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This week's Mining News

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The weekly mining newspaper for Alaska and Canada's North

Week of March 26, 2017

NEWS NUGGETS

Compiled by Shane Lasley

SHANE LASLEY

Over the course of two decades, Northern Dynasty has outlined a world class deposit at Pebble with 56.8 billion pounds copper, 70.4 million ounces gold, 3.4 billion lbs molybdenum and 343.6 million oz silver in measured and indicated resource.

Pebble, EPA extend negotiations

Northern Dynasty Minerals Ltd. May 20 reported the Pebble Limited Partnership and the U.S. Environmental Protection Agency have filed a joint motion in federal court to extend a stay of proceedings to May 4 in ongoing litigation under the Federal Advisory Committee Act. In 2014, the Pebble Partnership had filed a suit, alleging EPA violated FACA by working inappropriately close to anti-Pebble groups as the regulatory agency built a case for placing restrictions on yet to be applied for permits for the development of a mine at the Pebble copper-gold-molybdenum deposit in Southwest Alaska. With the trial nearing its end, by October it had become apparent EPA and Pebble Partnership would likely reach an agreement that would settle this suit outside of the courtroom. To provide the parties time to negotiate, the court issued a stay of proceedings in this case until March 20. The latest motion extends this stay until May 4, providing the parties additional time to reach a settlement outside the courtroom. Pebble Partnership says it has made substantial progress in recent discussions with the EPA and intends to continue negotiating the matter directly, rather than through mediation. Northern Dynasty said government representatives are actively engaged in these discussions. In February, U.S. House Science, Space, and Technology Committee Chairman Lamar Smith, R-Texas, sent a letter to EPA Administrator Scott Pruitt asking him to rescind the 2014 decision to pre-emptively use Section 404(c) of the Clean Water Act to limit the scope of any potential mine developed at Pebble. "Active discussions between all parties involved have been positive and very constructive," said Pebble Partnership CEO Tom Collier. "We remain confident in achieving a prompt and fair resolution that follows the rule of law, supports the interests of the parties involved and allows the Pebble project to move into a normal course permitting process." In the meantime, a 2014 preliminary injunction ordering EPA to halt efforts to finalize the implementation of its plans to pre-emptively restrict Pebble permits remains in effect for the duration of the court ordered stay.

TRILOGY METALS INC.

Arctic, situated in the mountains about 16 miles north over the Upper Kobuk Mineral Projects camp at Bornite, is slated to be the first of the high-grade deposits in the Ambler mining district to be developed into a mine.

EXPLORATION

Path to Arctic Mine

Trilogy to complete pre-feasibility; Ambler Road permitting makes headway

By SHANE LASLEY

Mining News

The path to discovering the viability of developing a mine at Arctic and the road needed to deliver the copper, zinc, lead, gold and silver from this exceptionally high-grade Northwest Alaska deposit to world markets are both making headway in 2017.

Arctic is the most advanced of the high-grade deposits that make up the Upper Kobuk Mineral Projects, an extensive land package that unites Trilogy Metals Inc.'s state mining claims that blanket a 70-mile- (110 kilometer) long belt of high-grade copper-lead-zinc-gold-silver deposits across the Ambler mining district with an adjacent package of NANA Regional Corp.-owned lands known for hosting exceptionally high-grade copper.

RICK VAN NIEUWENHUYSE

Trilogy is the operator of UKMP, and Alaska Native Regional Corporation NANA represents the Inupiaq people of Northwest Alaska and holds an option to be a 16 to 25 percent equity partner in the project or receive 15 percent net proceeds royalty from any mines developed on the 353,000-acre land package.

Arctic – a high-grade volcanogenic massive sulfide deposit on Trilogy Mining claims that encompasses some 1.65 billion pounds of copper, 2.62 billion lb of zinc, 444 million lb of lead, 610,000 ounces of gold and 45.3 million oz of silver in the inferred and indicated resource categories – will likely be the site of the first such mine.

Bornite, a world-class deposit on NANA lands about 16 miles south of Arctic, encompasses 40.5 million metric tons of in-pit indicated resources averaging 1.02 percent (913 million pounds) copper; and 84.1 million metric tons of inferred resources averaging 0.95 percent (1.8 billion lbs.) copper. Additionally, this UKMP deposit likely to be developed second, is estimated to contain 57.8 million metric tons of below-pit inferred resources averaging 2.89 percent (3.7 billion lbs.) copper.

Getting ready for permitting a priority

Already a world-class copper deposit in terms of size and grade, the various zones of Bornite are open to expansion in several directions.

While expanding Bornite is a compelling target for a junior mining company with the exploration expertise of Trilogy, getting Arctic ready for permitting is a top priority.

To this end, Triolgy has budgeted US$7.1 million for a 2017 work program focused on finalizing a pre-feasibility study that will outline the engineering and financial parameters of developing Arctic as the first UKMP mine.

"The PFS will demonstrate the true value of the high-grade Arctic deposit which we expect will be the first in a series of potential mines in the Ambler mining district," explained Trilogy Metals President and CEO Rick Van Nieuwenhuyse.

Arctic feasibility

In 2013, Trilogy (then NovaCopper) completed a preliminary economic assessment that provided a first glimpse of what an open-pit mine at Arctic might look like.

This scoping level study outlined a 10,000-metric-ton-per-day mill at Arctic that is anticipated to produce roughly 1.5 billion lbs of copper, 1.8 billion lbs of zinc, 289 million lbs of lead, 30.5 million oz of silver and 349,000 oz of gold over a 12-year mine-life.

At the time, the cost to build such a mine was estimated to be US$717.7 million. Another US$164.4 million in sustaining capital and US$81.6 million in closing costs also were anticipated.

The mine outlined in the 2013 PEA was based on 23.85 million metric tons of indicated resource averaging 3.26 percent (1.71 billion lbs) copper, 4.45 percent (2.34 billion lbs) zinc, 0.76 percent (400 million lbs) lead, 0.71 grams per metric ton (550,000 oz) gold, and 53.2 g/t (40.8 million oz) silver.

Additionally, Arctic hosted 3.63 million metric tons inferred resource averaging 3.22 percent (239 million lbs) copper, 3.84 percent (285 million lbs) zinc, 0.58 percent (43.2 million lbs) lead, 0.59 g/t

see ARCTIC MINE page 8

Trilogy to complete pre-feasibility for Arctic property in Northwest Alaska; Ambler Road permitting makes headway. See page 7.

Accumulate brings rig to Icewine

Accumulate Energy Ltd. has mobilized a rig at its Icewine prospect.

The local subsidiary of Australian independent 88 Energy Ltd. announced on March 21 that the Doyon Arctic Fox rig had arrived at the Icewine No. 2 well site at the Franklin Bluffs pad. The company expects to begin drilling the onshore appraisal well in April.

Drilling crews have already set the conductor and were

see **ICEWINE RIG** *page 13*

Furie plans to drill to Jurassic

Furie Operating Alaska plans to drill a deep exploration well into the Jurassic, offshore in Cook Inlet this year, Bruce Webb, Furie senior vice president, told Petroleum News in a March 20 email. The Randolf Yost jack-up drilling rig would drill the oil and gas exploration well, the Kitchen Lights Unit No. 6 well, to a planned depth of more than 20,000 feet, Webb said.

Geologists have long speculated about the possibility of

see **FURIE PLANS** *page 13*

CEA, Furie sign supply agreement

Anchorage utility Chugach Electric Association has agreed on the terms of a gas supply agreement with Furie Operating Alaska LLC and has filed the agreement with the Regulatory Commission of Alaska for approval. The gas would presumably come from Furie's Kitchen Lights gas field, offshore under the Cook Inlet.

The agreement starts with an interruptible supply of unspecified amount that would go into effect as soon as the commission

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EXPLORATION & PRODUCTION

Beaufort drilling

BOEM reviewing Eni's plan for directional drilling into Nikaitchuq North

By ALAN BAILEY

Petroleum News

The Bureau of Ocean Energy Management has confirmed that it is reviewing a plan filed by Eni U.S. Operating Co., proposing drilling for oil prospects in federal waters of the Beaufort Sea, immediately north of the Nikaitchuq oil field. The agency received an exploration plan for the drilling on March 3, at which point it had 15 working days to determine whether the plan is complete, BOEM spokesman John Callahan told Petroleum News in a March 17 email. Eni would use extended reach drilling from an existing gravel drilling pad at Spy Island, Callahan said.

On Feb. 27 BOEM sent a letter to Eni confirming approval of a new unit, the Harrison Bay Block 6423 unit, in the Beaufort Sea. Apparently Eni had applied for the unit formation on Dec. 20. The unit includes 13 federal leases. Those leases lie directly north, northeast and northwest of the state Nikaitchuq unit.

The leases lie within the region of the relatively nearshore Beaufort Sea that President Obama did not withdraw from oil and gas activities late last year.

For some time Eni has been considering the possibility of further oil development to the immediate north of its existing Nikaitchuq field, which lies under state waters of the Beaufort Sea. Eni is

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LAND & LEASING

State reconsiders CRU

Mack agrees to hear ConocoPhillips' arguments in favor of expanding unit

By ERIC LIDJI

For Petroleum News

The state has agreed to reconsider its decision to deny ConocoPhillips Alaska Inc.'s request to expand the Colville River unit to include the former Tofkat unit.

As part of the reconsideration decision, Alaska Department of Natural Resources Commissioner Andrew T. Mack also agreed to stay his earlier Feb. 17 decision, which had included an option to approve the expansion if ConocoPhillips agreed to drill this winter and provide $14 million in bonds and other payments to guarantee development.

Those work commitments had been an acknowledgement that ConocoPhillips is likely the fastest option for exploring and developing the acreage, but is not the only option.

In his earlier decision, Mack raised numerous concerns about ConocoPhillips, from its earlier failure to explore the expansion acreage, to the status of its surface use agreement in the area, to its preference for "sequential" development. In its March 15 request for reconsideration, ConocoPhillips criticized the state for issuing the decision without first discussing those concerns with the company and its partners in the expansion acreage.

ConocoPhillips is now asking the state to approve the expansion with a clause requiring the company to drill an exploration well into the Nanushuk formation by May 31, 2018, or immediately relinquish the

see **CRU DEBATE** *page 14*

GOVERNMENT

Alberta financial mess

Dragged by commodity price slide, debt-free status distant memory in oil heartland

By GARY PARK

For Petroleum News

It was less than a decade ago that the government of Alberta was reveling in a gusher of oil and natural gas revenues, having already achieved the treasured goal of wiping out its debt and introducing legislation banning deficits.

Under then-Premier Ralph Klein, the province — widely known as Saudi Alberta — had slashed spending, shelved plans for roads, schools and hospitals and laid off thousands of public sector workers, in a case of Trump-style budgeting before anyone had given a serious thought to the possibility of Donald Trump occupying the White House.

The province reached the point where finance ministers from far and wide were dropping in to pick the brains of Alberta's leaders and examine their budgeting strategies.

Highly respected ATB Financial said in a research note earlier in March that rising U.S. production will rule out "any meaningful increases in the price of oil this year."

But that didn't last long. Klein was ousted and his populist approach was scuttled, leading in 2015 to the toppling of 44 years of Conservative party rule.

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● GOVERNMENT

The Trump regulation roll back status

The president has to operate within a framework of laws designed to ensure a public process in the setting of administrative code

By ALAN BAILEY
Petroleum News

President Donald Trump has made no secret of his antipathy for government regulation, in particular of business and industrial activity. And on Jan. 30, not long after his inauguration, he set a regulatory tone for his administration by signing an executive order requiring two existing federal regulations to be eliminated for every new regulation introduced.

But how much leeway do the president and his administration have in doing away with existing regulations, and what actions have the administration taken so far to reduce government red tape when it comes to the energy industries?

Under the terms of the Administrative Procedures Act a major change to regulations has to go through a formal and often lengthy process, including a public review, in the same manner as the introduction of a new regulation. However, there is a statute, the Congressional Review Act, which enables Congress to nullify any regulation that has gone into effect within the previous 60 days. Upon passage by Congress, a nullification under this act simply needs a presidential signature.

WOTUS regulations

As an action to potentially go through the formal process of changing or withdrawing a regulation, at the end of February Trump ordered the Environmental Protection Agency to review new waters of the United States, or WOTUS regulations, introduced by the Obama administration. A number of entities, including the state of Alaska and Alaska lawmakers, have criticized this rule as an example of federal overreach into state affairs.

In a different twist on the regulation amendment approach, on March 15 Environmental Protection Agency Administrator Scott Pruitt and Department of Transportation Secretary Elaine Chao announced that EPA intends to reconsider the final determination of light-vehicle greenhouse gas emissions standards that EPA issued on Jan. 12. In this instance, the final determination represented the second step of a two-stage process of introducing the standards — EPA had determined not to change the standards set in the first stage of the process, given that vehicle manufacturers had been already been meeting or in some cases exceeding the standards. However, the deadline for making the final determination for the regulation was not until April 1, 2018, thus providing ample time to make a new final determination, EPA says.

It also appears that the administration is preparing to make changes to regulations introduced by the Obama administration requiring the disclosure of chemicals used in oil or gas well hydraulic fracturing operations. On March 16 the Associated Press reported that the administration has withdrawn from a lawsuit challenging the new regulations. The Department of the Interior told the Associated Press that it is going to submit a new fracking rule.

Congressional Review Act

There have been a number of energy-related actions involving the Congressional Review Act.

On Feb. 14 the president signed legislation removing regulations under the Dodd-Frank Act, requiring oil and gas and mining companies to disclose financial transactions with foreign governments. And on Feb. 16 the president's signature went on another piece of legislation cancelling the stream protection rule that the Obama administration had introduced, to require coal mines to test and monitor the quality of water in streams that might be impacted by mining operations.

Another bill, annulling the Bureau of Land Management's so-called Planning 2.0 rule, regulations for activity planning on federal lands, has been passed by Congress but awaits the president's signature. BLM has argued that this rule will improve planning efficiency, but there has been criticism of the rule in Alaska on the grounds that it gives too much authority to the federal government over decisions impacting Alaska's interests.

Another bill under the Congressional Review Act, a bill to cancel an Obama administration rule limiting methane emissions from oil and gas operations, has been passed by the House of Representatives but has not yet been passed by the Senate. ●

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● GOVERNMENT

Differing views on BSEE performance

New assessment focuses on the regulatory agency's successes while GAO report alleges leadership deficiencies in the agency

By ALAN BAILEY
Petroleum News

Two reports on the federal Bureau of Safety and Environmental Enforcement that have been published in March present markedly different perspectives of the federal agency that oversees regulatory compliance in offshore oil and gas activities. The National Academy of Public Administration has published the results of its assessment of the agency's performance, having been contracted by the agency to prepare an independent report. The U.S. Government Accountability Office, Congress' watchdog organization, has prepared a report criticizing the BSEE leadership for failing to follow through on several initiatives that the leadership had undertaken to pursue.

The academy report praises the progress that BSEE has made in building its organizational effectiveness and says that the agency should continue to operate as an independent entity. But the report also recommends some policy issues that the agency needs to address, in particular the regulatory oversight of the renewable energy program on the outer continental shelf and the issues and risks associated with the decommissioning of offshore facilities. The report also comments that the agency faces budgetary challenges because of declining revenue collections and insufficient inspection fees.

The GAO report says that BSEE has undertaken several initiatives to reform its oversight capabilities. But, because of limited efforts by the BSEE leadership to obtain input for these initiatives from the agency's experienced regional personnel, the initiatives have not been successfully implemented, GAO says.

Established in 2011

BSEE, an agency within the Department of the Interior, was established in 2011 in the aftermath of the 2010 Deepwater Horizon disaster in the Gulf of Mexico. Until Deepwater Horizon a single agency within Interior, the Minerals Management Service, had managed and overseen outer continental shelf oil and gas activities under the terms of the Outer Continental Shelf Lands Act.

However, one of the findings from investigations into the Deepwater Horizon incident was a need to separate regulatory oversight of the oil and gas industry from the other government functions involved in the stewardship of U.S. outer continental shelf energy resources. Essentially, there appeared to be a conflict of interests between, on the one hand, the need to promote resource development on federal lands and, on the other hand, the need to ensure that resource development is conducted safely, with appropriate environmental protections.

The consequence was the splitting of the Minerals Management Service into three new agencies: the Bureau of Safety and Environmental Enforcement, the Bureau of Ocean Energy Management and the Office of Natural Resource Revenue. BSEE would provide regulatory oversight; BOEM would manage resource development; and ONRR would manage revenue collection from OCS activities.

BSEE operates from a headquarters in Washington, D.C., and three regional offices for the Gulf of Mexico, for the Pacific Ocean and for the waters offshore Alaska. The agency ensures sound practices in offshore industrial activities, to minimize risks while preventing waste and maximizing resource recovery. The agency operates an inspection program for offshore activities and ensures that operators have adequate oil spill preparedness arrangements. The agency is also responsible for ensuring that offshore operators comply with the terms of their leases and permits. The agency conducts appropriate technical and scientific research, the academy's new report says.

Strengthened programs

The academy's report says that BSEE, since its formation, has established itself as a new federal entity and has strengthened programs for ensuring safety and protecting the environment. The agency has seen success in its inspection and permitting programs, and has enhanced its relationships with other federal agencies, the report says. The agency has addressed gaps in regulations and policy; re-aligned itself to promote consistency and transparency, both internally and externally; and nearly achieved its recruitment goals by attracting highly skilled employees. The agency has also established partnerships for promoting technical competencies, the report says.

BSEE has issued strategic and other plans to drive operational and organizational improvements. The agency has also implemented an integrated information technology and business enterprise architecture, which, coupled with training and professional development, improve the accuracy of information used within the agency and by industry, the report says.

However, especially given the multiple linkages between activities conducted by BOEM and BSEE, the report comments on the complexities and challenges involved in disentangling the two organizations from the original MMS. Commenting on the GAO's critique of BSEE efforts at addressing its organizational issues, the academy report says that BSEE has taken steps to respond to GAO's recommendations, with four of those recommendations already having been addressed.

Interdependence with BOEM

While supporting BSEE's continued existence as an independent entity, the report also comments that BOEM and BSEE will remain interdependent and must work together effectively. Areas of disagreement between the agencies need to be raised to senior management level for resolution. And there is scope for establishing a process for addressing these disagreements, the report says.

However, the report does recommend the transfer from BOEM to BSEE of responsibility for environmental oversight, facility inspection and regulatory enforcement for the outer continental shelf renewable energy program. The report also recommends that the Department of the Interior should continue to address issues relating to the decommissioning of offshore facilities, including taking into consideration risks associated with potential business bankruptcies.

BSEE needs to address the budgetary issues associated with the facility decommissioning program and the oversight of renewable energy programs. And the Department of the Interior, the Office of Management and Budget, and Congress need to take action to address BSEE's current budgetary challenges, the report says.

GAO: incomplete initiatives

In commenting on what it sees as leadership shortcomings in BSEE, the GAO report cites several initiatives that the leadership had promoted but failed to complete, including an inspection initiative to identify and assess high-risk production facilities, and the development of performance measures for the organization.

In the five years since BSEE embarked on its effort to implement its risk-based facility inspection initiative, that initiative has yet to succeed, the GAO report says. And regional officials with significant experience of risk-based inspection methods said that they had not been consulted

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● ENVIRONMENT & SAFETY

AOGCC finalizes fines against Hilcorp

By KRISTEN NELSON

Petroleum News

The Alaska Oil and Gas Conservation Commission has finalized two fines it proposed against Hilcorp Alaska in November 2015, raising the initially proposed fine for each incident of $75,000 to $80,000. The fines are for changing the approved work procedure and performing well cleanouts using an unapproved contingency plan.

But the commission also noted a change in the company and said in its March 21 orders that "during the past twelve months, Hilcorp has taken initiatives that have improved their overall regulatory compliance."

Both fines involve the use of nitrogen at well workovers in the Hilcorp-operated Milne Point field which occurred in April and August of 2015 when the company had applied only to use water.

The commission said a review of workovers done by Hilcorp-operated rigs showed that three fill cleanout operations used nitrogen without AOGCC approval. In the case of work on the Milne Point unit J-08A well, three workers were overcome by nitrogen in an incident that the commission said could have been fatal "except for one worker's good fortune to collapse into the fresh air environment outside of the enclosed trailer." The commission had initially imposed a $720,000 fine for that incident, later reduced to $200,000 (see story in March 12 issue of Petroleum News).

No workers were impacted in the other two incidents, which occurred at the MPU J-09A well in April 2015 and at the MPU J-01A well in August 2015.

Changes at Hilcorp

In a March 22 statement from Hilcorp, provided by spokeswoman Lori Nelson in an email, the company said: "Personal health and safety is of the utmost importance to Hilcorp."

The company said that since the 2015 events it has "integrated the lessons we have learned into our current and future operations," and said it was pleased that the commission has "recognized our improvements over the past year."

"The entire Hilcorp team is focused on getting better every day, therefore we will continue to work openly and honestly with our regulators and the community to ensure we are developing Alaska's resources safely and responsibly."

The company said it did not agree with all of the commission's findings but does not plan to appeal.

Similar rulings

The commission rulings are similar as the cases involved similar circumstances: Hilcorp applied to do a workover using water for the cleanouts: The use of nitrogen was not authorized.

Hilcorp told the commission that use of nitrogen for fill cleanout was a contingency plan, but the commission said a contingency plan "constitutes a change to an approved permit requiring AOGCC approval prior to implementation."

"The point of requiring preapproval for this operation is to allow review of the entire proposed program, not just one of the alternatives from which Hilcorp may pick," the commission said, and noted that in an earlier workover request Hilcorp had listed nitrogen.

The commission also noted several earlier enforcement actions against Hilcorp and said it had met several times with the company's Alaska managers.

AOGCC said that after the initial investigation it stopped work on all four Hilcorp workover rigs during most of October 2015 until the company could demonstrate compliance with the commission's conditions and said it "recognizes that this shutdown of well workover operations had a significant financial impact to Hilcorp." ●

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BSEE FOCUS

over what was proposed and that the proposed risk-based model was over simplistic.

Moreover, two overlapping attempts at environmental risk reduction turned out to be fragmented and uncoordinated, the GAO says.

The GAO report also says that the BSEE management has spent three years trying to implement an enterprise risk management system for managing its organizational risks, but has yet to develop a means of addressing even its highest priority risk factors.

Communication issues

According to the GAO report there are also communication issues between BSEE's headquarters and the agency's regional offices. The report also questions the effectiveness of BSEE's system for reporting and responding to allegations of misconduct.

The report recommends that Interior act to establish mechanisms for BSEE management to obtain input from agency personnel and external parties in the furtherance of the agency's objectives; to address BSEE management's commitment to complete management initiatives in a timely manner; to address concerns over trust between BSEE headquarters and regional offices; and to increase trust in the procedures for misconduct allegations.

And the GAO questions the value of the National Academy of Public Administration's assessment, saying the academy had been instructed to work cooperatively with BSEE leadership, to focus on the BSEE headquarters rather than the regions, and to focus on documentation rather than in-depth interviews with personnel.

Interior's response

In response to the GAO report, the Department of the Interior has challenged the report's findings, saying, for example, that regional personnel and managers have been involved in the development of BSEE's risk-based inspection model. Implementation of the enterprise risk management program is on target, scheduled to complete its first full cycle in March 2017. BSEE has been conducting a program of employee engagement, and the procedures for dealing with alleged misconduct are effective, Interior said. ●

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● LAND & LEASING

State terminates North Slope Qugruk unit

By ERIC LIDJI
For Petroleum News

The state terminated the Qugruk unit earlier this year. In a late January ruling posted online earlier in March, state Department of Natural Resources Commissioner Andrew T. Mack announced that the North Slope unit had automatically terminated on Jan. 27, 2017, five years after the unit was approved.

Repsol E&P USA Inc. requested a 98,852-acre Qugruk unit over 49 leases in the Colville River Delta region in late 2011. Along with partners 70 & 148 LLC and GMT Exploration Co. LLC, Repsol proposed a four-well exploration program for the unit.

An oil and natural gas unit in Alaska generally terminates five years after initial approval unless the company shifts into development mode or the state approves an extension.

In early 2012, the state approved a 12,065-acre unit over six leases and required Repsol to post a $20 million bond to backstop the initial well in the program by the end of June 2012. In addition to the bond and the work commitment, the state also increased the rental rate of four leases that would have expired without the protection of the unit.

With the termination, seven leases associated with the unit reached the end of their primary terms and entered their secondary terms, which will expire on May 4.

After drilling the required well, Repsol asked the state to extend the primary terms of five un-unitized leases in the Qugruk area by three or four years. The request followed a newly passed legal provision allowing the state to make such extensions. The state ultimately gave Repsol an additional two years on the leases, but required the company to drill an additional well, post a $100,000 bond and collect new seismic information.

Following the initial Qugruk program, Repsol and its partners shifted their focus to other sections of their large leasehold between the Kuparuk River unit and Colville River unit and have since made two announcements of a major discovery across that broad region.

In early 2015, Repsol asked the state to form the 63,304-acre Pikka unit over 33 leases covering a portion of the acreage that the state had excluded from the Qugruk unit. The state approved the unit in June 2015. After reorganizing, Armstrong Energy LLC is now operating the program. The current development plan involves Pikka, not Qugruk. But many of the wells in the Pikka program continued to use the Qugruk naming system. ●

—A copyrighted oil and gas lease map from Mapmakers Alaska was a research tool used in preparing this story.

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● ENVIRONMENT & SAFETY

PHMSA proposes oil pipeline inspection

Agency wants Hilcorp to ensure the subsea crude oil pipeline from Middle Ground Shoal field to Nikiski does not develop a leak

By ALAN BAILEY
Petroleum News

The federal Pipeline and Hazardous Materials Safety Administration has sent a letter to Hilcorp Alaska proposing an order requiring Hilcorp to inspect the subsea pipeline that delivers oil from the Cook Inlet Middle Ground Shoal field to shore at Nikiski. The agency thinks that the oil line is subject to a damage risk similar to the risk associated with a subsea gas line that has ruptured, causing a gas leak in the waters of the Cook Inlet. The gas line delivers fuel gas to the field's offshore platforms.

PHMSA's concerns stem from the facts that, while the gas line (designated the A pipeline) and the oil line (designated the B pipeline) run across the seafloor close to each other and are of near identical design, the A pipeline has now suffered three leaks since June 2014. Both lines are eight inches in diameter, cased in concrete. The B pipeline was installed in 1965.

A leak from the oil line would be significantly more environmentally damaging than the gas line leak.

Inspection within 21 days

PHMSA has already proposed another order, requiring Hilcorp to repair the subsea gas line by May 1. The agency now proposes an order requiring Hilcorp to inspect the oil line within 21 days of the new order being issued, and to send the results of the inspection to PHMSA's Western Region director within three days of the inspection being completed.

The inspection must involve a survey using high-resolution side-scan sonar or equivalent technology, to identify sections of the pipeline that are not adequately supported by the seabed. Areas of the line that are found not to be adequately supported over distances of 10 feet or more, with a gap of one foot or more from the sea floor, must be inspected by a diver, or by some equivalent means, to locate any unsupported pipeline sections that lack a protective concrete coating. And, where that concrete coating is missing, the line must be inspected for defects including dents, gouges and metal loss.

PHMSA says that abrasion of unsupported sections of the gas pipeline by rocks as a consequence of the vibration of the line in the Cook Inlet tidal currents has been identified as the likely cause of the previous gas pipeline leaks.

If Hilcorp is unable to conduct the required inspections of the line within the 21-day time limit, or if PHMSA determines that the inspection results indicate a pipeline integrity risk, Hilcorp must shut the pipeline down and purge its contents within seven days, PHMSA proposes.

A pipeline shutdown would presumably cause a shut-in of the Middle Ground Shoal field.

Modification and inspection plan

In addition, PHMSA's proposed order would require Hilcorp to develop a modification and inspection plan for the oil line and to submit that plan to the agency within 45 days of the issue of the order. The plan, which would require PHMSA approval, must include a plan for modifications to the pipeline to enable in-line inspections. Hilcorp must then conduct an in-line inspection and complete all necessary repairs to the line by Sept. 30, 2018.

The proposed order also says that Hilcorp must review and modify, as necessary, its oil spill response plan, in the light of the experience of responding to the leak in the gas pipeline. And Hilcorp must submit to PHMSA quarterly reports presenting analyses of the results of testing and evaluations mandated by the PHMSA order, and the progress of any resulting pipeline repairs and other remedial actions.

Hilcorp response

"Hilcorp will work with PHMSA and other state and federal agencies to ensure a thorough and timely response to the concerns in the proposed order," Hilcorp said in response to the letter from PHSMA. "Hilcorp continues to focus on addressing the natural gas pipeline leak and ensuring the safety of our responders in the field."

Hilcorp said that the oil pipeline was pressure tested in September 2015 and that the line is operating normally.

The company is waiting for sea ice in Cook Inlet to clear before sending divers down to repair the gas line — the company has said that the use of divers in sea ice conditions would be unacceptably dangerous. Once the repairs are started they will likely take several day to complete, the company has said. Previous repairs to the pipeline involved installing bolt-on, split sleeve clamps.

PHMSA, in its letter to Hilcorp, said that the National Marine Fisheries Service has expressed concern about the potential impacts of the gas leak on marine mammals, especially the endangered Cook Inlet beluga whales. The U.S. Fish and Wildlife Service has indicated that the risk to birds, sea ducks and water fowl is currently low but will increase with the seasonal migration that typically starts in March. Hilcorp has said that no significant impacts to wildlife or the environment have been observed. The company is implementing an environmental monitoring and sampling plan. ●

Contact Alan Bailey at abailey@petroleumnews.com

● GOVERNMENT

Industry thumbs down on HB 111 in Finance

Criticisms include tax increase, different treatment of existing producers and explorers, data sharing, new approval role for DNR

By KRISTEN NELSON
Petroleum News

The House Finance Committee heard from industry March 22 on House Bill 111, the proposal passed out of House Resources March 14 on a 5-4 party line vote.

Finance began considering the bill March 17, with Rep. Geran Tarr, D-Anchorage, co-chair of House Resources, telling the committee that the state's oil and gas tax system is now broken. When Senate Bill 21 was passed, she said, oil was $94 per barrel and $60 per barrel seemed low, so there wasn't a lot of time spent crafting a system that works well at low prices. With unanticipated consequences at low prices, she said, the goal was to find an alternative for credits while maintaining the state as a favorable place for investment. The bill makes adjustments to the underlying tax structure to get a more appropriate value for oil, Tarr said.

But industry told House Finance that the bill is a tax increase.

Tax increase

Kara Moriarty, president and CEO of the Alaska Oil and Gas Association, said the bill raises taxes and increases costs for industry and would put Alaska toward the bottom of the competitiveness scale.

The increase in the minimum tax from 4 percent to 5 percent is a 25 percent increase for taxpayers subject to the minimum tax, she said, and an "infinite increase" for smaller companies and newcomers to Alaska who do not yet pay the 4 percent tax, because they go from zero to 5 percent.

Moriarty noted that industry has testified that just this type of increase would likely lead to a reduction of one drilling rig for at least six months.

Scott Jepsen, ConocoPhillips Alaska vice president external affairs and transportation, called the bill a significant change in the cost of doing business in the state, highlighting the minimum tax rate increase, a reduction in the per-barrel tax credit and a "punitive" interest change.

He said the migrating tax credit change would create a monthly tax and is inconsistent with the overall tax structure.

Dan Seckers, ExxonMobil tax counsel, said he was "disheartened" to be in Juneau again testifying on efforts by the state to raise taxes and change policy and said the bill changes the underlying rules of the game.

He said section 23 of the bill, which prohibits the gross value at the point of production — which includes transportation costs — from being less than zero, is a disguised tax increase which would encourage investment only near existing facilities, thus picking winners and losers.

Disclosure requirements

Moriarty said the portions of the bill on confidentiality and transparency would allow disclosure of commercially and federally protected sensitive downstream information and allow the Department of Revenue to request "other information" through regulations, providing the department with what Moriarty called "unfettered and unsupervised power" to request and disclose any information it desires.

Seckers said the bill would allow disclosure of some very confidential and taxpayer sensitive data. While ExxonMobil partners with BP and ConocoPhillips on the North Slope, the companies are competitors, he said, and are bound by law on what can and cannot be said. The language in the bill is written to allow almost any information to be released, he said, and would chill investment.

DNR preapproval

The bill requires the Department of Natural Resources to provide preapproval of any amounts claimed under net operating loss, something Moriarty described as creating one of the largest regulatory processes in state history. The process is not defined in the bill, she said, but because industry does not know at the time of expenditures that they will suffer a net operating loss, it would mean almost every penny of proposed investment would need to be preapproved.

Seckers said the preapproval process was hard to address since it was just a statement in the bill, but said it was a very troubling provision and raised all sorts of questions: Would it be a line-by-line audit? How long would it take? And if when the Department of Revenue audits tax returns it disagrees with DNR's preapproval, who wins? DNR's fiscal note said they wouldn't have regulations up until 2019, Seckers said, but the provision takes effect in 2018, so how would a company invest? And what if it made an investment in 2018 that DNR says in 2019 doesn't qualify?

Picking winners

Pat Galvin, chief commercial officer and general counsel for Great Bear Petroleum, addressed issues from the perspective of a company still in the exploration stage.

He said the bill abandons a state policy of encouraging new companies to enter the North Slope, reduces incentives for new investment, tilts the playing field in favor of incumbent producers and treats new companies as second class citizens when it comes to North Slope investment.

It would also create partner misalignment where one partner in a project had existing production and one partner was a new entrant, he said.

And because only expenditures resulting in carried forward losses, the net operating losses, are subject to preapproval by DNR, it would create uncertainty solely for new companies, because the North Slope's existing producers, with production, would expect to write off losses against production taxes, not carry them forward.

Galvin said the bill "barely moved the needle" for the state but would put new companies at a significant disadvantage compared to incumbents. ●

Contact Kristen Nelson at knelson@petroleumnews.com

NORTH OF 60 MINING news

page 8 Montana billionaire makes a $1B offer to buy Dominion Diamonds

www.MiningNewsNorth.com The weekly mining newspaper for Alaska and Canada's North Week of March 26, 2017

NEWS NUGGETS

Compiled by Shane Lasley

SHANE LASLEY

Over the course of two decades, Northern Dynasty has outlined a world class deposit at Pebble with 56.8 billion pounds copper, 70.4 million ounces gold, 3.4 billion lbs molybdenum and 343.6 million oz silver in measured and indicated resource.

Pebble, EPA extend negotiations

Northern Dynasty Minerals Ltd. May 20 reported the Pebble Limited Partnership and the U.S. Environmental Protection Agency have filed a joint motion in federal court to extend a stay of proceedings to May 4 in ongoing litigation under the Federal Advisory Committee Act. In 2014, the Pebble Partnership had filed a suit, alleging EPA violated FACA by working inappropriately close to anti-Pebble groups as the regulatory agency built a case for placing restrictions on yet to be applied for permits for the development of a mine at the Pebble copper-gold-molybdenum deposit in Southwest Alaska. With the trial nearing its end, by October it had become apparent EPA and Pebble Partnership would likely reach an agreement that would settle this suit outside of the courtroom. To provide the parties time to negotiate, the court issued a stay of proceedings in this case until March 20. The latest motion extends this stay until May 4, providing the parties additional time to reach a settlement outside the courtroom. Pebble Partnership says it has made substantial progress in recent discussions with the EPA and intends to continue negotiating the matter directly, rather than through mediation. Northern Dynasty said government representatives are actively engaged in these discussions. In February, U.S. House Science, Space, and Technology Committee Chairman Lamar Smith, R-Texas, sent a letter to EPA Administrator Scott Pruitt asking him to rescind the 2014 decision to pre-emptively use Section 404(c) of the Clean Water Act to limit the scope of any potential mine developed at Pebble. "Active discussions between all parties involved have been positive and very constructive," said Pebble Partnership CEO Tom Collier. "We remain confident in achieving a prompt and fair resolution that follows the rule of law, supports the interests of the parties involved and allows the Pebble project to move into a normal course permitting process." In the meantime, a 2014 preliminary injunction ordering EPA to halt efforts to finalize the implementation of its plans to pre-emptively restrict Pebble permits remains in effect for the duration of the court ordered stay.

TRILOGY METALS INC.

Arctic, situated in the mountains about 16 miles north over the Upper Kobuk Mineral Projects camp at Bornite, is slated to be the first of the high-grade deposits in the Ambler mining district to be developed into a mine.

EXPLORATION

Path to Arctic Mine

Trilogy to complete pre-feasibility; Ambler Road permitting makes headway

By SHANE LASLEY

Mining News

The path to discovering the viability of developing a mine at Arctic and the road needed to deliver the copper, zinc, lead, gold and silver from this exceptionally high-grade Northwest Alaska deposit to world markets are both making headway in 2017.

Arctic is the most advanced of the high-grade deposits that make up the Upper Kobuk Mineral Projects, an extensive land package that unites Trilogy Metals Inc.'s state mining claims that blanket a 70-mile- (110 kilometer) long belt of high-grade copper-lead-zinc-gold-silver deposits across the Ambler mining district with an adjacent package of NANA Regional Corp.-owned lands known for hosting exceptionally high-grade copper.

RICK VAN NIEUWENHUYSE

Trilogy is the operator of UKMP, and Alaska Native Regional Corporation NANA represents the Inupiaq people of Northwest Alaska and holds an option to be a 16 to 25 percent equity partner in the project or receive 15 percent net proceeds royalty from any mines developed on the 353,000-acre land package.

Arctic – a high-grade volcanogenic massive sulfide deposit on Trilogy Mining claims that encompasses some 1.65 billion pounds of copper, 2.62 billion lb of zinc, 444 million lb of lead, 610,000 ounces of gold and 45.3 million oz of silver in the inferred and indicated resource categories – will likely be the site of the first such mine.

Bornite, a world-class deposit on NANA lands about 16 miles south of Arctic, encompasses 40.5 million metric tons of in-pit indicated resources averaging 1.02 percent (913 million pounds) copper; and 84.1 million metric tons of inferred resources averaging 0.95 percent (1.8 billion lbs.) copper. Additionally, this UKMP deposit likely to be developed second, is estimated to contain 57.8 million metric tons of below-pit inferred resources averaging 2.89 percent (3.7 billion lbs.) copper.

Getting ready for permitting a priority

Already a world-class copper deposit in terms of size and grade, the various zones of Bornite are open to expansion in several directions.

While expanding Bornite is a compelling target for a junior mining company with the exploration expertise of Trilogy, getting Arctic ready for permitting is a top priority.

To this end, Triolgy has budgeted US$7.1 million for a 2017 work program focused on finalizing a pre-feasibility study that will outline the engineering and financial parameters of developing Arctic as the first UKMP mine.

"The PFS will demonstrate the true value of the high-grade Arctic deposit which we expect will be the first in a series of potential mines in the Ambler mining district," explained Trilogy Metals President and CEO Rick Van Nieuwenhuyse.

Arctic feasibility

In 2013, Trilogy (then NovaCopper) completed a preliminary economic assessment that provided a first glimpse of what an open-pit mine at Arctic might look like.

This scoping level study outlined a 10,000-metric-ton-per-day mill at Arctic that is anticipated to produce roughly 1.5 billion lbs of copper, 1.8 billion lbs of zinc, 289 million lbs of lead, 30.5 million oz of silver and 349,000 oz of gold over a 12-year mine-life.

At the time, the cost to build such a mine was estimated to be US$717.7 million. Another US$164.4 million in sustaining capital and US$81.6 million in closing costs also were anticipated.

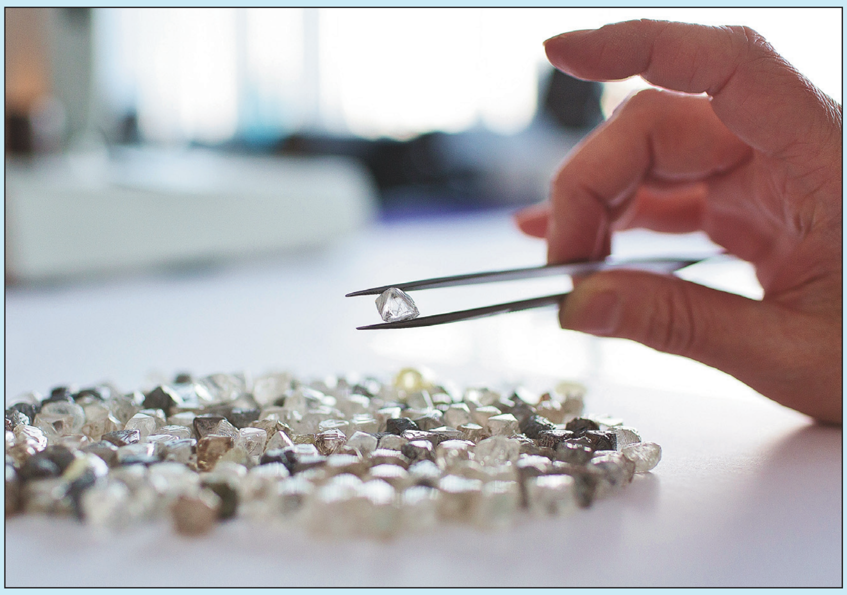
The mine outlined in the 2013 PEA was based on 23.85 million metric tons of indicated resource averaging 3.26 percent (1.71 billion lbs) copper, 4.45 percent (2.34 billion lbs) zinc, 0.76 percent (400 million lbs) lead, 0.71 grams per metric ton (550,000 oz) gold, and 53.2 g/t (40.8 million oz) silver.

Additionally, Arctic hosted 3.63 million metric tons inferred resource averaging 3.22 percent (239 million lbs) copper, 3.84 percent (285 million lbs) zinc, 0.58 percent (43.2 million lbs) lead, 0.59 g/t

see ARCTIC MINE page 8

NORTHERN NEIGHBORS

Compiled by Shane Lasley



DOMINION DIAMONDS CORPORATION

Sorting rough diamonds recovered from Ekati, a diamond mine in Northwest Territories operated by Dominion Diamonds.

Billionaire makes bid for Dominion Diamonds

Dominion Diamond Corp. March 19 confirmed that it has received an unsolicited US$1.1 billion buyout bid from Washington Corporations, a group of companies owned by billionaire Dennis Washington. Dominion said the preliminary expression of interest submitted by Washington is subject to, among other things, extensive due diligence, negotiation of satisfactory agreements and regulatory approvals, and is contingent on entering into discussions with Dominion on aggressive and off market terms and conditions. Dominion, which owns a majority interest in the Ekati diamond mine and a 40 percent interest in the Diavik diamond mine, considers the Washington offer to be opportunistic. Despite this, as well as concerns over Washington's experience and credibility in the diamond sector, Dominion said it is open to meeting with (and a better offer from) Washington, but only under terms that protect the diamond company and its shareholders. "While we believe that your proposal does not recognize the full value of the company, we are, and have been, prepared to work constructively with you and allow you to conduct the due diligence that you have requested, on standard and market customary terms that protect the company and its stakeholders. It is unfortunate and surprising that you have refused to so do," Dominion wrote in a March 19 letter to Washington Corp. President Larry Siskins. Despite this strong stance, Dominion said it remains open to holding discussions with Washington Corp. to see if they can come together on a proposal that is acceptable to both parties.

92 Resources to test NWT lithium potential

92 Resources Corp. March 21 provided exploration plans for the upcoming field season at its Hidden Lake lithium project about 40 kilometers (25 miles) east of Yellowknife, Northwest Territories. The company said it has received the primary permit needed to carry out exploration at Hidden Lake and plans to carry out a drill program to test the strike and depth of spodumene-bearing pegmatite bodies found there in the latter half of the year. Spodumene is a lithium mineral that often occurs in extremely large crystals.

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ARCTIC MINE

(60,000 oz) gold at the time of the PEA.

Over the past two years, Trilogy has carried out targeted drill programs aimed at upgrading and expanding these resources, much of which will be elevated to reserve status once supported by a pre-feasibility study.

In addition to resource drilling, the 2015 and 2016 programs included collecting the geotechnical, engineering, environmental and other data needed to complete the pre-feasibility study for Arctic.

This year's field program aims to collect the final bits of data for the study with a program that includes geotechnical drilling, hydrology studies and test pits aimed at determining the best locations for the mill, tailing facility, waste rock storage and road.

Trilogy expects the pre-feasibility study will be completed early in 2018.

Movement on the Ambler Road

The mill at Arctic will likely produce three separate concentrates – copper with gold and silver; zinc; and lead with gold and silver – that will need to be shipped to refineries for further processing. This project, however, is located about 200 miles from the nearest road, at least for now.

Understanding the exceptional potential of the Ambler district, the state of Alaska began studies on the potential of building a road to the metals rich region in 2009. Alaska Industrial Development and Export Authority, a quasi-state-owned entity established by the Alaska Legislature to provide financing for Alaska businesses that will expand the state's economy, took the lead on the potential development of a road to the Ambler district in 2013.

The Ambler Mining District Industrial Access Road, the official name of this proposed 211-mile transportation corridor, would run west from the Dalton Highway along the southern foothills of the Brooks Range to the Ambler Mining District near the Arctic deposit.

Trilogy and AIDEA entered into a memorandum of understanding in 2015 that paves the way for the development authority to investigate various ways to fund the construction and maintenance of the Ambler Road and create the framework by which this investment would be paid back from mines developed at the roads terminus.

A similar arrangement for the Delong Mountain Transportation System, a road and port facility linking the Red Dog zinc-lead mine to world markets, has proven to be a good investment for AIDEA and the state.

Ideally, the road and first mine would be completed about the same time. To keep the road side of this on schedule, AIDEA submitted applications for rights-of-way, permits and related authorizations needed for the road in 2016.

The U.S. Interior Department's Bureau of Land Management, which will be the lead agency for permitting the road, opened a 90-day public scoping period for an Environmental Impact Statement for the Ambler Road on Feb. 28. This marks the official start of permitting for this vital transportation route linking the metals-rich Ambler mining district to world markets.

With a road and a mine to support it, the potential of one of the richest undeveloped mining districts may finally be realized.

"With the recent announcement that the BLM has initiated the permitting process on the AMDIAP, as well as an upswing in demand for copper and zinc, the company is well positioned to add value for shareholders by advancing development of the world-class Ambler mining district," Trilogy CEO Van Nieuwenhuyse said in a March 20 statement. ●

Petroleum news

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Before the discovery of lithium-bearing brines, spodumene was the primary source of lithium. The lithium potential of pegmatites within the Yellowknife area, including Hidden Lake, was first recognized in the mid-1950s. Despite the introduction of low-cost production from lithium brine deposits, 92 Resources said spodumene-bearing pegmatites continue to be an important supply of lithium. The company completed channel sampling of four pegmatites at Hidden Lake in 2016. Highlights from this work include nine meters averaging 1.9 percent lithium oxide; 6.9 meters averaging 1.78 percent lithium oxide; and one sample averaging 3.3 percent lithium oxide. In addition, significant grades of tantalum were reported in association with the lithium mineralization. Prior to drilling, 92 Resources plans to complete prospecting and detailed mapping of two pegmatite bodies it discovered in 2016. A grab sample from one of these pegmatites returned 1.9 percent lithium oxide. In addition to the field work, 92 Resources intends to initiate a preliminary metallurgical program with the objective of producing spodumene concentrate of potentially marketable quality. The program will include a complete mineralogical characterization of the Hidden Lake pegmatites, as well as various beneficiation test work. The potential for concentration of the tantalum bearing minerals into a secondary concentrate will also be evaluated.

Silver Range stakes more Nunavut gold claims

Silver Range Resources Ltd. March 20 said it has staked two highly prospective gold properties – Yandle and Noomut – in the eastern Nunavut greenstone belt that hosts Agnico Eagle's Meliadine gold mine project. The Yandle property covers the Yandle and Aruat showings which were explored from the early 1990s until 2003. Numerous gold-bearing grab samples were collected along a 4,500-meter-long zone of arsenopyrite and pyrite bearing schist. The best samples collected along this contact zone were 25 grams per metric ton gold at Yandle and 59 g/t gold at Aruat. Comaplex Resources Ltd., which completed much of the historical work at Yandle, carried out ground geophysical surveys, and detailed prospecting and mapping over a wide area prior to drilling their portion of the zone in 2002. This nine-hole program cut low gold values in the overlying rhyolitic volcanic rocks. Drilling in the contact zone, however, cut three meters averaging 11 g/t gold. The property was subsequently optioned to Placer Dome, which drilled 12 holes at Yandle in 2003. One hole drilled cut 1.25 meters averaging 17.5 g/t gold and 2.8 meters of 2.5 g/t gold. The Aruat zone remains un-drilled. The Noomut property, which is 15 kilometers (nine miles) southwest of Yandle, covers a 1,900-meter-long zone of gold mineralization which has returned historical surface grab samples to 89 g/t gold. Silver Range intends to conduct community consultations in the Kivalliq region this spring and apply for land use permits to conduct drill programs at the Hard Cash, another gold project in the region, and Yandle properties thereafter.

Agnico set to earn stake in Aura's Greyhound

Aura Silver Resources Inc. March 20 said Agnico Eagle Mines Ltd. plans to resume drilling at Aura's Greyhound gold-silver property in Nunavut this year. Slated to begin in April, this roughly 1,500-meter drill program will follow up on a hole completed by Agnico in 2015 that cut 1.5 meters averaging 6.41 grams per metric ton gold. "The potential for success of future work following up on the discovery of high-grade gold (multiple one ounce per ton gold samples) and silver boulders (some in excess of 5,000 grams per metric ton silver) is exciting," says Aura Silver

see **NORTHERN NEIGHBORS** *page 10*

GOLDEN PREDATOR MINING CORP.

Drilling in December tapped high-grade gold at Ace of Hearts, one of the many gold veins Golden Predator has identified at its 3 Aces project in southeastern Yukon.

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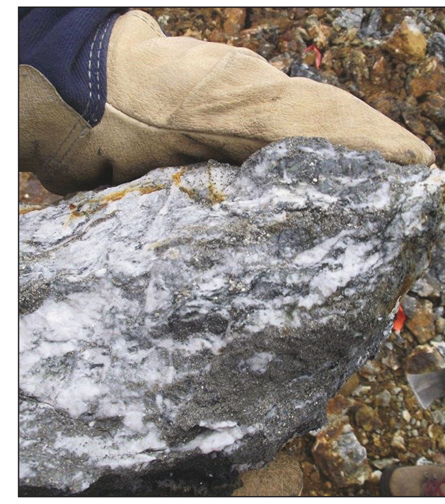
NORTHERN NEIGHBORS

President and CEO Robert Boaz. Agnico has the option to earn an initial 51 percent interest in a portion of Greyhound, which lies some 35 kilometers (22 miles) south of its Meadowbank gold mine, by paying Aura C$250,000 and investing C$1.75 million in exploration by the end of May, a stake that can be raised to 70 percent with additional expenditures. This spring drilling is the third completed by Agnico and should satisfy the initial earn-in requirements.



AURA SILVER RESOURCES INC.

This sulfide-rich sample collected from Aura Silver's Greyhound property in Nunavut averaged one ounce per metric ton gold.

Golden Predator adds Ace of Hearts to hand

Golden Predator Mining Corp. March 16 said results for the final 25 holes of the winter 2016 drill program at the 3 Aces project in southeastern Yukon have confirmed high-grade gold mineralization in the Ace of Hearts vein with additional veining identified at depth. Highlights from Ace of Hearts includes: 7.59 meters of 6.39 grams per metric ton gold from a depth of 96.01 meters in hole 3A16-RC-048; 17.26 meters of 4.76 g/t gold from a depth of 38.86 meters in hole 3A16-RC-054; 7.43 meters of 9.37 g/t gold from a depth of 51.05 meters in hole3A16-RC-055; and 13.07 meters of 16.75 g/t gold from a depth of 42.67 meters in hole3A16-DD-082, which bottomed in gold mineralization. Ace of Hearts is roughly 1,000 meters west of Ace of Spades, the primary high-grade gold zone explored so far at 3 Aces. "We are very pleased with the excellent high-grade results from our 2016 winter program at the Hearts, Spades and Clubs zones," said Golden Predator CEO Janet Lee-Sheriff. "With our C$17.25 million bought deal financing now complete we are well positioned for our 2017 drilling campaign, which is underway and off to a good start." A 20,000-meter drill program that began in February is initially focusing on the Spades Zone before expanding to other areas of the property. Drilling in the Spades zone is testing the depth and strike extensions of the Ace of Spades vein; stockwork mineralization encountered below Ace of Spades; and initial drilling at the Jack, Queen, Seven and Three of Spades zones. The Clubs and Hearts zones, which experience heavier snow conditions due to slightly higher elevations, are slated for drilling this summer.

Kemess Underground receives first approvals

AuRico Metals Inc. March 22 reported that federal and provincial authorities have issued a first round of permit approvals for development of a mine at its Kemess Underground, a large gold-copper-silver project in northern British Columbia. This includes a positive decision statement by the Canadian Environmental Assessment Agency and an environmental assessment certificate granted by the British Columbia Environmental Assessment Office. Kemess Underground is located about six kilometers (3.7 miles) north of the past producing Kemess South open-pit mine, which produced about 3 million ounces of gold and 750 million pounds of copper from 1998 until 2011. AuRico now owns Kemess South and the roughly C$1 billion of infrastructure that goes with it. This includes a camp, powerline, all-weather air-strip and access road, as well as other surface facilities including an administrative building, workshop and warehouse. AuRico published a feasibility study for the Kemess Underground project in 2016 that contemplates the development of a low-cost panel caving operation with an initial 12-year mine life. Ore would be transported by conveyor to the existing processing facilities, with concentrate transported to a wholly-owned concentrate load-out facility in Mackenzie, B.C. The mine outlined in the study is expected to produce 1.4 million oz of gold, 573 million lbs of copper and 4.5 million oz of silver. Total up-front capital expenditure for developing Kemess Underground is estimated at US$452 million with a payback period estimated at 3.3 years. "The Kemess Underground project presents an attractive development opportunity given its strong economics – supported by existing infrastructure, large scale, good jurisdiction, and advanced stage," said AuRico President and CEO Chris Richter. "Today's environmental approval represents a significant milestone for the project, and we are excited about the opportunity to continue to advance the project to the benefit of all stakeholders." Kemess underground will require a number of additional licenses and permits which the company expects to receive early in 2018. AuRico also owns the Kemess East deposit, 1,000 meters east of Kemess Underground. In January, the company released an updated resource estimate for Kemess East outlining 113.1 million metric tons of indicated resources averaging 0.38 percent copper and 0.46 grams per metric ton gold; and 63.8 million metric tons of inferred resource grading 0.34 percent copper and 0.31 g/t gold. ●

HISTORY

Christmas at Prudhoe Bay, part 2

Personal reflections from Alaska geologist Gil Mull, who sat on the Prudhoe discovery well for Humble, ExxonMobil predecessor

By GIL MULL
For Petroleum News

After several days of unsuccessful attempts to free the stuck drill string and test tools, the decision was made to side-track the lower part of the original hole and drill around the stuck fish. This took a couple of weeks, and when drilling into new geology resumed in late January, Hank Repp, one of the Humble senior geologists, went back as the Humble well site geologist.


COURTESY GIL MULL

An oil-splattered C.G. "Gil" Mull, Humble Oil (predecessor to ExxonMobil) geologist at drill stem test No. 5, Prudhoe Bay State No. 1 discovery well on March 15, 1968. The oil flow measured 1,152 barrels per day. Mull was one of several geologists who actually "sat" on the discovery well. The photo was taken by Bob Jacobs of Interior Airways.

The base of the Sadlerochit sandstone and conglomerate interval was finally reached at 8,670 feet — an interval thickness of over 460 feet with about 300 feet net sandstone and conglomerate as potential reservoir beds. Even more significantly, the lower 40 feet of the sandstone was oil saturated, and no oil/water contact was encountered.

After wire-line logs were run, a string of casing was set through the Sadlerochit and drilling continued into the underlying Lisburne formation, which was found to consist of hard limestone with interbedded brown, porous, oil saturated dolomite.

Another open-hole drill stem test in the top of the Lisburne recovered light oil that flowed intermittently with a high volume of gas. This test showed that the Lisburne was also an oil reservoir, but the flow of gas suggested that there was communication with the overlying Sadlerochit formation, which was behind casing.

During the DST, some of the high-pressure gas from higher in the well was apparently bypassing the cemented casing and into the lower part of the hole, where it flowed with the oil from the Lisburne.

The level of excitement on the well was increasing. Although the rate of oil flow during the test could not be measured, the discovery of oil in the well was headline news in the Feb. 16 Anchorage Times.

Back on well with Pentilla

When drilling in the Lisburne resumed after that drill stem test, ARCO geologist Bill Pentilla and I were back on the well, which was then drilling in dense limestone with more beds of brown oil-stained dolomite.

By the end of the first week of March, we had drilled and cored over a thousand feet of Lisburne that contained a number of thin beds of oil-saturated dolomite. Another drill-stem test was run, to test a 320-foot interval in the lower part of the Lisburne. This test was a spectacular success.

About 20 minutes after the test tool was opened, the light flow of air from the drill pipe was followed by gas to the surface and then in about two hours oil began flowing to the surface.

1 2 SERIES

Oil flowed for seven hours at a measured rate of 1,152 barrels of oil per day; this test confirmed beyond any question that Prudhoe Bay State No. 1 was a significant oil and gas discovery.

In addition to the oil saturated dolomite beds in the Lisburne, the Sadlerochit formation was clearly an even better reservoir unit with as much as 300 feet of net sandstone and conglomerate in an interval about 460 feet thick.

And more importantly, there was no indication of an oil-water contact in either the Sadlerochit or Lisburne. The wire-line logs, core data, and drill stem test data indicated a gas column of about 420 feet in the Sadlerochit, and no way of knowing the height of the oil column.

Sag River confirmation well

Evaluation of the drilling results to this point clearly indicated to ARCO and Humble management that additional evaluation was necessary. A second well was going to be needed to determine the lateral extent of the Sadlerochit reservoir beds and to find the oil-water contact to determine the height of the oil column. A drill rig that BP and Sinclair Oil had used to drill a dry hole near the Colville River west of Prudhoe Bay was brought along the coast by cat train over a winter road on the sea ice.

And, clearly, more detailed seismic data was needed.

Thus began a major mobilization of equipment unlike anything seen before in Alaska. In mid-March, while drilling continued at Prudhoe Bay No. 1, a massive airlift began and two Alaska Airlines C-130 Hercules cargo planes began flying around the clock from Fairbanks. The Prudhoe well site was a beehive of activity as about every two hours, night and day, another Hercules would taxi into the ramp just outside our sleeping trailer and offload another 40 tons of equipment. On some occasions, two Hercs were on the ramp at the same time.

The planes flew in thousands of feet of drill pipe and casing, thousands of sacks of drilling mud and cement, seismic equipment, seismic camps, trucks and construction equipment to build a second drill site — all of the supplies needed to support another large camp for the drilling of the second well. This location, named Sag River State No. 1, was to be near the banks of the Sagavanirktok River, seven miles southeast of the Prudhoe Bay drill site and, based on the available seismic data, was predicted to be three to four hundred feet structurally lower than Prudhoe Bay State No. 1.

By May, drilling at the Prudhoe Bay well had ended and the well was undergoing a very detailed testing program. Meanwhile, the Sag River drill site had been completed and drilling was progressing rapidly.

Hank Repp, Dean Morgridge and I took turns as the Humble well site geologists, working with ARCO geologists Marv Mangus, Bill Pentilla, and Bob Anderson (no relation to R.O. Anderson).

In some ways, this well was even more interesting than the Prudhoe Bay discovery well. By early June, the top of the Sadlerochit was reached and was being evaluated by almost continuous coring. Most of the Sadlerochit was within the oil column, and some of the sandstones and conglomerates appeared to have even better reservoir quality than at Prudhoe Bay State No. 1.

More than 500 feet thick

Security was very tight, and only the geologists were supposed to see the rocks that were being extracted from the core barrels, but one 20-foot core was particularly memorable. Usually, a solid cylinder of rock came out of the core barrel and was laid out in trays to be examined in detail. But in this case, with the core barrel hanging vertically in the derrick, when the core bit was removed from the barrel, out poured a pile of unconsolidated sand, gravel, and oil — which flowed through openings in the derrick floor and into the rig cellar. The porosity and permeability of this interval was fantastic. The entire drill crew soon saw and knew exactly what we were finding.

The Sag River field confirmation well showed that the Sadlerochit reservoir interval was over 500 feet thick, with at least 300 feet of net reservoir-quality sandstone and conglomerate, and a 400-foot oil column below a gas cap that was also about 400 feet thick.

The drilling and test data from the Prudhoe Bay State No. 1 and Sag River State No. 1 wells, along with the seismic maps of the area were given to the consulting firm DeGolyer and MacNaughton for an independent evaluation of the significance of the discovery.

And on July 18, ARCO and Humble released the results of this independent evaluation, which estimated that Prudhoe Bay contained between 5 billion and 10 billion barrels of oil, which would make it the largest oil field in North America.

But by the time the announcement made the headlines, my field partner Howard Sonneman and I were back in the Brooks Range for another season pounding on rocks and making geologic maps. ●

Part 1 of this story ran in the March 19 issue.

Editor's note: Gil Mull submitted the above in March 2011, when it was first published by Petroleum News in a special publication, Exxon in Alaska.

Petroleum news

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Companies involved in Alaska and northern Canada's oil and gas industry

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GAS AGREEMENT

approves the agreement. That supply would terminate on March 31, 2033. In addition, a firm supply of approximately 1.8 billion cubic feet per year, with a minimum daily rate of 5 million cubic feet per day, would start on April 1, 2023, and also continue to March 31, 2033. The supply agreement allows Chugach Electric the option of increasing the firm supply by up to 1.8 bcf per year, upon providing Furie with a notice of intent to do this. The electricity utility can also purchase additional daily firm deliveries of up to 2 million cubic feet per day, beginning in year seven of the contract.

Chugach Electric told the commission in a March 16 filing that it already has sufficient gas under contract to meet all of its needs through to March 31, 2023. The 1.8 bcf per year in the new Furie gas supply would then likely account for 20 to 25 percent of the utility's gas fuel needs during the period of the firm supply component of the contract. Currently Chugach Electric obtains its firm gas supplies through its ownership interest in the Beluga River gas field on the west side of Cook Inlet, and from Hilcorp Alaska. The utility also has interruptible gas supply agreements with Cook Inlet Energy and AIX Energy.

Chugach Electric told the commission in a March 16 filing that it already has sufficient gas under contract to meet all of its needs through to March 31, 2023.

A graph included with Chugach Electric's commission filing shows the utility's Beluga River gas supply climbing until the mid 2020s before going into a decline.

Pricing agreements

The minimum price of gas under the interruptible supply would increase from $5.75 per thousand cubic feet in year one of the contract to $6.25 per mcf in 2033. The price for firm gas supplies would start at $7.16 per mcf in 2023, increasing to $7.98 per mcf in 2033. Chugach Electric told the commission that it believes that the firm gas pricing is competitive with existing contracts covering the time period involved.

Subject to the minimum pricing in the agreement, the actual price of gas in an interruptible supply would be negotiated between Furie and Chugach Electric on a case-by-case basis. There is no specific limit to the volume of gas that could be purchased as a consequence of one of these negotiations, but the supply could be interrupted at any time by either Furie or Chugach Electric.

Under the terms of the agreement Furie, at its discretion, would deliver the contracted gas from its gas field to the Kenai Beluga Pipeline, or from gas storage in the Cook Inlet Natural Gas Storage Alaska facility on the Kenai Peninsula. Chugach Electric would be responsible for the shipment of the gas from the delivery points.

Chugach Electric told the commission that the Furie gas supply agreement is consistent with the utility's policy of diversifying its gas supply arrangements and that the agreement would form the cornerstone of the utility's supplies after a supply agreement with Hilcorp Alaska terminates in 2023.

—ALAN BAILEY

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ICEWINE RIG

installing the cellar at the time of the announcement. Accumulate still needs some equipment, as well as final permitting, such as a drilling permit from the Alaska Oil and Gas Conservation Commission.

The well is designed to follow up on both conventional and unconventional targets along the trans-Alaska oil pipeline corridor, south of the Prudhoe Bay unit. The company expects to stimulate and flow test the HRZ shale formation in June or July of this year.

88 Energy is partnering on the project with Burgundy Xploration Inc.

The Arctic Fox rig is having a busy season, having recently finished drilling activity for Armstrong Energy Inc. at the Horseshoe exploration project near the Colville River.

—ERIC LIDJI

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FURIE PLANS

finding as-yet undiscovered oil resources in Mesozoic strata, including the Jurassic, deep under the younger and shallower Tertiary strata that host the reservoirs of the producing Cook Inlet oil and gas fields. The source of the oil in these fields lies within the Jurassic sequence, and much oil estimated to have been generated from the Jurassic source remains unaccounted for. But, with offshore drilling in Cook Inlet to the depths of the Mesozoic being challenging and expensive, the Mesozoic oil play remains essentially untested.

The Randolf Yost rig has been over wintering at Nikiski on the Kenai Peninsula. Furie is currently waiting for ice conditions in the inlet to improve to a point where the rig can be mobilized for the 2017 drilling season, Webb said.

The Randolf Yost rig has been over wintering at Nikiski on the Kenai Peninsula. Furie is currently waiting for ice conditions in the inlet to improve to a point where the rig can be mobilized for the 2017 drilling season, Webb said. The rig's first task will be to complete the KLU A-1 development well at the Julius R platform in Furie's Kitchen Lights gas field. Furie began drilling the well in September. The well is the second of two development wells that Furie needs to complete as part of the terms of a gas supply agreement with Enstar Natural Gas Co. that is scheduled to go into effect in 2018. The first of the development wells, the KLU A-2 well, was completed and hooked up prior to starting the drilling of KLU A-1.

Furie is currently producing Kitchen Lights gas from the KLU A2 and KLU No. 3 wells. The KLU No. 3 proved out the discovery of the Kitchen Lights field and was subsequently converted to a production well.

—ALAN BAILEY

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ENVIRONMENT & SAFETY

Arctic sea ice maximum hits another record

For the third straight year the winter maximum extent of the Arctic sea ice cover has reached its lowest ever level, the National Snow and Ice Data Center announced March 22.

Following the winter freeze up, on March 7 the sea ice extent reached 5.57 million square miles before starting to decline as the annual melt season began. The resulting maximum extent was the lowest recorded in the 28 years since satellite observations of the ice began. By comparison, the maximum extent in 2015 was 5.605 million square miles, while in 2016 it was 5.606 million square miles, NSIDC said.

NSIDC attributes the low extent, in part, to exceptionally warm autumn and winter weather, with air temperatures 4.5 degrees F above average across the Arctic Ocean. In particular, a series of extreme winter heat waves impacted the region, in a similar manner to what happened in the winter of 2015.

"I have been looking at Arctic weather patterns for 35 years and have never seen anything close to what we've experienced these past two winters," commented Mark Serreze, NSIDC director.

Satellite data also indicates that this winter's sea ice has been slightly thinner than has been the case in the past four years. As a consequence the total volume of sea ice is unusually low — assessments of sea ice conditions need to consider both the extent and the thickness of the ice, especially given the fact that thick multiyear ice tends to be more durable than young, thin ice.

"Such thin ice going into the melt season sets us up for the possibility of record low sea ice conditions this September," commented NSIDC scientist Julienne Stroeve.

—ALAN BAILEY

GOVERNMENT

Approval of Petro Star royalty sale moves

Legislative approval of a contract for sale of a portion of the state's royalty crude oil to Petro Star Inc. passed the Alaska Senate 17-0 in February and has now cleared the House committees to which it was assigned. It had not yet been scheduled for a floor vote when Petroleum News went to press.

Senate Bill 30 authorizes approval of a four-year contract beginning Jan. 1, 2018, and ending Dec. 31, 2021.

The sale required a best interest finding from the commissioner of the Department of Natural Resources; a final finding was issued in September 2016.

The state has a five-year contract to sell 20,000 to 25,000 barrels per day of royalty oil to Tesoro, approved by the Legislature in 2016. That contract is estimated to result in additional state revenues or $45-56 million relative to revenues the state would have received for royalties in value.

DNR negotiated two contracts with Petro Star. The first covered 2017 and did not need legislative approval; it was recommended by the Alaska Royalty Oil and Gas Development Advisory Board and entered into in August 2016.

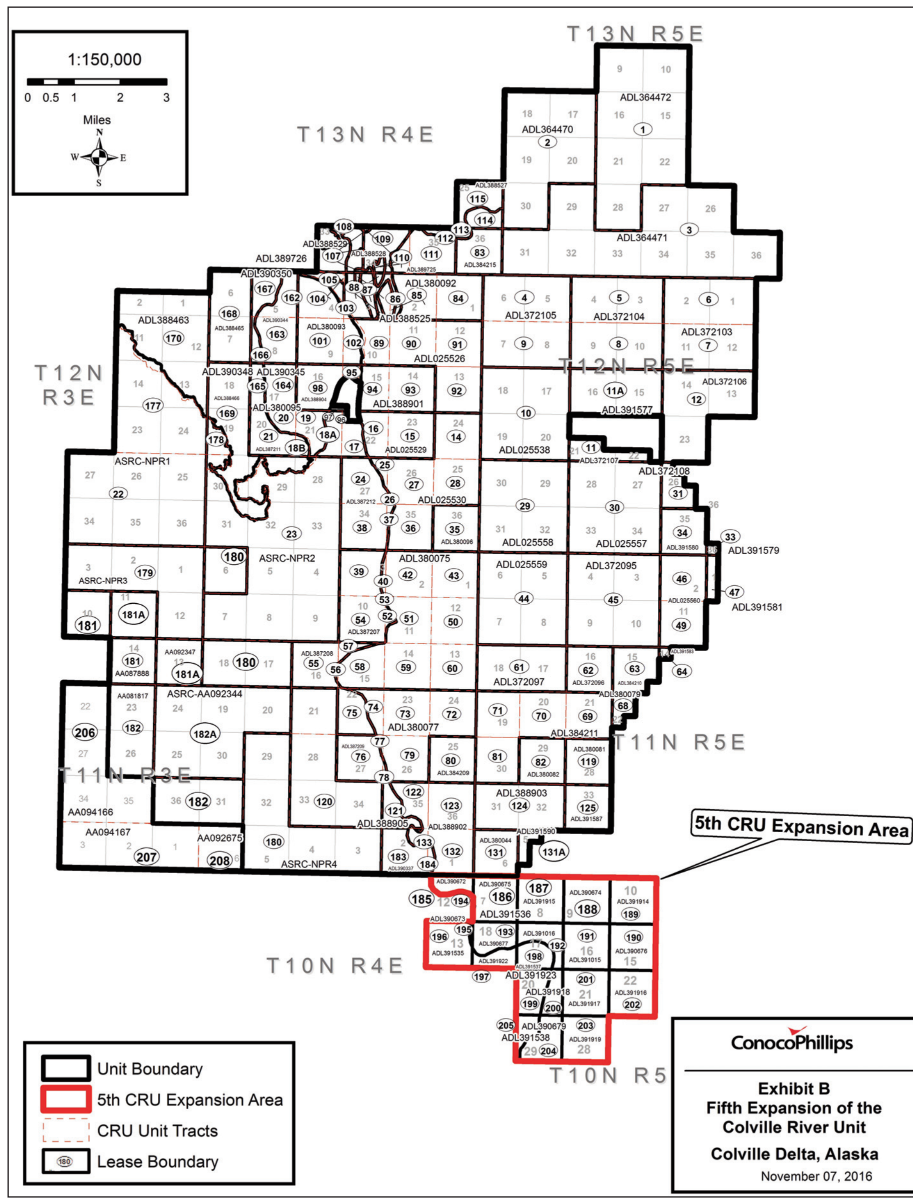
The second contract, for January 2018 through December 2021, was recommended by the board in August. The governor introduced a bill for approval and ratification of the royalty oil sale to Petro Star.

The agreement is between the state and Petro Star and Arctic Slope Regional Corp. Petro Star is a wholly owned subsidiary of ASRC. Petro Star was founded in 1984, commissioned the North Pole Refinery in 1985 and the Valdez Refinery in 1993. The refineries have a combined capacity to produce some 25,000 barrels per day of refined products.

The volumes to be sold to Petro Star decrease by year, as expected state royalty volumes decrease: year 1, 16,400-20,500 bpd; year 2, 13,200-16,500 bpd; year 3, 10,800-13,500 bpd; and year 4, 8,400-10,500 bpd.

The contract is expected to generate $22-$27 million in revenues in addition to the amount the state would have collected if it had taken the royalty in value.

—KRISTEN NELSON



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CRU DEBATE

acreage, which would allow the state to make the leases available in the next North Slope areawide lease sale toward the end of 2018. The relinquishment clause would make the bonds and bonus bid payments unnecessary.

Four points

ConocoPhillips challenged the denial on four points.

In the first, the company said that the state denied the company due process by failing to discuss its concerns. One of these involved a commitment ConocoPhillips had made to drill a well in the exploration acreage this winter if the state approved the expansion request by August 2016. The state became confused when ConocoPhillips continued to discuss the potential well after that deadline had passed. The company has now explained that it continued to plan for the well but could not guarantee activity, as it had before.

The company eventually cancelled its plans in December 2016, citing a desire to address concerns from villagers in nearby Nuiqsut before advancing any exploration plans.

In the second point, ConocoPhillips questioned the bond requirements. Although the February ruling denied the expansion, Mack included a provision that would have allowed the expansion if ConocoPhillips provided a $2.5 million performance bond for the exploration well, a $10 million performance bond to guarantee oil production from the area within the next five years and a $1.5 million "bonus bid replacement payment."

ConocoPhillips called the $10 million development bond "inappropriate" given the lack of successful exploration activity in the expansion leases, not to mention delineation and appraisal. The company also challenged a request from the state to provide a development plan for the leases, which "has not been standard practice" before a successful exploration program has been completed, according to the company.

Although previous exploration wells drilled in the expansion area over the past decade have encountered hydrocarbons, they were never certified for paying in commercial quantities, and the state acknowledged the potential for a dry hole in its initial decision.

Even if ConocoPhillips drills in 2018, the company noted, it could not guarantee production by 2022. The well might be a dry hole, and even if the well was successful, an environmental impact statement could take years, especially given the rush of activity in the region over the past two years with several major discoveries and developments.

The third point involves a major point of contention in the earlier decision: a surface use agreement between ConocoPhillips and the Kuukpik Corp. ConocoPhillips cancelled plans to drill on the leases this winter after meeting with the village of Nuiqsut. The state saw that delay as a potential admission that its surface use agreement was not valid. But ConocoPhillips argued that the surface use agreement merely provides access to the leases, and not does offset the need for acquiring other endorsements. The company also noted that the Kuukpik Corp. and the Native Village of Nuiqsut are separate entities.

The fourth point concerned the "protection of all parties" clause, which is one of the ways the state determines whether or not to approve requested oil and gas activity on its lands.

Mack had argued that allowing the expansion would prevent the state from making the acreage available in an upcoming lease sale, which would provide a competitive advantage to the state. But ConocoPhillips believes that competition would have arisen under previous operators or during public comment periods, if it were truly an issue.

Additionally, ConocoPhillips believes that the question of competition ignores the role of Arctic Slope Regional Corp., which is also a landowner and endorses the expansion. If the state and ASRC truly disagreed, it would be a first under the terms of the Colville River unit agreement, according to ConocoPhillips, which could create complications. ●

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ALBERTA FINANCES

In a staggering surge to power, the socialist New Democratic Party under the leadership of Rachel Notley almost wiped out what was seen as an arrogant and corrupt administration, only to find itself mired in a sudden collapse of oil prices that have since failed to do what everyone expected, or hoped, and make a rapid return to the US$100 a barrel level.

Approval ratings tumble

Approaching the second anniversary of its election, the NDP government has seen its approval ratings tumble well below 20 percent while it flounders to find answers.

The people of Alberta gave Notley a free pass to keep pouring money into the social infrastructure by running up a record deficit of C$10.8 billion in the 2016-17 fiscal year.

But forgiveness is now a scarce commodity, given the latest five-year budget plan that will see the government continue its losing struggle to bring the deficit and debt under control.

The projected deficit for 2017-18 is C$10.3 billion, accumulating a debt of C$45 billion that is forecast to balloon to C$71 billion in two years and likely surpass C$100 billion by about 2025.

Without flinching, Finance Minister Joe Ceci said the government will borrow C$6 billion this year to build capital projects such as schools and hospitals and borrow another C$6.4 billion to pay for its daily operating costs, including the wages of public sector workers.

"When the oil price shock hit our economy, Albertans were faced with a choice," Ceci said. "Some said, and some still say, that government should make deep cuts to public services."

Instead, the Notley government is pinning everything on a gamble that it can free Alberta from a fiscal jam by betting that oil prices will average US$55 a barrel in 2017-18 and climb to US$68 by 2019-20.

Despite the combined setback of oil prices falling below operating costs, combined with devastating forest fires a year ago, the government has budgeted for C$2.55 billion in bitumen royalties from the oil sands in the new fiscal year and C$5.27 billion two years out.

US shale industry resilient

But that is offset by the resilience of the United States shale industry, led by the imposing presence of the Permian basin in Texas and New Mexico, where breakeven costs run about US$10 lower than prevailing oil prices, and production is expected to grow by 400,000 barrels per day this year to 2.5 million bpd, than add another 500,000 bpd in 2018.

For anyone thinking the basin will go into decline, the U.S. Geological Survey made a case for the reverse to happen by estimating there are 20 billion barrels of undiscovered, technically recoverable oil in the Permian Wolfcamp shale region alone.

Private equity groups have started injecting increasing amounts of capital into the Permian, prompting Sam Burwell, an analyst with Houston-based Canaccord Genuity, to suggest that Permian could be followed by Eagle Ford and the Bakken if breakeven costs start to rise.

Highly respected ATB Financial said in a research note earlier in March that rising U.S. production will rule out "any meaningful increases in the price of oil this year."

Message from leading players

The message from leading industry players is especially troubling for Canada given the latest developments, with ExxonMobil announcing it will double its Permian holdings through a series of acquisitions totaling US$6.6 billion; Royal Dutch Shell targeting the bulk of its US$3 billion shale program on Texas; Chevron earmarking US$2.5 billion for shale and tight oil in the Permian; and ConocoPhillips considering selling its US$2 billion of natural gas assets in Canada to shift more money to the U.S.

But the bulk of investors continue to seek refuge in U.S. shale plays, which may not leave enough time for Notley to redirect her storm-tossed ship of state before the next election in 2019.

Those warning signals are compounded by the reality that Canadian oil and gas producers continue to struggle despite hope that crude prices will gradually rise, with the Conference Board of Canada forecasting total losses will reach C$1.1 billion this year, while capital spending is expected to remain low after hitting C$27 billion last year, down 43 percent from the 2014 peak.

For every US$1 drop in the annual average price of oil, Alberta government revenues drop C$130 million, underscoring the vital importance of Kinder Morgan proceeding with its Trans Mountain pipeline expansion that could absorb an estimated increase of 600,000 bpd of new oil sands production, boosting exports by 16 percent in the next two years.

These less than cheerful prospects generated a barrage of tough questions for Ceci, who was asked whether he thought the NDP could get re-elected on its latest budget, to which he ruefully replied: "I just want to win this news conference."

Cenovus touting assets

However, not everyone is ready to run up the white flag. Cenovus Energy, which pumps about 165,000 bpd from the oil sands, plus 55,000 bpd of conventional crude, is touting its assets as longer-term, more predictable investments.

"We're quite well positioned," Judy Fairburn, vice president of business innovations at Cenovus, told Houston's big annual energy conference earlier in March. "We've got the fight in us. Our business is competitive with light, tight oil."

see ALBERTA FINANCES page 16

EXPLORATION & PRODUCTION

Hilcorp applies for Kalotsa pad expansion

Hilcorp Alaska LLC has applied to Alaska's Division of Oil and Gas for permission to construct a 73,500-square-foot expansion to the Kalotsa gravel well pad in the Ninilchik gas field. The expansion would enable the number of wells that can be drilled from the pad to be increased from four to 12 — the wells will access the Susan Dionne Paxton participating area in the field, the company told the division. The expansion would also accommodate the production facilities, pipelines and other infrastructure needed to support the additional wells, the company said in its requested amendment to its Ninilchik plan of operations.

The Ninilchik field lies along the western coast of the Kenai Peninsula and has been developed from a series of onshore well pads.

The Ninilchik field lies along the western coast of the Kenai Peninsula and has been developed from a series of onshore well pads. Typically, directional drilling accesses offshore reservoir targets from the onshore pads.

The Kalotsa pad is the newest of the Ninilchik pads, having been constructed in October and November of 2016. The pad, about six miles northeast of the village of Ninilchik, lies on private surface land belonging to Ninilchik Native Association.

Petroleum News understands that Hilcorp has now drilled the first two of its Kalotsa wells. The company has clearly decided that significant additional drilling is warranted.

Construction of the pad extension will involve ground clearing, the placement of a pad liner, the placement of gravel over the liner and the construction of a containment berm. Construction should start in early May and take about a month to complete, Hilcorp's requested plan amendment says.

Drilling of the Kalotsa Nos. 5 and 6 wells should be conducted between July and December of this year, with the drilling of the Nos. 7, 8 and 9 wells to be conducted at some time between January and December 2018. The Nos. 10, 11 and 12 wells would follow, between January 2019 and December 2021, Hilcorp told the division.

—ALAN BAILEY

LAND & LEASING

Varied leases activity in February report

•The Alaska Department of Natural Resources terminated six North Slope leases operated by Great Bear Petroleum Ventures II LLC in February for failure to pay rent.

The leases were located in two clusters south of the Prudhoe Bay unit. ADL 392599, ADL 392601, ADL 392602 and ADL 392603 were in one cluster close to the trans-Alaska oil pipeline and included the ARCO N. Franklin Bluffs Unit No. 1 well. ADL 392608 and ADL 392626 were to the northwest. The leases were set to expire in 2025.

The state also approved the transfer of a 1.61 percent royalty interest in 31 leases operated by Great Bear Petroleum Ventures I LLC to Geokinetics USA Inc.

•The state terminated five North Slope leases operated by Doyon Ltd. for failure to pay rent. The leases — ADL 392444, ADL 392446, ADL 392447, ADL 392448 and ADL 392449 — are located in the Nenana basin, where the company has been exploring.

•As reported in this issue, the state terminated the Armstrong Energy LLC-operated Qugruk unit in late January. Its leases have now passed into their secondary terms.

Hilcorp Alaska LLC surrendered eight leases in February.

The first — ADL 393174 — was created by segregation as part of the fifth expansion of the Milne Point unit in early May 2016 and would have expired in late April 2025.

The remaining seven were in Cook Inlet. ADL 392227, ADL 392235 and ADL 392236 are near the Trading Bay unit. ADL 392243, ADL 392245, ADL 392248 and ADL 392252 are part of an un-unitized cluster of leases east of the Deep Creek unit in the southern Kenai Peninsula. All seven leases were set to expire in late April 2023.

—A copyrighted oil and gas lease map from Mapmakers Alaska was a research tool used in preparing this story.

—ERIC LIDJI

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ALBERTA FINANCES

She said Cenovus trimmed its breakeven price across its operations in 2016 to US$45 per barrel. Other producers such as Imperial and Husky Energy have also reported falling oil sands break-even prices.

Fairburn said her company has lowered costs at its in-situ facilities by extending its wells to record length and injecting solvents to mobilize bitumen.

OPEC members have started talking up basins with longer lead times such as the oil sands and offshore plays, arguing those long-life anchor developments are vital for the overall health of the industry.

But the bulk of investors continue to seek refuge in U.S. shale plays, which may not leave enough time for Notley to redirect her storm-tossed ship of state before the next election in 2019. ●

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BEAUFORT DRILLING

part-owner of federal outer continental shelf leases to the north of the field. Two of these leases are scheduled to expire in July of this year and the remainder, including all of the leases in the new unit, are scheduled to expire in December. The leases lie within the region of the relatively nearshore Beaufort Sea that President Obama did not withdraw from oil and gas activities late last year.

In May 2016 Mark Fesmire, Alaska director of the Bureau of Safety and Environmental Enforcement, told a meeting of the Society of Petroleum Engineers that Eni had been discussing with his agency the possible drilling of some wells into federal leases to the north of Nikaitchuq. Those wells would be some of the longest extended-reach wells drilled to date, Fesmire said.

Schrader Bluff formation

The producing oil reservoir for the Nikaitchuq field lies in the upper Cretaceous OA sands of the Schrader Bluff formation. However, Eni has also been considering oil development in the Schrader Bluff N sands. The Schrader Bluff is known to extend a long way out into the Beaufort Sea continental shelf, where it presumably presents oil and gas development opportunities. The formation sits within the Brookian sequence, the youngest and shallowest of the major North Slope oil and gas bearing rock sequences.

On the outer continental shelf the Brookian typically lies on top of major faulted blocks composed of older rocks. Brookian sands are thought to thicken in more downthrown rock sections between the faults.

However, development at Nikaitchuq has been challenging because of the compartmentalized nature of the sands and the relatively viscous 16 to 19 API oil. Eni has been using a combination of horizontal injection and production wells, employing both electric submersible pumps and water injection to boost oil production. The company has also been drilling horizontal, multilateral sidetrack wells that undulate their way through the sand bodies.

Dates back to 2000s

The discovery and development of the Nikaitchuq field date back to the mid-2000s, when Bill Armstrong, president of Armstrong Oil and Gas, pushed exploration of what was then called the Northwest Milne Point prospect. Armstrong is currently spearheading a major planned Nanushuk development to the east of the Colville River unit.

In 2004 Armstrong partnered with Kerr-McGee for exploration drilling at Northwest Milne Point: The resulting discovery was named Nikaitchuq. Eni ultimately bought out both Armstrong's and Kerr McGee's interests in the Nikaitchuq field, to become operator and 100 percent owner of the field.

In early 2008 Eni sanctioned the Nikaitchuq development. The development plan involved drilling from an onshore pad at Oliktok Point and from an artificial offshore island, situated in shallow water at Spy Island in the Beaufort Sea. An onshore processing facility at Oliktok Point would deliver crude oil to the trans-Alaska pipeline through a 14-mile pipeline, connected to ConocoPhillips' Kuparuk pipeline system.

Production in 2011

Initial production from Nikaitchuq started in 2011 from wells at Oliktok Point, with Spy Island production starting in November of that year. Since then Eni has conducted an active development program in the field. By the end of 2014 the production rate had reached more that 25,000 barrels per day. Developments have included the addition of lateral wells to existing wells, to improve the drainage of oil from the OA sands, and the drilling of multilateral wells.

In 2015 Eni completed a West Expansion Project, targeting an area to the west of the Spy Island drill site. In the third quarter of that year the company began an East Expansion Project with the drilling of a dual lateral production well. However, later that year, in response to the depressed oil price, the company suspended all Nikaitchuq drilling.

That drilling suspension continued through 2016. However, the company has recently filed a state plan of development indicating that "with hopes of a more favorable oil prices environment" drilling may restart in 2017 with the drilling of six wells from the Spy Island pad. At this point, it is not clear when the Spy Island extended reach drilling to the north into the new federal unit might begin.

According to data published by the Alaska Oil and Gas Conservation Commission, by the end of January this year the Nikaitchuq field had produced a cumulative total of 36.3 million barrels of oil. ●

—A Mapmakers Alaska map was used in researching this article.

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