Petroleum news

Vol. 28, No. 4 • www.PetroleumNews.com | A weekly oil & gas newspaper based in Anchorage, Alaska | Week of January 22, 2023 • $2.50

page 3 20 years ago: USGS says ANWR oil likely low sulfur, high gravity

IGU to source LNG for Fairbanks gas supplies from the North Slope

In a major change in business strategy, the board of the Interior Gas Utility, the gas utility for the Fairbanks-North Pole region, has decided to shift its source of natural gas from Cook Inlet to the North Slope.

During a Jan. 17 special meeting, the board unanimously approved a resolution authorizing IGU General Manager Dan Britton to execute a sale and purchase agreement with Hilcorp Alaska for the purchase of North Slope natural gas for LNG manufacture, and with Harvest Alaska LNG for IGU to purchase LNG from a new 150,000 gallons per day LNG plant that Harvest will construct on the North Slope. IGU will establish a trucking operation for shipping the LNG from the North Slope to Fairbanks. IGU has LNG storage facilities in Fairbanks and North Pole, from which the utility feeds gas into its gas distribution pipeline system. Harvest is Hilcorp's midstream affiliate.

The Titan plant

Currently, IGU manufactures LNG at its Titan LNG plant near Point Mackenzie on Cook Inlet, using Cook Inlet natural gas purchased from Hilcorp. The plan had been to expand the

see IGU GAS SOURCE page 6

AIX loses 2 of 3 Kenai leases; Wyo. aims to stop EV, protect O&G

ON JAN. 18 ALASKA'S DIVISION of Oil and Gas issued an automatic termination notice to AIX Energy for failure to pay rental rates on two non-producing leases.

The two leases, ADL 93033and 393035, are part of the three-lease onshore Cook Inlet Kenai Loop field.

AIX's payment on the two leases were due on or before Jan. 1, 2023.

The notice, which was signed by Division Director Dennis Nottingham, said the following: "Any lease on which there is no well capable of producing oil or gas in paying quantities terminates by operation of law if any rental due is not timely paid on or before each anniversary date of the lease, except where provisions of 11 AAC 83.620 are applicable."

The notice also said the two leases automatically terminated in whole effective Jan. 1, 2023.

see INSIDER page 4

State approves adding 4 leases to Prudhoe Bay unit, 9,053 acres

How does a large oil and gas unit grow? Typically, by absorbing acreage on its edges. In the case of a new Prudhoe Bay expansion, by absorbing acreage which was previously part of smaller and now defunct units.

The Prudhoe Bay unit, Alaska's most prolific field, and at 254,235.32 acres, also the largest physically, has just been expanded by 9,053.11 acres, four leases.

In a Jan. 12 approval of an application by Prudhoe operator Hilcorp North Slope, the Department of Natural Resources' Division of Oil and Gas said, "lands included in the expansion area were part of the now terminated Gwydyr Bay, Beechey Point, or Dewline Units."

One of the leases, ADL 47466, was issued in 1969 and was most recently held by ConocoPhillips Alaska. The other three leases were most recently acquired by Hilcorp North Slope in 2021 and cross assigned in 2022 to ConocoPhillips Alaska, ExxonMobil Alaska and Chevron U.S.A. ADL 47466 has also

see PRUDHOE EXPANSION page 8

FINANCE & ECONOMY

Demand rally afoot

China reopening drives upward oil price trend despite US recession fears

By STEVE SUTHERLIN
Petroleum News

After making a dramatic leap of $2.82 Wednesday Jan. 11 to regain the $80s, Alaska North Slope crude marched $1.96 higher over the next week, from its close of $80.15 per barrel on the 11th to $82.11 Jan. 18.

The gain came despite a daily trading loss on Jan. 18, which saw ANS fall $1.14 to its close of $82.11, while West Texas Intermediate fell 70 cents to close at $79.48 and Brent fell 94 cents to close at $84.98.

The gain for the week was attributed to government-reported improvement of business conditions in China, which augured well for future demand.

Worries about a U.S. recession, however, overrode the positive China data to shave prices Jan. 18.

Moody's forecasts that average crude oil prices in 2023 will remain below last year's $100 per barrel average for Brent but exceed the medium-term oil price range of $50-$70, according to a report published Jan. 17.

Oil prices turned negative, as did U.S. equity markets, after hawkish comments from U.S. Federal Reserve officials dashed hopes that the Fed would pause interest rate hikes soon.

Both St. Louis Fed President James Bullard and

see OIL PRICES page 7

GOVERNMENT

New income for Alaska

Dunleavy moves to monetize CO2, bringing in maybe billions of dollars

By KAY CASHMAN
Petroleum News


MIKE DUNLEAVY


JOHN BOYLE

On Jan. 12, in accordance with a mandate in Alaska's Constitution that requires development of all state resources, Gov. Mike Dunleavy presented his Carbon Management Bill Package, which he says could bring in millions, if not billions, of dollars, to the state.

The legislation will create statutory and regulatory structures needed to capitalize on the emerging carbon markets, he said.

The Alaska Department of Natural Resources began overview work to facilitate a carbon capture, utilization and sequestration, or CCUS, in Alaska in January 2022 while Corri Feige was commissioner of DNR.

Feige: He's 'exactly right'

After Dunleavy released information about his carbon management legislative package, Petroleum News asked the former commissioner for her input on the proposed legislation.

"I am very pleased that the governor has rolled out this carbon management package!" Feige said

see CARBON MANAGEMENT page 6

EXPLORATION & PRODUCTION

Nanushuk reservoir quality

Maximum burial depth, depositional environment of sediments determine storage

By ALAN BAILEY
For Petroleum News

Major new oil discoveries, such as Pikka and Willow, have been made in the Nanushuk formation on Alaska's North Slope in recent years. A new research paper published in Marine and Petroleum Geology documents the results of research conducted by scientists from the Alaska Department of Natural Resources into the factors that determine the oil and gas reservoir quality in the formation — an understanding of these factors can help identify optimum places to drill for new discoveries.

The scientists, Kenneth Helmold of the Division of Oil and Gas and David LePain of the Division of Geological and Geophysical Surveys,

Overall, the data demonstrate that the estimated maximum burial depth of a potential reservoir rock can be used as a key predictor of reservoir quality, prior to drilling, the paper suggests.

comment that it is possible to distinguish two groups of sandstone with distinctly different reservoir qualities within the formation: a low-porosity group with porosities of less than 20% and a higher porosity group with a maximum porosity in excess of 30%. While the environment in which the sediments were deposited is critical in determining

see NANUSHUK FORMATION page 5

● GOVERNMENT

EPA issues Fairbanks air quality notice

Agency partially disapproves and partially approves state plan for dealing with poor air quality in Fairbanks-North Star Borough

By ALAN BAILEY
For Petroleum News

The U.S. Environmental Protection Agency has issued a notice, proposing that it will approve in part while also disapproving in part the state's plan for dealing with poor air quality in Fairbanks-North Star Borough.

The agency has opened a 60-day public comment period for its proposed rulemaking, before issuing a final action in the matter. The public comment period will include a public hearing in February in Fairbanks.

Winter air quality in the Fairbank region has been a long-standing problem, in part because of the widespread use of wood burning stoves to heat houses. Pollution also results from coal and oil-fired power generation, and from vehicle exhaust. Winter thermal inversions tend to trap cold air, holding pollutants close to ground level, thus causing people to inhale polluted air.

"Over the past 13-plus years, the state and borough have achieved important reductions in particulate levels. However, Fairbanks residents continue to endure potentially dangerous wintertime particulate pollution," said Casey Sixkiller, regional administrator of EPA's Region 10 office in Seattle. "We look forward to working with the state and local officials to improve their plans to meet the federal air quality standards meant to protect people's health."

State air quality plan

The state has long been aware of the air quality challenges in the Fairbanks region and includes a specific section on Fairbanks-North Star Borough in the Department of Environmental Conservation's state implementation plan, or SIP, for achieving required air quality standards in Alaska. In 2019 DEC published a new plan for the Fairbanks region in the SIP, including more stringent criteria for the use of wood stoves, a requirement to use low sulfur diesel in oil-fueled heaters, and a deadline for the removal of coal-fired and uncertified heaters from buildings.

EPA, in its new order, says that the U.S. Clean Air Act requires Fairbanks-North Star Borough to be in compliance with the relevant federal clean air standard by October 2025, but that the agency does not believe that the state's current plan will be capable of meeting that goal.

EPA, in its new order, says that the U.S. Clean Air Act requires Fairbanks-North Star Borough to be in compliance with the relevant federal clean air standard by October 2025, but that the agency does not believe that the state's current plan will be capable of meeting that goal.

However, EPA is approving some portions of the state's plan, saying that these plan components will have the desired affect for certain emission sources. These components include a baseline inventory of all emission sources; an analysis showing that some emission sources do not contribute to the emissions that need to be reduced; and portions of the state's emission control strategy that apply to wood-fired heating devices.

EPA cites plan deficiencies

EPA thinks that significant portions of the state's plan will fail to enable the required reductions in particulate air pollution. The agency cites what it believes to be a failure to adequately address the feasibility of using the best available control technologies for coal and oil-fired electricity generation units that lack adequate sulfur dioxide emissions controls; a failure to apply emission control strategies for commercial, industrial and residential heating sources, including a requirement for the use of ultra-low sulfur diesel for home heating; a failure to conduct an adequate evaluation of emissions controls for other commercial emissions sources; a failure to demonstrate the attainment of the standard for particulate emissions; and a failure to adopt adequate contingency measures, should sufficient progress towards the required standards not be achieved.

The EPA says that, while Alaska has determined that sulfur dioxide in the air contributes to particulate air pollution, EPA has discussed with the state measures needed to control sulfur dioxide emissions, including emissions from coal and oil-fired power generation units that have only rudimentary or no sulfur dioxide emissions controls. There are three coal-fired units and two oil-fired units in the region. ●

Contact Alan Bailey
at abailey@petroleumnews.com

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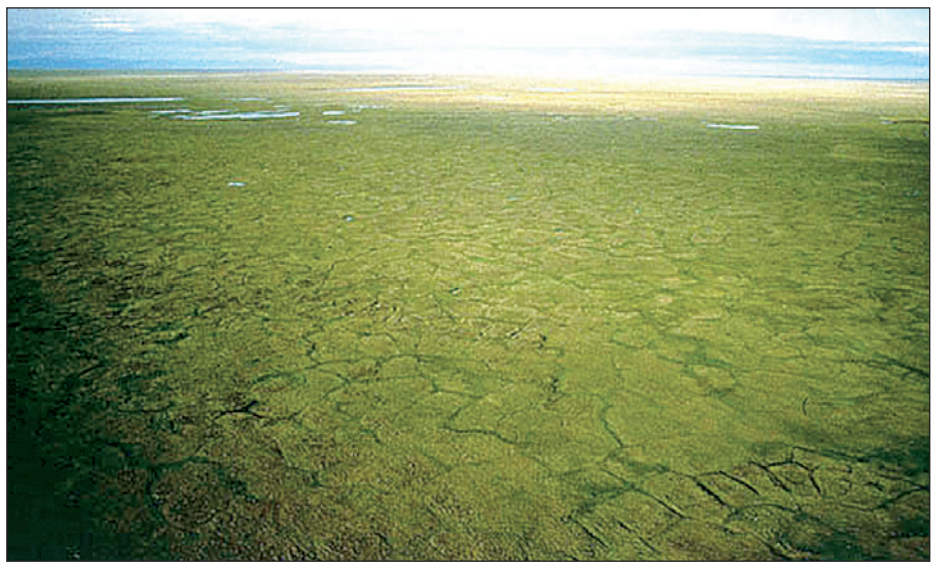


The coastal plain of the Arctic National Wildlife Refuge.

FILE PHOTO

● THIS MONTH IN HISTORY

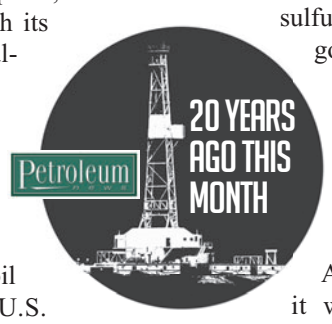
USGS: ANWR oil likely sweet, light

20 years ago this month: US Geological Survey says coastal plain low sulfur, high gravity oil is cleaner than Prudhoe Bay crude

Editor's note: This story appeared in the Jan. 26, 2003, issue of Petroleum News Alaska.

By KAY CASHMAN & STEVE SUTHERLIN
Petroleum News

The coastal plain of the Arctic National Wildlife Refuge may be a desolate and windblown place, but studies suggest that beneath its flat surface is sweet, low sulfur crude — in high demand by refiners and environmentally sensitive consumers.



"The oil we've studied in ANWR is higher gravity and lower sulfur oil than oil in Prudhoe Bay," U.S. Geological Survey research geologist Ken Bird told Petroleum News Alaska in mid-January 2003. "Prudhoe Bay-type oil contains one to two percent sulfur, while samples from ANWR measure between zero and one percent sulfur."

The oil tested by USGS was gathered from several points in and just outside the coastal plain, which is a 1.5 million acre slice of the 19 million acre refuge set aside by Congress for possible oil and gas exploration and development because of its geologic potential.

"All the seeps and oil-stained rocks we find in ANWR contain low sulfur oil from the Hue or Canning formations. Nearby offshore wells at Kuvlum, Aurora and Hammerhead and oil seeps next to Barter Island and Ungoon Point in the eastern part of ANWR, about 30 miles southeast of Barter Island, all have low sulfur oil," Bird said.

The only oil USGS has not been able to test is from the KIC No. 1 well, drilled by Chevron in the mid-1980s in ANWR's coastal plain. ChevronTexaco, a strong supporter of opening the coastal plain to oil and gas drilling, has kept that well information confidential.

Environmentally friendly

Sweet light crude is the desired feedstock for refining, particularly for the refining of motor fuels. Reduced sulfur in the feedstock results in a reduction of sulfur and other effluents from the refining process, and reduced sulfur in refined products.

"There's obviously an environmental benefit because of the fact you're using a lower sulfur crude and producing lower sulfur fuels with less of an impact," said Rod Cason, Tesoro Alaska vice president and manager of its refinery on the Kenai Peninsula.

"We hydro-treat all our gasoline here, so we're well below what EPA's 2003 sulfur emission requirements are going to be, but lower sulfur fuel will have an impact on other refiners. … And low sulfur crude from ANWR will reduce the overall sulfur content in the oil coming down the trans-Alaska oil pipeline because it will be commingled with Prudhoe oil," Cason said.

Low sulfur fuel, Cason said, is also less expensive to refine.

"Typically, our costs are driven by chemical treatments (which include stripping out sulfur) and energy costs, but the biggest benefit of low sulfur crude from Tesoro's perspective is that the lighter, sweeter crude produces lower sulfur products and we receive a premium for those fuels," he said.

Greenpeace recognizes difference

The environmental group Greenpeace doesn't endorse any type of fossil fuel but acknowledges that some fossil fuels are easier on the environment than others.

"There is a difference in projects that we campaign against," said J.P. Ross, a policy analyst in Greenpeace's San Francisco office, adding that the organization will campaign more vociferously against projects it finds more onerous.

"We're against all types of fossil fuels, be they tar sands or natural gas," Ross told PN in December 2002. "We support wind, solar, and geothermal (energy)."

Ross said the organization understands that sweet light crude is relatively clean compared to sour crude, or tar sands development, and that natural gas is near the top of the scale in cleanliness. Even so, Greenpeace doesn't favor development of gas projects like an Alaska natural gas line, because, it maintains, building of huge infrastructure prolongs the

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EXPLORATION & PRODUCTION

US rotary drilling rig count up 3 to 775

The Baker Hughes' U.S. rotary drilling rig count was 775 on Jan. 13, up by three from the previous week and up 174 from 601 a year ago.

When the count dropped to 244 in mid-August 2020, it was the lowest the domestic rotary rig count had been since the Houston based oilfield services company began issuing weekly U.S. numbers in 1944.

Prior to 2020, the low was 404 rigs in May 2016. The count peaked at 4,530 in 1981.

Baker Hughes shows Alaska with nine rotary rigs active Jan. 13, unchanged from the previous week and up by three from a year ago, when the state's rig count stood at six.

The count was in the low 790s at the beginning of 2020, where it remained through mid-March, when it began to fall, dropping below what had been the historic low in early May with a count of 374 and continuing to drop through the third week of August 2020 when it gained back 10 rigs.

The Jan. 13 count includes 623 rigs targeting oil, up by five from the previous week and up 131 from 492 a year ago, with 150 rigs targeting natural gas, down by two from the previous week and up 41 from 109 a year ago, and two miscellaneous rigs, unchanged from the previous week and up by two from a year ago.

Forty-nine of the rigs reported Jan. 13 were drilling directional wells, 700 were drilling horizontal wells and 26 were drilling vertical wells.

Alaska rig count unchanged

The New Mexico rig count (103) was up by three from the previous week.

California (5), Louisiana (67) and Texas (379) were each up by one.

Oklahoma (64) was down by two rigs week over week and Colorado (20) was down by a single rig.

Rig counts in other states were unchanged from the previous week: Alaska (9), North Dakota (39), Ohio (14), Pennsylvania (21), Utah (12), West Virginia (17) and Wyoming (20).

Baker Hughes shows Alaska with nine rotary rigs active Jan. 13, unchanged from the previous week and up by three from a year ago, when the state's rig count stood at six. All nine of the Alaska rigs were onshore, unchanged from the previous week. There were no offshore rigs active in the state.

The rig count in the Permian, the most active basin in the country, was up by three from the previous week at 356 and up by 63 from 293 a year ago.

—KRISTEN NELSON

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Kay Cashman	PUBLISHER & FOUNDER
Mary Mack	CEO & GENERAL MANAGER
Kristen Nelson	EDITOR-IN-CHIEF
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Allen Baker	CONTRIBUTING WRITER
Judy Patrick Photography	CONTRACT PHOTOGRAPHER
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

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INSIDER

The commissioner of the Alaska Department of Natural Resources may reinstate a lease automatically terminated if the failure to pay rental was justifiable and not due to lack of reasonable diligence by the lessee, Nottingham said in the notice, adding: "Should you wish to request reinstatement of the lease, you must submit a statement and supporting evidence of the reasons for the failure to pay in accordance with 11 AAC 83.175(a). The Director of the Division of Oil and Gas must receive your request for reinstatement and the rental payment amount within 15 days of the receipt of this notice."

The small independent acquired the onshore gas field on the Kenai Peninsula in late 2014, as part of the bankruptcy proceedings of Buccaneer Energy Ltd.

Through the end of March 2022, the Kenai Loop field produced 26 billion cubic feet of natural gas, 10,178 barrels of water, and 2,836 barrels of condensate, according to AIX.

Natural gas production peaked in early 2016 around 11.5 million cubic feet per day and declined sharply in late 2017. It currently produces some 3.6 mcf per day.

—KAY CASHMAN

Wyoming aims to stop EV sales, protect O&G

LAWMAKERS IN THE STATE of Wyoming are crafting new legislation that would phase out the sale of new electric vehicles by 2035, which they say would help ensure the stability of the Cowboy State's oil and gas industry, as well as help preserve the country's limited critical minerals used in EV batteries.

The latest version of a joint Wyoming Senate and House resolution reads in part:

WHEREAS, oil and gas production has long been one of Wyoming's proud and valued industries; and

WHEREAS, the oil and gas industry in Wyoming has created countless jobs and has contributed revenues to the state of Wyoming throughout the state's history; and

WHEREAS, since its invention, the gas-powered vehicle has enabled the state's industries and businesses to engage in commerce and transport goods and resources more efficiently throughout the country; and

WHEREAS, Wyoming's vast stretches of highway, coupled with a lack of electric vehicle charging infrastructure, make the widespread use of electric vehicles impracticable for the state; and

WHEREAS, the batteries used in electric vehicles contain critical minerals whose domestic supply is limited and at risk for disruption; and

WHEREAS, the critical minerals used in electric batteries are not easily recyclable or disposable, meaning that municipal landfills in Wyoming and elsewhere will be required to develop practices to dispose of these minerals in a safe and responsible manner; and

WHEREAS, the expansion of electric vehicle charging stations in Wyoming and throughout the country necessary to support more electric vehicles will require massive amounts of new power generation in order to sustain the misadventure of electric vehicles; and

WHEREAS, the United States has consistently invested in the oil and gas industry to sustain gas-powered vehicles, and that investment has resulted in the continued employment of thousands of people in the oil and gas industry in Wyoming and throughout the country; and

WHEREAS, fossil fuels … will continue to be vital for transporting goods and people across Wyoming and the United States for years to come; and ….

WHEREAS, phasing out the sale of new electric vehicles in Wyoming by 2035 will ensure the stability of Wyoming's oil and gas industry and will help preserve the country's critical minerals for vital purposes.

Among other things, the members of the Wyoming Legislature asked that the secretary of the state of Wyoming "transmit copies of this resolution to the President of the United States, each member of Wyoming's congressional delegation, the President of the United States Senate, the Speaker of the United States House of Representatives, the governor of Wyoming and the governor of California."

—KAY CASHMAN

Contact Kay Cashman at publisher@petroleumnews.com

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HISTORY

world's fossil fuel dependence.

Might reduce consumer costs

In the future, low sulfur refinery feedstock might take the edge off energy price increases for consumers. According to the U.S. Energy Information Administration, processing costs for light products, including gasoline, diesel fuel, heating oil, and jet fuel, are projected to increase by 6 cents to 7 cents per gallon between 1999 and 2020.

The increases are expected because of projected growth in demand for the products, investment needed to meet new federal requirements for low-sulfur gasoline between 2004 and 2007, and investments related to compliance with refinery emissions, health, and safety regulations, EIA said. ●

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NANUSHUK FORMATION

variations in reservoir quality within these two groups, the disparity between the two groups is largely determined by the maximum burial depths of the sediments, the paper says.

The rock formation forms part of the Brookian sequence, the youngest and shallowest of the petroleum bearing rock sequences on the North Slope. The sediments that later formed the rocks were deposited in a giant depositional system called a clinothem — a complex system of marine and non-marine sediments associated with ancient river systems — and deposited across the edge and into an ancient marine basin.

River delta complexes

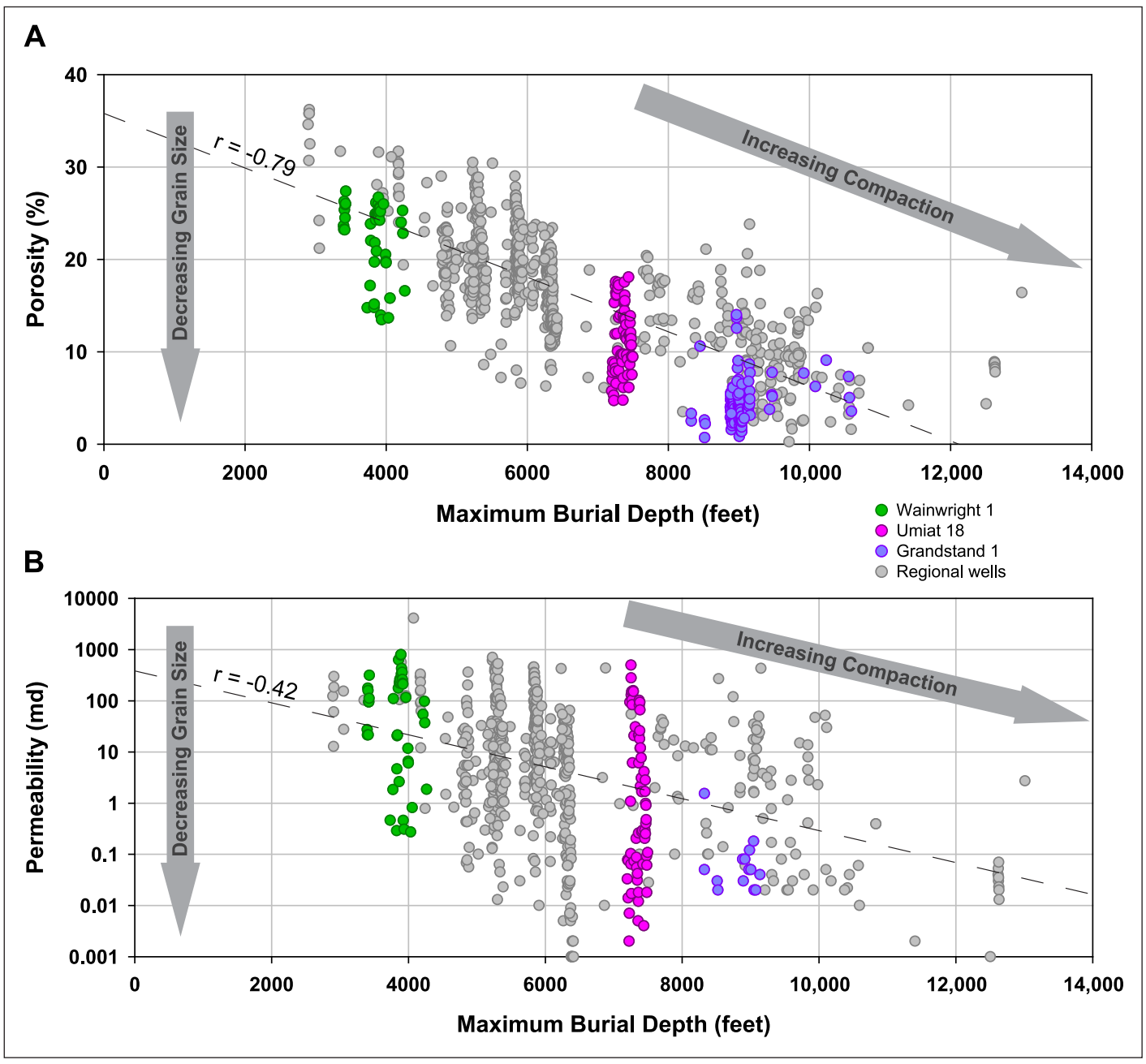
The Nanushuk sediments were deposited in two large river delta complexes separated by a geologic high named the Meade Arch that trends south, approximately from the location of Utqiaġvik on the Beaufort Sea coast. The delta complex to the west of the arch is interpreted as formed from rivers flowing from the west of what is now Arctic Alaska. The delta complex to the east of the arch consists of two lobes, with river-dominated sediment deposition systems that also appear to have been impacted by wave action in the marine basin. Sediment in these lobes appears to have originated both from the west, and from the emerging Brooks Range to the south and southwest.

The analysis presented by the DNR scientists used data from 38 exploration wells located across the western and central North Slope. Data obtained included the results of a detailed analysis of the composition of the rocks, including the grains of detritus in the rocks, the material cementing the rocks, and the rock porosities and permeabilities. An interpretation of sedimentary structures provided insights into the environments in which the sediments were deposited.

In general, the depositional environment is a critical determinant of the rock qualities that impact the reservoir quality of a sediment. For example, a high energy environment associated with fast flowing water tends to lead to relatively coarse grained sediments, and hence relatively high porosities. Lower energy environments in which sediment is deposited from slow flowing or still water tend to result in finer grained, lower porosity rocks. The porosity of the rock is the key factor in determining the amount of hydrocarbon a rock can hold.

Burial depth

However, the depth of burial of a rock is also critical in determining reservoir quality. The pressure exerted on a deeply buried rock tends to cause compaction, together with chemical processes that can cement the rock grains, thus reducing both the porosity and permeability of the rock.



While there is a clear trend for porosity and permeability of Nanushuk sandstones and siltstones to decline with maximum burial depth, variations in sediment grain sizes between different depositional settings also cause considerable scatter in the data at any given depth.

Because various geologic processes have tended to cause rock formations to rise or sink over time, the current burial depth does not generally equate to the maximum burial depth of the rock. And the maximum burial depth is the determinant of the impact of burial depth on reservoir quality. So, the scientists conducting the research had to obtain estimates of how much sedimentary overburden had been eroded in the past from above the sampled rocks.

Overall, the scientists recognized that the two fundamental porosity groups within the Nanushuk rock samples examined related to maximum burial depths. A low-porosity group had been subjected to maximum burial depths greater than 7,000 feet, and a high-porosity group had been subjected to maximum burial depths less than 7,000 feet. There was also a direct correlation between porosity and permeability — the high porosity rocks tended to have higher permeabilities, and vice versa.

Impact of depositional environment

Plots of porosity and permeability against maximum burial depth clearly demonstrate these declining trends with depth. However, at any specific burial depth there are significant spreads of porosity and permeability values. These spreads relate to sediment grain size, a factor of the environment in which the sediments that formed the rocks were deposited. Overall, the data demonstrate that the estimated maximum burial depth of a potential reservoir rock can be used as a key predictor of reservoir quality, prior to drilling, the paper suggests.

However, although the Nanushuk reservoir quality degrades significantly at maximum burial depths approaching 8,000 feet, modern drilling and well completion techniques, including hydraulic fracturing, improve the viability of these tight reservoirs, the paper says.

Carbon dioxide sequestration?

The paper also comments that, in addition to their value as oil reservoirs, the Nanushuk reservoirs could probably be used for carbon dioxide sequestration — there is currently much interest in sequestering carbon dioxide underground, as one strategy for reducing atmospheric carbon dioxide. While there is a generally recognized minimum carbon dioxide sequestration depth of 2,625 feet (800 meters), the Nanushuk reservoirs have porosities and permeabilities appropriate for sequestration down to depths of about 8,000 feet, the paper says. Moreover, the carbon dioxide would react with some of the detritus material in the rocks to increase the available porosity. It is also possible that over millions of years the subsequent precipitation of carbonate materials in the rocks could more effectively sequester the carbon dioxide, the paper says. ●

Contact Alan Bailey
at abailey@petroleumnews.com

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IGU GAS SOURCE

Titan plant, to accommodate increased gas demand in the Fairbanks region, as IGU increases its customer base. However, major uncertainty in the oil and gas markets following the onset of the COVID pandemic caused IGU to place the planned Titan expansion on hold in May 2020. But several months ago, Hilcorp indicated to its customers that it was not clear whether Hilcorp may be able to fully meet natural gas demand in the Cook Inlet region beyond the terms of current supply contracts, Britton told the board.

The consequent Cook Inlet natural gas supply uncertainty renders the planned Titan expansion no longer tenable, Britton said.

A need for expansion

Meanwhile, as IGU continues to sign up new gas customers, the utility anticipates having the maximum number of customers that can be supported through the existing Titan plant by the end of the coming year's construction season, Britton told the board. To place a hold on signing up more customers at that point would put the expansion plans into the doldrums and somewhat defeat IGU's objective of making affordable natural gas available to people and businesses in the Fairbanks region while also reducing winter air pollution.

Britton said that IGU investigated several alternatives to expanding the Titan plant: the construction of a removable LNG plant next to the Titan plant; the import of LNG from Canada; and the Harvest LNG plant on the North Slope. For various reasons, including the reliability of long-term natural gas supplies and the potential for future expansion, the Harvest LNG plant proved the best of the alternatives.

—ALAN BAILEY

Contact Alan Bailey
at abailey@petroleumnews.com

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CARBON MANAGEMENT

in an email to PN.

"The geologic storage — carbon capture and storage — would build a whole new industry in Alaska, leveraging the very same pore space that has been producing oil and gas for decades, and now use it to store CO2.This will strengthen Alaska's oil and gas industry — giving operators the carbon offset opportunities so essential for continued oil and gas production as the world transitions to a broader mix of energy sources while reducing the carbon load associated with energy production," she said.

CORRI FEIGE

Feige said it will also open Alaska to the carbon capture and storage industry that is rapidly evolving around the world.

"Alaska could receive imported CO2 from places like Japan, for example, and have it stored in a 'storage' lease. The state would generate revenue through this activity, just like producing oil and gas," she said.

"Alaska will always have to have a mix of energy sources and taking this step to enhance the state's oil and gas industry by now being able to manage carbon storage also showcases one of Alaska's very significant strategic advantages — Alaska owns the pores space! This is very unique and gives Alaska the opportunity to manage that activity and the use of the pore space for CO2 storage in the best interest of Alaskans," Feige said.

"The rest of the world has recognized this unique Alaska advantage and have been actively seeking the opportunity to do projects in Alaska. Gov. Dunleavy is exactly right that carbon management is in line with the State's mandate to manage its resources for the benefit of all Alaskans."

On the biological storage side, Feige said, "the public should understand that this does NOT mean 'locking up' Alaska's productive forests or shutting down the state's timber industry. There has been a lot of confusion and misunderstanding around this. Lands dedicated to carbon credit programs are lands that remain open for public use like recreation and hunting, while at the same time managing the forest assets to maximize their ability to take carbon dioxide out of the atmosphere."

This is done by both "leaving some trees standing, as well as planting new trees. In exchange, the state receives payment for the amount of carbon that can be captured by both the standing trees and new planted trees. The state would select the lands to be used in these programs so as to maximize the benefits for Alaskans and maintain and grow a commercial timber industry. Alaska is a big place — there is plenty of room for both," Feige told PN.

Legislators asked to help

"I'm asking lawmakers to take this legislation seriously as the cornerstone of a long-term fiscal solution that complements revenue from oil and gas and the Permanent Fund," Dunleavy said.

"Then, by working with like-minded legislators and stakeholders, we'll turn that principle into policies and a new era of prosperity for the Alaskans we serve."

Dunleavy said the ability to cash in on emerging carbon markets can generate carbon offsets and/or credits, which are sold, traded, and utilized by companies and entities in two kinds of markets — regulated or compliance markets found in jurisdictions around the world where activities are required to utilize credits, and voluntary markets, where companies use them to comply with corporate missions and commitments to limit net emissions associated with their activities.

These markets, he said, are growing rapidly. Alaska Native regional corporations such as Sealaska, Chugach Alaska Corp. and Ahtna Inc. have been participating in these markets for years. Since 2019, carbon offsets generated in Alaska have brought $370 million to Alaska Native corporations and were the most prominent forestry participants in the California Air Resources Board's regulated offset/credit market.

The governor said he is proposing legislation for maximum flexibility to participate in this evolving industry.

Geological, biological sequestration

Under the legislation, DNR would be authorized to promote and provide two main categories of carbon management:

1. Geologic — – where concentrated carbon is compressed, injected and stored in deep underground geologic formations, typically referred to as CCUS.

2. Biologic sequestration — where the accumulation of carbon in trees, soils, kelps or other natural processes can be promoted or encouraged. These projects could occur both on state lands and potentially in state waters off Alaska's coasts.

For geologic sequestration, the bill package would establish statutory authority, rules and processes for leasing state subsurface lands for CCUS activities. In addition, it would create operating rules, regulatory oversight authority, and liability provisions for CCUS projects in Alaska, whether located on state or other lands. For biological sequestration, the bill package would establish the authority for DNR to develop and market carbon offsets and would authorize DNR to lease state land for purposes that include carbon offset projects.

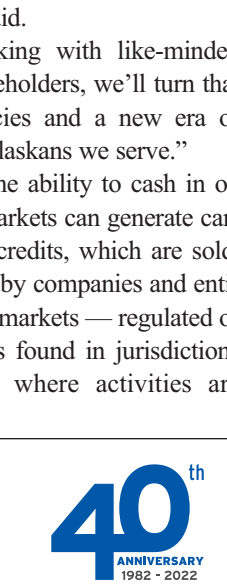
Boyle emphasizes flexibility

"We're proposing a flexible framework broad enough to cover the growing possibilities and opportunities with carbon management," said DNR Commissioner John Boyle. "This burnishes the state's environmental, social and governance, or ESG, credentials — and shows the market that we're open for business."

"This bill package came together with the leadership of Gov. Dunleavy and through teamwork with the Department of Environmental Conservation, the Alaska Oil and Gas Conservation Commission and the University of Alaska," Boyle said. ●

Contact Kay Cashman
at publisher@petroleumnews.com

Can incentivize more CI oil, gas production



AKIS GIALOPSOS

In a Nov. 13 guest editorial for PN's annual Producers magazine, then Acting DNR Commissioner Akis Gialopsos wrote that in the longer term "Cook Inlet's substantial pore space represents an opportunity for the state to pursue carbon capture, utilization and storage, but unlike carbon taxes or offsets, a CCUS regime would literally monetize the storage of carbon molecules in now depleted reservoirs, and in some cases even utilize the carbon for indirect energy generation."

"Combined with federal tax credits and substantial market interest, CCUS can incentivize further oil and gas development and create new vacant areas to store carbon from other parts of the world," Gialopsos said.

"Alaska is joining a process that other energy producing states such as Wyoming and Louisiana have already embarked upon, with promise of prolonging the oil and gas market in the Cook Inlet through this and other innovations."

On the biological storage side, Feige said, "the public should understand that this does NOT mean 'locking up' Alaska's productive forests or shutting down the State's timber industry."

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OIL PRICES

Cleveland Fed President Loretta Mester said rates must rise above 5% to get inflation under control.

ANS gained 72 cents Jan. 17 to close at $83.25, while WTI added 32 cents to close at $80.18 and Brent added 64 cents to close at $85.92.

Markets were closed Jan. 16 to honor Martin Luther King Jr.

On Jan. 13, ANS jumped $1.51 to close at $82.53, WTI popped $1.47 to close at $79.86 and Brent gained $1.25 to close at $85.28. ANS rose 87 cents Jan. 12 to close at $81.02, as WTI rose 98 cents to close at $78.39 and Brent jumped $1.36 to close at $84.03.

China to lead demand recovery

China will lead the way as oil demand continues its recovery from COVID-19 induced lows, according to the International Energy Agency.

The IEA said it expects global oil demand to rise by 1.9 million barrels per day in 2023 — to a record 101.7 million bpd — with some half the gain emanating from China as it unwinds its lockdowns and restrictions it had in place under its zero COVID policies.

The United States will be the world's leading source of supply growth, and — along with Canada, Brazil and Guyana — it will attain an annual production record for a second straight year, the IEA said.

Jet fuel will remain the largest source of growth, the agency said.

World oil supply growth will slow in 2023 to 1 million bpd following last year's OPEC+ led growth of 4.7 million bpd, the IEA said. An overall non-OPEC+ rise of 1.9 million bpd will be tempered by expected declines in Russia.

The United States will be the world's leading source of supply growth, and — along with Canada, Brazil and Guyana — it will attain an annual production record for a second straight year, the IEA said.

Russian oil exports fell by 200,000 bpd month-over-month in December to 7.8 million bpd as crude shipments to the EU declined after the EU crude embargo and G7 price cap came into effect, it said.

The Organization of the Petroleum Exporting Countries expects world oil demand growth for 2023 of 2.2 million bpd, with the Organization for Economic Cooperation and Development output growing by 0.3 million bpd and non-OECD at 1.9 million bpd, it said in its January oil market report released Jan. 17.

"This forecast remains surrounded by uncertainties including global economic developments, shifts in COVID-19 containment policies, and geopolitical tensions," it said.

OPEC's forecast for 2023 non-OPEC liquids production growth was unchanged from last month's assessment at 1.5 million bpd, with the main drivers of liquids supply growth expected to be the United States, Norway, Brazil, Canada, Kazakhstan and Guyana, while declines were forecast in Russia and Mexico.

Moody's calls for volatile Brent in 2023

Moody's forecasts that average crude oil prices in 2023 will remain below last year's $100 per barrel average for Brent but exceed the medium-term oil price range of $50-$70, according to a report published Jan. 17.

"Oil price trajectory this year remains uncertain and depends on economic outcomes in major economies," said co-author Madhavi Bokil, senior vice president, CSR, at Moody's Investors Service. "We expect two opposing market forces will keep oil prices highly volatile this year: a slowdown in demand and restricted supply."

Moody's expects constrained oil supply to continue to support oil prices, with global spare capacity limited and concentrated in Saudi Arabia and Russia.

"Should demand for oil rebound, say when China's transportation demand picks up, oil prices may rise abruptly to mid-2022 levels because supply will not be able to adjust quickly to the recovery in Chinese demand," it said.

Brent crude oil prices declined to around $80 on Jan. 3 from well over $120 in June 2022, a 33% decline in just six months, despite global supply constraints and lingering uncertainty about Russian producers' ability to maintain export volumes amid sanctions, Moody's said.

"The decline in oil prices since June reflects reduced market expectations for growth in oil demand amid heightened recession risks in the US and Europe and a short-term decline in oil demand from China amid COVID restrictions," Moody's said. "These factors outweighed market concerns about supply constraints and declining global inventory levels."

"As estimates for 2023 oil demand moderated, so did the risks of spiking prices from the December implementation of the US and European oil price cap, and Russia's threat to divert oil and refined product sales away from countries supporting the price cap," it said. ●

Contact Steve Sutherlin
at ssutherlin@petroleumnews.com

Petroleum news

Oil Patch Bits

ChampionX launches new infrared emissions detecting camera

As reported by Hart Energy Jan. 12, ChampionX soft-launched its newest handheld emissions-detecting camera at a Jan. 10 event in Houston.

Developed in part by ChampionX Emissions Optical Gas Imaging group Chairman David Furry, the latest generation camera is equipped with navigation and an integrated computer. Furry holds the patent for the first OGI camera used in the oil and gas industry, a device he built more than a decade ago on his kitchen table.

Saurabh Nitin, ChampionX's senior vice president for emissions technologies, said the Aura OGI camera was developed in such a way that "even an untrained operator can provide the best possible optical gas imaging surveys in a fairly fast and efficient manner."

The portable midwave infrared camera is different from the other OGI cameras on the market, Furry said.

"The first thing about this camera that stands out is that it has four times the resolution of any other camera," he said.

It also has a "high sensitivity mode," or gas enhancement mode, and the ability to overlay that onto an infrared camera image. Anything moving "it paints green, so it makes it easy for you to see the gas," Furry said.

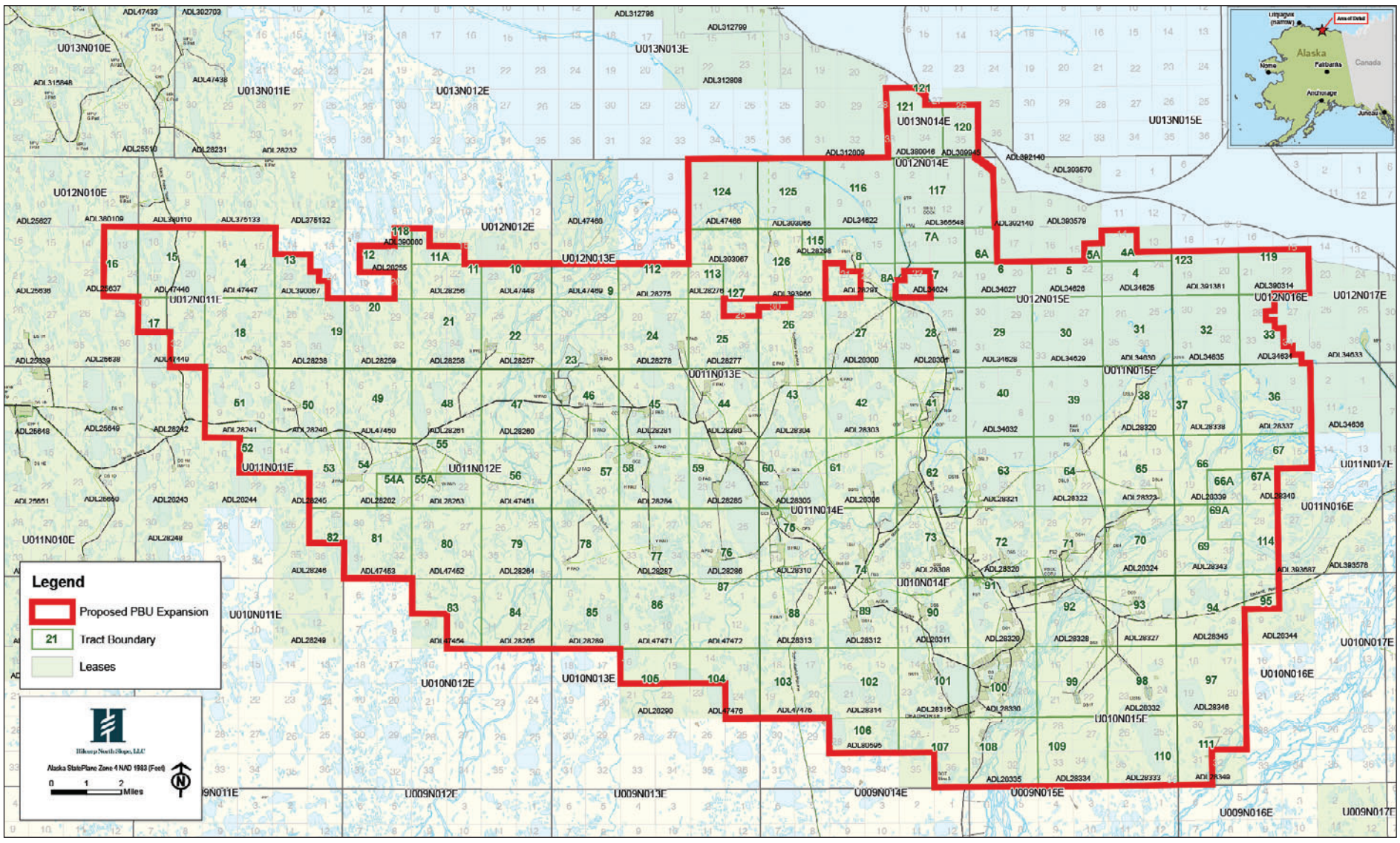
When the product is officially launched in third-quarter 2023, it will be Class One, Div Two certified, meaning it can be used in areas where hazardous materials are present. The camera also offers an ingress rating of 67 — one of the highest levels of protection offered against dust, airborne particles and water and liquids.

"It's built tough," he said.

A senior operator can set up a "smart route" that ensures the survey complies with regulations, and a junior operator can carry out the survey, Furry said. The camera's antennas, navigation system and Wi-Fi capability ensure the Aura OGI knows its location and where to target infrastructure that needs to be surveyed. For more information visit www.hartenergy.com.

Companies involved in Alaska's oil and gas industry

All of the companies listed above advertise on a regular basis with Petroleum News



STATE OF ALASKA

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PRUDHOE EXPANSION

been cross assigned and is now held jointly by the Prudhoe working interest owners, ConocoPhillips, ExxonMobil, Hilcorp and Chevron.

The four leases are west and northwest of the Point McIntyre drill pad, adjacent to the north-central edge of Prudhoe, the division said.

ADL 47466

ADL 47466 was committed to the Gwydyr Bay unit in 1979. A well, Gwydyr Bay State 2A, was drilled on the lease in 1981, and certified capable of producing following plugging and abandonment. The division no longer recognizes P&A's wells as capable of producing and ordered the lease — then held by ConocoPhillips Alaska — into production in 2013.

The company requested a 5-year extension in 2014, a request the division denied, but the date to bring the well into production was extended to 2016. ConocoPhillips appealed and a decision, issued in 2020, required the company to submit a plan to bring the lease into production by May 2021. ConocoPhillips submitted a plan in April 2020 and has since fulfilled requirements of that plan, the division said.

Potential on the acreage

The Prudhoe Bay unit was formed in 1977 to develop oil discovered in 1968 at Prudhoe Bay State No. 1 in the Triassic Ivishak and Sag sandstones of the Sadlerochit Group, with eight expansions approved since then, the most recent in 2009, the division said.

Hamilton Brothers Oil Co.'s Point Storkersen 1 exploration penetrated the Kuparuk, Sag, Ivishak and Lisburne reservoirs in the expansion area in 1969, the division said, on what is now ADL 393965, one of the three issued to Hilcorp in 2021.

ExxonMobil took over as operator of the Point Storkersen 1 well in 1973, and initial P&A work began in 1974 with final closure of well site remediation in 2004. Drill stem testing of the Ivishak and Sag reservoirs at the well had yielded rates of 735 and 312 stock tank barrels per day, the division said.

Three additional exploration wells penetrated the Kuparuk, Sag and Ivishak reservoirs in the expansion area, the division said: Kuparuk Delta 51-1, Kuparuk Delta 51-2 (both drilled by Hamilton Brothers) and Gwydyr Bay State 2 (drilled by Conoco in 1980).

The division said the Gwydyr Bay well only penetrated the Brookian formation before requiring sidetrack operations.

The four wells are all on ADL 47466.

The Kuparuk Delta 51-1 had flows only from the Ivishak, which had a very high water cut, 95%, with no flow rates recorded, the division said.

Kuparuk Delta 51-2 had Kuparuk flows of 350 bpd and no water, Ivishak flows of 695 bpd at 59% water-cut and no flows for the Sag.

Gwydyr 2A (the sidetrack) had Kuparuk flows of 740 bpd with no water, Ivishak flows of 3,540 bpd at 28% water-cut and no flow test for the Sag.

The division said the commercial oil rates from the Ivishak allowed the Gwydyr 2A to be certified.

BP Exploration (Alaska) drilled the Point McIntyre 12 in 1991 from the Point McIntyre pad. The division said the well penetrated the Kuparuk reservoir in ADL 393966 (one of the three leases issued to Hilcorp in 2021) and was logged but not flow tested.

BP (then the Prudhoe operator) acquired high density broadband 3D seismic over the expansion area in 2019, the division said.

Hilcorp provided confidential data, but the division said that based on non-confidential data "there are multiple reservoirs and potential hydrocarbon accumulations located in the proposed PBU expansion area."

Potential hydrocarbons

Ivishak is the primary producing formation at Prudhoe, the division said, and in addition to producing from both the initial participating area and Raven participating area at Prudhoe, it is also in production at Duck Island and Northstar.

"Hilcorp integrated available subsurface control from well data with seismic attributes to predict the presence of Ivishak sands within the proposed expansion area. Ivishak sand structure and net pay maps were created and one distinct Ivishak potential hydrocarbon accumulation target was identified within the proposed expansion area," the division said.

The division said the Sag River reservoir has diminished quality compared to the Ivishak with permeability the greatest challenge. Sag River is in production at Milne Point and at the IPA in Prudhoe.

Hilcorp has identified one distinct Sag River potential accumulation within the proposed expansion area, the division said.

"The Kuparuk sandstone is one of the most prolific oil-bearing reservoirs on the North Slope," the division said, and is in production at the Kuparuk River, Oooguruk, Milne Point and Colville River units, in addition to the Aurora, Borealis and Midnight Sun participating areas at Prudhoe.

Hilcorp has identified three distinct Kuparuk potential hydrocarbon accumulations within the proposed expansion area.

Exploration plan

Hilcorp submitted an initial plan of exploration for the expansion area as part of the application and proposes to drill one well within three years targeting one of the five described bottomhole locations, with any future development and drilling to depend on results from the initial well.

The division said the initial plan of exploration is effective Jan. 12, 2023, through Jan. 12, 2026, with a second POE due Nov. 13, 2025.

In its POE for the expansion area, Hilcorp said plans for the fourth quarter of 2023 "currently include targets within potential hydrocarbon accumulations extending across the northern two leases, ADL 47466 and ADL 393965" in the Kuparuk (at an approximate depth of -8,850' TVDSS), in the Sag River and the Ivishak (at an approximate depth of -10,600' TVDSS), and potential targets within potential hydrocarbon accumulations extending across the southern two leases, ADL 393966 and ADL 393967, in the Kuparuk (at an approximate depth of -8,900' TVDSS)."

Hilcorp said preparation of a comprehensive drilling plan for an extended reach appraisal/development well, Gwydyr 1, is underway, along with regional analysis of reservoir quality for both the Sag and Kuparuk formations, and stimulation plans for Gwydyr 1.

—KRISTEN NELSON

Contact Kristen Nelson at knelson@petroleumnews.com