



## Dakota Prairie taking shape



VERN WHITTEN PHOTOGRAPHY

Construction continued in November on the Dakota Prairie diesel-topping refinery west of Dickinson, N.D. The project is a joint venture between MDU Resources and Calumet Specialty Products Partners.

## North Dakota Light Sweet still in a Midcontinent price slump

While Bakken crude oil has generally traded at a discount to West Texas Intermediate, WTI, on Midcontinent markets, North Dakota Sweet took a hit on the Flint Hills Resources market in early November and has not yet recovered. From January through October, North Dakota Sweet had been trading at an average discount of \$9.27 below WTI, but since Nov. 1, that discount has widened to an average of \$23.20 through the first two weeks of December.

In addition to North Dakota Light Sweet, other benchmark crudes that Petroleum News Bakken watches are WTI, Brent and Alaska North Slope, ANS. Those benchmark crudes generally reflect pricing at Midcontinent, East Coast

see **NORTH DAKOTA SWEET** page 15

## October rail exports increase amid a widening Brent/WTI spread

After giving up Williston Basin crude oil export market share to pipelines from May through August, railroads gained back some of that market share for the second consecutive month in October, pulling six percentage points from pipelines. As of the end of October, railroads accounted for 69 percent of Williston Basin crude oil exports.



JUSTIN KRINGSTAD

Concurrent with railroad's increase in export market share is a widening Brent/WTI spread since July (see chart). That price differential offers Williston Basin

see **RAIL EXPORTS** page 14

## Devils Lake eyed by Michigan firm as proposed refinery location

Mark Carlson, chief operating officer of Michigan-based American Energy Holdings, said that in January his company will present a preliminary proposal to the city of Devils Lake proposing construction of a \$250 million refinery on industrial land in that northeastern North Dakota community.

Carlson told Petroleum News Bakken on Dec. 18 that he has identified a number of reasons why Devils Lake presents a viable location.

Devils Lake may not be in the Bakken, but land is less expensive and the city offers incentives for locating there, he said.

see **REFINERY LOCATION** page 6

### MOVING HYDROCARBONS

# Highly dangerous?

Transport Canada expected to elevate crude oil to highest hazard level

By GARY PARK

For Petroleum News Bakken

The Canadian government and federal transportation regulators are tightening their squeeze on shippers using rail to move crude out of the Bakken and other sources in Western Canada, with Transport Minister Lisa Raitt hinting that crude could soon be designated as a dangerous substance.

Raitt has given a working group within her department until the end of January to draft an Emergency Response Assistance Plan, or ERAP, which will move crude to the highest level of hazardous goods, targeting mid-2014 to implement a new regime governing oil shipments.



LISA RAITT

The new rules will require railways and importers to have specific emergency plans for crude, including the creation of specialized response teams to deal with accidents, matching the ERAPs that were put in place for chlorine and propane after a 1979 derailment in the Greater Toronto area forced the evacuation of 220,000 residents.

She said the government was no longer prepared to see Transport Canada continue its history of taking 10 or 15 years to hold "conversations and consultations" only to decide — as the agency did in 2006, 2008 and 2012 — not to treat oil as a particularly dangerous product.

see **CRUDE BY RAIL** page 15

### MOVING HYDROCARBONS

# The price of rail safety

PHMSA considering mandatory tank car standards that would require retrofitting

By GARY PARK

For Petroleum News Bakken

Replacing or refitting rail tanks cars to meet new safety measures contemplated by U.S. regulators could cost Hess alone \$140 million to replace 963 cars it ordered three years ago to move Bakken crude out of North Dakota, the shipper estimated in a filing to the U.S. Pipeline and Hazardous Materials Safety Administration.

In December 2010, Hess acquired the DOT-111 cars to deliver more than 50,000 barrels per day of Bakken crude from its Tioga, N.D., loading facility to various destinations.

It paid a 10 percent premium at the time, raising the cost of the cars to \$90 million, to meet new

The Railway Supply Institute has urged PHMSA to exempt all cars in service that comply with the 2011 voluntary standard, noting that 55,546 of those cars will be in service by 2015, representing an industry investment of at least \$7 billion.

safety specifications proposed by a task force of the American Association of Railroads.

In comments filed to an advance notice of proposed rulemaking by PHMSA, Hess said it could be faced with a \$140 million bill to acquire heavy-

see **RAIL SAFETY** page 15

### EXPLORATION & PRODUCTION

# 'Huge' operations shift

Companies reinvest savings from new technologies as ND output inches upward

By MAXINE HERR

For Petroleum News Bakken

The declining cost to drill a well in the Bakken is allowing oil companies to invest their dollars in additional operations in North Dakota.

In 2012, it was common to find only one well per pad, but as 2013 draws to a close, most pads are housing two or three wells, with walking rigs currently drilling as many as 14 wells per pad, that according to Department of Mineral Resource, DMR, Director Lynn Helms.

"There's just a huge shift in how the industry is operating," Helms said in a monthly press confer-



LYNN HELMS

ence in Bismarck on Dec. 13, and pointed out that multiwell pads have eliminated hundreds of truck trips and provide quicker drilling operations.

And the efficiency advancements continue with the North Dakota Industrial Commission considering an application from Continental Resources to drill up to 30 wells on an existing 2,560-acre spacing unit as Petroleum News Bakken reported in the Dec. 15 issue.

Alison Ritter, Public Information Officer for DMR, told Petroleum News Bakken Dec. 16 that 30 is the highest number of wells on a spacing unit the

see **OPERATIONS SHIFT** page 16

• MOVING HYDROCARBONS

# Global Partners enhancing ND export logistics

By **STEVE SUTHERLIN**

For Petroleum News Bakken

**G**lobal Partners LP is bullish on its position in North Dakota.

"Last February we bought two assets out in North Dakota, crude by rail, and we went into that business through to Albany (N.Y.) on Canadian Pacific – that's a single line haul, very efficient mover," Eric Slifka, Global Partners president and chief executive officer said at a Dec. 10 Wells Fargo energy conference. "We've been able to have these original assets collect and aggregate the products, the crude that goes into it," he said.

Global has 300,000 barrels of storage at its Columbus, N.D. facility, and another facility in Beulah where the company just completed 300,000 barrels of tankage, Slifka said.

## Beulah to West Coast

The Beulah facility is served by BNSF, which offers single haul service to the West Coast and connections to Global's Clatskanie, Ore. facility, Slifka said. "There's a

1,200 foot dock there, there's an ethanol plant there; it's a facility that has currently 200,000 barrels of storage," Slifka said. "That is a facility we are actively seeking to expand; we think there's a lot of value that can be created there if we're able to get the permits to do the expansion.

"It's one of the very few facilities on the West Coast that can transload crude and at the same time do ethanol with additional tankage," Slifka said.

## Columbus to East Coast

The Columbus facility is served by Canadian Pacific which facilitates single haul service delivering 160,000 bpd to Global's Albany plant, he said.

"The top T is located in Columbus and the two largest lines are on the Canadian Pacific," Slifka said. "The key is Canadian Pacific has backups, you can go up over Canada or you can go through the U.S. to supply the Albany market; once it gets to the Albany market, it goes out on a barge and it supplies the crude to the refineries from there."

A single line haul is important, Slifka said. "It's cost efficient; in a double line haul you must pay another car-

rier, which costs more money.

"In a single line haul you're talking travel time of four days; you load your train, and in four days it's to the Albany facility and then it's another day down by barge."

By contrast, if there was a pipeline route to the East Coast, "you're talking about a line fill of 45 days or more," he said.

## Expanded vision

Slifka said expansion opportunities for the company include not just building tank capacity but also connecting to other pipeline logistic systems.

"There are gathering systems that are being built and the key to making these assets really perform at capacity over time is going to be making sure that they get connected to the pipeline network that is there," he said.

Global is planning to make such pipeline connections at the Beulah site, Slifka said.

"That has not been connected yet but we are hopeful that we'll be able to have an announcement on something there in the near future," he said. ●

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MOVING HYDROCARBONS

# Crestwood handling 18% of Bakken output

Arrow system acquisition and expansion along with Colt Hub facility expansion poise Williston Basin midstream company for growth

By STEVE SUTHERLIN

For Petroleum News Bakken

Crestwood Midstream Partners LP now transports 18 percent of current Bakken output following its acquisition of the Arrow gathering system on the Fort Berthold Reservation and the COLT Hub in Epping, N.D., the company said in a Dec. 10 conference.

Crestwood's \$750 million purchase of the Arrow gathering system closed Nov. 8. Crestwood acquired the COLT Hub loading terminal in an Oct. 7 merger with Inergy Midstream LP.

Crestwood said it is positioning itself to be a full value chain midstream services provider for the Bakken Shale.

"We are excited about Crestwood's opportunities in 2014, and pleased to provide guidance that we believe demonstrates the merits of the transformational merger we completed this year," said Robert Phillips, Crestwood president and CEO. "Since announcing our business combination in May, we have focused on executing our strategy to leverage our operational critical mass in liquids-rich and crude oil shale plays to accelerate growth."

Arrow and COLT Hub are connected directly through the Hiland Pipeline and Tesoro Pipeline, which improves pricing and sales optionality for Arrow producers, the company said.

"It's a combination of assets located in the core of the Bakken; both have tremendous growth potential and a lot of operating synergy as well," Phillips said.

The Bakken acquisitions are a major part of the company's strategy to shift from handling dry gas, to a higher weighting of crude oil and natural gas liquids, Phillips said.

Phillips said the company's position in the Bakken, along with the Marcellus and the Niobrara, will drive the company's growth going forward.

On the heels of its expansion, Phillips said, the company has more than \$1.2 billion of identified multiyear growth projects in its current portfolio.

The COLT Hub expansion, which is expected to be completed in the first quarter of 2014, will increase crude oil rail loading capacity from 120,000 bpd to 160,000 bpd and is supported by take-or-pay contracts, the company said.

The Arrow system is being expanded to a total design capacity of 125,000 barrels per day of crude oil gathering, 100 million cubic feet per day of gas gathering and 40,000 bpd of produced water gathering.

## Arrow acquisition

At Arrow, the company said, it has long-term gathering contracts with committed Bakken Shale producers WPX Energy, QEP Energy Co., XTO Energy, Halcon and Kodiak Oil and Gas. Nine or ten rigs are expected to be operating in the area to drive 2014 volumes.

Arrow's operations extend from Dunn County to McKenzie County.

The system features 460 miles of gathering pipeline systems including 150 miles of crude oil gathering lines, 160 miles of natural gas gathering lines, and 150 miles of water gathering lines, Crestwood said.

"Arrow's oil, gas and water gathering systems have been engineered around modularity expandable stations strategically located along its footprint, (which) allows for highly capital-efficient capacity

**"It's a combination of assets located in the core of the Bakken; both have tremendous growth potential and a lot of operating synergy as well." —Robert Phillips, Crestwood president and CEO**

increases to match future throughput requirements," the company said.

There are multiple crude pipeline interconnects with the Tesoro pipeline, the Hiland pipeline and BakkenLink pipeline, the company said, adding that it also has a natural gas pipeline and processing connect with Oneok Inc.

A substantial gathering system expansion is under way, Crestwood said, and it is commissioning five new compressor stations to capture flared associated gas in the fourth quarter of 2013.

"Arrow undertook a significant 2013

capital investment program intended to provide core system capacity to get ahead of future expected throughput system demand," Crestwood said. The program undertook station build-outs, line looping projects, pump and compressor projects, and expansion projects to accelerate gathering of flared natural gas volumes — improving producer economics.

The 2013 system enhancements will increase throughput capacity from 60,000 bpd to more than 100,000 bpd in the first quarter of 2014, the company said. The majority of Arrow's large core system enhancement projects are either online currently or expected to be online during the fourth quarter of 2013.

The Arrow system is 60 miles southeast of Crestwood's COLT Hub crude rail and pipeline terminal

## COLT Hub

COLT Hub is North Dakota's most

active crude by rail facility, Crestwood said.


The expansion to a capacity of 160,000 bpd in the first quarter is matched by a 160,000 bpd unit train capacity, 1.2 million barrel crude oil storage, 105,000 bpd pipeline capacity, and a 95,000 bpd truck rack unloading capacity, Crestwood said.

Crestwood said the facility cash flow is assured by 130,000 bpd of rail loading take or pay contracts with refiners. Seventy percent of the flow is bound to the Pacific Northwest, it said.

The COLT Hub began commercial operation in May 2012. It is connected to the Burlington Northern Santa Fe rail system.









The COLT Connector, a 21-mile, 10-inch bi-directional pipeline connects the COLT terminal to the Crestwood Dry Fork Terminal, the company said. ●

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## ● NATURAL GAS

# ExxonMobil sees bright future for natural gas

A look at worldwide energy supplies, demands, markets and practical choices through 2040 foresees a cleaner mix of fuels

By **MAXINE HERR**

For Petroleum News Bakken

Natural gas is expected to be the fastest-growing major fuel through 2040, that according to ExxonMobil's energy outlook to 2014 which the company released on Dec. 12. The company's long-term global view of energy demand and supply predicts that global demand for natural gas will rise by close to 65 percent and account for about 40 percent of the growth in global energy needs.

ExxonMobil also predicts the largest contribution to fuels will come from natural gas liquids, NGLs, which should grow by 80 percent from 2010 to 2040. NGLs — such as ethane, propane and butane — are extracted from natural gas and can be used as feed stocks to manufacture plastics, heat homes or serve as additives to engine fuels.

"These projects will bring jobs and economic opportunity to gas-rich regions while providing much needed, cleaner energy to burgeoning cities and demand centers all around the world," said William Colton, ExxonMobil vice president of corporate strategic planning during a Dec. 12 webcast.

## Coal takes a back seat

By 2025, natural gas is projected to

overtake coal as the second-largest energy source, but Colton said while coal may become less important, it won't disappear.

"Look at the evolution of the energy industry," he said. "It's always been evolving toward a cleaner mix of fuels, so that shouldn't be a surprise."

Colton expects demand for coal to continue to rise until around 2025, and then decline despite its plentiful resource base. It is projected to fall from its 25 percent of the global energy share to less than 20 percent by 2040.

Along with its attraction as a cleaner fuel, natural gas resources are plentiful and geographically diverse. The International Energy Agency estimates the remaining recoverable natural gas resource worldwide to be about 28,600 trillion cubic feet — about 200 times the natural gas the world currently consumes in a year. As hydraulic fracturing and horizontal drilling techniques have tapped into unconventional natural gas sources, estimates of what is recoverable have doubled over the last decade.

From 2010 to 2040, unconventional gas production in North America is expected to grow by approximately 65 billion cubic feet per day, which is about the size of current U.S. gas production. ExxonMobil figures this abundant supply will shift the con-

tinued from a net importer to a net exporter by 2020 as production outpaces demand.

## LNG volumes to triple

Cooling and compressing natural gas into liquefied natural gas, LNG, is an expensive process, but LNG has an economical advantage in that it can be transported greater distances by ship and not restricted to pipeline.

"There will be an expansion of the market for LNG," Colton said. "When natural gas is cooled, it turns into a liquid and shrinks its volume. It can be shipped by tanker — think of it like a giant thermos on its side — and at its destination turned back into gas."

The global volume of LNG is expected to triple by 2040 which ExxonMobil believes will facilitate trade between regions, helping to balance global supply and demand of natural gas.

## Headed for the highway

The rise in natural gas resources globally has gained attention for its use as a transportation fuel. Owners of heavy-duty commercial vehicles express the biggest interest in this kind of natural gas use, a reflection of the economy producing more goods that need to be transported. In the Asia-Pacific region, compressed natural gas, CNG, is already successfully used to fuel transit buses and truck fleets. Although the price tag is \$30,000 more than its diesel

counterpart in the U.S., it could pay for itself within five years. Comparatively, trucks fueled by LNG could see a savings as soon as three years, despite the \$70,000 to \$90,000 price differential from diesel.

On the other hand, general consumers will find that natural gas as fuel for their cars is not nearly as economical. While natural gas prices are lower than gasoline, CNG cars cost about \$8,000 more. Since fuel economy is about the same, it would take a typical driver more than five years to recoup the extra cost.

Natural gas does, however, enjoy greater popularity with consumers as a source of electricity. ExxonMobil foresees the need for electricity to nearly double globally from 2010 to 2040.

"North America has the highest per capita use of electricity followed by Europe, and this is directly linked to high standards of living," Colton said. "The large growth in electricity in developing countries reflects improved standards of living and better access to electricity for billions of people. So how will we fuel this? Gas fired plants are competitive, but regulatory issues need to be addressed before it can be made practical."

ExxonMobil's report can be found at the following website: <http://corporate.exxonmobil.com/en/energy/energy-outlook>. ●

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## COMPANY UPDATE

### ND to get 17% of Baytex budget

Baytex Energy will devote the largest single portion of its 2014 light-oil capital program to the Bakken and Three Forks formations of North Dakota as it continues to chase "oil-weighted production growth," said Chief Executive Officer James Bowzer.

The Calgary-based company said 17 percent of its planned C\$485 million of capital expenditure will be pumped into North Dakota to drill about 15 (9.6 net) wells.

The overall exploration and development activities are designed to generate average production of 60,000-62,000 barrels of oil equivalent per day, compared with this year's guidance of 57,500-58,000 boe per day, or a growth rate of 6 percent for oil-equivalent volumes.

Baytex's capital budget includes 201 net wells, of which 156 target crude oil, three natural gas wells and 42 stratigraphic and service wells.

The company expects its production mix next year to be 89 percent liquids (75 percent heavy oil and 14 percent light oil and natural gas liquids) and 11 percent natural gas. About 70 percent of the capital budget is earmarked for heavy oil operations in the Lloydminster and Peace River plays, with 5 percent going to thermal-enhanced oil recovery projects.

Baytex said it plans to finance its 2014 capital budget and dividends with funds from operations and its existing credit capacity, noting that it had C\$605 million of undrawn credit on September 30.

—GARY PARK



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● NATURAL GAS

# More gains made on North Dakota flaring

October gas connections outpaced new wells going on production; Hess's Tioga gas plant expansion to pick up 'hot spots'

By **MAXINE HERR**

For Petroleum News Bakken

The volume of natural gas flared in North Dakota inched slightly higher in October to 9.689 billion cubic feet, bcf, compared to 9.636 bcf in September. However, the percentage of gas flared dropped a point to 28 percent in October.

At his monthly Director's Cut press conference on Dec. 13, Lynn Helms, director of the state Department of Mineral Resources, DMR, Oil and Gas Division, said he expects that percentage to be sliced a bit when Hess Corp. begins processing natural gas at its expanded Tioga gas plant at the start of 2014. That expansion will increase capacity from 115 million cubic feet, mmcf, per day to 250 mmcf per day. Helms said gathering systems to that plant will pick up two "hot spots" near Tioga where significant flaring has occurred due to the lack of

a connection to a gas plant. "We think that project alone has the potential for a 5 percent drop in flaring," he said.

More gains will be made on the state's flaring with Oneok's Divide County gathering system, which is now in partial operation and will be fully operational by the end of 2014. In terms of affecting flaring, Helms said the Oneok system could "perhaps could do the same thing" as the Hess Tioga plant.

North Dakota will have the capacity to process nearly 1.014 bcf of natural gas per day by the end of 2013, and more than 1.344 bcf per day in 2014, according to documents North Dakota Pipeline Authority Director Justin Kringstad shared with Petroleum News Bakken.

## NDPA flaring stats

Pipeline Authority flaring statistics differ slightly from DMR's because Kringstad's numbers don't include flaring of wells on confidential status. His flaring per-

cent also dropped a full point in October from 28 to 27 percent. Of that 27 percent, 12 percent was from wells that are not connected to gas infrastructure, which is down from 13 percent in September. The other 15 percent of gas flared in October was from wells that are connected to gas infrastructure that doesn't have enough capacity to handle new wells coming on production (see charts in Bakken Stats section). That number remained flat with September.

In September, a total of 195 new wells went on production in North Dakota with 189 of those connected to gas gathering infrastructure. Well connections in October actually outpaced new wells going on production with 189 wells connected in the month compared to 179 new wells that went on production. Approximately 79 percent of producing wells in North Dakota are connected to gas infrastructure. ●

Contact Maxine Herr at maxine606@msn.com

● PEOPLE TALK

# Oasis Petroleum taps new president, COO

Independent elevates senior managers; WPX Energy appoints interim CEO; Marathon promotes Clark to vice president, treasurer

By **ROSE RAGSDALE**

For Petroleum News Bakken

Oasis Petroleum Inc. has appointed Taylor L. Reid as president and chief operating officer.

Reid, 50, previously served as the company's executive vice president and chief operating officer. Reid also will continue to serve as a director on the independent's board of directors.

The appointment, announced Dec. 10, comes with several promotions designed to structure Oasis' management team for continued growth and execution of its resource conversion strategy in the Williston Basin.

Among the promotions and changes, effective Jan. 1:



TAYLOR L. REID

Niko Lorentzatos, 44, will serve as executive vice president and general counsel. Lorentzatos previously served as senior vice president and general counsel.

H. Brett Newton, 47, will serve as senior vice president asset management and chief engineer. Newton previously served as senior vice president asset management.

Tom Hawkins has been promoted to senior vice president land. Hawkins previously served as vice president land.

Robin Hesketh, 55, has been elevated to senior vice president operations. Hesketh previously served as vice president operations.

Greg Hills, 52, has been promoted to senior vice president marketing and mid-stream. Hills previously served as vice president marketing.

Richard N. Robuck, 39, has been appointed vice president finance and treasurer. Robuck previously served as director of finance.

Oasis Chairman and Chief Executive Officer Tommy Nusz said he and Reid began working together in 1986 and together founded Oasis. "He has proven himself to be one of the most capable executives in the oil and gas industry. His contribution to Oasis has been invaluable. The rest of this group has been with the company since at least 2010, the year we

## People Talk

took Oasis public, and we expect them and the rest of our senior management team to carry on the momentum we have established," he continued.

## WPX Energy appoints interim leader

WPX ENERGY HAS APPOINTED James J. Bender as interim president, chief

executive officer and board member, effective Dec. 31, in the wake of a decision by current President and CEO Ralph A. Hill to step down as president, chief executive officer and board member of the company.



JAMES J. BENDER

Hill spent over 32 years with Williams

and WPX, working in various facets of the energy business. WPX, one of the nation's largest domestic natural gas producers, was spun off from Williams as of Jan. 1, 2012.

Hill will remain with the company through March 31, 2014, to assist with the transition of his duties.

Speaking on behalf of the board, WPX Chairman William G. Lowrie said, "We very much appreciate Ralph's dedicated

see PEOPLE TALK page 6

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● COMPANY UPDATE

# Halcon maintaining capital discipline in 2014

By MIKE ELLERD

Petroleum News Bakken

Increased drilling efficiencies, lower average working interest in proposed Williston Basin wells and lower capital expenditure on more exploratory plays have allowed Houston-based Halcon Resources to lower previously announced drilling and completion budget guidance for 2014 by nearly 14 percent from \$1.1 billion to \$950 million. However, Halcon is maintaining its 2014 production guidance of 38,000 to 42,000 barrels of oil equivalent per day.

In September, Halcon announced that it

is divesting certain non-core assets in various plays in three separate transactions in order to be a more focused oil company. In a Dec. 16 press release, Halcon said two of those transactions have closed with the third expected to close before the end of the year. In addition, Halcon is planning more non-core divestitures in 2014.

The proceeds from the additional divestitures will be used to help fund the company's 2014 capital budget along with cash flow from operations and borrowings. "We are well positioned to deliver significant growth of reserves, production and cash flow while maintaining capital discipline," Chairman and Chief Executive

Officer Floyd Wilson said in the Dec. 16 press release. "In addition, we are focused on capital efficiency and intend to achieve higher rates of return across our asset portfolio via a persistent emphasis on technological innovation."

The company has three core resource plays: the Bakken/Three Forks, the El Halcon operation in Eagle Ford shale in East Texas, and the Utica/Point Pleasant operations in Ohio and Pennsylvania. Halcon has had non-core assets in the Woodbine, Wilcox and Tuscaloosa Marine plays in East Texas and Louisiana.

In the Williston Basin, Halcon holds approximately 150,000 net acres, approxi-

mately 74 percent of which are operated with its core acreage in northwestern Williams County and its Fort Berthold area in northeastern McKenzie and northern Dunn counties.

In the Williston Basin, where Halcon operates as HRC Operating, the latest Department of Mineral Resources Oil and Gas Division monthly production data indicate that HRC Operating ranked 12th among the top 50 North Dakota oil producers with an average production of 26,912 barrels of oil per day for operated, non-confidential wells (see Bakken Stats section). ●

Contact Mike Ellerd  
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continued from page 1

## REFINERY LOCATION

Devils Lake and the nearby city of Grand Forks offer a large and stable workforce, whereas in the Bakken there is a transient workforce and high living expenses, Carlson said.

"Some of the smaller towns away from the Bakken feel a little bit left out of the oil and gas boom," he said. "What if you

could pay a decent wage in Devils Lake?"

The company plans to make jet fuel as well as diesel at the plant.

Logistic advantages for jet fuel sales exist locally; Minot Air Force Base and Grand Forks Air Force Base are nearby, ready customers for jet fuel, Carlson said.

Carlson said the plant could lower fuel expenses in the region through transportation cost savings.

"We looked at the logistics. The oil is sent by rail to refineries on the coast and

then the products are transported back – what if you could eliminate those transportation charges?" Carlson said. "It would be more efficient."

Carlson said the company is working with engineering firm Larson Engineering and the petrochemical and refining industry engineering consulting firm TTC Labs Inc. on its proposal.

"The refinery is being designed to be unobtrusive and small enough to fit," he said. "The refinery will generate its own power and have its own water treatment plant."

Carlson said the plant will be compatible with area fishing and tourism interests.

"The site is miles from the lake, we would not take water out of the lake, we will get the water from the city."

Carlson said at least fifty workers would find jobs at the plant, but said the number might reach 100 depending on final plant design – with more jobs during the build out.

## From wind to oil

American Energy Holdings first looked at Devils Lake for a wind energy development, Carlson said. Wind opportunities subsided, so the company talked about various other possibilities at Devils Lake.

North Dakota has great potential for wind energy but economics are improving for oil and gas, he said.

The company had talks with a Chinese

company about building a refinery in North Dakota. Ultimately American Energy Holdings decided it made more sense to proceed with the project in house.

Forward Devils Lake, an economic development corporation, was instrumental in bringing the potential location to the attention of American Energy Holdings.

Carlson said Chris Schilken, then executive director of Forward Devils Lake, encouraged the group to take a look at the Devils Lake region, and to keep looking as they explored other business options.

"Chris is a good man, extremely knowledgeable and helpful and resourceful. He asked the right questions to find the benefits and address the challenges of locating a refinery in Devils Lake," Carlson said.

Rachel Lindstrom, Forward Devils Lake executive director told Petroleum News Bakken that local officials and the public are just now learning about the proposal.

"It's very preliminary," she said.

Lindstrom said officials would be able to ask questions of the presenters at the company's January presentation, adding that a public comment period would be held prior to any official response to the proposal.

—STEVE SUTHERLIN

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## ASSOCIATIONS & EVENTS

### Watford meeting will compare oil policies

Comparing North Dakota's oil fiscal policies with other those of other oil-producing states to identify strengths and weaknesses in North Dakota's policies will be the focus of the 2014 annual meeting of the Watford City Area Chamber of Commerce and the Watford City Economic Development Corp., scheduled for the evening of Jan. 22.

Mark Haggerty of Montana-Based Headwaters Economics will be the featured speaker at the meeting with a talk titled "Windfall or missed opportunity? How North Dakota returns oil revenues to local governments compared to other states."

In a Dec. 18 press release, the Watford City chamber said the policy comparison not only identifies several areas "for obvious reform," but also raises other issues important as oil and gas production continues in the region. "With elections looming and a new legislative season just around the corner we urge you to attend," said Watford City Area Chamber of Commerce President Darick Franzen.

The meeting will be held in the ballroom at Outlaws' in Watford City with a social hour beginning at 6 p.m. and dinner at 7 p.m. Those interested in attending should contact Mary Gumke, chamber coordinator, at 701-580-4348 or at wccamber@restel.com. Tickets are \$50 per person.

—PETROLEUM NEWS BAKKEN

continued from page 5

## PEOPLE TALK

service to WPX Energy and wish him well in his future endeavors."

Bender has served as WPX's senior vice president and general counsel and as a member of the company's executive leadership team since the company was spun off from Williams. Prior to WPX, Bender served for nine years as senior vice president and general counsel of Williams.

A search committee of the board of directors — currently consisting of four directors — has been established and the executive recruiting firm of Spencer Stuart has been retained to assist in an external CEO search. Bender will serve as the interim CEO until the selection process is complete.

"Finding the right individual to lead the company at this pivotal time is one of the board's highest priorities," said Lowrie.

"The new CEO will be expected to critically review the strategic direction of the company and enhance its operating and financial performance, driving improved returns for all of our stakeholders. We are also fortunate to have an executive of Jim's

caliber to step into the leadership role at this time," he added.

Dennis C. Cameron, who joined the company in January 2012 and recently served as vice president and deputy general counsel, will replace Bender as WPX's senior vice president and general counsel.

### Marathon elevates Clark to VP, treasurer

THE BOARD OF DIRECTORS OF MARATHON Oil Corp. has elected Morris R. Clark, currently Marathon Oil assistant treasurer, to the position of vice president and treasurer, effective Jan. 1.

Clark will succeed Michael K. Stewart as treasurer. Stewart has elected to retire after 28 years of service, effective Jan. 1. Clark will continue to be located in Houston and to report to John R. "J.R." Sult, Marathon Oil's executive vice president and chief financial officer.

"We want to offer our congratulations to Morris on being elected vice president and treasurer of Marathon Oil," said Sult. "Morris has consistently demonstrated his deep knowledge and understanding of the capital markets, treasury and risk management functions of our business, the suc-

cessful management of which plays a crucial role in our ability to fulfill our commitments to strong financial discipline. We look forward to Morris' leadership and the many contributions he will continue to make toward Marathon Oil's success."

Clark, 46, began his career with Marathon Oil in 2002 when he joined the company as senior tax counsel. Between then and 2007, he provided extensive tax-related advice and counsel at both the corporate and business unit levels. He was appointed to his current position as assistant treasurer in 2007 and since has played an instrumental role in helping manage matters related to the company's treasury needs. Clark earned a bachelor's degree in accounting from Southern University and subsequently earned a juris doctorate degree from Tulane Law School, and later a master's of laws degree in taxation from New York University School of Law. His experience prior to joining Marathon Oil included serving as an accountant with Touche Ross & Co. and as a tax attorney with Bracewell & Patterson and Enron North America. ●

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# Montana well permits and completions

December 6—12, 2013

### Abbreviations & parameters

With a few exceptions, the Montana weekly oil activity report includes horizontal well activity in the Bakken petroleum system in the eastern/northeastern part of the state within the Williston Basin. It also includes the Heath play and what is referred to as the South Alberta Bakken fairway in northwestern/west-central Montana, which is at least 175 miles long (north-south) and 50 miles wide (east-west), extending from southern Alberta, where the formation is generally referred to as the Exshaw, southwards through Montana's Glacier, Toole, Pondera, Teton and Lewis & Clark counties. The Southern Alberta Bakken, under evaluation by several oil companies, is not part of the Williston Basin.

Following are the abbreviations used in the report and what they mean.

**BHL:** bottomhole location | **BOPD:** barrels of oil per day | **BWPD:** barrels of water per day  
**IP:** initial production | **MCFPD:** thousand cubic feet per day | **PBHL:** probable bottomhole location  
**PD:** proposed depth | **SHL:** surface hole location | **TD:** total depth

#### And public land survey system abbreviations:

**FNL** = from north line | **FEL** = from east line | **FSL** = from south line | **FWL** = from west line

**COMPILED BY DARRYL L. FLOWERS**

For Petroleum News Bakken

### Re-issued locations

In Pondera County, a permit was approved for the Benton Bench 16-5-28-4. Primary Petroleum is the operator of the well, which is at SE SE 5-28N-4W (380 FSL/660 FEL). The Duperow formation is the target, at a proposed depth of 5,000 feet.

In Roosevelt County, a re-issued permit went to Continental Resources Inc. for the Appling 1-25H, which has an SHL at NE NW 25-30N-58E (300 FNL/2050 FWL) and a PBHL of 19,989 feet at SE SW 36-30N-58E (200 FSL/1980 FWL). The Appling will target the Bakken formation.

### Permit modifications/corrections

In Richland County, a permit modification or correction was issued to Continental Resources Inc. for the Rognas-Barbara HSU. The Rognas-Barbara has an SHL at SE SE 28-25N-55E (260 FSL/440 FEL) and a PBHL of 20,069 feet at WL NW 22-25N-55E (200 FNL/0 FWL). The well will target the Bakken formation.

### Completions

In Richland County, there were three reported completions.

Statoil Oil & Gas LP reported the completion of two Bakken formation wells. The Shannon 2-35 1H, with an SHL at SW SE 2-25N-59E (264 FSL/2425 FEL) and a BHL of 20,367 feet at NE NE 35-26N-59E (610 FNL/542 FEL) reported an IP of 1,893

BOPD, 1,130 MCFPD of natural gas and 5,473 BWPD. The Breaks 17-20 1H, with an SHL at NE NW 17-26N-57E (240 FNL/2298 FWL) and a BHL of 20,370 feet reported an IP of 920 BOPD, 781 MCFPD of natural gas and 6,342 BWPD.

Continental Resources Inc. filed a completion report for the Marla HSL, which has an SHL at NW NW 35-24N-55E (375 FNL/440 FWL). No IP was reported for the Marla. The well, which was originally approved on June 25 of this year, was permitted to the Bakken formation with a PBHL of 20,207 feet at WL SW 2-23N-55E (200 FSL/0 FWL). The well was drilled to a total depth of 1,976 feet. The Board of Oil and Gas received a subsequent report to plug and abandon on Dec. 10.

### Completions: new horizontal lateral or extension

A completion of a new horizontal lateral or extension was reported for the ECA Foothills 1-H, operated by Energy Corporation of America in Carbon County. The well has an SHL at NW SW 13-6S-17E (1484 FSL/613 FWL) and two laterals with BHLs of 4,933 feet at SE SW 13-6S-17E (462 FSL/2036 FWL) and 5,785 feet at SW SE 13-6S-17E (108 FSL/2512 FEL). Both laterals target the Greybull formation.

### Expired permits

In Richland County, the permit for the Candee 4-0405H expired. The EOG Resources Inc. well had an SHL at NE SW 4-25N-53E (1960 FSL/1545 FWL) and was permitted to the Bakken formation. ●

## BAKKEN STATS COMMENTARY

### Continental bolsters No. 1 producer spot

Continental Resources maintained its No. 1 position on the Top 50 North Dakota Bakken oil producers list (page 12) with an average daily production of 86,330 barrels per day in October, an increase of 4,936 bpd or 6 percent from its September production. Hess Corp., the No. 2 producer in the state, saw a slight decline in October production, widening the gap between the No. 1 and No. 2 positions. Whiting Petroleum had an increase of 1,140 bpd to 71,038 bpd, holding solid its No. 3 spot on the list.

Among the top 15 producers, Oasis Petroleum's average daily production increased 1,158 bpd to 39,018 bpd keeping secure its No. 10 position. QEP Energy, Halcon Resources and Slawson Exploration also saw production increases in October.

A number of other top 15 operators, however, saw their average daily production decline in October, which Department of Mineral Resources Director Lynn Helms called a "lackluster" month (see story on page 1). In addition to Hess, the other top 15 producers with October production declines were EOG Resources, Statoil, XTO Energy, Kodiak Oil and Gas, Burlington Resources, WPX Energy and SM Energy. Marathon Oil's October production was essentially unchanged from September. Statoil's average production declined enough to drop the company from the fifth to the sixth spot on the list with XTO moving into No. 5 spot.

### Top IP wells

ConocoPhillips subsidiary Burlington Resources filled the top five slots on the Top 10 IP list for the week with 24-hour initial production rates ranging from 2,664 to 2,899 barrels. Those five wells are in the Westberg, Clear Creek and Croff fields in McKenzie County.

Statoil filled the six and seven spots on the IP list with two Williams County wells having IPs of 2,541 and 2,338 barrels. Marathon Oil came in at the eighth highest IP of 2,328 barrels from a Killdeer field well in Dunn County. Kodiak Oil and Gas had the No. 9 and 10 wells for the week at 2,308 and 2,154 barrels for wells in the Epping and Traux fields in Williams County.

—MIKE ELLERD

*Editor's note: Darryl L. Flowers, a contributor to Petroleum News Bakken, is the publisher of the Fairfield Sun Times in Fairfield, Mont.,*

*reached at publisher@fairfieldsuntimes.com. The information is derived from the online records of the Montana Board of Oil & Gas Conservation Commission.*

*www.fairfieldsuntimes.com, and can be*

## Bakken producers' stock prices

Closing prices as of Dec. 18, along with those from previous Wednesday

Company	Exchange	Symbol	Closing price	Previous Wed.
Abxaxas Petroleum Corporation	NASDAQ	AXAS	\$3.21	\$3.07
American Eagle Energy Corporation	OTC	AMZG	\$2.06	\$2.10
Arsenal Energy USA, Inc.	TSE	AEI	\$5.00	\$5.28
Baytex Energy USA Ltd	NYSE	BTE	\$38.53	\$39.37
Burlington Resources Co., LP (ConocoPhillips)	NYSE	COP	\$69.40	\$69.11
Continental Resources, Inc.	NYSE	CLR	\$108.12	\$101.45
Crescent Point Energy US Corporation	TSE	CPG	\$40.51	\$40.26
Denbury Onshore, LLC	NYSE	DNR	\$16.15	\$16.04
Emerald Oil, Inc.	NYSEMKT	EOX	\$7.03	\$6.61
Enerplus Resources USA Corporation	NYSE	ERF	\$18.21	\$18.23
EOG Resources, Inc.	NYSE	EOG	\$162.00	\$156.26
Fidelity Exploration & Production (MDU)	NYSE	MDU	\$29.59	\$28.55
GMX Resources, Inc.	PINK	GMXRQ	\$0.12	\$0.16
Halcon Resources	NYSE	HK	\$3.82	\$3.85
Hess Corporation	NYSE	HES	\$80.83	\$78.94
Kodiak Oil and Gas (USA), Inc.	NYSE	KOG	\$10.82	\$10.55
Legacy Reserves Operating LP	NASDAQ	LGCY	\$26.93	\$26.80
Marathon Oil Company	NYSE	MRO	\$34.72	\$35.69
Mountain Divide, LLC (Mountainview Energy)	CVE	MVW.V	\$0.48	\$0.46
Newfield Production Company	NYSE	NFX	\$23.28	\$23.85
Northern Oil and Gas	NYSE	NOG	\$14.80	\$14.84
Oasis Petroleum North America	NYSE	OAS	\$45.92	\$43.27
Oxy USA, Inc. (Occidental Petroleum)	NYSE	OXY	\$92.26	\$91.54
PetroShale Inc.	CVE	PSH	\$1.50	\$1.50
QEP Energy Company	NYSE	QEP	\$30.28	\$30.06
Resolute Natural Resources Company, LLC	NYSE	REN	\$8.67	\$8.40
Samson Resources Company (KKR & Co)	NYSE	KKR	\$24.53	\$24.20
SM Energy Company	NYSE	SM	\$81.47	\$80.64
Statoil Oil and Gas LP	NYSE	STO	\$23.27	\$22.76
Triangle USA Petroleum Corporation	NYSE	TPLM	\$8.69	\$9.54
Whiting Oil and Gas Corporation	NYSE	WILL	\$60.55	\$57.94
WPX Energy Williston, LLC	NYSE	WPX	\$19.15	\$18.89
XTO Energy, Inc. (ExxonMobil)	NYSE	XOM	\$99.54	\$94.26

## 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)



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Petroleum News  
**Bakken**

## Montana Bakken oil production by company

### October 2013

The information below is derived from State of Montana production reports and separated out by company. Note this is oil produced by wells operated by these companies; it does not identify the percentage of Bakken petroleum system oil such as Three Forks, Bakken, Pronghorn, etc. that is actually owned by the company, so it might differ from what each company reports. It also does not include oil production from wells operated by others, in which these companies might hold an interest, or wells currently on confidential status. The daily average was derived from dividing the total production by the number of days in October, excluding production from wells on confidential status. Note: Abraxas, Armstrong, Charger, HRC Operating, Marathon, MBI Oil and Gas, McRae and Henry, Mountain Pacific, Panther Energy and TAQA North had not yet filed their October production information, so their September production is shown, as noted.

**LEGEND**

Field – pool – county – barrels of oil per month  
Daily average in barrels of oil

The operator names used in this report are as they appear in State of Montana records, even though some of the companies or their Bakken system assets might have been purchased by other companies. When that is the case, the current owner's name is in parenthesis behind the owner of record. If any current owners are missing, please contact Ashley Lindly at [alindly@petroleumnewsbakken.com](mailto:alindly@petroleumnewsbakken.com).

#### Top 5 Montana Bakken oil producers October 2013

Continental Resources	15,813.8 bpd
Oasis Petroleum	6,504.35 bpd
XTO Energy	5,923.96 bpd
Enerplus Resources	5,514.22 bpd
Whiting Oil and Gas	2,850.19 bpd

**Average October 2013  
Bakken oil production: 45,874.67**

<b>Abraxas Petroleum (September 2013)</b>			
Elm Coulee – Bakken – Richland	85		
Lane – Bakken – Richland	0		
Sidney – Bakken – Richland	0		
Daily average:	2.74		
<b>Armstrong Operating (September 2013)</b>			
Elm Coulee – Bakken – Richland	782		
Daily average:	25.22		
<b>Burlington Resources Oil and Gas (ConocoPhillips)</b>			
Elm Coulee – Bakken – Richland	38,278		
Daily average:	1,234.77		
<b>Charger Resources (September 2013)</b>			
Elm Coulee – Bakken – Richland	1,110		
Daily average:	35.81		
<b>Continental Resources</b>			
Elm Coulee – Bakken – Richland	468,376		
Elm Coulee – Bakken – Roosevelt	6,233		
Elm Coulee, Northeast – Bakken – Richland	12,195		
Elm Coulee, Northeast – Bakken – Roosevelt	2,935		
Elm Coulee, Northeast – Three Forks – Richland	488		
Wildcat Richland – Bakken – Richland 0			
Wildcat Roosevelt – Bakken – Roosevelt 0			
Monthly total:	490,227		
Daily average:	15,813.8		
<b>Denbury Onshore</b>			
Lookout Butte, East, Unit – Lodgepole – Fallon 0			
Lookout Butte – Lodgepole – Fallon	111		
Daily average:	3.58		
<b>Earthstone Energy</b>			
Spring Lake, West – Bakken – Richland 0			
Vaux – Madison, Bakken – Richland	386		
Monthly total:	386		
Daily average:	12.45		
<b>Enerplus</b>			
Charlie Creek – Bakken – Richland	156		
Elm Coulee – Bakken – Richland	169,514		
Daily average: 0.38			
Epworth – Bakken – Richland	157		
Girard – Bakken – Richland	142		
Mustang – Bakken – Richland	506		
Putnam – Bakken – Richland 0			
Spring Lake – Bakken – Richland	305		
Three Buttes – Bakken – Richland	161		
Monthly total:	170,941		
Daily average:	5,514.22		
<b>EOG Resources</b>			
Elm Coulee – Bakken – Richland	25,006		
Elm Coulee, Northeast – Bakken – Roosevelt	55,851		
Wildcat Richland – Bakken – Richland 0			
Monthly total:	80,857		
Daily average:	2,608.29		
<b>Fidelity Exploration and Production (MDU)</b>			
Elm Coulee – Bakken – Richland	3,325		
Elm Coulee – Bakken – Richland	284		
Monthly total:	3,609		
Daily average:	116.41		
<b>Marathon Oil (September 2013)</b>			
Elm Coulee, Northeast – Bakken – Sheridan	5,346		
Elm Coulee, Northeast – Three Forks – Sheridan	1,997		
Monthly total:	7,343		
Daily average:	236.87		
<b>MBI Oil and Gas (September 2013)</b>			
Elm Coulee, Northeast – Bakken – Richland	815		
Daily average:	26.29		
<b>McRae and Henry LTD (September 2013)</b>			
Outlook – Mission Canyon, Bakken – Sheridan 0			
Outlook – Nisku, Bakken – Sheridan	346		
Daily average:	11.16		
<b>Mountain Pacific General (September 2013)</b>			
Two Waters – Bakken – Richland 0			
<b>Newfield Production</b>			
Comertown – Lodgepole – Sheridan 0			
Elm Coulee – Bakken – Richland	21,333		
Daily average:	688.16		
<b>Oasis Petroleum North America</b>			
Elm Coulee – Bakken – Richland	538		
Elm Coulee, Northeast – Bakken – Richland	36,032		
Elm Coulee, Northeast – Bakken – Roosevelt	160,634		
Elm Coulee, Northeast – Three Forks – Roosevelt	4,431		
Monthly total:	201,635		
Daily average:	6,504.35		
<b>Panther Energy (September 2013)</b>			
Elm Coulee – Bakken – Richland	12		
Daily average: 0.38			
<b>Sagebrush Resources II</b>			
Redstone – Bakken – Sheridan	61		
Daily average:	1.96		
<b>Samson Resources (KRR &amp; Co.)</b>			
Elm Coulee, Northeast – Bakken – Sheridan	1,389		
Elm Coulee, Northeast – Bakken – Three Forks	881		
Monthly total:	2,270		
Daily average:	73.22		
<b>Sinclair Oil and Gas</b>			
Elm Coulee – Bakken – Richland	1,005		
Elm Coulee, Northeast – Bakken – Sheridan	2,071		
Monthly total:	3,076		
Daily average:	99.22		
<b>Slawson Exploration</b>			
Elm Coulee – Bakken – Richland	67,496		
Elm Coulee – Lodgepole – Richland	567		
Elm Coulee, Northeast – Bakken – Roosevelt	6,852		
Monthly total:	74,915		
Daily average:	2,416.61		
<b>SM Energy Company</b>			
Brorson, South – Bakken – Richland 0			
Elm Coulee – Bakken – Richland	24,154		
Mustang – Bakken – Richland	93		
Brorson – Mission Canyon, Bakken – Richland	1,018		
Putnam – Mission Canyon, Bakken – Richland	128		
Vaux – Mission Canyon, Bakken – Richland	530		
Monthly total:	26,288		
Daily average:	848		
<b>TAQA North USA (September 2013)</b>			
Flat Lake – Bakken – Sheridan	25,636		
Daily average:	826.96		
<b>Whiting Oil and Gas</b>			
Elm Coulee – Bakken – Richland	208		
Elm Coulee, Northeast – Bakken – Richland	80,539		
Elm Coulee, Northeast – Bakken – Roosevelt	2,861		
Elm Coulee, Northeast – Three Forks – Richland	2,017		
Elm Coulee, Northeast – Three Forks – Roosevelt	1,955		
Elm Coulee, Northeast – Three Forks – Sheridan	776		
Monthly total:	88,356		
Daily average:	2,850.19		
<b>XTO Energy (ExxonMobil)</b>			
Elm Coulee – Bakken – Richland	176,702		
Elm Coulee, Northeast – Bakken – Roosevelt	6,941		
Monthly total:	183,643		
Daily average:	5,923.96		

—Compiled by Ashley Lindly

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# North Dakota Pipeline Authority

Monthly update December 2013

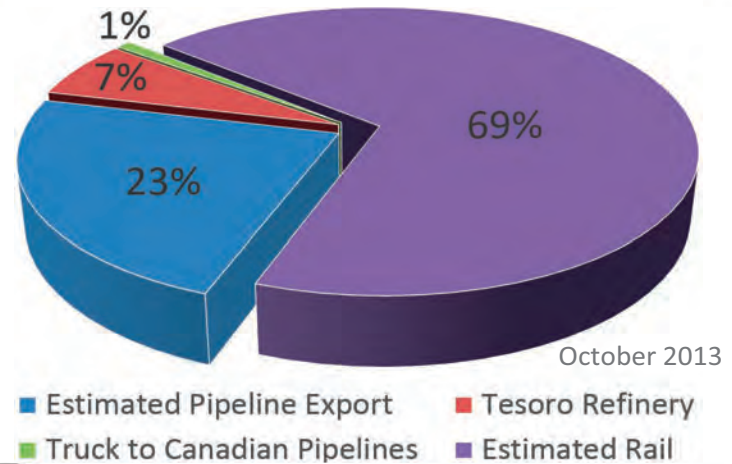
## US Williston Basin Oil Production - 2013

MONTH	ND	Eastern MT*	SD	TOTAL
January	739,072	70,598	4,617	814,287
February	781,305	71,861	4,891	858,057
March	786,347	73,406	5,111	864,864
April	793,687	76,027	5,131	874,845
May	811,763	75,058	4,800	891,621
June	823,376	73,547	4,781	901,704
July	874,208	75,854	4,678	954,740
August	911,477	75,727	4,877	992,080
September	932,962		5,017	--
October	941,637			--
November				--
December				--

JJ Kringstad - North Dakota Pipeline Authority

2

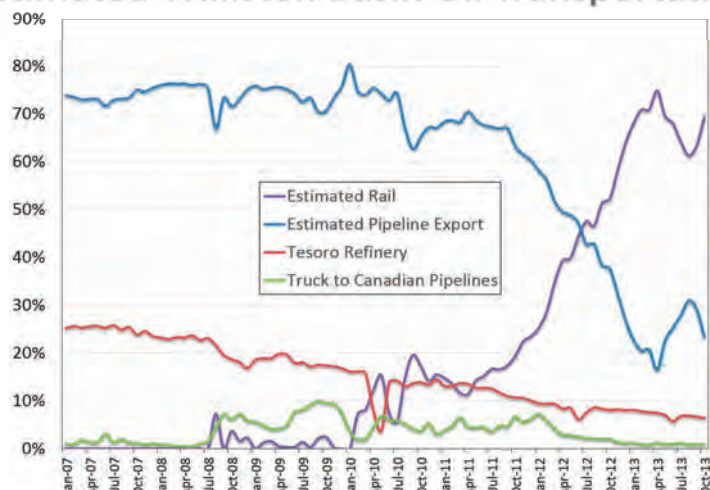
## Estimated Williston Basin Oil Transportation



JJ Kringstad - North Dakota Pipeline Authority

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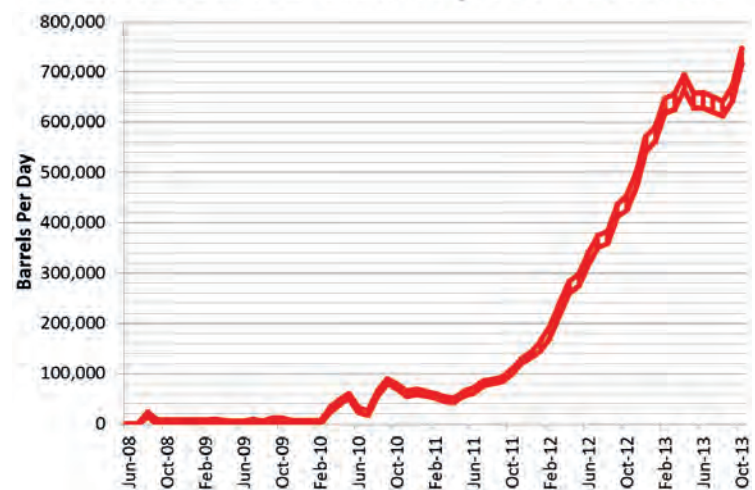
## Estimated Williston Basin Oil Transportation



JJ Kringstad - North Dakota Pipeline Authority

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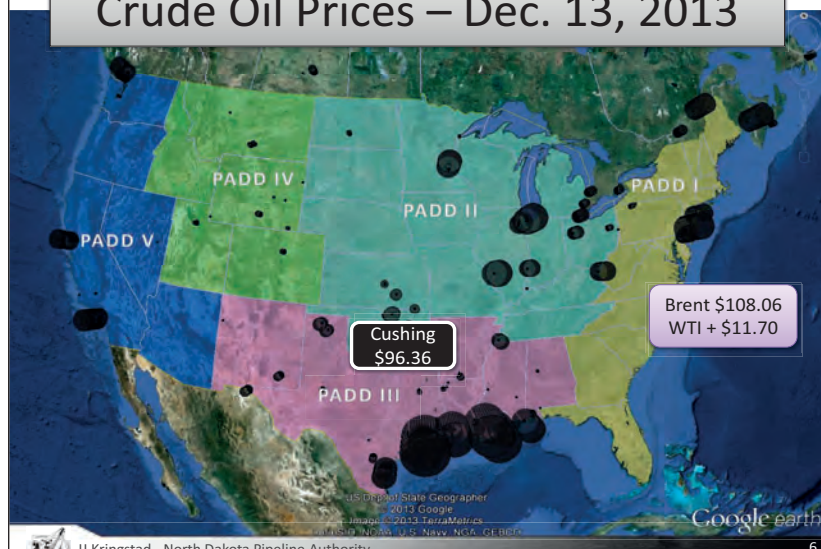
## Estimated ND Rail Export Volumes



JJ Kringstad - North Dakota Pipeline Authority

5

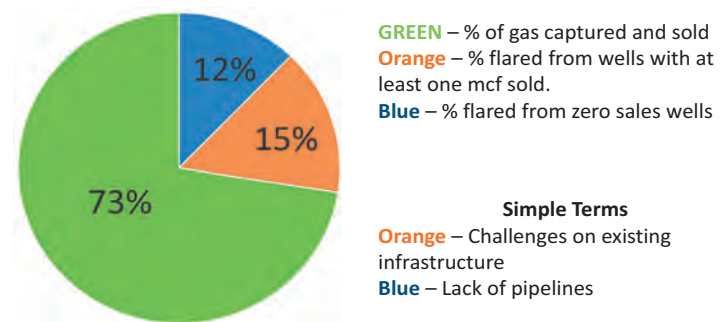
## Crude Oil Prices – Dec. 13, 2013



JJ Kringstad - North Dakota Pipeline Authority

6

## Solving the Flaring Challenge



Statewide

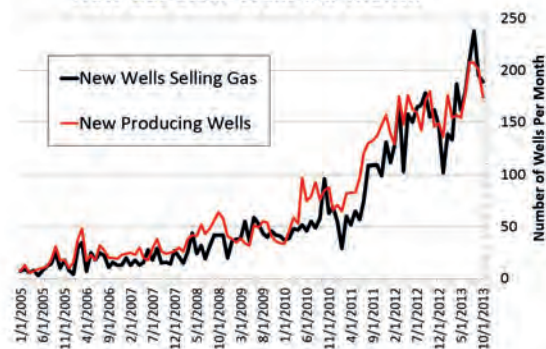
August 2013 Data – Non-Confidential Wells

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7

## Capturing the 12% Faster Well Connections

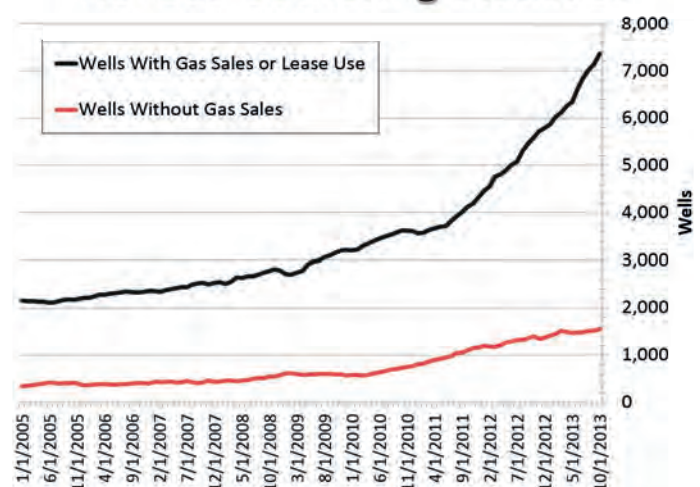
### New Gas Sales Wells Per Month



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8

## ND Gas Gathering Statistics



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9







## Top 50 North Dakota Bakken oil producers October 2013

Company	BPD*		BPD*
1 Continental Resources	86,329.61	29 Crescent Point Energy U.S. Corp.	2,970.51
2 Hess Corporation	71,777.84	30 Abraxas Petroleum	2,533.45
3 Whiting Oil and Gas	71,038.32	31 Sinclair Oil and Gas Company	2,006.35
4 EOG Resources, Inc.	51,334.19	32 Arsenal Energy USA Inc.	1,322.96
5 XTO Energy Inc. (ExxonMobil)	44,458.03	33 Denbury Onshore, LLC	1,081.54
6 Statoil Oil and Gas	44,276.84	34 Cornerstone Natural Resources	935.8
7 Kodiak Oil and Gas	42,927.61	35 True Oil LLC	855.96
8 Burlington Resources Oil and Gas Co., LP (ConocoPhillips)	42,874.22*	36 Emerald Oil, Inc.	831.87
9 Marathon Oil Company	39,510.52	37 Mountain Divide, LLC (Mountainview Energy)	540.74
10 Oasis Petroleum North America	39,018.32	38 Armstrong Operating, Inc.	539.9
11 QEP Energy Company	33,329.52	39 GMX Resources	539.64
12 HRC Operating (Halcon Resources)	30,643.29	40 Gadeco, LLC	318
13 Slawson Exploration Company, Inc.	24,444.23	41 Windsor Energy Group, LLC	281.29
14 WPX Energy Williston, LLC	20,144.94	42 Bakken Hunter, LLC	234.54
15 SM Energy Company	19,113.39	43 Rim Operating, Inc.	199.54
16 Petro-Hunt LLC	16,032.29	44 Resource Drilling, LLC	152.51
17 Oxy USA Inc. (Occidental Petroleum)	15,476.10	45 Resolute Natural Resources Company Ltd	120.64
18 Newfield Production Company	14,143.94	46 Legacy Reserves Operating LP	117.61
19 Enerplus Resources USA Corporation	12,432.87	47 SHD Oil and Gas, LLC	77.83
20 Fidelity Exploration and Production (MDU)	10,782.23	48 North Plains Energy, LLC	46.9
21 Hunt Oil Company	9,590.83	49 Texakota, Inc.	44.83
22 Murex Petroleum Corporation	7,491.80	50 Petro Harvester Operating Company, LLC	32.25
23 Zavanna, LLC	7,141.54		
24 Samson Resources Company (KKR & Co.)	7,097.96		
25 Triangle USA Petroleum Corporation	6,301.64		
26 Baytex Energy USA Ltd	4,120.87		
27 Sequel Energy, LLC	3,220.74		
28 American Eagle Energy Corporation	3,138.93		

\* Note: ConocoPhillips-owned Burlington production was added to ConocoPhillips' separate production, so their total output determined their ranking.

Information derived from the preliminary October 2013 Oil & Gas Production Report published by the North Dakota Industrial Commission, Department of Minerals' Oil and Gas Division. This is oil produced by wells operated by these companies; it does not identify the percentage of oil from the Bakken petroleum system (including Bakken, Three Forks, Pronghorn, Sanish, etc.) that is owned by each company AND it does not include production from wells operated by others, in which these companies might hold an interest. It also does not include Bakken system oil production from wells on confidential status.

Contact Ashley Lindly at  
alindly@petroleumnewsbakken.com

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### ND PRODUCTION

Bully – Bakken – McKenzie	5,525
Cabernet – Bakken – Dunn	6,930
Camel Butte – Bakken – McKenzie	12,685
Charlson – Bakken – McKenzie	14,071
Clear Creek – Bakken – McKenzie	30,323
Corral Creek – Bakken – Dunn	260,158
Croff – Bakken – McKenzie	13,952
Crooked Creek – Bakken – Dunn	3,286
Dimmick Lake – Bakken – McKenzie	5,991
Elidah – Bakken – McKenzie	48,485
Fayette – Bakken – Dunn	3,779
Hawkeye – Bakken – McKenzie	39,317
Haystack Butte – Bakken – McKenzie	66,113
Jim Creek – Bakken – Dunn	3,614
Johnson Creek – Bakken – McKenzie	123,778
Keene – Bakken/Three Forks – McKenzie	202,573
Killdeer – Bakken – Dunn	6,020
Little Knife – Bakken – Dunn	37,855
Lone Butte – Bakken – Dunn	1,951
Mondak – Bakken – McKenzie	0
Morgan Draw – Bakken – Golden Valley	889
Murphy Creek – Bakken – Dunn	39,674
North Fork – Bakken – McKenzie	11,510
Pershing – Bakken – McKenzie	33,985
Pierre Creek – Bakken – McKenzie	583
Sand Creek – Bakken – McKenzie	25,127
Union Center – Bakken – McKenzie	91,566
Westberg – Bakken – McKenzie	23,796
Wildcat – Bakken – McKenzie	99
Willmen – Bakken – Dunn	314
Monthly total:	1,321,104
Daily average:	42,616.26
<b>Carl H. Nordstrand</b>	
Pierre Creek – Bakken – McKenzie	181
Daily average:	5.83
<b>Charger Resources, LLC</b>	
Buckhorn – Bakken – McKenzie	52
Johnson Creek – Bakken – McKenzie	160
Morgan Draw – Bakken – Golden Valley	0
Pierre Creek – Bakken – McKenzie	0
Monthly total:	212
Daily average:	6.83

#### Chesapeake Operating, Inc.

Wildcat – Bakken/Three Forks – Golden Valley	0
Wildcat – Bakken/Three Forks – Stark	0

#### Citation Oil and Gas Corp.

Sadler – Bakken – Divide	99
Daily average:	3.19

#### Condor Petroleum, Inc.

Hayland – Bakken – Divide	0
Stoneview – Bakken – Divide	62
Daily average:	2

#### ConocoPhillips Company (see Burlington Resources Oil and Gas)

Dickinson – Lodgepole – N/A	4,832
Duck Creek – Lodgepole – N/A	3,165
West Dickinson – Lodgepole – N/A	0
Monthly total:	7,997
Daily average:	257.96

#### Continental Resources

Alkali Creek – Bakken – Mountrail	31,246
Antelope – Sanish – McKenzie	43,069
Avoca – Bakken – Williams	9,841
Baker – Bakken – McKenzie	1,392
Baker – Bakken – Williams	2,459
Banks – Bakken – McKenzie	168,265
Barta – Bakken – Billings	7,968
Battleview – Bakken – Williams	4,257
Baukol Noonan – Bakken – Divide	1,379
Bear Creek – Bakken – Dunn	26,954
Beaver Creek – Bakken – Golden Valley	5,595
Beaver Creek Bay – Bakken – Mercer	107
Beaver Lodge – Bakken – Williams	13,412
Bell – Bakken – Stark	2,262
Bicentennial – Bakken – McKenzie	717
Big Gulch – Bakken – Dunn	6,360
Blacktail – Bakken – Billings	2,478
Bluffton – Bakken – Divide	3,045
Border – Bakken – Burke	9,883
Border – Bakken – Divide	3,996
Brooklyn – Bakken – Williams	121,963
Bully – Bakken – McKenzie	4,051
Cabernet – Bakken – Dunn	8,395
Camel Butte – Bakken – McKenzie	1,316
Camp – Bakken – McKenzie	113,873
Catwalk – Bakken – Williams	6,046
Cedar Coulee – Bakken – Dunn	35,517
Charlie Bob – Bakken – McKenzie	207
Charlson – Bakken – McKenzie	0

Chimney Butte – Bakken – Dunn	138,346
Corinth – Bakken – Williams	29,660
Corral Creek – Bakken – Dunn	82,783
Crazy Man Creek – Bakken – Williams	49,609
Deep Water Creek Bay – Bakken – Billings	336
Dimmick Lake – Bakken – McKenzie	8,053
Dollar Joe – Bakken – Williams	104,345
Dolphin – Bakken – Divide	25,008
Dutch Henry Butte – Bakken	174
East Fork – Bakken – Williams	57,772
Edge – Bakken – McKenzie	3,522
Elidah – Bakken – McKenzie	27,422
Elk – Bakken – McKenzie	7,556
Elkhorn Ranch – Bakken – Billings	2,805
Ellisville – Bakken – Williams	2,902
Elm Tree – Bakken – McKenzie	129,283
Epping – Bakken – Williams	18,506
Fairfield – Bakken – Billings	4,928
Fancy Buttes – Bakken – McKenzie	2,245
Forthun – Bakken – Divide	4,455
Frazier – Bakken – Divide	9,082
Glade – Bakken – Billings	241
Glass Bluff – Bakken – McKenzie	3,323
Hamlet – Bakken – Divide	111,949
Hamlet – Bakken – Williams	35,516
Hanson – Bakken – Williams	4,960
Hardscrabble – Bakken – Williams	8,010
Hayland – Bakken – Divide	7,406
Haystack Butte – Bakken – Dunn	3,533
Haystack Butte – Bakken – McKenzie	8,940
Hebron – Bakken – Williams	33,547
Indian Hill – Bakken – McKenzie	17,042
Jim Creek – Bakken – Dunn	68,966
Juno – Bakken – Divide	4,171
Kimberly – Bakken – Divide	76
Last Chance – Bakken – McKenzie	5,484
Last Chance – Bakken – Williams	19,613
Lindahl – Bakken – Williams	99,723
Little Knife – Bakken – Dunn	19,093
Little Knife – Bakken – McKenzie	1,126
Lone Tree Lake – Bakken – Williams	24,476
Long Creek – Bakken – Williams	24,010
Mary – Bakken – McKenzie	1,265
Mondak – Bakken – McKenzie	3,775
Murphy Creek – Bakken – Dunn	50,773
New Home – Bakken – Williams	9,985
North Tioga – Bakken – Burke	19,809
North Tioga – Bakken – Williams	54,856
North Tobacco Garden – Bakken – McKenzie	52,110
Northwest McGregor – Bakken – Williams	14,620
Oakdale – Bakken – Dunn	160,564
Oliver – Bakken – Williams	73,321

see ND PRODUCTION page 13

Patent Gate – Bakken – McKenzie	8,664
Pembroke – Bakken – McKenzie	4,679
Pershing – Bakken – McKenzie	11,803
Pleasant Valley – Bakken – Williams	3,115
Poe – Bakken – McKenzie	3,132
Rainbow – Bakken – Williams	6,503
Ranch Coulee – Bakken – McKenzie	3,857
Ranch Creek – Bakken – McKenzie	900
Rattlesnake Point – Bakken – Dunn	21,435
Rosebud – Bakken – Williams	3,320
Ross – Bakken – Mountrail	514
Saddle Butte – Bakken – Billings	1,794
Sadler – Bakken – Divide	11,190
Sauk – Bakken – Divide	4,699
Sauk – Bakken – Williams	34,188
Siverston – Bakken – McKenzie	2,790
South Boxcar – Bakken – McKenzie	345
South Meadow – Bakken – Williams	476
Squires – Bakken – Williams	7,185
St. Anthony – Bakken – Dunn	3,596
St. Demetrius – Bakken – Billings	30,709
Stoneview – Bakken – Burke	15,519
Stoneview – Bakken – Divide	81,683
Stoneview – Bakken – Williams	12,913
Temple – Bakken – Williams	5,594
Todd – Bakken – Williams	5,135
Upland – Bakken – Divide	37,122
Viking – Bakken – Burke	11,105
West Cappa – Bakken – Williams	2,826
Westberg – Bakken – McKenzie	7,735
Whitetail – Bakken – Billings	217
Wildcat – Bakken – Billings	4,963
Wildcat – Bakken – McKenzie	1,003
Wildcat – Bakken – Williams	9,109
Wildrose – Bakken – Divide	18,372
Willow Creek – Bakken – Williams	5,393
Winner – Bakken – Williams	5,507
Monthly total:	2,676,218
Daily average:	86,329.61

**Cornerstone Natural Resources**

Avoca – Bakken – Dunn	1,295
Carter – Bakken – Burke	3,648
Clear Water – Bakken – Burke	1,134
Coteau – Bakken – Burke	4,971
Customs – Bakken – Burke	1,533
Flaxton – Bakken – Burke	3,611
Lignite – Bakken – Burke	424
Lostwood – Bakken – Burke	2,397
Northeast Foothills – Bakken – Burke	1,041
Pickett – Bakken – Burke	965
South Coteau – Bakken – Burke	5,762
Woburn – Bakken – Burke	2,229
Monthly total:	29,010
Daily average:	935.8

**Crescent Point Energy U.S. Corp.**

Alkabo – Bakken – Divide	1,463
Blue Ridge – Bakken – Williams	7,813
Church – Bakken – Williams	3,828
Colgan – Bakken – Divide	4,552
Dublin – Bakken – Williams	3,694
Ellisville – Bakken – Williams	9,734
Gooseneck – Bakken – Divide	4,414
Little Muddy – Bakken – Williams	15,630
New Home – Bakken – Williams	411
West Ambrose – Bakken – Divide	13,814
Wheelock – Bakken – Williams	222
Wildcat – Bakken – Williams	5,238
Wildrose – Bakken – Divide	2,361
Winner – Bakken – Williams	18,912
Monthly total:	92,086
Daily average:	2,970.51

**Denbury Onshore, LLC**

Eland – Lodgepole – N/A	22,784
Livestock – Lodgepole – N/A	0
Stadium – Lodgepole – N/A	10,539
Subdivision – Lodgepole – N/A	205
Monthly total:	33,528
Daily average:	1,081.54

**Eagle Operating, Inc.**

Spiral – Bakken – Burke	35
Daily average:	1.12

**Earthstone Energy, Inc.**

Flat Top Butte – Bakken – McKenzie	202
Daily average:	6.51

**Emerald Oil, Inc.**

Boxcar Butte – Bakken – McKenzie	12,522
Charbonneau – Bakken – McKenzie	10,505
Foreman Butte – Bakken – McKenzie	2,761
Monthly total:	25,788
Daily average:	831.87

**Encore Energy Partners Operating LLC**

Icy Caves – Bakken – Billings	174
North Tioga – Bakken – Burke	0
Tree Top – Bakken – Billings	87
Monthly total:	261
Daily average:	8.42

**Endeavor Energy Resources, L.P.**

Bicentennial – Bakken – McKenzie	30
Daily average:	0.96

**Enduro Operating, LLC**

Hay Draw – Bakken – McKenzie	0
Stoneview – Bakken – Divide	0

**Enerplus Resources USA Corporation**

Antelope – Sanish – McKenzie	8,667
Eagle Nest – Bakken – Dunn	6,413
Eagle Nest – Bakken – McKenzie	27,651
Fortuna – Bakken – McKenzie	988
Heart Butte – Bakken – Dunn	25,889
Mandaree – Bakken – Dunn	145,853
McGregory Buttes – Bakken – Dunn	126,051
Moccasin Creek – Bakken – Dunn	18,149
South Fork – Bakken – Dunn	3,550
Spotted Horn – Bakken – McKenzie	13,407
Squaw Creek – Bakken – Dunn	4,630
Wildcat – Bakken – Dunn	4,171
Monthly total:	385,419
Daily average:	12,432.87

**EOG Resources, Inc.**

Alger – Bakken – Mountrail	38,293
Antelope – Bakken – McKenzie	64,666
Clarks Creek – Bakken – McKenzie	175,642
Clear Water – Bakken – Burke	12,516
Clear Water – Bakken – Mountrail	94,063
Cottonwood – Bakken – Mountrail	11,340
Eightmile – Bakken – Williams	1,882
Hebron – Bakken – Williams	3,846
Kittleson Slough – Bakken – Mountrail	45,022
Lake Trenton – Bakken – Williams	718
Little Butte – Bakken – Burke	972
Mandaree – Bakken – Dunn	7,331
Painted Woods – Bakken – Williams	42,927
Parshall – Bakken – Mountrail	733,754
Rosebud – Bakken – Williams	8,995
Ross – Bakken – Mountrail	49,074
Round Prairie – Bakken – Williams	25,576
Sixmile – Bakken – Williams	4,564
Spotted Horn – Bakken – McKenzie	107,351
Squaw Creek – Bakken – McKenzie	18,425
Squires – Bakken – Williams	2,445
Stanley – Bakken – Mountrail	19,703
Thompson Lake – Bakken – Burke	15,669
Van Hook – Bakken – Mountrail	104,463
Vanville – Bakken – Burke	726
Wildcat – Bakken – Williams	1,397
Monthly total:	1,591,360
Daily average:	51,334.19

**Evertson Operating Company, Inc.**

Ray – Bakken – Williams	202
Daily average:	6.51

**Fidelity Exploration and Production (MDU)**

Alger – Bakken – Mountrail	20,980
Dickinson – Bakken – Stark	4,907
Dutch Henry Butte – Bakken – Stark	16,657
Green River – Bakken – Stark	9,214
Heart River – Bakken – Stark	28,615
Lehigh – Bakken – Stark	80
New Hradic – Bakken – Stark	2,526
Sanish – Bakken – Mountrail	108,003
Stanley – Bakken – Mountrail	139,301
Zenith – Bakken – Stark	3,966
Monthly total:	334,249
Daily average:	10,782.23

**Filco Incorporated**

Charlson – Bakken – McKenzie	38
Rough Rider – Bakken – McKenzie	23
Monthly total:	61
Daily average:	1.96

**Gadeco, LLC**

Epping – Bakken – Williams	9,858
Daily average:	318

**Galaxy Oil**

Hamlet – Bakken – Divide	41
Sauk – Bakken – Williams	37
Monthly total:	78
Daily average:	2.51

**GMX Resources**

Beicegel Creek – Bakken – McKenzie	3,394
Bennett Creek – Bakken – McKenzie	4,407
Butte – Bakken – McKenzie	1,147
Magpie – Bakken – Billings	2,162
New Hradic – Bakken – Stark	1,965
Ranch Creek – Bakken – McKenzie	2,622

Tree Top – Bakken – Billings	1,032
Whitetail – Bakken – Billings 0	
Monthly total:	16,729
Daily average:	539.64

**Hess Corporation**

Alger – Bakken – Mountrail	113,779
Alkali Creek – Bakken – Mountrail	132,467
Antelope – Sanish – McKenzie	42,562
Antelope Creek – Bakken – McKenzie	5,383
Avoca – Bakken – Dunn	410
Banks – Bakken – McKenzie	6,855
Baskin – Bakken – Mountrail	13,715
Baukol Noonan – Bakken – Divide	873
Bear Creek – Bakken – Dunn	2,220
Beaver Lodge – Bakken – Williams	62,861
Big Butte – Bakken – Mountrail	105,528
Big Gulch – Bakken – Dunn	11,679
Blue Buttes – Bakken – McKenzie	229,298
Capa – Bakken – Williams	26,404
Cedar Coulee – Bakken – Dunn	70,272
Cherry Creek – Bakken – McKenzie	22,774
Clear Water – Bakken – Mountrail	14,978
Cottonwood – Bakken – Mountrail	894
Crazy Man Creek – Bakken – Williams	5,535
Davis Buttes – Bakken – Stark	2,613
Dollar Joe – Bakken – Williams	24,308
East Fork – Bakken – Williams	2,273
East Tioga – Bakken – Mountrail	490
Elk – Bakken – McKenzie	2,742
Ellsworth – Bakken – McKenzie	33,075
Elm Tree – Bakken – McKenzie	11,089
Enget Lake – Bakken – Mountrail	1,616
Forthun – Bakken – Burke	1,470
Glass Bluff – Bakken – McKenzie	6,137
Hans Creek – Bakken – Dunn	0
Hawkeye – Bakken – McKenzie	180,953
Hoffland – Bakken – Williams	4,705
Juniper – Bakken – McKenzie	3,304
Kittleson Slough – Bakken – Mountrail	663
Lake Ilo – Bakken – Dunn	0
Larson – Bakken – Burke	2,520
Little Knife – Bakken – Dunn	186,282
Little Knife – Bakken – McKenzie	1,624
Lone Butte – Bakken – Dunn	3,639
Lone Tree Lake – Bakken – Williams	17,314
Long Creek – Bakken – Williams	3,593
Manitou – Bakken – Mountrail	72,398
Manning – Bakken – Dunn	2,232
Marmon – Bakken – Williams	9,636
Midway – Bakken – Williams	667
Murphy Creek – Bakken – Dunn	45,385
New Home – Bakken – Williams	1,582
Oliver – Bakken – Williams	9,904
Parshall – Bakken – Mountrail	3,016
Pleasant Valley – Bakken – Mountrail	10,292
Rainbow – Bakken – Williams	8,778
Ranch Coulee – Bakken – McKenzie	158
Ray – Bakken – Williams	45,877
Robinson Lake – Bakken – Mountrail	374,691
Ross – Bakken – Mountrail	57,164
Sandrocks – Bakken – McKenzie	2,950
Sather Lake – Bakken – McKenzie	9,576
Saxon – Bakken – Dunn	0
Short Creek – Bakken – Burke	1,038
Siverston – Bakken – McKenzie	10,822
Sorkness – Bakken – Mountrail	5,110
South Meadow – Bakken – Williams	1,122
South Tobacco Garden – Bakken – McKenzie	3,760
Spencer – Bakken – Ward	1,174
Stanley – Bakken – Mountrail	3,176
Timber Creek – Bakken – McKenzie	18,758
Tioga – Bakken – Mountrail	7,359
Tioga – Bakken – Williams	4,783
Truax – Bakken – Williams	99,322
Westberg – Bakken – McKenzie	6,536
Wheelock – Bakken – Williams	44,679
White Earth – Bakken – Mountrail	1,290
Wildcat – Bakken – Burke	991
Wildcat – Bakken – McKenzie	2,079
Monthly total:	2,225,113
Daily average:	71,777.84

**HRC Operating (Halcon Resources)**

Antelope – Sanish – McKenzie	142,408
Climax – Bakken – Williams	20,606
Dublin – Bakken – Williams	9,942
Eagle Nest – Bakken – Dunn	277,235
Ellisville – Bakken – Williams	2,973
Flat Top Butte – Bakken – McKenzie	0
Fortuna – Bakken – McKenzie	112,479

To view this chart in its entirety, please visit <http://bit.ly/1dnajD5>.

## North Dakota well operator transfers

December 7—December 13, 2013

### LEGEND

Date of well operator transfer  
Well(s) transferred from  
Well(s) transferred to  
NDIC well file number — well name — well type — geological target — field — IP (initial production) test date — IP oil rate in barrels — location — county

**From: Samson Resources Company**  
**To: Oasis Petroleum North America LLC**  
**#19101** - Gustafson 29-32-161-92H; horizontal; Bakken; Foothills; 10/25/2010; 333 bbl; NENE 29-161N-92W; Burke Co.  
**#22716** - Rutherford 24-25-161-93H; horizontal; Bakken; Foothills; 11/25/2012; 147 bbl; NENW 24-161N-93W; Burke Co.  
**#21500** - ST. Helena 17-20-161-92H; horizontal; Bakken; Foothills; 10/27/2012; 316 bbl; NWNW 17-161N-92W; Burke Co.

**#17517** - State 36-161-93H; horizontal; Bakken; Foothills; 4/5/2009; 47 bbl; NWNW 36-161N-93W; Burke Co.  
**#16810** - Oas 31-161-92H; horizontal; Bakken; Foothills; 3/15/2008; 240 bbl; LOT 1 31-161N-92W; Burke Co.  
**#21501** - Oakville 8-5-161-92H; horizontal; Bakken; Black Slough; 11/18/2012; 160 bbl; NWNW 17-161N-92W; Burke Co.  
**#22572** - Saratoga 12-1-161-92H; horizontal; Bakken; Black Slough; 9/17/2012; 147 bbl; NWNW 13-161N-92W; Burke Co.  
**#22573** - Felton 13-24-161-92H; horizontal; Bakken; Foothills; 9/16/2012; 175 bbl; NWNW 13-161N-92W; Burke Co.  
**#21051** - Sonoma 19-30-161-92HOR; horizontal; Bakken; Foothills; 3/12/2012; 197 bbl; SWSE 18-161N-92W; Burke Co.  
**#21050** - Calistoga 18-7-161-92HOR; horizontal; Bakken; Black Slough; 3/9/2012; 238 bbl; SWSE 18-161N-92W; Burke Co.

—Compiled by Ashley Lindly

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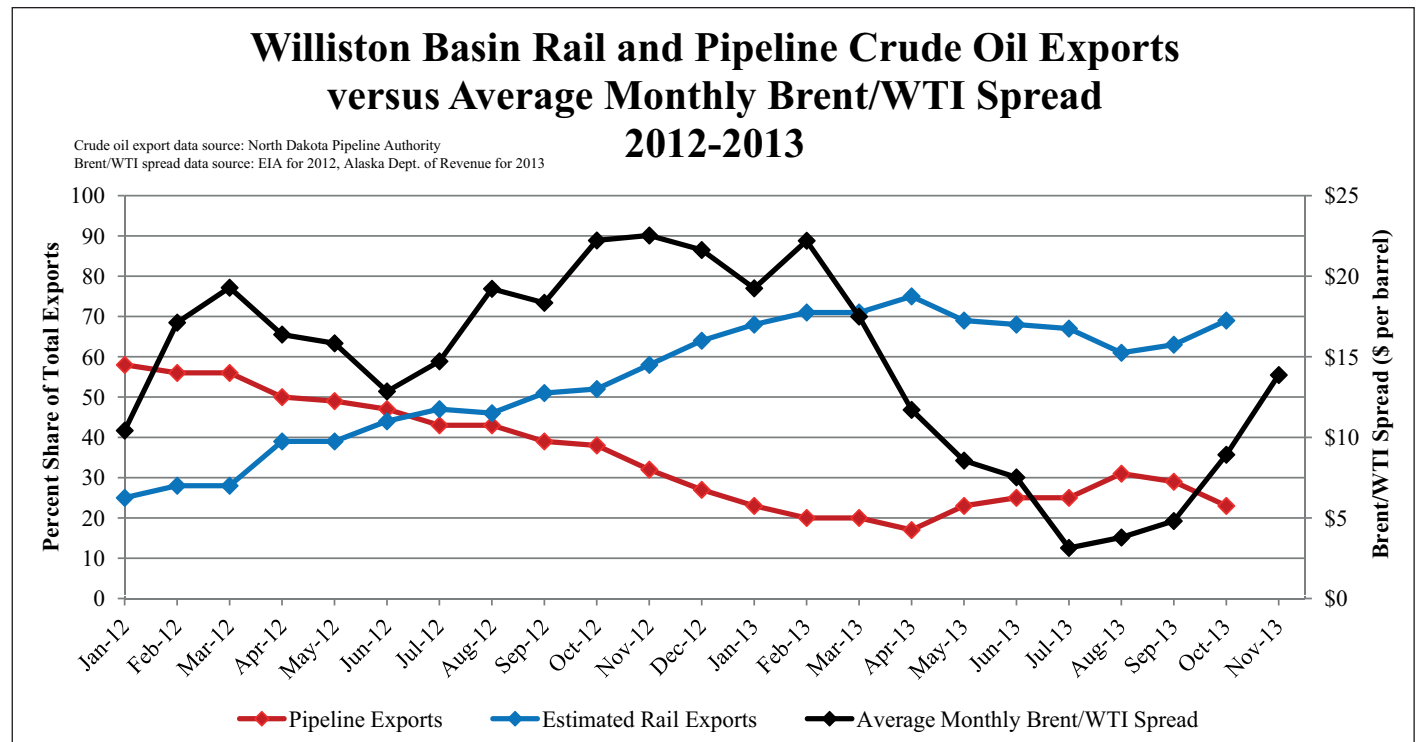
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## RAIL EXPORTS

operators higher prices for Bakken petroleum system crude oil on coastal markets. Brent generally represents price trends on the coastal markets relative to Great Lakes and Midcontinent markets where crude prices are more representative of WTI prices.

Beginning in April 2011, railroads began a trend of steadily pulling export market share away from pipelines, increasing their market share from 11 percent to 39 percent by April 2012, and on to a peak of 75 percent in April 2013. However, after the Brent/WTI spread began narrowing in February 2013, railroads began losing market share to pipelines in May, a trend that continued through August (see chart). But after the Brent/WTI spread trend shifted again and began widening in July, rail, in turn, began picking up export market share in September.

In a Dec. 13 press conference, North Dakota Pipeline Authority Director Justin Kringstad, who tracks Williston Basin crude oil exports, referred to the increase in rail exports as “a pretty significant shift relative to previous months.” Kringstad noted that over the summer months rail exports were “down a little bit” as the Brent/WTI spread narrowed, “but in October, and as we sit today, the price



environment is such that rail is going to continue to attract barrels to that transportation method.” On the day of the press conference, the Brent/WTI spread stood at \$12.23 per barrel based on New York Mercantile Exchange settlements with Brent settling at \$108.83 per barrel and WTI settling at \$96.60.

### October rail volumes

Kringstad estimates total Williston Basin oil production at more than 1 mil-

lion barrels per day when estimated production from Montana and South Dakota is included with North Dakota’s production (see table in Bakken Stats section). He also estimates that between 717,518 and 747,518 barrels of crude oil leave the Williston Basin on rail cars each day. Assuming 100 tank cars per train and about 650 barrels per tank car, Kringstad said that equates to some 10 unit trains per day leaving the basin and at least that many empty trains coming back each day

(see related story on rail car safety issues on page 1).

### Other WB crude destinations

Combined, rail and pipelines accounted for 92 percent of Williston Basin crude exports in October, and of the remaining 8 percent, Kringstad estimates that 7 percent went to Tesoro’s refinery at Mandan and 1 percent was trucked across the border and put into Canadian pipelines. Both

see RAIL EXPORTS page 16

## Petroleum News Bakken

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### NETZSCH Pumps wins Breakthrough Product of the Year

Netzsch Pumps has been awarded Processing Magazine’s 2013 Breakthrough Product of the Year for its TORNADO T2 rotary lobe pump. Recognized for materials advances applied to rotary lobe pumps, the TORNADO T2 rotary lobe pump had its world premiere last May at the IFAT, and its U.S. premiere at WEFTEC 2012 in New Orleans. It addresses conveyance challenges by completely reversing the entire materials concept of conventional rotary lobe pumps by featuring a metal lobe with a replaceable rubber liner, a concept more like a progressive cavity pump.

Since the T2’s launch, it has already proven successful in numerous applications and has won awards around the globe, including the “Targa Beltrami” innovation prize in March 2012 at the Biogas Trade Fair in Cremona, Italy.

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## RAIL SAFETY

ier cars equipped with thick steel jackets.

That could translate into an extra \$1.50 per barrel for crude transport costs because the heavier cars would have reduced capacity, resulting in higher loading and unloading costs.

### Voluntary standard met

Hess and shippers who bought DOT-111 cars after October 2011 already measure up to a voluntary industry standard contained in an American Association of Railroads petition to PHMSA that includes protection for fittings on top of rail cars, pressure relief valves that close after being activated and

a minimum thickness for steel shells.

PHMSA is now trying to decide whether to make those voluntary standards mandatory and require all existing cars to be refitted, even though the investigation of the Lac Megantic, Quebec, disaster has not yet pinpointed the design of the DOT-111 cars as a contributing factor in the accident.

The AAR has urged PHMSA to require retrofitting and to set an “aggressive phase-out schedule for the cars that cannot meet retrofit requirements.”

### 10-year transition recommended

The Railway Supply Institute has urged PHMSA to exempt all cars in service that comply with the 2011 voluntary standard, noting that 55,546 of those cars

will be in service by 2015, representing an industry investment of at least \$7 billion.

The RSI has recommended a 10-year transition period for rail car owners to comply with any new standards and the inclusion of pressure relief valves to protect the cars from overheating in the case of a fire.

Given the constraints on barge shipments and pipeline capacity, the RSI said any decline in rail shipments would result in about 252,000 additional long-haul trucking shipments per month, posing “substantial additional risk for transporting hazardous material.”

The American Petroleum Institute said in a filing that it supports retrofitting all existing tank cars to include a higher-

capacity pressure relief valve, but argued that other safety measures would add weight and cost to cars without a significant increase in safety.

It called on PHMSA and Federal Railroad Administration to form a task force to assess the cost and benefits of retrofitting.

The Renewable Fuels Association said that rather than focusing exclusively on rail car design “a more prudent approach would be to invest in initiatives that address root causes (such as substandard track, switching failures, inspection errors, maintenance problems and lack of communication between train crews) and keep the railcars on the tracks.” ●

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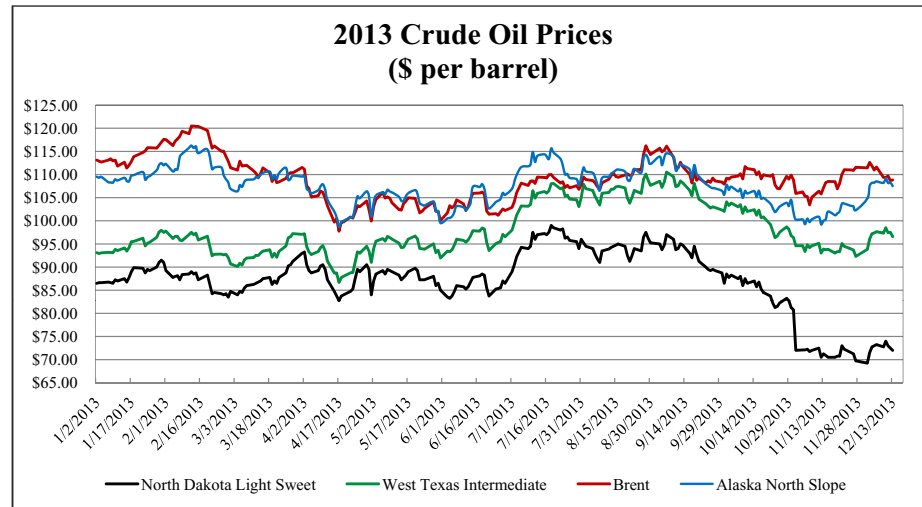
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## NORTH DAKOTA SWEET

and West Coast markets, respectively (see chart).

On Nov. 1, all four crude oils closed down on various markets from the previous day, but North Dakota Sweet closed as much as seven times lower than the other three crudes, dropping \$8.75 per barrel on the Flint Hills market, whereas WTI, Brent and ANS closed down \$1.77, \$2.93 and \$1.56, respectively. But more importantly, WTI, Brent and ANS all recovered to a certain degree from the Nov. 1 drop. North Dakota Sweet, however, has not (see chart). Not only did North Dakota Sweet go from trading above \$80 per barrel in October to currently trading in the \$70 to \$75 range, but in early December it actually closed below \$70.

When asked about Bakken crude prices in a monthly press conference on Dec. 13, North Dakota Department of Mineral Resources Director Lynn Helms said speculating on oil prices is “always risky” but he did offer some thoughts, saying “I think we’ve probably seen the bottom of it in these November-December time frame.” However, Helms



WTI, Brent and Alaska North Slope data source: Alaska Dept. of Revenue  
North Dakota Light Sweet data source: Flint Hills Resources

added that on the previous day, Dec. 12, he told an interim legislative committee that he believes prices will be “soft” through 2014. “There is a limit to light, sweet crude refining capacity, so there’s going to have to be some refinery builds and some refinery conversions ... and some reordering of the world market,” Helms said in the Dec. 13 press conference. “So, 2014 looks like a soft year with prices in the \$75 to \$85 range instead of in the \$95 to \$105.”

That pricing scenario, Helms said, will

remain economic for production in counties where breakeven costs are less than \$40 per barrel, i.e., Dunn, McKenzie, Mountrail and Williams, but the softer pricing is “going to make economics difficult for some of the counties, in particular Billings, Divide, Golden Valley counties — those are pretty close to breakeven numbers.”

### Railing 900,000 barrels per day?

Helms said the depressed Midcontinent Bakken crude oil prices

have resulted in a “complete turnaround in the movement of oil shifting back towards the rail,” a trend he said will continue and is necessary for operators in counties with higher breakeven costs. “Certainly with the change in the pricing scenario, we’re going to see more oil move by rail — it just has to happen to maintain the economics for some of the places like Billings and Divide counties to keep the economics really up there.”

The question then becomes whether there is sufficient rail capacity to keep up with the increasing demand in rail exports? Helms said there is, and he told the interim legislative committee that currently there is enough rail capacity to export up to 900,000 barrels of North Dakota crude oil per day.

“The rail capacity is there. Our rail transport facilities have the capacity. As I stated to the legislature yesterday, they could move 90 percent of a million barrels a day if they needed to.” That increase in rail exports, he added, is “certainly possible next year.”

—MIKE ELLERD

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## CRUDE BY RAIL

That thinking came to an end on July 6 at Lac-Megantic, Quebec, when a train hauling 72 tank cars of crude from the North Dakota Bakken, derailed, with five cars exploding, killing 47 people and leveling much of the town center, making it the worst railway disaster in Canadian history.

### Irving Oil records seized

Separately, inspectors from Transport Canada seized records Dec. 11 from Irving Oil headquarters in New Brunswick, whose 300,000 barrels per day refinery was the destination for the Bakken shipment.

Court documents filed in support of the search warrant indicate Irving is under investigation to determine whether it followed safety and security rules for importing dangerous goods and whether those goods were accompanied by proper documentation.

Officials of privately owned Irving confirmed the company has received requests from government inspectors about their operations and is “complying with all requests for information (while) operations remain normal.”

In recent years, Irving has been a major buyer of Bakken crude from North Dakota, which is prized for its light qualities and occasionally discounted prices.

Irving receives most of its Bakken crude from World Fuel Services, which

delivers to New Brunswick via three railroads, and Global Partners, which ships by rail to Albany, where the crude is loaded on to tanker ships that connect with the Irving refinery.

According to court documents, Irving regularly received tank cars from Montreal, Maine & Atlantic Railway with paperwork that suggested the crude was not particularly volatile, although the empty tanks cars were returned to the shipper with a more volatile classification for the residual oil inside them.

The documents did not show who was responsible for changes to the paperwork.

### More volatile than indicated

The Transportation Safety Board of Canada said recently that the crude involved in the Lac Megantic explosion was more volatile than indicated in paperwork. Penalties for contravening Canadian legislation covering the movements of dangerous goods are up to two years in prison or a C\$50,000 fine for a first offence.

Raitt has said there is a clear need for higher safety standards to deal with the rapid increase in crude shipments through towns and cities, while Transport Canada has started to pursue oil shippers who are not properly testing crude before the shipments take place.

She said there is now pressure on Transport Canada to “make sure we focus more clearly” on fixing the problems.

“Everybody understands and knows what the urgency is,” she said. “We want

to get these things moving as fast as possible.”

Michael Bourque, president of the Railway Association of Canada, said the government’s action comes as no surprise, although he cautioned that reclassification of the crude might result in higher costs for railways and other shippers.

“But if they improve safety and they are the right things to do, then it’s worth it,” he said.

David Jeanes, president of Transport Action Canada, said Raitt is “taking one small step in the right direction. We’ve got to tighten up the rules. I think that’s coming.”

Canada’s two largest railways — Canadian National and Canadian Pacific — had no immediate comment.

However, Canadian National Chief Executive Officer Claude Mongeau told reporters in early December that he

understands the public concern about the movement of dangerous goods by rail through urban centers, though he was emphatic that rerouting the shipments away from towns and cities would be impractical because many of the goods are integral to lifestyles.

He said the dangerous goods moved by Canadian National are worth C\$25 billion a year, with 99.997 percent arriving at their destination without incident.

Mongeau described the Lac Megantic disaster as an “outlier,” in which “at least six things” needed to go wrong for the unmanned train to roll down a slope into the town.

He said Canadian National would not oppose further regulations if they were based on sound and fact-based policy. ●

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## OPERATIONS SHIFT

department has seen thus far.

### More money to spend

Streamlined hydraulic fracturing also adds to cost savings, requiring only 35 stages as opposed to 40 to 45 in 2012, Helms said.

“What we’ve seen happen from December 2012 to December 2013 is about a 25 percent reduction in well costs,” he said. “That’s made it possible for places like Burke and Divide counties to get back on the map for drilling prospects.”

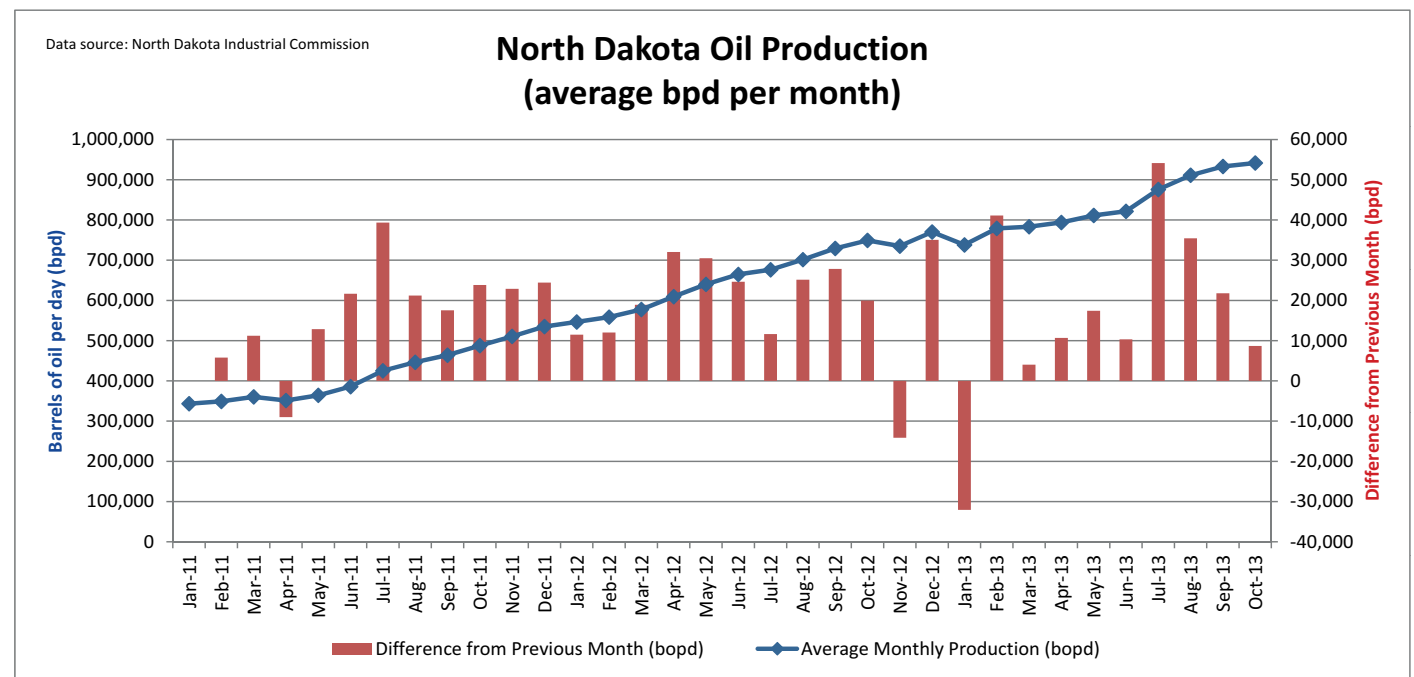
With the extra savings in time and money, some operators are focusing on building out the natural gas gathering which adds “3 percent to their bottom line” with the value of natural gas.

“The typical well cost \$11 million last year, and now it’s down to \$8.5 or \$9 million,” Helms said. “As they come into December, many companies have built their capital budgets on that \$11 million, so now they have money to drill.”

Preliminary numbers indicate five additional rigs were added in December over November, bringing the preliminary rig count to 189. But Helms said rig counts hit 193 earlier in December. Operators have indicated plans to add 10 to 15 rigs by the middle of 2014, according to DMR’s monthly production report.

### A ‘lackluster’ month

North Dakota oil production increased slightly by 8,675 barrels per day to 941,637 bpd over September production according to preliminary production data released by DMR Dec. 13. While setting another monthly production record, the net October increase of 8,675 bpd represents the third consecutive month during which the rate of production increase has slowed after a record monthly increase of 54,138 bpd in September (see chart).



“It was a little lackluster in terms of production increase,” Helms said, “less than what we would have anticipated.”

Unfavorable weather conditions attributed to the slow pace. A three-day rain in October soaked McKenzie County causing county roads to be shut down. McKenzie County accounts for 29 percent of the state’s oil production and one third of the drilling rigs.

“When an event like that happens county-wide in a place like McKenzie County, it’s very significant,” Helms said, adding that the production increase “probably would have been two to two-and-a-half times that if not for that weather event,” i.e., October production would have been 10,000 to 15,000 bpd higher.

With November’s nicer weather Helms expects a production increase, but December’s arctic air may prove to round out the year on a “not-so-great month.”

He said technology hasn’t advanced enough to make hydraulic fracturing quite as productive when the state experiences frigid winter temperatures like it has in recent weeks. The time it takes to heat the water to appropriate temperatures prior to sending it down the well can double or triple in minus 20 degrees Fahrenheit weather.

Another reason Helms cited for the small increase in October production was the “enormous” drop in crude oil prices (see story on page 1).

### More tech advancements

Production, however, may climb significantly if recent technological advancements continue to prove positive. Helms said two operators have begun increasing the sand and ceramic proppant volume in their hydraulic fracturing operations.

“They’ve increased their sand volume by 15 to 25 percent and are seeing good results,” he said. “So for fracturing infill wells, it shows they may get better results if they use more sand.”

Pilot tests of waterfloods and carbon dioxide injections are also under way.

EOG Resources is testing the rock with water flooding processes, but Helms admitted most people do not think the Bakken’s oil wet source rock is going to work well with conventional water flooding because the oil clings to the rock and the water goes right by it.

Whiting Petroleum plans to see how the various benches in the middle Bakken and lower Bakken shale will tolerate a carbon dioxide injection. While the company is not unveiling its plans, lab tests at the University of North Dakota’s Energy and Environmental Research Center, EERC, show very promising results.

EERC Senior Research Manager Jim Sorenson told Petroleum News Bakken Dec. 16 that the two-year project, which involved immersing Bakken rock in carbon dioxide at reservoir pressure and temperature to see how much oil would emerge, had positive results.

“We found that the CO<sub>2</sub> is causing the hydrocarbons to come out of the rock and we’re able to measure them,” Sorenson said. “For the middle Bakken, in less than 48 hours, 95 percent of the hydrocarbons were removed.” Only 2 to 3 percent of oil is being recovered in the Bakken with current primary hydraulic fracturing techniques.

The lower Bakken rock is taking longer, Sorenson said, but tests still captured 60 percent removal after only a few days. “That’s remarkable because a lot of people didn’t think we’d get any or very little out of there,”

Sorenson said.

“I think both of those (increased proppant and carbon dioxide injections) have enormous long-term prospects for increased production recovery,” Helms said. “If we can get CO<sub>2</sub> to it, and you can get 95 percent, that will get people really excited.”

### October numbers

In addition to an increase in oil production, North Dakota natural gas production increased slightly from 1.066 billion cubic feet, bcf, per day in September to 1.070 bcf per day in October. A total of 9,900 wells were producing in the state in October, up from the 9,701 that were producing at the end of October. Some of those are new wells, but others are wells that were taken off production at some point and were put back on production during the month. Both the natural gas production and the number of producing wells are new records.

Of the 9,900 producing wells, 5,939 are modern, horizontal Bakken petroleum system wells with the remaining 3,963 wells producing from conventional “legacy” pools. However, those 5,939 modern Bakken system wells accounted for 93 percent of the October production, i.e., 93 percent of North Dakota’s October oil production came from the Bakken and Three Forks formations. In addition, over 95 percent of North Dakota’s drilling is targeting the Bakken and Three Forks formations.

The days from spud to initial production increased from 100 in September to 114 in October. The number of wells completed in October fell slightly to 202, down from the 225 wells completed in September. ●

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## RAIL EXPORTS

of those market share percentages have declined over the last two years, with 10 percent of Williston Basin crude oil going to the Tesoro refinery and 6 percent going over the Canadian border in trucks in February 2012, the first year that the Pipeline Authority began posting export data.

However, it’s important to note that market share is reported in percentages, and that in February 2012 North Dakota’s average daily production was 558,558 barrels per day. In October 2013 that production averaged over 941,000 bpd according to preliminary data released by the North Dakota Department of Mineral Resources (see story on page 1).

Although the November Williston Basin export statistics will not be available until January, the Brent/WTI spread widened considerably in November averaging more than \$13 for the month, up from the October monthly average of near-

ly \$9 (see chart). Since the spread began widening in August, Brent gained a nearly \$10 per barrel advantage over WTI through November.

For the first half of December, the Brent/WTI spread has been holding generally steady, averaging \$13.48 through Dec. 16, although the spread has been narrowing somewhat in December with the actual spread at \$13.19 on Dec. 17 compared to the \$17.63 spread on Dec. 1 based on New York Mercantile Exchange closings.

### Southern XL effect

As Petroleum News Bakken reported in the Dec. 8 edition, Enbridge Energy began filling the southern leg of the Keystone pipeline that will run from the Midcontinent crude oil hub at Cushing, Okla., to the Gulf Coast. Kringstad said analysts aren’t sure what affect that could have on crude oil pricing and premium markets.

“Cushing, for the last number of years, has become a severe bottleneck for North American crude oil,” Kringstad said,

adding that not only Keystone XL, but other pipelines have been built to try to ease the Cushing bottleneck. “And what that means — that’s what all the analysts are arguing about — is: what does that really mean for the U.S. and North American crude oil? Does it just move the bottleneck down to the Gulf? Some believe that might be the case, where instead of depressed pricing at Cushing, now we may have depressed pricing in the Gulf Coast area.”

If the bottleneck simply moves from Cushing to the coast, Kringstad believes more Bakken crude will be shipped via rail to the other two U.S. coasts. “For us here in North Dakota, if that is the case ... the Gulf may not be a target for our rail movements any longer — we may see our rail shipments moving toward the East Coast and the West Coast ... to those higher-priced regions if that glut just moves south.”

—MIKE ELLERD

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