

page 6 Hilcorp permitting L Pad expansion at Prudhoe for 15 additional wells

Draft permit for Pikka seawater treatment plant out for comment

The Alaska Department of Environmental Conservation has issued a draft permit for wastewater discharges from Oil Search Alaska's proposed seawater treatment plant at Oliktok Point on the North Slope. The STP "will function as a treatment and distribution point for waterflood used to maintain formation pressure and enhance oil recovery," DEC said.

The OSA STP will be next to the existing STP operated by ConocoPhillips Alaska.

The department said it has determined to issue the wastewater discharge permit, which allows mixing zones for "Outfall 001 — Strainer/Filter Backwash."

The Alaska Pollutant Discharge Elimination System permit "authorizes and sets conditions on the discharge from this facility

see **WASTEWATER PERMIT** page 9

Carbon capture tax credit vital, Canadian energy leaders insist

Canada's Big Oil — specifically the Alberta oil sands — is about to learn what shape its future will take under the national government of Prime Minister Justin Trudeau.

A long-promised federal tax credit for investments in carbon capture, utilization and storage, CCUS, is likely to be included in the next budget, along with the details of a plan to cut greenhouse gas emissions by 40%-45% below 2005 levels, Natural Resources Minister Jonathan Wilkinson told reporters.



JONATHAN WILKINSON

see **CCUS CREDIT** page 9

US expected to be top exporter of LNG in 2022; China top importer

In 2021 the United States was the third largest exporter of liquefied natural gas — after Australia and Qatar — but this year the U.S. is projected, for the first time, to top the list.

On the import side, China surpassed Japan last year as the largest importer of LNG, the first time Japan has not been the largest importer since it began importing LNG in the early 1970s.

As a result, the world's largest economies will lead the LNG export and import markets, IHS Markit observed in releasing its "LNG Trade in 2021: Runaway Recovery" in early January.

The U.S. Energy Information Administration agrees on the

see **LNG EXPORT** page 7

Capline reversal boon to oil sands in moving crude to Gulf

Having seen two of their hoped-for outlets to Asian markets scuttled by the Canadian and U.S. governments, Alberta oil sands producers have seized an overlooked alternative route.

They have quietly and suddenly taken advantage of Ohio-based Marathon Pipe Line's reversal of its Capline system that previously was the largest south-to-north pipeline from Louisiana to the Midwest, with capacity of 1.3 million barrels per day.

Faced with declining imports from Mexico and Venezuela, Marathon has been working since 2017 to open a connection for heavy and light crude (including oil sands bitumen) from

see **CAPLINE REVERSAL** page 4

FINANCE & ECONOMY

ANS approaches \$90

Unexpected strong demand, supply issues propel oil to seven-year highs

By **STEVE SUTHERLIN**

Petroleum News

North Slope crude rose 11 cents to close at \$89.39 per barrel Jan. 19, while West Texas Intermediate popped \$1.53 to close at \$86.96 and Brent rose 93 cents to close at \$88.44. WTI set a fresh seven-year high with its 1.8% rise on the day.

Traders bid prices higher as the omicron variant of COVID-19 increasingly appeared unlikely to destroy oil demand, while short-term disruptions impacted supply.

The gains added to sizzling price action Tuesday Jan. 18 and Friday Jan. 14. Jan 17 was a national holiday.

ANS leapt \$1.82 higher Jan. 18 to close at

The EIA expects global oil inventories will rise by an average of 0.5 million bpd in 2022 and by 0.6 million bpd in 2023 and that the inventory builds will put downward pressure on crude oil prices.

\$89.37, WTI jumped \$1.61 to close at \$85.43 and Brent lifted \$1.45 to close at \$87.51.

Aside from existing bullish market factors, Jan. 18 action was juiced by a drone attack the day before by Iran-aligned Houthis on targets in the United Arab Emirates. The drone attacks resulted in several deaths and destroyed tanker trucks near

see **OIL PRICES** page 8

EXPLORATION & PRODUCTION

Permits largely in hand

Snow road to Merlin 2 well, rig commissioning, started ahead of February spud

By **KAY CASHMAN**

Petroleum News

In a Jan. 17 operations update 88 Energy Ltd. said the permit to drill the Merlin 2 well is in the final stages of review by the U.S. Bureau of Land Management and that snow road construction and the commissioning of the Doyon Arctic Fox rig have begun ahead of an expected February spud date.

The appraisal well will be drilled in Project Peregrine in the National Petroleum Reserve-Alaska region of Alaska's North Slope. (See wireframe image in the print and pdf versions of this issue.)

The Merlin 2 drill site is to the southeast of



ERIK OPSTAD

Merlin 1 and closer to the shelf break where 88 Energy expects enhanced sand thickness and quality.

88 Energy also said Jan. 17 that "good conditions" were noted in the field for construction of the single lane snow road to the Merlin 2 drill site and that road construction was on schedule.

Permitting largely complete

88 Energy said permitting and planning for Merlin 2 was "largely complete, with the well on track to spud in February 2022."

In a Dec. 8 interview Erik Opstad said they had

see **MERLIN 2 PERMITS** page 8

UTILITIES

Demand soars in winter

Enstar says storage necessary to meet Southcentral peak natural gas needs

By **ALAN BAILEY**

For Petroleum News

In a Jan. 12 presentation to the Regulatory Commission of Alaska, executives from Southcentral gas utility Enstar Natural Gas Co. described how the utility succeeds in supporting peak gas demand during severe cold winter weather such as in November and early December of last year.

A high proportion of buildings in Southcentral, including commercial and domestic properties, use natural gas for heating. And, in addition to the gas that Enstar delivers for this purpose, electric utilities use gas-fired power stations as their primary means of generating electricity. Thus, gas supplies are critical to the wellbeing of residents and businesses in the

Johansen said that she would like to see an additional gas storage facility on the west side of the Cook Inlet, to diversify Enstar's storage options, as a contingency against some unanticipated problem with CINGSA, and to compensate somewhat for decreased gas supplies on the west side.

region. And all of that gas originates from gas and oil fields in the Cook Inlet basin. Enstar President John Sims told the commission that in 2021, in its 60th year, Enstar had delivered a record volume of more than 35 billion cubic feet of gas.

see **GAS DEMAND** page 11

● PIPELINES & DOWNSTREAM

Court orders review of pipe expansion need

By JAMES MACPHERSON

Associated Press

An Illinois appellate court has set aside a decision by state regulators that would allow the Dakota Access oil pipeline to double capacity to 1.1 million barrels daily.

In a 60-page decision filed Jan. 12, the appellate court's three-judge panel ordered the Illinois Commerce Commission to review the public need for the project that moves North Dakota oil to a shipping point in Illinois. The court said the commission must consider the public need "for the people of the United States, not the world."

The court said regulators must also consider regulatory violations in Pennsylvania by Sunoco, one of the pipeline's owners.

It ordered Illinois regulators to issue a new decision within 11 months, while restricting the pipeline's capacity to 570,000 barrels per day.

The \$3.8 billion, 1,172-mile underground pipeline has been moving oil since 2017. It was subject to prolonged protests and hundreds of arrests during its con-

Kringstad said the ruling in Illinois won't have any immediate impact on North Dakota's oil production or the ability to ship it. But the "long-term outlook remains uncertain," he said.

struction in North Dakota in late 2016 and early 2017 because it crosses beneath the Missouri River, just north of the Standing Rock Sioux Reservation. The tribe draws its water from the river and fears pollution.

Disagreements over safety issue

Texas-based Energy Transfer, which built the pipeline, has insisted it would be safe and that the expansion would be, too.

Opponents argue that moving more oil through the pipeline increases the probability of a disastrous oil spill.

North Dakota regulators in 2020 unanimously approved expanded capacity for the Dakota Access pipeline from 570,000 barrels daily to 1.1 million barrels, saying they believed the project had met exhaustive

state and federal requirements. Pipeline backers said the expansion was needed to meet the growing demand for oil shipments from North Dakota, without the need for additional pipelines or rail shipments.

Additional pump stations were needed in the Dakotas and Illinois to add horsepower to push more oil through the line. Regulators in those states approved the additional stations.

In Illinois, the Sierra Club, the Natural Resources Defense Council and others protested the commission's approval, sending it to the appellate court.

North Dakota oil

Pipeline owners announced last summer that the line was able to transport 750,000 barrels a day along the line. But North Dakota Pipeline Authority Director Justin Kringstad said Jan. 13 that amount likely has not been achieved to date.

North Dakota's oil production is 1.1 million barrels daily at present. Rail and other pipelines ship oil that doesn't move on the Dakota Access pipeline.

see DAKOTA ACCESS page 4

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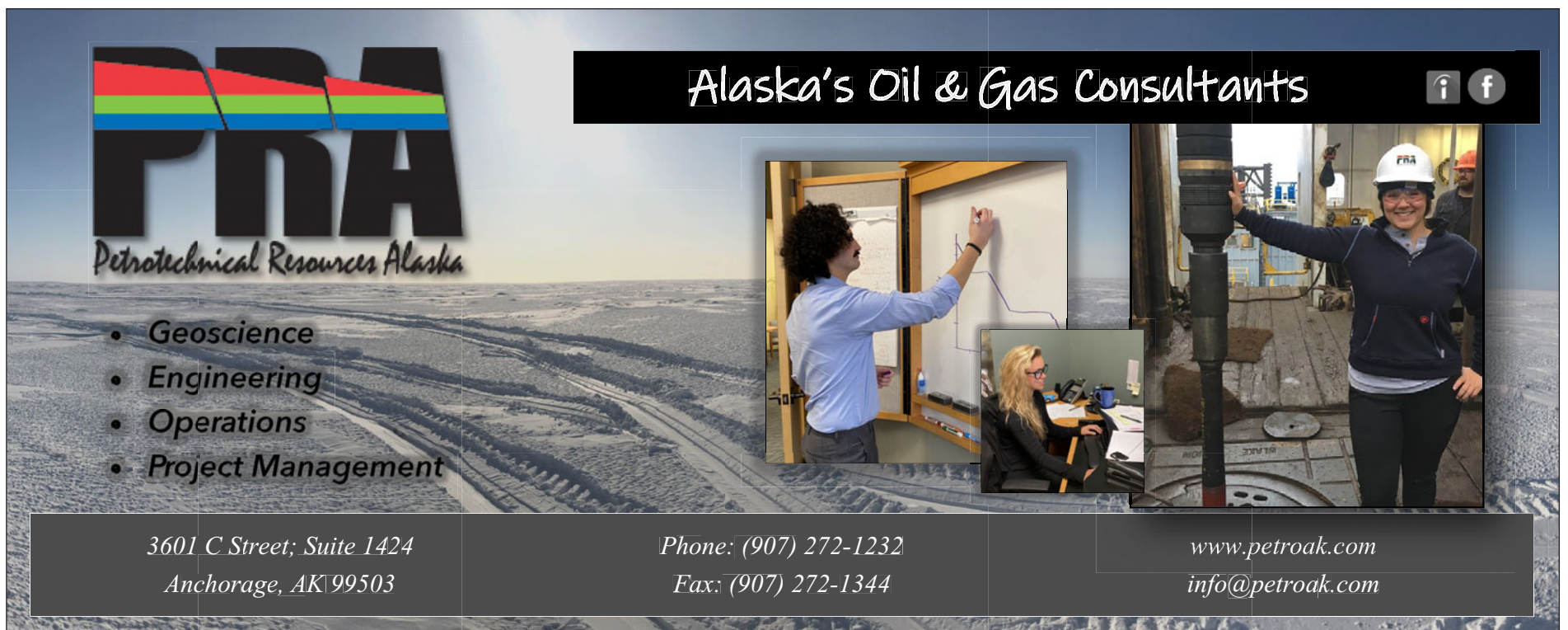


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EXPLORATION & PRODUCTION

Rig count tops 600 for 1st time since 2020

Baker Hughes' U.S. rotary drilling rig count topped 600 for the week ending Jan. 14, at 601 a gain of 13 rigs over the previous week and up 228 from a count of 373 a year ago. This is the first time the count has topped 600 since April 2020 and the first time since April 2021 that the week-over-week gain has been this large.

When the count dropped to 244 in mid-August 2020 it was the lowest the domestic rotary rig 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 2020 when it gained back 10 rigs.

The Jan. 14 count includes 492 rigs targeting oil, up 11 from the previous week and up 205 from 287 a year ago, with 109 rigs targeting gas, up by two from the previous week and up 24 from 85 a year ago, and no miscellaneous rigs, unchanged from the previous week and down by one from a year ago.

Thirty-five of the rigs reported Jan. 14 were drilling directional wells, 541 were drilling horizontal wells and 25 were drilling vertical wells.

Alaska rig count up by one

Texas (281) was up by seven rigs from the previous week, while Louisiana (55) was up by three.

Alaska (6), Pennsylvania (20) and West Virginia (11) were each up by one rig from the previous week.

Rig counts in all other states were unchanged week over week: California (8), Colorado (12), New Mexico (95), North Dakota (27), Ohio (11), Oklahoma (49), Utah (9) and Wyoming (16).

Baker Hughes shows Alaska with six rigs active Jan. 14, up by one from the previous week and up by three from a year ago, when the state's rig count stood at three.

The rig count in the Permian, the most active basin in the country, was up by one from the previous week at 293 and up by 104 from 189 a year ago.

—KRISTEN NELSON

INTERNATIONAL

Photos show aftermath of Abu Dhabi attack

By JON GAMBRELL
Associated Press

Satellite photos obtained by The Associated Press Jan. 18 appear to show the aftermath of a fatal attack on an oil facility in the capital of the United Arab Emirates claimed by Yemen's Houthi rebels.

The attack brought the long-running Yemen war into Emirati territory Jan. 17. That conflict raged on overnight with Saudi-led airstrikes pounding Yemen's capital, Sanaa, killing and wounding civilians.

Meanwhile, fears over new disruptions to global energy supplies after the Abu Dhabi attack pushed benchmark Brent crude to its highest price in years.

The images by Planet Labs PBC analyzed by the AP show smoke rising over an Abu Dhabi National Oil Co. fuel depot in the Mussafah neighborhood of Abu Dhabi after the attack. Another image taken shortly after appears to show scorch marks and white fire-suppressing foam deployed on the grounds of the depot.

The Abu Dhabi National Oil Co., known by the acronym ADNOC, is the state-owned energy firm that provides much of the wealth of the UAE, a federation of seven sheikhdoms on the Arabian Peninsula and also home to Dubai.

ADNOC did not respond to questions from the AP asking about the site and damage estimates from the attack. The company had said the attack happened around 10 a.m. Jan. 17.

"We are working closely with the relevant authorities to determine the exact

Fears over future attacks reaching the UAE, a major oil producer and OPEC member, helped push Brent crude oil prices to their highest level in seven years.

cause and a detailed investigation has commenced," ADNOC said in an earlier statement.

Fatalities in attack

The attack killed two Indian nationals and one Pakistani as three tankers at the site exploded, police said. Six people were also wounded at the facility, which is near Al-Dhafra Air Base, a massive Emirati installation that is also home to American and French forces.

Another fire also struck Abu Dhabi International Airport, though damage in that attack could not be seen. Journalists have not been able to view the sites attacked and state-run media have not published photographs of the areas.

Police described the assault as a suspected drone attack. The Houthis claimed they used cruise and ballistic missiles in the attack, without offering evidence.

Meanwhile Jan. 17, the Saudi-led coalition fighting in Yemen announced it had started a bombing campaign targeting Houthi sites in the capital of Sanaa. It said it also struck a drone-operating base in Nabi Shuaib Mountain near Sanaa.

Overnight videos released by the Houthis showed damage, with the rebels

see FACILITY ATTACK page 4

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CAPLINE REVERSAL

the Midwest storage hub to the Gulf Coast refining center.

Matt Smith, an oil analyst at Kpler, said that as a result Canadian exports out of the U.S. Gulf “should continue to show strength” by allowing those producers to become a beneficiary of the “changing dynamics” since the tanking of Venezuela imports and the prospect of more Mexican crude being removed from the U.S. market.

The initial statistics by Kpler show that volumes of heavy crude on Capline averaged 260,000 bpd in December and 180,000 bpd for all of 2021.

Canadian shipments up

Of that total, Canadian shipments on Capline rose from 25,000 bpd in 2018 to 70,000 bpd in 2019 and 2020, a small fraction of the 4 million bpd exported from Canada to the U.S.

As yet, there is no indication from Marathon on when the reversed Capline will move from its current volumes of light crude to large volumes of heavy crude.

Randy Ollenberger, a BMO Capital Markets analyst, said he expects Capline to shrink the discounts for the benchmark Western Canada Select crude from the oil sands relative to West Texas Intermediate to about US\$10 per barrel, resulting in a strong impact on the bottom lines of Canadian producers in the second quarter of 2022, according to a Financial Post survey of producers.

Grant Fagerheim, chief executive officer of Whitecap Resources, said his company is eyeing the use of Capline because of the “insurance” it offers by accessing a diversity of markets in the U.S. Midwest and Gulf Coast.

Credit rating agency Fitch expects

the new Capline routing will draw crude from Canada, North Dakota and the U.S. Mid-Continent.

Routes to get there

To use Capline, Canadian producers need to ship their crude on Enbridge’s Mainline to the U.S. Midwest, then switch to Enbridge’s Southern Access line that feeds into the Patoka, Illinois, storage hub, which ties directly into Capline and a clear run to the Gulf Coast.

The Capline has come on stream at the same time Enbridge’s Line 3 replacement has offered 760,000 bpd of capacity to a wide swath of outlets in the U.S.

The Capline shipping rates range from US\$1.75 per barrel for shippers committing to move more than 100,000 bpd on the line to US\$3.75 for those operating on a spot basis.

Whoever benefits from Capline, the line reversal has partly bailed out producers who were left reeling when the Canadian government in 2016 officially rejected Enbridge’s Northern Gateway project to ship 520,000 bpd to a Kitimat tanker terminal on the British Columbia coast, along with President Joe Biden’s scuttling last year of the 830,000 bpd Keystone XL project.

Martin King, senior analyst with RBN Energy, said that if nothing else the new Capline will “certainly help to keep the price differentials (between WCS and WTI) tighter than what we’ve seen in the past because you’ll have more egress optionality out of Western Canada.” He estimated the differential could trade in the range of US\$12-US\$15 a barrel. That compares with as much as US\$30 in past years.

—GARY PARK

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FACILITY ATTACK

saying the airstrikes killed at least 14 people. Sanaa resident Hassan al-Ahdal said one airstrike hit the house of Brig. Gen. Abdalla Kassem al-Junaid, who heads the Air Academy. He said at least three families were living in the house. Another adjunct house with a four-member family was damaged.

The Saudi-led coalition has faced international criticism for airstrikes hitting civilian targets during the war.

For hours Jan. 17, Emirati officials did not acknowledge the Houthi claims over the Abu Dhabi attack, even as other countries condemned the assault. Senior Emirati diplomat Anwar Gargash broke the silence on Twitter, saying that Emirati authorities were handling the rebel group’s “vicious attack on some civilian facilities” with “transparency and responsibility.”

The office of South Korean President Moon Jae-in, who had been in the Emirates on a state visit, said he spoke to Abu Dhabi’s powerful Crown Prince, Sheikh Mohammed bin Zayed Al Nahyan, immediately after the attack.

The statement quoted Sheikh Mohammed as saying the attack had been “anticipated.” The two had been scheduled to meet during Moon’s visit but the event had been cancelled prior to the attack over an “unforeseen and urgent matter of state,” according to Moon’s office.

The Emirati Foreign Ministry did not immediately respond to a request for comment over Moon’s statement. However, the state-linked newspaper The National in an editorial Jan. 18 called the Houthis “an extremist organization reliant on terrorism and, most of all, fear.”

“Their brazen attempts to bring that

fear to Abu Dhabi failed as the explosions were swiftly brought under control, but that does not mean the world should ignore the dangers they pose,” the newspaper said.

Brent prices up

Fears over future attacks reaching the UAE, a major oil producer and OPEC member, helped push Brent crude oil prices to their highest level in seven years. On Jan. 18, a barrel of Brent crude traded at over \$87.50 a barrel, a price unseen since October 2014.

“The damage to the UAE oil facilities in Abu Dhabi is not significant in itself, but it raises the question of even more supply disruptions in the region in 2022,” said Louise Dickson, an analyst at Rystad Energy. “The attack raises the geopolitical risk in the region and may signal the Iran-U.S. nuclear deal is off the table for the foreseeable future, meaning Iranian oil barrels are off the market.”

Although the UAE has largely withdrawn its own forces from Yemen, it is still actively engaged in the conflict and supports Yemeni militias fighting the Houthis.

The incident comes as the Houthis face pressure and are suffering heavy losses on the battlefields. Yemeni government forces, allied and backed by the UAE, have pushed back the rebels in key provinces. Aided by the Emirati-backed Giants Brigades, the government forces took back the province of Shabwa earlier in January in a blow to Houthi efforts to complete their control of the entire northern half of Yemen.

While Emirati troops have been killed over the course of the conflict, now in its eighth year, the war has not directly affected daily life in the wider UAE, a country with a vast foreign workforce. ●

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DAKOTA ACCESS

Kringstad said the ruling in Illinois won’t have any immediate impact on North Dakota’s oil production or the ability to ship it. But the “long-term outlook remains uncertain,” he said.

The biggest obstacle for the pipeline’s operation remains in federal court. A

Washington, D.C., Circuit Court of Appeals panel last year supported the Standing Rock Sioux and other tribes’ argument that the project deserves a thorough environmental review and is currently operating without a key federal permit.

The study will determine whether the U.S. Army Corps of Engineers reissues a permit for the line to cross the Missouri River in south-central North Dakota. ●

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● EXPLORATION & PRODUCTION

Hilcorp applies for Milne S Pad expansion

State has approved camera installation at Alpine Airstrip, installation of additional VSMs at Prudhoe for infield piping support

By KRISTEN NELSON
Petroleum News

Hilcorp Alaska has applied to the Alaska Division of Oil and Gas to expand S Pad in the Milne Point unit. S Pad is some 6 miles northeast of the Kuparuk airstrip and 7 miles south of Milne Point on the North Slope, the division said in a public notice.

Hilcorp is requesting authorization to add an area of 254 feet by 330 feet to the northwestern corner of the pad and an area 75 feet by 300 feet to the northeast corner. The company also plans a new 50-foot by 500-foot gravel path connecting the two expansion areas.

In its application for the work, Hilcorp said the project is within and adjacent to a much larger gravel expansion of S Pad, authorized but never constructed in 2008.

The company said the expansion is “to provide safe access around the well row headers for snow removal, equipment, vehicles, drilling and operations support, and emergency equipment,” and will provide space for “power fuel separation infrastructure which will be permitted separately.” Hilcorp said the project will require placing up to 20,000 cubic yards of gravel into 3.1 acres of wetlands. All work will be done on and adjacent to existing roads and pads.

S Pad

Data from November, the most recent available from the Alaska Oil and Gas Conservation Commission, shows 94% of S Pad production from Schrader Bluff, 4% from Ugnu and 2% from Sag River.

Hilcorp has applied to AOGCC for an enhanced oil recovery pilot at S Pad, which would allow polymer injection into the Ugnu, with two injectors proposed at S Pad to support the existing producer, S-203. The company needs commission approval for polymer injection at S Pad, as polymer is not currently approved for enhanced oil recovery for this area and prior temporary administrative approval for water and gas injection

into Ugnu has expired.

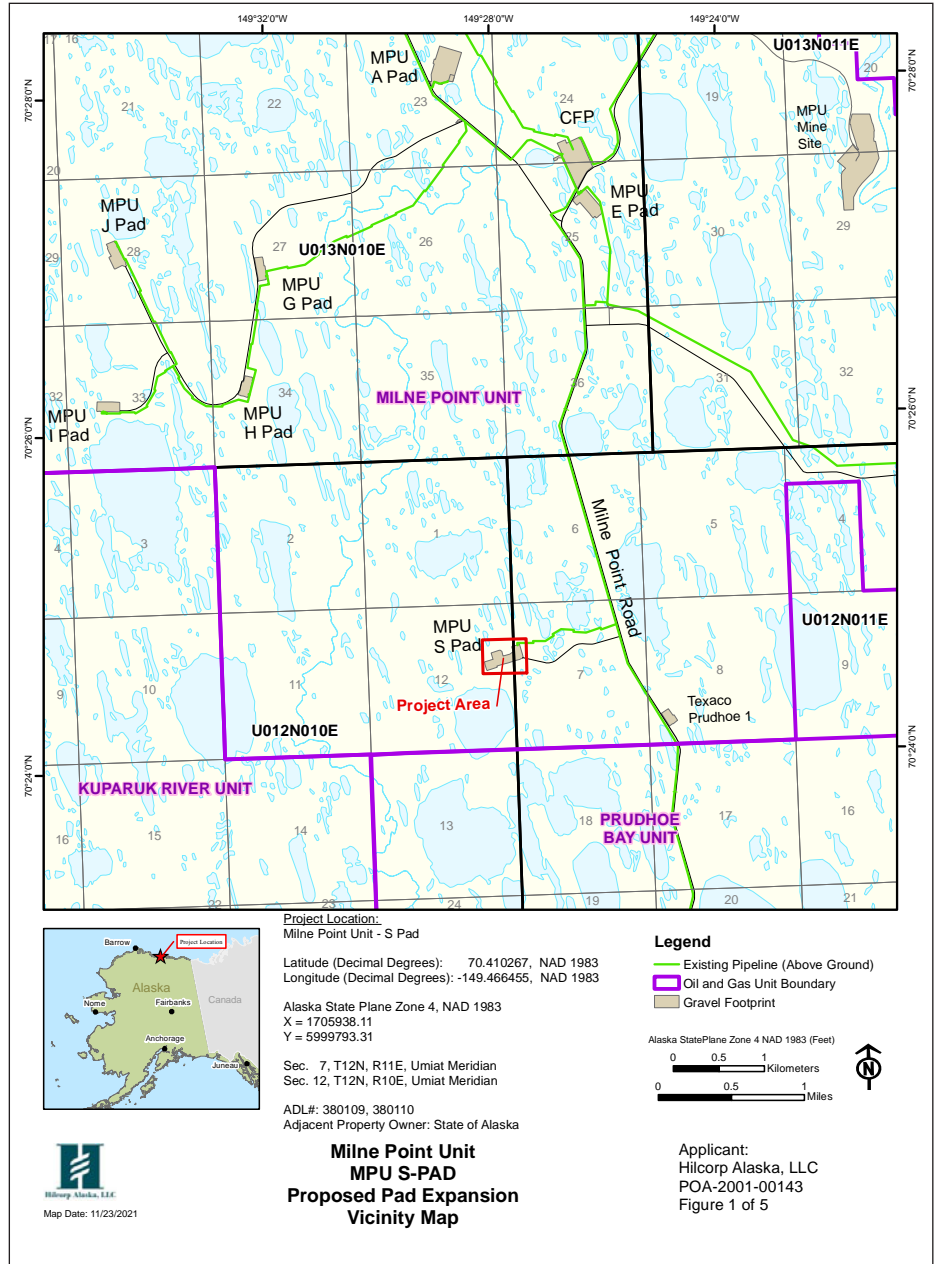
Hilcorp said its Ugnu work builds on work begun by BP, previously the Milne Point working interest owner and operator, in 2003 and said the project is designed to “gather the data necessary to determine the appropriate spacing for paired Ugnu producer and injection wells at S-pad.” If the pilot is successful, the company said, “potential exists to justify a project throughout the field, including the establishment of formal pool and area injection rules for the MPU Ugnu sand.”

In its most recent plan of the development for the field, for Jan. 13, 2022, through Jan. 12, 2023, Hilcorp said among the long-term activities it is evaluating are future drilling opportunities in the Schrader Bluff participating area on previously developed acreage from I, H and S pads, in addition to evaluating continued performance from Ugnu horizontal producing well S-203.

Other work approved

The Division of Oil and Gas has approved a plan of operations amendment from ConocoPhillips Alaska for work at the Colville River unit. The company plans to install a new camera and repeater near the Alpine airstrip at the Colville Delta No. 1 pad to support ongoing safe operations at the airstrip. The division said associated power cables will be placed on the tundra from the existing precision approach pathway indicator lights along the runway to the

see S PAD EXPANSION page 6



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● EXPLORATION & PRODUCTION

Hilcorp plans L pad expansion at Prudhoe

Would allow for 15 additional wells on west side of pad, including well houses and infrastructure; work to begin this January

By KRISTEN NELSON

Petroleum News

Prudhoe Bay unit operator Hilcorp North Slope has applied to the Alaska Division of Oil and Gas for a unit plan of operations amendment to expand L Pad at Prudhoe by 3.7 acres to accommodate 15 new wells.

The expansion is on the west side of the pad.

Public comment on the proposal closes at 4:30 p.m. Feb. 10.

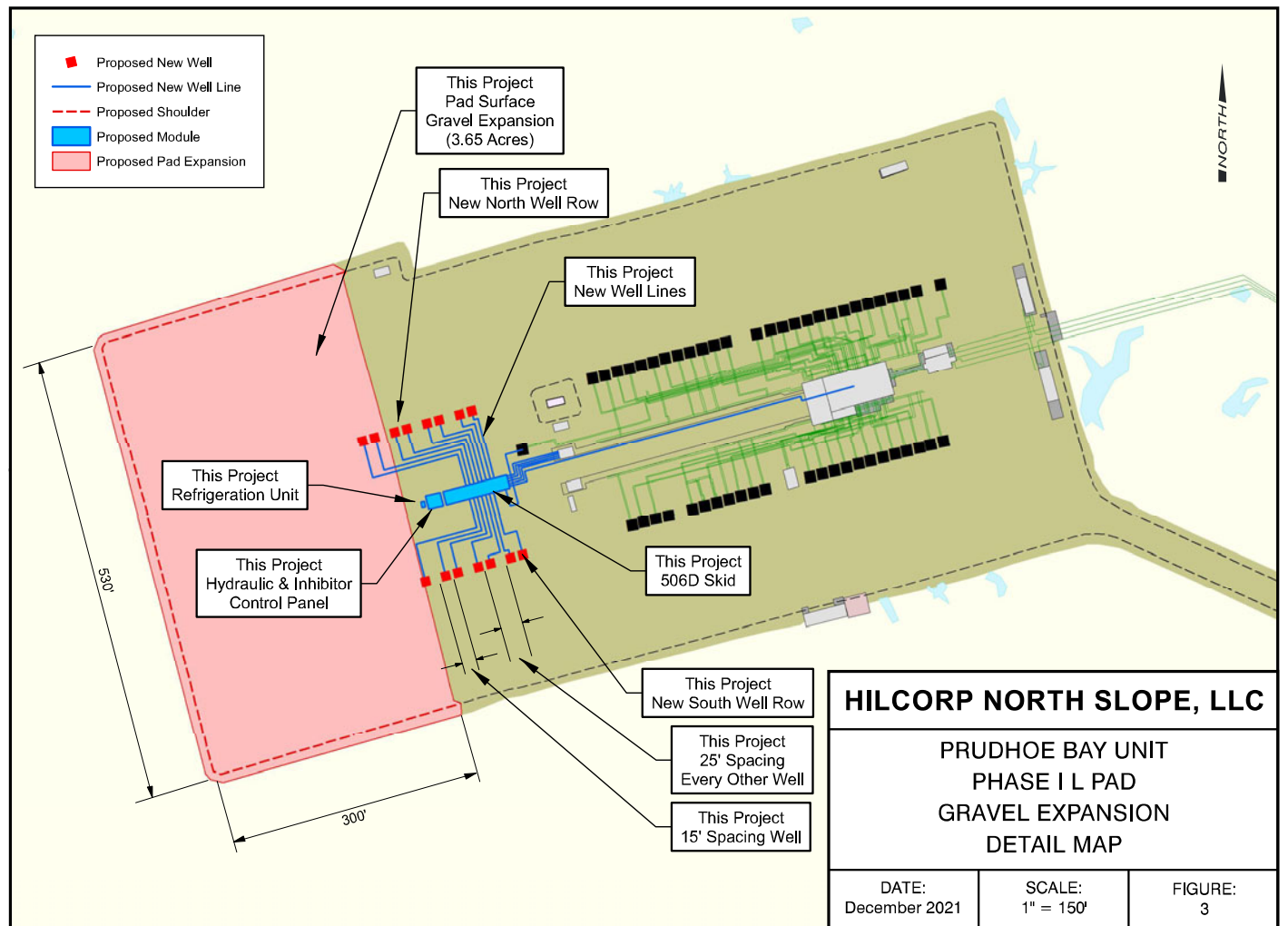
In its Dec. 22 application the company said the L Pad expansion would accommodate the new wells and associated infrastructure. The expansion would be some 530 by 300 feet and use some 35,000 cubic yards of gravel. The project includes relocation of a divert skid manifold from Z Pad to L Pad and installation of required support pilings, installation of a new 16 foot by 18 foot module to house control panels, installation of a refrigeration unit to support hybrid thermosyphons at divert skid vertical support members and wellhouses and installation of tie-in piping and electrical cabling from the new wells to existing infrastructure.

Hilcorp said project activities are scheduled to begin in January with gravel pad construction.

Increased production

“The purpose of this project is to accommodate new wells for increased production and oil retrieval at L Pad,” Hilcorp said.

The company said it will have maximized use of existing wells slots by the end of 2021 and “in order to drill more wells, an extension of the divert manifold system is required.” That system enables routing of producing wells between the test separator and the main



There is an under-utilized divert skid, 506D, which will be relocated from Z Pad to support the new wells.

production line.

There is an under-utilized divert skid, 506D, which will be relocated from Z Pad to support the new wells.

The 15 new wells will be a combination of producers and injectors.

Hilcorp said pad expansion is necessary to allow the drilling rig to access the target areas and to provide additional surface area for service and emergency vehicle access.

Hilcorp said the project is scheduled to begin in January with gravel pad construction and be completed by February 2023. No fill will be placed during the summer season, June through July 15, to avoid disturbance of nesting birds and to mitigate tundra impacts.

Current production

In November, the most recent month for which production data is available from the Alaska Oil and Gas Conservation Commission, L Pad was producing from three pools: Schrader Bluff Orion, Borealis and Prudhoe. The majority of the pad's production, 73%, was from Schrader Bluff, with 25% from Borealis and 2% from Prudhoe. ●

Contact Kristen Nelson
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S PAD EXPANSION

new camera and repeater, with two new vertical support members to be installed to support the camera and repeater.

The division has also approved a unit plan of operations amendment from Hilcorp North Slope for VSM installation at Prudhoe Bay A Pad. Hilcorp plans

to install 18 new 14-inch diameter VSMS on the A-804 line adjacent to A Pad. The new VSMS will be installed between existing supports to provide better support for an area of piping that has subsided and heaved over time, the division said, with project work expected to begin in January. ●

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LNG EXPORT

U.S. numbers, noting in a December release that the U.S. LNG export capacity will be the world's largest by the end of 2022.

The U.S. was the largest source of LNG supply growth in 2021, IHS Markit said Jan. 5, adding 25 million metric tons "amid continued buildup of liquefaction capacity as well as the ramping up of output from plants turned down the previous year," with average utilization of U.S. plants growing from 43% in third quarter of 2020 to 98% in third quarter 2021.

Capacity additions

Major U.S. LNG export capacity additions will come online by the end of 2022, EIA said:

- Train 6 at the Sabine Pass LNG export facility will add up to 0.76 billion cubic feet per day of peak export capacity; it came online in late November and the first cargo was expected to be shipped before the end of the year.

- At Calcasieu Pass LNG, 18 liquefaction trains with a combined peak capacity of 12 million metric tons per year, 1.6 bcf per day, commissioning began in November and first production was expected before the end of the year, with all liquefaction trains expected to be operational by the end of 2022.

Key LNG trends

IHS Markit said in addition to the U.S. topping the export market and China topping the import market there were other significant trends:

- A rebound of long-term contract signings after a pause in 2020. Firm, long-term contracts exceeded 65 million metric tons per annum in 2021, surpassing a previous record of 61 million in 2013, with signings among sellers roughly split between the U.S., Russia, Qatar and portfolio suppliers, many of whom are likely to source LNG from U.S. projects. IHS Markit said "U.S. projects were by far the largest source of pre-final investment decision (FID) contracts, as most contracts signed in Qatar and Russia were for capacity that is either already existing or under construction."

- Spot LNG prices set new records, spiking to nearly \$30 per million British thermal units in Asia in early 2021, before settling back to normal ranges, but "by August both Asian and European spot LNG prices climbed well above their oil price equivalent and remained above it for the rest of the year," ending December at \$40 per million Btu, "more than double the previous peaks achieved in the several years following Japan's 2011 nuclear crisis."

- In Brazil, imports hit an all-time high.

- European LNG imports fell, reflecting global market balances, as

By 2024, when construction is complete and operations begin at Golden Pass LNG, the eighth U.S. LNG export facility, U.S. peak LNG export capacity will increase to an estimated 16.3 bcf per day.

less supply was available to Europe due to strong demand in Asia and South America.

• Plant utilization rates outside the U.S. suffered, with LNG plants across the Atlantic and Pacific basins facing "unexpected outages and gas feedstock shortfalls from maturing production, dragging down average global utilization below the previous five-year average (excluding the price-responsive shut-ins in the United States in 2020)," with utilization particularly weak during summer in the northern hemisphere with non-U.S. utilization averaging 11 percentage points below the five-year average.

US plant capacities

EIA cited two capacity measures — nameplate or nominal, reflecting production in a year under normal operating conditions, based on engineering design, and peak capacity, reflecting production "under optimal operating conditions, including modifications to production processes that increase operating efficiency."

In October, EIA said, the U.S. Federal Energy Regulatory Commission approved requests to increase authorized LNG production at the Sabine Pass and Corpus Christi LNG terminals by a combined 261 billion cubic feet per year, 0.7 bcf per day, with the increases to be achieved by optimizing operations, including production uprates and modifications to maintenance.

As of November, EIA said it estimated U.S. LNG nominal capacity at 9.5 bcf per day, and peak capacity 11.6 bcf per day, with peak capacity including uprates to LNG production capacity at Sabine Pass and Corpus Christi.

By the end of 2022, EIA said U.S. nominal capacity is expected to increase to 11.4 bcf per day, with peak capacity at 13.9 bcf per day, exceeding the capacities of Australia and Qatar, currently the largest LNG exporters.

The agency said Australia has an estimated peak capacity of 11.4 bcf per day while Qatar's peak capacity is 10.4 bcf per day.

By 2024, when construction is complete and operations begin at Golden Pass LNG, the eighth U.S. LNG export facility, U.S. peak LNG export capacity will increase to an estimated 16.3 bcf per day.

—KRISTEN NELSON

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ALSS1/22

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OIL PRICES

storage facilities owned by the Abu Dhabi National Oil Co.

On Jan. 14, ANS lofted upward \$2.15 — a 2.5% gain — to close at \$87.56. WTI jumped \$1.70 to close at \$83.82 and Brent rose \$1.59 to close at \$86.06.

The benchmarks had dropped slightly Jan. 13, coming off a fresh post-omicron high Jan. 12.

ANS has traded at a premium to Brent for weeks, indicating that Asian buying of Pacific cargoes continues to lessen price competition on the West Coast where ANS is sold.

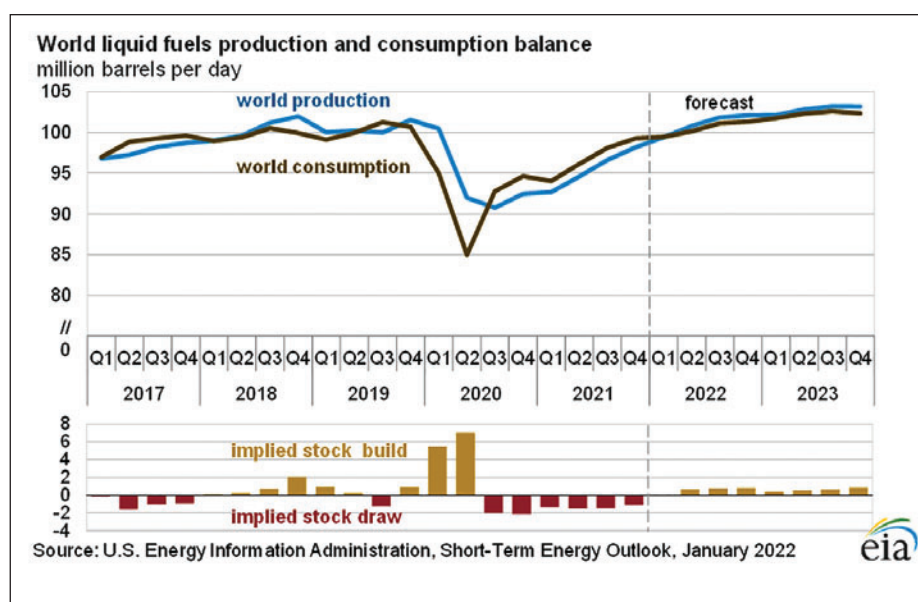
A Jan. 18 Bloomberg report said, “markets have tightened in recent weeks due to stronger-than-expected demand and outages in OPEC+ producers including Libya, with buyers in Asia paying sharply higher premiums for spot cargoes.”

EIA says inventories to rise in 2022, 2023

The U.S. Energy Information Administration expects global oil production to overtake demand in 2022 and 2023, resulting in increasing global oil inventories, it said in its January 2022 Short-Term Energy Outlook. The January STEO is the first to include 2023 estimates.

Oil consumption has outpaced oil production for more than a year, the EIA said, adding that production has remained restrained because of production curtailments by OPEC+ members, investment restraint from U.S. oil producers, and other supply disruptions.

The situation has led to persistent withdrawals from global oil inventories



The EIA said its current price path reflects global oil consumption that increases by 4% in 2022 and by an additional 2% in 2023, but the forecast depends on the effect of potential new COVID-19 variants.

and significant increases in oil prices, it said.

According to EIA estimates, global oil inventories have fallen for six consecutive quarters going back to the third quarter of 2020, declining at an average rate of 2.1 million barrels per day in the second half of 2020 and at an average rate of 1.4 million bpd in 2021.

The EIA expects global oil inventories will rise by an average of 0.5 million bpd in 2022 and by 0.6 million bpd in 2023 and that the inventory builds will put downward pressure on crude oil prices.

“However, oil market balances are

subject to significant uncertainties during the forecast period, notably, the way in which the ongoing pandemic affects economic growth, oil demand, and the production decisions of OPEC+ members,” it said. “These factors, among others, could keep oil prices volatile.”

Slowing global economic growth translated into slowing global oil demand in the EIA’s forecast, it said, adding that it used assumptions that global GDP will increase by 4.5% in 2022 and by 3.9% in 2023, compared with an increase of 5.8% in 2021.

“As business activity and personal mobility increased through much of 2021, air travel remained the most affected segment of liquid fuels demand in 2021,” the EIA said. “Our forecast assumes air travel will increase throughout 2022 and into 2023, but it will continue to remain below pre-pandemic levels.” With jet fuel consumption below pre-pandemic levels, economic growth is expected to be the main driver of oil consumption growth, it said.

The EIA said its current price path reflects global oil consumption that increases by 4% in 2022 and by an additional 2% in 2023, but the forecast depends on the effect of potential new COVID-19 variants.

Supply chain disruptions and central bank activity may affect oil demand during the forecast period, it said.

IEA sees supply exceeding demand in 2020

The International Energy Agency has raised its demand estimates for 2021 and 2022, but it also expects oil supply to overtake demand in 2022, it said in its January Oil Market Report.

Despite omicron cases surging worldwide, oil demand defied expectations in fourth quarter 2021, rising by 1.1 million bpd to 99 million bpd, the IEA said, adding that in Q1 2022, demand is set for a seasonal decline, with more teleworking and less air travel.

The IEA raised its global demand estimates by 200,000 bpd in 2021 and 2022 — resulting in growth of 5.5 million bpd in 2021 and 3.3 million bpd in 2022, due to softer COVID restrictions.

In 2022, world oil supply has the potential for a Saudi-driven gain of 6.2 million bpd if OPEC+ fully unwinds its cuts, the IEA said.

Oil output from OPEC+ could rise this year by 4.4 million bpd, resulting in reduced effective spare capacity in the second half of 2.6 million bpd, held primarily by Saudi Arabia and the United Arab Emirates.

Non-OPEC+ growth of 1.8 million bpd in 2022 will be led by the United States, it said. ●

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MERLIN 2 PERMITS

received state, federal and North Slope Borough approvals to begin pioneering (same as the prepacking that’s done for ice roads) of the 111-mile snow road between KRU 2P and the Merlin 2 well location.

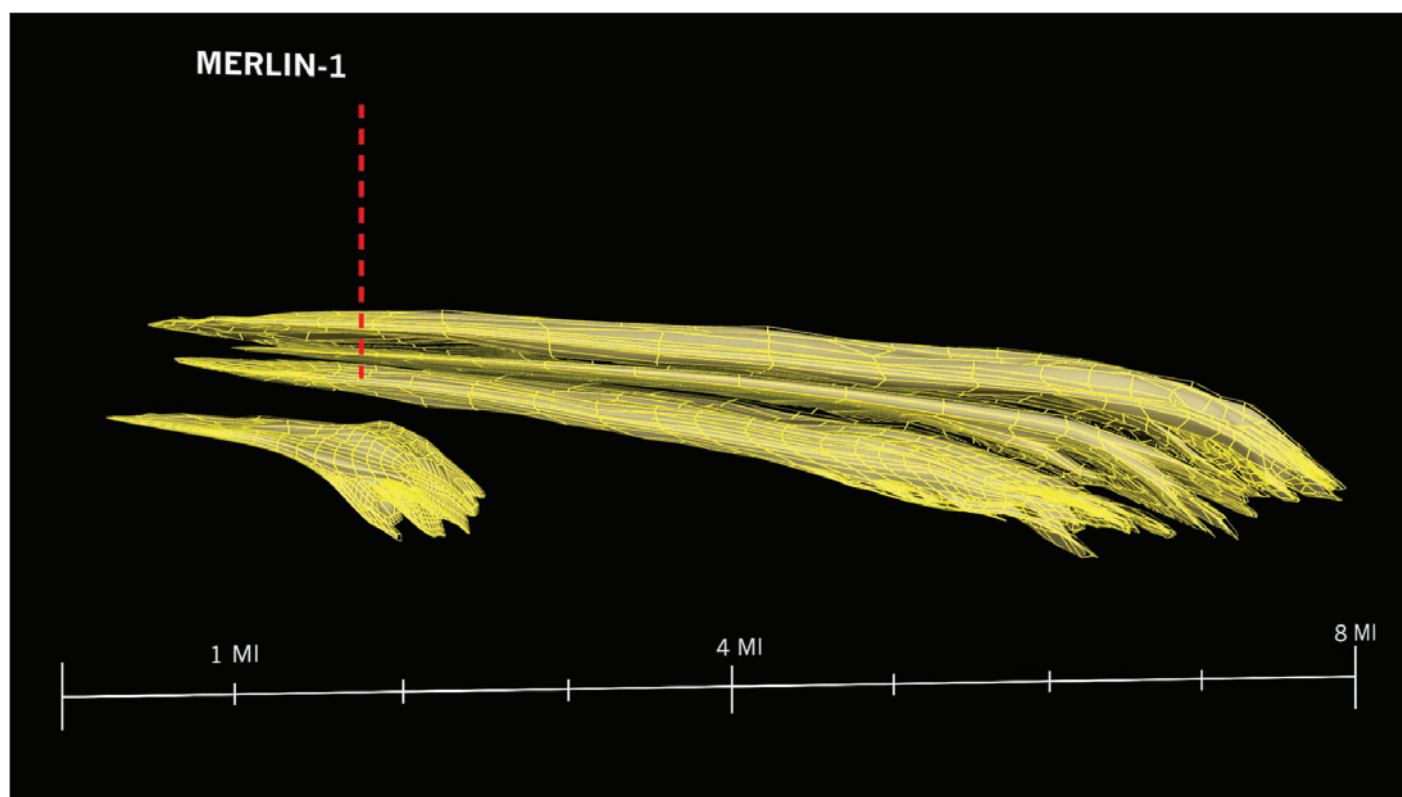
“We already have people working across the Colville River,” Opstad said. Using track vehicles, they are building ramps down the east side of the Colville and up the west bank and beyond.

Opstad owns Anchorage-based ELKO International, the lead contractor on Merlin 1 and Merlin 2. Along with a partial cash payment, ELKO took 88 Energy shares in lieu of payment on Merlin 1.

In 88 Energy’s Dec. 5 and 6 public announcements the company said its lead contractor will accept 407.7 million new 88E ordinary shares as pre-payment of up to US\$7.5 million (A\$10.7 million) against the costs of the Merlin 2 well this winter.

In its Jan. 17 update, 88 Energy said it’s “aware of media reports of correspondence to the BLM from the Center for Biological Diversity” with respect to the permit to drill.

“The CBD is a not-for-profit environmental activist group in the U.S.,” 88 Energy said. “With the current status of the review of the permit to drill by the BLM, as well as numerous other related approvals and permits from various government agencies, 88 Energy is nearing completion of permitting and the well remains on track to spud in February 2022.”



Wireframe image showing respective Merlin 1 and Merlin 2 well locations, facing east and overlain with predicted reservoir sands profile.

“We already have people working across the Colville River,” Opstad said (Dec. 8). Using track vehicles, they are building ramps down the east side of the Colville and up the west bank and beyond.

Targeting Nanushuk

Merlin 2’s total depth is expected to reach 8,000 feet, and “is targeting 652 million barrels of oil, in the highly prospective N18, N19 and N20 targets that were encountered in the successful

Merlin 1 exploration well,” which was drilled in Project Peregrine in March 2021 to a depth of 5,267 feet.

Merlin 1, 88 Energy said, “demonstrated the presence of oil in these multiple stacked sequences within the Brookian Nanushuk formation.”

Project Peregrine encompasses approximately 195,000 contiguous acres in NPR-A. 88 Energy has a 100% working interest in the project

Merlin 1 results

The Merlin 1 exploration well was spud in March 2021 with drilling operations completed in April 2021.

Interpretation of results was completed in August with post-well evaluation “successfully demonstrating the presence of oil in N20, N19 and N18 targets, with 41 feet of net log pay across the three reservoir intervals noted and geochemical analysis determining the oil to have an estimated API gravity between mid-30 to low-40 API,” 88 Energy said.

To view the company’s video and animated presentations of Project Peregrine, as well as Merlin 1 well results and details about Merlin 2, go to www.88Energy.com. ●

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WASTEWATER PERMIT

to waters of the United States,” DEC said in the draft permit fact sheet, dated Dec. 28. The public comment permit closes Jan. 28. DEC said the permit limits “types and amounts of pollutants that can be discharged from the facility and outlines best management practices (BMPs) to which the facility must adhere.”

DEC received the application from OSA for an APDES individual permit in July. (Oil Search merged with Santos in December and Oil Search is now part of the Santos Group.)

The STP facility

DEC said the proposed STP at Oliktok Point will include a make-up water (waterflood) pipeline, supporting development of the Pikka unit, with the STP on a gravel pad adjacent to the mainland shoreline at Oliktok Point next to the existing ConocoPhillips Alaska-operated STP.

The reservoirs at Pikka require a supply of water for waterflood “to optimize pressure in the reservoirs for enhanced oil recovery,” DEC said.

“The STP will strain, filter, heat, bio-treat, and de-aerate seawater drawn from four intake bays located on the face of

the OSA sheet pile dock facility for waterflood and other industrial uses,” the department said.

Wastewater will be discharged from a single outfall with the outfall line estimated to terminate 140.2 meters offshore with outfall oriented perpendicular to prevailing currents and the shoreline at a depth of some 2.44 meters below the sea surface.

Strainer/filter backwash

DEC said it is necessary to remove suspended sediment and microbes from the seawater prior to waterflood “to prevent clogging of pore spaces in the formation,” typically done using sand filtration and “hypochlorite to prevent bio-fouling filters, vessels, and pipes.”

The OSA STP will use membrane ultrafiltration and nanofiltration “to remove a greater percentage of sediment and microbes to be commensurate with the unique requirements of the oil producing formations,” DEC said.

The seawater coming into the STP is screened to block debris, marine life and other materials, with that debris “diverted to a bin for removal to an upland site.”

The seawater then goes through 24 crossflow filters which remove the bulk of silt, sand and detritus, with seawater further treated with “two self-backwashing strainers

(coarse filters) to remove silt, sand, and detritus” larger than 250 microns, DEC said.

The seawater is then heated to 15.5 degrees C to reduce viscosity and optimize treatment, with a portion of the heated water recycled through the intake bays to prevent freezing.

Particles greater than 50 microns are removed in a second set of fine filters, with reject water going to the outfall tank, and is further treated using seven ultrafiltration membrane membranes which remove silt and clays greater than 0.1 micron, with strainer and membrane backwash routed to the outfall tank.

Seawater is then injected with an inhibitor to prevent scale formation and with sodium bisulfate to remove chlorine prior to being treated in four sulfate removal unit membranes.

DEC said OSA requested authorization to discharge wastewater associated with the strainer/filter backwash, including water from backwashing the strainer/filters and neutralized water from periodic chemical cleaning of the membranes.

—KRISTEN NELSON

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CCUS CREDIT

Oil sands producers have estimated that eliminating emissions from their operations by 2050 could cost C\$75 billion, mostly for CCUS projects, which may consume two-thirds of the capital supplied through government support.

The hope in Canada’s petroleum industry is that a tax credit will be introduced this year, modelled after the similar 45Q program in the United States.

Apparent lack of EOR projects

But what causes unease within the fossil-fuel industry and oil-producing provinces is the Trudeau government’s apparent reluctance to include in its CCUS plan any projects targeting enhanced oil recovery, EOR.

The CCUS technology can be used across a range of industrial sectors, including fossil-fuel production, power generation and manufacturing.

In the case of EOR, captured carbon dioxide is already being injected into mature oil wells to rebuild reservoir pressures to boost output.

The International Energy Association has estimated that 16 of 21 CCUS operations around the world are already using those methods, which upsets environmental organizations, who argue that EOR will only prolong the use of oil.

In response, the governments of Alberta and Saskatchewan argue that excluding EOR will only remove the incentive for upstream companies to take advantage of CCUS to reduce their emissions.

EOR inclusion urged

Cenovus Energy Chief Executive Officer Alex Pourbaix told analysts and shareholders recently that if the objective of CCUS is to sequester large volumes of carbon dioxide then Canada should copy the U.S. by including EOR in its tax credits.

Failure to “think very hard about including EOR” in a federal tax credit will only limit the volumes of carbon dioxide that can be sequestered, he said.

Alberta Energy Minister Sonya Savage was even blunter, insisting that Canada “will never get to net zero” without CCUS.

“There’s no possible path to it without carbon capture. There’s no ability to pursue projects that are in the billions of dollars without competitive support from the govern-

ment,” she said.

The IEA is emphatic that CCUS is a vital link in the world’s transition to net-zero because the technology can be used to retrofit existing power and industrial plants and tackle emissions in sectors such as cement production.

Samantha McCulloch, head of the IEA’s CCUS unit, has written that “CCUS is necessary to meet national, regional and even corporate net-zero goals.”

She estimated that the world has increased its carbon capture capacity by only 3 million metric tons a year since 2010, raising the annual capacity to 40 million mt when 1.6 billion mt is needed to put the planet on a pathway to net-zero by 2050.

Global interest in CCUS gathered momentum last year with more than 100 new facilities announced and industry leaders expressing hope that pace will quicken now that there is so much worldwide focus on meeting climate-change goals.

McCulloch said that if net-zero is to remain within reach, CCUS “cannot afford to spend another decade sitting on the sidelines of climate mitigation efforts.” She prodded governments, industry and investors to ensure that “CCUS delivers” over the next 10 years.

—GARY PARK



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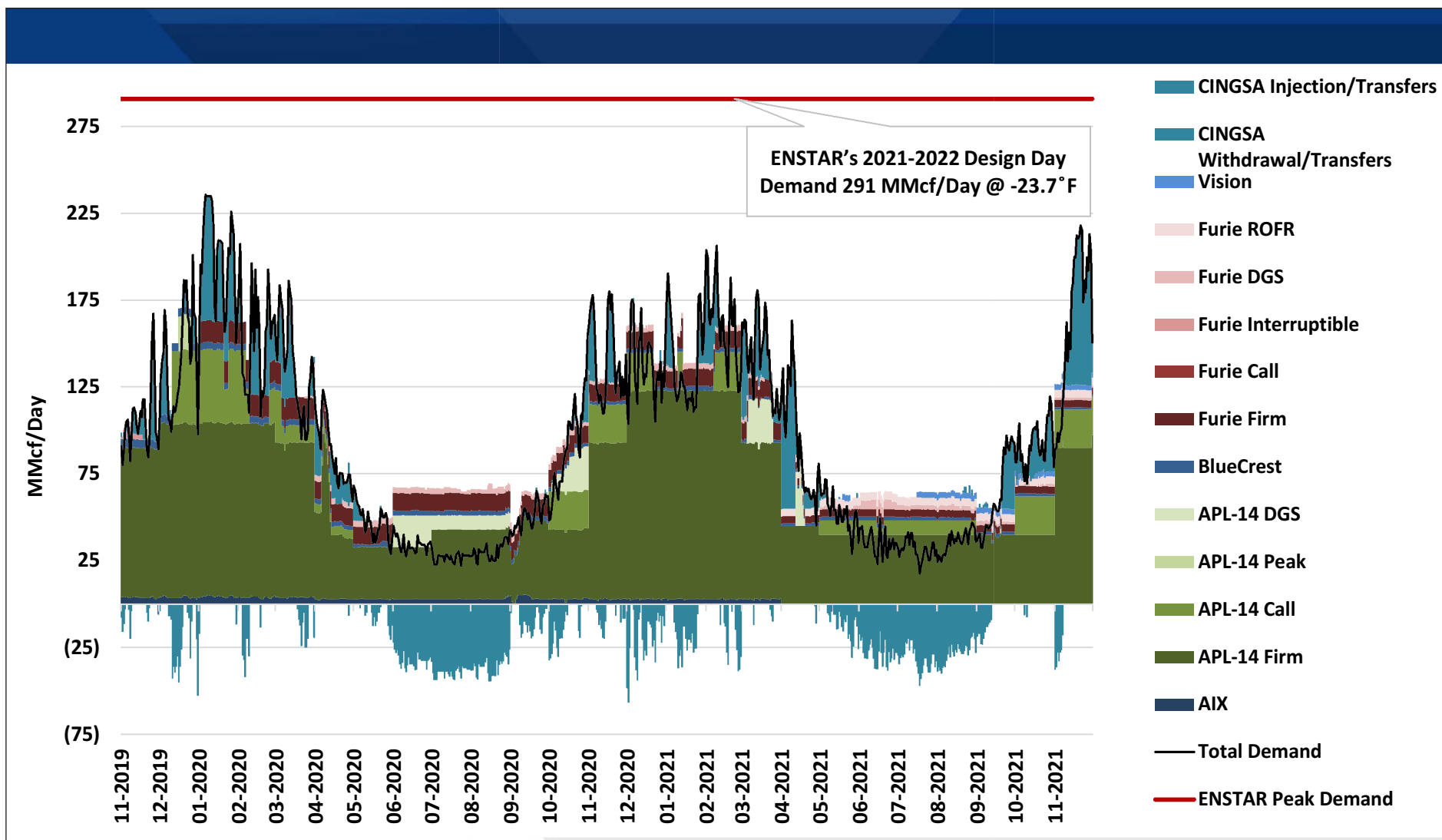


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ENSTAR NATURAL GAS CO.

A graph showing Enstar's sources of gas in response to gas demand over the past couple of years shows peak winter deliveries, with a notable peak during cold weather in November 2021. Gas is injected into the CINGSA facility during the summer, and at times during the winter, to ensure adequate winter deliverability.

continued from page 1

GAS DEMAND

The need for gas storage

While in the early days of the Southcentral gas industry there was more than enough gas deliverability to support maximum demand, gas production capabilities from the Cook Inlet declined significantly, as major fields matured. Around 2010, when it became evident that peak gas deliverability would fall below peak winter demand within the next few years, plans moved forward for the construction of a major subsurface gas storage facility, south of Kenai on the Kenai Peninsula. The facility, known as Cook Inlet Natural Gas Storage Alaska, or CINGSA, went into operation in April 2012.

The Enstar presentation demonstrated the vital importance of gas storage, CINGSA in particular, to the continuing reliability of winter gas supplies in Southcentral. Essentially, Enstar feeds gas to fill its allotted capacity assignment in CINGSA during the summer, when gas demand is relatively low. The utility can then withdraw gas from CINGSA during periods of peak winter demand, to meet the utility's peak deliverability needs.

November 2021 cold spell

Inna Johansen, Enstar director of gas supply operations, told the commission during the Jan. 12 meeting that by the second week of November 2021, during the unusually cold weather at that time, Enstar's gas deliveries reached 200 million cubic feet per day. That compared with around 100 million cubic feet per day of deliveries in November 2019, when temperatures were more normal.

When gas demand peaks, Enstar first uses all of its firm gas supplies from Cook Inlet gas producers, Johansen explained. The utility then calls on discretionary supplies under non-firm gas supply contracts. Gas withdrawn from CINGSA is then used to fill any remaining deliverability gap. CINGSA is the only public utility gas storage facility available for utility use. However, some gas producers have their own gas storage arrangements, to help them ensure that they can meet their contractual obligations for gas supplies.

Enstar's winter prioritization of purchasing gas from producers while minimizing its CINGSA withdrawals, ensures that the utility can maintain a maximum CINGSA capacity for use during cold snaps. However, the utility can drop its CINGSA storage volume somewhat after mid-February, Johansen said.

A winter challenge

A challenge from an early cold snap in November arises from the fact that the excessive CINGSA gas withdrawals result in a lower CINGSA gas inventory than

Enstar needs to ensure adequate deliverability capacity for the remainder of the winter. This winter Enstar is having to use call options for additional gas from producers to top up the levels of CINGSA stored gas, Johansen explained.

In addition, there are normally spells of relatively mild weather during the winter, when the drop in gas demand enables Enstar to top up its CINGSA stored gas volumes. In fact, an important function of CINGSA use is the ability to balance the highly variable levels of gas demand against the desires of gas producers to maximize gas well performance by maintaining relatively steady rates of gas production, Johansen commented.

Johansen also commented that an exceptionally cold spell in the first week of April 2021 had presented another challenge for Enstar, especially since that cold spell had coincided with the point at which contracted gas supplies transitioned from winter supply levels to the somewhat lower summer levels. With gas demand rising from normal levels of around 87 million cubic feet per day to 163 million cubic feet per day by April 9, Enstar had to obtain 66% of its gas for the day from CINGSA, Johansen said.

Changing gas situation

A comparison of the gas supply characteristics for some peak gas demand days, starting in 1999, shows the changing nature of the Cook Inlet supply situation and the increased need for gas storage. In addition to a decline in field gas deliverability, gas supplies from the west side of the inlet have declined relative to supplies on the east side.

Feb. 3, 1999, before CINGSA was constructed, saw a systemwide low temperature of -19 F, making this the coldest day on record for more than the last 20 years. Enstar had to deal with a total daily gas throughput of about 272 million cubic feet per day, with 183 million cubic feet coming from fields on the west side of the Cook Inlet and 89 million cubic feet from fields on the east side, Johansen said.

Jan. 19, 2017, saw a temperature of -7 F, coupled with record daily gas sales for Enstar. The utility delivered 117 million cubic feet from the west side of the inlet, including 9 million cubic feet from producer gas storage. Gas from the east side amounted to 198 million cubic feet, including 103 million cubic feet from CINGSA and 43 million cubic feet from producer storage.

Maximum CINGSA withdrawals

A cold spell on Jan. 7, 2019, marked Enstar's maximum gas withdrawals from CINGSA. The west side of the inlet delivered 118 million cubic feet, with 4 million cubic feet coming from producer storage. The east side delivered 166 million cubic feet, including 112 million cubic feet from CINGSA and 48 million cubic feet from producer storage.

Nov. 21, 2021, during this winter's early cold weather,

saw 120 million cubic of gas coming from the west side of the inlet, including 5 million cubic feet from producer storage. The east side delivered 155 million cubic feet, including 94 million cubic feet from CINGSA and 48 million cubic feet from producer storage.

A comparison of total Cook Inlet gas deliverability, including deliveries for all gas uses, between 1999 and 2021, also provides insights into how the Cook Inlet gas supply situation has changed over the last 20 years or so. On Feb. 3, 1999, total gas deliverability, including gas for a now mothballed fertilizer plant on the Kenai Peninsula, and with no gas storage, amounted to about 763 million cubic feet per day. On Nov. 21, 2021, total deliverability, including CINGSA withdrawal capacity, was 370 million cubic feet per day, Johansen said.

Forward planning

Enstar bases its forward gas deliverability planning on a minimum winter temperature of -22 F. Johansen said that the utility's current deliverability capability, using all of the utility's gas supply contracts and its CINGSA capacity, falls a little short of the 293 million cubic feet per day estimated to be needed at that temperature. The expiry on March 31, 2023, of a special contract with CINGSA would also drop Enstar's withdrawal capacity a bit, although the utility plans to extend that contract. The utility also anticipates working with gas producers to ensure that it can meet future deliverability needs, Johansen said.

In the very unlikely situation where Enstar did run short of sufficient gas deliverability in the winter, the extreme practical difficulty of safely restarting individual consumer gas meters after a supply disruption would preclude the utility from actually interrupting the gas supplies. Instead, the utility would request the electric utilities to divert some of their gas supplies to Enstar, with the consequent possibility of reduced electricity supplies in the region. Enstar has been in communication about this with electric utilities Chugach Electric Association and Matanuska Electric Association, and has an emergency agreement with MEA, Johansen said.

Johansen said that she would like to see an additional gas storage facility on the west side of the Cook Inlet, to diversify Enstar's storage options, as a contingency against some unanticipated problem with CINGSA, and to compensate somewhat for decreased gas supplies on the west side. Sims commented that in the short term Enstar will look at how it can increasingly leverage CINGSA to meet deliverability needs. However, in the longer term it is also necessary to look at other deliverability options, he said. ●

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