ALASKA STATE LEGISLATURE
HOUSE TRANSPORTATION STANDING COMMITTEE
March 4, 2014
2:18 p.m.

MEMBERS PRESENT

Representative Peggy Wilson, Chair
Representative Doug Isaacson, Vice Chair
Representative Lynn Gattis
Representative Craig Johnson
Representative Bob Lynn

MEMBERS ABSENT

Representative Eric Feige
Representative Jonathan Kreiss-Tomkins

COMMITTEE CALENDAR

HOUSE BILL NO. 271
"An Act making a special appropriation to the University of Alaska Fairbanks for a study of the feasibility of constructing a railroad between Fairbanks and Deadhorse; and providing for an effective date."

- HEARD & HELD

PREVIOUS COMMITTEE ACTION

BILL: HB 271
SHORT TITLE: APPROP: RAILROAD FEASIBILITY STUDY
SPONSOR(s): REPRESENTATIVE(s) ISAACSON

01/22/14	(H)	READ THE FIRST TIME - REFERRALS
01/22/14	(H)	TRA, FIN
02/06/14	(H)	TRA AT 1:00 PM BARNES 124
02/06/14	(H)	Heard & Held
02/06/14	(H)	MINUTE(TRA)
02/13/14	(H)	TRA AT 1:00 PM BARNES 124
02/13/14	(H)	Heard & Held
02/13/14	(H)	MINUTE(TRA)
02/20/14	(H)	TRA AT 1:00 PM BARNES 124
02/20/14	(H)	-- MEETING CANCELED --
03/04/14	(H)	TRA AT 2:00 PM BARNES 124

WITNESS REGISTER

PAUL METZ, Ph.D.
Professor of Geological Engineering
Department of Mining & Geological Engineering
College of Engineering and Mines
University of Alaska Fairbanks
Fairbanks, Alaska
POSITION STATEMENT: Provided a presentation on the railroad extension and answered questions during the discussion of HB 271.

ACTION NARRATIVE

2:18:18 PM

CHAIR PEGGY WILSON called the House Transportation Standing Committee meeting to order at 2:18 p.m. Representatives Johnson, Gattis, Isaacson, Lynn, and P. Wilson were present at the call to order.

HB 271-APPROP: RAILROAD FEASIBILITY STUDY

2:18:29 PM

CHAIR P. WILSON announced that the only order of business would be HOUSE BILL NO. 271, "An Act making a special appropriation to the University of Alaska Fairbanks for a study of the feasibility of constructing a railroad between Fairbanks and Deadhorse; and providing for an effective date."

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REPRESENTATIVE ISAACSON, prime sponsor of HB 271, emphasized the importance of the rail extension since the rail extension can greatly help diversify the economy. He related that historically, the railroad has hauled freight from North Pole and the impending closure of Flint Hills Resources refinery diminishes the freight from 55 percent of the Alaska Railroad Corporation's revenue to 15 percent. In fact, he was unsure how much revenue the railroad would receive from the North Pole Flint Hills operations. He recalled when he was mayor, Pat Gamble, who was president of the ARRC stressed that the ARRC needed to go north. Today he spoke to Mr. Gamble who provided

reasons the rail extension should go north. First, this could help resource development and second, it would provide year round passenger rail service. Mr. Gamble additionally recalled the president of ConocoPhillips Alaska, Inc. indicated the company expected to spend $105 billion more of capital to extract oil on the North Slope as compared to the $5 billion the railroad extension was expected to cost.

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REPRESENTATIVE ISAACSON pointed out Dr. Metz will explain how the $5 billion investment will lower the cost of transportation in multiple industries. He recalled an earlier question about this project and whether it would be "welfare to the university." He emphasized Dr. Metz's experience in multiple projects that have become operational, including the university studies that led to the Tanana Bridge, the Port MacKenzie rail - which is three-fifth completed - and the G7G effort to bring the rail from Alberta to Delta Junction. Thus, Dr. Metz has "real world" experience in research for rail and other projects.

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PAUL METZ, Ph.D., Professor of Geological Engineering, Department of Mining & Geological Engineering, College of Engineering and Mines, University of Alaska Fairbanks, stated that the UAF has been involved in a series of studies beginning in 2000, which are not academic exercises. In the context of all the other rail investigations, rail extensions have had an immediate effect on Alaska's economy. First, the study for the rail link from Eielson Air Force Base to Delta Junction was a joint effort with Lockheed Martin and several engineering firms. Second, the Alaska Canada rail study released in 2007 was a joint effort with Lockheed Martin and HDR Engineering, the largest railroad engineering firm in the U.S., and Van Horn Institute at the University of Calgary, an industry-funded applied research group, and not part of the university. The purpose of U.S. Senator Frank Murkowski's original "rails to resources" legislation, signed into law in 2000, was to examine the impact of a rail extension on the North Slope natural gas development.

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DR. METZ stated that the first few commissions studied rail extensions to the east and south; however, the federal government is now going back to its original basis in its most recent national-level discussions. He then turned to his presentation entitled "Economic Impact of a North Slope Rail Extension on Future Northern Energy and Mineral Development" dated August 7, 2013. He provided two quotes, one from William Shakespeare, "What is yet to come is still uncertain" and the other from Yogi Berra, "The future ain't what it used to be" [page 1]. He acknowledged that the future is uncertain and projections made today change over time. For example, forty years ago the state couldn't predict the Trans-Alaska Pipeline System (TAPS) would be built more quickly than anticipated or that it wouldn't last forever. This shouldn't prevent us from looking forward.

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DR. METZ suggested that Alaska's future is tied to the oil patch and it will continue to be linked to the oil industry for a very long time. The major sources of oil revenue began in 1977 and oil revenue is dwindling; however, the North Slope still has enormous oil resources, which he estimated in excess of 40 billion barrels of additional oil that is yet to be produced. He surmised an additional 100 billion barrels of unconventional oil exists. Petroleum resources and reserves are two concepts often confused. Petroleum resources represent a quantity of petroleum that can be potentially useful, but a petroleum reserve is one that can be currently produced at a profit from existing technology at current costs of production and at current market prices for petroleum. He stated that a large portion of the resources on the North Slope are resources and to convert them to reserves will entail large capital investments by the private sector. He offered his belief that a competitive economic climate is necessary to produce those resources.

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DR. METZ pointed to the huge surge of petroleum production in the continental states since 2011 although hydro-fracking was first patented in 1947 [page 2]. This process entails pumping fluids into the ground, breaking rock, and increasing the porosity of the oil and gas formation. He reported the Bakken in North Dakota and Montana and Eagle Ford in Texas are projects that have been producing large quantities of oil. Additionally, large quantities of natural gas are being produced in the Eastern states in Marcellus shale and other units.

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DR. METZ related that the West Texas oilfield that produced about 35 billion barrels of oil had been estimated by the Carter administration of having the potential to produce 100 million barrels from the source beds. He estimated these source beds would cover 10,000 square miles. The Shublik formation, one of the source beds in the North Slope, underlies an area approximately 30,000 square miles or a size equivalent to the size of Ireland, which is three times larger than the West Texas oil field. He concluded the North Slope resources offered tremendous potential resources that need to be changed into reserves.

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DR. METZ reported that hydraulic fracturing has only been conducted on the North Slope in relatively small levels for investigative purposes. This method of extraction has not been used for production due to the high cost operation on the North Slope. Additionally, wells produced by fracking shale units do not have the same levels of productivity as conventional oil reservoirs, plus this method has higher costs. Thus, the margins are much narrower [page 3].

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CHAIR P. WILSON asked whether one additionally reason production hasn't occurred was due to the high tax rates [in Alaska].

DR. METZ interjected that one reason is due to the "historic" tax rates. In further response to Chair Wilson, Dr. Metz offered his belief that SB 21 is absolutely essential to reduce taxes. He concluded there has been no "surge" in oil production as a consequence of fracking. Winston Churchill said, "A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty." He stressed that Alaska has to be optimistic about its future.

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DR. METZ turned to "An Arctic Oil Bonanza [that] Never Was (see Miller, 2010)" [page 3]. He highlighted that many misconceptions exist, one of which is that the North Slope investment resulted in huge rates of return for the oil and gas industry. He referred to a 2010 John Miller discussion that demonstrated the Atlantic Richfield Company (ARCO), which discovered oil on the North Slope, could have made a higher rate of return by putting its money in federal bonds than it did from operating on the North Slope. He said this was due to the high cost of operations and the extensive delays in obtaining a permit for Trans-Alaska Pipeline System (TAPS).

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DR. METZ discussed "Constraints on Northern Alaska Oil, Natural Gas, and Mineral Development" [page 4]. The high costs of operations on the North Slope have been well documented by the Department of Defense (DOD). He related that he served six years with the U.S. Air Force and his job was to cost out projects in Alaska, Greenland, and elsewhere. He said that what the USAF discovered was that the cost indexes for the North Slope were extremely high due to long supply lines, remote areas, and extreme environmental conditions. Additionally, the USAF found Alaska had high tax burdens relative to the tax burdens occurring in other jurisdictions. He said the state has created a "huge economic hurdle" that has been difficult for oil companies to overcome.

DR. METZ explained that reducing oil taxes is an essential and necessary first step to enhance the competitive economic

environment in Alaska [page 4]. Developing a railroad to the North Slope, which could handle large volumes of bulk commodities and low unit cost material could have an enormous impact on the cost differential on the North Slope as compared to other areas. He emphasized this is especially true since rail would provide backhaul capabilities for low-cost transport of mineral commodities south to tidewater. He reported that he developed an RTS forecast system that provides a fundamental exercise to determine costs.

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DR. METZ reported that all of the studies considered the impact of mineral resources within 50 miles of the transportation corridor. He envisioned that mine owners would fund rail spurs or road connections to the rail corridor to transport material out and resupply in. For example, over 600 known mineral occurrences have been identified from Nenana to Prudhoe Bay. He indicated that a rail system would create a huge incentive for exploration and hence, mineral occurrences would be identified if the railroad system existed today.

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DR. METZ discussed figures based on the U.S. Department of Defense (DOD), which have changed very little from the 1960s to the present [page 5]. The historic cost factors for North Slope DOD facilities in the Aleutians were about the same as the Alaska North Slope operations. These operational costs run 4 to 4.5 times more than continental U.S. costs. He reported the index was based on an average of all DOD construction contracts in Lower 48. He stated that the cost of operations on the North Slope as compared to fracking costs occurring in East Texas is about 6.5 times as costly, or about 5 times as costly to the average cost in Texas. He highlighted that these figures are not percentages but represent the factors that are huge cost differentials.

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DR. METZ turned to the benefits and costs of the rail extensions page 6]. He reported that Great Bear Petroleum announced the company would like to drill 200 wells per year on the North Slope using horizontal drilling and hydro-fracking to produce oil from the Shublik formation and other source beds on the North Slope. He estimated that the 200 wells would result in 2.4 million tons of freight per year based on 12,000 tons per well, which is 2.5 times the concentrates that are hauled out of Red Dog mine per year. He represents a huge amount of freight ["frac" sand, drilling steel, drilling fluids, cement, diesel fuel, and other equipment] that would need to be sent north, equivalent to 500 car trains, carrying 10,000 tons per train five times a week. He compared the potential rail freight to trucking, which would require 168 18-wheelers necessary to haul 40 tons one-way. This would represent enormous volumes of freight being hauled on the Dalton Highway yet it doesn't include the additional backhaul that might occur with the development of other mineral resources.

DR. METZ referred to the map to remind members of the other large oil resources to the east at the in the MacKenzie River Delta and Northwest offshore resources, as well as very large coal resources on the North Slope that would all benefit from the proposed railroad extension [page 6].

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REPRESENTATIVE ISAACSON recalled a prior question was raised with respect to an alternate rail route from Deadhorse to the Brooks Range instead of from Nenana or Fairbanks. He asked whether it could be done and if it would still achieve the same benefits.

DR. METZ explained the overall plan is to eventually connect the railroad to Huntsville, Alabama. For example, once the rail is completed, steel could be placed on a rail and transported across the country to a rail-barge system in Southcentral Alaska and be delivered to the North Slope. He acknowledged one option would avoid building a tunnel through Atigun Pass, but doing so would require offloading the material, which would mean handling the material again to truck it. He offered his belief that the

tunnel wouldn't be a daunting task. In response to a question, he identified the location of Atigun pass on the map as being the number "3" between Coldfoot and Deadhorse.

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CHAIR P. WILSON asked whether the mineral corridor would extend 50 miles each side of the proposed railroad extension.

DR. METZ acknowledged that the mineral corridor was an arbitrary estimate based on the cost a moderate size mine could bear to build a road or rail. He indicated that a utility corridor lies north of the Yukon River that has been set aside as federal land designated as a transportation corridor. He reported that he did an assessment for the Bureau of Mines of all the mineral resources in the aforementioned corridor that were known in 1975 through 1977. He recalled that the corridor is 18 miles wide.

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DR. METZ highlighted some photographs that demonstrate the terrain in the proposed rail extension project [pages 7-9]. One shows a stretch of road north of Livengood in the Hess Creek area, which has challenging permafrost conditions [page 7]. He described the road system in the early days of the pipeline as being "very tough." He indicated the extreme grades that illustrate the extreme grades over Atigun Pass on [pages 8-9.

REPRESENTATIVE P. WILSON remarked [traveling over Atigun Pass by truck] can be pretty scary.

DR. METZ explained that the proposed route uses the braided stream valleys to the greatest extent possible and to keep the alignment at a 1 percent horizontal grade.

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DR. METZ compared the rail versus truck freight costs for North Slope shale oil logistics [page 10]. He estimated the trucking cost from Fairbanks to Prudhoe Bay based on 13,000 tons per well for the 470 miles at a transportation cost of $1 per ton would

add about $5.5 million per well. From Dunbar or Nenana to Prudhoe Bay represents 450 rail miles at $.10 per ton mile, which would cost $550,000. He commented that the cost analysis isn't from the oil industry perspective or the trucking industry, but from the state's perspective. He stressed that the project cost and revenues need to be considered. He offered his belief that huge benefits would accrue to the oil industry in reduced freight costs, and it would result in more revenue to trucking since a lot more freight would be shipped elsewhere.

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DR. METZ explained the capital cost of the proposed railroad extension to Prudhoe Bay based on the unit cost from previous studies at $6 million per mile for 450 miles. The unit costs were based on a long, deep tunnel in the Alps at $2.5 million per mile [page 10]. However, the Atigun Pass tunnel would be 4.5 miles in length whereas the tunnel in the Alps is 57 kilometers long and 1,000 meters deep. Therefore, it follows that the tunneling project, even at Atigun pass would be a much easier tunneling project than the one in the Alps. The Yukon River Bridge costs are estimated at $500 million, noting the original bridge cost $31 million. He concluded the overall cost estimate is very conservative at $5.2 billion including provisions for a terminal on the North Slope.

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DR. METZ discussed the proposed benefits to the State of Alaska based on one-eighth royalty on the 200 proposed wells. He projected that at $85 per barrel it would generate about $1.5 billion per year [page 11]. Further, this oil would fill up the pipeline and fill the treasury with the resource potentially lasting a very long time.

DR. METZ discussed the benefit cost analysis and rate of return on investment analyses [page 11]. He predicted the cost-benefit analysis would be 2.5, assuming royalty oil as the only benefit. He estimated an adjusted rate of return on investment at 30 percent. For comparison, he mentioned that when Warren Buffet bought the Burlington Northern Santa Fe Railroad (BNSF), the

transportation index went up 30 percent. Thus, the proposed rate of return projection for this project is not astronomical given what is happening in the contiguous states. In fact, 60 percent of the oil from the Bakken is being transported by rail and overall huge amounts of oil are being transported by rail, which was not even considered in this analysis.

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DR. METZ explained proposed project funding by Alaska Railroad Corporation Bonds [page 12]. He suggested the state could use the bonding authority of the Alaska Railroad Corporation to sell non-recourse tax exempt revenue bonds. This brings to light the "wake up" call on the need to make a decision on the project. The revenue bonds can only be sold if the state or the ARRC can sign long-term contracts guaranteeing revenue stream to repay the bonds. He characterized this as a "go" or "no go" decision point. In order to reach this stage the state must complete a business case for the financial community to defend the $5.2 billion capital estimate. The proposed $2 million [fiscal note for HB 271] would provide funding to do so. The state must provide a business case the federal Surface Transportation Board, which is the agency of authority for all railroad extensions in the U.S. He compared the fiscal note costs to other feasibility studies, such as the Quartz Hill's project feasibility cost of $100 million or for the feasibility study to reopen the A-J mile by Echo Bay mines, also at $100 million. These projects are all large capital intensive projects, which require detailed engineering studies to justify the long future projections on the revenue sources, to address uncertainties, and to ensure that today's prediction will have a reasonable chance.

DR. METZ highlighted other benefits for the Northern Mineral Development [page 12]. He explained that the cost of trucking mineral concentrates from the Brooks Range or other low unit value commodities from the North Slope is too high to justify the development of the projects. The only way the base metal occurrences, such as the copper in the Ambler district or other lead zinc deposits will happen is if the rail extension on the North Slope also occurs.

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DR. METZ presented challenges and logistics for the North Slope which can be addressed, in part, by the railroad. Additionally, the proposed rail project would provide year-round transportation access to the state's major asset although this large project would not happen immediately. For example, the railroad extension from Eielson Air Force Base to Delta Junction also took considerable time. The aforementioned project began in 2003 and took 10 years to complete. He urged members to start this project now so it would be completed in time to haul pipe and help develop the gas fields on the North Slope. He noted it is also possible to bring gas liquids from Point Thomson south, which is not included in these projections. He predicted that without a rail extension to the North Slope that it would is very unlikely shale gas development will occur on the North Slope.

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REPRESENTATIVE ISAACSON summarized the mechanics of the proposed project. The feasibility study or business concept would be the first step, followed by seeking environmental study funds from the National Transportation Surface Board (NTSB). At that point, it would be the state's responsibility to see the project completed.

DR. METZ answered the NTSB would not fund the environmental impact study (EIS). He suggested that once the business case is made, the NTSB would take it over; however, someone has to fund the EIS. He recalled the EIS for the Eielson Air Force Base to Delta Junction project cost $ 20 million. U.S. Senator Stevens obtained first $15 million. Typically, EIS costs range from 2 to 3 percent of the capital cost. He reported that Norway approaches oil and gas develop in a novel way. First, Norway performs the preliminary science by funding seismic surveys and the EIS and then parcels it out to the private sector. He suggested that something similar could be done with this project. For example, it might be possible to include the cost

of the EIS in the bonding. The caveat would be uncertainty since the project could be delayed and the costs would escalate.

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CHAIR P. WILSON suggested it would be easier for a country like Norway to accomplish this than a state since Alaska must obtain permission from the federal government.

DR. METZ acknowledged the difference.

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REPRESENTATIVE ISAACSON suggested that the state needs to be optimistic and start this now. He asked Dr. Metz to discuss the downsides. He suggested that the business case would include holding discussions with the Generating for Seven Generations (G7G) mineral interests including Great Bear Petroleum, ConocoPhillips Alaska, Inc., and Nova Copper, Inc. The state could invite them to participate and share the expense. He asked whether he was correct.

DR. METZ answered yes. He suggested that all the potential freight haulers and customers should be contacted.

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REPRESENTATIVE ISAACSON suggested the bill may need to be changed a bit. He urged the committee to support HB 271 due to the implication for jobs and to provide transportation of goods and services at a much reduced rate for decades to come.

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CHAIR P. WILSON asked whether the G7G group interest means that perhaps other countries could help Alaska.

DR. METZ agreed. He explained that the G7G discussion was initiated by the Alberta government in Canada. The Van Horn Institute, at the University of Calgary was one of the partners of the 2007 study and the institute is the managing entity

responsible for the $1.8 million that the Alberta government put forward for the oil sands feasibility study.

CHAIR P. WILSON acknowledged that the Van Horn Institute approached the Alaska delegates at the Pacific NorthWest Economic Region meeting and this is still something the institute is very interested in, she said.

DR. METZ agreed, noting the UAF has a small portion of that contract.

[HB 271 was held over.]

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ADJOURNMENT

There being no further business before the committee, the House Transportation Standing Committee meeting was adjourned at 3:03 p.m.