ALASKA STATE LEGISLATURE
SENATE RESOURCES STANDING COMMITTEE
February 26, 2011
10:01 a.m.

MEMBERS PRESENT

Senator Joe Paskvan, Co-Chair
Senator Thomas Wagoner, Co-Chair
Senator Bill Wielechowski, Vice Chair

MEMBERS ABSENT

Senator Bert Stedman
Senator Lesil McGuire
Senator Hollis French
Senator Gary Stevens

OTHER MEMBERS PRESENT

Senator Joe Thomas
Representative Paul Seaton

COMMITTEE CALENDAR

CALISTA REGION: ALTERNATIVE ENERGY UPDATE

- HEARD

PRESENTATION: GREAT BEAR PETROLEUM LLC

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

ANDREW GUY, President and CEO
Calista Corporation
POSITION STATEMENT: Presented Yukon Kuskokwim Delta (YK) energy project.

PAUL GEORGE GUY, General Manager
Kweth Inc. Village Corporation

POSITION STATEMENT: Testified as chairman of the board of Nuvista Light and Electric Cooperative on YK energy project.

CHRISTINE KLEIN, COO
Calista Corporation
POSITION STATEMENT: Commented on Nuvista Cooperative as part of Calista presentation on YK energy project.

ED DUNCAN, President and CEO
Great Bear Petroleum
POSITION STATEMENT: Gave presentation on Great Bear Petroleum's unconventional oil play on the North Slope.

RYAN MOYNAGH
Vice President, Finance
CFO, Great Bear Petroleum
POSITION STATEMENT: Commented on Great Bear's financial model for its unconventional oil play on the North Slope.

ACTION NARRATIVE

10:01:47 AM
CO-CHAIR JOE PASKVAN called the Senate Resources Standing Committee meeting to order at 10:01 a.m. Present at the call to order were Senators Wielechowski, Wagoner, and Paskvan.

10:02:27 AM

Calista Region: Alternative Energy Update

CO-CHAIR PASKVAN announced Calista's presentation as the first order of business.

ANDREW GUY, President and CEO, Calista Corporation, thanked the committee for giving them an opportunity to make a presentation on an energy project that is of great importance to the people of the Yukon Kuskokwim Delta (YK). He explained that Calista and regional village corporations were established by the Alaska Native Claims Settlement Act (ANCSA) to improve the socio economic status of the people in their respective regions and villages. In Calista's case, accomplishing the goal in the past 40 years has primarily consisted of employment for themselves and their descendents in their corporate headquarters and subsidiaries based in Anchorage and around the nation. Other benefits include scholarships, training funds, internships and donations to village and regional entities. More recently they have begun paying distributions to their shareholders and elders. While these benefits are important and will continue to

be priorities for them, they understand that they can better meet the acts obligation by engaging in activities that create jobs for their people.

He said their region is one of the most economically depressed areas in the state and nation coupled with a very high cost of living - the two main factors being energy and transportation. The village corporations in the region can become bigger employers if they had a business plan that at least offered an opportunity for breaking even in their business ventures. To do this they need lower energy costs. With reasonable energy costs their business investments have been successful. Calista has committed to do its part.

MR. ANDREW GUY said there is a lot of concern about what will happen in the Railbelt and Southcentral with energy supplies in the future, but while that is important, it doesn't affect everyone in the state. He said he was here to ask the state to step up and do its part for rural Alaska. For the rural citizens it is clear that diesel energy is untenable in the future. Its cost is prohibitive and the environmental consequences of this high carbon fuel are unacceptable. Rural Alaska must have a different energy future if it is to have any future at all, he said.

10:08:13 AM
PAUL GEORGE GUY, General Manager, Kweth Inc. Village Corporation, said he also sits on the board of directors of Calista Corporation, but that he is here today as chairman of the board of Nuvista Light and Electric Cooperative. He has been involved in energy matters for over 20 years beginning with management if Kwethluk Community Power Plant and the oil and gas retail business of Kweth Inc.

MR. GUY said that numerous energy studies have been conducted in the Calista AVCP region over the last five decades. Studies are important but action needs to follow once they have been completed. In order to move the effort from study to action, Calista and AVCP formed Nuvista Light and Electric to pour through these prior energy studies and identify feasible alternatives and make plans to build a new integrated region-wide electrical system. They have examined diesel, coal, wind, solar, natural gas, geothermal, even nuclear powered generation options. In going through this process, Nuvista has reviewed and considered all possible energy sources and has concluded with public input that these options are either deficient in scale, unacceptable from an environmental standpoint or not feasible

for supplying regional light and power. The best alternative to emerge so far is hydro electric power generation, and they are excited by the possibility offered by the Chikuminuk Hydro Power Project.

He said Nuvista Light and Electric is a non-profit cooperative organization with directors from all the major organizations in the Calista AVCP region including the association of Village Household Presidents and AVCP Regional Housing Authority. After studying all different kinds of energy they found that hydropower generation is the type of project that will best work in their region. It's time to move beyond studying and act for the benefit of all involved including the State of Alaska. Power Cost Equalization (PCE) can't be the indefinite solution.

10:10:27 AM
CHRISTINE KLEIN, COO, Calista Corporation, said she is also representing Nuvista Cooperative today. She said she would give them a quick overview of what they found and look at some of the energy solutions and then what their next steps are in regards to their requests to the legislature.

She said Calista Region is 59,000 square miles, 10 percent of the Alaska land mass, with a population of over 26,000 people. It also contains the Wade Hampton Census area and its socio economic challenges. Nuvista Cooperative was formed in 1995 as a utility cooperative with a common goal of reducing electrical costs in the region because of their very high costs. She said they are made up of 12 different organizations, and it is unusual for so many groups to work together. They are very proud that they have all the major stakeholders in the region as a part of this cooperative working to find a solution to high energy costs.

MS. KLEIN said that currently diesel is the primary heating fuel and runs $6.14 - $9.50 per gallon and gets delivered once a year by barge. If there isn't enough fuel or the barge couldn't get up river, it has to be flown in to one of the 56 villages. In 2004, 50 percent of family incomes went to home heating and that has grown this past year to 75 percent.

She explained that currently most of the electrical generation is done by diesel and costs $0.52 - $1.00 kWh. Many in the region use the PCE, and while they are very appreciative of that, they can't keep up and it's only for the first 500 kW.

10:13:07 AM

She said there are over 41 independent small diesel-powered generators in the region and they use over 20 million gallons of diesel a year, which is one-third of the diesel used in Alaska for electricity generation. Most all of them have noted that transmission lines are needed in this region to link up some of the villages. The electrical demand for these villages around Bethel by 2020 is expected to be 65 mW; currently it's 15 mW. Reports have continuously found that coal, hydro power and wind are potential feasible options and should be implemented.

10:14:47 AM
MS. KLEIN said energy and transportation are the two largest areas of energy impact. For example, a week's supply of food ranges from $142 in Juneau to $273 in Bethel for the same type of food. Electrical cost projections done in 2004 indicated $.70 per kW, but unfortunately because of the rising cost of fuel that has already gone off the charts.

She said these studies have also found that energy needs vary in the region because it is so large and has diverse topography. They embrace conservation, but it won't solve their problem. Nine coastal villages have wind turbines, which have helped tremendously with 18 kW of capacity but it is not a year-round solution and doesn't fit the needs of other villages throughout the region.

10:15:58 AM
Numerous areas could be connected fairly easily just because of the proximity of villages with transmission lines. Some of the energy alternatives that have been considered over the years have ranged from doing nothing and continuing to use diesel all the way to small package nuclear power plants. When each of the different alternatives were looked at and discussed in the communities, some were immediately taken off the table because of fear of some of the technology. For instance, concerns over the coal power plant in Bethel were about Black Lung.

She said there has been a lot of interest in geothermal, but unfortunately there are only three hot springs in the region and they are not hot enough to provide the power that would be needed for the area other than in a very local manner.

10:17:21 AM
SENATOR WIELECHOWSKI noted the feasibility of nuclear power was poor to none and asked if they had evaluated small scale nuclear reactors.

MS. KLEIN replied that that idea was looked at briefly. Some options were taken off the table because the communities were very reactive to it and permitting for nuclear power has not been successful in the last 30 years.

CO-CHAIR WAGONER said Galena has been working on a nuclear power plant. He personally thought that was a great way to go, but he wanted to know if they had asked a geothermal expert like Ormat to look at their geothermal possibilities because you have to drill to see if you have a feasible project with geothermal. It can't be determined by the amount of water in a hot spring.

10:19:13 AM
MS. KLEIN answered that no drilling has been done, but it was looked at in 1948, 1970 and 1975. She wasn't sure if it was in the 1980 report.

CO-CHAIR WAGONER urged her to contact Bobby Evans with Ormat for another evaluation. Ormat is the leader in the country for geothermal.

10:20:19 AM
MS. KLEIN said after the past 40 years of 21 engineering reports and assessments the Nuvista board and stakeholders felt that the remaining candidates left were wind turbines, a coal power plant and hydroelectric power. Coal had a very negative public reaction in the Bethel area, but it would be the cheapest and have the greatest energy capacity. Coal sources would not be from in the region. Wind turbines are variable and would not power the whole region, but there are 12 sites for hydro. Four sites were considered more seriously in the past year: Kisaralik River and the Chikuminuk Lake in the Kilbuck Mountains. The Chikuminuk River is 118 miles east of Bethel and has been studied several times over the last 30 years.

The latest hydro electric feasibility findings in the latest engineering report of the four sites indicated the Kisaralik River would not provide enough power for e Bethel and the 13 area villages year-round; however it would be a cheaper option but there are salmon in the river. The Chikuminuk Lake option has enough capacity to power Bethel and the area villages, and it is 118 miles from Bethel and has no salmon (a positive in the local peoples' perspective).

MS. KLEIN said in January, the Nuvista team and stakeholders decided to move forward with the Bethel area sub-region plan as well as a region-wide comprehensive plan and found that

Chikuminuk Lake as the preferred alternative for a total cost of $483 million - a construction cost of $392 million including 118 miles of transmission lines and a design cost of $91 million. It would meet the Bethel and 13 area villages' electrical demand easily through 2020 and beyond.

The Kisaralik on the other hand would not meet the area demand, but would be slightly cheaper. Any of the other three options would require some augmentation by diesel. The estimated 20-year cost per kWh for hydro power in the early years is generally more, but as there is more demand the cost drops significantly. These would be early start up costs she reminded them.

10:23:48 AM
SENATOR WIELECHOWSKI asked for the cost breakdown between transmission lines and the actual hydro plant for the Chikuminuk Lake project.

MS. KLEIN answered that the transmission lines range from $400 thousand to $1.2 million per mile. The estimate they have at this time is $142 million for the transmission lines alone.

SENATOR THOMAS asked if the Kisaralik Lake is in the National Wildlife Refuge.

MS. KLEIN answered that it's in the Yukon Delta Wilderness Preserve; the Chikuminuk is in the Woodtikchik State Park.

SENATOR THOMAS commented that a state park is better than the other and that must have been a consideration as far as realistic potential for Kisaralik.

MS. KLEIN replied yes; but there will be challenges - mostly permitting - associated with both because both are in parks. However, she said there are mechanisms to deal with both and both options can be done.

SENATOR THOMAS said a state park would seem like a better option and asked if they aren't more serious about Lake Chikuminuk.

MS. KLEIN replied that option would require a legislative amendment to the existing authorization of the Woodtikchik State Park to allow hydro power in a state park.

10:25:56 AM
With respect to cost per capita, to give them a sense of Railbelt versus urban, this project comes in very well, she

said. The capital projection for this project at $17,260 per capita is surprising in the same range as a Railbelt project at $16,200 per capita. Their next task would be to complete a detailed engineering feasibility study that would include field reconnaissance, surveying, initial designs and the FERC permitting. The drainage basin for the Chikuminuk is the smallest of the four drainage basins that would be impacted, another positive.

10:27:12 AM
FERC licensing would cost $5.88 million and $11.75 million for the design and site field investigations, for a total of $17.6 million. These efforts are proposed to start this next year. Their request to the legislature, as hydro has obviously risen to the top of many, many engineering reports at this time as the most feasible option for this Alaskan region, is to fund the capital request to go to the next stage of designs.

SENATOR THOMAS asked if it's a lake tap or a regular dam.

MS. KLEIN answered that this would be a lake project. It would be a rock fill with concrete face dam - not a direct lake tap.

SENATOR THOMAS asked if there isn't enough drop to do a lake tap.

MS. KLEIN answered that the drop isn't quite enough; the rock and concrete face would be expected to increase the elevation by 75-100 feet.

10:29:10 AM
CO-CHAIR WAGONER went back to hydro versus nuclear and asked if they had priced a stand-alone nuclear compared to hydro for generating the same megawatts.

MS. KLEIN replied that she didn't recall those cost estimates and nuclear was taken off the table really early.

CO-CHAIR WAGONER asked if it was just the fear of nuclear.

MR. ANDREW GUY answered yes; fear of nuclear and the fear of the affect an accident would have on subsistence resources there.

REPRESENTATIVE SEATON added that Seward has been looking at a nuclear plant after Galena Air Base left, but they didn't have enough load. The problem is that a nuclear plant has never been permitted or built in Alaska before.

CO-CHAIR PASKVAN acknowledged that they recognize the challenges.

10:31:02 AM
SENATOR THOMAS said with an average cost of $8/kW it would take 34 years to pay around $400 million to displace the diesel.

MS. KLEIN replied that this project will range from $450 to $500 million.

SENATOR WIELECHOWSKI asked what the current megawatt usage is for Bethel and the 14 villages.

MS. KLEIN replied in the 15 mW range and it's projected to be 65 mW by 2020.

SENATOR WIELECHOWSKI said that seems like an enormous growth to happen in 9 years - more than tripling.

MS. KLEIN responded that is a very good question and she had failed to point out that the Calista Region is one of the only regions in the state that has been growing. They actually projected 2 percent growth, but it has actually been closer to 3 and 4 percent depending on which years are used.

SENATOR WIELECHOWSKI asked if they are projecting new industries being added.

MR. ANDREW GUY responded that the combination of population growth and the kind of businesses that would crop up from it would create more demand.

10:33:43 AM
MR. GEORGE GUY added that a couple of years ago his community had black outs because the production kilowatts far exceeded the kilowatt production. As a result, people were asked to shut off their unneeded electrical appliances so they could keep power on in the community.

CO-CHAIR PASKVAN said this discussion is a great start in figuring out potential solutions to the Southwest Alaska energy concerns. He said Interior Alaska is not "punished" by these crushing costs as much as Southwest Alaska is. He thanked them for their presentation.

10:35:32 AM

At ease from 10:35 to 10:39.

10:39:33 AM

Presentation: Great Bear Petroleum LLC

CO-CHAIR PASKVAN called the meeting back to order and welcomed Mr. Duncan from Great Bear Petroleum to give his presentation.

ED DUNCAN, President and CEO, Great Bear Petroleum, thanked the committee for the invitation to present his company and to present what they believe is an unsurpassed opportunity for the state to rebuild itself in the oil and gas energy world through the explorations and development of unconventional resources. He said their company is solely focused on unconventional and solely in Alaska. They don't have a business unit anywhere else and their intention is to prosecute their business solely on the North Slope of Alaska.

He said that Great Bear is an interesting company; it's private and small. It's a big company in a small company body. They are focused on three of the most prolific world-class source rocks in the world - that happen to lie underneath and within the producing fields that have proven themselves so prolific over the years: the Triassic age Shublik Formation, the Jurassic age Kingak Formation and the Cretaceous age Hue/HRZ Formation - any one of which individually could function as an unconventional resource development as good in quality and regional extent as any of the resource plays that are developed in the Lower 48.

10:43:03 AM

MR. DUNCAN said the North Slope's Brookian foredeep, in a basin context, has what he thinks is a unique situation of having three world-class source rocks with broad geographic spread co-located and sharing a common burial history, all of which are accessible in Great Bear's area of operation.

He said in a conservative case scenario, Great Bear has a very robust, analogue-based volumetric estimation. A mid-sized case allows the production profile for this play to remediate much of what is wrong with the decline in the state's production base down TAPS and also provides a basis for a clearer view of Alaska as a potential gas resource supplier on a global scale well into the future.

MR. DUNCAN stated they are targeting near-term oil production. And rather than leasing and studying like a lot of companies do, they have studied and leased. They want to accelerate their

exploitation program with geo-mechanic studies this year and full field development tests next year. At this time next year their plan is to be drilling their first two full production test wells - laterals, fracs and flow-backs. They could be selling oil into TAPS by summer 2012 - although it would be trucked at this time.

10:44:32 AM
Today, he said, Great Bear in the context of its leasehold surprised a lot of people. He explained that their bidding strategy was heavily focused on science-based knowledge while other companies' strategies are not particularly focused and are often more like "land-grabs." Nothing is further from the truth for Great Bear. Great Bear management knows the North Slope and they have studied it hard. Their jobs throughout their careers have been to identify opportunities based on good science and to look for ways to access the material piece of what they believe to be emerging plays.

In the context of North Alaska, their acreage position was targeted and focused on solid science. He said a lot of modern science is available to the industry and the state has organized and made tremendous data bases available to the public. The USGS has done "spectacularly good work" particularly over the last 20 years on understanding the distribution of source rocks - their quality, their burial history, their maturation - focused on understanding how the oil charge got to the fields they know about - Prudhoe and Kuparuk primarily - but certainly Point Thomson, Alpine and some of the satellite fields.

MR. DUNCAN said Great Bear knows they have a world-class petroleum province because they are predicated on world-class source rocks. The North Slope basin has three of them - all of which could be unconventional. You can have great reservoirs and no source rock; but you won't have world class reservoirs.

10:49:40 AM
He said conventional reservoirs can be clearly delineated from subsurface well and seismic data. Unconventionals are the opposite. Because the source rocks, in particular source rocks in basins like the North Slope, are ubiquitous; they are regional and extend from one side of the North Slope to the other side - into the offshore and all the way back to the outcrops of the frontal folds of the Brooks Range. That's the challenge and the beauty of the play. The presence of ubiquitous source rocks allows companies to move their business management and development away from the day-to-day technological risk at

the geologic scale to day-to-day engineering of commercial risk. He elaborated that if the geology is bad they can't do anything about it; that's Mother Nature, but if the commercial or engineering environment is a challenge, those are things they can fix.

10:51:15 AM
He related a brief history of resource development in North America, particularly relevant to unconventional shale gas plays (and much later in the timeline, oil): George Mitchell, Mitchell Energy, entrepreneurial visionary, started working the Barnett Shale in north Texas with vertical wells in 1981. He and most of his colleagues thought this was ludicrous. By 1991, Mitchell was still the only company doing unconventional shale reservoir development, but they had moved into doing horizontals recognizing the importance of exposing more bore hole to the formation, effectively improving productivity and recoveries. Thirteen years later - a forever in this industry of multiple price cycles, evolving technology like 3-D seismic - the Fayetteville Shale, dominated by Southwestern Energy, was first drilled and commercial flow rates of gas were developed. In the same year the Marcellus Shale area started to evolve with commercial rates of gas; and in 2005, the Woodfords Drill in eastern Oklahoma; in 2008 the (gas) Haynesville Drill in northern Louisiana.

MR. DUNCAN said that drilling, completion and stimulation technology until 2008 could not deal with liquids production in a frac job. In fact, when a shale source rock was fraced and stimulated and attempted to be flowed, in a portion of the "fairway" that was rich in liquids it stopped the play. And that is how the plays were defined up until about mid-2008. You drilled until you started getting too much liquid and then you stopped.

10:54:03 AM
In 2008, a small company named Petro Hawk Energy rolled out - using the technology that they had clearly been working on in the background with some of the prime service providers (Halliburton, Baker, Schlumberger and the like) - the first commercially successful production well of oil out of Eagle Ford Shale in south Texas.

HE said that separation of oil and gas prices facilitated more, and continues to facilitate more, and more research on drilling and completion technologies for oil and liquids production out

of the same resource plays that previously only had been exposed to gas production.

He stated that the technology simply didn't exist until 2008. This is one of the keys to Great Bear's success: only two bidding cycles are between the time the technology became widely known and today. They bid in the second one of those cycles. Retrospectively they realized the state's annual lease sales could become their worst enemy if they didn't take as much of the "fairway" as they could. So, that's what they did, but the probability of them holding the theory tight for another year is probably low.

10:56:33 AM
SENATOR WIELECHOWSKI asked how confident he was that these rocks they leased are as good as he says they are.

MR. DUNCAN answered, "Approaching certainty." He said the USGS published a seminal paper in 2006, a joint study with Stanford University and Schlumberger, that used every available piece of data that could be captured at the time - virtually every well, every core, every sidewall core, every cutting sample, every outcrop evaluation the USGS had ever done - was incorporated into what at the time was the largest 3-D fluid flow model ever done of the entire basin - from the Canadian border, offshore Chukchi Sea, to Cape Lisburne to the frontal folds outcrop of the Brooks Range. The study was built on the back of very quantitative geo-chemical analysis of the rocks understanding the products generated when the rocks matured through the oil window, products generated through the gas window and the chemistry of the produced hydro carbons. But the focus of the study wasn't resource play evaluation; it was to illustrate the relative mixing of oils and the known pools. Or simply put, how much of Prudhoe came from the Shublik, how much came from the Kingak and how much came from the HRZ.

Great Bear took the model and flexed it differently. They took the quantitative geo chemistry and the source rocks and understood where those source rocks are mature today, which is critical, and mature in the recent past, which is also critical for predicting what portions of present day fairways are optimally stressed for oil and optimally stressed for gas. He wasn't particularly concerned about proving to himself that Prudhoe is a big field; he already knew that. He was more concerned about proving where the source rocks were still present in the right thermal window to be exploited for a resource play. The USGS study, if it's flexed differently, is

perfect for that. The USGS published the results of that study very heavily; Great Bear licensed the study and that is fundamentally what they used for their early work on the play.

11:00:44 AM
SENATOR WIELECHOWSKI asked if he knows how sweet the oil is.

MR. DUNCAN responded that the practical answer is there is no reason for the oils to be lower quality than what is reservoired in the known fields. There is some reason to believe the oils will be higher quality because they are going to get them before migration and mixing. He suggested that Shublik oils will be in the mid to high 20s, Kingak in the 30s and HRZ oils in perhaps the 40s - very light almost gasoline-like; but them may be even better than that.

11:01:58 AM
MR. DUNCAN stated the technology is new and that is one of the things that they leveraged along with high basin knowledge - understanding the technology today and seeing the intersection and becoming first mover. Their program on the Shublik, Kingak and the Hue began in earnest with the leasing obviously, but the geo-mechanical studies are scheduled for late this year and then two full production tests are targeted for the January/April 2012 window - critical dates they are pushing hard for.

This is more than just theory, he said. It is not a question about whether these source rocks are viable or rich. There are 100 billion barrels of oil in place between Point Thomson and Alpine fields - that's an observation not a guess. He explained that only about 20 percent of the oil generated out of the source rock actually makes it to a trap; and the balance is their target. This is what is driving the plays in Bakken, Eagle Ford and Marcellus. They have known this for a long time, but haven't had the technology to get it out.

11:03:57 AM
SENATOR WIELECHOWSKI asked if he is saying their lease has the source rocks and that the oil in Prudhoe has migrated from the source rocks where their play is.

MR. DUNCAN said, "Yes; that's correct. That's a perfect summary."

SENATOR WIELECHOWSKI asked if he thought only 20 percent of the oil has migrated and that there is a much larger reserve left.

MR. DUNCAN answered yes; expulsion and migration science suggests that 80 percent oil/gas is left in place in the source rocks. The challenge for unconventional resource play development historically has been an engineering exploitation challenge: what percentage of that retained hydrocarbon they can get out at commercial rates. That is where they are right now. They know the technology is available in Alaska; they know it can be applied at the drilling depths where these rocks exist; they know the thermal stress that the rocks in their acreage are in right now and feel confident that they are optimally stressed and ready to be exploited.

CO-CHAIR PASKVAN followed up asking what percentage of the 80 percent of resource still in source rock is technologically recoverable in the near term.

11:06:10 AM
MR. DUNCAN answered that they base their recoveries on analogue performance of the Eagle Ford Shale, specifically, because it is remarkably similar in lithology and mineralogy as well as organic richness to the Shubliks. The percentage of hydrocarbon recovered is a moving target. Two years ago it was 3-4 percent; now it's 5-6 percent and improving. Technology in this particular field is moving at a spectacular pace, and it's driven by the success of the plays like Bakken, Eagle Ford and Marcellus. So, the exploitation, reservoir stimulation, completion and production technologies are improving dramatically. Great Bear is using 5-6 percent as their base case, but their suspicion is that it will be higher than that by the time they drill their full production test next January.

SENATOR WIELECHOWSKI asked why they hadn't heard this from the majors - ConocoPhillips, BP and Exxon - who have been on the North Slope for decades.

MR. DUNCAN went back to a slide of the Lower 48 10 years ago with the names of the companies that drove the R&D behind the scenes to make these plays viable; none of them were known at the time. The companies that drove these technologies weren't the majors then but they are now.

SENATOR THOMAS remarked that he didn't find that unusual, because the same thing happened in the Fairbanks mining district where poor miners were tromping around in the early turn of the 20th Century, chipping away at the rocks with a pick and an axe and now Fort Knox Mine and International Tower Hills Mine are producing millions of ounces of gold.

MR. DUNCAN agreed with his simile. He said Great Bear repurposed a very good USGS study published in 2006 to build an understanding of where the known source rocks are properly thermally stressed today to provide an optimal target for oil resource play development - and at some point in the future - gas development.

SENATOR THOMAS asked who actually drilled in that area previously.

MR. DUNCAN answered the USGS study incorporated every known penetration through the Shublik into the lower-most source rocks and some coals deep beneath the Ibishak (the primary reservoir at Prudhoe Bay). These wells were for USGS stratographic test wells done by Arco, BP and Texaco. About 150 base wells penetrated the full section in and around their specific area. Their study was heavily focused on state lands, because they worried less about the NPRA when building the business case. So, additional wells could be in the NPRA that he hadn't studied as well.

11:13:30 AM
SENATOR THOMAS said approximately 100 billion barrels of equivalency (BOE) has already been discovered just north their acreage and asked who that lease belongs to.

MR. DUNCAN answered that would include the oil and gas in place at Point Thomson, Prudhoe, Kuparuk, Alpine and the satellite fields associated with those accumulations.

SENATOR WIELECHOWSKI clarified that the statement above that says estimates of oil generated from their targeted source rocks approaches 1 trillion BOE.

MR. DUNCAN responded yes; the study is regional and that 1 trillion is North Slope-wide, ANWR to the western edge of the NPRA and into the offshore - oil and gas.

SENATOR WIELECHOWSKI asked if he used the 6:1 ratio for oil to gas equivalent.

MR. DUNCAN nodded yes.

11:15:17 AM
REPRESENTATIVE SEATON asked if his estimate was for extractable or in-place resources and if it was in their leased area.

MR. DUNCAN answered these numbers are reserve estimates on their leasehold which is in pre-award status. Final word should be coming out in the next month or so. The P50 reserve estimate is on their leasehold only and only one source rock is being developed with a specific drilling density.

MR. DUNCAN reviewed his slide of the three primary source rocks - the Shublik, Kingak and Hue. They are well-known and well mapped; their distribution and geo chemical characteristics have been effectively proven. They know from various studies, not the least of which is the USGS study, what they had already discussed at length. These are the primary source rocks on the North Slope. The Shublik rocks provided about 60 percent of the oil at Prudhoe Bay and the balance came from the Kingak and the Hue. The relative mix of oils in Kuparuk and Alpine and other fields varies amongst the three. The richest source rock on the North Slope and one of the richest source rocks in North America as well as the world is the Shublik Formation, and that is their primary target. But, he emphasized again, that they believe that the Kingak and the Hue individually could support an unconventional resource play development on their own. The fact that they have three on the North Slope provides a truly extraordinary opportunity. You don't get that in south Texas, the Bakken or in the Marcellus.

CO-CHAIR PASKVAN asked him to explain the correlation between the Shublik and the Triassic age in light of his illustrated rock columns.

MR. DUNCAN explained that the Shublik is Triassic age (the oldest), the Kingak is Jurassic age and the Hue/HRZ is Cretaceous age (the youngest) and sets stereographically shallowest. So, from a drilling depth perspective, they will drill through the HRZ on the way down to the Kingak on the way down to the Shublik.

SENATOR WIELECHOWSKI asked him for a one-minute explanation of exactly what Kingak and Shublik are.

MR. DUNCAN replied that all three units are shales; they're black mud stones generally. The Shublik has a higher percentage of calcareous-like (carbonate limestone) units; always black and organic-rich, a critical component for viable source rocks. The Kingak is a regional black mud stone.

SENATOR WIELECHOWSKI asked if it is accurate that millions of years ago organic matter piled up and that formed the Shublik.

MR. DUNCAN answered yes; most source rocks are the product of conditions that allow organic material to be deposited and preserved, which is critical. Two-hundred million years ago, the Jurassic margin was a south-facing ocean; the coastline was to the north of the present day coastline of north Alaska and the ocean opened deep into the south. The margin was characterized by upwelling, which is similar to conditions seen offshore of California - organic-rich activity in the ocean. That material was deposited and preserved in a very thick section that covered a huge area - what today is seen as the entire onshore from the east NPRA to Cape Lisburne on the west and partially into the offshore north of the present-day coastline.

CO-CHAIR WAGONER asked if Great Bear would produce all three zones or just the Shublik.

MR. DUNCAN replied that their initial production tests will focus on the Shublik, but in the early stages of their exploitation planning they will want to get a good feel for what the Kingak and HRZ can do, as well.

11:23:24 AM
He "drilled down" into the technical case with a schematic (slide 12) of the basin and said one of the critical things about this basin that is so good, they believe, is the fact that the source rocks are regional in extent. All three are located everywhere they are looking and all three in fact share a burial history context - how the basin developed, how the rocks were heated, and how they were driven towards oil and gas maturity. As the Brooks Range elevated to the south and was eroded, the basin that formed in front of it and the filling of it is what drove the source rocks to their thermal maturity. He said the seismic line is extracted through Great Bear's lease hold. He related that the HRZ and GRZ refer to the same rock unit in the slides; it just depends on which company you worked for.

11:26:57 AM
SENATOR WIELECHOWSKI asked how putting a well into the Shublik or the Kingak region is different from a putting a well in Prudhoe. How much oil will flow into that well compared to a well in Prudhoe or Kuparuk?

MR. DUNCAN replied the difference is that unconventional reservoirs either do not or just barely flow naturally. They

require engineering stimulation in order to produce at commercial rates. Ten years ago these rocks would have been considered impermeable.

Prudhoe is to the right of the truncation of the Shublik and Kingak (slide 12). The trap at Prudhoe Bay is underneath the lower Cretaceous unconformity, which generates the angular discordance. Prudhoe in space would be about where the GRZ plus Hue shale label is located. Not every well in the Prudhoe and Kuparuk units drills through the Shublik and Kingak because it's truncated and missing by the lower cretaceous unconformity.

Interestingly, he said, interviews with many geologists that have done well site duty over the years (the state has plenty of them) will tell them drill the HRZ because one of its characteristics is that "it bleeds oil." It was a curiosity in 1982, but now it's a "flag" that the unit is potentially a viable unconventional resource development target.

11:30:05 AM
MR. DUNCAN provided maps derived from the USGS 2006 study; slide 13 was of the thermal maturity zone of the Shublik and Lower Kingak representing the general area within which the Shublik and the Lower Kingak are expected to be thermally stressed optimally for oil, today - a good place to be. The green shading across the map illustrated the "fairway." Great Bear's lease hold was outlined in the middle of the map in the area immediately south of Prudhoe and Kuparuk.

CO-CHAIR PASKVAN asked him to describe how the TAPS line correlates with Great Bear's leases.

MR. DUNCAN replied that the precursor planning in the business development plan looked at possible routes for produced hydrocarbon and recognized the benefits of leasing adjacent to the existing TAPS Haul Road for any number of reasons, not the least of which is ingress and egress across their field area. At some point it may prove helpful in the context of moving oil into the pipeline. He noted that the TAPS and Haul Road cross the eastern side of their leasehold position.

11:33:17 AM
SENATOR WIELECHOWSKI said it looks like they leased everything to the south of the fairway, but what about the land to the north and northeast of the Shublik that is out of the fairway? Is that for access purposes?

MR. DUNCAN answered that the fairway as mapped and interpreted by the USGS is a "bracket of thermal maturity," and Great Bear has a slightly, but importantly, different interpretation.

CO-CHAIR PASKVAN asked if that interpretation involved proprietary data.

MR. DUNCAN replied not necessarily proprietary data, but a different interpretation of the data as presented.

CO-CHAIR PASKVAN said, for the listening public, that they were looking at stratas below the surface that represent the various unconventional oil play opportunities.

MR. DUNCAN said that is correct and the deepest target that they will be working toward in the near future is the Shublik and Lower Kingak that are effectively co-located and deposited on top of one another. They are not separated by much space in a vertical context. The Hue/HRZ is on the page 14 map and is the shallowest interval that they will be targeting. They will drill through the HRZ on the way down to the Shublik and will probably get a "pretty good feeling" for what it is going to do as they pursue the Shublik.

CO-CHAIR WAGONER asked if any of these unconventional plays in any of the three zones is close enough to Prudhoe Bay that perhaps one or more of the majors might explore the shale in their areas - or is that even mature enough.

11:36:34 AM
MR. DUNCAN referred him back to the seismic line on page 12 that shows the Shublik, their primary target, is truncated and missing under most of the Prudhoe unit area. So, if the majors were going to try this at all they would have to be targeting the HRZ. He reminded them that a critical piece of this puzzle is thermal maturity and that generally comes with depth of burial in this basin and most of the rocks in Prudhoe are thermally immature.

REPRESENTATIVE SEATON asked if the reason their initial play is the Shublik is because the analysis of Prudhoe indicated that 60 percent of its materials came out of it. So that seems to be the more productive play out of their area.

MR. DUNCAN responded that the Shublik is the "star" of the three source rocks. That is a proven fact based on the very detailed analytical geo chemistry and chemistry work done on Prudhoe oils

and understanding of the geo chemistry of the source rocks and the subsurface.

11:39:42 AM
SENATOR WIELECHOWSKI asked to go back to slide 12 and asked if the way the technology works is that they would drill down into the Shublik region and then start going horizontally fracturing the rock as they went along.

MR. DUNCAN replied that was correct in general.

SENATOR WIELECHOWSKI asked how far they can drill horizontally.

MR. DUNCAN replied that will depend on the rock mechanic studies that they intend on prosecuting later this year - shallow core holes with rock samples and detailed studies on rock compressibility, sheer strength and things of that nature. But, if they use the analogue as a working model they would expect most of their laterals to be 4,000 to 6,000 feet in length.

SENATOR WIELECHOWSKI asked if drilling horizontally along the Shublik would cause any subsidence that would impact the GRZ at all.

MR. DUNCAN replied that he considered the potential for mechanical compaction of the section over that thickness to be unlikely. When extracting fluids from a rock, pore spaces are made, but in a bulk rock volume context, it's a very small percentage of the total bulk rock volume that would be extracted.

11:41:34 AM
SENATOR WIELECHOWSKI asked if they are concerned about getting into aquifers or anything of that nature in this area.

MR. DUNCAN answered that is an excellent question and technology has gone a long way in just the last year when it comes to frac fluid chemistry. Importantly, the companies they are dealing with are right at the forefront of technological development, not just the physical pumping of fluids, but also in the chemistry of the "makeup gels." Many are FDA approved and comparatively benign to what was seen a few short years ago, and importantly, they are separated from the base of permafrost by at least 5,000 feet. There is no potable water aquifer on the North Slope and their area doesn't have any urbanization.

11:44:23 AM

MR. DUNCAN said they feel "very bullish" about all three zones, but they will start with the Shublik initially; but all three deserve an exploitation strategy. He wanted people to know how important this area is. The Brookian area is at least as big as the Marcellus Fairway in the Appalachian Basin and several factors larger than the Eagle Ford in south Texas. From a pure geographic perspective it's an "extraordinary circumstance." It's important to recognize what that can eventually translate into for Alaska as a global resource player - not competing against North Dakota, the Eagle Ford or the Marcellus necessarily.

11:45:04 AM
Looking at a few metrics to establish a comfort level with a high performing analogue, Mr. Duncan said the TOC (total organic carbon) average for the Shublik, Kingak and Hue compared favorably with the Eagle Ford in south Texas, which by anybody's estimation is the hottest play in North America. They believe that individually their plays will perform as well; and collectively there is every reason to expect a superior outcome.

SENATOR WIELECHOWSKI said Shublik has a 4 percent TOC, Kingak has 5 percent and Hue has 4.5 percent and yet he says Shublik is the "super star" and yet it has the lowest carbon content. Why would that be?

MR. DUNCAN replied the Shublik has delivered most of the hydrocarbon to Prudhoe Bay from a "kitchen" that sits underneath their leasehold for a number of interesting reasons, one of which could be its limestone content. Some of the vagaries of migration theory may allow it to expel and migrate more efficiently. It is also a very thick section. So, 150 meters at Shublik at 4 percent is better than 50 meters at Kingak at 5 percent.

11:48:11 AM
CO-CHAIR WAGONER remarked that Great Bear is dealing with three different zones in Alaska, but Eagle Ford has only one zone.

MR. DUNCAN responded that was correct, but Eagle Ford is a thick zone. He went on to Great Bear's Vision saying they aim to be the leading unconventional oil and gas producer in Alaska. Their leasing focused very heavily on good science and they are reasonably proximal to infrastructure as they bracket the pipeline. They see every reason to believe that these rocks will produce at commercial rates. They believe that effective and efficient development of their resource base from their

leasehold alone provides a "growing and stable forecastable energy and economic future for the State of Alaska for the next 50-plus years - effectively in the near term reversing the state's oil production decline."

MR. DUNCAN said it's an interesting notion that can be applied to conventional exploration and development as well, but particularly, this is an incredibly "scalable" business. He said their program in phase 1 has planned 200 wells per year for 15 years. That's 3,000 wells providing a peak phase 1 production rate in excess of 300,000 barrels - and a long-term over the horizon steady production profile of 150,000 barrels a day a long way out. Because of the nature of this play, they are not dealing with a combined structure with a reservoir limitation; they are talking about a piece of geography that is 500,000 acres that in phase 1 will be drilled at 160 acre spacing. Based on analogue they already believe that ultimately every single one of these source rocks will be developed probably on an 80-acre spacing. Great Bear has three. If the state needed 1 million barrels a day, the play could deliver it if the wells were drilled. Their program is not confined by a structural limit like at Prudhoe, Kuparuk, Point Thomson or Alpine. It's all about drill out, the rate, and the density of the well spacing.

SENATOR WIELECHOWSKI asked if he expects to have a total maximum number of 3,000 wells in 15 years and about 5,000 barrels per day from each well.

MR. DUNCAN answered not 5,000 barrels a day, but 500 barrels a day.

SENATOR WIELECHOWSKI asked if this is so good, why they wouldn't drill 1,000 wells in the first year. Obviously they want to test it, but once it's working, why scale the project out over 15 years?

MR. DUNCAN answered that 200 wells a year is a lot, but it's scalable if the capital, the development infrastructure and the ability to move that produced oil into the pipeline are there. They are not waiting for anything from a technology perspective and it will be better one year from now than it is today.

SENATOR WIELECHOWSKI asked if there were some concerns about doing this in a very cold weather environment.

MR. DUNCAN answered - no concerns. The winter temperature in western Canada is not dramatically different than the North Slope. Drilling and fracing technology is used on an everyday basis in the northeast of the U.S. From a fluid flow perspective they will have a metallurgical limitation on their equipment, which already exists, before they will actually stop producing because of the inability to flow fluids from the subsurface.

11:54:27 AM
REPRESENTATIVE SEATON said he appreciated their aggressive schedule, but could they truck oil into TAPS by 2012 possibly using existing infrastructure or does he anticipate processing facilities on their own?

MR. DUNCAN replied initial production rates in the testing phase don't warrant a separate production facility, either processing or pump station. But certainly even in a phase 1 they should consider that to effectively get the flow of oil into TAPS unencumbered. In a few slides they would see what Great Bear believes phases 2 and 3 may look like and what it could deliver to the state. That's why they need to work closely with the state to make sure the full benefit of this type of resource play development can be had.

SENATOR WIELECHOWSKI asked what kind of investment team Great Bear has.

11:56:49 AM
RYAN MOYNAGH, Vice President, Finance, and CFO, Great Bear Petroleum, said to date they have embarked on an aggressive financing strategy. The company is fully funded through proof of concept and has a share registry that is very supportive and provides access to very deep capital sources. But over the course of the next year or two as they develop their technical and operations environment, before the commerciality case of the project is fully developed, the capital resources to develop and prosecute this development plan will be in place.

CO-CHAIR PASKVAN asked if it's fair to say that the drilling operation is measured in billions of dollars a year.

MR. MOYNAGH answered, "Absolutely." They are still trying to refine the costs at this point. Alaska presents a number of operational challenges which do not exist in the Lower 48, but one thing they are certain of is that the costs to drill the necessary wells will be more expensive than the in the Lower 48. Their current rule of thumb is approximately $10 million per

well and that would necessitate a $2 billion investment per year just in drilling expenses over the course of their program.

11:59:24 AM
MR. DUNCAN went to the map on page 19 with their vision. He said the technical work has been done by them and others, but much of the other work has been repurposed to support this play. It has led them to this substantial leasehold position that they believe provides an opportunity for the state to realize steady production over the horizon from a single source rock development. He described the scaling up phases:

> -Phase 1: one source rock drilled at 200 wells a year for 15 years = 3,000 wells at 160 acre spacing.
> -Phase 2: same source rock, 200 wells a year but at 80 acre spacing.
> -Phase 3: a second source rock at 200 wells a year for 15 years = another 3,000 wells - 9,000 total wells drilled between full field development sanction 2013 and 2016.

He said they could grab the upward incline of their drill out, that point where they hit 9,000 wells and drag it to the left to accelerate the program. That tilts the production profile up and bolts their production profile onto the existing Prudhoe, Kuparuk, Alpine decline. They could quite conceivably rebuild the production down TAPS to well in excess of 1 million barrels a day. They could do that relatively quickly if the program is accelerated.

What they have proposed is predicated on the 200 wells per year drill out, a decrease in well spacing to 80 acres, which he thought would ultimately happen, and adding one more source rock to the mix (either Kingak or HRZ). Importantly, they see steady sustainable long-term production from their acreage of nearly a half million barrels to the state that effectively runs out over the horizon.

CO-CHAIR WAGONER asked how many rigs they would need to drill 200 wells per year.

MR. DUNCAN answered that the performance metrics they are using early in the program are not those that will be achieved after they get under way. Right now from their analogue a 14,000 foot measured depth well in the Eagle Ford (vertical and horizontal leg) is being drilled in 21 days - extraordinary performance.

So, he believed that 200 wells a year would take at least 20 dedicated rigs, and many of them would be "new build."

12:06:22 PM
The power of the potential production profile (slide 20) he said is self evident, not just in the near term increase of oil to TAPS, but long term production into TAPS or a sister line since they are proposing a serious length of time. The ability of the state to forecast revenue forward with stable long term production that is scalable is a powerful piece of business, he pointed out.

Slide 21 showed a simplified project development timeline. Mr. Duncan said that today Great Bear is actively working with their service providers, regulatory and permitting experts, drilling and completion experts on the prediction box, drilling their core holes, taking rock samples, doing the rock mechanic studies; these will be turned straight around with no lag time into the frac design to be prosecuted in the January/April 2012 window. With good results from their full production tests in 2012 they could sanction full field development for 2013. Their service providers are the largest in the world; they have met with and talked through the play. Everybody is hands on, philosophically aligned, and understands the challenges. The reception has been extraordinary and everybody is ready to do their part. When he looks at this play it's not so much about how much they have to gain, but rather about how much they have to lose if they don't pursue something like this. The volumetric outcome will exceed the conventional exploration production targets on the North Slope - in their opinion.

MR. DUNCAN said the easy conventional oil has been found and the remaining large volume potential in the North Slope as with every other basin in North America is unconventional oil and gas and coalbed methane.

12:09:11 PM
CO-CHAIR PASKVAN asked what Alaska might expect as far as others interested in these resource plays.

MR. DUNCAN answered their peer companies that hold acreage on the North Slope that will be viable for this play at the very least have become aware of it if they weren't already. Collectively, the industry will react and move positively to get this play under way. He also suspected that the response in the upcoming lease sales will be a lot different than those over the last few years.

He has been quoted in "Petroleum News" as stating that companies that do their science well will have major leasing just as Great Bear has. Companies that don't do their science very well will probably look like wild-eyed speculators and then there will be a bunch of folks in between. Fortunately, Alaska has good players, and he was sure their peer group companies will become active in this.

12:11:37 PM
He said Great Bear believes the ability to deliver unconventional resources to the market rests primarily on commercial risk, the key hurdle in any unconventional play. They understand the geology of this play and feel confident along with their key technology thought partners and service providers that the technology is applicable. It's certainly available and they see no overt reason why these unconventional resource plays will not work.

12:12:21 PM
Significant challenges do exist and certainly the state and industry need to work on them together. This is a play like development of Prudhoe and Kuparuk; it requires 365-day ingress egress. "You can't develop this play with ice road technology; it simply will not work." Access to infrastructure, pipelines and water disposal facilities needs to be reasonably assured.

SENATOR WIELECHOWSKI said he understands that these type of wells require millions of gallons of water and asked if that is true where they will get the water from.

MR. DUNCAN replied that millions of gallons of water per well is not accurate, but it is a water intensive program. Fortunately technology developing today allows for recycling of frac water, which reduces water need significantly. Additionally they have held meetings with the DNR Water Resources folks in Fairbanks and have talked about water access and needs with virtually every service provider that is going to be involved in this play. They believe there are adequate water resources on the North Slope both from the Sag River as well as surface water. But importantly, as this play develops they may well see accessing subsurface water from some of the brackish aquifers not suitable for drinking or agricultural use. These water resources may be perfectly adequate for making up their frac fluids and that could definitely change the balance of surface water use in this program. It's a challenge and they are working on it.

REPRESENTATIVE SEATON said there has been prior reference to the depth of permafrost and then a water layer that interfaces as one gets deeper and he asked if they are considering using that.

MR. DUNCAN answered yes they have contemplated it, but they are not actively studying it. It will be in the mix over this year as they begin to identify reasonable water sources.

He said Alaska is a resource base that is global in scale; it's an international oil and gas player. Access to capital, interest in investment, activity in the state shouldn't be dependent on competition from North Dakota. Great Bear is built around building Alaska back to where it should be - not preoccupied with North Dakota or other U.S. plays.

12:18:16 PM
Slide 27 showed the gas wedge and he said they believe something similar to it will happen with unconventional oil. The shale gas to contribute 45 percent of the U.S. supply by 2035 is a reality and they are seeing movement like this in the oil front as well. They believe that unconventional oil will have a similar growth to gas. Shale gas is driving U.S. supply growth; but they know the picture for gas in Alaska is complicated. The slide is meant to illustrate the viability and the effectiveness of the technology in delivering very large long live volumes of hydro carbons out of rocks that just not too long ago were waste.

Slide 28 was a case study of the Bakken shale and its huge impact on the economy. Great Bear's impact on Alaskan job growth and the economy is self evident if they deliver those kinds of volumes to the pipeline. It will be huge. They are not talking about just truck drivers and rough necks on the Slope, but teachers and grocery stores, Home Depots and Wal-Marts and the like. But the performance metrics of these resource plays in the Lower 48 are becoming well known and are spectacular - 13,000 new jobs in North Dakota created between 2005 and 2009. The number of active wells has gone from 3,391 in 2005 to 4,190 in 2009 and they have heard recently that in the Bakken, 350 wells per month are being completed. An average of 47 new jobs per well are being created and at 3.6 percent it has the lowest unemployment in the nation.

The impact of the Marcellus Shale is spectacular on slide 29 - West Virginia and Pennsylvania - beautiful states with a long history of oil and gas exploration and development, a lot of coal influence in decision making, which complicates the picture

for an aggressive oil and gas development program. But the impact on those states' economies is spectacular - $8.5 billion in 2009 and the number of jobs created - amazing.

12:23:42 PM
MR. DUNCAN described slide 30 named "Case Study: Alaskan Shales." It highlighted the questions and fears about this kind of program that mostly concern infrastructure build out. Phase 1 with 3,000 wells will have a certain road and pad network associated with them. All the other wells drilled in Phases 2 and 3 will use those same roads and pads tightening the well space to 80 acres with laterals while exploiting one additional source rock with not one more pad required. This allows them to amortize the impact over a very large number of wells and to not increase their surface footprint at all. This is a spectacular point that they have to keep in mind when thinking about this project. He said this action profile is based Eagle Ford analogue performance metrics from a year and a half ago, not plucked out of thin air. They expect better than this performance, but he wanted to use it as a talking point for now.

CO-CHAIR WAGONER asked what level the price of oil has to be maintained at for this project to go forward.

MR. MOYNAGH answered that the breakeven price of their project is uncertain at this point in time. There are a number of variables concerning the capital requirements and terms that will be made available to them. One thing is quite obvious that the initial stages of the project - based on $2 billion per year for a 15 year period - will have considerable costs before the project starts becoming self financing. Getting a feeling for that precise number is something they are aggressively pursuing with all the service providers. In sourcing the capital they have to present a commercial case that is relatively attractive vis-a-vis the other opportunities that exist in the oil and gas sector. While they are working hard within the context of the environment that exists at this point in time to try and make that argument, at this point, they aren't able to present a commercial case to their investors.

12:27:58 PM
SENATOR THOMAS asked if they estimated the number of wells drilled per year when they found out when Doyon and Neighbors were completing their wells.

MR. DUNCAN asked if he was talking about drill time or costs or both.

SENATOR THOMAS replied both.

MR. DUNCAN replied that Prudhoe Bay is considerably shallower in general. The average vertical depth of the reservoir is less than what they are going to be dealing with, so the drill time is less. But he said the performance metrics of the new rigs that are being used in the Lower 48 to develop this play are considerably better than the vintage rigs that tend to be resident in Doyon and Neighbor stables (although the equipment is very good for what it is purposed to do). Cost wise there is a big difference in an 8,000 foot vertical well and a 4,000 or 6,000 lateral with a multi-stage frac. Completion work in an unconventional play is much more expensive and engineering-intensive than conventional completion in a standard sense that is done in sandstone reservoirs that are in Prudhoe and Kuparuk.

SENATOR THOMAS said he supposed they not only needed an aggressive schedule for drilling if they have potential first delivery to TAPS in 2012, but also for convincing people. He asked what he meant by "access to infrastructure, pipeline and water disposal facilities" on slide 24. Did he expect some if not all of the roads to be accomplished in partnership with the state of Alaska or should the state provide it all with existing companies that already have some of those facilities? That also has a potential long lead time. How do you get there in two years? Are they going to have joint use agreements with the other existing parties at Prudhoe Bay?

MR. DUNCAN answered that he hit on a number of things that they are working on. They hope the state is an active partner in their roads to resources model. The 200 wells per year means six tracts are being developed annually at 9 square miles per state tract and 4 wells per square mile (36 wells per tract). So, 6 tracts per year deliver those 200 wells. It's not an explosion of activity across the 500,000 acres; it's an "inchworm" that is moving in a very measured way 6 tracts at a time. Initially, they are giving heavy consideration to paralleling their early activity adjacent to the existing TAPS Haul Road; that facilitates ingress/egress movement of early production via truck. The production in 2012 will be oil produced from test wells, not full development-sanctioned development wells. In an ideal world with great results for their early development tests, about this time next year they will be moving with haste to put a full field development plan in place. They are talking to the DNR and Division of Gas about what that means as far as pace of surface facilities, roads and build out and making sure

they have clear communication. There is plenty of room for incorrect speculation about what the surface impact will look like and the pace at which it will evolve when they start talking about 3,000 wells.

12:34:11 PM
SENATOR WIELECHOWSKI said this is an exciting presentation. Five years ago no one was talking about shale gas in the Lower 48 and they have seen what is happening there. A DNR slide last week indicated a 350 percent ROR for a few fields in Bakken and he didn't think Alaska could get that because labor is higher and we don't have the infrastructure. But Alaska can probably get 100-200 percent ROR based on modeling done in Prudhoe Bay where BP is getting 123 percent with $80 barrel/oil.

He the state could lower its tax rate to zero and still not get a 350 percent ROR. How does Alaska compete with those other states because of the higher costs? He said the Governor's proposals lowers taxes by $2 billion a year, but Great Bear needs $2 billion and he would rather have the state invest in that.

12:37:16 PM
MR. DUNCAN responded that they really appreciate the opportunity to talk to them about what they perceive to be the most exciting oil and gas exploration and development program that Alaska has seen in a very long time. He added that their peer group companies and conventional explorers and developers on the North Slope have a role to play, too, but in the context of the multi-billion barrel prize and providing material volume to TAPS that not only addresses the viability challenge of the pipeline but also provides a real opportunity to reverse the decline and a steady state forecastable production rate, this is the direction he believes the industry in the state has to - not should or might - has to go.

REPRESENTATIVE SEATON said he was pleased to hear him say the state of Alaska should not be just focused on competing with another state and he asked if he heard Mr. Duncan say that credits upfront to help with the drilling costs and reasonable life expectancy for the duration that those credits would be available are beneficial to them to get investment.

MR. DUNCAN replied that he didn't recall discussing the investment credits during the presentation, but certainly improvement in the state's fiscal regime in some form or fashion is beneficial to Great Bear, but elements of the existing regime

present challenges in their commercial model. They are green-field explorers and don't have a bank of production against which they play. They are new ventures, green field drillers and developers. They are new oil and their view of what facilitates them executing is biased towards incentives that address the green field exploration and new oil development.

REPRESENTATIVE SEATON said he was remembering from other conversations and didn't mean to raise another issue and asked if he was hearing that the roads to resources and permitting to allow that to go forward is going to be really critical to advancing their project.

MR. DUNCAN replied that clearly the state assisting by directly investing or any number of other vehicles to facilitate construction of development infrastructure is of great benefit to them. It allows the play to be accelerated rather than creep forward, and it's critical.

CO-CHAIR WAGONER asked how long phase 1 will take.

MR. DUNCAN replied 3,000 wells would take 15 years at 200 wells per year.

SENATOR THOMAS asked if he knew the date of the chart derived from Wood MacKenzie on slide 25 and where the title "Ability to Execute" came from.

MR. DUNCAN replied the first time he saw this presented by Wood MacKenzie was at the "Meet Alaska Conference" about one month ago.

MR. MOYNAGH answered that the title of the slide is from Great Bear, not Wood Mackenzie.

SENATOR WIELECHOWSKI noted for the viewing public that this chart had Yemen, Tunisia, Libya, Egypt and Pakistan all ranked higher than Alaska, and he didn't know how many oil companies would want to be doing business in those countries about now.

12:43:56 PM
CO-CHAIR PASKVAN finding no further questions thanked everyone for their presentations and adjourned the meeting at 12:43 p.m.