

page 7 BLM calls for nominations, comments for tracts for 2019 NPR-A lease sale

## Alliance looking for partner for North Slope well next to Prudhoe

IN WHAT IS POSSIBLY THE LEAST EXPENSIVE and least risky play on the North Slope today, Alliance Exploration LLC is looking for a partner in its Guitar unit to help shoulder the cost of drilling a well next winter.

On the southwestern side of the Prudhoe Bay oil field, Guitar is “an easy play and close to infrastructure,” Barry Foote told Petroleum News June 25. Foote is one of Alliance’s owners, along with Sam Nappi and Derek Foote.

“I really like this play ... the best-case scenario is we could have 200-300 million barrels of oil. And more that extends over

see INSIDER page 10



## Eni takes over at Oooguruk on Aug. 1; to finish drilling, test Nikaitchuq North well in 2020

Effective Aug. 1, Eni Petroleum will be the new operator of the Oooguruk unit on Alaska’s North Slope, per a June 20 decision by the state Division of Oil and Gas.

The action was triggered by the resignation of the current operator, Caelus Natural Resources, on June 19.

Eni announced it had acquired full ownership of the Oooguruk oil field in January, in which it previously held a 30% working interest; at that time the U.S. subsidiary of the Milan-based major said it would eventually be taking over as

see ENI TAKES OVER page 11



## Conoco applies to add acreage at Nuna to Kuparuk River unit

ConocoPhillips Alaska has applied to include Nuna in the adjacent Kuparuk River unit. Nuna lies immediately south of Oooguruk, now operated by Eni, immediately east of the Oil Source-operated Pikka unit and immediately west of the Kuparuk River unit, operated by ConocoPhillips.

ConocoPhillips Alaska made public its agreement to purchase 100% ownership in Nuna from Caelus June 17. The prospect includes 11 tracts covering 21,000 acres, ConocoPhillips said, and will be appraised over the next several years.

“This transaction represents an attractive addition to our expanding North Slope position and will allow ConocoPhillips to cost effectively develop Nuna utilizing

see KRU EXPANSION page 6

## FERC to release Alaska LNG draft EIS; AGDC continues work

The Federal Energy Regulatory Commission is set to release a draft environmental impact statement for the Alaska LNG project June 28, the Alaska Gasline Development Corp. board was told in a June 20 meeting.

Joe Dubler, AGDC interim president, said the anticipated DEIS release reflects five years of work, 150,000 pages of data submitted by AGDC and 1,738 data requests from FERC.

He also told the board that the financial participation in Alaska LNG by BP and ExxonMobil was the first third-party participation in three years. The companies, he said, are willing to fund a third of fiscal year 2020 costs up to \$10 million

see LNG DRAFT EIS page 7

### EXPLORATION & PRODUCTION

# Starting early?

Moving cautiously, Oil Search looks at beginning Pikka production in 2022

By KAY CASHMAN

Petroleum News

The new oil field that is expected to increase Alaska North Slope output by almost 25% at its peak might be going online early — in 2022 versus late 2023.

Keiran Wulff, Oil Search Alaska’s president, said June 26 that moving “cautiously, not expeditiously,” the schedule for its big Pikka oil field development might be moved forward by more than a year.

“If we can get the necessary approvals ... drill some wells earlier ... we’re looking at bringing it on early,” he told attendees of the Resource



KEIRAN WULFF

Development Council’s 44th annual luncheon in Anchorage.

In other news from the company, as of June 26, Oil Search expected to soon close on its June 30 option with Armstrong Energy to double its working interest in Pikka, Horseshoe and nearby exploration leases. For an additional \$450 million, the company can buy Armstrong’s remaining working interest in the acreage, which varies from 25.5% to 37.5%, depending on the lease. (The initial buy-in was for a similar percentage and closed in 2018 for \$400 million, after which Oil Search took over operatorship of the leases.)

see PIKKA PRODUCTION page 11

### EXPLORATION & PRODUCTION

# Hunt for Badami oil

State approves Glacier’s 16th plan of development for unit, production falling

By KAY CASHMAN

Petroleum News

Savant Alaska, a Glacier Oil and Gas company, continues to move cautiously forward with its search for undiscovered oil at Badami on the eastern North Slope of Alaska.

After stepping out of its comfort zone of low-risk maintenance and well work in 2018 to drill exploration well B1-07 in the Starfish prospect outside the Badami Sands participating area, the company announced an oil discovery in the Killian formation that it quickly brought online.



PHIL ELLIOTT

The 16th plan of development, or POD, for the Badami unit was filed April 15 and approved by the Alaska Department of Natural Resources’ Division of Oil and Gas on June 17.

The POD is a “basic plan” that calls for “investing nearly \$200 million (gross) to prosecute a Killian-focused drilling program over the next 3-4 years” at Badami, Glacier President Phil Elliott told Petroleum News in an April 10

email. The outlay represents a much larger investment than the chunk of Glacier’s capex of (net) \$20 mil-

see BADAMI OIL page 12

### GOVERNMENT

# Attacking Canada’s unity

Trudeau government passes bills seen by critics as slamming door on investment

By GARY PARK

For Petroleum News

Anger has spilled across the Canadian Prairies and through the corridors of the country’s petroleum industry since the Liberal government of Prime Minister Justin Trudeau wrapped up a parliamentary session on June 21 by passing two pieces of legislation described by many as undermining the national fabric.

Bill C-48, which bars oil tankers from loading diluted bitumen and conventional crude at northern British Columbia ports, and Bill C-48, dubbed the “No More Pipelines Bill” by Alberta Premier Jason Kenney, cleared their final legislative hurdles in the Senate, despite claims by the govern-

He said that if the Trudeau government banned tankers delivering crude to Atlantic Canada and Quebec it would shut down the Quebec economy. “So why is Bill C-48 a ban on just Alberta exports?” Kenney asked.

ments of Alberta and Saskatchewan that they will repel investors from the oil and gas sector and slam the door on any new pipelines.

They have been welcomed by federal Finance Minister Catherine McKenna as the tools to achieve her goal of ultimately shutting down the

see CONTROVERSIAL BILLS page 8

EXPLORATION & PRODUCTION

# AOGCC OKs AIO for Southern Miluveach

By **KRISTEN NELSON**  
*Petroleum News*

The Alaska Oil and Gas Conservation Commission has approved an application by Brooks Range Petroleum Corp. to inject water and natural gas at the Southern Miluveach unit on the North Slope.

BRPC is the Southern Miluveach unit operator and has been working to bring the unit into production. The company requested authorization to inject fluids for pressure maintenance and enhanced recovery of hydrocarbons from the Kuparuk River oil pool within the SMU. The commission held a hearing June 4 on the application, with testimony provided by BRPC.

BRPC drilled the discovery well, North Tarn 1A, in January 2012, and confirmed it at the Mustang 1 in February 2012.

AOGCC said the Kuparuk River oil pool is defined in Conservation Order 432D. In addition to the SMU, the commission said, portions of the oil pool lie within the Kuparuk River unit, which adjoins SMU, and the Milne Point unit.

### Reserves estimates

Estimates of in-place and recoverable volumes for the SMU are based on audited reserves and analogous developments, the commission said, and include: 70 million barrels of original oil in place; 10-25% recovery of OOIP estimated from primary recovery, 7-17.5 million barrels; primary plus

water injection (an additional 10-25% of OOIP), 7-17.5 million barrels incremental; primary plus water and lean gas injection (additional 1-5% OOIP above primary plus water injection), 0.7-3.5 million barrels incremental; and primary plus water and lean and enriched gas injection (additional 3-15% OOIP above primary plus water injection), 2.1-10.5 million barrels incremental.

Development of the field will be with up to 11 horizontal production wells and 10 horizontal injection wells drilled parallel with the major faults, the commission said, hydraulic fracturing possible in some wells to enhance reserve recovery.

The commission said the anticipated peak daily injection

see **INJECTION ORDER** page 4

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• EXPLORATION & PRODUCTION

# Pore to core subsurface flow analysis

*Zeiss enables non-destructive virtual visibility into core porosity and permeability with multiscale in situ digital core analysis*

By **STEVE SUTHERLIN**  
Petroleum News

Carl Zeiss Microscopy LLC can offer porosity data using micro computerized tomography or X-ray microscopy, K.D. Derr, of Zeiss said while presenting at a May 31 technical breakout session at the state Geologic Materials Center in Anchorage. The session focused on the potential for new investigative technologies and machine learning systems to better assist geoscientists and resource companies to meet the challenges of interpreting Alaska geology.

“We make a distinction between micro CT and X-ray microscopy because with micro CT you’ve got a fixed source and a fixed detector, and your resolution depends upon how close you can get your samples to the source,” Derr said. “With an X-ray microscope you have the same type set up, but you have a series of objectives that you have to use (for interior modeling).”

Derr said despite many advances in the science, significant challenges remain, particularly in the areas of process and scale.

“Fluid flow in porous media is dominated by processes occurring at the scale of the microscopic torturous pathways through which the fluid flows and in which the fluids are hosted,” she said. “The last 20 years have seen a step-change in our ability to characterize and examine such flow at the scale at which these physical processes occur, with pore scale imaging and modeling being transformed from a primarily academic pursuit used to examine fundamental processes associated with transport and displacement, to a fully fledged industrial service industry routinely used by the oil industry to predict flow and transport properties of subsurface samples.”

Machine learning has enhanced the ability of computers to predict porosity and subsurface flow.

“You start out with a reservoir model, you do the wireline logging, you pull your core samples, then you do a bunch of measurements and you use that measure-

**“You can use this information to run digital rock physics ... virtually slicing through the samples.”**

—K.D. Derr, Carl Zeiss Microscopy

ment to make a dynamic reservoir model,” she said. “You predict what the production is going to look like but it’s not perfect.

“So, a series of history matching has been created to take the actual production information and to feed that back into the dynamic reservoir model,” she said. “It’s very complex why the predictions aren’t spot on, that’s one of the reasons we think we could get those predictions much more accurate if we had more porosity data.”

### Analysis

The digital information is analyzed in two different ways, Derr said.

“One is multiscale simulation where we can take that data statically and run digital rock physics on it to get a sense of what the porosity data is,” she said. “The second example is ... we can actually use the data from our X-ray microscope to inform areas where we will pull samples to do in situ experiments, and this is that where we’re actually able to dynamically image rock under reservoir conditions using the X-ray microscope.”

The resulting porosity data varies in an XY and Z direction, which allows the entire sample to be seen non-destructively in three dimensions, rather than just a surface representation.

“We take core samples from different regions of interest and we look at the porosity within that sample; we were actually able to use the objectives within the X-ray microscope to sub sample within that sample,” Derr said. “We can look at those individual areas and look at what the porosity lights and start to model what the flow characteristics are, and we can take that information and plug it back into the core samples and use that to upscale to the entire core.

“This is our vision, and we partner with

a lot of other companies to make that happen,” she said. “Zeiss is an optics company, so we’re very clear that our focus is making people able to see what is in their samples, and we play well with all of the companies because our expertise is not data analysis.

“You can plug that data back into the model,” she said. “It’s an iterative process; we can continue to model your samples and take plugs wherever you see a difference in the structure.”

### Virtual simulation

Using multiple data sources and algorithms, it is possible to create a visual simulation of the interior of the core. It’s like being able to take a virtual thin section without touching the core.

“You can use this information to run digital rock physics ... virtually slicing through the samples,” Derr said.

“One thing that’s really unique about our X-ray microscope is that our scintillators (responsible for converting electrons collected from the sample into photons) are paired to the X-ray energy ranges that are used so we have very high contrast definition between our samples,” she said. “Because we’re able to move our source and our detector away from the samples we’re able to not only have absorption contrast honor images but we also have propagation phase contrast to give you an

**Using multiple data sources and algorithms, it is possible to create a visual simulation of the interior of the core. It’s like being able to take a virtual thin section without touching the core.**

enhanced (view) so you’re able to separate the porosity much more readily.

“You can look at one of the high porosity sections where the permeability in X and Z is very different than it is in Y,” she said. “This is really important information when you’re trying to understand what’s going on with in your rocks.”

The information can be plugged back into multi-scale data sets.

The samples can be viewed not only in 3D, but in what the company calls 4D imaging.

“This is an in-situ measurement where we take rocks and put them back into reservoir conditions,” Derr said.

The samples are vacuum saturated with brine before the injection of oil (drainage) and chase brine (imbibition) to establish a residual state.

“We can start to understand how the porosity, permeability and the wettability in those rocks work.” ●

Contact Steve Sutherlin at [stevepna@hotmail.com](mailto:stevepna@hotmail.com)

## PIPELINES & DOWNSTREAM

### FERC sets EA schedule for Kenai project

The Federal Energy Regulatory Commission has set the schedule for environmental review of the Kenai LNG Cool Down project, with the environmental assessment to be released Dec. 13 and the 90-day federal authorization decision deadline March 12, 2020.

Trans-Foreland Pipeline Co. filed an application with FERC in March to make facility modifications at the Kenai LNG Plant to bring parts of the plant out of warm idle to allow for import of liquefied natural gas. The work would involve installation of a new 1,000 horsepower electric-driven boil-off-gas booster compressor unit and related equipment with the goal of importing LNG so that the Kenai LNG Plant could provide up to 7 million standard cubic feet per day of natural gas to Trans-Foreland’s affiliated Kenai Refinery.

—PETROLEUM NEWS

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## GOVERNMENT

# AIDEA: North Slope pad, BlueCrest loan

By **KRISTEN NELSON**

Petroleum News

The Alaska Industrial Development and Export Authority board of directors had two items of oil and gas interest on its June 26 agenda: the North Slope Pad and an amendment to the loan agreement with BlueCrest Alaska. The board passed both resolutions.

## North Slope Pad

The North Slope Pad, a 22,991-acre parcel on the north side of Spine Road on the North Slope, was originally leased by the Alaska Department of Natural Resources to Spectrum Alaska LLC. AIDEA CEO/Executive Director Tom Boutin said in a June 26 memo to the board. When AIDEA purchased Spectrum in 2014 as part of the Interior Energy Project it took control of the property, and DNR issued a replacement lease to AIDEA.

AIDEA constructed a pad on the site in 2014 for some \$6 million, intended as the site for a liquefied natural gas plant to supply LNG to Fairbanks and the Fairbanks North Star Borough. That plan was abandoned due to cost.

The 2018 sale and purchase agreement between AIDEA and the Interior Gas Utility for Pentex was conditioned on DNR transferring the lease for the North Slope Pad to IGU, but DNR required AIDEA to apply for a new lease.

IGU agreed to waive the pad transfer, and in early 2019

*Since early 2018, AIDEA has been in negotiation with Prudhoe Bay Chemical Co. for the use of the pad in the development of a small-scale methanol plant. In April 2018 the AIDEA board voted to approve a long-term sublease of a portion of the North Slope Pad to PBC.*

the IGU board voted against taking the North Slope Pad.

Since early 2018, AIDEA has been in negotiation with Prudhoe Bay Chemical Co. for the use of the pad in the development of a small-scale methanol plant. In April 2018 the AIDEA board voted to approve a long-term sublease of a portion of the North Slope Pad to PBC.

The memo says, "PBC is now in advanced discussions with a third party for potential investment and construction of the proposed methanol facility. PBC and this third party have expressed a strong interest to take control of the entirety of the NSP site and sub-lease, or through assignment, lease directly with DNR. Provided a final investment decision is taken within the next three months, active on-site development of the methanol facility could take place as early as 2019."

AIDEA staff recommends approval of NSP as a development project financing, with any final terms with a third party for sub-lease or assignment subject to board approval.

## BlueCrest

AIDEA loaned BlueCrest \$30 million for an onshore drill rig, rig camp, their transportation to the project site and associated tools, equipment and fixtures.

For additional collateral security, BlueCrest was required to fund a \$6.06 million reserve count to be used in the event of loan default if a foreclosure sale did not provide sufficient funds to provide the outstanding loan balance.

"BlueCrest has been diligently paying down AIDEA's term loan on a timely basis," Boutin said in a June 20 memo to the board. "Debt service (principal and interest) is \$705,242.88 per month with monthly principal payment not in excess of \$500,000 per month."

Boutin said the current loan documentation on release conditions for the reserve account is complex, and BlueCrest and AIDEA staff have agreed to a proposal for release of the \$6.06 million reserve and use of the funds to pay down the loan.

The AIDEA term loan matures July 1, 2022. With use of the reserve account to pay down the principal the loan balance would drop from the current \$22.9 million to \$16.3 million in July.

Boutin said AIDEA staff is recommending approval of the resolution proposing the release of the reserve account and use of the funds to pre-pay outstanding principal balance. ●

Contact Kristen Nelson  
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continued from page 2

## INJECTION ORDER

rate for individual wells is 6,000 barrels of water and 6 million standard cubic feet of gas.

Water and water-alternating-gas injection into the Kuparuk River oil pool in the SMU, AOGCC said, "will provide a substantial EOR benefit over primary recovery alone, maximize ultimate recovery from the SMU-KROP, and prevent waste."

### Aquifer issues

There may be aquifers shallower than about 2,300 feet measured depth, the commission said, but BRPC will isolate those aquifers with cement.

"Shallow aquifers within the SMU are not considered Underground Sources of Drinking Water (USDWs) because they are situated at depths that make recovery of water for drinking purposes economically impractical, and they are situated at a location where they are not reasonably expected to supply a public water system," the commission said.

The U.S. Environmental Protection Agency has an aquifer exemption for the Kuparuk River field, but that applies only to the portion of the SMU within one-quarter mile of the boundary of the adjoining Kuparuk River unit, AOGCC said.

"An Aquifer Exemption Order is not required for the remainder of the Affected Area because BRPC's enhanced recovery injection operations — as described in BRPC's Application — will not impact any shallow aquifers, and none of the shallow aquifers within the Affected Area are considered USDWs," the commission said.

BRPC is the SMU operator. Working interest owners are Alaska Venture Capital Group LLC, Brooks Range Petroleum Corp., Caracol Petroleum LLC, Mustang Operations Center 1 LLC, Mustang Road LLC, Nabors Drilling Technologies USA Inc. and TP North Slope Development LLP. The Alaska Department of Natural Resources is the landowner. ●

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INTERNATIONAL

# Oil shippers boost security after attacks

By **AYA BATRAWY**  
Associated Press

A series of attacks on oil tankers near the Persian Gulf has ratcheted up tensions between the U.S. and Iran — and raised fears over the safety of one of Asia's most vital energy trade routes, where about a fifth of the world's oil passes through its narrowest at the Strait of Hormuz.

The attacks have jolted the shipping industry, with some of the 2,000 companies operating ships in the region on high alert and ordering their vessels to transit the Strait of Hormuz only during the daylight hours and at high speed.

Washington's accusation that Iran is behind the attacks targeting oil tankers comes as tensions flare between the two countries. The U.S. has deployed an airstrike carrier and bombers to the region and announced the week of June 17 it will send 1,000 more troops. European powers are facing a deadline from Tehran to ease the effects of punishing U.S. sanctions — described by its leaders as “economic warfare” — or Iran will break out of the limits set on its uranium enrichment by the landmark 2015 nuclear deal.

## Ship owners alarmed

The apparent targeting of tankers is alarming to ship owners operating in the Persian Gulf, said chief shipping analyst at BIMCO, Peter Sand. The company dubs itself the world's largest shipping association.

But it's more or less business as usual for shippers, he said, despite the need for added precautions.

“They are all of course increasingly worried, but many of them are going with business as they would have done without the attacks, but of course with an extra layer of safety and security measures on top of that,” Sand said.

That means going at high speed through the Strait of Hormuz, which at its narrowest point is about 3 kilometers (2

*The attacks the week of June 17 targeted the Norwegian-owned MT Front Altair, which had a cargo of highly flammable naphtha loaded from the UAE, and the Kokuka Courageous, a Japanese tanker carrying Saudi methanol. Both had been traveling through the Gulf of Oman, having passed the Strait of Hormuz.*

miles) wide. Normally, vessels carrying cargo would slow down to save on fuel costs.

It also means avoiding the strait at night to keep better watch on security around the vessel.

Washington alleges Iranian forces surreptitiously planted limpet mines on two vessels in the Gulf of Oman the week of June 10. The attack forced the evacuation of all 44 crewmembers onboard and left one of the ships ablaze at sea.

Washington also blamed Iran for similar attacks on May 12 that targeted four oil tankers anchored off the coast of the United Arab Emirates. Iran denies being involved.

The attacks the week of June 17 targeted the Norwegian-owned MT Front Altair, which had a cargo of highly flammable naphtha loaded from the UAE, and the Kokuka Courageous, a Japanese tanker carrying Saudi methanol. Both had been traveling through the Gulf of Oman, having passed the Strait of Hormuz.

## Freight rates increase

Of the roughly 2,000 companies that operate ships in the Persian Gulf, only two companies have halted bookings outright. Otherwise, “business has continued more or less undisrupted,” Sand said.

In fact, higher risks could boost the bottom line for some oil shippers, after a lackluster period for the industry. A risk

see **TANKER ATTACKS** page 7

## LAND & LEASING

### 88 Energy board signs off on farm-out

88 Energy has moved a step closer to farming out its conventional Project Icewine prospect portfolio on Alaska's central North Slope after its as-of-yet unnamed partner completed all internal approvals, including board sanction.

The ASX-listed company said June 26 that the farm-out is now subject only to the execution of closing documents and standard conditions, mainly related to the transfer of working interests.

Dave Wall, managing director, said 88E is ramping up well planning and permitting that will be required for 2019-20 drilling. The company has previously said it was permitting two exploration/appraisal wells in next winter's drilling season.

The company has also said that Project Icewine's conventional acreage contained multiple stacked plays (including a Schrader topset play and the Torok slope and basin floor fan play), noting a gross mean prospective unrisks resource of 2 billion barrels (1.5 billion barrels net).

—KAY CASHMAN

## EXPLORATION & PRODUCTION

### US drilling rig count down by 2 to 967

The number of rigs drilling for oil and natural gas in the U.S. was down by two the week ending June 21 to 967.

A year ago, the count was 1,052 active rigs.

Houston oilfield services company Baker Hughes reported that 789 rigs targeted oil (up one from the previous week) and 177 targeted natural gas (down four). One miscellaneous rig was active.

The company said 68 of the U.S. holes were directional, 846 were horizontal and 53 were vertical.

Alaska was up by four rigs from the previous week; West Virginia was up by two.

The rig counts for a number of states were unchanged from the previous week: California, Colorado, Louisiana, North Dakota, Ohio, Utah and Wyoming.

New Mexico and Oklahoma were each down by one rig, while Pennsylvania was down by two.

Texas, with the largest number of active rigs in the country, 463, was down by four rigs from the previous week.

Baker Hughes shows Alaska with nine rigs, the same count as a year ago.

The U.S. rig count peaked at 4,530 in 1981. It bottomed out in May 2016 at 404.

—KRISTEN NELSON



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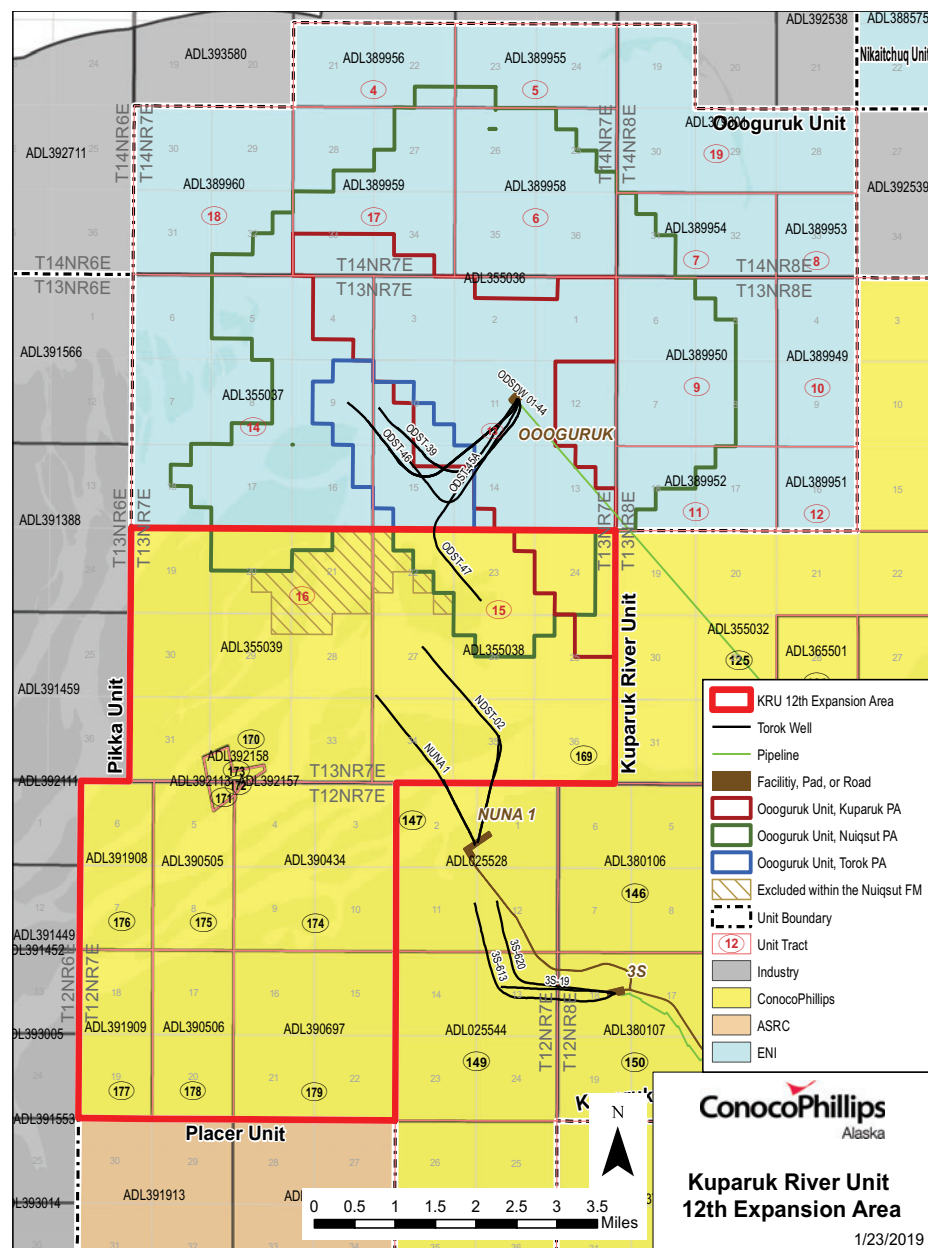
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## KRU EXPANSION

Kuparuk River Unit infrastructure,” said Joe Marushack, president of ConocoPhillips Alaska.

On June 25, ConocoPhillips Alaska applied to the Alaska Department of Natural Resources’ Division of Oil and Gas for the 12th expansion of the Kuparuk River unit with the addition of the Nuna prospect. The company told the division that development of the expansion area through existing KRU facilities will minimize environmental impacts because “the tract owners will not have to build stand-alone processing facilities solely for the benefit of these areas.” The working interest owners at Kuparuk (ConocoPhillips, Chevron U.S.A. and ExxonMobil Alaska Production) already have facility sharing agreements in place, the company said.

ConocoPhillips said reserves discovered in the expansion area “are not large enough to support the costs of full processing facilities,” and even if such stand-alone facilities were economic, “there would be economic waste due to the existence of duplicate facilities and services that could be provided by the KRU.”

The company also said that use of existing facilities will accelerate timing compared to development of new facilities.

Once the expansion acreage is included in the Kuparuk River unit, the working interest owners will be responsible for abandonment obligations for the existing Nuna 1 pad, the Nuna road, Nuna pipelines and Nuna well bore, consistent with abandonment obligations for all other KRU infrastructure.

### Caelus work at Nuna

Caelus Natural Resources Alaska, the previous operator at Oooguruk and Nuna, sanctioned Nuna development in 2015, based on a state royalty reduction rate on five leases to 5% until costs were paid off. Caelus built a new pad and a 2.5-mile

access road. Nuna targeted the Torok formation at Oooguruk, the unit to the north, now operated by Eni.

Pioneer Natural Resources had proposed Nuna development in late 2010, having drilled through the Torok formation for several years to target deeper oil reservoirs.

Oooguruk was initially developed from an artificial gravel island, but the Nuna satellite was too far south to be economically developed from the island. Pioneer wanted to build at least one onshore drill site and potentially stand-alone facilities.

Pioneer drilling in 2012 and 2013 at the Nuna 1 and Nuna 2 wells led the company to estimate Torok in a range of 75 million to 100 million barrels.

Caelus acquired Pioneer’s Alaska assets in late 2013, and by early 2014 was estimating some \$550 million for new facilities and \$800 million to \$900 million for drilling, a price tag of some \$1.4 billion.

After evaluating the geology more closely, Caelus asked the state to modify the royalty structure at Nuna, saying it would not otherwise be able to proceed. The company requested a 5% royalty rate on 11 leases until the project reached payout — when revenues cover upfront costs — and then an increase of 1.875% per year for four years, returning to the original 12.5% royalty.

The state offered a 5% royalty rate on five Nuna leases in exchange for Caelus meeting various sanctioning, spending and development targets through 2017.

The 2015 royalty reduction required Caelus to sanction the project by the end of March 2015, start spending money by the end of September 2015, spend at least \$260 million and bring the field into sustained production by the end of September 2017.

Caelus requested a two-year extension in 2017, which the state denied.

—KRISTEN NELSON

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## LAND & LEASING

### BLM issues call for 2019 NPR-A lease sale

The federal Bureau of Land Management has issued a call for nominations and comments for tracts to be included in its 2019 National Petroleum Reserve-Alaska oil and gas lease sale.

The June 20 notice announces a 30-day period for nominations or comments which closes July 22.

“This is one of several actions we are taking to further expand energy development in Alaska,” BLM Alaska State Director Chad Padgett said in a press release.

“The BLM in Alaska is also working on a new Integrated Activity Plan for the NPR-A to maximize tracts offered in the next lease sale as well as developing an Oil and Gas Leasing Program for the Coastal Plain of the Arctic National Wildlife Refuge (ANWR) as directed by the 2017 Tax Act,” Padgett said.

BLM published the notice of intent for the new Integrated Activity Plan and associated Environmental Impact Statement for NPR-A on Nov. 21, 2018.

“The new IAP/EIS will include consideration of a range of leasing alternatives that open new areas to leasing, examination of current special area boundaries, and consideration of new or revised lease stipulations and best management practices,” the agency said on its website. The public comment period ended Feb. 15; BLM is in the process of writing the draft IAP/EIS, which will be issued in the fall, followed by a 45-day public comment period, including public meetings. BLM will then revise the draft IAP/EIS and the final will be published, followed by a 30-day waiting period before issuance of the record of decision.

BLM said there are 215 authorized oil and gas leases in NPR-A, a total of 1.6 million acres. Some 10.2 million acres, 879 tracts, are available for nomination or comment.

The agency’s 2018 sale, held Dec. 12, brought in \$1.5 million in high bids on 16 tracts.

—KRISTEN NELSON

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### LNG DRAFT EIS

each. They will also be providing technical assistance for DEIS review and analysis and assistance in evaluating potential cost reduction opportunities, Dubler said.

### FERC release

Frank Richards, AGDC’s senior vice president of program management, said AGDC is expecting a 90-day public comment period once the DEIS is released. The public comment period is usually 45 days, he said, but because of the size of the project and the distances in Alaska, AGDC is anticipating a 90-day comment period.

Richards said FERC published the June 28 date on the FAST-41 website. AGDC became a FAST-41 project in 2017, triggering a requirement that federal agencies provide schedules. FAST-41, Fixing America’s Surface Transportation Act, is designed to recognize major projects and elevate them in the federal arena, requiring a permitting timetable and a comprehensive schedule for all federal permits.

Once the DEIS is out, FERC will schedule public meetings. It is a FERC process, not an AGDC process, Richards said, and AGDC staff will be at the public meetings to listen to and record comments so that AGDC can address comments as the process progresses.

In addition to working with FERC, the lead agency for the EIS, AGDC also needs permits and authorizations from the Pipeline Hazardous Materials Safety Administration, the Army Corps of Engineers, the Bureau of Land Management and National Marine Fisheries, in addition to a host of other federal, state and local agencies.

### Commercial AFE

Authorizations for expenditure approved in the past expire June 30, and the board was presented with new AFEs at the meeting.

For the commercial side, the AFE is \$5 million for FY20, Leisa Wilcox, AGDC’s vice president of commercial and economic, told the board. This AFE is for short-term work, Wilcox said, noting that BP and ExxonMobil will step in to fund part of the work and AGDC needs to set up a proce-

*Frank Richards, AGDC’s senior vice president of program management, said AGDC is expecting a 90-day public comment period once the DEIS is released.*

cedure to handle accounting procedures for that.

Dubler told the board he didn’t know what the agreement would look like for FY20 but said it won’t be a joint venture. There will be no equity transfers associated with the agreement, he said: AGDC will remain 100% owned by the state. He said it is a cost-sharing agreement only and is more mechanical in nature, addressing how bills will be prepared, for example.

Wilcox said the parties are aligned on the principles and outline of the agreement and said she didn’t expect any big surprises.

Dubler said if the agreement wasn’t completed by July 1 all work between July 1 and completion of the agreement would be subject to reimbursement.

### Technical, regulatory

Discussing the \$15 million AFE for technical and regulatory work, Richards said this was continuing work to address concerns and do any field work required. He said it also included continued work with the memorandum of understanding partners, BP and ExxonMobil, to look at potential cost reductions.

The project management team will be significantly reduced from last year, Richards said.

FY20 work is focused on obtaining the FERC order authorizing construction of the Alaska LNG project, he said, including: responding to items identified by FERC in the public comment period; addressing FERC engineering and environmental data requests; conducting any necessary field work; completing the FERC National Environmental Policy Act environmental review and receiving authorization to construct.

—KRISTEN NELSON

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### TANKER ATTACKS

analysis by shipping services company Braemar ACM said owners can ask for higher premiums now. The firm said the Gulf region was declared as a “Listed Area”, meaning it faces enhanced risk, after the May 12 incidents targeting tankers off the UAE coast.

Immediately after the attacks the week of June 10, freight rates for operators in the Gulf rose 10-20%.

With increased risks, however, come higher insurance premiums, which are expected to rise 10-15%.

It’s typically the buyers and charterers who bear the brunt of the overall higher costs, another reason why security of the Strait of Hormuz is paramount for oil-importers around the world. An estimated 18-20 million barrels of oil — much of it crude — pass through the strait every day. BIMCO says anywhere between 10-40 vessels carrying just crude oil move through daily.

During the so-called Tanker War of the 1980s, when Iran and Iraq targeted vessels carrying one another’s exports, the U.S. Navy escorted oil tankers through the Persian Gulf to ensure American energy supplies. But the U.S. is no longer as reliant on Arabian producers.

### Impact to Asian buyers

Today, any conflict that threatens tankers would badly disrupt crude supplies for energy-hungry East Asia. Higher prices could hit hardest China, Japan, South Korea, Singapore and Indonesia — among the five biggest

buyers of Arabian oil.

Indeed, the MT Front Altair was headed to Japan; the Kokuka Courgaeous reportedly to Singapore.

The Washington Post quoted Air Force Gen. Paul J. Selva, vice chairman of the Joint Chiefs of Staff, as saying that because most of the oil passing through the Strait of Hormuz is headed to Asian markets, it would be ill-advised for the U.S. military to take the same role it did in the 1980s. He said there were plans to reach out to the big Asian oil-importers about a possible international effort to safeguard tanker traffic.

Robert Macleod, CEO of Frontline Management, whose vessel Front Altair was targeted the week of June 10, said the general area of the Strait of Hormuz “represents a real and very serious risk to shipping.”

In a statement, he said crews must be on high alert while traversing through the passage. The company, however, said it had re-commenced trading in the region after briefly halting it following the attack. He said the company also tightened security measures but did not elaborate.

One extraordinary measure ship owners might consider, if the situation deteriorates further, is having armed guards onboard. This is already the case for many vessels transiting the Gulf of Aden, where piracy is a major concern.

“From a shipping industry perspective, we are certainly not in favor of bringing more armed guards onboard international commercial ships because they are not warships,” said Sand. “They should not be carrying arms. They should be able to transit without being interrupted.” ●



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## CONTROVERSIAL BILLS

Alberta oil sands and condemning the energy industry as it now exists to extinction within 12 years.

They have also generated a growing swell of demands for referendums to test the mood in Alberta and Saskatchewan for the separation of those two provinces from the rest of Canada.

### Bill C-88

Amid all the sound and fury of the Senate debate the Trudeau government also quietly slipped through a third bill that bolstered a ban on offshore oil drilling in the Canadian Arctic, shelving any thoughts of future oil and gas development in the region.

The virtually ignored Bill C-88 includes changes to the Canadian Petroleum Resources Act to enshrine in legislation a moratorium on exploration in northern waters.

Since late 2016 the Trudeau administration has enforced a moratorium on offshore drilling across all Arctic waters through regulation by rejecting any new bids for licenses or exploration permits.

Indigenous Relations Minister Carolyn Bennett said Trudeau implemented the ban as part of a broader belief that the risk of a spill in the sensitive waters was too great.

Some global majors such as ExxonMobil (in partnership with its subsidiary Imperial Oil) and Shell have pondered drilling programs in the Canadian Arctic but have held back because of past regulatory delays.

### Independence favored

Mark Scholz, chief executive officer of the Canadian Association of Oilwell Drilling Contractors, said recent surveys show about 60% of people in Alberta and Saskatchewan feel they would be better off as independent states because of the new measures.

He noted that Trudeau insists his government “knows best,” regardless of a warning from six of 10 provincial premiers alerting the prime minister to a “looming national unity crisis.”

“I hope he will reconsider and listen to what Canadians are trying to tell him; the very future of our country depends on it.”

Bill C-48 narrowly escaped defeat by Senate vote of 49-46, partly because the government accepted a Senate amendment that requires a mandatory review of the tanker ban in five years.

But the Senate refused to consider a proposal by the Canadian Association of Petroleum Products to create a maritime “corridor” that would have allowed some tankers to dock in designated areas.



### ANS shipments not affected

Although it designates a wide swath of ocean from the northern tip of Vancouver Island to Alaska, Bill C-48 will not interfere with the tanker shipment of about 37 million metric tons of crude a year from Alaska to the Lower 48. Those deliveries will be free to continue on their existing routes under international law.

The refusal by senators to vote down the legislation in its entirety prompted Conservative members to accuse Independent senators who make up a majority of the upper house of being Liberals in disguise.

Conservative Sen. Michael MacDonald made a last-minute plea to sway the vote, saying Bill C-48 “will be devastating for the landlocked oil and gas resources of Alberta and Saskatchewan.”

Liberal Sen. Donna Dasko reflected the sentiment in her ranks by arguing the legislation “is quite a good bill.”

### Scientific study lacking

A University of Calgary economist Jack Mintz said Bill C-48 was passed “without a scientific study supporting the

ban. So much for ‘evidence-based policy.’ The senators supporting the bill should be ashamed of themselves.”

He said the adoption of Bills C-48 and C-69 is an indication that the petroleum industry is “being throttled.”

Mintz said that even if the Trans Mountain Expansion is built it would take only one nail out of the coffin, “but Bill C-69 adds a row of them — lost jobs and Gross Domestic Product.”

Doug Black, a Conservative Senator from Alberta, said Bill C-48 takes “direct aim” at the heart of his province’s oil sands sector, noting: “There are no other bans like this in Canada. I’m not even sure there are any other tanker bans for oil in the world.”

Resource Works Society, a non-partisan research group that is funded partly by the Business Council of British Columbia and individual donations, said that by refusing to allow oil to be loaded or transported from the British Columbia exclusion zone means the Trudeau government is “significantly limiting the possible routes for the export of Alberta hydrocarbons to new markets.”

It said the bill also “appears to limit future liquid fuel export potential from sources such as shale and LNG.”

The organization said that if the government “agrees that tankers can safely move through the Burrard Inlet, Vancouver harbor, the Salish Sea, the Jan de Fuca Strait and past the southern half of Vancouver Island (whose 750,000 residents depend for their oil supplies from barges sailing overnight from the British Columbia mainland) — about 100 miles of narrow water and archipelagos — then surely the same ships could manage the 10 miles out of Prince Rupert harbor to open waters.”

### Regulatory overhaul

Bill C-69, which will overhaul regulatory reviews of major resource projects, was defended by McKenna as the basis for demonstrating “that Canada is the best place in the world to invest,” contrary to industry leaders who say the bill will scuttle any new pipeline or oil sands

development applications. She said many amendments from the Senate were essentially written by oil industry lobbyists.

Trudeau has insisted the bill will protect the environment and the rights of Indigenous communities while limiting the number of interveners at regulatory hearings and setting the stage for a predictable review process.

The Senate passed that legislation in a 57-37 vote, after the government accepted 99 of more than 200 amendments submitted by Liberal and Independent senators, rejecting the bulk of changes endorsed by the Alberta government and the petroleum industry.

On Bill C-69, McKenna said she was “extremely proud” of the legislation, which “is going to be great for investor confidence in our country to know we have a system that works.”

“If you do not respect the rights of Indigenous peoples, if you do not protect the environment, if you do not listen to concerns, good projects simply will not go ahead,” she said.

She has attracted backing for Bill C-69 from the Mining Association of Canada and the Canadian Electricity Association, both of whom saw the changes as an improvement over the status quo.

In addition, an analysis by the independent research organization Canada West Foundation said most of the changes have established a clear and manageable process, increasing clarity, reducing political discretion, firming up timelines and relying on technical expertise.

At the other end of the spectrum, CAPP said the new regulations will likely “make an already complex system more complicated while ultimately raising uncertainty and the potential for litigation.”

The Canadian Energy Pipeline Association said prospects for major new pipelines are now “bleak.”

CEPA President Chris Bloomer said a “wide cross-section of other industries, Indigenous groups, elected officials and other Canadians shares our concerns. The government’s amendments (to the bill) do not go far enough to make it workable.”

### Anger within Alberta

Anger within Alberta runs deep, especially involving equalization payments which redistribute federal taxes from economically strong provinces to those with weaker economies — a program that started in 1957.

Since 1964 Alberta has collected only 0.02% of those payments, while contributing almost C\$140 billion over the six years from 2012 to 2017. The formula is supposed to be revisited every five years, but there is no indication that the Canadian government will follow that practice when a review is due in 2020.

Kenney said the passage of the two bills “not only undermines Canada’s economy, but also the Canadian federation. They have brought us closer to moving forward with a referendum on a constitutional amendment to eliminate equalization from the Canadian Constitution. If Albertans cannot develop our resources within the federation, then we should not be expected to pay the bill in the federation.”

Kenney said Alberta will file constitutional challenges in its Court of Appeal to the bills.

He said that if the Trudeau government banned tankers delivering crude to Atlantic Canada and Quebec it would shut down the Quebec economy.

“So why is Bill C-48 a ban on just Alberta exports?” Kenney asked. ●

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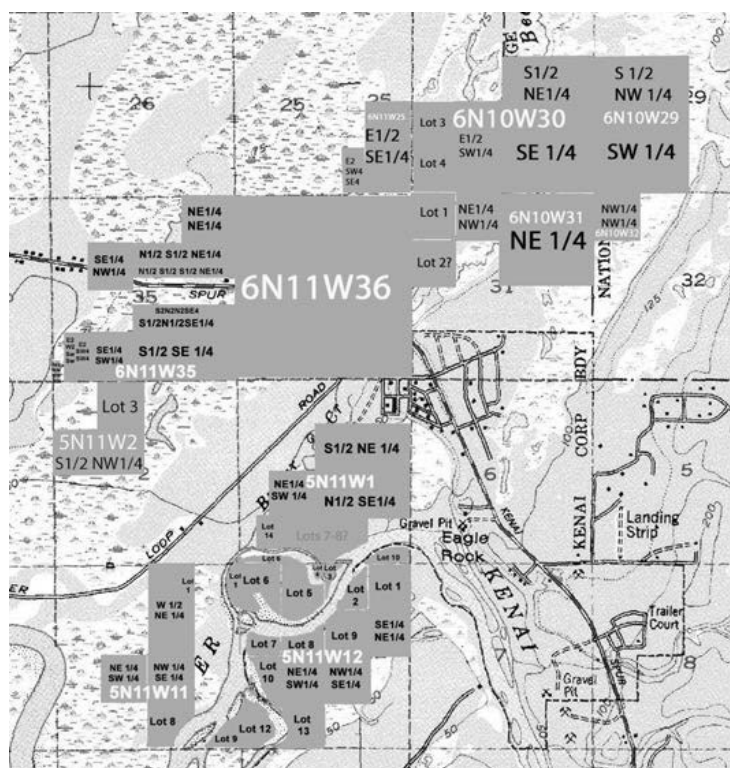
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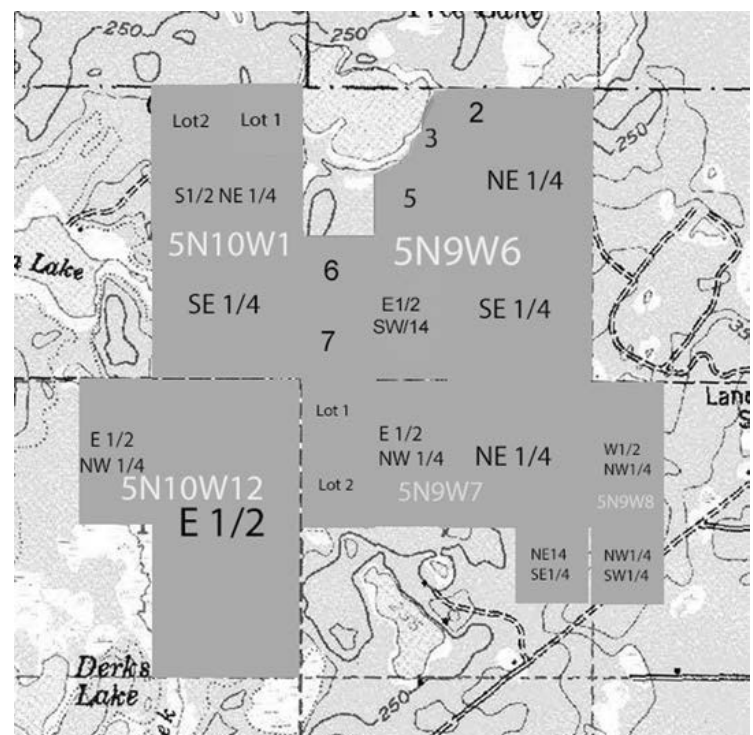
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 Section 7, Lots 1, 2, E1/2NW1/4, NE1/4,  
 NE1/4SE1/4;  
 Section 8, W1/2NW1/4, NW1/4SW1/4.  
 Containing 926.23 acres, more or less.

Township 5 North, Range 10 West (surveyed)  
 Section 1, Lots 1, 2, S1/2NE1/4, SE1/4;  
 Section 12, E1/2, E1/2NW1/4.  
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### INSIDER

to other leases outside our unit," he said.

Although the company does not plan to set up a data room, Foote has a lot of information available, including 3D seismic over the entire area.

"I hate to see all the work we've done ... (including) processing 3D seismic go to waste, but we've sunk \$1.5 million in this already. We need a partner to move forward ... and we need them yesterday," he said.

In a mid-June plan of exploration filing with the Alaska Department of Natural Resources' Division of Oil and Gas, Alliance said its work on Guitar to date has materially increased the prospectivity of the unit for the initial well and subsequent wells "for both currently defined targets, Kuparuk C and Ivishak."

The Guitar unit consists of three state leases, which had previously been part of the Hemi Springs unit, formed in 1983 by ARCO Alaska, predecessor to ConocoPhillips, and terminated in 1992.

Alliance has a 100 percent working interest in the three leases and has finalized a lease transfer document and production sharing agreement with ConocoPhillips on the fourth lease, ADL 28249, which sits at the northwest quadrant of what, with the three Guitar unit leases, forms a square.

The Hemi Springs State No. 1 well, drilled by ARCO in tract 28249 in 1984, was certified as capable of producing hydrocarbons in payable quantities from the Kuparuk C sands.

"The well head is on the Conoco lease but the bottom hole is on one of our leases," Foote said.

Alliance has said it hopes to drill a well in tract 392104 that would penetrate the Ivishak formation, the formation that hosts the Prudhoe Bay field reservoir, with a lateral well targeting a seismic anomaly in the Kuparuk C sands.

In the paperwork Alliance filed in mid-June with the division, it listed what it had accomplished for the Guitar unit since April 2018 — .and planned to do between now and Sept. 1.

From April 25 to Dec. 31, 2018, Alliance accomplished the following, plus finalized the deal with ConocoPhillips on the fourth lease:

- Held discussions with DNR to reduce level of bonding related to adding ADL 28249 to the Guitar unit.

- Held discussions with a geotechnical consultant to identify the optimum location of the initial well, retaining Waters Petroleum for this work; Larry Casarta, who works with Ryan Moynagh, also vetted the location.

- Continued discussions with service companies to reduce cost estimates and schedule equipment availability to drill the initial well.

- Oil to market study performed by David Clark of PRA.

- Continued to work permitting issues.

- Oil discharge prevention and contingency plan — AECOM

From Jan. 1 to May 31, Alliance did the following:

- Retained MAP Consulting and its subcontractor GEC LLC to optimize risk-weighted original oil in place and estimated ultimate recovery potential of the initial well and increase probability of commercial success including

potential subsequent wells MAP and GEC were also tasked with design plans for 2019-22 for the development of a commercially successful initial well.

- Identify additional adjoining prospective acreage to increase the probability of commercial success of the initial well (especially reservoir structural position, permeability and volume interpretations).

- Continued discussions with state to minimize bonding requirements for the additional prospective acreage, ADL 28249.

- Contacted surety agents to identify availability and cost for bonds.

Between June 1 and Sept. 1 Alliance plans to perform the following:

- Continue discussions with adjoining lease owners for potential farm-out and working interest investors for initial well.

- Continue all geotechnical and operational work to drill the initial well.

- Finalize permitting.

- Secure bonding requirements.

- Secure additional working interest partner

- Submit a letter to the commissioner of DNR and ask for an extension of unit default period from March 31, 2020, to 2021.

And finally, the company was considering posting the \$500,000 statewide bond by June 25 but have held off doing so.

"As I said, it's probably the cheapest play on the North Slope that could be a significant play. We're ready to make something happen," Foote said.

—KAY CASHMAN



## Oil Patch Bits



### Stork awarded agreement by Ecopetrol in Colombia

Fluor Corp. announced June 25 that Stork, part of Fluor's diversified services segment, together with its consortium partners, was awarded a four-year framework agreement for plant turnaround services by Ecopetrol S.A. for its Barrancabermeja and Cartagena refineries in Colombia. The Colombia-based consortium includes Stork as the international lead partner, Rampint as the local partner in Barrancabermeja and Servimant as the local partner in Cartagena. The agreement also includes two extension options for an additional two years each. Both refineries supply fuel to meet Colombia's national and export product needs. Fluor booked the undisclosed contract value in the second quarter of 2019.

"Stork is extremely pleased that Ecopetrol has awarded this new turnaround contract that

includes these two important refineries," said Taco de Haan, Stork's president. "The ongoing partnership with Ecopetrol has grown over the years due to mutual trust and collaboration and is built upon both companies' commitment to safety, integrity, excellence and teamwork. Stork will apply its full portfolio of professional solutions as part of this contract including a range of innovative products and techniques."

Stork's local offices in Barrancabermeja and Cartagena will lead the work, which is due to begin in September. The scope of work includes providing turnaround maintenance services on the plant process units during scheduled plant shutdown periods. In addition, the contract also includes emergency works and other preventive and corrective maintenance services to support Ecopetrol with further refinery performance optimization. Stork has been providing maintenance and turnaround services to the Barrancabermeja refinery since 2013.

# Companies involved in Alaska's oil and gas industry

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## PIKKA PRODUCTION

Repsol holds the remaining working interest in the leases.

### Elusive Nanushuk

In Wulff's speech and accompanying overheads at the RDC luncheon, he summarized the company's activities in the Pikka unit to date, as well as talked about plans for the future.

The topic of his presentation was "Oil Search & Alaska, forging a path forward in the Nanushuk."

The shallow Brookian Nanushuk formation was ignored in earlier drilling across the North Slope as explorers drilled deep to find another Prudhoe Bay. The play was discovered by Armstrong and Repsol.

Wulff, like Armstrong founder and President Bill Armstrong before him, said the Nanushuk was a very subtle play that doesn't jump out at you on seismic, but takes high quality 3D seismic and advanced seismic processing to track for drilling.

Throughout his speech Wulff emphasized the importance of utilizing the best technology and employing people with North Slope experience as elements of his company's success on the Slope to date.

### Coming in under cost


One slide titled, "Earliest spud on ice in 43 years," touted the success of this past winter's drilling season for Oil Search, with wells Pikka B and C, noting they were both drilled in record time and came in under cost. They were also sidetracked and flow-tested with Pikka B intersecting the thickest Nanushuk reservoir seen in the field to date — some 350 feet of pay as compared to average thickness farther north in the Pikka unit of some 200 feet and 40 to 70 feet farther west at Willow.

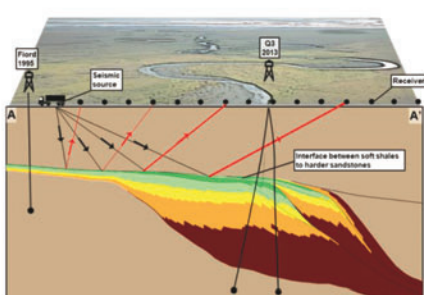
Per Oil Search, the well results also "materially upgraded prospectivity" in the southern part of the Pikka unit and in the adjacent Horseshoe block.

The Pikka B/Pikka B ST1 flowed at a stabilized rate of 2,410 barrels of light, sweet oil per day, its flow restricted by the capacity of the testing equipment, the

## NANUSHUK 3D SEISMIC DATA

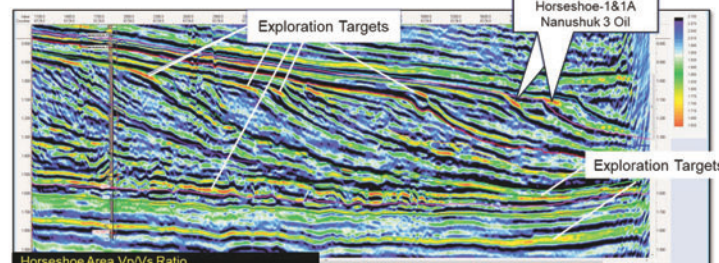
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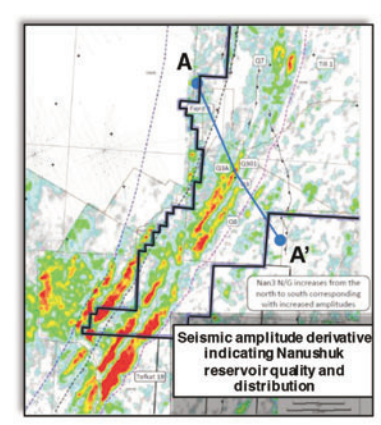


Interface between soft shales to harder sandstones

- » High quality 3D seismic
- » Advanced seismic processing
- » Reduces risk and uncertainty



Horseshoe Area Vp/Vs Ratio



Seismic amplitude derivative indicating Nanushuk reservoir quality and distribution

company reported. Based on the productivity index calculated during the final flow test (one stage stimulation), the well flow rate potential was estimated at 3,800 bpd at a flowing well head pressure of 50 psi.

"It's extremely rare that what you plan for is exactly what you get," Wulff said, but that is what happened this past winter.

He credited much of Oil Search's success to the 80-some contractors his staff worked with, noting most of them were from Alaska.

He made it clear he wanted to hear "noise" from the contractors — get input on a continual basis as to what was being done right, wrong, and how it could be improved.

### Twenty-seven changes

As previously reported, Oil Search received the U.S. Army Corps of Engineers Record of Decision, or ROD, and permit for the Pikka development, which was tentatively scheduled to enter the front-end engineering and design, or FEED, phase this summer, get final company approval and begin construction in early 2020, and start production in late

2023 — all of which, as Wulff indicated, might change.

A critical step to advancing the proposed project, the ROD used Oil Search's preferred development option, which included, Wulff noted, the company's 27 changes that reflected feedback from permitting agencies and key stakeholders, including residents of the nearby Native village of Nuiqsut.

Among the changes were smaller pads and moving pads farther from the river, he said.

The Corps approved a development scope that included 26 miles of gravel roads, 70 acres of gravel pads, 650,000 feet of pipelines, 36 miles of power and fiber optic cables, up to 12 sealift modules skids, a 200-man camp, two bridges, three to five infrastructure buildings, and involved a peak construction workforce of 1,300-1,600.

Along with a central processing facility there would be as many as three pads with 120 wells, Wulff said.

The oil is initially expected to come from the Nanushuk formation, but the company is also looking at tapping the deeper Alpine reservoir.

Bill Armstrong said from the start that

there were at least six intervals in Pikka wells that would eventually be tapped.

### Extended reach drilling

Extended reach drilling is a key technology that will be employed at Pikka, Wulff said, which will help "minimize the footprint" of the project.

The measured depths of extended reach wells will be 12,000 to 31,000 feet, he said, noting a fit-for-purpose rig selection is planned.

Regarding long term government monetary benefits from the Pikka development, Wulff's presentation included the following: \$30 billion in state royalties and taxes, \$8 billion in federal taxes, and \$1.6 billion in North Slope Borough taxes.

Oil Search, which was founded in Papua New Guinea in 1929, is celebrating its 90th anniversary this year.

The company has operating offices in Anchorage, Papua New Guinea and Sydney, Australia. ●

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## ENI TAKES OVER

operator.

Already 100% owner and operator of the adjacent Nikaitchuq oil field, one of the reasons Eni gave for taking over at Oooguruk was because it wanted new oil to take advantage of significant spare capacity in its standalone Nikaitchuq production facility, which can handle 40,000 barrels per day and can be expanded to 50,000 bpd, per Eni Alaska Vice President Whitney Grande.

Eni said in January that its first goal was to increase its Alaska North Slope production to 30,000 barrels of oil per day.

That month, Nikaitchuq produced an average of 18,375 bpd and Oooguruk yielded 9,336 bpd, the combination of which would have brought the company a lot closer to its goal than the 21,186 bpd Eni would have gotten with only 30% of Oooguruk output.

Assuming Caelus and Eni's deal is already giving Eni 100% of Oooguruk production, the total in April reached 23,522 bpd from the two units.

### To finish Nikaitchuq North in 2020

Eni offered the same reason for acquiring full ownership in Oooguruk — spare

capacity in its Nikaitchuq production facility — as it did for stepping out north of the Nikaitchuq unit in December 2017 to begin drilling the Nikaitchuq North exploration well, NN-01, the longest extended reach well of its type in Alaska.

Due to unforeseen challenges, including having to modify the drill rig and impacts related to seasonal drilling restrictions, Eni halted drilling again at the end of this winter's drilling season. The company will resume drilling NN-01 next winter, in early 2020, when it hopes to reach its intended target depth and flow-test the well.

While the Nikaitchuq oil field lies in state land under the nearshore waters of the Beaufort Sea, the Nikaitchuq North oil prospect is in Harrison Bay Block 6423 immediately north of the state leases in the federal outer continental shelf of the Beaufort Sea. Drilling has been taking place from an existing drill pad on Spy Island, part of the Nikaitchuq field.

### Target confidential, but ...

Eni says Nikaitchuq North drilling is targeting an anomaly that appears on 3-D seismic, but that's all it will say — the geological target(s) remain confidential.

The Schrader Bluff formation produced at the Nikaitchuq field is known to extend a long way out under the Beaufort

Sea, to the north.

The previous unit operator, Kerr-McGee, talked about the possibility of testing the Jurassic Nuiqsut sandstone and the Triassic Sag River sandstone to the north.

While everything about the target of Nikaitchuq North drilling was removed from its public plan of development under its confidential status, there were some hints in the Oil Discharge Prevention and Contingency Plan application that appeared to be based on tapping the Jurassic Alpine sands, which would certainly qualify as an anomaly in the area.

Whatever the case, the 25,957 bpd in the contingency plan application could not

be referring to the heavy Schrader Bluff oil that can't flow unassisted.

Also, this and the measured depth and angle of the well suggest one of the Jurassic sands.

NN-01 was to have a vertical depth of 8,131 feet and a measured depth of 34,150 feet, although more recently company officials talk in terms of 35,000 feet for the measured depth.

"It will be the longest extended reach well in the state," Grande said in November 2017.

—KAY CASHMAN

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## BADAMI OIL

lion in 2018. (In addition to Badami, the company operates three units in the Cook Inlet basin — West McArthur River, Redoubt and North Fork.)

Glacier promised to do the following during the term of the POD, which is July 16 through July 15, 2020:

- The company is currently working on a permit to construct a new Badami drilling pad, the “Dock Pad,” which will be the surface drilling pad for additional Killian wells drilled toward the eastern side of the Badami unit.

- The B1-01 well workover will include pulling and replacing tubing; Savant also will run a casing inspection log for evaluation purposes.

- Convert the B1-14 well to a gas injection service well (AOGCC has approved this conversion).

Glacier says these operations will “occur during the second and third quarters of the 2019 POD period.”

In the June 17 approval letter acting division Director James Beckham told George Morris, Savant’s chief operating officer, “The division remains encouraged by Savant’s continued efforts to develop the Badami unit’s resources and looks forward to further positive production development soon.”

### Looking for more pools

Further, the company says Savant continues to evaluate B1-07 production, as well as assess additional drilling prospects within the Badami unit but outside the Badami participating area. A turbidite sandstone reservoir slightly older than the Badami’s Brookian reservoir, the Cretaceous Killian interval is immediate-

*The 16th plan of development, or POD, for the Badami unit was filed April 15 and approved by the Alaska Department of Natural Resources’ Division of Oil and Gas on June 17.*

ly above the oil source rock and below the Badami sands that form the main reservoir for the Badami oil field. In early testing the B1-07 well produced 2,500 barrels per day.

Describing the Starfish project in September 2017, a Glacier official said, “If this well works close to what we think it will, it should open five to seven more prospects similar to it.”

In its 2017 POD, Glacier described Starfish as one of “several new target pods of interest” identified through a recent geologic and geophysical review of the Badami and Killian sands. It says something similar in both its 2018 and 2019 PODs.

### Up to 10 new wells

Glacier’s application with the U.S. Army Corps of Engineers for a permit to construct Dock Pad inland 1.3 miles from Mikkelsen Bay will accommodate the drilling of up to 10 new wells.

The application says that pad construction involves excavating a 9.2-acre gravel pit, building an 800-foot access road and a 2.5-mile pipeline connecting the new pad to existing field facilities.

The pad itself will be square, with 660-foot sides, and will be due east of the existing Badami pad.

The Mikkelsen Bay pad proposal dates back to a unit expansion effort in late 2012, when Savant asked the state to add seven leases to the Badami unit, including

six leases held by Alaska Venture Capital Group. Since that time AVCG has sold most of its interest in those six leases, with six companies now holding them, Caracol Petroleum being the largest leaseholder. Brooks Range Petroleum Corp. currently operates the leases.

The proposed lease expansion, which straddles the Beaufort Sea coast, would have extended the Badami unit east, closer to ExxonMobil’s Point Thomson producing unit, the eastern-most producing unit on the North Slope, just to the west of the Arctic National Wildlife Refuge 1002 area.

### 1971 well tested at 700 bpd

The concept behind the lease expansion was to enable exploration drilling in the East Mikkelsen prospect that included the site of the East Mikkelsen Bay No. 1 well drilled by Humble Oil (predecessor to ExxonMobil) in 1971.

Using outdated technology, that well encountered oil in the Killian sands, with a tested flow rate of 700 bpd of 24-degree API oil.

In March 2013, the division approved inclusion of parts of two of the leases into the Badami unit but declined to expand the unit across the remainder of the seven leases: The approved expansion included the Mikkelsen well. The state argued that only those lease portions met the qualifications for a lease expansion.

In April 2013, Savant appealed the state’s decision, claiming that effective exploration of the prospect required access to all seven of the leases.

The appeal remained in limbo until July 2, 2018, when then-DNR Commissioner Andy Mack sent a letter to Glacier telling it the department had reviewed Savant’s appeal and was remanding the matter to the division for reconsideration.

As of June 21, the division has not yet issued a decision, although it appears the parties have discussed the matter.

### Output falling

Production from the eastern North Slope Badami unit, which is between the Prudhoe Bay and Point Thomson units, averaged 879 barrels a day in November 2015 prior to Glacier assuming operator-

*The POD is a “basic plan” that calls for “investing nearly \$200 million (gross) to prosecute a Killian-focused drilling program over the next 3-4 years” at Badami. —Glacier President Phil Elliott*

ship in January 2016.

By January 2019, Badami was producing 2,323 bpd, with B1-07 accounting for 1,604 bpd.

In April, Badami had fallen to an average of 1,659 bpd — clearly an incentive for continued drilling, especially since the unit’s processing facilities can handle 38,500 bpd, a reminder of the ambitions of the original operator, BP Exploration.

It came as no surprise when Elliott told Petroleum News in the April 10 email that “The B1-07 well was an economic success and proved the prospective value of a Killian-focused drilling initiative,” noting the well was expected to “pay out in less than 15 months.”

Elliott did not indicate whether the company would be open to another partner at Badami. ASRC Exploration, owned by the Native regional corporation for northern Alaska, Arctic Slope Regional Corp., and others hold minority working interests in the Badami unit and surrounding leases, with Glacier owning approximately 67% of most leases.

### Glacier’s background

After emerging from bankruptcy protection in early 2016, the publicly traded Miller Energy Resources became the privately owned Glacier Oil & Gas Corp.

The changes appear to go far beyond leadership, name and ownership status.

Starting immediately after formation, Glacier pursued a different strategy than its predecessor, favoring caution and focus where Miller was ambitious and sprawling.

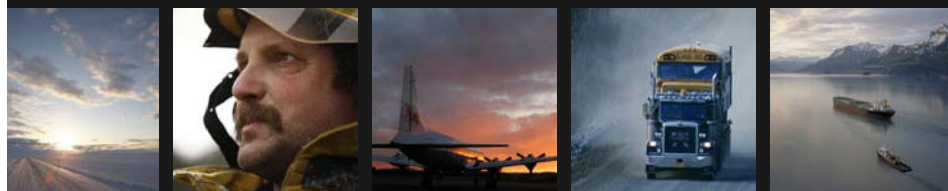
Following the reorganization, Glacier retained Miller’s North Slope and Cook Inlet holdings, including wholly owned subsidiaries Cook Inlet Energy and Savant. ●

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