Petroleum news

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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 January 22, 2017

NEWS NUGGETS

Compiled by Shane Lasley

GOLDRICH MINING CO.

Located just south of the Brooks Range, Chandalar is one of the northernmost and largest placer gold operations in Alaska.

Northern Alaska placer mine more than doubles gold in 2016

Goldrich Mining Co. Jan. 18 reported that the Chandalar placer gold mine in northern Alaska produced 10,209 ounces of alluvial gold, or roughly 8,200 ounces of refined gold, during the 2016 mining season. This is roughly a 117 percent increase over the 4,400 oz produced at the mine in 2015. Processing of pay gravel at this operation about 200 miles north of Fairbanks continued into late-September and preparations for the 2017 mining season were completed in mid-October. Production costs through the end of September were roughly US$7.9 million, or about US$961 per oz of fine gold produced. At the end of the production season in September, there were also general and administrative expenses of US$797,000 and other expenses of US $1,036,000. The Chandalar placer mine is operated by Goldrich NyacAU Placer LLC, a 50-50 joint venture owned by Goldrich and NyacAU LLC. All initial capital expenditures are being funded by NyacAU under terms of the joint venture agreement. To date, NyacAU has invested some US$30.8 million to develop the placer operation. Final numbers concerning the total amount funded by NyacAU, cost of goods sold, and other expenses may change as Goldrich and NyacAU are in discussions concerning certain accounting items. Prior to the formation of the joint venture, Goldrich outlined about 250,000 oz. of gold in a 10.5 million cubic yard alluvial deposit in Little Squaw Creek, averaging 0.25 oz. per ton gold. However, much of the gold recovered over the past two seasons has come from beyond the drill defined deposit, indicating a larger resource than currently outlined.

Alaska joins multi-state fight of 'one-size-fits-all' coal reg

Gov. Bill Walker Jan. 17 announced that Alaska has joined 12 other states in bringing a legal challenge to the U.S. Department of the Interior's Stream Protection Rule, which would place rigid restrictions on coal mines in the United States. In a complaint filed in U.S. District Court in Washington D.C., the 13 states allege that the rule exceeds the Office of Surface Mining Reclamation and Enforcement's statutory authority, infringes on states' constitutional sovereignty, and is otherwise arbitrary and capricious. "Despite repeated requests from states and direction from Congress, the federal agency failed to adequately consult with the states on the rule," said Alaska Department of Natural Resources

GOV. BILL WALKER

see **NEWS NUGGETS** page 8

MILLROCK RESOURCES INC.

Geologists investigate geology recently revealed by receding glaciers at Millrock Resource's Todd Creek property in the Golden Triangle region of northern British Columbia.

EXPLORATION

Spirit of optimism

Millrock looks to build on foundation as bulls return to mining markets

By SHANE LASLEY
Mining News

With C$2.5 million in the bank and roughly two dozen mineral exploration projects it has generated in Alaska, British Columbia, New Mexico and Mexico, Millrock Resources Inc. is prepared for a stellar 2017 as metals prices rise and a bullish sentiment returns to mining markets.

"While we will not underestimate the work ahead, we continue to carry forward into 2017 with a spirit of optimism," Millrock President and CEO Greg Beischer said. "The cycle seems to have changed, and we have positioned Millrock as best we possibly can to capitalize on a bull market in precious, base and energy metals."

GREG BEISCHER

As a project generator, Millrock aims to leverage its team's geological acumen by identifying and acquiring promising mineral prospects, completing preliminary exploration aimed at bolstering the project's potential and then vending them to a partner to fund the more advanced stages of exploration.

This business strategy allows the project generator to leverage the notoriously cyclical mining markets to its advantage by acquiring promising mineral properties at rock bottom prices when the bears reign and ready them for robust exploration when the bulls run.

Exploring The Last Frontier

While Millrock is not as Alaska-centric as it was prior to recent acquisitions of large swaths of mineral rich lands in British Columbia and Mexico, the Last Frontier continues to be an important part of the now more jurisdictionally diverse exploration company.

Going into 2017, Millrock's Alaska portfolio includes at least five properties prospective for gold and copper; and if the past is any indicator, this portfolio will grow before the calendars turn to 2018.

"Millrock plans to acquire and generate quality exploration projects and prudently advance them to the stage that will attract funding partners," the company said in a Jan. 16 update on the company's activities.

Late in 2015, Australia-based Vista Minerals Pty Ltd. entered into a joint venture agreement on Millrock's Stellar gold-copper property.

Located in Southcentral Alaska, the Stellar claims cover the Zackly copper-gold skarn deposit, which hosts a historical resource of 218,944 ounces of gold and 66.9 million pounds of copper contained in a deposit of 1.13 million metric tons grading 6.03 grams per metric ton gold and 2.69 percent copper.

In September, Vista flew induced polarization geophysical surveys over the west flank of Zackly and Jupiter, a separate copper prospect to the northeast.

The Jupiter occurrence is a 1,700- by 2,300-meter geochemical anomaly underlain by a corresponding magnetic high. One rock sample collected by Millrock in an area northwest of the main Jupiter prospect in 2013 returned 23 percent copper, an area Vista is interested in taking a closer look at.

Among the newest additions to Millrock's Alaska portfolio are gold exploration properties near Sumitomo Metal Mining's Pogo Mine in the Goodpaster mining district.

"So far, only one hard rock lode mine has been discovered in the Goodpaster mining district, and it is a very good one," Beischer said. "We believe that one day there will be multiple lode gold producers in the area."

In a quest to discover one of these future mines, Millrock accumulated six claim blocks blanketing 15,278 acres of this Interior Alaska district through a series of purchase and option agreements, as well as claim staking.

Collectively known as West Pogo, these properties are subject to a collaboration agreement signed with Australia-based Newcrest Mining Ltd., which entered into a collaboration agreement with Millrock in 2015.

see **MILLROCK OPTIMISM** page 10

Millrock Resources looks to build on foundation as bulls return to mining markets. Read more in North of 60 Mining News, page 7.

LNG opposition unrelenting

As quickly as governments and regulators open the routes to completion of LNG projects in British Columbia they get blocked by factions that want nothing to do with fossil fuel development.

And the Petronas-led Pacific NorthWest venture has again fallen victim to the opposition forces.

Two hereditary chiefs of the Gitxsan First Nation in northwestern British Columbia have launched the fourth Federal Court of Canada challenge of Pacific NorthWest, demanding a judicial review of the project, four months after it was given final approval by the Canadian government.

The Gitxsan traditional territory covers the area targeted for an C$11.4 billion LNG liquefaction plant and export terminal — part of an overall project that carries a price tag of C$36 billion — near Prince Rupert.

see **LNG OPPOSITION** page 16

Meet Alaska hears 40-year history, projections, concerns for future

The history of the oil and gas industry in Alaska and what might lie ahead were topics the Alaska Support Industry Alliance heard addressed at its annual Meet Alaska conference Jan. 13 in Anchorage.

Two of the speakers represented two of the North Slope's biggest companies; a third view came from a geophysicist who has worked for independents and for the state of Alaska.

The policy impact

Oil has been flowing down the trans-Alaska oil pipeline for 40 years this year and Damian Bilbao, vice president commercial ventures for BP Exploration (Alaska) addressed how the next 40 years can be enabled.

see **MEET ALASKA** page 11

EXPLORATION & PRODUCTION

Another big find

ConocoPhillips announces Willow oil discovery to west of Mooses Tooth 2

By ALAN BAILEY
Petroleum News

ConocoPhillips has announced a new oil find in the Greater Mooses Tooth unit in the northeastern National Petroleum Reserve-Alaska. Discovered by the Tinmiaq Nos. 2 and 6 exploration wells drilled in early 2016, the find, called the Willow discovery, could hold 300 million barrels of recoverable oil, the company said in a Jan. 13 press release.

Depending on the results of further appraisal drilling and the chosen development scenario, the field could produce at a rate of up to 100,000 barrels per day, the company said. ConocoPhillips has a 78 percent interest and Anadarko Petroleum a 22 percent interest in the find.

JOE MARUSHACK

A test using the Tinmiaq No. 2 well showed a flow rate of 3,200 barrels per day of light 44 degree API oil over a 12-hour period, ConocoPhillips said. The company said that it will further appraise the discovery through a 3-D seismic survey commencing in January. The find lies west and slightly north of the company's Mooses Tooth 2 development.

"This discovery is tremendously exciting not only for ConocoPhillips, but also for the state of Alaska," said Joe Marushack, president of ConocoPhillips Alaska. "Willow's proximity to existing infrastructure improves the economic via-

see **BIG FIND** page 15

GOVERNMENT

Regs changeable, maybe

What are chances of incoming administration rolling back Obama-era regulations?

By TIM BRADNER
For Petroleum News

Alaska's resources developers will find a sympathetic ear in the new Congress and Trump administration on regulatory issues, but it may take a long time before the "regulatory state" of former President Obama can be dismantled, if it even can.

Tim Doyle, vice president for policy and general counsel to the American Council of Capital Formation, a business-orientated Washington think-tank, presented a sober assessment of prospects at the Alaska Support Industry Alliance's annual "Meet Alaska" conference in Anchorage Jan. 13.

Bottom line: It will take time. However, there are hopes that some issues, for example the previous administration's special "Arctic rule" that loads up costs on offshore exploration and a new stream protection rule that adversely affects coal mines, including those in Alaska, Doyle told the Alliance.

In many cases undoing regulations will be as complicated as creating them in the first place and there may be limits.

In many cases undoing regulations will be as complicated as creating them in the first place and there may be limits. "For example, we just can't

see **REG ROLLBACK** page 16

PIPELINES & DOWNSTREAM

Hanoi Jane screened out

Joins call for end to developing oil sands, loses spotlight to pipeline expansion

By GARY PARK
For Petroleum News

It was almost as if the governments of British Columbia and Alberta decided to gang up on Jane Fonda, the Oscar-winning actress and anti-Vietnam War protester from a distant past, when she acquired the label Hanoi Jane.

Fonda, like film director James Cameron, singer Neil Young and actor Leonardo DiCaprio before her, made a 24-hour visit to Alberta on Jan. 11, taking a crash course in the oil sands by buzzing over the region in a helicopter, holdings a news conference flanked by a handful of Native leaders and delivering a speech in Edmonton.

In the process she took a stab at Prime Minister Justin Trudeau for signing on to a global climate agreement a year ago, then approving two pipeline projects to ship oil sands bitumen to markets in the United States and Asia.

Fonda also managed to offend Alberta government leaders by accepting an invitation to meet with them, then failing to show up, and capped her day by telling oil sands workers they should be looking for environmentally friendly jobs rather than continuing to work "in an industry that is unsustainable."

Trans Mountain gets green light

While she was cutting a swath across Alberta, British Columbia Premier Christy Clark announced her government had given a green light to Kinder

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Alaska - Mackenzie Rig Report

The Alaska - Mackenzie Rig Report as of January 18, 2017.
Active drilling companies only listed.

TD = rigs equipped with top drive units WO = workover operations
CT = coiled tubing operation SCR = electric rig

This rig report was prepared by Marti Reeve

Alaska Rig Status

North Slope - Onshore

Rig Owner/Rig Type	Rig No.	Rig Location/Activity	Operator or Status
Doyon Drilling			
Dreco 1250 UE	14 (SCR/TD)	Milne Point B-1	Hilcorp
Dreco 1000 UE	16 (SCR/TD)	Standby	
Dreco D2000 Uebd	19 (SCR/TD)	Alpine CD5-18	ConocoPhillips
AC Mobile	25	Standby	
OIME 2000	141 (SCR/TD)	Kuparuk 2M-38	ConocoPhillips
	142 (SCR/TD)	Kuparuk 2L-315	ConocoPhillips
Hillcorp Alaska LLC			
	Rig No.1	Milne Point	Hilcorp Alaska LLC
Nabors Alaska Drilling			
AC Coil Hybrid	CDR-2	Kuparuk 2F-18	ConocoPhillips
AC Coil	CDR-3 (CTD)	Kuparuk	ConocoPhillips
Dreco 1000 UE	2-ES (SCR-TD)	Deadhorse	Available
Mid-Continental U36A	3-S	Deadhorse	Available
Oilwell 700 E	4-ES (SCR)	Deadhorse	Available
Dreco 1000 UE	7-ES (SCR/TD)	Deadhorse	Available
Dreco 1000 UE	9-ES (SCR/TD)	Deadhorse	Available
Oilwell 2000 Hercules	14-E (SCR)	Deadhorse	Available
Oilwell 2000 Hercules	16-E (SCR/TD)	Mustang location	Available
Oilwell 2000 Canrig 1050E	27-E (SCR-TD)	Deadhorse	Available
Oilwell 2000	33-E	Deadhorse	Available
Academy AC Electric CANRIG	99AC (AC-TD)	Deadhorse	Available
OIME 2000	245-E (SCR-ACTD)	Kuparuk	Available
Academy AC electric CANRIG	105AC (AC-TD)	Deadhorse	Available
Academy AC electric Heli-Rig	106AC (AC-TD)	Deadhorse	Available
Nordic Calista Services			
Superior 700 UE	1 (SCR/CTD)		Available
Superior 700 UE	2 (SCR/CTD)	Prudhoe Bay	Available
Ideco 900	3 (SCR/TD)		Available
Parker Drilling Arctic Operating Inc.			
NOV ADS-10SD	272	Prudhoe Bay DS 18	BP
NOV ADS-10SD	273	Prudhoe Bay DSW-59	BP

North Slope - Offshore

BP			
Top Drive, supersized	Liberty rig	Inactive	BP
Doyon Drilling			
Sky top Brewster NE-12	15 (SCR/TD)	Stacked	
Nabors Alaska Drilling			
OIME 1000	19AC (AC-TD)	Oooguruk, Cold Stacked	Caelus Alaska

Interior Alaska

Doyon Drilling			
TSM 7000	Arctic Fox #1	Nenana, Stacked	

Cook Inlet Basin – Onshore

Glacier Oil & Gas			
	Rig 37	West McArthur River Unit Workover	Glacier Oil & Gas
All American Oilfield LLC			
IDECO H-37	AAO 111	In All American Oilfield's yard in Kenai, Alaska	Available
Aurora Well Services			
Franks 300 Srs. Explorer III	AWS 1	Stacked out west side of Cook Inlet	Available
Saxon			
TSM-850	147	Stacked	Hilcorp Alaska LLC
TSM-850	169	Stacked	Hilcorp Alaska LLC

Cook Inlet Basin – Offshore

Hilcorp Alaska LLC			
National 110	C (TD)	Platform C, Stacked	Hilcorp Alaska LLC
	Rig 51	Steelhead Platform, Stacked	Hilcorp Alaska LLC
	Rig 51	Monopod Platform, Drilling	Hilcorp Alaska LLC
Spartan Drilling			
Baker Marine ILC-Skidoff, jack-up		Spartan 151, Stacked Seward	
Furie Operating Alaska			
Randolf Yost jack-up		Drilling KLU A-2	Furie
Glacier Oil & Gas			
National 1320	35	Osprey Platform, activated	Glacier Oil & Gas
Kuukpik Drilling	5	King Salmon Platform	Hilcorp Alaska LLC

Mackenzie Rig Status

Canadian Beaufort Sea

SDC Drilling Inc.			
SSDC CANMAR Island Rig #2	SDC	Set down at Roland Bay	Available

Central Mackenzie Valley

Akita			
TSM-7000	37	Racked in Norman Well, NT	Available

JUDY PATRICK

Baker Hughes North America rotary rig counts*

	Jan. 13	Jan. 6	Year Ago
United States	659	665	650
Canada	315	205	227
Gulf of Mexico	24	23	26

Highest/Lowest

US/Highest	4530	December 1981
US/Lowest	404	May 2016

*Issued by Baker Hughes since 1944

● LAND & LEASING

Repsol adds interest in Armstrong leases

Royale, Savant, Woodstone lose or relinquish leases; ConocoPhillips adds Anadarko E&P Onshore as partner on Tofkat area leases

By ERIC LIDJI

For Petroleum News

Armstrong Energy LLC has transferred minority interest in 10 North Slope leases to its exploration partner Repsol E&P USA Inc., according to recent state lease reports.

The leases are scattered across the large leasehold that the two companies own.

Armstrong transferred 49 percent working interest and 40.83333 percent royalty interest in ADL 393169, ADL 393170, ADL 393171 and ADL 393172 to Repsol. The four leases are located immediately south of the former Tofkat unit and the village of Nuiqsut.

Armstrong also transferred 49 percent working interest and 40.83333 percent royalty interest in ADL 393166, ADL 393167 and ADL 393168 to Repsol. The three leases are north of the Tofkat unit, where the company had planned to drill the Pikka No. 1 well this winter. The company cancelled the project upon request of villagers, who worried about excessive activity this winter. ConocoPhillips Alaska Inc. is also planning a nearby exploration well this winter, and has agreed to share some results with Armstrong.

Armstrong transferred 25 percent working interest and 20.83333 percent royalty interest in ADL 393163, ADL 393164 and ADL 393165 to Repsol. The three leases are part of a larger block of acreage the companies hold in the area south of the Kuparuk River unit.

To date, the companies have focused their exploration activity almost entirely on the fairway between the Kuparuk River unit and the Colville River unit. The lone exception is the Kachemach No. 1 exploration well drilled on acreage south of Kuparuk. The recent transfers involve leases farther north and northeast of that earlier exploration well.

Armstrong plans to drill one exploration well this winter, the Horseshoe No. 1 well on ADL 392048, near the Meltwater satellite. In August 2016, several months before announcing plans to drill the well, Armstrong transferred a 25 percent working interest and 21.54167 percent royalty in the lease and two neighboring leases to Repsol.

Royale, Woodstone, Savant

The state terminated 28 leases held by Royale Energy Inc. for failure to pay rent.

The leases were contained within two swaths. The first included 16 leases in the area between the Kadleroshilik River and the Shaviovik River in the central North Slope. The second included 12 leases farther to the west, beyond the trans-Alaska oil pipeline.

Royale Energy recently departed Alaska after several seasons of preliminary exploration activities focusing on unconventional as well as some conventional oil targets. The state terminated nine leases held by Woodstone Resources LLC for failure to pay rent. The state terminated six of the eight leases — ADL 391940, ADL 391941, ADL 391942, ADL 391943, ADL 391944 and ADL 391945 — the company held in a bundle between the trans-Alaska oil pipeline and the Toolik River. Those terminated leases included the ARCO Alaska Nora Fed No. 1 well. The state also terminated three of the eight leases — ADL 391937, ADL 391938 and ADL 391939—the company held farther west. Those leases included the BP Exploration (Alaska) Inc. Itkillik Unit No. 1 well.

Savant Alaska LLC surrendered ADL 392098. The lease was located in the eastern North Slope, along the border with the Arctic National Wildlife Refuge. The lease was set to expire on Nov. 30, 2022. The lease was one of seven contiguous leases Savant held in the area, including one lease with the BP Exploration (Alaska) Inc. Yukon Gold No. 1 well.

Colville River unit deals

ConocoPhillips Alaska Inc. transferred a 22 percent working interest and 17.6 percent royalty interest in seven leases to Anadarko E&P Onshore LLC. The leases are associated with the former Tofkat unit, which the company wants to include in the Colville River unit. The two companies maintain a similar partnership at the Colville River unit.

The state is considering requests from the A. Ronald Nerland and Delores K. Nerland Living Trust 4-26-99 to transfer small royalty interests less than 1 percent in two leases — ADL 364470 and ADL 364471 — at the ConocoPhillips-operated Colville River unit to the Nerland Trust, David E. Nerland, the Nerland Family Trust and Lori Hennessy.

Cook Inlet deals

In the Cook Inlet basin, Peter G. Zamarello transferred 50 percent working interest and 43.75 percent royalty interest in ADL 391849 to Paul G. Craig. The offshore lease sits between the N. Trading Bay unit to the south and the Nicolai Creek unit to the north.

ConocoPhillips transferred working and royalty interest in the Beluga River unit to partners Chugach Electric Association Inc. and Municipal Light & Power. The two utilities recently purchased a greater interest in the field from the departing operator. The requested transfer of interests from ADL 17658 remains in the case file at the moment. ●

—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

EPA awards funding to cut diesel emissions

The Environmental Protection Agency has awarded $3.6 million in funding for initiatives aimed at reducing emissions from diesel engines in equipment such as school buses, trucks, agricultural machinery and generators. The funding comes under the terms of the federal Diesel Emissions Reduction Act and applies to the Pacific Northwest and Alaska, where the operation of the act is administered by EPA's West Coast Collaborative, a clean air partnership between the agency's Pacific Northwest and Pacific Southwest regions.

The newly funded projects target the use of diesel engines in economically disadvantaged communities with higher-than-average levels of asthma, heart disease and lung disease. The projects involve the replacement of old, polluting engines, or the installation of idle reduction and retrofit technologies to these engines.

In Alaska, as part of the new funding, the EPA has awarded $286,241 to the Alaska Energy Authority for the replacement of old diesel engines by modern engines in power generation systems. The state will provide $310,094 in matching funds, EPA says.

"By promoting clean diesel technologies, we can improve air quality to protect community health and support green jobs," said Dennis McLerran, regional administrator for EPA's Pacific Northwest office. "Public-private partnerships like the West Coast Collaborative are leading the way to reduce harmful diesel emissions and support local economic development."

—ALAN BAILEY

● GOVERNMENT

Hoffbeck: Tax credits need further review

Revenue commissioner says oil and gas tax system not broken, but state cannot sustain credits in chronically low-price environment

By STEVE QUINN

For Petroleum News

Department of Revenue Commissioner Randall Hoffbeck says the state's current tax system isn't as broke as some would have others believe. But it's not as stable as it could be, either, particularly in the tax credit sections. Hoffbeck says he's hoping the right changes — as opposed to emotional, ideological offerings — are made so the state has a more durable system that won't need any tweaking for years to come. Hoffbeck offered his view of the tax system and some features of the fall revenue forecast one week before lawmakers gaveled in Jan. 17.

Petroleum News: What's your overall assessment of the state's tax regime, its strengths and weaknesses?

Hoffbeck: One of the things I think a lot of people miss is the gross tax and the impact it really has on the net tax. When we are at $50 a barrel, the tax is close to 70 percent of the net with a 4 percent gross. That changes pretty dramatically when you get above $50. With these prices, there isn't a lot of money for anybody and I think sometimes the conversation causes a lot of political rhetoric and people don't recognize just how strapped everybody is at these prices. At these prices, we are collecting about as much as is a reasonable amount to collect. Some would argue too much. I don't see a lot of issue with the tax itself.

The credit is more of a problem: The open-ended credit program at these prices where we are not generating enough revenue to pay the credits yet we are still accruing the liability. That is where the biggest issue is at these low prices. There is some argument for a higher gross tax or less of a per-barrel credit as we move up to allow a little bit more revenue for the state. That's a good debate to have. At the upper end, that was purposeful to reduce the state's take at the upper end. ACES was seen as a little bit of an overreach and had to be pulled back a little bit. I think there is general consensus on that. I think there is some room for movement in the middle areas potentially: lower prices there is not a lot of money for anybody, upper prices think it's pretty solid where it's at.

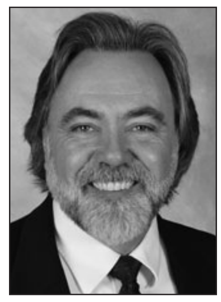
Petroleum News: Have you considered modeling the current tax system at extremely low and extremely high prices so people can get a broader view?

Hoffbeck: We have. In fact there is a new chart we have used a couple of times in meetings late fall and early winter that really lays out what the actual severance tax take is all the way essentially from $20 a barrel to $200. Once you get above $160 it's 35 percent. Anything below that it's something less than 35 percent. It's about a 10 percent rate where it goes into the gross tax, then it goes into new operating loss.

We've got it modeled. I think it will be part of the discussion this year. We really want to take a lot of the noise out of the discussion and have people just really look at the numbers.

Petroleum News: Let's go back to tax credits. Are they too costly or are there too many of them?

Hoffbeck: The numbers have been dramatically reduced with what they did last year in Cook Inlet and the expiration of credits on the North Slope. We are really dealing with the net operating loss credit. It's that open ended expense that we have no control over. They come in two flavors. We've got the reimbursable credits for the small producers, or the developers. That liability accrues regardless of oil price. Then you've got the net operating loss for the producers which only accrues if oil prices are below the high 40s. So it's really only the small producers and the non-producers are generating those cashable credits. It's kind of self-corrected on half of it although we would like to get that fixed so that if we do drop back to the low price environment in the future, we don't have these net operating loss credits that can drive the severance tax to zero.



RANDALL HOFFBECK

But, it's not quite as imperative as it was because the price recovered, but the cashable credits for the folks developing fields — that's still a huge potential liability. If you get a $10 billion development like you can have in Smith Bay, all of the sudden you're on the hook for $3.5 billion in credits and we have no revenue to pay those kinds of credits. We've got to have something that gives us control over those credits in the long run.

Petroleum News: Have you been meeting with industry players these last several months?

Hoffbeck: We have. The governor has met with them more than we have. Last summer (2015), Ken and I and Pat and some others, were doing a lot of leg work, but the governor this year has done a lot of the meetings himself to try to elevate the discussions to get people we need in the room to reach some resolution. So yeah we have been meeting and we have tried to stress to people the importance of coming up with a solution this year. The way I laid it out with them is right now we are paying credits with money from the CBR but if we bleed the CBR this year and we have to start paying credits with Permanent Fund earnings, I don't think the public is going to be very receptive to that. We've got to a point where we've got to get if fixed this year.

Petroleum News: in the past you've held town hall like meetings. Do you see that happening again?

Hoffbeck: I do. I did a couple of them this year. It was more along the lines of a broader fiscal plan. Oil and gas credits are part of the discussion, but it was more of the broader discussions. As occasions allow, we will do that more in the future. We want to keep the public engaged in the discussion. I think for the most part the public is pretty much aware of the issue we are dealing with.

Petroleum News: Getting back to the industry people for a minute, have you met with people who are already here or those we are considering coming up?

Hoffbeck: It's primarily folks who are already here. I think all the new players we met were last year. I don't think I met anyone who is considering coming up here. I guess that's not terribly surprising because people aren't really expanding during this low-price environment.

Petroleum News: On the credits, then, any idea how you're going to be able to pay down the back tax credits which is about $500 million right now?

Hoffbeck: Really three alternatives right now. One is the governor has proposed in his budget, which is essentially what he did last year with the veto, which is paying the statutory minimum. We will eventually whittle them down, but we won't whittle them down if we don't get some control over new credits that are developing. If we can get that under control and we would hope some of these fields come into production.

The second option is what the governor proposed last year but didn't get passed, and that's if we get a whole fiscal plan in place then we can pay off all the credits. We'll wipe the slate clean with one lump sum appropriation from the CBR. The other is the Legislature does what they have proposed the last couple of years, which is some level of payment but less than a full payoff. Either that one or the full payoff is going to require a full fiscal plan. Without a full fiscal plan in place, we won't be able to pay more than just the minimum.

Petroleum News: How do you prioritize? Is it first in, first out? There is a provision for local hire kicking in soon, correct?

Q AND A

Hoffbeck: It still first in, first out. With the legislation passed last year (HB 247) there was a provision in there that has a local hire priority that gets laid in on top of that first in, first out. We've got $500 million that are first in, first out that were accrued before the new statute so it will be a while before the local hire would come into play. Once those credits are paid down, the local hire would be first in, first out. After that, it would still be first in, first out but on the first out, they would be prioritized by local hire.

Petroleum News: Right now the administration doesn't have any bill on oil tax credits so what kind of discussion do you expect to have?

Hoffbeck: I'm sure we'll come to some resolution to see what oil and gas tax bills others may introduce. We are hoping to work more cooperatively with the Legislature this year. Last year we just introduced everything and then tried to carry a massive number of bills. We are hoping certain legislators will take on certain issues. Then we can sit back more in a support role or in an information role, then let either the House or the Senate carry the bills through. So

see HOFFBECK Q&A page 13

● EXPLORATION & PRODUCTION

AOGCC approves MGS pool rules

Regulatory changes follow recent state approval of field mergers, allows Hilcorp to consolidate operations into single unit

By ERIC LIDJI
For Petroleum News

The Alaska Oil and Gas Conservation Commission has approved a series of rule changes for the Middle Ground Shoal Oil Pool and the Middle Ground Shoal Gas Pool.

The administrative changes allow operator Hilcorp Alaska LLC to proceed with its efforts to consolidate the North Middle Ground Shoal field, Middle Ground Shoal field and South Middle Ground Shoal unit into a single Middle Ground Shoal unit. The Alaska Department of Natural Resources approved at boundary change for the new unit in September 2016. The new rule changes bring the consolidation to the operational level.

The local subsidiary of the Texas-based independent had asked the AOGCC to change the boundaries of the Conservation Order to match the expanded unit boundaries. The company also proposed a series of amendments meant to modernize operations.

Some of those changes included:

•Eliminating all well spacing restrictions except two: prohibiting any oil well within 500 feet of the order boundaries and any gas well with 1,500 feet of the order boundaries unless the leaseholder and the landowner are the same on both sides of the boundaries.

The AOGCC felt that eliminating the spacing requirements would "make further development of the field more viable and lead to increased recovery," while preserving the buffers from neighboring properties would protect correlative rights in the region.

•Allowing Hilcorp to consolidate production into a single oil pool and a single gas pool, and allowing comingled injection as well. Over the years, operations at the Middle Ground Shoal field involved three co-mingling production groups from seven oil pools.

The AOGCC found that the complex system of distinct pools "provides no benefit for reservoir management and monitoring, may hinder further development of the field and may reduce ultimate recovery" and that "combining the existing seven oil pools into a single oil pool will eliminate the need for a rule that governs commingling."

•Eliminating a restriction against drilling any wells on the boundary between ADL 17595 and ADL 18754, which were leased by different companies until the 2015 acquisition.

The AOGCC agreed that the rule was moot now that Hilcorp owned both leases.

•Using current regulatory standards for casing and cementing oil wells and allowing Hilcorp to propose alternative methods for completing gas wells, on a case-by-case basis.

•Eliminating bottom-hole pressure surveys and gas-to-oil ratio tests, which Hilcorp believes are no longer useful given the age of the field and the volume of existing data.

In both cases, the AOGCC felt that current regulations were sufficient.

Hilcorp acquired the three Middle Ground Shoal fields through two purchases.

The company bought the North Middle Ground Shoal field and its Baker platform and the South Middle Ground Shoal unit and its Dillon platform from Marathon Oil Corp.'s assets in the Cook Inlet region in 2012 and bought the Middle Ground Shoal field and it's A and C platforms from the ExxonMobil-subsidiary XTO Energy Inc. in 2015.

While the Baker and Dillon platforms have both been inactive for several years, Hilcorp has previously expressed an interest in finding a way to resume production from both. ●

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● EXPLORATION & PRODUCTION

Research reveals Japanese gas hydrates

Multiple deposits detected off country's west coast hold huge quantities of natural gas but development potential unknown

By ALAN BAILEY
Petroleum News

The latest edition of the National Energy Technology Laboratory's Fire in Ice publication has reported results from research into subsea methane hydrate deposits off the west coast of Japan. The report says that hydrates have been cored from some of the deposits, thus confirming the presence of the hydrates and allowing some estimates of hydrate quantities.

Methane hydrate is an ice-like solid with methane, the primary component of natural gas, trapped in a lattice of water molecules. The material, which can hold high concentrations of methane, is stable within a certain range of relatively high pressures and low temperatures. The hydrates occur naturally in various parts of the world, in situations where pressure and temperature conditions are appropriate to the material's stability. The material could become a source of natural gas as fuel, if a workable and economic production technique could be developed — hence Japan's interest in its methane hydrate resources.

Gas chimneys

The Fire in Ice report says that, unusually, the Japanese deposits are found in huge subsea gas chimneys, features where natural gas has in the past bubbled up through the subsurface rocks and presumably formed hydrates when mixed with water in the cold, relatively high pressure environment below the sea floor. Apparently the gas chimneys have given rise to distinctive mounds on the seabed. Research over the course of several years has revealed the existence 1,742 of these gas chimneys offshore Japan's west coast and around the island of Hokkaido, at the northern end of Japan. Individual chimneys may be anywhere from a few hundred meters to a kilometer in diameter, the report says.

Downhole logging while drilling into 33 of the chimney structures has indicated that the base of the zone in which methane hydrates would be stable may lie at a depth 100 to 120 meters below the seafloor. An investigation of one presumed hydrate mound using intensive logging while drilling techniques indicated the existence of massive hydrate deposits throughout the gas chimney above the stability zone base. Moreover, the coring of material within multiple gas chimneys resulted in the recovery of 27 hydrate-bearing cores. An analysis of these cores suggests that 35 to 86 percent of the material penetrated at each drill site consists of methane hydrate, the report says.

Successful tests

In 2013 Japan successfully conducted a test involving the production of methane from one of its offshore hydrate deposits by drawing down the pressure in the deposit over a period of a few days. And, according to a Platts report published a few months ago, the country is gearing up for another similar test.

But it appears that researchers are still a long way from proving the possibility of continuously sustained gas production at an economically viable cost.

Methane hydrate deposits occur in vast quantities near the base of the permafrost, onshore in Arctic North America, including under Alaska's North Slope. In 2007 the drilling of the Mount Elbert methane hydrate stratigraphic test well in the Milne Point unit on the North Slope tested and evaluated a hydrate deposit. In 2008 a depressurization methane hydrate production test in the Mallik well in the Mackenzie River Delta of northern Canada lasted six days. A further production test on the North Slope in 2012, involving the Ignik Sikumi No. 1 well, lasted a record 30 days.

And, intriguingly, methane hydrate dissociation has been credited for sustained gas production from the East Barrow gas field at the western end of the North Slope. If this theory for gas production from the field proves correct, the phenomenon would demonstrate the possibility of continuous gas production from hydrates through depressurization of the hydrate resource. ●

Contact Alan Bailey at abailey@petroleumnews.com

NORTH OF 60 MINING news

page 9 TMAC looks forward to first Hope Bay gold in February

www.MiningNewsNorth.com *The weekly mining newspaper for Alaska and Canada's North* Week of January 22, 2017

NEWS NUGGETS

Compiled by Shane Lasley

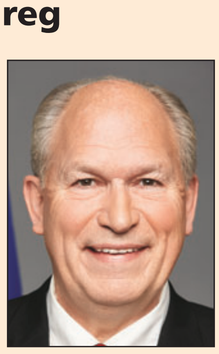
GOLDRICH MINING CO.

Located just south of the Brooks Range, Chandalar is one of the northernmost and largest placer gold operations in Alaska.

Northern Alaska placer mine more than doubles gold in 2016

Goldrich Mining Co. Jan. 18 reported that the Chandalar placer gold mine in northern Alaska produced 10,209 ounces of alluvial gold, or roughly 8,200 ounces of refined gold, during the 2016 mining season. This is roughly a 117 percent increase over the 4,400 oz produced at the mine in 2015. Processing of pay gravel at this operation about 200 miles north of Fairbanks continued into late-September and preparations for the 2017 mining season were completed in mid-October. Production costs through the end of September were roughly US$7.9 million, or about US$961 per oz of fine gold produced. At the end of the production season in September, there were also general and administrative expenses of US$797,000 and other expenses of US $1,036,000. The Chandalar placer mine is operated by Goldrich NyacAU Placer LLC, a 50-50 joint venture owned by Goldrich and NyacAU LLC. All initial capital expenditures are being funded by NyacAU under terms of the joint venture agreement. To date, NyacAU has invested some US$30.8 million to develop the placer operation. Final numbers concerning the total amount funded by NyacAU, cost of goods sold, and other expenses may change as Goldrich and NyacAU are in discussions concerning certain accounting items. Prior to the formation of the joint venture, Goldrich outlined about 250,000 oz. of gold in a 10.5 million cubic yard alluvial deposit in Little Squaw Creek, averaging 0.25 oz. per ton gold. However, much of the gold recovered over the past two seasons has come from beyond the drill defined deposit, indicating a larger resource than currently outlined.

Alaska joins multi-state fight of 'one-size-fits-all' coal reg



GOV. BILL WALKER

Gov. Bill Walker Jan. 17 announced that Alaska has joined 12 other states in bringing a legal challenge to the U.S. Department of the Interior's Stream Protection Rule, which would place rigid restrictions on coal mines in the United States. In a complaint filed in U.S. District Court in Washington D.C., the 13 states allege that the rule exceeds the Office of Surface Mining Reclamation and Enforcement's statutory authority, infringes on states' constitutional sovereignty, and is otherwise arbitrary and capricious. "Despite repeated requests from states and direction from Congress, the federal agency failed to adequately consult with the states on the rule," said Alaska Department of Natural Resources

see **NEWS NUGGETS** *page 8*

MILLROCK RESOURCES INC.

Geologists investigate geology recently revealed by receding glaciers at Millrock Resource's Todd Creek property in the Golden Triangle region of northern British Columbia.

EXPLORATION

Spirit of optimism

Millrock looks to build on foundation as bulls return to mining markets

By SHANE LASLEY

Mining News

With C$2.5 million in the bank and roughly two dozen mineral exploration projects it has generated in Alaska, British Columbia, New Mexico and Mexico, Millrock Resources Inc. is prepared for a stellar 2017 as metals prices rise and a bullish sentiment returns to mining markets.

GREG BEISCHER

"While we will not underestimate the work ahead, we continue to carry forward into 2017 with a spirit of optimism," Millrock President and CEO Greg Beischer said. "The cycle seems to have changed, and we have positioned Millrock as best we possibly can to capitalize on a bull market in precious, base and energy metals."

As a project generator, Millrock aims to leverage its team's geological acumen by identifying and acquiring promising mineral prospects, completing preliminary exploration aimed at bolstering the project's potential and then vending them to a partner to fund the more advanced stages of exploration.

This business strategy allows the project generator to leverage the notoriously cyclical mining markets to its advantage by acquiring promising mineral properties at rock bottom prices when the bears reign and ready them for robust exploration when the bulls run.

Exploring The Last Frontier

While Millrock is not as Alaska-centric as it was prior to recent acquisitions of large swaths of mineral rich lands in British Columbia and Mexico, the Last Frontier continues to be an important part of the now more jurisdictionally diverse exploration company.

Going into 2017, Millrock's Alaska portfolio includes at least five properties prospective for gold and copper; and if the past is any indicator, this portfolio will grow before the calendars turn to 2018.

"Millrock plans to acquire and generate quality exploration projects and prudently advance them to the stage that will attract funding partners," the company said in a Jan. 16 update on the company's activities.

Late in 2015, Australia-based Vista Minerals Pty Ltd. entered into a joint venture agreement on Millrock's Stellar gold-copper property.

Located in Southcentral Alaska, the Stellar claims cover the Zackly copper-gold skarn deposit, which hosts a historical resource of 218,944 ounces of gold and 66.9 million pounds of copper contained in a deposit of 1.13 million metric tons grading 6.03 grams per metric ton gold and 2.69 percent copper.

In September, Vista flew induced polarization geophysical surveys over the west flank of Zackly and Jupiter, a separate copper prospect to the northeast.

The Jupiter occurrence is a 1,700- by 2,300-meter geochemical anomaly underlain by a corresponding magnetic high. One rock sample collected by Millrock in an area northwest of the main Jupiter prospect in 2013 returned 23 percent copper, an area Vista is interested in taking a closer look at.

Among the newest additions to Millrock's Alaska portfolio are gold exploration properties near Sumitomo Metal Mining's Pogo Mine in the Goodpaster mining district.

"So far, only one hard rock lode mine has been discovered in the Goodpaster mining district, and it is a very good one," Beischer said. "We believe that one day there will be multiple lode gold producers in the area."

In a quest to discover one of these future mines, Millrock accumulated six claim blocks blanketing 15,278 acres of this Interior Alaska district through a series of purchase and option agreements, as well as claim staking.

Collectively known as West Pogo, these properties are subject to a collaboration agreement signed with Australia-based Newcrest Mining Ltd., which entered into a collaboration agreement with Millrock in 2015.

see **MILLROCK OPTIMISM** *page 10*

NORTHERN NEIGHBORS

Compiled by Shane Lasley

ATAC RESOURCES LTD.

Realgar, the orange colored mineralization in this drill core, is an arsenic mineral commonly found in Carlin-style gold deposits. This sample is from a hole drilled in the Osiris zone at Atac Resources' Rackla project in the Yukon that averaged 4.08 grams per metric ton over 82.29 meters.

Atac steps up drilling at Rackla gold project

Atac Resources Ltd. Jan. 17 announced plans for a C$10 million exploration program at its Rackla gold project, an extensive land package that stretches roughly 185 kilometers (114 miles) east-west across central Yukon Territory. This fully-funded program will include roughly 15,000 meters of drilling focused on expanding high-grade gold mineralization at the Nadaleen and Rau trends. At Rau, a 20-kilometer-long (12.5 miles) trend towards the western end of the Rackla project, Atac plans to complete core drilling to test the newly discovered Tiger East anomaly and other targets related to the Tiger gold deposit. In 2016, the company published an updated preliminary economic assessment for a mine at Tiger that would produce roughly 302,300 ounces of gold over a six-year mine life from ore averaging 3.81 grams per metric ton gold. Estimated pre-production capital costs for this operation are C$109.4 million and life-of-mine sustaining capital costs are expected to be C$8.3 million. At Nadaleen, about 90 kilometers (55 miles) east of Tiger, Atac is planning core drilling aimed at expanding high-grade gold structures at the Conrad and Osiris zones, where the first Carlin-style gold mineralization was discovered in Canada. The company is also planning exploration drilling at the nearby Anubis Cluster gold zones and other high priority geochemical targets in the area. "We have successfully advanced the Rackla gold project through challenging markets while maintaining a healthy treasury and preserving our capital structure," said Atac President and CEO Graham Downs. "We are very well-positioned going into a busy and exciting year as we take advantage of the economies of scale that have previously returned excellent results and new discoveries at the Rackla gold project."

Production climbs at Imperial's BC mines

Imperial Metals Corp. Jan. 18 reported that its share of 2016 production from three British Columbia mines totaled 119.17 million pounds copper, 94,930 ounces gold and 330,960 oz. silver, up from the 88.13 million lb copper, 44,710 oz gold and 224,530 oz of silver produced in 2015. The 2016 totals include the first full year of operations at the Red Chris mine in northern B.C.; copper and gold produced at the re-opened Mount Polley Mine in the central part of the province; and Imperial's 50 percent share from eight months production at Huckleberry, a smaller operation that was placed on care and maintenance in August. The Red Chris Mine produced 83.61 million

see **NORTHERN NEIGHBORS** *page 9*

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NEWS NUGGETS

Commissioner Andy Mack. He said the "one-size-fits-all" rule does not consider Alaska's unique geography and environment. In addition to the legal challenge, Alaska Attorney General Jahna Lindemuth joined several other attorneys general in sending a letter to Congress, urging it to consider using the Congressional Review Act to overturn the rule. CRA allows Congress to overturn rules issued by federal agencies by passing a joint resolution of disapproval, which would prevent the rule from taking effect. "Within the last few weeks, federal agencies have taken multiple actions that impede responsible resource development in our great state," said Governor Bill Walker. "This is one of the worst. I sincerely hope that Congress will use its power to overturn it. If not, we are filing the lawsuit to fight it." Published in the Federal Register on Dec. 20, the Stream Protection Rule is scheduled to take effect on Jan. 19.

Northern Dynasty set to raise at least US$32.6 million in popular financing

Northern Dynasty Minerals Ltd. Jan. 11 announced plans to raise US$25 million, a financing that quickly swelled to US$32.56 million due to the immediate demand for the shares being offered. The original bought deal offering – made through a syndicate of underwriters co-led by Cantor Fitzgerald Canada Corp., TD Securities Inc. and BMO Capital Markets – involved 13.52 million Northern Dynasty shares at US$1.85 each. As a result of strong demand, Northern Dynasty said it had increased the offering to 17 million shares on Jan. 12. Additionally, the underwriters were granted the option to acquire another 2,028,000 shares up to 30 days after the closing of the offering, which could increase the overall financing by US$3.75 million. Northern Dynasty has agreed to pay a 5 percent cash commission to the underwriters. Northern Dynasty will use the net proceeds to ready its Pebble Project in Southwest Alaska for permitting. The first step of this process is to complete its strategy to persuade the U.S. Environmental Protection Agency to lift its pre-emptive limitation on a mine that can be developed at the enormous copper-gold-molybdenum deposit and allow a the project to be vetted under the existing state and federal permitting process. At the same time, the Pebble Partnership – currently owned solely by Northern Dynasty – will continue environmental monitoring, engineering and environmental studies, field investigations and related technical studies to finalize a proposed development plan for Pebble. Northern Dynasty said it also will use the money raised for enhanced political, regulatory and stakeholder outreach, and other corporate needs. ●

Petroleum news

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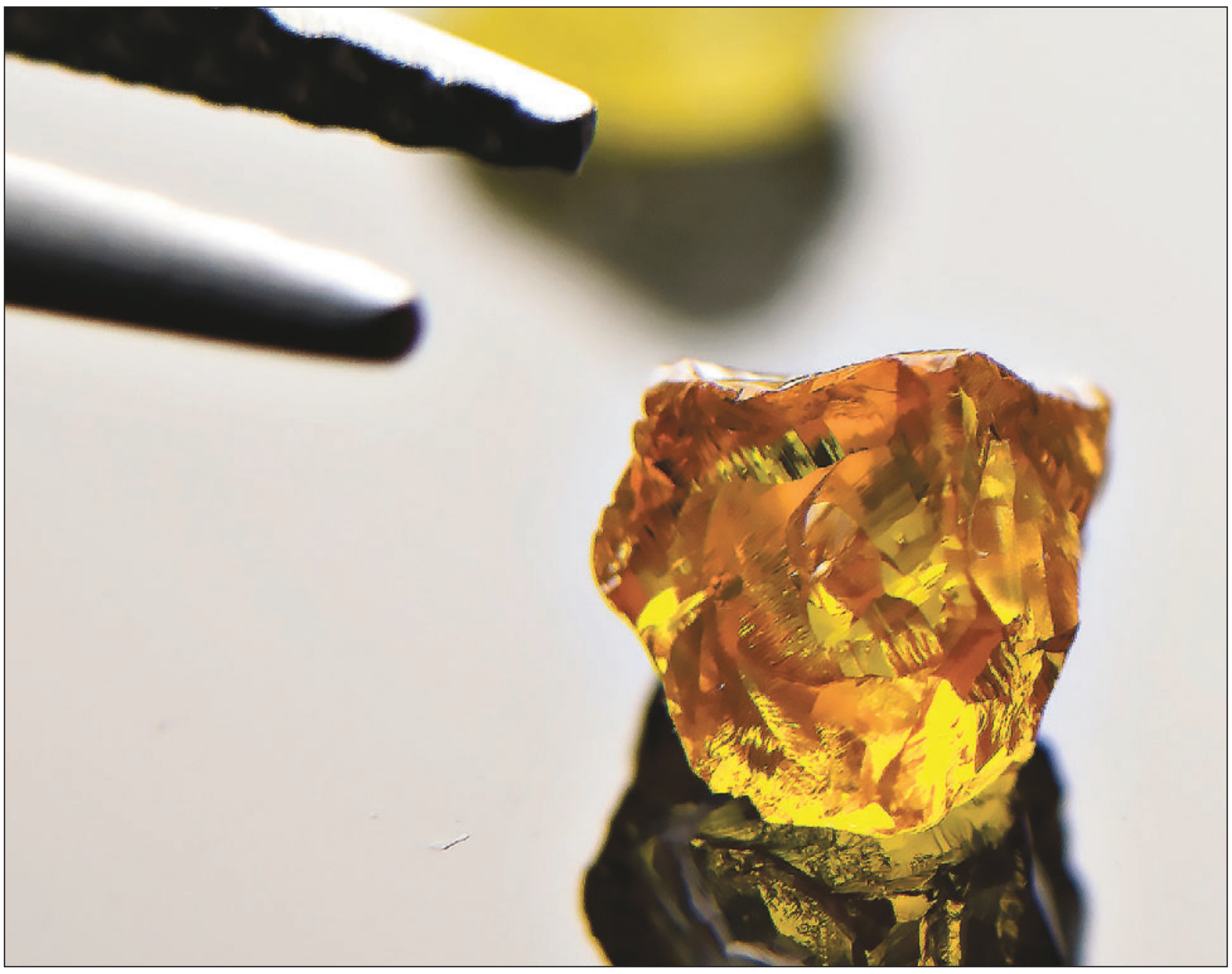
NORTHERN NEIGHBORS

lb of copper in 2016, which is 1.6 percent less than the low end of Imperial's 2016 guidance for the operation. The 47,090 oz of gold produced at this northern B.C. operation, however, was about the midpoint of the company's target for the year. For 2017, Imperial is targeting the production of 85 million to 92 million lb of copper and 40,000 to 45,000 oz gold at Red Chris. Imperial's Mount Polly Mine produced 25.34 million lb of copper and 46,440 oz of gold in 2016, both of which were slightly below the low end of the company's guidance for last year. The Vancouver, B.C.-based mining company is targeting 26 million to 29 million lb copper and 55,000 to 60,000 oz of gold produced at Mount Polly in 2017.

North Arrow cuts deal for ownership of Q1-4

North Arrow Minerals Inc. Jan. 17 said it has agreed to acquire Stornoway Diamond Corp.'s interests in Qilalugaq and Pikoo, which will give North Arrow full ownership of both northern Canada diamond projects. Under terms of the agreement, North Arrow will acquire Stornoway's roughly 18 percent interest in the Qilalugaq project in Nunavut and 15 percent interest in the Pikoo project in Saskatchewan in exchange for 2 million North Arrow common shares. Stornoway will retain 0.5 percent and 1 percent gross overriding royalties on diamonds, and 0.5 percent and 1 percent net smelter returns royalties on base and precious metals mined from Qilalugaq and Pikoo, respectively. North Arrow has also agreed to pay C$2.5 million and C$1.25 million to Stornoway at the time that first royalty payments for Qilalugaq and Pikoo, respectively, are due. "The agreement announced today allows North Arrow to consolidate our ownership of the Qilalugaq and Pikoo projects without up-front cash payments and provides the company with greater flexibility to manage continued evaluation of two of the most compelling exploration stage diamond projects in Canada," said North Arrow President and CEO Ken Armstrong.

Qilalugaq hosts the Q1-4 kimberlite, which contains a population of fancy orangey yellow diamonds that are unique in Canada. North Arrow said it has mobilized a drill to Naujaat, a community about nine kilometers (5.5 miles) from Q1-4. The company plans to carry out a drilling and sampling program there this spring and summer.



NORTH ARROW MINERALS INC.

Bulk sampling of the Q1-4 kimberlite at North Arrow's Qilalugaq in Nunavut has turned up a number of rare yellow diamonds.

Back River gold goes back to Nunavut review board

Sabina Gold & Silver Corp. Jan. 13 said the Minister of Indigenous and Northern Affairs Canada, has determined that the Back River gold project should be returned to the Nunavut Impact Review Board for further consideration. Late in 2015, Sabina submitted an environmental impact statement for a 3,000-metric-ton-per-day mine focused on Goose, one of the properties that comprise the larger Back River project, to NIRB. In June, the review board recommended that INAC Minister Carolyn Bennett not advance Back River to the next phase of permitting at this time. Bennett said the report submitted by NIRB is "deficient with respect to some ecosystemic issues" and has returned the Back River report to the board for further review or public hearings. "There were a number of areas where there was insufficient information presented in the (NIRB) report to support the conclusions of the board, and where further information is required so that the ministers may understand the rationale behind the conclusions presented by the board prior to making a decision on whether the project should proceed," she wrote in a June 12 letter explaining the INAC decision. Sabina says it has received broad based Inuit support for its Back River gold project in the Kitikmeot regions and is confident that there are no unresolvable issues and looks forward to working with the NIRB and others to address any outstanding concerns. "We understand and support the NIRB's desire for a high level of confidence in the mitigation and management proposed and believe that we have defined programs to address their issues," said Sabina President and CEO Brue McLeod. Sabina is now awaiting direction from the NIRB on how the additional review of the Back River gold project is to proceed.

Late in 2015, Sabina submitted an environmental impact statement for a 3,000-metric-ton-per-day mine focused on Goose, one of the properties that comprise the larger Back River project, to NIRB.

Road funds good news for Nico cobalt project

Fortune Minerals Ltd. Jan. 12 reported federal funding for the construction of an all-season road to Whati, a Northwest Territories community about 50 kilometers (30 miles) south of Fortune's Nico cobalt-gold-bismuth-copper project. Following an existing winter route, the Tlicho Road will span 97 kilometers (60 miles) between Whati and Highway 3. The federal government will provide up to 25 percent of the costs to build this road. "Replacing the existing winter road to Whatì will reduce challenges associated with impacts of climate change, create new employment and training opportunities for residents, result in more reliable and efficient delivery of goods, and provide new opportunities to develop our territory's economic potential," explained Wally Schumann, transportation minister, Northwest Territories. The road is also a key element to developing Nico, a mine that would produce cobalt, along with gold, bismuth and copper as by-products. Over the past two decades, Fortune has invested more than C$115 million advancing Nico from an in-house discovery to a development stage project that includes a planned mine and concentrator in the Northwest Territories and refinery in Saskatchewan. According to 2014 feasibility study, mineral reserves at Nico will support a 21-year mine that would average 1,615 metric tons of battery-grade cobalt; 41,300 ounces of gold; 1,750 metric tons of bismuth; and 265 metric tons of copper per year. Fortune has already received its environmental assessment approval and the major permits needed to build the mine, including a 50-kilometer (30 miles) spur road to Whati. The Tlicho Road would provide a route for concentrates to be trucked to Hay River where it would be loaded on railcars for delivery to Fortune's proposed refinery in Saskatchewan. Completing this development would make Fortune an important supplier of cobalt materials needed to manufacture lithium-ion batteries. "With cobalt and gold prices firming, and greater certainty of an all-season road, Fortune is well-positioned to secure the financing needed to begin construction of the Nico mine," said Fortune CFO David Massola.

TMAC nears first gold

TMAC Resources Inc. Jan. 11 said it anticipates producing between 130,000 and 140,000 ounces of gold during the first year of production at its Hope Bay Mine in the Kitikmeot region of Nunavut. The company said commissioning of the processing plant is progressing smoothly and the first saleable gold is expected in early February. Commercial production for the initial 1,000-metric-ton-per-day recovery plant is slated to be reached by the end of the first quarter. "Ore is starting to move through the processing plant, tailings pipeline construction is nearing completion, the crushing, grinding, gravity and flotation circuit is largely commissioned and we are working towards final commissioning of the concentrate treatment circuit," explained TMAC CEO Catharine Farrow. For the balance of 2017, TMAC will focus on doubling of gold production by the end of the year. A second processing plant is currently under construction and is slated for ocean delivery this summer and brought online by the end of the year. In addition to ramping up production, the company plans to continue a robust exploration program at Hope Bay. The 2017 exploration and evaluation activities will include 16,000 meters of underground drilling at the BTD zone of Doris, a recent discovery that has added to the high-grade gold currently being mined; and 14,000 meters of drilling at Naartok and Boston, two other deposits found on the 1,100-square-kilometer (425 square miles)Hope Bay property. ●

TMAC RESOURCES INC.

Following the August delivery of the gold processing plant, TMAC Resources had the final pieces needed to begin commissioning of its newly developed Hope Bay gold mine in Nunavut.

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MILLROCK OPTIMISM

Millrock said its 2016 program at West Pogo, which consisted of core re-logging and surface sampling, has defined a corridor worthy of drilling.

Millrock generated a new Alaska copper-gold exploration project in 2016 through a deal it cut with Corvus Gold Inc. for Chisna. In addition to a prospective land package located near a highway 64 miles south of Tok, the Chisna project included a database of roughly US$11 million worth of exploration work previously carried out on the property.

Millrock's Alaska portfolio also includes: Apex El Nido, a high-grade gold project in Southeast Alaska; and Liberty Bell, a road-accessible project prospective for copper-gold porphyry and associated gold deposits about 70 miles (115 kilometers) south of Fairbanks.

The company dropped Alaska Peninsula, AUDN and Humble copper projects in Alaska.

MILLROCK RESOURCES INC.

The Zackly deposit at Millrock Resources' Stellar project in Alaska hosts a historical resource of 218,944 ounces of gold and 66.9 million pounds of copper contained in a deposit with 1.13 million metric tons of material averaging 6.03 grams per metric ton gold and 2.69 percent copper.

Into Golden Triangle

Before markets began to recover in earnest last year, Millrock was able to leverage the bottom of the cycle to acquire three properties – Todd Creek, Poly and Oweegee Dome – that blanket roughly 217 square miles (562 square kilometers) of the Golden Triangle in northern British Columbia.

Todd Creek, which lies immediately south of Pretium Resources Inc.'s Brucejack project, shows the potential for precious metals-rich volcanogenic massive sulfide deposits similar to the historic Eskay Creek Mine located 37 miles (60 kilometers) to the northwest.

Poly, located about six miles (10 kilometers) southeast of Todd Creek, is prospective for both volcanogenic massive sulfide and epithermal gold deposits.

Oweegee Dome, which lies immediately northeast of the Brucejack property, is prospective for the gold-vein, porphyry copper-gold and polymetallic VMS deposits for which the Golden Triangle is renowned.

To ready Oweegee Dome for drilling, Millrock had a ZTEM airborne geophysical survey flown over the project late in 2016. Short for Z-Axis Tipper Electromagnetic, ZTEM is an innovative airborne electromagnetic system capable of deep penetration and identification of conductive zones at depth.

"This survey will complement the existing geophysical information that we acquired along with the property when we purchased it. We now have all project information in a database and will use all data at hand to develop drill targets for testing in 2017," explained Millrock Chief Exploration Officer Phil St. George.

In June, Millrock added to its Golden Triangle land position with the acquisition of Willoughby, a high-grade gold-silver property located five miles (eight) kilometers south of Poly.

To round off its move into northwestern B.C., Millrock acquired an exploration operations facility complete with an office, storage area, a core cutting facility in Stewart, a mining town within the southern corner of the Golden Triangle.

"This facility will make an excellent base of operations for continued exploration of Millrock's existing projects in the Golden Triangle, and for those we generate in the future," explained Beischer.

Speaking of Millrock's B.C. portfolio, Beischer said the company is "optimistic about the likelihood of finding partners to fund exploration on these projects."

Golden Mexico portfolio

While continuing its work in the north, Millrock has built a large portfolio of 15 gold properties in Sonora, northwestern Mexico.

In 2016, the project generator cut a deal with Centerra Gold Inc. on two of these projects, Los Chinos and Los Cuarentas. Under the option agreement, the Canada-based gold producer can earn a 70 percent interest by completing US$5 million in exploration expenditures over a five-year period at Los Chinos, and US$2 million at Los Cuarentas.

After entering an option on the property, Centerra invested C$1.2 million on surface exploration and drilling at Los Chinos.

Following its initial exploration, Centerra agreed to spend US$250,000 on an exploration alliance with Millrock aimed at developing new exploration targets in Sonora.

"Centerra has already taken on two of our Sonora gold projects. We are pleased that Centerra has now shown confidence in our Mexico exploration team by entering this strategic alliance," said Beischer.

Red Basin, Millrock's single project in New Mexico is primarily a uranium exploration project that also has the potential for base and precious metals deposits.

Coming out of the mining sector's five-year bear market with a large and diversified portfolio of exploration projects, Millrock feels it is stepping into the bull market on good footing.

"We now have an extensive exploration property portfolio diversified across four excellent mining jurisdictions, and the company is being actively funded by partners," explained Beischer. "With continued excellent scientific work, supportive funding partners and shareholders, we have the potential to make a transformative discovery in the coming year." ●

ALTERNATIVE ENERGY

AEA awards new emerging energy grants

Two projects receive funding under round of awards that is focusing on electrical microgrid technologies that may be used in Alaska

By ALAN BAILEY

Petroleum News

The Alaska Energy Authority has awarded grants to two projects under round three of the agency's Emerging Energy Technology Fund. The grants go to Ocean Renewable Power Corp. for a microgrid control application being developed and tested in the village of Igiugig, and to the Fairbanks North Star Borough, to demonstrate the use of a gasification combined power and heat system, AEA announced on Jan. 11.

The purpose of the Emerging Energy Technology Fund is to facilitate the testing in Alaska of emerging technologies for energy supplies or energy conservation. The idea is evaluate new energy technologies; to improve or find different ways of using existing technologies; and to deploy established technologies that have not been used in Alaska but are commercially viable elsewhere.

Focus on microgrids

During a Jan. 11 meeting of the AEA board, AEA Lead Economist Cady Lister explained that round three of the EETF funding is particularly focusing on the use of microgrid technologies in Alaska — a microgrid, in this context, is a small-scale electricity supply grid of a type that operates in, for example, a rural Alaska village. The U.S. Department of Energy is particularly interested in microgrid technology and, for Alaska, has offered a $250,000 grant that requires a one-to-one funding match. AEA has about $750,000 available in state funds for the EETF program but has decided to only use money that is supported by matching funds, Lister explained.

The ORPC project in Igiugig will receive a $210,000 award from AEA, matched by a $210,000 DOE grant. The project is testing technology that enables the integration of wind, hydrokinetic and diesel power in the village. The Fairbanks North Star Borough project is receiving a $209,000 AEA award, which the borough is matching — this project will also use $120,000 in contributions from other sources.

Earlier rounds

Two earlier rounds of EETF funding took place in 2012 and 2013, with AEA, the Denali Commission and some other funding sources all contributing to the total cost of $16.5 million for the selected projects, Lister said. For those two rounds, AEA received nearly 100 grant applications and issued 19 project awards. Of these projects, 10 are complete or nearly complete, Lister said. The projects include the testing of heat pump usage in cold conditions; the use of thermal shutters and doors for energy conservation; the use of flywheels for stabilizing fluctuating power supplies; and a system for improving the efficiency and safety of stove pipes.

Lister said that benefits gained from the EETF program include the continuation of programs in Alaska that have received a kick start from EETF funding and have then been able to also attract investors and participation from national laboratories, universities and private equity. The program has also aided in the development of two technology test beds that can now be used in conjunction with non-EETF funded projects. Those test beds consist of the hydrokinetics test bed at Nenana and the Alaska Center for Energy and Power's power system integration laboratory in the University of Alaska Fairbanks, Lister said. ●

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MEET ALASKA

BP, operator of Prudhoe Bay, the North Slope's largest field, remains committed to Alaska, is proud of its legacy and believes there is still a lot of resource to play for, Bilbao said. By some estimates, he said, there are more than 70 billion barrels to go after on state and federal lands on the North Slope.

Bilbao emphasized the impact of policy on investment, noting that while global and Lower 48 investment spiked beginning in 2009, Alaska investment was flat.

(The state passed a new oil tax, ACES, Alaska's Clear and Equitable Share, in late 2007. But as oil prices spiked, ACES, which had not been modeled at high oil prices, made the state temporarily wealthy — while investment went elsewhere. ACES was replaced with Senate Bill 21 in 2013, but that failed to model very low oil prices, which occurred after the price began to drop in 2015.)

At low prices, such as the $43 per barrel price in the Department of Revenue's 2016 Fall Forecast, the state makes $7 per barrel in royalty and taxes, Bilbao said, while the cost to produce a barrel of North Slope oil — operating, capital and transportation — is $48 per barrel, putting producers $12 in the hole per barrel.

He showed a Wood Mackenzie chart projecting the cost of producing the incremental oil supply in 2025, with 8 million barrels per day of liquids production worldwide costing less to develop than Alaska's resources, and only 4 million bpd costing more to produce, a challenge for the state.

As Alaska policy develops, BP will be looking at four things, Bilbao said: Does the policy encourage more oil down the trans-Alaska oil pipeline? Does it extend the life of the backbone fields on the North Slope, Prudhoe and Kuparuk? Does it encourage more independents to look for oil and gas? And it is a policy which doesn't pick winners and losers, something which BP believes leads to unintended consequences, Bilbao said.

Investment and innovation

Corri Feige is a geophysicist with 30 years of experience, 20 years of that in Alaska, where she worked for independent oil and gas companies. Most recently she

Oil has been flowing down the trans-Alaska oil pipeline for 40 years this year and Damian Bilbao, vice president commercial ventures for BP Exploration (Alaska) addressed how the next 40 years can be enabled.

was director of the Alaska Division of Oil and Gas, a position she left in August.

Feige talked about what moved the state's industry for 40 years, and what would make 40 more years happen, with a focus on investment and innovation.

While discovery of the Swanson River field in Cook Inlet in 1957 resulted in statehood, the 1960s made the state's dreams come true, she said, from infrastructure development and more discoveries in Cook Inlet to the discovery of Prudhoe Bay, followed by Kuparuk and Milne Point, and the $900 million North Slope lease sale.

Investment drives Alaska innovation, she said, and innovation continues today, with production technologies, enhanced oil recovery, drilling technology, well completions and new plays and discoveries.

These innovations are based on investments made just before the oil price decline and that innovation will drive the next 40 years, Feige said. The state had a single oil and gas tax program from 1977 to 2006, she said and under that program, ELF, industry withstood catastrophic price collapse and grew when price recovered, she said.

But in the last 10 years there have been four tax changes, each requiring project economics to be recalculated, and for investment bankers that creates 100 percent risk, Feige said.

If the state's vision is 40 more years of vibrant industry, a stable, business-minded fiscal policy is necessary: the state needs to chase the vision not the money, Feige said.

The image of Alaska currently is that it's a risky climate, she said, and a course correction is required to ease uncertainty. Unpaid tax credits are a particular concern, she said, and holding them hostage could mean that as the price recovery commences Alaska will miss opportunities because money won't come here.

On an optimistic note, Feige said she believes the state will make the needed course correction.

Exxon and gas investment

ExxonMobil's Steve Butt, senior vice president for Alaska gas and formerly AKLNG project manager, reviewed Exxon's history in Alaska with a focus on gas commercialization. ExxonMobil, he said, is the largest owner of discovered gas on the North Slope, holding 36 percent of Prudhoe Bay and 62 percent of Point Thomson.

The company has access to significant resources, Butt said, and has made multiple attempts to commercialize that gas, working with the state through the years, including under the Stranded Gas Development Act, under the Alaska Gas Inducement Act and most recently under Senate Bill 138 on the Alaska LNG Project.

Butt reviewed principles for success of a large project: a gated process for project development and a focus on alignment, risk and cost.

Point Thomson is the first move to large-scale gas development, he said, with the field currently producing 11,000-plus barrels per day of condensate, and cycling more than 200 million cubic feet per day of gas. Point Thomson was completed under budget and on schedule, Butt said, with an investment of some $4 billion, 62 percent funded by ExxonMobil.

For AKLNG, which is moving to a state-run project, a gated process was used, along with industry best practices and an integrated "best player plays" team.

The work done on costs for AKLNG reached the low end of the $45 billion to $65 billion range, he said, but at the end the cost of supply was not competitive, which means the project wouldn't pass the next gas.

ExxonMobil recommended pausing and working on reducing costs, but that wasn't acceptable to the state, Butt said. The state sees an opportunity to reduce the cost of supply with tax exempt status and low-cost financing, and ExxonMobil supports the state, he said, because it wants the project to succeed and is providing access to all pre-FEED work at no cost, with extensive technical, regulatory handover work complete.

The company never requested any payment and completed several agreements by year end.

Butt said he thinks there is a path forward, including wellhead sale of gas. He said next steps require providing the Alaska Gasline Development Corp. with access to Alaska LNG LLC assets — the land purchased at Nikiski for the LNG facility; coming to a mutual agreement on bilateral wellhead gas sales; and durable and predictable terms, including fiscals, to underpin required upstream investments.

—KRISTEN NELSON

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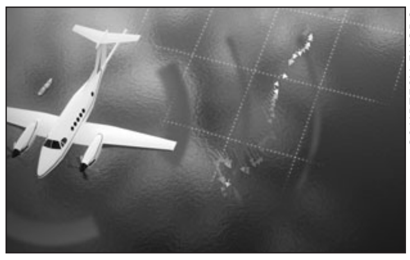
Petroleum news

Oil Patch Bits

Fugro presents new ocean current measurement tool


COURTESY FUGRO

The Geophysical Society of Alaska's Jan. 12 meeting featured a presentation on remote ocean current imaging system, a high resolution airborne imaging system capable of measuring near surface currents over large areas. The system was developed and commercialized by Fugro with technology partner Areté Associates to improve the accuracy and efficiency of ocean current observations in support of offshore oil and gas activities. Using high-resolution airborne photography, the system images surface waves and retrieves surface current data from the Doppler shift of successive surface wave images. In addition to a technology overview, Fugro presented results of recent project work in the Gulf of Mexico and opened the floor to discussion on potential Alaska applications. The audience, whose backgrounds included oil and gas, seismic operations, oceanography, marine traffic, and aerial survey, identified scientific studies, search and rescue, and marine construction as potential uses in the state.

aeSolutions announces CSIC open house in February

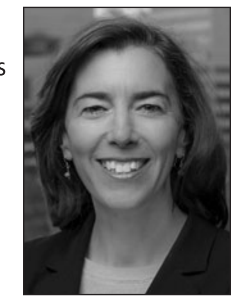
aeSolutions wants to formally invite you to its control systems integration center open house to be held Feb. 1. The open house will be held at: 12050 Industry Way, Unit O-1, Anchorage, Alaska 99515 from 4-7 p.m.

There will be food, drinks, demos and expertise. Tour the climate-controlled space for testing systems up to 10,000 I/O; experiment with burner management system demos; connect with local automation suppliers and get your problems solved. Attendants can RSVP through aeSolutions website by Jan. 25.

For more information and to RSVP go to www.aesolns.com/events/control-systems-integration-center-open-house-rsvp-125/.

Stoel Rives appoints new partner in Anchorage

Stoel Rives LLP is pleased to announce that Ramona L. Monroe, in the firm's Anchorage office, has been promoted to partner. Monroe is one of 13 Stoel Rives attorneys who became new partners at the firm effective Jan. 1. Monroe's promotion continues the firm's commitment to grow its Anchorage office through client value, diversity and innovation, which are keystones of Stoel Rives' corporate culture and commitment to excellence.


RAMONA MONROE

Monroe's practice focus is natural resources law for the oil and gas industry, mining industry and renewable energy sector. Notably, she has been the seconded attorney for ConocoPhillips Alaska Inc., Alaska's largest oil producer. She was an integral part of the team helping Furie Alaska Operating LLC to establish the first oil production platform in Cook Inlet in the last 15 years, securing $165 million in financing, obtaining clear title and permits, and complying with government regulations.

Monroe holds a law degree from Lewis and Clark Law School. In addition to her legal practice, she is trustee-at-large of the Rocky Mountain Mineral Law Foundation, serves on the board of directors of the Alaska Miners Association and is past president of the Alaska Association of Professional Landmen.

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HOFFBECK Q&A

depending upon whether the House or the Senate introduces anything on oil and gas taxes or credits will dictate whether the governor introduces a bill or not, but if they don't introduce one I fully expect the governor then would eventually put one into play. It's important that we get that credit piece under control.

Petroleum News: Why do you think you came up short on HB 247?

Hoffbeck: I think there was a lot of concern on the North Slope that a credit package similar to Cook Inlet would impact some fairly high-potential field developments. With Cook Inlet, the issue was energy security for the major population centers for Alaska. The credits worked. The gas was discovered. The fields were online. There wasn't a lot of reason to keep the credits in Cook Inlet. People felt more strongly with the Repsol, Armstrong and then of course with Caelus in Smith Bay, they felt there were some fields that needed to have some support and they weren't willing to take as big a bite out of it as they did in Cook Inlet. And quite frankly, Armstrong and Caelus did a pretty good job of lobbying the Legislature last year. The Legislature moved about as far as they were willing to go last year. I'm hoping they will be will be able to move just a bit further this year and we can get that new operating loss credit under control.

Petroleum News: Through your various roles throughout the state, you've seen how the oil industry affects the state or the borough you've worked for. You've seen enough changes in tax regimes, so why is it so difficult to get a stable tax regime?

Hoffbeck: That's a good question. When we came out of ELF, the work done in Gov. Murkowski's administration to create PPT was driven largely by the numbers and that ELF over the years had broken down. It wasn't working anymore. There was the idea that if we have a net tax, we can incentivize developing more expensive fields. There were a lot of reasons to go to a net tax. It was pretty well thought out. ACES was a reaction to the corruption issues that surfaced in relation to passing that bill, so it swung too hard against industry.

The pendulum swung back really hard when industry pushed back against ACES. I think we've got one more move to get it in the middle where it can be more stable. I think everybody wants it to be stable. But it's got to be something that enough

> *"The state needs to treat the industry the way the companies treat each other. They all want to succeed, but they are going to hold everybody to doing their fair share."* **—Revenue Commissioner Randall Hoffbeck**

people on both sides think it's fair enough that it doesn't become a campaign issue or they just feel it's unfair enough that they have got to change it.

The other issue is we became so dependent on oil and gas revenues over the year that we kind of came to expect that they would always pay for everything. Now the reality with low production and with low price, they can't pay for everything. There are some people who can't get their head around it. There are some people who think there is enough money out there that we can go get it from the oil industry again. The numbers just aren't there. Part of it is that it's just a reality check of 30 to 40 years of a free ride. People are having a little trouble adjusting to the reality is the oil industry is not going to be able to support everything anymore. It's taken a little while for people to get their head around it.

Petroleum News: Would you consider ACES and SB 21 an emotional reaction?

Hoffbeck: I think there was a lot of emotion on that. I think there was some failed analysis, too. I don't think ACES really fully modeled the impact of high oil prices. I don't think anybody expected it to run up to $140 a barrel and see what kind of impact that had on the government take. It was very obvious that SB 21 didn't model low oil prices. It just wasn't modeled low enough to figure out when you hit those outlier price environments. I think that modeling has been done pretty well now. Hopefully, people can smooth it out around the edges and make it a little more palatable. I think it's a good argument and a good discussion to have. I know that there are several groups doing competitiveness studies to see how our tax regimes competes with other states, to see whether or not we are too high or too low.

I think we are moving to a place where it can sit for a significant amount of time and not be whipsawing industry back and forth. I'm not the industry's biggest supporter; I'm not the industry's biggest opponent. I just see them as our partner. We need to hold each other accountable. The state needs to treat the industry the way the companies treat each other. They all want to succeed, but they are going to hold everybody to doing their fair share. The state needs to do the same thing. I think we are close. I think we are close to being in that place. I think there is one more iteration out there before we get there.

Petroleum News: Let's talk about the production forecast methods. You decided to use in-house personnel rather than consultants. What drove the change?

Hoffbeck: Two things. One is budget cuts. We were spending in excess of $100,000 a year for the Department of Revenue to hire a consultant to do production forecasting while DNR had in-house folks were doing the same thing. So do we need that redundancy? It was nice in past years to have the ability to double check everything. When we were looking at taking money out of the budget then it seemed reasonable that we could rely on DNR's work. They have petroleum engineers. They have reservoir engineers. They have the capacity to make good forecasts. Secondly, when we looked at the information the consultants were using, which was publicly available data and looked at what DNR has, which is a lot of proprietary data, we were thinking DNR has better information. It just made more sense for us to look to DNR to do the work.

Petroleum News: How do you feel this has played out the first year?

Hoffbeck: We'll see. I've asked DNR for a briefing to get a better handle on what they see for individual fields. My staff worked directly with them when they did the forecasting. I haven't got that deep into the details of it. I want to get a better feel for it. The key is going to be just how on how quickly the fields have a negative response to the reduced investment that's occurring right now. DNR expects a quick response and it shows up in their forecast. I think we were all surprised by the forecast for next year. I expected it to be a little higher than that. I challenged them on their numbers. They were comfortable on where their numbers are. If ever there was a fallacy in the forecasting the Department of Revenue did, in the mid-term it tended to be overly optimistic. With the DNR forecast it's going to be a lot closer to what actually happens.

Petroleum News: So were figures too optimistic in previous forecasts?

Hoffbeck: A lot of it came from how they risked new field developments. There was always the issue of these are what the development plans say and this is what the reservoir modeling or the decline curve analysis said should happen. Assuming everything is going to happen the way it's supposed to, this is how it should work out. But things never seemed to happen the way they were supposed to. There were development delays. There were corrosion issues. Things didn't seem to happen quite the way people plan. I think in our forecasts of the past, we never really risked that sufficiently. DNR did risk things differently this year and I think that's part of what you're seeing. ●

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FINANCE & ECONOMY

GCI expanding North Slope broadband

GCI Communication Corp. wants to build a small communication center at the Southern Miluveach unit as part of an ongoing effort to improve North Slope communications.

The company recently applied to the state to lease some 1,600 square feet at the North Slope unit for a new communication tower and two telecommunications buildings.

The state Division of Mining, Land & Water is taking comments through Feb. 13. The division received no offers when it solicited competing bids for the area late last year.

The proposed 25-year lease would allow GCI to build the center at the northeast corner of the Mustang pad at the Brooks Range Petroleum Corp.-operated Southern Miluveach unit. The company expects to install the first 10-foot by 24-foot telecommunications building immediately after acquiring the lease and the second building around 2019 or 2020. The project would also include an 85-foot lattice communication tower.

According to GCI, the proposed communication center is part of a long-term plan to "bring terrestrial high speed broadband services" to the nearby village of Nuiqsut and also to "generally improve broadband service on the North Slope." The tower would "serve as a link to other towers and expand the communications service area."

—ERIC LIDJI

GOVERNMENT

AOGCC proposes fining Nordaq $771,000

By ALEX DEMARBAN

Alaska Dispatch News

State oil regulators are threatening to hit an independent oil and gas company with $771,000 in fines for failing to properly seal two exploration wells in the Cook Inlet region, and for failing to respond to proposed enforcement actions.

A senior adviser for the company, Nordaq Energy, said it hopes to avoid the sanctions by completing the required work this spring and summer.

Nordaq is a small oil and gas explorer formed in 2009 that has projects on the North Slope in addition to the Inlet area. It owns 17.5 percent of the leases in the potentially giant oil field owned largely by Caelus Energy at Smith Bay.

Caelus announced in October that the field, on the Slope, contains about 3 billion barrels of recoverable oil, though key tests to help verify that number have not been completed.

The Alaska Oil and Gas Conservation Commission, chief environmental and safety regulator for oil and gas wells, has expressed frustration with independent oil and gas companies new to Alaska, which it says are not following rules.

It has issued an unusually large number of fines and other enforcement actions in the last two years to force compliance, by companies like Hilcorp Alaska, the dominant oil and gas company in the Inlet and a big player on the Slope.

A batch of new companies in recent years has been attracted to Alaska by the state's generous oil and gas tax credits that paid up to 65 percent of explorers' costs.

The Legislature last year agreed to phase out Inlet credits by 2018 and may consider scaling back Slope credits this year. The state tax policy helped encourage a Chinese company, Chinanx Investment Group, to heavily invest in Nordaq in 2014, the two companies said, according to news articles.

The two wells subject to proposed fines in Southcentral are Nordaq's Tiger Eye 1 natural gas exploration well on the west side of the Inlet, across the water and northwest of Nikiski. The Shadura-1 natural gas exploration well is located about 15 miles northeast of Nikiski in the Kenai National Wildlife Refuge.

The commission issued letters to Nordaq Energy dated Dec. 2, calling on the company to pay the $2.5 million needed to cover the costs of the work, or to apply with the commission to do the work.

Proper abandonment and plugging of wells, such as capping with cement, prevents an unused well from leaking liquids or gases into the environment.

"Nordaq is not ignoring its obligations and duties, but there have been other circumstances with third parties involved that limited Nordaq from doing the work immediately," said Bob Warthen, Nordaq's senior adviser.

He said other private companies had decided not to take over the wells to pursue further activity. That left the cleanup responsibility to Nordaq.

Warthen said the lower portion of the wells had previously been plugged with cement. He said the company is pursuing permitting approval from the commission to properly plug and abandon the wells this spring and summer, including using cement to plug the upper portion of the wells.

"We have inspected them every year, and they're not leaking" gas or other fluids, said Warthen.

The commission said Jan. 13 it will hold public hearings on April 4 in association with the alleged violations. Public comment will be collected until the day of the hearing.

Cathy Foerster, commission chair, said the violations are straightforward.

"Before you give a lease back, you the plug the wells," she said.

Nordaq drilled the Tiger Eye 1 well on a state lease in 2012, the agency said in the letter addressed to Warthen, signed by Foerster. The company surrendered the Tiger Eye leases in January 2016, and the state terminated the Tiger Eye unit in October, the letter said.

The commission intends to impose $150,000 in fines for that well.

Nordaq drilled the Shadura-1 well in 2012 on a lease owned by Southcentral regional Native corporation Cook Inlet Region Inc. CIRI notified the AOGCC Nordaq's leases had been terminated in June 2015.

The commission intends to fine Nordaq $621,000 for not properly plugging and abandoning the Shadura well.

Nordaq plans to plug and abandon the Shadura well by the April 4 meeting, Warthen said. It's a wintertime operation only, because traveling on snow helps protects tundra in the wildlife refuge.

Warthen said plugging and abandoning the Tiger Eye well is limited to operations in summer because a barge is needed to deliver supplies across the Inlet, after sea ice is not a hazard.

Warthen said the company hopes to avoid the fines by doing the work. ●

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FONDA VISIT

Morgan's plans to triple capacity to 890,000 barrels per day on its Trans Mountain pipeline from the oil sands to an export tanker terminal in the Port of Vancouver.

She said the "unprecedented" agreement would see Kinder Morgan contribute up to C$1 billion over 20 years to a fund for environmental protection.

Clark also said the environmental certificate clearing the way for Kinder Morgan to start construction comes with 37 conditions, in addition to the 157 conditions required by the National Energy Board.

To meet requirements previously set by the B.C. government, the proponent will address concerns raised by aboriginal groups, including impacts on vegetation, wildlife, parks and protected areas, along with measures to curb greenhouse gas emissions and respond to any spills on land or water.

A joint statement by Environment Minister Mary Polak and Natural Gas Development Minister Rich Coleman said the C$6.8 billion project "will have economic benefits for British Columbia workers, families and communities. However, we have always been clear economic development will not come at the expense of the environment."

Those thoughts were echoed by Alberta Premier Rachel Notley, who welcomed the decision by her neighboring province.

Ian Anderson, president of Kinder Morgan Canada, welcomed the "milestone," expressing confidence that corporate sanctioning is likely by September, allowing shipments to start by late 2019.

However, Notley did caution that some aboriginal and environmental groups, along with the city governments of Vancouver and Burnaby, are still threatening to mount further legal action against Kinder Morgan.

"We are closer than ever to breaking our landlock (on the offshore export of bitumen) and fixing a problem that has dogged our province for decades," she said.

Fonda challenged

But Notley did not pass up the opportunity to deliver an extensive broadside at Fonda, accusing the Hollywood celebrity of "not knowing what she is talking about."

In lecturing the oil sands workers, Fonda had demonstrated that "she is super tone-deaf," Notley said.

"I would suggest that dining out on your celebrity is something that one ought to also pair with knowledge and research. She didn't do that and I don't think as a result much of her intervention requires or deserves the air time it's getting," she said.

Notley was especially annoyed that Fonda urged Alberta to reduce its greenhouse gas emissions and transition to a sustainable green economy, apparently unaware that Alberta has introduced North America's toughest carbon tax.

Robbie Picard, founder of a pro-industry Oil Sands Strong group, confronted Fonda, asking if she was aware that the Fort McKay First Nation, which occupies a large chunk of the oil sands region, had just invested C$250 million in the resource, while almost 300 aboriginal-owned businesses were benefiting from oil sands development.

"We will no longer tolerate celebrities coming here for a day to take a ride over the oil sands, then attacking us," he said. "I thought clearly that she was not being informed about the good things that industry is doing, like land reclamation. Unfortunately, she just ran off."

Picard said Fonda's visit was insensitive to the thousands of people who lost their homes in last May's Fort McMurray wildfire and have since lost their jobs.

Fonda responded that she was "not here to trash Alberta, to trash Fort McMurray or the men and women who work in the tar sands. That's not our purpose. We are at a moment in human history that is absolutely unique. This has never happened before."

To that, Notley said "what we really need is to have well-informed, adult conversations," not the observations of someone who bases her views on a whistle-stop visit then "climbs into her jet and flies back home." ●

Contact Gary Park through publisher@petroleumnews.com

On one hand, on the ...

In late November, Canada's Prime Minister Justin Trudeau approved major expansions of two pipelines to transport more than 1.8 million barrels per day of crude bitumen from the Alberta oil sands to United States and Asian markets.

On Jan. 13, speaking to a town hall meeting in Ontario, he said Canada should "phase out" the oil sands.

"You can't make a choice between what's good for the environment and what's good for the economy," Trudeau said when challenged to explain how he could reconcile his introduction of a carbon tax on oil sands production while endorsing new pipelines.

"We can't shut the oil sands down tomorrow. We need to phase them out. We need to manage the transition off of our dependence on fossil fuels."

In the process he seemed to undercut a budding friendship with Alberta Premier Rachel Notley, who was quick to counter that the oil sands are "not going anywhere, any time soon."

She said oil and natural gas will help power the global economy for generations to come "and our job is to make sure that Alberta's product is the first in line. That's why we're working with the industry to position Alberta as a global energy leader ... the most progressive and sustainable producer of oil and gas anywhere in the world."

Other political leaders in Alberta were less diplomatic, with Brian Jean, leader of the opposition Wildrose Party, saying Trudeau "has confirmed Albertans' worst fears about his Liberal government and its plans for our energy sector."

"By vowing to 'phase out' the oil sands he has declared his true feelings towards our province and Western Canada as a whole."

Jean said he was "sick and tired of people attacking our oil sands. I truly would suggest that Mr. Trudeau keep his comments to himself when he doesn't know what he is talking about."

Jason Kenney, a leading contender to win leadership of the Alberta Conservative Party, asked if Trudeau's objective was to "hand over all global oil production" to Saudi Arabia, Iran and Qatar.

Alberta Liberal leader David Swann, a long-time critic of oil sands development, said that given the "current international economic climate, the (Alberta oil) industry does not need more uncertainty about its future. We need our prime minister to not only support this industry, the economic engine of the country, but to communicate that clearly."

Under fire, Trudeau's office issued a statement that he and previous prime ministers, including his immediate successor Stephen Harper, "have been saying for a long time ... that we need to move away from our dependency on fossil fuels."

In 2014, prior to the collapse of oil prices, the oil sands contributed C$91 billion to Canada's gross domestic product.

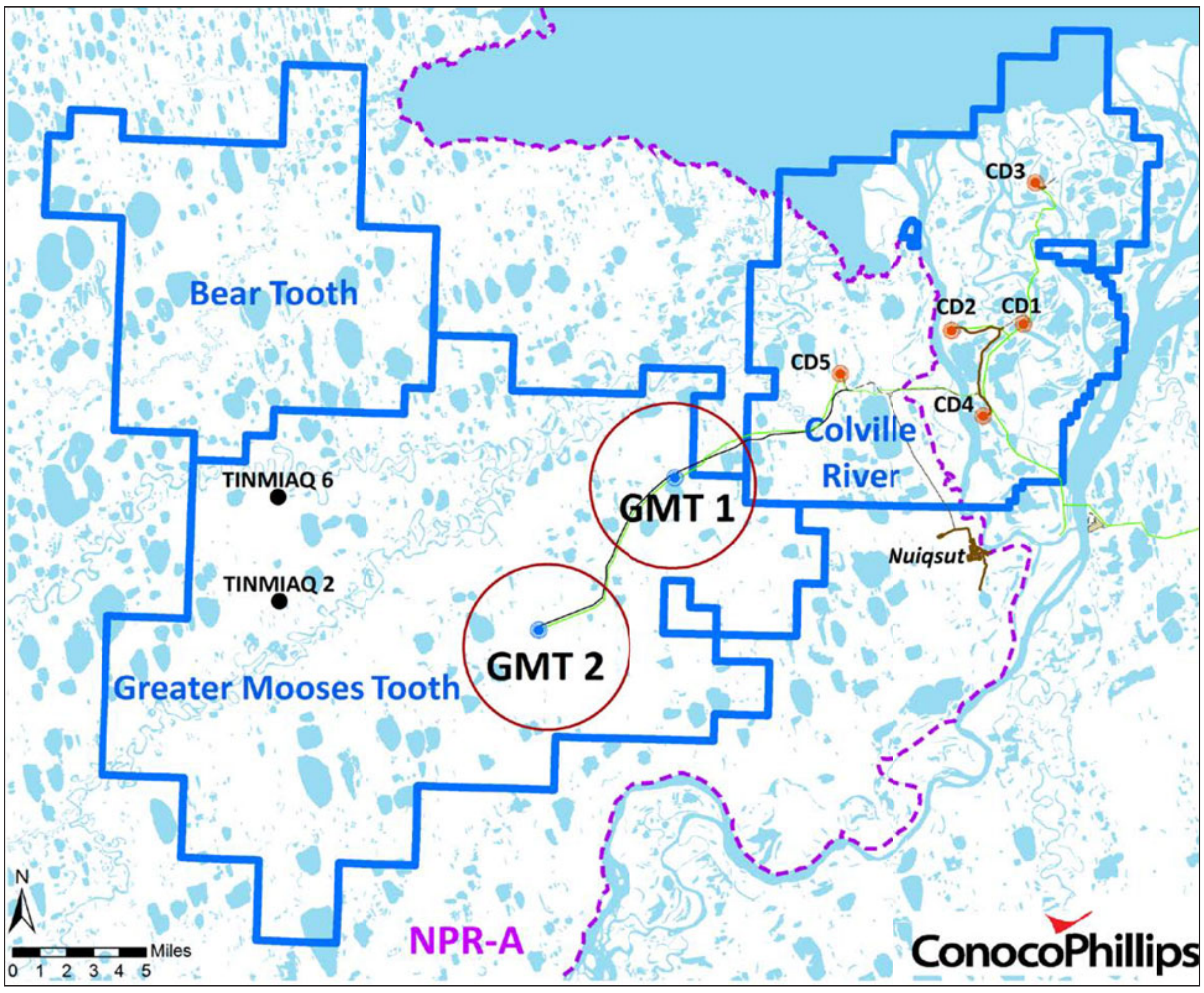
The Canadian Association of Petroleum Producers has projected oil sands output will rise by 850,000 bpd by 2021 and grow by about 50 percent from last year's level to 3.7 million bpd.

The "speed at which technology is developing continually makes them more of a viable opportunity," said CAPP President Tim McMillan.

Kevin Birn, director of the Canadian oil sands for IHS Energy, noted that oil sands mines are designed to have operating lives of 40 years, while steam-driven projects are built for a 25- to 35-year timeframe.

"We think that at some point after 2030 you'll see projects that are 30 or 40 years old begin to near the end of their natural life," he said.

—GARY PARK



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bility of the discovery. Development of Willow, a potential multi-billion-dollar investment, could provide thousands of jobs during construction and could generate substantial revenue for the federal government, state, North Slope Borough, and communities in the NPR-A."

Gov. Bill Walker commended ConocoPhillips on its discovery.

"I congratulate ConocoPhillips on its exciting and promising Willow discovery in NPR-A," Walker said. "This is just one more piece of good news we've received from Alaska's oil and gas explorers in recent months, and it demonstrates that Alaska remains an attractive place to do business and look for oil."

Nanushuk play

ConocoPhillips said that the discovery is in the Nanushuk formation, a part of the Brookian sequence, the youngest and shallowest of the major petroleum bearing rock systems on the North Slope. The two wells were each drilled to vertical depths of just over 4,200 feet.

During a talk at the Alaska Support Industry Alliance's Meet Alaska conference on Jan. 13, Marushack said that the Willow discovery represents a new oil play for ConocoPhillips. As a follow-up to the discovery and as an avenue to pursuing the play, the company purchased neighboring acreage in the December 2016 state and federal lease sales: 65 tracts amounting to 594,972 acres in the federal sale, and 74 tracts amounting to 142,280 acres in the state sale. The federal tracts were purchased jointly with Anadarko Petroleum,

"We've got running room now to test that new play on state lands and onto federal lands," Marushack said, also commenting that, although the play probably extends west from Willow, the play is blocked in that direction by land within NPR-A that has been withdrawn from oil and gas leasing.

Major NPR-A step out

Marushack said that Willow represents a major step-out from the company's developments at Greater Mooses Tooth 1 and Greater Mooses Tooth 2. ConocoPhillips has teams working on figuring out the most appropriate development scenario for Willow, with a key decision revolving around whether the new field is developed as a satellite of the Alpine field, or whether the field will have its own standalone production facilities. As a satellite field, production would probably be limited to some 40,000 or 50,000 barrels per day, while standalone facilities could enable that higher level of 100,000 barrels per day to be reached, Marushack said.

Following the drop in the price of oil in the past couple of years, ConocoPhillips has an annual capital budget of about $5 billion, with around $1 billion of that being allocated to Alaska, Marushack said. That Alaska spend supports developments such as the GMT-1 and GMT-2 projects, as well as supporting the company's North Slope exploration efforts. But, if Alaska projects are delayed, the capital allocated to those projects will be diverted to projects elsewhere. In particular, Alaska, with its relatively high cost environment, now competes for investment dollars with shale oil developments elsewhere in North America, Marushack said.

He said that ConocoPhillips had drilled 29 exploration wells in Alaska since 2000, about three-quarters of the exploration wells drilled in the state during that time period. However, the company did not drill any exploration wells between 2009 and 2013 because of the very high taxes in those years, he commented.

Two significant concerns

When it comes to developing Willow, ConocoPhillips has two significant concerns: the need for a regulatory and permitting environment that is reasonable and makes sense, and the need for stakeholder alignment coupled with a stable tax structure.

"A stable tax policy is absolutely critical," Marushack said, later commenting that any increase in taxes would put the company's North Slope development projects at risk.

Marushack said that the state provides much help with project permitting, including federal permitting. ConocoPhillips also works with the Alaska congressional delegation and with the Native communities.

"We've got this four or five pronged approach on how we are working these developments, and that's what we need to do," Marushack said.

Cost cutting

ConocoPhillips has driven down its costs in Alaska over the past couple of years. However, when compared with the flexibility of ramping shale oil developments up and down, projects in Alaska face the challenges of having to conduct development work during the winter, typically from ice roads, and of incurring the cost of transporting oil down the trans-Alaska pipeline to market.

And given the need to maximize the trans-Alaska pipeline throughput and to maintain a thriving contractor community, the legacy producers on the North Slope are happy to see more companies operating on the Slope, Marushack said. Stories about the three big producers wanting to lock up the North Slope oil industry for themselves "could not be further from the truth," he said.

Marushack said that he is particularly worried about there being enough investment in Alaska this year to retain a capable workforce in the state.

"We need our workforce. We need our contractors to be successful. We all need to come through this together," he said.

But after what he characterized as one of the most difficult times that people in the oil industry can recall, Marushack expressed hope that a recovery is beginning to emerge.

GMT-1 and GMT-2

Currently ConocoPhillips has its GMT-1 project fully permitted and is moving ahead with development. First oil is expected around late 2018. The project, employing about 700 people, involves the construction of an eight-mile gravel road with two bridges. At its peak, it should produce about 30,000 barrels per day of oil.

"It's a great project for us, a great project for the state, a great project for the Native communities," Marushack said.

GMT-2, which lies about eight miles farther into the

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Willow: part of a Brookian play

ConocoPhillips's newly announced Willow oil discovery in the National Petroleum Reserve-Alaska is the third recent major oil find in Brookian rocks near and to the west of the Colville River delta, near the Beaufort Sea coast, to the west of the central North Slope. The Brookian is the youngest and shallowest sequence of rocks in the petroleum systems of the North Slope.

Armstrong Energy partnered by Repsol E&P USA is planning an oil development involving a major find in the Nanushuk formation in the Pikka unit, to the east of the Colville River delta. And Caelus Energy has announced a huge oil find in the Torok formation, immediately below the Nanushuk formation, at Smith Bay, about 90 miles west of the delta. The Torok and Nanushuk are formations, Cretaceous in age, within the Brookian sequence.

Willow has its oil reservoir in the Nanushuk and seems closely analogous to Armstrong's Nanushuk discovery.

Significant new play

Geologist David Houseknecht from the U.S. Geological Survey has seen these finds as part of a significant Brookian oil play that exists along the northern side of the North Slope, west from the Colville River delta area and particularly associated with the Nanushuk and Torok formations. The play is also associated with the Barrow Arch, a major, regional geologic structure that runs along the Beaufort Sea coast and is associated with most of the producing oil fields on the North Slope.

Houseknecht has suggested that the oil in the Brookian play has come from a source to the north, deep under the Beaufort Sea, with the oil flowing up the northern flank of the Barrow Arch. That contrasts with the oil in the currently producing fields, which appears to have flowed from the south.

However, Houseknecht has told Petroleum News that, with the Willow discovery lying well south of the coastline, on the south side of the Barrow Arch, the Willow oil has probably originated from a source under the discovery. The light character of the oil suggests a Brookian origin such as the HRZ, a prolific North Slope oil source rock. However, the older and deeper Kingak source rock is also a possible origin for the oil.

Stratigraphic traps

Seismic data from the region suggest that the Willow oil lies in a stratigraphic trap, probably towards the base of the Nanushuk, rather than being trapped in a geologic structure, Houseknecht said. Oil flowing up the flanks of the Barrow Arch, either from the south or from the north, would tend to become caught in traps of this type in the Brookian, he said. That concept leads to the conclusion that there is likely to be a prolific oil play running east to west along this region of the northern North Slope and Beaufort Sea coast.

During a presentation to the Alaska Support Industry Alliance's Meet Alaska conference on Jan. 13, Joe Marushack, president of ConocoPhillips Alaska, indicated that his company also believes that Willow forms part of a new oil play running east to west through the company's leases in the northeastern NPR-A and adjacent state lands.

By contrast, the nearby Alpine oil field and its attendant satellite fields have oil reservoirs in the older and deeper Beaufortian rock sequence.

—ALAN BAILEY

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NPR-A, is still at the permitting stage. But slow progress with the federal permitting is putting the project schedule at risk. The plan has been to have the permits in place in time to start construction in 2018, with a view to seeing first oil in 2020. Construction will require about 700 people and, as with GMT-1, oil production should peak at some 30,000 barrels per day.

Each of these step-out projects in the NPR-A will cost about $1 billion, a cost figure consistent with ConocoPhillips' Alaska capital expenditure program, Marushack commented.

Oil infrastructure

Recounting his company's long history in Alaska, Marushack also emphasized the importance of keeping the existing oil infrastructure in good condition, to provide a basis for new developments. And, over the years, the state has been a proving ground for a number of new technologies, including the use of multi-lateral wells, coiled tubing drilling and state-of-the-art seismic surveying.

Marushack expressed particular excitement with the new extended reach drilling rig that Doyon Ltd. is building for ConocoPhillips' use. That rig, an around $1 billion investment, will enable access to about 125 square miles of the subsurface from a single 12-acre drilling pad. That compares with the five square miles of access from the original 65 acre pads on the North Slope and 55 square miles of access with existing rigs on 12-acre pads, Marushack said. The new rig has about 10 years of work ahead of it, starting with a Fiord West development in the Colville River unit.

Through all of this, ConocoPhillips sees safety as foundational to its success. In 2016 the company had its safest year ever in Alaska, and one of its best years for environmental performance.

"Safety is our license to operate," Marushack said. ●

—A Mapmakers Alaska map was used to research this article.

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REG ROLLBACK

undo a rule by reinterpreting the law. There has to be new information," to show the action is justified, Doyle said. Any such moves will also prompt lawsuits.

Chipping away

There are still many ways, however, the new administration can begin chipping away at Obama-era rules. For a start, a little-used group in the Office of Management and Budget charged with reviewing new federal regulations can be strengthened.

"There's a lot of power in this group but it has been little used," during the Obama years. "Its staff is now about half the size it was. We expect President Trump to develop a more robust capability to go after agencies like the Environmental Protection Agency," one federal agency that has frequently used rulemaking to expand its powers.

"Obama had actually asked agencies to periodically review regulations but there was not a lot of push behind this and agencies always reasons found to keep them on the books," Doyle said. Regulations give people things to do, and why would any agency voluntarily reduce its activity?

Another change that could be implemented quickly, he said, is to stop the use of informal agency "guidance" documents that help shape decisions. "Agencies can do this without formal procedures that require advance notice and an opportunity to comment," by affected industries.

The Obama administration made more frequent use of this than any other president. One reason was that it was quick to do, mainly because the agency doesn't have to go through a formal rulemaking," Doyle said.

"There are no checks and balances, and no opportunity for those affected to challenge a guidance document. This is real regulatory dark matter," he said.

Pursuit, or not, of litigation

Another action the new administration can take is to decide whether or not to pursue litigation that is already underway. Decisions can be made to not pursue appeals, for example. There may be cases where the new administration may want to let the litigation play out, just to get certainty. "This will be a tricky area," Doyle said.

An example of this is the power plant carbon dioxide emissions rule that is in court but temporarily stayed. The Obama administration rule on CO2 emissions is being challenged, but some states and major utilities have intervened on the side of the government.

If the Trump administration tries to back away from the rule, which seems likely, it will have to contend with a U.S. Supreme Court decision that carbon dioxide does present a human health hazard, which automatically triggers U.S. Clean Air Act regulation.

That was the legal authority under which Obama developed the power plant rule.

Undoing a regulation isn't easy. If a regulation is being litigation and the court finds it has been done properly, the rule will have to be undone properly, meaning doing through a formal rulemaking, Doyle said.

There is one tool Congress can use with new rules enacted recently, he said. That is the Congressional Review Act, or CRA, which allows Congress to examine, and possibly nullify, regulations enacted in final form 60 to 90 days prior to an election.

Since those days are counted in certain ways, and are not calendar days, in practical terms this could include rules finalized in mid-summer. The OCS "Arctic rule" would fall under this, for example.

There are practical limits on how widely this can be used, however. One limit is that there must be a separate resolution introduced for each rule under the CRA and each resolution must be debated separately, Doyle said. "There is very limited floor time for debate in the Senate," which means that just a handful of regulations can be dealt with under the CRA.

A few high-priority Alaskan issues might find their way on the agenda but many others will fall by the wayside.

Congress is busy with its own ideas for dismembering complex regulatory regimes and the U.S. House has passed a bill, the "Reins" act that requires Congress to make up or down votes on new regulations that have $100 million or more in economic impact.

Another bill, the "Midnight Rule Relief Act," would allow new regulations to be bundled, or considered in group, rather than singly, under a Congressional Review Act resolution.

These bills must still pass the U.S. Senate, however, and that may be doubtful given the thin 52-48 majority that Republicans have in the body. Backers of the bills really need 60 votes to overcome an expected Democratic filibuster. To do that, eight Democrats must be persuaded to vote with the Republican majority. It's possible, but difficult, Doyle said.

Alaska's Sen. Dan Sullivan also has his "red tape" reduction bill that requires agencies to eliminate a regulation for every new one adopted. "British Columbia has had some success with this approach," Doyle said.

Other ideas in proposal stage

There are other ideas still in the proposal stage, such as a bipartisan congressional regulatory review committee with the power to nullify rules.

An idea being championed by the U.S. Chamber of Commerce is a "regulatory accountability act" that requires formal proceedings for public notice and comment on all rules.

Agencies often adopt rules using streamlined procedures that weaken the public comment procedures. Formal rulemaking, while time-consuming, has built-in protections such as hearings, when disputes arise, by administrative law judges. "These are like trials in that evidence must be presented," Doyle said, to justify a government action.

Agencies often don't really respond to all comments but rather respond to groups of comments they deem similar, he said. That kind of informality allows issues to be swept under the rug.

Another improvement would be a requirement that agencies adopt the least-costly alternative in a regulation. Surprisingly, that isn't now required.

In theory Congress has the ultimate power over the executive branch agencies because elected officials control the purse-strings. In practice, however, it's not easy to single out agencies, Doyle said, because budgets are often approved in major omnibus bills that include budgets of several agencies. ●

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LNG OPPOSITION

Hereditary chief Yvonne Lattie said in a statement that the government decision "did not respect our fishing rights protected under the Canadian Constitution. We were not consulted."

"This project will be stopped," said a spokesman for the Luutkudziiwus community. "The terminal is bad news for our salmon up the Skeena River."

Three other challenges filed in October are aimed at derailing a venture by four Asian companies that the appellants rate as a "very risky investment" amid a global glut of LNG.

British Columbia Natural Gas Development Minister Rich Coleman said that although the challenges must be handled by the courts, the markets in China and Japan remain open to LNG from Canada.

Pacific NorthWest said it has been meeting with First Nations since 2012 and is continuing to seek an agreement with them.

—GARY PARK

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