



page 20 years ago: 7.9 quake shuts down  
3 pipeline Nov. 3; up again Nov. 6

## Hilcorp submits PODs for Slope fields, Duck Island and Northstar

Hilcorp Alaska has submitted plans of operation for the Duck Island and Northstar units to the Alaska Department of Natural Resources' Division of Oil and Gas. The plans, submitted Nov. 15, are for Feb. 13, 2023, through Feb. 12, 2024.

The two are the smallest of the North Slope fields operated by Hilcorp, which took over BP's interest in the fields and became operator in 2014. Hilcorp holds 100% working interest ownership at Northstar and is the majority WIO at Duck Island, where Chevron holds a minority interest. The fields produce crude and natural gas liquids — the only North Slope fields besides Prudhoe Bay to do so. In September, the latest month for which Alaska Oil and Gas Conservation Commission data is available, daily production at Duck Island was a combined 5,997 barrels per day, 1.3% of North Slope production of 473,179 bpd (crude and NGLs combined), while Northstar averaged 6,919 bpd in that month, 1.5% of Slope production.

### Duck Island unit

The POD Hilcorp submitted to the division in November is the 41st for the Duck Island unit which was formed in 1978, and includes some 17,588 acres.

see **HILCORP PODS** page 8

## State of Alaska okays Hilcorp's PBU Western Satellites 2023 plan

On Nov. 18 the Alaska Department of Natural Resources' Division of Oil and Gas sent Kyndall Carey with Hilcorp North Slope LLC a letter saying that the company's Prudhoe Bay Unit Western Satellites Area 2023 plan of development had been approved, running from Jan. 1 through Dec. 31, 2023.

The letter was signed by Derek Nottingham, division director.

On Sept. 30 the division received Hilcorp's proposed 2023 Western Satellites Participating Areas POD from the company and the agency notified Hilcorp by email on Oct. 11 that the submittal was deemed complete.

On Nov. 7 Hilcorp provided a technical review to the division.

The PBU Western Satellites area consists of five participating areas: Aurora, Borealis, Midnight Sun, Orion and Polaris. The

see **SATELLITES PLAN** page 8

## Alaska jobs: oil industry recovery continues to lag rest of economy

Alaska employment peaked in 2015 and between 2015 and 2021 the state "shed 8% of its annual average employment, compared to a gain of 3% nationally," said a University of Alaska Center for Economic Development report which compares Alaska's economic performance to that of other states.

Looking at four factors — employment growth, unemployment, GDP growth and net migration — the report found Alaska at or near the bottom.

"The main culprit for Alaska's lagging performance during these years was the low price of oil," with a period of high prices coming to an end in 2014, "leading to falling employment in multiple sectors tied to the industry."

The report said that compared to the rest of the U.S., Alaska's recovery from the job drop due to COVID has been slower, with U.S. employment back to pre-pandemic levels over this past summer, while Alaska's employment is still well below pre-pandemic levels.

see **ECONOMIC REPORT** page 5

### FINANCE & ECONOMY

# Rumors vs. realism

Rare olive branch from Fed official lifts oil from fears of oversupply

By **STEVE SUTHERLIN**

Petroleum News

Alaska North Slope crude rose 73 cents Nov. 22 to close at \$90.15 per barrel, while West Texas Intermediate jumped \$1.22 to close at \$80.95 and Brent gained 91 cents to close at \$88.36.

The cautious rally followed an important note of dissent against the chorus of hawkish voices from Federal Reserve officials promoting higher interest rates in the interest of choking the economy into a lower rate of inflation.

San Francisco Fed President Mary Daly said in



**MARK MILLS**

a Nov. 21 speech that as the Fed makes decisions on further rate adjustments, "it will be important to remain conscious of this gap between the federal funds rate and the tightening in financial markets."

"Ignoring it raises the chances of tightening too much," she said, adding that although the official range on the fed funds rate is 3.75% to 4%, financial markets are behaving as if the rate is 6%.

Overlooking the lag time in policy could lead the Fed to boost rates when it needs to wait for earlier hikes to work their way through the economy, Daly said.

see **OIL PRICES** page 6

### EXPLORATION & PRODUCTION

# Jade's timing tight

Big banks still call Alaska O&G un-investable, but private money seems interested

By **KAY CASHMAN**

Petroleum News

As reported in last week's Petroleum News, Jade Energy LLC is looking to drill a development well in its Sourdough prospect in first quarter 2024. Operator Jade holds a 100% working interest in the tract.

The company filed its fifth plan of development for ADL 343112 Area F, Tract 32, in the eastern North Slope's Point Thomson unit with the Alaska Department of Natural Resources' Division of Oil



**ERIK OPSTAD**

and Gas on Nov. 1. The POD period runs from Jan. 1 through Dec. 31, 2023.

In its Nov. 1 filing, Jade said that in the last few weeks investors who had suspended interest in Sourdough development due to things such as the Biden administration's hostility to the oil and gas industry, have once again expressed interest in the project — "if we can demonstrate that the program is commercially viable."

Unfortunately, according to 2020 modeling conducted by Jade (with feedback from DNR), the

see **JADE TIMING** page 10

### THIS MONTH IN HISTORY

# Hot ice project

Twenty years ago this month: Anadarko to core hydrate well south of Kuparuk

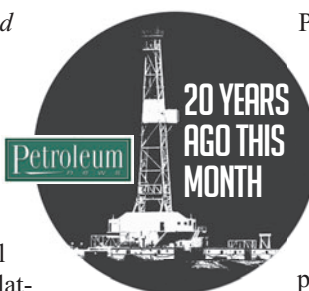
Editor's note: This story appeared in the Nov. 10, 2002, issue of Petroleum News Alaska

By **KRISTEN NELSON**

Petroleum News

Anadarko Petroleum Corp. will be testing its modular Arctic platform south of Kuparuk this winter — and drilling the first completely cored gas hydrate well in Alaska.

The Arctic platform (see story in Oct. 27, 2002, issue of PNA) will include a modularized state-of-the-art mobile testing laboratory to test the hydrates, Anadarko's Keith Millheim, Ph.D., told



PNA Oct. 22. Millheim, the Houston-based manager of operations technology for Anadarko, is involved in both the Arctic platform and the hydrate coring project.

The hydrate coring is "a combination project for us. ... It's research on the hydrates as well as the Arctic platform prototype," said Mark Hanley, Anadarko's public affairs manager for Alaska.

When Congress made money available through the U.S. Department of Energy for a hydrate project in Alaska, Anadarko applied, as did BP, Millheim said. Both projects were funded (see

see **HOT ICE HISTORY** page 9



## ● UTILITIES

# Could Alaska need to import natural gas?

Two Anchorage utilities — Chugach Electric and Enstar — are looking into it, have hired consultants to examine imports of LNG

By **NATHANIEL HERZ**  
Northern Journal

Amid warnings of diminishing natural gas supplies, utilities in Alaska, one of America's biggest fossil fuel producers, are exploring imports of liquefied natural gas from outside the state to meet demand as contracts expire over the next decade.

Two of Anchorage's largest utilities have hired consultants to study bringing in liquefied natural gas, or LNG, likely from British Columbia — though executives said they're also looking closely at using renewable energy to help fill gaps.

The two utilities are Enstar, which supplies Southcentral Alaska homes and businesses with natural gas for heating, and Chugach Electric Association, the 90,000-member cooperative that produces electricity in the Anchorage area.

Alaska ranks fourth in oil production out of all 50 states, trailing only Texas, New Mexico and North Dakota.

Cook Inlet, Alaska's main natural gas basin for consumer production, has met the heating and power demands of Anchorage and surrounding areas for decades.

But Hilcorp, which extracts the vast majority of Cook

*Experts say the size of the Anchorage area market is too small, and the cost of drilling exploratory wells in Cook Inlet too high, to attract new industry players who could boost production.*

Inlet gas, warned utilities this year that the company may not be able to meet future demand once supply contracts expire over the next decade.

Those expiration dates, for most utilities, aren't for at least five years, and there's no immediate risk to utilities' operations or the ability of residents to heat their homes.

But maintaining natural gas supplies in the future won't be easy.

Experts say the size of the Anchorage area market is too small, and the cost of drilling exploratory wells in Cook Inlet too high, to attract new industry players who could boost production. And though Alaska elected officials want to build an export-focused natural gas pipeline from the North Slope to near Anchorage that could also meet local utility demands, construction depends on commitments from Asian buyers and investors that have not

yet materialized.

"We cannot rely on that. We have to have a way to bridge that gap between Cook Inlet gas and the future," John Sims, Enstar's president, said in a phone interview Nov. 17. "That's really what the purpose of this study is."

Enstar's consultant, Berkeley Research Group, is investigating and evaluating "gas supply options from outside of Alaska," including LNG, the company said the week of Nov. 7 in a filing with the Regulatory Commission of Alaska, or RCA.

Chugach has hired its own consultant, Black and Veatch, that's evaluating LNG as a source of alternative natural gas supplies, said Arthur Miller, Chugach's chief executive.

"We're the largest electric utility in Alaska. And gas supply makes up 30% of our cost structure," Miller said in a phone interview Nov. 17. "It's essential that we have the expertise and the resources to effectively evaluate LNG as a potential option."

## Cook Inlet

Cook Inlet is Alaska's oldest oil and gas basin, and

see **IMPORTING GAS** page 4

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Alaska's source for oil and gas news

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## Alaska's Oil & Gas Consultants





PETROLEUM NEWS FILE



One of several “cribs” Alyeska Pipeline Service Co. installed under the trans-Alaska pipeline following the 7.9 earthquake which took place Nov. 3, 2002. Alyeska said the cribs are an industry-standard practice that helps support a structure like the pipeline — or a house that needs to be moved.

● THIS MONTH IN HISTORY

# 7.9 earthquake shuts down pipeline Nov. 3

20 years ago this month: Pipeline flowing again Nov. 6; temporary supports under areas affected, work on permanent repairs ongoing

*Editor’s note: This story appeared in the Nov. 10, 2002, issue of Petroleum News Alaska*

By KRISTEN NELSON  
Petroleum News

The trans-Alaska oil pipeline, shut down Nov. 3, 2002, after a 7.9 magnitude earthquake, was restarted shortly after 8 a.m. Nov. 6 and by that afternoon was once transporting crude oil from the North Slope at a rate of 750,000 barrels a day.

Alyeska Pipeline Service Co., which runs the pipeline for its owners, said shippers could begin loading oil at the Valdez Marine Terminal by the afternoon of Nov. 7.

Alyeska said that work on repairing damaged sections of the pipeline continues, but all priority work tasks were completed prior to restart. The company said that by the afternoon of Nov. 5 almost all of the critical tasks had been completed and crews would work through the night to finish the final tasks for a Nov. 6 restart.

Some flow began Nov. 5, when Alyeska used oil stored in tanks at pump station one to fill a portion of the pipeline Nov. 5, to make room for oil coming in from North Slope producers and also began pumping a limited amount of oil, some 3,000 bpd, to the Williams refinery in North Pole. At that time, 75 percent of projects deemed critical to startup had been completed.

The quake occurred at approximately 1:12 p.m. (Alaska standard time) Nov. 3 on the Denali fault in Interior Alaska some 45 miles east-northeast of Cantwell. Alyeska said Nov. 4 that one tanker had been loaded out of Valdez since the earthquake and the oil inventory, already low at the time of the quake, has been depleted.

The company said it would take some 24 hours after the restart of the pipeline for tanker loading to resume.

By Nov. 5, officials at the state-federal Joint Pipeline Office told PNA, there were

five tankers stacked up waiting to load.

## Two crossbeams breaking worst-case scenario

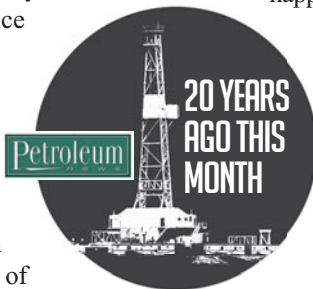
The senior federal and state officials at the JPO, Jerry Brossia, authorized officer for the U.S. Department of the Interior’s Bureau of Land Management, and John Kerrigan, state pipeline coordinator with the state Department of Natural Resources, said Nov. 5 that what happened to the pipeline Nov. 3 was exactly what was supposed to happen.

“This is a real success story,” Brossia said. For the last several years Alyeska has gone through the entire system and updated everything, he said, even doing a lot of structural work along the pipeline.

When the quake hit, the pipeline support system did “exactly what it was built and designed to do,” Brossia said. “It broke as predicted.” The worst case projected was for a magnitude 8 earthquake on the Denali fault: crossbeams were projected to break with the pipe remaining intact: “That’s what happened,” he said.

Kerrigan also said the quake demonstrated the success of the design of this pipeline: It “sheared according to design,” he said,

see HISTORY page 4



## EXPLORATION & PRODUCTION

### US rotary drilling rig count up 3 to 782

The Baker Hughes’ U.S. rotary drilling rig count was 782 on Nov. 18, up by three from the previous week and up 219 from 563 a year ago.

When the count dropped to 244 more than two years ago, 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.

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 Nov. 18 count includes 623 rigs targeting oil, up by one from the previous week and up 162 from 461 a year ago, with 157 rigs targeting natural gas, up by two from the previous week and up 55 from 102 a year ago, and two miscellaneous rigs, unchanged from the previous week and up by two from a year ago.

Forty-five of the rigs reported Nov. 18 were drilling directional wells, 714 were drilling horizontal wells and 23 were drilling vertical wells.

### Alaska rig count unchanged

Oklahoma (69) and Texas (375) were each up two rigs from the previous week. Utah (13) was up by a single rig.

New Mexico (103) was down by three rigs week over week.

Rig counts in other states were unchanged from the previous week: Alaska (10), California (5), Colorado (22), Louisiana (65), North Dakota (38), Ohio (13), Pennsylvania (22), West Virginia (17) and Wyoming (24).

Baker Hughes shows Alaska with 10 rotary rigs active Nov. 18, unchanged from the previous week and up by four from a year ago, when the state’s rig count stood at six. Nine of the rigs in Alaska were onshore and one was offshore, also unchanged from the previous week.

The rig count in the Permian, the most active basin in the country, was down by one from the previous week at 349 and up by 71 from 278 a year ago.

—KRISTEN NELSON

### State reviewing 3 ice construction apps

The Alaska Department of Natural Resources’ Division of Oil and Gas posted public notices Nov. 18 on three applications for ice construction and off-road travel. The applications, from Accumulate Energy Alaska, Eni and Savant, are for five-year permits for off-road travel, ice construction and associated activities on state land between the Canning and Colville rivers, the division said.

These are general permits, and individual activities would require review and authorization on a case-by-case basis.

The Accumulate Energy Alaska application cites the company’s proposed Hickory 1 exploration well as an example of the type of work that company envisions. AEA said it is proposing to drill Hickory 1 beginning in February 2023 from a temporary ice pad some 30 miles south of Deadhorse some 400 feet west of the Dalton Highway, to which it would be connected by an ice road.

The other applicants, Eni and Savant, are current producers.

Eni is the Nikaitchuq and Oooguruk unit owner and operator and describes the proposed activity as: “Ice road and ice pad construction to support oil and gas activities and maintenance.”

Savant, a Glacier Oil and Gas company, operates the Badami unit. “Off road travel is necessary to perform routine maintenance, survey and patrolling year round,” the company said. “Ice road and ice pad construction will support off-road travel for purposes of routine maintenance, survey activities, and exploration and development projects. Specific project details will be provided in requests for approval of individual routes, as required,” Savant said.

Comments on all three permit applications are due by 4:30 p.m., Alaska standard time, Dec. 2.

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## HISTORY

adding that the pipeline was engineered to allow for movement of the pipe.

In this area close to the fault, Brossia said, the pipeline was designed to move on its supports: 20 feet horizontally and five feet vertically. The actual displacement was seven feet horizontally and two feet vertically, he said.

Brossia said oil spill contingency crews would be standing by during startup.

### Monitoring system responded

Alyeska said the pipeline's earthquake monitoring system responded to the quake and immediately began the process that would automatically shut down the pipeline. Before the alarm triggered the automatic shutdown, Alyeska personnel responded to the alarm and initiated a manual, controlled shutdown of the pipeline beginning at approximately 1:50 p.m.

Helicopter crews began aerial surveillance immediately and ground crews were mobilized to begin inspection of the integri-



JERRY BROSSIA

ty of the line. No leaks were detected and there was no apparent damage to the integrity of the line, Alyeska said, but pipeline support structures near milepost 588 were displaced during the quake. Portions of the vertical support members displaced were the "shoes" which allow the pipeline to slide along the crossbeams in between the vertical supports. Alyeska said that at eight locations there are "shoes" on the ground and at five locations there are crossbeams on the ground. Shoes and crossbeams are part of the support assembly for above-ground pipe.

### Cribbing, engineering assessments

Alyeska said crews were on site Nov. 4 applying temporary supports for above-ground pipe in the milepost 588 and milepost 589 areas. The company was also doing engineering assessments of the pipeline, pipeline bridges and other supporting structures.

In an update issued at 6:30 p.m. Nov. 4, Alyeska said:

Two sections of the pipeline have been pressure tested and no leaks detected in those sections.

Cribbing for temporary support has been placed under the pipe near milepost 588 and crews were preparing to place temporary support under the pipe south of milepost 588. ●

continued from page 2

## IMPORTING GAS

it's produced fuel for Anchorage and the surrounding area following an initial discovery in the 1950s.

The region faced looming gas shortages roughly a decade ago, but attracted new companies and development through a subsidy program that cost the state more than \$2 billion, according to estimates by one advocacy group.

Now, those subsidies are largely phased out. And while there's still gas remaining in Cook Inlet, new extraction projects face obstacles from environmental permitting to the relatively small size of Anchorage's natural gas market.

The lack of major industrial customers makes projects in other areas, such as on the North Slope and outside Alaska, more appealing investments for companies, experts said.

### A call for transparency

For utilities to receive and store LNG shipments, they may have to build or modify infrastructure. And Ben Boettger, who closely watches the Cook Inlet gas industry for the advocacy organization Alaska Public Interest Research Group, said it's prudent for the utilities to be studying the issue and assessing relative costs.

The Enstar consultant's report should be made public, Boettger said, since Cook Inlet energy "affects everybody's lives."

Meanwhile, a utility working group with state government members that's examining Cook Inlet gas supplies has been holding closed-door meetings, rather than public ones. Its members, including Enstar and Chugach, are meeting under a "confidentiality agreement," according to Enstar's regulatory filing, though participating representatives from the Alaska Department of Natural Resources have not signed, an agency spokeswoman said.

Boettger and Antony Scott, an analyst for the nonprofit Renewable Energy Alaska Project, both questioned why the meetings aren't public.

"These are policy decisions which shouldn't be made by private companies," Scott said. "We really should be making those collectively."

Sims, the Enstar president, said he expects the utility to make a presentation on its consultant's findings at a public meeting, and for the information to be shared with other members of the working group.

He and other utility executives said one of the reasons for confidentiality is that details of their natural gas demands, if revealed publicly, could weaken their positions in contract negotiations with suppliers.

Scott, the renewable energy analyst, said that coordination between the utilities is key to the planning process for Cook Inlet's energy future. That's in part to avoid duplication of planning and

*"It's untenable that, as a utility manager, I have to rely 85% on one fuel. No other place does that," Tony Izzo, the chief executive of Matanuska Electric Association, said in an interview Nov. 16. "So, we need to change it."*

study costs, and partially because Enstar, as a supplier of home heating fuel, doesn't have obvious alternatives to natural gas like the electric utilities.

Because the utilities can more easily integrate renewable energy sources into their generation mix, they should be moving quickly toward those technologies to help preserve Cook Inlet gas supplies, Scott said. The cost to shift Southcentral Alaska homes and businesses away from burning natural gas for home heating "is just catastrophically large to think about replacing," Scott said.

"It's a conservation story," he added. "We really should be saving those hydrocarbons as much as we can, to safeguard our economy as long as we can with less expensive natural gas."

### Renewables' role

Utility executives said they are aggressively moving to harness power sources like solar and wind, even if those sources haven't emerged in the public discussions or disclosures about the working group's proceedings.

"It's untenable that, as a utility manager, I have to rely 85% on one fuel. No other place does that," Tony Izzo, the chief executive of Matanuska Electric Association, said in an interview Nov. 16. "So, we need to change it."

At the same time, said Miller, the Chugach chief executive, natural gas remains the cornerstone of the Anchorage area's energy industry, and stable supplies must be guaranteed.

"In no way, shape or form should this discussion on natural gas assume that efforts are not being seriously undertaken evaluating alternative sources of generation," he said. He added: "We're kind of doing this simultaneously, by looking at wind and solar projects at a utility scale, but recognizing that natural gas is critical to meeting long-term viability needs in the future."

Both Chugach and Enstar said it's too early to know how much their consultants will cost. But Enstar the week of Nov. 7 asked the RCA for permission to separately track what it calls "potentially significant" expenses for its consultant. Those expenses could ultimately be incorporated into the rates it charges customers for gas — but only with the commission's approval in a separate proceeding. ●

*This piece is reprinted from the Alaska Beacon; it was originally published in Northern Journal, a newsletter published by journalist Nathaniel Herz.*

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## ECONOMIC REPORT

The report said the U.S. overall saw steady employment expansion from 2010 to 2020, interrupted by the pandemic.

Alaska reached “its all-time employment peak in 2015 followed by five years of declining or stagnant employment.” From 2015 to 2021 “Alaska shed 8% of its annual average employment, compared to a gain of 3% nationally,” with only North Dakota showing a larger employment drop.

There was historically low unemployment in the U.S. prior to the pandemic. Alaska had the highest annual rate from 2017 to 2019, and while there were states with worse unemployment in 2020-21, “Alaska’s rates stayed above the national level,” with the second highest average unemployment from 2015 to 2021, averaging 6.5%. Not especially high for the state in historic terms and compared to 8.4% in Alaska during the 2008-10 “Great Recession,” the report said, and lower than the national rate at the time.

Gross domestic product for Alaska in 2021 was \$57.3 billion, the smallest of any states except Wyoming and Vermont, also the only two states, the report said, with populations smaller than Alaska.

Inflation adjusted GDP for Alaska has declined from a 2012 peak, shrinking by 7.1% from 2015-21, the second largest decline, with only Wyoming, at 9.9%, having a larger decline — while U.S. GDP grew by 12.8%.

Alaska leads in net migration, which, the report said, is closely related to declining employment. While the U.S.

*Alaska reached “its all-time employment peak in 2015 followed by five years of declining or stagnant employment.” From 2015 to 2021 “Alaska shed 8% of its annual average employment, compared to a gain of 3% nationally,” with only North Dakota showing a larger employment drop.*

gained an average of 2.2 residents per 1,000 each year from 2015-21, Alaska lost 8.8 residents per 1,000 over the period.

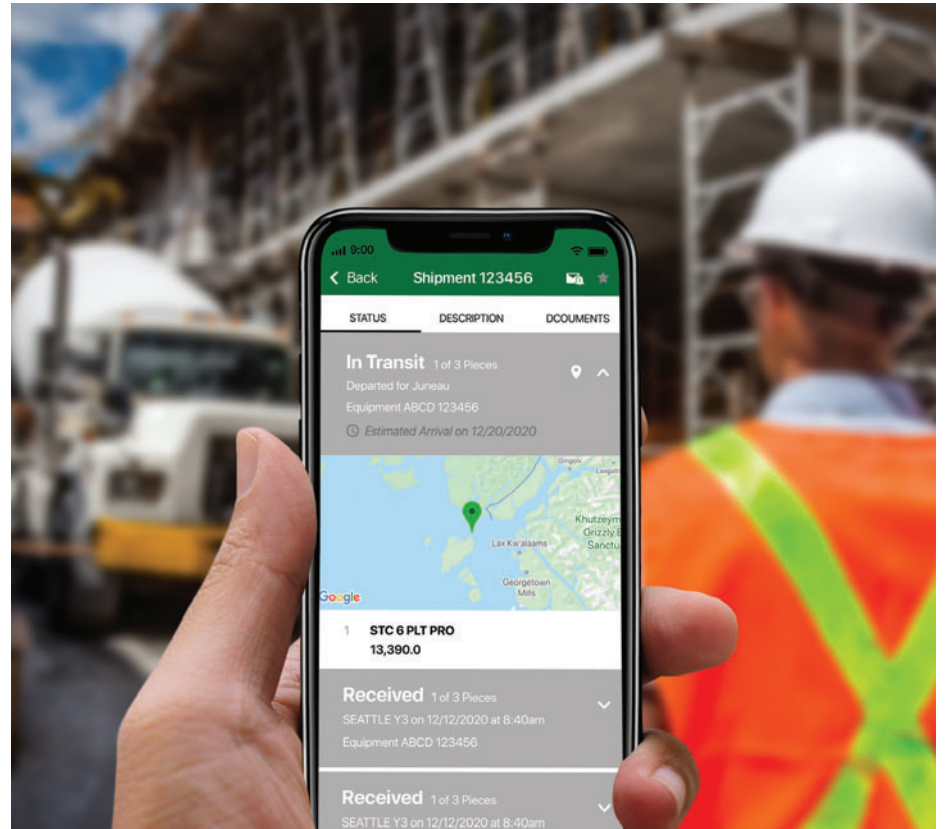
### Department of Labor numbers

In its monthly jobs report for October the Alaska Department of Labor and Economic Development said the state’s job count was 2% above October 2021, a gain of 6,100 jobs, but still below 2019 levels by 10,800 compared to the October prior to the COVID pandemic.

“The oil and gas industry’s recovery continued to lag the rest of the economy,” the department said, gaining just 300 jobs from October 2021 but still 2,700 below October 2019. At an estimated 7,100 jobs for October, the oil and gas industry job count “was less than half that of October 2014, just before the one-two punch of the recession and then COVID.” The industry had some 9,800 jobs in October 2019.

—KRISTEN NELSON

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continued from page 1

## OIL PRICES

“This is especially important as we move into the next — and in many ways more difficult — phase of policy tightening,” she said.

In Nov. 21 trading, markets survived a jagged midday plunge that took WTI as low as \$75.33 on a rumor that the Organization of the Petroleum Exporting Countries and its allied exporting nations were considering proposing a production increase of 500,000 barrels per day at the group’s Dec. 4 meeting. The boost would

*Despite the proclamations of various politicians and energy transition promoters, reports of the death of hydrocarbon fuels are premature, according to Mark P. Mills, senior fellow at the Manhattan Institute.*

take effect in January if ratified and would coincide with the planned European Union embargo of Russian oil.

After the story was reported by The Wall Street Journal and other publications, Saudi energy minister Prince Abdulaziz bin Salman said the reports were false, and that in actuality it was a production cut that was on the table.

Once the Saudi official quelled the rumor, oil prices sliced upward as sharply as they fell.

WTI bounced back to close at \$79.73 Jan. 21, down 35 cents. Brent, which plunged as low as \$82.38 on the OPEC+ rumor, recovered to close at \$87.45 — up 17 cents. ANS closed at \$89.42, notching a gain of 24 cents.

Nov. 18 price action capped off a three-day slide precipitated by worries over COVID-19 lockdowns in China. ANS fell \$1.76 on the day to close at \$89.18, as WTI dropped \$1.56 to close at \$80.08 and Brent shed \$2.16 to close at \$87.62.

ANS slid \$2.85 Nov. 17 to close at \$90.94, as WTI plunged \$3.95 to close at \$81.64 and Brent slid \$3.08 to close at \$89.78.

From Tuesday to Tuesday, ANS lost \$5.19 per barrel from its Nov. 15 close of \$95.34 to its close at \$90.15 Nov. 22.

As Petroleum News went to press early Nov. 23, WTI and Brent were lower in Asian trading.

The United States and its allies may agree Nov. 23 on a level for a price cap on Russian oil, with officials discussing setting it at around \$60, according to people

familiar with the talks, the Wall Street Journal reported late Nov. 22.

### A dose of realism

Despite the proclamations of various politicians and energy transition promoters, reports of the death of hydrocarbon fuels are premature, according to Mark P. Mills, senior fellow at the Manhattan Institute.

“Total consumption of energy is rising,” Mills said in remarks to the Resource Development Council’s Alaska Resources Conference in Anchorage Nov. 17.

Wind and solar combined today provide about 3% of the world’s energy, Mills said.

“That doesn’t look like a transition,” he said. “It doesn’t look like an acceleration.”

Mills said mankind still uses a lot of the world’s oldest energy sources.

“The world’s oldest nonhuman energy source is burning wood,” he said. “The world today burns about as much wood as it did 5200 years ago, in fact, globally the world gets three times more energy still from burning wood as wind and solar combined.”

America has managed to transition more rapidly away from burning wood, he said, adding, “We’re a wealthy country and we get about 4% of all our energy from wind and solar and only 2% from burning wood.”

In Europe, the burning wood category is accelerating, and Europeans are burning coal directly in homes because of the energy crisis brought about by the loss of oil and natural gas supplies from Russia, he said.

When looking toward the future and evaluating the prospects of an energy transition, “the data matters, especially the language,” Mills said. “Accelerate from this point forward — what would it take in dollar terms?”

“In the last 20 years, the Western World

*There will be more wind and solar, more batteries, more electric cars, more oil and more gas, Mills said, adding that OPEC’s most recent forecast said 2030 world oil demand will be not lower, but 10 million barrels per day higher.*

— Europe and the United States — spent about \$5 trillion on things other than hydrocarbons,” he said. “\$5 trillion, even in Washington where I’m from is real money, still, \$5 trillion has taken the world share of hydrocarbons from 84% to 82% or so — a 2 percentage point decline for \$5 trillion and change.”

Over that time, the world’s consumption of energy has increased in absolute terms, he said.

“We’ve increased consumption of hydrocarbons in the 20 years we’ve been trying to abandon hydrocarbons,” he said. “The world is using a lot more of everything; we’re going to have a lot more of everything in the future.”

There will be more wind and solar, more batteries, more electric cars, more oil and more gas, Mills said, adding that OPEC’s most recent forecast said 2030 world oil demand will be not lower, but 10 million barrels per day higher.

Mills said the International Energy Agency in its projections imagines a future where the world spends lots more money on energy than it is currently spending, both by mandate and taxpayer subsidies.

“The IEA imagines that two things will happen in the next 20 or 30 years: the world economy and population will grow, and world energy consumption will stagnate,” he said. “So, for the first time in all human history, population and wealth will grow, without energy consumption growing.”

“I wouldn’t take that bet; I think it won’t happen, but okay, this is the assumption,” he said. “By the way they hedge the assumption by pointing out that this will require — and I am quoting with air quote — ‘changes in behavior.’”

“That will require a limit in the number of vehicles a household can own — that kind of change in behavior,” Mills said. “That’s the kind of thing they mean and they’re right.” ●

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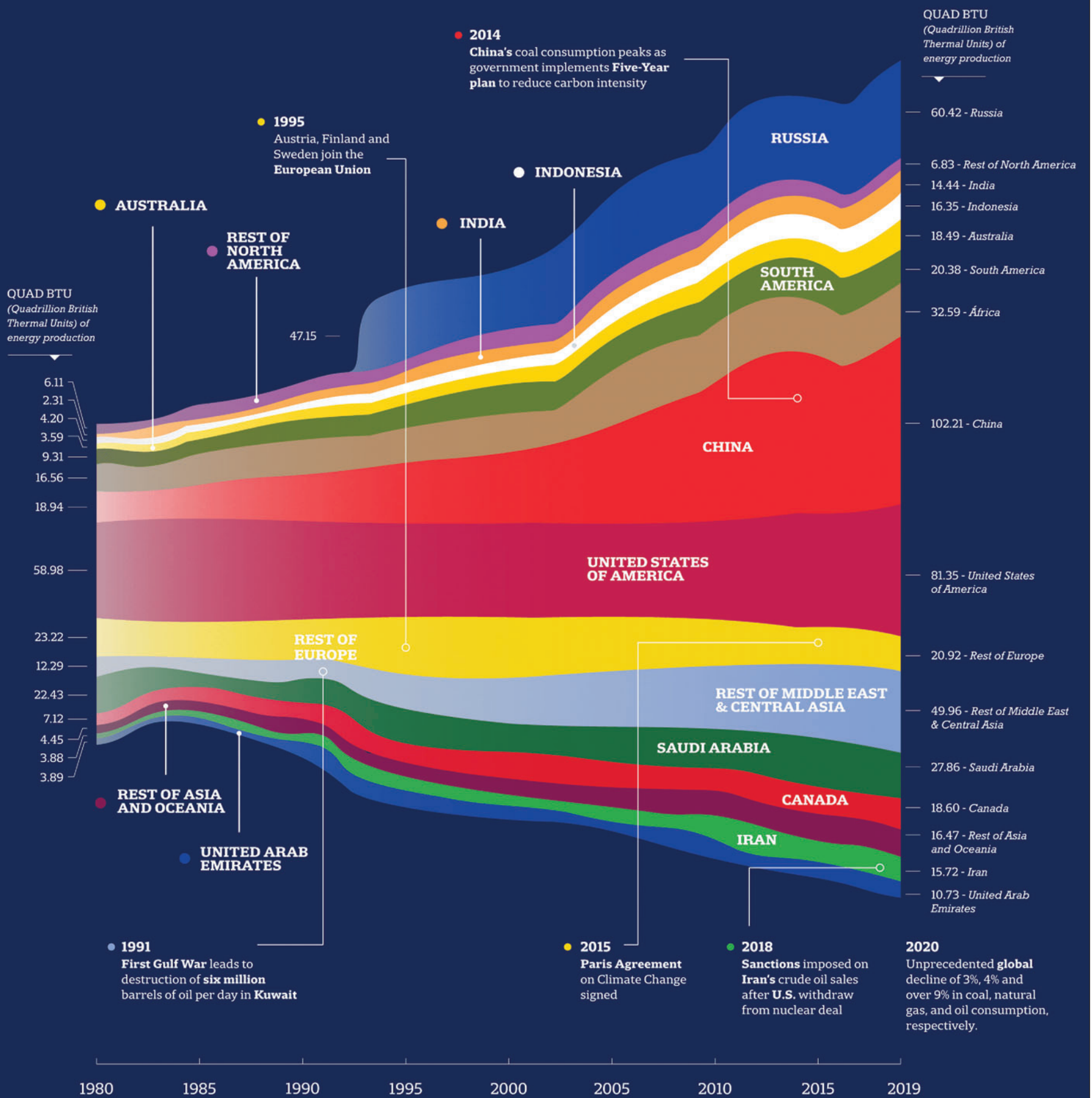
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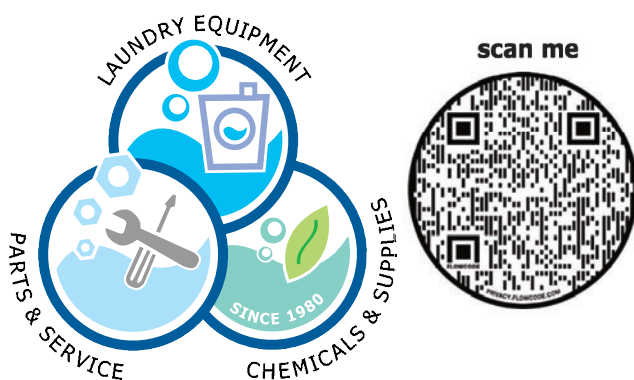


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## SATELLITES PLAN

Aurora, Borealis, and Midnight Sun PAs produce primarily from the Kuparuk River formation, while the Orion and Polaris PAs produce oil with higher viscosity from the Schrader Bluff formation.

Through September 2022, the PBU Western Satellites PAs have cumulatively produced 250.09 million barrels of oil and 484.57 billion cubic feet of natural gas, Nottingham said in the Nov. 18 approval letter.

In its proposed 2023 POD, Hilcorp committed to drilling up to 26 new wells in the following PAs:

- Aurora PA — up to one producer.
- Borealis PA — up to three producers and two injectors.
- Orion PA — up to 12 producers and

injectors.

- Polaris PA — up to eight producers and injectors.

The company also committed to up to four workovers or recompletes, two in the Orion PA and two in the Polaris PA.

Hilcorp said it will continue evaluation of pad options, facility layouts, and subsurface development schemes for I Pad development; and a three well polymer pilot in Polaris PA to determine polymer's impact on injectivity, MI utility, oil rate and reserves for potential future implementation of polymer throughout the Polaris PA and the Orion PA.

Questions regarding the decision are being handled by Heather Beat with the division at (907) 269-8792 or via email at heather.beat@alaska.gov

—KAY CASHMAN

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## HILCORP PODS

The company said DIU production is associated with the Kekiktuk reservoir in the Endicott participating area; the Ivishak and Sag River reservoirs in the Eider PA; and the Sag River reservoir in the Minke tract operation.

Plans for the 41st POD include up to three rig workover operations, additional workovers as needed and various non-rig wellwork operations to maintain and enhance production.

Major facility projects include upgrading/repairing the SDI low flow test separator internals; installing a propane turbine demister; and a turnaround for LACT meter upgrades, upgrade/repair of SDI low flow test separator internals and propane turbine demister install.

Duck Island was developed from two artificial gravel islands, the main producing island and the satellite producing island, connected by a causeway to the mainland.

### 40th POD for DIU

From January through October of this year, average daily production at DIU was 6,428 barrels of oil per day, Hilcorp said.

During the 40th POD, Hilcorp completed a tubing string install in the 3-11 well and returned that well to production; the I-19 well was returned to production after hyposeal was used on a production casing leak; and the I-09A well was converted to gas injection. Unanticipated workover operations including returning the 3-17F well to production for 30 days and subsequently performing successful workover operations.

A summer turnaround during the 40th POD included: vessel cleaning and inspection; LACT meter upgrades — in progress; rotating equipment overhaul and repairs; retraying condensate stabilizer; and flare inspection and repair.

Work not completed during the 40th POD included converting the I-21 well to gas injection, which was delayed in favor of evaluating other more attractive opportunities for the well; and increasing injectivity on current water injection wells, which is waiting e-line to add prefers to current WINJ to increase injectivity.

### Northstar

The current POD for Northstar is the 19th for the unit, formed in January 1990 and jointly managed by the division and the U.S. Department of the Interior, Bureau of Safety and Environmental Enforcement, the division said in January 2022 in its approval of the 18th POD. There are four state leases and three federal leases in the unit, some 20,135 acres, with three participating areas:

*Hilcorp ... will continue evaluation of pad options, facility layouts, and subsurface development schemes for I-Pad development; and a three well polymer pilot in Polaris PA to determine polymer's impact on injectivity, MI utility, oil rate, and reserves for potential future implementation of polymer throughout the Polaris PA and the Orion PA.*

Northstar, Fido and Hooligan, the division said.

Hilcorp said production is from Ivishak sands in the Northstar and Fido PAs, and from Kuparuk sands in the Hooligan PA.

In its pool statistics for Northstar, AOGCC notes production is from a 5-acre manmade island, 6 miles offshore in the Beaufort Sea, connected to onshore processing facilities by a buried pipeline. Regular production began in November 2001.

### Northstar 19th POD

In its 19th POD Hilcorp said long-range activities at Northstar include:

- Exploring importing natural gas from Prudhoe for pressure maintenance in the Kuparuk reservoir.

- Reviewing the potential of coil tubing drilling, including determining "if coil tubing drilling operations are economically viable, or even mechanically feasible, on Northstar Island."

- Researching the economic viability of Sag River development. "The reservoir is of very low permeability and porosity, likely requiring stimulation techniques to unlock production," Hilcorp said.

The company does not anticipate any workover operations in the 19th POD but said it would do workovers as needed.

Facility projects include completing the commissioning of the remaining heat pipes in the ground refrigeration expansion project and continuing the ongoing repair of the island's coastal defenses.

Under the 18th POD Hilcorp, as anticipated, did not do any drilling, sidetracks or workovers.

It did plan surface facility work and completed surface piping supporting 86 heat pipes in the ground refrigeration expansion project, with the first group of heat pipes anticipated to be in service by the end of the 18th POD.

Hilcorp also continued ongoing repairs of the island's coastal defenses.

—KRISTEN NELSON

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continued from page 1

## HOT ICE HISTORY

story on BP project).

Anadarko's project is to drill and core "one complete well through the potential hydrate section, which is down to about 3,000 feet. And to evaluate the cores," Millheim said.

The Mallik hydrate wells have been drilled in the Canadian Arctic, but this well will be a first in Alaska, he said.

"No one has drilled, purposefully, a hydrate well... where you specifically core the hydrates and measure the hydrate content," he said.

### Coring a hydrate well

Anadarko's proposal was in two phases. The first involved identifying a site with good potential for hydrates, and developing detailed costs and timing for the project. Anadarko also did some testing in Houston with frozen cores to determine how best to recover them.

In addition to coring the well, Anadarko will also evaluate the cores as they come out of the well, and Millheim said that is a unique part of the company's project.

Anadarko has "constructed a one-of-a-kind mobile laboratory, which will be on the platform, which will evaluate all the properties of the hydrate as it comes out of the well," Millheim said. The lab is modularized, he said, and can be moved by helicopter.

Anadarko's gas hydrate prospect is south of the Kuparuk River unit and east of Meltwater. Bill Fowler, Anadarko's Houston-based environmental supervisor, said the company is permitting three locations. The farthest is some 15 miles from infrastructure, the nearest seven to eight miles. The Alaska Division of Governmental Coordination has begun the Alaska Coastal Management Program consistency review for the project; comment deadline is Dec. 3. DGC said

## Twenty years ago this month: BP's project to address technical, money issues

BP Exploration (Alaska) Inc. and Anadarko Petroleum Corp. both have gas hydrate projects underway on Alaska's North Slope. (See separate story on Anadarko.)

The BP project, aimed at characterizing and quantifying the gas hydrate resource in the Prudhoe Bay and Kuparuk River area, is funded by the U.S. Department of Energy. Others contributing to the study include the U.S. Geological Survey, the University of Arizona in Tucson and the University of Alaska Fairbanks, BP petroleum geologist Bob Hunter told an American Association of Petroleum Geologists meeting in Anchorage in May.

The U.S. Geological Survey has estimated the North Slope basin gas hydrate resource at 590 trillion cubic feet in place, he said, "including the better-known Eileen trend gas hydrates (more than 40 tcf in place) and the lesser-known Tarn trend which may contain up to 60 tcf in place."

These, he said, are "high quality reservoirs beneath existing facility infrastructure" where there is associated geological and geophysical data including extensive three-dimensional seismic.

### Gas stored in clathrates

Hydrates are "naturally occurring ice-like solids which are composed of water and gas that trap gas molecules in a very efficient cage-like structure called a clathrate," Hunter said. Clathrates store up to 164 volumes of methane gas — the most common gas hydrate — per unit of clathrate. Gas hydrates are stable offshore and in from 400 to 4,000 feet subsurface in Arctic permafrost, he said.

Both water and gas must be present to form the clathrate structure and gas hydrates, Hunter said: gas has migrated from deeper accumulations on the North Slope into regionally extensive reservoir-quality shallow sands and hydrates can help form their own trap.

But before the resource can be converted into reserves, he

said, "significant technical and economic issues remain to be resolved."

The project that BP is leading "will focus on reservoir characterization and productivity of the gas hydrate, mainly in the Eileen trend." In phase one, 2002-04, the goal is to characterize the reservoir and fluids and calculate in-place resource.

"We will also study ... the drilling, completion and production methodologies which then would apply to ... phase two, to drill and production test."

In the second phase, studies of reservoir fluids characterization will continue, the best areas for data acquisition will be selected and there will probably also be a short-term production test of the gas hydrate.

"We will drill, complete, acquire data and production test a dedicated gas hydrate well or well of opportunity" at Prudhoe Bay or Milne Point, Hunter said.

### Long-term production testing in third phase

If phase two is successful, the third phase would continue earlier studies "proceed into additional probable long-term production testing operations and field test the best possible production methods for gas hydrates in association with moveable gas," he said.

If phase three is successful, it could lead to a pilot development program.

The technical and economic issues which need to be resolved are very significant, Hunter said. Gas hydrates are an unconventional resource and unconventional resources typically require special technology to extract. Technical challenges include productivity, he said: "the primary unknown variable remains recovery factor." Innovations in well completions will also be necessary, and non-conventional and multilateral well technology will probably be required, Hunter said.

"This could involve a significant amount of capital investment and technology investment. But what attracts us and the DOE to this research is the potential resource is very large."

—KRISTEN NELSON

Anadarko has proposed as many as three exploratory gas wells in 2003 and 2004. The company said that if it gets all of its permits, it expects to be coring in March.

### Next source of natural gas

Fowler said hydrates are probably going to follow coalbed methane as the next unconventional source of natural gas

for the United States and, he said, hydrate research is probably where coalbed methane research was a decade ago.

Successful development of gas hydrates would make tremendous quantities of gas available.

A one-foot cube of hydrate ice, Millheim said, holds approximately 160 cubic feet of natural gas, plus a little bit of

water.

Hydrates occur both in the Arctic and in deepwater. Japan, he said, is involved in the Canadian Mallik project and is looking at deepwater hydrates it controls as an energy source.

"It's an immense resource. It dwarfs the known hydrocarbon resources on the planet," Millheim said. ●



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## JADE TIMING

project has a negative Net-Present Value, or NPV, for the full program expected to approach \$1 billion dollars.

In analyzing the POD filing and reviewing previous Petroleum News reports, there are three major obstacles to Jade's 2024 drilling plans:

1. The 40% net profit share leases, or NPSL, burden on ADL 343112, which can only be changed by legislation.

2. Hilcorp hasn't transferred the Development Account Balance to Jade, estimated to be approximately \$150 million.

3. Royalty relief (Jade is filing for royalty relief with the Division of Oil and Gas in the next two weeks or so).

Legislation needs to be passed to give DNR the authority to reduce the 40% NPSL burden on ADL 34311. Such a bill passed the Alaska House in 2022 but became mired in the Senate Finance committee, so with a new two-year Legislature beginning sometime in first quarter 2023, Jade and its supporters will have to start over. In the last session Alaska Gov. Mike Dunleavy led the charge to get the bill introduced and passed.

It's unclear why Hilcorp has not yet transferred the Development Account Balance to Jade, which it seemingly should have done in July 2022. Delaying hurts Sourdough economics and Jade's chances with its investors. The funds can't be used until after Sourdough production begins but having the Development Account Balance (thought to be in the neighborhood of \$150 million) will mitigate future tax liability for the project and thus materially improve the economics, the NPV, of the Area F, Tract 32 Sourdough Development Project.

Another thing that would help would be if oil reserves could be added. According to a 2018 seismic program, some 40% of Tract 32 reserves fall within ExxonMobil leases. Those additional reserves would materially improve the economics of Sourdough, but under the current arrangement, ExxonMobil indicated it would only transfer additional resources to Jade following a successful initial drilling campaign, and not before.

According to the fifth POD, signed by North Slope geologist and entrepreneur

Erik Opstad, the transformation from a noncommercial to a commercial Sourdough Development Project is only possible if some combination of the above occurs.

### Drilling targets

Tract 32 holds two of the mid-1990s Brookian oil discovery wells, Sourdough 2 and 3. BP drilled the 12,562-foot Sourdough No. 2 well in March 1994 and the 12,475-foot Sourdough No. 3 well in March 1996.

In its fifth POD, Jade noted that Brookian reservoirs have been encountered by "numerous wells" drilled in and near the Point Thomson unit since the 1970s, including BP's two Sourdough discovery wells, which the major estimated held 100 million barrels of recoverable oil.

On the currently suspended Sourdough 3 well, initial BP well testing offered 2,700 barrels of oil per day from a stimulated vertical well, but Opstad told PN he expected that a 5,000-foot horizontal completion would produce significantly more than that.

### Economic enhancement

The first 10 months of the fourth POD in 2022 were challenging as a series of unprecedented events such as supply chain problems, inflation, sky-rocketing interest rates and more prompted Jade to modify its initial POD activities on the fly.

A number of tasks that were planned and expected to be worked were either postponed or only partially completed. This caused Jade to change its priorities several times to pursue other tasks that were less impacted by external events that were largely out of Jades control.

These tasks included the following:

1. Working on federal polar bear related permitting.
2. Obtained a revised third-party reserve study from Petrotechnical Resources Alaska, evaluating the implications offered by PRA's new Reserves & Economics Report.
3. Working with Worley to generate a preliminary facility design and construction cost estimate (FEED).
4. Got input from DNR to update the Sourdough development project economic model (issued 08-09-2022).
5. Secured an additional 5% working interest from Hilcorp (approved by Division of Oil and Gas on 12-28-2021).
6. Working to secure a Development Account Balance transfer from Hilcorp

(DNR & Hilcorp).

7. Working with legislative representatives to modify the 40% NPSL burden currently carried by the Jade lease.

8. Working on a royalty modification request to DNR.

9. Jade working with Schlumberger and Halliburton on the design of its first horizontal development well.

10. Confirm that dredging of the PTU pier approach was not currently required to support rig mobilization.

As the company transitions to the last 60 days of the fourth POD Jade is focused on three elements that have emerged as key to advancing the program short-term ahead of the fifth POD that will run from Jan. 1, 2023, through Dec. 31, 2023. In no particular ranking, these elements are:

1. Development model,
2. Royalty reduction,
3. Well design.

### Development modeling, royalties

The development model "has become significant because everyone has some vested interest in what the model is telling us," Jade said in its Nov. 1 POD filing.

In particular, Jade wants to avoid starting a project that in the long run has no chance of being profitable.

The state appears to share that concern for all North Slope projects.

Approval of royalty relief for Jade by DNR is of course dependent on the commercial model.

Then the potential investors also want to understand the long-term profitability profile for an Area F development.

"Since parties interested in participating in an Area-F Development have only reappeared in the last few weeks after nearly a year of disinterest, Jade has a sense of urgency to get the model whipped into shape ASAP," Jade said Nov. 1.

"Tangential to modelling, is royalty reduction. Thus far, the models run by Jade of resulted in a negative NPV suggesting that the nearly \$1 billion dollar project is not commercial. That said, some of the model runs have produced results that are close to offering a positive NPV. One scenario that is helpful is to reduce the standard 12.5% royalty to say 5%, but then tie that reduction to an oil price schedule so that the reduction becomes less as the price of ANS crude rises above an agreed benchmark," Jade said.

"Since investors want to see proactive actions from the operator to enhance the economics of any project, and there are

established procedures submitting a formal application for royalty reduction to the state, Jade elected to make reduction of the standard 12.5% royalty on the ADL343112 lease another focus during the final 60 days of the 4th POD," the company said Nov. 1.

### Well design

Well design is the third element that Jade is focusing on to close-out the fourth POD. This element gains special attention largely due to a change in Jade's focus early in 2022.

During the first through third PODS, design for a Jade 1 appraisal well was nothing more than a simple throw way pilot hole. As the true cost of remote operations east of the Point Thomson unit's Central Pad started to emerge, both Jade and its potential Sourdough Development Project investors began to question the economic viability of a throw way pilot hole.

"Although we still needed to drill a pilot hole deeper than either existing Sourdough wells (SD2 & SD3) to evaluate potential additional reserves atop the Hue Shale ... it didn't make financial sense to plug and abandon that wellbore," Jade said.

Rather, the company decided to change the well design "whereby we would plugback from the pilot hole TD, then complete the well as a horizontal sidetrack."

Although more expensive than an abandoned pilot hole, this plan makes better use of the capital and was quickly embraced by our investor community," Jade said.

"Further to this subject, Hilcorp's recent suggestion that a similar workover and horizontal sidetrack completion of Sourdough 3 (drilled by BP but not classified by BP as a discovery well) might also add considerable value to the drilling program. We haven't looked at this suggestion in any detail yet, but it is certainly a potential task for the 5th POD and one that we have already worked on a preliminary basis," Jade said Nov. 1.

The above discussion of Jade's planned activities spanning the last 60 days of 2022 closes-out the fourth POD.

### 2023 activities

For the fifth POD Jade hopes for a seamless transition from the 2022 activities, leaving it with "a fairly short list of tasks" that should take it to drilling in first or second quarter 2024.

see JADE TIMING page 11

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## JADE TIMING

These tasks are:

1. Royalty and tax reduction
2. Funding
3. Well planning
4. Rig selection
5. Permit to drill
6. Mobilization

Royalty and tax reduction mean not just the application for royalty reduction, but also the 40% net profit share burden on ADL 343112 and the Development Account Balance transfer to Jade from Hilcorp.

“There is universal recognition that to ensure that development of the Sourdough reservoir is economic, Jade needs to reduce the level of taxation, demonstrate that it can legitimately increase the reserve basis in its economic model or somehow materially reduce development costs,” Jade said.

“Preferably, Jade can deliver some benefit to all of these elements. As a result, Jade intends to work these issues throughout 2023,” the company said Nov. 1.

In regard to funding, “everyone will agree that oil and gas operations in Alaska are absurdly expensive when compared with most other onshore venues. Fortunately, these ridiculous costs can occasionally be offset by the financial rewards that can come from the development of outsize Alaskan reserves,” Jade said.

“Unfortunately, such reserves are uncommon, but the State of Alaska financial framework is largely structured around these rare elephants, which discourages many independents from entering the market at all, because it is so expensive to conduct business in the state,” Jade said.

Jade said it typically divides well costs into three phases — administrative, materials and equipment acquisition and drilling operations.

As of the end of 2022, Jade said it was in the administrative fund raising phase that by way of example includes the items listed below, required as part of permitting and planning to get the bit turning right:

- Permit application review fees: \$11,059
  - Permitting labor costs: \$49,000
  - Field study costs: \$37,000
  - Administrative labor costs: \$15,000
  - Ice pad lease rental: \$4869
  - Bonds, insurance and guaranty: \$800,000
  - COFR total premium \$381,948.3
- “So more or less we have nearly \$1.8M exposed just for permitting, plan-



Nabors rig 27E

ning, bonding/insurance & fees! At the moment, Jade is working to fund this phase of the program,” the company said.

Given the intent to drill a horizontal production well rather than just an exploration test, Jade can work on finalizing its plan to drill a pilot hole to the Hue Shale at ~12,547 feet MD, then plugback and sidetrack to a 5000-foot horizontal well.

### Rig selection

“Selection of a Sourdough rig is largely driven by the pressure gradient that is roughly 0.7 psi/ft. That gradient equates to reservoir pressures between 8k and 9k PSI,” Jade said.

“This means that any rig used for Sourdough drilling must be able to deploy BOPE rated for 10,000 psi,” Jade said.

Unfortunately, there are only a few rigs in Alaska that can be so equipped.

“Assuming that funding can be put in place, the Jade 1 drilling campaign is now planned for Q1/Q2 2024. Currently plans on utilizing a medium sized mono-body rig like Nordic Rig-3 or perhaps a slightly

larger rig like Nabors 27E that has drilled several deeper wells at Point Thomson,” Jade said.

Weighing in at some 2.8 million pounds, Nordic Rig-3 is a “challenging barge load,” but once landed the rig moves quickly along ice roads and arrives ready to drill with little additional rig-up work required. With its own secondary containment, the rig “presents and environmentally friendly package, particularly when underlaid by a Polystar™ berm system, which is Jade policy,” Jade said.

The rig features a split pipe shed that allows casing to be run on one side and drill pipe run on the opposite side. Automated pipe handling equipment raises and lowers tubulars into either side of the pipe shed. Capable of standing back 16,000 feet of 4-inch drill pipe and hoisting 464,000 pounds the rig is “well-suited for medium depth appraisal well programs such as Jade 1,” Jade said.

For “completeness” the company is also looking at several modular rigs that could be transported to the Jade 1 drill site

entirely by snow road.

Rig selection will be made based on drilling requirements as dictated by the final well design, the company said in its Nov. 1 POD filing.

### Private money

Jade initially intended to file the Jade 1 permit to drill, or PTD, during the fourth POD period, but in 2022 funding was simply unavailable, so there was no point in filing a PTD the company didn't have the money to drill (~\$40-million).

Although the big banks are still calling the Alaska oil and gas industry “un-investable” the situation with private money seems to have changed.

Several investors have been in touch with Jade expressing interest in the Sourdough Development Project.

Given that interest, Jade hopes to fund the first well early in 2024. That will require that the well design be finalized by mid-summer and the PTD filed no later than Thanksgiving 2023.

That will lead into the last task planned under the fifth POD, mobilization.

### Last task, mobilization

Execution of this task is also dependent on Jade securing the required funding, the company said in its fifth POD.

“Mobilization of a rig and its heavy equipment is one of the more challenging elements of any well plan and this one is no different. Most drilling programs on the North Slope access their drill site by ice or gravel roads, but gravel is not expected to be available during the early phase of the Sourdough Development Project,” Jade said.

Consequently the company has two primary options available to it: “We can barge between West Dock and the PTU Service Pier to the mix as an intermediate step. This conveyance expects to stage necessary equipment such as a drilling rig, support equipment, some additional materials and expendables as required to support drilling operations. All will be staged into a laydown area already designated by the PTU. Barging operations would occur in the summer of 2023.”

The second mobilization option available to Jade is “mobilization overland by snow or ice road. Jade routinely supplies USLD and pre-mixed drilling mud to its rigs operating on remote sites by snow road and it expects to do the same for the Jade 1 site in the PTU,” the company said.

Mobilization by snow road could occur either during winter 2023 or winter 2024 depending on the nature of the loads, Jade said. ●

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