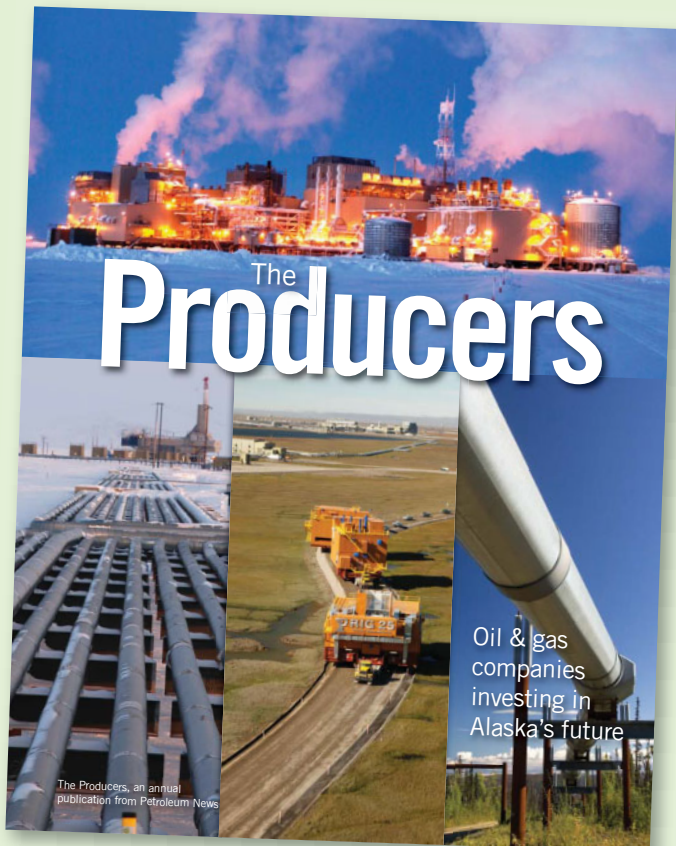


The Producers magazine enclosed



Inside this issue of Petroleum News is the first issue of The Producers magazine, which features oil and gas companies investing in Alaska's future.

Begich tells Jewell he'll fight any move to put ANWR off-limits

After a recent speech in which Interior Secretary Sally Jewell laid out the Obama administration's vision for conservation, Alaska's Democratic senator, Mark Begich, fired her a letter promising a fight.

Begich said he read accounts of the speech, delivered on Halloween at the National Press Club, with "interest and alarm."

Although the prepared text of the speech, posted on the Interior Department website, made no direct mention of the Arctic National Wildlife Refuge, Begich in his letter said Jewell made reference to ANWR, saying it "should remain off-limits to development."

Begich said he also was concerned that Jewell indicated the

see **ANWR FIGHT** page 30

Fracking approval for Conoco for 2 test wells near Norman Wells

Canada's National Energy Board has given the go-ahead for ConocoPhillips to undertake the first horizontal fracturing program in the Northwest Territories.

A company spokesman said that assuming favorable weather, ConocoPhillips will start drilling the first of two wells in December on Exploration License 470 which covers 216,000 acres near Norman Wells in the Central Mackenzie Valley.

ConocoPhillips has also received approval from the Sahtu Land and Water Board for a related land-use permit and water license.

NEB said it "recognizes the importance of fostering better understanding and communication with all stakeholders that take part in the board processes and engaging Canadians is a priority."

Over the past two years, NEB staff have conducted more than 25 public information and community engagement ses-

see **FRACKING APPROVAL** page 31



SEN. MARK BEGICH

PIPELINES & DOWNSTREAM

The water problem

Alyeska Pipeline, North Slope producers work to reduce TAPS freeze-up threat

By WESLEY LOY

For Petroleum News

With the onset of winter, the operator of the trans-Alaska pipeline system enters another season of challenges to prevent catastrophe due to potential freezing in the line.

Alyeska Pipeline Service Co. is using a range of tactics to avoid a freeze-up, including operations to add heat to the crude oil as it makes the 800-mile journey south from the North Slope.

Another tactic is minimizing the amount of water that's mixed in with the oil.

In fact, Alyeska "appears to be concentrating on the option of water removal," said the newly released 2013 annual report from the State Pipeline

"We have conducted tests with static separation in tanks and expect to do so again next summer."

—Alyeska spokeswoman Katie Peszner

Coordinator's Office.

Potential for calamity

In recent years, Alyeska has faced a mounting problem — the decline in the volume of oil moving daily on the trans-Alaska pipeline system, or TAPS.

The pipeline is oversized, having been designed to ship three or even four times the current throughput

see **WATER PROBLEM** page 31

NATURAL GAS

'Staggering' report card

Montney ranked as one of world's largest gas resources, supporting LNG hopes

By GARY PARK

For Petroleum News

The Montney formation, sprawling over 50,000 square miles of northeastern British Columbia and northwestern Alberta, has been rated as one of the world's largest natural gas resources.

The Lower Triassic play which has been targeted by conventional oil and gas techniques since the 1950s had to wait until 2005 to be developed when advances in horizontal drilling and multi-stage hydraulic fracturing made it possible to produce the resource.

The results have been captured in a study that

The Montney estimate has more than doubled the ultimate potential of the Western Canada Sedimentary basin to 821 tcf, of which 632 tcf remains after cumulative production to the end of 2012.

combined the findings of Canada's National Energy Board, British Columbia's Oil and Gas Commission and its Ministry of Natural Gas Development and the Alberta Energy Regulator.

Their work has estimated the thick and geograph-

see **MONTNEY RANKING** page 29

EXPLORATION & PRODUCTION

No final go on 4 wells

Brooks Range Petroleum, ConocoPhillips haven't sanctioned exploration wells

By ALAN BAILEY

Petroleum News

As the winter exploration drilling season approaches on Alaska's North Slope, Brooks Range Petroleum Corp. and ConocoPhillips both have plans for exploration wells but neither company has yet sanctioned the drilling operations, thus leaving question marks over what drilling will actually take place.

ConocoPhillips has said that it hopes to drill two exploration wells this winter and Petroleum News has obtained information indicating that both of these wells would be in the Greater Moose's Tooth unit, in the northeastern part of the National Petroleum Reserve-Alaska. The company has previously staked several well locations targeting the Rendezvous prospect in the unit.

Brooks Range has filed the drilling plan "as is required if operations were to be conducted during this coming winter season." —Bart Armfield, COO, Brooks Range Petroleum

Brooks Range has filed with Alaska's Division of Oil and Gas a plan for the drilling of up to two wells, the Placer No. 3 and Placer No. 4 wells, targeting the Placer prospect, west of the Kuparuk River unit and south of the Oooguruk unit. The company may also sidetrack the no. 4 well.

But, in a Nov. 13 email to Petroleum News, Bart Armfield, chief operating officer of Brooks Range, emphasized that his company has not yet

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Petroleum News

North America's source for oil and gas news

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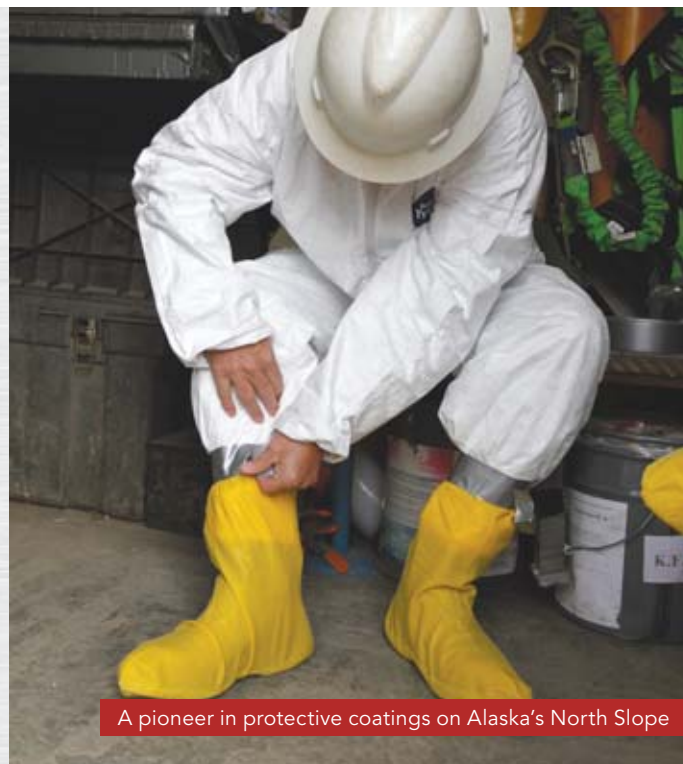
Utilities continue to consider unifying the entire grid under single operator and single ownership structure to simplify management

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"The 'tie in' is so smooth it looked like a machine had done it."

— Client QC Supervisor referencing the surface preparation of bare steel around a weld to "tie in" new coating to the existing protective coating on pipe.



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Alaska - Mackenzie Rig Report

Rig Owner/Rig Type Rig No. Rig Location/Activity Operator or Status

Alaska Rig Status

North Slope - Onshore

Doyon Drilling			
Dreco 1250 UE	14 (SCR/TD)	Prudhoe Bay X-03A, workover	BP
Dreco 1000 UE	16 (SCR/TD)	Prudhoe Bay MPF-93 workover	BP
Dreco D2000 Uebd	19 (SCR/TD)	Alpine CD4-96	ConocoPhillips
AC Mobile	25	Prudhoe Bay P-29	BP
OIME 2000	141 (SCR/TD)	Kuparuk 2T-41	ConocoPhillips

Kuukpik	5	Rigged up on Umiat Disp#1	Linc Energy Operations Inc.
----------------	---	---------------------------	-----------------------------

Nabors Alaska Drilling			
Trans-ocean rig	CDR-1 (CT)	Prudhoe Bay	Stacked
AC Coil Hybrid	CDR-2	Kuparuk 2F-18	ConocoPhillips
Dreco 1000 UE	2-ES (SCR-TD)	Prudhoe Bay	Available
Mid-Continental U36A	3-S	Prudhoe Bay	Available
Oilwell 700 E	4-ES (SCR)	Prudhoe Bay	Available
Dreco 1000 UE	7-ES (SCR/TD)	Kuparuk	ConocoPhillips
Dreco 1000 UE	9-ES (SCR/TD)	Will begin operation in Kuparuk January 1, 2014	ConocoPhillips
Oilwell 2000 Hercules	14-E (SCR)	Prudhoe Bay	Available
Oilwell 2000 Hercules	16-E (SCR/TD)	Prudhoe Bay	Available
Oilwell 2000	17-E (SCR/TD)	Prudhoe Bay	Stacked
Emsco Electro-hoist-2	18-E (SCR)	Prudhoe Bay	Stacked
Emsco Electro-hoist Varco TDS3	22-E (SCR/TD)	Prudhoe Bay	Stacked
Emsco Electro-hoist Canrig 1050E	27-E (SCR-TD)	Prudhoe Bay	Available
Emsco Electro-hoist	28-E (SCR)	Prudhoe Bay	Stacked
Oilwell 2000	33-E	Prudhoe Bay	Available
Academy AC Electric CANRIG	99AC (AC-TD)	Prudhoe Bay	Available
OIME 2000	245-E (SCR-ACTD)	Oliktok Point	ENI
Academy AC electric CANRIG	105AC (AC-TD)	Deadhorse	Available

Nordic Calista Services			
Superior 700 UE	1 (SCR/CTD)	Prudhoe Bay Drill Site Z-17A	BP
Superior 700 UE	2 (SCR/CTD)	Prudhoe Bay Well Drill Site C-32	BP
Ideco 900	3 (SCR/TD)	Kuparuk Well 3K-17	ConocoPhillips

Parker Drilling Arctic Operating Inc.			
NOV ADS-10SD	272	Prudhoe Bay DS 18	BP
NOV ADS-10SD	273	Prudhoe Bay DS W-59	BP

North Slope - Offshore

BP			
Top Drive, supersized	Liberty rig	Inactive	BP
Doyon Drilling			
Sky top Brewster NE-12	15 (SCR/TD)	Spy Island SP08-N7	ENI
Nabors Alaska Drilling			
OIME 1000	19AC (AC-TD)	Oooguruk ODSN-02	Pioneer Natural Resources

Cook Inlet Basin - Onshore

Kenai Land Ventures LLC (All American Oilfield Associates, labor Contract)			
Taylor	Glacier 1	Kenai Loop Drilling Pad #1	Buccaneer Energy Ltd.
All American Oilfield Associates			
IDECO H-37	AAO 111	Kenai Yard	Available
Aurora Well Services			
Franks 300 Srs. Explorer III	AWS 1	D&D yard in Sterling, doing winter maintenance	Aurora Gas
Doyon Drilling			
TSM 7000	Arctic Fox #1	North Kenai, stacked	Contracted to ConocoPhillips Winter of 2013/2014
Nabors Alaska Drilling			
Continental Emsco E3000	273E	Kenai	Available
Franks	26	Kenai	Stacked
IDECO 2100 E	429E (SCR)	Kenai	Available
Rigmaster 850	129	Kenai	Available
Academy AC electric Heli-Rig	106-E (AC-TD)	Kenai	Available
Saxon			
TSM-850	147	Ninilchik Unit, Bartolowits pad drilling Frances #1	Hilcorp Alaska
TSM-850	169	Swanson River	Hilcorp Alaska

Cook Inlet Basin - Offshore

XTO Energy			
National 110	C (TD)	Idle	XTO
Spartan Drilling			
Baker Marine LLC-Skidoff, jack-up		Spartan 151 Upper Cook Inlet KLU#1	Furie
Cook Inlet Energy			
National 1320	35	Osprey Platform RU-1, workover	Cook Inlet Energy
Hilcorp Alaska LLC (Kuukpik Drilling, management contract)			
		Monopod A-32, workover	Hilcorp Alaska LLC

Mackenzie Rig Status

Canadian Beaufort Sea

SDC Drilling Inc.			
SSDC CANMAR Island Rig #2	SDC	Set down at Roland Bay	Available

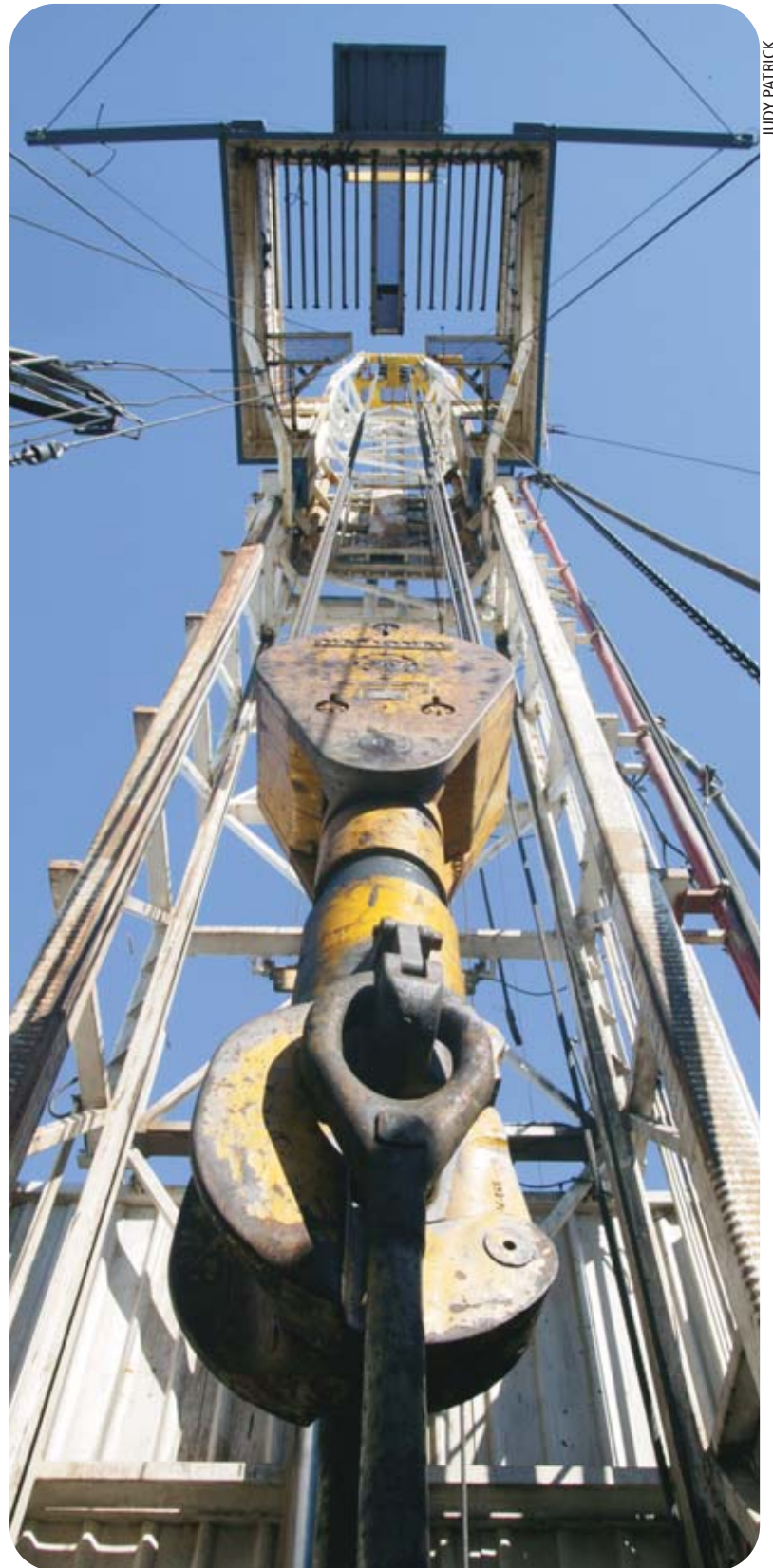
Central Mackenzie Valley

Akita			
TSM-7000	37	Racked in Norman Well, NT	Available

The Alaska - Mackenzie Rig Report as of November 14, 2013.
Active drilling companies only listed.

TD = rigs equipped with top drive units WO = workover operations
CT = coiled tubing operation SCR = electric rig

This rig report was prepared by Marti Reeve



JUDY PATRICK

Baker Hughes North America rotary rig counts*

	Nov. 8	Nov. 1	Year Ago
US	1,754	1,742	1,806
Canada	378	394	370
Gulf	56	57	47

Highest/Lowest

US/Highest	4530	December 1981
US/Lowest	488	April 1999
Canada/Highest	558	January 2000
Canada/Lowest	29	April 1992

*Issued by Baker Hughes since 1944

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GOVERNMENT

Alberta, BC make pipeline progress

Provinces still lack formal pact endorsing lines across BC; Canadian government must authorize lines crossing provincial borders

By GARY PARK

For Petroleum News

Alberta and British Columbia have reached broad agreement on the terms for construction of pipelines from the oil sands to the Pacific Coast, but the accord guarantees nothing beyond further negotiations.

There is considerable work ahead to turn the outline into a formal pact that satisfies the issues British Columbia Premier Christy Clark has insisted on resolving in return for her endorsement of pipelines such as Enbridge's Northern Gateway and Kinder Morgan's Trans Mountain expansion.

However, Clark and her Alberta counterpart Alison Redford have come a long way since a year ago when they were barely on speaking terms after Clark had indicated she would settle for nothing less than a share of Alberta's oil sands royalties — an impossibility under Canada's Constitution, which assigns ownership and taxing of natural resources to the provinces.

In the framework that was rolled out Nov. 5 after an overnight bargaining session between officials of the two governments, the tentative accord keeps the door open to a bilateral agreement on British Columbia's five demands for allowing crude bitumen to cross the province and be shipped through coastal waters to Pacific Rim markets. In return, Clark has endorsed Redford's campaign for a national energy strategy in Canada.

What is unmentioned is that the ultimate decision on any pipelines that cross provincial borders rests with the Canadian government.

'Fair share' an issue

A British Columbia news release said the first four conditions are "designed to achieve both economic benefit and risk mitigation on increased shipments through B.C., while the fifth condition provides a green light from Alberta for B.C. to negotiate with the industry on appropriate economic benefits such as jobs and taxes without seeking a share of Alberta's oil sands royalties."

Clark, who insisted she had never held

out for a share of Alberta revenues, said there are various "possibilities" for her province to get its "fair share" of revenues in return for British Columbia carrying the greatest risk of crude spills from pipelines or tankers.

The two provinces said they will now work together to establish regulations to reduce the chances of marine or land spills and put methods in place to deal with accidents; secure fiscal and economic benefits; and consult with First Nations.

Redford said her government accepts that B.C.'s conditions are designed to ensure "responsible energy production and safe transport to new markets.

"Alberta's firm belief is that meeting those conditions gives projects the social license to proceed, as well as clear economic benefits for B.C. They could also mitigate the risk of increased shipments through B.C.," she said.

Many ways to share benefits

Dave Collyer, president of the Canadian Association of Petroleum Producers, said there are many ways that benefits can be placed on the table.

"The bottom line for us is we need the three governments (Alberta, B.C. and Canada) and industry working together to see how we can advance the interests of market access," he said, making it clear the industry is ready to participate.

First Nations, which present the strongest opposition to heavy crude pipelines, dismissed the deal by the premiers.

Art Sterritt, executive director of the Coastal First Nations, an alliance of 10 communities, said there is no way of satisfying concerns over marine spills given estimates that only 10 to 15 percent of crude could be recovered.

He suggested Clark is "playing Redford a bit because Redford might think" that a solution is possible.

Sterritt has insisted First Nations will take whatever action is necessary to block pipeline construction, hinting that could extend to blockades. ●

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GOVERNMENT

Murkowski keeps hand in on energy issues

Former governor talks gas pipeline, LNG export issues; favors negotiations with producers as best way to move gas project forward

By **STEVE QUINN**
For *Petroleum News*

Former Gov. Frank Murkowski left office under criticism for the way he handled oil tax and gas pipeline negotiations with North Slope producers BP, ExxonMobil and ConocoPhillips. Criticism continued years after he left office, but Murkowski, also a former U.S. Senator, steadfastly defends his approach and the Petroleum Production Tax that was replaced by Alaska's Clear and Equitable Share, known as ACES.

Murkowski remains actively interested in Alaska's resource development prospects, speaking to groups statewide and offering thoughts in published op-eds. The retired Republican believes the state needs to show restraint on authorizing new appropriations for mega projects, return to the bargaining table to negotiate a long-term tax policy and remove the pipeline company TransCanada from the equation to advance a natural gas pipeline project.

He remains active enough that one Japanese consortium known as REI asked to meet with him.

Murkowski sat down with *Petroleum News* to discuss his views and interests in Alaska's resource development prospects.

Petroleum News: You've met with folks from Japan. What made you sit down and meet with them?

Murkowski: It wasn't a matter of what made me. It was a matter of them being interested and getting some information relative to what they were particularly involved with. They represented the prefectures, which are the areas of service — like counties — where they had the authority to contract for energy supply. Several of the participants in REI are looking for a supply of gas. Evidently with the tsunami that occurred earlier, the LNG plant was re-opened and I think they contracted for six shipments but they were only able to deliver five because of the demand for gas in Cook Inlet. There was a renewal in interest in Alaska's gas by Japan. We've exported LNG there for almost 40 years.

I've been very active in Asian activities so that's why the connection is so strong. Over the years, I've probably made 25 trips. We used to do a lot more like with Alaska lumber and pulp. I've been active in Japanese, Taiwan and Korean activities, my entire business career in Alaska.

Petroleum News: So what did you learn about REI's interest in Alaska's gas?

Murkowski: They are interested in acquiring a supply of gas. The producers' long-term venture is most likely to be economically viable. There is a market for Alaska's gas, OK? Are we 10 years away from gas floating down to tidewater? At least 10, maybe eight. These Japanese people represent purchasers; in other words, they have LNG facilities in the sense of utilizing the gas to generate power. All nuclear plants are not going to shut down. They will reduce their dependence, but they can't simply shut all of them down. So if there is enough gas in Cook Inlet, we can start shipping gas to the Japanese market. They might not be the competitive market we go

into, but at least they represent a market that has come into Alaska spending \$20 million of their own money saying we are interested to the point where the state signed a memorandum of understanding with them.



GOV. FRANK MURKOWSKI

Petroleum News: OK, so let's talk about the LNG markets. What do you make of the LNG market for Alaska? Do you believe this is the way to go?

Murkowski: the market we were looking at and the one we had pursued — we had a contractual agreement subject to legislative approval, which we didn't get because it all fell apart in the end. We were looking into a market into Alberta and distribution into U.S. markets. That market was taken over by shale gas. Our market at the time was \$6 an mcf. The market now is just over \$3 an mcf. Our market has moved away. So we look at other sources. Since we had a natural affiliation with Japan and since Japan is reassessing its power requirements as a result of the tsunami and public opinion over there, it's natural that we would look to Japan initially.

Petroleum News: You mentioned that you would like TransCanada removed from the alignment that includes ConocoPhillips, Exxon and BP. Why is that?

Murkowski: They are a great organization but the question I have is what do they bring to the table? What I'm referring to specifically is the producers hold the leases. The initial advertisement that went from the state for proposal under the administration that followed mine, evidently it was not in the state's best interest to have the big producers own the pipeline. It should be a third party. The producers did not file a bid. TransCanada did. TransCanada's job was to garner a supply of gas and build a

pipeline. As I've said before that was assumed to be the Alberta market, which dried up with shale gas.

During our conversations with the producers — and these went on almost daily — one of the things at the time was TransCanada wanted to build the pipeline. The producers said what do they bring to the table? At that time the producers were willing to build their own pipeline and look to Enbridge or other Canadian partners if they needed them.

The project has changed. They want to build the pipeline. There is reason to believe, they expect to get 20 to 25 percent ownership and I think it's in the state's interest to have that ownership rather than TransCanada who can't bring anything to the table. Their interest has to come from somebody, either the producers or the state. I don't see any justification for the state to continue to pay TransCanada for a project where basically TransCanada portions out some of that money for the benefit of Exxon, BP and ConocoPhillips to continue their evaluation and engineering. They are quite capable of doing it themselves. They don't need a subsidy paid through Exxon, BP and ConocoPhillips. So again, what do they bring to the table? I haven't had a satisfactory response.

Petroleum News: One of the argu-

ments that persists is if Keystone XL goes through, TransCanada will be the operator and they don't bring any oil to the table. It's a mega project just as this one is. How do you reconcile that?

Murkowski: That's another contract initiated in Canada. What's different is TransCanada did have certain rights in Alberta and Canada, right-of-way rights for that project, but they don't have any right-of-way rights in Alaska. The right of way would come down along TAPS and pick up the Alaska railroad and go down to Anchorage and Kenai and so forth.

Petroleum News: The other argument put forth against a producer-owned pipeline is monopoly and precludes more players in the natural gas market. What are your thoughts on that?

Murkowski: I don't buy that at all. You have to take these things one at a time. Right now one of those things is that curtailment of 500 mcf of gas can't be sold outside of the agreement with TransCanada. What are you going to do with that? Then there is trebled damages if you do that. That's ridiculous.

We had a good faith effort of all the parties to come together on one project, a project that looked feasible at one



see **MURKOWSKI Q&A** page 27

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• EXPLORATION & PRODUCTION

Gravel haul, bridge work for CD-5 in '14

This winter will be first of 2 construction seasons for new pad; ConocoPhillips has temporary camps, pre-staged equipment in place

By KRISTEN NELSON

Petroleum News

Work on ConocoPhillips Alaska's fifth Colville River unit drill site, CD-5, will get under way this winter, with

gravel haul and bridge construction.

CD-5, sanctioned last year, is a single-pad development west of Alpine in the Colville River unit.

In an early-November email, ConocoPhillips Alaska spokeswoman

Natalie Loman told Petroleum News the new production drill site will be approximately 6 miles west of the existing Alpine field.

While the CD-5 pad is technically within the boundaries of the National Petroleum Reserve-Alaska, it is on Native land, so it will not be the first production from NPR-A, a distinction which would go to the Greater Mooses Tooth unit, for which a supplemental environmental impact statement is under way.

Loman said access to the CD-5 pad will be via a gravel road starting at the existing Alpine field road system and includes four bridges across channels of the Colville River, with flow lines transporting production to Alpine for processing.

She said the project "is on schedule and on budget."

Additional infrastructure required at the Alpine Central Facility includes a 20-inch line from CD-5 to Alpine along with power and communication, two process modules and a pipe rack.

Two construction seasons

CD-5 will be built over two construction seasons, with ice roads, gravel haul and bridge construction in 2014. The 2015 construction season will include ice roads, the Nigliq bridge, pipelines, power and facilities at the CD-5 drill site.

Ice roads will support bridge construction, including the 12-mile access road from the Alpine Central Facility, and ice pads.

Loman said long lead time materials

The 2015 construction season will include ice roads, the Nigliq bridge, pipelines, power and facilities at the CD-5 drill site.

have been purchased and temporary camps and pre-staged equipment are in place, while bridge fabrication is nearing completion.

Drill site facilities will include the 10.7-acre pad, eight process modules, 12 pipe rack modules and 15 wells — seven production and eight injection.

Loman said facilities design continues, but drilling is scheduled to begin in May, 2015, with the rig moving to CD-5 on an ice road, and startup scheduled for December 2015.

Long time coming

This satellite — along with others farther west in NPR-A — have been in discussion since discoveries in NPR-A in the mid 1990s. In 2003, ConocoPhillips discussed the possibility of as many as 10 satellites within 30 miles of Alpine, which was discovered in 1994 and brought online in 2000.

Two pads at Alpine satellites — Fiord and Nanuq — have been built, with production coming online at both CD-3 and CD-4 in 2006.

CD-5, Alpine West, was in the application stage prior to that, but regulatory and legal complications produced delays. ●

Contact Kristen Nelson
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GOVERNMENT

Balash named DNR commissioner

Gov. Sean Parnell has named Joe Balash commissioner of the Alaska Department of Natural Resources. Balash has served as acting commissioner since Sept. 24.

"Joe is a great addition to my cabinet," Parnell said Nov. 13 in announcing the appointment. "He has outstanding credentials with a solid understanding of the Department of Natural Resources, public policy, and issues that influence resource development in our state."

Balash served as one of two deputy DNR commissioners beginning in December 2010, and was charged with the day-to-day management and supervision of the state's land management agency, with an annual budget of \$170 million and 1,100 employees. Balash had direct oversight for the Division of Oil and Gas, Division of Geologic and Geophysical Surveys, the Mental Health Trust Land Office, the State Pipeline Coordinator's Office, the Gas Pipeline Project Office, and formerly, the Division of Coastal and Ocean Management.

From 2006 to 2010, Balash served as special assistant in the Office of the Governor for energy and natural resources. He also was staff to the Legislative Budget and Audit Committee on gas pipeline negotiations, and was chief of staff to the president of the Alaska Senate.

Balash received a bachelor's degree in politics and government from Pacific University in Forest Grove, Ore. He resides in Anchorage with his wife and two daughters.



JOE BALASH

—PETROLEUM NEWS



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• PIPELINES & DOWNSTREAM

Conoco converting Oliktok to fuel gas

The natural gas liquids pipeline would start carrying natural gas in 2014 to offset declining fuel gas production at Kuparuk

By ERIC LIDJI

For Petroleum News

A ConocoPhillips subsidiary wants to start importing natural gas to the Kuparuk River unit as early as next spring to offset declining production from the North Slope oil field.

The Oliktok Pipeline currently brings natural gas liquids to the Kuparuk River unit to enhance oil recovery at the field, but the ConocoPhillips transportation subsidiary Oliktok Pipeline Co. wants to convert the pipeline to natural gas to meet fuel needs at the field.

The Kuparuk River unit currently produces all the fuel its needs using gas brought to the surface through oil production. The gas supply is used to generate heat and electricity, power equipment and run the giant turbines and compressors needed to produce underground gases and fluids and inject associated mixtures back into the reservoir.

“Historically, the Kuparuk oil field has produced enough natural gas with its oil to meet its fuel gas needs, but oil production has declined from 300,000 barrels of oil per day to approximately 100,000 barrels of oil per day,” ConocoPhillips Alaska Pipelines Inc. Commercial Analyst Luke Kiskaddon wrote in testimony to the Regulatory Commission of the Alaska. “Production is continuing to decline such that it is expected that in 2014 the Kuparuk oil field will not produce enough natural gas to fuel all of its equipment.”

The Oliktok Pipeline Co. also believes it may soon be asked to deliver gas to the BP-operated Milne Point unit, which has not taken natural gas liquids deliveries since 2002.

The Oliktok Pipeline Co. also believes it may soon be asked to deliver gas to the BP-operated Milne Point unit, which has not taken natural gas liquids deliveries since 2002.

The change has more to do with ending natural gas liquids shipments than adding natural gas shipments. The Oliktok Pipeline is currently authorized to ship either product, but any pipeline company must get regulatory approval before dropping a service. The approval process guarantees that the service being dropped is not filling a public need.

The Oliktok Pipeline Co. wants to make the change by April 2014.

Changes as needed

The Oliktok Pipeline dates to the beginning of the Kuparuk River unit.

In 1980, the Kuparuk Pipeline Co. built a 16-inch crude oil pipeline running 28 miles from Central Processing Facility No. 1 to Pump Station No. 1 of the trans-Alaska oil pipeline, but by 1982 the company built a 24-inch pipeline between the two fields.

In 1984, the Oliktok Pipeline Co. asked for permission to use the original 16-inch

crude oil pipeline to deliver natural gas to the field. Regulators granted the request the following year, but by 1988 the company said the shipments were no longer needed. In a 1991 decision, regulators allowed the company to suspend operations on the pipeline.

By 1995, though, the Oliktok Pipeline Co. wanted regulators to expand its certificate to include natural gas liquids, which the Kuparuk River unit needed for enhanced recovery.

The Oliktok Pipeline has been providing natural gas liquids to the field ever since.

A new rate

With the change, Oliktok Pipeline Co. also needs to establish shipping rates.

The company is proposing to charge 54 cents per thousand cubic feet for shipments to Central Processing Facility No. 1 and 41 cents per thousand cubic feet for shipments to the Milne Point Products Pipeline, where a separate tariff would go into effect.

The company determined the rate using estimated throughput for the first year and

taking into account operations costs, conversion costs and a rate of return. The company is estimating annual throughput of 18.25 billion cubic feet, or 50 million cubic feet per day.

The Oliktok Pipeline currently delivers some 15,000 barrels of natural gas liquids per day, with all of it going to the Kuparuk River unit, according to ConocoPhillips.

The actual conversion involves “making physical changes, such as adding small amounts of piping and valves, changing instrumentation and controls, performing integrity assessments and satisfying regulatory requirements,” according to the State Pipeline Coordinators Office, which expects the conversion to be completed by late 2014.

While it converts the pipeline, ConocoPhillips also plans to install a fiber optic cable along the right of way, part of a larger effort to upgrade the Kuparuk systems. ●

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NATURAL GAS

Corps taking comments on LNG plant

The Alaska Industrial Development and Export Authority is permitting a liquefied natural gas facility in the Prudhoe Bay unit as part of its plan to truck LNG to the Interior.

The U.S. Army Corps of Engineers is taking comments on a proposal to construct such a facility along the Spine Road between Drill Site 6 and Drill Site 14 at the North Slope unit. The permit is required because the construction effort would involve filling some 14.97 acres of permafrost tundra wetlands with some 150,800 cubic yards of gravel.

The proposed facility would be fed by an 8-inch pipeline connecting to an existing pipeline in the region and would produce 300,000 gallons per day of LNG, or some 9 billion cubic feet per year of natural gas, according to current AIDEA specifications.

The 300,000 gallons per day would come from three 100,000-gallon trains.

The U.S. Army Corps of Engineers is taking comments through Dec. 9, 2013.

AIDEA is currently developing commercial terms with three companies that have expressed an interest in designing, building and operating the plant. The companies are the local distribution company Fairbanks Natural Gas, the local electric cooperative Golden Valley Electric Association and the private developer Spectrum Alaska LLC.

AIDEA previously said it would require its private partner on the project to contribute no less than \$20 million and no more than \$50 million to the cost of construction.

After completing the terms, AIDEA plans to release the proposals to the public and give a recommendation to its board on which proposal best meets the terms of the project.

—ERIC LIDJI

• LAND & LEASING

Apache loses 25 leases to expirations

Expirations also hit Armstrong Cook Inlet, Cook Inlet Energy and Buccaneer; Doyon takes complete ownership of Nenana

By ERIC LIDJI

For Petroleum News

Apache Alaska Corp. saw 25 leases expire at the end of their primary terms in October.

The leases cover the Cook Inlet basin.

ADL 391746, ADL 3901750, ADL 390751, ADL 3901752 and ADL 3901753 were in the north, near the Stump Lake unit and the mouth of the Susitna River.

ADL 390762, ADL 390763 and ADL 390764 were onshore and offshore, near Ninilchik.

ADL 390722 and ADL 390723 were on the west side of Cook Inlet, south of the

Drift River oil terminal, while ADL 390727 was just to the north, near the mouth of the river.

ADL 390728, ADL 390729 and ADL 390733 were just offshore of Nikiski, surrounding the Hilcorp-operated South Middle Ground Shoal field, while ADL 390732 was just to the west, near the Cook Inlet Energy-operated Redoubt unit and its Osprey platform.

ADL 390734 was a small offshore lease near the Trading Bay unit. ADL 390736, ADL 390737, ADL 390738 and ADL 390739 were offshore leases just to the north.

ADL 390741 was on the coast just south of Tyonek while ADL 390745 was on the coast just north of Tyonek. ADL 390748 was an onshore lease near the Lewis River unit.

ADL 390772 was in the southern Kenai Peninsula, near the Deep Creek unit.

Other expirations

Also in October, the Armstrong Cook Inlet LLC lease ADL 390773 expired. The lease was located just outside the boundaries of the Armstrong-operated North Fork unit.

The Cook Inlet Energy LLC lease ADL 390735 expired. The lease was located on the west side of Cook Inlet, near the Cook Inlet Energy-operated West McArthur River unit.

The Buccaneer leases ADL 390771 and ADL 390774 expired. The leases were in the southern Kenai Peninsula, near the Buccaneer-operated West Eagle unit.

The state terminated one Alaskan Energy Alliance Inc. lease in late September for "nonpayment of rent." The offshore lease — ADL 391099 — was located near Nikiski. The small independent also lost two leases to expiration. ADL 3901721 was near Clam Gulch and ADL 390730 was located near Nikiski, adjacent to the terminated lease.

The state also terminated the NordAq Energy Inc. lease ADL 392260 for "nonpayment of rent." The lease, ADL 392260, was located near the South Middle Ground Shoal field.

Cook Inlet Energy LLC transferred a 0.052474 percent royalty interest in two Point Thomson unit leases to Donkel Oil & Gas LLC. The leases — ADL 47567 and ADL 47562 — are operated by ExxonMobil and are located in the western half of the unit.

The former partners in a Nenana Basin exploration program have transferred working and royalty interests in some 40 leases to operator Doyon Ltd. The companies are Usibelli Energy LLC, Arctic Slope Regional Corp., Windmill Canyon LLC and Cedar Creek Oil & Gas Co. The partner dropped out of the program following an initial exploration well in 2009, but the Alaska Native corporation Doyon Ltd. chose to continue the program and started drilling a second well in the basin earlier this year.

The former partners each kept overriding royalty interests in the leases. ●

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

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• LAND & LEASING

CIRI sues Buccaneer over Kenai Loop lease

Says Buccaneer hasn't met lease terms; Buccaneer says it has more than met terms of lease, although it hasn't drilled CIRI lease

By **KRISTEN NELSON**
Petroleum News

A dispute which became public in hearings before the Alaska Oil and Gas Conservation Commission this summer has moved into Alaska Superior Court, with Cook Inlet Region Inc. suing Buccaneer over return of a CIRI oil and gas lease Buccaneer acquired in 2011.

CIRI owns subsurface rights near the Kenai acreage where Buccaneer started producing natural gas in early 2012, including acreage in section 33 of township 6 north range 11 west, Seward Meridian.

In 2011 CIRI issued an oil and gas lease in section 33 to Buccaneer. CIRI has now gone to court to get that lease back, telling the Alaska Superior Court that Buccaneer has not fulfilled the terms of the lease.

In its response Buccaneer told the court it had more than met the terms of the lease, and accused CIRI of not fulfilling its part of the lease agreement.

The State of Alaska and the Alaska Mental Health Trust Authority also hold title to subsurface in section 33, where Buccaneer, an independent oil and gas company, is developing the Kenai Loop field, CIRI said in its filing.

CIRI's complaint, filed Oct. 9 in Alaska Superior Court, says it issued oil and gas lease C-061667 to Buccaneer in March 2011. CIRI said Buccaneer also holds leases in section 33 from the state and the Trust Authority.

Buccaneer has been drilling and producing gas at Kenai Loop — but from adjacent acreage, not from the CIRI lease.

The commission has a public hearing scheduled on that petition, which claimed that Buccaneer is illegally producing gas from the Kenai Loop 1-1 and 1-3 wells without a pooling agreement, at 1 p.m. Dec. 4 in its Anchorage offices.

In its complaint CIRI told the court: "Buccaneer had the incentive to drill to bottom-hole locations on tracts owned by the State and AHMTA, as Buccaneer's leases with the State and AMHTA require Buccaneer to pay a lower percentage in royalties than did Buccaneer's lease with CIRI."

Buccaneer said in its response that its "drilling targets have been dictated by geologic and geophysical considerations instead of lease boundaries" and said it "has drilled in areas that had relatively

lower risk profiles and higher prospectivity."

Lease terms at issue

CIRI said terms of the five-year lease required that Buccaneer submit a plan of exploration to CIRI for the lease by June 1, 2011. By Jan. 1, 2012, Buccaneer was required to complete reprocessing of "certain existing seismic and other data," identify the prospect area for resource recovery from a well with a bottomhole either offset or on the CIRI leased property and provide copies to CIRI "of all products resulting from the interpretation of the data, including maps, reports, and displays" showing Buccaneer's interpretation of the property.

A plan of operations was required by Feb. 1, 2012; an approved AFE, authorization for expenditure, was required by March 1, 2012.

CIRI said it did not grant extensions

for any of the work commitments, and said Buccaneer "failed to timely perform Work Commitments required by the Lease, as set forth in Exhibit A to the Lease."

Buccaneer denied that it failed to meet work commitments in the lease.

Rental payments

In a response filed Nov. 4, Buccaneer told the court that CIRI accepted its rental payments through 2012 and said that acceptance "ratified any breach that may have occurred before that time."

On the issue of required drilling the company told the court: "Buccaneer was specifically obligated to commence the 'drilling of one well by February 1, 2013, on the Leased Area or off the Lease on adjacent property.' Buccaneer had complete discretion on where to drill this

see **LEASE LAWSUIT** page 11

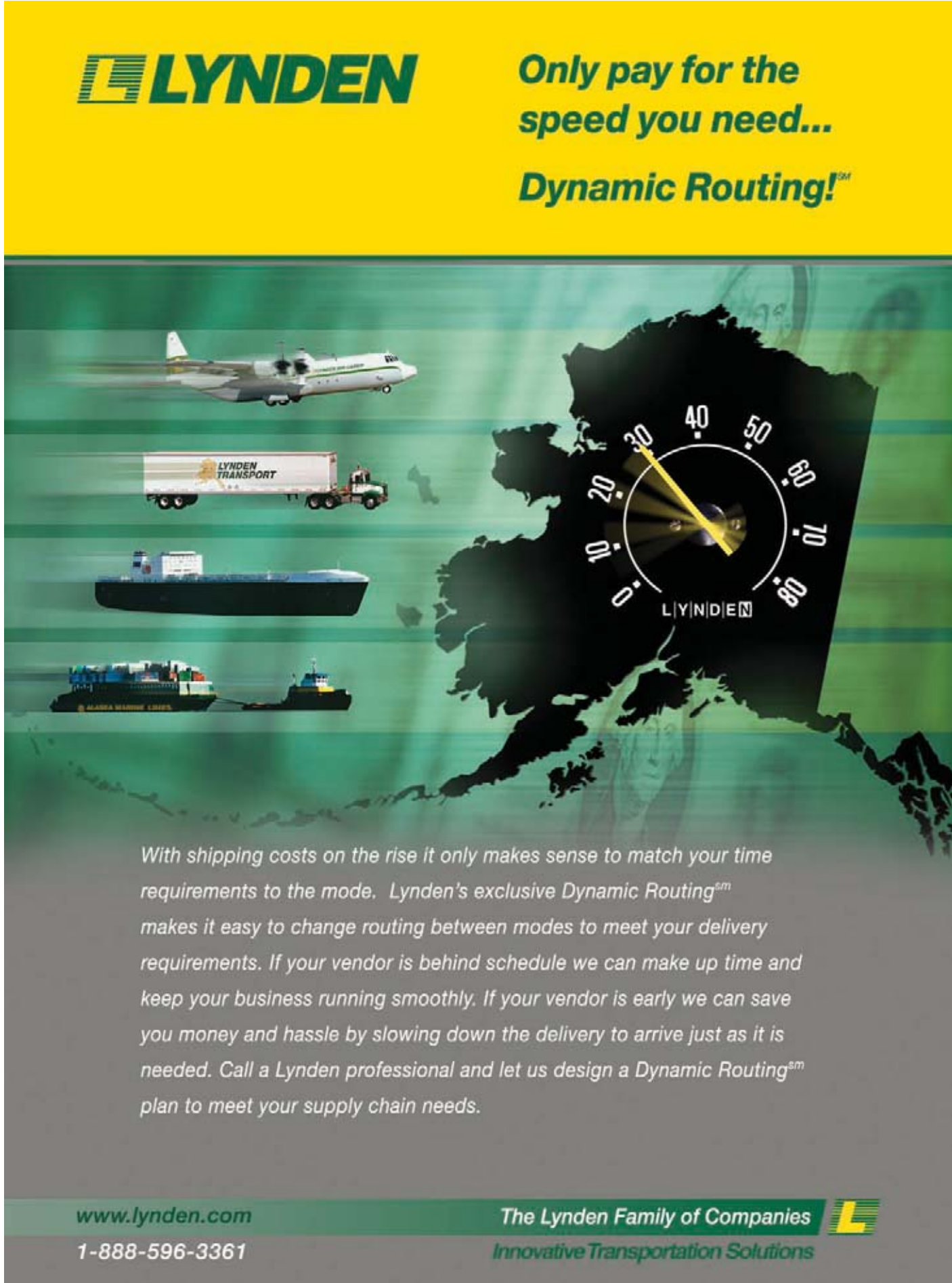


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EXPLORATION & PRODUCTION

Comments sought on Oooguruk project

The U.S. Army Corps of Engineers is taking comments on a proposal from Pioneer Natural Resources Alaska Inc. to expand the infrastructure at its Oooguruk unit.

The federal agency is taking comments on the project through Dec. 6, 2013.

The project includes four components at the artificial gravel island Pioneer constructed in the shallow state waters of the Beaufort Sea and at its associated onshore facilities.

The project calls for expanding the existing Oooguruk Tie-in Pad, building an onshore Seawater Tie-in Pad, building a seawater flowline that would connect the two tie-in pads and expanding the existing Oooguruk island. The Oooguruk Tie-in Pad expansion would increase the capacity of infrastructure such as power generation and separation volumes to accommodate the proposed Nuna development at Oooguruk. The proposed seawater flowline would also increase capacity as well as improve the reliability of seawater deliveries. The proposed Oooguruk Island expansion would allow for additional wells and add facilities to the northwest corner of the island to improve helicopter deliveries.

The Oooguruk Tie-in Pad expansion would discharge 14,500 cubic yards of gravel onto 1.5 acres of wetlands. The Seawater Tie-in Pad would discharge 1,200 cubic yards of gravel onto 0.18 acres of wetlands. The Oooguruk Island expansion would discharge 173,000 cubic yards of gravel into 4.22 acres of the Beaufort Sea, according to the Corps.

Pioneer Natural Resources recently sold its Alaska holdings to Caelus Energy LLC, which has said it intends to pursue the Nuna project "pretty much immediately."

—ERIC LIDJI

GOVERNMENT

Kornze, Beaudreau named to new posts

PETROLEUM NEWS

Secretary of the Interior Sally Jewell said in statements Nov. 7 that Neil Kornze will be nominated to head the Bureau of Land Management, and Tommy Beaudreau to become assistant secretary for policy, management and budget.

Both positions require confirmation by the U.S. Senate.

Kornze has led BLM since March 1 as principal deputy director; prior to that he served as BLM's acting deputy director for policy and programs. He joined the agency in early 2011 as a senior advisor to the director.

"Neil has helped implement forward-looking reforms at the BLM to promote energy development in areas of minimal conflict, drive landscape-level planning efforts, and dramatically expand the agency's use of technology to speed up the process for energy permitting," Jewell said, adding that he "has been a key player in many of the nation's major natural resource policy issues" for more than a decade.

Before joining BLM, Kornze was a senior policy advisor to Senate Majority Leader Harry Reid.

Kornze was raised in Elko, Nev., by a family with a long history in mining; he has a master's degree in international relations from the London School of Economics and is a Phi Beta Kappa graduate with a degree in politics from



NEIL KORNZE



TOMMY BEAUDREAU

Whitman College in Walla Walla, Wash.

Beaudreau

Beaudreau currently leads the office of the assistant secretary for Land and Minerals Management and is director of the Bureau of Ocean Energy Management at Interior.

In his new position Beaudreau would oversee a broad portfolio of policy and administrative functions that support Interior and its workforce, including budget, law enforcement and security management, human resources and procurement.

"Tommy's legal background, policy expertise, and extensive managerial experience with complex natural resource issues will be an invaluable asset as we carry out our vital and diverse missions in unprecedented fiscal and budgetary times," Jewell said.

The assistant secretary for PMB is Interior's chief financial officer and chief

see **BLM CHANGES** page 11



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LEASE LAWSUIT

well,” Buccaneer said — either on the CIRI lease or on adjacent acreage.

Buccaneer told the court that since it acquired the CIRI lease, its work activities “went far beyond” the lease requirements.

Buccaneer said it acquired exclusive rights to a drilling rig, shot 3-D seismic, identified potential prospects on the CIRI lease and within the Kenai Loop area, constructed two drill pads, drilled four wells testing the hydrocarbon potential “of the Lease and the Kenai Loop Area,” installed production infrastructure and pipelines.

CIRI also said: “Buccaneer failed to complete the reprocessing of certain existing seismic and other data on or before January 1, 2012,” and failed to provide CIRI with copies of all results of interpretation of the data.

In its response Buccaneer said: “CIRI’s failure to provide Buccaneer with existing 2D seismic rendered Buccaneer’s ability to satisfy work commitments impracticable — there is no obligation to do the impossible.”

Pooling

CIRI said in its complaint that as a subsurface estate owner within section 33, it “owns drilling rights and the right to share in production from Well 1-1,” and said it had not consented to a pooling agreement with the state and AMHTA, the other subsurface owners in section 33.

CIRI cited Alaska Administrative Code to the effect that a well cannot begin gas production from a property

smaller than a governmental section unless interests of persons owning the drillings rights and the right to share production have been pooled.

Buccaneer said in its response that its Kenai Loop wells “are authorized by Conservation Order No. 231,” and noted that the Alaska Oil and Gas Conservation Commission recently found that CO No. 231, for Cannery Loop, an adjacent field, remains in effect and that section 33 lies within the area of that order.

CO 231 establishes a quarter-quarter section for purposes of well spacing.

Buccaneer also told the court it intended to develop Kenai Loop as a unit.

“CIRI, however, objected to Buccaneer’s attempt to unitize the Kenai Loop Area leases and this objection served as a material reason for the Department of Natural Resources, Division of Oil and Gas’s decision to reject Buccaneer’s request to form a unit,” Buccaneer said in its response.

CIRI also said in its complaint that “Buccaneer has wrongfully converted gas drained” from CIRI’s property “without payment to CIRI, in violation of CIRI’s ownership rights.”

Buccaneer denied the drainage, noting that CIRI raised the issue of illegal drainage with the commission in October, petitioning for relief.

The commission has a public hearing scheduled on that petition, which claimed that Buccaneer is illegally producing gas from the Kenai Loop 1-1 and 1-3 wells without a pooling agreement, at 1 p.m. Dec. 4 in its Anchorage offices. ●

Contact Kristen Nelson
at knelson@petroleumnews.com

GOVERNMENT

Rodell named Revenue commissioner

Alaska Gov. Sean Parnell said Nov. 7 that he has appointed Angela Rodell as commissioner of the Department of Revenue. She has served as acting commissioner since Aug. 7.

“I am pleased to have Angela join my cabinet,” Parnell said in a statement. “She is well versed in fiscal policy and well respected among financial managers.”

Rodell has been state treasurer and deputy commissioner of Revenue since September 2011 and has been responsible for debt management, cash management and portfolio management.

Parnell said Rodell was instrumental in helping the state achieve a general obligation rating of AAA from both Standard & Poor’s and Fitch Ratings.

Rodell formerly was senior vice president for First Southwest and a managing director for Arimax Financial Advisors.

Rodell has a bachelor’s degree in economics and political science from Marquette University and a master of public administration from the University of Kentucky.

She will continue to reside in Juneau.



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BLM CHANGES

human capital officer, as well as providing policy leadership on the Arctic, international affairs and initiatives on land conservation, sustainability, diversity, and youth engagement and employment.

Beaudreau has been head of Land and Minerals Management since January. He joined Interior in June 2010 to help develop and lead aggressive reforms of off-

shore energy management and oversight, including reorganization of the former Minerals Management Service.

Prior to joining the administration Beaudreau was a partner in the law firm of Fried, Frank, Harris, Shriver and Jacobson LLP. He is a graduate of Yale University and the Georgetown University Law Center.

If confirmed by the Senate Beaudreau would replace Rhea Suh, nominated by President Obama as Interior’s assistant secretary for Fish and Wildlife and Parks. ●

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FINANCE & ECONOMY

Yellen supports policy; oil price rises

The price of oil erased early losses Nov. 14 as Janet Yellen indicated that she plans to keep her predecessor's economic stimulus in place pending further improvement in the U.S. economy.

Yellen testified Nov. 14 to the Senate Banking Committee, which is considering her nomination to be the next chairman of the Federal Reserve, replacing Ben Bernanke. She said the U.S. economy has regained ground lost to the Great Recession but still needs the Federal Reserve's support because unemployment remains too high at 7.3 percent. That support has encouraged investment in riskier assets such as stocks and oil.

Yellen's comments helped reverse sharp morning losses in oil, partly caused by a government report showing the eighth straight increase in the nation's supply of crude oil. Benchmark U.S. crude for December delivery slipped 12 cents to \$93.76 a barrel on the New York Mercantile Exchange. Oil fell as low as \$92.51 in the morning and rose as high as \$94.43 in the afternoon.

The U.S. Nymex benchmark is down by about 8 percent over the past month. Traders say further declines are likely, as U.S. output keeps rising.

"This is a trend that is likely to continue next year — crude oil production looks set to grow to 8.9 million barrels per day by the end of 2014, while crude oil imports are expected to drop to 5.8 million barrels per day," said analysts at Commerzbank in Frankfurt in a note to clients.

The U.S. Nymex benchmark is down by about 8 percent over the past month. Traders say further declines are likely, as U.S. output keeps rising.

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EXPLORATION & PRODUCTION

Revived Osprey exceeds 2,500 boe per day

Cook Inlet Energy brings another platform sidetrack online, plans to start drilling grassroots well; Sword No. 1 shows promise

By WESLEY LOY

For Petroleum News

Cook Inlet Energy LLC recently brought another well online, pushing overall production from its Osprey offshore platform to more than 2,500 barrels of oil equivalent per day.

That's a long way from the zero production Osprey had when the company took over the platform in December 2009. At the time, Osprey was dormant and in jeopardy of becoming a ward of the state following the bankruptcy of its prior operator, Pacific Energy Resources Ltd.

Osprey sits in the Redoubt unit, and is the southernmost of the oil and gas plat-

forms in Cook Inlet.

The company said it completed the RU-5B well in mid-October and then put it onstream. Drilled to a final measured depth of 15,750 feet, the well is actually a sidetrack of the RU-5 well.

Repairing damaged Osprey wells with sidetracks and other procedures has been a focus for Cook Inlet Energy in reviving the platform.

The original RU-5 well reportedly had produced mainly water, the company said in an Oct. 31 press release. The new sidetrack was producing about 250 barrels of oil per day and the company was "seeing oil cuts continually improve on a daily basis."

"As a whole, the Osprey platform is currently producing over 2,500 boepd," Cook Inlet Energy said.

Grassroots well planned

Cook Inlet Energy is a subsidiary of Miller Energy Resources Inc., a publicly traded company based in Tennessee.

The Alaska subsidiary accounts for the great majority of Miller's production. Miller reported record oil sales of more than 200,000 barrels for the quarter ended Oct. 31.

Cook Inlet Energy has a number of other producing and exploratory properties around the basin, including the onshore West McArthur River oil field and the Otter natural gas prospect.

Aside from the Osprey sidetrack, the company announced more news regarding its plans to drill a new grassroots well on the Osprey platform.

The planned RU-9 well "is intended to achieve oil reserves from a large four-way structure located approximately 2.5 miles southwest of the platform," Cook Inlet Energy said.

The company expects to spud the well before the end of the year, using its own rig 35.

Sword's 'extraordinary potential'

Since June, the company has been pursuing another drilling project on a pad adjacent to its West McArthur River field.

The Sword No. 1 well reached a final measured depth of 18,475 feet on Oct. 23, the company said.

During drilling the well encountered 11 hydrocarbon shows, including shows in the Tyonek gas sands, the Tyonek G (thought to be oil-bearing), and the Hemlock oil zone, the company said.

"With many identified potential zones behind pipe, the company plans to initially perforate 168 feet in the liquid hydrocarbon zones and 66 feet in the gas-bearing zones," the Oct. 31 press release said. "Third-party reserve reports show approximately 950,000 barrels of oil based on only 43 feet of net pay. The completion on Sword No. 1 has been designed with the flexibility to allow for testing and production through multiple different oil and gas targets."

Over the next several months, the company said it plans to initially test and produce the Hemlock formation followed by the shallower zones.

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● ENVIRONMENT & SAFETY

Congress hears testimony on GHG regs

Proposed EPA rules place tight limits on carbon dioxide emissions from new coal-fired power plants, but are the limits practical?

By **ALAN BAILEY**
Petroleum News

The publication in September by the Environmental Protection Agency, or EPA, of proposed new rules limiting the amount of carbon dioxide that new power stations can emit marked a key milestone in the Obama administration's efforts to reduce U.S. carbon emissions. Having been unable to persuade Congress to pass carbon cap-and-trade legislation during his first term in office, the president is instead trying to achieve his greenhouse gas policy objectives through regulation of gas emissions.

Most climate scientists blame human-created carbon dioxide, mostly from the burning of fossil fuels, for ongoing global warming. Scientists predict dire results if worldwide carbon emissions are not curbed.

But will the new EPA regulations spell the end of the construction of new coal-fired power stations in the United States? Or does technology exist to enable new facilities to meet the limits on carbon emissions? Under the proposed regulations a new coal-fired power plant would be limited to emissions of 1,100 pounds of carbon per megawatt of power generated, a number far below the emissions from a typical coal-fired plant.

Expert testimony

On Oct. 29, in a joint hearing of two subcommittees of the House Committee on Science, Space and Technology, federal lawmakers listened to expert testimony on the thorny question of whether the EPA's regulations are technically and economically feasible to implement.

In written testimony to the hearing Roger Martella, partner in the Environmental Practice Group of Sidley Austin, said that no coal-fired power plant in the world can come close to meeting the EPA's proposed standard. Thus, as a policy ramification, the proposed standard would have the practical effect of "being as much an energy regulation as an environmental regulation," given its practical impact of phasing out coal-fired power stations, Martella wrote.

There seems to be general agreement that the only means of meeting the new standard is to implement carbon capture and storage, or CCS, technology to sequester at least some of the carbon dioxide generated from the burning of coal. In its simplest form CCS involves using chemicals such as amines to scrub the gas from power plant exhaust — the gas is then injected into some form of underground reservoir. An alternative to exhaust scrubbing is the extraction of the carbon dioxide before burning by using the coal to manufacture hydrogen as fuel in a power station.

CCS is now also referred to as carbon capture, usage and storage, or CCUS, to encapsulate the possibility of improving the economics of the process by finding some industrial use for the carbon dioxide, perhaps using the gas to enhance oil recovery in an oil field or as a chemi-

Addressing the GHG emissions problem

Climate scientists have for a number of years blamed the emission of greenhouse gases, especially carbon dioxide from the burning of fossil fuels, for the observed warming of the Earth's atmosphere. But, despite warnings of potentially dire consequences if atmospheric carbon dioxide is not brought under control, government policy makers have struggled over what to do about a predicted climatic disaster, with some questioning the validity of climate change theories and others worrying about the economic impacts of tinkering with energy markets.

Some people have argued that carbon dioxide is a pollutant that is being emitted into the air at no cost to the users of fossil fuels. Some form of cost associated with this environmental harm would discourage the use of carbon-based fuels while encouraging the use of less carbon-intense energy sources, these people say.

But persuading people to pay now for a problem which some people do not agree exists, which has significant levels of uncertainty, with impacts some of which will not emerge until sometime in the future, is a tough sell. And, with people's standard of living in most countries highly dependent on the use of relatively cheap fossil fuels, increasing the cost of these fuels raises the worrying specter of economic downsides.

Carbon tax

A carbon tax, either in the form of a direct tax on fuels or in the form of a cap-and-trade system, has been implemented in some U.S. states, in some Canadian provinces and a number of countries around the world, including the nations of the European Union. A cap-and-trade system involves a combination of mandated emissions caps and the trading of emissions credits.

Another more indirect way of increasing the cost of carbon is to use government regulation to force people to use technologies that lower carbon footprints, thus steering people toward these technologies and increasing the cost of technologies that are more carbon intensive. This is the approach that the Obama administration is currently taking in the United States, with the Environmental Protection Agency proposing to pose limits on carbon emissions from new power stations, for example.

A third approach involves the introduction of government subsidies for relatively expensive renewable energy technologies, such as wind power and solar power, thus enabling these technologies to compete on cost with traditional fossil fuels. The United States government has, for example, been providing funding assistance for wind power systems. In Europe, renewable energy subsidies have had the curious and presumably unintended consequence of undermining the region's carbon cap-and-trade system, as increasing renewable energy use enables carbon emission targets to be met, thus causing the market price of carbon credits to tumble.

—ALAN BAILEY

cal manufacturing feedstock.

Commercial technology?

Charles McConnell, executive director, energy and environment initiative, at Rice University, told the hearing that CCUS represents both an environmental solution to the carbon emissions problem and a business strategy for meeting EPA greenhouse gas regulations. But, while studies have verified that compliance with EPA's new regulations will require the use of CCUS technology, there is no commercial CCUS technology available that can enable power stations to meet the EPA standard, McConnell said in written testimony to the hearing.

"The cost of current carbon dioxide capture technology is much too high to be commercially viable and places the technology at similar economic thresholds of alternative clean, carbon-free energy alternatives currently being subsidized," McConnell wrote.

McConnell said that current technologies for the recovery of carbon dioxide at power plants increase the cost of generated electricity by about 80 percent and, while pipeline technology for transporting carbon diox-

ide to storage sites is mature, pipeline siting can prove problematic. There is also a lack of a proven track record for the sequestration of carbon dioxide in underground reservoirs, he wrote.

Still being evaluated

"While injection of carbon dioxide into deep geologic storage formations is being evaluated, it has only been done successfully on a relatively small scale at a few sites around the globe," McConnell wrote, adding that some forms of storage still face issues such as property rights and liability for any carbon dioxide leakage.

However, McConnell commented on the success that has been experienced in the sequestration of carbon dioxide for enhanced oil recovery in oil fields, a technique that he said has been practiced for more than 50 years.

McConnell also commented on Department of Energy funding assistance for CCUS research and development programs but said that at current funding levels affordable CCUS solutions "may be decades away."

"The DOE's coal research and development funding

see **GHG REGS** page 14



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DOE announces 18 carbon capture projects

As part of a multi-year program of funding for the research and development of carbon capture and storage, or CCS, technologies, the U.S. Department of Energy has selected 18 projects to research innovative techniques that can help drive down the cost of capturing carbon from coal-fired power plants, the agency announced Nov. 7. Carbon capture is the first step in a CCS system, which also requires transportation of captured carbon dioxide gas to a suitable underground storage site and the injection of the gas into an underground rock reservoir.

Reducing the costs of a CCS operation to a point where the operation becomes economically viable is a major challenge.

"In the past four years we've more than doubled renewable energy generation from wind and solar power. However, coal and other fossil fuels still provide 80 percent of our energy, 70 percent of our electricity, and will be a major part of our energy future for decades," said Energy Secretary Ernest Moniz when announcing the new research funding. "That's why any serious effort to protect future generations from the worst effects of climate change must also include developing, demonstrating and deploying the technologies to use our abundant fossil fuel resources as cleanly as possible."

The Department of Energy said that it will contribute nearly \$84 million to the projects in a cost-sharing arrangement with industry, universities and other research institutions. The research will target carbon capture in traditional coal-fired power plants and from plants that involve the gasification of coal or other carbon-based feedstocks. The agency said that the Obama administration has so far invested \$6 billion in clean coal technologies as part of the president's all-of-the-above approach to U.S. energy.

—ALAN BAILEY

Supreme Court accepts GHG emissions case

The U.S. Supreme Court has agreed to review appeals against the Environmental Protection Agency's regulation of greenhouse gas emissions from stationary sources such as power plants.

In 2007 the court ruled in favor of the agency in an appeal case challenging the agency's authority to regulate greenhouse gas emissions from car engines. And, having declared carbon dioxide and other greenhouse gases to be pollutants under the terms of the Clean Air Act, the agency is now introducing regulation of these gases for stationary sources. But, since the allowed emissions limits for more traditional pollutants are quite low, thus potentially creating a minefield of complex and impractical permitting requirements for small business operators, the agency has also introduced a rule setting relatively high emissions thresholds for greenhouse gases. These high thresholds result in the regulations only applying to large industrial facilities such as power stations.

Several states and industry groups have appealed the agency's regulation, saying that there is inadequate evidence supporting the dangers of greenhouse gases and that the agency does not have the authority to regulate greenhouse gas emissions from stationary sources.

According to a report in the New York Times, the U.S. Court of Appeals for the District of Columbia rejected the appeals last year. The Supreme Court has now accepted six of the appeals, but has limited its review to the question of whether the regulation of greenhouse gases from motor vehicles has triggered the need for similar regulations for stationary sources, the New York Times said.

—ALAN BAILEY

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GHG REGS

levels must be increased to enable the pursuit of demonstration projects to move transformational, low-cost CCUS technology from the laboratory to the commercial marketplace in a timely manner," McConnell wrote.

Not cost competitive

Richard Bajura, director of the National Research Center for Coal and Energy, West Virginia University, told the hearing in his written testimony that a state-of-the-art pulverized coal power plant may now output carbon at the rate of 1,800 pounds per megawatt hour of power generated. But established technologies using

amines for carbon capture are not cost competitive for use in coal-fired power plants, he wrote.

"Using newer advanced technologies such as membranes or ionic liquids, or revised power cycles that minimize the steps required to separate and capture carbon dioxide, are ways to reduce costs," Bajura wrote. "However, these are newer technologies that have not been demonstrated at commercial scales."

Bajura also commented on the importance of integrating the operation of a carbon storage facility with the operation of the power plant with which it is associated, given the interdependence of the two operations. And carbon dioxide storage at the scales required for a major power plant has yet to be demonstrated, he wrote.

"Carbon dioxide injection studies into geologic reservoirs have only been carried out at scales of 10s of thou-

sands of tons of carbon dioxide per site," Bajura wrote. "For a full-scale operating plant, a million tons of carbon dioxide per year may be generated and would need to be injected to handle the plant's output."


Up-beat view

Characterizing EPA's proposed regulations as the beginning of CCS rather than the end of coal, Kurt Waltzer, managing director the Clean Air Task Force, an environmental non-profit, took a more up-beat view of the status of CCS technology. Given the construction of new coal plants with life expectancies in excess of 50 years, especially in developing countries such as China, the deployment of CCS technologies will be crucial to


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continued from page 14

GHG REGS

the worldwide management of carbon emissions, Waltzer wrote in his pre-filed testimony.

Moreover, carbon dioxide capture from power and industrial plants will be vital to the expanded use of carbon dioxide for oilfield enhanced oil recovery, he wrote.

Large CCS projects linked to enhanced oil recovery, capturing and storing millions of tons of carbon dioxide per year, first started to appear in the United States in the 1970s and 1980s, Waltzer wrote.

“Because the component pieces of what we call CCS systems have been in widespread and safe use, separately, for 40 years or more, they are more than adequately demonstrated to form the basis for an emissions standard for power plant combustion of fossil fuels,” he wrote. “Indeed the component parts of CCS systems are not only ‘adequately demonstrated,’ they are commercially available.”

Migration to CCS started

The migration to CCS technology has already started and, with stronger regulatory drivers, will accelerate, Waltzer wrote, commenting that a coal to synthetic natural gas plant in North Dakota has been doing pre-combustion carbon capture since 2000, shipping carbon dioxide to Canada for enhanced oil recovery. And some coal-fired power stations that will use CCS technology for sequestering carbon dioxide underground

are scheduled to go into operation, including a plant in Mississippi that is slated to go into operation in 2014 and a plant in Saskatchewan, Canada, with a planned startup in the spring of the same year, Waltzer wrote.

Several cost factors

Waltzer said that the cost associated with the use of CCS technology depends on several factors, including the length of time over which developers could phase in the CCS implementation and the percentage of the carbon dioxide removed by the CCS process. The availability of an enhanced oil recovery application for the carbon dioxide also significantly impacts the cost.

According to an analysis by the Clean Air Task Force for power from a high-efficiency “supercritical” coal-fired power station, the use of CCS to sequester 50 percent of the generated carbon dioxide, with no phasing of implementation, would add 36 percent to the cost of the power. With revenue from enhanced oil recovery that cost increase would drop to 24 percent, dropping further to 13 percent in a phased implementation over 10 years, Waltzer wrote.

There are already about 4,000 miles of carbon dioxide pipeline carrying carbon dioxide to enhanced oil recovery locations, the technology for the underground injection of the gas has a 50-year track record for use, and natural gas companies already commonly use deep geologic structures to store natural gas, he wrote. ●

Contact Alan Bailey at abailey@petroleumnews.com

LAND & LEASING

BOEM extends Chukchi Sea comment period

The Bureau of Ocean Energy Management said Nov. 13 that it is extending the public comment period on proposed Chukchi Sea oil and gas lease sale 237 scheduled for 2016.

BOEM said the call for information and nominations for the proposed sale was issued Sept. 26, with the comment period scheduled to close Nov. 18, but in light of the federal government shutdown during the first half of October the comment period is being extended through Dec. 3.

BOEM noted that the call is designed to provide it with information about interest in offshore oil and gas leasing by requesting that industry identify specific blocks in the Chukchi Sea that appear promising for oil and gas exploration and development.

The call also requests comments and information from interested parties relevant to the agency’s analysis of areas for potential leasing, including geological conditions such as bottom hazards, seabed or nearshore archaeological sites, multiple uses of the area including navigation and subsistence, and other socioeconomic, biological or environmental information.

More information is available at www.BOEM.gov.

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REVIVED OSPREY

“Based on log results, our Sword well has extraordinary potential and we believe it could double the reserves currently reported for the West McArthur field while providing us a launch pad for drilling into Sabre, which is an even larger identified prospect,” said Scott Boruff, chief executive officer for Miller Energy.

Otter unit finalized

In late August, state officials conditionally approved the Otter unit, combining parts of four state leases, after Cook Inlet Energy appealed an earlier denial.

On Nov. 1, the state Division of Oil and Gas indicated by letter that the company had met all the conditions for unit approval. These included submitting a modified unit agreement and plan of exploration, and posting a \$1.2 million performance bond.

The Otter gas prospect is located about nine miles north of the ConocoPhillips-operated Beluga River gas field.

The company in 2012 drilled an exploratory well, the Otter No. 1, but technical problems plagued the project and the company was unable to reach full depth.

Under the plan of exploration, the company can partially fulfill its unit obligations by re-entering and deepening the Otter No. 1 by March 31.

Cook Inlet Energy said it would start the deepening operation in November. ●

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UTILITIES

The Railbelt grid: an operational puzzle

Utilities continue to consider unifying the entire grid under single operator and single ownership structure to simplify management

By ALAN BAILEY
Petroleum News

For a number of years and through multiple investigations the question of whether and how to unify the Alaska Railbelt power transmission grid under a single management structure has been a regular topic of conversation. In 2010 the concept reached the state Legislature in the form of a bill to establish a corporation to develop, maintain and operate the entire grid. And, after that bill failed to pass, some of the utilities that operate the grid formed a cooperative called the Alaska Railbelt Cooperative Transmission and Electric Co., or ARCTEC, to at least coordinate grid upgrades.

The grid stretches from Fairbanks in the Alaska Interior, south through the Matanuska and Susitna valleys and Anchorage, to Homer and Seward in the southern Kenai Peninsula. Despite its small size in terms of power throughput, the grid is owned by six distinct electric utilities, with the State of Alaska also owning one segment of the line.

The topic of grid unification emerged again during a Nov. 6 meeting of the Anchorage Mayor's Energy Task Force when Brian Hickey, executive manager, grid development, for Chugach Electric Association, told the task force that the Railbelt electric utilities continue to discuss possible ways in which grid unification might be achieved, given the significant benefits that unification would bring.

One machine

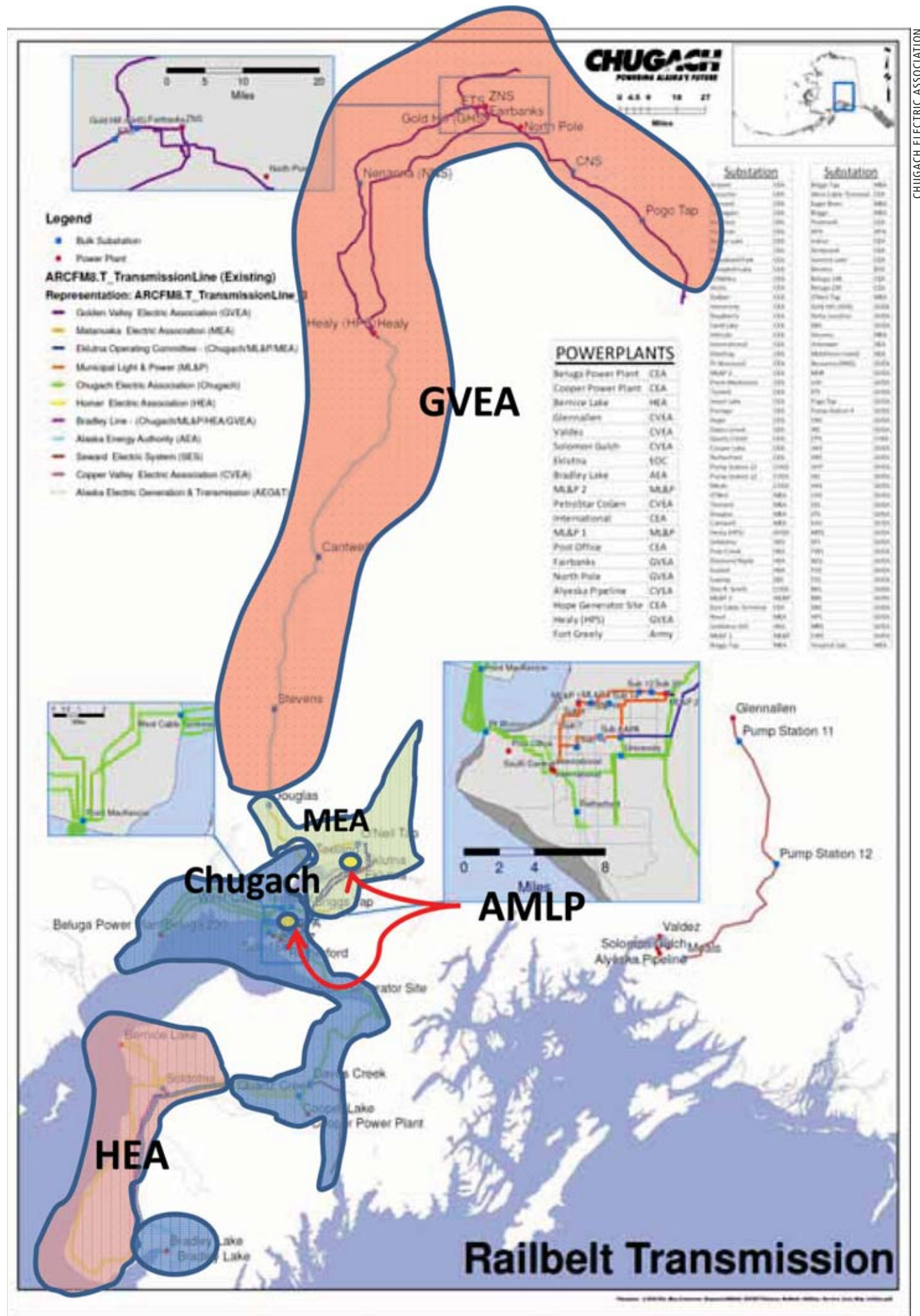
"From a system perspective the transmission grid is one machine," Hickey said, explaining that generators feeding power into the grid at different points along its length all have to spin at the same speed, synchronizing their output of alternating current at a fixed 60 cycles per second frequency. If the load on the system exceeds the generation capacity, the power generation will slow down and ultimately come to a halt, rather like an underpowered car trying to negotiate an uphill stretch of road. Conversely, an excess of generator output overload will cause a speeding up of generation and trigger system instability.

A power load increase in Fairbanks at one end of the grid should have an almost instantaneous impact on a power generator in Homer, at the other end, as the generator adjusts to the load change. And so, operators of the grid must load balance on a second-by-second basis, to ensure the maintenance of power supplies and the continuity of the 60 cycles per second frequency, Hickey said.

Multiple utilities

At present three utilities that own generation capacity, Chugach Electric Association, Municipal Light & Power and Golden Valley Electric Association, conduct the load balancing, using a set of agreed rules for how the balancing is done and with each utility being responsible for its own sector of the grid, Hickey said. But the grid is entering a period of major upheaval, as wholesale power sales agreements between Chugach Electric and two other utilities, Matanuska Electric Association and Homer Electric Association, come to an end, causing these utilities to construct and operate their own power stations.

When the new power generation goes into operation, Homer Electric and



After 2015, when Matanuska Electric Association, MEA, and Homer Electric Association, HEA, will have implemented their own new power generation systems, these two utilities will join Golden Valley Electric Association, GVEA, Chugach Electric Association, Chugach, and Municipal Light & Power, AMLP, in balancing the power load with generation on the Alaska Railbelt grid. Although the grid as a whole has to operate as a single, integrated system, each utility will be responsible for load balancing in its own sector.

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FINANCE & ECONOMY

Domestic oil production hits 25-year high

Energy Information Administration also says for first time since early 1995, in October the US produced more crude than it imported

By KRISTEN NELSON

Petroleum News

U.S. crude oil production averaged 7.7 million barrels per day in October, the U.S. Energy Information Administration said in its short-term energy outlook, released Nov. 13.

"As EIA predicted back in March, it appears the United States produced more crude oil in October than it imported for the first time since early 1995," EIA

Administrator Adam Sieminski said in a statement. "Monthly estimated domestic crude oil output averaged 7.7 million barrels per day in October, which was the highest production for any October in 25 years, while oil imports were 7.6 million barrels per day," he said.

Total petroleum net imports were the lowest since February 1991, the agency said.

EIA is forecasting that U.S. crude oil production will average 7.5 million bpd

this year and 8.5 million bpd in 2014.

US crude supply

EIA said it expects U.S. crude oil production to increase from a 2012 average of 6.5 million bpd to 7.5 million bpd this year and 8.5 million bpd in 2014. "The continued focus on drilling in tight oil plays in the onshore Bakken, Eagle Ford, and Permian regions is expected to account for the bulk of forecast production growth over the next two years," the agency said.

Gulf of Mexico production is forecast to average 1.2 million bpd this year and 1.3 million bpd in 2013.

U.S. liquid fuel net imports, including crude oil and petroleum products, peaked at 12.5 million bpd in 2005 and have fallen since.

In October liquid fuel net imports were the lowest since 1991, EIA said, with the share of total U.S. consumption met by imports peaking at more than 60 percent in 2005 and falling to an average of 40 percent in 2012. The agency expects the net import share to decline to 28 percent in 2014, which would be the lowest level since 1985.

Brent down

The Brent crude oil spot price fell from a monthly average of \$112 per barrel in September to an October average of \$109 per barrel, EIA said. The agency expects the Brent crude oil price to continue to weaken as supply from non-OPEC countries exceeds growth in world consumption.

EIA said it expects Brent to average \$106 per barrel by December and \$103 per barrel next year.

The West Texas Intermediate spot price fell to an average of \$101 per barrel in October, down from \$106 in September, and EIA said it expects WTI to average \$97 per barrel in the fourth quarter and \$95 per barrel next year.

"The discount of WTI crude oil spot prices to Brent crude oil has widened from just over \$3 a barrel in July to \$9 in October, as refinery demand has returned to normal, lower seasonal demand levels, and U.S. crude inventories have begun to grow at the Cushing, Oklahoma, storage hub," Sieminski said. "EIA forecasts that growing non-OPEC crude production will continue to outpace refinery demand, leading to an average WTI discount to Brent of \$10 per barrel in the fourth quarter of 2013 and \$8 per barrel in 2014," he said.

"After averaging nearly \$103 per barrel for three consecutive months from April to June, Brent crude oil prices increased to around \$110 per barrel from July through October as a result of strong U.S. refinery demand and supply disruptions in the Middle East," Sieminski said.

Natural gas

"EIA boosted its forecast for U.S. marketed natural gas production by 0.4 percent this year and nearly 1 percent for next year, as domestic natural gas output reached record levels during the past several

see **OUTPUT MILESTONE** page 19

PIPELINES & DOWNSTREAM

Unocal sale of TAPS stake still pending

A minor owner continues to pursue a sale of its interest in the trans-Alaska pipeline system, or TAPS, but snags still remain.

Unocal Pipeline Co., in an Oct. 25 status report filed with the Regulatory Commission of Alaska, repeated language it had used previously. That is, Unocal and the other TAPS owners "have a dispute over several transfer-related matters," and the parties are trying to settle their differences through arbitration and litigation.

The other TAPS owners are subsidiaries of BP, ConocoPhillips and ExxonMobil. Presumably, one or more of these companies could end up with Unocal's interest.

Unocal, part of Chevron, holds the smallest stake in TAPS at 1.36 percent.

Unocal told the RCA it would file either an application to transfer its interest, or another status report, by Jan. 25. The commission said that would be fine.

The RCA in July 2012 gave Unocal permission to temporarily suspend service on its share of capacity on the pipeline, pending the sale of its ownership interest.

In seeking that suspension, Unocal said it was bowing out as an owner because its interest in TAPS "no longer meets the company's core strategic needs."

A subsidiary of Koch Industries in December 2012 received RCA approval to transfer its small stake in TAPS to BP, ConocoPhillips and ExxonMobil.

—WESLEY LOY



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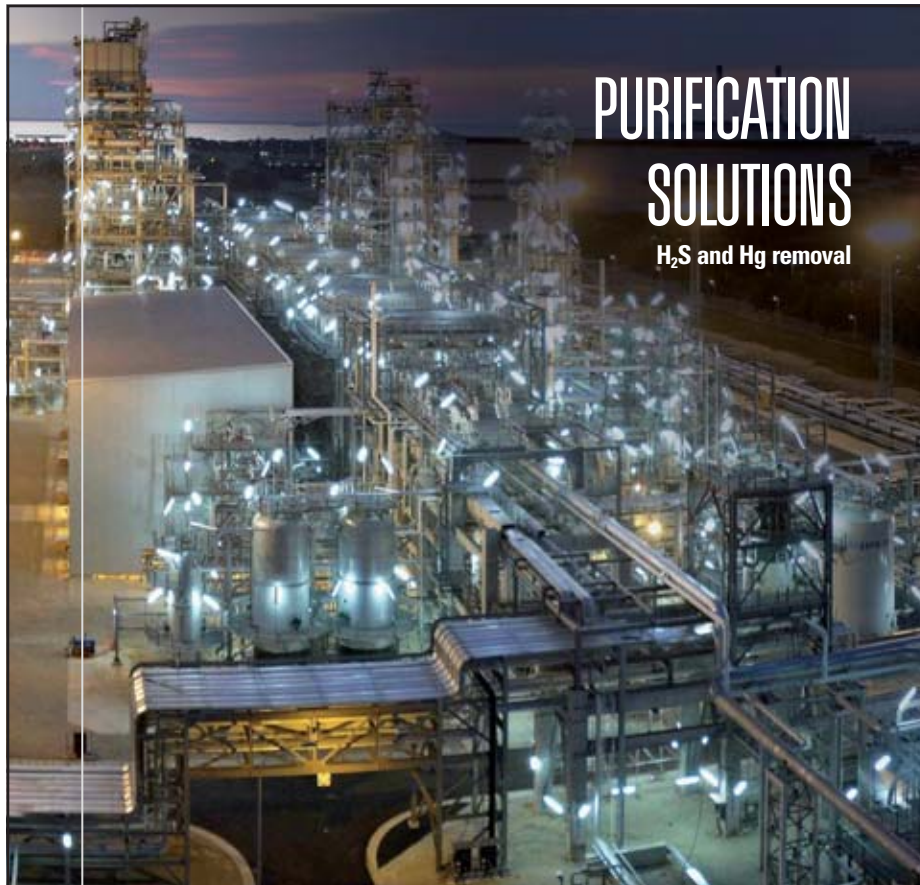
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ENVIRONMENT & SAFETY

Apache gets environmental award for seismic

The Interstate Oil and Gas Compact Commission has awarded its Chairman's Stewardship Award to Apache Alaska Corp. for the company's nodal seismic survey program in the Cook Inlet basin. On Nov. 5 the commission announced Apache as the winner in the small independent category of the award.

The award recognizes achievements in environmental stewardship by the oil and gas industry.

"We are immensely proud of this award because it formally recognizes what Apache Alaska practices every day — an unwavering commitment to protect the environments in which we operate," said John Hendrix, general manager of Apache's Alaska operations.

Kara Moriarty, director of the Alaska Oil and Gas Association, the organization that nominated Apache for the award, said that the association's members take operating safely and responsibly very seriously.

"Apache's award is just another example of how they are achieving that goal," Moriarty said. "Apache has been an industry leader on this project and they deserve the recognition."

The seismic technology that Apache has been using in the Cook Inlet region involves the use of wireless seismic nodes that independently record seismic signals for later download into a computer system, with precise timing and satellite positioning used to synchronize the recordings from multiple nodes.

On land, cylindrical shaped nodes can be backpacked to their location, with the wireless technology eliminating the need for ground cabling or the cutting of seismic trails through vegetation. Offshore, the nodes are disk shaped and are laid on the seafloor without cabling, rather than being towed behind a seismic vessel.

—ALAN BAILEY

continued from page 17

RAILBELT GRID

Matanuska Electric will become responsible for load balancing in their regions, thus expanding the number of utilities conducting load balancing from three to five, an expansion that will complicate the load balancing arrangements, Hickey said. The complications are compounded by difficulties in achieving agreements between the utilities over load balancing rules and associated cost allocations, with at least one of the utilities joining the load balancing system disagreeing with the existing rules, he said.

In the Lower 48 load balancing complications within a region are generally resolved by establishing an independent system operator, or ISO, with authority to control the dispatch of power and ensure non-discriminatory access to the transmission system across the entire region, Hickey said. And a regulated transmission company known as a transco typically owns the assets of the grid, manages grid upgrades and secures financing for the upgrades, he said.

The transco pools all costs associated with the grid and recovers these costs through rates charged to the grid users. The ISO has authority over the transco, ensuring that an adequate transmission system is built, assuring the recovery of rates and, as necessary, ensuring short-term reliability of power supplies.

Alaska possibilities

The Railbelt utilities have been discussing a similar arrange-

"From a system perspective the transmission grid is one machine." —Brian Hickey, executive manager, grid development, Chugach Electric Association

ment for Alaska and have coined the name Railbelt Reliability Authority, or RRA, for an ISO that could potentially oversee the grid, implementing a single, system-wide rate for power transmission, rather than having the current complex rate structure, Hickey said. ARCTEC could potentially become the transco for the grid, taking responsibility for grid upgrades and maintenance and pooling the costs across all users. ARCTEC would likely contract work back to the entities that originally maintained the transmission assets, but with the assets either being transferred or pledged to ARCTEC.

This type of arrangement would make the funding of transmission upgrades more feasible than otherwise: Benefits from the upgrades would mainly come in the form of cost savings that ARCTEC could offset against the upgrade costs in the rates that it charges for grid usage, Hickey explained.

However, the main obstacle to establishing a grid management system of this type has been misalignment between the costs and benefits across the different existing utilities, he explained. If a grid unification initiative results in a benefit for the grid as a whole, but that benefit disproportionately applies to perhaps one or two utilities, the other utilities that lose out will not agree to the funding of the initiative, he said. ●

Contact Alan Bailey at abailey@petroleumnews.com

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OUTPUT MILESTONE

months despite lower gas prices," Sieminski said. "Gas from the Marcellus Shale has been the main driver of this production growth," he said.

Natural gas marketed production is projected to increase from 69.2 billion cubic feet per day in 2012 to 70.3 bcf per day this year and 71 bcf per day in 2014, with natural gas pipeline gross imports continuing a five-year fall and liquefied natural gas imports remaining at minimal of levels of some 0.4 bcf per day this year and next.

"This month's forecast lowers U.S. natural gas imports by pipeline, mostly from Canada, as domestic gas production increases," Sieminski said.

Natural gas spot prices averaged \$3.68 per million Btu at Henry Hub in October, up 6 cents from the September price, EIA said. The agency expects the Henry Hub spot price to increase from an average of \$2.75 per million Btu in 2012 to \$3.68 this year and \$3.84 in 2014. ●

Contact Kristen Nelson at knelson@petroleumnews.com

• NATURAL GAS

Small-scale LNG makes in-roads in north

Utilities pave way for trucked liquefied natural gas in Yukon; if Casino mine goes ahead, its LNG volumes would reduce overall cost

WESTERN COPPER AND GOLD



If the Casino copper-gold prospect gets developed into a mine, it could produce more power than is consumed in the rest of Yukon combined. Current plans call for natural gas to be the primary fuel, trucked in as LNG from British Columbia.

By **BILL WHITE**

Researcher/writer for the Office of the Federal Coordinator

Editor's note: Part 1 of this story ran in the Nov. 3 issue; Parts 2 and 3 have been combined in this issue.

Gas vs. diesel in the Yukon

In Yukon Territory, two power utilities are paving the road for trucked LNG deliveries.

The first and more modest effort belongs to Yukon Electrical Co. for the small Alaska Highway hamlet of Watson Lake.

The private company plans to convert a diesel generator — one of six there — into one fueled by a mix of natural gas and diesel. Yukon Electrical hopes to have the system ready to go this coming winter, if it gets government approvals in time.

If this project proves successful after a year of testing, phase 2 will involve converting the remaining generators to mixed natural gas-diesel fuel. From there, if all works out well, Yukon Electrical and its parent company have ambitions to roll out trucked LNG elsewhere in remote, northern Canada, to other towns, oil fields

and elsewhere where big, heavy-duty engines need fuel.

The second trucked LNG initiative is a \$34 million project to replace the two oldest diesel back-up generators at the Whitehorse Rapids dam with LNG-fueled turbines. A government utility called Yukon Energy Corp., which runs the dam, is pushing this project.

Yukon Energy hopes to break ground next spring on a site to house the storage and regasification equipment. It wants the LNG generators working for the 2014-2015 winter, saving almost \$3 million in fuel costs in the next year over diesel.

Again, this timeline depends on getting government approvals in hand.

Because LNG is new territory for Yukon regulators, it's unclear that all paperwork will get signed as fast as Yukon Energy and Yukon Electrical would like. But the government has seen the drive to LNG coming. In July it issued its first environmental and safety regulations for power-plant equipment that would warm LNG back into vapor before the gas is burned. Yukon Electrical's Watson Lake project is the first test of these rules, and the regulators want to make sure they act judiciously on the company's regasification-plant application.

Cost savings and cleaner air are LNG's key selling points for Yukon Energy. Hydro — relatively cheap. Diesel — relatively expensive. LNG — in between. Yukon Energy pegs its diesel power-generation costs at 28.7 cents per kilowatt hour, with LNG coming in at 13.5 cents. By comparison, Inuvik's residential diesel-power rates are about 65 cents per kWh, before a territorial subsidy slashes it by more than a third.

How expensive is diesel? It depends on how far up the road you live. Yukon Electrical paid \$3.68 per gallon for its Watson Lake diesel in 2012, \$4.26 a gallon for deliveries to its Beaver Creek power plant 550 miles away near the Alaska border, and over \$8 for deliveries to its Old Crow plant in Yukon's Arctic.

More on the Yukon Electrical and Yukon Energy ventures in a moment.

First, a detour to a third project that could transform the economics for Yukon trucked LNG, and for Inuvik, too.

All eyes on Casino

Hovering in the background is a remote copper-gold mine prospect that, if developed, could be so big that its power plant would produce more electricity than is consumed in all the rest of the Yukon combined.

It bears a roll-the-dice name of Casino. It's championed by a Vancouver, B.C., based junior mining company called Western Copper and Gold Corp., which is betting the company on Casino.

Casino lies in a region with an entrenched mining heritage — the remote hills and valleys of west-central Yukon. It's a bit south of Dawson City and west of Carmacks, towns prospectors founded in the 1890s. The Yukon River flows roughly 10 miles north of Casino. Whitehorse lies 240 miles southeast.

Western Copper estimates Casino holds at least 4.5 billion pounds of copper, 8.9 million ounces of gold, 483 mil-

1 2
SERIES



BILL WHITE

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see **SMALL-SCALE LNG** page 21

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SMALL-SCALE LNG

lion pounds of molybdenum and 65 million ounces of silver. This “endowment” is roughly a 10th to a 20th the size of Western Alaska’s massive and controversial Pebble copper and gold deposit, but it’s sizable nonetheless.

The company believes that with a \$2.5 billion investment — including \$209 million for a power plant, and \$123 million for an airstrip and 80-mile access road into the deposit — Casino could produce for 22 years, sending the ore to market south by truck to the Southeast Alaska port of Skagway.

Western Copper readily acknowledges it lacks the financial heft to develop Casino on its own. It needs a deep-pocket mining major to partner in or buy the project. That said, Western Copper says it plans to apply for the government’s environmental review by late 2013 and that if all goes well production could start late this decade.

Here’s why Casino matters to the region’s trucked LNG ambitions:

Casino would haul in LNG for its power-plant fuel. It would need so much natural gas that economies of scale for trucking LNG to the northland would improve fantastically. It’s likely to need enough LNG to justify construction of a liquefaction plant much closer than in suburban Vancouver — the source of Yukon Electrical’s and Inuvik’s supplies — or near Calgary — the source of Yukon Energy’s supply.

Pretty much everyone in the Yukon points to Fort Nelson, B.C., as a likely site for a new LNG plant to meet local needs — especially if Casino is developed. A truck trip from Fort Nelson to Watson Lake is 1,100 miles shorter than one from Vancouver. A truck trip to Whitehorse is 800 miles shorter than one from the Calgary area.

As good as Yukon Electrical and Yukon Energy say the economics look for LNG vs. diesel today, they look fabulously better if the LNG can be sourced in Fort Nelson, which lies just over 300 miles down the Alaska Highway from Watson Lake and is amid some of northeast British Columbia’s most promising shale-gas plays. Fewer trucks and tanks needed for the round-trip. Less fuel burned on the highway. Etc.

Energy would comprise about 30 percent of Casino’s processing cost, estimated Cameron Brown, Western Copper’s vice president of engineering. LNG cuts the fuel bill in about half over diesel, he said.

His company figures Casino will need



Western Copper and Gold Corp. envisions trucking in LNG for power-plant fuel when its Casino prospect, shown above, in west-central Yukon is developed into a mine.

a main power plant and a supplemental power plant totaling 135 megawatts of capacity, give or take. Peak demand elsewhere in the Yukon from utility-provided hydro, diesel and wind energy tops out at about 90 megawatts.

Gas would be Casino’s main fuel. Western Copper figures it will probably need 10 to 11 LNG truck deliveries a day, Brown said. That would require a fleet of about 35 trucks for the 1,700-mile round-trip between Fort Nelson and Casino.

By contrast, Yukon Energy figures it initially would receive two to four deliv-

eries per week to its Whitehorse LNG generators, with a longer-term best-case scenario of possibly 2.5 deliveries per day on average. Yukon Electrical expects about one delivery every other week to Watson Lake for phase 1, and less than one per day if the whole power plant converts to mixed LNG-diesel fuel in phase 2. Inuvik likely would get fewer than one per day even if LNG comprised all the town’s power and heating fuel.

In Alaska, Fairbanks Natural Gas averages three loads per day throughout the year to serve its 1,100 customers, with a

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Vancouver and Inuvik.....	2,252 miles*
Calgary and Whitehorse.....	1,422 miles
Fort Nelson and Watson Lake.....	319 miles
Fort Nelson and Whitehorse.....	591 miles
Fort Nelson and Casino mine.....	831 miles
Fort Nelson and Inuvik.....	1,352 miles
* Minimum mileage	

Sources: Distancecanada.com; Office of the Federal Coordinator (for Casino)

low of one and a high of six or seven from its liquefaction plant at Point Mackenzie, said Daniel Britton, president and CEO. The state of Alaska’s proposed project to truck LNG from Prudhoe Bay to Fairbanks for heating fuel would involve seven daily deliveries at first and eventually up to 30 truck deliveries per day in winter.

(Comparisons between Alaska and Canada deliveries are skewed by the different tanker sizes used. The Alaska tankers carry 9,000 to 11,000 gallons. Yukon Energy and Western Copper hope to use double-trailers called A-Trains that can haul about 25,000 gallons, although such heavy loads beat up roads more and the Canada highway departments haven’t sanctioned them yet for the LNG projects.

see **SMALL-SCALE LNG** page 22

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SMALL-SCALE LNG

Inuvik expects to use 16,500-gallon tanks.)

A 'proof of concept' test

Yukon Electrical's phase 1 conversion of one diesel generator is ready to go, mainly awaiting approval of its application to the territorial Oil and Gas Resources Branch for a license to install equipment to receive and regasify LNG at the company's Watson Lake power plant.

The plant has six diesel generators. Phase 1 involves converting the smallest, a 0.7-megawatt turbine. The other five are larger, ranging from about 1 to 1.5 megawatts. The other Watson Lake generators would get converted to dual-fuel — LNG and diesel — if phase 1 goes well.

A year of testing will show whether phase 1 cuts emissions and noise as expected — LNG should burn cleaner and quieter than diesel.

Cost savings probably won't come until phase 2, although fewer emissions from the plant should begin at once, the utility said. LNG should be cheaper than diesel, but too little will be purchased at first for the small generator to more than offset the roughly \$1 million capital cost of converting to dual fuel, company executives said.

Yukon Electrical generates power in a few small towns other than Watson Lake, but mainly it's the territory's largest electricity retailer. It buys most of its power from Yukon Energy Corp., a government-owned business — or "crown corporation," as they're known in Canada.

Yukon Electrical is an arm of Alberta-based ATCO Group, a Western Canada electricity and natural gas conglomerate. It owns power plants, transmission and distribution lines and local electric companies such as Yukon Electrical. It has big



The Whitehorse dam, foreground, on the Yukon River is the Yukon Territory's biggest energy source, with four hydro generators and seven diesel generators. Whitehorse downtown is in the upper right and the airport is in the photo's center.

transmission gas pipelines and local gas-distribution companies. Among its other interests, ATCO owns construction businesses in Canada and elsewhere. Revenue in 2012 totaled \$4.4 billion, profits \$372 million.

J.D. Patrick Creaghan is ATCO Energy Solutions special projects vice president, kind of the guy in charge of discerning synergies among diverse and even seemingly unrelated activities.

Take LNG, for example. Will LNG work well at other small power plants? Can it be a smart fuel choice for oil and gas exploration and field development, mines and other high horse-power uses? What is its application to ATCO's gas pipeline and storage businesses? And on and on.

Creaghan calls Watson Lake a "proof of concept" test.

"Smaller-scale liquefaction is something we're interested in understanding," he said.

As for Watson Lake itself, "We're con-

fidant Watson Lake will work. The technology is there," he said. With both diesel and natural gas available as fuels, Yukon Electrical will have the option to buy the fuel selling for the best price, he added.

LNG at the Whitehorse Dam

Up the highway in Whitehorse, Yukon Energy is a smaller business than ATCO but is pursuing a bigger LNG play.

The crown-owned utility is the Yukon's major power generator. Besides its main dam in Whitehorse, it has hydro plants in Aishihik Lake about 70 miles northwest of Whitehorse and in Mayo, about 250 miles north of Whitehorse at a site originally developed in the 1950s to provide power for a silver mine. All the dams have expanded over the years.

Yukon Energy also has diesel generators in Whitehorse, Mayo, Dawson and Faro, as well as two wind turbines perched on Haeckel Hill above Whitehorse.

The company just finished a series of

transmission-line extensions that tie this whole system together — the hydro, the diesel, the wind. It's a single functioning unit where all the systems back up each other in providing power and electric heat for much of the Yukon's road system and population.

But this Yukon electrical grid — like Alaska's — is disconnected from the North American grid. It would cost something like \$2 billion in capital spending to plug into the northernmost tentacle of BC Hydro's system, figures Hector Campbell, director of resource planning for Yukon Energy.

Yukon Energy's three hydro plants generate most of the territory's wattage. The eight diesel generators in Whitehorse conceptually are for backup power, but increasingly they get tapped for base-load duty, especially in winter when the Yukon River flow slackens. (Territory-wide, Yukon hydro energy capacity falls from 77 megawatts in summer to 60 megawatts in winter.)

The oldest two diesel generators, installed in the 1960s, are ready for retirement, Yukon Energy says.

After studying their options for several years, utility executives decided on generators that burn natural gas instead of diesel, a \$34.4 million project. They figure if they can install two new gas generators in late 2014, their fuel bill would fall by \$2.7 million in 2015 and by \$4.2 million a year starting in 2017 compared with sticking to diesel. They're also seeking permission to install a third gas generator later as part of this project.

Besides the fuel savings, emissions would fall — less greenhouse gases, less particulates, less nitrogen oxide. Like Fairbanks, Whitehorse has winter air inversions that trap air pollution, giving a noxious texture to street-level breathing.

In July 2013, the Yukon government took two actions to clear the way for LNG. It raised Yukon Energy's borrowing limits so it could finance the project. It also adopted the gas-processing regulations. Both had been in the works for many months.

In August 2013, the utility filed for an environmental review. In the Yukon, these are done by an 8-year-old federally formed body called the Yukon Environment and Socio-economic Assessment Board. YESAB is set up as a one-stop agency that will perform this assessment for all agencies — federal, territorial and First Nations — with oversight. In some ways the YESAB process resembles U.S. environmental reviews done under the National Environmental Policy Act.

For this LNG project, an executive committee comprised of the YESAB chairman and several other board members has the lead. That's a higher-level screening than most reviews because this is a bigger project, said Stephen Mills, chairman. The Watson Lake dual-fuel LNG project is much smaller and was assessed by the local YESAB office, he said.

Mills has publicly vowed to try to complete the YESAB assessment by next spring, when Yukon Energy wants to break ground. That would make it one of the speediest YESAB executive committee turnarounds since the agency's work began in 2005, he said. He noted the Whitehorse LNG project in many ways is much smaller in scope and potential environmental/socio-economic impacts than large-scale mining proposals and other big projects the executive committee considers. Also, Yukon Energy has kept the area's two First Nations groups informed on its LNG project, and typically has

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continued from page 22

SMALL-SCALE LNG

responded quickly to YESAB requests for more information, he noted.

After conducting its review, the YESAB panel will issue its report to government and First Nations agencies that have permits, licenses and other authorizations pending for the LNG project. The report will make one of three recommendations:

- Accept the project as proposed.
- Accept the project with specific changes to mitigate environmental and socio-economic impacts.
- Reject the project.

If government agencies veer from the YESAB recommendation, they must explain themselves.

Environmentalists do battle

The YESAB review promises to be a battleground of sorts for LNG opponents.

The arguments will sound familiar to those who follow the anti-fracking debate in the United States. Concerns about choosing fossil fuels over renewables, about water use and possible contamination. That methane leaks from wellheads and pipelines should be considered with power-plant emissions.

Yukon residents who head south on the Alaska Highway drive right through British Columbia's Liard Basin, a new gas play, so the shale debate is becoming more tangible. The Liard extends north into the Yukon, although drilling hasn't occurred there.

The big win so far for Yukon oil and gas opponents is a drilling moratorium in a basin around Whitehorse, and a review under way of fracking's pros and cons. They also scored some minor concessions on the gas regulations adopted in July.

The opposition appears to be engaged and vocal.

"It is unwise to replace one dirty fossil fuel with another," the Yukon Conservation Society said a few days before a July 2013 Yukon Energy public meeting on its trucked LNG plans.

At the meeting, the utility got an earful.

"We should be moving toward renewable energy," one local said.

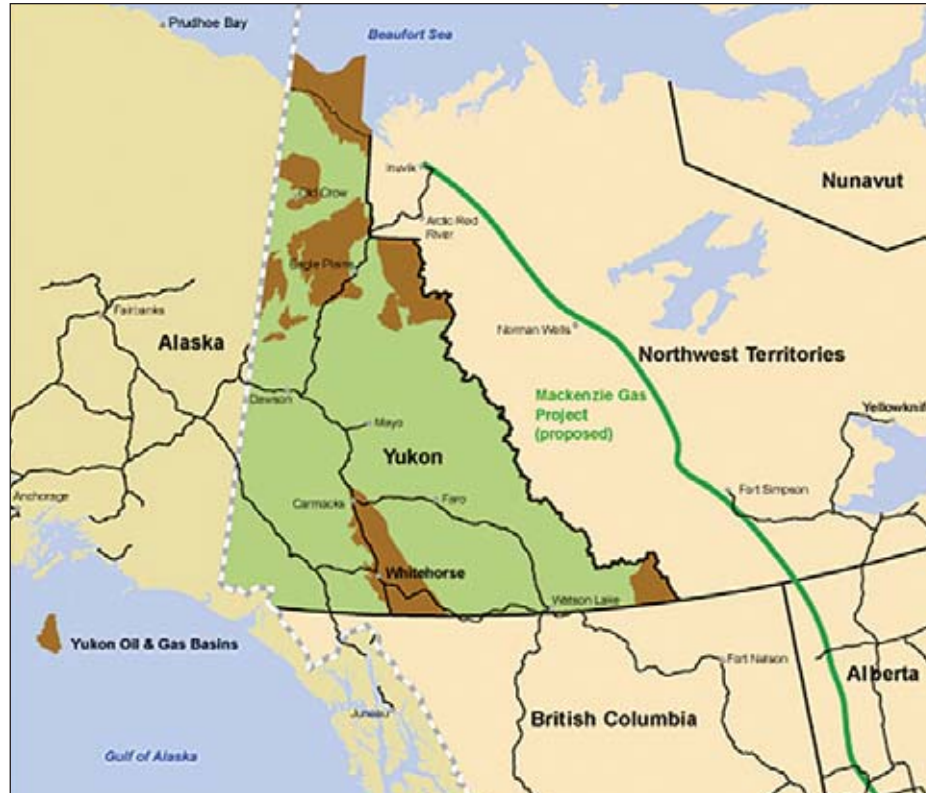
"I am just really sorry there is this kind of fixation on old-fashioned fuels," another said. "I just wish you guys would do something different."

In mid-September, the conservation society hosted a public lecture in Whitehorse by Canadian journalist Andrew Nikiforuk, author of "The Energy of Slaves: Oil and the New Servitude." The talk's title was "Oil, Gas, Fracking and the Yukon!" The host wasn't sure what turnout to expect and was pleasantly surprised at the standing-room-only crowd of over 100 people. Nikiforuk's message: Humans are hooked on cheap energy, whose era has passed. Today's oil and gas production consumes extraordinary energy. Until humans can wean themselves off fossil fuels, they must tightly regulate the expensive and arguably less planet-friendly energy plays that remain, such as shale oil and gas.

Anne Middler, the conservation society's energy coordinator, basically described her group's position this way:

First, adopting LNG as a Yukon Energy fuel will leave little room for renewable energy for the next 40 years. In the short term, better to stick with what the utility knows — diesel, although a cleaner, low-carbon diesel.

Second, LNG could open a gateway to Yukon gas drilling, i.e. fracking. The utilities eventually will want to source their gas locally. And even if they don't buy



Yukon Territory has six main oil and gas basins that geologists believe hold 17 tcf of gas. Eagle Plain is in the northcentral. Liard is in the southeast corner. The green line east of Yukon shows the proposed Mackenzie Valley gas pipeline route from Inuvik.

Yukon gas, eventually they will buy fracked shale gas from somewhere in North America.

Yukon has no natural gas production.

The only active explorer is Northern Cross, a company majority owned by China National Offshore Oil Corp., or CNOOC. Northern Cross is targeting a

conventional — not shale — play north of Whitehorse called Eagle Plain, which territorial geologists believe holds 6 tcf of natural gas and 437 million barrels of oil.

Northern Cross has done some drilling and hopes to shoot 3-D seismic this winter.

Throughout the Yukon, the territory holds an estimated 17 tcf of potential onshore gas resource, including 4.1 tcf in its patch of the Liard down in its south-east corner.

Officials with the Yukon Territory's Oil and Gas Resources Branch acknowledge the lack of a big pipeline — the Mackenzie Valley or the Alaska North Slope line — handicaps large-scale gas development in the region.

But they also believe that getting this resource into production is critical to economic development. Natural gas transforms the economics of potential mines, like Casino, compared with diesel. And new mines are the key to new jobs and new wealth for the Yukon, they say. ●

Editor's note: This is a reprint from the Office of the Federal Coordinator, Alaska Natural Gas Transportation Projects, online at www.arcticgas.gov/small-scale-lng-makes-roads-canada-far-north.

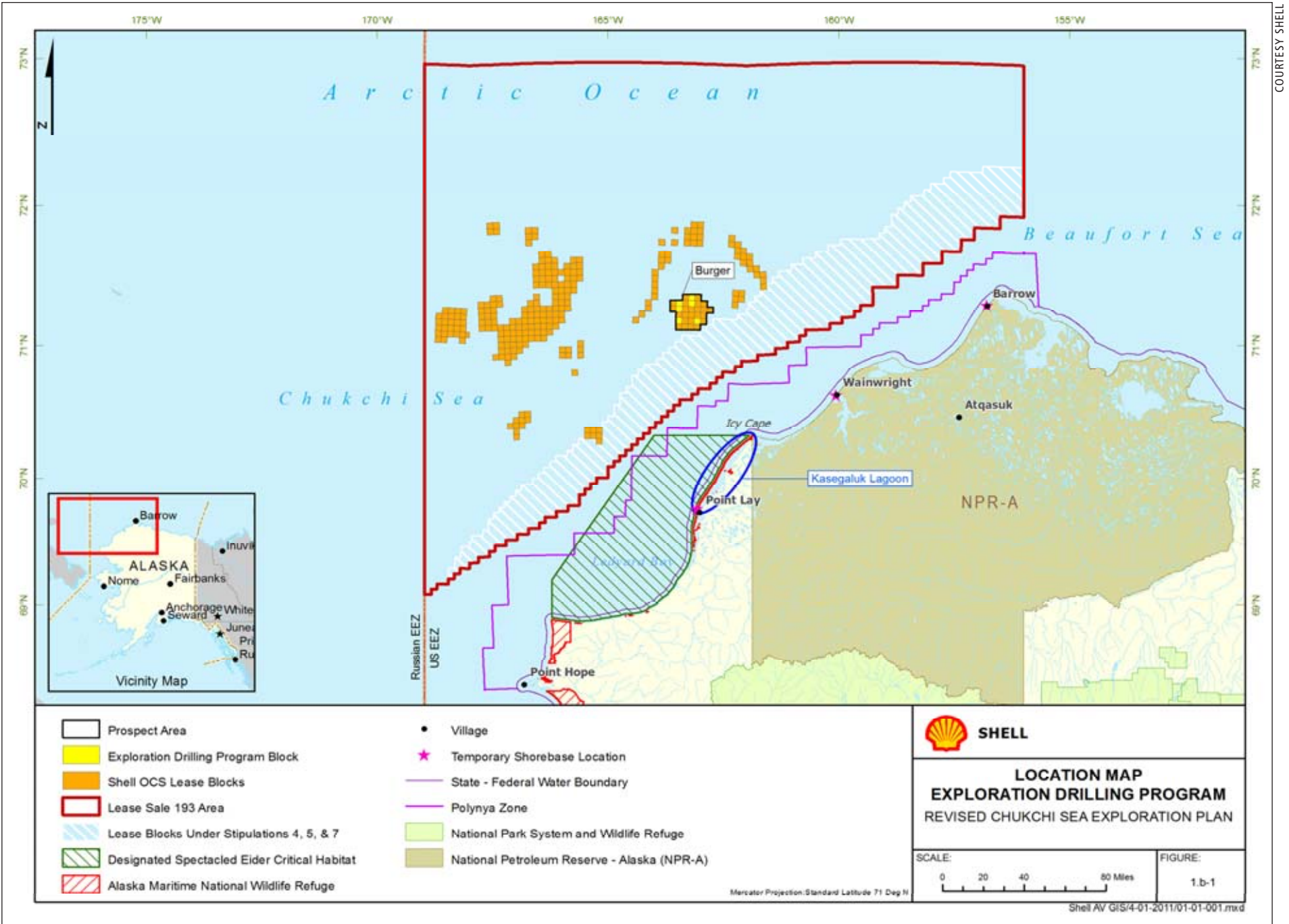
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The huge Burger structure, 80 miles west of the northwestern end of Alaska's North Slope, is Shell's initial exploration target in the Chukchi Sea.

● EXPLORATION & PRODUCTION

Shell's Arctic saga moves ahead again

Company still sees the Arctic Alaska offshore as presenting a strategic opportunity for major new oil reserves in the years to come

By ALAN BAILEY
Petroleum News

After several months of silence following the misadventure involving the grounding of the Kulluk, the company's Arctic floating drilling platform, Shell has confirmed with the filing of a new Chukchi Sea exploration plan its commitment to the Arctic Alaska offshore as a strategic exploration play, a region where the company hopes to find a significant part of its future oil supplies.

And, as reported in the Nov. 3 issue of Petroleum News, Simon Henry, the company's chief financial officer, characterized Arctic Alaska as "the largest single exploration project in the Shell group."

Since the original Burger well did not determine what lies below the gas, could Burger hold a giant oil field akin the Kuparuk River or Prudhoe Bay fields on the North Slope?

Chukchi Sea

The company has made it clear that it sees the huge but largely untested petroleum province of the Chukchi Sea, with its immense area of geology similar to that of Alaska's North Slope and with giant geologic structures that could host oil and gas, as its primary focus. And as its first objective, the company is targeting the Burger

prospect, a 35-mile diameter structure about 80 miles offshore the western end of the North Slope.

Shell has already drilled a single exploration well into the structure. That drilling, which took place during an earlier exploration program in the late 1980s, discovered a pool of natural gas amounting to perhaps 17 trillion cubic feet in sands roughly equivalent to the reservoir sands of the Kuparuk River field in the central North Slope.

In the age of cheap shale gas no one has any interest in developing natural gas in such a remote and expensive place as Burger. But, following a program of 3-D seismic surveying over the prospect during its current exploration program, Shell said that it thinks there is oil in the

see SHELL OUTLOOK page 25

PIPELINES & DOWNSTREAM

New tugboat comes to work in Cook Inlet

A newly built tugboat, the Bob Franco, was due to arrive in Alaska to escort and assist ships docking at Tesoro's refinery at Nikiski on the Kenai Peninsula.

A welcoming ceremony was planned for Nov. 12 in the Homer harbor.

The 120-foot, 5,360-horsepower tractor tug is designed specifically to operate in "the severe tides, fast currents and heavy ice of Cook Inlet," said an Oct. 29 media advisory from the Cook Inlet Regional Citizens Advisory Council, which monitors oil industry activity in the inlet.

The tug belongs to Seattle-based Harley Marine Services. It will operate under contract for Tesoro.

—WESLEY LOY

continued from page 24

SHELL OUTLOOK

structure. Since the original Burger well did not determine what lies below the gas, could Burger hold a giant oil field akin the Kuparuk River or Prudhoe Bay fields on the North Slope?

However, since it is not possible to use seismic data to directly detect the presence of oil beneath the ground, Burger presumably remains a multibillion-dollar gamble for Shell, with no guarantee of success.

Beaufort Sea

Following the drilling of a number of exploration wells in the Alaska Beaufort Sea quite a few years ago, this region, where Shell is pursuing part of its Alaska exploration program, is known to hold several oil pools in the strata beneath the sea floor.

These known pools, while all modest in size, present the advantage of being relatively close to the existing North Slope oil infrastructure. Shell has particularly been targeting the Sivulliq prospect, on the west side of Camden Bay, to the east of Prudhoe Bay. Sivulliq has a known oil pool, thought to be around 100 million to 200 million barrels in size. Shell has also been targeting a nearby prospect called Torpedo.

2005 lease sale

In fact Shell's current Alaska exploration program initially targeted the Beaufort Sea, after the company picked up some Beaufort Sea leases in a 2005 lease sale. And as the company progressed its exploration plans, it appeared to try to maintain a relatively low profile in Alaska while also moving forward with very aggressive Beaufort Sea drilling concepts. But North Slope communities, becoming aware of Shell's intent and alarmed about potential impacts on their subsistence hunting activities, raised objections to what Shell was attempting. At the same time, environmental organizations, most of

see **SHELL OUTLOOK** page 26

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EXPLORATION & PRODUCTION

US drilling rig count up by 12 to 1,754

Oilfield services company Baker Hughes Inc. says the number of rigs drilling for oil and natural gas in the U.S. rose by 12 the week ending Nov. 8 to 1,754.

The Houston-based company said in its weekly report that 1,383 rigs were drilling for oil and 365 for gas. Six were listed as miscellaneous. A year ago there were 1,806 rigs. Of the major oil- and gas-producing states, Texas gained 13 rigs, New Mexico increased by six and Louisiana added one. Oklahoma lost four rigs and Alaska declined by one. Arkansas, California, Colorado, Kansas, North Dakota, Ohio, Pennsylvania, Utah, West Virginia and Wyoming remained unchanged.

The U.S. rig count peaked at 4,530 in 1981 and bottomed at 488 in 1999.

—ASSOCIATED PRESS

EXPLORATION & PRODUCTION

Alaska lawmakers tour Point Thomson

Alaska lawmakers were heading north Nov. 12 to take a firsthand look at the Point Thomson petroleum field.

Exxon Mobil Corp. has been working to develop the North Slope field since settling a long-running lease dispute with the state in 2012. Terms of that agreement, aimed at getting development under way, include penalties aimed at forcing the company to move toward a major gas sale and increased oil production, the Fairbanks Daily News-Miner (<http://bit.ly/1bzMK9p>) reported. Critics of the settlement said it would leave too much oil untapped.



CLICK BISHOP

Sen. Click Bishop, R-Fairbanks, said he believes ExxonMobil is serious about moving ahead with the development and that Point Thomson could enhance chances for a major natural gas pipeline. The field is seen as critical to the fortunes of a major gas line, which ExxonMobil, BP, ConocoPhillips and TransCanada Corp. are pursuing.

During the trip, Bishop said he would look for signs of the company's continued commitment to Alaska.

The amount of money ExxonMobil has invested so far "is not chump change," he said. "I don't know what the total spend is, but it's north of 4 billion. I'm not inside the ExxonMobil boardroom, but I don't think they're going to be spending that kind of money without the bigger prize of the pipeline."

Bishop said he is pleased to see ExxonMobil following through on promises to hire Alaskans.

ExxonMobil earlier this year announced it had hired 1,200 Alaskans during the 2013 winter work session and sent work to in-state contractors across Alaska.

Larry Persily, the federal coordinator for Alaska gas pipeline projects, said a gauge of the companies' intention of following through on a pipeline might not be on the North Slope but in a mailbox.

"The next benchmarks to look for are going to be the application for an export license," he said. "Even though it's a 50 buck fee, it's a visible symbol to the market that you're doing something. There's also 2014 fieldwork to be done."

Information from: Fairbanks (Alaska) Daily News-Miner, <http://www.newsminer.com>.

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continued from page 25

SHELL OUTLOOK

which were adamantly opposed to any offshore exploration and development, started lining up to block Shell's plans.

Shell took action to accommodate the concerns of North Slope residents. And over time, while North Slope communities have remained divided over the pros and cons of offshore development, the company has achieved cooperative relationships with several North Slope organizations, including the North Slope Borough. But some North Slope groups together with a long list of environmental organizations have launched a series of lawsuits targeting the permits that Shell

Shell now says that it hopes to resume drilling in the summer of 2014, but that it will only drill in the Chukchi Sea, placing its Beaufort Sea plans on hold for the time being.

needs and delaying Shell's planned drilling.

Chukchi lease sale

In a 2008 lease sale Shell spent \$2.1 billion on a series of Chukchi Sea leases, thus kicking off the company's Chukchi Sea exploration efforts. That lease sale is still the subject of an unresolved legal challenge.

In the summer of 2012 Shell finally managed to obtain all of its needed permits and deployed drilling fleets to the Chukchi and Beaufort seas. But, because an oil containment system that the company had committed to deploy as a safety precaution for its Arctic venture took longer to construct than anticipated and then failed in its initial testing, Shell was limited to the drilling of two top-hole well sections, one at the Burger prospect and one at Sivulliq. Then the grounding and damaging of the Kulluk in the Gulf of Alaska after the end of the drilling season caused Shell to pause its plans in 2013.

Shell now says that it hopes to resume drilling in the summer of 2014, but that it will only drill in the Chukchi Sea, placing its Beaufort Sea plans on hold for the time being. The company plans the use of two rigs, having contracted a semi-submersible drilling rig, the Polar Pioneer, as a replacement for the Kulluk. Drilling in 2014 will depend on the challenging prospect of permitting the company's substantial drilling fleet before the drilling season. ●

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continued from page 5

MURKOWSKI Q&A

time; then shale gas came a long and chased it away. It's over. We all need to take our licks and start over. Not continue this drain on state revenue. We have already spent \$260 million and are on the hook for another \$240 million. Again, what is TransCanada bringing to the table? The producers don't need them. Don't forget the state has leverage. It has its royalty gas. If they take an interest equal to their royalty — 20 percent — then we have what we had when we negotiated: alignment. That would represent our equity contribution. TransCanada can walk in free without any gas? By having equity interest, we have a seat at the table. We have representation on the board, whether it's an Alyeska-type board of directors. The capacity of the pipeline can be consistent with the market demand.

I recall Bill Egan argued that the state should have taken interest in the Alyeska pipeline. It would have accommodated a lot of the dispute fought in the courts over the fairness in the tariffs. A lot of lawyers were able to send their kids to graduate school over the fees because there was constant litigation. You can eliminate most of that by having a seat at the table.

Petroleum News: So what should the executive branch be doing right now to advance a gas pipeline?

Murkowski: First of all the Legislature is responding to the frustration of Alaskans along the Railbelt who want a supply of gas that is economic. If you take that objective and apply it to the realities, obviously they are funding an in-state line, not funding it to construct it, but funding from the standpoint of feasibility and from the standpoint of trucking LNG. The difficulties with the in-state line are the unknowns. If you bring North Slope gas down and they find major reserves in Cook Inlet, what does that do to the economics of your in-state line? Of course, they are looking for oil primarily, rather than gas, because it's more profitable. On the other hand, if they find significant reserves of gas and it's feasible for ConocoPhillips to start up their LNG facility, I think that would be a good idea. I think it might be a good idea. I would encourage that. I see the state has asked ConocoPhillips to look at putting that plant back in operation. You can't have a short supply of gas of gas on one hand in Anchorage and go out for long-term supply of contracts in Japan. So my point is there is a lot of risk.

There is a lot of risk for the producers because they are competing with gas in certain areas of the world that are closer to tidewater, so what's the Legislature doing? They are responding to the pressures, but they need to take the economics into account. The economics will drive this project. The interesting thing is you don't see the producers standing lining up behind any project to participate or fund associated with the in-state pipeline. They are focused on the market, which is primarily Asia. The price of gas is too low to justify that investment. The Legislature is starting to spend a lot of money and they have to keep in mind the economics drive those projects.

As far as the administration, here is what the producers want. They want certainty. We had a deal where we provided certainty on PPT, but they have never been able to resolve that. You have ACES now and they are about to unwind that. You've got to have alignment. You've got to have participants who

have, not necessarily an equally, but an equity interest of substance. That has to be identified with something meaningful, either a supply of gas or cost of construction. My point is the administration has to keep in mind, they are spending state money on feasibility studies, but the economics will drive the projects.

There are two problems. One is the unknown of Cook Inlet with in-state gas and the other is the market. It's so unstable. It's all over the place.

Petroleum News: If you were to do anything different, would there be anything?

Murkowski: The easiest thing would be go back to look at the contract we had, which the producers and, to some extent, the state are currently re-evaluating those conditions. I think it's going to be along those lines. There is obviously some changes in negotiations that are going to have to be addressed. The fundamentals we had were alignment and fiscal certainty. Those are the two big things that have to be addressed. You are going to stagnate and tread water until they are done. In the meantime, the market is not where you can say we have reason to believe that by the time we get this project built that we can amortize it for the next 20 to 25 years.

Petroleum News: So should the executive branch go back to negotiating fiscal certainty or wait for a firm project to come to the table?

Murkowski: No, it has to be done. Fiscal certainty means the producers want to know what they are going to be paying for the life of the project so they can figure out what they can amortize. We've heard the arguments one Legislature can't bind over the next. They aren't worried about that. They believe in the sanctity of a contractual relationship with the state. Then you've got to an alignment with everybody having an equity interest, not a regulation that's tied off in left field that you can't contract for more than 500 million.

Petroleum News: Speaking of money, you've talked about limiting funding for projects moving forward?

Murkowski: I've talked about 18 months or so. You've got plenty of projects potentially out there to evaluate and the Legislature is going to spend the money, but there are only so many prac-

tical ideas out there. The producers are the only ones with the capacity to build a project that's in their interest to market their gas. They've got leases to perform on. They can't hold onto them forever. It's in their interest to market their gas. It's in the state's interest.

Petroleum News: A few analysts have told lawmakers there are so many projects being studied that we really aren't sure what direction we're heading. You've spent time in Washington and had an outside-in view. Do you agree?

Murkowski: Under the current climate of indebtedness of the U.S. government, I don't think we can look to the federal government for a significant portion of our energy needs. We can do it with the state participating in revenue bonds or general obligation bonds.

The significant part of our energy needs has got to come from the market. You have to look at what's the end user going to pay? What's it going to cost to open up that plant down in the Kenai? Is it going to be cheap gas? Can you deliver that? Same is true for Agrium. How cheap can you produce gas that we need?

Petroleum News: Did you get a sense that the window of opportunity was closing for marketing Alaska's gas?

Murkowski: I get a sense the producers are looking all over. They are multinational companies looking to secure

long-term contracts. The market is competitive, but Alaska is a player in there as well. What they really need are long-term contracts whether it's with Osaka Gas, Korean Gas or any of the majors out there. There is a lot of competition; where capital goes is to the highest return and the least risk. They are not doing business up there because they love us; they are looking at it strictly from a bottom line. We've got to amortize that cost to moving gas to tidewater.

Petroleum News: OK, closing out with oil taxes. Do you think the state is in a good position with SB 21 coming into play soon?

Murkowski: I think they agonized too long to come up with a perfect solution on ACES. To me, a better solution would have been trying to sell where Alaska belongs in the world tax structure of oil bearing provinces. We were at the top. We don't belong at the top; we don't belong at the bottom. We belong in the middle. The middle to me is Alberta, a northern developing oil province. That's where we should be. If you go back and look at our contract, the one producers had agreed to under PPT, it was a little higher than the administration is currently purporting, so we had a little better deal but the times were different back then. ●

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Crowley and subsidiary relocate to shared facility

Crowley Maritime Corp.'s solutions group, project logistics and global freight management team, and subsidiary TITAN Salvage have relocated to a shared, custom-designed office and warehouse facility in Houston. The new consolidated location at 15894 Diplomatic Plaza Drive is expected to foster company-wide synergies, expand TITAN and Crowley's customer base and create new business opportunities among the three groups. Together, these businesses, which are founded in engineering, project management and logistics, will ultimately be able to provide better, more value-added customer solutions.

Though its name and core business remains unchanged, TITAN Salvage has relocated its headquarters from Pompano, Fla., to Houston as a result of the move.

The new facility will feature a state-of-the-art emergency response center, manned 24/7, for TITAN Salvage customers, and will have collaborative work spaces and meeting rooms, as well as a fully functional, secured warehouse and maintenance facility. The office boasts 128,500 total square feet, including 102,500 square feet dedicated to maintenance and warehousing. TITAN and Crowley's project logistics and global freight management team will use the warehouse space to store and stage salvage equipment, inventory ship parts and spares, and handle project cargo for customers. The new facility also offers 4.61 acres of additional paved outside storage and parking.

This shared office and warehouse is at 15894 Diplomatic Plaza Dr., Houston, Texas 77032. The businesses can be reached by calling the following new phone numbers: TITAN

Salvage, 832-850-4150; solutions, 832-850-4100; and project logistics and global freight management, 832-850-4000.

Foss Maritime honored for hurricane relief

A year after Hurricane Sandy struck America's East Coast the federal government has honored Foss Maritime Co. for its part in critical relief work.

Vice Admiral Mark D. Harnitchek, director, Defense Logistics Agency, presented the award to the Seattle-based company during a ceremony at the agency's headquarters, citing its ability to quickly move personnel and equipment to devastated, hard-to-reach locations in New York and the New Jersey shore.

Foss Maritime's John Tirpak was on hand to accept the honor. "Foss is proud to have done its part in Sandy's aftermath," he said. "We were able to respond quickly because of our peoples' unique skills and their on-the-ground experience in disaster areas."

"Foss was contacted during Sandy in part because of the work we'd done in Haiti in partnership with the U.S. government," said Robert Wagoner, who oversaw Foss' role in helping deliver tens of thousands of tons of food to the earthquake-torn country and rebuild the island-nation's main port. "The United States Transportation Command and the Defense Logistics Agency were well aware of Foss' capabilities in the face of a natural disaster."

"When our country calls, Foss stands at the ready," added Tirpak.

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MONTNEY RANKING

ically extensive siltstones of the Montney — ranging in depth from 330 feet to almost 1,000 feet — hold a “staggering” 3,000 trillion cubic feet of gas, of which 449 tcf is thought to be marketable, plus 14.5 billion barrels of natural gas liquids and 1.13 billion barrels of oil, with most of the oil confined to Alberta.

Play considered economic

The report said the Montney is “already considered one of Canada’s most economic gas plays,” with 2012 production averaging 1.7 billion cubic feet per day, or about 12 percent of Canada’s total marketable output, which represents petroleum that is recovered and ready to be used by consumers.

The Montney estimate has more than doubled the ultimate potential of the Western Canada Sedimentary basin to 821 tcf, of which 632 tcf remains after cumulative production to the end of 2012.

“The depth of the formation increases from northeast to southwest, generally along with increasing reservoir pressures and decreasing NGL and oil content. Thus, reservoir characteristics vary widely across the formation,” it said.

Gaetan Caron, chair and CEO of the NEB, said that “at current consumption rates the Montney gas resource would meet Canadian needs for 145 years.”

“The report clearly shows that Canadian energy markets will be well supplied with natural gas far into the future,” he said.

And the study emphasizes that more is likely in store as additional unconventional potential is found in unassessed shales, such as the Liard basin of British Columbia and Duvernay formation of Alberta.

Oil production from the Montney, still in its initial stages of development, flowed at an average 25,845 barrels per day last year, while natural gas liquids volumes are described as “highly uncertain, mostly because the in-place volumes (like those of oil) are also largely found in shallower areas.”

The report was released Nov. 7, just two days after Encana Chief Executive Officer Doug Suttles described the Montney as “unbelievable in scale,” representing 25 years of drilling inventory for his company and the potential to yield 2 billion cubic feet per day of gas and 50,000 bpd of oil.

It has been earmarked by Encana for up to US\$800 million of joint-venture spending in 2014.

By coincidence, the report was followed on Nov. 8 by an announcement that Talisman Energy has a C\$1.5 billion deal to sell 127,000 acres, or about three quarters of its Montney holding, to Malaysian-controlled Progress Energy Canada, while Enerplus said it has fetched C\$130 million from the sale to an unidentified buyer of 33,300 acres.

LNG export hopes

The gas riches identified in the formation were seized on by Natural Gas Development Minister Rich Coleman — the lead cabinet minister in the provincial government’s LNG sector — as proof that the province can be the “supply hub” for LNG exports from Canada.

He said the study supports his government’s conviction that “more than ever before British Columbia can supply energy needs at home and abroad.”

Michael Dunn, an analyst with FirstEnergy Capital, said that given the number of assets on the block in Western Canada sellers may have success in finding joint-venture partners, especially in regions such as the highly rated Montney and Duvernay.

The all-cash transaction by Talisman involves prospects in the Farrell Creek and Cypress areas and is a breakthrough in what CEO Hal Kvisle said Nov. 6 is a “challenging and slow moving” market that was holding up company efforts to dispose of C\$3 billion of assets in Western Canada, Norway and Colombia.

Kvisle said in a statement that the Progress deal, which includes 65,000 thousand cubic feet per day of Farrell Creek production and which was producing 11,000 barrels of oil equivalent per day by Oct. 1, is in line with other recent Montney transaction and enables Talisman to focus more on the Edson-Duvernay producing and development assets in northwestern and central Alberta.

Talisman retaining some assets

Talisman said it will retain its Groundbirch and Saturn assets as part of its 48,000 net acres of prospective Montney land.

Progress, a unit of Malaysia’s state-owned Petronas, is operator of the proposed Pacific NorthWest LNG project, which has applied for a National Energy Board license to export an initial 12 million metric tons a year of LNG, starting in late 2018.

Progress CEO Michael Culbert said the assets strengthen his company’s position in the North Montney which he said is “key to our go-forward plans” and contained sufficient resources to provide the needed 2 billion cubic feet per day of gas for Pacific NorthWest.

He said the quality of the Montney, and especially the North Montney, “have associated liquids as well as sweet gas that we feel stands up competitively with any other play in North America.”

In addition, Progress will acquire Talisman’s partnership interest in the Greater Cypress area where it has joint operations with Talisman and other operators to make it operator and the largest landholder.

Enerplus CEO Ian Dundas said his company has invested C\$50 million in its Montney properties, resulting in a return of about C\$3,900 per acre from the transaction.

He told a conference call the liquids content of the assets was lower than Enerplus had been targeting, but suggested the area offers “significant scope and scale” as a dry gas producer. ●

Contact Gary Park through publisher@petroleumnews.com

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DRILLING SEASON

struck a deal with ASRC Exploration LLC, the operator of the Placer unit, for the proposed drilling program. Brooks Range has filed the drilling plan “as is required if operations were to be conducted during this coming winter season,” Armfield said.

Unit expansion

As reported in the Nov. 10 issue of Petroleum News, Bill Barron, director of the Division of Oil and Gas, has recently approved the expansion of the Placer unit, contingent on the drilling and testing of a new well in the unit, the flow testing of the Placer No.1 well and transmissibility testing between the two wells, with all of this work to be done by June 30, 2014. ASRC Exploration must also post bonds totaling \$5.4 million and show a signed farm-out agreement with Brooks Range, the company which would farm into the unit and presumably conduct the drilling.

The division set a deadline of Dec. 15 for ASRC Exploration to accept the deal.

ConocoPhillips and its partners drilled Placer No. 1 in 2004. Although the well found an oil-bearing reservoir in thin Kuparuk C sand, the company eventually dropped the Placer leases

after the results from a second well in the prospect proved disappointing.

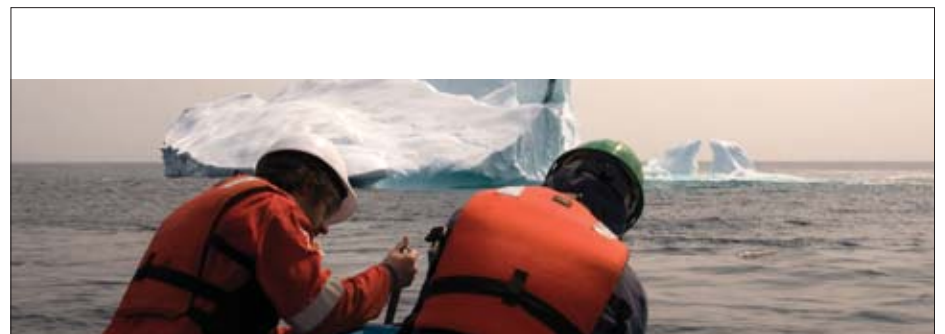
Drilling plan

According to Brooks Range’s plan for the proposed new Placer drilling, if the company meets with success in the No. 3 well it will conduct a transmissibility test, presumably with the No. 1 well. Drilling of the No. 3 and No. 4 wells would take place from a single ice pad, but work on the No. 1 well would take place from a separate ice pad.

The Placer No. 3 ice pad would be adjacent to the Placer unit. The bottom-hole location for the No. 3 well would be adjacent to the Placer unit and the Brooks Range-operated Kachemak unit to the west. The bottomhole locations for both the Placer No. 4 well and its sidetrack would be in the Kachemak unit.

Brooks Range, a subsidiary of Alaska Venture Capital Group, would be the operator for the drilling program, the plan says. The company anticipates using the Nabors Rig 27E for the drilling, with ice roads being required for access to the ice pads. The plan says that ice roads and pads would be completed in time to conduct drilling operations between January and April. ●

Contact Eric Lidji at ericlidji@mac.com



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ANWR FIGHT

administration would move on its own to protect certain public lands failing action by Congress.

“Proposing to lock up additional land within ANWR is short-sighted, poor public policy, and old-fashioned thinking in our new world of globalization and ongoing conflict over who controls energy resources,” Begich wrote in his Nov. 12 letter to Jewell. “It should be no surprise to you that I will fight any effort by the Obama Administration to make ANWR off-limits.”

‘Too special to develop’

Jewell, formerly chief executive of the



SALLY JEWELL



SEN. LISA MURKOWSKI

outdoors retailer REI, is still relatively new as secretary, sworn in on April 12.

Her speech focused on the administration’s “conservation agenda.”

She chastised Congress for potential budget cuts to Interior agencies such as the Fish and Wildlife Service and the Bureau of

Land Management, and decried the “absurd, wasteful government shutdown.”

She noted the upcoming 100th anniversary of the National Park Service, and the 50th anniversary of the Wilderness Act. She quoted folk singer Joni Mitchell and Teddy Roosevelt, who said conservation is “a great moral issue.”

And Jewell said Congress, since 2010, “hasn’t acted to protect a single new acre of public land as a national park or a wilderness area.”

She continued: “We need a comprehensive public lands package that conserves our nation’s most special lands and waters — just like the one that President Obama signed into law in 2009 that protected more than 2 million acres of wilderness, designated more than 1,100 miles of wild and scenic rivers, expanded the national park system and established several new national conservation areas.”

Jewell suggested that if Congress doesn’t act, President Obama “is ready and willing.” She noted Obama had established nine national monuments over the past four years.

Energy development can proceed, she said. For example, in Alaska, the administration protected more than 13 million

acres, including caribou habitat around Teshekpuk Lake, but made available for development “more than 72 percent of the estimated economically recoverable oil.”

But Jewell said “there are some places that are too special to develop.”

National monument status?

Presidents, under the Antiquities Act of 1906, have the power to declare public sites or lands as national monuments. Such a designation can put lands off-limits to such activities as oil and gas development.

Some Alaska elected officials and oil industry players fear ANWR could be so designated, including the relatively small coastal plain considered highly prospective for oil.

An environmental group, the Alaska Wilderness League, has encouraged Obama to declare ANWR a national monument.

The Fish and Wildlife Service, as landlord for ANWR, also is considering whether to recommend wilderness designation for the coastal plain.

Begich, in his letter to Jewell, said trying to put ANWR off-limits through the Antiquities Act “would be strongly opposed by a majority of the residents of my state, and I believe by a majority of members of the U.S. Congress.”

ANWR legislation filed

On Nov. 13, U.S. Sen. Maria Cantwell, D-Wash., introduced a bill to designate the coastal plain as wilderness. Sen. Mark Kirk, R-Ill., is co-sponsor.

In a press release, Cantwell said the aim of the bill (S. 1695) is “to protect one of the last pristine public lands in America.”

Cantwell has long opposed oil and gas activity in ANWR. Since entering the Senate in 2001, she has sponsored legislation multiple times to permanently protect the coastal plain as a wilderness area.

Sen. Lisa Murkowski, R-Alaska, said the “anti-Alaska legislation” would permanently ban oil and gas development on the coastal plain.

“I cannot understand how, given Alaska’s decades of responsible energy development, this is still viewed as a good idea or a necessary action,” Murkowski said. “At a time when our nation clearly needs more jobs, more revenues, and more domestic energy, this bill defiantly ignores all three.”

Murkowski is the top-ranking Republican on the Democrat-controlled Senate Energy and Natural Resources Committee.

—WESLEY LOY

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WATER PROBLEM

of around 550,000 barrels per day.

The low flow means the oil moves slower to the pipeline terminus in Valdez.

This means the warm oil is exposed longer to arctic weather conditions in winter. About half the line is above ground.

If for some reason the pipeline must shut down for an extended period, and the oil chills too much, freezing and other problems could develop. Restarting the pipeline could become difficult, if not impossible.

To date, Alyeska has always managed to restart the line promptly after winter shutdowns. But multiday outages following a January 2011 spill at Pump Station 1 caused serious worry about potential freezing and wax buildup severe enough to idle the pipeline until the summer thaw.

Obviously, a shutdown of that duration would be an economic calamity for the state, and a technical nightmare for Alyeska and the North Slope oil producers.

Declining water content

It's the small amount of water mixed in with the oil that poses much of the freeze-up threat.

Water and natural gas are found naturally with the oil in North Slope reservoirs. Companies also inject water underground to enhance oil recovery.

"Processing plants remove the majority of produced water," the pipeline coordinator's annual report said. However, a significant fraction remains. And a bit of sediment, too.

By policy, the TAPS owners aim to limit water and sediment content to no more than 0.35 percent of the crude oil delivered to Pump Station 1.

"However, in recent years the North Slope oil fields have averaged water contents below this limit," the annual report said. "Reports indicate that the average ... is typically in the range of 0.10 to 0.21 percent."

In addition, operators have cut the magnitude and number of water pulses, up to 2.5

percent, than can sometimes occur, the report said.

Still, water remains a concern when coupled with the low oil throughput.

As flow decreases and becomes laminar, or less turbulent, water can drop out as the oil and water separate. This can increase internal corrosion, especially at the bottom of the pipe.

Free or fixed ice has potential to cause myriad problems: disabled instrumentation, plugged pump screens, frozen valves and so forth.

Getting it out

So, how can the troublesome water be wrung out of the oil?

"This could involve something as simple as a large tank at PS 1 that allows water to settle to the bottom, where it can be drained," the pipeline coordinator's report said. "Reduction of water and sediment content below the current standard might reduce problems caused by ice formation."

Alyeska spokeswoman Katie

Pesznecker told Petroleum News that several technologies for removing water from crude oil are being considered.

"We have conducted tests with static separation in tanks and expect to do so again next summer," she said.

Pesznecker defined static separation as letting the crude oil "rest" in a tank so separation of oil and water occurs, with the water falling to the tank bottom.

The testing was conducted in existing tanks at Pump Station 1, she said.

The state pipeline coordinator's annual report said Alyeska would conduct ice studies at the University of Oklahoma.

"Very few facilities have the capability of performing flowing ice studies of hydrocarbon mixtures," the report said. "The primary focus of this set of investigations is to characterize the rate and volume of ice formation at various water concentrations and the conditions under which ice forms." ●

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FRACKING APPROVAL

sions in the NWT on how it regulates hydraulic fracturing.

It expressed satisfaction with ConocoPhillips' "risk assessment" of conducting fracking, including a review of the geology and fault identification and the proposed mitigation measures and commitments such as microseismic monitoring.

NEB satisfied with mitigation measures

The NEB said it was satisfied with the company's mitigation measures and com-

mitments relating to wellbore integrity, including the casing design, cementing program, cement bond log evaluation program and casing integrity pressure test plans.

The company plans drilling to depths of 5,250-6,560 feet, with a horizontal section of 3,300 feet.

It will evaluate data from both wells to determine "flow ability of hydrocarbons," then seek approval from the NEB for additional work in the Central Mackenzie.

A spokesman said the wells are exploratory and test work and will require an extensive appraisal program to determine whether they are capable of commer-

cial production.

For now, ConocoPhillips is not disclosing estimated well costs.

The company was one of five that secured rights to 11 parcels of Central Mackenzie land in 2011 for work commitments of C\$534 million, with ConocoPhillips making a successful bid of C\$66.7 million.

Decision on Amaulikak in late '14

The company is also working on a study that is expected to allow a decision by late 2014 on development of its Amaulikak Significant Discovery License in the Canadian Beaufort, along with part-

ners Chevron Canada and Atco Gas.

The Amaulikak find is the largest in the region with an estimated 350 million-360 million barrels of recoverable oil and 2.3 trillion cubic feet of natural gas.

Sheila Reader, the company's vice president for the Canadian Arctic, told a Calgary conference in late October that the company is in the second year of a three-year study to explore various issues in advance of preparing a design concept to drill wells and develop the offshore field.

—GARY PARK

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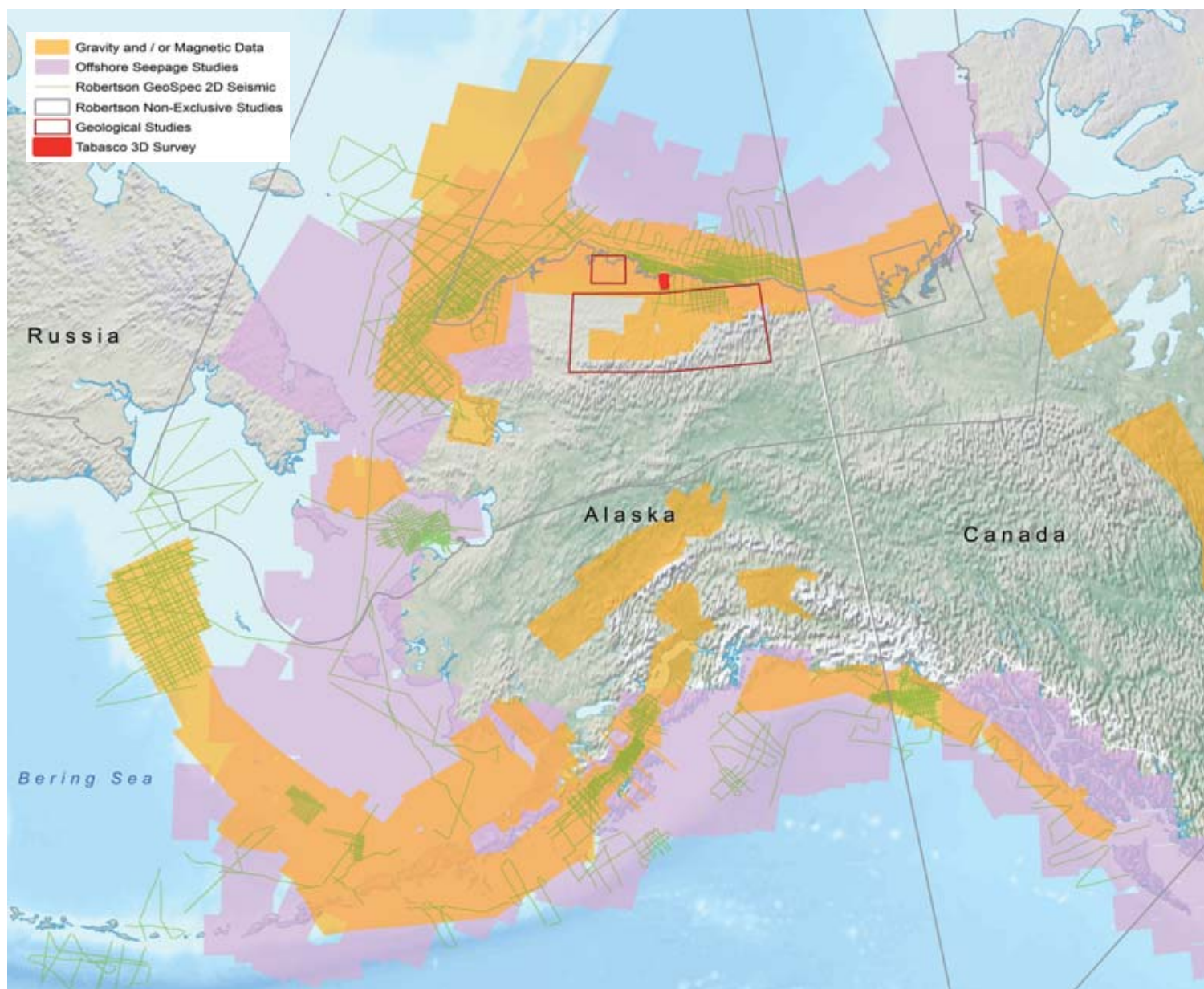
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