

HOUSE/SENATE FINANCE COMMITTEE MINUTES - 1967-1982 2799

HOUSE FINANCE COMMITTEE

June 21, 1981

4:35 p.m.

(Tape HFC 81-116, Side 1 #001)

PRESENT

All Members of the Committee were in attendance.

SB 156

Chairman Adams called the meeting to order and brought SB 156 up for consideration.

SB 156 -- "An Act relating to the withdrawal of land for a utility corridor for extension of the Alaska Railroad and the preparation of a report evaluating the effect of construction of an extension of the Alaska Railroad; and providing for an effective date."

Chairman Adams stated the Committee should consider the fiscal note dated 4/8/81 for \$2,130.0 along with the bill.

Representative Fuller MOVED AND ASKED UNANIMOUS CONSENT that SB 156 be reported out of Committee with the fiscal note dated 4/8/81. Representative Cuddy OBJECTED for comment. He stated the private land acquisition portion of the fiscal note had been cut from \$3 million to \$1.5 million. Representative Haugen noted that the lesser figure was put in because more funds might be called for next year. Chairman Adams asked if this "guesstimate" was made by DNR. Representative Haugen stated the original fiscal note was prepared by the Department of Transportation, Interior Region. He said when the Senate acted on the bill they thought they should not put the total sum in the fiscal note, but rather should put in a lesser sum to encourage bargaining.

Representative Cotten asked if there were assurances that the Canadians would start building the railroad where Alaska left it off. Representative Bettisworth stated there were no firm assurances, but said "its like a checker game". He said this legislation would show Alaska's good faith, and besides, the Canadians have shown more interest in the Railroad than Alaska has. He was certain that they would follow through.

Representative Cotten asked who had been doing the negotiating. Representative Bettisworth responded that at the present time there were no official negotiations going on. He said that the issue has been with DNR over the years and they have been at a standstill.

Representative Chuckwuk called for the QUESTION. There being NO FURTHER OBJECTION, SB 156 was reported out with individual recommendations and the \$2,130.0 fiscal note.

SB 84

The next bill to be considered was SB 84.

CSSB 84 (Resources) -- "An Act relating to the processing of permits by state agencies; and providing for an effective date."

Chairman Adams stated there have been problems getting the agencies to issue permits for employment. This bill would streamline the permit process in all state agencies. He asked for discussion from the members.

Representative Chuckwuk stated that hearings had been held on this legislation in the Judiciary Committee. He said there was a great deal of history given and it did limit the time afforded to the public during the hearing.

Representative Chuckwuk asked Representative Montgomery if he had seen the Judiciary Committee Report. Representative Montgomery said he had not. Chairman Adams stated the bill had just been waived off the floor and they had not seen anything yet. Representative Chuckwuk said the feeling was that the public should be given the right to participate more on this bill subject.

Representative Haugen stated he was not at the hearing, but he did know there were a lot of people "doing jobs in the state who have to deal with this rigamarole". He said "they will still hold hearings under this bill, but the effort of those objecting to this are the ones who do not want anything to happen". He said that he favored the bill as there was "just too much rigamarole".

RECESS

Chairman Adams called for a recess at 4:45 p.m. and recalled the meeting to order at 4:50 p.m.

CSSB 84 (Resources)

The Committee continued its discussion of CSSB 84.

Representative Cotten stated he would like to offer the following amendment to page 2, line 5 of the Bill:

After "time" add ", or unless the agency makes a written finding stating why more time is required and sets a deadline for issuance or denial of the permit".

Representative Cotten said an agency may have a reason for withholding a decision. He said they may not come to a written agreement. He explained the amendment would allow the agency to make a written finding and set a deadline on its own. There was brief discussion on the amendment.

Representative Chuckwuk MOVED that the amendment proposed by Representative Cotten be adopted. There being NO OBJECTION, it was so ordered.

Representative Cotten MOVED to delete subsection (d) on page 2, lines 23-25 of the bill. Representative Bettisworth OBJECTED.

Representative Chuckwuk asked if there was a process for a permit to be denied if necessary. Representative Cotten said he didn't know of any.

The QUESTION was called for. Three in favor, six opposed. The MOTION FAILED.

Representative Cotten MOVED to delete lines 1 through 15 on page 4 ("Sec. 44.62.636. REVIEW BY THE SUPERIOR COURT.") of the bill. Representative Montgomery requested an explanation of the motion. Representative Cotten said this section adds an unnecessary burden to the court system. He said there is a package of material from the Attorney General's Office on this which he has not had an opportunity to review.

Chairman Adams said that section provides for review of the final permit.

Representative Bettisworth said he is opposed to deleting that section. He said there should be some judicial review. There was further discussion.

Representative Cotten MAINTAINED HIS MOTION. The QUESTION was called for. Two in favor, seven opposed. The motion FAILED.

Representative Montgomery MOVED to report out CSSB 84 (Res) with the amendment approved by the Finance Committee. There being NO OBJECTION, it was so ordered. CSSB 84 (Resources) amended House was reported out with individual recommendations.

ADJOURNMENT

The meeting adjourned at 5:15 p.m.

Tape HFC 81-116, side 1 #001 to #488

CORRECTION

**THIS DOCUMENT
HAS BEEN REPHOTOGRAPHED
TO ASSURE LEGIBILITY**

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**Note: A summary of Testimony on these
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at the front of the Minute Book (Book I).

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* Also see HB 666 and SB 744.

(Note: The Budget accepted by the House & Senate
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HOUSE FINANCE COMMITTEE

HEARINGS ON

WORLD OIL PRICES
AND
PROJECTED STATE REVENUES

MARCH 29 & 30, 1982

SUMMARY OF TESTIMONY

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GREGG ERICKSON
ECONOMIC CONSULTANT, JUNEAU
PAST DIRECTOR OF RESEARCH, ALASKA STATE LEGISLATURE
PAST STAFF MEMBER, U.S. ENERGY COMMITTEE

I have been interested in the oil market and its effects on Alaska's finances for 13-14 years now, and I can't remember a time where there was more uncertainty or more contradictions than there are today. We were asked to prepare a point estimate of petroleum estimates for Alaska for FY 82 and FY 83. We did that. The charts show our forecasts for FY 82 general funds balance and projected FY 83 balance available for appropriation.

We didn't arrive at these numbers easily. We analyzed the world oil market and every important aspect of that market that we could identify. Our conclusion is that world oil prices are declining, that there is practically no possibility that world oil prices will stabilize at anywhere near their present level. The only chance for our prediction of lower revenues to not be true would be the result of war, a revolution in Saudi Arabia, or some other event that cut off a major portion of the oil supplies the world receives from the Persian Gulf. We don't really know what sort of probability should be assigned to that possibility. We think it is very low to the end of FY 82. Barring that event, oil prices are going down. We had to address the issue of how far and how fast.

We did an extensive analysis. We analyzed the response of people's use of oil, the intensity to which they use oil, to the rise in prices. The gentle slopes in the attached chart disguise some very important facts. When prices rose rapidly in 1973-74, the amount of oil required declined very slowly. During 1974-76, the real price of oil declined slightly. In about 1978 it began to steepen in its decline. That meant in the industrialized countries, that people were learning to use less and less oil. This is extremely critical and important to the kind of market in which we are selling our oil. That market is one that needs our oil less and less. This is not a trend that is going to go away tomorrow because the response to the 1973 price increase really didn't begin showing up until about 1978. The things that people own that use energy -- cars, buildings, factories, shops -- are not replaced over night. Even if the real cost of oil were to fall to some very low level, \$3-\$4 a barrel, people would continue to be adding machinery and equipment, etc., that would use less energy than that which it replaced. We believe this represents not just a short term trend, we think it represents a change over to natural gas, the ability to substitute labor and other inputs to the productive process against oil energy. It demonstrates how flexible in the long term consumers usually are to changes in price.

Some have suggested these conservation efforts are just about played out and that oil demand will increase rapidly as long as economic output increases. This is sort of the hopeful theory that as the economy improves so will the demand for oil. Back in 1972 the U.S. and Japan used almost the same amount of oil per unit of GNP. Since 1972, Japan has reduced its need for oil by about 25%, where the U.S. has reduced its need by about 15%. This would indicate that alternatives for conservation are not used up.

In the course of trying to analyze what was going to happen during the next fifteen months, we did a lot of technical analysis. We took the numbers that show the prices over time and we said, supposing we know nothing about the numbers -- we didn't know that Iran had a revolution, etc. -- could we figure out what was going on just from the movement of the prices. The facts that were abundantly apparent when we started the analysis, were the ones we ended up with. Those are very simple: that over 110 years the average price of oil has been about \$13 a barrel. More remarkable than that, the trend over 110 years has been absolutely flat. In the first 50 years the average is \$12.96; over the second 50 years, from 1920 to 1982, it's been about \$13.02. There is a remarkable stability in the long run and a remarkable volubility in the short run. These prices go up and down like mad, except for a few periods. From 1939 to 1979 was remarkable stable. We asked ourselves whether this period of stability, where the Texas Railroad Commission was really in control of the price in the United States and the world, could be repeated. Our conclusion was that neither OPEC, Saudi Arabia, nor anybody else has the ability at the present time to really control the price of oil because to control the price of oil you have to be able to control output. We don't think Saudi Arabia has the ability or willingness to cut output sufficiently to really control output and the price. We believe OPEC and Saudi Arabia have the ability to manage the decline in prices.

We tried to address whether this run-up in prices was a fundamental change in the market. Our conclusion is that this does not represent a fundamental change in the oil market and the price is going to go down. Frankly, we don't know how far.

About 95% of the oil produced in the world today has marginal operating costs, less than \$5 a barrel to produce. This means you don't drop very much production out of the supply as price falls. On the demand side, people's demand for energy is embodied in very long lived capital products that don't change overnight. Those things mean people are going to continue to use energy about at the rate they used it yesterday, last week and last month, even if price falls. You can't expect demand to suddenly increase by large amounts if price falls. As price falls consumers don't start using more, and suppliers don't really start supplying less. This means the forces that cause the price to fall in the first place continue to exist, which

causes the price to fall further. That is what causes those wide oscillations. The only sustained period when this wasn't found was when the Texas Railroad Commission was in control of that market and essentially told every producer of Texas, with the weight of the state and federal governments behind it, that they would control this market.

This brings us to our forecast. We think there are three possibilities. One is if there is war, revolution, disaster or whatever in the Persian Gulf, enough of the world's oil resources are concentrated in the Persian Gulf area that if something happened to cut off that oil, there is no doubt there would be a rapid run-up in price. A possibility at the other end of the spectrum is that OPEC will completely lose control, and the price will fall uncontrollably. The third possibility is that OPEC, which we believe is basically Saudi Arabia, will manage a price decline. They clearly cannot maintain a \$34 a barrel market price, in my opinion. If they are willing to cut both production and price, I believe they can maintain control of the market. If it gets away from them, it's going to get away from them entirely. There is really no intrinsic floor to the oil price collapse that would occur if that happens.

I believe these markets should be studied by a team of psychologists and economists, because they are just as much psychology as economics. The price run-up that occurred in 1978-1979 was a result of very small reduction in total world supply -- a couple of million barrels dropped out of the market. There were all sorts of ways the world could have responded to that, but the price went up because consumers got scared.

The failure of OPEC and Saudi Arabia to cut price and production makes me more and more pessimistic about the price we'll get for our oil.

A lot of people have talked about inventories, and they have said inventories have been declining and as soon as the inventory sell off occurs, the prices will firm up. You don't have to be a statistician to know that world oil stocks have gone up rather steeply since 1975. It means that people who hold oil have decided to hold more or have been involuntarily holding more. We did an analysis of inventories in the short run to see who was right. OPEC said its stores are coming down. As soon as they come down everything will be all right. The oil companies say no, inventories aren't coming down, they're not drawing them down. So, who's right? Our conclusion is that inventories normally build about this time of year. What is happening now is that, in fact, inventories aren't building as fast as they normally would. They may be holding level or declining very slightly, but the oil companies and others are correct in saying they are not selling off inventories right now. We feel the long term trend here is that inventories will increase. That inventories being held are substantially more than they have been

in the past. This indicates there is not only a production overhang, but an inventory overhang. That is something on the supply side that will accelerate the crash if the price gets away from the Saudi Arabians, which I really think it has.

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PETROLEUM ECONOMIST
PRESIDENT, W.J. LEVY CONSULTANTS CORPORATION

I was struck by how similar the projections of the various witnesses was, particularly as they are based upon an expectation of world oil prices. I did not hear anyone say that there was any substantial probability of a world oil price any higher over the next year or eighteen months than something in the low 20's. Of course, I am struck always by how rapidly conventional wisdom tends to turn around. It wasn't so many years ago that we heard most commonly expressed the fact that the world was going to be running out of oil by the middle 1980's if Saudi Arabia did not produce 20 million barrels a day of oil. Now what we hear most commonly expressed is that we are facing surpluses into the 1990's and beyond and that there is no hope of holding world oil prices unless Saudi Arabia produces something under six million barrels a day. I think it is fair to say that all of us tend to see the future through the prism of the present.

We are conditioned by what we are seeing close as to what we are experiencing. I think it is also fair to ask what the dramatic changes in basic circumstances might be that we suddenly see the world turned topsy turvy in such a short period of time. I am going to run through what I consider to be some of the highlights dealing with why we are where we are and then where do I think we are going from here.

What are the causes of the present crisis of falling prices? A crisis of declining prices. We know about crisis of rising prices but all of a sudden for the first time in the modern petroleum age, we are concerned with the crisis of falling prices. Some of them are very obvious. There is conservation. This has caught hold and burgeoned over the years as a reaction against the explosive price increases of 1973 and 1974 and again in 1979 and 1980. There is the substitution of other forms of energy for petroleum.

There is the economic slow down which has taken place, not just the recession of recent years, but the general expectation most widely held that once oil prices shot up to the explosive heights that they did, that the economic rates of growth of the industrialized world would slow down. One was no longer projecting the historic rates of growth but two to two and one half percent was the best that we could hope for, half of what it had been previously. This was all because of the big increase in oil prices and the interposition of economic recession which came in 1975 and 1976 and again in 1980-81 into 1982. The overhang of inventories is another.

We have all of these things and none of them together would have brought us to where we are. It took the combination of all

of them, the juxtaposition of conservation, substitution, economic slow down recession and the overhang of inventories plus the particular role which Saudi Arabia played in 1981 which has brought us to where we are today.

I want to say a few words about Saudi Arabia in this whole area within OPEC and as a swing force with respect to international oil movements and prices. First of all, for the sake of emphasis, Saudi Arabia does not have an oil policy and never did have an oil policy. Saudi Arabia has political purposes and it will utilize its oil policy from time to time in order to serve its political purposes. Secondly, the major political purpose of Saudi Arabia, like that of any government, is to perpetuate itself and in this case represents a dynasty. In that respect they believe, and believe correctly, that the most important defense of the Saudi-Arab position in the world depends upon the importance of the their oil to the industrialized world. The industrialized world needs Saudi-Arab oil. The Arab world around them covets Saudi-Arab oil revenues. It is the industrialized world that is so keenly interested and concerned about the uninterrupted flow of oil from Saudi Arabia, yesterday and today and years into the future, that has the same ideas as Saudi Arabia about stability in the Middle East.

Most of their Arab neighbors are much more interested in stability, having their own pretensions and their own objectives. Should these objectives ever be exercised in the form of paying Arabism the way Nasser tried to promote it or the radicalism of an Iraq or a Syria would leave the Saudi Arab dynasty tremendously exposed. Therefore, their major concern is that they be seen and understood to be a constructive force for the industrialized world which is why they have ever since 1974 pitched their own oil policy towards moderating explosive price increases. Also, except in the case of the Arab oil embargo in 1973-74, towards trying to assure the industrialized world that they can be counted on to supply the essential needs of industry in the industrialized world if something goes wrong elsewhere.

Opposition towards price increases and the ability to supply when other things go wrong is the way in which the Saudi's have presented themselves to the industrialized world. They were not altogether successful in projecting this image, not in 1975, 1977, 1979 or 1980 but in 1981 they saw the opportunity. The opportunity arose out of the conjuncture of other circumstances which I was talking about. The fact that we had conservation, slackening of demand, substitution and an overhang of inventories. The Saudi's took advantage of this to try to bring down the extremely high prices of the more militant members of OPEC who had gotten away with it in 1979 and 1980 during a period of tight crude oil balances. They did that by underpricing and overproducing. The purpose was clear and the money and circumstances of the time was able to come to the United States and appear on nationwide television and say "we Saudi Arabia

engineered the glut". The ability to do this was based on the fact that the rest of the Arabic world was in disarray. Iran, a Moslem country but not Arabic, was in the throes of a revolution. Iraq and Iran were at war, etcetera.

They were able to do it and in fact they effectuated their policy by underpricing and overproducing and through the major part of 1981 they were in fact producing 10.4 million barrels per day with the obligation of their off-takers to lift and dispose of that oil. For awhile the preferred off-taker in Saudi Arabia, whether he be an American company or the Japanese, were twice blessed with oil in 1980 when other people were short and with low cost oil. By 1980 it became a mixed blessing when you considered what to do with that amount of oil which is being put upon you at a time when there is surpluses all over the world. For awhile you have surplus refining capacity so you put it through refineries and since it is the lowest cost oil in the world you can sell it competitively. The effect, of course, is to weaken market prices in every major market that Saudi-Arab oil reached whether direct or indirect. These companies had access to very large volumes of low cost oil whereby weakening product prices and after awhile there is no place to go with the product so the products themselves go into inventory. After awhile there is no more room for product inventories and this surplus production goes into crude oil storage. When crude oil storage is filled you charter empty tankers and fill with crude oil and move it to Southeast Asia or the Carribean and you have floating storage.

The Saudi's effected their purpose. They forced the more aggressive members of OPEC to come down with their extreme prices and by August, even though OPEC did not formalize the reunification of prices that Saudi Arabia had been shooting for, they had achieved it. Following the August meeting of 1981, Saudi Arabia stated they were going to reduce their production to 9.5 million barrels per day. By December of 1981, Saudi Arabia had reduced their production more but had reduced production too little, too late and not convincingly enough. The statement was that they were reducing their ceiling on production and did not say openly and specifically that they were cutting back their production and telling our off takers that they can't lift more than this particular volume which is going to balance the market. The upshot was that 1981, as a result of this policy on the part of Saudi Arabia designed to bring extreme prices down but carried out their underpricing and overproduction, changed completely the character of the year 1981. 1981 was started with an overhang of inventories of over 5 billion barrels. There was a tremendous overhang of high cost inventories that confronted the whole world. Everyone anticipated that 1981 would be a year of adjustment the way 1975 and 1976 were and that inventories would be worked off in the course of the year. In fact, because of the Saudi-Arab policy there was virtually no liquidation of inventories in the course of 1981. The sum total was maybe at

the rate of one to one and a half million barrels a day which means that inventories were reduced between 350 million and 500 million barrels. We ended 1981 with inventories of over five billion barrels which is about 100 days supply which is twenty days more than the rate of inventory carriage we had in 1978.

It was this which brought us into 1982 with not only the accumulation of further declines in demand but an overhang of inventories which had been high cost in 1981 but which became intolerable in 1982. The conventional wisdom had by then changed around so thoroughly that with surpluses foreseeable into the future and prices having no way to go but down to carry inventories was intolerable. A barrel of inventories which you have in stock today is going to be worth less tomorrow so you get rid of them. There was a tremendous rate of inventory liquidation beginning early in January through February and most of them were product inventories. A lot of them were product inventories which don't show up on the inventory statistics because your secondary inventories are held by consuming groups. With this overhang of inventories, whose value is going to go down and that you can always replace because there is plenty of surplus refining capacity, can be replaced cheaper than what you had in stock so you sell the products. You can probably buy from somebody else with surplus products cheaper supplies than running crude through your own refinery. You had essentially a dumping of products on the product market and tremendous weakness of product prices in all major consuming areas. This liquidation of products kept pushing crude oil back into inventory because if you reduce your refinery runs and buy products from someone else you are not using crude oil. Therefore, through January and February we had very little liquidation of crude oil.

When you hear about the firming of product prices which took place in March, my own guess is that this was owing less to a major change in the psychology of the market as it was to the fact that the product dumping had very much come to a halt and we were reaching the point where we had to start liquidating crude oil inventories.

OPEC is sorely beset by the declining demand for their crude with the dumping of products weakening prices and product markets so refiners are suffering losses. As refiners suffer losses they have to reduce their crude oil costs and the way they reduce their crude oil costs is to sluff off whatever high cost crude there is, except one, Saudi-Arab crude. If Saudi Arabia says our production ceiling is 8.5 million barrels a day or 7.5 million barrels a day and you are an off-taker from Saudi Arabia you want to be very careful less you prejudice your future relationships by underlifting what has not become high cost crude instead of low cost crude. With the Saudi-Arabs pricing at \$34 other crude selling very much below it is a high cost crude. There was underlifting but no company is prepared to go too far unless it gets a clear signal from Saudi Arabia. In the latter months of

1981 and the early part of 1982, Saudi Arabia was not giving a clear signal as to what their intentions were. What you have now is the dilemma within OPEC of how you balance your production with the demand for OPEC oil and how you preclude or at least reduce the amount of discounting by some of the OPEC members so you can achieve a modicum of stability in the crude oil market in the months immediately ahead.

There are different groups within OPEC which have had and still have a need for increased production export and oil revenues. Iraq and Iran together used to produce between nine and ten million barrels per day and now produce barely two million barrels a day. Both of them are desperately in need of volume and revenues to rebuild against the war which is still going on. There is almost an unlimited desire for increasing production, exports, and oil revenues. There is a limit to how much can be increased out of these two countries.

Iraq has lost and will not be able to reestablish it's major export facilities at the head of the Persian Gulf as a result of war damage. Whatever they might be able to produce they can not move into export more than two pipelines will carry. Two pipelines which go to the Eastern Mediterranean, one which goes to Tripoli in Syria and the another which is built through Turkey into the Eastern Mediterranean. Together these two pipelines can carry a little bit more than one million barrels per day. There is another pipeline which has an on again off again operation through Syria which has lost some pumping capacity. The limitation of what they can export is their pipeline capacity which is going to remain for a considerable period of time.

Iran would love to produce three or four million barrels per day, yet they have a very serious problem. There are a lot of off takers from Iran. Their major customers are the Japanese who rushed to Iran in 1979 when they were opening up because they had nationalized and the Americans had backed away. This was the first chance the Japanese had ever had to get direct access to Middle East oil. They rushed in and paid premium prices but Iran went down the drain as a result of the war. The Japanese have opened up extremely important lifting arrangements with Saudi Arabia. The Japanese today, as a group, take as much oil from Saudi Arabia as any one of the four ARAMCO American oil companies. They would be reluctant to turn their back on that to reopen negotiations with Iran and secondly the Saudi's are in a position no matter what the Iranian price is to say to companies we don't want to negate the economic reconstruction of our Moslem half-brothers in Iran. The greatest threat to Saudi Arabia had been the pretensions and meglomania of the Shah and they are reluctant to see the economic reconstruction. Whatever these two countries may want, it is unlikely in the near term they will get increased exports of more that about 750 or one million barrels a day.

Kuwait and Lybia don't directly need the money and have other reasons for wanting increased exports. They are producing well below what they had been previously producing and together are producing maybe 1.4 or 1.5 million barrels per day. They would like a lot more but neither of them have trying revenue needs and if you say that each of them could expect out of an OPEC arrangement in the near term to get another 750,000 barrels a day, this may not make them happy. This also would not make them so unhappy that they would be price cutters in order to get an additional one hundred to two hundred thousand barrels a day.

Algeria, Nigeria, Venezuela and Indonesia need revenue and would like to have increased exports. As a matter of fact the lower the price goes the higher the level of exports they need in order to maintain their level of revenues. I would say that if they were able as a group for a time to increase their exports by another 1.2 million barrels a day they would not be happy but not be so unhappy that they couldn't stick it out for awhile. What I am talking about is something on the order of 2.5 to three million barrels a day that somehow has to be given to them. That is not going to come out of the Saudi-Arab high. The Saudi-Arabs are not prepared, given the state of the market, to reduce their production by enough so there would be a shift of off-take from Saudi Arabia to these eight countries in the amount of 2.5 or three million barrels a day.

The problem which faced OPEC when they convened in March was a fantastic juggling act. Saudi had to convince the other eight that they were serious and determined enough to reduce actual production, not only their ceiling, to a figure that the others might be able to live with and then wait for something else to happen to improve the whole environment. The turnaround from inventory liquidation, which is still going on, to a lower rate of liquidation which means in effect that the world would have to meet it's energy/oil demand out of current exports from OPEC. Saudi Arabia has to convince the eight that they are serious enough and the eight had to convince Saudi Arabia that they wouldn't accept what was given to them and then go on cutting prices still further in order to get their extra 100-300,000 barrels a day.

The question then is whether or not the OPEC decision to hold production to 7.5 million barrels per day is going to stabilize the market. As it has been discussed today, 7.5 million barrels a day is not the answer to anything really, but is a holding action on OPEC's part. OPEC knows that the world is using today more than 17.5 million barrels a day. Therefore, if Saudi Arabia will actually cut production, not just their ceiling, to 7.5 million and maybe if necessary 6.5 million barrels a day, and if the others hold still and suffer the shortfall in the desired level of exports for several months, then that 7.5 million barrels will increase to 19.5 or 20 million barrels a day. That is not going to be frustrated by added conservation or

substitution. We are going to be doing whatever we can anyway in all of these areas. The turnaround in the rate of inventory liquidation is what OPEC is banking on and if they are prepared to go that route without continuing to cut prices then the expectation is that they will be able to stabilize the market.

The competition that OPEC faces is not from low cost North Sea crude. If OPEC worries about North Sea crude the game is lost. The competition is not from declining prices of U.S. oil. North Sea oil is not a price maker in this world and U.S. crude oil is not a price maker. The price determining factor in the world is never the lowest price oil but the highest cost. We know that consumers if they need a certain volume of oil are going to have to pay the price for the marginal barrel. The marginal barrel is the last barrel you have to buy for your refinery or the last barrel you get out of your refinery. No matter what OPEC does with their price they are not going to drive North Sea oil down beneath the water and if they cut their prices they are not going to drive U.S. oil down under the ground of Texas. We are going to produce roughly 8 million barrels a day of crude oil and the North Sea, Norway and Britain together are going to produce their 2.1 million barrels a day because they are more concerned about volume instead of price. OPEC has to worry about competitive pricing and as OPEC countries competing with themselves to get their share of what they regard as the deficient demand. It is OPEC competition within itself which is creating directly or indirectly the extremely low spot prices. Dumping of products continues even with some OPEC countries which export their crude oil and refine it in third countries taking some of the products back and dumping the surplus products onto markets resulting in an undercutting of prices.

In the short run a reduction in price is not going to increase demand. In 1979 and 1980 the countries of the oil importing world and the companies from these countries competed among themselves to bid the price up. This rising price did not get one extra barrel of oil out of the ground. What they were doing was competing among themselves for the oil that was not contracted for and was on the spot market. The faster they bid up the spot market prices one country after another withdrew it's crude from contracts and put it on the spot market. Consequently, the contract prices went up and OPEC did a wonderful job of taking advantage of our own shortsightedness. We bid prices up without bringing forth more supply. What the OPEC members are doing when they compete with each other is driving prices down without bringing forth increased demand. They know that but were driven by circumstances. Through 1981 they never believed what is so often said that they are facing the discipline of the market place. It is the discipline of the market place which is going to force crude oil prices down. They never believed it and don't believe it today. It wasn't a discipline of the market place it was the intransigence of Saudi Arabia.

They do not believe, nor do I think they have reason to believe, that the long term trend in oil prices has to be down. This is the conventional wisdom which was presented by Mr. Erickson's chart. Everybody says that oil is a depleting resource, a finite resource, so shouldn't the real price of oil be going up? It may be finite but through this entire period of time with the ups and downs oil was essentially in unlimited supply. If you look at the levels of consumption of petroleum in 1910, 1920 and 1930, and on, oil consumption only began to burgeon after World War II when it was fed by the low cost oil out of the Middle East. People began to realize how much oil was there. At that time the demand for oil went up and the reconstruction after World War II, and for a generation thereafter, was taking place. It all came out of a bottomless barrel. If it is a bottomless barrel why do you have to worry about a rising price of oil?

Sure the real price is stable but we have pushed our consumption to a level today where every year if we want to replace the amount of oil which is being consumed, even after conservation and substitution, we have to look for and discover a new Lybia every year. If you are talking about what the real price of oil is going to be over the long run then you are not talking about a bottomless barrel where the real cost of oil can remain constant. You are talking about the necessity to find the oil which you are consuming. It may very well be that in individual years we can find our 17 billion barrels which we use up. However, it is questionable that you can do it year after year. What is unquestionable is that even when you do the cost of finding it is going to go up. I think there is very little reason to expect that in the long run OPEC is faced with a constant or declining real price. The problem of OPEC is to bridge the gap of a certain number of years. The real oil price is not going to be going up year after year from a level of \$35 to \$40 a barrel such as we had in 1980. Obviously the explosive increase in prices had to be adjusted for as we did in 1975-1978 and with an even bigger adjustment because the explosive price increase was greater. That would have taken three or four years of oil prices stable or maybe even going up in dollar terms, as they did from 1975-1978, but declining in real terms. The problem of adjustment has become acute because 1981 was the year when we should have started it and it was aborted by the misadventure of the Saudi-Arab oil high.

Is the OPEC adventure going to work? I don't think anyone knows the answer but I would say that the odds are better than not that it is going to work. In effect OPEC will in the course of the next six months be able to hold the price of their oil that moves in international trade somewhere in the range of \$30 or \$32. I think the justification/rationalization for reduction in the market price from \$34 down to say \$31 is there. The Saudi-Arabs could have said in March that they had to reduce their production because the demand isn't there and adjust the

price downward to firm up demand. Why they didn't one can guess. It could have been a considerable fear that if they adjusted their prices downward that the world would take this as a real sign of collapsing oil prices and it would tend to trigger the psychological reaction to the downwards spiral of oil prices. It may have been that after the experience of 1981 OPEC also wants to show as part of their image to the world that whereas they can force prices down they are also strong enough to hold prices. The answer is uncertain, but I think the chances are very good that OPEC may be able to hold the price in this range of \$32 for the bulk of oil moving in international trade. There may very well be continued weakness of spot prices while this is going on. There is an overhang of crude inventories which still have to be worked off. It doesn't matter if you say the surplus is in surplus production which is being absorbed but there is surplus fuel oil inventories which have to be disposed of which can only be done with a certain amount of selling on the spot markets. If the OPEC "have nots" are prepared to sit it out and wait for the hope of upturn in economic activity it may very well work. If it doesn't then we could be faced with a relatively considerable period of continuing price weakness. I don't believe that the price weakness is the kind that is going to cut oil prices into less than half. I think there are a lot of reasons to anticipate that will not happen. I will not argue if a free market price is \$13 or \$6 or \$8. A free market price is something which we tolerate when prices are going up and not when they are going down. The world crude oil business has rarely known a free market.

In 1928 oil companies congregated in Scotland to try and provide a certain amount of direction to an otherwise undesirable free market. The Texas Railroad Commission did its part and the U.S. Hot Oil Act did its part when we stopped the previous collapse of oil which was going down to ten cents a barrel in the East Texas field. If you consider what a major decline in world oil prices would mean to the policies of governments which they have instituted and the expectations of rising prices, you can see many reasons for public intervention.

The direction of the price movement is a tremendously important matter. In 1978 our office used as a working hypothesis the possibility that the world oil prices, which were then \$12.70, within two to two and one half years would about double. It was a combination of a lot of things. The OPEC countries we talked to were exuberant at a forecast such as that. The U.K. government saw this as a solution to all their budgetary problems. The United States and Canada were not going to have any more energy problems because a world oil price of \$25 is a go ahead signal for oil shell, gasification of coal, etcetera.

I would anticipate that not when the oil price reaches \$15 or \$16 but substantially before that there would be a considerable amount of intervention by many of the governments who have an

allied interest that there shall not be such a precipitous collapse of oil prices that the commitments have been made pursuant to government policy are not all going to be thrown out of kilter. The U.S. may very well intervene, not when U.S. crude oil prices are down around \$13 or \$14 that gives a netback of \$5 a barrel, but considerably before. There are two purposes for this both in the interest in maintaining incentives to the development of American natural resources and also for budgetary interests. There can be a devastating impact upon the U.S. budget and the income from Windfall Profits taxes if prices fall to that level. As a matter of fact, income from Windfall Profits tax disappears if prices ever fall to that level.

There is the prospect that OPEC will hold the line somewhere in the area of \$30-32 with spot prices below, not with a downward spiral of spot prices, and that with further declines in the real price of oil for several years thereafter. If OPEC can't do its job, to defend prices in a declining market, then we are faced with downward pressure on the prices in the spot market carrying other prices lower. The big question mark is where is the trigger point for intervention, for example on the part of the United States government, which has the legal authority to do it at the present time. If the Administration decides they want to impose a duty on oil it takes a finding by the Administration pursuant to the Trade Agreements Extension Act.

As far as the implications for the State of Alaska, I think your problems are basically with your principals of budgetary projection. They have been for a long time. I fault noone for making the mistake of projecting crude oil prices. Anybody can make that mistake and all of us do. The question is what principal of projection do you use. I would use an entirely different principal of projection with the same set of circumstances when you are considering the revenues of a government or the cash flow of a business corporation than if we were advising a major oil company on their future exploration policy. When it comes to the determination of how much shall we budget and how shall we allocate for exploration; what happens to oil prices over the next three years is irrelevant. The money spent on exploration today is not going to find the oil or develop the oil or produce the oil over the next three or four years. What they are concerned about is what the long term oil balances and the long term oil price is going to look like in the future. If they don't have a sufficiently realistic perspective on the upside then they are out of the game of exploration because either they will not bid enough competitively to get leases or negotiate on the proper basis with the various governments in the third world. There one has an entirely different perspective that one has to take.

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UNIVERSITY OF VIRGINIA

I have been asked to give a presentation about the current state of the world oil situation and some speculations about the future. Keep in mind, it is very difficult to make predictions. We are living in very interesting times. The degree of uncertainty today is probably larger than in the past when the course of oil prices seemed much more certain to us. The reason for the uncertainty in my view is that OPEC is teetering on the brink of stability. I will talk about three main subjects: (1) I will briefly describe how the present situation developed -- how it is possible for a glut to develop and a price to weaken; (2) what OPEC is doing and the options open to them; and (3) what the U.S. should do, because whenever there is a crisis there are always opportunities.

HOW THE PRESENT SITUATION DEVELOPED. The present situation was brought about primarily because of the price rise of 1979. This rise in oil prices was unexpected. I don't know of any analyst who had anticipated this to occur. I was reasonably convinced that prices would bottom out around 1980-1981, near about \$10 in 1978 dollars, then gradually rise and continue to rise fairly smoothly beyond the end of the century -- subject of course to interruptions which could raise the price for a short time, but it would come down again. Sudden rises, then declines to the base price. What developed in 1979 is an interesting example of how the world oil market is not governed only by economics but also by psychology. The psychology that had been built up by 1977-1978, primarily in Washington, was that the world was going to be in for a tremendous oil shortage. In 1977 our then president, Mr. Carter, reminded us that the energy crisis was the most important thing that would ever happen to the United States. He called it the moral equivalent of war. He visualized a situation where by 1983 the supplies of oil in the world would not be able to keep up with the demand. He visualized something which we as economists would never admit, namely a situation where the demand would actually overtake the supply and there would be "gap". It seems odd as we look back on this episode that we were not in a position to know better, but we should have known better then. The authority of the president of the United States is very great, and if the president says there is going to be a crisis, people believe that there is going to be a crisis. It is interesting that all of this was swallowed not only by a large portion of the public -- although not by the Congress -- but it was also swallowed by the Arabs. They believed it. Mr. Carter conveyed this feeling and I am sure that the Saudi's particularly accepted this thesis uncritically. They also accepted uncritically the idea that the western consumers would be willing to pay any price for oil because it is such an

important commodity. What got lost in the shuffle is the fact that oil, like any other commodity, must have a price elasticity attached to it. There must be a decline in demand if the price goes up. That was played down partly because most of the studies we had showed very small elasticities. They showed the demand for oil is very insensitive to the price and this encouraged people to believe that if the price went up much higher the demand would be hardly changed. That has turned out to be wrong.

In any case after the fall of the Shah at the end of 1978 there was a great loss of Iranian production. Much of that production was made up by other nations, primarily OPEC nations. So, there really was no change in world supply. There was certainly no change in world consumption. Yet the price started to rise in early 1979 and it tripled by 1980. The causes were primarily psychological. People were panicky -- they thought the prices would go even higher. They bought more oil than they could consume and put it into stockpiles. This becomes a self fulfilling prophesy because as you buy more oil, the demand goes up, which drives the price even higher.

In addition, the producers saw the price go up rapidly and figured if they held back on some of their sales, "maybe the price will go higher and we will be able to sell at a higher price". That too is a self-fulfilling prophesy. By reducing the supply they actually drove up the price more. Saudi Arabia did this twice. Once in January 1979, about two or three days before an important oil auction, and the spot price immediately doubled. Then they slashed production around April 1, 1979 just after the Camp David agreements were signed. Again, the spot price leaped upward. These manipulations had their effect on a very nervous world and the spot price jumped up. The contract prices followed very slowly.

You might ask, weren't they aware of the danger of letting the price go up. The best I can tell, they were not. They simply saw it as an opportunity to get more money out of the western oil consumers. They probably believed the demand would stay up because they had been told so by their economists, and western economic analysis. In fact, the price did stay up for almost two years.

As best I can tell, the reason the price did not come down in 1980, contrary to my expectations, was the fact that we had a war between Iran and Iraq, we had the invasion of Afghanistan; there were enough things going on, the take over of the Grand Mosque in Saudi Arabia, to make people nervous about future supplies of oil. They felt perhaps the price would rise some more. Experts were telling them the price would continue to go up at the rate of between 5% and 10% in real terms. Others were saying there would be further price leaps, if possible, due to interruptions. People were mentally set up to a price of \$100. There seemed to be no limit to the price of oil. Under those circumstances, if

you held stockpiles you might be willing to sit on them longer and pay the carrying costs.

Yet, by 1981, no further price increases had developed in spite of all sorts of interruptions. When Carter decided not to buy any more Iranian Oil, which is equal to an oil embargo, there was no effect on the price; we decided to kick out the Lybian diplomats -- no effect on the price; the oil weapon that people kept talking about was never unsheathed. By 1981 people began to realize that perhaps there are economic limits and perhaps there is a price elasticity. The demand began to decline drastically at the end of 1980.

Therefore, it is not surprising that by 1981, and certainly by 1982, people started to destock, get rid of their excess stock-piles, and the necessary readjustments over the price began to be noticable.

What this whole exercise also brought out is that OPEC is really made up of quite dispersive countries that have different interests. On the one hand you have countries like Algeria with small reserves, who would like nothing better than to have the price of oil \$100 a barrel, so they can sell whatever they have left at the highest possible price. On the other hand, the other extreme, are countries like Saudi Arabia whose supplies are likely to last for 50 to 100 years at the kinds of rates they project, who must be concerned about the long term market, and who know from their point of view, the optimum price is not a high one, but something in between. Enough to give them a profit, but not so much to discourage the use of oil in the future. They are very aware of this, but I don't think they remembered in 1979. In 1979 they seemed to be very happy to take three times the price and three times the revenues, and make three times the money. They acted on a very short term basis. As always the case when you do things for the short term, you have to pay in the long term. They are probably going to have to pay now. Let me review what we mean by optimum price. If one does a theoretical analysis as we have done -- I know theory doesn't apply to the real world, but it's nice to know what theory tells us so you have a frame-work for thinking about a situation -- if you ask what would be the best oil price from the point of view of Saudia Arabia -- not too high and not too low. The answer is that it is a price that, starting right now, would drop precipitously down to about \$18 a barrel, stay in that general vicinity -- between \$18 and \$20 -- for something like five to eight years, and then gradually increase. There is no chance they could actually achieve this optimum pattern. A pattern that would give them a maximum screen of profits over the years. But if they understood the situation from an economic point of view and if they were politically powerful enough, that is what they should do.

What this tells us is that the present price is much too high for Saudi Arabia. The present price is so high that it will kill not only a large part of the long term market for oil in the world, but even the medium term. By this I mean that the demand for oil in the industrialized world will decline rapidly.

Let me talk about the consequences of this high price. Once the price is up for more than a few months, people begin to think seriously in terms of making adjustments that require capital expenditures. I ought to explain that conservation is really a very complicated term. I think of three types of conservation. The first type is where you turn off the switch on a light, or drive less, because the price is high. That kind is easily reversible if the price should go down, or if you should make a lot of money and don't care about the cost of energy. The second kind of conservation is where you actually lay out some money, invest capital, and buy a piece of machinery that is more efficient -- like a more efficient car or installing insulation in your house. That kind is essentially irreversible -- you are not going to throw away your car or strip off the insulation in your house, even if the price of oil goes back down. This means that a certain market for oil will disappear. The third kind of conservation is where you actually substitute another fuel for oil. The other fuel may be gas, coal, nuclear, hydro, geothermal, or whatever. You can do this because it turns out that oil around the world is used mainly to make heat and steam. Anything that burns will of course produce heat and steam. It is more difficult to replace oil in transportation uses. Once the price of oil goes up and stays up for a length of time, people around the world will move to make these capital changes that will result in oil being backed out. Theoretically you can back out two-thirds of the world's oil, if you assume that all of the oil used for heat and steam is used for cheaper fuels. That's not likely, but a good fraction can be backed out as long as the price stays up. Even if the price does not stay up, people may still back out oil by making the necessary capital investments, because they might be afraid that the price might go up again.

The price expectation is really what is important here. That is what is driving the reaction of the people. Also, the governments may decide to make energy more expensive by putting a tariff on imported oil. So there are a variety of reasons to believe these capital investments people are making to back out oil are going forward and will continue to go forward even if the world price of oil should weaken. Another reason they may go forward, once you set a bureaucracy into motion, these things can't be stopped -- people's reputations are tied to certain projects, staff has been hired, a constituency has been built up -- once these things are launched they will continue with their own momentum. This country almost made the mistake of launching the synthetic fuels industry with government backing. We were saved in the nick of time from spending some hundreds of billion dollars on such an enterprise.

I'd like to give one example of what it means to switch from oil and invest in alternatives. I've taken the case of Japan, a country that at one time was completely dependent on import oil. As you know, they are making a large effort to switch to other fuels, coal as well as nuclear. Let me take nuclear as an example. Nuclear energy is quite expensive to begin with, that is, you have to make a very large up-front capital investment to build a nuclear reactor. But, once you've built a reactor, then the continued production of power is very cheap because nuclear fuel is really not very costly. Supposing Japan has built nuclear reactors, let's ask how low would the price of oil have to be in order for them to give up their existing nuclear reactors and switch back to oil. The Japanese have then sunk costs in nuclear reactors and they have to make the following decision: they know what the incremental and marginal cost is of nuclear power, the cost of nuclear fuel, and they have to translate that into dollars a barrel for oil. The answer is \$4.00. Oil would have to go to \$4.00 or less to make you want to give up an existing plant -- that would be true in the United States too. Solar energy is a more striking example. Once you have invested in a solar energy facility, then the incremental cost is zero. The sun is free. Once you have your solar facility you would never want to give it. There has been investment in hydro, primarily in Latin America, but these projects take time. The impetus is here now and projects have been started. Again, once a project is started and the impetus is built up, they are likely to continue. Hydro is a good example where the initial capital costs are extremely high but the continuing operating costs are quite low.

If oil demand develops as I think it will, then the oil needs of the industrialized countries are likely to drop to about one-half what they were at the peak in 1979. If they drop down towards 20 million barrels or so per day from a peak of 42, the need for OPEC oil imports will disappear because the oil production of the OECD, the industrialized countries, and of non-OPEC countries, is large enough to take care of this demand. This is a long term crunch for OPEC which they will have to address. This is all something that was started by the 1973 price increase, but more particularly by the sudden 1979 increases.

WHAT OPEC SHOULD/WILL DO ABOUT SITUATION. OPEC has a real problem. In the face of falling demand there are only two things they can do: either drop production so as to match the falling demand, and thereby maintain the price. Or if they really cut their production, they could even increase the price for a short time at least. On the other hand, if they don't cut their production or if they don't cut it enough, the price will go down. This decision is really up to OPEC because they are the ones who are determining the world price by their production decisions. We have recently seen a situation where some of the price leadership has been taken away from them by the North Sea

producers particularly, but I think in the long run OPEC still will control the world price by their production decisions.

It is really interesting, and ironical, that for the last ten years or so, we have been referring to OPEC as a cartel that sets the world price. Well, that's not true. OPEC has never been a cartel or acted as a cartel. Now, for the first time, as it was last month, they are trying to act as a cartel by actually setting a production ceiling, by allocating production quotas for each member of a cartel. And now that they are finally acting as a cartel, people are saying OPEC is dead.

We're all interested in knowing what will happen next, now that OPEC has decided to defend the price at \$34 a barrel by adjusting their production and setting a production ceiling, which is now 17 1/2 million barrels per day effective April 1. I think OPEC is flying blind. By this I mean they don't know really what the world demand is. I don't know what the world demand is. I don't think anybody knows what the world demand really is because the consumption of oil in the world is being hidden by a variety of other things that are going on at the same time. There is, first of all, a recession in the world. It's not very serious perhaps, but it has some effect on oil consumption. Undoubtedly when economic recovery occurs energy consumption will pick up and some oil consumption will pick up. There is also an extensive effort towards destocking. People are finally recognizing that their excess stockpiles are costing them a lot of money. They don't really believe the cost is going to jump up, at least not in the near future. Therefore, it is foolish for them to hold excess stockpiles. This has the effect of decreasing demand. People are buying less because stockpiles are being dumped on the market. It's hard under these circumstances to figure out what is happening to the real long term consumption of oil. Those who are optimists in OPEC would like to believe what their advisors tell them -- oil consumption is going to increase again just as soon as the recession is over and just soon as these guys have got rid of their stockpiles. I think they are wrong. There is no blinking away the fact that oil is being backed out in many applications by gas, coal, nuclear -- anything that will burn or make heat and steam. There is no blinking away the fact that particularly in the United States gasoline consumption will decrease as more efficient cars come on the market and as the car fleet gradually turns over from gas guzzlers to more efficient cars. This takes time of course, but you can't stop it. These are bound to make an impact on demand. I think that OECD demand is going to decrease at the rate of about one million barrels a day over the next ten to fifteen years. So, OPEC may have misjudged. The cuts they have taken may not be large enough. They may be forced to take another cut in production if it turns out that they didn't go far enough. The trouble with that is psychology. They have a problem. They are trying to "psych" themselves and us at the same time. They are trying to "psych" us into believing they can

really defend the price. They have to appear self confident. If people really believe this, then they will stop destocking. That will be self-fulfilling. It will increase the demand for oil and OPEC may ride it up. Also they are trying to "psych" themselves. They are trying to make sure that the members of OPEC who have been assigned production quotas will not cheat. Now, we all know that cheating pays. Chiseling is good for you if you can get away from it. In national economics or commerce there is no law. There is no anti-trust law. You can have cartels and there is no law against cheating. And even if you are caught, the consequences are not too serious. So, it really pays to cheat. This means that if Saudi Arabia, by cutting its production, defends the price and keeps it high, some smaller producer by selling more can take advantage of the high price and make more money by not sticking to his production quota. The temptation to do this becomes particularly great when he sees non-OPEC nations such as Mexico, the North Sea producers, Alaska, selling whatever they can sell at the current price. The question from the U.S. national point of view is: should we try to stabilize OPEC or should we try to de-stabilize them?

In any case, I think we'll know in the next few weeks -- maybe by May -- whether or not OPEC really can work as a cartel. I have given them a 50% chance that they can pull it off until May. I give them about a 10% chance that they can pull it off until the end of this year. We all know that it is very difficult for a cartel to operate as a cartel even under the best of circumstances. What OPEC really needs is something like the Texas Railroad Commission plus the federal Connolly Hot Oil Act. They need a means of monitoring and enforcing. They don't have that. Their coherence depends entirely on the perceived common self-interest, and it isn't there. The interests of the different countries are really quite different. What they are all going to try to do is dump it on Saudi Arabia, to take all the production cut-backs, so they can maintain the price and keep on making money. They'll justify this by saying, you don't need as much money as we do; you are a country of very few people; you have a very large income; you've got money in the bank; you take the production cut. Saudi Arabia may be willing to do this. They have already indicated they may be willing to go lower. They have to be very cautious, because once they indicate this, they will be forced to go lower. There does come a point where even Saudi Arabia can't go any lower because they do need the revenue to keep their present budgets up. They can cut, but they can't cut all that much. When they cut certain projects they loose the investment in the project. They also have to be aware of the fact that the Saudi society is the original trickle down society -- all the money trickles down from the royal family. If the trickling stops, they are in trouble internally. That is the first big hurdle Saudi Arabia faces, which I think they can overcome by cutting production if necessary. And also by subsidizing. They are going to subsidize weak sisters like

Nigeria. They are subsidizing Iraq right. They are going to subsidize to a certain extent to maintain OPEC as a cartel.

The second hurdle they face is the serious one. That is if such OPEC countries as Iraq and Iran try to come back into production. The only way they can do this is to take it out of the hide of Saudi Arabia. They'll try to get them to cut production further. Both Iran and Iraq have not only the political but the military muscle to make their demands felt. I think this is a serious problem with the Saudi's.

The third hurdle is the long term hurdle -- by the latter part of this decade, 1988 or thereabouts -- the need for OPEC oil may be so small in the OECD countries that OPEC will be fighting very hard to maintain its markets, and there will be price competition.

Do the Saudi's believe the price will come down to \$18? It is politically impossible for them to do this. If they did this by increasing their production, flooding the market with oil, they would earn the enmity of every producer in the world. They are in a difficult position. They can't go up and they can't go down.

How important is stock piling/excess holdings? The stock pile situation is important right now because of the uncertainty about how much destocking is going on. OPEC claims that destocking is going on at the rate of 4 million barrels a day. Western countries claim that this is not so high. OPEC's claim is to some extent self-serving, if the destocking is really as large as 4 million barrels a day, it can't be maintained for more than another two quarters at the most. Once the destocking stops the demand will go up correspondingly. OPEC will have been proven right, and their production ceiling will be realistic. Prices will remain firm. On the other hand, if they are wrong, if the destocking is much slower, then demand will not go up. Then they will have to cut some more in order to keep the price from sliding. It is extremely difficult to determine what the world's storage capacity is. There are people who specialize in this and they disagree with each other. There are definitional questions as to what is meant by storage: what are commercial stocks, excess stocks. There is also the problem of what people will do about the stock. For example, we have a strategic petroleum reserve approaching 300 million barrels. This is a very substantial reserve. As far as I am aware, we don't really have a policy yet of how we are going to use this reserve. For example, are we going to keep it for a fiscal rainy day? Is it just going to sit there forever, and never be used? Or are we going to use it in a very active way, to fight price increases? There are a number of ways of operating. So far the Administration does not have a policy.

The amount of oil on the spot market is really quite small. It is only a few percent. There is also a certain amount of oil which is being sold under barter arrangements. That is also very difficult to get a hold on. The rest of the oil is sold on contract terms, with the terms of the contracts pretty well known to everybody. It is a situation in which some companies are willing to swallow losses to buy oil, even though they shouldn't be buying at this high price, and losing money in the process. They try to make up some of it in refining, but it is very hard to do if you loose money up in the front end.

One must also look at the time scale here. Over a long time scale, production and consumption must balance. Over a shorter time scale oil goes in and out of inventories. There are times of the year when inventories are built up and there are times of the year when commercial inventories are drawn down. We are talking about extra inventories, special or excess inventories, which people are laying in in anticipation of some price increase, which people are now destocking in anticipation of price weakening. Separate from that we have government inventories which are being maintained without an economic concern. They are being built up because we have a law that says we have to build it up. My last information was that the U.S. Government inventory -- the strategic petroleum reserve -- is being built up at the rate of approximately 300,000 barrels a day. The capacity is being added as needed, but the law specifies that the amount should be built up to 750 million barrels. Privately, I have my doubts that we need that large a reserve. It is also a tremendous economic burden on the country because the carrying costs for this stockpile are very high.

WHAT THE U.S. SHOULD BE DOING ABOUT THE OIL SITUATION. First I am encouraged by the fact that the present Administration has already taken two very important steps. They decontrolled the price of oil domestically last year, and just last week, Reagan's veto of the emergency allocation bill was sustained by the Senate. The reason these actions are very important is that they mean we will never have another crisis again in the United States. We will never have a situation again where people will stand in line waiting for gasoline. Once prices are decontrolled and once you eliminate the possibility of having bureaucratic or political allocation for a scarce resource, then you don't have these kind of crisis anymore. What will happen then if there is a supply interruption? If there is a supply interruption in the world, the world price must go up. What happens within the country is then up to the government. What we have tried to do in the past is keep the price from rising domestically and allocate the gasoline administratively. That really hasn't worked. It's caused great problems. The sensible thing to do then is to let the price rise domestically, let the price allocate the resources to those willing to pay more, and make some provisions that the extra revenues which the government now gains from the windfall profits tax -- when the price rises

domestically, produced oil will also go up in price. This money can be recycled to protect the low income consumer. The government has taken two important steps with respect to oil and oil supply interruptions. It should take a couple more important steps, which is to have a clear policy on how it will use the strategic petroleum reserve.

I would favor a system, I call it a two trigger system, whereby a sudden price rise would trigger the petroleum reserve and then the president will make a decision whether or not to use it. It would be preceded by a price rise that would provide the first trigger, then the president would make the decision that would be the second trigger. I suppose one could make it completely automatic, but there might be some value in having the president have a chance to say yes or no. There is no question about how the oil should be disposed of, certainly it should be auctioned off to refiners and would then command whatever the world price is. The money would go back into the treasury. We need a clear policy on that.

We also need a clear policy with respect to the recycling of extra income the government would make during such an emergency. I think this would go a long way from keeping congress from legislating something. In asking myself what we should be doing, I would like to mention a few items. We have to recognize that any weakening in price produced by these events I just described is not going to be permanent. It might last for a few years at the most, but it will also be interrupted by price spikes, which are likely to come about if major producers are knocked out. Keep in mind there is a real incentive for members of OPEC to go after Saudi Arabia and knock them out, if only because it will raise the price of oil and allow them to make more money. It will raise the price of oil all around the world of course, at least for a short time. We have to have some means of insulating ourselves in the United States from these unpredictable and violent price fluctuations which are out of our control. We should not permit ourselves to be jiggled about like a yo-yo because the disruptions which come from this are really quite harmful to our economy. The standard way of doing this is to have a system of tariffs. I've noticed there has been a quickening of discussions, even among free market economists, about a tariff on imported oil. It is something that is being very seriously considered, perhaps not official yet in the federal government, but it is talked about more and more. You must keep in mind such a tariff has a definite chance of being put in effect in one form or another. We can estimate what this will do for the state of Alaska. The major advantages of such a tariff would be from the point of view of national security first of all in providing for fewer imports. It would cut imports and make us less dependent on imported oil. There is no question of that. It would also tend to isolate our domestic economy -- both the producer and consumer economy -- from violent price fluctuations. We have after all projects now underway to produce

oil and build gas pipelines, build power plants and so on, which were started with the expectation that oil would be priced at around \$30-odd a barrel. We can't have these projects suddenly discontinued and then start it up again two or three years from now when the price goes back up again. That would be very harmful and very wasteful. I am speaking now about all the conversions that are being talked about and being put into effect from oil to coal. We don't want to have those suddenly stopped. We don't want to wipe out over night the solar energy industry and hope it might restart again in a few years. It won't happen. You have to provide some measure of stability, particularly for emerging industries like the solar energy industry. You also have to continue to provide incentives to people who want to find oil, people who have paid for lease bonuses, who have put real money down and started a program of exploration. You can't cut these efforts off and expect them to start again. They are not on/off operations. Another reason for such a tariff is to transfer rents or oil profits from OPEC to the U.S. This entire business is a revenue enhancer and an important revenue enhancer. To the extent that it does transfer money from OPEC to the United States, it is good for us.

To the actual methods of doing it, people have considered straight tariffs -- so many dollars per barrel. They have considered import license fees where essentially you set an import quota and then you auction off tickets for oil; they have also discussed excise taxes on gasoline and motor fuels. These things are not incompatible with each other. YOU can have all of them going on at the same time. Excise taxes, we really should call them user fees, because they are fees from people who use the roads, and road-building is very expensive. User fees are important. The gasoline federal tax is only 4 cents a gallon. It should be raised. These taxes are in the order of \$2 a gallon in many European countries and Japan. If we want to be on the same basis as other industrialized nations we should raise the user fees. It is also a great measure for revenue enhancement. One penny of tax on gasoline raises one billion dollars a year. Since the price of gasoline has just decreased by about 20 cents a gallon since its peak, if this 20 cents were taken up by some gas tax, whether its a federal tax or state tax doesn't really matter in this analysis, would produce a revenue of \$20 billion a year. We could almost get rid of our deficit if we keep energy prices roughly level for the consumer at the level where they have been for the past year. In other words, if we take up the price weakening that is now going on by an appropriate system of user fees and tariffs, then we can maintain what amounts to price stability in the United States domestically, and at the same time, help balance our budget.

Let me mention a couple of other things that we need, one particularly applying to Alaska. I really believe this is the right time to reconsider a revision or amendment to the law which does not permit the export of Alaskan hydro-carbons. I think

this would be a good time to let oil and gas in the form of LNG to be exported to whoever is willing to pay for it. Once you do this, you will of course, decrease again the demand for OPEC oil in the world, and you will de-stabilize OPEC further. So these measures should all be tied together with a tariff, because it only pays to de-stabilize OPEC and drive prices down if at the same time you can put this money back into the U.S. treasury. So you have to have in operation some kind of tariff escape.

Could you speculate on the what chances of exporting our oil happening are? I can't speculate on the chances. This is really not my business. I have not heard it discussed in Washington, but I'm now changing my position. I'll be taking leave from the University of Virginia in about a month and joining the Heritage Foundation in Washington. I will address myself to the question of tariffs and taxes, and to the question of Alaskan oil and gas. It should never have passed that way. I see no point in restricting exports from Alaska, but I think from a political point of view, this is probably as good a time to bring it up as there has been.

The final thing we need to do is decontrol natural gas completely in the United States. Something that is not going to come about this year, but we can hope for next year.

One question, if we are going to ask ourselves should we help destabilize OPEC, is whether we should stop filling our strategic stockpile for awhile -- for just a few months. If all the industrialized countries did this, it would take about a million barrels a day out of demand. That is an important item. We should only do this, of course, if we have at the same time a tariff scheme in reserve so that we can take advantage of any price weakening by transferring the profits into the U.S. treasury.

Alaskan oil, as a domestic oil, would maintain its price under this scheme. The price would be then set essentially by a governmental decision on how much oil to import. The import quota would indirectly determine the world price of oil. If other countries join us in this and decide to set import quotas as they should, it should be coordinated with industrialized countries, it would have an important influence on the demand for OPEC oil. We would see a sizable income transfer from OPEC back to the industrialized nations.

I thought I would close this discussion with these challenging political questions, which I really am addressing to you. I wanted to give you some thinking that may not necessarily be along the lines of the present thinking, or at least of last year, but I believe it has something to commend it. As always I want to tell you that we are dealing with probabilities here. We cannot, in any case, ever be sure of what is going to happen since events are determined not by economics but primarily by

economic expectations, by the psychology of people and by political events.

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The speakers at this hearing addressed themselves to two related issues. First is what will the price of oil be and secondly will OPEC succeed in stabilizing it's benchmark price? My understanding is that my mandate was to concentrate on the second question and related questions include: Is OPEC a cartel? Has it been effective? Can it continue to be effective?

I would like to start with my conclusions first. I have four conclusions and they are as follows: OPEC is a cartel. It has been effective. It is however an unusual one because it's members are government and it has worked in manners different than other types of cartels. OPEC has an achilles heel. It has not been able to prevent exploration and development of capacity outside OPEC. This has and will continue to erode the market power of OPEC. The high priced strategy of OPEC has not only induced entry by outsiders but it has also motivated the use of alternate fuels. Both of these developments strike directly and in the long term at OPEC's market power. In consequent unilateral ability to control price has also been decreased. It still however may be able to engineer run-ups. Whether it will be able to maintain them near the top is questionable.

Over the last two years or so OPEC has performed with strength as a cartel. It has supported a significant run-up in price and has been moderately successful in stabilizing its benchmark price by decreasing its offtake from 31 million barrels to below 20 million barrels. During this period the outsiders expand their output by about 10%. To get some idea of the power of OPEC just ask yourself this question. What would be the price of oil today if OPEC had not cut its output by about 30%?

OPEC has been acting like a cartel and an effective cartel but can OPEC keep it up? There is no definitive answer to this question. The answer depends upon many inponderables. For example when will the Administration and Congress get its act together on the budget? Secondly, what form will that resolution take? What will happen to the rate of interest? What will be the pace of our recovery? What will be the pace of the world recovery? How energy intensive will that recovery be? How energy intensive will our defense build-up be? How stable will the Middle East remain? How hard will OPEC fight to hold the \$34 price?

I believe that OPEC will fight hard. In recent weeks the president of OPEC has said that OPEC will go to ten million barrels if necessary. OPEC has more than money at stake. I would think that they are prepared to wait out the run down of

inventories and wait for the recovery. OPEC will survive this test but its longer run market power is diminishing.

These conclusions are supported by that which follows and consists essentially of three parts. First, is OPEC a cartel? Secondly, what has OPEC achieved? Third, how does a cartel operate with special reference to OPEC?

It seems maybe strange that you should even ask if OPEC is a cartel. It turns out that in the literature there is considerable disagreement as to whether or not OPEC is a cartel or even if OPEC is effective. You just heard Mr. Singer say that maybe OPEC has not been a cartel until since about March 19. There are those who hold that OPEC is not and has not been a cartel. They do it for different reasons. One commentator states that OPEC is not a cartel but an economic animal whose members have political clout. He says that economists and politicians want to call whatever OPEC is a cartel and the only thing that suffers is the English language. Then he quotes with approval the Secretary General of OPEC who states that OPEC is not illegal nor is it a cartel or an oligopoly. OPEC is OPEC--something new under the sun. This would indicate that it certainly, in their view, is not a traditional cartel. Another commentator indicates that he views it not as a cartel but as a cartel-like organization. He says that it is no more than a forum for discussions and for coordination of the price and production policies of the individual exporting countries. There are those who say that it has been a cartel but an ineffective cartel. Fortune magazine says that "we do not believe that OPEC has been an effective cartel. The record shows we believe that it has been a price follower more than a price leader". There are those who look upon it as an effective cartel. Forbes magazine referred to it as an "old fashioned monopoly" or as a "ruthless" monopoly. Another commentator called it "the worlds most successful cartel and the worlds most lucrative cartel".

I tend to view it as a cartel. I think it has been an effective cartel but its performance has no way been in the traditional mold of a cartel. If you say that a cartel is a cartel only if it acts in a certain way, and that is the traditionalist mode, then it hasn't been a cartel. It is a cartel-like arrangement but to me that is more or less semantics.

What has OPEC done? OPEC was formed in 1960 to protest the loss of revenue of a few cents per barrel. It took five years to redress that particular grievance. Before another five years was up, its members began to escalate their demands alternatively for more cash and for more control. By 1975 the takeover of the production concessions had been completed and the members petroleum revenue had risen fifty fold against their 1960 revenue. By 1976 it sold the same quantity as in 1972 but at a price six to seven times greater. A twelve fold increase occurred between 1973 and 1981. Another measure is that in a

competitive market price is equal to or should be equal to marginal cost. You find an effective cartel as one that would have a three dollar price and a one dollar marginal cost, a three to one ratio. In 1974 the ratio in OPEC was roughly about fifty to one. I do not know what it would be now because that fifty going was based upon estimated marginal cost of about sixteen cents. These data suggest that OPEC has been a successful cartel.

I would like to explain my version of the way in which OPEC has worked. It seems to me that you will see that it does not follow the normal mode. I am going to do this by briefly discussing the mechanics of a cartel and then considering the source of the market power of the cartel. Cartels can be either one of two types. They can be price setting cartels or output setting cartels. If you set the price you let production adjust so as to stabilize the price. If it is a production cartel you set the production and then let the price fluctuate to stabilize the amount that you set as the quota. OPEC has essentially been a price setting cartel. Other functions of a cartel operation usually include allocating production among the members, monitoring the production of the members and disciplining cheaters if they arise. The cartel mechanisms are not enough. In establishing a price they did not operate like a traditional monopolist. They did something a little different.

I would refer you to Exhibit I. These exhibits consists of supply and demand curves and what happens with them. Under Exhibit I take the example on the left hand side. You have a demand curve that slopes downward and to the right and a supply curve that slopes downward and to the left. Both of these are very inelastic. These are the characteristics to which Greg Erickson referred yesterday. You see at the intersection of the demand and supply curve there is a competitive price and a competitive quantity. It is at that point that supply equals demand. If price were higher than that, supply would exceed demand and price would fall. If price were below that demand would exceed supply and price would rise. That would be the competitive price. OPEC were sort of operating like a traditional monopolist. They might establish a price and in order to sustain that higher price a reduction in output. I do not think this is what happened when you had the big run-ups in prices. This is what a traditional monopolist would have done but instead what you had was OPEC seizing an opportunity in which there was great uncertainty in the market created by outside events. These caused shifts in the demand and the supply curve. Basically what happened is what happens on the right hand diagram of Exhibit I. You had a supply curtailment arising because of the embargo, for example, in 1973. This shifted the supply curve to the left and created panic among the buyers which shifted the demand curve back to the right and price then went up. The supply demand curves kept scissoring until you had a higher price with about the same quantity being produced. This then is the

same thing as saying you had supply curtailments that panicked the buyers and they bought more and curtailed still more which ran the price up. They were able to engineer this simply by being price followers running the price up.

The period between 1974 and 1978 was the one in which they were being tested as to whether or not they could stabilize price. It is here that I suggest that they operated as a cartel in the sense of stabilizing a price after the price had been run-up. To stabilize that particular price you have to have the proper kind of base and that is the source of the market power. That is a peculiar shaped supply curve. You have to have that type of curve and be able to coordinate in some way the production decisions.

What is the shape of that supply curve? I refer you to Exhibit II. In a competitive market you have a supply curve and a demand curve like one the lower left side of Exhibit II. We have noted already that there are several reasons for the decrease in demand: conversion to alternate fuels, increase in non-OPEC producers, recession, etcetera. If it is a competitive market you have a supply curve that slopes downward and to the left. When the demand shifts then price just automatically falls down and you have a reduction in quantity so you get a price deduction. On the other hand, if you have a supply shape curved something like the curve on the lower right hand side of Exhibit II where you have a price stabilization line, this allows the firms in this particular industry to stabilize the price as the demand curve shifts to the left instead of having the price fall. I am suggesting that OPEC has this particular type of supply curve. This would come from considerations that involve production cost and processes of production. Essentially the breakeven point.

Exhibit III, top, represents the basis of the particular type of supply curve that I think OPEC has. You could look at this as representing Saudi-Arabia. The vertical axis represents the utility or the usefulness that governments find in their oil revenue. The sharply rising curve represents that this part of their potential oil revenue is very valuable to them but it reaches a point where it becomes less valuable and whether they get more oil revenue or not is moderately indifferent to them. The far right hand side represents too much money and they would rather bank the oil by keeping it in the ground. This would be the situation for Saudi-Arabia. You could transfer this into the supply curve on the lower left of Exhibit III. What it says is that there is a rather significant range of indifference and during that range of indifference they are willing to cut back production. At the extreme left end as the line drops, it suggests that they are getting desperate for money and in order to get additional revenues they will sell at a lower price. This means that the supply curve drops off on the left hand side. On

the right hand side it means that they are going to hold out for a higher price.

On the lower right side of Exhibit III, this represents what might be the supply curve for Nigeria where they have high development requirements relative to their capacity. They have little flexibility with respect to cutting back production.

When you add these together for OPEC you will find that they have the ability to stabilize price by cutting back production. That ability however is not as considerable now as it was back in 1974-1978. They have the power base to do it.

During an excess supply period you have to be able to coordinate. The ability to coordinate is dependent upon quite a few variables of which two are concentration and similarity of interests and values. The more concentrated the industry presumably the easier it is to coordinate activity and if there is a dominant firm around, all the better. The more similar the interests are the easier it is to coordinate. Is OPEC sufficiently concentrated within itself to be able to coordinate? It would appear to be. Does OPEC have sufficient similar interests and values? So far we have heard suggestions that they do differ and they do differ significantly. As a result of this we should expect difficulty in their hanging together. OPEC has been divided into three different groups. There are the hard-core group or stabilizers which include Saudi-Arabia, Kuwait, UAE, and Qatar. These are countries with rather large capacities. They have excess capacity very often. They have rather high financial surpluses and can wait out periods of time. They have demonstrated a willingness to coordinate and to move together. The second group has been called the price pushers and include Iran, Venezuela and Algeria. They have little excess capacity and high development requirements and they want high prices. There is the expansionist fringe which includes Indonesia and Nigeria. They have small capacities, excess capacities, high development requirements and want a bigger market share but they want a bigger market share without price increases. They want someone to move over to make room for them.

Despite these differences the member governments have common interests. They especially have a common interest in that they share a very similar historical experience. They have a common fear. They live in a world where the white man still controls most of the centers of power. They share a common pride. For the first time in history a group of "nothing" countries wrestled power from the great nations. Their pride of accomplishment is mutually shared and will last only as long as OPEC members hang together. The loss of self esteem would be a severe blow to the national pride of those OPEC members for undoing their magnificent crude. They were the model for the rest of the developing world. The new International Economic Order was fostered by OPEC. If this then were to go there would be a

considerable loss of pride and prestige. I think this is one of the reasons they are going to be willing to pay the price it might do for their survival. They share a common high priority to solidarity. They can disagree on lots of things but they have important things in common including a desire to preserve the solidarity of OPEC because without it they know they would lose a tremendous amount other than simple revenue. In sum with respect to OPEC's market power, it has a decreased ability to exercise traditional monopoly like power because of the intrigue of non-OPEC producing countries. It could still engineer a run-up. OPEC has had the ability to stabilize when it needed it and I think that it might still have one good shot at it left.

How did OPEC utilize its market power? The 1973 and 1974 run-up was a combination of supply curtailment, panic buying and individual exploitation. There was a plateau from 1974-1978. In 1975 OPEC cut back production about 12% to 27.1 million barrels per day which was two-thirds of its capacity. In 1976 price rose 10% and output rose 10%. In 1977 they went to a two tier price because they couldn't really agree on a price. The price was finally unified later and output increased slightly to 31.4 million barrels. In 1978 the price was \$12.70 just above the 1974 price.

How did OPEC operate during this period of time in its effort to coordinate? It was a price setter. It set the price and then allowed the production to be adjusted against that price. They set the price by consensus. If they are able to reach no consensus they would either make no price change at all or go to a two tier price which opens up pressure to compromise and resolve. They set the price and had to adjust the output. The output was adjusted according to market conditions when they allowed the operating companies to buy oil sufficient to stabilize the price. What basically happened was that OPEC members had allowed the operating companies to be the arbitrator of the allocation process. They would take off as much as was necessary to maintain that particular price. There were some which did set production quotas because they were willing to "bank it in the ground". This aspect of OPEC has also weakened in recent years because for various reasons more outside buyers are coming in. To the extent that you have more outside buyers coming in there are more opportunities to cheat and more sales are made outside the official allocation system.

There are four reasons it won't be easy for OPEC like in the past. First is that world demand has decreased. Secondly is the increase in non-OPEC oil. Another reason is that there has been a significant glut in the market. OPEC is also closer to the drop off on the supply curve than they were before which means that it will be more costly in terms of internal problems.

The following gestures were made at the March meeting of OPEC. They were going to cut back production to 18 million

barrels. Saudi-Arabia said it was going to go another 500,000 which brings it down to 17.5 million barrels. They also allocated for the first time amongst themselves how that might fall. This whole production cutback is going to be subject to review. They stated that further cuts will be made if necessary. With respect to prices they want to hold at the \$34 level.

Two critical issues remain which is can OPEC really cut quantity by enough? There has been some firming up of spot prices and if they stay firm then maybe 17.5 million barrels will be sufficient. The second question is do they have the commitment to stay the course? With respect to the commitment, they have drawn down their output from 30 million barrels to 17.5 million. They drew it down to defend their position. If they don't take the additional step they will have thrown away alot of money. They know that what might well happen is what Gregg Erickson predicted. The same mechanism which got the price up can also get the price down unless you have some sort of a barrier in place like Mr. Singer referred to with respect to tarrifs. There are also strong pyschological reasons. With respect to cheating they have provided loans to countries which have been in trouble. More immediately the larger companies in the larger countries have come to the rescue of Nigeria and threatened to blacklist anyone who does not buy from Nigeria because their price is higher than the North Sea price. They are taking steps to protect those most vulnerable to a price cutting.

Even if they do succeed in stabilizing this price, I think that their long term marketing power is diminishing. It is diminishing because non-OPEC oil is becoming increasingly important and it won't play ball.

ATTACHMENT "A"

FIGURE 1

FY-82 GENERAL FUND BALANCE FORECAST & PROJECTED FY-83 BALANCE AVAILABLE FOR APPROPRIATION

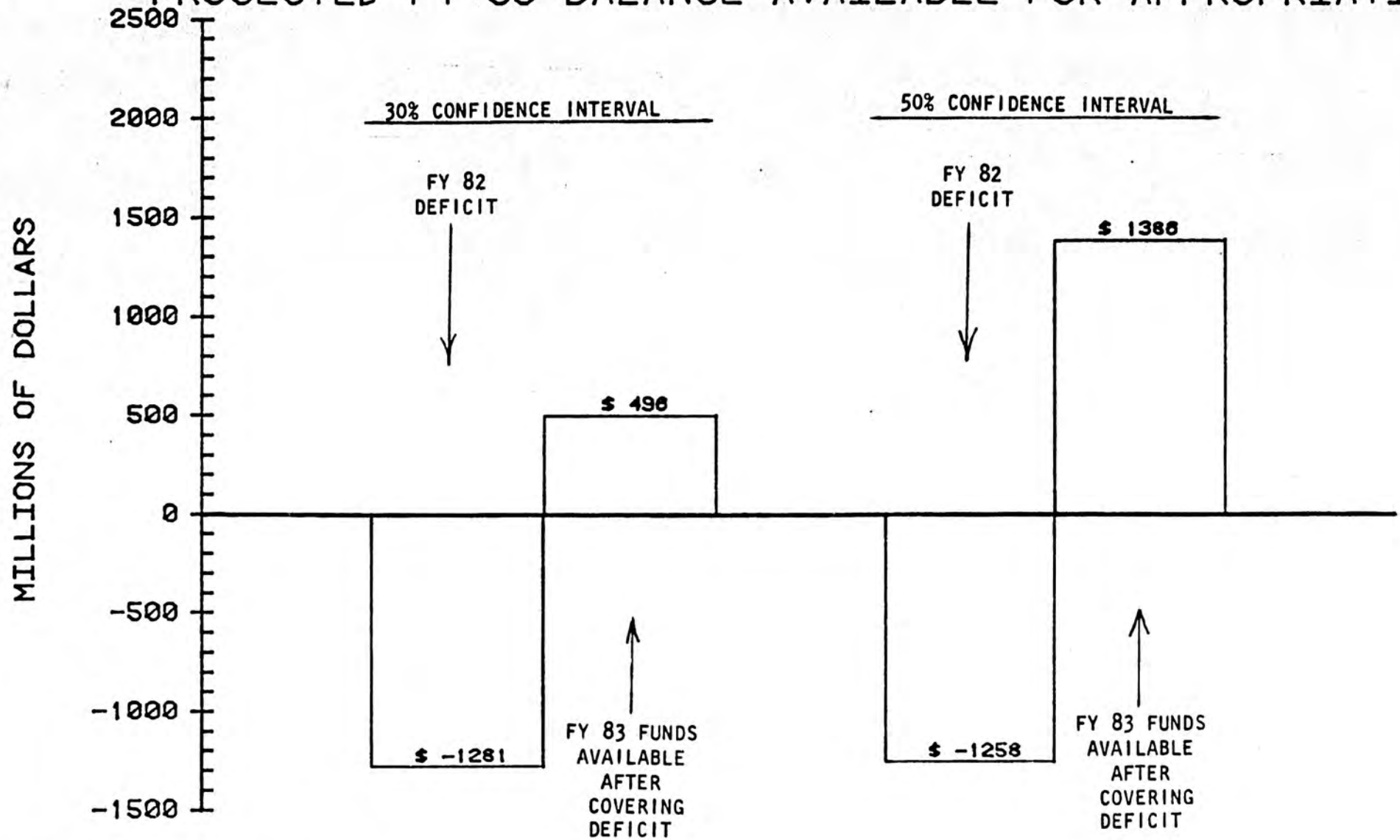
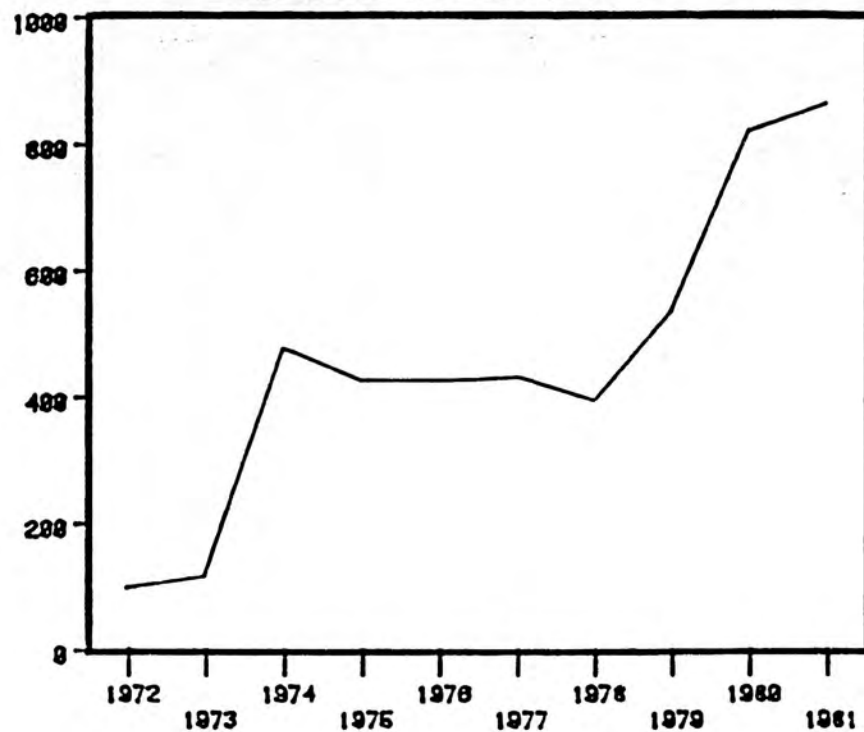


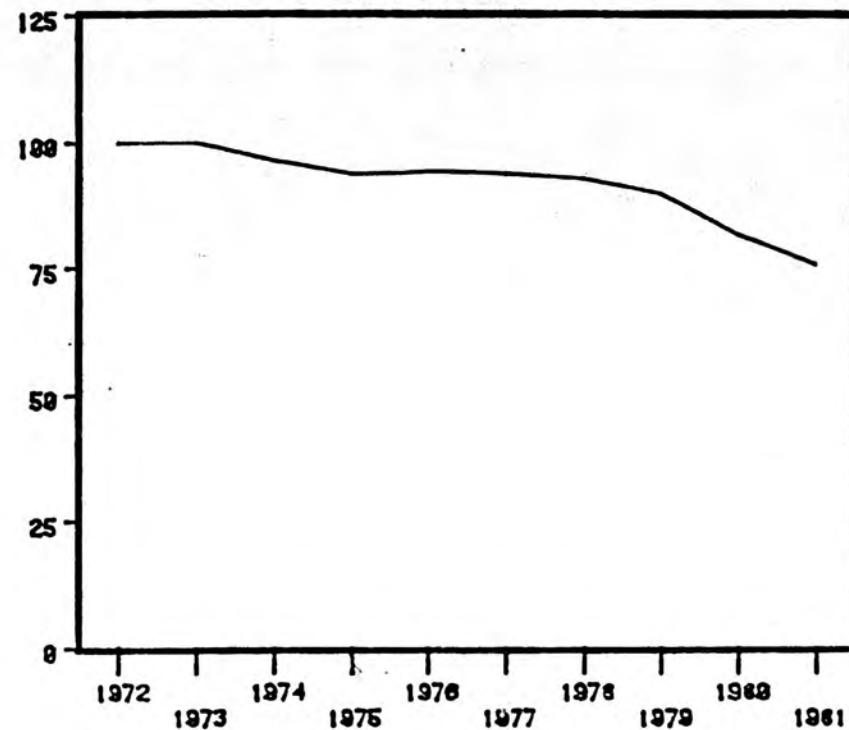
FIGURE 2

INDEX OF THE REAL COST OF PETROLEUM
FOR OECD NATIONS (1972=100)



ERICKSON & ASSOCIATES
26 MARCH 1982

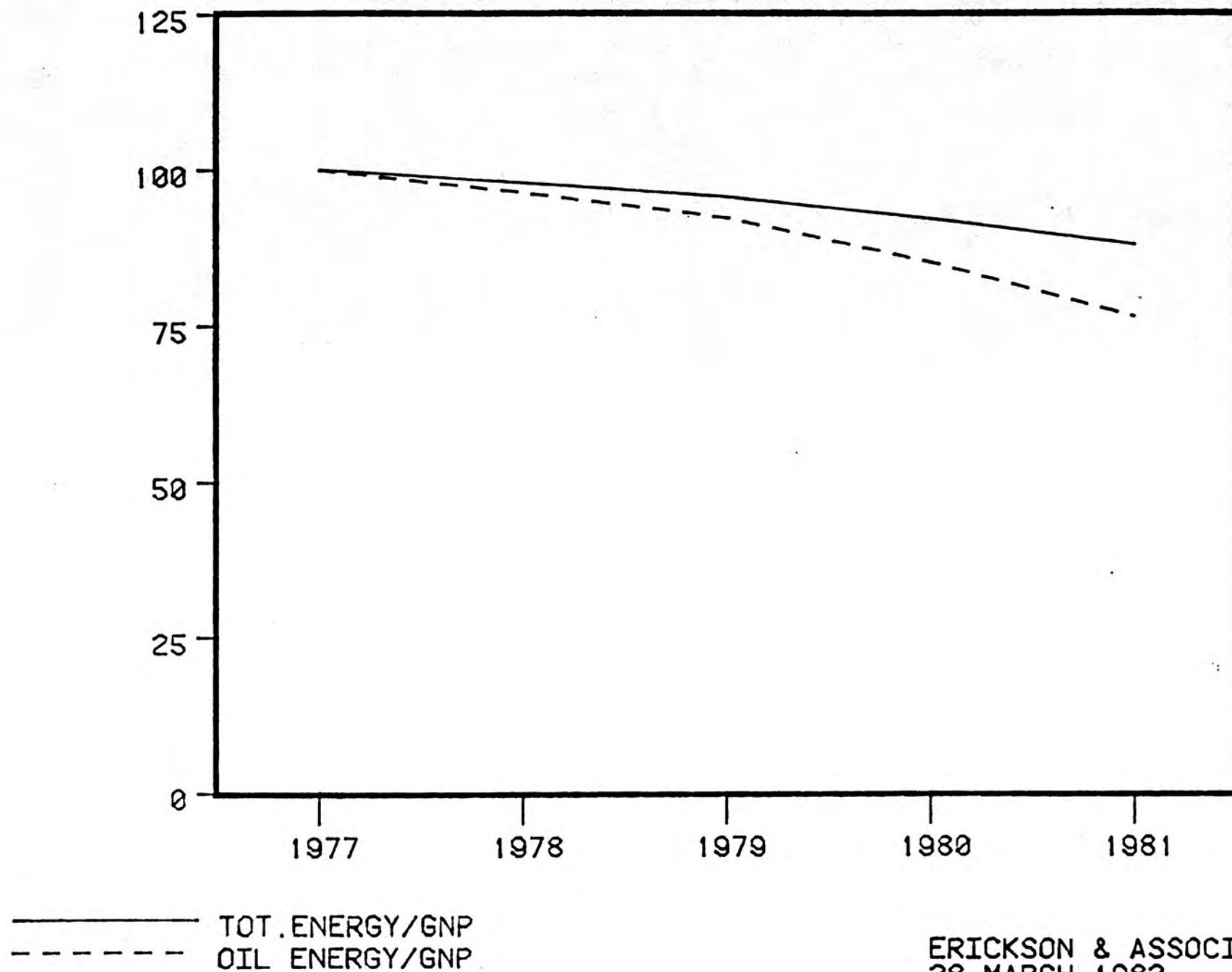
INDEX OF OIL INPUTS PER UNIT OF GROSS DOMESTIC PRODUCT
FOR OECD NATIONS (1972=100)



ERICKSON & ASSOCIATES
26 MARCH 1982

FIGURE 3

INDICES TO TOTAL ENERGY & OIL ENERGY INPUTS
PER UNIT OF U.S. GNP (1977=100)



ERICKSON & ASSOCIATES
28 MARCH 1982

FIGURE 4
OIL ENERGY INPUTS PER UNIT OF GROSS DOMESTIC PRODUCT
IN THE U.S., OECD NATIONS, AND JAPAN (1972=100)

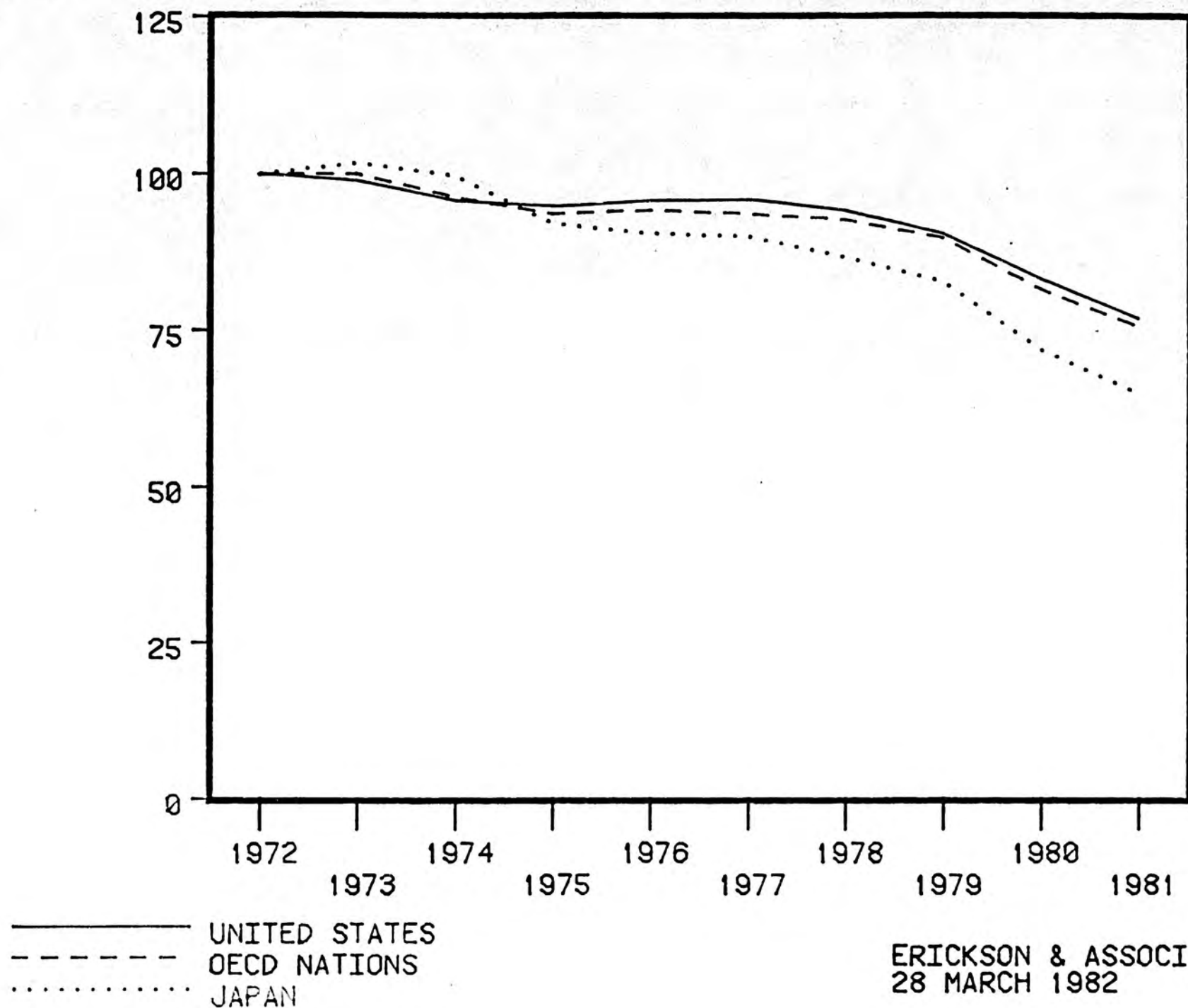
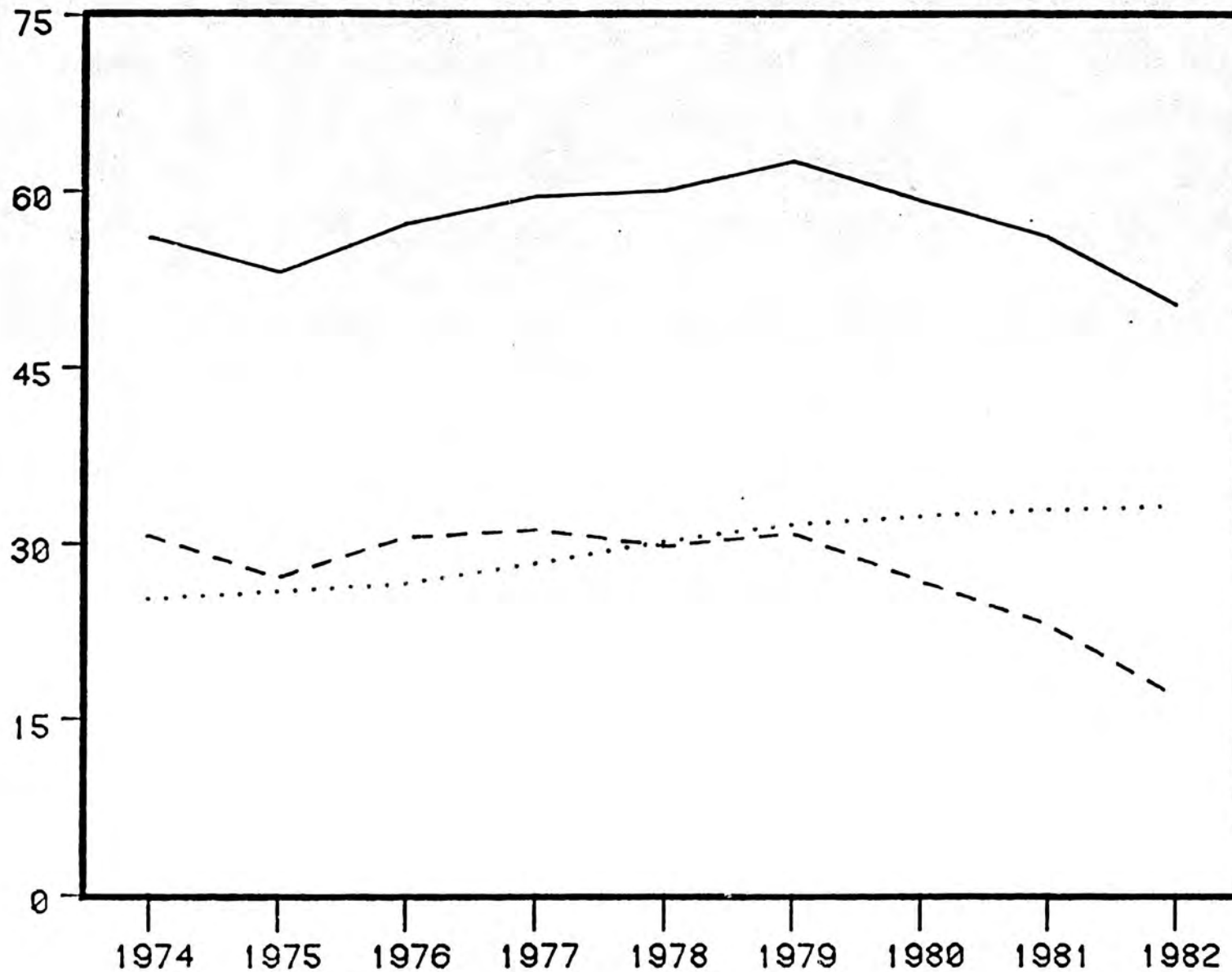


FIGURE 5

OPEC OIL PRODUCTION COMPARED TO TOTAL WORLD PRODUCTION
1974-1982 (MILLIONS OF BARRELS PER DAY)

MILLIONS OF BARRELS PER DAY

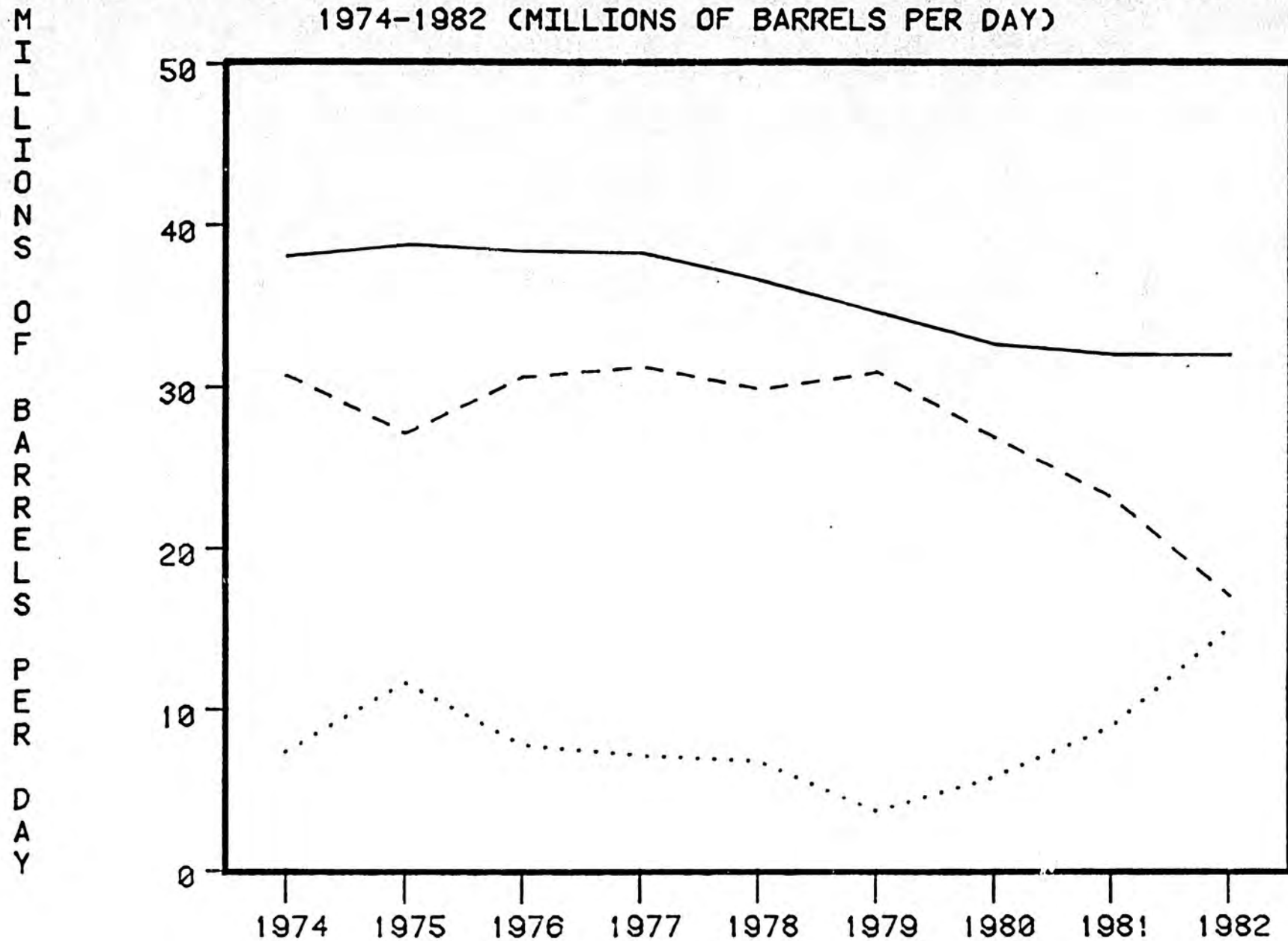


——— WORLD TOTAL
----- OPEC PRODUCTION
..... NON-OPEC PROD.

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28 MARCH 1982

FIGURE 6

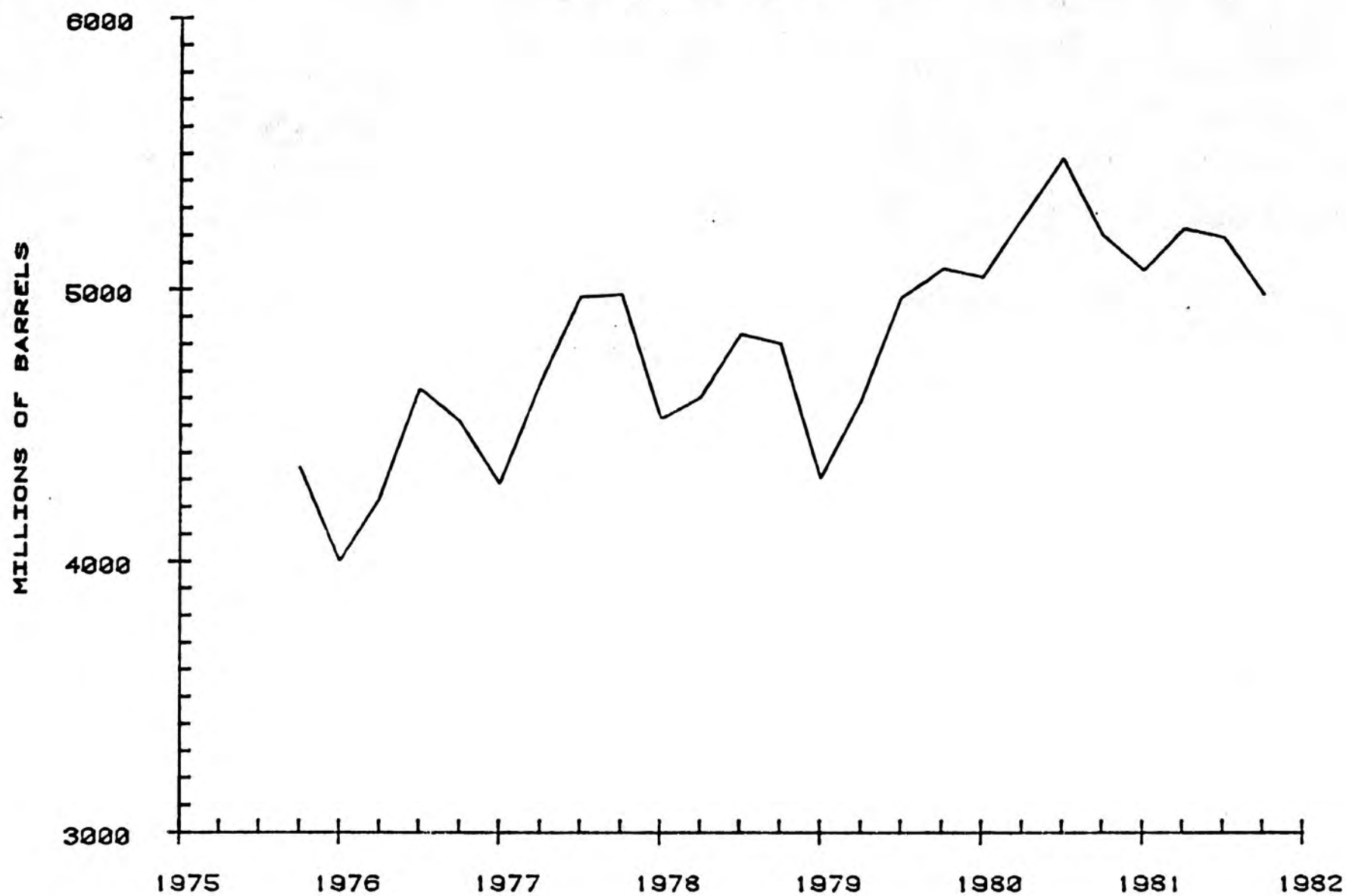
OPEC PRODUCTION, PRODUCTIVE CAPACITY, & PRODUCTION 'OVERHANG'
1974-1982 (MILLIONS OF BARRELS PER DAY)



————— OPEC CAPACITY
 - - - - - OPEC PRODUCTION
 PROD. OVERHANG

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28 MARCH 1982

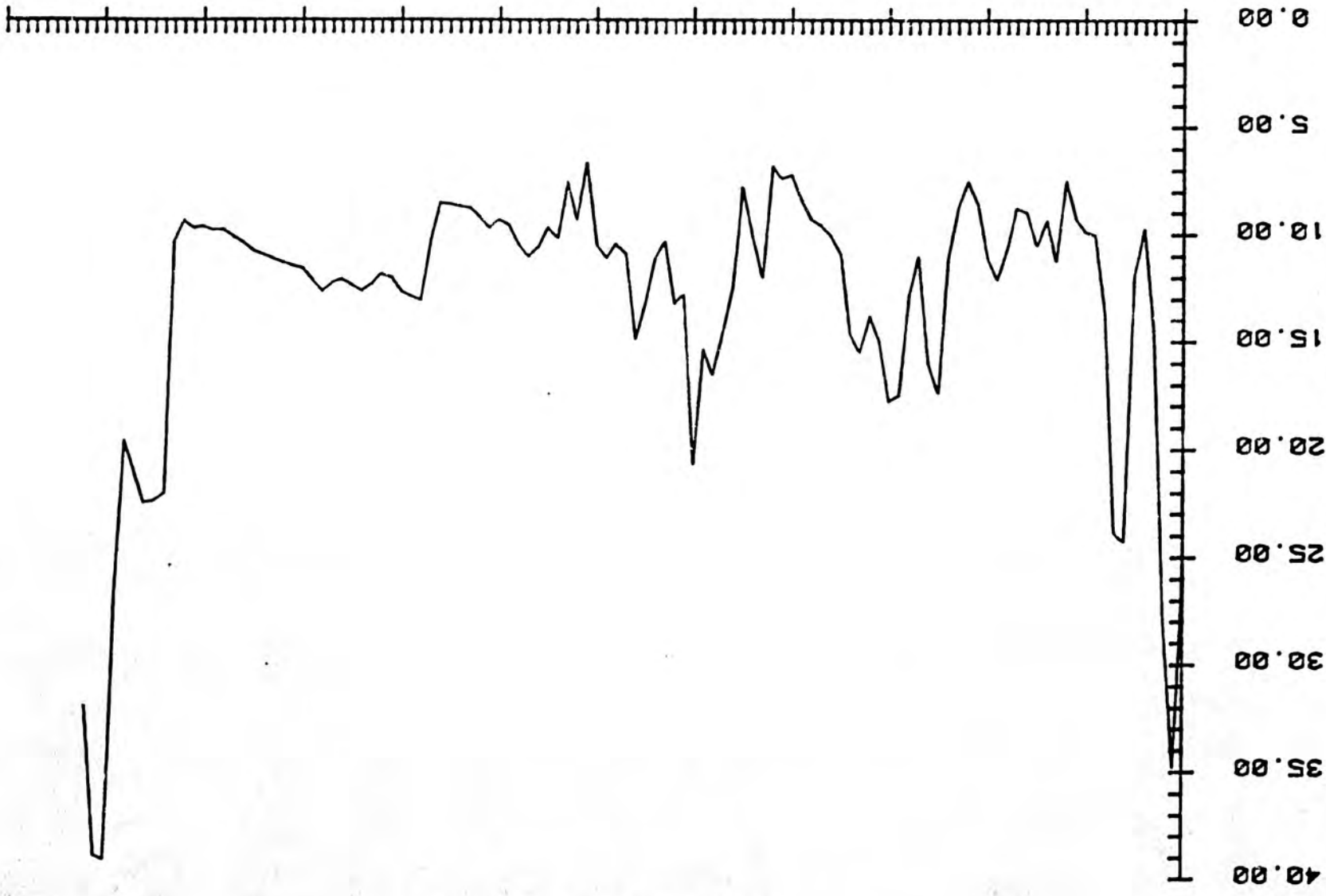
FIGURE 7
WORLD OIL STOCKS
INCLUDING OIL AT SEA



YEARS BY QUARTERS
4TH QTR. 1975 TO 4TH QTR. 1981

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1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990



U.S. CRUDE OIL PRICES - 1870 TO 1982
(IN 1982 DOLLARS)

ATTACHMENT "B"

Exhibit I

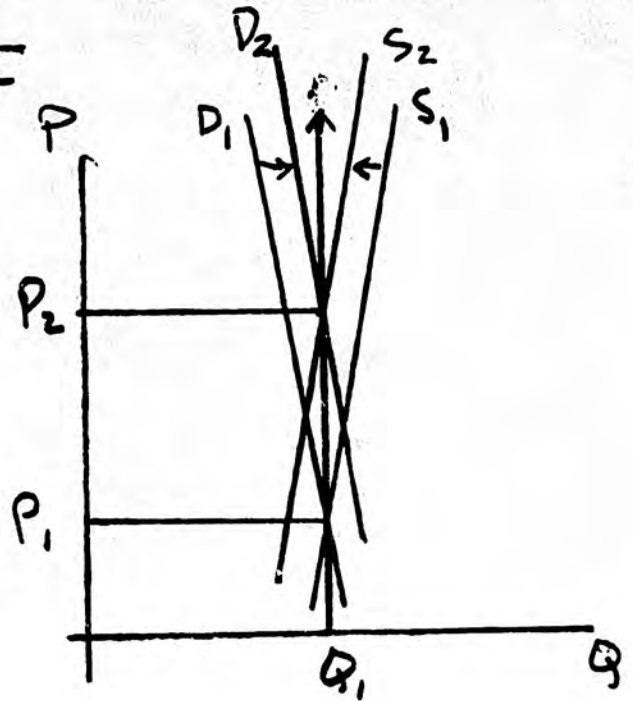
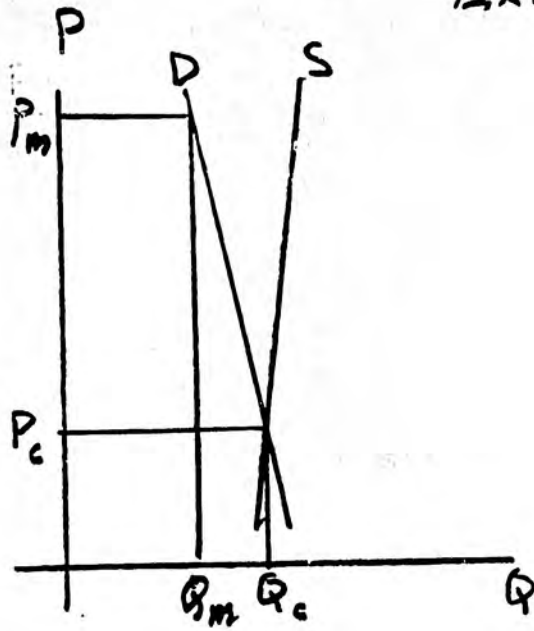


Exhibit II

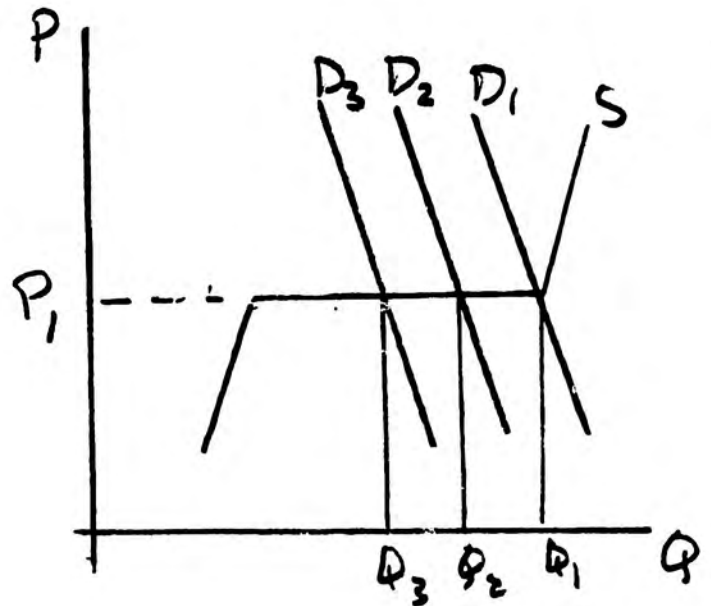
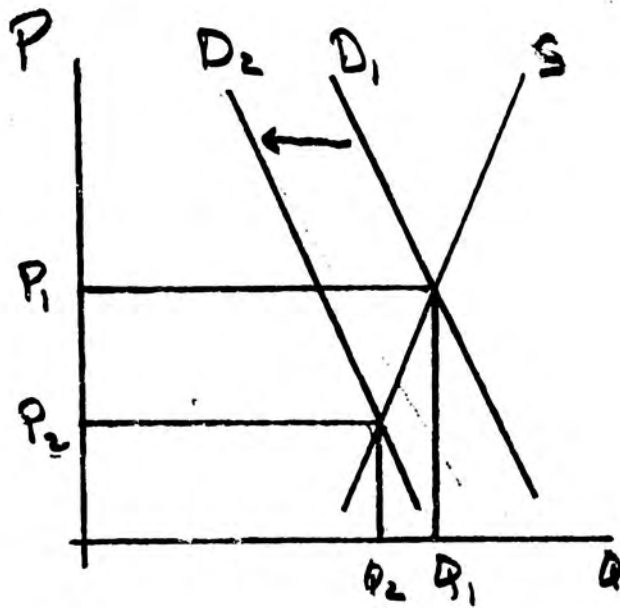
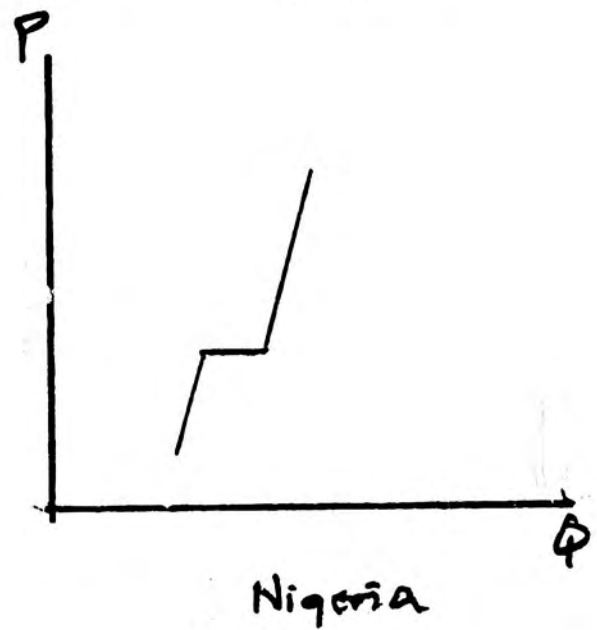
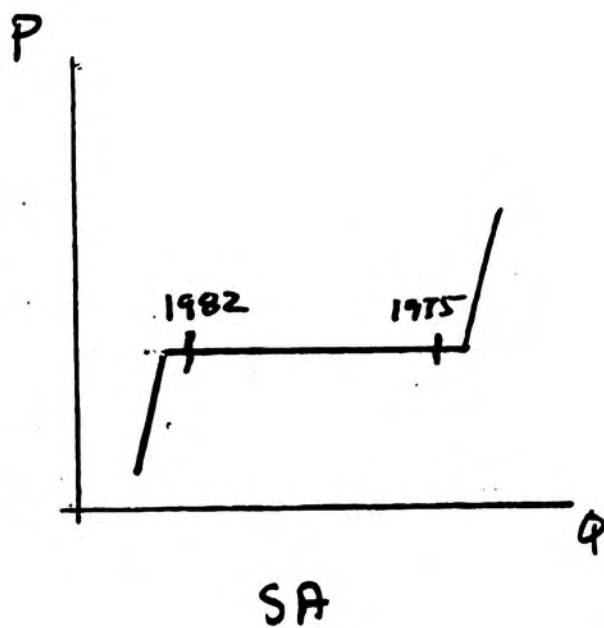
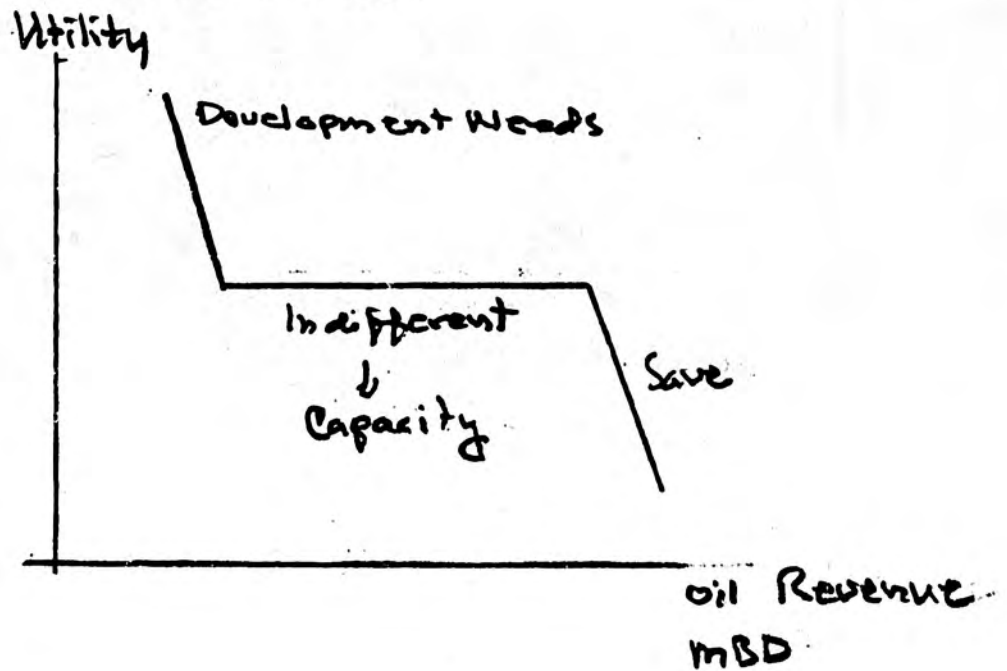


Exhibit III



*** HOUSE FINANCE COMMITTEE ***
1982 MEMBERSHIP

Albert P. Adams, Chairman
Joe D. Montgomery, Vice-Chairman
Robert H. Bettisworth
Patrick J. Carney
Joseph Chuckwuk
Samuel R. Cotten
David W. Cuddy
John G. Fuller
E. J. Haugen
Vernon L. Hurlbert
Russ Meekins, Jr.

*** HOUSE FINANCE COMMITTEE SUBCOMMITTEES ***

Governor's Office	Joe. Chuckwuk, Chair
Administration	Charles Anderson, Fred Brown
Revenue	
Legislature	

Law	Vern Hurlbert, Chair
Military Affairs	Ramona Barnes
Public Safety	Hugh Malone
Court	

Health & Social Services	Jack Fuller, Chair
Labor	Mike Beirne
	Thelma Buchholdt

University	Russ Meekins, Jr., Chair
	Terry Martin
	Brian Rogers

Education	Joe Montgomery, Chair
	Ramona Barnes
	H. Pappy Moss

(continued)

1982 House Finance Committee Subcommittees (continued)

Commerce & Economic Development
Community & Regional Affairs

David Cuddy, Chair
Mitch Abood
Mike Miller

Natural Resources
Fish & Game
Environmental Conservation

Ernie Haugen, Co-Chair
Bob Bettisworth, Co-Chair
Fred Zharoff

Transportation

Ernie Haugen, Co-Chair
Bob Bettisworth, Co-Chair
Carney