

ALASKA STATE LEGISLATURE
SENATE RESOURCES STANDING COMMITTEE

March 18, 2011

3:34 p.m.

MEMBERS PRESENT

Senator Joe Paskvan, Co-Chair
Senator Thomas Wagoner, Co-Chair
Senator Bill Wielechowski, Vice Chair
Senator Bert Stedman
Senator Lesil McGuire
Senator Hollis French
Senator Gary Stevens

MEMBERS ABSENT

All members present

OTHER LEGISLATORS PRESENT

Senator Joe Thomas

COMMITTEE CALENDAR

SENATE BILL NO. 49

"An Act relating to the interest rate applicable to certain amounts due for fees, taxes, and payments made and property delivered to the Department of Revenue; relating to the oil and gas production tax rate; relating to monthly installment payments of estimated oil and gas production tax; relating to oil and gas production tax credits for certain expenditures, including qualified capital credits for exploration, development, and production; relating to the limitation on assessment of oil and gas production taxes; relating to the determination of oil and gas production tax values; making conforming amendments; and providing for an effective date."

- HEARD & HELD

PREVIOUS COMMITTEE ACTION

BILL: SB 49

SHORT TITLE: PRODUCTION TAX ON OIL AND GAS

SPONSOR(S): RULES BY REQUEST OF THE GOVERNOR

01/19/11 (S) READ THE FIRST TIME - REFERRALS

01/19/11	(S)	RES, FIN
03/09/11	(S)	RES AT 3:30 PM BUTROVICH 205
03/09/11	(S)	Heard & Held
03/09/11	(S)	MINUTE(RES)
03/11/11	(S)	RES AT 3:30 PM BUTROVICH 205
03/11/11	(S)	Heard & Held
03/11/11	(S)	MINUTE(RES)
03/14/11	(S)	RES AT 3:30 PM BUTROVICH 205
03/14/11	(S)	Heard & Held
03/14/11	(S)	MINUTE(RES)
03/16/11	(S)	RES AT 3:30 PM BUTROVICH 205
03/16/11	(S)	Heard & Held
03/16/11	(S)	MINUTE(RES)

WITNESS REGISTER

BOB GEORGE, Vice President and General Manager
 Gaffney Cline & Associates (GCA)
 Consultants for the Administration

POSITION STATEMENT: Continued explaining petroleum fiscal design and answer questions relative to SB 49.

ACTION NARRATIVE

3:34:38 PM

CO-CHAIR JOE PASKVAN called the Senate Resources Standing Committee meeting to order at 3:34 p.m. All members were present at the call to order.

SB 49-PRODUCTION TAX ON OIL AND GAS

3:35:14 PM

CO-CHAIR PASKVAN announced the hearing on SB 49 would continue and that they would next hear a presentation on petroleum fiscal design from Bob George with Gaffney Cline & Associates.

BOB GEORGE, Vice President and General Manager, Gaffney Cline & Associates (GCA), consultants for the Administration, said they are a global petroleum consultant based in Houston. He said he has about 38 years of experience in the industry; his original training was as a geologist, but his main area of experience is more on the commercial and strategic side of the business. His work often involves two aspects of things, the evaluation work relative to acquisitions and divestitures and finance raising and fiduciary reporting and dispute resolution. Clients for this type of work include major oil companies, independent oil companies, banks, financial institutions and taxation agencies

such as the IRS. Other major areas of work he undertakes with governments, ministers and national oil companies advising them in areas such as petroleum policy, licensing and fiscal design. Clients are from a number of major producing countries such as Venezuela, Brazil, Saudi Arabia, Kuwait and Mexico and he is currently engaged by the minister of oil in Iraq.

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He said GCA was first engaged by the Alaska Department of Revenue (DOR) in the middle of 2007 when they did a comparative analysis of several countries' fiscal regimes. Following that, they engaged in ACES in 2008; they provided support on gas line economics, the AGIA conference and subsequently the special legislative hearings in the 2008. Since then, they have provided ongoing support for the department on a number of mostly fiscal issues. They are currently engaged by the DOR for two more years.

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At ease from 3:40 PM to 3:41 PM.

[3:40:50 PM](#)

MR. GEORGE said he would address some issues and follow on comments made by his colleague, Rich Roggerio, about a month ago. He wanted to go to issues that are facing everyone at the moment. He showed a slide of the production history and short term production outlook for the North Slope. It showed nothing new, but brings out the question everyone is wrestling with if the decline is a "function of nature or of nurture." Is the fiscal, contractual and regulatory system governing it?

SENATOR STEDMAN asked if this was a normal-type production curve one would expect to see in any oil basin around the globe.

MR. GEORGE answered that it's not unusual to see this kind of a production curve. There are different shaped profiles, particularly in areas of more closely managed operations (North Sea, for instance), but some fields do get a "second life."

SENATOR STEDMAN remarked that he could have modeled this when the North Slope basin first was opened.

MR. GEORGE agreed that the model is not an unusual shape.

SENATOR STEDMAN asked when he does a model to figure out the fiscal system or a subcomponent of it along the way, would he use a model like this for timing and cash flow.

MR. GEORGE replied that you would be important to assume a period of building production, whether you're applying it to a field or to a basin, and then some sort of plateau duration. You would assume a period where the thing would decline away. It may be a relatively steady decline or areas of build-up could happen two or three more times, perhaps not quite as high as the peak, but coming up again before falling off at some late stage.

SENATOR STEDMAN asked if sometime in the timeframe similar to where we are now, it could be expected that there would be a review of the fiscal policy to see if the decline could be stemmed to extend the life of a basin.

MR. GEORGE replied yes, that has happened in a number of countries and continues to happen.

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SENATOR FRENCH said it's almost like Alaska has two different universes, the Prudhoe universe and then everything else. Without Prudhoe, the highest year of production in 1988 had about 500,000 other oil barrels flowing into the pipeline. Today there is about 350,000 other oil barrels, an extremely modest rate of decline over those years. He asked to what degree they are looking for smaller fields to fill the pipe besides Prudhoe or are they trying to resurrect Prudhoe.

MR. GEORGE replied that you would typically expect some form of distribution of size that would provide a fairly broad spread; one particularly big outlier and lots of small ones is not unusual. Yes, you would expect to find more. Some people think the North Slope still has significant volumes to find. The Gulf of Mexico, for example, is where people have gone back to find more after everyone thought they were played out.

SENATOR FRENCH asked with respect to just the Prudhoe reservoir, has there ever been a reservoir that didn't decline over time.

MR. GEORGE replied he didn't know that specific answer, but the question goes to the mechanism of pressure depletion in the reservoir. If it's a completely closed system, no; it will decline. If you have very strong support from an aquifer, for example, or a way of artificially keeping pressure you could hold the rate up, but over time one would expect to see a decline.

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SENATOR WIELECHOWSKI thanked him for his advice in the past saying it had been invaluable in helping to develop ACES. He asked if this slide took into account the impacts of Repsol's announcement to spend \$768 million in Alaska exploration; he also asked him to talk about the shale oil and if he thought it (and other companies) could potentially bump up the decline period.

MR. GEORGE answered no, the profile does not take into account any of the exploration; it takes into account discovered resources and those that are being developed or evaluated.

The shale oil resources are difficult to comment on. Alaska has very rich source rock, but whether it's oil or gas is a huge question. Oil is more difficult to flow than gas out of the resource plays; its pathway has to be created. The key issue in this particular case, and in every single case, is going to be the evaluation work, and the drilling and then the stimulation of completion of the wells to see what sort of rates can be flowed out. Wells that are being stimulated like this start at a rate and then decline very rapidly and then typically have a long tail. But one of the problems the industry has is that it's all so new that a long tail is being projected, but there isn't enough of a track record to say for sure.

He said he doesn't know if shale oil/gas will add significant volumes. Three years ago, the 2008 AGIA conference had a lot of gas outlooks for the Lower 48 and gas pricing. At the time it was a fairly high price. You didn't hear one peep in the whole of that conference about the impact of shale gas on the Lower 48 supply. The extent of opportunities has taken the industry by surprise.

CO-CHAIR PASKVAN recapped that the first slide depicts what is in part a normal life-cycle of a large petroleum basin.

MR. GEORGE agreed that it is not unusual.

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Slide 3 was on fiscal system design and the only point he wanted to make is that this is not an exact science; nothing in it is black and white. It uses a lot of judgment. They try to build in flexibility to be able to accommodate changing environmental factors.

CO-CHAIR PASKVAN asked him to explain "basin maturity."

MR. GEORGE replied that it's the degree to which you think you have information with regards to how well you know a basin; the more you do there the more you understand it. That perception of maturity can change as new information comes to light. Sometimes you're not as mature as you thought you were or sometimes things start declining a lot faster than you originally thought. It's a concept of the expected lifespan of a basin or an area.

CO-CHAIR PASKVAN asked if he has an opinion on the maturity of the North Slope Prudhoe/Kuparuk region for conventional oil.

MR. GEORGE replied the area of the North Slope that has been developed is probably into a fairly well-known stage; maturity still has some complexities, though, because a lot of oil and gas resource has been discovered, but it is not subject to commercial exploitation at the moment; heavy oil would be a good example. The volumes that are known to exist in the ground are very large, but the degree to which they may be extracted commercially is a subject of greater question. That could change the perception of maturity if the key to oil and gas is unlocked in the relatively near future. Another life there is possible.

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MR. GEORGE said it's not unusual for fiscal systems to change (slide 4). Companies are concerned about the issue of stability and if they feel comfortable that if they make an investment, things are going to remain at least within a reasonable band close enough that they will get the levels of return they expected going into something. A lot of change was seen in Alaska in the 2005-08 window where fiscal regimes were set up in an era when people had a \$20-oil mentality.

SENATOR MCGUIRE asked how other governments mix the two goals of getting its fair share and attracting investment/industry.

MR. GEORGE replied these goals are a "continuous competitive tension" with pulls from both directions. It is easy to overreach; it is difficult to say whether Alaska has done that. The timeframe has been so short especially when global issues are changing all the time. Competition isn't always a question of doing it either here or there; companies operate in different countries at the same time. Alaska might want it now; it might not want to wait and therefore make some changes. It's not good to swing too wildly between end points. But he thought the tension would always continue.

SENATOR WIELECHOWSKI asked how Alaska's government take compares to government take in countries like Venezuela, Brazil, Kuwait and Iraq.

MR. GEORGE replied that it would be less than on an average basis than in Venezuela, but Venezuela has a lot of other issues right now. When GCA was down there through the mid-1990s, things were opening up and they were making it easier for the companies. They were creating structures that would allow a sharing that attracted a lot of money into the country.

In Brazil currently, the Alaska take would not be dissimilar, but possibly higher at current oil prices. Brazil is not geared to oil price in the way that Alaska's fiscal regime is where the progressivity has worked well. Iraq's fiscal regime where the take is north of 90 percent is very different. What is actually happening is that a number of contracts there are in existing oil fields, one of which is doing around 1 million barrels a day. The 90 percent is basically being kept by the host country.

Saudi Arabia's fiscal system was structured for the gas industry; they have activity but no gas production under it. The rates went higher than here, but they were also based on a rate of return concept and started out with somewhat lower rates.

Kuwait has a service contract structure with a lot of known resource being developed on behalf of the government and an exact answer is not possible, but probably higher. Most of those structures are where you get your money back and then an element of profit on top of that.

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How do you justify the change? Mr. George said when he does these things he likes to see a range of outcomes and build a mental picture of where the responsiveness is and where difficult areas are. Then the subjective calculations are trying to make judgments as to where in fact things may go, always a difficult thing to do.

CO-CHAIR PASKVAN asked if it's accurate, whether it's an objective or a subjective calculation, that it should be overlaid on the basin maturity concept they previously described.

MR. GEORGE answered yes. He added that maturity is perhaps a surrogate word for expectation, the degree to which you feel you know something.

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He said it's hard to say which fiscal system is the best; you hope that you've done the best you can but "shifting sands...." You are continually assessing your competitive position and making sure you're fulfilling all the things you do under the guise generally of maximizing the value or the benefits of the resource in question to your home jurisdiction, whatever it happens to be.

SENATOR MCGUIRE said she had introduced a bill setting up a competitiveness review panel so there would be a continual annual assessment of those things. She has observed over the last decade that the state doesn't do this very well and asked where he had seen this done well and what kind of system has he used to assess that world-wide competitiveness.

MR. GEORGE answered that a number of different approaches are used and some seems to appear during times of "seeming crises." Under various systems regulatory bodies prepare reports; for instance, the UK, Denmark and Norway do regular annual reports that appear on a website.

SENATOR MCGUIRE said Alaska's problem is that it is ranked in the bottom tier of the private reports that have been published for competitiveness. Lawmakers get frustrated in trying to figure out exactly what the ranking is based on. It could be climate, difficult access to resource, fiscal regime, regulatory process et cetera. This bill tries to factor in all the things from a private sector point of view. She asked if he looks at any particular universal guide or book and if when looking at these regimes, does anyone divide competitiveness with respect to exploration and production.

MR. GEORGE answered that he didn't know of a single book or annual review that anyone would call definitive. But the more factors brought in the more subjectivity is brought in as well, and people will tend to go with things that can be treated mathematically, because you get an answer that comes out.

SENATOR MCGUIRE said the credit regime that is in place amounts to upwards of \$4 billion and seems to be incentivizing exploration very well, but it has not led to any increased production; in fact, there is a decline that is expected to continue for the next 10 years. Alaska might want to keep part of the fiscal system it has and repair another part of it. She asked if there is any assessment that tells one that a certain

fiscal regime has it right when it comes to the producing phases as well exploration.

MR. GEORGE replied that he didn't know of any. Time is needed to look at successful countries; however, those manage for very different circumstances. For instance, UK and Norway manage their resources in the North Sea differently. UK has 50-60 million people and Norway has 4 or 5 million. In one it's a major part of the economy and in the other it's maybe 5 percent.

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SENATOR WIELECHOWSKI said when Gaffney Cline presented to the House Resources Committee in February they used a slide called "Producers View of Fiscal Systems" that is not in this presentation and one of the headlines says "never met a tax they liked." Then he talked about Illinois and how it has the lowest government take, but nobody investments there because it doesn't have very much oil. Then it had Iraq that has the highest government take but lots of investment. The slide also said to always make comparisons to the Lower 48 as a best place to invest; he remembered talking about this quite a bit in the ACES debate. So, he want to know who our peers are. He heard over and over again that it was not appropriate to compare us to the Lower 48, because they aren't sovereign jurisdictions. And that it was more appropriate for Alaska to compare itself to places like Norway, UK or Russia. "Is that still your view of things?"

MR. GEORGE replied yes. There are two components to that. One is the sort of comparison that Alaska owns the resource and therefore has a very different duty in looking at it compared to most of the rest of the US where private land owners are the financial beneficiaries. Another element is a structural one within the industry where companies tend to put their budgets in "regional pots." He said it wasn't irrelevant to look at other parts of the Lower 48, but Alaska manages its resource much more comparably to other nations.

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MR. GEORGE went to slide 6 labeled "Where is Alaska today?"

1. Production continues to decline despite unprecedented prices.
2. TAPS (either operational limit or economic limit) - very important because it is the one connection the market.
3. Heavy oil potential under assessment; Alaska has a lot of known resource. The technology and economics of unlocking it are critical.
4. New plays (shale oil) on the verge of being unlocked?

5. New resources viewed by some as "stranded" access to infrastructure.
6. Logistical challenges and high costs remain.
7. Long lead times to bring on new fields.
8. Large dominant players - incumbents and new entrants - a lot of new players with different parameters.

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He went to Slide 7 labeled "Future Scenarios for Alaska."

1. Requires many assumptions that lead to "noise" time that changes focus from discussing and understand root causes and the real issues
2. Lack of planning data

CO-CHAIR PASKVAN said it seems like Alaska doesn't have the data transparency that many other regimes have, and he asked him to comment on Alaska's need for that.

MR. GEORGE separated the question into two parts, the data and the transparency. He further wanted to separate out the idea of financial data that belongs to taxpayers (generally backward looking) and the operational or planning data that is not related to the economics of anything particularly and is more forward-looking. The matrix is between the way information is provided and the disclosure, which may or may not occur as a result. This was a 2007 issue with the ACES hearings. He understands that it has improved significantly, but he didn't know if it is as good as other nations. He didn't think so yet. UK regulations allow the ministry to ask for "pretty much anything they want" and they do ask for "quite a lot...particularly in the early stages of field development..." They will see the development plans and the production outlook and alternatives. But the disclosure on that is relatively limited. So, for planning purposes they have a lot, but what goes into the public domain is much less. So, if you're talking about transparency that is slightly harder to answer.

He said Norway requires that companies report twice a year on a spreadsheet of a forecast. You can't see all the numbers underneath it, but you can see the form of reporting by going onto the website. Iraq is one country that would substitute for a lot of others where everything you do is subject to submitting plans and having them approved so that the regulator knows what's going on. But the disclosure on that is relatively limited; it doesn't go outside of the ministry, for the most part. He hoped that answer helped.

CO-CHAIR PASKVAN said he would invite him back for more specifics.

MR. GEORGE said he is on the road for the next two weeks, but would work with the committee.

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SENATOR WIELECHOWSKI said the February presentation also had a section that said "lack of data transparency that many regimes have" and another that talked about data transparency and that Alaska relative to other regimes is handicapped in its decision-making by the small amount of either confidential or reliable public data on energy operations. Has that situation been alleviated in the last month? Is it still a handicap for Alaska? He has asked the Department of Revenue on ways to close the gaps on data transparency for the last three weeks and is still waiting for the information.

MR. GEORGE commented that it is his understanding is that it is improved from where it was in 2007, but it wasn't at a very good level then. It probably has a lot further to go to be comparable to most other countries outside of the US including Canada. Again, he said he would separate transparency from data provision and taxpayer from planning and operational data.

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MR. GEORGE went to Slide 8 labeled "The Importance of Oil to Alaska."

- In Alaska (2010) oil taxes and royalties account for almost 90 percent of unrestricted general fund revenue. Scale is different for the different parties.
- For the Big 3 (2010) Alaska profits and production accounted for 5 - 30 percent of their "economy."

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Some big questions are:

1. Is it necessary to change ACES?
2. Will I get the same investment and production if I do not?
3. If I get more investment and production, how much more
4. Will TAPS obtain oil from "somewhere" to keep flowing regardless?
5. How can I delay before being comfortable that I know the likely outcomes?
6. What can I influence? How?

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Slide 10: Some very high level metrics:

- Difference between 3 and 6 percent decline. Companies have indicated that 3 percent ought to be achievable given the right level of investment. It depends on when you take the TAPS economic limit to be; maybe it's 1.5-2 billion barrels.
- 150,000 barrels of oil per day difference in production for 20 years (the level between the 3 and the 6 percent decline) is the difference of 1 billion barrels of oil.
- Delays cost money; value halves depending on the discount rate used somewhere between plus or minus 10 years.
- \$100 a barrel (today's market price) is worth approximately \$40 to the state and under the ACES regime about \$30 depending on whether it's a new field or an existing field under SB 49.
- At \$150/barrel it's worth somewhere between \$50 to \$75.
- Put another way, getting 150,000 barrels a day for 20 years would be worth about \$30 billion to the state.

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SENATOR FRENCH asked what that 150,000 barrels would be worth to the industry.

MR. GEORGE said that is a good question and he had the number, but not in his head. He'd get it for him.

- Changing to SB 49 if the state would have got it anyway costs \$10 million to \$25 million.

- What's the value of delaying, getting something you might otherwise get, leaving aside the issue of what happens with TAPS, about \$20 billion to \$40 billion.

- Examine the "what if" economic impacts to try and assess some possible goalposts:

- what happens if the North Slope generally declines at 6 percent a year and what happens if it performs according to the DOR fall 2010 forecast - and the difference between those over the time to 2050 is a bit under 2 billion barrels

- Do nothing and decline is actually around 6 percent - relatively early demise to TAPS but through making a change you are able to achieve a profile like the department's and you manage to keep TAPS going longer through appropriate investment, there is about a \$100 billion potential gain

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SENATOR WIELECHOWSKI asked why he chose a 6 percent decline when the DOR is predicting 2 or 4 percent.

MR. GEORGE replied the decline depends on the shorter term or the longer term. The average of 3 percent is out to 2040. The 6 percent is the average level for the last two or three years. It's a number the industry has used in prior times for current investment; but at higher levels they say they can hold it at 3 percent.

SENATOR WIELECHOWSKI said his model also assumed no new major investment and he asked if he could remodel this taking into account the \$768 million that Repsol has said they plan on investing on the North Slope as well as the investment proposals made by Great Bear.

MR. GEORGE replied that he could make those assumptions.

SENATOR WIELECHOWSKI asked why he used an undiscounted cash flow for this slide. Is that standard practice for a business when comparing two different investment scenarios over time?

MR. GEORGE replied no. But he agreed when one is making investment decisions one wouldn't look at the undiscounted numbers. The reason it was done at the time is to try and get away from issues of what discount rate to use for the state and whether it would be the same for the company. He said you would get absolute numbers for the same general picture if you used a discount rate.

SENATOR WIELECHOWSKI asked if he could use a discounted slide flow.

MR. GEORGE answered that he would be happy to look at a couple of discount rates rather than saying this is the right one. It's a sensitive issue for individual parties as to what the appropriate discount rate is.

CO-CHAIR PASKVAN returned to slide 10 that indicates at \$100 a barrel the state's take is approximately \$40. Some people are saying the state's take at \$100 a barrel is 82 percent. Why are some saying it's \$40 and others are saying it's 82 percent?

MR. GEORGE apologized for not providing enough explanation. That \$40 was over the life of an investment assuming \$100 a barrel. It takes out the factor of costs coming out as well. Some other number is typically a share of the revenue after costs.

SENATOR WIELECHOWSKI asked what TAPS enhancement he is referring to in slide 14.

MR. GEORGE replied whatever would be necessary to keep it flowing through to 2050; it's non-specific. The object on these was to try and set out some goalposts at each end of the field that said what if this or that.

SENATOR WIELECHOWSKI asked what fields will be discovered under SB 49 that will not be discovered under ACES.

MR. GEORGE replied that is not what "discovered" means there. It means the existing producing fields and the existing discovered fields, as well.

SENATOR WIELECHOWSKI asked if they pass SB 49, which fields would be developed as opposed to if it doesn't pass.

MR. GEORGE replied that he didn't know.

SENATOR WIELECHOWSKI asked if he could predict how much more oil will be produced under SB 49 as opposed to ACES.

MR. GEORGE replied that he would love to be able to tell him, but he didn't know what the difference would be.

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CO-CHAIR PASKVAN said he just did a rough calculation that at 600,000 barrels a day or 200 million barrels per year it takes five years to pump 1 billion barrels. That means it takes us 40 years to pump 8 billion barrels. On page 14 out 40 years from now, that 8 billion barrels - the reserves are currently 5 billion barrels and then the undiscovered potential recovery are another 4 billion barrels. So we only have 9 billion barrels whether they're incentivized or not according to the facts. So, if we're out 40 years pumping 600,000 barrels, we're within a billion barrels of the end of the reserves in the end of undiscovered potentially recoverable. Is that accurate?

MR. GEORGE replied that the actual ultimate recovery under SB 49 column is about 5-5.5 billion barrels; it's not constant at 600,000 a day (going back to slide 13).

CO-CHAIR PASKVAN asked if this is total or total plus enhanced.

MR. GEORGE replied the assumption in this set of slides is that 5.5 billion barrels is what you achieve for total production.

CO-CHAIR PASKVAN said then that total assumes all of the known reserves currently.

MR. GEORGE replied you have to be careful using the term "reserves," because it also is a term of art and has certain connotations. It is certainly not all the reserves and resources that are known to be out there. It is certain fields that are either currently producing or under development or are under appraisal and are identified by the DOR in its fall forecast. It doesn't have any heavy oil for example.

SENATOR WIELECHOWSKI said under assumptions for continued decline slide 14 says that no new major investments will occur. Being that since they passed ACES three years ago, the state has seen a 50 percent increase in capital investment on the North Slope and have projections of continued increases on capital expenditures in 2011 and 2012, he asked if Mr. George could recreate this slide assuming the new level of investments they have actually seen in the last four years.

MR. GEORGE replied that he would be happy to look at some additional cases and some additional assumptions.

SENATOR WIELECHOWSKI asked, "When are you assuming that TAPS will cease to carry oil in this assumption?"

MR. GEORGE answered in these particular examples, the bar that has 95 on it assumes that TAPS ceases to operate at 250,000 barrels a day; the one that says 110 goes to 200,000 barrels a day.

SENATOR WIELECHOWSKI asked at what year they achieve 250,000 barrels per day.

MR. GEORGE replied in the mid and late 2020s.

SENATOR WIELECHOWSKI asked what it would cost to enhance TAPS to carry 250,000 barrels per day and what the cost benefit analysis would be if the oil companies would strand 250,000 barrels versus making the adjustments to enhance that.

MR. GEORGE replied that he had done no work on that; he didn't know if it's a very easy question to answer. But he accepts that it is a very important one.

CO-CHAIR PASKVAN asked what volume of reserves would still be left in the ground and what is the volume of undiscovered

potentially recoverable that would still be left in the ground after a shut down under either scenario on slide 14.

MR. GEORGE replied that he would have to get back to him. It depends on shutting down to what level. If you took it down all the way to zero he could get the answer fairly quickly, but it's the difference between 200,000 and 250,000 and some other level where you're able to operate it down to. He didn't think anyone could answer how much undiscovered oil is not there.

SENATOR WIELECHOWSKI asked if companies would leave the large amounts of oil and shale oil in the Chukchi and Beaufort Seas stranded.

MR. GEORGE answered no; he didn't think anyone would leave anything stranded if they thought there was a viable economic proposition and regulatory regime that would allow them to get after those wells.

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MR. GEORGE recapped that the goalpost at one end under those two conditions might be \$100 billion of upside and asked on the downside what happens if you make a change such as SB 49 but nothing changes and you carry on with the 6 percent decline before TAPS abandonment. Then you've foregone about \$20 billion in fiscal take for the state. If you make no change or you kept ACES and you got the investment necessary to do what provides the DOR profile, the difference is \$50 billion.

SENATOR FRENCH asked when the two lines cross where Alaska starts giving the money back this year and starts getting the increased production tax value in future years.

MR. GEORGE replied the expectation as to when you might start to get more, at relatively small volumes you could do it in a year or two afterwards if it's infield activity. In terms of revenue from new exploration, a little bit longer. The North Slope needs a long lead time from discovery, planning et cetera and ten years might not be an unreasonable expectation for starting to get meaningful flows from exploration activity there.

SENATOR FRENCH said when you start calculating in the time value of money it gets harder and harder.

MR. GEORGE replied that it depends on the volume you attract at the end of the day; it is very volume-dependent.

SENATOR WIELECHOWSKI said if he is reading these numbers correctly, they have heard varying numbers about what SB 49 will actually cost the state. From Mr. George's testimony and what he reads, this slide says that from 2011-2020 if SB 49 passes, it will cost the state \$20 billion; and from 2011-2050 it will cost the state \$50 billion. "Is that accurate?"

MR. GEORGE replied that would be if nothing changed as a result of SB 49 passing.

SENATOR WIELECHOWSKI asked if this passes and everything stays the same, the state loses \$50 billion from 2011-2050 and then Mr. George testified that he didn't know that SB 49 will add a single drop of oil in production or that it will result in a single new exploration well being drilled.

MR. GEORGE replied he wasn't sure that he would put it quite like that. He didn't know exactly what result it would have. He assumed directionally it will give improvement because there is more money in the system. He didn't know what would come out at the end of the day. That is a question the companies have to give a better indication of.

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CO-CHAIR PASKVAN found no further questions and thanked Mr. George; he adjourned the meeting at 4:59 PM.