



page Q&A: Stedman supports repeal of SB 21; says state should fund LNG

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New report says only oil and gas industry can support Arctic port

Oil and gas activity is the only source of enough revenue to support development of a proposed Arctic seaport. And oil industry plans appear too tentative to warrant starting port construction now.

That's the upshot of a new port feasibility analysis from Bering Straits Native Corp.

The Nome-based regional Native corporation, along with Crowley Maritime Corp., asked consulting firm Northern Economics to do the analysis, which focuses on Port Clarence, a large bay 60 nautical miles northwest of Nome.

The bay's attributes include naturally deep water, close proximity to the Bering Strait and protection from storms. This makes it potentially a good site for a harbor to support shipping, emergency response and drilling in the Arctic Ocean.

A decommissioned U.S. Coast Guard radio navigation station is on Point Spencer, at the tip of a long sandspit that encloses the bay.

For some years now, federal and state officials have looked at the concept of a port somewhere along Alaska's northern

see **PORT CLARENCE** page 17

TransCanada plays big in LNG signs for C\$1.9B link to Kitimat

TransCanada has notched another success in its drive to become the lead transportation company in moving natural gas from northeastern British Columbia gas fields to LNG export terminals on the Pacific Coast.

ENVIRONMENT & SAFETY

Drones arrive on Slope

FAA OKs use of unmanned aircraft for mapping and surveying at Prudhoe Bay

By ALAN BAILEY

Petroleum News

The Federal Aviation Administration has authorized BP to use unmanned aircraft systems for surveying operations in the Prudhoe Bay oil field on Alaska's North Slope, the first time that the agency has approved the use of unmanned aircraft over land in the United States. The aircraft, sometimes referred to as drones, are equipped with laser-based surveying technology called LIDAR, for making high-precision measurements of surface features, including roads and pipeline structures.



"These surveys on Alaska's North Slope are

see **DRONE USE** page 15

use at Prudhoe Bay are hand launched, have wingspans of 9 feet and are powered by electric motors.

Gas from a Kitchen

Furie's Cook Inlet development may begin to realize a long-held vision

By ALAN BAILEY

Petroleum News

With Furie Operating Alaska's new offshore gas production platform on its way from Texas to Cook Inlet, speculation over just how much undeveloped hydrocarbon resource may lie beneath the waters of the inlet continues unabated.

Back in 2001 Escopeta Oil and Gas and its president, Danny Davis, caused something of a stir and a good deal of skepticism when they announced that a new analysis of some old seismic data had revealed the possibility of major undiscovered oil and gas resources in the company's offshore Kitchen and East Kitchen prospects, east of the South Middle Ground Shoal unit. The development is targeting gas production in the Corsair block of the unit, with multiple wells from the single platform in the block all potentially producing gas, the plan says.

Although seismic data for the prospects indicates the existence of geologic structures that could host oil or gas fields, there have been significant question marks over the interpretation of that data. And because of uncertainties regarding the geology, Alaska's Division of Oil and Gas has characterized the East Kitchen prospect, for example, as "highly

see KITCHEN GAS page 18

EXPLORATION & PRODUCTION

Operating through its Nova Gas Transmission subsidiary, TransCanada said it has struck a deal with operator Chevron and Apache to feed the proposed Kitimat LNG facility at the deepwater port near Kitimat and give that project a fresh lift to place itself among the frontrunners to export LNG from British Columbia.

The C\$1.9 billion Merrick Mainline project is designed to cover 160 miles from Dawson Creek in the province's resource-rich northeast to Summit Lake, where it would feed into the Kitimat partners Pacific Trail Pipeline to the liquefaction plant.

The Canadian subsidiaries of Chevron and Apache say they have signed an agreement for TransCanada to deliver about 1.9 billion cubic feet per day to the Merrick line, aiming for an in-service date in the first quarter of 2020.

Although preliminary work is under way, construction will only go ahead if the National Energy Board gives a green light and if Chevron and Apache make a final investment decision

see **KITIMAT LINK** page 17

Cosmo plans advancing

BlueCrest outlines two-pronged approach to offshore oil and gas field

By ERIC LIDJI

For Petroleum News

BlueCrest Energy Inc. is planning a two-pronged development for Cosmopolitan.

As currently envisioned, the Fort Worth, Texasbased independent intends to install two offshore platforms to support natural gas production from the Cook Inlet prospect and use existing onshore facilities to support oil production through extended reach drilling.

BlueCrest said it is currently in negotiations with two rig companies for the oil development. But sanctioning the gas development depends upon "a suitable market for gas in the Cook Inlet basin, additional information gained from drilling the first offshore delineation wells, and receipt of all required governmental approvals from the offshore program," the company said in filings with the Alaska Department of Natural Resources.

Either way, the program is scheduled to begin this summer with the first of three offshore wells to delineate previously made discoveries at the field off the coast of Anchor Point.

The wells would all be vertical or deviated penetrations into the deeper oil-bearing zones at the field. After collecting reservoir information, BlueCrest would plug the wells back to shallower gas-bearing zones to support future gas production. BlueCrest is aiming to drill the first of the three delineation wells this summer. The proposed Cosmopolitan State No. B-1 well would be a directional well into the Hemlock formation to "extend the current knowledge

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Alaska - Mackenzie Rig Report

Rig Owner/Rig Type	Rig No.	Rig Location/Activity	Operator or Status
	Alaska	a Rig Status	
	North	Slope - Onshore	
Doyon Drilling Dreco 1250 UE Dreco 1000 UE Dreco D2000 Uebd AC Mobile OIME 2000	14 (SCR/TD) 16 (SCR/TD) 19 (SCR/TD) 25 141 (SCR/TD)	Prudhoe Bay DS 05-39, workove Prudhoe Bay M-05, workover Alpine CD4-96 Prudhoe Bay H-19 Kuparuk 2K-34	r BP BP ConocoPhillips BP ConocoPhillips
Kuukpik	5	Stacked 100% Pad Deadhorse, Royale Energy Well AK #1, Winte	r 2014-2015
Nabors Alaska Drilling AC Coil Hybrid Dreco 1000 UE Mid-Continental U36A Oilwell 700 E Dreco 1000 UE Dreco 1000 UE Oilwell 2000 Hercules Oilwell 2000 Hercules Emsco Electro-hoist-2 Emsco Electro-hoist Varco TDS3 Emsco Electro-hoist Canrig	CDR-2 2-ES (SCR-TD) 3-S 4-ES (SCR) 7-ES (SCR/TD) 9-ES (SCR/TD) 14-E (SCR) 16-E (SCR) 18-E (SCR) 22-E (SCR/TD) 27-E (SCR-TD)	Kuparuk 2F-18 Prudhoe Bay Prudhoe Bay Prudhoe Bay Kuparuk Prudhoe Bay Prudhoe Bay Prudhoe Bay Prudhoe Bay Prudhoe Bay Prudhoe Bay	ConocoPhillips Available Available ConocoPhillips ConocoPhillips ConocoPhillips Available Available Stacked Stacked
1050E Emsco Electro-hoist Oilwell 2000 Academy AC Electric CANRIG OIME 2000 Academy AC electric CANRIG Academy AC electric Heli-Rig	28-E (SCR) 33-E 99AC (AC-TD) 245-E (SCR-ACTD) 105AC (AC-TD) 106-E (AC-TD)	Prudhoe Bay Prudhoe Bay Deadhorse Oliktok Point Deadhorse Deadhorse	Stacked Available Availablel ENI Available Available
Nordic Calista Services Superior 700 UE Superior 700 UE Ideco 900	1 (SCR/CTD) 2 (SCR/CTD) 3 (SCR/TD)	Prudhoe Bay Drill Site 6-01 Prudhoe Bay Drill Site S-02 Kuparuk Well 3A-11	BP BP ConocoPhillips
Parker Drilling Arctic Operating NOV ADS-10SD NOV ADS-10SD	Inc. 272 273	Prudhoe Bay DS 18 Prudhoe Bay DS W-59	BP BP
PD	North	Slope - Offshore	
Top Drive, supersized	Liberty rig	Inactive	BP
Doyon Drilling Sky top Brewster NE-12	15 (SCR/TD)	Spy Island SI17-SE2	ENI
Nabors Alaska Drilling OIME 1000	19AC (AC-TD)	Oooguruk ODSN-02	Pioneer Natural Resources
	Cook Inle	et Basin – Onshore	
Kenai Land Ventures LLC (All An Taylor	nerican Oilfield Assoc Glacier 1	tiates, labor Contract) 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	Swanson River, doing assorted workovers	Hilcorp Alaska
Doyon Drilling TSM 7000	Arctic Fox #1	Beluga BRU-244-23	ConocoPhillips
Nabors Alaska Drilling Continental Emsco E3000 Franks IDECO 2100 E Rigmaster 850	273E 26 429E (SCR) 129	Kenai Kenai Kenai Kenai	Available Stacked Stacked Available
Saxon TSM-850	147	Ninilchik Unit, Bartolowits pad	Hilcorp Alaska
TSM-850	169	Swanson River	Hilcorp Alaska
Cook Iniet Basin – Ottshore			
XTO Energy National 110	C (TD)	Idle	ХТО
Spartan Drilling Baker Marine ILC-Skidoff, jack-	up	Spartan 151 Upper Cook Inlet KLU#1	Furie

The Alaska - Mackenzie Rig Report as of June 9, 2014. Active drilling companies only listed.

 $\label{eq:total} \begin{array}{l} TD = rigs \ equipped \ with \ top \ drive \ units \ WO = workover \ operations \\ CT = coiled \ tubing \ operation \ SCR = electric \ rig \end{array}$

This rig report was prepared by Marti Reeve



6 I.I.I.F		opper cook iniet keon i		
National 1320	35	Osprey Platform RU-1, workover	Cook Inlet Energy	Baker Hughes I
Hilcorp Alaska LLC (Kuukpik Dr	illing, managemen	t contract) Steelhead Platform, Well M-34 Grassroots, Drilling	Hilcorp Alaska LLC	June 6 US 1,860 Canada 214
Patterson UTI Drilling Co LLC	191	West McArthur River Unit #8	Cook Inlet Energy	Gulf 56
Kenai Offshore Ventures LeTourneau Class 116-C, jack-up	Endeavor	Port Graham	Buccaneer Energy Ltd.	Highest/Lowest US/Highest
	Macken	zie Rig Status		US/Lowest Canada/Highest
	Canac	lian Beaufort Sea		Canada/Lowest
SDC Drilling Inc. SSDC CANMAR Island Rig #2	SDC	Set down at Roland Bay	Available	The Alaska
	Centra	l Mackenzie Valley		is is
Akita TSM-7000	37	Racked in Norman Well, NT	Available	

Baker Hughes North America rotary rig counts*

	June 6		May 30	Year Ago
	1,860		1, 866	1,765
а	214		198	152
	56		58	53
st/Lowest	t			
ghest		4530		December 1981
west		488		April 1999
la/Highest		558		January 2000
la/Lowest		29		April 1992
			*Issued by B	aker Hughes since 1944

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NATURAL GAS

AOGCC OKs CINGSA pressure increase

The Alaska Oil and Gas Conservation Commission has approved an increase in the maximum allowed pressure in the Cook Inlet Natural Gas Storage Alaska, or CINGSA, storage reservoir from 1,700 pounds per square inch to 2,200 pounds per square inch. The CINGSA facility provides gas storage services for Southcentral Alaska power and gas utilities, enabling the utilities to warehouse summer-produced gas to meet high winter gas demand.

CINGSA applied to the commission for an increase in the allowed pressure, following the discovery of a higher than expected pressure in the reservoir in the fall of 2013 and a determination that one of the facility's wells had penetrated a previously unknown gas pocket in one of the underground sand bodies that form the reservoir.

CINGSA told the commission that, with the surprise gas pocket causing an unplanned 14.5 billion cubic feet of additional gas to flow through the facility's reservoir, the storage facility could not meet its contracted storage obligations without increasing the reservoir pressure above the originally permitted maximum.

The facility uses reservoir sand bodies which originally formed part of the Cannery Loop gas field but which had become depleted of gas — the new permitted maximum pressure of 2,200 pounds per square inch approximately equals the reservoir pressure in the sands when the gas field was originally discovered. The new maximum would support CINGSA's existing contracts while also allowing capacity for potential future expansion of the facility, CINGSA told the commission.

In an order issued on June 4 the commission accepted CINGSA's request and explanation, and authorized the revised maximum pressure.

-ALAN BAILEY



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EU shifts ground on oil sands

By GARY PARK

GOVERNMENT

For Petroleum News

he European Union has taken a step back without engaging in a full scale retreat from a proposed low-carbon fuel policy that might have closed the door to imports of oil sands bitumen from Alberta.

In the first signs of a softening in the EU's plans to label crude from the oil sands as more polluting than crude from other sources, Canadian Prime Minister Stephen Harper said key allies, including the United Kingdom, Poland and Italy, showed a willingness to expand the Canada-EU energy relationship.

Underlying the apparent shift from a hard-line stance is the increasing concern among European governments about their dependence on Russian energy imports, amid tensions between Russia and the West over the crisis in the Ukraine.

A new draft proposal of the Fuel Quality Directive, FOD, would require European refiners to report only on an EUwide average of the emissions for the feedstock they use rather than single out the oil sands.

"The proposed methodology requires suppliers to report (an EU) average greenhouse gas emission intensity per fuel with an option to report supplier specific values," the draft said.

Harper: In-depth discussion

Harper said energy ministers, including Canada's Natural Resources Minister Greg Rickford, have held a "very in-depth discussion (over the last month) on how we can move forward to enhance our energy security for the Western world generally."

The Canadian and Alberta governments and the Canadian petroleum industry have engaged in an intensive and prolonged

CORRECTION

By 30% of 2005 levels

The article titled "30 percent by 2030" in the June 8 issue of Petroleum News incorrectly states that the Environmental Protection Agency wants U.S. carbon dioxide emissions from existing power plants to drop to 30 percent of 2005 levels by 2030. The agency's target is a drop in emissions by 30 percent of the 2005 levels, not a drop to 30 percent of those levels.

argument that the proposed FQD would discriminate against oil sands crude, while benefiting producers from countries such as Russia and Nigeria, despite their flawed environmental practices.

"We don't see the crisis in Ukraine as simply an opportunity to market Canadian products, but obviously we're deeply engaged in a discussion with our allies on how we can make sure that globally our energy supplies are secure and stable," Harper said.

Alberta wants scientific basis

A spokesman for Alberta International Relations Minister Cal Dallas said his government wants a scientific basis for any measures adopted by the EU.

He said Alberta's primary concern is "with any arbitrary distinction between our energy production and that of others."

A spokesman for Rickford said the Canadian government would not comment on a "hypothetical outcome" of the EU's policy making.

He said Canada is a "secure, responsible and reliable source of energy that can make a growing contribution to global energy security" and insisted the FQD, as currently written, is unscientific and discriminatory.

The Canadian Association of Petroleum Producers said it remains wary based on years of debate with EU members over the FQD.

"From what we have heard of the proposal, while it doesn't discriminate against Canadian oil to the degree it initially did, it still doesn't encourage transparency," Greg Stringham, CAPP's vice president of oil sands and markets, told the Financial Post.

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• **GOVERNMENT**

Stedman supports Senate Bill 21 repeal

Sitka Republican believes state should use Permanent Fund for gas line; thinks global trends, not legislative actions, drive project

By STEVE QUINN

For Petroleum News

Senate Finance, but he's still actively involved in giving Alaska a resource development voice.

Last year the Sitka Republican completed his term as Energy Council chairman. In March, he received an appointment to the National Petroleum Council, an advisory board to Energy Secretary Ernest J. Moniz.

He joins Mark Myers, University of Alaska Fairbanks vice chancellor of research, on a committee

dealing with Arctic issues. Stedman is still speaking out

against the new oil tax regime passed under Gov. Sean Parnell's Senate Bill 21. Voters in August will decide whether to repeal or keep the new system.

Should a repeal succeed, the old system known as ACES returns. Stedman spoke to Petroleum

News about his new post, the

upcoming oil tax vote and recent legislation designed to advance a gas line and LNG export facility project.

Petroleum News: Let's talk about your National Petroleum Council appointment. Is this a matter of the common refrain, "Alaska having a seat at the table," or can having you and Mark Myers help advance the discussion?

Stedman: I think both. It's nice to have someone from an Arctic state in discussions. Clearly we have different viewpoints than people in Louisiana and Texas. We are more sensitive to the state itself: the people and the critters who live here. We can open up the Arctic in an environmentally friendly way. We need to advance and do that for national energy security. Not only that we need to be in a position in the Arctic, so if there is a problem somewhere else there, like an environmental incident, we've got the wherewithal to respond, not only the scientific knowledge but the physical infrastructure to do it.

We won't get into fiscal policy discussions. It has to do with the viability and the national interest of an oil line and hopefully a gas line out of the Arctic. It does have to do with that, but this is not a group that discusses fiscal policy.

Clearly there is a need to expand and open the Arctic. The Arctic is getting opened regardless if the United States does anything or not. Hopefully this advisory council can make a positive impact. It's important to have two Alaskans like Mark Meyers and myself on the committee. We have a little different view of Alaska than folks elsewhere.

I think it's going to be a good position to be in even though it's a large group overall. I think it will be easier to inject some of the concerns Alaska has as a state at the federal level than would be possible if we didn't have anyone there. We can send all the resolutions we want to. Once I get involved, I'll sit down with DNR, DEC, other agencies and sync up as much as possible with a concentrated message from Alaska.

Petroleum News: OK, closer to the Capitol, the state is approaching a vote on whether to repeal or leave untouched SB 21. You favored an ACES rewrite, but you didn't like this version. What are your thoughts on how all this played out?

Stedman: I think the needle went too far. Clearly there was a problem with ACES and there are three major areas.

First was the high progressivity. It was too aggressive on the upside. If you were more in a socialistic sovereign somewhere else in North America, it might be acceptable, but I don't think it is here. Then you've got the large credits coming against the treasury that were in concept, not about capital expenditures for oil production increases versus a lot of maintenance.

Even though we did recognize there was a lot of maintenance to be done on a 30-year-old field that needed to take place. Then there was the down side of the exposure to the state.

SB 21 took care of the high progressive mechanism on the upside but left the complexity in place and the credit issue in place, and it didn't change the downside in any appreciable amount. Some argue that SB 21 may produce more revenue to the state when prices are \$70 or \$60 a barrel, but if you sink your boat at five fathoms or you sink your boat at three fathoms, you're still sunk. The arguments are illogical.

The state as a sovereign should not be exposed to increasing credits at declining prices. In other words, this per-barrel-allowance mechanism, that was a way to basically bastardize the mathematics of a progressive fiscal system.

In other words, it took the low side of the curve and bent it down, which would visually appear as a regressive system, which the system would be without it, to a progressive system. When you put together progressive systems you want to bend the upper price range up not the lower price range down.

This leaves the state in a peculiar position. As the price drops, your per barrel allowance goes up, so your allowance — or your credits, because that's what it is a credit — ends up. I'd like to see the political elected officials stand in front of the public and explain to them why when prices drop \$20 (from \$100 per barrel), credits goes up \$350 to \$400 million. There is going to be a lot of fancy dancing at the podium and a lot of B.S. flying around the room. It's not going to put the state and elected officials in a very good light in my opinion. And I think it's dangerous to the treasury to boot. We've got the downside issue. We've got the complexity issue. We did fix the upside mechanism of progressivity.

So those are the real core issues with SB 21. The

argument that the revenue stream off of ACES and SB 21 are very similar off of \$105 a barrel gets masked because as you go through the system to get to the net, the net numbers in that price range is an anomaly because it was set up to mirror that. At that range the legacy fields were economic by virtually any measure. The underlying cash flow being moved is significant to say the least. If the net cash flow was truly to remain

fairly the same, it would make no difference what tax regime you were under because the name of the game is net cash. You can look at it from the sovereign's side or you can look at it from the industw's side it's still net cash more so on

try's side, it's still net cash — more so on the industry side. If you look at North

Dakota's structure, which was the comparative that was constantly thrown out there three years ago, they have 11.6, a compilation of two components at the state level, but that doesn't take into account the royalty they have to pay to the subsurface owner. They have roughly a 31.5 percent gross tax in North Dakota. In 2015, when we have a full year of SB 21, we will be \$1.4 billion under North Dakota and we used to be \$300 to \$700 million over North Dakota, so we went from several hundred million over to \$1.4 billion under? So when the public figures this one out and we have to deal with budget implications throughout the state, it's going to be an interesting dialogue. I think it's going to lead to some public unrest.

Petroleum News: The argument for SB 21 started out as an issue toward more production. It seems to have shifted to a jobs issue now. Are you sensing that, too, or is it both?

Stedman: I would agree with that from what I can see in the public arguments. Three or four years ago at the (Senate) finance table, there was a testimony that we were approaching a deflection in the downward sloping production curve and we would be in a one to three (percent) decline curve for quite some time because of the magnitude or size of Prudhoe Bay and Kuparuk. Those are the same numbers they are talking about today after SB 21 and there is more of a concentration today about jobs.

You don't, as a sovereign you don't trade jobs for a hydrocarbon. You get your fiscal policy in balance so you have a fair and competitive revenue stream on your hydrocarbons. When you do that, you're going to get the development and then you get the jobs. You get the jobs through having a balanced fiscal system and having a workforce that is trained and competent for having to do the labor. When you put your hydrocarbons on a going-out-of-business sale, which is what's going on with SB 21, and you think you're going to trade them for jobs and you think you're going to be economically better off as a sovereign, I don't agree with that at all. By the way, we are not going out of business and there is no reason to have a going-out-of-business





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PIPELINES & DOWNSTREAM

Northern Gateway at crux point

Canadian government on verge of make-or-break decision for controversial Enbridge pipeline; talk of legal action, civil disobedience

By GARY PARK

For Petroleum News

C anada's original Great Pipeline Debate over plans to ship natural gas from Alberta to Ontario and Quebec was so controversial that it ended 22 years of Liberal Party rule at the federal level in 1957.

That thought has probably been weighing heavily on the Conservative administration of Prime Minister Stephen Harper as it faces a June 17 decision on the most contentious energy pipeline project in the past 60 years and whether to approve Enbridge's plan to ship 525,000 barrels per day of oil sands bitumen to the Pacific Coast for export to Asia.

There is no clear-cut verdict for Harper, no easy way to appease either side in a dispute that could get bogged down in years of litigation and, most disturbingly, result in civil disobedience or even violence if Enbridge starts construction.

On the pro-Northern Gateway side, led by the petroleum industry and the Harper government, the stakes are high.

Without the pipeline one of the best chances of opening markets for Canadian crude outside North America is in trouble, along with billions of dollars of investment, thousands of jobs and royalties that are vital to financing Canada's social programs, including health care and education. Already a splinter group in northern British Columbia's Wet'suwet'en First Nation has established a "resistance camp" to deny access to the Northern Gateway route by Enbridge.

If Enbridge decides it can no longer afford to wait out another decade of legal battles after a decade of planning and opts to walk away from the C\$7.9 billion project, the attention will immediately shift to Kinder Morgan's plan to increase capacity on its Trans Mountain system to 900,000 bpd and possibly 1.2 million bpd from the current 300,000 bpd.

Mounting public concerns

Once seen as a cinch until public concerns over pipelines mounted, catching Kinder Morgan off guard, the C\$5.4 billion Trans Mountain expansion is faced with 117 questions from parties with official "intervener status" in the regulatory hearings, requiring 60 employees to work around the clock on answers.

For Enbridge, Northern Gateway has involved spending hundreds of millions of dollars on project design and improvements and a prolonged regulatory hearing process, along with countless community meetings and efforts to reach equity agreements with First Nations.

For Harper, the political stakes are

extreme as he faces an election in fall 2015 with his 21 Members of Parliament from British Columbia vital to his precarious chances of maintaining a majority government, or even holding a minority administration.

For the governments of Alberta and British Columbia, a damaging rift over building a pipeline across British Columbia has been only partly healed, while still falling short of British Columbia Premier Christy Clark's five demands that include a greater share of revenues from Northern Gateway, environmental safeguards covering the overland pipeline and tanker traffic in coastal waters and full consultation with First Nations.

Promises from government

There has been a late flurry of promises from the Harper government to address safety concerns and to persuade First Nations that resource development projects offer them an "unprecedented opportunity" for jobs and economic benefits to resolve the chronic social issues in remote aboriginal communities.

Northern Gateway project leader Janet Holder has repeatedly insisted that First Nations covering 60 percent of the pipeline right of way have agreed to support the project, but the company says the identity of those communities must remain confidential. But Holder sees no reason why legal challenges from First Nations would last indefinitely, or whether they would even force work on a pipeline to be postponed.

"The appeal process is not something that would go on forever and ever," Holder said.

No modifications

The National Energy Board, whose recommendations can only be accepted or rejected, but not modified by the Harper cabinet, has required Enbridge to meet 113 of 209 safety, environmental and financial conditions before construction can start.

Holder estimates those requirements could be met by about September 2015, giving time for some of the legal challenges to be dealt with under streamlined federal regulations that could see litigation go directly to either the Federal Court of Appeal or the Supreme Court of Canada.

She also suggested that progress through the courts is time specific and would not involve re-hearing evidence presented at the public hearings.

Canada's Natural Resources Minister Greg Rickford said the NEB conditional sanctioning six months ago of Northern Gateway is undergoing "careful consideration by cabinet ... and we will be in a position to respond to that in fairly-soon timelines."

Equity increase?

However, the government could suggest the NEB ask Enbridge to increase its offer of a 10 percent equity stake to First Nations, which was widely seen as unacceptable from the outset, and possibly match the 33 percent offered to Northwest Territories aboriginal communities by coowners of the Mackenzie Gas Project.

Aboriginal business leaders in Alberta, who view Northern Gateway as vital to their economic well-being, have suggested the Canadian government and possibly Alberta could offer loan guarantees to make a 50 percent ownership stake possible.

Jim Prentice, a former federal cabinet minister who has re-entered politics as a candidate to become Alberta's next premier, said Alberta could play a larger role in overcoming Northern Gateway's obstacles.

Before entering the contest for leadership of the Alberta Conservative party. which automatically sees the winner become the next Alberta premier, Prentice had been hired by Enbridge to seek answers to the unresolved issues between First Nations and Enbridge. In launching his leadership bid, Prentice said he would aggressively pursue access to the Pacific Coast for Alberta crude bitumen. "The premier of Alberta bears a heavy responsibility to build the partnerships that we are going to need with Coastal First Nations (an alliance of eight communities) and with the government of British Columbia ... our future does not lie in being a provider to the United States of oil and selling it at 70 cents (on the dollar). We need access to the Asia-Pacific basin."



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Spill cleanup fears

Art Sterritt, executive director of Coastal First Nations, whose greatest fear

see NORTHERN GATEWAY page 7

PIPELINES & DOWNSTREAM

GVEA working on PetroStar contract

The Interior electric cooperative is rushing to replace its longstanding naphtha supply in wake of Flint Hills closure

By ERIC LIDJI

For Petroleum News

olden Valley Electric Association is seeking regulatory approval for a contract with the refiner PetroStar Inc. The contract would replace a long-standing relationship with the refiner Flint Hills Resources Alaska Inc., which is shuttering its Alaska operations.

A pair of requests would allow the Interior electric cooperative to add the new contract to its quarterly fuel purchasing allowance and to subsequently increase those costs.

Since 2004, GVEA has bought all the fuel for its oil-fired plants from Flint Hills. When the refiner announced plans earlier this year to close its operations, GVEA was left without a source of naphtha for its North Pole Expansion Power Plant, which supplied more than 25 percent of the total energy requirements for the utility in 2013. "The abrupt loss of this fuel source put GVEA in a critical situation," Rate and Regulatory Analyst Paula Ashbridge wrote in a late May filing with the Regulatory Commission of Alaska.

While GVEA currently gets some power from the Southcentral region, constraints in the intertie connecting the regions make it impossible to replace the loss of naphtha using additional imported power, according to GVEA. "With only a few months to secure a fuel supplier, GVEA immediately assembled a task force to explore and research the economic feasibility of a variety of short-term, medium-term, and longterm fuel options," Ashbridge wrote. The task force is still determining a long-term solution, but GVEA believes PetroStar is the best option for addressing the problem in the meantime.

GVEA and PetroStar have agreed to a price for the fuel supply, but have yet to sign a contract. The RCA has asked to see the contract before it rules on the GVEA

continued from page 6 NORTHERN GATEWAY

is an inadequate system for cleaning up oil spills in Pacific waters, said that even Northern Gateway gets cabinet approval, opposition in British Columbia is so widespread that First Nations will have no difficulty enlisting others to join it in blockading construction on a pipeline.

request. GVEA has said the fuel price under the proposed PetroStar contract is "comparable" to the price under the previous Flint Hills. While the actual price is based upon indices, making it hard to predict, GVEA said the PetroStar contract would have been some 4 percent or 10 cents per gallon higher than the Flint Hills contract in January 2014.

The contract would require a short pipeline connecting the PetroStar refinery and the North Pole Expansion Plant, which are located on adjacent properties in North Pole.

The RCA has implemented both requests on an interim basis, until September, while it investigates the matter and is taking comments on both requests through July 9.

After years of scaling back its operations in Alaska, Flint Hills announced plans in February to gradually stop processing crude oil at its North Pole refinery.

The company blamed its decision on market conditions and an outstanding liability dispute over a sulfolane contamination Flint Hills inherited from a previous opera-

The gradual shutdown called for ending the production of gasoline in May and ending the production of jet fuel and other refined products no later than June, while continuing to market jet fuel through Flint Hills terminals at the Anchorage and Fairbanks airports and maintaining a small staff to operate its 30 million gallon storage facility in North Pole for local distribution. The fuel for local distribution operation would come from third parties.

The sulfolane matter continues to play out through legal proceedings. But earlier this year Gov. Sean Parnell proposed incentives to encourage in-state refining of Alaska crude oil.

> Contact Eric Lidji at ericlidji@mac.com

EXPLORATION & PRODUCTION

More CI seismic, but what of Apache?

Seismic company SAExploration has submitted a seismic permit application to the Bureau of Ocean Energy Management for a proposed survey in the southeasterly sector of the upper Cook Inlet. The application says that SAE wants to conduct the survey using cable-free, ocean-bottom technology at some time between Sept. 1, 2014, and Aug. 31, 2015, with an exclusion period in the middle of the winter.

According to a map that accompanies the application the survey area encompasses about 698 square miles of the inlet, offshore the west coast of the Kenai Peninsula, from just south of Kenai to an area near Anchor Point. The area appears to include a substantial region of state rather than federal waters.

Apache Alaska Corp., the company that has been conducting a multi-year seismic program in the Cook Inlet basin, declined to comment on who might be the client for SAE's planned work. This year Apache has been continuing

According to a map that accompanies the application the survey area encompasses about 698 square miles of the inlet, offshore the west coast of the Kenai Peninsula, from just south of Kenai to an area near Anchor Point.

with seismic surveying in the northern Kenai Peninsula and the more northerly part of the inlet. In a June 11 email, Kathleen King, legislative and policy advisor for the Alaska Department of Natural Resources, told Petroleum News that Apache's threeyear seismic program on state lands comes to an end on Aug. 31, 2014, and that, at this point, Apache has not applied for an extension to the program.

On May 20 Ethan Schutt, senior vice president, land and energy development, for Cook Inlet Region Inc., told the U.S. House Committee on Natural Resources that a lack of coordination between federal permitting agencies, with complications arising from the critical habitat designation for the protected Cook Inlet beluga whales, had caused Apache to scale down a planned major 3-D seismic program in the Cook Inlet basin, to a smaller, discontinuous 2-D program. In a June 10 email, Apache spokeswoman Lisa Parker told Petroleum News that Apache had nothing to add to Schutt's statement.

-ALAN BAILEY





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Already a splinter group in northern British Columbia's Wet'suwet'en First Nation has established a "resistance camp" to deny access to the Northern Gateway route by Enbridge.

Freda Huson, leader of the camp, said the community has "never ceded or surrendered" its land by negotiating a treaty agreement.

"We don't need permission to be out there," she told the Globe and Mail. "The land is ours and we've never given it up."

That position applies to most of British Columbia and could become the ultimate stumbling block for Northern Gateway.

> Contact Gary Park through publisher@petroleumnews.com



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EXPLORATION & PRODUCTION

A vital key to Cook Inlet exploration

Seismic surveys are essential to deciding where to drill but can be tricky to conduct in challenging geology and environment

By ALAN BAILEY

Petroleum News

Which a heightened interest in recent years in searching for new oil and gas resources in Alaska's Cook Inlet basin, the use of data gathered from seismic surveys has become a critical factor in deciding where to drill exploration wells. A seismic survey involves creating sound waves bouncing from a sound source such as a small surface explosive device. The echoes of these sound waves from geologic structures deep underground are detected and recorded at the surface. Geoscientists can then use the recorded data to construct images of the subsurface, to identify potential oil and gas traps.

But the acquisition and processing of seismic data in the Cook Inlet region can be difficult, if rewarding, thanks to a combination of surface challenges and complex subsurface geology. And, in a chapter of a memoir on the oil and gas fields of the Cook Inlet basin published recently by the American Association of Diane Petroleum Geologists, Shellenbaum, a geoscientist with Alaska's Division of Oil and Gas, reviewed the various techniques used for the acquisition and processing of seismic from the basin.

Old seismic data gathered many decades ago during early exploration of the basin is generally of very poor quality, but a dataset covering much of the marine area of the basin was gathered in the 1980s and is available for licensing, Shellenbaum wrote. Much existing seismic data is held by oil companies, geophysical contractors and Cook Inlet Region Inc., the regional Native corporation, with some of the data available for sale, she wrote.

Sound energy

The physics of seismic data acquisition relates to the properties of sound as it passes through rock strata. Essentially, a seismic sound source creates a pulse of sound that contains a mix of sound frequencies. The speed with which the sound travels through subsurface rocks varies, depending on what is referred to as the acoustic impedance of the rocks. And where two different rocks with contrasting impedances share a sharply defined boundary, some of the sound energy passing through the boundary is reflected, creating an echo that can potentially be recorded at the surface.

The shorter the wavelength of the sound, and hence the higher the sound frequency or pitch, the finer the detail that the seismic echoes can discern in the subsurface geology. But there are physical and practical limits to the sound frequencies that can be used, so that there are also limits on how finely a seismic survey can resolve the details of the geology.

Lower frequencies dominate

Shellenbaum explained that the geology of the Cook Inlet basin tends to cause lower frequency sound to dominate seismic recordings, requiring survey designs that maximize sound energy penetration and that allow for the recording of a wide frequency range.

The relative attenuation or dampening of the higher frequency signal components appears to result from a number of factors. In particular, the rock strata in the basin typically include many relatively thin beds of rocks of contrasting impedance, including coal seams, volcanic beds and conglomeratic horizons. The highly reflective boundaries between these strata tend to both absorb sound energy and cause multiple echoes to bounce back and forth, dampening the sound signals and causing the loss of the higher frequencies, Shellenbaum wrote.

Complex structures

Added to these difficulties are the complex structures into which the strata have often been contorted and faulted, with this complexity requiring appropriate seismic processing. And geologic stresses that have been imposed on the rocks tend to cause the sound velocity to vary with the horizontal direction in which the sound is travelling, a factor that requires special care when conducting surveys involving multi-directional data, Shellenbaum said.

When using seismic data to evaluate subsurface geology, geoscientists attempt to tie sound reflections observed from the data to boundaries between rock strata identified from whatever wells have been drilled in the region of the survey. The geoscientists can then trace the relevant rock boundaries through the subsurface using the seismic data, to locate potential



drilling targets.

But tracking the subsurface geology in this way for the Cook Inlet basin can be problematic, both because of the challenges of seismic data acquisition and because of the age of much of the existing well data, Shellenbaum wrote.

Difficult to trace

In addition, the nature of the geology of the basin can make the tracing of specific rock strata through the subsurface difficult. The producing oil and gas fields of the basin are located in what is referred to as the Tertiary sequence, the younger and shallower of the two major rock sequences of the basin. The Tertiary rocks were formed from sediments laid down on land from a system of ancient rivers, resulting in a system of discontinuous river sands, discontinuous coal seams and other rock types.

And the lack of acoustic impedance contrast between the river-deposited silty sands and mudstones in the basin fill leads to low sound reflection from these units and consequent difficulties in tracing individual rock interfaces, Shellenbaum wrote. On the other hand, there are some distinctive rock units, such as the West Foreland formation, that tend to be easier to track around the basin, she wrote.

Onshore and offshore

The acquisition of seismic data takes place in two distinctly different environments: on land and offshore in the inlet itself. Between these two environments lies a transition zone, characterized by the ebb and flow of the massive Cook Inlet tides, with extensive areas of mud flats, and commonly impacted by grounded ice in the winter.

Although surveys could be conducted in the better-drained upland areas year round, on-land surveys are generally conducted between late October and March, when the freezing of surface water helps protect fish and wildlife while also simplifving wetlands operations, Shellenbaum wrote. A variety of technologies have been used as seismic sound sources, including buried explosives, surface explosives and surface vibrators. Land access can be challenging, with the potential need for helicopter transportation for crews, and for the use of cablefree recording systems. And a general lack of easy road access, the seasonality of data acquisition and a small seismic contractor market all tend to lead to acquisition costs that can be higher than in the Lower 48, Shellenbaum wrote. A land survey may also need to contend with complex land use and permitting issues, she wrote.

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Challenges of the inlet

The marine acquisition season tends to be limited by winter sea ice and the need to avoid fishing and protected species at certain times of the year. The strong tidal currents can make the management of long surface streamers of seismic receivers in the confined waters of the inlet difficult, with data acquisition typically limited to periods of slack tides. Modern systems of data acquisition using recording nodes placed on the seabed have also been used and should enable improved data acquisition efficiency,

see SEISMIC SURVEYS page 10

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EXPLORATION & PRODUCTION

US production highest since March 1988

Brent averaged \$110 per barrel in May, the 11th consecutive month it was in \$107-\$112/barrel range; WTI averaged \$102 in May

By KRISTEN NELSON

Petroleum News

U.S. crude oil production averaged almost 8.4 million barrels per day in May, the highest monthly average since March 1988, the U.S. Energy Information Administration said in its June 10 Short-Term Energy Outlook.

"U.S. crude oil production in May increased to the highest output for any month in 26 years and is on track next

NATURAL GAS

year to reach the highest annual production level since 1972," EIA Administrator Adam Sieminski said in a statement.

U.S. crude production averaged 7.4 million bpd in 2013, is expected to average 8.4 million bpd this year and 9.3 million bpd in 2015, EIA said.

U.S. production growth is part of a projected non-OPEC increase which reached 1.4 million bpd in 2013 and is expected to be 1.5 million this year and 1.2 million bpd in 2015. In 2013 non-OPEC produc-

LNG procedure would not apply to Alaska

As reported in the June 8 issue of Petroleum News, the U.S. Department of Energy has proposed changing its procedures for dealing with applications for the export of liquefied natural gas, or LNG, from the United States. The agency wants to end the practice of issuing conditional license decisions, prior to the completion of permitting and environmental analysis for a planned LNG export facility. Instead, the agency proposes waiting until after the completion of the environmental analysis before beginning the export license procedure.

But, according to a footnote in the Federal Register notice for the proposed new procedure, the proposed change does not apply to the export of natural gas from Alaska. The footnote says that, because the Department of Energy has not received any applications for the long-term export of LNG from Alaska, the agency does not know whether an Alaska LNG project might present unique features that might justify a need for a conditional export decision.

The Department of Energy has used conditional decisions as a means of providing guidance on whether a license would be issued, prior to major expenditure on environmental work and permitting. But the agency has said that in the Lower 48 this form of early guidance no longer appears necessary, and that the proposed changes would improve the efficiency of the licensing procedures.

-ALAN BAILEY



tion averaged 54.1 million bpd.

EIA is projecting that production in the U.S. and Canada will grow by a combined average of 1.4 million bpd this year and 1.2 million bpd in 2015.

Production from the Organization of the Petroleum Exporting Countries averaged 29.9 million bpd in 2013, down 1 million bpd from 2012, and is expected to fall by 100,000 bpd this year and an additional 100,000 bpd in 2015 "to accommodate growing production in non-OPEC countries."

Brent at \$110

The spot price for North Sea Brent crude oil was \$110 per barrel in May, up from \$108 in April, EIA said, the 11th consecutive month in which the average Brent spot price was in the \$107-\$112 per barrel range.

The discount of West Texas Intermediate to Brent averaged \$7 per barrel in May, up from below \$4 per barrel in April. The discount averaged more than \$13 per barrel from November through January.

EIA said it is projecting Brent to average \$108 per barrel this year and \$102 in 2015, with the WTI discount averaging \$9 per barrel this year and \$11 per barrel in 2015.

WTI averaged \$102 per barrel in both April and May, up from an average of \$95 in January. EIA said the January startup of TransCanada's Marketlink pipeline, "moving crude oil from Cushing to the Gulf Coast, and strong refinery runs" contributed to the WTI price rise.

Inventory levels at the Cushing,

continued from page 8 SEISMIC SURVEYS

Shellenbaum wrote.

The transition zone between the land and marine environments involves a transition between sound sources typically used onshore and the air guns that are typically used in a marine survey. There is also transition in the types of seismic receivers used. And data from a transition zone survey typically needs to be merged with data from a land or marine survey, Shellenbaum wrote.

Successfully used

Given the various challenges in

Oklahoma, storage hub dropped from 41 million barrels Jan. 3 to fewer than 22 million barrels at the end of May, the agency said, the lowest level since November 2008.

High seasonal demand for refined products and strong refinery runs are expected to help keep the discount of WTI to Brent at about \$7 per barrel over the next few months, EIA said, with the discount expected to widen later in the year and reach \$12 in December.

Natural gas averaged \$4.58 per million Btu at the Henry Hub in May, down 8 cents from April, EIA said. The agency expects Henry Hub to average \$4.74 per million Btu this year and \$4.49 in 2015.

Marketed production of natural hit a record high of 72.7 billion cubic feet per day in March, the agency said, up 1.5 percent from February.

Total marketed production averaged 70.2 bcf per day in 2013 and is projected to average 73 bcf per day this year and 74 bcf per day in 2015.

New infrastructure projects are expected to support Marcellus formation production growth, which is largely driving overall production increases, the agency said. The rapid growth in Marcellus production is contributing to falling forward prices for natural gas in the Northeast, with those prices often falling below Henry Hub outside of peak winter demand months. EIA said this may result in some drilling moving from the Marcellus back to Gulf Coast plays where prices are closer to Henry Hub. ●

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obtaining data from the Cook Inlet basin, surveys require careful planning both from logistical and technical perspectives. But seismic data have been successfully collected and used for exploration of the basin, Shellenbaum wrote. Data quality has progressively improved over the years. However, much of the existing data is from 2-D surveys that result in two-dimension cross-sections of the geology. Harnessing the full hydrocarbon potential of the basin will require modern, high-quality 3-D data, to identify the basin's more subtle hydrocarbon traps, Shellenbaum said. ●

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EXPLORATION & PRODUCTION EIA says growth will be from light oil

As US crude production grows, Energy Information Administration looks at current, projected production by grades, areas of country

By KRISTEN NELSON

Petroleum News

s U.S. crude oil production volumes A grow, the majority of that growth is coming from light oils.

The historic high for U.S. crude oil production was 9.6 million barrels per day in 1970, the U.S. Energy Information Administration said in a May 29 analysis breaking its forecast down into crude types. Production has grown again recently, rising from 5.7 million bpd in 2011 to 7.4 million bpd in 2014 and is forecast to reach 9.2 million bpd in 2015.

EIA said the recent growth in domestic production is expected to peak at near that 9.6 million bpd historic high between 2017 and 2020, based on its reference case; in its high growth case, production growth would continue into the 2030s, peaking at 13.3 million bpd in 2036.

The agency said there is value is forecasting by crude type because of wide variation in the quality of different U.S. crude streams; because the economics of domestic use of additional volumes are dependent on the quality of the crude; and because actual or potential export values vary with quality of the crude.

Recent increase in light oils

Of the roughly 1.8 million bpd growth in production from 2011 to 2013, 98 percent "consisted of sweet grades with API gravity of 40 or above," EIA said, adding that its analysis indicates the growth of domestic "lighter API gravity crude will continue to outpace that of medium or heavier crudes," with more than 60 per-

GOVERNMENT

Kerttula tabbed as ocean council director

Former Alaska state legislator Beth Kerttula has taken a job in the Obama administration as director of National the

Ocean Council. Kerttula start-

ed the job in early June, the White House confirmed to



cent of production growth forecast for 2014-15 consisting of "sweet grades with API gravity of 40 or above."

The impact so far of additional production of light oil has primarily resulted in reduced imports of similar grades of crude oil. EIA said there was a 1.5 million bpd drop in crude oil imports between 2011 and 2013, nearly half of which was light crude with an API gravity of 35 or higher.

"Other responses to the additional production of light oil over the past several years have included additional crude exports, an increase in the average gravity of crude inputs to domestic refining, and increased refinery runs, given the recent cost advantage of U.S. refiners relative to global competitors," EIA said.

With dwindling amounts of imported light crude available to be backed out and refinery limits, absorption of further increases in domestic production could rely heavily on continued shifts in the input mix for refineries; addition of "splitters to convert light crude into a mix of heavier fractions to feed domestic refineries and light products valued in other markets"; and continued crude oil exports, which would "depend in part on the extent of any relaxation of current export restrictions."

The options "have implications for the value of existing refineries and specific refinery units," EIA said, "given the substantial investments that many domestic refiners have made since the 1990s in coking capacity designed to process heavy crude."

Data available

EIA said the quality and timeliness of data available varies widely across states. The agency currently collects data on monthly natural gas production in six states and is seeking public comment on a plan to expand that to include both oil and natural gas production in 21 states. "The proposed data collection, which EIA plans to launch in 2015, would provide information on production by type," the agency said.

It currently divides crude oil types by API gravity and by sulfur content, thus "light sweet" crude refers to grades with an API of 35 or higher and a low sulfur content; medium refers to crudes with an API from 27 to 35; heavy refers to crudes with an API of less than 27.

EIA said recent increases in domestic crude production have sparked discussion on how that production would be absorbed. The short-term forecast of domestic production by crude oil type is one of the analyses EIA is developing to respond to that question, the agency said. \bullet

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Petroleum News. The Juneau

Democrat and BETH KERTTULA

House minority

leader left the Legislature in January to take a fellowship with Stanford University's Center for Ocean Solutions.

The National Ocean Council is a relatively new agency that includes Cabinet-level and other federal officials.

Obama, by executive order in 2010, established a national ocean policy and the National Ocean Council.

Some Alaska elected officials and industry representatives have raised concerns that the ocean policy could hinder resource development.

-WESLEY LOY

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NATURAL GAS

Largest LNG carriers sized for Qatar

Q-Max tankers are 1,132 feet by 177 feet, while most of the fleet is smaller and sized to fit most LNG export, import terminals

By STAN JONES

Researcher/writer for the Office of the Federal Coordinator

How big are LNG tankers?

The world's largest LNG carriers are the Q-Max tankers, so-called because they are the maximum size that can be accommodated at liquefaction terminals in Qatar, the world's biggest exporter of LNG.

Q-Maxes are 1,132 feet long and 177 feet wide. They draw 39 feet of water. Qatar went for economies of scale with



these ships — move the most gas in the biggest tanker possible — though only a limited number of customers can receive the big ships at their docks.

How big is a Q-Max? Pretty big, but not on the same scale as some of the world's true seagoing behemoths.

The biggest ship ever — more of a barge than a ship, actually — is Shell's gigantic Prelude floating LNG vessel. It was moved out of a South Korea dry dock in early December 2013 and is expected to enter service in an offshore Australia gas field in 2016. It's 1,601 feet long - longer than five football fields - and has no propulsion of its own. Instead, it'll be towed into position and anchored over the gas field. There, it will take gas piped from under the seabed, liquefy it and store it to be loaded on LNG tankers for shipment.

LNG TANKERS GROW IN SIZE



Probably the smallest oceangoing LNG tanker ever to sail was also the first: The Methane Pioneer, a mere 339 feet long. It left the U.S. Gulf Coast for England with the first load of LNG ever to cross an



ocean in January 1959.

After Prelude, the big-ship field drops away pretty fast. Next are a fleet of Maersk Line container vessels at just over 1,300 feet, followed by a number of oil tankers over 1,200 feet, then the Q-Max tankers and some bulk carriers and cruise ships over 1,100 feet.

But what matters about a ship is not how long it is. The question is, how much cargo can it handle?

A Q-Max tanker can carry about 266,000 cubic meters of LNG, equal to roughly 5.5 billion cubic feet of natural gas in the vapor form burned in furnaces, water heaters and kitchen ranges. That's enough to supply almost 75,000 U.S. households for a year. (The old Methane Pioneer carried 1/50th as much, about 5,000 cubic meters. The Polar Alaska and Arctic Tokyo, which launched the Alaska LNG trade, carried 71,500 cubic meters



each.)

But most LNG carriers are not sized for the Qatar trade. They tend to be of a more utilitarian size — around 950 feet — so they can fit most LNG export and import terminals anywhere in the world. Their LNG capacity falls into the range from 빂 5 125,000 to 175,000 cubic meters. Energy consultants IHS CERA reported that, as of late 2013, of the more than 100 new LNG tankers on order through 2017, only one had a capacity over 190,000 cubic meters.

The common mid-range tankers can move from 2.6 billion to 3.6 billion cubic feet of natural gas (when supercooled into LNG) per load, and the vessels envisioned for the proposed Alaska LNG project would fall within that range. The North Slope producer-led project would pipe natural gas from Prudhoe Bay and other North Slope fields to a liquefaction plant in Nikiski on the Kenai Peninsula. That project in full operation could fill several tankers per week.

LNG tankers and oil tankers are in essentially the same business - moving liquid energy across oceans. But, as a general rule, LNG costs more to get to market.

This is partly a function of two cost factors tied to producing and moving LNG.

One factor is the expense of the huge and complex plant that turns vapor into LNG. Another factor is that LNG tankers are more complicated to build and operate than oil tankers. The tanks holding the LNG must be heavily insulated to keep it cold enough to stay liquid, and the ship has to have onboard systems for managing what is called boil-off — the LNG that evaporates because no insulation system is perfect.

But another key factor at work in the higher cost of transporting LNG has nothing to do with equipment or operations. Rather, it's basic physics: A given volume of LNG contains only about 64 percent as much energy as the same volume of crude oil.

For example, the crude oil on a fully loaded million-barrel tanker contains 5.6 trillion Btu of energy.

And LNG? A tanker of the same volume would carry 3.6 trillion Btu.

To put it another way, to move equal amounts of energy, you'd need either an LNG tanker about half again as big as your oil tanker, or 50 percent more tanker loads.

Floating thermos bottles

Every LNG tanker on Earth has to do one thing: make sure that its cargo methane gas chilled to about minus 260 degrees Fahrenheit to turn it into a liquid - doesn't warm up and turn back into a gas. This is why LNG tankers are often called "floating thermos bottles." To keep the gas cold, LNG tankers come predominantly in two designs: Moss and membrane. If there's such a thing as an instantly recognizable LNG tanker, it's one with the Moss design, developed by Norway's Moss Maritime. What makes it recognizable is a row of what look like giant golf balls running down the middle of the deck. Those golf balls — typically about 140 feet across, or as wide as eight Chevy are actually a series of spherical tanks for the LNG.



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Moss tankers may be the most recognizable, but they are not the most common.

see LNG TANKERS page 13

GOVERNMENT

Plan touts Alaska maritime jobs

The state government and others have put together an "Alaska Maritime Workforce Development Plan."

The plan is posted at labor.alaska.gov/maritimeplan.

The maritime sector already is a huge job producer in Alaska. Maritime jobs are integral to industries such as seafood, transportation and oil and gas, as well as research.

"However, maritime employers note that the number of Alaskans who have the necessary skills to fill these positions is too low to meet the demand," the plan says. "An aging or 'graying' workforce was identified by many employers."

The plan identifies strategies to, among other things, develop "career pathways" into maritime occupations. It also lists 23 priority positions.

Representatives of industry, state agencies and the University of Alaska collaborated on the plan. Participants included Kurt Hallier of ConocoPhillips, which has a fleet of oil tankers operating out of Valdez.

-WESLEY LOY

continued from page 12 **LNG TANKERS**

Instead, membrane tankers dominate the market. These look about like any other ocean freighter that doesn't carry containerized cargo on deck. The bridge, several stories high, is at the back, and the deck is characterized by a complicated system of pipes and valves for getting LNG on and off the ship.

As of 2011, only about 30 percent of the world fleet relied on the Moss design and only about 6 percent of new orders were for Moss tankers, according to a report from the University of Texas Center for Energy Economics. The rest of the market belongs to membrane tankers.

Pros and cons

Each design has its advantages and disadvantages.

Moss tankers can be faster to build, because the spherical tanks are constructed separately from the ship, then lowered into position and installed when the vessel is ready. Also, Moss tankers don't suffer from the problem of cargo sloshing described below.

On the other hand, those big tanks are heavy — typically around 900 tons each — meaning they can be built and installed in only a relative handful of shipyards.

Also on the downside, the shape of Moss tanks makes them a poor fit with a ship's hull — they've been described as "balls in a box." A membrane tanker, by contrast, has built-in tanks. They can be fitted to the shape of the hull and do not project far above the deck — a much more efficient use of space. As a result, it takes a bigger ship to haul the same amount of LNG in Moss tanks than in membrane tanks.

Since tolls and other ship fees are based on something called net tonnage derived solely from ship's dimensions without reference to its cargo capacity or the actual load aboard — Moss tankers pay more per cubic meter of LNG in tolls and fees. For example, a 2005 calculation by Lloyd's Register determined that a Moss tanker able to carry 135,000 cubic meters of LNG would pay 30 percent more in nettonnage-based fees to use the Suez Canal than a membrane tanker of the same capacity.

Further complicating the picture for Moss tankers is the fact that they are more subject to wind forces than membrane tankers and thus may bear the added expense of more escort tugs and pilots.

The chief advantage of the membrane tanker is its lower operating cost, for the reasons discussed above. \bullet

Editor's note: Part 1 of this story appeared in the June 8 issue. Part 3 of this story will appear in the June 22 issue.

This is a reprint from the Office of the Federal Coordinator, Alaska Natural Gas Transportation Projects, available online at www.arcticgas.gov/lng-carriers-calledfloating-pipelines.

FINANCE & ECONOMY

Husky reports mixed-bag

For Calgary-based Husky Energy, controlled by Li Ka-shing, Asia's richest man, it's a time of good, bad and uncertain.

Speaking at an investor day, company executives delivered the mixed bag, with Chief Executive Officer Asim Ghosh disclosing that Husky is strongly placed to deliver its growing volumes of heavy crude to market — but only if the major transportation proposals moving from the drawing board to the field.

He said the company has signed up for capacity on four proposed pipelines — Enbridge's Northern Gateway in British Columbia and Flanagan South in the U.S. Midcontinent; Kinder Morgan's Trans Mountain expansion; and TransCanada's Energy East.

"Through 2020, we are quite comfortable that we've got enough (pipeline capacity) in place with existing commitments," he said. "Within that time frame, I have a high degree of confidence that at least one or two of these pipelines will come to pass."

Ghosh also suggested that Husky's integrated structure — exploration, production, upgrading and refining in Canada and the United States — has eased its commodity-price risk such as the deep crude discounts that are being blamed on the pipeline delays.

Husky's overall oil and liquids output averaged 242,000 barrels per day in the first quarter, with steam-driven heavy crude production targeted at 80,000 bpd by 2020. It expects to exit 2014 at 330,000-335,000 bpd from its operations in Western and Atlantic Canada and Southeast Asia.

On the down side, Vice President John Myer disclosed that costs are rising at the Sunrise oil sands project, which is due to come onstream and start ramping up to 60,000 bpd later this year.

The first phase of Sunrise was budgeted at C\$2.7 billion, but cost overruns are facing the central processing plant.

Chief Operating Officer Rob Peabody said the final costs will not be made public until the estimates are nailed down.

Myer said future expansions at Sunrise will move ahead in "bite-sized" phases by awarding smaller contracts to firms supplying equipment and services.

Ghosh told investors has seriously considered two "transformational deals" in the past four years and is open to a purchase offer at a premium price.

"If something comes along ... that competes with the returns that we are getting, obviously I'd be a fool not to look at it," he said.

Ghosh said Husky's operations — which have grown from five projects to more than 50 since 2010 — have been so successful that "more and more we are getting to the position where we don't need one."

-GARY PARK



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continued from page 5 **STEDMAN Q&A**

sale. That pipeline is going to be in place for decades

You don't undersell your hydrocarbons for jobs unless you are a chump. Alaska being the only state that owns the subsurface needs to act like a sovereign. As diligent as the industry is on protecting their interest, the state of Alaska needs to do the same.

Petroleum News: So is SB 21 more complicated, equally complicated or less complicated?

Stedman: I don't think it makes any reasonable improvement at all. If you take out the capital credits, that cleans up some of it. But it's still too complicated in my opinion. The complexity is an issue.

Petroleum News: So let's say SB 21 gets repealed, what's the Legislature or the Administration's next job?

Stedman: We've got a concession system that came in with PPT. With ACES, all we did was change some credits and increase progressivity. It's the same structure. SB 21 strips out a lot of the capital credits, puts in this bastardized progressive mechanism with a per barrel credit and really takes a concession concept and turns it on its head. With that being said, you can take ACES and restructure SB 21. Personally, I would take SB 21 and modify it. That would be my starting point. You've got to remember the foundation of both of them are the same, so you can go from either direction. But per barrel credits on pure production was a clever mathematical maneuver. It's not going to stand the test of time. If we end up dealing with SB 21 for several years, it will be interesting to see what the Department of Revenue ends up doing with that downside exposure to the state.

Petroleum News: On to LNG, you didn't vote for SB 138 on the Senate side but you did vote for it on concurrence. What changed your mind?

Stedman: I think there was a little bit more discussion and adjustments put in on the house side. I'm still not comfortable with it. I don't like the concept of using TransCanada as a bank. I don't like our misalignment of TransCanada basically front running what I see is our interest in the gas line and the conditioning plant. If you were to ask BP, Exxon or Conoco, either one of them collectively or individually, to have the same structure on alignment, I'd be surprised if either one of them stood up and saluted. They have been pretty straight up with us over the years that alignment is in everybody's interest. Their interest and the state interest needs to be aligned. I think we have an alignment problem with TransCanada.

The state is in a unique position fiscally that we can finance a lot of our percentage of the project ourselves, either through our own financial relationships and other institutions or direct equity, so I think the financial structure can be reworked and improved to the benefit of the state.

It's not very popular for elected officials to bring up the Permanent Fund as



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a mechanism to advance the state in these large projects, but the state of Alaska should use the Permanent Fund to finance their portion of the gas line in an equity position and debt it after first gas. Then set the debt limit they want after first gas and take the risk exposure down to the state. You could finance it through your realized earnings. It would shrink the dividend going forward a little bit, but you would have a lot stronger cash flow being spun off the gas line to finance and run the state.

If we had production declines and problems in the markets without a lot of debt on it or no debt at all, we still have positive cash flow otherwise your bondholders are going to eat a significant part of your cash. I think there is a preferred financing mechanism called the Permanent Fund that should be in play to put the state in a stronger position both risk wise and cash wise to put the state in a stronger financial position. I know a lot of elected officials are afraid to bring it up.

Petroleum News: So you are on board with the state taking a financial stake in a project?

Stedman: The state needs to not only take a position, the state needs to not have TransCanada in front of us on our position we should be staking. Should we have ownership in the infrastructure, not only the shore side liquefaction but the pipeline and the treatment plant in accordance with our gas position? Yes. The area I'd like to see the state pursue is our percentage of the gas, we don't have to have a marketing arm put together but the gas percentage is taken care of the three majors: BP, Exxon and Conoco. If Alaska does not take an equity position in that infrastructure, our revenue stream is going to be significantly reduced. If that happens, the public will be concerned that we gave away the farm. For those who say don't invest in the infrastructure, my position is not only do you invest in it, you pay cash for it as much as possible.

Petroleum News: What do you believe the Legislature should do between now and the time a contract comes for your review in 2015?

Stedman: I think we will be wrapped up in a dialogue hopefully in a repeal of SB 21. And we'll get that sorted out. We need to take a harder look at our infrastructure and make sure we are in a position to not slow down the construction of (the pipeline) because we have problems with bridges or roads. You know sometimes we try to be too helpful and we actually hindering things. Sometimes we need to just get out of the way and let private enterprise move forward and get something done. I think we have a real project in front of us.

If you look at the age of our basin, you've got a field that's 30 years old and it's time to blow the gas cap off. You've got the economics in the Pacific with Japan needing gas and a secure trading partner, plus a free and defensible transportation corridor. In other words we don't have the Panama Canal and all of the choke points incoming in Southeast Asia. We've got the North Pacific from Alaska due south and the U.S. Navy protecting it. It looks like the macro trends are lining up in our favor better than they've ever been. I think we have a project.

Petroleum News: Are you more confident that the Legislature advanced the prospects of a project this past session?

Stedman: I think the global economics advance the project and the age of our basin do that. I think we in the Legislature are static in the game. In other words, when this project is economic, it's going to get built. There isn't a lot we can do to change the macro trends and/or the age of the basin. We can take some marginal positive steps like regulatory issues, there's some tax issues, infrastructure issues, but we don't have any control over the age of the basin — it was opened up when it opened up; the volume's the volume — the earthquake and tsunami in Japan, growth in China, South Korea's economics, our physical location on the planet sitting here atop the Pacific So I don't think we should beat ourselves on the chest too much. We should make the changes we can make to make a marginal positive impact, but it's mainly global trends that are going to drive this. It has been driving it for about a decade.

Petroleum News: Do you have a sense that, whether you liked it or not, the Murkowski contract is going to come back in a few years?

Stedman: I think it is going to be the contract from when we were under the Stranded Gas statutes coming back at us. I'm hesitant for the state to take gas in kind and have to market it ourselves. There needs to be a concrete agreement with the three majors to market the state's gas and diminish the state's exposure to a certain degree. ●

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ADVERTISE NOV

Exploring the Alaska-Washington Connection

Beginning with the Klondike Gold Rush in the 1890s, these two northwestern states have a long history of working together to overcome the constraints of geography and climate to build an enduring partnership that fuels both economies.

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Contact Marketing Director Bonnie Yonker for further details at byonker@petroleumnews.com or 425-483.9705.



continued from page 1 **DRONE USE**

another important step toward broader commercial use of unmanned aircraft," said Transportation Secretary Anthony Foxx on June 10 when announcing the issuance of the drone authorization to BP. "The technology is quickly changing, and the opportunities are growing."

The FAA says that the approved type of aircraft is a Puma AE, a handlaunched, unmanned vehicle about $4 \frac{1}{2}$ feet long and with a wingspan of 9 feet.

BP says that it wants to use the drones for high-accuracy surveying and mapping.

Road surveys

Curt Smith, technology director with BP's Chief Technology Office in Houston, told Petroleum News that the machines have an immediate application in developing high-precision surface maps of the gravel roads at Prudhoe Bay. A conventional aircraft has to fly at a height and speed that limits the accuracy of the LIDAR data, Smith explained. But a small drone, with a cruise speed of perhaps 25 miles per hour at an altitude of just 150 feet, can potentially achieve a survey accuracy of 5 centimeters horizontally and 1 centimeter vertically, he said.

And that level of accuracy in road surveying can feed through to improved road maintenance, a critical factor in Prudhoe Bay field operations. Any discrepancy from required specifications for a gravel road surface can lead to problems with operations such as the movement of massive drilling rigs between different oilfield sites, Smith said. A road blockage caused, for example, by a rig becoming stuck, can become an expensive and timeconsuming problem.

GPS guided graders

Smith said that BP is starting to use GPS-guided road graders to improve maintenance efficiency. The grader has a screen that guides the driver of the machine, ensuring that the grader follows the road's centerline, he said. A groundbased GPS correction system enables a GPS receiver to achieve a positional accuracy of 5 centimeters, he said.

But this high level of positional accuracy is of limited value without equally accurate maps. And that is where the high-precision mapping from the LIDAR-equipped drones comes into play,

with the plotting of the precise location, shape and profile of each Prudhoe Bay road. Now, a grader equipped with a precision GPS receiver at each end of its blade, can be programmed with data describing both the actual road profile and the required road profile, enabling the precise adjustment of a grading operation, Smith said.

GPS technology can also provide the means to steer graders along the roads during periods of low visibility. And BP is considering equipping drilling rigs with GPS systems, thus, in combination with a high precision map, enabling a rig to be accurately steered along a road centerline, avoiding the risk of the rig crossing the edge of the road, Smith said.

More new ideas

And, as with many emerging technologies, the successful operation of the drones is rapidly spawning a series of new ideas for their use.

"It's going to be a big deal," Smith said.

For example, having seen what the drones can achieve in terms of road maintenance, pipeline maintenance staff are using the drones to survey the Prudhoe Bay pipelines, thus greatly increasing the efficiency and frequency of the survey operations required to detect problems such as frost heaves that can cause pipeline support members to move, Smith said.

BP has also used the drones to measure the precise volume of gravel obtained from a state gravel pit, he said. Other ideas include the mapping of culverts, to identify improved culvert locations, and the aerial inspection of equipment such as tanks and electrical lines.

Safe operation

But what about the risk of a mid-air collision, given the fact that the aircraft are unmanned?

BP notifies the local air traffic control services before any drone operation, with the air traffic controllers then notifying aircraft of what is happening, Smith said. The operators of the drones also use radios to keep other aircraft informed about the drone flights, he said.

Being in the air, the drones do not disturb the tundra. And, having electric motors, the vehicles create no discernible sound when flying, Smith said. \bullet

> Contact Alan Bailey at abailey@petroleumnews.com

ENVIRONMENT & SAFETY

Truck rollover spills 2,500 gallons of diesel

The state of Alaska says a tanker truck spilled about 2,500 gallons of diesel fuel on the Dalton Highway north of the Brooks Range.

The Fairbanks Daily News-Miner reports (http://is.gd/QVT6mL) that the state Department of Environmental Conservation said June 10 the northbound NANA Oilfield Services truck left the road and rolled over the afternoon of June 7 about 110 miles south of Deadhorse.

The truck was carrying about 9,700 gallons.

The state says the spill reached a small stream but it has gotten no reports of affected wildlife. Cleanup is under way.

The driver was treated at a Fairbanks hospital and released.

-ASSOCIATED PRESS

EXPLORATION & PRODUCTION

US drilling rig count down by 6 to 1,860

Oilfield services company Baker Hughes Inc. says the number of rigs drilling for oil and natural gas in the U.S. declined by six the week ending June 6 to 1,860. The Houston firm said in its weekly report that 1,536 rigs were drilling for oil and 320 for gas. Four were listed as miscellaneous. A year ago there were 1,765 active rigs. Of the major oil- and gas-producing states, Texas gained two rigs while Ohio and Wyoming were up one each. Louisiana and Pennsylvania each decreased by three while Alaska, California, Colorado and Oklahoma were down one apiece. Arkansas, Kansas, New Mexico, North Dakota, Utah and West Virginia all were unchanged.



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

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Oil Patch Bits

Arctic Slope Regional Corp. announces new acquisition

After many months of planning and preparation, Arctic Slope Regional Corp. is pleased to announce the acquisition of Little Red Services Inc. LRS has been in operation for more than 30 years and provides "hot oil" and other well services on the North Slope.

As a wholly owned subsidiary of ASRC, LRS will be operated separately from ASRC Energy Services Inc. This operating structure will help to protect LRS' brand and allows the management teams at LRS and AES to focus on what they do best.

"It's an exciting day for ASRC," said Rex A. Rock Sr., president and CEO of ASRC. "I believe the nature of LRS' services positions the company for long-term growth as North Slope producers seek to increase production, as a result of oil tax reform."

"I speak for LRS employees when I say we are excited to join the ASRC family of companies," added Doug Smith, LRS president and CEO. "ASRC and LRS have a shared commitment to the Alaska oil and gas industry, and I believe the combination of oil tax reform and the financial support of ASRC will allow LRS to expand and improve the services we have provided to North Slope producers for more than three decades."

Commemorating the acquisition, ASRC hosted a ceremony at its Anchorage headquarters on May 21.

Usibelli Coal Mine Inc.

Founded in 1943 by Emil Usibelli, Usibelli Coal Mine Inc. is located in the mountains of the Alaska Range near Healy, Alaska. UCM has a workforce of about 130 employees and operates year round. UCM is Alaska's only operating coal mine and production averages 2 million tons of coal per year.

Richard C. Sivils, Reclamation Engineer

Sivils earned his B.S. in mining engineering from the University of Arizona. Previous experience includes reclamation engineer at the Decker Coal Mine in Montana and mining engineer at Freeport McMoRan Copper & Gold in Arizona. He enjoys working outdoors with the crews and having the opportunity for his work to be an enduring part of Alaska's landscape. His favorite pastimes include hunting, fishing, rafting, flying and camping.



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continued from page 1 **KITIMAT LINK**

to proceed with Kitimat LNG.

Four projects under development

TransCanada Chief Executive Officer Russ Girling said his company now has four major natural gas pipeline projects under development in the region at a combined cost of C\$12.6 billion and "we are committed to ensuring they are all built responsibly and with minimal environmental impact."

He said a regulatory application should be filed in the fourth quarter of 2014.

TransCanada said the Merrick system

would be a "significant new link" in British Columbia's emerging plans to export LNG, extending the company's existing Groundbirch Mainline system.

The other commitments TransCanada has negotiated to serve the LNG sector are led by the proposed Prince Rupert Gas Transmission Project and the Coastal GasLink project.

In January 2013, Progress Energy Canada awarded TransCanada the rights to build, own and operate the Prince Rupert pipeline to deliver gas to the Petronas-operated Pacific NorthWest terminal near Prince Rupert.

That came only six months after TransCanada landed a similar deal with the Shell-operated LNG Canada partnership, which gives it identical rights to

carry 4 billion cubic feet per day on the Coast GasLink system from the Montney region.

TransCanada is also involved in feeder lines out of the Horn River and North Montney basins.

All told, the company's LNG role puts it ahead of rivals Spectra Energy and Enbridge, in what Girling describes as the "sweet spot of our backyard in terms of an opportunity to grow earnings beyond the 2015 timeframe."

Site work at Kitimat

As far as Kitimat LNG goes, a Chevron executive said early work is under way to prepare a terminal site and prepare for construction of the Pacific Trail pipeline.

So far, the partnership is strongly placed, having received a permit from the National Energy Board to export 11 million metric tonnes a year of LNG.

It has also struck benefits agreements with 15 of 16 First Nations along the pipeline right of way from Summit Lake to Kitimat, giving it the most successful record in getting aboriginal communities on its side.

The spokesman said Kitimat LNG is optimistic it can sign up contract buyers for 65 percent to 70 percent of the production, but is not setting deadlines for a final investment decision.

-GARY PARK

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Contact Gary Park through publisher@petroleumnews.com

continued from page 1 **PORT CLARENCE**

coast capable of handling deep-draft vessels. At present, no such port exists.

The oil and gas industry has used Dutch Harbor, in the Aleutian chain, to support offshore exploration in the Arctic. Dutch Harbor is roughly 800 nautical miles south of the Bering Strait.

With climate change, the Arctic is becoming less icy and more open for shipping and other industry. Thus, proponents say the need for a far-north port is great.

The U.S. Army Corps of Engineers, in tandem with the Alaska Department of Transportation and Public Facilities, is expected to make a recommendation by year's end on development of an Arctic port. The agencies have signaled Port Clarence and neighboring Nome likely are the best locations.

Put port 'on hold'

The Northern Economics feasibility analysis doesn't seem to make a strong case for building a port, at least not right away.

That's because the shipping, cruise and commercial fishing industries, along with government agencies, don't offer much revenue potential for the port, the study indicates.

Only oil and gas exploration and field support are listed in the analysis as having "high" revenue potential.

But drilling in the Chukchi and

STRE

ALASKA

Beaufort seas is currently on hiatus, and might remain so for years, the report says. It's because of the troubles Shell encountered during its brief Chukchi drilling campaign in 2012, as well as persistent court challenges.

Northern Economics says it interviewed people with companies holding offshore leases in the Chukchi and Beaufort.

"Forecasting potential oil and gas activity in the Chukchi and Beaufort seas is problematic, following Shell's problems with their 2012 program," the report says. "Interviews and research suggest that, at a minimum, there will be greater scrutiny and further federal regulation for any future exploration."

The study says it could be as late as 2018 before exploratory drilling restarts in the two outer continental shelf lease areas. First oil isn't expected until 2025.

Interview subjects had "mixed responses to possible use of Port Clarence," the study says.

Generally, larger firms look to Dutch Harbor as a supply base, while smaller firms expressed more interest in Port Clarence for fuel or other support, the study says.

"All those interviewed suggested any plans for constructing infrastructure should be placed on hold," the study adds.

Capital costs, revenue needs

Northern Economics estimates capital costs for a minimal port, or what the consultant terms a "support base."

A dock, work camp and utilities would

take between \$33.6 million and \$72 million, with a midpoint estimate of \$48 million, the study says. Annual operating costs are estimated at \$480,000 to \$1.4 million.

"For discussion purposes," the report factors in a 25-year, \$25 million loan for the project.

The numbers suggest the need for a minimum of about \$5 million per year in revenue, the study says.

Potential funding, the report says, could come from a range of sources including private infrastructure investors, shipping companies, banks, Port Clarence tenants, and government agencies such as the U.S. Economic Development Administration and the Alaska Industrial Development and Export Authority.

Bering Straits Native Corp., in announcing the Port Clarence feasibility analysis, said it "has been approached by numerous private entities interested in partnering in financing development of Port Clarence."

Northern Economics concludes its feasibility analysis this way: "The team believes Port Clarence development and revenues must be directly linked to oil and gas exploration in order to justify capital expenditures for a dock, tank farm, and other support activities."

Land conveyance sought

Port Clarence has a colorful history. Whaling ships used it in the 1800s as a port of refuge and to take on coal and water, the study says.

In the early 1900s, Port Clarence



served as a landing point for reindeer transported from Siberia.

The Coast Guard established a LORAN navigation site in 1961, erecting a 1,350-foot antenna, the tallest structure in Alaska. The station operated until 2010, and the antenna was taken down.

A good airstrip and some buildings remain at Point Spencer.

Ships and tugs continue to duck into Port Clarence for refuge.

The area has open water only four to five months a year, but Crowley notes icebreakers could extend the season to 10 months, the study says.

Bering Straits Native Corp. is pursuing title to Point Spencer, and has selected the land for conveyance under the Alaska Native Claims Settlement Act.

On May 15, Alaska Congressman Don Young introduced a bill (H.R. 4668) to facilitate the land conveyance.

The Northern Economics report is available online at http://bit.ly/1kpf0y8.

-WESLEY LOY

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FURIE OPERATING ALASKA LLC



speculative."

But convinced that the offshore prospects might contain large oil and gas fields that some geologists had thought remained undiscovered in the Cook Inlet basin, Davis named the prospects in reference to the supposed hydrocarbon "kitchen," the region of hot oil and gas source rock, that he thought lay under the prospects.

Kitchen Lights

Roll forward to the present day, and the quantity of oil and gas resources in the prospects remains unknown, at least in public. Following a series of lease deals in 2009, the Kitchen prospects were combined with two other prospects along the same structural trend, the Corsair and Northern Lights prospects, to form the Kitchen Lights unit. In 2011 Escopeta brought a jack-up drilling rig, the Spartan 151, to the inlet to drill in the unit. And, following a program of exploration and appraisal drilling, Furie Operating Alaska, as Escopeta is now known, is developing what appears to be a significant sized gas field in the unit.

The Kitchen Lights unit is divided into four exploration blocks, with each block encompassing one of the original prospects that were combined into the unit. In the southern part of the unit, immediately north of the East Foreland region of the Kenai Peninsula, lie the southwest and central blocks over the original Kitchen prospects. In the middle lies the Corsair block, with the fourth block, the Northern block, in the unit's northeastern sector.

How big?

In September 2011 Escopeta used the Spartan rig to drill the company's first exploration well, the Kitchen Lights unit No. 1 well to a depth of 8,805 feet in the Corsair block. And on Nov. 4 of that year the company announced a 3.5 trillion-cubicfeet gas find, an announcement that was met with considerable skepticism and which one commissioner from the Alaska Oil and Gas Conservation Commission characterized as "irresponsible," given "so little firm data." Escopeta concurred that the statement had been "bold," but commented that detractors had not seen the data that the statement was based on.

Later in 2011 Escopeta was renamed Furie Operating Alaska, a subsidiary of



Piping for one of Furie Operating Alaska's Kitchen Lights gas gathering lines being loaded in Mexico for transportation to Cook Inlet.

Texas-based Furie Petroleum Co., a business owned by German investors. Danny Davis retained ownership of Escopeta's interests outside of Kitchen Lights. And, given the active exploration program in the Kitchen Lights unit, in January 2012 Alaska's Division of Oil and Gas granted a four year extension to the unit's term, to Jan. 31, 2016. That unit extension was subject to Furie re-entering the Kitchen Lights unit No. 1 well and then drilling four or five additional wells in the unit.

After a couple of management changes at the top of Furie Operating Alaska, Damon Kade, the company's current president, took over the company's helm. And in March 2012 Kade told the Alaska Senate Resources Committee that the gas resource encountered in 2011 by the No. 1 well amounted to a probable gas reserve of 750 billion cubic feet, with a possible gas production rate of up to 30 million cubic feet per day. Kade told Petroleum News that the gas estimate announced in September 2011 was based on a much larger reservoir drainage area than the company was now using for its reserves estimates.

Continued drilling

In the summer of 2012 the Spartan rig re-entered the Kitchen Lights unit No. 1 well, continuing drilling to the base of the Tertiary rock sequence at a depth of 15,298 feet. Later that year the company drilled the KLU No. 2 well to a depth of 9,106 feet, with a later sidetrack drilled from that well for testing purposes. The KLU No. 3, drilled to a depth of 10,391 feet, followed in June 2013. Later in the 2013 drilling season, Furie started drilling the KLU No. 4 well, but the company had to suspend the drilling of that well for the winter, before the well was completed.

In July 2013 Furie filed a statement of discovery with the Alaska Department of Natural Resources, saying that the Kitchen Lights unit No. 3 well had encountered multiple productive gas pools in the Sterling and Beluga formations at depths ranging from 3,618 feet to 6,228 feet.

Since March 2012 Furie has remained tight-lipped about the scale of its Kitchen Lights gas discovery. But a plan that began to emerge in the summer of 2013 to develop the discovery through the installation of an offshore gas production platform seemed to imply the existence of a significant find.

Plan of operations

In March 2014 Furie formally filed a plan of operations with the Alaska Department of Natural Resources for the Kitchen Lights unit. That plan said that the company wanted to install an offshore platform of monopod design in the unit, about 10 miles north of Boulder Point, near Nikiski on the Kenai Peninsula. The platform, designated Kitchen Lights unit Platform A, would be supported on a single 18-foot-diameter caisson, with twin gas gathering pipelines delivering production from the platform to an onshore gas processing facility near East Forelands, for delivering natural gas into the Kenai Peninsula gas pipeline infrastructure.

The plan said that each of the twin pipelines would be able to transport up to 100 million cubic feet per day of gas, with initial production coming from the KLU No. 3 well, but with the possibility up to six wells eventually being drilled. The Spartan rig, cantilevered over the platform, would conduct the development drilling. Platform installation, the laying of the pipelines and the construction of onshore facilities would take place between April and October of 2014.

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approved Furie's plan at the beginning of May. However, Furie plans to lay just one of the two gathering lines in 2014, with the laying of the line scheduled for completion by the end of September. Kade told Petroleum News in a June 10 email that the idea is to add the second pipeline later, based on field reservoir performance after further wells come on line.

The Department of Natural Resources

One pipeline initially

The approved plan says that production from the field should start in late 2014, with development of the Kitchen Lights unit likely to result in the production of up to 30 billion cubic feet per year of gas. The development is targeting gas production in the Corsair block of the unit, with multiple wells from the single platform in the block all potentially producing gas, the plan says. Exploration is continuing in the other blocks, with any development in those other blocks requiring additional infrastructure, the plan says. The KLU No. 4 well, which

see KITCHEN GAS page 19

continued from page 1 COSMO PLANS

of the various producing stratigraphic intervals and to provide guidance for drilling of more wells to the south," according to the company.

Under its deal to buy the remaining interest in Cosmopolitan from former partner Buccaneer Energy Ltd., BlueCrest has agreed to drill these wells using the Endeavour jack-up drilling rig. The deal allows BlueCrest to use the rig for as many as five months each year, with a commitment to pay for at least 150 days on the rig over the next three years, so long as the rig meets regulatory and technical specifications for the proposed work. The deal also gives BlueCrest first right of refusal on the rig through April 1, 2019.

Oil development next year

The oil development could begin as soon as next year.

BlueCrest said ongoing negotiations with rig contractors are aimed at mobilizing drilling equipment to the onshore site by late this year or early next year. The goal is to find a rig that can support a "multi-year" program lasting "at least five years," with the expectation of "multiple changes in plan as new information is gleaned from each new well and as available applicable technology and local market conditions evolve over time."

When Buccaneer and BlueCrest acquired the Cosmopolitan prospect from former operator Pioneer Natural Resources Alaska Inc. in early 2011, they only picked up two leases held by wells - ADL 18790 and ADL 384403. Pioneer had previously relinquished three other leases at the prospect not held by wells. The state subsequently made these three leases - ADL 391902, ADL 391903 and ADL 391904 available under special terms, given the known value of the acreage. Apache Corp. acquired the leases in a June 2011 lease sale and identified a preliminary drilling target, but postponed further plans because of permitting delays related to its basin-wide 3-D seismic program.

In August 2013, Apache assigned the leases to Buccaneer, which in turn assigned them to BlueCrest, giving BlueCrest complete working interest over all five leases at the field.

The current BlueCrest program imagines "an orderly delineation of these leases through continuous step-out drilling within



the entire project area." The onshore program "will progress continuously" with "rapid progression along the drill pad from well-to-well."

The program calls for drilling extendedreach wells from an onshore pad located some 2.5 miles from the offshore reservoir. Each well would allow for at least one lateral into the oil-bearing zones, but BlueCrest said it might eventually use multi-lateral wells, too.

The first well in the program, Hansen No. 2, would be "an undulating lateral penetration" of an interval in the Hemlock beneath the existing Hansen No. 1AL1 well, which is a lateral that Pioneer drilled in 2005 off a previous ConocoPhillips sidetrack. The Hansen No. 1A sidetrack into the Hemlock has been temporarily plugged and is not capable of production, according to BlueCrest. The current plan is to permanently abandon the well.

The "next three or four" wells would reach north of Hansen No. 2. The proposed bottom-hole locations for these extendedreach wells remain confidential for the time being.

The onshore development will also likely include a waterflood program into "at least" the Hemlock and Starichkof reservoirs, according to BlueCrest. While the company is still studying where to locate the injection wells and whether it makes more sense to isolate these wells within specific zones or use the wells across multiple zones, it is designing its onshore facilities to accommodate water production and injection. The first injection well would likely be drilled after "at least" three new oil development wells have been drilled. BlueCrest is also studying an offshore gas development at Cosmopolitan.

While the program depends on the results of the delineation program scheduled to begin this summer, BlueCrest said "considerable design work" has already been done on two small monopods. The proposed "A" platform would sit atop the Cosmopolitan State No. 1 well Buccaneer and BlueCrest drilled in early 2013. The proposed "B" platform would sit atop the proposed "B" platform would sit atop the proposed Cosmopolitan State No. B-1 well scheduled for this summer.

Each platform would accommodate as many as six gas production wells, which would connect back to the onshore facilities through a single pipeline serving both platforms. \bullet

Contact Eric Lidji at ericlidji@mac.com

Totem Ocean Trailer Express

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Furie started drilling in 2014, is located in the Northern block.



Platform en-route

Meantime, the development associated with the A platform in the Corsair block is moving ahead. Kade has told Petroleum News that the components of the platform are en-route for Cook Inlet, anticipated to arrive in late July, having departed Ingleside, Texas, on June 4. The pipeline components are being shipped from Mexico, for delivery in June. And work clearing the site for the onshore facility started in May.

Exactly how much new Cook Inlet gas will come online as a result of the development remains a mystery. And Furie has not indicated who will purchase the gas when it comes on line. But at least some component of that original optimism over the offshore prospects appears set to bear fruit.

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