



page 3 McGuire pushes Alaska Arctic policy, PNWER drilling support

## July Mining News inside



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*335-meter copper-gold interval intrigues investors, spurs exploration*

This exploration center continues to provide a base for field activities in support of permitting the 46 million-ounce Donlin Gold project in the Kuskokwim region of Southeast Alaska. It recently sold \$10 million in cash and cash equivalents at the end of the second quarter. Newagold Resources Inc. said it has more than enough money for field and the full of permitting the Donlin Gold project as well as fund the exploration and other ongoing activities at its Galore Creek copper-gold project in British Columbia. Page 12

A special supplement of Petroleum News  
WEEK OF  
July 28, 2013

The July issue of North of 60 Mining News is enclosed.

## Alaska gets pipeline, just barely

July 17 marked the 40th anniversary of a pivotal moment in Alaska history.

It came in 1973 in the U.S. Senate.

“Vice President Spiro Agnew cast the tie-breaking vote on an amendment offered by Senators Mike Gravel and Ted Stevens to remove all environmental and legal impediments to the pipeline carrying oil south from Alaska’s North Slope,” the Senate’s official Alaska timeline says.

see PIPELINE HISTORY page 15

## Young backs Parnell’s ANWR idea

Back in 2008, longtime Alaska Congressman Don Young drew a Republican primary challenge from Sean Parnell, then the state’s lieutenant governor.

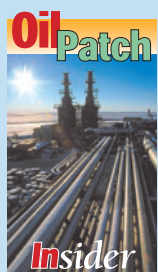
During the campaign, Young would taunt Parnell, calling him “Capt. Zero.”

Ultimately, Young would win re-election. Today, he remains in Congress, while Parnell occupies the governor’s mansion.

see ANWR IDEA page 15

## Shell hires, Pioneer wins award

ALTHOUGH MEDIA ATTENTION on Shell’s problems with its Alaska Arctic exploration program and the deferral of similar programs by ConocoPhillips and Statoil has tended to question the oil companies’ continuing commitment to the Arctic offshore, a recent half-page advertisement by Shell in the Anchorage Daily News would



see INSIDER page 14

## EXPLORATION & PRODUCTION

# Much more to go

Upping recoverable reserves at Prudhoe Bay requires high-tech solutions

By ALAN BAILEY

Petroleum News

With an estimated 22 billion barrels of oil in place at the start of production in 1977, Prudhoe Bay on Alaska’s North Slope is one of the world’s largest oil fields.

The cumulative production of the field’s originally estimated volume of 9.6 billion barrels of oil reserves — the volume that engineers thought could realistically be drawn from the field reservoir — was reached in 1998. And today the field continues to dominate North Slope oil production and underpin Alaska’s

1 2  
SERIES

see PRUDHOE RESERVES page 10



BP EXPLORATION (ALASKA) INC.

The huge Central Gas Facility in the Prudhoe Bay field processes up to 8 billion cubic feet per day of natural gas produced from the field. The facility compresses the gas, the bulk of which is injected back into the field’s gas cap to maintain field reservoir pressure.

## NATURAL GAS

# LNG prods gas sector

Upstream activity on ‘cusp of renaissance’ as LNG projects round up resources

By GARY PARK

For Petroleum News

North America’s natural gas sector shows early signs of breaking free from the bonds of the past five years.

Kevin Heffernan, president of the Canadian Society for Unconventional Resources, told a conference in Calgary earlier in July that the Canadian upstream sector is on the “cusp of a renaissance.”

As Canadian LNG export proponents start seriously laying the groundwork for their projects, attention is turning to securing the necessary gas supplies to underpin final investment decisions.

Meanwhile, new forecasts point to 2.57 percent annual growth in North American natural gas-fired

Even so, the latest industry statistics from 146 of Canada’s leading producers point a troublesome trend, with proven reserves dropping sharply last year to 36.53 trillion cubic feet from 40.86 tcf.

power generation, according to the consulting firm of Black & Veatch, while Calgary-based Ziff Energy Group is predicting annual growth of 1.3 percent.

Heffernan said the gas activity lull during prolonged weak gas prices has not all been bad, noting it has given the industry time to absorb and take advantage of a technological evolution and revolution.

During the slump some companies have been able

see GAS SECTOR page 11

## EXPLORATION & PRODUCTION

# Revisiting 1995 decision

Triggered by issues in propane hearing, commission looking at Prudhoe MI rates

By KRISTEN NELSON

Petroleum News

Under a 1995 order from the Alaska Oil and Gas Conservation Commission, Prudhoe Bay field operator BP Exploration (Alaska) is maximizing production of blendable natural gas liquids from the field.

But does that promote maximum ultimate recovery or should BP be focused on production of miscible injectant which is used for enhanced oil recovery projects, resulting in more crude oil production?

AOGCC is revisiting its 1995 decision following a



CATHY FOERSTER



JANET WEISS

production.

In 1995, when Prudhoe Bay had two operators, BP and ARCO Alaska, and the owners held different interests in the oil rim and the gas cap at the field, the

2012 hearing on potential waste of propane at Prudhoe.

After that hearing the commission determined that the best use of propane was for reinjection, not for sale. However, the commission is now asking Prudhoe operator BP if it could be producing more miscible injectant, MI, which is used in enhanced oil

see 1995 DECISION page 11

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Upping recoverable reserves at Prudhoe Bay requires high-tech solutions



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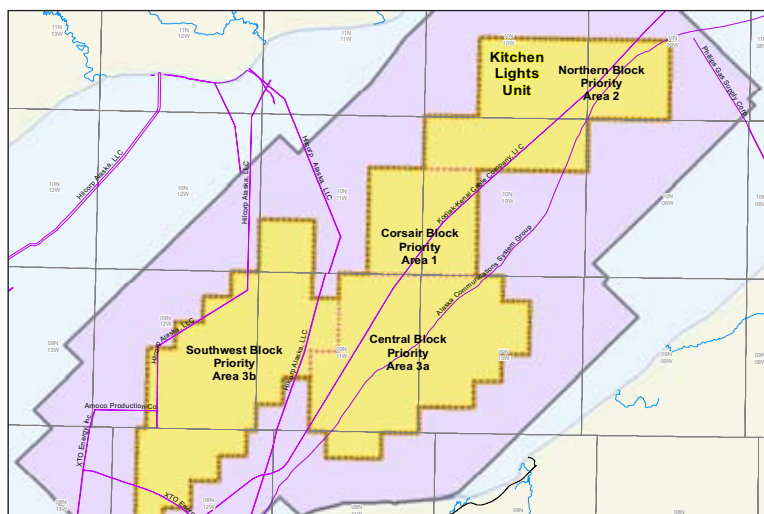
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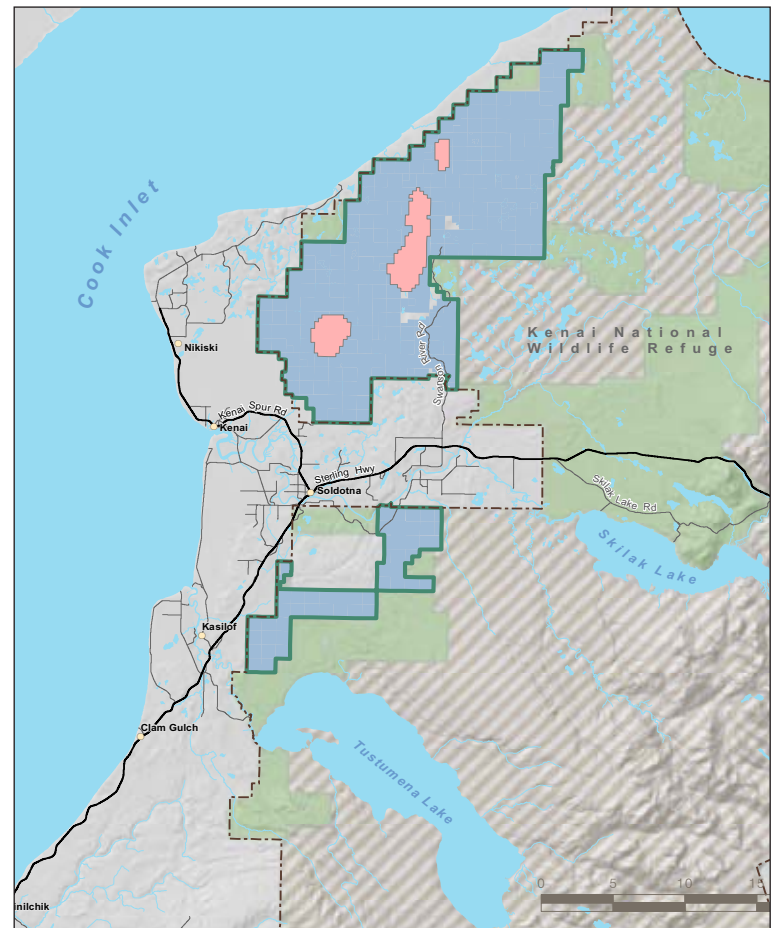
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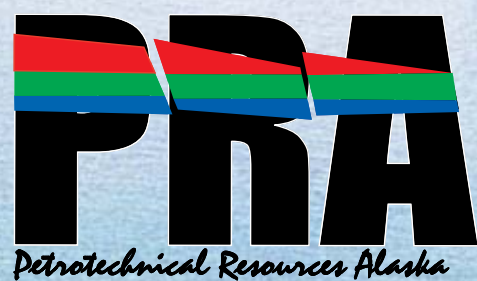
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A land use permit will allow Apache to conduct a 3-D seismic survey in CIRI land under the Kenai National Wildlife Refuge

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Anchorage Republican senator co-chairs Alaska Arctic Policy Commission, formerly headed PNWER, urges states to back Arctic drilling



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GOVERNMENT

# McGuire pushes Arctic policy for state

Anchorage Republican senator co-chairs Alaska Arctic Policy Commission, formerly headed PNWER, urges states to back Arctic drilling

By STEVE QUINN  
For Petroleum News

Senate Rules Chair Lesil McGuire once served as president for the Pacific Northwest Economic Region organization, a collection of policy and industry leaders from Canada and Alaska, Idaho, Washington, Montana and Oregon. Her two-year stint ended in 2010, but her involvement remains strong. She served as lead when PNWER's annual conference came to Anchorage in July.

McGuire, an Anchorage Republican, said one of the prevailing discussions was economic development in the Arctic, something she and Rep. Bob Herron, a Bethel Democrat, are tasked with as the state's Arctic Policy Commission co-chairs.

McGuire spoke to Petroleum News about Arctic issues discussed between both groups, the commission's upcoming meeting in Unalaska and her concerns over the prospects of oil tax reform being overturned by voters.

*Petroleum News: Let's start with PNWER. What's the value of this organization when you have states that don't exactly have the same interests as Alaska and vice versa?*

McGuire: PNWER is a one of a kind organization and we're so lucky to be part of it here in Alaska. It's the only group of its kind that brings public policymakers and private sector leaders who have to deal with policy day in and day out that we make together, and it's the only organization on top of that that brings together two countries to talk about things that directly affect economic growth. It's a very targeted group. At the starting point, 650 delegates (were) here to learn about Alaska's economic development in the Arctic, Cook Inlet and the Interior. The members from Alaska already here learn from other members about their economic development successes as well so we can share best practices.

*Petroleum News: You spoke of the relationship with federal government in the past. Is there a way to use PNWER to enable Washington, Oregon, Montana and Idaho to align their interests with Alaska to have a louder voice?*

McGuire: One of my goals as host committee chair was to invite our neighbors in the PNWER region of the United States to develop a vested interest in the development of the Arctic alongside Alaska. To become educated about what the opportunities were for jobs for North American supplies of energy to the people in their state and to see how their (federal) government was lagging behind other countries like Russia. It's my hope that we build these allegiances and build these new partnerships. It's my hope that we sent back plane loads of people who feel it's in their best interest to promote development of the Arctic now.

*Petroleum News: One of the conference's reports detailed how the U.S. clearly lags behind in Arctic development. What are your thoughts on that assessment?*

McGuire: The fact that Alaska has so much potential and on the other hand is so far behind in terms of rig count and

wells drilled. (Former Alaska senator and federal pipeline coordinator) Drue Pearce showed a map with the number of wells successfully drilled in Russia, the number of polar class icebreakers to service these wells and the people in the Arctic. On the other hand she showed us Alaska and its lack of development; then she walked the crowd through how long it took Shell to secure its permits, all of the various federal agencies that had to weigh in and the cumbersome nature of the process. So that's been on the forefront of everyone's mind: how to get Alaska into a position where we can be better developed.

When I spoke about the Arctic, I said Alaska's best days are yet to come. They are not behind us in the Prudhoe Bay development and the trans-Alaska pipeline. That's just one chapter of Alaska's history. The opportunity to develop the Arctic offshore and the methane gas onshore bring such a profound opportunity for Alaskans by way of jobs, social enhancements for people who live in that region if done carefully.

All of this requires good research, thoughtful people at the table. When the ability to insert ourselves into a dialogue with the federal government that has been another theme that comes up over and over: how often Alaska's manifest destiny is thwarted by our inability to align goals with the federal government and navigate through the system. Then of course how successful our Canadian neighbors have been in their individual provinces and territories by executing economic development.

Bob Herron and I have had meetings with federal Canadian officials who have been charged with developing the Arctic policy over the last seven years. We want to work with those officials to help guide us in how to assert ourselves more into the federal process and make it



SEN. LESIL MCGUIRE

more of a Northern vision.

*Petroleum News: What else did you learn about where Alaska stands in Arctic development from people like one of your featured speakers, John Higginbotham?*

McGuire: We are woefully behind. The excuse can't simply be that the region is remote and expensive to operate in because when you look at the North Sea, when you look at Russia and when you look at what the Chinese are doing with other investment partners, you can see that the United States has a unique opportunity as landholders along the Arctic, yet we are woefully behind. There are countries who have no territorial stake in the Arctic and are far more advanced in their Arctic policies, in their dedications of resources to the Arctic and in their Arctic development as an investment prospect as part of their economic plans. Yet the United States, which clearly has such vested interest from a lands claims aspect and an eco-

conomic aspect is horribly behind.

*Petroleum News: So what can the state of Alaska do to spur this?*

McGuire: By forming under statute the Arctic Policy Commission, the state has set a clear priority around the development of an Alaska-based Arctic policy. Appointing Bob Herron and me as co-chairs alongside 27 others who are experts from their respective industries and communities, and bringing us together to discuss the opportunities and making them a reality has been

step number one.

Step number two has been our tenacious advocacy inserting this Arctic policy commission into every federal dialogue we can find with legitimacy. The first opportunity we had was in Barrow. We invited the federal group in town to give us an update on the first draft of Obama's policy, and to explain how they came about that first draft, what their plans were, what their timelines were,

see MCGUIRE Q&A page 13

## Q&A



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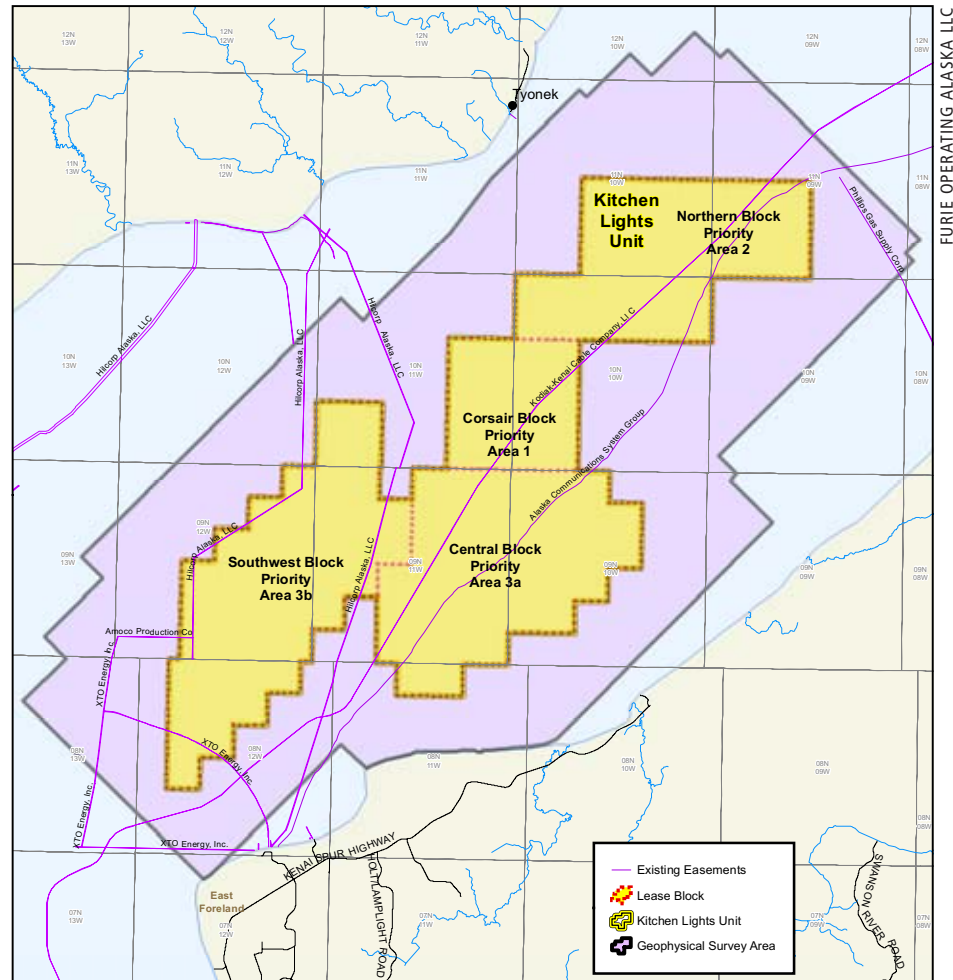
To view the complete expansion plans and more, go to [www.deadhorseaviationcenter.com](http://www.deadhorseaviationcenter.com).

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## EXPLORATION & PRODUCTION

# Furie applies for seismic survey permit

Wants to conduct offshore 3-D survey in Kitchen Lights unit in Alaska's Cook Inlet to better characterize subsurface geology

By ALAN BAILEY  
Petroleum News

Furie Operating Alaska has applied to the Alaska Department of Natural Resources for a permit to conduct a 3-D seismic survey in the Kitchen Lights unit in the Cook Inlet. The company has been conducting offshore exploration drilling in the unit using the Spartan 151 jack-up drilling rig and recently completed testing of its third well in the unit before starting to drill a fourth well. According to Furie's plan for the seismic survey submitted to Alaska's Division of Oil and Gas, Furie, having "encountered potential oil and gas reserves," wants to acquire 3-D seismic data "to characterize the subsurface geological structure and confirm exploration and drilling targets and reservoirs."

To ensure data coverage of the entire Kitchen Lights unit the boundary of the proposed seismic survey area lies a couple of miles or so outside the unit boundary.

The state's public notice for the permit application says that Furie anticipates taking 120 days to complete the survey, with survey start and end dates dependent on the timing of permit authorization. The exact duration of the survey will depend on factors such as the Cook Inlet commercial fishing schedule and any other seismic operations conducted in adjacent areas, the state says. Furie's plan says that the company anticipates starting the survey in a high-priority part of the unit, referred to as the Corsair block, followed by a northern block, and then central and southwestern blocks.

### Other permits

The plan says that, in addition to a state geophysical permit, Furie will need an incidental harassment authorization from the National Marine Fisheries Service, a U.S. Army Corps of Engineers permit and

see **FURIE SEISMIC** page 9



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● EXPLORATION & PRODUCTION

# NordAq following in footsteps of FEX

Independent planning work on state acreage in Smith Bay, also in NPR-A area where FEX reported positive drilling results in 2007

By KRISTEN NELSON  
Petroleum News

As Petroleum News reported last week, NordAq Energy Inc. has permitting under way for exploration drilling in Smith Bay off Alaska's North Slope this winter season, and for proposed work in the National Petroleum Reserve-Alaska in following winter seasons.

These are areas where FEX worked in the 2000s, shooting seismic in Smith Bay and NPR-A and drilling in NPR-A, over what appears to be the same acreage.

In an oil discharge prevention and contingency plan filed with the Alaska Department of Environmental Conservation, NordAq said it was proposing to drill in Smith Bay, with 10 Tulimaniq wells listed, and then in NPR-A with four wells listed: Aklaq Nos. 2A and 6A, Aklaqyaaq No. 1 and Amaguq No. 2A.

The Smith Bay wells would be drilled with a land-based rig from a grounded ice island, the company said, with the first season's drilling to begin in January 2014 and be completed by April 21.

## FEX's Aklaqyaaq the best

FEX reported finding oil, but ultimately exited the acreage, apparently deterred by lack of infrastructure, including logistics of working in the area, distance to market and lack of a regular federal Bureau of Land Management leasing program in NPR-A.

In a March 2007 analysts' call by Talisman, parent company of FEX, Talisman CEO Jim Buckee and John 't Hart, the company's executive vice president of exploration, described NPR-A

*The Smith Bay wells would be drilled with a land-based rig from a grounded ice island, the company said, with the first season's drilling to begin in January 2014 and be completed by April 21.*

prospects, with Aklaqyaaq said to be the biggest, with median reserve potential for the three prospects described as hundreds of millions of barrels.

In May 2007, Talisman said the three wells FEX drilled in NPR-A in 2007 all encountered hydrocarbon-bearing sandstones in several formations.

The Amaguq No. 2 was plugged and abandoned; the Aklaqyaaq No. 1 and the Aklaq No. 6 were suspended.

FEX said the "initial estimate of contingent resources present" in formations of the two 2007 suspended wells was "300-400 million barrels" net to FEX, which had an 80 percent working interest in the leases.

Talisman said that in addition to the 300-400 million barrels, "there is significant follow-up potential on many similar structures on Talisman's acreage if commercial productivity is proven," based on log analysis and "strong gas and oil shows, including oil staining and free oil in the drilling mud in one of the wells." FEX said the two wells encountered more than 225 feet of net hydrocarbon-bearing sandstones.

The Amaguq No. 2 was described as "subcommercial given current infrastructure."

Talisman had said FEX would test the rest of the wells during the 2007-08 winter drilling season, but cancelled those plans when NPR-A lease sale schedule was slowed.

The company spent three years drilling wildcats in NPR-A, beginning as a partner in the Caribou well drilled by Total in the NPR-A Northeast Planning Area. It then spent two winters operating its own wells, drilling wildcats in the Northwest Planning Area of NPR-A, onshore south of Smith Bay.

Aklaq No. 2 and a sidetrack were drilled in the winter of 2005-06; Aklaqyaaq No. 1, Amaguq No. 2 and Aklaq No. 6 were drilled in 2006-07.

FEX plugged and abandoned three NPR-A exploration wells in 2010-11 — all near the Ikpikpuk River southeast of Barrow — Aklaqyaaq No. 1, Aklaq No. 2 and Aklaq No. 6.

## NordAq plans

Given the names of the wells NordAq is proposing — Aklaq No. 2A and No. 6A, Aklaqyaaq No. 1 and Amaguq No. 2A — and the acreage, it appears that NordAq is following up on FEX drilling.

NordAq plans to begin in Smith Bay, however, where FEX never drilled, although it did shoot 3-D seismic there.

Rig, camp and equipment will be moved overland by wide-track or low-

pressure vehicles pulling sleighs or trailers, with mobilization from West Dock to Cape Simpson as soon as travel conditions allow.

Cape Simpson is owned by the North Slope Borough and operated by UIC.

Overland travel in 2013-14 from Cape Simpson, northwest of Smith Bay, to the first well site will be via ice trail via low-pressure vehicles or all-terrain vehicles, with supplies and equipment coming to Cape Simpson or the drilling location from Deadhorse. NordAq said the early season route begins at 2P Pad, crosses the Colville River at Ocean Point, and then follows alignment used by previous operators, most recently FEX.

Later in the season a route will become available along Harrison Bay and the Kogru River maximizing use of sea ice and lake ice and allowing for smoother travel.

NordAq said supply and resupply on frozen trails by low-pressure vehicles from Barrow may occur.

An airstrip will be constructed, 5,000 feet or longer, allowing landing by C-130 or similar heavy-lift aircraft.

As reported last week, NordAq proposes to drill up to eight exploration well locations during the 2013-14 and 2014-15 winter drilling seasons offshore in Smith Bay.

see **NORDAQ PERMITTING** page 6

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● EXPLORATION & PRODUCTION

# ConocoPhillips jumps into CD-5 case

Judge grants company intervenor status in lawsuit pitting Center for Biological Diversity against U.S. Army Corps of Engineers

By **WESLEY LOY**

For Petroleum News

A federal judge has granted ConocoPhillips' motion to intervene in a lawsuit seeking to invalidate the company's permit for a planned oil and gas development in the National Petroleum Reserve-Alaska.

"ConocoPhillips is hereby admitted into this litigation as an intervenor-defendant with full rights of participation," U.S. District Judge Sharon Gleason of Anchorage said in a July 24 order.

The case began as Center for Biological Diversity vs. U.S. Army Corps of Engineers.

The Arizona-based nonprofit filed the suit on June 5, asking the court to vacate the Clean Water Act Section 404 permit the Army Corps granted to ConocoPhillips in December 2011 to build and operate a drill site known as CD-5.

The project, in the vicinity of the Colville River Delta, is planned as a satellite development to nearby Alpine, a large oil field ConocoPhillips has operated since 2000.

The Center for Biological Diversity contends the

Army Corps failed to do an updated, site-specific environmental analysis for CD-5, and violated several federal laws including the Clean Water Act, the National Environmental Policy Act and the Endangered Species Act.

## Battle for the frontier

ConocoPhillips has said construction of CD-5 is scheduled to begin in the winter of 2014.

The lawsuit is one of two cases challenging the project.

The other case was filed against the Army Corps by a seven residents of Nuiqsut, a predominantly Inupiat Eskimo village about 8.5 miles southeast of the CD-5 site.

Gleason is presiding over both cases.

The suits would appear to represent resistance to the expansion of oil and gas activity into the western North Slope frontier.

CD-5 is a special project in that it would be the first permanent oil installation inside the vast petroleum reserve, which is west of Alpine and the other producing

North Slope oil fields.

The project is one in a string of existing or planned Alpine satellites.

Once built, the CD-5 pad will connect to the Alpine field via a six-mile gravel road, including a bridge over the Nigliq Channel of the Colville River. An above-ground pipeline will carry a blend of oil, water and gas to the Alpine central processing facility.

The bridge will be the first across a major channel of the Colville.

## Basis for intervention

In its July 9 motion to intervene in the Center for Biological Diversity case, ConocoPhillips said it was "the target of this lawsuit in all practical terms."

The company said it already has invested millions of dollars in CD-5. Were the permit to be vacated, it would "erase over a decade of effort by ConocoPhillips in obtaining the challenged ... permit, and impede development of CD-5 for a substantial and indeterminate period of time."

see **CD-5 CASE** page 9

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## NORDAQ PERMITTING

In future years additional locations may be drilled in Smith Bay or within the Northwest NPR-A.

At the end of the winter 2013-14 season the drilling rig, camp and fuel tanks will be moved to Cape Simpson for summer storage, and equipment would be mobilized from Cape Simpson for winter 2014-15 work.

## Long distances

Even the Smith Bay wells present logistical challenges: They range from 149-157 miles from Drill Site 2P and 68-77 miles from Barrow.

The NPR-A wells are farther out, occupying three blocks of acreage stepping to the southwest from Smith Bay: the proposed location for the Aklaq well would be 155 miles from Drill Site 2P and 82 miles from Barrow; the Aklaq well would be 168 miles from 2P and 79 miles from Barrow; and the Aklaqaaq wells would range from 176 to 197 miles from 2P and 73 to 104 miles from Barrow.

While there are no wells in Smith Bay, there are known oil seeps at Cape Simpson west of Smith Bay.

In 2006, after FEX acquired its Smith Bay acreage, Division of Oil and Gas geologist Paul Decker described the area as a natural oil trap where Brookian topset sands come up against shale in an ancient incised canyon, and said oil from the Cape Simpson seeps likely originates from an "oil kitchen" to the north in the lower Cretaceous source rock system known as the HRZ.

That would put the Smith Bay "area squarely in between the kitchen and the seeps," Decker said. "So you probably have a pretty good plumbing story to be able to charge this with nice light oil."

—A copyrighted oil and gas lease map from *Mapmakers Alaska* was a research tool used in preparing this story.

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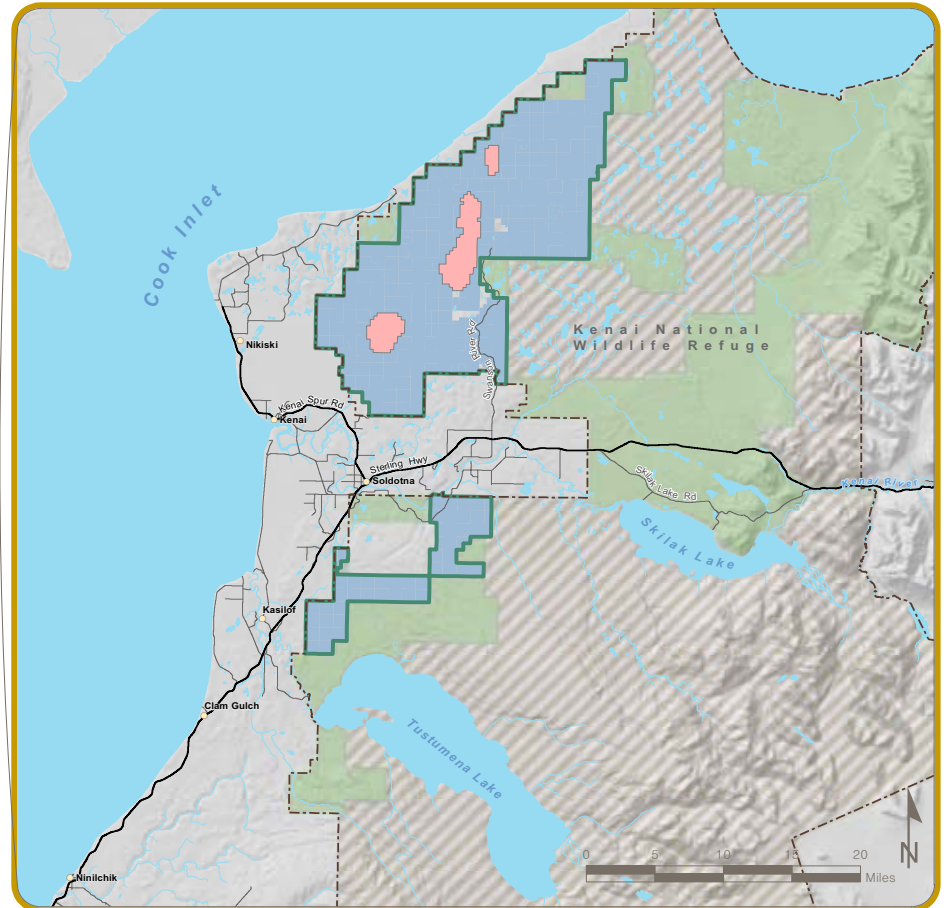


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### Legend

- KNWR Boundary
- Project Area
- Roads
  - Major
  - Secondary
- Rivers
- KNWR Designated Wilderness Areas
- Subsurface Conveyed to CIRI
- Federal Oil & Gas Lease Units
- Refuge Areas Subject to Compatibility Determination

Apache Alaska Corporation  
Cook Inlet Seismic Exploration

KNWR EA - Map 2  
Lands in the KNWR Subject to Compatibility Determination

This map contains public and private data and is intended for informational purposes only. HDR makes no guarantee as to the accuracy or correctness of the data.  
Source: KNWR, CIRI, Apache, DOT, HDR 2012  
Map Created By HDR 4/26/2013

**Apache**

## EXPLORATION & PRODUCTION

# Fish & Wildlife issues Apache permit

A land use permit will allow Apache to conduct a 3-D seismic survey in CIRI land under the Kenai National Wildlife Refuge

By ALAN BAILEY

Petroleum News

The U.S. Fish and Wildlife Service has issued a special use permit to Apache Alaska Corp., allowing Apache to use surface land in the Kenai National Wildlife Refuge to conduct a 3-D seismic survey. The survey, part of a multiyear seismic survey program being conducted by Apache in the Cook Inlet basin, will target subsurface land owned by Cook Inlet Region Inc., or CIRI, under refuge land in the northwestern part of the Kenai Peninsula. Apache has an agreement with CIRI, the Native regional corporation for the Cook Inlet region, for the exploration of CIRI land for oil and gas.

Lisa Parker, Apache Alaska's manager, government relations, told Petroleum News July 23 that, with the special use permit now having been issued, Apache is excited about the opportunities that a seismic survey on the Kenai Peninsula will present for the

company and for CIRI. However, Apache is still working with its contractors to delineate the timing of the survey and has not yet determined a start date, Parker said.

"We know we have a path forward for conducting seismic in that area and we're working to further define that path now," Parker said.

The issuance of the special use permit results from a finding by Fish and Wildlife of no significant environmental impact from the planned survey, with that finding based on an environmental assessment for the survey — Fish and Wildlife issued a final version of the environmental assessment on July 3.

### Wireless technology

According to the environmental assessment the survey, covering an area of about 142,810 acres, will be conducted during the

see **APACHE PERMIT** page 9



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## ENVIRONMENT & SAFETY

### Coalition to appeal dispersants loss

A coalition of conservation and other groups are appealing the dismissal of their lawsuit challenging the U.S. Environmental Protection Agency's regulation of oil spill dispersants.

The coalition in August 2012 sued the EPA in the District of Columbia federal court. U.S. District Judge John D. Bates on May 7 issued a 21-page opinion dismissing the suit as untimely. The dismissal came at the request of the EPA as well as the American Petroleum Institute, which intervened in the case.

The coalition that brought the suit included Alaska Community Action on Toxics, Cook Inletkeeper, Florida Wildlife Federation, Gulf Restoration Network, Louisiana Environmental Action Network, Louisiana Shrimp Association, Sierra Club and Waterkeeper Alliance.

On July 8, the coalition filed notice that it would appeal the court's dismissal. The coalition questions the safety of dispersants used to break up oil spills. It says unprecedented volumes of dispersants were used in the BP Deepwater Horizon oil spill "without prior scientific study and evaluation of the toxicity of those dispersants and any understanding of whether those dispersants were safe for the Gulf of Mexico," said a July 9 press release from the coalition. "Research in the aftermath of that disaster suggests that indeed they were not safe."

The essence of the coalition's claims, Judge Bates wrote, was that EPA violated the Clean Water Act in failing to identify in advance the waters in which listed dispersant products may be used, and the quantities that can be used safely.

EPA decided in 1984 not to pre-specify limits on dispersant use so as to give on-scene coordinators flexibility on how to control a particular spill, the judge said.

Challengers had a limited number of years to contest the EPA's 1984 decision, and "the time for bringing suit has long since passed," Bates ruled in dismissing the coalition's case.

The coalition believes the judge got it wrong, saying: "This interpretation of the law allows an agency to continue violating clear statutory mandates so long as these violations were not caught and corrected within the first six years of their occurrence."

—WESLEY LOY

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### FURIE SEISMIC

a letter of concurrence from the State Historic Preservation Office before the survey can start.

Furie says that it has not yet selected a contractor to carry out the survey but that it anticipates the use of two seismic source vessels, each towing an array of air guns for generating seismic sound signals. Three shallow-draft, jet-driven vessels will

deploy nodal seismic receivers tethered in lines, units or patches on the seafloor. An individual "patch" may consist of three to eight lines of receivers, with each line four to 10 miles in length, spaced 8,000 to 1,700 feet apart, Furie's plan says.

Two additional boats will provide offshore support and crew transportation, the plan says. ●

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### CD-5 CASE

The motion further said ConocoPhillips couldn't rely on the Army Corps to look out for its interests in the case, noting the company and the agency had "quite often been at direct and significant odds regarding CD-5 permitting."

ConocoPhillips struggled to get the permit. The Army Corps initially denied it, saying the satellite could be developed

without a road, bridge and suspended pipeline across the river. Instead, the agency said the pipeline could be installed beneath the channel using horizontal directional drilling.

The Army Corps later reconsidered and permitted the project, dropping the underground pipeline idea.

The plaintiffs in both lawsuits fault the Army Corps for its reversal. ●

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### APACHE PERMIT

winter and will take three winters to complete. Apache plans to use wireless nodal seismic receivers of the type that the company has employed successfully elsewhere in the Cook Inlet basin. The receivers, each a sealed cylinder five inches in diameter and six inches high, can independently record signals from a seismic sound source while using global positioning system technology and satellite-based timing to accurately position and time the recordings. With no requirement for cabling to connect the nodes to a central recording device, the recording system has minimal environmental impact and does not, for example, require the cutting of seismic trails on land.

The environmental assessment says that ground crews will place the receivers along a grid of lines 1,320 feet apart, with receivers positioned 165 feet apart along each line. Explosives buried in shot holes at depths of at least 15 feet and up to 35 feet

will be detonated to generate seismic sound signals. The backfilling of the shot holes with clay material and cuttings will minimize the surface disturbance from the explosions. Shot holes will be located at 165-foot intervals on lines spaced 1,650 feet apart, arranged at right angles to the lines of receivers.

The surveyors will avoid areas where there is potential for wildlife disturbance, such as locations close to salmon streams or owl nests — a plan for the survey will take account of known environmentally sensitive locations, with an environmental field monitor subsequently helping field crews spot any sensitive areas not identified in the plan. A wilderness guide will accompany each field crew. Equipment for the survey will be transported to the survey area by helicopter sling. And snow machines will be the only form of ground transportation used within the survey area, the environmental assessment says. ●

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## PRUDHOE RESERVES

economy, as engineers, geoscientists and drillers figure out ever more ingenious ways of teasing more oil from the field's underground reservoirs.

"It's all about additional (oil) recovery through the use of technology and continued investment in the field," Scott Digert, BP's Alaska subsurface manager, told Petroleum News in a July 18 interview.

Cumulative production from the field passed the 12 billion barrel mark in 2012 and production is still going strong, Digert said. However, techniques such as high-tech horizontal drilling, used to exploit ever more resources in the field, are also expensive to implement, upping the cost of bringing new barrels on line, he commented.

### Massive reservoir

The main Prudhoe Bay oil reservoir occupies an area of about 254 square miles and lies in the 450-foot-thick Permian-Triassic Ivishak formation, an assemblage of sandstone, shale and coarse pebbly rocks called conglomerates, laid down in an ancient river and river delta system. A much thinner reservoir, a 35-foot shallow marine sandstone known as the Sag River formation, lies about 100 feet above the main reservoir.

At the time of its discovery, the field contained a huge cap of natural gas trapped at the top of the gently sloping reservoir rock formation. Below the gas cap lay an equally huge oil pool. A thin layer of tar and heavy oil marked the base of the oil, separating and largely sealing the oil from water in the rock below.

From the outset of oil production in 1977, pressure in the gas cap drove production of oil from the section of the oil pool directly below and in pressure communica-

tion with that cap, with gravity assisting the process by causing oil to flow down the reservoir slope into production wells. Gas produced along with the oil was injected back into the gas cap to maintain reservoir pressure. Farther down the slope of the reservoir, where the oil was not in direct contact with the expanding gas, water has been injected into the reservoir to support reservoir pressure and to drive oil into production wells in a process known as waterflood. The massive quantities of water required for this operation have come from water produced along with the oil and from a seawater plant on the neighboring Beaufort Sea coast.

These two production schemes led people to distinguish two major field areas: the "gravity drainage" area of the field, underlying the gas cap, and the waterflood areas. But, with gas pressure in the gas cap progressively declining as oil and gas in the field were produced, in 2002 BP started to inject water into the gas cap to stem the pressure decline.

### Continuing strategy

The overall approach to oil production at Prudhoe Bay continues these two essential strategies: gas cycling supplemented by water injection in the gravity drainage area and waterflood elsewhere, Digert explained. However, with the field now very mature as less and less oil remains in the reservoir, BP has had to find new ways of accessing that oil, he said.

And to evaluate development decisions, such as overall changes in water injection or the possibility of a new drilling program, BP uses a computer model that simulates the workings of the field reservoir. This model is one of the largest and most sophisticated reservoir simulators used anywhere in the world, Digert said.

### Thin oil layer

The main challenge in the gravity

drainage area, the source of much of the current Prudhoe Bay production, is the fact that the remaining oil now forms a relatively thin layer within the rock, Digert said. Rather than driving simple production wells down through the reservoir, drillers now "sidetrack" new wells out at relatively shallow angles from old well bores, using modern seismic images to target areas of the reservoir where oil can still be found. Many of these new wells use technology called coiled tubing drilling, threading continuous lengths of small-diameter, flexible drill pipe through the thin oil column.

And, while the "sharpening" of seismic images through the use of ever improving seismic processing enables the identification of ever thinner drilling targets, the drilling itself has become increasingly precise.

"Today we can place a well fairly accurately within 10 vertical feet," Digert said.

Originally drillers would not attempt to drill into an oil column less than 100 feet thick. Over time, that limit went down to 50 feet, then 30 feet and now it can be possible to access an oil layer just 15 to 18 feet thick, Digert said.

"We are working to continue to sharpen that pencil, so we can get down to 12 feet and 10 feet," he said. "That's where our future is."

In many places the drillers now skim wells along the top of the tar layer at the base of the oil column, with some relatively heavy oil at the top of the tar being produced along with the typical light oil of the reservoir, Digert said.

### Steering a well

With the wells needing to be steered through subsurface layers too thin to be resolved from seismic data, the drilling team relies on downhole well logging and the continuous examination of rock cuttings from the well to track the subsurface location of the drill bit. This type of well steer-

ing is as much an art as a science, depending on very high levels of expertise and experience, Digert said.

One challenge in accessing a thin oil column under a pressurized gas cap is the tendency for the gas above the oil to "cone" down into a production well, thus disrupting oil production. This problem leads to the periodic stopping and starting of production from individual wells and the eventual relocation of a well by the drilling of another sidetrack, Digert explained.

### Pockets of oil

In the waterflood areas of the field the main challenge now is to find and develop pockets of oil left behind by earlier waterflood operations, and to scrub as much oil as possible from the pores of the reservoir rock. During waterflood the water passing through the reservoir tends to take the line of least resistance, pushing oil from relatively permeable rock and leaving behind oil in areas where the water can flow less readily. And in any part of the field, faulting of the rock strata can create isolated pieces of reservoir sand holding oil that has become stranded from production.

Using seismic images of the subsurface to identify drilling targets and then using sophisticated drilling techniques to access those targets, it has become possible to develop stranded pockets of oil that years ago would have been left in the ground.

### Miscible injectant

And the originally simple waterflood operations have morphed into more sophisticated techniques involving the use of a material known as miscible injectant, a mixture of natural gas and natural gas liquids such as butane and propane produced from the field — miscible injectant operates as a solvent, drawing oil from the rock pores and then carrying that dissolved oil into production wells.

A technique called "water alternating gas," involving the waterflooding of a section of the reservoir alternating with the use of slugs of miscible injectant to flush out remaining oil, has become a standard approach in the waterflood areas. But in some places, depending on the subsurface geology, the water and injectant can tend to part company, with the water flowing under an oil body and the miscible injectant gas floating above, Digert said. This type of situation requires the use of another technique called "miscible injectant side track," or MIST, to drive out that remaining chunk of oil. A MIST operation involves the drilling of a special sidetrack injector well that loops around an existing injector well low in the reservoir. Bulbs of miscible injectant released from the MIST well float upwards through the reservoir sand, carrying with them oil from the target oil body, Digert said.

### Bright Water

A trademarked technique called "Bright Water" has also proved useful in moving additional oil out of waterflood areas. Bright Water involves adding particles of a temperature sensitive polymer to water used to flood the reservoir. As the water takes its line of least resistance through more permeable channels in the reservoir, the particles expand, blocking the channels and causing the water to flow through less easily penetrated sections of rock where residual oil still lurks.

A particular challenge arises in the regions of the field where the gravity drainage area transitions into waterflood areas. In these regions gas from the gas cap can flow underneath layers of shale within the reservoir, leaving pockets of oil on top of some of the larger shale bodies. BP has been adding injection wells to push this



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## GAS SECTOR

to substantially rebuild their reserves and have got to grips with tackling resources that have become more difficult and costly to access, he said.

### Proven reserves down sharply

Even so, the latest industry statistics from 146 of Canada's leading producers point a troublesome trend, with proven reserves dropping sharply last year to 36.53 trillion cubic feet from 40.86 tcf.

An estimated 3.62 tcf of proved reserves were added through discoveries and extensions, compared with a record 6.11 tcf in 2011, reflecting a sharp decline in completions of gas-targeted wells to 1,253 from 2,768 in 2011.

The reporting companies also listed total Canadian production at 4.19 tcf, translating into an 86 percent replacement rate, the second lowest over the past decade. When revisions to reserves are factored in, the production replacement rate for 2012 slumped to 36 percent.

Black & Veatch is forecasting a significant rise in the share of gas-fired capacity over the next 25 years, with combined-cycle generation increasing from 21.6 percent of the United States mix to more than 54.8 percent by 2038.

Over the same period, coal's contribution to power generation is expected to shrink to 21 percent from 43 percent.

Black & Veatch is calling for sharp growth in North American gas demand to 108 billion cubic feet per day in 2038 from 62 bcf per day this year, with demand for electricity generation expected to double over the next 20 years.

Black & Veatch analysts are also counting on Henry Hub spot prices rising to \$6 per million British thermal units by 2020 from the current \$4-\$5.

### Fuel switching a factor

Bill Gwozd, Ziff's senior vice president for gas services, said gas accounts for 25 percent of North America's current power generation, while many power plants are adopting a business model that allows them to "switch (fuels) on a dime's notice" to the most effective fuel source.

He said gas consumption is likely to increase over coming years because of its cleaner-burning properties compared with coal.

In Canada, which accounts for about 13 percent of power generation in North America, only about 10 percent of generation is fueled by gas, but Gwozd expects that will rise.

In Canada, industry statistics show producers booked negative revisions for last year of 2.12 tcf, compared with positive revisions of 1.19 tcf in 2011, the highest negative level since 2002.

Companies also experienced a sharp setback from low commodity prices by trimming 1.36 tcf from their proved reserves due to economic factors.

Since the gas price decline started in 2008, Canadian producers have de-booked 4.13 tcf, with the cutback climbing rapidly from 201.5 bcf in 2008.

At the end of 2012, 11 companies claimed proved reserves of more than 1 tcf, led by Encana at 6.73 tcf (down 4.8 percent for the year), followed by Canadian Natural Resources at 3.99 tcf (down 6.59 percent), Apache Canada, which acquired most of BP's Canadian assets in 2010, at 2.14 tcf (down 39.75 percent), Husky Energy 2.07 tcf (down 7.99 percent) and ConocoPhillips Canada 1.76 tcf (down 16.52 percent).

Only six producers added more than 100 bcf to their reserves count, led by Encana with 880 bcf, Peyto Exploration & Development 336.3 bcf, Tourmaline Oil

326.8 bcf, Apache 252.1 bcf, Birchcliff Energy 166.3 bcf and Husky 145.2 bcf.

The leading positive revisions were posted by ARC Resources at 22.42 bcf, Encana 217 bcf, Penn West Petroleum 138 bcf, Advantage Oil & Gas 136.1 bcf and Talisman Energy 96.8 bcf.

On the negative side, Apache recorded 1.44 tcf, EOG Resources Canada 94.5 bcf and Shell Canada 683 bcf.

The most successful drilling programs yielded 880 bcf for Encana, followed by Peyton at 336.3 bcf and Tourmaline at 326.8 bcf.

Proved reserves of coalbed methane entering 2013 were 1.58 tcf, with Encana owning 1.45 tcf after adding 125 bcf from drilling, with only 17 other companies reporting CBM reserves.

### Six with shale gas reserves

Six companies — Encana, Nexen, Yoho Resources, Trilogy, Athabasca Oil and Lightstream Resources (formerly PetroBakken) — reported shale gas reserves, with Encana growing to 897 bcf from 673 bcf, while Nexen dropped to 189 bcf from 319 bcf after disposing of 122 bcf of reserves.

Heffernan told the Calgary conference there is "quite simply a staggering amount of gas that is technically recoverable" in Western Canada.

"The industry knows where these reservoirs are and the challenge is getting the gas out of the ground," he said, noting the reverse from earlier years when finding reserves was the challenge and producing them was easy.

He said fracturing individual segments along horizontal wellbores is "the trigger for what I consider to be the revolution in the natural gas industry."

Heffernan said multistage fracturing continues to evolve and has now achieved 20- to 60-stage operations compared to just three- or four-stage operations only a few years ago.

"That allows very, very precise stimulation of reservoirs and enables much better recovery of hydrocarbons from these very technically challenging reservoirs," he said.

Heffernan noted that the biggest blow for Canadian producers is the loss of "historically key markets" in the United States, where the technological revolution has made its greatest impact. ●

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## 1995 DECISION

commission held a hearing and ordered maximization of natural gas liquids, NGL, over MI. NGL can be shipped through the trans-Alaska oil pipeline for sale; MI is used in enhanced oil recovery, EOR projects, to get more crude oil from the field.

In 1995 ARCO argued for maximizing NGL production; BP argued for maximizing MI production. The field owners had divergent views because they owned different proportions of the field's oil and gas: ARCO (and non-operator ExxonMobil) owned more of the gas cap and benefitted more from selling NGL; BP owned more of the oil rim and benefitted more from use of MI in EOR which resulted in more crude oil production.

Divergent ownership interests changed in 2000 as part of the Prudhoe reorganization following BP's purchase of ARCO and Phillips Petroleum's purchase of ARCO Alaska. Interests in the Prudhoe Bay field — oil and gas — were aligned, so each working interest owner held the same proportion of each.

### Changed circumstances?

In its notice of a Sept. 19 public hearing the commission said it was "considering whether changes in circumstances" since Conservation Order 360, CO 360, was issued warrant revision of the conservation order. The commission said that issues it

would consider include whether the findings and conclusions in CO 360 remain viable and the effect, "if any," of an annual average MI volume of less than 600 million cubic feet per day "on ultimate recovery from the Prudhoe Oil Pool."

In its August 2012 findings on the propane issue the commission said that selling propane "would reduce the amount of MI that could be produced and in turn would reduce the ultimate recovery" from the Prudhoe Bay oil pool.

The commission said the Prudhoe Bay field processing facilities have the capacity to compress 600 million cubic feet per day of MI, but only an average of 131 million cubic feet per day is currently being created.

"If the separation system was changed to allow for increased gas liquids production the majority of these gas liquids would be used to generate MI," the commission said.

However, the commission said, the Central Gas Facility at Prudhoe Bay "within operational and safety constraints, produces as much gas liquids as it is physically capable of doing." The gas liquids stream from the CGF is further processed into NGL and MI.

New separation equipment would be required to increase the volume of gas liquids extracted. "The estimated cost of such equipment would be substantial. Installation of such equipment would require a six to eight month shutdown," the commission said.

see 1995 DECISION page 14

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## MCGUIRE Q&A

then we could explain who we were and express a desire to have a liaison from their group, which they will send to Unalaska in August. They need to recognize we're not mere stakeholders but a sovereign.

Step number three would be to continue policy drafting. We sent an initial draft to Washington June 28 that contains policies of our six working groups. We will continue with meetings in Washington and follow up preliminary report and a final report on Jan. 30, 2015. I would say Alaska intends to continue working through our delegates on the Arctic Council to make them aware of Alaska's interest and needs.

*Petroleum News: So how does PNWER fit into this?*

McGuire: I want to transition into another effort Bob Herron and I are co-chairing as a result of this conference.

Our strategy is to come at it from two different angles. We'll wear two different hats depending on how we want to deal with the problem. We decided what we will do definitively is to utilize the Arctic caucus to educate PNWER members — again those U.S. states and their policy makers — about what our Northern neighbors have already done that is resource development based, people based and Northern based. Use that group to help PNWER bring in other resources of the Canadians and other experts to help us offer input to the federal government of how important it is to involve the north in the development of an Arctic policy, using Canada as an example.

We met with the Arctic advisor (Patrick Borbey) to (Prime Minister) Stephen Harper. He walked us through the very diligent process that Stephen Harper went through. You have to understand Stephen Harper is the first northerner to be appointed Prime Minister; he's an Albertan. He understands the importance of economic development. He also understands the importance of involving the northern people in policy development. He tasked Patrick with bringing in every federal agency that could be affected by Arctic policy and they have been crafting an Arctic policy for their country. That has led them taking over the chairmanship for the Arctic Council in May.

We can learn from this. What I said back in D.C. to the president's advisors from the Department of Inter Governmental Affairs was this is a bit like the race to put the first man on the moon. That is what the Arctic represents in 2013 for the United States. This is the opportu-

**"We don't have, as you know, the port system that will support the kind of Arctic development that Alaskans want and deserve in terms of the opportunities they should have for their future."**

— Sen. Lesil McGuire, R-Anchorage

nity for our president to become engaged with something quite frankly Alaska has understood for years. We are an Arctic nation. It's an opportunity for leadership at the federal level. It can't be top-down. It can't be from inside the Beltway. It's got to be that government officials from D.C. coming here to listen to people of the Arctic understand security issues and understand what development means for job growth within the region.

*Petroleum News: Looking ahead Unalaska next month, what do you want to accomplish with the Arctic Policy Commission.*

McGuire: By then we will have an executive director to the commission and begin the process of refining in earnest the draft policy that we rushed out the door to the feds. We all worked as a commission diligently on something in time for the Obama administration to consider Alaska's views. We spend the first day listening to the people living in the region about what they feel on Arctic development. In this case Unalaska is going to be such an important part of Arctic development from a marine transportation point and a logistics point. The people of that area have such job potential, but they will be impacted. We want to listen to the people of the region, the individual citizens like the marine pilots. We want to hear how they are viewing Arctic policy, what they would like to see in an Alaska policy and what they would like to see in a federal policy. Then we'll go back into our working groups and reflect on all of the work that goes on between the meetings. One of the main things we'll talk about are ports. We don't have, as you know, the port system that will support the kind of Arctic development that Alaskans want and deserve in terms of the opportunities they should have for their future. We certainly don't have the kind of Arctic port structure to support even today the marine transportation that is ongoing on the part of other nations are out ahead of us. That's one of the things the people Unalaska want to talk about: the increased vessel migration through their region happening in the Arctic. In 2007 with the opening of both sides of the Northwest Passage they have new vessels coming through that waterway without

having any port to support it.

What our commission is trying to do is help Alaska put us in a competitive position to address the challenges and opportunities of the growing Arctic.

*Petroleum News: There are always criticisms of newly formed task forces as another layer of government or another think tank. What do you think you've accomplished so far?*

McGuire: Appointing Bob and I co-chairs was a good move because we are both known for being people of action. In 13 years, I have not sat on a single task-force where we don't come out of it with an action item. So as far as what's happened now, there is excellent progress. The most important thing that's happened is we were able to insert ourselves into a federal process that was well under way without our knowledge and would have absolutely excluded Alaska as a formal participant. That was something Bob and I were able to do in the spring: Announce this formation of the Arctic Policy Commission and the diverse membership of it, all things the State Department simply could not ignore. We were successful in inserting ourselves into a federal making process that was well under way. When you look at the draft policy that came out, you will see that it was not crafted with Alaska's input at all. We believe we've arrested that process. We have their attention. We have a liaison now from the federal government. We got the federal government to formally accept our draft recommendations on June 28. That was huge to get them to formally accept them and to put it in part of their process in crafting this policy.

Next, we formed six specific working groups with experts in areas of interest from the commission, which have been working since May. They work with staff and they have their own individual goals. Marine safety and marine shipping and vessel tracking systems as you can imagine is a priority. What are we looking at in terms of increased vessel traffic? Where should these ports be? How can Alaska be a participant in stimulating the dialogue on port development? Those are the questions we are asking.

We are slowly marching our way toward the preliminary product, which of course will be a final piece of policy that goes into the blue book, into our statutes. As a lawmaker, a bill is not just a bill. I try to bring that to light. Everything we work on and every piece of legislation is a tapestry of our community. This policy will be important and hopefully enduring.

*Petroleum News: Is it possible to reconcile the two points of view, state and federal?*

McGuire: From the federal point of view, I really view that as the first landing on the moon. We have to ask ourselves, what are the successes of this last frontier of opportunity? When you think of Alaskans and me being inherently an optimist, who have been for the last five or six years rightfully complaining about the decline of production in TAPS and setting their happy meter looking at how many barrels a day are going through that. For those of us who are pro development, we have not been very happy. It's been daunting to look at. For those of us who want to see commercialization of our North Slope gas finally, we have not been happy for three decades. This can be something that provides opportunity for Alaskans in that next generation. I see this as jobs for tomorrow in the way TAPS was an economic boom for our parents' generation.

*Petroleum News: OK, moving closer to what would happen this year and possibly next year, what are your thoughts on the prospects of a referendum to overturn the tax regime change (Senate Bill 21)?*

McGuire: I'm disappointed that it appears to have qualified. I'm not disappointed in Alaskans. Ever. But I'm disappointed that somehow in the process of putting this piece of policy together that is so important to our future, we have failed to communicate what it is and its importance to so many people in our state. I feel a sadness about it. I struggle to understand the underpinnings. When I'm able to say ACES as it existed had no linkage to what the state paid out in capital credits to production. We would be on the hook for a billion next year, like a credit card that came due. Once people understood that, people would say, 'O.K. we're with you.' When you look at reduction of government take from any industry, you are going to see increased incentives to invest. It's just that simple. We need to get more rigs out there. We need to get more wells drilled. The first step is to address your tax policy.

*Petroleum News: Do you think this will have a chilling affect on investment?*

McGuire: Absolutely. That is the travesty of it. We finally got to the right place in the Legislature where we could move forward and take the right steps to incent development. Take the right steps to turn our tax policy around. Now we are sending a confused message out there again. Every time we get some degree of certainty, we take five steps backward. That's what's sad. ●

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## INSIDER

seem to imply that the company's Alaska program is still alive and well. The advertisement, seeking job applications from "engineering and technical professionals," says that Shell is seeking to fill immediate vacancies based in Anchorage. Those vacancies include positions such as a marine contracts manager, an ice management lead, well engineers and well supervisors, the advertisement says.

In February Shell announced that it was postponing its planned 2013 exploration drilling program in Alaska's Chukchi and Beaufort seas to 2014 at the earliest. Both of the Arctic drilling vessels that the company has been using are currently under repair and upgrade in Asian shipyards.

—ALAN BAILEY

## Alaska team wins 'Silver Wrench'

**PIONEER NATURAL RESOURCES'** Alaska asset team was awarded the company's "Silver Wrench Award" for 2012, the first time the Alaska asset team has reached medal contention in the awards, which recognize outstanding levels of operational excellence.

The award recognizes the Alaska team's execution of "the North Slope's largest hydraulic fracture stimulation in its N-1 well," work the company said utilized a Lower 48 style completion technique.

The team also "considerably improved its overall up-time by upgrading equipment and implementing new procedures and enhanced training."

These efforts are credited with boosting Pioneer Natural Resource's Alaska 2012 production, "exceeding their goal

by 13 percent."

Most importantly, the company said in a July 10 release, the team met or exceeded goals for environmental incidents, with zero OSHA recordable injuries and a 25 percent reduction in reportable spills.

"Implementing the Slope's largest frac and improving our operational performance is no small feat," said Pioneer Alaska President Pat Foley. "But, doing all of that in extreme winter conditions with zero OSHA recordable is truly a tremendous effort and illustrates our teams' commitment to safety, the environment, their fellow employees and the job at hand."

—KRISTEN NELSON

## Rasmuson Foundation award goes to ANSEP

**THE RASMUSON FOUNDATION** BOARD of directors said July 15 that the Alaska Native Science and Engineering Program, ANSEP, will receive a \$5 million award over five years as part of the foundation's Tier 2 grant program.

The foundation said the University of Alaska Anchorage will match the award with created program support reaching \$1 million annually after year five to help institutionalize and sustain ANSEP's award-winning components.

"For decades leaders in the Native community and rural villages have struggled with how best to raise their students' achievements. The key to ANSEP's success is really simple. If you raise expectations for students, provide access to challenging curricula and provide a supportive environment that expects high achievement, the students will exceed expectations," Rasmuson Foundation President Diane Kaplan said in a statement.

—KRISTEN NELSON

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## OIL PATCH BITS

Before joining Lynden Air Cargo, Zerkel held management positions at various airlines in Alaska. He is a member of the executive council of the National Air Carriers Association and a volunteer with the Boy Scouts of Anchorage.

Lynden Air Cargo is part of the Lynden family of companies offering truckload and

less-than-truckload freight to Alaska, charter barges, rail barges, intermodal bulk chemical hauls, scheduled and chartered air freighters, domestic and international shipping via air and ocean forwarding, customs brokerage, trade show shipping, remote site construction, sanitary bulk commodities hauling and multi-modal logistics. Lynden companies are repeat winners in the annual Quest for Quality customer service awards presented by Logistics Management magazine.

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## 1995 DECISION

Following issuance of the 2012 order on the propane issue, AOGCC Chair Cathy Foerster asked BP Exploration (Alaska) Resources Vice President Janet Weiss (now president of BP's Alaska operations) whether "ultimate recovery at Prudhoe Bay could be harmed by prospective compliance with CO360's requirement of maximum NGL production," and said BP's testimony at the propane hearing "suggested maximum amounts of NGL are being produced at the expense of miscible injectant (MI) and that as a consequence, less oil is being produced than would be produced if more NGL were available as MI." Foerster asked BP to document whether maximizing NGL sales — as required by CO360 — "at the apparent expense of MI will or will not result in lower ultimate recovery from the (Prudhoe Bay unit)."

In an October reply Weiss said the Prudhoe Bay working interest owners "are in agreement that the maximum manufacture of blendable NGL should continue." She said BP and the other owners "believe that the current development and production operations of the Prudhoe Oil Pool, including those related to the use and disposition of NGL, prevent waste, represent good oilfield engineering practices, and ensure a greater ultimate recovery of oil and gas."

In an October response Foerster asked Weiss to "provide an estimate of how the volumes of MI and blendable NGL would change if the facilities were operated to maximize MI production instead of blendable NGL."

Weiss responded in November: "The maximum MI volume under this operating scenario is limited by the stabilizer bottoms temperature. Changing operations of the CGF to maximize manufacture of MI

instead of blendable NGL" would produce an additional 55 million cubic feet per day of MI at the expense of 13,000 barrels per day of NGL.

### Inconsistency?

In a January letter Foerster asked for further clarification, telling Weiss that BP's propane hearing testimony indicated "that the use rather than sale of MI results in greater ultimate recovery," while Weiss' October and November letters indicated "the use of MI results in lower recovery than sales."

In a March response Weiss, by then president of BP Exploration (Alaska), said BP disagreed that there was inconsistency between the company's testimony in the propane hearing and its response in subsequent correspondence.

She said "BP has consistently maintained that the sale of one barrel of propane or one barrel of blendable natural gas liquids ... would result in a reduction of roughly the same amount of available miscible injectant ... and therefore a loss of the potential opportunity for future incremental recovery of the enhanced oil recovery ... volume (0.6-0.8 barrels) that could accrue from multiple cycles of injection of recovered MI constituents."

But, Weiss said, while sales of propane and NGL "would have a similar impact on future EOR oil production volumes, the economic results would be quite different. Given the uncertainties, and costs, BPXA has consistently maintained that it is not currently economic to sell propane, but it is economic to sell blendable NGL, and that therefore current practices are fully consistent with good oil field engineering practices."

She said while BP believes propane manufacture and sale is uneconomic "based on the values proposed by potential buyers," it believes "maximizing blendable NGL sales creates greater value for the State of Alaska and the PBU working interest owners. Propane and blendable NGLs are compositionally different and have different economic values. ... Additionally, the economics of selling blendable NGLs versus propane are impacted by facility costs," because "costly facility modifications would be necessary to sell propane, whereas the facilities to extract and transport blendable NGLs are already in place."

### Without project economics

In an April response, Foerster asked BP: "Without regard to project economics, perceived benefits to the State of Alaska or working interest owners, and previous agreements, decisions, and/or orders by the AOGCC or other state agencies, would ultimate recovery increase if the Central Gas Facility was operated to maximize the production of miscible injectant instead of maximizing blendable natural gas liquids?"

In a May response Weiss said: "the short answer is no" based "on a purely volumetric basis" and without consideration of those factors Foerster asked BP to disregard. ●

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## ANWR IDEA

And apparently, Parnell is no longer a zero in Young's eyes, as the congressman is lending active support to Parnell's high-profile proposal to conduct seismic surveys in the Arctic National Wildlife Refuge.

The Obama administration is now weighing the state's ANWR application.

On July 17, the House Natural Resources Committee, of which Young is a senior member, heard testimony from Interior Secretary Sally Jewell.

Jewell has been in the position only since April.

During the hearing, Young suggested Jewell read ANILCA, the Alaska National Interest Lands Conservation Act of 1980, which has a key section pertaining to ANWR's highly prospective coastal plain.

"Under that act, there's some requirements you have to meet," Young told Jewell. "If the state makes a proposal, you have to respond. We'll be watching this very closely, because if you don't you'll be breaking the law. And, you know, this is not the correct way to handle things. This is about utilization of federal lands and how we develop them."

Parnell and his natural resources commissioner, Dan Sullivan, on July 9 announced the state had applied to the Interior Department, under ANILCA, for a "special use permit" for 3-D seismic surveys across the coastal plain from 2014 to 2017.

The governor and Sullivan say Section 1002(e) of ANILCA requires the secretary to promptly publish a notice of any such application, to hold a hearing within the state, and to make a decision within 120 days on whether the plan can be approved.

Parnell and Sullivan say a modern assessment of the coastal plain's potential oil and gas riches is needed to better inform the debate on whether to open the refuge. They say the surveys could be

done with little or no impact to the tundra and wildlife.

The governor's proposal, however, would appear to have little chance of approval.

Jewell already has indicated the Obama administration opposes drilling in ANWR. And she has said ANILCA's authorization for exploratory activity expired long ago.

### Bill provides matching federal funds

Young announced July 24 that a bill had cleared the committee with language "requiring the Secretary of Interior to provide up to \$50 million in matching funding for joint projects with states interested in oil and gas resource assessments on federal lands."

The bill is called the Federal Lands Jobs and Energy Security Act (H.R. 1965).

As part of his ANWR seismic application, Parnell pledged to seek at least \$50 million from the Alaska Legislature to execute the plan.

H.R. 1965 would "aid Gov. Parnell's proposal," Young said.

"As I have said before, I applaud Gov. Parnell for his continued leadership on developing ANWR and I am pleased to support his innovative proposal through the federal matching funds provided in this legislation, which builds on the generous funding the State has already offered to move this plan forward," the congressman said.

Young also pledged to keep working to open ANWR outright to industry activity.

"A longtime advocate for responsible development in ANWR, Rep. Young has successfully passed legislation to open up ANWR 12 times, as recently as 2012, and intends to do so again in the 113th Congress," said a July 17 press release from Young's office.

—WESLEY LOY

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## PIPELINE HISTORY

The vote capped an epic environmental battle over the pipeline. Later that year, the Arab oil embargo would provide the final push needed to bring about the long-delayed construction of the 800-mile line.

Daniel Yergin, in his book "The Prize," talks about the complicated road to the pipeline after the elephant Prudhoe Bay field was confirmed in 1968.

Lots of ideas were considered to get the remote, arctic crude to market: ice-breaking tankers, trains and trucks, jumbo jet tankers, nuclear-powered submarine tankers.

A pipeline route into Canada also was considered, but ultimately the choice was for an "all-American route" to the ice-free port of Valdez, where the crude could be loaded aboard conventional tankers that could go to the Lower 48 or to Asia.

An oil company group including ARCO, BP and Standard Oil of New Jersey (Exxon) organized to build the line.

The consortium "rushed out and hurriedly bought 500,000 tons of forty-eight-inch pipe from a Japanese company; they did not think there was time to wait for American manufacturers to gear up," Yergin wrote. "They were wrong. The pipeline was to come to a dead halt before it even started."

Alaska Native land claims and "wrangling among the partners" slowed the project. But the real impediment was an effective legal challenge from environmentalists.

Tens of millions of dollars of stockpiled pipe and heavy equipment languished for years in the cold.

The Native claims were mostly settled in 1971, and eventually the environmental battle came to Congress.

### Construction finally begins

On a vote of 50 to 49, with Agnew

casting the decisive vote as the body's president, the Senate passed the Gravel-Stevens amendment declaring that the Interior Department had met all the requirements of NEPA, the National Environmental Policy Act, for the pipeline project.

Three months later, in October 1973, the Organization of Petroleum Exporting Countries, or OPEC, would impose an oil embargo that shocked the nation.

Not long after, on Nov. 16, 1973, President Nixon signed right-of-way legislation, the Trans-Alaska Pipeline Authorization Act, into law.

Construction began in 1974, first oil flowed from Pump Station 1 in 1977, and the pipeline has since moved more than 16 billion barrels of crude.

Oil revenue utterly transformed Alaska and its economy. And the hope is that the pipeline can continue to operate for many years to come, although throughput has declined to around 550,000 barrels per day, or roughly a quarter of the peak of more than 2 million barrels in 1988.

Alaska Sen. Lisa Murkowski, the top-ranking Republican on the Senate Energy and Natural Resources Committee, commemorated the historic 1973 vote with a July 17 press release.

"It was a monumental decision that has shaped the trajectory of Alaska to this day," Murkowski said.

She added: "A vast amount of oil remains as yet untapped in Alaska, most of it trapped on federal lands. It's my hope that on this 40th anniversary of the pipeline, we'll start to pay greater attention to the looming problem of losing a major portion of our country's domestic oil production if more federal lands in Alaska aren't opened to responsible development."

—WESLEY LOY

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## PRUDHOE RESERVES

stranded oil off the shale using injected water and sometimes miscible injectant, Digert said.

### Well work

In parallel with development work using new wells, existing wells have to be kept in good working order. That necessitates an extensive program of well workovers. BP hopes to expand its total well work program

by almost 50 percent in 2014, Digert said. BP has said that plans for expanded well work in the field are linked to recent production tax changes. According to BP's most recent Prudhoe Bay progress report, the company performed about 1,700 well-work jobs in 2012, with 250 of those jobs resulting in increased production. ●

*Editor's note: Part 2 of this story will describe some new development opportunities within the Prudhoe Bay field.*

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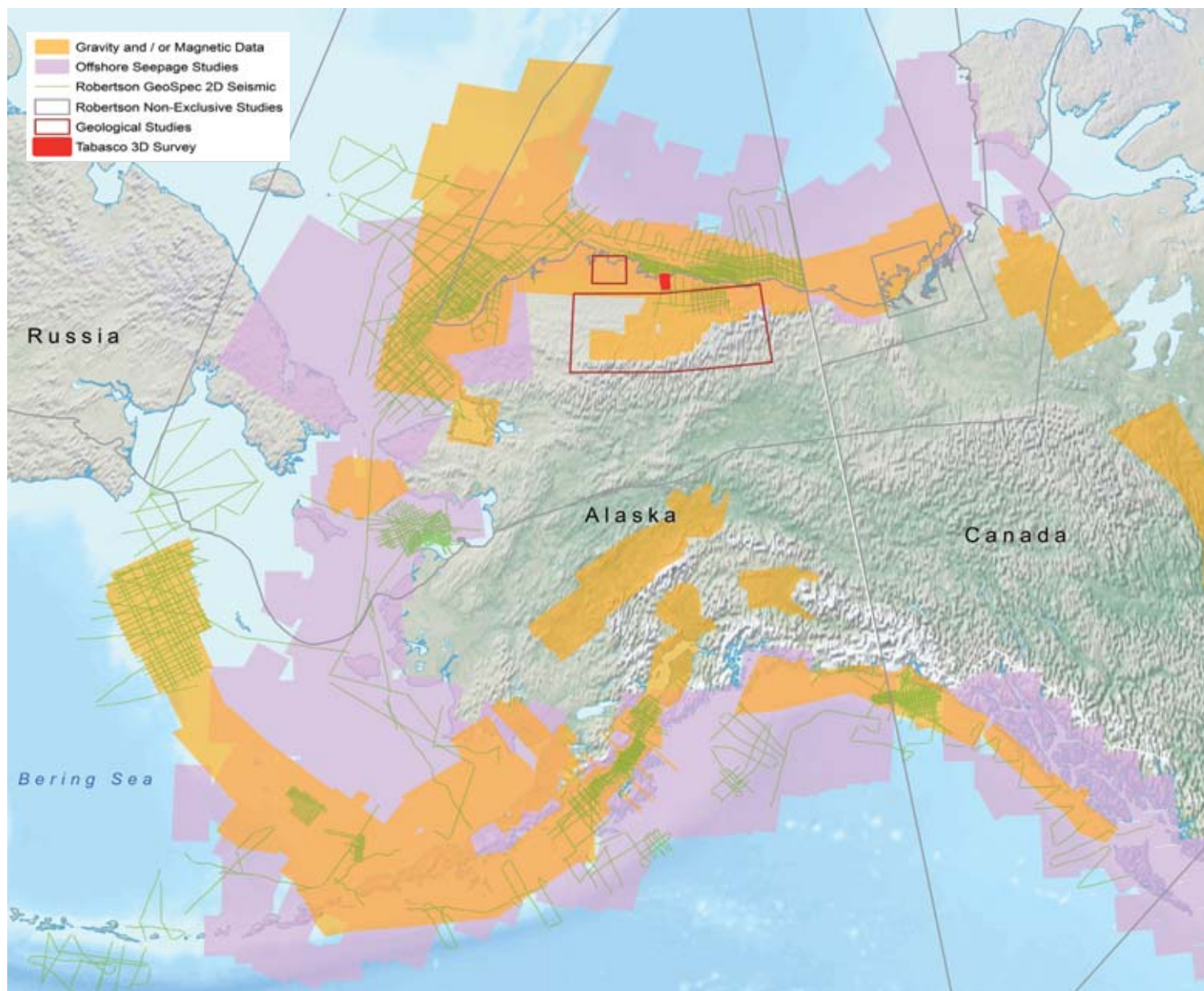
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