

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 86/25

654 SCOMM21: ROYALTY OIL & GAS FILES 1977-78

among the Alcan sponsors; and, even toned down as it was before the record closed, it represents an additional set of risks to the American consumer." 7/

In light of these considerations, the most noticeable recent cosmetic addition to the Alcan Definitive Agreement, stating that the participants "contemplate" a 13-month interval between the two projects, is not compelling.^{8/} It certainly does not assure that an Alaska gas delivery system would receive the priority treatment and corporate commitment it deserves.

THE ARCTIC GAS PROJECT

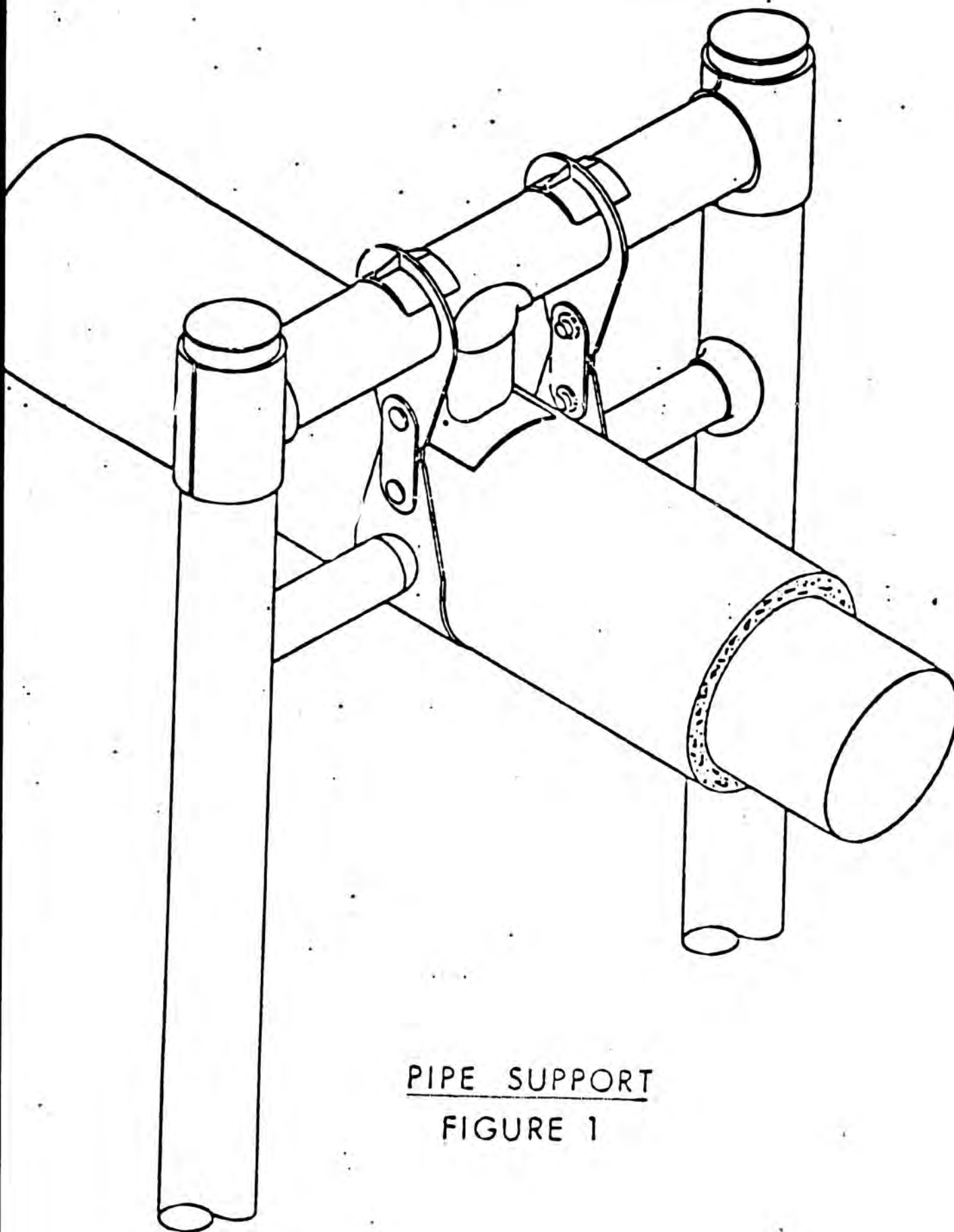
A. New Frost Heave Design

Despite the reassuring words of counsel for the Arctic Gas project, the new so-called frost heave design filed with this Commission is in reality a new construction plan for almost 2,000 miles of their line in Canada. Simply as an example, we note that all of their compressor stations in Alberta have been derated from 55,000 HP to 38,000 HP, that the Caroline to Coleman lateral has been resized from 30" at 1680 psi to 36" at 1440 psi, that gas heaters and propane refrigerator systems have been added. In addition, cursory analysis reveals that in the northern portion of the line, immediately

7/ Ibid., App. I-21.

8/ Alcan Pipeline Project 48-Inch Alternative Proposal, Section 10, 2.1(d), p. 5.

south of Tununuk Junction, they have added 400 miles of above-ground power transmission cable and several hundred miles of cable transmission line. In the same 400 mile-stretch of line, there are no fewer than 1,800 mode changes between insulated and heat-traced pipe and non-insulated pipe. The average mode length is no more than 700 feet. Over yet another 200 miles of line, directly to the south, they are installing more than 1,000 underground VSMs similar to those of the Alyeska project. What these changes do to their construction schedule, to their manpower requirements, to their hydraulics and to their overall energy balance cannot be tested. One need only look at the Rube Goldberg design of the underground VSMs to conclude, notwithstanding the facile assertions of Arctic Gas counsel, that the installation of a thousand of them over 200 miles of line must necessarily have an adverse impact upon their already too tightly constricted construction schedule. The following page, extracted from the Arctic Gas filing with this Commission of March 22, shows the design of the underground VSMs.



PIPE SUPPORT
FIGURE 1

In connection with their frost heave filing, Arctic Gas continues the assertion that El Paso Alaska still must confront the frost heave problem. In this regard, we repeat what we have previously said. Judge Litt was plainly wrong when he said, at I.D. 111, that "El Paso has . . . not yet specifically addressed frost heave avoidance in its design." All parties agree that frost heave occurs only under certain discreet soil conditions. There must be a combination of freezing temperature, frost-susceptible soil and an appropriate source of water. To sketch the parameters of this problem, Arctic Gas confronts the type of soil conditions susceptible to frost heave over 200 to 300 miles of its line. This is not the assertion of counsel; this is the testimony of one of the Arctic Gas geotechnical consultants, Dr. John Ivor Clark. Tr. 20/3,148 (Clark). By contrast, El Paso Alaska encounters such conditions for but 50 miles of its line. Tr. 42/6,331 (Wright), Tr. 169/27,758

9/
(Winn).

El Paso Alaska examined the Alyeska alignment, the mode of Alyeska construction and the Alyeska core logs to make estimates of the mileage of pipeline where frost heave potential may exist. Tr. 169/27,759 (Wright). El Paso Alaska acknowledges that site-specific examination and testing will have to take place prior to final design, id., and time and money have been provided to effect such site-specific analysis.

El Paso Alaska has recognized the potential for frost heave. At the time of final site-specific design, the suspect areas within that 50-mile range will be assessed utilizing a

9/ It should be noted that Arctic Gas witness Clark stated that El Paso Alaska would encounter 100 miles of frost-susceptible soils along its route. Tr. 154/25,302-06, 25,501-02 (Clark). Dr. Clark's opinion in this regard is apparently based on his review of the USGS open-file maps, Tr. 154/25,317 (Clark), input from his staff, some of whom had done some work on the Alyeska project but none of whom had even assessed the actual El Paso Alaska alignment in the field, Tr. 154/25,317-24 (Clark), and a limited fixed-wing flight over the Alyeska route for purposes admittedly other than analyzing El Paso Alaska's pipeline route. Tr. 154/25,318 (Clark). Dr. Clark had not reviewed any additional Alyeska core hole information. It is clear that neither Dr. Clark nor any member of his staff conducted anywhere near the analysis of El Paso Alaska's route that Mr. Wright and Pipeline Technologists did. El Paso Alaska witness Wright reached his conclusion with respect to the existence of 50 miles of frost-susceptible soil after extensive field work along the El Paso Alaska route, and after reviewing USGS open-file maps, the Alyeska project description and some 1,200 Alyeska core holes. Tr. 43/6,408 (Wright). Mr. Robert Winn, the Dames & Moore partner who directed Dames & Moore's efforts as Alyeska's geotechnical consultant, confirmed Wright's judgment. Tr. 169/27,758 (Winn).

mathematical model consisting of a series of proven components to determine if, and to what extent, frost heave will exist and what measures may be taken to abate any predicted frost heave. Tr. 41/6,902-04, 6,104 (Wright). The effectiveness of each of the components of this mathematical model have been proven. Tr. 41/6,093, 6,184, 6,185 (Wright). For example, the conduction component has been used to predict the migration of the Mackenzie River, the depression of permafrost in the new channels and the rebuilding of the permafrost in the channels from which the river migrated. Id. Such a conduction component accurately predicted the thickness of the active layer on the North Slope. Tr. 42/6,283 (Wright). The pipe stress component was utilized as the basis for the Alyeska stress analysis. Tr. 42/6,280 (Wright). The soil stress component has been used in the development of projects for the U.S. Navy and other governmental entities. Id. The convection component has been used to trace contaminants in contained aquifers for the USGS. Tr. 41/6,094 (Wright).

The model enables the pipeline designer to synthesize all aspects of the environment through which the pipeline will be constructed. The operation of the pipeline can then be superimposed on the synthesized environment to determine if the pipeline's operations will cause alterations to the environment, such as frost heave, which will require special design, construction or operation features. Remedial measures to accommodate any alterations to the environment can be proposed and synthesized

by the model to determine their effectiveness. Tr. 41/6,109-10, 42/6,277 (Wright).

When areas of frost heave are predicted by the mathematical model, any of several remedial measures can be examined through the model to determine their effectiveness. One such measure would be to replace the frost-susceptible soils with non-frost-susceptible granular backfill. Tr. 41/6,134, 169/27,758 (Wright); 246/42,918 (Dau). The granular material would be placed in the ditch to completely surround the pipeline (Tr. 42/6,326 (Wright)) and would provide soil with larger pore spaces so that migration of water to the freeze front, would not occur. This method would not necessarily prevent the formation of a frost bulb but would interrupt the exact mechanism needed to produce frost heave. Tr. 42/6,327 (Wright). Although Mr. Wright has ascertained only 50 miles of frost heave potential along the El Paso Alaska route, he had provided enough granular backfill to replace completely over 400 miles of ditch. Tr. 41/6,137, 6,268 (Wright).

Another remedial measure proposed by El Paso Alaska to abate frost heave is deeper pipeline burial. Tr. 41/6,104 (Wright), 169/27,758 (Winn). This method will be particularly effective at locations where the permafrost table is deeper than the normal depth of the ditch. This method will be utilized wherever it is determined to be appropriate and at all road crossings. Tr. 42/6,276 (Wright). Even after the recently

announced Arctic Gas test failures, they still propose to counteract frost heave by increasing the overburden "on some of the soils". Tr. 246/42,916 (Dau).

Insulating the pipe is another method proposed both by El Paso Alaska and by Arctic Gas for abatement of frost heave. Tr. 41/6,104 (Wright); 246/42,916-17 (Dau). This method alters the heat transfer from the soil to the pipeline so that the frost heave mechanism would be interrupted. Tr. 42/6,327 (Wright).

In situations where the frost heave forces are predicted to be of certain magnitude, pipeline anchors could be used to abate the frost heave. Tr. 42/6,323, 6,327 (Wright); 246/42,917-18 (Dau).

We should note at this point that proposals put forth by El Paso Alaska in the Spring of 1975 were once adopted by Arctic Gas to handle its frost heave problems. See Tr. 246/42,916-19 (Dau). One distinction is that while El Paso Alaska has 50 miles with which to cope (Tr. 42/6,331 (Wright)) Arctic Gas has 250 miles. Tr. 246/42,915 (Dau).

Arctic Gas has sequentially proposed three separate and distinct types of frost heave solution. They initially proposed a berm construction mode. They vigorously defended that construction mode through 16 months of hearing, denigrating anyone with the temerity to suggest a different solution. Abruptly, in November of last year, almost at the close of the hearing, they reluctantly and with some embarrassment admitted some insecurity

with the berm construction method. They recommended five other procedures, some of which, as the foregoing text demonstrates, had been planned by El Paso Alaska all along. Now, with the hearing completed, and with no opportunity to cross-examine, they have proposed yet another "solution". Whatever can be said about the Arctic Gas frost heave "solution", one thing is clear. Despite their justifiable pride in the amount of engineering and geotechnical experimentation which they have conducted, they themselves still do not feel comfortable with whatever "solution" they have proposed. And, even if we were to assume (for that is all we can do) that the new "solution" will work, a layman's review of it must suggest that it will have to result in higher cost and lower progress rate.

Moreover, the adverse environmental impacts resulting from these new design concepts include the formation of thermokarsts and thaw ponding along a heat-traced pipeline, together with the easily recognizable aesthetic impact of 400 miles of overhead transmission cables. It is obvious that this heat tracing will create ponding above the pipeline. This ponding could create problems of erosion and siltation. El Paso Alaska is unable to evaluate the extent, if any, of the impact caused by ponding. There has, of course, been no examination of this problem on the record compiled before Judge Litt.

B. Financing

The financial implications of the frost heave filing by the Arctic Gas project are adverse to their overall case. The \$475,000,000 estimated additional capital cost simply adds to the bloated demands which Arctic Gas makes on its numerous capital markets, aggravating its already infeasible financial plan. In addition, the frost heave problem's solution highlights the difficult nature of Arctic Gas' construction problems which suggest to all who have made a study of it that the construction schedule of Arctic cannot be met and massive cost overruns are most probable.

C. Mackenzie Delta Gas Supply

El Paso Alaska here comments on the response of the Arctic Gas project to gas supply interrogatories of El Paso Alaska and on the Sproule NEB study Arctic Gas filed with the Commission.

Arctic Gas made no effort to respond to the interrogatories that El Paso Alaska Company filed. It is apparent from a review of the Arctic Gas answers that Arctic Gas did not really undertake to answer the questions that were posed in any meaningful way, but rather dodged the questions by making a reference to nonresponsive materials. For example, in Interrogatory 26, El Paso Alaska asked Arctic Gas to state whether it had any documents in its possession or under its control which reflect

that a Mackenzie Delta producer or operator is, as of this time, unwilling to invest in development wells for field processing facilities necessary to market reserves under its control.

Arctic Gas was obviously aware of the statement of counsel for the producers before the NEB of February 17, 1977 that the producers have not made a commitment to invest in the necessary processing facilities. NEB Tr. 24,176 (Ballem). We think this Commission should give no weight to the Arctic Gas answers.

Even on the basis of the Arctic Gas answers, it is clear that all recent wildcat wells have been failures. There have been ten such wells since June 1, 1976; all have been dry and abandoned. This includes two wells in the Beaufort Sea. El Paso Alaska lacks specific information on the well drilled by the Dome Petroleum Corporation, but believes the report to be true that Dome in fact abandoned the well it was drilling in deep water in the Beaufort Sea. While El Paso Alaska concedes that the advent of a pipeline would spur development drilling, El Paso Alaska does not believe that the advent of a pipeline would result in increased discoveries from wildcat drilling. The more promising structures, both onshore and offshore, have already been drilled.

The Mackenzie Delta is clearly a disappointment. We would observe that no new commercial field has been found in

the Mackenzie Delta since April of 1973.^{10/} Indeed, as of this time, there are only three fields of questionable commerciability -- Taglu, Parsons Lake, and Niglintgak. The remaining fields are clearly noncommercial. Further, raw gas from these fields cannot be piped to processing facilities in the three fields where processing facilities might be built. There are technical difficulties of significant magnitude if raw gas is piped for any distance in the Mackenzie Delta. Hydrates in the raw gas, for example, could freeze the line; unprocessed gas could corrode the line. Therefore, it would be necessary to develop special engineering techniques to transport raw gas for any significant distance. There is no suggestion in this record that it is technically and economically feasible to develop and implement such techniques. El Paso Alaska adheres to its view, therefore, that it is absurd to schedule gas from the clearly noncommercial fields in the Mackenzie Delta. There is simply no reason to believe that it can be marketed.

Sproule, in scheduling gas reserves, did not make a forecast of gas production based upon the ability of the reservoirs to produce. Like D&M, Sproule scheduled gas on a contract rate-of-take basis. El Paso Alaska in its Brief on Exceptions

^{10/} The discovery dates for the Taglu, Parsons Lake and Niglintgak fields were August 18, 1971, April 19, 1972, and April 7, 1973, respectively.

has adequately discussed the glaring deficiency of this approach. But Sproule carried the methodology that it used to an even further, absurd extreme. The methodology is stated on page 189 of the Sproule report:

"Because the test data available indicated a high degree of damage around the wellbore, it was not possible to use this test data directly to identify the well productivities to be expected from future wells. Deliverability characteristics to be expected from undamaged wells in the Parsons Lake and Taglu areas were calculated from permeability data from cores and logs for the various zones. Insufficient data was available from wells in the other areas to develop their deliverability characteristics."

We make four criticisms. First, as seen, Sproule did not schedule deliverability on a reservoir basis. Second, Sproule ignored all well tests in the Mackenzie Delta. One wonders why the producers ran the tests in the first place if they were to be ignored in calculating reserves. Third, Sproule assumed that wells could be drilled and completed without wellbore damage. There is no reason to believe that the producers can in fact accomplish this with development wells. They have not been able to do so to date. Fourth, Sproule applied theoretical deliverability characteristics; one zone in the Taglu field is applied to all zones in all fields except Parsons Lake. This is apparent from a review of footnote 2 appearing on the deliverability forecast for each of the areas. This is nothing short of astounding. The Commission can, and should, ignore the Sproule deliverability report.

El Paso Alaska does not accept the new, assertedly proved level of reserves at Parsons Lake. The reason is that Gulf has been surprised in the past with development drilling. The L-60 dry hole, a development well, was drilled in an area where D&M had assigned significant proved reserves, and resulted in a net reduction of proved reserves in the Parsons Lake area of about 200 Bcf. The recently drilled F-38 well, a less-than-a-mile step-out, was a dry hole. On the basis of these wells, El Paso Alaska does not think it is prudent to assign large acreage to reservoirs appearing in already drilled wells. Yet, for example, Sproule in the Cretaceous A-1 field studies has assigned 9860 acres -- more than 15 square miles -- to this sandstone found in the F-09 well. Because Parsons Lake is highly faulted, it is imprudent to assign as proven such large acreage to reservoirs on the basis of sparse drilling.

El Paso Alaska adheres to its view that about 500 million a day is all that can be expected from the Mackenzie Delta.^{11/} This Commission should know that El Paso Alaska alone scheduled gas production on a reservoir-by-reservoir basis. Further, El Paso Alaska was not niggardly in its approach. El Paso

^{11/} This figure is endorsed by the Department of Interior/ Aerospace Study Team in a recent update to DOI's Report to Congress (Exhibit EP 231), as is hereinafter discussed.

Alaska scheduled gas from all gas-bearing reservoirs. The Commission should understand, however, that the fields in the Mackenzie Delta are lenticular. The producing sands are thin. This is confirmed by the Taglu Field-Dual Induction Lateral Log for the P-03 well appearing at EP 241, Tab 4. Thus, no producer will find it economically attractive to complete in all reservoirs. Many of the stringers are no doubt uneconomic to complete in. El Paso Alaska remains firm in its view, therefore, that this Commission should assume no more than 500 Bcf in actual production from the Mackenzie Delta. See Gas Supply Reply Brief of El Paso Alaska filed before Judge Litt.

D. Risk Analyses

The Commission should have the benefit of the three recent analyses, attached as Tabs A, B, and C hereto.

The first is an excerpt from a preliminary discussion draft of a report prepared by Resource Planning Associates, Inc., for the Environmental Protection Agency. The preface states that this discussion draft has been circulated to federal and state agencies for review and comment. El Paso Alaska assumes that the Federal Power Commission has already received a copy, but in the event that the Commission has not, a copy is attached hereto under Tab A. The important conclusions of this paper

appear on page 12. It finds that schedule slippage is significantly more likely for Arctic Gas than for El Paso,^{12/} and that there is a 20% to 40% chance that Arctic Gas will not be able to construct in the manner proposed by it, and may be required to abandon its project. This conclusion is clearly warranted in view of Alyeska's inability to construct in the middle of the Alaskan winter, as well as the inaccessibility of much of Arctic Gas' alignment to permanent roads.

The second is an update (March 1977 Supplement) to the early submission of the Department of Interior to the Congress (Exhibit EP 231). EP 231 is the Department of Interior study discussed by Judge Litt at p. 425 of his decision. It is therefore especially important that this Commission have the update, and it is for that reason that the update is submitted under Tab B.

In the update, the Department of Interior/Aerospace Study Team, after reviewing the Arctic Gas comments and criticisms, expressly reconfirms (p. 3-21) the conclusions pertaining to schedule delay and cost overrun appearing in its risk analysis in EP 231, pp. 128-147. In EP 231, p. 143, the study team estimated that an Alaska-LNG system could slip 6-18 months, whereas an Alaska-Canada system could slip 12-36 months. The

^{12/} The draft discussed Alcan's 42" proposal, and therefore is not relevant to Alcan at this stage.

average difference in delay is, therefore, one year. This again confirms the position of El Paso Alaska that schedule slippage, with attendant cost overrun, is considerably more likely for an Alaska-Canada system than it is for an Alaska-LNG system, essentially because the former lacks the construction accessibility (roads) of the latter.

In the update, the Department of Interior/Aerospace Study Team summarizes the NNEB of Alaska-Canada at 7.865 billion, Alaska-LNG at 6.87 billion, and Fairbanks-Alcan at 6.660 billion. In evaluating these figures, however, it is important to remember that the Alaska-Canada system does not include the western leg proposed by Arctic Gas and does not take into account the conclusions of the DOI/Aerospace Study Team estimate that "the average change in NNEB per year of schedule slip and including cost overrun at one billion per year of delay is approximately 1.7 billion." Thus, it is apparent that when schedule slip and cost overrun, as well as the cost of the western leg facilities, are deducted from the 7.865 billion NNEB for an Alaska-Canada system, the real NNEB of that system falls significantly behind that for an Alaska-LNG system. This confirms the argument of El Paso Alaska that it is in the national interest to prefer an Alaska-LNG system over an Alaska-Canada system with or without a west coast leg.

Finally, the DOI/Aerospace Study Team studied reserves in the Prudhoe Bay area and in the Mackenzie Delta area. USGS

geologist Max Taves testified for the DOI/Aerospace Study Team in this proceeding. He was a disinterested evaluator of reserves. He expressed the same skepticism toward Mackenzie Delta reserves that El Paso Alaska has in this proceeding. It is interesting that the DOI/Aerospace Study Team, in its update, has concluded (pp. 1-3) that only 500 million per day will be available from the Mackenzie Delta over twenty years. This is precisely the figure that El Paso Alaska said was reasonable in oral argument before this Commission and also in Exhibit EP 241, tab 5. El Paso scheduled slightly lesser volumes.

El Paso Alaska also attaches a cost overrun analysis which was recently filed before the NNEB by Foothills Pipeline, Ltd. Curiously, Alcan did not file that document before this Commission. We suspect, but do not know, that the reason is that the criticisms of Arctic Gas contained therein could be turned against Alcan. It is filed here under Tab C. It fully supports the Alaska, Department of Interior, and Green risk analyses.

EL PASO ALASKA COMPANY

By:


J. Alan Galbraith

CERTIFICATE OF SERVICE

I hereby certify that I have this 8th day of April, 1977, served a copy of the foregoing Response of El Paso Alaska Company to the Submissions of Arctic Gas and Alcan, upon each person designated on the official restricted service list compiled by the Secretary in this proceeding in accordance with the requirements of Section 1.17 of the Rules of Practice and Procedure.

Copies of the attached tabbed documents have been served on counsel for Arctic Gas, Alcan, Northern Border, Western LNG, Northwest Pipeline, State of Alaska, State of California, California Public Utilities Commission, and the Conservation Intervenors. Copies of the tabbed documents will be made available to other counsel upon request.



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JOHN C. BENNETT (VICE PRESIDENT)

May 19, 1977

The Honorable John L. Rader
Alaska State Senator
State Capitol Building
Pouch V
Juneau, Alaska 99811

Dear John:

As the nation approaches the decision on how best to move Alaskan natural gas to U.S. markets, a question frequently arises which is as easily answered as it is important: How will the El Paso "All-American" project deliver gas to the Midwest and Northeast?

Although no one will ever accuse the Federal Power Commission (including Judge Litt and the Commission staff) of bias in favor of El Paso, the ability of El Paso to deliver the gas to all U.S. markets has been repeatedly supported throughout the two years of hearings. To quote from Judge Litt's decision:

"No challenge has been made to the technical feasibility of El Paso's displacement proposal...Consultants for Arctic Gas have studied the feasibility...(and confirmed) the viability of the general concept."

To quote the Federal Power Commission staff counsel on April 6th:

"We've studied El Paso's displacement, we've listened to the testimony of their witnesses, we've listened to the testimony of Arctic Gas' experts analyze the El Paso displacement, the El Paso displacement was thoroughly analyzed...while they came to a slightly different manner of doing it, they agreed it has been and could be done. As a matter of fact, they agreed it could be done for approximately the cost overall that El Paso thinks it can be done for."

So I think El Paso's displacement on the merits is not really in dispute."

Also on April 6th, Commissioner Holloman referred to the "Commission's experience in this past winter emergency and our demonstrated capability to move gas eastward from the West Coast through Texas..." He further observed, "Well, there's obviously going to be a great deal of excess capacity as the years go on."

AGO 668119

The enclosed explanation of how El Paso can move Alaska's natural gas to Middle West, East, and Northeast succinctly describes the plan, which in fact did--on a few days notice--transfer California's gas to Atlantic Coast markets last winter.

Another pertinent fact is that all proposals--including the two trans-Canadian projects--will deliver Alaska's gas to markets east of Chicago only through existing facilities and exchanges. No new pipeline construction is proposed east of Chicago by any applicant.

Why, one may ask, does El Paso "protest so much" on this subject? Again, the answer is as simple as it is factual: proponents of the trans-Canadian projects have repeatedly created the completely erroneous impression that El Paso, if it can move the gas East of California, will encounter all sorts of complex difficulties. The following is a direct quote from the Northwest Pipeline Corporation (proponent of Alcan):

"The LNG system is dependent upon a complicated nation-wide displacement "theory" for transferring the gas from the West Coast to the rest of the United States."

Again, a quote from an elected official who supports Arctic Gas:

"The entire El Paso project rests upon the concept of displacement, one which is without doubt physically possible given sufficient pipeline investment, but one which will surely create a legal and contractual nightmare." (emphasis added)

The falsity of that prediction was amply demonstrated last winter, when a "complicated theory" became a functioning system almost overnight and without any time for preparatory planning!

Once Americans throughout our nation realize that all three proposals can deliver gas to all domestic markets, they can focus on the very real differences among those projects--which one will deliver the gas at the earliest date, with greatest economic benefit to the United States, with complete U.S. control of what consumers pay for the gas, with minimal environmental damage, without governmental financing, and with minimal risk of schedule and cost overruns. On all these counts, El Paso is superior to the trans-Canadian proposals. More important, all of these factors are of great importance to all Americans, whether living in Maine or California.

If you have any questions at all concerning El Paso's project, we stand ready to respond immediately.

Thank you for your continued interest in which proposal best serves the nation's interest.

Sincerely yours,



AGO 668120

U. S. DELIVERIES OF GAS

In recent years, the U. S. natural gas industry has not been able to find new supplies of gas in quantities sufficient to offset the decline in reserves. This fact has resulted in increasing idle or unused capacity in the existing 1.1 million mile pipeline system crisscrossing the nation.

By 1980, pipelines extending northward from major natural gas production areas in Texas and Louisiana will have over 10 billion cubic feet/day of spare capacity. At the request of the Natural Gas Supply Committee, a study was prepared by the Energy Division of Foster Associates, Inc. to appraise the impact of declining gas supply on interstate pipeline transportation costs. This study reported that if the idle capacity is not filled, natural gas consumers will have to pay between 19¢ and 44¢ more per MCF of gas in order to amortize those facilities. El Paso's Trans-Alaska Gas Project will utilize this idle capacity to deliver Prudhoe Bay natural gas, either directly or through exchange of gas supplies, to markets throughout the nation.

After landing on the West Coast, Alaskan natural gas will be connected to existing major transmission systems in California and then delivered directly to markets in that state. How then, will Alaskan gas be delivered to markets in the Northwest, Middle West, and Eastern U. S.? The procedure is really quite simple. It is also inexpensive and efficient, and will cause an absolute minimum of environmental damage.

Approximately three billion cubic feet of natural gas are presently shipped each day from Texas and New Mexico to California. To the extent that this lower 48 supply can be replaced by volumes of gas delivered from Alaska, an equivalent amount of gas need not move from Texas to California. Instead, this gas can be put into existing pipeline systems for movement to other markets throughout the United States. This process is called displacement. As lower 48 supplies diminish, Alaskan gas will physically move from California to other markets by reversing the flow in the pipeline systems which currently serve California.

At most, the El Paso Trans-Alaska Gas Project will require construction of a few hundred miles of new interconnecting pipelines in California and Texas to facilitate this delivery system. In contrast, both of the trans-Canadian projects propose to build thousands of miles of new pipeline in the South 48, compounding the problem of pipeline under-utilization.

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Cubic foot - at what pressure?

ROYALTY GAS SALES AGREEMENT

THIS AGREEMENT, made and entered into as of this _____ day of _____, 1976, by and between the Commissioner of Natural Resources of the STATE OF ALASKA, acting pursuant to AS 38.05.183(d), hereinafter referred to as "Seller," and Tenneco Alaska, Inc., an Alaskan 1/ corporation, hereinafter referred to as "Buyer";

WITNESSETH:

WHEREAS, Seller hereby represents to Buyer that Seller has the right under each of the leases identified in Exhibit A to this Agreement to be paid by the lessee thereunder a royalty of twelve and one-half percent (12.5%), unless otherwise stated in Exhibit A, in-kind (amount) or in value of the natural gas produced and saved and sold or used off of the lands covered by each such lease; and

WHEREAS, Seller hereby represents to Buyer that under each of the leases identified in Exhibit A to this Agreement Seller has reserved the right to elect to take either in-kind (amount) or in value its royalty gas; and

1/ An explanation of the footnotes is appended as the last page of this document.

WHEREAS, Seller represents to Buyer that Seller is authorized by AS 38.05.183(d) to sell royalty gas surplus to the intrastate domestic and industrial needs of the State of Alaska; and

WHEREAS, Buyer represents to Seller that it is or will be a natural gas company subject to the jurisdiction of the Federal Power Commission and desires to purchase natural gas from Seller so as, at the earliest possible date, to increase the supply of natural gas available to its customers or its affiliated pipeline companies in the contiguous 48 states; and

WHEREAS, Seller desires to sell royalty gas to Buyer and Buyer desires to purchase royalty gas from Seller under the terms and upon the conditions hereinafter set forth; and

WHEREAS, Buyer and Seller each desire certification and construction of a trans-Alaska gas pipeline system for movement of natural gas from Prudhoe Bay, Alaska to the contiguous 48 states;

NOW, THEREFORE, in consideration of the representations, covenants, and conditions herein contained, Seller and Buyer hereby agree as follows:

Article I

Support for Trans-Alaska Pipeline

In consideration of the obligations assumed by each herein, Buyer and Seller agree to actively support and seek before the Federal Power Commission, and any and all other involved federal, state and local authorities, representatives and individuals, the ultimate selection and implementation of a trans-Alaska gas pipeline system. "Pipeline" shall mean a large diameter gas pipeline (including expansion thereof) commencing at Prudhoe Bay, crossing Alaska in approximately the same route as the present Trans-Alaska Pipeline System oil pipeline, and terminating at a site in the Prince William Sound area (without limitation to others, the pipeline route sought by El Paso Alaska Company in Federal Power Commission Docket No. CP75-96 is a trans-Alaska gas pipeline system within the meaning of this Article).

Article II

Seller's Royalty Gas

2.1 Seller warrants that under the leases identified in Exhibit A of this Agreement, Seller has the right to take its royalty natural gas in-kind which amount it

represents is twelve and one-half percent (12.5%), unless otherwise stated in Exhibit A, and agrees that it will exercise this right at a time sufficient to deliver gas to Buyer on the date the pipeline is ready to receive gas. If the laws, rules or regulations of the United States of America, or any agency thereof, prevent Seller from exercising its right to take its royalty gas in-kind, this Agreement shall be void.

*? per [unclear]
[unclear] [unclear]
[unclear]*

2.2 In addition to the price as provided in Article VI hereof, Buyer shall reimburse Seller for Buyer's pro rata share of any costs attributable to the preparation and transportation of gas to be delivered hereunder which costs Seller may incur as a result of Seller's election to take its royalty gas in-kind and which costs would not have been incurred by Seller if Seller had not elected to take its royalty gas in-kind. Seller shall use its best efforts to minimize any costs incurred by Seller by reason of Seller's taking royalty gas in-kind, such best efforts shall include but not be limited to litigation in cooperation with Buyer to the extent necessary to contest the imposition of unwarranted and/or improper charges.

*[unclear] [unclear]
how [unclear]
[unclear]*

2.3 In the event Buyer is unable to obtain approval of the Federal Power Commission (or any successor governmental agency having jurisdiction in the premises) to

[unclear] [unclear] [unclear]

what we should have PDC and...
include in Buyer's cost of service the costs Buyer is obligated to pay Seller under Section 2.2 herein, Buyer may terminate this Agreement six (6) months after receipt by Seller of written notice of Buyer's termination notice; provided, however, that any costs identified in Section 2.2 herein becoming due and payable by Seller prior to termination of this Agreement shall be reimbursed to Seller by Buyer regardless of approval of the Federal Power Commission to include such costs in Buyer's cost of service. *and use for sales on other*

Article III

Quantity

? Can we do this? what is supply?
3.1 Subject to the terms and conditions set forth in this Agreement, Seller hereby agrees to sell and deliver or cause to be delivered to Buyer and Buyer hereby agrees to purchase and receive or cause to be received from Seller on each day commencing with the date of first delivery hereunder and continuing during the term of this Agreement, fifty percent (50%) 2/ of Seller's royalty gas available at the point of delivery described in Article IV hereunder.

3.2 It is agreed that the base volume of gas to be sold by Seller and purchased by Buyer during the term of this Agreement (excluding gas that might be made available under Subsection 3.7(b)) may be less than but under no conditions shall it be in excess of one (1) trillion, three hundred (300) billion cubic feet. 3/

Don't know

3.3(a) Commencing on the date of first delivery of royalty gas hereunder and continuing each day thereafter until the fifth (5th) anniversary date thereof, Seller shall have the right to reduce the quantity of royalty gas otherwise available for sale and delivery to Buyer under Section 3.1 above by up to and including twenty-five percent (25%).

*See 3.1
25%
guaranteed*

3.3(b) Commencing on the fifth (5th) anniversary date of first deliveries and continuing each day thereafter until the tenth (10th) anniversary date thereof, Seller shall have the right to reduce the quantity of royalty gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including fifty percent (50%).

*See 3.1
50%
guaranteed*

3.3(c) Commencing on the tenth (10th) anniversary date of first deliveries and continuing each day thereafter until the fifteenth (15th) anniversary date thereof, Seller shall have the right to reduce the quantity of royalty gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including seventy-five percent (75%).

*See 3.1
75%
guaranteed*

3.3(d) Commencing on the fifteenth (15th) anniversary date of first deliveries and continuing each day thereafter until termination of this Agreement, Seller shall have the right to reduce the quantity of royalty gas available for sale and delivery to Buyer as set forth in Section 3.1 by up to and including one hundred percent (100%).

*See 3.1
100%
guaranteed*

3.3(e) Reductions by Seller of the quantity of royalty gas as provided in this Section 3.3 shall not become effective prior to twelve (12) months following Seller's written notice to Buyer thereof.

3.4 Buyer hereby agrees that Seller shall have the right and power at any time during the term of this Agreement to change the percentages set forth in Subsections 3.3(a), 3.3(b), 3.3(c) and 3.3(d) above; provided, however, that no such change or changes shall become effective prior to twenty-four (24) months following Seller's written notice to Buyer thereof.

3.5 The reservation of gas by Seller by way of its exercising its rights of gas reductions pursuant to Sections 3.3 and 3.4 hereof shall be for the sole purpose of Seller meeting the intrastate domestic and industrial needs of the State of Alaska including the right to exchange reserved gas for other natural gas produced or delivered into Alaska, provided such exchanged gas is used for the sole purpose of meeting the intrastate domestic and industrial needs of the State of Alaska. However, this provision shall not limit the right to export from the State any products manufactured from said gas.

could be very easily changed to meet the needs of the State of Alaska

products manufactured from said gas

3.6 Seller agrees that reservations similar to those available to Seller under Sections 3.2, 3.3, 3.4 and

3.5 shall be made in any contract providing for the sale of Seller's royalty gas from the leases identified in Exhibit A under contract for sale outside of Alaska and that the changes, up or down, in the amount of gas reserved for use in Alaska pursuant to this Article shall be made ratably from all such contracts.

3.7(a) Should Seller, through the exercise of its rights under Sections 3.3 and 3.4, in fact diminish the volume of gas otherwise available to Buyer hereunder and should Seller during the term of this Agreement and five (5) years thereafter have additional royalty gas which in Seller's sole discretion is surplus to the intrastate domestic and industrial needs of the State of Alaska, and will be transported by the Pipeline, Seller shall offer to sell to Buyer under the provisions of this Agreement, except as to price and term, ratably with other eligible purchasers of Seller's royalty gas from the leases identified in Exhibit A such additional royalty gas equivalent to Seller's prior reductions under Sections 3.3 and 3.4. Buyer shall have the right to purchase such gas at the highest price available to Seller for such gas from any other interstate bona fide purchaser. In the event there are no other interstate bona fide purchasers, the price shall be the price then being paid by Buyer for gas purchased under this Agreement. Buyer shall as soon as possible, but in no event later than twelve (12) months after receipt of Seller's offer to sell

such gas, give notice that it desires to purchase such gas or such right is waived by Buyer and Buyer shall have no further right to purchase that quantity of gas offered to Buyer by Seller. After receipt of such notice by Seller, Seller shall make available and Buyer shall take the necessary steps to receive such gas within two hundred ten (210) days. *note*

3.7(b) In addition to the right granted Buyer under Subsection 3.7(a) and after all eligible purchasers of royalty gas from the leases identified in Exhibit A have had an opportunity to exercise such right, Seller grants to Buyer the right of first refusal to purchase additional royalty gas from Seller to the extent of one-half (1/2) times the volume that Seller's exercise of its rights under Sections 3.3 and 3.4 in fact diminishes the amount of gas Buyer otherwise would have purchased and received hereunder. Such right is granted during the term of this Agreement and five (5) years thereafter. This right of first refusal shall apply to royalty gas which becomes available to Seller and which in Seller's sole discretion is determined to be surplus to the intrastate domestic and industrial needs of the State of Alaska. This right of first refusal applies only to gas which will be transported by the Pipeline. 4/ *Handwritten notes on right margin: "This right of first refusal shall apply to royalty gas which becomes available to Seller and which in Seller's sole discretion is determined to be surplus to the intrastate domestic and industrial needs of the State of Alaska. This right of first refusal applies only to gas which will be transported by the Pipeline."*

3.8 Buyer hereby acknowledges that at any time after the effective date of this Agreement and prior to the

date of first deliveries hereunder, Seller shall have the [?] right and power to initiate the taking of its royalty gas in-kind under the leases identified in Exhibit A hereto and to utilize, market or otherwise dispose of all or any portion of said royalty gas in any manner as Seller in its sole discretion, and at its sole expense, may determine; provided, however, that Seller agrees that any such arrangement shall not prevent Seller from making available for sale to Buyer on the date of first deliveries the quantity of gas committed to Buyer hereunder and not reserved by Seller pursuant to Sections 3.3 and 3.4.

3.9 Seller will provide Buyer at the beginning of each calendar year its best estimate of volumes under this Agreement which will be available during each calendar year of the next succeeding five (5) calendar years. This estimate shall not constitute the notices required by Subsection 3.3(e) and Section 3.4.

for 3.10 Buyer and Seller will cooperate to minimize any charges levied on gas liquefied and transported from Alaska to the contiguous 48 states. This Section shall not apply to any tariff established by the State of Alaska as owner of any portion of the transportation facilities. *likely D note*

3.11 Seller shall reimburse Buyer, at such time as Seller takes reserved gas pursuant to this Article, for a *T notes*

percentage of any then undepreciated investment made by Buyer in any facilities upstream of the Pipeline. Such percentage of reimbursement shall be the same as the percentage the Seller's reserved gas is of the total gas which otherwise would have been sold to Buyer hereunder. Depreciation shall be calculated using generally accepted accounting principles. *See also Section 1.1*

Article IV

Delivery Point(s) and Delivery Pressure(s)

4.1 Delivery of Seller's royalty gas shall be at the point(s) the working interest owners of the leases identified in Exhibit A make delivery of gas to their purchasers or at any other point mutually agreed upon by the parties hereto. *See Appendix A*

4.2 Should Seller be required to take delivery of its royalty gas from the working interest owners of the leases described in Exhibit A at a point upstream from the delivery point as determined in Section 4.1 after exerting its best efforts to receive such gas at the delivery point as determined in Section 4.1, Buyer shall accept delivery at the point Seller receives its royalty gas. Seller shall have no obligation under this Section to enter into any agreement (except the leases identified in Exhibit A) regarding delivery points that will result in Seller's incurring any costs which Buyer will not reimburse. *made with record*

4.3 Gas sold and delivered by Seller to Buyer hereunder shall be received by Buyer at the delivery point at the same pressure as the pressure the working interest owners deliver their gas to their purchasers, or at the pressure Seller receives its gas from the working interest owners if delivery is made under Section 4.2 hereof.

4.4 Seller shall retain the right to receive all liquids removed from the gas prior to its delivery to the Pipeline, whether removed before or after delivery of the gas to Buyer.

*6/1/84
banned
from sale
Tide*

Article V

Quality

5.1 The gas to be delivered by Seller to Buyer at the delivery point(s) hereunder shall conform to the quality specifications applicable to the gas sold by the working interest owners from the leases identified in Exhibit A deliverable at the same delivery point(s).

Article VI

Price

6.1 Buyer and Seller recognize that as of the date of this Agreement, the price which Buyer may be allowed to pay and include in its jurisdictional resale rates has

not been determined. In consideration thereof, the price which Buyer shall pay Seller for gas purchased hereunder shall be determined in accordance with Section 6.2 or Section 6.3 or Section 6.4 or Section 6.5 and shall be subject to the adjustment as provided by Section 6.6; however, the price paid Seller for gas which Buyer reflects in its rates to jurisdictional customers shall never be higher than the price Buyer is permitted to retain in its jurisdictional resale rates as long as such rates are subject to regulation by the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises).

6.2 Seller represents that Seller is not a "Person" as defined in the Natural Gas Act and therefore not subject to the provisions of said Act. Buyer is a natural gas company subject to the regulations of said Act. If at the time of first deliveries of gas hereunder the price of gas purchased hereunder is subject to the regulation of the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises) because of the Commission's authority to regulate the rates at which Buyer resells such gas, then the initial price to be paid by Buyer to Seller hereunder shall be the highest area, national or ceiling rate allowed to be paid by any interstate gas purchaser to any working interest owner in the leases identified in Exhibit A under contracts of at least fifty (50) billion cubic feet and providing for substantially the

TPC
11/22
11/22

same quality and conditions of delivery as in this Agreement. The price to be paid thereafter, shall be subject to all periodic changes permitted in accordance with the applicable and governing portions of the Rules and Regulations of the Federal Power Commission, (or of any successor governmental authority having jurisdiction in the premises), or such other changes in price as may be permitted by any new area, national or ceiling rates applicable to the gas sold under the leases identified in Exhibit A, which may subsequently be established. Such price shall include all applicable adjustment provisions prescribed or permitted; provided, however, such price adjustment provisions which relate to charges for which Seller is reimbursed pursuant to Article II hereof shall be excluded. If Buyer is subsequently unable to obtain approval of any portion of such price in Buyer's cost of service and required to refund that portion of such price to its customers, Seller shall refund such portion of the price to Buyer.

In the event gas sold by a producer or producers from the leases identified in Exhibit A is permitted a price higher than the area, national or ceiling rates, under Federal Power Commission regulations relating to Optional Pricing, Temporary or Emergency Sales, Commission Order Nos. 481 or 533, as amended, or other similar regulations or orders, then the price paid for Seller's royalty gas attributable to such production will be increased to that higher price.

In no instance shall the price paid Seller be less than the price paid producers for their gas from the same reservoir for same or similar sales in interstate commerce.

TPC
not regulated

② 6.3 If at the time of first deliveries of gas hereunder the price of gas sold from the leases identified in Exhibit A is not regulated by the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises), then the initial price for gas delivered hereunder shall be the highest price being paid by any interstate gas purchaser for gas under contracts of at least fifty (50) billion cubic feet and providing for substantially the same quality and conditions of delivery as in this Agreement and produced from the leases identified in Exhibit A.

not to be regulated

TPC
State Reg

6.4 If the Federal Power Commission (or any successor governmental authority having jurisdiction in the premises) shall at any time after commencement of the first delivery cease (after commencing) to regulate the price applicable to natural gas of any vintage produced from the leases identified in Exhibit A and sold in interstate commerce, which deregulation would prevent the Federal Power Commission from excluding the price Buyer pays under this Agreement from its cost of service and would have applied to Seller had Seller been subject to governmental regulation, then upon notice of written election given by Seller or Buyer to the other not later than sixty (60) days after the

effective date of such deregulation, the price of gas sold by Seller to Buyer hereunder shall be redetermined in accordance with the provisions of Section 6.5.

The redetermined price shall be agreed to by the parties and become effective within ninety (90) days after the notice has been given as aforesaid, or if the parties shall fail to agree, the redetermined price shall be established by arbitration. The redetermined price shall remain in effect until later changed in accordance with the pricing provisions of this Agreement.

6.5 Seller or Buyer shall have the option to cause the price being paid for the gas sold hereunder to Buyer to be redetermined every twelve (12) months, such to be effective on the anniversary of such redetermination under Section 6.4 hereof. The request for a price redetermination shall be given in writing not later than one hundred twenty (120) days prior to the beginning of the period for which the price redetermination is requested.

Within the same one hundred twenty (120) days following such request for a price redetermination, the parties shall meet to redetermine such price. Such redetermined price shall be the higher of (1) the highest price being paid for gas sold in interstate commerce from the North Slope of Alaska set out in a contract selling at least

50
fifty (50) billion cubic feet executed in the one (1) year period immediately preceding said notice and providing for substantially the same quality and conditions of delivery and having a term of at least five (5) years, or (2) the highest price being paid under a renegotiation or price redetermination clause of any contract for gas sold in interstate commerce from the North Slope of Alaska selling at least fifty (50) billion cubic feet and providing for substantially the same quality and conditions of delivery and having a term of at least five (5) years. In the event there are no comparable contracts executed in the one (1) year period, or no contracts under which the price has been renegotiated or redetermined, the parties shall meet to agree upon a price. If the parties are unable to agree, the matter shall be submitted to arbitration as provided in Article VII.

It is agreed that the parties shall have the full one hundred twenty (120) days to reach voluntary agreement on the redetermined price. However, at any time after negotiations have been in process more than thirty (30) days but less than one hundred twenty (120) days, either party may request in writing that the matter be submitted to arbitration as provided in Article VII of this Agreement.

A redetermined price established by arbitration shall become effective as of the later of (1) the date the

Board renders its decision, or (2) one hundred twenty (120) days after the giving of notice of the request for a price redetermination.

In no event shall the redetermined price be less than the price being paid to Seller by Buyer immediately preceding the initial redetermination.

6.6 If it is found upon tests that the gas being delivered hereunder shall have a gross heating value of more or less than one thousand (1000) British thermal units per cubic foot, then the price payable for such gas shall be increased or reduced. Such increased or reduced price shall be determined by multiplying the price otherwise payable for such gas by a fraction the numerator of which is the actual gross heating value of the gas delivered, expressed in British thermal units per cubic foot, and the denominator of which is one thousand (1000).

Article VII

Arbitration

7.1 In the event either party shall request arbitration of any dispute arising under this Agreement, there shall be established a board of three (3) arbitrators to be selected as follows: either Seller or Buyer may, at

the time such board of arbitration is desired, notify the other of the name of an arbitrator, and such other party shall, within ten (10) days thereafter, select an arbitrator and notify the party desiring arbitration of the name of such arbitrator. If such other party shall fail to name a second arbitrator within ten (10) days, then the party which first served the notice may, on three (3) days' notice to the other party, apply to the person who is Chief Judge of the United States District Court for the District of Alaska for the appointment of such second arbitrator. The two (2) arbitrators chosen as above shall, within ten (10) days after the appointment of the second arbitrator, choose a third arbitrator, and in the event of their failure to do so within said ten (10) days, either of the parties hereto may in like manner, on three (3) days' notice to the other party, apply to the person who is such Judge for the appointment of a third arbitrator and in such case the arbitrator appointed shall act as the third arbitrator. The arbitrators selected hereunder shall be qualified by education and experience to consider the question involved. The Board shall promptly fix a reasonable time and place for the hearing, at which time each of the parties hereto may submit such evidence as it may see fit. If within such thirty (30) days a decision is not rendered by the board, new arbitrators may be named, at the election of either Seller or Buyer, and shall act hereunder in like manner as if none had been previously named. The action of a majority of the members of the board shall govern and their decision in

writing shall be final and binding on the parties hereto. Each party shall pay the compensation and expenses of its own counsel, witnesses and employees. All other costs of the arbitration shall be equally divided between Seller and Buyer.

Article VIII

Term

8.1 This Agreement shall become effective upon the execution and approval as provided in Section 11.6 hereof and, except as provided in Subsection 3.7(a) hereof, shall continue and remain in force and effect for a period of twenty (20) years from the date of first deliveries or until the base volume of gas as set forth in Section 3.2 hereof has been delivered, whichever is earlier; provided that if, prior to the expiration of the term hereof, the volumes of gas available for delivery hereunder shall be so reduced by the decline in production that further production of gas for delivery hereunder would no longer be profitable for Seller or that further operation of the facilities used to transport such gas by or for the account of Buyer would no longer be profitable to Buyer, then the party for whom continued operation under this Agreement is no longer profitable may give notice to the other, which notice shall give the reason for such non-profitability and on the two

hundred tenth (210th) day after the giving of such notice this Agreement shall terminate unless the parties before that time agree to extend the terms hereof prior to the end of that two hundred ten (210) day period. This Article is not applicable to gas which Seller makes available to Buyer under Subsection 3.7(b) hereof.

Article IX

Seller's Reservation

9.1 Seller shall retain the right to process the gas or have the gas processed, before and/or after delivery to Buyer, for the recovery of liquefiable hydrocarbons other than methane, (propanes, ethanes, butanes and heavier hydrocarbons) except such minimum quantities of methane as must necessarily be removed in such processing (including the right to use the gas for fuel in the operation of any processing plant). Gas so processed in a plant shall be delivered, redelivered, measured and accounted for in accordance with procedures mutually satisfactory to Buyer and Seller. Seller shall not reduce the heating content of the gas remaining after processing below one thousand (1000) British thermal units per cubic foot. Seller shall reimburse Buyer for all transportation charges, liquefaction charges and regasification charges attributable to the volume removed by processing, including fuel and shrinkage. Should such processing occur downstream of the delivery

point hereunder, appropriate adjustment shall be made to the volume of gas delivered by Seller to Buyer to give effect to all reduction of delivered volumes as a result of such processing.

Article X

Notices

10.1 Notices to be given hereunder shall be deemed sufficiently given and served when and if deposited in the United States mail postage prepaid and certified or registered, addressed to Seller at _____, or to Buyer at _____, as the case may be, or to such other address as either party shall respectively hereafter designate in writing.

10.2 Routine communications, including monthly statements and payments shall be considered as duly delivered when mailed by either registered mail or ordinary first class mail, postage prepaid.

Article XI

Conditions Precedent

11.1 Seller acknowledges that Buyer shall have no obligation to perform any of its undertakings set forth in this Agreement, other than its undertaking to actively

support the ultimate (government) selection of the Pipeline for the movement of natural gas from the North Slope of Alaska to market, until and unless all governmental approvals necessary for initiation and implementation of the Pipeline are granted; provided however, that costs incurred by Seller by reason of Seller's election to take its royalty gas in-kind shall be reimbursed to Seller by Buyer as provided in Section 2.2 herein. (staff 7)

11.2 In the event that on or before December 31, 1978, all regulatory approvals have not been issued and been accepted by Buyer or the applicant to construct the Pipeline which Buyer or Seller deems necessary to enable Buyer or Seller to perform its obligations under or receive the benefits of this Agreement, either party may thereafter terminate this Agreement by giving written notice to the other party not less than ten (10) days prior to the effectiveness of said action.

11.3 Promptly after approval of this Agreement by concurrent resolution of a majority of each house of the Alaska State Legislature, Buyer shall proceed with diligence in the preparation, filing and prosecution of such applications, petitions, pleadings and other filings with the Federal Power Commission as may be required to obtain all necessary rate, tariff, and/or certificate authorizations, approvals and rulings, as the case may be, related to Buyer's undertakings set forth in this Agreement.

11.4 Prior to the time that a Federal Power

Commission order granting a Certificate of Public Convenience and Necessity to the Pipeline becomes final and non-appealable, the Governor of Alaska may give written notice to Buyer of his decision, and reasons therefor, to support a project other than the Pipeline and such notice shall not be deemed a default of Seller's obligations under Article I hereof. Should Buyer elect to support the project designated in the Governor's notice, such project shall be considered the "Pipeline," and Buyer's rights hereunder shall continue. If Buyer does not give notice of its decision to support the project designated in the Governor's notice within thirty (30) days after receipt of the Governor's notice, this Agreement and all rights and obligations hereunder shall terminate.

11.5 This Agreement may be terminated by directive of the Governor of Alaska to the Commissioner of Natural Resources and the serving of a written notice to Buyer by said Commissioner, which notice may be given anytime after a Federal Power Commission order denying El Paso Alaska in Docket No. CP75-96 a Certificate of Public Convenience and Necessity, becomes final and non-appealable, or after an order of the Federal Power Commission granting a Certificate of Public Convenience and Necessity to a project or system other than the Pipeline becomes final and non-

appealable. Such termination shall not prejudice Buyer's position in negotiations for subsequent purchases of gas from Seller.

11.6 This Agreement shall not take effect until approved by concurrent resolution of a majority of each house of the Alaska State Legislature.

Article XII

Exhibits and General Terms and Conditions

12.1 Exhibit A and the General Terms and Conditions attached to this Agreement are by this reference incorporated into and made a part of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in four (4) original counterparts on this day and year first above written.

"BUYER"

COMMISSIONER OF NATURAL RESOURCES
OF THE STATE OF ALASKA

ATTEST:

ATTEST:

This "General Terms and Conditions" is attached and
made part of Royalty Gas Sales Agreement dated _____
1976, by and between _____
as Buyer, and _____
as Seller.

SECTION 1	Definitions	2
SECTION 2	Responsibility.	4
SECTION 3	Meters.	4
SECTION 4	Units of Volume	7
SECTION 5	Gas Measurement	8
SECTION 6	Billing and Payment	11
SECTION 7	Receipt of Available Gas.	12
SECTION 8	Title	12
SECTION 9	Force Majeure	13
SECTION 10	Rules and Regulations	15
SECTION 11	Successors and Assigns.	16
SECTION 12	Conformity with Producer Sales Contract.	16
SECTION 13	Miscellaneous	17

General Terms and Conditions

I. DEFINITIONS

The following terms, when used in this General Terms and Conditions and in the foregoing portion of this Royalty Gas Sales Agreement, shall have the following meanings, regardless of capitalization:

1.1 The term "lease or leases" shall mean the oil and gas leases and portions thereof which are described in Exhibit A hereto attached and made a part hereof.

1.2 The term "lessee" shall mean the party or parties owning working interest in the lease or leases.

1.3 The term "gas" shall include casinghead gas produced with crude oil, gas well gas, and residue gas resulting from processing either casinghead gas or gas well gas or both.

1.4 The term "casinghead gas", as used herein, excludes gas cap gas and shall mean gas produced with crude petroleum from an oil well, all or substantially all of which is indigenous to the oil strata from which such crude petroleum oil is produced, together with gas lift gas produced with oil whether originally produced from the same oil stratum or not.

1.5 The term "gas well gas" shall mean all other gas, including gas cap gas, or the mixture of hydrocarbon gases produced from the leases other than that includable within the definition of casinghead gas.

1.6 The term "day" shall mean a period of twenty-four (24) consecutive hours beginning at 7:00 o'clock A.M. Alaska Standard Time. The reference date for any day shall be the date of the beginning of such day.

1.7 The term "month" shall mean the period beginning at 7:00 o'clock A.M. Alaska Standard Time on the first day of a calendar month and ending at the same time on the first day of the next succeeding calendar month.

1.8 The term "cubic foot of gas" means the volume of gas contained in one cubic foot of space at a standard pressure base and a standard temperature base. The standard pressure base shall be fourteen and sixty-five one hundredths (14.65) pounds per square inch absolute and the standard temperature base shall be sixty (60) degrees Fahrenheit.

1.9 The term "year" shall mean each successive period of twelve (12) consecutive months beginning on the first day of the month in which deliveries of gas are commenced to Buyer hereunder and any anniversary of such date.

1.10 The term "anniversary date of first delivery" shall mean the same date of each succeeding year as the date of first deliveries.

1.11 The term "domestic and industrial needs of the State of Alaska" shall mean those present and projected residential, commercial and industrial uses for gas within Alaska as determined by the Alaska Royalty Oil and Gas Development Advisory Board in accordance with AS 38.05-.183(d).

2. RESPONSIBILITY

2.1 Buyer shall not be responsible for the gas prior to its delivery hereunder and Seller shall hold Buyer harmless against any damage or injury caused thereby until same has been delivered to Buyer at the delivery point or points hereunder, after which delivery Buyer shall be deemed in exclusive control and possession thereof and responsible for said gas and shall hold Seller harmless against any injury or damage caused thereby, except that while the gas is being processed by or on behalf of Seller, Buyer shall not be deemed in control or possession thereof and shall not be responsible for said gas.

3. METERS

3.1 Buyer, at its sole cost and expense, shall install, maintain and operate, or cause to have installed, maintained, and operated, at each delivery point, a standard

type orifice meter or meters for the measuring of the quantity of gas delivered hereunder. Orifice meters shall be installed and operated in accordance with the specifications prescribed in Gas Measurement Committee Report No. 3, as revised and reprinted September 1969, of the Natural Gas Department of the American Gas Association, as supplemented and modified from time to time. Buyer shall cause the charts on such meters to be changed each day, or at such other times as may be agreed upon by the parties hereto. The meters, meter readings and meter charts shall be accessible at all reasonable times to inspection and examination by Seller.

3.2 From time to time and at least once each month, the accuracy of Buyer's measuring equipment shall be verified by and at the expense of the Buyer. If either party at any time shall notify the other that it desires a special test of any meter, the other party shall cooperate to secure an immediate verification of the accuracy of such meter and joint observation of any adjustments. If any such test shall be requested by Seller and upon such test, the measuring equipment shall be found to be registering correctly, the cost of such test shall be charged to Seller, otherwise the cost of all such tests shall be borne by Buyer. Buyer shall give notice to Seller of the time of all tests made pursuant to this Section in order that Seller may conveniently have its representative present. Calibration and

adjustment of Buyer's meters and changing of charts shall be done only by Buyer.

3.3 If, upon any test, the percentage of inaccuracy shall be two percent (2%) or more, the registration of such meter shall be corrected at the rate of such inaccuracy for any period which is definitely known or agreed upon, but in case the period is not definitely known or agreed upon, then for a period extending back one-half (1/2) the time elapsed since the date of the last calibration. Following any test, metering equipment found inaccurate shall be immediately restored by Buyer as closely as possible to a condition of accuracy. If, for any reason, any meter is out of service or out of repair so that the amount of gas delivered cannot be estimated or computed from the reading thereof, the amount of gas delivered through the period such meter is out of service or out of repair shall be estimated and agreed upon by the parties hereto upon the basis of the best available data, using the first of the following methods which is feasible:

a. By using the registration of Seller's check meter if installed and accurately registering.

b. By correcting the error if the percentage of error is ascertainable by calibration test or mathematical calculation.

c. By estimating the quantity of deliveries by deliveries during preceding periods under similar conditions when the meter was registering accurately.

3.4 Seller may, at its option and expense, install and operate or cause to be installed and operated check meters to check Buyer's meters, but measurement of gas for the purpose of this Agreement shall be by Buyer's meter, except as hereinabove specifically provided to the contrary. Such check meters and equipment shall be so installed as not to interfere with the operation of the meters to be installed and maintained by Buyer at or near the points of delivery.

4. UNITS OF VOLUME

4.1 The unit of volume for all purposes hereunder (except as otherwise specified in Subsection 4.2 of this Section 4) shall be one thousand (1000) cubic feet at an absolute pressure of fourteen and sixty-five hundredths (14.65) pounds per square inch at a temperature of sixty (60) degrees Fahrenheit.

4.2 The unit of volume for the determination of the gross heating value of the gas purchased hereunder shall be the amount of gas, saturated with water vapor, which would occupy a volume of one (1) cubic foot at a temperature of sixty (60) degrees Fahrenheit and under a pressure equivalent to thirty (30) inches of mercury at thirty-two (32)

degrees Fahrenheit. Such gross heating value shall be expressed in British thermal units per cubic foot.

5. GAS MEASUREMENT

5.1 The volumes of gas delivered hereunder shall be computed in accordance with the specifications prescribed in Gas Measurement Committee Report No. 3, as revised and reprinted September, 1969, of the Natural Gas Department of the American Gas Association, as supplemented and modified from time to time, applied in a practical and appropriate manner, and appropriate correction shall be made for deviation of the gas from Boyle's Law in accordance with said Gas Measurement Committee Report No. 3. Any additional data required to be developed in accordance with recommendations contained in such report shall be jointly determined by the parties hereto in a manner mutually agreeable.

5.2 For the purpose of measurement, the absolute atmospheric (barometric) pressure shall be agreed upon for each point of delivery hereunder based on the actual elevation or location of the delivery point above sea level and shall thereafter be deemed to remain constant regardless of variations in the actual barometric pressure from time to time.

For meters of the orifice type the following factors shall be given due consideration:

a. The temperature of the gas flowing through Buyer's meters shall be obtained by the use of a recording thermometer so installed by Buyer that it may properly re-record the temperature of such gas. The arithmetical average of the hourly temperature during the period gas passed shall be used to make proper computations of volumes hereunder.

b. The specific gravity of the natural gas shall be determined by Buyer by calculation (compensated for any difference between the specific gravity in the ideal state and in the real state in accordance with published procedures adopted by the Gas Measurement Committee of the American Gas Association) utilizing the analysis of the natural gas determined in accordance with Subsection 5.3 of this Section 5. The specific gravity so determined shall be utilized during the applicable period of time referred to in said Subsection 5.3.

5.3 Each three (3) months or as near the first of each three (3) months' period as practicable, Buyer shall sample and analyze the gas delivered hereunder at each delivery point for determination of its constituents and the total gross heating value thereof. The "Method for Natural Gas Analysis by Gas Chromatography, Revised and Adopted as Standard, 1964, by the Natural Gas Processors Association,"

as supplemented and modified from time to time, shall be used in making such determination. Copies of each such analysis shall be furnished by Buyer to Seller. Should Seller not be satisfied with the results of such analysis, it shall notify Buyer in writing. Promptly thereafter, representatives of the parties shall obtain simultaneously under normal operating conditions two (2) samples of the gas delivered hereunder at the point of delivery in question in appropriate sampling devices of the same type. Each of the parties shall take one (1) such sample and subject it to appropriate laboratory analyses to determine the total gross heating value thereof, reporting the results thereof in writing to the other. The average of the total gross heating value shown by such two (2) analyses shall be used for all purposes of this Agreement for the period covered by the analyses made by Buyer which gave rise to the joint determination.

5.4 Buyer reserves the right to install and utilize recording gravimeters and/or calorimeters at any and all delivery points for the determination of specific gravity and gross heating value in lieu of the testing procedures provided in Subsections 5.2(b) and 5.3 of this Section 5.

5.5 Buyer shall give notice to Seller of the time of all tests of gas delivered hereunder or of any equipment

used in measuring or determining the nature of quality of such gas, in order that Seller may conveniently have its representative present. Should Seller not be satisfied with any such tests, it shall so notify Buyer and Buyer shall perform such retests as may be necessary to assure an accurate test.

6. BILLING AND PAYMENT

6.1 On or before the fifteenth (15th) day of each month after deliveries of gas are commenced hereunder, Buyer shall render to Seller a statement showing the amount of gas delivered by Seller and the amount of gas purchased by Buyer hereunder during the preceding calendar month and payment for gas sold hereunder by Seller shall be made by Buyer to Seller on or before the twenty-fifth (25th) day of the calendar month in which such statement is rendered.

6.2 Upon request, Buyer shall furnish or cause to be furnished Seller the measurement charts applicable to any monthly statement. Seller shall return to Buyer all charts after thirty (30) days.

6.3 Any error or discrepancy in charts or statements furnished pursuant to the above shall be promptly reported to Buyer and Buyer shall make proper adjustment thereof within forty-five (45) days after final determination of the

correct volumes or values involved; provided, however, that if no such errors or discrepancies are reported to Buyer within two (2) years from the date of such chart or statement the same shall be conclusively deemed to be correct.

6.4. Seller shall have access to Buyer's records and books at all reasonable hours so far as they affect measurement and settlement for gas sold hereunder.

7. RECEIPT OF AVAILABLE GAS

7.1 In accordance with the provisions hereof, Buyer shall proceed diligently to seek such authorization as required to receive gas then available for delivery by Seller hereunder. Thereafter, as additional gas becomes available for delivery to Buyer hereunder at additional points of delivery, Seller shall notify Buyer in writing, or cause Buyer to be so notified, of the availability of such additional gas, and thereafter Buyer shall proceed diligently to seek such authorization as required for Buyer to receive such additional gas.

8. TITLE

8.1 Seller hereby warrants title to the gas sold by it hereunder and its right to sell the same and warrants that all such gas is owned by Seller free from all liens, encumbrances and adverse claims.

9. **FORCE MAJEURE**

9.1 In the event of either Buyer or Seller being rendered unable by force majeure to perform a duty or an obligation under the Royalty Gas Sales Agreement, the performance of said duty or obligation by the party affected by such force majeure shall be suspended without liability to the other party to the Royalty Gas Sales Agreement during the continuance of the period of inability caused by force majeure but for no longer period, and the party whose performance is thus suspended shall, so far as possible, take all actions within its control to remedy the cause of its non-performance with all reasonable dispatch.

The term "force majeure" as employed herein shall mean acts of God, strikes, lockouts or other industrial disturbances, acts of the public enemy, wars, blockades, military action, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, storms, or storm warnings, crevasses, floods, washouts, arrests and restraints of governments and people, civil disturbances, explosions, breakage or accident to machinery or lines of pipe, or making repairs or alterations to machinery or lines of pipe, the necessity for testing (as required by law, governmental regulation or for safe operation thereof, in the judgment of the testing party), freezing of wells or lines of pipe, partial or entire failure of wells, inability of any party

hereto to obtain necessary materials, supplies or permits due to existing or future rules, regulations, orders, laws or proclamations of governmental authorities (both Federal and State), including both civil and military, any inability on the part of any purchaser or purchasers to receive gas from Buyer by reason of force majeure affecting such purchaser or purchasers, provided that such inability of Buyer to take gas because of force majeure affecting its purchasers, shall be fairly apportioned among its various sources of gas supply, and any other causes, whether of the kind herein enumerated or otherwise, not within the control of the party claiming suspension, and which by the exercise of due diligence such party is unable to prevent or overcome; such term shall likewise include (a) in those instances where either party hereto is required to obtain servitudes, right-of-way grants, permits or licenses to enable such party to fulfill its obligations hereunder, the inability of such party in acquiring, at reasonable cost and after the exercise of reasonable diligence, such servitudes, right-of-way grants, permits or licenses, and (b) in those instances where either party hereto is required to furnish materials and supplies for the purpose of constructing or maintaining facilities, or is required to secure permits or permission from any governmental agency to enable such party to fulfill its obligations hereunder, the inability of such party to acquire, or the delays on the part of such party in acquiring, at reasonable cost and after the exercise of

reasonable diligence, such materials and supplies, permits and permissions; provided, however, Seller shall have the right but not the obligation to sell on a day to day basis free from this Agreement any gas which is committed to Buyer hereunder but which Buyer does not take because of force majeure. The word "party" as used in this Section 1 shall mean and include any person or persons, corporate or otherwise, with whom Seller enters into or has agreements for the conditioning, processing, compressing, or transportation, for its account, of the gas to be delivered hereunder from the point of delivery hereunder to Buyer's facilities.

9.2 It is understood and agreed that the settlement of strikes or lockouts shall be entirely within the discretion of the party having the difficulty, and that the above requirement that any force majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes or lockouts by acceding to the demands of the opposing party when such course is inadvisable in the discretion of the party having the difficulty.

10. RULES AND REGULATIONS

10.1 This Agreement is subject to all present and future valid laws and valid orders, rules and regulations of the United States, the State of Alaska, or any duly constituted agency thereof.

11. SUCCESSORS AND ASSIGNS

11.1 This Agreement shall bind and benefit the parties hereto and their respective successors and assigns, provided that no conveyance or transfer of any interest of either party shall be binding upon the other party until such other party has been furnished with written notice and true copy of such conveyance or transfer; provided, further, that either Buyer or Seller, or both, may assign its right, title and interest in, to and by virtue of this Agreement, including any and all extensions, renewals, amendments and supplements thereto to a trustee or trustees, individual or corporate, as security for bonds or other obligations or securities, without such trustee or trustees assuming or becoming in any respect obligated to perform any of the obligations of the assignor, and if any such trustee be a corporation, without its being required by the parties hereto to qualify to do business in the State of Alaska, but no such assignment shall serve to relieve the assigning party of its obligations hereunder.

12. CONFORMITY WITH PRODUCER SALES CONTRACT

12.1 Seller and Buyer recognize that this Agreement is being entered into prior to sales agreements by the working interest owners. Each party further recognizes that Seller's royalty gas will be commingled with the gas of the working interest owners and that consequently Seller's gas will be produced, gathered and treated identically with the

gas of the working interest owners. It is therefore agreed between the parties that if terms, conditions, or clauses are included in contracts for the sale of gas from the leases identified in Exhibit A by the working interest owners which terms, conditions, or clauses are more favorable to the vendor than the terms, conditions or clauses of Sections 3, 5 and 6 of these General Terms and Conditions herein, Seller shall at its sole option have the right to include such term, condition or clause into this Agreement by giving Buyer written notice within ninety (90) days after approval by the Federal Power Commission of said working interest owner's contract for the sale of its gas.

13. MISCELLANEOUS

13.1 No waiver by either party of one or more defaults by the other in the performance of any of the provisions of this Agreement shall operate or be construed as a waiver of any other or further default or defaults, whether of a like or of a different character.

13.2 This Agreement, and the construction and interpretation thereof, shall be governed by the laws of the State of Alaska.

13.3 Article headings used in this Agreement are for convenience only and shall not affect the construction of this Agreement.

13.4 This Agreement may be supplemented, amended or modified only by a written instrument duly executed by the parties hereto.

13.5 Except in the cases for which arbitration is specifically provided herein, if either party shall fail to perform any of the covenants or obligations imposed upon it by this Agreement (except where such failure shall be excused under the force majeure provisions hereof), then and in that event, the other party may, at its option (without waiving any other remedy for breach hereof), by notice in writing specifying wherein the default has occurred, indicate such party's election to terminate this Agreement by reason thereof. The party in default shall have sixty (60) days from the receipt of such notice to remedy such default and to pay or indemnify the other party all loss or damage incurred as a result thereof, and upon failure so to do, this Agreement shall terminate from and after the expiration of such sixty (60) day period. Any such termination shall be an additional remedy and shall not prejudice the right of the party not in default to collect any amounts due it hereunder for any damage or loss suffered by it and shall not waive any other remedy to which the party not in default may be entitled for breach of this Agreement.

13.6 If any provision or clause of this Agreement or application thereof to any person or circumstances is held

invalid, such invalidity shall not affect other provisions or applications of the Agreement which can be given effect without the invalid provision or application.

13.7 Seller and Buyer shall each preserve all test data, charts and other similar records as required by the Federal Power Commission.

Exhibit A

Attached to and Made a Part of a Royalty Gas Sales
Agreement dated _____, 1976, Between
_____ "Buyer"
and _____
Seller", With Respect to Certain Royalty Gas Owned and Taken
In-Kind by _____
_____ Under the Leases Described Herein Covering
Lands in the State of Alaska.

Each of the following described Leases reserves to
the State of Alaska a one-eighth (1/8) royalty interest,
unless otherwise stated.

Lease Serial No.

Legal Description

Gross Acres

EXPLANATION OF FOOTNOTES

The preceding agreement for the sale of royalty gas is a copy of the Agreement between the State of Alaska and Tenneco Alaska, Inc. The Agreements between the State and El Paso Natural Gas Co. and the State and Southern Natural Gas Company are virtually identical. The differences which exist have been footnoted in this contract and the changes which are appropriate to the El Paso and Southern contract are explained in each footnote.

The contract is being made available in this manner as it facilitates comparison of the three contracts and avoids the necessity of distributing widely three copies of contracts which are virtually identical. These footnotes, of course, do not appear in the original contracts.

Footnotes:

1/ Instead of the words "Tenneco Alaska Inc., an Alaskan corporation" substitute the words "El Paso Natural Gas Co., a Delaware corporation" for the El Paso contract and the words "Southern Natural Gas Company, a Delaware corporation" for the Southern contract.

2/ Instead of the words "fifty percent (50%)" substitute the words "twenty-five percent (25%)" for both the El Paso and Southern contracts.

3/ Instead of the words "one (1) trillion, three hundred (300) billion cubic feet" substitute the words "six hundred fifty (650) billion cubic feet" for both the Southern and El Paso contract.

4/ An additional sentence is added at the end of Section 3.7(b) to the El Paso and Southern contracts. For the El Paso contract that sentence reads as follows:

Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____.

For the Southern contract the added sentence reads as follows:

Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____, and that Agreement between the State of Alaska and El Paso Natural Gas Co. dated_____.

STATE OF ALASKA THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH Y - STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3800

MEMORANDUM

January 31, 1977

SUBJECT: Amendments/Changes to Royalty Gas Contracts

TO: The Honorable John Rader

FROM: Elke Kallab *ek*
Research Analyst

I have just been advised by Billy Berrier that it appears impossible to amend the contracts.

The reasons given are as follows:

1. Alaska Statutes

38.06.040, particular subsection (2),

38.06.050, particularly subsection (d), and

38.06.055 appear to prevent amendment to the contracts while waiting approval in the legislature.

2. General Contract Law

In general contract law one party cannot unilaterally amend a contract.

Mr. Berrier suggested the possibility of a concurrent resolution making the legislative approval conditional upon whatever changes were considered important to the contracts. He said that such a move, however, would bring with it the very "ticklish" subject of the separation of power argument.

I asked that he pursue the matter further for you, and he will do so. In addition, he will keep you advised of any other alternative solutions he is able to think of.

EK:mo

AGO 668169

STATE OF ALASKA THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH Y - STATE CAPITOL
JUNEAU, ALASKA 99811
907-465-3800

MEMORANDUM

January 31, 1977

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TO: The Honorable John Kader

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EK:mo

AGO 668170

EXPLANATION OF FOOTNOTES

The preceding agreement for the sale of royalty gas is a copy of the Agreement between the State of Alaska and Tenneco Alaska, Inc. The Agreements between the State and El Paso Natural Gas Co. and the State and Southern Natural Gas Company are virtually identical. The differences which exist have been footnoted in this contract and the changes which are appropriate to the El Paso and Southern contract are explained in each footnote.

The contract is being submitted to you in this manner to avoid unnecessary duplicating expenses. Exact copies of each individually signed contract have been submitted to the President of the Senate and the Speaker of the House.

Footnotes:

1/ Instead of the words "Tenneco Alaska Inc., an Alaskan corporation" substitute the words "El Paso Natural Gas Co., a Delaware corporation" for the El Paso contract and the words "Southern Natural Gas Company, a Delaware corporation" for the Southern contract.

2/ Instead of the words "fifty percent (50%)" substitute the words "twenty-five percent (25%)" for both the El Paso and Southern contracts.

3/ Instead of the words "one (1) trillion, three hundred (300) billion cubic feet" substitute the words "six hundred fifty (650) billion cubic feet" for both the Southern and El Paso contract.

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For the Southern contract the added sentence reads as follows:

Buyer's right under this Section shall apply only to surplus royalty gas available after Seller has satisfied its obligations under Subsections 3.7 (a) and 3.7 (b) of that Agreement between the State of Alaska and Tenneco Alaska, Inc. dated_____, and that Agreement between the State of Alaska and El Paso Natural Gas Co. dated_____.

Findings and Conclusions of the Commissioner
Pursuant to Alaska Statute 38.05.183(c) -
North Slope Royalty Gas Sale

For a sale of Alaska royalty oil or gas to be completed through a procedure not utilizing competitive bid, AS 38.05.183(c) requires that the Commissioner of Natural Resources must make public, in writing, the specific findings and conclusions upon which a determination not to use competitive procedures is based. Publication is to follow approval of the determination by the Alaska Royalty Oil and Gas Development Advisory Board. On November 22, 1976, the Royalty Board did approve the Commissioner's determination to waive the competitive bidding requirement for three proposed sales of royalty gas to El Paso Natural Gas Company, Tenneco Alaska Inc., and Southern Natural Gas Company. Accordingly, these written findings and conclusions are submitted in fulfillment of the requirement of AS 38.05.183(c).

1. Both through consideration of available alternatives and through affirmative action to solicit proposals, the Commissioner and Royalty Board acted to define existing interest in the purchase of Alaska royalty gas conditioned upon the construction of a processing facility or other use of the gas in Alaska. Since no specific proposals for such purchases were made, and even general expressions of interest were insubstantial, it indicated that adequate competition did not exist for a competitive sale where a requirement of the sale would be that the purchaser obligate itself to build a processing facility or undertake other use of the natural gas within Alaska.

2. Under present legal and regulatory circumstances, a competitive sale based on price competition is not feasible because the price at which natural gas may be sold in interstate commerce is controlled by the Federal Power Commission. Investigation of the possibility that potential purchasers would be able or willing to pay a premium price above the regulated price set by the FPC indicated a lack of interest in such procedure. It therefore was concluded that inadequate price competition existed for an interstate sale. Insufficient interest also appears to exist at this time for a competitive intrastate sale of any substantial magnitude; and in any event, such a sale at a later date is not precluded by the present proposed sales.
3. Whatever sale of royalty natural gas is pursued by the State, it will be essential to identify and adopt primary and secondary objectives for that sale. Such objectives could include maximum or premium price, the establishment of facilities desirable in the overall interest of the State, or the primary objective of the presently proposed sales - to improve and strengthen the position of the State with respect to the decision process for the system to transport North Slope natural gas. The retention of increased support for the State's position on the gas pipeline route issue through the sale of royalty gas necessarily involves a substantial amount of subjective judgment as to those purchasers having the greatest capability to reinforce the State's position.

through technical expertise, legislative capabilities, the geographical and political distribution of the purchasers and their consumers, the technical experience and financial capability of each purchaser and other factors. The design of competitive terms to satisfy such criteria is not possible under the circumstances prevailing at this time.

4. A second primary objective of the presently proposed sales is to offer full protection of future in-state use of Alaska royalty gas. This objective has the capability to act in substantial conflict with the objective of gaining increased support for the State's route position as such increased support would likely require the actual and final commitment of royalty gas to those purchasers adding support to the State's position. The existing contracts of sale avoid this conflict by providing for a unique "take-back" provision allowing the State to gain both the support and flexibility deemed essential to this transaction. Such a contract is necessarily the product of negotiation rather than design followed by competitive sale. Such a contract would not only have been difficult, if not impossible, to prepare for competitive sale, but would have been extremely unlikely to yield the best combination of potential purchasers to bring assistance to the State's position.

EXHIBIT A
PRUDHOE BAY GAS SALES CONTRACT *1
STATE OF ALASKA

<u>ADL NO.</u>	<u>DESCRIPTION</u>	<u>NO. ACRES</u>	<u>EFFECTIVE DATE</u>	<u>BASIC ROYALTY</u>	<u>LESSEE OF RECORD AND INTEREST OWNERSHIP*</u>
28238	T12N, R11E, UM Secs. 25, 26, 35, 36	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28239	T12N, R11E, UM Secs. 27, 28, 33, 34	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28240	T11N, R11E, UM Secs. 1, 2, 11, 12	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28241	T11N, R11E, UM Secs. 3, 4, 9, 10	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28244	T11N, R11E, UM Secs. 15, 16, 21, 22	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28245	T11N, R11E, UM Secs. 13, 14, 23, 24	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28246	T11N, R11E, UM Secs. 25, 26, 35, 36	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28256	T12N, R12E, UM Secs. 15, 16, 21, 22	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28257	T12N, R12E, UM Secs. 25, 26, 35, 36	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28258	T12N, R12E, UM Secs. 27, 28, 33, 34	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28259	T12N, R12E, UM Secs. 29, 30, 31, 32	2459	10/1/65	1/8	ARCO - 50% Exxon - 50%
28260	T11N, R12E, UM Secs. 1, 2, 11, 12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%

*Current to 12/28/76

AGO 660176

<u>ADL NO.</u>	<u>DESCRIPTION</u>	<u>NO. ACRES</u>	<u>EFFECTIVE DATE</u>	<u>BASIC ROYALTY</u>	<u>LESSEE OF RECORD AND INTEREST OWNERSHIP</u>
28261	T11N, R12E, U1, Secs. 3, 4, 9, 10	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28262	T11N, R12E, U1, Secs. 17, 18, 19, 20	2480	9/1/65	1/8	Socal - 100% (Secs. 17, 18, 19) Socal - 33 1/3% (Sec. 20) Mobil - 33 1/3% (Sec. 20) Phillips - 33 1/3% (Sec. 20)
28263	T11N, R12E, U1, Secs. 15, 16, 21, 22	2560	9/1/65	1/8	Mobil - 50% (Secs. 15, 16) Phillips - 50% (Secs. 15, 16) Mobil - 33 1/3% (Secs. 21, 22) Phillips - 33 1/3% (Secs. 21, 22) Socal - 33 1/3% (Secs. 21, 22)
28264	T11N, R12E, U1, Secs. 25, 26, 35, 36	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28265	T10N, R12E, U1 Secs. 1, 2, 11, 12	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28277	T12N, R13E, U1 Secs. 25, 26, 35, 36	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28278	T12N, R13E, U1 Secs. 27, 28, 33, 34	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28279	T12N, R13E, U1 Secs. 29, 30, 31, 32	2459	9/1/65	1/8	Sohio Petroleum Co. - 100%
28280	T11N, R13E, U1 Secs. 1, 2, 11, 12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28281	T11N, R13E, U1 Secs. 3, 4, 9, 10	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28282	T11N, R13E, U1 Secs. 5, 6, 7, 8	2469	9/1/65	1/8	Sohio Petroleum Co. - 100%
28283	T11N, R13E, U1 Secs. 17, 18, 19, 20	2480	9/1/65	1/8	Sohio Petroleum Co. - 100%
28284	T11N, R13E, U1 Secs. 15, 16, 21, 22	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28285	T11N, R13E, U1 Secs. 13, 14, 23, 24	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28286	T11N, R13E, U1 Secs. 25, 26, 35, 36	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%

<u>ADL NO.</u>	<u>DESCRIPTION</u>	<u>NO. ACRES</u>	<u>EFFECTIVE DATE</u>	<u>BASIC ROYALTY</u>	<u>LESSEE OF RECORD AND INTEREST OWNERSHIP</u>
28287	T11N, R13E, UM Secs. 27, 28, 33, 34	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28288	T11N, R13E, UM Secs. 29, 30, 31, 32	2491	9/1/65	1/8	Mobil - 50% Phillips - 50%
28289	T10N, R13E, UM Secs. 5, 6, 7, 8	2501	9/1/65	1/8	Mobil - 50% Phillips - 50%
28290	T10N, R13E, UM Secs. 15, 16, 21, 22	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28299	T12N, R14E, UM Secs. 29, 30, 31, 32	2459	10/1/65	1/8	Arco - 50% Exxon - 50%
28300	T12N, R14E, UM Secs. 27, 28, 33, 34	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28301	T12N, R14E, UM Secs. 25, 26, 35, 36	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28302	T11N, R14E, UM Secs. 1, 2, 11, 12	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28303	T11N, R14E, UM Secs. 3, 4, 9, 10	2560	10/1/65	5%*	Arco - 50% Exxon - 50%
28304	T11N, R14E, UM Secs. 5, 6, 7, 8	2469	10/1/65	1/8	Arco - 50% Exxon - 50%
28305	T11N, R14E, UM Secs. 17, 18, 19, 20	2480	9/1/65	1/8	Sohio Petroleum Co. - 100%
28306	T11N, R14E, UM Secs. 15, 16, 21, 22	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28307	T11N, R14E, UM Secs. 13, 14, 23, 24	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28308	T11N, R14E, UM Secs. 25, 26, 35, 36	2560	10/1/65	1/8	Arco - 50% Exxon - 50%

*5% Discovery Royalty Rate - 1/8% applies After 1/1/78

AGO 668178

<u>ADD. NO.</u>	<u>DESCRIPTION</u>	<u>NO. ACRES</u>	<u>EFFECTIVE DATE</u>	<u>BASIC ROYALTY</u>	<u>LESSEE OF RECORD AND INTEREST OWNERSHIP</u>
28309	T11N, R14E, UM Secs. 27, 28, 33, 34	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28310	T11N, R14E, UM Secs. 29, 30, 31, 32	2491	9/1/65	1/8	Sohio Petroleum Co. - 100%
28311	T10N, R14E, UM Secs. 1, 2, 11, 12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28312	T10N, R14E, UM Secs. 3, 4, 9, 10	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28313	T10N, R14E, UM Secs. 5, 6, 7, 8	2501	10/1/65	1/8	ARCO - 50% Exxon - 50%
28314	T10N, R14E, UM Secs. 15, 16, 21, 22	2560	9/1/65	1/8	Mobil - 50% Phillips - 50%
28315	T10N, R14E, UM Secs. 13, 14, 23, 24	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28316	T10N, R14E, UM Secs. 25, 26, 35, 36	2560	9/1/65	1/8	Socal - 100% (Secs. 26, 35, 36) Socal - 33 1/3% (Sec. 25) Mobil - 33 1/3% (Sec. 25) Phillips - 33 1/3% (Sec. 25)
28320	T11N, R15E, UM Secs. 1, 2, 11, 12	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28321	T11N, R15E, UM Secs. 17, 18, 19, 20	2480	10/1/65	1/8	ARCO - 50% Exxon - 50%
28322	T11N, R15E, UM Secs. 15, 16, 21, 22	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28323	T11N, R15E, UM Secs. 13, 14, 23, 24	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28324	T11N, R15E, UM Secs. 25, 26, 35, 36	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28325	T11N, R15E, UM Secs. 27, 28, 33, 34	2560	10/1/65	1/8	ARCO - 50% Exxon - 50%
28326	T11N, R15E, UM Secs. 29, 30, 31, 32	2491	10/1/65	1/8	ARCO - 50% Exxon - 50%

<u>ADL NO.</u>	<u>DESCRIPTION</u>	<u>NO. ACRES</u>	<u>EFFECTIVE DATE</u>	<u>BASIC ROYALTY</u>	<u>LESSEE OF RECORD AND INTEREST OWNERSHIP</u>
28327	T10N, R15E, U1 Secs. 1, 2, 11, 12	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28328	T10N, R15E, U1 Secs. 3, 4, 9, 10	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28329	T10N, R15E, U1 Secs. 5, 6, 7, 8	2501	10/1/65	1/8	Arco - 50% Exxon - 50%
28330	T10N, R15E, U1 Secs. 17, 18, 19, 20	2512	9/1/65	1/8	Sohio Petroleum Co. - 100%
28331	T10N, R15E, U1 Secs. 15, 16, 21, 22	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28332	T10N, R15E, U1 Secs. 13, 14, 23, 24	2560	10/1/65	1/8	Arco - 50% Exxon - 50%
28333	T10N, R15E, U1 Secs. 25, 26, 35, 36	2560	9/1/65	1/8	Sohio Petroleum Co. - 100%
28334	T10N, R15E, U1 Secs. 27, 28, 33, 34	2560	9/1/65	1/8	Mobil - 50% (Secs. 33, 34) Phillips - 50% (Secs. 33, 34) Mobil - 33 1/3% (Secs. 27, 28) Phillips - 33 1/3% (Secs. 27, 28) Socal - 33 1/3% (Secs. 27, 28)
28335	T10N, R15E, U1 Secs. 29, 30, 31, 32	2523	9/1/65	1/8	Sohio Petroleum Co. - 100%
28343	T11N, R16E, U1 Secs. 29, 30, 31, 32	2491	9/1/65	1/8	Sohio Petroleum Co. - 100%
28345	T10N, R16E, U1 Secs. 5, 6, 7, 8	2501	10/1/65	1/8	Arco - 50% Exxon - 50%
28346	T10N, R16E, U1 Secs. 17, 18, 19, 20	2512	10/1/65	1/8	Arco - 50% Exxon - 50%
28349	T10N, R16E, U1 Secs. 29, 30, 31, 32	2523	9/1/65	1/8	Sohio Petroleum Co. - 100%
34521	T12N, R15E, U1 Secs. 29, 30, 31, 32	2459	4/1/67	1/8	Arco - 50% Exxon - 50%