

**ALASKA STATE LEGISLATURE
HOUSE RESOURCES STANDING COMMITTEE**

February 12, 2007

1:01 p.m.

MEMBERS PRESENT

Representative Carl Gatto, Co-Chair
Representative Craig Johnson, Co-Chair
Representative Vic Kohring
Representative Bob Roses
Representative Paul Seaton
Representative Peggy Wilson
Representative Bryce Edgmon
Representative David Guttenberg
Representative Scott Kawasaki

MEMBERS ABSENT

All members present

COMMITTEE CALENDAR

CS FOR SENATE BILL NO. 46(RES)

"An Act relating to the Alaska coastal management program; providing for an effective date by amending the effective date of sec. 45, ch. 24, SLA 2003, as amended by sec. 21, ch. 31, SLA 2005; and providing for an effective date."

- MOVED CSSB 46(RES) OUT OF COMMITTEE

OVERVIEW(S): COOK INLET GAS: REALITY & EXPLORATION POTENTIAL

- HEARD

PREVIOUS COMMITTEE ACTION

BILL: SB 46

SHORT TITLE: COASTAL MANAGEMENT PROGRAM

SPONSOR(S): SENATOR(S) OLSON

01/16/07	(S)	PREFILE RELEASED 1/12/07
01/16/07	(S)	READ THE FIRST TIME - REFERRALS
01/16/07	(S)	RES, FIN
01/29/07	(S)	RES AT 3:30 PM BUTROVICH 205
01/29/07	(S)	Moved CSSB 46(RES) Out of Committee
01/29/07	(S)	MINUTE(RES)

01/31/07 (S) RES RPT CS 3DP 1NR SAME TITLE
01/31/07 (S) DP: HUGGINS, GREEN, STEDMAN
01/31/07 (S) NR: MCGUIRE
01/31/07 (S) FIN REFERRAL WAIVED
02/07/07 (S) TRANSMITTED TO (H)
02/07/07 (S) VERSION: CSSB 46(RES)
02/08/07 (H) READ THE FIRST TIME - REFERRALS
02/08/07 (H) RES
02/12/07 (H) RES AT 1:00 PM CAPITOL 124

WITNESS REGISTER

SENATOR DONNY OLSON
Alaska State Legislature
Juneau, Alaska
POSITION STATEMENT: Sponsor of SB 46.

DAVID GRAY, Staff
to Senator Donny Olson
Alaska State Legislature
Juneau, Alaska
POSITION STATEMENT: Answered questions regarding SB 46.

RANDY BATES, Acting Director
Office of Project Management and Permitting (OPMP)
Department of Natural Resources (DNR)
Juneau, Alaska
POSITION STATEMENT: Testified in support of 46 and answered questions.

TOM LOHMAN, Wildlife Specialist
Department of Wildlife Management
North Slope Borough;
Vice-Chair
Alaska Coastal District Association
Anchorage, Alaska
POSITION STATEMENT: Testified in support of CSSB 46(RES).

MARLENE CAMPBELL, Coastal Management Coordinator
Government Relations Director
City and Borough of Sitka
Sitka, Alaska
POSITION STATEMENT: Testified in support of CSSB 46(RES).

GARY WILLIAMS, Coastal District Coordinator
Kenai Peninsula Borough
Soldotna, Alaska

POSITION STATEMENT: Testified in support of CSSB 46(RES).

CAROL SMITH, Planner/Coastal Coordinator
City of Valdez
Valdez, Alaska

POSITION STATEMENT: Testified in support of CSSB 46(RES).

BOB SWENSON, State Geologist, Acting Director
Central Office
Division of Geological & Geophysical Surveys
Department of Natural Resources
Fairbanks, Alaska

POSITION STATEMENT: Presented an overview on Cook Inlet gas.

ACTION NARRATIVE

CO-CHAIR CRAIG JOHNSON called the House Resources Standing Committee meeting to order at [1:01:28 PM](#). Representatives Johnson, Gatto, Guttenberg, Edgmon, Kawasaki, Kohring, Seaton, and Roses were present at the call to order. Representative Wilson arrived as the meeting was in progress.

SB 46 - COASTAL MANAGEMENT PROGRAM

[1:01:51 PM](#)

CO-CHAIR JOHNSON announced that the first order of business would be CS FOR SENATE BILL NO. 46(RES), "An Act relating to the Alaska coastal management program; providing for an effective date by amending the effective date of sec. 45, ch. 24, SLA 2003, as amended by sec. 21, ch. 31, SLA 2005; and providing for an effective date."

[1:02:03 PM](#)

SENATOR DONNY OLSON, Alaska State Legislature, sponsor, paraphrased from the following sponsor statement [original punctuation provided]:

Alaska's Coastal Management Program has undergone major modification in the last several years under the previous administration. These changes required the coastal zone management districts throughout the state to completely revise their management plans. Compliance and approval of the new plans by both the state and federal authorities must be achieved before

the March 1, 2007 termination date of their existing plans.

Of the 28 coastal management districts, 16 have new plans that have been approved or are near approval. Of the remaining districts, 9 are still being revised or are under review and 3 have requested mediation. They are not likely to make the March 1 deadline. The reasons most often given for the delays are the complexity and extent of information required by the Department of [Natural] Resources for justification of the plan proposals. This is particularly true for large districts where revisions to resources inventories and analysis required significant effort.

CSSB 46(RES) accomplishes two things. First, it extends the March 1 deadline for completion and approval of district plans six months to September 1. Secondly, it extends a related deadline for the designation of categorical and generally consistent determinations (the ABC list) six months also.

I urge you to give favorable consideration of SB 46 and its importance to 70% of Alaska's coastal area and the people who call it home.

SENATOR OLSON emphasized that CSSB 46(RES) is entirely focused on extending the deadline from March 1 to September 1, 2007. He said that other related issues will be carried forward in another bill.

[1:04:46 PM](#)

CO-CHAIR GATTO asked if the extension is sufficient to meet all the deadlines mentioned.

SENATOR OLSON stated that he is not convinced it is, but it provides communities the opportunity to complete revision of their plans. One or two districts will probably have difficulty making the September 1 deadline, he said.

[1:05:23 PM](#)

CO-CHAIR GATTO asked what happens for coastal zone management in those districts that do not meet the deadline.

DAVID GRAY, Staff to Senator Donny Olson, Alaska State Legislature, related that the administration supports the September deadline. He further related that the coastal districts are telling Senator Olson that the six-month extension is adequate and a good compromise. He noted that extending the deadline beyond September 1 also has problems.

[1:07:01 PM](#)

CO-CHAIR GATTO inquired as to why CSSB 46(RES) is significantly shorter than the original version.

SENATOR OLSON explained that the original bill had a section dealing with federal lands and federal leases, which made the bill more complicated than just extending the deadline. Given the time sensitivity of the deadline, he said, the bill was amended to deal only with the deadline issue.

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REPRESENTATIVE GUTTENBERG related his assumption that the coastal zone management districts, along with their planning process, had been eliminated during the Twenty-Third Alaska State Legislature. He asked what transpired between then and now.

SENATOR OLSON offered his belief that the previous administration failed to understand the complexity and detrimental effects that their actions would have on the coastal communities that wished to have a say in fish, gas, and oil issues.

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REPRESENTATIVE GUTTENBERG inquired as to whether there had been a court case or other type of challenge.

SENATOR OLSON said he did not know of any challenges in court, but due to the imminent deadline three districts sought resolutions through mediation.

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REPRESENTATIVE GUTTENBERG asked what happens to a coastal district as an entity if it is not in compliance by the September deadline.

[1:11:18 PM](#)

RANDY BATES, Acting Director, Office of Project Management and Permitting (OPMP), Department of Natural Resources (DNR), explained that OPMP is the lead agency for implementing the Alaska Coastal Management Program (ACMP). He related that the OPMP, DNR, and the Palin Administration support CSSB 46(RES). He stated that OPMP will continue working with the coastal districts throughout the time extension to achieve compliance with their coastal programs. He reported that OPMP has worked with the districts over the past two years to ensure that the districts understand the rules of writing enforceable policies and that they are educated as to what they can and cannot do. Once the districts have completed their plans, they will submit them to DNR. The DNR will then evaluate the compliance, respond, and make a recommendation to the commissioner. If the policies are still noncompliant with the laws that govern the coastal program, they will not be approved, he said. The districts are trying to address issues that the state is already addressing, which is not allowed and thus DNR disapproved those plans.

[1:13:58 PM](#)

REPRESENTATIVE ROSES inquired as to what action will be taken for those districts that are not in compliance because they did not submit a plan.

MR. BATES explained that coastal management in the state and for the districts is voluntary. If a district voluntarily chooses to participate, it can write district plans according to rules established by statute and regulation. If DNR determines that the policies are noncompliant, the department cannot approve the policies, and the district does not get those policies. If the district writes policies that are approvable, they become law as part of the coastal program that is implemented uniformly throughout the state by DNR, just as the department does for the statutes and the regulations. He stated that a district would not have a plan if DNR disapproved all of the policies included in that plan. Absent a plan, he said, state laws and standards still apply to the entire coastal zone. Therefore, he stressed, protection is not lost for resources or uses in a coastal zone without a district plan. Instead, what a district loses is the local perspective on how to guide development in accordance with ACMP.

[1:16:22 PM](#)

MR. BATES further explained that in any planning process additional time will always be requested for getting better studies and information with which to prepare a better plan. Given the implementation of House Bill 191 in 2003 and given the eight-month extension afforded by Senate Bill 102 in 2005, he stated that this additional six months should generally satisfy the majority of the coastal districts seeking additional time. He emphasized that the districts must realize this six-month extension is it. The DNR is awaiting submission of district plans so it can finalize its review and make sure it is done in a manner that reaches conclusion by the now proposed September 1 deadline.

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REPRESENTATIVE GUTTENBERG asked what happens if the department disapproves or modifies any of the program as referenced on page 1, lines 13-14, in CSSB 46(RES).

MR. BATES reported that this provision was passed by the legislature in 2003 and again ratified in 2005 through Senate Bill 102. He noted that it is his task as acting director of the executive branch to carry out the program and ensure that the legislature's language is implemented. The department has used this language to terminate the plans of five coastal districts that have never complied with House Bill 191 by drafting and submitting district plan revisions. The department has not, under any other circumstance, taken any action to disapprove or modify any other part of a program, he emphasized. Furthermore, DNR has been implementing a provision in Senate Bill 102 that requires elimination of certain district policies if they duplicate or restate existing law, and this implementation aligns itself with this provision of CSSB 46(RES) as well, he said.

[1:19:50 PM](#)

REPRESENTATIVE GUTTENBERG inquired as to whether a coastal zone plan becomes null and void if it copies existing state statute.

MR. BATES answered, "Yes." If there is a provision in an existing coastal district plan that restates or duplicates an existing state or federal law, it is rendered null and void by Senate Bill 102, he said. Eliminating that duplicity was one of the basic tenants of reform of the coastal program back in 2003.

[1:21:15 PM](#)

REPRESENTATIVE GUTTENBERG pointed out that sometimes it is desirable to transfer authority to the lowest level, and sometimes not. He asked if there is any provision for arbitration so that a district's entire plan is not automatically voided without the opportunity for discussing a duplicative [provision].

MR. BATES related that nationally there are 35 coastal states, and each state has an opportunity to develop a coastal program that best fits its needs. Alaska has chosen to implement a program that includes state laws from the various sister agencies, such as the Office of Habitat Management and Permitting, the Department of Environmental Conservation, and the Division of Mining, Land and Water. He emphasized that Alaska has also voluntarily chosen to include a local component – the state's coastal districts. This is a state program in which the local governments play an important role in helping determine whether projects are compliant with district plans, the state standards, and the existing state and federal law.

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REPRESENTATIVE SEATON asked whether local coastal district plans could speak to an "issue" that is already addressed in state law.

MR. BATES responded that there are regulations that state what a district can and cannot write. He said there is also statutory language that says a district may not address a matter already covered by an existing state agency authority – unless the matter is not adequately addressed. If a district demonstrates that an issue is inadequately addressed, then it can delve into the topic. He outlined the context: Is the resource covered and is the management and protection provided? If it is not and it is within the bounds of what the state has written as far as a coastal program, then the district could address the issue. Mr. Bates further stated that DNR has, under all circumstances, objectively reviewed and evaluated all of the district plans as to whether they comply with state laws.

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CO-CHAIR JOHNSON surmised that the state will write a plan without local input for any coastal district that fails to meet the planning deadline or that has its plan denied by DNR.

MR. BATES answered affirmatively. He noted that state law still applies to a coastal zone regardless of whether there is a district plan. District plans simply provide a local flavor to the program, he said.

[1:28:06 PM](#)

REPRESENTATIVE SEATON queried as to whether a district would be terminated if its plan is not submitted and/or approved by the deadline.

MR. BATES stated that there is no elimination of districts. He cited the communities of Angoon, Hydaburg, Klawock, St. Paul, Kake, Wrangell, and Petersburg as examples of coastal districts without plans. They will remain coastal districts and DNR will still involve them in discussions regarding coastal management. However, he stressed, they will not have a seat at the table during a consistency review of a project, and therefore no due deference in the interpretation of laws.

[1:29:32 PM](#)

MR. BATES emphasized that a district gains due deference and a seat at the table with an approved district plan that has enforceable policies. Absent those policies and absent an effective district plan, the state still implements the program at a state level, he said. Districts without plans could still comment and participate through ACMP consistency procedures and through any solicitation for public comment on federal or state agency permits.

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REPRESENTATIVE WILSON asked whether a community could re-submit a plan by September 1, 2007, if its previous plan was denied. She also inquired as to whether a district could deny a permit request before it reached the state level.

MR. BATES said that if a plan is not compliant, DNR tells the district what it can do to achieve compliance. If the district is trying to write about an aspect of resource that is already covered by existing law, DNR educates the district on how the coverage is provided. If the coverage is inadequate, DNR instructs the district on how to craft its enforceable policies in order to get to the issue. At this point, he stressed, he did not expect any district to come in with a plan that DNR has

not yet seen because it is only a matter of refining plans and accepting what the rules are.

MR. BATES then stated that a local district could deny a permit under the coastal program because regulation allows coastal districts to identify areas that are important to them, such as tourism, recreation, subsistence use, or habitat. He said that if a district can draw a boundary around a specific area that needs to be maintained for a particular reason, the district could then disqualify or disallow certain uses in that area. However, he emphasized, a district cannot preempt uses that the state considers important for the preservation of health, safety, or economy, such as oil and gas opportunities.

[1:34:01 PM](#)

REPRESENTATIVE EDGMON noted that there are three coastal plans currently in mediation and that some others will soon be in mediation. What happens to the funding stream if these plans are not submitted by the September 1 deadline, he asked.

MR. BATES predicted that 26 of the 28 districts will be finished by the September 1 extension deadline. He said he expects that mediation with the three districts will be resolved and their plans approved and in place before the deadline. The department will continue working with the two remaining districts, and any others that may be languishing, to get them to approval. He stressed that funding is continuous for all of the districts that are making progress and are participating in the program. The 28 coastal districts receive an average of \$1 million annually in state and federal funds to ensure that they are implementing the program for themselves and for the state's purposes.

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REPRESENTATIVE EDGMON asked if this means a district would still receive funding even if its plan is not approved by September 1.

MR. BATES indicated that funding for districts that fail to meet the deadline depends on whether the district is making progress on its plan. The department has not heard from a couple of districts, he said, and it would make no sense to continue funding a district if it has no intention of revising its plan.

[1:36:45 PM](#)

TOM LOHMAN, Wildlife Specialist, Department of Wildlife Management, North Slope Borough; Vice Chair, Alaska Coastal District Association, supported CSSB 46(RES). The North Slope Borough needs the extension, he said, in order to successfully complete its district plan revision. He noted that in terms of coastal area, the North Slope District has the second largest in the state. He agreed with Mr. Bates that 26 of the 28 active coastal districts will have approved plans in place by the extended deadline. However, he stressed, very few districts will be satisfied with their approved plan. Mr. Lohman took issue with Mr. Bates' statements about educating the districts. He said that over the past three years the North Slope Borough has been continually surprised with regard to where it stands with DNR. The borough, he stressed, has found it impossible to craft policies on subsistence and activities in outer continental shelf waters, two topics of extreme importance to the borough. He also noted that the lack of continuity in DNR's staff over the past three years has resulted in interpretations changing numerous times. While there might be other vehicles to address some of those differing interpretations, the deadline extension is essential for the North Slope Borough, he advised.

[1:40:01 PM](#)

MARLENE CAMPBELL, Coastal Management Coordinator, Government Relations Director, City and Borough of Sitka, supported Mr. Lohman's statements and thanked Senator Olson for the bill. She said that many districts are facing extinguishment of their programs until their new plans are in place on March 1. Sitka has done everything in its power to comply with deadlines, she explained. The state has done three major reviews, and each time has changed Sitka's plan by forcing removal of more of the district's enforceable policies. The district, she opined, now has less than half of what it once did. Furthermore, what is left is not nearly as protective as they had hoped it would be. Sitka submitted its final plan amendment by the August 10, [2006] deadline. However, Sitka did not hear back from the state until the commissioner's November 24, [2006,] approval, which required removal of yet more of the district's enforceable policies. Sitka deleted the policies and submitted its revised plan on January 5, 2007, but this document was not submitted to the National Oceanic and Atmospheric Administration (NOAA) for federal approval until January 22, she said. Ms. Campbell emphasized that because of the timeframe there is no way Sitka's plan can actually be in operation by March 1, and the extension will afford continuity of the district's plans.

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GARY WILLIAMS, Coastal District Coordinator, Kenai Peninsula Borough, stated that the bill is necessary because 14 coastal district plans will expire if the legislation is not passed. Nine of these are the largest of the coastal districts, and this includes the Kenai Peninsula Borough's district, he said. The task of updating the coastal district plans to conform to legislation has been a daunting task, not only for the coastal districts but also for OPMP. This effort has turned out to be much more complex and time consuming than anyone could have foreseen, he emphasized. With at least nine of the districts certain to miss the deadline, he stated, it only makes sense to provide an extension of time because an extension will have no negative effect on any person or process.

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CAROL SMITH, Planner/Coastal Coordinator, City of Valdez, testified that the [Valdez Coastal Management District] fully supports passage of CSSB 46 (RES). She said that the district had successfully met all of the program's deadlines so far because of the district's small size and a consultant's help. The district received notice of approval of its revised plan on December 13, 2006. However, she continued, the district is now behind in finishing its plan because the director was out of the office for three months due to an automobile accident. Although the state has been helpful in working through most situations, she stated, the Valdez district believes the deadline extension will make it possible for most districts to finish their plans.

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CO-CHAIR JOHNSON closed public testimony after ascertaining that there was no one else wishing to testify.

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REPRESENTATIVE GUTTENBERG asked whether the sponsor would be proposing other legislation to deal with the other issues.

SENATOR OLSON said, "Yes."

[1:46:39 PM](#)

CO-CHAIR GATTO moved to report CSSB 46(RES) out of committee with individual recommendations and the accompanying fiscal

notes. There being no objection, CSSB 46(RES) was reported from the House Resources Standing Committee.

The committee took an at-ease from [1:47:27 PM](#) to [1:50:43 PM](#).

OVERVIEW: COOK INLET GAS: REALITY & EXPLORATION POTENTIAL

[1:50:43 PM](#)

CO-CHAIR JOHNSON announced that the last order of business would be an overview presented by the Division of Geological & Geophysical Surveys - Cook Inlet Gas: Reality & Exploration Potential.

[1:50:55 PM](#)

BOB SWENSON, State Geologist, Acting Director, Central Office, Division of Geological & Geophysical Surveys, Department of Natural Resources, presented an overview entitled, "Alaska Gas Exploration Potential - The Cook Inlet and Other Basins". He first reviewed five "Take Home Points": 1) Because of market issues, focused exploration for natural gas in Alaskan basins is in its infancy; 2) Of the 36+ trillion cubic feet (tcf) of gas reserves, nearly all was discovered while looking for oil; 3) Published resource assessments often have very large associated "error bars," variation assessments; 4) Significant exploration potential exists in a number of basins across the state, however economics and access to market will play key roles in level of activity; 5) In the Cook Inlet, most of the easy and inexpensive gas has been found and delineated.

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MR. SWENSON pointed out that the map of Alaska on slide 4 of his PowerPoint presentation clearly shows that a significant amount of land in the state has no existing infrastructure. He noted that the polygon superimposed on the map delineates the size of Colorado in comparison to Alaska. Sedimentary basins with oil and gas potential are shown in yellow, he explained, and the dominant hydrocarbon potential in most of the basins is gas.

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MR. SWENSON advised that there is significant gas potential in the Colville Basin adjacent to the Brooks Range and in the offshore basins of the Beaufort and Chukchi seas. He noted that most of the exploration on the North Slope has been focused on the Barrow Arch shown on slide 5 and that this is where Prudhoe

Bay is located. He pointed out that the lands colored in red are state acreage and the rest is federal acreage.

[1:55:56 PM](#)

MR. SWENSON reported that the division has conducted a significant amount of surveying along the front of the Brooks Range looking at the geology as well as the hydrocarbon potential. Referring to the satellite image of the Brooks Range on slide 6, he explained that the lighter colored polygons indicate the areas that have been mapped by the division. He then moved to slide 7 showing a close-up image of the area near Anaktuvuk Pass where numerous leases have been purchased over the last three years.

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MR. SWENSON further advised that the North Aleutian Basin shown on slide 8 also has significant gas potential. The red lines delineate the annual areawide sale for onshore and offshore state acreage, he said. The varying shades of grey on the map indicate the thickness of the basin – light grey signifies where the basin thins dramatically to the north and black signifies where the basin thickens significantly as it reaches onshore areas.

[1:57:30 PM](#)

MR. SWENSON noted that slide 9 shows the seismic interpretation for the Bristol Bay offshore region where Shell and Hewitt Mineral Corporation purchased leases during the first annual lease sale [in 2005]. The thick 150-mile-long "sedimentary package" shown on the slide indicates significant exploration potential, he said. To illustrate the immensity of the Bristol Bay region he moved to slide 10 where an outline of the Arctic National Wildlife Refuge 1002 area is superimposed within the bay.

[1:59:27 PM](#)

MR. SWENSON described the Gulf of Alaska depicted on slide 11 as a "sleeper area." The green dots indicate onshore oil seeps along the gulf, he explained, and the red dots indicate onshore and offshore wells drilled between the 1950s and 1982. The geological cross section drawn at the bottom of the slide shows that the area is a classic thrust belt, he said, and all the tertiary sediments that contain the hydrocarbon potential are

caught up in this thrust belt. The Gulf of Alaska is one of the oldest oil provinces in the state - 300,000 barrels of oil were produced in the early 1900s before the local refinery burned down. He said the natural oil seep shown on slide 12 is located on Brower Ridge and seeps about a barrel of oil per day.

MR. SWENSON emphasized that the resource assessment numbers on slide 13 are estimates for the "technically recoverable" gas in Alaska and do not include an "economic filter." For a near-field area, the economic recoverable reserve estimate would be very close to the technically recoverable number, he said; however, the numbers for reserves located far away from infrastructure would be quite different. He explained that the estimates are a range of numbers because they are "probabilistic estimates" compiled from all the different data sources. Using the Chukchi Sea as an example, he pointed out that the estimated reserve is an extremely large range of 13.6 - 154.3 tcf. In a probability distribution the smaller number of the range is the 95th percentile, meaning there is a 95 percent chance that the amount of the reserve is larger than the smaller number. The largest number in the probability range is the 5 percent number, meaning there is a 95 percent chance that the reserve is smaller than the larger number. What is usually reported and published is the mean of these numbers which, in this example, would be 60.1 tcf. The more limited the geologic information the larger the range, he continued, and using the mean is problematic because it does not represent the entire distribution and the amount of information that is contained within any given area.

MR. SWENSON subsequently reviewed the known and estimated gas reserves for Alaska's three regions: Southern Alaska has 2 tcf of known reserves in Cook Inlet plus a mean estimate of 20 tcf of undiscovered conventional gas; Central Alaska has a mean estimate of 9 tcf of undiscovered conventional gas; and Northern Alaska has 33 tcf of known reserves plus a mean estimate of 150 tcf of undiscovered conventional gas. He stated that the total of proven, or known, gas reserves in Alaska is 36 tcf as shown on slide 14.

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MR. SWENSON then focused attention on the exploration potential of the Cook Inlet. He reviewed the stratigraphy for the Tertiary period on slide 15, noting that the West Foreland and Hemlock formations house the oil reservoir, and the gas is all reserved except for a small portion of associated free (biogenic) gas that is located in the Tyonek, Beluga, and

Sterling formations. Referring to slide 16, he explained that the red triangles are the volcanoes along the Aleutian Trench associated with the subduction of the Pacific Plate underneath the North American Continent, and the blue X's are all earthquakes associated with the subduction.

MR. SWENSON pointed out that slide 17 is a cross section of the subduction zone located under the red line previously shown on slide 16. He said the Pacific Plate is currently moving under the North American Plate at about the same rate as a fingernail grows. This is relatively fast in geologic time, he emphasized, and this is why there are a tremendous number of earthquakes along the south Alaska margin. As the Pacific Plate subducts, two things happen: it partially melts and then rises up, causing volcanoes along the Alaska Peninsula; and sediments are scraped off the Pacific Plate as it subducts, causing formation of the Chugach Mountains. Between those two geologic phenomena, he continued, is what is called a "forearc basin" and that is the Cook Inlet Basin. He said the Cook Inlet Basin is unique because there are very few forearc basins in the world that have hydrocarbon production.

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MR. SWENSON further explained that this uniqueness is because of the source rock in the Cook Inlet Basin and because of the thickness and deformation history of the basin. Up to 95 percent of the basin's gas is what is called "biogenic" gas which comes directly from coals. The oil in the Cook Inlet is from the Mesozoic section that underlies the entire Cook Inlet Basin.

MR. SWENSON proceeded to slide 18 and the importance of provenance in the Cook Inlet. The basin is bounded by a series of faults, he said, and contained within those faults is a series of depositional environments. Through time, sediments from the volcanic arch and the forearc basin have filled up the Cook Inlet Basin. He pointed out that non-marine meandering stream systems like the one shown on slide 19 are what filled the Cook Inlet Basin. These types of depositional environments, he explained, create areas called crevasse splays, point bars, and flood plain channel abandonment. As they are buried these depositional environments will create rock that house hydrocarbons. The green areas shown in the picture, he continued, will become coals as they are buried.

[2:09:57 PM](#)

MR. SWENSON commenced to slide 20 depicting the aforementioned deposition in three-dimensional terms. As the basin subsides, he explained, these different depositional environments become stacked on top of one another and a very complex series of reservoirs develops. He stressed that seismic imaging of this type of depositional system can be very difficult, making it hard to determine where a trapping configuration might be located.

MR. SWENSON displayed a photograph from the Healy Mine area north of the Alaska Range that illustrates what this type of deposition looks like in an outcrop on land. He explained that the thick coal seams in the photograph would be associated with the green areas shown on slide 19 and the sandstones interbedded within the coals are from the meandering streams that swept back and forth across the basin as it subsided.

[2:11:03 PM](#)

MR. SWENSON then referred to slide 22 showing well logs for the Beluga River Gas Field. He explained that this depiction relates to the previous 3-D diagrams and is what is seen when the well is drilled. The yellow represents the sand bodies, he said, each of which is perforated and produces gas up into the well bore. He noted that this structure of repeated coal, sandstone, and mudstone layers can be up to five miles thick in the Cook Inlet Basin and is one reason why the basin is so prolific.

[2:11:54 PM](#)

MR. SWENSON pointed out that exploration in the Cook Inlet began in the 1950s with the discovery of the Swanson River Field, slide 24, and that there have been a number of discoveries since that time, slide 25. There was a large spike of exploration wells in the mid-1960s, he said, and by the time Prudhoe Bay was found in 1968 over 2 billion barrels of oil and almost 8 tcf of gas had been discovered in the Cook Inlet. Much of the exploration activity then moved to the North Slope. At that point in time, he explained, there was a significant amount of "stranded" gas in the basin, meaning there was no market for that gas. He noted that gas-specific exploration did not begin until recent times.

[2:13:05 PM](#)

MR. SWENSON discussed the graph on slide 26 portraying gas field size distribution for the Cook Inlet. He explained that there are a number of relatively small fields of 100-300 billion cubic feet (bcf) and a number of large fields of 1-2 tcf, but that there are virtually no fields in between these sizes. The question, he said, is where are these "in-fill" fields.

[2:13:46 PM](#)

MR. SWENSON then directed the committee's attention to the historical and projected gas production for the Cook Inlet shown on slide 27. Based on current known reserves in the Cook Inlet Basin, he said, projected production is now about to drop off a cliff. He emphasized that this prediction is based only on proven reserves in the current fields and does not incorporate probable reserves or exploration reserves.

[2:15:35 PM](#)

MR. SWENSON predicted that there is more gas to be found and it will be found in existing fields and in new "exploration play types." However, he said, there are hurdles to overcome such as the incredibly high costs of operating and drilling in an offshore scenario, a limited market because of the Alaska market not being open to the Lower 48 market, and complicated land access.

MR. SWENSON spoke about the gas exploration potential in the Cook Inlet pointing out the following on slide 29: 1) Only structural traps have been explored for and developed; stratigraphic trap potential remains untapped; 2) Eighty-five percent of the gas discovered early in the exploration cycle was found while drilling for oil; 3) Only 70 exploration wells have been drilled for gas, and those were drilled very recently; 4) Four of the largest fields have 86 percent of the reserves; and 5) Field-size distribution lacks discoveries in the 300-1300 bcf range with the question being whether this size range will be discovered.

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MR. SWENSON moved to slide 30 showing diagrams of the different oil and gas trapping mechanisms. He noted that to-date the "exploration play type" looked at in the Cook Inlet Basin has been limited to anticlinal traps like the one diagramed at the top left of the slide. In the lower left corner is a diagram of the thrust fault, he said.

MR. SWENSON then interpreted four slides showing seismic data. He explained that the seismic data on slide 31 shows the incredibly large folds at Granite Point in the north Cook Inlet Basin. He noted that the next type of exploration play is down "off-structure" in stratigraphic traps. Slide 32, he continued, shows what geologists call "low hanging fruit," meaning the North Cook Inlet Field has classic "direct hydrocarbon indicators" (DHIs). The gas field is located at the top left of the slide, he said, and is indicated by the two bumps in the lower part of the seismic line. The velocity of the seismic signal slows down when it goes through gas, creating what geologists call gas "push-down." This "push-down" shows up as a dip in the seismic data, he explained, indicating there is a thick gas column above the dip. On slide 33 he pointed out the "flat spots" that indicate a contact between gas and water, and that this gas is trapped rather than free.

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MR. SWENSON, responding to questions, stated that he thought the size of the North Cook Inlet Field shown in slide 32 is a reservoir of about 1.2 tcf of gas, and that both the Sterling and upper Beluga sections have multiple layers that contain gas. He reiterated that while there has been a significant amount of exploration in the Cook Inlet Basin, these early phases of exploration were only for oil, not gas. Other than the 70 recently drilled wells, he said, there has not been a concerted effort to specifically look for gas.

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MR. SWENSON turned to the seismic data shown on slide 34. He pointed to the area of the slide where the sand, coal, and mudstone layers "pinch-out" laterally and "up-dip." He explained that if there is a viable seal in the pinch-out area, this would constitute a stratigraphic trap. He noted that this type of play has not yet been significantly looked for in the Cook Inlet Basin, but that part of the play in Prudhoe Bay is a stratigraphic trap. He further explained that the volume of gas contained in this type of stratigraphic trap depends on the seal capacity and the height of the hydrocarbon column. If the stratigraphic traps are a very low angle, he said, the volume can be relatively large.

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MR. SWENSON reported that in 2006 the Division of Geological & Geophysical Surveys initiated a study of the entire Cook Inlet Basin. He displayed four photographs, slides 35-38, of the stratigraphy in exposed landforms near Fritz Creek, Fox River, Homer, and Diamond Gulch - areas located along the edge of Cook Inlet Basin. He explained that this stratigraphy extends all the way through the Cook Inlet Basin, so the basin's geology can be determined by studying these exposed landforms. He further explained that the exploration potential of the landforms themselves is lessened because the stratigraphy is uplifted and exposed. Mr. Swenson displayed seismic data on slide 39 and explained that the division's main focus is to identify and publish the geology of the basin's edge. This geology will be very important for "non-structural play types" in the Cook Inlet Basin, he said.

MR. SWENSON thanked Veritas Geophysical Corporation for providing seismic data to the division. He noted that the data is provided through an agreement between Veritas and the Department of Natural Resources. He said use of this data is extremely important to state geologists because it gives them the ability to "get into the subsurface" and to use the exposed outcrops for extrapolating the information into the Cook Inlet Basin.

MR. SWENSON next explained that the purple line around the land and water of Cook Inlet on slide 42 delineates the Tertiary Gas Potential Fairway. Areas outside of the line have limited gas exploration potential. He noted that the different colors for land on the map indicate their status: light green is federal acreage, pink is Alaska Native Claims Settlement Act (ANCSA) acreage, and blue is state acreage. All of the offshore acreage also belongs to the state, he said.

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REPRESENTATIVE SEATON asked why Kachemak Bay, east of Homer, is of such interest to gas companies given that it is located outside of the high gas potential boundary.

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MR. SWENSON related that the interest is only because Kachemak Bay is located on the basin's edge. He explained that in a biogenic gas system it is important to have a relatively thick stratigraphy to accumulate enough gas to migrate into the traps.

However, the Tertiary sediment is thin in Kachemak Bay, so it was excluded from the area of high potential, he said.

MR. SWENSON next referred to the 2006 Cook Inlet Areawide Sale depicted on slide 43. He advised the committee to keep in mind the boundary shown on the previous slide as members looked at the lease locations. The tracts shown in dark blue were purchased during the 2006 sale, he said, and the pink is previously owned tracts. He specifically pointed out that all of the state acreage along the Sterling Highway was sold in the 2006 sale and that there is significant potential for lands adjacent to those state leases.

MR. SWENSON then directed the committee's attention to non-conventional exploration gas and stressed that this would be an important part of increasing the amount of reserves in the Cook Inlet Basin. Slide 44 illustrates a "stacked pay" well where the shallow gas is at a lower pressure than the deeper gas. He said this requires the running of two or three "completion strings" to keep the two pressure zones separate. If a gas/water contact moves into the well bore, he explained, the water causes significant production problems. To shut off the water the producer must go through the very expensive process of pulling the entire tubing string out of the well. He advised that going back and fixing "watered-out" wells in the Cook Inlet will be one way for increasing production from known reserves.

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MR. SWENSON reported that tight gas sands, illustrated on slide 46, are another type of non-conventional exploration gas. He explained that "porosity" is the size or amount of free space between the sand grains and "permeability" is how well fluid can flow between those pore spaces. He noted that a number of well bores in the Cook Inlet Basin have very prolific production because they are in sands with high porosity and high permeability. He explained that in tight gas sands the deliverability is significantly less because the porosity and permeability are low. However, he emphasized, tight gas sands are a potential target because they have the potential to reservoir significant resource. For example, he said, producing 10 million cubic feet per day from wells in fractured shale was inconceivable 20 years ago. He stressed that diligent application of new technologies is essential.

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CO-CHAIR GATTO inquired as to whether there has ever been a major gas field that became exposed due to uplifting and then subsequently vented completely into the atmosphere.

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MR. SWENSON explained that the oil seep shown in the Gulf of Alaska photograph is exactly that scenario. Of course, he said, exhumed gas fields are tougher to see than exhumed oil fields because the evidence is not really visible. There are gas seeps all around, he explained, including one that was recently discovered by the division in the Port Moller area of Bristol Bay.

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CO-CHAIR GATTO asked if it is possible to establish the date of a massive venting and correlate whether that venting led to a warming trend so as to determine whether man's contribution to global warming is significant or not.

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MR. SWENSON advised that while he had not seen any actual calculations, he assumed that the amount of methane generated by biodegradation at the earth's surface is far more than the release from one gas field. For example, he said, the Susitna Basin produces an astounding amount of methane, and all across the state bubbles can be seen coming up from the tundra.

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CO-CHAIR JOHNSON queried as to whether new technology is actively being developed by the industry.

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MR. SWENSON stressed that the oil companies are being very diligent in this regard. The use of technology in the Cook Inlet Basin must be put into the context of the initial reserve amount of 8.2 tcf of gas, he explained. At that time, the amount of deliverability from those fields was tremendous, but the market was only just developing. As the deliverability starts approaching the "off-take," or the market, those technologies will start coming into effect. He emphasized that as time goes on, technology will play an important role in adding reserves to the Cook Inlet Basin.

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CO-CHAIR JOHNSON asked what is the reality of running out of gas.

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MR. SWENSON stated that the market drives the amount of exploration – what the market is willing to handle in volume as well as the price. Much of the exploration from this point forward, he said, will require additional investment by the exploration companies. The ability to have access to the market at a fair price is going to be incredibly important. He emphasized that there is definitely significant resource potential in the Cook Inlet. However, he warned, the hurdles toward that exploration can be onerous. These hurdles include land access, the cost of drilling, the cost of seismic acquisition, and the permitting. Concerning actually running out of gas, he stated that any hydrocarbon is a finite resource assuming that all of the resource has been identified – and that is really the key point.

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CO-CHAIR JOHNSON noted that the legislature has control over the hurdle of permitting and ensuring that it happens in a responsible way.

ADJOURNMENT

There being no further business before the committee, the House Resources Standing Committee meeting was adjourned at [2:37:21 PM](#).