

page 20 years ago: BP has conceptual  
4 breakthrough on viscous production

## Alaska North Slope Pikka project 47% complete as of March 31

In Santos' first quarter report issued April 18, the company said the Alaska North Slope Pikka development project was 47% complete as of March 31, as compared to 37.4% complete as of Dec. 31.

In the first quarter rig operations were completed on seven wells. Four wells have been stimulated with three successfully flowed back. "Flow back results compare favorably with pre-drill expectations," Santos reported.

Vertical support members for the pipeline are more than 65% complete, and pipelaying was more than 61% complete for the winter season objectives.

The seawater treatment plant was 62% complete at the end of the first quarter.

### Robust results

Santos Managing Director and Chief Executive Officer Kevin Gallagher said the strong underlying business performance, combined with a disciplined focus on operational excellence, delivered

see **PIKKA UPDATE** page 6



KEVIN GALLAGHER

## House Resources hears Narwhal on West Harrison Bay unit issues

Rep. Tom McKay, chair of the Alaska Legislature's House Resources Committee, wants to know why there is no development at the West Harrison Bay unit on the North Slope. He said at a committee hearing April 15 that he was concerned about delays in developing West Harrison Bay, which he said he understands is considered "highly prospective" in the industry and has been described as containing an accumulation as large as Kuparuk.

McKay invited testimony from the parties involved in current issues around development — unit operator Shell Offshore, the Alaska Department of Natural Resources and adjacent leaseholder Narwhal.

He said the committee was unable to have Shell or DNR at

see **NARWHAL TESTIMONY** page 6



TOM MCKAY

## 88 Energy reports second light oil discovery in Hickory-1 well

In an April 15 ASX announcement 88 Energy Limited reported dual reservoir success at the company's Hickory-1 well with a second light oil discovery at the SMD-B reservoir. Hickory-1 is in Project Phoenix on the North Slope of Alaska.

In an April 2 ASX announcement 88 Energy reported the successful flow testing of the Upper SFS reservoir in the Hickory-1 well with "multiple oil samples recovered, measuring ~40-degree API oil gravity." The USFS test produced at a peak gauge flow rate of over 70 barrels of oil per day.

The SMD-B reservoir showed little to no measurable associated gas flow (low Gas-oil-Ratio, or GOR), which validates the pre-test analysis.

Hickory-1 has now delivered two successful oil flows and

see **HICKORY-1 WELL** page 5



ASHLEY GILBERT

### EXPLORATION & PRODUCTION

# 2023 drilling down

North Slope saw 46 development wells; no Cook Inlet exploration drilling

By ALAN BAILEY

For Petroleum News

According to drilling data published by the Alaska Oil and Gas Conservation Commission, 46 development wells were completed on the North Slope in 2023. That compares with 71 completions in 2022 and 91 in 2019. There were few North Slope wells drilled in 2020 and 2021 because of COVID related restrictions. Six exploration wells were completed on the North Slope in 2023.

Of particular note in the Cook Inlet basin was the absence of any exploration wells completed in 2023. The Cook Inlet did see the completion of 10 development wells. That compares with 19 in 2022, nine in 2021, 10 in 2020 and 14 in 2019.

Hilcorp drilled all 10 of the development wells completed in the Cook Inlet basin in 2023.

### North Slope development wells

On the North Slope Hilcorp Alaska drilled 33 development wells in 2023. Of these wells, 21 were in the Prudhoe Bay unit, with 11 drilled into the Prudhoe oil pool, six into the Schrader Bluff Orion pool, one into another Schrader Bluff pool, two into the Borealis oil pool and one into the Aurora oil pool. The company had indicated an intent to increase its drilling activity that addresses production from the

see **2023 DRILLING** page 8

### GEOTHERMAL

# Drilling Augustine '25

GeoAlaska gains entire southern half island, MT survey planned for summer

By KAY CASHMAN

Petroleum News

On April 16, GeoAlaska told Petroleum News that effective April 1, the Alaska Department of Natural Resources granted GeoAlaska a geothermal prospecting permit (ADL 394374) covering 7,299 acres on Augustine Island. This acreage expands GeoAlaska's existing geothermal footprint at Augustine Island by 240%, encompassing the entire southern half of the island.

The company already had (ADL 394080), which involved 3,031 acres. The two permits total 10,830 acres.



PAUL CRAIG

Based on the expanded acreage and the recommendations contained in an independent geothermal reservoir engineering study commissioned during 2023, GeoAlaska and its partner are commissioning a new magnetotelluric (MT) survey covering the southern half of Augustine Island to be completed during June and July.

GeoAlaska is a geothermal energy company based in Anchorage. The company was founded in May 2020 by Paul L. Craig with the goal of proving sustainable, affordable, carbon-free, baseload geothermal power to the

see **AUGUSTINE GEOTHERMAL** page 7

### FINANCE & ECONOMY

# Demand fear hits ANS

Iran vs Israel attack falls flat; China woes, US supplies take stage

By STEVE SUTHERLIN

Petroleum News

Alaska North Slope crude plummeted into the \$80s April 17, off \$2.46 to close at \$87.82 per barrel, as West Texas Intermediate plummeted \$2.67 to close at \$82.69 and Brent plummeted \$2.73 to close at \$87.29.

The dramatic movement came as traders factored in no evidence of disruption of crude shipments arising from Iran's massive but thwarted drone and missile attack directed at Israel over the weekend.

"At the end of the day, the conflict between Iran and Israel has not disrupted the supply of oil out-

side of the Houthis' impact on Red Sea transit," said Troy Vincent, senior market analyst at DTN, as quoted in an April 17 MarketWatch report.

"Without the war spilling over into attacks on oil infrastructure in other Gulf nations, or the U.S. stepping up enforcement of Iranian oil-export sanctions, the odds of this war materially impacting oil supply remain low," he said.

In the lull of immediate worries over supply interruptions, traders were free to fret over a surprise build in inventories in the United States and chinks in the armor of China's long awaited economic recovery from pandemic woes.

see **OIL PRICES** page 8

EXPLORATION & PRODUCTION

# Baker Hughes US rig count down 3 to 617

By KRISTEN NELSON  
Petroleum News

The Baker Hughes' U.S. rotary drilling rig count was 617 the week ending April 12, down by three rigs from 620 the previous week, and down by 134 from 751 a year ago, following a drop of one rig last week. The rig count was down in five and up in three of the last eight weeks, with a loss of 19 against a gain of 15 over the period, following a downward trend dominant since the beginning of May.

A drop of 17 to 731 on May 12, 2023, was the steepest weekly drop since June of 2020, during the first year of the COVID-19 pandemic, when the count also dropped by 17 to 284 on June 5, following drops as steep as 73 rigs in one week in April. The count continued down to 251 at the end of July 2020, reaching an all-time low of 244 in mid-August 2020.

For 2023, the count hit its low point Nov. 10 at 616, down from a high of 775 on Jan. 13, 2023. In 2022, the count bottomed out at 588 Jan. 1, reaching a high for the year of 784 on Nov. 23.

When the count dropped to 244 in mid-August 2020, it

*Baker Hughes shows Alaska with 14 rotary rigs active April 12, unchanged from the previous week and up by four from a year ago when the count was 10*

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 prior to the COVID-19 pandemic, where it remained through mid-March of that year 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 April 12 count includes 506 rigs targeting oil, down by two from the previous week and down 84 from 590 a year ago, with 109 rigs targeting natural gas, down one from the previous week and down 49 from 158 a year ago, and two miscellaneous rigs, unchanged from the previous

week and down one from a year ago.

Fifty-one of the rigs reported April 12 were drilling directional wells, 554 were drilling horizontal wells and 12 were drilling vertical wells.

### Alaska rig count unchanged

New Mexico (109) was up by one rig from the previous week.

Texas (294) was down three rigs week over week.

Rig counts in other states were unchanged from the previous week: Alaska (14), California (3), Colorado (15), Louisiana (39), North Dakota (32), Ohio (12), Oklahoma (44), Pennsylvania (22), Utah (12), West Virginia (8) and Wyoming (11).

Baker Hughes shows Alaska with 14 rotary rigs active April 12, unchanged from the previous week and up by four from a year ago when the count was 10.

The rig count in the Permian, the most active basin in the country, was down by one from the previous week at 316 and down by 37 from 353 a year ago. ●

Contact Kristen Nelson  
at [knelson@petroleumnews.com](mailto:knelson@petroleumnews.com)

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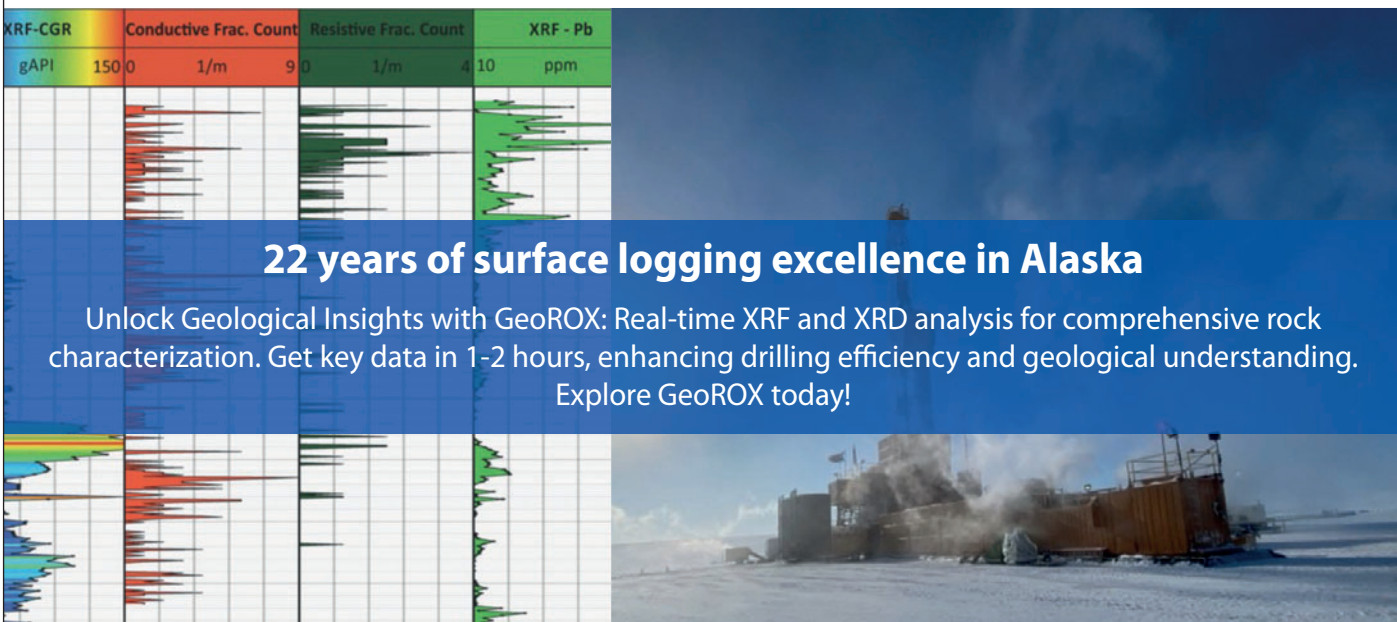
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● THE EXPLORERS PREVIEW

# Explorers keep pursuing exploration licenses

Program continues to make acreage available outside major producing basins; active Houston-Willow license; Katalla under appeal

*Editor's note: This story is from the forthcoming 2024 issue of The Explorers which will be available in June.*

By ERIC LIDJI

For Petroleum News

Alaska has many small prospects that would be instantly sanctioned almost anywhere else in the country but are not large enough to overcome the logistical challenges inherent to the far north: getting supplies to the site and moving production back to market.

While some of those burdens have been gradually overcome in large basins thanks to decades of step-out development, no one has yet cracked the code for the rest of the state.

And yet, explorers keep trying.

The exploration licensing program offered by the state Division of Oil and Gas is a way for companies to venture beyond the regions covered by existing lease sales. In the decades since the exploration license program was launched, it has led to many issued licenses, a small number of exploration activities, and no commercial production to date.

The state Division of Oil and Gas can make a preliminary determination that certain areas are suitable for exploration licensing and then begin accepting proposals for exploration.

Each April, companies can request a license for a geographic area between 10,000 and 500,000 acres, along with a proposed financial work commitment and a term limit. Other companies can then make competing bids, in an effort to get the best deal for the state.

There are currently two active “determined” areas.

The “Southcentral Region” is an L-shaped area including the coastline along Prince William Sound and extending north to include the southern edge of the Interior, including the cities of Cordova, Valdez, McCarthy, Glennallen, Talkeetna, Paxson and Tok.

The “Nenana Region” covers a smaller area immediately west of the Fairbanks North Star Borough and immediately west and north of the Interior city of Nenana.

There is currently one active exploration license and one license under appeal.

## Houston-Willow

Samuel Cade and Daniel Donkel currently hold a six-year exploration license covering 18,698 acres in the Houston-Willow basin with a \$500,000 work commitment. The state awarded the license on Dec. 1, 2018, and therefore expiration is pending this December.

The partners originally submitted the application in April 2007 with local independent LAPP Resources Inc. but resubmitted after the death of principle Dave Lappi in 2011.

According to the Division of Oil and Gas, some 22 earlier penetrations have been drilled in the Houston-Willow basin, mostly to evaluate shallow gas and coalbed methane.

Exploration began around 1917, when excavations for the Alaska Railroad

**There is currently one active exploration license and one license under appeal.**

exposed subbituminous coal. The coal supplied area military bases until at least 1955. The U.S. Bureau of Mines drilled three core holes in 1951-52, with reports of methane and brackish water. Anchorage Oil and Gas completed a side-track of one of these core holes in 1955, but no information exists about the results. Anchorage Gas and Oil Development and Hackathorn Drilling separately completed five wells between 1956 and 1962.

After a period of dormancy, Growth Resource International and Evergreen Resources completed six coalbed methane wells in the Houston area between 1998 and 2004.

The state approved the exploration license with the hope that modern exploration techniques “would likely help to resolve details of the anticline's geometry and to clarify its conventional gas and CBM resource potential,” according to the decision results.

## Gulf of Alaska

A second proposed exploration license in the Katalla region of the Gulf of Alaska has been under appeal for several years by applicant Nikiski-based Cassandra Energy Corp.

The Division of Oil and Gas initially leaned toward granting the company a 10-year license over 65,773 acres with a \$1 million work commitment but ultimately

denied the application in late 2020, saying it failed to serve the best interests of the state.

The state said the denial reflected the particulars of the project — its technical complexities relative to the current geologic prospects — not a disinterest in seeing activity in the basin. In short, “the potential positive effects of the exploration license do not clearly outweigh or balance the potential negative effects to the other resources and habitat of the license area,” then-Division of Oil and Gas Director Tom Stokes wrote.

A British consortium drilled near Katalla Meadows in 1902 to investigate oil seeps from the mid-1890s. The consortium sold some of its assets in 1910 to Amalgamated Development Corp. out of Washington state, which sold them to Chilkat Oil Co. in 1911.

Chilkat Oil built a small refinery. Kennecott Copper Corp. acquired the properties in 1922, a few years after additional drilling in the area led to a small boost in production. The area was seen as promising but hampered by its remoteness. The refinery burned down in 1933 and was never rebuilt. All told, some 154,000 barrels of oil were produced.

Northern Development Co. visited in the 1950s, using a provision of federal law giving the Interior Department permission to grant contracts in frontier basins. Other companies explored through the early 1960s, all without success. Chugach Alaska Corp. secured an exclusive exploration contract from the early 1980s through the early 2000s.

Cassandra Energy President William

H. Stevens joined that venture in the early 2000s, but his project was thwarted by a combination of environmental and regulatory delays until the late 2010s, when he submitted his exploration license application to the state.

## Susitna Valley

The 2023 issue of The Explorers included a profile of Alaska Natural Gas Corp., which had two applications pending for a single exploration program in the Susitna Valley. The applications have since been removed from the state's exploration licensing page.

The two license areas covered 913,249 contiguous acres in the Susitna River basin within the Matanuska-Susitna valleys, immediately west of the Parks Highway.

Alaska Natural Gas Corp. submitted its proposal in late April 2017, asking for 10-year licenses, each with a \$500,000 work commitment. Based on economic and geologic considerations, the state imposed \$3 million and \$3.3 million work commitments. The licenses only allow for natural gas exploration. The Susitna Valley is considered gas-prone, with a higher likelihood of unconventional resources such as coal-bed methane.

Alaska Natural Gas Corp. is a privately held company. On its website, the company said it plans to use horizontal drilling technology to target coal-bed methane in the region. ●

Contact Eric Lidji at ericlidji@mac.com



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● THIS MONTH IN HISTORY

# BP has conceptual breakthrough on viscous

20 years ago this month: New drilling, completion techniques, horizontal drilling into viscous formations, spurs Milne Pt volumes

*Editor's note: This story first appeared in the April 18, 2004, issue of Petroleum News.*

By **KRISTEN NELSON**  
Petroleum News

When a single horizontal well was drilled to viscous oil on Alaska's North Slope in 1999, producers had taken what proved to be a significant step toward economic development of the 15 billion barrel resource.

In the last year, new drilling and completion technology tripled productivity from the shallow viscous accumulations, which are both thicker and colder than the slope's conventional oil, and harder to get out of the ground (see sidebar on viscous and heavy oil).

Viscous production across the slope is now some 30,000 barrels per day, and with some 22,000 bpd from Milne Point, viscous accounts for 40 percent of production at the BP Exploration (Alaska) field, Ed LaFehr, Milne Point asset manager, told the Alaska

Support Industry Alliance April 8, 2004.

Current success follows years of effort to find the right technology to produce viscous oil, but it's only the beginning.

LaFehr said he believes that in the struggle to commercialize viscous oil, the North Slope producers have established a base camp at the 7,000-foot level of the mountain, and are starting to see what lies ahead.

But, he cautioned, it's still a long way to the top of the mountain — significant commercial development.

## Viscous a third of BP's Alaska resource

Viscous oil is critical to both Alaska and to BP, LaFehr said. It accounts for a third of BP's Alaska resource — conventional oil and natural gas are each about a third — and will bridge the gap to gas production, he said.

While BP has “essentially shut down

exploration,” it is “still spending risk capital — but we've shifted it from exploration over into the viscous arena and other areas ... but we're spending \$400 million plus or minus inside the fields on things that are challenging, that require enormous innovation and a lot of scientific and engineering envelope-pushing off that.”

The Alaska business unit has the largest resource base of the BP business units, he said, but “most of the BP Alaska resource base is ... economically challenged or ... gas,” and Alaska is also “the highest-cost region” in BP, some \$5 a barrel above the BP upstream average.

That makes the competition for investment dollars tough, he said.

On the plus side, viscous has “relatively short cycle times to production” and is “really green” because there is minimal new infrastructure required: “A lot of this extended reach drilling has been a phenomenal breakthrough for us to come off of existing gravel. You can't do that in very many parts of the world,” he said.

BP's production from Alaska is still a significant portion of the company's total production, at 330,000 bpd some 8-9% of the almost 4 million bpd the company produces, but it's less than half of what it was at the peak in the late 1980s, and the goal, he said, is to keep that production level, and “to reinvest in the existing resource base to hold production flat” until gas can be produced.

But LaFehr said he believes that strategy is only possible “if viscous oil happens and if it happens in a relatively material way,” not just in bits and pieces.

## Much has been accomplished

Industry has known about the viscous resource for a long time, LaFehr said, and the North Slope producers collectively spent more than half a billion dollars in the 1980s and 1990s, trying to produce viscous, “pushing the envelope” with such techniques as fracturing for sand control and drilling smaller wells.

But “none of that worked: it was all uneconomic,” he said.

The horizontal well drilled in 1999 showed promise, and BP tackled things needed to make viscous economic: tripling well productivity to sustained rates of 1,000 barrels per day and reducing life-cycle costs by finding a way to lift the oil other than with electric submersible pumps.

“We also had to radically reduce our costs of drilling per unit of production,” LaFehr said, and leverage infrastructure costs, “coming off of existing gravel, minimizing pads and new pipelines.”

Since 2000, BP has spent more than \$300 million on viscous, “largely developing S pad at Milne Point,” and in 2004 will spend more than \$100 million as its share of more than 30 wells, some 13 of those at Milne Point, 15 or so at Prudhoe Bay and others at Kuparuk.

## Plan size from five pads to one

The original plan for Milne Point viscous development called for five new drilling pads, 75 miles of new pipeline and 10 miles of new road.

What BP did, however, was to build one new pad which will “access nearly the same reserve pool” with extended reach drilling. With wells reaching out as much as 12,500 feet, to an accumulation at four or five thousand feet vertical depth, the wells are “just laid out on their side,” LaFehr said, “pushing the shallow extended reach drilling envelope for BP.”

BP is using jet pumps for lift and drilling multilateral wells from a small pad. Geologic models lead “to predictability in our geo-steering” and have resulted in wells staying in the productive sands 90 to 93 percent of the time.

And when it comes to drilling, “what Doyon 14 has done, what 141 did before that, just blew the doors down.”

“We've seen the best drilling performance in all of BP sitting right out there on the tundra.”

In addition, he said, “the safety performance has been outstanding, the cost delivery has been 20% below what we authorized” and on drilling measures like days to 10,000 feet, “we're beating those by about 20%.”

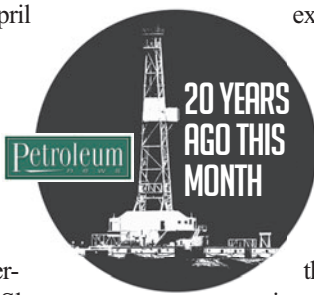
And “trouble time on drilling has been very, very low — half the Slope average roughly,” he said.

“So a lot of technology all the way from subsurface to facilities has been driving the breakthrough in performance.”

Viscous oil production from S pad is a success, LaFehr said: “we've seen our first commercial project at S pad.”

What BP would do differently in the

see **HISTORY** page 5



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<b>Kay Cashman</b>	PUBLISHER & FOUNDER	<b>ADDRESS</b> P.O. Box 231647 Anchorage, AK 99523-1647
<b>Mary Mack</b>	CEO & GENERAL MANAGER	<b>NEWS</b> 907.522.9469 publisher@petroleumnews.com
<b>Kristen Nelson</b>	EDITOR-IN-CHIEF	
<b>Susan Crane</b>	ADVERTISING DIRECTOR	<b>CIRCULATION</b> 281.978.2771 circulation@petroleumnews.com
<b>Heather Yates</b>	BOOKKEEPER	
<b>Marti Reeve</b>	SPECIAL PUBLICATIONS DIRECTOR	<b>ADVERTISING</b> Susan Crane • 907-250-9769 socrane@petroleumnews.com
<b>Steven Merritt</b>	PRODUCTION DIRECTOR	
<b>Alan Bailey</b>	CONTRIBUTING WRITER	Petroleum News and its supplement, Petroleum Directory, are owned by Petroleum Newspapers of Alaska LLC. The newspaper is published weekly. Several of the individuals listed above work for independent companies that contract services to Petroleum Newspapers of Alaska LLC or are freelance writers.
<b>Eric Lidji</b>	CONTRIBUTING WRITER	
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## HISTORY

future, he said, was management of facilities construction.

Because so many surface facilities have been built on the Slope, there wasn't enough front-end attention or project management for the facilities side of S pad, LaFehr said, and it was too schedule driven. "We pushed ourselves into a pretty tough ... schedule-driven approach, and we met the schedule, but we paid a premium on the facilities' side."

### Where next

With development success at S pad, "if we start seeing signs that the next evolution of technology works, and the economics are there ... there are hundreds of millions of dollars over the next decade that we would spend ..."

"It's a phenomenally large project," LaFehr said.

With success have come new challenges: long-rate delivery; issues around how water-flood in the field is run; understanding the reservoir; and how sand is managed through the facilities.

Sand management is part of issues around "cost of operations and operability (that) have started to creep in," LaFehr said, with something like 35 barrels a day of sand now being trucked off of S pad (viscous oil reservoirs aren't well consolidated, so sand, bits of the reservoir, is produced along with the oil). We knew there would be sand, he said, "it's a bit more challenging than we had thought."

Then there are new types of wells.

In addition to multilateral wells, LaFehr said ConocoPhillips in Venezuela has drilled wells using what he called "the fish-bone concept," where many drain holes are

*The original plan for Milne Point viscous development called for five new drilling pads, 75 miles of new pipeline and 10 miles of new road.*

*What BP did, however, was to build one new pad which will "access nearly the same reserve pool" with extended reach drilling.*

drilled off of a lateral line, exposing "huge volumes of reservoir, so your ... productivities are greater" in viscous oils, which really don't want to flow.

"There's concept thinking on where we go next with the drilling, and then cost transformation and project management has to be improved."

And, he said, "it's pretty clear that the access costs have to continue to come down, everything from engineering to procurement to construction to ... fabricating. ... We need to continue to drive the cost of business in the right direction to make a marginal project like this ... happen, and so the pie gets bigger."

### How big could this pie be?

Once you get into enhanced oil recovery, LaFehr said, "you start getting into the big numbers."

While the viscous resource is 15 billion barrels, for various reasons probably only 10% can be extracted, but "that's one and a half billion barrels — and we only have maybe 100 million, 100 to 200 million under development."

Looking at this as a mountain, "it gives you a sense of where we are — we're just above the foothills." ●

Contact Kristen Nelson  
at knelson@petroleumnews.com

## 20 years ago this month: What's heavy oil and what ain't

In most places viscous oil equals heavy oil, but that isn't the case on the North Slope, where the term viscous is a better fit than heavy for the shallower, colder crude oil BP and ConocoPhillips are tapping at Milne Point, Kuparuk and Prudhoe Bay.

BP's Milne Point asset manager, Ed LaFehr, told the Alaska Support Industry Alliance April 8, 2004, that while heavy oil and viscous oil are not always "directly correlated, most of the time they are," and so in most places it's just called heavy oil.

But not on the North Slope, he said.

So what's the difference?

BP spokesman Daren Beaudou said on the North Slope viscous oil is generally any crude oil with an American Petroleum Institute gravity of less than 22 degrees and a viscosity greater than 10 centipoises.

Conventional North Slope crude oils, the lighter oils, have higher API gravities. The Alaska Oil and Gas Conservation Commission lists oil from the main Prudhoe Bay reservoir at 28 degree API and oil from Kuparuk at 24 degrees API. Oil from the Alpine and Northstar fields is much lighter, 40 degrees and 44 degrees respectively.

A centipoise is a measure of the viscosity of a liquid — how it flows. Water has a centipoise of 1 at atmospheric pressure and temperature, and anything with a higher number isn't as fluid as water.

"Heavy oils," Beaudou said, "will typically have much lower API gravities, but could have similar viscosities as the reservoir temperature in many basins is higher than the North Slope."

"The distinction between heavy and viscous is really that on the North Slope we are producing relatively light oil at higher reservoir viscosities — thus viscous oil."

LaFehr said North Slope viscous oil is "low sulfur, low metals." And, he said, because there is so much light oil going into the trans-Alaska pipeline from Alpine and Northstar, viscous oil "actually helps the blend" in the pipeline and keeps the overall crude a good fit for West Coast refineries.



DAREN BEAUDOU

*"Heavy oils," Beaudou said, "will typically have much lower API gravities, but could have similar viscosities as the reservoir temperature in many basins is higher than the North Slope."*

—KRISTEN NELSON

continued from page 1

## HICKORY-1 WELL

three independent discoveries:

- SMD-B (April 15's result): with a peak flow rate of ~50 barrels per day of light oil measuring approximately 39 degree API oil gravity, under nitrogen lift.

- Upper SFS, or USFS, announced on April 2 with a peak flow rate of more than 70 bpd of light oil measuring approximately 40-degree API oil gravity, under natural flow.

- Both flow rates result from low volume stimulations over small 20-foot perforated intervals in a vertical well.

- Previously announced Basin Floor Fan, or BFF, gross best estimate (2c) contingent resource of 250 million barrels of oil equivalent announced on Nov. 6, 2023.

### Long horizontal production wells

The quality and deliverability of both SMD-B and USFS demonstrated via oil production to surface with the USFS reservoir producing under natural flow — positively differentiated Hickory-1 from results on adjacent acreage, 88 Energy said.

In its April 15 ASX announcement the company said it anticipates that these reservoirs will be developed from long horizontal production wells "which typically produce at multiples of between 6 to 12 times higher than vertical wells."

Project Phoenix also benefits from the ability to produce concurrently from multiple reservoirs in a single development scenario, 88 Energy said April 15.

As such, the Hickory-1 flow test results "can be rightly characterized as in-line with those observed from equivalent reservoirs on adjacent acreage. Importantly, the performance of the USFS reservoir exceeded

*In its April 15 ASX announcement the company said it anticipates that these reservoirs will be developed from long horizontal production wells "which typically produce at multiples of between 6 to 12 times higher than vertical wells."*

expectations, with the well flowing naturally with increasing oil cut," 88 Energy said.

### Gilbert's comments

"Having now successfully demonstrated light oil flow from two reservoirs at Hickory-1 in recent weeks, it is clear that this is a significant milestone in the history of 88 Energy. The USFS success represents the first time that we have successfully flowed oil to surface in Alaska — and under natural flow — as well as being the first time we have confirmed a light oil discovery of substantial scale in close proximity to the critical Dalton Highway and Trans-Alaskan Pipeline System infrastructure. To then achieve a second successful flow of light oil from the SMD-B reservoir, with a low gas/oil ratio, is an outstanding outcome for 88 Energy and its shareholders," Managing Director Ashley Gilbert was quoted as saying in the April 15 ASX announcement.

"The flowing of light oil from multiple reservoirs demonstrates the potential that this acreage holds for our shareholders, positioning the Company to grow and extract value from Project Phoenix via multiple potential development and commercialization pathways. These include farm-out to a strategic partner in pursuit of a carry towards a development proposition and/or

see HICKORY-1 WELL page 6

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## NARWHAL TESTIMONY

the hearing but welcomed two managers from Narwhal.

### Narwhal

Michael Parker, a manager and an owner of Narwhal and an affiliate EE Partners Corp., said Narwhal holds 83,000 acres in West Harrison Bay adjacent to the unit and has invested some \$8 million in acquiring the leases, conducting a geological assessment and beginning permitting and field work, with plans to invest up to \$100 million in an exploration program over the next two years depending upon permits and the availability of equipment and service providers.

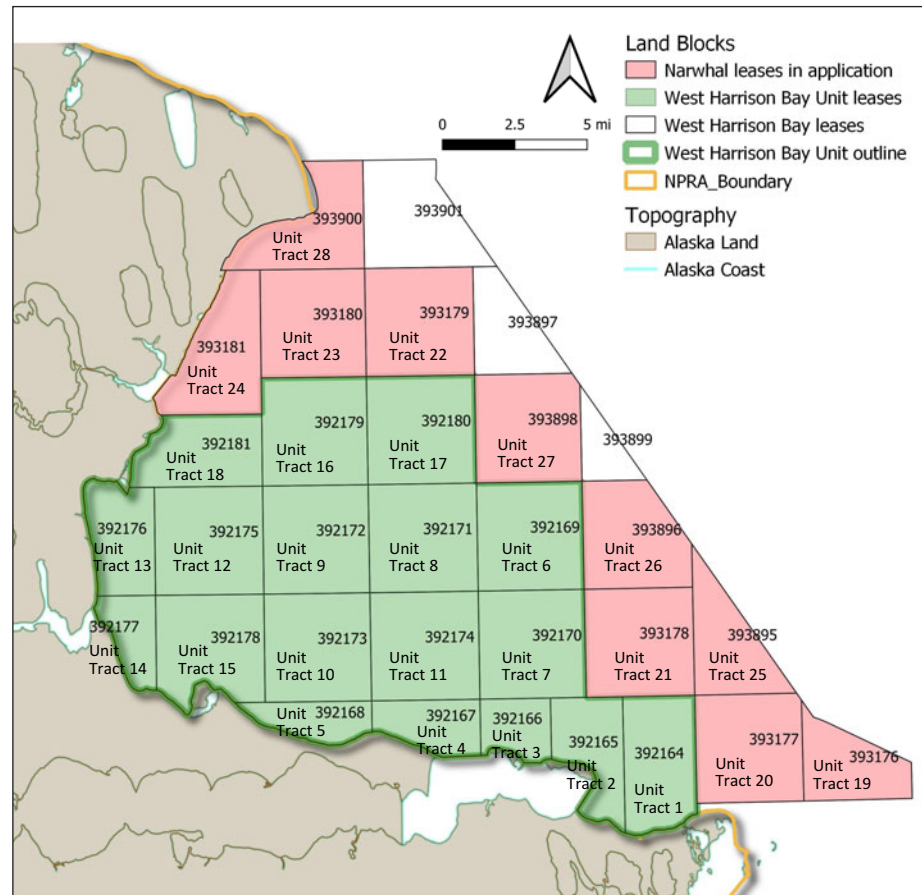
Both Shell and DNR are impeding efforts to bring West Harrison Bay into production, he said.

Shell, which unitized its West Harrison Bay leases in 2020, has said it will no longer operate in Alaska, Parker said, and has been open about looking for a third party to operate West Harrison Bay.

DNR, since 2020, “has accommodated nearly every extension and other accommodation requested by Shell,” Parker said.

### DNR and Shell

Narwhal’s Stephane Labonte presented a proposal from the company to put into statute requirements that DNR issue default letters and require cures within specified periods of time for all operators who fail to meet requirements of plans of exploration or operation.



He compared the treatment of Shell with that of smaller operators and said recently DNR has been quick to issue letters of default to Jade Energy and Furie when those small companies failed to meet requirements in their plans but has so far let Shell be in default for 16 months.

Labonte said requirements on default are in DNR’s regulations and proposed putting them in statute. Narwhal included proposed

statutory language in its presentation to the committee.

In early March Narwhal filed against DNR in Alaska Superior Court for its failure to act against Shell (see story in March 24 issue of Petroleum News).

In 2022, Narwhal had asked DNR’s Division of Oil and Gas to expand the West Harrison Bay unit to include Narwhal’s adjacent leases and name Narwhal operator, requests denied by the division in 2023. In January of this year Narwhal filed a reconsideration request with DNR Commissioner John Boyle.

### DNR, Shell

Committee records do not reflect any response from DNR on invitations to present at the hearing but do include a letter from Shell explaining why it felt unable to provide testimony at the hearing.

Shell said it had a meeting scheduled with DNR on April 17 concerning the West Harrison Bay unit and “given the confidential nature of Shell’s ongoing work and immediacy of our critical meeting with DNR, Shell is not in a position to provide public testimony regarding these efforts.”

Shell cited its work on the acreage and said it “has continued searching for a potential co-owner or co-owners with the demonstrated financial, technical, and operational

Narwhal’s Stephane Labonte presented a proposal from the company to put into statute requirements that DNR issue default letters and require cures within specified periods of time for all operators who fail to meet requirements of plans of exploration or operation.

capability to participate in this project.”

That has included “confidential discussions with multiple potential co-owners” as well as regular communication with DNR on that search.

Narwhal said it has made several proposals to Shell to buy its acreage or work with Shell cooperatively to develop West Harrison Bay, but all offers have been rejected.

### Committee members

The committee did not take any action following Narwhal’s presentation, but some members expressed concern about statements unflattering to DNR and Boyle made by Narwhal. McKay assured the committee that DNR was aware of the hearing and the nature of what Narwhal would say and had not responded to requests to participate.

He said DNR had known for weeks that the hearing was going to occur and had opportunities to participate — or to provide confidential responses to McKay’s office on the subject — but refused both offers several times.

McKay said his office had been following the West Harrison Bay issue for about a year and a half, but hadn’t brought it before the committee, hoping for resolution of the issues. But with no resolution, and the end of the session approaching, he said he thought it was important for the committee to hear about the issue and make up their own minds.

He acknowledged that there was an ongoing administrative appeal but said since it was not a lawsuit seeking damages, the committee hearing did not violate legislative rules.

McKay said his office and the committee didn’t condone any allegations made in the hearing but was just trying to provide an open forum.

—KRISTEN NELSON

Contact Kristen Nelson  
at knelson@petroleumnews.com

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## PIKKA UPDATE

a robust first quarter for 2024.

“The first quarter brought strong free cash flow which provides a solid foundation for the year ahead. It positions us well to fund shareholder returns, backfill and sustain our existing business, complete our major projects and grow our Santos Energy Solutions business,” Gallagher said.

“I am very pleased that Barossa pipelaying activities are now almost complete and all other Barossa activities are progressing well with first gas expected in the third quarter 2025,” he said. (Barossa was 70.6% complete at the

end of the quarter.)

“The Pikka project has made excellent progress over the winter months in Alaska and is on track for first production in 2026,” Gallagher said.

“Barossa and Pikka are world-class projects that will be transformative for Santos and set the company up with long-term, stable cash flows for the next 10-15 years at least,” he said.

Santos’ first quarter strong free cash flow came from operations of US\$692 million.

Sales revenue was US\$1.4 billion for the quarter.

—KAY CASHMAN

Contact Kay Cashman  
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## HICKORY-1 WELL

accelerated, capital-lite production given the highly development-friendly location of Hickory-1. . . . Development of these reservoirs is anticipated to be via long horizontal production wells, with numerous production analogues elsewhere demonstrating many multiple times the flow rates achieved from vertical wells,” Gilbert said.

Detailed evaluation of these development options, and pursuit of the “optimal pathway, is the process that we are now set to undertake over the coming months. This work will be undertaken alongside the assessment of independent Contingent Resource declarations for the SFS and SMD reservoirs at Hickory-1, which will be additive to the BFF Contingent Resource previously declared. It is a busy and exciting time ahead for 88 Energy,” Gilbert said.

—KAY CASHMAN

Contact Kay Cashman  
at publisher@petroleumnews.com

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## AUGUSTINE GEOTHERMAL

benefit of Alaska and its citizens.

GeoAlaska owns and operates geothermal prospecting permits and leases at Mount Spurr and Augustine Island.

GeoAlaska is partnered with Ignis Energy Inc., a sister company to Geolog. Ignis is involved with geothermal energy projects internationally, while Geolog is well known to the energy industry in Alaska as a premier surface logging company over the past 25 years.

### First well 2025

The first geothermal well at Augustine Island is anticipated to be drilled in 2025. Follow-along production and injection wells will be planned, permitted, and drilled on the heels of that first well in 2025.

During 2023, GeoAlaska collected audio-magnetotelluric (AMT) and gravity data at Augustine Island to evaluate ADL 394080. These data were subsequently analyzed by JRG Energy Consultants, an internationally respected geothermal engineering company headquartered in New Zealand.

Using the AMT data, JRG's team identified what is believed to be the apex of a hydrothermal resource; an area within ADL 394080 that Craig has described as "the sweet spot" — GeoAlaska's initial lead.

JRG advised GeoAlaska that the AMT signal did not penetrate deeply enough to define the boundaries of the initial lead, including its depth and areal extent. Consequently, JRG was not able to complete further modeling or volumetric analysis.

The potential hydrothermal volume along with other factors such as temperature and flow rate, are required to calculate the amount of baseload geothermal power that a geothermal resource can support on a sustainable basis.

In response to JRG's recommendation to collect MT data that will accurately measure the depth and areal extent of the hydrothermal resource, and due to the



Above: Summit during the summer 2023 MT and Gravity Survey Campaign, courtesy of a survey team member, taken on 8/13/23. Left: An outcrop on the southern shoreline within the GeoAlaska license area dubbed "Mr. Augustine," which appears to be for centuries on guard of the treasures to be discovered.

ELISA MUNGUIA, POLLUX AVIATION

GEOALASKA

*"If we were to drill immediately, based on the 2023 AMT results, we would be 'poking and hoping' with the drill bit."*  
—Paul Craig

cone at Augustine in order to infer the location, depth and conformation of the shallow magma chamber(s) estimated by the USGS to be about 4 kilometers below sea level.

### Similar to O&G de-risking

Craig describes the current situation at Augustine Island as being similar to de-risking an oil or gas prospect identified using 2D seismic data. In Craig's words, "The 2023 AMT data identified an initial lead. However, the resolution of the AMT data at depth is akin to 2D seismic data in the oil patch, when what you really need is high resolution 3D.

"GeoAlaska and Ignis have decided that it makes sense to collect high resolution MT data over the prospect — not unlike completing a 3D seismic survey — to further de-risk drilling and turn the 'sweet spot' at Augustine into a de-risked prospect."

Craig added, "The incremental cost of collecting MT data at Augustine during 2024 is money well spent. Measuring MT signal at sufficient depth over a larger area will increase our subsurface knowledge at Augustine by more than 10X. If we were to drill immediately, based on the 2023 AMT results, we would be 'poking and hoping' with the drill bit. Once we have collected the MT data, we will perform further modeling and volumetric analyses, to identify the optimal drilling location for our first exploratory well."

GeoAlaska and Ignis look forward to ongoing collaboration at Augustine, Mount Spurr and beyond, with the hope of meeting a portion of Alaska's current and future baseload energy needs — sourced from clean, sustainable and affordable geothermal power. ●

Contact Kay Cashman at [publisher@petroleumnews.com](mailto:publisher@petroleumnews.com)

during 2024 covering both geothermal prospecting permits.

The 2024 MT survey will be designed to measure resistivity at significantly greater depths than the 2023 AMT survey.

According to Craig, "from a de-risking perspective, collecting the MT data across all of the acreage will result in GeoAlaska having more than a 10-fold increase in useful geophysical data regarding geothermal potential underlying Augustine Island."

Several of the MT readings collected in 2024 will be concentrated around the identified initial lead, while others will be distributed across the entire southern half of the Island to assess prospectivity at depth throughout the newly acquired acreage.

GeoAlaska is also proposing to collect a circle of MT data around the volcanic

240% increase in acreage under which one or more additional leads may be identified, GeoAlaska and Ignis have decided that the prudent path forward is to collect additional MT data at Augustine Island



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## 2023 DRILLING

Prudhoe oil pool. The Schrader Bluff, Borealis and Aurora pools are in what is referred to as the Western Satellites, a region within the Prudhoe Bay unit that Hilcorp has been focusing on for expanded development.

Hilcorp also drilled seven development wells into the Milne Point field Schrader Bluff oil pool. And at Milne Point the company drilled five wells into the Kuparuk River oil pool. The company has been using polymer to enhance production of the relatively viscous Schrader Bluff oil in both the Milne Point and Prudhoe Bay units.

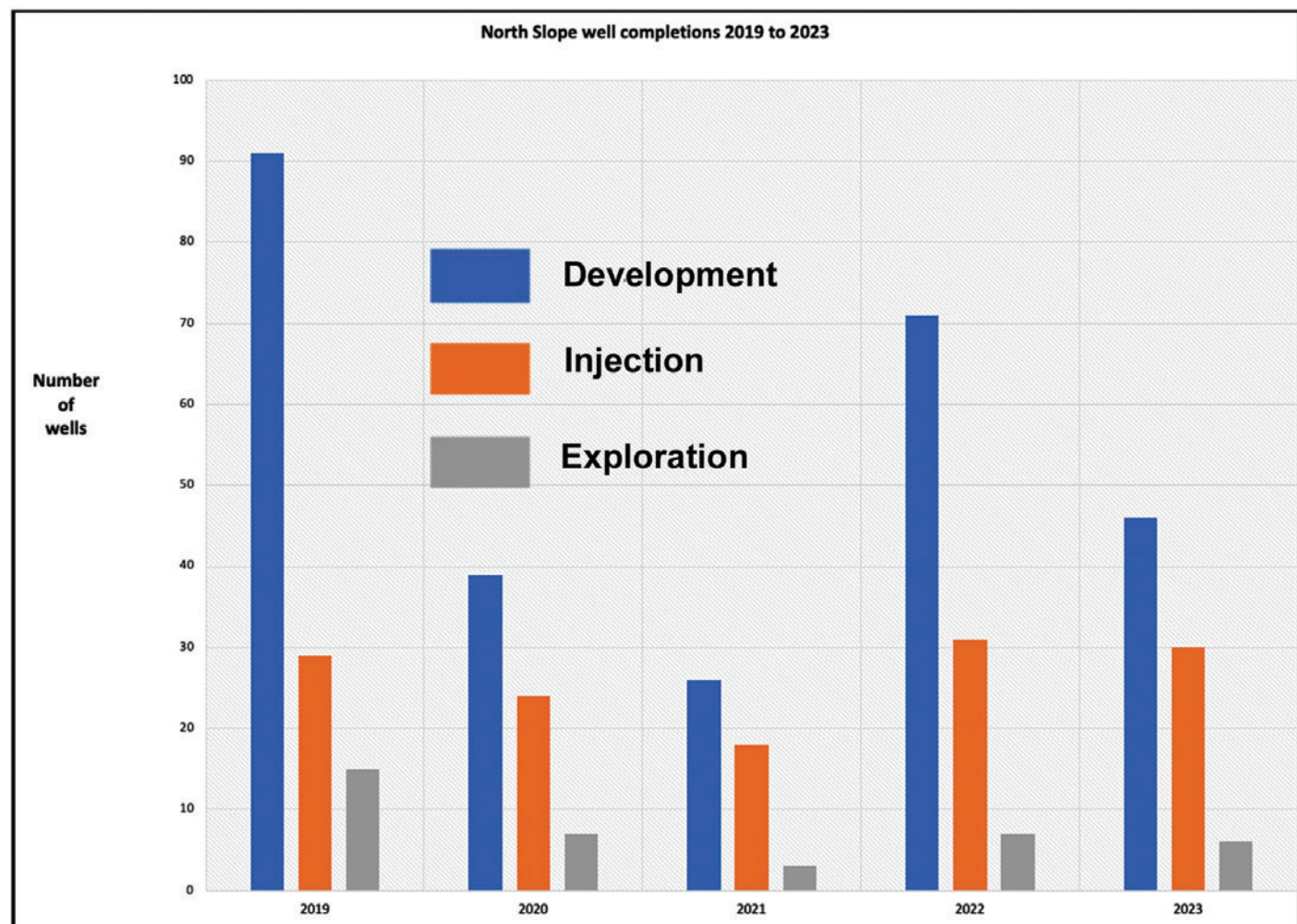
ConocoPhillips drilled nine North Slope development wells. Four of these wells were in the Colville River unit, two drilled into the Qannik oil pool, and one each into the Narwhal and Alpine pools. The company drilled three wells in the Greater Mooses Tooth unit, all of them into the Rendezvous oil pool. And the company also drilled two development wells in the Kuparuk River unit, one into the West Sak oil pool and one into the Kuparuk River pool.

Eni US Operating Co. drilled two development wells in the Nikaitchuq unit, both into the Schrader Bluff oil pool as part of the company's ongoing plan of development for the unit. And Oil Search (Alaska) Inc. drilled two wells into the Nanushuk oil pool as part of its development of the Pikka oil field.

### North Slope injection wells

In 2023 30 injection wells were drilled on the North Slope. The majority of these were drilled for injecting fluids for enhanced oil recovery. One well was a water supply well, one was a waste disposal well and two wells were plugged and abandoned. Hilcorp completed seven enhanced oil recovery injection wells in the Milne Point unit and eight in the Prudhoe Bay unit. The majority of these wells in both fields targeted the Schrader Bluff oil pool.

ConocoPhillips completed two enhanced oil recovery injection wells in the Colville River unit, four in the Greater Mooses Tooth unit and three in the Kuparuk River unit. Oil Search completed two enhanced oil recovery injection wells as part of its



Pikka development.

### North Slope exploration drilling

In terms of exploration, ConocoPhillips completed the Bear 1 exploration well, near the Colville River, south of the village of the Nuiqsut, in a similar geologic setting to Oil Search's Pikka oilfield to the north. The company has recently reported that Bear 1 proved to be a dry hole. ConocoPhillips also completed three exploration wells targeting the Coyote oil pool in the Kuparuk River unit — Coyote is a discovery in the Nanushuk formation that hosts the reservoir for the Pikka field.

Accumulate Energy Alaska, a subsidiary of 88 Energy, completed its Hickory 1 exploration well in the central North Slope near the Haul Road, to test multiple reservoirs. The company has since reported successful oil flow testing from the Upper SFS reservoir penetrated by the well.

In 2023 ASRC Consulting and

Environmental Services completed an exploration well in the Prudhoe Bay unit. This well was drilled as part of an international research project into methane hydrate production.

### Cook Inlet drilling

Hilcorp drilled all 10 of the development wells completed in the Cook Inlet basin in 2023. The wells targeted gas in operating gas and oil fields, presumably reflecting Hilcorp's focus on extending the life of the fields and maintaining adequate gas production. Three of the wells were in the Beluga River gas field on the west side of the Cook Inlet, three were in the Ninilchik gas field on the west coast of the Kenai Peninsula, three were in the Swanson River oil field in the northern Kenai Peninsula, and one was in the Lewis River gas field, inland, on the northwest side of the inlet.

No injection wells were drilled in the Cook Inlet basin in 2023.

The complete absence of Cook Inlet exploration drilling in 2023 seems to underline current concerns about the adequacy of future natural gas supplies in the region. Hilcorp has been conducting exploration in the basin but clearly needs to continue to develop its existing fields, to ensure that it can maintain gas supplies from known gas resources to meet its gas supply contractual obligations. The company has drilled a number of exploratory and stratigraphic test wells in recent years.

Other operators in the inlet appear challenged by the economics of exploration in the region. And significant offshore exploration in the Cook Inlet itself will probably require an additional jack-up drilling rig in the inlet. The Spartan 1 jack-up rig that is currently in the inlet is primarily used by Hilcorp to drill development wells. ●

Contact Alan Bailey  
at [abailey@petroleumnews.com](mailto:abailey@petroleumnews.com)

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## OIL PRICES

U.S. commercial crude oil inventories for the week ending April 12 not including those in the Strategic Petroleum Reserve jumped by 2.7 million barrels from the previous week to 460.0 million barrels — 1% below the five-year average for the time of year, the U.S. Energy Information Administration reported April 17. It was fourth straight week of inventory increases.

Analysts surveyed by The Wall Street Journal had predicted a 600,000-barrel rise.

The U.S. government added a trickle of crude to the SPR — 648,000 barrels — to push levels to 364.9 million barrels, the EIA said.

Total motor gasoline inventories countered with a bullish drawdown of 1.2 million barrels for the period to 227.4 million barrels — 4% below the five-year average for the time of year, the EIA said.

The Wall Street Journal poll foresaw a 1 million barrel drop.

Distillate fuel inventories fell 2.8 million barrels for the period to 115 million barrels — 7% below the five-year average for the time of year.

### China's GDP up

China's gross domestic product in the first quarter rose by 5.3% year on year at constant price, according to an April 16 release from the National Bureau of Statistics of China.

There were some standout sectors.

Investment in manufacturing of aerospace vehicles and equipment grew by 42.7%, while investment in e-

**U.S. Federal Reserve officials including Chair Jerome Powell declined to provide any clear guidance April 16 as to when the nation's benchmark interest rate might be cut, leading investors to price out any meaningful relief from high borrowing costs on the near future.**

commerce services and in information services grew by 24.6% and 16.9% respectively, the bureau said.

But the important real estate sector continued to struggle. Total sales of new commercial buildings were down by 27.6%, the bureau said.

George Magnus, associate at the University of Oxford China Centre told Newsweek for an April 17 article that the forward momentum is unlikely to last.

"March monthly data on the economy were much softer than the recently announced Q1 GDP data, deflation risk still stalks the economy, and the widely discussed need to strengthen consumption spending isn't finding traction in action to bolster household incomes and spending," Magnus said, adding that if the economy lags over the summer, he expects some stimulus in the second half, but Beijing may not shore up the household sector "other than cyclically, if at all."

### No clear interest rate guidance

ANS shed 29 cents April 16 to close at \$90.28, while WTI edged down 5 cents to close at \$85.36 and Brent shed 8 cents to close at \$90.02.

U.S. Federal Reserve officials including Chair Jerome Powell declined to provide any clear guidance April 16

as to when the nation's benchmark interest rate might be cut, leading investors to price out any meaningful relief from high borrowing costs on the near future.

On April 15, ANS gained 13 cents to close at \$90.58, WTI shed 25 cents to close at \$85.41 and Brent lost 35 cents to close at \$90.10.

Although the risk of a broader conflict in the Middle East continued to loom over the market, crude prices failed to blast off Monday April 15 after Iran's attack on Israel over the weekend.

The "risk premia" had been priced into oil since an Israeli strike on Iran's consulate in Syria took place early this month, Darwei Kung, head of commodities and portfolio manager at DWS Group told MarketWatch.

"Given the tone from the U.S. and its allies, as well as the delay in Israel's government's actions, we believe the market priced out some of the potential upside" April 15, he said.

April 12 was an up day, seeing ANS up 28 cents to close at \$90.45, WTI up 64 cents to close at \$85.66 and Brent up 71 cents to close at \$90.45.

ANS fell 41 cents April 11 to close at \$90.17, while WTI plunged \$1.19 to close at \$85.02 and Brent fell 74 cents to close at \$89.74.

For the week Wednesday to Wednesday, ANS lost \$2.75 from its close of \$90.57 on April 10 to a close of \$87.82 April 17.

On April 17, ANS sold at a premium of \$5.13 over WTI, and ANS sold at a premium of 53 cents over Brent. ANS and Brent closed at \$90.45 each on April 12. ●

Contact Steve Sutherlin  
at [ssutherlin@petroleumnews.com](mailto:ssutherlin@petroleumnews.com)