ALASKA STATE LEGISLATURE
SENATE RESOURCES STANDING COMMITTEE
January 18, 2008
3:41 p.m.

MEMBERS PRESENT

Senator Charlie Huggins, Chair
Senator Bert Stedman, Vice Chair
Senator Lyda Green
Senator Gary Stevens
Senator Bill Wielechowski
Senator Thomas Wagoner

MEMBERS ABSENT

Senator Lesil McGuire

OTHER LEGISLATORS PRESENT

Senator Dyson
Representative Hawker
Representative Thomas

COMMITTEE CALENDAR

Gas Offtake; Resource Considerations in the 'Maximum Benefit' Equation by Cathy Foerster, Commissioner, Alaska Oil and Gas Conservation Commission

PREVIOUS COMMITTEE ACTION

No previous action to consider

WITNESS REGISTER

CATHY FOERSTER, Commissioner
Alaska Oil and Gas Conservation Commission (AOGCC)
Anchorage, AK
POSITION STATEMENT: Discussed work the AOGCC is doing to prepare the state for the sale of its North Slope gas.

KEVIN BANKS, Acting Director
Division of Oil and Gas
Department of Natural Resources (DNR)
Juneau AK

POSITION STATEMENT: Answered technical questions on using gas as fuel.

ACTION NARRATIVE

CHAIR CHARLIE HUGGINS called the Senate Resources Standing Committee meeting to order at 3:41:49 PM. Present at the call to order were Senators Green, Wielechowski, Wagoner, Stedman, Stevens, and Huggins. Senator McGuire was excused.

GAS OFFTAKE, RESOURCE CONSIDERATIONS IN THE MAXIMUM BENEFIT EQUATION

CHAIR HUGGINS said the gas pipeline is the focus for the session, and the starting point is a discussion of gas offtake. He wants to gather information to lead to an up or down vote on a gas line.

3:43:21 PM
CATHY FOERSTER, Commissioner, Alaska Oil and Gas Conservation Commission (AOGCC), said her statement will include the AOGCC's statutory responsibilities and a description of the main sources for North Slope gas sales in context with the reserves classifications of the Securities and Exchange Commission (SEC), which will be important for the Federal Energy Regulatory Commission (FERC) open season process. She would then list the issues of concern the AOGCC has about Prudhoe Bay and Pt. Thomson, and she will describe the process that operators must use to get a gas sales allowable from the AOGCC. She provided a glossary of acronyms to the committee.

MS. FOERSTER said the AOGCC is called upon to do the responsibilities outlined in a handout, which include preventing waste of hydrocarbon resources and encouraging greater ultimate recovery of hydrocarbons. AOGCC does not have the responsibility of making money or balancing the budget, she noted. The reserves classifications of the SEC are on page 4. For a gas pipeline open season the FERC will only entertain nominations of gas reserves that are recognized by the SEC as proved. The SEC breaks down proved reserves into two categories: proved/developed and proved/undeveloped.

3:49:22 PM
MS. FOERSTER said proved/developed reserves are hydrocarbons that can be demonstrated with reasonable certainty to exist; are economically extractible with proven technologies at today's price; the wells have been drilled and the production equipment

has been installed. “Proved” means you can get it today; “developed” means you’ve spent the money and all you have to do is turn on the valve. Essentially all of the oil reserves at Prudhoe Bay and Kuparuk are in that category. The Prudhoe Bay gas cap would be considered such once the gas pipeline was at the front door.

She said “proved undeveloped reserves” means hydrocarbons that can be demonstrated with reasonable certainty to exist and that are economically extractable using proven technologies and at current prices, but the wells have not been drilled and production equipment hasn't been installed. BP’s Liberty field would be considered proved undeveloped reserves, but once they build the infrastructure and drill the wells, those reserves will move to the proved developed category. Pt. Thomson is considered proved undeveloped. These are the two classifications of reserves reported to the SEC and the ones that will play a roll in an open season.

3:50:51 PM
However, Ms. Foerster said, there is a third category of reserves that most companies keep track of internally, but do not necessarily report to the SEC. Different companies have different names for this category and some even break it up into subcategories. This is for the hydrocarbons that don’t meet the SEC’s definitions for proved developed or proved undeveloped. For this discussion, she called them potential reserves; most companies use that name.

She said reserves in the potential category have some level of uncertainty. You cannot demonstrate to the satisfaction of the SEC that the reserves exist or you may know they are there, but you cannot prove them to be economically extractable using today’s technologies. The Ugnu and some of the other heavy and viscous oils on the North Slope would fall into the potential reserves categories. Although they exist, they have been drilled numerous times; they cannot be extracted economically using existing technologies. For the sake of this gas discussion, all of those yet to be discovered gas fields on the North Slope can be considered as potential reserves and there are even a few discovered gas reservoirs on the North Slope; for example Shell’s Burger prospect in the Chukchi Sea where they know there’s gas, but not how much or whether it’s enough for them to commercially develop. All of those potential gas fields may or may not exist, may or may not be big enough; they may or may not be economically extractable using today’s technologies. The SEC doesn’t recognize them and FERC will not consider them in an

open season. But if they are as plentiful as people hope and suspect they are, they will play a very important part in North Slope gas sales. She said that concluded the background information she wanted to share with them. Now she would go into the substance of her comments.

3:53:09 PM
MS. FOERSTER said one of the pillars of the AOGCC's mission is to encourage greater ultimate hydrocarbon recovery and with a gasline on the horizon they'll be doing the same with natural gas. In fact, that resource has been protected all along through their no-flaring policies and gas disposition procedures.

She reiterated the North Slope has three major sources of gas – the proved developed reserve at Prudhoe Bay, the proved undeveloped reserves and Pt. Thomson and all of the potential reserves in the yet to be discovered gas fields. She said she would look at each one of those resources individually and consider their interdependence.

The first major gas source is the gas cap of the Prudhoe Bay oil pool estimated to be about 24 tcf. All by itself it could fill a 4 bcf/day gas pipeline for over 15 years. This resource will be proved developed once the gasline is there. The commission knows the gas is there, it's economical, the infrastructure is in place and the SEC will consider it during an open season.

3:54:39 PM
She there are very good reasons the Prudhoe Bay gas is not being sold already; every bit of that gas has been and is still being put to very good use for getting oil out of the ground and not just a Prudhoe Bay, but in other fields across the North Slope.

It is essential for oil production from Prudhoe Bay in a number of ways. Page 5 of her handout had a cartoon illustrating how gas is used. First and most importantly, the gas that is reinjected keeps the reservoir pressure that is necessary to move the oil from the reservoir to the well bore. Without reservoir pressure, there would be no oil production from Prudhoe Bay. About 7 bcf/day is reinjected for pressure maintenance and before that gas is reinjected the natural gas liquids (NGLs) are extracted, a portion of which are blended with oil and sold down the TAPS. This blending process has already yielded about half billion barrels of oil sold and it's continuing to contribute to the oil sales volumes.

A second huge benefit of reinjecting the gas is that it strips oil out of the gas cap in a process called vaporization. This process will yield about 2 billion of the total 13 billion barrels expected to be recovered from the Prudhoe Bay oil pool.

3:56:23 PM
Third, about a third of a bcf/day is mixed with NGLs and reinjected for enhanced oil recovery (EOR) in the Prudhoe Bay oil pool and its satellites amounting to an additional half billion barrels of oil. Additional gas and NGLs are exported to other North Slope fields such as North Star and Kuparuk for their uses. Some of the produced gas, less than a half bcf/day is used for fuel to keep the infrastructure operating. Without the production equipment and other infrastructure running, there would be no oil production from Prudhoe Bay. Page 6 of the handout illustrated the contributions that the gas has made and continues to make to oil recovery at Prudhoe Bay alone (it doesn't include gas working in other fields).

3:58:12 PM
SENATOR WAGONER asked her to expand on what the value of gas liquids that are taken out each day and what their value is when they go on the pipeline.

MS. FOERSTER replied right now 395,000 barrels/day of oil are being produced from Prudhoe Bay including the NGLs that are blended with it. About 7 or 8 bcf/day of gas is entrained in and being produced with the oil along with a lot of water, which is reinjected into the reservoir to maintain pressure. A majority of the gas is reinjected into the gas cap for the same purpose. The oil rim in the middle is getting squeezed from below by the water and above by the gas to keep the pressure high enough so that the oil can continue to flow.

She explained that a good rule of thumb is for every barrel of oil produced an equivalent value of heating can come from 6,000 mcf/gas.

SENATOR WAGONER said he was asking about the value of sending the gas liquids to market.

MS. FOERSTER replied that NGLs are blended with oil and being put into line. They have the same value as the oil.

4:01:43 PM
CHAIR HUGGINS asked what she means by a whole lot of water.

MS. FOERSTER explained that a good oil field produces black oil. As the pressure drops and as the oil depletes and if you have an active aquifer that moves in, then the amount of water and gas produced in conjunction with the oil increases. So the wells may start with 95 or 100 percent oil, but over time the ratio moves the other way. Now a majority of the Prudhoe Bay wells are producing at 60-90 percent water. She said it is all salt water. Water was taken from the sea before they had enough coming out of the wells at the onset of production.

4:03:22 PM
CHAIR HUGGINS asked if the water volumes cause the price of processing to go up.

MS. FOERSTER answered that the facilities are a set size and they were all full of oil at first, but now they are full of oil, water and gas. It costs the same to process fluids no matter what is being processed and it costs the same to pull them out of the ground whether it's oil, gas or water. But with the ratio of 9:1, the processing cost goes up in relation to the barrels of oil produced.

4:04:55 PM
She went back to the graph and said the dark green represents primary recovery on all of the graphs. In 1977, the operator expected to produce a total of about 9 billion barrels of oil; about 7 billion was going to be from primary recovery, another 1 billion from the water floor and another 1 billion from the gas cycling vaporization process. However, with essentially the same sized reservoir in place, improved technology, and understanding how to make things work better (like horizontal drilling and gas handling expansions) 13 billion barrels of oil is estimated to be produced from Prudhoe Bay. In addition to vaporization, the state has NGL and EOR production to make that total.

The second graph showed percent of ultimate recovery instead of barrels. She said you get about 25 percent recovery from most reservoirs if you don't do anything other than drill the wells and open the valves, but close to 60 percent of the oil in Prudhoe Bay will be produced and "That's darn good."

SENATOR WIELECHOWSKI asked if those numbers would increase with better technology.

MS. FOERSTER replied, "The low hanging fruit has all been plucked." However, she was optimistic about the 13 billion plus barrel estimate.

4:08:15 PM
CHAIR HUGGINS asked how heavy oil complicates our lives.

MS. FOERSTER reminded him that the chart is just for the Prudhoe Bay oil pool, not for the heavy oil reservoirs. She explained that one of the emerging technologies is decreasing the heaviness of heavy oil by gasifying it, which will make it more mobile and easier to move from potential into proved reserves. Also, when the gas is sold from Prudhoe Bay, the unsellable commodities will be stripped off; about 10 – 12 percent of the gas will be CO2 and that will be used to lighten up the heavy oils and make them saleable.

CHAIR HUGGINS asked if there is any difference in sequestering CO2 in the oil fields than there is in other chosen locations.

MS. FOERSTER replied yes; in most Lower 48 applications where CO2 is truly being sequestered, it just means getting rid of it. When CO2 is used for EOR it is sent back into the ground not to get rid of it, but rather to see it again.

CHAIR HUGGINS asked making the assumption that CO2 will be part of extracting oils in the future, would some communities potentially object because of it possibly contributing to green house gases.

4:12:06 PM
MS. FOERSTER replied that she can't predict what uprisings will occur, but from her experiences with CO2 and from the work the AOGCC does with underground injection control in association with the EPA, she is confident that the procedures and the technology exist now that would prevent that environmental concern from becoming a reality. The AOGCC makes sure when CO2 is injected underground that it goes where it's supposed to go, stays there and doesn't do any damage.

CHAIR HUGGINS said if she is confident he is confident.

4:12:53 PM
MS. FOERSTER reflected if they believe what she said so far, their next question might be how we will know when the time is right to start selling the gas. Several things need to be taken into consideration; first, most of the gas is being used to maintain pressure in the Prudhoe Bay oil pool; so the later we start to sell the gas, and the more aggressively BP has been producing the oil in the meantime, the less oil will be left in

the reservoir at risk of being lost due to decreased pressure or other reservoir mechanisms associated with selling the gas. So later is better and encouraging BP to have all the valves full open and applying their technology in the meantime is the right answer.

Second, she said they want to continue other EOR projects in Prudhoe Bay and other North Slope fields as long as they are yielding increased oil recoveries. So, again, the later the gas is sold and the more aggressively the oil is produced, the more likely the state will reap their full benefits before the gas is all gone. But, even after North Slope gas sales commence, some of the available gas can be used for EOR along with the CO2. Fuel use is the only use of gas in which it is all gone. So, obviously they will not want to use gas for fuel when it starts having more value than the oil it is being used to produce.

4:15:12 PM
SENATOR WIELECHOWSKI asked if gas is lost with reinjection.

MS. FOERSTER replied that gas as fuel is the only loss that is quantifiable. "Fuel shrinkage" is the term used by the industry for any loss through reinjection. Prudhoe Bay uses about 460 mcf/day or the fuel equivalent of about 77,000 barrels/day using the 6 mcf/barrel of oil conversion. So 77,000 barrels/day is being used to produce about 395,000 barrels of oil. In other words, every equivalent barrel of fuel is used to produce more than 5 barrels of oil. “So we’re still doing the right thing with the resource and we will be for quite some time.” And using an engineering trend analyses, the AOGCC predicts the state will be doing the right thing with that fuel until after 2030.

SENATOR WIELECHOWSKI remarked that burning 77,000 barrels/day seems like a lot.

MS. FOERSTER replied, “It is a lot,” but Prudhoe Bay has a lot of equipment that eats fuel.

SENATOR WIELECHOWSKI asked if it’s in the state’s best interest to burn that much.

MS. FOERSTER replied yes; there is a 5:1 return on the fuel investment.

CHAIR HUGGINS remarked that Alberta is using about 1 bcf/day for its oil sands and they are projecting using more than 4 bcf/day within the next 10 years.

4:19:33 PM
She continued saying that last session the AOGCC completed a reservoir study with the assistant of a reservoir engineering consultant and the cooperation of BP and the other Prudhoe Bay owners. It provided the AOGCC with insights and understandings of the Prudhoe Bay oil pool that will assist it in future Prudhoe Bay gas off take allowable decisions.

CHAIR HUGGINS asked what that study cost Alaska.

MS. FOERSTER replied $570,000.

SENATOR WIELECHOWSKI went back to the 77,000 barrels of fuel and asked what the cross over point is.

MS. FOERSTER responded when it gets to be a 1:1 ratio (around 2030) it is bad, but the Prudhoe Bay infrastructure is so important for other areas of the North Slope that it might be okay to even lose a little money there to keep the bigger picture on the North Slope going.

SENATOR WIELECHOWSKI asked if there is no other way to get the barrels out.

MS. FOERSTER replied that the fuel is heating the camps that people live and work in, running the gas compressors that reinject the gas and pump the water to keep the pressure up.

4:22:44 PM
SENATOR WAGONER attempted an explanation saying that oil is more valuable than gas, so it wouldn't make sense to use it for fuel.

MS. FOERSTER reiterated that gas has a lower economic value than its heating value; so that 6:1 is a generous comparison for the gas.

SENATOR WAGONER asked if the state gets paid for some of that gas through a charge-back.

4:23:57 PM
MS. FOERSTER responded that a confidentiality agreement prohibits her from sharing data, but there is no right answer. The amount of loss depends on many variables.

SENATOR WIELECHOWSKI asked if there is enough gas to build the ConocoPhillips gasline without significantly impacting our oil production.

MS. FOERSTER replied that is outside her area of expertise, but she has been told that additional discoveries have to be made.

SENATOR WIELECHOWSKI said Alaskans need assurance the gas is there.

4:27:20 PM
CHAIR HUGGINS said the assumption is high that in 10 years the gas will be there.

MS. FOERSTER agreed and added that according to the USGS 100 - 300 tcf/gas undiscovered resource is there. She emphasized that AOGCC doesn't dictate to operators what they must do; rather the operator comes to them with a request for permission to do something. They either allow it, disallow it, or allow some modification to their original plan. The AOGCC will not dictate to the operators what volumes of gas to sell and when to start selling them.

SENATOR WIELECHOWSKI asked if all the operators have to agree to sell the gas and how the Prudhoe Bay Operating Agreement is interpreted as far as selling of gas by individual producers.

4:30:24 PM
MS. FOERSTER replied that she didn’t know.

MS. FOERSTER said whenever the state gets a gas line and the gas is called upon from Prudhoe Bay, it will be the right answer. She reminded them of the 24 tcf/gas in the Prudhoe Bay gas cap. Using the 6:1 gas to oil conversion, that means there are 4 billion barrels of oil equivalent in the gas cap. As of today there is less than 2 billion barrels of producible oil remaining in the Prudhoe Bay oil rim.

In any major gas sale scenario, it will be several years before gas sales can commence so there will be less oil left in the oil rim and the operation steps BP uses to mitigated those loses due to gas sales will be further developed. Thus, they will be looking at losing a small fraction of a much smaller number in exchange for getting 4 bcf/barrel equivalent from the gas.

The state will want to sell whatever volume is needed from Prudhoe Bay whenever it is needed to get the gasline going. The

right answer assumes that the Prudhoe Bay operator aggressively produces as much oil and puts in place as much mitigation for losses as possible before the gas sales begin.

4:32:39 PM
SENATOR WIELECHOWSKI asked if operators are aggressively doing this.

MS. FOERSTER replied yes.

4:34:48 PM
CHAIR HUGGINS asked her to characterize AOGCC's relationship with operators on the North Slope.

MS. FOERSTER replied that the AOGCC is highly professional so it's important to keep up a good relationship with the industry. They can't be best buddies, however, because it is policing them.

CHAIR HUGGINS asked if that is working.

MS. FOERSTER replied her sense is that it is working.

4:37:18 PM
CHAIR HUGGINS asked when the value of gas and oil will cross.

MS. FOERSTER replied that she hadn't done a projection of when that would happen, but the state will be selling both for a long time.

CHAIR HUGGINS said he has heard from multiple sources that at about 300,000 barrels the challenges of moving oil through TAPS might be beyond the economics.

4:38:27 PM
SENATOR WAGONER interrupted that he had talked to a lot of people with pipeline experience and 300,000 is not a reasonable number.

MS. FOERSTER added that pump stations that have been shut down can be reactivated to get a longer life out of the pipeline.

CHAIR HUGGINS said UAF has a task force that is working on reconfiguring what goes through TAPS.

4:39:02 PM

MS. FOERSTER said the second major gas source is Pt. Thomson, which is estimated to be 9 tcf and this by itself would fill a 4/bcf/day pipeline for another six years assuming no decline in production. This resource will be classified by the SEC as proved undeveloped, but it will be considered during an open season.

“So, what are our concerns at Pt. Thomson?” she asked. Most people refer to it as a gas field, but in engineering vernacular it is a gas condensate reservoir or a retrograde condensate reservoir and under AOGCC definitions in regulations, it is an oil field. She referred them to the “Role of the AOGCC in Approving Pool Rules for Pt. Thomson Field” for further elucidation. The handout said looking at the technical issues, not getting into financial concerns or politics, cycling the gas until the liquids have been recovered is always the way to achieve greater ultimate recovery and prevention of waste from a gas condensate reservoir.

SENATOR STEVENS asked her to rephrase that so he could understand.

CHAIR HUGGINS asked her to define what “liquid” is.

4:41:19 PM
MS. FOERSTER answered in a gas condensate reservoir all of the fluids are in a gaseous phase. As the pressure drops, some oil falls out and some of it will fall out in the well bore and in the production facilities as the gas is produced. Then the oil doesn't come to the surface; it stays in the reservoir forever. It tends to drop out at the lowest pressure which is next to the well bore hole where it plugs up the pore spaces making it hard for the gas to come out.

She said cycling is producing gas, stripping off the liquids, putting it into a sales line and running the gas through some compressors and sending it back down into the reservoir so that the pressure stays high enough that the oil doesn't drop out.

4:43:17 PM
She said there are two important considerations in producing Pt. Thomson as a gas reservoir without cycling first. One, a significant portion of the liquid hydrocarbons will drop out and be lost in the reservoir forever; two, these dropped out liquids will most likely cause increased operating costs and decreased gas recovery from the gas wells as they drop out in and around the well bore and plug up the pore spaces.

4:43:44 PM
CHAIR HUGGINS asked if there would be a way to recover the liquids that drop out even if it wasn't cost effective.

MS. FOERSTER replied that studies on retrograde condensate reservoirs indicate that even if you go back and try to fix things by injecting something to pressure up the reservoir, you still won't get the liquids back.

4:44:35 PM
Since the AOGCC is charged with insuring greater ultimate recovery and prevent hydrocarbon waste, she said publicly available estimates of recoverable liquid hydrocarbons associated with the gas a Pt. Thomson vary from 200 - 400 million barrels depending upon the source. Using Prudhoe Bay logic, losing this resource would be a small price to pay to get the 9 tcf or 1.5 billion barrels of equivalent from selling the gas. However, we have time, right now, to be developing Pt. Thomson, cycling the gas, and recovering the liquids. If they were doing that, they could have both the liquid recovery in the interim and the gas sales when the pipeline is ready.

She stated, "Don't let me under-emphasize the size of this liquid resource; 200 – 400 million barrels. That's another Alpine field." If they were to recover those liquids through cycling in advance of gas sales, the second concern of damaging the near well bore area would also go away.

MS. FOERSTER said it's important to understand that because of ACES the state shares the cost of interventions that will likely need to be done over and over again to move the liquid out of the way and enable the gas well to continue producing. However for fair and balanced reporting cycling will likely add significant capital costs, which again, the state would share under ACES. "It's a trade off that you have to realize."

CHAIR HUGGINS asked what was her one greatest success and one worst regret in her last three years in the AOGCC decision making process interfacing with the industry.

4:47:24 PM
MS. FOERSTER replied one of the biggest successes she has had is developing revised regulations in fields where technology and operating conditions have changed – like safety valve system regulations, gas storage reservoir regulations and abandoned well regulations. She also was particularly proud that AOGCC and

the operators were able to negotiate to do the Prudhoe Bay study for a half million dollars. The DNR proposed to do a study for $10 million. The biggest regret is that the AOGCC hasn't left Juneau with “every single one of you guys” feeling confident that they are taking care of their responsibilities to their satisfaction.

SENATOR STEVENS asked her to explain the capital cost in cycling that the state would share.

MS. FOERSTER answered after stripping the gas you take it to a compressor for reinjection and burning the fuel to do that is what she was referring to.

4:50:22 PM
She said the AOGCC is in the early stages of a study similar to the one it conducted for Prudhoe Bay to understand the Pt. Thomson resource. The Pt. Thomson evaluation used by ExxonMobil is more complex than what AOGCC used with BP for the Prudhoe Bay study, so she anticipated it taking another year or so.

She said for example, ExxonMobil has taken different positions over time on whether or not to cycle first for liquid recovery. Their latest official position is not to cycle. At the completion of their study, AOGCC expects to know enough about Pt. Thomson to decide whether or not they agree with that position. Even without results of the study, she can tell them that time is the important thing to keep in mind at Pt. Thomson. Right now we have time to develop the field, but the longer it remains undeveloped, the less time they will have.

4:51:43 PM
SENATOR WAGONER asked her to explain pressures at this reservoir because the pipeline will be pressurized at 2,500 psi.

MS. FOERSTER replied that the gas would have to be pressured up to about 10,000 psi to get it down into the reservoir at Pt. Thomson – pretty heavy metal and high tech - real expensive.

CHAIR HUGGINS asked what role does a successful pipeline play in further development of Pt. Thomson.

MS. FOERSTER replied that there are 9 tcf/gas to be produced from Pt. Thomson and that won’t happen without a gas pipeline. Some fraction of the 200 – 400 million barrels of oil will be extracted simply through gas sales, but it will be a small

fraction; a larger fraction would be realized if they cycled first.

CHAIR HUGGINS asked if she had seen any estimates on the infrastructure needed to get the oil to market.

MS. FOERSTER replied first they would have to put in the drilling and production facilities and then they would have to drill the wells. If you're drilling into a 10,000 psi reservoir it will be very expensive. Developing Pt. Thomson has an enormous capital cost. She said a pipeline now goes to Badami and it's not that far from Pt. Thomson; so a small oil pipeline would connect it and Badami has spare capacity. In fact, it's empty right now.

4:53:56 PM
CHAIR HUGGINS asked if you factor out gas on Pt. Thomson, is there a profit to be made on oil.

MS. FOERSTER replied that she didn't know. The physics say that the only to get the majority of the oil is to cycle it. To the extent the statutes allow the AOGCC to consider the economics they will. Money is not part of their statutes, but they have to consider some economics for realistic recovery.

4:55:24 PM
She went on to talk about potential gas fields – the third kind. The USGS and the MMS estimate the potential for over 150 tcf/conventional gas on the North Slope and she related that Anadarko is exploring for gas this season.

> The sooner we find gas fields and the more gas we find the less pressure there will be to accept oil losses at either Prudhoe Bay or Pt. Thomson and that gas will be necessary to give the gas pipeline the longevity for our kids and our grandkids and probably for the long term viability economically. So please keep this third and very important gas source in mind as we move through North Slope gas decisions.

CHAIR HUGGINS related that an Anadarko representative said they may not be able to make the first open season and might have to ask for one.

MS. FOERSTER replied that she didn't know the timing of the open season or what the exploration would yield.

4:57:05 PM
She said the last topic she was asked to address is the process by which an operator receives a gas off take allowable from the AOGCC. Two scenarios trigger the AOGCC to take action. The first is response to a petition from an operator or another interested party; the second is proactive only to prevent imminent waste. In the case of North Slope gas sales there is no sales capability and no imminent waste. Thus there is no need for the commission to act on Pt. Thomson. Therefore, it will respond to a petition from the Prudhoe Bay and Pt. Thomson operators.

SENATOR WIELECHOWSKI took issue with the statement that there is no sales capability and therefore no imminent waste. The equivalent of 77,000 barrels of oil and he heard on the radio that 25 percent of all green house emissions come out of the North Slope. He asked the value of 460 mcf/gas. [Kevin Banks, Acting Director, Division of Oil and Gas, DNR, looked into the answer.]

MS. FOERSTER replied an enormous value. “You can say that we’re wasting the gas or you can say that we’re using the gas to get the oil.” The AOGCC looks at it as using the gas to get the oil and doesn’t consider it waste.

4:59:12 PM
An existing pool with rules is in place at Prudhoe and the existing off take allowable was set in 1977 at 2.7 bcf/day. When the gas pipeline gets put in should the operator want a larger allowable, it would have to request a change to the existing Rule 9, which set that off take. However, if 2.7 bcf/day off take including fuel is enough to export to other fields, the Prudhoe Bay operator will not have to ask AOGCC for permission to do anything.

CHAIR HUGGINS asked if Alaskans should be nervous about this.

MS. FOERSTER replied no. For an undeveloped pool like Pt. Thomson with no rules in place, a gas off take allowable rule would be part of the greater process of determining all the rules by which the pool would be developed and operated if the operator wants to do anything else besides use it for fuel.

CHAIR HUGGINS asked if the process would evolve based on the circumstances in the pool.

MS. FOERSTER replied that is exactly right. She explained that the operator would look at the AOGCC regulations and to the

extent that they suit their needs, they don't ask for any special rules. If they need a special exemption to set the surface casing higher or lower or to space the wells closer together or something like that, they ask for a special rule. Pt. Thomson would have to go to the AOGCC for a gas off take if the operator wants to do anything other than reinject the gas and use it for fuel. In either case, AOGCC technical staff would gather sufficient information to make recommendations and the commission would hold a hearing. They would probably have all of the information they would need for Prudhoe Bay by virtue of the Prudhoe Bay study completed in 2006. Assuming a successful completion of the Pt. Thomson study, the same would hold true there. The information in the studies has a good four or five-year shelf life.

At one of these hearings the operator, AOGCC staff and other interested parties would present all of the relevant technical information needed to reach a decision. The commission would then make a ruling. At such a hearing, the information needed to make the decision would become part of the public process and would no longer be confidential.

5:04:29 PM
She closed with a few take-home messages. One, by the time we get a gasline, the oil volume left at risk at Prudhoe Bay will not be sufficient to derail a pipeline. So the right answers for timing and sales volume are within reason, whenever and however much. In the meantime, however, the Prudhoe Bay operator must continue aggressive production, avoid major unplanned shut downs and developing and implementing strategies to mitigate oil losses.

Second, she said at Pt. Thomson, we have the time to minimize the oil losses and the operating cost tax deductions that would result from gas blow down. "But every day that goes by with Pt. Thomson undeveloped whittles away at that opportunity; we lose our choice." Third, we need new gas discoveries for the long term success of the gas pipeline and to help further diminish concern over oil losses at Prudhoe Bay and Pt. Thomson. So, these new discoveries need to be encouraged.

5:05:51 PM
CHAIR HUGGINS asked how successful aggressive oil recovery has been.

MS. FOERSTER answered in her opinion she is pleased that we have a set of world class owners at Prudhoe Bay.

> Among the three key major owners – ConocoPhillips, ExxonMobil and BP – they are leaders in developing and implementing technology world wide and all three of those companies recognize Prudhoe Bay as a major asset. So they are putting the full force of their technological resources to bear in developing Prudhoe.

She reiterated that 60 percent recovery from Prudhoe is very good and it has a lot more life left. So, it would be incumbent upon the operators to continue to make good investments and use good technology. It will also be incumbent upon the AOGCC, DNR and DEC and the legislature to make sure the operators know they must keep doing that.

5:07:58 PM
CHAIR HUGGINS said Alberta claims to have 175 billion barrels of known recoverable reserves – second to Saudi Arabia, and by their numbers, Alaska has about 4 billion. So, at a production cost of $24/barrel it seems that their challenge of extracting that oil may be greater than ours. He asked if she is confident that heavy oil production will happen in Alaska.

MS. FOERSTER replied that easier to get heavy oil is already being developed at West Sak, Schrader Bluff, Orion, Polaris and some of the equivalents at Prudhoe Bay, but as you get into the more viscous oils, the current technology coupled with the current costs of doing business on the North Slope become problematic. It's a combination of the two. Viscosity is related to temperature, too, so the cold up there doesn't help. If these heavy oil resources were in the Lower 48 they would be depleted already. However, she had some confidence that it is such a huge prize that it will continue to be figured out.

She also commented when he talks about how huge the Canadian tar sands are and how our little 2 or 4 billion barrels doesn't make the international scene, to take the 2 billion barrels left at Prudhoe and compare it to the biggest discovery in the North America in the last 10 years - Thunder Horse in the off shore Gulf of Mexico. It was a huge discovery and at its onset it was 1 billion barrels. So the 2 billion barrels left at Prudhoe is twice as big as the biggest discovery that has been made in North America in the last 10 years. "So," she admonished, "don't undersell the value of that huge resource we have up there."

5:12:04 PM

CHAIR HUGGINS asked if her confidence level on us recovering the heavy oil with some revenue satisfaction is high or low.

MS. FOERSTER replied it is high, but not before a gas line is built.

5:12:31 PM
CHAIR HUGGINS said Pt. Thomson is in litigation, but the question remains will its development meet the timeline of the gas pipeline in the window of 10 - 15 years from now.

MS. FOERSTER replied yes, but with the caveat that she doesn't know how long the litigation will last. Assuming reasonable people make reasonable decisions, it will happen in the time line we have. Without litigation her confidence level goes way up. She said the AOGCC still has a year to go on its study.

CHAIR HUGGINS asked Kevin Banks what the answer is.

5:14:12 PM
}KEVIN BANKS, Acting Director, Division of Oil and Gas, Department of Natural Resources (DNR){ said the per barrel oil equivalent is 6 mcf/gas for each barrel of oil. At today's $8/mcf gas and $90/barrel oil, the ratio is different. So the 460 mcf/gas that is being used for fuel costs less than $3.6 million/day, but it is producing $35 million worth of oil.

SENATOR WIELECHOWSKI asked if the state is compensated for the fuel that is burned.

MR. BANKS replied no; and it's called fuel gas. It's used on the lease and as a consequence the state doesn't receive a royalty for it nor is it subject to tax.

SENATOR WAGONER said, "But in a way we are compensated because 12.5 percent of that production is ours."

SENATOR WIELECHOWSKI said his point was that there is no incentive for efficient use of that gas.

MR. BANKS said you can't argue with the value of gas versus the value of oil production you get for it.

SENATOR WIELECHOWSKI said there is no incentive for efficient use of that gas which is the equivalent of 77,000 barrels of oil a day. "Maybe that is being used at optimal efficiency and maybe

we can be doing it for half that and saving a couple million dollars per day."

MS. FOERSTER responded that every month every operator has to submit a gas disposition report to the AOGCC about all the gas they use. An engineer and a statistician look at those reports every month. If the operators do something that looks out of line, they make them come in and explain why. If they are inefficient they get fined. A new compressor might be more efficient, but the stuff they got up there was the best they could get when they put it up there.

SENATOR WIELECHOWSKI said he appreciates that is what is happening.

There being no further business to come before the committee, Chair Huggins adjourned the meeting at 5:17:46 PM.