



page 3 BNSF 'over-sourcing' as it prepares for increased rail demand in 2014

## Williston Basin sundial



VERN WHITTEN PHOTOGRAPHY

In the middle of a North Dakota winter, a Nabors rig drills on a Hess Corp. pad in the Alkali Creek field in western Mountrail County, N.D., in February 2014.

## Lease focus in Montana shifts to central and western counties

Nominations closed on March 18 for the June Montana Department of Natural Resources and Conservation Trust Land Management Division lease auction and while some of the nominated acres are in the more traditional Bakken counties in eastern Montana bordering North Dakota, more than three-quarters of the nominated acres are in central and western Montana.

A total of 7,840 acres in 16 separate tracts were nominated for the June auction, with 76 percent in Wheatland County in central Montana and Lewis and Clark County in western Montana. Six 640-acre tracts were nominated in southern Wheatland County for a total of 3,840 acres. In northern Lewis and Clark County along the Rocky Mountain Front, seven tracts ranging in size from 40 to 640 acres were nominated for a total of 2,080 acres.

In Richland and Roosevelt counties, the two Montana counties where Bakken operators are most active, one 640-acre tract was nominated in each. Farther south along the North Dakota border in Fallon County, another 640-acre tract was nominated.

see LEASE AUCTION page 12

## Quantum Energy inks land deal for proposed ND diesel refinery

Arizona-based Quantum Energy Inc. is buying 80 acres from Northstar Transloading to build a 20,000 barrel per day diesel topping facility.

Quantum said March 20 that it has entered into a purchase and sale agreement for the acreage, adjacent to a transload facility Northstar is building in East Fairview in far western North Dakota, just over the border from Fairview, Mont.

"The Northstar transload will be a state of the art facility and an ideal rail and oil transit strategic neighbor for our Fairview Refinery," said Stan Wilson, Quantum's president in the March 20 press release. "The Dakota Prairie Refinery in Dickinson has served as the model for our proposed Fairview Refinery and helped demonstrate to our funding sources the feasibility for our project as well."

Construction on Northstar's East Fairfield rail loading facility is expected begin in April, weather depending, and when completed the facility will have 160,000 bpd high-speed rail loading capacity and 20,000 bpd outbound truck-to-rail transloading capacity. The terminal will have a 12-station truck unloading facility and storage for 762,000 barrels of crude oil. The rail loading capacity is planned to expand

see REFINERY PLANS page 12

### COMPANY UPDATE

# Back for an encore

Liberty returns to the Bakken with its legendary completion techniques in tow

By MAXINE HERR

For Petroleum News Bakken

The successful and arguably legendary completion techniques of Liberty Resources are making a comeback in the Williston Basin.

The company previously held acreage in the Bakken, but at the end of a three-year business plan, it sold its assets to Kodiak Oil and Gas in July 2013 for \$680 million. Liberty had demonstrated industry-leading recovery rates with its proven completion techniques, and now has plans to once again out-produce its competitors on 53,000 recently acquired acres in Williams, McKenzie, Divide and Burke counties. Liberty partnered with Riverstone Holdings to develop the Williston Basin in its prior venture,

"When financial people look at what we do, they shake their heads at the rest of the industry wondering why they aren't copying this." —Mark Pearson, Liberty Resources president

and the two companies have teamed up again, forming Liberty II.

The previous partnership had 43,000 net acres and 29 well completions in the Bakken and Three Forks, producing over 6,000 barrels of oil equivalent per day.

"We went in with a three-year plan to develop

see BACK FOR AN ENCORE page 11

### COMPANY UPDATE

# Ramping up activities

Marathon Oil gathers enough drill rigs to dramatically increase 2014 production

By RAY TYSON

For Petroleum News Bakken

Marathon Oil Corp., which last December unveiled a major plan to hike annual production by more than 30 percent in 2014 across the Bakken and two other unconventional resource plays in the United States, said it now has the drilling rigs to get the job done.

"We ramped up drilling and completion activity levels ... achieving our committed 28-rig program in January," Lee Tillman, Marathon's president and chief executive officer, disclosed in remarks that were to be delivered



LEE TILLMAN

March 24 to the 42nd Annual Howard Weil Energy Conference in New Orleans, La.

Tillman said that in addition to its 30 percent plus production target in 2014 over 2013, Marathon remains confident of attaining longer-term production goals because of "strong resource growth" through well downspacing and optimization. For the period 2012-17, Marathon projects a resource play production compound annual growth rate greater than 25 percent, and a total annual growth rate of 5 percent to 7 percent.

see MARATHON TARGET page 10

### LEGAL COLUMN

# Court resolves ROW rub

ND landowners lose legal appeal regarding Alliance pipeline from Tioga gas plant

By JANNELLE STEGER COMBS

For Petroleum News Bakken

A legal fight over 4.36 acres of right of way condemned for construction of a gas pipeline made its way to the 8th Circuit Court of Appeals. Alliance Pipeline L.P. operates more than 2,000 miles of oil and natural gas pipelines in North America. In 2011, Alliance undertook to build a 79-mile-long underground pipeline from Hess Corp.'s gas processing plant near Tioga, N.D. to a connection in an Alliance mainline near Sherwood, N.D. The Alliance mainline runs from western British Columbia to the market hub in Chicago.



JANNELLE STEGER COMBS

Leonard and Ione Smith are an elderly couple who own land near Sherwood. On Jan. 25, 2012, Alliance applied to the Federal Energy Regulatory Commission for a certificate of public convenience and necessity. FERC published notice of the application in the Federal Register on Feb. 7, 2012. FERC must issue a certificate of public convenience and necessity before a natural gas pipeline can be built in the United States. Along with the certificate, the recipient would gain the authority to condemn land along the proposed pipeline route under the power of eminent domain.

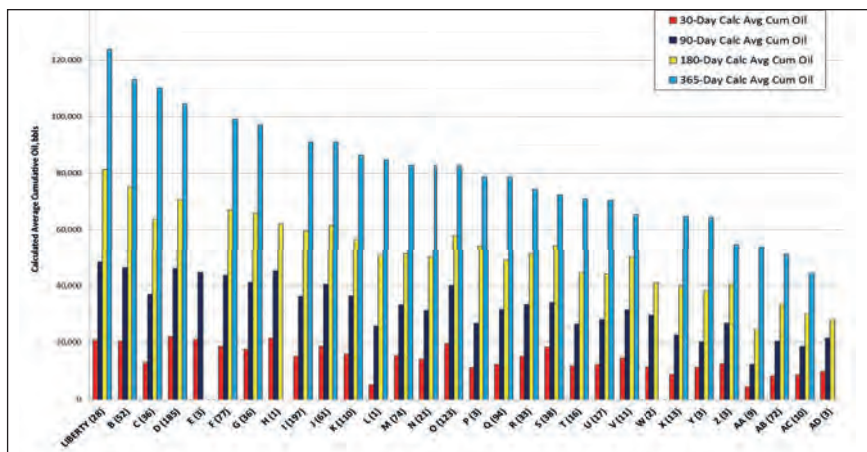
In February 2012, Alliance's representatives

see LEGAL COLUMN page 12

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## WATCH FOR IT IN MAY

# The Bakken Explorers

For more information on this annual magazine, which will feature those oil companies exploring vertically or laterally in the Bakken petroleum system, email Kay Cashman, publisher and executive editor, at [publisher@petroleumnews.com](mailto:publisher@petroleumnews.com).

A special publication from Petroleum News Bakken

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● MOVING HYDROCARBONS

# BNSF prepares for high 2014 rail demand

Railway commits to add new equipment, more employees to keep pace with the need to transport rising amounts of Bakken crude

By MAXINE HERR

For Petroleum News Bakken

**B**NSF Railway's steady growth has been driven by a flourishing crude-by-rail business over the past year, and the company is answering with a surge of its own. The company said its investment plans for 2014 are at an "unprecedented level," bumping up capital commitments by \$1 billion over last year.

The company plans to invest \$5 billion into the railroad in 2014, including hiring 5,000 employees, adding 500 locomotives, and purchasing 5,000 new tank cars to haul Bakken crude. The rule of five appears to dictate, as even BNSF's revenues grew by just over 5 percent in 2013, according to the Securities and Exchange Commission.

BNSF's 2014 proposed projects are focused on rail capacity improvements to accommodate the expansion of commodities, particularly those related to the oil industry, as well as terminal enhancements. More than \$900 million of its spending plan is targeted to expansion and maintenance in the Northern Corridor which spans the northern U.S. between the Pacific Northwest and Chicago, including extending into key southern points in Canada.

BNSF said this investment should "put the company in position to meet all customer service expectations, including Amtrak."

The company's expansion plans in North Dakota consist of double track between Minot and Williston and new siding in various locations across the state.

The rail giant shifted leadership on Jan. 1 when Carl Ice transitioned seamlessly to the chief executive officer position as Matt Rose assumed the executive chairman role. Ice has been with BNSF for 34 years, and "has been integral to the development of the company's operating and marketing plans," the company said in a statement.

Rail volumes increased by approximately 800,000 units in 2013, and BNSF handled over half of that additional volume. The new jobs created this year will be spread throughout the organization, and some will be to replace retirees. The company already brought on 300 new employees in the first two months of the year, and BNSF currently has approximately 41,000 employees, with about 1,500 in North Dakota. BNSF spokeswoman Amy McBeth told Petroleum News Bakken that the company plans to hire 1,000 new employees in its North Region, which includes North Dakota.

## Bumper crops and winter weather slow momentum

The fourth quarter of 2013 saw an increase in grain, oil and coal shipments. Last year, the rail company also saw an 8 percent bump in domestic intermodal units, and another 11 percent hike in industrial product volumes led by crude-related traffic. But recent severe winter weather in the Midwest and Northeast kept BNSF from moving full steam ahead.

"While our network can manage some excess demand, the added demand has come during one of the hardest winters on record in terms of low temperatures and snowfall," McBeth said. "Low temperatures and snowfall are especially difficult



MAXINE HERR

for a railroad's operations."

To assist efforts to move more grain, BNSF added 250 more engines since the beginning of the year with 125 more expected in the coming months, the company said. Bad weather was preceded by equipment shortages and increasing cargo, so once snowstorms hit, the company struggled to make up ground, according to analysts.

"The service challenges we have been experiencing are impacting all customers," McBeth said. "We are outsourcing the railroad with additional locomotives, equipment, and people, in addition to our record 2013 and 2014 capital investments that increase capacity, to

help restore service and handle the growth."

## Committed to safety

The bulk of spending, \$2.3 billion, is slated for the company's core network and related assets. BNSF also plans to spend \$1.6 billion on acquiring equipment, such as locomotives and freight cars. Expanding safety and efficiency features also top the list.

"Our capital plan continues to focus on improving our ability to meet our customers' service expectations, increasing our capacity where there is growth, and strengthening our railroad to help ensure it remains the safest means of ground

transportation for freight," Ice said. "BNSF's capital investments are an integral part of making sure our network is well prepared for the demand for freight rail service in the U.S. and helps ensure the continued integrity and reliability of our network."

BNSF operates on 32,500 route miles of track in 28 states and two Canadian provinces. It is one of the top transporters of consumer goods, grain and agricultural products, low-sulfur coal, and industrial goods such as petroleum, chemicals, housing materials, food and beverages. ●

Contact Maxine Herr  
at maxine606@msn.com

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## MOVING HYDROCARBONS

### Enable Midstream Partners locks in production from XTO

Enable Midstream Partners has secured an agreement with XTO Energy, a subsidiary of ExxonMobil, to become a tenant for its 85-mile crude oil gathering line and transportation pipeline system capable of moving 30,000 barrels per day from the Bakken. The agreement came as part of the open season announced by Enable Midstream in February.

The system will service Mountrail and Williams counties and interconnect to downstream pipelines. Enable Midstream expects to begin operations in the second quarter of 2015. An additional agreement between the two companies includes construction of a 75-mile gathering and transport system for produced water.

This is the second crude gathering system Enable Midstream has committed to build in the Bakken area. In April 2013, the company announced its first long-term agreement with XTO to construct a crude oil gathering system in Dunn and McKenzie counties. That gathering system began initial operations in November and is expected to have a capacity of up to 19,500 bpd upon completion.

"These new contracts allow us to expand our asset infrastructure and to increase our crude oil and water service offerings in the Williston Basin," Enable CEO Lynn Bourdon said. "Having a successful customer like XTO sign up as an anchor tenant on a second gathering system in this region demonstrates their confidence in our abilities as a service provider."

Enable Midstream is a joint venture formed in May 2013 that combines CenterPoint Energy's interstate pipelines and field services with the midstream business of Enogex, a previous subsidiary of OGE Energy Corp.

Enable Midstream owns, operates and develops natural gas and crude oil infrastructure assets to include approximately 11,000 miles of gathering pipelines, 12 major processing plants with 2.1 billion cubic feet per day of processing capacity, 7,900 miles of interstate pipelines, 2,300 miles of intrastate pipelines and eight storage facilities comprising 86.5 bcf of storage capacity.

—MAXINE HERR

## MOVING HYDROCARBONS

### Canada's old rail cars on their way out

Canada's two big railways are stepping up their efforts to discard or upgrade their fleets of older DOT-111 tank cars that were blamed for the deadly explosions at Lac-Mégantic, Quebec, last July.

Canadian National said it is phasing out its remaining 183 DOT-111s, while Canadian Pacific said it will retrofit the less than 200 cars it owns.

Montreal-based CN said it will spend C\$7 million this year to replace the 40 cars it owns and will replace the other 143 cars as leases expire.

CN Chief Executive Officer Claude Mongeau said that for his company the tank car design is "one of the most important issues arising from the Lac-Mégantic accident," with the robustness of the cars being the core concern.

A spokesman for CP said the company is finalizing a plan to immediately "retrofit the older tank cars in our internal fleet to the safer standards."

Canadian transportation safety regulators said 60 of the 63 cars that were carrying Bakken crude to the Irving Oil refinery at Saint John, New Brunswick, when they derailed at Lac-Mégantic "released product due to tank car damage."

The Association of American Railroads has recommended the retrofitting or retirement of the old DOT-111 cars — which make up 70 percent of all tankers in use — that are used to transport flammable and hazardous materials.

Since October 2011 all new model cars are required to meet higher safety standards, but there is a long backlog of orders.

There are an estimated 228,000 DOT-111s in service in North America, with about 92,000 carrying flammable liquids.

The reinforced models now total about 26,000 and are expected to double by next year. The bill for retrofitting is about C\$70,000 for the old cars and C\$100,000 for new models.

Rail safety is being tackled on a number of fronts, with CN and CP introducing more stringent training programs for employees and track inspections, while the rail industry is strengthening its emergency response measures and enhancing early detection of defects in tank cars, while placing tighter speed limits on trains moving dangerous goods.

—GARY PARK

## CORRECTION

### Getting the numbers, decimal place right

A story on Calgary-based Vermillion Energy entering the Williston Basin that appeared in the March 23 print edition of Petroleum News Bakken stated that Vermillion was acquiring a privately owned Bakken player for \$C3.59 million. That value was actually C\$345 million. The transaction totaled \$C400 million which included C\$172.5 million in cash, C\$172.5 million of Vermillion stock, and assumed debt of C\$55 million. The error appeared only in the print edition and not in the online or PDF editions.

—MIKE ELLERD

## MDU Resources reiterates need for binding commitments

In the middle of its open season on the proposed Dakota natural gas pipeline, MDU Resources says response by potential shippers has been encouraging, but binding commitments are needed before the company can proceed with the \$650 million to \$700 million project. Reuters reported that during an interview at an energy conference in New Orleans on March 21, MDU Resources Chairman and Chief Executive Officer David Goodin said his company is "encouraged by the reaction of the marketplace," but added that he would be "getting ahead" of himself if he said the company was "ready to build" and that MDU needs "some binding commitments." Reuters said Goodin did not specify what commitments MDU has received on the project, but he did say that ideally the company would like to be "oversubscribed" by the time the open season ends on May 30.

Those comments came on the heels of similar comments made by MDU Resources subsidiary WBI Holding's Chief Executive Officer Steven Bietz during MDU's annual analyst seminar in New York on March 18. As Petroleum News Bakken reported in the March 23 edition, Bietz said that to date the proposed project had been viewed "pretty favorably by customers working both with producers and the downstream market," but added that the company is "looking for binding bids from customers to take capacity out on the pipeline."

According to Reuters, permitting the project could take up to two years with construction taking another year, putting the service date into 2017, a timeframe that Goodin said is a problem when potential shippers are deciding on a commitment. "A little bit of the challenge here is for the market to look that far in advance," Goodin said in the March 21 interview.

The Dakota pipeline, which is a WBI project, would begin approximately 20 miles south of Williston, N.D., and extend some 375 miles east and connect to other gas transmission pipelines just below the Canadian border in northwest Minnesota. The 24-inch pipeline would have an initial throughput capacity of 400 million cubic feet, mmcf, per day with expansion capacity up to 500 mmcf per day.

—MIKE ELLERD

*The Dakota pipeline, which is a WBI project, would begin approximately 20 miles south of Williston, N.D., and extend some 375 miles east and connect to other gas transmission pipelines just below the Canadian border in northwest Minnesota.*

## Petroleum News Bakken

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<b>Kay Cashman</b>	PUBLISHER & EXECUTIVE EDITOR
<b>Mike Ellerd</b>	EDITOR-IN-CHIEF
<b>Ray Tyson</b>	CONTRIBUTING WRITER
<b>Gary Park</b>	CONTRIBUTING WRITER (CANADA)
<b>Eric Lidji</b>	CONTRIBUTING WRITER
<b>Rose Ragsdale</b>	CONTRIBUTING WRITER
<b>Steve Sutherlin</b>	CONTRIBUTING WRITER
<b>Maxine Herr</b>	CONTRIBUTING WRITER
<b>Janelle Steger Combs</b>	LEGAL COLUMNIST
<b>Mary Mack</b>	CEO & GENERAL MANAGER
<b>Raylene Combs</b>	BAKKEN ADVERTISING EXECUTIVE
<b>Ashley Lindly</b>	RESEARCH ASSOCIATE
<b>Mark Cashman</b>	RESEARCH ASSOCIATE
<b>Susan Crane</b>	ADVERTISING DIRECTOR
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<b>Renee Garbutt</b>	CIRCULATION SALES
<b>Shane Lasley</b>	IT CHIEF
<b>Dee Cashman</b>	RESEARCH ASSOCIATE

**ADDRESS**  
P.O. Box 231647  
Anchorage, AK 99523-1647

**NEWS**  
**MIKE ELLERD**  
406.551.0815  
mellerd@bresnan.net

**CIRCULATION**  
907.522.9469  
circulation@petroleumnews.com

**ADVERTISING**  
907.522.9469  
mreeve@petroleumnews.com

**FAX NUMBER**  
907.522.9583

Several of the individuals listed above are independent contractors

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PREVIEW

# Crescent pioneer in Saskatchewan Bakken formation

Calgary-based company driving force in Canada's resource oil plays with waterflood, cemented liners driving dual-track growth

By GARY PARK

For Petroleum News Bakken

Calgary-based Crescent Point Energy was a pioneer in opening up Saskatchewan's Bakken and Lower Shaunavon formations, and is an established driving force in Canada's resource oil plays, counting on waterflood programs and cemented liner completions to achieve its dual-track growth strategy.

It has never shown the slightest hint of going on cruise control.

Having joined the top 10 on the Toronto Stock Exchange's Energy Index and added the New York Stock Exchange to its trading platforms in January, Crescent Point is constantly restless, but patient enough to allocate the time needed to evolve new technologies.

## Independent recognition

The most notable symbolic milestone in 2013 occurred when its "improved recovery" reserves gained independent recognition in the early stages of the Viewfield Bakken waterflood program in Saskatchewan.

Neil Smith, chief operating officer, said the addition to reserves showed waterflooding is "commercial, it works, government recognizes it, independent (evaluators) recognize it and you're seeing great production numbers from us."

He declared that Crescent Point now has the "evidence that our waterflood works, without question."

The addition of 3 million barrels to the company's core Viewfield Bakken area are reserves that Crescent Point will not have to spend C\$60 million of capital to find, Smith said.

What the independent engineers have established is just the first step on a journey that will generate a "little bit more every year," he said.

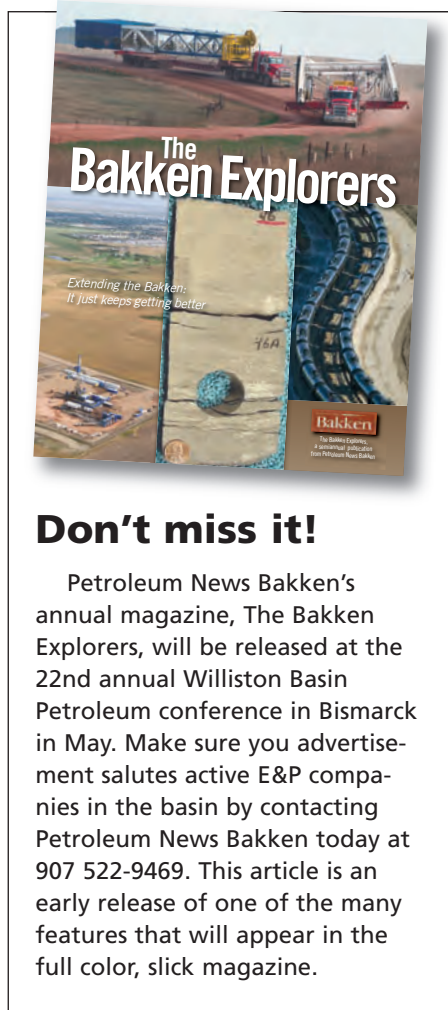
Smith noted that when Crescent Point started to develop its Viewfield Bakken core in 2007, the estimated ultimate recoveries, EUR, per well were 115,000 barrels. Now that the company is applying its new technological advances the EUR has climbed to 250,000-350,000 barrels per well, he said.

## Shipments beyond North America

On another front, Crescent Point is on the verge of by-passing barriers within the U.S. administration by using rail to access Brent crude prices by shipping crude from U.S. ports to markets beyond North America.

Because those exports involve Canadian crude they are not affected by a four-decade-old ban on exporting U.S. crude and they sidestep the reviews by the Department of State and need for a Presidential Permit to cross the Canada-U.S. border. Instead the approvals come from the Department of Commerce and the Bureau of Industry and Security.

"We know there is already some Canadian crude that is being exported



## Don't miss it!

Petroleum News Bakken's annual magazine, The Bakken Explorers, will be released at the 22nd annual Williston Basin Petroleum conference in Bismarck in May. Make sure you advertisement salutes active E&P companies in the basin by contacting Petroleum News Bakken today at 907 522-9469. This article is an early release of one of the many features that will appear in the full color, slick magazine.

through the U.S., so it is very doable," said Trent Stangl, Crescent Point's vice president of marketing in a March call with analysts. "We have a lot of irons in the fire ... and we're working hard to get something in place by the end of the year."

## Lowering water consumption

While it probes that option, Crescent Point is surging ahead with its water injection techniques and the latest generation of its cemented liner completions.

Chief Executive Officer Scott Saxberg said that "while U.S. companies use high volumes of water, sand and fluid (in their resource operations), we're going in the opposite direction," adding that the company is now "working on patents in and around waterfloods" that are lowering water consumption by up to 45 percent in the Viewfield Bakken.

Saxberg said independent evaluators completed initial studies of the play and determined there is a potential recovery factor of greater than 30 percent, which is more than a 50 percent increase above the primary recovery factor.

The company said the evaluators increased EURs by about 25 percent per well on average due to the application of cemented liner, which "provides more efficient fracture stimulation results, more controlled access to the reservoir and lower decline rates."

It said that in general the EUR increases have raised the value of its Bakken inner core area by about 35 percent.

In addition, the evaluators raised the

see EXPLORERS PREVIEW page 6

## ENVIRONMENT & SAFETY

### Hiland reports 3rd incident in 5 months

A gasket failure on a pipeline near McKenzie County caused approximately 800 barrels of crude oil to spill, with half of it escaping the containment area.

Hiland Crude reported discovering the spill early in the morning on March 20 and immediately began emergency response activities, according to a company statement. The North Dakota Health Department said no surface waters were impacted by the spill and crews were building berms to contain the oil. A state inspector is on the site, six miles northeast of Alexander, to assist with remediation.

Initially the spill was estimated at 400 barrels, with only 100 barrels getting off the location, but the total figure was later updated to 800 barrels. The pipeline was above-ground, and contractors were on site to control the spill, although about 400 barrels of oil reached a dry drainage area off the site. That area was diked and boomed because North Dakota Water Quality Director Dennis Fewless said if it rained, the oil could get to water.

Contractors were removing contaminated soil, with all off-site remediation expected to be complete on March 21.

Hiland Partners LP, which owns Hiland Crude, is responsible for two other incidents in the Williston Basin in recent months. In November, a crude oil spill near Trenton's rail transfer facility in Williams County caused nearly 500 barrels of oil to be contained. About 20 barrels had breached the dike but stayed just outside the structure.

In February, the company reported a ruptured natural gas pipeline south of Tioga, causing a fire and explosion, but no injuries or third party damage.

—MAXINE HERR

*Hiland Crude reported discovering the spill early in the morning on March 20 and immediately began emergency response activities, according to a company statement.*

## MOVING HYDROCARBONS

### Tesoro extends open season on High Plains

In mid-March, Tesoro Logistics extended the open season on its proposed High Plains pipeline until April 4. The open season was launched on Feb. 4 to evaluate potential shipper support on the reversal of a key section of the High Plains pipeline in order to move crude oil from the Johnson's Corner area of northeastern McKenzie County north to transportation hubs in Burke and Williams counties. Tesoro said the open season extension was in response to a higher than expected number of potential shippers. The open season was initially to end on March 14.

Historically, the High Plains pipeline transported crude oil from an Enbridge connection near the Canadian border to the Tesoro refinery in Mandan. That route runs from Portal in northern Burke County south through Johnsons Corner and then southeast to the Tesoro refinery. Reversal of the segment from Johnson's Corner north will allow operators access from that area to export hubs north of Lake Sakakawea, such as Inergy Midstream's COLT rail facility at Epping in Williams County and Global Energy's Basin Transload facility at Columbus in northern Burke County.

The High Plains will initially have a transport capacity of approximately 70,000 barrels per day, which is anticipated to incrementally increase to 90,000 bpd at some point in the second half of 2015. The \$30 million initial phase is expected to be completed by mid-2014.

Tesoro also has plans to expand the capacity of its Bakken Area Storage Hub near the High Plains Ramberg Station in Williams County, and is extending until April 4 the period for potential customers to submit offers for storage at that facility. That facility has an initial planned capacity of 1 million barrels with potential expansion of up to 2.5 million barrels.

—MIKE ELLERD



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continued from page 5

## EXPLORERS PREVIEW

recovery factor in Crescent Point's waterflood patterns by 3 percent from previous primary recoverable reserve levels, which equates to a 16 percent rise in EURs, representing the first time that "improved recovery" reserves have been independently recognized.

### Bullish on waterflood results

Crescent Point executives also offered a bullish assessment of ongoing results from their waterfloods, which are being implemented in the company's major unconventional oil fields in Western Canada.

In the Viewfield Bakken alone, volumes positively affected by waterfloods have grown by more than 15,000 barrels per day and are expected to double in the

*Chief Executive Officer Scott Saxberg said that "while U.S. companies use high volumes of water, sand and fluid (in their resource operations), we're going in the opposite direction," adding that the company is now "working on patents in and around waterfloods" that are lowering water consumption by up to 45 percent in the Viewfield Bakken.*

next two years.

In 2013, regulators approved the first waterflood unit in the Lower Shaunavon area and gave technical approval to the first Viewfield Bakken waterflood unit.

"This year we plan to pursue approvals for subsequent units in both plays to implement waterfloods across larger

areas," Saxberg said.

"Based on solid results so far from our 25-stage cemented liner completion technique, we'll continue to refine this technology" which is being used on "every well we drill in those areas (and yields) improved production and first-year decline rates that are about 10 percent lower than the previous generation."

Crescent Point's plans for 2014 include the conversion of 30 producing wells to water injection wells, with the objective of lowering production declines and improving rates of return on adjacent producing wells.

The company is also pursuing waterflood unitization this year based on the success of its Manitoba Bakken play and is planning to build a battery to accommodate increased production.

### Flat Lake drilling

On the emerging front, Crescent Point drilled 30 net wells last year at southern Saskatchewan's Flat Lake, which it said "gives exposure to the North Dakota basin," but being on the Canadian side of the border it is "able to capitalize on lower service costs."

Current production at Flat Lake is 5,500 barrels of oil equivalent per day, with the play targeted for 48 net wells in 2014.

The first full year of operations in the Uinta Basin posted a production increase of 30 percent to 10,000 boe per day, reserve additions and field operation cost reductions in a play that has an estimated 5.2 billion barrels of original-oil-in-place with only 0.4 percent recovered to date.

Crescent Point has listed the upside reserves potential at the Utah play of 75 million barrels on primary recovery, with a drilling inventory of 1,051 wells (in a corporate total of 7,139 wells) and risked finding and development costs of

C\$15.26 per boe, compared with a corporate average of C\$21.08, including C\$22.92 in the Bakken/Three Forks formation.

### New completion techniques

Various new completion techniques are being tested in the Uinta with the goal of improving fracture stimulation efficiency, production rates and ultimate recoveries.

Based on results so far, Crescent Point said the resource play "has significant potential long-term upside."

The company is also seeking permits for a 3-D seismic program covering a large portion of the operated lands in Uinta's Randlett area and expects to start acquiring data in the third quarter.

As well, Utah state regulatory approval has been received for down-spaced drilling and a waterflood injection pilot in 2,560 acres of the Randlett area, where Smith said "multiple initiatives are under way," with water injection scheduled for early 2015.

Rail operations in Utah have allowed Crescent Point to broaden the market for Uinta crude beyond the Salt Lake City refining market. A permanent rail loading facility is fully operational, with capacity of 10,000 bpd and the ability to increase volumes.

Overall, Crescent Point boosted its production for 2013 by 22 percent to 127,641 boe per day (115,971 bpd of crude and liquids and 70 million cubic feet per day of gas), its proved plus probable reserves by 9 percent in 2013 to 663.8 million boe, weighted 91 percent to light and medium crude and liquids, while finding and development costs for the year averaged C\$18.42 per proved plus probable boe. ●

Contact Gary Park through publisher@petroleumnews.com

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# Bakken Stats

• BAKKEN COMMENTARY

## Top 10 North Dakota IPs fall below average

MIKE ELLERD

Petroleum News Bakken

The top 10 initial production, IP, volumes for the week of March 18-24 fell short of what has been reported thus far in 2014 for Bakken petroleum system wells in North Dakota. For the week, the top 10 IPs ranged from 896 to 2,271 barrels, with an average of 1,519 barrels. That is the lowest weekly average so far this year. The highest weekly average so far is 2,809 barrels for the week of Feb. 11-17.

Whiting Oil and Gas came in with the top IP well for the week with 2,271 barrels from its Levi Federal 21-33H well in the Sanish field in Mountrail County (page 8). A Marathon Oil well in the Chimney Butte field in Dunn County was second at 2,084 barrels, and a Kodiak well in the Traux field in Williams County was third at 1,976 barrels. XTO had the next three wells on the Top 10 list with three common-pad wells in the Heart Butte field in the Dunn County. Newfield, Hess and SM Energy rounded out the Top 10 list for the week with wells in McKenzie and Dunn counties.

### Year to date

The highest IP reported since the first of the year was 4,884 barrels produced from a Statoil well in the Banks field in McKenzie County in January, and Statoil has had two other top IP wells this year, both Banks field wells with IPs of 3,823 and 2,513 barrels. XTO Energy also has had three of the top IP wells, all three in the Blue Buttes field in McKenzie County with IPs of 4,434, 4,051 and 3,264 barrels. XTO had a fourth top IP well in the North Tobacco Garden field in McKenzie County at 2,592 barrels.

Oasis has topped the list once this year with 3,170 barrels from a well in the Willow Creek field in Williams County. Burlington Resources has topped the chart twice, once with an IP of 2,970 barrels from a Keene-field well in McKenzie County, and again with 2,923 barrels from a well in the Haystack Butte field in McKenzie County.

Marathon topped the chart in late January with a well in the Murphy Creek field in Dunn County that had an IP of 2,275 barrels.

### ND well permits

Most of the well permits issued in North Dakota during the week of March 18-24 were in McKenzie and Williams counties with 18 permits issued in each (page 9). In McKenzie County, eight permits were issued to Continental Resources, three each to SM Energy, Triangle USA Petroleum and XTO Energy; one permit was issued to Petro-Hunt. Kodiak Oil and Gas was issued seven permits in Williams County, Continental was issued five, XTO was issued four, and Hess Corp. as Hess Bakken Investments II was issued two. Continental also had a permit renewed in McKenzie County.

Seven permits were issued in Divide County, four to Hunt Oil, two to

American Eagle Energy and one to SM Energy. Whiting Oil and Gas was issued one permit in Stark County. Luff Exploration was issued a permit in Bowman County and Cornerstone Natural Resources was issued a permit in Burke County.

Three location resurvey permits were issued to Halcon Resources, filing as HRC Operating, in Dunn County, and in McKenzie County, three location resurveys were issued to Kodiak, two to SHD Oil and Gas, and one each to Petro-Hunt and Whiting.

### Montana activity

The only activity to report from Montana's side of the Bakken is one new permitted location and two re-issued permits. Continental Resources was issued a permit for its Dodger 1-36H Bakken pool well in Richland County. Continental was also reissued permits for two other wells, those being the Alex 1-7H and the Cotesworth 1-20H, both Bakken pool wells in Richland County.

Slawson was reissued a permit for its Testarossa 1-6-7MLH Bakken pool well in Wibaux County. ●

*The highest IP reported since the first of the year was 4,884 barrels produced from a Statoil well in the Banks field in McKenzie County in January, and Statoil has had two other top IP wells this year, both Banks field wells with IPs of 3,823 and 2,513 barrels.*

## Bakken Looking for a rig report?

### North Dakota

The best list for North Dakota is updated daily by the North Dakota Oil and Gas Division at [www.dmr.nd.gov/oilgas/riglist.asp](http://www.dmr.nd.gov/oilgas/riglist.asp)

### Saskatchewan

Weekly drilling activity report from the government of Saskatchewan: [www.economy.gov.sk.ca/Daily-Well-Bulletin-Weekly-Drilling-Reports](http://www.economy.gov.sk.ca/Daily-Well-Bulletin-Weekly-Drilling-Reports)

### Manitoba

Weekly drilling activity report from the government of Manitoba: [www.manitoba.ca/iem/petroleum/wwar/index.html](http://www.manitoba.ca/iem/petroleum/wwar/index.html)



PHOTO COURTESY CONTINENTAL RESOURCES

## Bakken producers' stock prices

Closing prices as of Mar. 26 along with those from previous Wednesday

Company	Exchange	Symbol	Closing price	Previous Wed.
Abraxas Petroleum Corporation	NASDAQ	AXAS	\$3.95	\$3.88
American Eagle Energy Corporation	NYSE	AMZG	\$7.12	\$6.61
Arsenal Energy USA, Inc.	TSE	AEI	\$6.42	\$6.28
Baytex Energy USA Ltd	NYSE	BTE	\$40.15	\$38.99
Burlington Resources Co., LP (ConocoPhillips)	NYSE	COP	\$68.60	\$67.50
Continental Resources, Inc.	NYSE	CLR	\$119.14	\$120.23
Crescent Point Energy US Corporation	TSE	CPG	\$40.07	\$40.39
Denbury Onshore, LLC	NYSE	DNR	\$16.17	\$16.16
Emerald Oil, Inc.	NYSEMKT	EOX	\$6.62	\$6.46
Enerplus Resources USA Corporation	NYSE	ERF	\$19.25	\$18.95
EOG Resources, Inc.	NYSE	EOG	\$192.12	\$187.53
Fidelity Exploration & Production (MDU)	NYSE	MDU	\$33.80	\$33.83
Halcon Resources	NYSE	HK	\$3.76	\$3.80
Hess Corporation	NYSE	HES	\$81.37	\$80.62
Kodiak Oil and Gas (USA), Inc.	NYSE	KOG	\$11.46	\$11.85
Legacy Reserves Operating LP	NASDAQ	LGCY	\$25.13	\$25.47
Marathon Oil Company	NYSE	MRO	\$34.50	\$33.29
Mountain Divide, LLC (Mountainview Energy)	CVE	MVV.V	\$0.60	\$0.58
Newfield Production Company	NYSE	NFX	\$30.43	\$28.38
Northern Oil and Gas	NYSE	NOG	\$13.96	\$13.19
Oasis Petroleum North America	NYSE	OAS	\$40.05	\$40.83
Oxy USA, Inc. (Occidental Petroleum)	NYSE	OXY	\$93.54	\$95.14
PetroShale Inc.	CVE	PSH	\$1.35	\$1.40
QEP Energy Company	NYSE	QEP	\$29.00	\$28.74
Resolute Natural Resources Company, LLC	NYSE	REN	\$7.09	\$7.17
Samson Resources Company (KKR & Co)	NYSE	KKR	\$22.32	\$23.29
SM Energy Company	NYSE	SM	\$69.76	\$69.95
Statoil Oil and Gas LP	NYSE	STO	\$27.76	\$27.20
Triangle USA Petroleum Corporation	NYSE	TPLM	\$8.10	\$8.11
Whiting Oil and Gas Corporation	NYSE	WILL	\$68.07	\$67.62
WPX Energy Williston, LLC	NYSE	WPX	\$17.61	\$18.23
XTO Energy, Inc. (ExxonMobil)	NYSE	XOM	\$94.70	\$93.73

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# IPs for ND Bakken wells

March 18—24, 2014

This chart contains initial production rates, or IPs, for active wells that were filed as completed with the state of North Dakota from Mar 18-24, 2014 in the Bakken petroleum system, which includes formations such as the Bakken and Three Forks. The completed wells that did not have an available IP rate (N/A) likely haven't been tested or were awarded confidential (tight-hole) status by the North Dakota Industrial Commission's Department of Minerals. This chart also contains a section with active wells that were released from confidential status during the same period, Mar 18-24. Again, some IP rates were not available (N/A). The information was assembled by Petroleum News Bakken from NDIC daily activity reports and other sources. The name of the well operator is as it appears in state records, with the loss of an occasional Inc., LLC or Corporation because of space limitations. Some of the companies, or their Bakken petroleum system assets, have been acquired by others. In some of those cases, the current owner's name is in parenthesis behind the owner of record, such as ExxonMobil in parenthesis behind XTO Energy. If the chart is missing current owner's names, please contact Ashley Lindly at alindly@petroleumnewsbakken.com.

## LEGEND

The well operator's name is on the upper line, followed by individual wells with data in this order: NDIC file number; well name; field; location; spacing; county; geologic target; wellbore type; total depth; IP test date; IP oil flow rate. (IP stands for initial production; in this chart it's the first 24 hours of oil production.)

## IPs for completed North Dakota wells

### Hess Bakken Investments II

25427; EN-Nelson 155-94-3328H-4; Alkali Creek; SESW 33-155N-94W; 2SEC; Mountrail; Bakken; horizontal; 21,103; 2/15/2014; 822 bbl  
 25428; EN-Nelson 155-94-3328H-5; Alkali Creek; SESW 33-155N-94W; 2SEC; Mountrail; Bakken; horizontal; 20,518; 2/20/2014; 733 bbl  
 26131; LK-A STR CIR- 147-96-0718H-2; Big Gulch; LOT1 7-147N-96W; 2SEC; Dunn; Bakken; horizontal; 20,702; 2/18/2014; 946 bbl  
 26132; LK-A STR CIR- 147-96-0718H-3; Big Gulch; LOT1 7-147N-96W; 2SEC; Dunn; Bakken; horizontal; 21,194; 2/28/2014; 786 bbl  
 24783; LK-Bice-147-97- 1201H-4; Big Gulch; SWSE 12-147N-97W; 2SEC; Dunn; Bakken; horizontal; 21,118; 2/9/2014; 789 bbl  
 25095; LK-Bice 147-97- 1201H-5; Big Gulch; SWSE 12-147N-97W; 2SEC; Dunn; Bakken; horizontal; 21,105; 2/17/2014; 896 bbl  
 23642; SC-Mari-153-98- 2223H-1; Truax; NWNW 22-153N-98W; 2SEC; Williams; Bakken; horizontal; 20,240; 2/28/2014; 921 bbl

### HRC Operating (Halcon Resources)

25499; Moline 157-100-20D-17-2H; Marmon; SWSE 20-157N-100W; 2SEC; Williams; Bakken; horizontal; 20,148; 2/11/2014; 707 bbl  
 26211; Moline 157-100-20D-17-3H; Marmon; SWSE 20-157N-100W; 2SEC; Williams; Bakken; horizontal; 20,037; 2/11/2014; 1,188 bbl

### Marathon Oil

26287; Adam Ell 34-33H; Murphy Creek; SWSE 33-145N-96W; 2SEC; Dunn; Bakken; horizontal; 21,058; 2/25/2014; 1,934 bbl

### SM Energy

24524; Koeser 4X-26H; Siverston; NWNW 26-150N-98W; 2SEC; McKenzie; Bakken; horizontal; 21,367; 2/14/2014; 896 bbl  
 24446; Lucille 1-27H; Siverston; NENE 27-150N-98W; 4SEC; McKenzie; Bakken; horizontal; 21,366; 2/15/2014; 851 bbl  
 24447; Lucille 1X-27H; Siverston; NENE 27-150N-98W; 2SEC; McKenzie; Bakken; horizontal; 21,460; 2/10/2014; 828 bbl

### Whiting Oil and Gas

24540; Levi Federal 21-33H; Sanish; NENE 33-153N-91W; 2SEC; Mountrail; Bakken; horizontal; 17,800; 2/19/2014; 2,271 bbl

### XTO Energy (ExxonMobil)

25430; FBIR Youngbear 31X-9A; Heart Butte; NWNE 9-148N-92W; 2SEC; Dunn; Bakken; horizontal; 20,478; 2/28/2014; 1,759 bbl  
 25431; FBIR Youngbear 31X-9E; Heart Butte; NWNE 9-148N-92W; 2SEC; Dunn; Bakken; horizontal; 20,819; 2/25/2014; 1,785 bbl  
 25429; FBIR Youngbear 31X-9F; Heart Butte; NWNE 9-148N-92W; 2SEC; Dunn; Bakken; horizontal; 20,263; 3/5/2014; 1,410 bbl

## IPs for ND wells released from confidential status

### Burlington Resources Oil and Gas (ConocoPhillips)

26081; Big Bend 11-2MBH; Camel Butte; LOT4 2-151N-96W; N/A; McKenzie; Bakken; horizontal; N/A; N/A; N/A  
 26082; Big Bend 11-2TFH; Camel Butte; LOT4 2-151N-96W; N/A; McKenzie; Bakken; horizontal; N/A; N/A; N/A  
 26069; Big Jon 11-2MBH-ULW; Camel Butte; LOT4 2-151N-96W; N/A; McKenzie; Bakken; horizontal; N/A; N/A; N/A

### Continental Resources

24490; Durham 4-2H; North Tobacco Garden; LOT2 2-151N-99W; N/A; McKenzie; Bakken; horizontal; N/A; N/A; N/A  
 26369; Palahniuk 1-1H; Whitetail; NWNE 1-143N-99W; 2SEC; Billings; Bakken; horizontal; 20,924; 1/15/2014; 569 bbl

### Hess Bakken Investments II

24515; LK-Summerfield- 147-96-15H-2; Bear Creek; SWSE 15-147N-96W; N/A; Dunn; Bakken; horizontal; N/A; N/A; N/A

## Top 10 Bakken wells by IP rate

### Whiting Oil and Gas

24540; Levi Federal 21-33H; Sanish; Mountrail; 2,271 bbl

### Marathon Oil

26016; Schaefer 34-23TFH; Chimney Butte; Dunn; 2,084 bbl

### Kodiak Oil and Gas

25976; P Vance 154-97-4-17-20-14H; Truax; Williams; 1,976 bbl

### XTO Energy (ExxonMobil)

25431; FBIR Youngbear 31X-9E; Heart Butte; Dunn; 1,785 bbl  
 25430; FBIR Youngbear 31X-9A; Heart Butte; Dunn; 1,759 bbl  
 25429; FBIR Youngbear 31X-9F; Heart Butte; Dunn; 1,410 bbl

### Newfield Production

26251; Eide 150-99-7-6-3H; Tobacco Garden; McKenzie; 1,167 bbl

### Hess Bakken Investments II

26131; LK-A STR CIR- 147-96-0718H-2; Big Gulch; Dunn; 946 bbl

### Hess Bakken Investments II

25095; LK-Bice 147-97- 1201H-5; Big Gulch; Dunn; 896 bbl

### SM Energy

24524; Koeser 4X-26H; Siverston; McKenzie; 896 bbl

*Note: This chart contains initial production rates, or IPs, from the adjacent IP chart for active wells that were filed as completed with the state of North Dakota from Mar 18-24, 2014 in the Bakken petroleum system, as well as active wells that were released from tight-hole (confidential) status during the same period. The well operator's name is on the upper line, followed by individual wells; the NDIC file number; well name; field; county; IP oil flow rate in barrels of oil.*

24516; LK-Summerfield- 147-96-15H-3; Bear Creek; SWSE 15-147N-96W; N/A; Dunn; Bakken; horizontal; N/A; N/A; N/A  
 24517; LK-Summerfield- 147-96-15H-4; Bear Creek; SWSE 15-147N-96W; N/A; Dunn; Bakken; horizontal; N/A; N/A; N/A

### Hunt Oil

26256; Alexandria 161-100-24-13H-1; Alexandria; SESW 24-161N-100W; 2SEC; Dunn; Bakken; horizontal; 18,664; 11/20/2013; 48 bbl

### Kodiak Oil and Gas

26031; P Earl Rennerfeldt 154-99-1-3-10-15H3; Stockyard Creek; LOT1 3-154N-99W; N/A; Williams; Bakken; horizontal; N/A; N/A; N/A  
 26029; P Earl Rennerfeldt 154-99-1-3-10-16H; Stockyard Creek; LOT1 3-154N-99W; N/A; Williams; Bakken; horizontal; N/A; N/A; N/A  
 26030; P Earl Rennerfeldt 154-99-1-3-27-1H; Epping; LOT1 3-154N-99W; N/A; Williams; Bakken; horizontal; N/A; N/A; N/A  
 26032; P Earl Rennerfeldt 154-99-1-3-27-2H3; Epping; LOT1 3-154N-99W; N/A; Williams; Bakken; horizontal; N/A; N/A; N/A  
 25975; P Vance 154-97-4-17-20-13H3A; Truax; NWNW 17-154N-97W; 2SEC; Williams; Bakken; horizontal; 20,920; 2/10/2014; 1,701 bbl  
 25976; P Vance 154-97-4-17-20-14H; Truax; NWNW 17-154N-97W; 2SEC; Williams; Bakken; horizontal; 21,040; 2/10/2014; 1,976 bbl  
 21644; Wildrose 159-97-13-8-20-13H3; Corinth; SWSW 8-159N-97W; 2SEC; Williams; Bakken; horizontal; 20,264; 12/5/2013; 357 bbl

### Marathon Oil

26464; Kimball 14-35TFH; Reunion Bay; LOT3 2-150N-93W; N/A; Mountrail; Bakken; horizontal; N/A; N/A; N/A  
 26016; Schaefer 34-23TFH; Chimney Butte; SWSE 23-146N-95W; 2SEC; Dunn; Bakken; horizontal; 20,625; 2/9/2014; 2,084 bbl

### Murex Petroleum

25714; Holice 2-11H; Writing Rock; LOT3 2-161N-101W; 2SEC; Divide; Bakken; horizontal; 18,575; 11/23/2013; 137 bbl

### Newfield Production

26252; Eide 150-99-7-6-2H; Tobacco Garden; LOT1 18-150N-99W; 2SEC; McKenzie; Bakken; horizontal; 21,550; 1/12/2014; 734 bbl  
 26251; Eide 150-99-7-6-3H; Tobacco Garden; LOT1 18-150N-99W; 2SEC; McKenzie; Bakken; horizontal; 21,956; 1/14/2014; 1,167 bbl

### North Plains Energy

25706; Solberg 160-101-21-16-13B-1H; Sioux Trail; SWSW 21-160N-101W; N/A; Divide; Bakken; horizontal; N/A; N/A; N/A  
 25705; Solberg 160-101-28-33-21-13A-1H; Sioux Trail; SWSW 21-160N-101W; N/A; Divide; Bakken; horizontal; N/A; N/A; N/A

### Oasis Petroleum North America

25353; Link 13-24HTF; Foreman Butte; SESW 12-150N-102W; 2SEC; McKenzie; Bakken; horizontal; 21,525; 11/28/2013; 872 bbl

### Oxy USA (Occidental Petroleum)

25642; State Brian Sadowsky 2-3-10H-142-97; Willmen; LOT3 3-142N-97W; 2SEC; Dunn; Bakken; horizontal; 20,279; 9/19/2013; 530 bbl

### QEP Energy

24421; MHA 5-32-31H-150-90; Deep Water Creek Bay; NWSW 33-150N-90W; ICO; McLean; Bakken; horizontal; 18,754; 1/16/2014; 562 bbl  
 24419; MHA 6-32-31H-150-90; Deep Water Creek Bay; NWSW 33-150N-90W; ICO; McLean; Bakken; horizontal; 18,820; 1/15/2014; 667 bbl

### Slawson Exploration

23200; Fox 4-28H; Van Hook; SWSE 21-152N-92W; N/A; Mountrail; Bakken; horizontal; N/A; N/A; N/A  
 24920; Hunter 6-8-17TFH; Big Bend; NENE 8-151N-92W; N/A; Mountrail; Bakken; horizontal; N/A; N/A; N/A  
 24921; Jeriyote 6-5-32TFH; Big Bend; NWNW 8-151N-92W; N/A; Mountrail; Bakken; horizontal; N/A; N/A; N/A  
 23197; Zulu 3-21H; Van Hook; SWSE 21-152N-92W; N/A; Mountrail; Bakken; horizontal; N/A; N/A; N/A  
 23198; Zulu 4-21H; Van Hook; SWSE 21-152N-92W; N/A; Mountrail; Bakken; horizontal; N/A; N/A; N/A

### SM Energy

26135; Doris 1X-13H; Poe; NENE 13-151N-100W; 2SEC; McKenzie; Bakken; horizontal; 21,485; 1/22/2014; 705 bbl  
 26136; Elery 1-13H; Poe; NENE 13-151N-100W; N/A; McKenzie; Bakken; horizontal; N/A; N/A; N/A

### WPX Energy Williston

22109; Mary R Smith 5-8HX; Van Hook; LOT4 5-150N-92W; 2SEC; Mountrail; Bakken; horizontal; 20,965; 12/26/2013; 1,106 bbl

### XTO Energy (ExxonMobil)

25979; Inga Federal 41X-29D; Haystack Butte; NENE 29-148N-97W; N/A; Dunn; Bakken; horizontal; N/A; N/A; N/A  
 25980; Inga Federal 41X-29H; Haystack Butte; NENE 29-148N-97W; N/A; Dunn; Bakken; horizontal; N/A; N/A; N/A  
 26312; Kanyer Federal 11X-15B; Haystack Butte; NWNW 15-154N-97W; N/A; Dunn; Bakken; horizontal; N/A; N/A; N/A  
 26313; Kanyer Federal 11X-15F; Haystack Butte; NWNW 15-154N-97W; N/A; Dunn; Bakken; horizontal; N/A; N/A; N/A

—Compiled by Ashley Lindly

Contact Ashley Lindly at  
 alindly@petroleumnewsbakken.com

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continued from page 1

## MARATHON TARGET

### Co-development opportunities

Marathon also is progressing with evaluating and appraising “co-development opportunities” with the Bakken’s deeper Three Forks benches in North Dakota, he noted, as well as with the Eagle Ford’s Austin Chalk play in Texas.

In Oklahoma’s resource basins, Marathon continues to develop its South Central Oklahoma Oil Province, SCOOP, acreage, while assessing the Southern Mississippi Trend and Granite Wash horizons, “all of which could further expand our current resource estimates,” Tillman said.

Marathon averaged about 144,000 barrels of oil equivalent per day across its three U.S. resource plays in the fourth quarter of 2013, with roughly 40,000 boepd coming from the Bakken petroleum system, up from 38,000 boepd in the prior quarter.

Marathon’s ambitious 28-rig program, up from last year’s 22 rigs covering the three resources plays, is underpinned by 2.4 billion boe of proven and probable reserves — doubled since 2011 — and more than 4,500 net well locations. Since December, rig activity has been increased 20 percent each in the Bakken and Eagle Ford and 100 percent in the Oklahoma Woodford, according to the company.

### Bakken gets \$1 billion in capex

Moreover, greater than 60 percent or \$3.5 billion of the company’s 2014 worldwide capital expenditure budget of \$5.9 billion is allocated to U.S. unconvention-

al plays. Nearly one-third of the \$3.5 billion, or just over \$1 billion, is going to the Bakken.

Roughly \$1.4 billion is earmarked for conventional North America and international exploration and production assets, including the Gulf of Mexico, Norway, Equatorial Guinea, the UK, Libya and Iraq.

Now that Marathon’s drilling program is up to speed, six rigs are working the Bakken, where 75 to 85 net wells are to be drilled in 2014, along with 20-24 net well recompletions, Marathon cited in its Howard Weil presentation.

There are now “future growth opportunities” to capture 800 million boe in “total resource” on its 370,000 net acres in the Bakken, Marathon said, noting that it had 630 million boe in proved and probable reserves at year-end 2013 compared to 345 million boe at year-end 2011, a hefty 83 percent increase in so-called 2P resource.

The anticipated production gains from these reserves will come by way of additional infill drilling in the Middle Bakken and first bench of the Three Forks, TF1, formation, tapping lower benches of the Three Forks, continued improvement in well completion design, and the addition of “other horizons,” Marathon said.

“Three Forks first bench contribution (is) growing,” Marathon said, adding that its economics are now “consistent” with upper Middle Bakken play.

### Bigger slice of the pie

TF1 accounted for 23 percent of Marathon’s operated production in 2013, compared to just 3 percent in 2011. Consequently, more TF1 pilot tests are scheduled for this year to further define its potential. Currently, 64 of Marathon’s 400 producing wells are in TF1, with 45 more planned for 2014.

Marathon, as other operators are doing, is testing the “co-development” of Three Forks and Middle Bakken wells in higher density on a single drilling pad. Field work includes testing 320-acre spacing for co-development of four Middle Bakken wells and four Three Forks wells per 1,280-acre unit.

“Early testing at 320-acre spacing (is) yielding encouraging results,” Marathon noted in the presentation, adding that higher density spaced pilots are planned for the second half of 2014 in the Myrmidon and Hector areas of North Dakota.

“In our particular acreage areas which we believe to be very high quality, we’re seeing excellent performance and tight curves from the Three Forks first bench,” Tillman said in February conference call with industry analysts.

### Testing lower bench potential

Marathon also is looking at the production potential of the lower benches of Three Forks, with initial focus on the second bench, TF2, in the Myrmidon area, where six company-operated wells are planned for 2014-15. Permitting is currently in progress, Marathon said.

Additionally, Marathon has a working interest in two TF2 and TF3 pilot projects headed up by other operators, OBO, at the Rollefstad and Hartman units and one joint interest pilot, JIP, at the Hawkinson unit.

The Continental Resources-operated Hawkinson pilot already has established TF2 and TF3 commerciality, though additional testing will be required to determine proper well spacing.

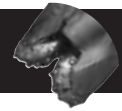
Marathon also has managed to dramatically lower drilling costs. During the fourth quarter of 2013, the

see **MARATHON TARGET** page 12

Petroleum News

**Bakken**

## Oil Patch Bits



### Painting and coating specialist joins Abrasives

Abrasives Inc. is pleased to welcome Cliff Schaan to their customer relations team serving North Dakota. With more than 33 years of industrial painting and coating in the field, North Dakota native Schaan is no stranger to issues on the job site. If there is a question about how to tackle a project, rest assured, he has been in the same position and knows a thing or two about how to get the job done in spite of the challenges.

As Abrasives Inc. grows and changes to meet the unique needs of western North Dakota, Schaan brings his wide knowledge base and more than three decades of experience with him to Abrasives. His career began as an apprentice, and then he gained hands on experience as a journeyman painter and ultimately earned the position of division manager at Swanson & Youngdale in Beulah, N.D., before joining the Abrasive team.

Schaan is excited to help other coating professionals troubleshoot and find a better way to complete projects.

An employee-owned corporation, Abrasives Inc. is home to Black Magic “The Tough Stuff” coal slag, a blast-cleaning favorite throughout the United States and Canada.

Abrasives is also home to Dakota Gold silica sand and distributes a full line of blast material including Starblast, steel shot and grit, garnet, aluminum oxide, soda and custom orders. In addition, Abrasives is an authorized Clemco, RKL and Graco distributor and service center.

For more information, visit [www.AbrasivesInc.com](http://www.AbrasivesInc.com).



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## Bakken Players

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MOVING HYDROCARBONS

# Crestwood continues Arrow gathering expansion

By MIKE ELLERD

Petroleum News Bakken

The U.S. Environmental Protection Agency is accepting public comments for an air quality permit application to construct a new crude oil and natural gas gathering and transmission station proposed by Arrow Midstream as part of an expansion to its existing gathering system on the Fort Berthold Indian Reservation in northern Dunn County, N.D. The permit addresses facility-wide emissions from engines, storage tanks and truck loading operations. The comment period is open through April 20, and comments can be submitted to the EPA at its Region 8 office in Denver.

By 2015, the expansion will increase crude oil throughput capacity on the Arrow system to 125,000 barrels per day, natural gas throughput to 100 million cubic feet per day and water throughput to 40,000 bpd. The system currently has five compressor stations in operation with two more in the design and permitting stages, all intended to enhance natural gas capture in the area.

The Arrow Pipeline system consists of 485 miles of pipeline that gathers crude oil, natural gas and water on the reservation in northern Dunn and southeastern McKenzie counties. The Arrow system is currently connected to approximately 300 wells and plans are to connect an additional 100 wells this year. Arrow's system interconnects with Oneok's Bear Paw pipeline for delivery of natural gas just east of Johnson's Corner in McKenzie County. The Arrow system also delivers crude oil to Tesoro, Bakken Link

## Integrating the Bakken Footprint

Arrow's CDP is a strategic liquidity hub, which complements COLT Hub; Crestwood currently ~18% of Bakken crude oil production

Synergy Potential

- Arrow system is ~ 60 miles southeast of CMLP's COLT Hub crude rail and pipeline terminal
  - COLT Hub is North Dakota's most active crude by rail facility; expansion to be completed in 1Q 2014
    - 160,000 BPD unit train capacity; 1.2 MMBls crude oil storage; 105,000 BPD pipeline capacity; 96,000 BPD truck rack unloading capacity
    - 150,000 BPD rail loading take or pay contracts with refiners (70% of flow to Pacific NW)
- Direct connectivity between Arrow and COLT Hub through Hiland and Tesoro Pipelines
  - Improves pricing and sales optionality for Arrow producers
  - Improves access to new wellhead supplies for COLT customers

and Hiland Partners pipelines as well as to the COLT connector pipeline providing crude oil access to both the COLT terminal at Epping and the Dry Fork Terminal at the Beaver Lodge/Ramberg pipeline hub junction in Williams County.

Arrow Midstream was acquired by

Crestwood Midstream in November 2013 after it acquired the COLT terminal in October through a merger with Inergy Midstream. As of December 2013, Crestwood transported 18 percent of Bakken crude oil production, but that number is anticipated to go up. In addition to

the Arrow system enhancements, Crestwood is also expanding the rail loading capacity, crude storage pipeline and truck unloading capacities at the COLT terminal (see slide). ●

Contact Mike Ellerd at [mellerd@bresnan.net](mailto:mellerd@bresnan.net)

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## BACK FOR AN ENCORE

acreage and prove-up the central basin, and then flip the assets to another company," President Mark Pearson told Petroleum News Bakken.

Riverstone Partner John Lancaster said, "The (Liberty) team was simply able to extract more oil per wellbore on average than other producers in the region by deploying a proprietary and highly effective pressure stimulation approach. Our strategy in Liberty II is to deploy the same team and capabilities in areas where we think this approach can produce similar outperformance."

Liberty was also the largest investor in Zavanna during that time, and ran all of its completions, so the two companies shared top spots for the highest-performing wells in the Bakken (see chart). While many top operators saw solid results, all fell short of Liberty. Pearson notes that Zavanna's results were slightly lower than Liberty because they had wells on 640-acre rather than 1,280-acre spacing units and, hence, shorter laterals.

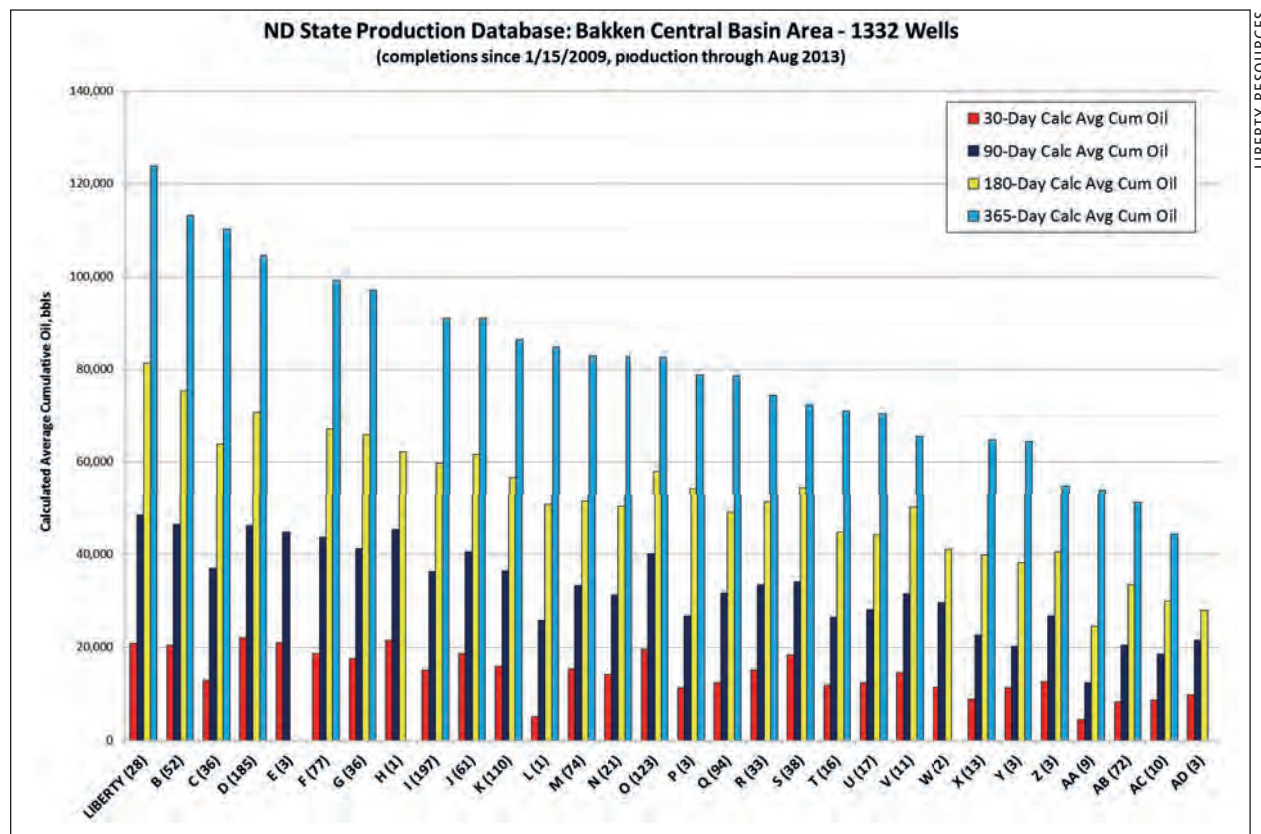
"When financial people look at what we do, they shake their heads at the rest of the industry wondering why they aren't copying this," Pearson said. "That's just the reality of the industry. People get in their particular way, and they have a cost structure to stay in."

### It's not all about geology

Liberty developed a model to determine what factors influence production in the Bakken, and found six essential parameters that can calculate projected cumulative oil recovery with amazing accuracy. Of the six, only one is related to geology with the other five dependent on completion techniques.

"If you want to maximize recovery you need to focus on completion parameters," Pearson said. "Most companies are trying to cut costs on completions and that will have a detrimental effect on their production."

Liberty's completion techniques do come with a steep price tag. Pearson said the company is spending \$3.4 million to \$4 million to complete a well, while many other operators are trying to keep costs to around \$1 million. But he said the costs are recovered within two months, and he would argue that this is the area where money should be spent.



"Fracks used to be 10 percent of the cost, but now frack and completion is more than the cost of drilling and some companies have a hard time wrapping their head around that," Pearson said.

The data show Liberty wells only get better with time. Initial production over 30 days is 10 percent higher than the average in the central basin, then it jumps to 30 percent higher over 180 days and soars to a 56 percent performance increase over one year.

"By no means do we have the best geology, because we got in there late," Pearson said. "We have a relatively high water cut, but it all comes down to completion."

Liberty uses a plug and perf completion with a large number of stages, exclusively using slickwater fluid and ceramic proppant.

"When we started using these, we built ourselves a database of every central basin well, how it's completed, and the production data," Pearson said. "So we can match our understanding of geology with completion information, production data and benchmark performance of dif-

ferent completions."

Out of necessity, the company gave birth in 2011 to Liberty Oilfield Services, a hydraulic fracturing company, since there was a shortage of service companies and most were not interested in working with a company not large enough to commit to a full-time contract.

Liberty II will apply its expertise in well completion design and execution within its inventory of approximately 100 Bakken and Three Forks drilling locations throughout the newly acquired acreage. The company acquired the Bakken assets from Sequel Energy, and though the completion strategies will be similar, the business plan is different. It will be a five-year plan, taking three to four years to complete the drilling work.

"Private equity models are always looking to monetize, that's the nature," Pearson said. "We'll draw up all the assets and then look to monetize flowing production from those assets, though we may still operate it." ●

Contact Maxine Herr at [maxine606@msn.com](mailto:maxine606@msn.com)

LIBERTY RESOURCES

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## MARATHON TARGET

company's drilling and completion costs fell about 10 percent compared to a year earlier, even as the company has increased the volumes of stimulation fluid and proppant it is using.

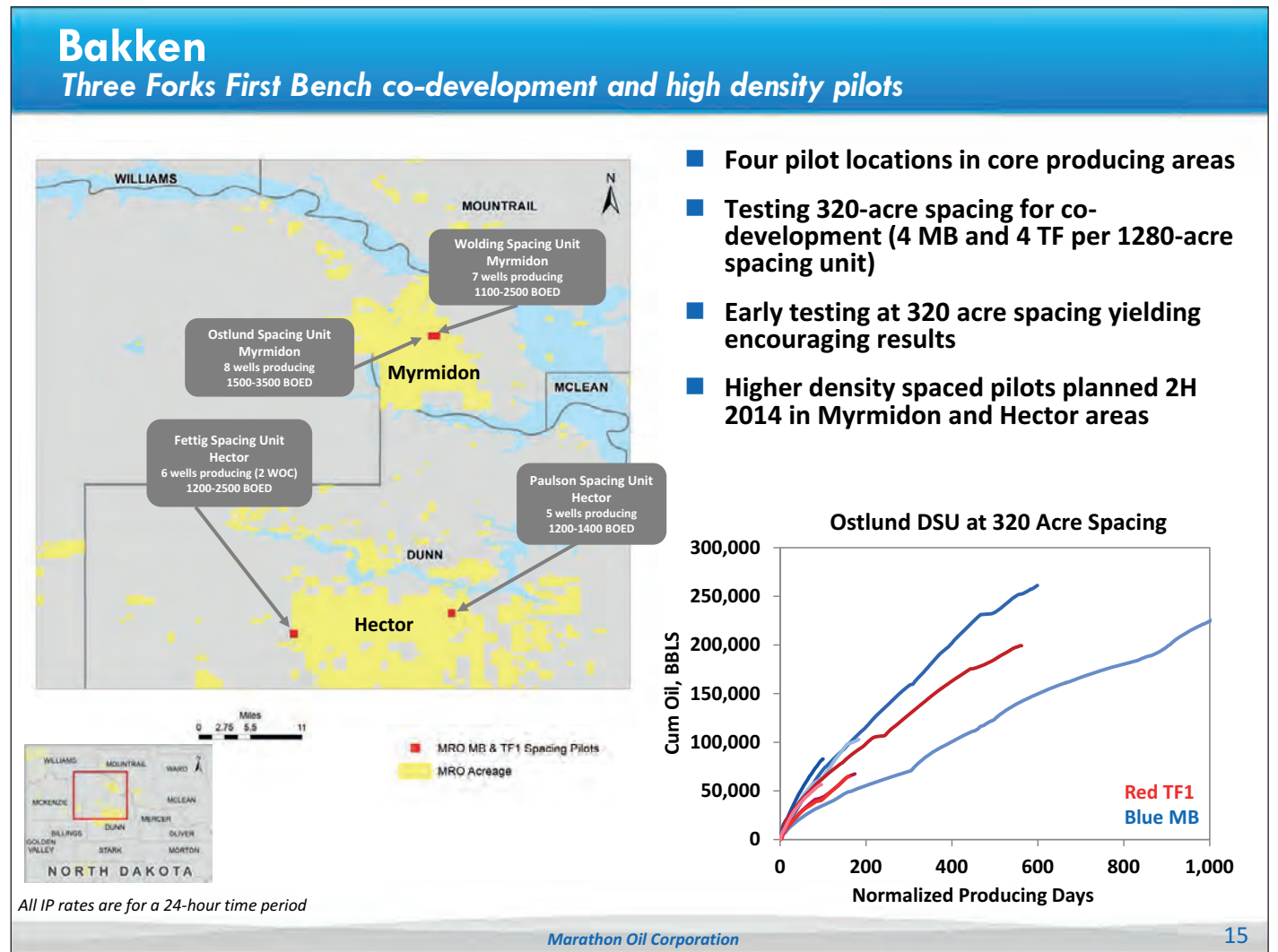
No doubt that performance was helped by the fact the company's average time to drill a Bakken well improved about 16 percent compared to a year earlier, averaging 15 days spud-to-total depth. This year the company is aiming to further lower completed well costs to \$7-7.8 million per well.

### Eagle Ford's 'future opportunities'

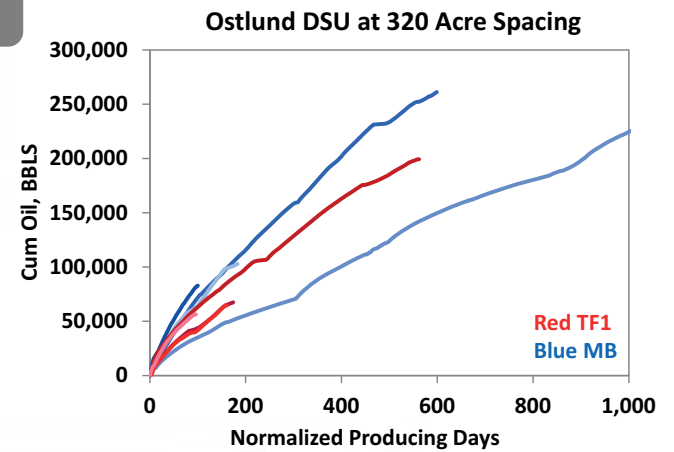
In its flagship resource play, the Eagle Ford, there are now "future opportunities" to capture 1.7 billion boe of total identified resource, Marathon said. That will be possible by exploiting the Austin Chalk and other horizons, along with reducing infill drilling from 60-acre areas to 30 acres, increasing the recovery factor through completion efficiency, and the recompletion of existing wells, the company explained.

Wells drilled at 40- and 60-acre spacing in 2013 exhibited higher initial production, IP, rates than wells at 80-160-acre spacing in 2011, Marathon said, noting that early 2014 wells at 40-acre spacing demonstrated even further improvements.

Moreover, zipper stimulations from pads "materially impacted" complexity and improved recovery, the company said, while fluids, volumes, rates, cluster spacing and proppant loading all evolved



- Four pilot locations in core producing areas
- Testing 320-acre spacing for co-development (4 MB and 4 TF per 1280-acre spacing unit)
- Early testing at 320 acre spacing yielding encouraging results
- Higher density spaced pilots planned 2H 2014 in Myrmidon and Hector areas



with spacing. Meanwhile, geologic completions, proppant size, gel loading, sleeve technology and perforation clusters are being tested.

Marathon said initial Austin Chalk wells have proven to be competitive with the Eagle Ford, noting that co-development from five wells produced "encour-

aging early results." Two more pilots were to be spud in March, with one or two additional pilots planned for the second quarter, the company said.

During the fourth quarter of 2013, Marathon produced an average 90,000 boepd from the Eagle Ford on its 200,000-acre position.

And though Marathon's Oklahoma production accounted for just 14,000 boepd in the fourth quarter, the basins hold an estimated 1.2 billion boe of total resource, the company emphasized. ●

Contact Ray Tyson  
at rtyson@petroleumnews.com

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## LEASE AUCTION

At 7,840 acres, the preliminary acreage for the June auction ranks as the fifth lowest for all oil and gas lease auctions back through 2008, and those auctions date back only as far as December 2012, i.e. five of the last seven auctions. Over the last six years the acreage offered per auction has been just over 69,000 acres, putting the June 2014 acreage far below average. However, the tracts in

the June auction average 490 acres, slightly above the six-year average of 410 acres. In the March 4 auction, 3012 acres were leased averaging \$266.34 per acre, the highest price per acre over the last six years. That average was bolstered by two Richland County tracts.

With the preliminary auction list released, DNRC is now seeking comments on the nominated acreage. All comments must be submitted by April 25. Prior to any exploration and production activity on any of the leases, DNRC will prepare environmental reviews of activities proposed for the leases.

The final auction list will be released on or about May 12.

Detailed maps of the nominated tracts in each county, as well as additional auction information, are available on the Trust Land Management Division's website at <http://dnrc.mt.gov/trust/MMB/OG/Default.asp>. The auction will be held in the auditorium at the Montana Department of Transportation building in Helena beginning at 9 a.m. Mountain Standard Time on June 3.

—MIKE ELLERD

Contact Mike Ellerd at mellerd@bresnan.net

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## LEGAL COLUMN

visited the Smiths' farm to attempt to purchase an easement across their land. Since the Smiths were in poor health, the Alliance representatives were directed to Guy Solemsaas, who is the son of Ione and stepson of Leonard Smith, who also happens to live next to the Smiths. Solemsaas told Alliance that neither he nor the Smiths would negotiate a sale of an easement across the Smiths' lands.

On April 13, 2012, Alliance visited the Smiths again and served them with a state court summons and petition to enter and survey the property. The state court granted that petition on May 15, 2012. Finally on Sept. 20, 2012, FERC granted Alliance its certificate of public convenience and necessity for the pipeline. On Oct. 16, 2012, Alliance brought a condemnation action against two parcels of land owned by the Smiths, which comprised 4.36 acres. Alliance moved for summary judgment of condemnation and for immediate use and possession of the acreage. Both motions were granted Nov. 2, 2012.

### What the court thought

The Smiths challenged the FERC certificate in the condemnation action. The federal district court and the court of appeals refused to allow the collateral attack on the administrative certificate.

While indicating that it would not rule on the issue, the court of appeals did note that the Smiths received notice of the FERC application. "Perhaps the Smiths, as an elderly couple in rural North Dakota, should not be charged with notice of the Federal Register. But their counsel in the state court proceeding to enter and survey their land (who also represents the Smiths in this proceeding) can claim no such lack of notice," wrote the appellate court.

The Smiths' attempt to challenge the procedure used by Alliance in the condemnation action also was unsuccessful. North Dakota state law provides for a jury trial to determine the value of condemned land; however, the court of appeals found that the federal rules superseded state law.

The last substantive argument the Smiths proffered was that Alliance failed to negotiate in good faith before they commenced the condemnation action. The federal courts are split as to whether negotiation with landowners requires good faith, or not. This opinion, however, does not reach that issue; instead it states that even if good faith is required, Alliance met its burden. Alliance was able to purchase easements from 90 percent of the landowners, and they provided information as to how they calculated their offer.

The Smiths also argued that the court granting immediate use and possession of the land was in error. Since the Smiths

would need to have succeeded on the merits of the underlying action and arguments, that argument was foreclosed. Alliance had deposited its offered \$3,000 per acre payment for the easement rights, and the court found that any prejudice to the Smiths' property could be outset by

that deposit. In fact the Tioga Lateral pipeline began construction in October 2012 and had an official in-service date of Sept. 1, 2013. ●

Contact Jannelle Steger Combs  
at jannelle@stegerlawoffice.com

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## REFINERY PLANS

to 180,000 bpd in 2014.

The Fairview refinery brings to six the number of refineries either existing, under construction or proposed in North Dakota, potentially boosting the state's refining capacity to 168,000 bpd. Tesoro's refinery at Mandan now has a processing capacity of 68,000 bpd, and MDU Resources and Calumet's Dakota Prairie refinery under construction near Dickenson will have 20,000 bpd processing capacity. The Thunder Bay refinery on the Fort Berthold Indian Reservation, also currently under construction, will also have 20,000 bpd capacity. Dakota Oil Processing has plans to build a diesel topping refinery southwest of Williston with a processing capacity of 20,000 bpd. And Michigan-based American Energy Holdings announced in January that it is exploring a possible 20,000

bpd diesel and jet fuel refinery near Devils Lake.

### Quantum's move to the Bakken

In early December, Quantum said it was redirecting its oil and gas focus away from Barnett shale fields in Texas and toward North Dakota and that it was opening an office in Williston. In that announcement, Quantum also said it had secured consultants to assist in pursuing refinery opportunities in the Bakken.

Later in December, Quantum said it had signed an engagement agreement with Data Capital Corp. to assist Quantum in forming a business development company to fund refinery development opportunities and help Quantum fund oil and gas exploration, drilling, completion and fuel distribution endeavors.

—MIKE ELLERD

Contact Mike Ellerd  
at mellerd@bresnan.net