

ALASKA STATE LEGISLATURE
SENATE RESOURCES STANDING COMMITTEE

February 9, 2009

3:32 p.m.

MEMBERS PRESENT

Senator Lesil McGuire, Co-Chair
Senator Bill Wielechowski, Co-Chair
Senator Charlie Huggins, Vice Chair
Senator Hollis French
Senator Bert Stedman
Senator Gary Stevens

MEMBERS ABSENT

Senator Thomas Wagoner

OTHER LEGISLATORS PRESENT

Senator Joe Thomas

COMMITTEE CALENDAR

Overview: Alaska Gas Exploration Potential in the Cook Inlet by
Bob Swenson, State Geologist, Division of Geological and
Geophysical Surveys

PREVIOUS COMMITTEE ACTION

No previous action to consider

WITNESS REGISTER

BOB SWENSON, State Geologist and Director
Division of Geological and Geophysical Surveys (DGGS) Department
of Natural Resources (DNR)

POSITION STATEMENT: Presented overview of Cook Inlet gas
exploration.

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

POSITION STATEMENT: Commented on Cook Inlet gas exploration.

ACTION NARRATIVE

[3:32:30 PM](#)

CO-CHAIR BILL WIELECHOWSKI called the Senate Resources Standing Committee meeting to order at 3:32 p.m. Present at the call to order were Senators Huggins, Stevens, Stedman, McGuire, French and Wielechowski.

[3:33:42 PM](#)

Alaska Gas Exploration Potential in the Cook Inlet.

CO-CHAIR WIELECHOWSKI announced the overview of Cook Inlet gas supplies and exploration development activities.

BOB SWENSON, State Geologist and Director, Division of Geological and Geophysical Surveys (DGGS), Department of Natural Resources (DNR), began by commenting on the Mt. Redoubt eruption. He said the USGS, the University and DGGS are part of the Alaska Volcano Observatory and some of the fluid movement recently maxed out the tremor part of their instruments. For the first time they were able to see the tremors at Mt. Spurr 100 kilometers away. There hasn't been an eruption yet, but they are still seeing well above background levels.

He said he came to talk to the committee today about gas exploration potential in the Cook Inlet, a complex basin. The U.S. Geological Survey (USGS) has come up with a series of probabilistic numbers for what the technically recoverable resources in the state could be. Cook Inlet Outer Continental Shelf (OCS) has a range of 0.7 - 2.5 tcf of gas with a mean of 1.4 tcf. The USGS has not done a proper analysis of the Cook Inlet, but they are in the process of doing that right now.

MR. SWENSON remarked on exploration statistics: 85 percent of gas was discovered early in the exploration cycle while drilling for oil (that's the case for most of the state's gas). Until recent times there hasn't been a lot of exploration specifically for gas. The plays in Cook Inlet are all structural traps; the stratigraphic traps have essentially been untapped. Nearly 1 in 10 fields is greater than 2 tcf, which is very unusual for a basin. The four largest fields have 86 percent of the reserves, another unusual statistic in a basin. Finally, the field distribution lacks the 300-1300 bcf range. One would expect to see the full gamut of field sizes from the very small all the way up to the very large size; but the fields that are relatively mid-size in range are missing. Most basins have this normal logarithmic distribution to them and he believes those

would be part of the technically recoverable reserves in the basin.

3:39:10 PM

CO-CHAIR WIELECHOWSKI asked if the mean should be 3.73 tcf referring to the chart on page 2 that said 373 tcf.

MR. SWENSON answered yes.

CO-CHAIR WIELECHOWSKI said that was different than the mean on the front page of their handout that says 1.4 tcf. What is that difference?

3:39:52 PM

MR. SWENSON answered that 1.4 tcf is just for the technically recoverable reserves in the OCS acreage. The 3.73 tcf are the reserves that could be found in the basin - very different numbers.

CO-CHAIR WIELECHOWSKI asked him to explain the difference between "technically recoverable reserves" and "total reserves."

MR. SWENSON said he should be saying "technically recoverable resource." "Reserves" means that you have actually discovered and delineated them - you have technical proof that you actually have that gas behind pipe and it is producible. When USGS talks about "technically recoverable resource" in a basin, they look at all the fields that are in existence in a basin, they look at the geology and tie in the petroleum systems - and make a probabilistic estimate of what the amount of technically recoverable resource is likely to be there.

CO-CHAIR WIELECHOWSKI asked if Cook Inlet has 3.73 tcf of resource remaining, what Southcentral's lifespan is at current usage.

MR. SWENSON clarified that the current reserves are 1.3 tcf. The total resource of 3.73 tcf is what was available in 2004 of the 8.5 tcf of original resource discovered in 1972. Because it has continued being produced since 2004, it's at about 1.314 tcf now.

CO-CHAIR WIELECHOWSKI asked how many years supply that was at current usage.

MR. SWENSON replied about 16 years.

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KEVIN BANKS, Director, Division of Oil and Gas, Department of Natural Resources (DNR), added that the Cook Inlet uses about 130 bcf/yr. and including some projection for what LNG supplies would require that is about a 10-year supply. All the existing gas fields would have to be drained for that supply.

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CO-CHAIR WIELECHOWSKI recalled that the average reserve in a basin across North America is about eight years.

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MR. SWENSON responded that he wasn't familiar with that number. Each basin is probably going to have a significantly different reserve base depending on its geometry and dominant petroleum system. For instance, right now the North Slope basin has about 35 tcf and if you take into account all of the "technically recoverable resource," it's about 200 tcf. "And so, that's a huge basin with a lot of net reserves and possible resource in it." Cook Inlet originally had 8 tcf and what is suggested is that there could be 2-17 tcf in total resource when the basin is fully explored and done.

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SENATOR FRENCH asked when the USGS would finish its new survey.

MR. SWENSON said he didn't have an exact date, but within two years.

SENATOR FRENCH asked if it always takes this long.

MR. SWENSON replied that it's most important to get the right information to do a reasonable job.

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SENATOR FRENCH asked how much data he is generating on his own and how much is from industry.

MR. SWENSON answered every piece of information that has been generated on the basin from industry is well logs and seismic, and he has a fairly comprehensive database. His division is tying the subsurface information in with the surface data to get a distribution of the rocks (facies) that will suggest what the potential for stratigraphic traps is.

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Some of the "take home points" are that there has been minimal focused exploration for natural gas in the Cook Inlet until recent years, that oil and gas exploration is inherently risky with a low chance of economic success with a long lead time, and that Cook Inlet has specifically difficult data acquisition because of the thick sequence of non-marine sediments with coals and low velocity surface.

MR. SWENSON said additionally, the best chance of success is achieved when numerous geologic concepts are tested, which requires access to the entire sedimentary basin and numerous exploration wells. For market certainty, he said that modern high resolution geological data and non-volatile pricing are key to meeting the economic risk threshold for doing an exploration program. And in the Cook Inlet most of the "easy" gas has already been found and delineated. Is there more gas to be found? Yes. It will be found in existing fields and in new exploration play types. What are the hurdles? One of the big ones is land access over the entire basin; others are expensive data gathering of new seismic information both onshore and offshore, drilling costs and a complicated and relatively limited market when compared to Lower 48 or global markets.

MR. SWENSON walked them through the geology depicted in slides 4-6 including the Aleutian Trench and the ring of volcanoes. He said only two other basins on earth have the same amount of reserves with the specific tectonic setting Cook Inlet has.

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SENATOR STEVENS asked if the Shelikof Straits is unlikely to have oil and gas - so fishermen can feel safer - and for him to explain the difference between the Mesozoic and Tertiary basins.

MR. SWENSON replied that the northern part of the Cook Inlet Basin has the Tertiary stratigraphy, the non-marine strata. The important point about this is that all of the gas that is produced in the basin has been sourced within the coals. They have two totally different petroleum systems in the basin. Number one, all the oil that is produced is out of these formations, but it must migrate out of the Mesozoic into the upper formations; and then it's trapped within the lower tectonic formations. That is what all the fields in the Cook Inlet are drilling into. The gas, however, is biogenic gas, not associated with this oil. It is both generated and accumulated in the Tertiary section.

SENATOR STEVENS asked if he was saying that the Shelikof Strait was unlikely to have oil and gas.

MR. SWENSON replied yes. He said that in the northern Cook Inlet, the tertiary section where the gas is located is not present in the Shelikof Straits area. However, he said, the Mesozoic in the Shelikof Strait area is very thick, and seeps are on the southern part of the Alaska Peninsula, but the reservoir rocks that house that resource are not present in the Shelikof Straits area.

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He explained oil and gas trapping mechanisms and flat spots in slides 7-8. These structures are what explorers in the 1970s were looking for. What has been drilled in the basin to date essentially are all structural traps; that's where all the reserves are. This means that you have a reservoir rock that has porosity and permeability with a cap rock overlying and containing it - keeping it from migrating any further towards the surface. Structural traps also coincide with the faults and the basin has gas accumulations in them. They have not seen stratigraphic traps in the basin to date. This is where reservoir quality rock has been truncated by an erosional event and then a cap rock is deposited over that that stops migrating gas and oil from reaching the surface.

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Tight sands is another area of possible exploration for gas in the basin (slide 9). He explained that you can have a lot of resource here, but it takes a lot of time to produce it into a well bore without "some artificial fracing."

CO-CHAIR WIELECHOWSKI asked how they can tell what the pool is when by drilling into it and how is the gas gotten out.

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MR. SWENSON answered while drilling, a series of remote sensing tools is used to check resistivity and a number of different parameters. Often they hit mud, coal and then some more mud, then sandstone. If the porosity in that sandstone still exists and it contains gas, it will come up with the mud. At the surface they have a "sniffer" that can identify gas. Having a "gas show" doesn't mean a field or a pool; it just means that you have run into some type of hard hydrocarbon that can be tested. Once that is drilled, they will go back in with much more sophisticated measuring devices (like CMR type well logs). The different fluids in the rock will have different responses

in the logs. If the drillers see something, then they set casing on it and cement it all in. They then perforate the reservoir to open it to surface pressure. Under normal conditions the gas is under great pressure - maybe 1500 psi at 3,000 ft. Control systems at the surface test what comes out and that's called a "well test." If you have very tight rock, it won't give you anything at the surface and you may have to go in later and do "a frac job" to artificially frac the well. The final test is always a well test, but a lot of remote sensing leads up to that, because the test is an incredibly expensive process.

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CO-CHAIR WIELECHOWSKI asked if other things are extracted with the gas and that have to be separated out.

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MR. SWENSON answered yes, but one of the wonderful things about Cook Inlet gas is that it's very, very dry; so you can actually use it coming out of the well bore. Pressure on the well bore is kept just a little lower than the pressure that is in the formation so it flows into the well bore, to the surface and into the surface equipment.

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Slide 10 showed when all the large fields in the Cook Inlet were found in the 1960s. That's also when Prudhoe Bay was found and when a lot of companies shifted their exploration effort up there.

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He showed maps of what was going on across the basin from a visual standpoint in 2006-2008. He said anyone you talk to would say there is some potential for exploration gas in this basin; how much and how much it will cost is another question.

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MR. SWENSON said access is the big question and from an exploration standpoint slide 11 showed the distribution of gas and oil fields, federal acreage, CIRI lands, Mental Health lands, University lands, Beluga Habitat and leased acreage, some of them overlapped.

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SENATOR STEVENS asked if the CIRI lands that overlay federal land is off limits.

MR. SWENSON answered no; some of that acreage is getting leased to the industry.

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He said his division is facilitating exploration in the basin by trying to understand the stratigraphic potential and distribution of facies and reservoir quality rock across the entire basin by preparing a four-year study that is in its third year. The program goals are basically to look at specific reservoir quality in a stratigraphic sense to help them understand what potential there is in the basin and to work with the USGS so it can provide realistic estimates for resources that good decisions can be made upon.

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SENATOR HUGGINS asked him to restate the potential of the Capps Glacier Fault in the vicinity of the Beluga Coal fields.

MR. SWENSON pointed to a region just north of Capps Glacier where the gas potential is essentially zero, he said, but the reason they are looking at it is because that is where the entire sequence is exposed. This same rock is being deposited out in the basin and this information will be extrapolated into the basin and give them a much better handle on the distribution of reservoir facies out there. The coal fields are there because of that exposure to the surface.

SENATOR HUGGINS said he assumed there is not much potential going up Chakachamna towards the potential hydro-site even though there has been a lot of exploration.

MR. SWENSON agreed; but added that the further west side of the basin has an incredible amount of "deformations," which indicates potential, and a number of companies are active in this area. But closer to the basin edge, especially by Mt. Spurr, the amount of resource potential becomes very small.

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CO-CHAIR WIELECHOWSKI asked how this basin compares in terms of oil and gas reserves to other basins around the world.

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MR. SWENSON replied that is hard to answer. The Cook Inlet basin is small by comparison to all the other North American basins. The North Slope and the entire Canadian Front Range that goes all the way through Canada and down to the south, with Williston Basin, another intra-cratonic type basin that is also relatively

small, could be compared to the California basins along the San Andreas fault system. They are small, but fairly hydro-carbon prolific. In 10 years of exploration 8 tcf of gas was found. But overall it is very much smaller than most of the big basins in the U.S.

CO-CHAIR WIELECHOWSKI asked about oil potential in the Cook Inlet.

MR. SWENSON replied their studies now are focused on gas, but all the exploration to date has been on the large easily identifiable structures for oil. Oils can be trapped in stratigraphic traps, as well, but most likely it will be in the Mesozoic section and the lowest part of the Tertiary section, unlike the natural gas system.

SENATOR HUGGINS said he has heard that once a well is dormant that it is self-degrading, and could he explain that.

MR. SWENSON replied slide 9 explains that issue specifically. He explained that it showed thin sections of reservoir rock; the blue color indicated where the gas or fluid would reside. If gas is in the pore spaces, the rock remains relatively dry. That is when gas specifically is produced into the well bore by reducing pressure to get it up. However, the indicated water, a "down dip away," moves along with the gas. If holes are drilled very near the edges of the field, that water would replace the gas in the pore spaces. Once that happens, given the fact that a lot of clays are in the pore spaces, the water starts to break the reservoir down and it can actually plug it up sometimes referred to as "shut-in." When it's just gas, nothing will happen to those clays. So, you produce as fast and as long as you can there. Another thing is that water moves much slower through the rock than gas; and if you stop, it allows time for the water to catch up. So, it's best to produce gas as continuously and as fast and as is safely possible.

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CO-CHAIR WIELECHOWSKI announced an at ease.

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CO-CHAIR WIELECHOWSKI called the meeting back to order at 4:18.

KEVIN BANKS, Director, Division of Oil and Gas, Department of Natural Resources (DNR), said the reserve estimate of 1.3 tcf represents gas that lies within the existing units and fields where gas has been discovered and produced for some time.

"Resources" refers to possibly discovered, but not yet produced or fully delineated, potential gas that could be added with more exploration activity. The Chair had asked how long 1.3 tcf of gas reserves would last, and his estimate is 10 or 11 years at current rates of production and demand in the Cook Inlet. But if new exploration occurs, there would be 3.7 tcf of resources that "you might be hunting for, which represents a much longer potential supply."

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CO-CHAIR WIELECHOWSKI asked what percentage of Alaskan gas that is being exported to Japan.

MR. BANKS said he assumed we were exporting about 48 bcf/yr. of gas, and that represents 36-40 percent of the total.

CO-CHAIR WIELECHOWSKI said if we back that out of our 10-year life cycle, we could have possibly another six years.

MR. BANKS agreed, but he reminded him that both numbers suggest that these gas fields can be drained to practically zero.

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He said in 2008 they were administering 410 oil and gas leases, many of which are producing, some not producing; others are exploration targets for several companies. The last Cook Inlet areawide sale was held in the spring when 18 tracts were sold and those can be added to the number of tracts that are under lease. There are 25 oil and gas units and fields in 36 participating areas - areas that have been delineated sufficiently so that the allocation of production can be made between the various owners within the units where production can occur efficiently and economically through single-surface facilities.

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MR. BANKS said the division has had discussions on clarifying what can be regarded as exploration and what as development in the Cook Inlet. In 2008 there were three seismic programs, which could be called strictly exploration; new reserves were being looked for - even inside existing units, with the notion that after seismic is conducted, drilling occurs. The results of that drilling, if successful, will add to reserves. Development activities within existing units may add incrementally to reserves, but those activities are largely to make sure that the producibility and deliverability of gas from the existing units can be maintained.

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SENATOR FRENCH asked if he said 15 gas wells were drilled.

MR. BANKS replied they are a combination, but primarily they are gas wells being drilled in existing gas fields for the purposes of maintaining deliverability and potentially adding some to the annual production.

SENATOR HUGGINS asked if that was bringing on any new potential or just exploiting the known potential there.

MR. BANKS said his point is that most of the 15 wells drilled under this development category were to add to the production of a unit, but perhaps only marginally adding to some reserves. He explained there are many discontinuous sands within a potential reservoir that are being drilled in these units. Occasionally in drilling known sands, there are lenses of gas reserves that are not in communication with existing wells and hitting those can potentially add a small amount of gas.

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He said that ConocoPhillips drilled in the Beluga River; Chevron has been active in the Deep Creek Unit and is one of the investors in the Cook Inlet, as is Marathon that has drilled wells into the Kasilof and Kenai Units. Aurora Gas is working Nikolai and has proposals coming up for this coming year. One of the newest lessees, Armstrong, is delineating a very old gas field to see if they can bring what was once ignored as a potential gas producing unit back to market.

CO-CHAIR WIELECHOWSKI asked what the requirements are under the leases for drilling and exploration. Is there a timeline?

MR. BANKS answered most of the leases being offered are for 5-7 years depending on where they are located. If a lessee wants to keep a lease beyond the primary term, they may do so either by forming a unit around it and demonstrating progress towards production, if production hasn't already occurred, or in the lease operations demonstrate that drilling operations have occurred and are sustained. Those are the minimum requirements for holding a lease. Once lease operations are approved, or a unit is approved, there has to be some progress towards development and production. Many of the items listed on the two slides of north Cook Inlet, the Ninilchik Unit, and Kenai, are already producing.

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CO-CHAIR WIELECHOWSKI asked what percentage of wells are being explored or produced of the 410 leases.

MR. BANKS answered that he would get that information.

CO-CHAIR WIELECHOWSKI asked if his department aggressively pursues where the leases are being explored and ultimately produced.

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MR. BANKS replied yes; some of their lessees think they are being too aggressive. Last December two units, the Corsair and the Kitchens units listed on slide 6 are coming to the end of their term. The Corsair Unit commitments had been made for bringing in a jack up rig and begin drilling there by this June. For failure to bring in, in the department's opinion, a contract for a heavy lift vessel to bring the jack up rig into the Cook Inlet, they were put in default. Similarly for the Kitchen Unit where the oldest leases are nine years old. At the end of their seven-year term the leases were unitized with a commitment the drilling would begin by the end of 2008. Having failed to do that, they were put in default, too. Those together with leases owned by Renaissance in an area called Northern Lights are now part of a "discussion" with the state that has proposed that the lessees group together in each of these units to form a single operation, as units should be.

He explained that units are designed to encourage development by affirming the joint operating arrangements that are required of the various lessees. They have been asked, as a way to minimize surface impacts in the normal unitization process, to come back with a single-unit with the appropriate geological and geophysical evidence of hydrocarbon potential, the contracts for a heavy-lift vessel, a jack up rig to be brought up the Cook Inlet on that vessel, and commitments to drill by this summer. He is awaiting a reply from the lessees. This is the kind of stick and carrot approach they sometimes use for exploration incentives. "Sometimes you just finally have to say it's time to get busy." Because the alternative for the state is to offer the leases to someone else who may have a different view about how they can be developed.

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SENATOR HUGGINS asked, given the extraordinary economic times, what sort of rationale and action he saw going forward, because it appears to him that the state could end up repossessing lots

of leases. The expectation for activity on those has diminished to some degree.

MR. BANKS replied that in this instance, last week he met with the Kitchen Unit owners who are quite excited and finding investors. The challenge for the department is to decide whether or not staying with the current resident will lead to quicker development than pulling the plug and trying someone different. What the department has done for many of the units, particularly in the Cook Inlet, is to develop interim milestones. For instance, instead of a well by some date certain, include bringing evidence that there is progress to get that well drilled - a contract with a drilling rig company or other commitments that demonstrate progress.

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MR. BANKS said that slide 6 demonstrated 2008 has seen a lot of activity. In some cases, not wells being drilled, but various pilot projects, and permits for wells that may not be drilled immediately, but with tracked progress. He suspected that he will see a lot less activity in the Cook Inlet in 2009, because Cook Inlet represents a fairly marginal development prospect for a lot of producers, particularly for those who are looking at worldwide opportunities.

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He hoped to find in 2009, since the division will be working on gas storage expansion plans, more exploration and development. Last week he met with some folks who were looking at Swanson River and the West McCarther area. They refer to themselves as externally financed, but if they can find investors, he may see some more applications for exploration. Development may occur in order to meet existing commitments for supply requirements by the utilities. "Beyond that, 2009 might be a tough year for us on the Cook Inlet."

He pointed out that coordination with the federal government is essential now that we start thinking about ways to access more federal lands.

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Slide 8 showed that ConocoPhillips drilled three additional wells from the Tyonek platform and they are assessing the success of those wells.

MR. BANKS said the state has just issued its final best interest finding for Cook Inlet, something of a milestone. The areawide

lease-sale schedule is in its tenth year and he recalled that the legislature made it possible for him to go into a 10-year cycle supported by a single best interest finding that is supplemented as things change from time to time each year. This means they have been able to offer all of the land in the Cook Inlet that's available for lease every year in the spring on a schedule that is predictable and works well for lessees when they are making plans acquiring a land position there.

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The challenges going forward are going to be environmental. He didn't know if there would be litigation on the final best interest finding, but they have issues related to the listing of Beluga whales and other resource conflicts. He hoped the state's leases had appropriate mitigation measures in them to take care of that.

MR. BANKS also mentioned that the legislature made it possible for them to be able to offer leases in a phased approach so that the decision to lease is different than the decision to explore or develop. When they move to the exploration or development phase they can do a much more concentrated review of the potential environmental impacts.

He again mentioned in coordinating with the federal government, he wanted to see access to federal lands where the state thinks there is oil and gas potential. He would like to make sure the Minerals Management Service (MMS) is willing to offer their lands for lease as the state will potentially jointly manage the Beluga River and Cosmopolitan units with it.

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SENATOR HUGGINS asked if Cosmopolitan belongs to Pioneer and if they had suspended activity.

MR. BANKS answered that is correct; they have postponed the second Hanson well. They drilled an extended-reach well last spring and their focus seems to be to finish up their work at their Oooguruk field on the North Slope. "I think Pioneer is experiencing challenges throughout North America in the work that they are doing, even in the Lower 48."

SENATOR HUGGINS recalled that they were going to drill 30 wells and they've pared that back to two.

MR. BANKS replied that in his opinion, the wells they are drilling are still at a delineation phase and are still in a process of getting a handle on how they can produce this field.

SENATOR HUGGINS asked how much the average cost of drilling a well in Cook Inlet is.

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MR. BANKS replied that obviously there is a lot difference places in Cook Inlet to drill. If you're near infrastructure and/or a road it would be one thing, but most exploration plays aren't so conveniently located. He guessed onshore spending \$10 million or more; offshore could be as much as \$25-30 million.

MR. BANKS continued on to slide 11 and described gas storage saying at the moment there are three storage facilities under development in the Cook Inlet. Two of those are on state lands at Pretty Creek and in the Kenai gas field. Pretty Creek is about 0.7 bcf capacity and is operated by Chevron. The Kenai gas field is about 6 bcf of capacity and it is run by Marathon. The Swanson River is on federal land in the Moose Range and it has 1 bcf of capacity. All three of them combined can probably deliver as much as 30-33 mmcf into the market on any given day. That compares to an average daily supply of about 260 mmcf, but clearly when these storage facilities are producing, it creates "quite a peak" during months where the total gas sales are much higher.

He said they are looking at a fourth storage facility and will be working with a potential lessee in the winter 2010.

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SENATOR HUGGINS said he heard that three parties got together in a "gas purchasing coop,"

MR. BANKS said he would have to talk to Mr. Heinze about that.

SENATOR HUGGINS asked if capacity is what a purchasing coop would be looking into.

MR. BANKS explained that the three existing storage facilities are an alternative to drilling more wells in an existing field in order to achieve deliverability into the marketplace. Companies like Marathon and Chevron look into their own properties and acquiring leases from the state in order to manage a facility where they are more than likely going to put

their own gas into storage and deliver gas out of that storage during the peak months.

Another alternative is a fourth storage facility that will be operated by a lessee, but for the benefit of third-parties. Someone like Enstar could acquire gas from anybody that is supplying it during the summer months and put it in the storage and draw it out during the winter months.

SENATOR HUGGINS asked if he had been involved in any conversations on purchasing cooperative kinds of things.

MR. BANKS answered no.

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MR. BANKS said the reason to store natural gas is that the gas demand shifts dramatically in order to supply space heating. When it is cold and dark the use of gas for heating is very dramatic (slide 12). This means that in order to deliver gas at a peak period of time, either you have to store the gas or drill more wells. For a long time, it was just a matter of drawing from the existing wells because the resource was pretty vast, but as the fields have been drained, in order to provide deliverability in the winter time, more and more straws have been drilled into the bubble. That means those straws are not used during the summer time when there isn't the same kind of demand. When the well is left idle for any length of time, the risk is run of damaging the reservoir and shutting off the movement of gas through the reservoir to the well.

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Another issue goes to the question of what an investor or new explorer is looking at in this marketplace. He said the red line on slide 13 shows the typical productivity of a well drilled into a reservoir. It has a pretty quick response and then a logarithmic decline in production. Anybody drilling for gas in the Lower 48 is hoping for this kind of production profile, because it means they can monetize their investment very quickly by selling as much gas as they can in the early years of its life. The market in Cook Inlet is constrained by its size - just the electrical and space heat utilities and about 48 bcf/day going into the LNG plant - "That's it for the marketplace."

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SENATOR FRENCH hypothesized about a new entrant into the Cook Inlet marketplace. Why would their analysis be any different than the analysis of the existing producers?

They are finding investors that are considering the gas play in the eastern side of the Inlet. The question is whether they can step in, find gas in time and be able to meet or have a supply of gas that the utilities will be willing to buy. If a lot of gas is found (for instance 100 bcf), that is where industrial demand and export is an important part of the market mix. Whoever would find it would be in a better position to supply gas to the LNG plant.

SENATOR FRENCH said he didn't see how the thinking of an independent producer looking at entering the Cook Inlet basin would be different than the thinking of the producers that are already in place. What would motivate Chevron, Marathon, ConocoPhillips to invest \$50 million next year in an exploration program if that yielded a big gas find that they, in essence, couldn't sell, given the size of the market?

MR. BANKS agreed. The major players do examine these kinds of economics as well, and in the recent past resident producers have been willing to invest to the extent that they can supply commitments that they make.

SENATOR FRENCH said he didn't see any reason for the producers to search for any more gas than they can reasonably expect to sell in four or five years.

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MR. BANKS said that is correct. The idea is to make sure the market isn't any further constrained.

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SENATOR STEDMAN referred to chart 13 and said the red line looks more like an oil producing cycle and the blue line a little bit more like gas. How would a gas producer needing long term contracts be able to peak his like the red curve, he asked. "It's just seems kind of counterintuitive."

MR. BANKS replied that the red line kind of represents what gas production would look like in a market that is unconstrained - like gas wells drilled in the Lower 48 that are near infrastructure to deliver gas. The idea is the same - that you can produce at peak for a few years and then as the pressure drops in the reservoir and the well becomes less producible you see that kind of profile in production. Presumably the cash flow would look like that, too.

[4:59:10 PM](#)

SENATOR STEDMAN said that Agrium is in a low cost producing environment needing inexpensive gas to compete in the international market place for its fertilizer. If Cook Inlet gas was marketed to Henry Hub, in future exploration, how would an operation like Agrium function paying the going rate? Would that have to be lowered to keep them in business?

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MR. BANKS replied that Agrium had a challenge in 2006 to keep the plant going, because its sales were low. As commodity prices rose around the country, those market conditions changed, but they had already decided to not continue operating the plant. Had Agrium been able to bridge through that high priced gas/low price commodity sales crisis, it might have found itself with a gas supply problem.

[5:01:14 PM](#)

SENATOR FRENCH asked if the current tax policies with Cook Inlet gas sufficiently incentivize exploration.

MR. BANKS cited the favorable ACES tax credits that go along with developing gas there. The tax rate for instate use of gas is cheaper and many of the fields enjoy royalty relief from a long ways back. The current producers talk about refinements as any producer would, but the new explorers, unless they can show continuous expenditure of funds, if they are successful, they get to enjoy the full benefit of those exploration investment credits. If they strike out, then they are not able to acquire their full benefit. When they are doing their economics and comparing a success and failure leg, the failure leg looks a little bit more expensive than it might otherwise be. Newcomers like the tax system for gas in the Cook Inlet.

[5:02:52 PM](#)

CO-CHAIR MCGUIRE asked what a gasline looks like from Cook Inlet going north versus a gasline from the Nenana Basin going south.

MR. BANKS replied that going north the demand for gas in the Interior is not all that great. So the economies of scale are going to be a challenge for a northbound supply if Fairbanks is the only market. Heading south, the economies of scale are only challenged by how productive Nenana basin is if gas is found and can be developed there. Clearly the target market for success in the Nenana is Fairbanks, itself. If Nenana has more gas than Fairbanks needs, heading south is attractive because Anchorage is a bigger market. They will face the same kinds of challenges

that any explorer in the Cook Inlet would face, but it's not nearly as constrained as an Interior market.

MR. BANKS said he is a little bit of a contrarian in some respects. It's not inconceivable that gas supplies could move from the Cook Inlet north into a main export line going from the North Slope to Alberta or something like that. It all just depends on the price and the success of the explorers in the Cook Inlet.

[5:05:32 PM](#)

CO-CHAIR MCGUIRE asked what other opportunities might exist for stabilizing the market for Cook Inlet gas.

MR. BANKS replied that storage is the most obvious place to look. There are more than four potential storage areas. Some of the big fields that are exhausted like the Kenai gas field's 6 bcf of storage is "a pretty big balloon to fill up with gas." It's like filling a car tire with a bicycle pump. "You have to put a lot of gas into it before you can pull very much out of it."

[5:06:58 PM](#)

SENATOR HUGGINS said his position would be to expand the LNG plant and a pro-rata piece would go instate by virtue of that. That appears to be the most feasible thing assuming export permit. Why not that course of action?

MR. BANKS agreed with him - that at 48 bcf/yr. there is room to grow if there is a market to supply it. Those are issues that need to be overcome. At the moment the owners of the LNG plant agreed with the state to submit a request for proposals (RFPs) to buy gas for the LNG plant; if gas is to be supplied to the LNG plant, it most likely would be during the summer months to create that leveling that Senator McGuire was talking about. It's there already and doesn't need to be developed. All that is needed is a contractual relationship.

[5:08:45 PM](#)

CO-CHAIR WIELECHOWSKI thanked everyone for their comments and adjourned the meeting at 5:09.