ALASKA STATE LEGISLATURE
HOUSE RESOURCES STANDING COMMITTEE
January 30, 2012
1:04 p.m.

MEMBERS PRESENT

Representative Eric Feige, Co-Chair
Representative Paul Seaton, Co-Chair
Representative Peggy Wilson, Vice Chair
Representative Alan Dick
Representative Neal Foster
Representative Bob Herron
Representative Cathy Engstrom Munoz
Representative Berta Gardner
Representative Scott Kawasaki

MEMBERS ABSENT

All members present

COMMITTEE CALENDAR

HOUSE JOINT RESOLUTION NO. 31
Urging the President of the United States and the United States Congress to acquire the area commonly known as Central Park on Manhattan in New York City on behalf of the federal government; urging the United States Congress to declare Central Park to be a wilderness area and to prohibit any further improvement or development of Central Park unless authorized by an Act of Congress.

- HEARD & HELD

HOUSE BILL NO. 276
"An Act providing for a credit against the oil and gas production tax for costs incurred in drilling certain oil or natural gas exploration wells in the Nenana Basin."

- HEARD & HELD

PREVIOUS COMMITTEE ACTION

BILL: HJR 31
SHORT TITLE: DECLARE CENTRAL PARK A WILDERNESS AREA
SPONSOR(s): REPRESENTATIVE(s) JOHANSEN

01/23/12	(H)	READ THE FIRST TIME - REFERRALS
01/23/12	(H)	RES
01/30/12	(H)	RES AT 1:00 PM BARNES 124

BILL: HB 276
SHORT TITLE: OIL/GAS PRODUCTION TAX CREDITS: NENANA
SPONSOR(s): REPRESENTATIVE(s) THOMPSON, DICK, MILLETT, TUCK, MILLER

01/17/12	(H)	PREFILE RELEASED 1/13/12
01/17/12	(H)	READ THE FIRST TIME - REFERRALS
01/17/12	(H)	RES, FIN
01/30/12	(H)	RES AT 1:00 PM BARNES 124

WITNESS REGISTER

REPRESENTATIVE KYLE JOHANSEN
Alaska State Legislature
Juneau, Alaska
POSITION STATEMENT: As prime sponsor, introduced HJR 31.

REPRESENTATIVE STEVE THOMPSON
Alaska State Legislature
Juneau, Alaska
POSITION STATEMENT: As joint prime sponsor, introduced HB 276.

JANE PIERSON, Staff
Representative Steve Thompson
Alaska State Legislature
POSITION STATEMENT: On behalf of Representative Thompson, joint prime sponsor, presented further information about HB 276.

ROBERT SWENSON, Petroleum Geologist, Acting Director
Central Office
Division of Geological & Geophysical Surveys (DGGS)
Department of Natural Resources (DNR)
Fairbanks, Alaska
POSITION STATEMENT: During the hearing on HB 276, provided a PowerPoint presentation and responded to questions.

JAMES MERY, Senior Vice President
Lands and Natural Resources
Doyon, Limited
Fairbanks, Alaska
POSITION STATEMENT: During the hearing on HB 276, provided information about Doyon's exploration in the Nenana Basin.

ACTION NARRATIVE

1:04:52 PM

CO-CHAIR ERIC FEIGE called the House Resources Standing Committee meeting to order at 1:04 p.m. Representatives Herron, Gardner, Kawasaki, Dick, Foster, Seaton, and Feige were present at the call to order. Representatives Munoz and P. Wilson arrived as the meeting was in progress.

HJR 31-DECLARE CENTRAL PARK A WILDERNESS AREA

1:05:17 PM

CO-CHAIR FEIGE announced that the first order of business would be HOUSE JOINT RESOLUTION NO. 31, Urging the President of the United States and the United States Congress to acquire the area commonly known as Central Park on Manhattan in New York City on behalf of the federal government; urging the United States Congress to declare Central Park to be a wilderness area and to prohibit any further improvement or development of Central Park unless authorized by an Act of Congress.

1:05:52 PM

REPRESENTATIVE KYLE JOHANSEN, Alaska State Legislature, prime sponsor, described a trip he took to New York City where the green of Central Park contrasted with the rest of the city. A few years later he read a description of the flora and fauna that were present in this area prior to Henry Hudson's arrival. He described Manhattan as an epicenter of finance and culture in the U.S. and Central Park as an icon to which everyone can relate. He said he thought of using Central Park to raise the level of discussion about what the State of Alaska wants to do in relation to the Arctic National Wildlife Refuge (ANWR). He opined that since President Bill Clinton vetoed legislation [to open ANWR to drilling], the conversation has been repetitive and unproductive.

REPRESENTATIVE JOHANSEN related that since bringing forth this proposed resolution, he has been surprised at the support for it. He said that several co-sponsors have signed on to HJR 31, and a news story written locally was picked up by several major news venues. Further, he said, the word of HJR 31 has been spread across social networks and Internet search engines, and there is a grass roots discussion about Alaska's biggest issue.

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REPRESENTATIVE JOHANSEN noted incidentally that ANWR legislation is currently being heard by the U.S. House Resources Committee, which may move to the House Floor in the next couple weeks.

REPRESENTATIVE JOHANSEN admitted that HJR 31 is most likely not going to happen; however, he emphasized that if the federal government wanted it to happen, it would. He said that is how he feels about some of the ideas the federal government has about how Alaska should develop its land. In the 1970s, he related, New York City was running a deficit and was considering all options to balance its budget. One of the proposals was to give Central Park to the government, but city fathers at the time considered that if they were to do so, then Central Park would be in control of the federal government and they would have no say in how that park was managed. He stated, "I think that really summed up where I was trying to go with this."

REPRESENTATIVE JOHANSEN told the committee that there were business and resource development groups in the capitol eager to testify, but he asked them to refrain in the interest of time.

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REPRESENTATIVE HERRON asked whether the sponsor would be willing to consider an amendment such that short of the proposed resolution passing, the land that is Central Park could be given back to the appropriate tribe of Native Americans.

REPRESENTATIVE JOHANSEN responded that the Lanape tribe is mentioned in the proposed resolution, and the tribe has received a copy of the resolution, but has not yet responded. He said he would be willing to support such an amendment.

REPRESENTATIVE HERRON commented he understands the intent of the language and hopes it will generate dialogue that helps Alaska.

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CO-CHAIR FEIGE said he signed onto the proposed resolution because the point needs to be made. He related that many passengers from Manhattan have ridden in his plane, and they had no real basis for knowing what a wilderness is. A lot of restrictions get attached to a wilderness designation, he said, and "like the city fathers of New York who were certainly

looking out for the people of New York by resisting the federalization of Central Park, ... we need to look out for the increasing ... federal control over Alaska."

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REPRESENTATIVE KAWASAKI said although he appreciates the humor in which HJR 31 was written, he feels that it is a waste of the committee's time given the number of bills that are still sitting in the committee. He said he thinks the committee needs to focus on how to address energy concerns across the state. He said passing this proposed resolution out of committee will backfire. People already have a negative opinion of Alaskans and think that Alaskans are paid to live in the state. He said the legislature needs to act like adults to prove that the state is capable of managing its own resources, and he opined that HJR 31 does not get to that point. He stated that he would not support HJR 31 in committee or on the House floor.

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REPRESENTATIVE GARDNER shared that after HJR 31 was introduced, she received comments from constituents who were not happy. She said at the time she defended HJR 31 as a humorous way of drawing attention to a serious topic. She said she was asked how much it costs the state to draft and carry forward the proposed resolution, and at the time she said she would not look into that; however, she said she now may contact that person and try to produce a figure as to the cost. She concurred with Representative Kawasaki that there are other issues on which the committee should focus, and said she is only present out of respect for the process.

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REPRESENTATIVE JOHANSEN responded that he respects the members' comments, but the topic is about opening ANWR. He admitted that the proposed resolution was written as satire, but disagreed that it is a waste of time. He stated that any time the state can bring up the issue of opening ANWR for resource development is important to the state's future development. He said there has not been this much attention to ANWR since President Bill Clinton vetoed legislation. He opined that not continuing on with the resolution would have negative consequences, and he emphasized how serious it is to him that the legislature takes this proposed resolution seriously.

[CO-CHAIR FEIGE held over HJR 31.]

The committee took an at-ease from 1:21 p.m. to 1:23 p.m.

HB 276-OIL/GAS PRODUCTION TAX CREDITS: NENANA

1:22:59 PM

CO-CHAIR FEIGE announced that the next order of business would be HOUSE BILL NO. 276, "An Act providing for a credit against the oil and gas production tax for costs incurred in drilling certain oil or natural gas exploration wells in the Nenana Basin."

1:23:11 PM

REPRESENTATIVE STEVE THOMPSON, Alaska State Legislature, introduced HB 276 as joint prime sponsor. He said the proposed legislation is designed to incentivize exploratory drilling in the Nenana Basin. He related that those living in the Interior of Alaska are suffering from the high cost of gasoline and home heating fuel, with heating and electric bills that are exceeding their house payments. The Nenana Basin, just 50 miles from Fairbanks, has the possibility for a high gas and oil yield, which is important to the Interior as well as the Railbelt, and would relieve a lot of the state's problem's with economic development. He noted that there are buildings waiting for construction in Fairbanks and those will not get built until there is some relief in the current situation.

REPRESENTATIVE THOMPSON said the amount of money that the state would spend on power cost equalization in the Fairbanks area could amount to $30 million annually. The cost of building a pipeline from the North Slope to Fairbanks to get relief for energy costs would be "way ... more money than what we would have a possibility of spending on this bill." In terms of natural gas at the wellhead, he said there is not a lot of incentive for investment; however, HB 276 would incentivize "getting this done" in an expedited manner, in an area close to Fairbanks, and relieve a lot of energy problems. He deferred to his staff, Jane Pierson, for further details.

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JANE PIERSON, Staff, Representative Steve Thompson, on behalf of Representative Thompson, joint prime sponsor, stated that HB 276 is a policy call for the legislature. She said the proposed

legislation will strongly encourage investment in the Nenana Basin. It is designed to incentivize exploration drilling, which will benefit the state, because it will get the data. She said HB 276 will also bring investors to the table, which has been a problem with natural gas prices as low as they are currently and Shell exploration having taken center stage. She related that the Nenana Basin, although sitting in an undeveloped area, is located 50 highway miles from Fairbanks, 280 highway miles from the Southcentral gas system, and lies adjacent to the Alaska Railroad System and major power transition system.

MS. PIERSON stated that HB 276 offers tax credits to the first three persons who drill an exploration well to the depth of 8,000 feet for the purpose of discovering gas or oil. The first person to drill an exploration well would be credited at 100 percent of the cost or $25 million, whichever is less; the second person to drill an exploration well would be entitled to a credit of 90 percent or $22.5 million; the third would be entitled to a credit of 80 percent or up to $20 million. She related that if the exploration results in sustained oil and gas production from a reservoir, then 50 percent of the rewarded credits would be returned to the state.

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MS. PIERSON said Fairbanks has experienced one of the coldest winters in its history, and she imparted that her own fuel cost has already equaled what she paid for the entire previous year. She said she thinks the proposed legislation could expedite the influx of more dependable and reasonably priced fuel into the Interior; the current supply problems are not allowing Fairbanks to grow its industry. Ms. Pierson concluded by stating her belief that incentivizing exploration in high production potential basins located near energy-starved regions of the state is a step that will help support the state's economy; that doing so may give the state relief from programs it funds annually; and that sustained production in these regions would be a good solution.

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MS. PIERSON, in response to Co-Chair Feige, explained that there is a proposed committee substitute (CS), labeled 27-LS1193\M, Bullock, 1/18/12, in the committee packet, which would offer a cleaner method of repayment of the credit. She explained that both Version M and the original bill version would require 50

percent of the amount of the credit received be repaid to the department in "monthly installments over a 10-year period"; however, the original bill version would require that the amount of the monthly installment "shall be the greater of 1/240 of the total amount of credit received or 10 percent of the gross value at the point of production for the month immediately preceding the month the payment is due", while Version M would simply require "equal monthly installments".

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CO-CHAIR SEATON moved to adopt the proposed committee substitute (CS) for HB 276, Version 27-LS1193\M, Bullock, 1/18/12, as the working document. There being no objection, Version M was before the committee.

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MS. PIERSON, in response to Representative Kawasaki, said the bill sponsor modeled HB 276 after the Cook Inlet exploration legislation that was heard by the legislature two sessions ago and that created "a stampede."

REPRESENTATIVE KAWASAKI said the proposed legislation would incentivize an area that is known to have gas but has not been developed for whatever reason, and therefore the bill makes sense for the Interior.

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REPRESENTATIVE GARDNER cautioned that any time the state offers 100 percent of costs regardless of outcome, it puts itself on fragile ground. She said someone with a bad track record could be the first to respond, and the state could end up spending $25 million and get nowhere.

MS. PIERSON said Representative Gardner's concern is valid. She relayed that currently Doyon, Limited, is exploring the area, but is having troubles with its investors. She said a lot of information was gained in the 1990s when previous drilling took place. In response to a further question, she offered her understanding that Doyon previously drilled two wells, which may not have been in the right place, and the company is looking to drill further north.

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REPRESENTATIVE HERRON asked about the possibility of having legislation that acts as a template, so the legislature does not have to designate specific basins or areas when legislating this type of exploration credit.

MS. PIERSON responded that that is something for the committee to consider. She offered her understanding that Mr. Swenson's forthcoming testimony may touch upon other unexplored basins that could fall into this type of model.

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MS. PIERSON, in response to Representative Dick, said [a depth of] 8,000 feet is the number the sponsor came up with when working with Legislative Legal and Research Services, which is the Tertiary level where gas would be found. She noted that the bill sponsor has meetings scheduled with the Department of Natural Resources (DNR) and the Department of Revenue (DOR) to discuss the finer points of the bill.

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CO-CHAIR SEATON directed attention to language beginning on page 2, line 7, of Version M which read:

> (n) The first three persons that drill an exploration well for the purpose of discovering oil or gas in the Nenana Basin are eligible for the credit under this subsection.

CO-CHAIR SEATON noted that in the Cook Inlet it was one operator that would drill wells for three different companies. Regarding the aforementioned first three persons, he inquired whether "persons" is the drilling company or the owner of the resource that is contracting [the drilling].

MS. PIERSON responded that her understanding is that the money would go to the actual lessee of the land because the lessee would have to pay any drilling company that was brought in.

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CO-CHAIR SEATON said a couple wells were drilled in [the Nenana Basin] in response to a 40-percent tax credit. He said he can understand the desire to enhance drilling, but is concerned about offering 100 percent up to $25 million. He recollected that Pedro Van Meurs had, in a recent presentation, said that a

tax credit that is too high gives no incentive to control costs. He asked the bill sponsor to consider whether there may be a lower percentage that would still act as an incentive, while ensuring cost control. He further stated concern about the $25 million cap. He said he understands that cap was placed in order to bring a special rig up from some other part of the world to Cook Inlet, and said he would like to see a cost estimate for a land-based drilling operation as compared to the jack-up rig that was brought into Cook Inlet.

CO-CHAIR SEATON added that the cost of gas at the wellhead has been a problem. Fairbanks has a very high price for gas right now, given it is trucked up from Cook Inlet. He said going forward, if gas is found 50 miles from Fairbanks, he would like to know why a low wellhead price of gas would be anticipated when "most of the ... high cost is taken in the transportation and the LNG conversion currently."

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MS. PIERSON, in response to Representative Foster, said she pays approximately 22 cents per kilowatt hour of electricity and over $4 a gallon for heating oil [in Fairbanks where she lives].

The committee took an at-ease from 1:42 p.m. to 1:51 p.m. to deal with some technical issues.

1:51:48 PM

ROBERT SWENSON, Petroleum Geologist, Acting Director, Central Office, Division of Geological & Geophysical Surveys (DGGS), Department of Natural Resources (DNR), said he will start with a regional overview looking at all of the sedimentary basins in Alaska and will then put that into context for focusing on the Nenana Basin. Beginning with a photograph of an outcrop located just outside of Homer (slide 1), he explained that it is the type of stratigraphy, type of rock, from which a tremendous amount of Cook Inlet gas is produced. The black layers are coal and in between those are layers of sandstone, mudstone, and siltstone that were laid down in a non-marine setting. Known in Alaska as Tertiary basins, which is the most recent time period, it is primarily the age of deposition in most of these basins and nearly all are non-marine. However, the basins all have variances, some of them quite large variances.

1:53:53 PM

MR. SWENSON noted that the light blue dots on slide 2 are the population centers in Alaska and [the red lines] are the transportation structures around the state. [The light green areas] are the Tertiary basins with relatively modern sediments like the aforementioned outcrop. A dramatic amount of these basins is distributed in the offshore regions around the state, although there are some fairly significant basins within Interior Alaska. While these basins look very large in this satellite-type view, they are similar in size and areal extent to many of the other basins from which oil and gas is currently being produced. However, when looking at any geology, it is important to delve deeper into the details because these basins, while having some similarities, do have a lot of variances.

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MR. SWENSON stressed that Alaska's geology is incredibly complex (slide 3), as seen by the topography, the variations in the orientations of the mountain ranges, the volcanoes (depicted in red), and the earthquake focal locations (depicted in blue). The earthquake focal locations are related to the down-going slab on the Pacific plate which is moving at about 63 millimeters a year, the rate at which a person's fingernail grows. It is the reason for the tremendous amount of tectonic activity in Alaska - it drives the volcanic systems, the seismic systems, and creates a lot of deformation in the state, and has made Alaska's geology very complex. The Interior sedimentary basins are driven by huge strike-slip systems that traverse nearly the entire state (depicted by three black lines). Farthest south is the Castle Mountain Fault System, the central system is the Denali Fault System, and to the north are the Tintina and Kaltag fault systems, which are huge strike-slip crustal-scale type faults. Motion on these faults in the last 80 million years has created a tremendous variance in the geology of Alaska. The down-going slab, the crustal-scale motions, and the uplift and subsidence of different areas create these places where there is deposition of what is eroding off the surrounding mountain ranges.

1:57:02 PM

MR. SWENSON explained that in the diagram on slide 4, the up arrows indicate uplift and the vertical black lines represent faults associated with crustal-scale faults and motion. Uplift and erosion of those areas then transports sediment into a basin that is actually subsiding. As that basin subsides, the meandering rivers (as seen in the photo on the right) will take

the sediment derived from the uplifting areas and deposit it in that basin. As that basin continues to subside because of the huge tectonics going on in the state, tremendous thicknesses of this stratigraphy can be put down. In the photograph on the left, the lines are related to point bars and other different types of depositional systems of that river. Those end up being the reservoirs within an oil and gas system; it is the sandstone that is deposited in the high energy environments. The ponds and peat bogs in between the river (photo on right) end up being lake-type sediments which have lots of organics, and that is what gives the source rock. In the Cook Inlet and many of these basins it is going to be biogenic gas. However, if it gets buried deep enough it will be thermogenic gas, where the organics are cooked and produce gas; although, with the right type of kerogen, it will produce oil. Many times after a basin is developed the tectonics will continue and the rocks that were once deposited in a subsiding basin are then deformed by folding and uplifting to the surface. An example of that is the photo on the bottom left of slide 4, which shows what was once a meandering stream that is now a bluff along the west side of Kachemak Bay; the coals are associated with the bogs and the sandstones are associated with the river systems.

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REPRESENTATIVE KAWASAKI inquired whether these basins are large reservoir types of basins or the types that must be fractured.

MR. SWENSON explained that, especially in non-marine systems, the sand that is deposited is often relatively loose. If it does not get buried very deep, the porosity and permeability within that sandstone remains incredibly high. The Sterling Formation - the primary gas source in the Cook Inlet - is that type of system and is a conventional reservoir. The porosity and permeability in the Sterling Formation are so high that a person can literally blow through a piece of that rock. As sandstone is buried deeper it gets compacted and the pore spaces and sand grains move around. If buried deep enough those sand grains will deform and that porosity and permeability are lost; additionally, because of getting into higher temperature and waters with lots of different chemistries, some of the deposited sediments can be changed into clays, which plugs up those pore spaces. In any one of these systems there is basically a full sweep of possibilities - from very tight rock and unconventional plays to very high porosity and permeability and conventional plays.

MR. SWENSON, continuing his answer, added that there are two big issues associated with any one of these basins. One is the seal, which is the very tight rock that keeps the gas or oil from migrating up-section. There must be lots of clays and mudstones in the system to stop that vertical migration. The other is that it needs to have an operating petroleum system. A good thing about any one of these basins is that they will probably have two petroleum systems - one being a biogenic system associated with coals that were never buried deep enough to actually generate thermal type hydrocarbons.

2:02:28 PM

MR. SWENSON, returning to his presentation, noted that after up to 25,000 or 30,000 feet of sediment is laid down - over 5 miles of sandstones and coals - the tectonics can then compress the basin, changing it from a subsidence to a compression event that creates folds (slide 5, stratigraphy of west side of Cook Inlet). The vertical scale of the folds depicted on the slide is about four miles from the surface to the bottom of the diagram, he pointed out. Drilling a well into one of those folds, as depicted by the red line on slide 5, would result in what is seen on slide 6, which depicts a series of [five] wells along the crest of the Beluga River Gas Field. Everything in yellow on slide 6 is reservoir and everything in black is coal; there is production from top to bottom. Lots of complexities and variations can be seen laterally in this system.

2:04:01 PM

MR. SWENSON directed attention to slide 7, a depiction of all the exploration wells in Alaska. He said an important point seen from the slide is the very high focus in exploration in the North Slope and Cook Inlet areas, where proven petroleum systems are working. Alaska has 1.4 billion barrels of oil out of the Cook Inlet and over 8 trillion cubic feet (TCF) of gas have been discovered and are being produced, along with the resource being produced on the North Slope. However, in the other basins there is not a good understanding of the subsurface.

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CO-CHAIR FEIGE asked how much of the data, in terms of drill logs and wire line work, is public and available for other companies to research at the DGGS facility.

MR. SWENSON replied that a significant amount of the data is available to the public. He related that the Alaska Oil and Gas Conservation Commission (AOGCC) has statute to collect a full suite of the electric well logs, which is the information that is pulled from the well by running a series of different types of electric logs in the well. Also available to the public and kept at the Geologic Materials Center in Eagle River are 10- to 30-foot incremental cuttings from each exploration well, plus some portion of core.

2:06:10 PM

MR. SWENSON, continuing his presentation, pointed out that the North Slope and the Cook Inlet have a lease sale system. However, the Nenana Basin and many of the Interior basins are under the exploration licensing program (depicted by the yellow boxes on slide 7), a competitive process initiated in the late 1990s. It is a very different way to bring in companies, he said, and is important for the committee to hear about.

2:07:09 PM

CO-CHAIR SEATON noted that exploration licenses cover large areas and asked whether there can be overlay in that or, under HB 276, would only the one person having the exploration license be eligible.

MR. SWENSON qualified that he is not the expert to answer specifics on exploration licensing, but that basically it is a competitive process through work commitment. Companies come to the Division of Oil & Gas with a work commitment and the exploration license area is defined. A term limit is set in which the work must be done and the data provided to the state, at which point the company can go to lease on any part within that license area and it becomes a normal oil and gas lease to the state. Unlike having an open lease sale where everybody bids on certain lease tracts, an exploration license allows a company to come in, look at a very large and high risk area, do a significant amount of work to try to define the prospects, and then go to lease on those specific prospects without having to worry that somebody else can pick up those leases from underneath the company while it is doing the seismic and other work.

CO-CHAIR SEATON said this is something that he would like the Division of Oil & Gas to address before the hearing on HB 276 is completed.

CO-CHAIR FEIGE suggested that perhaps Mr. Barron [director of the Division of Oil & Gas] could address the committee after Mr. Swenson's presentation.

2:09:17 PM

MR. SWENSON, returning to his presentation, pointed out that because of Alaska's large size and geological complexity, one issue is the tremendous amount of data (slide 8). He said that because it is important to make all of that data accessible to people across the state, he partnered with the Alaska Energy Authority and the Division of Oil & Gas in 2005 to put together a web site that will provide the public with data on all renewables, such as wind, hydropower, and biomass, as well as oil, gas, and coal. One product of that partnership is a report, currently in final review, which covers all of the state's areas and subareas as defined by the Alaska Energy Authority (slides 9-12). The report provides information on the available public data within the system for any coal, gas, or geothermal information that the state or other public entities may have. The different colors and black lines on the maps attest to the complexity of Interior Alaska's geology.

2:11:23 PM

MR. SWENSON reported that the next phase of this project is to look at what data is available, what data is needed to help assess the petroleum potential of these basins, and what the state needs to do to gather additional data that gets it to the point of attracting the industry to explore these areas. This data will all become public through time, he said. Field work was started last year in the Susitna Basin (slide 13) and next year the Nenana Basin will be looked at.

MR. SWENSON next discussed the land status of the Nenana Basin area (slide 14). He said the tan color delineates the license area, green delineates conveyed Native lands, blue delineates selected Native lands, red is allotments, dark blue is federal acreage, and white is state land that is currently open to mineral entry. Relative to the North Slope and Cook Inlet, the Nenana Basin is small; however, it is a very deep basin. He explained that slide 15 represents the information that was had about the Nenana Basin in 2003. The dark grey contours represent the basin's deepest areas, and the blue and light grey contours moving outward show where it gets shallower and then

becomes very thin. Two wells were drilled in the shallow areas, Unocal Nenana 1 and ARCO Totek Hills 1.

2:13:50 PM

MR. SWENSON, in response to Co-Chair Feige, confirmed that the contours represent the basin's thickness from top to bottom, with the top being the surface and the bottom being basement rock. He clarified that slide 15 is a structure contour so the colors represent the thickness of that basin and the contours are based on remote sensing data called gravity, and modeling of that remote sensing data.

MR. SWENSON continued his review of what was understood about the Nenana Basin prior to 2009: about 18,000 feet thick; time equivalent in stratigraphy to the Cook Inlet, but with a very different set of stratigraphy; potential for oil very low due to the thin organic source rocks and the thermal history the basin was assumed to have. The range of possible reserve outcomes was considered wide and poorly constrained. The two wells drilled in 1962 and 1984 were on basement highs, meaning they were drilled where the basin proper was relatively thin. One well was drilled to 3,000 feet and the other to 3,500 feet. At that time it was thought that there would be a lot of deformation, or the building of traps, in the southern margin of the basin.

2:15:58 PM

MR. SWENSON moved to slides 17-18 and said that since 2009 a number of seismic lines have been shot across the basin under Doyon, Limited's, exploration license. The Nunivak #1 well was drilled [in 2009], which helped to correlate all the other data that was had. This recent data was published in the January 9, 2012, Oil & Gas Journal and the significant findings include: the basin could be up to 25,000 feet thick, which has a huge variance on the thermal history because the deeper the hotter, as well as the fetch area and the amount of potential for thermogenic-type hydrocarbons; the encountering of a thick Paleocene section with trace oil and gas shows, indicating, at least in a local sense, an operating petroleum system; and coals showing high hydrogen indices and "S2" values, indicating some oil potential and which changes the prospectivity of the basin. Basin history modeling based on the well data, he continued, leads Doyon to believe that there is an active petroleum system.

2:17:58 PM

MR. SWENSON, referring to slide 19, said the cross section on the farthest left depicts the north flank of the Alaska Range, the two middle cross sections are what was encountered in the [ARCO and Unocal] wells, and the far right cross section is what was expected would be encountered in [Doyon's] 2009 well. The part of the [Doyon] well with the question marks is the Paleocene section that was not known to exist.

MR. SWENSON summarized his presentation by noting that there are a number of basins across the state in addition to the Nenana (slide 20). For example, there are basins in the Yukon Flats, west central Alaska, and extending out into the Bering Strait. Many of these basins have similar geometries and similar stratigraphy, but each one has a very unique history and that is what is very important to take away from today. These basins are usually non-typical petroleum systems. Very little is known about the sub-surface geology in most of the basins, a problem that was seen with the assumptions made on the Nenana Basin. Most of these basins have zero sub-surface information, he continued. There is probably potential for biogenic gas in many of these basins and possibly in some basins for thermogenic gas, but that is poorly understood. From an exploration standpoint, these really are wildcat basins.

2:20:54 PM

CO-CHAIR FEIGE, regarding wildcat exploration targets, inquired what the odds are.

MR. SWENSON replied that depending on the information level for a play, a wildcat exploration target is usually a 5-15 percent chance of success. Geologic success versus economic success can also be talked about, he said, and when going from geologic to economic the chance factors drop. One important point is that there are two different types of chance factor variables: negative information and lack of information. The chance factors for success on any kind of an exploration well can be because negative information says there is no petroleum system, in which case the chance factor is going to go down. The other side, however, is that there is not enough information and therefore too many unknowns, in which case the chance factor still has to be low. It is very difficult from a wildcat standpoint to make that distinction. The more data there is the less wildcat it becomes.

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MR. SWENSON, in response to Co-Chair Feige, concurred that the benefit of the Nunivak #1 well was not that it found oil, but that it expanded the knowledge of the geology and discovered a layer that was not expected to be there.

MR. SWENSON, in response to Representative Munoz, explained that the ARCO and Unocal wells, drilled in [1962] and [1984], are no longer active exploration wells because they have been plugged and abandoned.

MR. SWENSON, in response to Representative Foster, said the data from a well drilled by ARCO 30 years ago in Norton Sound would not be considered obsolete. He explained that while prior technology could not gather the amount of information that is now gathered in an operation, that data is still very critical. Some of the most critical data is just a sample of the rock, he continued, and this is why having the Geologic Materials Center is so important. When going back into an area, being able to look at core dramatically changes the ability to understand the basin as new data comes in.

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MR. SWENSON, in response to Co-Chair Seaton about past drilling in the Nenana Basin, replied that with any dry hole, post mortem is the most important thing for understanding what was encountered. For any trap to actually end up with an accumulation of hydrocarbon, it is astounding how many different variables have to fall into place. The more data, the more pieces that fall into place. It is hard to say why that accumulation was not seen in the ARCO Totek Hills and Unocal wells. It could have happened for a number of reasons: the wells may have been outside of the migration pathway or there were seal problems, but most likely it was not a reasonable or viable trap. Additionally, a biogenic system is generated as it is being deposited and subsiding, which is the reverse of a thermogenic system. A biogenic system requires a huge amount of uplift because it reduces pressure and temperature on the fluids and also on the coals where the gas is absorbed to, and that reduction in pressure and temperature then releases the gas and it migrates up.

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CO-CHAIR SEATON, in regard to HB 276 and the relationship of credits for drilling a well when there is not much information, asked whether the state would be better off to give credit for

three-dimensional seismic work so exploration could be more specifically targeted.

MR. SWENSON said he misspoke earlier about the older seismic, and that it was actually seismic that was shot when ARCO drilled in 1982. Since that time Doyon has acquired a fairly robust two-dimensional grid of seismic as part of the exploration licensing program, but Doyon has posted that it would like to shoot more seismic to the north; so getting additional seismic for understanding the prospectivity is absolutely part of that. When Doyon drilled Nunivak #1, it had a fair seismic grid to identify where the prospect was, it just turned out that it was not in the correct place and the prospect turned out to be a dry hole.

CO-CHAIR SEATON inquired whether HB 276 includes seismic in the credit for a well or is seismic a separate issue that needs to be looked at outside of, or in addition to, the bill.

MR. SWENSON deferred to the Division of Oil & Gas to provide this information because of the difference between exploration licensing and the credit that is before the committee in HB 276.

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JAMES MERY, Senior Vice President, Lands and Natural Resources, Doyon, Limited, noted that Doyon is the Alaska Native Claims Settlement Act (ANCSA) regional corporation for Interior Alaska and has over 18,000 shareholders. He said Doyon has several subsidiary businesses in Alaska and a couple Outside, with a strong emphasis in oil field support services and other natural resource development. Additionally, Doyon is the largest private landowner in Alaska, owning about 12.5 million acres in the Interior. He said he is a 31-year employee of Doyon and a 35-year resident of Interior Alaska. He disclosed that while he is not a geoscientist, he employs and manages several who provided input for this testimony. He specified that he is speaking only for Doyon and not the other investors in the [Nenana Basin] project. He specified that HB 276 was not introduced at the request of Doyon. Rather, Doyon was approached by Senator Wagoner who wanted to do something for Nenana modeled on the Cook Inlet jack-up rig incentive legislation that sparked a lot of new activity in Cook Inlet, as well as an apparent discovery. He maintained that the similar incentives in HB 276 present an opportunity to do things at Nenana which might not otherwise happen or to do more things and do them sooner on State of Alaska lands in the basin, especially

when the risks of frontier exploration are considered along with the topsy-turvy world of Alaska gas markets and politics.

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MR. MERY began with a history of Doyon's [Nenana] project and a status update. He conveyed that Doyon is an investor with several other companies in exploring the basin, with Doyon having the largest single equity ownership at 60 percent. For the last year Doyon has been the operator, the day-to-day manager, of the project. Doyon's investment started several years ago at only 20 percent and its current percentage of ownership shows its commitment and belief in the project. The other project participants are Rampart Energy, a Denver company; Arctic Slope Regional Corporation; Usibelli Energy LLC; and Minnesota-based Cedar Creek Oil & Gas Company. The group has a state exploration license on a little less than 500,000 acres of state land, as well as leases to about 15,000 acres of Alaska Mental Health Trust lands. The group is about 10 years into this project and has been slowed down at several points by the oil and gas tax changes resulting from the petroleum production tax (PPT) and Alaska's Clear and Equitable Share (ACES). Both PPT and ACES had some negative impacts and unintended consequences on the group which had to be rectified before the group would move forward. Additionally, availability of drill rigs has been a real problem, partners have quit, and others have lost interest because of no big early discovery.

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MR. MERY, continuing, pointed out that under the state license program Doyon will be taking multiple year leases later in this calendar year, at which time it will start paying the State of Alaska yearly rentals of $3 per acre. Any production from these lands will be subject to a 12.5 percent gross value royalty to be paid to the state, as well as applicable production taxes. The 43,000 acres of Doyon lands in the Nenana Basin are not part of the state mental health lands venture, he noted, nor are they a focus of any current exploration.

MR. MERY stated that this is a very frontier basin that is very under-explored with only one deep hole which Doyon drilled. A lot more needs to be learned about the basin, so it is a risky place to deploy capital. The group's major programs have been a large two-dimensional seismic program in 2005 and a 2009 drilling program to about 11,000 feet, which was on the flank of the basin and close to the road system. He allowed that some of

the logistics drove some of that drilling decision, but a lot of very interesting information was learned, some of which was shared by Mr. Swenson, and Doyon is excited about the area.

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MR. MERY shared that since taking over the operatorship in 2010 Doyon has undertaken multiple efforts to review existing data, re-analyze the well drill cores, acquire new soils geochemistry, license a proprietary geophysics, and gather new geophysics. Implications from the work are that this is an opportunity for both oil and natural gas. The well data, rock geochemistry, and new geophysics re-define the shape and depth of the basin. Doyon believes the basin is substantially deeper than previously thought and therefore good for both oil and gas generation. He announced that Doyon will start a 125-mile two-dimensional seismic program this week and said this multi-million dollar program further demonstrates Doyon's commitment to the basin. The seismic will be in an area of the basin in which no seismic has been shot before, but one that Doyon now thinks has tremendous promise based on the re-assessment of gravity and past seismic data that was gathered.

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MR. MERY advised that the Nenana Basin is a tough place for attracting investment, given its stage of understanding. All that is had are encouraging results - no real discoveries, no history of development or production like the Cook Inlet or the North Slope, no oil and gas infrastructure, and unsettled gas markets which put incredible risk on the project just on the markets alone. He pointed out that this frontier basin also has an oil tax that is the same as Prudhoe Bay, it is not the same as Cook Inlet, and that is something that should be looked at and that Doyon will be bringing up with other people. He said Doyon believes that it has had much larger risks and burdens for any exploration project compared to Cook Inlet or parts of the North Slope.

MR. MERY estimated that there could be 300 million to 1 billion barrels of recoverable oil in the Nenana Basin, although they are likely in multiple smaller fields. He said Doyon also thinks there will be plenty of thermogenic natural gas as well as propane. Rather than giant fields like on the North Slope, it is more like what is seen in the Cook Inlet or the Lower 48. In that light, Doyon believes that the Nenana Basin is as deserving as Cook Inlet for enhanced drilling incentives.

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MR. MERY stated that Doyon has more reasons to make this work than most companies: Interior is the home to most of Doyon's shareholders; Fairbanks is where Doyon's home offices are; job creation for Interior residents, especially for the nearby communities of Nenana and Minto where many Doyon shareholders live; Nenana is the hub of the great river system in the Interior and there are many Doyon region villages; propane produced near Nenana could be shipped down the river system; and Doyon owns multiple oil and gas field service companies. For these reasons Doyon has the desire to make this happen, he said, but the risks are huge and HB 276 would allow this project to move forward much more quickly.

MR. MERY, in response to Representative Munoz, said the cost of an exploratory well in the Nenana Basin comes down to where the well is. He related that the $25 million figure comes from the Cook Inlet jack-up rig legislation. According to consultants not owned by Doyon, he continued, an 11,000-foot well located in the central part of Nenana Basin will cost about $25 million. Doyon's [2009] well was just shy of $20 million; however, that well was only four miles off the road system on an existing right-of-way, relatively easy access compared to some of the other locations being looked at.

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CO-CHAIR FEIGE described a scenario of drilling one well that found an indication of something and then drilling a second well to confirm the find. He asked what the sum total would be for those two wells.

MR. MERY replied that it would not be $20 million for each well, rather some fraction of the $20-$25 million. He added that it is hard to say because it depends on how far the second well is offset, but it would not be the same amount of money because the logistics have already been paid for getting the rig in there.

MR. MERY, in response to Representative Munoz, confirmed that the State of Alaska provided a 40 percent credit on Doyon's [2009] exploratory well.

MR. MERY, in response to Co-Chair Seaton, confirmed that, in addition to the 40 percent tax credit, Doyon is able to convert the expenditure/investment into a tax credit at 25 percent.

CO-CHAIR SEATON presented a scenario of a 100 percent tax credit for a $25 million well and also converting that $25 million of cost into a transferrable tax credit at 25 percent.

MR. MERY answered that both cannot be done.

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MR. MERY, in response to Co-Chair Feige, confirmed that Doyon has a seismic program starting this week, but has no plans to drill at this point in time, although Doyon would like to. Nenana Basin is a tough place, he continued, and only one of the companies in the current investor group is participating in the seismic program.

CO-CHAIR FEIGE inquired whether the passage of HB 110, but not HB 276, would alter Doyon's decision on whether to go forward.

MR. MERY responded that while the issues are linked somewhat, they are almost separate. The overwhelming issue is the risk of frontier exploration, he said. The tax rate is an ancillary aspect of that larger question. The geologic risks, litigation risks, and market risks are as profound, or more so, than the tax. In further response, he concurred it is a lot of risk.

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MR. MERY, in response to Co-Chair Seaton, confirmed that under Alaska's Clear and Equitable Share (ACES), Doyon would qualify for the 50,000 barrel per day small producer tax credit or a proportion of that if production went up to 100,000 barrels a day.

The committee took an at-ease from 2:46 p.m. to 2:48 p.m.

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CO-CHAIR FEIGE asked Mr. Swenson to speak to the prospectivity of the basins depicted on slides 9-13.

MR. SWENSON reiterated that DGGS, in consort with the Alaska Energy Authority (AEA), conducted a statewide look at all of the available data for each energy area. Part of that was trying to understand what available data there is for the sedimentary basins, including the Copper River, Susitna, Yukon/Tanana, Selawik, and other basins. Looking at the statewide picture,

clearly the two basins with the most data are the Cook Inlet and the North Slope; second to those are the Copper River Basin and the Gulf of Alaska. A first-pass look for potential in all of the Alaska basins was done and one of the things used for that was the gravity information.

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MR. SWENSON continued, explaining that the Nenana and Copper River basins have the most information followed by the Susitna, which is broken into two sub-basins. The Copper River Basin is a very broad, open shallow basin without the great thicknesses seen in the Nenana Basin (slide 10). The Nenana Basin is a pull-apart basin, the bottom basically drops out of it, while the Copper River Basin is more of a flexure, or a broad open depression that collects sediment. The Copper River Basin's sub-Tertiary stratigraphy has the potential to generate oil, like that seen in the Cook Inlet. The oil in the Cook Inlet does not come from the coals, it comes from the Mesozoic rocks, a stratigraphy that is much older and deposited in a marine setting; during the time that the rock was deposited it was a shelf system just like the North Slope. However, while the Copper River Basin has that same stratigraphy under it, the thermal maturity does not appear to have gotten to the same situation as the Cook Inlet. The jury is still out in certain areas, but it is a much different basin. He reiterated that each basin has attributes that must be understood, making it difficult to broad brush all the basins and say they are all going to be the same - each will have similarities as well as differences. Additionally, there are varying amounts of data.

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CO-CHAIR SEATON surmised that Mr. Swenson is saying the Copper River Basin did not get thermally reactive enough for oil formation. He inquired whether the basin is then gas prone or does not have anything.

MR. SWENSON replied he is not saying that at all; the Native corporation in the Copper River Basin has some very robust prospects for natural gas in that Mesozoic section. The real problem in the deeper part - the Mesozoic section, not the Tertiary section - is the lack of information. He explained that the geology underneath the relatively flat-lying Tertiary sediments is very complex due to much deformation, which was followed by erosion, which was then followed by the Tertiary deposit; so, it is very difficult to understand that underlying

sequence. Therefore, part of the risk in the Copper River Basin is lack of information, not negative information. In response to Co-Chair Feige regarding improved seismic technology, he offered his belief that the most recent seismic data [for the Copper River Basin] is from the 1980s and said he will get back to the committee with further information.

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MR. SWENSON next discussed the geology of the Northwest Arctic Energy Region (slide 11), which encompasses the offshore Hope and Kotzebue basins and the onshore Selawik Trough Kobuk Basin. He said the Kobuk Basin is part of the Mesozoic and has Cretaceous-age rock that has a tremendous amount of coal. The Selawik Trough is a Tertiary, younger, basin that has coals and sandstones in it. The best understanding with current gravity is that the Selawik Basin is around 10,000 feet; so, if it is true that it did not get very deep, the chance of thermogenic hydrocarbons is dramatically lessened. However, other forms of gas, such as shallow biogenic gas, could possibly be there. The problem in any one of these basins is that there are no wells and the data is very limited. The tundra covers up much of the outcrop information of the onshore basins, so remote sensing is needed to get a feel for the geometries.

MR. SWENSON, moving to slide 12, said the Yukon Energy Region is incredibly intriguing. While it is very large in area, it is not the same type of basin as the Nenana, as it is more of a flexure than a strike-slip. He related that according to Doyon's data the Yukon has a possibility of liquid hydrocarbon source rock out of the coals. He added that DGGS will be focusing heavily on its sampling programs to help understand the distribution of that rock type.

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REPRESENTATIVE FOSTER requested Mr. Swenson to touch on the Norton Sound Basin. He observed that slide 2 depicts two onshore deposits near Nome.

MR. SWENSON explained that geologists portray geology in a number of different ways. For example, the Tertiary basins are depicted in yellow on the map [slide 2] and some of these areas, such as the Nenana Basin, are huge. When a geologist sees a Tertiary outcrop, the surface map will show it as Tertiary even though it may be only 100 feet thick at the surface. For many of the onshore Tertiary areas, the rock is very, very thin and

therefore the prospectivity very limited. So, one thing that the report will show is the prospectivity. He displayed maps of the Norton Basin [not included in his PowerPoint presentation] and explained that the yellow stippled pattern to the south is the deepest part of the Norton Basin and is the area where the prospectivity is. This is the case for most of the basins in the Bering Strait region, he continued. The onshore extent of that rock becomes very, very thin because the basin feathers out, so the onshore sections have very limited prospectivity. He related that a 1986 study by the Minerals Management Service (MMS), now called the Bureau of Ocean Energy Management (BOEM), provides an idea of the complexities in that basin, which has two sub-basins. A number of the wells drilled showed a fair amount of potential. It is believed from the study that there is a thermogenic system as trace oil was found in a couple of the wells, as was a fair amount of reservoir-quality rock and a lot of structure. However, the other side of that coin is the cost of exploration and looking at the potential size of any one of those things.

[CO-CHAIR FEIGE held over HB 276.]

3:03:37 PM

ADJOURNMENT

There being no further business before the committee, the House Resources Standing Committee meeting was adjourned at 3:30 p.m.