



Narwhal, Willow in Nanushuk; investors unworried w. oil price

IF YOU'RE WONDERING WHETHER ConocoPhillips has changed the name of the Nanushuk formation to Narwhal or Willow, the answer is no. Independent Armstrong and its partners first went after Nanushuk west of the central North Slope, although Conoco had drilled through the formation but never pursued it on their own acreage until they witnessed Armstrong's amazing success in the Brookian topset sequence, which is the youngest and shallowest of the petroleum bearing rock sequences in Arctic Alaska.

When asked whether the Narwhal wells Putu and Stony Hill, were in the Nanushuk formation, U.S. Geological Survey geolo-

see **INSIDER** page 8



Eni says drilling at Nikaitchuq could resume as early as this fall

Eni could resume development drilling at the Nikaitchuq unit as soon as this fall, if the timing and results of its ongoing exploration campaign in the region accommodate.

In its 11th plan of development for the North Slope unit, the local subsidiary of the Italian major announced plans to drill as many as three new wells and to add laterals to as many as eight existing single lateral wells at its Spy Island Drillsite as soon as October 2018.

The work depends on the progress at the Nikaitchuq North exploration project. The start of that project was delayed back in December 2017 and now faces seasonal restrictions.

The planned development work depends on the ongoing

see **NIKAITCHUQ DRILLING** page 6

Oil supply weakening, says Paal Kibsgaard, Schlumberger exec

In its July 20 second quarter earnings conference call Schlumberger Chairman and Chief Executive Officer Paal Kibsgaard shared his observations of the world's oil supply base, which he says is dwindling.

"In spite of OPEC's recent decision to increase oil production, the supply base continues to weaken, with growing geopolitical pressure to remove Iranian barrels from the market, with no apparent resolution to the falling production in Venezuela, and with Libyan exports continuing to be volatile," Kibsgaard said.

At present, "OPEC spare production capacity is limited to 2.1 million barrels per day from Saudi Arabia, Kuwait and the UAE, which is approaching the lowest levels seen in the last two decades."

In North America, he said, "the pressure on infrastructure and

see **SCHLUMBERGER EXEC** page 5

BLM requesting nominations for 2018 NPR-A oil & gas lease sale

The federal Bureau of Land Management is requesting nominations and comments on available tracts for consideration in its December 2018 oil and gas lease sale in the National Petroleum Reserve-Alaska.

BLM announced a 30-day period for nominations or comments which closes Aug. 20.

"Requesting comments about which tracts should be included in the sale allows us to ensure industry, conservation groups, and other stakeholders have an opportunity to provide input," Karen Mouritsen, BLM Alaska acting state director, said in a July 19 statement. "This is one of several actions we are taking to further the direction in Secretarial Order No. 3352, relating to expanding energy development in the

see **LEASE SALE** page 5

LAND & LEASING

Bids on blocks

DO&G to offer special lease sale areas — Harrison Bay, Gwydyr Bay, Storms

By **KRISTEN NELSON**

Petroleum News

The Alaska Division of Oil and Gas is combining unleased acreage backed by publicly available information on those leases to offer three blocks of leases in its fall oil and gas lease sales.

Large contiguous acreage blocks in three North Slope and Beaufort Sea areas will be offered in a sale to be held concurrently with its annual fall 2018 competitive oil and gas lease sales.

"These unique lease sale blocks are groups of North Slope and Beaufort Sea Areawide lease sale tracts that will be offered together as Special Alaska Lease Sale Areas (SALSA)," Division of Oil and Gas



CHANTAL WALSH

Director Chantal Walsh said in describing the program on the division's website.

She said the division "has gathered and highlighted large amounts of publicly available data that bears on the SALSA areas."

The areas are: Harrison Bay on the coast west of the Colville River unit; Gwydyr Bay on the central North Slope coast, between Milne Point and Northstar north of Prudhoe Bay; and Storms, south of the

Prudhoe Bay unit and immediately east of the Guitar unit.

The block sizes vary, with the Harrison Bay SALSA the largest at some 66,430 acres, followed by

see **SALSA BLOCKS** page 6

EXPLORATION & PRODUCTION

Canada risky, uncertain

Imperial Oil, unhappy with red tape, backs off growth opportunities, limits capex

By **GARY PARK**

For Petroleum News

With billions of dollars of foreign-sourced capital investment being scaled back and hundreds of industry employees still collecting pink slips, the impression is building that Canada's oil patch is in an irreversible decline.

And just in case anyone thought a reversal might still be possible that hope has been dealt a setback by Imperial Oil — 70 percent owned by ExxonMobil and long the powerhouse of Canadian oil development and refining — whose Chief Executive Officer Rich Kruger delivered the bleakest of messages to The Globe and Mail and the National Post, Canada's two national newspapers.

"We all shy away from risk, beyond the technical and operational risk we accept.

And today there is more risk and uncertainty." —Imperial CEO

Rich Kruger

He said Imperial has stopped all new growth spending until governments act to improve competitiveness and reduce red tape, noting that his own company will, at most, spend only C\$1.7 billion this year just to "care and feed" its existing asset base.

"This is not a place where Canada has been historically," he said. "We all shy away from risk,

see **IMPERIAL OUTLOOK** page 6

PIPELINES & DOWNSTREAM

Cross inlet approval

RCA approves Harvest-owned lines requests; pipeline will end need for Drift River

By **KRISTEN NELSON**

Petroleum News

The Regulatory Commission of Alaska has approved applications by Cook Inlet Pipe Line Co. and Kenai Beluga Pipeline LLC for pipeline changes in Cook Inlet which will allow for movement of crude oil from the west side to the east side by pipeline, eliminating the need for tanker transport from the Drift River Terminal to the Andeavor (formerly Tesoro) refinery at Nikiski.

The pipelines are owned by Harvest Alaska, a wholly owned subsidiary of Hilcorp Alaska, Cook Inlet's largest oil and gas producer. Applications for the changes were filed with the commission last September.

The capacity exchange agreement between CIPL and KBPL states that CIPL will bear the investment cost of reconfiguring the lines and KBPL's natural gas shippers will not experience a rate increase as a result of reconfiguration.

The commission has approved conversion of a portion of the Kenai Beluga Pipeline gas system, CIGGS-A, into an oil pipeline and connection of that line with existing Cook Inlet oil pipelines on the east and west sides of Cook Inlet.

Cook Inlet Pipe Line has been authorized to

see **PIPELINE CHANGES** page 7

GOVERNMENT

Legislators hear departments on initiative

Ballot measure 1, the 'salmon initiative', would be costly to state; state challenging validity of measure at Alaska Supreme Court

By KRISTEN NELSON

Petroleum News

The Alaska Senate's State Affairs Committee heard an update July 20 from state departments on the potential impact of ballot measure No. 1, the so-called salmon initiative.

A memo from Legislative Legal Services to Committee Chair Kevin Meyer, R-Anchorage, provided a brief summary of the initiative, telling the committee it "would establish a multi-tiered permitting regime for activities likely to adversely affect anadromous fish habit," amending Alaska Statute 16.05 "by adding new sections to describe fish and wildlife protection standards ... and permitting requirements 'before initiating any activity that may use, divert, obstruct, pollute, disturb or otherwise alter anadromous fish habitat.'"

Lt. Gov. Byron Mallott denied certification of the initiative as an unconstitutional appropriation of state assets last September, but in October the Superior Court found that the initiative did not appropriate a state asset

and granted a motion for summary judgment in favor of the initiative group, requiring the division of elections to provide petition signature booklets to initiative sponsors.

The state appealed the Superior Court's determination. Legal Services said the issue before the Alaska Supreme Court is whether the initiative usurps the Legislature's "discretion to allocate anadromous fish habitat among competing users and purposes."

Fish & Game

Commissioner of Fish & Game Sam Cotton and Ron Benkert, fish and game coordinator, habitat southcentral, reviewed the department's current statutory authority and the new duties the initiative would require of the department.

They said that under the initiative the presumption is that naturally occurring connected water bodies and adjacent riparian areas are anadromous, whereas the department's current jurisdiction ends at the ordinary high-water mark of documented anadromy.

The initiative may prevent the department from issu-

ing permits for the proposed Donlin Prospect mine because two anadromous streams would be permanently eliminated and the initiative would restrict project mitigation to on-site only. Major highway projects could be affected because highways often parallel streams and rivers, requiring extensive erosion control or relocation and because the adverse effect on anadromous fish habit potentially could not be permitted.

Time and cost would be increased for stakeholders, the department said, and the department would be required to hire additional staff and develop new regulations.

Transportation & Public Facilities

Department of Transportation & Public Facilities Commissioner Marc Luiken and the department's statewide environmental program manager, Ben White, said the ballot measure would require an additional eight positions within the department at an annual increase of

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INSIDE ALASKA EXPLORATION

Heading back to the North Slope

Big Nanushuk oil discoveries by Armstrong, Repsol, then ConocoPhillips forces rethink of North Slope potential

By **KAY CASHMAN**
Petroleum News

New major discoveries in the Nanushuk formation on Alaska's North Slope are causing some significant rethinking of the oil potential of the region, as companies move toward development of these finds and assess further exploration opportunities — companies such as the Oil Search/Armstrong Energy/Repsol group; ConocoPhillips; Paul Craig; the 88 Energy consortium; and Malamute Exploration.

Veteran oil and gas investor and developer Paul Craig told Petroleum News, "Some people are preoccupied with ANWR opening ... but we (the western North Slope) have the biggest clinothem in the world."

In Craig's opinion, "The Lower 48 has shifted from exploration to mining projects in tight oil (commonly referred to as shale oil) when they can get production costs low enough. It doesn't have exploratory risk, but Bill Armstrong and his partners are still out there doing real exploration. That takes guts and vision. Armstrong was preceded on the North Slope by ARCO's Robert O. Anderson at the Prudhoe Bay discovery. That's what made America great in the first place — people who took intelligent risks."

Petroleum geologist Paul Decker from Alaska's Division of Oil and Gas talked to Petroleum News in June 2018 about the nature and significance of the new finds. Decker sees the new Nanushuk oil play as opening the possibility of further significant discoveries to the west of the central North Slope. The play may also prove valuable as a geologic paradigm for oil prospects in the newly opened 1002 area of the Arctic National Wildlife Refuge, or ANWR, Decker said.

Recent finds include Armstrong's Pikka/Horseshoe trend in the Nanushuk, Conoco's Willow discovery in the Nanushuk of the northeastern National Petroleum Reserve-Alaska, or NPR-A, as well as Conoco's Narwhal trend in the Nanushuk (see July 2018 map with this story in upcoming edition of Inside Alaska Exploration).

Mark Myers said in 2016 of the Armstrong discoveries that "the proven contingent oil reserve number makes the discovery the largest since the Alpine field, the probable contingent reserve number the largest since the Kuparuk



PAUL CRAIG



BILL ARMSTRONG



ERIK OPSTAD
88 Energy

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A special publication from the publisher of Petroleum News.

INSIDE ALASKA EXPLORATION
OPPORTUNITIES FOR PROFITS IN ALASKA'S NEW OIL BOOM

WHAT'S INSIDE?

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- How to develop oil prospects
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Big new North Slope play
Independent Armstrong to develop Nanushuk reservoir, all from unanticipated source to the north

First oil 2021

Another big find \$36.6 million in bids
ConocoPhillips announces Willow oil discovery State of Alaska, HLM, attract bids on more than 1 million acres across North Slope, Beaufort Sea

New edition coming soon

field, and the possible contingent number makes the discovery the largest since Prudhoe."

The company and its latest partner who has taken over as operator, Oil Search, continue to talk to Myers and show him geologic data.

Myers' career includes commissioner of the Alaska Department of Natural Resources; director of Alaska's Division of Oil and Gas; director of the U.S. Geological Survey; and earlier senior staff geologist for exploration for ARCO Alaska and Phillips Alaska (before mergers created ConocoPhillips) including survey chief for field programs in the Mackenzie Delta, Cook Inlet and North Slope. He received his doctorate in geology from the University of Alaska Fairbanks, specializing in sedimentology, clastic depositional environments, surface and subsurface sequence analysis and sandstone petrography.

First Nanushuk development

After paying \$400 million and agreeing to cover most of the exploration and development costs (undisclosed amount), Oil Search in collaboration with Armstrong is first pursuing a 120,000 barrel-per-day project in the Nanushuk in the Pikka unit.

Interests as of February 2018 in the Pikka unit are Oil Search 25.5 percent, Armstrong 19.125 percent, GMT 6.375 percent and Repsol 49 percent. Interests in adjacent exploration areas include Oil Search 25.5 percent, Armstrong 37.125, GMT 12.375 and



RYAN LANCE
ConocoPhillips



KEIRAN WULFF
Oil Search

see **ANS POTENTIAL** page 5



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● INVESTOR CORNER

Investing in Alaska O&G properties

Sutherlin works to facilitate objectives of companies and investors in regard to projects and leases — from Cook Inlet to North Slope

By **KAY CASHMAN**
Petroleum News

This section features individuals who deal with the acquisition and/or sale of Alaska oil and gas leases, projects and associated properties; a service that often includes guidance to private individuals and public groups looking at investing in Alaska and/or considering operations in the state. The last time Investor Corner appeared, in the May 27 edition of Petroleum News, veteran investor Paul Craig was interviewed.

Every month or two another qualified individual's name is drawn from a jar to be featured. They are each given the opportunity to offer advice they think is most pertinent.

Stephen "Steve" Sutherlin, founder and operative of Strategic Action Associates, has a background that makes him particularly suited for the role he plays with prospective investors, as he is knowledgeable about Cook Inlet, the North Slope and areas in-between.

Raised in Anchorage, Sutherlin is a

former reporter for Petroleum News; he now owns a small piece of the newspaper and its associated publications, although he has no editorial control. Writing for the newspaper soon after its inception in 1995, he covered everything oil and gas related statewide.

Sutherlin left the editorial staff of Petroleum News in 2005 to work for Escopeta Oil and Gas as strategic officer and spokesman and was instrumental in a Jones Act waiver that allowed the company to bring a jack-up rig to its Kitchen Lights prospect in Cook Inlet.

When Escopeta president and founder Danny Davis was replaced and the newly re-organized company became known as Furie, Sutherlin remained in the same position. In addition to heading government and public affairs, he interfaced with contractors, planned and negotiated



STEVE SUTHERLIN

transport and winter storage of the jack-up rig, instituted programs to protect the endangered Cook Inlet Beluga whales and avoid conflicts with the local fishing fleet. He was responsible for underwater safety, coordinating operations with Furie's diving contractor and other marine assets and is cross-trained in a variety of positions in spill response and prevention.

After leaving the Kitchen Lights project in 2013 Sutherlin conducted a forensic study of the 1989 Exxon Valdez oil spill response, which led to a consultancy on a proposed spill response center for the Gulf of Mexico, and later to an invitation to address an international leadership conference in Equatorial Guinea.

One of the key initiatives of the Africa conference was to adopt the "Alaska Model" of oil spill prevention and response for the Gulf of Guinea. Sutherlin returned to Alaska and formed a company which developed a comprehensive oil spill prevention and response plan for Equatorial Guinea and the 16 nations that line the Gulf of Guinea.

Also in 2013, Sutherlin reported for Petroleum News Bakken — from its inception until its closure in 2015 due to low oil prices. This was a period of remarkable advancement in horizontal drilling and fracking technology.

In 2016, he began doing consulting work and geologic studies on the undeveloped Stinson discovery on the eastern North Slope near the Arctic National Wildlife Refuge, or ANWR.

Sutherlin has worked with numerous small investors and leaseholders, and large companies as well, such as Shell Oil from 2007 to 2015 as a scientific and historical researcher during its nine-year effort to explore the Chukchi and Beaufort seas. There he proposed the use of air curtain technology to mitigate the effect of industrial percussion on whale communication and navigation.

Sutherlin is an oil and gas historian with numerous publications to his credit. A scientific generalist, he studied environmental chemistry and did extensive field work with the late Dr. J. Calvin Giddings — the inventor of field-flow fractionation — at the University of Utah as well as geology, meteorology and engineering. At the University of Alaska Anchorage he studied biology, anthropology, astronomy, music theory and aircraft

mechanics, graduating with a Bachelor of Arts in journalism with film and television specialty. At UAA he worked professionally in distance education, including the live series "TalkBack" — over Rural Alaska Television Network — and the "Crossroads for Justice" series. He was awarded two CINE Golden Eagle awards for production of Alaska Center for International Business educational documentaries on Alaska value-added businesses.

Sutherlin continues scientific inquiry in non-university settings, notably in marine acoustics and ecosystems, exploring commercial applications for the GEDEX High Definition Airborne Gravity Gradiometer, and with Dr. Robert B. Blodgett in the field of stratigraphy and paleontology.

Advice to investors: The state sets the rules

"The challenge for smaller investors in Alaska's oil and gas leases," Sutherlin told Petroleum News, "is primarily to find a niche in an arena that is suited for extremely deep pocketed operators. Like the fabled king crab fishery in the Gulf of Alaska, the environment is threatening, the work is hard and survival is always the prime consideration — but the potential rewards are high."

"The large players" in Alaska's oil industry "are well capitalized, and well connected in government and in the business community."

"In Alaska, most of the non-federal lands that are prospective for oil and gas are centrally owned by the state government. The state sets the rules, and if you, the lessee, have a dispute with your landlord, your landlord is the arbiter, the regulator, and the enforcer," he cautioned.

"Under Alaska's constitution, any party 18 and older may buy state oil and gas leases. The state can, and has, set lease terms that make it expensive to acquire leases, and it has recently set its terms to make it brutally expensive to hold leases more than a few years. For an investor, time is short and the clock is ticking loudly once possession of a lease is taken."

What about the small investor? "The small investor is not particularly welcomed to the table — but the potential

see **INVESTOR CORNER** page 5

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Forrest Crane	CONTRACT PHOTOGRAPHER
Renee Garbutt	CIRCULATION MANAGER

ADDRESS

P.O. Box 231647
Anchorage, AK 99523-1647

NEWS

907.522.9469
publisher@petroleumnews.com

CIRCULATION

907.522.9469
circulation@petroleumnews.com

ADVERTISING

Susan Crane • 907.770.5592
scrane@petroleumnews.com

FAX FOR ALL DEPARTMENTS

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Petroleum News and its supplement, Petroleum Directory, are owned by Petroleum Newspapers of Alaska LLC. The newspaper is published weekly. Several of the individuals listed above work for independent companies that contract services to Petroleum Newspapers of Alaska LLC or are freelance writers.



OWNER: Petroleum Newspapers of Alaska LLC (PNA)

Petroleum News (ISSN 1544-3612) • Vol. 23, No. 30 • Week of July 29, 2018

Published weekly. Address: 5441 Old Seward, #3, Anchorage, AK 99518

(Please mail ALL correspondence to:

P.O. Box 231647 Anchorage, AK 99523-1647)

Subscription prices in U.S. — \$118.00 1 year, \$216.00 2 years

Canada — \$206.00 1 year, \$375.00 2 years

Overseas (sent air mail) — \$240.00 1 year, \$436.00 2 years

"Periodicals postage paid at Anchorage, AK 99502-9986."

POSTMASTER: Send address changes to Petroleum News, P.O. Box 231647 Anchorage, AK 99523-1647.

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SCHLUMBERGER EXEC

export pipeline capacity from the Permian basin is becoming an increasing constraint to production growth, which will likely not be resolved until the second half of 2019.”

U.S. tight oil (commonly referred to as shale oil) producers are “also experiencing production challenges linked in part to well interference as infill drilling in the producing acreage increases and as drilling continues to step out from the tier 1 acreage,” Kibsgaard said.

And “lastly, after more than three years of E&P underinvestment, the international production base has started to show accelerating signs of weakness with noticeable year-over-year production declines in 15 of the world’s

producing countries.”

If he’s right, the situation bodes well for future crude prices and capital investment by oil companies.

The future looks bright for Schlumberger and Baker Hughes, two of the top three global oilfield service providers said Kibsgaard and Baker Hughes top executive Lorenzo Simonelli in their second quarter earnings conference calls.

Both men predicted a positive outlook for the service industry for the rest of the year and continuing even stronger into 2019 and 2020. ●

Note: This story was derived from reading second quarter results and reviewing Seeking Alpha transcripts (<https://seekingalpha.com>)

—KAY CASHMAN

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LEASE SALE

National Petroleum Reserve in Alaska.”

Tract selection for the sale will be consistent with allocations and stipulations identified in the NPR-A 2013 Record of Decision for the Integrated Activity Plan, BLM said, with 11.8 million acres identified available for leasing in the IAP.

The 895 tracts available for nomination and comment cover some 10.25 million acres.

There are currently 196 active oil and gas leases, 1,452,686 acres, in NPR-A.

Last year’s sale, held Dec. 6, offered

five high potential tracts (22,412 acres) and 895 low potential tracts (10.2 million acres). Of the 900 tracts offered, seven low potential and no high potential tracts received bids — all from ConocoPhillips Alaska, which is in the process of developing Greater Mooses Tooth in NPR-A.

BLM’s map of NPR-A tracts, available on its website at www.blm.gov/alaska, shows that the majority of unleased high potential tracts, in the north and northeast of the sale area, are not available for leasing. That was also true for last year’s sale.

—KRISTEN NELSON

Contact Kristen Nelson at knelson@petroleumnews.com

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INVESTOR CORNER

rewards are high,” Sutherlin said.

“Do not invest money you can’t afford to lose. Do not invest money until you invest time in understanding the industry,” he said, noting things are very different in Alaska than in other states.

“It is said that information is the coin of the realm in the oil and gas business. Remember this, because for the smaller

investor, information is the key to survival. Information — and the ability to act quickly on it — is the only advantage the smaller investor can gain or hope for.

“The big oil companies, for all their strength, cannot be everywhere. There are opportunities that have been overlooked; there are opportunities that have been discarded in the past. There are challenges for which study and ingenuity can find a solution,” Sutherlin said.

“The smaller investor must have knowledge of geology, finance, oil markets, poli-

tics, the competition and of which companies may become interested in Alaska.

“There are resources for the small investor. State meetings and hearings are open to the public. The doings of the Alaska Legislature are televised. Luncheons of the Alaska Geological Society have informative speakers and are open to the public, as are those of the Alaska Association of Professional Landmen. State and federal oil and gas lease sales are open to the public.”

Sutherlin’s final piece of advice: “There

is no oil and gas arena quite like Alaska. Alaska has never been forgiving for the unprepared. Alaska can be harsh — but the potential rewards are high.” ●

Note: You can contact Steve Sutherlin at Strategic Action Associates, PO Box 112546, Anchorage, Alaska 99511, email stevepna@hotmail.com, mobile 907 250-1533.

Contact Kay Cashman at publisher@petroleumnews.com

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SALMON INITIATIVE

\$953,900; Fish & Game had cited a \$1.3 million annual cost.

DOT&PF projects involve work within and near fish habitat for culverts, bridges, roadway embankment protection and stream realignments — temporary and permanent. They said proposed language could restrict or prohibit culverts with inverts, riprap for erosion protection, channel maintenance and temporary construction activities, and noted that project delivery would be delayed because the initiative language requires applicants to prove fish do not exist for all work in Alaska waters. Language could require an environmental assessment (1-3 years to develop) or environmental impact statement (up to 5 or more years) whereas most current minor maintenance work falls under a categorical

exclusion (6-12 months).

DOT&PF cited one of the same issues as Fish & Game — mitigation is required on-site.

Natural Resources

Natural Resources Commissioner Andy Mack and Kyle Moselle, associate director, Office of Project Management & Permitting, said while the initiative focuses primarily on Title 16 fish habitat permits and Fish & Game statutory authorities, if passed into law it may constrain DNR’s statutory authorities to appropriate water, which is done for transportation projects, mining/industrial projects, pipelines, residential/commercial construction projects, municipal water and sewer and schools and other municipal buildings and many smaller projects.

DNR must consult with Fish & Game and the Department of Environmental

Conservation in temporary water use authorizations.

For large projects, DNR’s Office of Project Management and Permitting may coordinate review of larger scale projects in the state and facilitates multi-disciplinary agency teams to review plans. The initiative would require additional public notice.

Environmental Conservation

Commissioner of Environmental Conservation Larry Hartig and Andrew Sayers-Fay, the department’s director of water, reviewed Alaska water quality standards, noting they were set through a public process with the federal Environmental Protection Agency. Point sources of wastewater discharging pollutants require a permit under the National Pollutant Discharge Elimination System; the state’s wastewater discharge program is called the Alaska

Pollutant Discharge Elimination System. The APDES permit process includes consulting with Fish & Game and the applicant to determine if discharge is to an anadromous waterbody.

DEC said there is a rebuttable presumption under the salmon initiative that all waters in Alaska are anadromous, with no mixing zones allowed.

DEC would be required to review all existing permits with mixing zones in freshwater. For new systems, or at renewal for existing systems, the requirement would be to meet water quality standards at the end of the discharge pipe, with increased complexity for the engineering plan review and more stringent permit limits. DEC said it would require a new permit writer and engineer under the salmon initiative. ●

Contact Kristen Nelson at knelson@petroleumnews.com

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ANS POTENTIAL

Repsol 25. Interests in the Horseshoe leases are held by Oil Search 37.5 percent, Armstrong 28.125, GMT 9.375 and Repsol 25.

Oil Search has an option through June 30, 2019, to acquire an even larger interest in the project. For an additional \$450 million, the company could acquire Armstrong’s remaining 25.5 percent and partner GMT Exploration’s remaining 37.5 percent interests in the Pikka unit and the Horseshoe block, as well as an additional 25.5 percent interest in adjacent exploration acreage and 37.5 percent in the Hue shale.

During the winter of 2017-18 Conoco encountered commercial quantities of oil in the Putu Nos. 2 and 2A wells, and in the Stony Hill No.1 well, all in that Pikka/Horseshoe trend. Conoco is now planning a standalone development of its Willow discovery, rather than do another step-out from Alpine (Colville River unit facilities) because the large amount of oil expected from Willow would overload the existing facilities.

Brookian oil plays

The Nanushuk formation is part of what geologists refer to as the Brookian sequence, the youngest and shallowest of the petroleum bearing rock sequences in Arctic Alaska. The sediments that formed the rocks were deposited down the margin of an ancient marine basin that filled from west to east, with the basin margin itself migrating in that same direction, as the basin filled. The more sandy sediments deposited in shallow water at the top of the margin later formed the Nanushuk formation.

Oil in the Nanushuk is found in what are called stratigraphic traps, hydrocarbon traps created through the disposition and sequence with which the sediments forming the rocks were laid down. The key to understanding the success of the Nanushuk play is the effect of cycles of sea level change and corresponding changes in sediment deposition, as the ancient basin margin migrated east, Decker explained.

During periods of relatively low sea level, rivers dumped large quantities of sand out across to the basin shelf edge; it also appears that the sands were commonly reworked along the shelf edge to form elongated sand bodies, in some cases several miles long, such as is now observed in

the Pikka/Horseshoe trend, Decker said.

Distinctive oil traps

Then, as sea level rose, submerging the sands, the tops of the sand bodies were scoured off and impervious muddy sediments were deposited on top, to form what would later become hydrocarbon seals. In cross-section, the package of sediments took on a sigmoidal shape, pointed at top and bottom, with the sand at the top pinching out between mud above and below, and with the pointed end of the sand body

directed towards the west, towards the source of the sediment pouring into the basin. Oil later accumulated in upper parts of the sand bodies. ●

Editor’s note: See full story in the upcoming Inside Exploration special pub, expected to be released by Petroleum News in August.

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SALSA BLOCKS

Storms at some 30,720 acres and Gwydyr Bay at some 23,040 acres.

Terms and conditions of the sale will be available in mid-August, Walsh said, when the public notice is released.

The data summary, available on the division's website, <http://dog.dnr.alaska.gov/Information/DocumentLibrary>, includes links to information on the areas.

State as aggregator

The state is acting as aggregator with the SALSA program: it has identified prospects and assembled the leases.

Although in the case of these blocks the areas have been previously leased, seismic has been shot and in some cases wells drilled: the areas were just never developed.

The wells shown for the Harrison Bay SALSA appear to be outside the boundaries of the block, with the Atigaru Point No. 1 the closest, apparently adjacent to the northwest corner of the block. That 11,535-foot well was drilled in the National Petroleum Reserve-Alaska in 1976-77, was a legacy well tackled by the federal Bureau of Land Management in the early phase of cleanup and has been plugged and abandoned to the surface. South Harrison Bay 1 is just south of the block and Qugruk No. 4 is to the east.

There are six wells in the Gwydyr Bay



SALSA block, including Northstar 3, Long Island 1, Gwydyr Bay wells either drilled in or with bottom holes in the block and the Sak River 1A which has a bottom hole in the block.

The Hailstorm 1 was drilled on the eastern edge of the Storms block; Hemi Springs Unit 3 is off the southeast corner of the block.

It appears from the division's graphics that only the Sak River 1A flowed hydrocar-

bons to the surface.

Previously used

The division used a block bidding method in 2011 in Cook Inlet, grouping three tracts surrounding the Cosmopolitan unit into Part B of the two-part sale, requiring bidders to bid on all three tracts with a minimum bid of \$50 per acre. The minimum bid for the remainder of the sale, Part

A, was \$10 an acre.

The division also required a work commitment for the Part B leases in that sale, with a lease plan of exploration required within six months of leases being issued, and the plan required to describe proposed exploration activities, including bottom-hole locations, depths of proposed wells and the estimated date when drilling would begin.

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NIKAITCHUQ DRILLING

exploration program in part for a very practical reason: Eni is using the same rig — Doyon 15 — for both drilling efforts.

The relationship between the two programs may also concern drilling targets. In its plan, Eni said that the development program could begin as early as late 2018 “pending the results and scope of exploration work.” From the beginning, the purpose of the exploration program was to add reserves to Nikaitchuq and to increase oil production.

The Nikaitchuq unit is located in nearshore state waters north of the Kuparuk River unit.

Upcoming plans

The plan for the current year, running through September 2019, calls for drilling three new wells at Spy Island and converting eight existing Spy Island wells into multilaterals.

According to a drilling schedule in the plan, the new Spy Island wells are SP03-FN9, SP06 and SI02-SE6, planned for October 2018 through late February 2019. (In a different part of the plan, Eni lists SP03-FN9, SI02-SE5 and SI06-FN8.) The

eight new laterals are SP33-W3, SP30-W1L1, SP16-FN3L1, SP27-N1L1, SP23-N3L1, SP10-FN5L1, SP18-N5L1 and SP05-FN7L1, planned for late February 2019 through mid-September 2019.

Under the current naming conventions used at Spy Island, wells beginning with “SP” represent production wells while wells beginning with “SI” represent injection wells.

Eni is using Doyon 15 for its Spy Island program. The company contracted the rig in preparation for its Nikaitchuq North exploration program earlier this year. The program involved drilling an ultra-extended reach well from the Spy Island Drillsite into federal waters north of the Nikaitchuq unit, and the rig required considerable modification.

The timetable of the proposed development activities depends on the timing and results of the NN-01 exploration well being drilled into the Harrison Bay Block 6423 Unit.

Eni had initially planned to spud the well by Dec. 10, 2017, completed the well in mid-February 2018 and conduct flow testing between mid-February and mid-March 2018.

The actual spud date was pushed to Dec. 23, with drilling activities beginning in

February 2018 and expected to continue into mid-July, with flow testing occurring in late July or August. The delays forced the company to defer plans to drill a sidetrack in order to comply with summer drilling restrictions in the waters off the North Slope. The company still plans to drill a NN-02 appraisal well during the upcoming winter exploration season.

The company is not planning to resume development drilling from the Oligotok Point Pad but does plan to continue its ongoing workover activities from the pad in early 2019.

The company is also planning to conduct workover activities on Spy Island wells.

Prior suspension

Eni suspended development drilling at Nikaitchuq in May 2015 in response to the global downturn in oil prices. The suspension occurred as the company was completing some of its initial development plans and was beginning to consider expansion opportunities.

The company completed its initial drilling plans for the Oligotok Point Pad in October 2012 and conducted a sidetrack campaign on select wells in 2013 and 2014. The additional work also included an appraisal in mid-2014 to evaluate an N sand

target. All the previous wells drilled from the Oligotok Point Pad had targeted an OA reservoir.

Since the end of the sidetrack program in May 2014, all development activity at the Oligotok Point Pad shifted from drilling to workover operations. The company eventually released its Nabors 245 rig in late 2017 and contracted the Nordic Calista 4 rig.

A continuous drilling program at Spy Island began in November 2012. The program was expanded in early 2013 with the first multilateral at Nikaitchuq and expanded again in late 2013 with a campaign to add a second lateral to all new Spy Island production wells.

The company conducted the West Extension Project at Spy Island between the third quarter of 2014 and early 2015 and launched the East Extension Project in 2015, before suspending all drilling activities at the unit and putting the Doyon 15 rig in cold stack.

Average daily production at Nikaitchuq peaked in late 2015 at around 27,000 barrels per day, according to Eni. The unit had produced 45 million barrels through April 2018.

—ERIC LIDJI

Contact Eric Lidji
at erichidji@mac.com

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IMPERIAL OUTLOOK

beyond the technical and operational risk we accept. And today there is more risk and uncertainty,” Kruger said in a rare public expression of his company's thinking.

If anything, Imperial, despite 138 years of almost unblemished success, has traditionally been the most tight-lipped of Canada's major energy companies and the slowest to embark on new ventures.

Warning

But in a clear warning to political leaders, he said “the real determination of what our near-term or medium-term investment will be will largely hinge on how the competitiveness situation is addressed.”

Reflecting that corporate mood has been a halt to plans for a C\$4 billion, 150,000 barrels per day Aspen in situ oil sands project in Alberta, which was first submitted for regulatory approval at the end of 2013, despite offering an advanced technology that would reduce greenhouse gas

emissions intensity by 25 percent and achieve a similar goal in water consumption.

“I have lived and worked in a lot of places (during 37 years with ExxonMobil) and four and a-half years to get a project that has strong economics, pace-setting environmental performance, is inordinately long,” he said earlier this year. “That is not world class.”

Drawing on Imperial's playbook, Kruger said his company views Aspen as a “winner,” although the venture will not go ahead even with final approval until the conditions are weighed and a judgment is rendered.

Cold Lake stalled

Expanding operations at the Cold Lake heavy oil operation in northeastern Alberta by 55,000 bpd from the current capacity of 180,000 bpd achieved through measured growth over 43 years has also been stalled by regulators.

Kruger is encouraged by the Canadian government's acquisition of the existing Trans Mountain pipeline for C\$4.5 billion, giving it control over the contentious tripling of capacity to 890,000 bpd, because that move

“shows a clear recognition and resolve at the federal level and, from an industrial standpoint, that's a good thing.”

That move recognized the industry's efforts to gain access to markets and international oil prices beyond North America, but “that alone will not be sufficient,” he said.

Full confidence in the government cannot be restored until the expanded pipeline is built and shipments start, he said.

He cautioned that Canada's competitive position will be measured by federal, provincial, municipal and carbon taxes, pointing to the Trump administration's cuts to corporate taxes as an example.

For now, Kruger noted, “capital is flowing, it's just not flowing” in Canada.

Syncrude Canada

Imperial remains disappointed in the performance of the Syncrude Canada oil sands operation, of which it is a

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PIPELINE CHANGES

construct an extension of its existing oil pipeline on the west side of Cook Inlet that will connect to KBPL's newly converted CIGGS-A and to construct and operate a new segment of the Cook Inlet Pipeline on the east side of the inlet that will connect to existing east side oil pipeline infrastructure.

In a related approval, RCA has granted the joint application of CIPL and Swanson River Oil Pipeline LLC, also owned by Harvest, to connect the new east side segment of the Cook Inlet Pipeline to the Swanson River Oil Pipeline, allowing delivery to the Kenai Pipe Line Co. for further delivery to the Nikiski refinery. These lines are also owned by Harvest.

From private to public

Cook Inlet Pipe Line, currently an oil pipeline carrier, applied for gas pipeline certification. The line will convert from private to public use.

The application of CIPL to connect both ends of the newly extended and certified Tyonek Pipeline to the Kenai Beluga Pipeline is granted, the commission said. The Tyonek Pipeline is approved for extension from the offshore Tyonek Production Platform, operated by Hilcorp Alaska, to Ladd Landing on the west side of Cook Inlet.

The commission issued temporary construction permits to CIPL in December.

RCA received comments when the applications went out for public notice, and Harvest responded to the comments, but when the commission held public hearings in May and only KBPL and CIPL testified.

Related applications

The commission said CIPL, KBPL and Swanson River jointly with CIPL, filed four related applications "intended to effectuate a reconfiguration of the common carrier oil and gas pipeline infrastructure in the Cook Inlet area," by reconfiguring oil and natural gas pipeline infrastructure to meet current needs of shippers.

All of Cook Inlet Pipeline's current facilities are on the west side and crude oil is delivered to the pipeline for transport from Hilcorp's Granite Point and Trading Bay units and from Glacier Oil's Redoubt and West McArthur River units. The Cook Inlet Pipeline also receives oil from the Trading Bay Production Facility and from Cook Inlet Energy's Kustatan Production Facility.

Combined crude oil flows south to the Drift River Oil Terminal, where it is temporarily stored for load out to tankers from the Christy Lee Tanker Terminal.

KBPL has facilities on both the east and west sides of Cook Inlet and also crosses the inlet, RCA said, with its natural gas transportation system extending north along the east side from near Ninilchik north to the KPL Junction and then farther north to East Forelands near Nikiski, and across Cook Inlet from East Forelands to Kaloa Junction via two 10-inch subsea pipelines, CIGGS-A and CIGGS-B.

KBPL's natural gas pipeline system extends from Trading Bay north to Kaloa Junction on the west side where it intersects CIGGS-A and CIGGS-B and continues north to Beluga where it connects to the Alaska Pipeline Co. transmission line, a natural gas utility pipeline, not a common carrier line.

Gas is received and delivered at numerous locations on the KBPL system; most segments of that system are bidirectional and have seasonal swings in flow rate, the commission said.

Harvest Alaska also owns the Tyonek Pipeline, which is not currently a common carrier; it transports gas from the offshore Tyonek Platform to Moose Point and then along the shore to the Kenai LNG Plant at Nikiski. The commission said natural gas can be delivered to the LNG plant or KBPL.

Changes

RCA said the major change proposed is conversion of CIGGS-A from natural gas to oil transportation. KBPL owns CIGGS-A and will continue to own and maintain it, but CIGGS-A will be made available to CIPL for operational use in oil transportation under the capacity exchange agreement.

CIPL will extend and modify its system, including installation of a new 3.3-mile onshore segment designated CIPL W-10 on the west side.

CIPL will extend a currently unused 10-inch line, LP CIGGS owned by Hilcorp, using a portion to connect KPL's Middle Ground Shoals Facility to CIGGS-A.

Natural gas pipeline changes include extension and modification of the Tyonek Pipeline with replacement of an existing 8-mile segment; modification of KPL Junction piping; necessary modifications and repairs to remaining portions of the Tyonek line between Halbouty Hill and Moose Point; and construction of a new 7.5-mile extension of the Tyonek line to Ladd Landing, allowing gas from the Tyonek Platform and the KPL Junction to enter the Beluga Pipeline segment of KBPL's pipeline system in a parallel path with the existing CIGGS-B pipeline.

The capacity exchange agreement between CIPL and KBPL states that CIPL will bear the investment cost of reconfiguring the lines and KBPL's natural gas shippers will not experience a rate increase as a result of reconfiguration.

Benefits of reconfiguration

RCA said CIPL and KBPL provided a description of benefits for reconfiguration in their filings, asserting that the plan "will reduce environmental hazards by eliminating marine tanker transportation of crude oil and by reducing the amount of crude oil stored in an area that is volcanically active," will more efficiently use rights of way, put existing infrastructure to its highest and best use, "improve the quality and efficiency and reduce the costs of transporting hydrocarbons in the Cook Inlet area" and benefit the local economy.

On costs, the companies said there would be "an overall reduction of transportation costs for oil produced on the west side of Cook Inlet that will extend the economic viability of Cook Inlet production and the Tesoro refinery (now Andeavor owned) and will encourage future exploration and development."

By separating CIGGS-A and CIGGS-B lines and making the Tyonek Pipeline available for gas transportation, an alternative gas line will be physically separated from the two CIGGS lines, reducing the risk of "a system-wide disabling event caused by a common incident."

Capacity exchange, construction

RCA said the under the capacity exchange agreement CIPL and KBPL "have agreed to exchange all of the oil carrying capacity of CIGGS-A owned by KBP for all of the gas carrying capacity of the Tyonek Pipeline owned by KBPL," with neither party required to compensate the other.

RCA said it issued temporary construction permits requiring CIPL to begin construction and said this order grants permission for continued construction and completion of the work. ●

Contact Kristen Nelson
at knelson@petroleumnews.com

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IMPERIAL OUTLOOK

25 percent owner, but where a "string of events (including a power outage in June that will not be fully repaired until September) over the last several years have led to a performance well below the expectations of any and all owners," he said.

The Syncrude consortium, whose majority partner is Suncor Energy, is about to start up a coking unit that will convert 150,000 bpd of bitumen into lighter crude.

The senior partners are also examining ways to improve the overall reliability of their bitumen mine, but Kruger said "we have not found the magic elixir yet to enhance" the operation's reliability.

A new report from the research firm IHS forecasts the oil sands will add 500,000 bpd of output over the next two years, before hitting a deceleration point in 2020, largely because the world still has a glut of crude supplies, with the heavy oil sector taking the brunt of a tightening global market.



Senior IHS director Kevin Birn said the continuing completion of oil sands projects that were sanctioned before oil prices slumped in 2014, the return to some deferred projects and new investments in capital efficiency will mean continued growth over the next 18 months.





The firm said it was likely oil sands production will resume growth in the medium and long term, based partly on the belief that rail can be used to get that new output to market. ●

Contact Gary Park through
publisher@petroleumnews.com

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INSIDER

gist Dave Houseknecht told Petroleum News July 18 they were, along with Armstrong's Pikka and Horseshoe discoveries. He had previously said Willow was also in the Nanushuk.

A Conoco geologist told Petroleum News the names Narwhal and Willow are internal, informal prospect names — not geologic terms.

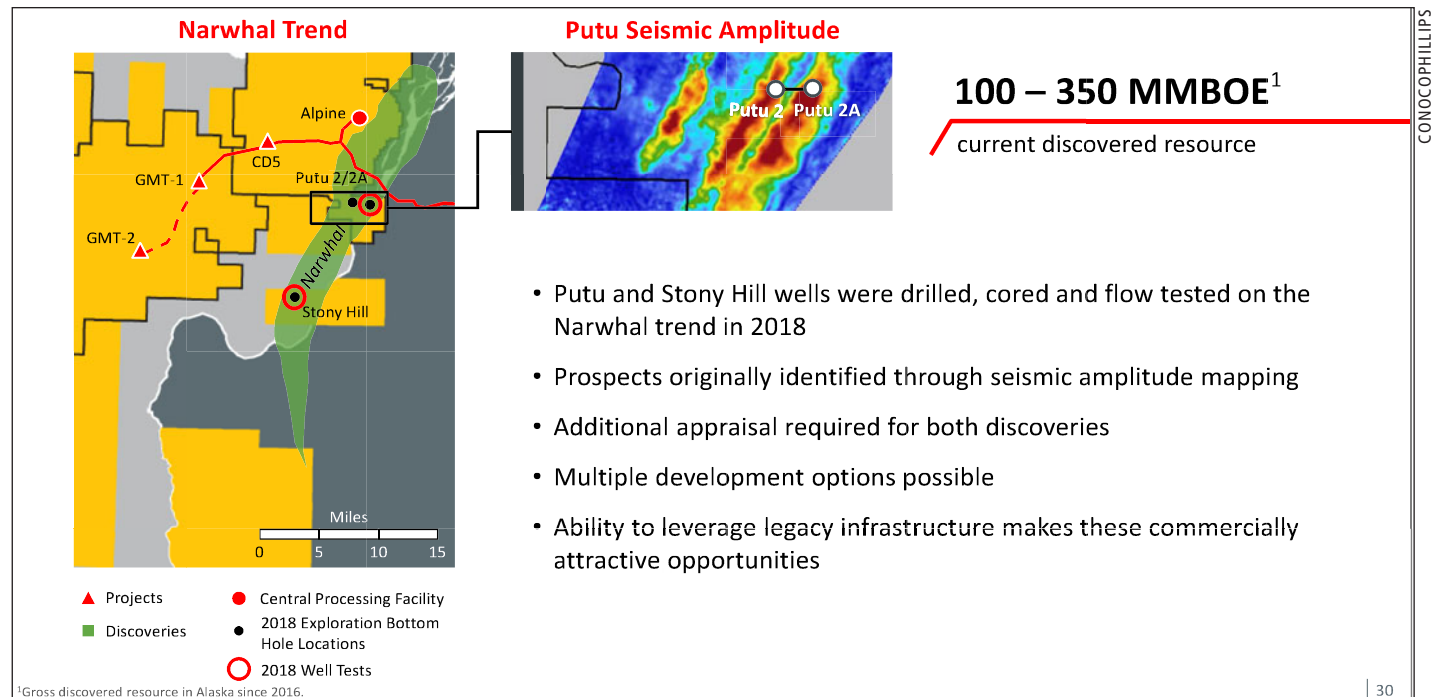
He said the difference between Willow and Narwhal in the Nanushuk is their age — i.e. when the sediments were laid down — with the Willow prospect being older and Narwhal the youngest.

The Willow prospect (and West Willow) in NPR-A, or National Petroleum Reserve-Alaska, includes the Hunter well, Tinniaq wells, Greater Mooses Tooth unit wells and possibly extends into the Bear Tooth unit. In 2017 Conoco also integrated its previous Cassin 3-D seismic program into its evaluation of Willow.

According to state of Alaska geologist Paul Decker, the API density of the oil in the Nanushuk may relate to the oil source rock. The Pikka/Horseshoe oil is thought to have originated from a source in the Shublik formation and has an API of 42 to 43. Willow oil has an API of around 30. Conoco has not said what the source rock for Willow is, nor has the USGS made a determination of the likely source rock, although there is speculation that it may have come from the HRZ or from a Jurassic source.

The Nanushuk runs through Armstrong's Pikka unit, which will soon be developed by a new partner, Oil Search, and all the way west through NPR-A and south into the foothills of the Brooks Range, encompassing Umiat, a 1 billion barrel field on the eastern NPR-A border.

Although the Umiat field was discovered by the U.S. Navy in 1946, it has yet to be developed, primarily because of its remote location and technical challenges,



although infrastructure has been drawing closer with Armstrong and ConocoPhillips' discoveries to the north.

De-risking of Umiat to finish early 2019

CONSULTANCY FIRM RYDER SCOTT conducted several Umiat field assessments, the latest in 2015, estimating a 50 percent probability of nearly 99 million barrels of oil being economically recoverable and a 10 percent chance of more than 154 million recoverable barrels from the billion barrels of oil in place.

Malamute Energy, new operator of the Umiat prospect, is working with researchers and technical experts to develop solutions to the challenges of producing light oil from the very shallow permafrost-hosted reservoir.

Company President Leonard Sojka told Petroleum News May 8 that in late 2017, "Malamute convened a multi-disciplinary technical workshop to evaluate the past work, technical assumptions, and open questions concerning production of the

Umiat oil field. As a result ... Malamute is now working with University of Alaska researchers and third party technical specialists to develop solutions" to Umiat's "specific challenges."

Among other things, the independent is "fully defining the controls on seal and compartmentalization, determining the best drive mechanism required to produce from the low-energy shallow reservoir, and optimal orientation and configuration of production and injection wells are all part of Malamute's work to de-risk and advance the Umiat field toward production," he said.

Petroleum News sources said in May that once the work to re-risk Umiat is completed, Malamute will look for investors or buyers for the prospect.

When asked July 23 in an email whether the company had completed the de-risk work and was ready to talk to potential investors, Sojka said, "Malamute is in the midst of working with several parties to study various characteristics of the Umiat Oil Field. While we are interested in speaking with potential investors/partners at any time, we have not completed the current phase in our hopefully valued-added de-risking process. We continue to gain insight into the oil field, but are targeting early 2019 as to accomplishing our current set of initiatives."

Investors unconcerned about crude price drop

ACCORDING TO A BLOOMBERG STORY RELEASED ON JULY 17 and reprinted on the same day in the Alaska Department of Revenue's daily oil price email, investors in oil companies don't

care about crude's drop in the second week of July. Although the price of crude has begun to creep up since the 17th, Brent crude had fallen more than 9 percent.

European oil companies are "weathering the slump," the article reported, "signaling a change in fortunes for last year's laggards. ... the Stoxx Europe 600 Oil & Gas index has retreated just 3.9 percent."

Bloomberg credited oil companies' "discipline during the 2014-2016 crash," alleging it "proved to investors they can now easily withstand such crude-price corrections."

Ahmed Ben Salem, an analyst at Oddo Bhf, was quoted in the story as saying, "Oil companies have done a good job adjusting their budgets to the lower oil price environment and their shareholders are now benefiting from that.

"The resilience is mainly linked to the fact that oil companies have an oil cash breakeven as low as \$50 per barrel and their budget and share-buyback plans are based on \$60."

Investors have also been encouraged by a buoyant outlook for second-quarter earnings, Bloomberg reported: "Analysts expect the European oil sector to report the highest profit growth among 10 industries. The biggest companies are also set to deliver the highest free cash flow in almost a decade, according to Goldman Sachs Group."

At the close of business July 20, Alaska's Department of Revenue reported Alaska North Slope crude was at \$74.20; Brent was at \$70.46.

—KAY CASHMAN

Contact Kay Cashman at publisher@petroleumnews.com

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SALSA BLOCKS

This was the sale dominated by Apache Alaska, which has since exited the state. Apache took 90 tracts in the 2011 sales for some \$6.9 million (of 104 tracts sold in the sale for a total of \$7.9 million) including the three tracts in Part B of the sale for \$70 an acre.

3-D seismic available

Each of the SALSA lease blocks has 3-D seismic available, data which was acquired through the state's tax credit program and is available through the Department of Natural Resources for a modest fee, Walsh said.

The SALSA information includes maps showing the blocks, where seismic is available and wells in the areas which flowed hydrocarbons to the surface.

There are links to the Alaska Oil and Gas Conservation Commission's website, with a list of information available from AOGCC,

and a link to the Division of Geological and Geophysical Surveys Alaska Geological Materials Center, and materials available there, as well as a list of information available from the division.

A bidding history for tracts in the blocks is included, and links to information sources on the leases.

Jump start

Walsh said the SALSA information "is meant to give you a jump start in understanding what data is available for the lease sale blocks," with sources of data provided so searches can be expanded outside the SALSA file. "This rich and insightful information will help you interpret and evaluate Alaska's resources more quickly," she said.

Formal information on the fall sales will be posted as available at:

<http://dog.dnr.alaska.gov/Services/BIFAndLeaseSale>. ●

Contact Kristen Nelson at knelson@petroleumnews.com



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