OUTER CONTINENTAL SHELF OIL & GAS TECHNOLOGY: SHORT COURSE

~~SHORT COURSE~~ MAY 26-27, 1976

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COMMITTEE ON AGRICULTURE

U.S. House of Representatives
Washington

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We had a few problems starting as you can see so we may be running just a little late. However, I think we'll have time after each speaker for a few minutes to answer any questions that might come up on each particular presentation. As time permits at the close of the presentations we can have a discussion period. Dan has organized the afternoon session so that we have a pretty full schedule. The session tomorrow morning has been set aside for a full discussion including feedback from the audience and through the speakers.

Topic to be discussed is Off-Shore or Outer Continental Shelf Technology-Oil and Gas. This particular group will be most concerned with the institutional factor, emphasizing on non-technical and technical aspects and barriers, social, environmental, economics etc. The sponsors of the conference, University of Oklahoma and ERDA are interested in technology in looking at the whole off-shore picture.

As you know, ERDA is not in the regulation business. ERDA is not in the business of managing the leasing program either. Our mission is to accelerate production of domestic energy supplies and to advance technology by working with the private sector and other state and federal government agencies.

One aspect that stands out in this "whole picture" of Off-Shore exploration is that the energy states are big "off-shore". Dominating the picture of the domestic energy supplies is the off-shore and Arctic oil and gas energy. That's the name of the game, oil and gas.

The technology is complex. There are many problems in the frontier-off-shore areas; deep water, ice, and various other conditions. Not excluding the ongoing usual problems of oil and gas exploration and production. We don't know what kind of program, what kind of activity, that ERDA can best offer to accelerate and improve the offshore oil and gas energy picture. But, we do know we've got to listen and give attention to the concerns, knowledge and ideas from people such as yourselves. That's what this conference is all about and we appreciate you all being here.

First on the program I am going to ask Jim Cooper to put a little background before you on ERDA's energy authorities and priorities and the goals and the mission that ERDA is really after.....

.....From the five areas, we'll first discuss economic growth and energy demands. Then move quickly into energy supplies in the near future and talk about our domestic energy supplies. Summarizing with the status of offshore activity now. As far as economic activity is concerned, off-shore oil and gas is an extremely active area right now, world-wide. Active in that it is a \$10 billion business. Its importance stems from a consensus of virtually all experts that; oil and gas will continue to

play a vital role in our energy supplies through the end of this century. Furthermore, most people agree that off-shore oil and gas will provide a substantial amount of energy. So why is the off-shore so important?

Basically, in the US the off-shore is important because onshore reserves are mature areas; they have been explored and there remains no great reserve now. (they are depleted) Onshore reserves are quickly vanishing. Off-shore offers vast new areas of exploration and possible production.

I will focus on the importance of "off-shore". Perhaps gaining a perspective of how the US is going to meet it's near term energy requirement.

An important factor in making energy supply and demand projections is economic growth and outlook.

There are many uncertainties in projecting energy growth. How do you predict inflation and oil embargos? (Slide presentation)

During the 1960-73 period energy demands grew at 4% per year. As an affect of the oil embargo, consumption decreased in 1973. Due to higher costs, energy conservation and a decrease in economic growth; energy demand during 1975-90 is projected to increase at about 3% annually. But even with this decreased rate we're going to see an increase in energy consumption. Consumption level in 1975 was 36 million barrels of oil per day compared to a projected 58 million barrels of oil per day in 1990.

This 58 million a day is a significant reduction from previous projections. But, it is still a large growth in energy and consumption. Included in the 58 million barrels per day is the rapid growth of nuclear energy. In this projection nuclear energy is expected to grow from 2.16% from 1975 to 1990. A 14% increase in 15 years. Also natural gas, which provides about 30% of our total energy today, is expected to provide about 17% by 1990. A 13% decrease in 15 years. Also the total consumption of gas is expected to decrease due to increased prices and scarcity.

Nuclear energy is still in the bounds of the questionable and unknown. Any long range projections of nuclear energy are always full of uncertainties. Since 1970 new projections of nuclear energy consumption have been reduced with every new projection.

Other sources, the hydro-geo-thermal group, including hydro-electric power, geo-thermal and new energy sources such as solar and wind energy are coming into the picture. The newer energy sources, solar and wind are not expected to become commercially important until after 1990. Hydro-power and geo-thermal energy certainly contribute to generation of electrical power. However, the overall picture in the energy market will probably remain fairly static.

In the case of geothermal energy there are some technological and site limitations.

Look at a quick picture of the world energy supply. The US expects to import 49% of her energy. US gas consumption is higher than most countries while coal consumption is somewhat lower.

Seventy-six per cent of US energy in 1975 came from oil and gas. By 1990 only about 60% of US energy will come from oil and gas. Both oil and gas energy are important in our future energy requirement. But, oil is really the foundation of our energy system.

Where is our oil going to come from? Consider projections of US oil reserves. Oil will remain the predominant fuel in the US. Actually domestic production is expected to decline until a supply begins flowing through the Trans-Alaskan pipeline in 1977 or 1978 from the North Slope. This supply is expected to reach maximum production, 2 million barrels per day, in 1982. Our existing reserves are expected to provide about 22% of our total oil consumption in 1990. Therefore we have a great deal to find. We must find new reserves. Exploration onshore, offshore or in the Arctic must begin soon.

The rate of exploration will have to meet energy demand curves. We're in desperate need of finding oil, new reserves, at a faster rate than we've found it for the past 15 years. That will mean an increase of an additional 3 billion barrels of reserves a year.

In order to meet our needs, we will have to explore frontiers ie. offshore and Arctic.

Today we get about 250,000 barrels a day from cursory or enhanced recovery. Projected growth is 600-650 thousand barrels a day by 1990. In addition to economic incentive for cursory recovery there are going to have to be some technological accomplishments. In order to increase cursory recovery beyond those levels there will have to be economic incentive and technological improvements. By 1985, synthetic fuels from coal are expected to be available. But combined, cursory and enhanced recovery fuels and shell oil, will account for maybe another 6-7 thousand barrels a day.

Where is this oil going to come from? We need to find a lot of it and on a regular basis. There is a need to discover (domestically) some 100 billion barrels of oil per day.

However, you can't really tell what is there until you get out and explore. A good example of offshore exploration is Western Florida. Industry has invested over \$600 million exploring the "Destanatic Climb." They expected to find east Texas-type oil but, there was nothing.

Great expectations and big investment resulted in nothing.

It's estimated by various groups that 60-70% of our oil and natural gas liquids will come from offshore. There is great expense involved in reinjecting natural gas in pressure maintenance. For the present time and for the projectable future, economic return doesn't justify the expense of facilities to liquify the gas, bring it to market or to build a pipeline and bring it to market.

While 60-70% of new oil is "anticipated" to come from offshore, projections show that about 40% of our oil will come from offshore by 1990. It takes time to put offshore fields into production. So, the amount of offshore oil we will be consuming is somewhat lower than what the new oil discoveries will be. Proposed areas for offshore exploration include the Gulf of Mexico, certain areas off the coast of California and hopefully parts of the Atlantic Coast and Alaska including the Baltic Sea. Shell Oil has projected that the frontier areas, the Atlantic Coast, The Alaskan Pacific areas and the Arctic offshore areas could provide, by 1990, 4 million barrels of oil which is needed to take place of depleting sources ie. domestic onshore production. Therefore, frontier areas and exploration and development and technology is going to be extremely important. You can't get around the cost of exploration and development in these areas. Just as the cost of living has gone up dramatically in the last year or two so has the cost of offshore exploration and development. It's anticipated that a 10,000' exploratory well in the Gulf of Alaska will cost \$9-11 million. However, ARKO has indicated that cost may greatly exceed this figure.

To be considered also is the status of offshore development. 55-70% of offshore oil is thought to lie on the Continental Shelf. There is a 200 meter "water gap". The oil industry has worked in this type of water gap for a long time. They have been working in areas with this problem, Gulf of Mexico and California for sometime. There is no significant problem as we move toward more hostile water, Gulf of Alaska, but some technological improvements will be required. Technology must demonstrate that they are prepared to adequately and safely drill and develop the reserves that are found. On the outer edge of the Continental Shelf there is a water gap of about 2,000 meters (6-7,000' deep.) That water depth will include virtually all of the reserves, 85-95%, that are expected to be found off of the coast of the US.

Shell is building platforms to install in 1,000' water. Other technology developments include sub-sea production systems. Mostly, there is a need to demonstrate that this technology is adequate to do the job.

Where does the US stand on "leasing" in comparison to other continental areas? The US has leased only 2-3% of the acreage on the Continental Shelf.

The other Continental areas have leased more. Much of the technology that is being developed in the US and by US countries is being exported for the development of reserves of other continents. There is some 100 million acres on the shelf that is hydrocarbon prone and has potential for oil. In the Bering Sea Shelf there are over 200 million lightly hydrocarbon prone areas.

Technological developments include "mobile drilling" with working capacities for water up to 3,000' deep. Presently there is a drill ship drilling in 2600' of water and there have been other operations in 2,900'. Completion systems and under-water production and manifold systems are being developed. Exxon has a very sophisticated "submerged production system." Lockheed and Shell have developed fixed platforms. One thousand feet seems to be the limit for fixed platforms. Compliant power is also being tested at the present time. Technology is certainly being addressed. Perhaps one of ERDA's roles will be in demonstrating that the technology is adequate to economically and safely continue development of oil.

Of 900 million acres there are only 13 million acres under lease and exploration at the present time. That means there is still a lot of acreage out there to be developed yet. To look at the status of exploration and development in the offshore: There are some 28 areas for exploring and developing. Virtually all of the areas off the US have been looked at in a preliminary fashion. But once you go beyond a gross base evaluation you find that there has been little work in the frontier area. Only in the development of Mexico and upper California do we really come down to production. Even when you get down to this point of exploratory drilling and find major hydrocarbon, it can still take 3-10 years just to finish this part. To plan, to develop, to actually build and install platforms and pipelines, to do the production drilling, to bring the production and transporting facilities in and install them takes a long lead time. Therefore this is something that would really have to be accurate.

As an example of what delays can do in cost estimated is a particular pipeline which I worked on. Initial estimated on it, was supposed to be one of the biggest capitol projects ever undertaken, was \$900 million. I understand now the latest estimated on that completed job are \$6½ billion. I know, I had a boy working up there making \$1,200 a week.

Three hundred feet is just beyond the capability of jack-up type rigs and floating drilling operations must be used. Resulting in a greatly increased derrick. Another problem in floating drilling operations is weather. You've got motion to worry about, whereas the jack-up rig provides a stable platform.

Our new speaker will give us a feel for oil and gas development and discuss institutional or non-technical considerations affecting offshore oil and gas development.

Mr. Dillard Hammell represents SEGCI, one of the leading offshore drilling contractors. SEGCO has many other related firms and activities throughout the world. Dillard is Technical Vice-President of DEGCO and is going to tell us about offshore oil and gas operations.

✓ Mr. Dillard Hammell's presentation:
. I will tell you about offshore drilling in two phases: exploration and developments phases. I'll be talking around the history of what has happened offshore, about some of the technology, about the safety, and the environmental impact of offshore exploration.

Let's move from onshore areas in Pennsylvania, Oklahoma and Texas where we were sitting on solid ground to where an operation 200 miles offshore in 2,000' of water. The waves are 50-60' high, it's a nice environment in this area. These are what we call "frontier areas." The reason we have moved offshore is because the geological formations found on shore or in the shallower water have been depleted. So we have had to move out to these "frontier areas."

Development is booming around the world. Take a look at some of the areas in the Persian Gulf. There are about 150 rigs operating in the Persian Gulf. There are also some operations in South Africa. South Africa has been "off-shore" for 10 years and hasn't found a drop of oil or gas yet. In Nigeria, they have also moved offshore. Then there is the development in the Red Sea, about 37 rigs in total operating in that area. They are also moving into the very expensive development phase. Development cost (in the Gulf of Mexico) \$2 million, \$200 million in the North Sea.

Moving into eastern Canada, wells have been drilled there just 14 miles off the Canadian border. There are 260 wells offshore, the environment is worse than New Jersey, we haven't had one Blow Out; no pollution, no casualties, and in turn not one drop of oil has been found yet!!!

Cost of the offshore rig in the New Jersey-Boston area is also great. One well just off the coast of New Jersey has just been completed. It was completed ahead of schedule, with a savings of \$1 million. The crew has now moved to Boston and should be completing that well in the middle of July. These are the first exploration wells, as such, drilled off the US east coast. There has been a great deal of publicity about the Gulf of Mexico. There are some 1,100 structures located offshore in the gulf. In South America, there are some 30 exploration rigs operating off the coast of Brazil. Another area in offshore exploration is the North Pacific and the Gulf of Alaska.

Discussion for leases in the Gulf of Alaska began in 1966, 10 years later, 1976, the areas have been leased. There will be a number of rigs put into operation there. There is presently one rig being built in San Francisco in a private field. It will leave San Francisco about the 15 of July, for Alaska. Several other rigs will come from Japan. Technology has developed drilling in the Gulf of Alaska. Conditions are a little more severe than the North Sea, especially the persistent weather. Wave heights are not much different and water depths are less than drilling sites in the North Sea. The technology is there. Another area, the Baltic Sea, Frito Bay and the Arctic Island is being developed. Currently there have been six wells drilled off of the ice in the Arctic Islands. This is land-fast ice, about 12' thick, doesn't move much because it is land-fast. The Canadian government has approved the contractors and oil companies to go off-shore. They take a rig and literally move it as if on land out across the ice. They move it to a frozen pad about 30' thick. The well that was completed this summer in 950' of water drilled off the ice was not on a platform, just on the ice. There have been other developments in that area. In the Fuford Sound area are two rigs moving into Canadian waters this summer. Those two rigs have a payroll of about \$180,000 a day.....every day that they are drilling. They have about a 60-65 day drilling season. That makes the payroll over \$10 millions.

There are two phases the industry goes through for a producing well; The exploration phase begins when the seismic says there is a dome. Next step is to go take a look and find out if there is oil. The only way to find out is to drill. The only way to find out is to GO DRILL. You need a few investments to build a fixed platform. First, you cruise around the area with a mobil platform. You don't want to sink \$200 million platform and find out it's a dry hole. Therefore, mobile platforms are used in moving from area to area. There are plenty of these rigs available, about 376 throughout the world.

In regards to exporting technology; we have developed the technology in this country, we are the leader world-wide. Hammell believes that the US leads in two things, oil technology and giving money away. Everyone is grabbing at us to learn about our technology. If we don't open up our exploration offshore we can't export it but someone overseas will. They are developing those lands and territories as fast as we are. A contractor or an oil company going overseas that restricts exporting technology will be faced with no money flowing in form outside countries. It's not a matter of exporting technology, it's using technology world-wide.

Phase one is exploration drilling using mobil equipment to drill into the formation to find out if something is there, therefore if it is economical to go ahead and develop. If something is there you set a fixed platform and

you drill the well out into the formation.

This is something that ought to be concentrated on -- there is a lot of oil and there is a lot of less glamorous things that need to be done today.

But there is plenty of oil and gas off the coast of Louisiana if the right economic considerations are given. You don't have to go to the glamorous offshore things, spending a lot of time and money. In water 300' deep the technology is already there. It's being used every day.

These shallow formations not only require the platforms and the pipeline to shore but also require a lot of lead time.

After drilling, the well production equipment is put on the platform; pipelines to shore. The oil is flowing into refineries and into our gasoline tanks.

We've taken technology since the turn of the 19th century. We've taken drilling rigs, blow out preventers and mud systems and mud pumps. We've taken these and set them on a barge 20 years ago. You put it on a barge and you just finished drilling exploration. As we get into deeper water, 1-200' of water, we use a jack-up mobil platform that goes from location to location with its long legs. When it gets to the site it jacks itself up out of the water. This then becomes a fixed mobil platform. But, again the technology used offshore is basically the same drilling equipment and the same drilling technology as onshore. If we move to the next step, into deeper water with more highly mobil prices of equipment, the finest step is to put a rig on a ship. The ship itself has lots of motions. Workers often get sea sick and can't handle the equipment.

Now to discuss prices . . . a drill ship built 12 years ago was \$3½ million. The drill ship today is \$40 million. Payrolls are running somewhere in the range of \$50,000 a day. This includes your contractor. All total the price of one day of drilling runs in the range of \$80-90,000 a day to operate the contractor and his floating scramble. Moving into rougher frontier areas, the motion of the sea increases. You must use a floating platform.

Due to the distribution of buoyance on the floating platform the down time is de-reased, therefore, permitting you to move into rougher water. This unit costs about \$50 million. They operate in water heads up to 1,500'. There are many of them in use today.

TAPE 3

No longer is a pickup truck driving out to drop off the supplies. The truck has been replaced by a \$5,000 supply boat. It normally takes three of

them to deliver all needed supplies. That's a cost of \$15,000 a day for the oil company for boats to deliver supplies.

When you do find oil, you do a production test, to see how big the reservoir is. Then you plug that well. The cost of plugging the well up is about \$6 million. Six million dollars to say there is oil down there. That is just the beginning of the cost.

To get 1,000 barrels of oil to the beach from the Gulf of Mexico costs \$1 billion and 5 years of time. In the North Sea, to get 100,000 barrels a day the cost is \$2.5 billion and takes 8 years of planning. In Saudi Arabia it takes \$.05 billion for a lot of oil and only 4 years of time. The area there is shallower and there are fewer environmental conditions to contend with. The area calls for less investment resulting in oil out of the ground. Middle East oil flows out at the rate of 20,000 barrels a day per well. In constructing an offshore platform you first build it on shore in a ship yard. You then load it on a barge and take it to the well site.

Every day you work on building a platform costs \$180,000 a day even if no work is done. So if the weather is bad and they don't do anything the base is still \$180,000 to plunk down. The reason that they do so much prefabrication onshore is because of this enormous cost. The platforms are then carried to sea and fully assembled there.

The whole production facility is pressure tested and tested before it goes offshore so as to minimize work on the sea-based platform.

The safety features can be used onshore and offshore.

Depending upon the operation location, practically all pipe lines are laid through the distribution point, the refinery. These lines vary in sizes, 20-54". This layout cost up to \$180,000 a day to lay.

If you can't lay a pipeline because of economics or water depth and there is a calm area of the world then you go to what is called a "single point mooring system." In a single point mooring system rather than laying pipeline all the way to the beach you have an offshore loading station. Some of these have been operating in the North Sea now for 2 years. The efficiency of one of the single point mooring systems is about 80%. In the Persian Gulf area or the Mediterranean efficiency is about 96 %. Cost varies from site to site in relation to water depths, soil types, weather ie. snow and ice.

In an ice-bound environment we find more different types of structures than in non-ice-bound.

If you move into an ice environment, the cost of the structure goes up because of the horizontal loads imposed on it by the ice.

Large amounts of money have been spent by oil companies to develop sub-sea pieces of equipment, to develop equipment, to put well heads on the ocean

floor and put maintenance people down there.

Basically a man likes to keep his head above the water. Any time you put him underwater you have to pay him a lot to get him down there or else change all of the way that you are doing it, making it a completely remote type operation.

We need to continue developing systems and move on to other ways of exploring for subsea type pieces of equipment. One exploration tool that we have today, the floating rig, can drill a well in 2,000' of water. The wells are completed on the ocean floor. They are satellite-type wells with red flow lines leading into a centralized station. From the centralized station they lead to a pencil-type floating structure.

When we get to 6,000' of water people aren't going to build structures like we have today, huge pieces of steel sticking out of the ground. Emphasis should not be on 5,000' of water and the glamour of what we are doing at 6,000', but the emphasis should be put on 1-300' range where there is still a lot of exploration to be done. Don't get your eyes set too far out because we still need to work in shallow depths.

The platform is on the ocean floor so you drill all of the wells from a cluster and directly drill them.

In the North Sea there is one facility that has been operating for more than a year. They have run over 6½ million barrels of oil through it. In the Middle North Sea area it produces 27,000 barrels of oil a day operating at a 82% efficiency.

There has been a lot of work done on putting nuclear generators on the ocean floor. There have been 3 of them on a subsea well head placed in the Gulf of Mexico. We have the clumsiest reference system for Diane's Station. We use a vertical reference gyro that has to be replaced every 4 months at a cost of \$9,000 for one gyro scope. We've had to buy about 10 of them because they keep wearing out so soon. The government has an electrostatic gyro manufactured by Honeywell but we can't even put our hands on it because it's not released. That's just one example of the pieces of things that have already been developed by the government, that if they were provided by the industry, we would use them immediately.

Technology is what we like to do in some ways to "prepare ourselves."

Let's see what industry has done from drilling without any assistance from the government. Rotary drilling started in 1900. We moved offshore in the 1950s. We drilled 4 miles down in 1952-3 without any government money. We were out working in 300' of water in 1956 without government money. In the 60's, The first subsea wells were put in and functioning in oil and gas in the early 1960's. We only had 50 world wide mobil drilling units in the late 1960's. Drilling was done in 1,300' of water before the 1970's. This thing is out of date now the

dynamic stage has been done out for 4½ years rather than seeing 200 drilling rights up here now we have 526 mobil drilling units and in turn not one direct dollar has been paid by the federal government to build a drilling rig in the US. So it is a private enterprise competition.

What steps have been done in technology? We've moved the scene from the shelf area out to the slope area. Well drilling will be started next month in 3,050' of water to tie it in. Our company has been drilling for the last 4½ years. We've been out to a depth of 2,300', we've drilled 28 wells in greater than a 1,000'. This is exploration drilling. The technology is already there and the equipment is already purchased to go on to the next area, the rise area. That's 6,000'. At 6,000' the sediment is going to disappear. There will be nothing found on past that point and in fact there may not be too much found in the rise area because the sediment is getting thinner & thinner as you move out there.

In Nigeria, in Vietnam, and in South Africa the leases have already been let out in the very deep water.

Still there has to be some technology spent in finding oil in the shallower water depths and get the platforms out there and produce.

We need to address ourselves to getting young people trained to the right activeness. Someone needs to run the computer.

Drive-off means that the ship doesn't move. There are no anchors out there so if you loose power there is nothing to hold you. So when we have the drive-off situation, fuel doesn't get to the engines so all the engines go down. When all the engines go down no thrust is running so if there is a wind you start to drift. In that case, we need safety precautions, so in a BOP, you have sheer range, all the operator has to do is to reach up and punch a button. When he punches the button the first thing it does is sheer the drill pipe. It comes back and reconnects a day or two later, connecting back on retests the well goes back in and picks up the cut off drill pipe and starts drilling. You do have to plan for the continuancy of a BOP, if this happens so that you have back-up systems that can take care of it.

The four things that we had to do to get ourselves ready for deeper water, deep water achievements: get dynamic stations operable, get 12" sonar re-entry operable and electric BOP controls to work.

In deep water we have to provide electric BOP controls so that when you punch the button on top a valve on the ocean floor closes in seconds. All of this has been accomplished with equipment all bought for 6,000' of water. It has been tried and tested in 3500' of water bed.

Something else we need to contend with, as you move into the northern frontiers, is "ice environment." Sometimes the area is ice-logged 12 months sometimes 2 months of the year. You have to dodge ice bergs

coming in and out of the bay. A lot of ice research has been done on huge ice bergs. In Cook Inlet, 13 years ago, oil was found, and concertive programs and argument started from intending to learn what the ice berg was like in that area so we could build platforms.

Lots of engineering and technology went into those platforms. There are about 13 of them in Cook Inlet now. They have been producing oil for the last 10 years. This will continue for another 10-12 years. Cook Inlet was the industry's first confrontation with ice.

The platforms were installed after criteria was established and measurements made of the bergs.

Measuring the waves and stresses and model test of the units both when the wind and wave currents get down to some of the things that design improvements are and still need to be done. All industries need to concentrate on drilling tools and mobility. The tools that are available to us now and in some cases if the manufacture had more time or more money to devote to some of the specialized tools we might be able to increase or decrease our drilling time and increase our efficencies. Like everything, accidents do occur, many are man made, but when these accidents occur and they are primarily man made we have to have ways of solving them. Again the answer is proper training. Most industries now have two training schools, one at LSU and one at the University of Oklahoma with their training industry people on blowout preventions. There are practical seminars to train practical people.

Everyone goes through a six week concentrated training course. The first training course is a safety course; how to handle yourself on the rig and not get hurt, how to pick up a wrench, how to work with wrenches. The secondary school though, is one where we use BOP machines. What we do there is we pick up the next grade of person and educate him on BOP controls. At the same time we bring in older people off the rigs and train them in the phase II school. And we have a phase III school which is for mechanics and electricians. This is to up-grade the people to prevent part of what we've seen in accidents.

We are working in a water environment where waves and motions are at works; in an area where we have helicopter transportations, we have divers operating in deep depths.

Also in every case now we're having to look at economics, sociology, ecology and politics and incorporate into our technology. We have to do this in order to optimize our offshore production.

The problem is that government regulations change and change fast. We might need one regulation today and tomorrow we don't need it.

A well was drilled about 50 miles offshore from Atlantic City, NJ, below 11,000'. About 150 million gallons of diesel oil is used to run the engines, 50 dump trucks of jell and clay is used to drill a 10' hole two miles into the ocean floor. What we get out of there is a bunch of cuttings, clay, sand and shell that come out of the holes in addition to the clays that we sent down. During the drilling of that well, we get about 40 dump truck loads of stuff; trash, boards, cables etc.. Those 40 dump trucks of stuff are bundled up put on the boats and carried to shore. From there they carry it up to New York City and carry it back out and dump it right back into the ocean.

We do keep up with ecology, we try to measure the salinity of the water that is draining off the decks and if we have any diesel oil we keep up with that. Import oil is really important, we import a huge amount of oil from the Middle East. Supplemented with oil from New Jersey, Maine, Texas, Louisiana and California.

Tankers that are coming in bringing the oil are responsible for some 46% of the pollutant, in someway oil is discharged off the import tankers coming in on marine operations.

Heller

We've got an Alaskan well coming down and various proposals for taking it across the Northern territory from Washington to the Mid West. New proposals from Canada down to Minnesota negotiating. We've got three proposals for the Louisiana terminal to California. We've got three proposals to where they are bringing natural gas down from Alaska. We've got Elk Hills in the process of being developed by the natives which is going to be sold to the highest bidder. As far as the natives can tell, now we're not going to have any bidders. We have a real problem on the West Coast -- nobody knows what to do about a little gas. As far as I'm concerned and as far as the states are concerned, many of the routes that have been active in Washington clearly resulted in very bad planning over the last 5 to 10 years. We'd like to avoid that problem in the future. It seems to us that one example again of this kind of thing is the recent fall up in the Gulf of Alaska. One of the problems with the program makes its regard to the states changes in the administration of the program. The state of Alaska is not opposed to OCS development. They very much want to lease their own land. California is not opposed to OCS development and neither are any of the East Coast states. What they want is a little time to plan and a little bit of consideration in the progress making process and that's something that just hasn't been given them over the last couple of years. We've been working very hard on the OCS legislation. Are there any specific questions about our position on the OSC legislation or what it will do from our point of view as posed from your point of view which is quite different. Our previous speaker outlined some very good programs, some wonderful programs which can overcome a lot of our energy problems. What would be the effect on the east programs if the enemies or the industry are successful in breaking up the oil companies? The legislator we're talking about would not in any sense break up the industry. One of the things we do have in common with you and that we have worked on some with you is a tremendous fear of getting the federal government in producing oil. That goes for Senator Jackson's S740 Act which we have worked with you all on and it goes for the Federal Oil and Gas Corporation. There are few local groups who oppose OCS development in their area but there is not many departmental organizations that oppose to offshore oil. This is something that they have thought about and talked about for a long time. We would like to see an administration change because it seems inevitable to us that if the conflicts are allowed to continue the exculating rate we're going to have more and more delays than ever really getting to that oil. There is no way it can result in a ten year or even a five year delay under the time frame set out and built. The House Bill is far tighter in that sense than the Senate Bill. I feel fairly confident that if we ever do get this bill out of the House it will prevale in the conference committee because it is a tighter more polished bill. It's not as strong

by any means as we would like to see it. I think it is a step in the right direction and in terms of making some reasonable changes in the administration in the OCS program.

QUESTION Why does your group think any delay at all is necessary?

ANSWER Well, I don't think we're not talking about delay in producing oil and gas, we're talking about giving the states some time to plan for the onshore impacts. If that can be done without any delay we have no objection to it. We want to see exploration go through as quickly as possible, but at the same time that is being done we want to see the right kinds of environmental studies being done. We want to see the right kind of postal planning being done by the states which they are willing to do and they want the right kinds of information. If you're talking about the two or three months delay -- give the states some time to look over the information developed and to do the right kind of postal planning. You're talking about six months on a time frame of what producing oil in seven, eight or nine years. I can't see that that's going to be any less of a delay than their going to get in court cases in the next few years. The states haven't begun to do postal planning but many of them have not begun the postal planning that's directly related to anticipated offshore development partly because they haven't been able to figure out what to expect. They don't know how much acreage is going to be leased. I am a little integrated with this great concern on the sociable impact. I'm talking about 28,000 people over a period of ten years.

Everybody is out for the federal money including the energy industry. The Interior Department over the last year has been on all sorts of side issues. That's become the big issue. That's why the state wants in the legislation some written guarantee that they're going to be heard if not listened to.

Offshore Texas and California have been producing oil for a long time. These new states are reaping the benefits of what's coming out of the Midwest as far as gas prices and so on. They like what they see there and they are holding out for a little bit more money. If you get New Jersey, Massachusetts and the other states that are expressing concern for money without the other kinds of things, I think you would find that they would not be very cooperative. The problem is that New Jersey, Alaska and some of the others want a bigger cut of the action than the states of Texas, Louisiana and others got.

That is part of the truth, but I would think you would be seriously misled if you thought that their only concern would be working so hard on the OCS bill that they would be spending all of their time on cost of adding some amendments and not time on the OCS bill and that is not the way it is happening.

Do we understand career development? The real problem the states face is the Interior is running the show. Who will listen?

I am really unfamiliar with all these bills, but do think that there is an actual depreciation on all sides of our need for additional domestic energy sources and how this affects us in our future economic growth.

The problem is that the programs that have come down don't get any progress. They are developing everything now whatever the cost. Forget the states, forget the public, just develop. That is the kind of thing that has led to the push for OCS legislation meaning opposition to synthetic fuel development and their 6 billion dollar subsidy program.

I can't agree on the states having control. I know the control in Louisiana. They can control and they can do it on the onshore development simply through the corp of engineers. If they want to stop it go ahead and do it.

The other thing I can't understand is the amount of one of the sizes of the leases makes any difference. The time it takes to develop a big production takes 15-20 years and you have ample time to work out all these plans if you get the money. They have come to the point where they know they are not going to produce. They are going to get it after they get clearance, before they can drill the first well.

In the volunteer areas we have had no oil development. It is going to be more different, more rapid and the problem not just with oil but of all sorts of energy facilities. Citizens groups are objecting and that is part of the problem. If some of the peace planning things could be worked out in advance between the states and the industries. I think a lot of the problems that are happening now could be avoided.

St. Adm. Ladies and gentlemen -- If I have any claim to fame it's because I have lived with the oil industry since its inception into the state of Louisiana, the coastal areas and in the marine areas. We happen to be in a peculiar position dealing with natural resources and the oil industries. In Louisiana we did a lot of research and a lot of study to determine the effects of oil on natural resources, if any. We watched the industry grow over a 30 or 40 year period. You listen to some people who would have you believing that dooms day was around the corner. If they were anywhere near correct, Louisiana would have been off the map 20 or 30 years ago. Yet we still produce probably more fish than any other single area in this country. We produce 1.2 billion pounds of commercial fish annually and the recreational fish is not counted in this nor is natural fish or anything else. What you have in the oil industry in trying to work is basically an administrative irregularity problem.

I think you ought to look at the history of the oil in Louisiana because it reflects some of the talk you heard this morning. It reflects the advancement of the industry and technology and it probably will indicate to you what I may not be

able to or can't understand. It's true that oil moved in Louisiana from onshore to offshore and in our own way it moved in Louisiana from the land situation to a rather hostile coastal environment. From 1927 when some of the first wells were being drilled until about 1947 there were absolutely no regulations as far as the environment was concerned. Maybe we didn't know how to control environment, maybe we didn't know the difference, but what we were dealing with in those days was the depression. People were looking for jobs and trying to make a few bucks. The oil companies were still in a relatively primitive shape having worked on land most of the time and not yet in the ocean. They moved into an isolated area where no one could see what was going on. They had problems moving the equipment into the system. Some of the things we make the oil company do today with the clean up and hauling this stuff back to shore could not have been accomplished in those days. The material was just not there. So for years everyone went overboard, they went overboard until mid 40's. I guess we were projected to as much oil as any area could be projected to besides the fact that we were producing oil at a rapid rate through the war. At times we had oil vasts along the coast and the southwest pass of the Mississippi River. This carminated in a problem that developed in 1943 or 1944 that was blaigned on the oil companies. We had a sudden toll loss to the oysters and the oyster industry was sueing the oil company for 30 million dollars. The oil company in defense had to do something. They hired Texas A & M Research Foundation to do work on the effects of oil on oysters. The state had to get involved to protect the state interests. Between 3 and 6 million dollars were spent in research at that time to determine what oil did in this environment. We found out it wasn't killing the oysters—it was something else. We did have problems with oil, oil muds, and this kind of thing before we got control over the situation. You can get a pretty good mess if you dump the number of tons of drilling oil around an osytery. These problems we lived with and got control of. The net result was it caused a law suit and all the state developed certain regulatory procedures with the oystery prevention. The wildlife commission came in and the regulatory agency got involved. Incidentally we not only regulated inshore but we regulated as far out as the oil company went, but in those days the Department of Interior was not to active offshore. We also regulated a sizemac activity offshore and onshore and developed the various regulations involved. It takes an awful lot of oil to kill an animal and when you get it to the level of killing them you begin to wonder whether you are killing them physically with the oil or drowning them in it or whether you are doing it with a chemical reaction. There has been a lot of work done on toxic effects of oil. On some point in time, we began to look at oil pollution not so much as a toxic problem but as a problem in tastes. We got to a point where we could regulate

this. Back in the early 50's we were running about 80 and 90 cases a year on complaints of pollutions in oysters. Today I don't think we have more than one

two complaints like this. It was just a matter of a strain in both oil companies and fishing industry and getting the regulatory procedures to a point where they were effective. Certainly you can look at Louisiana and use it as prime example of many states of protection grounds. You can look at it as a situation where it demonstrated the oil, even at its' worst, is not as dangerous as people think. The main problem we ran into in Louisiana was from the navigational interests and from the local townships and cities. They want the deep water port that we passed to the oil companies. But it pointed out you can't move a rig in there without dragging it. Production areas and production sights over the area is one thing. Transporting oil by measure pipeline is something else. One can become complicated and the other is practically simple. When you do think over a sight and you have them off of a well head then you have a lot of gap in the line and this leads to a number of problems that could develop. Over a period of time you can get some types of pollution associated with this. This is generally true in the old fields which were drilled back years ago before we had any concept of how to regulate them. At the present time, the type of regulations that they use on the North slope concentrating in building in one sight and reducing this type of thing is probably accepted to sea. Within the marsh land we've had some trouble but most of it has been salt water intrusions and change. You need to assist them because of changes in water direction flow.

There seems to be no detectible statistical change in the total system or the total production in the system. What has happened apparently is we have lost in some areas and we've gained in others. Oysters, certain types of marsh plants have changed. They've gone in some instances from a low bracket system to a more solid system. When this happens we lose water fall, we lose oyster grounds, we gain shrimp grounds, we gain in perhaps more fish nursery grounds. If you go back and look at the production of some of your fishers since the mid 30's right up to today you find a more or less confident increase. In most instances it's an increase but the increase is not due to the oil companies, although some people would like to claim that. It's due to the fact that we've increased the fishing pressure in some area. Now I'm giving you the internal and the coastal look because if you don't understand this it's not really easy for you to understand what I am going to say about offshore. The problem in the coast area was one of regulation, understanding the eco-system, learning how to manage. While this was going on, the oil companies were also developing more and more sophisticated technology and safer systems. When they moved offshore in the late 40's in Louisiana they had a number of problems. One they had the problem of human life and equipment. From

the very beginning there has not been much trouble in the offshore system. There were some troubles offshore with the sizemac operation. Studies were done to determine the effects of blasting, effects of high explosives on the fish. We developed such a thing as a floating charging system. We separated regulations which prevented floating on the bottom. We found that the floaters on the bottom didn't kill too many fish but they did form deep trenches. As soon as we got the water underneath the cushion we didn't have any troubles. We then ran into navigation problems offshore. The sizemac boats like to run in a direct line on a ramfix. They don't want to deviate off course because they are pulling a 6 or 7 thousand foot recording cable behind a boat. Shrimp fleet were also out there with two troughs 3 or 4,000 feet deep. Here we ran into a problem that I guess had to do with the rules of the road. The international rules of the road say that a fishing boat with its gear out has the right of way. There is one exception to this and that's if another vessel has a vessel on tow. The oil companies decided that this 8,000 foot cable was a tow and they went back to the rules of the road and when two people coming together--there we had some shooting going on. Somebody had to try to figure out a way to decide who had the right of way. What we did, we went in and set a regulation and just arbitrarily described the shrimp fleet with more than five boats joined gave way. Less than five boats and a bunch of people gave way. This is a kind of regulatory acting we had to develop. These were the kinds of problem that developed over the years and that we constantly had to do something about. Somebody mentioned this morning that we had 1,100 platforms. That is correct for the big platforms. Actually, we have 2,700 or 2,800 structures. A lot of them were single protective devices in shore, but we do have and have had a great number of these structures offshore for a good many years. There is a lot of them incoast shore of Louisiana. We leave them within a three mile limit. We've had some good and bad effects from these -- I say good and bad for the folks around here. The objective term has been, if any, by the commercial fishing people and they do if you get enough of them and got them in the wrong place. We have an argument down there right now about this loop deepwater port thing. They want something on 89 square miles out in an anchorage where they don't want any fishing. That is an awful big chunk of water when you've got shrimp and we've got rough production in this area. We are looking at about 80 million dollars worth of shrimp. This is not ecological again because of the shrimp problem. The point is you've got two people wanting to use the same sea floor. I don't know where we are going to end up with that. In the Louisiana area a platform requires about 1 to 12 miles. It takes an hour to fish in that big zone with the big boats. They can't very well get within a half of a mile -- maybe a little closer with a couple of troughs down because they have to stay

clear of the rigs. So, effectively you reduce the amount of fishing areas. Fortunately the entire Louisiana coast is good fishing. You are only looking at about 2700 acres if that much that is taken out for fishing. Conversely the platforms at lease offshore are going to prove to be probably the most expensive artificial rigs being developed. The fishing around these platforms is phenomenal. And it has caused a new industry to develop with the big recreational fishing in it around the rigs. There is a new charter boat industry that does nothing but rig fish. Thousands and thousands of people have fished around these rigs. They have not as far as we can determine increased the fish population of one single fish. But what they do is concentrate the fish and they do a better job. The liberty ships are on the bottom and they don't have a vertical stratification of coming up to the water. The platform legs and rigs come all the way to the surface so you get a vertical stratification of the animals on it and the fish tend to leer into this so that you seem to get generally more concentration even of your polacnint fishes somewhere near the surface and you can get more fish in there. What about pollution? We have blowouts occasionally, we have spill, we have fires. We've had them and have had them for years but they are very infrequent. They occur in different areas. They rarely occur in the same spot over and over again. They usually take care of them in a very efficient manner. There is probably some misconceptions among the public that when a well blows out that you have millions of gallons of oil spill and there is just a wake of oil pooling around over the surface. This is not the case. This is true perhaps when a tank ruptures or some system where they are transporting oil would rupture. But most of the wells in the coast use perhaps only a couple of thousand barrels of oil a day. When these wells break, if they don't catch fire they tend to atomize. They water them with salt water and it is sprayed out over the area. So, you don't get this typical lake of oil as people expect to happen. If they don't catch fire, we like for them to set them on fire to keep from hurting people. This is the simplest way because once they start to burn the amount of oil escaping is negligible. There was a lot said about the Shell and Chevron oil fire. I have some photographs taken directly over the height of it and you can't see any oil around it. Most of it was burning. You get a light film out from the structure but we didn't find any evidence or any threat from it. The day of chronic pollution associated with offshore platform is over. It's too well regulated under the new system and under the sophisticated equipment that you saw today. Anything that has oil in it has got to be washed. The bleed water going overboard has got to be down less than 50 parts of a million and generally speaking it's much easier to regulate it in forced platform because if it starts to leak anything, you can easily see where it's coming from. You can detect the geological survey now as a seven day a

week around the clock and four month surveillance in the Gulf area. They are flying helicopters all the time. We've got 8 aircrafts and most of the time we have them in the air somewhere close to along the coast. On weekends more than 50,000 people are along the coast and the minute there is any oil visible a Southwest telephone starts to ring somewhere. The continuancy plan in the Gulf now are what I would think excellent. A clean gulf associates and the association that they have is well equipped to take care of the spill. They have a notification system where around the clock somebody in our organization in the whole system is notified if we have a problem. They next morning we have somebody out there to check on it and to follow it out to its endpoint. Offshore production is not that big of a problem. I think that given people that know these systems, to assist the people that understand the animals and how they operate and know how to handle people and stiff regulations it seems to be handled with a reasonable amount of efficiency. I'll not hesitate to draw up regulations. I would think that any coast would mind provided, that is has been pointed out this morning in the NUN procedures necessary to protect these rigs from the environmental steps with that. But once the equivalent is developed the rest of it is management and business management people and managing the way.

Most of these coastal states that I am familiar with do not have the problem of producing oil offshore. The moment you get three or four miles from the shore it is an entirely different problem. Most of the production in these areas is from a single platform and multiple wells directionally drilled with the gas and oil separated on the production platforms pumped into the shoreline through some type of pipeline. These pipelines offshore have not been a problem. They have jetted into the surface sea floor then they rapidly tend to compact. On occasion we have some problems with trawls. If a pipe should come out and hump up we can hook a trawl in. It doesn't take long to get noticed when this happens. Sometimes when the jetting is done in certain types of bombing it fails to consolidate. If a trawl board drops into this thing it can bend it and you can end up with a trawl hung up. It will be in the mud. But the number of instances here are not significant and generally they will recolor. Your big problem with pipeline is from the shore. If you have a high shoreline with a noun in a tyler zone or a speak in a tyler area there is no real problem. You cross the beach and you are in high land and you have the same problem you have all over the country. You have got pipelines going all over the country that you don't even know are there except they are kept mowed and the trees out of them. There isn't any problem where you can find a coast line that you can bring a pipeline into and bury it and bring it across the now beach in a tile zone, into a high land. Certainly in many areas a low iron beach like we have in and around the gulf of some areas and behind this beach where you have wetland areas, then you've got a bit more of a problem. You've got a problem crossing the creek because it is necessary that you don't rupture it or leave some amount of it to be ruptured during the highest wave or the storm situation. This requires that the pipeline at least be burried sufficiently and some types of engineering and other types of studies be made to make sure that it is not going to wash out. Once you get behind the beach line then you have the problem of whether you are going to have a flowtation canal and how you are going to handle it. Small pipeline up to fourteen inches can be pushed to the margin, laid down on the floor through the system and your work with some type of marshburgy or equipment. These will tend to heal up and in a matter of a few months or a year you won't know the pipeline is there. If you are putting in the larger lines you have to have a quotation canal to move the lay barge and the tugs through it. Then you, of course, need some type of water system which requires some attention. What needs to be done here is

several things. One if you don't get it, put it there, if you have to go through a wetland area try to lay it up against some natural levy or some other type of car through the areas so that you are not running down the middle of the marsh and disrupt the natural grain possibility. If you do have to go through what we call the bury marsh then you had better have some regulations. One, you've got to know where you want to put your soil, you need to know where to put the water control structure. To keep the natural grain pattern, keep the integrity in tack. The one thing we still haven't arrived at through the years is vimps and maintenance of these things. These cost the state and it is going to be costly for the organization. The thing here is an unstable area like North country. What happens is you build a beautiful canal and put the necessary water into the system and go back and repair this. You can end up with bronks. Of course, the oil companies need some kind of contract of business with some other way to fix them. They're trying something new in Louisiana right now associated with the Loope organization. This is the offshore deporter port. They're going to put 54 inch lines in and they're going to start pushing. I don't know whether they can push a line that big, they claim they can do it or try to do it. Actually when I go out and look at the plans and what it is, it's a combination of flowtation and pushing instead of digging a flowtation canal that's deep enough to move dug and laid barges. What they plan to do is to dig a shallow canal maybe only two or three feet deep and float the bar ditch. They are going to dig in the bottom of the canal a deeper ditch, then they'll make up the pipe in the end of this and float it down and drop it in this ditch and try backfield. It's going to be different and it's going to be an interesting procedure. We are going to study it and see what happens. I think it will probably work alright but I don't believe it is going to heel up as fast as some of the smaller ones. There is an awful lot of lattitude in offshore production moving this material inshore.

With all the oil we produce in Louisiana, we only have seven or nine refineries. I believe we have two in Lake Charles, and seven along the river. Our refineries are anywhere from 50 to 75 miles from the gulf so they are not suppose to profit. They are an industrial problem. I think that if we have an industrial park or an industrial area the state or the city could already have some kind of room and industrail planning. I don't feel it is necessary to be involved in social zone management or anything else. If you've got to plan, you know where you are going to put these things. The trouble with planning is you need money to do the studies and a lot of companies don't have the money. Then you've got to get some kind of law to help people go along with it. The mere fact of moving the oil and refining it doesn't seem to take much

area. Now if you do like we did in Louisiana and invite as much petroleum chemical associated industries that you can get, then you are going to have some pretty fancy planning. I think this is a government problem, if you don't want this you don't have to have it. If you do want it, you can invite it in with certain restrictions. It would seem to me on the East coast that some of the states are so small that they could bypass this completely with pipelines and transporting it to onshore industries. I don't see why they would have to run through every state or anything like that. There is a judgement to be made here. I think something should be said about the impact statements and environmental studies. I've seen so much of this it is important that some of these things are said. An impact statement hasn't proved to us any good because they are not decision making documents. They are generally just a quality examination of what's out there and most people already know what's out there. What you need if you're going to do an adequate environmental study is some type of ongoing continuous monitoring of your system. With highly graphic and environmental proanalysis of certain key animals in the area you ~~can't~~ possibly do this wrong. But I can tell you right now, we didn't know what we know now about shrimp in Louisiana. There would have been some fancy law suits made with some of the blowouts and fires that caused damage to the wildlife. It just turned out that the studies we had made and the studies that were made by the Government have shown conclusions that the controlling factors, most of these on upstream dependent species or the environmental calamities that exist within the joint seas of that particular year. What happens to your fish happens on the nursery grounds. A controlling factor is how much temperature you had, how much fresh water, how much rain, how much real estate. The best way for me to explain this is something like this -- anything we do to the environment is environmental stress. When we dump the Mississippi River into Lake Ponchartrain last year and the year before last we stressed that lake. We changed it from a salt water lake to a fresh water lake over night killing everything in it or ran it out. I don't think the oilfield should do that. The point is in three months its back producing again. This may be a good way to do it if you can prove that the loss in production is constant, but a single incidence is of no value whatsoever. The best way to illustrate this is as I told you at the beginning of this talk. We caught about 1.2 billion pounds of commercial fish every year. We kill every damn one of them. We have consistently killed over a billion pounds of fish a year for the last 15 years. So killing 50 pounds or even 100 pounds or even a ton is not an ecological catastrophe. Now what will be an ecological catastrophe is if we ever do something to the generator in the state of Louisiana that produces a billion pounds of fish on an

annual basis. If we make a mistake somewhere along the line and reduce this productivity on a continual basis it will show up. But, the actual loss of the animals is not the critical side. What needs to be done in this whole environmental analysis is to move over from a quality to a quantity analysis. This costs alot more time and money but you're better off if you have a single key individual or several key species in the ecosystem than if you have a whole list of animals. Really the problem between animals and oil is more between people than it is between the ecosystem.

Questions: I'd like to ask two questions. On these environmental impact statements what would you suggest as an alternative means of informing the public about the quality and the second question is about the fires and air pollution -- is there any connection.

Answer: Let's say we wanted to drill oil on the Continental shelf off the Georgia Canyon. You've got people who have been working on the Georgia and South Carolina coast and the Chesapeake Bay area for years. The best way to do it is to go to these people and say how much do you know and what don't you know and what is it you need to know. When you outline what needs to be done to understand the dynamics of that coastal system and it's production then somebody should get to work on it and it should be a continuing monitoring type thing. I don't think it does any good, for example, one of the arguments I have been having with the study is that they have been looking at an abnormal situation. What happened was during 1953-54 when our nursing grounds for shrimp was reduced from an average of about 2 million acres down to 90,000 acres because of the fresh water intrusion from these fresh water rain falls. A study needs to be made to learn how the dynamics of it works and what makes that system produce.

In about 1958 or 1959 a platform caught fire and there was about 16 miles offshore that was burning pretty good. They blew it out with dynamite but they didn't do very much about shutting the wells so we ended up with a lake of oil floating around on the shore. We knew about it but we figured it wouldn't make much difference. I woke up one morning and I had about $\frac{1}{2}$ inch of water over the whole area. We had about a million and half dollars worth of oil in oysters. In about three or four days the oysters were tasting so bad you couldn't eat them.

In Lamont New Zealand we've got some specific problems which relate with OPS and also with the energy fuel in general. My concern is about offshore drilling but I am also concerned about energy. We have high energy costs in about every area of the country. The question I want to propose is one which has bothered me not only in the field of oil but also generally in the field of resources. What kind of policy are we going to have in the future to

determine how we should share as a nation the profit that we have from some of the resources here and the resources which lie outside the country? This may very much affect the profit picture on resources. Some basic questions are -- What is fair to the business and what is fair to the American consumer and how they share the profit from our resources?. As our resources become less available whether it be in oil, coal or other areas such as iron or aluminum, we've got to ask ourselves this basic question -- Who should take the difference between what may be the cost of developing and with what may be the cost of those and take into consideration the profit and who should share these profits. Should we use a three market system or should we regulate as we have in the oil and gas field to keep prices of the well head down so that profits are kept down which might otherwise occur. And, I ask myself, what is the best way to do that? What kind of philosophy should we develop? It becomes especially apparent when you start talking about bidding or leasing on a continental shelf. In England when people began to use the waterways, they began to take advantage of the availability of water by damming it up or building docks. The English laid down a basic philosophy which we had carried forward in our environmental fields and the resource field which is: the natural resources and water ways belong to the people of the nation. It cannot be abused either by the government or by a private person. It exists there for the best benefit of society. Do we do it with the bonanza style in which we give the broad rights to someone to go over and develop it and let them take the profits less whatever it costs for the lease, less what little loyalty you are required to pay. Or should we pay a business to explore and provide the maximum profit to the people and the maximum benefits to the people of the country and provide the business with a reasonable profit like we do in the utility field so that we can make sure that society gets the maximum benefit of the resource. Another alternative is to go after only the profits and then tax the profits. We will decrease the incentives by doing away with the depletion allowances, etc. Where is this country going in this area and what kind of basic philosophy are we going to develop in the oil and gas field or in the other resources field especially in public land? What is the fairest way and most equitable way for this nation to share the benefits of our natural resources? Take into consideration that we are moving into the future where we are going to have shortages and we are going to have increased demand on limited supplies. Those people who have long term leases from long ago are going to be reaping increased profits, without increased costs and that's going to inspire the development of resources. What seems to be a fair system now may turn in to be a bonanza for those who have the leases under the present system.

I find myself in agreement with a lot of the things said here today and I'm trying to point some of these things out as I go and hope they don't overlap too much with some of the previous talks. Let me just say that my statement I'm going to give is drawn from several studies on energy related problems that I have been involved with since 1971. I'm a member of an interdisciplinary technology assessment group located at the University of Oklahoma, Science and Public Policy Program. We've done three studies since 1971. One of them on OCS development in the United States sponsored by NSF and that resulted in a book "Energy Under the Oceans of Technology Assessment of Outer Continental Shelf Oil & Gas". Following that we did a related study of looking at North Sea petroleum development and this was sponsored by the Council of Environmental Quality. The third study, which is currently being completed, involves a fairly general analysis concerning domestic energy supply with recommendations for research and development. Properly conducted exploration and development of offshore oil and gas resources is the most attractive short and middle term option available for increasing domestic production of liquid and gaseous fuels. Summarizing my reasons into three categories: 1. At least it is believed that substantial quantities of oil and gas do exist offshore and the technology is commercially available today to develop these resources. 2. The nation's energy in use in prestructure requires oil and gas before alternatives such as electricity can be substituted. We would have to make massive changes in the NU structures so we are tied for at least the short mid term to oil and gas or at least liquid and gaseous fuels to a large extent. 3. Offshore oil and gas is less environmentally threatening than most other alternatives for supplying liquid and gas as fuels. Coal and oil shale represent the largest interview resources that can be converted to liquid and gaseous fuels but environmental impact in developing these two resources are almost totally American technologies that have been developed over the last several decades. However in the past few years development in the US offshore has expanded very little but it has spread rapidly in other parts of the world. Currently the US produces about 2 million barrels of oil a day offshore. The world total is approximately 11 million barrels a day. Also pointed out this morning the US has only leased approximately 2% of their sea areas. It's clear that the primary obstacles currently to offshore oil and gas development in the US are not technological. In general the hardware is in good shape and the industry has an adequate concentration for continuing development and improvement of this hardware. The technology is adequate to develop onshore-offshore gas with very low levels of toxic pollution and relatively small probabilities in major accidents. Generally the increase of offshore production is the most attractive short middle term option. It wouldn't be reasonable to say that offshore development

is more attractive than all other energy options. There may well be areas where local conditions may not think offshore oil and gas development undesirable or less desirable at least for coal. There are sights where offshore gas development may pose an exceptable environmental risk. While it's my opinion that the technology is generally adequate it's the concern of the involved environmentalists that social impacts that has delayed OCS development in the US since the Santa Barbara blowout of 1969. States, local governments and environmental interest groups have been quite successful in blocking and delaying federal government efforts to lease OCS acreage especially in the frontier areas. A few years following Santa Barbara the primary concerns were with the technologies themselves. The question was raised -- Were they adequate to make the probabilities of major accidents sufficiently small? While this is still concern to some people, recently the issue is shifted to the onshore impacts associated with OCS development of broad or social impacts that are associated with this development. In essence, the optical siesta development now involves primarily around the question of federal versus state rights. Early in the history of offshore oil, parties outside the petroleum industry or federal government showed little interests in how OCS policy was made. However, now state and local government officials and numerous other potentially effective or interested parties want to be involved in OCS decision making and want to be consulted. They want more information and would like for the federal government to provide more point of access for time and participation. In effect, they want to have more control over development that effects the coastal areas. Unless these concerns are dealt with, it is likely that OCS development will be blocked or sufficiently delayed. Recently the Office of Technology has completed the study dealing with the impacts of OCS involvements off New Jersey and Delaware. OTA identified a number of issues which are affecting the ability of the federal government to lease offshore areas in the middle Atlantic and discuss policy options available to the congress that would deal with these issues. I would like to give you some of the issues as OTA described them to give you a better idea of the nature of some of these nontechnological areas. One issue deals with state access of OCS information. New Jersey and Delaware officials believe that they are not receiving adequate information. Revealing under present laws, regulations, and procedures they have no guarantee that all of the information they believe they need for planning will be provided by either the federal government or the oil industry on a timely basis. Another issue identified by OTA concerns state assess to OCS decisions. Top officials in New Jersey and Delaware are saying they do not believe the current laws and regulations, which specify the procedures for administering offshore petroleum and development

allow for adequate state involvement in important decisions. These sales set in most a development process which can rarely be slowed or stopped under existing laws and regulations. The lack of state participation in the decisions concerning OCS leasing has helped create an adversary relationship in which a states only option in controlling onshore may be to construct the problem thus brining about some very timely delays in OCS development that the federal government wants to avoid. A third issue discussed in the OTA report concerns the financial impact of the state and local government. The concern is that OCS won't replace the man from public services and facilities to support increases in populations. In industrial operations that might not be cempated for by increased governmental rate revenues. OTA analyzed the issue and their analysis indicated in general per capital tax revenues for most OCS related activities should be adequate on a state wide basis to support normal levels of public expenditures for OCS related activities. However, this doesn't do away with the issue, they point out, because the cost and revenue might not be distributed evenly. For example, it could happen that most of the supporting areas and OCS employees were located in one state and the oil and natural gas could be landed in another state. Other issues identified by OTA deal with oil spill liability compensation, adequacy of the system by responding to the oil spills, and potentially conflicting uses of the oceans involvment of fishing and shipping. Let me just mention briefly what contribution of research and development might play in the moving of some of these constraints. In order to do this let me find two catagories. One is hardware research or technological development of improved pieces of equipment in technology by hardware research. Also, softer kinds of environmental and social policy studies. I generally believe that technology growth, OTS development is in good shape. There are some areas of hardware concerned with governmental efforts that we think the government might get in to do some more hardware research. One area they could increase is their support in offshore clean up technologies and disbursements. However, they are doing experimental work in this area now. You'll have to realize that there are real practical limits on how much oil spill clean up can be increased especially in conditions of rough water. The Federal Government could also support R&D tree growing explorations technics, primarily sizemac exploration. They are doing a little bit in this area. If the government spent money in this area, I guess is that they are the owners of large oil and gas resources and so you could argue just on the economic point of view. Since the government is the owner of large oil and gas resources they ought to have the announced capability in order to evaluate these resources which at least proves in the existing industry. More compelling needs with regard to OSC hardware is for

the government, especially for the USGS, down the independent source of knowledge on which to base equipment performance standards. Perception by some people is that the industry intends to set it's own standards to deal with this one option. One way to correct this would be to establish an independent classification society with an inhouse R&D capability. It's important to recognize that the technology being used on the OCS is changing and here's another area structure the federal government must rapidly adapt in technologies. The Norwegian Government is facing a similar problem in the North Sea development. It has relied heavily upon an independent classification society with experience in Marine construction. Norway uses an independent group wrather than industry groups to develop standards for off-shore technology. This could be adopted in the United States situation. This kind of technical back up would be helpful to the U.S.G.S. in carrying out it's obligation to insure uniformly high quality performance by all operators. Non-hardware research can be divided into three categories depending on it's objectives. One kind of research concerned with describing and understanding the environment in which OCS operation is likely to take place would include collecting and analyzing data on marine and shoreline physical and biological systems as well as social data on the multiple uses of coastal areas base lines. A second kind of research is aimed at identifying the impact that OCS and gal development will have on this environment -- that is social and environmental cost benefits and such. This is a very difficult and relatively undeveloped kind of analysis and as far as we know there is only one study of this type that has really been done that was funded by the Office of the Recient and by the Office of Technology Assessment. The third kind of research is that aimed at analyzing alternative management arrangements for controlling the development of OCS resources. Although these kinds of--research nonhardware research can be separated in abstract they frequently can not be separated by the need for all three.

You are generally poorly developed in research involving value judgments. Furthermore the number of institutions available to carry out such research is very limited. With these limitations in mind, then one can make three general recommendations. First, more federal money needs to be spent in this area devoted to the area of non-hardware research. For instance, base line studies need to be repeated as they are of real value and research on impacts must be continuous if we are to gain an understanding of environmental or social impacts. Secondly, all of the capability for doing non-hardware research, is to be available. Several key institutional issues must be addressed. Many of the important, unanswered questions related to both OCS and other energy resources are long-range in impact, and require prolonged and sustained effort. Such long-range, long-term, or non-hardware are indeed likely to be conducted most effectively in institutions that have a long-term guaranteed commitment. Establishing such institutions would be central to the development of the community of new disciplinary research and necessary in providing integrated pictures of the impacts of energy development. Thirdly, one of the key difficulties with non-hardware research is insuring it's credibilities, because it does involve a lot of value judgment. Research which focuses on the impact of OCS developments were part of numerous value judgments and for that reason, the most credible research comes from research groups that do not have an obvious economic or regulatory interest in the activity. For instance, studies on the OCS that are permanent are carried out by either the non-hardware industry or the Department of Interior. Whether its valid or not is the case. Unfortunately, this is the case even when the studies are pro-

fessionally first-rate. One example of the study of the Santa Barbara blowout, funded by the Western Oil and Gas Association, is that as soon as the results come out and the people who are concerned with these things find out who funded it then they immediately tend to disregard the studies, regardless of how well it's done scientifically.

Second speaker, I am an independent. I will try to present some alternatives to how we can get a more ethical system for the nation as a whole, sharing in the profits for the resources, especially those under federal lands. What the OCS bill is feeling about is that it is not a good system and that it does open itself to cool, gentlemen's agreements on bidding on leases and cutting down on revenues we might get from the initial bid on the leases. The profits may get larger as time goes on. We may and should look at it as a better system of bidding and sharing the wealth of our resources on a more applicable basis with out society. Another suggestion is a system where the bidding is altered or supplemented by a production-sharing system. Whereby, a certain percentage of the resources is allocated to a company, depending on the nature of the situation. The remainder is reserved for the public.

The capital expenditures for exploration and development are allowed to be annotized. The provate public rate can change as the daily production rate goes up. We would then have a system we could fine-tune as the rate goes up. To do this we would have to entice the proper amount of interest in the area of providing adequate return and equity, maximize the development of the resources, insure we return a proper proportion to the public. The proportion returned to the public can be invested in other energy sources or used for general public purpose.

We could build a strategic storage system or whatever other natural interests are closely related to the production of oil or for some other greater social purpose. All I am really saying is that I am one that tries to look toward the future. Think what we can do as a nation, not only in the field of oil but in all our resources. To define a system which fits the needs of this country and best benefits all society, we've got to go to other areas. We've done it thru certain stimuli in the oil area and regulation of oil prices. We've done it in the area of our environment, treating our water and air resources differently and looking at which is most beneficial to society.

I feel very strongly that it now is the time for a decision in this country as to building a good, sound, basic philosophy and examining our old system. As we move into the future, our resources will get scarcer and prices will go up. I feel that now we've got inequities in all new systems and approaches to this. The whole purpose of this conference is to throw out some ideas and thoughts and hopefully as we're trying to do in the OCS Bill and other bills, generate some new systems and approaches that might help in the production of resources in this country.

Question: It's an interesting proposal that you have. Do you think that your state might be interested in entering into an agreement in problem sharing and in the risk of investment where you may get nothing back?

Answer: We haven't forgotten that. Obviously you can't entice independents or smaller companies. If we're talking about increase in bidding and trying to reduce the costs of the public, or maximize benefits of the public, we have to have a system to take care of those who try to drill a dry hole. Whether

you do that by increasing the benefits above normal or if you don't have that risk, how you fine-tune your system, or how you reward or write-it off, or whether you do it on some sort of reimbursement situation, I don't know. But, I do know, you can't do a situation where all the best goes to the public and none to the business unless the government takes over and does it. I don't want to see that done.

Question: Oil companies offer this risk opportunity to anyone who wants to invest. In this case though you are suggesting that the government invest in that risk. You think the government is prepared to invest in the risk of a \$680.00 dry hole with nothing coming out of it along with the exposure of say a \$2 billion liable suit on pollution, do you think the government is ready for that?

Answer: I'm not suggesting either. I'm not suggesting the government necessarily take the risk. I think perhaps there are other possibilities of "pools" from the successful holes where part of the profit can go in and insure reimbursement for dry holes, or take care of them. That's all I mean by "reasonable profit" or a "reasonable return" on an investment; that those risks are taken care of. That's all part of the situation, it's just a question of preventing the Bonanza situation. And especially when it's created by non-competitive factors but non free-market factors.

Question: What non free-market factors?

Answer: Now of course, you can argue with that but it's a fact of life. If that price is driven up, not related to cost of production, but related to arbitrary governmental control on the other extreme, of a supply which bids up prices in the areas that have a different system. And it relates an additional portion of

property to do that.

Question: Well, you can make that point but I think it resumes that property is accrued on the records of stockholders or the investors in this lot. Take into account the reinvestment. Last year I believe that offshore oil was a \$10 billion industry for a while and most of that is going back into the system. A very large proportion of that is capital investment of which the industry provides a great deal of self-generating capital. You drew the analogy to the utility industry, and I think in the last few years we have seen capital profit there. Do you think that the suggestions that you are making could lead to capital problems in the offshore petroleum industry?

Answer: It could. But not if it's properly designed and obviously you've got to admit in short, that the capital necessary is available to do the job or else nothing gets done. And if you don't have the capital to drill and the capital to produce, then everything is defeating. If you do not attract capital then you increase your rates or whatever it is necessary to attract your capital, that's utility people.

Question: As a student of this field, I wonder, where do you feel that the regulatory people went wrong in the railroad and the utility industries since both of them are now terribly lacking in capital? In fact, they're asking us poor taxpayers for billions.

Answer: Well, I think we went wrong in probably funding too extensively alternatives to government without taking into consideration what applications it would have on the assistance which were providing service at that time.

Question: Did we have too many assistants?

Answer: Well it's a combination of the government subsidies for loans plus the consumer desire for automobiles as an alternative

and preference to this type of mobile transportation.

Question: The consumer made a bad choice?

Answer: Well, it depends upon comparing that to the situation we have now. It may have been a good choice then, now we may have to make another choice.

Question: I'm undoubtedly quite naive in this question, but I'm confused by the equitability of the profits. When I buy a gallon of gasoline, I can sit there and know that, Exxon for example, is going to make 3¢ on it. Uncle Sam, is going to make 9¢ on it. Now, how are we going to balance this?

Answer: Well, you say he makes 9¢ on it, if you did that on a cost basis and you took into consideration the roads which the sale of the gasoline provides, then maybe he hasn't made a profit or maybe he's lost money on it. You're saying that is profit and that's the money that goes in your pocket, but when you compare cost with the money allocated towards it, it may not be a profit to Uncle Sam. I don't know any answer to that. My guess is that he's probably losing money on it.

Question: What do you consider profit?

Answer: I would say profit would be the generating of resources by the federal government for that area, I'm not sure we do that in that program.

Question: With due respect to the OCS Act to be considered by the position defending this morning, which may make it to the House floor next week - there's an amendment being offered which stipulates the Secretary of Interior should develop alternative leasing programs for 33% of all offshore operations. The aim of this, as I understand it, is to increase revenues of the federal treasury and competition for these offshore groups. What is your position on this amendment?

Answer: Well, I'll be frank with you. I don't know that much about the business to say what my preferences are. I am viewing and studying it though. But I do know the reason for being here today is to look^{at} alternatives. And I am encouraged by the fact that the bill does include alternatives.

Question: You mentioned oil company profits, in your opinion what is the profit margin in the petroleum industry compared to the other manufacturing industries in the U.S.?

Answer: No, percentage wise.

Question: You are asking me a question, you know the answer to and you want to hear the answer, so why don't you tell me?

Answer: I'm curious to know what you knew. Of, course, how you figure profit depends. You can't compare apples and oranges without taking into consideration the various advantages and disadvantages of the various tax concessions whichever made the profits. It substantially and I know now that you will say that it is decreasing as far as percent of profits in the oil. Now that I understand, I also know that there are many, under certain circumstances, that are making a lot out of certain wells and particular situations they have where they're getting oil for a dollar a barrel because of the artificial situations we have, some get it for \$12, \$15 a barrel.

Question: Just for the record, oil companies are just about in the middle of all manufacturing processes, a little over 13 percent. We mentioned the Bonanzas, yes, there are some but they have to pay for nine dry holes every time they have a wet one. One other question, you mentioned a desire to get the best advantage out of oil and gas on a federal limit as very desirable. Should the Federal Government be in a better position than say Farmer Brown who might also have oil and gas on his land?

Answer: Of course, that too brings out another question and that is--what should our philosophy towards resource bonanzas on private land be? And whether or not we have to take a look at that and we may well have to. Certainly, I think it's a different situation, I recognize that but certainly the lives moved in these areas, I'm saying that resources found on a private land may be appropriate to be told as to the use of people of those resources. And we may have to move into that area, it may not be a different situation.

Question: Let's hope there are some more bonanzas. A great many renown geologists feel that there is a very strong chance there won't be anymore major occurrence on the east coast offshore. They took the facts of life. Our main hope is, that we have some bonanzas. And we'll do everything we can to get the companies who spend these hundreds of millions of dollars. The first concern is to get them out there to help evaluate them. If the government would pay for evaluation then they could put them up for bidding and they'd pay tremendous prices. I was close to leasing, at least bidding, in Louisiana for several years and the competitive bidding on the lease in Louisiana was very, very competitive. They paid millions and millions of dollars to the state of Louisiana and to the Federal Commission beyond the other Continental Shelf and it really almost kept the government running, in Louisiana, the state government. Most of these huge purchases to these companies were nothing, many, many were wasted. Then, of course, the amount of royalty the governor did return on offshore, is flexible. The governor certainly is afraid to make an eighth or a quarter of $3/8$'s or whatever is reasonable. But the system that we've had in the past on both

our continental shelf and offshore on the states have been very profitable to the governor's concern. I think we can go a long way before we can start changing it or replacing it with something else. Because the same just isn't there. We heard some wonderful talks this morning, how much these offshore operations really cost. Maybe they are going to be drilling in 4,000 to 5,000 feet of water. Trying to do all this under sea completions and everything, it's almost like a trip to the moon, financing. It's almost all been financed, every cent of it by private industry, not one cent of it by the government. Second, I want to mention the price of gasoline in the U.S. is about half of what it is in Europe. If it would come to the point of breaking up the industries, as now proposed by Congress. I think we'd see an immediate price increase in oil.

Question: You are from the North East, and I am from Texas. Back many years ago, we drilled for all our resources down there. You can find spots all over the state and offshore. We didn't have a market for our gas and so we signed and put it in the federal line and it's now going up there to your North East. We sell it at the given well-head price down there, that is established. In the state we are paying more for it than we are selling it to you for. Basically as it goes into the federal line. Now where do you stand as a Northeasterner on what you are going to do with your gas when you find it up there, are you going to send it back to Texas at the same price?

Answer: Let's go back in history for a little bit, so you can see the Northeastern viewpoint. Now there was a time when there was an awful lot of cheap oil in the Middle East at a lot less cost than the Texas oil and they wouldn't let us buy it.

They said you support your local Texas oil dealer and you buy his oil because it's important to support our local oil industry. Now that situation is changed, now they are saying, we prefer you buy the more expensive even tho we have been able to force an entitlement program. Now it's more expensive in the Middle East and they want us to buy it out of there and let the Texas people use the cheaper gas. So there's a little history that puts a little different perspective on it right now. I'll tell you the situation right now is a little more to do with it, of course, if it was discovered out here, I would presume that we would hit the kind of an end that would be necessary to reverse the flow of oil from down your way, up ours, and started it back, you would have the same kind. You'd probably have the same kind of benefits we have been able to gain. We are still paying well above the rest of the country in energy costs.

Question: Would you propose de-regulation on old and new gas or just old gas?

Answer: I voted for the compromise bill that came out. The answer to that is that I took a strong regulation stand desirably but did go along with the compromise.

Question: You know there are a number of points that you can go to actually see some of what you are talking about, in attempting to get the federal government involved in the oil business. You can go to Purdamia, Indonesia and see the results of investment and higher costs of oil production and inefficiency. You can go to the U.K. at this time, where they are also stepping into the oil business. You can go into Canada and see what is has done in Canada with the federal government a little bit you can find some cases to give you a lead on what is going to happen when you do this.

Question: Let's set one point straight. You imply that there could be collusion in the bidding between various companies. In all honesty sir, it is very competitive and even tho there might be two companies ajoined to submit a bid they do not share information. They are just sharing the risk, that is what it boils down it, it is very competitive.

Question: Can more research and development be done in universities?

Answer: That's a tough question, actually, as it turns out the university should be a perfect place to do inter-disciplinary research, but they turn out they are not very good places. It's hard to get started even for a very few.

Question: Would you agree that research hasn't been carried out, by say, national laboratory under federal funding or whatever, like citizen censors and things like that? There seems to be a role there in a cooperative basis to get some of that technology to industry where that would aid them in their research.

Answer: Sure the research that's being done is already existence, a piece of equipment or technologies are in existence, it's just a matter of transferring the industry up and using the technology for defense purposes, which could be in other areas.

Question: Sounds, possible, but unlikely. Some of the unmade special heating systems possibly could be improved if certain elements were developed by Honeywell, but are not available to the industries or pre-releases. I guess one of the roles that ERDA will have to play is to identify those kinds of areas like that as well as others who might not be coming along straight.

Answer: Sure, technology opportunities for industry is not doing it. I think the first point is to ask industry why they

are not doing it. By encouraging them to do it.

Question: I was reading an OGA report that you referred to. I think you have to watch it that you don't go after non-problems. They talk about the great social impact of 9 thousand workers that were going to be hired in New Jersey and Delaware. Those states have about 555 thousand laborers, 15 percent unemployment and this is going to take place over ten years. This is a few hundred people a year. How can this have a tremendous impact on even any village in New Jersey or Delaware? And this land impact of 15 hundred acres when you've got something like 300 thousand acres within one mile of the coast? You've really done a lot, it's just not that big of a problem. I think Louisiana really hit the nail on the head, pointed out right here that they've never encountered such a town.

Answer: I'm afraid this has been made out of a whole plot, having to do with offshore work.

Question: Are these particular problems likely to obstruct, constrain, or restrain the offshore development? How do you identify the effects?

Answer: There's no way to really know the motives behind the states and the environmental institutes who are taking the federal government to court and blocking these sales with these kinds of arguments. Maybe they are artificial and really the whole idea or the whole purpose is to get some decent ties, as you suggested earlier. I think that happens to be a fairly large element, but I do not know where the line has gone, and how much of it is valid. It's not unique to offshore oil. Let me point out that besides the problem, it did come up in offshore oil first, which will run the same kind of problems as Western area development.

It is now possible to look forward with plans, make schedules, consider budgets and then move on to implementation of such plans which then provides the opportunity for later review and adjustment. It seems fairly clear that some of the possibilities are in front of us at the present time, with goals seem to indeterminate or at least not agreed upon among important members of the population that are deeply involved in this OCS matter. However, let us see what we can talk about. You know it's sort of interesting being here from California. As you are well aware, there are some strong pressures in California not to develop the oil resources in what turns out to be an economically sensitive area, the Santa Barbara Channel for instance. You are probably also aware that on June 8th we are going to see how the populus responds to proposition which, if passed would be quite restrictive on the further development of nuclear energy resources or plants within California. But that's not all. It's late enough in the day that you might care to laugh with me a moment. I've got a clipping from the financial section of last Sunday's Los Angeles Times. It's almost a quarter of a page ad and it left me wondering whether we are working on the right problem or not. Let me just read a few sentences. They talk about the resumption of the age of ice. They say: "The last three decades has seen the fast growth of coal in the earths Northern hemisphere and this has accelerated strongly in the last half decade. It is very possible that five to seven years will bring year round snows as far south as New York City, as the customary conditions of the earth's age of ice resume after ten thousand years. In 1971 the rate of average yearly snow cover increased and reached twelve percent per year." Given such a rate of increase it was calculated that full glacial cover could be reached in seven consecutive years.

Then they talk about population migration, military conquest of the tropical regions and so on and so forth. But getting back to California, with the weight of the snow and ice that will accumulate even modest variations of Arctic snow cover, will produce earthquakes in faulty regions such as California. They go on to say, that the probability of world catastrophe in the near future is well beyond any acceptable risk. Now, that sounds a little extreme, but I'm sure many of you remember not too many years ago, and perhaps there are still some people pushing it, some people were worrying that the industrialization of the world was moving so rapidly that the carbon dioxide layer would increase and get a further greenhouse effect. That the polar caps would melt and our highly developed coastal areas would be inundated but a few hundred feet of added ocean. These people at least seem to disagree with that point. However, if we focused in a little more closely when I read a short essay by Ken Bolding. Ken Bolding is the Professor of Economics and Director of the Institute of Behavioral Sciences at the University of Colorado. He was writing on the importance of improbable events and this caught my eye because much of it we were talking about deals with the importance of improbable events.

He attacks California again and I wasn't sure how to take this: "We know that San Francisco will be destroyed in X years, there is a fair chance that X is less than ten and a virtual certainty that X is less than 100. Although most of the citizens of San Francisco simply dismiss the possibility from their minds, they know deep down that the San Andreas fault is waiting for them and that California's absurd geological ambition to reach Alaska is relentless and unremitted." That perhaps, is closer to our point, when dealing with improbable events. I don't know where San

Francisco will be 100 years from now and I don't know how many oil spills we will experience in the next 100 years with a recovery exploration of recovery of oil and gas on the outer Continental Shelf. However, it seems that what the heart of the discussion here was to have been was the way we direct our attention toward the development of oil. Well considered politics by which OSC resources can be developed. When I say well considered, we can all think of instances in which various agencies have set their minds on the wrong objective or in some sense formed decision rules and decision patterns that lead to results that were somewhat different than the objectives intended. I won't go into a long dissertation here on the diamond lane that they have imposed on us on the Santa Monica freeway since the middle of March, but that's a nice example of something that came out the wrong way. Very briefly, in this sections of the Santa Monica freeway from downtown Los Angeles to Santa Monica, by the way, is one of the most heavily traveled freeway sections in the country. In other words, to reduce consumption of idle carbon fuel in the area, someone got the bright idea that they should lock off one of the four lanes and let only carpools of three or more person, or buses, use the fourth lane. And the most normal result, as far as I'm concerned, is that now people who were able to commute from Santa Monica to downtown Los Angeles in 35 minutes, now take more like 45-50 minutes. There are far more fender-benders and I hardly believe that the consumption of fuel has decreased by the very noble gesture on the part of the local authority. This is what I mean by well considered policy. There is an obstacle that we face, and I found a statement that I thought pertained here. Pa Wals, as some of you may know, is the superintendent of the Ocean Technology

Division of the U.S. Naval Research Laboratory and is currently on assignment in the office of Naval Research in London. Curiously he was reviewing the very book that I mentioned earlier, the book, Energy Under the Oceans. His comment about the book and about what could be done about it was what I found interesting. In quoting, the studies major conclusions as I see them are that development of oil and gas resources is too important and effects too many people to be left to the oil companies. The important problems are managerial and not technical. The thrust of his argument comes a little later when he says - those of us with technical problem solving experience often mistakingly believe that techniques that have been successful in managing a technical project will be equally successful in managing development a resource. In fact, it was probably easier to put a man on the moon than to manage New York City. And if that's so it is because the objective - the moon - was known and agreed upon. A proposed course of action could be examined against a single criteria, but does this improve the probability of putting a man on the moon? Try that for New York City or more pertinent here - try it with the development of the U.S. outer Continental Shelf for oil and gas.

Environmental impact and environmental aspects may lead us to make some determination of the prices that have not been stressed very heavily and perhaps underlay some of the comments that have been made. But it seems to me that environmental aspects might well be less impactful on the environment in whatever degree, that is true today as it is in the future. We bring up the question that it's not whether ^{to} develop the outer Continental Shelf resources, because we must. The question is how we do it. Of course, that's an absurd statement on my part. It is not a must that we develop OCS resources as though it were like our only possible alternative.

There are several other alternatives that we have been touched upon. We need energy, but there are other possibilities, many far-more capital intensive, many requiring much more advanced technology, many being more serious in their impact on the crudes, development. Within some economic sense it seems to go with developing. If someone could recover better, earlier data, then I could cover it at this time. Some of the things that are important in one riddle or lie in defending the statement that we must develop these resources. According to the figures that I have looked at, in 1974, 25 percent of the domestic consumption was supported from the opposite shore recovery. A second consideration which has been touched on is that it's basically cheap oil, it's landed cost is low enough to be quite a factor. And the third one which was also touched on, may have gotten a slightly different figure but, nonetheless - something like 2/3 of the undiscovered resources in oil and gas are offshore and something a little over 3/5 of the unproduced oil and gas is offshore. The congressman did a fine job also on how the resources market developed with various economic and policy considerations.

I have listed a few here that I would have talked about a little longer but let me just run through them quickly. There has been discussion on this today of the possibility of governmental exploration, or governmental investigation in advances of development, and that would have some interesting and important new facts on the way in which future leases were let pass. There's the whole spectrum which the Congressman related to and he didn't have a specific offering, nor do I. But you can go all the way from the present bonus bidding and it's good or bad influences up to the possibility of claim's staking, or royalty bidding, or even some sort of sharing of excess profits from a

bonanza. Then the whole subject that was touched on earlier also, the division of the income between national coffers and say regional coffers. When you get down to environmental issues, there are a few things to be said here that differ a bit from what has been said before. We are all aware that whatever we are talking about here in terms of oil and green environment or oil along the shore or whatever it is, all intermingled with a large number of other sources. The thing I was surprised at, coming from California, was the figures that were shown earlier today about the amount of oil that finds its way into the ocean as a consequence of automobile use. It really suprised me because there are rather serious constraints concerning what we can dump into the ocean in California. Maybe that's not the same elsewhere. The obvious point is of course, that we find variations of oil in the environment to have probably treated urban sewage. We find it associated with industrial wastes, and of course, it's intentionally discharged from ships in the process of discharging accumulated water or cleaning storage tanks. It is accidentally spilled from a variety of sources and of course, there's a certain amount of natural seepage that takes place. You have seen some figures already today on the distribution among the sources of the various products we find.

In order to put the whole thing in focus, I found one rather interesting, you might have run onto it yourself in other investigations, some environmentalist said, and I'm quoting an article by Kenneth Amory of the Woods Halucionographic Institution. "Some environmentalist have warned that oil spills might lead to an ocean of oil instead of water, however simple calculations show that even if the total world proved reserves and unrecoverable

resources were suddenly added to the ocean, they would constitute a film less than a millimeter thick over the entire ocean surface."

The amount of spillage that goes along with offshore recovery to the degree that data has been available and to the degree that it has been correlated. The amount of spillage varies quite widely. The amount of spillage seems to vary substantially with the age of the fuel or the age of the equipment and platforms and so on that are being used in production of those fuels at the present time. It appears that there is less spillage from platforms further off the coast but this indeed may possibly be related to a spewed mess and reporting of the spilled data. There does seem to be some evidence that support the idea that as environmental considerations have put greater and greater pressure on the industry through the application of tighter supervision and control.

It was interesting to hear some of the things that were said most recently by Mike Davis. For instance, about some of the advances in technology which indeed sounded as though they might help to reduce the probability of spills or limit their volumes. Now these lead to believe that there are some important possibilities that to be drawn from other areas of advanced technology which to my knowledge are not presently applied. There is at least the possibility of building fault trees or prevent trees and doing failure mode analysis. Now obviously, people who have been designing and building equipment and operating it successfully know quite a bit about where the weak links are. But, I suggest that possibly a dispassionate, detached view of applying some of the reliability analysis techniques that were successful in getting us to the moon might indeed be applied in these areas to see really what can most readily be improved to reduce the impact or the possibilities of spills or limiting their volume. I believe it's possible to sort out from the incomplete data that does exist some guidelines relating to the environmental and institutional impacts which will permit development of policy for exploitation of OCS oil and gas. I believe we need to find a way to define our goals and we need an orderly investigation of improbable events in order to reduce the probability of recurrence.

The primary purpose of 6218 is to promote a timely and safely development of offshore oil resources in a way which will encourage competition, protect the marine and coast environment and involve the affected states with planning and decision processes. Rather than present a detailed analysis of the house report; 94-1084 merely explains those sections of the bill which are most frequently understood. One of the most frequently heard criticism of the bill is that delayed rather than expedite development of OCS. The argument goes on to say that this would increase our dependence on foreign oil, detriment our national security and weaken our economy. The facts are that the bill will not delay the development of OCS at all, in fact several aspects it will speed up development which are now moving too slow. Another practice is that other aspects which critics point to as delays to a lawful processing. In April 1973 President Nixon announced that the OCS leasing rate should be increased from 1 million to 3 million acres per year. In January 1974 the President directed the OCS leasing be further accelerated and that 10 million acres be leased in 1975. The actual increased lease, the actual acreage lease fell far short of these goals. In 1974, 1.76 million acres were leased offshore and in 1975 only 1.68 million acres were leased. These shortcomings resulted from the delay of lease sales due to lawsuits filed by the states and environmental groups seeking to prevent offshore development and to internal delays in the Department of Interior. As a result of these delays, drilling rates production from offshore failed to keep pace with the nation's

needs and import of oil grew to 35 to 40% of our total consumption. In fact, last month was the first time the number of barrels imported exceeded the domestic production of oil in the United States. Under 6218 the Secretary of the Interior directed the development of a new five year leasing plan which is reviewed by the states and the Attorney General before the Secretary can approve it. Some critics have pointed specifically to the preparation of this new plan as a course of delay. The fact is that the bill specifically and unequivocally states that leasing is continual under any existing plan until a new leasing plan is approved. An amendment will be introduced on the floor to further clarify this by giving the Secretary 18 months in which to prepare the leasing program. Under this new plan, leasing will be accelerated in a way that the President was unable to achieve in 1974-75. Leasing will be accelerated because the states will have already submitted their comments and participated in the preparation of the plan. After the new leasing program takes effect, oil leasing must be conducted according to plan with the development of this new leasing program. Offshore production should increase and help meet national needs. Furthermore, the depth of the plan and the leasing schedule will enable oil companies to plan on the availability of drilling rigs and other equipment and submit orders when necessary. This will help alleviate the present flood of exploratory rigs which now exists through an accelerated and leasing schedule. In some members leasing programs the leasing of offshore tracks and will achieve that under a comprehensive and rational management plan which takes into accounts the national energy needs discovery potential, the potential for environmental inhabitants of the various areas, and the needs of the states. Some critics have cited the requirement of the Attorney General and the Federal Trade Commission to review the issue for extension of the leases as another delaying factor. This is clearly not the case and it was one of the issues before the rules committee. Currently the Department of the Interior has a period up to 30 days between the lease sale and the issuance of the lease to review the bids. During this same thirty day period the Attorney General and the FTC will examine the issuance of the lease to assure that it would not be anti-competitive. They have criticized the requirement of the bill, the oil companies prepare and submit reproof development and production plans and the insueing delay between the exploration and development phase of the offshore operation. The important fact which is devastated by critics is that currently under existing operations the preparation of the development and production plan is required by the Department of Interior and the delay already exists. The bill merely strengthens in action to all the protections which such accords the courts by requiring the preparation of the production plan and the submissions of

information to the state official. The states can now equally anticipate the plan beyond short impacts resulting from offshore development. Some of the state police said that this bill would require additional environmental impact proceedings which will further contribute the delay. The bill calls for an environmental impact statement to be prepared at least once in each frontier period at the time that the development and production plan is submitted. Under the national environmental policy act, the approval of such a plan would probably have constituted a coporation federal action anyway and thus require preparation of NIS. A second major complaint is that the bill calls for the federal government to enter the oil and gas exploration business. Alarm has warned that this bill would eventually lead to a national oil company. What critics are pointing to when they make this drive is the requirement in Section 11-G that at least once in these frontier areas the secretary shall seek qualified applicants to conduct geological exploration trying to release those areas regarding them as having the greatest likelihood of containing significant oil and gas accumulation. It is essential that this subsection be thoroughly understood as far as what it says and as far as what is intended. It says that the Secretary shall seek qualified applicants. That means private industry will be doing the drilling. It also means that the drilling will be done voluntarily at no cost to the federal government. It is not done by a branch of the federal government. It is only done under a permit issue by the Secretary. Why does he intend it as such then? The intent is to decrease the risk inherently associated with the leasing of offshore lands to all parties involved. By obtaining more information about an area to be leased prior to the sale, the public will be assured a fair return based on the actual value of the minerals to be recovered. The risk of the oil companies will also be reduced if they know more about the area they are going to lease. Finally, this will increase competition among the oil companies by allowing the smaller companies to bid on lands and risk level 8-4. The pre-lease exploratory program is envisioned by this. Subsection is patterned after continental offshore stratographic test cost program. This program is currently conducted by the Department of Interior and has received widespread industry support and acceptance. Under the program primancy drilling has been grated in the Gulf of Mexico, Southern California, and the Gulf of Alaska as well as the one test just finished in and the one test presently under way by Sevco, the Georgas Factory and the Atlantic OCS. Those companies will share in the cost of the drilling and the Interior Department has exclusive right to the information obtained from the test. The program envisioned in the bill merely strengthens the current program by making it a law requiring the drilling to be done on-structure rather than off-structure. A third complaint about HR-6218 is that it would cause a bureaucratic nightmare

and that it over regulates the activities on the outer continental shelf. However, there are very few activities which exist over regulated. Almost all the operations are regulated by the federal government. In fact the bureaucratic nightmare exist today. This legislation would end it. This bill clearly sets up the regulatory authority of the various agencies, provides the joint action when necessary and plainly spells out who is responsible for what. This way only two agencies having authority under different statutes are reluctant to act because of the others jurisdiction will be covered rather than left unresolved and unregulated. I hope this has cleared up the more controversial aspects. We did get the rule pending on the house schedule. We could be on next Thursday or Friday. The senate majority passed its own version of the bill that our house committee started last April working field hearings at New Orleans, San Fransisco, Santa Barbara, Los Angeles, Yacatac, Cordoba, Anchorage, Krudo Bay Alaska, Boston, London Conneticut, New York, Philadelphia, Ocean City New Jersey and Ocean City Maryland. The committee was formed last year in the first test under the authority of the state to appoint a house select committee for a specific purpose. Particular in an area such as this where the jurisdiction of eight of the committees were intersected. If we ask sequential referral through eight committees, you can imagine in a two year congress why the speaker took 6218 which had been written so that it intersected with three committees, merchantmen, fisheries, Interior, and the judiciary program. The original intent is to take three majority members from each of those committees and of course a member of the minority placed on the committee on a 2-1 basis plus one extra majority. That was done, the committee was expanded twice to include each of the coastal areas. The staff was drawn from those three committees and our chief counsel has done probably the most expertise job of legislating, combining and counseling the majority of the minority members through the difficult period. We now face a house senate conference and futher negotiations with an executive in all these stages. Are there any questions?

To be committed to all the work that you have done about trying to draw something together like that is very difficult. On the black coast roads being drilled off the east coast not it adds to the incentive of the number of companies to make a bid on an area which will very likely increase the bid prices that accompany the bidding. If you move the next step and bid on a structure, you are basically saying there is oil there or there is not oil there and in turn you maybe absolutely cutting off leasing the land. Has that been considered? Yes sir it has. The second thing that I would ask is that the more people involved, for instance the states, then it seems it will involve more time. How can you say it is going

to take less time when the decision takes 18 months as you go through the state functions and the state people?

ANSWER We make information available to the states so that they can complete their planning processes concurrently with the Department of Interior. The states are brought right into the planning processes. The original bill had a veto by the government which we took out. But, the intent is to circumvent what has happened. In New York, Sulphur County, immediately filed an environmental suit. California immediately filed a suit and different subdivisions are beginning to file suite. In these areas, what this bill does is bring them all together into the planning process. Finally, Congress had an act in order to stop the numerous layers of court actions. We ought not have to do that each time we wanted a leasing program and that is the intent we have in this bill.

QUESTION Alright your intent, not to occupy the questions, that just because the bill goes through, is that going to eliminate any environmentalists from filing suit and delaying the action?

ANSWER Because certain things are now in review directly in the Court of Appeals *instead* of going through a whole trial situation in the District court, you may view the decision of the Court of Appeals. There are suits all over the place each of any one could stop drilling and has. You have to consolidate in one way. So look at the obligation you mentioned before the fact. Only once in a frontier area is it cooperative. The expectation is that most structured will continue to go off structured. But once you should go on structured the reason for it is that there is a disagreement between geologists as to whether to get more geological information on structure or off structure. There is nobody to try long structure.

When you read the words of the act, it says to contain geological information. As a shorthand term we called it one structure. It is not an attempt to start a national oil company. There is nothing in there now that dates government drilling or even appropriates money for it.

I appreciate your information on the health and your explanation on the environmental suits. The suits will still be filed but there is a time limit and a court defect goes to it.

QUESTION Is there anything in the bill that states whether any revenue is going to the states?

ANSWER Well, yes and no. Yes, there are recent ones. The leasing plan when spoke of time, extent of location, on lease sales, and that leasing plan is often sued against that leasing plan.

QUESTION To bring up an interesting point -- right now they are building on the slope. What jurisdiction do they have on the continental slope?

ANSWER If we did deep ocean mining and it would probably cover this also. That's what we blew out of the sub-committee about three months ago on March 15, just in time for the Law of the Sea Conference in New York. We'll go ahead with our own deep oceanography if they don't get some reasonable conclusion up there. That is what you are getting into as you go further out. Those clarifications would be good in the deep ocean mining where there is nothing out there right now. A definition is needed to the question on the plan as it is submitted. Does that have to be reviewed by the state, passed by the state, reviewed by the federal government and passed by the federal government? Does the government make recommendations, do local communities make recommendation, do any of the agencies make recommendation? Hopefully, some federal agencies make some recommendations and is holding that together. That firing plan like every other plan is subject to review. We would like to review the court of appeals, a non-district court because the district courts have a trial with hearing and witnesses.

It will be going to the states weekly considered through not only this bill but also the coastal zone management which is currently in constant conference. Any revenue sharing we have is an impact fund and where the demonstration has been shown there is also plan grants for impacts and that's part of this process.

You say that public lands and federal lands are going to come ashore and it's going to impact states? The governor of Louisiana wants automatic grants in the CCM Bill. They rushed 125 measures before them. We eliminate the revenue sharing concept and put it on a demonstrated need basis with planning grants.

QUESTION How are you going to figure out how much each state gets?

ANSWER Well you see, California is a different case. They have 900 miles of coast. Also New England is a complex state. You really have a regional problem and where is that problem going to come ashore and who is going to be impacted and how. Where is the refinery going to go, how is the pipeline going to come in, what are going to be the associated industries, what schools are going to be necessary, what roads, all these elements are mixed. That has to be demonstrated. But if there is a planning grant then that state going in there can have that construction planning and the impact further, that is also in the bill.

QUESTION You mentioned that the bill is to accelerate leasing. Are there any requirements for substantial acreage after giving depths?

ANSWER No, as those acreage areas come up all areas are gridded and the lease sales and the bids will be made.

QUESTION So the Secretary could decide that a million acres a year is of judicial proceedings. We expedite proceedings by saying the reviewed by the court of appeals. It will also be involving people being able to challenge it.

This bill is really a complex bill -- it is almost 280 pages long. There are

some regions one says after a four page. It summarized how it effects the energy industry, how it effects the states, how it effects the environment by a section by section analysis. I would really strongly urge you to read it if you have any interest to be involved in the issue.

Everybody thinks the law needs updating. They disagree what the updating should be. But the petroleum geologists want insurance about confidential information. The coastal states certainly want more input, the people who construct the rigs and platforms have an amendment that they are going to offer large utilization of construction. Some of these smaller oil companies are greatly afraid. They presently have their activities but they want more protection. The leasing system that is presently operated provides for funded industries -- that really means that the large oil companies are the ones that are directly involved. Even they have admitted that their capital expenditure is so high because of the system, that sometimes they can't lease as much as they would like to. We provide the new options and do require that 10% be tested and then set aside about 50% to be tested. These are the differences between the two bills. Some of the key issues in the bill are handled as follows: the one base line studies and predictive studies are mandated. The result of the base line studies and predictive studies are monitored in activities. However, the baseline studies are to be completed independently of approval of development production. I like the Senate Bill which makes development production contingent on the base line because base line studies are a changing thing. It can change day by day. Second, we do require every frontier area at least once and an environmental impact statement. Every oil company executive has stated that for a frontier the first time around is going to be NIS. It is going to be under federal action. You can't avoid the problem. We provide that citizens including the environmentalists can sue in a specified way and in a specified court and in a specified time procedure which we think will eliminate alot of nuisances and we also think it will speed up the entire process. There is an oil spill -- title requiring certain requirements for cleanup, certain damages that can be covered. You're talking about leasing on the Atlantic Coast. You are dealing with fishermen and recreational business and they are scared to death. Alot of that fear is unjustified but they want to have input and they want to be tested near the spill. As Mr. Murphy stated the curse was on the impact part of the bill. Every possible issue involving International policy has been considered either inclusion or exclusively rejected for this bill. It clearly involves many things -- international law, domestic law, criminal law, strict liability environmental safety, energy needs, anti-trust division, etc. The committee had to consider it and has to consider

everything. They had to be careful over a very long period of time. As a matter of fact, the chairman of the rules committee said -- Why do we spend 14 months on this issue? Its really more than 14 months. The senate has been working on it for three years, the House has been doing it, various committees have been doing it for seven years. Hearings were held by the judiciary committee as early as 1974.

QUESTION What is the current lease price per acre?

ANSWER The person who bids the highest price -- drills, gets the acreage, and it varies from very low to very high.

QUESTION Will the prices of drilling be more expensive in the future?

ANSWER Offshore drilling will be extremely more expensive because of the tremendous cost to explore.

QUESTION How will you provide for the lease prices?

ANSWER Lease prices will be provided for by a system suggested by Phillips Petroleum that will allow smaller companies to participate. Phillips Company suggested what they call a percentage leasing plan which means the Secretary of Interior will put up a geological structure or part of a geological structure. Each company, which could include the National Gas Security Company could bid on a percentage of that lease sale and that person with the highest bid on that percentage would get it all. An operator is selected and the rules procedures are established. This allows more value to only 4.1%. Somebody larger could work 20%. It also allows diversification by the larger oil companies so they don't have to make so large an investment in each particular area so that they won't be so strangled if there is a failure. The only other way is to lease some of the areas set down by the rules for it.

QUESTION Does the bill send out an alternative leasing system that can be tried and states that the 10% must be tried?

ANSWER You are syaing that your trials for alternative leasing, percentage leases, net profit, share royalty duty, installment leases can be payed over a period of time variable royalty diminishing or sprialing royalty, net profit plus royalty. It says that the going rate can only be used at 90% meaning that the rest must use the 10%.

QUESTION This whole bill is to include the drilling program or just the senate one?

ANSWER Only the senate will provide for the 500 million dollar relay program.

QUESTION Are there any references to a federal offshore technology program?

ANSWER The original draft that the committee and staff prepared included an R&D section for total R&D session. There was a jurisdictional objection on science and technology that we should not add at our bill anything having to do with

research and development was their domain. But it was successful in convincing the members of the committee that if they want to get a bill reported out then they had better take the R&D session. They took the R&D session and the science and technology committee has passed 11993. It is a comprehensive OCS related R&D bill concerning offshore technology that is now in the Interior committee. The Senate bill has a detailed R&D provision. What I expect will happen is that when you come back for conference, the science and technology committee will ask for a report of the conference and they will go and introduce an amendment in the conference to require an HR-6218 that will preserve the jurisdiction for all time. But, still we will have research and development.

QUESTION When do you expect it to be offered?

ANSWER I'm fully expecting alot of changes and I think we are going to be there a long time.

QUESTION You mentioned before that some consideration is being given for pollution insurance for smaller companies.

ANSWER Presently there are funds for clean up of offshore and a con-law document as to damages. We provide a liability up to 35 million dollars to the leases or to the lessor and then the fund takes over afterward. Some of the smaller companies have stated that they can't get insurance.

QUESTION Then what is the North Sea fund?

ANSWER Well the North Sea fund is subject to change at will by the government. In the North Sea, we have a fund that has independent authority that can get the fee by 3¢ a barrel. The people have a right to litigate but not in court. The North Sea problem is that it is all done by regulation. They can change the regulation from day to day.

QUESTION Does it withdraw from the oil produced 3¢ a barrel or what?

ANSWER Until you reach one, no and then when you get below one then it goes back up again. It's not forever.

QUESTION And that is the federal fund that has accumulated?

ANSWER That is considered to be incentive for the small companies now because they now can have insurable interest.

QUESTION With the leasing the way it is now and the amount of money that the oil companies have to pour out -- if you pour out 200 million dollars to get a lease, you may have 10 million dollars to drill wells and that is all you have left. So it is hurting exploration, drilling and the development just for the amount of the lease. We are working at two ends -- one group is looking for more money. The leases under your head plan are going to get rid of 200 million or rather 500 billion that has been gotten from the Gulf of Alaska selling it to 571 people bringing approximately 750 million dollars, Under your new plan, you

are looking for more money coming from the leases. What are some of your incentives for doing this?

ANSWER: You're right. One of the OK policies of the bill is clearly to get as much fair public return, which is interpreted to mean more money for the leases. The question is really when you get under a net profit share or a royalty bidding system the oil companies don't have to lay out that money until they actually find the oil. The profits go down as the royalties go up. Basic economics is budgeted so if an increased royalty occurs or a net profit occurs then there is not that much need for our money and that money can be used for exploration. The second thing is that by providing for your exploration, the companies can pace their development while leasing their one which five years later will be discovered in year two. They can pay one fifth each year and that isn't settled to the right of more capital. There are incentives in the bill for the use of technology that we both value. We can't speed up the whole exploration process and expect the bill to be followed up with revenue. Of course, we don't have any jurisdiction over that, but we will require internal revenue for a chance to increase it. I agree they said that there is tremendous property and you have to be very careful to get in between so you don't cut out the incentives.

QUESTION I feel that the government has risked its right there but if you look at what happened to Pertamina and Indonesia basically that is the same plan they had. You look at the amount of investment and at the amount of rigs that are working that area on profit sharing, what has happened?

ANSWER I agree with that. Actually that is shy, it is only a 10% mandate. We want to see what the American situation is. We want to see how it is going to operate. We want to follow what steps are involved. Of course, the difference in these situation is not just that problem, it is also ownership.

QUESTION Yes, that is correct. If you hold any one of these cases. It's just like our social security. It goes from 1% to a higher percent pretty damn fast if you let your federal people get in your pocket. So, is this going to go from 10% to 100% in a year, will it be there in two years?

ANSWER Well, if nobody bids on the higher percentages the leases will not be bid. If the current level of administration leases retirement they won't accept the bids. The leading interior department is not acting to take low bids and they don't. So, I'm sure they find it's not an adequate return of what they believe to be public resources and they won't accept the bids.

QUESTION The bill may practice and we may in 18 months offer leases on the new plans and we may in turn find that nobody bids on that basis causing a delay.

ANSWER You have been talking about the Interior Department. They fully plan to experiment anyway and they claim to have started in the 10% to 20% range. That

is what our gross is -- 10% and not 50%. They have already started experimentation in the Gulf of Mexico and a place in California. By uping the royalty presented in California, but they are going to do it anyway because the people just need information.

QUESTION Is this 10% a set or is the minimum 10%?

ANSWER In a set it is 50%.

QUESTION In the oil industry per general, does the IPAA support the bill?

ANSWER Adriatic opposed the bill. IPAA, Independent Petroleum supported the bill. We ran a neutron bill for the Gas Association because the associated gas distributor, who are part of the oil and gas association, are for the bill but the larger companies are against it. Some of the small oil companies, like national oil are supporting the bill. The reason I think the opposition is released -- The rules committee is not so upset with our bill, but they are afraid that if we get this bill and the senate bill it is going to come out terrible so that they could not possibly support the bill. That showed a tremendous lack of confidence in the House of Representatives.

QUESTION I presume that we give profits over to you?

ANSWER Well in a company report the first 20 pages of the report contain the taxes to them and the last 30 pages contain the taxes situation as a corporation in getting them to try to compromise.

QUESTION What is the historical cost for a offshore Gulf of Mexico reducing the offshore gas when it comes out.

ANSWER I think these are about 1970 figures but, it shows here that a total of 14% of your total cost of bringing your oil from offshore was lease bonus. No bonus bidding actually serves the public more in that you have more money left to explore for oil and gas on the outer continental shelf.

I can tell you where it came with in the staff graphs. One of the alternatives suggested was called working the bid, which would mean a person would submit a bid to scarf away from the bid. That water and another resource altered by the suggested by the staff was to provide that the gross be merely escrowed funds that the RESY could use to do exploration reports. That would be his insurance. They were both overwhelmingly defeated by the committee and the feeling of the committee can be expressed two ways. They agree to the idea that fund and bonus bids create artificial price and increase and so therefore we should cut out the bonus bid. At the same time they were also concerned when you get to have some kind of return to the federal government you lose incentive and the federal government dealing with federal leased lands to regulate them and control them. I'm not saying whether they are right or wrong, I am just telling you what I think their position is. I think a third facet was a study on the faults of water as is only now

correlated to the price of oil. There was 60% basis. The price that we accept from the Arab states not being set by what it costs to produce the oil and since that is true, there is not a one to one relation in the price of consumer base and the cost of royalty. So, along on top of the fee there is another loss.

Before the Arab embargo, the cost of oil was less than \$2.00. Well, it was around \$3.50. The interior department now uses a price of \$7.67 based on cost for offshored oil.

I think the alter minerals meet the heavy costs of heavy benson over millions and millions of dollars. To develop this offshore oil company is to leave the countries alone and let them simmer down after they lost their decreasing amounts of radium. It just doesn't stand to reason that they could even meet your new agreement or anything else that would bridge profits. Of course the people would like the government to take over. That is one step maybe in breaking the backs of the oil companies so that they can get into some kind of government corporation. It is a very serious thing and we have got to save this free enterprise system. All the oil companies control about 11% of all production oil.

One question on the support of the bill -- Where is the future bankers support coming from?

The environmentalists are not full of heaven but they support at least even though they would like it to be much stronger.

Congressman Stubbs from Massachuse#sis is here and he is going to speak to us. I gather we are a mixture of industry, academic, and government folks here. When someone told me this was co-sponsored by ERDA and by the University of Oklahoma I was speechless for a few moments trying to figure out from my New England vanishing point just what that combination meant hearing Oklahoma. I knew it meant no good, but I couldn't figure out which kind of no good.

My district is in Southeastern Massachuse#s. It is Cape Cod, the Islands of Nantucket, Martha's Vineyard, and the suburbs of Boston. If you want to know something more about it, I shall tell you that I am the first Democrat congressman in history. I was first elected in 1972 having lost in 1970.

The other thing that you should know is that I represent the only one of 12 districts from the state of Massachusetts which voted for Richard Nixon in 1972.

I want to say that I have twice gone to Louisiana in the last year and have been granted safe passage by the Congressional Deligation from Louisiana. I was a bit frightened late at night on the streets of New Orleans and there were several opportunities on the rigs and the gulf when I could have been promptly disposed of by clever technicians of the industry, but we managed to avoid that being very broad minded in New England. We have offered safe passage through the Louisiana deligations to Massachusetts. We understand that at least a large part of their constinuancy is already on their way there, so they've probably heard all about it.

The bill which has passed the Senate, which I will let you know is a good deal stronger than the one that passed the House,

and although our bill was considerably watered down by combination which is not a new one in this city of republicans and democrats from such places as Louisiana and Texas. It is still a sufficiently strong and sufficiently good bill to warrant the very strong opposition of both industry and the administration and to face if we keep it even remotely in it's present form - an almost certain veto by the President. Those of you who are from the industry should be assured that even I don't see any way under heaven that we could override the veto given the variety of forces that are opposed to the bill. We're going to try and see if we can't get something resembling sensible public policy with the respect to resources which belong to all the people of this country.

A month or so ago the first photographic rig drilling, the first photographic test hole of course most people don't understand that they are not looking for oil. The Alice in Wonderland nature of this operation would be considered a disaster if they found oil. Those of you from Oklahoma who understand this industry know that all the time, all that money, and all that effort is being sunk offstructure and the purpose of not finding oil which is one of those we try very hard to try to explain to those people in Massachusetts and Washington having a very strong and very natural paranoia.

I don't know which ones of you are in the industry, which ones of you are academic, or which ones of you are government. As you laugh or scowl at each remark I'm getting an increasingly clear idea, but I still don't know for sure, for those of you who do represent the industry should know or if you don't you will learn promptly as you approach New England.

Vestas are no longer necessary for entry into Massachusetts. I did have a bill to put an American Embassy in Boston but it bottles up in committee. You will find a very great inclination to distrust the oil industry and the energy industry in general. In New England this should be understandable easily even to people in the industry. If you have even the most passing familiarity with regional differences in energy prices in this nation today and over the last ten or twenty years, you will understand why the mention of some of the larger oil companies is apt to draw shoes thrown at TV sets, adds, and things like that. New England, at least those of us from New England, feel and I think with some justification beyond mere parochialism, that the region in general has been severely discriminated against by what has passed as National Energy Policy.

If one likes to think there has been one in recent years in this country the memories go back to the battle over oil import quarters. You will recall that for the past twenty or so years until about 1971 or 1972 import quotas on imported oil were imposed against the wishes of the Northeastern coast in general. Governor Edwards of Louisiana told me last year when we were in Baton Rouge, "You know you all were right and we were wrong. We beat you, we kept those quotas on you, but by God we've used our own oil up."

I said, "Governor, it is a little late for us to reach that conclusion, mutually, that is, of course, what has happened was exactly what many people said for so many years, a drain in America first policy."

President Nixon, of course, as you know, established a commission on oil import quotas in the early 1970's and they recommended that he abolish the quota system. President Nixon proceeded to abolish the commission. As he did most of those commissions that recommended things he didn't like, which were most of those commissions, and it was only when foreign oil became more expensive that the quotas were dropped.

The history is in the minds of people in New England and it strikes them as one of the early manifestations of a very raw deal in terms of energy crossing the battles. In the recent two or three years between the Congress and the President over questions of oil and energy pricing policy have been uniquely bitter ones and uniquely significant ones. The last figures I saw indicated that we in New England are paying a basis of 2.1 times the national average for energy. That's the average and those of you who are where I would imagine that factors three or four times more for capital energy.

We generate most of our electricity with oil and most of it is imported oil. When the industry comes, and it will come, and although some of you may heard the industry people say that people are greatly irresponsible, flakey type, anti industry, or anti OCS Development, that is not true. The pressures on me representing Cape Cod, Kentucky, Martha's Vineyard are indeed to be anti OSC Development. We have people that would just as soon go away and never be there. What I have told my constituency is that, like it or not, - if there are commercially valuable deposits of oil and gas on the shelf they will be developed and that, therefore, those of us with reservations about that should

direct our energy and attention not to the titling at windmill type operation of trying to stop it, but to try to see to it that it happens when it does in the most economically and equitable sound manner that it possibly can.

Our two major industries in Eastern Massachusetts are fishing and tourism. I think that you all know that those are probably the most vulnerable two accidents of catastrophes with respect to OCS operations. Our fishing industry finds its richest sources of fish precisely where the initial tract nominations are in Georgia's bank. We have had a very unpleasant exchange of correspondence. The interior department here is a good indication why there is so much sinthesism and so little trust, at least in the area of the country that I represent. I asked the Secretary of Interior that if in the initial tracks election in Georgia's bank off New England if he would exclude from the initial lease sales at least those areas that were less than fifty miles from shore. Those areas of the highest dencity fishing operations are richest lobstering canyons which are very few in number, but extremely productive, but also geologically unstable and probably not very good places to be drilling anyway.

We got a letter from the Interior Department saying we'll respect those wishes and I'm sure you know the next part. We get the announcement initial tracks election for the Department of Interior within one month having publically and in writing made them to me. When the oil industry decends in Washington, as it has on Massachusets in the last few weeks in an attempt to bottle up the bill on the Rose Committe and uses as one of its principle arguements against the bill that it would constitute

a delay of the highly necessary business of getting on with offshore development that in their own framework in their own interest they have got it backwards. The one way this nation could guarantee an almost interminable series of delays on the OSC is not to pass any bills because if we do not change the current procedures , and if we do not change the rules and regulations as they are represented in the outer Continental Shelf Lands Act, and if the Interior Department continues with business as usual you may be absolutely certain that every governor of every coastal state is going to take this to court and we are going to be in with negotiations for years if not decades to come. California as I am sure you already know, has already brought suit. The governors of Delaware, Maryland, New Jersey, Alaska, Massachusetts, New Hampshire, Rhode Island, and Connecticut are seriously considering going to court to stop a process of their shores impacting on their shores over which they have absolutely no control and no voice.

If I were a representative of the oil industry I would be extremely anxious to find a way to make the governors feel they had a sufficient voice so as not to feel compelled to engage in what would be essentially constructive kinds of legal tactics. Those judicial obstructions will occur if we can't get this or something like this bill into law. There is no veto for governors in this bill.

Some of you have seen the cables that are descending on the Rules Committee and members of Congress this month in attempts to kill the bill. They are sheer fabrications in terms of the substance of the bill. All we do with the governor is try to

guarantee that at least the Secretary of Interior has to listen to what he is saying.

We say that the secretary with respect to the decisions made off the states off the shores of a coastal state must either follow the recommendations of the governor of that state or state publically to the governor why the national interest requires that he not do so. There is no veto on the part of coastal governors.

The Advisory Committees and councils that have been set up by the Interior Department today are mere shams and are seen as such and I think justifiably so by the governors. I'm sure you know the other kinds of issues at stake in the bill. The kind of onshore development which inevitably accompanies offshore production in a series of coastal communities whose life and look is the beach of the eastern areas and the ocean, unlike Louisiana where you can fly for 20 minutes from the gulf inland before you see a person. The economic livelihood of these communities is precisely on the shore and consequently the sensitivity and the vulnerable to both psychologically and generally to misfortunes at sea is infinitely higher.

We have asked for some separation between exploration and development and production so that the coastal communities can plan. You can't plan for onshore developments till you know whether there is any oil out there and how much it is and where it is and who is going to do what with it. You can't know that until you've done some exploration so that there is a very brief period in there for coastal communities to do some elementary kind of planning so that they are not absolutely overwhelmed by the developments that are going to occur.

There is an oil spill liability fund that will ruin the dessert of the industry people that are here which I put into the bill and there are a variety of other provisions. The bill is not designed to delay OSC Development and productions. It is designed to see to it that when this nation approaches a resource that belongs to all the people of the country I submit to you that this is a fact of critical importance and one in which the Department of Interior takes precious little cogninces of.

One of the things I must say to you in all honesty that I have learned is to be very leary about the statements of spokesmen of the industry. If I was considering retiring from Congress one of the things that I think I might aught to do is to offer myself as a PR spokesman for the oil industry cause you've got to do better. I can argue your case better than you do. I was told by a vice president of a major oil company in New Orleans not to worry about oil spills because they were positive environmental goods.

He said, "Afterall Congressmen, their just protein and they oxidize very quickly."

I said, "Well gosh me vice president I have in my district the Woods Hole Oceanographic Institution and there has been some major studies of the effects of marine life of a spill, and he said, "Oh that's not creditable."

Should we go ahead and develop and produce right away all of our OCS resources the way we did our own shore resources and have Governor Edwards equivalent in Louisiana twenty years from now say, "Hay we were wrong?" We shouldn't have done that, we've used it all up, maybe we should be thinking in terms of some kind of national strategie reserve.