



## This week's Mining News

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Higher grade gold ore from Jualin deposit to be the norm at Kensington Mine in Southeast Alaska. See Mining News, page 7.

### Hilcorp hopes for oil from Liberty field in Beaufort Sea in 2022

Hilcorp Alaska hopes to start building the offshore gravel island for its planned Beaufort Sea Liberty oil field in late 2019, with the laying of the field's subsea pipeline taking place in the following winter and first oil from the field perhaps flowing in 2022, Mike Dunn, Hilcorp's Liberty project manager, told the Alaska Support Industry Alliance on Oct. 26. Currently, the draft environmental impact statement for the field development is moving through its public comment period, with that period scheduled to end in mid-November, Dunn said.

The final EIS for the project is likely to be published in about a year's time, with a record of decision by the Bureau of Ocean Energy Management or the Department of the Interior

see LIBERTY FIELD page 20

### AOGCC issues emergency NS well safety order after BP DS-2 spill

On Oct. 30 the Alaska Oil and Gas Conservation Commission issued an emergency order to all North Slope oil and gas operators to shut in by the end of the year any wells that have a similar design to that of a Prudhoe Bay well which leaked oil and gas in April. BP determined, and AOGCC has agreed, that the April leak from the wellhead of well 02-03 on Drill Site 2 resulted from a combination of the well design and the thawing and subsidence of the permafrost around the wellhead. The problem related to the wellhead geometry, in which the well's outer casing shoe was set in the permafrost, AOGCC says.

AOGCC requires all wells with a similar construction geometry to be shut in and that each operator submits a list of

see SAFETY ORDER page 18

## FINANCE & ECONOMY

# Armstrong sells Pikka

Oil Search, based in Papua New Guinea, has partnered with Repsol, Exxon

By KRISTEN NELSON  
Petroleum News

Oil Search, based in Papua New Guinea, has bought into Armstrong Energy and GMT Exploration's interests at Pikka and Horseshoe on the North Slope.

Oil Search said in a Nov. 1 statement that it paid \$400 million for a 25.5 percent interest in the Pikka unit and adjacent exploration acreage and 37.5 percent interests in the Horseshoe block and the Hue shale, with the sale subject to regulatory approval.

The company has the option, exercisable until June 30, 2019, to purchase all of Armstrong and GMT's remaining interest in the Pikka unit and the

The company also said it has agreed with Armstrong Energy to "jointly explore and develop other opportunities in the area."

Horseshoe block (25.5 percent and 37.5 percent respectively) as well as an additional 25.5 percent interest in adjacent exploration acreage and 37.5 percent in the Hue shale, for \$450 million.

Oil Search said it will carry Armstrong and GMT's share of the 2018-19 appraisal program, estimated at \$25-\$30 million, if the purchase option is not exercised by June 1, 2018, and will assume operatorship on June 1, 2018.

Armstrong is the current Pikka operator; Repsol

see PIKKA SALE page 19

## UTILITIES

# Passing the IEP baton

AIDEA sends Pentex sale agreement to IGU; questions raised over Titan plant

By ALAN BAILEY  
Petroleum News

During its Oct. 26 meeting the board of the Alaska Industrial Development and Export Authority passed a resolution approving terms for the sale of Pentex Alaska Natural Gas Co. to the Interior Gas Utility and giving the IGU board until Nov. 30 to approve the deal.

Eventual closure of the deal would then depend on several conditions being met, including an agreement on a plan to expand an existing liquefied natural gas plant operated by Pentex subsidiary Titan Alaska LNG near Point Mackenzie. During the board meeting's public comment period proponents of a plan to develop a new LNG plant near Houston on the Alaska Railroad raised

AIDEA purchased Pentex in 2015 to help facilitate the completion of the IEP. Pentex owns the Titan facility, as well as a trucking operation for transporting LNG to Fairbanks, and Fairbanks Natural Gas, a utility that currently supplies gas to customers in central Fairbanks.

questions over whether a new plant at Houston would be preferable to the Titan plant expansion.

The proposed Pentex sale comes as part of the Interior Energy Project, or IEP, an AIDEA project

see PENTEX SALE page 16

## FINANCE & ECONOMY

# COP earns \$103M in 3Q

Company reports progress on its projects at 1H NEWS, CD-5 and GMT-1

By ERIC LIDJI  
For Petroleum News

ConocoPhillips Alaska Inc. is reporting progress on three North Slope developments.

In a third quarter earnings call, the local subsidiary of the largest independent exploration and production company in the world said that it recently spud the first well in the 1H NEWS project and expects first oil by the end of the year; that the CD-5 project is producing significantly more oil than expected; and that the GMT-1 project is "running well under budget" and remains on track for producing first oil by the end of 2018.

The company is also permitting a seismic program across the 740,000 gross acres it acquired last December in a lease sale. "We see additional

The CD-5 pad at the Colville River unit is producing 26,000 barrels per day, according to the company, compared with a projected plateau rate of 16,000 bpd.

opportunity out to the west, but also have a nice pipeline of projects that we're working on today," Executive Vice President of Production, Drilling and Projects Al Hirshberg said, according to a transcript of the call.

The company spud the first well in the \$460 million 1H NEWS project at the Kupaaruk River unit in early August. The project should produce 8,000 barrels per day at its peak.

see CONOCO EARNINGS page 18



## ● ENVIRONMENT &amp; SAFETY

# BP accepts AOGCC fine for Prudhoe well

By KRISTEN NELSON

Petroleum News

The Alaska Oil and Gas Conservation Commission said in an Oct. 25 order that BP Exploration (Alaska) is not contesting a proposed enforcement action for failure to complete a mechanical integrity test on Prudhoe Bay unit H-03 well, an injection well. The commission said it proposed a \$24,500 civil fine and BP had committed to paying the fine.

AOGCC said a violation occurred every day after May 20, 2014, that BP injected into the H-03 well with-

out completing a mechanical integrity test, specifically June 17 to July 15 of 2016. The commission said the \$24,500 fine was \$10,000 for the initial violation — failure to perform the required mechanical integrity test on the injection well — and \$500 for each day of injecting in the well without compliance with the testing requirement.

AOGCC last witnessed a mechanical integrity test on May 20, 2010. A test was required on or before May 20, 2014, but without the test the well was placed on injection for 29 days.

BP notified the commission July 20, 2016, that the

well had been returned to injection on June 17 of that year. When the commission investigated, BP provided data that injection occurred from June 17 to July 15 of 2016, for 29 days, before the company shut in the well.

The commission said the penalty was reduced due to BP's "general history of satisfactory compliance and practices, an aquifer exemption for the PBU, the lack of actual or potential threat to public health or the environment," and the company's "immediate shut-in of H-03 and notification to AOGCC once BPXA determined the

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## ● LAND &amp; LEASING

# S. Miluveach expansion application amended

BRPC adds 1,920-acre tract, expansion now 21,472 acres, unit would be 30,432 acres; 4th POD amended to add N Tarn 1A reentry work

By KRISTEN NELSON

Petroleum News

Brooks Range Petroleum Corp. has amended its fourth plan of development for the Southern Miluveach unit on the North Slope to include re-entry of the North Tarn 1A well this year. Citing poor economic conditions, the company moved most of the work in its POD for 2017, the fourth, to its fifth proposed POD for 2018. It has also amended its application to expand the unit with the addition of an additional tract.

The amendment to the fourth POD added plans to re-enter the North Tarn 1A well (see story in Oct. 22 issue) and conduct a flow test following hydraulic stimulation.

In approving the amendment for the fourth POD, James Beckham, deputy

director of the Alaska Department of Natural Resources' Division of Oil and Gas, said the amendment "adds a drilling commitment that, if successful, could provide a basis for the unit extending past its December 31, 2017 expiration date."

He said BRPC had previously indicated that it hopes to certify the North Tarn 1A well as capable of producing in paying quantities for purposes of an automatic unit extension, but said the division has advised the company "that in addition to well certification, it will need to either be producing from the well or able to produce and continuing to conduct operations under an approved POD."

## Work in fourth POD not completed

BRPC submitted its fifth POD for Southern Miluveach Oct. 23.

In reporting on activities under the

fourth POD, BRPC said it refined drilling plans and procedures for managed pressure drilling and advanced subsurface evaluation of the Kuparuk "C" and "A" sands, and has a reentry, fracture stimulation and test of North Tarn No. 1A underway, with requests for proposals solicited and received for North Slope installation work.

But, the company said, plans under the fourth POD in general remained in "warm standby" during the term of that POD because of continued low oil prices and difficult economic conditions.

The majority of the fourth plan was not accomplished: A drilling rig was not commissioned to drill development wells because a processing facility is not available. The company did not re-engage with engineering contractors or engage procurement contractors for remaining equipment and services because of continued adverse economic conditions, nor did it solicit RFPs for fabrication work or fabricate remaining modules. Other elements on hold from the fourth POD include installation of additional piles, completion of the tie-in to Alpine and installation of cross-country pipelines.

Alaska-fabricated modules were not installed, nor were Canada-fabricated modules set and tied-in.

And oil production will not begin in December 2017 because the processing facilities are not complete.

## Fifth POD

The fifth POD includes long-range proposed development activities, "including plans to delineate all underlying oil or gas reservoirs, to bring the reservoirs into production, and to maintain and enhance production once established," the company said.

Facilities for the Southern Miluveach unit include a central processing facility with a 15,000 barrel per day capacity, drill site facilities, two cross-country pipelines, non-process infrastructure including build-

ings and equipment, a communications tower and related infrastructure and up to nine production wells and 17 injection wells.

The company also said it plans to explore or delineate any land in the unit not included in a participating area.

Details of proposed operations for at least one year following submission of the plan include fabrication of remaining modules beginning this coming January and continuing through December; installation of all remaining on-pad piles in the first quarter of 2018; ConocoPhillips Alaska-pipeline tie-in work in the fourth quarter of 2018 or the first quarter of 2019; cross-country pipeline installation in the fourth quarter of 2018 or the first quarter of 2019; first Alaska-fabricated modules would arrive on the Slope in June and the last Alaska-fabricated modules would arrive for installation in December 2018.

Canada-fabricated modules would arrive via sealift in August 2018 with installation complete in August and September of 2018.

A 60-90 day system-wide functional check-out followed by commissioning and start-up would lead to first oil in the first quarter of 2019.

## Unit expansion

BRPC applied for an expansion of the Southern Miluveach unit in June, requesting an expansion along the west, north and east of the existing unit.

In October, the company amended the request, adding an additional lease, 1,920 acres, to the proposed expansion area, bringing the total proposed expansion area to some 21,472 acres in 12 state oil and gas leases.

The expanded unit would contain 30,432 acres. The lease added to the expansion request is a noncontiguous lease to the west of the unit.

The company said it planned to develop

see MILUVEACH UNIT page 5

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## AOGCC FINE

well was out of compliance."

AOGCC said BP "committed by email dated July 19, 2017 to an increased level of oversight and review of established training and process protocols for employees and contractors governing

dewatering injection operations," and the commission said it found BP's "renewed training and process protocols" satisfactory to help prevent further violations of requirements for mechanical integrity tests. ●


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## GOVERNMENT

### Alaska Oil and Gas Conservation Commission report: October 2017

• On Oct. 5, the Alaska Oil and Gas Conservation Commission approved (Area Injection Order No. 2C.047) a request from ConocoPhillips Alaska Inc. to continue water-only injection at the Kuparuk River Unit No. 1E-17 well. The company reported a potential Tubing x Inner Annulus pressure communication on April 15, 2016. Subsequent diagnostics and monitoring including a passing non-state witnessed Mechanical Integrity Test of the Inner Annulus convinced the commission of the integrity of the well.

• On Oct. 5, the AOGCC approved (Area Injection Order No. 2C.048) a request from ConocoPhillips to continue water injection at the Kuparuk River Unit No. 2M-37 well.

The company reported a potential Inner Annulus by outer annulus pressure communication on Aug. 7. Subsequent diagnostics including a passing state witnessed Mechanical Integrity Test convinced the commission of the integrity of the well.

• On Oct. 10, the AOGCC approved (Area Injection Order No. 2C.049) a request from ConocoPhillips to continue water-alternating-gas injection at the Kuparuk River Unit No. 1C-10 well. The commission issued AIO 2B.036 in August 2008, after a pressure communication became evident, and cancelled it in 2013, after the company worked over the well to add casing. The company reported a potential return of the communication, but subsequent diagnostics convinced the commission of the integrity of the well.

• On Oct. 17, the AOGCC established (Other Order 126) regulatory cost charges for fiscal year 2018. The charges are based on production volumes by operator and are due in four installments each year. The charges are as follows: BP Exploration (Alaska) Inc. (\$4,895,027.97), ConocoPhillips (\$1,240,171.03), Hilcorp Alaska LLC (\$1,009,364.73), Eni US Operating (\$81,020.17), Caelus Energy Alaska LLC (\$34,089.40), ExxonMobil Alaska Production (\$10,414.07), Cook Inlet Energy, LLC (\$8,560.82), Cook Inlet Natural Gas Storage Alaska (\$4,483.21), Furie Operating Alaska, LLC (\$2,078.35), Savant Alaska LLC (\$1,919.44), AIX Energy LLC (\$1,798.57), North Slope Borough (\$841.99), Aurora Gas LLC (\$377.57) and BlueCrest Alaska Operating LLC (\$252.17).

• On Oct. 23, the AOGCC approved (Area Injection Order No. 18D.002) a request from ConocoPhillips to continue water injection at the Colville River Unit No. CD2-55 well.

The company reported a potential Tubing x Inner Annulus pressure communication on July 25 on miscible gas injection. Subsequent diagnostics including a passing non-state witnessed Mechanical Integrity Test convinced the AOGCC of the integrity of the well.

• On Oct. 25, the AOGCC ordered (Other Order 125) Aurora Exploration LLC to post a \$3.6 million bond to guarantee plugging and abandonment of six wells at the Nicolai Creek unit. The bond is a pre-requisite for AOGCC approval of a change of operator for the Cook Inlet unit. Aurora Exploration wants to take over from Aurora Gas LLC.

The company can post the bond over three years in installments of decreasing size: \$2 million in the first year, \$1 million in the second year and \$600,000 in the

see **AOGCC REPORT** page 6

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### MILUVEACH UNIT

the expansion area and process the recovered hydrocarbons through the future Mustang facility to maintain maximum throughput. An additional drill site would be installed which would accommodate up to 40 wells, 20 producers and 20 injectors, with produced fluids transported to the

Mustang pad via a 20-inch multiphase pipeline.

BRPC operates the Southern Miluveach unit on behalf of working interest owners CaraCol Petroleum LLC, TP North Slope Development, MEP Alaska LLC, Ramshorn Investments Inc., AVCG LLC, Mustang Road LLC and MOC1 LLC. •

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

## GOVERNMENT

### Walker orders climate change action team

Gov. Bill Walker has ordered the formation of a Climate Action for Alaska Leadership Team to establish a climate change strategy for the state. In an Oct. 31 press release the governor's office said that the idea behind the strategy is to create a long-lasting framework under which Alaskans can build a strategic response to climate change, based on the best available science and on the integration of indigenous and local knowledge, while also taking into account Alaska's economic interests.

"Alaskans should be at the forefront of innovation and response," Walker said. "In addition to developing solutions that ensure community and economic resilience while mitigating environmental harm, we must also engage with national and international partners to strengthen Alaska's voice in global



GOV. BILL WALKER

**Walker plans to appoint team members later this year and is inviting applications from interested citizens. The deadline for applications is Nov. 14.**

decision making. We will support the goals of the Paris Agreement while ensuring that Alaskan communities and businesses have the resources and opportunity to benefit from the global response to climate change."

The governor's office says that the climate change leadership team will be chaired by Lt. Gov. Byron Mallot. The 15-member team will consist of a diverse group of stakeholders from across the state

and will build on past research and policy recommendations to formulate new policy priorities. Walker plans to appoint team members later this year and is inviting applications from interested citizens. The deadline for applications is Nov. 14.

In support of the leadership team, sub-committees composed of non-committee members will provide expertise on specific issues.

Walker wants the leadership team to submit quarterly progress reports that document preliminary recommendations, and to deliver an initial recommended plan of action to the governor by Sept. 1, 2018. The plan needs to outline achievable actions to address four aspects of dealing with climate change: mitigation, adaptation, research and response. A purpose is to foster partnerships and activities that operate across different sectors of the state.

"Climate change will affect all Alaskans," said Mallot. "Addressing this bipartisan issue is our responsibility as global citizens, and ensures that we leave for future generations all the promise and potential that Alaska has to offer."

—ALAN BAILEY

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## GOVERNMENT

### RFP out for support for DNR on ASTAR

Alaska's current capital budget, signed into law July 31, includes \$7.3 million for the Arctic Strategic Transportation and Resource project, to be run by the Division of Mining, Land and Water at the Department of Natural Resources, with the objective of better connecting villages in the region and encouraging resource development.

DNR's Office of Project Management and Permitting issued a request for proposal Oct. 19 for assistance in developing an ASTAR strategic plan, with the deadline for proposals 4 p.m. Nov. 14.

Evaluation of the proposals will be completed by Nov. 21 and the state will issue a notice of intent to award a contract that same day. The contract would be issued Dec. 4 with the first contract term Dec. 4 through June 30, 2019, and renewal options to expire June 30, 2020.

The RFP says the state reserves the right to award multiple contracts, and anticipates that the contractor(s) selected would assemble a team of experts. Term contract(s) would be developed with qualified contractor(s) and while the term contract does not authorize any work, it puts a contract into place allowing DNR to issue specific notices to proceed under the contract for completion of more specific work tasks.

Services are divided into four groups: project management; data analysis, management and GIS analysis and integration; stakeholder outreach and coordination; and economics, socioeconomics.

The RFP includes a potential list of the types of activities that could be requested, a list of potential deliverables and minimum qualifications expected.

—PETROLEUM NEWS

*Evaluation of the proposals will be completed by Nov. 21 and the state will issue a notice of intent to award a contract that same day. The contract would be issued Dec. 4 with the first contract term Dec. 4 through June 30, 2019, and renewal options to expire June 30, 2020.*

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### AOGCC REPORT

third year.

- On Oct. 25, the AOGCC assessed (Other Order No. 127) a \$24,500 penalty against BP Exploration (Alaska) Inc. for performing injections at the Prudhoe Bay Unit H-03 well without completing a mechanical integrity test. BP accepted the fine. The AOGCC approved policy changes by the company intended to prevent a similar occurrence.

- On Oct. 26, the AOGCC approved (Area Injection Order No. 2C.050) a request from ConocoPhillips to continue water injections at the Kuparuk River Unit 3F-07 well.

The company reported a potential Tubing x Inner Annulus pressure communication on August 31, while injecting gas. A subsequent 30-day water-alternating-gas monitoring period, followed by diagnostics and a passing non-state witnessed Mechanical Integrity Test of the Inner Annulus convinced the commission of the integrity of the well.

- On Oct. 30, the AOGCC required

(Other Order No. 128 through Other Order No. 135) all North Slope operators to shut-in all wells with construction geometry similar to the Prudhoe Bay Unit DS02-03B well, as reported in the Nov. 5 edition of Petroleum News. The emergency order applied to Armstrong Energy LLC, Brooks Range Petroleum Corp., Caelus Natural Resources Alaska LLC, ConocoPhillips Alaska Inc., Eni US Operating Co. LLC, ExxonMobil Oil Corp., Hilcorp Alaska LLC and Savant Alaska LLC.

- The AOGCC has tentatively scheduled a hearing for Nov. 14, 2017 to consider a request from Hilcorp Alaska LLC to redefine the vertical and horizontal boundaries of the Ninilchik Beluga/Tyonek Gas Pool in Rule 2 of Conservation Order 701A.

The hearing was originally scheduled for Oct. 25.

The commission will proceed with the hearing if it receives a request by Oct. 27.

—ERIC LIDJI

Contact Eric Lidji at ericlidji@mac.com

## ALTERNATIVE ENERGY

### Chugach Electric approves solar project

The board of Southcentral Alaska utility Chugach Electric Association has authorized a project to install a solar power system composed of about 2,000 solar panels at an Anchorage site on Chugach Electric property on the east side of Minnesota Drive, south of International Airport Road. Referred to as the Chugach Community Project, the idea is to finance the project through the sale of shares in the project to Chugach Electric's members. During the 25-year life of the project a member who purchases shares will be credited monthly with solar energy in proportion to the number of shares that the member owns.

The start of construction, anticipated in April, 2018, will depend on the sale of 80 percent of the shares on offer, with the sale of the shares expected to start in March.

The solar power facility is expected to generate about 550 megawatts of power per year, an amount of power equivalent to 15 percent of the average electricity consumption of 500 homes, Chugach Electric says. The utility says that it surveyed 700 of its members about sustainable energy and interest in community solar power. Of those surveyed, 63 percent favored the community solar project while 60 percent said that they would be willing to pay more for their electricity in order to use solar power, Chugach Electric says.

In February the Chugach board formally changed its business philosophy to measure its performance through environmental and social factors, as well as through financial parameters.

"The sustainability resolution we passed earlier this year underscores our commitment to long-term, sustainable energy resources, and this project aligns well with that focus," said board Chair Janet Reiser. "Our members have shown great interest in community solar, and we are pleased to be moving forward on serving that interest."

"We continue to work toward developing renewable energy sources and allow any retail member to use solar energy," said Chugach Electric CEO Lee Thibert. "We can achieve great economies of scale in a community project, which will allow any member who can't have solar panels at home to have solar power as part of their energy mix."

—ALAN BAILEY

## LAND & LEASING

### Interior to offer largest US lease sale

The Interior Department said Oct. 24 it will propose the largest oil and gas lease sale ever held in the United States — nearly 77 million acres in the Gulf of Mexico off the coasts of Texas, Louisiana, Mississippi, Alabama and Florida.

The sale, scheduled for next March, includes all available unleased areas on the Gulf's Outer Continental Shelf, a reflection of the Trump administration's strategy to maximize oil and gas drilling on federal lands and waters.

Even so, only a small fraction of the tracts available are expected to receive bids. A similar lease sale in August drew bids on just 90 offshore tracts totaling about a half-million acres — less than 1 percent of the 76 million acres available.

Interior Secretary Ryan Zinke touted the upcoming sale as part of the administration's bid to achieve what President Donald Trump calls "energy dominance" in the global market.

"In today's low-price energy environment, providing the offshore industry access to the maximum amount of opportunities possible (will) spur local and regional economic dynamism and job creation," Zinke said.

Rep. Raul Grijalva of Arizona, the top Democrat on the House Natural Resources Committee, said Zinke and congressional Republicans were taking credit for an Obama-era policy to offer oil and gas leases from all available tracts in the Gulf, rather than separating the western and eastern Gulf areas from the more productive central Gulf region off Louisiana, Mississippi and Alabama.

"Republicans spent eight years alleging the Obama administration was killing oil and gas when they knew it wasn't true," Grijalva said. "Now they're taking credit for lease sales made under the Obama leasing plan. Tomorrow they may as well claim credit for capturing Osama Bin Laden."

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page 8 Washington Companies get into NWT diamond business with Dominion buy

## NEWS NUGGETS

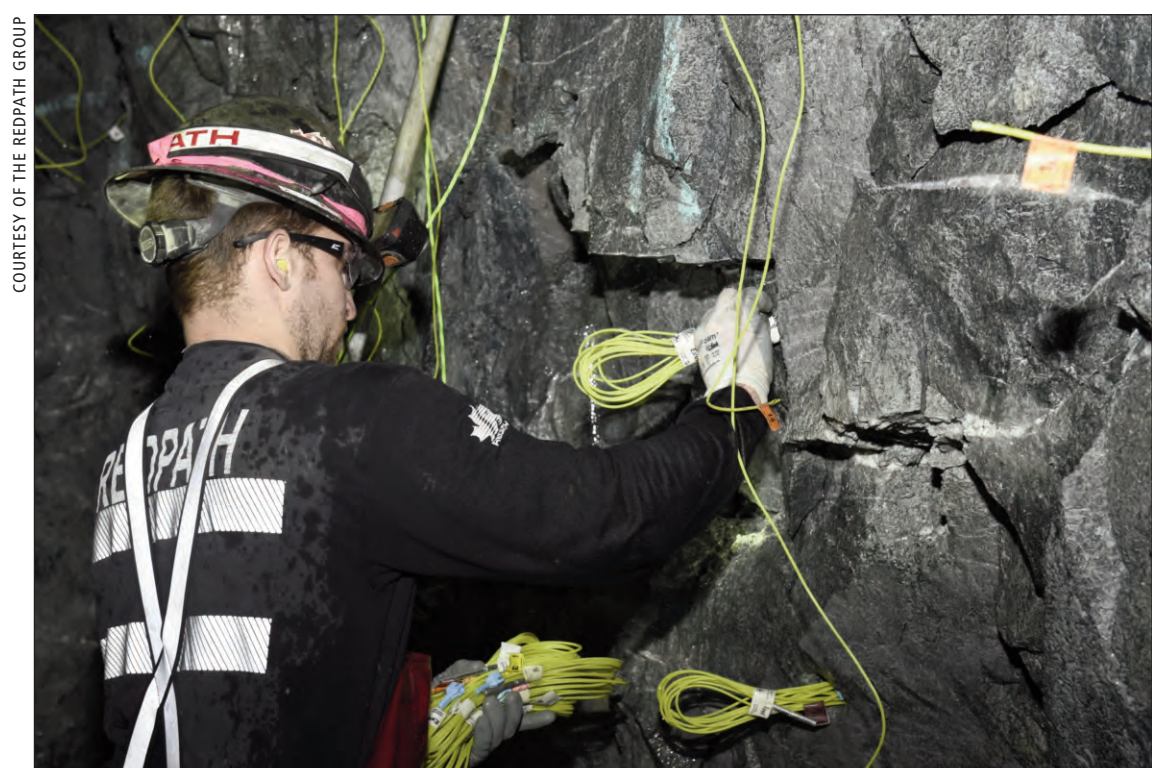
Compiled by Shane Lasley

**CopperBank drilled 13 holes this year aimed at confirming and expanding the roughly 1.1 billion pounds of copper previously outlined at its Pyramid copper project on the Alaska Peninsula.**

**Confirming, expanding Pyramid**

CopperBank Resources Corp. Oct. 30 reported drill results that continue to confirm and expand copper mineralization in the Main and North zones of its Pyramid project on the Alaska Peninsula. DDH 17PY035 cut 251 meters averaging 0.41 percent copper over two intervals in the Main zone – a near surface intercept of 137 meters of 0.45 percent copper, 0.02 percent molybdenum and 0.15 grams per metric tons gold from a depth of 42 meters and 114 meters of 0.37 percent copper, 0.01 percent molybdenum and 0.08 g/t gold from 205 meters. The two zones encountered in hole 35 were separated by a 26-meter fault zone of clay altered quartz diorite porphyry. CopperBank said the results from this and previously reported holes confirm a minimum length of 800 meters for the Main zone. DDH 17PY036 cut 179.5 meters of 0.37 percent copper, 0.03 percent molybdenum and 0.12 g/t gold in the North zone. CopperBank completed 3,690 meters of drilling in 13 holes at Pyramid this year. “Six holes have now been reported, representing phase one of our 2017 drilling program, and we look forward to reporting the results of our final seven holes that test open areas in the Central and West Zones in due course,” said CopperBank Executive Chairman Gianni Kovacevic. According to a 2013 calculation, Pyramid hosts roughly 1.1 billion pounds of copper in 122.5 million metric tons of inferred resource averaging 0.41 percent copper, 0.1

see **NEWS NUGGETS** page 12



A J.S. Redpath Corp. crewmember prepares for a blast as the company drives a decline to the high-grade Jualin gold deposit at Coeur Mining's Kensington Mine in Southeast Alaska.

**GOLD PRODUCTION**

## Kensington's gold future

Higher grade gold ore from Jualin to be the norm at SE Alaska operation

By **SHANE LASLEY**  
Mining News



**MITCHELL KREBS**

Undaunted by the slower than planned start, the company is sprinting for at least 40,000 oz of gold during the final 122 days of 2017.

“Kensington results during the first nine months now puts a lot of pressure on the team during the fourth quarter to deliver on the full year production guidance of 120,000 to 125,000 oz of gold,” said Coeur Mining President and CEO Mitchell Krebs.

With high-grade ore being hauled to the surface from the Jualin deposit, Coeur Mining Inc.'s Kensington Mine in Southeast Alaska is poised to churn out more gold at lower costs moving forward.

Through the first nine months of this year, this underground mine about 45 miles north of Juneau produced 80,162 ounces of gold.

Going into 2017, Coeur planned for Kensington to produce at least 120,000 oz of gold this year. The Chicago-based miner, however, had hoped to be closer to this goal by the end of the third quarter.

**Mining Jualin**

Mining ore from the high-grade Jualin deposit has been a cornerstone for increased production at Kensington since Coeur reconfigured its plan for

see **KENSINGTON'S FUTURE** page 15

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## NORTHERN NEIGHBORS

Compiled by Shane Lasley



DOMINION DIAMOND CORP.

An aerial view of Ekati, one of two world renowned diamonds mines The Washington Group bought into with its US\$1.2 billion acquisition of Dominion Diamond Corp.

### Washington Companies buys Dominion Diamond

Dominion Diamond Corp. Nov. 1 announced that it has closed the deal to sell all of its outstanding shares to The Washington Companies for US\$14.25 per share, worth roughly US\$1.2 billion. Founded by billionaire Dennis Washington, The Washington Companies is a group of privately held North American mining industrial and transportation businesses. "This is an exciting day for Dominion Diamond and The Washington Companies," said Washington President Lawrence Simkins. "We fully support Dominion's existing strategy and its exceptional employees, and we are confident that Dominion will continue to offer long-term benefits to all of the company's stakeholders." Dominion, which operates the Ekati diamond mine and 40 percent of the Diavik diamond mine, will operate as a standalone, private company. "With today's closing, I am excited to join forces with Dominion as well as with our respected partner at the Diavik mine – Rio Tinto. We look forward to owning and operating Dominion for decades to come, with a focus on maintaining safe and prosperous business operations in the Northwest Territories," said Dennis Washington. Patrick Evans, who recently served as CEO of Kennady Diamonds and Mountain Province Diamonds, is

see **NORTHERN NEIGHBORS** page 12

## • COLUMN

# Upbeat mood buoys outlook for AMA meet

On heels of increased exploration, development and production activities in 2017, Alaska miners welcome signs of industry revival

By **CURT FREEMAN**

Special to Mining News

In early November, the Alaska Miners Association will hold its annual convention in Anchorage. Unlike the past four or five years, the excitement surrounding the convention this year is palpable due to the steady increase in exploration, development and production activities in Alaska in 2017.

Clear signs of the industry's long-awaited revival include the fact that 11 new project acquisitions have taken place in 2017, half of which involve companies that are newcomers to the Alaska mineral industry. Total exploration spend for 2017 is up for the second straight year, easily topping the US\$90 million mark, and this, after four years of steadily decreasing investments beginning in 2012.

With metal prices stable or rising, output and revenue from Alaska's mines is healthy and growing.

The same lack of investment in new projects industrywide during the past four to five years, coupled with strong production figures, has created a shortfall in the number of high-quality mid-tier projects that producers can acquire to fill their short and long-term production pipelines. As a result, major and intermediate producing companies have been actively acquiring new Alaska projects at an earlier stage of exploration than typically seen.

While the recovery locally and around the globe is in no way at the "boom" stage, it is clear that 2018 promises to be an exciting year for the Alaska mineral industry.

### Western Alaska

**NORTHERN DYNASTY MINERALS LTD.** announced a sweeping series of new development considerations for its Pebble copper-molybdenum-gold project near Iliamna. Among the mine design changes being considered is reducing the footprint of the project's major mine facilities (pit, tailings storage facility) to roughly 5.4 square miles. Mine operations in the Upper Talarik River watershed region would be eliminated, minimizing the project's environmental footprint and addressing stakeholder concerns relating to the local salmon population. An enhanced tailing storage facilities (TSF) would be constructed with enhanced buttresses and slopes and a

### The author

The author Curt Freeman, CPG #6901, is a well-known geologist who lives in Fairbanks. He prepared this column



**CURT FREEMAN**

Oct. 30. Freeman can be reached by mail at P.O. Box 80268, Fairbanks, AK 99708. His work phone number at Avalon Development is (907) 457-5159 and his fax is (907) 455-8069. His email is [avalon@alaska.net](mailto:avalon@alaska.net) and his website is [www.avalonalaska.com](http://www.avalonalaska.com).

greater safety factor. Potentially acid-generating tailings would be separated from other tailings and stored in a lined TSF. All tailings storage would be consolidated to the North Fork Koktuli River area. The project would no longer require the use of waste rock piles, significantly reducing risk associated with acid rock drainage and potential related environmental impacts. Although safely used in Alaska and around the world to increase gold recovery, the project would not use cyanide in the recovery process. The development would include the creation of a new ferry route across Iliamna Lake, minimizing the total road area, stream crossings, bridges, and culverts and ultimately minimizing the project's impact on local wetlands. The mine also would be designed to withstand the greatest possible predicted seismicity. Under this scenario, the project's estimated annual revenue to the Lake & Peninsula Borough would be \$19 million to \$21 million per year. Estimated annual state revenue would be \$49 million to \$66 million per year, and estimated jobs created for Alaskans would total 1,500-2,000. A series of other community enhancements also were announced for the project.

**COPPERBANK RESOURCES CORP.** reported results from a 13 diamond-drill-hole, 3,690-meter 2017 drilling program on its Pyramid copper project near Sand Point. Significant results include hole 17PY032, which intersected three significant near-surface intervals totaling more than 290 meters at grades higher than 0.33 percent copper, including 201 meters 0.48 percent copper, 0.021 per-

see **FREEMAN** page 9





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## FREEMAN

cent molybdenum and 0.1 gram per metric ton of gold, hole DDH 17PY033, which intersected 300 meters of 0.53 percent copper including 40.85 meters of 1.17 percent copper, and hole DDH 17PY034 which intersected 232.88 meters of 0.19 percent copper. Results from the higher-grade portions of these holes fall outside the current resource envelope and mineralization remains open laterally and at depth. Deeper mineralization associated with the main quartz diorite porphyry intrusion is dominantly chalcopyrite with chalcocite disseminated throughout the stratigraphic sequence. However, near-surface mineralization in hole PY034 was hosted in hornfels intruded by numerous porphyry dykes with continuous copper mineralization and higher molybdenum grades than observed elsewhere in the deposit. Mineralization in these near-surface rocks is mainly composed of disseminated chalcopyrite and molybdenite with chalcocite. Additional drilling results are pending.

**REDSTAR GOLD CORP.** announced completion of 2,641 meters of drilling in 13 drill holes at its Unga gold-silver project near Sand Point. The program tested four zones and Shumagin-style breccias were intercepted in all 13 drill holes. Colloform-textured carbonate breccias were intercepted in eight drill holes at a boiling zone elevation of 85 meters to 125 meters below sea level. Two drill holes intersected Shumagin-style breccia and stockwork in the newly identified Rising Sun gold zone. At the Shumagin Gold Zone, which consists of three zones (Main Breccia, Bunker Hill, East), 11 drill holes totaling 2,407 meters were completed over 750 meters of strike length with depths ranging from 85 to 225 meters below sea level. Previous drilling indicated that moderate-dipping Shumagin-style quartz-adularia +/- carbonate +/- rhodochrosite breccias were localized within the hanging-wall, while a steeper dipping, high-grade colloform textured, carbonate - green clay - pyrite breccia occurred in the footwall. Shumagin-style breccias were intercepted in all 11 drill holes targeted in this zone, while colloform-textured carbonate breccias were intercepted in all eight holes drilled deep enough to reach the footwall zone target. At the Rising Sun gold zone near the historic Apollo gold mine in the southern Apollo-Sitka Trend, two holes were designed to test breccias and stockwork that are exposed at the surface that occur

sub-parallel to the main Apollo gold zone. Shumagin-style breccias and stockwork were successfully intersected in both drill holes and are similar to those that occur historically along the Apollo-Sitka Trend mined over 100 years ago from the late 1880s to early 1920s. Assays are pending from this program.

### Interior Alaska

**ENDURANCE GOLD CORP.** reported additional results of geochemical sampling completed on the Trout prospect, part of its Elephant project in the Rampart-Eureka-Manley Hot Springs district. The 2017 soil survey has identified gold-in-soil values over 1 part per million along a 1,000-meter-long-plus, 100 parts-per-billion soil anomaly. Previous grab rock sample results returned up to 9.64 g/t gold. Mineralization occurs in a northeast-southwest trending shear zone hosted within a syenomonzonite intrusive plug. Mapping identified an iron-oxidize altered intrusive-hosted shear zone which was observed over a variable 8- to 23-meter width with a northeast trending strike. Within this anomaly is a 10- to 15-meter-wide gold-in-soil anomaly averaging greater than 500 ppb gold with an open-ended strike length of about 130 meters. Peak values within this core zone include 2,330 ppb gold and 2,100 ppb gold, and up to 4,130 ppb silver. The

higher gold-in-soil results are associated with elevated arsenic values. Due to oxidation and recessive weathering, there is no outcrop within the shear zone but frost boils in the area of the highest gold-in-soil anomaly have yielded oxidized quartz veining with grab samples assaying up to 1,260 ppb and 1,065 ppb gold, and up to 16,400 ppb silver. The shear zone and the greater than 500 ppb gold-in-soil anomaly is open in both directions. Additional follow-up work is planned for 2017.

Endurance Gold Corp. also reported additional results of geochemical sampling completed on its South Fork prospect, also part of its Elephant project. Initial assay results from 2017 sampling on South Fork returned up to 6.6 ppm gold and 1.94 percent lead. Follow-up rock samples returned gold values including 10.35 ppm, 6.73 ppm, 5.15 ppm, 4.10 ppm, and 3.53 ppm, confirming the gold potential associated with one or more structural linear features. The three highest gold-in-rock samples collected in 2017 also returned 0.48 percent lead, 1.280 percent lead, and 1.205 percent lead respectively. Elevated arsenic is also associated with the higher gold values in rock. Mineralization is related to oxidized sulfides associated with quartz veining, vein stockwork, and quartz healed breccia hosted in hornfels altered clastic sediments. Hand trenching

exposed the quartz-breccia over about nine meters in estimated true width associated with quartz breccia and quartz vein stockwork with slickensides and oxidized sulfides. Chip sampling averaged 0.547 ppm gold over 9.14 meters, including 0.846 ppm gold over 4.57 meters. With the trench assay and other rock samples, the quartz-breccia mineralization has now been confirmed in rocks over an east-west distance of 250 meters. Additional follow-up work is planned for 2017.

### Alaska Range

**POLARX LTD.** (formerly Coventry Resources) reported that visible mineralization was encountered in all of the drill holes completed at its high-grade Zackly copper-gold skarn deposit on the Stellar copper-gold project in the central Alaska Range. The company planned to complete 2,000 meters of drilling in 13 holes at Zackly and has completed additional induced polarization geophysics at the nearby Mars porphyry copper-gold prospect. Key geological observations from the drilling include evidence for multiple phases of mineralization including an initial alteration consisting of formation of marbles and weakly mineralized skarns adjacent to a diorite intrusion and introduction of disseminated iron,

see **FREEMAN** page 10



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## FREEMAN

copper and molybdenum sulfides. A later, stronger mineralizing event included introduction of widespread garnet-bearing skarns containing clots, veins and disseminations of covellite, native copper and bornite, with local formation of secondary chalcocite and zones of massive magnetite-bornite-chalcopyrite skarns up to several thick. Previous drilling in 1981 and 1982 also encountered occasional coarse gold. Drill core also contained porphyry style veins overprinting potassic alteration containing potassium-feldspar and secondary biotite along with sub-vertical hydrothermal breccias, both of which suggest the possible presence of a buried porphyritic intrusion. Assay results from the 2017 drilling are pending. At the Mars prospect, ground geophysics indicates a chargeability anomaly consistent with the top of a mineralized porphyry copper system located approximately 100-150 meters below surface. The Mars prospect lies six kilometers to the northwest of

the Zackly deposit along a mineralized structural corridor which may host several buried porphyry copper-gold systems. At Mars, strong surface copper and gold values occur in soils and rocks, with rock-chip values up to 7.4 percent copper and 1.8 g/t gold. These anomalous rocks and soils lie directly above the induced polarization chargeability anomaly over a two-kilometer strike length. The chargeability anomaly is open to expansion. Assays are pending from this program.

### Northern Alaska

**GOLDRICH MINING CO.** reported final gold production figures for Goldrich NyacAU Placer LLC from its Chandalar placer gold mine in the Brooks Range. The mine production for 2017 was 14,670 ounces of raw placer gold, which is about equivalent to 12,000 ounces of fine gold. This compares with 10,209 ounces of raw gold, or roughly 8,200 ounces of fine gold, produced in 2016 and 4,400 ounces of raw gold, or about 3,600 ounces of fine gold, produced in 2015. The 2017 production season ran from about June 4 through Sept. 27. In

addition, stripping of overburden and stockpiling of pay gravel was completed in mid-October. The partners also completed 231 sonic drill holes, totaling 14,271 feet in 2017. A total of 15,000 feet of previously conducted reverse circulation drilling delineated about 10.5 million cubic yards of mineralized material at an average grade of 0.025 ounces (0.78 grams) gold per cubic yard containing an estimated 250,000 ounces of gold.

### Southeast Alaska

**HECLA MINING COMPANY** announced preliminary production results for the third quarter of 2017 at its Greens Creek mine. The mine's third-quarter production was 2.3 million oz of silver and 12,563 oz of gold, compared to 2.4 million oz and 11,988 oz, respectively, in the third quarter of 2016. The mill operated at an average of 2,391 tons per day, a life-of-mine record for the operation.

**COEUR MINING INC.** announced preliminary third-quarter 2017 production results from its Kensington mine. The mine produced 27,541 ounces gold during the quarter, a 4 percent quarter-over-quarter and year-over-year increase. The operation milled 172,038 tons of ore grading 0.17 ounces of gold per ton. Recovery was 94.1 percent for the quarter. Initial development ore was mined from the newly commissioned Jualin deposit. Production from Jualin is expected to ramp up as planned over the next twelve months. Higher anticipated grades from Jualin are expected to positively impact gold production in the fourth quarter. As a result, the company is estimating full-year production of 120,000 - 125,000 ounces of gold.

**CONSTANTINE METAL RESOURCES LTD.** reported additional assay results from four drill holes from

resource expansion and upgrade drilling at the South Wall Zone of its Palmer volcanogenic massive sulfide deposit near Haines. A total of 10,718 meters were drilled as part of the recently completed dual-focus resource expansion and regional exploration drill program. The 2017 program included 10 holes for 3,221 meters at South Wall, 13 holes for 4,993 meters at the AG Zone, three holes for 1,006 meters at the Cap prospect, and six geotechnical holes totaling 1,499 meters. Drilling at AG Zone has continued to successfully define the zone with step-outs along strike and to depth from the initial discovery holes. Significant new results include 20.9 meters grading 8.4 percent zinc, 0.1 percent copper, 40 grams-per-metric-ton silver, 0.2 g/t gold from hole CMR17-95; 14.5 meters grading 7.5 percent zinc, 1.9 percent copper, 66 g/t silver, 0.4 g/t gold and an additional 10.1 meters grading 8.5 percent zinc, 0.5 percent copper, 57 g/t silver, 0.4 g/t gold from hole CMR17-97, 12.8 meters grading 12.0 percent zinc, 0.5 percent copper, 64 g/t silver, 0.7 g/t gold and an additional 13.4 meters grading 5.4 percent zinc, 1.7 percent copper, 11 g/t silver, 0.2 g/t gold from hole CMR17-88, and 7.9 meters grading 5.3 percent zinc, 1.5 percent copper, 35 g/t silver, 0.1 g/t gold from hole CMR17-100. Collectively, the six 2017 drill holes that tested this part of the deposit have defined a thick new high-grade sub-zone of mineralization over a vertical dip length of roughly 150 meters and over a strike length of about 60 meters, which is open to further expansion. The average cumulative drill width of mineralization in each of the six holes is greater than 20 meters, with a length weighted average of 1.6 percent copper, 7.5 percent zinc,

see **FREEMAN** page 11



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• ZINC PRODUCTION

# Red Dog delivers 2.2 billion lb zinc

*Extended shipping season good for 2017; mill upgrades, exploration success bode well for the future of Northwest Alaska zinc mine*

By **SHANE LASLEY**  
Mining News

Thanks to an extended shipping season, roughly 2.2 billion pounds of zinc is being delivered from the Red Dog Mine in Northwest Alaska to world markets starving for the galvanizing metal.

“The concentrate shipping season was extended by two weeks and is expected to be completed in the first week of November, having shipped the maximum possible of around a million (metric) tons of zinc concentrate and 210,000 (metric) tons of lead concentrate,” said Teck Resources Ltd. President and CEO Don Lindsay.

The extended shipping, coupled with zinc currently selling for around US\$1.50 per pound, is good news for both Teck, operator of Red Dog, and NANA Regional Corp. the Alaska Native corporation that owns the land where the world-class zinc mine is located.

For NANA, strong zinc sales and soaring prices are further sweetened by a 5 percent increase in its Red Dog royalty that kicked in at the beginning of October. With this increase, the Northwest Alaska Native corporation now receives a 35 percent royalty.

The royalty paid to NANA increases in 5 percent increments on each 5-year anniversary of Teck’s pay-off of up front capital and operational costs to a maximum of 50 percent royalty.

Considering the upgrades being made to the mill and the continued expansion of zinc resources at and around the mine, Teck and NANA are poised to benefit from billions of additional pounds of zinc being shipped from Red Dog to world markets in the coming decades.

**Back on pace**

Red Dog churned out 152,400 metric tons (336 million lb) of zinc in third quarter, bringing the total production for the first nine months of 2017 to 400,700 met-

ric tons (883 million lb). In addition, the Northwest Alaska operation produced 86,300 metric tons (190 million lb) of zinc during the first three quarters.

Red Dog zinc production got off to relatively slow start in 2017 due to the complexity of the ore coming out of Qanaiyaq, a new pit at Red Dog.

Qanaiyaq ore being introduced to the mill to supplement declining grade ore from the Aqqaluk pit adversely affected mill performance, particularly the highly oxidized material being mined at surface.

Teck quickly adjusted to the complex ore and is now on track to produce another 125,000 to 150,000 metric tons (275 million to 330 million lb) of zinc during the final quarter of 2017.

“As we have gained processing experience with this ore, we continued to improve metallurgical recoveries and

increased the amount of Qanaiyaq ore in the mill feed blend this quarter. Together with implementing changes in mine sequencing in the Aqqaluk pit to access higher grade ore, production increased significantly over the previous quarter,” the company wrote in its third quarter report.

As a result, Red Dog is expected to produce 525,000 to 550,000 metric tons (1.16 billion to 1.21 billion lb) this year, which was Teck’s goal going into 2017.

**Investing in the future**

Teck is investing roughly US\$110 million on mill upgrades that will help ensure strong zinc production from Red Dog in the coming years.

“In September, we initiated a mill upgrade project which is expected to increase average mill throughput by

about 15 percent over the remaining mine life, helping to offset lower grades and harder ore in the Aqqaluk pit,” the diversified miner wrote.

The company is forecasting annual zinc production at Red Dog to range between 475,000 and 550,000 metric tons over the next five years.

The mill upgrades currently underway are expected to increase average throughput by about 15 percent over the remaining mine life, which will offset the challenges of processing lower grade and harder ore in the Aqqaluk pit.

These improvements to the mill are expected to be finished by the end of 2019.

While these upgrades will increase the amount of ore being fed through the mill,

see **RED DOG** page 13



## UNDERGROUND HEROES

Nestled in the Alaska wilderness, Pogo Mine is home to many natural resources including gold and wildlife. Through a culture of responsibility, personal accountability, everyday environmental monitoring, and the management of over 50 permits, Pogo’s Underground Heroes are key to minimizing Pogo’s impact to the environment.



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**FREEMAN**

43.1 g/t silver and 0.32 g/t gold. Additional drill results are pending.

**GRANDE PORTAGE RESOURCES LTD.** announced that it has completed 12 drill holes (3,700 meters) at its Herbert gold project near Juneau. Initial drill results from the Goat Vein include 2.64 meters grading 27.93 g/t gold in hole 17L-2, 1.96 meters grading 7.5 g/t gold in hole 17L-3, and 6.3 meters grading 7.31 g/t gold in hole 17L-4. Significant results from the HW vein include 0.88 meters grading 10.54 g/t gold in hole 17K-1, 0.46 meters grading 26.3 g/t gold in hole 17L-1, and 1.34 meters grading 10.61 g/t gold in hole 17L-4. The drilling results confirmed the continuity of the Goat vein over 300 meters of strike and when combined with new surface samples and mapping, the strike of the Goat vein is now more than 650 meters. The 2017 drilling also confirms significant potential for the development of subsidiary high-grade veins in both the hanging and footwall of the Goat vein structure. Additional drill assays are pending. ●

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## NORTHERN NEIGHBORS

the new CEO for Dominion. "I will work relentlessly with management and our talented employees to help realize the long-term potential of Dominion's world-class assets, specifically by extending the life of the Ekati Mine, investing to develop the Jay project and reinvigorating our exploration program," said Evans. "I have long admired Dominion Diamond's deep ties to the Northwest Territories and Nunavut and to Yellowknife in particular, and I look forward to continuing that legacy with the full support and resources of The Washington Companies." Directors with a mix of relevant business and mining expertise have been added to the Dominion board, including Rolin Erickson, president of Montana Resources, a copper and molybdenum mine owned by Washington.

### Agnico advances next Nunavut gold mines

Agnico Eagle Mines Ltd. Oct. 25 said it remains on track to have two new gold mines at Amaruq and Meliadine projects in Nunavut by 2019. "Our major projects in Nunavut continue to advance on time and on budget and we are excited by the significant growth in gold production and the related cash flows that these projects are forecast to provide," said Agnico Eagle CEO Sean Boyd. Amaruq is being developed as a satellite to Meadowbank, a gold mine that lies about 50 kilometers (31 miles) to the south. Amaruq ore will be trucked to Meadowbank, where it will be processed through the mill. The company currently expects Amaruq to produce 2 million ounces of gold between 2019 and 2024. At the end of 2016, Amaruq hosted 16.9 million metric tons of open pit indicated mineral resource averaging 3.88 grams per metric ton (2.1 million oz) gold; 4.9 million metric tons of open pit inferred mineral resource



Agnico Eagle's Meadowbank gold mine in Nunavut has about another year's worth of ore left in reserves. Once these deposits are depleted, the mill will be used to process ore from Amaruq, a gold mine project about 31 miles to the north.

averaging 4.81 g/t (763,000 oz) gold; and 6.8 million metric tons of underground inferred mineral resource averaging 6.22 g/t (1.4 million oz) gold. Agnico completed 89,217 of drilling in 453 holes at Amaruq in 2017 through the end of September. This drilling targeted extensions of the deposits at Whale Tail and V Zone; tested the continuity of the new Tugak structure; and investigated the source of the gold-bearing boulders discovered north of Mammoth Lake. Hole AMQ17-1504, drilled at V Zone, encountered two distinct mineralized structures: 4 meters of 5.3 g/t gold at 313 meters and 6.1 meters of 5.6 g/t gold at 389 meters. The company said two other nearby holes intersected what appears to be the same two distinct mineralized layers at greater depths – AMQ17-1448, collared 140 meters east of hole -150, cut 4.8 meters of 5.5 g/t gold from 447 meters and 6.5 meters of 5.5 g/t gold from 492 meters depth; and AMQ17-1510, collared 160 meters southeast of hole -1504, cut 4.2 meters of 12.1 g/t gold from 402 meters depth and 5.3 meter of 6.4 g/t gold from 508 meters. Agnico said the deep V Zone results are expected to expand the under-

ground mineral resource estimate for Amaruq. At Whale Tail, direction drilling is targeting deep gold mineralization below the proposed pit. AMQ17-1433E, drilled to roughly 730 meters, cut 16.1 meters of 7.3 g/t gold from 627 meters. Almost 300 meters below this intercept, AMQ17-1436B cut 5.3 meters of 5 g/t gold at 915 meters, the deepest gold drilled so far. To date, the Whale Tail deposit has been defined over at least 2,300 meters along strike and from surface to 915 meters. Agnico drilled 28 holes at the Tugak showing, a 2017 discovery about 4,500 meters west of Whale Tail. One Tugak hole, AMQ17-1484, cut 1.2 meters of 13.6 g/t gold from a depth of 141 meters. A follow-up drill program will be carried out on the showing in 2018. The 2017 drill program at Amaruq will continue until mid-December.

Agnico is on pace to begin production at Meliadine, a gold project about 25 kilometers (15 miles) from the town of Rankin Inlet, Nunavut in 2019. The 2017 program there includes some 5,600 meters of underground development; about 26,500 meters of drilling; and new camp and other surface facilities. In addition to the development work, the company had one drill testing the potential of

targets along an 80 kilometer- (50 miles) long greenstone belt blanketed by the Meliadine property.

### White Gold drills into Golden Saddle deposit

White Gold Corp. Oct. 30 reported that drilling has cut broad intercepts of strong gold mineralization at the Golden Saddle deposit at the White Gold property, Yukon. Highlights from the latest batch of results from Golden Saddle include: 34 meters of 4.57 grams per metric ton gold from a depth of 155 meters in hole WHTGS17DD-0170; and 54.9 meters of 1.42 g/t gold from a depth of 64 meters in WHTGS17RC-005. White Gold, a company formed late in 2016, hold claims covering roughly 1 million acres (390,000 hectares) of the White Gold District. This includes the five claim blocks in the district previously held by Kinross Gold Corp. – White Gold, JP Ross, Black Fox, Yellow and Battle. The White Gold property hosts 9.79 million metric tons of indicated resource averaging 2.7 g/t (840,000 ounces) gold; and 2.17 million metric tons of inferred resource averaging 1.8 g/t (125,000 oz) gold, according to Kinross' reserves and resources statement for the end of 2016. White Gold Corp., which closed the deal to acquire Kinross' White Gold District portfolio in June, began drilling the White Gold property in September. This 4,432-meter program included 31 reverse circulation holes and four diamond holes. Assays are still pending from most of this work and the results will be included in an updated White Gold resource estimate slated for completion early in 2018. "The results received to date and revised geologic modelling from our 2017 field work indicate strong potential for additional mineralization along strike and within subparallel zones to both the Golden Saddle and Arc deposits," said White Gold Vice President of Exploration Jodie Gibson. "Additionally, numerous other exploration targets have been developed on the property that will require follow up work." ●

continued from page 7

## NEWS NUGGETS

grams per metric ton gold and 0.021 percent molybdenum. CopperBank is treating this resource as historical and plans to update it once all the results from the

2017 program are received. Kovacevic said "numerous high-grade intercepts received to date from the 2017 program fall outside of the historical resource envelope, which should help further our goal of expanding upon the historic resource estimate at Pyramid." ●



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The Red Dog Mine in Northwest Alaska supplies roughly 5 percent of the world's zinc. Operated by Teck Resources, this world-class zinc mine is located on private lands owned by NANA Regional Corp., an Alaska Native corporation that receives a 35 percent royalty from the operation.

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## RED DOG

the current life expectancy of Red Dog remains the same.

"Because the upgrade project will permit lower grade material to be processed, the current mine life, based on existing developed deposits, will remain unchanged through to 2031," Teck wrote.

### Massive Aktigiruaq

The existing developed deposits at Red Dog will likely not mark the end of this operation's perennial supply of zinc

to world markets.

By the time Qanaiyaq is mined out, it seems likely that the massive Aktigiruaq deposit on Alaska mining claims to the north will be ready to supply high-grade zinc ore to the Red Dog mill – potentially for decades.

This year, Teck is investing C\$16 million on an exploration program at Aktigiruaq that includes roughly 18,000 meters of drilling in 16 to 20 holes.

While Aktigiruaq had not previously been drilled sufficiently to calculate an NI 43-101-compliant resource estimate, the 25 widely spaced holes drilled prior to 2017 suggest this exploration target has

somewhere between 80 million and 150 million metric tons of material averaging around 13 percent zinc and 4 percent lead.

For comparison, Red Dog has processed 78.3 million metric tons of ore averaging 19.6 percent zinc and 5.3 percent lead over 27 years.

Early highlights from 2017 drilling at Aktigiruaq include 25.4 meters of 21.4

percent zinc and 4.1 percent lead in hole DDH 1730; and 54.6 meters of 16.8 percent zinc and 3.6 percent lead in DDH 1737.

Among the largest undeveloped zinc deposits on Earth, Aktigiruaq has the potential to be a source of ore for the Red Dog mill for 25 to 50 years beyond 2031 at current production rates. ●



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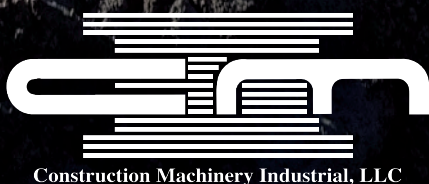


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## KENSINGTON'S FUTURE

the mine in 2015.

The Kensington property hosts two historical mines that date back to the dawn of the 20th Century – Jualin and Kensington.

Jualin operated for roughly 30 years beginning in 1896 and Kensington produced gold for about four decades, starting in 1897. Together, these bygone mines churned out some 40,500 oz of gold from 75,200 tons of ore, for an average recovery grade of around 0.54 oz/t.

Since Coeur resumed operations, it has mined ore from the Kensington area. Going into 2017 this area hosted 497,000 oz gold in 2.62 million metric tons of reserves averaging 0.19 oz/t.

A 2015 resource calculation, the most recent one published for Jualin, has the neighboring mine hosting 289,000 tons of inferred resource averaging 0.62 oz/t (179,000 oz) gold, more than triple the grades mined at Kensington so far this year.

Coeur began digging towards Jualin in mid-2015 and began hauling out the higher grade ore there in the third quarter of this year.

“We mined development ore from the new Jualin deposit earlier than planned and expect to start processing this higher grade material in the fourth quarter, which is a major accomplishment,” said Krebs.

This ore, coupled with high-grade ore from the Raven deposit in the Kensington Mine, is expected to push fourth quarter gold production high enough to reach the lower end of Coeur’s production guidance for 2017.

Krebs said Coeur anticipates that “mining from the high-grade Raven and Jualin zones to lead to significantly higher grades and production levels and lower unit costs to finish the year.”

The Coeur CEO told analysts on Oct. 26 that the final push for 2017 “leans heavily on ore coming out of Raven.”

“They’ll be dropping stopes to allow us to process some very high grade ore out of Raven that will supplement what we mine from Kensington Main to give us that great kick that we’ll need to achieve that kind of a production quarter,” he added.

With higher grade ore becoming the norm, it is expected that Kensington’s gold production will be in the 150,000 oz



Underground development reached the Jualin deposit at Kensington during the third quarter and this higher grade ore is expected to help boost gold production at the Southeast Alaska operation moving forward.

range for 2018.

A technical report due to be published early in 2018 will provide a better idea of how much high-grade gold bearing ore has been identified at Jualin and how this will translate into Kensington gold production in the coming years.

### A lot of drilling

In the meantime, Kensington continues to draw a large portion of Coeur’s exploration dollars.

Through the first nine months of 2017 the company invested roughly US\$6 million to drill some 33,400 meters at the high-grade gold mine.

“The results we are seeing justify these higher spending levels,” Krebs explained.

The Coeur CEO said there are five rigs turning at Kensington – two rigs targeting Jualin from the surface, another two focused on Jualin resource expansion from underground, and one expanding the high-grade Raven deposit in the

Kensington mine.

“As a result we are generating a lot of drill core during the second half of this year, which is the main reason we’re targeting an updated technical report for the end of the first quarter of 2018, so we can incorporate as much of this new information as possible into an updated reserve and resource,” he said.

This technical report seems likely to mark the start of a new phase for

Kensington – a period that could be known for higher grade ore resulting in more gold for less cost.

If Coeur’s strategy of investing more money in operations where it is having the most exploration success is any indication, then this new era could last awhile.

“There’s still a lot of drilling to be done at Kensington which has suffered from a lack of exploration funding over the years,” Krebs said. ●

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## PENTEX SALE

to bring affordable energy to Fairbanks and its surrounds and to reduce winter air pollution in the region by instigating a greatly expanded natural gas supply at a workable price.

### A consolidated utility

AIDEA purchased Pentex in 2015 to help facilitate the completion of the IEP. Pentex owns the Titan facility, as well as a trucking operation for transporting LNG to Fairbanks, and Fairbanks Natural Gas, a utility that currently supplies gas to customers in central Fairbanks. The idea has been to combine FNG and IGU to form a single Fairbanks gas utility — hence the proposed sale of Pentex to IGU. The consolidated utility would build out the gas distribution network in Fairbanks, construct a new large LNG storage facility in the city, and enlarge the Titan plant for the anticipated expansion of the gas supply.

In January IGU and AIDEA signed a memorandum of understanding for the Pentex sale. However, under the terms of House Bill 105, passed by the Alaska Legislature in 2015, AIDEA has had to approve an IEP plan that includes an identified source of gas for the project, the cost of the various components of the gas supply chain, and the expected delivered price of gas in Fairbanks. Without this approved plan it would not be possible to make additional use of Sustainable Energy Transmission and Supply, or SETS, loans for the project. Consequently the September approval of a gas supply agreement with Hilcorp Alaska has enabled the project to move forward to the point of board approval of the

Pentex sale agreement.

Funding for the project comes from a combination of a state capital appropriation, SETS loans and AIDEA bonds. AIDEA used money from a revolving fund to pay for the Pentex purchase: The idea is to recover that money plus a return on investment from the Pentex sale.

Although the AIDEA board has now approved a plan for completion of the IEP, the plan component involving the expansion of the Titan plant does not include a final specification or contract for the plant expansion: The expectation is that IGU, if it purchases Pentex, will issue a request for proposal for the work, with the work being financed from IEP funds.

### An alternative proposal

During the public comment period of the board meeting, a group of representatives from Knikatu Corp. and from industrial manufacturing company Siemens presented a concept for the construction of a new LNG plant near Houston, as an alternative to the expansion of the Titan plant. Knikatu is the Native village corporation for the Knik and Wasilla area. As reported by Petroleum News in February, the Knikatu group envisages building the new facility on industrial zoned Native land adjacent to a spur of the Alaska Railroad. The concept is to ship LNG to Fairbanks by rail. A feeder gas line would need to be constructed to the plant from an Enstar gas transmission line about 12 miles away.

Tom Harris, CEO of Knikatu, told the board that that Knikatu has been working with Siemens on a proposal for an LNG plant at the Houston site and that the Houston team does not view its efforts as competing with the IEP but as an alternative to the expansion of the Titan plant in meeting the IEP objectives.

“Our multidisciplinary team looked at the Titan

expansion plan and we recognized that it had serious critical deficiencies that could put people’s lives in jeopardy,” Kelly Laurel, director for energy and infrastructure for Siemens Government Technologies, told the board. “The current plan is not utility grade. We discovered single points of failure.”

Single points of failure include the use of the Titan LNG plant and dependency on a single LNG storage facility in Fairbanks, Laurel suggested.

### Use of the railroad

The Siemens team concluded that the optimum means of achieving an HB 105 compliant plan for the IEP would be to build the plant near Houston and to use the Alaska Railroad for the delivery of LNG to Fairbanks. This option, carried out in parallel with the continuing operation of the Titan plant, would eliminate single points of failure in terms of LNG production and transportation. The current backup plan for a failure at the Titan plant involves trucking LNG from Canada, an option that is impractical given the distances involved and the number of trucks available, Laurel said. The proposed Houston plant would be close to the Parks Highway, with road transportation being a convenient alternative to rail, should there be some interruption in the railroad service.

“This Houston LNG plant is not a pie in the sky, but rather is a well thought out, holistic solution that can be implemented quickly, in approximately about a year, and designed in such a way that it can be scaled and evolve to best match the demand of IEP added growth over time,” Laurel said.

The modular design of the proposed plant would

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## Gas utility CEO expresses Pentex concerns

During public comments in the Oct. 26 meeting of the board of the Alaska Industrial Development and Export Authority Jomo Stewart, CEO of the Interior Gas Utility, expressed his concerns about an AIDEA resolution to authorize the sale of Pentex Natural Gas Co., including its subsidiary Fairbanks Natural Gas, to IGU. Later in the meeting the board passed the resolution, approving documentation for the sale. The IGU board has until Nov. 30 to decide whether to agree to buy the company.

The idea is to combine Pentex and IGU to form a single gas utility in the Fairbanks region of the Alaska Interior, with IGU also operating an LNG plant near Point Mackenzie and a trucking operations for transporting LNG to Fairbanks.

Stewart questioned some of the provisions within the sale documentation, in particular some covenants, which, if violated, would trigger a major escalation in the interest rate that IGU would have to pay for AIDEA financing. He pointed out, in particular, that one of the covenants requires IGU to operate as a utility-grade business. Moreover, the gas price that AIDEA has currently approved for Fairbanks consumers does not comply with the rate setting provisions of the sale agreement because the rate is artificially low as a consequence of not including in the rate calculation the cost of AIDEA's investment in Pentex, he said, suggesting that the low rate had been set for political and public relations purposes.

"You are right now, today, in violation of the covenant you are asking me to sign," Stewart said. "If I signed this, before the ink is dry on the paper I would be in violation of the operating covenant and subject to acceleration of the loan."

Although there has been much progress in the process of consolidating the Fairbanks utilities, several significant issues still need to be resolved in order to complete the consolidation deal, Stewart said.

### Single points of failure

Stewart also commented to the board that Pentex's safety record has taken a hit since 2015, with a high rate of recordable safety incidents. There are also compliance issues relating to the design of the facilities in Pentex's Titan LNG plant at Point Mackenzie, he said. Moreover, a lack of schematics for the plant would give rise to problems if equipment has to be fixed, he said.

Stewart later commented to Petroleum News that one particular concern is that a utility grade utility normally requires redundancy in its energy supplies, to avoid single points of failure and the associated risk of a supply failure. It is not apparent that Pentex has the required redundancy in its supply chain, he said, adding that the Pentex sale agreement should include a transition period, to enable time for achieving utility grade status.

### Pentex response

In response to Stewart's comments on Pentex's safety performance, Dan Britton, CEO of Fairbanks Natural Gas, has told Petroleum News that Pentex provides the training, tools and safety equipment necessary for employees to carry out their tasks in a safe manner, and holds regularly scheduled safety meetings.

"A safety culture that empowers employees, increases visibility, and begins with the belief that all accidents and incidents are preventable is paramount to reaching safety goals," Britton said. "Pentex enables these safety concepts by first empowering any employee to stop work should a safety concern arise. In addition, Pentex encourages all employees to bring forward to the president any safety concerns they have, or suggestions for improvement."

### A need for urgency

The AIDEA board is clearly anxious to complete the sale of Pentex as soon as possible. Board Chair Dana Pruhs said that the use of revolving fund money for the AIDEA purchase of Pentex in effect is causing the price of Pentex to rise by \$200,000 for each month that AIDEA continues to own the company. Board member Fred Parady commented on the generous terms of the AIDEA financing on offer to IGU, including a 50-year loan, interest free for 15 years and with a subsequent interest rate of 0.15 percent.

"We have been hard at work in good faith with a process that has brought forward an agreement that reflects most of the concerns of each party," Parady said. "At some point it's time to bring closure and get to the finish line and that time is now."

—ALAN BAILEY

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## PENTEX SALE

enable the plant to be built in stages, in response to LNG demand, perhaps starting with a capacity of 60,000 gallons per day and increasing in 30,000 gallons per day increments, she explained.

### Project economics

Laurel said that the Siemens team had modeled the economics of the proposal and had concluded that the system could deliver LNG to an LNG storage facility in Fairbanks at a cost of \$16 per thousand cubic feet of gas, or less. The cost would fall as demand for gas in Fairbanks rises. Apparently the estimated cost of LNG transportation by rail is about \$1 less per mcf equivalent than the cost of transportation by road. The Houston team is not currently in a position where it can sign a gas supply agreement for its project, but the team has obtained price quotes of \$6.50 and \$5.00 per mcf from Cook Inlet gas producers, Laurel said.

The current IEP plan involves a signed contract with Hilcorp Alaska for a gas supply at \$7.72 per mcf, resulting in an anticipated initial price for gas delivered to consumers of \$19.88 per mcf. As with the Siemens concept, the gas price in Fairbanks would drop with increasing demand, but the Fairbanks price is the price at the consumer burner tip, not at the delivery point to Fairbanks LNG storage.

The idea would be to finance the Houston LNG plant development using AIDEA funding, in the same manner as is proposed for the Titan plant expansion, without impacting the use of the AIDEA funds assigned to other components of the IEP, Laurel said.

Laurel said that the Siemens economic model considered several means of expanding Fairbanks LNG demand, including the potential to supply LNG to Department of Defense facilities in the region. The DOD has expressed an interest in the LNG concept but would require supply reliability assured by a utility-grade supplier, she said.

"Energy must be available at all times for the DOD installation to meet its mission requirements," said John Saams from Siemens Government Technologies.

Rupright also said that the Houston site has a better safety rating than the Titan site, a factor that would impact insurance rates for an LNG facility.

### Road transportation issues

Roger Purcell, a former mayor of Houston and senior partner with East West Pacific Consulting, questioned the capability of the unpaved road system from Point Mackenzie to handle the level of anticipated LNG tanker traffic that would follow expansion of the Titan plant. While the trucks would tear up the road, the state does not have the money to conduct the road repairs that would become necessary, he said. Moreover, the additional traffic in a road system already stretched beyond capacity as a consequence of population growth in the area would trigger an increased traffic accident rate, he said.

Verne Rupright, former mayor of Wasilla and also a member of East West Pacific Consulting, commented that the Point Mackenzie road is already in bad shape because it is sinking into the tundra. Rupright also said that the Houston site has a better safety rating than the Titan site, a factor that would impact insurance rates for an LNG facility.

Purcell later told Petroleum News that AIDEA had known about the Houston proposal for nearly a year but that the AIDEA staff had not put the proposal into the agenda of a board meeting. Hence the Oct. 26 move to present the Houston plan in the form of public comments to the board, Purcell said.

### Can be considered

During board discussion of the Houston plan, Jerry Juday, assistant attorney general, Alaska Department of Law, commented that, although the Pentex sale documentation specifically references the expansion of the Titan plant as the means of expanding the Fairbanks LNG supply, the document did not preclude the possibility of the Houston group submitting its alternative LNG plant proposal in response to the anticipated RFP for Titan plant expansion. ●

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## CONOCO EARNINGS

The CD-5 pad at the Colville River unit is producing 26,000 barrels per day, according to the company, compared with a projected plateau rate of 16,000 bpd.

The GMT-1 project at the Greater Mooses Tooth unit is the first National Petroleum Reserve-Alaska development on federal land. The cost savings to date have been large enough to be felt on overall spending rates companywide, according to Hirshberg.

### Earnings, production

ConocoPhillips Co. reported \$103 million in adjusted earnings from its Alaska segment in the third quarter, rep-

resenting increased production and prices from last summer.

The company produced 166,000 barrels of oil equivalent per day in Alaska in the third quarter, up from 162,000 boe per day during the same period in 2016.

A comparison of specific commodities is more dramatic, given the recent start-up of several North Slope oil projects and divestment of Cook Inlet gas projects. The company produced 5 million cubic feet of gas per day in Alaska during the third quarter, down from 18 million cubic feet per day in the period last year. At the same time, the company produced 154,000 barrels of oil per day this summer, up from 148,000 bpd last summer. Natural gas liquids production remained even at 11,000 bpd.

Adjusted earnings fell from \$167 mil-

lion in the second quarter. Quarter over quarter production also fell from 184,000 barrels of oil equivalent per day — 169,000 bpd of oil, 14,000 bpd of natural gas liquids and 7 million cubic feet per day of natural gas. Alaska production rates often fall in the summer, as operators use the warmer months to conduct major maintenance activities across their North Slope properties.

With most segments reporting losses, ConocoPhillips reported \$436 million in total income during the third quarter and only \$198 million in adjusted earnings.

Alaska accounted for 13.5 percent of the 1.226 billion boe ConocoPhillips produced companywide during the third quarter of the year. Alaska accounted for 26 percent of the 582,000 barrels of oil the company produced.

But the seasonal downturn in Alaska oil production opened the gap with the Lower 48, which has been narrowing in recent quarters after years of gains by Lower 48 properties. ConocoPhillips produced 175,000 bpd in the Lower 48 in the third quarter.

### Prices, taxes, spending

Also helping earnings in Alaska was a bump in oil prices.

ConocoPhillips reported an average realized price of \$50.53 per barrel for Alaska crude oil during the third quarter, up from \$43.43 per barrel during the same period last year and up from \$49.95 per barrel from the second quarter of this year. The Alaska crude price includes both oil and natural gas liquids, which are blended and shipped together.

Realized natural gas prices fell to

*ConocoPhillips reported an effective income tax rate of 35.3 percent and a total tax rate of 56.6 percent for its Alaska operations during the third quarter of the year, up from negative 64 percent and 36.4 percent respectively during the same period last year.*

\$4.55 per thousand cubic feet, down from \$6.95 per thousand cubic feet during the third quarter of last year but up considerably from \$1.43 per thousand cubic feet in the second quarter of this year. Natural gas prices in Alaska are determined primarily through contracts with prices that are often tied to outside indexes.

ConocoPhillips reported an effective income tax rate of 35.3 percent and a total tax rate of 56.6 percent for its Alaska operations during the third quarter of the year, up from negative 64 percent and 36.4 percent respectively during the same period last year.

Capital expenditures and investments were \$179 million in the third quarter, down from \$229 million the second quarter and \$199 million in the third quarter of last year.

Depreciation, depletion and amortization was \$188 million in the third quarter, down from \$216 million in the second quarter and \$214 million in the third quarter of last year. ●

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## SAFETY ORDER

the impacted wells to the commission.

In July, following its determination of the cause of the spill, BP shut in all 14 of its wells that have the problematic well design. At that time the company said that the impacted wells are old wells that have a particular rigid three-casing design with the base of the upper casing located within the permafrost. The two-casing design, used for most Prudhoe Bay wells does not present the same problem because the well tubing in this design is inherently more flexible than in the three-casing design, the BP investigation found.

### Spray of gas and oil

The Drill Site 2 wellhead incident began on April 14, when gas started venting from the wellhead of well 02-03. The gas leak generated a spray of oil that

impacted the well pad. It turned out that there were two leaks in the wellhead: an oil leak at the pressure gauge assembly at the top of the wellhead structure, and a gas leak farther down the wellhead. In response to the leaks, the well was eventually killed on April 17.

Apparently the melting and subsidence of permafrost around the wellhead had generated a load that had broken the surface well casing. Subsequently, the detached upper portion of the well had moved upwards, causing the wellhead to strike the wellhead housing. The pressure gauge at the top of the wellhead consequently broke off, resulting in an oil leak, while the striking of a valve handle lower in the wellhead against the side of the well house caused the gas leak.

—ALAN BAILEY

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## PIKKA SALE

holds a 49 percent interest.

### Balance portfolio

Oil Search said the Alaska assets would complement its high-quality gas assets in Papua New Guinea and balance its gas-dominated portfolio.

The \$400 million price represents a low-cost entry, “made at an attractive time in the commodity cycle,” and equates to \$3.10 a barrel, with potential resource upside reducing the cost to \$1.30 a barrel, Oil Search said.

The acquisition was made on the basis of some 500 million barrels, Oil Search said, noting that joint venture partner estimates are more than 1 billion barrels.

### Further appraisal drilling

Further appraisal drilling will take place at Nanushuk in early 2018, “after which an independent resource audit will be obtained, with potential to add more than 125 million barrels net to Oil Search’s booked resources,” the company said.

Oil Search said there is a clear route to rapid commercialization at Nanushuk, with target production rates of 80,000-120,000 barrels of oil per day, gross, for the first phase of development and 7-11 million barrels of oil net to Oil Search, with first oil production in 2023.

Oil Search said it would assume operatorship in June 2018, and will build Alaska North Slope operating capabilities by partnering with Armstrong Energy LLC and through a cooperative agreement with Halliburton to provide resources and capability to supplement Oil Search’s technical and operating skills on the ground in Alaska.

The company also said it has agreed with Armstrong Energy to “jointly explore and develop other opportunities in the area.”

### Search for oil interests

“For some time, Oil Search has been seeking to acquire oil interests to complement our PNG gas assets, to create a more balanced portfolio that is less exposed to one single commodity and one country,” Oil Search Managing Director Peter Botten said in commenting on the transaction.

“Utilizing our existing relationships, this Alaska North Slope opportunity has been proactively pursued and an agreement

*Oil Search is an oil and gas exploration and development company established in Papua New Guinea in 1929...*

structured to the benefit of all parties,” he said.

He said the purchase price equates to some \$3.10 per barrel of discovered resources, \$1.30 per barrel “if Repsol’s gross resource estimates are used.”

In addition, Botten said, there is “significant exploration upside, providing the Company with the potential to develop, over time, a business of a similar scale to our (Papua New Guinea) operations.”

He said Oil Search has a “strong working relationship” with Repsol in Papua New Guinea, “and Armstrong, which has a proven 15 year track record of finding major oil accumulations in Alaska.”

“We will be partnering with Armstrong, which has significant operating expertise in Alaska, and with Halliburton, in a cooperative arrangement similar to that which worked so successfully when Oil Search took over operatorship if the oil fields in PNG in 2003, to help us build North Slope operating capabilities and ensure a smooth transition,” Botten said.

### The North Slope plan

Oil Search said Nanushuk is the main development at the Pikka unit, but oil was also discovered in the Alpine and Kuparuk C reservoirs.

The fairway at Nanushuk has been delineated with 12 wells, six production tests and full modern 3-D seismic coverage.

Oil Search said that following appraisal, it is targeting front-end engineering and design in 2019, a final investment decision in 2020 and first oil in 2023.

Halliburton will help Oil Search in building the company’s Alaska operating capabilities and Armstrong has committed to assist with secondees as part of an agreed transition plan.

A three-year alliance with Armstrong will help identify and pursue additional growth opportunities in Alaska, and Oil Search said it will be continuing the strong relationship it has with Repsol following successful collaboration in Papua New Guinea.

### Oil Search

Oil Search is an oil and gas exploration and development company established in Papua New Guinea in 1929; its main asset

is a 29 percent interest in the PNG LNG Project operated by ExxonMobil PNG Ltd. It also holds a 22.8 percent interest in the Papua LNG Project and has interests in and operates all of Papua New Guinea’s producing oil fields. The company said it has a strong working relationship with Repsol in Papua New Guinea. In 1998 Oil Search made acquisitions from BP, enhancing its oil and gas position in PNG and aligning its gas commercialization strategy.

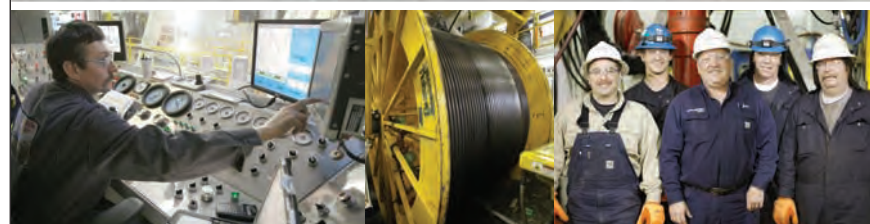
In 2002 it made acquisitions from Orogen, aligning PNG entities, enhancing oil and gas equities and liquidity to support growth.

In 2003 it secured operatorship of PNG oil fields from Chevron, enhancing production and aligning gas commercializing strategy. In 2013, with an acquisition of PAC LNG, Oil Search created the opportunity to optimize to optimize PNG’s LNG industry and secure interest in all projects. An acquisition discussion with IOC in 2016, which the company did not complete, catalyzed integration discussions between Papua LNG and PNG LNG owners. ●

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## LIBERTY FIELD

being issued in the fall of 2018. The working interest owners would then need to run the economics of the project, to make a decision on whether to sanction the development.

“We think we can get the cost such that this will attract capital, provided the oil price gets some legs, something north of \$50 per barrel,” Dunn said, emphasizing that, with cost estimates for the project still being approximate, Hilcorp cannot currently say what the project’s breakeven oil price would be.

Field construction would likely generate 200 to 300 jobs over around a five-year period. And there would be a 2.5 to three year drilling cycle, given the need for seasonal drilling restrictions, Dunn said. Once in operation, the field will require 20 to 30 full-time operations staff on the production island, with additional staff supporting the field logistics. Direct employment for the field will in turn drive indirect employment in Alaska.

### Small but advantaged

With some 100 million barrels of recov-

erable oil, the field is relatively small.

“The reason this reservoir’s been sitting there for 30 years is it’s a marginal field,” Dunn said.

However, the field does enjoy some advantages that swing the economics in its favor. In particular, the oil in the field’s reservoir is light and the reservoir rocks have good properties, similar to those in the Endicott field to the west. Consequently, Hilcorp anticipates being able to develop the field with relatively few wells: around four or five injectors and four or five producers, Dunn said. In addition, Hilcorp plans to develop the field using relatively small, truckable modules and equipment that can be built in Alaska, rather than the more expensive large, barged units have tended to be used in other Arctic Alaska field developments.

The concept of producing light oil from Liberty is especially appealing as a means of diluting the heavier oils that are coming from some of the North Slope fields. And, although the anticipated peak output of about 60,000 barrels would be only around 15 percent of the current trans-Alaska oil pipeline throughput, bringing on a field like Liberty helps extend the pipeline’s life and, hence, the lives of other fields.

“This field will probably get all of the

oil out of the ground in somewhere between 15 and 20 years,” Dunn said.

Dunn said that the field does not appear to have a significant gas cap. However, Hilcorp anticipates injecting produced gas into the crest of the reservoir structure, with that gas then becoming available as a source of fuel gas towards the end of the field’s life.

### Artificial island

As previously reported in Petroleum News, Hilcorp plans to develop the field from an artificial gravel island, about five miles offshore in Foggy Bay, about 15 miles east of Prudhoe Bay. The island would have a surface area of about nine acres in 19 feet of water. Dunn said that the island would be larger than BP’s Beaufort Sea Northstar field, to allow more space for operations. The field lies entirely in federal land on the Beaufort Sea outer continental shelf.

Reflecting on the fact that Hilcorp normally buys older fields for revitalization rather than developing new fields, Dunn commented that the Liberty development will use well established technologies and will involve the excellent workforce that Hilcorp inherited when it took over the operatorship of the Northstar, Endicott and

Milne Point fields a few years ago. There are four existing artificial islands, similar to that planned for Liberty that support offshore oil fields in the Beaufort Sea. And more than 20 exploration islands have been built in the last 40 years, Dunn said.

“We are very confident we can do a project like this,” he said.

The subsea pipeline that will bring the Liberty oil to shore will be of a pipe-in-pipe design first implemented at the Ooguruk field offshore the central North Slope. The Liberty pipeline system will have a 12-inch oil pipeline inside a 16-inch outer pipe and will include a fiber optic line for monitoring temperatures. The pipeline system will employ state-of-the-art technologies for leak detection, Dunn said.

### Subsistence hunting

Dunn commented that Hilcorp is very sensitive to the proximity of subsistence hunting grounds to the Liberty project — Cross Island, a focus of subsistence whale hunting, lies to the north of the planned Liberty Island.

“We’ve had lots of discussions with the whaling captains,” Dunn said.

Hilcorp now operates a communications center at Endicott in support of the hunting — bilingual operators talk to the captains and plot where whale strikes occur. In return for formalizing this support and providing assurance over protection of the community subsistence lifestyle, the communities are helping Hilcorp figure out how to achieve that protection.

“They’ve given us a lot of feedback on how to manage noise, for example,” Dunn said. “We’re not going to do any sheet pile work in August, September, when whales are in the area. So construction is done in the winter time.”

—ALAN BAILEY

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