



page 5 Rig headed to 88 Energy's Merlin 1 drill site, camp & airport open

ConocoPhillips says Harpoon 2 dry but prospect still promising

In its Feb. 21, 10-K 2020 annual report, ConocoPhillips expensed its North Slope Harpoon 2 exploration well as a dry hole after “evaluations confirmed the well intersected sub-commercial volumes of hydrocarbons in the upper Harpoon interval which will not be developed.” But the company still views the prospect as having commercial potential and intends to do more drilling there in the future.



MATT FOX

In the National Petroleum Reserve-Alaska, Harpoon 2 was one of three Harpoon prospect wells that were supposed to be

see **HARPOON 2** page 10

Seaview summer startup eyed with March mobilization for HDD boring

Natural gas from Hilcorp's much-anticipated Seaview prospect at Anchor Point remains offline for now, but the company anticipates production coming online this summer, assuming the success of horizontal directional drilling under the Anchor River for the project's gas pipeline from the Seaview pad to the existing Enstar gas transmission pipeline.

Production was expected to begin Nov. 1, but the date slipped into 2021 when construction delays on the 2-mile pipeline squelched the company's production plans for 2020, Jennifer Starck, Hilcorp Alaska Kenai team lead said Feb. 19 in remarks to the Alliance Kenai digital luncheon.

“Because of the location of this pad, we've got some very

see **SEAVIEW STARTUP** page 10

Canadian oil patch future about 'scale and size' M&A activity

There's a catchphrase — “scale and size” — that's spreading like a virus through the Canadian oil patch these days.

What it means in real terms was captured in a few days around the middle of February with a succession of deals and plans for strategic shifts, prompting what many analysts believe will be a wave of further mergers and acquisitions, especially in the Montney shale play of northeastern British Columbia and northwestern Alberta.

On the same day, Brookfield Infrastructure Partners launched a hostile C\$13.5 billion takeover attempt for a coveted midstream company, Inter Pipeline, followed in a few hours by a friendly move to combine the forces of ASRC Resources and Seven

see **“SCALE AND SIZE”** page 9

TMX ownership at stake; Canada in talks with 75 Indigenous tribes

With construction resuming on Canada's Trans Mountain pipeline expansion, TMX, after a two-month shutdown, the pace of negotiations that could lead to a change of ownership in the project is quickening.

As well as opening talks to set the stage for possible sale of the 590,000 barrels per day new pipeline, in addition to the existing 300,000 bpd line, federal government officials are introducing consultants to provide a financial analysis of the eventual system.

Preliminary discussions started two years ago with Indigenous communities and prompted the Department of Finance to conclude that a form of revenue-sharing or the purchase of an equity stake in TMX would be the “preferred

see **TMX OWNERSHIP** page 10

EXPLORATION & PRODUCTION

Nearing home stretch

Pikka enters FEED with year-round access; soft sounding for 3rd partner

By **KAY CASHMAN**

Petroleum News

An investor briefing and two ASX filings, followed by a Feb. 22 Petroleum News interview with Oil Search top executive Keiran Wulff, produced the following key updates to the company's North Slope Pikka oil field development plans, including those for bringing in a third partner.



KEIRAN WULFF

As anticipated, Pikka has entered the front-end engineering and design, or FEED, process for phase 1, involving a single drill site and production facility with an 80,000 barrel-a-day capacity that will begin producing oil by 2025 from the first

major Nanushuk reservoir discovery on Alaska's North Slope. Subsequent phases will be paid for by cash flow from phase 1.

Construction is expected to begin after a final investment decision in late 2021, which will likely be preceded by the equity sell-down of 30% by Oil Search and its partner Repsol that will leave operator Oil Search a 36% share.

Oil Search said it is “well positioned to proceed” having completed a “significant construction effort in 2020, including pads for the Pikka NDB drill site, production facility and operations

see **PIKKA FEED** page 12

EXPLORATION & PRODUCTION

COVID impacts drilling

Notably fewer Slope development wells in 2nd half of 2020; fewer total wells

By **ALAN BAILEY**

For Petroleum News

With just 38 development wells completed in North Slope oil fields in 2020, compared with 88 wells in 2019, the COVID-19 pandemic clearly impacted drilling activity in the Alaska oil industry. The picture becomes still clearer when looking at the timing of the drilling: 28 of the development wells drilled in 2020 were completed prior to the beginning of May, according to data published by the Alaska Oil and Gas Conservation Commission.

In the first four months of the year ConocoPhillips completed 11 development wells in the Kuparuk River field and five in the Colville

In Cook Inlet the impact of COVID-19 on drilling activity is less obvious. A total of 10 development wells were drilled in 2020, with the drilling being spread fairly evenly across the year.

River unit. BP completed six development wells in the Prudhoe Bay field, while Hilcorp Alaska completed six in the Milne Point field. However, following the spread of the pandemic in the United States, ConocoPhillips announced a drilling rig laydown from April for the remainder of the year.

see **DRILLING DECLINE** page 11

FINANCE & ECONOMY

ANS crude hits new high

Growing demand meets tight supply in wake of freak midwestern freeze

By **STEVE SUTHERLIN**

Petroleum News

For every action there is an equal and opposite reaction, so says Newton's third law of motion. Newton's law applies to a relationship between two objects, so perhaps it doesn't directly apply to the complexities of oil markets.

Surging oil prices in early 2021 may not equal an exact match to the plunge in early 2020, but there's no denying that the action so far in 2021 is opposite to that of the pandemic-induced crash of 2020.

Oil prices have already recovered beyond levels that many analysts predicted for summer — even for the end of the year.

Public companies are reluctant to increase drilling expenditures while the pandemic outcome remains uncertain, Dallas Fed economist Kunal Patel told the International Energy Forum Feb. 22.

Alaska North Slope crude ascended \$1.97 to a new post-coronavirus-crash high of \$66.29 per barrel Feb. 24. Brent rose \$1.67 to \$67.04 and West Texas Intermediate rose \$1.55 to \$63.22, each also at new highs since the crash in April 2020.

The three indexes dropped a bit on Feb. 19,

see **OIL PRICES** page 4

● LAND & LEASING

Eni requests Oooguruk contraction delay

Division of Oil and Gas previously approved one-year delay; has just approved contraction delay for neighboring Nikaitchuq unit

By **KRISTEN NELSON**

Petroleum News

Low oil prices, reduced oil demand and impacts of the COVID-19 pandemic have caused Eni to request delays in unit contractions at its two North Slope units, Nikaitchuq and Oooguruk.

The company requested a delay for Nikaitchuq in January; on Feb. 22, it requested a contraction delay at Oooguruk.

The Alaska Department of Natural Resources' Division of Oil and Gas approved the Nikaitchuq deferral on Feb. 17.

An earlier Oooguruk contraction approval, granted in 2019, ran through the end of February.

Unit contraction reduces a unit to acreage within participating areas, PAs, the areas from which production is occurring.

In its Oooguruk request Eni provided the division with "technical notes" outlining its long-term plans to drill into areas in the unit which are not in PAs.

There are three PAs at Oooguruk: the Oooguruk Nuiqsut PA, Oooguruk Kuparuk PA and Oooguruk Torok PA.

When the division approved the 14th plan of development for Oooguruk in August, division Director Tom Stokes said that under the plan, which covers Oct. 1, 2020, through Sept. 30, 2021, Eni "proposes to maintain production, conduct maintenance, continue process optimization, engineering studies to reduce cost, and well planning for operations beyond the proposed period. No drilling or workover activities are anticipated."

Appraisal wells under evaluation

In its 14th Oooguruk POD proposal, Eni said that for lands not within PAs, it "is evaluating two appraisal

wells targeting the northern Nuiqsut reservoir," and said both are within the 22,000-foot proven drilling radius of the Oooguruk Drill Site. The wells would test productivity and quality of the oil on three leases: ADL 379301, ADL 389953 and ADL 389949. These leases are in the northeast corner of the Oooguruk unit.

In its contraction delay request Eni said contraction of the leases not included in PAs "will make it very unlikely that oil resources could be accessed and developed by any other operator in the area since the drilling paths of neighboring development projects are located farther away than the drilling path from the ODS and could result in stranded resources."

Eni said the contraction delay is necessary because of the global oil price decline, lack of demand for oil "and

see **ENI REQUEST** page 3

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REPRINT

7 The 2020 Polar Endeavour Shipyard Project

ConocoPhillips' 'Spirit Now' magazine calls this project a shining example of teamwork under duress

SIDEBAR, PAGE 8: 2020 Endeavour Shipyard Project Crew



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• ALTERNATIVE ENERGY

Dream of inlet tidal project continues

Dominic Lee's son, Chris Lee, tells FERC he has taken over as Turnagain Arm Tidal Energy president, wants to see project restarted

By KRISTEN NELSON
Petroleum News

There have been proposals over the years to harness Cook Inlet tidal power and one of those proposals, formerly headed by Dominic Lee, is now being pursued by his son, Chris Lee.

The proposal became public in 2009 when the Federal Energy Regulatory Commission received a preliminary permit application from Little Susitna Construction Co. to partner with Blue Energy Canada Inc. to build a tidal power system in Turnagain Arm using structures called tidal fences to harness the inlet's 30-foot tides using Davis turbines in a \$2.5 billion project to generate an average output of 1,200 megawatts.

By 2011, Dominic Lee, president and CEO of Little Susitna Construction, was proposing a different approach, and told FERC in a May 2011 filing that after further engineering study "it was determined that the Davis turbines deployed in tidal fence arrangement ... were considered experimental and were not accepted for current use."

Instead, Lee, filing as Turnagain Arm Tidal Energy Corp., said the revised plan was based on a tidal power project in La Rance, France. That project, Lee said, has been in operation since 1966 using a "bulb type of turbine."

The Cook Inlet proposal called for use of a barrage — a type of low-head diversion dam with gates which can be opened or closed — 1,000 feet long and 100 feet

The Cook Inlet proposal called for use of a barrage — a type of low-head diversion dam with gates which can be opened or closed — 1,000 feet long and 100 feet wide some 5 miles from Possession Point near Fire Island.

wide some 5 miles from Possession Point near Fire Island.

Lee said bulb-type turbines had been in operation at La Rance for more than 45 years with no recorded breakdowns.

Construction of the project in Cook Inlet was estimated at \$760 million, and would produce 240 megawatts of power, he said.

The barrage would be backed by a reservoir 1 mile by 2 miles — a storage tank 20 feet above high tide for water to be used to drive the turbines during slack tide.

Lee said that while tidal power is predictable, it is intermittent because of the slack tide period — hence the storage tank. In Turnagain Arm, he said, the slack tide is short, 15 to 30 minutes, and the reservoir would provide moving water for energy production during the slack tide.

Slot gates would be open during flood tide and closed in ebb and slack tide and during flood tide a pump system would fill the storage tank to 10 feet above high-tide level and during slack tide slot gates would be raised and the turbines would be turned by water coming out of the storage tank.

see **TIDAL PROJECT** page 4

continued from page 2

ENI REQUEST

the logistical interference of the COVID-19 pandemic."

Those factors resulted in budget cuts at Eni, production curtailments and project deferrals at Oooguruk, the company said, and because of these temporary conditions which are beyond its control, it is requesting a further delay in the automatic contraction of the Oooguruk unit.

The Oooguruk unit was formed in 2003.

On Aug. 1, 2019, Eni succeeded Caelus Natural Resources Alaska as unit operator. Eni said there are 16 state leases, some 35,271 acres, in the unit.

Nikaichuq deferral approved

In January Eni requested a deferral for contraction of the Nikaichuq unit, a request the division granted Feb. 17.

Oooguruk and Nikaichuq are adjacent and lie north of Kuparuk. Oooguruk is primarily offshore; Nikaichuq is entirely offshore.

In granting the Nikaichuq deferral, Stokes said Eni provided the division with "evidence that the Schrader Bluff reservoir extends outside the current participating area, and has described long-term plans to drill wells in this area."

If the wells are drilled, and prove productive, that area would likely be included in the existing Schrader Bluff PA, he said.

Without a contraction delay, Eni may lose the right to drill there, and if the Nikaichuq unit is contracted, Stokes said, "the resources outside the unit are unlikely large enough to justify development by another lessee who might acquire the area in a future lease sale."

The area would also likely require "duplicative facilities to develop."

"If the area is contracted from the NU," Stokes said, "then the relatively small resource size and difficult development options could prevent development and thus strand State resources."

Contraction of the Nikaichuq unit was deferred through Sept. 30, 2022, which coincides with the expiration of the units next plan of development. ●

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EXPLORATION & PRODUCTION

US drilling rig count unchanged at 397

The Baker Hughes U.S. rotary drilling rig count, 397 for the week ending Feb. 19, was unchanged from Feb. 12, the first time since Nov. 25 that the count has not seen a week-over-week increase. Year-over-year the count is down, by 394, from a count of 791.

When the count bottomed out at 244 in mid-August last year, it was not just the low for 2020, but the lowest the count has 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 when it gained back 10 rigs.

The Feb. 19 count includes 305 rigs targeting oil, down by one from the previous week and down 374 from 679 a year ago, 91 rigs targeting gas, up one the previous week but down 19 from 110 a year ago, and one miscellaneous rig, unchanged from the previous week and down one from a year ago.

Sixteen of the holes reported Feb. 19 were directional, 357 were horizontal and 24 were vertical.

North Dakota (14) and Texas (194) were each up by one rig from the previous week. Alaska (3) and Louisiana (47) were each down by one.

Counts in all other states remained unchanged: California (7), Colorado (8), New Mexico (61), Ohio (7), Oklahoma (17), Pennsylvania (18), Utah (3), West Virginia (12) and Wyoming (5).

Baker Hughes shows Alaska with three rigs active Feb. 19, down by one from the previous week and down by nine from a year ago, when the state's count stood at 12.

The rig count in the Permian, the most active basin in the country, was up by one from the previous week at 204, but down by 205 from a count of 409 a year ago.

—KRISTEN NELSON

ENVIRONMENT & SAFETY

Back in Paris pact, US faces tougher steps

World leaders welcomed the United States' official return to the Paris climate accord Feb. 19, but politically trickier steps lie just ahead for President Joe Biden, including setting a tough national target in coming months for cutting damaging fossil fuel emissions.

And even as Biden noted the country's first day back in the climate pact, the globe's dangerous warming was just one of a long list of urgent problems he raised in a video speech to European leaders Feb. 19, a month into his administration. Before bringing up climate issues, he touched on the global pandemic, sputtering national economies and tense relations with China, among other matters that threaten to impede and delay tackling the nation's status as the world's top carbon polluter after China.

Despite all the other challenges, Biden said, speaking to the Munich security conference, "we can no longer delay or do the bare minimum to address climate change. This is a global existential crisis, and all of us will suffer if we fail."

Biden signed an executive order on his first day in office reversing the pullout ordered by President Donald Trump. Trump said soon after he took office that he would start the process of pulling the U.S. from the Paris accord, but it didn't take effect until Nov. 4, 2020, because of provisions in the agreement.

Officially, the United States was only out of the worldwide global climate pact for 107 days. It was part of Trump's withdrawal from global allegiances in general and his oft-stated but false view that global warming was a laughably mistaken take by the world's scientists.

More broadly, Trump reversed Obama-era initiatives to rein in oil, gas and coal emissions and opened new federal lands and waters to exploration and drilling. Biden is working to overturn those measures and additionally has pledged a \$2 trillion remake of U.S. power grids, transportation systems and other infrastructure to sharply cut fossil fuel pollution.

While Feb. 19's return is heavily symbolic, world leaders say they expect America to prove its seriousness to the cause. They are particularly eager for the United States to announce its new national 2030 target for cutting fossil fuel emissions, which scientists agree are altering the Earth's climate and worsening the extremes of drought, hurricanes, flooding and other natural disasters.

United Nations Secretary-General Antonio Guterres said Feb. 18 that the official American reentry "is itself very important," as is Biden's announcement that the U.S.

see **PARIS ACCORD** page 9

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OIL PRICES

cooling off to end a week that had had seen prices advance to post-crash highs in the wake of the Texas rolling blackouts.

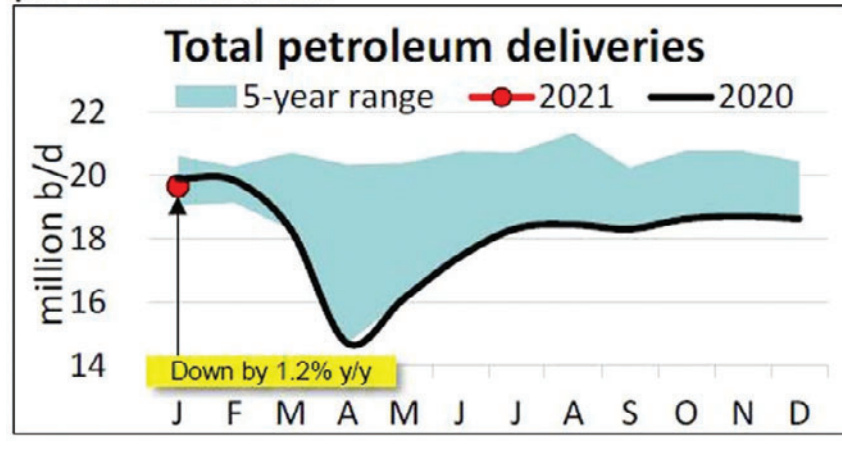
When trading opened Feb. 22, traders had had a weekend to assess the extent of supply disruptions from the polar blast that slammed the central United States. Prices jumped sharply higher on the day. ANS popped \$2.45 to close at \$64.60, Brent gained \$2.33 to close at \$65.24, and WTI rose \$2.25 to close at \$61.49.

Feb. 23 was a day of consolidation; ANS gave up 28 cents, but Brent added 13 cents and WTI added 18 cents.

As COVID-19 cases fall and vaccines proliferate, the brisk oil price action is likely driven by the growing pull of demand, compounded by supply constrictions. On top of that, the U.S. dollar weakened Jan. 24, unleashing a trifecta of upward pressure on oil prices.

U.S. petroleum demand is recovering, as measured by total domestic petroleum deliveries of 19.7 million barrels per day in January — just 1.2% below demand for the same month in 2020, according to the latest monthly statistical report by the American Petroleum Institute.

U.S. petroleum demand (19.7 mb/d) neared its pre-COVID-19 levels



US supply drops

Meanwhile, supply has taken a hit.

40 million barrels of February oil production, mostly Permian Basin oil, has been lost to the weather and 5% of wells that went offline may never come back, Ben Luckock, Trafigura Group co-head of oil trading said on Bloomberg Television Feb. 22, adding that refined products faced a similar lost output.

The market is likely underestimating the impact, he said.

“We have a strong market going into

summer,” Luckock said. “We’re certainly very bullish most of the world is getting out of lockdowns this summer. So, this market has been given an impetus given the events in Texas.”

Goldman Sachs Group Inc. said it expects Brent to reach \$75 per barrel as consumption continues to recover faster than supply.

Morgan Stanley also boosted its outlook, calling for perhaps the tightest quarter in oil markets since 2000.

The global trading arm of the government-controlled State Oil Company of Azerbaijan Republic, Socar Trading, anticipates oil will hit \$80 per barrel in 2021.

“I will not be surprised if we see \$80 a barrel in summer or before year-end and above \$100 a barrel in the next 18 to 24 months,” Hayal Ahmadzada, Socar chief trading officer, told Bloomberg Feb. 22.

Ahmadzada said steel price spikes will hinder oil services contractors’ ability to build pipes, wells and other infrastructure needed to bring back production on time and on budget.

“We may see a shake-out in that industry, due to very high steel prices,” he said.

The Federal Reserve Bank of Dallas thinks that higher prices won’t immediately

move the needle for U.S. oil production in 2021 as producers focus on cash flow and returning capital to shareholders to win back investors’ trust following the pandemic-related price crash.

Public companies are reluctant to increase drilling expenditures while the pandemic outcome remains uncertain, Dallas Fed economist Kunal Patel told the International Energy Forum Feb. 22.

At recent prices over \$60 per barrel, U.S. oil producers can drill profitably but most will hold off committing capital to drilling until assured that the price rebound is sustainable, Patel said, adding that he and his colleagues expect 2021 U.S. production will be “roughly flat” with 2020 levels — around 11 million bpd.

March 4 meeting

The Organization of the Petroleum Exporting Countries and its affiliated producing countries will hold the OPEC and non-OPEC Ministerial Meeting March 4 by teleconference to decide whether to restore 500,000 bpd of the 7 million bpd of oil production the group is currently withholding from the market.

OPEC+ had agreed on a schedule to gradually restore production in 2021, but it dialed back the scheduled increase in January as new lockdowns threatened oil price recovery.

The March 4 meeting takes on extra importance as Saudi Arabia decides the fate of its voluntary unilateral oil production cut of 1 million bpd in February and March.

While OPEC says compliance with the group’s agreed reductions has been exemplary, some countries are impatient to increase production.

The possibility that all or part of the Saudi production cut might be extended into April could provide the Saudis with extra leverage in negotiations over the actions of the group. ●

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CORRECTION

Dick Garrard, not Gerard

In the Jan. 21 issue of Petroleum News, the Oil Patch Insider brief titled “Borealis assigns numerous ORRIs; may have sold E. North Slope block” got two things wrong: The spelling of Dick Gerard’s name, which should be Garrard, and a quote by Borealis’ top executive Dave Pfeiffer, which should have read: “There was a period there where we had a lot of litigation. We were being sued by one of our major shareholders. We were suing a former executive and were being counter-sued by that individual. These transfers are all part of a larger settlement that happened in 2019 but are taking some time to go through.”

Both errors have been corrected in our story archive. Our apologies to Mr. Garrard and Mr. Pfeiffer.

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TIDAL PROJECT

The reservoir would have a concrete wall surrounded by rock and Lee said the barrage and reservoir would function as an island: fish and sea mammals could swim around it and it might provide habitat for birds and sea mammals.

Chris Lee

In a Feb. 19 letter to FERC, Chris Lee said his father passed away in July.

Since his father’s death, Chris Lee said, he has taken over duties as president of both Turnagain Arm Tidal Energy Corp. and The Little Susitna Construction Co.

Dominic Lee was not able to raise capital to keep the project moving, Chris Lee said, adding that he joined the project in 2011 to attempt to raise funds for the study phase of the project.

Chris Lee said he did not succeed in raising some \$20 million required to get the Turnagain Arm Tidal Energy project to the construction permit phase but was told by the renewable energy divisions of major investment banks that they would have “jumped at the chance to finance” the construction phase, then estimated at \$1.6 billion. “The investment banks believed that financing the project was a no-brainer for them, but only if and when the Construction Permit was issued.”

Since bridge funding could not be obtained, the company “subsequently and reluctantly requested” withdrawal of the preliminary application for the Turnagain Arm Tidal Energy Generation project, he said.

Chris Lee had written to FERC to discuss restarting the project. ●

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● EXPLORATION & PRODUCTION

Rig 111 headed to Merlin 1 drill site

88 Energy's North Slope camp and airport for Peregrine exploration program are open, well spud still set for first week of March

By **KAY CASHMAN**
Petroleum News

Mobilization of All American Rig 111 to the Merlin 1 drilling location in the National Petroleum Reserve-Alaska has begun, Perth, Australia-based 88 Energy said Feb. 18 in an ASX operations update on its North Slope Peregrine exploration program.

With the camp and airport already open, the well is scheduled to be spud in the first week of March. Drilling and logging are expected to take three to four weeks by one of the company's Alaska subsidiaries that is headed by long-time Alaska geologist Erik Opstad.



ERIK OPSTAD

"Dependent on the results from the logging, the well will then be flow tested," 88 Energy said.

Dave Wall, the company's outgoing managing director, was quoted in the update as saying:

"Commencement of drilling at Merlin 1 is now just around the corner, targeting the extension of the highly successful Nanushuk play. Success would underpin a company making development project for our shareholders, with the proven resource at the recently acquired at Umiat Oil Field adding substantial value."

Per the operations update, Merlin 1 is targeting 645 million barrels of gross mean prospective resource.

A second well in the Peregrine project, Harrier 1, "is intended to commence immediately following completion of operations at Merlin 1, subject to Merlin well results, schedule and permit approvals," 88 Energy said.

Harrier 1 is targeting a gross mean prospective resource of 417 million barrels.

Harrier and Merlin lie between the Umiat oil field to the south and Willow and Harpoon to the north.

Harpoon not a discovery — yet

The Peregrine prospects are "located on trend to an existing discovery," to the north in the same play type — Nanushuk topsets, the company said.

The Harrier and Merlin prospects are in XCD Energy's 195,000-acre Peregrine block that 88 Energy acquired in an off-market takeover in July.

Both companies have said Merlin was a direct analogy to ConocoPhillips' big Willow oil discovery, while the Harrier prospect has been interpreted to lie on the same sequence boundaries as ConocoPhillips' Harpoon prospect.

But in its Feb. 18 operations update 88 Energy

see **MERLIN 1** page 6



All-American Rig 111 staging near MP22



All-American Rig 111 carrier.

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CROWLEY FUELS FUEL DOCK, KOTZEBUE, AK

continued from page 5

MERLIN 1

referred to Harpoon as a discovery (see earlier map in the pdf and print versions of this story); rather than a prospect, despite the fact that in its Feb. 16 10-K annual report for 2020, ConocoPhillips said its first and only well at Harpoon is a dry hole.

Nonetheless, ConocoPhillips still has high hopes for the prospect and intends to return to Harpoon to explore its “remaining potential” in the future (see Harpoon story on page 1 of this issue.)

Three stacked reservoir targets

The Merlin prospect comprises three separate stacked reservoir targets in the Nanushuk formation. The deepest, N14 South, sits on the same shelf break as Harpoon, while the shallowest target, N20, correlates to the Willow discovery, 88 Energy shown in an illustration in its operations update.

“The N20 shelf/sequence boundary has been proven as a hydrocarbon bearing and commercial petroleum system by the Willow discovery to the north,” the company noted, adding “topset sands of the N18 have yet to be intersected optimally.”

Merlin 1 is estimated to cost US\$12.6 million total, while Harrier 1 well is expected to cost US\$7 million if it is drilled right after Merlin 1 in the same winter season.

Both wells will be drilled to a depth of approximately 6,000 feet in order to intersect the Nanushuk.

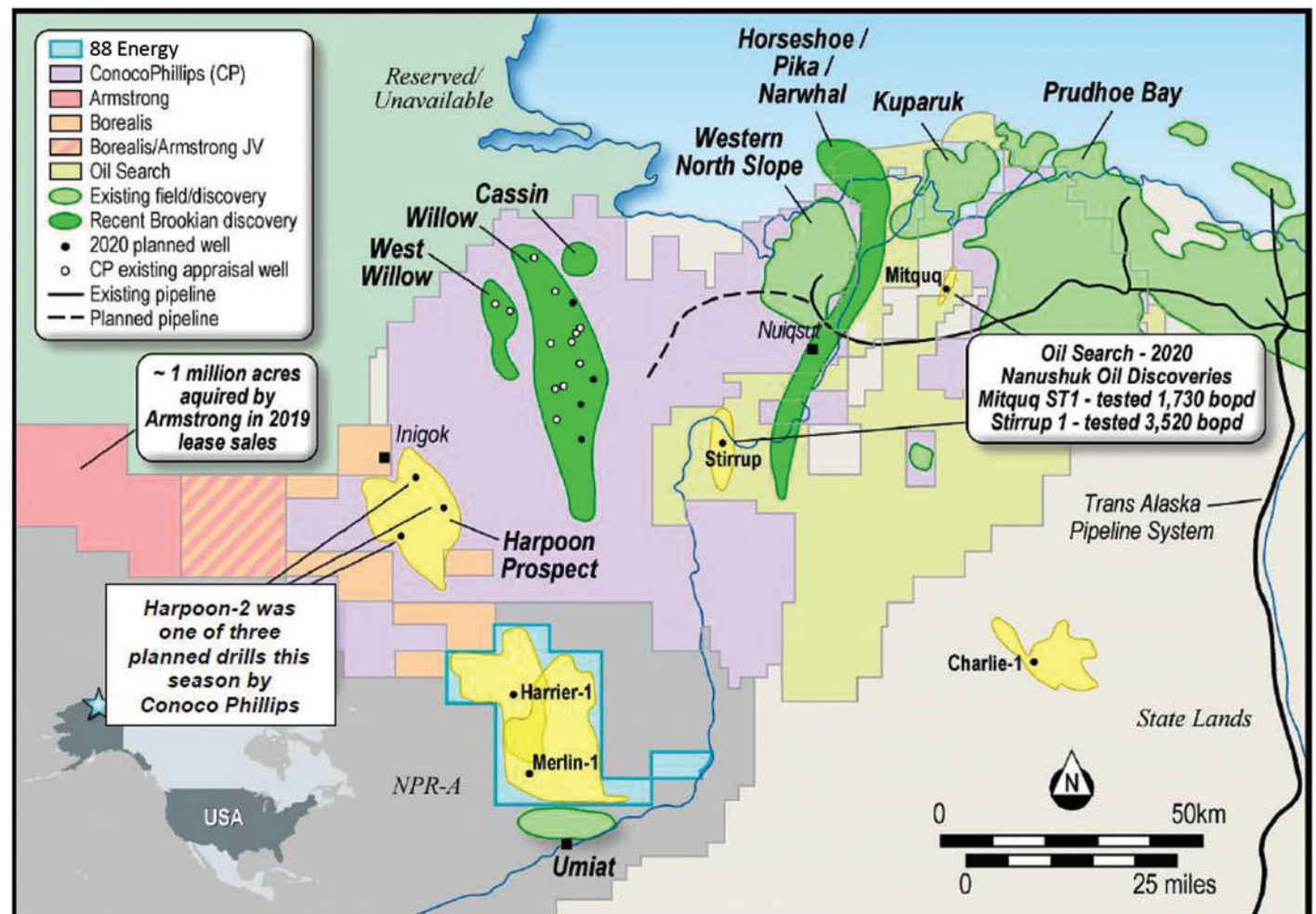
A third Merlin prospect

A third prospect in the Peregrine block, Harrier Deep, has a Torok objective at about 10,000 feet. It will not be drilled in the 2021 winter season because the shallower Nanushuk wells do not require the use of a rotary rig or an ice road, which is needed to transport the heavier traditional North Slope exploration rigs.

This allows 88 Energy to use a less expensive lightweight workover rig that can be moved off-road in pieces by tundra-safe track vehicles on snow trails. Although the use of lightweight, portable rigs and snow roads was studied and considered by XCD, Armstrong and Oil Search, 88 Energy will be the first to conduct a major wildcat exploration program on the North Slope with a lightweight rig.

Talitha A well connections

The operations update also noted that Great Bear Pantheon’s Talitha A exploration well, which just reached its full depth, is “close to the northern border of the 88E central acreage position (Project



This 88 Energy map ran in the January 17 issue of Petroleum News, but the last two ASX releases from 88 Energy now show Harpoon as a discovery. It is not, although ConocoPhillips still considers Harpoon a promising prospect and intends to return in the future to do more exploration drilling.



Bald Mountain Air loading Global Services staff.

Icewine).”

Talitha A, Wall said, is “scheduled to be flow tested over multiple horizons after encouraging log results.” (See story

titled “Talitha exploration well results promising” in the Feb. 21 issue of Petroleum News.)

Several of the “prospective horizons”

in Talitha A are “interpreted to extend into 88E acreage,” he said. ●

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● REPRINT

The 2020 Polar Endeavour Shipyard Project

ConocoPhillips' *'Spirit Now'* magazine calls this project a shining example of teamwork under duress

By RAY SCIPPA

Reprinted by permission
from ConocoPhillips "Spirit Now"

It was March 2020. The Polar Endeavour was en route from Valdez, Alaska to a shipyard in Singapore for its required dry dock maintenance scheduled to start April 1.

As the ship passed Hawaii, the crew was nearly finished cleaning the 900-foot-long vessel's cargo tanks.

Welding is part of the dry dock process and cannot be done with oil residue left in the tanks. During the three-week voyage, the crew worked around the clock, using high pressure hot water, and getting into the tank with shovels to remove any remaining gunk.

Three days past Hawaii, they got the word — Singapore was closed due to the COVID-19 pandemic.

"We turned her around," said Polar Tankers Operations Manager Doug Lamson. "They stopped cleaning and headed back to Alaska."

The ship was put back into service transporting oil from Alaska to the U.S. West Coast.

To return the ship to service, Polar Tankers had to apply to the regulatory authorities, in this case the Coast Guard and American Bureau of Shipping for extensions. That meant filling out extension surveys — dive, hull, boiler, engine room and safety inspections — to get a three-month extension.

"It was a lot for a short time," said Engineering Manager Bob Hayes. "But it allowed us to do some more trips on the West Coast and take an export load to China."

When the Endeavour transported the load to China in July, local COVID-related restrictions kept the crew onboard waiting for three weeks before the oil could be delivered. By then, it was time to go back to Singapore where the shipyard had re-opened. On the way, the tanks would need to be cleaned again.

The Endeavour finally arrived in Singapore on August 11.

"When we got to Singapore, the rules had changed, and our 23 crewmembers could not leave the ship. They couldn't even walk down the gangway and go on the dock," Hayes said. "Some people had been on the ship for close to 90 days."

A skeleton crew trapped onboard

The start date of the dry dock project was pushed back to late August. Singapore provided a lay berth where the Endeavour and its crew waited for two weeks.



DOUG LAMSON



JOHN STREBEL



ANDREW McISAAC



Polar Endeavour alongside shipyard berth. The ship, delivered in 2001, is named after the HMS Endeavour, a British Royal Navy research vessel commanded by Lieutenant James Cook on his first voyage of discovery to Australia and New Zealand, from 1769 to 1771.

Engineering Superintendents John Strelbel and Andrew McIsaac served as project managers on the long-delayed shipyard project.

Soon after Endeavour's arrival, the ten crew members who had reached the end of their contracts prepared to depart the ship. Normally, during a shipyard project, the onboard crew starts the project, and half are relieved halfway through. Under COVID restrictions, the government would not allow that.

"The Singapore government was controlling people coming in and out of the country," said Strelbel. "They would allow crew members to depart to go home but would not allow new crew to fly into the country to take their place."

The rule, according to McIsaac, was that new crew could arrive only within three days of the ship's sailing. In other words, no new crew members could come until late October.

"So now we're looking at a half crew to do a full shipyard," said Strelbel.

The project would be completed by the 13 still onboard — five from the engine room department and eight from the deck department.

"That was definitely a challenge," added McIsaac. "By the end of the project, the remaining crew members had been onboard coming up on 100 days."

To make things even more difficult, the onboard crew was not allowed to step foot on shore. During a normal shipyard project, crew members doing onboard inspections would have the opportunity to leave the ship and go into the shoreside shops to observe work being done.

"That was disheartening for the crew," said McIsaac. "Getting into the yard to see both sides of the overhaul process is a big part of their learning curve. Now they were captive onboard. It was a huge burden on the crew and the shoreside staff."

Quarantine at the Hard Rock Hotel

As part of the shoreside staff, Strelbel, McIsaac, Materials Coordinator Lee Payne and HSE Construction Advisor Wayne Bishop flew into Singapore on Aug. 11.

"We landed in Singapore and had no idea what to expect," Strelbel said. "We sat in the airport for a few hours, going through interviews and inspections. Then at 2 a.m. they lined us up, led us out to a private bus and took us to a hotel, which would be our quarantine hotel for the next 14 days."

During the airport wait, McIsaac said they learned they would be staying at the Hard Rock Hotel.

"We Googled it and saw pictures of a four-star hotel. We

see POLAR ENDEAVOUR page 8

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2020 Endeavour Shipyard Project Crew

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Chief Mate.....Crystal Parker Maass	
2nd Mate..... Michele Handtmann	Polar Shoreside Team
3rd Mate.....Matthew McMahon	Engineering Supt.....John Strebel
Bosun.....John Rodriguez	Engineering Supt.....Andrew McIsaac
AB.....Clarence Dials	HSE Const Advisor.....Wayne Bishop
AB.....Jonathan Straley	Materials Coordinator.....Lee Payne
AB.....Ron Murchison	Pumproom Specialist.....Larry McDougall
	Bridge Upgrade Specialist.....Steve Wall
Engine	Bridge Upgrade Specialist.....Dale Schults
Chief Engineer.....Jeremy Nichols	Steel Inspector.....Mark Thury
1st A/E.....Alexys Nielson	Oceanwide Inspection LLC
2nd A/E.....Franz Carmine	Safety Advisor.....Micheal Boogaard
3A/E.....James T Payne	Oceanwide Inspection LLC
Utility.....Abraham Dorado Valera	Steel Inspector.....Robert Gokin
	Oceanwide Inspection LLC
Galley	UAV Technical Manager.....Xiang Wong
Chief.....Steward Alex Kurrus	Cyberhawk Inc.
	UAV Pilot.....Callum Darling
	Cyberhawk Inc.

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POLAR ENDEAVOUR

got excited, thinking we had hit the jackpot. It was quite a shock when we arrived and learned the quarantine rules and requirements. They said, your key will work once, upon entry to your room, you cannot leave again unless told to by immigration inspectors.

Strebel said they got video calls every day from immigration.

“They would ask you to sweep the room with your camera so they could ensure that you were actually in your assigned room. Every other day three immigration inspectors would knock on your door and you would have to present your passport and verify that you were truly in there,” added Strebel.

The rest of the shoreside staff flew into Singapore in subsequent waves. Once each team member completed quarantine and tested negative for COVID-19, they were able to roam free.

Preparing for potential lockdown

The Endeavour crew did not know how many local support workers would be released by the government to work each day. Local yard workers, who live in dorms,

“On the way to Singapore, navigation and cleanup are the responsibility of the operations crew; they must deliver the ship in the proper condition for dry dock work to occur. During the time en route, the engineering team supports them, providing among other things the machinery and hot water for cleaning the tanks. Upon arrival at the shipyard, engineering is responsible, and operations now support them. They switch roles and it works seamlessly.”

—Doug Lamson

were COVID tested every 14 days. If one of the workers tested positive, they would lock down the entire dorm.

If there was an outbreak onboard, the vessel would be isolated, thoroughly cleaned and everyone tested. They had to approach the work each day thinking what should or should not be started with the looming potential for a lockdown in mind.

“If the ship or the shipyard was to lock down,” Strebel said, “we needed to be able, in short order, to get the ship out of there.”

They prioritized work to clear regulatory burdens and get the ship back into service, but the intent was to complete the full scope of work.

“We kept pushing toward that,” Strebel said, “keeping our options open to bail out if we had to.”

In the end, they completed the full scope of work except for some large capital projects accomplished later back on the West Coast.

Ice cream, KFC and Dunkin Donuts

Under the circumstances, keeping up crew morale was a challenge.

“Normally the crew would work a 12-hour shift from 6 a.m. to 6 p.m. and then go into Singapore for dinner,” said McIsaac. “This time they were trapped onboard. We asked them ‘if you could have anything from onshore what would you want?’”

The first request was ice cream, perhaps the hardest thing to get in Singapore where the temperature was 82 degrees every day. They made it happen.

“Then we did a Kentucky Fried Chicken dinner,” said Strebel, “a little bit of America. It went a long way. Their whole world lit up.”

When the crew was finally allowed down the gangway into the dry dock for the first time after months onboard the ship, they were greeted with a selection of Dunkin Donuts specialty coffees.

Three to go in 2021

On Oct. 25 the Polar Endeavour left the Singapore shipyard. She completed her sea trials, received her full certificates and the Condition Assessment Program Grade 1 rating required to do business.

“It was a huge accomplishment considering the circumstances,” said Strebel.

Strebel and McIsaac left Singapore by air on Oct. 28 just one day before their visas would have expired.

In 2021 three Polar Tankers — the Discovery, Enterprise and Resolution — are scheduled to undergo dry dock. The Discovery arrived in January and encountered new requirements. Everyone needed to be tested and have a negative COVID test before being allowed onto the dock. All shoreside employees and vendors must be tested every seven days.

“We are taking it one step at a time,” said Bob Hayes.

In the words of Global Marine & Polar Tanker Manager Chris Bulera: “They have the Endeavour’s shining example of teamwork under duress to guide them.” ●

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continued from page 1

“SCALE AND SIZE”

Generations Energy.

Adding to the mix, Montreal-based engineering firm SNC-Lavalin Group announced it was quitting the oil and gas sector by selling its industry unit to Kentech Corporate Holdings of the United Arab Emirates.

No firm price was disclosed, but SNC said it expected to pocket a small gain after taking a writedown of up to C\$295 million on the value of the asset.

The sale to Kentech marked a full retreat from oil and gas for SNC-Lavalin just seven years after it made a C\$2.1 billion bet on the industry by acquiring Kentz Corp.

SNC helps oil and gas producers in the Middle East and elsewhere set up and maintain their facilities, but that business has floundered over the last year of COVID-19 turmoil, forcing the company to take a C\$1.24 billion writedown.

Inter Pipeline

Brookfield, which is already the largest single shareholder in Inter Pipeline at 20%, is widely expected to overcome resistance to its offer.

It said talks with Inter Pipeline were “positive in spirit,” but the targeted company said that it has an “intrinsic value far in excess of our assessment, largely driven by a more optimistic outlook for future growth and a recovery of commodity prices in excess of current market expectation.”

The takeover proposal is worth C\$16.50 a share, making the 80% of Inter Pipeline that Brookfield does not already own worth C\$5.7 billion.

Inter Pipeline said it received unsolicited, conditional proposals last year from Brookfield in the range of C\$17-

\$18.25 per share.

Brookfield is willing to pay a maximum consideration of about C\$4.9 billion. The remainder will be in shares.

Calgary-based Inter Pipeline, with about 625 employees, is constructing a C\$4 billion petrochemical plant near Edmonton that is scheduled for completion within a year. Its holdings already include 2,050 miles of oil sands transportation, 240,000 barrels per day of natural gas liquids processing, 2,400 miles of conventional crude pipelines, 1.3 million barrels of bulk liquid storage and eight petroleum terminals in Denmark and Sweden.

ARC, Seven Generations

If completed, the ARC-Seven Generations transaction will create Canada’s sixth largest energy company, producing 340,000 barrels of oil equivalent per day, representing the country’s largest condensate producer and third largest natural gas producer.

The companies said in a joint statement that the merger will have “material size and scale that enhances ARC’s and Seven Generations’ existing commodity and geographic diversification.”

ARC Chief Executive Officer Terry Anderson said the new entity will focus on reducing Seven Generations net debt of C\$2.1 billion.

Only when that short term objective has been achieved will the company look at further developing its assets, he said.

“We don’t need more acreage (ruling out any thoughts of further acquisitions). We’re going to be able to develop internally and grow our production base in the future, but inventory isn’t our concern,” Anderson told analysts and investors.

Montney acres

The combined company, operating under the name of ARC Resources, will be able to use its financial strength to develop its 1.1 million net acres in the Montney region, rated as North America’s fourth largest shale play, aiming for output of 1.4 million boe per day later this year.

The resources controlled by the new entity will rank only behind the Permian and Marcellus basins in the United States. But bringing Montney’s potential into full production will require expanded pipeline capacity and increased spending on drilling, said Jeremy McCrea, a Raymond James analyst. Montney deals last year included ConocoPhillips purchase of land from Kelt Exploration and Canadian Natural purchase of Painted Pony Energy.

If U.S. gas development declines under President Joe Biden, Montney’s fortunes could surge, said Stephen Kallir, vice president of Calgary-based BlueSky Equities, who is counting on another “headline grabber” in the region this year.

Eric Nuttall, a senior portfolio manager with Ninepoint Partners, believes the growing size of ARC and Tourmaline Oil (which bought Modern Resources and Jupiter Resources last year), will provide greater impetus for smaller producers to consider mergers and acquisitions, or risk getting left by the wayside.

“With each successive transaction, the pressure on remaining laggards to do something different, to try to gain greater relevancy ... only gets stronger,” adding weight to the pursuit of “scale and size,” he said.

—GARY PARK

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PARIS ACCORD

will return to providing climate aid to poorer nations, as promised in 2009.

Inger Andersen, the environment program director at the United Nations, said America has to prove its leadership to the rest of the world, but she said she has no doubt it will when it submits its required emissions cutting targets.

“We hope they will translate into a very meaningful reduction of emissions, and they will be an example for

other countries to follow,” Guterres said.

The Biden administration is working now on a target that balances meaningful cuts in emissions with political and financial realities. Settling on a U.S. emissions goal by April, when Biden plans to host world leaders for an Earth Day summit, would help the administration prod other countries for ambitious emissions cuts as well. That spring meeting should see countries start “to put the down payments on the table,” John Kerry, Biden’s climate envoy, said Feb. 19.

Republican leaders already are fighting it.

Wyoming Sen. John Barrasso, the top Republican on the

Senate energy panel, has criticized Biden for rejoining the Paris accord, tweeting: “Returning to the Paris climate agreement will raise Americans’ energy costs and won’t solve climate change. The Biden administration will set unworkable targets for the United States while China and Russia can continue with business as usual.”

University of Maryland environment professor Nate Hultman, who worked on the Obama administration’s official Paris goal, said he expects a 2030 target of cutting carbon dioxide emissions between 40% and 50% from the 2005 baseline levels.

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TMX OWNERSHIP

options” for First Nations.

That has since advanced to the prospect of outright ownership that led to a secretive workshop late last year with 120 participants representing about 75 Indigenous organizations.

The Canadian government purchased the existing Trans Mountain line from Kinder Morgan in 2018 and has since added the C\$12 billion expansion to its holding.

Federal officials are now assessing the level of support in two leading Indigenous groups that have been the most aggressive in pursuing an ownership share. At the same time, the government is trying to determine whether other groups might emerge.

Two contenders

Calgary-based Project Reconciliation, PR, said his membership, drawn from British Columbia, Alberta and Saskatchewan First Nations, believes TMX would generate funds for housing, roads, sewers and drinking water that are badly needed in First Nations communities, said spokesman Robert Morin.

But he admitted to concerns that the Canadian gov-

ernment could opt for an easier route and simply sell TMX to the private sector.

The other contender is the Western Indigenous Pipeline Group, based near Kamloops in southcentral British Columbia.

The Federal Court of Appeal estimated last year that of 129 Indigenous communities that are potentially impacted by TMX, 120 either support the venture or don't oppose it.

The Department of Finance told the Canadian Broadcasting Corp. that the “government does not intend to be the long-term owner of Trans Mountain Corporation. It intends to launch a divestment process after the expansion is further de-risked.”

To date, more than 1,000 Indigenous people have worked on the TMX job, with contracts worth more than C\$1.4 billion awarded to their communities.

The work was halted in December after a series of workplace safety hitches, but those have since been resolved.

Trans Mountain Corp. has declined to estimate the cost that delay in time or money.

Project Reconciliation

PR said it is ready for a March launch of a sovereign wealth fund, hoping to raise C\$750 million to C\$1 bil-

lion, with the proceeds aimed mostly to its goal of buying Trans Mountain.

Revenues from the pipeline would flow into the fund, which would be used to invest in other infrastructure projects such as a C\$475 million ethanol plant near Calgary that is being developed by Carbon Clean Energy. PR hopes to take a C\$100 million stake in the facility that is designed to produce 5,500 barrels per day of ethanol, nitrogen fertilizer and a fairly significant quantity of renewable natural gas.

PR has also partnered with a First Nation to invest C\$200 million into carbon capture sequestration technology.

PR managing director Stephen Mason said greener ventures are more palatable to some First Nations that want to be involved in large-scale investments, but not necessarily fully invested in an oil pipeline.

He said the current thinking is for PR to initially purchase a 30% ownership position in Trans Mountain.

“The pipeline is just the means to an end,” he told BNN Bloomberg. “You’re taking a rightful share, not tokenism, from the ownership and reinvesting it in a greener world with less carbon.”

—GARY PARK

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SEAVIEW STARTUP

difficult connections to get this gas into market,” Starck said.

Starck said the pipeline must make two crossings beneath the Anchor River by horizontal directional drilling. That work was attempted by a local contractor last year but was unsuccessful, so the company is bringing in specialists from the Lower 48.

“We just secured the services of Michels; they are a world class HDD contractor, and they do this type of drilling all over the world,” Starck said. “Fortunately for us, they were one of the pipeline contractors that were secured for the Keystone pipeline and now they’ve got some free space in their calendar, and they’re going to be coming up and helping us install our HDD under the Anchor River.”

Local companies will provide support for the HDD operation, Starck said.

Crews will be mobilizing in March to complete the pipeline work, and Hilcorp anticipates production from the pad will come online in the summer, she said, adding, “Once we get the pipeline in place, we’ll be drilling additional penetrations in Seaview to get more gas in to market.”

All in all, the Seaview prospect has progressed rapid-

ly, Starck said.

“We flew the survey for Seaview back in 2017, so we drove strat tests in 2019,” she said. “It was actually pretty fast, because we were able to actually go ahead and drill the (Seaview 8 discovery well) at the end of ’19.”

The Alaska Oil and Gas Conservation Commission issued approval in October for production from Seaview 8, noting “commercial quantities of gas in four zones in the Tyonek formation.”

Once it comes into production, Seaview will be the 16th onshore gas field operated by Hilcorp on the Kenai, Starck said.

Gas and oil potential at Whiskey Gulch

Hilcorp is hoping the Whiskey Gulch exploration prospect, located three miles north of Anchor Point, can be developed into field number 17 for the company on the Kenai.

“The team is very excited about this one,” Starck said. “The thing that’s most exciting about this one is ... it’s all on roads, with a very known, feasible connect point for Enstar, which gets that gas right off to market quickly; that being said, you’re still talking about two to three years between right of way, installation, and permitting.”

“This is an exploration target for us; we found it doing a survey about four or five years ago and have slowly

been identifying the structure and delineating what we want to go after here and seeing if there’s potential with further exploration activities.”

This summer Hilcorp will build a pad, and upgrade the access road to the prospect, she said.

“We’re going to drill a gas well out there and test gas; there’s also a potential for oil,” Starck said. “We don’t quite have that structure delineated as much as I’m comfortable with just yet, and so it’s possible we could go drill that deep oil well or put that off until 2022 development.”

In addition to the Whiskey Gulch gas well, Hilcorp will continue stratigraphic testing, with 20 penetrations north of Whiskey Gulch and south of Ninilchik, Starck said.

“There’s a prospect south of Ninilchik called Pearl that’s already been identified, but we’re continuing to strat test to look for additional gas along that same structural line,” she said. “Currently we’re looking at the northern section; we’ll be looking at those wells and drilling those strat tests in June, and then looking at the second tranche of them in August.”

—STEVE SUTHERLIN

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HARPOON 2

drilled in the 2020 winter drilling season. But the drilling season was cut short due to concerns for worker safety connected to the coronavirus.

ConocoPhillips appraisal of the Willow oil discovery in the Bear Tooth unit in NPR-A also ended early with the drilling of two of four planned wells, per the 10-K NYSE filing.

The reduced 2020 Willow appraisal program “consisted of drilling a horizontal well in the eastern portion of the field, informing the reservoir’s connectivity, and a vertical well in the field’s southern extent, reducing the original oil in place uncertainty,” the company reported.

The initial development plan for the Willow discovery, approved in the fourth quarter, did not include the Cassin discovery from 2013; “therefore, we recognized dry hole expense for two previously suspended Cassin wells in 2020,” ConocoPhillips said in its filing.

In its description of the winter 2020 exploration of the “Harpoon Complex — Harpoon, Lower Harpoon and West Harpoon,” ConocoPhillips said “future exploration plans include returning to the Harpoon Complex to explore the remaining potential.”

One of the North Slope’s most successful explorers, Bill Armstrong, has leased acreage to the west of Harpoon, confirming his bullish view of the exploration outlook for the area.

Remember what Matt Fox said

In its first quarter 2020 earnings webcast

ConocoPhillips Executive VP & COO Matt said it appears that the Harpoon 2 well “clipped the edge of the topset based on its log response. ... We won’t know that for sure until we get a chance to drill the second well,” a reminder that ConocoPhillips executive Michael Hatfield said in November that 3D seismic imaging indicates Harpoon has “high-potential Brookian topset targets with stacked plays.”

When asked about encountering hydrocarbon fluids in Harpoon 2, Fox said: “Yes, we did encounter hydrocarbons. ... It looks from a lithological perspective similar to other lithological signatures we’re seeing on the edge of these topsets.”

More exploration, Brookian sequence

Finally, in its Feb. 16 10-K 2020 annual report ConocoPhillips also reported that a 3D seismic survey was completed in 2020 over a 234-mile area of the region on state and federal lands, noting it was “currently evaluating this seismic data for future exploration opportunities.”

What it and others are chasing appears to be the Nanushuk formation, which forms part of the Brookian sequence, the youngest and shallowest of the major North Slope petroleum bearing rock sequences. Although rocks of the Brookian are found across the entire North Slope, the Nanushuk is found mainly west of the central Slope.

The rocks of the formation were generated from sediment pouring from the west into an ancient marine basin. As these sediments accumulated on and down the basin margin, the margin migrated from west to east, eventually coming to a halt at what is referred to as the ultimate shelf margin, a few miles to the east of what is now the Colville

River delta.

Following the discoveries of the Prudhoe Bay and Kuparuk River fields in rock reservoirs much older and deeper than the Nanushuk, subsequent exploration mainly focused on these deeper rocks, with Brookian strata such as the Nanushuk generally being ignored. Until that is, 2015, when Armstrong Oil & Gas Inc. and partner Repsol E&P USA Inc., taking a contrarian view of conventional North Slope exploration strategies, made the Pikka discovery to the east of the Colville delta. (Oil Search and Repsol own the working interest in Pikka today.)

That discovery upended expectations for potential oil volumes in the Brookian.

The Nanushuk oil reservoirs consist of a series of sand bodies that were deposited at the top and down the upper slope of the ancient marine basin margin, as that margin migrated east. While the sand bodies can be identified in seismic cross sections, anomalously high seismic amplitudes, particularly in high resolution 3D seismic, can point to potential oil accumulations.

U.S. Geological Survey geologist Dave Houseknecht told Petroleum News in May that these potential oil reservoirs have distinctive geometries. Some, such as those of the Pikka discovery, tend to be thick but narrow, fairly elongated and generally oriented north to south. Others, such as ConocoPhillips’ Willow discovery tend to be more oval in shape. He said the different geometries may lead to different reservoir performances.

—KAY CASHMAN

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DRILLING DECLINE

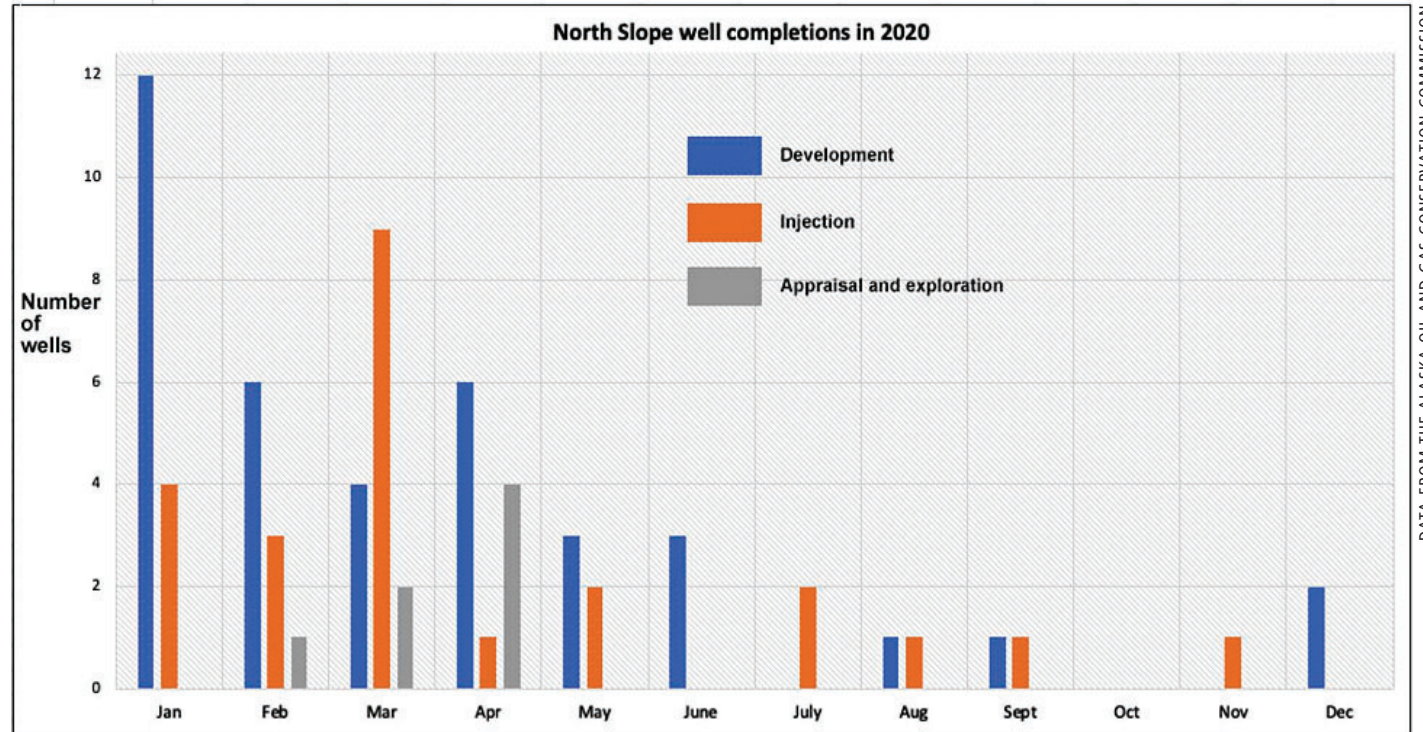
BP completed two wells at Prudhoe Bay in May. Hilcorp continued drilling, albeit at a slower rate than previously, completing eight development wells in the Milne Point field during the remainder of the year. There was very little development drilling from July onwards.

By comparison, in 2019 development drilling was spread throughout the year, with a particularly large number of wells completed in November. While much of the 2019 drilling was in the Prudhoe Bay and Kuparuk River fields, Hilcorp conducted drilling in the Milne Point field, while ConocoPhillips continued development drilling from its CD5 pad in the Colville River unit.

Injection wells

In total 24 injection wells were drilled on the North Slope in 2020, to improve field production. Some of these wells were for water injection, and some for water alternating gas. That compares with 29 injection wells drilled in 2019. In 2020, however, 17 of the injection wells were drilled prior to the beginning of May. In that earlier part of the year ConocoPhillips drilled three injectors in the Kuparuk River field and three in the Colville River unit. Hilcorp completed five injection wells in the Milne Point field, while BP completed five in the Prudhoe Bay field. Eni US Operating Co. Inc. drilled a single water injection well in the Nikaitsuq field.

And, as with the development drilling, only Hilcorp completed any injection wells after the beginning of May. All seven of these wells were drilled in the Milne Point field. Moreover, only one



The pattern of drilling on the North Slope in 2020 clearly shows the impact of the COVID-19 pandemic, with much of the drilling taking place prior to the beginning of May. Exploratory drilling, as normal, took place during the winter months at the beginning of the year, although it was cut short by a couple of wells.

injection well was complete in April, also a well in the Milne Point field.

In its 38th plan of development for Milne Point, filed in 2019 for the period Jan. 13, 2020, to Jan. 12, 2021, Hilcorp said that it anticipated drilling up to 28 new wells in the field during that period. In the event, the company drilled a total of 26 wells in the field.

Exploration and appraisal

At first sight, it appears that the drilling of exploration and field appraisal wells in 2020 followed a normal pattern. These wells are drilled during the winter off-road travel season. And so, as is typical, there were well completions in February, March and April, with a total of

seven wells eventually being completed. ConocoPhillips drilled two Tinmiaq appraisal wells in its Willow discovery, as well as its Harpoon exploration well, also in the northeastern part of the National Petroleum Reserve-Alaska. Oil Search completed three appraisal wells in the Nanushuk play: two Mitquq wells and one Stirrup well. Accumulate Energy Alaska, a subsidiary of 88 Energy, completed its Charlie 1 appraisal well in its central North Slope Icewine project.

However, ConocoPhillips had originally planned four Tinmiaq wells: The company cut its appraisal drilling program short because of COVID-19. So, the total number of appraisal and exploration wells on the North Slope did fall a bit

below what had originally been planned. By comparison, in 2019 13 North Slope exploration and appraisal wells were drilled, mostly appraisal wells for recent Nanushuk discoveries.

Cook Inlet drilling

In Cook Inlet the impact of COVID-19 on drilling activity is less obvious. A total of 10 development wells were drilled in 2020, with the drilling being spread fairly evenly across the year. In 2019, by comparison, 14 development wells were drilled.

The well count for 2020 reflected at least some impact from the pandemic:

see **DRILLING DECLINE** page 12

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DATA FROM THE ALASKA OIL AND GAS CONSERVATION COMMISSION

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DRILLING DECLINE

BlueCrest Alaska Operating LLC had planned to drill one or two multilateral development wells in 2020 in its Cosmopolitan field in the southern Kenai Peninsula but subsequently cancelled this plan because of COVID-19 and the collapse in the oil market.

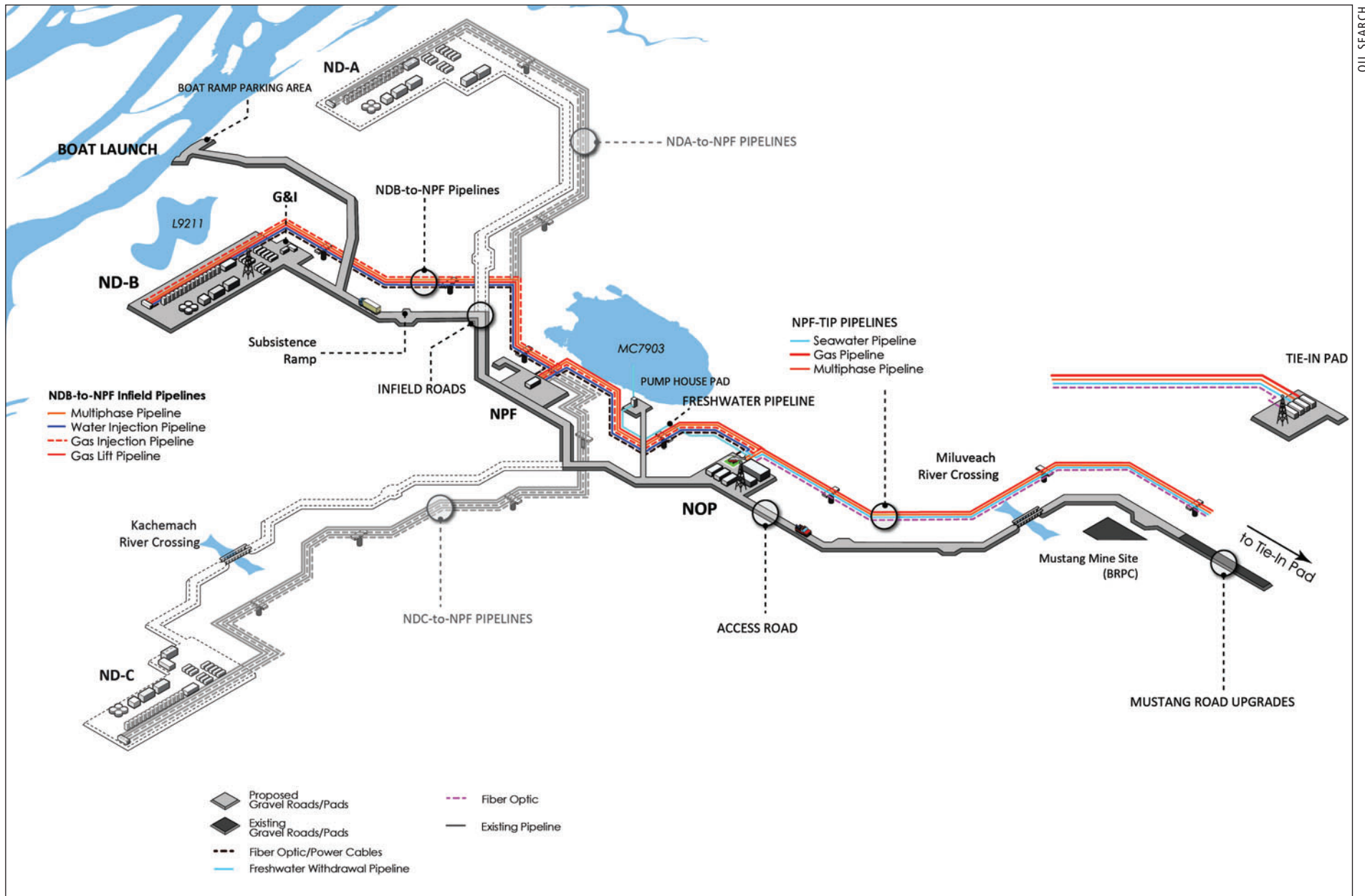
And there were significant differences in the patterns

of development drilling between 2020 and 2019. In 2020 Hilcorp drilled all of the development wells, and all of the wells were gas wells in various gas fields. In 2020 Hilcorp also completed a gas storage well in the Swanson River field. In 2019, on the other hand, BlueCrest completed eight oil development wells at Cosmopolitan. Hilcorp completed three gas development wells and three oil development wells in various fields.

In terms of appraisal and exploration drilling, Hilcorp completed eight shallow Whiskey Gulch stratigraphic

test wells in July 2020 in the southern Kenai Peninsula — Hilcorp had completed four similar Whiskey Gulch test wells in November 2019. In October 2019 the company suspended an appraisal sidetrack well at Trading Bay. No other appraisal or exploratory drilling was conducted in the Cook Inlet region in either year, according to the AOGCC data. ●

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OIL SEARCH

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PIKKA FEED

center; a 192-foot bridge over the Miluveach River; and an 11.5-mile gravel road that allows year-round access from existing North Slope infrastructure to Pikka.

How sell-down will work

Wulff said Oil Search's focus will continue to be 100% on state versus federal lands.

If Pikka was in any other jurisdiction other than the Arctic, it would be "one of the hottest projects on the planet ... simply because of its proximity to infrastructure, its upside in resource, and the fact that it ... has very, very strong environmental controls."

For the upcoming divesture, he said, Pikka's Arctic location for some companies means "it's outside the bounds of where they're looking at expanding ... regardless of the quality of the project. Having said ... that, we actually do have a number of companies who have maintained interest

because it is a conventional project, and it has a low-cost series of additional growth options."

Wulff said the partners' agreement to jointly market a 30% interest will be "attractive to some of the larger companies."

Or, he said, "we also each have an ability to independently market and divest our own 15% equity, which might be more attractive to smaller companies."

But the "strong preference is that we'll be marketing it together. We've set up joint teams. We've got a joint bank. We've got joint advisers. So, it's very much a joint process at the moment," Wulff said.

The process will start in March: "We wanted the conditions in America to settle down a little bit post the election and the Biden administration coming into office. So, we're starting off with a series of soft soundings ... with companies that have



BRUCE DINGEMAN

approached us and others that we think would be interested."

A broader program will commence in April.

"The idea is for us to have indicative proposals around July, August, with a view for closing it off at FID at the end of the year."

"Clearly, a sell down ... would provide funding support. However, this is really a high-quality asset with a lot of growth. As for any sale, it has to make sense on a value perspective ... for our shareholders," Wulff said.

Major upside, resource potential

In 2020 Oil Search had an independently certified increase in its Pikka 2C resource base to 968 million barrels, and that was before the two new discoveries — Mitquq, which is 6 miles from the proposed Pikka processing facility, and Stirrup to the south.

"These wells demonstrate the major upside and resource potential that exists in this field, and easy tie-in potential" to Pikka, he said, noting Stirrup "was recently rated one of the top 10 global discoveries in 2020."

Wulff said the 1 billion barrel 2C resource will go higher once Stirrup and Mitquq are appraised.

In 2020, the company's Alaska team, which is headed by Bruce Dingeman, president of Oil Search Alaska, "also completed and reviewed the development plan for Pikka with the aim to reduce breakeven, lower capital costs and increase IRRs without compromising full value. That was no easy feat," Wulff said.

"The important point here is that the breakeven cost of all future developments will just continue to go down," as more oil is found in the area.

Furthermore, the "sub \$3 billion Pikka development, is fully costed, which includes facilities and drilling," Wulff said.

"We've been able to lower our breakeven cost below \$40 a barrel (Brent). ... We're very transparent with these ... costs. They're fully loaded, including financing with a 10% return on capital."

Small footprint, Arctic experience

Wulff also touts Pikka's "very, very small footprint."

"It's actually sandwiched between existing facilities, ConocoPhillips at Kuparuk and the Alpine field to the west. We're not in a remote area. We can tie into existing pipelines. ... So, this is almost like an offshore development, where we'll be drilling 50 wells from a small pad rather than whole series of wells spotted over the area," he said.

"We genuinely have a world-class team in Alaska that has proven experience in the region. We targeted professionals with clear knowledge and were able to extract an amazing team as demonstrated by their performance to date," Wulff said, noting most of Dingeman's staff came from existing North Slope operators and many had leadership positions in those firms. ●

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