vickers Petroleum Corp.—Ardmore	31,500	32,000	11,000	[5]2,500§	[1]12,500	500	[2]6,500			[1]6,500	[2]4,500			5,000	
Total¶	481,000	497,695	156,110	69,070	184,100	42,230	112,490	4,500		136,590	41,280	16,610	10,600	21,010	1,445

*Cycle oil. †Cat charge. ‡All figures calendar day. Stream day figures not reported. §Pitch. ¶Total includes figures converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

OREGON

Standard Oil Co. of California*—Portland	14,000	NR	15,000											8,600	
Total	14,000	14,740	15,000											8,600	

*Calendar day figure converted to stream day basis.

PENNSYLVANIA

Atlantic Richfield Co.—Philadelphia	185,000	195,000	57,000				[1]60,000	[1]30,000	[2]32,000 [5]41,000	[1]54,000				19,500	
BP Oil Corp.—Marcus Hook	98,000	105,000	60,000	[2]12,000	[1]37,900	4,000	[2]22,000			[1]24,000 [6]16,000	[2]9,700				
Bradford Petroleum Division, Witco Chemical Corp.—Bradford	7,000	7,800					[2]7,500			[1]2,000			3,100		
Gulf Oil Co.—Philadelphia	168,500	174,000	65,000		[1]74,000	6,500	[1]52,000		[5]60,000	[1]52,000	[2]15,000	[1]3,300 [2]1,600			
Pennzoil Co.—Rouseville	10,000	10,400	3,328				[1]3,600	[2]2,700		[1]4,500			3,528		
Quaker State Oil Refining Corp.—Emlenton	3,320	3,495	1,700	[1]750 [5]600			[2]1,250			[1]1,450			1,700		
Farmers Valley	6,500	6,800	2,750	[1]1,400			[2]1,858			[1]2,300			2,500		
Sun Oil Co.—Marcus Hook	165,000	180,000	48,000	[5]12,000*	[1]75,000	10,000	[1]17,400 [2]27,600			[1]35,000 [5]10,000 [6]10,000	[1]12,000	[1]53,000	17,000	12,000	
United Refining Co.—Warren	38,000	38,000	8,000		[1]10,000	200	[2]10,000			[1]15,000 [4]1,500	[1]1,400			4,000	
Valvoline Oil Co., Division of Ashland Oil Inc.—Freedom	[1]6,200	6,500	2,000										1,300		
Wolf's Head Oil Refining Division of Pennzoil Co.—Reno	2,100	2,220											500		
Total	689,620	729,215	247,778	26,750	196,900	20,700	197,208	32,700	133,000	227,750	38,100	57,900	29,628	35,500	

*Naphtha standby. [1]Furnace oil.

TENNESSEE

Delta Refining Co.—Memphis	29,000	30,000			[2]12,000	None					[2]3,500			3,000	

AGO 530050

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
TEXAS															
Adobe Refining Co. (subsidiary of Crystal Oil Co.)—LaBlanca	4,250	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
American Petrofina Inc.—Mt. Pleasant	26,000	NR	15,000	.....	[2]9,600	2,200	[1]3,000	.....	[5]6,000	[3]3,500	[2]2,200	.....	.....	8,000	.....
Port Arthur	84,000	NR	28,000	[2]10,000	[1]26,000	2,000	[1]12,500	.....	[5]30,000	[1]15,000	[1]2,500	[1]3,000 [2]1,600	.....	.....	.....
Amoco Oil Co.—Texas City	333,000	NR	131,000	[4]22,500	[1]128,500	56,500	[3]129,000	[1]38,000	.....	[1]130,000	[1]26,700	[1]34,000	.....	5,300	800
Atlantic Richfield Co.—Houston	213,000	233,500	70,000	[4]27,000	[1]69,000	5,000	[1]100,000	[3]4,500	[5]35,000	[1]100,000 [3]6,000 [5]8,000	[1]9,000	[1]10,400	6,500	.....	1,300
Champlin Petroleum Co.—Corpus Christi	62,000	63,000	9,200	.....	[1]10,000	105	[2]6,300 [6]20,000*	.....	.....	[1]27,000 [2]6,100	[2]2,600	[1]2,100 [2]1,600 [6]7,510	.....	.....	.....
Charter International Oil Co.—Houston	70,000	66,000	22,000	[2]10,000	[1]24,000	5,000	[1]13,500	.....	[5]29,500	[1]15,000	[1]4,500	[1]7,900	.....	4,000	.....
Chevron Oil Co.—El Paso	71,000	NR	24,600	.....	[1]22,000	8,000	[2]25,000	.....	[4]14,000 [5]4,000	[1]25,000	[1]5,000	[4]1,300	.....	5,000	.....
Coastal States Petrochemical Co.—Corpus Christi	NR	135,000	33,000	[4]12,000	[1]19,000	300	[1]15,000 [6]20,000*	.....	.....	[1]30,000 [7]10,000† [7]10,000‡ [7]25,000§	[2]2,500	[1]5,500 [2]2,300	.....	500	500
Cosden Oil & Chemical Co.—Big Spring	65,000	NR	25,000	[1]10,000	[1]24,000	1,000	[2]20,000	.....	[5]8,000	[1]25,000	[2]6,000	[1]4,500 [2]2,000 [3]800	.....	8,000	.....
Crown Central Petroleum Corp.—Houston	100,000	103,000	38,000	[4]9,500	[1]43,000	9,000	[1]8,000 [2]14,000	.....	.....	[1]22,000	[2]10,000	[1]2,000 [2]2,000	.....	.....	300
Diamond Shamrock Oil & Gas Co.—Sunray	47,000	49,000	14,500	[1]2,500	[2]11,500 [3]11,500	2,000 2,000	[2]14,000	.....	.....	[1]14,000 [2]2,500 [7]3,500†	[1]7,600	[4]1,400	.....	2,500	.....
Eddy Refining Co.—Houston	3,250	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Exxon Co.—Baytown	400,000	420,000	180,000	.....	[1]124,000	21,000	[3]88,000	[1]20,000	[2]48,000	[1]90,000 [2]15,000 [5]41,000 [6]109,000 [7]8,500¶	[1]26,000	.....	25,000	12,000	.....
Flint Chemical Co.—San Antonio	1,200	750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gulf Oil Co.—Port Arthur	312,100	319,000	147,400	[4]30,000	[1]120,000	6,000	[1]65,000	[1]15,000	[5]65,000	[1]65,000 [3]1,200 [5]13,900	[1]5,500 [2]14,500	[1]2,700 [3]2,500 [5]7,200	[1]13,200	.....	1,390
Howell Hydrocarbons—San Antonio	3,100	NR	.....	.....	.....	.....	[1]500	.....	.....	.....	.....	.....	.....	.....	.....
La Gloria Oil & Gas Co.—Tyler	28,000	29,000	.....	[1]3,000 [4]12,000	[1]10,000	5,000	[2]9,500	.....	.....	[1]7,000	[1]2,400	.....	.....	.....	80
Longview Refining Co. (subsidiary of Crystal Oil Co.)—Longview	6,600	7,500	.....	.....	.....	.....	[1]1,500	.....	.....	[1]3,300	.....	.....	.....	.....	.....
Marathon Oil Co.—Texas City	61,000	63,000	20,000	.....	[1]28,500	4,500	[1]8,000	.....	.....	.....	[1]1,650	[1]1,600	.....	.....	.....
Mobil Oil Corp.—Beaumont	325,000	335,000	103,000	[4]33,000	[1]55,000 [2]40,000	NR 12,000	[1]45,000 [2]49,000	[1]29,000	.....	[1]83,000 [5]42,000	[1]16,500	.....	8,800	100	1,200
Phillips Petroleum Co.—Borger	95,000	NR	.....	.....	[1]55,000	15,000	[1]26,000	.....	.....	[1]25,000 [4]26,000 [7]12,000	[1]14,500	[2]2,900 [4]8,000 [5]12,000	.....	.....	.....

AGO 530051

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Sweeny	85,000	NR	17,000	.....	[1]30,000	5,000	[1]32,000	.....	.....	[1]26,000	[2]9,000	[1]1,900 [3]3,600 [5]9,000	.....	.....	.....
Pride Refining Inc.—Abilene	14,125	14,690	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quintana-Howell—Corpus Christi	10,000	NR	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shell Oil Co.—Deer Park	288,000	293,000	106,400	[1]65,000 [5]20,000	[1]70,000	NR	[1]35,000 [3]42,000	[1]25,000	[4]50,000	[2]73,000 [5]7,000 [6]85,000	[1]6,800	[1]13,500	6,000	3,800	.....
Odessa	32,000	34,000	10,000	.....	[1]10,500	5,000	[1]9,700	.....	.....	[2]9,700	[1]2,800	[1]450	.....	.....	.....
Southwestern Oil & Refining Co.—Corpus Christi	100,000	150,000	24,000	.....	[1]9,500	2,500	[2]15,000	.....	.....	[1]15,000	[2]2,400	[1]6,000	.....	.....	.....
Suntide Refining Co.—Corpus Christi	57,000	60,000	10,000	[4]7,700	[1]20,000	6,500	[1]13,000 [3]11,000	.....	.....	[1]15,500	[2]3,200	[1]4,500 [2]1,300	.....	.....	235
Tesoro Petroleum Corp.—Carrizo Springs	13,000	13,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texaco Inc.‖—Amarillo	20,000	NR	.....	[4]4,000	[1]8,000	.....	[2]5,000	.....	.....	[1]5,000	[1]1,500	.....	.....	.....	100
El Paso	17,000	NR	.....	[4]4,000	[1]7,000	NR	[2]3,500	.....	.....	[1]3,500	[1]1,500	[4]500	.....	.....	100
Port Arthur	406,000	NR	142,000	[1]51,000	[1]135,000	NR	[1]20,000 [2]40,000	[1]15,000	.....	[1]60,000 [7]37,000**	[1]15,000	.....	20,000	.....	.....
Port Neches	47,000	NR	26,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,000	.....
Texas Asphalt & Refining Co.—Fort Worth	3,000	3,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas City Refining Inc.—Texas City	60,000	63,000	14,500	[2]5,000	[3]22,000	1,000	[2]11,000	.....	.....	[1]11,000	[2]3,500	.....	.....	.....	.....
Three Rivers Refinery—Three Rivers	1,500	NR	800	.....	.....	.....	.....	.....	.....	.....	.....	.....	800	120	.....
Union Oil Co. of California—Nederland	116,000	NR	44,000	.....	[1]36,700	4,000	[3]35,000	.....	.....	[1]35,000 [3]6,500 [4]6,700	[1]4,000	[1]2,500 [3]1,800	3,500	5,400	.....
Union Texas Petroleum, Division Allied Chemical Corp.—Winnie	9,500	10,000	.....	.....	.....	.....	[1]6,200	[2]3,000	.....	[3]270 [7]250†	.....	[1]300	.....	.....	.....
Winston Refining Co.—Ft Worth	15,000	15,500	3,500	.....	[1]3,400	2,600	[1]1,700	.....	.....	.....	.....	.....	.....	.....	.....
Total††	3,732,875	3,896,560	1,277,560	344,750	1,199,370	268,535	980,510	151,170	289,500	1,427,650	211,160	172,410	86,020	64,720	6,025

*Continuous. †Kerosine. ‡Diesel. §Gas oil. ¶Solvents. ‖All figures are calendar day. Stream day figures not reported. **Jet fuel. ††State totals includes figures converted to stream day or calendar day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

UTAH

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Amoco Oil Co.—Salt Lake City	39,000	NR	.....	.....	[1]17,000	5,000	[3]5,500	.....	.....	[1]5,500	[1]3,750	[4]1,800	.....	2,500	.....
Arizona Fuels Corp.—Roosevelt	NR	11,000	.....	.....	[1]6,000	None	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribou Four Corners Inc.—Woods Cross	4,200	5,000	1,000	.....	.....	.....	[2]2,000	[1]1,000	.....	.....	.....	.....	.....	.....	.....
Chevron Oil Co.—Salt Lake City	45,000	NR	27,000	.....	[1]10,000 [3]8,000	2,000 5,000	[2]5,500	.....	[5]5,500	[1]5,500	[2]4,300	[4]750	.....	.....	.....
Husky Oil Co.—North Salt Lake	11,500	12,000	3,800	.....	[2]4,400	2,500	[1]1,000	.....	.....	[1]1,000	[2]800	.....	.....	.....	.....
Phillips Petroleum Co.—Woods Cross	23,000	NR	3,000	.....	[2]8,000	2,500	[4]4,500	.....	[6]1,500	[2]1,600	.....	.....	.....	2,200	.....
Total*	133,150	140,620	34,800	.....	53,400	17,000	18,500	1,000	7,000	13,600	8,850	2,550	.....	4,700	.....

*State totals include figures converted to stream day or calendar day basis. Cat cracking recycle total includes figures no. reported (with recycle estimated at 30% of fresh feed).

VIRGINIA

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Amoco Oil Co.—Yorktown	53,000	NR	28,000	[4]14,000	[1]26,500	4,000	[3]8,000	.....	.....	[1]8,000 [4]14,000	.....	.....	.....	.....	710
Total	53,000	55,790	28,000	14,000	26,500	4,000	8,000	.....	.....	22,000	.....	.....	.....	.....	710

Calendar day figure converted to stream day basis.

AGO 530052

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
WASHINGTON															
Atlantic Richfield Co.—Ferndale	96,000	100,000	55,000	[4]29,000			[2]35,000	[1]35,000	[5]12,000	[1]27,000					1,500
Mobil Oil Corp.—Ferndale	71,500	74,500	7,000	[2]7,000	[2]25,500	2,000	[2]10,000			[1]10,000 [6]21,000	[2]5,900				
Shell Oil Co.—Anacortes	91,000	94,000	33,000		[1]36,000	17,000	[3]20,000		[4]8,500	[2]24,000 [6]21,000	[1]12,100	[4]2,900			
Sound Refining Inc.—Tacoma	4,500	4,700	4,500										1,900	2,600	
Standard Oil Co. of California—Richmond Beach	4,500	NR	5,000											4,000	
Texaco Inc.*—Anacortes	63,000	NR	22,500		[1]25,000	NR	[1]8,000			[2]25,000	[1]3,000				
U.S. Oil & Refining Co.—Tacoma	16,000	NR	3,200				[2]3,000			[1]3,000				3,000	
Total	346,500	361,100	132,700	36,000	89,280	27,330	76,890	35,000	20,500	133,780	21,330	2,900	1,900	9,600	1,500

*All figures are calendar day. Stream day figures not reported. †State totals include calendar day figures converted to stream day basis. Cat cracking recycle total includes figures not reported (with recycle estimated at 30% of fresh feed).

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
WEST VIRGINIA															
Pennzoil Company, Elk Refining Division—Falling Rock	5,000	5,500	2,500				[1]2,000			[1]2,500 [2]500			1,300		
Quaker State Oil Refining Corp.—															
Newell	9,700	10,000	4,000				[2]2,860		[6]4,440	[1]3,060			3,600		
St. Mary's	4,850	5,000	2,175				[2]1,300			[1]1,450			1,700		
Total	19,550	20,500	8,675				6,160		4,440	7,510			6,600		
WISCONSIN															
Murphy Oil Corp.—Superior	37,000	38,000	15,500		[1]9,700	1,000	[2]8,200		[5]5,800	[1]8,200	[2]1,200			12,000	
WYOMING															
Amoco Oil Co.—Casper	43,000	NR	13,500		[1]9,500	1,500	[3]5,200			[1]6,600	[1]1,150		1,280	1,550	
Husky Oil Co.—Cheyenne	23,600	24,600	14,000		[1]10,000	2,500	[1]1,000 [2]5,200			[1]6,200 [4]1,500 [6]3,400	[2]2,750	[4]1,500		3,000	
Cody	10,700	11,200	6,500		[1]3,300	1,000	[1]1,200			[4]1,800	[2]800			4,000	
Little America Refining Co.—Casper	22,000	23,000	5,800		[2]6,500	4,000	[1]3,750			[1]3,750 [2]3,750				2,000	
Mountaineer Refining Co. Inc.—LaBarge	NR	500													
Pasco Inc.—Sinclair	40,000	42,000	14,200		[1]12,000	840	[3]9,700		[4]11,000	[1]9,700 [4]11,400	[1]2,200			2,300	
Sage Creek Refining Co.—Cowley	1,000	1,200					500								
Southwestern Refining Co.—LaBarge	330	NR													
Tesoro Petroleum Corp.—Newcastle	10,500	11,000			[2]3,750	4,250					[2]900				
Texaco Inc.*—Casper	21,000	NR	10,000	[5]4,000†	[1]7,000	NR	[2]4,000		[4]4,000	[1]4,000				1,500	125
Total‡	172,605	181,210	65,110	4,440	52,830	16,420	30,990		15,440	52,540	7,800	1,500	1,280	14,520	140

*All figures are calendar day. Stream-day figures not reported. †Pressure coke. ‡State totals include figures converted to calendar day or stream day basis. Cat cracking recycle total figures not reported (with recycle estimated at 30% of fresh feed).

AGO 530053

Survey of Canadian operating refineries*

Province	No. plants	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
Alberta	8	176,850	190,600	67,280	9,400	56,330	25,807	28,290	.....	6,000	64,740	14,560	3,000	3,220	10,680	1,613
British Columbia	7	133,900	141,200	53,530	.....	40,170	15,350	27,410	.....	19,450	49,450	2,510	.....	.....	8,250	.....
Manitoba	2	49,000	51,580	16,220	.....	16,670	3,320	12,000	1,550	.....	13,670	1,550	.....	.....	4,440	.....
New Brunswick	1	123,500	130,000	20,000	.....	18,000	5,400	13,500	.....	15,000	13,500	.....	.....	.....	5,000	.....
Newfoundland	2	118,000	124,330	39,000	18,000	.....	.....	25,300	35,000	.....	41,800	.....	.....	.....	.....	.....
Northwest Territories	1	2,900	3,050	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nova Scotia	3	180,000	192,260	53,440	.....	29,340	20,330	21,220	.....	.....	70,330	.....	.....	.....	7,440	.....
Ontario	7	419,700	455,080	139,100	38,280	119,770	40,870	109,710	20,000	4,000	221,580	19,050	3,560	7,770	17,100	.....
Quebec	7	607,500	641,830	272,340	74,330	142,000	54,830	99,220	28,780	15,000	249,430	5,498	22,210	3,490	53,750	100
Saskatchewan	4	66,200	71,600	30,905	3,000	21,220	19,280	6,780	.....	.....	9,000	.....	.....	.....	3,905	165
Total	42	1,877,550	2,001,530	691,815	143,010	443,500	185,187	343,430	85,330	59,450	733,500	43,168	28,770	14,480	110,565	1,878

*Province totals include figures converted to calendar day or stream day basis.

Company and location	Crude capacity b/cd	Crude capacity b/sd	Charge capacity—b/sd: Vacuum distillation	Thermal operations	Cat cracking: Fresh feed	Cat cracking: Recycle	Cat reforming	Cat hydrocracking	Cat hydrorefining	Cat hydrotreating	Production capacity—b/sd: Alkylation	Aromatics-isomerization	Lubes	Asphalt	Coke (t/d)
ALBERTA															
Great Canadian Oil Sands Ltd.*—Fort McMurray	50,000	NR	.....	80,000	.....	.....	[2]40,000 [5]14,000	[2]16,000	.....	.....	.....	.....	.....	.....	2,800
Gulf Oil Canada Ltd.—Calgary	6,750	7,500	2,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,700	.....
Edmonton	72,000	80,000	24,400	[4]7,200	[1]30,000	750	[1]5,400 [2]10,000	.....	[5]6,000	[6]45,000	[2]10,000	[4]3,000	.....	.....	431
Husky Oil Operations Ltd.—Lloydminster	10,600	11,000	6,500	.....	.....	.....	[1]1,000	.....	.....	[4]1,000	.....	.....	.....	5,200	.....
Imperial Oil Enterprises Ltd.†—Calgary	22,600	NR	7,400	.....	[7]7,000	11,600	[3]2,500	.....	.....	[4]5,600	[1]1,700	.....	.....	.....	1,000
Edmonton	39,900	NR	15,600	.....	[1]10,200	9,000	[3]2,600 [3]2,600	.....	.....	[5]2,900 [1]2,700	[2]2,400	.....	2,900	3,400	.....
Shell Canada Ltd.†—Bowden	5,000	NR	.....	.....	.....	.....	.....	.....	.....	[1]3,000	.....	.....	.....	.....	.....
Texaco Canada Ltd.†—Edmonton	20,000	NR	7,500	[4]2,000	[6]6,500	NR	[1]3,000	.....	.....	[4]2,700	.....	.....	.....	.....	65
Total	176,850	190,600	67,280	9,400	56,330	25,807	28,290	.....	6,000	64,740	14,560	3,000	3,220	10,680	1,613

*Synthetic crude. Not included in totals. †All figures calendar day. Stream day figures not reported. ‡Province totals include figures converted to stream day basis.

BRITISH COLUMBIA															
Chevron Canada Ltd.—North Burnaby	20,000	21,000	8,400	.....	[1]5,000	4,000	[2]3,400	.....	.....	.....	.....	.....	.....	.....	.....
Gulf Oil Canada Ltd.—Kamloops	5,900	6,500	2,200	.....	[1]2,100	200	[1]800 [2]1,000	.....	.....	[2]2,400 [6]2,250	.....	.....	.....	500	.....
Port Moody	30,000	32,000	12,500	.....	[1]9,000	2,300	[1]4,000 [2]4,500	.....	.....	[2]11,700 [6]11,000	[1]1,050	.....	.....	300	.....
Imperial Oil Enterprises Ltd.*—Ioco	36,800	NR	16,200	.....	[11]11,700	5,900	[3]6,400	.....	.....	[4]5,400	.....	.....	.....	2,800	.....
Pacific Petroleums Ltd.—Taylor	11,700	12,000	1,100	.....	[1]4,400	300	[1]2,200	.....	.....	[1]2,200 [2]2,400 [4]5,900	[2]1,460	.....	.....	560	.....
Shell Canada Ltd.*—Shellburn	22,000	NR	7,500	...	[1]6,000	NR	[3]2,700	.....	[1]6,000 [4]11,500	.....	.....	.....	.....	2,500	.....

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PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Total wells drilled in the United States*—May 1974†

Data compiled by the American Petroleum Institute

State-district	Oil wells‡	Gas wells§	Dry holes	Total wells excluding service wells, stratigraphic, and core tests — wells	Total wells excluding service wells, stratigraphic, and core tests — Footage	Total wells all types, May 1974‖ — Wells	Total wells all types, May 1974‖ — Footage	Total exploratory wells¶ — Oil wells‡	Gas wells§	Dry holes	Wells	Footage
Alabama	1	3	3	7	89,282	7	89,282	1	1	3	5	58,089
Arkansas	5	4	12	21	118,112	22	120,195			4	4	24,512
California	115	3	24	142	348,455	159	387,987	4	2	12	18	99,734
North	1	3	4	8	42,140	10	53,128		2	2	4	13,727
Central Coastal	13		4	17	80,487	19	69,854	2		3	5	21,170
East Central	91		13	104	216,470	114	230,571	2		7	9	59,837
South	7		3	10	25,540	12	31,645					
Offshore	3			3	1,818	4	2,789					
Colorado	23	13	38	74	402,991	74	402,991	1	4	23	28	143,916
Florida	3		6	9	117,025	9	117,025	1		4	5	54,711
Illinois	22		24	48	113,606	48	117,347			7	7	18,493
Indiana	4	1	22	27	38,086	30	44,361	1	1	15	17	23,892
Kansas	80	53	112	245	895,035	261	712,508	5	2	61	68	238,209
Kentucky	11	8	35	54	79,122	55	80,385	2	2	15	19	29,056
Louisiana	64	53	84	201	1,541,568	202	1,554,188	1	8	30	39	368,349
North	26	18	29	73	270,177	73	270,177	7	4	9	14	73,822
South	14	13	26	53	540,128	53	540,128		4	13	17	225,045
Offshore	24	22	29	75	731,263	76	743,883			8	8	69,482
Maryland		1		1	5,120	1	5,120		1		1	5,120
Michigan	3	2	10	15	70,720	16	74,858	1	1	6	8	36,695
Mississippi	4		28	32	266,574	32	266,574			25	25	204,221
Missouri			1	1	795	1	795			1	1	795
Montana	3	2	22	27	79,323	27	79,323		1	13	14	52,805
Nebraska		1	8	9	43,934	9	43,934		1	8	9	43,934
New Mexico	19	39	31	89	470,517	91	475,700	1	3	14	18	99,899
East	18	13	23	54	330,466	56	335,649	1	3	11	15	96,517
West	1	26	8	35	140,051	35	140,051			3	3	3,382
New York	12			12	12,935	12	12,935					
North Carolina			1	1	4,102	1	4,102			1	1	4,102
North Dakota	2		2	4	34,702	5	42,637			1	1	8,302
Ohio	52	88	9	149	662,048	149	662,048	6	13	3	22	109,399
Oklahoma	92	43	80	215	1,223,617	227	1,253,496	3	1	22	26	187,468
Pennsylvania	40	33	5	78	178,679	84	187,863		2	3	5	26,028
Tennessee	4	1	4	9	17,751	9	17,751		1	4	5	11,701
Texas	363	149	275	787	4,281,911	802	4,346,649	27	42	196	265	1,764,819
Dist. 1	28	4	18	50	170,716	50	170,716		1	15	16	73,283
Dist. 2	5	30	21	58	335,070	56	333,070	2	11	14	27	174,261
Dist. 3	29	19	36	84	562,994	84	562,994	4	13	28	45	377,829
Dist. 4	23	29	33	85	507,737	85	507,737		7	24	31	197,828
Dist. 5	2	1	6	9	45,137	12	54,038		1	6	7	35,523
Dist. 6	7	8	10	25	194,201	25	194,201	1		7	8	66,346
Dist. 7B	44	18	56	118	397,443	121	408,562	2		32	34	133,207
Dist. 7C	20	16	13	49	298,132	49	298,132		1	8	9	73,111
Dist. 8	93	6	9	108	720,807	112	743,724	3	1	7	11	115,161
Dist. 8A	55		20	75	409,555	80	431,356	7		15	22	148,431
Dist. 9	38	3	25	66	214,845	66	214,845	8	3	14	25	127,975
Dist. 10	19	10	7	36	216,140	36	216,140			5	5	37,380
Offshore		5	21	26	211,134	26	211,134		4	21	25	204,484
Utah	15		5	20	166,128	20	186,128			4	4	30,658
Virginia		1	1	2	10,320	2	10,320			1	1	5,170
West Virginia	5	18	4	27	86,163	27	86,163	1	1	3	5	22,474
Wyoming	15	4	24	43	282,974	43	282,974	3	3	16	22	176,320
Total—May 1974	**957**	**520**	**870**	**2,347**	**11,459,595**	**2,425**	**11,665,639**	**58**	**90**	**495**	**643**	**3,848,877**
Total—April 1974	**947**	**700**	**945**	**2,592**	**13,349,007**	**2,681**	**13,554,973**	**64**	**94**	**523**	**681**	**4,154,125**
Cum. 1974	**4,504**	**3,035**	**4,437**	**11,976**	**60,204,842**	**12,383**	**61,175,662**	**295**	**451**	**2,589**	**3,335**	**20,007,441**
Cum. 1973	**3,936**	**2,293**	**3,997**	**10,226**	**54,149,907**	**10,623**	**55,192,960**	**294**	**284**	**2,255**	**2,783**	**—**

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from Apr. 27, 1974 through May 24, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ‖Includes two strat tests and 76 service wells, 1,697 and 204,347 ft, respectively.

AGO 530055

VENEZUELA

CREOLE Petroleum Corp. (Exxon Corp. subsidiary) has found oil below 15,000 ft in the Cretaceous in Urdaneta field in the western portion of Lake Maracaibo, Venezuela. The oil is 27°-gravity, much lighter than the 11°-gravity oil found in the field's shallower (about 10,000-ft) wells.

ALBERTA

A NEW wildcat gas discovery for West Central Alberta in Canada was reported recently by Sundance Oil Co.

The Dunvegan 10-18-82-5w6 well flowed 5,488 Mcfd through ½-in. choke in the Cadomin formation at 3,028-59 ft. Flow was 1,500 Mcfd in the Galata formation at 4,732-54 ft. Production casing was run to total plug-back depth of 4,953 ft for completion.

This step-out success is 175 miles northwest of Edmonton and 2¼ miles from Sundance's Dunvegan 6-6-82-5w6, a December 1973 strike.

ARKANSAS

FLOW of 120 b/d is reported at a new deep discovery in South Arkansas' Troy field.

C. G. Davis 1 Christopher et al., SW SW 2-24s-20w, Nevada County, flowed from perforations at 4,688-96 ft. This well is 1¾ miles southeast of Young and ¼ mile northwest of the deep discovery at Troy. Other development is under way here.

In Lafayette County, Amerada Hess Corp. will drill to 11,500 ft, 2½ miles southwest of Bradley. The 1 Charles G. Allen will drill in SW SW 21-19s-25w, 1¾ miles southwest of shallow production.

KANSAS

A REVIVAL well in McPherson County, Kan., opened Mississippian production in dry Bitikofer North field, 2½ miles southeast of Canton.

Mid-America Petroleum Co. 1 Sinclair, NW NW SW 25-19s-1w, flowed 240 b/d on ½-in. choke from perforations at 2,946-54 ft.

OKLAHOMA

ARKLA Exploration Co. is busy developing gas reserves in the deep Anadarko basin of western Oklahoma.

The 1-3 Klein in Anthon field, Custer County, flowed 2,800 Mcfd from Morrow Pennsylvanian through perforations at 12,971-78 ft. In Ellis County, the 1-2 Jones flowed 1,600 Mcfd from Morrow at 8,968-80 ft. The 1-34 Hutton in Taloga field, Dewey County, flowed 336 bbl oil daily from Morrow at 9,505-11 and 9,521-25 ft.

ANOTHER deep wildcat well dug in western Oklahoma's Anadarko basin.

Target for Forest Oil Corp. 1 Bobwhite unit is 23,000 ft. Well is 3½ miles north of Northeast Gotebo gas field and 6 miles from 400-ft Hunton pay in ultrashallow Komalty District field, Kiowa County. The Washita County test is in NW SW NE SW 16-8n-16w. This site is at the "front door" of the deep trough of the basin.

DISCOVERIES

NEW MEXICO

Eddy County:

Samedan Oil Corp. 1 Amoco Federal, 16s-28e. Section 19. IPCAOF 3,935 Mcfd, GOR 51,099:1, Morrow Pennsylvanian 9,326-36 ft. SIWHP 2,528 psi, SIBHP 5,217 psi. TD 9,390 ft. Elev. 3,556 ft. GRD. Comp. 4-2-74. Contractor Capitan. New gas discovery.

NORTH DAKOTA

Stark County:

Farmer Union Exchange 6-30 William Tomchuck, SE NW 30-140n-98w. IPF 176 b/d, 18/64-in. choke, natural, Tyler 8,114-26 ft. TD 8,325 ft. Elev. 2,560 ft. KB. Comp. 4-25-74. Contractor Bomac. Tyler discovery, new field.

OKLAHOMA

Blaine County:

Southeast Longdale discovery. Universal Resources 1-20 Boston, C NE 20-19n-12w. IPF 25 b/d, 14/64-in. choke, 4,768 Mcfd, Mississippi and Chester 8,072-8,107 and 8,874-9,089 ft. Comp. 3-13-74.

Dewey County:

Southeast Hucmac field. Wessely Energy 1 Blaine unit, C NE NE 11-17n-15w. IPF 42 b/d, 62,000 cfd, Morrow 9,632-42 ft. Comp. 3-25-74.

East Hucmac field. Woods Petroleum Co. 1 Chain Ranch trust, C N½ SW 6-18n-14w. IPF 379 b/d, 14/64-in. choke, 1,516 Mcfd, Morrow open hole 9,066-92 ft. Comp. 3-21-74.

Oklahoma County:

Northeast Marion discovery. An-Son Corp. 1 Choctaw, C NW NW 4-11n-1w. IPCOF 2,300 Mcf, Misener 6,219-24 ft. Comp. 3-16-74.

Texas County:

National Oil and Amarex Inc. 1 Jackson, C NE SW 6-3n-15eCM. IPF 59,109 Mcfd, COF 71,158,000 cfd. Upper Morrow 6,120-26 ft. Comp. 2-14-74. Opens North Guymon field.

TEXAS GULF COAST

Chambers County:

McMoRan 1 State Tract 64, 17 miles northeast of Texas City in St. Tr. 64, Trinity Bay. IPAOF 10,300 Mcfd, Frio Oligocene 9,781-83 ft, SITP 6,220 psi, GCR 25,365:1, 45.6°. TD 11,890 ft. Elev. 20 ft KB. Comp. 5-1-74. Contractor Marine Drilling Co. New gas discovery.

SOUTH TEXAS

Bee County:

Laura Thompson South. Exxon 14 Laura F. Barrow, 11 miles east of Skidmore in Pat Downey Sur., A-20. IPAOF 10,000 Vicksburg Oligocene 5,162-73 ft. SICP 2,014 psi, GCR 119,870, 60.5°, BHSIP 2,318 psi. TD 6,050 ft. Elev. 83 ft GRD. Comp. 2-17-74. Reported May 1974. Contractor Field Drilling Co. New gas discovery.

Webb County:

Midwest Oil Corp. 1 Dan M. Sanchez, Jr., 4 miles southwest of Encinal in S&M Sur. 397, A-2076. IPAOF 190 Mcfd, dry, Escondido Cretaceous 5,983-6,013 ft, SITP 2,414 psi, BHSIP 2,798 psi. TD 8,077 ft. Elev. 540 ft GRD. Comp. 2-14-74. Reported May 1974. New gas discovery. Contractor Baggett. Shar-Alan Oil Corp. et al. 1 Gates Ranch, 50 miles north-northwest of Laredo in C. C. Ramsey 1726, A-2860, W. Brown Sur. 1726-A-2165. IPAOF 1,400 Mcfd, Olmos Cretaceous N-4 sand, 5,615-20 ft. TD 5,750 ft. Elev. 666 ft GRD. Comp. 11-23-73. Reported May 1974. New gas discovery. Contractor Dixon.

San Patricio County:

North Portland discovery. Edwin L. Cox 1 City of Portland Gas Unit "C," north side of Portland in T. T. Williamson Sur., A-248. IPAOF 24,000 Mcfd, Frio Anderson 11,190-11,220 ft. GCR 7,214:1, 57.4°, SITP 6,955 psi, BHSIP 8,970 psi. TD 11,320 ft. Elev. 34 ft GRD. Comp. 1-27-74. New gas discovery. Contractor Flournoy.

Mary Iris discovery. Goldston Oil Corp. 2 Miller, 3 miles southwest of Sinton in M. McAuley Sur., A-13. IPAOF 10,200 Mcfd, Frio 5,510-12 ft. SITP 1,515 psi, BHSIP 1,725 psi. Dry. TD 8,327 ft. Comp. 2-20-74. Elev. 55 ft GRD. New gas discovery. Contractor BDK Drilling Co.

WEST TEXAS

Crane County:

Texas Oil & Gas Corp. 1 Reed-Butler, 19½ miles west and 1½ miles south of Crane in Sec. 10, Blk. 4, H&TC Survey. IPCAOF 8,250 Mcfd, dry, Wichita Albany Permian 5,458-5,538 ft. TD 6,180 ft. PB 6,124 ft. Elev. 2,418 ft GRD. Comp. 4-1-74. New gas discovery. SIWHP 2,368 psi, SIBHP 2,706 psi. Contractor Rod-Ric Drilling Co.

Edwards County:

W. B. Osborn 1 Shanklin "10," 8 miles north and 7 miles west of Rocksprings in J. H. Bunton Sur. 10, A-1862. IPCAOF 1,900 Mcfd, Canyon Pennsylvanian 4,498-4,510 ft, GOR 2,123,000:1, 53.7°, SIWHP 1,181 psi, SIBHP 1,344 psi. TD 6,050 ft. PB 4,688 ft. Elev. 2,177 ft GRD. Comp. 3-21-74. Contractor Tucker.

Irion County:

Amoco Production Co. 1 Sugg, A. A. "D," 2 miles north and 2 miles west of Mertzon in Sec. 20, Blk. 1, H&TC Sur. IPF 194 b/d, 2 bw/d, 5,605-5,723 ft. TD 7,800 ft. 16/64-in. choke, 37.2°, CP 875 psi, TP 285 psi, GOR 464:1, PBTD 6,100 ft. Comp. 4-10-74. Elev. 2,327 ft GRD. New oil discovery. Contractor Tom Brown.

Kimble County:

A. N. Norwood Inc. 1 Weisenburg, 12 miles south-southwest of Junction in Sec. 49, TW&NG Sur. A-638. IPCAOF 4,000 Mcfd, Canyon 1,733-40 ft. TD 2,811 ft. Elev. 2,153 ft GRD. Comp. 4-8-74. New gas discovery.

AGO 530056

Total wells drilled in the United States*—July 1974†

Data compiled by the American Petroleum Institute

State-district	Total completions: Oil wells‡	Gas wells§	Dry holes	Total wells excluding service wells, stratigraphic, and core tests: wells	Total wells excluding service wells, stratigraphic, and core tests: Footage	Total wells all types March 1974‖: Wells	Total wells all types March 1974‖: Footage	Total exploratory wells¶: Oil wells‡	Gas wells§	Dry holes	Wells	Footage
Alabama	1	1	6	8	76,032	8	76,032	...	...	3	3	24,214
Alaska	12	3	2	17	126,133	17	126,133	1	2	2	5	35,919
Onshore	6	3	2	11	73,347	11	73,347	1	2	2	5	35,919
Offshore	6	...	...	6	52,786	6	52,786	...	...	...	...	...
Arkansas	8	1	15	24	98,565	24	98,565	...	...	5	5	29,219
California	116	2	19	137	327,143	141	343,886	2	...	10	12	71,405
North	...	1	11	12	72,007	12	72,007	...	...	7	7	48,158
Central Coastal	15	...	4	19	60,064	21	69,192	2	...	2	4	14,897
East Central	94	1	3	98	181,177	98	181,177	...	...	1	1	8,350
South	3	...	1	4	7,681	6	15,296	...	...	...	...	...
Offshore	4	...	...	4	6,214	4	6,214	...	...	...	...	...
Colorado	18	19	28	65	417,970	65	417,970	4	1	22	27	172,706
Florida	2	...	1	3	35,547	3	35,547	...	...	1	1	11,740
Illinois	13	1	30	44	129,356	44	129,356	2	1	13	16	46,591
Indiana	17	4	14	35	39,895	35	39,895	2	...	10	12	20,485
Kansas	69	18	95	182	525,147	186	528,059	10	3	56	69	208,930
Kentucky	14	9	30	53	90,051	55	92,590	1	4	14	19	26,868
Louisiana	71	52	124	247	1,893,142	248	1,895,403	3	7	62	72	700,502
North	33	19	55	107	443,984	108	446,245	2	...	25	27	169,791
South	27	26	40	93	1,044,916	93	1,044,916	1	7	25	33	456,077
Offshore	11	7	29	47	404,242	47	404,242	...	...	12	12	74,634
Michigan	13	5	24	42	214,762	44	222,674	6	4	19	29	146,886
Mississippi	13	1	37	51	445,162	51	445,162	1	...	29	30	278,230
Montana	3	11	35	49	125,706	49	125,706	...	5	25	30	85,829
Nebraska	7	...	24	31	154,163	31	154,163	3	...	18	21	105,748
New Mexico	24	49	28	101	555,305	103	564,235	...	5	14	19	115,928
East	18	14	24	56	385,955	58	394,885	...	5	12	17	111,967
West	6	35	4	45	169,350	45	169,350	...	...	2	2	3,961
New York	3	...	...	3	4,113	3	4,113	...	...	...	...	...
North Dakota	5	...	6	11	97,355	11	97,355	1	...	5	6	51,751
Ohio	44	60	10	114	495,299	114	495,299	2	6	2	10	41,230
Oklahoma	63	48	66	177	1,043,674	187	1,062,244	2	5	9	16	181,182
Pennsylvania	45	26	3	74	159,854	74	159,854	2	6	2	11	43,252
South Dakota	...	...	1	1	8,730	1	8,730	...	...	1	1	8,730
Tennessee	3	...	5	8	10,526	8	10,526	1	...	4	5	5,915
Texas	394	122	242	758	4,005,635	769	4,037,095	26	41	164	231	1,604,414
Dist. 1	13	3	14	30	118,415	30	118,415	...	2	11	13	59,135
Dist. 2	2	19	34	59	356,626	59	356,626	2	9	26	37	241,101
Dist. 3	44	18	40	102	665,053	104	666,003	6	13	27	46	414,234
Dist. 4	22	30	18	70	478,254	70	478,254	3	8	10	21	151,997
Dist. 5	...	1	2	3	22,817	3	22,817	...	1	2	3	22,817
Dist. 6	3	5	9	17	134,522	18	135,087	1	1	9	11	94,445
Dist. 7B	32	6	35	73	240,743	73	240,743	...	2	22	24	99,522
Dist. 7C	33	12	16	61	346,239	62	350,239	4	2	9	15	107,210
Dist. 8	114	9	14	137	709,023	139	712,016	4	...	11	15	113,827
Dist. 8A	44	...	11	55	307,610	53	328,760	3	...	8	11	80,707
Dist. 9	56	5	29	90	248,650	91	249,433	2	...	13	15	67,226
Dist. 10	27	14	7	48	267,541	48	267,541	1	3	3	7	41,032
Offshore	...	...	13	13	111,161	13	111,161	...	...	13	13	111,161
Utah	7	1	2	10	91,398	10	91,398	1	...	2	3	26,760
Virginia	...	1	...	1	5,216	1	5,216	...	...	...	...	...
West Virginia	...	24	2	26	70,593	26	70,593	...	...	...	...	...
Wyoming	43	3	35	81	554,305	82	565,454	3	1	29	33	254,627
Total—July 1974	**1,008**	**461**	**884**	**2,353**	**11,801,777**	**2,390**	**11,903,253**	**73**	**91**	**522**	**686**	**4,299,061**
Total—June 1974	**1,238**	**586**	**982**	**2,806**	**12,976,388**	**2,933**	**13,258,441**	**81**	**111**	**540**	**732**	**4,142,122**
Cum. 1974	**6,750**	**4,082**	**6,303**	**16,676**	**84,983,007**	**17,705**	**86,337,356**	**849**	**853**	**3,651**	**4,753**	**28,448,624**
Cum. 1973	**5,615**	**3,229**	**5,632**	**14,476**	**72,960,446**	**19,031**	**74,393,319**	**343**	**409**	**3,219**	**3,971**	...

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from June 29, 1974, through July 26, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ‖Includes one strat test and 35 service wells, 750 ft and 100,726 ft, respectively.

AGO 530057

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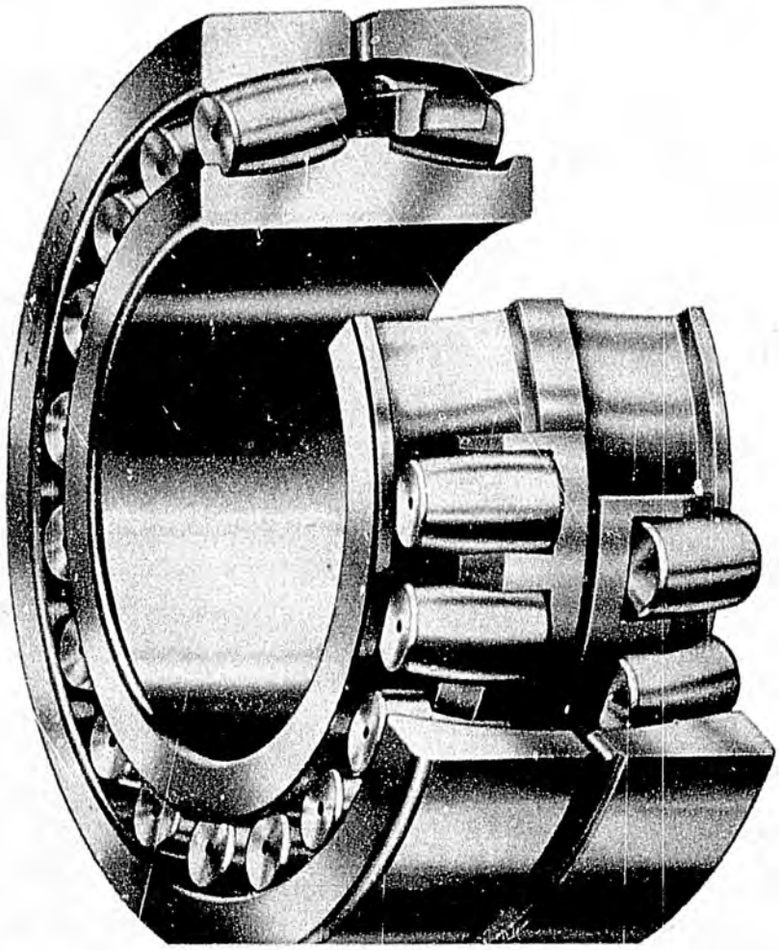


AGO 530058

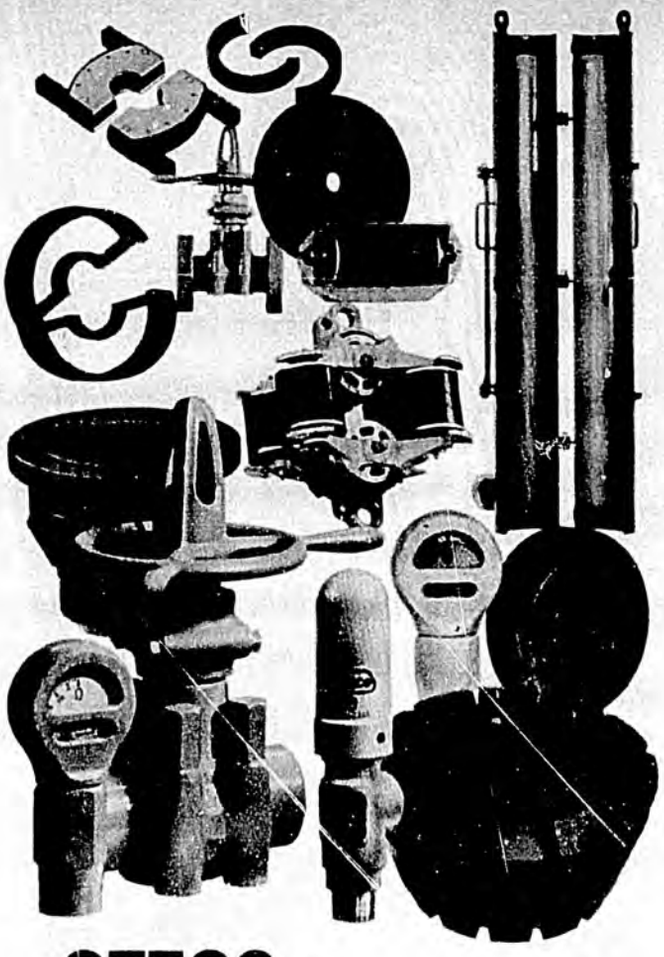
Total wells drilled in the United States*—June 1974†

Data compiled by the American Petroleum Institute.

State-district	Oil wells‡	Gas wells§	Dry holes	Total wells excluding service wells, stratigraphic, and core tests — Wells	Footage	Total wells all types, June, 1974‖ — Wells	Footage	Total exploratory wells¶ — Oil wells‡	Gas wells§	Dry holes	Wells	Footage
Alabama	1	....	4	5	30,522	5	30,522	....	....	3	3	26,899
Arizona	1	....	....	1	4,009	1	4,009	....	....	....	....	....
Arkansas	16	4	16	36	186,015	36	186,015	3	1	8	12	68,397
California	186	8	26	220	529,057	252	588,351	2	1	19	22	105,408
North	....	8	10	18	90,684	18	90,684	....	1	7	8	39,998
Central Coastal	24	....	9	33	126,344	33	126,344	1	....	9	10	42,059
East Central	148	....	5	153	249,394	179	284,206	1	....	1	2	9,125
South	5	....	2	7	30,473	13	54,955	....	....	2	2	14,226
Offshore	9	....	....	9	32,162	9	32,162	....	....	....	....	....
Colorado	16	12	45	73	469,201	73	469,201	3	1	30	34	205,730
Florida	3	....	4	7	91,142	7	91,142	....	....	3	3	28,419
Illinois	27	....	34	61	163,911	63	166,895	2	....	18	20	53,096
Indiana	12	2	21	35	47,237	35	47,237	1	....	17	18	22,791
Kansas	99	32	133	264	781,900	276	793,668	12	3	55	70	258,531
Kentucky	22	11	22	55	82,699	59	87,353	6	1	7	14	25,413
Louisiana	62	41	77	180	1,357,616	181	1,360,226	....	3	29	32	264,370
North	26	22	26	74	289,054	75	291,664	....	1	14	15	92,466
South	9	11	18	38	407,024	38	407,024	....	1	5	6	74,547
Offshore	27	8	33	68	661,538	68	661,538	....	1	10	11	97,357
Michigan	6	6	24	36	178,249	36	178,249	2	3	20	25	140,472
Mississippi	6	4	30	40	313,030	40	313,030	3	2	22	27	215,552
Missouri	....	....	1	1	2,375	1	2,375	....	....	1	1	2,375
Montana	3	9	27	39	102,276	39	102,276	1	2	20	23	64,834
Nebraska	1	....	16	17	89,337	17	89,337	....	....	11	11	57,290
New Mexico	52	23	37	112	619,389	118	637,226	1	5	19	25	135,169
East	45	16	28	89	516,031	95	533,868	1	4	15	20	120,740
West	7	7	9	23	103,358	23	103,358	....	1	4	5	14,429
New York	9	....	....	9	11,395	23	33,303	....	....	....	....	....
North Dakota	1	....	5	6	57,192	6	57,192	....	....	2	2	18,939
Ohio	49	83	9	141	545,947	141	545,947	1	11	1	13	61,103
Oklahoma	132	56	109	297	1,589,640	316	1,641,525	8	5	33	46	242,623
Pennsylvania	87	74	8	169	414,830	183	434,740	1	8	6	15	78,707
South Dakota	....	....	1	1	1,989	1	1,989	....	....	1	1	1,989
Tennessee	10	3	5	18	29,984	18	29,984	3	3	5	11	19,521
Texas	372	135	262	769	4,143,519	792	4,232,722	26	49	163	238	1,575,053
Dist. 1	16	8	13	37	141,850	37	141,850	....	4	7	11	59,086
Dist. 2	5	31	21	57	324,853	57	324,853	2	12	13	27	166,592
Dist. 3	20	13	20	53	378,272	53	378,272	2	8	13	23	228,154
Dist. 4	14	7	16	37	255,140	38	259,448	2	2	10	14	96,357
Dist. 5	3	2	4	9	59,196	9	59,196	....	1	4	5	50,340
Dist. 6	7	7	9	23	176,007	27	188,681	....	1	7	8	64,717
Dist. 7B	25	10	67	102	356,933	106	369,283	1	2	37	40	161,141
Dist. 7C	46	19	15	80	434,029	80	434,029	3	4	12	19	98,211
Dist. 8	95	15	20	130	932,152	130	932,152	4	8	11	23	224,995
Dist. 8A	64	6	15	85	477,291	96	529,449	1	....	11	12	81,256
Dist. 9	68	10	39	117	336,134	120	343,847	10	6	18	34	159,240
Dist. 10	9	7	7	23	141,018	23	141,018	1	1	4	6	54,320
Offshore	....	....	16	16	130,644	16	130,644	....	....	16	16	130,644
Utah	13	3	6	22	148,711	22	148,711	....	2	3	5	39,298
West Virginia	4	74	15	93	285,789	93	285,789	....	7	8	15	60,665
Wyoming	48	6	45	99	699,427	99	699,427	6	4	36	46	369,478
Total — June, 1974	**1,238**	**586**	**982**	**2,806**	**12,976,308**	**2,933**	**13,258,441**	**81**	**111**	**540**	**732**	**4,142,122**
Total May 1974	**957**	**520**	**870**	**2,347**	**16,459,595**	**2,425**	**11,665,639**	**58**	**90**	**495**	**643**	**3,848,877**
Cum. 1974	**5,742**	**3,621**	**5,419**	**14,323**	**73,181,230**	**15,316**	**74,434,103**	**376**	**562**	**3,129**	**4,067**	**24,149,563**
Cum. 1973	**4,703**	**2,725**	**4,792**	**12,220**	**61,964,507**	**12,679**	**63,193,436**	**291**	**341**	**2,735**	**3,367**	....

*Does not include miscellaneous drilling not related to oil and gas exploration and production. †Covers reports of completed or abandoned wells received by the API during the period from May 25, 1974 through June 28, 1974. ‡Includes multiple completion wells which produce gas from one or more zones but oil from at least one zone. A multiple completion well is counted as one well. §Includes multiple completion wells that produce gas from all zones. A multiple completion well is counted as one well. Gas wells also include so-called condensate wells. ¶Exploratory wells include: new-field wildcats, new-pool wildcats, deeper-pool tests, shallower-pool tests, and outpost (extension) tests. ‖Includes one strat test and 126 service wells, 2,026 and 280,027 ft, respectively.

AGO 530059



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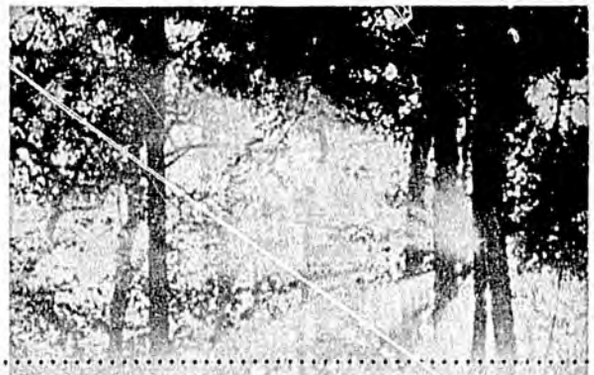

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AGO 530060

FEA reports gasoline-market breakout

REFINERS' gasoline sales to independent marketers—both branded and unbranded—decreased to 82.7% of total national gasoline sales for the first 5 months of 1974, compared with 83.4% for the first 5 months of 1972, the Federal Energy Administration reports.

FEA's definition of an independent marketer includes major-company jobbers and branded dealers as well as private-brand marketers.

Refiners' sales to their own operated retail outlets, however, increased from 7.9% of all gasoline sold in the first 5 months of 1972 to 9% during the same months of 1974.

These figures come from an FEA report on petroleum market shares, compiled by the agency itself. The study is the third in 2 months, and differs with the conclusions found in the earlier ones.

A study made by the Independent Gasoline Marketers Council showed that unbranded marketers' share of the market declined from 3.59% in February 1972 to 3.28% in 1974, a 17.1% loss.

But a study conducted by Lundberg Survey Inc. showed that this market share increased from 9.5% in February 1972 to 11.53% in February 1974, a 21% gain.

While FEA's figures may not be comparable to the previous studies, they do add more statistics to the debate over whether the independent share has declined.

FEA findings. FEA's survey of 88 refiners, accounting for 92% of U.S. refinery capacity, and 13 importers also shows that market shares of independent marketers and wholesale purchaser-resellers during 1972 amounted to 80.3 billion gal, or 83.6% of all sales. Sales to such independent marketers in 1973 were larger—84.1 billion gal. But the proportion of total sales was fractionally smaller—83.2%.

In the first 5 months of 1974, the proportion of total sales to independent marketers was smaller than in the corresponding period of either 1972 or 1973—82.7% compared with 83.4% in 1972 and 83.7% in 1973. Gallonage, however, was slightly higher in the first 5 months of 1974—32.1 billion gal compared with 31.9 billion for the same time period in 1972. But it was lower than the 34 billion gal sold during the first 5 months of 1973.

The market share of total direct sales rose slightly from 1972 to 1973—16.4% to 16.8%. For the first 5 months of 1974, the share was 17.2% of all sales, compared with 16.3% for the same time period in 1973 and 16.5% for the first 5 months in 1972.

The large integrated refiners sold 71.1 billion gal of the total 96 billion in 1972, or 74.1% of the total. In 1973 the volume increased to 75.3 billion gal, and so did the proportion to 74.5%.

In the first 5 months of 1973 the volume sold by integrated refiners was 30.1 billion gal, compared with 28.6 billion in the similar period in 1972. The proportion, however, declined slightly from 74.8% to 74.1%. For the first 5 months of 1974, 28.6 billion gal were sold, accounting for 73.7% of the total.

Gasoline sales of large independent refiners, defined by FEA as controlling less than 30% of the domestic crude they refine, was 72.76% at the end of the first 5 months of 1974, compared with 73.96% for the same time period in 1972 and 69.56% in 1973.

Sales of small refiners, defined as having less than 175,000-b/d refining capacity, also decreased from 82.4% at the end of the first 5 months in 1972 to 82% for the same period in 1974.

Sales of importers changed little in either gallonage or percentage market shares.

FEA considers these figures of great significance in the battle over whether the allocation program should be continued. The program was adopted to ensure, in part, that the independent sector of the oil industry was protected and that it retained its market share.

API survey. Meantime, the American Petroleum Institute has released a report showing that only 3.5% of U.S. service stations are directly operated by 22 of the country's largest oil companies.

The companies surveyed reported

Total adjusted sales: distribution and market share

Month	Total sales, Thous. gal	Share %	Market shares: Sales through company-operated outlets, %	Market shares: Other direct sales, %	Market shares: Sales to independent marketers %
Jan. 72	7,153,584	100	8.17	8.43	83.40
Feb. 72	7,078,174	100	7.81	8.65	83.55
Mar. 72	7,927,928	100	7.91	8.66	83.43
Apr. 72	7,567,110	100	8.09	8.33	83.57
May 72	8,483,729	100	7.65	9.12	83.23
Jun. 72	8,604,395	100	7.74	8.37	83.88
Jul. 72	8,421,584	100	8.22	6.62	85.16
Aug. 72	8,960,411	100	7.88	8.26	83.87
Sep. 72	8,029,019	100	7.96	8.23	83.81
Oct. 72	8,312,020	100	7.89	8.87	83.23
Nov. 72	8,031,048	100	8.02	8.41	83.58
Dec. 72	7,435,256	100	9.20	8.02	82.77
Jan. 73	7,853,849	100	8.33	8.08	83.59
Feb. 73	7,305,134	100	8.26	8.03	83.71
Mar. 73	8,405,866	100	8.12	8.02	83.86
Apr. 73	8,123,784	100	8.00	7.99	84.01
May 73	8,871,328	100	8.09	8.55	83.36
Jun. 73	8,662,211	100	8.75	7.93	83.32
Jul. 73	9,017,404	100	8.96	7.29	83.74
Aug. 73	9,398,401	100	8.80	7.69	83.52
Sep. 73	8,262,041	100	9.37	7.65	82.98
Oct. 73	8,809,817	100	9.40	8.28	82.32
Nov. 73	8,403,644	100	9.69	8.32	81.98
Dec. 73	7,907,231	100	9.81	7.73	82.46
Jan. 74	7,397,829	100	10.06	8.37	81.57
Feb. 74	6,857,549	100	9.16	8.40	82.45
Mar. 74	7,699,049	100	8.83	8.51	82.66
Apr. 74	8,052,991	100	8.54	8.24	83.22
May 74	8,797,424	100	8.32	8.38	83.30

Source: Federal Energy Administration (FEA's system of classification groups major-company jobbers and branded dealers with private-brand marketers as independent marketers).

AGO 530061

Transworld field in U.K. North Sea called commercial

TEST results released by the Transworld exploration group indicate its wildcat has tapped a commercial oil field in Block 21/1-1 of the British North Sea.

Tests were of three Jurassic sand intervals between 9,498 ft and 9,950 ft. One, on a 24/64-in. choke, flowed 1,345 b/d. Another, on a 24/64-in. choke, flowed 890 b/d and a third, on 40/64-in. choke, made 2,177 b/d, for an aggregate of 4,412 b/d.

The unnamed discovery is the closest to shore yet in British waters, lying only about 90 miles off Peterhead, Scotland.

The group will drill its first appraisal well in first-quarter 1975.

Transworld group includes: Apexco Inc. 14%, Candel Oil Ltd. 14%, St. Joe Minerals Corp. 14%, City Investing Service 28%, C.C.P. North Sea Associates 21-1/6%, GOAL (Oil and Gas Acreage) 7½%, and Petromin 1⅓%.

Sunoco to drill deep tests in Arctic waters

SUNOCO E&P Ltd. has received drilling permits for a pair of previously announced 15,000-ft wildcats in northern Canada's Mackenzie Bay.

Contract has been let to Adeco Drilling & Engineering Co. Ltd. for both of the tests in shallow waters off the Mackenzie Delta, where the exploration pace is picking up speed (OGJ, July 22, p. 24). Both tests are to start late this month under a farmout agreement with Bow Valley Industries Ltd., Arctic Coast Petroleums Ltd., and Numac Oil & Gas Ltd.

Sunoco's F-34 Unark is at 69° 33' 24" N. Lat., 134° 38' 48" W. Long., 8 miles west-southwest of Imperial Oil Ltd.'s J-26 Ivik oil discovery and 16 miles north-northeast of Taglu gas field, both onshore. Proposed drill site is on exploration Permit W-947.

The company's C-35 Pelly is at 69° 34' 14" N. Lat., 135° 23' 45" W. Long., 16 miles north-northwest of Taglu gas field and 14 miles east-northeast of Imperial F-28 Adgo, drilled last March as the first offshore oil and gas discovery in the North American Arctic. Proposed site is on Permit W-948.

Both Sunoco tests are on man-made islands.

Grand Banks wildcat. Elsewhere in Canadian waters, the Amoco Canada Petroleum Co. Ltd. group scheduled a new test on the Grand Banks off the east coast. It is E-41 Skua at 45° 20' 27" N. Lat., 48° 52' 22" W. Long., 176 miles southeast of St. John's, Newf., and 75 miles south of the group's 0-46 Egret, recently abandoned at 9,000 ft.

The Skua, apparently the next to last test to be drilled in the group's Grand Banks drilling program, will be drilled by the Sedco I semisubmersible. The group plans to halt its Grand Banks campaign at year-end.

Bad petrochemical scarcity seen to worsen, Senate says

A SERIOUS shortage of petrochemicals, now being experienced by nearly 200 major corporations, is expected to get much worse, according to a study done by the Senate subcommittee on investigations.

There is "little chance of a reversal" of the shortage during the next 5 years, the report says, predicting a shortfall of 10-15% by the end of this year, a 17% shortage in 1975 and 18% in 1976.

The subcommittee sent out questionnaires to 500 major corporations, and received 258 replies. Of those, 181 companies cited a serious short supply of petrochemicals, due to the limited availability of petroleum feedstocks.

Other products listed in short supply include steel and steel products, paper and plastics. The subcommittee will study these material shortages in hearings to be held later this month.

"Part of the shortage of some resins is due to the shift by producers of feedstocks to the most profitable products, leaving the others in very short supply," the study says.

Another reason is environmental regulations, which has created many uncertainties. The rules might change, or new ones could be imposed, after new plants are completed.

"The closing of older, marginal plants because of the expense of complying with environmental laws has reduced the capacity of the industry and intensified the petrochemical shortage," the study says.

U.S. seismic activity dips

THE COUNT of seismic crews working U.S. areas dropped slightly last month, the Society of Exploration Geophysicists reports.

Active crews numbered 321, off 13 from July.

The decrease of 12 land crews is due to three crews reported on standby in Alaska, three idle because of lack of personnel in the Lower 48, three analog crews shut down after short-term reactivation in the summer, and three included by error in previous counts. Although several marine vessels reportedly left the U.S. for foreign assignments, reactivation of vessels idle in July resulted in a net loss of only one vessel in August.

The August count of active crews is made up of 247 land crews and 27 marine vessels operated by 41 contractors and 40 land crews and 7 marine vessels operated by 12 oil companies.

Respondents to the monthly survey told SEG that the exodus of Canadian equipment and personnel to the U.S. is being followed by Canadian oil operators, who are buying seismic and velocity data in preparation for entry into U.S. exploration. Fifty-one Canadian seismic crews have halted operations since last March, leaving only 18 conventional crews at work.

Personnel and equipment shortages continue in the U.S., with drillers and shot-hole rigs heading the list. Some truck deliveries scheduled in 6-8 months are being delayed for 10 months to 1 year.

AGO 530062

that as of June 30 they directly operated 7,375 of the country's estimated 212,000 service stations. The survey covered all stations — branded, unbranded, and secondary branded—operated by the reporting companies.

The study also shows that during the past 3 years the ratio of directly operated stations to the total of all service station has stayed essentially constant. The number of directly operated stations totaled 7,239 as of Dec. 31, 1973, and 7,641 as of Dec. 31, 1972.

Additionally, there were more conversions of company-operated station to lessee dealer operations than there were conversions from dealer operations to company stations, the survey shows.

TransCanada gets NEB approval for expansion project

CANADA'S National Energy Board has approved a $16-million pipeline-expansion project to boost gas deliveries to eastern Canada.

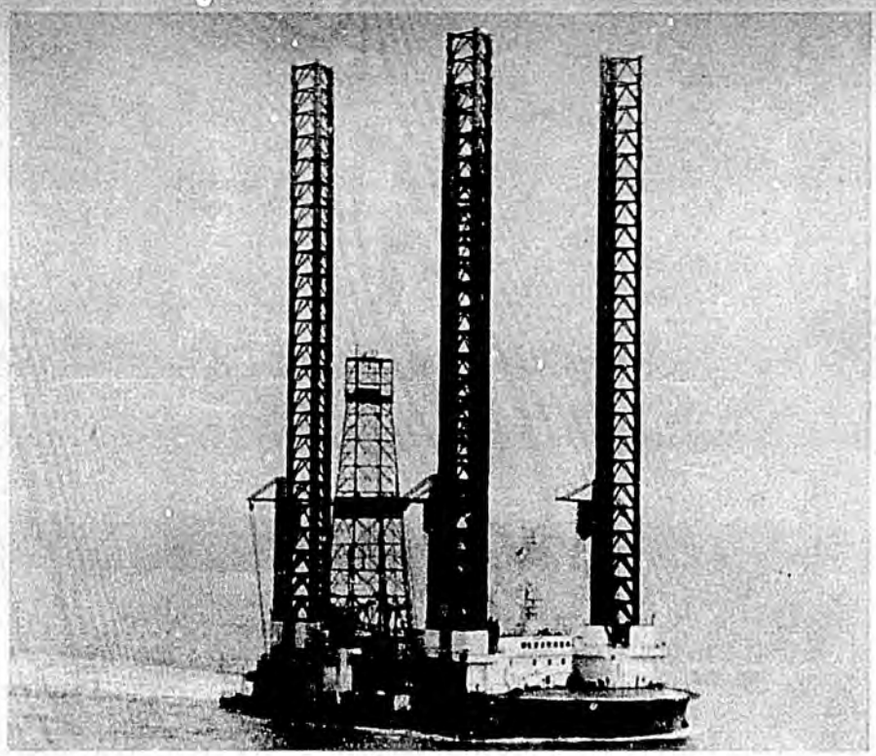
The NEB action allows TransCanada PipeLines Ltd. to lay 58½ miles of loop on its existing system in three provinces—15½ miles of 42-in. line at three locations in Saskatchewan and Manitoba and 43 miles of 24-in. line at four locations in Ontario. The project, scheduled for completion by Nov. 1, will add 45.5 MMcfd to system capacity.

Delivery of 35.5 MMcfd is scheduled to Gaz Metropolitan Inc., Montreal, under its first direct purchase from Pan-Alberta Gas Ltd. Greater Winnipeg Gas Co. will receive 10 MMcfd via direct purchase from Provident Resources Ltd.

Westcoast link. Meantime, Pan-Alberta has agreed to supply up to 58 MMcfd of gas to Westcoast Transmission Co. Ltd., Vancouver. Deliveries are to begin early in 1975, subject to regulatory approval.

The contract calls for the first direct link between the systems of Westcoast and Alberta Gas Trunk Line Co. Ltd. AGTL plans about 40 miles of line to join the two systems.

Price and terms of the agreement between Pan-Alberta and Westcoast are not disclosed, but the contract covers a period of less than 3 years.



DRILLSHIP Offshore Mercury moves through the English Channel en route to the Irish Sea.

Self-propelled jack-up rig to drill Irish Sea wells

OFFSHORE MERCURY, one of only three self-propelled jack-up drillships operating worldwide, is now on location in the Irish Sea working for Hydrocarbons Great Britain Ltd., a wholly owned subsidiary of British Gas.

The firm plans to drill two wells, the first in the northern part of its Block 110/2, 26 miles off Blackpool.

The drillship maneuvered under its own power through the English Channel from the North Sea. It was guided into position by a survey ship, the Decca Recorder. The Decca Recorder had previously scanned the seabed to map an area where the rig could be jacked up and the legs lowered without meeting any obstruction.

Offshore Mercury, designed and owned by Offshore Co., was the first self-propelled jack up built. It worked in Argentine and Mozambique waters prior to the North Sea.

The vessel is 276 ft long and 130 ft wide. It is capable of working in waters up to 250 ft deep and can drill to 20,000 ft.

CRA to buy Cayman assets in Colombia

CRA INC. has agreed to buy Cayman Corp.'s holdings in Colombia for $4.5 million.

CRA, in an agreement subject to approval by Cayman shareholders and the Colombian Government, would acquire about 8,000 b/d of oil production and an interest in the trans-Andean pipeline from Cayman International Exploration Co. The latter holds a 20% interest in the pipeline and in a 615,000-acre concession in the Putumayo basin.

In addition, Cayman International owns a 25% interest in two contracts of association covering a total of 440,000 acres and a seismic option on another 2.5 million acres, both in the Putumayo region of Colombia.

Cayman's operations in Ecuador wouldn't be affected by the transaction.

CRA is a subsidiary of Farmland Industries Inc., Kansas City, and Cayman International is 90% owned by Cayman Corp.

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INTERNATIONAL BRIEFS

DRILLING

JAPAN Petroleum Co. (Nigeria) Ltd., says it plans to begin a 12-well drilling program next year in its six Offshore Nigerian blocks and aims for initial production by 1976.

The company, which has found oil in four of eight wells drilled, is drilling its ninth well now and may drill another before the end of the year.

► **The Woodside Burmah** group's 1 Troubadour wildcat in permit NT-P 12 in the Bonaparte Gulf basin 275 miles northwest of Darwin, Australia, tested a combined rate of 9.84 MMcfd of gas and 233 b/d of condensate through a ¾-in. choke. The test intervals were between 7,307-24 ft and 7,341-60 ft. The well is in 289 ft of water and is projected to a total depth of 11,152 ft.

► **Venezuela's** state-owned CVP has launched a program to drill 32 stratigraphic holes in the 375-mile-long Orinoco heavy oil belt in Venezuela. The Mines and Hydrocarbons Ministry has budgeted $13.2 million for the program, which is aimed at verifying the different qualities of crude in the belt. The belt has been estimated to have over 700 billion bbl of heavy oil reserves.

► **After 14 years,** drilling has been resumed in the rugged Mand Mountains of southern Iran, near the Persian Gulf shore. The Iranian consortium drilled the 1 Mand in 1960 and abandoned it at 13,541 ft. Now Oil Service Co. of Iran has drilled to about 12,500 ft in the 2 Mand and will carry the hole to about 15,000 ft in search of oil or gas in the Permian Khuff formation. Santa Fe's rig 98 is drilling the well.

TRANSPORTATION

WORK on the Moomba-Sydney gas pipeline in Australia has been held up since July by a strike of construction employees, who last week were to meet to discuss terms of a settlement with the contractors and the National Pipeline Authority.

It is estimated now that the pipeline will cost more than $362 million, compared with an estimate of $232 million made 2 years ago.

► **The Indian Oil Corp.** has announced plans to build an offshore crude-oil terminal in the Gulf of Kutch, northwestern India. The terminal would accommodate very large crude carriers that would off-load at sea via submarine pipelines to onshore storage tanks.

AGREEMENTS

TEXAS Gulf has signed an exploration agreement with the government of Pakistan covering 11,000 sq miles in the provinces of Sind, Baluchistan, and Punjab.

The company is to put up all the risk capital for exploration.

The government has an option to acquire up to a 40% working interest in event of commercial oil or gas production.

► **The Norwegian** company of A/S Fred Olsen, a shipowning concern, is reported by the Norwegian Information Service to have applied for an exploration license from the Government of Guatemala. Location and other details of the application were not disclosed.

EXPLORATION

AMOCO Thailand Petroleum Co., subsidiary of Standard Oil Co. of Indiana and operator for itself and partner, says it tested "a few hundred b/d of crude oil" from its first wildcat drilled in the Gulf of Thailand.

The hole, spudded last July 10 some 280 miles south of Bangkok in Block 6, had a planned depth of 10,000 ft. Actual completed depth of the well and other details of the well weren't disclosed. The company, which described the test as "encouraging," has plugged and abandoned the well and moved the drillship Investigator to another site on the block to spud a second well.

Amoco is in equal partnership with Idemitsu Exploration Co. (Thailand) Ltd. in exploration rights to Blocks 5 and 6, covering about 9,400 sq miles off the east coast of Thailand.

GOVERNMENT

JAPAN Petroleum Development Corp. and Peru's state-owned Petroperu have signed a formal agreement under which the Japanese company will lend Peru $330 million for oil and gas exploration and development and construction of a trans-Andean crude-oil pipeline (OGJ, June 10, p. 31).

The newly created Japan Peru Oil will be permitted to buy crude and petroleum product supplies from Petroperu as part repayment for the loan.

The 511-mile, 250,000-b/d crude pipeline itself is expected to cost $500 million.

PROCESSING

PHILLIPS Puerto Rico Core Inc. will have Procon Inc. build its 470-million-lb/year paraxylene expansion at Guayama, Puerto Rico. Completion of the project is expected in early 1977.

The plant will be built adjacent to an existing facility. Total cost is expected to exceed $34 million.

► **Mobil Technical Services Co.** has let a contract to Kellogg International Corp. to design its 2,740 b/d grass-roots lube-oil plant at Jeddah, Saudi Arabia. The project is a joint venture of Mobil and Petromin. Plant will consist of a vacuum unit, propane deasphalting, furfural unit, and MEK dewaxing.

► **East African Oil Refineries** has put its Mombasa, Kenya, refinery expansion on stream raising capacity to 80,000 b/d from 55,000 b/d. The Mombasa refinery is owned 50% by the government and 50% by BP, Caltex, Esso, and Shell.

► **South African Coal, Oil & Gas Corp.** is expanding capacity an undisclosed amount at its oil-from-coal plant at Sasolburg, South Africa, by the addition of two steam-generating units.

► **Petroleos del Norte** plans a 450,000-ton/year ethylene plant and refinery expansion to 240,000 b/d from 120,000 b/d at Somorrostro near Bilbao, Spain. Government approval has been requested. Completion is planned for 1980.

► **Petroquimica-Dow S.A.** will double the capacity of its low-density polyethylene plant at Concepcion, Chile, to 40,000 metric tons/year from 20,000 tons/year by late 1975.

AGD 530064

The top 10 U.S. oil companies: Their record on profits and rate of return

1. EXXON

	Sales	Net income	Capital expenditures	Invested capital	Return on invested capital
	(billions of dollars)	(millions of dollars)			(percent)
1964	$10.8	$1,050.6	$1,046.5	$9,630	12.2%
1965	11.5	1,035.7	971.3	10,054	11.5
1966	12.2	1,090.9	1,204.8	10,482	11.6
1967	13.3	1,192.3	1,618.6	11,361	11.9
1968	14.1	1,276.7	1,944.1	12,803	11.8
1969	14.9	1,242.6	1,690.7	13,207	10.9
1970	16.6	1,309.5	1,793.6	14,418	10.8
1971	18.7	1,516.6	1,810.8	15,360	11.5
1972	20.3	1,531.8	1,984.0	16,173	10.9
1973 est.	**28.5***	**2,440.0**	**2,252.0**	**17,706****	**14.0****

2. MOBIL

1964	$ 4.5	$ 294.2	$ 460.2	$3,812	8.3%
1965	4.9	320.1	557.3	3,999	8.7
1966	5.3	356.1	682.2	4,147	9.3
1967	5.8	385.4	678.5	4,568	9.4
1968	6.2	430.7	713.2	5,027	9.8
1969	6.6	456.5	800.0	5,274	9.6
1970	7.3	482.7	879.5	5,729	9.5
1971	8.2	540.8	1,037.6	6,183	9.7
1972	9.2	574.2	1,180.0	6,482	9.6
1973 est.	**12.7***	**842.8**	**1,340.0**	**6,958****	**11.7****

3. TEXACO

1964	$ 3.6	$ 577.4	604.8	$4,300	14.4%
1965	3.8	636.7	718.9	4,591	14.8
1966	4.4	709.9	737.4	5,265	14.9
1967	5.1	754.4	893.7	5,945	14.2
1968	5.5	835.5	1,065.3	7,358	13.4
1969	5.9	769.8	791.9	7,928	10.9
1970	6.3	822.0	906.1	8,363	10.9
1971	7.5	903.9	1,162.2	9,219	11.0
1972	8.7	889.0	1,192.9	9,798	10.2
1973 est.	**11.8**	**1,292.4**	**1,600.0**	**10,734****	**12.1****

4. GULF

1964	$ 3.2	$ 395.1	781.8	$4,038	10.5%
1965	3.4	427.2	783.5	4,408	10.7
1966	3.8	504.8	1,035.2	4,923	11.5
1967	4.2	568.3	873.0	5,349	11.7
1968	4.6	626.3	1,182.9	6,305	11.3
1969	5.0	610.6	1,551.7	6,786	10.4
1970	5.4	550.0	989.8	7,325	8.9
1971	5.9	561.4	891.0	8,016	8.3
1972	6.2	447.0	959.9	7,738	6.6
1973 est.	**NA**	**775.0**	**1,632.0**	**NA**	**NA**

5. STANDARD OIL OF CALIFORNIA

1964	$ 2.3	$ 345.3	570.0	$3,299	11.1%
1965	2.4	391.2	654.0	3,513	11.8
1966	2.7	401.2	557.0	4,029	11.0
1967	3.3	421.7	643.0	4,477	10.4
1968	3.6	451.6	651.0	4,830	10.3
1969	3.8	453.8	775.0	5,143	9.7
1970	4.2	454.8	788.0	5,391	9.2
1971	5.1	511.1	857.0	5,974	9.7
1972	5.8	547.1	789.0	6,253	9.6
1973 est.	**8.9***	**843.6**	**1,200.0**	**6,986****	**11.4****

6. STANDARD OIL (INDIANA)

1964	$ 2.3	$ 194.8	487.8	$2,978	7.3%
1965	2.5	219.3	475.5	3,087	7.9
1966	2.7	255.9	569.5	3,364	8.6
1967	2.9	282.3	638.7	3,513	9.0
1968	3.2	309.5	796.9	4,102	9.1
1969	3.5	321.0	857.2	4,334	9.0
1970	3.7	314.0	713.3	4,478	8.5
1971	4.1	341.7	720.4	4,838	8.6
1972	4.5	374.7	940.6	5,138	8.6
1973 est.	**6.5***	**511.2**	**1,000.0**	**5,826****	**9.5****

7. SHELL

1964	$ 2.3	$ 198.2	$432.0	$1,880	11.4%
1965	2.6	234.0	530.7	2,166	12.2
1966	2.8	255.2	564.0	2,451	11.9
1967	3.1	284.8	618.4	2,786	11.9
1968	3.3	312.1	554.1	3,473	10.9
1969	3.5	291.1	628.8	3,632	9.0
1970	3.6	237.2	634.8	3,854	7.2
1971	3.9	244.5	450.5	3,944	7.3
1972	4.1	260.5	590.9	4,243	7.5
1973 est.	**5.8***	**332.7**	**NA**	**4,342****	**8.8****

8. CONTINENTAL

1964	$ 1.3	$ 100.1	$225.0	$1,278	9.7%
1965	1.4	96.1	199.8	1,356	8.7
1966	1.7	115.6	282.4	1,561	9.2
1967	2.1	136.1	383.5	1,904	9.2
1968	2.3	150.0	389.0	2,025	9.2
1969	2.4	146.4	337.3	2,327	8.4
1970	2.7	160.5	366.2	2,377	8.4
1971	3.1	140.1	387.5	2,425	7.4
1972	3.4	170.2	458.1	2,534	8.4
1973 est.	**NA**	**225.0**	**375.0**	**NA**	**NA**

9. ATLANTIC RICHFIELD

1964	$ 0.6	$ 47.1	NM	$ 825	6.5%
1965	0.7	66.2	NM	866	8.4
1966	1.1	113.5	NM	1,370	10.8
1967	1.3	130.0	NM	1,541	10.0
1968	1.4	148.9	NM	1,999	9.6
1969	2.7	230.1	$418.4	3,324	10.5
1970	2.7	205.6	466.6	3,699	7.0
1971	3.1	210.5	543.9	3,800	6.7
1972	3.3	192.5	363.5	3,777	6.1
1973 est.	**4.5***	**270.2**	**NA**	**NA**	**NA**

10. PHILLIPS

1964	$ 1.3	$ 115.0	$195.0	$1,607	7.9%
1965	1.5	127.7	232.4	1,740	8.3
1966	1.8	138.4	271.1	2,083	8.4
1967	2.0	164.0	279.8	2,269	9.0
1968	2.1	129.9	289.2	2,351	6.9
1969	2.2	127.8	316.6	2,526	6.8
1970	2.3	117.1	239.4	2,433	6.3
1971	2.4	132.3	225.0	2,610	7.0
1972	2.5	148.4	264.7	2,678	7.2
1973 est.	**3.1**	**230.4**	**NA**	**NA**	**NA**

NA, not available. NM, not meaningful.
*Includes excise taxes and other income.
**First nine months of 1973.

Data: Investors Management Sciences, BW est.

Sales: Revenues minus other income and consumer excise taxes.
Net income: Income after taxes and before extraordinary items.
Invested capital: Sum of long-term debt, minority interest, preferred stock, deferred taxes and investment tax credit, and common equity.
Return on invested capital: Sum of net income, income of minority interest, and fixed charges (minus tax on fixed charges) divided by average invested capital.

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duction now free from controls, the average price of domestic oil has reached $7, twice the average of a year ago. As a result, oilmen say, profits on domestic oil operations could rise by at least one-third. Declares James P. Murphy, president of Houston's Inexco Oil Co.: "The romance of finding great riches has returned to oil."

That is not exactly the way executives of the oil giants view it. They concede that U.S. profits could be up sharply this year. But they see many uncertainties abroad. They say foreign earnings could drop partly because of the strengthening of the dollar. Their margins in Europe may also fall, they say, as governments use price controls to ease the blow of high-priced Middle East crude. "The industry might be doing very well this year to equal its performance of last year," says Harold H. Hammer, senior vice-president of Gulf Oil Corp.

Plenty of money to spend

The oilmen staunchly insist on their need for higher profits. The far higher profits that the industry earned last year provided a higher rate of return for most companies than any year since 1968. As a result, the industry's biggest problem of a year ago—raising enough capital to find new supplies of oil and gas—may well have been solved. Oil executives say that until last year the industry's poor performance was leading it into a period of no growth. From 1968 through 1972, its return on investment dropped steadily from 12.4% to 8.7%, putting it 2.4 percentage points below other manufacturing.

Meanwhile, capital requirements of the business were growing rapidly as oilmen sought to replace dwindling reserves with vastly more expensive oil from the North Sea, the Gulf of Mexico, and Alaska. As a result, the industry's ratio of debt to capital climbed in the last decade from 16% to 24%—close to what many believe is the practical limit for a high-risk industry.

Now that picture has changed, too. Oil returns last year equaled those of other industries. "A year ago we were cutting each other's throats in price wars while crude prices were being held down by cheap foreign oil," says Harry Bridges, president of Shell Oil Co. "It's incredible that in one year those pressures are turned all the way around. Our financial concerns have evaporated."

Capital problems also may be eased because less capital may be needed. Says oil consultant Richard J. Gonzalez: "All the forecasts about the huge capital needs of the oil industry are worthless now because, at these high prices, we are going to consume a lot less energy, so the financial requirements will not be nearly as great." Gonzalez believes that the growth rate in energy consumption may be cut in half, to 3% a year.

Still, not all oilmen agree that their financial troubles are over. They insist that in the years ahead oil will require much more capital than other industries, so its return must also be better than average—perhaps around 16% instead of 12%. Mobil's Warner argues: "If we're going to do the job, even these [1973's] prices and profits fall short." This kind of talk infuriates the industry's many critics. "Those guys are like horses that don't know how to stop when the race is over," declares Lee C. White, former chairman of the Federal Power Commission.

While oil executives may disagree on the adequacy of returns, they are not hesitating to apply their higher profits to huge increases in their capital budgets. Capital spending by the nation's oil companies is likely to jump 20% this year, and many companies' capital budgets, which include projects that extend over more than one year, are up an estimated 50% from a year ago.

Even more important is the direction that the spending is taking. For years, investment in foreign operations boomed while that in domestic operations stagnated. In the last 10 years, corporate investment in oil abroad rose from $6-billion to $16-billion while oil investment in the U.S. edged up only from $6-billion to $10-billion. Now the balance has shifted in favor of U.S. projects. "There now is improved financial attraction for us in this country and greater risk outside," says Mobil's Warner. "So the money will begin to flow back here." That is precisely where the Nixon Administration wants it to flow, as a step toward energy self-sufficiency. "The tilt has definitely come back to this side of the Atlantic," says federal energy chief William E. Simon.

Richer prospects at home

The shift in spending is encouraged, too, by the domestic oil prospects that higher prices have opened up. There were poor oil prospects at $3.50 a bbl., but there should be hordes of them at $10. Says Edward B. Walker, executive vice-president of Gulf: "This could be the biggest boom in oil exploration that this country has seen."

Drilling has already been stepped up. Late last year, the number of rigs in operation in the U.S. rose to more than 1,400—the highest since the mid-1960s. There could be another 25% increase in domestic drilling this year, reversing a 15-year decline that cut by half the number of wells drilled each year. "With these prices," says Shell's Bridges, "everyone is taking risks that three years ago they never would have taken." The revival of drilling also gives new life to domestic independent oil producers, whose numbers have dropped in 20 years from 20,000 to fewer than 8,000. "The Arabs gave us an oil price that our own Congress would never have given, and we're no longer dying on the vine," beams Joseph C. Walter, Jr., president of Houston Oil & Minerals Corp.



Joan Sydlow—BW

'We are embarking on the oil industry's version of Project Candor'
—J. Kenneth Jamieson, chairman, Exxon.

Oilmen are also trying to revitalize old wells because increased production from them can be sold at the $10 price. By water flooding as a secondary recovery technique, oilmen ordinarily can recover about 34% of the oil in the ground. With chemical treatment, they can boost recovery to 40%, but this expensive tertiary production technique is not economical for $3.50 oil. With $10 oil, it is. Shell, Gulf, and many others are rapidly stepping up tertiary recovery. The potential gain is enormous because an increase of six percentage points in oil recovery would produce an additional 25-billion bbl., roughly 70% of the nation's current reserves.

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Still, most oilmen insist that President Nixon's 1980 target for U. S. self-sufficiency in fuel is completely unrealistic. They say 1985 is more likely, and some question even that. "I don't think we'll ever be independent in oil supplies," says Exxon's Jamieson. "And the time lag in shifting to new oil sources, such as shale, is inherently there. Even at these prices there isn't much you can do to speed it up." Jamieson says that the first oil from shale plants will not flow until around 1980 and that to rely on them for a significant part of the nation's energy needs would require massive investments in time and money. Just to make up 10% of the nation's oil production by utilizing shale, he says, would require setting up a mining operation as large as that of the present U. S. coal industry.



Richard A. Walters

'There is more financial attraction in this country and greater risk outside'
—Rawleigh Warner, Jr., chairman, Mobil.

Troubles multiply abroad

While the prospects for domestic oil brighten, it is hard to imagine how the outlook for the majors' foreign operations could be more threatening. Last month, the Organization of Petroleum Exporting Countries raised the f.o.b. cost of oil to $7 a bbl. That is more than twice the $3.05 price in October, and more than four times the price of a year ago. Moreover, OPEC is giving clear signs that it will not increase oil shipments as fast as the concession-holders would like. The majors had hoped to double production to 45-million bbl. a day by 1985, but that goal now apparently is out of the question.

Even more uncertain is how Europe and Japan are going to pay for their oil. Total payments to OPEC countries for oil could hit $90-billion a year, compared with the $25-billion projected before the two latest price increases.

This quick turn of events puts the majors' foreign earnings in serious jeopardy. Last year, the companies' profits on Eastern Hemisphere operations were roughly double the depressed 27¢ per bbl. they got in 1972. But these profits could drop this year. The majors will not find it easy to pass along the $3.95 cost increase when they sell the refined products from Middle East crude to European countries, many of which have price controls. "There's a serious question whether we'll be able to maintain our margins on that oil and also whether Europe will continue to buy as much," says Bob R. Dorsey, Gulf's chairman. "These prices could put Japan and Europe into a tailspin, so how can we say we're going to invest more money over there under these conditions?"



Clyde Hare

'The only safe and profitable place to invest in oil is the U. S.'
—Bob R. Dorsey, chairman, Gulf.

Dorsey believes that the new Arab prices also threaten the profits that the majors had expected to get from foreign oil production outside the OPEC countries. Oil-importing nations are making such big payments for Arab oil that they are not likely to permit companies to make big profits on oil discovered in areas that they control. They will levy high taxes on the oil, just as the Arabs do. Dorsey expects that oil from the North Sea and other non-OPEC areas soon will be hit by such high local taxes that profits will be cut to the same low levels as those on Middle East crude. "That's why the only safe and profitable place to invest in oil is in the U. S.," he says.

An even greater threat to the U. S. international oil giants is the possible loss of their dominant role as suppliers of oil to Europe and Japan. To begin with, they face the prospect that OPEC will claim a bigger share of the oil production for itself. More than a year ago, some OPEC countries negotiated a minimum of 25% participation with the oil companies, to rise to 51% by 1982. But already a few have nationalized a bigger portion; the largest oil producer, Saudi Arabia, is demanding equity control of more than 50%.

While the oil companies have arrangements to buy back the equity oil from the Arabs, OPEC increasingly is selling it directly to the consuming nations, cutting the majors out of the deal. By selling directly, the Arabs can claim the oil companies' brokerage profits. And the consuming countries can buy oil in exchange for goods and services to the Arabs, reducing the drain on their treasuries.



Lee Baker Johnson—BW

'It's incredible that in one year, the pressures turned all the way around'
—Harry Bridges, president, Shell.

The deals already made are only the beginning. Britain, for example, hopes to obtain 1-million bbl. of oil a day, half

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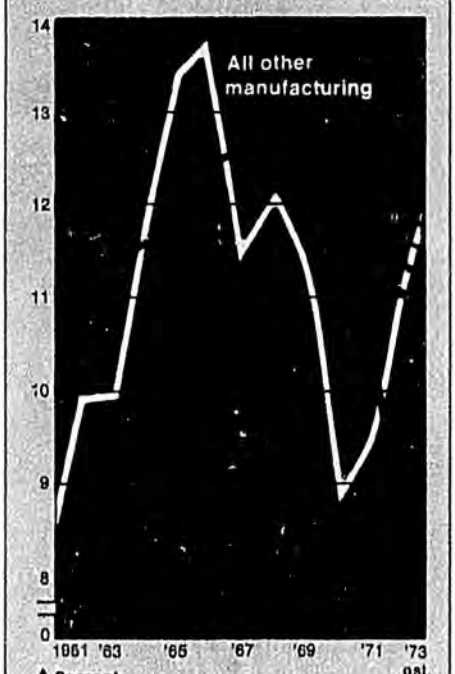
its consumption, through deals with Iran, Saudi Arabia, Kuwait, and others. Last week it signed the first of these deals, a $242-million barter with Iran under which it will get 100,000 bbl. of oil a day in exchange for British products.

This pattern, Jamieson warns, "could create chaos because the Arabs can play one country against another and drive the price up even more." But despite such warnings and despite a meeting of oil-consuming nations planned in Washington next week, most European oil experts expect the deals to continue. In fact, they say that the consuming countries will ultimately take over from the oil companies as the direct contact with OPEC, leaving the oil giants in the role of hired agents to produce oil for OPEC and to ship and refine the oil for the consuming countries.

Oil's rate of return makes a sudden leap



Robert McAuley—BW

Data: Federal Trade Commission

Cut out of a business

Initially, the trend threatens to push the oil companies out of wholesaling crude between the Middle East and the state-owned oil companies, independent refiners, and other bulk purchasers. This business accounts for about 20% of the oil that the companies take out of the Middle East; they feed the other 80% into their own refineries abroad. "Wholesaling of Middle East oil is a role we'll no longer play," Mobil's Warner admits. "The producing countries will move into that market."

Still, the majors control about half the refineries in Europe, and they hope to use this trump card to retain their strong marketing position there even if direct deals between governments grow. "The majors still have big transportation and refining systems in Europe," says Jamieson. "For the consuming countries to shut them down and replace them with higher-cost facilities wouldn't make economic sense." Now that the Arabs are grabbing more of the oil companies' profits on crude, the companies will be looking to those big refineries for more of their foreign profits.

"For a long time," says Warner, "our foreign profits were on crude oil because our taxes in the Middle East were so low. Now those profits are going to have to shift downstream for the simple reason that the Middle East governments now control prices and our profits on crude."

An excess profits tax?

Just as foreign governments may put a rein on U. S. oil companies' profits abroad, so may Congress stand in the way of the majors' attempts to capitalize on their new domestic opportunities. Congress has become a hotbed of oil critics, each of them with a proposal to curb the power and profits of the oil companies.

The mood plainly frightens oil executives. "No other industry has served this counry better," argues C. Howard Hardesty, Jr., executive vice-president of Continental Oil Co., "but in the space of three months everyone has forgotten our record, and people are trying to discard the very foundation of the industry." John Winger, head of Chase Manhattan's energy economics division, says flatly: "There just has never been a greater chance than now of the oil industry in this country being nationalized."

The initial threat from Congress is an added tax on oil company profits. "I'm for reasonable increases in profits for the oil companies," says Senator Walter F. Mondale (D-Minn.), "but they are taking advantage of this shortage, and their profits have gone beyond reasonable incentive." There is now little doubt that an excess profits tax will be passed; the only question is what form it will take.

Oil executives fear most the windfall profits provision included in the Energy Emergency bill that was recommitted to a conference committee by the Senate this week. That provision would hold oil company profits to the average level from 1967 through 1971. Oilmen insist that such a base period is unfair because it includes years in which the industry had some of the lowest returns in its history. "That bill would have clobbered us," says Jamieson.

Oil executives maintain that any excess profits tax that reduces oil company returns below last year's levels will prompt the companies to cut the big capital spending budgets that they have just approved. "If they are going to put the screws to us, the development work we are planning won't be done," fumes Continental's Hardesty. "That's not a threat—it's economic realism."

This furor has helped to produce several alternative proposals that would exempt from an excess profits tax any earnings that a company reinvests in producing domestic energy. "I want to be sure that the tax will not limit investment in developing reserves," says

The dramatic jump in Middle East crude prices

Period	Posted price*	Arab tax	Total cost (production cost plus tax)
1960-65	$1.80	$0.82	$0.92
1966-67	1.80	0.85	0.95
1968-69	1.80	0.88	0.98
Jan. 1—Nov. 14, 1970	1.80	0.91	1.01
Nov. 15, 1970—Feb. 14, 1971	1.80	0.99	1.10
Feb. 15—May 31, 1971	2.18	1.26	1.37
June 1, 1971—Jan. 19, 1972	2.28	1.32	1.43
Jan. 20, 1972—Jan. 1, 1973	2.48	1.44	1.55
Jan. 1—Mar. 31, 1973	2.59	1.51	1.62
Apr. 1—May 31, 1973	2.75	1.61	1.71
June, 1973	2.90	1.70	1.80
July, 1973	2.95	1.74	1.84
Aug., 1973	3.07	1.80	1.90
Oct. 1—Oct. 15, 1973	3.01	1.77	1.87
Oct. 16—Dec. 31, 1973	5.12	3.05	3.15
Jan. 1, 1974	11.56	7.00	7.10

*Posted price is the base on which OPEC countries figure their tax; it bears little relationship to the producers' selling price.

Data: International Crude Oil & Product Prices

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• Representative Wilbur Mills (D-Ark.), chairman of the House Ways & Means Committee. "If they increase spending, they should avoid the tax." But some critics see a major flaw in this so-called plowback provision. A Congressional aide observes: "It virtually mandates that they spend their profits to avoid the tax, and it could mean plowing money into more corporate jets and other wasteful things."

While many oilmen say they could live with a tax that included a plowback provision, some are still leery of it. Says Maurice F. Granville, chairman of Texaco, Inc.: "We're not naive enough to think that a plowback provision would be flexible enough to allow us to counter the excess profits tax with a reasonable capital investment program." The plowback provision, he says, is sure to be restricted to certain types of investment.

Many oil executives protest that there is no reason for an excess profits tax at all. "Our returns are just pulling even with the rest of American industry," Gulf's Dorsey argues. "If that's an excess profit, I'll eat my hat."

Rougher tax treatment?

There is also mounting pressure in Congress to grasp this moment to make broad-based reforms in the tax treatment of oil, the least taxed of all industries. Senator Henry Jackson (D-Wash.) has in mind a major reform package that would deal with oil's three major tax breaks: deduction of drilling costs, the foreign tax credit, and the 22% depletion allowance. Some argue that, rather than imposing an excess profits tax, depletion and drilling deductions should be dropped entirely. These tax breaks, they say, are no longer needed as an incentive for drilling.

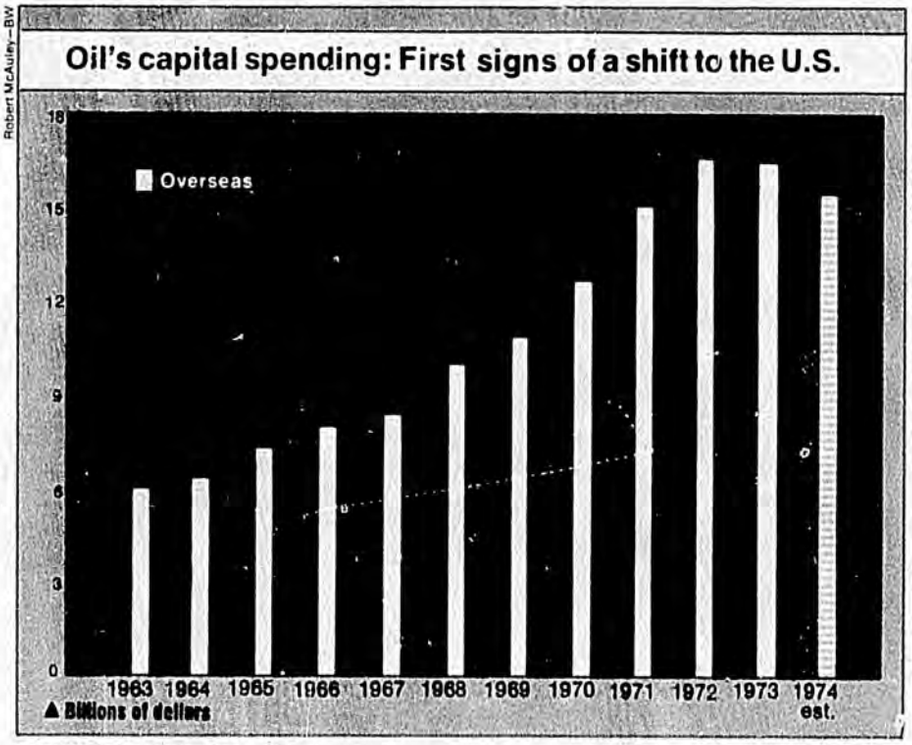
Indeed, the industry's own attachment to the depletion allowance may be weakening. Last December, Thornton F. Bradshaw, president of Atlantic Richfield Co., recommended that the allowance be scrapped in exchange for free-market pricing. "It's an albatross around our neck, and far more trouble than it's worth," Bradshaw said. Critics retort that this is hardly a concession, because free-market oil prices would be high enough to more than compensate oilmen for the 50¢ a bbl. that the depletion allowance is worth to them.

Some independent oilmen, however, were furious at Bradshaw for making the proposal. Unlike major oil companies, the independents attract much of their drilling capital from wealthy outside investors. Without the quick depletion write-off, they say, much of that money would dry up. "A higher price for crude oil doesn't shelter an outside investor who is taking a flier in oil to get a tax write-off," declares Houston independent George Mitchell. And elimination of the drilling deduction, he claims, would lead independents to cancel at least half of their drilling plans for this year.

Also under attack is the foreign tax credit under which U.S. taxes due on foreign earnings can be offset by tax payments to OPEC countries for crude oil. All industries receive credits for taxes paid abroad, but critics argue that, with tax payments to OPEC running four times what they were last year, the tax credit will more than wipe out oil's U.S. tax liability on foreign income.

The industry's response to such reform proposals has a common theme. "If they take away a tax benefit and decrease our profits, then we can't raise enough capital," declares Exxon's Jamieson. "Do they want an oil industry that is profitable enough to do the job, or not?"

Robert McAuley—BW



Data: Chase Manhattan Bank; BW est.

Surely more regulation

Already, in the present oil shortage, the federal government is advising refineries what products to make. And it is possible that when the shortage eases, the oil companies will face even more government regulation.

For openers, Jackson last week proposed a rollback in the soaring prices of domestic crude oil. Surprisingly, some oilmen are talking about the need for controls to keep oil prices from going too high. "For us to stand on our soapbox and talk about going back to a free market," Shell's Bridges concedes, "would be political suicide—the surest way to be nationalized."

Increased regulation will probably also force oil companies to provide the government with much more information about their operations. That process has already begun. A dozen Congressional committees are investigating the industry, including Jackson's permanent investigations subcommittee. Last week's fiery session was only the beginning of a much deeper probe that committee staffers hope will rival some of the committee's hearings on labor racketeering. To some oilmen, the accusatory manner of questioning last week bore a resemblance to the rackets hearings. "For God's sake," cries Mobil's Warner, "we're being treated like criminals."

The committee investigations will probably lead to more formal reporting systems. Jackson and Senator Gaylord Nelson (D-Wis.) are co-authors of a bill calling for creation of a Bureau of Energy Information, which would collect and verify the profits, costs, reserves, production figures, and inventories of energy companies.

Some congressmen are even demanding that oil be regulated much like a utility. Under a major bill to be introduced by Jackson soon, all large oil companies would be chartered by a federal agency. This body would not regulate prices but would prescribe certain principles of operation, put one public member on the board of each

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company, and possibly require prior clearance of major oil company actions, such as acquisitions and any withdrawal from markets. Jamieson says of the bill: "It would produce a rigid system of operation in our business and eliminate the benefit of individual companies testing different ideas."

The most extreme Congressional threats to oil are the measures designed to make the industry more competitive by changing its structure. Only a few months ago, oil executives believed such action was very remote, but the anti-oil mood in Congress has them taking the proposals seriously now. According to the critics, total integration of the major oil companies—their involvement in crude oil production, pipelines, refining, and marketing—has produced an anti-competitive structure. Critics point to product exchange agreements and joint exploration efforts as anti-competitive practices, and they charge that the majors have the power to set artificially high prices on crude oil, where their control is greatest. That allows them, the argument goes, to take most of their profits in that segment of the business while maintaining very low margins in refining and marketing to restrain competition there.

Some members of Congress put enough stock in such charges to push harder for bills that would promote competition in the oil industry. One such bill, sponsored by Senator Adlai E. Stevenson III (D-Ill.), would set up a federal oil and gas corporation that would get free leases to explore federal acreage that had the best prospects. The oil that it produced would go to independent refiners, few of which have their own sources of crude. Says Stevenson: "Most of our oil—about 70%—is located under public lands, and I want to see it developed to benefit the public, not just the oil industry."

Stevenson believes that in the angry mood of Congress his bill's chances have gone from zero to very good in the last few months. Says he: "If the oil industry had any sense, it would support the bill—and head off utility regulation." But the industry is not about to take that kind of advice. Oilmen argue that a federal oil company would be inefficient and would be guided by political consideration. Says Continental's Hardesty: "Unmask the idea for what it is—the first step toward nationalization of oil."

Breaking up the majors

Meanwhile, a far more serious threat is taking shape: a plan to break the majors up into separate producing, refining, [illegible]porting, and marketing companies. Already the states of Florida and Connecticut have filed antitrust suits against the majors, charging that they used their control over all segments of the business to squeeze out the independents. The two states seek court orders breaking up the giants. Colorado, Minnesota, and several others are considering similar suits. And last summer the Federal Trade Commission brought suit against eight majors, making much the same charges; FTC staffers suggest one objective is to seek some form of divestiture.

Antitrust law holds a precedent for such a move: the antitrust cases of 1948 that split apart the production and distribution segments of the movie industry. But litigation of this issue could take upward of seven years, and many in Congress are seeking faster action against the oil majors. Four different bills have been introduced that call for the oil giants to divest themselves of one or more parts of their business in order to stimulate more competition in the oil industry.

"If you broke the majors into separate segments, it would introduce an arm's-length bargaining between different levels that does not exist at the present time," says Charles Bangert, general counsel of the Senate antitrust and monopoly subcommittee. "There would be competitive bidding for crude oil by refiners, and for refined products by marketers."

"Right now," he adds, "people are so mad at the oil companies that the chances of such divorcement legislation are pretty good."

To fend off such legislative challenges, the oil companies are working fast to improve what has overnight become the worst image in American business. A Gallup poll taken last month indicated that more Americans (25% of the sample) blame the oil companies for the shortages than any other possible cause, including the Arabs.

In dealing with their image problem, the companies are having second thoughts about the industry's deep-rooted secrecy. Oilmen in the past may have talked freely to an uncritical trade press, but they seldom were willing to discuss their business with the general press and the public.

"We became members of an introspective group and talked only to each other," confesses Murphy of Inexco Oil. "We made the serious mistake of agreeing that the real villains had to be guys like Senator Proxmire and that if he and others would not appreciate the great job we were doing, then to hell with them."

A public-be-damned attitude was fostered by the industry's close ties with such one-time powers in Congress as Sam Rayburn, Lyndon Johnson, and Robert Kerr, all from oil-producing states. "We were lulled into a false security in those days," Continental's Hardesty explains, "because we knew that the leaders in Congress understood our business. We reacted far too slowly when Congress changed and all of a sudden we had to deal with people who didn't understand us." The chairman of another major adds: "Whenever we got into trouble, we always went to Sam and Lyndon to get us out. We never prepared for the day when the liberals would be in charge in Congress. That day has come."

Wooing public opinion

Ironically, despite the charge of conspiratorial togetherness, one of the industry's big public-image problems has been its internal divisiveness. Oilmen lately have not only debated such things as Arco's stand on depletion allowances but have also sharply disagreed on the wisdom of making unleaded gasoline and the merits of trying to make the U. S. self-sufficient in energy. And because their companies have different status in oil reserves, they have argued the relative merits of coal gasification, importing LNG, and developing oil shale. "We have a wide divergence of views and lack a common voice," says Jamieson. "It confuses Congress and the public about what we want."

Today, the industry can no longer be accused of being secretive. For the first time ever, the majors are revealing inventory statistics that once were guarded as competitive secrets. Last week they held press conferences for the first time to explain their earnings. In fact, much of an oil executive's time these days is spent in interviews with the media.

Oilmen are now convinced that, more than ever, they must win the public's favor. Energy shortages have a major impact on the lives of people, and it is already clear that how Congress handles the industry depends on the views of the constituents back home. If oil is to retain its big profits and avert government interference with its effort to cash in on new opportunities, it must first convince people that today's shortages are real and not contrived. Then it must show that the way to solve the shortages is to protect the incentives that have now developed. Even this year's profit increase, they must show, is a better price to pay than the alternative cost of a long-range energy drought. ■

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INDUSTRIES: Sudden riches stir the greatest threat from Washington in 63 years

The new shape of the U.S. oil industry

The good profit news coming out of the headquarters of U.S. oil companies this week is turning into a monumental problem for oil executives almost as fast as they issue it. Last year's profits for the top 10 companies in the industry were the best in half a decade—up 51.2% over 1972 to a total of $7.8-billion. But the good performance has triggered a massive storm of criticism from consumers and Congress, and the storm is generating demands for stringent legislation to curb the oil companies' operations.

The exhortations for regulation, for tax reform, for splitting up of the companies, and even for establishment of a national oil company could not come at a worse time for the oil industry. For oil is already caught up in a violent revolution that is changing not only the way that the companies do business but also the structure of the industry and its economics.

"The Arab oil embargo has produced a revolutionary change," declares Rawleigh Warner, Jr., chairman of Mobil Oil Co. "It is questionable whether we'll get the ever-increasing volume of oil out of the Middle East that we were counting on. And suddenly we're having to pay prices we didn't think we would have to pay until the 1980s."

One conclusion that the public jumped to was that oil's sudden wealth resulted from the Nixon Administration's decision to permit big oil price rises as a way to alleviate fuel shortages. But that accounts for only a small part of oil's huge profits jump in 1973. In fact, the bulk of the rise stemmed from strengthening prices in Europe, where U.S.-based international oil companies have a big share of the market. This was a sudden turn. As recently as 1971 there was an oil glut on the Continent, and over-supply drove prices to profitless levels.

A far smaller part of the profit increase can be traced to the gains that U.S.-based oil companies were able to make, on an accounting basis, for the devaluation of the dollar. Increased profits made in marks in West Germany, for example, were further fattened when they were transferred into dollars, because the value of the mark rose from 31¢ in 1972 to as much as 42¢ last summer. Exxon Corp., for one, estimates that $120-million of its $2.4-billion profit came from this source.

The critical problems

The swing that took place in Europe last year and helped produce the big jump in profits is only the start of the radical changes in store for U.S. oil producers. These changes look different to different companies, because each company has its own strengths and weaknesses and its own strategy. The major internationals have one set of problems, the domestics have another. Those internationals that have a high percentage of their crude oil coming from the Middle East, such as Gulf Oil Corp. and Standard Oil Co. of California, have a different set of problems from those of Exxon, which gets a far lower percentage of its oil from that area. But there are some critical problems that everyone in the U.S. oil business has to cope with:

- Finding huge sums of money needed to explore for new sources of oil, build synthetic oil plants that process shale or tar sands, construct coal gasification and liquefaction plants, build new pipelines, and expand refining capacity. The industry figures it needs to raise $800-billion for capital spending from 1970 through 1985, four times its capital outlay during the previous 15 years.
- Responding to a dual threat that promises to end the dominance of the U.S.-based majors in the overseas oil business. The oil-producing countries are accelerating the pace at which they are determined to become majority owners of their resources. And the oil-consuming countries, frantic to secure their supplies, are making government-to-government deals with the Arab states, which may undercut the U.S. oil giants' role as suppliers to Europe and Japan.
- Warding off punitive legislation in the U.S. that would cut profits, end the depletion allowance, bring oil companies under regulation, split up the major companies, establish a national oil company. Today, the oil industry is facing the greatest threat from Washington since the breakup of the Standard Oil monopoly 63 years ago.

Polishing a public image

To counter the legislative threats, the oil companies are making adjustments on still another front: their approach to the public and the press. To improve their battered public image they are mounting a massive public relations effort that promises to open up what has been one of the most secretive of all industries. Says J. Kenneth Jamieson, chairman of Exxon: "We are embarking on the oil industry's version of Project Candor."

The first order of business will be to justify the huge increase in 1973 earnings. For 30 oil companies whose performance is charted by the Chase Manhattan Bank, earnings on foreign operations nearly doubled from $3.2-billion in 1972 to an estimated $6.1-billion last year, while domestic oil earnings merely crept up from $3.6-billion to about $4.4-billion.

By contrast, this year the companies will get their big profits from the U.S., and this will add to the furor in Congress. The price of domestic oil from established wells has risen in the last year from $3.50 to $5.25 a bbl., and the profit on it has jumped from around 75¢ to $2.25. Oil from newly discovered wells was freed from controls last August, and oil from marginal stripper wells was decontrolled last December. Last month, the price of this oil soared to $10 a bbl., producing profits as high as $6.50. With about 30% of U.S. pro-

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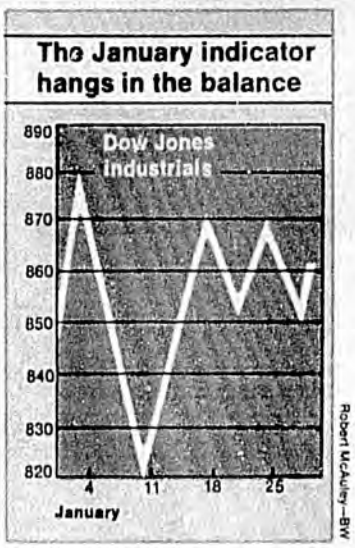
The ides of January

The premise of the January indicator is simple: If the stock market rises in January, it will be up for the year; if it goes down in January, it will be down for the year. Unfortunately, January's trend at midweek was still unclear. So here is a handy do-it-yourself kit for forecasting the 1974 stock market:

The Dow finished 1973 at 850.86. The S&P 500 closed at 97.35. This year will be an up year (according to the theory) if the averages finish the month higher. It will be a down year if they close lower. If one ends up lower and the other ends up higher—well, you can flip a coin.



Data: Dow Jones & Co.

On target. The January indicator has had an extraordinary record of accuracy. Last year, the Dow dropped 2.1% in January—and the market finished 1973 down 16.6%. Since 1950, in fact, the indicator has missed only four times. The Dow was down 3.6% in January, 1956, but finished up 2.6% after a seesaw year. It was up 0.5% in the first month of 1966 but then plunged and closed off 13.1%. January, 1968, was down more than 4%, but the market later boomed. The year 1970 was an ambiguous case: The Dow fell 7.6% in January, and the market collapsed through May. But by yearend it had recovered and closed virtually even.

The 'lame duck' theory. No one has any clear explanation why the indicator works. But Yale Hirsch, who publishes both the *Stock Trader's Almanac* and an investment letter called *Smart Money*, offers an interesting notion. Hirsch studied the S&P 500 going back to 1901 and found that during the first third of the century, January prefigured the rest of the year 16 times, but failed 17 times, a random pattern. Since 1934, though, the January indicator has been right 32 out of 40 years—or 80% of the time, a record that other indicators would be hard pressed to beat.

The difference, Hirsch suggests, was the 20th Amendment—the so-called "Lame Duck" Amendment—ratified in 1933. Before then, new members of the Senate and House, elected in November, did not take office until December of the following year, which meant that "lame duck" congressmen remained in office another 13 months. In 1934, Congress—and its new members—began convening, and setting goals and priorities, early in January. Then, too, Hirsch points out, "the President gives his State of the Union message and presents the budget in January." And since the 1930s, of course, federal spending has had an enormous influence over the U. S. economy.

"It seems likely," Hirsch judges, "that if these events were switched to another month or occurred at different times each year, the January indicator would lose its effectiveness." This year, the State of the Union address was scheduled for Jan. 30—which may be one reason why the stock market has been so trendless the past month. Indeed, 1974 may see the advent of the February indicator.

The energy in Dynalectron

Dynalectron was once dynamite. Speculators in 1967 hypoed the stock nearly 1,000% on the Amex, from 3⅜ to 34⅜. The shares have languished since. In December they traded as low as 2½. But last week the stock popped up on the Amex's most-active list and leaped to 6⅛—a sign that money is moving into Dynalectron again.

Investors are discovering that the company is no longer largely a military aircraft and missile maintenance operation. Rather, they see it as a capital-spending play, with an energy angle thrown in. Says Ivy Fund's Paul Fenton, who bought 240,000 shares for the fund last year: "That makes an interesting package in today's market environment."

Dynalectron's sales of some $100-million are double what they were in 1967, and defense contracts now contribute only a third. The company has been buying up electrical contractors for civilian projects from office buildings to power plants, and this is now half of Dynalectron's business. Further, its Hydrocarbon Research subsidiary holds slews of patents on hydrocarbon processes. Two are of special interest. A desulphurization process called H-Oil, jointly owned with Cities Service, is now used in three refineries (a fourth, run by Exxon, blew up in 1970; Exxon is now suing Dynalectron). Another is a coal liquefication process called H-Coal. The company is asking the Office of Coal Research for money to start a pilot plant.

Still, the stock isn't likely to repeat its 1967 performance. The hydrocarbon processes, less than 5% of revenues, have yet to show a profit, and other profit margins, though rising, are none too hot: Return on sales last year was running 1.7%, up from 1% the year before. But backlog was a healthy $71-million. Fenton expects the company to report earnings of 25¢ to 30¢ a share for 1973, up from 12¢ in 1972, and to earn 40¢ a share this year.

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Citibank sees money, supply problems for oil

THE WORLD'S major oil companies are improving their earnings position and their degree of self-sufficiency in crude supply, but still face some stiff financial and supply problems, according to New York's First National City Bank.

Citibank says oil-company earnings in the U.S. rose sharply in 1972 (see table), but says an analysis of the 10 years ending in 1972 shows domestic oil companies earned a return of only 11.8% based on after-tax net worth compared to 12.3% for other manufacturing industries.

"Any attempt to anchor profitability to that level during a period when the need for increased investment is paramount should be unthinkable," the bank says in its latest quarterly energy memo.

Long-term problems. The bank points out industry must look beyond the current earning picture to the years ahead when the amount of money oil companies must spend will be "drastically increased."

A study completed just before the 1973 oil embargo showed petroleum companies in the non-Communist world will have to invest annually $125 billion by the end of the 70's to meet supply requirements. But this figure is outdated "both because of the accelerating pace of inflation and because of the urgent need to develop new sources of energy at much higher costs," Citibank says.

Supply shaky. Citibank warns against complacency in supply even though the embargo has ended. The bank says gasoline shortages this summer are "inevitable," adding that "winters may not be so kind as they were this year in both Europe and North America."

Government support will be needed in the years ahead if importing countries are to reduce "the perils of energy starvation."

The bank says a new yardstick for measuring self-sufficiency will have to be developed due to the participation agreements being hammered out in the Middle East.

"The progressive breakdown of the former worldwide patterns of integrated production and refining will make it more necessary than ever to establish new hydrocarbon sources in each major consuming region and to resist the temptation to assume that the recent easing of supplies will allow consuming countries to return to the earlier era of plentiful, low-cost petroleum imports," the bank says.

Income and crude sufficiency figures for 30 integrated firms

	Net income, $ Million				Production as percent of runs							
					U.S.		Other West. Hem.		East. Hem.		Total	
Companies	1962	1972	1973	% change 1972/1973	1962	1972	1962	1972	1962	1972	1962	1972
FIVE LARGEST INTERNATIONAL COMPANIES												
Exxon	822	1,532	2,440	59.3	65.2	94.3	97.7	106.4	73.2	93.8	81.1	97.3
Texaco	472	889	1,292	45.3	77.8	78.3	60.6	57.[illegible]	177.3	199.8	100.5	127.9
Gulf	340	447	800	79.0	70.7	73.1	108.9	69.5	510.7	327.1	175.5	165.2
California Standard	291	547	844	54.3	73.3	56.7	204.5	68.3	176.1	249.5	121.2	154.3
Mobil	242	574	843	46.9	36.8	46.0	225.0	197.4	90.0	102.0	67.9	85.5
Subtotal	**2,167**	**3,989**	**6,219**	**55.9**	**64.4**	**71.0**	**98.0**	**90.4**	**142.9**	**161.4**	**99.2**	**119.2**
FIVE OTHER LARGE INTERNATIONAL COMPANIES												
British Petroleum	194	176	760	331.8			215.0	36.3	145.2	196.6	146.6	191.3
Royal Dutch/Shell (excl. U.S.A.)	470	525	1,550	195.2			112.5	86.4	47.7	82.1	69.9	83.1
Cie. Francaise des Pétroles	45	113	155	37.2				200.0	144.2	133.8	144.8	132.4
Ente Nazionale Idrocarburi	5	39	64	64.1					55.3	53.9	55.3	53.9
Petrofina (excl. U.S.A.)	17	58	71	22.4			34.5	32.8	5.3	8.5	9.1	12.6
Subtotal	**731**	**911**	**2,600**	**185.4**			**112.5**	**80.5**	**89.0**	**120.7**	**93.8**	**115.0**
TWENTY OTHER INTEGRATED U.S. COMPANIES												
Indiana Standard	162	375	511	36.3	45.8	50.9				164.2	54.9	78.6
Atlantic Richfield	113	193	270	39.9	63.7	56.2	661.9	435.5	150.0	1,450.0	89.8	86.6
Shell	158	260	333	28.1	65.0	63.7					65.0	63.7
Continental	73	170	243	42.9	85.5	64.9			575.0	171.2	113.7	115.5
Sun	89	155	230	48.4	51.7	69.0		123.6	250.0	300.0	74.2	85.4
Occidental	26	20	80	300.0						400.0		407.5
Marathon	38	80	129	61.3	86.5	78.4				280.7	107.5	135.0
Union	77	122	180	47.5	49.6	72.4		716.7			56.5	86.5
Phillips	107	148	230	55.4	58.2	49.2	1,050.0	480.0	163.6	87.0	73.6	59.6
Getty (excl. Skelly)	29	39	91	133.3	56.7	258.9			174.6	313.9	83.7	280.7
Amerada Hess	39	46	246	434.8	120.6	131.9		5.4			160.3	52.0
Cities Service	65	99	136	37.4	49.0	83.4	64.7				50.0	87.6
Tenneco	56	203	230	13.3	117.2	95.6					151.7	110.0
Skelly	22	38	44	15.8	122.8	110.0					124.6	111.3
Ohio Standard	24	60	74	23.3	19.1	7.5			600.0	900.0	28.2	12.4
Murphy	3	14	49	250.0	26.5	23.6		45.0		69.7	42.1	39.2
Ashland	17	68	85	25.0	10.9	7.3			250.0		22.8	12.8
Pennzoil	34	59	84	42.4	380.0	127.3					380.0	127.3
Kerr-McGee	22	51	63	23.5	31.3	105.0					40.6	110.8
American Petrofina	1	18	37	105.6	20.5	20.6					20.5	20.6
Subtotal	**1,155**	**2,218**	**3,345**	**50.8**	**57.5**	**59.1**	**1119.0**	**131.6**	**205.1**	**268.4**	**71.6**	**81.4**
GRAND TOTAL	**4,053**	**7,118**	**12,164**	**70.9**	**60.5**	**64.0**	**117.2**	**93.0**	**114.6**	**145.8**	**99.4**	**108.8**

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769 bbl from Tunisia, and 1,227,058 bbl from Libya.

Imports from Saudi Arabia peaked in October at 23 million bbl, and started downward immediately after the embargo was announced.

Other shipments. During the same period, Iran shipped greater volumes, ranging from 11 million bbl in November to 9.8 million in December, 13.5 million in January, and 11.8 million in February. During October, Iran supplied only 7.5 million bbl to the U.S.

Venezuela also helped to take up the slack, supplying 15.5 million bbl in November, 19 million in December, 17 million in January, and 11.8 million in February. This didn't count Venezuelan-source crude refined in the Caribbean and shipped as products to the U.S.

During the embargo Indonesia also stepped up shipments to the U.S., as exports from that country rose from 4.8 million bbl in October to a peak of 9.9 million bbl in February.

Venezuela cuts crude production by 160,000 b/d

THE Venezuelan Government last week imposed a 5% cutback on crude-oil production, due, it said, to lack of facilities to process associated-gas production.

The cutback amounts to about 160,000 b/d.

Creole Petroleum Corp., affiliate of Exxon Corp., which produces about 1.6 million b/d, says its foreign oil sales will be cut by about 100,000 b/d.

Royal Dutch/Shell's Shell de Venezuela produces about 800,000 b/d of Venezuela's total output of about 3.3 million b/d.

In addition, the government's state-owned CVP was slated Apr. 8 to begin taking about 100,000 b/d of royalty crude in kind.

Of this amount, Creole and Shell will be turning over an aggregate of about 70,000 b/d to CVP, which intends to market the crude to its own customers.

CVP has not disclosed its potential customers but has previously said it would sell oil to other Latin American countries. Mexico and Peru are believed to be among potential customers.

Qaddafi's status change seen improving Libyan oil situation

THE changes in the Libyan Revolutionary Council had oil observers puzzled last week, but overall it was felt that the relieving of Col. Qaddafi of his policy-making role will prove a step toward improved Libyan foreign relations and economic policy.

Qaddafi remains as head of state and commander-in-chief of the armed forces, but reports from Tripoli say he will devote his time to matters of "ideology and organization."

The command council is reportedly unhappy over the way Qaddafi has isolated Libya from the rest of the Arab world by his actions and threats to more conservative Arab regimes.

His abortive wooing of Egypt and Tunisia to merge with Libya did not help his public image.

Prime Minister Major Abdesalam Jallud now assumes all responsibilities for policy making. Jallud is known as a much more practical and liberal politician than his chief of state. He has played a major role in Libyan oil negotiations over the past few years.

Beirut newspaper An Nahar disclosed that Qaddafi's colleagues on the command council had been openly critical of his policies, calling them "moody" and dictated by emotion. They are concerned over his estrangement of Libya on both Arab and international levels, the paper said.

That estrangement worsened last February, when Qaddafi called on the Arab "masses" of every African and Middle Eastern state to declare a "bloody revolution."

Libyan Minister of Information Abu Zeid Dordeh said the changes are "mere formalities."

"The appointment of Jallud to undertake administrative and political functions was the result of a decision taken by Qaddafi himself," Dordeh said, "Because he wanted to devote himself to the armed forces and matters of ideology."

Simon opposes rollback of stripper-well crude prices

FREE-MARKET prices for stripper-well production shouldn't be rolled back or otherwise controlled, Energy Czar William E. Simon says.

His support should go a long way in preserving existing price treatment for leases whose average daily production for the preceding calendar year doesn't exceed 10 b/d per well. In a letter to Sen. Paul J. Fannin (R-Ariz.), ranking Republican on the Senate interior committee, Simon noted that Congress has twice voted legislation exempting stripper wells from price controls.

Simon says market prices for stripper oil are preventing premature abandonment among the 360,000 stripper wells producing an average of 3.5 b/d and are "paying additional dividends." Remedial work could add another 200,000 b/d or more to U.S. crude supplies, he said.

His strong support for the stripper exemption was in contrast to congressional testimony by Charles Owens, deputy FEO administrator who has had a key role in oil-pricing policy—first at CLC and now FEO. Owens referred to "the supply depressing potential of the stripper-well exemption."

The gap between the price of old and new oil is "an inducement to non-stripper well operators to reduce their production of 'old' crude from wells that are only marginally above the stripper level of production," Owens said. He suggested there is a large potential for this kind of "gamesmanship," in order to get leases down into the stripper category to qualify for higher prices.

But that's impossible under current FEO regulations, Sen. Dewey F. Bartlett (R-Okla.) declared in a stiff letter to Owens. In order to do what Owens suggested, Bartlett said, an operator would have to reduce his lease output for the entire year of 1974 in hopes that in 1975 the current rules would still apply.

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PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Top oil firms' 1973 profits jump 52.7%

Leading 25 companies report earnings of more than $9.4 billion. Big percentage gains follow a year when profitability hit a 10-year low. Profits from abroad are a major contributor to the companies' coffers.

TO THE SURPRISE of no one, the larger American oil companies dramatically turned around their profit performance in 1973 following a lackluster showing the year before.

When Gulf Oil Corp. finally came in with its report last week, the completed Oil and Gas Journal survey showed that the leading companies earned more than $9.4 billion in 1973, an increase of 52.7% over 1972 when profits of the same companies had dropped.

The final showing for the year had been signaled earlier by excellent first half and third-quarter earnings. The fourth-quarter performance was even better with an increase of nearly 70%.

Politicians and consumer advocates had anticipated the big jump in earnings and early greeted scattered announcements of individual companies with an outburst of demands before Congress for new tough regulations on industry operations.

As the accompanying table clearly shows, the profits gains were spread throughout the list. The so-called five international giants performed slightly better than the predominantly domestic firms.

Led by Exxon with earnings of $2.4 billion and Texaco at $1.29 billion, the five pushed profits up 55% to a total of $6.21 billion. The other three were closely grouped with California Standard at $843 million, Mobil $842 million, and Gulf $800 million. The domestic-oriented companies, many of whom also have foreign holdings, averaged increasing earnings by 47.9% for a total of $3.26 billion.

Behind the earnings. The charges of price gouging and excess profits directed at oil companies, however, ignore the many factors that contributed to improved earnings, the past years of relatively low earnings, and the relation of oil profits to those of other industries.

Large percentage gains for oil company 1973 profits are due to comparison with depressed earnings the year before when profitability of U.S. oil firms hit a 10-year low. Federal Trade Commission statistics show that earnings of all oil companies in 1972 were down 10% following a profits dip of 2% in 1971 and practically no change in 1970. This 4-year performance is the basis of claims by oil executives that 1973 earnings represent "catch up."

The First National City Bank of New York reports that the profits of oil corporations showed an average annual gain of 10.5% during the period 1968-72 while those of all manufacturing companies averaged 10.7%. The gains of both have been about 50% over the 1971-73 period.

The return on net assets also has been relatively close. In 1972, oil companies earned 10.8% on net assets while other manufacturing earned 12.5%. In 1973, the return for oil companies is expected slightly to exceed 15%, while those of other manufacturers will top 14%. (For details on Treasury Department study of returns on equity in oil, see p. 38.)

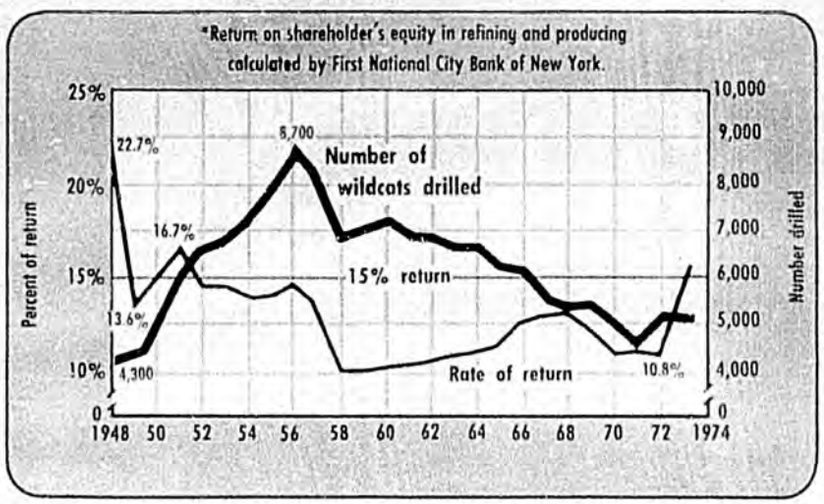
A major feature of 1973 earnings for the larger companies was the heavy contribution of profits from abroad while domestic profits failed to keep pace. Exxon reported U.S. earnings rose 16% last year while those in the Eastern Hemisphere were up 86%. Texaco showed an increase of 86% abroad and 3.6% in this country, and Mobil a 70% increase abroad and 15% in the U.S. In at least one instance—Marathon—domestic earnings dipped slightly with all the increase attributable to foreign operations. And Sun's domestic marketing and refinery profits declined. Preliminary reports indicate that foreign earnings of the major internationals will be up 75% with domestic earnings up only 12%.

Dollar devaluation figures in. The foreign earnings may be deceiving, however. An important factor in the increase was devaluation of the dollar in 1973. Since U.S. companies keep their books in dollars, high earnings in foreign currency translate into more dollars.

The chief reason for the jump in foreign profits was stepped up production worldwide, near-capacity refinery operations, and product sales at better margins. This was a sharp switch from the last few years which have been characterized by depressed markets and low profitability, especially in Western Europe. The Arab embargo came too late in the year and was not immediately effective enough to change the profits trends.

Companies with predominately domestic operations also shared in the upswing of industry profits, although perhaps not as much as those with

How wildcatting follows profits*



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which jumped from $2.12/bbl for a sale of Arabian light crude cargo last September to more than $15 last November, only to slip to $10-11 by the end of January. A continuation of prices at these levels is unlikely, in Simon's view. Considering efforts to reduce consumption around the world, "the potential clearly exists for spot market prices to continue to decline."

Simon's advisers expect 1974 non-Communist consumption to be around 46.4 million b/d, if world prices are consistent with $8.50/bbl for Arabian light, rather than the 51.4 million b/d forecast before the October 1973 Arab-Israeli war. If prices fall to $4.50, the forecast consumption rises to 50.3 million b/d, plus 200 million bbl in inventory buildup.

At either of these illustrative prices, U.S. energy experts believe productive capacity will not be fully employed. Whether some producing countries will choose to keep capacity idle, losing revenue, is an open question.

The message Simon is trying to sell to producing nations is this: produce more now, at lower prices, invest the surplus revenues, and reap the dividends.

Project independence. Simon lifted the veil from still more of the goals of domestic energy development.

Conservation has a high priority, with projected savings of up to 7 million b/d by cutting demand growth in half.

Expansion of oil and gas production, with emphasis on the Outer Continental Shelf and the North Slope of Alaska, is another major thrust. The trebling of OCS leasing has the potential for boosting offshore production to 10 billion bbl of oil and 28 trillion cu ft of natural gas by 1986, the Interior Department estimates. The OCS is assigned 42%—160 billion bbl of oil equivalent—of the remaining discoverable oil and gas in the U.S.

The North Slope will be producing 2 million b/d by 1980, with the trans-Alaska pipeline operating at capacity. Simon places the North Slope potential at 80 billion bbl, capable of producing 5-6 million b/d.

Coal production may be trebled to 1,500-1,800 million tons annually by 1985, "emerging as a very central element in our energy picture." Simon sees savings of 6 million b/d of oil equivalent by 1985 through direct substitution of coal for oil and gas—2 million b/d by replacement of oil under utility boilers, 1 million b/d in



FEO's Simon
U.S. won't need the 10-12 million b/d of imports projected for 1980.

residential and commercial space heating (primarily through heat pumps), and 3 million b/d in industry. Also, 3 million b/d of oil may be replaced by synthetic fuels—liquid and gaseous—from coal. Production of low-BTU gas from coal, rated marginal in the short range, is given a larger role in the longer-range future.

Simon is "especially encouraged by recent progress in the in situ processes for extracting shale oil at much less than the current cost of Persian Gulf crude." But no projections are given for this vast resource, which has not yet become commercial.

Nuclear power "could easily provide 10%" of U.S. energy needs by 1985.

Seven-point program. Access to nuclear and other U.S. energy technologies features the program offered by Kissinger to the major oil-consuming nations.

Kissinger advanced these seven points for coordination of energy policies among consumers:

Consumer-producer relations. "We must work toward the objective of preventing coercion of the weak by the strong—or of the strong by the weak; the producing nations must be given a secure stake in an expanding world economy, and the consuming nations a secure source of supply."

International financial cooperation. Producing nations will be called upon to help finance the higher oil-import bills of the developing consumer nations. There must also be new mechanisms to distribute international capital flows from oil-revenue surpluses, plus means for producers and consumers to cooperate in building confidence in investment policies and the integrity of investments.

Less-developed countries. "The wealth of the producer nations opens up a potential new source of large-scale capital assistance for development." Also, urgent measures must be taken to assure adequate fertilizer supplies for the coming year, requiring "oil at a price that will allow existing fertilizer production capacity to be fully utilized."

Emergency sharing. "The United States declares its willingness to share available energy in times of emergency or prolonged shortages.

"We would be prepared to allocate an agreed portion of our total petroleum supply provided other consuming countries with indigenous production do likewise. As we move toward self-sufficiency, our ability for sharing would of course increase."

The formula should include criteria to determine when a shortage exists, a mechanism to implement and terminate sharing, and complementary programs such as stockpiling and standby rationing schemes.

Research and development. The U.S. plans to spend more than $11 billion in federal funds in the next 5 years, with $12.5 billion more in private funds to be invested in the same period. The U.S. is prepared to make a major contribution of its most advanced energy R&D to a broad program of international cooperation.

Alternate sources. The U.S. favors consumer cooperation in international programs to reduce vulnerability of major industrial nations to interruption and manipulation of supply—such as the orderly conversion of key sectors away from petroleum; collective commitment to develop fossil-fuel resources within our respective borders; coordinated policies to encourage the flow of private capital into new higher-cost energy industries such as synthetic oils and gas from coal and shale; and governmental arrangements to accelerate the global search for new sources such as offshore oil.

Conservation. The U.S. recognizes that it is "the world's most profligate energy consumer" and pledges a sustained effort to cut waste.

At the moment, the Kissinger program of cooperation, like Project Independence, is more rhetoric than action. But if both are pursued, they will mark turning points in U.S. and world energy policies.

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interests abroad. Profit contributions were made by price increases in natural gas, crude oil, and products. Markets enjoyed stability as price wars faded and marketing costs dropped. Companies also benefitted from heavy production in both the field and plants until the effects of mid-October Arab embargo was felt late in the year.

Oil company executives in announcing 1973 earnings gave a more careful analysis of their operations than usual, and their comments are revealing. For example:

Texaco's Maurice F. Granville: "This strong upswing, especially in the latter part of 1973, followed a period of 4 years in which the company's returns on both gross income and total assets had been lagging behind the average returns of the past 10 years."

Mobil's Rawleigh Warner, Jr.: "The improvement . . . reflected recovery from the relatively low earnings from U.S. operations that characterized 1972 . . . reflected higher U.S. crude oil and natural-gas prices as well as a significant reduction in U.S. marketing expenses."

Union Oil's Fred L. Hartley: "Earnings increases were largely the result of increased foreign crude oil production, essentially 100% refinery throughput, increased sales of petroleum products, and stable prices—as compared to extensive price wars in prior years."

Atlantic Richfield's Robert O. Anderson: "Despite the improvement in 1973, after 3 years of depressed results, return on capital remained below the 8.6% earned in 1969."

Pennzoil's William C. Liedtke, Jr.: "The 1973 return on investment did not even equal the amount paid on insured savings and was less than half the prime lending rate."

Several executives equated their earnings on crude and products sales to a gallon, revealing that Exxon's earnings equalled 1.9¢/gal, Indiana Standard 2.5¢, Texaco and Atlantic Richfield 1.7¢, Gulf 1.5¢ and Continental 0.13¢.

The outlook. Executives throughout the industry are counting on 1974 being another profitable year and on that basis have budgeted a record total of capital funds for new facilities to expand supply.

Political uncertainties, however, may change this picture drastically. The outlook will depend on what happens to proposals for price rollbacks, excess profits taxes, ending percentage depletion, wiping out foreign-tax credits, and the workings of the allocation program.

Many analysts expect domestic operations to contribute more to company earnings this year. The full impact of higher crude-oil prices should be felt, especially for the independents and the larger companies with a good domestic production position. Foreign earnings should contribute relatively less, because of the rising strength of the dollar abroad. This will reverse the dollar-transfer gains enjoyed last year. If the Arab embargo continues for much of the year, this will limit production abroad and affect the downstream profits from refining and marketing. World production also could be depressed by skyrocketing oil prices which eventually are bound to curtail increases in demand.

A continued Arab embargo also will affect domestic operations. With refineries operating at only three-fourths capacity under crude allocations, unit costs will be much higher than at full capacity. The same trend will be felt on distribution costs with products allocated or rationed.

The industry's 1974 preliminary capital-spending budget of more than $19.5 billion for domestic projects (OGJ, Feb. 4, p. 29) was based on the high earnings of 1973 and cannot be sustained if earnings are restricted. Even though capital spending routinely exceeds earnings, the reinvested profits represent a sizable part of greater available capital funds. Indiana Standard and Sun, for example, reported 1974 capital-spending plans call for investing $3 for every $1 earned in 1973. Atlantic Richfield will invest $1.78 for each $1 of profit.

Exxon plans to spend $16 billion on capital items over the next 4 years with about $6 billion ticketed for 1974 alone. Texaco and Gulf have jumped their spending to $2 billion, California Standard $1.6 billion, Indiana Standard $1.4 billion, Continental $700 million, Union $490 million, Phillips $650 million, and Cities Service $466 million. All represent substantial increases.

How 25 U.S. oil firms fared in 1973

Company	Thousands of dollars — Annual: Net profit*	Annual: % change from 1972	Annual: % change 1972 vs. 1971	4th quarter: Net profit*	4th quarter: % change from 1972	4th quarter: % change 1972 vs. 1971
Exxon	2,440,000	+ 59.3	+ 0.9	784,000	+ 59.0	+ 13.2
Texaco	1,292,403	+ 45.4	− 1.6	453,486	+ 70.1	+ 8.7
California Standard	843,600	+ 54.2	+ 7.0	283,100	+ 94.2	+ 12.8
Mobil	842,800	+ 46.8	+ 6.2	271,600	+ 68.2	+ 7.9
Gulf	800,000	+ 79.1	− 15.9	230,000	+ 98.3	+ 8.4
Subtotal	**6,218,803**	**+ 55.0**	**− 0.5**	**2,022,186**	**+ 71.3**	**+ 10.9**
Indiana Standard	511,200	+ 36.4	+ 10.0	121,400	+ 52.7	+ 14.0
Shell	332,694	+ 27.7	+ 6.5	79,394	− 1.5	− 9.3
Atlantic Richfield	270,185	+ 40.3	− 8.6	91,697	+ 47.4	+ 11.2
Continental	242,700	+ 42.6	+ 21.5	89,300	+ 91.6	+ 63.5
Phillips	230,400	+ 55.3	+ 12.2	86,700	+127.6	+ 5.2
Tenneco	230,212	+ 13.4	+ 9.9	80,920	+ 14.4	0
Sun	230,000	+ 48.4	+ 2.0	75,000	+ 59.6	+ 14.6
Amerada Hess	218,364	+177.3	− 65.3	104,490	+471.9	− 19.4
Union	180,200	+ 47.8	+ 6.3	51,000	+ 55.5	+ 7.5
Cities Service	135,600	+ 36.8	− 5.2	42,100	+ 49.8	+ 23.2
Getty†	135,032	+ 77.4	− 36.6	52,612	+115.0	− 13.6
Marathon	129,405	+ 62.2	− 10.1	46,946	+ 92.8	+ 17.8
Ashland§	85,219	+ 25.7	+ 64.5	34,400	+ 52.2	+ 15.3
Pennzoil	80,412	+ 37.1	+ 24.3	24,103	+ 68.4	+ 20.6
Ohio Standard	74,100	+ 24.1	+ 1.4	11,600	− 39.9	+ 4.9
Murphy	48,533	+239.9	+ 28.9	13,935	+181.0	+ 48.3
Skelly	43,983	+ 17.0	− 1.8	16,812	+ 31.3	+ 18.5
American Petrofina‡	36,951	+104.6	+ 38.0	16,729	+218.2	+ 44.1
Clark	30,500	+265.6	+132.6	8,087	+140.8	+183.6
Tesoro§	19,874	+ 52.3	+ 70.1	12,580	+183.5	+ 37.3
Subtotal	**3,265,564**	**+ 47.9**	**+ 0.4**	**1,059,805**	**+ 65.1**	**+ 12.9**
TOTAL	**9,484,367**	**+ 52.7**	**− 0.2**	**3,081,991**	**+ 69.9**	**+ 11.5**

*Excludes nonrecurring gains and losses. †Includes Getty's share of Mission Corp. and Skelly Oil Co. ‡Includes revenue of Standard (Ohio) assets acquired July 1, 1973. §Fiscal year and first quarter.

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Bulk of the funds will be channeled into increasing exploration and production in this country or into projects seeking alternate energy sources.

Union President Hartley expressed the feelings of most company executives when he said "these earnings are not being salted away nor can they be considered a windfall for anyone. They —and more—are being plowed back into the business of exploring for and developing more and new energy sources . . . We are making this commitment in spite of the uncertainties of today's economic and political climate."

And Pennzoil President Liedtke observed that "actual results of 1974, as well as those for future years, will depend significantly upon the resolution of various governmental policy issues now being considered by the administration and the Congress."

H. A. True, Jr., Wyoming independent operator and chairman of the National Petroleum Council, recently told the House ways and means committee that "the economic stage is set for successful expansion of the conventional and nonconventional domestic oil and gas industries."

Crude-oil and gas prices, he pointed out, have broken out of their postwar stagnation. Profitability is increasing to attractive levels. First generation synthetics plans are announced.

True declared he could not overestimate the significance of the industry's rate of return reaching the 15% level. It should be higher, he said. "The domestic oil industry's expansion after World War II began in earnest in 1948 when the rate of return was 22.7%. Thereafter, during the expansion years through 1956, rates of return ranged from 13.6% to 16.7% with an average of 14.6% (see chart).

"It was no coincidence that those years were a time of expansion. The number of new-field wildcats drilled rose from 4,300 in 1948 to 8,700 in 1956. Then, the rate of return fell off; and the number of wildcats drilled declined to a low of 4,500 in 1971. Hopefully, that decline has been arrested.

"We should be optimistic over the prospects of achieving ultimate energy independence. Yet the U.S. petroleum industry is being accused of profiteering and is being subjected to threats of price rollbacks and higher taxes—especially taxation of so-called 'excess' profits.

"Nothing could be better calculated to destroy the new economic environment."

U.S. drilling funds raise 10% less money in 1973

MONEY raised by U.S. public drilling funds dropped by a little more than 10% last year.

Resource Programs Inc. (RPI), New York research and advisory firm, reports that 70 funds raised $346 million in 1973, off $39 million from the previous year.

The 1973 total includes $38 million raised under income programs that purchase producing properties rather than drill.

RPI attributes the decrease in 1973 funds to a growing trend toward privately sold programs. A number of firms responding to PRI's annual survey said they raised considerably more money privately than publicly last year.

In addition, fund raising was hurt by the absence of 200% write-off offerings.

Funds in 1973 were far short of the record $419 million public offerings accounted for in 1969.

PRI's survey shows a considerable decline over the past few years in the number of firms which sold public programs. And fund raising by new sponsors has fallen sharply both in amount and as a percent of total sales.

Four companies sold $20 million or more in public offerings last year.

Canadian-American Resources Fund Inc. took the top spot with sales of $47.5 million, more than double its 1972 sales of $22.7 million. Conoco Management Co. sold $25 million, the same as in 1972, and Sunoco Operations Inc. sold $20 million, off $5 million from 1972.

Petro-Lewis Funds Inc. sold $18.2 million in oil-income programs and $1.8 million in drilling programs, compared with $17.6 million and $6.2 million, respectively, in 1972.

McCulloch Oil Corp. - IDS Oil Programs Inc., which topped the $20-million mark by $4.4 million in 1972, fell to $17.9 million in 1973.

All sales figures include company subscriptions to their own programs.

Total programs filed with the Securities & Exchange Commission amounted to $896.7 million in 1973, off $173.2 million from 1972.

Breakout of fund raisings by size in 1973

Size of fund raising†	Amount* 1970	1971	1972	1973	Percent 1970	1971	1972	1973
Up to $1 million	27	23	23	14	9	7	6	4
$1-3 million	76	64	66	76	26	19	17	22
$3-5 million	41	62	50	64	14	18	13	18
$5-10 million	40	101	106	65	14	29	28	19
$10-25 million	107	64	140	79	37	19	36	23
Over $25 million	...	29	...	48	...	8	...	14
Total	$291	$343	$385	$346	100	100	100	100

	1970	1971	1972	1973
Number of firms raising totals shown	89	87	80	70
Amount raised by new sponsors (millions)	$52	$49	$46	$17
Percent of total	19	14	12	5
Number of programs unsubscribed‡	36	22	16	7
Number of programs filed	162	93	131	106
Number of firms filing programs	126	73	88	76

*Figures are original subscriptions and exclude assessments. Covers all programs registered with the SEC during the 1970-73 period. †Funds raised under multiple partnerships or ventures in one calendar year are considered a single fund raising. ‡Excludes programs withdrawn before becoming effective.

Source: Resource Programs Inc.

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East vs. West*—oil earnings, production

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Gross production (MM bbl)											
West	1,243	1,288	1,355	1,402	1,389	1,483	1,517	1,505	1,565	1,536	1,494
East	2,310	2,540	2,882	3,235	3,627	3,919	4,386	5,016	5,711	6,563	7,058
Net earnings ($MM)											
West	588	590	647	619	670	785	843	849	825	1,002	769
East	1,227	1,429	1,245	1,353	1,490	1,451	1,782	1,818	1,917	2,236	1,995
Net worth on Jan. 1 ($MM)											
West	5,078	5,027	5,075	5,529	5,672	5,923	5,542	5,795	5,966	6,274	7,210
East	9,353	10,115	11,232	12,027	12,929	13,542	14,245	15,446	16,249	17,370	19,882
Return on net worth (%)											
West	11.6	11.7	12.7	11.2	11.8	13.3	15.2	14.7	13.8	16.0	10.7
East	13.1	14.1	11.1	11.2	11.5	10.7	12.5	11.8	11.8	12.9	10.0
Earnings (¢/bbl)											
West	47.3	45.8	47.7	44.2	48.2	52.9	55.6	56.4	52.7	65.2	51.5
East	53.1	56.3	43.2	41.8	41.1	37.0	40.6	36.2	33.6	34.1	28.3

*Based on operations of British Petroleum Co., Exxon Corp., Gulf Oil Corp., Mobil Oil Corp., Royal Dutch/Shell Group; Standard Oil Co. of California, and Texaco Inc. in Eastern and Western Hemisphere, excluding U.S.

Bank sees new emphasis on western oil

North, South American petroleum offers most-immediate relief in energy crisis. Soaring wellhead prices, proximity of reserves to huge U.S. market signal shift of attention from Eastern Hemisphere supplies.

A NEW emphasis on Western Hemisphere oil supplies promises to cut back the shift toward the Eastern Hemisphere that was so marked in the 1960's.

The petroleum potential of North and South America is far from exhausted and offers most immediate means of narrowing hemisphere's energy gap, First National City Bank says in its January energy memo.

Exotic new energy sources — from garbage oil to solar power—are being urgently examined. But at best they represent slow-moving solutions to fast-moving problems, the bank says.

In recent years, the Western Hemisphere outside the U.S. has often been downplayed because of its relatively unfavorable oil reserves, ranging from some 10 years at the current production rate in Canada to under 12 years in Venezuela and the U.S.

A large part of the Western Hemisphere's production derives from sustained investment and technical input of the seven largest international oil companies — British Petroleum Co., Exxon Corp., Gulf Oil Corp., Mobil Oil Corp., Royal Dutch/Shell Group, Standard Oil Co. of California, and Texaco Inc.—the bank says.

Over the past 10 years, gross production of the seven companies in the Western Hemisphere outside the U.S. has been rising at less than 2% annually, significantly slower than soaring world demand.

The bank's 10-year summary shows gross production of 1.494 billion bbl in 1972 (4.1 million b/d), a 5-year low. Gross production of the same companies in the Eastern Hemisphere in 1972 amounted to 7.058 billion bbl.

The bank says the time appears ripe to reverse the recent sluggishness of production in the Western Hemisphere with increased exploration. Unparalleled high wellhead prices mean production and pipeline investments can now be justified by discoveries much smaller than hitherto. Deepwater structures have a new glitter, the bank says.

Eastward shift. Although the outlook for increased Western Hemisphere oil exports is changing for the better, the U.S. has continued to shift toward sources in the Eastern Hemisphere.

At the beginning of the 1960's crude imports from the East were only about half as large as those from the West. In 1973, crude supplies from the East for the first time moved ahead of those from the West.

Although U.S. product imports from the West outstrip the East five to one, product as well as crude imports from the Eastern Hemisphere have begun to rise rapidly in the 1970's. And nearly half the products from Western Hemisphere sources are manufactured from Eastern Hemisphere crudes, the bank estimates.

Western advantage. Western Hemisphere production has an obvious advantage in that it is nearer the North American market, which consumes more energy per head than any other region and represents some 35% of world demand, the bank says.

Caribbean terminals are less than 2,000 miles from the U.S. East Coast, against 12,000 miles from the Middle East. Higher freight rates have strengthened this advantage dramatically in recent years.

Tanker rates rose steeply in the first half of 1973, after a decline from the 1970 peak. The Arab embargo since has triggered a reduction, and inability to buy bunker fuel has further depressed the tanker market.

Profit recovery. Rates of return earned by the seven largest international oil companies in the Western Hemisphere in the early 1960's ranged between 11.2% and 12.7%, the bank says.

From 1967 to 1971, rates of return improved, ranging from 13.3% to

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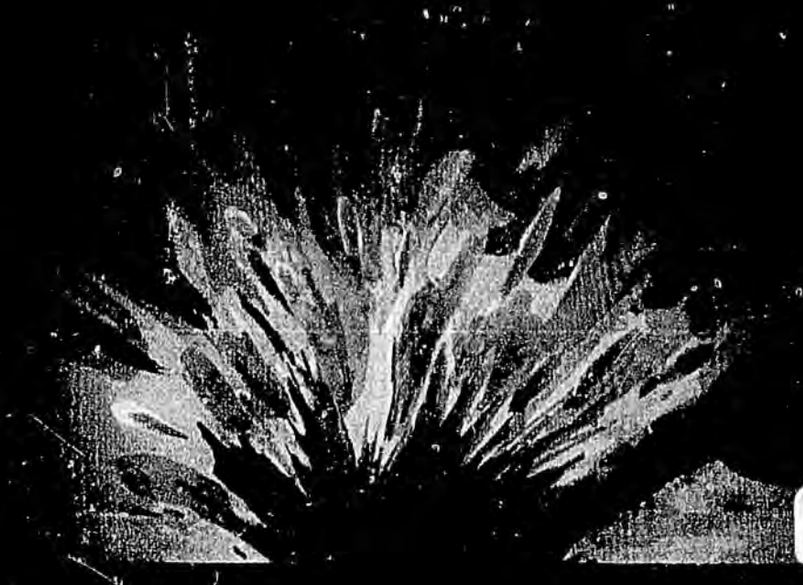

AGO 530080

16%. But profitability declined sharply in 1972 to 10.7% in the Western Hemisphere and 10% in the East. In 1972, oil company earnings in the West outside the U.S. were some 2% below those of manufacturing companies.

There were signs in 1973 that in spite of the sharp increase in tax-paid costs, profitability of petroleum operations moved up strongly in the West as well as the East. In Venezuela, where 1972 earnings were extremely disappointing, advances were achieved by major oil affiliates, the bank says.

The five largest affiliates earned a discouraging 11.1% return in Canada in 1972.

Comparing the first three quarters of 1973 to the similar period of 1972, these earnings rose by 35%.

"In 1974, oil-importing countries will have to bear the brunt of drastic deterioration in their terms of trade with exporting countries. But changes of this magnitude inevitably set in motion their own corrective forces," the bank says.

Energy demand cutbacks and increased energy production in North America and in those nearby countries best able to supply it are essential, Citibank asserts.

For broadly based energy companies, the new emphasis on the West will provide opportunities for challenging new investments that have been too long deferred, the bank says.

Ban sought on joint lease bids by big firms

THE Government plans major changes in offshore-leasing procedures as it moves toward President Nixon's new goal of selling 10 million acres next year.

Interior Sec. Rogers C. B. Morton told Congress of plans "to ban bidding consortia among the largest oil producers."

Departmental technicians are still working on the formula to define "the largest oil producers."

But a spokesman said last week the rules will probably bar the top 6-10 companies, based on size of reserves, from joint bidding with each other.

"Since these companies are financially able to bid alone, elimination of joint bidding among them will increase the number of competitive bidders in the sale," Morton said. "Moreover, this ban may induce the largest oil companies to enter bidding consortia with smaller independent companies, giving the latter a better opportunity to secure shares in leases than they have at present."

The new regulations won't be ready in time for application to the next offshore sale, scheduled in March, and may not be incorporated until next year, Interior officials said.

Within a few weeks, Interior plans to publish a call for nominations of areas—not tracts—to be included in future sales as the Government tries to jump offerings to 10 million acres annually from the present 3 million acres.

The U.S. Geological Survey has identified 19 areas for prospective sales and will gauge the interest of industry and the public in them.

These will be ranked according to reserves potential and environmental safety, enabling Interior to focus on four or five target areas to be auctioned first.

"Since it is important that the most promising offshore areas be developed first," Morton explained, "if the environmental conditions are acceptable, the accelerated leasing program will be coupled with a new two-tier nominating system. Under this system industry will first rank the regions they think are the most favorable.

The public will be invited to identify environmental conditions and problems in these regions.

"The Interior Department will use the industry and environmental rankings of regions along with its own evaluation of reserves potential and need to protect environmental values, to select the most promising regions for early development."

Later, within designated sales areas, industry will nominate individual tracts as is being done at the present time.

"The two-tier system will help to ensure that our scarce oil exploration and development resources can be employed on the most promising tracts and that major areas of environmental concern will not be touched," Morton says.

Louisiana-to-Florida gas, product pipelines planned

FLORIDA Gas Transmission Co. will spend $136.5 million to complete parallel natural-gas and products pipelines from Louisiana to Florida, if the Federal Power Commission approves the project.

The Florida Gas Co. subsidiary has asked FPC permission to convert 880 miles of its original 24-in. natural-gas pipeline to products.

The company would complete unfinished segments of its parallel 30-in. pipeline to maintain deliveries of gas to Florida.

The main line of the proposed products system from Baton Rouge, La., to Fort Lauderdale, Fla., will transport gasoline, jet fuel, kerosine, and heating oil. Initial capacity would exceed 200,000 b/d, about one half of Florida's current daily products consumption.

The $115-million system would begin operations in January 1977, delivering products to various Florida terminals. Nearly all products brought into Florida currently are transported by barge and tanker.

The gas system, which has a capacity of 690 MMcfd, presently consists of the 24-in. line from Baton Rouge to Miami and a 30-in. loop which parallels and interconnects with about 95% of the smaller line.

Florida Gas estimates building the remaining segments of the 30-in. line and adding compressors would cost $21.5 million. After conversion, capacity of the gas system would be about 630 MMcfd, but additional volumes could be moved by adding compression.

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U.S. BRIEFS

GOVERNMENT

DR. Thomas V. Falkie, 39, head of the department of mineral engineering at Penn State University, has been named by President Nixon to be director of the Bureau of Mines.

On Senate confirmation, he will succeed Dr. Elburt Osborn, who resigned in September. Dr. John D. Morgan, acting director, will resume his post as assistant director—mineral position analysis.

► **The Justice Department** has granted antitrust clearance to U.S. international companies for price and ownership negotiations with producing countries. Justice has given such clearance in other instances, agreeing not to prosecute companies because of joint negotiations. However, officials added, these business review letters, advising companies as to prosecution intentions, do not amount to immunity in the event of antitrust-law violations.

OFFSHORE

A NEW offshore drilling firm, K/S Norway Jackup, has ordered a Levingston-designed Class III jack-up rig from Levingston Shipbuilding Co., Orange, Tex.

Total price of the triangular-shaped, three-legged unit is estimated at more than $18 million, including drilling equipment and machinery. Delivery is set for September 1976.

The new rig will measure 208 ft long, have a beam of 178 ft, and be 22 ft deep. The triangular platform will have a 50-by-50-ft stern drilling slot through which nine well positions can be drilled. The unit will be capable of drilling in water depths to 300 ft, and will have legs 418 ft long.

K/S Norway Jackup is made up of Fearnley & Eger Chartering Co. Ltd.; Skips A/S Kim; and Odfjell Drilling & Consulting Co. AVA/S

► **A major facility** for the fabrication of large metal structures and components will be built on the eastern shore of Virginia by Brown & Root Inc. The Chesapeake Bay facility will be used for construction of offshore production platforms; modular plant construction; offshore power-plant construction; and storage-tank fabrication.

Brown & Root purchased the 2,000-acre Hollywood Farm property in, and adjacent to the town of Cape Charles; however, only a small part of it, 10-20%, will be used for manufacturing during the foreseeable future. The remainder will continue in farm production and as a golf course for some time.

► **Another large semisubmersible** offshore rig of Sedco Inc.'s 700-series design will be built by Avondale Shipyards for a joint venture of Sedco and a Shell subsidiary. The latest rig, estimated to cost $35 million, is scheduled for delivery in May 1976. It will be rated initially for 1,500-ft water depths. But it could later be equipped with dynamic positioning for operation in even deeper water. Rated drilling depth is 25,000 ft. Sedco is expected to announce yet another construction commitment for a similar rig in the next few weeks.

► **Marathon Oil Co.** will succeed Signal Oil & Gas Co. as the operator for the SLAM and Slant groups offshore Louisiana in the Gulf of Mexico, effective Apr. 1, 1974.

EXPLORATION

TEXACO INC. has a 428-b/d oil discovery on a 7,520-acre farmout from Tenneco Oil Co. in California's San Joaquin Valley, 20 miles south of Bakersfield.

The well, 1 San Emidio, was drilled to 20,704 ft, but production was found between 11,305 ft and 11,465 ft. The 428-b/d flow was recorded on a 24-hr test through a 26/64-in. choke.

Texaco has released the Loffland Bros. rig on the well but said development of the field is planned for later this year. Texaco and Tenneco also hold jointly 5,610 acres adjacent to the farmout tract.

RESEARCH

THE Atomic Energy Commission has proposed that $107.6 million be spent over the next 5 years to develop nuclear stimulation for both natural gas and oil shale.

Of this, $56.2 million would be spent in stimulating nuclear recovery of natural gas from tight sands. This would include a demonstration field experiment of five to six wells with three to five explosions per well. The explosives in each well would be fired simultaneously, while those in separate wells would be separated by several minutes.

The remainder of the money—$51.4 million—would be for nuclear blasts in oil shale at a Nevada test site. The test would investigate the quantity of noncondensable gas that could be generated by explosions in carbonate rock.

The program would include a pilot-scale nuclear chimney and underground retort, with the start of a demonstration-scale plant near the end of 5 years.

GEOTHERMAL

UNION Oil Co. of California has drilled a potentially commercial geothermal well in Sandoval County, N.M. The well, which would be New Mexico's first commercial geothermal project, flowed geothermal fluid at rates with a power-capacity equivalent to 6,500 kw/hr from a total depth of 6,929 ft.

Union said the test-flow rates are equal to some of the better wells drilled in northern California's Geysers field, where Union operates the largest geothermal steam project in the world.

The New Mexico well, north of Albuquerque, is located on a 100,000-acre tract on the Baca Ranch in Sandoval and Rio Arriba counties. Further drilling is planned to define the productive area.

Union holds a majority interest in the project and is the operator. Other participants are Dunigan Enterprises Inc. and Baca Land & Cattle Co.

PROCESSING

KERR-McGEE Corp. has signed an agreement to purchase Southwestern Oil & Refining Co., Corpus Christi, and Royal Petroleum Corp., New York. Southwestern owns a 100,000-b/d refinery at Corpus. Royal owns terminal facilities in the New York-Perth Amboy, N.J., area. Purchase price is no disclosed.

► **Mid-States Pipe & Supply Co.**, Tulsa, has purchased and will dismantle Phillips Petroleum Co.'s Cactus ammonia plant near Etter, Tex. Some of the more modern units will be resold.

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TABLE

Profits As A Percent Of Invested Capital
Twenty Largest U.S. Petroleum Firms

Firm (Ranked according to 1971 sales)	Average Profit Rate (1967-1972)	Profit Rate 12 Mos. Ending 9/30/72
1. Exxon	12.3	17.4
2. Mobil Oil	10.7	14.2
3. Texaco	13.8	15.4
4. Gulf Oil	10.4	12.1
5. Standard Oil of California	10.4	13.5
6. Standard Oil of Indiana	9.7	12.5
7. Shell Oil	10.6	11.4
8. Atlantic Richfield	8.4	6.9
9. Continental Oil	10.1	12.1
10. Tenneco	11.2	NA
11. Occidental Petroleum	14.2	NA
12. Phillips Petroleum	8.4	10.0
13. Union Oil of California	9.2	9.2
14. Sun Oil	9.5	9.4
15. Ashland Oil	11.6	NA
16. Standard Oil of Ohio	8.2	7.6
17. Getty Oil	8.5	8.0
18. Marathon Oil	11.4	13.5
19. Clark Oil	15.2	30.1
20. Commonwealth Oil Refining	11.5	9.8
Average	10.8	12.5
Average: All Manufacturing (1967-1971)[1]	10.8	

[1]Economic Report of the President, January 1973, p. 280.

Source: Fortune, May issues and Business Week, Nov. 10, 1973, p. 27.

Worldwide oil at a glance

COUNTRY	RESERVES 1-1-74		WELLS		OIL PRODUCTION		REFINING Capacity (1,000 b/cd) 1-1-74			
	Oil (1,000 bbl)	Gas (billion cu ft)	Producing oil 7-1-73	Drilling 12-1-73	Estimated 1973 (1,000 b/d)	% change from 1972	Refineries	Crude	Cracking	Reforming
ASIA-PACIFIC										
Afghanistan	†89,840	4,100	13	4	0.2					
Australia	2,300,000	37,100	394	7	420.0	23.3	10	680.9	144.7	156.7
Bangladesh		8,000		1			1	30.6		1.6
Brunei-Malaysia	1,600,000	20,000	126	5	325.0	17.7	3	123.2		5.7
Burma	67,800	200	700	7	23.0	15.0	2	25.3		
China Rep. (Taiwan)	14,000	400	50	2	0.2		2	210.0	9.0	20.0
Guam							1	29.5		
India	779,000	2,000	1,500	9	150.0	− 0.5	10	499.1	36.1	21.8
Indonesia	10,500,000	15,000	2,567	25	1,300.0	22.6	8	427.7	19.5	7.0
Japan	19,000	700	1,084	11	15.0		45	4,939.8	277.4	486.0
Khmer Republic							1	12.5		1.8
Korea, South							3	420.0		27.6
New Zealand	†224,000	15,000	4	1	3.6	33.0	1	54.0		18.0
Okinawa (R.I.)							3	212.0		12.0
Pakistan	31,200	10,120	16	5	8.0	−11.1	3	80.5		2.5
Philippines		180		3			4	283.8	21.7	42.6
Singapore							4	699.6		20.0
Sri Lanka							1	38.0		3.5
Thailand	10,200		25	2	0.2		4	166.2	7.0	23.5
Total Asia-Pacific	**15,635,040**	**114,200**	**6,479**	**82**	**2,245.2**	**20.0**	**106**	**8,932.7**	**515.4**	**850.3**
†Condensate										
EUROPE										
Austria	157,000	589	1,250	5	50.0		1	220.0	16.5	24.0
Belgium							8	916.7	55.3	90.8
Cyprus							1	15.0		2.7
Denmark	248,500	1,800	4	1	3.1	−11.4	3	226.5	18.0	19.3
Finland							2	196.0	32.0	25.8
France	80,000	6,500	284	5	26.3	−12.6	23	3,140.0	182.4	389.6
Germany, West	544,000	12,308	2,782	6	133.0	− 3.4	33	2,825.7	126.1	332.9
Greece†							4	313.6		21.5
Ireland†							1	58.0		13.3
Italy-Sicily	212,000	5,300	125	7	22.3	3.7	34	3,882.0	304.7	374.6
Netherlands	251,000	92,000	319	9	28.6	− 8.6	7	1,825.5	75.0	163.9
Norway	4,000,000	23,000	4	6	37.5	13.6	3	168.0		18.5
Poland*							6	145.8	13.5	10.8
Portugal							2	110.0	12.0	15.6
Romania*							10	320.0		
Spain	60,000	500	26	4	22.2	788.0	9	1,163.0		138.5
Sweden							5	248.0		47.8
Switzerland							2	140.0		23.0
United Kingdom	10,000,000	50,000	63	18	1.5	−11.7	20	2,762.1	188.0	386.2
Yugoslavia	**438,000	1,800	1,012	8	71.0	9.7				
Total Europe	**15,990,500**	**193,797**	**5,869**	**69**	**395.5**	**5.9**	**158**	**18,110.1**	**1,010.0**	**2,088.0**
†Oil or gas discovered but not developed. *Not included in non-communist total. **Government estimate adjusted.										
MIDDLE EAST										
Abu Dhabi	21,500,000	12,500	142	4	1,285.5	22.5				
Bahrain	360,000	4,000	215		63.7	− 8.7	1	250.0	34.2	14.3
Dubai	2,500,000	1,000	39	2	223.0	45.8				
Iran	60,000,000	270,000	350	9	6,000.0	19.5	5	660.0	36.0	41.3
Iraq	31,500,000	22,000	133	9	1,888.2	30.5	6	98.5		5.0
Israel	2,500	25	29	1	†100.0	− 7.0	2	212.0		27.0
Jordan							1	14.1	2.3	1.0
Kuwait	64,000,000	32,500	692	1	2,890.2	− 3.6	5	646.0		20.4
Lebanon							2	53.5	7.2	7.3
Neutral Zone	17,500,000	8,000	362	1	507.5	−11.2		††		
Oman	5,250,000	2,000	97	2	271.9	− 3.5				
Qatar	6,500,000	8,000	92	3	555.5	15.2	1	1.0		
Saudi Arabia	132,000,000	50,900	627	3	7,417.9	29.4	2	428.3		15.1
Sharjah	1,500,000	1,500	*	2						
South Yemen (Aden)							1	162.0		8.6
Syria	7,100,000	700	123	1	105.7	−12.1	1	51.3		
Turkey	450,000	200	286	6	65.0		4	305.5	28.6	28.3
Total Middle East	**350,162,500**	**413,325**	**3,187**	**44**	**21,374.1**	**18.1**	**31**	**2,882.2**	**108.3**	**168.3**
†Includes captured Sinai fields. *Not yet producing. ††Included in Kuwaiti figures.										

AGO 530084

Refinery capacity gains in non-Communist world

REFINING capacity in non-Communist countries outside the U.S. and Canada will be just over 38 million b/cd on Jan. 1, 1974, according to the Journal's detailed worldwide survey.

The 38.3-million-bbl total compares with 34.8 million b/cd on Jan. 1, 1973, for a 10.1% growth. But this rate of growth is expected to slow appreciably for the next year or so. The Journal projects a 38.9 million bbl capacity for Jan. 1, 1975, and 40.0 million b/cd for Jan. 1, 1976.

Biggest increases in crude capacity the past year came in Western Europe, where a 1.3-million-b/cd gain was chalked up. Close behind was the Asia-Pacific area, which accounted for a hike of 1.0 million b/cd.

Recognizing the importance of catalytic cracking and catalytic reforming in the world's refineries, the Journal made a change this year in reporting on cracking and reforming operations. In previous years, the totals included both thermal and catalytic capacities. This year, only the catalytic operations are totaled.

Though catalytic-cracking operations have not been as important in other countries as they are in the U.S. and Canada, Western Europe shows 1.0 million b/cd capacity, Latin America 636,000, and Asia-Pacific, 515,000 b/cd. Catalytic reforming shows up more strongly in western Europe, with 2.1 million b/cd capacity, and in the Asia-Pacific area, with 850,000 b/cd.

Hydroprocessing in Western Europe totals 5.1 million b/cd, while that in the Asia-Pacific area amounts to 3.3 million b/cd. Total Western bloc outside the U.S. and Canada shows 10.6 million b/cd hydroprocessing capacity.

Over the next 2 years, hydroprocessing is expected to show the biggest gains in downstream processing throughout the non-Communist nations. Total capacity outside the U.S. and Canada is expected to hit 11.4 million b/cd on Jan. 1, 1976.

Cat reforming should show about 500,000-b/cd growth in the 2-year period, to 4.0 million b/cd. Cat-cracking growth should be more modest, from 2.3 to 2.6 million b/cd.

(Capacities in 1,000 b/cd)

	1-1-73	1-1-74	Projected 1-1-75	Projected 1-1-76
Crude-oil capacities				
Asia-Pacific	7,916	8,933	9,100	9,300
Africa	825	1,092	1,200	1,400
Middle East	2,758	2,882	3,000	3,200
Latin America	6,451	7,266	7,300	7,500
Western Europe	16,826	18,110	18,300	18,500
Sub total	34,776	38,283	38,900	40,000
U.S. and Canada	14,812	15,171	16,100	17,000
Total, non-Communist	49,588	53,454	55,000	57,000
Catalytic cracking				
Asia-Pacific	475	515	525	550
Africa	50	60	61	63
Middle East	100	108	110	115
Latin America	575	636	645	655
Western Europe	1,000	1,010	1,100	1,200
Sub total	2,200	2,329	2,441	2,583
U.S. and Canada	4,850	4,940	4,999	5,017
Total, non-Communist	7,075	7,269	7,440	7,600
Catalytic reforming				
Asia-Pacific	765	850	900	950
Africa	116	139	145	150
Middle East	214	168	173	178
Latin America	351	329	335	345
Western Europe	2,042	2,088	2,200	2,400
Sub total	3,488	3,574	3,853	4,023
U.S. and Canada	3,459	3,568	3,647	3,750
Total, non-Communist	6,947	7,142	7,500	7,773
Hydroprocessing				
Asia-Pacific	2,788	3,309	3,500	3,700
Africa	126	259	270	280
Middle East	478	552	560	570
Latin America	1,220	1,377	1,390	1,410
Western Europe	4,557	5,067	5,200	5,300
Sub total	9,169	10,563	10,920	11,360
U.S. and Canada	6,229	6,897	7,100	7,300
Total, non-Communist	15,398	17,460	18,020	18,660

OPEC startled the world in mid-October when the oil ministers, sitting in Kuwait, unilaterally seized the initiative and boosted crude postings by 66-70%. In future, OPEC said, prices will no longer be subject to negotiation, but will be set by host governments.

That move spelled the end of cheap energy for good. The producers had discovered through observation and personal experience in their sales of participation crude, that market prices had moved up to and often above posted prices. This, they believed, meant the oil companies were reaping unconscionable profits in the market.

To correct the situation, the Arabs and Iranians declared that henceforth posted prices should remain at a constant 40% above market prices, but at year-end, they were still unable to reach a method of determining just what a "market price" really is.

Thus rang the death knell for the so-called "5-year security" Tehran agreement of 1971—a major casualty of the oil war.

The year of Libya. Libya spent 1973 in a vigorous campaign to gain control of its oil industry, taking its cue from Iran.

Early in the year, the government served notice that it wanted not 25% participation in oil-company operations as the Gulf states had gained, but 50%.

In midyear, it began touting for 100% control, but this proved a smokescreen, for the country is in no position technically to operate its vast oil fields.

In frustration, in mid-August, the government announced that Occidental Petroleum had yielded to its demand for 51% control of its operations, and the die was cast. One by one, the independent dominoes fell before the government onslaught and gave in to the 51% control demand.

The major companies held out. But on Sept. 1, as a birthday gift to the Libyan revolution of 1969, Col. Qaddafi announced a unilateral takeover of 51% of all the major-company operations. The sole exception was Esso's gas liquefaction plant at Brega. At year-end, the majors continued their holdout, and the Libyans, distracted by the Arab-Israeli war and the cutback-embargo operations, were not seriously pushing their case. But there's no doubt that 1974 will see the complete takeover established.

AQ 530085

COUNTRY	RESERVES 1-1-74		WELLS		OIL PRODUCTION		REFINING Capacity (1,000 b/cd) 1-1-74			
	Oil (1,000 bbl)	Gas (billion cu ft)	Producing oil 7-1-73	Drilling 12-1-73	Estimated 1973 (1,000 b/d)	% change from 1972	Refineries	Crude	Cracking	Reforming
AFRICA										
Algeria	*7,640,000	105,945	574	10	1,035.4	− 2.6	4	115.3		30.5
Angola-Cabinda	1,500,000	1,500	169	5	160.0	14.7	2	24.5		1.9
Congo Brazzaville	4,888,000	1,000	19	3	39.0	490.9				
Dahomey†										
Egypt	5,125,000	4,200	261	4	180.0	−15.0	4	180.0		
Ethiopia†							1	14.4		1.9
Gabon	1,500,000	6,500	122	4	145.0	15.4	1	17.0		2.0
Ghana†							1	25.3		9.4
Ivory Coast							1	44.2		5.0
Kenya							1	48.0		4.0
Liberia							1	10.0		2.0
Libya	25,500,000	27,000	895	9	2,116.6	− 4.5	5	16.4		1.5
Malagasay							1	1.5		0.3
Morocco	750	25	22	2	0.9	4.2	2	58.5	3.6	7.6
Mozambique†							1	17.0		2.5
Nigeria	20,000,000	40,000	898	28	2,000.0	10.0	1	60.0		6.0
Rhodesia							1	(not operating—not included in total)		
Senegal							1	18.0		2.0
Sierre Leone							1	10.0		
Sudan							1	22.0		2.0
Tanzania							1	17.0		2.6
Tunisia	950,000	1,500	56	4	87.0	4.6	1	21.4		3.0
Union of South Africa†							5	331.0	55.9	46.1
Zaire††	200,000	50					1	16.1		2.7
Zambia							1	24.6		5.6
Total Africa	**67,303,750**	**187,720**	**3,016**	**69**	**5,763.9**	**1.8**	**39**	**1,092.2**	**59.5**	**138.6**

*Revised. †Oil or gas discovered but not developed. ††To go on production at 25,000 b/d in 1975.

WESTERN HEMISPHERE										
Antiqua							1	17.3		1.9
Argentina	2,500,000	8,000	4,096	30	442.0	2.0	14	623.6	101.2	51.4
Bahamas							1	500.0		
Barbados†	250						1	3.0		
Bolivia	260,000	10,000	253	4	47.0	7.8	5	25.5		
Brazil	799,000	921	1,265	25	170.0	3.0	10	791.8	168.6	20.8
Chile	124,000	3,400	466	6	30.0	−12.8	3	123.5	26.3	10.0
Colombia	1,432,000	2,500	2,023	8	186.0	− 5.8	6	166.1	49.5	2.0
Costa Rica†							1	7.6		1.1
Cuba							3	122.0	14.6	11.7
Dominican Republic†							2	46.0		7.0
Ecuador	5,675,000	5,000	829	6	197.0	148.1	3	35.2		
El Salvador							1	13.7		2.1
Guatemala†							2	26.0		6.0
Honduras							1	14.0		1.8
Jamaica							1	33.0		2.3
Martinique							1	14.0		2.5
Mexico	3,600,000	11,000	4,345	45	478.0	8.4	6	625.0	109.0	56.3
Netherlands Antilles							2	945.0	35.0	15.0
Nicaragua							1	13.2		2.6
Panama							1	75.0		7.5
Paraguay							1	5.0		
Peru	1,050,000	3,500	2,499	13	68.0	1.8	5	106.8	6.7	1.8
Puerto Rico							3	307.8	47.8	75.5
Trinidad & Tobago	2,200,000	5,000	2,932	15	159.0	12.4	3	461.0	26.5	27.0
Uruguay							1	43.0	4.0	3.0
Venezuela	14,000,000	42,000	12,461	20	3,370.0	4.7	12	1,531.6	46.6	9.8
Virgin Islands							1	590.0		
United States	*34,700,249	247,310	503,505	1,411	9,225.0	− 2.4	247	13,383.0	4,512.5	3,273.1
Canada	9,424,170	**50,299	22,996	171	1,750.0	14.0	41	1,788.1	427.0	298.0
Total W. Hemisphere	**75,764,669**	**388,930**	**557,670**	**1,754**	**16,122.0**	**2.0**	**380**	**22,436.8**	**5,575.9**	**3,897.2**

†Oil or gas discovered but not developed. **Does not include Arctic gas. *Includes Alaska 10 billion.

Total Non-Communist	**524,856,459**	**1,297,972**	**576,221**	**2,018**	**45,900.7**	**9.8**	**714**	**53,454.0**	**7,269.1**	**7,142.4**
Communist World	*103,000,000	†735,400			9,312.0	4.5				
Total World	**627,856,459**	**2,033,372**			**55,212.7**	**8.8**				

*Including Russia with 80 billion, Red China 20 billion, and others 3 billion.
†Including Russia 706 trillion, Red China 20 trillion, Hungary 3 trillion, and others 6.4 trillion.

OGJ

AGO 530086

The year of Iraq. Iraq, following its June, 1972 nationalization of Iraq Petroleum Co.'s northern oil fields, reached a surprisingly quick settlement with the company in late February.

Under its terms, IPC yielded title to all the northern fields, agreed to pay $350 million in back claims, and gained 15 million tons of Kirkuk crude entitlement as compensation. It further affirmed Basrah Petroleum's title to fields in southern Iraq and committed Basrah, an affiliate of IPC, to a vigorous expansion program.

But Basrah was not spared. With the outbreak of the Arab-Israeli war on Oct. 6, the Iraqi government slapped a nationalization decree on the American holdings in the company—Near East Development Co. (50-50 Mobil and Exxon) held a 23.75% interest in Basrah.

Then, as the war rolled on, and Holland was classed an "unfriendly country" in the Arab oil war against the west, Iraq made a further seizure by nationalizing the Dutch share of the Royal Dutch/Shell group's interest in Basrah.

The group's 23.75% interest was held 60% by Dutch interests and 40% by British interests. Thus at year-end, Iraq held all its northern fields and 38% of Basrah, in the south.

Throughout the war and the cutback-embargo campaign, Iraq has been quite vocal in its demand for nationalization of all western producing interests in Arab countries. It shunned the cutbacks as useless and went all-out to market as much crude as it could on world markets (except, of course, the U.S. and other embargoed countries).

The year of Saudi Arabia. Kingpin of the war and of the oil weapon throughout the year was Saudi King Faisal. Not many months ago, he decried the mixing of politics and oil, but 1973 saw him reverse his stand and take the reins of leadership in the Arab world.

Faisal had given ample warning to the U.S. to change its policy toward Israel and the Middle East, or suffer the consequences. But Washington didn't respond to his overtures.

In mid-year, Pres. Sadat of Egypt gained the king's ear, and together the two leaders laid plans to achieve their goals.

Sadat would provide the political savvy, and Faisal the money.

Sadat also was eager to cast off the contentious Col. Qaddafi of Libya, who pursued his campaign to merge with Libya. Qaddafi killed his own plan by a disgraceful visit to Cairo in which he alienated the Egyptian people. Then he staged an actual "march on Cairo" with thousands of Libyan peasants trudging and driving down the principal highway eastward.

This was too much for Sadat. Hence his flight into the arms of Faisal, who conditioned his support for Sadat on Qaddafi's demise from the picture. And this is what did happen. In early December, Qaddafi closed his Cairo embassy and the Libyan-Egyptian marriage ended in divorce before it started.

A year for Algeria. In the early part of the year, Algeria racked up some new gains it had long sought. New 51-49% joint exploration agreements were signed with Sun Oil Co., Spain's Hispanoil, and France's Cie. Francaise des Petroles. Thus the state oil company, Sonatrach, gained some potent partners in its search for new oil and gas reserves.

But Algeria had other surprises for the industry. In late September, Sonatrach announced to the world that it would pursue its own pricing pattern, and make some changes in the rules for buying its high-gravity, low-sulfur crude.

In all candor, the company confessed it had oversold itself in crude-sales contracts, and was making a 7% cut in 1973 deliveries and at least a 20% cut in 1974 and 1975—possibly 25%.

Sonatrach also sprang a new approach to oil-finding on the industry. Boiled down, it reads "if you want to buy our oil, you must help us find more."

Each crude-buyer, under the new plan, will be asked to "contribute" to exploration programs in Algeria. Buyers may choose between "active" and "passive" participation in the program.

The "active" participant may set up a joint-venture with Sonatrach on the usual 49-51% pattern and spend 35¢/bbl of lifted oil on exploration.

A "passive" participant can simply contribute 20¢/bbl of lifted oil to the Sonatrach exploration programs.

Thus did Sonatrach show its heels to other producing countries in a progressive new path to renewed exploration in the desert country.

Light ahead? Oilmen look to 1974 with mixed emotions. Some have hopes that OPEC will pursue a sensible course in its new-found muscular approach to the consuming countries and the international oil companies. Others fear even more turmoil in the year ahead.

In any case, nobody will ever forget 1973. That, indeed, was the year that was!

Worldwide refining

WORLDWIDE REFINING	Company and refinery location	Crude	Catalytic cracking	Catalytic reforming	Hydro-processing	Other processing
ALGERIA	SONATRACH:					
	Arzew	54,600		16,000	1,000 DHT	10,300 V, 1,500 L, 1,300 A
	El Borma	600				
	Hassi Messaoud	3,135				
	Maison Carree	57,000		14,500		
	Total	**115,335**		**30,500**	**1,000**	
ANGOLA	Cabinda Gulf, Cabinda	2,500				
	Companhia de Petróleos de Angola (SARL), Luanda	21,700		1,900	3,800 DHT 2,800 DHD	1,900 V, 11,300 Vis, 950 A
	Total	**24,500**		**1,900**	**6,600**	

AGO 53087

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Refining capacity registers largest "nickel and dime" jump in history

LEO R. AALUND
Refining Editor

THE striking gain in U.S. refining capacity last year rates as one of the biggest statistical surprises in the history of the industry.

Announced projects at the beginning of 1973 indicated a bleak increase of only some 160,000 b/d, or growth in the range of 1%.

What really happened is that capacity, as reported to The Oil and Gas Journal, shot up some 830,000 b/cd—a jump of over 6% (Table 1). This is the biggest volume gain in recent memory and except for the 6.6% hike in 1967 the largest percentage increase in at least a decade.

In hindsight, the jump is not a total surprise, though the suddenness of it borders on a crash program. It illustrates what a mixture of government policy and profitability can produce.

Refiners have repeatedly said that given proper incentives and firm government policy that they could get moving. The first break in the logjam came last spring when crude-oil import regulations were revamped. As a result, a refiner could get all the oil he could chase down. There was also a rosy future of burgeoning world oil production, particularly in Saudi Arabia.

At the same time product prices firmed and moved up. Many refiners who hung on by their nails in 1971 and 1972 found they could compete in the improved climate.

Good product prices also made it possible to spend more on incremental expansions in large refineries. This accounted for most of last year's increase which has been called the big-

Table 1

Crude capacity shows big gain

	Capacity		Construction		
	1-1-74	% change from 1-1-73	Est. % change by 1-1-75	1974 completions*	1975 completions*
Crude, b/cd	14,216,287	+ 6.2	+3.0	425,000	725,000
Crude, b/sd	14,876,050	+ 6.3	+3.0	447,000	763,000
	Feed, b/sd				
Thermal operations	1,491,950	+ 3.5	+0.8	12,000	27,000
Cat reforming	3,358,038	+ 2.6	+3.2	108,500	185,000
Cat cracking†	4,618,580	+ 2.4	+1.0	46,000	58,000
Cat hydrocracking	855,840	— 1.0	....	....	6,500
Other hydroprocessing	5,780,110	+10.6	+6.7	386,000	897,000
	Products, b/sd				
Alkylation	849,080	+ 4.6	+3.6	31,000	....
Aromatics and isomerization	348,010	+ 4.3	+9.8	34,000	....
Lubes	237,118	+ 6.9	....	....	....
Coke, ton/day	43,410	+ 1.6	....	....	....
Asphalt	683,601	+ 6.1	+1.7	12,000	17,000

*Known as of Mar. 1, 1974
†Fresh feed

Table 2

Smaller refiners have relatively larger capacity gain

	Companies with more than 200,000 b/d		Companies with less than 200,000 b/d	
	1-1-74	1-1-73	1-1-74	1-1-73
	(Thousands of bbl)		(Thousands of bbl)	
No. companies	17	16	115	115
No. refineries	110	109	136	136
Capacity, b/cd	11,324.3	10,736.9	2,892.0	2,646.1
Capacity, b/sd	11,888.7	11,227.9	2,987.3	2,763.7
Annual change % (b/cd)	**5.5**	**3.4**	**9.3**	**2.3**
% of U.S. total b/cd	79.6	80.2	20.4	19.8
Cat cracking (F.F.), b/sd	3,892.5	3,772.5	724.1	739.5
% of crude	34.4	33.6	24.0	26.7
Cat reforming, b/sd	2,723.2	2,716.7	634.8	557.2
% of crude	23.0	24.2	21.2	20.1
Hydrocracking, b/sd	779.4	785.0	76.5	80.0
% of crude	6.6	7.0	2.6	2.9
Other hydroprocessing, b/sd	4,877.4	4,456.5	992.7	772.0
% of crude	41.0	39.7	30.2	27.9
Alkylation, b/sd	734.2	658.8	114.9	153.2
% of crude	6.2	5.8	3.8	5.5

Table 3

FCC capacity shows healthy gain*

Type unit	Capacity 1-1-72	% recycle	Capacity 1-1-73	% recycle	Capacity 1-1-74	% recycle	Capacity 1-1-75 (est.)
FCC	3,985.3	21.7	4,034.0	18.9	4,242.3	18.6	4,292.0
TCC	490.0	19.7	384.6	16.8	312.8	20.3	312.8
Houdriflow	97.5	25.8	93.5	21.7	63.5	14.8	63.5

*Capacity in thousand's b/sd

Table 4

Bimetallics capture more cat-reforming capacity

Type reformer	Catalyst	Capacity* 1-1-72	% of total capacity	Capacity* 1-1-73	% of total capacity	Capacity* 1-1-74	% of total capacity
Semiregenerative	Conventional	1,421.0	44.8	1,349.8	41.2	1,180.6	32.5
Cyclic	Conventional	743.4	23.4	739.9	22.7	833.9	24.8
Semiregenerative	Bimetallic	874.8	27.6	967.0	29.5	1,172.7	35.0
Cyclic	Bimetallic	....	....	122.1	3.8	73.1	2.2
Other	Bimetallic	49.0	1.6	52.0	1.5	95.0	2.8
Other	Conventional	80.8	2.6	43.0	1.3	3.6	<1

*Capacity in thousand's b/sd

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furic acid. The remainder is burned.

With our sixfold increase in sulfur, essentially all must be recovered to comply with environmental regulations. For recovery, a central amine (MEA) system is provided. Scrubbers are located throughout the refinery. The rich amine is returned to the central regeneration system where it is combined and stripped of H_2S. The following streams are scrubbed:

- Fuel gas.
- Ultracracker ethane and propane.
- Distillate Ultrafiner offgas.
- Coker propane and butane.
- Fluid cat cracker propane-propylene.

After recovery, the H_2S is converted to elemental sulfur in a conventional two-train Claus sulfur-recovery unit. Each train consists of three stages, and is designed for 200 long tons/stream day recovery. The normal sulfur recovery will be about 300 long tons/day. The two, 200-long ton/day trains are provided so that even when one train is down, there will be no significant sulfur emissions to the atmosphere. Operating adjustments will be made to bring the load quickly down to 200 long ton/day when one train is down.

Disposal of sour water will be to a disposal well, which is the present refinery practice. To provide future flexibility, in case well disposal becomes unacceptable, the sulfur-plant design provides for future addition of sour-water strippers.

Hydrogen supply. Both before and after the change in crudes, the refinery operation produces (in the Ultraformers) and uses (in the Ultracracker) large amounts of hydrogen. At present the production and use are roughly in balance, and no external source of hydrogen is needed.

After the switch, however, this will not be the case. Usage will increase for desulfurization of kerosine and diesel fuel in the distillate Ultrafiner, and production will drop because of the change in feedstocks to the Ultraformers.

We are always a little squeamish about the accuracy of relatively small numbers derived as the difference between much larger numbers.

Thus, we felt a certain lack of enthusiasm for the original design capacity number for the hydrogen plant to supply the future deficit. Another facet of the hydrogen plant also bothered us a little — energy consumption. We had decided we should use natural gas for feed and fuel, but were not happy with the BTU loss involved.

Fortunately, an alternative was available which pleased us more. Hydrogen-rich offgases were found to be available from Amoco Chemicals Co. processing units in Texas City and nearby Chocolate Bayou. Our present plans are to purify these streams to supply the needed hydrogen — at a considerable overall saving in energy. Also, since several chemical plants will supply the hydrogen, we will not have all our hydrogen eggs in a single hydrogen-plant basket.

Utilities. The program will require some additional steam.. A new 555,000-lb/hr boiler will provide steam at 850 psi to fit the existing steam-power generating cycle. Additional power will be purchased. Assignment of processing units to purchased power or to refinery power must be made.

In general, the more-critical units will be placed on refinery-produced power. This will involve a considerable rearrangement of the power-distribution system.

The new boiler, the larger new furnaces, and three existing boilers will be equipped to burn oil. At present the refinery is entirely gas fired, but these changes will make it possible to implement the crude-replacement program without importing additional natural gas.

Environmental. Currently, coke drums are steamed to a blowdown system. To reduce air pollution, a system will be provided to oil-scrub the vapors from both old and new coke drums.

Measures are included to protect the quality of the effluent water. These include a more-extensive system for collecting sour waters to avoid spilling these streams, unit separators on the new units, and maximum use of air cooling.

Integration. Major changes to an existing refinery, such as required for this program, are more complex and difficult to coordinate, and to execute than a clean new refinery project. Not only must the new facilities be installed efficiently, but there must be minimum interference with existing operations.

Obviously these two goals occasionally conflict. Schedules must not only accommodate equipment and material deliveries (difficult in itself these days), but tie-ins to existing units and systems must be consistent with the regularly scheduled maintenance turnarounds.

Considering these complexities, Amoco management set up a slightly different organization than it normally uses. A three-man team (the authors of this article) was appointed to handle all facets of the program. Fundamental assignments are shown in Table 2.

Our primary tool for proceeding with work in the early stages was an arrow diagram showing each of the detailed tasks to be done, a time for completion, and responsibility assignment to one of the three of us in line with the general assignments in the following Table 2.

Table 2

Texas City refinery-revamp team

C. W. Peters	
	Planning
	Process studies
	Economic studies
	Coordination with research, marketing, and other head-office departments
J. A. Bauer	
	All liaison with refinery
	Optimum integration of new and old facilities
	Ecology matters
	Recruitment and training of new staff
	Control of refinery expense
E. P. Wells	
	Process design
	Estimating
	Project engineering
	Procurement
	Construction
	Schedule responsibility
	Cost responsibility

We met together at least every week, at first, for proper coordination. When major management decisions were required, we met with the vice-president of refining transportation and engineering, the manager of refining, and the manager of engineering for prompt answers and guidance.

All phases of the project have now been contracted and meetings of our threesome (or troika, as we have called it) are less frequent, as are our meetings with top management.

Progress is as good as the present environment permits, and our somewhat foggy crystal ball predicts completion in about mid-1976. END

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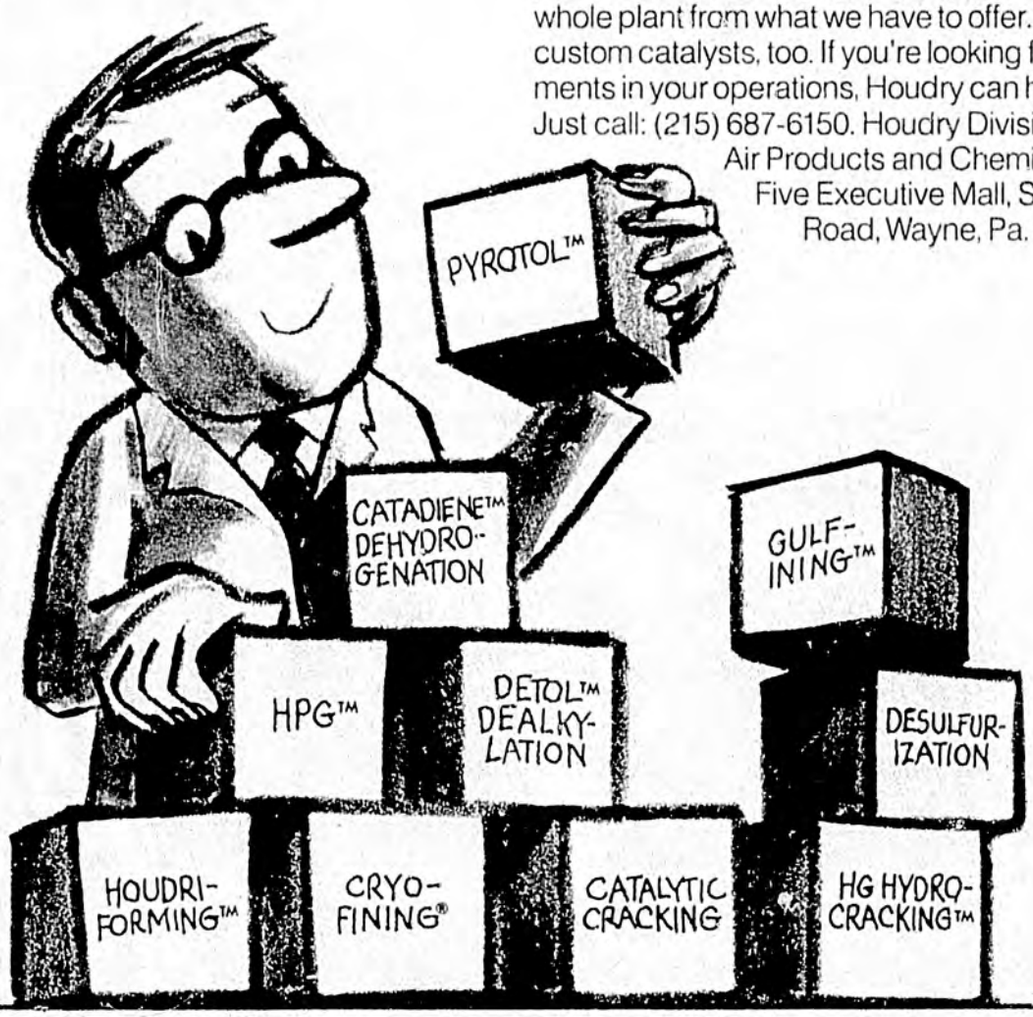

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gest nickel and dime expansion in history.

Talk of a big increase in capacity in early 1974 does have Alice-in-Wonderland overtones. The crude-oil embargo has idled much capacity in the U.S. refining industry.

Comparable? There is no doubt that the refining industry does today have much more capacity than expected. But the question is: Can we compare this 830,000-b/cd increase to that added in previous years on a barrel-for-barrel basis? Certainly, much of that expansion does not have the quality of that from, say, five 150,000-b/d new grass-roots refineries.

Also, a slight statistical aberration may have been introduced last year. American Petroleum Institute last year introduced some precise guidelines for counting capacity. For one thing, operable capacity was any capable of being put on stream within 30 days. The Journal adopted a modified version of these definitions.

No doubt many refiners have included this type capacity in the past, but last year all the 200 plus U.S. refiners were using the same rules.

Where it came from. An analysis of where the increase came from shows relatively less originated from refiners controlling more than 200,000 b/cd of capacity. Smaller refiners contributed more on a percentage basis (Table 2).

The top 16 companies in Table 2 were responsible for adding 481,000 b/cd of the 830,000-b/d increase. American Petrofina's contribution is not included in the preceeding major refiner increase since it joined the 200,000-b/d club for the first time this year (it got in by purchasing BP's Port Arthur, Tex., refinery and reactivating a sizable portion of the capacity there).

Reactivations played a solid role in the 1973 expansion. Marathon put 75,000 b/d of mothballed capacity back on line at Robinson, Ill., and made additional increases there. At least 125,000 b/d of shutdown capacity was put back on line by refiners in 1973.

Also, last spring Exxon said it would make incremental expansions at several refineries totalling 100,000 b/d. The company apparently got this on line in 1973. This, along with 160,000 b/d of earlier known expansions plus reactivations, accounted for 43% of the increase.

Following are some of the highlights

AGO 530091

Processing profile of refiners with over 200,000 b/cd capacity

Company	No. refineries	Crude capacity b/cd	Crude capacity b/sd	Cat cracking Feed, b/sd	Cat cracking Recycle,* b/sd	Cat reforming, b/sd	Hydrocracking, b/sd	Other hydroprocessing, b/sd	Alkylation, b/sd
1. Exxon	5	1,252,000	1,307,000	466,000	118,000	268,000	67,900	691,400	82,500
2. Shell	8	1,109,000	1,164,000	379,500	112,000	288,200	105,500	711,500	65,500
3. Texaco	12	1,083,000	N.R.†	442,270	132,591	232,780	38,890	352,800	59,970
4. Amoco	10	1,065,000	1,121,060	398,500	122,000	237,900	38,000	387,200	68,300
5. Standard (Calif.)	12	984,000	1,035,205	227,100	55,900	245,400	175,500	248,000	40,730
6. Mobil	8	932,000	972,800	327,700	68,100	178,400	47,000	448,600	67,000
7. Gulf	8	860,500	884,700	323,800	47,200	228,300	40,400	395,500	90,800
8. ARCO	6	789,800	846,550	174,000	15,000	249,000	89,200	432,000	22,200
9. Union Oil	4	487,000	508,100	133,700	19,000	122,000	51,000	245,400	24,800
10. Sun Oil	5	484,000	510,000	200,000	35,900	147,800	26,000	141,300	36,600
11. Phillips	6	403,700	N.R.†	173,800	53,800	111,600	22,000	155,800	58,500
12. Sohio/BP	4	384,250	406,300	127,900	31,000	119,700	56,000	137,500	21,000
13. Ashland	7	358,200	383,500	125,000	20,800	58,000	.....	155,000	18,000
14. Continental	7	349,200	360,500	111,100	28,880	79,300	.....	130,800	18,100
15. Marathon	3	314,000	332,000	86,500	16,400	71,300	22,000	57,100	12,650
16. Cities	1	268,000	282,100	125,000	20,000	46,000	.....	96,000	35,300
17. American Petrofina	4	200,000	210,210	70,600	5,700	39,500	.....	91,500	12,500
Total	110	11,324,350	11,888,726	3,892,500	902,271	2,723,180	779,390	4,877,400	734,150

*Calculated in some cases as 30% of fresh feed. †Calculated.

of the downstream scene:

Cat cracking. Catalytic cracking picked up its growth last year after a lag in 1972. However, total growth was held back by the retirement of units using older technology (Table 3).

Cat reforming. The exceptional growth of cat reforming continued to slacken off during 1973, growing only 2.6% between 1/1/73 and 1/1/74. This compares to a growth rate of over 6% during the previous 5 years. That was the period when U.S. refiners put much of their energy and financial muscle into units to make no-lead gasoline.

Ironically, barring literally an act of Congress or some higher authority, this country enters the no-lead gasoline era in just over 90 days—a time when it may be difficult to find any kind of gasoline.

But the trend to bimetallic catalysts continues strong. By the end of 1973, 40% of all cat-reforming capacity in this country used bimetallic catalysts compared with 30% at the beginning of 1972 (Table 4).

Inspection of the results also shows that continuous reforming, which makes up the majority of the "other" category in the table, is getting a good toehold in refineries.

Hydroprocessing. With the exception of hydrocracking, which declined, hydrotreating and hydrorefining processes chalked up the biggest gain of any downstream processes. Capacity used for hydrogen processing of middistillates stocks zoomed up 25% (Table 5).

Table 5

Hydrotreating and hydrorefining surges

Type feed	1-1-73, b/sd	1-1-74, b/sd	1-1-75 (est.), b/sd
1. Cat-reformer feeds	2,947,310	3,153,730	3,296,730
2. Middistillate stocks	**1,230,500**	**1,542,360**	**1,735,160**
3. Cat-cracking feed and recycle	276,200	339,690	350,000
4. Other	782,178	744,330	782,000

The large increases in hydrotreating and hydrorefining are a sign of the times. A large portion of the U.S. refining industry does not have the capability to process high-sulfur crude oil.

Many refiners must now develop the flexibility to process any of the world crudes they will have to import, many of which will be high in sulfur content.

Late last year, over $530 million had already been dedicated for revamps to allow refiners to process sour crudes. Paradoxically, these costly projects will add little to U.S. refining capacity.

The big expansions by the majors that are due to start going on stream late next year and thereafter will be equipped to process sour crude. Hydrodesulfurization of vacuum gas oil and residuum will lead the processing wave for that round of activity.

Alkylation. Hydrofluoric and sulfuric acid alkylation displayed good growth last year, moving up 4.6%. HF alkylation carved out a bit larger slice of the alkylation pie and is expected to increase its share this year (Table 6).

Table 6

Alkylation

	HF, b/sd	H_2SO_4, b/sd	Total, b/sd
1-1-72	267,095	554,774	821,869
1-1-73	276,345	535,700	812,045
1-1-74	310,410	538,670	849,080
1-1-75*	330,410	549,670	880,080

*Est.

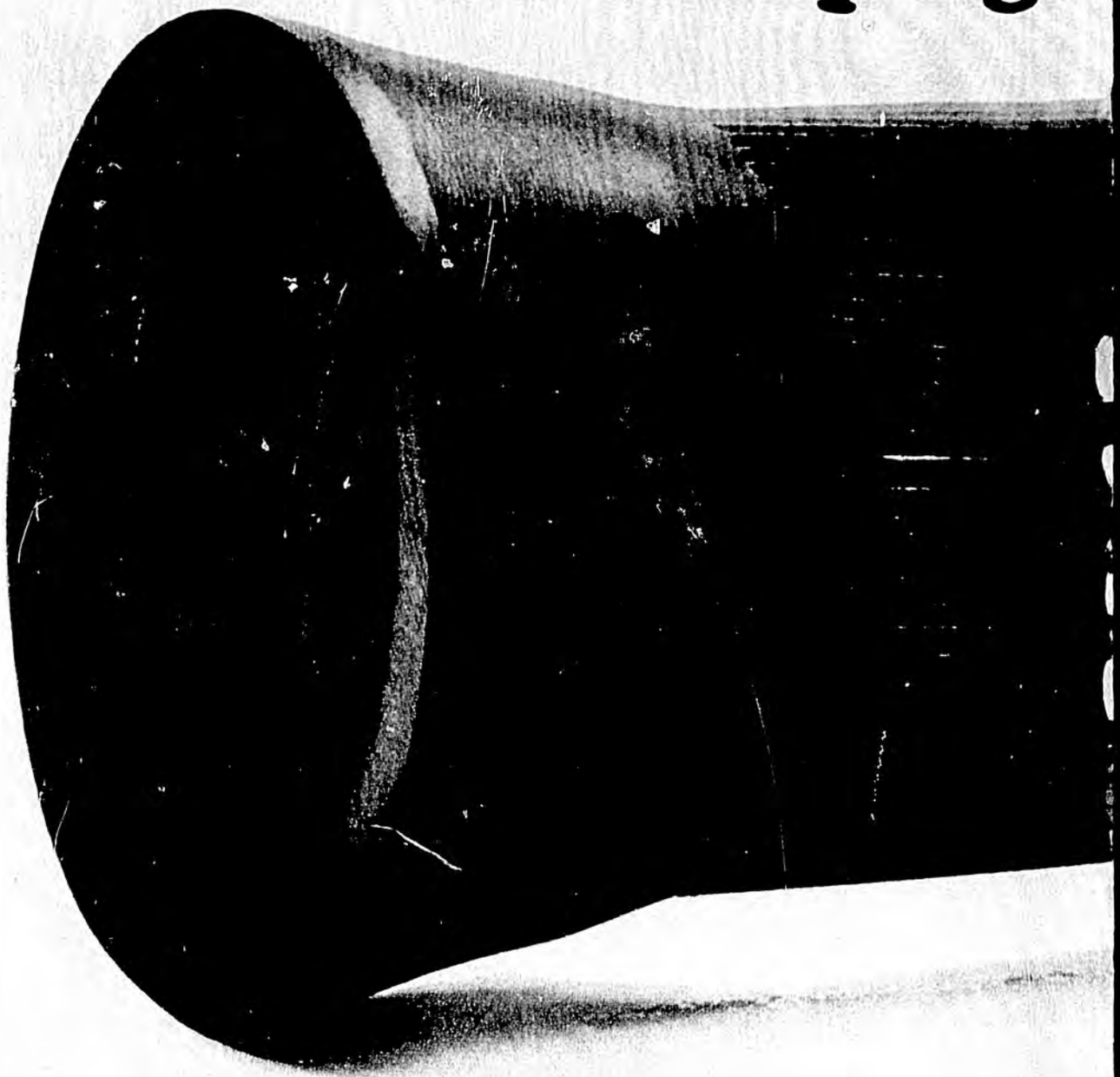
The future. This year, some 400,000 b/d of capacity is due to be added to the U.S. refining establishment. If the oil embargo is lifted, if the U.S. continues its energy belt-tightening, and if the rising cost of energy dampens demand, this may well be enough to get the country by.

A healthy batch of capacity is due on line in 1975. Most of that will be late in the year and come from Standard Oil Co. of California's huge expansion program. Given the proper climate, a half-dozen or so fuels refineries could be started this year and be on line by late 1976.

Whether this happens or not, the refining capacity now on blueprints around the country represents a staggering total. END

AQD 530092

No welding. No cutting. No clamping.



If you're looking for a way to speed up and simplify pressure tests for pipelines and piping assemblies, you'll find it with the Tube Turns Swel-Plug Pressure Tester.

With the Swel-Plug tester, there are no caps to weld on and then cut off. No clamps to tighten and re-tighten. No gaskets to position. No threads to align. No screws or clamps to adjust. And no ends to bevel.

All your men have to do is insert the Swel-Plug tester into the pipe, attach the pressure source, and vent residual fluid. Then begin testing for any pressure from atmospheric to 3,000 psi.

What's more, the Swel-Plug Pressure Tester provides full-length gripping. This puts an end to single-point gouging of pipe walls. It also minimizes deep scratches and sharp notches which could create stress raisers and weak spots.

After the test is completed, the Swel-Plug tester can be removed easily because its grip to the pipe walls

The Tube Turns Swel-

AGO 530093

?FORECAST REVIEW!



FIRST semisubmersible drilling rig to be built on the U.S. East Coast is being completed at Bethlehem Steel's shipyard near Baltimore. The rig was built for Ocean Drilling & Exploration Co., New Orleans, and will drill in the Gulf of Mexico for Pennzoil Co.

Oil scene may be brighter than first expected

OPTIMISM is growing among oil economists that Americans will escape a disastrous shortage of heating oil this winter despite an embargo on petroleum imports from Arab oil producing areas.

They now have, in fact, begun to express concern over the outlook for gasoline this spring and summer. And here the industry faces a dilemma.

There still is much winter weather ahead which requires continued refinery emphasis on producing heating oils: middle distillates and residual, at least through February and perhaps into March. But just as soon as possible, refiners need to switch yield patterns to produce more motor fuels to replenish dwindling gasoline stocks and meet rising demand for transportation fuels.

The problem? If refiners switch too soon, heating-oil supplies could get squeezed by prolonged winter weather. If the switch is made too late, the nation will be in serious trouble on gasoline all summer.

The industry normally makes these delicate decisions by individual action of each refiner reacting quickly to trends in the market. But this year, the Federal Energy Office is calling many of the shots on refinery runs and yield patterns. The Government's ability accurately to gauge market trends and fine tune refinery operations quickly is untested and, of course, plagued by uncertainties on the volume of imports.

Role of prices. But the big news is the belief flatly expressed by several oil economists that "we are past the critical danger point on heating oils this winter."

This is a real turn-about from the atmosphere of gloom and doom that prevailed in mid-November and early December when predictions of fuel runouts, closed factories, massive unemployment, and a depression were openly talked. Several things have happened since to brighten this picture. The import embargo hasn't proved as tight as expected, and imports of crude and products have remained higher than predicted. Refineries have managed to keep operations high. And consumers have slackened demand for gasoline and heating oils, thanks to conservation efforts and unusually warm weather early in the winter.

A few analysts attribute the improved supply-demand outlook to the fact that federal energy executives wisely have permitted the price mechanism to work.

"Imports are still coming in," one economist told The Oil and Gas Journal, "because we have allowed the price increases imposed by OPEC nations to flow through to the American consumer.

"The Arab countries and others who follow their price lead seem willing to let us have enough oil to get by if the price is right and we don't embarrass them. Caribbean refiners have been able to get the crude and process it into products knowing that we were willing to pay their price and let the costs flow through."

The Arab relaxation of planned production cutbacks and crude-price escalations led another analyst to observe that "the Arab embargo was related

AGO 530094



A PIPE DREAM is what drillers would call this 267 miles of 24-in.-diameter pipe if it were casing which is so short it has hampered drilling recently. But it's line pipe destined for Ashland Oil's crude line from Owensboro to Catlettsburg, Ky.

more to economics than politics."

Some economists believe the prospects are good that total imports will continue strong probably in the 5-million-b/d range through the first half of 1974 and even increase appreciably if the Middle East political climate improves.

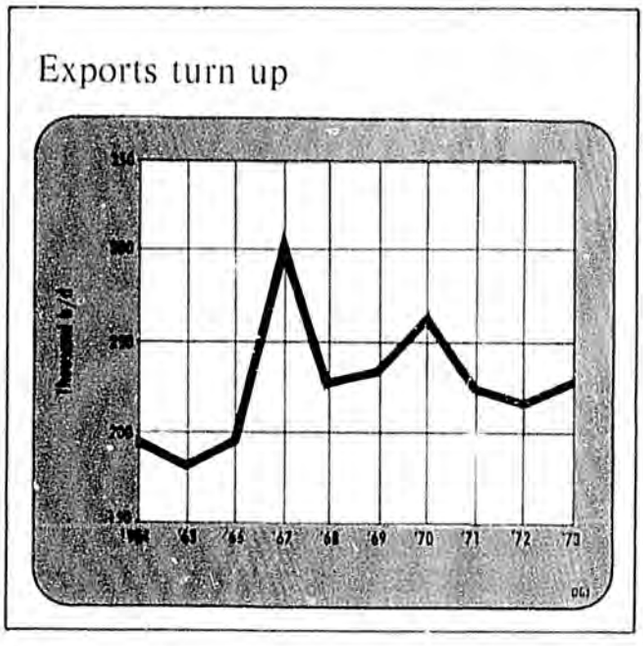
The result will be that price will be a restricting factor on demand and will encourage conservation and a switch to other fuels. "The experiences this winter," one economist observed, "proves the elasticity of energy demand, that price is an important supply-demand factor."

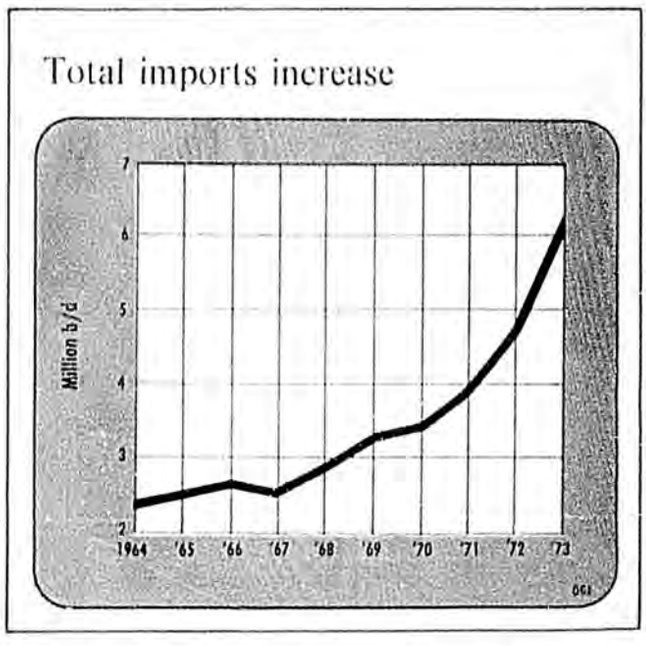
The shortfall. Economists agree on one point: their inability to make an accurate supply-demand forecast for 1974. The unknown variables just are too numerous.

Original estimates of the world crude shortage—7.5 million b/d in the first quarter of 1974—were changed when Libya joined Iraq in declining to enforce the embargo and when the Arab states eased their production restraints in late December. This prompted analysts to estimate the world shortage instead at 4 million b/d and to change the estimated U.S. shortfall from 3 million b/d to 1.5 million b/d. With heavier than normal stock withdrawals, the U.S. shortage thus could be cut to about 1 million b/d in the first quarter, a cut of about 5% in expected demand. On this basis, the shortage has manageable proportions.

Because of better than expected imports and energy savings by consumers, gasoline rationing could be delayed until summer. There is a danger, however, that the improved prospects could prompt Americans to relax their attitude toward saving energy.

Oil supply will continue to be a serious problem. Even before the Arab oil embargo was imposed in mid-October, the U.S. petroleum supply-demand outlook was touch and go for this winter and next summer. As long as the embargo persists and for a considerable time after, one economist warned, U.S. consumption of petroleum will be limited by supply. The only short-term options are to increase





AGD 530095

How embargo upsets supply-demand balance

(1,000 b/d)

	1973 Preliminary	1974 Predicted pre-embargo	1974 Demand limited by supply	Comments
Supply				
Domestic production				
Crude	9,203	9,032	9,200	Range is 9 MMb/d to 9.4 MMb/d.
Gas liquids	1,735	1,725	1,775	Some economists consider 1.7 MMb/d more realistic.
Total	10,938	10,757	10,975	
Imports				
Crude	3,212	3,937	2,500	Imports big question. Crude imports could dip to 2.3 MMb/d and products to 2.4 MMb/d.
Residual	1,849	2,167	1,600	
Other products	1,074	1,331	960	
Total	6,135	7,435	5,060	
Other supply	348	523	400	Processing gains.
Total supply	17,421	18,715	16,435	
Stock change	**+114**	**−28**	**???**	Stock draw will augment supply.
Demand				
Gasoline	6,610	7,035	5,630	Assumes 13,475 Mb/d input at refineries; yields of 41% gasoline, 26.9% distillates, 9.6% resid, 7.4% av fuels, 15.1% others; plus imports. Does not include military draw on fuel some of which will be exported.
Aviation fuels	1,060	1,140	1,167	
Distillates	3,200	3,560	3,980	
Residual	2,750	3,150	2,894	
Other products	3,447	3,650	2,364	
Domestic demand	17,067	18,525	16,035	
Exports	240	218	200	
Total demand	17,307	18,743	16,235	

domestic energy supplies by all means and reduce consumption.

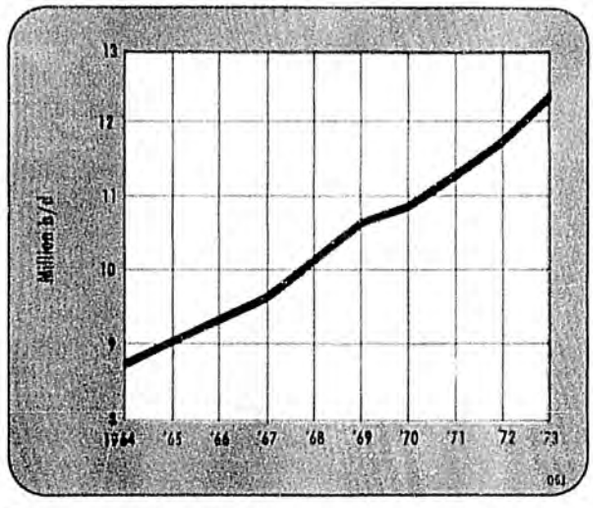
A look at '73. The Arab embargo came too late to change the record U.S. oil consumption in 1973.

Preliminary calculations indicate that supply slightly exceeded demand in 1973 and the industry was able to build inventories by a small margin. Estimates are 17,421,000 b/d for supply and 17,307,000 b/d for demand.

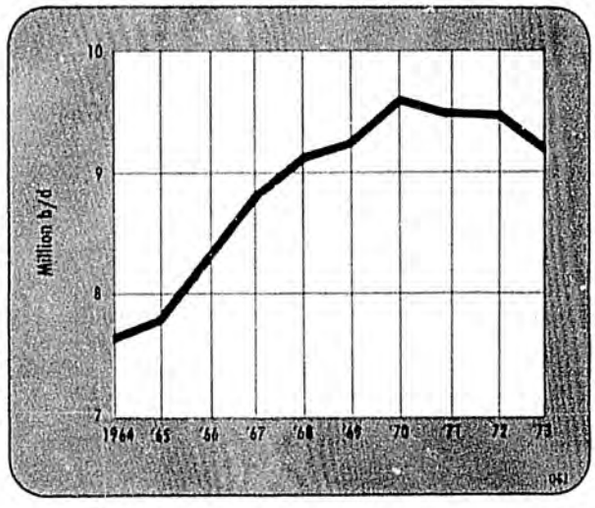
The supply came from total domestic production of 10,938,000 b/d, including 9,203,000 b/d of crude and condensate and 1,735,000 b/d of natural-gas liquids. Imports added another 6,135,000 b/d to supply with crude shipments averaging 3,212,000 b/d and products 2,923,000 b/d.

Demand for the major products saw gasoline consumption reach 6,610,000 b/d, distillates 3,200,000 b/d, residual 2,750,000 b/d, and aviation fuels 1,060,000 b/d. Domestic demand ran 17,067,-

Crude runs follow upward trend



Crude production declines



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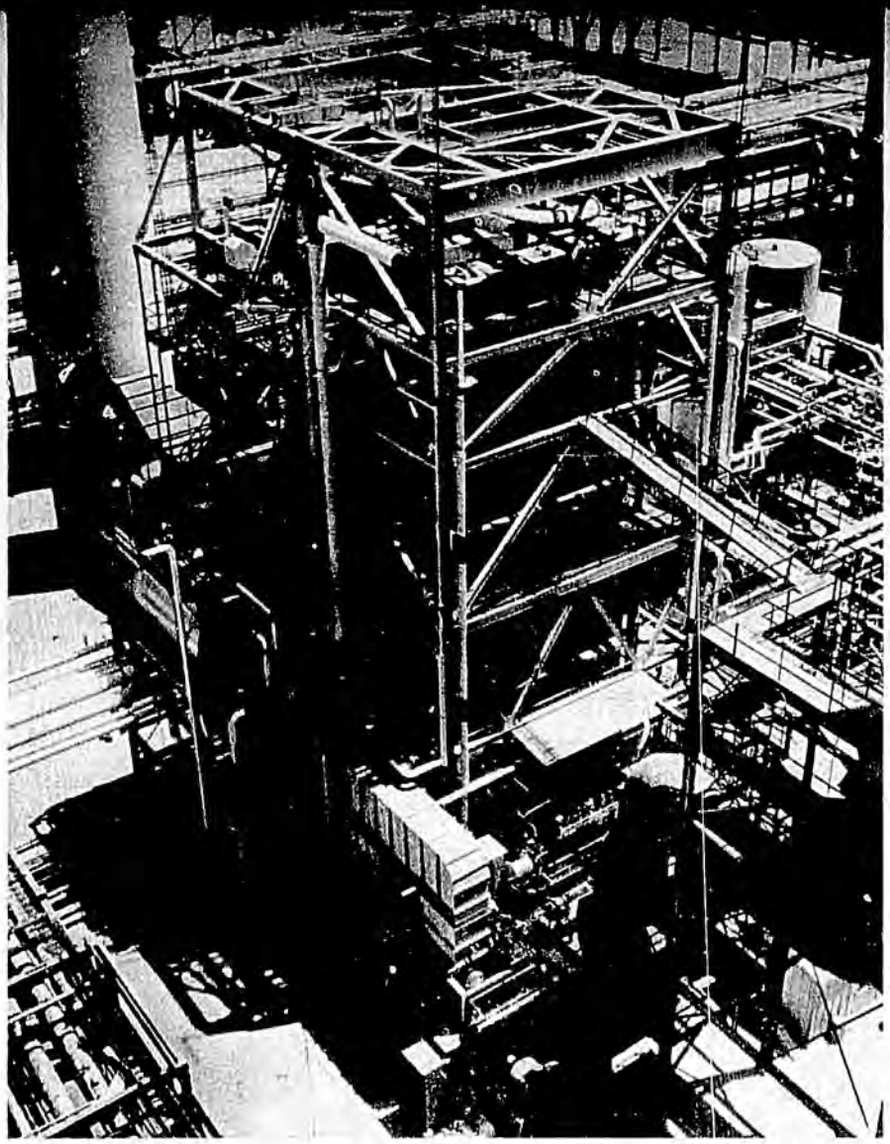


A POLLUTION FIGHTER in strange form but that's what this Badger Co. boiler is. The boiler eliminates carbon monoxide emissions and was installed by Getty Oil Co. as a part of its environmental program at the Delaware City, Del., refinery.

000 b/d and exports 240,000 b/d.

Early estimates for 1974 called for even greater increases in supply and demand. When company economists gathered for the IPAA's supply-demand committee's annual session in early October, the consensus was that 1974 demand would average 18,743,000 b/d after record 19,788,000 b/d demand in the first quarter and 19,900,000 b/d in the fourth quarter. The Arab embargo was imposed shortly afterwards, however, and these figures immediately became hopeless.

A look at '74. As for the 1974 supply-demand picture, there are as many different estimates as there are economists making them. The best formula is this: Supply this year is whatever you can get your hands on, and demand is whatever supply is. In other words, demand will be supply-limited.

One optimistic estimate, presented in the table on p. 109, calls for a supply total of 16,435,000 b/d at least for the first half year which might be increased nearly to 17 million b/d by heavy withdrawal of crude and product inventories.

But there's nothing certain about any element in the outlook.

Take domestic production. Crude output was expected to decline to slightly above 9 million b/d this year from 9.2 million in 1973. But with currently higher crude prices—$5.25/bbl for top "old" production and $10/bbl for marginal and "new" production—operators are known to be planning programs and projects to step up production. But these efforts take time and may not become effective soon enough to offset the normal decline in the nation's aging fields. The range of estimates on domestic crude production thus range from a low of about 9 million b/d to as high as 9.4 mililon b/d on the optimistic side. Even the 9.2 million b/d used in the table could be too high.

There are several opinions on the production level of natural-gas liquids. Early forecasts called for output of 1,725,000 b/d based on gas withdrawal remaining about steady with 1973. Some economists think the industry will be fortunate to keep NGL production at 1.7 million, but the more optimistic think an increase to 1,775,000 b/d is possible.

The big supply question for 1974, of course, is the level of imports. Best estimates are that imports under the present embargo will run from 1.5 million b/d to 1 million b/d less than last year or a total of 4-5 million b/d, about equally divided between crude and products. The more-optimistic 5-million-b/d level was used in the table.

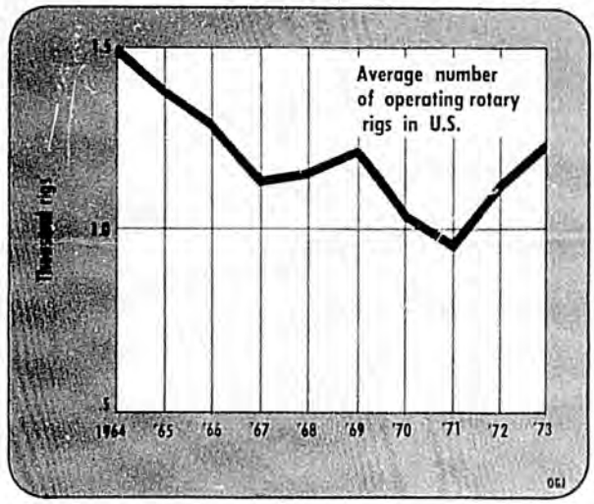
Fitting refinery operations into this supply outlook will require some very interesting juggling of crude and product yields which for the first time is involving restrictions from the federal Government. Federal energy authorities at first estimated that refiners would be able to operate at only 85% of capacity and suggested a yield pattern of 39.2% gasoline, 27.9% middle distillates, 9.7% residual, 7.7% jet fuel, and 15.6% other products. This, of course, penalized gasoline production enormously in favor of other products, especially distillate and residual fuels.

Some economists question the advisability of cutting gasoline production that severely. They think that with luck crude supply will allow higher refinery operations and a yield of 42-44% on gasoline should be considered, particularly after the first quarter. Unless higher yields of gasoline are permitted, the necessity for rationing is believed inevitable; and may be so even with higher yields.

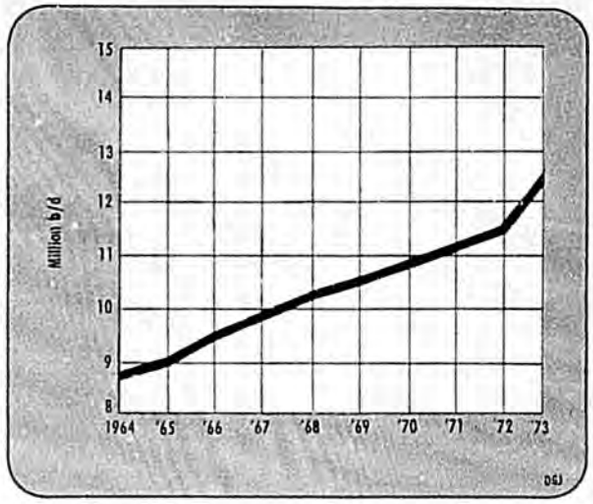
The table presented here assumes refinery input of 13,475,000 b/d—an optimistic assumption—will be available with permitted yields of 41% gasoline, 26.9% distillates, 9.6% resid, 7.4% aviation fuels, and 15.1% other products. With expected imports, this will allow gasoline production of 5,630,000 b/d, nearly 1 million b/d below 1973 demand and almost 1.5 million b/d below expected gasoline demand for 1974. Even higher yields still will leave a gap in gasoline supply which will require severe curtailment this summer. The gap can be narrowed by drawing on inventories, but stocks going into the motoring season are lower than normal and will provide only limited relief.

AGD 530097

U.S. rig activity revives



New U.S. crude supply



A glance at the other product volumes which may be available show clearly how much of the shortage is being covered with gasoline. Aviation fuels available are estimated at 1,167,000 b/d. This normally would be sufficient, but this will be reduced sharply by military-fuel demands which may range from 300,000 to 600,000 b/d in the first part of the year. These will be mainly in jet fuels but will also affect the supply of others. Under the assumed yield pattern the volume of distillates and residual expected appear almost comfortable, but it's doubtful these yields will hold for the entire year under the pressure for more gasoline by midsummer.

The calculations are not intended as a forecast of supply-demand for the year but are offered to illustrate the variety of assumptions that are necessary and the juggling of yields needed to produce the right volumes of fuels at the right time.

Hopefully, the Arab embargo will be eased considerably or lifted before the year is out and some of the pressure will be taken from U.S. petroleum supply. But higher prices alone will compel Americans to continue restricting consumption as much as possible and increase domestic production to the limit. Under present level of world prices, crude and products will lay into this country at about $10/bbl. If import levels remain only at the 5-million-b/d mark, this will mean a cost of $18.25 billion annually. Such a fuel bill will play havoc with this country's balance of trade. The old care-free days of high petroleum consumption at low cost clearly have come to an end.

A look back. From an operations standpoint, 1973 was not a vintage year for the U.S. petroleum industry. Although percentage gains in most instances were small, operating records still were established.

A quick rundown (for details see following tables) shows:

- Crude production dipped 2.9% to average 9,203,000 b/d compared with 1972's high mark of 9,477,000 b/d.
- Natural gas marketed increased 2% to average 62.9 billion cu ft/day for a record, and a record volume of 2.8 billion cfd was imported.
- Natural-gas liquids and liquefied refinery gases also set a production record of 2,081,000 b/d.
- Refiners averaged running 12,429,000 b/d of crude compared to 11,730,000 b/d in 1972 and operated their plants at 89.7% of capacity. Highest operating rates were reached by East Coast refiners at 95.7% and Mid-Continent refiners at 94.5%.
- Imports of crude averaged 3,212,000 b/d, also a record. Canada remained the major source of imported crude with shipments averaging 998,000 b/d, but Nigeria moved into second place with 461,000 b/d of imports while Saudi Arabia sent 445,000 b/d, Venezuela 318,000 b/d, Iran 191,000 b/d, and Libya 148,000 b/d.
- Imports of products averaged 2,923,000 b/d, up from 2,245,000 b/d in 1972. Residual represented by far the major imported product at 1,849,000 b/d with distillate imports reaching 377,000 b/d and kerosine jet fuel 163,000 b/d.
- Exports also increased slightly, causing a political flap in Congress where charges were heard that exports represented attempts by American oil companies to profiteer on world markets by shorting customers at home. Exports averaged 239,100 b/d for the year compared with 222,700 b/d in 1972 and with a record 307,100 b/d in 1967.
- Petroleum stocks at year-end topped 1 billion bbl, nearly 50-million-bbl higher than the year before but below the 1.04 billion mark of 1971.
- Drillers completed 27,863 wells including 8,008 wildcats during 1973 and made 139.6 million ft of hole. The outlook for 1974 is for 30,637 wells including 9,500 wildcats and 154.4 million ft of hole. Rotary-rigs active averaged 1,194 ranging from a low of 970 rigs at work to a high of 1,440. The rig activity was the best since 1969.

The drilling statistics were a disappointment since operators had expected to complete more than 31,000 wells in 1973. That goal ran into problems of weather early in the year and a shortage of casing and drill pipe in the later months.

But the higher level of crude and product prices are stirring the industry into expansion plans for 1974 and the years ahead. Operators are planning bigger drilling programs, enhanced recovery projects, and substantially larger capital outlays for plants and facilities.

This is the only answer to what happened in 1973 and the only way out if the nation is to escape zero growth and constant restraints on energy consumption. END

AGD 530098

U.S. production of crude oil and lease condensate

(Thousands of barrels daily)

	Percent change	1973†	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	Total* 1859-1972
District I:													
Fla., N.Y., Pa., W.Va.	+65.2	109	66	36	31	29	28	31	32	32	30	30	2,050,635
Total District I	**+65.2**	**109**	**66**	**36**	**31**	**29**	**28**	**31**	**32**	**32**	**30**	**30**	**2,050,635**
District II													
Illinois	−13.6	83	96	107	120	139	154	162	169	175	192	205	2,981,903
Indiana	−17.7	14	17	18	21	21	24	28	31	30	31	33	442,156
Kansas	− 8.4	185	202	215	232	243	258	272	284	287	290	299	4,563,265
Kentucky	− 7.7	24	26	29	32	35	38	43	49	53	54	50	614,873
Michigan	+ 8.3	39	36	33	32	33	35	37	39	40	43	44	625,053
Nebraska	−16.7	20	24	28	31	33	36	37	38	47	52	60	343,155
North Dakota	− 5.4	53	56	59	60	62	68	69	74	72	70	69	416,302
Ohio	+ 4.5	23	22	23	27	30	30	27	30	35	43	17	792,172
Oklahoma	− 7.1	527	567	584	613	616	611	632	615	557	555	553	11,000,841
Other		2	2	2	1	2	3	1	1	1	....	....	8,618
Total District II	**− 7.5**	**970**	**1,048**	**1,098**	**1,169**	**1,214**	**1,257**	**1,308**	**1,330**	**1,297**	**1,330**	**1,330**	**21,788,338**
District III:													
Alabama	+22.2	33	27	21	20	21	21	20	22	22	23	25	139,808
Arkansas	− 1.7	50	51	50	49	49	53	58	65	71	73	75	1,379,948
Louisiana	− 8.3	2,251	2,455	2,562	2,485	2,314	2,233	2,122	1,848	1,630	1,502	1,411	14,836,941
Gulf Coast	− 8.3	2,140	2,334	2,438	2,355	2,181	2,094	1,971	1,699	1,478	1,356	1,273	‡
Rest of state	− 8.3	111	121	124	130	133	139	151	149	152	146	138	‡
Mississippi	− 7.2	155	167	176	178	176	160	157	151	154	155	161	1,458,007
New Mexico	− 9.3	274	302	324	351	354	351	346	340	327	311	301	3,073,214
Texas		3,569	3,565	3,351	3,424	3,156	3,097	3,067	2,898	2,742	2,704	2,679	38,153,093
Gulf Coast	− 1.8	703	716	654	694	631	609	591	539	515	524	516	‡
West Texas	+ 1.6	1,797	1,769	1,646	1,634	1,497	1,453	1,427	1,352	1,262	1,212	1,195	‡
East Texas field	+ 2.8	217	211	186	199	159	145	142	124	111	119	120	‡
Rest of state	− 1.6	852	869	865	897	869	890	907	883	854	849	848	‡
Total District III	**− 3.6**	**6,332**	**6,567**	**6,484**	**6,507**	**6,070**	**5,915**	**5,770**	**5,324**	**4,946**	**4,768**	**4,652**	**59,041,011**
District IV:													
Colorado	+10.0	99	90	75	68	78	87	93	92	92	95	105	1,030,731
Montana	+ 1.1	94	93	95	104	120	132	66	97	90	84	84	829,856
Utah	+21.1	86	71	65	64	64	64	66	66	69	78	92	462,529
Wyoming	+ 1.0	390	386	405	439	424	394	373	368	379	379	396	3,794,577
Total District IV	**+ 4.5**	**669**	**640**	**640**	**675**	**686**	**677**	**628**	**623**	**630**	**636**	**677**	**6,117,693**
District V:													
Alaska	− 1.5	199	202	218	229	202	181	80	39	31	30	29	553,562
Arizona	−33.3	2	3	3	5	7	9	8					15,192
California	− 3.1	922	951	982	1,020	1,028	1,026	984	946	867	820	824	16,447,891
Coastal region	+ 1.4	215	212	237	222	180	176	191	190	182	178	184	‡
Los Angeles region	−7.0	362	389	392	430	465	453	380	340	296	279	279	‡
San Joaquin Valley	−1.4	345	350	353	368	383	397	413	416	389	363	361	‡
Nevada						1	1	1	1	1			2,949
Total District V	**− 2.9**	**1,123**	**1,156**	**1,203**	**1,254**	**1,238**	**1,217**	**1,073**	**986**	**899**	**850**	**853**	**17,019,594**
U.S. Total	**− 2.9**	**9,203**	**9,477**	**9,461**	**9,636**	**9,237**	**9,094**	**8,810**	**8,295**	**7,804**	**7,614**	**7,542**	**106,017,271**

*Thousand of barrels. †Preliminary. ‡Not available.

Supply and demand of crude in the U.S.

(Thousands of barrels daily)

	1973*	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961
SUPPLY:													
Crude imports	3,212	2,222	1,681	1,324	1,409	1,290	1,128	1,225	1,238	1,199	1,131	1,126	1,045
Crude production	9,203	9,477	9,463	9,637	9,238	9,095	8,810	8,295	7,804	7,614	7,542	7,332	7,183
Total new supply	**12,415**	**11,699**	**11,144**	**10,961**	**10,647**	**10,385**	**9,938**	**9,520**	**9,042**	**8,813**	**8,673**	**8,458**	**8,228**
DEMAND:													
Crude refinery runs	12,429	11,731	11,199	10,870	10,629	10,312	9,815	9,444	9,043	8,807	8,687	8,410	8,183
Crude transfers	20	12	17	14	14	14	12	12	13	12	11	14	13
Crude exports	1	1	1	14	4	5	73	4	3	4	5	5	9
Crude loss	13	13	12	11	11	11	9	10	10	10	10	9	9
Total crude demand	**12,463**	**11,757**	**11,299**	**10,909**	**10,658**	**10,342**	**9,909**	**9,470**	**9,069**	**8,833**	**8,713**	**8,438**	**8,214**
Stock change	**−48**	**−58**	**−46**	**+31**	**−11**	**+43**	**+29**	**+50**	**−27**	**−20**	**−40**	**+20**	**+14**

*Preliminary.

530099

Rotary-rig activity by states

	Peak No.	Low No.	Average rig activity 1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
Alabama	18	7	13	15	8	7	6	3	2	2	1	2
Alaska	10	0	5	5	5	14	28	20	21	13	6	5
Inland	8	0	4	4	5	12	18	3	5	5	3	3
Offshore	3	0	1	1	0	2	10	17	16	8	3	2
Arkansas	23	8	15	15	15	13	16	7	8	10	11	9
Arizona	5	0	2	1	1	0	2	1	3	1	1	2
California	68	34	51	46	46	52	78	87	83	79	89	93
Inland	65	33	49	45	40	42	61	65	67	70	83	87
Offshore	4	0	2	1	6	10	17	22	16	9	6	6
Colorado	58	23	42	35	30	25	23	17	16	16	19	21
Florida	15	5	9	19	11	4	1	1	2	2	4	1
Georgia	2	0	1	0	0	0	0	0	0	0	0	0
Idaho	2	0	1	0	0	0	0	0	0	0	0	0
Illinois	11	1	6	14	13	14	17	22	30	30	24	20
Indiana	2	0	0	1	1	1	1	2	3	5	5	6
Iowa	1	0	1	0	1	0	0	0	0	1	0	0
Kansas	45	8	28	24	29	30	38	35	41	55	70	87
Kentucky	3	0	1	2	2	1	2	5	9	13	12	8
Louisiana	253	161	205	214	194	204	230	233	235	256	270	282
North	31	15	23	19	16	12	19	19	20	23	30	27
Inland waters	66	43	55	54	50	57	57	64	66	72	72	83
South	76	37	56	59	54	56	69	59	58	63	73	81
Offshore	97	56	71	82	74	79	85	91	91	98	95	91
Maryland	1	0	0	1	0	0	1	1	0	4	2	2
Michigan	26	10	20	17	12	11	10	10	10	9	11	13
Mississippi	44	23	29	37	39	43	40	36	33	34	35	39
Missouri	1	0	1	0	0	0	0	0	0	1	0	0
Montana	28	9	19	20	17	17	31	34	22	24	26	21
Nebraska	10	1	5	6	5	6	10	5	5	8	10	11
Nevada	2	0	0	0	1	0	0	2	1	1	2	1
New Mexico	86	40	62	55	47	40	64	68	56	60	65	79
New York	6	0	1	0	1	0	0	1	1	1	1	1
North Carolina	0	0	0	0	0	0	0	0	0	0	0	0
North Dakota	17	5	10	7	9	9	12	13	11	12	12	14
Ohio	48	21	36	22	17	24	22	22	18	14	22	56
Oklahoma	150	80	115	90	90	98	120	106	101	141	163	158
Oregon	1	0	0	0	0	0	0	0	0	1	1	0
Pennsylvania	19	6	11	8	9	9	7	5	7	10	9	11
South Dakota	3	0	1	1	1	2	1	1	0	0	2	1
Tennessee	2	0	0	0	1	2	1	0	1	1	0	0
Texas	454	328	376	322	291	302	322	329	340	387	425	477
Gulf Coast	143	82	109	91	79	73	77	88	90	103	112	135
Offshore	18	6	9	6	5	6	10	6	7	8	5	2
North	29	14	22	16	15	17	25	25	28	31	34	42
Panhandle	29	15	23	22	16	19	19	20	21	23	25	31
East	37	15	30	26	23	25	37	34	36	38	40	43
West Central	104	73	82	71	76	77	74	67	67	82	102	121
West	115	32	101	90	77	85	80	89	91	102	107	103
Utah	49	29	38	34	17	12	12	12	15	14	14	17
Virginia	3	0	1	0	1	1	0	0	0	0	1	1
Washington	0	0	0	0	0	0	0	0	1	1	0	0
West Virginia	32	5	20	16	17	16	18	16	15	19	24	16
Wyoming	105	31	70	60	45	71	81	56	44	48	50	48
Total U.S.	1,440	970	1,194	1,087	976	1,028	1,194	1,150	1,134	1,273	1,387	1,502
Canada West	272	70	175	148	120	131	149	150	144	156	163	149
Canada East	9	0	4	4	4	3	2	1	1	1	2	1
Grand Total	1,627	1,043	1,373	1,239	1,100	1,162	1,345	1,301	1,279	1,430	1,552	1,652

Source: Hughes Tool Co. Note: Peak and low figures may not add to totals.

AGO 530100

?FORECAST REVIEW!

Drillers in 1973 failed

Well forecast for 1974

State	1973 estimate: Total wells 1973*	1973 estimate: Total wildcats 1973*	1973 estimate: Total footage 1973 (1,000 ft)	1974 forecast: Total wells 1974	1974 forecast: Wildcat wells 1974	1974 forecast: Field wells 1974	1974 forecast: Total footage (1,000 ft)	Change from 1973: Total wells
Alabama	108	80	1,196	114	71	43	1,263	+ 6
Alaska	32	11	300	38	15	23	361	+ 6
Arizona	9	4	23	10	10	0	26	+ 1
Arkansas	289	84	1,703	329	169	160	1,939	+ 40
California	1,252	189	4,071	1,641	219	1,422	5,342	+ 389
Onshore	1,192	188	3,850	1,561	214	1,347	5,051	+ 369
Offshore	60	1	221	80	5	75	291	+ 20
Colorado	870	464	5,008	1,097	622	475	6,314	+ 227
Florida	72	34	980	71	34	37	967	− 1
Georgia	2	2	12	3	3	0	18	+ 1
Idaho	4	4	29	1	1	0	7	− 3
Illinois	524	177	1,212	621	197	424	1,436	+ 97
Indiana	249	114	350	275	189	86	387	+ 26
Kansas	2,341	794	7,765	2,581	897	1,684	8,561	+ 240
Kentucky	686	155	1,070	702	171	531	1,095	+ 16
Louisiana	2,658	753	21,868	2,914	862	2,052	23,462	+ 256
North	817	131	3,060	971	142	829	3,636	+ 154
South	1,184	384	12,426	1,219	471	748	12,793	+ 35
Offshore	657	238	6,382	724	249	475	7,033	+ 67
Michigan	275	194	1,428	444	384	60	2,306	+ 169
Mississippi	386	227	3,771	481	284	197	4,699	+ 95
Missouri	9	9	18	3	3	0	6	− 6
Montana	635	419	1,892	789	575	214	2,351	+ 154
Nebraska	174	102	884	164	89	75	854	− 10
New Mexico	1,252	246	6,379	1,336	286	1,050	6,781	+ 84
East	750	167	4,507	789	211	578	4,741	+ 39
West	502	79	1,872	547	75	472	2,040	+ 45
New York	104	10	135	121	14	107	158	+ 17
North Carolina	0	0	0	1	1	0		+ 1
North Dakota	124	67	854	126	67	59	868	+ 2
Ohio	1,524	44	6,340	1,500	32	1,468	6,244	− 24
Oklahoma	2,588	394	13,590	2,644	381	2,263	13,884	+ 56
Oregon	3	3	5	0	0	0	0	− 3
Pennsylvania	1,053	77	2,399	1,079	78	1,001	2,458	+ 26
South Dakota	22	21	95	34	30	4	146	+ 12
Tennessee	101	57	152	161	67	94	241	+ 60
Texas	8,751	2,775	46,776	9,284	3,050	6,234	51,147	+ 533
District 1	544	238	1,894	575	240	335	2,001	+ 31
District 2	534	349	3,231	561	400	161	3,395	+ 27
District 3	877	487	5,865	841	520	321	5,625	− 36
District 4	741	451	4,631	728	419	309	4,709	− 13
District 5	96	54	678	97	53	44	685	+ 1
District 6	325	84	2,034	361	120	241	2,549	+ 36
District 7-B	901	295	2,643	1,102	389	713	3,232	+ 201
District 7-C	864	195	4,821	844	184	660	4,710	− 20
District 8	1,387	133	9,100	1,460	162	1,298	9,579	+ 73
District 8-A	1,050	106	5,316	1,119	119	1,000	7,270	+ 69
District 9	916	238	2,697	1,048	264	784	3,085	+ 132
District 10	449	83	3,129	427	75	352	2,976	− 22
Offshore	67	62	737	121	105	16	1,331	+ 54
Utah	184	64	1,654	225	89	136	2,023	+ 41
Virginia	0	0	0	2	2	0	14	+ 2
Washington	0	0	0	0	0	0	0	
West Virginia	722	72	2,248	787	109	678	2,451	+ 65
Wyoming	860	362	5,373	1,059	499	560	6,617	+ 199
Total U.S.	27,863	8,008	139,580	30,637	9,500	21,137	154,426	+2,774
Canada*	4,771	1,360	16,470	5,068	1,582	3,486	17,582	+ 297
West	4,474	1,330	15,770	4,735	1,560	3,175	16,900	+ 261
Alberta	3,544	1,048	12,460	3,627	1,091	2,536	12,749	+ 83
B.C.	161	73	839	246	127	119	1,281	+ 85
Manitoba	16	16	47	27	27	0	79	+ 11
North-Arctic	78	71	602	107	101	6	826	+ 29
Saskatchewan	675	122	1,822	728	214	514	1,965	+ 53
East offshore	30	30	307	22	22	0	225	− 8
Ontario	267		393	311		311	457	+ 44

*Estimated.

530101

to sink as many wells as they did in '72

How the top 20 companies line up

State	Total wells: 1974 Forecast	1973	1972	1971	1970	wildcats: 1973	Forecast 1974
Alabama	19	21	36	23	15	7	8
Alaska	24	21	15	31	62	6	10
Arizona	0	0	10	2	0	0	0
Arkansas	23	15	20	30	20	1	3
California	1,194	567	839	1,431	1,561	44	58
Onshore	1,179	562	827	1,388	1,483	43	53
Offshore	15	5	12	43	78	1	5
Colorado	109	54	228	225	98	10	24
Florida	21	36	64	32	32	7	11
Georgia	3	2	0	0	0	2	3
Idaho	1	4	0	0	0	4	1
Illinois	166	88	59	84	80	1	0
Indiana	0	1	1	1	0	1	0
Kansas	57	60	322	50	37	5	8
Kentucky	6	3	20	3	24	1	2
Louisiana	1,051	862	1,156	1,044	1,192	173	212
North	138	66	82	166	140	5	17
South	453	471	491	507	592	35	66
Offshore	460	305	583	371	460	133	129
Michigan	191	117	135	51	44	28	33
Mississippi	58	39	75	128	145	14	26
Missouri	3	8	0	0	0	8	0
Montana	44	34	50	40	26	21	18
Nebraska	1	3	6	7	9	1	0
Nevada	0	0	1	2	1	0	0
New Mexico	250	154	223	171	188	22	22
East	205	139	164	132	145	19	21
West	45	15	59	39	43	3	1
New York	2	4	9	2	0	4	2
North Carolina	1	0	0	2	0	0	1
North Dakota	14	11	13	19	19	9	4
Ohio	9	5	8	5	54	0	1
Oklahoma	292	223	291	326	328	25	24
Oregon	0	1	0	0	0	1	0
Pennsylvania	263	41	14	11	0	5	7
South Dakota	6	1	1	0	0	0	3
Tennessee	1	0	0	0	0	0	1
Texas	1,818	1,547	2,138	1,686	2,166	166	256
District 1	230	104	113	24	98	10	7
District 2	49	66	54	52	46	5	7
District 3	253	175	262	263	235	12	29
District 4	234	250	264	295	329	22	13
District 5	18	6	6	9	14	6	5
District 6	56	33	43	51	55	4	8
District 7-B	11	32	22	23	33	1	1
District 7-C	78	93	52	52	50	8	13
District 8	409	389	635	526	674	21	39
District 8-A	234	230	361	294	513	8	9
District 9	41	35	238	32	43	1	0
District 10	84	110	54	40	57	48	10
Offshore	121	24	34	25	19	20	105
Utah	111	100	101	41	17	10	12
Virginia	2	0	0	0	0	0	2
Washington	0	0	3	0	12	0	0
West Virginia	142	22	35	28	18	0	23
Wyoming	182	112	330	223	322	16	43
Total U.S.	6,064	4,156	6,203	5,696	6,470	592	818

THE drilling end of the U.S. oil industry failed to drill as many wells in 1973 as it had previously planned.

U.S. operators completed an estimated 27,863 wells last year compared to the nearly 31,000 planned earlier in the year. Many factors figured into this decline in drilling, mostly weather, lack of steel, dwindling crews, and economic conditions.

Last year's total of 27,863 wells included 8,008 wildcats. Total footage drilled was 139,580,000 ft. The complete listing of 1973 well completions in all categories will be published by the API and printed in The Journal later in the quarter.

Things look much brighter for the 1974 drilling outlook. The industry looks for 30,637 wells to be drilled this year. Of this total 9,500 will be wildcats, an 18.6% increase over 1973. Total drilling will increase 9.9% over the 1973 tally. Footage to be drilled this year is 154,426,000 ft, a healthy gain over the previous year. The 1974 total includes 21,137 field wells.

A comprehensive Journal survey of operators throughout the oil kingdom covered more than 10,000 wells for 1973. The top 20 companies in the nation plan to drill 6,064 wells this year, up considerably over the 4,156 drilled in 1973. The accompanying table notes the data for past years. Big operators will drill 818 wildcats in 1974, also up considerably over the 1973 figure. Nearly every state shows an increase in total drilling.

The better drilling picture in the U.S. for 1974 is bolstered by the high number of rotary rigs working in various areas. Large increases are noted in California, up 389 wells, the best climb in recent years. Offshore operators plan 80 wells off the California Coast this year compared to 60 in 1973. Another large drilling increase will be posted in Colorado, up 227 wells over 1973. Denver basin drilling is still very active and will increase this year. Kansas drilling totals will rise 240 wells this year, a rarity in recent years. Louisiana will see a good year with 256 more wells than in 1973. Much of this increase will be in North Louisiana rather than in the southern parishes and offshore.

530102

FORECAST REVIEW

Michigan's Silurian reef play plus new Ordovician interest will up the state's total by 169 wells. Montana's shallow gas play will help along a busy year with 154 more wells on the books. Texas will post a good drilling year, one of the best in recent countings. The state will drill 533 more wells than in 1973 with largest increase noted for North Central Texas, and in western counties. Finally, Wyoming will drill 199 more wells this year than last as a gas and oil play sweeps through the Powder River and Green River basins.

Canada will drill 297 more wells this year than last. Total wells should be about 4,735, compared to an estimated 4,474 wells in 1973. All provinces will have gains as will the northern and Arctic regions. Only decline will be off the East Coast in Atlantic Ocean exploration.

Total wildcats to be drilled in Canada this year will be 1,582 compared to 1,360 in 1973.

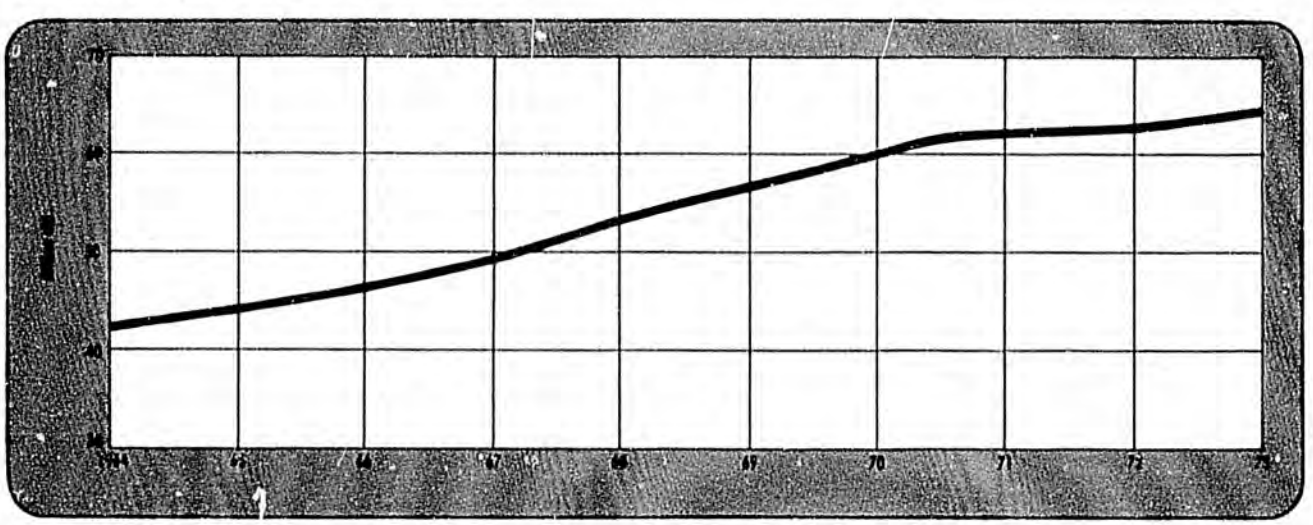
Marketed production of natural gas

(Million cubic feet per day)

	1973*	Actual 1972	1971	1970	1969	1968	1967	1966	1965	1964
Alaska	397	344	333	306	139	47	40	29	20	17
Arkansas	459	456	473	497	464	428	319	296	227	208
California	1,428	1,335	1,678	1,778	1,857	1,953	1,866	1,965	1,809	1,814
Colorado	363	320	297	290	325	332	320	326	346	312
Kansas	2,479	2,436	2,425	2,466	2,420	2,283	2,389	2,322	2,174	2,099
Louisiana	23,083	21,843	22,142	21,338	19,802	17,530	15,664	13,967	12,238	11,408
Michigan	105	94	70	106	99	111	92	105	95	86
Mississippi	276	285	325	345	360	369	382	381	457	496
Montana	155	92	90	117	113	53	71	99	77	68
Nebraska	13	10	10	16	19	22	23	27	29	30
New Mexico	3,340	3,332	3,199	3,121	3,118	3,181	2,925	2,770	2,568	2,401
Oklahoma	4,927	4,950	4,614	4,370	4,175	3,800	3,871	3,318	3,619	3,616
Texas	23,555	23,720	23,427	22,898	21,516	20,479	19,697	19,165	18,181	17,829
Utah	115	108	116	117	128	126	134	144	196	219
W. Virginia	585	589	641	664	635	647	579	585	568	557
Others	1,702	1,817	1,785	1,628	1,538	1,431	1,412	1,396	1,340	1,317
TOTAL	**62,983**	**61,731**	**61,625**	**60,057**	**56,708**	**52,792**	**49,784**	**46,895**	**43,944**	**42,477**
Volume Gain	1,252	106	1,568	3,349	3,916	3,008	2,889	2,951	1,467	2,061
Percent Gain	2.0	0.2	2.6	5.9	7.4	6.0	6.2	6.7	3.5	5.1
Imports	2,853	2,793	2,562	2,249	1,986	1,781	1,545	1,285	1,252	1,211
Exports	274	214	219	191	140	256	225	155	65	54

*Preliminary.

Marketed gas output stays level



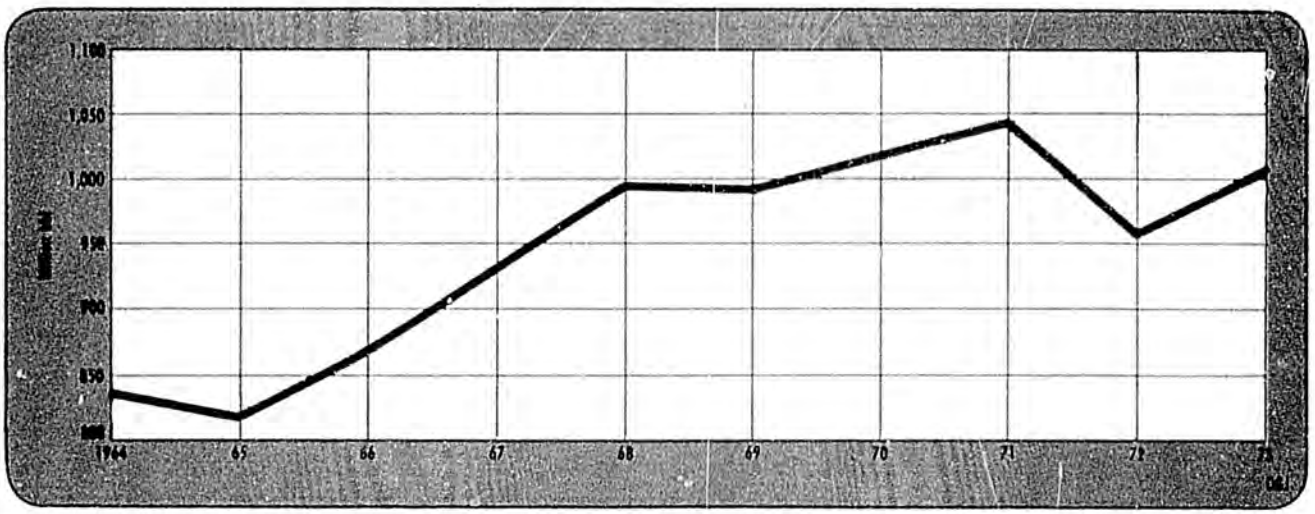
530103

Refinery runs by districts

	% of capacity	% of total 1973†	% of total 1972	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963
				(Thousands of barrels daily)									
East Coast	95.7	1,337	9.9	1,161	1,181	1,147	1,252	1,176	1,145	1,143	1,089	1,106	1,143
Appalachian: Dist 1	92.6	175	1.4	161	150	143	57	127	122	116	111	106	103
Total Dist 1	**95.3**	**1,512**	**11.3**	**1,322**	**1,331**	**1,290**	**1,309**	**1,303**	**1,267**	**1,259**	**1,200**	**1,212**	**1,246**
Appalachian: List 2	91.7	55	.5	54	55	60	63	59	60	78	101	101	99
Ill., Ind., Ky.	89.7	2,261	18.2	2,134	2,054	1,995	1,868	1,830	1,778	1,731	1,632	1,579	1,561
Minn., Wis., Dak.	89.0	242	1.9	228	217	200	198	185	164	162	153	147	134
Okla., Kan., Mo.	94.5	923	7.7	904	904	899	884	885	847	818	759	744	746
Total Dist. 2	**90.9**	**3,481**	**28.3**	**3,320**	**3,230**	**3,154**	**3,013**	**2,959**	**2,849**	**2,789**	**2,645**	**2,571**	**2,540**
Texas:													
Inland	93.2	425	3.5	416	401	395	388	371	350	340	321	316	310
Gulf Coast	86.6	2,782	22.5	2,635	2,523	2,450	2,407	2,359	2,283	2,185	2,116	2,088	2,092
Louisiana Gulf	90.7	1,656	13.7	1,604	1,377	1,317	1,285	1,214	1,101	979	911	853	776
N. La.-Ark.	76.9	133	1.1	132	148	154	145	142	135	128	126	123	120
New Mexico	73.0	46	.4	45	42	41	39	37	34	34	32	30	27
Total Dist. 3	**88.0**	**5,042**	**41.2**	**4,832**	**4,491**	**4,357**	**4,264**	**4,123**	**3,903**	**3,666**	**3,506**	**3,410**	**3,325**
Total Dist. 4	**85.6**	**410**	**3.4**	**398**	**405**	**393**	**385**	**366**	**344**	**338**	**330**	**319**	**307**
Total Dist. 5	**88.8**	**1,984**	**15.8**	**1,858**	**1,742**	**1,676**	**1,658**	**1,567**	**1,452**	**1,392**	**1,362**	**1,295**	**1,269**
Total U.S.	**89.7**	**12,429**	**100.0**	**11,730**	**11,199**	**10,870**	**10,629**	**10,318**	**9,815**	**9,444**	**9,043**	**8,807**	**8,687**

†Preliminary.

Total stocks head upward



Refined product, natural-gas-liquid, and crude stocks

Refined product stocks	1973*	1972	1971	1970	1969	1968	1967	1966	1965	1964
					(Thousands of barrels)					
Gasoline	210,500	217,149	223,771	214,348	217,392	211,526	207,715	194,177	183,058	193,622
Motor	207,000	212,894	219,352	209,255	211,199	204,496	199,790	186,393	174,717	185,755
Aviation	3,500	4,255	4,419	5,093	6,193	7,030	7,925	7,784	8,341	7,867
Special naphtha	4,700	5,232	5,384	6,193	6,292	5,829	5,742	5,583	6,209	5,879
Kerosine	23,000	19,111	24,438	27,848	26,780	23,480	25,008	24,004	24,080	27,325
Distillate	202,500	154,319	190,622	195,271	171,714	173,158	159,674	154,096	155,407	155,846
Residual	53,000	55,216	59,681	53,994	58,395	65,359	65,597	61,196	56,214	40,403
Kerosine jet fuel	22,000	19,346	20,747	20,989	19,517	15,373	13,174	12,139	10,361	8,840
Naphtha jet fuel	5,400	6,147	6,990	6,621	8,556	8,904	9,023	7,235	8,388	9,904
LRG	8,500	7,781	7,361	5,645	5,050	4,373	‡4,925	‡4,336	‡3,665	‡3,692
Unfinished oils	96,800	94,761	100,574	98,989	97,819	93,399	90,201	89,535	88,609	87,014
Other refined prod.	53,500	49,279	51,203	43,152	43,125	46,725	48,340	43,350	44,197	40,973
Total product stocks	679,900	628,341	690,771	673,059	654,640	648,126	629,339	595,651	580,188	573,498
Nat.-gas-liquids stk.	83,000	79,238	93,528	68,435	60,256	77,253	62,969	40,423	35,867	35,679
Crude stocks	243,000	246,395	259,648	276,367	265,227	272,193	248,970	238,391	220,289	230,057
Total stocks	**1,005,900**	**953,974**	**1,043,947**	**1,017,861**	**980,123**	**997,572**	**941,338**	**874,465**	**836,344**	**839,234**

*Preliminary. ‡Includes LRG for chemical use previously reported in petrochemical feedstocks.

530104

Crude imports by origin

(Thousands of barrels daily)

	1973*	1972	1971	1970	1969	1968	1967	1966	1965	1964
Bolivia	1	....	2	2	15.3	18.8	19.2	3.4	....	....
Chile	....	....	1	....	4.7	....	....	....	....	....
Colombia	2	5	9	20	42.6	32.7	32.5	39.5	41.7	26.2
Ecuador	43	....	....	....	....	....	....	....	....	....
Mexico	1	....	....	....	1.0	....	....	....	6.9	9.8
Trinidad	63	24	....	....	....	5.4	3.5	....	....	....
Venezuela	318	256	303	268	306.1	343.5	359.1	403.9	432.5	476.0
Latin America Total	428	285	315	290	369.7	400.4	414.3	446.8	481.1	512.0
Algeria	140	87	13	6	1.0	5.3	4.0	3.8	8.9	6.1
Angola	40	16	4	....	....	....	....	....	....	....
Egypt	13	8	19	21	40.5	29.5	3.6	2.3	2.4	3.0
Libya	148	110	53	47	133.9	113.6	41.9	69.0	41.6	39.4
Nigeria	461	244	95	46	49.2	8.6	3.9	11.3	14.5	....
Tunisia	14	7	....	....	....	....	....	....	....	....
Africa total	816	472	184	122	224.6	157.0	53.4	86.4	67.4	48.5
Kuwait	44	36	29	33	34.4	43.3	18.8	26.1	55.4	63.6
Saudi Arabia	445	174	115	17	34.7	51.8	81.3	125.4	132.2	96.9
Neutral Zone	....	....	....	23	43.5	29.4	11.0	19.3	26.7	48.0
Iran	191	136	106	33	41.9	57.8	65.2	84.5	78.5	65.9
Iraq	5	4	11	....	....	....	4.7	25.9	15.6	....
Qatar	8	3	....	....	0.5	....	....	0.5	11.9	19.9
Abu Dhabi	....	....	80	63	13.8	15.3	5.3	13.1	13.8	3.0
United Arab Emiratest	76	74	....	....	....	....	....	....	....	....
Middle East Total	769	427	341	169	168.8	197.6	186.3	294.8	334.1	297.3
Canada	998	856	721	672	557.0	462.9	412.1	347.1	295.2	277.6
Far East	201	167	117	70	88.4	72.6	61.7	49.9	60.7	63.0
Total crude	3,212	2,207	1,678	1,323	1,408.5	1,290.5	1,127.8	1,225.0	1,238.5	1,198.4

*Preliminary: †Abu Dhabi prior to 1972.

Imports of refined products

(Thousands of barrels daily)

	1973*	1972	1971	1970	1969	1968	1967	1966	1965	1964
Gasoline	114	68	59	67	62.2	59.0	42.7	48.1	37.1	40.0
Kerosine	2	1	1	4	2.6	0.5	0.1	0.6	0.3	....
Jet-fuel kerosine	163	162	150	125	110.7	85.8	73.8	51.4	36.9	30.4
Jet-fuel naphtha	24	33	30	19	14.1	19.4	14.9	34.4	45.2	33.1
Distillate	377	182	153	147	139.4	131.5	50.7	37.9	35.7	32.2
Residual	1,849	1,746	1,583	1,528	1,264.7	1,120.0	1,084.3	1,032.3	944.1	808.1
Unfinished oils	136	125	124	108	106.2	80.2	96.2	96.5	92.3	89.0
Other	‡258	‡215	‡145	97	57.5	52.9	45.9	46.9	37.7	27.5
Total U.S.	2,923	2,532	2,245	2,095	1,757.4	1,549.3	1,408.6	1,348.1	1,229.3	1,060.3

*Preliminary. ‡Includes plant condensate 1973, 103; 1972, 86; 1971, 36.

Exports of refined products—and crude

(Thousands of barrels daily)

	1973*	1972	1971	1970	1969	1968	1967	1966	1965	1964
Gasoline	2.9	2.6	4.5	3.8	6.7	5.7	18.8	15.9	17.6	22.0
Distillate	8.9	3.3	7.6	2.5	3.1	4.2	11.7	12.0	10.0	14.7
Residual	31.4	33.0	36.2	54.2	46.3	54.7	60.1	35.3	40.8	51.6
Lubricants	38.4	41.1	43.4	44.1	44.9	49.2	51.2	46.9	45.7	49.7
Coke	96.3	85.1	74.0	83.7	63.1	53.3	44.6	39.6	32.4	37.2
Asphalt	.9	0.9	0.8	1.0	1.3	1.2	1.3	1.3	1.1	2.1
LP-gas	30.6	31.4	25.7	27.3	35.1	29.0	25.4	22.4	20.6	14.6
Other refined products	28.3	24.8	30.6	28.6	28.2	28.8	21.3	21.0	14.7	6.2
Crude	1.4	0.5	1.4	13.6	3.9	4.9	72.7	4.0	3.0	3.7
Total U.S.	239.1	222.7	224.2	258.8	232.6	231.0	307.1	198.4	185.9	201.8

*Preliminary

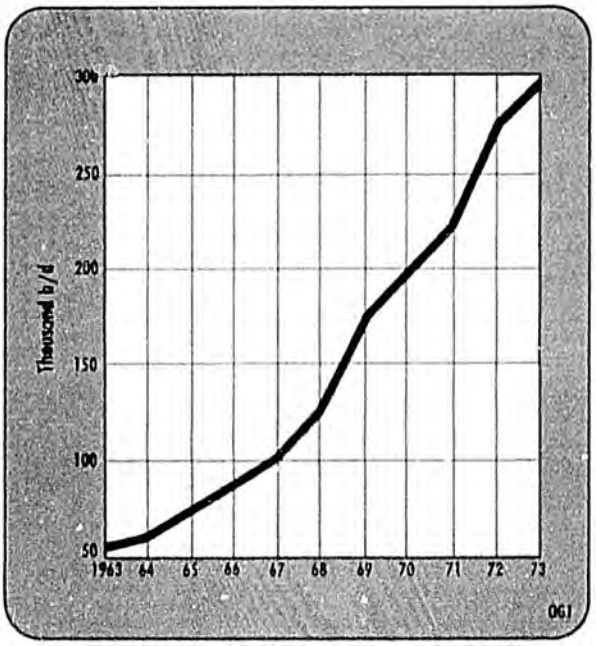
Production of natural-gas liquids and liquefied refinery gases

(Thousands of barrels daily)

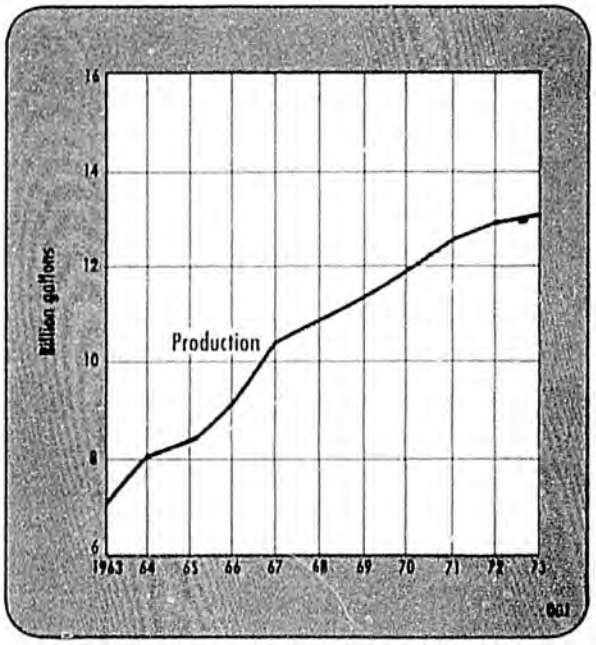
	1973*	1972	1971	1970	1969	1968	1967	1966	1965	1964
Ethane (from gas processing)	297	276	221	201	173	125	101	82	73	64
LP-gases:										
Propane	573	587	581	555	535	504	465	409	372	354
Butane	242	242	243	239	237	216	207	192	170	160
Butane-propane mix	10	10	11	16	16	34	42	36	24	30
Isobutane	94	92	88	84	74	81	80	73	67	62
Total LP-gases	919	931	923	894	862	835	794	710	633	606
Natural gasolines‡	417	427	453	452	423	404	382	356	356	344
Finished product and others§	71	81	96	113	117	140	132	136	119	114
Total natural-gas liquids	1,704	1,715	1,693	1,660	1,575	1,504	1,409	1,284	1,181	1,128
Liquefied refinery gas¶	352	332	331	319	313	323	306	291	293	291
Ethane (from refineries)	25	25	25	26	25	...	...	...	...	...
Total all products	2,081	2,072	2,049	2,005	1,913	1,827	1,715	1,575	1,474	1,419

*Eight months actual, four months estimated. ‡Includes isopentane. §Includes plant condensate. ¶LRG figures, 1968 and earlier, include ethane. ethane.

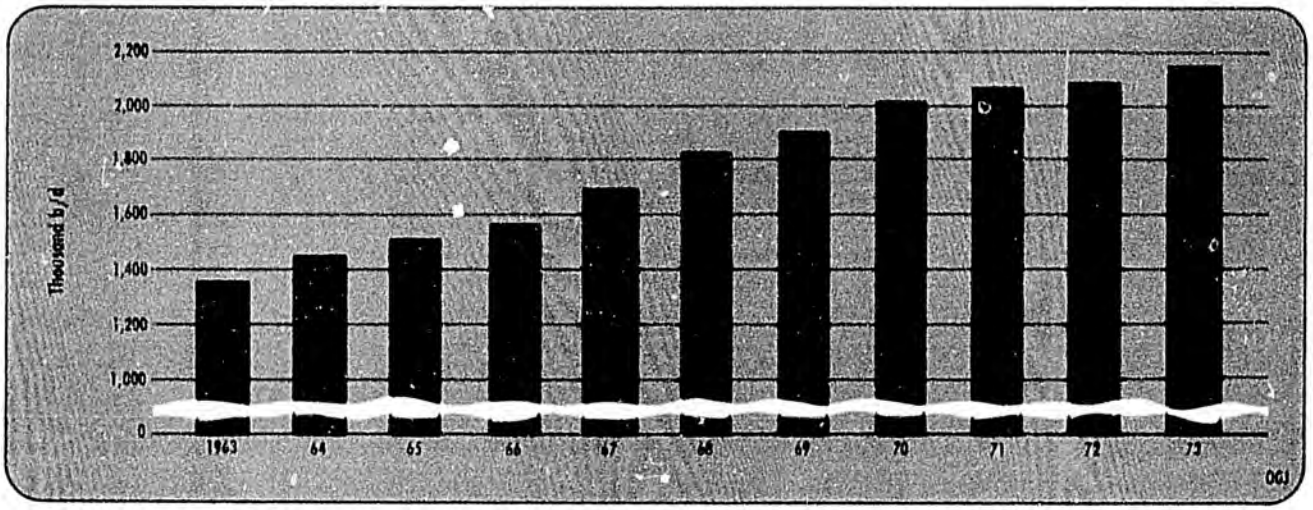
Ethane production rising



Total propane supply



Total production of NGL and LRG



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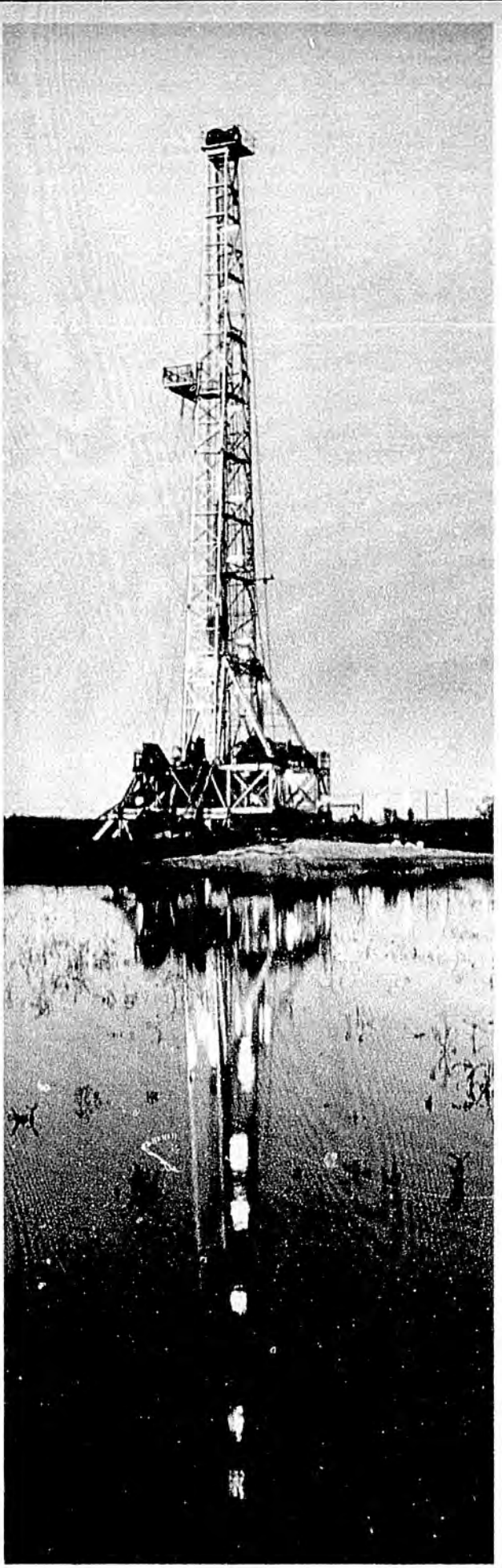

FORECAST REVIEW

Here's where the big reserves are in U.S.

MOST of the crude-oil production in the U.S. comes from the nation's giant oil fields. These fields lie in many states with Texas holding the most. California and Louisiana are also great storehouses of oil. Alaska's Prudhoe Bay field, not yet on production, is one of the largest with reserves pegged at from 10 to 20 billion bbl or more.

In order to be on this select list of U.S. oil fields, a pool must have an ultimate reserve of 100,000,000 bbl or more. Many of the fields on the listing are of 1920-1930 vintage, the age of oil giants in the U.S. Some of these fields are still producing respectable amounts of oil each year.

One of the newest fields on the list is in Florida at Jay. This is the largest of the Smackover fields in the Southeast. Its discovery set off one of the greatest wildcat campaigns in recent years.

Figures are in thousands of barrels. Only crude oil is figured into this reserve tabulation.

Field	1,000 bbl: 1973 prod.	1,000 bbl: Cum. prod.	1,000 bbl: Est. reserves	Est. No. wells
ALABAMA				
Citronelle	5,852	107,256	42,743	413
ALASKA				
Granite Point	4,766	51,897	38,554	25
McArthur River	39,171	214,485	175,939	52
Middle Ground Shoal	10,259	78,682	106,033	36
Prudhoe Bay	857	4,406	*	2
Swanson River	10,059	144,551	60,938	37
Trading Bay	7,830	48,902	25,505	42
*Reserves estimates range from 10 to 20 billion bbl.				
APPALACHIAN				
Allegany	400	166,000	1,815	2,100
Bradford	2,400	656,095	12,374	17,300
ARKANSAS				
Magnolia	520	152,424	7,576	56
Schuler and East	603	105,123	4,877	107
Smackover	2,850	505,647	24,353	2,586
Walker Creek	2,883	7,983	100,477	39

GIANT oil field, produces most of the crude oil in the United States.

530107

Field	1973 prod.	1,000 bbl Cum. prod.	1,000 bbl Est. reserves	Est. No. wells
CALIFORNIA				
SAN JOAQUIN VALLEY				
Belridge South	8,558	186,258	73,526	2,265
Buena Vista	4,389	613,242	36,430	1,127
Coalinga	7,062	626,495	72,370	2,143
Coalinga Nose	3,583	428,980	34,463	77
Coles Levee North	994	139,274	13,984	120
Cuyama South	1,611	207,130	12,473	138
Cymric	3,279	128,573	27,324	719
Edison	1,160	112,128	8,728	472
Elk Hills	797	283,022	1,019,421	104
Fruitvale	981	100,794	6,234	335
Greeley	720	107,472	2,794	43
Kern Front	2,937	131,456	30,530	871
Kettleman North Dome	749	451,466	4,399	136
Kern River	27,973	607,784	469,288	4,370
Lost Hills	2,249	116,931	18,942	1,123
McKittrick—Main Area	5,343	155,196	42,427	646
Midway Sunset	34,699	1,192,592	413,111	5,711
Mount Poso	2,362	165,846	20,620	477
Rio Bravo	271	112,968	1,901	37
COASTAL AREA				
Carpinteria Offshore	3,783	41,456	31,055	122
Cat Canyon*	6,760	208,828	44,120	626
Dos Cuadras	16,745	87,498	88,237	129
Elwood	54	103,221	519	12
Orcutt	1,965	147,009	14,811	179
Rincon	4,010	120,256	23,528	321
San Ardo	12,609	261,332	86,636	887
Santa Ynez**				
Santa Maria Valley	3,475	155,791	30,170	197
South Mountain	1,784	128,973	17,782	432
Ventura	11,022	782,054	69,946	804
LOS ANGELES BASIN				
Belmont Offshore	2,207	36,671	25,664	76
Beverly Hills	5,619	73,811	36,040	127
Brea Olinda	3,685	340,212	27,600	711
Coyote East	680	97,454	5,015	173
Coyote West	2,122	229,979	20,504	159
Dominquez	1,328	257,165	11,272	133
Huntington Beach	20,389	904,585	131,792	1,132
Inglewood	3,552	293,055	23,735	437
Long Beach	2,705	875,609	23,203	766
Montebello	612	183,927	5,678	168
Richfield	1,547	163,370	17,848	263
Santa Fe Springs	823	599,958	11,971	226
Seal Beach	1,339	186,743	8,086	179
Torrance	2,646	179,632	20,338	368
Wilmington	67,066	1,549,496	763,317	2,311
COLORADO				
Rangely	19,378	491,337	108,663	387
FLORIDA				
Jay	27,977	42,217	270,783	78
ILLINOIS				
Clay City	3,126	305,224	19,776	2,335
Dale	458	100,014	4,986	636
Loudon	2,965	360,860	24,140	1,429
New Harmony	1,558	153,975	16,025	1,130
Salem	2,904	352,990	17,010	1,389
KANSAS				
Bemis-Shutts	2,149	216,475	18,525	941
Chase-Silica	1,272	249,244	10,756	1,058
Eldorado	1,204	278,847	11,153	795
Hall-Gurney	2,071	125,423	14,577	1,202
Kraft-Prusa	917	116,958	8,042	602
Trapp	1,466	205,691	14,309	989
LOUISIANA, ONSHORE				
Avery Island	1,839	77,556	32,444	31
Bay DeChene	6,590	69,351	40,649	76
Bay St. Elaine	6,254	138,602	61,298	92
Bayou Sale	2,816	142,348	32,652	93
Black Bay West	8,036	84,470	65,530	153
Caillou Island	25,613	498,875	201,125	375
Cote Blanche Island	5,482	72,014	57,986	46
Delta Farms	997	109,137	10,863	47
Garden Island Bay	10,384	166,426	89,911	255
Golden Meadow	2,027	113,043	21,957	238
Grand Bay	5,755	148,599	56,401	176
Hackberry East	1,647	91,739	18,261	78
Hackberry West	3,100	114,952	25,048	139
Iowa	1,244	91,113	8,887	40
Jennings	261	111,409	3,591	72
Lafitte	8,211	206,805	51,190	246
Lake Barre	5,420	166,019	53,981	169
Lake Pelto	4,069	97,637	37,363	61
Lake Salvador	2,432	73,810	36,190	84
Lake Washington	6,965	192,186	82,814	139
Leeville	3,156	122,807	27,193	88
Paradis	4,277	99,156	20,188	93
Quarantine Bay	3,946	146,125	38,875	121
Romere Pass	2,727	78,129	26,871	43
Timbalier Bay	9,456	226,634	200,111	239
Venice	5,078	153,785	51,215	124
Vinton	3,478	119,892	20,108	178
Weeks Island	9,486	193,729	96,271	86
West Bay	8,363	169,864	70,136	222
W. Cote Blanche Bay	10,288	139,436	110,564	280
LOUISIANA, NORTH				
Caddo-Pine Island	3,076	309,666	30,334	8,056
Delhi	6,290	159,373	50,627	118
Haynesville (Ark. La.)	1,788	170,230	14,770	191
Rodesso (La. Tex.)	329	175,123	4,877	150
LOUISIANA, OFFSHORE				
Bay Marchand Blk. 2 (Incl. onshore)	32,561	396,902	253,098	290
Eugene Island Blk. 126	4,663	84,778	40,222	54
Eugene Island Blk. 175	9,873	29,241	80,759	80
Eugene Island Blk. 276	6,322	42,082	122,918	65
Grand Isle Blk. 16	18,936	197,896	152,104	85
Grand Isle Blk. 43	20,732	142,670	227,402	222
Grand Isle Blk. 47	4,684	61,097	38,903	80
Main Pass Blk. 35	2,456	77,613	22,387	86
Main Pass Blk. 41	14,808	134,123	145,877	121
Main Pass Blk. 69	10,924	183,037	76,963	160
Main Pass Blk. 306	6,652	26,369	123,631	125
Ship Shoal Blk. 204	5,369	21,408	83,592	63
Ship Shoal Blk. 207	6,964	38,196	136,804	51
Ship Shoal Blk. 208	11,262	81,947	143,053	83
South Marsh Island Blk. 73	5,353	35,828	69,172	44
South Pass Blk. 24 (Incl. onshore)	16,740	356,253	133,747	428
South Pass Blk. 27	13,366	247,358	137,642	341
South Pass Blk. 62	8,666	41,956	148,044	68
South Pass Blk. 65	12,088	36,088	153,912	70
West Delta Blk. 30	24,626	289,876	160,124	226
West Delta Blk. 58	8,176	28,056	121,944	76
West Delta Blk. 73	9,348	120,565	154,435	102
MISSISSIPPI				
Baxterville	7,902	160,160	74,840	234
Heidelberg	5,417	110,190	39,810	263
Tinsley	3,122	193,474	26,526	203
MONTANA				
Bell Creek	7,967	58,912	51,088	250
Cut Bank	4,289	135,173	33,827	873
Pine	2,830	77,000	30,500	107

*Combines Cat Canyon West and Cat Canyon East.

**Undeveloped fields, Santa Barbara Channel, uncorroborated reserves—1-3 billion bbl.

Field	1973 prod.	1,000 bbl Cum. prod.	1,000 bbl Est. reserves	Est. No. wells
NEW MEXICO				
Caprock and East	620	92,326	7,674	621
Denton	1,840	123,114	16,886	196
Empire Abo	9,797	98,904	71,096	253
Eunice	4,501	122,136	18,864	1,103
Hobbs	5,159	216,729	37,954	437
Maljamar	6,821	98,251	66,749	809
Monument	295	210,025	29,975	106
Vacuum	4,216	261,834	138,166	1,168
NORTH DAKOTA				
Beaver Lodge	2,985	75,377	24,623	144
Tioga	1,135	69,567	30,433	215
OKLAHOMA				
Allen	2,645	124,381	15,619	1,495
Avant	410	106,242	2,758	625
Bowlegs	1,750	156,827	8,173	180
Burbank	3,870	500,354	40,646	1,075
Cement	2,470	138,956	16,044	1,475
Cushing	3,245	460,217	24,783	1,715
Earlsboro	460	215,804	4,196	190
Edmond West	715	154,522	5,478	455
Eola-Robberson	4,355	104,257	35,743	485
Fitts	2,180	148,308	11,692	610
Glenn Pool	2,150	307,441	12,559	1,015
Golden Trend	9,875	393,876	106,124	1,235
Healdton	6,880	286,665	33,335	1,520
Hewitt	6,880	212,391	37,609	1,180
Little River	365	159,571	5,429	170
Oklahoma City	1,860	731,896	18,104	280
Seminole Greater	1,190	198,446	11,554	260
Sho-Vel-Tum	33,320	968,206	181,794	8,025
Sooner Trend	11,480	189,604	60,396	2,920
St. Louis	1,185	215,045	9,955	635
Tonkawa	275	134,937	2,063	200
TEXAS				
DISTRICT 1				
Big Wells	5,977	22,638	127,362	260
Darst Creek	2,050	139,653	20,347	837
Luling-Branyon	1,455	145,817	14,183	1,309
DISTRICT 2				
Greta All	4,598	112,475	47,525	184
Refugio All	337	94,846	5,154	66
Tom O'Connor	27,895	470,743	229,257	978
DISTRICT 3				
Anahuac	10,969	234,810	115,190	233
Barbers Hill	681	124,032	10,968	98
Conroe	21,846	518,922	156,078	581
Dickison-Gillock	1,935	106,114	43,886	79
Goose Creek & East	861	129,989	10,011	255
Hastings E&W	22,546	475,079	199,921	448
High Island All	1,499	129,655	20,345	103
Hull-Merchant	1,404	192,388	12,612	369
Humble All	1,362	160,366	29,634	377
Magnet Withers All	3,143	77,906	47,094	290
Old Ocean	879	120,730	9,270	38
Raccoon Bend	2,485	89,719	35,281	134
Sour Lake	890	116,461	8,539	286
Spindletop	181	153,570	3,430	94
Thompson All	15,858	353,752	146,248	279
Tomball	3,342	100,715	29,285	225
Webster	20,894	388,196	186,804	149
West Columbia	1,089	156,496	13,504	191
DISTRICT 4				
Aqua Dulce-Stratton	3,030	135,878	34,122	262
Borregas All	2,264	106,221	28,779	182
Kelsey All	3,040	105,393	44,607	180
Plymouth	756	115,916	9,084	101
Seeligson All	3,837	260,750	64,250	417
Tijerina-Canales-Blucher	7,094	96,661	68,339	135
White Point East	1,048	98,772	11,228	159
DISTRICT 5				
Mexia	130	107,224	2,776	98
Powell	95	129,971	1,029	31
Van and Van Shallow	16,658	403,120	146,880	467
DISTRICT 6				
East Texas	75,436	4,169,403	1,830,597	13,638
Fairway	17,175	109,962	89,975	97
Hawkins	39,513	496,067	328,933	449
Neches	4,889	55,313	44,687	129
Quitman All	3,812	76,845	32,829	242
Talco	4,138			598
DISTRICT 7-C				
Big Lake	544	124,164	10,836	94
McCamey	858	123,295	6,705	889
Pegasus	2,962	110,440	29,560	178
DISTRICT 8				
Andector	6,990	121,499	63,501	103
Block 31	5,262	137,594	52,406	111
Cowden North	13,091	261,866	63,134	964
Cowden South, Foster, Johnson	16,075	282,899	117,101	1,269
Dollarhide	5,840	144,362	65,638	152
Dune	9,181	119,028	80,972	886
Emma and Triple N.	2,483	94,701	20,299	279
Fuhrman-Mascho	1,806	72,952	27,048	597
Fullerton All	6,642	231,661	68,339	597
Goldsmith All	19,298	561,227	113,773	2,790
Hedrick	638	251,561	3,439	172
Howard Glasscock	6,761	303,251	71,749	1,872
Iatan East	3,896	82,215	42,785	837
Jordan	3,222	98,998	31,002	343
Kermit	1,121	111,440	18,560	468
Keystone	5,328	267,801	52,199	786
McElroy	10,772	297,698	62,302	1,848
Means All	7,677	139,605	70,395	376
Midland Farms All	6,658	169,643	55,357	314
Penwell	1,705	83,482	16,518	512
Sand Hills	5,841	184,013	60,987	1,045
Shafter Lake	2,689	69,708	30,292	440
TXL All	4,061	232,686	32,314	774
Waddell	3,477	78,817	31,183	406
Ward South	577	96,097	3,903	453
Ward Estes North	7,520	304,004	70,996	1,957
Yates	18,195	587,252	1,012,748	581
DISTRICT 8-A				
Anton	5,164	70,911	39,089	152
Cogdell Area	12,255	177,681	142,319	386
Diamond M	7,547	190,164	84,836	460
Kelly-Snyder	70,944	540,039	568,073	641
Levelland	11,201	220,117	104,883	1,624
Prentice	5,913	87,914	52,086	306
Russell All	2,998	109,344	25,656	237
Salt Creek	12,014	113,570	116,430	116
Seminole All	15,475	199,245	115,755	214
Slaughter	45,486	548,432	241,568	2,530
Spraberry Trend	20,383	361,443	148,557	3,524
Wasson All	83,726	616,311	716,237	2,281
Welch	6,505	82,371	67,629	378
DISTRICT 9				
KMA	2,327	165,325	19,675	966
Walnut Bend	5,286	96,434	43,566	262
DISTRICT 10				
Panhandle	12,579	1,271,238	143,762	10,503
UTAH				
Greater Altamont	13,069	24,367	250,333	133
Greater Aneth	7,814	251,515	63,485	364
Greater Red Wash	3,924	90,095	49,905	226
WYOMING				
Elk Basin (Mont.-Wyo.)	9,559	461,354	78,646	190
Garland	2,692	105,696	29,304	202
Grass Creek	3,124	137,631	27,369	233
Hamilton Dome	3,319	175,019	39,981	87
Hilight	7,896	42,090	92,910	190
Lance Creek	227	104,293	2,707	38
Lost Soldier	3,775	137,916	27,084	62
Oregon Basin	11,392	228,995	61,005	300
Salt Creek	15,203	529,603	65,397	976

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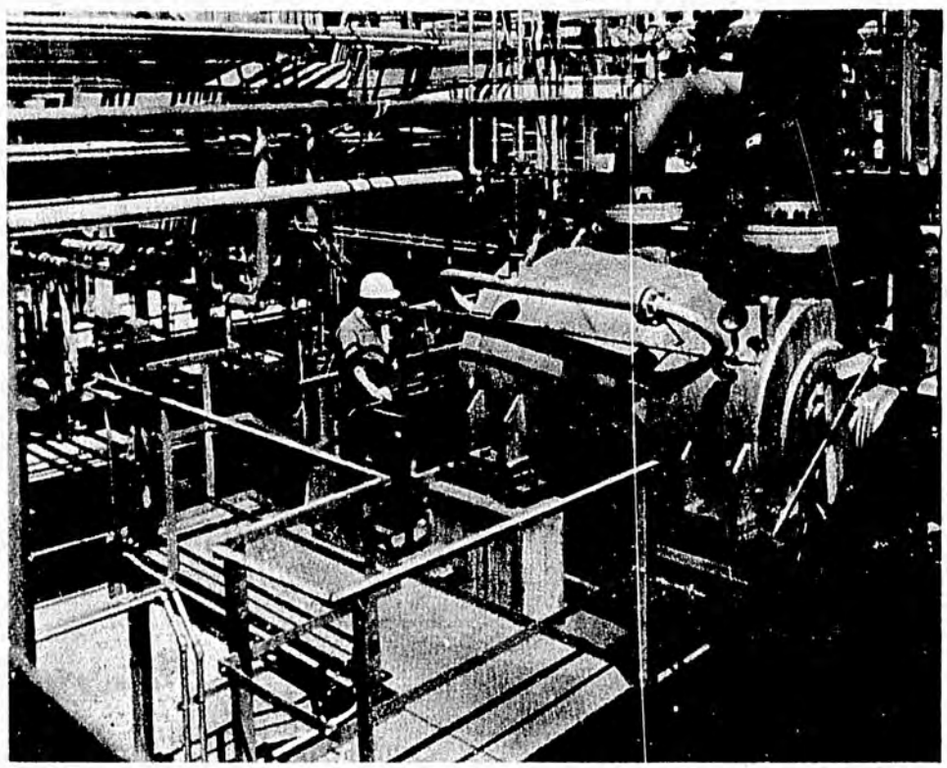

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AGO 530111

Another big drop logged for U.S. oil and

PROVED reserves of oil and natural gas in the U.S. plunged again last year.

The surge in drilling hasn't yet been translated into reserve additions on a scale capable of offsetting the heavy withdrawals from record or near-record production rates. But the upturn in activity last year may have helped slow the rate of decline in liquids.

New reserve estimates did not take into account late-year increases in crude prices.

The reserves committees of the American Petroleum Institute and American Gas Association reported these figures as of Jan. 1, 1974:

- Crude oil—down 1.040 billion bbl to 35.3 billion, after subtracting net production of 3.185 billion bbl, including 390 million from the Gulf of Mexico. About 80% of the decline was accounted for by Texas and Louisiana. API reported 5.144 billion bbl of indicated additional reserves on top of those listed in the proved category.
- Natural-gas liquids—down 332 million bbl to 6.455 billion, after production of 741 million bbl.
- Total liquid hydrocarbons—down 1.4 billion bbl to 41.755 billion, compared with a 2.2-billion decline the year before.
- Natural gas—down 16.1 trillion cu ft to 250 trillion, marking the fifth decline in the last 6 years and the larg-

Breakout by state of crude-oil and natural-gas reserves in the United States

State or area of state	CRUDE OIL (thousand bbl) Proved reserves Jan. 1, 1973	Changes due to revisions	Changes due to extensions	New field discoveries	New pools in old fields	Production in 1973*	Proved reserves Jan. 1, 1974
Alabama	56,734	+ 653	5,400	1,776	....	10,960	53,603
Alaska	10,096,282	+ 85,754	....	1,500	1,000	72,323	10,112,213
Arkansas	113,100	+ 5,898	3,540	60	75	17,121	105,552
California‡	3,553,735	+ 217,566	16,740	30,000	5,800	335,741	3,488,100
Coastal region	513,322	+ 88,124	14,050	....	5,550	76,762	536,284
Los Angeles Basin	1,282,048	+ 48,034	....	....	....	132,214	1,197,868
San Joaquin Basin	1,758,365	+ 89,408	2,690	30,000	250	126,765	1,753,948
Colorado	326,411	+ 4,474	7,174	3,496	99	36,864	304,790
Florida	208,149	+ 2,449	5,697	160	....	32,596	183,859
Illinois	174,883	+ 3,697	1,375	1,257	238	29,107	152,343
Indiana	23,383	+ 1,204	625	292	516	5,398	26,622
Kansas	453,394	+ 6,254	5,565	2,459	5	66,588	401,089
Kentucky	48,193	— 6	325	15	275	8,822	32,980
Louisiana‡	5,028,478	+ 63,206	118,853	31,900	54,112	719,723	4,576,826
North	281,451	+ 6,277	620	103	....	36,063	252,388
South	4,747,027	+ 56,929	118,233	31,797	54,112	683,660	4,324,438
Michigan	62,002	+ 7,129	10,000	7,035	....	13,722	72,444
Mississippi	312,458	+ 26,035	3,235	2,422	410	53,511	291,049
Montana	241,248	+ 11,031	650	930	....	34,516	219,343
Nebraska	30,553	+ 3,820	1,068	61	....	7,336	28,166
New Mexico	582,593	+ 152,852	2,687	322	754	96,214	642,994
Northwest	24,246	+ 4,716	....	36	....	5,138	23,860
Southeast	558,347	+ 148,136	2,687	286	754	91,076	619,134
New York	9,246	....	....	....	....	958	8,288
North Dakota	166,033	+ 24,754	8,470	5	....	19,742	179,520
Ohio	127,385	....	6,275	....	44	8,793	124,911
Oklahoma	1,303,004	+ 130,704	15,584	1,251	....	179,579	1,270,964
Pennsylvania	37,345	+ 5,550	....	....	....	3,282	39,613
Texas‡	12,144,057	+ 723,449	106,682	17,825	22,904	1,258,304	11,756,613
Dist. 1	147,324	+ 13,876	2,966	253	100	20,370	144,149
Dist. 2	636,768	+ 108,159	1,519	763	4,226	74,310	677,125
Dist. 3	1,536,426	+ 104,304	12,777	1,907	3,878	169,864	1,489,428
Dist. 4	343,752	— 2,839	6,073	95	8,921	51,580	304,422
Dist. 5	98,963	+ 47,150	....	300	2	20,583	126,462
Dist. 6	2,208,438	+ 175	3,554	220	101	163,240	2,049,248
Dist. 7-B	235,962	+ 18,450	13,724	2,513	720	35,499	235,870
Dist. 7C	239,270	— 22,021	16,317	5,017	161	33,748	204,996
Dist. 8	3,402,358	+ 47,514	30,060	940	1,449	276,783	3,205,538
Dist. 8-A	2,793,503	+ 323,173	9,579	2,804	2,056	345,807	2,785,308
Dist. 9	324,018	+ 72,628	9,333	2,655	1,045	45,971	363,708
Dist. 10	177,275	+ 12,250	780	358	245	20,549	170,359
Utah	244,397	+ 5,094	47,000	60	65	32,104	264,512
Virginia	....	....	....	....	....	....	....
West Virginia	34,040	....	530	....	15	2,459	32,126
Wyoming	949,779	+ 68,641	22,501	12,646	1,404	138,208	916,763
Miscellaneous§	6,526	+ 1,569	165	625	100	1,429	7,556
Total U.S.	36,339,408	+ 1,551,777	390,141	116,097	87,816	3,185,400	35,299,839

*Estimate. †Economically available by fluid injection. Additional reserves from fluid injection whether injection is under way or not. ‡Includes gas category) Arizona, Iowa, Maryland, Minnesota, Missouri, South Dakota, Tennessee, Washington.

AGO 530110

gas reserves

est on record. It would have been the sixth consecutive year of falling reserves except for the first-time inclusion of 26 trillion cu ft of newly discovered gas on Alaska's North Slope in 1970. Gross additions to reserves, including net changes in underground storage in 1973, amounted to only 6.5 trillion cu ft.

• Productive capacity of crude oil—down 600,000 b/d to 9.7 million b/d, for the sixth consecutive decrease since API began estimating such figures in 1967. Productive capacity is the estimated amount of crude that can be produced on leases within 90 days from Dec. 31, 1973, with existing wells and surface equipment or with changes in production facilities that could be made in that period.

Officials of API and AGA stressed the need for access to new offshore acreage and price incentives to spur drilling and halt the slide in reserves. They also warned against punitive tax legislation which would frustrate efforts to get capital to bring forth new supplies.

Crude oil. Louisiana led the big drop in reserves with 452 million bbl, of which 423 million was in the southern section, including offshore.

Gulf of Mexico reserves, including both Texas and Louisiana, fell 218 million bbl to 2.3 billion.

Texas followed closely with a decline of 387 million bbl, concentrated in Dist. 6 and Dist. 8. Other major oil states also were down.

Modest increases were recorded by New Mexico, 60 million bbl; Alaska, 16 million; North Dakota, 13 million; Michigan, 10 million; and Pennsylvania, 2 million.

Changes from Jan. 1, 1973	Indicated total reserves†	NATURAL GAS (MMcf) Proved reserves Jan. 1, 1973	Extensions and revisions	New fields and new pools	Production in 1973*	Proved reserves Jan.1, 1974	Change from Jan. 1, 1973
− 3,131	22,041	245,714	+ 83,553	6,000	7,892	327,375	+ 81,661
+ 15,931	36,000	31,455,553	+ 317,398	600	130,815	31,642,636	+ 187,083
− 7,548	21,444	2,455,877	− 25,727	2,050	163,586	2,269,353	− 186,524
− 65,635	1,560,150	5,328,862	+ 242,582	110,850	478,356	5,199,837	− 129,025
+ 22,962	202,750	761,580	− 15,679	500	70,361	684,922	− 76,658
− 84,180	418,000	493,340	+ 2,752		51,276	479,008	− 54,332
− 4,417	939,400	4,073,942	+ 255,509	110,350	356,719	4,075,907	+ 1,965
− 21,621	93,790	1,655,200	+ 317,401	27,914	134,276	1,868,299	+ 213,099
− 24,290	161,203	180,629	+ 1,945		33,660	148,914	− 31,715
− 22,540	6,500	545,361	+ 1,978		2,840	380,525	− 164,836
− 2,761	2,800	87,234	+ 509		1,364	66,682	− 20,552
− 52,035	1,500	11,938,716	+ 635,328	31,124	899,460	11,722,395	− 216,321
− 8,213	3,000	938,082	+ 17,604	3,610	62,396	864,921	− 73,161
− 451,652	233,877	74,971,334	+ 842,398	1,788,930	8,457,596	69,151,613	− 5,819,721
− 29,063	31,645	3,320,328	+ 37,477	24,454	412,431	2,976,133	− 344,195
− 422,589	202,232	71,651,006	+ 804,921	1,764,476	8,045,165	66,175,480	− 5,475,526
+ 10,442	7,500	1,296,815	+ 41,297	250,938	47,842	1,548,508	+ 251,693
− 21,409	22,952	1,104,336	+ 143,655	38,432	96,657	1,178,218	+ 73,882
− 21,905	51,420	1,064,036	+ 37,346	46,713	60,209	1,092,449	+ 28,413
− 2,387	4,145	50,260	+ 2,547	17	4,446	48,816	− 1,444
+ 60,401	319,510	12,335,647	+ 1,254,707	76,414	1,194,706	12,488,363	+ 152,716
− 386	4,025	8,160,874	+ 382,867	58	559,448	7,985,386	− 175,488
+ 60,787	315,485	4,174,773	+ 871,840	76,356	635,258	4,502,977	+ 328,204
− 958	2,000	139,184	+ 4,725		4,283	136,842	− 2,342
+ 13,487	14,670	441,625	+ 43,648	10	37,099	448,184	+ 6,559
− 2,474		1,146,677	+ 163,475	19,544	89,527	1,179,391	+ 32,714
− 32,040	261,000	14,492,030	+ 1,239,156	135,332	1,777,787	14,098,735	− 393,295
+ 2,268	54,770	1,406,948	+ 153,275	14,100	78,514	1,494,381	+ 87,433
− 387,444	2,083,344	95,042,043	− 3,209,546	1,345,655	8,240,478	84,936,502	− 10,105,541
− 3,175	36,702	1,620,405	− 28,772	21,352	139,715	1,473,201	− 147,204
+ 40,357	5,720	9,496,136	− 643,178	111,881	514,668	8,449,920	− 1,046,216
− 46,998	31,928	20,696,874	− 1,029,612	443,273	1,580,960	18,526,171	− 2,170,703
− 39,330	36,865	24,334,110	− 3,562,955	259,006	1,613,946	19,416,215	− 4,917,895
+ 27,499	36,000	1,171,395	+ 82,147	4,330	112,308	1,149,781	− 21,614
− 159,190	199,055	5,710,441	− 7,515	38,832	309,565	5,432,193	− 278,248
− 92	10,500	663,560	+ 64,225	6,235	79,090	652,076	− 11,484
− 34,274	9,028	2,581,980	+ 96,214	19,008	266,608	2,430,873	− 151,107
− 196,820	1,016,630	15,481,337	+ 988,512	337,009	2,010,404	14,796,454	− 684,883
− 8,195	686,861	2,366,951	− 13,449	1,140	233,137	2,121,505	− 245,446
+ 39,690	10,555	1,559,594	+ 82,591	2,563	143,465	1,502,193	− 57,401
− 6,916	3,500	9,359,260	+ 762,246	101,026	1,236,612	8,985,920	− 373,340
+ 20,115	44,100	1,022,110	+ 41,154	12,505	51,029	1,024,723	+ 2,613
....	....	35,921	+ 6,300	100	5,048	37,273	+ 1,352
− 1,914	5,000	2,345,957	+ 148,454	13,849	168,023	2,319,828	− 26,129
− 33,016	131,644	4,088,728	+ 200,263	196,908	376,758	4,109,523	+ 20,795
+ 1,030	....	269,987	− 2,895	924	759	165,931	− 104,056
−1,039,569	5,144,360	266,084,866	+2,702,530	4,122,519	22,605,406	249,950,217	−16,134,649

offshore reserves. §Includes (under crude-oil category) Arizona, Missouri, Nevada, South Dakota, Tennessee, and Virginia. Includes (under natural-

AGO 530112

Gas-liquids reserves (1,000 bbl)

State or area of state	Reserves Jan. 1, 1973	Production in 1973*	Proved reserves Jan. 1, 1974	Change from Jan. 1, 1973
Alabama	27,606	711	44,592	+ 16,986
Alaska	442	99	343	− 99
Arkansas	7,778	1,123	5,044	− 2,734
California†	126,726	12,461	105,963	− 20,763
San Joaquin Basin	67,174	6,650	60,170	− 7,004
Coastal Region†	29,668	3,366	25,216	− 4,452
Los Angeles Basin†	29,884	2,445	20,577	− 9,307
Colorado	16,079	2,767	20,853	+ 4,774
Florida	8,800	334	3,307	− 5,493
Illinois	814	0	0	− 814
Indiana	14	0	0	− 14
Kansas	393,082	30,602	387,298	− 5,784
Kentucky	46,782	3,085	45,324	− 1,458
Louisiana†	2,135,837	246,920	1,992,537	−143,300
North	107,282	16,020	86,824	− 20,458
South†	2,028,555	230,900	1,905,713	−122,842
Michigan	19,026	1,483	25,046	+ 6,020
Mississippi	14,620	1,499	14,090	− 530
Montana	4,413	691	3,625	− 788
Nebraska	1,630	351	1,292	− 338
New Mexico	502,787	38,306	413,180	− 89,607
Northwest	270,913	16,086	255,498	− 15,415
South	231,874	22,220	157,682	− 74,192
North Dakota	45,367	2,022	53,345	+ 7,978
Ohio	0	0	0	0
Oklahoma	335,161	40,100	289,102	− 46,059
Pennsylvania	735	76	659	− 76
Texas†	2,891,583	337,944	2,830,143	− 61,440
Dist. 1	16,742	3,143	26,510	+ 9,768
Dist. 2	122,029	11,157	144,318	+ 22,289
Dist. 3†	570,324	53,637	464,794	−105,530
Dist. 4†	424,019	60,340	490,561	+ 66,542
Dist. 5	73,358	6,057	73,261	− 97
Dist. 6	384,345	28,378	355,689	− 28,656
Dist. 7-B	52,921	8,947	62,161	+ 9,240
Dist. 7-C	118,506	16,767	120,608	+ 2,102
Dist. 8	475,338	60,177	453,718	− 21,620
Dist. 8-A	258,147	39,046	264,731	+ 6,584
Dist. 9	68,280	9,450	78,462	+ 10,182
Dist. 10	327,574	40,905	295,330	− 32,244
Utah	34,002	2,385	52,544	+ 18,542
West Virginia	82,084	5,651	82,755	+ 671
Wyoming	91,191	12,221	83,665	− 7,526
Total United States	**6,786,559**	**740,831**	**6,454,707**	**−331,852**

*Preliminary net production. †Includes offshore reserves.

It was another poor discovery year, with only 116 million bbl added from new field discoveries and 88 million from new pools. The reserves committee added 2.2 billion bbl to gross reserves by upward revisions of previous figures, deducted 662 million via downward revisions, and added 390 million bbl from extensions of known fields.

The only new discoveries of consequence showing up in addition to reserves were in Louisiana, with 31 million bbl, mostly offshore, and California, in the San Joaquin Basin, 30 million bbl, probably due to Tule Elk field.

Natural gas. The record slide left proved reserves, counting the shut-in Prudhoe Bay field in Alaska, at the lowest level since 1957.

In the Lower 48 states, reserves were down to 218.3 trillion, the lowest since 1954, when, AGA noted, gas consumption was less than half of what it is now.

The downward trend was general among major producing states. Reserves in Texas were down to 84.9 trillion cu ft from 95 trillion, Louisiana to 69.2 trillion from 75, Oklahoma to 14.1 trillion from 14.5 trillion, and Kansas to 11.7 trillion from 11.9 trillion. Alaska and New Mexico showed small increases in proved reserves.

Negative revisions of prior reserves estimates cut sharply into the total in both Texas and Louisiana. Texas was revised downward 4.7 trillion, due mainly to new estimates for Dist. 3 and 4 on the Gulf Coast. Louisiana's negative revisions amounted to 609 billion cu ft, almost all in the southern part of the state, including offshore.

These adjustments were based primarily on data obtained from continuing production experience, AGA explained. Data indicate a greater loss of pressure with production than had been expected.

AGA included statistics separately for the first time for reserves and production off Texas and Louisiana. Last year the region produced 4.2 trillion cu ft, or 18.4%. Proved reserves in the gulf are estimated at 36.8 trillion cu ft, down 2-trillion for the year.

Canadian reserves slump. The Canadian Petroleum Association reported proved reserves of marketable gas in Canada at the end of 1973 were down by half a trillion to 52.5 trillion cu ft.

CPA hasn't included any reserves in the Mackenzie Delta, the Arctic Islands, or the East Coast offshore areas, since details of these strikes haven't been made available to the association.

Estimates for the Mackenzie Delta will become available through the National Energy Board in connection with the application of Canadian Gas Arctic Pipeline for a line from Alaska via Mackenzie Valley to the U.S.

Productive capacity. API noted that the productive capacity estimate indicates an excess of 1 million b/d over December production of 8.7 million.

It explained that the capacity figure is one that could be achieved within 90 days "under conditions of an extreme national emergency." Most of the difference is located in 14 fields, API said, with three fields making up 80% of the total. In one of these fields, which is producing at the maximum legal rate, use of incremental capacity would create equity problems concerning mineral rights, API said.

Also, it added, there would be considerable waste of natural gas because of gas production exceeding gas-processing capacity. In the case of another field, also producing at the "maximum achievable legal rate," use of the incremental capacity would create equity problems also. In an extreme emergency, API assumes that these problems could be resolved in 90 days. The third field referred is the Elk Hills Naval Petroleum Re-

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WORLDWIDE ISSUE

1972: Year of the Arab

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International Editor



CONSTRUCTION of pipeline and production facilities has picked up in Saudi Arabia as nation pushes for new highs in oil output.

CALL it hectic, call it turbulent, call it what you will, 1972 was the Year of the Arab.

Flexing the muscles he'd developed in 1971, he spent all 12 months of the year just closed in pursuing new advantages, and with outstanding success.

In January, the Arab nations and Iran—the Persian Gulf circle—nailed down an 8.49% increase in the prices of their crudes to compensate for loss of purchasing power stemming from devaluation of several of the world currencies, chiefly the U.S. dollar.

The settlement, reached in Geneva under the sponsorship of the Organization of Petroleum Exporting Countries

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(OPEC), tacked an average 19¢/bbl on the prices for Persian Gulf crudes.

With that done, the Arab states turned immediately to the next OPEC goal—participation by host governments in the oil-company operations. Before adjourning the Jan. 20 conference, OPEC members designated Saudi Arabian Oil Minister Ahmed Zaki Yamani as their top negotiator in the search for participation.

Yamani was the logical choice, of course, for the participation concept had been his principal preoccupation since 1968. And he spent almost all of 1972 in pursuing the goal.

He got off to a slow start. At first he confined his efforts to his own country's principal concessionnaire—Arabian American Oil Co. (Aramco). But Aramco refused to budge from its antiparticipation stance, even after a stern warning from Saudi King Faisal.

At the time, Yamani declared, "The attitude of the oil companies forces us to think in terms of battle rather than negotiations."

He approached the Mar. 11 OPEC special session in Beirut without much hope of avoiding an angry showdown between the Arabs and the oil companies.

But suddenly, on Mar. 10, a day before the meeting, Aramco dispatched a letter to Yamani, saying that it accepted "the principle" of participation and that "having accepted the principle, the company considers it in order, as suggested by the government, to proceed with negotiations."

That letter launched 7 months of arduous negotiations between Yamani and all the oil companies bordering the western shores of the gulf. Iran had disassociated itself from the participation talks on June 24 when the shah declared himself "uninterested."

Finally, on Oct. 5, the so-called "New York agreement" was announced, and Yamani had won his long battle.

The pact held some surprises, principally in a provision for initial participation of 25% by the host states, rather than the expected 20%. It further provided for escalation to 51% participation by 1983.

The Arab side had made some concessions to the companies, too. Among these was compensation on the basis of "updated book value," taking into consideration the effects of inflation over the years, and investments made during the period from discovery to date.



INDIA conducted a running feud with her foreign oil refiners throughout 1972, as it sought solutions to the rising price of crude and soaring product demand. Here, a Caltex kerosine delivery in Bombay.

As the year draws to a close, the Arabs can claim a major victory in their struggle to take control of their oil. And they owe that victory to one man—Ahmed Zaki Yamani.

Iraq seizes IPC. Another major Arab event of 1972 was Iraq's sudden move on June 1 to nationalize the fields and properties of Iraq Petroleum Co. (IPC) in the northern part of the country. On May 17, the Iraqi Revolutionary Command Council (RCC) had issued an ultimatum to IPC to boost the sagging output from the northern fields by May 31 or face legislative action.

At the time, the northern fields were producing at only half the volume they had been earlier in the year. Iraq declared it was a pressure tactic by the company on the government, while the company retorted that the oil was simply overpriced in view of reduced tanker rates and slackened European oil demand.

As the deadline passed, Iraqi President Ahman Hasan al-Bakr declared the northern field nationalized. At the time, the Arab Oil Congress was gathered in Algiers, and the Iraqi announcement triggered rousing Arab shouts of approval.

In the aftermath, Cie. Francaise des Petroles (CFP), a 23.75% partner in IPC, reached agreement with the Iraqis to act as mediator in the negotiations on compensation to the company for the loss of the northern fields. From total shutdown on June 1, the northern fields have gradually built up their output to about 700,000 b/d, with most of it being exported to France, and some to Italy and the Comecon countries and India.

As mediators in the dispute, Iraq accepted CFP director Jean Duroc Danner and Nadim Pachachi, secretary general of OPEC. IPC, for its part, has held off any legal action against Iraq, pending the outcome of the negotiations. But it has declared Jan. 1, 1973, as the deadline for such action.

At the time of the nationalization in Iraq, Syria also declared nationalization of the IPC pipelines and terminals in that country. At press time, the two Arab states continued to bicker over transit fees to be paid the Syrians by Iraq.

Libya sets new terms. In another Arab country, new patterns also were being fashioned in 1972.

Libya, which nationalized British Petroleum's half-share in the giant Sarir field on Dec. 7, 1971, set forth in mid-October to grab 50% of the other half, held by independent Dallas oilman Nelson Bunker Hunt.

Only a fortnight earlier, the Libyans had sealed a 50-50 participation deal with Italy's ENI for operations on its Concession 100-A. With that in hand, they approached Hunt, demanding not only half his share of the field, but that he market the government oil, and hand over half his profits from oil sales retroactive to the date of the BP takeover.

The action foretells a similar campaign by the Libyan authorities against every other oil company in Libya.

Egypt ejects Russians. In yet another Arab state, Egypt, the biggest surprise of the year was political. In mid-July, President Anwar al-Sadat tagged the 5,000 top Russian military men and 10,000-15,000 lesser personnel as persona non grata, and demanded their withdrawal from Egypt.

The presidential action took the entire world by surprise. The move was and still is a puzzle to political ob-

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servers. But there are indications that Libya's crafty Col. Muamnar al-Qaddafi may have influenced Sadat, in view of his strong anticommunist stand and the proposed merger of the two countries.

Iran springs a surprise. Yet another surprise popped up in non-Arab Iran. At a London press conference on June 24, Shah Mohammad Reza Pahlevi revealed that he would sign three 5-year extensions to the Iranian Consortium's contract to produce oil from the "agreement area."

Only a year earlier, the shah had declared, "It's ridiculous that a foreign oil company should pump our oil from the well to the tanker. We can do this ourselves."

In his turnabout declaration, the shah said, "We have reached a period of close collaboration with the oil companies, which I think is in the interest of both parties."

The original agreement, signed in 1954, was to expire in 1979, but it calls for the three extensions at the option of the oil companies. Under the shah's new plan, it will extend to 1994.

The terms of the new Iranian agreement had not come to light at press time, but as the shah put it, "it will open a new page in the relations of producing countries and the oil companies, which are the intermediary between the producing countries and the consumers."

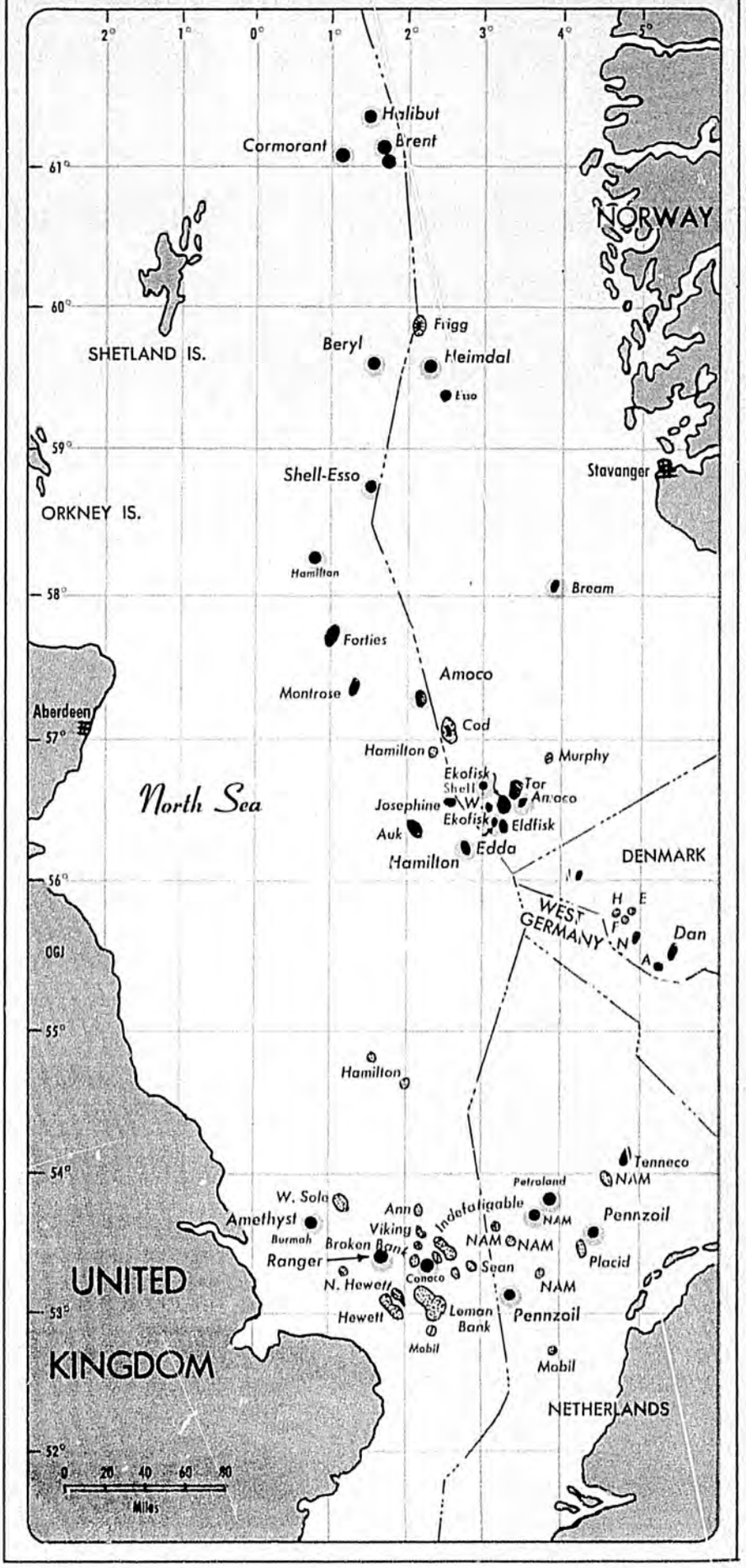
Top story in 1972. In the world of exploration for oil during 1972, the North Sea theater went unchallenged as Story No. 1.

At least 13 new oil fields came to light in the northern part of the sea during the year, and 7 new gas fields in its southern part (see map). Some of the oil finds may prove subcommercial, but the ones that are known already to be commercial are whales indeed.

Perhaps the most sensational and important finds were made in a single block—211—of the British North Sea. Here, within the space of a month (August), the Shell-Esso partnership announced two giant discoveries.

At the beginning of the month, Shell, as operator, announced that its second test of the Brent structure—well 211/29-2—had confirmed the presence of at least 1 billion bbl of recoverable reserves. Actually, the first well—211/29-1—had discovered the field in 1971, but Shell had not revealed this. However, as rumors flew

The North Sea's lucky 13 for 1972



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Worldwide oil at a glance

COUNTRY	RESERVES 1-1-73		WELLS		OIL PRODUCTION			REFINING Capacity (1,000 b/d) Jan. 1, 1973		
	Oil (1,000 bbl)	Gas (billion cu ft)	Producing oil 7-1-72	Drilling 12-1-72	Estimated 1972 (1,000 b/d)	% change from 1971	No. refineries	Crude	Cracking	Reforming
ASIA-PACIFIC										
Afghanistan	‡89,900	5,000	16	5	0.2	...				
Australia	2,121,460	*36,236	398	6	308.0	– 2.0	10	632.7	144.7	131.6
Bangladesh	...	8,000	...	...	...	...	1	30.6	...	1.6
Brunei-Malaysia	1,500,000	10,000	558	4	276.0	39.0	3	123.2	...	5.7
Burma	†75,000	120	695	7	20.0	15.0	2	25.3	1.6	...
Cambodia	...	...	...	...	...	...	1	12.5	...	1.8
Ceylon	...	...	...	...	...	...	1	37.4	9.0	2.5
Guam	...	...	...	...	...	...	1	29.5	...	...
India	834,000	2,300	1,545	8	151.0	3.0	10	489.1	82.3	21.8
Indonesia	10,005,000	5,500	2,344	17	1,027.0	15.0	8	424.0	49.5	16.0
Japan	23,000	400	1,078	10	15.0	– 1.0	43	4,315.6	264.5	422.2
Korea, South	...	...	...	1	...	...	1	430.0	7.5	26.0
New Zealand	‡224,000	17,000	4	2	2.7	50.0	1	54.0	...	18.0
Okinawa (R.I.)	...	...	...	...	...	...	3	210.0	...	10.0
Pakistan	34,500	16,000	17	4	9.5	– 5.0	3	80.5	...	2.5
Philippines	...	180	...	5	...	...	4	276.3	25.9	41.9
Singapore	...	...	...	...	...	...	4	390.2	...	19.4
Taiwan	15,000	500	12	3	2.0	–10.0	1	199.0	18.1	20.8
Thailand	400	...	25	1	0.2	–33.0	4	155.8	30.0	23.8
Total Asia-Pacific	**14,922,260**	**101,236**	**6,692**	**73**	**1,813.6**	**10.0**	**101**	**7,915.7**	**633.1**	**765.6**

*Includes 14 trillion northwest shelf. †Adjusted. ‡Condensate.

EUROPE										
Austria	175,000	500	1,270	4	46.6	– 2.0	1	220.5	24.1	23.0
Belgium	...	...	...	...	...	...	8	831.6	58.6	91.3
Cyprus	...	...	...	...	...	...	1	12.0	...	2.0
Denmark	250,000	1,800	(*)	1	3.0	...	3	221.8	40.4	34.4
Finland	...	...	...	...	...	...	2	186.0	46.0	26.1
France	81,000	6,800	175	4	31.0	–16.0	23	2,949.3	220.5	399.1
Germany, West	551,000	12,700	2,833	5	138.0	– 5.0	33	2,697.7	340.4	344.7
Greece	...	...	...	1	...	...	4	124.5	...	14.4
Irelandt	...	...	...	...	...	...	1	58.0	...	13.3
Italy & Sicily	220,000	6,100	128	8	21.0	–12.0	34	3,593.1	322.5	384.6
Netherlands	250,000	88,000	319	8	30.0	– 7.0	7	1,825.5	83.6	158.8
Norway	§2,000,000	15,000	4	5	34.0	496.0	3	173.0	24.0	18.5
Poland**	...	...	...	...	...	...	...	...	...	...
Portugal	...	...	...	...	...	...	2	79.8	23.4	9.9
Romania**	...	...	...	...	...	...	...	...	...	...
Spain	§55,000	500	22	3	3.0	16.0	9	1,025.7	16.2	129.9
Sweden	...	...	...	...	...	...	5	243.6	33.0	44.4
Switzerland	...	...	...	...	...	...	2	120.0	21.0	20.0
United Kingdom	5,000,000	45,000	56	13	2.0	25.0	21	2,464.6	251.4	328.2
Yugoslavia	‡3,500,000	2,000	...	6	59.0	– 3.0	...	...	...	...
Total Europe	**12,082,000**	**178,400**	**4,807**	**58**	**367.0**	**2.0**	**159**	**16,826.7**	**1,505.1**	**2,042.6**

*On production Aug., 1972. †Oil or gas discovered but not developed.
§Adjusted. **Not included in free-world total. ‡Adjusted (government figures).

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MIDDLE EAST										
Abu Dhabi	20,768,000	12,000	115	5	1,000.0	7.0	...	...	...	...
Bahrain	375,000	5,000	236	...	72.0	– 4.0	1	250.0	53.2	14.3
Dubai	2,000,000	1,000	21	3	130.0	4.0	...	...	...	...
Iran	§65,000,000	200,000	313	10	4,900.0	8.0	4	620.0	52.0	85.3
Iraq	29,000,000	25,000	132	5	1,500.0	–12.0	6	98.5	...	5.0
Israel	9,000	50	30	1	*120.0	– 7.0	1	147.4	57.9	16.8
Jordan	...	...	...	...	...	...	1	14.8	2.5	0.9
Kuwait	64,900,000	33,000	692	2	2,750.0	– 5.0	5	647.0	11.0	15.0
Lebanon	...	...	...	...	...	...	2	53.5	...	7.3
Neutral Zone	16,000,000	7,500	440	1	545.0	– 1.0	...	...	...	...
Oman	5,000,000	1,750	97	2	280.0	– 3.0	...	...	...	...
Qatar	7,000,000	8,000	84	2	450.0	4.0	1	0.7	...	...
Saudi Arabia	138,000,000	50,000	535	8	5,255.0	17.0	2	428.3	...	29.3
South Yemen (Aden)	...	...	...	...	...	...	1	160.2	...	8.6
Syria	7,250,000	700	123	2	120.0	9.0	1	51.3	18.0	2.2
Turkey	550,000	150	290	5	65.0	– 1.0	4	286.0	23.6	29.0
Total Middle East	**355,852,000**	**344,150**	**3,108**	**46**	**17,187.0**	**5.0**	**29**	**2,757.7**	**218.2**	**213.7**

§Adjusted. *Includes Sinai fields.

COUNTRY	RESERVES 1-1-73		WELLS		OIL PRODUCTION		REFINING			
							Capacity (1,000 b/d) Jan. 1, 1973			
	Oil (1,000 bbl)	Gas (billion cu ft)	Producing oil 7-1-72	Drilling 12-1-72	Estimated 1972 (1,000 b/d)	% change from 1971	No. refineries	Crude	Cracking	Reforming
AFRICA										
Algeria	*47,000,000	105,000	524	17	1,061.0	36.8	3	60.7	....	14.5
Angola (incl. Cabinda)	1,200,000	1,000	161	6	135.0	17.4	2	16.0	....	1.9
Congo-Brazzaville	5,000,000	exports	17	3	7.5	2,400.0	..	....	....	....
Congo-Kinshasa (See Zaire)†	....	....	....	....	....	....	..	....	....	....
Dahomey†	1,000	....	....	....	....	....	..	....	....	....
Egypt	5,200,000	7,500	245	4	227.0	−22.7	2	98.5	....	....
Ethiopia	....	....	....	....	....	....	1	14.8	....	2.0
Gabon	1,100,000	7,000	114	3	125.0	8.7	1	17.0	2.0	2.0
Ghana†	....	....	....	....	....	....	1	26.6	....	6.2
Ivory Coast	....	....	....	....	....	....	1	24.4	....	2.8
Kenya	....	....	....	....	....	....	1	48.0	....	4.0
Liberia	....	....	....	....	....	....	1	12.5	....	2.0
Libya	30,400,000	27,500	763	8	2,230.0	−19.3	5	17.4	....	2.0
Malagasay	....	....	....	....	....	....	1	14.6	....	2.3
Morocco	1,000	15	32	2	0.3	−57.0	2	58.6	3.6	7.6
Mozambique†	....	....	....	....	....	....	1	17.0	....	2.5
Nigeria	15,000,000	40,000	774	30	1,800.0	17.5	1	60.0	....	5.7
Rhodesia	....	....	....	....	....	....	(not operating — not included in total)			
Senegal	....	....	....	....	....	....	1	12.0	....	2.0
Sierra Leone	....	....	....	....	....	....	1	10.0	....	....
Sudan	....	....	....	....	....	....	1	20.0	....	2.0
Tanzania	....	....	....	....	....	....	1	16.8	....	4.2
Tunisia	1,000,000	1,000	42	3	80.0	− 7.0	1	21.4	....	3.0
Union of South Africa†	....	....	....	....	....	....	5	242.6	66.1	46.6
Zaire†	500,000	....	....	....	....	....	1	16.2	....	2.9
Total Africa	106,402,000	189,015	2,672	77	5,665.8	− .02	34	825.1	76.7	116.2

*Revised (government figure). †Oil or gas discovered but not yet producing.

WESTERN HEMISPHERE										
Antigua	....	....	....	....	....	....	1	17.3	....	1.9
Argentina	4,900,000	8,800	5,311	50	435.0	2.8	15	601.6	218.7	48.0
Bahamas	....	....	....	....	....	....	1	250.0	....	....
Barbados*	750	....	....	1	....	....	1	3.0	....	....
Bolivia	200,000	5,000	235	2	32.0	−13.5	5	21.7	....	....
Brazil	857,000	918	1,213	28	167.0	− 0.4	10	718.3	164.7	24.6
British Honduras	....	....	....	....	....	....	..	....	....	....
British West Indies	....	....	....	....	....	....	..	....	....	....
Chile	125,000	5,000	374	7	32.5	− 7.5	3	123.5	34.7	10.0
Colombia	1,500,000	2,400	1,865	6	192.0	−16.2	6	172.1	65.5	2.0
Costa Rica	....	....	....	....	....	....	1	7.6	2.7	1.1
Cuba	9,000	....	20	3	3.5	....	....	....	....	....
Dominican Republic	....	....	....	....	....	....	1	16.0	....	....
Ecuador	5,750,000	Eight 500	717	6	59.4	1,548.6	3	35.5	8.5	....
El Salvador	....	....	....	....	....	....	1	14.0	....	4.6
Guatemala*	10,000	....	....	1	....	....	2	26.0	....	6.0
Honduras	....	....	....	1	....	....	1	14.0	....	1.8
Jamaica	....	....	....	....	....	....	1	31.0	2.8	....
Martinique	....	....	....	....	....	....	1	11.0	....	2.1
Mexico	2,800,000	11,500	3,421	43	440.0	0.1	6	624.5	141.0	87.3
Netherlands Antilles	....	....	....	....	....	....	2	880.0	455.0	22.0
Nicaragus	....	....	....	....	....	....	1	13.2	....	2.6
Panama	....	....	....	....	....	....	1	75.0	19.0	7.5
Paraguay	....	....	....	....	....	....	1	5.0	....	....
Peru	750,000	3,000	2,296	10	60.2	− 2.9	5	101.5	22.7	1.8
Puerto Rico	....	....	....	....	....	....	3	291.0	70.5	76.0
Trinidad & Tobago	2,000,000	7,500	2,896	13	143.0	10.8	3	441.0	26.5	27.0
Uruguay	....	....	....	....	....	....	1	40.0	4.0	2.0
Venezuela	13,700,000	34,600	11,245	20	3,200.0	− 9.8	12	1,499.0	170.0	8.8
Virgin Islands	....	....	....	....	....	....	1	418.0	....	13.5
United States	§36,823,271	271,455	525,885	1,163	9,500.0	− 0.3	247	13,087.0	4,852.0	3,169.1
Canada	10,200,000	†55,000	20,911	163	1,490.0	10.4	41	1,725.0	427.0	290.0
Total W. Hemisphere	79,625,021	405,673	576,389	1,517	15,754.6	− 1.0	378	21,262.8	6,685.3	3,809.7

*Oil or gas discovered but not yet producing. †Does not include Arctic gas.
§Includes Alaska 10 billion.

Total Free World	568,883,281	1,218,474	593,668	1,771	40,788.6	2.0	701	49,588.0	9,118.4	6,947.8
Communist World	*98,000,000	†664,400	....	....	8,910.0	5.2	..	....	....	....
Total World	666,883,281	1,882,874	....	....	49,698.6	3.0	..	....	....	....

*Including Russia 75 billion, Red China 19.5 billion, Hungary 1 billion, others 2.5 billion.
†Including Russia 685.4 trillion, Red China 21 trillion, Hungary 3 trillion, & Poland 5 trillion.

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Trends in western-bloc refining

	Capacities in 1,000 b/sd					Projected Capacities in 1,000 b/cd		
	1-1-68	1-1-69	1-1-70	1-1-71	1-1-72	1-1-73	1-1-74	1-1-75
Crude-oil capacities								
Asia-Pacific	4,265	4,920	5,554	6,061	6,818	7,916	8,500	8,900
Africa	732	756	785	925	902	825	875	925
Middle East	2,053	2,296	2,438	3,172	2,851	2,758	2,900	3,100
Latin America	4,675	4,984	5,113	5,679	6,139	6,451	6,700	7,000
Western Europe	11,085	12,884	13,941	15,177	16,962	16,826	17,500	18,000
Total	**22,810**	**25,840**	**27,831**	**31,014**	**33,672**	**34,776**	**36,475**	**37,925**
Total, western bloc	**35,698**	**39,274**	**41,921**	**45,743**	**48,692**	**49,588**	**51,750**	**53,425**
Cracking (thermal & catalytic)								
Asia-Pacific	421	453	507	609	629	633	650	675
Africa	58	58	74	90	86	77	80	85
Middle East	131	111	155	197	212	218	230	240
Latin America	1,492	1,420	1,426	1,381	1,443	1,406	1,500	1,600
Western Europe	1,255	1,245	2,284	1,716	1,558	1,505	1,600	1,700
Total	**3,347**	**3,287**	**3,446**	**3,993**	**3,928**	**3,839**	**4,060**	**4,300**
Total, western bloc	**11,789**	**11,857**	**12,278**	**13,029**	**13,032**	**13,900**	**14,000**	**14,500**
Reforming (thermal & catalytic)								
Asia-Pacific	464	525	593	642	702	765	780	800
Africa	133	130	133	152	143	116	130	150
Middle East	212	243	215	235	233	214	230	250
Latin America	268	258	279	386	357	351	370	390
Western Europe	1,431	1,749	1,949	2,027	2,185	2,042	2,200	2,300
Total	**2,508**	**2,905**	**3,169**	**3,442**	**3,620**	**3,488**	**3,710**	**3,890**
Total, western bloc	**5,098**	**5,657**	**6,179**	**6,606**	**6,918**	**6,947**	**7,300**	**7,500**
Hydroprocessing								
Asia-Pacific	770	1,056	1,263	1,619	2,025	2,788	2,900	3,100
Africa	124	127	123	247	233	126	140	150
Middle East	158	341	332	473	489	478	490	500
Latin America	300	311	514	734	1,049	1,220	1,400	1,500
Western Europe	1,830	2,533	2,986	3,592	4,465	4,557	4,600	4,800
Total	**3,182**	**4,368**	**5,218**	**6,665**	**8,261**	**9,169**	**9,530**	**10,050**
Total, western bloc	**7,346**	**8,724**	**9,834**	**11,570**	**13,531**	**15,398**	**16,000**	**17,000**

during the summer of '72, Shell decided to issue a statement to counter unfounded rumors.

In late August, Shell announced a discovery—no figures revealed—at its 211/26-1 wildcat, only 20 miles west-northwest of the Brent field. Despite the lack of statistics, industry observers are confident that the second giant, now named Cormorant, is probably bigger even than Brent, for in August 1971, the two companies had plunked down $50 million in an auction bid for block 211/21 immediately north of the Cormorant discovery. This "golden block" is now being drilled for the first time.

Not long after the Shell announcements came word from the Signal Group 2 (19% Signal, 22.5% Champlin, 20% United Canso, 22.5% Santa Fe International, 5% North Sea Petroleum Ltd., 1% Charterhouse Securities, and 10% Tricentrol) that it too had found oil in Block 211.

The wildcat, 211/18-1, flowed 5,293 b/d of 37° low-sulfur oil on an 8-hr test on a 40/65-in. choke from an undisclosed horizon. While Signal was careful not to overplay the find, it is believed that another giant has been tapped at the site, now called Halibut. Signal is to drill some confirmation wells on the structure next spring.

Other oil discoveries of the year came at Heimdal (Pan Ocean Group) in Norwegian block 25/4; Beryl (Mobil) in U.K. block 9/13; Bream (Phillips Group) in Norwegian block 17/12; Shell-Esso in U.K. block 16/8; Hamilton Bros. in U.K. block 15/24; Amoco in U.K. block 23/21; Hamilton Bros. in U.K. block 30/24; and three new strikes in the Ekofisk complex off Norway—Phillips Group's Edda (2/7-4X), Amoco's 2/5-3, and Shell's 1/6-1.

World output tops 50 million. The industry saw its production record over a new milestone in 1972, as the world total topped 50 million b/d for the first time in April. For the next 3 months, it fell back, but in August surged again to 51.2 million b/d and to 52 million b/d in September. It probably will never drop below the 50-million mark again.

Worldwide, crude production will grow about 3½% for all of 1972. The Communist bloc is growing faster at 5% than the free world at about 2.5-3%.

The Middle East continues to supply the bulk of free-world oil (43%), with an 8½% growth rate over the year, to reach about 19 million b/d.

Refining climbs. Western-bloc refining capacity outside the U.S. and Canada will hit nearly 35 million b/cd on Jan. 1, 1973, according to the Journal's detailed worldwide survey.

The 34.8-million-bbl total compares with 33.7 b/sd chalked up on Jan. 1, 1972. Or, using a stream factor of 0.95, the growth was 2.6 million b/cd during 1972. (Journal figures for Jan. 1, 1972, and before are on a stream-day basis; those for Jan. 1, 1973, and later will be on a calendar day).

Projected total crude capacities for western bloc outside U.S. and Canada for Jan. 1, 1974, and Jan. 1, 1975, respectively, are 36.5 and 37.9 million b/cd. When U.S. and Canadian figures are added, projected western-bloc totals are 51.8 and 53.4 million b/cd for 1974 and 1975.

Biggest increase in crude capacity during the past year came in the Asia-Pacific area, where a 1.1-million-b/cd gain was chalked up. Japan showed a 500,000-b/d growth, and South Korea added over 200,000 b/d.

The Asia-Pacific area also recorded a growth of nearly 800,000 b/d in hydroprocessing capacity. Most of the increase was recorded in Japan, where total hydroprocessing capacity now stands at 1.81 million b/d.

There was little change in western-bloc cracking and reforming capacity total during 1972.

Other "firsts." A few other landmarks were posted in international oil in 1972. Among them was a welcome to two new oil countries, as the first discoveries were made in Guatemala and in the Persian Gulf emirate of Sharjah. Both should begin production next year.

Denmark became the world's new-

AGO 530119

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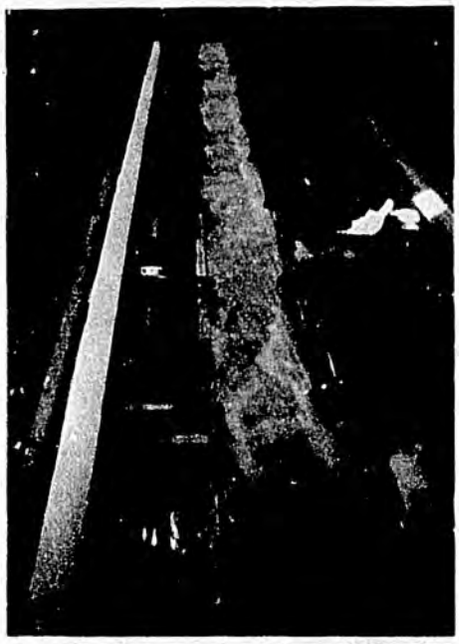
AGO 530120



AGO 530121

The Mannesmann inside-outside quench.





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AGO 530123

est producer, as crude from the North Sea's Dan field began flowing into Danish refineries in August.

And Ecuador became the world's newest exporter of crude oil, as oil from its eastern Oriente fields flowed over the Andes to the Pacific Coast for the first time in July.

Another country to come into flush production for the first time was Congo-Brazzaville, where Elf-Congo began test production in January at its offshore Emeraude Marine field. Elf found the 7-billion-bbl giant in 1969.

Something to remember. 1972 will go into oil's history books as the year that the balance of power shifted from the international oil companies to the producing countries, an event that was unimaginable only 3 years ago.

Despite its turbulence, its upsets, its nationalizations, its permanent changes, the year brought about a kind of peace between producer, transporter, and consumer that will be something to remember. END

Worldwide refining

WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
ALGERIA	Cia. Raffinage en Afrique du Nord (CRAN), Hassi Messaoud	3,135	.....	.....	.....
	Sonatrach—Raffinerie d'Alger, Maisan Carree	57,000	.....	14,500 C	.....
	El Borma	600	.....	.....	.....
	Total	**60,735**	.....	**14,500 C**	
ANGOLA	Cabinda Gulf, Cabinda	2,800	.....	.....	.....
	Companhia de Petroleos de Angola (SARL), Luanda	13,200	.....	1,900 C	1,900 V, 2,800 DHD, 950 A
	Total	**16,000**	.....	**1,900 C**	
ANTIGUA	West Indies Oil Co., Ltd., St. John's	17,300	.....	1,920 C	2,000 DHT, 4,800 DHD
ARGENTINA	Astrasur, Refinerías Patagónicas de Petróleo Sociedad Anónima, Comodoro Rivadavia	6,800	2,200 T 3,200 Vis	.....	4,800 V, 5,300 A
	Cóndor, Sociedad Anónima Petrolera Argentina, Lomas de Zamora	1,425	450 T	.....	450 V, 450 L
	Esso SAPA, Campana	87,400	13,800 CK 17,900 FCC	8,000 C	47,800 V, 8,000 DHT, 1,000 1,000 L, 570 C, 3,300 A
	Galván	17,000	9,000 Vis	.....	.....
	Lottero Papini SA, Avellaneda	1,900	.....	.....	450 V, 450 L
	Ragor SAIC, Quilmes	600	.....	.....	.....
	Refinería de Petróleo la Isaura SA, Bahía Blanca	12,580	1,450 T	.....	.....
	Shell Compañía Argentina de Petróleo SA, Buenos Aires	115,000	20,000 Vis 21,000 C	9,000 C	25,000 DHT
	Yacimientos Petrolíferos Fiscales:				
	Campo Durán	26,900	.....	.....	.....
	Dock Sud	5,700	2,300 T	.....	1,500 V
	El Centauro, Tierra del Fuego	18[illegible]	.....	.....	.....
	La Plata	182,500	40,500 FCC 22,100 CK	15,500 C	61,000 V, 3,800 DHT, 8,500 DHD, 700 Alky, 440 P, 3,150 L, 650 C, 1,550 A
	Luján de Cuyo	107,700	3,400 T 9,100 Vis 17,000 CK 14,300 FCC	15,500 C	56,800 V, 18,700 DHC, 2,500 DHD, 1,000 C
	Plaza Huincul	4,800	5,700 T	.....	.....
	San Lorenzo	31,100	4,000 T 11,300 Vis	.....	9,000 V
	Total	**601,585**	**93,700 C 125,000 T**	**48,000 C**	

Abbreviations used with the refining tabulations

(All figures in barrels per calendar day).

All figures are as of 1-1-73

Cracking processes:
C—Cat cracking
CK—Coke
FCC—Fluid cat cracking
HD—Houdriflow cat cracking
T—Thermal cracking
TCC—Thermofor cat cracking
Vis—Visbreaking

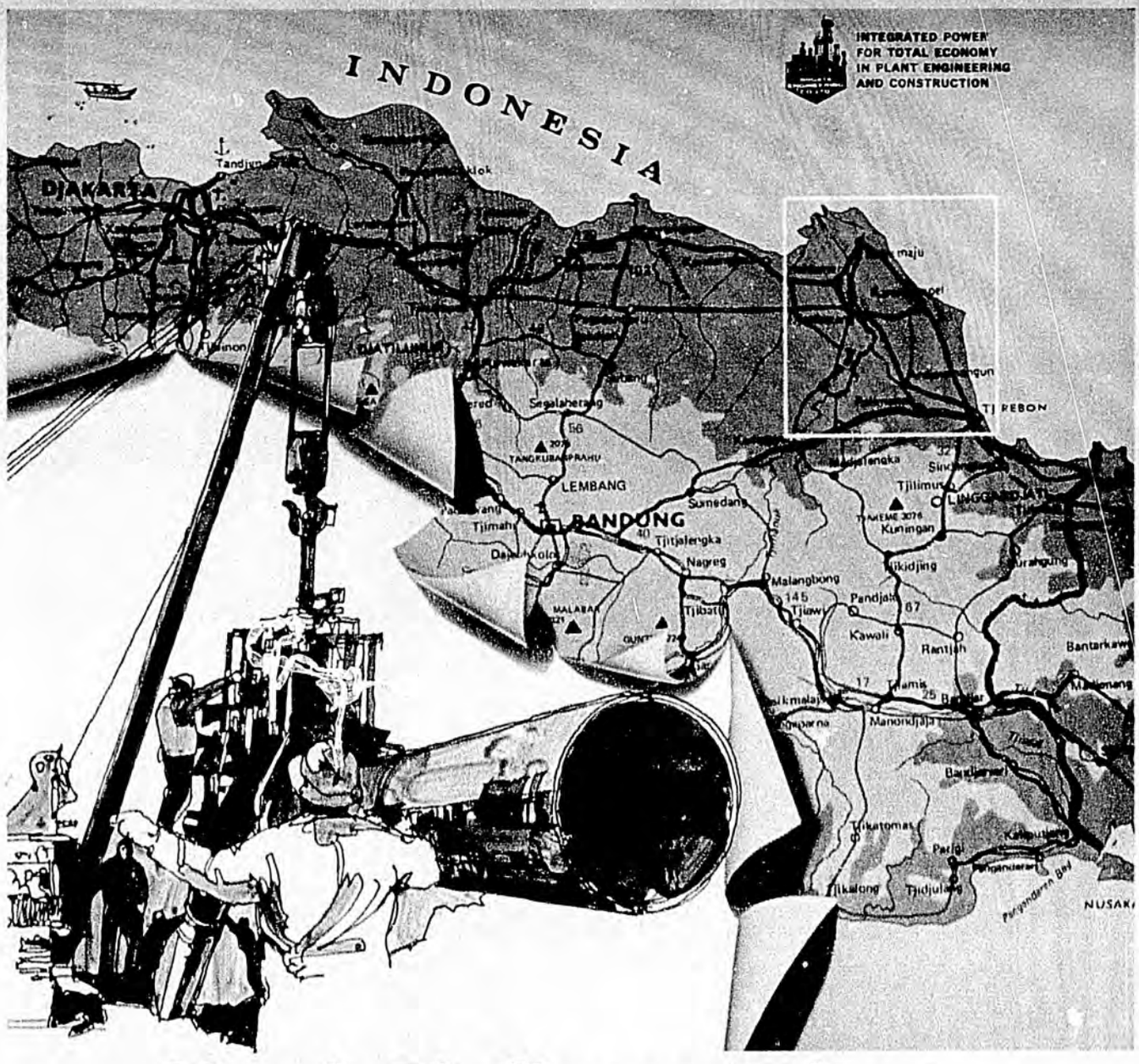
Reforming processes:
C—Catalytic
T—Thermal

Other processing:
A—Asphalt
Alky—Alkylation
C—Coking (t/d)
DHT—Distillate hydrotreating
DHD—Distillate hydrodesulfurization
RHC—Residual hydrocracking
DHC—Distillate hydrocracking
Is—Isomerization
L—Lube manufacture
P—Polymerization
RHD—Residual hydrodesulfurization
SD—Solvent decarbonizing
V—Vacuum distillation
W—Waxes

AGO 530124

WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
AUSTRALIA	Amoco Australia Pty. Ltd., Brisbane	25,000	8,750 FCC	5,000 C	14,500 V, 14,250 DHD, 1,400 Alky, 8,600 A
	Ampol Refineries Ltd., Lytton	60,000	21,500 FCC	11,800 C	26,000 V, 2,500 Alky, 1,500 Poly
	Australian Oil Refining Pty. Ltd., Kurnell	93,000	40,900 FCC	13,300 C	48,500 V, 3,200 Alky, 2,800 Poly, 12,800 SD
	Kurnell (lube refinery)	.....	.....	.....	7,100 V, 6,500 DHT, 3,775 L
	BP Australia Ltd., Kwinana	98,735	14,520 FCC	17,630 C	40,950 V; 16,380 DHT, 7,735 DHD, 1,553 L, 475 A
	Westernport	45,500	.....	13,333 C	3,185 V, 15,470 DHT, 678 A
	Petroleum Refineries Australia Pty. Ltd.—Adelaide	45,000	.....	14,500 C	2,500 V, 30,000 DHD, 1,000 A
	Altona	98,500	24,000 FCC	24,000 C	22,000 V, 30,000 DHT, 9,500 DHD, 2,000 Alky, 3,000 A
	Shell Refining (Australia) Pty. Ltd., Clyde	55,000	17,000 C	9,900 C	22,000 DHT, 6,000 DHD
	Geelong	92,000	18,000 C	17,000	36,000 DHT, 11,000 DHD
	Total Refineries Australia Ltd., Matraville	30,000		6,000 C	12,000 V, 11,000 DHT 4,300 DHC
		.....			
	Total	**632,735**	**144,670 C**	**131,563 C**	
AUSTRIA	Osterreichische Mineralolverwaltung AG, Schwechat	220,500	16,300 FCC 7,800 T	23,000 C	48,000 V, 24,780 DHT, 23,000 DHD, 700,L, 36,000 A
BAHAMAS	Bahamas Oil Refining Co., Freeport	250,000	.....	.....	70,000 V
BAHRAIN	Bahrain Petroleum Co. Ltd., Awali	250,000	34,200 FCC 19,000 Vis	14,300 C	40,500 V, 14,300 DHD, 1,300 Poly, 2,400 A
BANGLADESH	Eastern Refinery Ltd., Chittagong	30,600	.....	1,620 C	1,804 DHT, 1,660 DHD
BARBADOS	Mobil Oil Barbados Ltd., Bridgetown	3,000	.....	.....	400 A
BELGIUM	Albatros SA, Antwerp	57,000	.....	8,550 C	15,930 DHD
	Anglo-Belge des Petroles SA, Antwerp-Kiel	4,900	.....	.....	.....
	Belgian Shell NV, Ghent	9,000	.....	.....	.....
	Esso Belgium NV, Antwerp	95,000	9,500 FCC	7,800 C	32,000 V, 40,600 DHT, 550 L, 7,500 A
	NV Societe Industrielle Belge des Petroles SA (SIBP), Antwerp	297,700	49,100 FCC	28,400 C	105,900 V, 55,800 DHT, 53,900 DHD, 4,300 Alky, 1,560 Poly, 11,400 A
	Raffinerie Belge de Petroles, Antwerp	98,000	.....	19,000 C	14,000 V, 27,000 DHT, 10,000 DHD, 9,200 A
	SA Chevron Belgium NV, Feluy	130,000	.....	10,000 C	60,000 V, 10,000 DHT, 23,000 DHD, 2,300 A
	Texaco Belgium NV, Ghent	140,000	.....	17,500 C	46,000 DHT
	Total	**831,600**	**58,600 C**	**91,250 C**	
BOLIVIA	Yacimientos Petrolíferos Fiscales Bolivianos (YPFB):				
	Camiri	1,140	.....	.....	.....
	Cochabamba	13,300	.....	.....	450 V, 450 L
	Sanandita	570	.....	.....	.....
	Santa Cruz	2,850	.....	.....	.....
	Sucre	3,800	.....	.....	.....
	Total	**21,660**	.....	.....	
BRAZIL	Companhia de Petróleo da Amazonia, Paredao, Manaus	10,000	2,000 FCC	.....	3,000 V, 100 A
	Petróleo Brasileiro SA (Petrobras):				
	Betim, Minas Gerais	57,000	12,000 FCC	.....	22,000 V, 1,500 A
	Canoas, Rio Grande de Sul	57,000	12,000 FCC	.....	22,000 V, 1,500 A
	Cubatao, Sao Paulo	170,000	43,000 FCC	10,000 C	85,000 V, 5,000 A
	Duque de Caxias, Rio de Janeiro	190,000	34,000 FCC	11,000 C	100,000 V, 4,400 DHT, 4,400 L, 4,000 A
	Mataripe, Bahia	72,000	15,000 FCC	.....	40,000 V, 2,000 A
	Paulina, Sao Paulo	114,000	30,000 FCC	.....	57,000 V, 3,000 A
	Refinaria de Petróleo Ipiranga SA, Rio Grande	9,300	.....	.....	1,098 A
	Refinaria de Petróleos de Manguinhos SA, Rio de Janeiro	9,500	3,600 Vis	3,600 T	.....

AGO 530125



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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
BRAZIL—Continued	Refinaria e Explorcao de Petroleo (Uniao) SA, Capuava, Sao Paulo	29,450	13,050 TCC	.....	9,000 V, 900 P
	Total	**718,250**	**161,050 C 3,600 T**	**21,000 C 3,600 T**	
BRUNEI	Sarawak Shell Berhad, Seria	60,000	.....	.....	.....
BURMA	Myanma Oil Corp., Chauk	6,100	.....	.....	.....
	Syriam	19,200	1,635 T	.....	.....
	Total	**25,300**	**1,635 T**	.....	
CAMBODIA	Societe Khmere de Raffinage de Petrole, Krung Kompong Som	12,540	.....	1,800 C	5,850 DHT
CEYLON	Ceylon Petroleum Corp., Sapugaskanda	37,400	9,000 Vis	2,500 C	1,900 V, 7,600 DHT, 7,000 DHD, 1,000 A
CHILE	Empresa Nacional del Petróleo, Concepción	72,000	14,300 FCC 8,400 Vis	4,000 C	38,000 V
	Concón	50,000	12,000 FCC	6,000 C	24,000 V, 1,100 Alky, 1,000 A
	Magallanes	1,500	.....	.....	.....
	Total	**123,500**	**26,300 C 8,400 T**	**10,000 C**	
COLOMBIA	Colombian Petroleum Co., Tibú	4,200	.....	.....	.....
	Empresa Colombiana de Petróleos, Barrancabermeja	110,000	35,000 FCC 16,000 Vis	2,000 C	55,000 V, 2,500 Alky, 3,300 L, 3,500 A, 1,300 W
	International Petroleum (Colombia) Ltd., Cartagena	49,000	14,500 C	.....	30,000 V, 3,500 P, 450 L
	La Dorada	5,500	.....	.....	.....
	Texas Petroleum Co., Guamo	2,300	.....	.....	.....
	Orito (with Gulf Oil)	1,110	.....	.....	.....
	Total	**172,110**	**49,500 C 16,000 T**	**2,000 C**	
COSTA RICA	Refinadora Costarrincense de Petroleo SA, Moin, Limon	7,600	2,700 T	1,080 C	1,980 DHT
CUBA	Cía. Petrolera Shell de Cuba, Havana	27,000	.....	5,000 C	.....
	Esso Standard Oil Co., Havana	46,000	24,000 FCC	7,000 C	2,000 DHT, 1,300 P, 1,000 A
	The Texas Co. (West Indies) Ltd., Santiago de Cuba	20,000	.....	3,000 C	.....
	Total	**93,000**	**24,000 C**	**15,000 C**	
	All privately owned companies seized by government and now operated by Empresa Consolidada de Petrolea, S.A.				
CYPRUS	Cyprus Petroleum Refinery Ltd., Larnaca	12,000	.....	2,000 C	.....
DENMARK	A/S Dansk Shell, Fredericia	59,000	24,000 Vis	10,000 C	14,000 DHT, 8,000 DHD
	Dansk Esso A/S, Kalundborg	72,800	.....	7,300 C	22,000 V, 8,000 DHT, 12,000 DHD, 11,000 A
	Gulhavn, Skaelskor	90,000	10,700 T 5,700 Vis	17,100 C	14,950 V, 26,360 DHT, 24,225 DHD
	Total	**221,800**	**40,400 T**	**34,400 C**	
DOMINICAN REPUBLIC	Falconbridge Dominicana C por A, Santo Domingo	16,000	.....	.....	.....
ECUADOR	Anglo-Ecuadorian Oilfields Ltd., La Libertad	27,200	8,500 T	.....	.....
	Petroleos Gulf del Ecuador CA, La Libertad	7,300	.....	.....	.....
	Texaco Petroleum Co., Lago Agrio	950	.....	.....	.....
	Total	**35,450**	**8,500 T**	.....	
EGYPT	Alexandria Petroleum Co. (Petmex), Alexandria	66,500	.....	.....	.....
	Amreya refinery	32,000	.....	.....	.....
	Total	**98,500**	.....	.....	.....
EL SALVADOR	Refineria Petrolera Acajutla SA (RASA), Acajutla	14,000	.....	2,600 T 2,000 C	4,650 DHD

AGO 530127

WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
ETHIOPIA	Ethiopian Petroleum SC, Assab	14,790	.....	2,000 C	1,840 V, 3,300 DHT, 440 A
FINLAND	Neste Oy, Naantali	56,000	11,000 TCC	6,800 C	15,000 V, 7,620 DHT, 7,400 DHD, 2,600 Poly, 6,500 A
	Porvoo	130,000	14,000 Vis 21,000 FCC	18,000 C 1,300 T	53,000 V, 29,100 DHT 14,000 DHC, 37,000 DHD, 7,500 Poly, 6,400 A
	Total	**186,000**	**32,000 C 14,000 T**	**24,800 C 1,300 T**	
FRANCE	Antar Petroles de l'Atlantique, Donges	180,000	12,500 FCC	33,300 C	13,000 DHD, 3,200 A
	Valenciennes (Nord)	78,000	.....	14,000 C	.....
	Vern-sur-Seiche	31,000	.....	7,500 C	.....
	Compagnie Francaise de Raffinage, Gonfreville l'Orcher	484,000	24,300 FCC	64,380 C	56,000 V, 69,400 DHT, 85,000 DHD, 2,800 Poly, 7,400 L, 20,250 A
	La Mede	212,000	26,500 FCC	41,000 C	47,500 V, 820 DHT, 53,000 DHD, 820 Poly, 16,200 A
	Compagnie Rhenane de Raffinage, Reichstett Vendenheim	75,000	16,000 Vis	13,000 C	24,000 DHT, 16,000 DHD
	Elf Union:				
	Raffinerie de L'ile de France, Grandpuits	84,000	.....	12,000 C	27,000 V, 24,000 DHT, 8,300 DHD, 3,100 A
	Raffinerie du Vexin, Gargenville	130,000	.....	.....	.....
	Raffinerie Elf Rhone-Alpes, Feyzin	151,000	16,000 FCC 11,000 Vis	7,000 C	33,000 V, 7,000 DHT, 3,500 A
	Raffinerie Union Industrielle des Petroles, Ambes	42,000	7,700 FCC	4,400 C 4,000 T	19,600 V, 760 Poly
	Esso Standard SAF, Bordeaux	58,000	.....	8,000 C	28,000 V, 2,400 A
	Fos sur Mer	70,000	11,500 FCC	10,700 C	19,600 V, 22,800 DHT, 2,200 A
	Port Jerome	150,000	12,000 FCC	27,000 C	42,000 V, 46,500 DHT, 12,000 DHD, 5,600 L, 7,800 A
	Mobil Oil Francaise, Frontignan	80,000	11,000 TCC	17,000 C	22,000 DHT, 25,000 DHD, 1,000 A
	Notre Dame de Gravenchon	72,500	.....	14,500 C	10,500 V, 14,500 DHT, 7,000 DHD, 3,700 L
	Raffinerie de Strasbourg, Herrlisheim Bas-Rhin	95,000	.....	21,600 C	19,080 V, 21,600 DHT, 13,500 DHD, 7,380 A
	Shell Francaise, Berre l'Etang	165,000	4,000 Vis 17,000 C	24,000 C	33,000 DHT, 13,000 DHD
	Pauillac	90,000	24,000 C	15,000 C	32,000 DHT, 13,000 DHD
	Petit Couronne	180,000	6,000 Vis 21,000 C	16,000 C	31,000 DHT, 14,000 DHD
	Societe Frnacaise des Petroles BP, Dunkirk	113,750	.....	12,900 C	17,290 V, 5,187 DHT, 3,262 L, 2,440 A
	Lavera	232,960	.....	6,880 C	40,586 V, 14,287 DHT, 13,650 DHD, 1,858 A
	Vernon	70,070	.....	9,890 C	5,100 V, 18,200 DHT, 10,920 DHD, 1,356 A
	Societe de la Raffinerie de Lorraine (CRF 51%, Esso 40%, Elf Union 9%), Hauconcourt	105,000	.....	15,000 C	16,000 V, 35,000 DHT, 11,500 DHD, 9,100 A
	Total	**2,949,280**	**183,500 C 37,000 T**	**395,050 C 4,000 T**	
GABON	Société Equatoriale de Raffinage, Port Gentil	17,000	7,000 Vis	2,000 C	4,000 DHT
GERMANY, WEST	BP Benzin und Petroleum AG, Dinslaken	103,740	10,912 FCC	12,040 C	21,840 V, 9,100 DHD, 3,729 A
	Hamburg	99,550	.....	6,880 C	46,950 V, 8,645 DHD, 1,492 A
	Vohburg	100,100	10,560 FCC	15,480 C	21,840 V, 25,480 DHT, 13,468 DHD, 4,068 A
	Caltex Deutschland GmbH, Raunheim	90,000	.....	3,500 C	28,000 V, 6,500 DHT, 8,600 DHC
	Deutsche Marathon Petroleum GmbH, Burghausen, Bavaria	60,000	.....	.....	10,000 DHT, 550 C
	Deutsche Shell AG, Godorf	180,000	38,500 T	20,000 C	55,000 DHT, 49,000 DHD
	Harburg/Grasbrook	85,000	12,000 C 17,000 T	8,000 C	16,000 DHT, 12,000 DHD, 600 P, 3,452 L
	Ingolstadt	55,000	11,000 T	7,000 C	17,000 DHT, 17,000 DHD
	Monheim	7,000	.....	.....	1,726 L
	Deutsche Texaco AG, Heide	65,000	8,000 TCC	14,000 C	21,000 V, 24,000 DHT, 800 P, 3,500 A
	Erdol Raffinerie Duisburg GmbH, Duisburg	37,800	.....	7,300 C	7,300 DHT, 4,200 DHD

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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
GERMANY—Continued	Erdoelraffinerie Ingolstadt AG, Ingolstadt-Donau	65,000	.....	13,500 C	13,500 DHT, 6,500 DHD
	Erdol-Raffinierie Mannheim GmbH, Mannheim	123,000	.....	7,900 C	3,500 DHD
	Erdol-Raffinerie Neustadt GmbH & Co., Neustadt-Donau	99,000	11,700 FCC	17,700 C	24,000 V, 26,500 DHT, 21,000 DHD, 8,550 A
	Erdoel-Raffinerie Speyer, Speyer	57,800	.....	.....	.....
	Esso AG, Hamburg	122,000	7,500 FCC	13,400 C	15,300 V, 37,900 DHT, 22,300 DHD, 2,300 L, 11,300 A
	Ingolstadt	102,000	14,500 FCC	13,400 C	27,700 V, 31,300 DHT, 32,800 DHD, 9,100 A
	Karlsruhe	183,000	22,600 T	30,000 C	45,000 V, 54,700 DHT, 58,700 DHD, 30,600 A
	Koln	116,300	.....	9,300 C	17,000 V, 9,700 DHT, 11,700 DHD, 12,900 A
	Gelsenberg AG, Gelsenkirchen-Horst	144,000	23,400 Ck 11,000 TCC	30,700 C	16,100 V, 16,300 DHT, 31,400 DHD, 370 C
	Gewerkschaft Erdol-Raffinerie Deurag-Nerag, Misburg	54,000	12,000 Ck	8,000 C	7,000 DHD, 2,301 L
	Gulf-Erdoelwerke Frisia AG, Emden	47,500	.....	9,500 C	15,590 DHT
	Mobil Oil AG, Bremen	30,000	7,500 TCC	5,500 C	6,500 V, 6,000 DHT, 6,000 DHD, 800 L
	Worth	75,000	12,000 FCC	14,000 C	18,000 V, 26,000 DHT, 19,000 DHD
	Oberrheinische Mineralolwerke GmbH, Karlsruhe	128,000	11,600 T 4,700 Vis	20,500 C	21,2000 V, 20,500 DHT, 18,100 DHD, 11,800 A
	Occidental Oel GmbH, Brunsbuttel	7,500	.....	.....	6,700 A
	Stadhafen Essen	15,000	.....	.....	10,000 V, 7,500 A
	Oelwerke Julius Schindler MmbH, Hamburg	7,600	.....	.....	5,460 V, 5,000 DHT, 3,384 L
	Saarland-Raffinerie GmbH, Kokereistrabe	55,000	.....	.....	.....
	Union Rheinische Braunkohlen Kraftstoff AG, Wesseling	125,000	43,000 Vis	9,750 T 8,400 C	15,100 DHT, 10,100 DHD 650 P
	Veba-Chemie AG, Gelsenkirchen-Buer	162,000	17,000 Vis 4,900 FCC	22,800 C	6,300 V, 31,300 DHT, 10,900 DHD, 3,800 A
	Wintershall AG, Lingen, Emsland	91,000	15,400 Ck 13,600 FCC	15,830 C	16,100 V, 20,490 DHT, 12,820 DHD, 930 Poly, 420 C
	Salzbergen	4,790	.....	.....	770 DHT, 1,920 L, 1,170 A
	Total	**2,697,680**	**124,172 C 216,200 T**	**334,930 C 9,750 T**	
GREECE	Hellenic Aspropyrgos Refinery SA, Aspropyrgos (near Athens)	38,000	.....	8,100 C	5,860 V, 2,250 A
	Petrola Hellas, Athens	10,000	.....	.....	.....
	Athens	10,000	.....	.....	.....
	Thessaloniki Refining Co., Thessaloniki	66,500	.....	6,300 C	6,300 V, 24,120 RHT, 9,000 DHD, 2,430 A
	Total	**124,500**	.....	**14,400 C**	
GHANA	The Ghanian Italian Petroleum Co. (Ghaip) Ltd.	26,600	.....	6,175 C	.....
GUAM	Guam Oil & Refining Co., Agana	29,500	.....	.....	.....
GUATEMALA	Refinería Petrolera de Guatemala-California Inc., Puerto Barrios	12,000	.....	3,000 C	5,000 DHD
	Texas Petroleum Co., Escuintla	14,000	.....	3,000 C	5,000 DHT
	Total	**26,000**	.....	**6,000 C**	
HONDURAS	Refinería Texaco de Honduras SA, Puerto Cortes	14,000	.....	1,800 C	5,000 DHT
INDIA	Assam Oil Co. Ltd., Digboi	12,100	990 Ck		1,100 L, 45 C, 427 A
	Burmah-Shell Refineries Ltd., Trombay, Bombay	110,000	17,000 C	7,000 C	33,000 V, 8,500 A
	Caltex Oil Refining (India) Ltd., Visakhapatnam	32,000	9,100 FCC		15,200 V, 3,600 SD, 1,337 A
	Cochin Refineries Ltd., Cochin	53,500	14,210 Vis	5,640 C	7,400 V, 26,080 DHD, 2,822 A
	Esso Standard Refining Company of India Ltd., Trombay, Bombay	70,000	10,000 FCC	.....	9,000 V, 6,500 A
	Indian Oil Corp., Barauni	44,000	12,000 Ck		15,000 V, 850 L, 270 C
	Baroda	82,000	.....	7,000 C	.....
	Gauhati	16,000	6,500 Ck	.....	125 C

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Company and refinery location	Crude	Cracking	Reforming	Other processing
INDIA—Continued				
Lube India Ltd. (Esso), Bombay	19,500	.....	.....	1,700 DHT, 3,200 L
Madras Refineries Ltd., Manali	50,000	12,454 T	2,158 C	20,000 V, 5,922 DHT, 17,870 DHD, 6,062 RHD, 3,704 L, 4,000 A
Total	**489,100**	**36,100 C 46,154 T**	**21,798**	
INDONESIA				
Lemigas, Tjepu, East Java	4,000	.....	.....	.....
Pertamina:				
Balikpapan	75,000	.....	.....	13,000 V
Dumai, Central Sumatra	100,000	.....	.....	.....
Pakning (South), Central Sumatra	50,000	.....	.....	.....
Pangkalan Brandan	2,000	.....	.....	200 L, 300 A
Pladju, South Sumatra	110,000	10,000 T	16,000 T	24,000 V, 1,100 A, 350 P, 500 A
Sungei Gerong	79,000	20,000 T 19,500 FCC	.....	87,000 V, 650 Alky, 1,200 P
Wonokromo, East Java	4,000	.....	.....	750 A
Total	**424,000**	**30,000 T 19,500 C**	**16,000 T**	
IRAN				
Iranian Oil Exploration & Producing Co., Masjid Sulaiman	75,000	.....	.....	.....
Iranian Oil Operating Companies, Abadan	430,000	36,000 FCC	44,000 T 25,000 C	90,000 V, 25,000 DHT, 10,600 Alky, 1,000 L, 9,750 A
National Iranian Oil Co.,Kermanshah	15,000	.....	2,780 C	4,980 DHT
Tehran	100,000	16,000 Vis	13,500 C	40,000 V, 13,500 DHT, 16,000 DHC, 4,800 A
Total	**620,000**	**36,000 C 16,000 T**	**41,280 C 44,000 T**	
IRAQ				
Oil Refineries Administration:				
Daura	71,000	.....	5,000 C	13,000 DHT, 8,160 L, 1,815 A
K3-Haditha	7,000	.....	.....	.....
Khanaqin	12,000	.....	.....	.....
Mufthia	4,500	.....	.....	.....
Qaiyarah, Mosul	2,000	.....	.....	920 A
Iraq Petroleum Co. Ltd., Kirkuk	2,000	.....	.....	.....
Total	**98,500**		**5,000 C**	
IRELAND				
Irish Refining Co. Ltd., Whitegate	58,000	.....	13,300 C	5,000 DHD
ISRAEL				
Oil Refineries Ltd., Haifa	147,368	42,105 T 15,789 Vis	16,842 C	51,263 DHT, 736 L, 3,167 A
Total	**147,368**	**57,894 T**	**16,842 C**	
ITALY				
Amoco Italia SpA, Cremona	100,000	.....	2,700 T 4,000 C	7,600 DHT, 7,100 DHD, 3,600 Isom
ANIC SpA, Gela	92,000	21,000 FCC	14,200 C	32,000 V, 24,000 DHT, 26,000 DHD, 9,500 Alky, 1,000 C, 1,000 A
Sannazzaro d'Burgondi	120,000	80,000 FCC	24,500 C	60,000 V, 24,500 DHT, 12,000 DHD, 5,200 Alky, 2,500 A
Anonima Petroli Italiana, Falconara Marittima	81,000	9,000 Vis	3,600 T 10,000 C	13,000 V, 9,500 DHD, 3,000 A
Aquila SpA, Aquilina, Trieste	50,000	.....	7,700 C	10,000 V, 300 DHT, 5,000 DHD, 1,300 L, 2,300 A
BP Italiana, Volpiano	72,800	.....	10,750 C	18,200 DHT, 10,920 DHD, 5,280 Isom
Edoardo Garrone, Genoa	147,000	12,520 Vis	14,270 C	21,400 DHD
Gaeta Industrie Petroli SpA, Gaeta	39,900	27,000 FCC	11,250 C	10,800 DHT, 225 L
Gulf Italiana SpA, Bertonico	78,000	.....	12,700 C	14,600 V, 18,500 DHT, 11,700 DHD, 2,400 Isom, 4,575 A
Industrie Chimiche Italiane del Petrolio SpA (ICIP), Mantova-Frassino	65,000	.....	9,700 C	7,500 V, 14,600 DHT, 5,000 DHD, 2,000 Isom, 4,300 A
Industria Leganti Stradali del Affini (Ilsea), Como	7,885	360 T	1,350 C	.....
Industria Raffinazione Olii Minerali (IROM), Porto Marghera	110,000	.....	18,000 C	18,000 DHT, 18,500 DHD
Liquichimica SpA, Milan	12,000	.....	1,000 C	.....
Lombarda Petroli SpA, Villasanta, Milan	23,500	.....	3,600 C 630 T	4,800 DHT
Mediterranea SpA, Milazzo, Sicily	479,750	5,400 Vis 40,500 FCC	9,000 T 9,000 C	9,000 DHD, 4,500 Alky

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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
ITALY—Continued	Mobil Oil Italiana, Naples	130,000	14,500 TCC	12,500 C	7,500 V, 13,500 DHT, 10,500 DHD, 3,500 Alky, 750 L, 650 A
	Montecatini Edison SpA, Brindisi	41,800	.....	.....	.....
	Raffineria Dellepiane SpA, S. Quirico, Genoa	20,000	.....	.....	12,200 A
	Raffineria di Roma SpA, Rome	80,300	.....	12,300 C	9,300 V, 18,900 DHT, 8,500 DHD, 3,100 A
	Raffineria IPLOM, Sarissola, Genoa	31,200	.....	.....	5,700 V, 2,850 A
	Raffineria Olii Lubricanti (ROL), Viguzzola	1,425	.....	.....	.....
	Raffineria Sarde, Saras, Cagliari, Sardinia	256,500	27,000 FCC	17,550 C	45,000 V, 17,730 DHT, 27,000 DHD
	Raffinerie Siciliane Oli Minerali SpA (Rasiom), Augusta, Siracusa	210,000	40,000 FCC	15,300 C	189,200 V, 23,500 DHT, 25,000 DHD, 7,700 Alky, 5,200 L, 6,700 A
	Sanquirico SpA, Genoa	32,500	.....	1,300 C	11,500 DHD
	Sarpom, Novara	235,000	12,200 FCC	27,200 C	22,800 V, 89,300 DHT, 1,600 Poly, 2,800 A
	Shell Italiana SpA, La Spezia	86,000	.....	20,000 C	24,000 DHT, 12,000 DHD
	Rho	75,000	15,000 C	18,000 C	21,000 DHT, 12,000 DHD
	Taranto	90,000	.....	16,000 C	24,000 DHT, 12,000 DHD
	Sincat SpA, Priolo	313,500	18,000 FCC	9,450 C	36,000 V, 18,000 DHT, 15,300 DHD
	Societa Azionaria Raffinazione Olii Minerali (Sarom), Ravenna	153,900	.....	12,600 C 4,500 T	25,200 DHT
	Societa Italiana Resine SpA (Sardoil), Porto Torres, Sardinia	118,750	.....	11,700 C	14,400 DHD
	Societa Petrolifera Italiana, Arcola, La Spezia	18,400	.....	.....	.....
	Stanic Industria Petrolifera, Bari	105,000	.....	10,500 C	10,500 DHT, 19,300 DHC, 2,000 A
	Leghorn, Livorno	115,000	.....	24,000 C 3,740 T	26,800 DHT, 7,800 DHD, 6,700 L
	Total	3,593,110	295,200 C 27,280 T	360,420 C 24,170 T	
IVORY COAST	Societe Ivoirienne de Raffinage, Abidjan-Uridi	24,417	.....	2,794 C	3,172 DHT
JAMAICA	Esso West Indies Ltd., Kingston	31,000	2,800 FCC	.....	610 V, 13,700 DHT, 320 A
JAPAN	Asia Oil Co. Ltd., Hakodate	23,750	.....	1,170 C	1,350 V, 2,700 DHD
	Sakaide	60,000	8,000 FCC	.....	40,000 V, 14,000 DHD, 15,000 RHD
	Yokohama	95,000	.....	12,600 C	1,260 V, 6,300 DHC, 11,700 DHD
	Daikyo Oil Co. Ltd., Yokkaichi	185,250	18,000 FCC 3,150 HD	8,100 C	79,325 V, 3,600 DHT, 37,800 DHD, 31,500 RHD, 4,300 L, 5,490 A
	Fuji Kosan Co. Ltd., Kainan	77,600	.....	.....	44,000 V, 9,000 DHT, 20,000 DHD, 13,600 L, 17,500 A
	Fuji Oil Co. Ltd., Chiba	133,000	.....	5,850 C	30,150 V, 23,850 DHD, 20,700 RHD
	General Sekiyu Seisei KK, Kawasaki	52,700	.....	4,750 C	15,200 DHT
	Sakai	116,400	.....	24,250 C	50,300 V, 74,300 DHT, 29,450 DHD
	Idemitsu Kosan Co. Ltd., Chiba	310,000	25,000 FCC	35,000 C	60,000 V, 53,500 DHT, 38,000 DHD, 40,000 RHD, 5,753 L
	Hyogo	110,000	.....	15,000 C	22,000 DHT, 25,000 DHD, 40,000 RHD
	Tokuyama	140,000	15,000 FCC	15,000 C	20,000 V, 15,000 DHT, 30,000 DHD, 976 A
	Kansai Oil Co. Ltd., Sakai	110,000	.....	5,000 C	34,000 V, 20,000 DHT, 20,000 DHD
	Kashima Oil Co. Ltd., Kashima	180,000	14,000 FCC	6,000 C	25,000 V, 25,000 DHD, 45,000 RHD
	Koa Oil Co. Ltd., Marifu	141,550	13,500 Ck 14,000 FCC	11,520 C	45,000 V, 12,600 DHT, 2,250 DHC, 7,200 DHD, 225 C
	Osaka	76,000	14,400 FCC	8,100 C	49,500 V, 6,300 DHT, 10,800 DHD
	Kyokuto Petroleum Industries Ltd., Chiba	99,000	.....	5,000 C	67,000 V, 7,000 DHT, 67,000 DHD
	Kyushu Oil Co., Ohita	95,000	.....	8,100 C	22,500 V, 14,400 DHT, 12,600 DHD
	Maruzen Oil Co. Ltd., Chiba	195,000	20,000 FCC	25,000 C	65,000 V, 45,000 DHD, 35,000 RHD, 490 A
	Matsuyama	50,000	.....	3,500 C	12,000 DHD
	Shimotsu	37,500	6,500 FCC	7,000 C	14,460 V, 2,300 DHT, 4,500 DHD, 1,660 L, 920 A

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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
JAPAN—Continued	Mitsubishi Oil Co., Kawasaki	99,750	.....	10,800 C	8,170 V, 20,250 DHT, 1,043 A
	Mizushima	161,500	18,000 FCC	25,830 C	92,150 V, 71,640 DHT, 38,250 DHD, 1,800 P, 2,641 L, 2,086 A
	Nichimo Sekiyu Seisei KK, Kawasaki	54,150	.....	5,400 C	19,800 V, 2,160 DHT, 9,000 DHD, 14,400 RHD
	Nihonkai Oil Co. Ltd., Toyama City	30,000	.....	.....	.....
	Nippon Mining Co., Funakawa	13,735	.....	.....	1,746 V, 665 L, 750 A
	Mizushima	175,680	.....	20,700 C	27,000 V, 73,170 DHT, 2,700 DHC, 27,900 RHD, 3,450 L, 3,450 A
	Nippon Oil Co. Ltd., Niigata	24,700	.....	4,590 C	1,900 V, 14,850 DHT, 540 L, 396 A
	Nippon Petroleum Refining Co. Ltd., Kudamatsu	39,900	.....	4,680 C	4,275 V, 7,290 DHT, 360 L, 1,305 A
	Muroran	9,500	.....	.....	.....
	Negishi	313,500	18,000 FCC	27,900 C	135,850 V, 88,110 DHT, 61,200 DHD, 3,105 L, 6,210 A
	Yokohama	66,500	5,040 FCC	2,970 C	23,750 V, 9,540 DHT, 1,341 L, 3,357 A
	Seibu Sekiyu KK, Onoda	47,000	.....	6,000 C	26,000 DHT, 9,000 DHD
	Showa Sekiyu KK, Kawasaki	140,000	.....	20,000 C	20,000 DHT, 42,000 DHD
	Niigata	42,000	.....	4,000 C	11,000 DHT, 2,000 DHD
	Showa Yokkaichi Sekiyu KK, Yokkaichi	170,000	15,000 C	32,000 C	32,000 DHT, 33,000 DHD
	Taiyo Oil Co. Ltd., Kikuma	56,050	.....	4,500 C	3,600 V
	Teiseki Topping Plant Co., Kubiki	3,895	.....	.....	.....
	Toa Nenryo Kogyo KK, Kawasaki	190,000	36,000 FCC	.....	110,700 V, 69,300 DHT, 54,000 DHD, 520 A
	Shimizu	41,300	.....	4,140 C	3,420 V, 13,140 DHT, 190 L, 950 A
	Wakayama	177,700	20,970 FCC	32,400 C	71,550 V, 85,800 DHT, 22,500 DHD, 1,130 Alky, 5,930 L, 3,160 A
	Toa Oil Co. Ltd., Kawasaki	95,000	.....	9,900 C	12,600 DHD
	Toho Oil Co. Ltd., Owase City	38,000	.....	.....	.....
	Tohoku Oil Co., Sendai	38,000	.....	5,400 C	12,600 DHT
	Total	**4,315,610**	**251,060 C 13,500 T**	**422,150 C**	
JORDAN	Jordan Petroleum Refinery Co. Ltd., Zerqa	14,774	2,480 FCC	780 C	3,980 V, 1,340 DHT, 490 A
KENYA	East African Oil Refineries Ltd., Mombasa	48,000	.....	4,000 C	16,000 DHT
KOREA	Honam Oil Refinery Co. Ltd., Yosu	160,000		7,100 C	11,400 DHT, 2,100 A
	Korea Oil Corp., Ulsan	215,000	7,460 C	16,150 C	3,450 V, 28,370 DHT, 1,980 A
	Kyung In Energy Co. Ltd., Inchon	55,000	.....	2,700 C	6,700 DHT
	Total	**430,000**	**7,460 C**	**25,950**	
KUWAIT	American Independent Oil Co., Mena Abdulla	132,000	.....	.....	112,000 V, 32,000 RHD
	Arabian Oil Co. Ltd. (Japan), Ras Al Khafji	30,000	.....	.....	.....
	Getty Oil Co., Mina Saud	50,000	5,000 Ck	.....	.....
	Kuwait National Petroleum Co., Shuaiba	135,000	.....	15,000 C	70,000 V, 95,000 DHT, 14,000 DHC, 37,000 RHC
	Kuwait Oil Co. Ltd., Mina al Ahmadi	300,000	6,000 C	.....	915 A
	Total	**647,000**	**6,000 C 5,000 T**	**15,000 C**	
LEBANON	Iraq Petroleum Co. Ltd., Tripoli	36,000	.....	4,400 C	6,730 DHT, 900 A
	Mediterranean Refining Co., Sidon	17,500	.....	2,900 C	2,900 DHT
	Total	**53,500**	.....	**7,300 C**	
LIBERIA	Liberia Refining Co., Gardnersville	12,500	.....	2,000 C	1,000 V, 1,000 DHT
LIBYA	American Overseas Petroleum Ltd., Nafoora	1,800	.....	.....	.....
	Esso Standard Libya, Marsa el Brega	9,025	.....	1,980 C	2,880 DHT
	Mobil Oil Libya Ltd., Amal	1,800	.....	.....	.....
	Occidental of Libya Inc., Intisar	1,800	.....	.....	.....
	Zeutina	3,000	.....	.....	300 A
	Total	**17,425**	.....	**1,980 C**	
MALAGASY	Societe Malgache de Raffinage, Tamatave	14,600	.....	2,300 C	5,200 DHD

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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
MALAYSIA	Esso Standard Malaya Berhad, Port Dickson	32,200	.....	3,700 C	2,800 V, 12,780 DHT, 6,400 DHD, 1,100 A
	Shell Refining Co. Berhad, Port Dickson	31,000	.....	2,000 C	8,000 DHT, 4,000 DHS
	Total	**63,200**	.....	**5,700 C**	
MARTINIQUE	Societe Anonyme de la Raffinerie des Antilles (SARA), Fort-de-France	11,000	.....	2,120 C	3,400 DHT, 2,300 DHD
MEXICO	Petroleos Mexicanos:				
	Atzcapotzalco	100,000	20,000 Vis 23,000 FCC	26,000 C	50,000 V, 3,000 Alky, 650 P
	Ciudad Madero	169,000	8,000 Vis 23,000 FCC	19,000 C	78,000 V, 18,000 DHT, 15,000 DHD, 3,000 Alky, 650 Poly, 400 C, 16,000 A
	Minatitlan	208,000	24,000 FCC 21,000 TCC	29,300 C	60,000 V, 21,000 DHT, 29,000 DHD, 600 P, 3,000 L
	Poza Rica	27,000	.....	5,000 C	.....
	Reynosa	20,500	.....	.....	.....
	Salamanca	100,000	4,000 T 18,000 TCC	8,000 C	51,200 V, 17,600 DHT, 18,500 RHC, 28,000 DHD 7,100 L, 3,000 A
	Total	**624,500**	**109,000 C 32,000 T**	**87,300 C**	
MOROCCO	Societe Cherifienne des Petroles, Sidi-Kacem	8,550	3,600 TCC	1,080 C	1,080 DHT
	Societa Am. Marocaine Italienne de Raffinage (Samir), Mohammedia	50,000	.....	6,500 C	9,100 DHT
	Total	**58,550**	**3,600 C**	**7,580 C**	
MOZAMBIQUE	Sociedade Nacional de Rafinacao de Petróleos (Sonarep), Salazar	17,000	.....	2,500 C	5,000 V, 2,500 DHT, 1,000 A
NETHERLANDS	BP Raffinaderij Nederland NV, Rotterdam	475,020	.....	18,920 C	160,160 DHT, 18,200 DHD
	Chevron Petroleum Maatschappij Nederland NV, Pernis	300,000	.....	39,000 C	25,000 V, 39,000 DHT, 38,000 DHD, 5,000 A
	Esso Nederland NV, Rotterdam	325,000	.....	43,800 C	128,800 DHT
	Gulf Oil Raffinaderij NV, Rozenburg	94,000	8,600 T	7,050 C	31,000 V, 31,350 DHT, 2,850 L, 4,200 A
	Mobil Oil NV, Amsterdam	125,000	.....	24,000 C	36,500 DHT, 29,000 DHD
	NV Smid & Hollander, Amsterdam	6,500	.....	.....	6,500 V, 6,400 A
	Shell Nederland Raffinaderij NV, Rotterdam	500,000	75,000 Vis	26,000 C	96,000 DHT, 55,000 DHD
	Total	**1,825,520**	**83,600 T**	**158,770 C**	
NETHERLANDS ANTILLES	Lago Oil & Transport Co. Ltd., Aruba	520,000	280,000 Vis 40,000 FCC	.....	130,000 V, 77,000 DHT, 70,000 DHD, 7,800 Alky, 3,100 Isom
	Shell Curacao NV, Emmastad	360,000	100,000 Vis 35,000 C	15,000 C 7,000 T	52,000 DHT, 25,000 DHD
	Total	**880,000**	**75,000 C 380,000 T**	**15,000 C 7,000 T**	
NEW ZEALAND	New Zealand Refining Co. Ltd., Marsden Point, Whangarei	54,000	.....	18,000 C	32,000 DHT, 5,000 DHD
NICARAGUA	Refinería Esso Managua, Managua	13,200	.....	2,600 C	1,900 V, 10,600 DHT, 730 A
NIGERIA	Nigerian Petroleum Refining Co. Ltd., Alesa Eleme, Port Harcourt	60,000	.....	5,700 C	.....
NORWAY	A/S Norske Esso, Slagen, Tonsberg	110,000	.....	8,500 C	18,000 DHT, 8,100 DHD
	Valloy, Tonsberg	3,000	.....	.....	2,100 V, 700 DHT, 700 L, 2,400 A
	A/S Norske Shell, Solo	60,000	24,000 Vis	10,000 C	14,000 DHT, 8,000 DHD
	Total	**173,000**	**24,000 T**	**18,500 C**	
OKINAWA	Gulf Sekiyu Seisei Co. Ltd., Henza	92,500	.....	.....	17,900 DHT, 50,100 DHD
	Nansei Sekiyu, Nishihara	93,000	.....	10,000 C	36,300 DHT
	Toyo Petroleum Refining Co. Ltd., Naha	25,000	.....	.....	.....
	Total	**210,500**	.....	**10,000 C**	
PAKISTAN	Attock Oil Company Ltd., Rawalpindi	11,640	.....	.....	1,200 V, 350 L, 13,000 A
	National Refinery Ltd., Korangi	13,850	.....	.....	5,250 V, 1,550 DHT, 1,550 L, 1,650 A

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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
PAKISTAN—Continued	Pakistan Refinery Ltd., Korangi	55,000	.....	2,500 C	21,000 DHT, 217 A
	Total	**80,490**	.....	**2,500 C**	
PANAMA	Refinería Panamá SA, Las Minas, Colon	75,000	19,000 Vis	7,500 C	14,000 V, 30,000 DHT, 5,000 A
PARAGUAY	Refinería Paraguaya SA, Villa Elisa	5,000	.....	.....	210 A
PERU	Compañía de Petróleo Ganso Azul Ltda., Pucallpa	2,375	.....	.....	.....
	Petróleos del Perú, Iquitos	1,100	.....	.....	.....
	La Pampilla	30,000	6,670 FCC	1,760 C	9,360 V, 2,700 DHT
	Talara	60,000	16,000 T		1,000 L, 2,000 A
	Refinería Conchán Chevron SA (en administración judicial), Miraflores, Lima	8,000	.....	.....	3,000 V, 3,000 A
	Total	**101,475**	**6,670 C 16,000 T**	**1,760 C**	
PHILIPPINES	Bataan Refining Corp., Limay	103,500	14,492 TCC	20,713 C	21,204 V, 59,496 DHT
	Caltex Philippines Inc., Batangas	72,000	11,400 FCC	8,600 C	18,100 V, 15,200 DHT, 900 Poly, 3,500 SD
	Filoil Refinery Corp., Rosario	33,800	.....	4,600 C	8,500 V, 9,090 HDS, 800 A
	Shell Philippines Inc., Batangas	67,000	.....	8,000 C	12,000 DHT, 6,000 DHD
	Total	**276,300**	**25,392 C**	**41,913 C**	
POLAND	Glinik Mariampolski	2,470	.....	.....	.....
	Jasto	2,660	.....	.....	.....
	Jedlicze	3,800	.....	.....	.....
	L. Warynski, Czechowice	13,300	.....	.....	.....
	Mazovia, Plock	114,000	13,500 C 9,000 T 9,000 Ck	10,800 C	54,000 V, 16,200 DHD, 2,520 L, 5,400 A
	Trzebinia	9,500	.....	.....	.....
	Total	**145,730**	**13,500 C 18,000 T**	**10,800 C**	
PORTUGAL	Sacor, Cabo Ruivo, Lisbon	35,150	9,000 TCC		5,400 DHD, 477 P, 315 A
	Boa Nova, Porto	44,650	14,400 T	9,900 C	9,900 V, 18,450 DHT, 891 DHD, 2,790 L, 684 A
	Total	**79,800**	**9,000 C 14,400 T**	**9,900 C**	
PUERTO RICO	Caribbean Gulf Refining Co., Bayamón	40,000	8,500 FCC	6,000 C	15,000 V, 6,600 DHT, 11,000 DHD, 500 Poly, 1,000 A
	Commonwealth Oil Refining Co. Inc., Peñuelas	185,000	40,000 C 22,000 Vis	70,000 C	65,000 V, 88,000 DHT, 6,000 Alky, 4,200 Poly
	Yabucoa Sun Oil Co., Yabucoa	66,000	.....	.....	35,000 V, 14,000 DHT, 11,200 DHC, 8,300 DHD, 5,400 L
	Total	**291,000**	**48,500 C 22,000 T**	**76,000 C**	
QATAR	National Oil Distribution Co., Umm Said	680	.....	.....	.....
RHODESIA	Central African Petroleum Refineries Pvt. Ltd., Umtali	20,000	(Not in operation: not included in total.)		
ROMANIA	Brazi	76,000	.....	.....	2,025 DHT
	Pitesti	57,000	.....	.....	86,400 DHT, 15,570 L
	Sulpacu Barcau (Crisana oil field)	5,700	.....	.....	.....
	Total crude capacity for all refineries: 320,000 b/cd. Other refineries at Borzetsi, Brazov, Cimpina, Darmanesti, G. Gheorghiu Dej—Onesti, Ploiesti, Teleajen.				
SAUDI ARABIA	Arabian American Oil Co., Ras Tanura	415,000	.....	12,800 T 13,800 C	100,000 V, 22,800 DHD, 3,500 A
	Jeddah Oil Refinery Co., Jeddah	13,270	.....	2,650 C	1,380 V, 2,650 DHT, 3,750 DHD, 390 A
	Total	**428,270**	.....	**16,450 C 12,800 T**	
SENEGAL	Societe Africaine de Raffinage (SAR), Dakar	12,000	.....	2,000 C	2,000 DHT
SIERRA LEONE	Sierra Leone Petroleum Refining Co. Ltd., Freetown	10,000	.....	.....	.....

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Company and refinery location	Crude	Cracking	Reforming	Other processing
SINGAPORE				
BP Refinery Singapore Pte. Ltd., Pasir Panjang	24,570	.....	.....	.....
Esso Singapore Private Ltd., Pulau Ayer Chawan	88,000	.....	5,400 C	7,200 V, 30,800 DHT, 12,600 DHD, 6,800 A
Mobil Oil Singapore Pty. Ltd., Jurong	27,600	.....	4,000 C	13,000 DHD
Shell Eastern Petroleum Pte. Ltd., Pulau Bukom	250,000	.....	10,000 C	60,000 DHT, 20,000 DHD
Total	**390,170**	.....	**19,400 C**	
SOUTH AFRICA				
Caltex Oil (S.A.) (Pty.) Ltd., Cape Town	46,000	9,500 Vis 10,400 FCC	.....	21,000 V, 30,500 DHT, 900 A
Mobil Refining Co. South Africa Pty. Ltd., Durban	60,000	14,500 FCC	7,000 C	22,000 V, 7,500 DHT, 12,500 DHD, 300 Poly, 2,000 A
National Petroleum Refiners of South Africa (Pty.) Ltd., Sasolburg	50,000	14,000 FCC	9,600 C	18,000 V, 8,700 DHT, 9,400 DHC, 6,200 DHD, 4,300 Alky, 430 A
Shell & BP South African Petroleum Refineries Pty. Ltd., Durban	84,000	17,000 C	30,000 C	55,000 DHD
South African Torbanite Mining and Refining Co. Ltd., Boksburg North	2,600	650 T	.....	515 A
Total	**242,600**	**55,900 C 10,150 T**	**46,600**	
SOUTH YEMEN				
BP Refinery (Aden) Ltd., Aden	160,160	.....	8,600 C	2,730 DHD
SPAIN				
Asfaltos Españoles SA (Asesa), Tarragona	18,000	.....	.....	15,000 V, 11,700 A
Cia. Española de Petróleos (Cepsa), Algeciras, Cádiz	85,500	.....	18,450 C 22,680 T	30,800 V, 26,280 DHT, 8,820 DHC
Santa Cruz de Tenerife, Canary Islands	167,200	.....	18,000 C	10,620 V, 13,500 DHT, 10,800 DHD, 1,170 L, 6,300 A
Cia. Ibérica Refinadora de Petróleos SA (Petroliber), La Coruña	114,000	16,200 Vis	14,850 C	14,850 DHT
Empresa Nacional Calvo Sotelo, Puertollano	120,000	.....	6,800 C	5,000 V, 5,200 DHD, 2,000 L
Esso Petróleos Espanoles SA, Castellón de la Plana	72,000	.....	7,000 C	30,000 DHT, 6,000 DHD
Refinería de Petróleos de Escombreras SA, Escombreras	209,000	.....	21,150 C	12,150 V, 13,500 DHT, 18,000 DHC, 23,400 DHD, 1,350 P, 2,790 L
Refinería de Petróleos del Norte SA (Petronor), Somorrostro, Bilbao	160,000	.....	16,000 C	23,000 DHT, 18,000 DHD
Río Gulf de Petróleos SA, Huelva	80,000	.....	5,000 C	7,600 V, 13,000 DHT, 2,900 A
Total	**1,025,700**	**16,200 T**	**107,250 C 22,680 T**	
SUDAN				
Shell & BP Sudan Ltd., Port Sudan	20,000	.....	2,000 C	9,000 DHT
SWEDEN				
AB Nynas-Petroleum, Gothenburg	5,700	.....	.....	4,500 V, 900 A
Malmo	3,800	.....	.....	.....
Nynasham	28,500	.....	6,300 C	4,500 V
BP Raffinaderi, Gothenburg	105,560	.....	21,070 C	36,400 DHT
Koppartrans Olje AB (Shell), Gothenburg	100,000	33,000 Vis	17,000 C	27,000 DHT, 14,000 DHD
Total	**243,560**	**33,000 T**	**44,370 C**	
SWITZERLAND				
Raffinerie de Cressier SA, Cressier	50,000	21,000 Vis	10,000 C	17,000 DHT, 8,000 DHD
Raffinerie du Sud-Ouest SA, Collombey-Muraz	70,000	.....	10,000 C	17,400 DHT
Total	**120,000**	**21,000 T**	**20,000 C**	
SYRIA				
General Petroleum Co., Homs	51,300	18,000 Ck	2,160 T	2,880 V, 30,600 DHT, 2,520 A
TAIWAN				
Chinese Petroleum Corp., Kaohsiung	199,000	9,040 Ck 9,040 TCC	20,800 C	3,160 V, 22,600 DHD, 810 Alky, 605 P, 2,758 A
TANZANIA				
Tiper—Tanzanian and Italian Petroleum Refining Co. Ltd., Dar es Salaam	16,800	.....	4,200 C	5,000 DHD
THAILAND				
Defense Energy Department, Bangkok	55,000	10,000 Vis	10,000 C	18,000 DHD, 400 A
Fang refinery, Chieng Mai	800	.....	.....	700 V, 200 L
Esso Standard Thailand Ltd., Sriracha	35,000	.....	4,800 C	5,900 V, 13,400 DHT, 4,300 DHD, 3,300 A

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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
THAILAND—Continued	Thai Oil Refinery Co. Ltd., Bangkok	65,000	13,000 Vis 7,000 FCC	9,000 C	14,500 V, 32,000 DHT, 10,000 DHD, 1,400 A
	Total	**155,800**	**27,000 T 7,000 C**	**23,800 C**	
TRINIDAD	Shell Trinidad Ltd., Point Fortin	80,000	.....	7,000 C	19,000 DHT
	Texaco Trinidad Inc., Brighton	6,000	.....	.....	.....
	Pointe-A-Pierre	355,000	26,500 FCC	20,000 C	187,000 V, 45,000 DHT, 80,000 DHD, 1,200 Alky, 350 Poly, 4,000 L
	Total	**441,000**	**26,500 C**	**27,000 C**	
TUNISIA	Societe Tuniso Italienne de Raffinage (STIR), Zarzouna, Bizerte	21,375	.....	2,970	.....
TURKEY	Anadolu Tasfiyehanesi AS, Mersin	90,000	.....	9,500 C	20,000 DHT, 9,500 DHD
	Istanbul Petrol Refinerisi AS (Ipras), Izmit	110,000	19,585 FCC	9,330 C	50,000 V, 11,975 DHT, 18,525 DHD, 10,000 A
	Turkish Petroleum Co., Aliaga-Izmir	62,370	.....	8,880 C	32,225 V, 14,995 DHT, 12,760 DHD, 3120 L
	Batman	23,625	4,000 TCC	1,228 C	2,000 V, 1,228 DHT, 3,086 A
	Total	**285,995**	**23,585 C**	**28,988 C**	
UNITED KINGDOM	**ENGLAND**				
	Derry Wiggins & Co., Ltd., Kingsnorth on Medway, Kent	5,890	.....	.....	.....
	Weaste, Lancashire	3,420	.....	.....	.....
	BP Refinery Kent Ltd., Isle of Grain	232,960	17,600 Ck 15,840 FCC	38,700 C	62,790 V, 5,400 DHT, 13,650 DHD, 2,728 Alky, 2,800 L
	Burmah-Castrol Co., Ellesmere Port	26,520	1,230 Vis	5,060 C	14,370 V, 6,430 DHT, 6,430 DHD, 6,150 L, 240 A
	Conoco Ltd., Humber Refinery, South Killingholme	80,000	21,000 T 28,000 Ck	22,500 C	86,000 DHD, 670 C
	Esso Petroleum Co. Ltd., Fawley	389,500	76,500 FCC	50,400 C	60,750 V, 225 DHT, 73,800 DHD, 3,150 P, 5,230 L, 4,200 A
	Lindsey Oil Refinery Ltd., Killingholme, Lincolnshire	179,600	.....	27,400 C	14,200 V, 35,000 DHT, 30,500 DHD, 7,100 A
	Mobil Oil Co. Ltd., Coryton, Essex	135,000	9,500 TCC	27,000 C	43,000 V, 33,000 DHT, 34,000 DHD, 5,500 L
	Phillips-Imperial Petroleum Ltd., North Tees	100,000	.....	.....	.....
	Philmac Oils Ltd., Castham, Cheshire	11,000	.....	.....	9,000 V, 7,260 A
	Shell U.K. Ltd., Heysham	39,000	.....	.....	.....
	Shell Haven	200,000	.....	32,000 C	32,000 DHT, 16,000 DHD
	Stanlow	215,000	50,000 C	14,000 C	14,000 DHT, 13,000 DHD
	Teesport	110,000	.....	15,000 C	31,000 DHT, 14,000 DHD
	Total England	**1,727,890**	**151,840 C 67,830 T**	**232,060 C**	
	NORTH IRELAND				
	BP Refinery Ltd., Belfast	13,850	.....	5,590 C	10,010 DHT, 3,276 DHD
	SCOTLAND				
	BP Refinery Ltd., Grangemouth	182,000	15,840 FCC	20,640 C	77,350 V, 54,600 DHT, 24,900 DHC
	Shell U.K. Ltd., Ardrossan	6,000	.....	.....	.....
	Total Scotland	**188,000**	**15,840 C**	**20,640 C**	
	WALES				
	BP Refinery Ltd., Llandarcy, Neath	168,350	15,840 FCC	14,190 C	27,300 V, 3,185 DHT, 13,650 DHD, 854 L, 542 A
	Esso Petroleum Co. Ltd., Milford Haven	123,500	.....	20,250 C	18,900 DHD
	Gulf Oil Refining Ltd., Milford Haven	103,000	.....	18,000 C	35,100 DHT
	Texaco Ltd., Pembroke	140,000	.....	17,500 C	10,000 V, 41,000 DHT
	Total Wales	**534,850**	**15,840 C**	**69,940 C**	
	Total United Kingdom	**2,464,590**	**183,520 C 67,830 T**	**328,230 C**	
URUGUAY	Administracion Nacional de Combustibles Alcohol y Portland (Ancap), La Teja, Montevideo	40,000	4,000 FCC	2,000 C	12,000 V, 7,000 DHD, 4,100 A
VENEZUELA	Chevron Oil Co. de Venezuela, Bajo Grande	61,500	.....	.....	15,300 V, 7,000 A
	Cia Shell de Venezuela Ltd., Cardón	348,000	32,000 C 94,000 T	.....	44,000 DHT, 32,000 DHD

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WORLDWIDE REFINING	Company and refinery location	Crude	Cracking	Reforming	Other processing
VENEZUELA—Continued	San Lorenzo	32,000	.....	.....	.....
	Corporación Venezolana del Petróleo, Morón, Estado Carabobo	25,000	.....	1,800 C	1,200 V, 720 A
	Creole Petroleum Corp., Amuay Bay	630,000	13,000 FCC	.....	366,000 V, 17,500 DHT, 219,000 DHD, 1,400 L, 15,200 A
	Caripito	84,000	.....	.....	.....
	Mobil Oil de Venezuela, El Palito	102,000	.....	7,000 C	7,000 DHT
	Phillips Petroleum Co., San Roque	4,600	.....	.....	.....
	Sinclair Venezuelan Oil Co., Guanta, Puerto la Cruz	37,525	.....	.....	.....
	San Silvestre, Barinas	5,400	.....	.....	.....
	Texas Petroleum Co., Tucupita	10,000	.....	.....	.....
	Venezuela Gulf Refining Co., Puerto la Cruz	159,000	16,000 Vis 15,000 FCC	.....	2,400 Alky
	Total	1,499,025	60,000 C 110,000 T	8,800 C	
VIRGIN ISLANDS	Amerada Hess Corp., St. Croix	418,000	.....	13,500 C	45,000 V, 28,800 DHT, 48,600 DHD
YUGOSLAVIA	Government, Bosanski Brod	53,982	.....	5,861 C	1,200 V, 945 MC, 666 A
	Lendava	4,218	.....	.....	.....
	Novi Sad	12,654	.....	.....	.....
	Pancevo	29,878	14,652 T	3,996 C	8,793 DHD
	Rijeka	96,135	7,459 T	13,720 C	4,662 DHD, 4,000 L, 866 A
	Sisak	76,627	5,328 T 2,997 C	2,664 C	2,464 DHD, 1,000 A
	Note: Lube-oil manufacture is combined total of 3,330 b/sd for all refineries except Rijeka.				
ZAIRE	Societe Zairo-Italienne de Raffinage (Sozir), Muanda	16,150	.....	2,850 C	4,750 DHD

Worldwide production

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Shut-in	Production in bbl: Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
ABU DHABI	Murban, Bab & Bu Hasa, 1960	8,500	53	....	24	595,267	1,024,562,647	39.2
	Umm Shaif, 1958*	9,150	24	....	11	121,904	317,267,940	37.5
	Zakum, 1964*	9,100	38	....	6	226,224	311,238,841	40.5
	Total		115	....	41	943,395	1,643,064,428	
	*Offshore							
	Note: Japanese-owned Mubarras field to go on stream in March, 1973							
AFGHANISTAN*	Angot, 1950	2,100	....	....	....	5	15,475	....
	Hodja-Gugerdeg, 1961†	5,400	10	....	....	126	....	51.0
	Khulaja-Borhan, 1964†	4,170- 4,700	1	....	....	....	....	51.0
	Sar-i-pul, 1959	5,000	....	2	....	30	56,900	28.0
	Yatim Tagh, 1950†	1,290- 4,019	2	....	....	....	....	51.0
	Total		13	13	....	161	72,375	
	†Gas-condensate							
	*Data are estimated							
ALGERIA*	ALREP							
	Haoud Berkaoui, 1965	10,300	7	....	....	28,230	58,462,694	46.0
	Hassi Messaoud North, 1956	11,000	77	....	11	185,800	608,837,180	49.0
	C.P.A.							
	Gassi Touil, E., 1966	6,100	2	....	....	1,100	3,896,887	44.0
	CREPS							
	Acheb, 1963	7,900	7	....	2	2,260	9,219,751	43.0
	Edjeleh, 1956	1,900- 3,000	100	....	86	18,690	137,306,322	36.0
	El Adeb Larache, 1958	3,900	3	....	28	4,280	30,273,927	45.0
	Hassi Mazoula, So., 1962	4,400	....	....	6	2,790	10,408,620	49.0
	Ohanet, So., 1960	7,900	4	....	5	9,050	15,148,712	43.0
	Ohanet, No., 1960	7,900	10	....	10	6,590	48,177,918	44.0
	Tiguentourine, 1956	2,000- 3,600	4	....	54	4,080	36,317,944	45.0
	Tin Fouye No. & So., 1965	4,500	....	....	40	16,240	128,408,735	40.0
	Zarzaitaine, 1958	3,200- 4,600	12	....	124	41,770	436,657,725	42.0
	Others		9	....	....	3,340	10,939,017	
	PETRAL							
	Askarene, 1962	8,000	5	....	3	3,200	13,772,744	40.0

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WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Shut-in	Production in bbl: Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
ALGERIA—Continued	Gassi Touil, 1963	6,100	19	....	26	48,710	159,762,143	44.0
	Guelta, 1962	8,900	4	....	2	2,790	14,468,031	41.0
	REPAL							
	Hassi Messaoud, S., 1956	11,000	122	....	9	239,070	817,527,236	47.0
	Nezla E. & No., 1965	8,500	4	....	1	7,190	14,242,539	48.0
	SEPAL							
	El Gassi El Agreb, 1959	10,500	20	....	1	35,140	127,770,526	48.0
	SONATRACH							
	Djebel Onk, 1960	3,900	....	1	1	860	1,260,456	37.0
	Djoua W., 1966	5,500	2	....	4	1,220	4,222,875	40.0
	El Borma, 1967	8,500	8	....	....	21,890	114,023,764	41.1
	Rhourde el Baguel, 1962	9,500	16	....	1	55,130	208,959,715	41.0
	Timedratine E., 1966	7,870	2	....	....	1,000	3,177,030	38.0
	Tin Fouye Tabankort, 1966	4,500- 6,700	23	10	....	27,470	29,233,354	40.0-42.0
	Rhourde Nouss, 1963	8,900	4	....	2	3,080	9,547,634	39.0
	Others		28	18	4	1,280	12,110,595	
	Total		492	32	420	772,260	3,064,134,074	
	*Data are estimated							
ANGOLA	**ANGOLA PROPER:**							
	Mulenvos, 1966	6,500	1	7	2	1,068	2,338,669	25.0
	Quenguela Norte, 1968	4,900- 6,200	33	....	8	9,360	14,546,740	29.0
	Others	2,100- 8,000	14	3	17	687	32,303,495	29.0-33.0
	Sub-total		48	10	27	11,115	49,188,904	
	CABINDA							
	Malongo N., 1966*	1,500- 8,500	46	0	5	52,164	58,728,240	25.0-37.0
	Malongo, S., 1966*	1,300- 1,500	25	0	1	14,466	19,157,967	23.0-26.0
	Malongo, W., 1969*	1,800- 8,750	30	0	7	55,932	24,695,561	22.0-23.0
	61-1, 1968	5,900	2	0	0	206	551,378	23.0
	Sub-total		103	0	13	122,768	103,133,146	
	Total		151	10	40	133,883	152,322,050	
	*Offshore							
ARGENTINA*	Chubut, 1907	2,500- 6,000	25	1,200	200	70,833	520,008,545	22.8-24.5
	Jujuy, 1969	11,000-15,000	20	....	....	30,870	6,492,240	32.0
	La Pampa, 1968	5,000- 5,500	17	....	....	12,201	7,452,475	....
	Mendoza, 1943	7,500- 8,000	4	800	30	116,445	383,508,850	....
	Neuquen, 1918	3,000- 6,000	50	300	50	52,815	148,810,170	30.0
	Rio Negro, 1960	2,800- 6,000	200	250	110	68,439	114,117,235	....
	Salta, 1930	11,000-15,000	60	15	140	6,090	121,835,850	22.5-54.0
	Santa Cruz, 1944	4,000- 6,000	240	2,100	365	77,427	593,254,855	41.8
	Tierra del Fuego, 1952	6,000- 7,000	5	25	10	6,300	40,697,500	41.0
	Total		621	4,690	905	441,420	1,936,177,720	
	*Data are estimated							
AUSTRALIA	Alton, 1964	6,000	....	5	1	310	1,483,643	52
	Barracouta, 1968*	4,500	5	....	....	6,375	5,574,842	63
	Barrow Island, 1964*	2,200- 6,700	159	164	13	42,580	59,953,640	7
	Halibut, 1967*	7,500	21	....	....	118,292	129,394,803	43
	Kingfish, 1967*	8,450	42	....	....	135,093	53,875,055	47
	Moonie, 1961	5,800	1	1	4	1,837	16,377,380	44
	Total		228	170	18	304,487	276,659,363	
	*Offshore							
AUSTRIA	**VIENNA BASIN**							
	Matzen, 1949	4,200- 7,200	59	731	152	23,089	288,260,369	25.7
	Muehlberg, 1942	3,900- 5,500	9	54	21	963	35,503,938	35.0
	Pirawarth, 1957	2,400- 4,200	8	44	4	2,139	4,251,450	28.4
	St. Ulrich, 1938	2,900- 4,100	3	119	158	1,403	35,629,529	33.0
	Schoenkirchen (incl. Prottes+Strasshof Tief)	7,800- 9,600	13	3	1	9,824	34,450,571	31.1
	Gaiselberg, 1938	3,400- 6,500	1	39	18	1,285	27,223,051	24.8
	Others		....	122	48	1,215	.....	....
	MOLASSE ZONE							
	Piberbach, 1968	3,500	....	7	....	987	1,129,643	39.0
	Voitsdorf, 1962	6,800	4	17	3	3,549	12,363,456	35.8
	Others		2	35	7	2,152	7,041,506	....
	Total		99	1,171	412	46,606	493,917,340	
BAHRAIN	Awali, 1932	1,850- 4,600	195	41	3	72,640	518,881,000	33.0
BOLIVIA	Camiri, 1927	3,936	16	47	....	2,268	412,742	55.0
	Caranda, 1960	2,296	6	14	....	1,551	282,580	52.0
	Colpa, 1961	8,200- 9,500	27	....	....	4,087	745,258	42.0-46.0
	La Pena, 1965	8,100-11,200	18	....	....	4,290	778,670	42.0
	Monteagudo, 1966	5,576	24	1	....	9,404	1,710,627	59.0

AGO 530138

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells Flowing	Pumping	Shut-in	Production in bbl Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
BOLIVIA—Continued	Rid Grande, 1961	9,000	16	....	....	7,994	1,456,821	62.0-65.0
	Tatarenda, 1962	2,296	6	14	....	1,551	282,580	52.0
	Others		2	44	....	816	148,433	....
	Total		115	120	....	31,961	5,817,711	
BRAZIL	Agua Grande, 1951	3,281- 6,562	47	47	70	23,801	207,642,009	38.0-42.0
	Aracas, 1965	3,281- 6,562	11	55	31	26,384	32,065,249	41.0
	Buracica, 1959	2,395- 2,559	....	85	6	19,141	67,225,845	35.0
	Candeias, 1941	3,281- 6,562	15	26	92	6,238	59,631,661	30.0-31.0
	Carmopolis, 1963	2,460	....	179	8	19,788	39,549,497	24.0
	Cassarongongo, 1959	4,757	....	20	5	3,194	4,900,909	32.0
	Dom Joao, 1947	918	....	373	122	11,605	52,097,409	38.0
	Boa Esperenca, 1956	7,874- 8,530	4	3	2	2,211	3,941,419	38.0-40.0
	Imbe, 1964	2,132- 8,202	5	17	4	2,325	4,991,830	38.0-42.0
	Miranga, 1965	3,281- 6,562	53	61	27	32,218	81,912,014	39.0-41.0
	Plataforma Continental, 1968*	4,085- 8,750	....	....	4*	....	175,713	43.0
	Riachuelo, 1961	1,476	....	37	20	2,211	2,997,597	28.0
	Sririzinho, 1967	1,640	....	69	14	5,374	7,574,534	30.0
	Taquipe, 1959	3,117- 3,937	14	49	15	8,574	50,032,710	40.0
	Others		7	36	96	4,549	20,096,117	....
	Total		156	1,057	516	167,613	634,834,513	
	*Two offshore fields have been found—Guaricema and Ciaoba—not yet producing.							
BRUNEI-MALAYSIA	Ampa, S.W., 1963*	7,068- 8,155	59	25	25	110,073	158,760,800	41.0
	Bakau, 1971*	....	1	....	....	2,966	340,000	39.0
	Baram, 1967*	9,500	15	9	....	37,622	17,684,400	40.5
	Baronia, 1970*	11,000	1	....	4	1,278	116,300	42.0
	Champion, 1970*	4,300	8	....	3	14,389	1,450,700	20.0
	Fairley, 1969*	10,740	3	4	....	7,820	4,841,600	42.0
	Jerudong, 1968	....	....	....	2	....	636,800	39.0
	Mini, 1911†	300- 3,000	....	70	12	374	79,703,500	27.0
	Seria, 1928	834-10,450	....	344	182	45,689	792,374,400	36.0
	West Lutong, 1965*	6,800	19	....	....	52,346	33,707,700	39.5
	Total		106	452	228	272,557	1,089,616,200	
	*Offshore. †Field abandoned Nov., 1972.							
BURMA*	Chauk-Lanywa, 1902	3,500	2	290	....	2,100		
	Mann, 1970	3,955- 6,934	16	4	....	6,000		
	Myanaung, 1965		88	....	....	6,800		
	Prome, ?	....	40	....	....	2,150	148,400,750	
	Yenangyaung, 1902	5,000	20	235	....	4,500		
	Total		166	529	....	21,550		
	*Data estimated.							
CHILE	MAINLAND							
	Canadon, 1962	6,560	23	6	17	2,843	8,877,424	38.0
	Daniel, 1960	5,975	56	15	34	6,126	24,327,846	32.0
	Daniel Este, 1961	5,740	23	5	10	4,761	16,203,688	32.0
	Posesion, 1960	6,100	35	....	3	4,466	12,688,269	63.0
	TIERRA DEL FUEGO							
	Calafate, 1955	6,200	23	5	25	5,265	15,389,914	49.0-60.0
	Catalina Sur, 1962	5,890	19	7	18	925	5,083,121	43.0
	Cullen, 1954	5,840	44	16	33	3,101	33,064,862	41.0
	Tres Lagos, 1957	5,640	22	1	28	1,780	9,446,651	40.0
	Others		51	23	48	3,151	53,990,926	....
	Total		296	78	216	32,418	179,072,701	

	Name of field and discovery date	Depth (ft)	No. of wells capable of production	Production in bbl Daily avg. 1st 6 mos. 1972	Cumulative 7/1/72	Gravity °API
CANADA	ALBERTA					
	Acheson, 1950	4,600- 5,100	63	10,974	52,000,397	33.0-40.0
	Ban Try, 1948	2,500- 3,265	113	4,519	16,818,227	24.0
	Bellshill Lake, 1955	3,000	101	4,594	14,285,799	26.0
	Bonnie Glen, 1958	3,950- 7,000	72	46,408	163,530,600	34.0-42.0
	Carson Creek, North, 1958	8,650- 8,750	28	17,983	32,613,550	43.0
	Cessford, 1950	2,813- 3,395	80	2,685	10,695,310	24.0-28.0
	Clive, 1951	6,150	69	5,754	13,278,282	40.0-41.0
	Countess, 1951	2,858- 3,570	47	4,492	4,599,412	29.0
	Crossfield, 1959	6,650	70	1,441	13,732,268	36.0-37.0
	Erskine, 1952	5,400	63	1,839	16,204,071	22.0-28.0
	Excelsior, 1949	3,900	13	2,024	14,896,362	37.0

AGO 530139

This was a bad trip



Shale-Trol™, a new Milchem product, stops expensive downtime situations resulting from bit balling and flowline plugging encountered while drilling "gumbo" or "sticky" shales. It is compatible with all fresh, sea, and saltwater mud systems. Shale-Trol has been field-tested and proven to provide trouble-free drilling of sticky shales.

Shale-Trol eliminates bit balling and plugged flowline situations to provide real benefits like:

- more on-bottom rotating hours
- reduced control drilling in gumbo
- minimized sticking, swabbing, and drag
- fewer loss of circulation problems
- less trip time

Shale-Trol saves operational time and decreases drilling cost.

Shale-Trol is adsorbed on the drill solids by a process+ which provides a highly non-dispersive environment. Under these conditions, the gumbo cuttings are carried from the hole primarily as individual particles.

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Houston, Texas
Drilling Fluids and Drilling Controls

+Pat. Pend.

AGD 530140

fmc CORPORATION

O·C·T
OIL CENTER TOOL

O-C-T Single and Multiple Completion Wellheads, Gate Valves and Subsea Systems for drilling and completion.

O-C-T products are also manufactured by LUCEAT, S.A.—France; FABRICA de IMPLEMENTOS PETROLEROS, S.A.—Mexico; FMC—Argentina; FMC—Australia; CBV INDUSTRIA MECANICA, S.A.—Brazil.

When it's four miles or more to the bottom, O-C-T should be on top

After you've spent the money to go down 20,000 feet or more to get to the oil and gas, you can't afford to go for anything but the best completion equipment. Because if there's one thing certain about deep production, it's pressure. Extreme pressure. And controlling that kind of pressure is what O-C-T wellheads are all about.

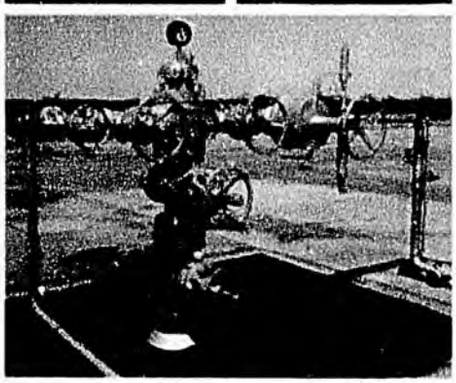
Every configuration, every trim, for every type of service is available from O-C-T in a variety of sizes with pressure ratings to 20,000 psi. And you can bet that if your casing and tubing will hold so will your O-C-T wellhead.

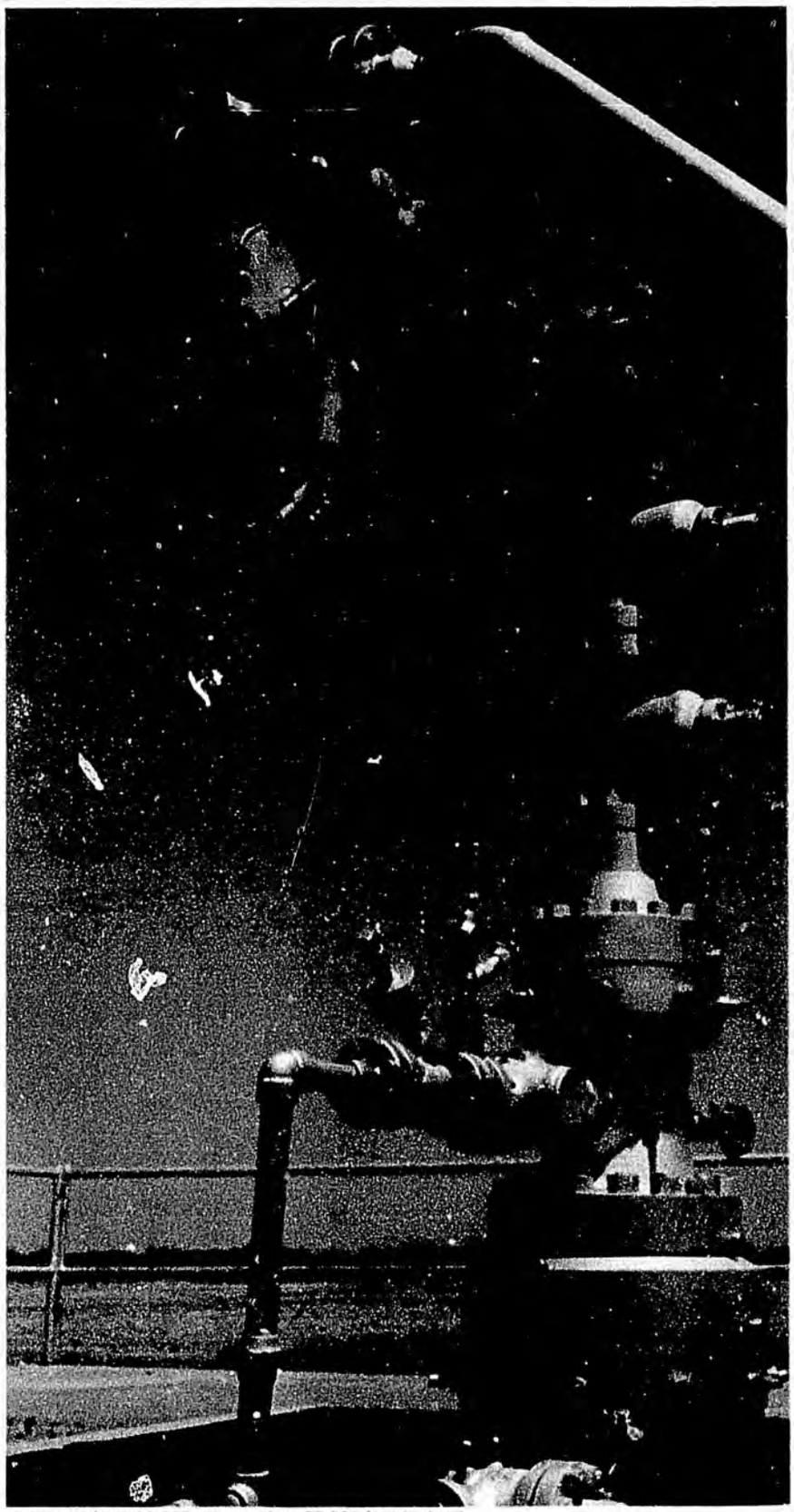
With more and more wells going below 20,000 feet, operators are looking for the experience and dependable equipment that can handle the special conditions that such depths create. And they're finding just what they're looking for at O-C-T.

Because when better ways to control pressure are needed, O-C-T will be right on top.









Wells illustrated range from 18,000 to more than 25,000 feet in depth.

AGO 530143

This was a bad trip



Shale-Trol™, a new Milchem product, stops expensive downtime situations resulting from bit balling and flowline plugging encountered while drilling "gumbo" or "sticky" shales. It is compatible with all fresh, sea, and saltwater mud systems. Shale-Trol has been field-tested and proven to provide trouble-free drilling of sticky shales.

Shale-Trol eliminates bit balling and plugged flowline situations to provide real benefits like:

- **more on-bottom rotating hours**
- **reduced control drilling in gumbo**
- **minimized sticking, swabbing, and drag**
- **fewer loss of circulation problems**
- **less trip time**

Shale-Trol saves operational time and decreases drilling cost.

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AGO 530140



AGO 530141

	Name of field and discovery date	Depth (ft)	No. of wells capable of production	Production in bbl: Daily avg. 1st 6 mos. 1972	Production in bbl: Cumulative 7/1/72	Gravity °API
CANADA—Continued	Fenn-Big Valley, 1950	5,300- 5,400	184	23,878	123,068,441	22.0-33.0
	Ferrier, 1955	6,655- 8,526	75	3,486	6,294,189	44.0
	Garrington, 1954	6,600	71	1,538	11,533,745	39.0-43.0
	Gilby, 1955	5,850- 7,050	78	5,254	23,717,039	27.0-41.0
	Glen Fork, 1951	4,627- 6,200	9	2,031	7,995,634	29.0-39.0
	Golden Spike, 1949	3,570- 5,861	21	34,328	135,742,322	36.0-38.0
	Goose River, 1963	7,764- 9,100	13	6,146	9,493,803	40.0
	Harmattan East, 1957	8,040- 8,558	32	6,913	27,491,875	38.0
	Harmattan Elkton, 1955	8,796- 9,000	34	4,527	27,282,519	38.0
	Hussar, 1952	3,719- 4,666	40	2,150	9,475,743	36.0
	Innisfail, 1956	6,730- 8,440	14	8,131	31,348,024	38.0-44.0
	Joarcam, 1949	3,179	179	7,266	66,985,239	38.0
	Joffre, 1953	4,983- 6,779	65	8,324	59,952,232	41.0
	Judy Creek, 1959	8,307- 8,721	85	57,052	126,417,471	42.0
	Kaybob, 1957	4,586-10,442	29	13,868	40,508,241	45.0-48.0
	Kaybob South, 1958	6,947	49	7,630	15,455,103	45.0-48.0
	Leduc, 1947	3,062	464	18,545	307,486,926	40.0
	Lloydminster, 1933	1,840	132	2,221	17,984,886	11.0-17.0
	Medicine River, 1956	6,339- 7,355	121	6,318	19,039,200	36.0-38.0
	Mitsue, 1964	5,908	120	40,790	59,839,149	42.0
	Nipisi, 1965	5,648- 5,726	145	39,147	47,876,499	42.0
	Pambina, 1953	2,991- 3,470	2,881	150,272	688,924,763	32.0-37.0
	Rainbow, 1965	4,994- 6,045	87	70,555	102,819,556	34.0-44.0
	Rainbow South, 1965	6,158- 6,338	17	8,921	13,472,151	34.0-44.0
	Red Earth, 1956	4,184- 4,878	56	7,779	8,160,631	38.0-39.0
	Redwater, 1948	2,012- 3,200	307	74,999	433,297,719	35.0
	Simonette, 1958	10,464-11,460	7	5,537	13,221,934	47.0
	Snipe Lake, 1962	8,500	47	8,936	21,749,719	37.0
	Stettler, 1949	3,910- 5,310	70	4,086	29,537,073	27.0-30.0
	Sturgeon Lake, 1952	8,901	8	2,199	9,232,495	38.0
	Sturgeon Lake South, 1953	4,912- 8,471	99	15,305	55,040,708	37.0
	Sundre, 1954	8,022- 9,090	29	3,302	17,607,187	32.0-41.0
	Swan Hills, 1957	7,851- 8,740	406	100,134	282,041,912	40.0
	Swan Hills South, 1960	8,227	87	45,561	99,312,477	37.0
	Sylvan Lake, 1953	6,768- 7,300	57	2,859	7,009,463	26.0-53.0
	Taber, 1942	3,200	38	1,373	4,781,826	20.0
	Taber South, 1963	3,200	53	2,733	7,628,528	21.0
	Turner Valley, 1913	3,100- 9,150	109	2,562	121,499,722	39.0
	Utikuma Lake, 1963	5,624	27	2,179	4,123,329	34.0
	Virginia Hills, 1957	9,210	32	18,143	48,904,679	34.0
	Virgo, 1968	9,210	82	8,777	14,896,133	....
	Wainwright, 1925	2,190	264	6,510	22,655,346	22.0
	West Drumheller, 1952	5,475- 5,651	54	2,488	20,313,422	41.0-42.0
	Westerose, 1952	6,818	11	14,929	37,632,550	42.0
	Willesden Green, 1956	5,195- 8,100	379	15,022	42,403,477	39.0-41.0
	Wizard Lake, 1951	4,600	15	37,823	97,247,016	33.0-37.0
	Zama, 1967	6,000	142	15,986	27,598,721	29.0-35.0
	Others	....	1,387	2,489	92,328,687	....
	Total		9,430	1,033,715	3,801,083,845	
	BRITISH COLUMBIA					
	Aitken Creek, 1959	4,400	7	1,271	2,962,578	38.0
	Beatton River, 1958	3,800	10	1,228	4,853,413	40.0
	Blueberry, 1953	6,950	23	1,153	8,601,327	40.0
	Boundary Lake, 1955	4,300- 4,600	301	23,295	80,916,104	40.0
	Inga, 1966	5,300	63	9,940	12,886,475	40.0
	Milligan Creek, 1956	3,750	19	7,111	29,148,710	41.0
	Peejay, 1959	3,900	86	10,614	37,665,726	39.0
	Weasel, 1965	3,800	17	2,836	7,041,428	40.0
	Others	....	318	8,881	12,412,079	....
	Total		844	66,329	196,487,840	
	MANITOBA					
	Daly 1951	2,550	106	1,684	15,275,930	32.0
	Virden-Roselea, 1953	2,030	193	3,624	24,788,414	30.0
	N. Virden-Scallion, 1963	2,010	220	7,099	36,595,774	35.0
	Routledge, 1955	2,100	110	1,444	10,460,414	35.0
	Others	....	66	479	6,420,401	....
	Total		695	14,330	93,540,933	
	SASKATCHEWAN					
	Alameda, 1956	4,420	84	2,758	12,078,556	37.0-39.0
	Coleville, 1951	2,700	184	4,815	22,625,949	14.0
	Battrum, 1955	2,900	124	6,533	27,369,160	32.0
	Dollard, 1953	4,600	43	8,568	56,580,020	23.0
	Fosterton, 1952	3,200	37	6,932	43,354,097	22.0-24.0
	Instow, 1954	4,500	45	4,593	30,352,884	23.0
	Midale, 1953	4,600	374	13,150	68,650,462	28.0-32.0
	North Premier, 1953	3,300- 3,500	50	4,613	13,113,932	23.0-24.0

AGO 530144

	Name of field and discovery date	Depth (ft)	No. of wells capable of production	Production in bbl: Daily avg. 1st 6 mos. 1972	Production in bbl: Cumulative 7-1-72	Gravity °API
CANADA—Continued	Steelman, 1954	4,590	607	25,703	155,779,880	31.0-39.0
	Weyburn, 1955	4,600	537	30,001	167,652,004	24.0-33.0
	Others	....	4,191	132,554	580,316,436	....
	Total		6,276	240,220	1,177,873,680	
	ONTARIO		NA			
	Rodney	200	174	1,250	6,593,255	....
	Total all fields*		....	3,182	51,787,774	
	NEW BRUNSWICK					
	Stoney Creek	....	....	25	750,639	....
	NORTHWEST TERRITORIES					
	Norman Wells	....	41	2,618	14,547,410	....
	Total Canada		7,460	1,494,160	5,336,072,121	

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Shut-in	Production in bbl: Daily avg. 1st 6 mo. 1972	Production in bbl: Cumulative 7/1/72	Gravity °API
COLOMBIA	Acae, 1964	10,600	7	....	3	6,212	7,990,943	30.3
	Bonanza, 1964	4,000	2	11	2	2,668	5,516,599	32.5
	Boquete, 1961	8,000	7	....	3	2,793	7,854,308	27.0
	Caribe, 1969	7,750	2	1	1	1,144	999,557	32.0
	Casabe, 1941	3,880	....	285	46	7,374	192,623,988	20.9
	Cocorna, 1963	2,000	....	14	4	1,467	2,358,902	12.8
	Cristalina, 1959	10,700	....	3	....	845	3,232,784	30.2
	Dina, 1962	2,900	4	4	7	2,316	3,878,334	21.5
	Galan, 1945	3,800	....	58	16	1,327	14,740,747	19.0
	Infantas, 1918	2,000	1	306	13	4,208	205,744,492	26.0
	La Cira, 1925	3,250	1	635	40	17,598	394,821,751	24.0
	Lisama-Tene.A.B.1, 1957	9,500	9	5	3	1,643	3,820,583	31.4
	Llanito, 1960	7,350	2	23	8	1,460	8,124,730	21.0
	Orito, 1963	6,600	37	3	18	44,645	68,817,576	35.6
	Palagua-Velasquez, 1946	4,925	....	107	63	19,008	176,595,705	19.0
	Payoa, 1962	8,000	15	....	13	6,703	50,975,942	34.0
	Provincia, 1962	8,000	31	....	4	18,437	83,636,572	33.1
	Rio Zulia, 1962	5,600	10	5	5	24,353	86,746,252	41.3
	San Antonio, 1971	9,500	1	3	....	1,021	779,512	30.7
	Tibu, 1940	4,200	8	130	48	10,892	192,389,680	36.8
	Yariri, 1943	6,850	....	35	6	9,169	79,716,019	20.9
	Others		27	79	103	6,229	97,652,008	....
	Total		164	1,701	406	191,512	1,689,016,984	
CONGO (Brazzaville)	Emeraude Marine, 1969*	1,900	....	12	3	5,000	910,000	23.0
	Pointe Indienne, 1957	5,000	5	....	4	300	5,771,000	37.0
	Total		5	12	7	5,300	6,681,000	
	*Offshore							
CONGO-KINSHASA (See Zaire)								
DENMARK	Dan*	5,900- 6,562	....	....	5	Production began July, 1972		30.0
	*Offshore.							
DUBAI	Fateh, 1966*	7,600- 8,500	21	....	1	129,605	104,360,389	32.3
	Fateh, SW, 1970*	7,500- 9,000	....	....	7	....	.....	32.0
	Total		21	....	8	129,605	104,360,389	
	*Offshore.							
ECUADOR	SANTA ELENA:							
	Ancon, 1921	4,000	4	543	1,668	2,878	97,373,772	37.0-40.0
	Others	1,000- 3,000	20	128	339	492	8,915,637	30.5-37.0
	Sub-total		24	671	2,007	3,370	106,289,409	
	ORIENTE:							
	Lago Agrio, 1967	10,200	22	....	3	29,924*	1,376,501	28.7
	Total		46	671	2,010	33,294	107,665,910	
	*May 15, 1972-July 1, 1972.							
EGYPT	Abu Rudeis, 1957†	8,500	....	....	....	....	13,204,947	23.0
	Al Yusr, 1966	4,264	15	....	....	7,531	6,735,000	20.5
	Asl, 1948†	3,000	....	....	....	....	34,269,304	23.0
	Belayim (Land & Offshore)* 1954†	7,000- 8,500	....	....	....	....	224,777,435	28.0
	El Alamein, 1966	8,700	8	....	6	19,066	38,832,032	33.5
	El Morgan, 1965*							
	Kareem	5,500- 6,400	41	6	13	157,230	354,603,798	32.0
	Belayim	5,100- 5,700	2	....	....	6,136	810,000	27.0
	Kareem, 1958†	2,200	....	8	12	1,800	6,243,500	19.0
	Ras Amer, 1965†	4,264	1	3	....	1,000	2,079,400	20.0

AGO 530145

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells Flowing	Pumping	Shut-in	Production in bbl Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
EGYPT—Continued	Ras Bakr, 1958‡	3,280	15	35	....	9,500	38,660,000	20.0
	Ras Gharib, 1938‡	2,100	....	90	12	7,000	206,841,000	25.0
	Razzak, 1972	7,700	3	....	....	8,424	454,905	36.0
	Sidri, 1959†	8,100	....	....	....	....	4,038,736	23.0
	Sudr, 1946†	....	....	....	....	....	39,198,071	23.0
	Yidma, 1971	9,000	6	....	1	8,039	1,675,375	43.8
	Others	....	10	2	1	2,000	42,014,000	....
	Total		**101**	**144**	**45**	**227,726**	**1,014,437,503**	

‡Data estimated.
*Offshore.
†These fields on Sinai Peninsula being produced by Israel. Data is confidential, but daily output is estimated at 120,000 bbl. Cumulative production for the captured fields is carried forward for the record (data as of June 5, 1967).

FRANCE	ALSACE (All fields shut in)	....	....	....	....	....	26,368,290	....
	AQUITAINE BASIN							
	Esso Rep fields:							
	Cazaux, 1959	8,200	4	23	2	6,722	39,741,296	34.2-37.3
	Lavergne, 1962	10,550	2	1	....	1,212	8,547,387	40.4
	Parentis, 1954	7,550	7	13	4	15,682	153,381,235	33.0
	Others	....	....	14	2	1,125	13,003,090	....
	SNPA fields:							
	Lacq, 1949	2,130	7	21	17	1,062	20,218,161	20.6
	PARIS BASIN							
	Copesep fields	1,530- 4,525	....	13	1	489	6,186,353	15.9-32.8
	Erap-CFP fields	2,000- 5,575	....	12	43	2,700	20,321,915	27.1-35.3
	Erap-RAP fields	4,985- 7,500	2	25	7	1,084	5,998,528	31.4-35.9
	Petrorep fields:							
	Coulommes, 1958	6,070	5	26	12	1,195	9,661,780	32.6
	Total France		**27**	**148**	**88**	**31,279**	**303,428,035**	
GABON	Anguille Marine, 1962*	8,300	16	....	3	25,773	36,552,818	31.8
	Anguille Northeast, 1968*	7,480	7	....	....	10,636	11,202,006	31.4
	Anguille, Northwest, 1968*	7,500	1	....	....	1,868	550,386	31.4
	Cap Lopez North, 1962	6,700	4	....	5	6,139	12,051,621	23.9
	Gamba, 1963	3,000	30	....	11	34,036	76,814,800	32.4
	Ivinga, 1967	3,100	11	....	9	20,856	23,971,400	32.5
	Pointe Clairette, 1956	4,000- 5,000	17	....	12	2,900	23,305,248	29.9
	Port Gentil Ocean, 1964*	8,100	3	....	2	3,812	7,477,872	33.6
	Tchengue, 1959*	3,500	9	....	14	3,438	19,505,365	30.6
	Tchengue Ocean, 1962*	6,200	5	....	1	1,390	4,530,290	33.1
	Torpille Marine, 1968*	9,487	6	....	....	8,529	2,221,075	33.9
	Others	....	5	....	5	1,318	8,626,409	....
	Total		**114**	**....**	**62**	**120,695**	**226,809,290**	

*Offshore.

GERMANY, WEST	**BAVARIA**							
	Arlesried, 1964	4,900	....	17	....	2,293	5,024,669	47.0
	Darching, 1967	14,400	1	....	....	1,115	1,403,926	....
	Monchsrot, 1958	4,800	....	17	....	1,583	5,936,452	36.0
	Others	....	10	29	....	1,882	16,120,240	....
	Total		**20**	**63**	**....**	**6,873**	**28,485,287**	
	EMSLAND							
	Emlichheim, 1944	2,600	....	99	....	3,131	25,750,983	25.0
	Georgsdorf, 1944	1,800- 2,600	45	167	....	9,606	59,251,361	24.0-29.0
	Meppen-Schwefingen, 1960	4,000	8	8	....	1,370	5,166,550	28.0-30.0
	Ruhlermoor, 1949	2,000- 4,700	16	359	....	13,362	78,974,962	25.0-34.0
	Ruhlertwist, 1949	2,350- 2,900				2,304	20,816,042	25.0
	Scheerhorn, 1949	3,550- 3,750	....	128	....	4,643	27,435,252	30.0
	Others	....	....	171	....	2,298	21,878,238	....
	Total		**75**	**932**	**....**	**36,714**	**239,273,386**	
	SCHLESWIG-HOLSTEIN							
	Plon-Ost, 1959	6,400	2	56	....	8,924	26,901,113	36.0
	Preetz, 1962	8,350- 8,550	1	24	....	1,291	7,114,597	29.0
	Reitbrook, 1937	1,450- 2,100	7	46	....	3,287	29,799,949	29.0
	Others	....	1	85	....	1,290	40,953,341	....
	Total		**11**	**211**	**....**	**14,792**	**104,769,000**	
	HANNOVER							
	Eldingen, 1949	4,750	....	24	....	1,633	133,034,490	35.0
	Hankesbüttel, 1954	4,450- 5,100	12	33	....	10,634	56,100,784	33.0
	Hardesse, 1958	6,050	9	11	....	1,030	2,705,235	34.0
	Hohne, 1951	4,300- 5,900	....	37	....	5,126	30,208,094	33.0-34.0
	Knesebeck, 1958	5,100- 5,200	....	24	....	2,293	8,872,793	36.0

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WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Shut-in	Production in bbl: Daily avg. 1st 9 mo. 1972	Cumulative 7/1/72	Gravity °API
WEST GERMANY—Continued	Lieferde, 1956	2,600	2	27	....	1,967	13,624,787	34.0
	Lüben, 1955	3,950	1	14	....	1,292	6,394,750	35.0-38.0
	Meckelfeld, 1938	1,000- 1,300	1	25	....	1,669	10,166,164	24.0-32.0
	Nienhagen-Hanigsen, 1899	800- 4,100	....	73	....	1,001	54,821,990	22.0-32.0
	Oelheim-Süd, 1968	1,650	9	4	....	1,413	2,028,598	33.0
	Orrel-Wesendorf-Nord, 1954	4,450	....	38	....	973	6,835,158	....
	Rühme, 1954	1,950	....	40	....	944	4,840,091	....
	Sinstorf, 1960	6,750- 7,150	....	20	....	3,039	10,999,171	....
	Suderbruch, 1949	3,750- 7,550	....	60	....	1,363	18,275,897	19.0-38.0
	Vorhop, 1952	2,950- 6,900	2	28	....	1,426	9,975,918	36.0
	Others	....	18	283	....	4,168	131,805,198	....
	Total		**54**	**741**	....	**39,971**	**500,689,118**	
	UPPER RHINE VALLEY							
	Landau, 1955	3,950- 4,800	....	78	....	3,074	14,544,379	36.0
	Others	....	....	19	....	355	9,797,546	....
	Total		....	**97**	....	**3,429**	**24,341,925**	
	WESER-EMS							
	Barenberg, 1953	2,300- 3,300	9	33	....	3,081	22,565,675	29.0
	Bockstedt, 1954	3,750	....	28	....	2,286	11,104,804	....
	Bramberge, 1958	2,560- 3,300	55	5	....	15,435	44,373,572	29.0
	Duste, 1954	2,600- 4,250	....	147	....	2,620	29,427,789	....
	Gross Lessen, 1969	3,300	3	....	....	5,439	3,299,015	....
	Sud-Oldenburg, 1950	1,700- 6,500	4	106	....	2,279	29,989,953	....
	Voigtei, 1953	1,150- 1,500	2	80	....	1,874	17,928,665	31.0-34.0
	Wehrbleck, 1957	3,400	....	63	....	527	9,729,258	33.0
	Others	....	....	94	....	975	17,771,384	....
	Total		**73**	**556**	....	**36,416**	**186,190,115**	
	Total Germany West		**233**	**2,600**	....	**138,195**	**1,083,748,833**	
GHANA	Block 10, 1970*	7,700- 8,500	....	....	1	....	.....	37.0-40.0
	*Offshore. Production start up unknown.							
INDIA*	**GUJARAT STATE**							
	Ankleshwar, 1960	2,953- 3,937		186				
	Bakrol, 1968	4,593- 4,921		2				
	Kadi, N., 1968	2,953- 3,609		9				
	Kadi, S., 1968	5,906- 6,562		6				
	Kalol, 1961	4,265- 5,250		106				
	Kathana, 1965	5,250- 5,906		6				
	Kholka, 1966	4,265- 5,577		5		76,000		
	Kosamba, 1963	1,968- 2,625		6				
	Nawagam, 1963	4,429- 6,562		63				
	Sanand, 1963	4,265- 4,593		13				
	Sobhasen, 1968	4,429- 5,906		9				
	Wovel, 1963	4,265- 4,593		1			400,822,880	22.0-48.0
	ASSAM STATE							
	Digboi, 1890	300- 7,500		733				
	Geleki, 1968	12,632-12,795		1				
	Lakwa, 1965	8,038-12,795		64		74,000		
	Moran, 1958	11,000		45				
	Nahorkatiya, 1953	9,500		251				
	Rudrasagar, 1961	10,171-10,500		39				
	Total India			**1,545**		**150,000**		
	*Data are estimated							
INDONESIA	**SUMATRA**							
	P. T. Caltex:							
	Bangko, 1970	1,820- 2,681	....	31	....	98,027	17,840,877	34.2
	Bekasap, 1955	2,500	....	24	5	87,163	200,613,101	31.9
	Bekasap, So., 1968	3,500	....	5	1	11,733	7,297,247	28.1
	Duri, 1941	600	....	326	50	34,455	219,957,994	22.1
	Kotabatak, 1952	4,575	....	31	2	36,455	13,465,881	30.9
	Leko, 1971	2,400	....	2	2	6,474	1,195,930	35.8
	Minas, 1944	2,400	....	146	41	373,466	1,446,013,332	35.2
	Mindal, 1971	3,200	1	1	1	1,698	1,065,649	36.0
	Pematang, 1959	6,500	....	15	2	54,028	81,600,453	29.2
	Petani, 1968	4,800	....	13	1	77,944	88,497,661	32.0
	Pungut, 1951	4,200	....	3	4	5,036	10,142,216	36.7
	Rangau, 1969	6,200	....	5	1	1,832	1,349,335	41.0
	Sintong, 1971	3,600	....	5	7	1,282	233,467	34.0
	So. Balam, 1969	1,253- 2,500	....	19	1	17,693	3,220,185	30.9
	Tandun, 1970	3,000	1	2	1	2,151	2,312,004	31.9
	Others	....	....	3	....	424	458,409	....
	P. T. Stanvac (Central):							
	Lirik, 1939	1,600	....	20	13	3,828	22,148,846	35.0
	Molek, 1956	2,600	....	12	11	4,028	3,394,746	35.0
	Pulai, No., 1951	1,800	....	26	14	4,563	26,165,755	35.0

AGO 530147

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells			Production in bbl		Gravity °API
			Flowing	Pumping	Shut-in	Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	
INDONESIA—Continued	Sago, 1940	1,800	....	88	124	11,825	97,955,790	35.0
	Others	....	....	18	17	1,747	10,945,211	....
	P. T. Stanvac (South)							
	Abab, 1951	6,000	20	2	23	19,930	15,768,672	33.9
	Benakat, 1952	1,600	....	77	209	5,308	120,338,168	35.0
	Dewa, 1971	7,675	8	....	5	2,847	518,620	....
	Ibul, 1970	5,600	16	1	19	16,697	6,459,943	....
	Jirak, 1930	900	....	41	182	1,373	49,954,185	36.8
	Talang Akar, 1922	2,800	61	6	423	1,419	247,693,683	35.0
	Others	....	42	4	243	1,775	133,415,734	....
	Pertamina Unit I (North)							
	Ice Tabue, 1971	2,112- 3,564	44	....	31	11,848	2,627,946	....
	Julo Rayeu, 1929	2,520- 90	26	....	42	4,287	5,383,044	54.5
	Rantau, 1929	950- 4,540	204	1	223	34,242	166,558,324	48.5
	Others	....	15	7	572	1,586	74,384,292	....
	Pertamina Unit II (South Sumatra)							
	Belimbing, 1964	5,200	11	....	3	4,609	11,978,755	27.6
	Gunung Kemala, 1938	6,340	8	....	43	1,053	21,696,512	27.0
	Kenali Asam, 1931	3,800	12	53	200	2,210	84,511,186	36.1
	Kluang, ?	....	....	9	....	1,174	214,670	41.1
	Kuang, 1967	4,800	7	....	3	2,086	2,652,364	....
	Limau, 1928	4,500- 5,400	9	....	148	11,532	183,567,058	27.6
	Talang Jimar, 1937	4,200	4	71	127	4,679	151,222,128	28.7
	Tandjung, Tiga, 1948	4,600	....	29	47	2,413	43,890,419	28.0
	Tempino, 1931	2,700	1	68	106	1,796	79,159,311	41.3
	Others	....	13	33	248	1,791	139,408,530	....
	WEST IRIAN							
	Pertamina Unit V							
	Klamono, 1936	500	....	32	16	1,347	86,954,342	18.8
	JAVA							
	ARCO							
	Ardjuna, 1968*	2,200- 3,300	14	....	....	22,,035	5,565,338	36.0
	IIAPCO							
	Cinta, 1970*	3,300	9	....	....	35,500	8,927,885	33.7
	Pertamina Unit III	....	5	24	30	250	11,242,176	....
	Lemigas (Oil & Gas Institute)	....	2	58	453	1,171	123,584,459	....
	KALIMANTAN (Indonesian Borneo)							
	Pertamina Unit IV							
	Bunyu, 1923	2,020- 7,800	33	1	46	4,642	51,410,292	24.5-32.6
	Sanga-Sanga, 1898	1,200	21	68	558	1,273	236,894,345	17.0-35.0
	Tanjung-S. Warukin, 1938-1965	2,500- 7,300	14	51	104	9,994	86,478,755	32.8
	Tarakan, 1906	200- 2,400	6	183	701	1,579	195,167,470	20.0-21.0
	Others	....	1	19	294	460	61,379,311	32.4
	MADURA	....	....	....	....	....	23.260	....
	CERAM							
	Gulf & Western Bula, ?	500- 600	....	15	17	1,635	9,036,596	21.6
	Total Indonesia		696	1,648	5,414	1,050,393	4,673,941,862	
	*Offshore.							
IRAN	CONSORTIUM FIELDS:							
	Agha Jari, 1938	6,500	45	....	....	958,518	4,994,552,000	33.9
	Ahwaz, 1958	9,000	22	....	....	281,085	688,507,000	32.7
	Bibi Hakimeh, 1961	6,800	15	....	....	448,186	773,090,000	29.6
	Binak, 1959	11,600	1	....	....	49,437	61,489,000	29.8
	Gach Saran, 1928	7,000	29	....	....	865,629	2,648,295,000	31.3
	Haft Kel, 1927	3,500	11	....	....	41,211	1,637,591,000	37.4
	Karanj, 1963	7,800	4	....	....	188,215	283,658,000	33.8
	Kharg Island, 1962	11,800	4	....	....	50,868	48,948,000	33.4
	Kupal, 1965	1,000	2	....	....	1,774	2,571,000	34.2
	Lali, 1948	8,000	1	....	....	1,456	58,953,000	36.2
	Marun, 1964	11,000	30	....	....	1,003,090	1,223,023,000	32.2
	Masjid-e-Sulaiman, 1908	2,500	19	....	....	8,001	1,077,193,000	39.8
	Naft Safid, 1935	6,000	11	....	....	30,893	235,964,000	35.4
	Paris, 1964	5,700	15	....	....	366,208	240,198,000	33.9
	Par-e Siah, 1967	6,000	1	....	....	10,710	7,516,000	38.1
	Pazanan, 1961	9,000	2	....	....	20,180	115,378,000	35.4
	Rag-e Safid, 1964	8,300	4	....	....	34,929	62,068,000	30.4
	Ramshir, 1963	9,100	2	....	....	11,716	12,357,000	28.8
	Total Consortium		218	....	....	4,372,106	14,171,351,000	
	SIRIP FIELDS:							
	Bahrgansar, 1960*	9,000-12,300	7	....	3	20,500	80,900,000	32.0
	Hendijan, 1968*	9,850-11,000	5	....	....	32,440	11,200,000	32.0
	Nowrouz, 1966*	8,587-10,850	10	....	5	42,120	16,300,000	30.0
	Total Sirip		22	....	8	95,060	108,400,000	
	AMOCO FIELDS:							
	Cyrus, 1962*	7,000	7	....	5	18,287	26,733,411	19.0
	Darius, 1961*	1,000	12	....	1	109,897	229,534,711	34.0
	Total Amoco		19	....	6	128,184	256,268,122	

AGO 530148

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells Flowing	Pumping	Shut-in	Production in bbl Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
IRAN—Continued	**IMINOCO FIELDS:**							
	Rakhsh, 1969*	7,500- 9,750	11	....	3	54,400	15,100,000	36.7
	Rostam, 1966*	7,200- 9,800	18	7	6	35,100	49,400,000	38.7
	Total Iminoco		**29**	**7**	**9**	**89,500**	**64,500,000**	
	LAPCO FIELDS:							
	Sassan, 1966*	4,000- 6,800	12	....	6	150,125	177,284,186	31.0-34.0
	NIOC FIELDS†:							
	Alborz, 1956	8,000- 9,000	....	....	17	....	5,115,892	39.0
	Naft-i-shah, 1923	2,000- 3,000	6	....	....	10,000	79,730,000	....
	Sarajeh, 1958	8,000- 9,000	....	....	(7 gas)	....	.....	....
	Total NIOC		**6**	....	**17**	**10,000**	**84,845,892**	
	Total Iran		**306**	**7**	**46**	**4,844,975**	**14,862,649,200**	
	*Offshore. †Estimated.							
IRAQ	Ain Zalah, 1939	5,200- 6,500	6	....	6	20,200	145,134,558	31.0
	Bai Hassan, 1953	4,800- 5,400	....	....	5	56,500	204,290,511	35.0
	Butmah, 1952	3,900	....	3	....	5,000	31,268,950	31.0
	Jambur, 1954	5,500	2	....	2	8,400	59,565,452	35.0
	Kirkuk, 1927	2,800- 4,200	47	....	19	900,000	5,733,017,018	36.0
	Naft Kaneh, 1923*	3,000	4	....	....	7,000	76,100,000	....
	Rumaila, 1953	10,800	26	....	2	534,500	1,476,910,000	35.0
	Rumaila, N., 1953*	10,500	10	....	....	30,000	2,730,000	35.0
	Zubair, 1948	7,400-11,200	25	....	5	103,700	592,830,000	35.0
	Total		**129**	**3**	**38**	**1,665,300**	**8,321,846,489**	
	*Data are estimated							
ISRAEL	Heletz-Brur, 1955	5,970	....	20	....	730	260,000	30.0
	Kochav, 1963	5,630	....	10	....	240	93,000	26.5
	Total		....	**30**	....	**970**	**353,000**	
ITALY	Gela, 1956	10,800-11,150	*9 36	*1 13	4} 7}	10,370	64,074,430	10.1
	Pisticci-S. Cataldo, 1960	6,560	8	....	2	1,041	3,128,817	11.4
	Ragusa, 1954	12,460	....	33	16	6,814	1,245,441	19.7
	Others	....	21	7	17	2,420	16,345,208	....
	Total		**74**	**54**	**46**	**20,645**	**84,793,896**	
	*Field lies on and offshore.							
JAPAN	Kubiki, 1954*	1,099- 6,370	133	....	6	1,228	9,838,353	31.0
	Minami-Aga, 1964	7,278- 9,574	18	....	8	2,681	9,298,518	38.5
	Sarukawa, 1958	3,880	54	....	4	1,418	6,171,855	32.8
	Others	....	188	685	481	9,273	139,185,694	....
	Total		**393**	**685**	**499**	**14,600**	**164,494,420**	
	*Offshore.							
KUWAIT	Dhrah, 1956	8,500	2					
	Burgan, 1938	4,800	368					
	Magwa/Ahmadi, 1952	4,800	178					
	Minagish, 1959	10,000	14			2,965,637	13,354,751,371	
	Raudhatain, 1955	8,500	51					
	Sabiriyah, 1957	8,000	48					
	Umm Gudair, 1962	9,300	31					
	Total		**692**					
LIBYA	Amal, 1959	9,900	....	1	18	136,340	383,522,505	36.0
	Arshad, 1966	10,100	2	....	5	2,352	5,651,531	48.0
	Bahi, 1968	3,600- 3,750	....	40	1	103,414	95,790,974	43.4
	Beda, 1959	4,000	....	34	34	6,855	70,424,016	36.0
	Belhedan, 1962	7,200	4	....	2	6,197	24,032,261	33.7
	Dahra, 1959	3,100- 3,700	6	38	89	36,837	338,272,619	37.0-41.0
	Defa, 1969	5,400- 5,900	55	....	7	146,699	200,044,659	36.5
	Dor, 1967	6,400	....	3	2	5,026	10,860,744	32.0
	Dor-Marada, 1967	9,000	1	....	7	4,720	10,127,740	50.0
	Ed-Dib, 1970	3,500	....	1	3	2,004	2,104,933	38.0
	Farigh, 1969	12,000	3	....	1	2,242	3,887,964	39.0
	Farrud, 1964	3,000	....	3	3	3,283	14,512,806	47.0
	Gialo, 1961	2,200- 6,300	4	140	34	312,304	883,822,028	35.7
	Intisar A, 1967	9,750	16	....	1	119,387	423,523,348	45.0
	Intisar C, 1967	9,650	6	....	1	31,069	28,256,414	39.0
	Intisar D, 1967	9,400	13	....	....	265,845	362,499,372	40.0
	Jebel, 1962	8,100	20	....	1	15,927	90,502,020	37.0
	Kotla, 1963	5,500	....	9	3	9,467	30,750,016	32.0
	Lehib, 1966	9,100	9	....	5	11,448	22,208,526	49.0
	Nafoora, 1965	2,200-10,000	21	18	9	67,577	138,281,048	36.0

AGO 530149

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Shut-in	Production in bbl: Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
LIBYA—Continued	Nafoora-Augila Unit, 1965-1968*	8,800- 9,000	43	....	18	215,077	415,590,300	35.0
	Ora, 1962	4,700- 7,500	1	23	13	8,225	57,794,427	36.0
	Raguba, 1961	5,400	44	....	28	95,664	342,508,452	43.0
	Rakb, 1962	2,500-11,000	3	7	2	8,084	17,770,329	34.0
	Ralah, 1964	7,650	3	....	1	2,341	4,740,795	37.0
	Sahabi, 1968	10,300	6	1	2	10,626	10,080,345	39.0
	Samah, 1961	6,400	11	....	9	50,889	199,096,994	33.8
	Sarir, 1961	9,000	50	....	38	202,352	627,817,512	37.8
	Ummfarud, 1962	3,300	....	7	1	3,207	14,224,482	47.0
	Waha, 1960	6,600	....	43	19	117,307	426,037,137	36.5
	Zaggut, 1962	6,000	5	....	3	2,354	14,711,072	36.5
	Zelten, 1959	5,500- 7,600	61	....	55	238,152	1,535,479,299	39.0
	Magid, 1968	9,600- 9,800	6	....	1	14,224	15,336,595	40.5
	Mansour, 1968	6,400	1	1	....	2,072	3,143,870	32.3
	Others†	....	....	....	89	346	84,024,447	....
	Total		394	369	505	2,260,113	6,907,431,670	

†Gas-lift wells excluded. *Unitized Nov. 1, 1971. Amoseas operator. †Includes Ain Jarbi & Khuff (abandoned), and Hofra and Bu Attifel (shut in).

MEXICO

NORTHEASTERN DISTRICT, NORTHERN ZONE							
Monterrey, 150	6,950	15	10	....	3,477	7,914,846	47.0
Others	....	34	7	....	1,196	18,511,388	....
NORTHERN DISTRICT, NORTHERN ZONE							
Arenque, 1970*	11,362	6	....	....	7,305	3,098,409	26.0
Constituciones, 1956	6,300	49	54	....	6,866	37,887,508	17.0
Ebano-Panuco, 1901	1,450	222	270	....	8,845	922,648,040	12.0
Tamaulipas, 1956	4,200	65	44	....	7,470	33,757,814	18.0
Others	....	15	6	....	591	10,716,122	....
SOUTHERN DISTRICT, NORTHERN ZONE							
Gabo Nuevo, 1967†	5,753	3	....	....	2,302	9,118,550	16.0
Isla de Lobos, 1963*	6,875	5	....	....	4,184	14,344,672	40.0
Naranjos-Cerro Azul, 1909	1,800	188	....	....	8,690	1,146,133,319	20.0
Tiburon, 1965*	7,314	7	....	....	2,497	4,341,276	20.0
Tres Hermanos, 1959	6,960	41	....	....	12,895	79,712,026	21.0
Others	....	45	....	....	1,204	27,672,885	....
POZA RICA, CENTRAL ZONE							
Atún, 1966*	9,040	11	....	....	7,290	23,921,147	37.0
El Hallazgo, 1955	10,170	1	53	....	6,427	52,545,421	25.0
Jiliapa, 1958	7,390	....	33	....	2,166	21,274,422	34.0
Miquetla, 1959	6,480	2	[illegible]	....	1,632	15,388,196	35.0
Morsa, 1971	10,434	4	....	....	10,511	4,040,306	37.0
Poza Rica, 1930	7,090	56	263	....	58,009	1,012,658,443	35.0
Remolino, 1962	10,745	6	42	....	3,843	13,211,535	....
San Andres, 1962	10,410	5	150	....	35,045	218,525,601	29.0
Others	....	20	56	....	4,712	50,857,326	....
NUEVA FAJA DE ORO							
Acuatempa, 1955	4,085	14	....	....	2,052	21,072,148	21.0
El Muro, 1966	3,966	11	....	....	4,725	5,805,934	17.0
E. Ordonez, 1952	5,220	12	....	....	3,008	49,388,582	21.0
St. Aqueda, 1953	4,789	33	....	....	5,671	86,361,770	16.0
Others	....	76	....	....	3,258	39,732,433	....
VERACRUZ DISTRICT, CENTRAL ZONE							
Angostura, 1953	4,405	8	....	....	425	21,243,185	15.0
Others	....	....	....	....	....	173,315	....
ISTHMUS OF TEHUANTEPEC, SOUTHERN ZONE							
Agata, 1956	3,830	2	14	....	1,243	8,923,152	34.0
Cuichapa, 1935	2,200	165	8	....	44,925	39,759,417	30.0
El Burro, 1931	2,200	1	18	....	1,036	16,376,889	26.0
El Plan, 1931	1,700	5	81	....	4,702	137,214,702	30.0
Ixhuatlán Oriente, 1965	3,952	16	2	....	1,440	3,139,359	22.0
Los Soldados, 1953	4,492	17	6	....	2,695	16,410,025	32.0
Moloacán, 1948	1,397	9	82	....	3,493	4,132,800	26.0
Tacuilolapa, 1955	2,925	3	4	....	951	2,021,009	36.0
Tonalá, 1928	1,770	2	52	....	1,670	70,856,429	28.0
Tunel, 1967	1,230	(Included in Moloacan field)					
Others	....	4	60	....	2,026	48,433,639	....
TABASCO, SOUTHERN ZONE							
Caracolillo, 1969	11,480	5	....	....	1,837	838,414	....
Carrizo, 1962	4,820	10	8	....	3,252	4,894,029	25.0
Castarrical, 1967	10,086	28	9	....	9,804	13,200,981	34.0
Cinco Presidentes, 1960	6,862	75	103	....	38,442	164,383,740	35.0
El Golpe, 1963	8,836	31	48	....	19,526	32,422,591	35.0
La Venta, 1954	4,730	2	47	....	3,294	42,397,361	41.0
Magallanes, 1957	4,240	18	192	....	18,989	85,535,741	27.0
Mecoacan, 1958	7,110	23	18	....	5,412	25,400,083	24.0
Ogarrio, 1957	5,790	25	60	....	11,634	71,222,696	38.0

AGO 530150

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Shut-in	Production in bbl: Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
MEXICO—Continued	Otates, 1965	7,469	16	9	....	6,065	11,657,270	39.0
	Pajonal, 1967	9,840	4	5	....	1,173	1,295,671	27.0
	Samaria, 1960	2,624	2	10	....	1,075	3,328,222	23.0
	San Ramon, 1967	9,883	37	22	....	17,757	11,497,276	30.0
	Santa Ana, 1959†	9,517	1	13	....	1,454	28,205,561	29.0
	Santuario, 1966	9,617	17	....	....	5,356	2,673,401	37.0
	Tintal, 1968	5,904	9	....	....	1,354	1,350,896	22.0
	Tucan, 1968	10,824	3	10	....	2,399	3,259,283	36.0
	Tupilco, 1959	9,685	27	18	....	11,928	18,447,393	27.0
	Others	....	10	4	....	1,459	9,377,284	....
	Total Mexico		**1,518**	**1,903**	....	**441,736**	**4,830,711,933**	
	*Offshore. †Partly offshore.							
MOROCCO	Haricha, 1957	3,000	2	1	....	25	2,747,000	40.0
	Sidi Fili, 1947	....	19	8	....	110	7,488,000	40.0
	Sidi Rhalem, 1961	5,600	....	2	....	175	4,860,000	40.0
	Total		**21**	**11**	....	**310**	**15,095,000**	
NETHER-LANDS	De Lier-Monster, 1955	5,200	16	....	11	1,250	11,976,300	33.2
	Ijesselmonda-Ridderkerk, 1956	3,100- 5,000	48	....	10	7,787	58,138,200	18.0-24.2
	Schoonebeek, 1943	2,500	198	....	104	14,423	151,281,800	24.8
	Wassen-Mayendel, 1956	4,200	25	....	7	5,005	29,463,900	18.6
	Zoetermeer, 1957	3,200	13	....	5	900	6,228,500	16.4
	Others	....	19	....	25	481	8,123,200	....
	Total		**319**	....	**162**	**29,846**	**265,211,900**	
NEUTRAL ZONE	Hout, 1969*	5,470- 9,130	26	....	6	59,434	58,868,000	34.0
	Khafji, 1961*	5,570- 7,540	89	....	7	322,240	893,234,000	28.4
	So. Fuwaris, 1962	6,700	....	4	4	2,133	9,653,430	24.5
	So. Umm Gudair, 1966	9,100	10	4	3	49,058	72,237,964	23.4
	Wafra:							
	Burgan, 1953	3,600	11	35	9	20,507	172,619,081	34.5
	Eocene, 1954	1,200- 2,200	8	222	85	37,965	336,246,099	18.5
	Ratawi, 1955	6,750	3	28	8	53,150	263,379,923	24.5
	Total		**147**	**293**	**122**	**544,487**	**1,806,238,497**	
	*Offshore. Note: Two fields—Lulu (2 wells) and Dorra (1 well) not yet producing.							
NEW ZEALAND	Kapuni, 1959	11,323-12,504	4	....	....	2,706	1,760,213	49.0
	Others*	....	....	....	....	....	217,000	....
	Total		**4**	....	....	**2,706**	**1,977,213**	
	*Old (1866) Moturoa field at New Plymouth was abandoned in 1972.							
NIGERIA	**GULF OIL***							
	Delta, 1965	5,600- 9,400	11	....	1	15,499	26,887,576	28.3
	Delta So., 1965	7,100- 9,200	14	....	4	42,858	61,936,838	39.4
	Isan, 1970	5,800- 9,000	5	....	3	10,120	1,436,985	44.0
	Malu, 1969	4,800- 6,300	15	....	....	29,687	12,822,135	39.3
	Meji, 1965	5,200-10,900	10	....	1	14,370	24,553,816	33.0
	Meren	5,000- 7,500	32	....	9	91,147	96,472,732	35.7
	Okan, 1969	5,500- 8,900	39	....	3	69,415	153,401,745	35.7
	Parabe, 1968	4,500- 8,200	25	....	....	38,560	16,644,176	39.3
	MOBIL OIL*							
	Asabo, 1966	5,412	8	....	1	35,285	27,719,805	33.2
	Ekpe, 1966	7,503	11	....	....	51,790	10,379,147	38.2
	Idoho, 1966	8,536	2	....	2	9,922	14,552,170	39.3
	Inim, 1966	5,914	4	....	....	15,036	2,751,598	38.3
	Ubit, 1968	4,842	14	....	4	36,492	18,120,575	37.2
	Utue, 1966	5,656	3	....	....	2,755	504,245	38.7
	AGIP-PHILLIPS							
	Ebocha, 1965	9,200-10,100	8	....	1	15,000	24,100,000	42.1
	Mbede, 1966	9,850-10,800	13	....	5	35,000		
	SAFRAP							
	Obagi, 1964	7,300	18	....	5	51,609	30,126,846	24.7
	TEXACO-CHEVRON*							
	Pennington, 1964	8,000-12,000	7	....	2	11,425	6,745,839	37.0
	SHELL-BRITISH PETROLEUM (MIDWEST)							
	Ugh-Ogini, 1964	5,860	6	....	2	6,198	2,258,600	17.5
	Ugh-Uzere East, 1960	8,500	11	....	1	13,706	29,127,600	22.6
	Ugh-Uzere West, 1960	8,500	11	....	....	20,778	45,847,900	27.7
	Ugh-Olomoro, 1963	7,000-10,000	24	....	7	67,697	123,631,800	22.3
	Ugh-Okeh, 1964	12,300	9	....	2	22,313	46,660,000	26.8
	Ugh-Kokori, 1961	8,000- 9,800	18	....	3	83,046	103,165,800	44.9
	Ugh-Asfriesfre, 1966	8,000- 9,000	14	....	3	17,922	18,757,900	23.8
	Ugh-Eriemu, 1961	12,500	8	....	2	5,144	6,397,900	29.9

AGO 530151

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291-83

GENERAL ELECTRIC

WORLD LEADER IN INFORMATION SERVICES

AGD 530152

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells			Production in bbl		Gravity °API
			Flowing	Pumping	Shut-in	Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	
NIGERIA—Continued	Ugh-Ughelli E., 1959	11,800	6	....	2	26,986	36,350,600	33.6
	Ugh-Ughelli W., 1959	7,400-10,200	6	....	....	8,026	8,993,300	20.0
	Ugh-Utorogu, 1964	9,000	19	....	....	40,059	41,547,000	25.0
	Ugh-Oroni, 1964	12,000	6	....	1	7,872	5,962,000	19.0
	Ugh-Warri-Ri-1, 1961	12,264	4	....	....	5,094	1,057,300	30.8
	Ugh-Evwreni, 1967	10,900	7	....	2	11,365	13,071,100	25.0
	Ugh-Rapele, 1965	12,934	3	....	....	8,910	2,129,700	25.0
	Ugh-Osioka, 1967	12,885	2	....	....	3,653	601,300	30.0
	Forc-Odidi, 1967	10,980	15	....	....	16,385	6,515,200	30.0
	Forc-Jones Cr., 1967	7,000- 9,000	26	....	....	141,325	66,401,700	25.0
	Forc-Egwa, 1967	9,350	11	....	....	21,521	13,672,600	37.0
	Forc-Forc. Est., 1969	7,000	38	....	3	100,309	51,987,900	25.0
	Forc-Batan, 1968	11,000	6	....	1	11,165	2,633,000	21.0
	Forc-Escravos Beach, 1969	9,391	8	....	....	4,894	447,000	36.0
	Forc-Ajuju, 1970	13,324	1	....	....	2,294	371,500	30.0
	Others		3	....	18	875	167,200	....
	SHELL-BRITISH PETROLEUM (EASTERN)							
	PHL-Bomu, 1968	6,700- 7,500	27	....	1	41,917	212,296,600	33.2
	PHL-Isimiri, 1964	5,900-11,000	5	....	....	7,747	12,015,300	28.8
	PHL-Imo River, 1959	5,800-10,100	38	....	....	95,097	181,284,000	32.0
	PHL-Ebubu, 1958	8,200	6	....	....	3,397	10,668,100	26.0
	PHL-Onne, 1965	10,384	2	....	....	2,471	610,700	30.0
	PHL-Nkali, 1963	12,000	6	....	1	5,604	10,157,800	41.0
	PHL-Obigbo-N, 1963	6,500-10,000	15	....	1	28,338	65,154,200	24.2
	PHL-Elelenwa, 1959	11,000	5	....	....	7,401	2,619,100	38.0
	PHL-Agbada, 1960	8,000-12,000	20	....	....	30,333	44,304,400	32.1
	PHL-Umuechem, 1959	5,800-10,700	15	....	....	31,759	81,925,900	37.6
	PHL-Apara, 1960	9,000	3	....	....	1,061	4,472,400	34.0
	PHL-Obele, 1964	10,000	3	....	....	2,006	600,100	22.0
	PHL-Bodo W., 1962	9,700	9	....	1	24,977	24,876,600	22.5
	PHL-Afam, 1956	6,000	9	....	2	9,935	15,242,300	45.0
	PHL-Korokoro, 1969	8,000- 9,800	7	....	....	14,446	46,184,500	35.2
	PHS-Alakiri, 1962	10,000	13	....	....	33,294	20,519,700	32.5
	PHS-Buguma Creek, 1960	12,195	2	....	1	4,632	444,400	35.0
	PHS-Cawth. Ch., 1963	11,000	11	....	1	70,618	57,333,400	39.0
	PHS-Ekulama, 1958	10,483	5	....	....	6,313	999,600	20.2
	PHS-Soku, 1958	11,500	17	....	2	35,245	7,599,600	35.0
	PHS-Oloibiri, 1956	8,000- 9,800	7	....	....	3,961	15,046,300	22.0
	EGB-Oguta, 1965	10,300	11	....	2	23,894	8,274,100	30.0
	EGB-Assa, 1961	11,300	2	....	....	2,120	194,200	17.5
	EGB-Egbema, 1960	10,470	6	....	....	16,822	12,069,200	28.0
	EGB-Ahia, 1965	11,500	13	....	....	31,273	24,919,500	35.5
	CESW-Adibawa, 1966	11,950	5	....	2	8,708	2,223,300	30.0
	Others		11	....	17	1,981	2,167,300	....
	Total Nigeria		**774**	....	**119**	**1,768,857**	**2,021,114,728**	
	*Offshore							
NORWAY	Ekofisk, 1970*	10,200-10,900	4	....	....	32,482	8,207,458	35.6
	Ekofisk W., 1970*	10,000	....	....	1	....	....	35.6
	Tor, 1970*	10,000	....	....	1	....	....	35.6
	Total		**4**	....	**2**	**32,482**	**8,207,458**	
	*Offshore							
OMAN	Fahud-Natih, 1964	2,000- 6,080	35	....	43	114,454	311,201,000	32.5
	Huwaisa-Shuaiba, 1970	5,550	10	....	....	32,864	16,468,100	33.0
	Natih-Natih, 1963	7,500	15	....	15	58,235	147,234,400	31.3
	Yibal-Shuaiba, 1962	8,465	37	....	5	70,459	35,040,400	39.7
	Total		**97**	....	**63**	**276,012**	**509,944,000**	
PAKISTAN	Balkassar, 1946	8,200	....	5	....	2,415	26,581,073	24.3
	Dhulian, 1937	8,500	5	2	....	3,190	34,632,000	43.0
	Meyal, 1968	12,500	2	....	....	2,500	2,398,000	44.0
	Others		3	....	1	1,250	8,430,660	
	Total		**10**	**7**	**1**	**9,355**	**72,041,733**	
PERU	**COASTAL**							
	Area Talara, 1869-1943†	2,000- 9,000	104	1,004	5,224	10,513	521,772,830	25.0-40.0
	Concesiones Lima, 1905	2,000- 9,000	62	847	1,833	23,529	246,640,232	32.0-35.0
	Others	500- 1,500	....	....	55	....	4,205,455	33.0-34.0
	†Includes La Brea y Parinas and Los Organos.							
	EASTERN							
	Agua Caliente, 1939	1,000- 1,500	....	23	12	1,123	12,399,235	34.0
	Maquia, 1957	1,000- 1,500	6	7	1	1,146	5,611,807	37.0
	Area Corrientes, 1971	12,000	....	....	3	....	....	....
	CONTINENTAL SHELF							
	Humboldt, 1960*	3,000- 7,500	46	58	42	17,284	15,027,534	38.0
	Litoral y Mirador, 1955*	1,500- 6,000	1	96	70	4,336	22,097,600	37.0-40.0
	Providencia, 1967*	3,000- 6,000	2	31	29	1,903	8,183,692	....

AGO 530153

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells: Flowing	Pumping	Shut-in	Production in bbl: Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	Gravity °API
PERU—Continued	Delfín y Ballena*	3,000- 7,000	....	....	2	....	....	....
	Others		2	7	2	353	1,519,918	....
	*Offshore							
	SIERRA							
	Pirin, 1925	....	....	....	....	....	287,000	....
	Total Peru		**223**	**2,073**	**7,272**	**60,187**	**837,745,303**	
QATAR	Duklan, 1940	6,200- 7,200	57	....	4	210,000	1,270,953,069	41.0
	Bul Hanine, 1970*	6,000	2	....	1	8,283	753,700	35.0
	Idd El Shargi, 1960*	4,500- 8,250	14	....	....	43,579	114,670,800	35.5
	Maydan-Mahzan, 1963*	7,000- 7,600	11	....	....	148,188	275,809,600	38.0
	Total		**84**	....	**5**	**431,750**	**1,662,545,100**	
	*Offshore.							
SAUDI ARABIA	Abqaiq, 1940	6,670	74	5	3	931,879	3,886,450,366	38
	Abu Hadriya, 1940	9,930	7	3	0	95,919	212,584,748	35
	Abu Safah, 1963*	6,650	9	0	1	94,748	148,634,819	30
	Berri, 1964†	7,450	18	10	1	313,487	165,692,250	33
	Dammam, 1938	4,620	20	0	4	23,084	517,871,607	34
	Fadhili, 1949	8,110	3	2	0	51,381	111,557,756	40
	Ghawar, 1948	6,700	205	23	8	2,668,202	7,127,596,792	35
	Harmaliyah, 1971	8,400	0	1	0	....	....	36
	Khurais, 1957	5,100	9	1	1	22,610	28,131,775	33
	Khursaniyah, 1956	6,750	10	0	2	129,020	371,550,624	31
	Manifa, 1957*	7,950	5	2	0	49,480	89,268,143	28
	Marjan, 1971	5,200	0	1	0	....	.....	32
	Mazalij, 1971	5,200	0	1	0	....	.....	31
	Qatif, 1945*	7,050	20	0	2	122,976	353,018,536	31
	Safaniyah, 1951*	5,100	83	12	8	909,924	2,140,954,223	27
	Shaybah, 1968	5,000	1	7	0	....	9,870	42
	Zuluf, 1965	5,800	0	3	0	....	.....	32
	Total		**464**	**71**	**30**	**5,412,710**	**15,153,321,509**	
	*Offshore. †Partly offshore.							
SPAIN	Ayoluengo, 1964	4,000	....	22	5	2,960	6,200,000	37.0
	Amposta, 1971*	10,000	....	....	4	....	.....	19.0
	Total			**22**	**9**	**2,960**	**6,200,000**	
	*Offshore							
SYRIA*	Hamsch, 1956	6,000	....	....	1	....	.....	21.0
	Jibissa, 1968	6,000	....	....	1	....	.....	23.0
	Karatchouk, 1956	6,500	13	3	1	10,000		23.0
	Rumalan, 1956	6,500	4	....	1	5,000	115,933,446	25.0
	Souedie, 1959	6,500	80	23	31	105,000		25.0
	Total		**97**	**26**	**35**	**120,000**	**115,933,446**	
	*Data are estimated							
TAIWAN	Tiehchanshan, 1962	8,500-18,000	26	....	2	1,700	926,736	53.0
	Others		25	....	17	230	125,636	....
	Total		**51**	....	**19**	**1,930**	**1,052,372**	
THAILAND	Boh Ton Kham (Chaiprakarn), 1953	700	....	12	12	10	196,000	16.0-17.0
	Mae Soon Luang, 1963	2,000- 2,560	1	12	5	146	359,000	32.0
	Total		**1**	**24**	**17**	**156**	**555,000**	
TRINIDAD & TOBAGO	Area 1:							
	North Marine, 1959	3,000-15,000	1	....	7	168	1,129,000	23.2
	Soldado, 1955*	5,100-11,000	139	78	69	51,010	225,760,000	24.8
	Area 2:	1,000-10,626						
	Area IV Guapo, 1913-1922		1	34	110	511	32,417,000	25.5-16.9
	Parry Lands (1-5), 1913-1918		16	40	148	774	33,250,000	30.2-10.7
	Point Fortin Central and West, 1907-1916		16	25	149	639	30,370,000	45.1-20.4
	Area 3:							
	Brighton, 1908†	700- 7,500	28	179	225	4,264	64,098,000	32.8
	Area 4:	460-12,718						
	Palo Seco, 1926-1929	....	....	8	61	27	1,565,000	22.1
	Palo Seco-Erin, 1915-1926		81	316	400	10,061	69,495,000	21.2
	Area 5:	500-11,000						
	Forest Reserve, 1913		59	594	965	16,657	307,002,000	23.0
	Fyzabad, 1918-1920		21	215	313	5,231	148,030,000	20.8-32.7
	Point Fortin East, 1929		4	56	50	2,304	20,011,000	34.4
	Area 6:	288-14,000						
	Coora-Quarry, 1936		19	163	356	3,260	76,547,000	24.1-20.4
	Area 7:							
	Oropouche, 1944		4	9	27	643	2,831,000	38.6-19.8

AGO 530154

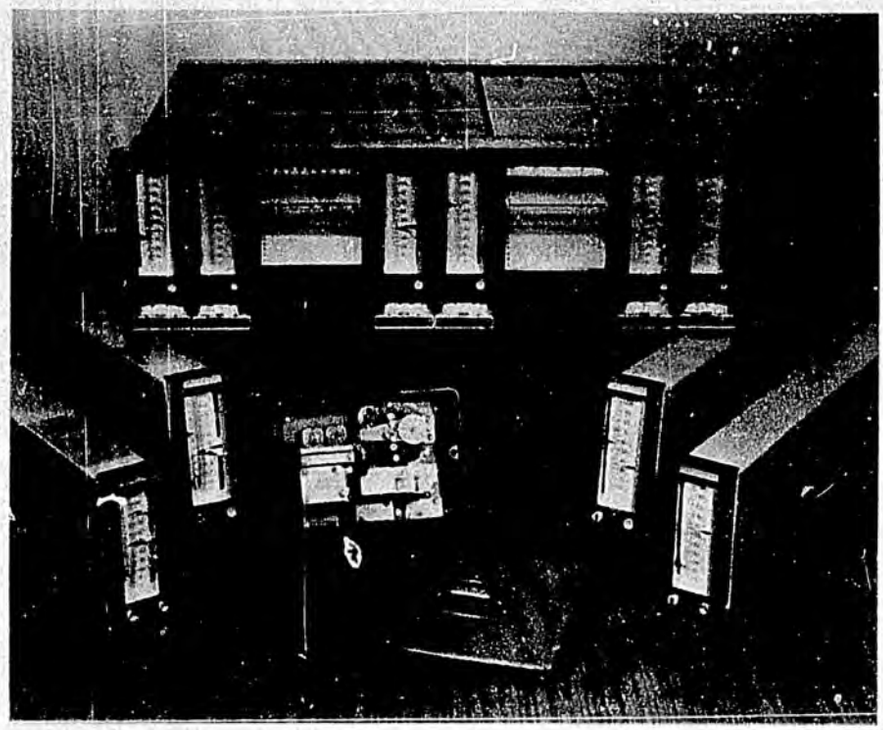
WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells			Production in bbl		Gravity °API
			Flowing	Pumping	Shut-in	Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	
TRINIDAD & TOBAGO—Continued	**Area 8:**	1,300-11,067						
	Barrackpore, 1911		15	23	135	1,725	22,009,000	41.2-26.9
	Penal, 1936		31	58	84	3,106	54,227,000	55.7-37.5
	Wilson, 1936		4	32	33	531	18,396,000	26.4
	Area 9:	1,400- 9,693						
	Catshill, 1950		4	51	18	1,345	19,534,000	46.3-38.3
	Moruga-North & West, 1956		1	37	71	376	8,967,000	31.4-25.0
	Trinity, 1956		1	51	20	788	12,575,000	32.2
	Area 10:							
	Guayaguayare, 1903	500-10,750	12	191	314	7,758	68,271,000	33.7
	Area 11:							
	Galeota, 1972*	1,100- 6,304	1	16	....	1,942	118,000	....
	Teak, 1972*	7,250-15,191	11	....	1	19,374	3,526,000	29.3
	Others	3,000- 7,560	49	202	972	3,527	99,178,000[a]	40.7-14.1
	Total Trinidad and Tobago		**518**	**2,378**	**4,528**	**136,021**	**1,319,312,000**	
	*Offshore. †Partly Offshore. (a) Others cumulative have changed as some fields were taken out and included under the Area Totals.							
TUNISIA	**Aquitaine:**							
	Douleb, 1966; Tamesmida, 1968	3,300- 4,950	2	....	....	3,716	5,827,340	41.6-43.0
	ENI:							
	El Borma, 1964	8,250- 8,900	39	....	11	73,100	147,500,000	41.1
	Others		....	1	2	100	106,500	....
	Total		**41**	**1**	**13**	**76,916**	**153,433,840**	
TURKEY	Adiyaman, 1971	5,600	....	12	2	2,591	1,076,979	26.6
	Barbes, 1972	7,200	1	....	....	1,199	218,240	29.6
	Beykan, 1964	5,200	....	8	3	10,963	28,229,249	33.2
	Garzan-Ger., 1951	5,100	....	38	32	3,192	25,261,966	25.0
	Kahta, 1958	3,500	....	5	1	1,570	3,047,777	11.5
	Kayakoy, 1961	6,000	....	6	7	2,982	6,671,954	38.2
	Kayakoy West, 1964	5,300	1	4	1	4,971	8,728,536	35.0
	Katin, 1971	6,800	2	....	1	828	251,696	29.3
	Kürkan, 1963	4,500	....	6	6	10,238	20,487,425	31.4
	Kürkan South, 1967	5,500	3	....	1	1,567	2,573,586	34.2
	Magrip, 1961	6,400	....	13	12	1,312	10,571,297	19.3
	Malatepe, 1970	5,000	1	2	....	1,220	1,021,508	32.7
	Piyanko, 1968	6,300	1	....	3	843	880,890	35.5
	Raman, 1940	4,500	....	24	23	2,599	19,856,271	18.5
	Raman West, 1961	4,300	....	126	12	5,362	16,369,805	13.4
	Silivanka, 1962	7,500	....	14	1	1,746	2,388,339	19.6
	Sahaban, 1966	5,400	3	....	1	1,463	6,148,306	34.4
	Selmo, 1964	5,800	2	9	1	10,109	29,852,901	34.2
	Others		2	6	8	297	2,444,224	....
	Total		**16**	**274**	**115**	**65,052**	**186,080,949**	
UNITED KINGDOM	Bothamsall, 1958	3,300	....	9	7	320	1,835,000	....
	Egmanton, 1955	3,250	....	14	37	273	2,855,000	....
	Gainsborough, 1959	3,200- 4,600	....	25	20	518	2,049,000	....
	Kimmeridge, 1959	1,800	....	1	2	376	1,298,000	....
	Others	....	....	8	10	243	10,033	....
	Total			**56**	**74**	**1,730**	**18,070,000**	
VENEZUELA	STATE OF ANZOATEGUI							
	Araibel, 1954	8,970-10,516	6	....	31	1,320	25,236,709	42.6
	Boca, 1951	9,500	16	1	62	3,571	66,733,111	35.6
	Caico Seco, 1946	6,500- 7,300	13	....	64	4,550	41,167,999	34.8
	Chimire, 1948-1952	7,000- 7,200	62	....	141	13,610	331,027,073	35.5
	Dacion, 1957	6,700	84	10	28	9,915	162,202,696	19.9
	Elias, 1954	5,100- 6,470	31	19	54	17,920	49,779,024	38.9
	El Roble, 1939	3,500-11,500	14	....	21	1,020	35,817,216	49.9
	Guara, 1946	5,000-10,000	94	103	194	26,389	473,083,942	26.3
	Guaria, 1940	5,000-10,000	8	....	52	1,739	41,856,675	49.5
	Güico, 1944	4,500- 7,000	23	6	50	2,694	80,990,786	27.1
	Inca, 1948	7,250	8	....	18	2,356	12,044,627	38.1
	Junta, 1954	6,720	1	8	13	1,434	21,910,122	20.8
	La Ceiba, 1946	9,480	20	1	11	7,926	21,897,184	41.5
	La Ceibita, 1963	9,870,- 9,878	25	....	20	15,406	49,822,059	42.8
	Leona, 1938	2,200-12,800	32	70	107	11,336	121,922,697	22.0
	Mapiri Este, 1952	9,500	2	....	14	1,283	22,244,136	35.9
	Mata, 1954	9,000-12,500	134	14	277	47,230	412,079,612	33.9
	Mercy, 1937	5,400- 5,700	9	263	113	20,273	156,367,957	11.4
	Nipa, 1945	6,000- 8,500	134	40	262	27,905	411,413,233	28.4
	Oficina, 1937	5,900	69	187	373	36,392	616,823,766	21.3
	Oscurote, 1952	9,513	26	16	42	10,906	103,180,754	19.7
	Rosa, 1958	1,250-11,412	....	....	3	1,332	6,307,003	50.8
	San Joaquin, 1939	6,560	24	....	48	2,744	75,585,369	47.5
	Santa Ana, 1936	8,500	37	....	47	6,997	81,850,318	37.9
	Santa Rosa, 1941	8,500	113	....	56	35,934	276,253,872	44.7
	Soto, 1950	9,500	41	....	174	7,615	154,685,316	37.3

AGO 530155

WORLDWIDE PRODUCTION	Name of field and discovery date	Depth (ft)	No. of Wells			Production in bbl		Gravity °API
			Flowing	Pumping	Shut-in	Daily avg. 1st 6 mo. 1972	Cumulative 7/1/72	
VENEZUELA— (Continued)	Tapuco, 1953	10,000	4	....	23	2,447	23,891,327	36.8
	Yopales, 1937	4,600	17	46	66	11,759	83,367,066	22.5
	Zanjas, 1958	13,270	7	....	7	4,651	17,147,429	32.8
	Zapatos, 1955	11,500	21	....	39	15,581	104,133,702	35.8
	Zorro, 1953	11,100	13	....	13	7,211	53,823,812	25.4
	Zulus, 1957	12,710	4	....	13	2,007	13,359,246	35.0
	Zumo, 1954	9,200	9	16	10	4,924	55,156,470	17.8
	Others		74	33	284	17,046	181,361,810	....
	Total		**1,175**	**833**	**2,730**	**385,363**	**4,384,524,118**	
	FEDERAL TERRITORY OF AMACURO							
	Tucupita, 1945	5,600	12	15	39	3,957	44,002,774	16.8
	Others		....	....	25	....	57,415,540	....
	Total		**12**	**15**	**64**	**3,957**	**101,418,314**	
	STATE OF MONAGAS							
	Acema, 1960	12,520-13,750	42	4	32	23,850	38,609,132	26.3
	Aguaguay, 1955	8,100- 13,400	25	....	35	14,369	69,289,739	38.7
	Jobo, 1956	3,600- 4,000	....	61	66	32,490	30,698,652	12.3
	Morichal, 1958	3,312	....	109	61	16,783	92,156,033	10.7
	Oritupano, 1950	7,657	9	66	34	17,779	87,825,075	20.0
	Orocual, 1933	2,954	12	6	19	3,577	14,410,441	20.9
	Pirital, 1958	450- 1,100	....	58	7	3,882	16,163,585	16.8
	Quiriguire, 1928	7,000- 7,200	....	377	87	19,996	711,895.138	16.4
	Santa Barbara, 1941	5,020- 6,500	108	15	216	4,757	154,826,805	27.5
	Tacat, 1953	1,830- 3,668	....	52	76	2,889	34,269,221	16.9
	Temblador, 1936	3,500- 4,500	38	2	9	4,811	94,119,831	20.3
	Others		37	....	322	5,564	394,723,412	....
	Total		**271**	**750**	**964**	**150,747**	**1,738,987,067**	
	STATE OF GUARICO							
	Las Mercedes, 1942	1,200- 4,500	30	12	113	1,388	125,869,817	29.1
	Ruiz, 1949	4,450	28	1	11	956	30,021,542	32.4
	Budare, 1958	4,523	23	....	6	19,454	20,168,225	31.3
	Others		30	60	147	2,753	56,656,263	....
	Total		**111**	**73**	**277**	**24,551**	**242,715,847**	
	STATE OF BARINAS							
	Hato Viejo, 1961	9,543	2	7	3	5,458	26,261,739	26.6
	Maporal, 1957	10,944	....	3	1	1,669	6,010,659	28.6
	Silvan, 1949	10,862	2	6	....	3,664	34,203,146	27.7
	Silvestre, 1948	8,850	1	21	17	11,490	98,725,003	25.8
	Sinco, 1953	8,500- 9,100	7	34	27	23,714	185,856,407	25.6
	Others		6	4	7	8,361	6,822,005	....
	Total		**18**	**75**	**55**	**54,356**	**357,878,959**	
	STATE OF FALCON							
	Tiguaje, 1953	3,300	1	16	5	798	7,965,296	27.2
	Others		....	40	70	351	96,913,848	....
	Total		**1**	**56**	**75**	**1,149**	**104,879,144**	
	STATE OF ZULIA							
	Bachaquero, 1930	3,444	584	1,370	1,153	583,058	4,273,896,910	23.6
	Barua, 1958	10,500	4	1	1	4,698	9,726,949	20.4
	Buscan, 1946	6,500- 7,500	....	168	195	43,933	444,187,230	10.3
	Cabimas, 1917	2,200	185	314	318	64,431	1,195,408,549	23.8
	Ceutro, 1957	12,568	79	1	38	108,504	261,844,525	30.8
	Cruces Manueles, 1916	300- 8,000	10	41	46	4,050	160,008,814	31.7
	Ceuta, 1956	9,600-11,000	49	5	37	62,326	184,263,276	30.8
	La Concepción, 1953	3,148- 8,000	3	67	45	5,547	110,549,839	35.4
	Lago, 1958	11,450	24	....	14	49,808	92,390,080	31.4
	Lagunillas, 1926	3,000	1,132	1,483	1,251	800,226	7,858,462,050	25.3
	Lama, 1957	8,320	219	2	88	308,049	1,618,442,703	32.5
	Lamar, 1958	13,003	69	....	30	140,000	567,563,588	33.8
	La Paz, 1925	4,268- 8,000	48	29	29	21,117	766,902,401	32.5
	Los Claros, 1960	9,328	....	9	5	4,782	25,703,356	10.3
	Mara, 1945	5,248	27	21	47	10,812	368,186,884	27.4
	Mene Grande, 1914	4,132	1	303	164	11,980	570,399,155	18.3
	Sibucara, 1948	13,451	2	....	3	1,882	38,421,055	34.7
	Tarra West, 1947	4,250- 5,500	6	11	17	3,133	61,039,609	39.0
	Tia Juana, 1928	3,000	310	1,255	509	303,425	2,616,950,221	19.1
	Others		18	5	24	14,299	18,969,012	....
	Total		**2,770**	**5,085**	**4,014**	**2,546,060**	**21,243,316,206**	
	Venezuela Total		**4,358**	**6,887**	**8,179**	**3,166,183**	**28,173,719,655**	
ZAIRE REPUBLIC	GC-1X, 1970*	11,825	....	....	2	....	....	....
	*Offshore—Not yet on production.							

AGO 530156

Remote-mounted controller offered



PNEUMATIC CONTROLLER makes efficient, compact package for services requiring rugged, weatherproof unit.

A NEW Model 138 remote-mounted pneumatic controller has been announced that reportedly provides an efficient and compact package for applications requiring a rugged, weatherproof unit with advanced features. The new Foxboro controller features the rugged, weatherproof/dustproof universal case similar to that used for the maker's field transmitters.

An advantage of the remote-mounted controller is that it eliminates the unacceptable pneumatic transmission lags that occur when distances between the process and control panel are great. For operator convenience, the Model 138 unit is used with a panel-mounted display and control station that allows full use of controller functions.

When maintenance is needed, the circuit board and components can be easily removed without affecting manual operation of the loop.

Foxboro Co., Foxboro, Mass. 02035.

Heavy machinery, engine grouting data available

EPOXY RESIN GROUT, tradenamed 604 Machine Bond for grouting heavy machinery and engines to resist vibration, chemical attack, high-torque loads, and other stresses in such installations is detailed in this four-page brochure, yours on request. Uses, surface preparation, forming, mixing and placing, temperature factors, clean up, health precautions, and estimating and ordering are explained in the brochure.

Carter-Waters Corp., 2440 Pennway, Kansas City, Mo. 64108.

Gate valves have seats that can be field re-energized

GATE VALVES with seats that may be re-energized in the field are described and detailed in this free 14-page catalog, yours on request. OCT gate valves are said to eliminate the field performance and maintenance problems usually associated with production gate valves. Features include blocking and bleeding in either open or closed position; nonrotating rising stem that places stem threads on outside of the valve; compact size that permits use of closer tubing center, smaller casing, and wellhead; light floating seats and gates that reportedly eliminate pressure locking; nonlubricated design seals; prolonged packing life; and needle bearings to more evenly distribute load. The valves, for multiple completion, come available in 1¾ to 4-in. sizes in 2,000 to 5,000 psi wp for duals, triples, and quadruples. Also covered in the catalog are 10,000 and 15,000 psi wp production gate valves.

Oil Center Tool Div., FMC Corp., Box 3091, Houston, Tex. 77001.

Chlorination guide available

THIS CHLORINATION GUIDE, Bulletin 922, yours on request may help you plan and install chlorination systems for potable and process-water treatment and for industrial wastes treatment. The bulletin's 16 pages of information include a sizing guide, definitions, typical chlorination installation layout, data on water and waste treatment, a planning and check-off table, and describes some Advance chlorination system.

Capital Controls Co., Advance Lane, Colmar, Pa. 18915.

Gaskets may cut downtime

DOWNTIME in refineries, petrochemical plants, and pipeline pumping and compressor stations for gasket replacement may be reduced with new Topog-E rubber gaskets which are molded (not cut out or stamped) from a specifically formulated material suitable for 180 psi and 380° F. service. The maker says they will positively stop leaks since they conform to the topography of both surfaces of

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AGO 530157

JOHN C. MCCASLIN
Exploration Editor

Drilling activity highest ever in Black Warrior

ABOUT a year ago this page noted that aggressive exploration was under way in the Black Warrior basin of northeastern Mississippi and northwestern Alabama.

This widespread campaign has not let up and success has been reported at several wildcats. Indications are that the basin will enjoy continued wildcatting and field-development work in the months to come as natural gas becomes more and more a rare commodity.

Dual success. Both states fared well in the current Black Warrior basin exploratory program.

Newest successes are two Monroe County wildcats in northeastern Mississippi. Gibraltar Oil Corp. and Ladner & Hildebrand 1 R. J. Lilley et al. unit, 3-16s-6e, 2 miles south of Muldon field (A on map), drilled to 5,800 ft. Core and logs indicated 30 ft of gas sand in the Sanders Mississippian sand topped at 5,712 ft. Also, there were shows logged in the Carter Mississippian sand and in two basal Pennsylvanian sands.

About 1 mile northeast of Corinne field, the same operators have found gas shows in the Pennsylvanian sand. This sand has indicated production in Corinne field, but is not being produced. New prospect is the 1 Turnage et al. in SE NW 6-16s-8e, 5 miles southwest of Hamilton (B on map). This well is reportedly across the fault from Corinne, paving the way for a new reservoir.

In a strong program. There are more wells drilling in the Black Warrior basin today than at any time.

A new Paleozoic test has rigged up in the Fairview area of Lamar County in Alabama at Skelton Operating Co. Inc. 1 J.P. Barnes unit, SE SW 13-14s-15w, 1⅝ miles south of an unnamed gas area. Target is 3,100 ft with M&C Drilling Co. holding contract (C on map). At D on map, Northwest Gas & Oil Co. Ltd. 11-1 Cleveland Lumber, 11-16s-11w, is an apparent Paleozoic discovery. In Lamar County (E on map), Oscar O. Hembree et al. 1 John Raymond Young, 33-13s-14w, is an active deep test. Lamar Properties 1 Moss-McCormick Mineral Co. 5-2 is drilling to 2,300 ft in Walker County (F on map). Shenandoah Oil Corp. 1 First National Bank L. 25-13, 25-13s-7w, is shut in (G on map). The 1 First National Bank 29-11 in 29-12s-8w is also shut in (H on map). In Winston County (I on map), Oil & Gas Properties Inc. 9-11 McCoy is a Paleozoic location in 9-12s-10w. P. W. Pitzer et al. A-1 Worthington Est. 4-4, 4-12s-8w (J on map), is also a Paleozoic location.

Four Mile Creek field (K on map) has two active locations, both Pruet & Hughes Co. The 1 Myers (K on map) is in 19-12s-18w and the 1 Tubb (L on map) is in 20-12s-18w. Ladner & Hildebrand et al. 1 Seeley et al. (M on map) is drilling in Hamilton field, 11-15s-18w. McKinley Creek field (N on map) has an active spot at Ladner, Stewart, and Gibralter 1 West et al., 21-15s-18w. Well flowed 1,500 Mcfd on choke and tested 15 b/d. In Splunge field, (O on map), Pruet & Hughes have two active wells, 24-12s-17w at 1 Crowe unit 25-3 and 1 Weyerhaeuser Co. Unit 18-13 in 18-12s-16w.



Undoubtedly some new oil and/or gas discoveries will result from this active hydrocarbon hunt in one of the nation's most neglected basins. Geologists for years have thought this Paleozoic arena would some day come into its own. Frankly, the basin just hasn't had enough holes punched in it yet. McKinley Creek is a good example of what the basin holds. The field discovery well, Ladner & Stewart and Gibraltar 1 Nevins, 20-15s-18w, a dual well, flowed from both Nevins and Lewis sands. Upper flow was 1,285 Mcfd, lower 1,300 Mcfd. Later, a Carter sand well was added to the field with development continuing.

The Alabama portion of the Black Warrior basin has its largest gas well yet at a Lamar County discovery.

Skelton Operating Co. Inc. of Laurel, Miss., reports that the 3 S. H. Gilmer in SW NE 18 14s-14w, northwest offset to the Fairview field discovery well, flowed 1,207 Mcfd on ¼-in. choke from perforations in the Mississippian Carter sand at 2,442-48 ft. Tubing pressure was 860 psi.

AGO 530158

Worldwide crude production

(Daily average in thousands of bbl)

	Oct. 1973	Sept.* 1973	10-month average Daily prod. 1972	10-month average Daily prod. 1973	Change from Vol.	Change from %
WESTERN HEMISPHERE						
Argentina	415.0	414.9	430.0	417.0	− 13.0	− 3.0
Bolivia	45.0	45.0	43.0	47.0	4.0	9.3
Brazil	169.0	168.0	165.0	168.0	3.0	1.8
Canada	1,812.0	1,745.0	1,505.0	1,791.0	286.0	19.0
Chile	31.0	31.0	34.0	32.0	− 2.0	− 5.9
Colombia	200.0	190.0	199.0	196.0	− 3.0	− 1.5
Ecuador	210.0	210.0	51.0	203.0	152.0	298.0
Mexico	480.0	470.0	441.0	462.0	21.0	4.8
Peru	67.0	67.0	66.0	67.0	1.0	1.5
Trinidad	160.0	165.0	141.0	164.0	23.0	16.3
United States	9,123.0	9,149.0	1,463.0	9,208.0	−255.0	− 2.7
Venezuela	3,371.0	3,387.1	3,208.0	3,365.0	157.0	4.9
TOTAL	**16,083.0**	**16,042.0**	**15,746.0**	**16,120.0**	**374.0**	**2.4**
EASTERN EUROPE						
Austria	48.0	48.0	47.2	49.2	2.0	4.3
Denmark	4.0	4.0	3.0	4.0	1.0	33.3
France	27.0	27.0	31.0	27.0	− 4.0	− 12.9
West Germany	128.0	128.5	139.0	130.0	− 9.0	− 6.5
Italy	15.0	15.0	22.0	15.0	− 7.0	− 31.8
Netherlands	27.0	34.0	31.0	30.0	− 1.0	− 3.2
Norway	38.0	40.6	35.0	36.0	1.0	2.9
Spain	20.0	20.0	3.0	15.0	12.0	400.0
United Kingdom	2.0	2.0	2.0	2.0	...	...
Yugoslavia	70.0	70.0	64.0	68.0	4.0	6.3
TOTAL	**379.0**	**389.1**	**377.2**	**376.2**	**− 1.0**	**− 0.3**
MIDDLE EAST						
Abu Dhabi	1,340.0	1,381.0	1,032.0	1,342.0	310.0	30.0
Bahrain	68.1	68.0	71.0	68.0	− 3.0	− 4.2
Dubai	214.0	273.0	137.0	236.0	99.0	72.3
Iran	5,978.0	5,793.0	4,905.0	5,825.0	920.0	18.8
Iraq	1,797.0	2,167.0	1,421.0	1,949.0	528.0	37.2
Israel	20.0	100.0	100.0	100.0	...	...
Kuwait	3,058.4	3,520.3	3,291.0	3,115.0	−176.0	− 5.3
Oman	304.0	302.1	282.0	291.0	9.0	3.2
Qatar	589.0	608.3	463.0	591.0	128.0	27.6
Saudi Arabia	7,797.9	8,574.2	5,883.0	7,840.0	1,957.0	33.3
Syria	40.0	125.0	119.0	114.0	− 5.0	− 4.2
Turkey	65.0	65.0	65.0	64.0	− 1.0	− 1.5
TOTAL	**21,280.4**	**22,976.9**	**17,769.0**	**21,535.0**	**3,766.0**	**21.2**
ASIA-PACIFIC						
Afghanistan	...	...	...	...	...	...
Australia	414.0	432.0	324.0	518.0	94.0	29.0
Burma	20.0	20.0	19.0	20.0	1.0	5.3
Brunei-Malaysia	330.0	325.0	272.0	316.0	44.0	16.2
India	148.0	148.0	150.0	148.0	− 2.0	− 1.3
Indonesia	2,406.0	1,338.0	1,046.0	1,305.0	259.0	24.8
Japan	15.0	15.0	15.0	15.0	...	...
Pakistan	8.0	8.0	8.0	8.0	...	...
Taiwan	2.0	2.0	2.0	2.0	...	...
Thailand	0.2	0.2	0.2	0.2	...	...
TOTAL	**2,343.2**	**2,288.2**	**1,836.2**	**2,232.2**	**396.0**	**21.6**
AFRICA						
Algeria	1,020.0	1,100.0	1,060.0	1,098.0	38.0	3.6
Angola	15.0	15.0	12.0	14.0	2.0	16.7
Cabinda	150.0	140.0	125.0	136.0	11.0	8.8
Congo	50.0	45.0	6.0	40.0	34.0	566.7
Egypt	60.0	209.0	216.0	194.0	− 22.0	− 10.2
Gabon	155.0	155.0	125.0	143.0	18.0	14.4
Libya	2,383.7	2,286.0	2,219.0	2,272.0	53.0	2.4
Morocco	0.3	0.3	0.3	0.3	...	...
Nigeria	2,190.4	2,100.0	1,799.0	2,011.0	212.0	11.8
Tunisia	82.0	82.0	83.0	83.0	...	...
TOTAL	**6,106.4**	**6,132.3**	**5,645.3**	**5,991.3**	**346.0**	**6.1**
COMMUNIST						
China	630.0	630.0	580.0	630.0	50.0	8.6
Romania	275.0	275.0	275.0	275.0	...	...
U.S.S.R.	8,689.0	8,663.0	7,881.0	8,356.0	475.0	6.0
Other	110.0	110.0	100.0	110.0	10.0	10.0
TOTAL	**9,704.0**	**9,678.0**	**8,836.0**	**9,371.0**	**535.0**	**6.1**
WORLD TOTAL	**55,896.0**	**57,506.5**	**50,209.8**	**55,625.0**	**5,416.0**	**10.8**

*Figures adjusted.

Gas production

(billions cu ft)

	Oct. *73	Sept. *73	Cum. 1973
Afghanistan	3.9	4.1	63.4
Australia	16.0	14.2	121.6
Burma	0.3	0.4	5.7
India	1.0	1.1	15.1
Indonesia	7.6	8.9	108.9
Japan	7.2	6.1	72.0
Pakistan	7.1	8.2	113.3
Taiwan	2.0	1.9	24.6
Abu Dhabi	...	...	...
Bahrain	1.0	1.1	18.1
Dubai	...	...	...
Iran	142.6	143.7	1,401.4
Iraq	11.7	12.7	132.1
Israel	0.1	0.1	2.9
Kuwait	0.2	0.2	50.3
Oman	...	...	...
Qatar	0.0	0.1	7.2
Saudi Arabia	...	...	...
Syria	...	...	...
Turkey	...	...	...
Algeria	1.7	1.6	79.5
Angola	1.9	3.2	20.4
Cabinda	...	...	...
Congo	0.2	0.4	2.3
Egypt	2.7	3.1	25.5
Gabon	0.0	0.1	1.5
Libya	4.9	6.2	33.3
Morocco	1.7	2.5	33.6
Nigeria	4.2	4.9	51.7
Tunisia	4.1	5.4	11.6
China	13.0	12.4	133.3
Romania	110.4	111.2	1,114.8
U.S.S.R.	673.2	653.1	6,815.4
Other	60.9	51.7	542.6
WORLD TOTAL	**3,926.5**	**3,781.0**	**39,999.4**

AGD 530159

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

SCOMM

#11:12

WALTER J. MEAD
990 CAMINO MEDIO
SANTA BARBARA, CALIFORNIA 93105
PHONE: 805-9672295

April 22, 1975

Senator John Huber
Special Committee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

I have two additional comments on Senate Bill No. 374.

1. On page 1, line 27, you might want to add "whichever comes first.", in order to eliminate ambiguity that would arise in case that two or more of the events listed occurred on different days.

2. On page 1, line 29, you might consider adding the word "calendar" so the line reads as follows:

property during a five calendar-year period beginning with the date of the first ...

Sincerely yours,

WALTER J. MEAD

WJM:mm

AGO 530160

WALTER J. MEAD
990 CAMINO MEDIO
SANTA BARBARA, CALIFORNIA 93105
PHONE: 805-9672295

April 22, 1975

Senator John Huber
Special Commitee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

This letter is in response to your request that I review Senate Bill No. 374 (4-15-75) to identify the economic consequences of enactment.

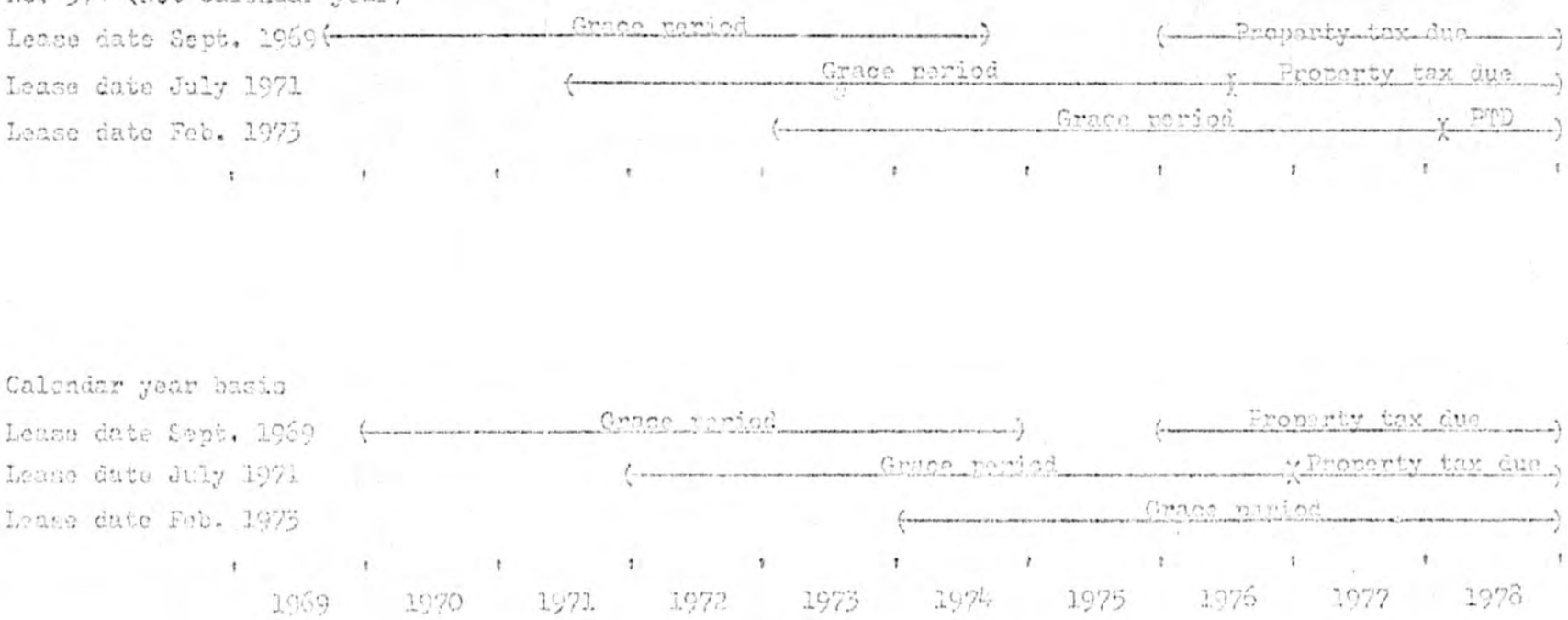
1. The effect of the five year grace period plus the December 31, 1978 termination date would be to exempt all leases issued on or after January 1, 1974. This follows from the fact that a lease issued on or after this date could not be placed on the tax roll until January 1, 1979, the day following expiration of the law. This point and other alternatives are illustrated in Figure 1 showing leases issued at three points in time. For the State leases sold in September 1969, property taxes would become due on June 30, 1976 for the 1976 taxable year. In the absence of production, property taxes would be due for three full years.[1] If the words are changed to read "five calendar years" on line 29, page 1, the three year maximum liability would remain unchanged for these leases.

For a lease date effective July 1971, property taxes would be payable for the period July (lease day) 1976 through December 31, 1978. Property taxes for 1976 would require a partial year calculation. If the calendar year terminology is adopted, property taxes would be payable for two years beginning January 1, 1977 through December 31, 1978.

For a lease dated February 1973, property taxes would be payable for the period February (lease day) 1978 through December 31, 1978. If calendar year wording is adopted, this partial year property tax obligation would be eliminated.

[1] In all Figure 1 illustrations, the assumption is made that production is not initiated until after December 31, 1978.

Figure 1--. Illustration of property tax obligation in the absence of oil production from known oil reserves.



*Assumes the absence of production or with production involving severance tax payments that average less than one-twelvth the amount of corresponding property tax liabilities.

2. The maximum number of years that any lease could be subject to the proposed property tax on reserves would be the three years 1976, 1977, 1978, the years encompassed by the initial effective date (January 1, 1976) and the termination date (December 31, 1978).

3. Firms might have property tax liabilities for less than the maximums because (1) leases were issued later than January 1, 1976, or (2) production commenced before June, 1978.

4. The timing of previous twelve month severance tax credits against property taxes due on June 30 of each taxable year raises a question of possible double taxation. The problem is illustrated graphically in Figure 2. If oil production begins in July, 1977, both severance and property taxes will be paid for the six months July through December of 1977. However, these severance taxes are creditable against the property tax liability, to the limit of the property tax liability. This timing situation involves pre-payment of property taxes, but not double taxation. The problem of double taxation arises in the final six month in the life of the property tax (July through December of 1978) when severance taxes are paid along with property taxes, but there is no offsetting credit. In this period, a double tax burden occurs. The extent of the double burden is less than that in one earlier version of the proposed legislation which provided that severance taxes in the preceding calendar year were creditable against property taxes on June 30 of any taxable year. In that case, the double tax burden would occur during the full 1978 calendar year.

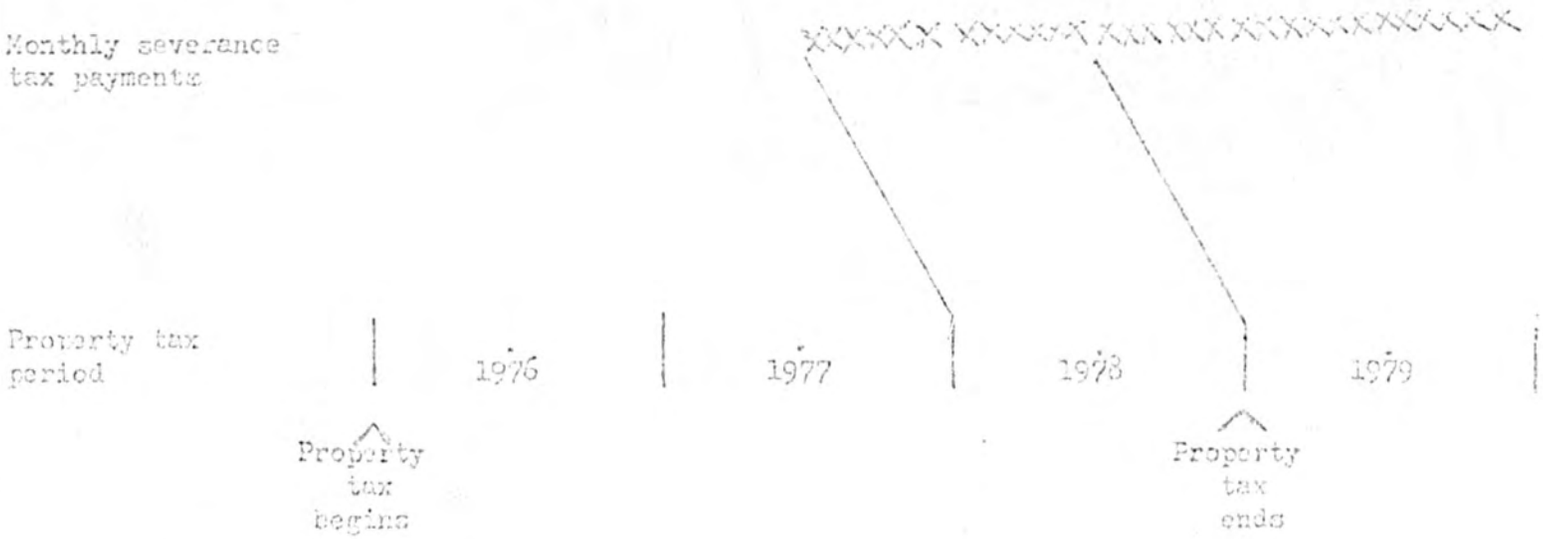
5. The five year grace period does not provide five years of exemption after discovery, but after lease issue date. Since discovery (if any) followed rather than preceeded leasing for all leases issued prior to January 1, 1974, the grace period in all existing cases is less than five years after discovery.

6. The incidence of the property tax depends on the circumstances. Three statements can be made.

A. For all existing leases subject to property tax liabilities, the incidence is upon the lessee. Oil produced from the lease (if not in production in 1972) will be classified by the Federal Energy Administration as "new oil" and may be sold under free market conditions at the highest price that the market will allow. The imposition of this tax will not increase or reduce the supply of oil therefore the market price is unaffected by the tax. The lessee cannot pass the tax along to buyers of oil.

B. For all existing leases the lessee cannot pass the tax back to the lessor. The bonus has already been bid and paid. The lessee does not have the option of renegotiating the lease payment terms.

Figure 2--. Illustration of overlapping property and severance tax payments for a known oil reserve leased prior to January 1, 1971 and beginning production in July 1971.



C. For leases issued subsequent to the imposition of a property tax there is a potential property tax liability. Bidders will likely reason that if Alaska imposed a property tax once, in response to a critical budgetary need, it may do so again. In estimating costs, revenues and net income for future leases in order to arrive at a present value and a bonus bid, the probability of future property taxes will be included along with other contingent costs. This will reduce present value estimates and yield lower bonus payments to the state in the future.

7. As indicated in my testimony the most serious shortcoming of a property tax on oil reserves as proposed is the fact that such a tax is not based on an ability to pay. Income is not expected to flow from the Alaskan oil reserves dependent on the trans-Alaskan pipeline until 1977. From the date on which these bases were issued until the date oil is delivered to market, those reserves will generate no income. Payment of a property tax must come from other income available to the lessees, from borrowed funds or from new equity capital. The lessees have already borrowed on a large scale to finance construction of the pipeline. While this outlay has been greater than expected, income from other oil production has also been greater than expected due to the rapid increase in crude oil prices since 1973. A large property tax burden will place a great financial burden on SOHIO as the company holding the largest share of North Slope known crude oil reserves and to a lesser degree on ARCO. There is no corresponding ability to pay this tax.

Sincerely yours,

WALTER J. MEAD

WJM:mm

May 22, 1975

Senator Chancy Croft
President of the Senate
Pouch V
Juneau, Alaska 99811

Dear Chancy:

Attached is a memorandum dated May 21, 1975, sent to me by Professor Joseph P. Witherspoon which is entitled "Present Importance of Exercising the State's Tax Function Relative to Prudhoe Bay Reserves of Oil and Gas."

Due to general interest at this time in this subject I request that the above memorandum be printed in the Senate Journal Supplement.

Sincerely yours,

John Huber

JH:kb
Attachment

AGO 5301 71

May 25, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation & Revenue
Pouch V
Juneau, Alaska 99811

FROM: Joseph P. Witherspoon
Professor of Law
University of Texas School of Law
Austin, Texas 78705

SUBJECT: Present Importance of Exercising the State's Tax Function Relative to Prudhoe Bay Reserves of Oil and Gas

The purpose of this memorandum is to set forth certain considerations concerning, among other things, the present importance of the State's exercising tax function relative to Prudhoe Bay reserves of oil and gas.

1. Before the sale of oil and gas leases at Prudhoe Bay in 1969, the State of Alaska had available to it three distinct levels of governmental functions for dealing with the oil and gas underlying that state-owned area so as to maximize the return to the State and its people from the ownership, discovery, production, and transportation to ultimate markets of such minerals. These functions were:

(A) the sale of oil and gas leases in the Prudhoe Bay area pursuant to a State policy that would allow the State to realize upon the increase in value of State lands containing oil and gas following the initial sales and that would protect the State with respect to any manipulation of cost factors that would cause the amount of the royalties payable at the well-head upon production to be reduced.

(B) the leasing of State lands and control of leasing of private lands as right of way for private construction of a pipeline or State construction of a pipeline for transporting oil from the Prudhoe Bay area to the ultimate markets.

(C) the taxation of various traditional taxable interests relative to ownership and production of oil and gas in place; ownership of other property associated with exploration for and production, processing, and transportation to ultimate markets of oil and gas; and income from the foregoing activities.

2. Unfortunately, the full array of opportunities available at the first level of governmental functions relative to Prudhoe Bay oil in place were not utilized by the State and are no longer available to it. The State exercised its leasing function without reserving substantial portions of the designated area from leasing sales in checkerboard fashion so that the reserved land could be sold at subsequent sales at considerably higher prices than those paid in 1969 due to the greater knowledge later available concerning the existence of oil and gas under the land and other factors, such as inflation, that would tend to raise the price obtainable for such reserved lands. Since the land of the area was completely sold, neither may the State, instead of selling the remaining oil and gas leases, engage in its own developmental and production work on the remaining land. Nor did the State act to obtain, in addition to its reserved royalty, a substantial 50 per cent interest in the profits of the corporations which obtained production from the lands leased, as some of the Native groups have done. Unfortunately, also, the State failed to put numerous provisions into its oil and gas leases of Prudhoe Bay land similar to those incorporated subsequently into the original Alaska Pipeline Right-of-Way Leasing Act of 1972 that would have provided great protection to State interests. A primary example of such provisions would have been one relating to the maintenance of a reasonable level of tariffs charged by subsidiary pipeline companies of the producer/lessees since that level affects the amount of the State royalties payable upon production at the wellhead value.

3. The State in 1972 initially exercised its available government function at the second level by its passage of the Alaska Pipeline Right-of-Way Leasing Act (AS 38.35.10 - .260). This Act was designed not only to create substantial non-tax revenues for the State for the use of its lands by pipeline companies in transporting oil of producer/lessees in the Prudhoe Bay area to ultimate markets. It was also designed to bring back to the State important leverage that it failed to provide for in its original oil and gas leases as well as to create additional important forms of leverage. An example of the first kind of leverage was the provision in the Act permitting inclusion of the optional lease provision with respect to the lessee's maintaining a reasonable level of tariff charges on file with the Interstate Commerce Commission. Examples of the second kind of leverage provided by the Act were lease provisions required to be inserted into every lease concerning the pipeline companies' assumption of common carrier and common purchaser statuses; the sale to the State of up to a 20 per cent undivided interest in the pipeline; and the making of connections together with appropriate facilities for the purpose of making deliveries of crude oil or natural gas to a municipal area desiring such deliveries. The Act was also designed to provide the State with an excellent vehicle for negotiating from a strong position, in return for State reductions in the level of lease rentals, for various affirmative actions on the part of pipeline companies that would assist in the solution of numerous major State problems, such action to be provided for in lease provisions looking to Native hire, the expansion of existing pipelines, the construction of new pipelines, education and training for employees, and installation of facilities and inauguration of services that would make possible general economic growth in the State. This extraordinarily important Act providing the State with such valuable leverage for dealing with pipeline companies and, indirectly, with their parent producer companies in the solution of State problems was so changed in its content by the 1973 amendments thereto as to be of little value for achieving its original purposes.

4. As a result of the way the State exercised its leasing function relative to oil and gas in place in the Prudhoe Bay area in 1969 and as a result of

the 1973 amendments to its 1972 Alaska Pipeline Right-of-Way Leasing Act, the State now has only one of its three basic governmental functions left to exercise with respect to the oil and gas in place in the Prudhoe Bay area in order to achieve its reasonable goal of maximizing the return to the State and its people from the ownership, discovery, production and transportation to ultimate markets of the oil and gas in the original lease area at Prudhoe Bay. This is, of course, the State's taxing function. By a careful and thorough use of this third and only remaining function - so far as the oil and gas reserves in the Prudhoe Bay lease area are concerned - the State can generate revenue that it could have generated and could have continued to generate by optimum use of the first two functions as well as to realize the normal tax revenues to which it is entitled by the exercise of this function. Moreover, while the State cannot regain the leverage it has lost by the way it has exercised its first two governmental functions, it can generate revenue through which it can do itself what it could have required or negotiated for the producers and pipeline companies to do under appropriate leases and lease laws.

In this context, the ad valorem property tax on oil and gas in place has a special justification as a new and independent source of substantial tax revenues at this time. Not only is such a tax a usual, normal and prudent exercise of the State's tax function as proven by its wide use in other mineral producing states, but also, its use now can produce revenues for the State to replace the revenues that could have been produced by the reservation in checkerboard fashion of oil and gas lands in the lease area of Prudhoe Bay and their subsequent sale at increased prices as, for example, today when Alaska is in the midst of heavy inflation and a financial crunch. Its use today can produce revenues for the State to replace the revenues that would have been produced by the State having reserved, as Native groups have, a 50 per cent interest in the profits of the oil producing corporations. The oil companies who obtained the Prudhoe Bay oil and gas lands that should have been reserved by the State for later sale and who have profited by the increase in value in oil and gas in place since

the original sale should be made to respond as owners of valuable mineral property generally do elsewhere to a rational ad valorem property tax. This justification is in addition to the numerous justifications for the ad valorem property tax as applied to minerals in place such as oil, gas, coal, and other minerals. That justification has been well stated by H. Groves in his outstanding work on the financing of government:

> "(The ad valorem tax) is the clearest means of equating the tax burden on mines with that on other property. It provides state and local government more stable revenue than any other form of mine taxation, and it is less arbitrary than its rivals."
> H. Groves, Financing Government (1965) at page 347.

GOVERNOR HAMMOND'S STATEMENT

BEFORE THE JOINT RESOURCES COMMITTEE ON TAXING POLICY

MARCH 31, 1976

I would like to take this opportunity to convey my position relative to the State's taxing policy for non-renewable resource industries, particularly the petroleum industry. I am intrigued with the concept of taxing the "superior profitability" that may emanate from the development of a non-renewable resource such as Prudhoe Bay petroleum, for I believe such may be necessary to provide adequate funds for investment in renewable resource industries in order to benefit future generations of Alaskans. However, such a policy must accomplish the following objectives:

1. It must generate sufficient revenues not only to compensate the State for additional service costs attending such development but also to provide a reasonable additional "dividend" to Alaskans.

2. It must leave profits to investors sufficient to encourage their continued interest in Alaskan resource development, especially where high risks, such as those in the area of oil and gas development, are involved.

3. It must be reasonably responsive to national and world economic trends of the time.

AGO 530167

4. It should not discriminate on the basis of ownership.

5. It must reduce uncertainty and encourage stable expectations about future resource tax and management policies.

I have, of course, submitted a gas severance tax measure which I believe meets these objectives. Accordingly, an oil severance tax, if consistent with the aforementioned objectives, could be acceptable. However, I must oppose other particulars of the proposed legislation designed to tax the petroleum industry for the following reasons:

First, the objectives of prudent tax policy which I previously outlined are not clearly attained.

Second, the majority of the tax measures before the Legislature would be extremely difficult to administer. The cost of additional staff would be tremendous, and additional study is in order to determine how to achieve optimum results at minimum operational cost.

Third, implementation of new taxes at this time may create rather than resolve problems. First, virtually any tax imposed this year will serve to depress the assessed valuation of petroleum reserves resulting in a reduction in revenue from the reserve tax. This, as you know, is critical to our short-term cash flow, and failure to address this problem may force other less desirable resource decisions.

Moreover, prior to Congressional price determination of Prudhoe Bay oil, it is not possible to determine what constitutes "profitability."

Accordingly, imposition of experimental tax measures without more certain knowledge of Prudhoe Bay production costs, production levels, and oil prices may well be counterproductive to the State's long-term best interests.

I believe that new and untried tax measures are neither needed nor desirable this year. High volume flows of Prudhoe Bay oil will not begin until mid-1977 and after. We have only low to modest production from declining fields until that time. These facts, together with the effects on reserve tax revenues, strongly argue that we must take the additional time available to formulate the soundest possible tax, leasing and other disposal measures related to State revenues rather than act precipitously and prematurely in one of our most sensitive areas of Alaska public policy.

Our work must be ongoing, and you have my pledge to develop sound policies addressing the superior profitability issue. For the Administration, to do so, however, will require additional ongoing funding for the Department of Revenue and the Department of Natural Resources for in-depth joint analysis of alternative taxation and management measures, and the proper balance

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between these functions for maximizing revenues. I will shortly be submitting additions to my budget proposals for this purpose.

The Legislature hopefully will also carry on its examination of taxation of these nonrenewable enterprises demonstrating superior profitability. Individuals conducting this research should, in light of changing economic conditions, evaluate existing tax programs, develop alternative tax measures, identify problems and forecast tax receipts. This information should then be utilized for legislative recommendations and tax policy decisions in 1977 and following years.

Until such in-depth studies are done, neither this Administration nor the Legislature can determine what the best means of taxing "superior profitability" would be and what would most effectively serve the public interest. Accordingly, I am determined to secure the necessary research and present my recommendations to the next legislative session.

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ok John Huber

March 15, 1976

The Honorable John Huber
Senator and Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature - Senate
Pouch V
Juneau, Alaska 99811

In re: Validity of exemption in behalf of Native individual and group (village or regional corporation) property interests contained in legislative measures imposing an ad valorem tax on oil and gas reserves

Dear Senator Huber:

During the First Session of the Ninth Legislature several proposals were made to exempt from the proposed legislative measures imposing an ad valorem tax on oil and gas reserves certain interests in property of a Native individual, Native group or village, or regional corporation.

You have asked me to provide you with any memorandum that may have been prepared by me during that session bearing upon the validity under the Constitution of the United States of such exemptions. Upon checking my files, I discovered that I did not prepare any such memorandum. However, I did participate in a conference on April 9, 1975, in the offices of your Special Committee in which both Dean Erwin Griswold and I expressed our respective views concerning this matter. There were present at that meeting yourself, Senator Chancy Croft, Representative Steve Cowper, and Professor Henry Wilkinson, among others.

This letter summarizes my views upon the validity of the kind of exemption about which you have inquired. It is based upon a fresh and in-depth investigation of the relevant case and scholarly authorities.

The Types of Exemptions in Behalf of Native Property Interests Contained in Proposed Measures Imposing An Ad Valorem Tax on Oil and Gas Reserves

There were two types of exemptions proposed in behalf of Native property interests in proposed measures imposing an ad valorem tax on oil and gas reserves during the First Session of the Ninth Legislature. One type, which took many forms, applied to property interests owned by Native individuals, Native groups, or Village or Regional Corporations. Another type, which was discussed as a possible measure at the April 9th meeting referred to above, applied to property interests transferred by such individuals, groups, or corporations to third parties and owned by the latter.

So far as the question of validity of the first type of exemption is con-

cerned, the variation in form presented in the various proposals is without significance. Some proposals of this type simply tracked the exemption contained in Section 21 of the Alaska Native Claims Settlement Act, 43 U.S.C. section 1620. Thus, CS for Sponsor Substitute for House Bill No. 297 (Original sponsor: Cowper, et al; Introduced 4/25/75) provided for the exemption as follows:

> "Sec. 43.58.020. Exemptions. (a) The following interests . . . shall be exempt . . .:
> (2) any interest exempted from taxation by sec. 21 of the Alaska Native Claims Settlement Act (P.L. 92-203, 43 U.S.C. 1620)."

Other proposals of this type provided a wider form of exemption. Thus, an amendment proposed for consideration by the Free Conference Committee with respect to CS SSHB 297 (Rules) on May 28, 1975, called for adding the following exemption to

> "Sec. 43.58.020. Exemptions. (a) The following interests . . . shall be exempt . . .:
> (5) any property of a Native individual, Native group or village, or regional corporation conveyed to such owner of that property pursuant to the Alaska Native Claims Settlement Act (P.L. 92-203) during the period of exemption specified by sec. 21 of that Act or pursuant to any other federal statute or authority that provides for a conveyance of such a property to a Native individual, Native group or village, or regional corporation."

I am not aware of any bill which proposed the second type of exemption described above so as to extend the exemption to any property transferred by a Native individual, Native group or village, or regional corporation to a third party and owned by such party who does not fall into the class of persons or entities to which the grantor belongs.

The Validity of Exemptions in Behalf of Native Property Interests under the Constitution of the United States

In light of the well-established constitutional doctrines applicable to state and local tax legislation, the only provision that is relevant for testing the validity of such exemptions is the Equal Protection Clause of the Fourteenth Amendment. No serious question of validity of these exemptions can be raised, without involvement of additional facts, under either the Due Process Clause of the Fourteenth Amendment or the Commerce Clause.

As I mentioned in the conference of April 9, 1975, the Alaska Native Claims Settlement Act operates to give validity to state legislation that grants exemptions from state tax measures, even though the state tax exemption is wider than the federal tax exemption, provided that the same persons or entities are being benefitted by the two exemptions. This proposition follows from application of the principle that a state can act to give support to a federal policy within its own jurisdiction so long as this does not hinder the achievement of the policy. The fact that the state extends its support of that policy to areas beyond the focus of that policy as originally conceived by the federal government does not basically change the conclusions stated above. Unless the scheme of federal regulation is so pervasive as to make reasonable the inference that Congress left no room for the State to supplement it, the State may supplement that scheme. Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 229-30 (1947). While the principle stated in the Rice case was made with regard to federal regulation, the principle is a fortiori applicable with regard to federal taxation. In the

field of taxation and taxation policy, the federal and state governments each retain ample power to pursue their respective interests and there is far less occasion for finding conflict between their respective efforts to legislate. See, e.g., Detroit v. Murray Corporation, 355 U.S. 489 (1958), in which the Supreme Court sustained the application of local government personal property taxes to property owned by a subcontractor under a prime contract for the manufacture of airplane parts between two private companies and the United States. Also, see, the McCarran Act, 59 Stat. 33, 15 U.S.C. sections 1011-1015, which declared that the business of insurance shall be subject to the laws of the several states relating to the regulation or taxation of such business. This act was enacted after the decision of the Supreme Court of the United States in United States v. South-Eastern Underwriters Association, 322 U.S. 533 (1944) in which it was held that the business of insurance could be subjected to federal regulation and that the Sherman Antitrust Act applied to it. Just as the McCarran Act is to be viewed as federal legislation permitting state taxation of an insurance company engaged in interstate commerce so far as business done within a state so the Alaska Native Claims Settlement Act is to be viewed as permitting state exemptions from taxation of those exempted from taxation by that act. Even if, without the federal statute, there would be no state power so to act because of some federal statutory or constitutional provision, the constitutional federal statute operates to provide power to the state to act within the scope of its policy and purposes.

Equal Protection Clause Considerations

Since the analysis so far would only sustain the validity of the first type of exemption under consideration, it is necessary to consider the application of the Equal Protection Clause of the Fourteenth Amendment to the second type of exemption. Moreover, since the Legislature may want to utilize a broader form of the first type of exemption, it will be necessary to consider the application of the Equal Protection Clause to that broader form. The analysis utilized above only sustains, strictly speaking, the validity of the first type of exemption which precisely tracks the exemption from taxation contained in Section 21 of the Alaska Native Claims Settlement Act.

Under certain circumstances, which should be carefully understood, exemptions of both the first and second type discussed above are valid under the Equal Protection Clause of the Fourteenth Amendment, in my opinion. The circumstances are that the Legislature chooses to enact these exemptions upon the basis that they are needed in order to protect Native individuals, Native groups or villages, or Native regional corporations with regard to the public interest in their economic, educational, social, political, and other like development and progress. The Legislature must have a rational basis for concluding that either or both of these exemptions will promote this public interest. The Legislature will especially require justification for its conclusion that the second type of exemption will promote this public interest since there will be, by hypothesis, no essential difference between a third party who enjoys the tax exemption because of a transfer of a property interest from a Native individual or entity and a third party who does not enjoy the tax exemption because of a transfer of a property interest from someone or some entity other than a Native individual or entity. This justification should be supported by evidence or data presented to the relevant legislative committees of both houses of the Alaska Legislature and, preferably, this evidence or data should be assembled in a report by each of these committees.

The starting point of the development of the doctrine concerning the application of the Equal Protection Clause as a limitation upon the taxing power of the states was the case of Bell's Gap Railroad Co. v. Pennsylvania, 134 U.S. 232 (1890). In upholding the particular tax involved, an annual tax measured by the nominal value of corporate bonds although all other moneyed securities were taxed at their actual value, Mr. Justice Bradley said for the Court:

> "The provision in the Fourteenth Amendment, that no State shall deny to any person within its jurisdiction the equal protection of the laws, was not intended to prevent a State from adjusting its system of taxation in all proper and reasonable ways. It may, if it chooses, exempt certain classes of property from any taxation at all, such as churches, libraries and the property of charitable institutions. . . . All such regulations, and those of like character, so long as they proceed within reasonable limits and general usage, are within the discretion of the state legislature, or the people of the State in framing their Constitution. But clear and hostile discriminations against particular persons and classes, especially such as are of an unusual character, unknown to the practice of our governments, might be obnoxious to the constitutional prohibition. It would, however, be impracticable and unwise to attempt to lay down any general rule or definition on the subject, that would include all cases. They must be decided as they arise." Id. at 237.

Perhaps the classic position concerning the validity of exemptions in state property tax laws was stated by the Supreme Court of the United States in the case of Williams v. Mayor and City Council of Baltimore, 289 U.S. 36 (1933). In that case a state law exempting from taxation railroad property of a single, specified railroad company, which was in great financial trouble, was challenged as a violation of the Equal Protection Clause. The federal district court upheld the statute. The Court of Appeals for the Fourth Circuit reversed upon the ground that the statute was invalid under both the Equal Protection Clause and several provisions of the Maryland Constitution. The Supreme Court reversed the latter decision. While the Court held the plaintiff cities to be without standing to raise the Equal Protection issue, it entertained their claim that the statute violated the Maryland constitutional requirement of uniformity in taxation, which basically paralleled the scope of the federal Equal Protection Clause. The Court's disposition of the latter issue is, therefore, of great significance for its bearing upon the doctrine of Equal Protection as a limitation upon the state's power to tax. Mr. Justice Cardozo, speaking for the Court, stated:

> "Furtherance of the public good is written over the face of this statute from beginning to end as its animating motive. 'It is of the utmost importance for the welfare of the State and particularly the communities served by said railroad, that the operation of said railroad be continued.' 'It is in the judgment of the General Assembly' that 'to encourage the continued operation' of the road by the grant of the exemption will be to give heed to the promptings of 'a wise and sound public policy.' The exemption is to be confined to that part of the property of the company, which is used for railroad purposes, is to continue only so long as the property is so used, and is to expire in any event at the end of the two years beginning in

> January, 1931. It is not the function of a court to determine whether the public policy that finds expression in legislation of this order is well or ill conceived. . . . The judicial function is exhausted with the discovery that the relation between means and end is not wholly vain and fanciful, an illusory pretense. Within the field where men of reason may reasonably differ, the Legislature must have its way. . . . Nor in marking out that field will a court be forgetful of presumptions that help to fix the boundaries. 'As underlying questions of fact may condition the constitutionality of legislation of this character, the presumption of constitutionality must prevail in the absence of some factual foundation of record for overthrowing the statute.' . . .
>
> We are told that the signs of an arbitrary preference are written on the statute because the exemption is confined to this particular insolvent when it might have been extended to all other insolvents engaged in a like business. There is nothing to show that any Maryland railroad other than this one was in the hands of a receiver. The assailants of the statute have the burden of proving everything essential to their case. . . . But the result will be no different if other insolvents be assumed. The public policy that made it wise in the judgment of the Legislature to help this particular railroad and keep its business going may have failed altogether in respect of any other railroad, solvent or insolvent. Here was a line carrying millions of passengers, and supplying the only railroad service between the capital of the state and its most populous city. The rescue of such a road might be dictated by the public interest when a road in some other territory might wisely be abandoned to its fate." Id. at 41-43.

The Supreme Court in Lawrence v. State Tax Commission of State of Mississippi, 286 U.S. 276 (1932) sustained a state statute, challenged under the Equal Protection Clause, which exempted corporations from the obligation of paying an annual tax on their net income derived from activities in building highways outside of the taxing state while imposing that obligation upon the non-incorporated competitors of such exempted corporations. The Court applied the same kind of analysis with respect to the public interest it utilized in the Williams case, supra. It stated:

> "Apart from other considerations which may have led to the present legislation as an integral part of the state system of taxation of the income of corporations, one which affords a rational basis for the distinction made, is the fact that the state has adopted generally a policy of avoiding double taxation of the same economic interest in corporate income, by taxing either the income of the corporation or the dividends of its stockholders, but not both. . . . In the case of corporate income and dividends attributable to business done outside the state and received by stockholders of domestic corporations, the stockholders are taxed, and not the corporations." Id. at 284.

The most recent case applying the above doctrine is Kahn v. Shevin, 416 U.S. 351 (1974). In that case the Florida property tax exemption in behalf of widows was challenged by a widower as a denial to him of equal protection of the laws. The Supreme Court upheld the Florida Supreme Court decision sustaining the validity of the statute. Mr. Justice Douglas, speaking for the Court, stated:

> "There can be no dispute that the financial difficulties confronting the lone woman in Florida or in any other State exceed those facing the man. Whether from overt discrimination or from the socialization process of a male-dominated culture, the job market is inhospitable to the woman seeking any but the lowest paid jobs. . . . data compiled by the Women's Bureau of the United States Department of Labor show that in 1972 a woman working full time had a median income which was only 57.9% of the median for males--a figure actually six points lower than had been achieved in 1955. Other data point in the same direction. The disparity is likely to be exacerbated for the widow. While the widower can usually continue in the occupation which preceded his spouse's death, in many cases the widow will find herself suddenly forced into a job market with which she is unfamiliar, and in which, because of her former economic dependency, she will have fewer skills to offer.
>
> "There can be no doubt, therefore, that Florida's differing treatment of widows and widowers 'rest(s) upon some ground of difference having a fair and substantial relation to the object of the legislation.' Id. at 353-355.

The later cases applying the doctrine elaborated above show greater concern with the actual justification offered in behalf of tax exemptions or classifications. In addition to the Kahn case, the cases of Reed v. Reed, 404 U.S. 71 (1971) and Frontiero v. Richardson, 411 U.S. 677 (1973) illustrate the point.

It remains to be examined whether a state tax statute can validly grant an exemption to a person or entity not because it will serve some public interest associated with that person or entity but because by exempting that person or entity some other person or entity will be provided protection or assistance that is in the public interest. The answer is "yes". The Supreme Court, for example, has upheld the exemption of persons dealing with farmers in order to relieve the latter of the ultimate burden of the tax. The exemption from a tax upon the generation of electric power of that sold to consumers for use in irrigation was sustained as being in aid of a matter of public concern. Utah Power & Light Co. Pfost, 286 U.S. 165, 185 (1932). Agriculture has always been treated as a paramount industry in our economy and legislation designed to promote the welfare of farmers, particularly farmers with a problem, is viewed sympathetically by the courts. Thus, a statute exempting from an occupation tax upon all other sugar refiners, planters who refined sugar from their own cane was sustained by the Supreme Court. American Sugar Refining Co. v. Louisiana, 179 U.S. 89 (1900). Again, in Aero Mayflower Transit Co. v. Georgia Public Service Commission, 295 U.S. 285 (1935), the Supreme Court sustained the exemption of carriers of farm produce owned by the producers from an annual license fee of twenty-five dollars exacted from other motor carriers for hire. In this case, Mr. Justice Cardozo stated:

> "The plight of the Georgia farmer has been pictured by the State Court. . . . To free him of fresh burdens might seem to a wise statecraft to be a means whereby to foster agriculture and promote the common good." Id. at 291.

The final inquiry in the application of the above doctrine concerning the Equal Protection Clause to exemptions in state property tax laws is whether the exemption of third persons who lease or purchase property from Native individuals, Native groups or villages, or Native regional corporations will be judged by the Supreme Court to have been done by the Alaska Legislature with the result that it is reasonably related to the promotion of a public interest in the welfare of such individuals, groups or villages, or regional corporations and that that asserted public interest is one that may be so promoted. On page 3 of this letter, I have suggested that that public interest could well be the economic, educational, social, political, and other like development and progress of these individuals and entities. I have also suggested that it is important that the Legislature and its committees in enacting such an exemption demonstrate in their consideration of it their concern with such development and progress and the basis for the judgment that that development and progress will be facilitated by the exemption granted.

There are considerable authorities for the proposition that government may specially favor Native individuals or groups and exempt them from taxation. Most of these authorities concern the federal government and federal measures or policies exempting Indians from state and local taxation. Nevertheless, these authorities are strong analogies for sustaining state tax measures which exempt Native individuals and groups from the obligation of paying taxes as well as those who buy or lease property from them. A leading case of this sort is Board of County Commissioners of Creek County v. Seber, 318 U.S. 705 (1943). In this case the land of certain members of the Creek Tribe was subjected to Oklahoma property taxes. The taxpayers relied upon a federal statute exempting land held by an Indian subject to restrictions against alienation except with approval of the Secretary of the Interior from taxation as the basis for their suit to recover taxes paid. The federal statute was challenged as being unconstitutional. Mr. Justice Murphy, speaking for the Court, held the statute to be valid. He stated:

> "The Acts of 1936 and 1937 are constitutional. From almost the beginning the existence of federal power to regulate and protect the Indians and their property against interference even by a state has been recognized. . . . This power is not expressly granted in so many words by the Constitution, except with respect to regulating commerce with the Indian tribes, but its existence cannot be doubted. In the exercise of the war and treaty powers, the United States overcame the Indians and took possession of their lands, sometimes by force, leaving them an uneducated, helpless and dependent people needing protection against the selfishness of others and their own improvidence. Of necessity the United States assumed the duty of furnishing that protection and with it the authority to do all that was required to perform that obligation and to prepare the Indians to take their place as independent, qualified members of the modern body politic.
>
> "They (the Acts of 1936 and 1937) are appropriate means by which the federal government protects its guardianship and prevents the impairment of a considered program undertaken in discharge of the obligations of that guardianship. The fact that the Acts withdraw lands from the tax rolls and may possibly embarrass the finances of a state or one of its subdivisions is for the consideration of Congress, not the courts." Id. at 715-718.

While there are, of course, vital differencesbetween the situation of the Indians involved in the Seber case whom the federal government sought to protect by the Acts of 1936 and 1937 and the situation of the Native individuals and entities whom the Alaska Legislature might seek to protect and assist by both types of exemptions previously discussed, the principle of the Seber case would be applicable to state action designed to provide necessary protection and assistance to Native individuals and entities by such exemptions. That principle would sustain the validity of the state action if the Legislature demonstrates that that protection and assistance is necessary and that the exemptions will in fact make that possible.

If I can be of further assistance on this problem, please let me know.

Sincerely,

Joseph P. Witherspoon

Joseph P. Witherspoon

cc: The Honorable Chancy Croft
President of the Senate

MEMORANDUM

May 17, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation & Revenue
Pouch V
Juneau, Alaska 99811

FROM: Joseph P. Witherspoon
Professor of Law
University of Texas School of Law
Austin, Texas 78705

SUBJECT: Problems with the "SOHIO" Amendment to HB 297

1. You have asked me to comment upon problems of a constitutional or other legal nature presented by the "SOHIO" Amendment to HB 297 (Rules). You had previously asked me to comment upon similar problems presented by HB 297 itself. This memorandum points out three basic legal problems presented by this Amendment and, in addition, takes the position that HB 297, even without this Amendment, is unconstitutional under both the Constitution of the United States and the Constitution of the State of Alaska for essentially the same reasons that the Amendment itself is unconstitutional. Both HB 297 and the "SOHIO" Amendment clearly violate the Due Process and Equal Protection Clauses of the Fourteenth Amendment of the Constitution of the United States and the restrictions upon contracting state debt contained in Article IX, Sections 8 and 10, of the Constitution of the State of Alaska.

HB 297 has been correctly characterized by former Senator George Sillides in his memorandum of April 2, 1975, to Senator Kay Poland, Chairman of the Senate Resources Committee, as a statute providing for "mandatory borrowing" by or mandatory lending to the State. In effect,

the lessees of state oil and gas leases are required by HB 297 to loan their money to the State, interest-free, for an indefinite period between the date of payments made under the proposed statute and the date that their obligation matures in the future to pay severance taxes under production under their leases. The "SOHIO" Amendment continues the same principle and, indeed, constitutes an explicit admission against its own interest by the State that it is not really levying a new ad valorem tax by HB 297 but rather coercing the making to it of a loan by lessees under state oil and gas leases in the form of advance payments of royalties under such leases that are not due to be paid until production starts. By such an admission the State makes defense of HB 297 by the State Attorney General impossible and constitutes a legislative exercise in utter futility. What the State does under HB 297 and the "SOHIO" Amendment taken together is to confiscate the property of lessees under state oil and gas leases for a temporary period of time without just compensation and to do so under the form of coercing these lessees to loan such property to the State until production begins under these leases. The fact that the State upon such production returns the confiscated property in the form of credits against the then due severance taxes under state law or royalties under state leases only emphasizes the fact that the money previously required to be paid under HB 297 was a temporary confiscation of the lessee's property without just compensation in the form of an interest-free loan to the State.

In a conference arranged by Senator John Rader between Mr. Richard M. Donaldson, Senator Rader, and myself on May 16, Mr. Donaldson carefully and fully explained to me the nature, operation, and reasons for the "SOHIO" Amendment. He answered well the various questions that I had about his proposal. On the other hand, Mr. Donaldson explicitly stated in the presence of Senator Rader that he had prepared an extensive brief demonstrating that HB 297 was clearly unconstitutional under the Due Process and Equal Protection Clauses of the Fourteenth Amendment of the Constitution of the United States and that he had submitted this brief to his principal, SOHIO. He also stated that he would advise SOHIO to challenge the constitutionality of HB 297 unless the "SOHIO" Amendment

was agreed to by the Legislature. While I have not had the privilege of examining this brief of Mr. Donaldson, I certainly agree with the conclusions he has reached in this brief and, in addition, assert that HB 297 is violative of the provisions of the Constitution of the State of Alaska to which I have made previous reference. But if Mr. Donaldson is correct in his conclusions concerning HB 297, he must apply also his conclusions to the "SOHIO" Amendment and to the combination of HB 297 and this Amendment since nothing is essentially changed in HB 297 by the addition of the latter. The proposed legislation after this addition still remains what it originally was: viz., the coercion of one or the other of advance payments of severance taxes or royalties under state leases. As such it is the confiscation of property by the State for a temporary period without just compensation in the form of a coerced loan to the State by lessees under state oil and gas leases.

The unconstitutional nature of HB 297 described above can only be eliminated by converting the statute into a genuine tax measure designed to produce new and independent tax revenues. To convert HB 297 from a "mandatory borrowing" statute into a genuine tax law it will be necessary to modify its tax credit provisions so as to produce a substantial amount of new and independent tax revenue. This can be accomplished in a number of ways. SB 374 does this by eliminating the Early Development Incentive Credit set out in Section 1 (Sec. 43.58.170) and Section 3 (Sec. 43.55.018) of HB 297. Another metnod was suggested in the memorandum submitted to you on April 7, 1975, by Professor Henry Wilkinson and myself. The solution just proposed for eliminating the unconstitutionality now present in HB 297, whether with or without the "SOHIO" Amendment, may well mean that the State will have to turn to other means of raising some of the revenue it needs in addition to an ad valorem tax statute. Certain other alternatives have been discussed at the hearings this session on HB 297 and similar measures and need not be discussed in this memorandum.

2. It is clear, if this Amendment is adopted, that the State of Alaska will lose one of the several alternatives which various witnesses in the hearings

on this and similar bills have stated the State should consider using for obtaining revenue needed by it. The opportunity to obtain revenue that the State would lose by this Amendment is the opportunity to sell future royalties that will become due and payable upon production under state leases. The Amendment calls for certain lessees under state oil and gas leases to make advance payments of such future royalties precisely as future royalties in lieu of payment of ad valorem taxes rather than to make payment under HB 297 of ad valorem taxes on oil and gas proven reserves. But the payment now of future royalties in lieu of payment of ad valorem taxes means that the State no longer has the right of property to such royalties under the State leases. The future royalties will have been paid in advance of their due date to the State. They cannot any longer be sold by the State, either now or in the future unless and until repurchased at the time of production, no matter how attractive an offer might be made to the State for them, were they still available for sale. Not only can they no longer be sold by the State, but they will also remain unavailable to the State for such other use as they might prove to have for the State under the leases or otherwise.

3. The "SOHIO" Amendment provides that "the State . . . shall have the right to purchase at the time of production" under specified conditions "at the field market price or value at the well . . . any part or all of the royalty oil or gas represented by the advance payment of royalties." Not only does this provision of the Amendment fail to provide a way for the State to sell or control royalties of which the lessee has made advance payments to the State, prior to production of the oil to which they pertain, as previously stated in paragraph 2, but also under this provision the State will undergo or face certain substantial risks with respect to its ability to exercise its so-called right under HB 297 to buy back the royalties at the time of production that have been paid in advance by the lessee. When production begins under a state lease and royalties then become due, it has been argued by proponents of the Amendment that the State can take some of the severance taxes that the lessee is then currently paying and with such tax moneys buy back--dollar for dollar--the royalties

previously paid to the State by the lessee. This argument, however, overlooks some of the contingencies that may occur subsequently to the advance payment of royalties. One such contingency is that the lessee may get involved in financial difficulties and that as a result of these difficulties either the Federal Government or some other entity or person may have or obtain a prior claim on the moneys of the lessee, and as a further result, the severance taxes on current production may not be paid or not be currently paid by the lessee. In such a case, if the State wants to buy back at the time of production the royalties previously paid to the State, the State will not have available, as proponents of the Amendment claim, any severance taxes paid by the lessee at the time of production with which to buy back such royalties and for which the lessee will receive a credit against royalties due the State under the lease at the time of production if the royalties previously paid are not then bought back by the State. The State, in such an event, would have to obtain new, additional money in order to buy back the royalties. If raising this new money for this purpose is not feasible, then the State would not be able to buy back the previously paid royalty and that royalty will be lost to the State.

4. HB 297, with or without the "SOHIO" Amendment, is unconstitutional. As previously stated, the latter Amendment simply adds to the bill an explicit admission by the State against its own interest that the bill is not a genuine taxing measure designed to add new and independent tax revenues to those provided for by other tax laws but rather is a statute calling for mandatory advance payments of future royalties otherwise only to become due and payable in the future under state oil and gas leases upon the obtaining of production of these minerals. Under the Amendment the coerced payments are not in payment of ad valorem taxes but in lieu thereof and specifically as advance payments of royalties. Indeed, the State agrees that the advance payment of such future royalties may be taken as a credit not against taxes to come due in the future under a state tax law but against royalties to become due and

payable under state leases upon production being obtained. HB 297 without the Amendment stands in no better status relative to its constitutionality. As it now stands with the various credit arrangements built into its structure, HB 297 is not a genuine taxing measure designed to add new and independent tax revenues to those provided for by other tax laws but rather is a statute calling for mandatory advance payments of future severance taxes otherwise only to become due and payable in the future under the state severance tax law and state oil and gas leases upon the obtaining of production of these minerals. Under the Amendment the coerced payments are not in payment of severance taxes because these taxes are not presently due and, indeed, will never become due unless production is obtained. Moreover, the payments are not in payment of ad valorem taxes in any genuine sense since they are collected wholly with reference to an ultimate credit being given for their payment against the severance tax obligation of the lessees when and if this obligation matures in the future. As previously stated, under HB 297, whether with or without the Amendment, the State is coercing the lending to it by lessees under state oil and gas leases of moneys on an interest-free basis subject to repayment at a later date. Under the Constitution of the United States this constitutes the confiscation of private property for a temporary period without just compensation and thus a denial of due process of law under the Fourteenth Amendment. It also constitutes a denial of equal protection of the laws to the lessees because it is the destruction of a highly protected private right belonging to them without the demonstration of a compelling public interest by the State and the unavailability of less drastic alternatives. Moreover, it is a violation of Article IX, Sections 8 and 10 because the confiscation of property by the State is in the form of the creation of a state debt without complying with the requirements of these sections.

As Mr. Donaldson well knows, the Supreme Court of the United States has long since adhered to the doctrine that a state or federal tax statute can be "so arbitrary as to compel the conclusion that it does not involve

an exertion of the taxing power, but constitutes, in substance and effect, the direct exertion of a different and forbidden power, as for example the confiscation of property." This doctrine was reaffirmed by the Supreme Court as recently as 1974 in the case of Pittsburgh v. Alco Parking Corporation, ___ U.S. ___, 42 U.S.L.W. 4874 (1974) and has been used to invalidate a federal tax statute, Heiner v. Donnan, 285 U.S. 312, 326 (1932), and a state tax statute, Nichols v.Coolidge, 274, U.S. 531, 542 (1927). HB 297, with or without the Amendment, is a clearer case of a tax statute being utilized for the confiscation of private property than those invalidated in the Heiner and Nichols cases by the Supreme Court of the United States. The intent of the Alaska Legislature with respect to HB 297 has been made extraordinarily clear both in the committee hearings and in the legislative debates. Senator Rader, the proponent of the Amendment, calls HB 297 a form of vandalism. Whether or not one accepts this characterization, former Senator Silides' characterization of HB 297 as "mandatory borrowing" is clearly a correct one. HB 297 cannot in its present form be argued to be a genuine tax measure. It is a measure designed to take private property for a temporary period for the benefit of the State without payment of just compensation to the lessees under state oil and gas leases from whom this property is taken by the State.

Moreover, even if by some legal legerdemain HB 297, with or without the Amendment, were to clear the judicial hurdle with respect to the Due Process Clause of the Fourteenth Amendment, it would still constitute a denial of equal protection of laws under the same Amendment. There are certain interests which are highly protected interests relative to state action impinging upon them. The rights to be free of the deprivation or destruction of one's life or property by the State are examples of such highly protected rights. With respect to such rights, the Supreme Court has long since established that in order for a state to deprive one of such rights there must be a compelling state interest justifying the state in taking such action and there must be no alternative and less drastic means available to the state for subserving that compelling state

interest. This doctrine has been well illustrated with respect to the right to travel in the leading case of Shapiro v. Thompson, 394 U.S. 618 (1969). Moreover, the state in depriving a person of one of these highly protected rights must bear the burden of showing it has a compelling state interest therefor and that there is no alternative, less drastic means for achieving that interest.

It seems manifest that the State of Alaska, even if it could show that it has a compelling state interest in taking this property from lessees under state oil and gas leases, which is most doubtful, could not show that it does not have less drastic alternatives available to it for achieving its goal. There has been copious testimony in the various hearings on HB 297 and similar bills concerning such other measures available to the State.

Even on the basis of the usual Equal Protection Clause criteria, HB 297, with or without the Amendment, also is unconstitutional. What rational basis is there for the State of Alaska to command a very few business entities, those having state oil and gas leases, to loan moneys to the State on an interest-free basis, without also asking other business entities and persons in the State to do likewise? What rational distinction can be pointed out between state oil and gas lessees and other business entities in the State with respect to the benefits they receive from the State that might justify the State in requiring the making of such loans to the State only by these lessees? If anything, the conditions "SOHIO" claims it finds itself in, if credited by adoption of the "SOHIO" Amendment, would seem to argue that others than, or along with, SOHIO should be asked to bear the burden of the coerced loan and temporary confiscation of property accomplished by HB 297. See, for example, Levy v. Louisiana, 391 U.S. 68 (1968).

HB 297, with or without the Amendment, also presents difficulties of constitutional proportions with respect to Article IX, Sections 8 and 10 of

the Constitution of the State of Alaska. It seems clear, as previously stated, that HB 297 provides for "mandatory borrowing" by or mandatory lending to the State, as former Senator George Silides has stated. But Section 8 of Article IX of the State Constitution states that "No state debt shall be contracted unless authorized by law for capital improvements and ratified by a majority of the qualified voters of the State who vote on the question . . ." It cannot be claimed by the proponents of HB 297 and the Amendment that the mandatory borrowing it effectuates falls within any of the exceptions stated in Section 8 of Article IX that allow the State to contract debt. For this reason HB 297 and the Amendment are unconstitutional since the borrowing effectuated by them is not authorized by law for capital improvements and ratified by a majority of the qualified voters of the State who vote on the question.

Moreover, Section 10 of Article IX provides: "The State . . . may borrow money to meet appropriations for any fiscal year in anticipation of the collection of the revenues for that year, but all debt so contracted shall be paid before the end of the next fiscal year." HB 297 and the Amendment violate Section 10 as a form of borrowing by the State since the borrowing effectuated by them is made without regard to collection of revenues in the year in which the borrowing is done and, indeed, looks, so far as the Amendment is concerned, not to tax revenues at all as a mode of repayment but rather to a royalty payment credit as the mode of repayment of the state debt. Still further, the repayment of the state debt could occur in a year well down the line from "the end of the next fiscal year" subsequent to the fiscal year in which the borrowing is effectuated. This would be an additional violation of the prohibition contained in Section 10.

With respect to the matter of contracting state debt, there can be no question that the Due Process and Equal Protection Clauses of the Fourteenth Amendment in their application to HB 297 operate to impose a debt upon the State of Alaska to repay not only the moneys borrowed under coercion upon the lessees effectuated by HB 297 but also the just compensation to those

lessees for the use of their moneys by the State. This debt is clearly a debt upon the general credit of the State which the lessees can enforce by a suit in a federal court and the State would be compelled to utilize its usual means of raising revenues and making appropriations in order to discharge its debt over to these lessees. In this connection, see Lyons v. Bottolfsen, 101, P.2d 1 at 5-6 (Supreme Court of Idaho, 1940) and Opinions of the Attorney General, No. 39, State of Alaska, dated December 30, 1959, and signed by then Attorney General and now Senator John L. Rader. Also see State of Nebraska v. Duxbury, 180 N.W.2d 88 at 92 (Supreme Court of Nebraska, 1968).

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June 5, 1975

Hon. John Huber
Pouch V
Juneau, Alaska 99811

Dear Senator Huber,

Thank you very much for your letter of June 2nd, with the accompanying material.

Needless to say, I am very glad to see the final version of the statute. It seems to me that it has come out very well I can well imagine the long, hard work which was devoted to the final drafting of the Bill.

I do hope that this works well, and that it will help to solve Alaska's immediate financial problems.

It was a privilege and a pleasure to be able to come to Alaska and to participate in the early stages of the work in the preparation of this Bill. I greatly enjoyed the opportunity to meet you, and other members of the Legislature.

With best wishes, and thanks again for your letter,

Very truly yours,

Erwin N. Griswold

AGO 530206

M E M O R A N D U M

May 17, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation & Revenue
Pouch V
Juneau, Alaska 99811

FROM: Joseph P. Witherspoon
Professor of Law
University of Texas School of Law
Austin, Texas 78705

SUBJECT: Problems with the "SOHIO" Amendment to HB 297

1. You have asked me to comment upon problems of a constitutional or other legal nature presented by the "SOHIO" Amendment to HB 297 (Rules). You had previously asked me to comment upon similar problems presented by HB 297 itself. This memorandum points out three basic legal problems presented by this Amendment and, in addition, takes the position that HB 297, even without this Amendment, is unconstitutional under both the Constitution of the United States and the Constitution of the State of Alaska for essentially the same reasons that the Amendment itself is unconstitutional. Both HB 297 and the "SOHIO" Amendment clearly violate the Due Process and Equal Protection Clauses of the Fourteenth Amendment of the Constitution of the United States and the restrictions upon contracting state debt contained in Article IX, Sections 8 and 10, of the Constitution of the State of Alaska.

HB 297 has been correctly characterized by former Senator George Silides in his memorandum of April 2, 1975, to Senator Kay Poland, Chairman of the Senate Resources Committee, as a statute providing for "mandatory borrowing" by or mandatory lending to the State. In effect,

the lessees of state oil and gas leases are required by HB 297 to loan their money to the State, interest-free, for an indefinite period between the date of payments made [under the proposed statute and the date that their obligation matures] in the future to pay severance taxes under production under their leases. The "SOHIO" Amendment continues the same principle and, indeed, constitutes an explicit admission against its own interest by the State that it is not really levying a new ad valorem tax by HB 297 but rather coercing the making to it of a loan by lessees under state oil and gas leases in the form of advance payments of royalties under such leases that are not due to be paid until production starts. By such an admission the State makes defense of HB 297 by the State Attorney General impossible and constitutes a legislative exercise in utter futility. What the State does under HB 297 and the "SOHIO" Amendment taken together is to confiscate the property of lessees under state oil and gas leases for a temporary period of time without just compensation and to do so under the form of coercing these lessees to loan such property to the State until production begins under these leases. The fact that the State upon such production returns the confiscated property in the form of credits against the then due severance taxes under state law or royalties under state leases only emphasizes the fact that the money previously required to be paid under HB 297 was a temporary confiscation of the lessee's property without just compensation in the form of an interest-free loan to the State.

In a conference arranged by Senator John Rader between Mr. Richard M. Donaldson, Senator Rader, and myself on May 16, Mr. Donaldson carefully and fully explained to me the nature, operation, and reasons for the "SOHIO" Amendment. He answered well the various questions that I had about his proposal. On the other hand, Mr. Donaldson explicitly stated in the presence of Senator Rader that he had prepared an extensive brief demonstrating that HB 297 was clearly unconstitutional under the Due Process and Equal Protection Clauses of the Fourteenth Amendment of the Constitution of the United States and that he had submitted this brief to his principal, SOHIO. He also stated that he would advise SOHIO to challenge the constitutionality of HB 297 unless the "SOHIO" Amendment

was agreed to by the Legislature. While I have not had the privilege of examining this brief of Mr. Donaldson, I certainly agree with the conclusions he has reached in this brief and, in addition, assert that HB 297 is violative of the provisions of the Constitution of the State of Alaska to which I have made previous reference. But if Mr. Donaldson is correct in his conclusions concerning HB 297, he must apply also his conclusions to the "SOHIO" Amendment and to the combination of HB 297 and this Amendment since nothing is essentially changed in HB 297 by the addition of the latter. The proposed legislation after this addition still remains what it originally was: viz., the coercion of one or the other of advance payments of severance taxes or royalties under state leases. As such it is the confiscation of property by the State for a temporary period without just compensation in the form of a coerced loan to the State by lessees under state oil and gas leases.

The unconstitutional nature of HB 297 described above can only be eliminated by converting the statute into a genuine tax measure designed to produce new and independent tax revenues. To convert HB 297 from a "mandatory borrowing" statute into a genuine tax law it will be necessary to modify its tax credit provisions so as to produce a substantial amount of new and independent tax revenue. This can be accomplished in a number of ways. SB 374 does this by eliminating the Early Development Incentive Credit set out in Section 1 (Sec. 43.58.170) and Section 3 (Sec. 43.55.018) of HB 297. Another method was suggested in the memorandum submitted to you on April 7, 1975, by Professor Henry Wilkinson and myself. The solution just proposed for eliminating the unconstitutionality now present in HB 297, whether with or without the "SOHIO" Amendment, may well mean that the State will have to turn to other means of raising some of the revenue it needs in addition to an ad valorem tax statute. Certain other alternatives have been discussed at the hearings this session on HB 297 and similar measures and need not be discussed in this memorandum.

2. It is clear, if this Amendment is adopted, that the State of Alaska will lose one of the several alternatives which various witnesses in the hearings

on this and similar bills have stated the State should consider using for obtaining revenue needed by it. The opportunity to obtain revenue that the State would lose by this Amendment is the opportunity to sell future royalties that will become due and payable upon production under state leases. The Amendment calls for certain lessees under state oil and gas leases to make advance payments of such future royalties precisely as future royalties in lieu of payment of ad valorem taxes rather than to make payment under HB 297 of ad valorem taxes on oil and gas proven reserves. But the payment now of future royalties in lieu of payment of ad valorem taxes means that the State no longer has the right of property to such royalties under the State leases. The future royalties will have been paid in advance of their due date to the State. They cannot any longer be sold by the State, either now or in the future unless and until repurchased at the time of production, no matter how attractive an offer might be made to the State for them, were they still available for sale. Not only can they no longer be sold by the State, but they will also remain unavailable to the State for such other use as they might prove to have for the State under the leases or otherwise.

3. The "SOHIO" Amendment provides that "the State . . . shall have the right to purchase at the time of production" under specified conditions "at the field market price or value at the well . . . any part or all of the royalty oil or gas represented by the advance payment of royalties." Not only does this provision of the Amendment fail to provide a way for the State to sell or control royalties of which the lessee has made advance payments to the State, prior to production of the oil to which they pertain, as previously stated in paragraph 2, but also under this provision the State will undergo or face certain substantial risks with respect to its ability to exercise its so-called right under HB 297 to buy back the royalties at the time of production that have been paid in advance by the lessee. When production begins under a state lease and royalties then become due, it has been argued by proponents of the Amendment that the State can take some of the severance taxes that the lessee is then currently paying and with such tax moneys buy back--dollar for dollar--the royalties

previously paid to the State by the lessee. This argument, however, overlooks some of the contingencies that may occur subsequently to the advance payment of royalties. One such contingency is that the lessee may get involved in financial difficulties and that as a result of these difficulties either the Federal Government or some other entity or person may have or obtain a prior claim on the moneys of the lessee, and as a further result, the severance taxes on current production may not be paid or not be currently paid by the lessee. In such a case, if the State wants to buy back at the time of production the royalties previously paid to the State, the State will not have available, as proponents of the Amendment claim, any severance taxes paid by the lessee at the time of production with which to buy back such royalties and for which the lessee will receive a credit against royalties due the State under the lease at the time of production if the royalties previously paid are not then bought back by the State. The State, in such an event, would have to obtain new, additional money in order to buy back the royalties. If raising this new money for this purpose is not feasible, then the State would not be able to buy back the previously paid royalty and that royalty will be lost to the State.

4. HB 297, with or without the "SOHIO" Amendment, is unconstitutional. As previously stated, the latter Amendment simply adds to the bill an explicit admission by the State against its own interest that the bill is not a genuine taxing measure designed to add new and independent tax revenues to those provided for by other tax laws but rather is a statute calling for mandatory advance payments of future royalties otherwise only to become due and payable in the future under state oil and gas leases upon the obtaining of production of these minerals. Under the Amendment the coerced payments are not in payment of ad valorem taxes but in lieu thereof and specifically as advance payments of royalties. Indeed, the State agrees that the advance payment of such future royalties may be taken as a credit not against taxes to come due in the future under a state tax law but against royalties to become due and

payable under state leases upon production being obtained. HB 297 without the Amendment stands in no better status relative to its constitutionality. As it now stands with the various credit arrangements built into its structure, HB 297 is not a genuine taxing measure designed to add new and independent tax revenues to those provided for by other tax laws but rather is a statute calling for mandatory advance payments of future severance taxes otherwise only to become due and payable in the future under the state severance tax law and state oil and gas leases upon the obtaining of production of these minerals. Under the Amendment the coerced payments are not in payment of severance taxes because these taxes are not presently due and, indeed, will never become due unless production is obtained. Moreover, the payments are not in payment of ad valorem taxes in any genuine sense since they are collected wholly with reference to an ultimate credit being given for their payment against the severance tax obligation of the lessees when and if this obligation matures in the future. As previously stated, under HB 297, whether with or without the Amendment, the State is coercing the lending to it by lessees under state oil and gas leases of moneys on an interest-free basis subject to repayment at a later date. Under the Constitution of the United States this constitutes the confiscation of private property for a temporary period without just compensation and thus a denial of due process of law under the Fourteenth Amendment. It also constitutes a denial of equal protection of the laws to the lessees because it is the destruction of a highly protected private right belonging to them without the demonstration of a compelling public interest by the State and the unavailability of less drastic alternatives. Moreover, it is a violation of Article IX, Sections 8 and 10 because the confiscation of property by the State is in the form of the creation of a state debt without complying with the requirements of these sections.

As Mr. Donaldson well knows, the Supreme Court of the United States has long since adhered to the doctrine that a state or federal tax statute can be "so arbitrary as to compel the conclusion that it does not involve

an exertion of the taxing power, but constitutes, in substance and effect, the direct exertion of a different and forbidden power, as for example the confiscation of property." This doctrine was reaffirmed by the Supreme Court as recently as 1974 in the case of Pittsburgh v. Alco Parking Corporation, ___ U.S. ___, 42 U.S.L.W. 4874 (1974) and has been used to invalidate a federal tax statute, Heiner v. Donnan, 285 U.S. 312, 326 (1932), and a state tax statute, Nichols v.Coolidge, 274, U.S. 531, 542 (1927). HB 297, with or without the Amendment, is a clearer case of a tax statute being utilized for the confiscation of private property than those invalidated in the Heiner and Nichols cases by the Supreme Court of the United States. The intent of the Alaska Legislature with respect to HB 297 has been made extraordinarily clear both in the committee hearings and in the legislative debates. Senator Rader, the proponent of the Amendment, calls HB 297 a form of vandalism. Whether or not one accepts this characterization, former Senator Silides' characterization of HB 297 as "mandatory borrowing" is clearly a correct one. HB 297 cannot in its present form be argued to be a genuine tax measure. It is a measure designed to take private property for a temporary period for the benefit of the State without payment of just compensation to the lessees under state oil and gas leases from whom this property is taken by the State.

Moreover, even if by some legal legerdemain HB 297, with or without the Amendment, were to clear the judicial hurdle with respect to the Due Process Clause of the Fourteenth Amendment, it would still constitute a denial of equal protection of laws under the same Amendment. There are certain interests which are highly protected interests relative to state action impinging upon them. The rights to be free of the deprivation or destruction of one's life or property by the State are examples of such highly protected rights. With respect to such rights, the Supreme Court has long since established that in order for a state to deprive one of such rights there must be a compelling state interest justifying the state in taking such action and there must be no alternative and less drastic means available to the state for subserving that compelling state

interest. This doctrine has been well illustrated with respect to the right to travel in the leading case of Shapiro v. Thompson, 394 U.S. 618 (1969). Moreover, the state in depriving a person of one of these highly protected rights must bear the burden of showing it has a compelling state interest therefor and that there is no alternative, less drastic means for achieving that interest.

It seems manifest that the State of Alaska, even if it could show that it has a compelling state interest in taking this property from lessees under state oil and gas leases, which is most doubtful, could not show that it does not have less drastic alternatives available to it for achieving its goal. There has been copious testimony in the various hearings on HB 297 and similar bills concerning such other measures available to the State.

Even on the basis of the usual Equal Protection Clause criteria, HB 297, with or without the Amendment, also is unconstitutional. What rational basis is there for the State of Alaska to command a very few business entities, those having state oil and gas leases, to loan moneys to the State on an interest-free basis, without also asking other business entities and persons in the State to do likewise? What rational distinction can be pointed out between state oil and gas lessees and other business entities in the State with respect to the benefits they receive from the State that might justify the State in requiring the making of such loans to the State only by these lessees? If anything, the conditions "SOHIO" claims it finds itself in, if credited by adoption of the "SOHIO" Amendment, would seem to argue that others than, or along with, SOHIO should be asked to bear the burden of the coerced loan and temporary confiscation of property accomplished by HB 297. See, for example, Levy v. Louisiana, 391 U.S. 68 (1968).

HB 297, with or without the Amendment, also presents difficulties of constitutional proportions with respect to Article IX, Sections 8 and 10 of

the Constitution of the State of Alaska. It seems clear, as previously stated, that HB 297 provides for "mandatory borrowing" by or mandatory lending to the State, as former Senator George Silides has stated. But Section 8 of Article IX of the State Constitution states that "No state debt shall be contracted unless authorized by law for capital improvements and ratified by a majority of the qualified voters of the State who vote on the question . . ." It cannot be claimed by the proponents of HB 297 and the Amendment that the mandatory borrowing it effectuates falls within any of the exceptions stated in Section 8 of Article IX that allow the State to contract debt. For this reason HB 297 and the Amendment are unconstitutional since the borrowing effectuated by them is not authorized by law for capital improvements and ratified by a majority of the qualified voters of the State who vote on the question.

Moreover, Section 10 of Article IX provides: "The State . . . may borrow money to meet appropriations for any fiscal year in anticipation of the collection of the revenues for that year, but all debt so contracted shall be paid before the end of the next fiscal year." HB 297 and the Amendment violate Section 10 as a form of borrowing by the State since the borrowing effectuated by them is made without regard to collection of revenues in the year in which the borrowing is done and, indeed, looks, so far as the Amendment is concerned, not to tax revenues at all as a mode of repayment but rather to a royalty payment credit as the mode of repayment of the state debt. Still further, the repayment of the state debt could occur in a year well down the line from "the end of the next fiscal year" subsequent to the fiscal year in which the borrowing is effectuated. This would be an additional violation of the prohibition contained in Section 10.

With respect to the matter of contracting state debt, there can be no question that the Due Process and Equal Protection Clauses of the Fourteenth Amendment in their application to HB 297 operate to impose a debt upon the State of Alaska to repay not only the moneys borrowed under coercion upon the lessees effectuated by HB 297 but also the just compensation to those

lessees for the use of their moneys by the State. This debt is clearly a debt upon the general credit of the State which the lessees can enforce by a suit in a federal court and the State would be compelled to utilize its usual means of raising revenues and making appropriations in order to discharge its debt over to these lessees. In this connection, see Lyons v. Bottolfsen, 101, P.2d 1 at 5-6 (Supreme Court of Idaho, 1940) and Opinions of the Attorney General, No. 39, State of Alaska, dated December 30, 1959, and signed by then Attorney General and now Senator John L. Rader. Also see State of Nebraska v. Duxbury, 180 N.W.2d 88 at 92 (Supreme Court of Nebraska, 1968).

COMMENTS ON HB 297 AS IT PASSED THE HOUSE, TELEPHONED TO CHAIRMAN JOHN HUBER, SENATE SPECIAL COMMITTEE ON TAXATION & REVENUE, MAY 12 AT 11:00 a.m.

Page 1, Sec. 43.58.020 (2)

Beginning on line 24, it needs clarification. It lists three events leading to exemptions. If two or more of these events are at different points in time, then it will be unclear how the five year grace period is to be measured. As a correction, I would propose addition of the following words, "whichever comes first."

Page 2

The exemption provided in (4), lines 9 through 16, do not provide for termination of the exemption. I would suggest the addition of a phrase which provides that when the restrictions noted here are lifted, that the exemption be terminated.

Pages 7 and 9

Provision is made for accrual of the "early development incentive credit." In one of my previous memos to Senator Huber, I pointed out that this pay-back provision is the opposite of an early development incentive credit. By providing for pay-back of property taxes, it means that, in most cases, the property tax is simply a loan and the cost to the tax payer is limited to interest charges. It would be a greater incentive to eliminate this pay-back provision entirely, if the intent of the Legislature is to create an incentive for early development.

Page 8

Lines 15 and 16 are vague and will certainly lead to endless adjudication. The definition of "proven reserves" provided in SB 374 is far preferable. SB 374 language is standard language which the industry understands. HB 297 introduces new language, "if it is economically feasible to market," and "under reasonable foreseeable conditions." These terms are vague. I would recommend adoption of the SB 374 definition of proven reserves.

Page 11

Sec. 7 provides that if specified paragraphs are found to be invalid, the the act is voided in its entirety. This provision seems to me to introduce a high degree of uncertainty into the legislation. It is quite likely that the legal attack on these crucial paragraphs will be mounted after passage of HB 297 as a means of attacking and invalidating the entire legislation. In order to avoid this possibility, I would recommend removal of the provisions which may invalidate the entire legislation.

COMMENTS ON HB 297 AS IT PASSED THE HOUSE, TELEPHONED TO CHAIRMAN JOHN HUBER, SENATE SPECIAL COMMITTEE ON TAXATION & REVENUE, BY ROBERT PASCHALL ON MAY 12 AT 1:00 p.m.

EXEMPTION OF "PRODUCING OIL AND GAS LEASES" AND "VALUE OF INTANGIBLE DRILLING AND EXPLORATION EXPENSES" (Sec. 2. AS 43.55.010(b))

These exemptions are carried in the April 17 and later versions of HB 297. I strongly urge their deletion. They may well nullify all or part of Sec. 43.58.010, namely, the very proposal to levy an ad valorem tax on oil and gas reserves. Here is why I state that this may be the case.

(2) Producing oil and gas leases. A private party to the lease with a government agency is the very instrument that creates its leasehold interest in the mineral rights. Unless the intent of 43.58.010 is to confine the ad valorem tax to non-producing properties, 43.55.010(b)(2) creates an unintentional exemption from ad valorem taxation for all fields that now produce, but the very fact that 43.58.030 provides for a production tax credit against the ad valorem tax indicates that producing leases are not to be exempted.

INTANGIBLE EXPLORATION AND DRILLING COSTS

Exploration and development are necessary to establish the existence of a valuable oil or gas reserve. More precisely, the completion of a new well capable of production enhances the value of the reserves since the well is necessary to produce the reserves. One can maintain, then, that the cost of drilling is included in the value of the reserves developed by the drilling.

Now, intangible drilling costs (IDC) simply represent the portion of total drilling costs expended for wages, salaries and services and are identified separately from tangible drilling costs only because the Internal Revenue Service permits expensing IDC while it requires that tangibles be capitalized. The only reason that IDC's ever showed up in Alaska law is because the North Slope Borough Assessor insisted on attempting to assess these costs per se.

The best thing--the only thing--is to get the phrase out of the law. Otherwise, industry may claim that IDC's are automatically included in the value of the reserves and should be subtracted. You can bet that no prospective purchaser of an oil property would ever try to pull that on the owner of the property and that is the true test of the issue. IDC's were never raised in the entire history of oil property valuation until the North Slope Borough Assessor insisted upon assessing them as a specific item of property.

THE PERIOD OF GRACE

The period of grace refers to the particular period of time following discovery in which the new field would be exempt from ad valorem taxation. This subject is covered in Sec. 43.58.020 and in Sec. 7 at the end of HB 297. Sec. 7 says that the entire bill will be void if either of paragraphs (2), (3) or (4) of 43.58.020 are "for any reason held invalid or unenforceable." This very strong language of Sec. 7 adds great importance to the manner in which 43.58.020 is stated. In my own opinion, the language of SB 374 is infinitely clearer, more to the point and less subject to future controversy and possible litigation. In any event, if it is necessary to include the essence of paragraph (4), it should be required to have the exemption terminate if the injunction is lifted.

DEFINITION OF "PROVEN RESERVES" (Sec. 43.58.190 (7))

An excellent definition of this term was in HB 297 until the version of April 24 was written. That earlier version was almost exactly the one promulgated by the American Petroleum Institute and adopted throughout the industry. The definition in the latest version of HB 297 is awkward and ambiguous. The phrase, "if it is economically feasible to market it" is not necessary since the phrase "indicate to be recoverable" precedes it; no one will bother to recover it unless it is economically feasible. Also, the term "reasonably foreseeable conditions" is a monster and lawyers may have a field day defining "reasonable" as it applies to a given oil field. I recommend that the definition in the April 17 version be used. That definition is the same as that in SB 374.

THE AD VALOREM ASSESSMENT TIMETABLE

Four key dates are presented here: January 1, February 1, April 15 and June 15. I can see a major problem for the valuation engineer who would have an absolute maximum of 2½ months time in which to appraise the State's oil fields. In fact, it is likely that late returns would confine the time in which he could work from February 15 to April 15. Moreover, if the Department of Revenue must send a notice of assessed value by April 15, the valuation engineer would have to submit his values to the Department by about April 1 and this further restricts the time in which he could do his job. I would like to suggest that the date April 15 in Sec. 43.58.060 be changed to May 15.

01

AMENDMENT 4

OFFERED IN THE FREE
CONFERENCE COMMITTEE BY:

TO: SENATE CS FOR CS FOR SPONSOR SUBSTITUTE
FOR HOUSE BILL No. 297 am S

02

Page 1, Lines 18-29; Page 2, Lines 1-15

Delete Sec. 43.58.020 and insert with place the following:

Sec. 43.58.020 EXEMPTIONS. The following property that would otherwise be taxable property shall be exempt from taxation under this chapter:

(1) any property of the United States or the State;

(2) any property for the period of five (5) years beginning on the date of the completion, plugging, or abandonment, whichever occurs first, of a discovery well in an oil or gas field or pool which in whole or in part underlies or comprises the lease or property;

(3) any property until any of the following occurs:

(A) the securing by the owner or operator of or by a person who has purchased or has the right to purchase all or any part of the production from a property, individually or with others, of permits, licenses, certificates or other approvals from federal and state agencies and rights of way, easements, leases or other rights in land which in the aggregate are reasonably necessary to commence construction of an initial transmission facility to transport oil or gas that may be produced from that property; or

(B) the commencement by the owner or operator of or by a person who has purchased or has the right to purchase all or any part of the production from a property, individually or with others, of construction of an initial transmission facility to transport oil or gas that may be produced from that property; or

(C) the determination by the department that a transmission facility exists that is capable of transporting oil or gas that may be produced from that property;

(4) any property with respect to which on January 1 the commencement of construction of an initial transmission facility to transport oil or gas that may be produced from that property is enjoined, either temporarily or permanently by an order, judgment, decree, determination or award of a federal, state or local court or administrative or regulatory agency; however, the exemption stated in this subparagraph operates only while the injunction is in effect and becomes inoperative if the department makes the determination stated in subparagraph (3)(C) of this section.

03

Page 8, Lines 16-17

Renumber (2) as (3) and insert the following in place of (2):

(2) "Discovery well" means a well the discovery of which is the basis, either of itself or in conjunction with other information, for a determination by the department that a field or pool, as these terms are defined in AS 31.05.170 (4), (9), exists and that at least a portion thereof has been defined or determined to be productive of oil or gas in commercial quantities by actual drilling operations. The department, in ~~making the~~ determination ~~that~~ a well is a discovery well, shall first consult with the Department of Natural Resources.

04

Page 8, Line 18

Renumber (3) as (5), ~~and insert~~ the following ~~prior to the~~ renumbered ~~(5)~~:

(4) "Initial transmission facility" means the first means or system for transporting oil or gas that may be produced from a lease or property, either by itself or as a part of ~~or as a part of~~ or in connection with any other means or system for sale or use off the lease or property including, but not limited to, transmission pipelines, common or private carriers, trucks and barges, although not including gathering lines and other personal property and equipment utilized by the owner or operator in developing the lease or property.

05

Page 8, Lines 18-~~21~~

~~Delete~~ Change renumbered (5) between lines 18-21 to read as follows:

(5) ~~"Lease or property" means~~ any right, title or interest in oil or gas in place including

~~(A) a lease or other property, and~~

~~(B) a leasehold interest,~~

Page 8, lines 19-20
delete "that includes mineral rights in oil and gas" and insert a comma ","
after "property."

Page 8, line 21
delete "in oil and gas" and insert comma ","
after "interest."

Page 8, Line 23

Change the word "payments" to "payment."

Page 9, Lines 2-12

~~Delete (4) and~~ renumber (5) as (6), (6) as (7), and (7) as (8).

Page 9, Lines 16-17

Change (8) to read as follows:

(9) "Taxable property" means the proven reserves in an oil or gas field or pool which in whole or in part underlies or comprises the lease or property.

Page 8, Lines 2-13

~~Delete Sec. 43.58.180.~~

Page 10, Lines 6-14

Delete Sec. 3.

Page 2, Lines 16-23

~~Delete all of Sec. 43.58.030.~~

Page 2, Line 25

After the phrase "under this chapter" add the phrase "to the owner thereof".

Page 3, Line 5

Delete the word "discounted" and insert it before the word "present".

Page 3, Line 14

Delete "April 15" and insert "May 15" in its place.

Page 4, line 16 Delete "premises" and insert in ~~lieu~~ its place "premises."

Page 4, line 18
Insert "other" before "appropriate."

Page 14, line 20
Delete "refused" and insert in ~~the~~ its place
"an employee or agent of the department seeking to enter any premises necessary for or to obtain assistance required for an investigation under this section is refused"

Page 14, line 21
add a comma "," after "assistance";

Page 14, line 21
after the word "to" add the words "and hearing,"

Page 4, Line 14

Delete "may" and insert "shall" in its place.

Page 3, Lines 19-29, Page 4, Lines 1-2

Delete subsections (a), (b) and (c) and substitute the following for them:

(a) A person aggrieved by the action of the department in making an assessment may appeal that action and obtain a hearing upon its validity before the department by filing written objections to the assessment within twenty (20) days of the effective date of the assessment notice.

(b) The procedures for conduct of the hearing and preliminary activities thereto shall be in accordance with § 350, 430, 450-460, 480, 500-590, and 610-640 of the Alaska Administrative Procedure Act (AS 44.62). The term "respondent" used in the above-mentioned sections of the latter act shall be deemed, for the purposes of this section, to include the person aggrieved by action of the department. The department shall provide by regulation for notices of hearing under this section to interested persons. At the hearing the appellant bears the burden of proof. The only ground for adjustment of assessed value is proof of unequal, excessive or improper valuation or valuation not determined in accordance with the standards set out in this chapter. In the absence of this proof the assessment is to be upheld by the department. If the department, after hearing, determines that a correction of the assessment is warranted, the department shall correct the assessment and the assessment roll.

(c) Judicial review of a decision by the department under this section shall be in accordance with § 560-570 of the Alaska Administrative Procedure Act (AS 44.62). The superior court shall grant priority on its dockets for the appeals over all civil cases then pending.

17

Page 4, Lines 27-29; Page 5, Lines 1-11

Delete subsections (a) and (b) and substitute the following for them:

(a) A return of taxable property shall be submitted on or before February 1 on the form prescribed by the department based on property values existing on January 1 of each year, except as otherwise provided in this chapter:

(1) by the person who is the owner of such property,

(2) by a person who controls such property as agent or attorney, or on account of any other person;

(3) by a guardian or other person who has charge of such property belonging to a minor or other person;

(4) by the trustee of a trust estate holding such property in trust for the benefit of another person;

(5) by the executor or administrator of a deceased person's estate which includes such property;

(6) by the receiver of a corporation who has its assets in his hands.

(b) The person required to submit the return specified under subsection (a) of this section is primarily liable for payment of the tax levied by this chapter. The persons or estates specified in subparagraphs (2)-(6) in whose behalf the tax levied by this chapter is paid are secondarily liable for payment of the tax ~~levied by this chapter~~ thereof. With the written approval of the department, a nonoperator of the lease or property may submit returns or make payment of the tax levied under this chapter on behalf of himself and such other persons as the department may approve.

Page 5, line 18
Delete "lease or" and insert in its place "taxable".

Page 5, line 19
Delete "lessor or" and insert in its place "taxable".

Page 5, line 23
Delete "lease or" and insert in its place "taxable".

Page 5, line 25
Delete "lease or" and insert in its place "taxable".

Page 7, line 14
After "discovered" add a comma ",".

Page 7, Line 25

After the word "tax" add the phrase ", penalty and interest".

Page 8, Lines 2-13

Delete all of Sec. 43.58.180.

Page 9, Line 12, Lines 14-15

Renumber (7) as (8), delete all after the word "recoverable" and substitute the following in its place: "in the future under prevailing economic conditions and technology."

Page 9, Line 26

After the phrase "Except as provided" add the phrase "In this chapter and".

Page 10, Lines 16-19

After "means" insert

Change (8) to read as follows:

(8) "lease or property means any right, title or interest in oil and gas in place including"

Page 10, lines 17-18 delete "and" insert "includes mineral rights in oil and gas"

(A) a lease or other property, and insert a comma "," after "property",

(B) a leasehold interest,

Page 10, line 19 delete "in oil and gas" and insert a comma "," after "interest"

Page 10, Line 21

After the phrase "net profit royalty interest" add the phrase "production payment".

Page 10, Line 25

After the phrase "net profit royalty interest" add the phrase "production payment".

Page 11, Line 3

After the words "result in" add "(1)" and delete words "either (1)".

Page 11, Line 5

Before the word "when" add the words "upon values which".

AGO 530216

Page 11, Line 6

After the word "municipality," add the word "exceed".

Page 11, Lines 10-11

After the word "would" add the word "(1)" and after the word "exceeding" delete the words "either (1)".

Page 11, Line 12

After the word "(2)" add the words "upon values which".

Page 11, Line 13

After the word "municipality" add the word "exceed".

Page 11, Line 26

Renumber Sec. 6 as Sec. 7 and insert the following as a new Sec. 6:

Sec. 6. AS 29.53.045(c) is amended to read:

(c) A municipality may levy and collect a tax on the full and true value of that portion of taxable property taxable under AS 43.56 as assessed by the Department of Revenue which value, when combined with the value of property otherwise taxable by the municipality, does not exceed the product of 225 per cent of the average per capita assessed full and true value of property in the state multiplied by the number of residents of the taxing municipality. For purposes of this subsection the average per capita assessed full and true value of property in the state shall be calculated without regard to the assessed value of taxable property under AS 43.58.

Page 12, Line 8

Renumber Sec. 7 as Sec. 8.

Page 12, Line 15

Renumber Sec. 8 as Sec. 9.

Sec. 3, 4 etc.

SCOMM

#11:13

Alaska State Legislature

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Jerry

11/11/75

The most interesting part of the hearing was El Paso's proposal to purchase our royalty gas. I will include the proposal for your file.

Bill.

AGO 513572

Commissioner Guy R. Martin
Chairman, Alaska Royalty Oil and Gas
Development Advisory Board
Department of Natural Resources
Juneau, Alaska

20 June 1975

I have been authorized by the El Paso Company to make a formal proposal to purchase the State of Alaska's royalty gas which is excess to the State's needs in Alaska. The following is a draft Memorandum of Agreement which sets forth El Paso's proposal:

(Quote)

WHEREAS, THE EL PASO COMPANY (El Paso), either singly or in conjunction with others is willing to construct and operate facilities to transport natural gas in a large diameter pipeline from the North Slope of Alaska across Alaska to a point on the south central coast, providing outlets for markets enroute, and thence by LNG tankers to markets in the lower forty-eight states ("The Alaska Project");

WHEREAS, the implementation of the plan contemplated by the Alaska Project is in the maximum interest of Alaska and the nation in coping with the critical energy shortage; and

WHEREAS, the State of Alaska ("the State") is entitled to take in kind its royalty share of natural gas produced on state-owned lands within Alaska ("Royalty Gas");

NOW THEREFORE, to the end that the Alaska Project may be realized and the State's objectives achieved, the parties hereto agree as follows:

1. El Paso agrees that the Alaska Project will be constructed and operated in a manner suitable to the handling of the State's Royalty Gas to to achieve its objectives herein set forth;

2. The State, having indicated a desire to make its Royalty Gas available for use within the state, will authorize such gas to be delivered to the Alaska Project for transportation to such points along the route of the pipeline as it shall designate;

AGO 513573

3. Those quantities of the State's gas determined by it to be surplus to its economic and sociological needs ("Surplus Gas") shall be sold to and purchased by El Paso at the terminus of the pipeline;

4. The charge for the transportation of the State's Royalty Gas shall be that fixed by the appropriate regulatory agency;

5. El Paso shall pay the State for the Surplus Gas at a rate equal to the highest price paid by any responsible purchaser from time-to-time for gas of which the State's Royalty Gas is a portion;

6. If from time-to-time the State shall have available to it additional quantities of Royalty Gas, El Paso agrees to transport and/or purchase such additional quantities of gas on the same terms and conditions set forth herein;

7. The term applicable to the purchase of the Surplus Gas shall be for a period of such years and for such amounts as shall be determined by the State to be surplus to its needs. The State agrees to quantify these amounts and to enter into a further definitive agreement to implement the Alaska Project within one month after signature of this agreement.

8. The State may withdraw any portion of its Surplus Gas from sale to El Paso whenever additional gas is made available to El Paso by others in a volume equal to that withdrawn by the State;

9. At the end of the term of the agreement which will be entered into pursuant to paragraph 7 herein, the State shall have the option to sell and El Paso agrees to purchase the volumes of such gas then determined by the State to be surplus to its economic and sociological needs for an additional term of similar duration and upon the same terms herein set forth;

10. The undertakings of both the State and El Paso are subject to the receipt of all requisite government approvals, provided, however, that either party shall have the right to cancel this agreement upon thirty (30) days written notice to the other party if El Paso's application to construct and operate the Alaska Project is denied by the Federal Power Commission, or if

AGO 513574

to El Paso, or to the State, or conditions which render El Paso unable to perform its contract with the State; and

11. At the appropriate time, the State and El Paso will execute a definitive agreement which shall incorporate the general principles covered by this Memorandum of Agreement and which shall include other terms and conditions as may be required and agreed upon.

DATED this _____ day of _____, 1975.

THE STATE OF ALASKA

By: _____

EL PASO COMPANY

By: _____

(End Quote)

Prompt execution of such an agreement will achieve the following:

A. Express to the Federal Power Commission the State's position on ownership of its royalty gas while being transported within Alaska.

B. Preserve the State's freedom to determine the best uses of its royalty gas within the State, while insuring a ready market for the surplus royalty gas.

C. Insure that the State receives the best price for its surplus royalty gas.

D. Demonstrate by affirmative action the State's support for the Trans-Alaska Gas Pipeline, thereby strengthening the position of El Paso in the current hearings before

El Paso representatives, or requires additional data from El Paso, we are prepared to respond promptly.

Thank you for your consideration of our proposal.

JOHN C. BENNETT

VICE PRESIDENT

EL PASO ALASKA COMPANY

AGO 513576

Sale by the State of Alaska of Rights to
Receive Future Production of Royalty Oil and Gas

State of Alaska legislation in 1974 provides a procedure with respect to the sale of the State's royalty oil and gas. The Commissioner of Natural Resources of the State can sell royalty oil and gas received in kind at the time of its production. He can also sell the State's rights to receive future royalty oil and gas production and receive payment for all or part of it now in the form of an advance sale.

Such sales must be made with the prior written approval of the Alaskan Royalty Oil and Gas Development Advisory Board and with the prior approval of the Legislature. These sales are not sales of oil or gas in place. The Constitution of Alaska prohibits sales in place.

If the State made a sale of its rights to receive future production of royalty oil or gas, the following questions come up:

1. How would such a deal be structured?

2. Would the State lose any of the increased market value of oil sold in this way between the time of sale and the time of production?

3. What portion of the State's royalty from Prudhoe Bay would have to be committed to the repayment of, say, $100 million, over a 3½ year period, commencing with the startup of production?

Structure of the Transaction

A transaction of this type would involve at least three parties--seller, buyer and a financial institution. The State of Alaska, as the Seller, would contract to sell oil to a Buyer and deliver it as it is produced. The Buyer would contract to buy the oil and would pay for

it in advance. Since it is quite unlikely the Buyer would have money available for such an advance payment, he would very likely borrow it from a group of banks. The Seller and the banks can be readily identified. However, a Buyer cannot be so readily identified.

The Buyer could be an oil company who has use for the oil, however, it is doubtful that there are companies with the money available, or the willingness to incur the debt necessary for such an advance payment. Therefore, the Buyer would likely be a financial vehicle created for this purpose, perhaps a company owned by a charitable organization.

If the Buyer is owned by a charitable organization, the questions arise as to why it would be in such a transaction, and how it would use this oil. It would be in the transaction for the financial gain it would realize. It would probably enter into an agreement with another party, a fourth party in this transaction, to sell the oil as its agent. Such fourth party might well be the working interest owner of the properties from which the oil will be produced. This overall arrangement is outlined on the attached exhibit.

Market Value of Oil

The State should lose nothing in terms of market value by making such a sale. The terms of the agreement would be somewhat as follows: "Seller agrees to sell to the Buyer that quantity of crude oil representing __ percent of its royalty interest in leases _____, _____, and _____, until the market value of that oil at the time it is produced is equal to $_____." The quantity of oil to be delivered would include oil to cover interest for the use of the money which the Seller receives in advance and for any profits which the Buyer would make on the transaction. Such profits would be small in terms of the whole transaction.

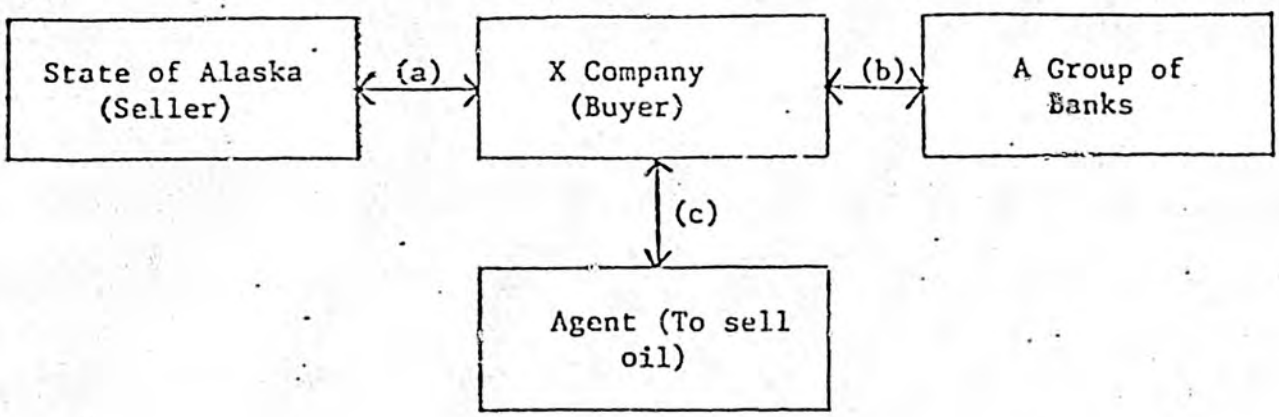
AGO 513578

Portion of Royalty Dedicated to the Sale

If a sale of $100 million of Prudhoe Bay royalty oil were made on July 1, 1976, and if production commenced at Prudhoe Bay on July 1, 1977, the advance could be paid out of about ~~15~~ 17 percent of the State's royalties during the period July 1, 1977 to December 31, 1980--that is, a period of three and one-half years. The ~~15~~ 17 percent applies to the State's royalty after payment of 2 percent into the Native Claims Fund. A wellhead value of the oil of $5 per barrel and a production rate of 600,000 barrels per day for the first six months and 1.2 million barrels per day thereafter have been assumed. With an assumed interest rate of 8 percent, the State would deliver 25.1 million barrels--20 million to repay principal and 5.1 to pay interest. Thus, about 20 percent of the ~~15~~ 17 percent dedication (or 3 percent) would go to interest.

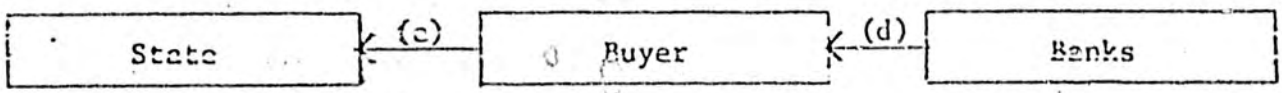
2/20/75

1. Agreements



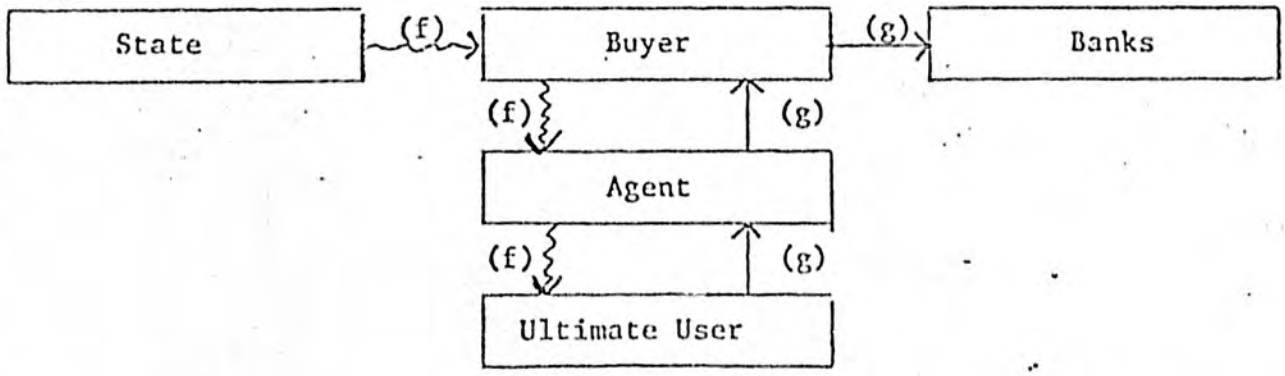
(a) State agrees to sell oil to Buyer.
(b) Buyer makes credit agreement with Banks.
(c) Buyer appoints agent to resell oil to ultimate user.

2. Flow of Money on 7/1/76 (e.g.)



(d) Banks lend money to Buyer.
(e) Buyer makes advance payment to State.

3. Delivery of Oil (⇝) and Flow of Money (⟶)--7/1/77 to 12/31/80



(f) State delivers oil to Buyer who resells and delivers it to the ultimate user, by using an agent to make the sale.
(g) User pays for the oil and Buyer repays the bank.

2/20/75

PRODUCTION AVERAGE FIRST SIX MONTHS, THEN 1.2 M B/D
(Millions)

	1976	1977	1978	1979	1980	1981
1. Production (B/D)	0	0.6	1.2	1.2	1.2	1.2
2. Wellhead Value Per Barrel (a)		$5	$5	$5	$5	$5
3. State Income-- No Advance Sale						
Royalty (b)	0	69	274	274	274	274
Severance (8%)	0	38	153	153	153	153
Total	0	107	427	427	427	427
4. Effect of Advance Sale on State's Royalty Income	+100	-10	-39	-39	-38	0
5. State Income-- With Advance Sale						
Royalty (b)	100	59	235	235	236	274
Severance (8%)	0	38	153	153	153	153
Total	100	97	388	388	389	427

(a) Project Independence Blueprint of the Federal Energy Administration makes reference to "Minimum Acceptable Prices" of $5.16 to $6.15 per barrel at the wellhead to stimulate development in "special regions," (including the North Slope of Alaska). See Table B-1 in Part 2 of FEA publication dated November 1974 entitled "Task Force Report - Finance."

(b) Includes portion going to Native Claims.

2/20/75

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#11:14

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

(file copy)

SPECIAL COMMITTEE ON TAXATION AND REVENUE
SENATE,

TESTIMONY OF MR. ROBERT PASCHALL ON APRIL 7, 1975

AGO 530218 +

SENATE RESOURCES COMMITTEE April 7, 1975

SEN. POLAND: This is a joint meeting of the House Sub-Committee on Revenue Sources with Rep. Steve Cowper as Chairman and members Rep. Mike Hershberger and Rep. Clark Gruening, along with the Special Senate Committee on Taxation and Revenue. Sen. John Huber is Chairman and Sen. Joe Orsini and Sen. Pat Rodey are members of that, as well as the Senate Resources Committee.

SEN. HUBER: We are very happy, Madam Chairman, to have you handle everything here.

SEN. POLAND: We are here primarily today to hear from Mr. Robert Paschall and discuss SB 276 and 103 and HB 297. Mr. Paschall, if you would be so kind as to take the chair.

MR. PASCHALL: Where would you like me to sit? Right here, in the hot seat?

SEN. POLAND: Yes, please.

SEN. HUBER: The red one is the hot seat, Bob.

MR. PASCHALL: My name is Robert H. Paschall. I am a registered geologist and a registered petroleum engineer in the State of California. I am a member of several geological and petroleum engineering societies. Also I am a member, a senior member of the American Society of Appraisers and a member of the International Association of Assessing Officers. I might remark that I have had the opportunity in the past not only to testify here in Juneau about a year and a half ago, but also to serve as advisor upon request to the legislatures of California and Nevada on the taxation of oil and mining properties.

I imagine that some of you are aware in advance that you are going to be having to hear, perhaps as an unwilling auditor to the way things are done in California to some extent, because that is going to be part of the substance of my comments. And things bring to my mind a situation that prevails in California itself that I think you might appreciate. It is not uncommon to see in the assessor's office

throughout the state, particularly in the northern part of the State, a sign up on the wall that says, "We don't give a damn how they do it in Los Angeles." Now the reasons for that are probably self-evident and it may be that some people feel the same way here in Alaska about California, so you will have to forgive me, because that happens to be my bailiwick and my particular area of expertise. Another little item I encountered recently that reminded me of my own personal and professional situation at the moment, that is the case of the man who was promoted (if that is the word for it--at least his position was changed from that of a staff advisor to that of an executive in a corporation). After about three months on the job he said, "You know, I never realized how much difference there was between giving advice and making a decision." Now, all I am doing here today is giving advice, and I realize that you are the ones who are the decision makers. I don't even want to pretend to be an advocate of the things that I am telling you. It may sound on occasion as if I am an advocate, that is, of ad valorem taxation of leasehold mineral interests. Please excuse me if that appears to be the case. I want primarily to tell you how it operates, how I have seen it operate, what the costs are, the administrative and appraisal problems and benefits. If I appear to paint a rosy picture sometimes, it is just the way I have seen things and not simply because I am saying, "This is what I think you ought to do."

I would like to start, first, by remarking simply on this phrase, "ad valorem " and mentioning the fact that "ad valorem" does mean "according to value," a very important consideration I believe. For example, in regard to oil and gas properties, "ad valorem" does <u>not</u> mean or imply a given gross income from a property, neither does it imply some given reserve of oil or gas. It means instead that according to value, the base for taxation would simply be the tax administrator's best estimate of the price that a given oil or gas property would sell for if there were a transaction between a willing and knowledgeable seller and a willing and knowledgeable buyer. Going on in that theme, I would like to remark that an ad valorem tax on oil and gas properties is <u>not a tax on reserves</u>. That phrase is sometimes used perhaps because it is a convenient phrase to use. It is very handy to

say "a tax on reserves," but it is an improper term. Neither is an ad valorem tax a tax on oil or gas in place. Again, this is a term that has been used I think particularly here in Alaska, and I have heard the term "tax on reserves" used, I would propose incorrectly in a number of places. Instead, the ad valorem tax in this case is a tax on the value of the leasehold or other mineral interest involved. And this actually implies, and at least in California it actually is the case, that it is the value of the right to produce the oil and gas. Those of you who are attorneys and who may have worked with mineral properties, particularly with oil and gas, may be aware that they have been termed "fugacious" minerals. I think that is a lovely word, fugacious. It means fugitive. In fact, in one U. S. Supreme Court decision at one time, oil and gas were referred to as fugitives in the manner that wild animals are fugitives and go wherever they may wish. And, of course, because of the movement of oil and gas underground in a manner that doesn't take any account of property lines, it is actually, in a sense, impossible to tax oil and gas in place but it is not at all impossible to assess and tax the right to produce.

I will give you a little history of what has happened in the state where I live in the past years. Oil fields in California have always been subject to ad valorem taxation. By always, I mean, it goes back sixty or seventy years in any event. We do not a have gross production in the state so this takes the place of that in effect. Assessment and tax collection happens to be done locally in California. If I were going to make any recommendations to Alaska, I would say that if you do contemplate this kind of thing that you not contemplate local assessment. I feel that there is a great advantage to the route that you employ on your severance tax and this advantage would similarly prevail with ad valorem taxation because it's easier to have a good professional qualified group operating at the state level in a manner that can treat all the properties equally and equitably. In any event, it happens it's done locally in California, that's kind of beside the point, but it has been done for a period of sixty years time very regularly. In addition, by the way, we also, in California, levy an income tax

actually on oil corporations and on their producing properties. My own observation is that the income tax tends to be fifty to sixty percent of the level of the ad valorem taxes collected. It's not as great a burden in effect on the oil industry as the ad valorem tax. The reason actually for this, as some of you may be aware, is because of the nature of the income tax. There are certain things permissable as deductions in computing taxable income, depreciation, up until very recently depletion, that lower the income tax liability. That kind of, those types of deductions do not prevail in the course of levying an ad valorem tax.

The oil and gas field value, by the way, are reviewed and revised annually by professional staffs. Every year there is a new appraisal made by the assessing authorities You might wonder why this is done every year. After all, homes aren't reassessed every year, office buildings aren't, farms aren't. But their values aren't as given to as radical changes as oil property values. Oil property values may in the course of a year either decrease or increase rather notably because of production decline, because of an increase of an oil price for other reasons, so both industry and assessing officials have insisted for their various reasons on annual assessment and it's done as a matter of course. It happens that the market value of all fields in California last year, as of the 1974 tax lien date, was about $4,700,000,000, pretty substantial amount of money for in the tax base. Ad valorem taxes collected were about $115,000,000.

Now, of course, the basis for the assessment is an appraisal. It's an evaluation of property and therefore the oil and gas field valuation is the main task that the assessor has relative to those properties. That is, the other tasks of enrolling the values and collecting the taxes etc., are rather minor compared to the evaluation job. Now I would suggest that the valuation of oil properties is actually less troublesome than the appraisal of a number of other types of properties. It happens that I work not only with oil properties, I also work with mining properties. I work with

a good bit in the way of heavy industrials. I worked on oil refineries appraisals, valuation of cement plants, and a number of other heavy industrial properties as steel mills. I actually found those properties, the heavy manufacturing ones, provide more in the way of valuation difficulties than oil fields do and I thought I would remark that, on the side, because I know in one instance at least in some of the testimony I believe that was given to one of your committees the statement was made that the matter of appraisal of an oil field was an exercise in futility. I would challenge that statement and I think I can give you the best reason for a challenge by remarking that every major oil company has a properties acquisition department and the people in that department of a given company have the job pretty regularly of appraising the oil properties for sale or purchase. And the manager of one of those departments would be ill-advised to tell the executives of his company that it was not possible for him to set a rational value on a given oil and gas reserve. They do it all the time.

I don't want to burden you with the details and income type valuation but I would like to give you some of the highlights of it so that you will have some feeling of what it amounts to. The valuation engineer for the oil and gas properties appraisal is interest in the present worth of future net income, present worth of anticipated future net income, we might say. Now, what is net income for oil field appraisal purposes? It is the gross income less the out of pocket operating expenses. By out of pocket I mean those that actually require writing a check. Depletion and depreciation for example are book charges that are not out of pocket charges. They are not customarily treated as an expense in computing oil field net income when appraising. The present worth is derived by discounting the future net income at a given interest rate, an interest rate that reflects the hoped-for rate of return of investors in that property. I'll go a little further in identifying or defining present worth because I'll be coming back to it just a bit later here and a very important concept with which some of you may not be familiar.

It is apparent that if you yourself were given the opportunity or were offered the privilege of being given let's say a thousand dollars ten years from now and you wanted to exercise that right much sooner, you'd like to have that money much sooner than ten years from now. You'd turn to the market generally to see whether you could get something like that at present. You'd find that nobody would be willing to give you the thousand dollars now. They would discount it. This is a bank's discounts notes. They would discount at whatever interest rate they would happen to want. They would give you something notably less than one thousand dollars. All right, now that one thousand dollars in this simple little example, would be the net income from the property, let's say, and the present worth of that future net income is much less than the net income itself.

Now, the elements that are required by the appraiser of an oil property in order to appraise are these five things:

1. estimate of the oil and gas reserves
2. future rate of production
3. prices of oil and gas
4. operating expenses
5. discount rate

Now, those of you who are at all familiar with appraisal generally realize that there are some serious, very important professional judgements that must be made regarding, I would say, essentially all of them. In fact, it's interesting to note that in my own instance I have had the greatest debates in the last couple of years, been involved in the strongest debates, over the subject of the discount rate. Generally speaking I found in working with oil and gas properties reserves estimations are not a burning issue. The parties on either side will be pretty much in agreement with a reasonable degree, let's say, of what reserves are. Some of these other things are of course, are subject to professional judgement, but it just so happens that the discount rate has been a very serious issue here in the last couple of years in our valuations in California. This has been the case

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because, as all of you are familiar, there have been such radical changes in the borrowing interest rate, the corporate prime rate, corporate long-term bond rate etc. And these lending rates very much influence the discount rate that a given corporation or an individual is going to demand of an investment that he makes.

Now with that very brief summary there of what an income type valuation requires, I'd like to make some general observations on value and on ad valorem taxation.

First, let me say this. Value is only a fraction of ultimate gross income. Now ultimate gross income is simply all of the barrels of oil that presumably will ever be produced in the field and all of the MCF of gas, cubic feet of gas, multiplied by their respective prices. I'll give you an example of that, an Alaska-based example. Some of you are aware that in 1973 I was employed by the North Slope Borough to appraise the Prudhoe Bay field for the purpose of ad valorem taxation. Just recently, in preparing myself to talk to you here today, I checked over my own appraisal which I have with me, a copy of which I have, and I found that my 1973 value was only 14% of the ultimate gross income from the field, about one-seventh. In other words, the gross income minus all of the expected operating expenses discounted to present worth was only 14% of this ultimate gross income itself. So you can see that there is really no relationship at all between gross income and value.

Going on, ad valorem taxes are directly tied to the profitability of a producing oil field. For example, profitability, I say profitability, profit and net income are essentially synonymous, so the higher the future net income from a given field the higher the present value. Now mind you, I did have this caveat in here that this is the case with a producing oil field. And I found myself, I drafted this relationship, I built tables of it on many occasions in past years and found this nice relationship between profitability and ad valorem taxation of a producing oil field. Now the net effect of this is that a well-administered ad valorem tax on a producing oil field is the same as the perfectly graduated severance tax. As an aside, my own concern with a

severance tax always has been that you pretty much have to pull numbers out of the air when you decide exactly what percentages are going to be applied to what levels of production. On the other hand you have this automatic nice sliding scale thing that plots out into a straight line or slightly curved line on a graph of the relationship between the severance tax paid and the actual price of a barrel of oil. And that relationship grades right down from a given high point when the field is new and with flush production, grades right down to zero at the economic limit when the field is ready to be abandoned. Typically in my own calculations I have noted that a new flush field has yielded something like, let's say, a severance tax equivalent of 9 or 10 percent of gross income. Now those calculations were made prior to the time that we had this tremendous increase in the price of oil about a year and a half ago. I haven't recomputed this kind of thing. But then it grades down very nicely so that marginal production is paying perhaps 2 or 3% of gross income in ad valorem taxes.

Now, here is another area in which I wanted to comment because I felt that misapprehension may have been in the mind of someone who spoke to you not long ago and that is this fact here--that ad valorem taxation tends to stimulate development in any type of property. I would propose this; that it actually stimulates it, whether it is oil or other, rather than retard it. Now why is this? A friend of mine who worked in South America quite a bit as a tax expert, tax advisor in South American countries, he told me that Venezuela and Columbia had hundreds of thousands of acres of very good farm land that were lying idle and unused because it was not subject to taxation and there was no reason for the very wealthy owners to generate any revenue to pay the taxes because there weren't any taxes. He commented to me and I have observed this since (I know he remarked this to me about ten years ago) that one reason for the pace of economic development in many of our cities, building new apartment houses, office buildings, etc., is because the bare land or an old building is subject to ad valorem taxation and the owner was there best advised to get an income-producing enterprise in there to pay the taxes. Actually, I have heard the ad valorem tax on oil criticized. This was in the past. It would no longer apply I

would say. I have heard it criticized as an undue stimulus to development and production. If an oil company, let's say in California where only the ad valorem applies, makes a discovery and simply shuts it in, an unlikely thing these days but at one time it was possible, simply shut it in, let's say,and it was not subject to ad valorem taxation it would be no burden on them. On the other hand, if it is going to be subject to some ad valorem taxation whether producing or not it was a tremendous stimulus to the company to develop the field and get it on production. Now, of course, this was criticized at a time when we had surplus of oil in California and the State was an exporting State. I say it no longer applies simply because the supply-demand situation has changed so radically. But that doesn't change the basic concept that ad valorem taxation does tend to be a stimulus generally to development.

I see I had a note here in my notes going back to the matter of present worth again. I would like to come around from another angle and tell you something in this regard because of the effect that present worth has on reserve estimates. I know some people feel that the estimation of oil and gas reserves is a rather esoteric thing. It's not. It's not esoteric. It is difficult of course to make highly accurate reserve estimates very early in the life of field. I'll grant that, that's pretty well accepted doctrine in oil property evaluation. However, this effect of present worth greatly reduces the seriousness of the----, of mistakes in the reserve estimate. And I'll mention for example the case I encountered with my Prudhoe Bay appraisal. I chose to run the appraisal for twenty years time. And I cut it off at that time because the remaining net income, which was considerable, had so little present worth that I thought it was not worth cluttering the paper with. And yet, at the time that I cut the appraisal off and said this is as far as I'll bother to carry my computations, six hundred million barrels of oil yet remained and 15 trillion cubic feet of gas. Now I would suggest that if anybody else appraised Prudhoe Bay or had appraised it at the same time I did, they probably wouldn't have come up with exactly the same value but I can certainly guarantee you that any other appraiser would have found himself with this tremendously diminishing present worth of a future net income

from Prudhoe Bay so that he too would have had some kind of a cut off or some point beyond which the present worth is essentially nil, minimal. Now, for this reason you can see you can have pretty fair errors in reserve estimates in the early life of a property and not have nearly so serious an effect on the value estimate from a percentage standpoint.

I wanted to close with some comment on some statements made before one of your committees. I might remark that Senator Huber had furnished me with a transcript of some of the hearings and I had studied them and there were a few things that I thought would be worth responding to. For example, one witness stated his belief that you might have two fields each with a reserve of 150 million barrels but that one field had serious producing difficulties, had poor accessibility to it, and for--, because of extreme problems in development and production the 150 million barrels wouldn't be produced until 25 or 30 years had passed. Whereas, another reserve might exist that was very handy to get at and had no major drilling and production problems and therefore be possible to produce the oil in only 15 years time. Now he proposed in his testimony that both of these fields would be taxed the same and that this would constitute a serious inequitability, that is, taxed on an ad valorem basis. I believe that the remarks that I have made already will indicate to you that this inequity that he suggested would not exist. The field that is going to last 25 or 30 years would have it's present worth greatly diminished if it had the other elements present that he commented on such as serious drilling and production problems that would increase the operating expenses and development expenses and lower the net income. So just at a very rough estimate and using something like a 15% rate of return in this case I would say that the longer-life field would have a value only about one-third that of the shorter-life field. This is a demonstration to my mind of the way that ad valorem taxation can actually iron out the inequities, by taking care of this kind of thing. At the same time, let's see, both of the fields would pay the identical gross production tax or severance tax, but that wouldn't necessarily be inequitable because it would be stretched out over a longer time with a longer-life field and from the producers standpoint that severance tax would similarly have a lower present worth. At least the witness had a misapprehen-

sion. I don't believe, no, let's say I believe he was simply uninformed on the matter of ad valorem taxation of oil properties and I wanted to correct the item.

Another witness was under the impression that gross income and value were the same. Now I think that I have pretty well set it out here that gross income and value are completely unrelated and that it is only the present worth of net income that is used as an indicator of value. But taking his own figure that he employed in the testimony he actually cited a prospective tax liability that was about 20 times as great as my own estimate of reality using the figures as he gave to your committee. But that was just because of his misunderstanding of what the value of an oil producing property is, or how it's arrived at.

There is one other subject that has come up in your hearings that I think is probably a very important issue to you and one that you should be interested to hear about. There are many precedents for the assessment and ad valorem taxation of shut-in oil and gas properties. I know that such things exist in California and I myself have appraised individual gas wells which were a year or perhaps two years from being hooked up to transmission lines so that the wells were non-producing for at least a two year period while they were awaiting the chance to produce. I checked on what the current situation is or what recent cases might be in this regard and I was interested to hear that there is one gas field in the Sacramento River Delta in California that is now in its third year of assessment and taxation and it has yet to produce any gas. And yet, in 1974 a value of $15,000,000 went on the assessment role, not any big sum on Alaska terms but a very substantial tax liability, a very substantial assessment and therefore tax liability. No one protested the taxability of the oil field nor did the taxpayer involved protest the $15,000,000 value that went on the assessment role. I wanted just to inform you that there are precedents for this kind of situation.

Incidently we do have in California a quide for the appraisal of oil and gas properties for tax purposes. Some of you are probably familiar with it. I know Gerry Hier has a copy and

Jim Deagan I believe, and perhaps others in the room, and this is Senator Huber's copy that I am holding in trust here for a few days. Incidently if any of you are interested in it all you have to do is to write to the California State Board of Equalization and ask for this. Any governmental entity can get a free copy. I might remark that private parties have to pay $10 for it. But anyhow, this volume was written and published first about nine years ago. I was closely involved in it for many years. It was several years in the making and I wrote it in conjunction, that is several county petroleum appraisers and I were the co-authors of the manual, and I put it in the final form and did the editing on it. When we finally had this manual done after about five years of pulling and hauling and of course doing many other things in the interim we gave copies to California oil producing industry. They were given several copies, the opportunity to make a thorough review. In fact, they had three months time in which they reviewed it. And we then had a very productive exchange of three days time on the elements that are contained in the manual. We felt this was necessary. The taxpayer was pretty much involved, after all, in what was in the manual. So we let the industry have its input into it. They were very good in pointing a number of technical problems primarily. No major issues arose. So that when the book was finally published it was one that was published with the full understanding of all the assessing authorities and all the taxpayers involved. I think that's pretty important. That doesn't always happen with tax manuals.

Then I would like to conclude actually with a little summary on the economics of ad valorem administration of oil and gas fields in California. I already mentioned to you that in 1974 the fair market value of all the fields as about $4,700,000,000 and taxes were about $115,000,000. I know everybody involved in the work in California so I sat down and made my own estimates and for those of you who do see these, these are my own estimates which I would believe are within about 10% of correct. I came up with a total of $548,000 for the cost of administration. This is for the appraisal staffs, for the actual enrollment of the values and for the collection of taxes. In this case the cost as a percent of taxes is about .48 of 1% or conversely, the net tax collection

is 99.52%, that is, as of last year. That of course is a-- makes the ad valorem tax as it now stands in California a quite efficient tax in terms of cost of administration. One thing that helped that situation immensely, there's no doubt, is the rapid rise in price of oil. Before the price of oil went up I would say that the cost of administration was 2 to 2½ times that, i.e., 1 to perhaps 1½% of the actual tax revenues collected.

That concludes what I have to say Madam Chairman.

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SEN. POLAND: Thank you very much, Mr. Paschall. I'm sure the committee has questions that they would like to ask.

SEN. ORSINI: What about the ---, it would seem to me that it would be in the interest of, whether the owners of the field or the right of the leasee of the field, to delay a specific confirmation of the existence of reserves until such time as pretty close to being ready to produce. In particular, an oil company would say, "Well, we don't want,,,uh." At what point does it become obvious that there is in fact a certain amount of oil existing it and has a certain valuation, I suppose is part of my question?

MR PASCHALL: Well, you posed a non sequitor, Senator, in a way, because you have got to develop it before you can produce it of course. Here in Alaska where most of your new fields being found are in relatively remote areas it's going to take a fair amount of development before anybody is going to commit himself to a pipeline input. So, if a company drilled a well and made a discovery, it would be in a very difficult situation if it said, "Well, now I'm not going to do anything until there's a pipeline in there. I'm not going to drill any more wells and possibly expand the extent of estimated reserves until there's a pipeline because those people who propose to invest money in a pipeline will say, "Well, we're not going to bring in a pipeline until you drill wells." You get caught in a revolving door on that, I think.

SEN. ORSINI: If you do various non-drilling exploration and you are reasonably confident of the fact there exists some amount of oil in a certain location and you realize that it's going to be some years before you get around to develop that, how would the government agency or agencies know, or go about, saying, "Well, since there is probably some oil down there, we're going to start taxing on it." When would taxation start?

MR. PASCHALL: They wouldn't.

SEN. ORSINI: Proven Reserve?

MR. PASCHALL: Yes.

SEN ORSINI: They drill a hole,,,,

MR. PASCHALL: The extent of proven reserves. If, for example let's take Prudhoe Bay after Arcos PV number 1. You've got one well there, one well that produced, tested, ten thousand barrels a day or whatever. A person would have been ill advised to attach anything like the value that we know now exists there to that one well. That one well would have proved up only a certain amount of reserve. Geological or geophysical information, no matter how good, can't aid a valuation engineer or geologist to an opinion of value prior to drilling. It takes a hole in the ground and the oil in the tanks to provide evidence for value.

SEN. ORSINI: Using Prudhoe Bay, at what point in the development of that field would you say, we could say, "Now, we are confident that a certain amount of oil is, uh, well, we'll start taxing now."

MR. PASCHALL: Well, I've gotten involved directly in cases like that where a field is discovered. What it amounts to is, the first year you put a very modest value on it. It's tied in only to the amount of production that's there, the amount of production that you presume has been established by the thickness and quality of the oil zones and the productivity of the wells as indicated by the formation tests or production tests. So that in effect, if a field

were discovered, but is not yet hooked up to production, you don't have a line into it, a transmission line, the value of the non-producing field would expand as it was developed. There is no doubt of it.

SEN. ORSINI: I'm still not clear. If we would have had an ad valorem tax in Alaska 20 years ago, at what point in time would we start getting ad valorem taxes from Prudhoe Bay?

MR. PASCHALL: At Prudhoe Bay there would have been a basis for taxation of a very modest nature sometime in 1969. When was the discovery, wasn't it late 68?

SEN. POLAND: 69.

MR. PASCHALL: Okay, by mid 1969. So you have a well or two there and you know there's something there. It's going to be pretty puny, a very small value indeed because a pipeline at that time even was almost speculative you might say. And there were a lot of big "if's". There was a lot of discounting of income down the line, tremendous investments to be made before the field could become productive. It would have been a nominal value. A nominal value but perhaps discernible value in 1969. At that time almost the only stand a petroleum appraiser could have made in a way was to say, "Well, there's some value here because I'm sure the operators wouldn't give it away but it can't be very much yet." It demands development to some extent in order to determine value.

SEN. BUTROVICH: You know when we had our sale, big sale in 69, Gulf bought a block of six leases and promised a hundred million bucks, bid almost a hundred million bucks for them. They probably thought there was something there too. How would you as an appraiser appraise those six leases, for example, if you had such a tax?

MR. PASCHALL: Well, you talk about another matter now, Senator. You are talking now about government leases acquired on a bonus bid, but without any development, maybe without even any wildcatting.

nothing, except the company's own geological and geophysical work of course. I have a very dim view of the value of properties like that. I tend to look at them as worth something immensely less than the bid paid for them. I've had some lively debates and I happen to disagree with several assessors in California who are strongly inclined put those properties on the role as possessor interest immediately at the price of the winning bid. But without burdening you with it here, unless you want to be burdened, I can give you the background of an analysis that was published in the Society of Petroleum Engineers book, the Journal of Petroleum Technology. It demonstrates that those bids do not, have not,represented value in the long run. The more parties bid, on the North Slope there were a great many parties involved indeed, they are more apt in the case of sealed bonus bidding, that there's a case apt to arise that the person who acquired the lease actually paid too much. It's a peculiar situation, but that's what it comes down to. I wouldn't want to advise you, let's say I don't want to advise you at all on that matter. That is an assessment problem. In California, for example, under the law the assessor can levy assessment on the possessory right that the lessee acquired when he turned in the highest bonus bid. The assessor makes his own best judgement of what he thinks it is worth and really the only thing he has to go on is the bid itself. That's a legal proposition. If it ever arose sometime when you specifically wanted my professional input on a value of a given parcel that had been acquired then I might go to work, put some time in on it and figure out what a value of it might be. But I'm addressing myself here primarily, and I think your committee is, to the matter of ad valorem taxation of established oil and gas finds, call them reserves, of whatever size.

SEN. BUTROVICH: I'm also interested in your remark about ad valorem tax stimulating development and I just wondered. I can see how that could be possible and certainly a fact. For if you do develop, you've got a pipeline to put the oil in. But when you don't have a market, in other words, when you have a product but you can't market, how do you stimulate development when you don't want what a development well is going to cost you?

MR. PASCHALL: Can you give me a specific example of this product that doesn't have a market?

SEN. Butrovich: Prudhoe Bay.

MR. PASCHALL: Well, Prudhoe Bay has a market. It just doesn't have an outlet. There is very definitely a market for the oil so that it's quite possible to make a rational appraisal of Prudhoe Bay and then consider that that net income that's going to be derived from Prudhoe Bay is not going to commence until some given later date, mid 1977 or whatever it may be. So that would diminish the value of the field below what it would be if it were producing right now or beginning to produce right now, because the income won't start until some future date. But I don't believe, sir, that it would be correct to say that it wouldn't have a market. It just doesn't have a physical outlet to that market right now.

SEN. BUTROVICH: Let's say it doesn't have a market today or next year.

MR. PASCHALL: That doesn't mean that it doesn't have value though, does it? We know it has value. None of the operators would be content to give it away. They would demand a sizable sum of money for their interest in it and that would represent the value of the property. It is quite possible that all of the evidence is at hand to make a pretty good appraisal of Prudhoe Bay.

SEN. ORSINI: What is the rate of return that they are currently using on this type of evaluation?

MR. PASCHALL: The rate of return we're using or that I would recommend using? There happens to be a difference.

SEN. ORSINI: Either or both.

MR. PASCHALL: Well, of course, this is always a difficult matter. In 1971 we made the first study that was ever made of oil property sales and actually rationally the only way to get the proper rate of return, the proper discount rate, is to analyse sales, compare the future net income that is derived to the buyer's anticipated, let's say to the buyer's sale price, compare his anticipated future

net income to his purchase price and relationship between those using what is called the discounted cash flow rate of return method would give you that rate of return, a discount rate.

Now we did that on a great many oil properties, representing sales of about $250,000,000 and came up with a rate that applied at that time in 1971. Since that time that rate has increased because of the increase in borrowing rates. More recently I've been engaged in an analysis to find out the effect on the rate that we use, the effect on it that's going to be caused by the elimination of the depletion laws. It happens that in appraising fields, the way that I happen to appraise fields, that we do in California, we use pre-income tax net income. That is, it is net income, operator's net income plus income tax. Operator's themselves use post-income tax net income. We use pre-income tax and therefore our discount rate tends to be--this tends to make it a little higher than what it would be on a after tax basis. Now the tax element itself has been changed because of the loss of the depletion allowance tax preference. And this means that we are going to have to raise the discount rate. I'll give you my opinion of the rate that should apply right here in Alaska now, let's say now, early in 1975. In fact, it's my opinion this week. I am working on the subject right now and I could change, but I think it would be somewhere around 16%.

I mention for those of you in the audience, particularly if there are any oil people here, who think the internal rates of return as 15% or so on equity and that it looks like I am really being very generous, it's not quite the case. The rate that I am talking about is a weighted average of the rate of return on debt and equity. It's a so-called total property rate of return. And when anybody buys an oil property of any consequence anyway he typically does it partly with borrowed money so you have this debt leveraging in there that has to be brought into effect. That debt is the same as the debt on your house, let's say, the mortgage on your home. It's a part of the value of the property and one has to bring together the two elements of debt and equity and their respective rates of return and balance them. It's this balance or overall total property rate of return that I am saying is about 16%. Furthermore, I'm talking now on a

pre-income tax basis where normally industry's goal of 15% is an after-income tax basis upon equity only. It's kind of an involved subject but I'm giving you some basics.

SEN. ORSINI: You are able to damp out the windfall or even the wipe out situation? Of course, recently the windfall is a rise in the value in the land.

MR. PASCHALL: Well, the windfall profit tax is, if enacted, is going to be, let's say can best be taken account of I would suggest, by the effective price of oil it produces. I would rather try to handle the windfall profit tax in the oil pricing area rather than in the discount rate area. For example, I made computations in California and have come up with, (you would come with a somewhat higher figure in the mid-continent) but I have come up with an average price of oil of something like $6.50 per barrel at the wellhead, $6.40 or $6.50, for all oil if the windfall profits tax were enacted. And I would then want to use that price in computing my gross income in an appraisal and let the discount rate be a separate issue.

SEN. HUBER: My question is could you make any comments on the applicability of a tax such as we are proposing here either in the Governor's bill or in my bill or the other ones which you have studied, how it might work on the leasehold interest of an oil company that had bought their lease and right to produce from the Federal Government in a former federal reserve, it's availability for the State to get taxation on that leasehold interest, if that's done elsewhere, in California, and how it might work?

MR PASCHALL: You are moving into a legal area here and I'm not sure just how it is handled in your own constitution or statutes. Again, in California, the position of the lessor doesn't concern us whatsoever. We have many on-shore federal leases. Calvin Hill, which was discovered in 1928 is about 50% USL, United States Land, with a nice 12½% royalty rate on it. It happens that even under our law which is different from yours, I think ours is a little harsh in this regard, really, the federal royalty isn't even taken into account as a cost. The leasehold interest is

treated as if it were 100% ownership and the entire value of the lease is determined on that basis. But, let's say someone looking at it from the operator's standpoint would say, "Well, this is definite cost. It goes to the federal government. It's nothing that we can in any way profit from." But even if that standpoint were adopted, the case would still remain in California that there would be an 87½% leasehold interest there that would be subject to taxation as a possessory interest or possessory right.

SEN HUBER: This in effect, then, gets to taxing the valuation of the possessory interest of companies in what is actually federal land.

MR. PASCHALL: That's right. This applies also with our state off-shore lands, and it will apply with the OCS lands in California. And it's not only the case with oil properties. We have substantial mining properties. For the last few years I've been appraising a large tungsten mine in the California eastern desert area. It's entirely on unpatented mining claims. When the operator gets through there, major mining company gets through, they'll just walk off and leave the mining claim. They don't own them, but that is completely ignored in the process of appraising the property. It's just as if the mining company itself owned the land.

SEN. ORSINI: One thing that concerns a number of people is native corporation owned land. Oil or whatever is discovered there, who pays the taxes and how is the tax derived in the condition where the native corporations own the sub-surface rights also?

SEN. HUBER: Madam Chairman, if I may interrup you, I don't believe that our witness here today has that legal expertise and I have went over with him whether he was competent to testify in those areas and I would like to suggest that there probably will be people here who will have this.

MR. PASCHALL: I decided not to become an expert on the Native Claims Settlement Act.

SEN. POLAND: Back to what I believe Sen. Butrovich had in mind when he was speaking of assessing Prudhoe Bay, starting back in

maybe 1969, when although there might have been a market for the product there was no way of getting the product to market through no fault of the companies. Would you still act?

MR. PASCHALL: Madam Chairman, when you say through no fault of the company, we're putting an issue into it that is outside of my area of expertise. Let's say, all I would say is this, if an ad valorem tax system prevailed in Alaska on oil and gas properties of a nature similar to the one that I was telling you about here earlier, it would have been possible and proper to appraise Prudhoe Bay and subject it to ad valorem taxation in the same way, I would suggest, as this gas field that I mentioned to you that has been shut in for three years down in California. The value of it I remarked would have been quite nominal in 1969 and the value of it would have increased each year for two reasons. One is that the operators were continuing to drill wells and thereby expand their knowledge and feeling of the reserve so it was known better and better how much oil was there and what the productive capability of the field was. And the other is that each year you're moving one year closer to the time when that production would start and this enhanced the present worth, that future income at a higher present worth as it moved nearer capture, nearer reality. In that remark, again this might help you. I'll get out the table that I made out. This table right here is my economic analysis of the income and expenses for Prudhoe Bay. Now it required this much paper because there are just all kinds of expenses that I put in here. I might remark that prospective future capital expenditures are just as important to the appraiser as prospective future operating expenses. So I brought in such things here as future costs for oil gathering centers and all sorts of things that weren't at Prudhoe at the date of my appraisal. The day of appraisal was in January, 1973. You will notice, actually, that although there are some things here which begin in the first year, and I think those must be well drilling costs, it is not until the fifth or sixth year following the date of my appraisal that I ran in the first production, because I assumed at that time that 1978 was actually going to be the first year of production, even though I was making the appraisal as of January 1, 1973. So, here I had oil pro-

duction, gross income minus all this great array of expenses coming over to net income, and those of you who are close enough can see that the first four years net income are in brackets, meaning that actually, the field would be running at a net loss for the first four years following the date of my appraisal.

SENATOR HUBER: Five on there.

MR. PASCHALL: Five? Is that it? Five. Yes, that is correct. Thank you. And then finally, on the sixth year I show the field moving into the black, in effect beginning to generate a positive net income and continuing thereon, and after about three, or it looks like, looking through the paper here, about seven or eight years of constant income, by then began declining income in line with my estimate of the decline in production. So here's a case, perhaps, Sen. Butrovich, this will clarify the matter for you if it hadn't before, here's the way that I handled the matter, or let's say that anybody would have handled the matter, of appraising an oil field which is not yet productive but whose presence is actually known. Any of you are welcome to have a look at this in detail afterward. And I might remark that after coming over to the net income I was using a discount rate of that time of 13%, by the way, I have here in this next to last column the present worth factors that were applied at 13% to each year's net income. And finally the right hand column is the present worth of each year's net income. I think you'll find this pretty standard procedure, the thing that I have done here.

SEN. HUBER: I'd like to expand on your question if I could a moment. I think that it's an important consideration. Assume that at the time you assessed this and with all the problems that arose with the trans-Alaska gas line, and as you know they tried the ice-breaker and the Manhattan made the trip and carried one barrel of oil out at the cost of many millions of dollars and gave that idea up, let's say, to this present time the oil companies had developed the field well enough to tell they get a nine or ten million barrel field there or more and that instead of a pipeline being built it was now determined economically infeasible until some future time and they don't know when that would be, to have any way to economically get it out of there. If you were the assessor responsible,

what kind of effect would that have on the value of the field?

MR. PASCHALL: Are you talking about the oil or the gas now?

SEN. HUBER: Oil or gas, either one. Let's say that it was determined that at this time, even right now, that they couldn't build the line and there was no way to get it out of there, which is ridiculous, but let's say that they did. I'd like you to recite what you think it would do to the value of your assessment.

MR. PASCHALL: Well, such things occur. Similar things have occurred. In fact, I'll tell you about one fascinating case that I am following with great interest. It's the case of the Elk Hills oil field in Kern County. Elk Hills is presently producing 2500 barrels a day and has a capacity right now of 150,000 which can probably be boosted fairly well above that, to 200 or a little better, a substantial oil field that is shut-in and has been since all of us, just about everybody were very small children. Now the field happens to be owned and always has been owned 80% by the Federal Government and 20% by Standard Oil Co. of California. Standard itself acquired the sections, their property, in turn from the Southern Pacific Railroad clear back around the turn of the century. Well, when the Navy decided in the 1920's that ultimately all wars were going to be won by battleships fueled with oil they set up Elk Hills as a naval petroleum reserve and shut it in with very firm stipulations of what would be required to open it. It was kind of fascinating. I was called in by the county assessor one time to assist him in figuring out when that thing was going to be opened. And this is similar kind of problem. It may sound different but it's not. I was shown a document, one of the Standard Oil lawyers showed me a document that stated that the field could go on production only if the Secretary of the Navy requested it, the President counter-signed it and Congress said it was O.K.. Now that's about as tight as you can turn a valve and so, this is about eight or nine years ago, I shook my head when I saw that because the price of oil was pretty low then and we really didn't have any of the problems that we have now. I considered it was very remote indeed. I told the assessor, "Aw heck, give it 20 years," which put the present worth of it down at a very low level indeed. Now he has a full

time professional on his staff to help him and I'm not back in on that act anymore. But I know the man who does do the work and he told me, "Boy, two years ago when this embargo hit and the price of oil went up I decided that the opening of Elk Hills was pretty imminent." And maybe he is right, but you can speculate on these things. So he has made his best estimate which, instead of 15 or 20 years, is something like three years away. But what is it? It's nothing but his best estimate of a very complex political and economic situation. Maybe it's going around the horn telling you that but it's kind of a fascinating little tale. If the assessor were stuck with that same kind of a situation, any assessing officer relative to Prudhoe Bay with the situation that you proposed, Senator, he would just have to exercise his best judgement and fight it out, that's all. Work it out.

SEN. BUTROVICH: It would end up being a very low valuation.

MR. PASCHALL: Yes sir, that's correct. It would very definitely lower the value, because it would make more and more remote the time at which the property could generate a net income.

REP. GRUENING: Thank you, Madam Chairman. To follow that up, since the discount rate, discount factor is tied to the time when you can have the oil flowing, to what extent would you, to what extent do you feel that an ad valorem tax, just oil, would have an incentive to delay on the part of Alyeska. I don't know if that maybe takes in a lot of factors, but is there any possibility that it would some delay?

MR PASCHALL: Well, this is a matter of opinion, now. I've been trying you know to stick to facts as best I can but you have asked me here for an opinion. I can't see why the prospect of an ad valorem tax would delay or retard the completion of the line or the hook-up of the field at all. In fact I would think that they would just be knocking themselves out to get to producing as fast as they could in order to get off the ad valorem tax and go on to the severance tax. Let's say and generate income with which to pay the tax. I'd better put it that way, that would be a better way to put it. Right now the field is not generating any inccome so any tax that they pay right now would be paid from revenue

from some other cource and naturally that's disadvantageous to them and would be to anybody. So the operators would therefore be highly desirous to get to producing and pay Prudhoe Bay taxes with Purdhoe Bay money.

REP. GRUENING: I guess what I'm saying is that, I haven't looked at the chart yet, but I guess the amount of tax they would be paying up until the time the oil starts to flow is such that it would encourage them, in other words, by stepping up the time that oil flows,in other words if it flows in 78 as opposed to 77 they would be paying, let's say in 76, a lesser tax. Tied with the price of oil which maybe, if they anticipate the price of oil is going up, maybe there would be an incentive to delay. I don't know what or to what extent.

MR PASCHALL: Well, now, as to whether they pay a lesser tax or not, I don't know because that is up to your legislative body here as to tax rates etc.. But I'd go back to stipulate that the big overwhelming consideration of the operator would be to be paying his taxes on that particular field from income derived from that field and not from elsewhere. It's just providing a drag on let's say the entire corporation to have to get money from elsewhere to pay tax on a non revenue producing enterprise. Now you mentioned something else here that is very critical that I wanted to get to and it has escaped me for the moment. You went on to something else that you closed with.

REP. GRUENING: The price of oil.

MR. PASCHALL: Oh yes. I've heard the oil industry accused of, in California and throughout the U. S., in some instances of holding back on production till the price went up. I can't quite go along with that. I think that most people in the oil industry feel that from the price standpoint they never had it so good. The price <u>has</u> gone up and they are generating excellent revenue from the fields that they are producing. Furthermore, with the present price of money generally, the price of oil would have to go up at 10% per year, let's say, just to make up for the loss in interest on the money that they might otherwise have gotten. And right now, we're not at all sure

that the price of oil is going up, are we? The net profits tax wouldn't do that to presently exempt oil. It would reduce the income from it. So I don't believe that, just my own professional impression from observing the industry, I don't believe that you are going to have any hold-back on production because somebody is waiting around to get a higher price. I don't believe that makes current economic sense.

REP. GRUENING: Madam Chairman, could we have some extra copies of that chart? I'm curious to look at it.

SEN. POLAND: We could have some zeroxed.

REP. GRUENING: Not now. I just mean at sometime.

MR. PASCHALL: You mean my appraisal sheet here? Sure.

SEN.POLAND: Are there any further questions of Mr. Paschall?

SEN. RADER: Mr. Paschall, we are talking about a short call on our revenues occuring maybe next March or April, a possibility. It has been suggested to us that we could, that we should enact a tax, set up our levy, make our assessments and perhaps when we come back in January establish our mill rate at that time for collection of money within several months. Is that a feasible time schedule, to set something like this up and get in operation make the assessment, send out your notices?

MR.PASCHALL: Between now and next January 1st?

SEN. RADER: Yes.

MR. PASCHALL: Yes, Sir. Yes it is.

SEN. RADER; Now, what if we didn't do anything now, but next January 20th enacted a basic law. What kind of a time schedule would you have, do you think before you could make assessments, get your notices out, have your boards of equalization appeals, whatever you have to do?

MR. PASCHALL: How many fields, one thing I've been meaning to ask

someone and I haven't done so, how many fields are in this category that would be subject to such a tax, to enact this legislation? How big is the job? Roughly. The number of fields would give me a pretty good hint this way.

SEN. RADER: The suggestion was that we would exempt any field for a period of five years after discovery or after lease. I think that that would probably, if you limit it only to oil and not to gas, which is another problem I want to ask you about, limit it only to oil and not to gas.

MR. PASCHALL: Limit what?

SEN.RADER: Limit the tax only to oil, the right to produce oil and not on the right to produce gas. The reason for that is that we have some gas fields in Cook Inlet which have been capped for more than five years and it was intended by at least some people that this bill would apply only to Prudhoe Bay and wanted to work out exemptions which would be constitutional as between property owners but that they really only intended to apply to Prudhoe Bay.

Before we get into that, let me ask you this. How about the five year exemption for example. Is that a reasonable exemption in this type of taxation?

MR. PASCHALL: I was a little puzzled by the wording in one of the bills in that it said something about "the time that the discovery is made or from one other time, whichever comes first." And for the life of me, I couldn't figure how one of them might have come before the other. I have forgotten which it was now.

SEN: HUBER: It was lease, five years from the time of lease or discovery whichever comes first.

SEN. RADER: Well, joint venture, contract, or any other agreement that is made for the oil and gas development of a part or all the lands subject to that lease or property. Any other agreement, I wonder if that would mean that an agreement that occurred five years before that, some people joint ventures bidding seismic

work. I'm looking at two sets.

MR. PASCHALL: That's what puzzled me, Senator. I was wondering how an agreement might precede discovery.

SEN: RADER: The same thing occurred to me. I was going to ask you that too.

MR. PASCHALL: I couldn't understand it.

SEN: RADER: Let me ask you this. Do you think we could write a definition here which would be reasonably certain to give in effect a five year release I'd say from the time of discovery probably, tied on to some time. Have you ever seen a bill written like that?

MR PASCHALL: That's your option. Really, I don't know whether I'd really care to express an opinion on it.

SEN RADER: You don't see anything particularly wrong from an assessor's point of view?

MR. PASCHALL: No. You'd have the assurance in all likelihood that if a discovery of any consequence was made that you'd know by that time just about what you had there. That is, the assessor's job should not be too difficult by that time in estimating a value on the property, as opposed to estimating a value immediately after discovery, which is very difficult indeed.

SEN. RADER: Do you have any feel as to what descriptive term we should use as a triggering mechanism to start the running of the five year period?

MR. PASCHALL: I'd want to get off in the corner and think about it. I hate to just throw something out here.

SEN. RADER: O.K. Let's assume you made it from discovery,then. Let's assume that for discussion here, because we have that in our bill, and my question was, in case we got down, what if we don't

do anything and passed a bill say next January 20? How long would it take to go through your procedures of assessment, valuation, notices, boards of equalization, appeals, some kind of appelate procedure and then the collection of taxes?

MR. PASCHALL: Are you talking about just Prudhoe Bay itself, now?

SEN RADER: Probably, that's what you've got into these other things. Well, let me ask you even if you had several, you'd get more assessors.

MR. PASCHALL: I'd want a minimum of three months, at least that, three or four on the first time around, because there are a lot of people to see on something like that and a lot of things to do.

SEN RADER: Three months from the time that the bill was enacted until you could expect the paid notices to go out?

MR PASCHALL: Three months from the time somebody started to work on it. Now, if there were much of a delay between the time of enactment and the time somebody was employed to start the job it would impose a terrible burden on him. Incidently, I'll just have to say this without regard to the dry gas fields in the Kenai, I'd hate to appraise Prudhoe Bay and be told to ignore the gas in doing it. This really poses a peculiar situation for an oil property, or appraiser of oil and gas property.

SEN RADER: Would you care to discuss that?

MR. PASCHALL: Well, it's simply that the two are mixed in the resevoir, for one thing, to a great extent. There is a gas cap at Prudhoe Bay plus a lot of oil-associated gas. They are produced together to a great extent. There's going to be a cost, in the early years at least, injecting gas back into the resevoir prior to the time the gas pipeline is built, if one is built. So you have--it's just one big ball of wax--and it's pretty hard to take it apart and apply a value just to the oil and not to the gas. Gas is undoubtedly, is probably a very valuable item, although I saw the results of a study here recently that indicated it might not be. I'd always thought of it as an element of considerable value.

SEN RADER: Are you saying that you don't think it could satisfactorily be broken out as a matter of assessment or that it just would be difficult?

MR. PASCHALL: It would not just be difficult, it would be arbitrary. I could do it but it would be arbitrary. I'd have to make some arbitrary decisions. Now, arbitrary decisions are not necessarily difficult. Sometimes they are very easy to make, but they are hard to justify. And this is the problem you'd be up against in my mind, slicing it up that way.

SEN BUTROVICH: Well, if I heard you right, in the beginning you were talking about appraising leases, fields, and you were talking about value and I can't figure out how you could value them properly if you didn't value both the gas and oil.

MR. PASCHALL: Well, that's what I'm saying Senator. I don't think I could either. If I were ordered to do it, in effect, by somebody in some situation, I could do it and say, "Here's what I've done. I'm not sure if I believe it but here it is." You know, this kind of thing.

SEN. HUBER: Madam Chairman, could we expand right in this same idea. I think that we were getting into a capped in, shut in gas wells in the Cook Inlet area that do exist and would be subject to a tax. I'd like Bob to comment on them because my understanding of what he has explained here would be that if those wells are some distance away from production yet due to various economic or other kind of factors, legal factors, whether a market exists, how long it takes to build a liquification plant or something like that, wouldn't those be self-adjusting if I understand this right? The value would be lower and lower and lower unless you were looking at how soon it could be produced. In this case maybe they're getting close to production. Isn't it a self-adjusting thing?

MR. PASCHALL: I would say so. Yes.

Unless there are some special circumstances that prevail that you could tell me about, I'm not sure how, let's say why the gas field should differ, the dry gas fields in the Kenai, should differ in

economic character from Prudhoe Bay. It may be longer until they are hooked up, the price in general and the ultimate gross income may be lower, and the value lower etc., but in principle, from the standpoint of valuation, they are the same kind of thing.

SEN. HUBER: They are probably contrary. They are probably now, because there is some liquification plants and stuff there and some shipment going out of there, and smaller fields, they are---

SEN. RADER: I guess so. But I don't know that much about it.

SEN. HUBER: I'm not sure of what the situation is down there. I'm sure there are some people that would tell us why they shouldn't be taxed around there.

SEN.RADER: Have you chanced to actually look at these various bills that we have before us, as to workability? Have you had a chance to read them?

MR. PASCHALL: The bills? Yes, sir, I have. I don't have them with me. I had some marginal notes on them and I didn't bring them along. In fact, they are over in Sen. Huber's office. I had some comments on them. There is one item I might mention. It is a little one, but as a professional I was a little unhappy with it. And that is, at one point, and I think everybody, I've looked at all four of them, refers to the discounted value of a future net income, something like that. I wanted to bring this to somebody's attention that it is not values that are discounted. I was remarking on this earlier. It is the net income that is discounted and the discounted net income becomes the value. So actually the proper wording there in the bill there should be the value of the discounted net income, rather than the discounted value of the net income. It's a minor but rather important point relative to financial analysis, let's say. If you wanted to ask me about some specific items, I might be able to respond to them but I don't have my copies with me.

SEN. RADER: I was just wondering if there were any particular items in it that you felt to be unworkable, not understandable.

MR. PASCHALL: Well, there was one of the bills, I responded to Senator Huber in a letter on it, there was one of the bills that

I felt was unworkable and I believe that you can tell me which one it was, Senator. I found myself in a revolving door in trying to figure out how to work it. And as I made a rough attempt to figure out how each of them would be administered. Now by this, I mean if you get, for one thing, this tax offset, a matter of a prospective offset of future severance taxes by current ad valorem taxes if the bill were enacted. But one of them had an offset of the severance tax by the ad valorem and vice versa and I couldn't get myself out of the labyrinth in trying to work that one out. I didn't see how it was possible to have this dual offset business.

SEN. HUBER: Some of the problems, if I may, some of the problems that arose were that the present tax law, which of course was written for the oil properties and pipeline transportation tax, was basically used on several of the bills as the foundation figuring that this would be a proper foundation and you'd do certain things to it. That's true in my bill and it's true in at least one or two of the bills in the House, and I don't know if it's true in Steve's final bill or not, but if you recall the administration did bring in the last bill. When it came to several areas like this some of us fellows who had wading around in the swamp draining it and the alligators were chewing away you know, by that time we got enough of the water out of the swamp that the administration got up on top a little bit and came up with some better ideas and some of the better ideas they came up with is putting this in a whole new chapter because of certain other things that will take place, that we keep running into. And so, the administration bill is a little further along in some of the things than the other bills are. Each is built on the other and I don't believe it probably will be the final perfect product, if there is such a thing.

REP. COWPER: Madam Chairman, I would like to respectfully demur from Sen. Huber's characterization of our bill as being final. It may change colors a lot. (Laughter)

MR PASCHALL: I might mention, Senator Rader, without reference to any specific bill, I did comment earlier when I was making my general presentation on the incorrectness of the use of the terms "tax on reserves" or "tax on oil in place" because I had in mind statements made in one or two of the bills. I'm not sure it is

present in all of them but this would be one area, for example, where I believe it would be advisable to watch the terminology very carefully and be sure that the bill states exactly what is to be subject to ad valorem taxation. I didn't see any problems generally in administration because there were fairly simple statements of what had to be done.

SEN: POLAND: Are there further questions?

SEN HUBER: Madam Chairman, before he leaves you might see that it is quite obvious from the fact that we have so many bills before us, even here we are talking about three, and there's more than that before the legislature on the same subject, that the principles that Mr. Paschall is talking about needs applying, the practical principles of ad valorem taxation, needs applying to the actual bills. And so, probably there would be some changes made. I can see some. I would suggest that this committee think of listening to a final or a near final bill later in the week. I suspect that something like that is in the making, with more ideas probably, than Mr. Paschall has said too. I think he has some others to hear from.

SEN. POLAND: Thank you very much Mr. Paschall.

WACO SHELLEY May I ask one more question? I am Waco Shelley of the Mobil Oil Corporation. You mentioned that someone had testified here that the amount of tax had been missed by a factor of about 20. Do you have what you think this tax would amount to on Prudhoe Bay, per year? Do you have a number?

MR PASCHALL: No sir. I can tell you that my value, as about two years ago was $4,768,000,000. Now I think, let's say it's a fair assumption to state that the value of Prudhoe Bay would now probably be greater than that. But, there are all kinds of things operating on it. We do have in all likelihood, regardless of the threat of an excess profit tax, we do have the prospect of a higher price of oil than I used in my appraisal. We also are much closer to the time at which Prudhoe Bay will begin to produce. We also, let's say, the operators also have behind them a great deal in the way of capital investments that I was anticipating as of two years ago. Those

three things all indicate an increase in the value of the fields. On the other hand the increased cost of the pipeline has a deleterious effect on the wellhead price so maybe I was wrong in my first statement on price. Also I would contemplate using a higher discount rate than I did in my appraisal of two years ago were I to reappraise the field myself right now. You can see it's a mixed bag and I would not want at all to just say, you know, Prudhoe Bay is now worth about so much. It would demand considerable work and considerable revision of what I did earlier to know, but I would estimate it would probably be higher. Now as to taxes, of course, this is another issue and I refuse to concern myself in that now. We get into mill rates and other budgetary and decisions.

REP. COWPER: Madam Chairman. I think, Mr. Shelley, that over-statement by 20 times was in reference to a figure used by Mr. Tom Kelly in reference to Kemik field, Artic Slope region. He gave a figure and Mr. Paschall reviewed that figure, I believe, and came up with something that was about 5% of the figure thatwas given by Mr. Kelly.

MR. PASCHALL: Sir, if I may comment on that further. Now I remember exactly what it was and I'll be a little more precise. It was actually Mr. Adams, I believe, of the Native Corporation who was speaking and he was tying value into gross income. Now, he did it on two counts. He was thinking of the entire field and he was also considering the Native Corporation's possible tax liability if their net profit interest was subject to taxation. So I made some roundhouse approaches to the text of those two situations, the entire field and the net profits interest if it was subject to taxation. On the entire field basis, his over-statement would have been about 8 times. Looking at the net profits interest tax aspect of it, my rough estimate was that his estimate tax was 20 times too great. You see, we are looking at two different elements there, the net profits interest and the total field.

SEN. HUBER: We can thank Mr. Shelley for the right questions again. That came from testimony before our committee if you remember, and there was a two point,,,, we had a little discussion of this prior to getting in here, there was a 2.1 million dollar

estimate and the remark that went with it is, that would break us. And that same figure, from the 2.1 million, I believe Mr. Paschall broke that down to $89,000. That's quite a fling between 2.1 million dollars and $89,000 and that's where that figure came from. We want to thank Mr. Shelley for really bringing the right question up again. He always comes up that way.

MR. SHELLEY: Thank you, Senator.

REP. ITTA: I'd like to inform this committee since you are mentioning about the Arctic Slope Regional Corporation that they will be down here again this week and they'll be providing the people that are concerned with taxes with additional information as to how it affects our region.

SEN. ORSINI: Despite your attempt at avoidance of how much money you could raise on the North Slope, I think that it is a very pertinent question as far as the legislature is concerned. If in fact, you could only raise a few thousand or even a few hundred thousand dollars, we obviously would have to look a lot further to try to find some money. If several hundred billion dollars is available in property ad valorem tax, then perhaps we need look no further. Really, the amount of money that we could be expected to get within the next couple of years is very critical, as far as we are concerned, on decisions on these concepts. And I don't know if it's our function or what but I would sure like to know how much we would, either say some 20 mills or some other such arbitrary mill rate, how much we could raise in the next couple of years.

MR. PASCHALL: Mr. Shelley's comments too bore on that and specifically on my value here and again I'll say, and this is just a roundhouse estimate at present, that the value of the field is probably greater now than it was two years ago,just about certainly greater. How much greater, I don't know but looking at this figure two years ago I would say that five billion dollars would be a rock bottom figure for the value of the field now. And of course, that's only a 5% increase over what I estimated two years ago. It's probably greater than that increase. Just an estimate, and believe me Senator, it is just an estimate now. Right now you'd be looking at a floor, a value floor of about five billion dollars on Prudhoe Bay.

SEN. ORSINI: That's the present value at which we would tax?

MR. PASCHALL: If you have 100% assessment ratio. Yes, sir.

SEN ORSINI: We do. So then, probably now if we had a 20 mill 100% rate we would get one billion dollars.

MR. PASCHALL: One h .dred million. I think I got my decimal point right.

SEN. ORSINI: Right, O.K.

MR. PASCHALL: One hundred million would be 20 mill rate of five billion dollars.

SEN. ORSINI: No, 20 mill rate would be one billion.

MR. PASCHALL: No sir, one billion would be 20 cents. Move it over another notch there.

SEN. RADER: Incidently, what kind of rate, how many mills, what's your assessment situation in California?

MR. PASCHALL: It varies radically, because the local tax rate prevails on property down there. As a result we have rates that vary. Now we talk in terms of dollars per hundred dollars of assessed value, a levy on assessed value. We have a 25% ratio. I'll try to make some quick conversions. We go from as low as 16 mills to as high as 36 mills.

SEN. RADER: On 100% valuation?

MR. PASCHALL: Yes, sir, on 100% valuation. And again this depends completely on the local jurisdictions. In some areas, particularly in very highly urbanized areas in both Los Angeles and Orange Counties, they are up in the 36 mills range. In the rural communities in the western side of the San Joaquin Valley, in the Sacramento Valley and the gas fields area, it's more of the nature of 16 mills, something like that.

SEN. RADER: Is that mill rate the mill rate the same that's applied to business buildings, homes etc.?

MR. PASCHALL: Yes, it is. For anything within that particular taxing jurisdiction. And the taxing jurisdictions, I might mention, are an absolute mess. We have something over twenty thousand tax rate areas, they are called, and each tax rate area is a unique combination of the rates that apply on schools, county general rate, special district rates like water districts, sewer districts. There are tremendous number of these areas.

SEN. RADER: How about the situation, I understand that Texas and Louisiana, other states, use this type of a tax in different areas. Are you familar with their methods or procedures?

MR. PASCHALL: No sir I am not. I might mention that we had, i.e., local jurisdictions had the right to set any mill rate levy that they wanted up until a year or two ago. And now there's been a lid put on it with special provisions for higher rates under certain circumstances. I don't even know what they are. I haven't bothered to learn the technical reasons that would allow a school district, for example, to exceed its limit. So that most tax increases, most property tax increases in California are resulting now from rising assessments and not from rising tax levels. That wouldn't necessarily apply to oil properties, of course.

SEN POLAND: Thank you very much, Mr. Paschall.

(Unrecognized speaker): I have one question. Is Mr. Paschall up as a technical advisor to your committee? Were his expenses paid by this committee or state legislature or what?

SEN. POLAND: Legislative Counsel.

(Same as above.): So the state of Alaska is paying for it?

SEN. HUBER: Madam Chairman, I can answer that. He is engaged under the authority of our special committee, Senate Committee on Taxation and Revenue, and the funds are made available through a grant by the legislative counsel.

The state of Alaska is paying for Mr. Paschall's trip here and his salary to be here. I think maybe the committee should establish, I think, that we had to get permission for Bob to be here. I think that his employer should be stated in California.

MR. PASCHALL: I am actually serving as a consultant to Sen. Huber's Special Committee but I am doing it on my vacation time as a moonlighting venture, in effect, from the California State Board of Equilization for which I work on a regular basis.

MR. EUGENE WILES: I would like to ask Mr. Paschall, as I understand it, your valuation is on net profits interest, is that correct? This evaluation of the five billion dollars?

MR. PASCHALL: It's what I term the net operating net income for the property. That was what was discounted.

MR. WILES: Operating net income? And how do you reach operating net income when the pipeline hasn't been built and you don't know what it's going to cost? You don't know what it's going to cost for a barrel of oil. What production figures do you have to come into that?

MR. PASCHALL: Well, for example, you mentioned that you don't know what it costs to bring out a barrel of oil. There were some field rules hearings before the state Division of Oil and Gas several years ago in which the companies provided certain information to the State. One of the things they provided were three estimates of the rate of decline of the typical Prudhoe Bay well and of course this was immensely helpful to me in my own estimates of the prospective future rate of production. There's undoubtedly a lot of hard work that had gone into that, that I was able to take advantage of.

MR. WILES: Basically, this is shown on your paper there, isn't it?

MR. PASCHALL: Yes sir, or in the report I stipulate in the report the reasons for the selection of every one of the estimates I employed.

MR. WILES: Are these quesstimates, are you guessing at what

the production is? Are you guessing at what the pipeline is going to cost us? What I'm trying to get is, how do you get an operating net profit from something that isn't operating?

MR. PASCHALL: We don't call them quesses, sir. We call them professional estimates. A while ago, you mentioned the operating costs. I was a little baffled at first, on operating expenses and it's a very important element and then I realized that the information provided to the state Division of Oil and Gas allowed me to back into an operating cost. It amounted to this, that on their own presentations, industry had indicated an economic limit of 100 barrels per day wells. For those of you who are not familiar with it, the economic limit is the time at which daily gross income and daily expenses meet and you are no longer generating a net income per day at the well. All right, they stipulated the 100 barrels per day economic limit. It also happens that I made the professional estimate, the professional judgement, that the wellhead price of oil would be $2.95 at that time. So here all I had to do was multiply $2.95 x 100 and 365 days a year and I had an operating expense of about $108,000 per well per year. So on the industry's own data I had a pretty good tool to work with and came up with a figure that was a pretty sizeable one and it seemed like it would be in the ball park for that kind of operation. I made similar judgements for everything else that's cranked into the --- (interruption)

MR. WILES: If an appraiser were hired under this situation, would he use that same information, or what? Or, how would he get his information other than that?

MR. PASCHALL: Well, he wouldn't certainly not at this time. You're asking, for example, if an ad valorem tax were enacted by the state and somebody was employed by the state to make the appraisal, would he use that same information?

MR. WILES: Could he use it?

MR. PASCHALL: No, sir. He would by this time be able to acquire much later, much more consequential, much more precise information.

MR. WILES: But he would make his evaluation as a result of it.

MR PASCHALL: That's correct. He would still have to engage in some estimates in judgement. But every appraisal, I don't care if it's even of your own home, is an estimate of value and the appraiser in any instance has to engage in estimates in arriving at a value.

MR. WILES: Thank you very much. I'm just sort of baffled about having operating net expenses or net profit if you don't have anything operating.

MR. PASCHALL: Those are anticipated future net income.

SEN. HUBER: Bob, just to get a little further on the question. Just a very few years back, I had an electronic business in Fairbanks that was serving quite a few people that were active on the North Slope, geophysical companies many of them, including some of the producing companies etc., and it was in a two-way radio business that had buildings and facilities etc., is the problems basically different here than those of the North Star Borough in Fairbanks if they had hired you to place an estimated value on my property for purposing of taxation?

MR PASCHALL: Only in that I might have appraised your property using your replacement costs less depreciation approach to value rather than the income approach. I might mention in that regard, I stress the income approach to value to you here today. I haven't talked about anything else. There are two other fundamental approaches to value of property, generally. One is the cost approach, that is roughly that property is worth what it costs, or it is worth what it originally cost less depreciation that has occurred since the time it was built or bought. That's the cost approach to value. The other is the sales approach to value. We have all used, or most of us have used the sales approach to value ourselves, personally, in buying a home. We go out to buy a home and we test the market and we pay for a house about what we find houses are selling for. We're looking at the direct market here and here's the sales comparison approach to value. When you get to oil properties generally and a property like Prudhoe Bay particularly, it's obvious that cost is completely irrelevant. The costs of

developing Prudhoe Bay has to my mind no reference to it's value. We can't use the sales approach directly because we don't have sales of properties like Prudhoe Bay and we aren't apt to have one. The only thing like it is the East Texas field and it has hundreds of operators versus the handful here and there are no comparable sales. So this turns the appraiser directly to the income approach to value. I would stipulate that this is not bad because this is what the oil industry itself does in buying oil properties and is what banks do when they loan on oil properties. They too make income type appraisals, recognizing their pitfalls and recognizing that professional judgement has to prevail on many occasions.

SEN. BUTROVICH: Do you remember what the rate was on that field that you say was blocked off for quite a few years by the federal government? What rate they used in taxing?

MR. PASCHALL: Elk Fields? Now, do you mean the mill rate here, Sen. Butrovich, or what?

SEN. BUTROVICH: Yes.

MR. PASCHALL: I don't know what it is out there. I think,-- I understand that tax rates are fairly high in western Kern County and I think it's about, (let's see, translating really gets me. I'm not to used to that.) What would 2½% be, 30 mill or 25? O.K. It's right around 23 or 24, just a little less than 2½% of value, something like that. Now, there I might remark, if the assessor has now gone in and put a substantial value on this little 2500 hundred barrels a day production, (I don't know what it is. I think he has put $70,000,000 and is proposing to raise that), he is simply anticipating that this thing is going to start producing full bore in the not distant future.

SEN. BUTROVICH: That's on federal land isn't it?

MR. PASCHALL: Well, no the property that he is actually assessing is Standard Oil Company feed property. It happens to be surrounded or intermingled with federal land but it is fee property in that case. That's not really consequential, it's not relevant to the situation, but it is fee property.

SEN. POLAND: Any further questions? If not, we have a couple of gentlemen from the administration.

Thank you very much, Mr. Paschall.

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

APPRAISER'S PROFESSIONAL QUALIFICATIONS

Paschall

EDUCATION

B.A. in Geology, Univ. of Calif. at Los Angeles, 1933
Graduate Work, U.C.L.A. and Oregon State Univ., 1940 & 1947
Courses in the income approach to value and the appraisal of industrial properties and of machinery and equipment given by the State Board of Equalization of California, the American Institute of Real Estate Appraisers, and the American Society of Appraisers

EXPERIENCE

Twenty years in petroleum geology in California. Latest industry job was as Senior Geologist, Offshore Area, Signal Oil and Gas Company.
Eleven years as Senior Petroleum Appraisal Engineer (present permanent position) and Principal Property Appraiser, State Board of Equalization, Sacramento. Engage in writing and lecturing on and appraising oil and gas and mining properties. Have appraised oil and gas fields in 15 California counties for property tax purposes. These fields include San Ardo, Kettleman Hills, Kern River, and Rio Vista.

PROFESSIONAL LICENSES AND MEMBERSHIPS

Registered Petroleum Engineer, State of California (No. 537)
Registered Geologist, State of California(No. 8)
Certified Property Tax Appraiser, State of California (No. 15)
Member, Society of Petroleum Engineers of AIME
Member, Amer. Assoc. of Petroleum Geologists
Member, Amer. Institute of Professional Geologists
Member, International Assoc. of Assessing Officers
Associate Member, American Society of Appraisers

RECENT TEACHING EXPERIENCE

Lecturer, I.A.A.O. Seminar on the Valuation of Oil and Mineral Rights, Phoenix, Ariz., December 1971
Speaker, meeting of the Society of Petroleum Accountants, Los Angeles, November 1972
Speaker, Society of Real Estate Appraisers seminar on mineral rights, Modesto, Calif., April 1973
Speaker, Amer. Society of Appraisers seminar on Oil and Mining Property, Toronto, Canada, June 1973

RELEVANT AUTHORSHIP

Co-author and editor of Valuation of Oil and Gas Producing Properties, 1966 (revised 1972), State Board of Equalization, Sacramento, Calif.
Valuation of an Oil and Gas Producing Property, in The Valuation of Oil and Mineral Rights, I.A.A.O., Chicago, Ill. 1972.

AGO 530261

MALONE

Sacramento, Calif.
14 October 1973

North Slope Borough
Barrow, Alaska

Gentlemen:

Here is my appraisal of the Prudhoe Bay oilfield for ad valorem tax purposes as of January 1, 1973. All value computations are shown on Appendix A, which is in the pocket at the back of the report. The reasons for the use of the items listed on Appendix A may be found in the body of the appraisal report.

It is possible that my value conclusion of $4,768 million may be challenged on the ground that I had inadequate data. We should keep in mind in this regard that the operators of Prudhoe Bay received interrogatories asking for detailed information on reservoir data, drilling costs and operating expenses, and the correlative rights of the several lessees. Those interrogatories were ignored.

The report makes it evident that relative paucity of data was not a serious handicap in appraising the field. The value would be 92 percent of that shown on Appendix A if production were carried only through the year 1980. That is the case in the face of the fact that only 77 percent of my oil reserves estimate will then have been produced; that is, more than two billion barrels of reserves will still remain. In short, the effect of present worth minimizes possible errors in reserves estimation, as my report points out.

The lack of precise data on expenses is not a serious matter, either. Net income is so high a percent of gross income (about 66 percent in the first few years) that a notable underestimation of expenses would not seriously increase the field's value estimate.

This brings us to the decisions that were most critical to the value determination. There are three of them:

1. The time at which oil production will begin.
2. The first few years' rate of oil production.
3. The price of oil.

All of these things are speculative at present, and do not depend on technical data that are available to some and denied to others. The commencement of production has already been delayed politically, and a further delay of five years from the date of appraisal now seems reasonable. The rate of oil production can be estimated with considerable confidence, and the details are spelled out in the report. Finally, the price of oil in 1978 will depend on global and national economics and politics, and one informed person's estimate is as good as another's.

Sincerely

Robert H. Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer
Reg. Petrol.Engr.Calif.No. 537
Reg. Geologist Calif. No. 8

REPORT ON THE APPRAISAL OF THE

PRUDHOE BAY OILFIELD

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REPORT ON THE APPRAISAL OF THE PRUDHOE BAY OILFIELD NORTH SLOPE BOROUGH, ALASKA*

I. OBJECT OF APPRAISAL AND MARKET VALUE ESTIMATE

The object of the appraisal was to estimate the market value of the Prudhoe Bay oilfield as of January 1, 1973 for ad valorem tax purposes, and to allocate the value between (1) the various assessment parcels and (2) possessory rights in land on the one hand and improvements and personal property on the other. The value of the field is estimated to be

FOUR BILLION SEVEN HUNDRED AND
SIXTY-EIGHT MILLION DOLLARS
($4,768,000,000)

The allocation of this total value to parcels and to land, improvements, and personal property is shown in Appendix D to this report.

II. APPROACH TO VALUE

The value estimate was made using the income approach to value. Only the income approach was used because (1) it is the approach used exclusively by the petroleum industry, whose member corporations are the only prospective purchasers of all or part of the Prudhoe Bay field, (2) all oil properties appraisal literature stresses the income approach virtually to the exclusion of other approaches, and (3) the other standard approaches to value-- cost and sales-- are inapplicable to Prudhoe Bay. They are not applicable because neither past nor prospective future costs reflect the present value of an oil or gas property and because sales data on properties comparable to Prudhoe Bay are nonexistent. Here are some comments relative to value approaches that may be found in the books listed in the bibliography to this report.

John Campbell's Oil Property Evaluation is the most authoritative book of this type in the commercial field. Campbell takes the income approach so much for granted that it is not possible to quote him regarding its relative importance. That is, he discusses nothing but the income approach in his chapters on "Elements of Oil Property Valuation," "Factors Influencing Oil Economics," and "The Value

*By Robert H. Paschal, Consulting Valuation Geologist and Engineer, Sacramento, California. The date of this report is October 14, 1973. See Appendix E for professional qualifications.

of Money." The latter chapter deals with the present worth concept and the time value of money, which are relevant only to the income approach to value.

Paul Paine's Oil Property Valuation preceded Campbell's work as an industry guide to appraisal. Paine had these things to say on page 9 in the section on "Valuation Methods" in his chapter on "The Scope of Valuation."

> "Replacement cost is very seldom workable for oil properties. No two properties are precisely alike..."
>
> "Sales of the same or of similar properties do provide a means of valuation which can be followed on many occasions for oil properties."
>
> "The capitalization of income derivable from a property provides a theoretical approach which has been the basis of most oil-producing property valuations. This is the so-called 'engineering' or analytical appraisal...(The) use of the expected income as a basis for the determination of value has been developed to a high degree...It has found ready acceptance in oilfield practice."
>
> (Underlining added in all of the above cases.)

The Society of Petroleum Engineers of AIME has published a series of articles jointly titled Oil and Gas Property Evaluation and Reserves Estimates. These remarks are made on page 152:

> "Where (as is usually the case) the investor has a choice of ventures in which he can invest his money, he will need a single yardstick to rank these ventures according to their profitability. Several yardsticks are being used in the oil industry which more or less approach this criterion. In the present paper, only two will be considered-- the present-day value (or deferred value) of the total profit, and the internal rate of return..."
>
> (Note: the underlined portion is italicized in the original.)

Finally, the California State Board of Equalization's Assessors' Handbook 566, Valuation of Oil and Gas Producing Properties, comments on all three of the standard approaches to value. Parenthetically, this volume has served since 1966 as a guide to the appraisal of petroleum properties for ad valorem tax purposes in California; the author of this appraisal report was the editor and a co-author of the book.

> "(The cost approach) is not applicable to the appraisal of oil and gas properties." (p.14)

"Market value" is defined at length on pages 13-14, and the comparable sales approach to appraisal is discussed on pages 14-15. It is important here to note this remark:

> "...scarcity of sales will usually require that every evidence of market data be investigated and analyzed. There is no excuse for the appraiser to overlook pertinent market data in areas for which this information is scarce."

It is obvious that sales data in the Prudhoe Bay area are sufficiently scarce to invalidate this approach at the present.

The income approach to value is dealt with on pages 16-24. A few quotations are germane to the present appraisal. The quotations within the quotation come from Assessors' Handbook 501, General Appraisal Manual.

> "Oil and gas producing properties are generally appraised by the income approach... 'A basic assumption of the income approach is that people purchase property for the income that it will yield...The relevant income that should be used in the income approach is the expected future net income. Past income is not a consideration, except insofar as it may be a guide to future income...The proper income to be used is the one which the typical purchaser and seller would anticipate over the remaining life of the property...'"

The principles contained in those quotations were employed in the valuation of the Prudhoe Bay oilfield.

III. APPRAISAL ELEMENTS

A. OIL AND GAS RESERVES DEFINED

The word "reserves" is defined in this manner by the American Petroleum Institute:

> "These are the volumes of crude oil and natural gas which geological and engineering information indicate, beyond reasonable doubt, to be recoverable in the future from oil and gas reservoirs under existing economic and operating conditions. They represent strictly technical judgments and are not knowingly influenced by policies of conservatism or optimism. They are limited only by the definition of the term 'proved.' They do not include what are commonly referred to as 'probable' or 'possible' reserves."

The production and sale of the oil and gas reserves provides the gross income from the property. The estimation of reserves, then, is highly important to oil and gas properties appraisal even though it is, strictly speaking, a technical as well as an economic matter. At the same time, the need for accuracy in the reserves estimate diminishes with the length of time that will be required to produce the oil and gas; this is the case because the present value of oil and gas that are to be produced many years from now is modest. For example, if net income is discounted to present worth at a 13 percent rate, as it is in this appraisal, the present value of a barrel of oil that is produced in the first year is 35 times as great as the value of a barrel that will be produced 30 years from now. With that caveat in regard to the economic significance of reserves, here are some comments on methods of estimation.

Reserves may be estimated variously by the volumetric, material balance, and decline curve methods, which assume a different order of importance at different stages in the life of an oilfield.

The volumetric method is appropriately used only in the earliest portion of the life of a field. In simple terms, the volume of the oil in place is estimated by measuring and/or estimating the total volume of the oil reservoir and the fraction of the reservoir that is occupied by oil (and gas). The key data used in computing the volume consist of (1) the area of the field, (2) the average thickness of the oil reservoir rock (which is a series of sandstones at Prudhoe Bay),

(3) the porosity of the reservoir-- that is, the portion of the rock which consists of open pore spaces, and (4) the fraction of the pore spaces which is occupied by oil, gas, or water. Then, in order to derive the oil reserves estimate, an oil recovery factor must be applied to the volume of oil originally in place.

The material balance method requires the use of a complex equation that relates the volume of oil originally in place to changes in cumulative oil production, the ratio of the volume of gas to the volume of oil, and the effects of the presence of gas on the volume of reservoir oil. It is evident, without being any more technical than that, that some production history is required to make the material balance method useful.

The decline curve method of oil reserves estimation is actually a family of methods, wherein one may graph the relationships variously of (1) the oil production rate versus time, (2) cumulative oil production versus cumulative gas production, et al. Appropriate extrapolation of various curves may afford an estimate of either oil or gas reserves. Again, like the material balance method, the decline curve methods require a history of production in order to be useful.

B. OIL RESERVES ESTIMATE

The preceding paragraphs make it evident that only the volumetric method of reserves estimation is presently available at the Prudhoe Bay oilfield. That is the case, then, with the four estimates cited below.

1. A letter from the president of Atlantic Richfield Oil Corporation to BP Oil and Humble (now Exxon) Oil Corporation, dated August 6 1969, proposed at one point that annual oil production be at a level that is three percent of the original oil in place. Conservation File No. 83 of the Alaska Oil and Gas Conservation Commission, dated November 13-14, 1969, says on page 59 that "...early pipeline capacity could be as high as two million barrels per day." (or 730 million barrels per year). If one combines these two statements, the indicated oil in place is 24.3 billion barrels-- that is, 730 million divided by .03. If one applies a 40 percent recovery factor to this volume of oil in place, the indicated reserve is

9.72 billion barrels.

2. The Oil and Gas Journal, an authoritative trade magazine, noted in an article on the Alyeska pipeline dated

April 23, 1973 that Prudhoe Bay reserves are about

10 billion barrels.

3. I made a volumetric estimate using the geological contour map, cross-sections, and reservoir information that were submitted at the 1969 and 1971 Field Rules Hearings. The details of my estimate may be found in Appendix B of this appraisal report. My estimate of oil reserves is

9.94 billion barrels.

The estimated rate of oil production for the first 25 years of the field's operation is listed on Appendix A. The economic limit of oil production is not yet reached, and production then totalled

9.39 billion barrels.

That production constitutes 94 percent of my volumetric estimate of 9.94 billion barrels and essentially all of its present worth.

C. GAS RESERVES ESTIMATE

The estimate of gas reserves is set out in Appendix B. It is estimated that the amount of gas originally in place is 33.6 billion MCF ("MCF" is the abbreviation for "1,000 cubic feet). Gas originally in place can also be stated as 33.6 trillion cubic feet. It is further estimated that 75 percent of this amount can be produced economically, yielding a reserve of

25.2 billion MCF.

Appendix A, the Value Computation Sheet, reveals indirectly that only 9.6 billion MCF will have been produced at the end of 30 years from the date of appraisal. That is the product of four times the gas revenue of $2.4 billion. Appendix A also reveals that the present worth of gas production distant more than 30 years is minimal.

D. GROSS INCOME

1. Sources of Oilfield Income

The annual gross income from an oil property is the product of the barrels produced multiplied by the price per barrel. If natural gas (mainly methane) provides income, the annual production in MCF is multiplied by the price per MCF.

It is assumed here that dry gas will provide some income at Prudhoe Bay beginning two years after oil production commences. This presumes that a gas pipeline will be installed parallel to the proposed oil pipeline from the field to Valdez. Good reservoir practice will probably require the injection of most of the gas back into the reservoir in order to maintain pressure and maximize oil recovery. Gas injection may not be required if it is found that an active water drive is present, but some production history is required to resolve that issue.

2. Prudhoe Bay Product Prices

a. Oil

A price of $2.95 per barrel is used to compute the gross income from oil. The use of this price constitutes a departure from normal appraisal practice, which typically calls for the use of current price, which would be less than the price that is used. However, an oilfield appraisal normally also involves current production, but it is believed that the Prudhoe Bay field will not begin to produce until 1978. It would be erroneous to employ the current price in computing 1978 and later income when it is evident that upward pressure on oil prices now exists on an international scale.

Oil price rises have been meteoric in the weeks just prior to writing this report. The price of 28-gravity oil rose 20 percent in California between May and September, and even greater increases have been recorded by Mid-East oil. Moreover, the prospect is that, by 1978, the influence of the Arab nations on worldwide oil pricing will be much greater than it is at present.

It is appropriate, however, to use information as close as possible in time to the date of appraisal in computing the price of oil. The writer's experience in property tax appraisal has been in a setting that permits the use of post-lien date information that seriously influences value. The only limitation on use is the closing of the assessor's roll, an action that takes place in California about three and one-half months after the lien date. Alaska law and practice do not provide for a closing date; in other words, it is an open-ended matter. It still seemed advisable not to depart unduly from the lien date in seeking critical information.

Here is the rationale for the oil price determination. The Oil and Gas Journal reported on April 16, 1973 about a meeting in Denver of the American Petroleum Institute. One of the speakers is quoted as saying:

"...(we) peg Persian Gulf crude prices at $7-10/bbl by 1980."

In early 1973 comparable 28-gravity oil brought $3.05 per barrel at Cook Inlet oilfields. (It had risen to $3.45 per barrel for "old" oil at the time of this writing, and the price for "new" oil is now subject to negotiation at a price undoubtedly much higher than $3.45.) Oil is an international commodity, of course, so Cook Inlet and Persian Gulf oil are at least partly in competition with one another. The well-publicized impending domestic shortage of crude oil, which will be only partially alleviated by Prudhoe Bay production, will place ever-greater upward pressure on the price of American oil. The prospect is offered, then, that Cook Inlet production will be worth about $8.50 per barrel in 1980--the mean of the price range proposed at the A.P.I. meeting. If the indicated 15 percent compounded annual price increase is computed in reverse, a Cook Inlet price of $6.43 per barrel is suggested for 1978.

But, Prudhoe Bay oil will not bring as high a wellhead price as Cook Inlet oil because it must be transported 789 miles by pipeline to a marine terminal that will put it on an economic level with Cook Inlet oil. Pipeline costs are computed here in this manner.

(1) An article on page 118 of the Oil and Gas Journal of June 12, 1972 deals with pipeline costs. It says "Current estimates of the cost of the line to be built by Alyeska Pipeline Service Company run close to $3 billion." As an aside, it is likely that total costs will exceed this amount, but that is the result of unanticipated carrying charges stemming from the delay in construction. Only replacement costs should be considered in this sort of analysis, so the earlier estimate of $3 billion will be employed.

(2) The article also states that the system operated by Colonial Pipeline, the largest in the Lower 48 states, cost $500 million for an annual capacity of 483 billion barrel-miles. Alyeska's pipeline will cost $3 billion for an annual capacity of 576 billion barrel-miles (at its stated 2,000,000 B/D capacity). Alyeska's line, then, will cost

$$\frac{3000}{500} \times \frac{483}{576}$$, or 5.04 times as much as Colonial's per barrel-mile of capacity.

(3) The Lower 48's oil and products pipelines grossed $1.25 billion in 1971, and had a throughput of 1,427 billion barrel-miles (this assumes that the top six carriers, which are listed in the Journal article, had 85 percent of

total throughput. The average cost per barrel-mile in 1971, then, was

$.000876.

(4) The cost per barrel-mile will be 5.04 times as great as that for the Alyeska pipeline, or

$.0044.

(5) The total cost per barrel is the preceding figure multiplied by 789, the number of miles from Prudhoe Bay to the pipeline terminal at Valdez:

$.0044 x 789 = $3.48.

(6) Finally, the estimated wellhead price of Prudhoe Bay oil in 1978 is the Cook Inlet price of $6.43 minus the transportation cost of $3.48, or

$2.95 per barrel.

For those who are interested, the total cost of $3.48 per barrel can be separated into components for (1) pipeline amortization and return on investment and (2) operating expenses. Pipelines are typically regulated by some government agency, and the rate of return is computed on a net after-tax basis. Moreover, the rate of return is a weighted average of debt and equity. Here are the assumptions and computations for the case at hand. Really should be 30-35 year

(1) Economic life of line 25 years

(2) Capital structure:
60 percent debt
40 percent equity

(3) Debt interest rate (in January 1973) 7.0%

(4) After-tax and -depreciation return on equity 12.5%

(5) Weighted average return on total capital 9.2%

(6) Capital recovery factor for 9.2% and 25 years .1035

(7) Cost per year for amortization and return on capital is:
.1035 x $3,000,000, or $310,500,000

(8) Total cost in 25 years' time is
25 x $310,500,000, or $7,762,500,000

(9) Total cost divided by reserves of 9.9 billion barrels yields a cost per barrel of $.76.

(10) The cost per barrel for operating expenses is $3.48 minus $.78, or $2.70.

b. Dry Gas

The price of natural gas is escalating rapidly at the present time, in recognition of past underpricing and present shortages. Its price at Prudhoe Bay, however, will continue to be minimized because (1) an expensive line must be built to carry it and (2) it must undergo expensive liquefaction at Valdez before it can be exported from Alaska. Therefore, although a wellhead price exceeding 50 cents per MCF (thousand cubic feet) has already been established in several parts of the Lower 48 states, and will very likely exceed 70 cents per MCF by 1978, a Prudhoe Bay price of 25 cents ($.25) is used in this appraisal.

3. Oil Production Rate and Decline Rate

It was remarked earlier that one of the operators suggested that a maximum production rate of 2,000,000 B/D of oil might be attained. In this regard, an item on the third page of the Oil and Gas Journal's "Newsletter" of June 18, 1973 said:

> "State of Alaska and producers there are cooperating to maximize the initial flow when Alyeska pipeline is ready rather than gradually building up throughput."

It is assumed, then, that wells will be drilled as the pipeline is being built (indeed, they are now being drilled), so that the field's initial production rate will be the same as the maximum rate. The current belief of the State Division of Oil and Gas[1] is that the initial rate will be about 1,800,000 B/D, and the Division's apparently conservative estimate is adopted for use in this appraisal.

A set of oil production curves was included in the evidence presented at the February 9, 1971 Prudhoe Bay Field Rules Hearings before the Alaska Oil and Gas Conservation Commission. These annual production decline rates were stated to apply to a well whose initial producing capacity is 1,000 B/D and whose economic limit is 100 B/D:

[1] Personal communication from Division engineers.

Constant percentage decline:
3.5 percent for 71 years

Pressure maintenance by natural water drive:
Zero decline for 25 years
35 percent decline for 10 years

Pressure maintenance by water injection:
650 B/D at zero decline for 39 years
35 percent decline for 9 years

The above estimates are only generally useful for the purposes of this appraisal. The Prudhoe Bay field had 79 Sadlerochit zone wells at the beginning of 1973, versus 51 at the beginning of 1972. The present rate of well completions-- 28 per year-- will result in the field's having 219 wells at the time that production begins in 1978. It is the writer's opinion that those wells will provide an initial production of 1,800,000 B/D.

Division of Oil and Gas engineers state that a total of about 400 wells will be drilled in the Prudhoe Bay field. This means that 181 wells will be drilled after the time that the field begins to produce. It is proposed here that their completion will sustain the initial production rate for a period of seven years, that is, through 1984.

It will be noted in Column 7 of Appendix A that the production rate per well declines at 8 to 10 percent annually through 1983. It is estimated that, upon the cessation of drilling, the field's producing rate will then decline at an exponential annual rate of 10 percent for 13 years' time. About 91 percent of the oil reserves will then have been produced. It is judged that gas "blowdown" will then be initiated, that is, reservoir pressure will no longer be maintained by gas injection. The conclusion is that the oil production decline rate will increase to 25 percent at that time.

4. Gas Production Rate

The benefits of gas injection in maximizing oil production were cited earlier. The judgment is made that net gas production will be only 25 percent of total production; that is, 75 percent of produced gas will be returned to the reservoir during the first 20 years of the life of the field.

It is also believed that gas production will not begin until 1980, two years later than oil production. Furthermore, the gas production rate will be one MCF per barrel of oil.[1]

[1] Alaska Oil and Gas Conservation File No. 83, p. 119, November 1969

Therefore, annual gas sales in MCF for the years 1980-1997 will be one-fourth the number of barrels of oil produced.

It is assumed that this rate will increase beginning in 1998. Gas will no longer be returned to the reservoir, but instead will be produced at such a rate that the remaining reserves will be depleted in 15 years' time.

5. The Economic Limit and Present Worth

The term "economic limit" was used earlier but not defined. It is that point in the producing life of an oil or gas field when gross income is exactly matched by direct operating expenses. The economic limit of Prudhoe Bay oil production would occur in the year 2004 if all 400 wells were retained, but the economic limit for gas production will occur much later.

About 15 billion MCF of gas will remain when oil production becomes uneconomic. The gross revenue from that gas will be very large indeed-- almost $4 billion. Its present worth, however, is insignificant when compared with the present value of the Prudhoe Bay oilfield itself. In fact, it can be noted on Appendix A that the present value of both oil and gas production for the year 2002 is only $11 million, which is a minute fraction of the field's value. As a result, value computations were not carried beyond the year 2002.

E. CAPITAL COSTS AND OPERATING EXPENSES

1. Definition of Net Income

It was remarked in section II of this report that "The relevant income that should be used...is the expected future net income." The operating net income that is capitalized into value in this appraisal is the gross income minus all out-of-pocket expenses except income taxes and interest on debt. Both income tax and interest charges are accounted for in the capitalization rate (see following section F). Depletion, depreciation, and amortization "expenses" are book charges that do not require the outlay of cash, and actually contribute to the cash flow from an income-producing property; in turn, cash flow is the money remaining in an entrepreneur's pocket after all expenses. Therefore, these book charges are not subtracted from gross income.

2. Capital Costs

Capital costs comprise money outlays that, for income tax purposes, must be recaptured by the investor over a period of time through book charges to either depletion or

depreciation. Practically speaking, capital costs in this appraisal are treated the same as operating expenses. This treatment is conservative in that it tends to reduce the value of the property. The reason for this conservative treatment is based on the assumption that a purchaser of Prudhoe Bay would have to engage in most of the required capital investments prior to the time that production and income will begin. As a result, payment for the investments would have to come, at least originally, from corporate resources other than Prudhoe Bay. This suggests that the capital outlays would be paid for with cash on hand or with the proceeds from a short-term loan. It was decided, therefore, to expense the investments rather than to spread their cost out over the typical period of repayment of an equipment loan.

a. Well-Drilling Costs

An earlier section of this report noted that 79 Sadlerochit zone wells had been completed by the date of appraisal and that a total of 400 wells would be required to develop the field. Opinions variously expressed at the Field Rules Hearings in 1971 and by the Division of Oil and Gas indicate that the total drilling and completion cost per well will be about $1,500,000. That amount is used in this appraisal (see Appendix A).

b. Oil-Gathering Centers

The gathering centers will receive all produced oil and gas, and will contain three-stage separators and other equipment. Three gathering center units have already been installed at a cost of about $54,000,000. It is estimated that a further expenditure of $54,000,000 will be required. That expenditure is divided between the years 1976 and 1977.

c. Gas Injection Equipment

The compressor plant and other facilities related to the injection of gas back into the reservoir will cost an estimated $200 to $300 million, according to an article in the August 10, 1970 issue of the Oil and Gas Journal. The latter figure is used, and is divided between the years 1976 and 1977.

3. Expenses

a. Oil and Gas Production Direct Operating

No experience is available on which to base an estimate of direct well-operating expenses, which include labor,

power, fuel, workovers, salt water disposal, routine contract work, et al. However, an economic limit for oil of 100 B/D was cited earlier, as well as an oil price of $2.95 per barrel. Combining these two numbers provides a daily cost per well of $295 and an annual cost per well of 365 times $295, or $108,000. The operating expenses listed for each year on Appendix A, the Value Computation Sheet, are the product of $108,000 times the number of wells in existence at the beginning of the year, through the year 1997.

b. Gas Injection

Strictly speaking, the expense of returning dry gas to the reservoir depends on the gas volume and on the reservoir pressure which must be overcome to effect injection. It is estimated that this expense will be $.10 per MCF for the 20-year period prior to blowdown.

c. Gas Production Direct Operating

Direct field operating expenses will still be incurred to produce the gas after blowdown begins. It is assumed here that only 100 wells in the structurally highest area will be required to produce the gas. The writer makes the professional judgment that the operating cost per well-year will be $25,000.

d. Well Remedial Work and Redrills

Oilwells commonly require maintenance work that varies from field to field depending on such things as casing corrosion, invasion of the well-bore by formation sand, with subsequent destruction of tubing, and other factors. The assumption is made in this appraisal that remedial work will (1) begin the year after all wells have been drilled, (2) end at the twentieth year, when gas blowdown begins, (3) affect ten percent of all wells each year, and (4) incur a cost that is one-third the cost of drilling a new well. In short, beginning in 1985 remedial costs of $20 million will be incurred each year through 1997. This amount is computed thus:

$$.10 \times 400 \times \$500{,}000 = \$20{,}000{,}000.$$

4. Property Taxes and Gross Production Tax

The prospective property taxes are so small in relation to the total value of the Prudhoe Bay oilfield that their effect on value is ignored. It is contended here that they are accounted for in the capitalization rate.

Section 43.55.010 of the Alaska Statutes supplement sets out the terms of the gross prduction tax to which produced oil

and gas are subject. That tax will be a levy against future gross income, just as are the expenses set out above. The manner in which it is computed in the appraisal for oil only is as follows:

First 300 B/D/Well:
B/D/Well x 365 x .03 x $2.95 x No. of wells

301st to 1000th B/D/Well:
(B/D/Well of 1000 or less, but greater than 300, minus 300) x .05 x 365 x $2.95 x No. of Wells

1001st to 2500th B/D/Well:
(B/D/Well of 2500 or less, but greater than 1000, minus 1000) x 365 x .06 x $2.95 x No. of wells

More than 2,500 B/D/Well:
(Field average B/D/Well minus 2500) x 365 x .08 x $2.95 x No. of Wells

The gross production tax on natural gas is much simpler to compute. That tax amounts to a flat four percent of the gross income from gas sold. That gross income is listed for each year on the Appraisal Computation Sheet.

It will be noted that the first year's effective production tax on oil is 7.1 percent. The levy declines every year, as the production per well declines; for example, it amounts to 6.4 percent of the gross value of oil production in 1985, and to 4.9 percent in 1995.

5. Royalty Payments

Royalty must be paid to the State of Alaska at the rate of 12½ percent of the gross value of production. A legal question exists in the State of California regarding the ad valorem taxability of the government interest. This stems from the fact that royalty is deemed equivalent to rent and rent should not be subtracted from a property's gross income in computing net income; in fact, net income commonly derives from rent.

However, that issue is still unresolved in California. Moreover, a private oil company cannot buy Alaska's royalty interest nor is it apt to pay another private party for the value of that interest. As a result, royalty is treated as an expense in this appraisal.

F. CAPITALIZATION RATE AND THE TIME DEFERMENT OF INCOME

The future net income from an oil property must be reduced to its present worth in order to obtain an estimate of market value. A prospective buyer will pay for the future net income an amount that will permit him to recapture his invested capital and realize a profit on it at his "target" rate of return. His future profit (return) is the difference between the total net income and the price (present worth) that he pays for the property.

Future net income is reduced to present worth by "discounting" it at the investor's anticipated rate of return. That return is also called the capitalization rate.

The capitalization rate used in this appraisal is 13 percent. The rate is weighted for the rate of return on equity capital and the interest rate on debt. It is assumed that Prudhoe Bay, like any other large mineral or industrial property, would be purchased partly with the use of borrowed money. Since it offers a level of risk that is greater than that of most oilfields, it is assumed here that a purchase would be made 50 percent with equity capital and 50 percent with borrowed money. This is a higher percentage of equity capital than usually prevails in the purchase of oil-producing properties.

An analysis was made in California in 1970-71 of the sales of 175 oil- and gas-producing properties.[1/] That analysis revealed an average 18.5 percent pre-income tax cash flow rate of return on equity. Also, it was found that the oil industry typically borrows money at a rate that is equal to the corporate prime rate plus three-quarters of one percent to one percent. That fact reveals a loan interest rate of 7.0 (seven) percent on the date of appraisal. The computation of the total-property capitalization rate follows.

Capital Item	Capital Fraction	Rate	Weighted Product
Equity	.50	.185	.0925
Debt	.50	.07	.035
TOTAL CAPITALIZATION RATE			.1275

that is, 12.75 percent, rounded up to 13 percent.

The present worth factors used in the appraisal may be found in Assessors' Handbook 566, Valuation of Oil and Gas Producing Properties.

1/ "The Determination of a Total Property Capitalization Rate from the Analysis of Market Data," March 1971, a report to the Standards Committee of the California Association of County Assessors from its Petroleum Standards Advisory Committee.

It will be noted that income from Prudhoe Bay is not anticipated until 1978. The Oil and Gas Journal, on April 16, 1973, quoted a speaker at an American Petroleum Institute meeting as saying:

> "...until North Slope production becomes available, perhaps in 1978."

Also, an article in the Journal of May 7, 1973 said:

> "Alyeska (pipeline) still hopes to begin construction...by summer 1974. But...work could be delayed two years..."

The effect of the delay in production on the present value of the field is conspicuous. The present worth factor for the year 1978 is .510, which means that the first dollar's worth of net income from oil was worth only 51 cents in January 1973.

Another rather impressive fact: if the date of appraisal was January 1978, and the field was just beginning to produce, its value would be in excess of $9,500,000,000 because of the more immediate receipt of the net income, and because all major capital expenditures would have been made.

IV. A MATTER OF SIZE

One should keep in mind that Prudhoe Bay is a giant oil and gas field with prospective monumental gross income and awesome operating costs. Dealing with Prudhoe Bay numbers has something in common with dealing with astronomy or the national debt. As a result, the valuation equivalent of a light-year is used on the Value Computation Sheet. It consists of stating production and income and expenses in terms of millions. Thus, Prudhoe Bay's first 20 years of production of 9,389,000,000 barrels is stated as 9,389 barrels.

This approach obviously offers computational advantages and saves paper. It is also mathematically rational and in accordance with good appraisal practice. For example, assume that the first 20 years' production was challenged as being excessive to the extent of 40,000,000 barrels and $118,000,000 gross revenue, a not inconsiderable sum. In most cases this would constitute a drastic professional challenge. In this instance, however, it would amount simply to a claim that production and revenue were overstated by 44/100 of one percent, that is, they were only 99.56 percent correct. Such a challenge may be unanswerable, but it is also unprovable.

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APPENDIX B- COMPUTATION OF OIL AND GAS RESERVES ESTIMATES

1. OIL RESERVES

The volumetric estimation of oil reserves is made with the use of the formula:

$$\text{Reserves} = \frac{A \times h \times \phi \times (1-S_w) \times 7758}{FVF} \times RE$$

where the symbols have these meanings:

A	area in acres
h	net oil sand thickness
ϕ	average porosity (rock volume pore space as a percent of total rock volume)
S_w	water saturation as a percent of pore space
7758	number of 42-gal. barrels in one acre-foot
FVF	formation volume factor, which is the number of barrels of space taken up in the reservoir by one barrel of oil and its included gas
RE	Recovery efficiency, expressed as the percent recoverable of the original oil in place

These elements are assumed to be constants for the Sadlerochit reservoir sands at Prudhoe Bay:

ϕ	22 percent, that is, .22
S_w	20 percent, so that $(1-S_w)$ is 80 percent, or .80
7758	
FVF	1.40

The product of these constants is another constant, 975, which represents the barrels of oil in place per acre-foot of formation. This constant is multiplied by A and h for each of several areas at Prudhoe Bay.

The geologic contour map, cross-sections, and reservoir data that were presented at the Field Rules Hearings in February 1971 were used in the following computations. A professional petroleum geologist or engineer will recognize the cited areas by referring to the map, which is not included in this report.

All of the listed numbers of barrels of oil in place are stated in millions. That is, the first figure listed is actually 13,455 million, or 13.455 billion.

a. Main Area, underlying gas cap

A 46,000
h 300

Oil originally in place:

46,000 x 300 x 974 = 13,455 barrels.

b. Main Area, oil ring

A 44,000
h 150

Oil originally in place:

44,000 x 150 x 975 = 6,435 barrels.

c. Unresolved shaded area, including only probable area above oil/water contact:

A 13,000
h 150 (rough approximation)

Oil originally in place:

13,000 x 150 x 975 = 1,901 barrels.

d. Small fault closure in SE part of T12N-R12E

A 3,900
h 175

Oil originally in place:

3,900 x 175 x 975 = 665 barrels.

e. Far western fault closure

A 14,000
h 175 (rough approximation)

14,000 x 175 x 975 = 2,389 barrels.

TOTAL OIL ORIGINALLY IN PLACE 24,845 barrels.

OIL RESERVES AT 40% RECOVERY EFFICIENCY 9,938 barrels.

The recovery efficiency was computed using the formula on page 109 of Craft and Hawkins' Applied Petroleum Reservoir Engineering. That formula assumes a water-drive recovery mech-

anism. The mechanism is not yet known at Prudhoe Bay, but the large structural relief and the presence of a giant gas cap point toward high oil recovery. The elements in the recovery efficiency formula and their values at Prudhoe Bay follow.

k (permeability)	265 millidarcies
S_w (water saturation)	.20 (given for Kuparuk River pool in Field Rules Hearings report)
μ (viscosity)	0.81 (at bubble-point)
ϕ (porosity)	.224
h	200 feet (average)

The formula is:

$$RE = 0.114 + (0.272 \log k) + (0.256\ S_w) - (0.136 \log \mu) - (1.538\ \phi) - (0.00035\ h)$$

and the computation is:

$$RE = 0.114 + (0.272 \times 2.4232) + (0.256 \times .20) - (0.136 \times 0.0908) - (1.538 \times 0.224) - (0.00035 \times 200)$$

$$= 0.3979, \text{ that is, } 39.79 \text{ percent, rounded to } \underline{40 \text{ percent}}.$$

This estimate of recovery efficiency can be confirmed generally by reference to the empirical factors listed in J.J. Arps' "A Statistical Study of Reservoir Efficiency" (Amer. Petroleum Institute Bulletin D-14, First Edition, 1967, Division of Production, Dallas, Texas). Arps' median recovery efficiency for sandstone reservoirs was 33.8 percent, and the maximum was 67 percent. The reservoir with the maximum RE was better than the median, relative to Prudhoe Bay, in regard to permeability and porosity, but less favorable in regard to water saturation and oil viscosity. Overall, Arps' empirically derived graphs justify the 40 percent RE computed using the formula presented by Craft and Hawkins.

2. GAS RESERVES

The estimation of gas reserves employing the volumetric method has these elements in common with oil reserves estimation:

A
h
ϕ
S_w

In addition, the natural gas volume must be corrected for the effects of pressure, temperature, and the gas's compressibility factor, which depends on the gas composition as well as on pressure and temperature. This formula is used to compute the corrections cited:

$$\frac{PR}{Psc} \times \frac{Tsc}{Tres} \times \frac{1}{z}$$

where the above abbreviations are defined thus:

PR	average original reservoir pressure
Psc	standard pressure of 14.7 psi
Tsc	standard temperature of 60°F
Tres	average reservoir temperature
z	the compressibility factor at average reservoir conditions

The corrections for the Prudhoe Bay reservoir are:

$$\frac{4125 \neq 14.7}{14.7} \times \frac{460 \neq 60}{460 \neq 190} \times \frac{1}{1.054}$$

A multiplication must also be made by 43,560 to obtain the number of cubic feet in an acre-foot. Then, a division may be made by 1,000,000,000 to reduce the answer from cubic feet to MMMCF, that is, billions of cubic feet. This reduction can be made directly by using .0004356 instead of 43,560.

The product of all corrections for porosity, water saturation, pressure, temperature, compressibility factor, and cubic feet is 0.001639. That constant can be used in conjunction with the area in acres and the net sand thickness in feet to compute the original volume of gas in place.

a. Area of Gas Cap only (no oil present)

A 12,000
h 225

Gas originally in place:

12,000 x 225 x .001639 = 4,425 MMMCF

b. Gas Cap Gas above oil ring (Main Area)

A 46,000
h 120 average

Gas originally in place:

46,000 x 120 x .001639 = 9,047 MMMCF

c. Oil-associated Gas (all areas except a and b, above)

The estimate of oil-associated gas in place is computed by multiplying the estimate of oil-originally-in-place by the reservoir gas/oil ratio:

$$24{,}845 \times \frac{810}{1000} = 20{,}124 \text{ MMBICF}$$

d. TOTAL GAS ORIGINALLY IN PLACE: 33,597 MMMCF

e. GAS RESERVES AT 75 PERCENT OF GAS ORIGINALLY IN PLACE: 25,198 MMMCF

Not uncommonly 90 percent or more of gas-in-place is produced from fields in the Lower 48 states. That level of recovery might be expected of Prudhoe Bay if it were not for the very high cost of production. In any event, the percent recovery of gas used here does not affect the field's present value; this fact was discussed in section III-D-5 of the appraisal report. The same value would have accrued had a recovery efficiency of only 50 percent been used.

Year	Production 1,000,000 bbls. (2)	Revenue at $2.95 per bbl.	Natural Gas Revenue at $.25 per MCF (4)	TOTAL REVENUE	No. of wells at end of year	Average BOPD per well
1973					107	
74					135	
75					163	
76					191	
77					219	
78	657	$1938	$	$1938	247	7287
79	657	1938		1938	275	6545
80	657	1938	42	1980	303	5940
81	657	1938	42	1980	331	5438
82	657	1938	42	1980	359	5014
83	657	1938	42	1980	387	4651
84	657	1938	42	1980	400	4500
85	591	1743	38	1781	"	4047
86	532	1569	34	1603	"	3642
87	479	1413	30	1443	"	3280
88	431	1271	27	1298	"	2952
89	388	1145	25	1170	"	2657
90	349	1030	22	1052	"	2390
91	314	926	20	946	"	2150
92	283	835	18	853	"	1938
93	254	749	16	765	"	1740
94	229	676	14	690	"	1568
95	206	608	13	621	"	1410
96	185	546	12	558	"	1267
97	167	493	11	504	"	1144
98	125	369	382	751	100	3425
99	94	277	382	659	"	2575
2000	70	206	382	588	"	1918
01	53	156	382	538	"	1452
02	40	118	382	500	"	1096
	9,389	$27,696	$2,400	$30,096		

COLUMN FOOTNOTES

(2) Zero decline until new-well drilling ceases; decline of 1 end of 20th year; decline of 25 percent per year

(4) Net production rate is 25% that of oil through 1997, th per year as blowdown begins.

(12) Year 1998 includes $15 MM for abandonment of 300 wells

(13) At $.10 per MCF for 75 percent of gross production un

ALL OTHER ITEMS ARE EXPLAINED IN

AQD 530288

CAPITAL COSTS			EXPENSES			PRODUCTION TAX		ROYALTY	TOTAL COSTS	OPERATING NET INCOME	Present Worth Factors at 13%	PRESENT WORTH
Well-drilling	Gathering Centers	Injection Eqpmnt.	Well-Operating	Remedial Work (12)	Gas Injection (13)	On Oil (variable)	On Gas (at 4%)	at 12½% of Total Rev.	EXP. TAXES ROYALTY			
$ 42									$ 42	$ (42)	.941	$ (40)
42									42	(112)	.832	(35)
42									42	(42)	.737	(31)
42	$ 27	$150							219	(219)	.652	(143)
42	27	150							219	(219)	.577	(126)
42			$ 27		$ 50	$138		$242	499	1439	.510	734
42			30		50	134		242	500	1438	.452	650
42			33		50	133	$ 2	248	508	1472	.400	589
42			36		50	132	2	248	510	1470	.354	520
42			39		50	130	2	248	511	1469	.313	460
42			42		50	128	2	248	512	1468	.277	407
20			43		50	127	2	248	490	1490	.245	365
			43	$ 20	45	111	2	227	448	1333	.217	289
			43	20	41	97	1	200	402	1201	.192	231
			43	20	37	85	1	180	366	1077	.170	183
			43	20	33	74	1	162	333	965	.150	145
			43	20	30	63	1	146	303	867	.133	115
			43	20	27	55	1	132	278	774	.118	91
			43	20	24	49	1	118	255	691	.104	72
			43	20	22	45	1	107	238	615	.092	57
			43	20	19	38	1	96	217	548	.082	45
			43	20	17	34	1	86	201	489	.072	35
			43	20	16	30	1	78	188	433	.064	28
			43	20	14	28	Ø	70	175	383	.056	21
			43	20	13	23	Ø	63	162	342	.050	17
			3	20		23	15	94	155	595	.044	26
			3	5		16	15	82	121	538	.039	21
			3	5		11	15	74	108	480	.035	17
			3	5		8	15	67	98	440	.031	14
			3	5		6	15	62	91	409	.027	11
						$1720	$97	$3341	$8,234	$21,862		$4,768

that is, $4,768,000,000

10 percent per year until thereafter.
then rises to 1.53 billion MCF

at $50/M each.
until blowdown begins.

IN TEXT OF REPORT.

October 1973
Robert H. Paschall
Sacramento Calif.
Reg. Petroleum Engr. (No. 537)
Reg. Geologist (No. 8)
State of California

AGO 530289

460 Lovella Way
Sacramento CA 95819
16 February 1976

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

This letter contains my comments on the three proposed bills that you sent to me on February 10. I believe that I can make some useful contributions to the first two. Also, I thought that you might be interested in an economic analysis in which I engaged to indicate the oil industry's approximate position at Prudhoe Bay relative to the return of their investment following the commencement of production in 1977. That analysis is attached to this letter.

SENATE BILL No. 567, PRODUCTION TAX

I will make only one comment on the level of taxation that will be effected by the change in rates. If Prudhoe Bay production commences at a rate of 1,200,000 barrels per day from 400 wells, the net effective tax rate will be 8.2 percent of gross income, versus an effective rate of 5.8 percent under existing law. The ad valorem property tax in California equates with a rate of about 5.5 percent. You have information in your office on comparable rates in Texas, Louisiana, and elsewhere. Now to specific comments.

Page 2, line 3

This line should conclude

> "...of the gas and liquidproducts produced each month and not injected back into the reservoir."

For some time most of the gas produced from Prudhoe Bay will be returned to the reservoir ("reinjected," in normal if incorrect parlance). As a result, the present wording of the bill would result in its being taxed time after time. It is only net production of gas-- that produced less that returned to the reservoir-- that should be subjected to taxation. The wording that I propose will take care of taxation of flared gas, as it should, and gas either used at the field or shipped out in a pipeline.

Page 2, lines 5-22

The cents-per-barrel tax confuses me every time that I encounter it. Is it an alternative tax on production (at an obviously lower level) or an added tax? It reads like an added tax, which puts the production tax at a very high level, indeed. Just asking.

Page 3, lines 8-9

Here and later is the same case that was noted on page 2. Beginning with the last two words on line 8, this should read

> "on oil produced or gas produced and not injected back into the reservoir..."

Page 3, lines 13-15

Same problem. These lines should be revised to read

> "(e) Gas produced is considered, for the purpose of this chapter, as gas produced from a lease or property and not injected back into the reservoir."

Page 3, line 26

Same problem. Line 26 should read

> "(3) the gross amount of oil produced or gas produced from the property, and in the case of gas, not injected back into the reservoir..."

Page 4, line 1

Same problem. Line 1 should read:

> "(4) the total value of the oil produced or gas produced but not injected back into the reservoir..."

SENATE BILL 620, NET PROCEEDS TAX

Essentially all of my comments here were also stated in my report to you of February 8. They bear mainly, though not entirely, on the differences that should be maintained relative to the meanings of the words price, income, and value. Except for Section 43.22.040 my comments are not momentous, but I believe they will contribute to the proper intent and language of a net proceeds tax bill.

Page 1, lines 14-16

These lines should be revised to read

> "...collection of a tax based on the operating income to the property from oil and gas, and to provide a rate of taxation on the operating income to the property from oil and gas..." (and conclude line 16 and line 17 as they stand)

It is simply not proper to speak of an "ad valorem tax" on "income," It serves to confuse two types of taxation. Moreover, the use of the word "operating" is necessary to differentiate "net proceeds" from either "gross income" or "net income." "Operating income" or even "operating net income" are essentially synonymous with "net proceeds." On the other hand, gross income is the starting point in computing net proceeds, while "net income" is the level at which the corporate income tax is usually assumed to apply. This may seem like nit-picking, but I have gotten into horrendous disagreements because another person and I were thinking about two different levels of income.

Page 1, lines 21-23

These lines should be revised to read:

> "...February 1, with the department a statement showing the gross income from production and the operating and development expenses for each well or field owned or..."

As it stands, without regard for things that follow, an extremely important element is omitted. It might not hurt to add "and net proceeds" after "expenses," but it is not really necessary, because its computation is automatic once one has the gross income and expenses.

Page 2, lines 8,9, 17, 19, and 25

The word "value" should be changed to "income"in each case.

Page 2, lines 23 and 25

The word "well" should be changed to "property" in each case. The net proceedd tax applies to properties, oil people think in terms of properties' incomes, and, also, the word "well" does not take account of multi-well properties.

Page 3, new line 1

A minor item, but I suggest that present item (7) on operating expenses be changed to item (4) and placed just before maintenance and repairs. That is the way it is usually carried on operating statements, and it should be a companion of other direct expenses, rather than separated by "amortization."

Page 3, line 5

The net proceeds tax is not at all like the Federal income tax, and the charge cited here is made for a different reason. The word "amortization" should be used instead of "depreciation.""Amortization" means only one thing, the recapture of capital, which is the goal sought here. As you know, "depreciation" can also mean a loss in value, and we might as well avoid that ambiguity.

Page 3, line 10

The words "the well" should be deleted, since it is operations generally that are involved. Also, the word "development" should be singular; it is never used in the plural in investment language.

Pages 3 and 4, Section 43.22.040

This section should be deleted in its entirety for reasons that I set out in my letter of February 8. First, note that "...money expended for ...development" is permitted as a charge against gross income in item (7) on page 3. But, drilling costs are the largest single element in oil field development costs, so a serious contradiction now exists relative to expensing development costs in Section 43.22.030(b)(7) and amortizing them in Section 43.22.040.

As I noted on February 8, it is much simpler to expense these costs, as proposed in Section 43.22.030(b)(7), and this expensing is in harmony with the income level known as net proceeds, since development costs are a direct obligation at the field level.

Exploration costs simply should not be allowed at all. The net proceeds tax is, to repeat, levied on the operating income from a property (specifically, from a property's oil and gas reserves, since equipment must be amortized in order to subject it to the ad valorem property tax). Past exploration costs, whether they resulted in production or not, have absolutely no relationship to present net proceeds.

If the amortization of exploration costs is permitted as an expense, it will vitiate the net proceeds tax and make it a tax on persons (corporations) rather than on properties. Also, it will compound to an unbelievable degree the administration and auditing of the tax. What does it matter, for example, if a producing lease at Prudhoe Bay is owned by a company that is engaging in seismic work in the Gulf of Alaska? Nothing, I can assure you.

Page 4, lines 5-7

The title of this section should be "NET PROCEEDS TAX LEVIED." It is not an ad valorem tax. Also, lines 6 and 7 should be revised to read

> "shall be collected by the department a net proceeds tax based on the operating income from production..." and so on.

Page 4, lines 14, 15, 19, and 20

The word "value" should be replaced by the words "gross income" in each case.

Page 4, line 23

The word "value" should be replaced by the word "price." You can now appreciate why it is so important to differentiate between the words price, income, and value. They only rarely mean the same thing in the fields of either valuation or taxation, and they never mean the same thing in net proceeds taxation.

Page 8, lines 21-23

First, a minor item. I suggest that "gas" be made item (3), so that it and "oil" are placed next to one another, and not separated by "gross income." More importantly, the word "value" on line 23 should be replaced by

"gross income per barrel of oil or MCF of gas"

Also, you may wish to reconsider the term "FOB price at Alaska border or other convenient point." My own belief here is that the price should be the wellhead price as determined by the Department in terms of Section 43.22060 on page 4.

SENATE BILL 621, EXCESS INCOME SURTAX

You know about my concern over this proposed tax. At the very least, I am convinced that its own excesses and its obvious administrative difficulties will jeopardize the passage of other oil tax legislation introduced in the same session.

I will make only two observations here. One of them is a simple technical point that I have beaten to death earlier in this letter. This particular tax is not an excess value surtax, but an excess profits tax or an excess income tax.

Permit me to offer an analogy with another excess profits surtax that you may wish to consider, and which may highlight the political and economic dangers that lurk in any excess profits tax. Contemplate, if you will, levying an excess profits tax on Alaska landlords. It should be easy to compute. Use a base year of, say, 1972 for Alaska rents, and escalate them each year by the Consumer Price Index. Then, levy a tax on 41 percent of the net income generated by the difference between actual current rents charged and indexed rents. Pretty easy, eh?

Yes, that would be easy, but now consider the problem introduced if the Department of Revenue is charged with determining each year, not an easily indexed rent, but the prospective long-term rent that might be expected. Now it becomes not only politically unpalatable (to landlords, at least) but an economic nightmare. And that's about the case with any effort to levy an excess profits tax.

Sincerely

Robert H. Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

APPENDIX

This analysis is a fairly straightforward effort to estimate the value, at the time that Prudhoe Bay production commences, of all past investment in the field, and then to estimate the time by which the industry will recoup that investment. It may be useful to you in considering the effect of different tax levies and in responding to similar estimates that may be offered by industry.

It is assumed that past investments will incur lost interest at a conservative rate of 8.5 percent per year, so that the true cost of investment by 1977 will be the original cost plus accrued annual interest. Stated costs for field development were taken from my 1973 appraisal and escalated 50 percent because of the great degree of inflation in recent years. Where certain costs were spread out over a number of years, an "average year" was used to simplify calculations.

Element of cost	Original	Full cost by 1977
	(in millions)	
1969 lease sale	$ 900	$1,728
Exploration	100	192
Development (average year 1974)	1,968	2,513
TOTAL		$4,433

The next step necessary is to compute the first-year operating net income for Prudhoe Bay, and assume that the net income will prevail for a few years. For this computation I used these elements:

Production rate of 1,200,000 B/D
Price of $7.00 per barrel at the wellhead
My 1973 operating expenses inflated by 50 percent
The current level of royalty and production tax

These elements yield a gross income per year of $3,066 million and an operating net income of $2,390 million.

In 1975 I concluded that the proper venture capital rate for Prudhoe Bay was then 18 percent. I will now lower it to a conservative 15 percent mainly because of a notable decline in the short-term interest rate that applies to oil field loans. If one next applies the operating net income of $2,390 million to the 1977 full cost of $4,4330 million, in conjunction with a 15 percent rate of return, it is found that the investment will be recouped in the year 1980, about three years from the commencement of production.

This period of return may appear to be a short one, but these important things should be kept in mind: some large capital investments date back to 1969, so that the total period of recapture (on a pre-income tax basis, at that) will be eleven years for that part of the investment, a very long time indeed for getting one's money back.

An equally important consideration is that the colossal $6 billion investment in the pipeline is not considered here. If the pipeline is treated as a regulated interstate carrier, the investment will not be recouped for perhaps twenty years. In short, it is evident that Prudhoe Bay has not yet provided a bonanza for the oil industry, but instead has simply incurred very large carrying costs.

460 Lovella Way
Sacramento CA 95819
12 February 1976

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

This letter contains my comments on the outstanding report submitted by Rush Moody, Jr., to you in your capacity as chairman of the Joint Gas Pipeline Impact Committee. Moody's report brings into clear focus Alaska's problems and required decisions on the issue of natural gas, to which you had alluded to me in conversation but of which I now have a fuller understanding. It is my hope that my own knowledge of and interest in petroleum economics and in production and processing systems will add to Moody's statements, which constitute a concise summary of legal avenues and pitfalls. My comments will proceed on a page-bypage path through Moody's report.

Page 1, future rate of Prudhoe Bay gas production

I was most interested in the footnote on this page bearing on the possibly detrimental effect of producing gas (and selling it) at a high rate at the same time that the oil is produced at Prudhoe Bay. I have been somewhat astonished in the past couple of years over the battle about alternative gas pipeline routes, because my 1973 appraisal of Prudhoe Bay contemplated that large-scale production of gas would not begin until the 18th year of the field's producing life. If my conclusion had any merit at all, I said to myself, why are people now battling over the right to build a line? Mr. Moody's footnote indicates a concurrence of our views.

I will give you my opinion on what Alaska should do about this issue and others of great importance in the last paragraph of this letter.

Page 2, the dangers of nonaction

I agree with Moody's implication that nonaction on Alaska's part at this time is tantamount to a decision, and one that may be injurious to the State's long-term interests. The various impacts of nonaction will become evident later.

Page 3 and pages 5-6, royalty in cash or in kind

Moody points out the grim effect on the State should it choose to take its royalty in cash, and thus lose control of the gas to the FPC. I made marginal notes on page 3 to the effect that "Apparently State should take only in kind" and "Better take action on a non-cash basis," and then found that Moody said the same thing on pages 5 and 6.

But this decision, on which Moody and I agree, calls for other decisions and positions. For one thing, it requires, as he noted, that the State promote a gas transmission line that lies within the State to the greatest extent possible, which means either the El Paso proposal or a southeasterly route for the Arctic Gas proposal.

But, paragraphs 2 and 3 on page 4 lead me to ask "Does anyone really know how well Kenai gas will provide for Alaska's needs for, say, the next twenty years?" There is no point, because of all the uncertainties involved, to look farther down the line than that. If Kenai can do the job for Anchorage and Fairbanks, this simplifies the problems related to delayed gas production from Prudhoe Bay or of choosing between El Paso and Arctic.

Mind you, there is a way of knowing, or at least of making a very good estimate, in order to answer my question. I will get back to that in the last paragraph. It is evident that the question should be answered, because it is one that may well be asked by the FPC in challenging Alaska's statements on its needs.

Page 6, Decision on disposal of royalty gas

Paragraph 2 continues to deal with the matter of the State's taking its gas in money or in kind, opting for the latter, and I agree. This is a decision that should be made soon, since it will have more merit later than if the decision itself was made much later. Also, you should obtain a legal opinion as to whether the State can take the royalty in kind and then sell it to the interstate pipeline without jeopardizing its right to claim it later. That is, would such a sale of its royalty gas commit it to interstate commerce?

Page 6, State cooperation with gas transporter

The last sentence in the next-to-last paragraph indicates the desirability of the State's remaining on at least speaking terms with the company that transports the gas. Should the State choose to take gas in kind, and either go into the gas distribution business itself or issue a franchise to a distributor, it appears that close cooperation with the transporter may be requisite. That is, for example, if a line were to tap El Paso's proposed line east of Fairbanks to take gas to Fairbanks, the State and El Paso might have to go hand-in-hand to the FPC to make the arrangement. And, for various reasons, the producers would undoubtedly be highly interested spectators.

Page 7, State law controlling out-of-state sales of gas

Paragraph 3 talks of such a law enacted in Texas. To me it smacked of lese majeste on the part of the state, and I scribbled a marginal note "Is this constitutional? May interfere with interstate commerce." Moody's remark in the last paragraph on page 6 shows that he wonders about it, too. There must be a better way to do what you want to do for Alaska. After all, you have only 300,000 population to Texas's 9 or 10 million, and your reserves and production are on the upgrade instead of the downgrade. Texas may be getting a bit desperate; a real pot of gold lies at the end of your rainbow, without getting crosswise with the rest of the United States.

Page 8, extraction of natural gas liquids

Ethane, propane, butane, et al., are known as natural gas liquids, or NGLs for short. I suggest here that Moody is not familiar with normal oil field practice relative to NGLs. If the field gas has an economic content of NGLs, they are extracted at the field by the use of separators or a gasoline plant ("gasoline" here means natural gasoline, which is one of the NGLs). "Natural gas" moving in interstate commerce is, so far as I know, only methane, which is also known as "dry" gas, meaning that the NGLs have been removed.

All of these definitions are intended to point out that no incentive is usually needed to get producers to extract the NGLs from the produced gas. In fact, it is generally considered highly advisable to do so before putting the dry gas back into a reservoir ("reinjecting", as it is called) when desired to maintain the reservoir pressure.

Of course, things may get a little sticky in Alaska because of the pipeline problem. Prudhoe Bay producers might decide to commingle the NGLs with the oil before shipping it to Valdez, where it would leave the State. That's not all bad, however, since that would boost the State's take from the severance tax and from the net proceeds tax, too, should one be enacted.

I will not comment on the prospect that the natural gas might be converted to methanol, other than to say that it is not immediately evident how the State could "encourage" that action. I suggest that economics will be the decider. I see no evident problems here relative to the FPC, by the way, although Moody believes so without saying why.

Page 9, State royalty rate

I will agree that a one-eighth royalty rate is a quite conservative one these days, but there are offsetting factors if one makes comparisons with Texas and Louisiana. For one thing, operating costs in Alaska are enormously higher than in the Lower 48, so if you put the two together-- royalty and operating costs-- your operators will undoubtedly suffer a much bigger bite out of their gross income. Moreover, no other state now has or has proposed a net proceeds tax on oil (let alone an excess profits tax!), so it is certainly economically unsound, and perhaps politically unsound as well, to make comparisons only on the basis of State royalty rates.

Page 9, a return to the subject of interstate commitment

Moody doesn't say, but perhaps you know the answer to what may be a simple but very important question: will natural gas be committed to interstate commerce before it leaves Valdez? Just asking; after all, it will be entirely intrastate until then, and will change carriers at that point.

Page 10, near top: oil development tied to State's needs

I feel a bit uneasy over Moody's statement here for the same reason that applies to the comments about the remarks on page 7 on a State law controlling out-of-state sales of gas. The political problems are ominous, and there are some sizeable economic ones as well. A political problem might be that of bringing 48 other states, or maybe 25 or so, down on your necks, with subsequent congressional "interference." Here is an economic problem: what if an operator leases State lands for a fat bonus bid, puts alot of money into exploration and makes a big discovery, and the State then says "Our law and our present circumstances require that you suspend development until we need the oil (or gas, or money)? That would be a case of Katie, bar the door!

Page 10, a franchise tax on interstate pipelines

Doesn't your present law provide for ad valorem taxation of the Alyeska pipeline? Moody may not know about this. In California at least, the franchise tax is relatively small compared to the ad valorem tax on interstate pipelines. (In fact, in California parlance the "franchise tax" on corporations exactly parallels the Federal income tax, and Moody probably refers to something different, like a business tax or license. But that still should not compare with the ad valorem tax.)

SUMMARY

John, I will close by suggesting early action on a multi-faceted program for Alaska.

1. Take care of the matter of the State's getting its gas in kind rather than in cash.

2. Have a study made that encompasses Alaska's 20-year need for natural gas, the ability of the Kenai to supply it, the cost of a pipeline for Kenai gas to Fairbanks, the probable date at which Prudhoe Bay will be able to ship gas, the matter of whether the State could take its royalty gas from El Paso's proposed line at selected points, and the cost of that program either to the State or to a franchised distributor.

Finally, if my suggestions have any merit whatsoever, Alaska will need a coordinated effort to find the answers and resolve the issues. If it is at all useful to you, I just happen to know someone who is in an excellent position to put together a small team of economists, engineers, and tax experts to do the job. (I forgot: we will need a lawyer, too. Can't seem to avoid them.)

Sincerely

Bob Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

460 Lovella Way
Sacramento CA 95819
8 February 1976

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V, Juneau Alaska 99811

Dear John:

This letter constitutes my report on the "Oil and Gas Taxation Report" that you sent to me on January 22. First, let me compliment the author on the high level of writing competence demonstrated, and on the thoroughness with which all issues are treated. The report is also sufficiently well-organized, by which I mean well organized, that I will use its organization as the framework for my response, after I have made some introductory comments.

A second and minor item: I am going to write this response straight through, without retyping. There is no need for Alaska to pay for my services as a typist alone, and I can usually do pretty well putting my final thoughts directly onto paper. However, you may have to forgive an occasional word that is "x'd" out.

I. INTRODUCTION

It is perhaps regrettable that I was not able to work with you in formulating proposed legislation, because it is not always pleasant for either party when one of them is called in later only for critical comments. Please keep in mind, then, that my sole intent at all times is simply to aid you in putting together a tax program that is politically feasible, economically palatable (to investors), simple to administer, and as free as possible from flaws and complexities that will produce future controversy and litigation. With those goals in mind, I will begin with Tax Proposal Two, Excess Value Surtax.

II. EXCESS VALUE SURTAX

First a comment on terminology. It is necessary in valuation work to differentiate between price, income, and value, and I suggest that the meanings employed in valuation are admirably adaptable to taxation. Thus, price is simply the amount paid per unit of a commodity, say a barrel of oil. Gross income is the annual production of units multiplied by the unit price, and net income, in general terms, is gross income minus the expenses incurred in generating the gross income. Finally, value is a many-faceted term, but its use in the field of taxation is probably best confined to the property tax meaning, that is, the amount in money or its equivalent for which a property might sell to a willing and knowledgable buyer from an equally willing and knowledgable seller.

These definitions reveal that the proposed tax being discussed here is an excess income surtax. You can be sure that that is the way it would be viewed by taxpayers.

Definitions aside, I would like to suggest that you not press for the implementation of this tax. As noted, it is a tax on income, and so are both the severance tax and the net proceeds tax. Imagine your own shock should it be proposed that a single jurisdiction will impose three separate taxes on your income. This sort of tax, I believe you will agree, could not possibly have a positive effect on investment in Alaska oil prospects. I suggest that, instead, it will have a delerious effect by its mere presence.

You have already demonstrated that tax revenues can be obtained by adjustment of the severance tax rate and by the addition of the net proceeds tax. It is not at all apparent that the addition of a third tax on income will necessarily increase revenues. But let us explore the real difficulties associated with an "excess income surtax."

The essence of the difficulties is summarized on page 28 of your report, where it is stated in the last paragraph that

> "It should be continually recognized that the excess value surtax is based on an estimate of the long term price of energy. Thus, the tax should have a provision for periodic correction and inflation adjustments of the long term price base."

This statement acknowledges that it is not possible to estimate the long-term price, but that instead adjustments must be continually made to the current price. The experience of the past three years shows that anyone's estimate of the long-term price is not worth very much. Not only must one estimate (1) inflation, but a future price-level estimate must also take account of (2) OPEC's actions, (3) development of alternative energy sources, and (4) congressional decisions. An extremely optimistic theoretical economist might be willing to crank these elements into a computer program, but they are not a very sturdy basis for taxation.

Another thing: the entire concept of "excess profits" or "excess income" is an extremely dubious one. Let's get away from oil for a moment, where there is a widespread temptation to think that excess profits are generated, and look at business and industry generally. How would you like to write an excess profits bill for California's row crop farmers (big businessmen, believe me), proposing to tax at a high rate any income from lettuce exceeding 25 cents a head, or Colorado's cattlemen, with an excess profits tax on beef income when the price rose above 40 cents a pound on the hoof? In another area, what about the "excess" profits generated by IBM as its net income increased at a rate of 20 percent per year, year after year, and it came to dominate its industry in a fashion unique in American history? At a personal level, how about the "excess profits" generated by $1,200-a-week welders on the Alyeska pipeline?

One can go on and draw innumerable examples of good cases of "excess income," but none of them appears to be politically feasible or administratively possible. Why, then, is the case different with oil? I do not believe that it is, as a tax source.

Back for a moment to the tax impact on investment. The last paragraph on page 23 begins

> "The excess value tax, as suggested, strives to tax only the income which does not have a direct impact on the investor's long term plans."

Let me ask you, a businessman, this question: what portion of your past or present income does not have an impact upon your plans for investment? All that any of us can say in response to that question is: "Who knows? The more income I have, the more I save or invest in some specific way, or just spend." There really isn't any other answer, is there? And, without serving as a crying towel for the industry, it is doubtful that any of its members can contemplate excess income for many years to come, with the pipeline ballooning in cost from $1 billion to more than $6 billion. This is why I believe that an "excess income tax" will be harmful to oil development in Alaska.

Finally, the foregoing remarks indicate the can of worms that administration of such a tax would open. Even if the state employs the brightest, most analytical, hard-boiled people it can find to run the program, they will be continually embroiled in controversy, tax appeals, and litigation. Who needs that?

John, I hope that these remarks do not seem harsh. They are intended mainly to serve you and your legislature and your state. Moreover, they constitute all of the bad news thatIintend to convey. The rest of this letter deals with a good tax and good news.

III. NET PROCEEDS TAX

Essentially all elements and all prospective problems of this tax are dealt with in "II. An Oil Tax Base," beginning on page 7, and my comments will parallel that discussion. Before that I would like to remark that, if Alaska did not already have a tax on oil production, I would heartily recommend the net proceeds tax as the only method of taxation. It is equitable, because it is based on the ability to pay; it is simple, in contrast to the Federal income tax; it does not call for the subjective judgments required by an ad valorem property tax; and finally, it is flexible, and tax revenues can be adjusted by adjusting the tax rate. As an aside, I have incorporated these features, in some detail, into the talk that I will give later this month at a seminar on the taxation of coal mines sponsored by the Council of Economics of the American Institute of Mining Engineers in Las Vegas.

By the way, the net proceeds tax is a form of income tax, not an ad valorem tax, which is what it is called near the bottom of page 3 of the report that you sent me. My earlier comments on price, income, and value, and the manner in which the tax base is computed in your report, both demonstrate this fact. Nevada tax officials, too, thought that their own net proceeds tax was an ad valorem tax, simply because they apply the ad valorem tax rate to the tax base. But the method of tax base computation reveals what sort of tax it really is.

Now to a discussion of the elements in the tax base, and of the alternatives set out by the author of your report.

A. Treatment of exploration and development costs (page 8)

1. Exploration costs should not be allowed at all. For openers, the oil industry accounting treats exploration and production as two cost centers. For another, exploration is a chancy thing, and two companies with identical present production may have incurred radically different past exploration costs. For another, current exploration costs seldom have anything to do with current production and income, and the very essence of a net proceeds tax is current income from production. Consider, too, the grim decisions to be made if exploration costs are allowed as an expense. Should all past exploration costs be allowed, going back to, say, 1958? Should costs be allowed only for exploration in finding the production that is taxed, or will distant exploration costs be allowed as well-- e.g., Bristol Bay exploration versus Prudhoe Bay production? A high percentage of exploration costs are incurred in geological and geophysical offices far from a producing oil field, and commonly far even from Alaska. Should those costs be allowed, too?

No, I assure you, only costs chargeable to production should be allowed as an expense.

2. Development costs should be allowed, because they contribute directly to production and, in fact, without them no production would occur. I recommend that they be allowed as an operating expense, even though they are recaptured for Federal income tax purposes by the unit-of-production method of amortization. But we should not cloud the clear waters of the net proceeds tax with income tax mud.

This is probably the best time at which to introduce the concept of net income (net proceeds) as the oil field superintendent views it. He is concerned, as we should be, with all out-of-pocket costs and expenses for which he is responsible in developing and maintaining production. He is not at all concerned about methods of amortization or interest payments deductions or other elements so dear to the heart of the accountant or the I.R.S. (Nothing personal, Frank, believe me. The effort here is to deal with the income from a property, not the income to a corporate entity. These are the things that differentiate the net proceeds tax from the Federal income tax.)

Annual expensing of development costs simplifies the administration of the net proceeds tax. Otherwise, judgments must be made of the life of the oil field or of the life of the oilfield equipment in order to determine the rate of amortization.

B. Indirect Administrative Costs (page 9)

In all fairness, general overhead incurred in Alaska and truly attributable to a given operation should be allowed, but this one can be a real bear. For example, one oil company here claimed O & A of $660,000 on an oil field that I was appraising. This turned out to be nothing more (or less) than a head-office accountant's allocation based on gross income, and the field was a large producer. I sat down with the company's representative and worked out a realistic O & A of only $120,900, and he accepted it without a murmur.

The only consolation about this troublesome expense is that it does not loom as a very large item relative to gross income or to other expenses. (see also second paragraph of next item, "C".)

C. Basis for the "Adjusted Value" (Net Proceeds) (page9)

The essence of a net proceeds tax is that it is a tax on the income from a property, not to a person, as noted earlier. Therefore a company's (person's) gross income and expenses from several fields should not be consolidated. In short, a field running at a loss incurs no net proceeds tax, but its loss shouldnot be transferable to a profitable field.

The report speaks here of what is to be done about allocation of indirect expenses if more than one field is operated by one corporation. In this case it would be appropriate to allocate on the basis of gross revenue, since the properties are alike. The problem that I cited above involved O & A costs involving refineries, service stations, and you name it. You will have to deal with only overhead costs incurred in Alaska by the production department, and that should not provide any great difficulty.

D. Method of Depreciation (page 10)

The report does not state to what sort of property the "depreciation"(amortization) is to be applied. Development costs are not a problem if they are simply expensed. However, a charge for amortization of the investment in equipment is necessary, since it is subject to ad valorem taxation in Alaska, and if it were not amortized in computing the net proceeds tax it would be subjected to double taxation.

The simplest way, and I believe an equitable one, is to employ a reasonable life of, say, 20 years, and use straightline depreciation. Moreover, this should be done by the use of a capital recovery factor at a reasonable interest rate, say 10 percent. That is, the capital recovery factor should be multiplied by the original cost of equipment, and the product used as an expense. Otherwise, recapture of capital would not be accompanied by a return on investment, and the depreciation would be understated. If this sounds too complicated-- and it is the only thing at all complicated about the net proceeds tax-- we can explore it when we get together. It's a strictly technical item, not a political or administrative one.

E. "Losses" stemming from depreciation (page 11)

This subject has already been covered. New and old entrants to Alaska are treated alike. Exploration costs should not be deductible from production income, and only profitable production (which will be about all of it, I can assure you) will be subject to taxation.

F. Treatment of Bonus Bid Money (page 11)

Item (3) is correct. Bonus bids should not be treated as an expense in computing net proceeds. They constitute pre-production money, and have nothing to do with net proceeds. It would be as improper to allow amortization of a bonus bid as an expense as it would be to do the same in valuing the field for ad valorem tax purposes. "Sunk costs" incurred perhaps far in the past have nothing to do with either present profitability or present value.

G. Treatment of Interest on Debt (page 12)

Interest on debt is a charge against a person, not against a property. I concur with the outlook stated in the first paragraph in your report on this subject. On the other hand, I do not concur with the statement at the top of page 13 that

> "...the taxpayer can be placed in the position of paying taxes while not having enough income after other costs to pay the interest on the debt."

By the time a field reaches a marginal stage any debt owing on it has long been paid off. The banks see to this.

Interest on debt should not be treated as an expense in computing the net proceeds to an oil field. Other than the property-versus-person argument, the problem in doing so is well stated on page 13 where it says that doing so

> "...would lead into an administrative and accounting quagmire."

I. Treatment of Income from Oil and Gas (page 14)

Again, this should be handled just the way that the production superintendent handles it. He doesn't care where the money comes from. Income from oil, gas, and natural gas liquids should be treated together.

J. Scope of the Net Proceeds Tax (page 14)

I concur with the author that only producing properties should be subject to the net proceeds tax. I have studied refineries income and valuation fairly extensively, and it is rather a nightmare. However, refineries and service stations do not necessarily require "a more complex tax approach." They are assessed and taxed in California on an ad valorem basis, using the cost approach to value, and things work out pretty well, although the industry would probably argue it.

K. Taxation of Royalty Payments

A royalty interest is an interest in land, and is the legal equivalent of rent paid for farmland. Royalty payments should be subtracted from an oil operator's gross income, since the operator does not own that interest. If the royalty interest is owned by the State, it is not subject to taxation. If it is privately owned, it should be separately subjected to the net proceeds tax at its face value, since no expenses are incurred in earning it. By the way, Nevada does this regularly, obtaining the names and addresses of royalty owners from the operators, who are only too happy to provide them.

.....

Comments on the Reporting Forms and Revenue Estimates

It would not serve any useful purpose for me to comment on either of these subjects, since many of my earlier remarks, if adopted, would necessitate changes in both.

I will next study your letter of January 30 on natural gas, and will send you a report on it within a few days.

Sincerely

Bob Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

460 Lovella Way
Sacramento CA 95819
22 June 1976

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

Your letter makes it apparent that this will probably be the last letter that I can write to you at the above specific address. It seems a shame, really, that Alaska should treat such an important mission on an ad hoc basis.

Thanks for sending me the distant early warning about the committee's demise. I am all paid up, so no problem exists.

It was indeed a pleasure working with you, especially last year when the work required my coming to Juneau and meeting head-to-head with everyone involved in the issue. If my personal situation had been just a bit different I would probably have come up there about three years ago to stay a few years. I found it to be a very stimulating place to be. But, Jeanette just can't take the cold weather as I can, so that was not to be.

Here are some more or less untouched areas that we may be able to explore together some day, and on which we have touched lightly in the past. One, of course, is a workable statute on the taxation of mines. I suspect that mines still go untaxed because a rather extreme view was taken by the administration in its efforts last year. It is not often politically possible, as you well know, to jump from nothing to everything.

Another is the area of possessory interest taxation, especially in regard to timber but not excluding other valuable private rights in public property. Some people up your way are getting a free tax ride, which is really not a healthy thing in the long run or for everyone else in the short run.

All for now, and thank you again for your recent nice note.

Sincerely

Bob Paschall

Robert H. Paschall

AGO 530308

June 15, 1976

Mr. Robert H. Paschall
460 Lovella Way
Sacramento, California 95819

Dear Bob:

The Subcommittee on Taxation and Revenue is in the process of preparing its final report. I want to thank you for the good job that you did for us. The information was most helpful in carrying out the committee's work.

Please review your records to see if all billings and payments have been made. If there is an additional billing or if a payment is missing, please inform me by phone or return mail. The committee will cease to exist and all funds will lapse as of June 30, 1976.

You can be assured that when matters come before the Legislature in your area of expertise that I will recommend that your services be retained. Thank you again for all of your help.

Sincerely,

John Huber

Enclosure

460 Lovella Way
Sacramento CA 95819
13 May 1976

Mr. John C. Doyle, Administrator
Legislative Affairs Agency
Pouch Y, State Capitol
Juneau Alaska 99811

Dear Mr. Doyle:

I am enclosing a duplicate of a statement for $750 that I first sent to your office on February 21. That statement dealt with my services during the months of January and February to Senator John Huber's Special Committee on Taxation and Revenue.

I would appreciate an early remittance of the $750. Last month I had to make my first estimated tax payment on that portion of my 1976 income, and next month I must make the second payment. It seems only proper that the State of Alaska pay me now for that work done four months ago.

Thank you for your very early attention to this matter.

Sincerely

Robert A. Paschall
Consulting Valuation Geologist
and Engineer

Attachment
cc Senator John Huber

Paid
5-10-76
V 3104550

AGO 530310

Rec'd 03-31-76

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

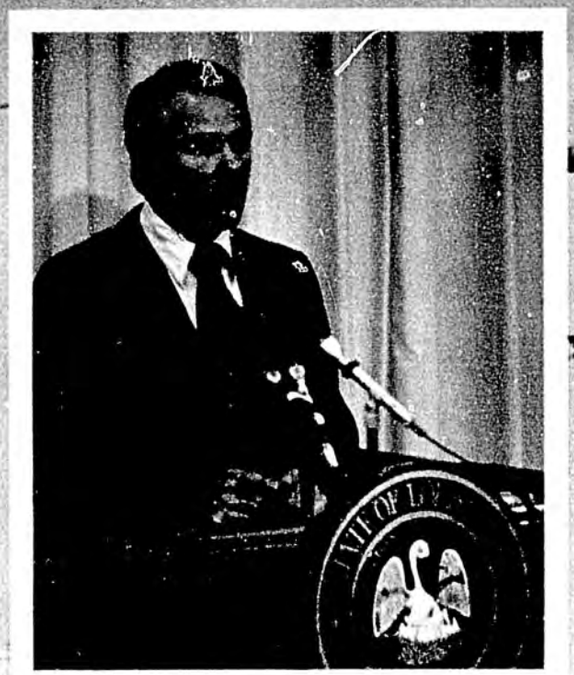
I thought that you might like to see, and pass along, this interview with Governor Edwards of Louisiana. His point of view as Governor of a longtime major oil-producing state may be of interest.

My schedule has been so busy of late that I am almost grateful that I have not received a call to come to Juneau. I have been on the road at least three days a week for ten of the past eleven weeks, and that's a bit much. It was more or less topped this past week by my being offered a county job that pays almost $6,000 a year more than my job with the state. If that were the only issue it would be overwhelmingly tempting, but there are other considerations, so I'm thinking it over.

Sincerely

Robert H. Paschall

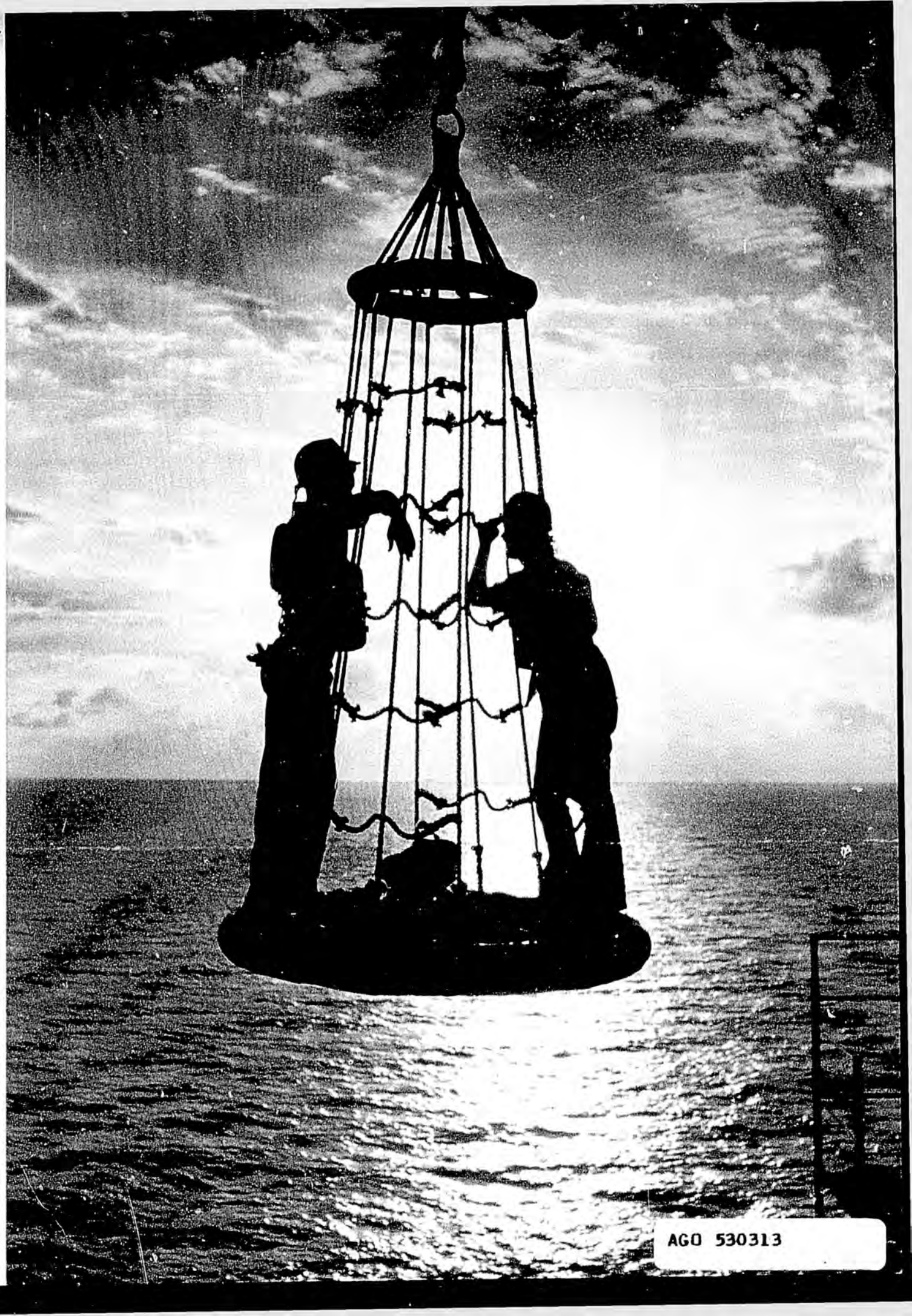
PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.



AGO 530312

PETROLEUM TODAY

1975/three



AGO 530313

Talk With a Cajun Governor

by Bob Hamm

Edwin W. Edwards has served at all levels of government: Councilman of the small Louisiana town of Crowley, member of the state legislature, U.S. Congressman, and now governor of Louisiana.

Born to a sharecropper family in Louisiana's oil-rich Acadian country, Edwards is a direct descendant of the exiled Nova Scotians described in Longfellow's poem, "Evangeline." He is the first "Cajun" governor of the state since pre-Civil War days.

Edwards has gained national prominence recently for his fiery defense of offshore exploration and production. In this interview, which took place at the Governor's Mansion in Baton Rouge, Edwards talks about that and other aspects of the oil and natural gas situation.

PETROLEUM TODAY: If you could turn back the clock to a time when there was no oil activity in the Gulf of Mexico would you permit its initial entry there?

EDWARDS: Yes. Absolutely. I say that as one who has looked at the total development, and as the governor of a state which has pioneered the development of offshore activity. We would be able to approach it now with all the technology that's been developed. It would be much safer now than it was 35 years ago when it was started.

PETROLEUM TODAY: In the past quarter of a century, approximately 14,000 wells have been drilled off the Louisiana coast. Has there been any lasting damage?

EDWARDS: None to my knowledge. None of the spills ever resulted in oil or noxious materials getting to the coast.

In all offshore exploration, there have been only four really major problems. In only one of them, the Santa Barbara incident, was there significant damage to the coastline . . . and that was repaired with money put up by the oil companies responsible for the damage. I think that's an excellent safety record.

But more importantly, the technology, machinery and government regulations now are much more effective than they were 6½ years ago. The possibility of blowouts or other accidents is much less today.

PETROLEUM TODAY: You have debated with governors of East Coast states—sometimes on national television—the pros and cons of offshore oil activity. Do they offer any compelling arguments?

EDWARDS: In all candor, no. Most of their arguments have been based on lack of knowledge. They were not aware of the huge number of wells that have been drilled without incident. Many of them envisioned oil and gas rigs as being ugly, dirty, spewing, noisy apparatus a hundred yards offshore, which swimmers had to circumnavigate.

Off the New England coast, we're talking about development of an area that's 60 miles off the coast in 200 feet of water.

You couldn't see an oil or gas rig 60 miles off the coastline from the top of the Empire State Building on a clear day . . . even if New York had clear days.

PETROLEUM TODAY: What was your reaction to the Supreme Court's denial of claims by East Coast states to mineral rights beyond the three-mile limit?

EDWARDS: They got what they deserved. Twenty-five years ago when we were trying to establish that as a matter of states' rights, they were foremost in arguing politically and legally that

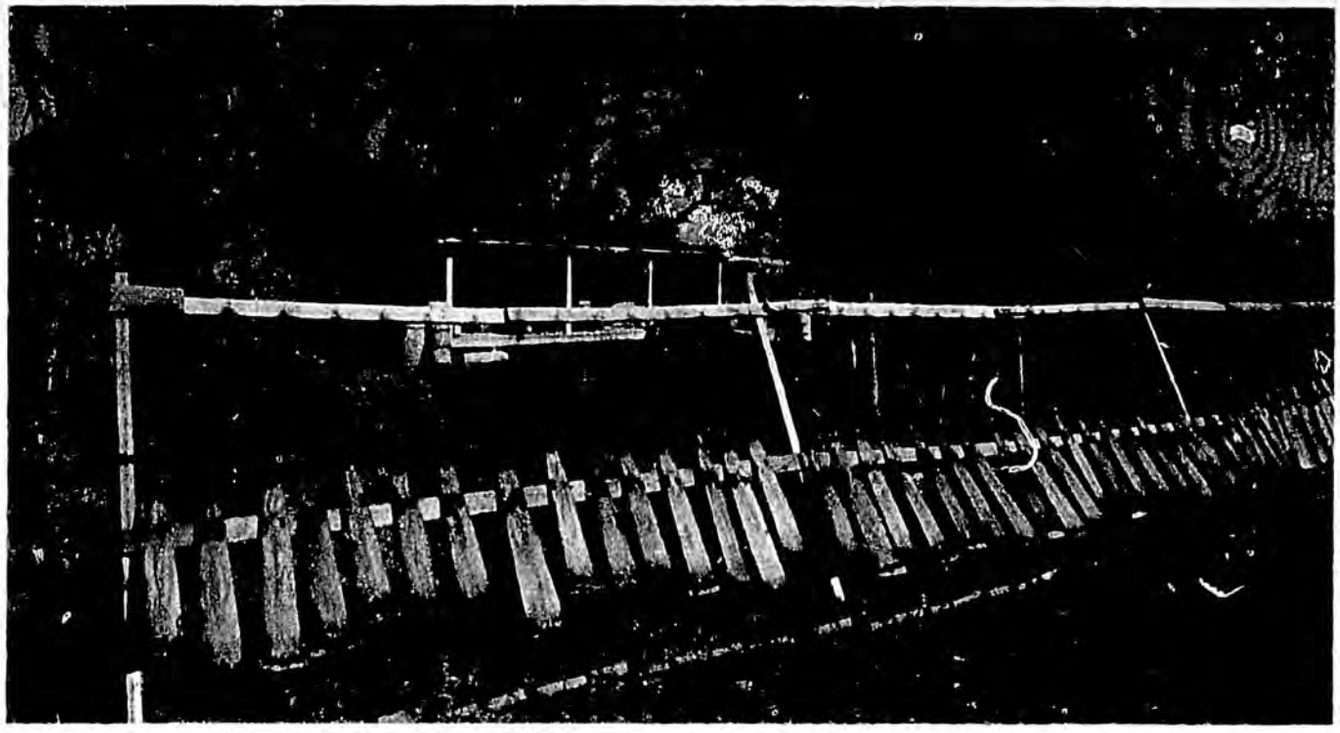
Louisiana marshes provide nesting areas for white ibis and site for drilling rigs

AGO 530314



Fur of the marsh-dwelling nutria (right) provides a living for Cajun trappers; below, nutria pelts dry on racks in dappled shade

Opposite page, pelicans perch within sight of rig on shell reef off Louisiana shore



we were wrong . . . that the federal government had the exclusive claim outside the three-mile limit. Now the situation has turned full-cycle, and they are the unhappy legatees of their own ill-advised legal opinions and political positions taken a quarter of a century ago.

PETROLEUM TODAY: The charge is revived periodically that the oil companies contrived the energy crisis to promote profits. Do you believe this?

EDWARDS: I can best answer that by saying that there are 23 major or heavy independent oil companies in America. That's far greater than the number of steel companies, automobile companies or mail-order houses of national significance. If one looks at the amount of money that is consistently paid to the government in federal and state bidding for coastal tracts by these companies, it's obvious that there's no collusion among them. If they were colluding, they certainly wouldn't leave millions of dollars on the table in bidding practices. They'd get together and rig the bids.

I simply say that there's fair enough competition in the oil and gas industry to more than allay the fears of anyone having that concern.

Also, you can look at the facts and figures. The reserves of oil and natural gas in place—whether we like it or not—declined by three to eight per cent a year because of many inhibiting factors and because of heavy usage. That's there . . . can be seen . . . can be calculated and projected. It flies totally in the face of the argument that the crisis has been contrived. It's just not so.

PETROLEUM TODAY: Proposed national legislation would establish a federal oil and gas corporation, national energy supply corporation, or other government operated company. Would you favor such a move?

EDWARDS: No. If there's one thing we have

AGO 530315

proved in the past 200 years, it is that in no single instance can government operate as efficiently as private industry. Government should only engage itself in projects like TVA or Hoover Dam, where private industry does not have the capital or the powers of expropriation or what have you to accomplish a stated purpose. There are some areas where government must be involved.

But where private industry can handle it—and certainly the oil and gas companies can handle the exploration and production of oil and gas in this country—it should definitely be left to them.

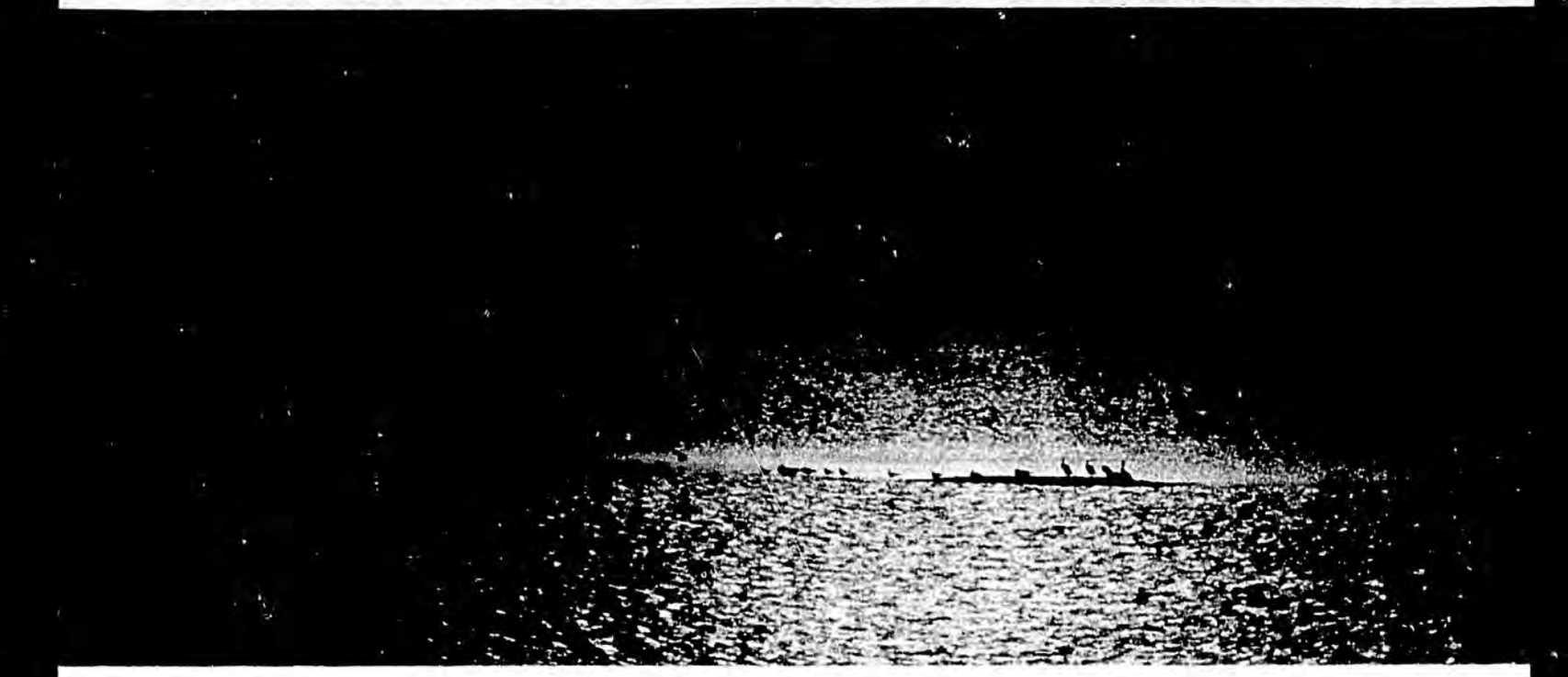
Secondly, there is a limited number of offshore rigs . . . a limited number of people in the business . . . a limited number of pieces of equipment and machinery. I don't think the government could acquire the equipment in any reasonable period of time, even if it had the men and technology to use it.

PETROLEUM TODAY: What was your reaction to Congressional action eliminating percentage depletion only for oil and gas?

EDWARDS: It was a step in the wrong direction. It will be counterproductive. I think it's going to hurt exploration at a time when we badly need to find additional reserves. And I think it's a beguiling of the American people. When you remove percentage depletion, the cost has to be passed on to the consumer at the gas pump and at the fuel station. It's really not doing the American taxpayer a favor.

I think the oil and gas companies should be treated like all other American businesses. Oil and gas were among more than a hundred minerals that were included under percentage depletion. All of a sudden, percentage depletion was removed for most oil and gas but not for the other minerals.

PETROLEUM TODAY: You have referred to federal regulation of natural gas prices at the wellhead as "the first giant step backwards."



EDWARDS: Wellhead regulation began in 1954 as the result of an ill-advised Supreme Court decision interpreting the 1938 Natural Gas Act. Congress passed an act overriding the decision that wellhead prices should be under federal regulation. When it got to President Eisenhower's desk in February of 1956, he vetoed it because of a scandal involving a campaign contribution made by a lobbyist to a senator.

At the time of the veto, he recommended that it be reenacted. He predicted then—prophetically—that it would ultimately reduce supplies and heighten demand, and would not be in the long-run national interest.

He was right. What happened was that natural gas, being the only fuel regulated for 20 years, was sold at a price about one-third to one-half comparative Btu costs of other ener-

I would say 50 per cent of Louisiana's economy depends on petroleum and satellite industries

gies. Demand skyrocketed for this cheap, clean, and beautifully burning fuel. Enthusiasm of investors and producers for seeking additional reserves was dampened because the price was kept so low.

As a result of this paradox, reserves have declined from about a 22½ years' supply in relation to production to a seven years' supply.

PETROLEUM TODAY: Do you subscribe to the view of some that the oil industry rakes in "obscene" profits?

EDWARDS: No, I do not. When one considers the tremendous investment, that claim seems faulty. Anyway, it's a free country, and if things are that good, everybody can get into the oil and gas business. But for every one who's making a few dollars in the business, there are dozens who are losing money. If you can get into the business in a free and competitive market and make it, so be it. That's what this country is all about.

PETROLEUM TODAY: What measures have you successfully promoted at the state level to create greater incentive for exploration and production?

EDWARDS: Instead of decreasing the depletion allowance, we have increased it. We also have a fund to encourage independents to search for oil and gas by giving them certain benefits under state law. Then, of course, there's the effort to maximize state participation in produced oil and gas from state lands rather than to increase the cash bonuses required from oil companies.

PETROLEUM TODAY: How does Louisiana's economy compare with the national picture. What part has the petroleum industry played?

EDWARDS: Because our economy is largely based on oil and gas, agriculture and transportation—the three remaining growth areas—Louisiana has not fared as badly as many other states. The petroleum industry has been very, very helpful. I would say 50 per cent of our total economy is dependent directly or indirectly on petroleum and satellite industries.

PETROLEUM TODAY: What will the establishment of a superport mean to Louisiana?

EDWARDS: Something like 35,000 jobs and billions of dollars in industrial expansion.

PETROLEUM TODAY: Are you fearful of possible environmental damage from the operation of a superport?

EDWARDS: Not at all. I would say to those who have some fears that one thing is certain: the possibility of spills or environmental damage resulting from transporting oil in supertankers and discharging it in superports away from the traffic lanes and crowded ports is far, far, far less than transporting the same quantity in medium tankers to customary ports. That's already been established by the Council on Environmental Quality, which is a very conservative body.

PETROLEUM TODAY: If you were still a member of the national Congress, what measures would you support to promote energy self-sufficiency?

EDWARDS: First, I would do whatever has to be done to complete the Alaskan pipeline. Second, I would immediately lift all environmental restrictions on the mining, transportation and use of coal. Third, I would immediately open up all of the 10 million acres in the Pacific and Atlantic Oceans which appear to be productive of oil and gas, and get it explored and developed as soon as possible. Fourth, I would embark on a Manhattan-type project to develop alternate sources of energy. I would license immediately all applications for construction of nuclear generating plants.

I would proceed with operational pilot fast-breeder reactors, insist on use of coal in areas where it is in abundant supply, and initiate a crash program for research and development to gasify and liquefy shale.

Fifth, I would cut all the red tape and probably appoint one energy czar who would have complete authority to override all other agencies in granting permits for construction of refineries, thermonuclear generating plants and facilities used in either the production or generation of energy.

Finally, I would deregulate the price of natural gas and oil at every level. ●

Active drilling rig in Gulf of Mexico symbolizes mainstay of Louisiana's economy

AGO 530317

February 27, 1976

Mr. Robert Paschall
Consulting Valuation Geologist & Engineer
460 Lovella Way
Sacramento, California 95810

Dear Bob:

Enclosed, for your information, is the most recent bill filed in the Legislature concerning oil taxation. It is known as the Cowper bill.

Sincerely,

John Huber

Enclosure

AGO 530318

460 Lovella Way
Sacramento CA 95819
21 February 1976

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

It seemed prudent appropriate at this time to render my statement to the Legislative Affairs Agency for work done in the months of January and February. I am sending two copies of both this letter and the statement in case you want a copy of the statement and the Agency needs a copy of the letter of transmittal.

Today I had a look at several Nevada Supreme Court cases and Attorney General's decisions dealing with the net proceeds tax, in order to anticipate any questions that might arise in the course of review or testimony. It was most interesting to find that all major issues were settled as far back as 1868, within four years of the time that the tax was enacted. How's that for longevity?

If you think that you have had trouble with the oil industry, you should see the language of the Supreme Court in dealing with the actions of certain mining companies more than one hundred years ago. The court said at one point "At the instance of the mine owners, and by their intrigues and threats..." The underlined words were in italics. Pretty strong, eh?

Sincerely

Bob Paschall

Robert H. Paschall
Consulting Geologist and
Valuation Engineer

AGO 530319

460 Lovell's Way
Sacramento CA 95819
21 February 1976

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

It seemed prudent appropriate at this time to render my statement to the Legislative Affairs Agency for work done in the months of January and February. I am sending two copies of both this letter and the statement in case you want a copy of the statement and the Agency needs a copy of the letter of transmittal.

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Sincerely

Bob Paschall

Robert H. Paschall
Consulting Geologist and
Valuation Engineer

AGO 530320

Robert H. Paschall
Consulting Valuation Geologist and Engineer
460 Lovella Way
Sacramento CA 95819

S T A T E M E N T

21 February 1976

Legislative Affairs Agency
Pouch Y, State Capitol
Juneau Alaska 99811

	Hours
January 5: discussion in Sacramento with Senator John Huber on oil and gas tax systems and proposals	4
February 1: Studied 14-page Mining License Tax proposal	2
February 8: Studied 30-page staff report on oil and gas taxation and wrote 7-page letter to Senator Huber	7
February 12: Studied 14-page report by Rush Moody on natural gas and wrote 4-page letter to Senator Huber	4
February 16: Analyzed three proposed Senate bills on oil taxation and wrote 6-page letter to Senator Huber	7
February 21: reviewed Nevada court cases and Attorny General's decisions on net proceeds tax	1
TOTAL HOURS	25
Amount due and payable, at $30 per hour	$750

AGO 530321

February 18, 1976

Mr. Robert Paschall
Consulting Valuation Geologist & Engineer
460 Lovella Way
Sacramento, California 95819

Dear Bob:

Enclosed is the tax package that the Special Committee on Taxation and Revenue has prepared and filed with the Legislature. Because of your position as a consultant to the Committee I thought you would be interested in receiving these bills.

HB 699 and SB 620 are the companion bills on net proceeds; and HB 703 and SB 621 are the companion bills on excess value.

Sincerely yours,

John Huber

Enclosures

AGO 530322

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

STATE OF ALASKA
THE LEGISLATURE
LEGISLATIVE AFFAIRS AGENCY

POUCH Y, STATE CAPITOL
JUNEAU, ALASKA 99811
465-3800

CONTRACT BETWEEN

STATE OF ALASKA

LEGISLATIVE AFFAIRS AGENCY

AND

ROBERT H. PASCHALL

The parties to this agreement are the LEGISLATIVE AFFAIRS AGENCY, hereinafter referred to as the "Agency", and ROBERT H. PASCHALL, of Sacramento, California, hereinafter referred to as the "Contractor".

THE PURPOSE OF THIS AGREEMENT is to provide professional review services and testimony on pending legislation relating to oil and gas revenues and taxation to the Alaska State Legislature through the Agency during the Second Session, Ninth Legislature.

IT IS, THEREFORE, MUTUALLY AGREED THAT:

CLAUSE I. - STATEMENT OF WORK

The Contractor shall do all things necessary for and incidental to the performance of the work as described in this agreement.

CLAUSE II. - PERIOD OF PERFORMANCE

(A) The Contractor shall be available at a mutually agreeable time during the Second Session of the Ninth Alaska Legislature to provide the services described in this agreement and under the terms and conditions contained herein.

(B) This agreement may be terminated

(1) by either party on 30 days' written notice to the other party, or

(2) by mutual consent of the parties to this agreement.

(C) This agreement expires on the last day of the legislative session aforementioned unless terminated earlier as provided in Clause II(B) of this agreement.

(D) It is estimated that 60 hours will be spent by Contractor reviewing legislation in Sacramento, California, and seven days will be required for his travel and presence in Juneau, Alaska, to satisfy this contract. These time estimates may be extended upon approval of the Project Director.

CLAUSE III. - COMPENSATION AND METHOD OF PAYMENT

The Contractor shall be compensated as a contract employee at a rate of $30.00 per hour while reviewing legislation in Sacramento, California, and $325.00 per day and be reimbursed for expenses for travel to Juneau, Alaska, for testifying purposes. The Agency will make necessary arrangements for such compensation to be remitted to the Contractor on receipt of an itemized invoice from the Contractor. Total payments for the services of the Contractor under this agreement, excluding approved expenses, may not exceed $4,075.00 unless extended in accordance with Clause II(D).

CLAUSE IV. - PROJECT DIRECTOR

Performance of the work specified in this agreement shall be under the general direction of Senator John Huber, Chairman, Senate Special Committee on Taxation and Revenue.

CLAUSE V. - REPORTS

The Contractor shall keep the Agency informed as to the progress of the work performed under this agreement and shall provide progress reports as specified by the Project Director.

CLAUSE VI. - RECORDS, DOCUMENTS, AUDIT

The Contractor shall maintain accurate records, including detailed time records, as may be required by the Agency. The records are subject to inspection by the Agency at all reasonable times. All documents, reports and writings are, upon delivery to the Agency or at termination of this agreement, the property of the Agency.

CLAUSE VII. - ALL WRITINGS CONTAINED HEREIN

This agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this agreement shall be deemed to exist or to bind either of the parties to this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement on this 8th day of February, 1976.

ROBERT H. PASCHALL

Robert H. Paschall
CONTRACTOR

LEGISLATIVE AFFAIRS AGENCY

John C. Doyle
ADMINISTRATOR

APPROVED AS TO FORM WHEN SIGNED BY CONTRACTING PARTIES

Billy G. Bessier
AGENCY LEGAL COUNSEL

John Huber
PROJECT DIRECTOR

February 4, 1976

Mr. Robert Paschall
Consulting Valuation Geologist & Engineer
460 Lovella Way
Sacramento, California 95819

Dear Bob:

Please sign both copies and return them to me immediately so that I may have them signed by Jack Doyle and legal counsel. We will return your copy to you.

In the meantime, we are planning a short session and don't let the grass grow under your feet in getting to work on our material, as you have my word that you are covered.

Sincerely yours,

John Huber

Enclosures

460 Lovella Way
Sacramento CA 95819
1 February 1976

Senator John Huber, Chairman
Senate Taxation and Revenue Committee
Pouch V
Juneau Alaska 99811

Dear John:

I just studied Chapter 65, Mining License Tax, and was so shocked by its contents that I am impelled to let you know immediately of some serious problems, without dwelling on their solutions. Meanwhile, I am beginning to study the other data that you sent, and I eagerly await a letter from you acknowledging my role as a consultant to your committee.

Chapter 65 is absolutely, unequivocally not a "net proceeds" tax law, and bears only the faintest resemblance to the Nevada type of law that I have recommended to you. Instead, Chapter 65 is a corporate income tax, and can hardly be deemed to be in lieu of such a tax when it is one itself. Here are the chief difficulties with the chapter.

1. Depletion is allowed as a cost, yet depletion is the very essence of income to the mineral deposit. Depletion is a major element of after-tax cash flow, which is the "net proceeds to the mine" so far as a mine operator is concerned.

2. Chapter 65 proposes a tax that is levied on the operator, not on the mine. The aggregation of income and expenses for two or more mines owned by a single operator vitiates the tax as a "mines net proceeds tax." Why should a profitable mine go tax-free simply because another mine owned by the same company is running in the red? The provision for aggregation obviously affords a much greater benefit to a large company than to a small one, because the small company is more apt to have a single and profitable property, with no tax shelter available from elsewhere.

3. Depreciation on plant and equipment is permitted as an expense "...not to exceed 10 per cent of the cost or market value of the asset, whichever is lower." There are two objections to this statement. First, if depreciation is allowed as an expense, the inclusion of market value as a prospective base will require annual appraisal of the plant and equipment. I assure you that such appraisal will be a difficult and controversial task, and will of course require hiring another body to do it. Going further: if depreciation is not allowed, the net proceeds will reflect the value of the plant and equipment and subject them to taxation, thereby making it unnecessary to tax them on an ad valorem property tax basis.

AGO 530327

4. "Amortization of development costs" is strictly an income tax approach, and greatly complicates administration. A true net proceeds tax would treat annual development costs as an annual expense, regardless of their handling for Federal income tax purposes. In appraising large mines, for example, I simply expense development costs, rather than amortize them, because this is the way that the mining superintendent looks at them.

5. Allocation of expenses "...not directly attributable to mining properties or processes" is, again, strictly an income tax device, and one that is a real monster to handle. Only direct expenses should be deductible, and those are the ones for which the mining superintendent is typically responsible.

6. A minor item: the sentence dealing with "Taxes upon royalties" should presumably read "Taxes upon privately owned royalties," since it is doubtful that the State either can or would want to tax itself or another governmental entity.

In addition to the above, there are several areas in which the chapter is simply overwritten, especially where all sorts of minerals are named and where all sorts of processing methods are listed. Also, I have not even bothered to read the provisions for administration and penalties, so I have no comments to make there.

The first five numbered items above will demonstrate to you how concerned I am over the utter vitiation of the net proceeds concept, and the substitution of an income tax that will probably be just about as useful as your State's present income tax on oil and mining. At the same time, I fully understand the mining industry's concern over a severance tax, as outlined in Franklin Fleeks' memos to you. A severance tax is inevitably an inequitable one, and does indeed penalize the marginal operator. I can also appreciate that the industry may not read my comments with approbation, but they should not concern the industry nearly so much as a contempalted tax rate, and that I will leave to you and the fiscal and budgetary people.

Sincerely

Bob Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

460 Lovella Way
Sacramento CA 95819
27 January 1976

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

Today I received your mailing of January 22 (pretty good mail service for such a bundle!) and will very shortly begin to review it and put together my thoughts on its contents. However, before I launch into any substantial work, such as rendering you a report on the material, it is necessary for me to receive formal word from you that I am indeed being employed by your committee to engage in the work. Imagine my embarrassment if you decided all of a sudden to give up the vicissitudes of political life and return to business in Fairbanks! It may be useful to note that, prior to my working for either the State of Nevada or the North Slope Borough, I received standard contracts from the Attorny General and the Borough Counsel, respectively. I suggest that such a document, or something very near it, is rather comforting to both sides of a cooperative effort. In fact, both the State of Nevada and the Borough made progress payments so that it was not necessary for me to make substantial out-of-pocket outlays for the expensive business of long-distance travel. This is not necessary, it's just nice.

By the way, I have again received a mass of material from Sterling Gallagher, asking for my comments by February 16. It contains the Mining License Tax item that you sent and, as well, a 252-page transcript of a November public hearing on taxation of the mining industry. I find it rather embarrassing to have to repeat my letter of last October to Mr. Gallagher, pointing up the fact that I simply cannot engage in gratis critiques of the complex issue of minerals taxation for the State of Alaska. Of course, your situation and his are notably different. You and I have engaged in voluminous correspondence, I have worked before for your Committee, and you recently visited me to talk things over. Mr. Gallagher and I have never discussed any of the matters on which he has asked my opinion by mail.

Finally: I am sure you will be interested to read the enclosed report by H.C. Wainwright and Company of New York. Liebman of Wainwright called me many months ago and asked for a copy of the Prudhoe Bay appraisal that I made in 1973, and he promised to send me anything that he wrote about Alaska oil, whose economics he has been assigned to follow.

Sincerely
Bob Paschall
Robert H. Paschall
Consulting Valuation Geologist
and Engineer

AGO 530329

460 Lovella Way
Sacramento CA 95819
11 January 1976

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

That was quite a four-hour chat that we had the other day, and I hope you enjoyed it as much as I did. As a matter of fact, it was the beginning of the darndest week for me. Before it was out, in addition to your visit I was either visited or called by people who want me to testify in four California county oil tax equalization cases. Since two of the callers were county counsels and two represented industry, I might stake a temporary claim to being nonpartisan. Also, something that I believe you will find interesting, I received a call from a professor at the University of West Virginia asking me to speak on mines taxation at next month's annual conference of the Council of Economics of the American Institute of Mining Engineers in Las Vegas. I accepted his invitation. Finally, on Friday I got a letter from the Executive Director of an outfit in British Columbia called the British Columbia Institute for Economic Policy Analysis. Somehow or other he had gotten a copy of my testimony in Juneau, and he began his letter by saying "I have just read with great delight..." He wanted me to fill in some details for him. I ask you: how was that for a week. Almost as good as money in the bank.

You asked that I provide you with a statement of my fees for working for your committee on bills analysis and testimony in Juneau. I am raising my fees this year by a modest amount: $30 per hour for time spent here in Sacramento and $325 per day (plus expenses) for a trip to Juneau. My past work for you and for the State of Nevada leads me to believe that bill analysis, et al., here at home will not take over 60 hours. A trip to Juneau seems inevitably to take a week. Put the two together and we are looking at a maximum of $4,275 in fees plus about $600 in expenses.

I am leaving tomorrow on an 11-day business trip, with four days in the Kern County Assessor's office followed by four days the following week at the Santa Barbara Assessor's office. I regret to say that I have not yet received anything from your office. I would like to have taken it along with me.

Sincerely

Robert H. Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

460 Lovella Way
Sacramento CA 95819
21 June 1975

The Honorable Sterling Gallagher
Commissioner of Revenue
Pouch SA
Juneau Alaska 99811

Dear Mr. Gallagher:

I recently had the opportunity to read the excellent master's thesis on oil taxation written by James Deagen of your Department of Economic Development. One statement, however, deeply concerned me, and I would like to comment on it. Mr. Deagen had this to say on page 51:

> "If legislation is enacted on taxing oil reserves, however, it appears that the Alaska Department of Revenue will contract with a Texas consultant rather than California consultants. Both offer competent appraisal techniques. The Texas alternative, however, offers both the appraisal and legal expertise that will be required. It is 'easier' to obtain $150-200 million in oil taxation revenues with the help of a veteran firm which has a good record in corporate-tax matters."

I disagree strongly with this viewpoint, both on behalf of the State of Alaska and on behalf of my personal interest in working for you. First, I propose that purely legal expertise relating to your State's oil property assessments falls in the domain of Alaska's office of the Attorney General. Should outside legal advice be required, which is doubtful, it should be sought on its own merits, and stipulated in a contract as something aside from valuation expertise. Please forgive me if this appears to be gratuitous advice, since I am sure that it is in accord with your current policies and practices.

More specifically, no valuation engineer can do a job for anyone unless he is thoroughly familiar with the laws applicable to the job. You are undoubtedly acquainted with my role in Alaska's recent legislation on oil property taxation. Senator John Huber provided me with every Senate and House bill draft, including the final statute, and I worked closely with him, Representative Steven Cowper, and John Messenger while I was in Juneau. Thus, I am as knowledgable about Alaska oil property tax law as anyone in your state or elsewhere.

I am required to be equally knowledgable about parallel California law. If that were not the case I could not do my work here, and the Alaska legislature would not have employed me to testify on its application. Moreover, I have testified on numerous occasions at equalization hearings on oil property assessments. I have been subpoenaed to appear three times in the past eighteen months, and have been notified by a major law firm that I will soon be subpoenaed in an oil equalization hearing involving several million tax dollars.

Forgive me if I appear to be disturbed by the implications of Mr. Deagen's remarks, but of course I am. I would be highly chagrined to lose an account in which I am greatly interested because it is presumed that I am ignorant in an area where I am highly knowledgable.

Sincerely

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

cc Senator John Huber
Gerald D. Heier
Frederick P. Boetsch
John Messenger
James Deagen

John, I am very much concerned for your sake about another aspect of this matter that I really couldn't mention to Sterling Gallagher. It may not be the best of news to Chancy Croft, but Texas simply does not have the reputation in property taxation that California has. In fact, to be blunt about it, Texas has a poor repuation. If you believe I may be unduly prejudiced, you may want to check with the International Association of Assesing Officers in Chicago, or the Advisory Commission on Intergovernmental Relations in Washington, D.C.

The idea of hiring a Texas appraisal firm because it has a Texas lawyer as president just does not make good sense from Alaska's standpoint. There may be a good reason to hire such a firm, but that is not it.

Another thing: you may find that the present statute needs amendment next year. If so, the employment of a Texas firm would probably mean that you would have input only from Texas relative to legislation. I will suggest that Henry Wilkinson and Joe Witherspoon are adequate to the case, without bringing in a third Texan.

Bob

460 Lovella Way
Sacramento CA 95819
2 June 1975

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

I am sure you will be pleased to know that a check from the Legislative Affairs Agency arrived today, in the same mail that brought your letter of concern on the subject. It may also relieve your mind to hear that, unfortunately, other states and governmental entities are similarly tardy in paying their bills, so Alaska has plenty of company. I'm not quite sure why this should be the case, and it appears to be a fit subject for a congressional investigation, at the very least.

How are things going in the field of oil tax legislation? I will be most grateful to hear as soon as a law may be enacted, for two reasons. One is that it is always gratifying to know of the successful conclusion of a campaign in which one has played a part, however small. The other, of course, is that I am still highly interested in serving as Alaska's valuation engineering consultant, should one be required. If I hear that ad valorem taxation has been enacted, I intend to write Commissioner Gallagher a follow-up letter. In fact, should I get the job, I intend to quit California state employment in order to do justice to Alaska's requirements.

Have you seen the article on Alaska in the most recent National Geographic? All told , it was pretty good coverage. And of course I was interested to encounter the names of three natives whom I have met: Eban Hopson, Willie Hensley, and Oliver Leggett.

I trust that you have had that fine boat in the water long before now, and have successfully pulled in your halibut skate.

Sincerely

Bob Paschall

Robert H. Paschall

AGO 530333

May 29, 1975

Mr. Robert H. Paschall
460 Lovella Way
Sacramento, CA 95819

Dear Bob:

Thank you for sending me a carbon copy of your letter of May 26, 1975 to John Elliott.

I just wanted to let you know that I have been raising Hell to get you paid, which I believe is now very close if not already in the mail. I am truly sorry for this delay and sincerely apologize for my state and its administration.

Sincerely yours,

John Huber

JH:kb

[redacted]

[redacted]

[redacted]

[redacted]

My previous concern about not having received payment for my services to your State's Legislature is two-fold. The most immediate, of course, is the fact that I have not been paid by a time that is now six and one-half months after I worked in Juneau, following my having submitted statements twice and having later sent you a telegram asking that you check on the matter with Senator John Huber.

My other concern is that I have heard absolutely nothing from you on the subject. I have begun to wonder whether your office has even received the three messages that I have sent. This puts me in a most difficult position. I can appreciate that a state may have administrative delays in paying unusual expenses like those of an individual consultant. At the same time, it also seems appropriate that the state might acknowledge correspondence on the subject, and give some idea of the time when the money will be sent.

It is most frustrating to be here 2,000 miles away, wondering what has happened to my communications on a subject that is highly important to me. By this time, of course, I have had to pay out of my own pocket the $600 cost of my trip to Juneau, and the continued delay in the receipt of pay for my services is a concern that increases daily.

Will you please at least acknowledge receipt of this letter?

Sincerely

Robert H. Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

cc Senator John Huber
Senator Chancy Croft

Dear Senator Huber and Senator Croft: I imagine that Nels Anderson would find some amusement in this delay, especially if he knew that the North Slope Borough always paid me within two weeks of billing. Is that where all the money has gone?

Bob P.

AGO 530335

[redacted]
30 April 1975

[redacted]
Executive Officer
Legislative Affairs Agency
Pouch V
Juneau Alaska 99811

Dear Sir:

The attached statement is a duplicate of one that I sent to your office on April 13. I hope that it will be possible for you to pay me in accordance with the statement at the time of your end-of-April accounting. Thank you for your attention to this matter.

Sincerely

Robert H. Paschall

Robert H. Paschall

Dear John:

I hope that things are going well with you regarding your legislative goals. Yesterday I talked with Walter Mead. I concur with his idea of the usefulness of a Beaufort Lease sale of the waters immediately contiguous to Prudhoe Bay. Interestingly, these lands are labelled as "BP" and "ARCO-Humble" on BP-Alaska's Exhibit G for the 1971 Field Rules Hearing. But Walter said that Sterling Gallagher assured him they were not included in the 1969 or prior sales. At the same time, and without regard to the sale, an ad valorem statute might be useful as a reserve, should the sale not meet state needs. And the prospect of a sale might reduce the opposition to the ad valorem bill (might, I said).

Looking back, I greatly enjoyed my trip to Juneau, even if you did keep me so busy that I didn't get to explore the adjacent wilds. Of course, all of those signs saying "DANGER-- TRAIL CLOSED" were a problem, too. And the highlight of the trip was the ride that you took me on the day that I arrived. Incidentally, I talked to a forester since I got back about those trees that were broken off by the wind above your place on Douglas Island. He said this was not unusual when tougher trees on the perimeter of a forest are removed, as they were of course in building the road on Douglas Island. The trees inside the forest are less wind-resistant, so that when a hurricane hits them they dont have a chance. Interesting, eh?

Bob

AGO 530336

[redacted]
Consulting Valuation Geologist and Engineer

460 Lavella Way
Sacramento Calif. 95819

30 April 1975

Legislative Affairs Agency
Pouch Y
Juneau Alaska 99811

S T A T E M E N T

for professional services

Analysis of legislative bills and testimony relating to ad valorem taxation of oil and gas, plus report-writing and letter-writing:

23 hours at $25 per hour (while in Sacramento)	$ 575.00

Trip to Juneau from April 5 to 12: testimony before legislative committees, conferring with legislators, legislative staff members, representative of the Attorney General, and others on bill analysis and other matters:

6 full days and two one-half days at $300 per day	2,100.00

Travel and other costs:

Air fare	$237.68	
Hotel: 5 nights at Baranof in Juneau at $33.28 and two nights at Sea-Tac in Seattle at $25.27	216.94	
Meals, bus and taxi, telephone, laundry, et al.	146.29	
		600.91

TOTAL of all costs and professional charges	$3,275.91

bc Senator John Huber

AGO 530337

460 Lovella Way
Sacramento CA 95819
30 April 1975

Executive Officer
Legislative Affairs Agency
Pouch Y
Juneau Alaska 99811

Dear sir:

STATEMENT

The attached statement is a duplicate of one that I sent to your office on April 13. I hope that it will be possible for you to pay me in accordance with the statement at the time of your end-of-April accounting. Thank you for your attention to this matter.

Sincerely

Robert H. Paschall

Robert H. Paschall

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Bob

AGO 530338

ROBERT H. PASCHALL
Consulting Valuation Geologist and Engineer

460 Lovella Way
Sacramento Calif. 95819

.....

30 April 1975

Legislative Affairs Agency
Pouch Y
Juneau Alaska 99811

Sir:

S T A T E M E N T

for professional services

Analysis of legislative bills and testimony relating to ad valorem taxation of oil and gas, plus report-writing and letter-writing:

23 hours at $25 per hour (while in Sacramento)	$ 575.00

Trip to Juneau from April 5 to 12: testimony before legislative committees, conferring with legislators, legislative staff members, representative of the Attorney General, and others on bill analysis and other matters:

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Air fare	$237.68	
Hotel: 5 nights at Baranof in Juneau at $33.28 and two nights at Sea-Tac in Seattle at $25.27	216.94	
Meals, bus and taxi, telephone, laundry, et al.	146.29	
		600.91
TOTAL of all costs and professional charges		$3,275.91

bc Senator John Huber

AGO 530

460 Lovella Way
Sacramento CA 95819
11 May 1975

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V, Juneau
Alaska 99811

Dear John:

Several elements of HOUSE BILL 297, as offered 5/6/75, provide great cause for concern, and others can be improved for administrative reasons. Here they are, more or less in order of importance.

EXEMPTION OF "PRODUCING OIL AND GAS LEASES AND THE VALUE OF INTANGIBLE DRILLING AND EXPLORATION EXPENSES (Sec. 2, 43.55.010(b)

These exemptions are carried in the April 17 and later versions of HB 297. I strongly urge their deletion. I will play the devil's advocate and claim that they nullify all or part of Sec. 43.58.010, namely, the very proposal to levy an ad valorem tax on oil and gas reserves. Here is the case that I can make and that industry will make.

(2) Producing Oil and Gas Leases

A private party's lease with a government agency is the very instrument that creates its leasehold interest in the mineral rights. Unless the intent of 43.58.010 is to confine the ad valorem tax to non-producing properties, 43.55.010(b)(2) creates an unintentional exemption from ad valorem taxation for all fields that now produce. But the very fact that Section 43.58.030 provides for a production tax credit against the ad valorem tax indicates that producing leases are not to be exempted.

(5) Intangible Exploration and Drilling Costs

(5) Exploration and development are necessary to establish the existence of a valuable oil or gas reserve. More precisely, the completion of a new well capable of production enhances the value of the reserves, since the well is necessary to produce (part of) the reserves. One can maintain, then, that the cost of drilling is included in the value of the reserves developed by the drilling.

Now, what exactly are "intangible drilling costs" (IDCs)? They represent that portion of total drilling costs expended for wages, salaries, and services, and are identified separately from tangible drilling costs (for casing, wellhead equipment, etc.) only because the Internal Revenue Service permits expensing IDCs while it requires that tangibles be capitalized. IDCs have been under serious attack as an undue tax privilege; that is the case because the euqivalent in real estate development would consist of expensing architect's fees and building contractors' salaries and wages.

DEFINITION OF "PROVEN RESERVES" (Sec. 43.58.190(7)

An excellent definition of this term was in the bill until the version of April 24 was written. That earlier version was almost exactly the one promulgated by the American Petroleum Institute and adopted throughout the industry. The definition in the latest version is awkward and ambiguous. The phrase "if it is economically feasible to market it" is not necessary, since the phrase "indicate to be recoverable" precedes it; no one will bother to recover it unless it is economically feasible. Also, the term "reasonably foreseeable conditions" is a monster, and lawyers would have a field day defining "reasonable" as it applies to a given oil field.

In fact, it looks as if the lawyers intruded themselves into an area that was hammered out years ago by engineers and economists to everyone's satisfaction. I recommend that the definition in the April 17 version be used.

THE AD VADOREM ASSESSMENT TIME TABLE

Here are key dates:

January 1: property assessed as of this date. This means that information as late as December 31 may be required by the valuation engineer.

February 1: all taxpayers returns shall be filed on or before this date. I can assure you that this will be essentially impossible in many cases, because of the lag in sending data from (1) the field to (2) a company's accounting department to (3) a company's tax department to (4) the state.

April 15: the department shall send a notice of the assessed value of each property to the operator or other person.

June 15: The department shall certify the assessment roll and send out the tax bills.

Here is the problem: typically, the valuation engineer will receive some critical data at least as late as February 15 (and he can't do much about it except complain). Also, he will have to furnish his values to the department by April 1 if the department is to send out notices by April 15. The result: the poor valuation engineer will have no more than sixty days in which to do his job.

A recommended solution: Change "April 15" in Section 43.58.060 to "May 15." This should give the department ample time for its job, and add a month's time for the beleaguered valuation engineer to do his job.

MANDATORY VALUATION BY THE DEPARTMENT

Sec. 43.58.100 (a), second sentence, says that "In either case, the department may make its own valuation of the taxable property." In my bailiwick, at least, that "may" would read "shall." It removes any doubt as to the department's right and obligation to value the property.

.....

I will now comment on the April 15 version of Senate Bill 374, beginning with the items in common with my remarks on House Bill 297.

EXEMPTION OF "PRODUCING OIL AND GAS LEASES" AND "INTANGIBLE DRILLING AND EXPLORATION EXPENSES" (43.55.010 (b) (2) and (5))

I cannot stress too strongly the need to remove these items from any bill on ad valorem taxation or other taxation of oil and gas. Putting it bluntly, everyone to whom I have described these items comes close to throwing up.

THE "PERIOD OF GRACE"

This element in SB 374 makes a great deal more sense than the language of HB 297. I suggest only that the word "other" be deleted from the first line of 43.58.020(3). I'm not quite sure what purpose it serves.

OPERATOR'S WITHHOLDING OF PROPORTIONATE SHARE OF TAXES

The Senate bill carries no problem in this regard.

DEFINITION OF "PROVEN RESERVES"

The Senate bill carries the correct definition of this term.

THE AD VALOREM ASSESSMENT TIME TABLE

SB 374 poses a quite insuperable burden on the valuation engineer, since its Section 43.58.080 lops a precious month off of the short time provided in HB 297. See my comments above on that topic.

Here are some brief comments on other subjects.

I like SB 374's appeals procedures, including the omission of reference to a trial de novo. John Messenger indicated that one cannot stop a trial de novo, but that a plaintiff's right to it need not be stated in a statute.

I was startled to see the non sequitor "crude petroleum oil" in SB 374's Section 43.58.190(5). "Petroleum" means "rock oil," so "crude petroleum oil" means "rock oil oil," which is not only redundant but a term never, never used by anyone in the entire oil industry. I got Easy Gilbreath's concurrence on this, but I guess it was too small to be noticed. Would you please insert "crude petroleum" or "crude oil"? All petroleum geologists and petroleum engineers will be grateful.

Sincerely,

Bob Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

cc Walter Mead

460 Lovella Way
Sacramento CA 95819
3 May 1975

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V
Juneau
Alaska 99811

Dear John:

The oil industry and gas pipeline industry have just furnished us with an excellent example of the viability of reserves estimation and property valuation for a non-producing field. The April 21 Oil and Gas Journal carries an article which says in part:

> "Northern Natural Gas Co. has asked the Federal Power Commission for an expedited hearing and decision on payments it plans to make to Exxon Co. U.S.A. for gas-purchase rights in the Prudhoe Bay area of Alaska... In one agreement with Exxon, Northern may acquire up to 2 trillion cu ft of gas from a 25% share of Exxon's interest in the Prudhoe field. In return, Northern may be required to pay Exxon as much as $300 million."

Here are some of the interesting things that may be inferred from the above statement.

1. Northern must have a great deal of faith that a gas pipeline will be built in the foreseeable future. This faith casts considerable doubt on the conclusion of the Governor's Task Force that Prudhoe Bay's gas is essentially worthless.

2. The proposed expenditure of $300 million means that Northern has faith, as well, in Exxon's estimate of reserves and of the ultimate wellhead price of gas. The article later said that Northern will ask the F.P.C. for permission to incorporate the purchase price in its rate base. You can bet that the F.P.C. will require submittal of a detailed reserves estimate and cash flow stream. In short, the F.P.C. will require an appraisal.

3. Finally, the above items refute the contention of Milton Lipton and others that valuation for ad valorem property tax purposes is not feasible. If Exxon and Northern Natural Gas can do it, I can do it. In fact, I would accept the F.P.C.'s allowable addition to rate base as an excellent value indicator for gas in place at Prudhoe Bay.

Sincerely

Bob Paschall

Robert H. Paschall
Valuation Geologist and
Engineer

cc Walter Mead

[redacted]

[redacted]

[redacted]

I hope that these comments are useful in putting the role of ad valorem taxation into perspective.

Robert H. Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

cc Senator Chaney Croft
Senator John Huber
Representative Steven Cooper

AGO 530346

460 Lovel[illegible] Way
Sacramento CA 95819
14 April 1975

The Honorable Sterling Gallagher
Commissioner of Revenue
Department of Revenue
Pouch SA
Juneau Alaska 99811

Dear Mr. Gallagher:

As you know, legislation presently pending in Juneau contemplates an ad valorem property tax on oil and gas leasehold interests. Mr. Gerald Heier, Director of your Department's Property Tax Division, has testified that, in his opinion, Alaska should employ an outside consultant to appraise your state's oil and gas fields should a property tax be enacted. This letter constitutes my expression of interest in being that consultant.

I have had the opportunity to visit Alaska four times in the past year and a half, in all instances either to work on the appraisal of the Prudhoe Bay field or to testify before your legislature on oil and gas property taxation. My qualifications are stated on the attached professional resume.

Here is the job that I would do annually for your Department and the Property Tax Division for a fee of $40,000 plus a maximum of $5,000 in recorded travel and other expenses:

1. Employing standard evaluation practice, derive a total property value for each field.

2. Write a narrative appraisal report which contains the reasons for each consequential judgment that was made in valuing each field.

3. Allocate the total property value to each ownership, lease block, or other legal or geographic category required to be in accord with the task of oil and gas field equipment assessment that is presently done by your Property Tax Division.

I will remark in closing that I had the pleasure of conferring recently in Juneau with both Gerald Heier and with Frederick Boetsch, Deputy Commissioner of Revenue. They are in a position to confirm my stated ability to do the required job for your Department and to deal on your behalf with other governmental agencies and with industry.

Sincerely,

Robert H. Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

cc Frederick P. Boetsch
Gerald D. Heier

bcc Senator John Huber
Representative Steven Cowper

AGO 530347

PROFESSIONAL RESUME OF

ROBERT H. PASCHALL

with special reference to the valuation of oil and gas properties for tax purposes

EDUCATION AND EXPERIENCE

B.A. and graduate work in geology, UCLA and Oregon State University

Twenty years in onshore and offshore oil and gas reserves estimation and exploration in California; last position was Senior Geologist, Signal Oil and Gas Company.

Twelve and one-half years (to present) as Senior Petroleum and Mining Appraisal Engineer and Principal Property Appraiser, State Board of Equalization, Sacramento.

Editor and principal author, Assessors Handbook 566, Valuation of Oil and Gas Producing Properties (for ad valorem tax purposes), State Board of Equalization, Sacramento, 1966 (265 pages).

Have appraised oil and gas properties for tax purposes in 15 California counties plus the North Slope of Alaska, 1963-74.

Lecturer on "Valuation of an Oil Property" at three-day seminar in 1971 on "Valuation of Oil and Mineral Rights" in Phoenix, Arizona, sponsored by the International Association of Assessing Officers and Arizona State University.

Panelist in 1974 at two-day seminar on "Oil in California" sponsored by California State Assembly Science and Technology Council, speaking on estimation of oil reserves and taxation of oil properties.

Have served as technical advisor to legislatures of both Alaska and California on taxation and other matters relating to the oil industry.

Have been guest speaker on oil and gas properties taxation at meetings of county assessors, the Society of Petroleum Engineers, the Society of Petroleum Accountants, and other organizations.

PROFESSIONAL LICENSES AND MEMBERSHIPS

Registered Geologist, State of California (Certif. No. 8)
Registered Petroleum Engineer, State of California (Certif. No. 537)
Member, Amer. Assoc. of Petroleum Geologists
Member, Amer. Inst. of Professional Geologists
Senior Member, American Society of Appraisers
Member, International Assoc. of Assessing Officers

460 Lovella Way
Sacramento CA 95819
30 March 1975

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear Senator Huber:

This letter carries my comments on Milton Lipton's testimony before your committee on February 12. My aim is to highlight those topics on which I dissent from Mr. Lipton, and other topics whose treatment I find puzzling.

A. THREE SOURCES OF OIL INDUSTRY REVENUE (p. 2-3)

1. Bonuses and Royalty Payments

These two sources are combined, but I suggest that they should not be. Lease-sale bonuses are commonly viewed by industry as "hunting licenses," and have often been paid, as you know, where no production is ever established and no royalties are ever paid.

2. Severance and Ad Valorem Taxes

Both of these are called "...taxes on on-going operations divorced either from industry's expectations or their actual profitability." This definition does not apply to ad valorem taxation. "Ad valorem" means "according to value," and the value of an oil property reflects its anticipated future profitability. The more profit, the higher the value.

3. Tax Keyed to Actual Profitability

I have no dissent here to what I presume is an income tax, although that term is not used. It is interesting to note that Mr. Lipton says

> "...for oil in particular this would have to be the major source of revenue which the State of Alaska or any state can expect to obtain..."

Actually, in California the local ad valorem tax on oil and gas exceeds the State income tax. That is the case because of the effects of depreciation and depletion in limiting income tax liability.

B. A PECULIAR STATEMENT ON BONUS BIDS (p. 3)

Referring to bids on leases, Mr. Lipton says:

> "...(it) is a flow of revenue which the industry voluntarily undertakes to contribute...

The phrase "voluntary contribution of the industry in its bidding" is later used on the same page.

I find this language rather unusual, and misleading as well. A lease bid is voluntary in the sense that most capital outlays are voluntary, but is is hardly a "contribution." It has something of the risk of buying a speculative stock that is not presently yielding a dividend. Voluntary, yes, but not an act of charity.

C. COMMENTS ON INCOME TAXATION (p. 8-9)

I am fairly well-acquainted with oil and gas income taxation, but Mr. Lipton's statements are hard to follow. My feeling is that he has made it sound more complicated than it really is. Why not simply propose to parallel Federal law, as is done in California and I am sure in other states as well?

He indicates that a problem may exist in computing depreciation:

> "You will have to think through the basic problems of how recovery of capital is handled."

I suggest thatthis is not a problem. Federal income tax guidelines exist for the allowable depreciation on oilfield machinery and equipment, and it must be established for each property. Why should Alaska have to work out its own system?

He does go on to say

> "These problems...have been handled in other jurisdictions."

It might have been better to say this in the first place.

D. COMMENTS ON AD VALOREM TAXATION (p. 14)

Mr. Lipton engages here in some remarks that absolutely astound me, because they reveal such a very large gap in his knowledge of ad valorem taxation of oil and gas properties (and of other properties, for that matter). He says

> "To estimate the value of oil or gas in place is an exercise in futility. No one really knows the value, even if you know how much oil and gas reserves there are..."

Of course, no one really knows the value of anything. We must settle for an estimate or an opinion of value, whether of an oil field or an oil refinery or a diamond ring. But estimates of value are not the province of just the tax assessor. The oil industry itself buys and sells oil and gas properties all over the United States. And the manager of a property acquisition department would be ill-advised to tell his boss that it is an exercise in futility to estimate the value of oil and gas reserves.

Mr. Lipton says that

> "(In California the assessor does not really) determine what the value of the underlying reserves are, as it is a notional (nominal?) thing which brings in a certain amount of municipal revenue."

Wrong, completely wrong. The California constitutional goal is fair market value for all properties, andhas been for 100 years. Granted, some lively debates occur here over oil property values, but no more so-- probably less so-- than over the values of industrial and commercial properties. That is the case,of course, because fair market value must be estimated for any type of property, and one can always argue over estimates. As to California's having only a"nominal" value (if that is indeed the right word near the bottom of page 14), the total value in 1974 of all oil and gas fields here was about $4.7 billion. Hardly nominal.

E. SEVERANCE TAXATION (p. 15)

I am somewhat puzzled by Mr. Lipton's statement that, in the future,

> "...the severance tax is going to be adjusted undoubtedly in the light of what seems to be the value of the reserves." (underlining added)

This may have been only a slip of the tongue, although it is stated twice. I presume he is really referring to oil and gas prices and gross income, because a value determination is not necessary in administering a severance tax.

.....

I would also like to comment on a statement of Mr. Lipton's made before the Senate Resources Committee on February 14 on the prospective sale of future royalties from natural gas. He rejected the idea of selling oil royalties for the good reason that the income would be discounted so heavily. However, he then stated that a public utility, which would be the logical purchaser of the gas royalties, would not engage in such heavy discounting because it could always incorporate the cost in either its rate base or its operating expenses.

I suggest that this is a dangerous assumption. The FPC and public utilities commissions are generally insistent that incurred costs are fair and reasonable. The FPC might take the stand that a utility paid too much, so that its customers are put in the position of subsidizing Alaska's tax deficit. And the excess cost might be disallowed.

The prospect is that a utility which might purchase Alaska gas royalties would consider this matter in advance, and even seek an FPC opinion. If the FPC proposed to disallow the purchase without adequate discounting, it means that the sale of gas royalties would be no more favorable an action than the sale of oil royalties, from Alaska's standpoint.

You may wonder why I dare to comment on this issue. It happens that I have written a book on the valuation of utility water companies, and teach a course on that subject annually. Also, I once briefly held the position of Supervising Utilities Valuation Analyst, and now own stocks in a half-dozen publicutilities. In the course of this activity I have become fairly familiar with rate base computation, at least as it is practiced in California.

Sincerely

Bob Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

cc Dr. Walter Mead

460 Lovella Way
Sacramento CA 95819
27 March 1975

Senator John Huber
Senate Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

The intent of this letter is to comment on the statements made by Jacob Adams and Thomas Kelly on behalf of the native corporations at the March 20 hearing of the Senate Resources Committe. My remarks are directed at areas of ambiguity or inaccuracy, especially in regard to oil property valuation and prospective methods of raising revenue. The Native Claims Settlement Act is a legal issue outside my province.

Mr. Adams commented at length on a gas discovery that has been made on an 18,000-acre lease. He stated that the U.S. Geological survey has estimated the proven reserves to be 213 billion cubic feet. He then said that a prospective wellhead gas price of 50 cents per MCF would produce a value of $106 million, from which a 20-mill levy would extract an ad valorem tax of $2.1 million.

Mr. Adams' conclusion betrays a serious lack of understanding of the relationship between gross income and value. His stated premise would yield an ultimate gross income of $106 million, but this income falls far short of value for these reasons: (1) field development costs plus production costs over the life of the field must be subtracted to obtain net income, and (2) the net income will be spread out over many years' time, so its present value is far less than its total future amount. For example: no one in his right mind would pay $1,000 now for the privilege of getting $1,000 back ten years from now. If an investor wanted a mere 8 percent on his investment, he would pay only $463 now for the privilege of receiving that $1,000 a decade from now.

Here is a specific Alaska field example. I appraised Prudhoe Bay as of January 1973 at a value of $4.8 billion, yet the anticipated future gross income from the field at that time was $35 billion. My appraised value, then, was only 14 percent of future gross income.

If we apply that fraction to the gas discovery cited by Mr. Adams, a value of $14.8 million is indicated, instead of $106 million. Such an application is imprecise, but it serves to illustrate the degree to which he overestimated the prospective ad valorem tax. If the native corporation's net profits interest was taxable (which apparently no one intends), that interest would now be worth no more than about 30 percent of the total value, and the tax liability would be about $89,000, not Mr. Adams' stated $2.1 million.

Mr. Adams next suggested six methods of raising revenue that he said might serve as alternatives to ad valorem taxation. It was difficult to follow all of his suggestions because, although they dealt with complex issues, the details for implementing them were in rather short supply. However, I believe that it is important to cite four of these methods for this reason: they all call for the state's selling future income to get present income, and discounting the future income in the process. Here are those methods as I understood Mr. Adams to state them.

ABC financing of oil royalties: the ABC technique was devised as a method of selling oil and gas properties with minimum income tax impact on the buyer. IRS regulations have changed its once-favorable status in that regard, but that is not important here. What is important is the fact that an ABC transaction depends on the sale of a producing property, and a sale requires the discounting of future income. The discount rate is set by the buyer and the lending institution (since a loan is implicit in the transaction), and it is typically substantial. In short, the state would now get many fewer dollars than it would get in future royalties if it did not engage in an ABC sale.

The other three methods proposed by Mr. Adams would have the same net effect on state revenues as the one just discussed. Those methods were: the advance collection of severance taxes, a purchase-option on state royalty oil to be sold to a public utility, and the advance sale of royalty income. Mr. Adams called the last "the least advisable at this time," but I find it hard to choose between the four, because they all carry the prospect of severe discounting of future state income that is presently assured without discounting.

I have no comments on the other two methods proposed for raising revenue. They were Arlon Tussing's proposal to issue revenue bonds and the proposal that a state lease sale be held.

Mr. Kelly then made two statements that I believe call for a response. Paraphrasing him as nearly as possible, he said that the discoverer of an oil field will not develop his discovery "if he doesn't have a market" for fear that he will be subjected to ad valorem taxation on the developed value (prior to production). I am rather startled at this statement because, as I recall, Mr. Kelly has considerable knowledge of the oil industry. What is the prospect that no market will exist for an oil discovery in Alaska? I will grant that it is not possible to find a case of zero risk in industrial economics, but we must be approaching it when we consider the risk of finding a market for crude oil from a new American oil field.

But that is not the most critical issue. Actually, the ad valorem taxation of oil properties has been criticized because it accelerated development and production. This is the case because no one wants to sit on an oil field of known value (however modest) and pay ad valorem taxes out of other income when he can start producing and pay taxes

out of income from the property. So, contrary to Mr. Kelly's conclusion, ad valorem taxation is apt to spur development rather than impede it.

Mr. Kelly also stated that the imposition of an ad valorem tax would make Federal OCS lands more appealling because of their exemption from state taxation, and that oil operators would therefore place a higher priority on acquiring and developing Federal leases. I suggest that this conclusion is incorrect for several reasons. The overriding one is that the appeal of prospective oil lands, no matter what the ownership or taxation, is dictated primarily by the geological odds; if the geology is favorable, people will bid, and if it is not, they will not. Also, taxes are only part of the cost of doing business, and therefore only part of the decision-making process; in the case at hand, Federal lands will be so much more expensive to explore and develop that those costs will far outweigh tax considerations.

In addition, the proposed five-year period of grace following discovery eases the impact of state ad valorem taxes. And finally, of course, state lands would not be ignored in favor of Federal lands. Instead, the bonus bids for state lands would simply be tempered to take account of the prospective ad valorem tax prior to the commencement of production.

How much would industry temper its bonus bids because of prospective ad valorem taxes? I suggest that it will not be very much; if you would like me to do so, I will quantify it for a typical case. But the multiple aspects of the five-year grace period, the time-deferred cost of the tax, and the much greater burden of exploration and development costs suggest that it will not be as serious an issue as Mr. Kelly implied.

In my next letter I will comment on Milton Lipton's testimony.

Sincerely

Bob Paschall

Robert H. Paschall
Consulting Valuation Geologist
and Engineer

cc Dr. Walter Mead

460 Lovella Way
Sacramento CA 95819
23 March 1975

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

Three of the four bills that you have sent me say in the first paragraph:

> "except as provided in Section 15 of this chapter."

The underlining is included, indicating it is a proposed addition to current law. My problem is this: Section 15 itself is not included in any of the bills. Would you be so good as to send me a copy of Section 15?

Another thing: I just came across a Pritchard and Abbott advertising folder that Jerry Heier once gave me. It confirms what I had in mind when I spoke to you about the firm on the telephone. P & A have a heading on their folder saying "Industrial Evaluations." The list a broad array of manufacturing plants that they have appraised. But they do not hold themselves out to be petroleum geologists or petroleum engineers. That is, at no point do they list "oil and gas fields" or "oil and gas reserves" as one of the property types in which they have appraisal experience and expertise.

Sincerely

Bob Paschall

Robert H. Paschall

460 Lovella Way
Sacramento CA 95819
23 March 1975

Senator John Huber
Special Committee on Taxation and Revenue
Pouch V
Juneau Alaska 99811

Dear John:

I have just been studying the unnumbered House Bill authored by Cowper that you sent to me on March 12. The bill contains many cases of wording whose clarity or precision can be greatly improved by using instead the language in the Governor's bill. But these things are minor compared to the serious problems posed by the combined effect of paragraphs (c), (d), and (e) of Section 43.56.015. I speak now as a tax administrator. It is not at all evident how this bill would provide for administration of oil and gas taxes in all cases. Let's look at the three paragraphs in terms of a fictitious oil property.

In the most recent year this property produced an average of 500 barrels a day of $6.00 oil from one well. It is appraised for ad valorem tax purposes at $2,000,000, and a 20-mill levy yields an ad valorem tax of $40,000. However, its gross production tax (under the terms of AS Chapter 55) comes to $41,610. How do we equate this situation with the terms of the proposed bill?

Paragraph (c) is common to your bill and to HB 102, and by itself is no problem. In the case at hand there would be no ad valorem tax liability, since the gross production tax is greater. Note, though, that it is necessary to value the property and to compute the ad valorem tax in order to determine whether paragraph (c) is applicable.

Paragraph (d) is, <u>in part</u>, the other side of the coin of paragraph (c). It says that the gross production tax "actually paid" shall serve as an offset to the ad valorem tax when the latter is greater. But it then adds "...after the subtraction of the credit allowable under (e) of this section."

It is paragraph (e) that is the problem. It begins by saying that

> "Tax paid under (a) of this section <u>may</u> be used as a credit against gross production tax..."

The underlining is added. Who determines whether it "may" be used as a credit? This is an awfully big "may," and leaves room for all sorts of later dissension. But a problem would exist even if the "may" was changed to "shall."

As noted, paragraph (e) turns things around and says that the ad valorem tax "may" be used as a credit against the gross production tax "...not to exceed 50 percent of the gross production tax due." That is, where paragraph (d) sets up the gross production tax as an offset to the ad valorem tax, paragraph (e) does the opposite. What would the effect of (e) be on the example that I proposed above?

Let's assume that someone decides to allow the ad valorem tax as a credit against the gross production tax "in subsequent years." What does "subsequent years" mean? Any year from now on, even beyond the year 1982 in which the proposed tax terminates? That is, could any ad valorem tax payment serve as an offset against any future gross production tax? The bill does not say.

Another thing: paragraph (e) refers to "(the ad valorem) tax paid under (a) of this section..." But (c) provides that no ad valorem tax is paid if the gross production tax exceeds the computed ad valorem tax. As a result, the phrases "gross production tax due" and "ad valorem tax paid" are completely at odds with one another here, because of the earlier terms of paragraphs (c) and (d).

I find it impossible to make a tax computation for my above example based on paragraph (e). Why did the author not write a paragraph (c) that said simply

> "Producing oil or gas leases or ownership interests in proven oil and gas reserves shall pay either a tax based on value or the gross production tax, whichever is greater.."

and forget about paragraphs (d) and (e)?

I hope that you will find these comments useful.

Sincerely

Bob Paschall

Robert H. Paschall

SCOMM

#11:15

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Anchorage, Alaska 99501
277-5541

120 Rooms — Direct Dial Phones
Bruce Kendall, *Owner-Manager*

May 29, 1975

To: Senator John Huber
Chm of Senate Special Comm on Taxes + Revenue

~~Dear Mr. Martin~~:

I don't believe it is legal for the oil companies to loan money to the state treasury and use the future royalties as collateral. My reasoning is based on facts as well as theory:

1. Nevada, New Mexico, Wyoming and California hold that future oil royalties in the ground are "realty", just like land. The owners can sell the oil "once", just as land owners can sell but "once". Furthermore, these states have some court tests on this subject.

2. Cook Inlet production royalties are legal since that oil has already been produced, severed and taxed. The present new oil revenue law is a mortgage because that resource is in place, not severed (will not be for some years to come), nor have the taxes been paid as per lease agreement. Our Constitution has been interpreted that, by law, the lease holder or producer, whichever, doesn't have to pay severance, income tax, or business license tax until it is being produced for use. To carry this theory further, it is surely no different than placing a first mortgage on state lands or buildings. How it is possible to construe that the oil in place is different than realty, capital improvements, or a fixed asset of the state's residents?

3. The administration, through the elected governor and empowered state agency, can legally lease oil lands for the single purpose of finding and producing the oil from said leased lands and collect annual rents. Therefore, upon discovery and production the tax laws apply. That chain of events makes the bonus and lease money rental income for the general treasury for the elected legislature to appropriate for the general public's good and benefit. To rent property or a fixed asset is one thing! . .to pawn it is another. That places this legislature in the position of obligating a future legislature to return the debt in reduced earned income to the treasury of the state. It certainly must follow that the future legislature must allow credit to the debt since the future legislature would be powerless to renege if the present bill becomes law, and is not successfully challenged in court prior to any collection of monies. The state constitution clearly states that each year the operating budget must at least balance with that year's earned revenues. At present, that isn't exactly fact. The state constitution also states very clearly that any debt of more than one year's duration must be approved by the qualified voters of our state. It is very definitely separated in our constitution that annual operational apporpriations and long-term debts are different subjects.

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Bruce Kendall, *Owner-Manager*

May 29, 1975

4. The state constitution also states that no long-term debt can be used for operationsl budget deficit financing. It can only be used for specific capital improvements that are approved by the qualified electorate. Therefore, we must address ourselves to the question of what is the "operating budget" that is appropriated by each annual legislature and disbursed by each legal agency and what is a "long-term" or "fixed debt"?

   (a) An operational annual budget is composed of day-to-day expenses to operate the agencies, expend aids and benefits to the general public as prescribed by law and to pay the debt service charges on long-term debts, i.e., capital return and interest to the long-term lender is also an operational budget item.

   (b) Long-term debts are approved by the voters of the state, then the proceeds are appropriated for a specific voter-approved improvement and is specifically not a general fund item to be allocated at the legislature's whim of the moment. And even worse, "How can a private corporation transfer funds in this manner without showing earned interest on balances?" I am sure that the IRS will have something to say on this.

5. In conclusion, how can this legislature or our elected administrator borrow money on a fixed asset of the state without the consent of the qualified voters when it is an obvious fact that long-term reimbursement of those funds to the lender are spelled out so specifically in the law? In addition, the oil companies intend to use this advance payment on royalties as collateral in their own private financing. How could the above points be more clearly identified as a promissory note of the State of Alaska backed by oil royalties as realty?

Respectfully yours,

Bruce Kendall
Speaker of Alaska State House
1963-64

BK:mm

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Bruce Kendall, Owner-Manager

To: Senator John Hacker
Chm of Special Senate Committee
on Taxes and Revenues

May 29, 1975

~~The Honorable Guy Martin~~
~~Commissioner of Natural~~ Resources
~~Beaufort Sea Hearings~~
~~Anchorage, AK~~

My Dear Mr. Martin:

The Legislature has been struggling for 125-30 days now with a budget problem of serious shortages. This administration and the Legislature have raised consumer taxes. Not enough money was raised to even dent the deficit proposed. Also, both have been toying with "gimmickery" such as the "Ad Valorum Tax" on reserves plus an advance pay scheme on "royalties" which as I previously presented. It appears to me when our State government has such a serious short fall in cash flow. . .and it appears to almost everyone that I know, that the only thing to do is dispose of something of value that has a market for cash. That, gentlemen, is the "Beaufort Sea lease sale". It's really the only value that can be converted to cash quickly.

This commission surely can't recommend leasing the lower Cook Inlet which is before the Federal Supreme Court. On this score you might have to repay all or part of the last Cook Inlet sale because that's before the State Supreme Court. The Gulf of Alaska is under considerable doubts as to any lease sales in that area for sometime to come. Our Governor will, in my opinion, never lease any lands in the major river deltas even if they were ready to lease.

The Governor's task force turned in a report on the Beaufort Sea which in essence said it is within the tolerable ecology and technology limits to go ahead and produce oil if found. The task forces only negative comment was, "It would bring more people to Alaska."

Therefore, I think that your hearing is timely and is really the only tranferable value that is available in the time frame that exists for budget balancing. I sincerely hope your findings are positive and I am absolutely sure that the Legislature will be very receptive to a positive recommendation. Thank you for your time.

Very truly yours,

Bruce Kendall

Bruce Kendall
Speaker of the State House
1963-64

BK:mm

AGO 530361

FISCHER

May 27, 1975

The Honorable Helen Fischer
Representative
Alaska State Legislature
Pouch V
Juneau, Alaska 99801

Dear Representative Fischer:

I don't believe it's legal for the oil companies to loan money to the State treasury and use the future royalties as collateral. My reasoning is based on facts as well as theory.

No. 1 - Nevada, New Mexico, Wyoming and California hold that future oil royalties in the ground are realty "just like land." The owners can sell the oil "once", just as land owners can sell but "once." Furthermore, these states have some court tests on this subject.

No. 2 - Cook Inlet production royalties are legal since that oil has already been produced, severed and taxed. The present new oil revenue law is a mortgage because that resource is in place, not severed (will not be for some years to come) nor have the taxes been paid, as per lease agreement. Our constitution has been interpreted that by law the lease holder or producer, whichever, doesn't have to pay severance, income tax or business license tax until it's being produced for use. To carry this theory further, it is surely no different than placing a first mortgage on state land or buildings. How is it possible to construe that the oil in place is different than realty, capital improvements or a fixed asset of the states' residents?

No. 3 - The administration, through the elected governor and empowered state agencies, can legally lease oil lands for the single purpose of finding and producing the oil from said leased lands, and collect annual rent. Therefore, upon discovery and production the tax laws apply. That chain of events makes the bonus and lease money rental income for the general treasury for the elected legislature to appropriate for the general public's good and benefit. To rent property or a fixed asset is one thing -- to pawn it is another. That places this legislature in the position of obligating a future legislature to return that debt in

AGO 530362

reduced earned income to the treasury of the State. It certainly must follow that the future legislature must allow credit to the debt since the future legislature would be powerless to renege if the present bill becomes law, and is not successfully challenged in court prior to any collection of monies. The State Constitution clearly says that each year the operating budget must at least balance with that year's earned revenues. At present, that isn't exactly fact. The State Constitution also states very clearly that any debt or more than one years duration must be approved by the qualified voters of our State. It is very definitely separated in our constitution that annual operation appropriations and long term debts are different subjects.

No. 4 - The state constitution also states that no long term debt can be used for operational budget deficit financing. It can only be used for specific capital improvements that are approved by the qualified electorate. Therefore, we must address ourselves to the question of what is the "operating budget" that is appropriated by each annual legislature and disbursed by each legal agency, and what is "long term" or "fixed" debt.

A. An operational annual budget is composed of day to day expenses to operate the agency, expend aids and benefits to the general public as prescribed by law, and to pay the debt service charges on long term debts, i.e., capital rent and interest to the long term lender is also an operational budget item.

B. Long term debts are approved by the voters of the state, then the proceeds are appropriated for a specific voter-approved improvement, and is specifically not a general fund item to be allocated at the legislature's whim of the moment.

No. 5 - In conclusion, how can this legislature, or our elected administrator, borrow money on a fixed asset of the state without the consent of the qualified voters when it is an obvious fact that the long term reimbursement of those funds to the lender are spelled out so specifically in the law? In addition, the oil companies

intend to use this advance payment on royalties as collateral in their own private financing. How could the above points be more clearly identified as a promisory note of the State of Alaska backed by oil royalties as realty? And worse, how could a private corporation show such a transfer of funds without an interest yield? I am sure that the IRS will have something to say about that.

Respectfully yours,

Bruce Kendall
Speaker of the Alaska State
House 1963-64

SCOMM

#11:16

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

SENATE RESOURCES COMMITTEE

TESTIMONY OF MILTON LIPTON

LEGISLATIVE CONSULTANT ON OIL & GAS

March 24, 1976

Members in attendance were Senator Kay Poland, Chairman, Senator Pete Meland, Senator John Butrovich, Senator Chancy Croft, Senator Joseph Orsini and Senator Pat Rodey.

SENATOR KAY POLAND: The Senate Resources Committee meeting will come to order. Our purpose of meeting today is to hear from Mr. Milton Lipton, the Legislature's consultant on oil and gas. What we would like today, Mr. Lipton, is to have your opinions, I know you gave some of them yesterday at the Joint Meeting but most of our members were not able to attend that. We are not going to discuss any bill in particular unless you feel that necessity.

MILTON LIPTON:

Thank you Senator Poland. I don't intend to repeat the testimony that I gave before the Joint Resources Committee yesterday for fear of boring those who have heard it all. What I would like to do is to pick up from the discussion of Tuesday morning and simply try to touch upon the highlights of what we feel are the most important considerations that the Legislature must bear in mind in framing a tax policy, therefore, in judging the kinds of tax bills that are before it.

First point. I said on Tuesday and I find myself being quoted now by representatives of various oil companies, that I said quite forceably that in our opinion DCF calculations, rate of return calculations on a discount of cash flow basis for Prudhoe Bay, are absolutely inappropriate as a basis for a state tax system. I did not say and I did not intend to imply that the State of Alaska or its Legislature in designing tax amendments or in judging tax proposals, must close its eyes completely to the potential profitability of a Prudhoe Bay, or any other oil field that may in the future be discovered in Alaska. There is a difference between saying that on the basis of our calculation about the potential profitability of Prudhoe Bay, it will have a DCF rate of return 48% or 24% or the industry will argue perhaps 17%, and try to design a tax system around it. The DCF calculations are inappropriate, irrelevant really, to tax policy. First of all, they do not tell you what it's going to be. The future remains in the future. Secondly, there are many different ways of calculating profitability. DCF rate of return is one basis of calculation. At the end of the

day, it's the average rate of return on the net assets of the stockholders, it can be an internal rate of return, it can be the marginal efficiency. These are technical things about which economists will argue endlessly. The point is that it is the prospective profitability which the State may want to look at but the tax system should be such that it is not triggered in any case until the potential profitability is realized. One doesn't tax on the basis of projections of profitability.

Therefore, if you are looking at the taxation system of Alaska, which encompasses already a severance tax, a normal corporate income tax, which we find faulty for reasons I will not discuss again but which I think should be fixed up in any case, and the proposals for some form of supplementary tax. How high the supplementary tax should be, how you determine what income is subject to supplementary tax -- we will discuss all of these things a little later. But, if you took at the entire tax system of Alaska and possible amendments to it, I'd say there are several things you must keep in mind which are absolutely basic if the tax system is to serve the interests of Alaska. First of all, it should not discourage exploration. There should be nothing in your tax system which discourages continuing exploration. You, yourself, will determine what kind of exploration and how it should be done by your leasing policy itself, but you should not use a tax system to discourage exploration and you wouldn't want anything in your tax system which does discourage exploration. That is to say, don't push back the margin of exploration. If there are prospects that industry would be well to explore, the tax system should encourage them, not discourage them from the exploration. Secondly, that the tax system should not impinge unduly on the prospects for profits and profitabilty of successful fields. On the prospects for profit and profitability of successful fields! Don't confront the industry in advance with a full knowledge that the tax system works in that way. Third, and this follows from what I said before, that the tax system, particularly if there is to be some form of surtax, or surcharge, that it should not be based on the assumption of superior profits, but it may well come into effect and apply when the fact, the evidence and the knowledge, the reality of superior profitability becomes evident. This is what I mean by not misinterpreting my remarks about DCF calculations, about Prudhoe Bay. I don't think the State has to close its eyes to the potential profitability of Prudhoe Bay, but if the potential profitability is established and a fact, then I think it is perfectly reasonable within certain guidelines, for the State to say that this is a proper avenue for taxation amongst all of the other decisions by the Legislature as to what the spending and disbursement policy of the State is, what the total revenue policy of the State is, but, certainly one cannot say _____ that one can ignore this as a potential avenue for revenue.

So the critical question then becomes, "Should there be, in Alaska, such a thing as a surtax." In other words, if in addition to your normal income tax, which is paid by every corporation based upon its taxable income within the State of Alaska, should there be for

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the oil industry, first of all and I'd like to get this in as often as I could, a restructuring of your income tax of the oil industry at least pays the same nine plus percent tax on its producing profits as it would if it were any other type of industry in the state. But beyond that, should there be a surtax? This absolutely must fall within the discretion of the Legislature. No one can say, from the standpoint of economic policy, from the standpoint of the pros and cons of the industry's position, you must do it, or you dare not do it. It depends upon the whole structure of the Legislature's own thinking about the needs for revenue, about the alternative sources of revenue and is this something which ranks as a high priority rank in the minds of the Legislators as a source of revenue. Let me assume for a moment, for purposes of our discussion, that the answer is yes, that the Legislature is inclined to look upon the income from oil producing operations in the State of Alaska, separate and apart from the income of other economic activity in Alaska. It may chose not to do so, but if you do, what are the guidelines to the kind of tax that might then appropriately be levied?

First, I think the most important thing, such a surtax should not be effected before the company that is producing in Alaska and the income of that company from oil producing operations in Alaska is clearly beyond the average profitability. That is to say, the profitability is not estimated, is not imputed, is not guessed at, but it has been clearly established. Secondly, that the surtax should, under no circumstances, become effective for anything which is close to marginal exploration. That is to say, anyone who is looking at an exploration prospect here, and says, in the State of Alaska there is a surtax on certain types of oil producing income, must know that if what he finds is a marginal field, if it is barely worth developing, or if it is going to give him modest profit as well, that he is not discouraged either from looking at the prospect in advance and taking a lease, or having taken a lease because he thinks its going to be a real good prospect and finding out that it is very very marginal -- is the candle worth the burning -- should we develop that field or shouldn't we -- there should be nothing in the tax structure that discourages that.

This means, in effect, that the price which the United States Government is holding out to the State of Alaska and which determines the value of oil produced in Alaska, this price that the U.S. government is setting, the upper tier price, the price for new oil, which is designed as an incentive thrust to encourage people to go in and explore farther, explore harder, that there is nothing in the Alaska tax system which cuts away any of the incentives under that price. The full price is basically available as the incentive to exploration in Alaska as much as it is to exploration in any other state in the union, as much as it is to exploration in the Outer Continental Shelf or on federal lands.

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It seems to me that the criticism which we may have of the bills that are now before the Legislature, which in one form or another involves surtax, the excess value surtax which is House Bill 703 and Senate Bill 621 and the oil production income tax which is House Bill 803, at least in the version that we have seen, and I am not sure we have seen all of the sponsor's amendments to them, but at least in the version that we have them, our criticism of these bills would be that to expose profits on production to a surtax before this superior profitability has really been established. In other words, they are anticipating that. One can object to them in principle also, there should or shouldn't be a surtax. I think I have covered that -- I suppose I should repeat it every once in a while because it gets lost. On the assumption that there is willingness on the part of the Legislature to consider at least the principle of the surtax. Our basic criticism of these bills is that they trigger the exposure of producing profitability to a surtax at a time when we feel is previous, unnecessary and possibly introduces all kinds of disincentives towards the exploration operation.

I suggested in my testimony yesterday morning, that there might be an alternative. I'm sure there are many alternatives. But there is one that we threw out and we put it out on the floor of the Joint Committee -- I will mention it here also because I think it is worth something as a basis for discussion by staffs and by legislators too. And this was the idea that if there is to be a surtax that what determines the breaking point between the time when a producing company pays no more than the regular state corporate income tax on his profits and when he is exposed to some surtax or some surcharge on his continuing profits from the producing operation in Alaska, should be the principle of capital recovery. That is to say, for purposes of the state income tax he continues as is normal under your state law and under your revenue department's regulations, he takes depreciation as it is allowed, expenses as it is allowed and so on. But for purposes for determining whether or not there is any producing income liable to surtax and if so, how much income there is liable to surtax, he shall be able to charge against his producing income as fast as he has revenues to do so, all of his capital costs necessary to achieve that production. Which means the lease acquisition costs, exploration costs, development costs and so on, and capital costs plus. That is to say, some markup of those capital costs, charged against his producing revenue. This means that for some length of time, even the most prolific field will probably not be susceptible or liable to any surtax. How long depends upon how much production is coming out of the field and what the costs were. But for a while there is no exposure to the surtax. For marginal fields, where it may take the life of the entire operation to recover all of the capital costs, there would never be any surtax so that it has no effect upon the marginal whatsoever. For the fields of modest profitability, not by guesswork, I am talking about at the end of the day, at the end of the life, there may or may not be exposure to surtax, depending upon what the capital cost ratios are. Now, capital recovery plus how much? I don't want to offer

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a number at the present time. I might suggest for example that where there is such a tax system in practice, which is in the U.K. North Sea, they allow 1.75 times the capital recovery. I am not proposing the State of Alaska consider the U.K. tax regime, far from it. In our Bicentennial Year, I am not going to suggest that the United States look at a British tax system 200 years after they fought against the Stamp Act and got our independence. But there are some features which are similar and I think this is worthy of discussion because it meets one very important criterion, and that criterion is that it does not or should not have any affect upon the incentive for exploration and it really doesn't become effective until superior profitability is established.

Whether or not this would yield any revenues from Prudhoe Bay depends upon many circumstances. Nevermind the DCF calculations about Prudhoe Bay. What is the margin of profit? That is to say, the cents per barrel that would be made. This depends upon an awful lot of factors. None of us really know what the price is going to be and so on. But it all falls into place so that over time there is very substantial profitability in Prudhoe Bay, I would say, yes, it probably will be _____. If things go wrong in Prudhoe Bay, incidentally, -- if things so right it works well. Suppose things go wrong. What can go wrong? The _____ for example -- in the timing of the start of the production -- or the ability to move from 600,000 barrels per day to 1.2 million barrels per day -- experience in the first few years of producing operations. Nothing else should go wrong in Prudhoe Bay, enough has gone wrong already. But there has been no real experience with the affect of producing operations upon reservoir pressures but the industry has tremendous confidence and so on. But the economics of Prudhoe Bay, probably at this stage of the game, depend more than anything else upon well producability and the ability of wells with an average producability of four or five, six thousand barrels a day, but this has to carry forward. If it turns out that it is going to take a tremendous amount of additional drilling of producing wells after several years of operation in order to sustain the producability of Prudhoe Bay, then something else has gone wrong and that begins very seriously to interfere with the flow of the barrel profits and the ultimate profitability. So you see, what this principle of capital recovery costs does is it says to the oil company, "Up to the day you produce the first barrel, you've taken all of the risks. You took risks when you first took a lease from us and paid bonuses." They weren't so large in '64, '65 and '66, but they were pretty big in '69. "You took exploration expenses and they could have been dry holes. You started to develop" -- and development costs in Alaska typically must run tremendously high -- "You've taken all of the risks and now the first barrel is being produced. We the State, will pick up some of the risk now. That is to say, if there is to be a surtax, that surtax is not going to touch you for some period of time. You are now going to recover your capital which you have invested and for taking all these risks. After that period, your risks have become very little. You have recovered your capital. The State feels that if a superior profitability" -- now that doesn't mean that the industry shouldn't be compensated several times over for the

risks that they took. This has to do with the rates of return and what you expect if you are taking all these risks. The State says at least, "We are not going to even touch you with any kind of a surtax until -- we are taking the risk here and if things go wrong in a producing field so that you incur greater expenses, okay, then we are going to allow you the recovery of that also before a surtax comes into effect." In the producing operation which may be very profitable for a while but in order to sustain production it is going to require reworking of wells, a secondary recovery, these become capital outlays and the State says, "Fine. If you do this to sustain production, our surtax becomes abated until you recover that as well." But it does say that "If at some point in time you have very superior successes in Alaska, the State will not ignore that this is something vital, this industry is vital to Alaska, we do everything to sustain it but at that point in time we do not close our eyes to the fact that there can be superior profitability and this is the way in which we propose to tax."

Secondly. If the State is considering a surtax -- I think this is tremendously important -- what is the rate of the surtax? If you move from the state income tax at a little over 9% which you must strengthen so you make sure you get that 9.3% severance tax. But if you move to a surtax, the surtax rates cannot be oppressive. If the surtax rate is oppressive I think it does violence to three tremendously important features of a state tax policy.

First of all, an oppressive surtax cuts into, it cuts too deeply into the superior profit which the most successful are expected to earn and have to earn if they are going to pay for the marginal fields and for all of the losses. In other words, the tax system should not imply that suddenly all of this added profitability is surplus profits, windfall profit, or in the language of the economist, all economic rent, and therefore you can tax all of it away. That is to say, do not leave one unnecessary dollar with an oil company. I don't think this should be the policy of state taxation. You can't have excess profitability until you recognize that there are sufficient losses. You can't have windfall profits until you recognize that there are windfall losses. And there is no such thing as an economic rent on an oil field. There is only an economic rent in an entire oil producing product. You simply cannot measure economic rent on an individual oil field. You ahve to have a margin of superior profitability. This is what brings people into the exploration game. Nobody really looks to find a marginal oil field. Nobody really looks to drill dry holes -- of course not. Nobody looks to discover a marginal oil field -- the real incentive to exploration is the attraction of the bonanza, of the great discovery. And a certain amount of that must always be the expectation, and it must always be the realization. So the rate of surtax has to attune itself to the fact that there is going to be superior profitability which remains with the most successful company.

Secondly, I think you must be very, very concerned, careful, as to how deeply the State's rate of taxation cuts into the federal tax _____. I would hate to suggest to the Alaskans that they take their taxes after the federal government. You obviously have first claim. I don't think it is in the interest of Alaska completely to ignore the fact that when they are taxing with a surtax, the profits of companies, they are also taxing the income of the federal government. The federal government picks up a part. You take that into account when you reckon what the net cost is to an oil producing company to pay taxes to Alaska. I don't think you can really ignore how much you are taxing the federal government, when you establish a tax system in Alaska. You may weigh this how you will but the fact is that Alaskan oil producing operations are very much a part of the U. S. oil producing area. They are in many different ways. The most particular one and of relevance to you is that under our present energy act, the value of oil in Alaska is determined by the federal government. The producers at Prudhoe Bay suffered as many of the _____ and misfortunes as any successful explore could have been confronted with. Between the time of the discovery well and their first barrel of production there have been delays, there have been run up of costs, there has been misadventure after misadventure. All the risks that a private company should take, and have taken all of those risks, the profitability of Prudhoe Bay may have been driven down to an infinitesimal figure if they hadn't been bailed out. What happened in the interim was the tremendous run up of world oil prices by OPEC. This did not bail out the producers of Prudhoe Bay because the world congress which authorized the construction of the Alyeska system forbid, without special approval, the export of a single barrel of North Slope oil. You may be able to get $15 a barrel in world markets but you are not allowed to do it. What has bailed out Prudhoe Bay has been the policy of the federal government, which has said, even under conditions of price control that we are establishing price incentives for new exploration ventures. Whereas before, at the time of the discovery well, the average price of crude oil to the United States was about $3.40 a barrel, under normal circumstances it might have gone up five percent a year -- seven percent a year. $5.00 oil in the lower 48 states would have left Prudhoe Bay a poor venture indeed. But the federal government said that, "despite the fact that we maintain price control, we are allowing an upper tier price for new oil." Prices today as high $11.28 and they are going to go higher. But this is all pursuant to federal policy. And the purpose of this federal policy is to _____ exploration. And I don't think the state of Alaska would want to do anything which says in effect that the pricing policy of the federal government was designed to achieve certain purposes, shall not be fully appreciated here in Alaska, and we will ignore this by an undue level of taxation.

I have been quoted to the effect that, "If Alaska isn't careful, the FEA, the Federal Energy Administration, is going to lower the price of North Slope oil." I never said that. I think that is nonsense. I don't think the difficulty that may emerge between Alaska and the Federal government if you go to an exaggerated tax

system is going to depress the price of your oil. I think that is silly. That would be cutting their nose to spite their face. There is uncertainty as to what the price of North Slope oil is going to be for a lot of different reasons. But the problem has to do less with whether there is going to be specific retaliation, but more in the nature of how does Alaska as a state fit into the whole concept of our federal system and where does one draw the line between what the state takes first and what is left thereafter.

Third, it has to do with the implications of your surtax rate for the export of capital. Let me explain what I mean by that .... And if you don't allow the expensing of dry holes in Texas, you should allow the export of capital as well. That is to say, Alaska has benefited from the willingness of companies to come in and explore in Alaska on the basis of the superior earnings of their exploration efforts elsewhere. When you look at your rate of surcharge, what that tax rate is, you must be perfectly willing to allow that there are superior profits. You've given them an incentive to invest superior profits in Alaska. But they should not be denied superior profits even if they want to export the capital out of the State. In other words, you admit that you are part of the United States and you are not trying to tax away every dollar of superior profitability unless it stays in the State of Alaska. The principle then that I am addressing myself to is that if there is to be any such thing as a surtax, called by whatever name it is, if there is to be, (1) It should hold marginal and modest exploration efforts harmless against any surtax; (2) it should not come into effect in any case until superior profitability has been well established - one to one criterion is the recovery plus of capital; and (3) when it is applied, the tax rate shall not become onerous, it shall be a tax rate which is reasonable in terms of the presumed profitability so it does not attempt to simply siphon off all of that profitability, but it remains cognizant, aware of, and sensitive to the fact that a superior exploration effort must continue to earn superior profitability, even though it becomes subject to and liable for some surtax in Alaska.

SENATOR JOE ORSINI: If we had a regular corporation profit tax of 9 percent, which would actually tax them, as you pointed out numerous times in past years, that you are actually taxing at nine percent. Would we then also have the severance tax or should we drop the severance tax if we had sufficient regular corporation tax?

MILTON LIPTON: I think that a corporate income tax at the level that you have it, coupled with a severance tax is absolutely appropriate. I see no reason why the State of Alaska, if it subjects the oil industry to nothing more than normal corporate income, should give up principles of taxation which have been adopted in every other state -- either a combination

is direct accounting under your present law would require them to show gross proceeds from sales in Alaska, allocation of costs, proper allocation of depreciation according to the nature of the property and so on. All of that would have to be done. The reason it really isn't done is because the companies don't fill out more than the first line - gross revenue from sales in Alaska - None. Nothing else is necessary and you can't touch oil producing profits in the State of Alaska. You could go to the allocation _____, we think that is sufficient. Now, whether you go the net proceeds bill -- I think your Revenue Department will comment on that net proceeds bill -- if you want us to we can also. Or the Revenue Department may come up with its own way of doing direct accounting. But if once you have that kind of accounting for purposes of the regular corporate income tax, there is not a lot more of accounting which is going to be necessary to determine whether a company is liable to surtax or if so to what extent it is liable to surtax. But I don't think this involves a bureaucratic nightmare.

SENATOR JOE ORSINI: You haven't then, looked at the net proceeds tax proposal? As I understood, you weren't prepared to comment on the specifics.

MILTON LIPTON: Yes, I have looked at the net proceeds tax. Yes, we would be glad to comment on the specifics if you like us to. I don't know if you are at that point.

(QUESTION INDISCERNIBLE)

MILTON LIPTON: Our major objection to the net proceeds bill as it is written, is that it makes the determination of gross value, which is the starting point of everything else, we think unduly cumbersome. It says, "FOB price at the Alaska border or other convenient point or as determined by the Department" and so on. The idea here is to separate out a company's income tax liability on account of profits from oil operations from all other forms of income because the feeling is that this is the one thing that gets most badly hidden in your present tax regime. If that were the case, it seems to us the most convenient and the most representative place to calculate the value before everything else is computed is at the wellhead. It has to be calculated at the wellhead in any case for reasons of severance tax and for reasons of royalty payments. And there would be as much or as little dispute about wellhead value for these purposes as it would be for income purposes. Indeed, if you could, under your present tax laws,

of severance tax, gross production tax, advalorem taxes and so on. I think that your attention of the severance tax is absolutely appropriate. It is not unreasonable for you to consider possible increases or restructuring of your severance tax rates in light of what has happened. I wouldn't want you to go ahead and decide on a whole new set of severance tax rates before you've made a decision on so many of the other tax bills that are before the legislature.

SENATOR JOE ORSINI: Then you recommend against then, to have the advalorem tax?

MILTON LIPTON: You are quite right. I should have said yes and dropped it. But I want to draw an analogy. Our criticism of the advalorem reserve tax was in effect, that it was a tax on profits before the first profit was being had. What we are trying to suggest to you is that if you go the surtax route, that again, you don't assume that there are superior profits until the evidence of superior profits is in hand. Of course the evidence is in hand after there has been this degree of capital recovery. And after the risks have been largely removed and you are saying to the company, "You have taken all the risks up to now, we will take the risk now." The criticism of the advalorem tax was that you tax normal profits before they began. If you are going to have a surtax, I don't think you would want to tax superior profits until the fact of superior profitability is clearly evidenced and not because somebody has computed, no matter how correctly, a DCF rate of return.

SENATOR JOE ORSINI: If we are going to change our regular corporation tax structure to adequately get the oil company, do we have the mechanisms now to allow the various costs involved to be amortized over a period of time?

MILTON LIPTON: I think that if you go ahead with a revision of the corporate income tax. For example, the net proceeds tax proposal is essentially, as I understand it, an attempt to transform the companies' options under the tax law, to a new method of calculating what the profit is on oil production per se, and subject them to the same rate of taxation as they would have if the present income tax could reach out and identify producing profits, which we don't think it can. The net proceeds tax would involve a certain form of revenue accounting to your Revenue Department. But so would it today if the companies filed on the basis of income -- that

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SENATOR CHANCY CROFT: Do you know of an easier way of doing it?

MILTON LIPTON: The easier way depends upon legality. My feeling is that if you could simply have all companies report either gross value of sales in Alaska or in the case of any product -- I hate to get involved in things which may involve other industries -- but if you're willing to say that in the case of oil producing operations, if you can simply _____ either the value of sales in Alaska or the value at the wellhead. The value at the wellhead presumably represents a net _____ from the value of the sale whereever it took place. If you can do that legally, I think that is the easiest and simplest way. If not, then you have to go the round about way and if it involves this kind of segregation, which means that you are separating out the profits in oil production from the profits elsewhere, you are separating out the losses in oil production from losses elsewhere, then you've done that kind of artificial division. I don't think there is anything terribly wrong about that.

SENATOR CHANCY CROFT: Just so that I understand it, its one thing to say there's nothing terribly wrong about it, but its another to say that....

MILTON LIPTON: I will be much more positive. I think that if this is the way that you can insure that Alaska collects its normal rate of corporate taxation of oil producing profits, then I think it is a good piece of legislation. I cannot say that there may not be a simpler way. But, per se, I think it is certainly an appropriate way of going about this.

SENATOR CHANCY CROFT: I know that you _____ money, but I think that you have had a chance to see, to at least talk to, some of the people on the staff and it seems to me that it was their opinion that the reason for taking this approach was that legally you had substantial problems with any other method. I think it was because of the legal concerns that you discussed that this method was proposed.

What about the question of severance tax? Do you think we should consider changes in the severance tax rate at this time?

MILTON LIPTON: Yes, but I don't think that you should do it independently of your decision as to how to dispose of the other tax legislation. I think it is perfectly appropriate to consider revisions in your severance tax from a lot of different standpoints. You may want to consider what the effect of higher rates

say, "Line 1 of direct accounting for income in Alaska." If you could legally say, "Gross revenues from sales in Alaska or in the case of oil producing operations, wellhead value of oil produced in Alaska", then you could go with your present tax law, you wouldn't have any problems. I think that for that purpose, it would make an awful lot of sense to start with a wellhead value since the purpose is to separate the income from oil producing operations from everything else so that it becomes identified and susceptible to the normal income tax rate.

There are some problems about the deduction of drilling costs and capital expenditures. It is not clear what this definition of property is, whether these allowances are by lease or what provision is made for dry hole expenditures. I think there are technical things in here that one has to look at very carefully. There may be easier ways to go about it but this is the sort of thing that the Revenue Department can probably speak to quite quickly.

SENATOR CHANCY CROFT: With the changes that you've suggested with regard to the net proceeds tax, do you think it is a reasonable approach?

MILTON LIPTON: The net proceeds tax? Yes. If we understand the intent and purpose of the net proceeds tax -- is to say that there shall be in effect a direct accounting of income from oil producing operations in Alaska. We are going to _____ at it this way, it's by indirection, but we are going to get it out this way and we are going to subject it to the same rate of taxation as if it fell under the perview of the regular corporate income tax law. This is not literally true. The minute you segregate out one piece of income from another piece of income, the two taxes don't work exactly the same. I have no real criticism of this approach. If this is the way in which you insure that oil producing profits in Alaska are subject to the normal state income tax rate, all well and good. Certain things happen. For example, you cannot reduce your liability for corporate income tax on the profits of Prudhoe Bay by money you lose in a gasoline station. On the other hand you can't reduce your tax liability for profits you make on gasoline by a dry hole somewhere else. You are separating it out. I don't think that is an abomination. I think the most important thing is that the oil producing income is reasonably subject to a corporate income tax. This is whether or not you have a surtax. If there is an easier way of doing it, I would like to to be done an easier way.

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MILTON LIPTON: The expectation is that by the time it is produced it might be on the order of $5.00 a barrel.

SENATOR CHANCY CROFT: And now we are talking about over $10.00 a barrel.

MILTON LIPTON: The net effect of everything that has happened in the interim upon Prudhoe Bay, per se, is certain or uncertain depending upon how you measure the net effect. If you measure it in terms of the rate of return on their investment -- it depends upon what calculation you use. By our basis of calculation, and we are not prepared to utilize the industry's arguments that all capital investments including the pipeline and tankers will all have to be paid out of the profits of Prudhoe Bay. But by our calculations, it would appear that -- and again, say that the assumptions about the future, and you are right about those assumptions, that the rate of return on Prudhoe is probably lower today than what? This is the important thing. Than might have been estimated in 1970 on the basis of what then were reasonable assumptions about the future. And people made different kinds of estimates then. We think that the rate of return may well be lower. Especially if you use the DCF calculation. But the aggregate profitability is going to be ever so much higher. The dollars per barrel that will be earned on production should be much greater today than one might have assumed before, dollars per barrel. Which means that if your profitability on one -- if your rate of return on one Prudhoe Bay has gone down, if you now have a lower rate of return on several Prudhoe Bays, because the rate of return is now being calculated on a multiplied capital investment. In a sense, the rate of return on Prudhoe Bay has gone down but because of the acceleration in prices and so on -- it is not as though the rate of return on Prudhoe Bay has gone down, but it is as though the companies have now found oil field A, oil field B, and oil field C, all of which have somewhat _____ rates in tax. I don't know what you make of this as a principle of taxation. I don't think it is really relevant for formulating what kind of tax policy the state should follow.

If you take into account what has happened to costs and to prices, then in general it would seem, that because of the tremendous inflation would -- When the costs that were inflated are capital costs, it takes a hell of a lot of earning to maintain a rate of return. But you may still have a very, very large increase margin of profit per barrel. This

may be, you may want to change the steps schedule, you may want to continue or abandon the cents per barrel feature which I think has worked in a rather uncertain way, sometimes to the detriment of the industry sometimes to the detriment of the state. I well remember the reason for it having been put in. The merits of the reasons at that time are no longer merits today. I think an awful lot has happened since those severance tax rates were established. You will remember that when this aspect of severance taxation was introduced and was being discussed, we talked about them excessively for keeping severance taxation in Alaska reasonably in line with severance taxation elsewhere taking into account also, where there is or is not advalorem property tax. Alaska has found a range of advalorem property taxes in the interim which they have added to it. When we say, reasonably in line, it doesn't necessarily mean that a barrel of oil produced in Alaska shall pay no more in severance tax and advalorem tax than a barrel of oil produced somewhere else. What it means is that if a severance tax in Alaska were adopted by all 48 states, would it make sense or would it _____. Now the feature of the severance tax which we feel is most progressive is the step schedule, which says in effect that the State of Alaska is prepared to tax, as a percent of the gross value of oil at the wellhead, certain producing operations, less than virtually any other state in the union. It is prepared to tax as a percent of wellhead value for certain operations more than many states in the union but not more than some. To consider, at this stage of the game, with a vast change in the circumstances of costs, prices, values and everything else, to reconsider these severance taxes -- I think it is appropriate. My only suggestion at this moment for the committee is that the decision on the severance tax not be the first decision taken but it be taken in the context of how the other tax legislation is disposed of.

SENATOR CHANCY CROFT: Just so that we might have it in perspective. You mentioned that the problems and the risks that the owners of the Prudhoe Bay fields have taken, and it is true that from their original estimate of some 900 million dollars to build the pipeline, they are now talking close to 10 billion dollars at this point -- a tenfold increase in that item of cost alone. But shouldn't we also keep in prospective the increase in the value of Prudhoe Bay. At the time they were talking about $900 million, they were talking about $3.00 a barrel oil?

is the net effect of what has happened in between. I would guess that the oil industry could probably demonstrate to you that the rate of return has gone down to very much lower than what has been assumed. And they argue that the margin per barrel has not increased as much. This is a matter of judgement. The profitability rate of return is probably lower, the total profit per barrel, and multiplied by all the barrels at Prudhoe Bay are very considerably larger.

QUESTION: Larger? Is it fair to say that the rate of return on Prudhoe Bay has gone down and other fields have gone up, since 1974 of world ....

MILTON LIPTON: Yes. The rate of return on most existing oil producing operations will have been improved because the capital base remains unchanged. Operating costs have gone up somewhat owing to inflation but it is relatively unimportant. But if the price under which the oil is sold is very much higher, and this is true even for a large number of established oil fields that are operating under the old price ceiling, these can be very, very profitable. When the price which you get goes from $3.40 to $5.25, and even taking into account the loss of the depletion allowance in the interim, it looks as though, on the average, the profitability of oil fields has improved.

I'm not sure the net effect would have been in the Cook Inlet because while their capital base has remained the same, it's an old established thing, and the prices have gone up somewhat, the State of Alaska has really subjected them to a high rate of severance taxation. Quite independent of the increase in their own wellhead price. In Cook Inlet they are paying on the basis of cents per barrel and the cents per barrel has gone up under your severance tax escalation clause not only because the price of old oil has gone up but it's based upon the wholesale price index of crude oil and that raised the combination of new oil prices and old oil prices. And when the new oil price started going up, as it did last month up to about $13.00 a barrel, that pulled the wholesale price index up. The wholesale price index escalated your cents per barrel severance tax and for over a year their own wellhead price is under old oil price control. This stuff stayed here, the cents per barrel tax came up and you were collecting windfall profits which the state had never anticipated. The state thought the cents per barrel would go up as the posting at Cook Inlet would go up. "Don't let the oil companies fool around too much with their posting, we are going to make sure they're honest. To get back to your question, I would guess that for -- Your question really needs two

different answers. What the effect of a relationship between higher prices and higher costs will be on an exploration venture in Alaska today. I would guess that it is favorable for the exploration venture and for profitability. Although costs have multiplied several fold, there has really been quite a rapid run-up in the new oil price, the upper tier price, and it is still going higher. I think it should be very favorable for exploration incentives and for the profitability of successful ventures. The second part of my answer deals with something I discussed on Tuesday morning and I think it is very well worth bearing in mind. In any aspect of your consideration of taxation, if in fact there has been a favorable impact on the profitability of exploration ventures, this is absolutely essential. It is essential because this higher price which gives you the higher profitability on successful exploration ventures was intended to bring the industry in to more exploration than they otherwise would have done. And more exploration means taking leases where they otherwise would not have. Taking leases on inferior prospects. Drilling more dry holes. Abandoning more leases. Doing seismic work and then saying, "No we are not going to drill." It means that the high price is an inducement to the industry to lose more money. "We give you this high price with the complete expectation that you will lose more money in unsuccessful ventures." If the industry doesn't, then the whole U.S. policy falls apart. But how do you induce industries to lose more money? Because the high price says that when you are successful you will make more profit than you would have if you were successful with a five dollar price or a four dollar price. In other words, although the new price cost relationship should be favorable for profitability, they very well better be, if the industry is going to do the kind of exploration and suffer the kind of risks which the high price is designed to encourage. So there are two balanced aspects of it. I think this is part and parcel of the intention of our oil policy and the idea of giving out a higher price will support the objectives of policy only in so far as it works that way. Only in so far as the industry is prepared to take on greater risks than they otherwise would have before, when they are successful to earn somewhat higher prices to pay for the greater number of losses. This is one of the things I said that the State should take into account when they say, "Well, where is the measure of superior profitability. What rate would we, if we do at all impose a surtax on them."

SENATOR CHANCY CROFT: I am also curious with regard to the question of the profitability of Prudhoe Bay and that analysis. There is some indicaton that the oil industry is again moving the point at which it plans to maximize its profit from its integrated operations. It has moved it historically through several different stages of the process and there is an indication again, with the loss of the depletion allowance that industry is moving their profits from the production stage to the refining and marketing stage. I wonder if you might care to comment on that?

MILTON LIPTON: It is pretty difficult to generalize about what the industry is doing when each company strikes its own _____ and it does it only within the limits of what it is permitted to do by tax laws. The profitability of the producing venture is supported by prices. Prices have gone up even though your depletion allowance has been eliminated. Profitability, historically had been very low in refined marketing. One of the reasons of course is that the competition is very intense. Competition is intense because of the structure of operation. Not only the structure of the industry, there are more firms in refining marketing, but it is the structure of the operation too. The fact that if you have capital invested in a refinery and the refinery operates at 80% of capacity, you've got 20% of refining capacity, you utilize it. Then the marginal processing is very much lower than the _____. When you can measure capacity in the refinery -- you can't measure capacity. You certainly can't measure unutilized capacity in distribution plants and gasoline stations. Historically, you've got so much unutilized capacity in that feature of the industry -- you put investment in gasoline stations, you want to get volume, turnover, and so the oil company operates a gasoline station, like a department store, you want to get as many people walking through, you want to sell as many units of your product as you can. And historically the companies could survive if there was intense competition at that end, provided they had some form of superior profitability in the producing end. Whether it was because of the depletion allowance on U. S. operations, or high unit profitability on foreign operations. That is pretty much out of the window now. Now the industry is faced with the need to obtain competitive profitability in virtually every function of their operation. There really isn't one thing that is going to support the other. A great deal of the profitability in foreign operations has been very much reduced. So that you find a tendancy, a trend towards the strengthening of product prices out of the sheer necessity to make them profitable

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so that you can support them, insofar as competition permits it. It is not happening in Europe yet, that is for sure. In the United States, of course, there has been a reduction in product prices but this is part of the _____. I would say over the next few years, I would expect that refining and marketing profits will improve here. I don't think it is a matter of shifting so much. I think in Alaska we have always been very much concerned about the _____ of integrated profitability as between the producing function and the transportation function. Because the profits on the pipeline is virtually assured so long as operations continue and they are protected against the rate of taxation in that, so in effect, if the profit goes into the pipeline, which reduces the wellhead value, they are protected against any higher rate of taxation on a dollar of producing profit than it would have on a dollar of transportation profit. This is one of the things that the state would presume to maintain surveillance over, is Alaska Pipe Company.

SENATOR CHANCY CROFT: You were very critical yesterday of the discounted cash flow method of analysis that has been utilized in attempting to analyze profitability. Several of us in the legislature have been told that is the method by which the industry itself often evaluates a venture before they commit themselves to it, is the discounted cash flow. It also seems to me that you're suggestion with regard to a capital recovery mechanism in the surtax proposal is somewhat similar to a discounted cash flow method of analysis, that what you are ensuring is that there is a rate of return based on a level of expenditures.

MILTON LIPTON: I am not critical of DCF calculation. I am critical of some of the ways in which DCF calculations have been used or interpreted in connection with analyses of Prudhoe Bay. How can you critize a DCF calculation? It is a piece of arithmetic, that's all it is. Does the industry use DCF calculations? The industry must speak for itself, company by company must speak for itself. Let me tell you what our experience has been with oil companies, insofar as we are consultants with oil companies. The DCF calculation is used typically, to array alternative investments. If you have a DCF rate of return of 35 that goes here, if it is 30 it goes here, if it is 15 it goes down here. It permits you to array. Secondly, when you say that this is higher in the array and this is lower in the array, you've got to look at what your nature of the investment is. DCF calculations become reasonably comparable and are useful for purposes of array if two things hold true. If the intensity of capital

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investment is approximately the same and if the lifetime of the investment is approximately the same I don't think any oil company would ever array a 31 percent DCF rate of return on an exploration venture, side by side with a 31 percent DCF rate of return on a refining venture. It wouldn't go into the arrays even. These DCF rates of return are not comparable. Now, if you talk about exploration ventures, I would suggest that most oil companies in an exploration ..... utilize DCF calculations. This is one way of pulling together all of the facts which are necessary to make a judgement. To my knowledge, an oil company would not, having made a DCF calculation, determine what its bonus bid is going to be on a lease. They might use it as one of the pieces of evidence, but they would not say that under this DCF calculation ... I am being more specific than I ought to be, but if a DCF calculation on a particular exploratory prospect comes out 50% and the company has as a rough criterion for yes, no, do we take a crack at the lease or don't we take a crack at the lease. ..... and then say okay, if I take the difference between 50% and X percent and I can translate that into a bonus payment and that is what I'm going to bid. And I wouldn't bid a penny more because if I do that I ruin the rate of return and I wouldn't bid a penny less because I have to be competitive. The DCF rate of return is one tool that serves a purpose. But you see, I would have been equally critical about the utilization of a rate of return calculation on Prudhoe Bay for tax purposes whether a DCF rate of return or were it an average return on net assets over the lifetime of the field, whether it was the marginal efficiency of capital or anything else. My real quarrel with the rates of return is that presumptive rates of return ought not to be the basis for taxation. These are presumptive rates of return. Even if it were the end of the day, I think it would be very difficult to look back and say, "Yes, there is superior profitability, but the superior profitability, because it yielded a return of 48% is exactly this much because it should have yielded only 24%." You may be able to calculate the 48% at the end of the day, but you really don't know what it ought to have been. The economic rent is over the whole area of the oil exploration operation.

MILTON LIPTON: I would like to suggest that perhaps you would like on Friday, to at least devote a little time to the question of leasing policy. This has been an old issue and I know that the native corporations have raised the whole subject of leasing policy as something which is vital to how the state reviews both tax policy and leasing policy. There is a bill that is before the legislature on leasing policy and I think it might be worth spending at least a few minutes if it is of interest to you now.

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PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Continuation of presentation by Mr. Lipton, Consultant on Oil and Gas
(Tape of this meeting is available through the Legislative Affairs Office)

MINUTES
SENATE RESOURCES MEETING
FEBRUARY 14, 1975

Senator Poland began by stating that Mr. Lipton had had the opportunity of being with us for a couple of days now, and had an idea of some of the bills and ideas coming before the Legislature. He had asked for a short time for a presentation before we started questions and answers.

Mr. Lipton began by stating: There is always an interest on the part of the Legislature in things in general and external and so therefore when I meet with the first committee upon coming to Juneau, I am sort of beholden to talk at length on this. One never knows quite how relevant it is. I've seldom had direct exposure either to the Bills before the Legislature or the thinking of the Legislators so it is difficult. It is a pleasure that I'm back with the first Committee again, and perhaps we can solve this problem with time. I would like to focus upon those matters of legislation or Alaskan administrative policy which come directly to bear with the primary interest at the moment, which is a prospective budgetary deficit and how it can be met- the presumption being that bridging this deficit, dependent upon contributions for a taxation upon the oil and gas industry. I pass no judgment on this presumption. If you look at the alternatives that I have been asked to address myself to over the last three days, they are 1) the possibility that the industry will contribute by virtue of a lease sale, 2) the State itself will exact funds from the industry by virtue of a taxation where the avenue of taxation is a new tax, an ad-volorem tax on oil and gas-in-place or the reserve tax, and 3) the industry will contribute by virtue of the various ways in which the State can sell either royalty oil and gas or options for the industry

to purchase oil and gas sometime in the future.

Of the three alternatives I would rank highest the lease sale. Not in terms of a decision on the part of the State, because it is in the budgetary deficit to go out and sell oil and gas leases. If that were the case, suddenly the State would turn the oil and gas division loose and study the maps and State lands to scrounge up acreage which could be thrown upon a lease sale market. I don't mean this. But since there is identifiable acreage available to the State that already falls within the near term leasing intention of the State. - that this acreage in Beaufort is of considerable interest to the industry. And because this acreage is also on the North Slope where from the standpoint of both the industry in finding reserves and the standpoint of the State in assuring optimum utilization of the pipline, it will be a positive contribution to make certain that the reserves are available so that at least 2 million barrels a day are available for throughput to the pipeline. Footnotes to this general observation: First, there is reasonably within hand, the 1.2 million barrels of crude oil production which the operators of Alyeska pipeline expect to be the early throughput to the pipeline. The Prudhoe Bay Field as it is being utilized would probably support something like 1.5 to 1.6 million barrels. Additional oil would be necessary to rise to 2 million barrels a day. There is no question that in due course it will be there. I think it is to the interest both to the industry and the State that the pipeline is operated at optimum capacity as quickly as possible.

Rule of thumb and for your information, the difference between what the costs of transportation might be at 1.2 million barrels a day and what it might be at 2 million barrels a day, is probably in the order of magnitude, $1.25 a barrel. All things being equal, this is what happens to the costs of transportation. Of course from your standpoint, the costs of transportation to the pipeline is tremendously important to the value of the oil at the wellhead and therefore, the revenues of the State. So if there is a difference of $1.25 a barrel in the cost of transportation with the State having a one-fifth interest in that, it makes a tremendous difference to what the State's severance tax and royality revenue receipts will be in the early years of pipeline operation.

Secondly, the area is highly attractive. There are all kinds of complications and uncertainties and I will go into that later. There should be a reasonable flow of competitive bidding if this area if put up for lease. So for both of these reasons, from the standpoint of what the revenue prospects are and from the standpoint of what early development of the Beaufort Sea might mean to the economic utilization of the pipeline. I would rank this kind of a lease sale relatively high. Not because the State conjurs up and improvises a lease sale, but because it is already in the offing, and if it can be done within the time frame that matters to the State, I would rank it highest among the alternatives.

The third alternative would be the Sale in Advance of State and royalty gas, or the sale of options on State and royalty gas. I would

rank this lowest on the array of alternatives available to the State for many reasons. 1) The value you could get from selling royalty oil today or the option to buy it today, is a very uncertain thing. It is uncertain because the companies who might be inclined to bid for the purchase of royalty oil or to negotiate for the purchase of an option to buy it in the future, are themselves faced with tremendous uncertainties. They don't know what the price or the value of that oil is going to be in 1978, or 1980. They are not really in the position to say that well whatever negotiation or contract they enter into with the State will be at the then market price. But they are not in the position to say what that market price means to them in terms of competitive position. Market price is a dubious sort of thing. The recovery of the price that you pay for the oil on the North Slope depends on the price at which you can sell gasoline in Los Angeles. This is a tenuous uncertain relationship. For all of these reasons, I feel strongly that if the State enters into either bidding for the sale of royalty oil or even negotiating the option to buy and sell royalty oil in the future - all of these uncertainties work to the disadvantage of the State. No oil company is really in the position to commit themselves to the purchase of your oil or option without assessing a relatively high interest rate against the funds that they advance to you compared to the time that the oil is forthcoming. The interest rate that an oil company has to look at is considerably higher than what the cost of capital is to the State of Alaska.

Finally there is the presumed importance of the State's continuing

access to royalty oil - for possible self-consumption within the State, support of a Fairbanks refinery, possibility of refining capacity and most importantly, the fact that the movement of the oil through the pipeline and intrastate commerce is to underpin the regulatory authority of your Alaskan Pipeline Commission.

The middle alternative would be the tax on oil and gas-in-place or the reserve tax. It is our judgment that this tax as a tax measure is a bad tax, in the sense that in all the ways in which the State obtains revenue from the Industry beginning on D Day with the bonuses of the lease sale ending on the day they get the income tax from the profitability of the industry. And inbetween the severance tax, and royalties ad-volorem tax on real property, the tax on oil and gas-in-place is a bad tax for two reasons - because there is no criteria available to the Legislature or to the person being taxed as to what really the incidence of the taxation is. If you talk about an income tax you have the tax base which is identifiable - that is to say, the profit is being taxed. If you talk about the tax rate you have a comparison - what are other tax rates elsewhere. So the industry being taxed has a basis of judgment on what it is being taxed. If it is bonuses, this is what industry enters into of its own volition; the ad-volorem tax on oil and gas-in-place is an estimate; it is unknown. The whole history of oil industry tells us that these estimates vary over time. If you know what is in place, how much is recoverable? What is recoverable is not a technical estimate, but an economic estimate. Over what span of time

will it be produced - this depends on the circumstances of the reserve and good conservation practices.

To assess the value of oil and gas-in-place is a different kind of animal than trying to assess other real property in the State.

Secondly, insofar as it may involve the respective assessment of a company's oil or gas, or oil and gas-in-place, one is confronted with the problem of equitable assessment, so long as it's just Prudhoe. If this is the only thing it is focused upon, it becomes the taxation of one person. The assessment and the mil rate don't matter all that much except in terms of how much money the State gets and how much money the individual pays. But if the tax were to be applied elsewhere in the State it becomes a matter of equity; a matter of legal responsibility that the value of one person's oil and gas-in-place shall be assessed by the same criteria as the value of the other problem or assessment because of the value of oil and gas-in-place which is so different from every other aspect of ad-volorem taxation. From that standpoint it is a bad tax.

There are times when the State is driven to legislation which is not necessarily the best available. In effect, if it has to be done for reasons of shear budgetary necessity then one should make the best of a bad thing, if that is possible. One thing, the tax should not remain on your books as a continuing tax which is one of many affecting the oil and gas industry. It ought to self-destruct as quickly as possible.

Secondly, if the purpose is for the State to get the optimum revenue from the oil and gas industry that should be done through bonuses, royalties, severance tax, income tax, and so on. I'm not arguing that the State should not get more revenue from the industry. We do want to look at it from the application of your severance tax, both on the oil and gas side, and the effectiveness of your corporate income tax. If the purpose is over the time span of oil and gas industry operations to get more revenue, it should be done differently. But if the purpose is to stand a budgetary deficit, what you are really saying is: Let's try to move the revenues from tomorrow toay. Not to get more revenues, but just try to advance those revenues which could be done by the sale of revenue bonds. Two features of this tax would be tremendously important: 1) that this tax has a limited duration, and 2) if the purpose is not to add total revenues, then provide a carryforward credit so that the very few taxpayers who are identified and hit by that at least will know that what they pay today becomes a credit against their severance tax liability tomorrow. If they have to pay today what they don't have to pay tomorrow, there is a very considerable interest cost - and for every 100 million dollars at 8% interest, if it takes about 5 years before they have tax abatement, we are talking about almost 50% - quite a carrying cost to the companies. Nonetheless at least it represents a recognition by the Legislature that they are trying to make the best of a bad thing.

The question is, does it have to be done? Number one which was the lease sale is the questionable item in terms of how much revenue it

would raise. You have a timing problem in your Legislature. Let me go back now to the sale of the State's royalty oil and gas. The royalty oil has many reasons why I believe it would be a mistake for the State to enter into a fire sale. There is a slightly different perspective on the sale of the State's royalty gas. First of all, oil is sold in barrels per day per a contract period. Gas is normally sold in terms of reserves. That is to say, the State would sell or give an option to somebody to buy all or some fraction of its royalty gas. The big difference in my opinion is between circumstances of oil and gas sale and the oil sale I tried to make clear that there are so many uncertainties. In effect, the State would be faced with a relatively low value today, for what it will be selling tomorrow. This need not be the case in gas. For one thing, an oil company has to worry about what the value of the oil is going to be because he buys it and he has to refine it in the competitive sense - and he has to recover it in gasoline. But a gas transmission company knows out of the circumstances of our regulation in the United States, but mostly out of the circumstances of our very acute gas shortage, that a gas company can always get back at the other end of the transmission pipeline the price he pays for gas. So there is no uncertainty for a gas transmission company as to whether buying gas at the market price he really recovers that price. This is clear...so that the uncertainty doesn't work against the State.

The second thing is that a gas transmission company that makes advances

for the purchase of an option or advances against the contract sale of gas, is operating under regulation whereby all of these advances in a sense enter into the company's rate place; e.g., if the company invested 500 million dollars in pumps and pipeline, it would be entitled under FPC regulations not only to recover that, but to make a profit upon it. In a sense, the money that they advance can enter into their rate place. So they can not only recover the price of what they will ultimately pay for the gas, but they can recover the value of the money they invest. In other words, for them to give you an interest free loan in terms of the purchase of an option to buy gas later on, doesn't really cost them anything out of their pockets, so that the State isn't really discounting the future value of their gas in the same sense that they might be forced to discount the future value of their oil.

This is not to say that the State should be cavalier in the selling freely of gas reserves, but if faced with a budgetary crisis, you have on the one hand the option for a lease sale with an uncertain bonus income, but with good expectations that will be there, and on the other hand the possibility of selling an option or even a contract to a portion of the reserves of gas which represent your share of the royalty gas that this may make a sufficient contribution to the near term flow of State revenue. It is a different set of circumstances than if nothing else were there and all you are looking at is the budgetary deficit and how soon and to what extent do you have to go to an oil place tax which we feel is bad taxation that should only be entered into under the pressure of extreme circumstances.

Perhaps the circumstances may be less extreme if you follow the alternatives. Perhaps the timing may be less immediate if you follow those circumstances. I can't judge that. What I've tried to present to you is how we balance these alternatives.

QUESTIONS:

Senator Rodey: In balancing these alternatives, I assume you don't take into consideration other physcial factors that may be present in the State of Alaska? Mr. Lipton answered: Not at all. The last thing I would dare do is to start addressing things to things that you know so much better than I. This is a situation; if its the oil and gas industry you are looking to, of how do we assess the implications in relationship to the State and the industry.

Senator Rodey: For example - turning to the lease sale which you mentioned as the best choice insofar as raising revenues are concerned, I suspect it is desirable if we consider it in a physical vacuum. However if we consider it in the light of the State of Alaska to channel our oil development in the direction you think proper, then perhaps a lease sale loses some of its glamor. Mr. Lipton stated: I tried to say at the outset, that I would not urge upon the State an aggresive fire sale of State lands. That is the last thing I would ever suggest to the State. I think, for a combination of reasons, this particular lease sale, which has already in a sense been on the docket before the budgetary problem at least came to my attention. It is an area of intense interest. There are some technical problems to it that I

don't quite know the answers to, but if it were to be done, I see no objection to it being done with due regard for all of your environmentalists. I would rank it relatively high as a factor contributing to the potential revenues within the next year. Certainly I'm not suggesting that the State go scrounging around to find what kind of acreage to start lease sales with.

Senator Rodey: We are in the position of being forced to find enough acreage to meet our physical needs. Mr. Lipton stated: Again, that is not what I'm saying. that in a lease sale, even if it is in the Beaufort area, maybe you put together more acreage,..What I'm saying, is that you go ahead with the lease sale, pursuant to all the other interests of the State and with a really unknown contribution. I do think from the standpoint of how the administration and the Legislature looks upon the budgetary position, that what can be done through this lease sale if it is consumated, is a top factor in the balance prospect. I doubt that it will balance the whole thing.

Senator Rodey: We don't really know what the contribution of a lease sale will be. As a consequence our government would be required to put a rather large portion of land to assure that the physical gap be bridged. Mr. Lipton answered: I see what your point is. I would not recommend to the State that it design this lease sale in any other way than in the absence of any budgetary fund. I don't think you ought to gerry a lease sale to fit a budget, because a lease sale just like the sale of royalty oil and gas in a sense is selling of the heritage of the State. That would be a mistake..

Senator Butrovich: Do offshore sales checkerboard as they do on land? Mr. Lipton answered: Not really. It depends on what you mean by checkerboarding. This connotates an idea that you draw a geographic grid. I don't think you can do that anywhere in Alaska. I believe that your administration would carefully consider how the geology matches the geography. It is not necessary to put up all of the geological structure for the first time around. It is probably impossible to because some of the geological structures may actually be federal acreage. But you have to put up enough so that the industry thinks the candle is worth the burning. If you want to hold some for a future lease sale, it is perfectly acceptable.

Senator Butrovich: Really in effect, haven't we checkerboarded on our sale up North? Mr. Lipton answered: Partly and partly not; To the extent that you did in 1969 worked very much to your advantage because people were so desparate that they bought alot of salt water instead of oil. This is outside of the explored area. It might make alot of sense for the State to put up a substantial amount of acreage because the companies know that the cost of exploration and development are very high. It is not necessary to stretch the amount of acreage to meet revenue purposes or that you deny yourself the right to withhold portions of what looks to be the geologic structure for potential future bidding. In other words, I don't think you ought to enter into this lease sale just as a revenue raising measure....I think you

ought to follow what is a reasonable course of leasing for the State, no more, no less.

Senator Butrovich: If we felt that way, we probably wouldn't have a sale because we are out of money. Mr. Lipton answered: I think there are other reasons for having the sale. This is an area which the State in any event would have been considering around that time for prospective leasing. I think the industry always has an interest in leasing in an area where they think they will find alot of oil. The State has an interest in leasing in the area of the North Slope and just offshore to make sure that there is a substantial volume of reserve that can assure the optimum utilization of the pipeline. I don't think the State ought to go into a fire sale, but I think this is the area that in any case would have come up for relatively short term consideration by any state government whatever the budgetary condition is.

Senator Butrovich: Pursuing that, does it make any difference in a sale if for example, some of the companies that are on the Slope now who belong to consortium that is building the pipeline are in deep financial problems? Mr. Lipton answered: There is no question they are in there heavy. Senator Butrovich asked: Aren't we going to eliminate some of them from maximum bidding offshore in the same general area; they are not anywhere near their market place? Mr. Lipton answered: There are companies on the North Slope that have such

a large position and with the financial circumstances of building the pipeline, and everything else upon them, this is not a matter of urgency for them. In a sense, this was reflected in the 1969 lease sale. The interesting thing is that there are a lot of companies who do not have a position on the North Slope who in the context of the U.S. oil balance, may find themselves short of crude production and in a sense be forced to buy crude oil from their own competitors in the market place. So that probably the most competitive bidding that you had in the 1969 lease sale was not from those who were there, although several of them were quite active. Now I don't think any company is going to feel that just because they have the share they do of Prudhoe Bay is going to turn their back on an attractive lease sale. The point is how attractive is the acreage? I would think you would have a fair number of companies who were most active in the 1969 sale who were relatively unsucessful and will be looking at a new geological prospect. I'm not here to guarantee you how successful a lease sale will be. I think you are right in that the companies who have a strong producing position and have all kinds of capital commitments and association with that will bear upon how active they are and what their position will be. I don't think however, that this quite adds up to the same thing of saying how can you really expect competitive bidding on the North Slope.

Senator Poland asked: In relation to selling our royalty gas, you said that it was preferable to selling the oil. Mr. Lipton stated: I'm really not urging the sale of oil and gas at all. It is that

I'm so negative on the sale of royalty oil, that I'm trying to draw the distinction into negativism on the sale of the oil and the fact that the sale of gas doesn't have quite the negative factors. It is something that can be considered whereas I as a visitor to Alaska, but a lover of Alaska would hate to have to consider the sale of royalty oil.

Senator Orsini: Could you pursue the sale of the option gas further? Do we still run into problems there of loss of pipeline control and other problems with selling of royalties? Mr. Lipton answered: Not in the same way. In the case of royalty oil, we have always felt that the State's control over that oil; the fact that it could take it in-kind; that it could move it through the pipeline which in itself becomes a shipper; In a sense this validates the jurisdiction of the Alaska pipeline. There are other reasons. You certainly want to be in a position to make available, if necessary, a state royalty oil for development of refined capacity in the Fairbanks area. You wouldn't want all this to wait another three to four years, because your royalty oil hasn't been sold off, etc. In the case of gas, there is an implication that if the State sells royalty gas to one pipeline buyer or another, that particular transaction is with the Federal Power Commission. With a dispute before the Federal Power Commission at the present time as to whether the pipeline should come through Alaska and the gas exported in liquified form to Los Angeles, or whether the pipeline should go go through Northern Alaska

and down through the MacKenzie Delta to California...that in a sense, any option or contract to sell becomes a public document and this could have a certain bearing upon the way in which the companies in their own presentations to the Federal Power Commission will be on the case. It may not be decisive, but the State ought to be aware of the fact that if you make this kind of sale or sale in options, that the buyer will be in a position to use it for whatever way he chooses in the argumentation before the Federal Power Commission. I think the leverage in the State of Alaska over the pipeline route is in any case, not all that great. This is a decision that if made on purely technical terms will be made by the Federal Power Commission. If there are political overtones to it, it will be made by the Federal government in terms of how they see the gas pipeline route fitting into the overall context of our energy balance, our relations with Canada, etc. I would guess that the probabilities are tilting against the Alaskan pipeline and for the Canadian route.

Senator Rader asked: Pursuing the same situation, in effect does the Federal Power Commission set the wellhead price on gas by approval of these contracts? Mr. Lipton answered: No, it doesn't. The contracts have no legal force until the Federal Power Commission in a sense authorizes the certificate of necessity - the construction of a pipeline to move that gas. For example, if a company has an option to buy EXXON or SOHIO Gas on the North Slope - being a member of the Alaskan and Canadian Arctic Group in the expectation the pipeline is going to be built. If the FPC opts for an Alaskan pipeline, their

option to buy gas is still there, but they in a sense, have to sell the gas to El Paso as a contract carrier to move the gas. As far as the pricing of the gas on the North Slope is concerned, this is completely up in the air. The pricing practice of the FPC in the past obviously is irrelevant because there is no historical data on what it costs to find and develop gas on the North Slope. the national pricing system today just can't be applied on the North Slope. Nobody knows what the pricing practice is. Nobody knows if the President's recommendation for the decontrol of gas will be passed by Congress. So it is completely up in the air. What is most relevant to the standpoint of Alaska, is that to a gas transmission company that buys gas and then resells it, they are not the distributors of gas in the city, they are transporters of gas. The transportation is not on the contract. They transport by buying and selling. Whatever happens to the pricing of gas under the FPC policy or by Congressional legislation, has nothing to do with their regulation. They are being regulated as transporting - not as producers of gas. The regulation of those pipelines provide in a sense, that 1) they can recover the purchase price of the gas, and 2) they can make a profit on their operation by a controlled rate of return on their investment. This is what is to the gas transmission companies the freedom to go out and negotiate in advance for future supplies of gas to keep their pipelines full. So here in Alaska they are buying options on gas or reserves in gas. These same transmission companies in the Arctic Islands of Canada have committed

millions of dollars not for the purchase of the gas....they have advanced it for exploration so that if the exploration is successful they will have the option to buy. In their own accounts, these capital advances to obtain supplies of gas to operate their pipelines become part of the capital structure of the country. They are entitled then in the rate they charge for transportation of any gas to recover all of these costs and earn a rate of return on them. They can be alot more forward looking and aggressive either in buying gas or in prefunding exploration.

Senator Rader asked: If they can include whatever the price of the gas is in their sale price, who controls their sale price? Mr. Lipton answered: It is controlled because it allows them to recover the purchase price and gives them a rate of return on their investment in the pipeline. The purchase price up until now has been controlled not by regulations of gas producers. This is a big distinction between the relationship the State would be entering when it is negotiating on any basis.

Senator Rader asked: What authority does the Federal Government have in forcing gas producers to allocate existing supplies between purchasers? Mr. Lipton answered: What they are doing is forcing pipelines to allocate among their buyers.

Senator Rader asked: What do pipelines do when they don't buy so

many million cubic feet of flowing gas, they buy from the producer an entitlement to the reserves. Then what they are entitled to is all the production of their reserves. At the same time, the pipelines enter into a contract with a gas distribution company in a state or a community to sell the gas they have bought as it is produced and transported. What has happened is that we have found that out of the contract reserves the pipelines have bought, the flow of gas is not what we have anticipated. So the pipelines are unable to deliver the amount of gas they have contracted to deliver. The FPC is forcing them to pro-ration the supplies of gas available to them among their own customers. This is where pro-rationing takes place. We have not yet had to enforce allocation of wellhead gas among pipelines. It could happen.

Senator Rader asked: As I understand it, the State of Alaska has no hold at all on gas transmission lines by the way of permits, cross-state lands, right of way control? Mr. Lipton answered: I think you are right. But theoretically, the State of Alaska has the right to grant or withhold right of way. I very much doubt that in a real sense, if there is a decision by the Federal Power Commission supported by the Federal government, that a gas pipeline is going to go one particular route through Alaska, or another way. Aside from the argumentation you may make over the direction of the route, you can block that kind of a pipeline by having your BLM say we will give you a right of way across that. I would hate to

that kind of a confrontation. The gas transmission pipeline probably will be decided outside of the State of Alaska. That is not to say of course, that you won't have an input. You have alot of interest in this and your interest ought to lay along with all the other arguments with the Federal Power Commission.

Senator Rader asked: On a slightly different subject: The problem here as near as I can tell, we are taking a passive position on this question of routing the gas pipeline. We did pass a resolution last year, which says if this is the best, we are for it. We did not, as I recall make the critical judgement of what was the best. Are we doomed to drift on this matter or should we, as a matter of policy, take an active role? If so, what should that role be? And how should we pursue it? Mr. Lipton answered: I recall at the last session of the Legislature when the joint resolution was before you, and was being very strongly urged upon by El Paso....I can only repeat what I said then. My feeling was that there are certain very visible interests in the State of Alaska and an all Alaskan gas pipeline route. The clear ones have to do with the value of investment and the continuity of employment. The ecological interests what you might have in using an established corridor instead of cutting through another part of the State...the potential value of moving gas through the communities that it might serve. I would still hold to the position that I took at that time. It is difficult to determine this early in the game what the final interest of Alaska really is. But there are certain obvious interests. I feel that if the Legislature adopts a resolution or the State of Alaska intervenes,

as they are about to do in the hearing, that you ought to confine your representations to what I call self-evident truths. I don't think the Legislature ought to say that the movement of Alaskan gas into the west coast is best for the lower 48 states. Really you know very little about that. I don't think the State of Alaska should say that it is a danger to the national security for oil and gas to go through Canada. You ought to confine yourself to what are the self-evident truths - that there would be a distinct value to the State for an Alaskan gas pipeline because of the ability to provide gas along the route, because of the continuity of employment, investment, development and the possibility that there might be industries available on the basis of petrochemical feedstocks. All of these things which are relevant to your interests, I think you should forceably state. That doesn't mean that in my judgment that this is really the best thing for Alaska. I would like to suspend judgment until..... ....including the alternative of the cost of tranportation. But certainly the State of Alaska ought to make these representations because you are a party of interest to the hearings that start I believe in April.

Senator Rader asked: The problem is there may be a tradeoff in costs of transportation. And to make the critical judgment as to do we favor the trans-Alaska route or do we not, you'd have to say at what price, or at what costs? Your recommendation is then that we be passive? Mr. Lipton answered: No, I think you can be very active on what the State interest is. Nobody else is going to say it as

as you can say it for the Federal Power people. What I am saying, is that the numbers you have seen so far about the relative costs of transportation from Prudhoe Bay to Chicago or to Los Angeles via the two alternative routes.....I would say they are about the same status as the early estimates you heard on the construction of the Alyeska Pipeline. If the two groups are within five cents of each other, do you really think it can be estimated that closely? Orders of magnitude or differences between them; even so critical a figure as what can be a technical answer. How much gas is consumed in the process of transportation is a question that is under dispute between the two parties. We've looked at the submissions so far for the FPC and really they don't go much further than what you've already seen; what has been put out in the press statements. This is not to say that you're passive. You have an active interest because of the State and this is what you ought to be representing down in Washington. But it is going to be people that are much better advised in this than you or me; who will be interrogating before the Federal Power Commission. This is what I was most concerned about when the first draft of the joint resolution came out. This was that the credibility of State of Alaska's representation gets weakened when the State talks about things it doesn't know anything about. When you talk about the revelance of all of these things to the interest of the State, you talk about authority, but when you throw in there the dictum about the security of gas moving through Canada, this is a complicated problem that alot of people direct their attention to...when you say there might be a better distribution of gas in the lower 48 states because of the placment for the El Paso system. It may be so, but your saying so is

an ill-informed judgment which distracts from the forcefulness of your own representations. Nobody can talk with such authority about the interests of the State of Alaska. But that is why I said that your resolution should be confined to what I call the self-evident truths. They are self-evident to you and make them self-evident to someone else.

Senator Rader asked: But we still never come to grasp with the problem in the Legislature of Alaska as to what tradeoff we are willing to make, in terms of costs, environment, industrialization. Mr. Lipton replied: There are several reasons why it is difficult to evaluate the tradeoff. First of all, you don't know how much difference in the costs of transportation there is going to be. So until you have all the facts at hand, you don't know what you are giving for what you are getting. Secondly, the tremendous appeal of the (blurred), which means minimum environmental damage. But suppose the 12 months of drilling on Pet. 4 indicates a very sizeable oil potential, not developed yet, but just there. Immediately the question comes up of how that oil is going to move out. Congress will have to make a decision on how it is to be developed and alot of other questions. The indication is going to be very clear that the next major movement of substantial volumes of oil out of the North Slope will tend to move eastward toward Canada into the U.S. midwest. If that is the case then in a sense, there are going to be two corridors, and the gas pipeline will not plow a new route. It will either move through a southern corridor or an eastward corridor. So maybe the ecological things have a

different sort of balast. I'm not arguing with the case. I'm stating that these are the difficulties for the State of Alaska in knowing what the tradeoffs are. I would certainly assume that if the alternatives - simply an oil route southward and a gas line eastward - even with due consideration for the fact that pipelines have to cross borders - I know that Alaskan streams move south to north and when you move south to north the number of crossings you will have when you start moving eastward will be tremendous. There is a wildlife preservation, etc. If there are going to be two corridors, it is difficult for the Senate to have made a judgment of tradeoffs when you really don't know what you are trading off.

Senator Rader asked: Should we be addressing through our own expertise to find out what we are trading off? If it is a very important tradeoff its going to be made without the benefit of our knowledge unless we develope some way to participate in that. I'm reluctant to see the State appear to state the self evident truths when we are avoiding the real judgmental problem and that is the tradeoff in values. Mr. Lipton replied: It is not the Legislature actually that intervenes. The intervention is through the administration. The administration will be appearing at the hearings, not only making its own representations to which the Legislature can obviously have an input, but also is bringing back a feeling for the written evidence which is available to you. If one of the committees has a committee staff to go through the written evidence which piles up so high, I think you should.

Somebody in Alaska obviously has to digest this evidence. A tremendously important part is the verbal hearings themselves. I don't see how the Legislature can be represented but the administration will be. Maybe there needs to be some kind of liaison so that a particular committee of the Legislature is not sitting back and reading about it in the newspaper to find out what is going on.

Senator Rader: Even if we could not technically intervene as a party - I'm talking about the Legislature participating and evaluating the tradeoffs as to what we think our administration should do. Again, that requires that we get some information before the hearing instead of after the hearing. If we try to influence our judgment on them and ask them to follow it? Mr. Lipton replied: All the information that you can possibly get before the hearings is what is available to you now. Unfortunately it is scant. If you look at the filings, they are so incomplete that you don't have the answer to most problems.

Senator Rader asked: If the decision is going to be made or is in the process of being made, shouldn't we be in there with the scant information and saying on the basis of the information presented up to this time, this is our judgment and this is our tradeoff? Mr. Lipton replied: I think this is a judgment you can make and can even make it forceably on the condition that unless there are differences in the cost of transportation which are so at variance from what we have said, or if there are ecological alternatives which are so substantially different, then these interests of the State of Alaska are paramount.

Let me be frank. I'm not at all convinced that from the overall national interests that an Alaskan gas route is desirable. What you are interested in from me is how I sense the interests of the State of Alaska. I think some of your concerns and the attractions of the Alaskan route - for example, the availability of gas along the route of the pipeline, are very attractive, but I don't know how realistic they really are. To take gas off the pipeline is not the problem, but rather how do you put that gas to use in the way that brings low cost energy to the communities and villages. You don't have a gas distribution system. Even in Fairbanks there is nothing and if you talk about the villages, what do you do with the gas; how do you reach them? Most of the villages will utilize either oil or liquids like propane, not natural gas in its own form. Is Fairbanks better off with a refinery and relatively low cost crude oil and the use of petroleum as a source of energy than trying to develop a gas distribution system? I don't want to be doctronaire about that. There are industries for example that use gas as fuel very economically without having a gas distribution system. I think one has to be kind of realistic about if the pipeline comes through what really would we do with it. The biggest possible attraction for the gas pipeline is the greater development. Even that though, I would temper. I don't think that you have, and rather doubt that you want, a Houston petrochemical complex in Alaska. But still there are certain benefits. One has to be realistic. The clearest value is that since you have the "benefit" of an oil pipeline, you clearly have the disadvantages that go along with the construction of the pipeline. At least if there

is a gas pipeline that goes along the stream - the environmental community costs of damages, etc, that go over a longer period of time; it isn't so horrendous as if you have a boom and bust. In a real sense, the biggest attraction of a gas pipeline is that you get the benefits of investment, benefits of employment, and the horrors of everything else that goes with it. The horrors of it are still there, but the costs of bearing them is spread over a longer period of time.

Senator Rader asked: Should we not be undertaking to evaluate the very things you are talking about - the advantages and disadvantages so that we can make a judgment as to whether or not we think or how badly we think the Alaska route is or is not favorable from the Alaskan's point of view, not the national point of view. Mr. Lipton answered: If you are not, the reason you may not be is not because there is information available that is not available to you. The kind of information that is available in the world at large, which is really the filings of the companies before the Federal Power Commission and the National Energy Board of Canada. There was a lot of information filed before the Canadian Board. That ties in with what Alaska Gas Arctic was telling you down here. They are all part of the public record. So whatever is available is available to you to make your judgments. Nothing I know of is being withheld. To a very considerable extent, the representations have been made in eulogistic form, by El Paso and Alaska Gas and Oil.

Senator Butrovich stated: I am very intrigued by this dissertation as it appears to me you are saying its going to be a political decision and we aren't going to have much to say about it. Mr. Lipton replied: Under any circumstances, I would suspect that is true. I would think at this particular time in history it is probably more true than general.

Senator Butrovich asked: That doesn't entrance me at all because when I look at that map, there is alot of Northern Canada that doesn't have many people in it. It is about as sparsely settled as alot of Alaska is. It would appear to me that 20 to 30 years from now we may be in the same position that alot of other states are, where all of our stuff has been piped out. We will have a much larger population in spite of our climate and will not have much to offer them in the way of resources. I'm not in favor of giving up an Alaskan line. It is frustrating to have your Alaska citizens paying 50¢ a gallon for heating oil. Alot of it is being shipped up from the Southern 48, just like our salmon; we ship it all out and ship it back and guess who pays the freight - the consumer. Mr. Lipton replied: If I may address myself to your own example for a moment...with the flow of oil out of the North Slope, you would expect that there will be a refinery in the Fairbanks area. I suggest to you that you concern yourself that when the refinery is there that the prices the people in Fairbanks pay for heating oil are a reflection of the costs of oil going into the refinery and not that you are still paying the same prices that you did

before the refinery was built. There is nothing magic in the availability of oil, or in the construction of a refinery, which necessarily bears upon the prices that citizens pay for petroleum.

Senator Butrovich stated: You have really convinced me that my efforts in the future are going to be concerned more with severance taxes than any other segment of the oil and gas industry. We are going to have to get something out of this someplace along the line. Mr. Lipton replied: I hope that when you concentrate on that, that you don't ignore the corporate income tax. Senator Butrovich stated: we will look into that too.

Senator Butrovich continued: I really feel dismayed when I think that a bunch of U.S. Senators who could care less about Alaska are going to settle our problems for us. That is the brutal truth of the matter and that is what will happen. I have a selfish interest in my own state and could care less about the Canadians. The first thing they did was to raise the price of oil when we got into a pinch.

Senator Huber asked: I would like to go back to the oil and gas tax in-place for a moment. Would a resource tax be deductible from federal income taxes or perhaps would be plowed back into the pipeline tarrif? Mr. Lipton answered: The tax on oil and gas in-place is a tax that the company who pays it will certainly expense it for federal tax accounting

purposes, to the extent that if it is exposed to the Alaskan income tax, they will expense it against that too: Senator Huber said: That certainly has a very identifiable desirability then rather than not. Mr. Lipton replied: I think it is too remote to bear upon whether it is a desirable tax or not. I would think the Legislature of Alaska should think in terms of whether it is a good tax or bad tax in terms of revenue and what we can do about it. I don't think if you carry it forward to the implication of the same company's income tax exposure, you would get very far in terms of should we do it, or should we not.

Senator Huber stated: I know they don't pay much income tax now. Could you expand on the $1.25 a barrel costs in moving 1.6 to 2.0 million barrels of oil a day? Mr. Lipton replied: We have, just as a matter of prudence, followed various estimates in Alyeska Pipeline construction costs, (these are a matter of public record), we tried to keep tabs of what this would imply for a potential tariff on Alyeska because of the implications for Alaska -- not on what the tarrif is going to be, because this is something which the companies must first determine and something which your own pipeline commission in the end will review. But if you took the tariff which is permitted under the ICC rate making rules on the basis of projected 6 billion construction costs and alot of assumptions about how allowances are made for interests, etc., you come up with what we call a base rate tarriff. We have caluclated always to the effect of other assumptions upon the tarriff. The figure I cited to you was that if you move from 1.2 million barrels a day to 1.6 million barrels a day - everything else being equal - construction costs, rates of interest being the

same, debt capital being the same, the income tax allowance in the rate structure by the ICC, the difference between 1.2 and 1.6 would be 75¢ per barrel. If you go to 2 million barrels a day compared to 1.2. million barrels a day, allowing for additional costs in the pipeline for additional pumping stations,etc., the difference i the in the permitted tariff by the ICC would be $1.20 a barrel. There is no other variable in the whole pipeline that has an effect upon the tariff as the rate of throughput. As you increase the throughput in the pipeline, your additional construction costs are very, very low. This is of tremendous interest to the State. For example, if you increase the capital costs, this is of interest to you because you have the indication of delays of the pipeline, and what every six month delay in the pipeline might do. If you increase the capital cost of the pipeline by 500 million dollars that would add for 1.2 million barrels throughput, 29¢ to the transportation costs. The rate of return is also tremendously important.

Senator Poland asked: Would you clarify for us something we discussed the other day - that excess capacity does not necessarily mean excess supply? In world oil? Mr. Lipton replied: The phrase that you most often read in the paper is "over-production of oil". You can't really have over-production of oil in the United States or anywhere else for very long. It means the wells are pumping more oil than people are using and burning up. You can overproduce faster than you burn up the oil, for as long as you have tankers in the ocean carrying the oil, or where you have storage capacity for the oil. After that you don't

over-produce anymore. The real concept of over-production is not that you produce more than you consume, but that you have a capacity of wells to produce very much above the rate at which consumers want to draw upon the productive capacity of those wells. This is what we really mean by overproductive capacity. All through the Middle East, there were wells to produce lots of oil. The wells were in countries controlled by foreign governments, but were operated under concessions by private companies. Both the companies and the countries have a very great interest, since the wells and capacity were there. Each one could sell it in competition with some one else. It wasn't that much more oil was produced, but in the competition to get the markets, the price kept coming down. What has changed in the interim, is that the wells are there; the world is consuming more oil; but we have developed our productive beyond that also. We have today, 7 to 8 million barrels a day of surplus capacity. The difference is that this is in the hands of governments that a few years ago had to produce more in order to get revenues. But now when they get $10 for those revenues and they don't quite know what to do with their surplus earnings, the whole world criticizes them for having such surplus earnings; that they are destroying the economies of the world; that they should support the economies of Pakistan, India, or Italy. They don't have to compete among themselves for sales in a market where the productive capacity is greater than the demand for oil The companies no longer have these decisions, the governments have them. So in

effect, the governments are prepared to set a price for their oil. If you don't buy it from us, we will simply produce less. If we produce less, we won't suffer at the levels of production. It is difficult in the changing oil environment where the political balance of power has shifted so much. The governments don't have to worry if the oil is in the ground five to ten years from now. By then the price of oil will be higher. They have no financial pressure to produce to capacity. There is no political incentive for them.

Senator Poland asked: What do you think the effect of the OCS might be upon the lease sale and whatever is done in Pet. 4. Mr. Lipton replied: It is hard for me to visualize Federal leasing of the OCS or the ultimate development of Pet. 4 as really being terribly disadvantageous to Alaska. This kind of implies that here is an Alaskan government and a federal government, and they are competing one with another in a narrow confined area. I think the urgency of oil development in the United States is so tremendous not only from the security standpoint, but also from the standpoint of having what tomorrow will be low cost energy compared to what is available from the other alternatives. It may look high cost now, but we are reaching the end of a petroleum age and there is alot of oil that remains to be found. What may look to be high cost today may not be high cost tomorrow. If the Federal Government in a sense is a purveyor of leases and if the State of Alaska is also a purveyor of leases, I don't think they are competing directly with each other, because both of them are in this

portion of North America which we call Alaska. For the companies bidding on leases, they are always looking at the amount of capital available to them, and the potential profitability on the investment of capital. The lease sale by the State of Alaska in Beaufort competes as much with an exploration in Southeast Asia or in Canada as it does with a federal lease sale in the OCS of the Gulf of Alaska. It is a matter of arraigning the demands on their capital vs. their profit expectations. In general, the resource potential is really good. Whatever is done around you will help you, and will increase the potential interest on any acreage you have nearby. Just as the Prudhoe Bay Field made it possible for people to operate and explore on the North Slope, where as before it was fantastically expensive because you can't explore on the OCS without a base of operations, which will have to be in Alaska. This is terrifying from an environmentalist's point of view. There are pluses and minuses for that. But when all of it is done, anything that is on State lands will cost less than otherwise. You don't have to visualize that federal leasing is in competition with State leasing. I think it will work to your advantage. The development drilling by the Navy in Pet. 4 will be different than it was in WW II, as they will be forced to exercise at least the same constraints as the State of Alaska forced upon private companies on the North Slope. There won't be quite as much damage to the environment by the Navy as there was the first time they walked into it. I doubt if drilling in Pet. 4 would in any way adversely affect the potential lease

sale of State lands somewhere between Prudhoe and Pet. 4, If anything it may excite more enthusiasm than otherwise.

Senator Rader asked: As I understand it, the primary of the gas reserves favor the Canadian route? Mr. Lipton answered: I don't blame you for assuming it, but I don't think anything they have done so far indicates that they positively favor it. I would guess that the most recent actions by them indicate that they are indifferent to it. They are all members of the original Canadian gas line. They were all original members of the first oil pipeline study group. It was out of the oil pipeline study group that the Canadian Gas Arctic went. They were all active in it for alot of different reasons. Most recently, they have sold off their gas reserves and let the buyer of the gas reserve worry about what the route is going to be. At least two of them have withdrawn from the Canadian Gas Arctic route. I'm not interpreting what their interests are, but to read the entrails of the chicken, so to speak, what is visible is that they are bowing out and have less of a direct interest than they had before.

Senator Rader asked: If the owners of the reserves intend to perform on the contracts that they have made, they have to favor that route which will permit those purchasers to buy won't they? Mr. Lipton answered: My recollection is that El Paso has already stipulated that they are prepared to operate the Alaskan Gas Pipeline

as a pipeline carrier. They are quite prepared to operate the pipeline and carry the gas. If they are also correct in that they can arrange for the reverse flow of lines, maybe the same buyers of gas can operate the other way. Whether they are correct or not, it isn't technically foreclosed that the same buyers of North Slope gas could not operate through El Paso. If they could not operate through El Paso, I think the El Paso case would (blurred) because of the problems of gas distribution in the lower 48. If it can be done by somebody else through El Paso, the El Paso's case before the FPC is weakened. I have probably said more than I should because I'm talking from memory without having recently looked at it, but my inclination is that the gas sale contracts do not entirely depend upon the Canadian route.

Senator Rader: Then are we really saying that the owners of the reserves are really not parties to the case as to which line they think is best, and maximum their profits from their reserves? Mr. Lipton answered: I never like to appear as a spokesman for a private oil or gas company. But if you are asking me how I interpret it, I would say that whatever interest they may have had at one time in the route, that at the point when they start selling off their reserves, they have a less interest than they had before. Now, they haven't sold off all of their reserves, but indications are that they have less interest than before.

Senator Rader asked: Why don't they have a tremendous interest because it is a flexible price and therefore the cheaper the line, the more valuable the gas at the wellhead, and they are the producers. It looks to me like they have the same reason we have which is an interest in the least expensive line. Mr. Lipton answered: They may be driven by the budgetary deficit like the State of Alaska. The advance payments are tremendously important to them.

Senator Rader: I thought that perhaps their own self interests were strong enough and dictated a particular type of line which I was interpreting to be a Canadian line.

Senator Rader: You say that has been diminished in that part of it has been sold. Mr. Lipton answered: That is so. Also it is awfully difficult at this state in our knowledge as to respective transportation costs to come up with the conclusion that one routing or the other will lead to a higher wellhead price. In point, the fact that differences in the transportation costs are most apt to be irrelevant to wellhead value unless they are really very substantial....I think the price at destination will be in terms of transportation differential. But if necessary there may be even differences in the wellhead value and differences at the destination.

Senator Rader asked: What would the national interest be other than

the cost of transportation? The market? Mr. Lipton answered: Yes, the market would be much more important than transportation costs unless the differences are really significant.

Senator Rader asked: How significant would national interest be opposed to our more local interest? Is there any way you could evaluate that? Mr. Lipton answered: I don't think the interests of the State of Alaska are going to be ignored. It depends on how strnng your interests are against the differences. Unless the differences between the two routes are overwhelming the State of Alaska, the interest to the State of Alaska is going to begin late.

Senator Rader asked: Where do you think the real market for the gas is at this time? Midwest? East? Mr. Lipton answered: Much less the west coast, but this has been knowledge all along, because you have displacement and so on. But probably the midwest and the east.

Senator Poland asked: You mentioned that the oil companies might be in a crunch like we were. One of the witnesses at the OCS Hearings in Anchorage brought forth the idea that the oil industry might be placed in a terrific bind were all these leases in the OCS to be offered as far as capital is concerned. What are your feelings on that? Mr. Lipton stated: There is no question but what there is a tightness of available capital over in investment in the oil industry. And borrowing is very, very expensive. But need of course means it is attractive enough to make the investment.

So one is always looking at prospectives. The Federal goverment is always very careful not to have simultaneous leasing in several areas. Yes, there is a problem, but I don't think one should put an emphasis on the problem that you get in competition. First of all, it doesn't work that way. We know there are going to be two lease sales. Budgets are made for time periods. There is flexibility and they are going to respond where they think is best. We are dealing with a free enterprise economy whose motivation is profit. Yes, there is competition, you can't ignore it, but don't get into the rat race.

Senator Butrovich asked: The other day when we started out, you said that the production price for a barrel of oil was arbitrary. Mr. Lipton answered: The selling price ....the one thing I remember saying was that if you look at the price of foreign oil, that this price has nothing to do with supply and demand or the cost of production. It is a political price, arbitrarily imposed. It costs about 25¢ to produce and it sells for $10.50.

Senator Butrovich: We are bringing in 6.5 million barrels of oil and getting a heavy outflow of U.S. dollars, which I am sure alarms some people. I read an article in which this economist took the opposite view. He said they have all this money now, and they will need all the things that we manufacture. He thinks the outflow will turn around and start coming back. Do you think there is any validity to that theory? Mr. Lipton answered: Yes, in two respects. First, with this money they are certainly buying more than they did before.

They have internal development programs which they couldn't finance (they, of course, means a large number of countries and they differ among themselves)..They can't get the springboard for internal development without a tremendous amount of imported technology and services. Secondly, machinery and equipment of all kinds are needed for this. Yes, they do buy it and the United States is one of the prime beneficiaries of that. There is another kind of internal development and that is what they spend on armories and we are the prime beneficiaries of that too. But so far at least there has been quite an imbalance. That is to say, what comes back to us has been less than what goes out. In terms of what they have surplus to what they can concievably spend, they must invest in one way or another. Invest where? They invest in those portions of the industrial world where they have a certain degree of confidence in it and a great deal of that has come back to the United States. So while our balance of trade has deteriorated, it is not clear that our balance of payments has been that bad. Also, if we can live through this period, all of these countries will in the future years, develop a greater absorptive capacity. That is to say they can absorb more goods from other countries because industry will be building and a second generation industry will be building on top of the first industry. In due course, all these things might come reasonably into balance. In all these respects the United States really is one of the two or three prime beneficiaries in the world.

It really costs us less compared to other countries in the cost of our oil imports porportionately speaking. We get more of the reverse flow than many other countries. The hemmorage that Senator Gravel talked about is very real. But it is a kind of modestly contained hemmorage compared to the problems of France, Italy, Germany, or Pakistan.

Senator Poland asked: With regards to President Ford's energy plan to increase the price of gas, how will this be distributed to the population. Mr. Lipton replied: Everybody will pay more for oil and gas and Alaska will pay a little bit more than everybody else will. You will pay as much more directly, but if you look at it indirectly, besides what you pay for a gallon of gasoline or a gallon of heating oil, you also pay for the price of oil in every commodity that you buy, including these plastic bags which are so essential to the Northern tier of Alaska, because you can't live all winter without having a place to dispose. Everything made of chemical products will go up. One of the indirect prices you pay for oil is in transportation. Oil is a big compound of the transportation costs. Everything you buy is related to the transportation factor. How much effect it will be on cutting down oil consumption nationwide however, is a matter of dispute among government people, oil industry people, Congress, and everyone else. If it is the purpose of the United States government to reduce oil consumption by a million barrels a day (which is one out of about 16 to 17 million barrels a day), where would you conserve 1/5 or 1/6 of your oil consumption

in Alaska? I don't think you could. I don't think you have such wasteful consumption of energy that you can conserve very much. So you bear the higher price and all of the higher costs and you will contribute very little to the nation's objective of conserving energy. The oil industry which is being taxed will at the end of the first year, have about two to three billion dollars cash flow less than they had before. I don't think this is particularly to your interests since you're interested in the cash flow out of the industry. I'm being critical, but I'm trying to be critical in ways that have to do with the Alaskan interest. The purpose of the program is very clear. The President wants a quick reduction in consumption through higher prices that will be reflected in a reduction of oil imports. If we import a million barrels of oil a day less in the course of 1975, we are less vunerable to an embargo. But more importantly we have said to the rest of the oil consuming world that we are prepared to be aggressive and decisive and this is what Dr. Kissinger was asking from them that strengthens his hand in the alliance with Western Europe and Japan to prove that we are being decisive. It provides a flow of 30 billion dollars to the treasury out of his energy program, which I think the Treasury Department wants very much to offset a terrifying prospective deficit from the rest of the anti-recession tax program that the administration has proposed. The administration believes this will be even worse by the Congress gets through with it, because Congress will cut the taxes more than the President has recommended and they won't cut back spending anything like the President has recommended. What I am trying to do is to give you a perspective on what the intent of the

program is and what the effect will be. But that is for the mean higher energy costs and the impact of the cost of living is very clear, if the Treasury Department itself estimates that the cost of living will go up by 2%, two percentage points because of the energy program. There are other outside estimates that suggest twice as much.

Senator Poland asked: When we were discussing this the other day, you mentioned that the larger user will bear less. Mr. Lipton replied: That isn't clear. The way in which the government proposes to regulate the price of petroleum products compared to the price of crude oil is designed to prevent the oil industry from passing on the high costs disporportionately to fuel oil, heating and diesel oil, becaur these are the really essential things, and hopefully pass it on more to gasoline because there is certain flexibility in the use of gasoline to the intention is that when the prices go up, everything will go up. But the price of gasoline will go up more than the price of diesel oil, heating oil, and heavy fuel oil. This again is the intention of the administration.

Senator Butrovich asked: Is all of the Cook Inlet production considered old oil? Mr. Lipton replied: Yes, it is.

Senator Poland thanked Mr. Lipton, stating that we had all learned a great deal and hoped that we could use it intelligently in the work we have before us. We will look forward to seeing Mr. Lipton again.

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MINUTES
SENATE RESOURCES MEETING
FEBRUARY 12, 1975

Senator Poland introduced Mr. Norman Lipton, Consultant to the Legislature on Oil and Gas, and added that it was a privilege to have him here today. She stated that she had asked Mr. Lipton to give a "State of the Oil and Gas", and that after his presentation, he would be available for any questions the committee may have.

Mr. Lipton began by stating since they had a relatively short time for the session he would not take too much time dwelling on matters remote from the State of Alaska. He continued: I put it to you that your concern about the oil and gas industries, your legislation affecting the industry and in particular, the economics of the industry as it provides a source of potential revenue for the State, are very closely interrelated, more today than ever before, with what goes on in the world at large. The nature of the federal energy policy is that it interrelates the United States as a whole with foreign oil. So I will take a few minutes to talk about what is happening in the world of oil; what is happening or is not happening in terms of federal policy in respect to how this relates to the United States. Just let me say that it is very difficult to be positive or omniscient in matters where political decisions weigh so heavily as they do with respect to oil balances, with respect to foreign oil prices, and particularly with respect to the way the United States adapts to it. But the fact that there is so much uncertainty in these areas is really no reason for foregoing decisions. The certainty is going to be a part of the world in which we live for a long time to come. Although I may not have any answers, perhaps I have some perspectives that are useful to you. I know everybody around the table, but there are a few new faces, so I might even dare tell you my favorite parable on the expectation that at least someone has not heard it before:

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There is this wonderful Irish Story about the little old man walking through the village street on a Sunday morning, bowler hat on his head, stick over his shoulder and all his worldly goods tied in a little pack at the end of the stick. But he was not going to village services; he was marching down the village street. Someone said,"Man, where are you going?" He said, "I'm going to Konnomara". The person asked again,"You mean you're going to Konnomara, Godwilla"? "I mean, the old man answered, "I'm going to Konnomara!" The Lord took offense at his boldness and turned him into a bull frog, croaking in the village pond. Years later, the Lord relented, turned him back into a man, bowler hat on his head, and he walked down the village street all over again. A villager asked "Man, where are you going"? He said, "Man, I'm going to Konnomara". The villager said,"you mean you're going to Konnomara Godwilla? The old man answered,"I mean I'm going to Konnomara or back in the pond."

A year to 18 months ago, the world was using oil as a cheap commodity. One looked ahead and said how long can the world continue to supply the consumption requirements of us all when we continue increasing our consumption each year at that rate. Even Middle East Oil has a bottom to the barrel somewhere. Its not a bottomless oil, and by the summer of 1973 we were beginning to see tightness in the world oil supplies. We, if you remember, were not that pessimistic about the world running out of oil by 1980 or 1985, but still this was part of the outlook. Under the circumstances, first of tightness of the world's oil supplies, then as a result of the Israeli-Arab War, the imposition of the Arab embargo against the United States and a few other countries, particularly because the Arabs enforced their embargo by reducing production, the world faced an acute shortage of oil and in the hectic scramble not only among countries to buy oil, but among countries to latch on to supplies and suddenly we find that the price of oil has shot up astronomically, explosively to completely unprecedented levels. Way beyond the level of prices which the Middle East producing governments themselves would have contemplated. Well now in a very short time, the situation has turned completely around. How completely? Because of the explosive levels to which oil prices rose, over

10½ dollars out of the Middle East, and because of the problems of countries not only in paying the price but in affording the foreign exchange that has to be paid from importation of oil; what Senator Gravel referred to as the hemmorage upon the US dollar. As a result the world was forced to conservation of energy to a degree that was unknown before. We entered into the petroleum age in the 20th Century. The petroleum age was 80 years old and in all that time there has never been an instance where world oil consumption was less than the previous years - not even in the great depression. Now for two successive years, we are faced with actual reductions in world oil consumptions. Meanwhile, productive capacity is going up. So today we have the surplus productive capacity on the order of 7 to 8 million barrels a day, which is probably 12 to 13% of world oil consumption at a time when prices remain high. This of course, is a result of not the economic balast of forces which creates a price, but of the political balast of forces which enables the major producing countries to sustain their price.

One further remark and then I leave the subject: By 1980 even if there is reasonable increase in energy consumption around the world...which means oil consumption and oil imports for those countries that are oil consuming countries. And without any extravagant projection of major new oil discoveries, simply with the development of the North Slope reserves , the North Sea reserves, the discoveries in Southeast Asia, or Latin America plus what is coming in in Africa and the Middle East,

the world is likely to have 12 to 14 billion barrels a day of greater capacity than the world will need in terms of the amount of oil that is consumed. What we have had is this tremendous turnaround in a relatively short time, largely because the high cost of oil has had its effect on the rates of growth and consumption. This too can change. I'm not suggesting that we now have plenitude of oil for long times to come. We are dealing with a finite resource, and with the prospect that most of the world will for 25 years have to depend still upon petroleum for their energy.

So we are reaching a time when again oil will be in short supply. The question is: What is the timing of it? Will by 1978, 1979, or 1980 the overhang of surplus force the producing countries to drop their price? The political incentive to hold the prices....what reason is there for them really to drop the prices? To sell more oil, when if they keep their oil in the ground and the world practices conservation, their oil will be more valuable in 1980 or 1990? Can they afford to suffer losses of income because the world consumes less oil? They couldn't in the 1960's because the government revenue in those days was 85¢ a barrel. Each government desparately needs money and they knew that they could get more oil only by producing more. So the competition for revenue through higher production kept prices down. A government today which gets $10 more for every barrel of oil it produces, which is building up surplus accumulations of foreign exchange in dollars which they cannot spend, can well afford to forego production - potential production in order to hold the price up. But it really depends upon the political sensibilities of 4 or 5 countries who really

sit upon the large reserve and because they sit upon the large reserve, they have to carry the burden of shutting in the production of carrying the surplus productive capacity. Will they be able to do it? Will they not? It is hard to tell.

But the picture I'm drawing is of continued high oil prices for a considerable length of time, even in the face of surplus. But with the availability of oil becoming more and more apparent and the uncertainty as to what happens to the future price of foreign oil, what is the US position? We are reluctant for many reasons to become unduly dependent on foreign oil; for foreign exchange reasons obviously because of the increased dollar cost to us, but also for strategic reasons. Not only because of another boycott, but because of the threat of a maneuverability limits the options of the administration on how they handle so many foreign policy decisions. So it is an economic incentive to reduce the volume of imports. There is a security incentive to make us less dependent on the voraciousness of foreign producing governments and there is always the long-range concern that that we must provide our future energy needs against the time when our world oil supplies will not be replenished.

The policy of the United States with respect to oil and energy is linked between the price that we would have to pay for foreign oil and the costs we must sustain for developing our own energy resources. It is not the costs of foreign oil in the sense that there is this much labor or this much capital in producing the foreign oil, the real costs is 25¢ a barrel, but the price we must pay in the United States - $11 to

$12 a barrel, against what costs we must incur in order to develop our own energy resources. From the standpoint of Alaska and its developments, I suggest certain numbers too. At the present time, foreign oil in the Middle East - say $10.50 a barrel, reaches the United States at $12.00 a barrel. What are the relevant prices of oil within the U.S.? Under our domestic oil control program, the old oil which is now being produced has a price ceiling of about $5.20 on it. We have decontrolled new oil..that is to say..if someone goes out and drills a well, with no control on it, he is able to get whatever price he can sell that oil for, or for whatever value that oil has if he produces it in his own refinery. So that oil commands a price which is very close to the only other alternative, which is import oil at say $12 a barrel. Average it all together and the amount of old oil we produce, the amount of new oil we produce, and the amount of oil we import, the average cost to us as a nation, the crude oil from which we refine our products and sell them to our consumers is around $9 a barrel. If we were as a matter of policy, as Senator Gravel has suggested, to eliminate all price controls from oil and gas, in due course the value of domestic oil production would go from the present $5.20 for old oil up to the only other alternative - imported oil which is about $12 a barrel. The corresponding value of gas would be about $2 in Seattle if it rose to BTU equivalent.

The president's proposal was not only to decontrol oil and a new gas, but also to levy a tax, an oil import license fee, of $2 per barrel and an equivalent tax on gas. That would raise the price to $14 a barrel. These numbers are relevant to something you must consider

if you think about: a) what the value of Alaskan oil is going to be if we go to leasing, b) what kind of revenues will the State get from such taxes and royalities which are related to the value of oil, or, c) how can we contemplate new taxation upon the oil industry. All of these involve a projection of what the value of oil and gas may be in 1977 or 1978 or up through the 1980's, if you consider resources. So look at the uncertainties that we face. a) the level of oil value as it now exists because of the control of oil and gas. b) the price to which it might raise if controls were taken off and some form of taxation were imposed by the federal government which would then give you still higher value for your oil. c) how much might be siphoned off if there was an excess profits tax, or as the President has suggested, a windfall profit tax. Put these together with the fact that all of these prices I have discussed are no more related to $10.50 Middle East oil as of today. What will it be in 1978 when the first oil moves out of Prudhoe Bay? What will it be in 1980? What will it be for the 15 years of exploitation of Alaskan Oil Reserves which is the basis upon which you might have to construct the value of reserves in place.

The range of uncertainities here is so great that I think one must move very cautiously in designing legislation relating to the expected profitability of an industry where you are thinking that this can be predictable as such. And therefore there is a known profitability or a known relationship between what is a reasonable tax today and what it may be when the oil action starts.

The thrust of my remarks here of course, is not to say that the Legislature must be doing nothing. But it is a word of caution to the effect that we are living in a period of greater uncertainty, 1) is to the value of energy all over the world when it depends upon the political price of making abilities of 4 or 5 foreign governments; 2) whatever they do becomes translated into what is U.S. energy policy and therefore what is the value of Alaskan oil and gas resources under U.S. enegry policy. If congress today asks the question which it is asking the administration: why if foreign oil has reached such astronomical levels as $12 a barrel, and we could get it sentenced for domestic exploration, even investment in alternative energy resources... ...if we allowed our prices to go up to this horrendous foreign price which we are so critical of, why must we raise our prices even higher? The other answer is also tremendously appropriate. Can we have a National Energy policy which allows our domestic energy to be valued in relation to foreign oil? If foreign oil prices collapse in the future? Can we afford the government initiative towards a development of alternative energy uses which have grown incredibly expensive, compared to commensurable resources. The most optimistic thing I have heard in the last 18 months is Senator Gravel's statement that if we put as much money into solar research as we did into the breeder reactor we would be supplying some percentage of our energy today. A tremendously impressive state,emt. I doubt very much if he really meant today. He may have been thinking 15 to 20 years from now. But we do not have these kinds of breakthroughs in completely new forms of energy which take place at that rate. But if the government is going to inspire

a resource development program; if private industry is willing to invest; whether it is a conventional exploration or the development of Alaskan resources, can we afford to let that investment proceed in the expectation that we will have energy values of $10 to $11 in the United States; if the foreign oil prices collapse to $7 or $8. Never mind that $3-$4 that it used to be. Even with $7 or $8 we will then say that we will allow our domestic prices to go down. So the uncertainty is whether we are going to allow our U.S. energy prices to go above foreign oil. Is it necessary? Would we allow it to go down if foreign oil prices go down. This is the range of uncertainties that we face.

One note of certainty - a very personal, but dogmatic opinion. If you look at all the possibilities of Project Independence that the government is banking on to minimize our dependence on foreign oil and you look at these realistically: what can be done with oil sharing, what can be done with coal, what can be done directly with the gasification or hydrogenation of coal, what can be done by accelerating a nuclear power program. And then you say within the time frame of the next five, six, or seven years, where will the big contributions be? To our nation's ailing supply of energy the answer is Alaska. The answer has to be Alaska. What you have in sight is the 1.62 million barrels a day out of the North Slope that will come through the Alyeska Pipeline. What you have is the belief or reasonable expectation, that

there is a very large reserve of oil in Pet. 4. Now what the policy will be for exploration and development in Pet.4 by the Federal government, I think we are some steps beyond that...But to find out for sure what the reserves and potential of Pet. 4 are is a tremendously important factor, not only for Alaska in terms of what it means to the whole potential or auxilliary development, but for the nation as a whole. It's not only the oil that may come out of Pet. 4, but it's the probability that the combination of the development of the Federal lands plus the spur to exploration in the North and the fact it may in all probability come down from Canada and therefore be linked with and will accelerate resource development in the MacKenzie Delta. This would enable Canada to turn from what is essentially a program of conserving their own resources, reducing exports to the United States because they are afraid of the pace at which their own exploration can proceed. but if we provide them with a relatively low cost transportation and they see this volume of potential oil coming out of Canada long before the actual production of Pet. 4, before the pipeline is built, it enables them to reconsider their own policy, which says we must slow down the rate of production and we must reduce in 1975 already exports of oil to the United States. And by 1980, 1981, 1982, no oil at all shall be exported at all to the United States from Canada.

As we broaden our conception, our appreciation of what the Arctic potential is, it not only contributes directly to Alaskan development, to the United States oil balances, but I think it offers the opportunity for a new realignment of Canadian and United States energy policy which has been horribly lost over the last two or three years.

I've spoken at great length on this, and would like now to turn from the general to the specific. The best way to do that is to elicit from you an expression of either disbelief, you don't believe a word of it, or what in the world are you talking about anyway? or we've got some very specific things in front of us, what do you think about those?

Senator Orsini asked: With respect to countries other than the U.S. how long can they continue paying $10 to $12 for oil? Mr. Lipton stated the answer is very simple. They couldn't even have done it last year. But they did. They could surely not afford to do it this year. One way or another they are bumbling through. Now this doesn't mean that they have solved the payments problem. It has not been solved. It is not being resolved, but without any design on the part of the world to solve the problem, little things are being done here and there. Last year a 2 billion dollar emergency fund from the INF which is now hopefully going to be extended to 5 billion. There is the Kissinger safety method, whereby in effect the United States and the Common Market would make available up to 25 billion dollars of credits among themselves to those countries within the group who are in the weakest position. This means of course, that the United States and Germany would bear the brunt of it. Italy, France, would be the major borrowers for some time to come. The U.K. for awhile would be until the North Sea production comes on. It is difficult to believe that a couple of potential lenders like the U.S. and Germany are prepared to anty up that amount of money. In principle, the concept is there

because we after all, are the beneficiaries of the reinvestment by the oil producing countries. They buy more things from us and Germany than they do from Italy. So we have some of the reverse flow.

There are direct loans by some of the producing countries to some of the weakest. India and Pakistan have gotten loans and cut in oil prices from Iran, and Iraq - not from any other oil producing countries. There has been direct borrowing. Britain borrowed 2 billion dollars directly from oil producing countries. This doesn't solve the problem. Witness the fact that the entire world is in a recession which means we haven't solved any problems, but we have mitigated the problems and if we can bungle through for enough years til alternatives are developed and among those alternatives that matter of course, is the ability of the oil producing countries to absorb some of their own revenues, and to spend it productively. If they spend it productively, they must spend it in those parts of the world that have something to offer in return, which is technology, etc. The tragedy is of course, that here is what was almost inevitable in any case by 1984. If one made projections of what foreign oil prices would be in 1973 we would have said that in 1984 it would be $8. $9, or even $10 a barrel. And at that same time, if the world had moved slowly towards that, there would have been economic adjustment to it. Why should energy always be cheap? Nothing is cheap in this world unless it is plentiful. As long as its plentiful, its cheap and as long as its cheap you use it in a profitable fashion. But energy can not always be cheap and when its not profitable it will go up in price and when it goes up in price, will we conserve? Unfortunately, a 1984 was dropped in our lap in 1974. We didn't have

those ten years and this is a tremendous problem of adjustment. If foreign oil prices should for any reason come down sharply in 1978 or 1979, and if the world for that reason were so short sighted that it started burning up energy at a 5,6,or 7% increase over years in the past and so short sighted that it wouldn't pay the money for nuclear power and gassification of coal - how long do you think the price of oil would stay down? We would be in another crises by by 1981 or 1982.

Senator Huber asked: I would like to explore one area you stated, about possibly turning around the Canadian policies, by getting production shipping through Canada. Aren't we just likely to do exactly the opposite by building major oil and gas through Canada, because we now give Canada the ability to tax that line that is carrying our oil and thereby providing them with needed income off our our resource and then they won't need to exploit their resource anymore. Won't this work just the opposite way? Mr. Lipton answered: I'm going to predict something about public policy. There is not going to be an oil or a gas line out of Alaska thorugh Canada without a treaty with the Canadian government. To my mind, this is a sine-ne-quon. The terms with which such a treaty can be negotiated depends upon what we are prepared to ask them, and what the Canadians are prepared to give. It is my opinion that the Canadian government has a very substantial interest in having the certainty of a gas or oil line coming down through Canada. Because as of now, three oil companies have made substantial discoveries in the MacKenzie Delta, not only of gas but oil. They are at least projecting a pipeline with a capacity of

of perhaps 500,000 barrels a day. This will link up with the major transportation system of Canada. Now we've discussed the economics of pipelines often enough that you know how quickly the economics of a pipeline is improved. First of all the capacity and the utilization of capacity. If the Canadians wanted to build a line scaled to 500,000 barrels a day it would be a relatively expensive line. They would say if we are going to find lots of oil, we will scale it to a million barrels a day pipline when they only have 500,000 barrels a day input. If the line can be scaled at a more economical size from the beginning, it improves all of their transporation economics. It provides a tremendous incentive to the continued exploration and development. You will not have Alaskan oil moving through Canada if the Canadian government is in a position to say if we find more oil you have to take yours out of the line. Obviously, this is a sine-na-quon. But once the intrastruction is gone; once one scale line is in there, the additions to the capacity of the line, either thru pumping are improved.....What I am suggesting is that this is a tremendous interest to Canada. I'm not addressing myself to the interest of the State of Alaska in what direction in transportation it takes. But you have your crude oil pipeline. What route the gas pipeline takes is an open question as yet. But the development of Pet. 4..at least the determination of the oil potential opens up whole new concept of future volumes of oil, transportation, and directions of oil movement. I think this would be a springboard to a change in the relationship in energy between the United States and Canada.

Senator Huber asked: The specific thing I'm getting at is the tremendous long line in Canada has such a high value that just reasonable ad-volorem tax alone place against that line has to carried by the product going through that line, which means Canada has a very large potential to tax us on our resource without having to give us any of theirs. This is my concern. Mr. Lipton answered: The economics of transportation - oil or gas - why in Alaska, Why in Canada, One can debate those. If Alaska is always interested under any and all circumstances in minimum transportation costs for its natural resources, the lowest possible costs must inevitably work to the benefit of Alaska. Now if what you are saying is that there may be inordinate transportation costs imposed through Canadian taxation, this ought to bring together something covered by treaty. If what you are saying is that even ordinate or reasonable transportation costs go to the Canadian government when they should go to the government of Alaska, that I can't answer. If you feel that the economic well-being of the State depends upon keeping all transportation facilities for Alaskan oil and gas within the State so that you can tax that property, I can't answer that. I'm not sure that is in the best interests of the State in any case.

Senator Huber asked: You did have some figures about the ordinate costs of transportation on such large investment through Canada would be a drain on our balance of payments and would be a considerable amount.

Senator Poland stated she wanted to make it clear that any of the other legislators present that were not on the committee were perfectly welcome to ask questions of Mr. Lipton.

Senator Butrovich asked: What is the ratio of the foreign oil that we are using now and the so-called old oil? Mr. Lipton answered: We are now importing about 6.5 million barrels of oil a day. That is not all crude oil. There is less than 4.5 million barrels of oil that is crude oil. The rest is heavy fuel oil. We don't as yet have in the U.S. the refining capacity for this. We are producing in the U.S. liquids, crude oil, nitro gas, etc., - about 10 million barrels of oil a day. Of this 10 million, about 6.5 million is controlled. This means that it moves at a price of about $5.25 a barrel. The other 3.5 million is essentially decontrolled oil. It is new oil. It is what is called released oil.

Senator Butrovich asked: How far in the future would you look before the decontrolled production would reach the controlled production? Mr. Lipton answered that, In terms of price...Senator Butrovich stated he was thinking in terms of time. Mr. Lipton continued: you mean that the controlled or old oil production which is less and less each year ....Senator Butrovich stated he was not interested in price controls at the present time, just the production. Mr. Lipton answered: You have controlled oil - the 6.5 million barrels. What we mean by controlled oil is that the price is being held there. The amount of oil that is produced without price control we hope will be increasing each year. The amount of oil that we will be producing subject to price control will be decreasing each year, because that is old oil coming out of

existing wells. These existing wells have less capacity each year.

Senator Butrovich asked: Then at some point in time they will even up? Mr. Lipton stated at some time they will be even, and if we maintain our present control system, theoretically everything will be uncontrolled oil because we will have exhausted our old oil. The decline rate of old oil in the U.S. is perhaps 2.5 to 3% a year. So if you talk about 6.5 million barrels of oil a day and you take 3% of that, you talk about perhaps 200,000 barrels a day less production each year. In other words wells (the old oil) are losing the capacity to produce at about 200,000 barrels a day. Unfortunately the new is not increasing as fast as the old has been going down which is why our total U.S. production has been going down..

Senator Butrovich asked: Why, if we are bringing in as much foreign oil as we have under the controlled price, do we have a controlled price on our own oil? Mr. Lipton answered: This is not my policy so therefore I can only give you the rationalization of what has been Federal policy up until now. There are several reasons for it. One is that the big increase in the foreign oil price going so far above the U.S. price took place in inflationary environment and it has now become a part of the recessionary environment. There is a reluctance on the part of some people to say, Can we really afford to let this large volume of our total oil supply up so much in price that it imposes a cost burden upon the American Consumer? Secondly, all those instances with the increase in foreign oil prices, was a substantial increase in oil industry profitability. In the first instance it came from foreign

profits, but in the second instance it came from improved profitability in the United States. Its a very difficult political thing to say time when the industry in the United States has been improving its profitability. We must also give them higher prices. Third, its a very difficult position we are in worldwide if we are saying that foreign governments ought not to raise their oil prices to $10-$11 a barrel. Can we really lecture them as what they ought not to do if we in effect let our prices go up?

Senator Butrovich stated: I'll buy that, but on the new oil we are doing that. That to me is not consistent. Mr. Lipton answered: My own feeling for whatever its worth is that first of all in talking about what the foreign oil price used to be - we have the economics of oil and we have the politics of oil and now we throw in the theology of oil. Its a losing battle to argue theology of oil pricing with the Arabs because Allah gave them the oil; he surely knows more about what the price ought to be than we do. If your point is that there is a price of oil in the United States that serves the economic function which is twofold: a) the price will induce consumers to consume oil at a rate that is consistent with the rate at which that same price brings forth new supplies, you're saying that the U.S. oil price is an economic price when it does two things. When it discourages consumption at too high of a rate, and encourages production at an adequate rate. Then I agree with you. You have defined what is an economic price for oil. But the politics of energy policy are often quite different from trying to achieve a price. A price must achieve those two functions. A price which is too low and

and encourages people to consume at a profligate rate is not an effective price. A price which is too low and discourages the development of oil and gas is not an economic price.

Senator Butrovich asked: What does the ceiling on the 6.5 million barrels do? Mr. Lipton answered: It keeps your cost and my cost of oil lower than what it would otherwise be. Senator Butrovich asked: But by the same token, you are turning around and paying the foreign governments twice that. Does that make sense? Mr. Lipton answered: It also keeps the profits of the oil industry lower. Whether we want these things to happen or not is a matter of public policy. I am not trying to be a protagonist of this policy, I'm trying to give you the rationalization of whay we are where we are today. No, the president has said in effect that he will, as of April 1, under the executive authority that he has, remove all price controls on crude oil in the United States. He has also said that he will not only allow all of our oil prices to go up to the foreign price of $12, but wants all oil prices to be $2 more than that by putting an import duty on the foreign oil and putting an excise tax on domestic oil. so we are not only going up to the foreign oil prices, but we are going up $2 a barrel - 17% above the foreign price.

Senator Butrovich asked: If you had some of this so called old oil, wouldn't you be reluctant to pump it out at this point in time? Mr. Lipton answered: It depends on what I thought the future price was going to be.

Senator Butrovich asked: It is hard for me to understand why we pay

these foreign countries in U.S. dollars twice what we pay our own people. Mr. Lipton answered: the question you're asking is at what rate we could replace foreign oil that costs us $12 with domestic oil, if we raise the price of domestic oil. Why shouldn't we be able to be willing to pay to our own producers instead of foreign producers? That is the difficult question to answer. At what rate could we really displace it, or will we in effect, for a considerable time be importing 6 million barrels a day of foreign oil and not getting very much more domestic oil, but still paying domestic producers $12, not for the oil that they are going to find, but for the oil that he found 20 years ago at a very low cost. That goes by the name of windfall games and raises the question of public policy. Even the President when he asked Congress to enact what he calls a windfall profits tax, which would take away all but about a dollar a barrel of the increase in price that producers of old oil would get and would take away a very large porportion of the price which producers of uncontrolled oil are getting today. The oil industry under the President's energy package would be left at the end of the first fiscal year of operation with about 2-3 billion dollars less cash than they have today. after the control because of this tax program. I would never presume to say that there is anything simple about this. It is obviously not a simple thing anywhere. We are facing in the United States as far ahead as one can look, energy crises that will be very significantly determined by public policy. We kid ourselves and I think that we are being flattered by the administration that tells us that we are going to free-market prices. We are not. We cannot have free-market prices so long as

the world oil price is politically determined. Do we have to always pay as high as they do? To decontol oil doesn't really say that the government is taking off all controls. If we have governmental intervention in the whole field of energy in effecting the price, what is the price that is going to do the job? What is its effect on consumption and its incentive. How fast do you move to that price? Do you go whole hog and say that everything in the United States shall be sold today at the price we think will be the price we have to pay for sharing or do we say everything is sold at the price that we think is enough incentive for domestic exploration? There are no easy answers to this. There is the question of what is the price that will do the job and how fast do we move towards it. The value of Alaskan oil and gas resources over this period ahead is not going to be determined as it was in the past by this interplay of market forces, but rather out of the juxtaposition of a) the political pricing of foreign oil, and b) the energy policy of the United States which says that whatever the foreign oil price is going to be, this is the relationship between our energy values. It will be this interplay of United States energy policy with the politics of foreign oil which is really going to be our problem.

Senator Butrovich asked: Is it not a fact then that the oil-in-place on the Slope that we know about now, would be classified as old oil. Mr. Lipton answered: No, it wouldn't. The North Slope oil, if it were being produced today, would be free of control and you could sell it at the decontrolled price. That is to say, it would be worth somewhere

around $11.50, delivered in California. Any new production which you can establish in the Cook Inlet over and above the production of a respective base period would also qualify as new oil and therefore command a higher price. Whereas today the bulk of oil in the Cook Inlet production is in a sense old oil subject to the price control.

Senator Poland stated that we had three people here - Senator Sackett, Senator Meland and Representative Gardiner and that she knew Mr. Lipton had another appointment. Mr. Lipton stated that he hoped he'd have a chance to meet again while he was here, as he has been talking in general terms and would like to talk in more specific terms in what the Alaska Legislature anticipates.

Senator Meland asked in reference to Senator Gravel's statement this afternoon concerning future legislation that may be planned for a tax on oil in place and as long as there is a possibility of a lease sale coming up in the near future , that would be a bad thing to do, for Mr. Liptons comments on that? Mr Lipton stated: " anything which is discouraging to the industry you have to translate into disincentive. How much of a disincentive I don't know under the circumstances. A more important question with respect to the resources tax which was before the Legislature last year and is before you again, is really whether this is a good tax per se, and whether among the alternatives this is the route you would like to take. I would like to answer that question in much greater detail. In general, yes it is quite correct that if you take an industry which is taking a look at profitability, and taking a lease and exploration, anything which smacks of taxation is something they don't like. But whether that would keep them out -

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there is not a chance in the world of keeping them out, I don't think there is anything you could do that would keep the industry under the present circumstances of U.S. energy from coming up and exploring in Alaska where there are really attractive exploration opportunities. How much it will affect the bonuses or royalities that you get, obviously has to have an effect. There is just so much which the State of Alaska can get from an industry from a sum total of revenue - bonuses, royalities, severance tax, resource tax, income tax, - all of these things are contingent on what the utlimate profitability of the industry is. Industry is bound to regard anything that pays early as something which has to come out of future profitability. So if you tax the resources while they are undeveloped for some length of time, this might alter the calculation as to the value of the lease. But that it would discourage exploration - not if its very attractive.

Senator Sackett asked: A couple of years ago, I was told that during the Special Session we had then, that if we took action then, they would never come back to Alaska. My question has to do with the statement you made as to the extreme caution we should take with regard to legislation. Could you elaborate specifically? I would refer to the reserves or oil-in-place for example. Mr. Lipton answered: For reasons I have expressed before, I would like to elaborate in more detail. But from the standpoint of tax policy, I don't think it is good to consider such taxation. I would hope we could consider it in the context of just how it happened. Really is it preferable among the alternatives? How would it really be applied? Basically, I think

it is a bad tax legislation.

Senator Sackett asked: Are you suggesting perhaps that we have an in-depth study over a period of time into the tax question. Mr. Lipton stated: Absolutely into the corporate income tax. You have a corporate income tax and you will have an oil industry that earns profits. For the purpose of a corporate income tax, the tax of profits or corporations operating in the State you have an ineffectual legislation in the books today and it ought to be improved. I sense from what is going on in the Legislature and also in the administration that you are in the process of doing that.

Senator Sackett asked: Do you express hesitation in these other taxing possibilities, either severance, in place, royalties, etc.? Mr. Lipton answered: Only in a general sort of way, cause I have not yet been confronted with legislation on the table yet and would like to look at that before I comment.

Senator Sackett asked: You're speaking of why we should be hesitant and look in depth at this. Mr. Lipton answered: What I'm saying is that whether it is a resource tax or whether it is a change in severance, there are some aspects of the severance tax that you might very well want to consider now. One has to be very careful...Somehow the tax on the books today can be improved because afterall it is adapted to the present environment. But the present environment is not really what you want to adapt it to. It is the environment in the future that you are looking forward to. I would be reluctant to suggest to the Legislature that they try to foresee the future. It is much better to

to handle your tax legislation when you are coming upon the circumstances.

Senator Sackett asked: That implies then that we shouldn't do anything? Mr. Lipton replied that: No, one should measure what you feel you have to do against the uncertainty. As I said if you become immobilized by uncertainty then you never do anything. The question is at what speed and what particular passage?

Senator Colleta asked: Following up on Senator Butrovich's earlier question, how broad is the regulation on old and new - the North Slope has been producing in essence for many years. Mr. Lipton answered: The definition of old oil vs. new oil has to do with the volume of production out of the particular producing area and the historical. Old oil would be under present regulations. New oil is something different of course.

Senator Huber announced that Mr. Lipton would be meeting with the Special Committee on Taxation and Revenue, and the people present here would certainly be welcome to come.

Senator Poland announced that we would meet again Friday at 1:30 with Mr. Lipton and continue for as long as it would take.

This meeting was taped and the tape is available through the Legislative Affairs Office.

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

HOUSE AND SENATE RESOURCES COMMITTEE
JOINT HEARINGS
ON PROPOSED OIL & GAS LEGISLATION

TESTIMONY OF MILTON LIPTON
CONSULTANT TO THE LEGISLATURE ON OIL & GAS
Tuesday, March 23, 1976
8:00 a.m.

Legislators in attendance were: Senators Kay Poland, Chairman, Joseph Orsini, John Butrovich, Pete Meland and Chancy Croft. Representatives Nels Anderson, Jr., Chairman, Mike Herschberger, Jimmy Huntington, Red Swanson, Leo Rhode, Al Osterback and Ted Smith. Staff Assistant Guy Van Doren was also in attendance.

Our time is limited this morning and I would like to utilize this time to discuss with you what I consider to be three very critical questions which will be basic to your consideration of the legislation before you.

The first question is why we think it is so appropriate for the legislature at this time to review critically and carefully the whole structure of petroleum taxation in Alaska.

The second to which I will address myself is what do we think is the significance of recent studies that have been made, by the legislature on the prospective profits of the oil industry.

The third question comes down to the implications of the previous two points for the various pieces of past legislation which are before your committees.

Rather than make a mystery story out of this I want to give you very quickly and succinctly, before discussing the law, what we think are the relevant factors in each of these categories. One, we think it is absolutely inevitable that the oil industry in Alaska because of the scale of its investment and because of the scope of its prospective profitability, however it's defined, is extremely relevant to any kind of tax or revenue policy which this state is going to adopt. Second, we think that there are interesting insights provided by the various studies as to the potential profitability of oil operation in Alaska. But we think that the particular measures of profitability, known as a DCF rate of return, however useful it may be for other purposes, is virtually irrelevant to any tax policy this legislature should focus on. Third, we think that it is a consideration of the various tax proposals before this legislature faces a very decisive question which only it can answer -- and that is to say, whether the state of Alaska shall at this time seriously consider a basic new approach to the taxation of the income of the petroleum industry. That is to say, to separate all taxation from other forms of taxation upon income within the state. This is posed by legislation before you and you must decide whether in your judgement this decisive new approach holds merit to the state or whether it does not. We will discuss some of the pros and cons.

Now going into a little more detail of each. We think that the importance of oil taxation to the state is overwhelming because the level of investment by the industry in the past transcends that of all other private investment in the state because the level of prospective earnings will transcend the earnings of all other private interests in the state. However important the oil industry may be in other states, and it is much more important today in terms of production in other states, it will continue to be in some of them for a long time to come. The major producing states, Texas, Louisiana, California. The oil industry although important to these states, does not have the overwhelming pivotal role within their state economy that it will have in Alaska. All three major producing states are major agricultural states. All three major oil producing states have other vital and important industries. But for Alaska, the significance of the oil industry is in the decisive role that is played within the state, which means that you must have due regard on the one hand, for the risks that we are taking, the outlays that were made and the necessary profitability to sustain it, but it also means that it is inevitable, in our opinion, and I am sure the industry believes this too, that future tax policy and future spending policy by the legislature cannot really ignore what the prospects and the potential is of the oil industry.

Secondly, since the last major piece of tax legislation was adopted in this state, it would be vital to the _____ _____. They work in two directions. There was a tremendous increase in costs that was imposed upon the industry. There was a spectacular increase in the value of oil resources and at prices that they can expect to obtain. How these balance out depends upon what kind of measure of profitability you use. One can come up with very, very many different answers. But the fact remains that cutting through everything else, there will now obtain for the industry if all goes well -- this is the big provider. But there will be a flow of income out of oil operations in Alaska which is multiplied several-fold, the flow of income that the industry could possibly have obtained, if the old historical circumstances had persisted. Lower costs, lower prices, these are gone.

The industry has been faced in the past with the need of the state to depend upon its potential profitability, not its real profitability, its potential profitability, to meet budgetary requirements within the state. When the state came to a crunch, to whom could they go? They could go to the oil industry. It was absolutely inevitable because the potential ability to meet the state's revenue needs were there. But looking ahead, the profitability of the oil industry must also be a pivotal factor in the way in which the state organizes its thinking. Both about what the potential sources of taxation are and about what kind of state undertakings, this access to a tax base has made possible.

Second, the significance of recent studies of prospective profitability. I think that the studies have been useful in one very important respect. They have put down in public a series of assumptions about what determines, what are the vital considerations, what the variables are, that may affect the future profitability of major oil operations in Alaska, notably the Prudhoe Bay area. These are all prospective, they are not in hand. But whatever their importance is in focusing attention on what may result from oil operations in the state of Alaska, if all goes well. And, incidentally, bringing to the fore, one of the question marks that still remains. The culmination of the studies, where they end up with discounted cash flows and DCF rates of return. We believe, that not really, in any sense, is it germane, to a legislature's decision as to what the nature of oil industries taxation ought to be. First, all of these DCF calculations are as yet prospective. What enters into a DCF calculation to date, when what is known are past expenditures. What remains unknown are all the critical factors which enter into a future projection and which enter into future profitability. A tremendous number of uncertainties as to what future prices will be, when production will start, at what level it will start, over how long it will be produced and what levels will be sustained. The assumptions may not be there. The assumptions may be perfectly good assumptions. But they remain assumptions and the DCF rate of return as it is calculated is extremely sensitive to any of these various assumptions. Second, suppose these were not DCF rates of return calculated today for the next ten to fifteen years of Prudhoe Bay operation. Suppose they were calculated at the end of the day. That is after the Prudhoe Bay field had been completely worked out. Then one would have a correct DCF calculation. One would know in a second, what the rate of return had been on a particular development. And what is the relevance of that? What is a high DCF rate of return for Prudhoe Bay and what is a low DCF rate of return for Prudhoe Bay? If one is to say, what rate of return is somehow adequate, is somehow correct for what is probably the most successful exploration venture west of the Suez Canal. What should it be? 25%, 35%, 50%, 100%? And don't think that there is a number which is a proper criterian for that. You have all heard that the rates of return on successful ventures have to compensate for the losses on unsuccessful ventures and for marginal operations. How does one balance that off? How does one judge the adaquacy of the rate of return for the single, most profitable, against something which is half as profitable, or something which is simply marginal where the candle was barely worth the burning or all of the loss. I put it to you that the DCF calculation, there is no answer to that question.

The third point -- we have to go back now to U.S. oil policy, U.S. price policy and what it is which in fact is going to determine the profitability in the future. Without spending a great deal of time on the recent changes made in U.S. policy as layed down in the Energy Act, let me just say that Congress has stipulated for the period of the next 40 months, that there shall be an average price for all crude oil produced in the United

States.. And around that average price there shall be at least two and possibly more different prices for different kinds of crude oil. One is now a lower tier price and the other is an upper tier price. Think of them for simplicities sake as the price that goes to old oil and the price that goes to new oil. The average price to begin with is $7.66, the old oil price is something above $5.00, new oil price is somewhere around $11.28. This average price is going to go up over the next 40 months, according to various formula which are contained in the Energy Act. What happens to the new oil price during this period of time depends upon a large combination of circumstances. How much old oil to new oil, how much of the price increase in the average goes to old oil, how much to new oil.

The complications are unfortunate, but what I call to your attention is that the Congress has deliberately, during a period when an imposed price control was on every barrel produced in the United States, Congress specified that there shall be an upper tier price and this upper tier price shall go to new oil, starting out at $11.28. What is $11.28? Why $11.28? Because this relatively high price for new oil is expected to bring forth certain results. The results the relatively high price is expected to bring forth, is that the industry shall look farther and the industry shall look harder for oil. And as the industry looks farther and the industry looks harder, there should be more leasing, more geological and geophysical work, there will be more dry holes drilled, there will be more adandonments. Which means that the industry faces larger losses than they would have if the price had been lower and the incentives to explore had been less. Secondly, it means that Congress expects that there will be oil fields found and developed and produced at a price of $11.28, which would not have been produced and developed at a lower price. Not profitably, just marginal. Congress is extending the margin of exploration, it is saying to the industry, go ahead and look harder, go ahead and look farther, and we're giving you something that is the incentive to develop even a marginal field. A marginal field becomes profitable at $11.28, or $12.13 in the future -- we will not have at lower and lower prices. Why this interest in marginal fields? How much oil is going to be found in marginal fields? The Lord alone knows that. But, I put it to you from the whole history of exploration that the incentive of the industry to go out and look for marginal fields, to explore modest prospects, may find a lot of big oil too, and the industry that looks only for big oil fields, may lose a lot of prospects. This is part of the uncertainly that is part of the whole history of the exploration method.

But having said all of that, look what it means about the implications for the negative return on the successful venture. It there is going to be more dry holes, more unsuccessful exploration, and Congress wants it and therefore gives the $11.28 price, it implies also that the rate of return on the very successful ventures, because they will be fewer and they will have to pay for

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more losses, probably must be considerably higher that the rate of return on the successful venture when U. S. oil prices were in the range of $3.00 per barrel. What is done is to shift the whole perspective on how much the industry is expected by the United States Government to invest unsuccessfully in behalf of the national effort to achieve a higher degree of resource development within the United States. Which means that Alaska too, as part of the United States, must accept that the purpose and function of these higher prices which create the profitability and the cash flow and the future revenue of exploration in Alaska are those which are returning to the nation. One cannot accept the purpose of a higher price as a matter of national purpose and deny that this shall also pertain to a highly successful venture in Alaska.

The DCF rate of return, per se, is not the appropriate criterion for the determination of tax policy. But, the level of total profits in the industry, is an appropriate criterion for the state to look at. Not just the rate of return, but the total level of profitability over the lifetime of all exploration ventures in the United States and in Alaska when you consider your own taxation.

What the effect of higher costs and higher prices will be upon rates of return depends upon what you select as a calculation. I would suspect that most DCF calculations will probably yield a somewhat lower rate of return based at Prudhoe Bay today than it might have if the Prudhoe Bay had been developed in 1972 under the circumstances then existant. There is absolutely no comparison between the total flow of profits which the producers of Prudhoe Bay or any other successful oil field in the future will obtain when in effect, even if their DCF rate of return is somewhat lower, their total profits are so much higher because it provides them compensation for the higher level of investment. It is not just a DCF rate of return that is relevant to the industry. As a matter of fact, I have yet to see an oil company or any other corporation, report to its stockholders what its DCF rate of return is. They will talk about the inadequacy of the return on the stockholders net assets or they will be proud of the high rate of return on the stockholders net assets and this is something which will inure to the benefit of the oil companies, quite apart from the DCF rate of return. In due course, if all goes well, as some of these studies suggest, and the returns are anything like that level, whatever the rate of return on a DCF basis may be, there will be over the history of oil exploration in Alaska, a fantastic contribution to the profitability of those companies as measured by that which is of the greatest interest to the stockholders, namely the return on their assets. And if in between you take other measures of rates of return you may get different results, but it remains that if things go as suggested, and I don't believe there is anything that is suggested by the oil companies, which really suggests no matter how critical they may be of the DCF calculations as a basis of principle of taxation, I would be surprised if they would deny that the aggregate flow of profitability to the oil industry over the history of Alaskan oil

development for successful ventures will not be in many times multiplied of what they might have made if the old low costs and the old low prices had remained. Changing circumstances are important to the whole profitability of the industry, the flow of their future profits and for purposes of taxes.

One quick illustration... In the North Sea, there was a great deal of argumentation over the adequacy of the rates of return. The United Kingdom proposed to raise the taxation, the companies obviously faced with tremendously escalating costs in the oil sale, argued that this would in a sense be confiscatory taxation that might interfere even with the development of marginal fields. A familiar argument and a vital argument. The government of the United Kingdom conceded a great deal and it revised and eased up on some of its tax proposals, whether they are good or bad is not my point, the point is that the next step of the UK government was to say, well, now that we have given you what is an acceptable rate of return by equitable taxation, we want government participation. We would like to have the government of the United Kingdom to have a 50% tax on every one of the offsea oil fields. And we commit ourselves to you, that when we take our 50% interest, either by paying for it and reimbursing the capital or whatever, we will not further interfere with your rate of return. The industry argued. Argued, I think, very correctly, that the same rate of return on half an oil field is not the same thing as the same rate of return on the whole one. The rate of return on the whole oil field is necessary to compensate the industry, to pay the industry for all the risks it takes, its exploration ventures. If you leave them with the rate of return, and you cut it in half, you interfere with the total cash flow of a successful venture and that is not the same thing for the industry. I will put it the other way. In Alaska, it may be that the rates of return are not as attractive as they had been before but the total industry profitability is going to be a multiple of what it was before. Not just rates of return _____.

Well, now I turn to what is of greatest interest to you, what is the implication of all of this for your tax policy. I look at three aspects of the tax policy, severance tax, income tax and the proposed sur taxes. On the severance tax you have before you House Bill 638 and Senate 567. I don't have too much to say about these bills. I think the state of Alaska has today a very good approach for severance taxation. I think that what you have in the sliding scale schedule of your severance taxation makes your severance more sensitive to the nuances of operating fields that severances taxes of other states which are either cents per barrel or a certain flat percentage of fixed value. What you are able to do is distinguish since every severance tax is a percentage of gross wellhead value, but lease by lease the relationship between them differs. Your severance tax has this sensitivity and it means that it is _____. The changing in severance tax rates from time to time without necessarily adversely affecting those fields which may not be able to pay the highest rates. There

is some question as to whether or not you want to retain the cents per barrel floor on your severance tax rate. I think perhaps we ought to hold discussion of that until there is detailed consideration of the bills before you. Any change now in your severance tax, I think that the legislature would be very well advised to hold off until it has made decisions on the whole package of tax legislation. That is to say, what you may want to do about the severance tax ought not to be independent about what you do with your income tax and whether or not you are prepared to adopt some kind of a sur tax on private industry producing oil in the state of Alaska. I would like you to hold off on that and see what you're inclination, what your directions are, what your final decisions are.

On the income tax, again, I will try to be relatively brief. You have been saying for many years that your corporate income tax statute as it exists, is an ineffective statute for reaching out and taxing profits made on producing ventures in the state. Without repeating all of the details, and you've heard this many times from us, what it comes down to is that neither approach to the accounting of income in the state, neither the formula approach which arises at an interstate tax compact which the state of Alaska is a member of or the direct accounting approach really works. Too many of the companies do not have any sales in the state of Alaska and so you lose tax income. On the apportionment approach, none of the three elements of the apportionment formula really works effectively. We have suggested many times that the state should explore an alternative which allows direct accounting of profits made especially in the oil producing operations in the state of Alaska, by changing from _____. The net proceeds tax which is before your committee, H 699 and S 620, both attempt to get direct accounting of all producing profits in the state of Alaska by indirection, by the method of the net proceeds tax. Again, we can discuss details of that from time to time, we have some reservations about it. I am sure that there are other possible ways of going about it and I rather expect that you will get long comments from your own _____ both about the bills and about their possible alternatives. But I put it to you again, that this is a second step in your whole tax review that you must seek to get an appropriate access to produce in profits just so that you tax the income from oil production on the basis comperable to the income of other economic activities.

Now I come to the third aspect of the legislation before you and I think that it is far and away the most important of all. There are two bills, H 703 and S 621, which is an excess value sur tax and H 803 which is an oil production income tax. What these bills propose to do is to introduce an entirely new principle of taxation. What they say is that it is not necessary and therefore the interest of State of Alaska does not require that every dollar of income generated from oil producing operations in the State of Alaska shall be taxed exactly the same as the income which is generated by other economic activities. It segregates the oil producing industry from other aspects of economic activity in the

State of Alaska and says that we will introduce new principles of taxation. The new principles of taxation is very briefly put forth here, that up to a certain level the profitability of an oil producing operation shall be taxed approximately at the same rate as other income. That is to say, a dollar of all income from production shall be taxed the same way as a dollar of income from any other activity. But a billion dollars of oil income does not necessarily be taxed the same way as a million dollars or a thousand dollars of income. It commits the segregation for tax purposes of the income from oil producing operations and then it says that tax policy will be written separately and apart for some aspect of that oil producing income. The legislature must resolve and recognize that this is a separate and distinct principle of taxation to be applied to the oil industry. And to decide whether it wants to go that route in principle. If the legislature does not want to go that route in principle, then there is no use discussing the details and the alternatives of the excess value, sur tax or the oil industry income tax because they both attempt to achieve this new principle of taxation. If the legislature feels that there is something in the nature of oil producing operations such that in due course and under proper safeguards they may want to tax oil income on a different basis than other income, then it is worth looking at the pros and cons of both of these pieces of legislation and perhaps to consider some other alternatives.

I don't want to take up your time, in the remaining days of your 90 day session, to speak on behalf of the industry and tell you why separate taxation is inequitable to the industry. You are going to hear this in very great detail I am sure. The moment that you tax the oil industry in a different way than any other industry, you are doing violence to a lot of _____. I do want to say one thing which is a proper and I believe a cogent position of the oil industry -- the greatest risk of this form of taxation for the oil industry. This is the greatest risk that the oil industry finds that it is exposed to. That's wherever or whenever it throws up by some definition, a relatively high level of profitability, that the government, within whose jurisdiction that high profitability occurs will say, we tax it separately and we tax apart. And if then, the oil industry finds that the government here, within whose juristiction says, Oh Boy, this is a high level of profitability, we have a separate form of taxation for the oil companies. The only place the oil industry would be left with a normal rate of taxation is where they are not making much money or where they are losing money. How then, does an industry in effect, cover its average rates of return, its average profitability to sustain exploration activity. If in fact as is exposed in every tax jurisdiction where returns are abnormally high, where government seizes the _____ bases for _____ taxation. The exposure abroad is very clear. The argument that other countries should not tax successful ventures too high, that got nowhere with kings, shas and sultans. As a matter of fact it didn't get very far in the anglo-saxon world either. Not in the North Sea, not in Alberta, Canada. But the United States is a

different story. I think it is different because there is an integrity of both investment decisions, pricing policy, and hopefully, a flow of capital within the United States. Therefore, the industry would like to feel that if it has lost the battle elsewhere, at least the battle should be fairly _____ within the United States. I don't think it's correct for industry to say that it wants nothing more anywhere and everywhere than the same tax regime to which other industries are subjected. The industry has argued for many years that there was a purpose to special tax treatment for the oil industry where it _____. The resource industry which has the benefit of a depletion allowance is very important to the oil industry and we have agrued in defense of this for many years. So there are circumstances under which they can benefit from separate treatment and circumstances from which it can suffer. I don't believe that it necessarily follows that the income from oil producing operations must always, under every circumstance, be treated exactly the same as any other industry. It is for you to decide whether or not you choose to go this route in Alaska. But I put it to you, that when you weigh this in the balance there are two criteria that are so important you can never avoid them. One is that however you decide for separate treatment of the oil industry, your taxation must strike a balance between the interest of the state and the interest of the industry. Whatever you do, it it must not involve that level of taxation which destroys incentive and says in effect that we look at profitability and we will either forget past costs incurred, past contributions, or even the fact that there is a need for this profitability to sustain other exploration in Alaska or perhaps elsewhere in Alaska. There must be a balance there. Secondly, I don't believe that the State of Alaska can reasonably expect to adopt a separate tax regime for income from oil operations in Alaska which is inconsistent with U. S. policy. But Alaska cannot presume to have first and unrestricted call on the profits made from oil producing operations in Alaska, when the touchstone of that profitability is a price policy that the United States government adopted.

The price of Prudhoe Bay oil is not _____. Under the Energy Act, Congress has stipulated that the president may propose subject to the consent of Congress that up to two million barrels a day of oil coming down the Alaskan pipeline shall be outside of this average price for all U. S. crude oil. And its basic reason for that is not to give Alaska a high price, but to keep the amount of Alaskan oil from reducing what is the new oil price or the upper tier price with everyone else. The Act specifically says that if the president exempts this up to two million barrels per day, the price for Alaskan oil that is exempt shall be no higher than the upper tier price. It does suggest that for a considerable length of time there is an unknown which could be in the range of $1 or $2 a barrel as to what the actual wellhead price of Alaskan crude is going to sell for. If Alaska gets itself into a tax posture here which looks to be running counter to what is a price policy and the incentive policy of the federal government. It is not that I think that the FDA is going to reduce the price of Alaskan oil in retaliation, I don't believe

it, but there is so many interests which involve the position, the confrontation of the State of Alaska with the federal government, that I think it would be very dangerous and probably and very poorly advised to the State of Alaska to take a tax policy which goes so hard and to such extremes that it begins to run counter to U. S. policy. Again, I give you an example. The example comes from Canada. The Province of Alberta, like the State of Alaska, has a tremendous interest in sharing in the profitability of oil producing operations in that province. And as the profitability looked to be going up, because prices were going up, the Province of Alberta moved to increase its provincial pay, it is called the royalty there but it is somewhat different, it is in lieu of severance taxes and so on. But it went from 16-2/3% which had been an old price of about $4.25, to 60% on that increment of price between $4.25 and $6.00. Which in effect meant that they were siphoning off a large part of the total increase in the profitability of the producing industry before _____. The federal government in Ottawa reacted violently. Up until then they had acknowledged the 16-2/3% royalty as a deduction in the computation of the federal income tax. They removed it, not only the added 60% but even the first 16-2/3%. As a result the oil producing industry was caught by this constitutional confrontation in Canada between a Province which lay first claim to what it believed was its maximum entitlement and the arguements of the federal government that what they did was to violate the interest of all of Canada to the extent that it interferred with what was the federal income tax statement. This was resolved by a whole series of comprising on both sides but for one year this confrontation in Canada was so acute that it virtually brought up to a halt, oil exploration operations in Alberta. Because as a result of the confrontation between a provincial and federal government the actual per barrel profitability _____.
If you consider that there is something in this whole concept of a special approach to the taxation of income derived from oil producing operations in Alaska, that approach must meet two criteria. That in the principle of taxation and in related taxation, it does not do violence to the interests of the industry vis-a-vis the state, or the state vis-a-vis the industry. And secondly, that it does not involve that form of taxation which sets Alaska in juxtaposition in confrontation with what is the policy of the U. S. Government and the reason for giving to all new producing operations, newly discovered wells, a price as high as the federal government is willing to give.

You will have to consider whether or not this principle of taxation commends itself. Let me say a few things more about how these bills have to operate. The excess revenue sur tax says in effect, that Alaska will acknowledge a long term price, a price which is adequate to sustain exploration over a long period of time, and any profits earned within that long term price will be taxed at what is essentially the normal income tax rate. On the other hand, any profits earned on prices received by the producer above that long term price can be taxed at a higher rate. The

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amount of the higher rate is not germane to what I believe is the problem. The long term price is about the most elusive thing imaginable. You don't really know what kind of a price is necessary to sustain the level of exploration, to find the kind of reserves and replace the reserves that are being used up. The long term price which was used in the _____ $7.00. There is a certain amount of authority for it. The foremost authority on long term pricing and adequacy of pricing is up to the Secretary of Treasury. And our Secretary of Treasury once said that a $7.00 price, he thinks is a long term price. It is on the record you see. The International Energy Agency has adopted $7.00 a barrel as a floor price. I don't think that it is reasonable to say to an industry that the legislature of Alaska has within its competence an ability to so discern the future that it knows what an adequate long term price is and before the future comes to _____, start already, today, to tax the profits on this theoretical long term price, as though it really was added profitability. The thing is that the long term price is a prediction about the future, but the excess revenue tax becomes effective immediately as though one knew what this long term price were going to be. This is not a principle of taxation which would meet either of the criteria that I set down for you which are absolutely essential to serious consideration of this kind of special taxation for the oil industry.

The other bill which sets up what is the oil production income tax takes a somewhat different approach. What it says in effect is that we're looking at the continuing profitability of the oil industry and we will, from the effective date, subject the oil industry to no more than the normal rate of taxation on profit of up to 1.25 times allowable costs of operation. That is to say, there is a built-in margin of profit within which the industry pays no more than what would be the equivalent of the normal income tax rate. But above that, on any income above that, the industry will pay a sur charge, a higher rate of taxation. Again, our difficulty with the specifics of this proposal apart from technical problems, which, again, I wouldn't want to quarrel with the bills as they stand, I am sure that all sponsors were looking for an approach and quite agreeable to changes of language and so on. The difficulty is that it says, as of today, without regard to what may be, over time, the true profitability of the industry, however you measure it, immediately the industry becomes subject to this relatively high rate of taxation. Why not from a field like Prudhoe Bay? Why not subject themselves immediately to it? Because we don't know what the ultimate profitability of Prudhoe Bay is going to be. I suspect the industry is going to tell you that the DCF rate of return is nothing like what some of your studies show. Suppose the industry is wrong and the DCF rate of return is much more than these studies show. Does that mean that then this kind of taxation in the first year of operation or the second year of operations, is acceptable to the industry. If they argue that I think they argue a poor case for themselves. One can't begin already to tax presumptive profits which are going to be very large before they occur.

Our quarrel with the legislature on advalorum reserve tax in the last session and the argument that this was a clear principle of taxation. It was not that it was inconsistent with the industries' ability to pay, but that it presumed something about the industries' ability to pay. That is to say, taxed the value of future revenues before the revenues even started. These other taxes begin by putting the sur charge, not in advance, but from the first day of operation and make very big presumptions about what the ultimate profitability will be. Let me suggest that if you are considering this, there is another alternative, and there is an alternative that could at least be consistent with the criteria that I suggested before. And that is that no more than the normal rate of taxation shall apply to oil producing profits until there is multiple recovery by the industry of all of the capital expenses that were involved in obtaining the leases, in doing the exploration, doing the development and so on. This means in effect that so long as the industry is getting back its capital and a multiple of the capital, how large a multiple - this is an unknown, but I am going to suggest to you for a moment that is one of the areas where the State of Alaska can afford to be extremely generous and not worry too much about the multiple recovery of capital. Which means that there cannot be for any income in the State of Alaska other than exposure to the normal rate of taxation until the profitability is assured. That is to say, these uncertainties that exist in oil producing operations -- When are you going to go on _____? When will the pipeline be constructed? What is going to be the well's producing ability? When you really get 1.2 million barrels a day? Can you go to 1.5 million barrels a day? Will the wells sustain as much as 10,000 barrels a day or an average of 5,000 barrels a day? -- All of these great uncertainties will have been resolved. The companies will have made multiple recoveries of capital, before they have ever been thrown in a position of being exposed to any sur tax over and above the normal rate of income taxation. This also means that there can be many future results, exploration successes in Alaska, which will never pay more than the normal rate of taxation on their income. Why? Because the capital investment relative to the amount of oil and the price of the oil, will require a long period of time before this multiple recovery of capital takes place. What you are doing is protecting the incentive to look for marginal fields, you are maintaining the incentive to continue producing, even fields of modest profitability. It means that while the State of Alaska will forego anything other than its normal tax revenues, from the most successful fields, it does say that it is in the position to ask that the industry make something more than the average or normal contribution out of what, by then, will be the sure and established profitability of the most successful ventures.

There are a host of problems in almost any aspect of this taxation. I hope that the record will not lead nor the presumption taken by the legislators who are listening that we are proposing this as something that you should adopt. What I am saying is that you are confronted now with a package of taxes which involve possible changes in the severance tax, which involves strengthening and supporting your income tax approach so that even at the rates that

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any other industry pays, the industry would be subject to and liable for that amount of taxation. But beyond that, that you consider whether or not there is something in the prospective profitability, not the present profitability, but the prospective profitability of the oil industry, which suggests that as this kind of an important venture it can have all the incentives necessary to continue exploration in Alaska, that it can be subjected to a form of taxation which is not inconsistent with federal policy and the purposes of the prices which the federal government gives to the State of Alaska. It is for you to decide whether you even want to introduce this new form and new principle of taxation. If you do then I think you might consider, along with what we feel are the disadvantages of the two particular bills before you, a similar principle of taxation but with a method of determining when and to what extent there is exposure to any higher level of taxation by means of this multiple recovery of capital.

I don't think for a moment that the industry is going to accept anything I've said about the reasonability of special taxation of the oil industry if only you assure profitability by meeting their multiple recovery. They will always feel not only that they shouldn't pay high taxes, but that if the principle of separate taxation, apart from the general taxation of income from whatever source, is once accepted by this legislature, that future legislatures, after the oil industry has recovered its capital one and a half times or two times over, or more, boy, at that time you can put on all kinds of taxation. Why not? They have been obviously profitable, they recovered their capital. I'm sure this is an inherent fear of the industry and it could happen that way. But the whole principle of taxation, as I've said before, a new concept of taxation, which is before you, proposing two different forms, under the best of circumstances can only work and ought not even be considered by the legislature, unless it is within the framework of understanding that there cannot be, even if there is separate taxation, there cannot be a raid of taxation upon the oil industry, which is destructive of incentive and too, which is inconsistent with what is federal policy.

REPRESENTATIVE TED SMITH: (QUESTION INDISCERNIBLE)

MILTON LIPTON: There are so many ways in which it could be done. If I give out any specifics, it would sound as though I think that's the only way of doing it. In general I would say this. It makes sense only, really, if the company is liable to this form of taxation by virtue of its earnings in the field, therefore you would want to allow for each company participating in the earnings, the profits out of that field, multiple recovery of all the expenses on the field. I would also feel, and I feel very, very strongly, that it would make sense for Alaska to allow as a charge against earnings before any sur tax comes in, not only multiple recovery of capital in the field, but allow the expensing of a lot of other expenses elsewhere in Alaska if they have no where else to expense it, that is to say, dry hole costs, by a company against whatever tax exposure has by virtue of its earnings as participation in a producing field.

REPRESENTATIVE TED SMITH: (QUESTION INDISCERNIBLE)

MILTON LIPTON: Yes, I would allow them to take exploration expenses elsewhere, which cannot be charged against operating income anywhere, against both their normal tax liability and their sur charge tax liability, whatever they are producing. And let them pick the most advantageous place for it. What I am really saying is that since there must be a limit in any case, upon the intensity of state taxation on the profitability of the oil industry. It cannot be regarded as an open sesame to unrestricted state revenues. If so, it falls apart, by both criteria, it can be destructive of the industry. If then, there are limits in the restrictions, it means that the State is postponing any added taxation on the industry until their profitability is assured and the State can lean over backwards, I believe, in providing that assurance in terms of a multiple. When the State leans heavily against the oil industry by what we regard as a poor form of taxation which was the advalorem reserve tax, because it had to. The State can afford to lean backwards in terms of its principle of taxation when it doesn't have the pressure _____. If this is looked upon as a means of the State getting what is a reasonable share of what will be, over a long period of time, a very profitable operation, even if it is not under DCF. Then I think the State can afford to lean over backwards without doing violence to the position of the State. Just as it would during periods of budgetary _____ it leans heavily on the industry.

SENATOR JOE ORSINI: You started off your remarks by saying that Prudhoe Bay is the most successful endeavor west of the Suez Canal. Yet you are saying now that we should tax based on Alaskan _____. What about dry holes in other parts of the world _____?

MILTON LIPTON: I would say that the State of Alaska should take into account dry holes east of Suez, when the producing countries east of Suez allow the oil companies to take account of dry holes in Alaska. No, I don't think that you can worry about the entire world. You don't have to allow the expensing of dry holes elsewhere in the United States against your tax regime, but you have to have a principle of taxation which recognizes that before you start taxing profitability here in Alaska, that profitability has somehow to compensate that company as part of an industry. What I am saying in effect is, that Alaska ought not to draw a ringed fence around Alaska and say we measure the adequacy of rates of return by what the industry does in Alaska. Certainly not around Prudhoe Bay, and say that well, if that great of return is adequate for Prudhoe Bay, what the heck, this is going to be the principle of taxation. I think that the ringed fence should really be drawn around the United States in terms of the consistency of your tax approach. But it doesn't mean that you therefore have to _____ expenses. You can decide in your infinite wisdom how much credit you give for overhead outside the United States, but this will be a small matter.

SENATOR JOE ORSINI: You say that after a field has a multiple of its expenses then sur tax on the profit. Would this discourage the marginal exploration?

MILTON LIPTON: No. I assume that that tax is not going to be a prohibitive tax. It is not as though you are taking away 100% of the added profitability. I presume that whatever percentage of taxation you are talking about is a modest percentage which makes your tax regime consistent with national policy. I don't want to talk about tax rates, or multiple recovery of capital. There are no neat answers to any of this. It would be wonderful if a consultant could sit before you and say, "Look, the answer is clear. If you give the companies 1.63 times recovery of capital and then you put a sur charge on profits after they have recovered that of 21.5%. This is absolutely right." Well there is no magic answer to it which is why I find myself so often cast in the position here, before the legislature, saying "on the one hand and on the other hand". And I know some of my friends in the legislature would wish that at one time I had my hand tied

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behind my back. On the other hand, I have never figured out when he looks at me that way, what his politics are. What does he want -- my right hand tied behind my back or my left hand? There aren't any easy answers and no more so if you go this multiple recovery of capital route rather than a DCF rate of return or a long term. This is all very much in never-never land, excepting that you are not likely to do great violence to an equitable sharing if you.... Because if you go the rate of return route or if you go the long term price route, what you are saying is, we start out immediately taxing what we believe to be is a higher rate of profitability. This is before the profitability is ever established. Whereas if, for example, -- I don't like to use Prudhoe Bay as an illustration because I hope that you don't write tax legislation which is designed for Prudhoe Bay per se, any more than you should be constrained in how you tax Prudhoe Bay by the problems in some of the less prolific fields in Cook Inlet. Your tax legislation ought to be appropriate to not only oil that is present but for the future as a whole. There has to be a decent principle of taxation. Which means that you protect both the marginal field because there is not going to be any income subject to a sur tax because they need to recover their capital. You protect the profitability even of the most profitable fields by allowing a heck of a lot of capital recovery and then presumably by coming up with a sur charge which is not confiscatory. Which doesn't say to them, "You made your profit, we are taking it all away from you."

Please don't misunderstand me, I have no idea whether it makes any sense whatsoever for Alaska. In your own thinking as legislators, to say we have to go beyond our present tax structure, you may want to say that we have a tax structure if only we can get our income tax, which assures us we collect the normal rate of income tax on what is the profitability of producing ventures here. We will try to utilize what is a good approach in severance taxation to get what we think is appropriate. We have a relatively high degree of various forms of advalorem taxation on the industry. This is sufficient unto our purposes and we can work within this framework. And you may very well want to make that choice. But on the other hand, you do have opened up before you legislation which is new, it offers new approaches, it opens up

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in new directions. What I am saying is that you must understand what these new directions are. Be very, very careful about it. If you want to go there, then you've got to find some principle of taxation which is consistent with what you want to achieve for the State of Alaska and with what you must give to the industry and with what is also conciliate with the U. S. policy.

QUESTION: When you say multiple recovery of capital costs, are you saying that in current (INDISCERNIBLE)

MILTON LIPTON: No. That is why you have multiple recovery of capital. I don't think that is necessary. You don't have to give them replacement costs. But let the multiple be large enough.

REPRESENTATIVE OSTERBACK: The overall cost to the state, would that be including the offshore drilling? (INDISCERNIBLE)

MILTON LIPTON: Not in federal lands. If it is offshore federal it doesn't fall within the Alaska tax regime one way or the other. It would with offshore drilling in State acreage.

REPRESENTATIVE SMITH: I presume from our standpoint the principle problem with the recovery approach would be that the _____ deferring taxes _____ for a substantial period of time _____.

MILTON LIPTON: You would be deferring additional tax income over and beyond that which you would get from your normal rate of income taxation. You are not giving that up. You are saying that all income becomes subject. You presumably still have a severance tax, and you have your advalorem taxation. What it says is, if we are looking for, what in the future, is a possible contribution of tax revenue from successful and profitable ventures in Alaska, over and above that which our present tax regime... You can review severance taxes, you can do all kinds of things but this is one possibility, that what you are looking at, as I have said before: The reason for it is not that calculations throw up high prospective DCF rates of return. The reason is that there is in prospect a totality of profits out of producing operations in Alaska which dwarfs what is likely to take place in other producing areas. Let me be very clear about where the problem here lies. When you talk about tax policy in principle, reasonable men can reasonably disagree. When one looks at the bills that are before your legislature, which imply for the industry -- they vary from bill to bill and it depends upon which field _____, we've done all kinds of calculations. But it may involve for

Prudhoe Bay as much as a dollar per barrel reduced income, net, after all taxation. A dollar a barrel, on a round number of a million and a half barrels a day, is a million and a half dollars a day, 365 days a year, we are talking about something over half a billion dollars a year, give or take. It is awfully hard for reasonable men to disagree reasonably when that amount of money is involved. And particularly when it is all based upon a presumption before it comes to pass. And yet, if you add up the totality of profit that may derive from a successful venture such as Prudhoe Bay, under the levels of prices which probably we'll obtain, may come. The magnitude of the profitability is awesome. And then the State has to decide what is a reasonable contribution. Does it mean in effect that billions of dollars of income earned from oil producing operations shall pay a tax rate identical with a thousand dollars earned from other economic activity in the state. You may decide, yes. But it opens a question, that is all I am saying. When I say, if there are no answers, you know there are really two philosophies also of how one strikes the balance. You can have one approach which says the interests of the state of Alaska are poorly served if you leave an oil company with one more dollar of profit than it needs. But if you leave an oil company with a dollar more than it needs, then you are not serving the interests of the state. The industry has said that whatever the taxation in the State of Alaska is, that another dollar of taxation is onerous, it threatens the viability of the industry, that it can't stand it. That the rates of return, all things considered, aren't that high. Well this is another extreme position. And maybe that is so. But if in due course you can find out, without making theoretical calculations, as to what profitability is going to be, but somewhere in between I think is a positions which the State of Alaska can reasonably take. Even though nobody will agree if there is too much money involved.

REPRESENTATIVE SMITH: (QUESTION INDISCERNIBLE)

MILTON LIPTON: The upper tier price will rise as the average rises but no one knows by how much it will rise as the average rises. For example, if the FEA decides that an increase in the average by 10% a year should go both to the lower tier price and the upper tier price, that very distinctly limits how fast the upper tier price could go up. If they decide that none of it goes to the lower tier price, the old oil, and all of it goes to the upper tier price, then the upper

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tier price goes up faster. Furthermore, it can give part of the increase in the average to the old oil and more of the percentage to the new oil. And whichever route it takes, it's not only their policy but it is the proportion of all the new oil which will determine how fast the new oil price goes up, which is why they don't want, in effect, the 200 million barrels a day. I hope so. One million barrels a day, 1.2 million barrels a day of North Slope crude all to claim the upper tier price within the average. In 1978, 1.2 million barrels a day of Prudhoe Bay production could depress the upper tier price if it is included by over a dollar a barrel. If the average goes up at 10% per annum and the old oil price is held, the new oil price, by June 1979 should go to $15.42. There are a lot of assumptions about how much production, how fast old oil goes down and new oil goes up, this is the figure. If the North Slope is included, the new oil price will be $14.03 and will have an affect of about $1.40 on the new oil price.

(QUESTION INDISCERNIBLE)

MILTON LIPTON: No, I am at the disposal of the committee and as I said, I tried to address myself today to what I think are some of the most important considerations that you've got to have in your minds as you view the kind of legislation that is before you. As far as the specifics of the legislation are concerned, we are available to you. We plan to be here for a while because we have other committees to meet with, and we will go over any and all bills with you at your convenience.

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SENATE RESOURCES COMMITTEE

Testimony of Milton Lipton

May 3, 1976

I would like to take a few minutes to give your our impressions of the bills in the form that they now are before the Legislature. There are three forms of taxation which have been before you all through this session. There are first of all the various amendments of the severance tax. Secondly, two separate bills which are designed to implement or be substitutes for the regular state corporate income tax and the third are the several bills designed to impose a higher order of income taxation on profits from oil producing operations than from other industries in the state.

On the severance tax, our office sent to the legislature, the week before last, a note on the proposed changes in Alaska's gross production tax, and I don't propose to summarize all the material, but in this note, as in our previous report to the Legislature a year ago and our comments before various legislative committees, we have consistently said that we feel this is an appropriate time for the state to review its severance taxation on oil production. We feel that the gross production tax as a percent of wellhead value can be increased without getting out of line with what is the going rate of taxation in the various states. Sponsor substitute for bill 569, which in effect imposes the highest rate of taxation in the last step schedule of taxation, would take production averaging about 9,450 barrels per day in order to yield an effective tax rate of 12 1/2 percent which is the tax rate which applies to all production across the board virtually without regard to the producibility of wells in the state of Louisiana.

We feel that the step schedule can be increased, with increased rates in the upper bracket and I think the idea of reducing rates for marginal wells makes a contribution also to a balanced severance tax spectrum. But we point out again that your severance tax, like all severance taxes, is a tax on the gross value of oil at the wellhead. Not on the net value. Therefore, it is not an income tax. It is not a substitute for income tax and therefore, one has to be very careful as to how high the marginal rates of severance taxation even within the step schedule go, because of the effect upon the gross value of production. We talk about wells producing 3,000 barrels a day or more or 5,000 barrels a day or more or 6,000 barrels a day or more, but the taxes are on the gross value. Even two wells, each of which average 5,000 barrels a day can have very different costs of operation. As the difference

between Cook Inlet and Prudhoe Bay and other fields that may be discovered. So that in general, the virtue of the severance tax is that it can be measured against the standards of taxation in other states which is particularly appropriate for taxes on gross value, whereas where we discuss an income tax there is no reason why income tax rates necessarily must be the same state by state any more than property tax rates are the same state by state or excise taxes.

But for the gross production tax it is a useful guideline to the state of Alaska to stay reasonably in line with what taxation is within other states. We find that the cents per barrel aspect of your severance tax faulty in the way in which has been operating and probably undesirable in the way in which it would be operating, from the standpoint of the state itself. The revenue to the state from Cook Inlet today from the cents per barrel tax already constitutes a higher percentage of wellhead value than is being proposed under the amended severance tax legislation in any of the bills that are before you. The reason that this has happened of course is because you have an escalation in the cents per barrel tax geared to the crude price component of the U. S. wholesale price index. That had been going up ever since January of 1973 consistently through January of 1974, consistently through January of 1976 whereas most of the Cook Inlet production as old oil has been frozen to a constant price. So the cents per barrel tax has been going up while the actual price, the value of their oil at the wellhead has been constant and you now have relatively high rates. Just to illustrate with regard to a few numbers. Wells averaging 2,000 barrels a day at Cook Inlet would be paying a tax as of the February wholesale prices 39.6 cents. The percent of value of that tax is 8.4 percent. Under the committee substitute bill 295 the percent of value tax which is being proposed is only 7.2 percent. And under SSSB 567 the tax rate being proposed is only 6.9 percent. So that already you see you have the cents per barrel tax imposing a higher rate of taxation relative to the wellhead value of Cook Inlet than is being proposed in the amendments. We would feel that if there is any amendment to the severance tax along the lines of increasing the incremental rates of the higher brackets, lowering them at the lower brackets, that the cents per barrel tax should probably be eliminated. Excepting possibly if you want to maintain the present level of state revenues from Cook Inlet as a fixed figure, in other words, freeze the cents per barrel at what the present payment is, so that it can't go any lower, if it is necessary for state revenues, no further escalation on it, and then allow the severance tax law to go higher only insofar as wellhead values in the future go up and new severance tax rates go higher as a percent of wellhead value than what is already being paid in cents per barrel. But if you continue to allow the cents per barrel to escalate under the unpredictable regulation of crude oil prices that we have in the United States you may very well end up with such onerous taxation for old oil in Cook Inlet that the producers of old oil in Cook Inlet will be paying a higher severance tax than the producers of new oil will be paying in Prudhoe Bay.

Now the final comment about the proposed changes in the severance tax law. They are apt to have very little current income effect for the State of Alaska. That is to say, the major impact of increases in marginal tax rates even within the structure of comparability with other states would come after Prudhoe Bay comes into production and it will not have very great impact at the present time. So I guess the question before the Legislature is to revise now or not to revise. There is at least one technical amendment proposed which I think is a major contribution for purposes of administration. That is to put the computation of the tax not on a per well basis but the average production per well per lease or per property. Simplify the administration of the tax tremendously from the standpoint of your operating department. I guess it was proposed initially by them although we discussed it as a factor some time back. Whether or not you should follow this course, one the technical amendment, two restructuring the step schedule to more towards higher incremental rates of taxation at the top, somewhat smaller rates of taxation for marginal wells at the bottom and either eliminating the cents per barrel or using it as a floor to protect state revenues, but with no further escalation, whether or not these, which I think we would commend to your attention, are worth doing at the present time in terms of the legislature you yourself must decide. We do not believe that it would be difficult for your committees to finalize a reasonable and offerable amendment to the severance tax. I don't think you need be deterred particularly by the fact that other aspects of oil industry taxation may not be finalized in this session and may be subject to review between sessions, may come up again in the future. I believe that within the range of observations which I have given to you today and discussed further in our report, the severance tax alone will stand on its own feet. I don't think it necessarily need inhibit whatever other consideration pro and con you give to other aspects of oil industry taxation. On the other hand, I would not regard these amendments as terribly urgent at the present time and if in your own wisdom you feel that it is worth weighing the severance tax in the balance with other types of taxation which may not actually be resolved this session which will be reviewed in the interim and possibly coming up later there is no great urgency, because as I have said the revenue impact on the state of the kind of amendments to the severance tax which are before you and within the limits of what are considered to be reasonable for the state, the revenue implications are not very great.

You will, of course, without my invitation, jump in and ask questions any time you want. I call your attention to the fact that this is about as much as I propose to say unless there are specific questions about the severance tax. I'll go on to the income tax.

ORSINI: Are you going to discuss gas in a different context than the oil severance tax?

LIPTON: I'll be perfectly willing to if this is of interest to you. I'll just say very quickly our position is that the state has to be very concerned about the cents per barrel form of taxation on oil. Because this is an aspect of taxation applied on gross value coming out of the presumptive profitability of the industry which cannot be passed on. There is no way of passing on this form of taxation which is not geared to income tax or anything else. In the end whether it is the producer of crude oil in Alaska who refines it in California or whether it is a producer who sells his crude oil to be refined in California or elsewhere the recovery of all costs, including all forms of taxation can only take place when gasoline is sold in competition in the marketplace. And gasoline is sold in competition with gasoline processed from all other kinds of crude, domestic crudes, imports and so on. So in a sense, a change in the severance tax, an increase in the severance tax is not recoverable. This is very different from the case of gas. In the case of natural gas it is not even inappropriate for the state to consider a cents per MCF tax on gas. Because, within limits, Alaska's tax on gas production will be recoverable in the market place from the ultimate consumer whether the consumer is in Alaska or whether the consumer is in the lower 48 states. It will be recoverable in the same sense transportation costs will be recoverable. Because you don't sell natural gas in a one price market although the ultimate consumer, whether it is an individual in a household, or a business corporation that's using gas for industrial gas or process gas, although he pays one price for the gas, the price he pays is an average of many different streams of gas coming into his distribution network, or being delievered by a gas transmission company, many different streams of gas that carry different costs and different taxation. And within limits, the state is in a position to say that if our tax, for example, is five cents per MCF, this five cents per MCF along with production costs of gas and along with transmission costs of gas will enter into the price at the end of the transmission line to be rolled in with the price of all the other gas supplies which are commingled and then sold to the ultimate consumer. So from the standpoint of gas, the state can regard the severance tax in a somewhat different way than it can an oil tax.

However, at the present time, almost 50 percent of all of your gas in consumed in Kenai and in Anchorage so that with contracts that provide for pass through of the severance tax, so that whereas the tax on gas can be passed through to the ultimate consumer almost half of it will be passed through to your own Alaskan consumers. The other part of the severance tax can be passed on to industry which is using the gas in processing or for export purposes. It's your decision whether or not you want to impose a higher severance tax on gas which can be passed on to the consumer when so large a percentage of the consumers are Alaskans.

You may want to regard it in an entirely different light in the future when Prudhoe Bay gas is coming on steam, when the bulk of your gas goes into export. And when you have a better handle on what production costs are gas pricing out policy is going to be, and so on. I would not think there is tremendous merit at the present time in revising your severance tax on natural gas.

RADER: I think you get that Alaska gas under any routing may not be economically acceptable for a lower 48 market because of the costs. Would you anticipate that a natural gas severance tax at this time would have anything to do with gas routing or the feasibility of either route, or anything like that?

LIPTON: Senator Rader, first of all, it is very difficult for me to conjure up the transportation costs which will price Alaska natural gas out of lower 48 markets. If you look at the natural gas balances in the United States and you see what the alternatives to them are you are talking about very high cost gas. If it is SNG, manufactured either from coal or naptha, or if it is imported liquefied natural gas, all of these by the 1980's when Alaska gas starts to flow will be incredibly high cost. It would take a multiple run up of any present estimate of transmission costs even to get these things close to the alternative. If you're talking about gas transmission costs on such an order of magnitude that Alaska gas lays into the lower 48 states at $3, $3.50 per MCF, as someone suggests may be the case, then a five cents severance tax is not going to weigh that much in the balance. I don't think the severance tax is going to be a disability on the movement of Alaskan gas, nor do I think transmission costs are going to be a disability. When the time comes that gas will have a very high value in the lower 48.

CROFT: You pointed out that some 50 percent of the gas out of Cook Inlet was used in the Anchorage area and there have been several different methods proposed by which you could increase the severance tax on gas yet minimize or eliminate the affect on Alaskan consumers. There may be mechanical or constitutional problems with some of the various proposals, but laying those questions aside, do you see any adverse affects other than the political one that suggests we don't bother with, increase the tax on gas. Is there going to be a reallocation of use of gas? Are we going to make other fuels more admirable in the Anchorage area rather than gas or any of those types of impact?

LIPTON: The highest value in your Alaskan gas is when it is transmitted to the lower 48 states to be used basically in households. On that basis I don't see that an increase in severance taxes is going to be a disability. It is a different story if you are talking about the internal utilization of gas as feedstock for example, for petrochemicals

use. There you have to be very much concerned. Because the petrochemical industry not only has alternative feedstocks, it has alternative locations. The petrochemical industry itself is running out of gas as a plant fuel in the lower 48 states. In certain locations they are facing curtailment of natural gas as petrochemical processing feedstock. So that the availability per se may be a plus for Alaska, but you certainly would want to be concerned about what you do to the cost of it, if it is to be a feedstock for explansion of petrochemical facilities where you have to entice industry to make the denovo investment in the state. But again, there are ways that can be handled. Louisiana has been doing that for a long time in which in effect it has given an indirect and not a direct rebate of the Louisiana severance tax to industry using gas in Louisiana. That, I presume could be done too.

Insofar as the highest value in dollar terms, you may want greater utilization of gas in Alaska, even if it means lower value through its use in Alaska. But in terms of high value and dollars per MCF, the greatest value is in the lower 48 states and I would not think that anything you do within the range of the proposals that I have seen, whether a cents per MCF or percent of wellhead value is going to be a great disability.

RADER: What you are saying is that the largest value in the commodity sense would be in a domestic consumption through a pipeline in the United States the greatest value to Alaskans in a local sense would be quite contrary.

LIPTON: Yes, this is a matter of how Alaska sees the merits of getting the highest net back to the value of the gas relative to the utilization of its gas within the state even if it means lower cost gas to its own consumers or if it means the availability of raw material to entice industry here. This is something you must decide.

CROFT: How does the Louisiana rebate work?

LIPTON: Senator Croft, I don't have the details of it. We looked into it some time ago, but I think basically it is a subventure to industry to cover energy costs. I don't remember exactly how it operates. After subvention the gas costs industry less than if they were charged with the whole severance tax.

CROFT: I assume that the problem that you describe with regard to cents per barrel of the present tax is because it is tied to the consumer price index. One way with regard to Cook Inlet to solve that problem would be to have a cents per barrel to fluctuate according to old oil prices. Which might be more realistic with regard to Cook Inlet. I assume one of the disadvantages would be that some uncertainty as to what is going to happen with the whole pricing policy . . .

LIPTON: I don't see any real merit, Senator Croft, in the cents per barrel tax if you remember, along with me, what the Legislative history was. It started out in the first instance when the legislature was asked to make itself concerned with the fact that wellhead values were going to be so depressed by pipeline tariffs and the value of oil in California was going to be low and therefore the wellhead value would be low and the state of Alaska wouldn't be getting severance tax revenues adequate to budgetary projections for 1976-77, when the pipeline was presumed to go into effect. And so the cents per barrel floor was a way of putting a reference basis on for severance tax purposes. And then when it went through various legislative combinations and later on there was some concern that the way the companies were setting posted prices in Cook Inlet might not do justice in the future to the state's entitlement to a fair share of the true value, and therefore, if they don't raise their prices in Cook Inlet, well what the hell they'll be hit by the cents per barrel tax because it is based on an average of lower 48 crude prices. Of course, it worked just the opposite. It is not that they didn't raise their wellhead prices, they were not allowed by law to raise their wellhead prices, whereas U.S. average prices were going up, not because other old production was going up in price but because the new oil price was going up. And we don't know what moment in time the U.S. Bureau of Labor Statistics will wake up and put foreign oil in the wholesale price index. It belongs in there. It has always been excluded. So it is an unpredictable behavior on the whole there. I think the cents per barrel doesn't have a great deal of merit. It has worked in the wrong way in the past. I don't think it has a great deal of merit in the future. Although I can see why you would want to maintain a floor, under severance tax revenues which you have been used to collecting and the companies have been used to paying even though as I said they are already paying a percent of wellhead value higher than any of the proposed amendments would impose upon them as a percent of value.

CROFT: You are saying that we might want to retain it as a floor, you are talking about a fixed . . .

LIPTON: Fixed . . yes. Whether it's the February rate or the January rate or the March rate, or some recent rate which is appropriate and would be a flat cents per barrel for different gravities of crude and for appropriate average well producibility and then thereafter the state's revenues will go up as the value of the oil at the wellhead goes up and according to whatever change you make in your rate of taxation. Severance taxation. Just roughly speaking if you were to adopt the rates of severance taxation in either of the amendments, the increases which bring the top rate up to 12 1/2 percent or 14 1/2 percent, depending upon the step schedule, and if the price of old oil at Cook Inlet goes up at about the rate which the Federal Energy Agency has projected.

Although I think their projection is too high. But about that rate. Then within about two years you would start collecting higher severance taxes from Cook Inlet. For about two years, or slightly less you would still be collecting the fixed flat cents per barrel. After that it would start going up. Because their prices have gone up and your rate of taxation, if you adopt either of these amendments will be somewhat higher.

BROWN: I wasn't in the legislature when the original bill was passed, but I would assume that one of the reasons for gearing the cents per barrel tax to the price index was to make sure that the actual affect in real dollars would take into account inflation. The tax would not just gradually decrease over a period of years.

LIPTON: No, because the cents per barrel escalated not with a wholesale price index. Only with a crude oil price component. And the worth was, that if, for example, all crude oil in the lower 48 states went up by ten percent then Cook Inlet crude oil would go up by ten percent too. And if the companies, being bastards as they are presumed to be, didn't raise their Cook Inlet prices, they would be taxed anyway because the index went up. Now, I don't think it was an attempt to maintain the real value of the state's income at all. I think it was an attempt to insure that the state got its fair share of the presumed value of Cook Inlet production.

BROWN: Even though my assumption is wrong, I still have that same concern. If we were to follow that recommendation that where we could keep a cents per barrel floor it would just be an absolute one not geared to something like that, in effect aren't we putting in a floor that will constantly decrease with inflation.

LIPTON: No, because if you assume also that crude oil prices are going to go up with inflation, which incidentally is built in to the Energy Act at the present time, then the base of your severance tax also goes up. And so, in a sense we will be collecting not a cents per barrel, you will be collecting a percent of the rising wellhead value. In other words, if your average rate of taxation at Cook Inlet works out to 8 percent of wellhead value and your inflation goes up at the rate of five percent a year the wellhead value will go up five percent a year, you will have eight percent of a rising wellhead value. So in a sense, the state is also protected against inflation.

BROWN: I'll have to work that through my head about two or three more times. I may come back and ask a question later.

HUBER: What happens to us if the cost of pipeline construction and operation of the pipeline escalates at an even faster rate than other things including the discussed changes of the ICC that they may go as high as 10 1/2 percent or 12 percent allowable earnings.

LIPTON: Ten or twelve percent on what?

HUBER: Ten or twelve percent based on the profitability on the line. In other words. . . . wouldn't we need that floor to protect ourselves?

LIPTON: No, what you would desperately need under those circumstances is an aggressive Alaskan pipeline commission.

HUBER: Maybe a mean legislature too?

LIPTON: A mean legislature and an aggressive Alaskan pipeline commission.

The eight percent rate making rule of the ICC, as we have discussed so many times, may have been appropriate to circumstances in the times when it was enunciated, basically 1939. Now it is completely inappropriate. The ICC has been sleeping ever since and I would assume that you have regulatory legislation and ability to ride herd on the pipeline tariff. Now you can't protect yourself against rising costs of the pipeline construction. The costs are based upon investment, you can't protect yourself against those costs. Those costs will come out of company profits to the extent that the depressed wellhead prices will come out of the state's economic interest. Both royalty and severance and taxes. No question about that.

HUBER: I thought that that eight percent was based upon the investment in the line and did I detect in what you were saying that you say it was inappropriate now, do you mean that it should probably be higher now? What direction can we look?

LIPTON: I think what is inappropriate is the whole rule. The eight percent was on total investment. It's depreciated updated capital in the line. It was adopted at a time when virtually all the investment in pipeline was equity investment. In the 1930's who could build a pipeline on borrowed money? And the eight percent seemed to be a reasonable rate of return on total capital and total capital was basically equity. Of course, now there is no way in which a company wants to build on equity when it can borrow money and certainly now with the tremendous leverage that you have on Aleyska the real question is what is the appropriate rate of return on equity and on borrowed capital and the eight percent rate making a cash flow to the company, to recover their capital, pay all of their taxes and to yield eight percent in which the interest on the borrowed capital has already been charged off as an expense. So the rate of return on equity becomes fantastically high.

HUBER: What prompted the question was that I had heard that probably it would be going even higher, the eight percent allowable earnings and I was wondering if Milton had any word on that and also both Milton and ourselves recognize that there is approximately 15 percent equity interest on the pipeline and the rest borrowed money. At eight percent this translates to some 46 percent at the present projected earning on just the equity, after you have paid off all of the expenses of the borrowed money. So that's what I was trying to get at.

LIPTON: I would like to spend just a few minutes now talking about the state income tax, and the several bills that are before the legislature that provide alternative methods for computing taxable income generated by oil producing operations in the state which would be subject to comparable rates of taxation as other industries.

You have before you in the legislature SB620, net proceeds tax, and the second SSHB 803. Both of these are designed to identify, as I said income generated by oil producing operations in the state and make them susceptible to what is essentially the same rate of taxation as other corporate income. We have long urged direct accounting of production income in the state of Alaska because we felt that the apportionment formula works to the disadvantage of Alaska. That is to say, you have what is roughly a 9.4 corporate tax rate and 9.4 percent of what. The apportionment formula throws up a smaller estimate of the income earned in producing operations than would be the case through direct accounting. Your present income tax law does provide for direct accounting, the trouble is that the method of direct accounting in the state avoids almost any tax payments by the companies because so few of the companies have direct sales in the state. Most of the oil produced here is in a sense shipped out of the state and lacking direct sales they have no gross revenues. If you have no gross revenues, you don't have to worry about the allocation of costs, you have no net revenues, if you have no gross revenues. So we long urged an overhaul of it.

There is, as has been called to your attention, some legal questions as to whether the two approaches would in effect work from a judicial standpoint. That is to say, vis a vis, the state's commitment to the Multistate Compact, a possible question of double taxation. We have no real competence in this area, I presume that it has been looked into at various levels. I suspect that however deeply you look into it, you will not get a definitive answer as to whether direct accounting along the lines of SB 620 or HB 803 is consistent with the state's obligations under the Multiple state compact or whether it can be challenged in the courts as essentially an unconstitutional taxation on income that is earned out of the state because of the whole question of allocation. Whether or not you have good legal advice or whether you can get a definitive answer, I just don't know. I suspect that in the end the only way that you find out whether Alaska can do it is if you eventually enact one or another of these taxes.

From the standpoint of our review and with regard to the aspects of oil industry taxation that we are familiar with we feel that probably the treatment of costs in both bills are unneccesarily complicated. There are difficult definitions. I would assume that in any case you would want some input from the department of revenue as to the operational

questions that are involved. After all they're the ones who will have to administer the statute which you enact. If you are concerned about the specifics of these I have discussed SB 620 in March when I was here, we now have HB 803 in front of us and I am prepared to go through with the committee line by line of 803. I think from an administrative standpoint, in terms of what is reasonable economic treatment of costs we still find some difficulty with 803. I think a basic question before the leigslature is how long it would take at this stage of the session to get a bill such as SB 620 or HB 803 into the kind of shape that we would want it to be in before you will be prepared to accept it as one approach to the direct accounting of oil producing income in the state of Alaska.

Let me just say I don't think either of these income measures will have very much net effect on the revenues on the state will get from Cook Inlet. I don't think that the margin is that great for Cook Inlet. It can be tremendously important by the time Prudhoe Bay comes on stream. I don't think that the immediate effect would be all that great in terms of revenue it generates. So you may want to defer this because of the time it takes to mark up the bills. I would strongly urge upon this legislature if it is deferred that the issue not be lost. The question is of vital and continuing importance to the state of Alaska, and it would be a shame if the legislature decided to defer action on this because of timing or because of difficulties in handling the bill for the principle to have been lost and because this aggressive legislature finally didn't come to grips with it that the next session of the Alaska legislature would somehow let it go. This is a basic piece of reform that is absolutely essential for your corporate taxation.

COWPER: Assuming that we are able to get over such legal hurdles as we may have and we are able to solve some of these problems with the cost definitions, do you think that the basic approach which is attempted at least by second sponsor substitute for 803 is sound?

LIPTON: Yes. I have reservations about many aspects of it. But I think that the basic approach of identifying the income from an oil producing operation, whether or not you have to segregate it has been done. Which means in effect you treat the oil producing operations of a company here in Alaska separate and apart from other operations. Whether that is necessary, I don't know. There are some leading questions there. But to my mind the general approach that you have direct accounting, and the key to direct accounting is the determination of the gross value of production in Alaska. That is the key to it. Your present statute enables the department of revenue to select either apportionment or direct accounting. A lot of the companies had been on direct accounting and because they reported no sales in Alaska, the department of revenue goes back and kind of coerces them onto apportionment, at least they get something. You could have direct accounting under your present statutes. If, for example, in the absence of sales in Alaska you were able to impute a wellhead value for that which is produced and not sold in Alaska.

Now, the second sponsor substitute and also, I think, the net proceeds bill approach the value of the oil either at the point of first sale or at the refinery gate. Of course at the refinery gate if there is no sale you still have to impute value. If you can impute value at the refinery gate, if there has been no arms length transation, why can't you impute value at the wellhead. You have to impute value at the wellhead for severance tax purposes and for royalty purposes. There are problems about how you handle the allocation of certain costs, there are questions of what kind of allowance you make for transportation but these are technical, I don't minimize them, they are difficult technical questions, but I do think that the approach to attempt to elicit from the industry a direct accounting which may give the state a higher revenue from the income tax on oil producing operations, or it may, in certain instances, give the state lower revenue, if the apportionment formula has worked to a disadvantage to some of the companies. This to my mind is less important than having the state in a position where they are able, in the near term when Prudhoe Bay comes on stream, and for the long run future when hopefully you will have more oil and gas producing operations to get a direct accounting. And if you don't have a direct accounting you will never have for any purposes, not for leasing purposes, not for other tax purposes, you will never know what the profitability of oil producing operations in Alaska are. You will always have, as you had in March, special studies made where somebody makes a whole set of assumptions as to what the value of the oil is going to be in the future, what the costs are going to be, and then there will be quarrels as to whether the assumptions were correct and you will always be faced with constant guess work as to what the profitability is. If you have direct accounting, it will, I know not only be helpful and equitable for both sides in terms of income taxation, but doubly helpful for the state to know what direction it can proceed from year to year in terms of leasing policies, in terms of tax policy. It is tremendously important.

What I have said in effect was that if it can be done within the time that remains we think the approach is on target. It's for you to decide how important it is. The other observation that we make is that we don't think in the short term it is going to have a great effect upon the state's income tax receipts from Cook Inlet operations. If it is not taken up in this session, we would hope that the principle is not lost and that it doesn't die.

RADER: You are addressing yourself as to the state's division of our statutes in order to get our oil producers to pay the customary corporate income tax as is paid by all other businesses in the state.

LIPTON: Right.

RADER: Do you intend to address yourself to extraordinary or different rates to be applied by one industry.

LIPTON: Yes, that's the third item on the agenda.

The third order of taxation with which you have been concerned is the surcharge on oil producing profits or the excess value surcharge. We are on record with your committees as to our difficulties and problems with the earlier bills. There is now before you SB 747 which approaches the excess value surtax via a surcharge on income after there is capital plus recovery. This approach to a surcharge on the profits of oil producing operations is something which we do not particularly recommend to the legislature but we said that if it was the decision of the legislature to identify an order of profitability of the oil industry which might expose them to a higher rate of taxation than the profits of other types of industrial operations in the state, then we said you might want to consider as the criterian which determines whether and if there is when, a company becomes exposed to this surchage the principle of the recovery of the company's capital plus. What the plus represented was some multiple of the direct capital investment of the producing operation itself thereby the successful ventures in effect not only got their own capital back but because they were successful and were entitled to higher rates of return and recovering the capital lost in unsuccessful ventures by themselves or other producers who never became successful in the state. In other words, you had well established the future and continuing profitability of the venture before there would be any exposure to a higher order of taxation in the regular state corporate income tax.

Our feeling is that SB 747 is at least founded on a principle which has precedent in the oil industry which I think the oil industry will never be happy about because nothing which raises their taxes will make them happy and anything which singles them out for taxation other than the taxation that is common to all industries cannot be a happy result for the petroleum industry There must always be concern on their part

about where is it going after the step has been taken. The first step is always the hardest to distinguish them. But once you distinguish them the second and third steps may be terribly onerous and I can understand the concern of the industry and in particular the common exposing of the industry that where they are subject to an especially high rate of taxation is precisely an area where they make their profit. You can only pay for the failures in one exploratory area by the success and the larger than average profits elsewhere. In other words you couldn't have ever explored futilely as long as one did in Alaska if there weren't profits elsewhere to invest in Alaska. In other words the successful ventures in the lower 48 and elsewhere paid for the original exploration in Alaska and the future of profitability in Alaska has to pay for more exploration in Alaska, and maybe for dry holes in Wyoming. And if you're always exposed where you are successful to specially high rates of taxation then in a sense all of the incentives fall apart. I understand all of these reservations. However, if it is the decision of the legislature that the circumstances of the industry are such where they may be exposed to separate taxation then we strongly urge that the criteria before which there is exposure and according to which the rate of their exposure is determined shall be the capital plus recovery.

On the basis of those principles we think that SB 747 is a not unreasonable approach. But it needs a tremendous amount of careful work yet. Not only are there problems of accounting built into it, which the sponsor of the bill himself has raised with me, so this is obviously not an attempt to be inflexible, so there is a lot to be discussed there as to what capital qualifies for recovery, what the rate of recovery shall be, what tax rates shall apply after the fact. For example, the higher capital recovery you allow, the longer the period during which the oil producing company is protected against the surchage. On the other hand, it's the rate of the surcharge which will determine how much tax you're going to pay after this capital plus recovery takes place. These things have to be worked out. There are many complications here and particularly in a bill such as this I would say that before the legislature gives it serious consideration for ultimate passage this kind of taxation requires tremendously important input from the industry itself. I would not expect that the industry would come out and say if you just do these few things we will like this form of taxation. There is no way the industry will like any taxation and especially will ever graciously and willingly accept selective taxation upon themselves apart from other industries. But if it were to be done I think there is room for industry input on this. Because they must bring to bear their own experience in Alaska, their experience elsewhere, what are the circumstances in the past in Alaska, what are we looking forward, what should be the treatment of capital, and all of this.

In general, if you would ask me for my evaluation I would say that you have before you now an approach which is worth consideration. But it is going to take a tremendous amount of work and whether or not you can possibly do it this session, whether it is necessary to do it in this session in view of the fact that it is not going to pertain for a long time to come in any event because it wouldn't even apply to early stages of Prudhoe Bay production if you allow capital recovery. So that it seems to me that this session has already accomplished a great deal in focusing upon the question, what are the pros and cons and the perimeters of the problem should Alaska proceed, if so how. The answer as to whether Alaska should proceed with any kind of a surtax in he oil industry I think depends in large measure on how it's going to do it, but should Alaska do it and how it is going to do it interplay one against the other. And so you've got to have a pretty strong and firm feeling of how you propose to do it before you decide whether you propose to actually go ahead. And I would think that there is a certain merit in this stage and the bill that we would be prepared to work with you in greatest detail, namely 747, and reviewing this very critical question should Alaska establish a form of taxation on surcharge on the oil industry as distinct from all other industries. This is such a far reaching decision to be made. I would think that this merits consideration in light of all the other aspects of taxation that you have before you and the whole problem of leasing which is also up for review.

Now, in that respect, I might just add I saw today for the first time the Senate Concurrent Resolution and the idea as a joint concomitant review of the various forms of Alaska petroleum taxation and of leasing policy certainly commends itself to the legislature and to the administration. It's a shame that it hasn't been done in the past, and you come to it this late in the game. But certainly the idea of a review which takes together all forms of taxation and leasing I would think has a tremendous amount of merit.

I have three questions about the SCR. The first is, would the administration do this in any case, in other words, is this the responsibilty of the administration to start looking at tax policy from a very broad gauge standpoint. The second, if it would do it anyway, would it do it any differently if there is a concurrent resolution. What is the legislature's position on this whole question of this review. And I would certainly think that if the legislature does not handle this by itself during the intersession period and if it is to be done by the administration I would certainly feel that it makes a tremendous amount of sense for there to be input from the legislature to whatever group within the administration works and I see a "be it resolved" clause in

which everybody is having input, the departments of revenue, commerce, economic development, natural resources, federation of natives, oil and gas industry, labor and investment counselors, economists, local governments, and interested persons, except the legislature. I would certainly hope that there ought to be some input from the legislature in any kind of a review that is taking place in the administration. So that if in fact, the purpose of this concurrent resolution is to get the recommendations of the study to the legislature within 14 days of the convening of the first session of the tenth session, that you would not like it to come as something strange to yourselves, that you would have some input into what comes through as a result of this study.

Let me conclude by recapping briefly and reversing the order. What I said about the oil industry income surcharge is that the question whether or not this is the intent and purpose of the legislature and if it should be done it is tied up with how it should be done and is a complicated thing which doesn't look to me to be far enough advanced, so that this is probably something which you will almost be inevitably obliged to carry over as part and parcel of a study of the whole system of taxation which interrelates severance taxation with ad valorem taxation with basic income taxation with a possibility of a surcharge.

What I said about the income tax is that this is of much more pressing concern and that I would think that it should be the purpose and intent of the legislature to come to grips with this whole question about how you establish taxable income for income tax purposes. On this you are far along. Whether or not you can handle the administrative things this session or not I don't know. But if it becomes part and parcel of a tax review I wouldn't want it to get lost in the interim and suddenly get lost because all of a sudden everything deals with the easy things like severance taxation, leasing policy and the whole income tax reform gets lost.

And finally on the severance tax, it is our opinion that it is perfectly appropriate for you to review the severance tax as a technical amendment which is worth consideration and that you may want to go in the direction of increases in certain brackets, reductions in other brackets, but in any case you should think very carefully about the the operation of the cents per barrel aspect of the tax as to how it would go in the future. But that again from the standpoint of revenue this is not of urgency to the state because with the kind of amendments to the severance tax that are before you in the present bills it is not going to make a heck of a difference on current production.

That is the jist of our reaction on current legislation as it now stands.

POLAND: Of course, we are not carrying over bills. This is the end of the legislature. And we don't know who will be sitting in the next legislature. And we take that into consideration, trying to decide what our priorities are in this legislature.

LIPTON: I appreciate that very much. Which is one of the reasons I said I hope it doesn't get lost. But I would assume that there is a certain continuity even in the Alaskan legislature.

RADER: You stated that there was precedent for this type of situation. Are you talking about foreign government precedent or what kind of precedent?

LIPTON: Not only foreign government precedent, but essentially all oil industry negotiations abroad. The petroleum revenue tax established by the United Kingdom for North Sea operations is a form of surtax on profits of oil production. It was first posed by the U.K. government. It was very carefully worked through by the government and the industry and tremendously modified in many respects before it was adopted by the U.K. government. But the industry itself in areas where it negotiates for example, of course there is no such thing as a consession anymore, but a contract or work agreement or production sharing contract or so on, where they constantly feel they are susceptible after they are successful to changes in contractual terms. The greatest interests of the industry and the greatest protection of the industry is the kind of arrangement which permits them relatively quick and early capital recovery. Because even if the margin per barrel of production is adversely affected by subsequent taxation legislation, having had capital recovery early in the process means that the effective rate of return after the investment has been recovered becomes ever so much higher than if they have to struggle through some kind of an averaging process over the whole life of a producing operation where the more successful they are early in the game the more they are subject to early changes in returns.

RADER: What do yo think of the argument that we should look for a precedent among purely capitalistic systems like the other states in the union, than perhaps a precedent in Norway?

LIPTON: I think there is a tremendous merit. I would assume that the state of Alaska will structure its system of taxation always within the context of what is legal precedent, competitive relationships, tax policy within the United States. As I said when I felt in juxtaposition

to the early bills with surcharge which we found objectionable because of the basis on which they identified when a company became subject to surcharge. Our objection there was that both of them we found, one of the in a sense which established a very arbitrary concept of long term supply price of oil and the other which was basically related to a rate of return above which they were subject to taxation. And I felt that since the whole subject was out that it would be well to introduce at least the concept for consideration by the legislature of early capital plus recovery. What I said at that time there are certain similarities to the petroleum revenue tax in the U.K. That was not why I was suggesting it. I was suggesting a matter of principle because in the bicentennial year I was not about to propose, 200 years after we fought for independence against the Stamp Act that we suddenly import from the United Kingdom a form of taxation. That's not the reason for doing it. That's not the precedent for doing it.

RADER: The charge has been made that the imposition of the excess value surcharge is one way of nationalizing a portion of the industry. Analyze that.

LIPTON: That doesn't have anything to do with nationalizing a portion of the indsutry. That is sophistry. What it is is an attempt to tax at a particular rate the income from producing operations. You could have a high rate of basic corporate taxation which would be unpleasant for the industry. I think that if you impose a high rate on the oil industry than on the other industries, it is onerous. It is terribly onerous from many points of view. I think that is a difference, too, between the oil industry in Alaska and the oil industry in other major producing states. And the difference has nothing to do with the presumed profitability per se. Hopefully, the oil industry is going to be more profitable in Alaska than any other state, and nobody hopes for that more than the oil industry.

But what I am saying now has nothing to do with profitability per se. When we discuss rate of return taxation and the Tanzer study, I'm dead set against any early judgments about what profitability is going to be as a basis for taxation. But the difference between the oil industry in Alaska and elsewhere is that if you take the other three major producing states, Louisiana, Texas, and California, all three states have very large and extensive agricultural industries. All three states have large, extensive industrial industry, manufacturing of all kinds. Alaska has basically the oil industry which will be a major generator of profitability in the state. And this to my mind means willy nilly that the State of Alaska is going to be looking at the oil industry in a different way from how California or Louisiana or Texas looks at the oil industry. I'm not making the argument now for higher

taxation. It may very well be under certain circumstances that you have to be more generous to the oil industry because it is a major industry and of great importance to you in the state. But states have different rates of taxation upon real estate all over the United States. They don't have the same rates of taxation. Corporate income taxes vary from state to state. There are different approaches to the relationship between property tax, income tax and excise taxes state by state.

The key, I think, by which you can judge whether or not you should, and if you do, how the industry is going to respond to the taxation, is what it does to their incentives. And what it does to their incentives depends upon what they think it does to their presumed profitability. If you're talking about a surcharge rate of 40, 50 percent then you are almost without exception, without regard to the attractiveness of exploration or anything else, you are posing a tremendous impediment upon any company making the judgment we ought to come into Alaska. But if you are talking about a surcharge rate of modest proportions which is geared to the superior profitability of operations in Alaska even after you take account of the fact that every successful venture in the United States has to be a superior profitabilty in order to keep exploration going. If that's how you key in on it and if the way in which you key in on it is through this capital plus recovery, then the industry will not like it. They shouldn't. But whether it has an adverse affect will depend entirely upon how you go about this taxation and what the rates of taxation are. You can just as well discourage the industry by an onerous rate of general corporate taxation. They feel secure against that becasue they don't feel you want to tax the fishermen, or other industries in Alaska at a higher rate. Don't misunderstand me. I am not urging this kind of a tax upon the legislature. I am responding to the fact that the issue has been laid before you and trying to be constructive. But I don't think one should interpret that any rate of taxation which is higher than other states do or higher than other industries do if you have due regard to the circumstances is partial nationalization.

HUBER: I was quite gratified by your explanation of 747 so far. I will admit that we designed this bill based on information that we gained from you and other sources, and primarily on the United Kingdom approach. Considering both the number of times capital rate recovery and the percentage that would be applied after capital recovery, would you compare this bill and its burden on the industry, would it be less burdensome on British petroleum, shall we say, than the burden Her Majesty has put on British petroleum.

LIPTON: I can't give you the answer to that. Because that would depend upon a host of assumptions of what the size of the field is on the North Sea, what costs are in the North Sea, what well producibility is in the Norht Sea. It is an entirely different set of economic circumstances for oil production on the North Sea. YOu don't have field economics in the North Sea, you have platform economics. You know the distinction. The economics of the North Sea operation are platform by platform not field by field. It is entirely different. We have made all kinds of assumptions ourselves about the incidents of taxation in the North Sea for other reasons. We have to be constantly in touch with it. But I would not even presume to hazard a guess as to . . For example, the easiest way to answer your question, if I have the fact, which I don't have, would be say that of the total profits over and above costs of a North Sea operation over the lifetime of the operation, Her Majesty's government takes this and this percentage of the total profits and Prudhoe Bay will take this and this percentage. That would be an answer to the question that in itself wouldn't be very constructive. Because there is nothing magical about taking the same percentage of the profitability. I would also say that if we are talking about what is the sum total of income taxation in Britain, whereas here you are talking about state income taxation and surcharge versus the federal government. Even then if they both came out to 60 percent or 70 percent or 80 percent, would that be right or wrong for Alaska. I don't know. You would be very much concerned what the rate of income taxation in Alaska take into account what previously had been paid as severance tax, and whatever ad valorem tax shall apply. Shall be such that no company when land is up for leasing here in Alaska would be deterred from going in and exploring the most marginal prospect. You want to keep exploration going at the margins. Not only Alaska, our country desperately needs that kind of exploration. So that the form of taxation must be that kind of taxation which says to the company if they see an exploration prospect which isn't all that great and they are not going to pay a big bonus for it, O.K. all exploration costs are pretty high in Alaska, but if they find a field with 50 million barrels in Alaska and they look at what they are going to have to pay as royalty and severance taxes and they look at the structure of income taxation that the candle is worth the burning because in that kind of a field they are not going pay any inordinate income tax and essentially they wouldn't even be exposed to that kind of a surcharge. The structure of taxation has to be adapted to the circumstances of Alaska. Even if it is right for the North Sea it may not be right for Alaska. Which is why I say that I would want from the industry the strongest and most constructive kind of input when the legislature considers it and I would not feel that the legislature in a sense is giving up its independence in listening to the industry, any more than Her Majesty's government gave up their independence when the listened to the industry, and to a very considerable degree revised their terms.

It is not the U.K. North Sea approach that I have been suggesting as an alternative to Alaska. It was the principle of capital plus recovery which may take an entirely new form from the North Sea.

HUBER: That brings me to my second question, and you practically ask it for me Milton, and that is how can we get, other than just negative, testimony from the oil company on this type of bill. You've seen during this session so far and during other sessions of the legislature, whether it was to raise the severance tax one percent or whatever it is, the oil industry from our recent testimony has taken a stand just no, no, no on taxes. Here we have a principle on taxation that we're going to need to work with them on and how would you suggest we get them to sit down and work with us on it.

LIPTON: I don't think that your problem is to get the cooperation of the oil industry. I think your problem is to get the cooperation of some oil companies, and you don't need an oil industry presentation. What you need are knowledgeable companies who are going to address themselves to a concept of taxation which you are considering to the technical problems that are involved, and particularly to the applicable to the circumstances of Alaska where they have had experience. You have had companies here who have had a great deal of experience, not only in Cook Inlet and Prudhoe Bay, but a lot of them have been exposed to other parts of the state. And many of them are working now with the regional corporations all over the state. They know something about the circumstances. So you don't have to ask them whether they are approving and going along with the principle of a surtax, but if it were to be done what are the features of it which are peculiar and representive of operations in Alaska and if there is to be a capital plus recovery what is the definition of capital. What is the plus that has to be done.

The plus is a different thing. If you know what the relationships are between the types of capital cost that are being incurred here typically, these are the sort of things that you could hope that there will be at least some knowledgeable company who will be responsive whether they like the principle of taxation or not, and if not, then I suppose it's on their heads that they have not been responsive.

HUBER: You sat through some of the other testimony, you did note that the testimony was broadly leveled like a shotgun from the industry, from all of the members of the industry in Alaska we can see sitting here today, and they were here then also, they just generally said no, we can't stand more taxation. And their public reaction to it has been it will discourage everything in Alaska, and that is their present stand on it. So I am looking for a method how to get them to talk about it.

LIPTON: You're leading me into an area of response which perhaps I should have not enter into. But it seems to me that a great deal of discussion before your committees in March was less upon specific bills and more upon the kind of studies that have been presented in the legislature in justification of it. The presumptive profitability of Pruchoe Bay, the presumptive profitability of Cook Inlet, and as I said, if you adopt the principle of taxation within the whole structure of Alaskan taxation which can stand on its own two feet, it will stand on its feet without your prejudging what profitability is. For example the surcharge. The surcharge is never going to be, a corporate liability unless they are exposed to it. Now when are they exposed to it. Under what circumstances.

HUBER: When they make money.

LIPTON: Well, no it is not just making money. It is making money under certain circumstances in a certain order of magnitude. And it may very well be that if in fact Prudhoe Bay turns out to be as marginal a producing operation as has been suggested in some of the testimony, then they may not be subjected to any more than a modest state income tax. The legislature is well advised to think this one through in terms of studies that begin to tell the legislature what the profitability of Cook Inlet is, the profitability of Prudhoe Bay is, and what the profitability of hopefully 10 or 15 more oil producing areas in Alaska that haven't even been explored yet. What you are looking for is something which is consistent with what is within the area which is also relevant to the incentives for continuing operations.

RADER: Your proposition that we should have a tax structure that does not discourage development on marginal properties but which will after the capital recovery that there will be a recapture at that time. Let me ask you this, if you have two investment opportunities, state A and state B. State A if you were successful with a marginal well, and you also have a bonanza, and you get the bonanza, whereas in state B, if you get the marginal well, you get the marginal well, but if you get the bonanza you have your capital plus tax. Isn't that by very definintion going to inhibit the bidding on the marginal well. Because as a total investment opportunity, in the first state is better than the second state and you can't really distinguish in this bidding situation whether or not we are inhibiting this exploratory expections, we don't want to destroy.

LIPTON: Of course, a marginal well in Alaska is a different thing from a marginal field in Texas to begin with. There is nothing, I believe, in the Alaskan tax statutes today, even what is being considered here at

the present time which is adverse to the incentives to go after what the industry feels is a marginal field prospect in Alaska. You don't have an onerous level of severance taxation, you don't have an onerous level of state income taxation and there is anything in the picture that I find is going to keep the industry out of Alaska. You know the industry responds very much to prospects. If they view the propects highly attractive it is difficult to keep them out. What I'm trying to say is that if you have, I presume your directing your attention to the surcharge, I don't want to be in a position of defending the surcharge, that's not my position before the legislature, you asked me to be the devil's advocate I will, if you have a modest surcharge . . .

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January 20, 1976

The Hon. John Huber
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

Needless to say we have heard and been intrigued by the proposals that have originated within your committee with respect to petroleum taxation. I do wish we could have gotten this first hand, and that is the point of my writing to you.

Would you send on to us copies of whatever bills are going into the legislative hopper? From our standpoint and also that of the legislative committees before which we may have to testify during the session, it would be most helpful to see them in good time.

All that is pro forma. More important, I would very much like to hear from you directly as to any questions and observations that may be relevant to your thinking and that of your committee about what we all agree is the very basic problem of Alaska's taxation: to what extent and by what means the State can appropriately identify its legitimate entitlement to the prospective earnings of the industry in Alaska.

With best personal regards and looking forward to seeing you in the course of the session, I am

Cordially,

Milton Lipton

ML:iw

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STATEMENT ON AD VALOREM TAXATION OF OIL AND GAS PRODUCING PROPERTIES

Robert H. Paschall

April, 1975

I. DEFINITIONS

A. "Ad valorem" means "according to value" of the property. In regard to oil and gas properties, "ad valorem" does not mean or imply a given gross income or a given proven reserve of oil or gas. It means the best estimate of the price that might prevail in a sales transaction between two willing and knowledgeable parties. That and nothing more.

B. An ad valorem tax on oil and gas properties is <u>not</u> a "tax on reserves" or a "tax on oil (or gas) in place." It is, instead, a tax on the value of the leasehold or other mineral interests which properly implies a tax on the value of the right to produce the oil and gas.

II. SOME HISTORY AND COMPARISONS

A. Oilfields in California have been subject to ad valorem taxation for 60 years. Assessment and tax collection is done locally. In addition, the state levies an income tax that is 50-60 percent as large as the property (ad valorem) tax. The state does not levy a gross production tax.

B. Oil and gas field values are reviewed and revised annually by professional staffs. The market value of all fields in California in 1974 was about $4.7 billion, and ad valorem taxes were about $115 million.

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C. Oil and gas field valuation (which is the assessor's main task relative to these properties) is actually less troublesome than the appraisal of heavy manufacturing plants, e.g., cement plants, steel mills, oil refineries. Put another way, the valuation of any complex property is a challenge, but not at all impossible. In fact--and this is a most important consideration--industry itself regularly makes appraisals. Every major oil company has a properties acquisition department and that department commonly must appraise oil and gas fields in all stages of development.

III. ELEMENTS OF AN INCOME-TYPE VALUATION

A. Definitions

1. The goal sought by the valuation engineer is the present worth of anticipated future net income.
2. Net income is gross income less the out-of-pocket expenses incurred in producing the gross income, that is, in producing the oil and gas.
3. "Present worth" is derived by discounting the future net income at an interest (discount) rate that reflects investors' goal of return on investment.

B. Elements Required by the Appraiser

1. Estimate of oil and gas reserves
2. Future rate of production
3. Prices of oil and gas
4. Operating expenses
5. Discount rate

IV. OBSERVATIONS ON VALUE AND ON AD VALOREM TAXATION

A. Value is only a fraction of ultimate gross income (which in turn equals the barrels of oil or the MCF of gas multiplied

by their respective prices). My 1973 Prudhoe Bay value estimate was only 14% of ultimate gross income.

B. Ad valorem taxes are directly tied to the profitability of a producing oil field. Since "profit" and "net income" are essentially synonymous, the higher the future net income, the higher the present value.

C. The net effect of "B," above, is that a well administered ad valorem tax has the same effect on a producing oil field as a perfectly graduated severance tax. That is, when the field is new and has its highest value, the ad valorem tax might be 10 percent or more of gross income, and would then decline over the life of the field to zero when the field reaches its economic limit.

D. Ad valorem taxation tends to stimulate development of any type of property, oil or other, not retard it. For example, it is notorious in South America that potentially productive farm land lies idle because it is subject to little or no property taxation.

Actually, economic analysts have criticized an ad valorem tax on oil as an undue stimulus to development and production. So statements that an ad valorem tax might hinder development of an oil discovery are incorrect.

E. Distant income has little present value. If the discount rate is 15 percent, $1.00 to be received in 1995 has a present worth of less than 7¢. This means that oil reserves estimates need not be precise if the reserve is to be produced over a relatively long period. For example, I cut off my Prudhoe Bay appraisal at the 20-year mark, although 600 million barrels of oil and 15 trillion cubic feet still remained. But the value shortfall that resulted amounted to

only a fraction of one percent. (A declining rate of production was also influential in this case, as well as the matter of diminishing present worth.)

F. Some Misconceptions on the Part of Senate Witnesses

1. One witness stated his belief that two fields with reserves of 150 million barrels each would both be appraised at the same value, even though one is difficult to produce and will last 30 years, and the other is easy to produce and will last just 15 years. Not so. The net effects of (a) different rates of production, (b) different operating expenses, and different discounting to present worth make it evident that the shorter-life field would have a greater value than the longer-life field--in fact, the value of the one would be about three times that of the value of the other.

2. Another witness was under the impression that gross income and value were the same, so his "estimate of value"--if it can be called that--was 8 to 23 times higher than reality, depending on whether one considered the tax on the total property interest or on only a native corporation's net profits interest in the property.

G. Many precedents exist for the assessment and levying of ad valorem tax on shut-in oil and gas properties. Specifically, a shut-in gas field awaiting pipeline connection is now going into its third year of assessment in California. No one protested its taxability or the $15 million that went on the assessment roll.

H. A guide exists for the appraisal of oil and gas properties for ad valorem tax purposes. It is the California State

Board of Equalization's 266-page Assessors' Handbook 566, Valuation of Oil and Gas Producing Properties. That volume was subjected to lengthy and critical review by the oil industry ten years ago, and has since been used as an appraisal manual by all state and county valuation engineers.

V. ECONOMICS OF ADMINISTRATION IN CALIFORNIA

1974 Fair Market Value of Oil and Gas Fields		$4.7 Billion
1974 Taxes		$115.0 Million
Estimated Cost of Administration		
Appraisal Staffs	$345,000	
Enrollment	68,000	
Tax Collection	135,000	
TOTAL		$548,000
Costs as Percent of Taxes		.48 of 1%
Or Conversely, Net Tax Collection		99.52%

scomm

#11:17

PROPERTY TAX ON OIL RESERVES, ALASKA

A

GOVERNMENT PROJECT REPORT

Presented to the

University of Alaska in partial fulfillment

of their requirements

for the degree of

MASTER OF PUBLIC ADMINISTRATION

By

James R. Deagen

Juneau, Alaska

May 1975

AGO 530365

SOUTHEASTERN SENIOR COLLEGE
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Graduate Program in
Public Administration

SOUTHEASTERN REGION

UNIVERSITY OF ALASKA

May 9, 1975

Mr. James R. Deagen
RR 4, Box 4071
Juneau, AK 99803

Dear Mr. Deagen:

I am very pleased to congratulate you on your recent completion of your study, Property Tax on Oil Reserves, Alaska. It is easily one of the best studies which a student in this program has turned in to meet the requirements for a graduate degree in public administration.

Very shortly I will be contacting the President of the Southeast Alaska Chapter of the American Society for Public Administration to discuss the prospects of publishing and distributing your study with him and the association's Executive Board. For purposes of publication further editing may be necessary and, given the time-frame in which we would be operating, I would estimate that it would be four to six weeks before we could distribute the paper to interested readers.

In the meantime let me assure you that, under the formal terms of the research grant which the University of Alaska extended to you, the paper is your property to dispose of as you so wish. Under the terms of the grant you have met your obligations to the University of Alaska and to the Alaska Department of Revenue by providing copies of your paper to both agencies.

Sincerely,

Robert E. Newton
Associate Professor and
Program Coordinator

REN:sh
cc: President, S.E. AK Chap., ASPA
Commissioner, Revenue
Provost, University of Alaska, S.E.
Director, Student Services

AGO 530366

TO

Gallagher
(Eppenbach)

Martin
(Fackler)

Motley
(Hubbard)

Edenso

Poland
Huber ✓
Orsini
Rader
Butrovich
Meland
Rodey

Anderson
Cowper
Brown

Bradner
Miller

PREFACE

Taxation of oil in place evolved as a subject of interest to me because it was an obvious revenue producing option for the people of the North Slope as well as the State. Only after embarking on the study did I discover the ad valorem property tax to be a volatile subject of considerable contemporary interest. This interest was growing within the legislative and executive branches of Alaska State Government.

Thomas K. Williams of the Alaska Department of Law provided help far beyond the call of duty. John R. Messenger also of the Law Department was very helpful and attempted to keep me advised of impending testimony and the legal issues involved. Two of the nation's foremost experts on the subject of ad valorem oil property taxation, Robert H. Paschall of California and Edward S. Pritchard Jr. of Texas were very interested and helpful. Extensive useful information was supplied by E. Lee Bryant of Marathon Oil Company.

To these and more than thirty additional people who are listed in the bibliography, I wish to extend my sincere appreciation for the help and advice.

In acknowledging the assistance of these people, it should be made clear that they provided much valuable information and many insights, but I take full responsibility for the synthesis of observations and conclusions.

Finally, I would like to express appreciation to Dr. Robert E. Newton of the University of Alaska and Dr. Charles L. Schroth of the Alaska Depart-

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ment of Revenue. Their guidance was invaluable. To Jeri who deciphered my nearly unintelligble scribbling - a very special thank you.

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TAXING OIL IN PLACE

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INTRODUCTION

Taxing oil in place in the United States historically has provided a local government source of revenue. In oil producing regions, the local taxing entities have reaped the bounty, and in the localities with no oil, naturally no revenues have accrued from this source.

This paper examines the oil taxing procedures of the 16 states with the highest current production, (see Table 1 & 2). All of these were contacted for information on oil taxation. Thirteen replied. The remaining states with minor production would not be able to provide additional significant information. Companies with extensive oil exploration and producing equipment in Alaska were queried concerning their view of this type of tax. In particular, their analysis of ad valorem tax equity in comparison with the various forms of severance taxes was sought. Possibly this was not a realistic query, since the impact of the tax on each company has significantly more importance than the eventual spread of the taxes paid by that company. Taxes paid to all forms of government by the oil companies is included in this analysis. The paper then examines the general field of property taxation showing Alaska as relying on this form of taxation less than any other state. Finally, the paper concludes with a review of some of the expert testimony presented to the Resources Committee of the Alaska State Legislature concerning oil property taxes, and a look at the alternative methods of obtaining revenue to cover the "shortfall" in State of Alaska revenue for the 1976-78 period.

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TABLE 1
OIL PRODUCTION LEVELS OF THE 16 HIGHEST OIL PRODUCING STATES

OIL PRODUCING RANK	STATE	OIL PRODUCTION (1,000 b/d)				Per Cent Change From:	
		Feb. 75	Aug. 74	Feb. 74	Feb. 73	Feb. 74	Feb. 73
1	Texas	3,339	3,596	3,654	3,538	- 9%	- 6%
2	Louisiana	1,943	1,970	2,132	2,388	- 9%	-19%
3	California	877	886	914	943	- 4%	- 7%
4	Oklahoma	490	490	498	535	- 2%	- 9%
5	Wyoming	374	418	420	353	-11%	+ 6%
6	New Mexico	267	272	268	295	--	-10%
7	ALASKA	201	202	189	194	+ 6%	+ 4%
8	Kansas	176	181	176	193	--	- 9%
9	Mississippi	135	143	151	163	-11%	-17%
10	Utah	108	109	98	73	+10%	+48%
11	Colorado	105	107	102	110	+ 3%	- 5%
12	Florida	99	104	90	77	+10%	+29%
13	Montana	91	97	97	93	- 6%	- 2%
14	Illinois	78	79	81	94	- 4%	-17%
15	North Dakota	54	54	55	56	- 2%	- 4%
16	Michigan	53	47	42	37	+26%	+43%

Source: Oil & Gas Journal: February 25, 1974, August 19, 1974 and February 17, 1975

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TABLE 2
OIL PRODUCTION, VALUE AND RESERVES BY STATE

Rank As Oil Producer	State	Value of Crude Oil Produced in 1972 (Millions of $)	Crude Oil Produced Barrels Per Day Average Per Well in 1972	Average Drilling Cost Per Well in 1971 (Thousands of $)	Proven Reserves December 1972 (Millions of bbls.)	State Rank In Proven Oil Reserves (End of 1972)
1	Texas	$4,536.1	20.7	$ 85.4	15,036	1
2	Louisiana	3,201.7	93.3	284.1	7,164	3
3	California	944.3	23.6	66.6	3,680	4
4	Oklahoma	710.1	7.7	79.3	1,638	5
5	Wyoming	432.1	43.3	93.5	1,041	7
6	New Mexico	376.8	22.5	88.8	1,085	6
7	ALASKA	235.4	1,019.4	1,396.3	10,097	2
8	Kansas	259.6	5.0	21.8	846	8
9	Mississippi	192.5	65.2	210.3	327	10
10	Utah	80.7	78.8	294.1	278	11
11	Colorado	109.2	48.0	53.3	342	9
12	Florida	53.7	320.0	NA	217	13
13	Montana	103.9	28.8	44.9	246	12
14	Illinois	121.0	3.9	17.1	176	15
15	North Dakota	67.6	35.9	78.9	211	14
16	Michigan	41.6	9.4	61.6	81	21

Source: Statistics adapted from information published by the Independent Petroleum Association of America in Publication, The Oil Producing Industry in Your State, 1973 Edition.

CHAPTER I

OIL TAXES IN THE MAJOR PRODUCING STATES

The oil producing states utilize a wide variety of methods in taxing oil. A few states tax oil and gas property solely on the basis of its value: California, Illinois and Ohio (see Table 3).

The largest oil producing state, TEXAS, has a severance tax as well as a property ad valorem tax. The physical structure, the reservoir, everything involved in the oil and gas production process, is included in the ad valorem tax.

The State of Texas has no strong ad valorem tax coordinating and regulating function concerning oil properties although they do have a small ad valorem tax staff within the State Comptroller office.

The comptroller retains the responsibility for designing prescribed forms, auditing tax roles (but only with respect to collection of State taxes) and providing a manual for assessors. The current edition, which has been in use many years, includes regulations, opinions of the attorney general, excerpts from statutes, and instructions in assessing procedure. It is not a cost manual for appraisers.

About 200 of the 254 Texas counties have oil or gas productive capacity. Texas has a myraid of local jurisdictions: cities, independent school districts, junior college districts, hospital districts, navigation districts, and more. As of 1972, Texas had 3,624 local govern-

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TABLE 3
TAXES ON OIL - 16 MAJOR PRODUCING STATES

RANK AS OIL PRODUCER	OIL PRODUCING STATE	AD VALOREM TAX ON OIL PROPERTY	SEVERANCE OR PRODUCTION TAXES % OF WELLHEAD VALVE	SEVERANCE OR PRODUCTION TAXES % OF MARKET VALUE	CONSERVATION TAX (MILL RATE PER BARREL)	SEVERANCE, PRODUCTION & CONSERVATION TAXES COLLECTED (in thousands of $) 1972	1973
1	Texas	yes	--	4-6%	1.87	$307,368	$334,797
2	Louisiana	in lieu	6.25 - 12.5%	--	--	236,485	259,455
3	California	yes	none	none	.63	1,554	1,407
4	Oklahoma	in lieu	--	5-7%	2.50	73,342	71,457
5	Wyoming	yes	1-3%	--	.40	5,075	16,130
6	New Mexico	no	--	3.75%	1.40	13,536	15,695
7	ALASKA	no	5-8%	--	1.25	12,341	10,893
8	Kansas	yes	none	none	1.50	687	711
9	Mississippi	in lieu	6%	--	3.00	13,143	13,666
10	Utah	yes	2%	--	1.50	1,432	1,530
11	Colorado	in lieu	(3-5% of gross income)		1.00	524	795
12	Florida	in lieu	--	5%	--	2,250	10,240
13	Montana	yes	--	3-4%	3.75-7.5	2,668	2,692
14	Illinois	yes	none	none	--	0	0
15	North Dakota	in lieu	--	5%	--	3,306	3,140
16	Michigan	in lieu	--	2%	(1-10 mills)	929	1,076

Source: Statistics adapted from three sources: 1) the Independent Petroleum Association of America, The Oil Producing Industry in Your State, 1973 edition, 2) Correspondence from the Tax Department of most of the states listed, and 3) the American Petroleum Institute State and Local Oil and Gas Severance and Production Taxes, Jan. 1974, updated to October 1974.

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ment units, 3,005 of which had property taxing power (in 1972, Alaska had 125 units, all having taxing power). Most of these taxing bodies are responsible for the administration of the property tax which, of course, includes the assessment of oil and gas reserves. Property taxes comprised approximately 60 per cent of all locally raised revenue. Unlike the California and Kansas underlying philosophy on this taxation (the value of the right to produce income from oil and gas) in Texas, they are more direct: the physical property itself is taxed (all of it).

Most of the taxing jurisdictions contract with three industrial evaluation appraisal firms located in Texas. Nearly all the large oil producing properties in Texas are appraised by two of these firms: Pritchard & Abbott and Thomas Y. Pickett. Pritchard & Abbott is the largest (Alaska has current contract with this firm). Like California, assessments require competent reservior engineering as well as consideration of the historical record of value of production and potential value.

The property tax system in Texas does not provide equity in local government finance. This becomes particularly evident in the field of education. In Texas, the "Rodriguez Decision" has created interest in the property tax in education and other fields.

> The current system of financing public education in Texas discriminates on the basis of wealth by permitting citizens of affluent districts to provide a higher quality education for their children, while paying lower taxes, (and) this court concludes...that the plaintiffs have been denied equal protection of the laws under the Fourteenth Amendment to the United States Constitution.
>
> Rodriguez et. al. vs. San Antonio Independent School District et al.[1]

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[1]Advisory Commission on Intergovernmental Relations, The Property Tax in a Changing Environment (Washington, D.C., Government Printing Office, March 1974) p. 252.

Even though the Rodriguez decision was not upheld by the U.S. Supreme Court, it has stimulated considerable interest and debate among Texas tax administrators and property tax opponents. In Texas a reasonable, but politically untenable alternative would be a statewide property taxation program supplanting the local property tax.

Besides the ad valorem tax on oil property, Texas assesses a straight 4.6 per cent severance tax. The ad valorem tax combined with the severance tax balances the comparative advantages of the sliding scale severance tax. The varying range of the ad valorem tax on top of the severance tax probably puts the local Texas tax at about 4.7 to 10.0 per cent. Ed Pritchard, of Pritchard & Abbott appraisal engineers, contends the average of both Texas taxes is slightly higher than the average of Alaska's sliding severance. The Texas tax on gas is higher, which when combined with oil taxes definitely places Texas taxes higher than in Alaska. The oil companies (particularly SOHIO, ARCO, and Union) contend the current Alaska sliding severance is equal or higher than the Texas combined taxes. The hard data to compare the two states is not yet available, however, it is safe to conclude that on oil only, current Alaska taxes and Texas taxes are close, but when combined with gas severances Texas is higher.

Of the total Texas ad valorem taxes collected, the state received 17 per cent of ad valorem taxes collected from the municipal taxing bodies in 1974. This will decline to 12 per cent for FY '75, and 10 per cent for future years, according to current Texas statutes. This minor proportion of ad valorem taxes collected for the state is dedicated to higher education (mainly the University of Texas). Although the State of Texas has a small

ad valorem tax-unit, they are totally dependent on the county assessors and other municipal taxing entities, most of which are, in turn, dependent on the industrial property appraisal firms.

Second to Texas in oil production is LOUISIANA which produces about ten times the Alaska level. The severance tax on flush wells in Louisiana has recently been raised to 12 1/2 per cent, the highest rate of any state. Although the tax is not in essence a sliding scale severance, oil wells are classified and subsequently taxed under three different classes. The 12 1/2 per cent rate applies to oil wells producing at a "full rate." The second well classification is an "incapable oil rate" which is taxed at 6 1/4 per cent of value and the third classification, "stripper oil rate" which is taxed at 3 1/8 per cent of value. Owen Van Manning of the Louisiana Department of Revenue defines the "incapable" and "stripper" wells:

> An incapable oil well is a well certified by the Department of Revenue as incapable of producing more than an average of 25 barrels of oil per day and also produces 50 per cent or more saltwater. A stripper well is a well that has been certified as incapable of producing more than an average of ten barrels of oil per day.[2]

The Louisiana severance tax brought in $388 million in FY '74, nearly all from oil and gas. Oil production, however, has declined, down nine per cent from the year before and down 19 per cent from 1973. The relationship, if any, of higher state taxes to reduced production is not known by this writer.

Refineries and manufacturers of petroleum products are subject to an additional tax, a graduated occupational license tax based on gross

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[2]Owen Van Manning, letter of November 6, 1974.

receipts.

A minor ad valorem tax on wellhead and downhole equipment is administered at the local level. There is no property tax on oil reserves. The severance tax is "in lieu" of property tax on reserves. The local tax revenues from the property tax total $12 million, an insignificant fraction of the severance tax.

The property tax combined with severance equals about 13 per cent; much higher than Alaska.

CALIFORNIA, the third largest producing state has only one tax on oil and gas, the ad valorem property tax. They use a unique system of determining the value. The total volume of recoverable hydrocarbons in a reservoir is estimated on the basis of the physical characteristics of the reservoir.

Most other states with ad valorem taxes on oil use a formula to estimate the value of reserves in a reservoir usually based on the value of production of the well from the previous year. As mentioned earlier, appraisal techniques in Texas (and Kansas) consider the characteristics of the reservoir.

California has no severance tax, no special tax on producing equipment, and no tax on oil and gas reserves as such. Instead, taxes are based on assessments that derive from annual total property income-type appraisals made by county assessors. The tax rate ranges from zero to nine per cent of income produced from oil and averages about seven per cent. The average seven per cent is close to what the Alaska severance tax will produce on Prudhoe oil. According to Robert Paschall, Senior Petroleum and Mining Appraisal Engineer of the California State

Board of Equalization (the closest California counterpart to the Alaska Department of Revenue):

> The upper end of the range is affected by two elements -- profitability and the local tax rate. High profitability means high value, and tax rates vary here in California from one jurisdication to another.[3]

Property taxes in California will amount to about $115 million in FY '75, nearly all of which will go to the counties and school districts. Unlike Texas, the State of California has a strong coordinating role in the industrial property taxing function.

As mentioned earlier, the basis of the tax has varying philosophical underpining. Kansas is similar to California in that the value of the right to produce oil and gas is what is taxed, although the method of determining the value of that right is generally computed similar to the method used in Texas. Paschall explains the philosophy behind the California ad valorem tax as not a property tax per se, but rather a tax on the value of the right to produce oil and gas. It is a tax on the net income from exercising the right. The higher the production, the higher the rate of taxes which are paid. As the production rate declines, and the future income promises to be lower, the present worth is reduced and so are the taxes. A properly administered ad valorem tax, although distinctly different, has the same effect as a sliding scale severance tax.

Paschall strongly advocates either the property tax or the severance tax, but not both at the same time. He explains the critical difference between the California property tax and the sliding scale sever-

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[3]Robert H. Paschall, letter of February 27, 1975.

ance tax:

> An equitable severance tax should not exact as high a levy on a barrel of marginal oil production as it does from a barrel of flush production. But how can one establish an equitable sliding scale severance tax unless it can be related to net income per barrel? The ad valorem tax, as it is administered in California, does this automatically.[4]

Of all the states surveyed, the California property tax system appeared to have solid recent administrative history and other beneficial aspects that could be applied to a similar tax if enacted in Alaska.

A recent report by the Advisory Commission on Intergovernmental Relations supports this relative excellence of the California overall property tax system:

> The type of reassessment program once common in the United States -- massive revaluation efforts often followed by years of roll copying -- is a thing of the past in California. Every county now has a continuing reassessment program. This has resulted from a number of major developments which are still underway involving pioneering technical efforts by some local assessors and the staff of the State Board of Equalization; and involving a great deal of State-local collaboration and intercounty sharing of experience.[5]

State involvement in property tax administration is strong and effective in California:

> Tremendous changes in property tax administration have occurred in California since 1962. Many of them stem from a scandal that broke early in July 1965 and was described at length in the September 10, 1966, Saturday Evening Post. After one county assessor had committed suicide and two assessors, as well as several deputy assessors and tax agents, had been convicted of felonies, the California legislature enacted Chapter 147 at an extraordinary session in June of 1966. This statute shifted the emphasis from local autonomy to State supervision of assessors, provided for vastly increased auditing of property statements, and gave taxpayers better appellate opportunities.[6]

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[4]Robert H. Paschall, Valuation of Oil and Mineral Rights, Arizona State University, 1971.

[5]Advisory Commission on Intergovernmental Relations, The Property Tax in a Changing Environment, (Washington, D.C. Printing Office, March 1974) p. 61.

[6]Ibid. p. 56.

Those in the oil industry and consultants to the Alaska State Legislature who contend that the property tax is expensive to administer should consider the California experience. Paschall, testifying before the State Senate Resource Committee in April 1975 reported roughly $6 billion is collected at a "central service" State expenditure of less than $5 million. He stated that the assessments on oil and gas property alone amounted to $115 million in revenue, with an overall cost of administration approaching $548,000. The cost of administration came to about one-half of one per cent of revenues, a very efficient ratio. Comparatively, the much smaller scale property tax on oil equipment cost about two per cent of revenues.

Consideration of the property tax as a short term tax to cover the shortfall in Alaska State revenues, or to eventually be credited towards the future severance tax, brought forth a key point of contention on property taxes of oil properties: should oil property without a pipeline allowing production be taxed? Are there any precedents? Paschall offered some illuminating points:

> You asked in your recent letter whether I could provide you with any examples of oilfields on which ad valorem taxes were levied at a time when a field had not yet been connected to a pipeline. I know of numerous instances of this nature involving gas wells, so it comes to the same thing. Quite commonly in the past gas wells have been drilled and completed but not hooked up to a pipeline as long as two years after the date of completion.
>
> It may be useful to remark that it is not germane under California law whether a well is hooked up or not, so far as its ad valorem tax liability is concerned. The key element is that the well have demonstrable value, since "ad valorem" means "according to value." Of course, a well that is not yet hooked up typically has a lower value than a producing well with similar reserves, simply because the income of the first well will not be received until some perhaps uncertain time in the future.[7]

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[7]Robert H. Paschall, letter of February 27, 1975.

Although similar examples of precedents were not requested from Texas, Pritchard was unequivocally opposed to enacting a property tax on oil property until the property was potentially able to produce revenue. The Pritchard and Abbott firm probably has considerable opportunity for financial gain from a potential Alaska property tax on oil properties as they would be prime candidates for contractual work on appraising the fields based on their significant record of accomplishments, as contractor and advisor, on the recently enacted 20 mill tax on oil and gas "chattel" property used in exploration, production and pipeline transportation. Although all executive personnel of the firm interviewed were strong advocates of the property tax on oil reserves as well as other industrial properties, they were not in favor of this tax on a resource which could not produce income.

In OKLAHOMA, the fourth ranked oil producing state, the primary form of taxation on oil and gas is the gross production tax, which is five per cent of the gross value. The payment of this production tax is in lieu of all taxes by the State or any sub-jurisdiction upon the producing leases, the oil or gas itself, or machinery and equipment used in the production of oil and gas.

Of the sixteen major producing states, twelve have a severance type of tax. Of these, only Oklahoma, Louisiana, Mississippi, Florida and Michigan provide that their severance tax is an outright in lieu tax. Property tax exemption, however, does not always mean the same thing. In Oklahoma, as in Mississippi, the severance tax is not only in lieu of property tax on the reserves in place, but also on all machinery and equipment used in production of oil and gas.

The gross production tax is administered by the Oklahoma Tax Commission. The production tax is dedicated primarily to the State where 78 per cent is appropriated to the General Fund and two per cent is allocated to collection and enforcement. Municipal sources receive the other one-fifth with ten per cent to the school districts.

W.L. Elvany, Director of the Gross Production Division of the Oklahoma Tax Division, describes the Oklahoma ad valorem taxes and their method of administration:

> Ad valorem taxes in Oklahoma are assessed by the county assessor, except on railroad and public service corporations, whose assessments are administered by the State Board of Equalization on the basis of recommendation of the Tax Commission. Pipeline companies are held to be public service corporations. Their assessments are determined from year to year by appraisal rather than by fixed schedules of value per mile by pipe size. The Tax Commission also recommends to county assessors schedules of value to be applied to such properties as oil in storage, tankage, gasoline plants, pipe, etc.[8]

Undeveloped leaseholds are not taxed in Oklahoma.

The combined gross production tax and ad valorem tax of Oklahoma is lower than current Alaska taxes on oil.

WYOMING, the fifth ranked oil producing state has an ad valorem property tax in addition to a three per cent severance tax (one per cent on wells producing less than ten barrels a day). The ad valorem tax on oil lease property is based on the preceding year's gross production in lieu of taxes on the land, but in addition to taxes on surface improvements the oil lands with an appraised valuation of $485 million in 1974 yielded $27.4 million in ad valorem taxes. This is one of the few states which considers the oil and gas property to be personal property for taxing purposes.

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[8]W.L. McElvany, letter of February 7, 1974.

According to Harold De Bolt, Director of the Ad Valorem Tax Division for the State of Wyoming, Department of Revenue and Taxation:

> The Wyoming Constitution provides that a four mill levy may be levied for ad valorem property tax, however, the state financial condition has been such that it has not been necessary to apply the four mill levy during the past four years. Therefore, all the ad valorem taxes...have remained in the local taxing districts in which the production was held. Our legislature is now in session and there is a good possibility that the three per cent severance tax on oil will be advanced to four per cent. In addition to the ad valorem (property) and severance taxes on production, which our State assessed, the county assessors assess all the above ground oil or natural gas producing equipment, i.e., pumps, tanks, gathering lines, moters, etc.[9]

Wyoming has no taxes on corporate income. Oil taxes in Wyoming are less than in Alaska.

NEW MEXICO, sixth ranked and the only other state producing more than Alaska, previously imposed nearly every type of oil tax: a severance tax, a special excise tax on the income from the sale of oil and gas, and a net proceeds type of ad valorem tax. However, as of January 1, 1975, the ad valorem tax statutes were changed -- now there are no taxes imposed on oil and gas in place in New Mexico. One feature of New Mexico's tax system that Alaska should consider is that all oil related taxes are based on the same evaluation and are administered through a central agency (all in one building). Even the royalties are administered from this central agency. Antonio L. Martinez, Executive Director of the Oil and Gas Accounting Commission for New Mexico feels they have the most efficient oil revenue system in the nation:

> New Mexico is considered to have the most efficient oil and gas collection and revenue distribution system in the nation since all production taxes and royalties due are based on the same evaluation and are administered by one central agency.[10]

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[9]Harold De Bolt, letter of February 27, 1975.

[10]Antonio L. Martinez, letter of December 26, 1974.

KANSAS, ranking eighth, produces slightly less oil than Alaska. They have a property tax on the production of oil and gas, and on oil and gas reserves. There is no severance tax in Kansas. Kansas enacted a severance tax on oil and gas production in 1957, however, six months later the State's Supreme Court declared it to be unconstitutional. Since that time the severance tax issue has surfaced in various legislative sessions, however, there has never been a major effort towards it's re-enactment. Although the State coordinates and administers the property tax for the municipalities, some oil-rich municipalities contract with the Texas firm, Pritchard & Abbott, for oil evaluation appraisals. Kansas statutes specifically state that oil and gas leases are assessable at their actual market value.

Although Kansas has a "good reputation" among oil taxing states, there are gross inequities in the spread of oil tax revenues. The oil-rich counties simply get all the revenues. This also occurs in California and Texas. The ad valorem tax contemplated in Alaska is a statewide tax. However, pressure can be expected from the municipalities to gain a large proportion of the taxes collected, as property taxes accruing to the local taxing jurisdictions have strong precedence throughout the states. Although the Alaska Constitution prohibits dedicated taxes; a property tax on oil reserves if dedicated to revenue sharing and education would eliminate the local taxing jurisdiction and at the same time provide alternate revenues to cover the shortfall in state revenues.

In Kansas, oil and gas property is assessed as personal property. The property is appraised at fair market value and assessed at 30 per

cent of that value. The State of Kansas, Division of Property Valuation, is required to furnish property assessment manuals to all local assessors. Kansas statutes require the local assessor to conform to the State manual.

The conservation tax rate is 1 1/2 mills in Kansas and one additional mill accrues to the State Board of Health. Kansas oil taxes are well under Alaska oil taxes.

MISSISSIPPI, the ninth ranked oil producing state, has a severance tax at six per cent of wellhead value. As in four other of the top sixteen producing states, the severance is in lieu of property taxes. All producing oil equipment, including wells, pumps, derricks owned by the producer and all leases in production including mineral rights are exempt from ad valorem taxes of the local taxing districts. The exemption does not apply to oil exploratory equipment. All drilling equipment, including derricks utilized in drilling, machinery used in drilling, oil gathering systems, and the surface of lands leased for oil production are assessed as other properties in Mississippi and are subject to ad valorem taxes. The State provides part of the severance tax collected to the county in which the oil is produced. One-third of the first $600,000, ten per cent of the next $600,000, and five per cent of that collected over $1.2 million is paid to the county.

Mississippi imposes a franchise tax of $2.50 for each $1,000 of capital assets. Also, they have an insignificant maintenance tax of three mills per barrel, similar to the Alaska Oil and Gas Conservation Tax of 1.25 mills per barrel. Of the sixteen major producing states only in Montana is this conservation tax rate exceeded. Virtually all oil producing states have this tax to cover the expense of administration of

the oil regulatory agency, however, mention of this tax has often been omitted in earlier state tax analyses because of its relative insignificance in comparison to property, production and severance taxes.

Mississippi has a State income tax amounting to three per cent of the first $5,000 of net income and four per cent of all income over $5,000. Overall, the taxes on oil in Mississippi are slightly lower than the comparable oil taxes of Alaska.

UTAH, the tenth ranked oil producing state, has experienced the largest percentage increase in production over the past two years. Utah has form of severance tax called an occupation tax as well as an ad valorem tax. Both are assessed at the state level, with the revenue from the occupation tax going to the state and the revenue from the ad valorem tax going to the county where the oil producing property is located.

The ad valorem tax is based on the gross proceeds and does not apply to oil reserves. According to Robert Cooper of the Utah State Tax Commission:

> The ad valorem assessment on oil and gas is based on 80 per cent of the gross proceeds, times the interest the owner or operator has in the property. In other words, if the oil is recovered from privately owned land, the assessment would be 80 per cent of the total revenue. In addition to this, there is a flat well assessment made on flowing and pumping wells. This assessment is static and allows for no depreciation. [11]

The occupation tax rate on oil and gas is only two per cent of the gross proceeds realized from the sale of the product, converted to the wellhead price, and allowing a $50,000 exemption per tract (depending on whether exempt royalties are paid by the operator).

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[11] Robert H. Cooper, letter of March 12, 1975.

The conservation tax in Utah is 1-1/2 mills, slightly higher than in Alaska, but at the median of the sixteen major producing states.

Cooper makes an interesting point concerning the reluctance of Utah to tax oil in place.

> The State of Utah has tried to steer clear of a tax on oil reserves, partly because of experiences we have had in assessing coal reserves, which have proven very unsatisfactory. The element of the unknown, which is constantly involved in establishing reserves, seems to continually haunt states where an attempt is made to tax on a reserve basis.[12]

Current Utah taxes on oil are less than Alaska taxes on oil.

COLORADO, the eleventh ranked oil producing state produces at about one-half the Alaska level. A corporate income tax serves as the basic source of revenue from oil to the state.

In addition to the state income tax, they have an additional tax on gross income from the production of oil and gas. The tax rates are: under $25,000 gross income - two per cent; from $25,000 to $100,000 - three per cent; from $100,00 to $300,000 four per cent tax; and all gross income over $300,000 at five per cent. It is an in lieu type of gross income tax, however, the ad valorem taxes paid to the municipal taxing districts are credited to the gross income tax.

The responsibility for property valuation in Colorado is delegated mainly to local jurisdictions, most of which are too small to afford a professional organization. The state property tax agency operates with a relatively slim budget and limited supervisory powers, but according to the Advisory Commission on Intergovernmental Relations, Colorado, has developed a useful program for the measurement of assess-

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[12] Ibid.

ment levels and variations.

At the county level, the ad valorem property tax in effect covers all oil property and equipment. An average rate of 89 mills on 30 per cent of actual value is collected by the municipal taxing authorities. According to Jack O'Donnell, Senior Property Appraiser of the State of Colorado, Division of Property Taxation:

> In Colorado, producing oil or gas leaseholds and lands have an assessed value equal to 87 1/2 per cent of the gross value of the oil or gas produced during the preceding year. This value is in addition to the regular actual value of the land.
>
> Severed mineral interests (nonproducing) are assessed at 30 per cent of actual value in the same manner as other real property. If there is no market in this type of property, a minimum assessed value of one dollar per acre is used.
>
> All surface oil and gas well equipment is separately valued for assessment as personal property at 30 per cent of its actual value.
>
> The ad valorem taxes are determined by multiplying the assessed valuation by the total levy in the tax jurisdiction wherein the property is located. The statewide average mill levy in Colorado is now 82.02 mills. However, many of the oil and gas fields are located in rural areas where the total levy is less than the state average.
>
> All taxable property, except that of public utilities, is valued by the local county assessors under the guidance of the Division of Property Taxation.
>
> All ad valorem taxes are collected by the local county treasurers and remain in the counties wherein collected. The State of Colorado receives no income from ad valorem taxation.[13]

The oil and gas conservation levy is one mill, slightly under Alaska's 1.25 millage rate. Overall, the Colorado oil taxes are slightly lower than Alaska's taxes on oil.

FLORIDA, the twelfth ranked state in oil production has an excise

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[13]Jack A. O'Donnell, letter of March 27, 1975.

tax of five per cent of the gross value of production. This production tax is in lieu of ad valorem taxes. The state general fund receives 80 per cent of the proceeds and the county in which the oil is produced receives the remaining 20 per cent. In essence then, one per cent of the production tax on gross value reverts to the county to pay the ad valorem tax on the "personal property" used in production.

The county tax assessors are prohibited from increasing the value of property on the basis of proven oil or gas reserves.

Florida, like Alaska, has experienced moderate increases in oil production over the last two years. Of the sixteen major producing states, only two others have realized advancing production levels.

MONTANA, the 13th ranked oil producing state, has three direct taxes on oil production: the Oil Producers License Tax, Resource Indemnity Trust Tax and Net Proceeds of Mines. All three are administered by the State with the proceeds of the License Tax and the Trust Tax becoming part of the state general fund and the receipts of the Net Proceeds Tax going to the local taxing jurisdictions.

The License Tax and the Trust Tax are both based upon a percentage of gross value. These two are more commonly referred to as severance taxes. They are actually one in the same and are separated only for the purpose of assigning the proceeds to different funds.

Montana makes heavy use of the property tax. Only two of the top sixteen oil producing states do not have a statewide sales tax, Alaska and Montana. Conversely, when looking at the relative burden from property tax as a proportion of personal income, Table 4, Montana has the highest rate and Alaska the lowest (in 1970-71).

K.K. Morrison, Chief of the Intercounty Property Bureau of the Property Evaluation Division of the Montana Department of Revenue describes the ad valorem tax:

> The Net Proceeds Tax is an ad valorem tax upon oil, as it is produced. The State of Montana is charged with the determination of the net proceeds from information provided by the oil producers. Upon determing the Net Proceeds, the State furnishes the county assessors with the information. The Net Proceeds then become part of the county's tax base the same as all other taxable property. The tax rate applied to the Net Proceeds would depend upon the mill levy in effect for the location of the oil production. The State does not receive a portion of the receipts, except to the extent of a State permissive levy may be included in the total mill levy.[14]

Montana was the only state surveyed which has centralized all property tax assessment at the state level (constitutional amendment effective July 1973).

Unlike the Alaska tax on oil exploration and producing equipment at 100 per cent of value, the states with ad valorem taxes on oil property assess at a rate less than 100 per cent. Montana, like Texas, assesses at 40 per cent of full value. The equipment in Louisiana is assessed at 20 per cent of value and in California, everything is assessed at 25 per cent of its full value. Concerning the assessed value in Montana, Morrison explains the process:

> There are two steps which are taken to arrive at the tax base. First assessed value is approximately 40 per cent of full value. Secondly, the base or taxable value is between seven per cent and 100 per cent of the assessed value, as determined by a classification system.
>
> The State permissive levy including University millage is limited to 18 mills. In 1974 only six mills were applied. It should be noted that the funds generated by the State millage are earmarked to finance local schools as a supplement to county millage for schools.[15]

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[14] K.K. Morrison, letter of February 21, 1975.

[15] K.K. Morrison, letter of February 13, 1975.

TABLE 4
STATE AND LOCAL GOVERNMENT PROPERTY TAX REVENUE IN THE 16 HIGHEST OIL PRODUCING STATES, 1970-71

Oil Producing State	Property Tax per $1,000 of Personal Income	Per Capita Amounts		As of % of Total Tax Revenue			As of % of Government Revenue		
		Total	Local	Combined	State	Local	Combined	State	Local
Montana	$70.84	$235.04	$222.90	55.6	6.3	96.6	31.6	2.7	60.2
California	67.45	296.27	284.20	49.1	4.3	88.1	32.3	2.4	42.5
Wyoming	65.74	228.35	202.25	47.3	9.5	97.0	23.8	4.1	41.7
North Dakota	63.63	188.15	185.89	44.9	1.0	96.8	24.3	.4	51.3
Kansas	55.06	209.67	205.04	50.4	2.3	97.1	32.4	1.3	49.5
Colorado	50.52	187.40	186.52	41.9	.4	83.9	25.6	0.2	42.6
Michigan	50.39	202.33	192.32	41.2	3.5	92.2	27.5	2.3	41.5
Utah	44.95	139.74	127.83	36.1	4.9	89.5	20.4	2.4	39.9
Illinois	44.56	199.54	199.50	38.9	---	85.7	27.7	---	46.6
U.S. AVERAGE	47.37	185.51	178.03	39.9	2.2	84.6	26.1	1.3	39.9
Texas	39.62	137.15	131.58	40.0	2.9	87.2	24.4	1.7	40.9
Florida	35.80	126.83	121.76	33.9	2.2	81.6	21.9	1.5	32.1
Oklahoma	29.99	97.53	97.53	30.2	NA	84.3	16.2	NA	34.3
Mississippi	29.93	76.72	74.87	24.3	.8	90.6	12.9	.4	24.3
New Mexico	28.38	87.78	72.35	22.4	5.0	87.6	11.4	2.6	20.2
Louisiana	23.79	71.95	64.27	19.0	2.9	58.0	11.0	1.6	20.4
ALASKA	23.64	105.74	105.74	22.7	NA	75.4	6.8	NA	19.4

--- Less than .05 per cent
NA Not applicable
Source: Taxable Property Value and Assessment - Sales Price Ratios, Volume 2, Part 2, 1972 Census of Governments, U.S. Department of Commerce, Social and Economics Statistics Administration, October, 1973.

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In comparing the approaches to oil field taxation by Alaska and Montana it appears that the Alaska severance tax rate exceeds the Montana severance tax by as much as 4.8 per cent. The ad valorem rates in Montana would make up the difference, resulting in an overall tax impact of state and local to be about the same in Alaska and Montana.

ILLINOIS, the fourteenth ranked oil producing state, has no severance or production taxes only an ad valorem tax. The formula for determining value includes four elements: the volume of production, the depth of the well, age of the well and nature of the reservoir (sand or limestone which is more or less determined by the depth factor). The assessments are made locally and the entire tax collected accrues to the local units of governments.

Although Illinois receives no taxes from oil or gas, a detailed formula is published by the Illinois Department of Revenue for use of local taxing entities. The Property Assessment and Equialization Supervisor for the State of Illinois, Department of Local Government Affairs, Gregory Lafakis, states, "the recommended formula is felt to be outdated and not reflective of the current value of oil reserves. Accordingly, the entire formula is in the process of being updated.[16]

Of all the states checked in this paper, the State of Illinois receives the least from the production of oil. The local taxing authorities in Illinois receive far less proportionately than the combined state/local taxes in Alaska.

In the states with ad valorem taxes that have relatively minor

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[16]Gregory J. Lakakis, letter of March 27, 1975.

production, the assessment formula is simple - usually total production in barrels times average field price equals full market value to which the level of assessment, usually 20 to 40 per cent is applied. The obvious shortcoming of this type of formula is that it doesn't take into account the costs of production. A full flowing well gets the same value and assessment as a stripper well with high operating costs. The Illinois formula, similar to the procedure in the major producing states of California and Texas, eliminates these inequities.

E. Lee Bryant, Manager of the Property Tax Department of Marathon Oil Company discusses the Illinois ad valorem formula:

> The Illinois formula provides for additional value on the royalty interest, which is done in many states, based upon the premise that the royalty interest does not bear any of the costs of production and hence should command a higher market value.
>
> The value per barrel is lower for flush (and in some instances for intermediate) production than for settled production. This is done primarily to reflect the characteristic of Illinois production of a relatively high rate of initial production followed quickly by a rapid rate of decline, particularly in the limestone formations. It was concluded that to use the temporarily high initial production levels as a measure of the remaining recoverable oil would be to exaggerate the latter. The credit for secondary recovery operations embodies this same theory, plus the factor of added production cost.[17]

NORTH DAKOTA, the fifteenth ranked oil state, produces at about one-fourth the Alaska level. A five per cent production tax is in effect which applies to the gross value at the wellhead. This production tax is in lieu of all ad valorem taxes.

In MICHIGAN, the sixteenth ranked state in oil production, a two per cent severance tax applies to the gross market value of oil produced. This low severance tax is in lieu of all other state or local taxes

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[17] E. Lee Bryant, letter of December 26, 1974.

including ad valorem taxes on oil property.

Concerning the Michigan property tax in general, it serves as a major source of revenue to the municipalities, providing about 92 per cent of local government revenues. (See Table 4.) Property tax per capita in Michigan takes a higher proportion of personal income than the U.S. average. The State Tax Commission has supervisory powers over municipal assessors and actively assists them (similar to the situation in California). Additionally, each county is required to establish a Department of Equalization to assist the local assessors in equalizing the assessment rolls.

The remaining states produce less than one-fourth the Alaska level and subsequently have relatively minor tax receipts from oil. At least three other states have an ad valorem tax on oil and gas reserves: Ohio, Nebraska and Kentucky. All three use a simple formula of production times value per barrel without regard to reservoir engineering which would bring a lower tax on marginal wells.

One Canadian Province, Alberta, was compared to the sixteen oil producing states. Alaska has more similarities with Alberta than the other states; in climate, in population and in oil reserves. Alberta relies on the royalty for revenue and have only one other tax, a Free-hold Mineral Tax. The royalty is a sliding scale royalty. The Director of Finance of the Province of Alberta, L.H. Montgomery describes the tax:

> In addition to the sliding scale type of crude oil royalty which dedicates approximately 15 % to 25 % of the value of production to the Province, there is an incremental royalty of approximately 65% of any price increase in excess of $4.71 per barrel (select price as of January 1, 1975).[18]

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[18] L.H. Montgomery, letter of April 9, 1975.

The Province now realizes a crude oil royalty of approximately 36.4 per cent of the production from Crown (national) lands. The combination of Alaska taxes and the royalty do not approach the provincial revenues from their rich oil resource.

In Alberta, the title to about 81 per cent of the oil and gas reserves are held by the provincial government. About nine per cent is within national parks or Indian reservations. The remaining ten per cent is under freehold title (privately owned). A mineral tax of 16 mills on the assessed value over $50,000 applies to the privately owned oil lands. According to Montgomery:

> With respect to mineral tax, owners of freehold minerals are assessed on petroleum and natural gas at the fair value of remaining recoverable reserves of crude oil and raw gas. The rate of tax levied upon the assessed value in excess of $50,000 was 16 mills on the dollar for 1974.[19]

So, Alberta has a simple system which extracts more revenue from the petroleum resources of it's territory than any state of the Union. They have no severance, no production, one specific corporate income tax and an ad valorem tax applying only to the one-tenth of the resource which is in private lands.

The oil companies which contend the Alaska rate is already to high may wish to change their frame of reference to include other Northern regions of North America.

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[19] Ibid.

CHAPTER II

OIL COMPANY TAXES

How do the oil companies active in Alaska regard a property tax on oil reserves? Seven of the eleven major oil companies active on the North Slope responded to a letter of inquiry which asked their evaluation of alternative oil taxes in terms of fairness and equity. All inquiries were directed to the Property Tax Divisions within the oil companies. The question basically was phrased: "Any information you can provide on the general topic of property taxes on oil reserves; and specifically on your position on this type of tax in contrast to royalties or severance taxes would be of considerable value." It would have been preferable to exclude the concept of royalties in the inquiry.

Royalties are negotiated between the producer and owner of the oil and, therefore, on leases already firm need to be considered independently from production or property taxes. On future leases though, they should be considered within the framework of a broad based, well balanced state revenue system. The recent change in royalty rate in Alaska from one-eighth to one-sixth is comparable to recent movements in other large oil producing states. Unlike Alaska, other oil producing states receive insignificant payments from royalties because most oil producing properties in those states are in private ownership.

Standard of California felt the subject too complex for a response. Evidently, Exxon, Mobil, Phillips and Amoco also considered the subject

overly complex, as they did not respond. Marathon provided an in-depth analysis. Of the six companies which did send information; Atlantic Richfield and Sohio were most strongly opposed to a property tax. Sohio speaks for British Petroleum on tax matters, and with Atlantic Richfield have the largest known reserves on the Slope. Atlantic Richfield has a section established in Anchorage exclusively to monitor Alaska oil taxes. Thus, Atlantic Richfield serves as the industry "bellwether" through its Alaska tax manager, Robert Underwood.

The principal objections to the property tax on oil reserves follow a similar pattern. According to Underwood:

> -- A tax on oil reserves is probably the most difficult to administer and the most controversial form of oil and gas taxation.[1]

D.M. Parker of Shell Oil mentions the same point:

> Generally an ad valorem tax on reserves is a difficult and costly tax to administer. Determining an equitable value on the reserves (which involves estimating both the amount of the reserves and their unit value in their unproduced state) requires the skill and knowledgeable background of highly qualified petroleum engineers... Severance taxes are generally considered to be easily administered from the collection standpoint...[2]

In contrasting the advantages and disadvantages of the severance and property taxes; R.S. Broberg, Manager of the Property Tax Division on Union Oil explains:

> A property tax system requires expertise in evaluation far beyond that which is necessary to police a severance tax. The appraisal problems are continual because of the requirement that the valuation be established every year. A severance tax, while easier to administer, is also easier to revise should a taxing jurisdiction choose to do so. A property tax system requires an annual review of the basis for taxation.[3]

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[1] R.M. Underwood, letter of November 14, 1974.

[2] D.M. Parker, letter of November 4, 1975.

[3] R.S. Broberg, letter of November 9, 1974.

The complications of appraising the oil field are also noted by E. Lee Bryant, Manager of the Property Tax Department for Marathon Oil Company:

> Reservoir engineering is not an exact science and differences of opinions between competent engineers occur frequently as to the amount of recoverable reserves that can be produced from newly discovered fields or even in existing fields with a long history of production. Add to this the problems encountered with predicting production costs in times of inflation and income to be produced under government controls and you arrive at an answer with adversary results.[4]

Although the oil companies unanimously contend that a property tax is difficult and costly to administer; those who administer this type of tax do not agree. Basically, they feel that the advantages far outweigh the relatively slight higher costs involved. The two largest oil producing states which have a property tax; California and Texas discount the arguments of complexity and excess cost of administration.

The ad valorem tax on oil properties in Texas and California have developed through the decades concurrent with the growth in the industry. Strong historical precedents underly the system utilized in both states.

As noted earlier, those that administer the property tax contend that it is relatively easy to administer. In California Paschall comments on the cost of administration, "19 appraisers and 13 clerks handle the annual reappraisal of about $3.5 billion worth of properties, that yield over $80 million in taxes.[5] In Texas, the cost is higher, how much higher is not known because of competitive reasons of private valuation firms. However, the point of cost and complexity of administration cannot be

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[4]E.Lee Bryant, letter of December 26, 1974.

[5]Robert H. Paschall, The Valuation of Oil and Mineral Rights, Arizona University, 1971.

seriously considered a deterrent in the Texas experience since the cost would be a minor part of the ad valorem taxes collected.

The second major issue in opposition to a property tax on oil reserves, suggested by all oil companies responding to the mail inquiry is that the Alaska tax rate now in effect is equal to or higher than the other major producing states. This issue is more important and also more difficult to assess. According to G.W. Ashmore, Manager for Alaska Taxes for Sohio (Sohio also handles tax matters for British Petroleum):

> Alaska's severance tax on oil of about 8 per cent plus its ad valorem tax on production equipment, equals or exceeds the tax imposed by California and Texas and may be just slightly under the Louisiana tax. Overall, Alaska's tax is equal to or greater than the effective rate of the other important oil states and higher than many of the lesser important oil states.[6]

Broberg of Union Oil stresses the same point:

> The State of Alaska, under its present statutes, has imposed a rather high severance tax and, in addition, has recently imposed a further burden in the form of a state property tax on all producing and transportation facilities, ...As you can see, if a property tax on oil and gas reserves is imposed, such added tax would push an already high burden to a point beyond all reason. ...The three levels -- severance tax, property tax on producing and transportation facilities, and property tax on oil and gas reserves -- could bring the level of tax burden above that imposed by other states where Alaskan crude oil must compete.[7]

From Atlantic Richfield, Underwood approaches this point from a somewhat different angle:

> -- In those few areas of the United States where underground reserves are taxed (most are at the local level) there is a notable absence of some of the other taxes imposed on the petroleum industry in Alaska, i.e., the oil and gas production or severance tax, the 20 mill facilities tax, and the corporate income tax.[8]

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[6]G.W. Ashmore, letter of November 26, 1974.

[7]R.S. Broberg, letter of November 9, 1974.

[8]R.H. Underwood, letter of November 14, 1974.

Underwood is the only oil company tax official noting the corporate income tax, probably because the oil companies have been able to avoid any significant tax payments under this particular tax. Although Marathon Oil Company did not compare the Alaska tax rate with that of other major oil producing states, Bryant wrote:

> ...We feel that the present severance tax as imposed by the State of Alaska plus the 20 mill tax levied against our producing and transportation properties constitutes more than our fair share and we would be opposed to additional property taxes on reserves.[9]

According to H.A. Roberts, Tax Representative of the Property Tax Department of Texaco Oil Company:

> According to the latest statistics we have, Alaska is already taxing oil at a rate as high as any in the nation.[10]

If Alaska oil is to be considered solely in competition with the other states, the rate of taxation is a critical issue. However, Alaskan oil will be competing with international oil. The rate of taxation or income to foreign countries is substantially above any domestic taxing rate.

A third argument made by the oil companies is that a state should have a property tax or a severance tax but not both. Roberts of Texaco makes the point:

> Texaco is not opposed to a severance tax on oil and gas production, or a property tax on the value of reserves per se, providing they are part of a well balanced system. If property tax rates are uniformly applied to all classes of property, including the value of oil reserves, then no severance tax should be imposed. To do so, would only discriminate against a single industry, and result in its bearing a dispproportionate (sic) or unfair share of the tax burden.[11]

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[9] E.Lee Bryant, letter of December 26, 1974.

[10] H.A. Roberts, letter of October 28, 1974.

[11] Ibid.

There are some pretty stong arguments for higher proportionate taxes on more profitable industrial enterprises. This paper will not diverge into the issue of "windfall profits." Although the "fair share" argument is not an overly convincing one, the necessity of having more than one major tax on oil is questioned by industry and taxing agencies alike. Parker, Senior Tax Representative of Shell Oil Company argues:

> A severance tax is a compulsory payment imposed by the state upon individuals or firms for the privilege of severing or extracting certain natural resources from the earth or water ...Such severance taxes are generally in lieu of a tax on the resource itself, such as an ad valorem tax on oil reserves. Severance taxes are generally considered to be easily administered from the collection standpoint and believed to be geared to the ability of a taxpayer to pay since the severance taxes are uniformly exacted from current production revenues.
>
> In addition to the severance tax, Alaska imposes a State Income Tax, an Oil and Gas Conservation Tax for the support of the Division of Oil and Gas, as well as a significant State and Local Borough Property Tax on oil and gas production and pipeline transportation equipment. ...The State already exacts a considerable tax burden from the oil and gas industry by imposing most of the taxes generally levied by other oil-producing states. Usually a state does not impose both a severance tax on production and an ad valorem tax on reserves....
>
> Your letter does not indicate whether this ad valorem tax on reserves would be pyramided on top of the present tax burden, or whether it would replace the Severance Tax.[12]

Other oil company responses included recommendations for either a severance or property tax but not both. Paschall agrees: "one or the other should be utilized, not both." The severance tax officials in Texas feel the severance tax alone would be more efficient, but the property tax officials and evaluation firms strongly feel that both types are important.

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[12] D.M. Parker, letter of November 4, 1974.

The valid and meaningful argument for both severance and property taxes relates to the stages of a field's development. A new field has more potential value, and is at that time more valuable, therefore, it should be taxed at a higher rate at the onset. The ad valorem property tax effectively derives revenue from this profit potential whereas the severance tax would impact on oil property evenly whether it was highly profitable or barely economical.

The argument is a valid one, but Alaska's sliding scale severance tax also takes into account the difference in the producing capacity of each well. By spreading the low and high rates of the scale from two or three per cent for the barely economical wells to twelve per cent (similar to what Louisiana presently uses) on the wells producing at an extremely high level (over 1,000 barrels a day) the severance tax would then give nearly all the advantages of the separate and additional property tax and at a lower administrative cost.

What is the financial condition of the companies active on Alaska's North Slope? Scrutiny of 1973 annual reports reveals that the eleven companies posted earnings of 7.9 per cent of revenues in 1973, see Table 5. Tax information and earnings information were solicited from the same eleven companies, which explains the ommission of the British Petroleum from the tabular data.

Standard Oil of California registered the highest earnings rate at 9.5 per cent and Standard of Ohio (SOHIO) the lowest at 5.1 per cent. Income averaged 8.3 per cent of total assets for the eleven companies. At Exxon as well as all other companies surveyed, the spurt in income in 1973 came mainly from "the translation of affiliates earnings from foreign

TABLE 5
EARNINGS OF MAJOR OIL COMPANIES ACTIVE
ON ALASKA'S NORTH SLOPE
(Millions of $)

OIL COMPANIES	GROSS REVENUES		OPERATING EXPENSES		NET EARNINGS		EARNINGS AS % OF REVENUES
	1972	1973	1972	1973	1972	1973	1973
ARCO	$ 3,899	$ 4,561	$ 3,706	$ 4,291	$ 193	$ 270	5.9%
EXXON	22,438	28,508	20,907	26,065	1,532	2,443	8.6%
MARATHON	1,509	1,859	1,429	1,729	80	129	6.9%
MOBIL	10,295	12,756	9,721	11,906	574	849	6.7%
PHILLIPS	2,568	3,074	2,419	2,843	148	230	7.5%
SHELL	4,850	5,750	4,589	5,417	260	333	5.8%
STANDARD - CAL.	6,746	8,927	6,199	8,083	547	844	9.5%
STANDARD - AMOCO	5,477	6,468	5,102	5,956	374	511	7.9%
STANDARD - OHIO	1,629	1,734	1,572	1,645	57	89	5.1%
TEXACO	10,749	13,868	9,860	12,576	889	1,292	9.3%
UNION	2,458	2,962	2,336	2,782	122	180	6.1%
						Average	7.9%

Source: Annual Reports filed in 1973

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currencies into more dollars as a result of devaluation of the dollar."[13]

The domestic vs. foreign situation at Texaco was even more striking:

> Texaco's earnings attributable to the United States failed to keep pace with other areas, increasing only 3.6 per cent to $454 million in 1973 compared with $438 million in 1972. Regulation of petroleum prices, sharply rising costs of doing business and lower production of crude oil and natural gas adversely affected United States earnings despite vigorous efforts toward controlling costs.
>
> Earnings attributable to operations outside the United States were $848 million, an increase of 86 per cent. Approximately 30 per cent of the $387 million increase in foreign earnings represents the effect of the higher net value, in terms of U.S. dollars, of the operating earnings realized in currencies of those countries where our operations outside the United States are conducted...[14]

SOHIO registered the lowest rate of return, primarily due to their relatively high expenditures in developing their Alaska property. At Prudhoe Bay in 1973 they drilled eight wells, all successful. This brought their drilling activity at Prudhoe Bay to 57 wells; all except three suspended and preserved for future use, have indicated to be oil bearing in the main productive zone of the field.

Taxes paid by the eleven oil companies totaled $25 billion in 1973 or about 29 per cent of revenues for the year. The tax rates listed in Table 6 reveal that Phillips had the lowest rate at 14.6 per cent and Exxon the largest company with also the highest proportionate tax burden at 37.2 per cent of revenues. Generally, the companies with the proportionately higher taxes had more extensive foreign operations where the effective tax rates were considerably higher.

Of the eleven oil companies, only six chose to publish in their annual reports a detailed listing of the various taxes paid in 1973. By

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[13]Exxon 1973 Annual Report.

[14]Texaco 1973 Annual Report.

TABLE 6
TAXES OF MAJOR OIL COMPANIES ACTIVE
ON ALASKA'S NORTH SLOPE
(Millions of $)

OIL COMPANIES	EXCISE PROPERTY & OTHER OPERATING TAXES		FEDERAL & OTHER TAXES ON INCOME		TOTAL TAXES	TOTAL ASSETS	TAXES AS % OF ASSETS	TAXES AS % OF REVENUES
	1972	1973	1972	1973	1973	1973	1973	1973
ARCO	$ 629	$ 624	$ 122	$ 197	$ 821	$ 5,109	16.1%	18.0%
EXXON	5,750	6,856	2,346	3,752	10,608	25,079	42.3%	37.2%
MARATHON	246	290	179	220	510	1,572	32.4%	27.4%
MOBIL	2,895	3,375	803	1,194	4,569	10,690	47.7%	35.8%
PHILLIPS	361	356	128	94	450	3,607	12.5%	14.6%
SHELL	878	953	83	122	1,074	5,381	20.0%	18.7%
STANDARD - CAL.	1,274	1,459	394	485	1,944	9,082	21.4%	21.8%
STANDARD - AMOCO	1,039	1,135	123	268	1,403	7,018	20.0%	21.7%
STANDARD - OHIO	299	291	23	39	330	1,963	16.8%	19.0%
TEXACO	2,031	2,388	556	733	3,071	13,595	22.6%	26.0%
UNION	397	436	62	81	517	2,909	17.8%	17.5%
						Average	29.4%	28.6%

Source: Annual Reports filed in 1973

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far the most substantial of the various forms of taxation was the excise tax. This motor fuel tax, collected directly from the consumers and paid to governmental agencies in the United States and abroad, exceeds all other taxes combined for each company. It was interesting to note that only Texaco did not include their consumer taxes collected in their listed deductions, choosing to publish gross income, not gross revenue including these consumer taxes.

All six companies reported property taxes higher than severance and production taxes. In relation to earnings; property taxes were 16.8 per cent and the production taxes including severance were 10.1 per cent. Care should be taken on drawing statistical inferences on this data. What Table 7 shows is that property taxes on oil are more substantial than other oil related taxes utilized in the states. The broad range of severance, property and other tax rates stems from the variety of production localities of each of the six companies.

Five companies published a breakout of foreign, federal and state income taxes. Four-fifths of the tax on income goes to foreign governments. The Federal Government share of these taxes is only 17.6 per cent of income taxes paid and state revenues derived from these taxes are insignificant as shown in Table 8. This data lends little credence to Atlantic Richfield's argument that Alaska corporate income tax should even be considered a factor in comparing the state to state tax burden.

While a full comparison of the overall tax burden on the oil industry as opposed to other industries would far exceed the scope of this analysis, it appears most likely from available data that the oil industry pays higher taxes in relation to their volume and profits than does bus-

TABLE 7
SPECIFIC 1973 OIL TAXES PAID BY SIX OIL COMPANIES ACTIVE
ON ALASKA'S NORTH SLOPE 1/
(Millions of $)

OIL COMPANY	EXCISE TAX	EXCISE % of REVENUES	PROPERTY TAX	PROPERTY % RELATIVE TO EARNINGS 2/	PRODUCTION & SEVERANCE TAX	PRODUCTION & SEVERANCE % RELATIVE TO EARNINGS 2/	ALL OTHER OIL TAXES EXC. INCOME TAX	ALL OTHER OIL TAXES EXC. INCOME % RELATIVE TO EARNINGS 2/	PROPERTY, SEVERANCE & PRODUCTION TAXES IN RELATION TO EARNINGS 2/	INCOME TAX 3/ TAX	INCOME TAX 3/ % OF INCOME
ARCO	$506.6	11.1%	$53.4	19.8%	$30.2	11.2%	34.1	12.6%	43.6%	$196.5	42.1% 4/
PHILLIPS	287.0	9.3%	30.2	13.1%	14.6	6.3%	24.1	10.5%	29.9%	94.3	29.1%
SHELL	817.3	14.2%	57.0	17.1%	34.0	10.2%	44.5	13.3%	40.6%	121.8	26.8%
AMOCO	963.5	14.9%	68.4	13.4%	55.4	10.8%	47.2	9.2%	33.4%	267.7	34.4%
SOHIO	251.8	14.5%	14.6	16.4%	6.3	7.1%	18.0	20.2%	43.7%	38.7	30.3%
UNION	361.3	12.2%	48.0	26.7%	22.9	12.7%	3.5	1.9%	41.3%	80.6	30.9%
Cumulative Average		13.0%		16.8%		10.1%		10.6%	37.6%		33.1%
Percentage of Total Taxes Paid	69.4%		5.9%		3.6%		3.7%			17.4%	

1/ Of the eleven oil companies, only these six itemized taxes in thier 1973 annual reports
2/ Taxes compared to earnings; not to be confused with "percentage of earnings."
3/ Federal, state and foreign income taxes as percentage of earnings plus these income taxes only.
4/ Income taxes proportionately high due to heavy foreign income taxes primarily in Venezuela, Libya, Indonesia and Iran.

Source: 1973 annual reports filed by the six companies.

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TABLE 8
INCOME TAXES PAID ON 1973 EARNINGS BY FIVE OIL COMPANIES
ACTIVE ON ALASKA'S NORTH SLOPE 1/

	UNION	PHILLIPS	ARCO	TEXACO	MARATHON	AVERAGE
FEDERAL						
Current	$19,700	$42,830	$ 36,276	$ 30,000	$ 36,675	
Deferred	14,400	(1,307)	14,400	46,145	(6,375)	
Total	$34,100	$41,523	$ 50,676	$ 76,145	$ 30,300	17.6%
STATE						
Current	8,300	---	4,908	6,500	2,647	
Deferred	1,500	---	1,250	---	---	
Total	9,800	8,984	6,158	6,500	2,647	2.6%
FOREIGN						
Current	35,900	39,819	139,242	562,300	164,737	
Deferred	800	4,022	432	88,307	22,000	
Total	36,700	43,841	139,674	650,607	186,737	79.8%
TOTAL TAXES ON INCOME	$80,600	$94,348	$196,508	$733,252	$219,684	
% FOREIGN TAX	45%	46%	71%	89%	85%	

1/ Of the eleven oil companies, only these five reported the different type of income taxes paid in 1973

Source: 1973 Annual Reports filed by the five companies

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iness in general.

The importance of state taxes on oil and gas should not be underestimated.

> Tax is of such pervasive importance in the financial reckoning of this industry that even the least financially-minded oilman, asked for his opinion of any unexpected move by any major company, immediately tries to figure out the "tax angles" that may have affected its decision. The tax treatment of oil profits in the country where any international company has its headquarters is likely to condition its industrial strategy all over the world.[15]

Companies with foreign operations get the benefit of the same deductions for drilling and development and depletion allowances as domestic companies, even though the risk of unsuccessful drillings is much less. In addition, the payments made by them to foreign governments, which are in reality royalties, are not merely treated as deductions against income, but are permitted to be taken as credits to offest their U.S. income tax liabilities dollar for dollar. The foreign royalties usually equal or exceed the amount of U.S. tax and usually wipe out all U.S. income tax liability on their foreign operations. U.S. oil companies with foreign operations also have the prerogative of using the cost of drilling and development abroad that results in operating losses to reduce the taxes they owe on income earned from their U.S. operations. J.E. Hartshorn, makes a convincing argument concerning taxes on oil companies:

> No sensible business firm anywhere arranges its affairs for the benefit of the tax collector. The international oil companies differ from those in most other industries only by having to operate within so many tax systems that their perfectly legal arrangements to avoid leaving most of their shareholders' profits in the hands of tax collectors, by comparison, have to become somewhat three-dimensional. Other liabilities to tax - and other collectors' pressures to maintain the amount paid in taxes - again occur in between producing government and home government.[16]

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[15] J.E. Hartshorn, Politics and World Oil Economics, New York, Praeger Publishing 1962, p. 176.

[16] Ibid, p. 183.

The analysis of state government taxation is directed to a number of key policy questions. The most important normative question: Who should pay? Two principles can be considered: Who is able to pay and who is entitled to the benefits. The ability-to-pay principal hinges on the economic capability to bear the burden. Without a doubt the oil industry in 1974 through 1980 can bear the burden and can bear a proportionately higher tax. The second principle, the benefit principle of taxation rests on the presumption that those who receive benefit from the services provided by government should bear the costs - under this criteria the tax should be shifted to sources other than the oil industry. There are some strong political forces at work in Alaska against further taxes on the oil industry. Nationally the oil industry has received preferential treatment on oil related taxes which can be attributed to the policy of the 1950 and 60s of utilizing foreign oil and conserving U.S. oil. The oil industry expects these privileges to shift to the state and local sectors.

Concerning administration of income taxes and the relatively small federal tax; Amoco intends to go to court over $49 million in taxes for the 1967 to 1969 period. The company contends the tax, which amount to about one per cent of their revenue, is "in large part without merit."[17] This has interesting ramification if applied to Alaska's intentions of "tightening" up the State corporate income tax. Possibly a higher severance or initiation of the property tax and dropping the corporate income tax for oil companies would achieve the same end with much less hassle.

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[17]Standard Oil of Indiana, 1973 annual report.

Of the eleven companies, Marathon has the highest proportion of it's production in Alaska. One-fourth of Marathon's North American oil production is in Alaska's Cook Inlet, more than any other state:

TABLE 9
MARATHON OIL COMPANY OIL PRODUCTION[18]

	1973	1972
Alaska	47,776	49,473
Texas		
Yates Field	23,957	22,530
Other	21,782	21,488
Wyoming	35,138	38,084
Louisiana		
Offshore	11,978	10,926
Onshore	5,782	7,036
Other U.S. (18 states)	28,120	31,396
United States	174,533	180,933
Canada	9,129	9,554
North America	183,662	190,487

Comparison of Marathon's tax burden shows the company right in the middle of the eleven companies, except in state income tax where Marathon has the lowest level of state tax.

This chapter has shown that oil companies pay significant taxes, but the largest share accumulates to foreign governments. These circumstances stem from U.S. policy over the last three decades to subsidize the exploration of foreign oil and preserve part of this countries reserves. The oil companies are adamant in their objection to additional taxes by the state and rely on the argument of total taxes paid in encouraging the states not to raise their tax levels on oil and gas. The treatment of company taxes in relation to revenues has been cursory; however, the basic fact is evident that the industry is not overtaxed by Alaska or any other state.

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[18]Marathon 1973 annual report.

CHAPTER III

PROPERTY TAX IN GENERAL

The ad valorem tax is basically a tax on wealth. It is levied against the value of tangible (and in the case of potential oil reserves, intangible) real or personal property. The term value is defined by the property tax assessor as the price paid by an informed willing buyer of a piece of property to an equally informed willing seller of the same property. The property appraiser considers three basic elements: 1) the cost incurred in creating the property, 2) the market value, the sales value on an open free market, and 3) the future income to be gained from the property, then converts that into an estimate of current value.

Few hydrocarbon properties are bought and sold, so the potential to produce income becomes the basic consideration of the value of the property. The estimating techniques on underground reserves are an educated guess of the volume of oil in the geologic structure, the relative oil, gas and water saturation, the viscosity, the porosity and permeability of the structure and the pressure of the reservoir. Upon this is placed the estimate of the percentage of the reserve which can be recovered. The determination of recoverable reserves from a new field is more difficult than determining the remaining recoverable reserves from an old field.

Once the value has been pegged, the future price of the oil, the demand in the market, and the discount rate (future value to today's

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money - combined with the risk factor) are the remaining critical factors in determining the appraisal. Oil company officials argue that the reservoir estimates are based on inexact scientific judgements. Engineers and appraisers contend that the engineering judgements on the reservoir are less of a problem than such factors as the future market price and more importantly - realistic discount factors.

Each property is assessed on a different combination of factors. The ad valorem tax on oil reserves can seldom be judged an equal tax among the various producers; but then the production taxes as they relate to income or profit are often not more equitable. Looking at the ad valorem tax from the standpoint of an equitable spread of revenue among the localities within a state -- historically it has been highly inequitable.

As outlined in Chapter I, seven of the 16 highest producing states have oil property taxes on the books which provide revenue for the local governments. In these seven states, nearly all revenues accrue to local governments, almost none to the state government. In an additional six of the 16 states, severance taxes are levied in lieu of ad valorem taxes on oil property. One state has a gross income tax (separate and in addition to a corporate income tax) an in lieu type of income tax. New Mexico recently abandoned its ad valorem tax on oil reserves. Alaska is the only other state which has neither ad valorem tax provisions or an in lieu type of severance tax.

Severance taxes based on wellhead value ranged from one to 12.5 per cent. Severance taxes on gross market value ranged from two to seven per cent. Property tax rates vary from state to state and from county to

county within each state and are usually based on an assessed valuation less than full value. The rate was most commonly applied to 20 - 50 per cent of value. An attempt was made to convert the property tax average rates per state to something comparable to the severance or production tax rate; but because of complexity and time limitations this effort was abandoned. Let us examine the taxation further in general terms.

The property tax is the most important tax in the revenue structure of local governments in all 50 states. Last year the property tax accounted for about 82 per cent of local revenues. The national average of state revenues from property taxes comes to about two per cent. The average of the 16 highest oil producing states was slightly higher, see Table 10. Of the states, New Mexico had the highest proportionate reliance on the property tax at 9.5 per cent of total state revenues in 1970-71. That figure will drop considerably with the abandonment of the ad valorem tax on oil and gas. Montana receives 6.3 per cent of it's revenue from the property tax.

California had by far the largest monetary revenue from the property tax; still only 4.3 per cent of state revenues were derived from this source.

In fiscal year 1970-71, property taxes in Alaska amounted to only about 19 per cent (see Table 4, Chapter I) of all local government revenue. The combined state-local revenue is less than seven per cent. No other state has as low a reliance on the property tax for state-local revenues.

TABLE 10
GROSS ASSESSED VALUE AND PROPERTY TAX REVENUES OF 16 OIL PRODUCING STATES, 1970-71
(In Millions $)

RANK - PROPERTY Tax as % of PERSONAL INCOME	OIL PRODUCING STATE	GROSS ASSESSED VALUE			PROPERTY TAX REVENUE		
		TOTAL	STATE ASSESSED	LOCAL ASSESSED	STATE	LOCAL	% of STATE REVENUE
1	Montana	$ 966	$ 191	$ 775	$ 8.6	$ 157.8	6.3%
2	California	59,176	4,493	54,683	244.0	5,747.5	4.3%
3	Wyoming	1,384	748	636	8.9	68.8	9.5%
4	North Dakota	627	70	557	1.4	116.2	1.0%
5	Kansas	6,476	1,086	5,390	10.5	463.0	2.3%
6	Colorado	5,454	561	4,893	2.0	425.8	.4%
7	Michigan	36,593	---	36,593	90.0	1,730.4	3.5%
8	Utah	1,966	667	1,299	13.1	140.5	4.9%
9	Illinois	49,683	1,167	48,516	.5	2,233.6	---
10	Texas	23,778	134	23,644	63.8	1,508.0	2.9%
11	Florida	51,761	299	51,462	35.7	857.3	2.2%
12	Oklahoma	4,266	867	3,399	---	254.6	---
13	Mississippi	2,579	566	2,013	4.1	166.7	.8%
14	New Mexico	2,358	655	1,703	15.9	74.5	5.0%
15	Louisiana	5,816	1,223	4,593	28.3	236.6	2.9%
16	ALASKA	2,430	---	2,430	---	33.1	---

Sources: Property Values Subject to Local General Property Taxation in the United States, (Dec. 74) Table I and Taxable Property Value and Assessment - Sales Price Ratios, Volume 2, Part 2 (Oct. 73) Table I, U.S. Department of Commerce, Social & Economics Statistics Administration, Bureau of the Census.

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Because of this apparent disparity, it has been recommended that Alaska rely more heavily on this type of tax for the State as well as local revenues. Alaska actually is in an enviable position. The literature on tax equity almost unanimously places property tax as the least equitable of all types of taxation. The Texas Research League reports a public opinion poll on the property tax.[1]

> The property tax does not stand high in the estimation of the American people according to a recent opinion poll undertaken on behalf of the National Advisory Commission on Intergovernmental Relations (ACIR).
>
> Asked to select the tax considered to be the least fair, a cross section of the public designated the property tax far more often than any other major source of public revenue...The survey results:

What is the LEAST fair tax?		What is the FAIREST tax?	
Federal income tax	- 19%	Federal income tax	- 36%
State income tax	- 13	State income tax	- 11
State sales tax	- 13	State sales tax	- 33
LOCAL PROPERTY TAX	- 45	LOCAL PROPERTY TAX	- 7
Don't know	- 10	Don't know	- 13

The property tax is not only the least popular but is considered least equitable by tax administrators. The same questions of the previous poll were asked of 145 attendees of the annual conference of the National Tax Association.[2]

> The national ACIR public opinion questionnaire was distributed at the 1972 Conference of the National Tax Association and was returned by 145 of the 450 registrants.

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[1]U.S. Advisory Commission on Intergovernmental Relations, Public Opinion and Taxes, May 1972) as cited by the Texas Research League, The Texas Property Tax: Background for Revision, Austin, August 1973, p. 5.

[2]John O. Behrens, "The Public and the Publicans Talk Taxes," National Tax Journal, XXVI, No. 2 (June 1973) p. 22 as cited by the Texas Research League, Ibid.

The results:

What is the LEAST fair tax?		What is the FAIREST tax?	
Federal income tax	- 13%	Federal income tax	- 54%
State income tax	- 5	State income tax	- 11
State sales tax	- 14	State sales tax	- 28
LOCAL PROPERTY TAX	- 60	LOCAL PROPERTY TAX	- 4
Don't know	- 7	Don't know	- 3

While the demographic and socioeconomic traits of the first group polled (e.g. age, region of the nation, occupation, income level, ethnic background, etc.) was not documented, the respondents of the second poll were a select knowledgeable group. They considered the property tax to be unequitable and in definite need of tightening the administration of the tax.

The unpopularity and inequities of property tax in general should not be extrapolated to the Alaskan experience, particularly to the potential ad valorem tax on oil property. The State has very competent administration in the Property Tax Division of the Department of Revenue. Additionaly this division has good council.

Moving from the opinions of the general property tax to the most often quoted reason for the unfairness we find: 1) it is regressive, 2) those least able to pay usually must carry the relatively highest burden, 3) it differs appreciably by region of the country, is extremely high in some states and moderate in others, 4) it tends to reduce home ownership, and 5) it perpetuates ghettos. None of the five reasons against a property tax in general apply to Alaska oil property. There are other reasons that make it an undersirable tax and these will be examined in the next and last chapter.

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CHAPTER IV

APPLICATION TO ALASKA

The Alaska House and Senate Resources Committees have heard considerable testimony on this subject, particularly in April 1975. From the oil companies came the plea - no further imposition of taxes; and the implied threat - the State would receive less in the long run through lower bonus bids on upcoming leases. Possibly the classic nadir of this testimony was the tenuous argument that a tax on oil reserves will cause such rapid development of the far north oil resource as to spur uncontrolled economic growth which will destroy the Arctic environment. British Petroleum proposed this argument.

From the other side of the issue came testimony of the pro-tax people, those who administer it or will profit from its enactment. Texas and California experts in particular were relied upon for factual information. About the only shortcoming in the testimony was an occasional non-response. For example members of the House Resources Committee tried to guage the number of months that the State might be in litigation on ad valorem tax legislation. They asked Pritchard and Abbott representatives, including the senior administrative officer, Pritchard, the length of time in court on the original Texas decision on property tax on oil. The firm had been built for 50 years, to a current level of 150 employees based on the historic precedent setting court decision on this very question. Yet

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None from the firm offered the simple fact of the court time involved in that decision.

This report required considerable interview time with oil property taxing experts from Texas and California. One finding was that the California people, from my experience were more candid and straightforward. If they knew the answer, they provided the information. If they promised to gather some information needed in the research, it was compiled and sent.

If legislation is enacted on taxing oil reserves, however, it appears the Alaska Department of Revenue will contract with Texas consultants rather than California consultants. Both offer competent appraisal techniques. The Texas alternative, however, offers both the appraisal and legal expertise that will be required. It is "easier" to obtain $150-200 million in oil taxation revenues with the help of a veteran firm which has a good record in corporate-tax matters.

Emphasis on this report should not be placed on testimony of obvious vested interests. Two witnesses, consistently "middle of the road," provided exceptional in-depth analysis of the factors involving an Alaska tax on reserves from the viewpoint of covering the shortfall in State revenues. Walter Mead, Professor of Economics, University of California at Santa Barbara and Milton Lipton of Walter J. Levy Company, provided strikingly similar testimony. Salient points made by these two witnesses show that a tax on oil reserves is not a preferable method of gleaning the required revenue.

Lipton, emphasized the unpredictability of world oil prices and

demand.[1] A few highlights of his presentation concerned world oil prices and the importance of the Alaska oil resources. He suggested that the price of foreign oil could not be supported indefinitely at the $13-14 per barrel level. If Prudhoe oil were delivered into California in early 1975 it would command a price of $11.50 a barrel.

Mead spoke of the current attractive price of oil at $12 per barrel.[2] He placed the Prudhoe bonus sale in perspective by emphasizing that the $900 million was achieved on $3.50 oil, not an $12 oil. (Underestimated discount factors and rising operational costs partially offset this, however). Like Lipton, Mead suggested that prices will go downhill from now until 1980; that the $12 price is temporary.

Paschall estimated the value of the Prudhoe Bay field at $4.7 billion in 1973. He estimated that oil production for the first 25 years of the field's operation would total 9.4 billion barrels. He said the most difficult part of the assignment on the Prudhoe field was in estimating the price of the oil at the time of production. He assumed a price of $2.95 per barrel; since then the price has tripled which, if extrapolated, would place the value of the field closer to $15 billion.[3]

The matter of current price, the fact that the pipeline now under construction is projected to have 25 per cent idle capacity, and the attractive nature of the Beaufort Sea oil potential immediately north of Prudhoe combine to make the proposed Beaufort lease sale extremely important.

Mead testified to the importance of the early lease sale in the

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[1]Milton Lipton, testimony to Senate Resources Committee, February 12, 1975.

[2]Walter Mead, testimony to House Resources Committee, April 15, 1975.

[3]Robert Paschall, personal interview, December 10, 1974.

Beaufort region irrespective of the immediate State revenue requirements. The Prudhoe field according to Mead likely extends north into the Beaufort Sea. When Prudhoe production starts, oil migrates from the "fingers" of the field. A unitization problem exists, and as Mead vividly explains it: "Someone has a straw into your oil. The immediate interest of Alaska is to hold a lease sale as soon as possible. The more delay, the more loss to the State of Alaska."[4]

Lipton and Mead are in agreement that the lease sale ranks as the highest alternative, particularly if the area includes the Beaufort which will bring in substantial revenues. Conversely, the advance sale of the State's royalty oil or options ranks as the least desirable of the alternatives available. Concerning the pre-sale of the State's royalty oil, Lipton emphasized the uncertainties involved in the future price of the oil which will influence the oil companies bids and work to the detriment of the State. Important points mentioned by Lipton included:

> The oil companies are not in the position to say what the 1978-1980 market price means to them in terms of competitive positions. Market price is a very uncertain, ephemeral dubious sort of thing; and the recovery of the price you pay for oil from the North Slope depends on the price you can sell gasoline in Los Angeles. This is a tenuous uncertain relationship...
>
> All the uncertainties get thurst back on to the State; none of the uncertainties work to the advantage of the State. In any case, no oil company is really in the position to commit themselves to the purchase of your oil, or an option on your oil, without assessing a relatively high interest rate against the funds they advance to the State compared to the time the oil is forthcoming. The interest rate the oil company is looking at is considerably higher than the cost of capital to the State of Alaska.
>
> Finally, there is the presumed importance of the State's continuing access to royalty oil...for possible comsumption within the State, e.g., to support the Fairbanks refinery. Most importantly, the movement of State royalty oil through the pipeline in interstate

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[4]Walter Mead, testimony to House Resources Committee, April 15, 1975.

commerce is tremendously important to underpin the regulatory authority of the Alaska Pipeline Commission.[5]

These reasons for caution in considering pre-sale of Alaska royalty oil by Lipton were also emphasized by Pritchard. For the reasons of future uncertainty on price and other points noted by Lipton, Pritchard felt that any other alternative would be preferable. Mead was less adamant on the problems of sale of future oil and included it as one of the combination of solutions that the State should enact. Lipton and Mead see less of a problem in sale of future gas because the regulatory nature of gas pricing and transport removes some of the uncertainties. Advanced gas sales would not be as detrimental to the State.

Mead and Lipton both recommended that the State tighten its corporate income tax laws, as a much needed and integral part of the overall solution to the revenue shortfall problem.

Lipton testified that the property tax on oil reserves is intrinsically a bad tax.

> It is our judgement that this tax as a tax measure is a bad tax...for two reasons: First, because there is no criteria available to the legislature or to the person being taxed as to what really the incidence of the taxation is. If you talk about income tax - you have the tax base which is identifiable - the profit is being taxed. Both the State, and the industry being taxed, has a basis of judgement of what the impact is, what the implications are. On the severance tax, you can make comparisons of what the tax base is in other producing areas. The bonuses are entered into by industry of their own free volition. But the ad valorem tax on oil in place is an estimate, its unknown...if you know what is in place, how much is recoverable? what is recoverable is not a technical estimate but an economic estimate...if you know how much can be recovered and if you know what it will be worth on the day it is produced or what it'll be worth on the last day the reservoir will be exploited.

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[5]Milton Lipton, testimony to Senate Resources Committee, February 15, 1975.

> So the fact of assessment itself, to assess the value of oil and gas in place is a different kind of animal than trying to assess other real property.
>
> Secondly, insofar as it may involve the respective assessment of one company's oil and gas in place, and another company's you are confronted with the problem of equitable assessment -- it becomes a matter of equity and legal responsibility that the value of one person's oil and gas in place shall be assessed by the same criteria as the other persons oil and gas in place, and I submit to you that this is an impossible problem; because the assessment of the value of oil and gas in place is so different from every other aspect of ad valorem taxation that you have taken in this State, or that has been taken anywhere else.[6]

Although there is considerable disagreement on whether it is indeed an impossible problem, Lipton's testimony points out the difficulty involved. Conversely, Mead points out the advantage of the property tax:

> The trouble with a royalty and a severance tax is that it leads to premature abandonment of a lease. A property tax does not have that disadvantage. A property tax is not a function of output. Royalty and severance is. A property tax does not raise costs. A property tax is paid whether you produce or not. That is a sizable advantage of the property tax compared to the royalty and severance which you now have.
>
> In the long run you may wish to change this and change the disadvantage of the royalty if you like. By instituting what you have done for the severance (sliding scale), you can do that for the royalty too.[7]

The advantages of the ad valorem property tax can be gained through a different method, ie., a sliding scale royalty, similar to the system in Alberta, but with a lower bottom range. Also the sliding scale severance could be extended in the lower and higher range as mentioned earlier in this paper. The combination of the sliding scale royalty and a wider ranging sliding scale severance would then provide virtually all the benefits of the property tax.

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[6] Ibid.

[7] Walter Mead, testimony to House Resources Committee, April 15, 1975.

Although Mead pointed out the advantage of the tax to insure maximum production of a field, he also testified that all future bids on lease sales would reflect the action taken on the property tax:

> If you impose this property tax burden, hereafter, companies that bid bonuses to the State of Alaska will consider that piece of history and will reduce their bonus bids accordingly. You will pay for it in the future.[8]

Mead and Lipton emphasized the importance of minimizing the uncertainties when the leases are drawn. If uncertainties exist because of wording or arbitrary future events left unclear, the discount rate figured by the oil company will go up and the State of Alaska will pay the price.

Some capricious and morally questionable unilateral changes in lease agreements have been recently made by Arab leaders on Middle East oil, by the Norwegians on North Sea oil, and by the Canadians on Alberta oil. It is the opinion of this writer that the State, if nothing else, should stick by any lease agreements into which it has entered.

There are alternative means to raise revenue that are preferable to the property tax on reserves. The lease sale in the Beaufort Sea is the most logical alternative and can incorporate into each lease a sliding scale royalty as well as severance. This will have considerable benefit to the State of Alaska and treat the oil companies equally and fairly from the onset. Even with a portion of the bonus lease revenues placed in a permanent fund, these revenues provide an important part of a temporary solution to a temporary problem. Conventional revenue anticipation bonds can cover the remainder of the shortfall.

---

[8] Ibid.

SOURCES CONSULTED

I Personal Interviews and Direct Correspondence:

Arnold, L.H. Supervisor, Severance Tax Section, State Tax Commission State of Mississippi, Jackson, Mississippi
Correspondence: Description of oil taxes in Mississippi.

Ashmore, G.W. Manager, Alaska Taxes, Accounting Department, SOHIO Petroleum Company, Oklahoma City, Oklahoma
Correspondence: "Alaska taxes on oil are equal or higher than other major oil producing states."

Awalk, Charles. Property Tax Consultant, Pritchard & Abbott, Valuation Engineers, Fort Worth, Texas
Personal Contact: "Property taxes on oil have a distinct advantage over other forms of oil taxation, particularly in newly developed fields."

Berry, Randolph. Revisor of Statutes, Legislative Affairs Agency, State of Alaska, Juneau, Alaska.
Personal Contact: Research on oil property taxes and severance taxes of other states, 1973.

Broberg, Roy S. Manager, Property Tax Division, Tax Department, UNION Oil of California, Los Angeles, California
Correspondence: "An additional oil tax could bring the level of tax burden above that of other states where Alaska crude oil must compete - could affect future competitive oil lease sales."

Bryant, E. Lee. Manager, Property Tax Department, MARATHON Oil Company, Findlay, Ohio
Correspondence: An in-depth assessment of the various oil taxes of major producing states - "Present Alaska taxes on Marathon constitutes more than their 'fair share' - suggest no additional property taxes on reserves."

Calvert, Robert S. Comptroller of Public Accounts, State of Texas, Austin, Texas
Correspondnece: State of Texas is not on top of oil property taxes on oil reserves, even though indirectly revenue does accrue to the State of Texas - "contact the firm of Pritchard & Abbott for answers."

AGO 530428

Cooper, Robert H. Assistant Director, Property Tax Division, State Tax Commission of Utah, Salt Lake City, Utah
Correspondence: Description of oil taxes in Utah.

Cunningham, Milton. State Assessor, Ad Valorem Tax Division, State Comptroller, State of Texas, Austin, Texas
Personal Interview: "The Railroad Commission and the firm of Pritchard & Abbott know more than anyone about this subject, contact them."

De Bolt, Harold. Director, Ad Valorem Tax Division, Department of Revenue and Taxation, State of Wyoming, Cheyenne, Wyoming
Correspondence: Description of oil taxes in Wyoming.

Dunlop, W.W. Executive Secretary, State Board of Equalization, State of California, Sacramento, California
Correspondence & Telephone Interview: An advantage of the California oil property tax is that it prolongs the economic limit of a well where a comparable severance tax would encourage abandoning a well where marginally economic reserves could be removed.

Edgar, T.C. Director, Severance Tax Division, State Comptroller Office, State of Texas, Austin, Texas
Personal Interview: The Texas Severance tax is basically a gross receipts tax, or an occupation tax levied on the market value and is more equitable than the ad valorem tax.

Freeman, Roger A. Hoover Institution on War, Revolution and Peace, Stanford, California
Correspondence: "Oil companies are not rolling in 'gravy' and the popularly believed 'tax advantages' should continue in order to increase the vitally needed domestic production of oil and gas."

Freer, Richard A. Previous Commissioner of Alaska State Department of Administration, Juneau, Alaska
Personal Interview: Since property taxes in other states have historically benefited municipal-local government units, would Alaska State sponsored property tax, if dedicated to local revenue sharing, be advisable? "NO."

Hall, David M. Senior Revenue Agent, Statistics and Research Section, Department of Revenue, State of Colorado, Denver, Colorado
Correspondence: Description of oil taxes in Colorado.

Heier, Gerald D. Director, Property Tax Division, Alaska Department of Revenue, Anchorage, Alaska
Personal Interview: Key source of information, and head of Division under which a property tax on oil would be administered if enacted, "Sees no insurmountable administrative problems with oil reserves property tax."

Hopkins, William W. Manager, Alaska Oil and Gas Association, Anchorage, Alaska
Correspondence: "Not in favor of tax on oil reserves."

Howell, Holland. Industrial Properties Appraisal Engineer, Pritchard & Abbott, Fort Worth, Texas
Personal Contact: Experience in appraising Alaska petroleum industry production facilities.

Humphries, J. Kenneth. Research Analyst, Legislative Affairs Agency, State of Alaska, Juneau, Alaska
Personal Interview: Has conducted previous research on this subject, particularly California administration of oil reserve taxes, a provocative "free thinker."

Kasline, Fred. Oil & Gas Conservation Department, State of California, Sacramento, California
Telephone Interview: The severance taxes have more advantages to oil exporting states; property taxes tend to spread the tax revenues unevenly throughout the State of California.

McElvany, W.L. Director, Gross Production Division, Oklahoma Tax Commission, State of Oklahoma, Oklahoma City, Oklahoma
Correspondence: Description of Gross Production and Excise Tax of Oklahoma.

McGrew, James W. Executive Director, Texas Research League, Austin, Texas
Personal Interview: A creditable reliable source of pro-industry research information; strongly prefers severance tax over property tax because of the inequities in local administration.

McLoed, W.D. Assistant Manager, Property Tax Division, Treasurer's Department, Standard Oil Company of California, San Francisco, California
Correspondence: Subject is so complex that it would require an in-depth study which they are unwilling to conduct.

Maguire, John R. Rax Counsel (State and Local) Taxation Division, American Petroleum Institute, Washington, D.C.
Correspondence: A good source for severance and production taxes by state.

Matthews, Guy. Railroad Commission, State of Texas, Austin, Texas
Personal Interview: The Railroad Commission serves as the Texas oil and gas conservation agency; "Suggested that certain Texas counties benefit, others do not - Pritchard & Abbott have all the answers."

Messenger, John R. Assistant Attorney General, Department of Law, State of Alaska, Juneau, Alaska
Personal Interview: Most knowledgeable in Juneau on oil taxes particularly legal aspects of oil property taxes, and is concerned that oil majors pay insignificant Alaska income taxes.

Morrison, K.K. Chief, Inter-County Property Bureau Property Valuation Division, Department of Revenue, State of Montana, Helena, Montana
Correspondence: Description of oil taxes in Montana.

Parker, D.M. Senior Tax Representative, Tax Division, SHELL Oil Company, Los Angeles, California
Correspondence: "Alaska oil taxes are already high, a property tax would be difficult and costly to administer."

Paschall, Robert H. Senior Petroleum & Mining Appraisal Engineer, Assessment Standards Division, State Board of Equalization, State of California, Sacramento, California
Correspondence and Personal Interview: An exceptional source, very knowledgeable; strongly feels that the property tax in California is far superior to a severance tax.

Pritchard, Edward S. Attorney at Law, Partner in firm, Pritchard & Abbott, Valuation Engineers, Fort Worth, Texas
Correspondence and Personal Interview: Largest of three oil property appraisal firms in Texas (and the United States) has contract with Alaska State Department of Revenue and feels the property tax on oil has made the difference in developmental progress of the oil producing states.

Roberts, H.A. Tax Representative, Property Tax Department, TEXACO Inc. Los Angeles, California
Correspondence: "Alaska is already taxing oil at a rate as high as any state in the nation; either severance or property taxes should be levied, not both."

Rosell, Earl P. Deputy Director, Ad Valorem Tax Division, Comptrollers Office, State of Texas, Austin, Texas
Personal Interview: The ad valorem tax is basically an effective fair tax although there are some inequities in assessment rates applied by the local "county commissioners." The State of Texas received $47 million last year; but less in future years because of declining rate; these funds dedicated to higher education.

Singletary, George F. Administrator, Railroad Commission, State of Texas, Austin, Texas
Telephone Interview: The administrator for the Texas oil conservation agency; "The State of Texas has no idea of the impact of ad valorem or severance taxes," referred all questions to the firm of Pritchard & Abbott.

Taylor, Robert L. Chief, Research and Management, Department of Revenue, State of Kansas, Topeka, Kansas
Correspondence: Description of oil taxes in Kansas.

Underwood, R.M. Manager, Alaska Taxes, Atlantic Richfield Company, Anchorage, Alaska
Correspondence and Personal Contact: "Against a property tax on oil reserves because the State has alternative better ways to cover the shortfall in State revenues and the property tax is the most difficult to administer and the most controversial form of oil and gas taxation."

Van Manning, Owen. Research/Legislation Specialist, Department of Revenue, State of Louisiana, Baton Rouge, Louisiana
Correspondence: Description of taxes on oil in Louisiana.

Williams, Thomas K. Assistant Attorney General, Department of Law, Anchorage, Alaska
Correspondence and Personal Interview: Probably the single best source of information on the broad subject of oil taxes of other states and the relation to current State taxes and potential Alaska oil development.

II Books and other Sources of Information -- Tax Related:

Advisory Commission on Intergovernmental Relations, The Property Tax in a Changing Environment, Selected State Studies, Washington, D.C.: U.S. Government Printing Office, 1974
A 33 state comparative analysis of property tax administration, exceptionally helpful background information.

Balk, Alfred. The Free List, Property without Taxes, New York: Russel Sage Foundation, 1971
A crusading type of treatment of the evils of real estate tax exemptions.

Bird, Richard and Oldman, Oliver, Readings on Taxation in Developing Countries, Maryland: The Johns Hopkins Press, 1964
A collection of 33 papers on fiscal policy and systems of a few nations and taxes by nation (analyzed according to effectiveness in administration).

Cameron, Helen A. and Henderson, William. Public Finance, Selected Readings, New York: Random House, 1966
Five papers dealing with budgeting, fiscal policy, evaluating state and local government finance (property tax evaluating standards).

Deran, Elizabeth. Earmarked State Taxes, New York: Tax Foundation, 1965
An 80 page booklet which lists and evaluates dedicated taxes by state.

Ecker-Racz, L.L. The Politics and Economics of State-Local Finance, New Jersey: Prentice-Hall, Inc. 1970
A historical analysis of state and local revenue sources, and an evaluation of problems and advantages of each type of tax.

Freeman, Roger A. Tax Loopholes, the Legend and the Reality. Washington, D.C.: American Enterprise Institute - Hoover Policy Study #5, May 1973
A straightforward review of tax exemptions, exclusions, deductions and credits in federal taxes. A critical point on tax advantages to oil companies prompted a letter to Freeman, duplicating bibliographic entry in first section.

Harriss, C. Lowell. Handbook of State and Local Government Finance, New York: Tax Foundation, Inc. 1966
Basically a statistical handbook of state and local taxes on 15 selected states (Alaska not included).

Hirsch, Werner Z. The Economics of State and Local Government, Los Angeles: McGraw-Hill Book Company, 1970
Contemporary microeconomic approaches applied to an analysis of state and local government.

Keith, John A. Property Tax Assessment Practices, Highland Publishing Company, Monterey Park, California, 1966
The closest to a textbook approach of any publication available on property taxation (public finance, history, economics, and assessing).

Lindholm, Richard W. Property Taxation U.S.A., Madison: The University of Wisconsin Press, 1967
Fourteen individual papers on property taxation; of particular interest - Mesabi Iron-Ore taxation history outlined by Clarence Nelson, Head of Research Department of Minneapolis Federal Reserve Bank.

Lipton, Milton. Tax hearings before the Senate Resources Committee of February 12, 1975 and the House Resources Committee of April 14, 1975.
The proceedings revealed exceptional and diverse knowledge of this Walter Levy Company consultant.

Maxwell, James A. Financing State and Local Governments, Washington, D.C.: The Brookings Institution, Studies of Government Finance, 1969

A textbook type approach to state and local taxation trends and interaction with the federal tax system.

Mead, Walter. Taxed hearings before the House Resources Committee, April 15, 1975

Unencumbered by special interests, this consultant to the legislature provided some of the most outstanding far reaching testimony, with obviously strong impact on the conclusion of this paper.

Musgrave, Richard A. ed. Broad Based Taxes: New Options and Sources, Maryland: The Johns Hopkins University Press, 1973

Sources of government revenue analyzed in light of economic development, a collection of ten papers.

Musgrave, Richard A. Fiscal Systems, New Haven: Yale University Press, 1969

A comparison of tax structures in developed countries, an in-depth analysis.

Netzer, Dick. Economics of the Property Tax, Washington, D.C.: The Brookings Institution, Studies of Government Finance, 1966

A comprehensive analysis of property taxation, the nature of the tax, the incidence, distribution, and economic effects.

Pechman, Joseph A. Federal Tax Policy, Washington, D.C.: The Brookings Institution, 1971

A highly readable introduction of the field of taxation as a major instrument of public policy; it includes a section on the analysis of state and local taxes.

Reuss, Frederick G. Fiscal Policy for Growth Without Inflation, the German Experiment, Maryland: The Johns Hopkins Press, 1963.

A somewhat dated study of the effects of German fiscal policy, a system which allows a more equitable distribution of income than the U.S. system.

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A lucid examination of major areas of tax advoidance; the sale of oil property of particular interest.

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A symposium report on state and local tax administration issues.

Statham, Robert R. and Lehmann, Cynthia P. A Review of the Property Tax and Its Impact on Business, Washington, D.C. Chamber of Commerce of the United States, 1973

This booklet highlights the negative aspects of property taxation in general, with strong reliance on U.S. Department of Commerce Census data.

State of Louisiana. 34th Annual Report, Louisiana Department of Revenue, Louisiana State Printing Office, 1974

State taxes listed by source for 1973; Severance tax collections itemized by product for each parrish.

Tait, Alan A. The Taxation of Personal Wealth, Chicago: University of Illinois Press, 1967

Distribution of wealth in the U.S. and Britain is examined in the light of tax proposals for a "more equitable" distribution.

Texas Research League. The Texas Property Tax: Background for Revision, printed by the League for the Texas Advisory Commission on Intergovernmental Relations, 1973

A good analysis of the deficiencies of property taxes on oil properties which are administered at the local level.

U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census, 1972 Census of Governments, Taxable Property Values and Assessment - Sales Price Ratios, Volume 2, Part 1 and Part 2, Washington, D.C., April 1974

Though somewhat dated when published, the best source of statistical data on property taxation of the 50 states.

_____, 1972 Census of Governments, Government Finances, Volume 4, Number 1, Finances of School Districts, Washington, D.C., April 1974

Statistical tables on school districts finances of 33 selected states in 1971-72, Alaska not included, most major oil producing states are included.

_____, Property Values Subject to Local General Property Taxation in the United States: 1973, Washington, D.C., December 1974.

White, Anthony G. Urban Property Taxation, Monticello, Illinois, Council of Planning Librarians, 1973

Two bibliographic lists of publications on urban property tax administration; of limited value.

III Books and other Printed Material -- Oil Related:

Adelman, M.A. ed. Alaskan Oil, Costs and Supply, New York Praeger Publishers, 1971

Economic analysis of the Prudhoe Bay field before oil price increases; excellent source but already somewhat dated.

_____, The World Petroleum Market, Maryland: Johns Hopkins Press, 1972
An excellent source on oil prices, reserves and international considerations.

Atlantic Richfield Company, Annual Report 1973.

_____, Supplement to the 1973 Annual Report.

Brown, R.D. The Crisis in Mining Taxation, CIM Bulletin, November 1974.

Campbell, Robert W. The Economics of Soviet Oil and Gas, Maryland: The Johns Hopkins Press, 1968
An historical sketch of Soviet energy development strategy and contemporary description of Soviet exploration, drilling, refining, transporting and marketing practices.

Exxon Corporation, 1973 Annual Report.

Forbes, January 1, 1975.

Hartshorn, J.E. Politics and World Oil Economics, New York: Frederick A. Praeger Publishing Company, 1962
This British author considers the international aspects of the oil industry and includes an arms-length evaluation of the "Oil Companies as Taxpayers."

Herbst, Robert L. Minnesota's Mineral Policy, Skillings Mining Review, October 12, 1974.

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Mining Engineering, September 1974.

Mobil Oil Corporation, Annual Report 1973.

O' Dell, Peter R. Oil and World Power, New York, Taplinger Publishing Company, 1971
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Oil and Gas Accounting Laws of New Mexico, State of New Mexico, 1972.

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Phillips Petroleum Company, Annual Report 1973.

Standard Oil Company of California, 1973 Annual Report.

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State of Oklahoma, Gross Production Tax Code and Petroleum Excise Tax Code, published by Oklahoma Tax Commission, Oklahoma City, Oklahoma, 1965.

Shell Oil Company, Annual Report 1973.

State and Local Oil and Gas Severance and Production Taxes, a mimeographed compilation of the American Petroleum Institute, Washington, D.C. 1974.

State of Alaska Hearings on Proposed Pipeline Legislation, Volumes I & II, March 6 - 10, 1972, Alaska Department of Revenue
A transcript of testimony by State and oil industry officials concerning ownership of pipeline, leasing of right of way, and oil related taxes.

Texaco Inc. Annual Report 1973.

Union Oil Company of California, 1973 Annual Report.

Valuation of Oil & Gas Producing Properties, AH 566, published by the Assessment Standards Division, Property Tax Department, California State Board of Equalization, 1972.

Valuation of Oil and Mineral Rights, reprint from Institute of Public Administration Symposium, Arizona State University, 1971.

SCOMM

#11:18

ALASKA
STATE LEGISLATURE

MEMORANDUM

May 14, 1975

Dear Mr. Mead,

It's been tough to pin Senator Huber down for very long--the session is getting into its fast and furious wind-up stage. Those handwritten memos you mentioned didn't seem to ring a bell at all, but if they are important we can make an all out search for them.

I thought I better go ahead and get these in the mail to you. Thanks a million. Your comments were apparently very valuable.

Have a nice day!

Kathie

AGO 513727

COMMENTS ON HB 297 AS IT PASSED THE HOUSE, TELEPHONED TO CHAIRMAN JOHN HUBER, SENATE SPECIAL COMMITTEE ON TAXATION & REVENUE, MAY 12 AT 11:00 a.m. BY WALTER J. MEAD

Page 1, Sec. 43.58.020 (2)

Beginning on line 24, it needs clarification. It lists three events leading to exemptions. If two or more of these events are at different points in time, then it will be unclear how the five year grace period is to be measured. As a correction, I would propose addition of the following words, "whichever comes first."

Page 2

The exemption provided in (4), lines 9 through 16, do not provide for termination of the exemption. I would suggest the addition of a phrase which provides that when the restrictions noted here are lifted, that the exemption be terminated.

Pages 7 and 9

Provision is made for accrual of the "early development incentive credit." In one of my previous memos to Senator Huber, I pointed out that this pay-back provision is the opposite of an early development incentive credit. By providing for pay-back of property taxes, it means that, in most cases, the property tax is simply a loan and the cost to the tax payer is limited to interest charges. It would be a greater incentive to eliminate this pay-back provision entirely, if the intent of the Legislature is to create an incentive for early development.

Page 8

Lines 15 and 16 are vague and will certainly lead to endless adjudication. The definition of "proven reserves" provided in SB 374 is far preferable. SB 374 language is standard language which the industry understands. HB 297 introduces new language, "if it is economically feasible to market," and "under reasonable foreseeable conditions." These terms are vague. I would recommend adoption of the SB 374 definition of proven reserves.

Page 11

Sec. 7 provides that if specified paragraphs are found to be invalid, the the act is voided in its entirety. This provision seems to me to introduce a high degree of uncertainty into the legislation. It is quite likely that the legal attack on these crucial paragraphs will be mounted after passage of HB 297 as a means of attacking and invalidating the entire legislation. In order to avoid this possibility, I would recommend removal of the provisions which may invalidate the entire legislation.

COMMENTS ON HB 297 AS IT PASSED THE HOUSE, TELEPHONED TO CHAIRMAN JOHN HUBER, SENATE SPECIAL COMMITTEE ON TAXATION & REVENUE, BY ROBERT PASCHALL ON MAY 12 AT 1:00 p.m.

EXEMPTION OF "PRODUCING OIL AND GAS LEASES" AND "VALUE OF INTANGIBLE DRILLING AND EXPLORATION EXPENSES" (Sec. 2. AS 43.55.010(b))

These exemptions are carried in the April 17 and later versions of HB 297. I strongly urge their deletion. They may well nullify all or part of Sec. 43.58.010, namely, the very proposal to levy an ad valorem tax on oil and gas reserves. Here is why I state that this may be the case.

(2) Producing oil and gas leases. A private party to the lease with a government agency is the very instrument that creates its leasehold interest in the mineral rights. Unless the intent of 43.58.010 is to confine the ad valorem tax to non-producing properties, 43.55.010(b)(2) creates an unintentional exemption from ad valorem taxation for all fields that now produce, but the very fact that 43.58.030 provides for a production tax credit against the ad valorem tax indicates that producing leases are not to be exempted.

INTANGIBLE EXPLORATION AND DRILLING COSTS

Exploration and development are necessary to establish the existence of a valuable oil or gas reserve. More precisely, the completion of a new well capable of production enhances the value of the reserves since the well is necessary to produce the reserves. One can maintain, then, that the cost of drilling is included in the value of the reserves developed by the drilling.

Now, intangible drilling costs (IDC) simply represent the portion of total drilling costs expended for wages, salaries and services and are identified separately from tangible drilling costs only because the Internal Revenue Service permits expensing IDC while it requires that tangibles be capitalized. The only reason that IDC's ever showed up in Alaska law is because the North Slope Borough Assessor insisted on attempting to assess these costs per se.

The best thing--the only thing--is to get the phrase out of the law. Otherwise, industry may claim that IDC's are automatically included in the value of the reserves and should be subtracted. You can bet that no prospective purchaser of an oil property would ever try to pull that on the owner of the property and that is the true test of the issue. IDC's were never raised in the entire history of oil property valuation until the North Slope Borough Assessor insisted upon assessing them as a specific item of property.

THE PERIOD OF GRACE

The period of grace refers to the particular period of time following discovery in which the new field would be exempt from ad valorem taxation. This subject is covered in Sec. 43.58.020 and in Sec. 7 at the end of HB 297. Sec. 7 says that the entire bill will be void if either of paragraphs (2), (3) or (4) of 43.58.020 are "for any reason held invalid or unenforceable." This very strong language of Sec. 7 adds great importance to the manner in which 43.58.020 is stated. In my own opinion, the language of SB 374 is infinitely clearer, more to the point and less subject to future controversy and possible litigation. In any event, if it is necessary to include the essence of paragraph (4), it should be required to have the exemption terminate if the injunction is lifted.

DEFINITION OF "PROVEN RESERVES" (Sec. 43.58.190 (7))

An excellent definition of this term was in HB 297 until the version of April 24 was written. That earlier version was almost exactly the one promulgated by the American Petroleum Institute and adopted throughout the industry. The definition in the latest version of HB 297 is awkward and ambiguous. The phrase, "if it is economically feasible to market it" is not necessary since the phrase "indicate to be recoverable" precedes it; no one will bother to recover it unless it is economically feasible. Also, the term "reasonably foreseeable conditions" is a monster and lawyers may have a field day defining "reasonable" as it applies to a given oil field. I recommend that the definition in the April 17 version be used. That definition is the same as that in SB 374.

THE AD VALOREM ASSESSMENT TIMETABLE

Four key dates are presented here: January 1, February 1, April 15 and June 15. I can see a major problem for the valuation engineer who would have an absolute maximum of 2½ months time in which to appraise the State's oil fields. In fact, it is likely that late returns would confine the time in which he could work from February 15 to April 15. Moreover, if the Department of Revenue must send a notice of assessed value by April 15, the valuation engineer would have to submit his values to the Department by about April 1 and this further restricts the time in which he could do his job. I would like to suggest that the date April 15 in Sec. 43.58.060 be changed to May 15.

WALTER J. MEAD
990 CAMINO MEDIO
SANTA BARBARA, CALIFORNIA 93105
PHONE: 805-9672295

April 26, 1975

Senator John Huber
Alaska State Senate
Pouch V
Juneau, Alaska 99811

Dear John:

Following the request in your April 22 letter which I received today I am providing the following comments on House Bill No. 297:

Chapter 58, Sec. 43.58.010, (b) and (c) do not specify the tax rate and therefore introduces an unnecessary degree of uncertainty into the operator's business. The Legislature may feel unconcerned about this problem, but ultimately the people of Alaska pay the bill due to increased uncertainty. Uncertainty in business dealings between the State and buyers of oil leases always leads to higher discount rates. This, in turn, leads to lower present values. But the bonus bids are based on present values. If the Legislature adds to the degree of uncertainty, its future bonus bid income will be lower then otherwise. In this respect, Senate Bill No. 374 is preferable because it specifies what the tax rate is to be.

Section 43.58.020 (3) specifies "the earlier of:" the items listed in A and B and is, therefore, superior in this respect to Senate Bill No. 374 which fails to specify "whichever comes earlier". See my letter to you dated April 22, 1975, paragraph No. 2.

Section 43.58.170 provides a termination date of December 31, 1977 rather than 1978 as provided in Senate Bill No. 374. The authors of House Bill No. 297, in providing for only two years of tax liability, may have in mind an extension in the event that oil production does not begin in 1977, or begins but is of low volume and produces only minor severance tax payments. But a possible or probable one year extension again adds to business uncertainty. A terminal date of December 31, 1977 actually produces a final tax payment on June 30, 1977, covering the 1976 taxable year for property taxes. The 1977 terminal date does not appear to be realistic. Senate Bill No. 374 appears to be more forthright in this respect.

Section 43.58.180 provides for "accrual of early development incentive credit". The purpose of this section appears to be to provide for a subsequent recovery of up to 50% of property taxes paid. The wisdom of partial, or full, or no recovery is a value judgement that the Legislature must make. However, if the intent of the Legislature is to provide an incentive for early development as suggested in this section, the 50% repayment provision will not accomplish this objective as well as Senate Bill No. 374 which provides for no recovery of property taxes paid prior to production. Both bills provide that severance taxes are creditable against property taxes.

I have provided my comments on Senate Bill No. 374 separately. See my letter dated April 22, 1975.

If I can be of further assistance, please feel free to let me know.

Sincerely yours,

Walter J. Mead

WALTER J. MEAD
990 CAMINO MEDIO
SANTA BARBARA, CALIFORNIA 93103
PHONE: 805-9672295

April 22, 1975

Senator John Huber
Special Committee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

I have two additional comments on Senate Bill No. 374.

1. On page 1, line 27, you might want to add "whichever comes first.", in order to eliminate ambiguity that would arise in case that two or more of the events listed occurred on different days.

2. On page 1, line 24, you might consider adding the word "calendar" so the line reads as follows:

property during a five calendar-year period beginning with the date of the first ...

Sincerely yours,

WALTER J. MEAD

WJM:mr

WALTER J. MEAD
990 CAMINO MEDIO
SANTA BARBARA, CALIFORNIA 93103
PHONE: 805-9672295

April 22, 1975

Senator John Huber
Special Commitee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

This letter is in response to your request that I review Senate Bill No. 374 (4-15-75) to identify the economic consequences of enactment.

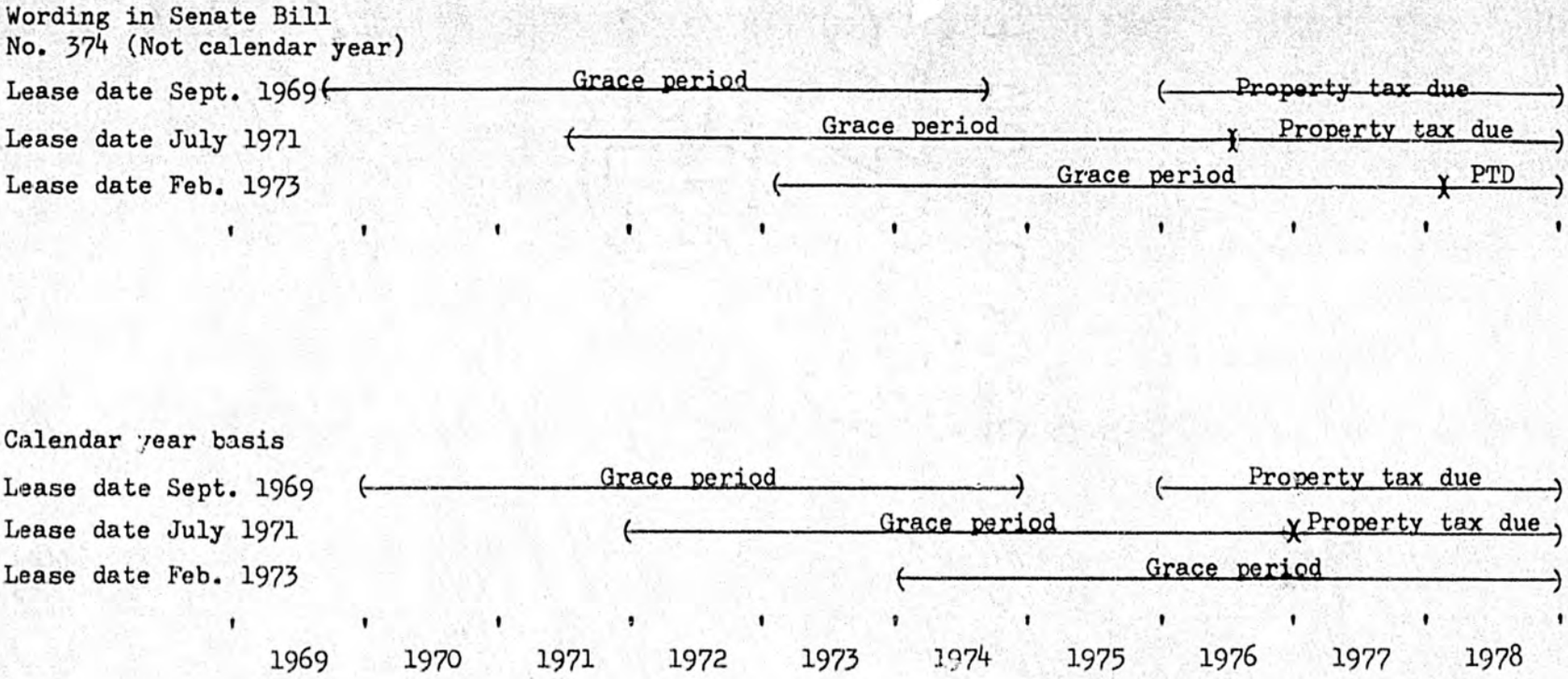
1. The effect of the five year grace period plus the December 31, 1978 termination date would be to exempt all leases issued on or after January 1, 1974. This follows from the fact that a lease issued on or after this date could not be placed on the tax roll until January 1, 1979, the day following expiration of the law. This point and other alternatives are illustrated in Figure 1 showing leases issued at three points in time. For the State leases sold in September 1969, property taxes would become due on June 30, 1976 for the 1976 taxable year. In the absence of production, property taxes would be due for three full years.[1] If the words are changed to read "five calendar years" on line 24, page 1, the three year maximum liability would remain unchanged for these leases.

For a lease date effective July 1971, property taxes would be payable for the period July (lease day) 1976 through December 31, 1978. Property taxes for 1976 would require a partial year calculation. If the calendar year terminology is adopted, property taxes would be payable for two years beginning January 1, 1977 through December 31, 1978.

For a lease dated February 1973, property taxes would be payable for the period February (lease day) 1978 through December 31, 1978. If calendar year wording is adopted, this partial year property tax obligation would be eliminated.

[1] In all Figure 1 illustrations, the assumption is made that production is not initiated until after December 31, 1978.

Figure 1--. Illustration of property tax obligation in the absence of oil production from known oil reserves.



*Assumes the absence of production or with production involving severance tax payments that average less than one-twelvth the amount of corresponding property tax liabilities.

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2. The maximum number of years that any lease could be subject to the proposed property tax on reserves would be the three years 1976, 1977, 1978, the years encompassed by the initial effective date (January 1, 1976) and the termination date (December 31, 1978).

3. Firms might have property tax liabilities for less than the maximums because (1) leases were issued later than January 1, 1976, or (2) production commenced before June, 1978.

4. The timing of previous twelve month severance tax credits against property taxes due on June 30 of each taxable year raises a question of possible double taxation. The problem is illustrated graphically in Figure 2. If oil production begins in July, 1977, both severance and property taxes will be paid for the six months July through December of 1977. However, these severance taxes are creditable against the property tax liability, to the limit of the property tax liability. This timing situation involves pre-payment of property taxes, but not double taxation. The problem of double taxation arises in the final six month in the life of the property tax (July through December of 1978) when severance taxes are paid along with property taxes, but there is no offsetting credit. In this period, a double tax burden occurs. The extent of the double burden is less than that in one earlier version of the proposed legislation which provided that severance taxes in the preceding calendar year were creditable against property taxes on June 30 of any taxable year. In that case, the double tax burden would occur during the full 1978 calendar year.

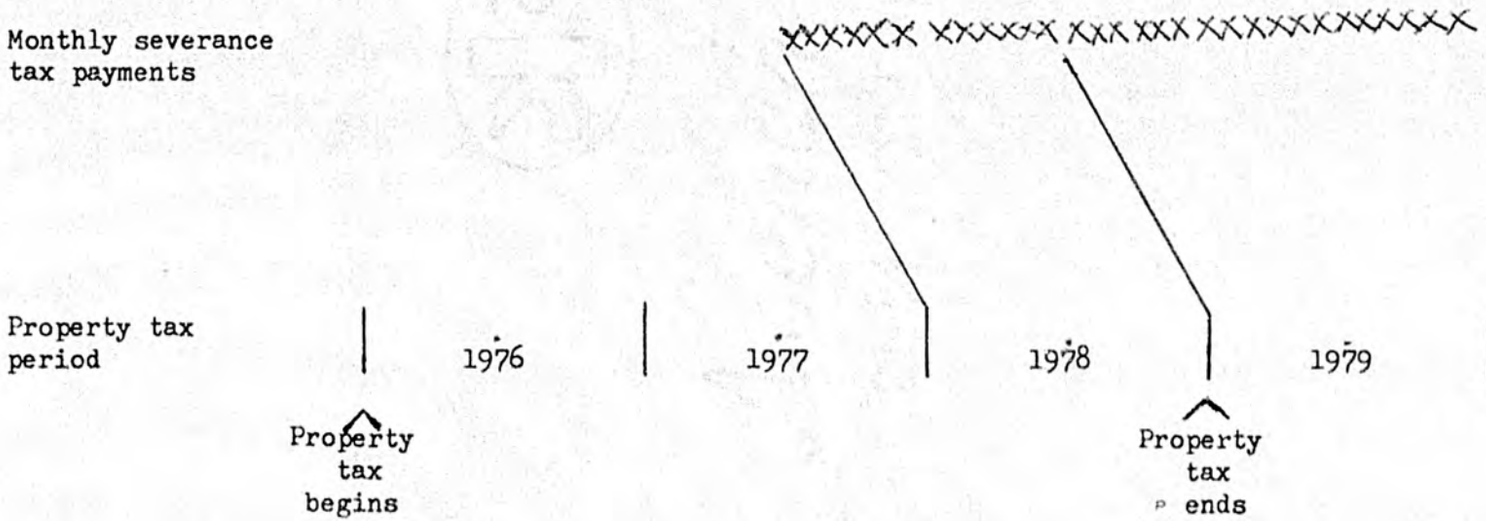
5. The five year grace period does not provide five years of exemption after discovery, but after lease issue date. Since discovery (if any) followed rather than preceeded leasing for all leases issued prior to January 1, 1974, the grace period in all existing cases is less than five years after discovery.

6. The incidence of the property tax depends on the circumstances. Three statements can be made.

A. For all existing leases subject to property tax liabilities, the incidence is upon the leasee. Oil produced from the lease (if not in production in 1972) will be classified by the Federal Energy Administration as "new oil" and may be sold under free market conditions at the highest price that the market will allow. The imposition of this tax will not increase or reduce the supply of oil therefore the market price is unaffected by the tax. The lessee cannot pass the tax along to buyers of oil.

B. For all existing leases the lessee cannot pass the tax back to the lessor. The bonus has already been bid and paid. The lessee does not have the option of renegotiating the lease payment terms.

Figure 2--. Illustration of overlapping property and severance tax payments for a known oil reserve leased prior to January 1, 1971 and beginning production in July 1971.



C. For leases issued subsequent to the imposition of a property tax there is a potential property tax liability. Bidders will likely reason that if Alaska imposed a property tax once, in response to a critical budgetary need, it may do so again. In estimating costs, revenues and net income for future leases in order to arrive at a present value and a bonus bid, the probability of future property taxes will be included along with other contingent costs. This will reduce present value estimates and yield lower bonus payments to the state in the future.

7. As indicated in my testimony the most serious shortcoming of a property tax on oil reserves as proposed is the fact that such a tax is not based on an ability to pay. Income is not expected to flow from the Alaskan oil reserves dependent on the trans-Alaskan pipeline until 1977. From the date on which these bases were issued until the date oil is delivered to market, those reserves will generate no income. Payment of a property tax must come from other income available to the lessees, from borrowed funds or from new equity capital. The lessees have already borrowed on a large scale to finance construction of the pipeline. While this outlay has been greater than expected, income from other oil production has also been greater than expected due to the rapid increase in crude oil prices since 1973. A large property tax burden will place a great financial burden on SOHIO as the company holding the largest share of North Slope known crude oil reserves and to a lesser degree on ARCO. There is no corresponding ability to pay this tax.

Sincerely yours,

WALTER J. MEAD

WJM:mr

Biographical Data
Walter J. Mead
Professor of Economics
University of California, Santa Barbara

Personal Data:

Born May 6, 1921, Nehalem, Oregon
Married, Five Children

Education:

AB University of Oregon, June 1948
MA Columbia University, February 1950
Ph.D. University of Oregon, June 1952
(Carnegie Fellow, 1949-50, 1950-51)

Employment:

1951-1956, Department of Economics, Lewis and Clark College, Portland, Oregon
1956-1957, Asst. Field Director, Committee for Economic Development, New York City, on leave for one year from Lewis and Clark College
1957-to date, Department of Economics, University of California, Santa Barbara, Professor since 1966
1972-73, on leave with Ford Foundation, Energy Policy Project

Publications:

See attached list

Professional activities:

1. Chairman, Governor's Advisory Committee on Unemployment Compensation, 1954-55 (Advisory to Governor Patterson of Oregon).
2. Consultant to several corporations in the following industries: Pulp and Paper, Lumber, Plywood, Electronics.
3. Consultant to Committee for Economic Development, Stanford Research Institute, General Electric-TEMPO, U.S. Department of Agriculture (Forest Service), U.S. Department of Interior (Bureau of Land Management), U.S. Bureau of the Budget, and U.S. Federal Trade Commission.
4. Labor arbitrator since 1952.
5. Member of National Advisory Council of the Natural Resources Journal, 1968-to date.
6. Member, Editorial Board, Land Economics, 1969-to date.
7. Member, Editorial Board, Industrial Organization Review, 1973-to date.
8. President of the Western Economic Association for 1968-69.
9. Senior Economist, Ford Foundation, Energy Policy Project 1972-73.
10. Member, University of California Council on Energy and Resources, March 1974-to date.
11. Expert Witness, "The Advocates", January 1974.

Administrative Experience:

1. Acting Chairman, Department of Economics, UCSB, 1963-64.
2. Chairman of the Graduate Committee, Department of Economics, UCSB, 1965-1966.
3. Chairman of the Executive Committee of the College of Letters and Science, UCSB, 1964-1966 (elected).
4. Chairman of the Danforth Foundation Associates, Southwest Regional Conference 1963-64. Presently a Senior Associate of the Foundation.
5. Chairman of the Committee on Committees, UCSB, 1967-1968 (elected).

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Administrative experience:

6. Chairman of a Committee to evaluate the goals of the Educational Opportunity Program, UCSB, 1969-to date.
7. Chairman of the Undergraduate Committee, Department of Economics, 1968-to date.
8. Chairman, Library Committee, UCSB, 1966-1967.
9. Member of the Regional Board of Directors, Omicron Delta Epsilon, the national honorary society in Economics.
10. See also Item #8 under Professional activities.
11. Chairman, Privilege and Tenure Committee, 1973-to date.

Research grants since 1965:

1. January 1965 - December 1968, $45,000 grant from Resources for the Future for a study entitled "Price Determination in Natural Resource Oligopsonies." This study was concerned primarily with leasing policy for oil shale resources owned by the Federal Government.
2. January 1968 - June 1969, $11,375 grant from the Haynes Foundation for a study entitled "Exploratory Economic Analysis of Ocean Mineral Resource Development." The objective of this project is to study the important externalities in marine development and to estimate the social rates of return for several marine minerals. This grant is jointly held by my colleague, Professor Philip Sorensen, and myself.
3. July 1969 - June 1971. The Haynes Foundation has made a follow-up grant of $15,000 to continue the studies noted in item 2 above. This, in turn, has been matched 2 for 1 under the National Science Foundation, Sea Grant Program.

LIST OF PUBLICATIONS

Name: Walter J. Mead

	Year	Title	Journal, Vol., pages	Category
1.	1953	"Some Recent Changes in the Concept of Fundamental Disequilibrium"	Proceedings of the Western Econ. Assn. Vol. 28, 5 pages	Article
2.	1954	Contributed to The Forest Products Industry of Oregon, Part 1	Published by Reed College and Lewis and Clark College	Monograph
3.	1956	Contributed to The Forest Products Industry of Oregon, Part II	Same	Monograph
4.	1956	"The Forest Products Economy of the Pacific Northwest"	Land Economics Vol. 32, 7 pages	Article
5.	1958	"Non-Defense Government Purchases of Goods and Services"	GE TEMPO, RM 58TMP-45. 24 pages	Monograph
6.	1959	"The Impact of Capital Gains Taxes on Timberland Resource Utilization"	Proceedings of a conference on Timber Taxation U. of Ore., 14 pages	Paper
7.	1959	"Public Policy and Economic Development"	Proceedings Society of American Foresters, 3 pages	Article
		Reprinted	Social Sciences in Forestry, A Book of Readings	
8.	1960	"Long-Term Investment Planning for Forestry Development"	Proceedings Industrial Forestry Seminar, Yale-UCB, 13 pages	Paper
9.	1960	"Concepts and Cases in Economic Analysis"	American Economic Review, Vol. 50, 2 pages	Review
10.	1961	"Fundamentals of Forestry Economics"	American Economic Review, Vol. 51 2 pages	Review
11.	1961	"Changing Pattern of Cycles in Lumber Production"	Journal of Forestry Vol. 59, 6 pages	Article
12.	1962	"Some Political-Economic Issues Determining U.S. Tariff Policy"	American Journal of Economics and Sociology, Vol. 21, 14 pages	Article

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LIST OF PUBLICATIONS

Name: Walter J. Mead

13.	1962	"The Changing Cyclical Character Residential Construction and its Impact on Lumber Production and Prices"	Proceedings of the Western Economic Assn., Vol. 36, 8 pages	Article
14.	1964	Mergers and Economic Concentration in the Douglas-Fir Lumber Industry	U.S. Forest Service Research Paper PNW-9 81 pages	Monograph
15.	1964	"Seasonal Variation in Lumber Prices"	Journal of Forestry Vol. 62, 7 pages	Article
16.	1964	"A Positive Proposal to Strengthen The Lumber Industry"	Land Economics Vol. XL, 12 pages	Article
17.	1964	"Economics of the American Lumber Industry"	Forest Science Vol. 10, 2 pages	Review
18.	1965	"A Positive Proposal to Strengthen The Lumber Industry": Rejoinder.	Land Economics Vol. XVI, 3 pages	Rejoinder to a reply
19.	1965	"Economies of Scale in Lumber Production"	Economic Concentration Hearings before the Subcommittee on Anti-trust & Monopoly, U.S. Senate, Part 4, 20 pages	Testimony
20.	1966	"The Workability of Competition in the Lumber Industry"	Public Finance and Welfare, Univ. of Ore. Press, 1966, 27 pages	Chapter in book
21.	1966	"Effect of Capital Gains Taxation on Timber Resource Allocation"	National Tax Assoc. Proceedings, 1965, 17 pages	Article
22.	1966	Competition and Oligopsony in the Douglas-Fir Lumber Industry	Univ. of California Press, 1966, 276 pages	Book
23.	1967	"Some Economic Implication of Changes in the Federal Timber Supply"	Proceedings, Society of American Foresters, 1967, 6 pages	Article
24.	1967	"Natural Resource Disposal Policy: Oral Auction vs. Sealed-Bidding"	Natural Resources Journal, Vol. 7, 30 pages	Article
25.	1967	"The Use of Competitive Markets in Federal Oil Shale Lease Policy"	Hearings before the Subcommittee on Anti-trust and Monopoly, U.S. Senate, Part 1, 20 pages	Testimony
		Reprinted	Congressional Record, October 11, 1968, S-12564-12569	

LIST OF PUBLICATIONS

Name: Walter J. Mead

26.	1967	"The Competitive Significance of Joint Ventures"	Antitrust Bulletin, Fall 1967, XII, 30 pages	Article
27.	196	"Resource Control as a Basis for Market Power: The Case of Timber"	Extractive Resources and Taxation, Mason Gaffney, ed. Univ.of Wisconsin Press, 1967, 17 pages	Chapter in book
28.	1968	"The Structure of the Buyer Market for Oil Shale Resources"	Natural Resources Journal, October, 1968, 27 pages	Article
		Reprinted	Rocky Mountain Mineral Law Journal	
29.	1968	"Economic Issues in Federal Oil Shale Leasing Policy Alternatives"	Quarterly of the Colorado School of Mines, 1968 19 pages	Article
30.	1968	"The Workability of Competition in Federal Oil Shale Leasing"	Public Land Policy, Proceedings of the Western Resources Conference, 1968, 13 pages	Article
31.	1968	With Philip E. Sorensen, "Externalities in Ocean Mineral Resource Development"	Marine Technology Society, A Critical Look at Marine Technology, July 1968 8 pages	Article
32.	1968	With Philip E. Sorensen, "A Cost-Benefit Analysis of Ocean Mineral Resource Development: The Case of Manganese Nodules"	American Journal of Agricultural Economics, December 1968, 9 pages	Article
		Reprinted	Hearings before the U.S. Senate Committee on Interior & Insular Affairs, Part 2, 1970	
33.	1969	"A Criticism of Mr. Bentley's Economic Model of Public Timber"	Journal of Forestry June 1969, 3 pages	Comment
34.	1969	Competition for Federal Timber In the Pacific Northwest, with Thomas E. Hamilton	U.S. Forest Service 63 pages	Monograph

LIST OF PUBLICATIONS

Name: Walter J. Mead

35.	1969	"The System of Government Subsidies to the Oil Industry"	Hearings before the Subcommittee on Anti-trust and Monopoly, U.S. Senate, Governmental Intervention In the Market Mechanism the Petroleum Industries, 25 pages	Testimony
		Reprinted #1	Natural Resources Journal, January 1970, 12 pages	
		Reprinted #2	National Petroleum Policy, A.E. Utton (ed.) U. of New Mexico Press, 1970	
		Reprinted #3	Political Economy of Federal Policy, Robert Haveman and Robert Hamrin (eds.) Harper & Row, 1973	
36.	1969	With Philip E. Sorensen, "A New Economic Appraisal of Marine Phosphorite Deposits"	Marine Technology Society, The Decade Ahead, 1970-1980, 1969, 10 pages	Article
		Reprinted	Outer Continental Shelf, Hearings Before the Senate Committee on Interior & Insular Affairs, Part 2, 1970	
37.	1969	"Instantaneous Merger Profit as a Conglomerate Merger Motive"	Western Economic Journal, Dec. 1969, VII, 11 pages	Article WEA Presidential address
		Reprinted	The Journal of Reprints for Anti-trust Law and Economics	
38.	1969	"Federal Public Lands Leasing Policies"	Quarterly of the Colorado School of Mines, Oct. 1969, Vol. 64, 33 pages	Article
39.	1970	With Philip E. Sorensen, "The Principal External Costs and Benefits of Marine Mineral Recovery"	Proceedings, Offshore Technology Conference, 1970, Vol. I, 10 pages	Article
40.	1970	With Philip E. Sorensen, "Evaluation of Technological Spillovers: The Case of the Deep Sea Dredge"	Proceedings, Marine Technology Society, 1970, Vol. 2, 9 pages	Article

Name: Walter J. Mead

41.	1970	"The Potential Economic Value of Mineral Production from the Outer Continental Shelf"	Outer Continental Shelf, Hearings before the U.S. Senate Committee on Interior and Insular Affairs, Part 2, 1970 35 pages	Testimony
42.	1971	"A National Defense Petroleum Reserve Alternative to Oil Import Quotas" (with Philip E. Sorensen)	Land Economics, Vol. 47, August, 1971, 14 pages	Article
		Preprinted	U.S. Senate Congressional Record May 10, 1971	
		Reprinted	Hearings before the Committee on Interior and Insular Affairs, U.S. Senate, May 30, 1973	
43.	1971	"Efficiency and National Security as Goals for Energy Policy"	National Goals Symposium, Hearings before the Committee on Interior and Insular Affairs, U.S. Senate, 92nd Congress, first session, Part I, October 20, 1971, 23 pages	Testimony
44.	1972	"The Economic Cost of the Santa Barbara Oil Spill", with P.E. Sorensen	Proceedings of the Oil Spill Symposium, U.S. Geological Survey, 43 pages	Article
45	1972	"Public Land Policies and Natural Resources"	America's Public Lands Institute of Governmental Studies, U.C. Berkeley, 30 pages	Article
46.	1972	"A Preliminary Estimate of the Economic Potential of Marine Placer Mining" (with Philip E. Sorensen and Sue Wilcox)	Proceedings Marine Technology Society, 1972, 7 pages	Article
47.	1973	"Crude Oil Storage Costs"	Hearings before the Committee on Interior and Insular Affairs, U.S. Senate, May 30, 1973, pp. 19-58	Testimony

48.	1973	"Joint Ventures in the Oil Industry"	Hearings before the Committee on Interior and Insular Affairs, U.S. Senate, December 12, 1973, pp. 999-104	Testimony
49.	1974	"The U.S. Energy Situation"	A New Look at Energy Sources, American Society of Agronomy, Special Publication No. 22	Article
50.	1974	"Comment" on papers by H. Houthakker & P. Verleger at joint session of AEA and AAEA annual meeting	Journal of the American Agricultural Economic Assn.	Comment
51.	1974	"Oil Energy and Environmental Concern"	Economic Analysis of Pressing Social Problems, Rand-McNally, Votey & Phillips, eds.	Chapter
52.	1974	Testimony on Senate Bills concerning OCS Development	Hearings before the Committee on Interior and Insular Affairs, U.S. Senate, May 7, 1974	Testimony

scomm

#11:19

Alaska State Legislature

Senate

JUNEAU, ALASKA

April 2, 1975

Senator Kay Poland, Chairman
Senate Resources Committee

Submitted herewith are the Preliminary Comments and supportive material of our analysis of the various options and implications involved in and surrounding the issue of Taxation of Leasehold Interests (SB 103 and SB 276).

The basic difference in the two Bills is that SB 276 offers a rebate of the monies paid, via future severance tax credits. As such, SB 276 must be regarded as mandatory lending. SB 103 does not offer a rebate and is a straight added tax on Industry. Both Bills adequately perform the purpose for which they were written, though SB 276 is the more flexible and can be adapted to either purpose.

Policy options discussed include:

A. Imposition of an added tax

B. Inclusion of other minerals

C. Credit against future severance taxes paid, and the immediate amending of the existing severance tax

D. Taxing vs borrowing

E. Effect on overall cash availability

F. Priority of action

We conclude with our recommendations as to priorities, as follows:

1. Pass SCR 27 urging a Beaufort Sea Lease Sale

2. Amend the Severance Tax (We include a proposed amendment)

3. Prepare a final version of SB 276 to be taken as a first order of business next session if lease sale bonuses and income from the amended severance tax do not suffice.

This report concludes the work to be performed under the limited directive given us. We would be pleased to continue this work on issues before the Legislature and your Committee, upon your request and authorization by the Legilative Council.

Very truly yours,

George C. Silides

Geroge C. Silides
Calliett and Silides Consultants

AGO 513747

PRELIMINARY COMMENTS
TAXING OF LEASEHOLD INTERESTS
SB 103, SB 276

SB 103 and SB 276 address the same issues, and it appears best to discuss the composition and implications of both bills simultaneously.

I. Background

The principle of taxing leasehold and ownership interests in land with proven mineral reserves is not new to the Legislature, but has been held in abeyance as an emergency measure.

During the Special Session of 1973, the Legislature kept the option alive by amending the severance tax laws to eliminate the language that the tax (severance) was "in lieu of all ad-valorem taxes that might be imposed upon property rights attached to or inherent in the right to produce oil or gas". During that session, the ad-valorem tax passed on production and transportation of unrefined oil and gas also left intact the option of taxing the property rights by the State, while at the same time foreclosing that option to local governments. Most of this action was formulated in the Senate and carried on through the Free Conference Committees.

II. Items Being Taxed

SB 103 and SB 276 both recognize this old option, but each

approaches it in a different manner.

SB 103 proposes to tax (a) oil and gas leases with proven resources, and (b) ownership interests in proven reserves.

Taxing of leases is possible if the Bill is clarified to mean any possessory right or interest in the lease. Obviously, the right to explore, develop, and produce is worth a great deal, depending upon the reserves contained therein.

Except on private lands, ownership interest in proven oil reserves are a different matter. Questions arise as to actual ownership of the oil until after production takes place.[1] The right to explore and produce is implicit, but the right to ownership is not. Obviously, the State cannot tax itself. The question was studied by the Attorney General's Office at our request. The Administration's Bill (276) recognizes this difficulty and is constructed to avoid it.

The purposes of SB 103 would be better served by taxing the possessory rights and deleting 015 (2) to help avoid challenge

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[1] It has been argued for example, that for the producer's expenditure of time, money, and material, the State will give the producer seven-eighths of the oil produced in payment for those efforts, but retains ownership until the contract is fulfilled.

in the courts, and providing further that administrative procedures not spelled out in the Bill can be devised.

In 58.190, pages 7 and 8, SB 276 defines "interest" to be of wide variety and scope and clearly defines the property being taxed as "any interest" in the proven reserves of a lease or property". By so doing it avoids the issue of who owns the oil or gas prior to production. It should also be noted that every person's interests in the lease is taxed, not only the original leaseholder. The operator is primarily liable.

We must conclude that of the two Bills, the taxable property is more clearly defined in SB 276 and, as a consequence, appears more defensible.

III. Type of Tax

SB 103 imposes a straight additional tax with an offset against any severance tax paid during a particular assessment year. There is no offset provided against any future tax to be paid. The tax begins five years after the date of the lease or when reserves are proven, whichever comes earlier. The tax continues indefintely or until repealed.

The tax imposed by SB 276 also commences five years from initial entry and is an advance payment on the Gas and Oil

Production Tax (severance) imposed by AS 43.55.010 (a). The advance payments are credited against production taxes and are recovered through accrual and credit devices in 58.180 (page 6) and the new subsection 55.018 (page 8).

Under the terms of SB 276, as written, the advance tax payments may be recovered in two years of production. We suggest that if the Legislature adopts the taxing policy of SB 276, then the payback period should be not less than three years, preferably five years, in order to insure the State's liquidity.

SB 103 attempts to amend 43.56, which is the Ad-Valorem Tax passed by the 1973 Special Session, by including new taxable property described in a new subsection .015.

SB 276 writes a new Chapter 58 so as to clearly define intent of tax, property being taxed, and to keep away from the calculations needed to operate Chapter 56, which taxes exploration, production, and pipeline properties.

Chapter 55 (Severance Tax) is made subservient to the new Chapter 58 created by SB 276. AS 29.53.050 (b) (page 9) and AS 43.56.010 (c) are amended to maintain the status quo of the taxing powers of municipalities.

A special feature of SB 276 is that even if the Bill is passed no tax per se attains unless the Legislature imposes a levy by April 1 of each ensuing year. The tax is designed to self-destruct as soon as production tax equals the lease-hold interest tax. A better trigering device would be an automatic one based on a dollar residue level of the General Fund.

IV. Policy Options

A. Additional Straight Tax Oil and Gas Leasehold Interests.

If the Legislature wishes a Bill that imposes a tax on oil or gas leases without additional inclusions or future offset considerations, SB 103 amended as above will impose that tax. However, SB 276 is a far better written Bill that could be adapted to the purposes of a straight additional tax by the simple removal of 43.58.180 (page 6) and 43.55.018 (page 8).

B. Inclusion of Other Minerals

The Legislature may wish to consider taxation of all mineral leases or mineral properties in fee simple. Thousands of acres are now held in a speculative non-production status.

More germane to the option of imposing a tax on leasehold interests is the history of the Union-Marathon gas holdings in the Kenai Gas Field.

There, Union-Marathon held six trillion cubic feet of proven gas reserves in a totally uncommitted status for ten years until West Coast purchasers were forced into settling for a premium price. Firstly, the State was deprived of its severance income and secondly, the prevailing higher market price forced on the West Coast is also being passed on to the people of the Anchorage-Cook Inlet area.

Other properties of interest are the Kennicott Copper holdings in the Kobuk area, the vast placer gold holdings of U - V Industries throughout the State, the Beluga Coal leases, the variously owned iron ore holdings, etc.

C. Credit Against Future Severance Taxes Paid

If the Legislature decides to offset the tax imposed by SB 276 against future severance taxes, consideration should be given to raising the severance tax at this time to a level that can be sustained without change during the payback period, for the following reasons:

1. To raise the severance tax during a payback period leaves the State open to the accusation that the raise was to offset the offset. This may raise the spectre of discriminatory taxation and possibly develop a bad faith aura.

2. Alaska's severance tax is now well below the national average of 7%, and is declining. (See attached computations.) Present yield is 5.7%)

3. Under the system now in use, Alaska's severance tax cannot reach the 8% implied in the current statute, and will decline. (See attached computations.)

4. If deregulation of oil prices occurs and the windfall profits tax goes into effect, severance taxes are expensable against that Federal Tax, to the benefit of the State if it is done now before the door is closed by the Federal government.

5. We estimate that a straight 8% severance tax effective immediately will raise an additional 41 million in the next three years. A tax of 9% effective immediately would bring in an additional 76 million

dollars. A tax of 10% would result in an additional 110 million dollars.

6. Severance tax should be high enough to equal the revenue we could derive by taking the tax in-kind, selling crude on the open market and investing the money.

A proposed severance tax Bill is attached for consideration.

D. Taxing Vs. Borrowing

As written, SB 103 is a straight tax. If severance tax offsets are involved as in SB 276, it is mandatory lending.

In either case, eventual profitability will be reduced and corporate taxes will also be reduced.

Mathematically it appears that a straight tax on lease-hold interests without offsets results in a greater total eventual return to the State in terms of dollars when combined with a corporate tax on the remaining profitability. It is also simpler. It will also probably be described as onerous.

Mathematically it appears that if an offset against future severance tax is given, the total eventual return

to the State in terms of dollars will be less than if the State borrowed the money on its own account - if such borrowing can be made constitutionally possible.

E. Effect on Cash Availability

Regardless of whether the Legislature passes a leasehold interest tax with or without a rebate provision, the effect on cash availability for other purposes, such as exploration and development will be immediate and, possibly, regressive.

We are advised by industry spokesmen that the delayed implementation device in SB 276 does not alter this condition because, if the Bill is passed, funds must be encumbered and set aside for the eventuality of implementation. Though industry adds lease bonus monies to their list of shortfalls, we do not believe they will be affected as bids on each parcel offered will be strictly on the merits of acquiring the parcel based on its production potential.

The need to secure and/or encumber monies for tax payments under either SB 103 or SB 276 affects all holders of possible reserves, including the Native and other cor-

porations or persons. Any attempts at exclusion of any group will open the door to a charge of discriminatory taxation.

F. Priority of Options

With regard to both the need of the State to secure additonal revenues and of probable feeling that the oil and gas producer should also be accomodated when not inimical to the interests of the State, the following appears as a reasonable priority of action at this stage of discussion:

1. Pass SCR 27 urging a Beaufort Sea lease sale.

2. Amend the Severance Tax.

3. Prepare a final version of SB 276 so that it can be passed as a first order business at the next session.

1975 SEVERANCE TAXES

Cook Inlet	= 1036/day	@	5.8%, declining
Granite Point	= 523/day	@	5.4% declining
McArthur River	= 2069/day	@	6.9%, declining
Middle Ground	= 714/day	@	5.6%, declining
Swanson River	= 686/day	@	5.6%, declining
Trading Bay	= 457/day	@	5.3%, declining

NATIONAL AVERAGE IS 7%

Prudhoe = 10,000/day initially @ 7.77%
with a decline commencing the third year from initial production

Other = 2000/day initially @ 6.85%
with a decline commencing the third year from initial production.

EFFECTIVE YIELD OF PRODUCTION TAX AT VARIOUS LEVELS

300	x	5	=	1500	Bbls		Rate
700	x	6		4200	1000	@	5.7%
1000				5700			
500	x	8	=	4000	1500	@	6.47%
1500				9700			
500	x	8	=	4000	2000	@	6.85%
2000				13,700			
500	x	8	=	4,000	2500	@	7.08%
2500				17,700			
500	x	8	=	4,000	3000	@	7.23%
3000				21.700			
2000	x	8	=	16,000	5000	@	7.54%
5000				37.700			
2500	x	8	=	20,000	7500	@	7.69%
7500				57,700			
2500	x	8	=	20,000	10000	@	7.77%
10,000				77,700			

F.Y. 1976 and F.Y. 1977

1) 29 : 5.7 = x : 9.0 = 45.8-29 = +16.8
8.0 = 40.7-29 = +11.7
10.0 = 50.9-29 = +21.9

F.Y. 1978

2) 180 - 29 = 151

151 : 7.7 = x : 8.0 = 156.9
9.0 = 176.5
10.0 = 196.1

	Prudhoe	C.I.	
@ 8%	(157 - 151)	+ 11.7	= +17.7
9%	(176.5 - 151)	+ 16.8	= +42.3
10%	(196.1 - 151)	+ 21.9	= +67.0

Totals For F.Y. 76, 77, and 78

3) @ 8% 11.7 + 11.7 + 17.7 = 41.1
@ 9% 16.8 + 16.8 + 42.3 = 75.9
@ 10% 21.9 + 21.9 + 67.0 = 110.8

CI 76 CI 77 (CI+P) 78

Extra income if distance is found

C.I = Cook Inlet
P = Pipeline.

scomm

#11:20

Special Committee on Taxation & Revenue
John Huber, Chairman
February 14, 1975

SENATOR HUBER - We will come to order. We expect more members from the House Finance Sub-Committee. Brenda Itta is with us now. We also have sitting in with us Senator Rader, Senator Orsini, Senator Pat Rodey, and of course the man who will be talking to us, Milt Lipton. Milt, I think that you know where we left off on taxation and revenues the other day and maybe you want to start from scratch. But basically, the questions have to do mostly with how it refers to taxation and revenue, both against our immediate needs and our long-range needs and the infrastructures of our revenue system. So, we are just going to start out with you and let you go.

MILTON LIPTON - Thank you, Mr. Chairman. It was several sessions ago that I referred to the practice of my appearing before legislative committees as a kind of a floating crap game, but I notice that you violate the principle of a floating crap game. For reasons of security you should never reconvene in the same place twice, but here we are reconvened in a hearing room where I was yesterday. I would like to start out discussion with you on reserves tax, perhaps go over quickly some of the things we have covered together before and many of the things I have discussed with other committees. Looking at the bill before you for the enactment of a tax on reserves from two perspectives: First, as a revenue-raising measure per se, that is by itself is it a good means (or what is the effect of it) to increase the aggregate amount of revenue which the State can expect to get from oil and gas operations? And then secondarily, as one among various alternatives that the State might turn to, not to increase the sum total of oil and gas receipts, but to provide a flow of revenues during an interim period when the budgetary needs of the State may compel us to look at some form of taxation or some source of revenue which it might not consider simply from the standpoint of raising more money. That is to say, the urgency of the State's budgetary position at the present time. Let me repeat very, very briefly, at the risk that you identify me as one among many lobbyists, what our objection has been to the principle of reserve taxation in the past and at present: That we feel that among the various means of raising funds from an operating and profitable oil and gas industry, the reserves tax is not a good tax. It hits the oil industry at the wrong time. It is not well

identified with the respective profitability of profits, or of producers, or with a lifetime of their exploitation of State resources. And it is not only extremely difficult to administer, but it raises the possibility of very serious inequities among the companies and producing firms who might, at least theoretically, be subject to the tax. Very quickly, the problems in the administration of the tax are that--as the Senate Bill provides and as the House Bill provides and as the bills of the last legislature provided--What you are doing in effect is assessing the value of property where you include in the value of the property an estimate of the value of oil or gas (or oil and gas) reserves underlying the property. The problem of assessment, and you provide that in effect the valuation shall be the commercial value of the property as it had been obtained between a willing buyer and a willing seller. If you look at an acre or two acres of undeveloped land, the valuation of such land can generally be determined by a tax assessor on the basis of other transactions; similar land, similar location, there have been purchases, there have been sales so that you can determine what it is. To try to assess the value of improved property you appreciate in assessment the value of the land either on the basis of the cost of the property that has been built upon the land or what it would cost to reproduce the property at some later date if it is an old house or an old factory, or the income-earning potential of a factory which is operating, which is manufacturing goods, which is selling them. The minute you move to the valuation of reserves in place, you have an entirely new order of problems of assessment. I think I discussed some of these with the Committee last time so I don't want to repeat them in great detail, but one that's very difficult to identify: What the magnitude of reserves in place are. I put to you that in the last fifteen, twenty years in the United States where we have statistics on recoverable reserves with gross additions to our recoverable reserves each year, the biggest change in our estimate of reserves is not on account of new discoveries, or not on account of the amount of oil that we have depleted these reserves through past production, but through changing circumstances which lead us to change our own estimate of what the volume of recoverable reserves are. Secondly, after you have estimated what the recoverable reserves are, you must determine what their value is in terms of how much oil will be produced from those reserves, over how many years in the future, at what price will they sell. So you have, from an administrative point of view, an extremely difficult problem of determining what the value of those reserves are for purposes of assessment, since in fact there is neither willing buyer nor willing seller of those reserves and you couldn't possibly have trans-

actions on the scale that would parallel the underground resources whose value you are trying to determine. Then, if you look at--if all of these problems had somehow been resolved, there is still the problem for one large oil field there or gas field here, or an oil field there which may have already been discovered or which will be discovered while the tax is still in effect. How do you determine the relative value of those reserves? Because the contribution in the payment on the oil or gas reserve which a lease owner will have to make will depend not only on the State's estimate of the volume of oil, but the estimate of when it will be produced, what the value of these are. It becomes an extremely difficult problem in not only determining for an individual field what the assessed valuation is going to be, but when several producers in different areas of the state may be both affected by it and determine the relative valuation and therefore the relative contribution. So that if this tax is looked upon as a means of increasing the aggregate revenues which the State will get from a functioning oil and gas industry, it seems to me that it's a poor and ineffectual way of doing that. If you want to increase revenues, you have other tax means by which to do it. Which is through your leasing policy, through your severance tax policy, through your royalty policy, through your income tax policy. So then I come down really to a perspective on this proposed tax, not so much as a means by which the State will increase the total revenues which it obtains from "D day" when the first lease is put up for bid, until "Z day" when on any particular lease the oil had been fully produced and the State has gotten all these revenues, but as a device to obtain for the State over the next several years a flow of revenues, which otherwise the State might not even obtain, or might obtain later, but which is necessary to bridge the gap. In other words, it now becomes a special form of taxation which is looked at by the legislature under the circumstances of today because the State faces this budgetary deficit. Obviously I am in no position to talk to the State's budgetary deficit or to other alternatives for improving the State's revenue position. But if the legislature is prepared to look at this task, not as the means of increasing over the span of oil and gas operations--increasing the total revenues, but as an interim budgetary measure, then I think at the very least it must consider what we have, I suppose, first suggested in the last session: Namely that since the State is trying to accelerate the flow of revenue, that it look upon whatever payments have to be made through a reserves tax, a tax on oil and gas in place, in fact as a prepayment of the taxes which otherwise would have been paid to the State at a later date when the oil and gas in those

reserves actually moves into production and when the severance tax payments are made by the leaseholders and the oil and gas producers. Which means in fact, that the payment to the State this year and next year becomes an anticipatory payment, that in a sense, offsets the severance tax that would be paid in the future. You exchange current revenues for future revenues. From the standpoint of the State, it would not in any sense increase their total flow of revenue, but bring them closer to the present. From the standpoint of the producing companies, it does increase their total tax burden: Because to the extent that they must pay the reserve tax before they begin production, they must pay either out of other sources of corporate income or by anticipatory borrowing, so that in effect they carry an interest cost for a year, two years, or three years, or four years--as long as is necessary before in effect they recover what they have paid in the reserve tax by the abatement of future severance tax liabilities. Where the State would not feel a net increase in their income, it would be bringing forward to recent years income that would otherwise have been recovered, for the industry it represents a net increase in the cost of doing the oil and gas exploration development work within the state on their leases. And of course, it places an acute financial burden on the specific companies who are most heavily involved in the Prudhoe Bay area, but you are well aware of that. So in general, I think that we feel that it is not a good tax from the standpoint of raising revenue. It is not an attractive tax really, from the standpoint of even providing carry-over funds, but this is a choice among alternatives that you would have to make. Here or elsewhere we can talk about the alternatives such as the prior sale of future royalty oil and gas or other forms of taxation. But if it were to be done, then at least we would feel that the State would be best advised to provide that payments on the reserve tax should be credited by each company that makes those payments against what in the future will be their severance tax liability. So that for some period of time, a portion of the severance tax each year that might be paid to the State since in fact it had already been paid in advance by the reserve tax. One other aspect of the relationship between the State and the industry: If it commends itself to the legislature, that this tax is really not a tax that should be added to the arsenal of weapons that you use against the industry (that you have other forms of taxation much better to turn to if you want to increase your total revenue) and that it is, in a sense, an emergency tax which is is enacted now because the alternatives are just now available, then I would strongly urge that

in passage of the tax, and in the legislative debate and in the legislative history, that this be clearly understood. Whether there is a termination date on the tax, or whether there is a clear understanding that it is the intent of the legislature that this tax, as an interim tax, shall in a sense abate future severance tax; that this should be clear either in the language of this statute or at least in the legislative history. That is as far as I would want to go in terms of general remarks, and if you like I could turn to the specific language of the bill that is before you.

SENATOR HUBER - I think that might be a good idea if you did. The proposed bill on oil and gas taxes in place--He has a copy of both the House and Senate bill, and I believe he's been briefed on the Governor's bill. We have been joined by Represenative Gruening and Representative Haugen, who are members of the House Committee on taxation and Revenue.

REPRESENTATIVE HAUGEN - Mr. Chairman, do we have a copy of this bill in our book so we can follow along with it?

SENATOR HUBER - You did have a copy in your books.

MILTON LIPTON - SB 103.

COMMITTEE MEMBERS LOCATED THEIR COPIES OF THE BILL.

SENATOR HUBER - Did anyone have any specific questions this far? Any members of either committee have any specific questions so far?

REPRESENTATIVE HAUGEN - Just one thing. I got in late, but putting it simply, what you are saying is that you are going to borrow against the future revenue, and what your caution was that that should be a credit against severance when the time came.

MILTON LIPTON - That is an alternative. That's not the alternative that's provided in SB 103.

REPRESENTATIVE HAUGEN - No. I know that, but I . . . Just to get . . . Putting it in simple form, that's what you said.

MILTON LIPTON - Yes. What I was saying was that if the purpose of this type of tax legislation is to provide a bridge between the time when the State faces an acute budgetary deficit and the time when its great expectations come to fruition, and not just to raise total revenue, then probably the best way to do it would be to say that all payments of the reserve tax (the tax on oil and gas in place) will, in due course become credits against future severance tax liability to that resource.

REPRESENTATIVE HAUGEN - I understand.

SENATOR HUBER - The difference between the intent of SB 103 was that it provide that same bridge, but with no payback provisions. It had a phase-in and phase-out provision, and it had no intent to pay it back out of future revenues. It was just an additional taxation policy.

MILTON LIPTON - This is very clear. I was going to call attention to this feature of SB 103. As it stands, I interpret SB 103 as an added burden of taxation upon the oil industry designed to increase the total payments which the industry will make to the State. If you look at section 3 of the Senate Bill, which is actually section 20 of AS 43, it says: Producing oil leases or properties which are paying the gross production tax (severance tax) during the assessment year in an amount which exceeds the tax that would otherwise be due under section 15 of this chapter (that is the reserve tax) are exempt from the reserve tax. Which means in effect you credit the severance tax against the reserve tax, but not the reserve tax against the severance tax, and there is a very distinct difference in what this means to the oil industry's liability. As this reads, and if this is your intention, what you are doing is you are not only increasing the flow of oil revenues during this interim period, but you are increasing the total tax burden on the oil-producing industry operating within the state. And my criticism is not that you are increasing the total tax burden of the oil industry, but that if it is your intention to increase the total tax burden of the oil industry, then it should not be through a reserve tax. It should be in due course, if it is on production, through the severance tax. If it is on the profitability of the industry, through your income tax. But not to say that the Legislature of Alaska in order to increase the total oil revenues for the State enacts this type of tax to increase the total.

SENATOR HUBER - So we're clear on that now. You don't see any attempt there to double tax them after they are in production.

MILTON LIPTON - There is no double taxation. There is just an added taxation during an interim period which otherwise they would not pay, and no offset for that.

SENATOR HUBER - Yes, that is correct. Senator Rader.

SENATOR RADER - Doctor, are you prepared to make a recommendation to us if we made the assumption that all we wanted to do was to bridge our shortfall, as a matter of revenue, without adding significantly to the burdens of the oil industry? What mechanism would you suggest that we use?

MILTON LIPTON - There are many alternatives I presume, that the State might consider, that I'm not competent to talk about. If you are asking among all the alternatives that the State might consider which says that the oil industry is going to pay this deficiency for two or two and a half years, you see, then I suspect that probably among those alternatives, if one has to be selected, the reserve tax probably is the one that you will have to turn to. But if that's the case, then I would prefer that section 3 here reads not that the reserve tax becomes a credit against future severance taxes, but that all payment on the reserves up until such period of time as the lease goes into production shall, over a future period of time, be credited against the company's ongoing severance tax liability. Which means in effect, the aggregate payments of the company will not have been changed, but the time when they make the payments will have been advanced. It's the difference in whether the reserve tax is a credit against future tax liabilities, or if in effect you pay all this reserve tax, but then you simply stop paying it after the severance tax comes into being.

SENATOR RADER - Do I understand that you meant to say that you would not favor the preselling of royalty interests or anything of that nature?

MILTON LIPTON - Yes. Now we haven't really discussed that, and in a sense it is unfair to you for me just to say among all the alternatives which we haven't discussed--therefore the correct effort is this. But maybe we ought to hold off with this discussion on the presale of

royalty oil and gas for a moment and concentrate on this thing. But I would certainly like to come back and tell you why it is in these fields that the sale in advance of what will be in the future royalty oil and gas is probably bad policy.

SENATOR HUBER - We have with us--there have been more people added--but we have the prime sponsor of the House version of the bill with us (Are you finished, Senator?), who would like to ask a question, Fred Brown.

SENATOR RADER - Yes.

REPRESENTATIVE BROWN - I have heard some of Mr. Lipton's presentation on some of these matters in House Resources this morning. I just had one short question right now. What other major oil jursidictions have taxes that are either taxes on oil and gas in place or are somewhat similar to this one, something comparable to this one?

MILTON LIPTON - There is nothing quite comparable to what is being proposed in this legislature. There are in other oil-producing states ad valorem property taxes which involve the valuation of the reserves under the property. They're usually part and parcel of local jurisdictions in which first of all, there is already production, and secondly in which the valuation tends to be relatively mild. There was in the Province of Alberta, in special circumstances and enacted by the Province of Alberta, which set up a resource tax in which every producer in the state had the option of paying either a mill rate on the valuation of the oil resources or a higher royalty rate (which the Province was enacting) than they had previously been committed to. They could choose between the two. But the Province at that time established the valuation only on producing properties, not on oil and gas in place that was not subject to production. And they had, and provided to the industry in advance a clear schedule by formula as to how the valuation of the oil reserves would be determined by their own Department of Energy and Conservation. And what that involved was to use ongoing estimates of reserves which were already (since there was a history of production) the basis of the Province's own prorationing program. So production was established on the same basis of reserve estimates, as the valuation was, and where there was no attempt to make forward projections of what the value of the oil would be, there was a simple formula which says the price that was obtained in the last accounting period for the

production applied to this agreed-upon volume of reserves in allowing for a given rate of decline in the reserve. So that it was, in effect, a mechanistic device. The one which was applied simultaneously to all producers in the province on the basis of reserves that they were already producing and on the basis of reserve estimates which were the basis of their allowables to produce. So, it was a somewhat considerably different tax device than the one that is being proposed here.

REPRESENTATIVE BROWN - You said it was a special case, and you had this in the past. That is, they don't have this anymore? When was this and why was this a special case?

MILTON LIPTON - Well, it was adopted by the Province several years ago when there was an appreciable increase in the value of Canadian oil. By way of background I must explain to you that the Province of Alberta, for example--No Canadian Province has the right to levy production taxes or severance taxes the way U. S. States do. This is a matter of constitutional delineation of taxing powers. The Province, if they taxed, could only tax really on the basis of income of value, but not on gross relative value. But the oil industry in Alberta has constantly taken exploration and production leases from the Province of Alberta on the basis not of a fixed contractual or legal royalty. The royalty has always been subject to change by the Province, at the will of the Province, excepting that some years earlier the then government of Alberta had entered in an Orders of Council in which they held it out to the industry that for ten years the royalty would not be changed. Then, before the ten years expired, the Province of Alberta wanted to change the royalty. They could on many, many of the leases, but they didn't want to violate what seemed to be a commitment on some of the outstanding leases. And so they went this route of setting up an alternative form of taxation and gave the companies the alternative of avoiding the taxation by voluntarily agreeing to an increase in the royalty.

REPRESENTATIVE BROWN - This would have been about when that this happened?

MILTON LIPTON - Several years ago. About two years ago this happened. But if the question, "Are there other instances by U. S. States . . ."

REPRESENTATIVE BROWN - I meant basic jurisdiction. I meant anywhere in the world that has anything roughly comparable to the way we have in taxing. Particularly in English-speaking countries where . . .

MILTON LIPTON - Well, the English-speaking world has less problems with oil and gas than other parts of the world. Now, I don't mean to be facetious. There may be, but to my knowledge, I cannot think of a place where there is any substantial taxation of reserves before they enter into production.

SENATOR HUBER - Clark.

REPRESENTATIVE GRUENING - Mr. Chairman, I would like to ask . . . Doctor, doesn't your suggestion that credit be given against the severance tax kind of help alleviate some of the problems you have in evaluation of the reserves as well as the value of them? In other words, you don't have to be so exact because you are going to give them credit anyway.

MILTON LIPTON - Well, let me say that if you are looking just at the problems of one oil field and the producers in one oil field, whose respective interests may probably be defined anyway by unitization agreement, then really the problem of assessment and the problem of the mill rate becomes secondary to how much money the State wants to take from it. In effect, if the decision of the State is that in a fiscal year we need $200 million and willy-nilly it is the leaseholders in Prudhoe Bay who have discovered oil who are going to have to carry us over, it doesn't make a hell of a lot of difference at what rate you assess the oil in place and what kind of a mill rate. One or the other will lead to $200 million. It does make a difference, I have to be brutally frank, because to play around with an idea that there is somehow a principle of taxation involved here because it is part of your general property tax, you are now going to . . . You really haven't established a new tax at all. You have broadened the definition of taxable property where before you had exempted oil and gas in place and now you are going to include oil in place. But this is fooling around because in effect you are creating an entirely new tax and you're entering into a principle of valuation which you have never done before, which can't be done that way, but arbitrarily it's done. Yes, in that sense for those producers, the only thing that matters is the $200 million. (I shouldn't use a number, because then it can be quoted as somehow it is significant and I have no idea of whether it is $200 million, or $100 million, or what. It will probably be more than that over the whole period that I'm talking about, but I'm using it for purposes of example.) Then what matters to them, the only thing

that matters to them is how much the money is and how soon they are going to extinguish that by taking the credit against the severance tax. But if in fact this is a general--(You are not in fact saying here, at least in this bill, you may be in some other bills saying that this tax is levied against the leaseholders in Prudhoe Bay)--this is a general tax for the State, to what extent will this tax be applicable to other fields in the State that either have been found for which we may not have any clear estimate of the reserves yet?--But when you go to your Oil and Gas Division, they will have some information about successful wells which are not in the general domain and within some period of time, there may be enough knowledge to assess the tax against them. Then it becomes a matter of equity, you see. Then it becomes a matter of difference as to just how you begin to evaluate this field's reserves against that field's reserves. And even if you take two additional fields that may--on the North Slope--that may fall within the jurisdiction of this proposed tax, both of which have reserves of 150 million barrels and therefore presumably both paying the same tax: But one has relatively unfavorable producing conditions so to exploit 150 million barrels of oil will require twenty-five, thirty years of careful production. The other has a favorable producing reservoir and can produce in fifteen years. The different rates of production, the speed at which one field or another recovers its prepayment on the reserve tax, will differ. Which means that the net cost to the companies will be different. Is this an important consideration to you or not? I don't know. But certainly, if you are thinking in terms of principles of taxation, it is a very difficult tax to administer equitably. If the tax is not going to affect anybody but Prudhoe Bay, that's a different story. But even so, you talk about Prudhoe Bay. Who really are going to be the producers in Prudhoe Bay? By the time production starts, the unit may not quite be the same. The total amount of oil produced . . . may be oil coming from outside the unit and these reserves may be subject to tax. It is not an easy tax to administer equitably. It is for the legislature, an easy way to find the kind of money to bridge the gap. And the only thing that I can offer, is that if it were to be done, and this you must decide, then I think that the one principle you should follow is to allow the extinguishment of these reserve tax payments relatively quickly as an offset against future severance taxes. And then one other thought. If you enact this law and the companies look forward and ultimately start producing, their severance tax is going to start to go down, and then the successor of this legislature meeting in this room two years from now, takes a look at the severance tax and says that the severance tax is too low, it really

ought to be higher. So in fact, there may not be any offset in the future, depending on what the legislature does with the severance tax. Now that in itself--now there is nothing wrong with that in itself, if the severance tax decision then is made legitimately in light of the circumstances at the time because your severance tax, nor your income tax, nor your property taxes are chiseled in stone. They are all susceptible to change from year to year according to changing circumstances and all taxation in particular is in a very volatile state because of the changes that are taking place in the world and in the United States and in the valuation, and the pricing, and the taxation. But I think it should be part and parcel of your legislative discussion here that the action by this legislature, if you have this right of offset against future severance tax, is done in good faith--that this does not imply that this legislature is trying to tie the hands of the future legislature--that in a sense they will be violating good faith if they legitimately review the severance tax in the future. Because you will surely hear three years from now in a debate when someone suggests raising the severance tax, that this is bad faith on the part of the Alaska legislature because when you adopted this tax you committed yourself to freezing the severance tax. Which is not what I am suggesting at all. You must have in the legislature the right to adopt whatever severance tax is appropriate to the time, but still have at this time a carry-forward credit.

SENATOR HUBER - Now if we'd go just a little further. If we could expand a little on the question--We had several versions of this bill that we were kicking around and we did ask some consideration for that aspect. In fact, we were thinking more in the line of, well if they are paying an ad valorem tax, maybe as much income tax wouldn't be levied or some other thing. We didn't know just what, but that's one reason we didn't have a phase-out on it. The other thing that we were thinking about is in the beginning, we were trying to figure a way to keep the tax from being a deterrent for new leases. Now, there is a difference between the House and Senate version on that. On the Senate version there is the five years that we put in there, and so you can see we were after an obvious time--five years would be enough to keep a new bidder so that he would never end up paying it. He would normally go into production. I would like you to touch on that and discuss it--Whether it is enough? How much of a deterrent it is? Whether it should stay in the final bill, or what?

MILTON LIPTON - The bidders for leases on Prudhoe Bay in September of '69 would have bet that five years were enough for them at that time to have avoided any reserve tax that might have been on the books then. You know really, the tragedy (I should choose my words more carefully) --the problems of Prudhoe--there are no tragedies up there--but the problems are not only the delays but everything that has happened in the world while these delays were taking place: Inflation, and the run up of costs, and everything else. And it's very difficult to know in advance, and in particular for remote areas of the state which may be opening up to exploration in the future, what an adequate time is. This is paragraph (b), I guess, of section 15. The intent of it is very, very clear, but you see this also reads to the oil industry that this is not a temporary tax--that this reads as though it is an addition to the panoply of taxation which this State is going to impose upon the oil industry. And I really have one of the strongest objections to the idea that this is the kind of tax which by itself, standing on its own feet, is an appropriate form of taxation whereby the State of Alaska reaches out for the revenues which it is entitled to obtain from the oil industry. It's not a good principle of taxation. Anything which implies that it's part of your permanent tax package, I think, is counterproductive. I don't know whether you can go ahead and make this an emergency tax, or a tax with a direct termination date. This may raise special problems for you in terms of legislative practice, even constitutionality, and I am not competent to talk to that.

SENATOR HUBER - That was the next thing that I was going to raise. We will have to explore elsewhere for the constitutionality of it as a special tax which would be phased out.

MILTON LIPTON - Obviously, the tax can be passed by this legislature and repealed by another legislature. But whether this legislature can enact this particular form of tax with an expiration date, I don't know. But of course, it is of no help to those producers who are immediately subject to the tax to know that the tax is going to be repealed. But in terms of the interplay between the State and the industry, if we are correct, that this is really not a very effective or a commendable form of taxation, I would not like to see the legislature keep this as a piece of the permanent passage. And this has nothing to do . . . I'm not arguing here that the State already is taking too much money from the oil industry or anything else. What I am saying is that the appropriate relationship between the State and the industry in terms of taxation and revenue is best served by other

vehicles other than this form of taxation.

SENATOR HUBER - I think you are basically telling us that it's an ends tax rather than a means tax. Fred.

REPRESENTATIVE BROWN - Mr. Chairman, I have another line of inquiry and then I have to go back to House Judiciary, next door. Some of the things you addressed yourself, some of the policy considerations (they aren't all there, I am sure) have been what the reasonable expectations of the oil industry are, of course depending on what those are--what affects what they would or would not bid in an oil lease sale for bonuses and that sort of thing. I know that you are in touch with the industry a lot more than many of us are and you talk to the people that they talk to and they fight with other countries and other states. I'm going to ask you a leading question, and maybe the answer is no, but isn't the industry already making business decisions based on the assumption that Alaska will almost certainly--just considering the political realities--almost certainly raise the severance tax after the oil goes on line and probably will either pass taxation of oil and gas in place this session, or keep it in the hopper and keep bringing it up and seriously considering it quite frequently?

MILTON LIPTON - The last thing I can do is to speak for the oil industry, which is . . . I give it to you as my personal opinion, that every prudent man who is in an executive position in an oil company in the oil industry is constantly anticipating tax increases in every jurisdiction where the oil company operates. Now, whether they look upon Alaska in some special light or different from other states, I suppose depends upon the whole flow of debate in the legislature and what their experience is and so on. I don't think that in any sense the oil industry has been poorly treated in Alaska. With all the jokes that may be made about the way in which Alaska operates, at least as I read it, all the legislation that has come out of the State of Alaska --including the taxation--the oil industry has not been treated poorly in the State of Alaska, and certainly not in comparison with the problems which they face in other jurisdictions, including other jurisdictions . . .

REPRESENTATIVE BROWN - My definition of other jurisdictions . . .

MILTON LIPTON - There is a very realistic problem of what the passage of this kind of legislation might do to the kind of bonuses that you could obtain in a lease sale. This is a very real question. The answer has to be in general, that it's going to have an adverse effect upon the way companies regard the bidding in a lease sale. But how adverse, I don't think anybody could really quantify. And whether in effect it would ever have a measurable distance really depends upon how attractive the acreage is that you put up for bid. Because if the acreage is very, very attractive, and the competition is very, very keen, then it is difficult for a company to say that I am going to penalize Alaska in my bid by so many dollars as the quid pro quo for the reserve tax to which I may be subject. Because if he does that he's made a very careful calculation and he comes out just as well in theory as if there hadn't been a reserve tax. Do you follow my argument? However, if not everybody does it, the difference may be that he doesn't get the lease. And so maybe you don't quite assess the full disadvantage of the reserve tax against the bonus bid, and the other guy doesn't quite do it to that extent so that you don't really know in the end. Yes, it has a discouraging effect. Yes, there will be a reevaluation and certainly if the acreage is not particularly attractive, it may make the difference between a company bidding at all, or how many companies even come in. But if it's attractive acreage, realistically it's very difficult to say with assurance that every dollar of revenue which a State may expect to get out of a reserve tax, they will have given up in advance by lower bonuses. They only example I can give you of how an industry will operate . . . Well, for example, up until several years ago there was computerized study after computerized study of rates of return to the oil industry on the oil exploration in the U. S. Gulf. There was hardly a one of them that didn't show the industry to date and projecting ahead of the basis of discoveries and price expectations, that the rates of return would be much better than 7 or 8%, or something like this. Which every firm knows is not the incentive for which one conducts exploration. These were industry calculations all the way through. So if you read the newspapers or follow, you know, the kinds of bids that have been made for offshore leases in the Gulf of Mexico. Which means that just as you in Alaska must be concerned by the depressing effect of adverse expectations, there is a kind of coefficient of euphoria, the hope upon the hope upon the hope that what you discover is really big oil, which leads to competitive bidding. And I don't think the world has changed in that respect: If anything, the higher values of which are beginning to emerge for U. S. oil and gas production I think are a spur to exploration and the deductions are here in Alaska and I would expect that if the acreage is attractive that you would get pretty good bids. But I am not prepared to assure you against failure.

SENATOR HUBER - John.

SENATOR RADER - Dr. Lipton, what if we had not only a temporary bridge with the credit that you suggest, but perhaps an interest payment also, so there is not even a penalty of interest on the prepayment? What if we had one other factor in it that would trigger that the tax would not be imposed in the event that a lease sale held within let's say six months produced a given amount of money?

MILTON LIPTON - Well . . .

SENATOR RADER - In other words, you develop a sort of scale like this: If bonuses received from lease sales held for calendar year 1975 are $100 million or less, than the tax will be "x". If it is $200 million or less the tax will be "x". If it is $300 million or less the tax will be "x". And really use this as an alternative triggered by the shortfall revenue from sales.

MILTON LIPTON - I am sure the industry people would appreciate any device in the act which minimizes their tax exposure. I don't respond instinctively, you know, to this formula approach. It seems to me that one alternative is that if there is not an urgency in terms of timing or present enactment, that perhaps you can defer enactment until such time as the results of a lease sale (if there is a lease sale) emerge. Or, alternatively, one can go ahead with the enactment and don't establish a single mill rate on the thing. In all your property taxation, mill rate varies according to various criteria from time to time, and this may be subject. I don't know. If the legislature concurs with our evaluation of this tax in principle, and if there is any leeway in time before the urgency of enactment, then perhaps that would be the device that one follows and not rush into passage. But this I can't judge, you see. I can't judge that. But, perhaps this is a time for me to address myself to the question that Senator Rader put before, which is: Are there other alternatives, and how do we assess those? Would that be in keeping with your own thinking, Mr. Chairman?

SENATOR HUBER - I think so. I was wanting to comment. I hope that if we adopt the system that Senator Rader just outlined that we can get him to draw up the constitutional opinion on it and so forth.

SENATOR RADER - Just toying with an idea is all.

SENATOR HUBER - Before we get into this, I think Clark had a . . .

REPRESENTATIVE GRUENING - Mr. Chairman, this may dovetail into what you want to expand on in terms of other means, but I don't know if this has been asked in earlier sessions. But what effect will federal taxation have upon our taxing reserves in place, specifically the President's proposal that we put an excess profits tax on it? Isn't it a question of who pays it? Who the oil companies pay it to?

MILTON LIPTON - Not in this particular instance. As I see it, there are two variables again. One is, how will federal policy affect the valuation of reserves in place? And second, how will the tax payments on the valuation of reserves affect the company's federal tax liability? So you've kind of completed a circle. If the President's proposal for simultaneous decontrol of oil prices goes into effect (This of course, is irrelevant to crude oil because that oil would not be under price control under the present federal system), but at the same time that oil becomes subject to a federal windfall profits tax, that in effect would really diminish the value of Prudhoe reserves because of the fact if Prudhoe reserves today are completely not subject to control, whether they were being produced today they would have a relatively high value. The windfall profits tax goes into effect and if you have an honest assessment, then you would have to say that Prudhoe Bay's are less valuable because there is a windfall profits tax in effect. Realistically, if you were going to get the same amount of money from them by saying, "Well, if the value goes down, the mill rate goes up," doesn't make much difference. In any case, none of this is going to be in effect, I would expect, by 1978. No. I shouldn't say that. That implies a bad perspective on pipeline completion. None of this will be in effect in 1977, when the pipeline is completed. Now all of this, in effect, will represent a diminution or a potential diminution of the company's federal tax liability. Well, this is almost always the case, but that will vary from company to company, according to what their federal tax liability is, and that they are not in a positive tax paying position or in effect this is not an expensed item. This kind of State tax cannot be expensed against otherwise taxable income. It may not in any appreciable sense reduce their federal tax liability. I don't think there is much, one way or the other, that you really ought to concern yourself with respect to the proposed resources tax. There is something on the severance tax, but perhaps we can discuss that later in a different context.

SENATOR HUBER - I think that we can go ahead now to Senator Rader's other questions.

MILTON LIPTON - I have been asked elsewhere on repeated occasions about the possibility of the State obtaining early revenue, not from taxation, but through the sale of royalty oil and gas to which the State will become entitled at some future date. Now you can regard that as two different ways. One, you can say that the State in effect is selling now what they otherwise would have sold later, or you can say that what the State is doing now is borrowing against the royalty income in the future. In one case you sell a good later or now, and the other perspective is that you are not selling anything, but what you really are doing is you are trying to get an anticipatory income against--because in the future you may take your royalty, well not as oil but as a cash payment. It has, for the industry, of course--it has two very keen attractions which I am sure they will quickly lay in front of you. One is that they're not paying taxes. They are spending money to buy something. And the second is that the incidence upon companies could be quite different. There is no question but that the reserve tax is going to hit most against Standard Oil of Ohio because of their proportionality of reserves (which happens to be a company this is already tremendously in tremendous cash pressure for the amount of capital they've got to put into the pipeline and the development of Prudhoe to go into production), then on to Atlantic Richfield and upon Exxon. And I don't mean to align these companies in order of magnitude, but there is a kind of continuity among these three companies. Whereas, if you sell royalty oil or an option on royalty oil, these companies may opt not to become buyers because they are already major producers and the more logical buyers could very well be other U. S. oil companies with major refining capacity who would not otherwise have direct access to Prudhoe Bay oil and would contemplate a look upon themselves as potential buyers in the future in any case. So why not try to buy from you now, instead of buying from you or from their own competitors later on. So, when it changes the total cash burden of the industry and it shifts it among companies within the industry, nonetheless I go back to what I said without explanation before, and now I'll try to give you that explanation. I think it is not an appropriate way or a good way for the State to approach a budgetary deficit. First of all, the worst time of all to be a seller of any kind is to be a seller under distress. If you have something to sell, you are in a much better position to choose the time and circumstances of sale than have to sell under distress, and

especially when all buyers know that. Obvious. Secondly, what the State does not know is really how much oil it's going to be selling. Because what the State will sell is an option on its future royalty oil in return for a stipulated amount of money, whatever the State may need. A buyer is not going to give you $10 a barrel or $12 a barrel or $9 a barrel or $5 a barrel. No buyer can commit himself to pay a price today for oil he may not get until 1978, '79, and 1980. The price is too uncertain. It is completely uncertain. So what you may do is entertain the idea of taking competitive bids for your oil at some percentage of what is then the market price at the time delivery of the oil takes place. Are you with me? Now that percentage will be less than 100% of the value because the buyer, if he's not going to get the oil for two, three, four years, will put a discount factor on it. Under the reserve tax, the taxpaying companies carry the interest burden until they can extinguish it. Here, you carry the interest burden because they pay you in advance. So, it will be less than 100% of the value. But what you don't know is how much oil you'll be selling in the future to extinguish say, $200 million worth of presell. If the oil is worth $10 a barrel at that time, it'll take so many barrels to extinguish a prepayment of $200 million. If the oil should be worth $15, you are very fortunate because it will be less oil. But, if the price goes down, you may have in effect committed a hell of a lot more royalty oil in order to obtain this advance of funds than you had contemplated. And I know from past legislative hearings that this State has so often considered what the value of royalty oil or royalty gas will be to the State. Not in the dollar value of the royalty payment but the ability to take the oil as oil, not in the dollars and cents, and then dispose of that oil (the State itself) in ways which serve other purposes, other intentions of the State itself. There has been and there is, I'm sure, ongoing discussion of the extent to which that oil may be, for example, processed within the state. Or, what kind of petrochemical processing may be established within Alaska? Why the availability of oil and gas, at the disposal of the State, not under the control of lease-holding companies? You don't know for how long and to what extent. In a sense you hypothicate all of these possibilities to the immediate need for money if you go into this kind of a sale of royalty oil or gas. Then there is the further consideration that you have established an Alaska Pipeline Commission to exercise regulatory authority over the pipeline. None of us know the extent to which the tariff on the pipeline may be at issue. The importance--the significance of the pipeline tariff to the State itself is very, very clear. Because the higher the tariff, the lower will be the wellhead value of the oil. The lower the wellhead value, the lower the severance tax income, the

lower the royalty income and so on. But if it was anticipation, among other things and not exclusively for that reason, but among other reasons, you established a Pipeline Commission with regulatory authority and jurisdiction over tariffs of that pipeline where the tariffs apply to the intrastate movement of oil. But for the jurisdiction of your Pipeline Commission to be enforced--to be reinforced--requires an intrastate movement. And it was always, I think, part of our thinking at least, that the State, so long as it had the access to royalty oil, was always in the position to take that oil in kind, to transport it through the pipeline and affect via buyer transportation services (and at the same time establish the fact of) intrastate business for the Alyeska Pipeline. Which then triggered the potential jurisdiction of your Pipeline Commission to review tariffs, to arrive at an agreement with the owners of Alyeska. What the appropriate tariff is and lack of agreement; to enforce a tariff; to fight the battle in the courts if it ever comes to pass. But in a sense to achieve sovereign powers in Alaska over a matter which is of very great concern to the State of Alaska. Now, if you have for temporary budgetary reasons in a sense given up control over very, very substantial volumes of royalty oil, my point is from unknown volumes of oil over an unknown period (because you can't anticipate how much oil you're selling for any given $100 million of current income), then I think you have in a sense taken away from the State a flexibility of decision which the legislature has tried so hard for so long to establish. So between the uncertainties of the income and the fact that all of the uncertainties are more apt to have a depressing effect on the price you now get for your oil rather than an effect to increase the price, and because of depravity of control of the royalty oil which you may want to have in the future, I would think that this is not a very good way for the State to go about covering and expanding this prospective budgetary deficit.

SENATOR RADER - If you assumed that the price of oil the next ten years was going to be $10 a barrel, what percentage (if we sold enough to raise $600 million--$200 million a year for say the next three years or something) . . . Playing with the figures, which I don't have a grasp of, what percentage of our oil would we be selling?

MILTON LIPTON - Senator Rader, that question is appropriate only if I'm the buyer of the oil. It doesn't matter what I assume the price of the oil to be. The real question that you face (and this is the tremendous problem) is what price the prospective buyers are going to assume for that oil. And I tell you as best as I can read the entrails of the hen, I don't think any executive is prepared today to make a

hard and fast assumption as to what that price is going to be. Now, suppose everybody assumes that it's going to be $10 (all right?) in the future. Then I would say, what rate of discount do you have to apply? If they're not going to get the oil for five years and they are going to assume a 10% discount for each of five years, and I won't even compound it, that's 50%. That means that they would be prepared to pay you $5 a barrel today for what is $10 oil five years from now. Now, if you want to ask yourself (if you want to do the arithmetic) if you're going to be paid $5 a barrel--and mind you this is a purely hypothetical number, purely hypothetical--if you're being paid $5 a barrel and you need $100 million, then you're talking about 20 million barrels of oil. For every $100 million, you multiply the 20 million barrels of oil. Now how much oil do you have? You have royalty oil as one-eighth of the production. If the production is 1.6 million barrels of oil a day, five, six, years from now, one-eighth of that is 200,000 barrels a day. 200,000 barrels a day times 365 days a year--You're talking about what is it--7 million barrels?--700 million barrels. How much of your royalty oil you are going to have to sell depends first of all on what the level of production is--how soon you get up to 1.6. Secondly, what kind of a price do you find are the buyers' expectations? Over what period of time are you prepared to tender to them? Can they claim all of it? Every buyer is going to have a limitation on how much oil he wants in one particular year. Chances are that he's going to want so much in one year, so much in the second--like a five-year contract. How many buyers are going to go for five-year contracts? I think that you have a tremendously difficult job, not only of estimating realistically how much income you could get out of this kind of an auction of options, how much revenue you'd get, but even after the fact is done--you've got your revenue--you will not really know how much oil you've committed. And you won't know for three, four, five years how much oil it's going to take to extinguish the cash payments that you have received.

SENATOR RADER - Now, we're talking about the sale price being the market price as of the date of delivery.

MILTON LIPTON - Yes, of course. Well, I would assume that nobody's going to commit himself to a--There is no oil company that today sells oil on a fixed basis so much as six months in advance, let alone five years in advance. And I'm sure they are not going to buy it on that basis, so I'd hate to be in a position to interpret what the market value is. But you can perhaps agree that the market value would be taken as the wellhead value. And the wellhead value is the basis for a severance tax royalty, and you'll probably be arguing about that

anyway with the industry. It's not the technical problem. It's the conceptual problem of what the State is involved in. So if you start looking between the two and are forced to come back to what essentially is a bad tax which is ameliorated . . . Hopefully, by the offsetting clause which says in effect that it becomes an advance payment against the severance, and the net cost of the company is the interest cost in early payment of future severance taxes. And what that cost is, is a function of two things: What the interest rate is, and how long it takes them to offset it in the future. And if the effective interest rate is 10% a year and it takes them five years or six years or seven years to offset it, it is a very appreciable cost for the industry or for the select number of companies who are forced to bear that burden.

SENATOR RADER - Would . . .

SENATOR HUBER - Go ahead, John.

SENATOR RADER - Would that tax follow the companies equitably though, as between companies or not?

MILTON LIPTON - Well, it would fall . . . If for the moment you assume that the only producing area that is affected is Prudhoe Bay--which I would not assume if you have this kind of generalized tax system because we don't know--but if you assume it would fall upon them equitably . . . (If you define equitably in proportion to their lease ownership of reserves, since one of the things they are battling out among themselves now in unitization agreement is who has what among the Prudhoe Bay reserves . . . And I don't believe that just because they are subject to a reserves tax that one company is going to say to another company, "No, you take the reserves. I give it to you." I mean, it doesn't weigh that much in the balance.) But you notice that the taxes on oil and it's not on gas, the holdings of the companies with respect to gas reserves are very different from the ownership of the companies with respect to oil reserves. And your tax--although it is referred to in your section 15 that it is on the full and true value of oil and gas leases within the state under which there are proven reserves and ownership interest in proven oil and gas reserves--that the actual tax is levied only on oil reserves. Now, I don't know if this is deliberate. Do you mean to exempt from the tax the undeveloped gas reserves of the Cook Inlet area? And if you don't, then you really introduce the question of equity. Because then it is not a matter of indifference how you

assess reserves, because you make it up in the mill rate. Then it makes a real difference how you assess the value of undeveloped gas reserves at Cook against undeveloped oil reserves or gas reserves on the North Slope. I don't want to confuse the picture by introducing extraneous arguments, but as the thing is now written, there is potential exposure of the regional corporations, in terms of their leasing arrangements with the private companies for the exploration and development of the native land selection areas.

SENATOR HUBER - They are obviously exempt for twenty years.

MILTON LIPTON - Why are they exempt?

SENATOR HUBER - The native corporations themselves are exempt from tax for the first twenty years of their existence by the . . .

MILTON LIPTON - I'm not talking about the native corporations. I'm talking about the private companies that take exploration leases from the native corporations. Are they exempt from this tax?

SENATOR HUBER - No, and you're getting back to another one of the basics of the tax.

MILTON LIPTON - Well, if they're not exempt from those taxes, then the nature of negotiations between the native corporations and the industry becomes affected by the existence of this tax.

SENATOR HUBER - There was another consideration in drafting the tax to begin with. It was drafted as an ad valorem tax with one favorable idea in it that is not in any other ad valorem tax. That is that when the production tax equals or exceeds it, it phases out, which doesn't happen to the farmer or the tree farmer or anybody else. So, it was realizing that the petroleum industry with its depletion problem is special. But we also were thinking in the future. The Pet. 4 is talked about now for leasing by the federal government to private concerns. Certainly once a private concern had a leasehold interest in Pet. 4, this tax would apply to their leasehold interest although we could not tax the federal government.

MILTON LIPTON - I don't think so. I'm not a lawyer and can't give you a legal opinion, but my feeling is that if the federal government goes to leasing of Pet. 4 (private leasing of Pet. 4), your income will come under the revenue-sharing aspects. You'll get 90% of the bonus

in royalty income on that leasing. This is an aside, but I guess it comes within the purview of your particular committee: It makes a tremendous difference to the State of Alaska along what route the federal government chooses to go in the exploitations of Pet. 4. Because if it does it by virtue of direct federal activity, either directly by the federal government or contracting out without any leasing to private operations, then you have no claim upon any revenue from or any value of oil and gases. It's strictly federal property, not in your tax purview. But if they go the route of leasing, the State of Alaska, I would believe would have the same entitlement to revenue as you have from any federal leasing in the State of Alaska. That is to say, 90% of all the oil and gas revenue.

SENATOR HUBER - I can understand that, Milt. But if we didn't, part of the idea behind the bill in the Senate draft is that we would be able to tax an ad valorem tax. Some of the other ideas that have been put forth, such as the idea of phasing it out, paying it back, and using it for a loan didn't cover that. I'm not sure that we've covered enough of the aspects of the ad valorem tax and how it compares to others. I understand what you've told us so far about it. But I have trouble seeing how it is different than the ad valorem tax that we've placed upon the land that belongs to a tree farmer, for instance. And the tree farmer then also has a round log tax placed upon him by the State for the logs that he's taking out of the land. Our law here would be much the center of the bill we're referring to (the Senate bill)--would be much the same as saying, "Well, he pays his ad valorem tax every year and when he's in production he can credit his round log tax against it." But then if we put a phase out on it, or like shall we say his supposedly coming down to the Governor's Office, we say well, we're going to pay him back all his ad valorem taxes. I think those ad valorem taxes are unfair to begin with.

MILTON LIPTON - Don't forget that was ad valorem taxes. He's paying ad valorem taxes on a heck of a lot of property in this state. On all kinds of facilities and everything else. The only thing he's not paying the ad valorem tax on--and this has been a feature of your severance tax from the first year you adopted it--is on the value of oil and gas down below there. And if there is no other distinction I can think of between the tree farmer and the oil explorer it's that you can see the logs on top of his farm before he cuts the logs down. But you can't see it and it's awfully damn hard to estimate what the oil is.

SENATOR HUBER - We were considering it from the farmer, too. Like the onion farmer and everything like that who seriously depletes his land by every crop that he raises. His resource in the ground (his minerals that he uses) is invisible too. I basically am not an ad valorem tax man. I hate it in my own business, my own home, and everything else. I don't think it's a good, equitable tax. But I do have trouble seeing why it is less equitable for the oil company to pay, especially when we give him a credit against his production back, which we don't anybody else. I can't see really the basic differences.

MILTON LIPTON - I can simply repeat what I said before, which is not an argument for less or more taxation in the relationship between the State and the industry. What I'm saying is that the tax on the reserves is a difficult tax to apply by standard of purpose that you want to adopt because of the difficulty of estimating what the reserves are in one field as compared to another. Because of the virtual impossibility of estimating what the value of the reserves are, since the value of the reserves at any one moment of time depends upon how much oil inflates, how much oil will be recovered, or how many years will it be produced--five, ten, fifteen, twenty, twenty-five. What will be the prices that that oil can command? And I think the last time we met I suggested to you that you can estimate. Reasonable men today can differ as to what will be the value of Prudhoe Bay oil in 1977 when it first starts flowing, which is two years, two and a half years from now. Reasonable men can differ between a price as low as $4 a barrel to a price as high as $12 a barrel, because of the two horrendous uncertainties that bear upon valuation. 1) What is the political price of foreign oil that we will obtain then? And 2) What will be the federal government's policy that says this will be the price of U. S. oil compared to the price of the foreign oil? These are two uncertainties.

SENATOR HUBER - There was one other question and then I'll go to someone else on it that is in the same area. We've been sitting back with an amendment to this that we thought of drafting into it to begin with and it's the proper time now to explore your ideas on it.. I'll see if I can get the idea of the amendment out. It was realizing the problems that we've had in assessment and that the oil company would say that the oil is worth so much under this land and the State assessor would try to assess it differently. And we were toying with trying to put a provision (in fact we have a bit of drafting done on the amendment) so that if it is overestimated--overcharged on the part of the State, that the State eventually--and this would be clear up

to when the field is depleted if necessary so you had final proof of what could be produced and would be adjustable all the way along the line--that if the State had overcharged, the State would have to rebate. If the company had underestimated and been allowed to pay the tax on that basis, then they would have to pay the difference. This was . . .

MILTON LIPTON - This involves you, you know, not only in establishing --as under your present proposed bill you have to establish an assessed valuation as of January 1 every year. That in itself becomes kind of a difficult administrative thing. But then you would have to have a post mortem assessment as you go along in order to determine overage and underage, and I just wonder whether under any circumstances you want to involve the State in such a fantastic administrative burden. If in fact this thing rests--is designed as an interim measure under the pressure of necessity--that's one thing. And then the problem of assessment would be minimized at least if not too many producers are affected and the impact is somehow assuaged by having a carry-forward credit and an expected termination date, in a sense you've made the best of a bad job. But I wonder whether you can pretend to make a bad job good by complicating the task?

SENATOR HUBER - Joe.

SENATOR ORSINI - Further pursuing John's question which was what I was going to ask, are there other possibilities of raising revenue in this interim period that we have not considered other than leasing, other than the presale, other than this oil and gas in place? Is there something we haven't thought of?

MILTON LIPTON - These are the three obvious ones, and I must confess that I can't conjure up other than the obvious ones, if it is the oil and gas industry to whom you are pointing and saying that it's out of your assets that we must obtain these interim funds. Now, don't misunderstand me. When I say that this is a bad tax, and if I point to the fact that the oil industry is made in a sense the object of taxation out of necessity for the State, I don't think this is an unreasonable point. That is to say, a State, if in fact the State legislature in expressing the intent of its own constituents, has an expenditure program and a revenue program and the two don't match and therefore the legislature has to contemplate where else do we go, I presume that it contemplates all other avenues of taxation and among them there is the oil industry which in its particular circumstances is an industry which has a certain capability. Now, this is not

without limits, obviously. But it has a certain capability and I suppose in a way it's inevitable that in Alaska you can't contemplate budgetary deficits without looking at the oil industry, which is a horrible thing for the oil industry to contemplate. But this is a fact of life and so you might do it. I would only hope that if you feel obliged to turn to a form of taxation upon an economic group such as the oil industry, that the capability of the oil industry is one thing, but the form of taxation and the duration of it is quite another. And I again urge upon you, avoid it if you can; don't chisel it into concrete. Because this you don't have to do. I think that as I said, to enact this as part of an ongoing tax package I think is bad taxation. It doesn't have the proper effect in terms of what the relationship between the State and the industry is in terms of revenue. In other words, how much revenue? This is the wrong way to go about doing it because of its impact on the company and defeating the object of the State.

SENATOR HUBER - Milt, you are--when we're comparing the three methods of raising the interim revenue, shall we say, we're really saying if we can make lease sales, that would be the best.

MILTON LIPTON - Again, I don't look upon the lease sale as a device to raise interim revenue. If, for all other reasons, the State were not going to lease land, then I wouldn't say we'll rush out and start leasing just to raise revenue. But in the context of certain State acreage, which is already under consideration for leasing (which I believe it's an appropriate time, it fits in with a lot of interests of the State and of the industry), then I would certainly feel that to go ahead with State leasing, say in the Beaufort Sea, with due diligence with regard to all the other things we're concerned about: The environmental impact, the way in which you select the areas for leasing with proper regard, you know, or how much acreage you put up or what you withhold, or what the circumstances are. If in all other respects it meets your criteria, then certainly the bonus revenue that you may get should be a primary input into the State's calculation as to what its budgetary position is. And if it were possible to defer action in other areas until you know what the results of such a sale are, then I think this is certain to be desired. But I can't judge really how much you need, what you expect from the lease sale, whether you dare defer or not. These are questions which are far beyond my comprehension.

SENATOR HUBER - I think we've been at it an hour and a half. I think

we'd like to take a ten minute break and maybe come back and we can either finish on this subject or go ahead with subject trailers so we won't chop it off. I note that Representative Gruening would like to have another question, so we'll start at that point.

THE COMMITTEE RECESSED FOR TEN MINUTES.

SENATOR HUBER - We'll go back into session. Joe, if you'll excuse me, I promised Clark that he could ask his question. He was in line, so if you'll excuse me.

REPRESENTATIVE GRUENING - Mr. Chairman, I'd like to yield to Senator Rader's question because we have a line of thought going and Senator Rader asked his advice on how to apportion the tax between oil and gas on the reserves in place. I'd like to hear that.

SENATOR RADER - Mr. Chairman, I'm sorry. We just got to chatting here while we were waiting, and my question to him was to elaborate on the policy considerations as against taxing gas, or oil and gas and between the different fields. He touched on it very lightly awhile ago, and I'm just asking him to elaborate on that a little bit, and get his final advice as to how he would handle the problem, should we be compelled to go to this mechanism.

MILTON LIPTON - Senator Rader, just for the record, let me repeat what I have said, that the broader the application of the reserve tax, the more difficult and the more pertinent is the problem of reserve valuation, because it has to do with equity among taxpayers you expose to the tax, and the sharing of the tax burden among them, or the apportionment of the tax burden among them. Now, in reply to your question, "What is my recommendation?", I would really not like to answer that question or at least defer the answer until your Committee, or some committee, really gets the advice and counsel of your Oil and Gas Division, as to what the circumstances are within the State. I mean, what are we really talking about? Is there a problem? To what extent is there identified within the Oil and Gas Division on the basis of what they know about drilling equity? First of all, already definable reserves (that is, reserves proved up), to what extent have there been successful wells that are outside of the public domain? Or which, even if the success if known (very little about it is known, but they have a certain amount of information), whereby there is a known discovery but as yet no evaluation of a reserve, and how soon is it likely that the reserve can be evaluated? In other

words, if it's oil on the North Slope, I would assume that there would be sufficient evaluation for the companies to know how fast it's going to be produced at the end of the pipeline. In the case of gas, it may not be apparent, depending on the circumstances, and really what you most need is a practical definition of the way you have proven reserves in place to which this would apply. But the circumstances of the State, I think, require that you all should know something more from the Oil and Gas Division, before I would say, well, good grief, try to go up there and try to narrow it. There I just don't feel that well informed.

SENATOR RADER - Mr. Chairman, did you plan to have Mr. Lipton back again? After today? So that perhaps as information could be supplied to us we could tie it in.

SENATOR HUBER - Well, not during--not before this Committee or committees during this trip that he's on. We do hope to have his futher input at public hearings, probably during March on various bills. I believe he is scheduled back--what date is that?

MILTON LIPTON - I have no schedule, but as a prudent man, I anticipate being back in Juneau before you adjourn. As I said to the Committee this morning, before you adjourn on February 28, but . . . but on the basis of previous consultations I would think that the guts of the type of legislation, whether it's on leasing policy or on taxation, is more apt to be coming up in April than it is in February. But I certainly anticipate being back and in point of fact I look forward to it.

SENATOR HUBER - I do understand that Milt will be before the Resources Committee and our three members are all Resources members and we intend to be here at least part of the time tomorrow. I don't know the full contents of what will be covered, and I know that House Finance still has something on tonight, do they not?

MILTON LIPTON - Yes. My social calendar is well taken care of.

SENATOR HUBER - I do know that this trip, that Milt is here, is going to be most of the information that he's going to be able to give us that's going to go into the infrastructure of whatever we come up with in oil and gas taxation or at least the oil and gas end of the taxation bit during this session of the legislature. I think what comes later will be I suppose mainly for public consumption--or whatever it takes to get the bills passed. But I'm sure that what goes into them, the

guts of them now is going to be the information that we're getting. Senator Orsini.

SENATOR ORSINI - Milton, just to . . . We've talked mostly this afternoon about two of the three methods of raising short-term funds, the third one being briefly discussed--the additional leases you mentioned in the Beaufort Sea. In the Resources Committee we started discussing Beaufort Sea on occasion, and apparently there are some problems with the leasing and developing oil resources in the Beaufort Sea. Namely, the particular type of the problems trying to drill in the ice packs, etc., there. So, really the question comes that completes this triad. Are you familiar enough to know that if in fact we did offer leases for sale, that we would raise funds in the order of the amount that the State needs in the next few years? And secondly, is the state of our technology such that we could develop maybe another lease there?

MILTON LIPTON - I wouldn't dare to guess what kind of income you could get from competitive leasing in that area. I'm not really terribly informed on the technical problems, but I do know a considerable amount of work has been done in areas like that and I do know that there are companies that are quite prepared and are quite interested in this State's having that kind of a sale. So I would assume that they feel reasonably competent about being able to operate in the area. Whether their own belief in their technical competence will prove to be justified or frustrated by events is something that you need not be concerned about at the moment of the lease sale. They feel competent, and if they are interested and they like the geology and they are prepared to bid, then presumably they will go ahead. But what they're prepared to bid competitively, I wouldn't have the foggiest notion. And obviously, no one company, or at least no one--there are groups of companies that are prepared to go together--no company or group of companies would have the foggiest notion of what their competitors are apt to do. So, it's very difficult for any of them to come up with an estimate of what that kind of a lease sale is really going to be in this state. I think one has to suspend judgment on that. But from the expression of interest on the part of companies in the industry, one gets the impression at least that this is highly attractive exploratory acreage.

SENATOR ORSINI - Of course that's a nice statement, but it didn't mean anything.

MILTON LIPTON - What else can anyone say?

SENATOR ORSINI - Are there other areas of State-owned land that are possible leasing of the magnitude we are talking about?

MILTON LIPTON - This looks to be the area of prime interest. For many reasons, including the fact that it now becomes accessible to a pipeline which will be operating and probably can use their volumes of oil by the time such exploration comes to fruition. But I would suspect that over a good part of the North Slope there is probably State acreage which may be available. But this is a judgment that, as I said, one doesn't--but I don't think one makes that kind of a judgment from a revenue standpoint. This is something your own people in the State government would have to estimate in terms of what State leasing policy is. The only reason I would rank the revenue from a lease sale high among the alternatives is because the lease sale is already, for many reasons, looked upon as something that fits in with the State's scheme of things. I would certainly not suggest to the State that they turn everybody in the Bureau of Land Management and the Oil and Gas Division loose now and try to scrounge around and find what areas of the State can be thrown on the auction block in a hurry just to raise revenue. That I think would be a most inappropriate thing. But because Beaufort Sea is under active consideration--I think the Governor has an environmental impact statement he projected for the area, although it's not legally required. This has been the subject of consideration both by your Executive Department (or the professional people in the Executive Department) and by the industry which has looked at it, and I believe has indicated what their own preferences are. I mean, they've made certain selections for competitive bidding, and so on. So you have a latitude of moving in that direction. If it's a question of specific timing, again I wouldn't even suggest that the timing of such a lease sale be unduly accelerated just because you want to get in within a budgetary deadline. But if there are environmental concerns, if there are technical problems that the State should pursue, then I would pursue them with deliberate speed but no more than that. I wouldn't throw things precipitously into auction for revenue reasons. But if it's going to be done, and if you can withhold in other areas because it's going to be done, then I would consider the potential income as an important factor and I would rank it first in the array of alternatives for State revenue.

SENATOR ORSINI - You mentioned the problems with presale of State's royalty, of selling under the stress of financial crush. Wouldn't the same problems exist in the case of a lease sale?

MILTON LIPTON - No. Entirely different. Entirely. Among other things, I'm saying that you should not lease under the pressure of a budgetary deficit, and for a very good reason. And secondly, the competitive urgency in bidding for very attractive leases is quite different from the competitive urgency on the part of oil companies to buy the State's royalty oil today with delivery in 1978, '79, '80, and '81. The uncertainties are of a different order of magnitude.

SENATOR HUBER - Milt, while you're on that subject, would you care to comment on the possible value changes, or whether it's practical on that lease sale now based upon the federal-State dispute over what boundaries might be, and so forth?

MILTON LIPTON - Well, I don't think that's particularly involved in the potential lease sale in Beaufort.

SENATOR HUBER - I believe it is, because I think that we're involved with the offshore islands in the Beaufort Sea and I think . . .

MILTON LIPTON - I don't know enough about the specifics.

SENATOR HUBER - You haven't looked into that yet?

MILTON LIPTON - No.

SENATOR HUBER - As I understand it, I believe that the federal government contends that the State's limits are within three miles of the shore, which doesn't mean very much, and that the State says, "Oh no, we've got a whole lot more because we own the offshore islands, and that means we own within three miles of them, too."

MILTON LIPTON - I don't know whether the acreage that may be under dispute is that vital to this particular sale. I just don't know. I mean, there's another part of Lower Cook Inlet which is also under dispute under different circumstances and I certainly feel that the proposals that have been made periodically for revenue-sharing or escrow in order to expedite lease sales would have made sense from

both points of view.

SENATOR HUBER - Well, if there is a dispute (federal-State) there, then as far as being a money-raising measure, it would be in limbo like Lower Cook Inlet, wouldn't it?

MILTON LIPTON - Yes. At least to that extent. Any revenues obtained on a lease sale in disputed areas . . . I don't know what policy the federal government would--whether they would try to enjoin the lease sale or . . . I really don't know enough about the circumstances to speak of. I was under the impression just from what I have discussed with other people, both in the Administration and the industry, that there was very considerable interest in acreage which was not in dispute. So, I don't know. I may be completely misinterpreting what I've heard.

SENATOR HUBER - I have heard that raised and I think that . . .

MILTON LIPTON - It seems to me that one can get a very, very straightforward answer very, very quickly either from the Administration's office or from the Bureau of Land Management, where this thing has been going through the mill for some time. They must know the answer to that.

SENATOR HUBER - Our Division of Oil and Gas I'm sure would be able to answer that. You made reference already to some of the questions that have been asked here that we should be entertaining with that committee and we certainly will take your recommendations into account. I believe Clark wanted the floor next.

REPRESENTATIVE GRUENING - Senator Orsini asked the very question on the forced sale problems. I'm still troubled with it in that I don't see why the uncertainties are so much greater from the industry's point of view when you're dealing with sale of future oil and delivery sale for future delivery of oil and gas, when we all know that the United States is in a sort of, I think, a situation where gas is always going to be needed in greater and greater quantities. And I think that just the contract to have that at a certain time would be very marketable. In other words, they could take that, get the money they needed. From the financing point of view, they could raise the revenue.

sell reserves. What you sell is a claim on ongoing production for a year, two years, three years, or what have you. In the gas transactions, because of the interrelation between the owner of the gas and his participation in the pipeline and the financing, typically what is sold is not so many cubic feet of gas per year or three years or four years, but so much of the gas reserves. For example, I believe that Exxon announced that they have . . . What is it? . . . Their estimate is (if I remember the numbers correctly) 8 trillion cubic feet of reserves in Prudhoe and the announcement is that they've sold to (I believe) Northern Natural something on the order of 50% or less than 50% of the reserves. Which means that the buyer in effect has taken an economic interest in the reserves and will be the owner of that gas as it is produced, which is very different from selling a certain volume of oil on a short-term contract or a long-term contract. In a sense you're not only selling off royalty gas, but you're selling off the royalty portion of the reserves--of the gas reserves. There's a difference in the economic venture of the transactions in oil and gas that you'd have to consider very . . . I don't think you can sell gas, you see, so much gas for two years. You can sell so much oil production for two years, but you can't sell so much gas production for two years. The gas buyer has to have access to a continuous flow of gas which he then integrates into his entire system. So you sell gas reserves, but you sell oil production.

SENATOR HUBER - If we amplifly that, then the obvious thing I'm sitting here wondering about . . . If we sold our royalty gas reserves to an organization that was part of Transarctic at this time, and they intended to move it in some other method than through Alaska to market, would we in effect have weakened our stand that we want access to the gas for petrochemical, that we want to have something to do with the routing?

MILTON LIPTON - Sure. If you've sold it without condition, of course you will have.

SENATOR HUBER - We'd just be a busybody then? If we sold it without condition?

MILTON LIPTON - And if you sell it with condition, it depends upon what condition. Because the conditions will always bear upon the price. One of the things you may want to do is to strip a certain

MILTON LIPTON - I think there's no question in my mind but that the advance sale of royalty gas in this state is subject to far less uncertainty than the advance sale of royalty oil. The circumstances, the financial circustances, and the investment circumstances of the potential buyers are very, very different. They're very different. And as you know, I think all--I believe all three of the major producing companies in Prudhoe have already made some sale of their gas reserves in return from the gas in this case. Now this is in the public domain. I don't remember who has made what advances. Certainly Sohio has. Exxon has just announced it. And I believe Atlantic Richfield has also made some advance sales on gas reserves. So to that extent the State could do it also. But I recall so many discussions here before the legislature as to what the alternative disposition of royalty gas might be, particularly the potential petrochemical feed stocks that might be derived from royalty gas. Now, when you make a decision to sell royalty gas, you have not only in a sense given over control of a certain proportion of the gas, but you have identified yourself with part of the battle over the route of the pipeline. Because among the things which become involved in the Federal Power Commission's decision as to which of the competing applicants shall have the right to transmit the gas will be the nature of contractual control over gas reserves by companies who have already entered into the purchase of gas--What the disposition of the gas will be. That doesn't mean that it automatically predetermines what the Federal Power Commission is going to do. Because if in fact they say that one route . . . For example, I think the contracts to sell gas that have been made up until now, I believe, have all been made to companies who have been active in both the Alaskan and Canadian gas arctic routes. El Paso will not enter into any gas purchasing contracts. That doesn't mean that the FPC may not turn around and opt for the El Paso. But in a sense, it has had an effect. It does bear upon the evidence that's been going up to the Federal Power Commission. Now, if the State goes ahead and sells royalty gas, I think this also implies, or certainly will be entered into the record--with what implications I'm not sure--but the State in a sense has made a choice to sell to one potential buyer or another. Now this is not necessarily a reason not to do it. I just call your attention to the fact that it will have political overtones that you may not have anticipated in advance, and you want to consider what those are. But from the standpoint of the question you've asked, I think it is correct to say that the problems of selling for advance payment, the right to lift State royalty gas . . . See, there's another difference between the typical transaction in oil and a typical transaction in gas. In oil, you do not typically

amount of the liquids out of the gas to have it available, perhaps for co-mingling with your oil as it comes down through Alyeska to have petrochemical feed stocks available. And how much do you strip? I mean this becomes a matter of how much has to be stripped to obtain pipeline quality gas, or how much do you want to strip, which adversely affects the b.t.u. value of the gas. So this becomes an economic calculation. It is not as simple a kind of transaction as would be involved in selling oil production--royalty oil production--as when you sell royalty gas reserves.

SENATOR HUBER - And if we did it, and sold the gas for future delivery, would we still be up against that same thing we are up against in oil, that maybe five years down the line there would only be--the gas would only be worth about half as much as it is five years down the line . . .

MILTON LIPTON - No. I . . .

SENATOR HUBER - . . . Like we predicted?

MILTON LIPTON - No. I think that when you sell gas reserves, what you're getting is the present value of whatever may be the future price of gas as the gas is produced.

SENATOR HUBER - As the value of the future price of gas? You threw me.

MILTON LIPTON - Anything that you sell for future production has a present value.

SENATOR HUBER - Which is considerably lower than its future value.

MILTON LIPTON - How considerably lower? It's difficult to say. In the case of competitive bidding for control over gas reserves, I would suspect the discount factor is much less than in the case of oil. But I think any way you look at it, it does not commend itself to me as a very attractive way of bridging the gap--to sell off the royalty oil and gas. If you could do it you see, if in fact, if constitutionally you could do it, the attractive thing of course, would be to sell royalty anticipation certificates, instead of taxing just anticipation certificates, royalty anticipation certificates. Which says in effect that you are borrowing money on the basis of--the security being the value of the oil and gas. You haven't given up control over the oil; you haven't given up control over the gas. You can do with it what

you will, but in a sense the security against the borrowing is the value of your royalty interest. But constitutionally, apparently, you cannot do that. Because it exceeds your constitutional limitation on borrowing for general budgetary purposes.

SENATOR HUBER - Well, is . . . isn't that the same thing as though we . . . It takes an amendment to the Alaska Constitution. Say we amended the Constitution or had it . . . the people agreed with us. And then we went to our banker and borrowed it and used that as collateral.

MILTON LIPTON - Yes. Well, Mr. Chairman, I'd just remind you that the constitutional limitations on what the Administration of the State of Alaska can do today are a very frustrating thing. Because it ties your hands on many, many more attractive alternatives. But the constitutional limitation on what you can do today was put in by the population of Alaska for many reasons, which in the past and in the future, they may consider as valid even though it's frustrating you today. Because the constitutional limitation is what--is the constraint upon the government of Alaska to do things in an irresponsible way, which otherwise they cannot do because they're forced to this budgetary deficit. This is why it's in so many state constitutions. In the inestimable wisdom and the foresight of the populations of the State, they're not prepared to give all powers of government to their elected representatives. And it becomes a terribly frustrating thing at this particular moment, where you have these, as I said, these great expectations. That the problem is not perpetual imbalance and overspending (hopefully not), but the fact that the revenues that will be coming in and which may be well surplused to your needs, are revenues that you can't put your hands on today.

SENATOR HUBER - Well, some of us are just absolutely, unalterably opposed to that kind of a course anyway. I don't think it could ever get far enough to get before the people to change it. Senator Rader.

SENATOR RADER - There's one other source of (possible source)--I mean we haven't had to roll up tax on the pipeline. We could increase that mill levy substantially. The pipeline is going to be producing a lot more revenue than we had anticipated because the value of the pipeline is so much greater than what we had anticipated. Administratively it could be done very easily by tagging onto a system we've got already functioning. It's a change in a number. That would--just thinking through that I'd--that would have to--Is there some way we could condition that reasonably? As a prepayment of something else? Or as

not increasing the total burden on the industry?

MILTON LIPTON - It does. There's no way of taxing an operation of the industry without actually increasing the burden of the industry. What you must say, what you must contemplate, is the circumstances of the companies who are the only undivided interests of the pipeline. They can recover in the tariff of the pipeline any taxation which you impose upon the pipeline. Now insofar as they pay the taxes before the pipeline is in operation, that becomes the burden, probably capitalized, and to that extent they recover it in future tariffs. Now, the future tariffs have to be paid by anybody who transports oil. However, they're not really in the position, because the oil costs more to reach Valdez, to get more for the oil at the other end, because they're operating in a competitive environment. So that the industry in a sense must absorb those costs. Now, how do they absorb those costs? In effect, since the pipeline tariff cannot be carried forward to a buyer of the oil, the pipeline tariff is passed backwards to the seller of the oil. And who is the seller of the oil? It's the man who produces it at the wellhead. The fact that the buyer and seller in most instances will be the same company doesn't matter. It is, in effect, that the tariff is passed backward to the seller of the oil which depresses the value of the oil at the wellhead. Now, to that extent, you would yourself when the industry starts producing, carry about 20% of the pass-back of the higher cost of transportation, in lower severance tax, and in lower royalties. But the producers, who are in part the same and in part different companies, and where they are same, still will not have precisely the same interests in production and transportation, will have to bear the other 80%.

SENATOR RADER - But wouldn't the burden, except for the amount that the State assumes here, be identical to the burden of tax on reserves? In other words, it's going to be based upon oil production and the amount of oil that they have in their rate, in their tariff, so the burden would be identical and fall on the same people.

MILTON LIPTON - The burden will not fall upon the oil companies as owners of the pipeline. Because those added taxes are recovered.

SENATOR RADER - That's right.

MILTON LIPTON - The burden will fall upon people who have reserves, who produce, and who ship.

SENATOR RADER - It's going to be the same people then as who would be . . . reserves.

MILTON LIPTON - But the difference between the kind of reserve tax that we were discussing is on the one hand that the State will bear automatically about 20% of the tax burden. They bear 80%. Here, under the proposed reserve tax, if there is a carry-forward credit, the burden that the owner of the reserves will carry is the interest cost on his payment of taxes until such time as it becomes an offset. Now, how you calculate these two burdens, I think, one has to sharpen his pencil and take a look at the tax involved. But I think you're quite correct in saying that without putting the dollar and cents figure upon it, the incidence will ultimately be upon the same companies. Yes. I think that's correct.

SENATOR HUBER - Methinks he might complain less about carrying the interest burden if he doesn't have to carry the principal burden, too, huh? In other words, it's a lesser problem on that.

SENATOR RADER - Why do we always go back to saying that the burden of carrying the interest? Why couldn't we write into the bill an alleviation of that problem for the companies?

MILTON LIPTON - I'd rather not answer that . . . I mean, talk to your legal authorities on that. Whether in fact a tax on reserves, for example, which becomes an offset, but becomes not a dollar-for-dollar offset but a dollar-and-six-cent (6%) offset, is it going to be a fixed amount of credit? Or is it going to vary with the number of years that it carries forward? At what point is it possibly subjected to the Constitution? In effect you are borrowing against your severance tax.

SENATOR HUBER - That's what I wanted to know.

MILTON LIPTON - I don't know the answer to that. It's just beyond my purview. Mr. Chairman, I beg your indulgence, but I have another committee meeting at four o'clock across in the Assembly Hall, so if you'll keep that in mind in terms of how you pace the rest of the session, I would appreciate it.

SENATOR HUBER - I would like to get--if the rest of the Committee is satisfied that we have chewed around and got most out of this oil and gas in place--I'd like to get you to give us a little dissertation about maybe something a little further in the future, a little bit more long-range, but something that this Committee is interested in, and that is the effectiveness of our income tax now on the oil companies, or the oil and gas companies. Are we getting taxes out of them--income taxes? What part of our income this should be? And what importance it should be, and should we look to doing something? And in what

manner do we need constitutional help? Do we need expert tax accounting help? You touched on these things the other day, but I hope you have time enough to give this Committee a little briefing now.

MILTON LIPTON - I wish in a way that we had started with that at 1:30 . . .

SENATOR HUBER - I wish we had too.

MILTON LIPTON - . . . instead of now. I'm so many times on the record that this is something that I think of prime and continuing concern for the legislature. Let me just say here that what kind of tax revenue you get from those corporations that you identify as members of the oil and gas industry, you can get from your own Finance Department very, very quickly. To describe the present structure of your income tax is not very difficult and therefore to define what we think is the problem is not very difficult. Perhaps I can take a few minutes to do that. To move into the directions of tax reform is much more complicated and I think it would be a mistake to start on something like that when we have just a few minutes of time left us.

SENATOR HUBER - I would ask, Milton, that you do maybe give us a letter in that direction addressed to the Committee with your thoughts in that area. In the area of the tax reforms that you may recommend--The details of them.

MILTON LIPTON - I'll do that.

SENATOR HUBER - Thank you.

MILTON LIPTON - You have now a corporate income tax--well at least the last time we had looked into it with your people--as set at 18% of the federal income tax that would be payable on such income at the federal rates existing in 1969. You see, in a sense, your tax is not a percentage of the federal tax, but a percentage of what the federal tax had been. I think the effective rate of taxation on that income in excess of $25,000 is something like 9.3% or something of this sort. The problem is not really with the tax rate, because that you can change in a very simple form. The problem, it seems to me, is how you identify taxable income in the state. And to identify taxable income by an apportionment formula such as is commonly used, which uses three elements of a ratio--value of property (value of property in Alaska) and total property of a company, payroll (payroll in Alaska) versus total payroll of the company, sales in Alaska versus total sales of the company. Well, the sales in Alaska are obviously an infinitesimal thing. It means, in effect, now what is apportioned is the tax base in the federal income tax laws. So they make their income tax to the

federal government. This figure can be brought to Alaska and then is apportioned by formula in Alaska. And mind you, this is not by the company that's operating in Alaska. This is by the parent of the company operating in Alaska on the basis of that parent's federal income tax report on all of their operations worldwide. And you allow (which is perfectly appropriate, I suppose, since income is being apportioned), you allow them to apportion their foreign tax credits. Because their foreign income is also apportioned by this method, you allow them to apportion depletion and everything else. It seems to me that if we are correct, that at the end of the day, the major relationship--income relationship--between the State and the oil and gas industry is in the profitability of the oil and gas industry's operation--that the major problem in tax reform is not so much in the tax rate, because this can be changed from time to time. It's not so much in the deductions and the expenses which are allowed or which are disallowed, because that also is subject to change from time to time. It's in the very concept of what is taxable income that's earned within the state. And it seems to me that the State should shoot for what is in effect a direct accounting of the income that's earned within the state. The State should not be interested in the entirety, to some kind of a proportioned share of income that may be earned in some other state, any more than it's prepared to give up the direct right of taxation on income (on corporate income) that's earned within the state. So the problem in tax reform (and there are two aspects to it) --the problem in tax reform is the legislative means and the regulations pursuant to your legislation by which you identify the income earned within the state which is subject to your federal corporate income tax. Now the problem in the regulations pursuant to it is not only--the problem is first of all, the special problems arising in the identification and definition of income earned within the State of Alaska for an industry as complicated as the oil and gas industry. I don't believe they're insurmountable problems, but obviously there are problems. On this we would hope to be able to work both with your Administration and the other states'. But what we have to say about what may be appropriate to the oil and gas industry has yet to be tempered against the specific problems of other industries that you have here that are also important in the state that operate both within the state and outside the state. The fishing industry, of course, is another industry that is domiciled in Alaska but which sells the bulk of its product elsewhere. And what we may feel is an appropriate pattern of income taxation in the light of oil industry operations may not be appropriate for other industries. This is something that you would have to consider very carefully. But the basic problem for the oil and

gas industry, of course, is that if you define income earned within the state as deriving only in the first instance from sales within the state, from which you deduct expenses, then you're left with virtually no income earned within the state. Because the bulk of the sales take place outside of the state, whether it's oil today, your larger volumes of oil, or gas. So the problem is to arrive at an equitable and a legally supported definition of the value of product that leaves the state, even if it leaves without a sale having been consumated. Now, this is done all the time in income taxation where national jurisdictions are involved, and I don't believe there's any reason why it can't be done where state jurisdictions are involved. The reason for the apportionment formula, where many different states may have a claim upon the value of the product and therefore on the profit of the product, is because there is such a complicated movement of products among the various states. But in the case of Alaska, where there is a distinct passage of oil and gas produced within the state across the border, and where in effect the value of your product is determined in the other market, but the valuation of the product at the wellhead is determined by the transportation costs backwards, if you have a value of Prudhoe oil at the wellhead, it's not that difficult to get the value of Prudhoe oil in Valdez. So, the problems of valuation as the basis for income are not different from the problem of valuation for the purposes of severance tax or royalty payments. So, I think the problems . . . Now I don't pretend that this is simple. How you value products which come into the state for operations, how you value the services that are performed within the state which have to be subtracted before you can get a profitability when the services are imported. This is not simple; it is relatively complicated and if it is done in an arbitrary and capricious manner, you obviously have all kinds of legal problems. But the concept of identifying income earned within the state therefore subject and amenable to State corporate income taxation, I think, is a valid concept and I don't believe the validity of it should be denied or effectively shoved aside because there are complications in the actual determination, either in the wording of an amended income tax law, or in the interpretation of revenues, expenses, and profits in the administration of the law. But I do believe that so long as you are left with an apportionment formula, you are at a distinct disadvantage in ever being able to apply your corporate income tax in such a way as to get what is the State's entitlement to corporate income tax revenue from what hopefully will be in the future a highly profitable producing operation. And everything I've said here goes with equal--applies with equal force to an operation which is distinctly within the state, where all the revenues

and costs are incurred within the state, and you still do not have under your present state law the opportunity to identify for tax purposes the profit, and that would be Alyeska Pipeline. Because the pipeline is in no circumstances an income tax payer. The corporate owners of the pipeline, and the independent pipeline companies, are not even themselves federal income tax payers. Because they are consolidated in the accounts of their own parent companies. So here is a completely distinct operation wholly within the state, by definition profitable (we hope--unless thank God knows what goes on), and yet this is something beyond the reach, you see. Even when you can identify the operation. The whole apportionment thing leaves them beyond the reach of your star. And this has nothing to do with the profitability of the pipeline. Because in a sense your State income taxes are recoverable by the companies, you know, in their tariff. But the point is that this is a distinct operation and we feel strongly that for a long time you have operated under a corporate income tax law that was never considered or deemed to be appropriate to the circumstances of a state where resource development is now reaching the proportions that it is. And I would hope that since this is the Year of the Rabbit, you would get hopping about it.

SENATOR HUBER - Milt, with that pun, this is . . . What you're telling us here is the same as we're being told by our Revenue Department. But it's interesting that on the income tax return, no sales in Alaska, therefore no income in Alaska is sufficient to keep from paying State income tax.

MILTON LIPTON - Well, it doesn't quite work that way. Under your State tax law, as I recall . . . Now all of a sudden I don't want to appear as the expert on this. From the time we became concerned, we've had some conversations with your finance people about it. My recollection is that it is within the legal right of the State to determine whether the income tax filing will be on the basis of a direct accounting of state income or apportionment. But they don't have the capabilities really to --if a company says no sales within the state (this becomes a direct accounting, you see) and they don't have the capabilities of going to that corporation and saying, "No--We, the State, opt for the alternative due on the apportionment basis." Now, that's a separate problem in and of itself. That's an administrative problem. What I'm saying is that even if you ask for apportionment, I don't think that's going to fit the emerging circumstances of the oil and gas industry. May I be excused, Mr. Chairman?

SENATOR HUBER - Thank you for being with us, and we look forward to seeing you again. We'll see you here tomorrow at 1:30 again on Resources.

SCOMM

#11:21

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AREA CODE 512

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April 7, 1975

The Honorable John Huber
Senator and Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

In re: Analysis of proposed bills to impose an ad valorem tax on oil and gas in place, with attention to present statutes

Dear Senator Huber:

INTRODUCTORY

You asked that Joseph P. Witherspoon and I make a study of the above matters. Basically, he is studying constitutional aspects, and the advantages and disadvantages (and rebuttals thereto) of the ad valorem tax as a revenue producing device. My study is directed to an analysis of the present taxing provisions that would be affected, and to the four bills presently under consideration.

Three chapters of the present statutes that would be amended by one or more of the proposed bills are set out, in whole or in part, in Appendices A, B and C hereto, as photocopied from the Alaska Statutes Supplement. The four bills under consideration, presented in the order in which you forwarded them to us, are set out in Appendices D, E, F and G hereto, as photocopied from the copies which you furnished. The various Appendices are as follows:

Present statutes:

A. AS Ch. 29.53, Secs. 29.53.045 et seq. Tax on oil and gas production and pipeline property by municipalities;

AGO 530481

B. AS Ch. 43.55. Oil and Gas Properties Production Tax;

C. AS Ch. 43.56. Oil and Gas Exploration, Production and Pipeline Transportation Taxes;

Proposed Bills:

D. SB 103, Introduced 1/29/75, by Huber and Hohman, Referred to Resources and Finance;

E. HB 102, Introduced 1/29/75, by Brown, Bowman, Bradner, Cotten, Gardiner, McKinnon, Miller, Naughton and Parker; Referred to Resources and Finance;

F. HB _____, Introduced by Cowper (Cowper's bill);

G. SB 276, Introduced 3/14/75, by the Rules Committee by Request of the Governor, Referred to Resources and Finance.

The first three bills would amend AS 43.56. The fourth bill would add a new Chapter AS 43.58, Oil and Gas Reserves Ad Valorem tax, and would amend Chapters AS 29.53, 43.55 and 43.56. Because of the interrelationships between those chapters and their possible effect under the proposed bills, I begin by considering the present statutes.

I. THE PRESENT STATUTES

A. Ad Valorem Taxes Imposed by The State and Municipalities on Certain Property Used in Production, etc., of Oil and Gas (AS Chapters 29.53, 43.56)

1. AS Chapter 43.56, Appendix C.

AS 43.56.010(a) levies an annual (state) tax of 20 mills on certain real and tangible personal property used or committed for use for production or pipeline transportation of gas or unrefined oil, or in the operation or maintenance of facilities used in the exploration for, production of, or pipeline transportation of gas or unrefined oil. AS 43.56.010(b) authorizes an ad valorem tax on such properties by municipalities under certain provisions of AS 29.53, and provides for credit of the municipal tax against the state tax. Property subjected to these taxes is specified at AS 43.56.210(6).

The municipal taxes authorized are subject to certain other provisions of AS 43.56, as follows. Certain property is exempt from the municipal tax, including property rights attached to or inherent in the right to explore for or produce oil or gas; oil or gas leases or properties, whether producing or not; oil or gas in place; oil or gas produced or extracted in the state; the value of intangible drilling expenses and exploration expenses; and an interest in property described in AS 43.55.010(b) (pertaining to the gross production tax of Chapter 43.55). AS 43.56.020. The municipal tax is in place of certain other municipal taxes. AS 43.56.030. No municipality may exempt from taxation the property authorized to be taxed under these provisions; exemptions are limited to those in AS 29.53.020, 29.53.025, and 43.56.020. AS 43.56.010(b).

Provision is made for assessment of property by the Department of Revenue for purposes of the municipal tax. AS 43.56.060(a), 210(3). If the total value of assessed property of a municipality taxing under AS 29.53.045(c) exceeds the 225 per cent limitation provided, the Department of Revenue shall designate the portion of the tax base against which the local tax may be applied. AS 43.56.010(c). The Department of Revenue may enter into agreements with a municipality for the cooperative or joint administration of the assessing authority conferred on the Department. AS 43.56.060(g). The Department of Revenue is required to send to a municipality a copy of the notice of assessment on any taxable property which is assessed under the provisions of AS Ch. 43.56, and which is located in the municipality and on which a tax is authorized under AS 43.56.10(b). AS 43.56.100(b). Methods of valuation to be used for assessment for municipal tax purposes are provided. AS 43.56.060(b) - (f).

Other provisions of AS 43.56 appear to be applicable solely to the state tax, or to both the state and the municipal tax. AS 43.56.040, .050, and .070 - .210. These pertain to returns, assessment rolls and notices, appeals, interest and penalty, lien for tax, remedy of distraint, penalties, regulations and definitions.

2. AS Chapter 29.53, Appendix A.

Operative provisions for the municipal tax are at AS 29.53.045 et seq. AS 29.53.045 provides in part as follows:

AS Sec. 29.53.045. Tax on oil and gas production and pipeline property.

(a) A municipality may levy and collect taxes on taxable property taxable under AS 43.56 only by using one of the methods set out in (b) or (c) of this section.

(b) A municipality may levy and collect a tax on the full and true value of taxable property taxable under AS 43.56 as valued by the Department of Revenue at a rate not to exceed that which produces an amount of revenue from the total municipal property tax equivalent to $1,000 a year for each person residing within its boundaries.

(c) A municipality may levy and collect a tax on the full and true value of that portion of taxable property under AS 43.56 as assessed by the Department of Revenue which, when combined with the value of property otherwise taxable by the municipality, does not exceed the product of 225 per cent of the average per capita assessed full and true value of property in the state multiplied by the number of residents of the taxing municipality, [hereinafter referred to as the 225 per cent limitation.]

(d) By February 1 of each assessment year a taxing municipality must inform the Department of Revenue which method of taxation the municipality will use. . . .

The choice of the $1,000 per capita limitation or the 225 per cent limitation seems to be at the option of the municipality. AS 29.53.045(d), supra.

The per capita limitation of $1,000 a year for each person residing within the boundaries of the municipality seems clear. AS Sec. 29.53.045(b), supra.

I am not clear, however, as to the precise meaning of the 225 per cent limitation of AS 29.53.045(b). Does it apply to (a) the "tax on the . . . property taxable under AS 43.56 . . . combined with the value of property otherwise taxable by the municipality. . . ." or (b) to "the full and true value of the portion of the taxable property taxable under AS 43.56. . . combined with the value of property otherwise taxable by the municipality. . . ."? (Emphasis added.) The latter interpretation seems more likely to be intended, as it applies the 225 per cent limitation to combined values, whereas the former applies the 225 per cent limitation to the tax on the taxable properties under consideration combined with the values of other properties taxable by the municipality. AS 29.53.050(b), Appendix C, applies a similar limitation to a municipality or combination of municipalities occupying the same geographical area, in whole or in part; it combines tax with values and thus apparently supports the former interpretation. On the other hand, the administrative provisions of AS 43.56.010(c), Appendix C, look solely to values, and thus seems to support the latter interpretation. This matter is important, not only in the interests of clarification of the present statutes, but also because of the proposed addition of oil and gas minerals in place to taxable property for state tax purposes, and the possible effect of that addition on the 225 per cent limitation on the municipal taxing authority. Further amendment may be necessary in connection with the

proposed ad valorem tax on oil and gas in place, as discussed below.

In addition to the aforementioned $1,000 per capita and 225 per cent limitations it is provided that no municipality may levy and tax for any purpose in excess of three per cent of the assessed valuation of property within the municipality in any one year. AS 29.53.050(a).

These limitations do not apply, however, to taxes levied or pledged to pay or secure the payment of the principal and interest on bonds, which may be levied without limitation as to rate or amount. AS 29.53.055.

Provision is made for assessment at full and true value of the property subject to the tax as of January 1 of the assessment year, with certain exceptions. AS 29.53.060.

Conclusions. The meaning of the above described 225 per cent limitation should be clarified as discussed above.

The municipal ad valorem property tax discussed, notwithstanding the specified limitations, apparently may equal or exceed the state tax on the same property, and thus by credit extinguish the state tax on that property. To the extent that the municipal tax exceeds the state tax, statewide equality of taxation does not exist. Nevertheless, any excess of the municipal tax over the state ad valorem tax which causes inequality of taxation may pose a constitutional question. Moreover, it appears that the credit against the state tax for the amount of municipal taxes imposed at varying rates under the various limitations may introduce inequality of taxation (as reduced by the varying credits) at the state level. This too may pose a constitutional question.

The provisions pertaining to the 225 per cent limitation may require further amendment in light of the proposed ad valorem state tax on oil and gas in place, as discussed below.

B. Oil and Gas Properties Production Tax.

1. AS Chapter 43.55, Appendix B.

AS Secs. 43.55.010 et seq levy a gross production tax on oil or gas removed or sold from each lease or property in the state less any part of the ownership or right to which is exempt from taxation.

On gas, the tax is four per cent of the gross value of the gas and liquid products produced each month. AS 43.55.010(a)(2).

On oil, there is levied upon the producer a tax based upon a per cent of the gross value at the well of all oil or gas removed or sold from each such lease or property in the state, based upon the percentages specified in AS 43.55.010(a)(1), or in specified amounts per barrel as provided in AS 43.55.015(a), (b), whichever is greater. AS 43.55.010(e); 43.55.015(d). The specified amounts per barrel are subject to revision based upon changes in the Wholesale Price Index for crude petroleum. AS 43.55.015(c).

The gross production tax is in place of all taxes now imposed by the state or any of its municipalities and neither the state nor a municipality may impose a tax upon producing oil or gas leases; oil or gas produced or extracted in the state; nor the value of intangible drilling and exploration expenses. AS 43.55.010(b).

The gross production tax is not in place of certain other taxes as specified in AS 43.55.010(d).

The "ownership or right to which is exempt from taxation" under the gross production tax is any ownership interest of the federal government or the state. AS 43.55.140(9).

For the purpose of the gross production tax "produced" means the removal or sale of oil or gas from a lease or property in the state. AS 43.55.140(10).

Other provisions deal with payment of the tax, 43.55.020; filing of statements 43.55.030; liens, 43.55.070; collection and deposit of revenue, 43.55.080; measurement of oil and gas, 43.55.135; and definitions, 43.55.140.

Conclusions. AS 43.55.010(b) may require a clarifying amendment. It provides that the production tax of AS 43.55 "is in place of all taxes now imposed by the state or any of its municipalities, and neither the state nor a municipality may impose a tax upon . . . (3) oil or gas produced or extracted in the state; . . . ." (Emphasis added.) AS 43.55.140(1) defines "produced" to mean " the removal or sale of oil or gas from a lease or property in the state; . . . ." AS §§ 43.55.010(a), 43.55.015(a) provide for a tax at the state level on oil or gas "removed or sold from each lease or property in the state. . . ." Thus AS 43.55 on its face appears to prohibit the state tax that it purports to impose. This anomaly seems to require a clarifying amendment.

AS Ch. 43.55 may require further amendment in the light of various exemptions and/or credit provisions of the proposed bills as discussed below.

II. THE PROPOSED BILLS

A. Introductory

Each of the proposed bills would impose an ad valorem property tax on oil and gas in place at the state level, but not at the municipal level. It should be noted that SB 103 and HB 102 contain identical provisions, except that SB 103, Sec. 2, would add a new section, AS 43.56.015(b), to provide a five year moratorium, which is not included in HB 102. Thus the analysis of SB 103 below applies equally to HB 102, with the exception of that moratorium provision. Those bills, and HB___ (Cowper's Bill),

all provide for the new tax by amending AS 43.56 by adding a new Sec. 43.56.015, with conforming amendments to AS 43.56, but with no amendment to AS 43.53.045 et seq (pertaining to the municipal tax discussed above), nor to AS 43.55, (pertaining to the production tax discussed above). SB 276 (the Governor's bill) provides for the new tax by amending AS 43 by adding a new Chapter 58, to impose the new tax, with correlative amendments to AS 43.55, AS 29.53.050(b) and AS 43.56.010(c).

It should perhaps be pointed out that in the chronology in which these bills were submitted to us, and apparently in conception, it is apparent that each succeeding bill shows the influence of the earlier bills. SB 103, HB 102, HB ____(Cowper's Bill), and SB 276 (the Governor's bill).

B. The Four Bills Compared

1. The Tax Rate and Effective Date.

Each of the first three bills provides an annual tax.

SB 103, §2, provides an annual tax of 20 mills, effective "each year beginning January 1, 1974, ..." Is this intended? Compare SB 103, §12, which provides that the bill take effect January 1, 1976.

HB ____(Cowper's bill), §2. This bill provides an annual tax of 20 mills "automatically at such time as the state's general fund cash balance reaches $200,000,000, ..." Is this on the upswing of the cash balance, or on the downswing? The bill does not state. The bill further provides: "The tax due for the calendar year of the original levy is the full amount which is due for the year reduced pro rata by the number of days from January 1 to the date of the original levy. In years subsequent to the original levy the tax is levied each year beginning January 1." This leaves open the question of when, relative to the date the cash balance attains

the specified amount, the levy is to be made.

SB 276, §1 (the Governor's bill), provides a new section as follows:

> "Sec. 43.58.010 . . . . (b) The legislature shall annually determine by law the rate of the levy before April 1.
>
> "(c) If on April 1 the legislature has not determined the rate of levy, the rate of levy shall be zero for that year. The rate of levy may not exceed 20 mills."

This provision seems to have the makings of an annual battle, with the danger that the deadline will pass without legislative determination of a rate. It seems desirable to establish a definite effective date and rate of tax.

2. The Subject Matter of the Tax.

The first three bills impose the tax on the full and true value of:

> "(1) oil and gas leases within the state under which there are proven reserves; and
>
> "(2) ownership interests in proven oil and gas reserves in place within the state."

SB 103, §2; HB ____(Cowper's bill), §2.

SB 102 does not define what is meant by "proven reserves," the subject of the proposed tax. HB ____(Cowper's bill), §11, and SB 276 (the Governor's bill), §1, adding 43.58.190(7) present definitions of the term.

SB 276 (the Governor's bill) imposes the tax on the full and true value "of taxable property under this chapter," which is defined as "any interest in the proven reserves of a lease or property." SB 276, §1, adding AS 43.58.010(a), and AS 43.58.190(8). The term "lease or property" is defined at SB 276, §1, adding AS 43.58.190(3).

SB 276 seems clearest on this point.

3. Exemptions.

SB 276 (the Governor's bill), §1, adds a new provision, AS 43.58.020 as follows:

> "Sec. 43.58.020. EXEMPTIONS. The following interests in the proven reserves of a lease or property shall be exempt from taxation under this chapter:
>
> "(1) any interest of the United States or the state;
>
> "(2) any interest exempted from taxation by sec. 21 of the Alaska Native Claims Settlement Act (P. L. 92-203 43 U.S.C. sec. 1620); . . .
>
> "(4) taxable property under ch. 56 of this title."

The exemption of "any interest of the United States or the state" corresponds to the present provisions of AS 43.55.140(9), 43.55.010(a) and 43.55.015(a), exempting those interests from the production tax of AS 43.55.

Should the exemptions described in (2) in the above quotation be added to the exemptions of present AS 43.55.140(9)? None of the proposed bills does so.

Should the exemptions provided in (1) and (2) as quoted above be added to the provisions of SB 103, or of HB ____(Cowper's bill)?

Clause (4), quoted above, exempts oil and gas in place subjected to the new tax from taxation under AS 43.56, the Oil and Gas Exploration, Production and Pipeline Transportation Property Taxes. There is no corresponding provision in SB 103, or HB ____(Cowper's bill). This provision may be desirable from the standpoint of clarity. It does not seem necessary, however, as there appears to be a clear distinction between the property taxable under these bills and that taxable under AS 43.56. Compare SB 276, §1, adding Sec. 43.58.190(3), (7) and (8), with present AS 43.56.210(6).

See also proposals for a moratorium on the new tax, and incentive credits and exemptions discussed below.

4. Moratorium.

SB 103 and HB ____(Cowper's bill) both provide a five year moratorium, but in different terms. The language of each follows, the bracketed language being in SB 103 but not in Cowper's bill, and the underscored language being added in Cowper's bill:

"Sec. 2. AS 43.56 is amended by adding a new section to read:

"Sec. 43.56.015. . . . (b) Oil and gas leases and ownership interests in proven oil [and] or gas reserves are exempt from taxation under (a) of this section for a period of five years from (1) the date of the original lease of all or part of the property described in the lease or ownership interest being taxed, or (2) the date [the existence of oil reserves under the land covered by the lease or interest is established to a reasonable certainty,] of the first completion, suspension, or abandonment of a discovery well in a field or pool which in whole or in part underlies or comprises the lease or ownership interest, whichever occurs [earlier] first."

HB 102 contains no corresponding provision.

Comment. The addition of interests in gas to the moratorium clause by HB ____(Cowper's bill) is necessary. On the other hand, the use of the "suspension" or "abandonment" of wells as a reference point for the commencement of a five year moratorium period seems inappropriate. Those factors tend to indicate want of value for tax purposes, rather than value.

SB 276 (the Governor's bill) provides for exemption from the proposed tax, in addition to those interests described under "Exemptions,"

above, of the following:

> "(3) all other interests in the proven reserves of a lease or property during a five-year period commencing with the date of the first lease, concession, joint venture, contract or any other agreement that is made for the oil and gas development of a part or all of the land subject to that lease or property; . . . ."

SB 276 §1, adding Sec. 43.58.020(3).

Comment. It seems to me that the moratorium clause of SB 276 (the Governor's bill) may be the most desirable of the three, measuring the five-year period from the earliest to occur of the specified events, which are much more comprehensive than those in the other two proposals. Moreover, that bill omits the reference points of "suspension" or "abandonment" of HB ____(Cowper's bill).

5. Incentive Credits and Exemptions.

Each of the four bills provides a combination of credits and/or exemptions. As SB 103, HB 102, and HB ____(Cowper's bill) are similar in some respects, I shall consider those first, then SB 276 (the Governor's bill).

a. SB 103; HB 102; and HB ____(Cowper's bill).

(1) Exemption from the proposed ad valorem tax. Provision is made that producing interests which are paying gross production tax during the assessment year which exceeds [equals or exceeds in HB ____ (Cowper's bill)] the proposed ad valorem tax that would otherwise be due for that year are exempt from the ad valorem tax. SB 103, §3; HB 102, §3; HB ____(Cowper's bill), §2, adding AS 43.56.015(c). Each of these provisions would be difficult to administer, as the proposed ad valorem tax to be levied by amendment to AS Ch. 43.56 would be subject to assessment on or before March 1, and payment is due on or before Sept. 1. AS 43.56.100, .150. Thus assessment and payment would apparently be required before the question of exemption can be determined for the year.

(2) Credit against the proposed ad valorem tax for gross production taxes. SB 103 and HB 102 provide that the production tax paid during the assessment year may be taken as a credit against the ad valorem tax. SB 103, §7; HB 102, §7. HB ____(Cowper's bill) allows a similar credit, but only if the production tax is less than the proposed ad valorem tax. HB ____(Cowper's bill), §2, adding AS 43.56.015(d).

(3) Credit carryover for proposed ad valorem tax paid. SB 103 and HB 102 contain no credit carryover provision. HB ____(Cowper's bill), §2, provides that the ad valorem tax paid "may be used as a credit against gross production tax . . . in subsequent years; however, the credit used in any one tax year may not exceed 50 percent of the gross production tax due." There is no provision for reducing the credit carryover as it is applied to the gross production tax of subsequent years, hence it is arguable that under the provision an ad valorem tax paid may be taken repetitively against production taxes for two or more subsequent years. This point should be clarified; it seems to be covered in SB 276 (the Governor's bill), discussed below, which see for suggested limitations on carryover. See also discussion under b (2) below which applies equally to HB ____(Cowper's bill).

b. SB 276 (the Governor's bill).

This bill provides similar credits, and for carryover of any excess credit for the proposed ad valorem tax against the production tax, in such manner as to avoid some of the problems posed above. SB 276, §1, adding AS 43.58.030, .180, .190; §3, adding AS 43.55.018. The provisions operate as below.

(1) The credit against the proposed ad valorem tax. SB 276 provides for a credit against the proposed ad valorem tax of the production taxes paid for the 12 months before the ad valorem tax payment date. The

credit is limited to the amount of ad valorem tax due. For this purpose the credit is to be calculated without regard to the development incentive credit against the production tax, described below. SB 276 (the Governor's bill), §1, adding AS 43.58.030. Comment: This provision avoids the problem posed under the exemption proposed under the other three bills, mentioned under a (1), above.

(2) Early development incentive credit. The provisions for this credit provide for the carryover of net payment of the proposed ad valorem tax (as reduced by the credit for production taxes described above), to subsequent periods to be allowed as a credit against production tax otherwise due for those subsequent periods but limited to 50 per cent of the Production tax against which the credit is applied. The mechanics of the credit are as follows.

First, "net tax paid under this chapter" means the amount of the proposed ad valorem tax paid, less the credit for production tax. SB 276, §1, adding AS 43.58.190(4).

Second, the early development incentive credit accrued (i.e., accumulated) for a lease or property, initially a zero amount, is increased each calendar year by the amount of "net tax paid under this chapter," and is reduced each month by the amount of the credit allowed against the production tax for that month. SB 276, §1, adding AS 43.58.180.

Third, there is allowed as a credit against the gross production tax for a lease or property the early development incentive credit accrued (i.e., accumulated) for that lease or property, but limited to 50 per cent of the production tax. This credit is allowed on a monthly basis. SB 276,

§3, adding AS 43.55.018.

(3) Effect of credits under SB 276 (the Governor's bill). A careful study of the above reveals the following possible results:

(a) The proposed ad valorem property tax for any given year may be extinguished by the credit for the production tax paid during the preceding 12 months;

(b) The foregoing is true even though the production tax "paid" during the preceding 12 months may have been reduced by as much as 50 per cent by the early development investment credit which arose out of payment of the proposed ad valorem tax for earlier years;

(c) (b), above, is anomalous, in that previous years' ad valorem taxes may be applied as a credit against the production tax of the preceding 12 months to a maximum of 50 per cent thereof, nevertheless the full amount of the production tax of the preceding 12 months (unreduced by the credit) may be taken as a credit against the ad valorem tax in (a);

(d) Nevertheless, any production tax arising for the given year specified in (a) must be paid at least to the extent of 50 per cent, because the early development investment credit is limited to 50 per cent;

(e) (1) Thus, for any given year the proposed ad valorem tax may be extinguished by credit for the previous 12 months' production tax "paid," even though those "payments" may have been only 50 per cent paid in fact; and

(2) If a production tax becomes payable, at least 50 per cent of that must be paid; accordingly,

(3) Years may arise when no more is payable than 50 per cent of the production tax, and if none, then neither tax would be payable.

(4) Comments. The considerations under (3), above, may make the notion of an early development incentive credit less attractive. I wonder, in any case, just how much effect such an incentive will have. What it amounts to is for the state to say to the owner, in effect, "if you drill and strike oil, we will allow you to recoup the ad valorem property

taxes that you previously paid by a credit of up to 50 per cent against your production tax." At the present price of oil of some $10.00 or more per barrel, the production tax imposed by AS 43.55.010 which ranges up to eight per cent would exceed the minimum provided by AS 43.55.015 which ranges up to $.2700 per barrel under the present provision. Accordingly the production tax would range upward to eight per cent, so that the development incentive credit would amount to a maximum of four per cent. Even this benefit is reduced by the impact of income taxes. In view of the high prices of oil today, is it realistic to think that the credit will have a significant effect on efforts to bring a field into production? I am doubtful that it will.

I call your attention to the fact that there is no limit to the number of years that the early development incentive credit may be carried forward. Thus when a lease or property comes into production an early development incentive credit may be carried over that would eliminate 50 per cent of the production tax for many years to come. At the same time the production tax, unreduced by the credit, may be taken as a credit against the new ad valorem tax and thus may eliminate that tax altogether. It seems that this feature may so burden the future to meet present needs that the state would be faced with the prospect of no future ad valorem tax in many cases, while collecting only 50 per cent of the production tax as presently provided by AS 43.55.

I also call your attention to the fact that SB 276 would not become effective until January 1, 1976, and would terminate December 31, 1977, thus imposing but two years' ad valorem property taxes. SB 276, §1,

adding AS 43.58.010, .170. Note, then, that presently producing leases or properties which presumably are most able to bear the ad valorem tax would have an immediate credit against ad valorem taxes for those years based on production taxes previously "paid," even though to some extent not in fact paid because of the credit for the ad valorem tax. I would limit the credit for production taxes against the ad valorem tax to production taxes actually paid after the effective date of the proposed new law.

Further, as SB 276 would not become effective until January 1, 1976, and would terminate December 31, 1977, the pressing need for immediate revenue would not be met for 1975, and whatever revenue is derived in 1976 and 1977 would be subject to loss by credit against production tax on subsequent production. Moreover, extension of SB 276 beyond 1977 would exacerbate the problem because the production tax, unreduced by the early development incentive credit, would be subject to loss by credit against subsequent ad valorem taxes on oil and gas in place.

In light of the above it seems desirable to modify the carryover provisions to limit the carryover of any given year's ad valorem tax to five years (or sixty months, for the monthly tax under AS 43.55), and to provide that the carryover be reduced from month to month by the amount of the gross production tax, not merely by the fifty per cent provided in SB 276. I have in mind provisions patterned upon the long-term capital loss carryover provisions and the net operating loss carryover provisions of the United States Internal Revenue Code of 1954.

The following modifications are suggested. First, that Sec. 43.58.030, as proposed by SB 276, §1, be modified by providing a credit against the ad valorem tax of <u>fifty per cent</u> of the production tax <u>actually paid</u> for months <u>after</u> the effective date of the new law, but <u>limited to fifty per cent of the ad valorem tax</u> against which the credit is taken.

Second, to clarify the additions and subtractions to be made in the computation of the early development incentive credit, the following addition to AS 43.58.180 as proposed by SB 276 (the Governor's bill) seems appropriate: "(d) In calculating the early development investment credit for any month under AS 43.55.018, additions under (b) shall include payments through that month, and reductions under (c) shall include those through the preceding month." This applies only if the early development incentive credit is enacted in substantially the form proposed in SB 276.

Third, that the early development incentive credit carryover be limited to five years.

Fourth, that the early development incentive credit carryover be reduced from month to month by the amount of the production tax, rather than by fifty per cent thereof.

The limitation of the early development incentive credit carryover to five years would emphasize the incentive for early development. Provision for reduction from month to month by the amount of the production tax would permit the use of each dollar of ad valorem tax paid to produce a fifty cent credit against the production tax, limited to fifty per cent of the production tax, but each dollar of the ad valorem tax used to produce a fifty cent credit would be eliminated from the carryover to subsequent years. Thus only fifty cents of any dollar of ad valorem tax could be applied against the production tax, and that only against fifty per cent of the production tax. The carryover of any ad valorem tax would be limited to five years, emphasizing the incentive to obtain early production. Thus the integrity of the credit would be preserved, and the revenue of the state would be protected.

These suggestions would initially impose total taxes equal to the greater tax plus one-half of the smaller tax, the remaining half of the smaller being credited against the larger. To illustrate, suppose the taxes for a lease on property for two succeeding years are: First, as in column (a), and second, as in column (b), below.

	(a)	(b)
First year	100,000	150,000
Second year	150,000	100,000
Total (before credit)	250,000	250,000
Then the credit against the second year tax would be fifty per cent of the first year tax, limited to fifty per cent of second year tax, or	50,000	50,000
Net tax collected	200,000	200,000

C. Miscellaneous

Regardless of whether the proposed tax is levied by adding a new provision to the present AS Ch. 43.56 as in SB 103, HB 102, and HB ____ (Cowper's bill), or by addition of a new Chapter to title 43 as in SB 276 (the Governor's bill), it is clear that, in addition to the above, conforming amendments to certain other provisions of AS Chapters 29.53, 43.55, and 43.56, supra, are needed.

Municipalities are precluded from taxing oil and gas in place, as noted above. AS 43.55.010(c), 43.56.020(a). AS §§29.53.045 et seq. (Appendix A) provide for taxation of certain other properties by municipalities. Accordingly it appears that, with one exception, AS §§29.53.045 et seq. do not require conforming amendment. The exception is the 225 per cent limitation discussed above, provided in AS 29.53.045(c), .050(b), and 43.56.010(c). In addition to the clarifying amendment suggested above, it appears that

further amendment may be necessary in view of the proposed tax on oil and gas in place at the state level. The reason is that the addition of the value of oil and gas in place to the taxable values at the state level will apparently increase the quantum of the 225 per cent limitation on taxation of other property by each municipality, and thus indirectly increase the amount of tax permitted to be imposed by municipalities. Unless that result is intended amendment appears to be necessary to AS 29.53.045(c), .050(b), and 43.56.010(c). SB 276 (the Governor's bill) recognizes this problem by proposing amendment to AS 29.53.050(b) and to AS 43.56.010(c) by addition of the following qualifying clause to each:

> "For purposes of this subsection the average per capita assessed full and true value of property in the state shall be calculated without regard to the assessed value of taxable property under AS 43.58."

SB 276, §§5, 6 (Appendix G). That bill offers no amendment to AS 29.53.045(c). Moreover, SB 103, HB 102, and HB ___ (Cowper's bill) (Appendices D, E, and F) offer no amendment in this regard.

D. Miscellaneous amendments.

For convenience, Exhibit A, herewith, presents a tabulation of certain provisions of the Alaska Statutes which would be amended by the proposed bills, and certain others where amendment may be desirable or necessary. In parallel columns references are made to the numbers of the section of the various bills that would modify the present provisions. Note that under SB 276 (the Governor's bill) §1 a new chapter, AS 43.58 is added, the section numbers of which are set out. The following symbols are used to indicate the nature of the amendment, or absence of amendment. The symbols used are explained at the end of Exhibit A.

The tabulation at Exhibit A covers many, though not necessarily all, of the provisions discussed herein. The main reason for including Exhibit A is to call to your attention various conforming and technical amendments not otherwise mentioned herein.

Exhibit A

Present Stats.	Description	SB 103; HB 102	HB (Cowper's bill)	SB 276 (the Governor's bill)
43.56.-				Sec.1 adds 43.58-
.010(a)	Excepts new tax from present provision	1 CA	1 CA	NR
---	New ad valorem tax provided	2 adds 43.-56.015	2 adds 43.-56.015	.010 - .190
---	Moratorium on the new tax (*Note: Not included in HB 102).	2 adds 43.-56.015(b)*	2 adds 43.-56.015(b)	.020(3)
.020	Exemptions	NR	NR	.020
.030	Present tax is in place of certain other taxes	?	?	?
.040	State Assessment Review Board	NC	NC	NA
.060(a)	Assessment	4 CA	3 adds (h)	.040(a)
(b)	Valuation (*Should be lettered (h).)	5 adds (g)*	3 adds (i)	.040(b)
.070	Returns	NC	NC	.110(b)
.080	Investigation	NC	NC	.100
.090	Assessment roll	NC	NC	.050
.100	Assessment notice	NC	4 adds (c)	.060
---	Certification of final assessment	---	---	.080
.110	Appeal to the department	NC	NC	.070
	Appeal to the court	---	---	.070
.120	Appeal to State Assessment Review Board	NC	5 adds (c)	NA
.130	Hearings of State Assessment Review Board	NC	NC	NA
.140	Supplementary Assessment Rolls	NC	NC	.090
.150(c)	Collection and deposit	6 CA	6 CA	.110(a)
---	Deposit to Alaska Native Claims Settlement Fund	---	6 adds	

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Exhibit A

Present Stats.	Description	SB 103; HB 102	HB ____ (Cowper's bill)	SB 276 (the Governor's bill)
.160	Interest, etc., late payment	8 CA	7CA	.130, .120
.190	Penalty - False or late return	8 CA	7 CA	.120
.170	Lien for tax	9 CA	8 CA	.140
.180	Remedy of distraint	10 CA	9 CA	.150
.190	Penalties	NC	NC	.120
.200	Regulations	NC	NC	.160
.210	Definitions	11 Am	10 Am	.190(1) - (8)
.210(6)	Definitions - Taxable property	11	10	.190(8)
.210(i)	Definitions - proven reserves	?	11 adds (i)	.190(7)
---	"Lease" or "property" defined for new tax	?	?	.190(3)(A)
---	Effective date provision	Sec. 12	Sec. 13	.010
	Termination date provision	---	13	.170
	Providing:			
	Effective date	1-1-76	Immediately	1-1-76
	Termination date	---	1-1-82	12-31-77
---	Exemption from new tax on account of production tax	3 adds 43.-020(c)	2 adds 43.-56.015(c)	NR, see .030
---	Credit against new tax for production tax	7 adds 43.-56.150(d)	2 adds 43.-56.015(d)	
---	Credit against production tax for new tax (Early development incentive credits)	---	2 adds 43.-56.015(e)	.180, .190(4) 3 adds 43.-55.018
43.55.010(b)	Present production tax is in place of certain other taxes	?	?	2 amends
43.55.140(8)	"lease" or "property" defined under production tax provisions	?	?	4 repeals & reenacts
29.53.045(c)	225 per cent choice in municipal taxation	?	?	?

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Exhibit A

Present Stats.	Description	SB 103; HB 102	HB ___ (Cowper's bill)	SB 276 (the Governor's bill)
29.53.050(b)	225 per cent limitation on municipal taxation	?	?	5 amends
43.56.010(c)	225 per cent limitation, administration	?	?	6 amends

Symbol	Meaning
adds	adds new provision as indicated
Am	Amendment
CA	Conforming or technical amendment
NR	Not required under the particular bill
NC	No change
NA	Not available under the particular bill
?	No amendment proposed under the particular bill, but may be desirable.

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(e) Subject to legislative appropriations for the purpose, the state shall reimburse a borough or city, as appropriate, for the real property tax revenues lost to it by the operation of this section. (§ 2 ch 118 SLA 1972; am § 1 ch 90 SLA 1974)

Effect of amendment. — The 1974 amendment made such changes in subsections (a), (b), and (c) as to make a detailed comparison impracticable and added subsections (d) and (e).

Sec. 29.53.045. Tax on oil and gas production and pipeline property. (a) A municipality may levy and collect taxes on taxable property taxable under AS 43.56 only by using one of the methods set out in (b) or (c) of this section.

(b) A municipality may levy and collect a tax on the full and true value of taxable property taxable under AS 43.56 as valued by the Department of Revenue at a rate not to exceed that which produces an amount of revenue from the total municipal property tax equivalent to $1,000 a year for each person residing within its boundaries.

(c) A municipality may levy and collect a tax on the full and true value of that portion of taxable property taxable under AS 43.56 as assessed by the Department of Revenue which, when combined with the value of property otherwise taxable by the municipality, does not exceed the product of 225 per cent of the average per capita assessed full and true value of property in the state multiplied by the number of residents of the taxing municipality.

(d) By February 1 of each assessment year a taxing municipality must inform the Department of Revenue which method of taxation the municipality will use.

(e) For purposes of this section, population shall be determined by the commissioner of community and regional affairs based on the latest statistics of the United States Bureau of the Census or on other reliable population data, and shall advise each municipality of its population as so determined by January 15 of each year. (§ 3 ch 1 FSSLA 1973)

Effective date. — Section 6, ch. 1, FSSLA 1973, provides: "This Act takes effect on January 1, 1974."

Sec. 29.53.050. Tax limitation. (a) No municipality may levy and tax for any purpose in excess of three per cent of the assessed valuation of property within the municipality in any one year.

(b) No municipality, or combination of municipalities occupying the same geographical area, in whole or in part, may levy taxes which will result in tax revenues from all sources exceeding either (1) $1,000 a year for each person residing within their boundaries or (2) when combined with the value of property otherwise taxable by the municipality, the product of 225 per cent of the average per capita assessed full and true value of property in the state multi-

plied by the number of residents of the taxing municipality. If two or more municipalities occupying the same geographical area, in whole or in part, attempt to levy a tax the combined levy of which would result in tax revenues from all sources exceeding either (1) $1,000 a year for each person residing within their boundaries or (2) when combined with the value of property otherwise taxable by the municipality, the product of 225 per cent of the average per capita assessed full and true value of property in the state multiplied by the number of residents of the taxing municipality, the commissioner of community and regional affairs shall apportion the lawful levy and equitably divide these revenues on the basis of need, services performed and other considerations in the public interest. For the purpose of this subsection, population shall be determined by the commissioner of community and regional affairs based on the latest statistics of the United States Bureau of the Census or on other reliable population data. (§ 2 ch 118 SLA 1972; am § 4 ch 1 FSSLA 1973)

Effect of amendment. — The 1973 amendment, effective January 1, 1974, added subsection (b).

Sec. 29.53.055. No limitation on taxes to pay bonds. The limitations provided for in §§ 45 or 50 of this chapter do not apply to taxes levied or pledged to pay or secure the payment of the principal and interest on bonds. Taxes to pay or secure the payment of principal and interest on bonds may be levied without limitation as to rate or amount. (§ 2 ch 118 SLA 1972; am § 5 ch 1 FSSLA 1973)

Effect of amendment. — The 1973 amendment, effective January 1, 1974, substituted "limitations provided for in §§ 45 or 50 of this chapter do" for "limitation provided for in § 50 of this chapter does" in the first sentence.

Sec. 29.53.060. Full and true value. (a) The assessor shall assess property at its full and true value as of January 1 of the assessment year, except as provided in this section and §§ 30, 35 and 160 of this chapter. The full and true value is the estimated price which the property would bring in an open market and under the then prevailing market conditions in a sale between a willing seller and a willing buyer both conversant with the property and with prevailing general price levels.

(c) In the case of cessation of business during the tax year, the assembly may provide for reassessment of business inventories using the average monthly method of assessment for the tax year rather than the value existing on January 1 of the tax year, and for reduction and refund of taxes. In enacting an ordinance authorized by this section, the assembly may prescribe procedures, re-

strictions, and conditions of assessing or reassessing business inventories and of remitting or refunding taxes.
(am § 45 ch 53 SLA 1973; am § 1 ch 46 SLA 1974)

Effect of amendments. — The 1973 amendment deleted "of a municipality" following "assessor" in the first sentence of subsection (a).

The 1974 amendment added subsection (c).

As the rest of the section was not affected by the amendments, it is not set out.

Editor's note.—The annotation in the main pamphlet, reading "This section applies only to the tax year during which a disaster takes place," was incorrectly located under this section. It applies to AS 29.53.160.

Legislative committee report.—For report on ch. 53, SLA 1973 (CSHB 382), see 1973 House Journal, pp. 793, 885.

Sec. 29.53.100. Assessment roll.

Mandatory provisions of section not complied with.—Mandatory provisions of this section and AS 29.53.110 relating to assessment procedures were not complied with by the North Slope Borough. Such non-compliance is in violation of the rights of plaintiffs to due process in the levy of tax against them. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

Sec. 29.53.110. Assessment notice.

Mandatory provisions of section not complied with.—Mandatory provisions of AS 29.53.100 and this section relating to assessment procedures were not complied with by the North Slope Borough. Such non-compliance is in violation of the rights of plaintiffs to due process in the levy of tax against them. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

Sec. 29.53.130. Appeal.

Applied in Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

Sec. 29.53.140. Hearing.

Cited in Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

Sec. 29.53.160. Tax adjustments on property affected by a natural disaster.

Editor's note. — This section is based on former AS 29.10.397.

This section applies only to the tax year during which a disaster takes place. Hoblit v. Greater Anchorage Area Borough, Sup. Ct. Gp. No. 636 (File No. 1214), 473 P.2 630 (1970).

Article 2. Enforcement of Tax Liens.

Sec. 29.53.200. Validity.

The validity of assessment rolls established by this section is a rebuttable presumption of validity. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

The acts of assessing officers are presumed to be valid, and, unless the contrary appears, the presumption is that an assessment is regular, valid and correct. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

Validity not affected by nonsub-

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Sec. 43.40.100. Definitions. In §§ 10—100 of this chapter

(2) "motor fuel" means fuel used in an engine for the propulsion of a motor vehicle, aircraft, boat or watercraft, or in a stationary engine, machine or mechanical contrivance which is propelled by an internal combustion motor; except on consignments of motor fuel oil to foreign countries, except motor fuel oil sold for use in jet propulsion aircraft operating in flights to foreign countries and except fuel used in stationary power plants operating as public utility plants and generating electrical energy for sale to the general public or by nonprofit power associations or corporations for generating electric energy for resale or by charitable institutions;

(am § 1 ch 74 SLA 1972)

Effect of amendments. The 1972 amendment inserted "except motor fuel oil sold for use in jet propulsion aircraft operating in flights to foreign countries" in paragraph (2).

As the rest of the section was not affected by the amendment, it is not set out.

Chapter 45. School Tax.

Section
10. Tax imposed

Sec. 43.45.010. Tax imposed. (a) There is imposed a school tax of $10 a year upon each person 19 years of age or older gainfully employed in the state or on the waters of the state, except (1) a married person who is unemployed and entirely dependent upon the income of the spouse and whose spouse has paid a school tax, and (2) a person exempt under § 20 of this chapter.

(am § 111 ch 127 SLA 1974)

Effect of amendment. — The 1974 amendment, in item (1) of subsection (a), substituted "person" for "woman," "the spouse" for "her husband," and "whose spouse" for "whose husband."

As the rest of the section was not affected by the amendment, it is not set out.

Chapter 55. Oil and Gas Properties Production Tax.

Section
10. Gross production tax
15. Tax per barrel of oil
20. Payment of tax
30. Filing of statements
70. Lien for tax
80. Collection and deposit of revenue
100. [Repealed]
135. Measurement
140. Definitions

Sec. 43.55.010. Gross production tax. (a) There is levied upon the producer of oil or gas a tax based upon a per cent of the gross value at the well of all oil or gas removed or sold from each

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lease or property in the state, less the value of any part the ownership or right to which is exempt from taxation. The tax is determined according to the following schedules, and any part which is exempt from taxation is deducted from the tax levied on a pro rata basis as to each production level tax bracket:

(1) oil: based upon the average daily production for each well for the calendar month in barrels, the tax is

(A) five per cent on the first 300 barrels;

(B) six per cent on the next 700 barrels;

(C) eight per cent on all production in excess of 1,000 barrels;

(2) gas: the tax is four per cent of the gross value of the gas and liquid products produced each month.

(b) The tax imposed by this chapter is in place of all taxes now imposed by the state or any of its municipalities, and neither the state nor a municipality may impose a tax upon

(1) [deleted]

(2) producing oil or gas leases;

(3) oil or gas produced or extracted in the state;

(4) [deleted]

(5) the value of intangible drilling and exploration expenses.

(c) The tax imposed by this chapter is in place of all taxes imposed by a municipality upon oil or gas in place or nonproducing oil or gas leases or properties.

(d) The tax imposed by this chapter is not in place of the tax imposed by ch. 57 of this title or income taxes or taxes upon the retail sale of oil or gas products.

(e) If on a tax payment date the amount of tax due under (a) (1) of this section is less than the tax due under § 15 of this chapter, the tax levied in § 15 of this chapter is payable in place of the tax levied in this section. (§ 2 ch 7 ESLA 1955; am § 1 ch 110 SLA 1968; am § 1 ch 247 SLA 1970; am §§ 1—3 ch 101 SLA 1972; am § 49 ch 53 SLA 1973; am § 1 ch 4 FSSLA 1973)

Effect of amendments.

The 1972 amendment, effective July 1, 1972, in subsection (a), substituted "the producer of" for "every person producing" in the first sentence, substituted "removed or sold from each lease or property" for "produced" in that sentence, rewrote the second sentence, deleted "per-well" preceding "production" in the introductory language of paragraph (1), and inserted "for each well" therein. The amendment also deleted item (3) in subsection (b) and added subsection (c).

The first 1973 amendment substituted "or any of its political subdivisions" for "cities, towns, school districts, and other local government units" in the introductory language in subsection (b), and substituted "produce" for "producing" in paragraph (1) of that subsection.

The second 1973 amendment, effective January 1, 1974, in subsection (a), substituted "oil or gas" for "oil and gas" twice in the first sentence of the introductory language, substituted "five" for "three" in paragraph (1)(A) and "six" for "five" in paragraph (1)(B), rewrote paragraph (1)(C), deleted paragraph (1)(D), substituted "tax" for "rate" in paragraph (2), and inserted "each month" in that paragraph. The amendment

also rewrote subsections (b), (c), and (d) and substituted "in place of the tax levied in this section" for "and the tax levied in this section need not be paid" in subsection (e).

Legislative committee reports.

For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963. For report on ch. 53, SLA 1973 (CSHB 382), see 1973 House Journal, pp. 793, 885.

This section is constitutional. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

The legislature has acted by subsection (b) to preempt the area of taxation. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

Nowhere in the state constitution is there provision that the state may not stake out an area of tax base as its exclusive province, forbidding the taxation thereof by local governmental units. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

While Alaska Const., art. IX, § 5, does state that private leaseholds, contracts or interests in land or property owned by any one of the various levels of government shall be taxable to the extent of the private interest therein, there is no constitutional direction as to who may or may not impose the tax on that interest. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973).

Enumerated interests not subject to local ad valorem taxes.—The former language of subsection (b), "Payment of the tax is in lieu of all ad valorem taxes now or hereafter imposed by the state, cities, towns, school districts, and other local government units. . . ," combined in reading with the former language of subsection (c), "An interest in the land not described in this section shall be assessed and taxed as other property within the taxing district in which the property is located," gives clear and unambiguous expression of the legislative intent that these enumerated interests are not to be subject to ad valorem taxes by any local government unit, including a borough. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973), decided prior to 1973 amendment of this section.

The former language of subsection (b) expressly exempted oil and gas leases from borough ad valorem taxes. Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973), decided prior to 1973 amendment of this section.

The borough is a "local government unit" within the meaning of the former language of subsection (b). Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973), decided prior to 1973 amendment of this section.

Oil companies held not subject to ad valorem taxes by the North Slope Borough, under subsections (a) and (b). Arco Pipe Line Co. v. North Slope Borough, Superior Court, 4th Jud. Dist., C.A. No. 73-336 and C.A. Nos. 73-294 to 73-306 (1973), decided prior to 1973 amendment of this section.

Sec. 43.55.015. Tax per barrel of oil. (a) There is levied upon the producer of oil a tax on each barrel of oil removed or sold from each lease or property in the state less any part the ownership or right to which is exempt from taxation. The tax is based upon the average daily production for each well for the calendar month in barrels determined according to the following schedule and any part which is exempt from taxation is deducted from the tax levied on a pro rata basis as to each production level bracket:

(1) $.16875 on each of the first 300 barrels;

(2) $.2025 on each of the next 700 barrels;

(3) $.2700 on each barrel of production in excess of 1,000 barrels.

(b) The cents per barrel tax schedule set out in this section applies to oil of 27 degrees API gravity. For each degree of API gravity less than 27 degrees the cents per barrel tax in each production level bracket shall be reduced by two per cent of the base rate for 27 degree oil and for each degree of API gravity greater than 27 degrees the cents per barrel tax for each production level bracket shall be increased by two per cent of the base rate for 27 degree oil; except that oil above 40 degrees API gravity shall be taxed as 40 degree oil. In applying the gravity adjustment under this subsection, fractional degrees of API gravity shall be disregarded.

(c) The tax rates set out in this section will be increased or decreased by a percentage equal to the percentage of change in the Wholesale Price Index for crude petroleum published by the Bureau of Labor Statistics, of the United States Department of Labor. The year 1967 is the base year of 100 for computing the tax rates. Changes in tax rates will be computed based on changes in the Wholesale Price Index occurring after January 1, 1974 and will not include changes in the Wholesale Price Index prior to January 1, 1974. The department shall post the changes in the tax rates at least semi-annually and shall notify every person producing oil within the state of the changes.

(d) If on a tax payment date the amount of tax due under this section is equal to or less than the tax due under § 10(a)(1) of this chapter, the tax levied in § 10(a)(1) of this chapter is payable in place of the tax levied in this section.

(e) When the tax levied under this section is payable, an amount not less than $.05 for each barrel of oil produced shall be paid by the state out of its royalties from the oil, whenever payment by the state is required under the revenue-sharing provisions of sec. 9 of the Alaska Native Claims Settlement Act (PL 92-203; 85 Stat. 688; 43 U.S.C. 1601 et seq.), into the Alaska Native Fund until all amounts paid in the fund equal $500,000,000. (§ 4 ch 101 SLA 1972; am § 2 ch 4 FSSLA 1973)

Effect of amendment. — The 1973 amendment, effective January 1, 1974, rewrote this section.

Effective date.—Section 18, ch. 101, SLA 1972, provides: "This Act takes effect July 1, 1972."

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

Sec. 43.55.020. Payment of tax. (a) The gross production tax on oil or gas shall be paid monthly. The tax is due on the last day of each calendar month on oil or gas removed or sold from each

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lease or property during the preceding month. If the tax is not paid before the end of the month in which it becomes due, the tax becomes delinquent.

(b) The gross production tax on oil or gas shall be paid by or on behalf of the producer.

(c) Repealed by § 7 ch 101 SLA 1972, effective July 1, 1972.

(d) In making settlement with the royalty owner the producer may deduct the amount of the tax paid on royalty oil or gas, or may deduct royalty oil or gas equivalent in value at the time the tax becomes due to the amount of the tax paid.

(e) Gas produced and used, except gas used in the operation of a lease or property in drilling for or producing oil or gas, or for repressuring, is considered, for the purpose of this chapter and in the amount used, as gas removed or sold from a lease or property.

(f) If oil or gas is sold under circumstances where the sale price does not represent the cash price prevailing for oil or gas of like kind, character or quality in the field from which the product is produced, the department may require the tax to be paid upon the basis of the prevailing price then being paid at the time of production of the oil or gas in the field for oil or gas of the same kind, quality and character. (§ 3 ch 7 ESLA 1955; am §§ 5—9 ch 101 SLA 1972)

Effect of amendment. — The 1972 amendment, effective July 1, 1972, substituted "monthly" for 'quarterly" in the first sentence of subsection (a), rewrote the second sentence in that subsection, rewrote subsection (b), repealed subsection (c), inserted "or gas" in two places in subsection (d), inserted "may" preceding "deduct royalty" in that subsection, substituted "property" for "premises" in subsection (e), and substituted "removed or sold from a lease or property" for "actually produced and saved" therein.

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

Sec. 43.55.030. Filing of statements. (a) The tax shall be paid to the department and the person paying the tax shall file with the department at the time the tax is required to be paid a statement, under oath, on forms prescribed by or acceptable to the department, giving with other information required, the following:

(1) a description of the lease or property from which the oil or gas was removed or sold, by name, legal description, lease number or by accounting code numbers assigned by the department;

(2) the names of the producer and the person paying the tax;

(3) the gross amount of oil or gas removed or sold from the lease or property, and the percentage of the gross amount owned by each producer for whom the tax is paid;

(4) the total value of the oil or gas removed or sold from the lease or property owned by each producer for whom the tax is paid; and

(5) [deleted]

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(6) the name of the first purchaser and the price received for the oil or gas if sold in the state.

(b) Repealed by § 11 ch 101 SLA 1972, effective July 1, 1972.

(c) Repealed by § 11 ch 101 SLA 1972, effective July 1, 1972.

(d) Reports by or on behalf of the producer are delinquent the first day following the day the tax is due. Each producer is subject to a penalty of $25 a day for each lease or property upon which the report is not filed. The penalty for failure to file a report is in addition to the penalty for delinquent taxes, and is a lien against the assets of the producer. (§ 4 ch 7 ESLA 1955; am §§ 10—12 ch 101 SLA 1972)

Effect of amendment. — The 1972 amendment, effective July 1, 1972, rewrote subsection (a), repealed subsections (b) and (c), and rewrote subsection (d).

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

Sec. 43.55.070. Lien for tax. The tax is a first and paramount lien against the producer's real and personal property. The tax may be recovered at the suit of the state upon relation to the department. (§ 8 ch 7 ESLA 1955; am § 13 ch 101 SLA 1972)

Effect of amendment. — The 1972 amendment, effective July 1, 1972, deleted "purchaser's or" preceding "producer's" in the first sentence, and deleted a former second sentence.

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

Sec. 43.55.080. Collection and deposit of revenue. The department shall deposit in the general fund the money collected by it under this chapter. (§ 10 ch 7 ESLA 1955; am § 14 ch 101 SLA 1972)

Effect of amendment. — The 1972 amendment, effective July 1, 1972, deleted "quarterly" following "deposit."

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

Sec. 43.55.100. Acceptance of deductions.

Repealed by § 15 ch 101 SLA 1972, effective July 1, 1972.

Editor's note.—The repealed section derived from § 12, ch. 7, ESLA 1955.

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

Sec. 43.55.135. Measurement. For the purposes of this chapter, oil shall be measured in terms of a "barrel of oil" and gas shall be measured in terms of a "cubic foot of gas." (§ 16 ch 101 SLA 1972)

Effective date.—Section 18, ch. 101, SLA 1972, provides: "This Act takes effect July 1, 1972."

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

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Sec. 43.55.140. Definitions. In this chapter

(1) "barrel of oil" means 42 United States gallons of oil of 231 cubic inches a gallon computed at a temperature of 60 degrees Fahrenheit;

(2) "cubic foot of gas" means the volume of gas contained in one cubic foot of space measured at a pressure base of 14.65 pounds per square inch absolute and a temperature base of 60 degrees Fahrenheit;

(3) "department" means the Department of Revenue;

(4) "gas" means all natural, associated or casinghead gas, all hydrocarbons produced at the wellhead not defined as oil, and all liquid hydrocarbons extracted at a gas processing plant;

(5) "oil" means crude petroleum oil and other hydrocarbons regardless of gravity which are produced at the wellhead in liquid form and the liquid hydrocarbons known as distillate or condensate recovered by separation from gas other than at a gas processing plant.

(6) "API gravity" means the specific gravity of oil measured in degrees on the American Petroleum Institute scale;

(7) "intangible drilling expenses" as defined in sec. 263(c) of the United States Internal Revenue Code as defined on the effective date of this paragraph;

(8) "lease or property" means a lease or property including mineral interests in oil and gas and working interests, royalty interests and overriding royalty interests in oil and gas leases and unitization or pooling agreements under the provisions of sec. 614(b)(3) of the Internal Revenue Code of 1954 as defined on the effective date of this paragraph;

(9) "ownership or right to which is exempt from taxation" means any ownership interest of the federal government or the state;

(10) "produced" means the removal or sale of oil or gas from a lease or property in the state;

(11) "production" means the volume or quantity of oil or gas removed or sold from a lease or property in the state. (§ 1 ch 7 ESLA 1955; am § 17 ch 101 SLA 1972; am § 3 ch 4 FSSLA 1973)

Effect of amendments. — The 1972 amendment, effective July 1, 1972, rewrote this section.

The 1973 amendment, effective January 1, 1974, added paragraphs (6)—(11).

Legislative committee report.—For report on ch. 101, SLA 1972 (FCCS HCSSB 168), see 1972 House Journal, p. 963.

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Chapter 56. Oil and Gas Exploration, Production and Pipeline Transportation Property Taxes.

Section
10. Levy of tax
20. Exemptions
30. In place of other taxes
40. State Assessment Review Board
50. Per diem and expenses
60. Assessment
70. Returns
80. Investigation
90. Assessment roll
100. Assessment notice
110. Appeal to the department
120. Appeal to the State Assessment Review Board
130. Hearings of State Assessment Review Board
140. Supplementary assessment rolls
150. Collection and deposit
160. Interest and penalty
170. Lien for tax
180. Remedy
190. Penalties
200. Regulations
210. Definitions

Effective date. — Section 6, ch. 1, FSSLA 1973, provides: "This Act takes effect on January 1, 1974."

Sec. 43.56.010. Levy of tax. (a) An annual tax of 20 mills is levied each tax year beginning January 1, 1974, on the full and true value of taxable property taxable under this chapter.

(b) A municipality may levy and collect a tax under AS 29.53.045 at the rate of taxation that applies to other property taxed by the municipality. A tax collected by a municipality as authorized by AS 29.53.045 shall be credited against the tax levied under (a) of this section and shall be levied at a rate no higher than the rate applicable to other property taxable by the municipality. No municipality may exempt from taxation property authorized to be taxed under this chapter. Exemptions shall be limited to those in AS 29.53.020 and 29.53.025 and § 20 of this chapter.

(c) If the total value of assessed property of a municipality taxing under AS 29.53.045(c) exceeds the product of 225 per cent of the average per capita assessed full and true value of property in the state (to be determined by the department and reported to each municipality by January 15 of each year) multiplied by the number of residents of the taxing municipality, the department shall designate the portion of the tax base against which the local tax may be applied. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.020. Exemptions. (a) The following are exempt from local taxes levied or authorized under § 10(b) of this chapter:

(1) property rights attached to or inherent in the right to explore for or produce oil or gas;

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(2) oil or gas leases or properties, whether producing or not;

(3) oil or gas in place;

(4) oil or gas produced or extracted in the state;

(5) the value of intangible drilling expenses and exploration expenses;

(6) an interest in property described in AS 43.55.010(b);

(7) before the construction commencement date, property taxed under § 1(a) of this chapter which is committed by contract or other agreement for use in this state primarily for pipeline transportation of gas or unrefined oil or for the production of gas or unrefined oil to be transported by that pipeline;

(8) before the construction commencement date, property taxed under § 10(a) of this chapter which is committed by contract or other agreement for use in this state primarily in the operation or maintenance of facilities for pipeline transportation of gas or unrefined oil, or facilities for production of gas or unrefined oil to be transported by that pipeline.

(b) In (a)(2) of this section, "properties" means mineral interests in oil and gas and working interests, royalty interests, and overriding royalty interests in oil and gas leases. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.030. In place of other taxes. Except for those taxes imposed under ch. 55 and ch. 57 of this title, the taxes levied or authorized under § 10(b) of this chapter are in place of

(1) all other ad valorem taxes or other taxes imposed by a municipality on property subject to tax under this chapter or exempted from taxation by § 20 of this chapter, and

(2) all other taxes imposed by a municipality on or with respect to the property subject to tax under this chapter or exempted from taxation by § 20 of this chapter, including, but not limited to,

(A) taxes on the retail sale or use of the property except for the retail sales tax on the first $1,000 of each sale;

(B) taxes on the sale or use of gas or unrefined oil;

(C) taxes on the sale or use of services used in or associated with the property or in its maintenance or operation except for the sales tax on the first $1,000 of each sale;

(D) taxes on or measured by gross or net income from the property, including income from the exploration for, production of, or pipeline transportation of gas or unrefined oil or property; and

(E) any license, excise, fee, charge or other tax on or pertain-

ing to the property or services. (§ 1 ch 1 FSSLA 1973; am § 55 ch 127 SLA 1974)

Effect of amendment. — The 1974 amendment deleted "erection, construction" preceding "maintenance" in paragraph (2)(C).

Legislative committee report.—For report on ch. 127, SLA 1974 (SCSHB 817 am S), see 1974 House Journal, p. 657.

Sec. 43.56.040. State Assessment Review Board. The State Assessment Review Board is created within the Department of Revenue. The board consists of five persons appointed by the governor to serve at his pleasure, each of whom must be knowledgeable of assessment procedures. Each board member is subject to confirmation by a majority of the members of the legislature in joint session. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.050. Per diem and expenses. Members of the board shall receive per diem and expenses authorized by law for boards and commissions. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.060. Assessment. (a) The department shall assess property for the tax levied under § 10(b) of this chapter and AS 29.53.045 on property used or committed by contract or other agreement for use for the pipeline transportation of gas or unrefined oil or for the production of gas or unrefined oil at its full and true value as of January 1 of the assessment year.

(b) The department shall assess property for the taxes levied under § 10(a) of this chapter at its full and true value as of January 1 of the assessment year except that in the case of taxable property used or committed by contract or other agreement for the pipeline transportation of gas or unrefined oil or for the production of gas or unrefined oil to be transported by that pipeline, the first assessment date shall be the construction commencement date. If the construction commencement date is used as the assessment date, the tax payable shall be prorated on the basis of the assessment year remaining.

(c) The full and true value of taxable property used or committed by contract or other agreement for use in the exploration for gas or unrefined oil, or in the operation or maintenance of facilities for the exploration for gas or unrefined oil, is the estimated price which the property would bring in an open market and under the then prevailing market conditions in a sale between a willing seller and a willing buyer both conversant with the property and with prevailing general price levels.

(d) The full and true value of taxable property used or committed by contract or other agreement for the production of gas or unrefined oil or in the operation or maintenance of facilities for the production of gas or unrefined oil is:

(1) on the construction commencement date the actual cost in-

curred or accrued with respect to the property as of the date of assessment;

(2) determined on each January 1 thereafter on the basis of replacement cost less depreciation based on the economic life of proven reserves.

(e) The full and true value of taxable property used or committed by contract or other agreement for pipeline transportation of gas or unrefined oil or in the operation or maintenance of facilities for the pipeline transportation of gas or unrefined oil is:

(1) on the construction commencement date and until January 1 following the date the pipeline begins to transport gas or unrefined oil, the actual cost incurred or accrued with respect to the property as of the date of assessment;

(2) determined on each January 1 thereafter with due regard to the economic value of the property based on the estimated life of the proven reserves of gas or unrefined oil then technically, economically and legally deliverable into the transportation facility; however, if the proven reserves of gas or unrefined oil then technically, economically and legally deliverable indicate an economic life materially shorter than the estimated physical life of the transportation facility, the full and true value is the actual cost reduced by an annual allowance for depreciation on a straight line basis over an economic life based on the actual elapsed life from the commencement of full operation to the date of assessment plus the estimated remaining life of the proven reserves of gas and unrefined oil then technically, economically and legally deliverable into the transportation facility as of the date of the assessment;

(3) on the assessment date next following inability to use or construct all or a substantial part of the facility for a period of 90 or more consecutive days because of natural disaster or legal prohibition, or other events beyond the control of a person having ownership or control of the property, adjusted to take into account any diminution in value.

(f) For purposes of this section, "actual cost" and "replacement cost" do not include interest capitalized before or during the period of construction nor the value of intangible drilling expenses. In the case of taxable property under construction, "actual cost" for purposes of this section means the costs incurred or accrued with respect to the property as of the date of assessment.

(g) The department may enter into agreements with a municipality for the cooperative or joint administration of the assessing authority conferred on the department by this section. (§ 1 ch 1 FSSLA 1973)

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Sec. 43.56.070. Returns. (a) The department may require by notice every person having ownership or control of an interest in property taxable under this chapter to submit a return in the form prescribed by the department, based on property values existing on January 1 of each year, except as otherwise provided in this chapter.

(b) The department by written notice may require a person to provide additional information within 30 days of the notice. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.080. Investigation. (a) The department may make an investigation of property on which a return has been filed or of taxable property upon which no return has been filed. In either case, the department may make its own valuation of the taxable property, which is prima facie evidence of full and true value.

(b) An employee or agent of the department may enter any premise necessary for the investigation during reasonable hours and may examine property and appropriate records. The owner of the taxable property upon request shall furnish to the employee or agent of the department reasonable assistance required for the investigation. If refused entry, the department may seek a court order to compel entry.

(c) For the purpose of the investigation the owner of the taxable property or his representative may be required to present himself for examination under oath by the department. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.090. Assessment roll. The department shall prepare annually the assessment roll for taxation under this chapter. The roll shall contain:

(1) a description of all taxable property;

(2) the assessed value of all taxable property;

(3) the names and addresses of persons owning property subject to assessment and taxation. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.100. Assessment notice. (a) On or before March 1 of each year, the department shall send to every owner of taxable property named in the assessment roll a notice of assessment, showing the assessed value of the property. Notice of assessment is effective on the date of mailing.

(b) The department shall send to a municipality a copy of the notice of assessment on any taxable property which is assessed under the provisions of this chapter and which is located in the municipality and on which a tax is authorized under § 10(b) of this chapter. (§ 1 ch 1 FSSLA 1973)

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Sec. 43.56.110. Appeal to the department. (a) An owner of taxable property or a municipality receiving an assessment notice may object to the assessment by advising the department in writing of the objections to the assessment within 20 days of the effective date of the notice.

(b) The department shall provide by regulation for notices of appeals to interested persons and municipalities.

(c) Following an objection the department may adjust the assessment and the assessment roll. An adjustment based on an objection from an owner of taxable property or a municipality shall be made within 30 days of the effective date of the notice of assessment. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.120. Appeal to the State Assessment Review Board. (a) After a ruling by the department on an appeal made under § 110 of this chapter, the owner or a municipality may further appeal to the board. The appeal must be filed in writing within 50 days of the effective date of the notice of assessment.

(b) The board shall provide by regulation for notices of appeals to interested persons and municipalities. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.130. Hearings of State Assessment Review Board. (a) The board shall hear appeals filed under § 120(a) of this chapter.

(b) A majority of the board constitutes a quorum required to transact business.

(c) The board shall provide by regulation for notices of hearings to interested persons and municipalities.

(d) If an appellant fails to appear at the hearing, the board may proceed with the hearing in his absence.

(e) The appellant bears the burden of proof at the hearing.

(f) The only grounds for adjustment of assessed value is proof of unequal, excessive or improper valuation or valuation not determined in accordance with the standards set out in this chapter, based on facts stated in a written appeal timely filed or proved at the hearing.

(g) The board shall certify its determinations to the department within seven days of the hearing.

(h) The department shall enter the changes and certify the final assessment roll on or before June 1 of each year and by July 1 shall mail to the owner of taxable property or his authorized agent a statement of the amount of tax due.

(i) An owner or municipality may appeal to the superior court for, and is entitled to, trial de novo of the board's action. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.140. Supplementary assessment rolls. The department shall include property omitted from the assessment roll on a supplementary roll, using the procedures set out in this chapter for the original roll. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.150. Collection and deposit. (a) The tax levied by § 10(a) of this chapter is payable to the department on or before September 30 of the taxable year.

(b) The department may provide for voluntary prepayment and for payment by installments.

(c) The tax levied under § 10(a) of this chapter, interest and penalties collected with respect to this levy shall be deposited in the general fund. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.160. Interest and penalty. When the tax levied by § 10(a) of this chapter becomes delinquent, a penalty of 10 per cent shall be added. Interest on the delinquent taxes, exclusive of penalty, shall be assessed at a rate of eight per cent a year. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.170. Lien for tax. The tax levied under § 10(a) of this chapter and the interest and penalty provided in § 160 of this chapter are first and paramount liens on the property subject to tax under this chapter. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.180. Remedy. The remedy of distraint of property set out in AS 43.20.270 applies to the tax levied by § 10(a) of this chapter. However, only property subject to the tax may be distrained. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.190. Penalties. A person who knowingly fails to file a return when due or who makes a false statement in a return required under this chapter with intent to evade taxation is guilty of a misdemeanor and upon conviction is punishable by a fine of not more than $1,000, or by imprisonment for not more than six months, or by both, together with the costs of prosecution, notwithstanding the provisions of AS 12.80.030. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.200. Regulations. The board and the department may adopt regulations in accordance with the Administrative Procedure Act (AS 44.62) as appropriate to carry out their respective duties under this chapter. (§ 1 ch 1 FSSLA 1973)

Sec. 43.56.210. Definitions. In this chapter

(1) "board" means State Assessment Review Board;

(2) "construction commencement date" means the earlier of April 1, 1974 or the date the following occur:

(A) there has been issued to the owner or his agent right-of-

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way permits, leases, and title and other rights in lands, and other approvals, permits, licenses and certificates, by federal, state and local agencies that a reasonable and prudent person would consider adequate to commence construction of the facilities in the expectation that all other approvals, permits, licenses and certificates necessary for the completion of facilities will be obtained;

(B) all approvals, permits, licenses and certificates are in full force and effect, unrevoked and without any modification, which might jeopardize the completion or continued construction of the facilities; and

(C) no order, judgment, decree, determination or award of a federal, state or local court or administrative or regulatory agency enjoining, either temporarily or permanently, the construction or the continuation of construction of the facilities is in effect;

(3) "department" means the Department of Revenue;

(4) "gas" includes all natural gas and all hydrocarbons produced at the wellhead not defined as oil;

(5) "intangible drilling expenses" means those expenses defined in sec. 263(c) of the United States Internal Revenue Code as defined on the effective date of this paragraph;

(6) "taxable property" means real and tangible personal property used or committed by contract or other agreement for use within this state primarily in the exploration for, production of, or pipeline transportation of gas or unrefined oil (except for property used solely for the retail distribution or liquefication of natural gas), or in the operation or maintenance of facilities used in the exploration for, production of, or pipeline transportation of gas or unrefined oil, including machinery, appliances, supplies, equipment, drilling rigs, wells (whether producing or not), gathering lines and transmission lines, pumping stations, compressor stations, power plants, topping plants, processing units, roads, tank farms, tanker terminals, docks and other port facilities, air strips and communication equipment and facilities, maintenance equipment and facilities, and maintenance camps and other related facilities; "taxable property" does not include permanent residences, office buildings requiring substantial local government services, or gas pipeline systems operated as utilities and regulated by the Alaska Public Utilities Commission;

(7) "unrefined oil" includes crude petroleum oil and other hydrocarbons regardless of gravity which are produced at the wellhead in liquid form and the liquid hydrocarbons known as distillate or condensate recovered or extracted from gas other than gas produced in association with oil and commonly known as casinghead gas. (§ 1 ch 1 FSSLA 1973)

Chapter 57. Oil and Gas Regulation and Conservation Tax.

Section
10. Oil and gas regulation and conservation tax

Sec. 43.57.010. Oil and gas regulation and conservation tax. (a) There is levied upon the producer of oil a tax of one-eighth of one cent on each barrel of oil removed or sold from each lease or property in the state, less any part the ownership or right to which is exempt from taxation.

(b) The tax is in addition to and shall be administered and paid in the same manner as the taxes imposed by ch. 55 of this title. Producers of oil are required to make reports of production in the same manner and under the same penalties as required by ch. 55 of this title.

(c) Proceeds from the tax shall be paid into the general fund. (§ 1 ch 5 FSSLA 1973)

Effective date. — Section 2, ch. 5, FSSLA 1973, provides: "This Act takes effect January 1, 1974."

Chapter 60. Excise Tax on Intoxicating Liquors.

Sec. 43.60.010. Liquor tax.

AS 43.26.010(a) covers the malt liquor excise tax.—The commissioner of economic development was justified in determining that AS 43.26.-010(a) covered the malt liquor excise tax. K & L Distrib., Inc. v. Murkowski, Sup. Ct. Op. No. 694 (File No. 1322), 486 P.2d 351 (1971).

The application of an industrial credit to the malt liquor excise tax is not unconstitutional as being in violation of both the commerce clause of the United States Constitution and the equal protection clause of the 14th amendment of the United States Constitution. K & L Distrib., Inc. v. Murkowski, Sup. Ct. Op. No. 694 (File No. 1322), 486 P.2d 351 (1971).

Chapter 70. Alaska Business License Act.

Section
30. Levy and computation of license fee

Sec. 43.70.030. Levy and computation of license fee.

(b) The license fee for each national bank and state bank, trust company and savings and loan association is seven per cent of its net income. Net income means the taxable income of each such taxpayer before net operating loss deduction and special deductions, computed as required under the Internal Revenue Code of the United States and includes all other income including income from federal, state or municipal obligation. Each of these taxpayers shall submit a copy of the income tax return which it files with the

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Chapter 57. Oil and Gas Regulation and Conservation Tax.

Section
10. Oil and gas regulation and conservation tax

Sec. 43.57.010. Oil and gas regulation and conservation tax. (a) There is levied upon the producer of oil a tax of one-eighth of one cent on each barrel of oil removed or sold from each lease or property in the state, less any part the ownership or right to which is exempt from taxation.

(b) The tax is in addition to and shall be administered and paid in the same manner as the taxes imposed by ch. 55 of this title. Producers of oil are required to make reports of production in the same manner and under the same penalties as required by ch. 55 of this title.

(c) Proceeds from the tax shall be paid into the general fund. (§ 1 ch 5 FSSLA 1973)

Effective date. — Section 2, ch. 5, FSSLA 1973, provides: "This Act takes effect January 1, 1974."

Chapter 60. Excise Tax on Intoxicating Liquors.

Sec. 43.60.010. Liquor tax.

AS 43.26.010(a) covers the malt liquor excise tax.—The commissioner of economic development was justified in determining that AS 43.26.-010(a) covered the malt liquor excise tax. K & L Distrib., Inc. v. Murkowski, Sup. Ct. Op. No. 694 (File No. 1322), 486 P.2d 351 (1971).

The application of an industrial credit to the malt liquor excise tax is not unconstitutional as being in violation of both the commerce clause of the United States Constitution and the equal protection clause of the 14th amendment of the United States Constitution. K & L Distrib., Inc. v. Murkowski, Sup. Ct. Op. No. 694 (File No. 1322), 486 P.2d 351 (1971).

Chapter 70. Alaska Business License Act.

Section
30. Levy and computation of license fee

Sec. 43.70.030. Levy and computation of license fee.

(b) The license fee for each national bank and state bank, trust company and savings and loan association is seven per cent of its net income. Net income means the taxable income of each such taxpayer before net operating loss deduction and special deductions, computed as required under the Internal Revenue Code of the United States and includes all other income including income from federal, state or municipal obligation. Each of these taxpayers shall submit a copy of the income tax return which it files with the

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Introduced: 1/29/75
Referred: Resources and Finance

IN THE SENATE BY HUBER AND HOHMAN

SENATE BILL NO. 103

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to the oil and gas exploration, production and pipeline transportation property tax; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 43.56.010(a) is amended to read:

(a) An annual tax of 20 mills is levied each tax year beginning January 1, 1974, on the full and true value of taxable property taxable under this chapter, except as provided in sec. 15 of this chapter.

* Sec. 2. AS 43.56 is amended by adding a new section to read:

Sec. 43.56.015. OIL AND GAS IN PLACE. (a) An annual tax of 20 mills is levied each year beginning January 1, 1974, on the full and true value of

(1) oil and gas leases within the state under which there are proven reserves; and

(2) ownership interests in proven oil and gas reserves in place within the state.

(b) Oil leases and ownership interests in proven oil reserves are exempt from taxation under (a) of this section for a period of five years from (1) the date of the original lease, or (2) the date the existence of oil reserves under the land covered by the lease or interest is established to a reasonable certainty, whichever occurs earlier.

* Sec. 3. AS 43.56.020 is amended by adding a new subsection to read:

(c) Producing oil leases or properties which are paying gross

production tax under ch. 55 of this title during the assessment year in an amount which exceeds the amount of tax that would otherwise be due under sec. 15 of this chapter for that year are exempt from the taxes levied or authorized under this chapter for that year.

* Sec. 4. AS 43.56.060(a) is amended to read:

(a) The department shall assess property for the tax levied under sec. 10(b) of this chapter and AS 29.53.045 on property used or committed by contract or other agreement for use for the pipeline transportation of gas or unrefined oil or for the production of gas or unrefined oil, and under sec. 15 of this chapter, at its full and true value as of January 1 of the assessment year.

* Sec. 5. AS 43.56.060 is amended by adding a new subsection to read:

(g) The full and true value of property taxable under sec. 15 of this chapter is the estimated price which the property would bring in an open market and under the then prevailing market conditions in a sale between a willing seller and a willing buyer both conversant with the property and with prevailing general price levels. In determining this value the assessor shall take into account the discounted value of the expected future net income from the production of proven reserves under the property.

* Sec. 6. AS 43.56.150(c) is amended to read:

(c) The taxes [TAX] levied under secs. [SEC.] 10(a) and 15 of this chapter, interest and penalties collected with respect to these levies [THIS LEVY] shall be deposited in the general fund.

* Sec. 7. AS 43.56.150 is amended by adding a new subsection to read:

(d) The amount of oil properties production tax paid under ch. 55 of this title on a particular lease or interest during the assessment year may be taken as a credit against the tax due under sec. 15 of this chapter on that lease or interest.

* Sec. 8. AS 43.56.160 is amended to read:

Sec. 43.56.160. INTEREST AND PENALTY. When the tax levied by sec. 10(a) or sec. 15 of this chapter becomes delinquent, a penalty of 10 per cent shall be added. Interest on the delinquent taxes, exclusive of penalty, shall be assessed at a rate of eight per cent a year.

* Sec. 9. AS 43.56.170 is amended to read:

Sec. 43.56.170. LIEN FOR TAX. The taxes [TAX] levied under secs. [SEC.] 10(a) and 15 of this chapter and the interest and penalty provided in sec. 160 of this chapter are first and paramount liens on the property subject to tax under this chapter.

* Sec. 10. AS 43.56.180 is amended to read:

Sec. 43.56.180. REMEDY. The remedy of distraint of property set out in AS 43.20.270 applies to the taxes [TAX] levied by secs. [SEC.] 10(a) and 15 of this chapter. However, only property subject to [THE] tax may be distrained.

* Sec. 11. AS 43.56.210(6) is amended to read:

(6) "taxable property" means property described in sec. 15 of this chapter or real and tangible personal property used or committed by contract or other agreement for use within this state primarily in the exploration for, production of, or pipeline transportation of gas or unrefined oil (except for property used solely for the retail distribution or liquefication of natural gas), or in the operation or maintenance of facilities used in the exploration for, production of, or pipeline transportation of gas or unrefined oil, including machinery, appliances, supplies, equipment, drilling rigs, wells (whether producing or not), gathering lines and transmission lines, pumping stations, compressor stations, power plants, topping plants, processing units, roads, tank farms, tanker terminals, docks and other port facilities, air strips and communication equipment and facilities,

maintenance equipment and facilities, and maintenance camps and other related facilities; "taxable property" does not include permanent residences, office buildings requiring substantial local government services, or gas pipeline systems operated as utilities and regulated by the Alaska Public Utilities Commission;

* Sec. 12. This Act takes effect January 1, 1976.

Introduced: 1/29/75
Referred: Resources and Finance

BY BROWN,BOWMAN,BRADNER, COTTEN,GARDINER,MCKINNON, MILLER,NAUGHTON AND PARKER

IN THE HOUSE

HOUSE BILL NO. 102

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled; "An Act relating to the oil and gas exploration, production and pipeline transportation property tax; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 43.56.010(a) is amended to read:

(a) An annual tax of 20 mills is levied each tax year beginning January 1, 1974, on the full and true value of taxable property taxable under this chapter, except as provided in sec. 15 of this chapter.

* Sec. 2. AS 43.56 is amended by adding a new section to read:

Sec. 43.56.015. OIL AND GAS IN PLACE. An annual tax of 20 mills is levied each year beginning January 1, 1974, on the full and true value of

(1) oil and gas leases within the state under which there are proven reserves; and

(2) ownership interests in proven oil and gas reserves in place within the state.

* Sec. 3. AS 43.56.020 is amended by adding a new subsection to read:

(c) Producing oil leases or properties which are paying gross production tax under ch. 55 of this title during the assessment year in an amount which exceeds the amount of tax that would otherwise be due under sec. 15 of this chapter for that year are exempt from the taxes levied or authorized under this chapter for that year.

* Sec. 4. AS 43.56.060(a) is amended to read:

(a) The department shall assess property for the tax levied

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under sec. 10(b) of this chapter and AS 29.53.045 on property used or committed by contract or other agreement for use for the pipeline transportation of gas or unrefined oil or for the production of gas or unrefined oil, and under sec. 15 of this chapter, at its full and true value as of January 1 of the assessment year.

* Sec. 5. AS 43.56.060 is amended by adding a new subsection to read:

(g) The full and true value of property taxable under sec. 15 of this chapter is the estimated price which the property would bring in an open market and under the then prevailing market conditions in a sale between a willing seller and a willing buyer both conversant with the property and with prevailing general price levels. In determining this value the assessor shall take into account the discounted value of the expected future net income from the production of proven reserves under the property.

* Sec. 6. AS 43.56.150(c) is amended to read:

(c) The taxes [TAX] levied under secs. [SEC.] 10(a) and 15 of this chapter, interest and penalties collected with respect to these levies [THIS LEVY] shall be deposited in the general fund.

* Sec. 7. AS 43.56.150 is amended by adding a new subsection to read:

(d) The amount of oil properties production tax paid under ch. 55 of this title on a particular lease or interest during the assessment year may be taken as a credit against the tax due under sec. 15 of this chapter on that lease or interest.

* Sec. 8. AS 43.56.160 is amended to read:

Sec. 43.56.160. INTEREST AND PENALTY. When the tax levied by sec. 10(a) or sec. 15 of this chapter becomes delinquent, a penalty of 10 per cent shall be added. Interest on the delinquent taxes, exclusive of penalty, shall be assessed at a rate of eight per cent a year.

* Sec. 9. AS 43.56.170 is amended to read:

Sec. 43.56.170. LIEN FOR TAX. The taxes [TAX] levied under secs. [SEC.] 10(a) and 15 of this chapter and the interest and penalty provided in sec. 160 of this chapter are first and paramount liens on the property subject to tax under this chapter.

* Sec. 10. AS 43.56.180 is amended to read:

Sec. 43.56.180. REMEDY. The remedy of distraint of property set out in AS 43.20.270 applies to the taxes [TAX] levied by secs. [SEC.] 10(a) and 15 of this chapter. However, only property subject to [THE] tax may be distrained.

* Sec. 11. AS 43.56.210(6) is amended to read:

(6) "taxable property" means property described in sec. 15 of this chapter or real and tangible personal property used or committed by contract or other agreement for use within this state primarily in the exploration for, production of, or pipeline transportation of gas or unrefined oil (except for property used solely for the retail distribution or liquefication of natural gas), or in the operation or maintenance of facilities used in the exploration for, production of, or pipeline transportation of gas or unrefined oil, including machinery, appliances, supplies, equipment, drilling rigs, wells (whether producing or not), gathering lines and transmission lines, pumping stations, compressor stations, power plants, topping plants, processing units, roads, tank farms, tanker terminals, docks and other port facilities, air strips and communication equipment and facilities, maintenance equipment and facilities, and maintenance camps and other related facilities; "taxable property" does not include permanent residences, office buildings requiring substantial local government services, or gas pipeline systems operated as utilities and regulated by the Alaska Public Utilities Commission;

* Sec. 12. This Act takes effect January 1, 1976.

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IN THE HOUSE BY COWPER

HOUSE BILL NO.

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to the oil and gas exploration, production and pipeline transportation property tax; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 43.56.010(a) is amended to read:

(a) An annual tax of 20 mills is levied each tax year beginning January 1, 1974, on the full and true value of taxable property taxable under this chapter, except as provided in sec. 15 of this chapter.

* Sec. 2. AS 43.56 is amended by adding a new section to read:

Sec. 43.56.015. OIL AND GAS IN PLACE. (a) An annual tax of 20 mills is levied automatically at such time as the state's general fund cash balance reaches $200,000,000 on the full and true value of (1) oil and gas leases within the state under which there are proven reserves; and (2) ownership interests in proven oil and gas reserves in place within the state. The tax due for the calendar year of the original levy is the full amount which is due for the year reduced pro rata by the number of days from January 1 to the date of the original levy. In years subsequent to the original levy the tax is levied each year beginning January 1.

(b) Oil and gas leases and ownership interests in proven oil or gas reserves are exempt from taxation under (a) of this section for a period of five years from (1) the date of the original lease of all or part of the property described in the lease or ownership interest being taxed, or (2) the date of the first completion, suspension, or abandon-

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ment of a discovery well in a field or pool which in whole or in part underlies or comprises the lease or ownership interest, whichever occurs first.

(c) Producing oil or gas leases or ownership interests in proven oil or gas reserves which are paying gross production tax under ch. 55 of this title during an assessment year in an amount which is equal to or exceeds the tax due under (a) of this section for that year are exempt from taxes under (a) of this section for that year.

(d) Producing oil or gas leases or properties which are paying gross production tax under ch. 55 of this title during an assessment year in an amount which is less than the amount due under (a) of this section shall reduce the tax due under (a) of this section by the gross production tax actually paid in the assessment year after the subtraction of the credit allowable under (c) of this section.

(e) Tax paid under (a) of this section may be used as a credit against gross production tax due under ch. 55 of this title in subsequent years; however, the credit used in any one tax year may not exceed 50 per cent of the gross production tax due.

Sec. 3. AS 43.56.060 is amended by adding new subsections to read:

(h) The department shall assess property for the tax levied under sec. 15 of this chapter within 60 days of the effective date of this Act on the basis of information presently available to the department.

(i) The full and true value of property taxable under sec. 15 of this chapter is the estimated price which the property would bring in an open market and under the prevailing market conditions in a sale between a willing buyer and a willing seller both conversant with the property and with prevailing general price levels. In determining this value the assessor shall take into account the discounted value of the expected future net income from the production of proven reserves under the

property.

Sec. 4. AS 43.56.100 is amended by adding a new subsection to read:

(c) The department shall send to every owner of taxable property named in the assessment roll a notice of the assessment made under sec. 60(h) of this chapter within 75 days of the effective date of this Act.

Sec. 5. AS 43.56.120 is amended by adding a new subsection to read:

(c) If an owner appeals a ruling of the department made under an appeal of an assessment of property made for purposes of the tax levied under sec. 15 of this chapter, the owner, by filing a notice of appeal to the board, agrees to furnish the state with all its records and research information relating to the property which is the subject of the appeal, including but not limited to (1) well logs; (2) records of well testing and completion; and (3) geological and geophysical information including seismic data. The information contained in the records and research information shall be kept confidential by the board unless litigation is instituted after a decision by the board.

Sec. 6. AS 43.56.150(c) is amended to read:

(c) The taxes [TAX] levied under secs. [SEC.] 10(a) and 15 of this chapter, interest and penalties collected with respect to these levies [THIS LEVY] shall be deposited in the general fund, except that two per cent of the taxes collected under sec. 15 of this chapter shall be deposited into the Alaska Native claims settlement fund.

Sec. 7. AS 43.56.160 is amended to read:

Sec. 43.56.160. INTEREST AND PENALTY. When the tax levied by sec. 10(a) or sec. 15 of this chapter becomes delinquent, a penalty of 10 per cent shall be added. Interest on the delinquent taxes, exclusive of penalty, shall be assessed at a rate of eight per cent a year.

Sec. 8. AS 43.56.170 is amended to read:

Sec. 43.56.170. LIEN FOR TAX. The taxes [TAX] levied under secs.

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[SEC.] 10(a) and 15 of this chapter and the interest and penalty provided in sec. 160 of this chapter are first and paramount liens on the property subject to tax under this chapter.

* Sec. 9. AS 43.56.180 is amended to read:

Sec. 43.56.180. REMEDY. The remedy of distraint of property set out in AS 43.20.270 applies to the taxes [TAX] levied by secs. [SEC.] 10(a) and 15 of this chapter. However, only property subject to [THE] tax may be distrained.

* Sec. 10. AS 43.56.210(6) is amended to read:

(6) "taxable property" means property described in sec. 15 of this chapter or real and tangible personal property used or committed by contract or other agreement for use within this state primarily in the exploration for, production of, or pipeline transportation of gas or unrefined oil (except for property used solely for the retail distribution or liquefication of natural gas), or in the operation or maintenance of facilities used in the exploration for, production of, or pipeline transportation of gas or unrefined oil, including machinery, appliances, supplies, equipment, drilling rigs, wells (whether producing or not), gathering lines and transmission lines, pumping stations, compressor stations, power plants, topping plants, processing units, roads, tank farms, tanker terminals, docks and other port facilities, air strips and communication equipment and facilities, maintenance equipment and facilities, and maintenance camps and other related facilities; "taxable property" does not include permanent residences, office buildings requiring substantial local government services, or gas pipeline systems operated as utilities and regulated by the Alaska Public Utilities Commission;

* Sec. 11. AS 43.56.210 is amended by adding a new paragraph to read:

(8) "proven reserves" means the volume of oil or gas in a

known deposit which geological and engineering information indicate to be reasonably expected to be produced under current economic and technological knowledge.

* Sec. 12. This Act takes effect immediately in accordance with AS 01.10.-070(c).

* Sec. 13. This Act terminates January 1, 1982.

AGO 530536

Introduced: 3/14/75
Referred: Resources and Finance

IN THE SENATE

BY THE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

SENATE BILL NO. 276

IN THE LEGISLATURE OF THE STATE OF ALASKA

NINTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to the oil and gas reserves ad valorem tax and its relationship to other oil and gas taxation; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

Section 1. AS 43 is amended by adding a new chapter to read:

CHAPTER 58. OIL AND GAS RESERVES AD VALOREM TAX.

Sec. 43.58.010. AD VALOREM TAX. (a) An annual tax is levied each tax year beginning January 1, 1976, on the full and true value of taxable property under this chapter.

(b) The legislature shall annually determine by law the rate of the levy before April 1.

(c) If on April 1 the legislature has not determined the rate of levy, the rate of levy shall be zero for that year. The rate of levy may not exceed 20 mills.

Sec. 43.58.020. EXEMPTIONS. The following interests in the proven reserves of a lease or property shall be exempt from taxation under this chapter:

(1) any interest of the United States or the state;

(2) any interest exempted from taxation by sec. 21 of the Alaska Native Claims Settlement Act (P.L. 92-203; 43 U.S.C. sec. 1620);

(3) all other interests in the proven reserves of a lease or property during a five-year period commencing with the date of the first lease, concession, joint venture, contract or any other agreement

that is made for the oil and gas development of a part or all of the land subject to that lease or property;

(4) taxable property under ch. 56 of this title.

Sec. 43.58.030. CREDIT AGAINST TAX. There shall be allowed, as a credit against the tax levied under this chapter for a lease or property, the amount of oil and gas properties production taxes paid under ch. 55 of this title for that lease or property for the 12 months before the tax payment date under this chapter. The credit may not exceed the amount of tax due under this chapter. For purposes of this section, the credit shall be calculated without regard to the allowance of any credit under AS 43.55.018 against the taxes levied by ch. 55 of this title.

Sec. 43.58.040. ASSESSMENT. (a) The department shall assess taxable property under this chapter at its full and true value as of January 1 of each year.

(b) The full and true value of taxable property under this chapter is the estimated price which the property would bring in an open market and under the then prevailing market conditions in a sale between a willing seller and a willing buyer both conversant with the property and with general price levels. In determining this value, the department shall consider all factors which may be known by the department to affect the value of the proven reserves of the lease or property, including but not limited to the discounted present value of the expected future net income from the lease or property.

Sec. 43.58.050. ASSESSMENT ROLL. The department shall prepare annually the assessment roll for taxation under this chapter. The roll shall contain:

(1) a description of all taxable property;

(2) the assessed value of all taxable property; and

(3) the names and addresses of persons owning or otherwise holding an interest in taxable property.

Sec. 43.58.060. ASSESSMENT NOTICE. On or before April 15 of each year, the department shall send to every owner of taxable property named in the assessment roll a notice of assessment showing the assessed value of the property. The notice of assessment is effective on the date of its mailing.

Sec. 43.58.070. APPEAL. (a) A person aggrieved by the action of the department in making an assessment may request a hearing not later than 20 days after the effective date of the assessment notice.

(b) At the hearing the department may subpoena witnesses and may administer oaths and make inquiries necessary to determine the correctness of the assessment. At the hearing the appellant bears the burden of proof, and in the absence of this proof the assessment will be upheld. If the department determines that a correction is warranted, the department shall correct the assessment and the assessment roll.

(c) Within 30 days after the decision by the department after a hearing, a person aggrieved by the decision may appeal to the superior court. If, after the appeal is heard, it appears that the assessment was correct, the court shall confirm the tax. If incorrect, the court shall determine the amount of tax and, if the person aggrieved is entitled to recover the tax or part of it, the court shall order the repayment.

Sec. 43.58.080. CERTIFICATION. On or before June 15 of each year, the department shall certify the final assessment roll and mail to the operator or other person filing a return and paying tax on the taxable property a statement of the amount of tax due.

Sec. 43.58.090. SUPPLEMENTAL ASSESSMENT ROLLS. The department shall include property omitted from the assessment roll on a supple-

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mental roll, using the procedures set out in this chapter for the original roll.

Sec. 43.58.100. INVESTIGATION. (a) The department may make an investigation of property on which a return has been filed or on property for which no return has been filed. In either case, the department may make its own valuation of the taxable property, which is prima facie evidence of full and true value.

(b) An employee or agent of the department may enter any premise necessary for the investigation during reasonable hours and may examine property and appropriate records. The owner of taxable property upon request shall furnish to the employee or agent of the department reasonable assistance required for the investigation. If refused entry, the department may seek a court order to compel entry.

(c) For the purpose of the investigation, the operator or other person filing a return and paying the tax on the taxable property or his representative may be required to present himself for examination under oath by the department.

Sec. 43.58.110. RETURNS AND PAYMENT OF TAX. (a) The operator of a lease or property is primarily liable for payment of the tax levied by this chapter. All other persons owning or otherwise holding an interest or right in that lease or property are secondarily liable for payment of the tax levied by this chapter.

(b) The operator of a lease or property shall submit returns on the form prescribed by the department and shall make payment of the tax levied under this chapter, on behalf of itself and all other persons holding an interest or right in that lease or property. With the written approval of the department, a non-operator of the lease or property may submit returns or make payment of the tax levied under this chapter, on behalf of himself and such other persons as the

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department may approve. All returns shall be filed on or before February 1 of each year.

(c) The tax levied under this chapter is payable to the department on or before June 30 of each year or in installments at the times and under the conditions the department may by regulation require.

(d) With the prior written approval of the department, a person submitting returns or making payments as required under this chapter for more than one lease or property may regard those leases or properties as a single lease or property for purposes of submitting those reports or making those payments.

(e) An operator or other person making payment of the tax levied under this chapter on behalf of one or more other persons owning or otherwise holding an interest in a lease or property may withhold a proportionate share of the payment from any proceeds or other benefits from the lease or property owed to any person on whose behalf the payment is made. Unless otherwise specifically provided by written contract or agreement, the person so withholding a proportionate share of the tax levied under this chapter incurs no liability to those from whom it is withheld by virtue of having made the withholding.

(f) By written notice the department may require a person filing a return to submit additional information to the department no later than 30 days after the notice.

Sec. 43.58.120. CIVIL PENALTY. Five per cent shall be added to the tax for each 30-day period or fraction of that period during which the taxpayer fails to file a return or pay the full amount of the tax, or a portion or a deficiency of the tax due and payable as finally determined by the department and required by this chapter, unless it is shown that the failure is due to a reasonable cause and not to willful neglect. The penalty may not exceed 25 per cent in the aggre-

gate. The penalty shall be collected at the same time, in the same manner and as a part of the original tax, but if the original tax is paid before the neglect is discovered the penalty shall be collected in the same manner as the original tax. The department shall describe by regulation circumstances which constitute reasonable cause for purposes of this section.

Sec. 43.58.130. INTEREST. When the tax levied in this chapter becomes delinquent it bears interest at the rate of eight per cent a year.

Sec. 43.58.140. LIEN. The tax, penalty and interest payable under this chapter are first and paramount liens on the property subject to tax under this chapter.

Sec. 43.58.150. REMEDY. The remedy of distraint of property set out in AS 43.20.270 applies to the tax levied by this chapter.

Sec. 43.58.160. REGULATIONS. The department may adopt regulations in accordance with the Administrative Procedure Act (AS 44.62) as appropriate to administer and enforce this chapter.

Sec. 43.58.170. TERMINATION OF TAX. The tax imposed by this chapter shall terminate on December 31, 1977.

Sec. 43.58.180. ACCRUAL OF EARLY DEVELOPMENT INCENTIVE CREDIT. (a) An early development incentive credit, calculated in accordance with this section, shall be applied to the tax payable under AS 43.55 as provided in AS 43.55.018. The early development incentive credit for a lease or property is zero until changed as provided in this section.

(b) The early development incentive credit for a lease or property shall be increased each calendar year by the amount of net tax paid under this chapter.

(c) The early development incentive credit for a lease or property

(7) "proven reserves" means the volumes of oil and gas in a known deposit which geological and engineering information indicate to be recoverable in the future under prevailing economic conditions and technology;

(8) "taxable property" means any interest in the proven reserves of a lease or property.

* Sec. 2. AS 43.55.010(b) is amended to read:

(b) Except as provided in AS 43.58, the [THE] tax imposed by this chapter is in place of all taxes now imposed by the state or any of its municipalities, and neither the state nor a municipality may impose a tax upon

(1) [deleted]

(2) producing oil or gas leases;

(3) oil or gas produced or extracted in the state;

(4) [deleted]

(5) the value of intangible drilling and exploration expenses

* Sec. 3. AS 43.55 is amended by adding a new section to read:

Sec. 43.55.018. CREDIT AGAINST TAX. (a) There shall be allowed as a credit against the taxes levied under this chapter for a lease or property the early development incentive credit accrued for that lease or property under AS 43.58.180. In no event may the credit allowed for a lease or property exceed 50 per cent of the taxes levied under this chapter for that lease or property.

(b) The credit shall be allowed on a monthly basis.

* Sec. 4. AS 43.55.140(8) is repealed and re-enacted to read:

(8) "lease or property" means

(A) a lease or other property that includes mineral rights in oil and gas,

(B) a leasehold interest in oil and gas,

shall be reduced each month by the amount of tax credit allowed in that month under AS 43.55.018 for that lease or property.

Sec. 43.58.190. DEFINITIONS. In this chapter:

(1) "department" means the department of revenue;

(2) "gas" means all hydrocarbon substances not defined as oil in this chapter;

(3) "lease or property" means

(A) a lease or other property that includes mineral rights in oil and gas,

(B) a leasehold interest in oil and gas,

(C) a working interest, royalty interest, overriding royalty interest, net profit interest or any other interest in a lease, concession, joint venture or other agreement for oil and gas exploration, development or production,

(D) a working interest, royalty interest, overriding royalty interest, net profit interest or any other interest in an agreement for unitization or pooling under the provisions of sec. 614(b)(3) of the Internal Revenue Code of 1954 as defined on the effective date of this paragraph;

(4) "net tax paid under this chapter" means the amount of tax payable under sec. 10 of this chapter, less the credit allowed under sec. 30 of this chapter;

(5) "oil" means crude petroleum oil and other hydrocarbons, regardless of gravity which, when recovered, are recovered at the wellhead in liquid form, and the liquid hydrocarbons known as distillate or condensate that are recovered by separation from gas other than at a gas processing plant;

(6) "operator" means the person conducting the exploration, development or production operation for a lease or property;

(C) a working interest, royalty interest, overriding royalty interest, net profit interest or any other interest in a lease, concession, joint venture or other agreement for oil and gas exploration, development or production,

(D) a working interest, royalty interest, overriding royalty interest, net profit interest or any other interest in an agreement for unitization or pooling under the provisions of sec. 614(b)(3) of the Internal Revenue Code of 1954 as defined on the effective date of this paragraph;

* Sec. 5. Sec. 29.53.050(b) is amended to read:

(b) No municipality, or combination of municipalities occupying the same geographical area, in whole or in part, may levy taxes which result in tax revenues from all sources exceeding either (1) $1,000 a year for each person residing within their boundaries or (2) when combined with the value of property otherwise taxable by the municipality, the product of 225 per cent of the average per capita assessed full and true value in the state multiplied by the number of residents of the taxing municipality. If two or more municipalities occupying the same geographical area, in whole or in part, attempt to levy a tax the combined levy of which would result in tax revenues from all sources exceeding either (1) $1,000 a year for each person residing within their boundaries or (2) when combined with the value of property otherwise taxable by the municipality, the product of 225 per cent of the average per capita assessed full and true value of property in the state multiplied by the number of residents of the taxing municipality, the commissioner of community and regional affairs shall apportion the lawful levy and equitably divide these revenues on the basis of need, services performed and other considerations in the public interest. For the purpose of this subsection population shall be determined by

the commissioner of community and regional affairs based on the latest statistics of the United States Bureau of the Census or on other reliable population data. For purposes of this subsection the average per capita assessed full and true value of property in the state shall be calculated without regard to the assessed value of taxable property under AS 43.58.

* Sec. 6. Sec. 43.56.010(c) is amended to read:

(c) If the total value of assessed property of a municipality taxing under AS 29.53.045(c) exceeds the product of 225 per cent of the average per capita assessed full and true value of property in the state (to be determined by the department and reported to each municipality by January 15 of each year) multiplied by the number of residents of the taxing municipality, the department shall designate the portion of the tax base against which the local tax may be applied. For purposes of this subsection the average per capita assessed full and true value of property in the state shall be calculated without regard to the assessed value of taxable property under AS 43.58.

* Sec. 7. This Act takes effect on April 30, 1975.

Notes to Appendices One, Two, Three and Four

1. Quantities produced and production costs based on H. J. Gruy and Associates model used for the Aerospace Corporation "Alaska Natural Gas Transportation Systems: report to the Department of Interior; specifically run 44102, tables 3.066B and 4.04B.

2. Capital costs are based on H. J. Gruy and Associates model as are quantities produced and production costs. Capital costs are varied between Appendix one and two to determine sensitivity of costs and tax revenues to greater depreciation costs.

3. Transportation costs are based on preliminary "Pipeline Tariff Summary," Oct. 13, 1975, by Division of Oil and Gas, Department of Revenue.

4. All values are in 1975 dollars except for transportation which allows for a three percent per year increase in operating expenses which slightly over states transportation expenses in the later years of operations.

5. PRICE - Appendix one and Appendix two: Price set at $7.00 per barrel to determine if this price and the proposed tax approach would yield returns to capital high enough to clearly make further development at this "long term price" competitive in the capital markets. NOTE: Under Appendix two, even if original capital costs are increased by 500 million to 3.2 million, the present discounted rate of return would still be 41 percent.

6. PRICE - Appendix three: This is based on total decontrol of Prudhoe Bay oil. It assumes it will have the same price as OPEC oil and that over time both will be forced down to the long term price.
NOTE: Both may appear to have rising prices but when inflation is considered, the price will be falling in real purchasing power terms. This has actually happened to OPEC prices in the past year.

7. * PRICE - Appendix three: This is based on the recently passed and signed "Energy Policy and Conservation Act." It is assumed that: 1) Prudhoe Bay oil will be treated like other oil and will generally sell for the "average weighted price" of $7.66 plus the three percent incentive factor allowed; 2) OPEC prices start at $14.00 in 1975 and in real purchasing power terms (constant dollars) fall three percent a year; and 3) in the eleventh year of production OPEC and the Prudhoe Bay price are equal and both begin to fall at three percent per year to the long term price of $7.00 per barrel.

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

AREA CODE 512
452-2108

J. HENRY WILKINSON, JR.
Attorney at Law
5505 CAPRICE DRIVE
AUSTIN, TEXAS 78731

April 12, 1975

The Honorable John Huber
Senator and Chairman
Special Committee on Taxation & Revenue
Alaska State Senate
Pouch V
Juneau, AK 99811

Re: SB ___ to provide for ad valorem taxes on oil and gas in place and for certain amendments to the present Alaska tax statutes.

Dear John:

You asked that I draft a bill for the above purpose based on the study which I furnished you on April 7, 1975, which reflected the work of Joseph P. Witherspoon and myself, and on the conclusions reached in consultation with you, based on various conferences and the testimony that we have heard this week.

I enclose the requested bill, SB ___. In Appendix "A" to this letter I have set out the corresponding provisions of SB 276 (the Governor's bill) and the sources of the provisions of SB 276 in the last two columns of Exhibit "A", indicating the section of SB 276 in the penultimate column and other sources in the last column, all by section number.

The principle changes from SB 276 to SB ___ herewith are the following:

1. SB ___ broadens the exemptions accorded to native interests;

2. The early production incentive credit provided by SB 276 is eliminated;

AGO 530548

3. The termination date provided by SB 276 is eliminated so as to make the new bill a permanent provision of the Alaska statutes.

4. SB ___ provides for review by the State Assessment Review Board, and reconstitutes the membership of that Board.

5. SB ___ provides for returns by each owner and for taxation of his interest, not for returns and payments by the operator as in SB 276.

Section 1 of SB ___ adds a new chapter, AS 58, as does SB 276. I shall now review briefly the changes that are made in SB ___ compared to SB 276. This review may be facilitated by reference to the cross-reference table provided in Appendix "A". I shall take up the section numbers of AS 43.58 proposed to be added by SB ___.

Section .010 AD VALOREM TAX. This provision is the same as that in SB 276, and provides for an annual rate to be fixed by the Legislature.

Section .020 EXEMPTIONS. The exemptions correspond to those set out in SB 276, except that Section .020 (2), providing for exemption of native interests, has been broadened to read as provided in SB ___.

Section .030 CREDIT AGAINST TAX. This provision for a credit against the new ad valorem tax for the amount of production taxes paid under AS 43.55 has been modified to provide that such credit shall be based upon the production taxes paid for the twelve months of the preceding calendar year as determined without reference to interest or penalty. Further modification limits the credit to the amount of the new ad valorem tax as determined without reference to interest or penalties and without regard to any credit.

Section .040 ASSESSMENT. This provision is based upon that in SB 276.

Section .050 ASSESSMENT ROLL, Section .060 RETURNS, and .070 INVESTIGATIONS. As a result of the provision for review by the State Assessment Review Board, these sections have been changed to meet that requirement and are based upon the present provisions of AS 43.56 as indicated.

Section .080 ASSESSMENT NOTICE. This provision is taken from SB 276, but the date of sending the notice is advanced from April 15 to March 15 because of the adoption of a State Assessment Review Board appellate procedure.

Section .090 APPEAL TO THE DEPARTMENT. To conform to the addition of the provision for appeal to the State Assessment Review Board, the provision for appeal to the Department has been modified to conform thereto, and is based upon AS 43.56.110 as indicated.

Section .100 APPEAL TO THE STATE ASSESSMENT REVIEW BOARD and Section .110 HEARINGS OF STATE ASSESSMENT REVIEW BOARD. These provisions are for the review by the State Assessment Review Board and are based upon the present provisions of AS 43.56 as indicated. It should be noted that, at one time, consideration was given to including a subsection 43.58.100 (c) based upon HB 297, Section 5 (Cowper's bill), providing that by filing of a notice of appeal the appellant agrees to furnish the State with certain records. John Messenger has advised that the State has access to such records under existing law and that the provision is unnecessary. Consequently, it has not been included in the draft bill, SB ___.

It should also be noted that the date provided in Section .110 (h) for certification and notice of tax due has been changed from June 1 to June 15 to conform to the time requirements imposed by the provisions for review by the State Assessment Review Board. Your attention is also directed to the fact that Section .110 (i) provides that the appeal from the Board's action to the Superior Court is to be in accordance with and

subject to the provisions of AS 43.56.130 (i). (Provision is made in Section 9 of SB ___, below, concerning appeal to the court.)

Section .120 SUPPLEMENTARY ASSESSMENT ROLLS and Section .130 COLLECTION AND DEPOSIT are based upon the provisions of AS 43.56 as indicated.

Section .140 CIVIL PENALTY, Section .150 INTEREST, and Section .160 LIEN were taken from SB 276 as indicated.

Section .170 REMEDY. The provision for remedy for distraint was taken from AS 43.56 as indicated, but has been modified to extend to the penalty and interest on the ad valorem tax.

Section .180 REGULATIONS. This provision was taken from AS 43.56 as indicated in order to provide for the State Assessment Review Board procedure.

Section .190 DEFINITIONS. The definitions were taken from SB 276 but were renumbered. Section .190 (1) is added to define the "Board" to conform to the addition of procedures before the State Assessment Review Board. Section .190 (4) and (5) were modified to add "production payment" to the definition of a "lease or property."

The above completes the description of the new chapter AS 43.58 to be added by Section 1 of SB ___. The remaining sections of SB ___, numbers 2 and following, provide for amendment of present statutes and for an effective date. These will now be considered.

Section 2. This provision is taken from SB 276 and modifies AS 43.55.010 (b) to except the ad valorem tax to be imposed under AS 43.58 from the exemption provided.

Section 3. This provision repeals and reenacts AS 43.55.140 (8) and is taken from SB 276. Its purpose is to redefine the term "lease or property" in AS 43.55 to correspond with the definition in AS 43.58.190 as provided in SB ___.

Section 4, Section 6 and Section 7. In my study of present law, as covered in my letter to you of April 7, 1975, on pages 5 and 6, a question was raised as to the meaning of the 225% limitation imposed on assessment of tax by municipalities under AS 29.53.045, as set out in 29.53.045 (c), 29.53.050 (b) and in 43.56.010 (c) of the present statutes. Sections 4, 6 and 7 of SB ___ provide for clarification of that ambiguity and apply the limitation of 225% to the values of property taxed by the municipality under AS 29.53 and values otherwise taxed by the municipality, not to the tax under AS 29.53 plus values of other properties taxed by the municipality. In addition, the three sections mentioned are amended by addition of a clause at the end of each which precludes the inclusion of values of oil and gas reserves in place to be taxed under new AS 43.58 in the calculations of the 225% limitation on the municipal tax.

Section 5. This provision reconstitutes the State Assessment Review Board membership to include the commissioners of natural resources, commerce and revenue, with the provision that each commissioner may designate his deputy commissioner to act in his stead, in lieu of the present membership under AS 43.55.040.

Section 8. This section amends AS 43.56.030 to provide for exclusion of the new ad valorem tax under Chapter 58 from the exemptions there provided.

Section 9. This section modifies the provisions of AS 43.56.120 (i) to eliminate the provision for trial de novo and to substitute an appeal on the record of the Board's action, and limits the inquiry

on that appeal. The purpose is to facilitate proceedings in the Superior Court, to expedite the proceedings and to avoid duplication of effort and costs at the Superior Court level upon appeal from the Board's action. This provision is referred to in SB ___, Section 43.58.110 (i), referred to above.

Section 10. This section provides that the act shall take effect immediately.

It is understood that the draft of SB ___ will be put in suitable form by your legislative draftsman for introduction.

Very truly yours,

J. Henry Wilkinson, Jr.

JHW:kb
Enclosure

cc: Joseph P. Witherspoon

Senator John Huber April 12, 1975

Cross References from SB 276 to SB ___
and Sources of Draft Bill Provisions

SB 276 S. 1 adds 43.58-	Description	SB ___ S. 1 adds 43.58-	Source: SB 276 S. 1 adds 43.58-	Source: Present Statute 43.56-
.010	Ad valorem Tax	.010	.010	
.020	Exemptions	.020	.020	
.030	Credit against tax	.030	.030	
.040	Assessment	.040	.040	
.050	Assessment roll	.050		.090
.110 (b)	Returns	.060		.070
.100	Investigation	.070		.080
.060	Assessment Notice	.080	.060	
.070	Appeal (to department)	.090		.110
.080	Certification: Notice of Tax due (See Secs. .080 and .110 (h) of SB ___).			
---	State Assessment Review Board	.100		.100
---	Hearings of State Assessment Review Board	.110		.130
.090	Supplemental Assessment Rolls	.120		.140
.110 (a)	Payment	.130		.150
.120	Civil Penalty	.140	.140	
.130	Interest	.150	.130	
.140	Lien	.160	.160	
.150	Remedy - Distraint	.170		.170
.160	Regulations	.180		.200
.170	Termination of Tax	___	___	___
.180	Accrual of early development incentive credit	___	___	___

SB 276 S. 1 adds 43.58-	Description	SB S. 1 adds 43.58-	Source: SB 276 S. 1 adds 43.58-	Source: Present Statute 43.56-
.190	Definitions	.190	.190	
Sec. 2	Amends AS 43.55.010 (b)	Sec. 2	Sec. 2	
Sec. 3	Amends AS 43.55.018 Credit against production tax	---		
Sec. 4	AS 43.55.140 (8) repealed and reenacted	Sec. 3	Sec. 4	
Sec. 5	Amends AS 29.53.050 (b) and to remove ambiguity	Sec. 4	Sec. 5	
---	Amends AS 43.56.040	Sec. 5		
Sec. 6	Amends AS 43.56.010 (c)	Sec. 6	Sec. 6	
---	Amends AS 29.53.045 (c)	Sec. 7		
---	Amends AS 43.56.030	Sec. 8		
---	Amends AS 43.56.120 (i)	Sec. 9		
Sec. 7	Effective Date	Sec. 10		

SCOMM

#11:22

JOSEPH P. WITHERSPOON, S. J. D.
PROFESSOR OF LAW
313 TOWNES HALL 2500 RED RIVER
AUSTIN, TEXAS 78705

OFFICE AC 512 471-5151
RESIDENCE AC 512 452-1939

STATEMENT

June 21, 1976

TO: Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Alaska State Legislature, Senate

FROM: Joseph P. Witherspoon, Professor of Law, University of Texas School of Law, Austin, Texas

SUBJ: Legal services relative to tax legislation proposed by Senate Special Committee on Taxation and Revenue, Ninth Legislature, Second Session

PERIOD: January 31 - April 1, 1976

For legal services rendered pursuant to my letter agreement of January 31, 1976, to and at the request dated January 27, 1976, and telephone call of the same date of Senate Special Committee on Taxation and Revenue, Alaska State Legislature, by Senator John Huber, Chairman, in conjunction with research for and preparation of memoranda upon constitutional and policy problems presented by bills prepared for or contemplated by such Committee, including Senate Bill No. 620, 621, and more especially a memorandum dated March 15, 1976, entitled: "Validity of exemption in behalf of Native individual and group . . . interests . . ."

Legal services from January 31 through April 1, 1976
-- 18 hours at $60.00 per hour $1080.00

Respectfully submitted,

Joseph P. Witherspoon

Joseph P. Witherspoon

AGO 513761

JOSEPH P. WITHERSPOON, S. J. D.
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313 TOWNES HALL 2500 RED RIVER
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OFFICE AC 512 471-5151
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June 21, 1976

Senator John Huber, Chairman
Special Committee on Taxation and Revenue
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear John:

It was certainly good to talk with you today and to review the problems you encountered during the session just ended. There will be a next time to resume the effort for a better legal system for Alaska.

I look forward to meeting with you in Anchorage on my visit there July 8-11 and I will call you at the number you gave me when I arrive. My visit is in conjunction with the opening of the Alaska Pacific Bank. I had assisted former Senator Rettig and others associated with him in combatting the opposition of the four principal banks in Alaska to obtaining a state bank charter and to obtaining clearance from the U. S. Department of Justice for its association with the Alaska Mutual Bank. It was quite an experience with very few holds barred. I will also be in Anchorage in late July and early August to assist the Alaska Pacific and the Alaska Mutual with certain problems. Although you will probably be out of the state then, I will plan to call you on that visit also.

I have enclosed my statement for services rendered your Committee during the recent session. It was again a pleasure to work with you.

I am glad to know that you plan to attend the scheduled meeting of the new organization of the petroleum producing states to be held in Houston in August. As you suggested, I will contact Representative Wyatt and obtain the current information on his plans. It will be good to attend these meetings with you.

Again, it was good to talk with you today. With best personal regards, I remain,

Sincerely,

Joseph P. Witherspoon

AGO 513762

June 15, 1976

Joseph P. Witherspoon, S.J.D.
Professor of Law
313 Townes Hall
2500 Red River
Austin, Texas 78705

Dear Joe:

The Subcommittee on Taxation and Revenue is in the process of preparing its final report. I want to thank you for the good job that you did for us. The information was most helpful in carrying out the committee's work.

Please review your records to see if all billings and payments have been made. If there is an additional billing or if a payment is missing, please inform me by phone or return mail. The committee will cease to exist and all funds will lapse as of June 30, 1976.

You can be assured that when matters come before the Legislature in your area of expertise that I will recommend that your services be retained. Thank you again for all of your help.

Sincerely,

John Huber

Enclosure

AGO 513763

FCCS SCS CSHB 586

The question being: "Shall the free conference committee report be adopted?" The roll was taken with the following result:

Yeas:	14	Bradley, Chance, Colletta, Croft, Ferguson, Huber, Kerttula, Meland, Orsini, Poland, Ray, Rodey, Willis, Ziegler
Nays:	0	
Absent:	3	Butrovich, Hohman, Tillion
Excused:	3	Miller, Rader, Sackett

And so, FREE CONFERENCE COMMITTEE SUBSTITUTE FOR SENATE COMMITTEE SUBSTITUTE FOR COMMITTEE SUBSTITUTE FOR HOUSE BILL NO. 586 was adopted.

The Secretary was requested to notify the House.

Alaska State Legislature

SPECIAL COMMITTEE ON TAXATION AND REVENUE
POUCH V
JUNEAU, ALASKA 99811
(907) 465-3779

SENATORS
JOHN HUBER, CH.
JOE ORSINI
PAT RODEY

Senate

May 29, 1976

The Honorable Chancy Croft
President of the Senate
Alaska State Legislature

Dear Mr. President:

The Special Committee on Taxation and Revenue met immediately after the May 29, 1976 session. The purpose of the meeting was to review the ongoing tax and revenue studies by the Committee staff. The Committee found that sufficient progress has been made in the designated subjects so that the Committee's charges have been met.

After the review the Committee instructed the Chairman to complete the staff studies now under way and to file a final report for inclusion in the Supplemental Journal. The final report shall be submitted not later than the final date of service of the contract employee staff, which is June 30, 1976. It was further decided to terminate all of the Special Committee's consultants on the same date.

In accordance with your charge on formation of the Committee on January 24, 1975, the following information is submitted giving the current status of the projects.

Items #1 and #2 - Relate to Corporate Taxes and Their Structure

AGO 513764

Alaskan residents and corporations pay one of the nations highest income tax rates. The outside and vertically integrated multi-national corporations largely avoid this taxation. The multi-state compact is inadequate to provide a fair formula to a resource extractive state. Legislative changes have been enacted in the final two items--per centage depletion allowance and investment tax credits.

Item #3 - Advantages and Disadvantages of Taxation of Oil & Gas in Place by Elimination of Present Exemption

This was sole Committee activity during the session of 1975. Subsequently, the Legislature adopted the Modified Reserves Ad Valorem Temporary Tax (as a finger in the dike measure.)

Items #4 and #5 - Revision of Serverance Tax Law and Difference in Tax on Oil and Gas

Specific legislation has been submitted on these subjects and presently rests in the Legislature's committees.

Item #6 - Proposals regarding liquor excise tax collection were made and submitted in legislation. Wholesale liquor income tax avoidance is still under study. Further study on the multi-state tax compact and cooperative arrangements with the U.S. Alcohol and Tobacco unit and the State of Washington Liquor Control Board are under way.

Legislation to control foreign real estate speculation was submitted and withdrawn. This needs more study because the actual drafted bill, based on Vermont law, proved to be too broadly based.

We have joined initial work on interstate cooperation between the 14 petroleum producing states regarding oil and gas taxation.

Conclusion and Recommendations

The Chairman will be responsible for the final report.

The Committee further recommends that any continuing tax and revenue source study and action be conducted by the Legislature within the framework of the standing committee system, with interim committees when needed. It is felt that either a new standing committee or preferably an expansion of one of the existing standing committees to include this neglected area of revenue and tax sources should be established by the next Legislature.

In conclusion, the Committee thanks the Senate for the opportunity to work on these crucial matters at a time when our state seemed to face virtual bankruptcy. It is hoped that our final report will help the Legislature replace the repressive and regressive oil and gas reserves tax which we now depend on so heavily for state budget funding. A system of taxation based upon the net profitability of the produced resources as well as the instigation of reforms in excise, corporate income, and gross severance taxes is recommended for consideration.

We wish to thank our highly competent and dedicated professional staff for their invaluable services as well as our consultants and the Legislative Council for additional support services and adequate funding of our operation. We have been efficient enough with our budget to allow lapsing funds 15 to 35% of the total amount allocated.

In finish, that motions may begin.

John Huber

Joe O'Brien

Pat Foley

AGO 513765

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OFFICE AC 512 471-5151
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March 16, 1976

The Honorable John Huber
Senator and Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature - Senate
Pouch V
Juneau, Alaska 99811

Dear John:

I have attached a fresh memorandum on the question of the validity of an exemption in behalf of Native individuals, Native groups, or Native regional corporations in legislative measures imposing an ad valorem tax on oil and gas reserves. The memorandum explains that I did not prepare such a memorandum in 1975. I only expressed myself orally to you and before your Committee. The memorandum is definitive and should prove helpful for the future when you have this problem as well as now.

I am also working on the memorandum requested by Chancy concerning the constitutionality of the bill restricting shipments of oil and gas from state leased lands and will be sending it on up reasonably soon.

I shall look forward to hearing from you concerning other specific matters you want me to handle.

With best personal regards, I remain,

Sincerely,

Joseph P. Witherspoon

AGO 513766

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AUSTIN, TEXAS 78705

OFFICE AC 512 471-5151
RESIDENCE AC 512 452-1939

March 15, 1976

The Honorable John Huber
Senator and Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature - Senate
Pouch V
Juneau, Alaska 99811

In re: Validity of exemption in behalf of Native individual and group (village or regional corporation) property interests contained in legislative measures imposing an ad valorem tax on oil and gas reserves

Dear Senator Huber:

During the First Session of the Ninth Legislature several proposals were made to exempt from the proposed legislative measures imposing an ad valorem tax on oil and gas reserves certain interests in property of a Native individual, Native group or village, or regional corporation.

You have asked me to provide you with any memorandum that may have been prepared by me during that session bearing upon the validity under the Constitution of the United States of such exemptions. Upon checking my files, I discovered that I did not prepare any such memorandum. However, I did participate in a conference on April 9, 1975, in the offices of your Special Committee in which both Dean Erwin Griswold and I expressed our respective views concerning this matter. There were present at that meeting yourself, Senator Chancy Croft, Representative Steve Cowper, and Professor Henry Wilkinson, among others.

This letter summarizes my views upon the validity of the kind of exemption about which you have inquired. It is based upon a fresh and in-depth investigation of the relevant case and scholarly authorities.

The Types of Exemptions in Behalf of Native Property Interests Contained in Proposed Measures Imposing An Ad Valorem Tax on Oil and Gas Reserves

There were two types of exemptions proposed in behalf of Native property interests in proposed measures imposing an ad valorem tax on oil and gas reserves during the First Session of the Ninth Legislature. One type, which took many forms, applied to property interests owned by Native individuals, Native groups, or Village or Regional Corporations. Another type, which was discussed as a possible measure at the April 9th meeting referred to above, applied to property interests transferred by such individuals, groups, or corporations to third parties and owned by the latter.

So far as the question of validity of the first type of exemption is con-

cerned, the variation in form presented in the various proposals is without significance. Some proposals of this type simply tracked the exemption contained in Section 21 of the Alaska Native Claims Settlement Act, 43 U.S.C. section 1620. Thus, CS for Sponsor Substitute for House Bill No. 297 (Original sponsor: Cowper, et al; Introduced 4/25/75) provided for the exemption as follows:

> "Sec. 43.58.020. Exemptions. (a) The following interests . . . shall be exempt . . .:
> (2) any interest exempted from taxation by sec. 21 of the Alaska Native Claims Settlement Act (P.L. 92-203, 43 U.S.C. 1620)."

Other proposals of this type provided a wider form of exemption. Thus, an amendment proposed for consideration by the Free Conference Committee with respect to CS SSHB 297 (Rules) on May 28, 1975, called for adding the following exemption to

> "Sec. 43.58.020. Exemptions. (a) The following interests . . . shall be exempt . . .:
> (5) any property of a Native individual, Native group or village, or regional corporation conveyed to such owner of that property pursuant to the Alaska Native Claims Settlement Act (P.L. 92-203) during the period of exemption specified by sec. 21 of that Act or pursuant to any other federal statute or authority that provides for a conveyance of such a property to a Native individual, Native group or village, or regional corporation."

I am not aware of any bill which proposed the second type of exemption described above so as to extend the exemption to any property transferred by a Native individual, Native group or village, or regional corporation to a third party and owned by such party who does not fall into the class of persons or entities to which the grantor belongs.

The Validity of Exemptions in Behalf of Native Property Interests under the Constitution of the United States

In light of the well-established constitutional doctrines applicable to state and local tax legislation, the only provision that is relevant for testing the validity of such exemptions is the Equal Protection Clause of the Fourteenth Amendment. No serious question of validity of these exemptions can be raised, without involvement of additional facts, under either the Due Process Clause of the Fourteenth Amendment or the Commerce Clause.

As I mentioned in the conference of April 9, 1975, the Alaska Native Claims Settlement Act operates to give validity to state legislation that grants exemptions from state tax measures, even though the state tax exemption is wider than the federal tax exemption, provided that the same persons or entities are being benefitted by the two exemptions. This proposition follows from application of the principle that a state can act to give support to a federal policy within its own jurisdiction so long as this does not hinder the achievement of the policy. The fact that the state extends its support of that policy to areas beyond the focus of that policy as originally conceived by the federal government does not basically change the conclusions stated above. Unless the scheme of federal regulation is so pervasive as to make reasonable the inference that Congress left no room for the State to supplement it, the State may supplement that scheme. Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 229-30 (1947). While the principle stated in the Rice case was made with regard to federal regulation, the principle is a fortiori applicable with regard to federal taxation. In the

field of taxation and taxation policy, the federal and state governments each retain ample power to pursue their respective interests and there is far less occasion for finding conflict between their respective efforts to legislate. See, e.g., Detroit v. Murray Corporation, 355 U.S. 489 (1958), in which the Supreme Court sustained the application of local government personal property taxes to property owned by a subcontractor under a prime contract for the manufacture of airplane parts between two private companies and the United States. Also, see, the McCarran Act, 59 Stat. 33, 15 U.S.C. sections 1011-1015, which declared that the business of insurance shall be subject to the laws of the several states relating to the regulation or taxation of such business. This act was enacted after the decision of the Supreme Court of the United States in United States v. South-Eastern Underwriters Association, 322 U.S. 533 (1944) in which it was held that the business of insurance could be subjected to federal regulation and that the Sherman Antitrust Act applied to it. Just as the McCarran Act is to be viewed as federal legislation permitting state taxation of an insurance company engaged in interstate commerce so far as business done within a state so the Alaska Native Claims Settlement Act is to be viewed as permitting state exemptions from taxation of those exempted from taxation by that act. Even if, without the federal statute, there would be no state power so to act because of some federal statutory or constitutional provision, the constitutional federal statute operates to provide power to the state to act within the scope of its policy and purposes.

Equal Protection Clause Considerations

Since the analysis so far would only sustain the validity of the first type of exemption under consideration, it is necessary to consider the application of the Equal Protection Clause of the Fourteenth Amendment to the second type of exemption. Moreover, since the Legislature may want to utilize a broader form of the first type of exemption, it will be necessary to consider the application of the Equal Protection Clause to that broader form. The analysis utilized above only sustains, strictly speaking, the validity of the first type of exemption which precisely tracks the exemption from taxation contained in Section 21 of the Alaska Native Claims Settlement Act.

Under certain circumstances, which should be carefully understood, exemptions of both the first and second type discussed above are valid under the Equal Protection Clause of the Fourteenth Amendment, in my opinion. The circumstances are that the Legislature chooses to enact these exemptions upon the basis that they are needed in order to protect Native individuals, Native groups or villages, or Native regional corporations with regard to the public interest in their economic, educational, social, political, and other like development and progress. The Legislature must have a rational basis for concluding that either or both of these exemptions will promote this public interest. The Legislature will especially require justification for its conclusion that the second type of exemption will promote this public interest since there will be, by hypothesis, no essential difference between a third party who enjoys the tax exemption because of a transfer of a property interest from a Native individual or entity and a third party who does not enjoy the tax exemption because of a transfer of a property interest from someone or some entity other than a Native individual or entity. This justification should be supported by evidence or data presented to the relevant legislative committees of both houses of the Alaska Legislature and, preferably, this evidence or data should be assembled in a report by each of these committees.

The starting point of the development of the doctrine concerning the application of the Equal Protection Clause as a limitation upon the taxing power of the states was the case of Bell's Gap Railroad Co. v. Pennsylvania, 134 U.S. 232 (1890). In upholding the particular tax involved, an annual tax measured by the nominal value of corporate bonds although all other moneyed securities were taxed at their actual value, Mr. Justice Bradley said for the Court:

> "The provision in the Fourteenth Amendment, that no State shall deny to any person within its jurisdiction the equal protection of the laws, was not intended to prevent a State from adjusting its system of taxation in all proper and reasonable ways. It may, if it chooses, exempt certain classes of property from any taxation at all, such as churches, libraries and the property of charitable institutions. . . . All such regulations, and those of like character, so long as they proceed within reasonable limits and general usage, are within the discretion of the state legislature, or the people of the State in framing their Constitution. But clear and hostile discriminations against particular persons and classes, especially such as are of an unusual character, unknown to the practice of our governments, might be obnoxious to the constitutional prohibition. It would, however, be impracticable and unwise to attempt to lay down any general rule or definition on the subject, that would include all cases. They must be decided as they arise." Id. at 237.

Perhaps the classic position concerning the validity of exemptions in state property tax laws was stated by the Supreme Court of the United States in the case of Williams v. Mayor and City Council of Baltimore, 289 U.S. 36 (1933). In that case a state law exempting from taxation railroad property of a single, specified railroad company, which was in great financial trouble, was challenged as a violation of the Equal Protection Clause. The federal district court upheld the statute. The Court of Appeals for the Fourth Circuit reversed upon the ground that the statute was invalid under both the Equal Protection Clause and several provisions of the Maryland Constitution. The Supreme Court reversed the latter decision. While the Court held the plaintiff cities to be without standing to raise the Equal Protection issue, it entertained their claim that the statute violated the Maryland constitutional requirement of uniformity in taxation, which basically paralleled the scope of the federal Equal Protection Clause. The Court's disposition of the latter issue is, therefore, of great significance for its bearing upon the doctrine of Equal Protection as a limitation upon the state's power to tax. Mr. Justice Cardozo, speaking for the Court, stated:

> "Furtherance of the public good is written over the face of this statute from beginning to end as its animating motive. 'It is of the utmost importance for the welfare of the State and particularly the communities served by said railroad, that the operation of said railroad be continued.' 'It is in the judgment of the General Assembly' that 'to encourage the continued operation' of the road by the grant of the exemption will be to give heed to the promptings of 'a wise and sound public policy.' The exemption is to be confined to that part of the property of the company, which is used for railroad purposes, is to continue only so long as the property is so used, and is to expire in any event at the end of the two years beginning in

> January, 1931. It is not the function of a court to determine whether the public policy that finds expression in legislation of this order is well or ill conceived. . . . The judicial function is exhausted with the discovery that the relation between means and end is not wholly vain and fanciful, an illusory pretense. Within the field where men of reason may reasonably differ, the Legislature must have its way. . . . Nor in marking out that field will a court be forgetful of presumptions that help to fix the boundaries. 'As underlying questions of fact may condition the constitutionality of legislation of this character, the presumption of constitutionality must prevail in the absence of some factual foundation of record for overthrowing the statute.' . . .
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> We are told that the signs of an arbitrary preference are written on the statute because the exemption is confined to this particular insolvent when it might have been extended to all other insolvents engaged in a like business. There is nothing to show that any Maryland railroad other than this one was in the hands of a receiver. The assailants of the statute have the burden of proving everything essential to their case. . . . But the result will be no different if other insolvents be assumed. The public policy that made it wise in the judgment of the Legislature to help this particular railroad and keep its business going may have failed altogether in respect of any other railroad, solvent or insolvent. Here was a line carrying millions of passengers, and supplying the only railroad service between the capital of the state and its most populous city. The rescue of such a road might be dictated by the public interest when a road in some other territory might wisely be abandoned to its fate." Id. at 41-43.

The Supreme Court in Lawrence v. State Tax Commission of State of Mississippi, 286 U.S. 276 (1932) sustained a state statute, challenged under the Equal Protection Clause, which exempted corporations from the obligation of paying an annual tax on their net income derived from activities in building highways outside of the taxing state while imposing that obligation upon the non-incorporated competitors of such exempted corporations. The Court applied the same kind of analysis with respect to the public interest it utilized in the Williams case, supra. It stated:

> "Apart from other considerations which may have led to the present legislation as an integral part of the state system of taxation of the income of corporations, one which affords a rational basis for the distinction made, is the fact that the state has adopted generally a policy of avoiding double taxation of the same economic interest in corporate income, by taxing either the income of the corporation or the dividends of its stockholders, but not both. . . . In the case of corporate income and dividends attributable to business done outside the state and received by stockholders of domestic corporations, the stockholders are taxed, and not the corporations." Id. at 284.

The most recent case applying the above doctrine is Kahn v. Shevin, 416 U.S. 351 (1974). In that case the Florida property tax exemption in behalf of widows was challenged by a widower as a denial to him of equal protection of the laws. The Supreme Court upheld the Florida Supreme Court decision sustaining the validity of the statute. Mr. Justice Douglas, speaking for the Court, stated:

> "There can be no dispute that the financial difficulties confronting the lone woman in Florida or in any other State exceed those facing the man. Whether from overt discrimination or from the socialization process of a male-dominated culture, the job market is inhospitable to the woman seeking any but the lowest paid jobs. . . . data compiled by the Women's Bureau of the United States Department of Labor show that in 1972 a woman working full time had a median income which was only 57.9% of the median for males--a figure actually six points lower than had been achieved in 1955. Other data point in the same direction. The disparity is likely to be exacerbated for the widow. While the widower can usually continue in the occupation which preceded his spouse's death, in many cases the widow will find herself suddenly forced into a job market with which she is unfamiliar, and in which, because of her former economic dependency, she will have fewer skills to offer.
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> "There can be no doubt, therefore, that Florida's differing treatment of widows and widowers 'rest(s) upon some ground of difference having a fair and substantial relation to the object of the legislation.' Id. at 353-355.

The later cases applying the doctrine elaborated above show greater concern with the actual justification offered in behalf of tax exemptions or classifications. In addition to the Kahn case, the cases of Reed v. Reed, 404 U.S. 71 (1971) and Frontiero v. Richardson, 411 U.S. 677 (1973) illustrate the point.

It remains to be examined whether a state tax statute can validly grant an exemption to a person or entity not because it will serve some public interest associated with that person or entity but because by exempting that person or entity some other person or entity will be provided protection or assistance that is in the public interest. The answer is "yes". The Supreme Court, for example, has upheld the exemption of persons dealing with farmers in order to relieve the latter of the ultimate burden of the tax. The exemption from a tax upon the generation of electric power of that sold to consumers for use in irrigation was sustained as being in aid of a matter of public concern. Utah Power & Light Co. Pfost, 286 U.S. 165, 185 (1932). Agriculture has always been treated as a paramount industry in our economy and legislation designed to promote the welfare of farmers, particularly farmers with a problem, is viewed sympathetically by the courts. Thus, a statute exempting from an occupation tax upon all other sugar refiners, planters who refined sugar from their own cane was sustained by the Supreme Court. American Sugar Refining Co. v. Louisiana, 179 U.S. 89 (1900). Again, in Aero Mayflower Transit Co. v. Georgia Public Service Commission, 295 U.S. 285 (1935), the Supreme Court sustained the exemption of carriers of farm produce owned by the producers from an annual license fee of twenty-five dollars exacted from other motor carriers for hire. In this case, Mr. Justice Cardozo stated:

> "The plight of the Georgia farmer has been pictured by the State Court. . . . To free him of fresh burdens might seem to a wise statecraft to be a means whereby to foster agriculture and promote the common good." Id. at 291.

The final inquiry in the application of the above doctrine concerning the Equal Protection Clause to exemptions in state property tax laws is whether the exemption of third persons who lease or purchase property from Native inviduals, Native groups or villages, or Native regional corporations will be judged by the Supreme Court to have been done by the Alaska Legislature with the result that it is reasonably related to the promotion of a public interest in the welfare of such individuals, groups or villages, or regional corporations and that that asserted public interest is one that may be so promoted. On page 3 of this letter, I have suggested that that public interest could well be the economic, educational, social, political, and other like development and progress of these individuals and entities. I have also suggested that it is important that the Legislature and its committees in enacting such an exemption demonstrate in their consideration of it their concern with such development and progress and the basis for the judgment that that development and progress will be facilitated by the exemption granted.

There are considerable authorities for the proposition that government may specially favor Native individuals or groups and exempt them from taxation. Most of these authorities concern the federal government and federal measures or policies exempting Indians from state and local taxation. Nevertheless, these authorities are strong analogies for sustaining state tax measures which exempt Native individuals and groups from the obligation of paying taxes as well as those who buy or lease property from them. A leading case of this sort is Board of County Commissioners of Creek County v. Seber, 318 U.S. 705 (1943). In this case the land of certain members of the Creek Tribe was subjected to Oklahoma property taxes. The taxpayers relied upon a federal statute exempting land held by an Indian subject to restrictions against alienation except with approval of the Secretary of the Interior from taxation as the basis for their suit to recover taxes paid. The federal statute was challenged as being unconstitutional. Mr. Justice Murphy, speaking for the Court, held the statute to be valid. He stated:

> "The Acts of 1936 and 1937 are constitutional. From almost the beginning the existence of federal power to regulate and protect the Indians and their property against interference even by a state has been recognized. . . . This power is not expressly granted in so many words by the Constitution, except with respect to regulating commerce with the Indian tribes, but its existence cannot be doubted. In the exercise of the war and treaty powers, the United States overcame the Indians and took possession of their lands, sometimes by force, leaving them an uneducated, helpless and dependent people needing protection against the selfishness of others and their own improvidence. Of necessity the United States assumed the duty of furnishing that protection and with it the authority to do all that was required to perform that obligation and to prepare the Indians to take their place as independent, qualified members of the modern body politic.
>
> "They (the Acts of 1936 and 1937) are appropriate means by which the federal government protects its guardianship and prevents the impairment of a considered program undertaken in discharge of the obligations of that guardianship. The fact that the Acts withdraw lands from the tax rolls and may possibly embarrass the finances of a state or one of its subdivisions is for the consideration of Congress, not the courts." Id. at 715-718.

While there are, of course, vital differencesbetween the situation of the Indians involved in the Seber case whom the federal government sought to protect by the Acts of 1936 and 1937 and the situation of the Native individuals and entities whom the Alaska Legislature might seek to protect and assist by both types of exemptions previously discussed, the principle of the Seber case would be applicable to state action designed to provide necessary protection and assistance to Native individuals and entities by such exemptions. That principle would sustain the validity of the state action if the Legislature demonstrates that that protection and assistance is necessary and that the exemptions will in fact make that possible.

If I can be of further assistance on this problem, please let me know.

Sincerely,

Joseph P. Witherspoon

Joseph P. Witherspoon

cc: The Honorable Chancy Croft
President of the Senate

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OK John Huber

March 15, 1976

The Honorable John Huber
Senator and Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature - Senate
Pouch V
Juneau, Alaska 99811

In re: Validity of exemption in behalf of Native individual and group (village or regional corporation) property interests contained in legislative measures imposing an ad valorem tax on oil and gas reserves

Dear Senator Huber:

During the First Session of the Ninth Legislature several proposals were made to exempt from the proposed legislative measures imposing an ad valorem tax on oil and gas reserves certain interests in property of a Native individual, Native group or village, or regional corporation.

You have asked me to provide you with any memorandum that may have been prepared by me during that session bearing upon the validity under the Constitution of the United States of such exemptions. Upon checking my files, I discovered that I did not prepare any such memorandum. However, I did participate in a conference on April 9, 1975, in the offices of your Special Committee in which both Dean Erwin Griswold and I expressed our respective views concerning this matter. There were present at that meeting yourself, Senator Chancy Croft, Representative Steve Cowper, and Professor Henry Wilkinson, among others.

This letter summarizes my views upon the validity of the kind of exemption about which you have inquired. It is based upon a fresh and in-depth investigation of the relevant case and scholarly authorities.

The Types of Exemptions in Behalf of Native Property Interests Contained in Proposed Measures Imposing An Ad Valorem Tax on Oil and Gas Reserves

There were two types of exemptions proposed in behalf of Native property interests in proposed measures imposing an ad valorem tax on oil and gas reserves during the First Session of the Ninth Legislature. One type, which took many forms, applied to property interests owned by Native individuals, Native groups, or Village or Regional Corporations. Another type, which was discussed as a possible measure at the April 9th meeting referred to above, applied to property interests transferred by such individuals, groups, or corporations to third parties and owned by the latter.

So far as the question of validity of the first type of exemption is con-

cerned, the variation in form presented in the various proposals is without significance. Some proposals of this type simply tracked the exemption contained in Section 21 of the Alaska Native Claims Settlement Act, 43 U.S.C. section 1620. Thus, CS for Sponsor Substitute for House Bill No. 297 (Original sponsor: Cowper, et al; Introduced 4/25/75) provided for the exemption as follows:

> "Sec. 43.58.020. Exemptions. (a) The following interests . . . shall be exempt . . .:
> (2) any interest exempted from taxation by sec. 21 of the Alaska Native Claims Settlement Act (P.L. 92-203, 43 U.S.C. 1620)."

Other proposals of this type provided a wider form of exemption. Thus, an amendment proposed for consideration by the Free Conference Committee with respect to CS SSHB 297 (Rules) on May 28, 1975, called for adding the following exemption to

> "Sec. 43.58.020. Exemptions. (a) The following interests . . . shall be exempt . . .:
> (5) any property of a Native individual, Native group or village, or regional corporation conveyed to such owner of that property pursuant to the Alaska Native Claims Settlement Act (P.L. 92-203) during the period of exemption specified by sec. 21 of that Act or pursuant to any other federal statute or authority that provides for a conveyance of such a property to a Native individual, Native group or village, or regional corporation."

I am not aware of any bill which proposed the second type of exemption described above so as to extend the exemption to any property transferred by a Native individual, Native group or village, or regional corporation to a third party and owned by such party who does not fall into the class of persons or entities to which the grantor belongs.

The Validity of Exemptions in Behalf of Native Property Interests under the Constitution of the United States

In light of the well-established constitutional doctrines applicable to state and local tax legislation, the only provision that is relevant for testing the validity of such exemptions is the Equal Protection Clause of the Fourteenth Amendment. No serious question of validity of these exemptions can be raised, without involvement of additional facts, under either the Due Process Clause of the Fourteenth Amendment or the Commerce Clause.

As I mentioned in the conference of April 9, 1975, the Alaska Native Claims Settlement Act operates to give validity to state legislation that grants exemptions from state tax measures, even though the state tax exemption is wider than the federal tax exemption, provided that the same persons or entities are being benefitted by the two exemptions. This proposition follows from application of the principle that a state can act to give support to a federal policy within its own jurisdiction so long as this does not hinder the achievement of the policy. The fact that the state extends its support of that policy to areas beyond the focus of that policy as originally conceived by the federal government does not basically change the conclusions stated above. Unless the scheme of federal regulation is so pervasive as to make reasonable the inference that Congress left no room for the State to supplement it, the State may supplement that scheme. Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 229-30 (1947). While the principle stated in the Rice case was made with regard to federal regulation, the principle is a fortiori applicable with regard to federal taxation. In the

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field of taxation and taxation policy, the federal and state governments each retain ample power to pursue their respective interests and there is far less occasion for finding conflict between their respective efforts to legislate. See, e.g., Detroit v. Murray Corporation, 355 U.S. 489 (1958), in which the Supreme Court sustained the application of local government personal property taxes to property owned by a subcontractor under a prime contract for the manufacture of airplane parts between two private companies and the United States. Also, see, the McCarran Act, 59 Stat. 33, 15 U.S.C. sections 1011-1015, which declared that the business of insurance shall be subject to the laws of the several states relating to the regulation or taxation of such business. This act was enacted after the decision of the Supreme Court of the United States in United States v. South-Eastern Underwriters Association, 322 U.S. 533 (1944) in which it was held that the business of insurance could be subjected to federal regulation and that the Sherman Antitrust Act applied to it. Just as the McCarran Act is to be viewed as federal legislation permitting state taxation of an insurance company engaged in interstate commerce so far as business done within a state so the Alaska Native Claims Settlement Act is to be viewed as permitting state exemptions from taxation of those exempted from taxation by that act. Even if, without the federal statute, there would be no state power so to act because of some federal statutory or constitutional provision, the constitutional federal statute operates to provide power to the state to act within the scope of its policy and purposes.

Equal Protection Clause Considerations

Since the analysis so far would only sustain the validity of the first type of exemption under consideration, it is necessary to consider the application of the Equal Protection Clause of the Fourteenth Amendment to the second type of exemption. Moreover, since the Legislature may want to utilize a broader form of the first type of exemption, it will be necessary to consider the application of the Equal Protection Clause to that broader form. The analysis utilized above only sustains, strictly speaking, the validity of the first type of exemption which precisely tracks the exemption from taxation contained in Section 21 of the Alaska Native Claims Settlement Act.

Under certain circumstances, which should be carefully understood, exemptions of both the first and second type discussed above are valid under the Equal Protection Clause of the Fourteenth Amendment, in my opinion. The circumstances are that the Legislature chooses to enact these exemptions upon the basis that they are needed in order to protect Native individuals, Native groups or villages, or Native regional corporations with regard to the public interest in their economic, educational, social, political, and other like development and progress. The Legislature must have a rational basis for concluding that either or both of these exemptions will promote this public interest. The Legislature will especially require justification for its conclusion that the second type of exemption will promote this public interest since there will be, by hypothesis, no essential difference between a third party who enjoys the tax exemption because of a transfer of a property interest from a Native individual or entity and a third party who does not enjoy the tax exemption because of a transfer of a property interest from someone or some entity other than a Native individual or entity. This justification should be supported by evidence or data presented to the relevant legislative committees of both houses of the Alaska Legislature and, preferably, this evidence or data should be assembled in a report by each of these committees.

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If I can be of further assistance on this problem, please let me know.

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Joseph P. Witherspoon

cc: The Honorable Chancy Croft
President of the Senate

February 27, 1976

Mr. Joseph P. Witherspoon, S. J. D.
Professor of Law
313 Townes Hall
2500 Red River
Austin, Texas 78705

Dear Joe:

Enclosed, for your information, is the most recent bill filed in the Legislature concerning oil taxation. It is known as the Cowper bill.

Sincerely,

John Huber

Enclosure

AGO 513783

February 10, 1976

Joseph P. Witherspoon, S. J. D.
Professor of Law
313 Townes Hall
2500 Red River
Austin, Texas 78705

Dear Joe:

Enclosed is the tax package that the Special Committee on Taxation and Revenue has prepared and filed with the Legislature. Because of your position as a consultant to the Committee I thought you would be interested in receiving these bills.

HB 695 and SB 620 are the companion bills on net proceeds; and HB 703 and SB 621 are the companion bills on excess value.

Sincerely yours,

John Huber

Enclosures

AGO 513784

JOSEPH P. WITHERSPOON, S. J. D.
PROFESSOR OF LAW
313 TOWNES HALL 2500 RED RIVER
AUSTIN, TEXAS 78705

OFFICE AC 512 471-5151
RESIDENCE AC 512 452-1939

January 31, 1976

The Honorable John Huber, Senator and
Chairman, Special Committee on Taxation and Revenue
Alaska State Legislature - Senate
Pouch V
Juneau, Alaska 99811

Dear John:

It was good to talk with you on January 24th and to learn of the progress of the work of your Special Committee and of your legislative work more generally.

As a result of our conversation, I have made a brief, initial study of what constitutional and related problems might be presented by the tax legislation your Committee is considering this session. Your packet of reports and your Staff's draft bills, which arrived today, certainly demonstrate a thoroughgoing approach to the matter of tax legislation bearing upon the oil and gas industry.

I appreciate your invitation to serve as a consultant on constitutional law and related legal matters for your Special Committee and will be happy to serve again, as indicated in our telephone conversation. I would estimate that approximately 125 professional hours of research, analysis, and drafting will be necessary to perform the services you will require on constitutional law and related legal matters. Contemplating the making of one visit to Juneau together with the necessary preparatory work here, I estimate that the sum of $5,000 would cover the amount of the fee for the services you requested plus the expenses of travel and related professional expenses and agree to perform these services, including expenses incurred, for that sum.

Currently, I am preparing to serve as a committee witness on February 4th next in Washington, D.C., before the Subcommittee on Civil Rights and Constitutional Rights, House Judiciary Committee, of which Congressman Peter Rodino is Chairman. Just as soon as I return on Thursday, I will look up the memorandum you requested on the matter of the constitutionality of various kinds of statutory exemptions operating in behalf of the Native groups.

With best personal regards to you and your wife and Chancy Croft, I remain,

Sincerely,

Joseph P. Witherspoon

Joseph P. Witherspoon

AGO 513785

January 30, 1976

Joseph P. Witherspoon, S. J. D.
Professor of Law
313 Townes Hall
2500 Red River
Austin, Texas 75705

Dear Joe:

I am enclosing a copy of the Moody report which was done for our Alaska Natural Gas Pipeline Impact Committee of which I am a member. Upon reading the report it will be obvious to you why I have sent it.

It is obvious that positive action will be necessary and this work does fit in with our taxation and revenue work. Your suggestions and recommendations, particularly in regards to legal points raised as to whether you agree or disagree, I feel are absolutely necessary. I, in particular, am a great advocate of converting Alaska's natural gas to a petrochemical product namely, methanol, and thereby crawling out from under the oppression, and downright unjust control of another federal bureaucratic agency, the FPC.

I am hoping to hear from you and looking forward to seeing you in the not too distant future. By the way, our Legislature started this year on January 12 and according to Chancy, it by God better not last over 90 days.

Sincerely yours,

John Huber

Enclosures

FILE COPY

JOSEPH P. WITHERSPOON, S. J. D.
PROFESSOR OF LAW
313 TOWNES HALL 2500 RED RIVER
AUSTIN, TEXAS 78705

OFFICE AC 512 471-5151
RESIDENCE AC 512 452-1939

May 31, 1975

STATEMENT

TO: Senator Chancy Croft, President of the Senate
Senator John Huber, Chairman,
Special Committee on Taxation and Revenue
Alaska State Legislature - Senate

FROM: Joseph P. Witherspoon, Professor of Law, University of Texas School of Law, Austin, Texas

SUBJ: Legal services relative to constitutional and drafting problems presented by Senate and House bills designed to impose an ad valorem property tax on oil and gas reserves

For legal services rendered to Special Committee on Taxation and Revenue, Senate: Senator John Huber, Chairman, and Senator Chancy Croft, President of the Senate, between May 9 and May 29, 1975, with respect to Senate and House bills designed to impose an ad valorem property tax on oil and gas reserves with a special focus upon constitutional law and drafting problems, including analysis of administration proposed amendments to CS for SS for HB 297; conferring with Senator John Sackett and his attorney concerning desired amendments to above bill relative to exemptions; preparation of memorandum entitled "Problems with the 'SOHIO' Amendment to HB 297; preparation of memorandum entitled "Present Importance of Exercising the State's Tax Function relative to Prudhoe Bay Reserves of Oil and Gas"; preparation of work draft copy of proposed Free Conference CS for Senate CS for SS for HB 297 am S in two versions; preparation of work draft copy of proposed Free Conference CS for Senate CS for SS for HB 297 am S in a version imposing a 1975 half-year tax; testimony before Free Conference Committee presenting constitutional problems involved in HB 297's provisions relating to departmental procedure, judicial review, operator responsibility for paying another's tax, tax credit provisions, and the "SOHIO" Amendment; drafting of changes in above work draft copy desired by Free Conference Committee in consultation with John Messinger; conferring with various Senators, Representatives, and representatives of the Office of the Attorney General; consulting with Senators Croft and Huber on various problems in connection with the above; and preparation of various draft amendments for possible use by Senator Huber.

A. legal services from May 9 through May 29 - 157 hours at $60.00 per hour: $9420.00 - rendered at half-rate by special arrangement with Senator Croft $ 4710.00

AGO 513787

JOSEPH P. WITHERSPOON, S. J. D.
PROFESSOR OF LAW
313 TOWNES HALL 2500 RED RIVER
AUSTIN, TEXAS 78705

OFFICE AC 512 471-5151
RESIDENCE AC 512 452-1939

May 31, 1975

The Honorable John Huber
Senator and Chairman
Special Committee on Taxation and Revenue
Alaska State Legislature - Senate
Pouch V
Juneau, Alaska 99811

Dear John:

It was a real pleasure and challenge to work with you and Chancy again on the constitutional and drafting problems presented by the Senate and House bills for an ad valorem property tax on oil and gas reserves. When the tax bill is passed, I would greatly appreciate your sending me a copy of it.

I have enclosed my statement for legal services in connection with this last visit. The 157 professional hours spent in rendering these services have been billed at one-half of my usual rate of $60.00 or $30.00 per hour. Chancy and I discussed the matter of my fee on May 27 in light of the additional time that was required beyond May 22. This billing is within the guidelines he gave me.

Again, thank you very much for giving me this opportunity to serve the Alaska State Legislature again. Inevitably, these experiences enable me to bring many new insights to my students and legal scholarship. This last experience was especially rewarding in this respect.

Also, I want to thank you and your fine wife for having me to dinner in your Juneau home and for taking me out fishing with you. Believe me, I want to do some more fishing for salmon and like fish. It was great fun. I also enjoyed the trip around Douglas Island and the performance of your boat.

I will be leaving for Anchorage on June 4 in connection with a hearing for a bank charter for a bank sponsored by the Alaska Mutual Savings Bank which is to be held on June 9. This is the last lap of an effort extending over some ten months. My contribution has been concerned with administrative law and anti-trust law problems.

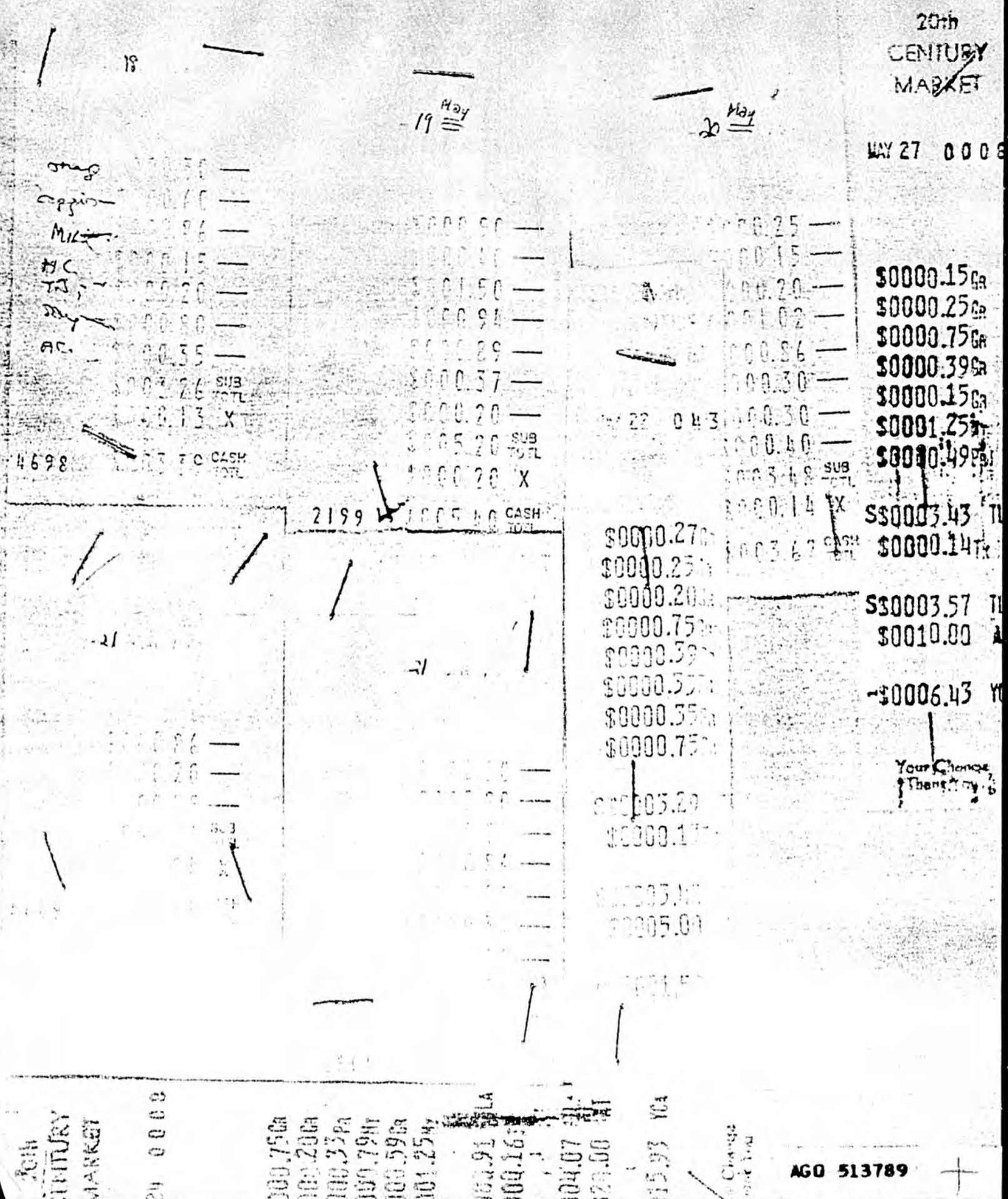
With best personal regards to you and your wife, I remain,

Sincerely,

Joseph P. Witherspoon

AGO 513788

Joseph P. Witherspoon — May 31, 1975 Statement to Senator Chancy Croft and Senator John Huber - Air Ticket, Hotel Statement, etc.



Joseph P. Witherspoon May 31, 1975 Statement to Senator Chancy Croft and Senator John Huber - Air Ticket, Hotel Statement, etc.

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JOSEPH P WITHERSPOON JR

THE PROSPECTOR
JUNEAU ALASKA 5 16 75
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25 DAYS FROM DEMAND PURCHASER-ACCEPTOR SHALL PAY TO ALASKA BANKAMERICARD CENTER, INC. OR ORDER, THE SUM AS SHOWN ABOVE. UNIT COST INCLUDES ALL MOTOR VEHICLE FUEL TAXES WHERE APPLICABLE.

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JOSEPH P WITHERSPOON JR

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Thank You!

YOUR PATRONAGE IS APPRECIATED

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AGO 513790

Joseph P. Witherspoon

May 31, 1975 Statement to Senator Chancy Croft and Senator John Huber - Air Ticket, Hotel Statement, etc.

ROOM NO. | NAME | IN | OUT | RATE

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CLERK | CITY | STATE | IN

CORP. AFFILIATE | FROM | TO | DIFF.

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E - TELEGRAMS
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G - LAUNDRY
H - C.O.D.
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59097

CREDIT CARD

DETACH AND RETURN THIS PORTION WITH REMITTANCE

PLEASE REMIT FROM THIS INVOICE

Regardless of charge instructions the undersigned guest acknowledges the above as a personal indebtedness.

CHARGE TO

ADDRESS

SIGNATURE

AGO 513791

p.2

Joseph P. Witherspoon May 31, 1975 Statement to Senator Chancy Croft and Senator John Huber - Air Ticket, Hotel Statement, etc.

ROOM NO.	NAME	IN	OUT	RATE
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JOE P WITHERSPOON JR

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Date of Charge 5 28 75

Merchandise/Services

Taxes

Tips/Misc.

Establishment agrees to transmit to American Express Company (Amexco) or Authorized Representative for payment. Merchandise and/or service purchased on this card shall not be resold or returned for cash refund.

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Total 379 45

Amexco Usa Only

Equivalent Amt.

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American Express Card

AGO 513792

Record of Charges

Cardmember Copy

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Joseph P. Witherspoon - May 31, 1975 Statement to Senator Chancy Croft and Senator John Huber - Air Ticket, Hotel Statement, etc.

I ACKNOWLEDGE RECEIPT OF TICKET(S) AND/OR COUPONS FOR RELATED CHARGES DESCRIBED HEREON. PAYMENT IN FULL MUST BE MADE WHEN BILLED OR IN EXTENDED PAYMENTS IN ACCORDANCE WITH STANDARD POLICY OF COMPANY ISSUING SAME AND SUBJECT TO APPLICABLE TARIFFS

X J. P. Witherspoon Jr.

NAME OF PASSENGER IF OTHER THAN CARDHOLDER

UNIVERSAL CREDIT CARD CHARGE FORM

AIRLINE CODE: Braniff Airways, Inc. (002)

1. CARDHOLDER COPY

IF EXTENDED PAYMENT DESIRED CIRCLE NO. OF MONTHS: 3 6 9 12 ____

DATE OF ISSUE: 14 MAY 75

DATE AND PLACE OF ISSUE: AUS 7533 I387 CTO

TO AT NO

CONNECTION OF PASSENGER WITH SUBSCRIBER

APPROVAL CODE

COMPLETE ROUTING	FARE BASIS	CARRIER
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TICKETS NOT TRANSFERABLE
NO CASH REFUNDS

BAC

EXPIRATION DATE/CODE

AIRLINE FORM SERIAL NO.: 002-4300664562-563

FORM OF CREDIT: 4652 520 211 016

EXP DATE 10/75 BAC

JOSEPH P WITHERSPOON JR

TOTAL 458.24

ROUTE CODE

425.56
TAX 24.52
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SC 2.16

BRANIFF AIRWAYS, INCORPORATED
DALLAS, TEXAS U.S.A.
SOLD SUBJECT TO CONDITIONS OF CONTRACT ON PASSENGER'S COUPON

PASSENGER TICKET AND BAGGAGE CHECK

NAME OF PASSENGER: Witherspoon/J. P. Mr.

ISSUED IN EXCHANGE FOR: 002-4300664563

14 MAY 75

AIRLINE FORM SERIAL NUMBER: 002 4300 664 562

AGS 7533 I387 CTO

X/O	NOT GOOD FOR PASSAGE	FARE BASIS	CARRIER	FLIGHT/CLASS	DATE	TIME	STATUS	ALLOW
	FROM AUSTIN	Y	AA	194	15 MAY	1040	OK	
2	TO DALLAS	Y	AA	195	15 MAY	1125	OK	
3	TO SEATTLE	Y	AS	173	15 MAY	1400	OK	
	TO JUNEAU							

BAGGAGE CHECKED UNCHECKED — PCS. / WT. / UNCK WT.

CPN TICKET NUMBER CK

PASSENGER'S COUPON	FROM/TO	CARRIER	FARE CALCULATION
	AUS		
	DAL	AA	27.71
	SEA	AA	
	JUN	AS	185.00
	SEA	AS	
	AUS	AA	120.00
	DAL	AA	2-71
	SC		2.16

FARE

FORM OF PAYMENT: 4652 520 211 016

10/75 BAC

JOSEPH P WITHERSPOON JR

IT IS UNLAWFUL TO PURCHASE OR RESELL THIS TICKET FROM/TO ANY ENTITY OTHER THAN BRANIFF AIRWAYS, INCORPORATED OR ITS AUTHORIZED AGENTS.

425.56
SC 2.16
TOTAL 427.72
TAX 24.52
600

BRANIFF AIRWAYS, INCORPORATED
DALLAS, TEXAS U.S.A.
SOLD SUBJECT TO CONDITIONS OF CONTRACT ON PASSENGER'S COUPON

PASSENGER TICKET AND BAGGAGE CHECK

NAME OF PASSENGER: Witherspoon/J. P. Mr.

ISSUED IN EXCHANGE FOR: 002 4300 664562

14 MAY 75

AIRLINE FORM SERIAL NUMBER: 002 4300 664 563

AGS 7533 I387 CTO

X/O	NOT GOOD FOR PASSAGE	FARE BASIS	CARRIER	FLIGHT/CLASS	DATE	TIME	STATUS	ALLOW
	FROM JUNEAU	Y	AS	174	15 MAY	1400	OK	
4	TO SEATTLE	Y	AS	194	15 MAY	1700	OK	
5	TO DALLAS	Y	AA	1955	15 MAY	2125	OK	
	TO AUSTIN							

BAGGAGE CHECKED UNCHECKED — PCS. / WT. / UNCK WT.

CPN TICKET NUMBER CK

PASSENGER'S COUPON	FROM/TO	CARRIER	FARE CALCULATION
	AUS		
	DAL	AA	27.71
	SEA	AS	
	JUN	AS	185.00
	SEA	AS	
	DAL	AA	120.00
	AUS	AA	2-71
	SC		2.16

FARE

FORM OF PAYMENT: 4652 520 211 016

10/75 BAC

JOSEPH P WITHERSPOON JR

IT IS UNLAWFUL TO PURCHASE OR RESELL THIS TICKET FROM/TO ANY ENTITY OTHER THAN BRANIFF AIRWAYS, INCORPORATED OR ITS AUTHORIZED AGENTS.

425.56
SC 2.16
TOTAL 427.72
TAX 24.52
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AGO 513793

May 25, 1975

TO: Senator John Huber, Chairman
Special Committee on Taxation & Revenue
Pouch V
Juneau, Alaska 99811

FROM: Joseph P. Witherspoon
Professor of Law
University of Texas School of Law
Austin, Texas 78705

SUBJECT: Present Importance of Exercising the State's Tax Function Relative to Prudhoe Bay Reserves of Oil and Gas

The purpose of this memorandum is to set forth certain considerations concerning, among other things, the present importance of the State's exercising tax function relative to Prudhoe Bay reserves of oil and gas.

1. Before the sale of oil and gas leases at Prudhoe Bay in 1969, the State of Alaska had available to it three distinct levels of governmental functions for dealing with the oil and gas underlying that state-owned area so as to maximize the return to the State and its people from the ownership, discovery, production, and transportation to ultimate markets of such minerals. These functions were:

(A) the sale of oil and gas leases in the Prudhoe Bay area pursuant to a State policy that would allow the State to realize upon the increase in value of State lands containing oil and gas following the initial sales and that would protect the State with respect to any manipulation of cost factors that would cause the amount of the royalties payable at the well-head upon production to be reduced.

(B) the leasing of State lands and control of leasing of private lands as right of way for private construction of a pipeline or State construction of a pipeline for transporting oil from the Prudhoe Bay area to the ultimate markets.

(C) the taxation of various traditional taxable interests relative to ownership and production of oil and gas in place; ownership of other property associated with exploration for and production, processing, and transportation to ultimate markets of oil and gas; and income from the foregoing activities.

2. Unfortunately, the full array of opportunities available at the first level of governmental functions relative to Prudhoe Bay oil in place were not utilized by the State and are no longer available to it. The State exercised its leasing function without reserving substantial portions of the designated area from leasing sales in checkerboard fashion so that the reserved land could be sold at subsequent sales at considerably higher prices than those paid in 1969 due to the greater knowledge later available concerning the existence of oil and gas under the land and other factors, such as inflation, that would tend to raise the price obtainable for such reserved lands. Since the land of the area was completely sold, neither may the State, instead of selling the remaining oil and gas leases, engage in its own developmental and production work on the remaining land. Nor did the State act to obtain, in addition to its reserved royalty, a substantial 50 per cent interest in the profits of the corporations which obtained production from the lands leased, as some of the Native groups have done. Unfortunately, also, the State failed to put numerous provisions into its oil and gas leases of Prudhoe Bay land similar to those incorporated subsequently into the original Alaska Pipeline Right-of-Way Leasing Act of 1972 that would have provided great protection to State interests. A primary example of such provisions would have been one relating to the maintenance of a reasonable level of tariffs charged by subsidiary pipeline companies of the producer/lessees since that level affects the amount of the State royalties payable upon production at the wellhead value.

3. The State in 1972 initially exercised its available government function at the second level by its passage of the Alaska Pipeline Right-of-Way Leasing Act (AS 38.35.10 - .260). This Act was designed not only to create substantial non-tax revenues for the State for the use of its lands by pipeline companies in transporting oil of producer/lessees in the Prudhoe Bay area to ultimate markets. It was also designed to bring back to the State important leverage that it failed to provide for in its original oil and gas leases as well as to create additional important forms of leverage. An example of the first kind of leverage was the provision in the Act permitting inclusion of the optional lease provision with respect to the lessee's maintaining a reasonable level of tariff charges on file with the Interstate Commerce Commission. Examples of the second kind of leverage provided by the Act were lease provisions required to be inserted into every lease concerning the pipeline companies' assumption of common carrier and common purchaser statuses; the sale to the State of up to a 20 per cent undivided interest in the pipeline; and the making of connections together with appropriate facilities for the purpose of making deliveries of crude oil or natural gas to a municipal area desiring such deliveries. The Act was also designed to provide the State with an excellent vehicle for negotiating from a strong position, in return for State reductions in the level of lease rentals, for various affirmative actions on the part of pipeline companies that would assist in the solution of numerous major State problems, such action to be provided for in lease provisions looking to Native hire, the expansion of existing pipelines, the construction of new pipelines, education and training for employees, and installation of facilities and inauguration of services that would make possible general economic growth in the State. This extraordinarily important Act providing the State with such valuable leverage for dealing with pipeline companies and, indirectly, with their parent producer companies in the solution of State problems was so changed in its content by the 1973 amendments thereto as to be of little value for achieving its original purposes.

4. As a result of the way the State exercised its leasing function relative to oil and gas in place in the Prudhoe Bay area in 1969 and as a result of

the 1973 amendments to its 1972 Alaska Pipeline Right-of-Way Leasing Act, the State now has only one of its three basic governmental functions left to exercise with respect to the oil and gas in place in the Prudhoe Bay area in order to achieve its reasonable goal of maximizing the return to the State and its people from the ownership, discovery, production and transportation to ultimate markets of the oil and gas in the original lease area at Prudhoe Bay. This is, of course, the State's taxing function. By a careful and thorough use of this third and only remaining function - so far as the oil and gas reserves in the Prudhoe Bay lease area are concerned - the State can generate revenue that it could have generated and could have continued to generate by optimum use of the first two functions as well as to realize the normal tax revenues to which it is entitled by the exercise of this function. Moreover, while the State cannot regain the leverage it has lost by the way it has exercised its first two governmental functions, it can generate revenue through which it can do itself what it could have required or negotiated for the producers and pipeline companies to do under appropriate leases and lease laws.

In this context, the ad valorem property tax on oil and gas in place has a special justification as a new and independent source of substantial tax revenues at this time. Not only is such a tax a usual, normal and prudent exercise of the State's tax function as proven by its wide use in other mineral producing states, but also, its use now can produce revenues for the State to replace the revenues that could have been produced by the reservation in checkerboard fashion of oil and gas lands in the lease area of Prudhoe Bay and their subsequent sale at increased prices as, for example, today when Alaska is in the midst of heavy inflation and a financial crunch. Its use today can produce revenues for the State to replace the revenues that would have been produced by the State having reserved, as Native groups have, a 50 per cent interest in the profits of the oil producing corporations. The oil companies who obtained the Prudhoe Bay oil and gas lands that should have been reserved by the State for later sale and who have profited by the increase in value in oil and gas in place since

TO: Senator John Huber, Chairman
Special Committee on Taxation & Revenue
Pouch V
Juneau, Alaska 99811

FROM: Joseph P. Witherspoon
Professor of Law
University of Texas School of Law
Austin, Texas 78705

SUBJECT: Present Importance of Exercising the State's Tax Function Relative to Prudhoe Bay Reserves of Oil and Gas

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(A) the sale of oil and gas leases in the Prudhoe Bay area pursuant to a State policy that would allow the State to realize upon the increase in value of State lands containing oil and gas following the initial sales and that would protect the State with respect to any manipulation of cost factors that would cause the amount of the royalties payable upon value of production at the well-head ~~upon production~~ to be reduced.

(B) the leasing of State lands and control of leasing of private lands as right of way for private construction of a pipeline or State construction of a pipeline for transporting oil from the Prudhoe Bay area to the ultimate markets.

(C) the taxation of various traditional taxable interests relative to

ownership and production of oil and gas in place; ownership of other property associated with exploration for and production, processing, and transportation to ultimate markets of oil and gas; and income from the foregoing activities.

2. Unfortunately, the full array of opportunities available at the first level of governmental functions relative to Prudhoe Bay oil in place were not utilized by the State and are no longer available to it. The State exercised its leasing function without reserving substantial portions of the designated area from leasing sales in checkerboard fashion so that the reserved land could be sold at subsequent sales at considerably higher prices than those paid in 1969 due to the greater knowledge later available concerning the existence of oil and gas under the land and other factors, such as inflation, that would tend to raise the price obtainable for such reserved lands. Since the land of the designated area was completely sold, neither may the State, instead of selling the remaining oil and gas leases, engage in its own developmental and production work on the remaining land. Nor did the State act to obtain, in addition to its reserved royalty, a substantial 50 per cent interest in the profits of the corporations which obtained production from the lands leased, as some of the Native groups have done. Unfortunately, also, the State failed to put numerous provisions into its oil and gas leases of Prudhoe Bay land similar to those incorporated subsequently into the original Alaska Pipeline Right-of-Way Leasing Act of 1972 that would have provided great protection to State interests. A primary example of such provisions would have been one relating to the maintenance of a reasonable level of tariffs charged by subsidiary pipeline companies of the producer/lessees since that level affects the amount of the State royalties payable upon production at the wellhead value.

3. The State in 1972 initially exercised its available government function at the second level by its passage of the Alaska Pipeline Right-of-Way Leasing Act (AS 38.35.10 - .260). This Act was designed not only to create substantial non-tax revenues for the State for the use of its lands by pipeline companies in transporting oil of producer/lessees in the Prudhoe Bay area to ultimate markets. It was also designed to bring back to the State important leverage that it failed to provide for in its original oil and gas leases as well as to create additional important forms of leverage. An example of the first kind of leverage was the provision in the Act permitting inclusion of the optional lease provision with respect to the

lessee's maintaining a reasonable level of tariff charges on file with the Interstate Commerce Commission. Examples of the second kind of leverage provided by the Act were lease provisions required to be inserted into every lease concerning the pipeline companies' assumption of common carrier and common purchaser statuses; the sale to the State of up to a 20 per cent undivided interest in the pipeline; and the making of connections together with appropriate facilities for the purpose of making deliveries of crude oil or natural gas to a municipal area desiring such deliveries. The Act was also designed to provide the State with an excellent vehicle for negotiating from a strong position, in return for State reductions in the level of lease rentals, for various affirmative actions on the part of pipeline companies that would assist in the solution of numerous major State problems, such action to be provided for in lease provisions looking to Native hire, the expansion of existing pipelines, the construction of new pipelines, education and training for employees, and installation of facilities and inauguration of services that would make possible general economic growth in the State. This extraordinarily important Act providing the State with such valuable leverage for dealing with pipeline companies and, indirectly, with their parent producer companies in the solution of State problems was so changed in its content by the 1973 amendments thereto as to be of little value for achieving its original purposes.

4. As a result of the way the State exercised its leasing function relative to oil and gas in place in the Prudhoe Bay area in 1969 and as a result of the 1973 amendments to its 1972 Alaska Pipeline Right-of-Way Leasing Act, the State now has only one of its three basic governmental functions left to exercise with respect to the oil and gas in place in the Prudhoe Bay area in order to achieve its reasonable goal of maximizing the return to the State and its people from the ownership, discovery, production and transportation to ultimate markets of the oil and gas in the original lease area at Prudhoe Bay. This is, of course, the State's taxing function. By a careful and thorough use of this third and only remaining function - so far as the oil and gas reserves in the Prudhoe Bay lease area are concerned - the State can generate revenue that it could have generated and could have continued to generate by optimum use of the first two functions as well as to realize the normal tax revenues to which it is entitled by the exercise of this function. Moreover, while the State cannot regain the leverage it has lost by the way it has exercised its first two governmental functions, it can

generate revenue through which it can do itself what it could have required or negotiated for the producers and pipeline companies to do under appropriate leases and lease laws.

In this context, the ad valorem property tax on oil and gas in place has a special justification as a new and independent source of substantial tax revenues at this time. Not only is such a tax a usual, normal and prudent exercise of the State's tax function as proven by its wide use in other mineral producing states, but also ~~In addition~~, its use now can produce revenues for the State to replace the revenues that could have been produced by the reservation in checkerboard fashion of oil and gas lands in the lease area of Prudhoe Bay and their subsequent sale at increased prices as, for example, today when Alaska is in the midst of heavy inflation and a severe financial crunch. Its use today can produce revenues for the State to replace the revenues that would have been produced by the State having reserved, as Native groups have, a 50 per cent interest in the profits of the oil producing corporations. The oil companies who obtained the Prudhoe Bay oil and gas lands that should have been reserved by the State for later sale and who have profited by the increase in value in oil and gas in place since the original sale should be made to respond as owners of valuable mineral property generally do elsewhere to a rational ad valorem property tax. This justification is in addition to the numerous justifications for the ad valorem property tax as applied to minerals in place such as oil, gas, coal, and other minerals. That justification has been well stated by H. Groves in his outstanding work on the financing of government:

> "(The ad valorem tax) is the clearest means of equating the tax burden on mines with that on other property. It provides state and local government more stable revenue than any other form of mine taxation, and it is less arbitrary than its rivals."
> H. Groves, Financing Government (1965) at page 347.

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April 30, 1975

The Honorable John H. Huber
Senator
Alaska State Legislature - Senate
Pouch V
Juneau, Alaska 99801

Dear John:

Thank you for your letter of April 22. I certainly understand the matter of your authority. My indication that I was exploring further the matter of the owner versus operator responsibility was simply to inform you of the fact due to my own personal, professional interest in it. If I discover any pertinent material beyond what I have already examined in some depth, it will be my very great pleasure to send it to you purely on a pro bono basis.

Mrs. Robert Porter called me by long-distance telephone on March 18th, as I recall, to inform me that you wanted my advice on a matter concerning the University of Alaska that she had previously brought to your attention. She explained the matter at length during the course of an hour-long conversation. At my request she agreed to send me a letter giving more precise details since I explained that I felt I could not give sound advice on the basis of her oral presentation. She also asked me to contact her after I had read the letter if I had any further questions about the nature of the problem.

Because I was so very busy in March and throughout April both with my work with your Special Committee, my work with the U. S. Senate Subcommittee on Constitutional Amendments, and my work with Representatives Truan, Von Dohlen, and Tom Uher in drafting seven complex civil rights bills which came on for hearing before the House State Affairs and House Health and Welfare Committees of the Texas Legislature during the past two days, I simply did not get a chance until this evening to open Mrs. Porter's letter. When I saw the enclosed letter was addressed to you, although the envelope was addressed to me, I gathered that I had misunderstood Mrs. Porter. I regret that I have kept the letter this long, but my precise understanding of what Mrs. Porter wanted me to do was as I have stated it above. I have resealed the envelope without reading the letter and have enclosed the envelope with this letter. If I can be of any assistance to you on the matter, please feel free to call on me. I often assist legislators on a pro bono basis in Texas and various parts of the country and am happy to do so.

Thank you for the copies of your bill and Steve Cowper's latest one. Again, it was a great pleasure to work with you on the ad valorem tax bills. I will look forward to hearing the further developments concerning your bill.

AGO 513802

It appears that I will be in Anchorage and Juneau the first week of June in connection with a project in the private sector that I have been handling in my private practice since the latter part of 1974. I hope to be able to spend some extra time in Alaska on this occasion and certainly would look forward to seeing you if that would be possible and convenient after my work is done.

Please give my regards to Mrs. Huber. Currently, I have learned the avocation of grafting pecan trees both by the inlay graft and patch bud graft methods. It is a great thing and I thoroughly enjoy the work. I have some property in the country where I have planted a goodly number of grafted pecan trees. Now I am converting native pecan trees into the grafted papershell varieties. I also have a few head of Black Angus Cattle and Suffolk Sheep. Last year I built a tank or pond of some size and stocked it with both bass and catfish. Now I am able to catch fish of good size in the tank. I also have four dogs. They thoroughly enjoy getting out in the country too.

With best regards to you and to Chancy, I remain,

Sincerely,

Joseph P. Witherspoon