

* * * * *

* * * * *

* * * * *

* * * * *

* * * * *

* * * * *

* * * * *

M I N U T E S

* * * * *

HOUSE SPECIAL COMMITTEE ON ENERGY

* * * * *

MEETING

* * * * *

February 26, 1974

* * * * *

* * * * *

* * * * *

* * * * *

CHAIRMAN:

Robert L. Hartig

* * * * *

* * * * *

COMMITTEE MEMBERS:

* * * * *

- Mildred Banfield
- Terry Gardiner
- Phillip Guy
- Richard McVeigh
- Richard Randolph
- I. Lavell Wilson

* * * * *

* * * * *

* * * * *

* * * * *

* * * * *

* * * * *

SUBJECT:

Industry Review of Exploration and Drilling
Activities in North Slope, Cook Inlet and
Gulf of Alaska.

* * * * *

* * * * *

* * * * *

* * * * *

Legislative Reference Library
Legislative Affairs Agency
State Capital
Pouch Y
Juneau, AK 99811

MEETING
HOUSE SPECIAL COMMITTEE ON ENERGY
February 26, 1974

Present at the meeting were Chairman Bob Hartig, Speaker of the House Tom Fink, Representatives Richard Randolph, Richard McVeigh, Terry Gardiner, Mildred Banfield, John Huber and Glen Hackney; John H. McKeever - AMOCO; Bill Fackler, Deputy Commissioner for Dept. of Natural Resources; Dave Rainey - El Paso; and W. W. Hopkins - SOCAL.

Chairman Bob Hartig called the meeting to order at 5:15 p.m. He said the subject of the meeting was industry review of exploration and drilling activities with special emphasis in the areas of the North Slope, Cook Inlet and Gulf of Alaska. He introduced the first speaker, Mr. John H. McKeever.

MC KEEVER: He is employed by AMOCO Production Company, staff geologist and exploration representative in Alaska. He has been employed by AMOCO for 25 years, working in western Canada and northern Rocky Mountain area and the past eight years he has been in Alaska. He served as an officer in several geological societies. At present, he is President of the Alaska Geological Society and Chairman of the Exploration Subcommittee for Alaska Oil and Gas Association.

Mr. McKeever said he would speak on how oil and gas are found and how it occurs in the earth; decline in exploration activity and some of the reasons for it and some of the problems that affect gas exploration in Alaska at this time.

Oil and gas are naturally occurring substances found within sedimentary rocks within the crust of the earth which have been made by decaying organic material and the influence of heat and pressure.

In order for an oil gas field to exist, three conditions are necessary:

- 1) It must be a suitable organic, rich source rock which at time of formation included a high amount of organic material from which oil or gas eventually evolved.
- 2) Reservoir rock, sufficiently porous that oil or gas may accumulate in significant quantities and sufficiently permeable that oil or gas may move through the connected pore spaces in the reservoir rock to the bore hole. Oil does not occur in large unbroken accumulations in the earth, oil is in these porous rocks. (Limestones, sandstones and conglomerates). Pore spaces in rocks are almost always filled with fluid, usually with water but rarely with gas. The oil or gas generally migrates through mostly water-filled pore spaces in rocks of the earth's crust from a point of origin in the source rock to the reservoir rock in accordance with hydro-dynamic laws. In other words, gas floats on oil and oil floats on water.
- 3) There must be a trap. The reservoir rock must be sealed so that natural lateral or vertical migration of oil or gas out of the reservoir rock is no longer possible. Vertical seals should have a tight rock above a porous rock.

Lateral seals are formed by upwarping or doming of the strata so that oil or gas, because of their low density, will rise to the top of the dome. Outward migration cannot occur and the oil or gas becomes trapped. This is called a structural trap. Sometimes the rock layers break and slip. This break is called a fault and when the movement is such that the reservoir rock is placed next to a non-porous or impermeable rock against which the oil or gas may be trapped is called a fault-trap. Often naturally occurring changes in the composition or texture of the rock itself will result in the lateral condition from porous and permeable rock to a non-porous impermeable rock barrier which oil or gas may be trapped. This is called a stratigraphic trap.

Oil and gas well-drilling in the submerged area of Cook Inlet is demonstrated at present as source rocks, a number of reservoir rocks and a number of traps which are either structural traps or fault traps. Off-shore drilling in Cook Inlet has resulted in the discovery of a number of oil or gas fields, one of which is a giant field with initial reserves of over 500 million barrels of oil and there can be no doubt that the area both on and off shore is an important oil and gas province. There is no certain method of locating oil or gas fields directly, but by applying the results of geophysical studies, the chances of successfully finding oil may be substantially enhanced. The geologist relies on observations made and information gathered from field offices and laboratory studies. One of the most obvious indications of oil or gas is the presence of oil or gas seeps since they represent oil or gas reservoirs with no vertical seal. It was the instance of seeps near the shores of Cook Inlet that drew the interest of geologists in the area. Oil seeps have long been known to exist on the I. Peninsula and have been reported along Fish Creek in Anchorage and Fire Island and near Knik. Gas seeps associated with coal beds are present near Anchor Point in Homer. The geologist also studies the rocks adjacent to the waters of Cook Inlet to determine their suitability as source and reservoir rocks. It can be demonstrated that similar rock sequences by age, by fossil evidence, by composition and by texture are present on opposite sides of Cook Inlet. A reasonable inference can be made that has been proved by drilling that the same rocks are exposed on land on either side of the inlet extending beneath it; thus, the hemlock conglomerate which is the main oil-producing rock sequence on the oil field on the east side of Cook Inlet extends beneath Cook Inlet. It uses oil at MacArthur and a number of other oil fields and is encountered on wells on the west side of the inlet. Wherever it is encountered in Cook Inlet, the age, composition, texture and other physical characteristics of the hemlock conglomerate are similar.

Once drilling commences, a broader spectrum of information becomes available. The well cuttings or well cores may be examined. The geologists may extract fossils from them for age correlations. He may measure the amount of oil or gas contained within them. He can observe their structural attitudes, he can measure their electrical radio active sound transmissibility and other physical characteristics, all properties important in structural and reservoir evaluations by means of electrical and other logging devices. In short,

he obtains stratigraphic information. Drilling information is obtained in three general methods:

- 1) core drilling, shallow holes drilled with light equipment;
- 2) stratigraphic tests drilled through one or more horizons for stratigraphic data.
- 3) an expandable well drilled to the...to evaluate its productive capabilities. (This is most commonly done off-shore.) For, even if oil should be recovered, the expandable well may be plugged because it was drilled solely to determine if there were reserves sufficient to justify the economics of the setting of a platform or other permanent producing facility from which producing wells can be built.

There are three main types of geophysics:

- 1) seismograph work;
- 2) gravity meter work; and
- 3) magnetic work.

They all measure properties of the earth's crust. Seismic work is probably the most widely done in Alaska and probably the most reliable. It can be done on land and water from boats. It is really pretty simple, a charge, an energy source is released at the surface or near the surface of the ground. The energy goes down into the earth, reflecting horizons and bounces up to the detector. The time it takes the seismic energy to make that round trip can be converted into depth and that gives you an indication of the depth of the reflecting horizon at that point. You may find a reversal or an area where the reflecting horizon is shallower than where you started. This would be a structural high that I mentioned is a good place to find oil and gas trapped. The magnometer survey work is the variations in the earth's magnetic field and seems to be a little better suited to mineral exploration for oil and gas exploration. The gravity meter surveys the variations in the earth's field and if you can find an area where the gravity field is somewhat less, you may have a structural high and one of the biggest hazards to gravity work is that no two geologists or geophysicists will agree on its interpretation.

The Gulf of Alaska is an area of considerable petroleum potential. (He put up a map, showing the potential oil and gas provinces.) What the geologists need is an area where sedimentary rocks are believed to be present and where the surface evidence is such that source rocks, reservoir rocks and possibly traps can be predicted within the basin area. Petroleum exploration in the Gulf of Alaska dates back to the late 1800's and this interest was prompted again by the number of seeps in the off-shore coastal belt. Over 100 oil and gas seeps have been documented and several cycles of drilling exploration have taken place into the present during the period 1900 to 1933.

Off-shore drilling off the Gulf essentially began in the 1960s and is called geophysical surveys. Marine seismograph operations are quite expensive. It might even be as much as 500 or 1,000 or even more a line mile so it is customary for companies to pool their resources and pay one contractor to conduct surveys for them. They do not share the fruits of the information; everybody has an area where competitive bidding is anticipated. The bidding is not joint bidding (it is every man for himself) although two or more companies may join together to bid on particular tracts. In the area, 32 companies have participated in geophysical activities. They have conducted about 75,000 line miles of high quality seismic data and some of these seismic studies were initiated by the U.S. Geological Survey. In addition to this, some people have done air-borne magnetometer, ship-borne gravity meter surveys. Some companies have even looked at the bottom of the Gulf of Alaska itself from small submarines. In the summer of 1971, the U.S. Geological Survey, 19 company groups completed a shallow sea-floor coring program in which 60 holes were drilled, according to a maximum penetration of the ocean bottom of about 300 feet. This was done for the acquisition of scientific data. As soon as the wells were cored to their maximum depth, they were plugged.

The major part of the geophysical data that has been acquired is held widely throughout the oil and gas industry and, in fact, the U.S. Geological Survey has got most of it. The area suggests that it has a high hydro-carbon potential within the designated sale area of about 50 large anticlinal structures which are considered capable of trapping hydrocarbons.

I think the oil and gas industry is ready for sale as soon as possible and they have the capability and the equipment to safely drill and produce oil and gas in the Gulf of Alaska.

FINK: (bad tape area) Tom Fink asked questions about the state and federal lease lands.

RAINEY: There is an awful lot of state land and federal land still leasable...a lot of it has been leased also. Texas has some but not as much as Louisiana.

FINK: Is there a pattern in the State general lease after the federal government or before the federal government - or is there any pattern?

RAINEY: No particular pattern as far as I know.

FINK: Does industry show any desire for the State to lease? You mentioned you were nominated to Secretary.

MC KEEVER: The Secretary of Interior asked for nominations of OCS lands. The State has held sales on off-shore...The State leased its lands in the three-mile area around Middleton Island and that is where the well that I referred to was built (in 1970).

FINK: And that is in the block that you were talking about the federal government being interested in?

MC KEEVER: At that time, that was in the nomination area, Middleton Island is the...

FINK: But that's not the area you said the Secretary was talking about.

MC KEEVER: I've forgotten the name of the area.

FINK: Has the State leased all this land from the Gulf?

FACKLER: No, very little. We did lease or open for lease in the Yakutat Bay. There wasn't much activity.

MC KEEVER: Of course, activity interests change, you know. That was many years ago and we didn't know quite as much about the country as we do now. It's entirely possible that the State could lease Yakutat Bay.

HARTIG: What indication do you get from the hearings that were held last summer, environmental hearings in the Gulf of Alaska, to indicate that some recent action the federal government should take now.

MC KEEVER: I can't speak to that but I have heard that the CEQ report on the Gulf of Alaska is due to be issued in April this year and this has encouraged some people to believe, possibly there will be another call for nominations in the Gulf of Alaska before OCS sale to be held possibly next fall or the fall of '75. I have no basis to believe that will happen.

HACKNEY: Has satellite scanning been used at all?

MC KEEVER: Yessir, we refer to the earth satellite. It paints with such a broad brush, so to speak that it doesn't seem to be able to define the really, rather small areas that are potentially oil and gas fields. Most oil fields are really not very big, area-wise - Prudhoe Bay is an uncommon exception. MacArthur River field, which happens to be offshore of Cook Inlet is only about three townships in area, that is, it covers parts of three townships. The satellite pictures will not reliably find an indication that there is an oil field, although the satellite information is extremely valuable in determining major geological trends and patterns and we pick up sedimentary basins, for instance. Some of the geophysical data has suggested that there are perhaps as many as 50 anticlines in the area and some of them are so large that they are considered to be potentially capable of holding perhaps a million barrels of oil.

The reason for this concentration of activity in the general vicinity where Federal Bay has been found, in recent years is because State land is restricted to that area and there has been a freeze on federal leases since 1966 so the leases that have been applied for were not issued. The area has an extremely high potential for its strategraphic structuring for both oil and gas beyond the Federal Bay area and beyond the earlier discoveries in NPR4. One thing that might be mentioned in connection with Umiat oil field is that there has been a lot of loose talk about the reserves of the Umiat oil field but when the Navy closed

the field out in '54 they concluded that there were between 30 million and 100 million barrels of oil in the Umiat. Nothing has happened since then to make a geologist change those reserve estimates. You've seen some pretty substantial increased estimates of gas and oil in that field in recent months. The area in the North Slope is about as big as the State of Nebraska and there are 210,000 _____ rocks, including those that could provide the source and the reservoirs for oil and gas. There are oil seeps in the area and oil shales which occur at outcrops all testing to the oil-bearing nature of the country. I think one thing that also might be mentioned is that it's not unlikely that there may never be another Federal Bay found. Federal Bay may be a unique accumulation as far as oil and gas are concerned but there is no reason why fields of different nature may not contain large quantities of oil and gas. I think we might look at the overall potential of the State. (He puts up another map.)

(Poor tape area) Using State figures, they believe that the State has remaining undiscovered within its boundaries approximately 74 billion barrels of oil and 423 trillions of cubic feet of natural gas. They believe that 10-1/2 million barrels of oil is covered so far within the boundaries of the State and 29.7 trillion cubic feet of natural gas. They believe that only half a billion barrels have been produced and 6/10 of a trillion cubic feet of natural gas have been produced, so you can see that the State calculations are somewhat conservative. I find nothing to disagree with them about. I think they did a good job of inventorying the potential of oil and gas reserves of Alaska. Mind you, these are potentials. There has to be a lot of things done before this potential gets converted into the kind of gasoline that you can pump. First of all, you've got to explore for it, find it, find favorable place to drill, then drill. Should you make a discovery you've got to get your product to the market place, so just saying that we have all this oil and gas really doesn't mean that we have it at our fingertips. Now, at the present time, the exploration in Alaska is at a low and there are a number of reasons for this. Just as an example, for instance, in 1969 there were 127 crew months of seismographic work with marine and on land in the State. In 1972, there were only 37-1/2 crew months which is a decline of almost 75 per cent. In '69, I believe the Division of Oil and Gas issued 122 drilling permits and in 1972 they issued 31. Again, a decline of almost 75 per cent and the reason for this is primarily that the fields that have been discovered earlier have been pretty well drilled up, no more development wells were needed and it has been increasingly difficult to acquire new leases in the State, both from the federal government and some areas from the State government so that places where the industry can explore and can drill have been somewhat reduced. Another problem that we see here in Alaska is that the complex pattern of ownership of State and federal lands has made it very difficult for people to do almost anything. I mean everybody, not just the oil business. There are only small areas that are open for leasing but the Secretary of Interior is not issuing oil and gas leases in Alaska at this time, so that doesn't give anybody much room to run.

GARDINER: What's the restriction on all the off-shore lands, a lot of the basins you pointed out that were in the first category would

be in the off-shore lands?

MC KEEVER: Those are lands that are part of the outer-continental shelf and those lands are controlled by the special office of the Bureau of Land Management and in order to have a sale on the outer-continental shelf, the Secretary of Interior must determine that it is in the national interest to do so. Then call for nominations, he must file an environmental impact statement. So far, he has not seen fit to call for a sale on the outer-continental shelf lands.

FINK: That's beyond the three miles then. The first three miles the State can still lease?

MC KEEVER: If the State Division of Lands so desires.

FINK: It definitely all goes to the federal government, right?

FACKLER: OCS, yes.

MC KEEVER: There is (correct me if I'm wrong), there is no revenue tax.
(several voices all at once)

HARTIG: John, what's the significance of that CEQ hearing that we had then, is that a preliminary type of statement or federal government or is that just a review to find out if there is any interest or...

MC KEEVER: If the CEQ determines no harm will be done by having this sale of outer-continental lands for a certain area then the Bureau of Land Management will proceed with getting the sale organized.

HARTIG: Do you still have to have the environmental statement?

MC KEEVER: As I understand it, yes, but I may be wrong as to that, too.

HARTIG: Is anyone doing anything about that right now?

MC KEEVER: Well, in Cook Inlet the Corps of Engineers seems to be responsible for making an environmental impact statement and they are working on it. They have promised it won't be ready until fall of this year.

FACKLER: It was originally going to be ready in 1972.

MC KEEVER: Here's a rough draft of it right here.

HARTIG: Is there any way that you can request for the environmental study to be conducted or at least started prior to the time of the nominations?

MC KEEVER: I think that in the case of outer-continental shelf land, the environmental impact statement will have been overcome by the time nominations are called for. You see it's not the responsibility of the person who wants to buy the land to make the environmental impact statement, it's the responsibility of the administering agency. At least as I understand it.

HARTIG: I'm wondering, John, if we know eventually that that is going to happen, why aren't we working on it right now. Why does it become a burden after the nominations and delay it that much longer?

HOPKINS: They have another specific area that they are going to be addressing besides the environmental impact statement.

HARTIG: Can it be done on a mass basis?

HOPKINS: Mr. Chairman, this is in respect what the Corps is doing. The Corps of Engineers has divided the State into 14 general areas where they would anticipate the future need for any environmental impact statement. They are starting with Cook Inlet and I don't recall which other one they give priority to but they already have done the preliminary drafting of the environmental impact on Cook Inlet and that is the one that they expect to have all their EIS work done by fall. I think Bristol Bay is another one that is first on their list and another 11 to go through and that is all before there have been any nominations.

HARTIG: I remember in 1969 we did make recommendations by the State and set these priorities. I am wondering, though, if we can get more people on it. Let's not wait..if we recognize the priorities, let's do all of them.

HOPKINS: The EIS work that the Corps is doing, of course, for that land shoreward of State lands to the outer-continental shelf.
(several voices at once)

MC KEEVER: There is an oil industry group called the Gulf of Alaska, Operator's Committee, which is charged with preparing testimony (information) for input into the EIS in the Gulf of Alaska at such time as it becomes necessary to put it altogether and actually quite a bit of the research has been done in such things as commercial fishing and anadromous fish and oceanography and the various problems that people can anticipate. They prepared the statement for the Counsel on Environmental Quality last September and this is their statement in part. The oil industry is doing its homework in that area, no question about it. Some other problems that we have are that in many instances where regional corporations or village corporations may eventually acquire deficiency lands, the BLM has not given title to the land and not given patent to the land but by the same token, the BLM is no longer managing the lands as they used to and this causes some problems in access from time to time. I have a feeling that they will go away by the time the selection process for the various native groups have been completed. Another problem that we run into, and I guess everybody has this problem in various degrees, is that just the large number of state and federal agencies that get into the act. We are presently trying to get a permit to drill the well in the State and we had to get 31 different permits from 10 different agencies before we could really get started and I think it would be nice if we could cut that figure to 25.

BANFIELD: Is there much money involved in these permits?

MC KEEVER: The only money really involved is perhaps a \$10 filing fee and \$100 fee for a drilling permit and radio licenses probably might be \$10. It isn't much money, but it is a lot of time.

BANFIELD: It is a nuisance amount of money, in other words?

MC KEEVER: I doubt the money that the agencies get would pay for the cost of processing the papers.

RAINEY: I think it might be interesting for the Committee to know that they are dealing with the energy spectrum. There are 61 different federal agencies or boards that have something to do with energy.

HOPKINS: It doesn't count the ones that may have been formed today.

MC KEEVER: Another problem that seems to be arising is that some people are concerned about the possible impact of exploration of the proposal by the State Environmental Protection Agency, the Environmental Conservation Division, to regulate very stringently the opening of gravel pits. This could be a very real problem, especially in the Arctic because of the perma frost. The only way you can drill a well, the only way you can build an airstrip is by using gravel from the rivers or roads. These regulations are now under public hearing. They are going to be next week in Anchorage and I am sure that they will be held here in the near future.

Another problem that very seriously affects the interest of an operator who is concerned about whether or not he should dedicate so much of his exploration or production budget for Alaska or should he put it in some area of taxation. There is no question that some of the fluctuations in the State production tax, which have kept some people from drilling some wells, and also have an unfortunate effect of keeping oil in the ground. In other words, if the tax on the product goes up with the price, you may prematurely abandon your well. It also may have an effect on bonus returns from the State from the sale of oil and gas leases.

HARTIG: I would like to know if you were given the go-ahead in Cook Inlet right now, how long would it take before you could drill your first well?

MC KEEVER: If everything else was even, if all we had to do was go to the Division of Oil and Gas and get a permit..we're talking about a marine operation and off-shore operation...Well, one of the problems of drilling in Cook Inlet is that there is an extreme shortage of marine drilling vessels. I understand that one company has a permit to obtain a vessel in August of this year so that would limit you in Cook Inlet or perhaps elsewhere in Alaskan waters at this time but this situation could change next year. It's possible that more drilling vessels may be made available. To get started on a land location, say in the Kenai Peninsula; why, if I had the go-ahead tomorrow morning I would be moving something in the way of earth by tomorrow evening one way or another.

HARTIG: How about Kachemak Bay, there is a question there?

MC KEEVER: Kachemak Bay is the area where Shell was seeking to put to work the vessel that they had contracted beginning in August and

I do not know what other problems they may have. I know there is some question in some people's mind of whether or not an EIS is necessary for an exploratory well, just a one-shot operation, and I have heard that the people who decide are getting to lean toward the view that it is not necessary so it may be that Shell would have no problems. They may be able to start working on it.

HARTIG: How recent was that work done in the Gulf of Alaska and also in Cook Inlet?

MC KEEVER: Well, last winter in the Gulf of Alaska, the vessel worked all winter long out there and last fall in lower Cook Inlet.

HARTIG: It's recent enough that you could accept it without too extensive a follow-up?

MC KEEVER: The only limitation in seismic work in Alaska is the presence or absence of ice.

HARTIG: You mentioned that there would be some structures in the Gulf of Alaska that will be on State land but most of them occur beyond the three-mile limit.

MC KEEVER: Well, I would really not want to answer that, but the State didn't get left out, I'm pretty sure.

HARTIG: Have you thought where your base of operations would be if you did decide to operate in the Gulf?

MC KEEVER: Well, a lot of people have considered this, of course, and about all I can say is that the 1971 drilling program, where two drills were working out there, Seward was used as a base for operations. The reason for this was it was on a highway that linked with the supply centers at Kenai and Anchorage so that when they needed some equipment, they could have it delivered to the dockside. It is possible that with successful exploration and production in the Gulf of Alaska, some consideration would possibly have to be given to possibly Cordova or Yakutat but I don't think they need to consider at this time. Both of those towns have good harbors (Yakutat better than Cordova) but both of them have serious drawbacks - I mean no facilities. They don't have the cargo landing and they don't have the transportation and the rest of it that would be desirable.

FINK: Yes, the Cook Inlet one, do you project any increased drilling on the North Slope in the near future?

MC KEEVER: Yes, as soon as the question of land ownership is highly resolved. Right now on the North Slope, the bulk of the...well, the State has issued leases from the very darkest blue at the top of the map. Most of that area has had wildcat areas drilled but some distance from Prudhoe Bay. They have not been successful so it is possible that the Prudhoe Bay accumulation is the only one in that dark blue area. There has been quite a bit of drilling in the light blue area, south of it, and I believe that two gas fields have been found as a result. That land is presently nearly all under federal

lease but the State can select it and so when the federal leases run out (which they are now doing), the land, the minerals are returned to the State and the State has not yet had a lease sale in that area. In the pink areas there, to the east and west of the pipeline corridor route, most of the land is still held by the federal government under leases issued in 1964, 65 and 66. Those leases are rapidly running out. In other words, they are 10-year leases. Because of the status of the land tied up in the deficiency areas, the land freeze still applies and the leases once they expire will be lost until the ownership of the land is finally resolved and then if the land remains in public domain, not included in one of these vast withdrawal areas, then it is possible that the Bureau of Land Management will issue the lease. If the land goes to one or the other of the Native corporations, I strongly believe they will be interested in the development of their resources and they will bring us rights to enter on it for both oil and gas in some areas.

FINK: What about off-shore then by boat?

MC KEEVER: The State owns out to the three-mile limit and the rest is continental shelf and that presents some operating problems, that I don't feel I am qualified to talk about because I don't know the status of the art in overcoming them. But, there is no doubt that there could very well be some oil and gas accumulations out there but exploiting them might be kind of tough. I notice that in the McKenzie River Delta the Imperial Oil Co. built an artificial island and drilled successfully to about 8,000 feet just this winter and everything went fine. All it took was money. The same thing might be done off the Beaufort Sea.

FINK: You don't know of any plans of anybody?

MC KEEVER: No, sir. The Atlantic Richfield people have permitted a well to be bottomed about a mile off shore but they are approaching it from a land location so it is just a routine operation.

HOPKINS: Of course, there are interest areas, aren't there, John?

MC KEEVER: There is a great deal of geophysical data gathered. In fact, there has been two group programs altogether, probably about 5,000 miles of seismic work conducted in that general area north of the blue country there. The people have done seismic work with field equipment on the ice and people are interested in it and what I really think they are trying to do is to gather data now so that they can have a reason to continue the research on solving the operational problems.

FINK: Well, as I understand it, some of those leases are going to expire off-shore if they don't drill them. I think they have to drill them.

MC KEEVER: There are only a few state leases off-shore. There are no federal leases off-shore. State leases will run until '79, I believe. and it is possible that nearly all of them can be reached from an onshore location or an island location. I know my own company has some leases that are off-shore and have no land on them. We hope, if and when we decide to drill, we will be able to reach

them from the land location. People, perhaps, don't understand that it is possible to drill an oil well crooked. In other words, you can start at the surface and you don't have to go straight down, you can go sideways. In one case in Cook Inlet, they ended up 10,000 feet sideways from where they started.

FINK: Do you have any environmental problem up there right now. I know one company that does have. I'm sure you do, too.

MC KEEVER: Environmental in what way, Tom?

FINK: He tried to drill off the north coast of Alaska.

MC KEEVER: You mean an environmental problem because it is cold and icy.

FINK: No, because the Corps won't give them a permit.

MC KEEVER: I wasn't aware of that.

BANFIELD: Was that environmental, or just the Corps?

FINK: The Corps wants an environmental statement.

BANFIELD: They don't have any environmental reason for denying it, they just want a routine impact statement?

FINK: They seem to be willing to grant an exploratory, they may be willing.

HARTIG: Isn't there a problem on it that they would have to do some earth work?

FINK: Bulkhead around the island? Why such a shortage of oil permits?

MC KEEVER: Because everybody is looking for oil, worldwide, and just about any place that seems to be the least favorable for oil and gas is undergoing a surge of exploration activity.

FINK: How much drilling has to take place before the 1.2 billion barrels can go into the pipeline when it's supposed to?

MC KEEVER: I really don't know but I've seen some estimates that may be...well, I'd better not say. I don't even know how many wells there are up in Federal Bay right now, close to 85 or 90, but I may have overstated.

HOPKINS: A real general answer to that is about a three-year drilling program.

FINK: So you're going to be building wells all the time you're building the pipe.

MC KEEVER: Yes.

HARTIG: Do you have the rigs available? How many actual rigs do you think you have operating?

PACKLER: Six, maybe.

MC KEEVER: It only takes about a month to drill a well up there. 640 acres facing, except the one operator that was building a lot of wells, British Petroleum, has applied for and received 350 acres facing in some areas because of reservoir conditions.

HARTIG: How about if the State were to lease to you some of those off-shore islands, in the Beaufort Sea, would that be of any assistance?

MC KEEVER: I think, depending upon where they are, it might be of considerable assistance because you would in effect have a ready-made platform.

RAINEY: Part of the problem right now is the technology, John mentioned, is that they can't drill off-shore with the ice cap up there. The ice shifts, if it stayed steady, if you wipe a rig out, going through that ice as it shifts, you shear the dang thing off and they haven't beat the technology of that yet. If you can build an island or lease on an island, you can drill there.

FINK: How far out can you whip out from an oil well?

MC KEEVER: As I said, in Cook Inlet, the record is about 10,000 feet, total depth 17,000.

FINK: You can't whip out three miles? (several voices at once)

MC KEEVER: The deeper the well, the farther you can go sideways. I think you can build deviations as far as 80 degrees from vertical.

FINK: The 10,000 foot well, how far out can you drill?

MC KEEVER: Objective depth 10,000 feet. Probably the same as Cook Inlet, two miles.

RAINEY: If you don't have to do it, you'd better not do it.

BANFIELD: Why did they do it in Cook Inlet?

MC KEEVER: Well, there were only three platforms, yet some of the productive area was not being adequately drained by the existing wells and so the only way to get the oil out of that particular tract was to build sideways afterwards.

HOPKINS: If you were on land, you would probably try to get over it. Out there, you would have to build a 20-million dollar platform to get over it.

MC KEEVER: The location of platforms is always kind of a problem because you can only set them in water depths up to a certain depth and keep your costs at a reasonable figure and so, unfortunately, the three platforms are all on the west side of the field and almost all of the wells are inclined to some extent or another.

HARTIG: Do you envision that the industry is going to be busy this summer with what they have, except they are not going to see any new exploration.

MC KEEVER: There will be considerable amount of marine geophysical work. There will not be too many oil cap wells built.

HARTIG: I understand that there have been some agreements that have been entered into between the Native corporations and industry concerning exploration. Is that exploration going on now or will it be started next summer.

MC KEEVER: To my knowledge, it's going on now in one contract area and in two contract areas, we'll probably continue through the summer.

HARTIG: These lands that have been selected by the Natives, they haven't been patented, have they?

PACKLER: They were withdrawn for Native selection.

HARTIG: It's not like they're exploring on BLM land or...

(Areas pointed out on map) (Several voices at once)

MC KEEVER: We will spend x dollars doing geophysical and other exploration work on your lands in return for which when you select we will tell you what to select and you will give us the first right of refusal of an oil and gas lease at a figure which is satisfactory to us.

HARTIG: Does the BLM get theirs in the same situation. Assuming they don't select all the lands, and some of it still remains with the federal government, but you may be condemning the land. In other words, you aren't getting anything for it. It doesn't seem right.

MC KEEVER: You are condemning the Native lands?

HARTIG: They are not going to select the land that you condemn, they will select the land that you recommend. What I'm saying is, in effect you condemn the federal land. (several voices) Then you go ahead with the contract which obviously won't be to their benefit.

MC KEEVER: I don't believe the federal government is entitled to file an objection.

HOPKINS: BLM lets you explore on their land lots of times and every time you have an exploration, you condemn some land. You hope that what you find is going to be to their benefit.

FINK: You haven't indicated...that there is anything that the State can do to expand drilling exploration or anything, is that right?

MC KEEVER: That's true. I feel that the problems are only partly under control of the State government. The biggest problem is the availability of land, both onshore and offshore, in which we can hope to find oil. The State could probably do most, I think, by fighting these withdrawals and by urging that sales of outer-continental shelf land be expedited and possibly by expediting their own program of oil and gas lease sales.

FINK: I feel that the three miles all around Alaska is a hell of a lot of territory. Can't any of that be opened up to drilling be of any assistance?

MC KEEVER: It would certainly be interesting, you bet it would and this is something that perhaps is within the purview of the Committee.

HARTIG: Should we be encouraging the government, if the Corps of Engineers is going to enter into this thing, eventually, is it our best interest that we start on this...If it takes a lot more people, let's do it and so when we finally decide to lease we aren't told that it is going to take another three years before engineering gets going and that it's a low priority.

MC KEEVER: Well, these should not be low priority.

HARTIG: I'm surprised they are not doing the whole State. If we can survey the State on land, we ought to be doing something out there.

FINK: They are supposed to be working on...I think the State asked them to break it up.

FACKLER: They couldn't really handle the whole thing in one statement either because of the differences.

RAINEY: I think another important point for the Committee to realize is not just land or even money but there is an awful shortage of driven rigs, off-shore rigs, pipe (both casing and drill pipe), etc. An announcement was made about a month ago that there were several hundred wells that were not drilled last quarter ('73) because they couldn't get the material to drill them.

BANFIELD: Is there also a lack of professional manpower?

MC KEEVER: I don't really think so but there is a shortage, a worldwide shortage of skilled drilling people, but I don't think we see this particularly in Alaska yet because our drilling activity has been so low and, of course, when things were better in '69, there were a lot of people that learned the skills involved in drilling wells and they have remained and they need a job now. So...

HARTIG: The Oil and Gas Journal advertised for openings for geologists and petroleum engineers where...in the last year.

RAINEY: I think it is interesting also, that there has been a steady decline in drilling since 1956. At that time there were 2500 rigs - at last count there were only 1300 rigs available worldwide.

FINK: Some oil people made a statement in lower Cook Inlet in 18 months you could have something onstream if you had the go-ahead.

MC KEEVER: I doubt that very much. I think that's an optimistic statement because in Cook Inlet, for instance, the first oil well was found there in 1962 and the first oil flowed into the refineries in 1965 or 1966. I mean there is a lag time because the equipment that's needed has to be bought, ordered, designed, paid for, put together and in those days the supply of simple little things like electrical wire was no problem but today it is. We're buying well-head equipment now and ordering it for delivery in September. We used to be able to call up the supplier and he'd say, do you want it this afternoon or should I get it over before lunch.

HUBER: What advantage to the State of Alaska is there to expedite off-shore land lease sales while the State has no share in these lands? Would we be better off to concentrate our limited effort toward development where the State will directly profit?

MC KEEVER: That question has come up in areas where off-shore production is going on and I think that the State would benefit in the sense that it will have residents to tax, business will be generated. I agree that at this time there is no direct return to the State.

HUBER: I was talking about directing our efforts towards the most benefits.

MC KEEVER: Well, if you do that then you must think about leasing State lands and producing oil from State lands on which the State will receive royalties and production taxes and on the issuance of leases and the State will also get the bonuses when the leases are sold. But if you are looking at an overall and long-range solution to the problem, then eventually oil and gas of the oceans near Alaska will have to be tapped or, I should say, certainly should be tapped.

FINK: There isn't any particular reason to believe that the oil starts three miles out, is there?

MC KEEVER: No, heavens no. If the first well is 3-1/4 miles out, then that is three miles of land that you have handy.

BANFIELD: We Alaskans always say, you know, that all the minerals are three miles to the other side of the Canadian border, so maybe it is the same thing with this.

FINK: We have the three-mile line, plus we can run under it 10,000 feet. He doesn't seem to be too excited about any of our off-shore stuff and that really surprises me.

MC KEEVER: Well, I'm excited about it but what can I do about it today. I can't buy it.

FINK: You can indicate that you think the State ought to put some of it up for lease.

MC KEEVER: I have, at least I thought I had.

FINK: Well, when we asked a question, he said - well, it might be a good idea, but well...

BANFIELD: He smiled when he said it, that was excitement.

HOPKINS: You've never seen him when he's really blase'.

HARTIG: I was beginning to think we'd have to look into the regassification of coal and a few other things.

FINK: What is the significance of Exxon's well at the east end of our land?

MC KEEVER: Prudhoe Bay?

FINK: Alongside the Arctic wildlife area, down by the Canyon.

MC KEEVER: I believe that's being drilled on federal lands. It offsets land on the wildlife refuge, nearly offsets them. I think it's another attempt to find another oil field geologically situated at Prudhoe Bay.

FINK: Is that federal or state land?

MC KEEVER: It's not very far from _____ gas field and that's federal land. I believe it's federal land. I don't think there any any State leases down in that land, except possibly the State may claim the Canning River water bottom.

FACKLER: We've had a legal problem with that, too.

MC KEEVER: I think one has been up just recently in that area.

HARTIG: Was this land selected by the State?

MC KEEVER: It's in that lighter blue area on the map.

FACKLER: We'd hope to get that pretty fast, though, with that new system requiring survey around all of it.

FINK: Is Exxon oil in that light blue area up there?

FACKLER: The Canning River was apparently part of the big public land withdrawal in the whole Arctic part of Alaska, also Alaska Peninsula. When Seaton created this National Wildlife Range, he created it first and then withdrew the old PLO number so the river was never opened for navigable water determination. They're filed the same date, the same time, but the old PLO number was after the others.

There being no more questions, Chairman Hartig adjourned the meeting at 9:45 p.m.