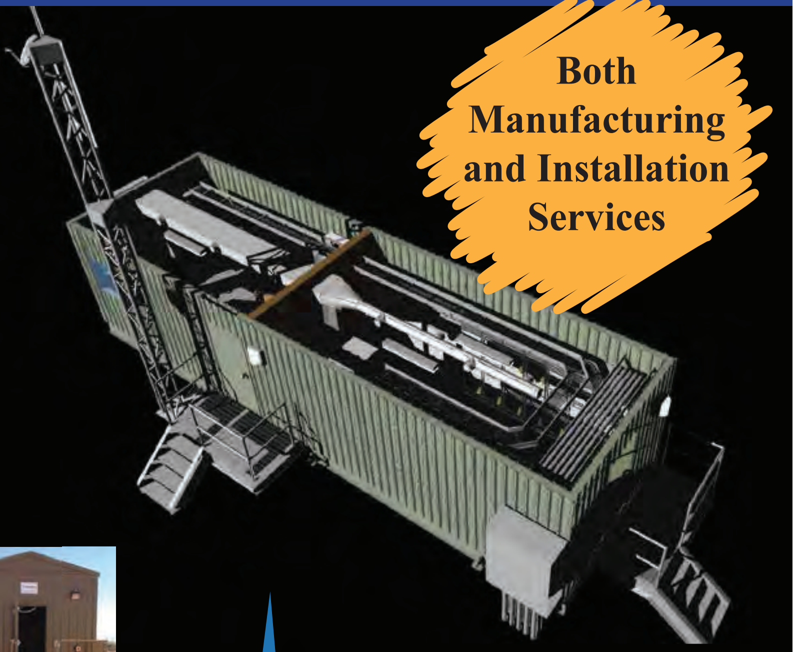
The Bakken Explorers

Petroleum news
BAKKEN

The Bakken Explorers,
an annual publication
from Petroleum News Bakken

E-HOUSE / MOTOR CONTROL CENTER BUILDINGS

- Highly customizable skid-loaded modular buildings and equipment packages
- Accomodates virtually any kind of remote location utility function
- Modular design and construction process provides flexibility to adapt to requirements
- Lact units and E-houses
- 30-45 day turnaround



Both Manufacturing and Installation Services

Planning

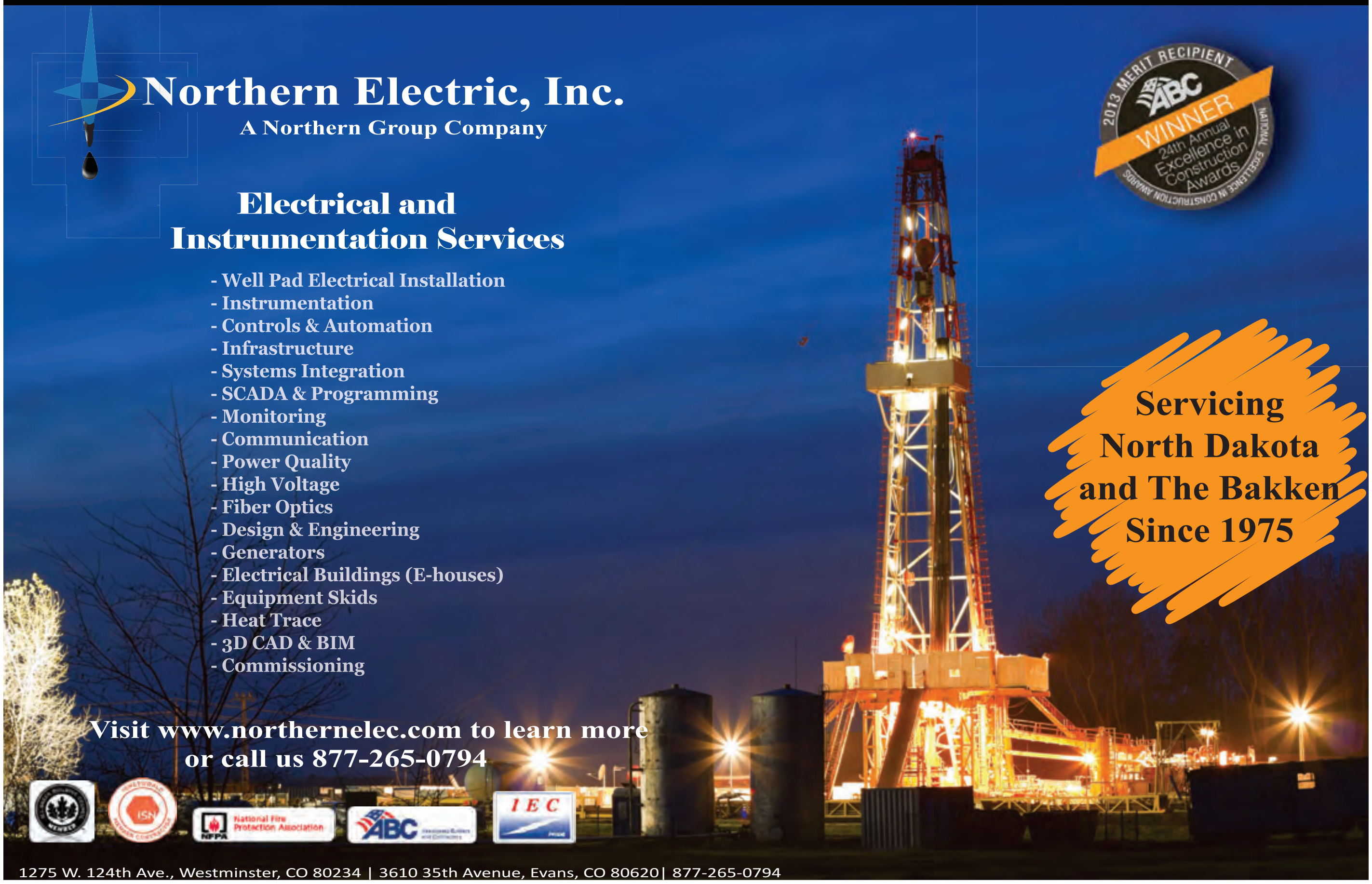
BIM/AutoCad Design

Construction

Delivery and Installation

Northern Electric, Inc.
A Northern Group Company

NORTHERN ELECTRIC, INC. - E-HOUSE FACILITY - 10100 119TH STREET, LONGMONT, CO 80504
NORTHERN ELECTRIC, INC. - CORPORATE HEADQUARTERS 1275 WEST 124TH AVENUE, WESTMINSTER, CO 80234 877-265-0794
WWW.NORTHERNELEC.COM



Northern Electric, Inc.
A Northern Group Company

2013 MERIT RECIPIENT ABC WINNER 24th Annual Excellence in Construction Awards NATIONAL EXCELLENCE IN CONSTRUCTION AWARDS

Electrical and Instrumentation Services

- Well Pad Electrical Installation
- Instrumentation
- Controls & Automation
- Infrastructure
- Systems Integration
- SCADA & Programming
- Monitoring
- Communication
- Power Quality
- High Voltage
- Fiber Optics
- Design & Engineering
- Generators
- Electrical Buildings (E-houses)
- Equipment Skids
- Heat Trace
- 3D CAD & BIM
- Commissioning

Servicing North Dakota and The Bakken Since 1975

Visit www.northernelec.com to learn more
or call us 877-265-0794

NFPA National Fire Protection Association ABC IEC

1275 W. 124th Ave., Westminster, CO 80234 | 3610 35th Avenue, Evans, CO 80620| 877-265-0794

MILLER
INSULATION CO, INC

www.MillerInsulation.com
info@millerinsulation.com
800-337-8145

Serving the Williston Basin since 1972, **Miller Insulation** is a name that has been counted on for over 42 years for quality and professional insulation and scaffolding service. Fueled by a reputation for high standards, value, safety, and on-time dependability, combined with an extensive array of insulation services and capabilities, **Miller Insulation** has grown to become a contractor of choice throughout much of the country.

3520 East Century Avenue
Bismarck, ND 58502-1393
Phone: 701-258-4323

3258 SW 110 Z Avenue
Dickinson, ND 58601
Phone: 701-225-5877

3222 4th Avenue Southwest
Fargo, ND 58103
Phone: 701-297-8813

9124 Derrick Avenue
Williston, ND 58801
Phone: 701-572-2718

3700 Salt Creek Highway
Casper, WY 82601
Phone: 307-265-5646

2615 Industry Drive
Cheyenne, WY 82007
Phone: 307-635-5311

50 North 500 West
North Salt Lake, UT 84054
Phone: 801-936-8352

DET-TRONICS
United Technologies

The Global Leader in
Fire and Gas Safety Systems

Providing Life-Safety Solutions with Engineered Fire and Gas Detection Systems—Superior Performance and Reliability

Toll-free: 800.765.3473
det-tronics@det-tronics.com
www.det-tronics.com

CONTENTS

MISCELLANEOUS

32 Ad Index

EDITORIAL

6 Bakken Explorers looks again at those pushing the limits

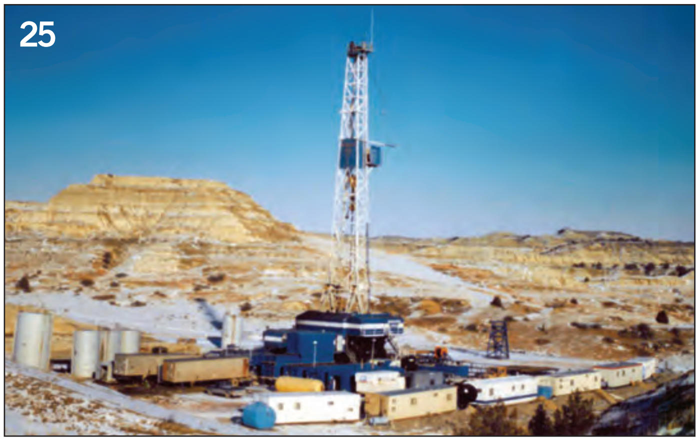
THE EXPLORERS

7 **Continental poised to weather downturn**
Balancing capex to cash flow; focus on cost reductions, efficiencies, high rate of return wells; seeking acreage opportunities

9 **Crescent Point: an international player**
Canada's largest Bakken player employs 'huge technical change' in Saskatchewan as Uinta Basin reserves in Utah continue to rise

11 **DeeThree Exploration's 'fantastic' Alberta assets**
Strong leadership coupled with early successes in Southern Alberta Bakken give Canadian junior high ratings among industry analysts

13 **Enerplus ensuring financial strength**
Following a year of 'rigorous' resource assessment, 2015 will see 'strict capital allocation'


25

14 **Applying years of experience**
Leading horizontal developer EOG Resources slows spending with plans to ramp up when prices turn around

18 **On the cutting edge of completions**
For four years, Halcon Resources has been experimenting with Bakken fracturing modifications, which has proven a good investment

19 **Legacy Oil + Gas plays to its strengths**
Canadian Bakken operator focuses on capital preservation, maintaining liquidity while innovating fracturing and waterfloods

CALL ON LOENBRO.
BAKKEN TESTED. BAKKEN TOUGH.

WE ARE THE TRUSTED PARTNER YOU ARE LOOKING FOR. SIMPLY PUT: WE'LL GET THE JOB DONE.

We employ motivated and talented crews—and the latest technology—to get the job done across all our divisions:

- Pipeline
- Fabrication
- Inspection Services
- Industrial Construction
- Industrial Insulation
- Oilfield Services

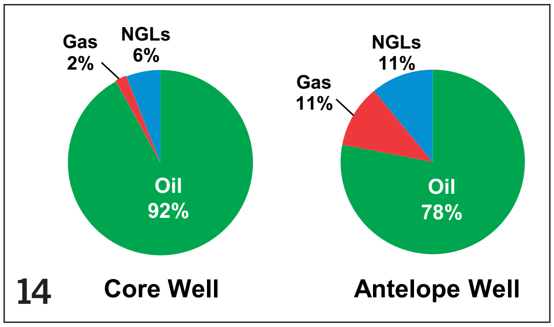
Working under tight deadlines and tough conditions, we continue to pass the test. The best companies across the Rocky Mountain region entrust us with their most important projects. We don't disappoint.

Contact us for your next project.

LOENBRO
LEADING THE CHANGE
409 14th St SW | Great Falls, MT 59404 | (406) 453-1542

OIL & GAS AWARDS
3rd Annual
FINALIST

LOENBRO.COM



14

20 **Improving recovery efficiencies**
Marathon Oil boosts early well results with enhanced completion designs along with increased density spacing on Bakken assets

22 **An order-of-magnitude growth in 4 years**
Oasis Petroleum's successes in the Williston didn't just happen — they came from innovative technical thinking coupled with a solid business plan

24 **Creating complex pressure networks**
QEP triples proppant loads to 10 million pounds, ups fracturing stages to 50, and nets 90-day production gains of 60 percent

25 **A family tradition**
Slawson carries a long and rich history of exploration in the Bakken

26 **'Simplify, standardize, work smarter'**
Statoil makes exploration a priority despite cutting capex and incrementally reducing activity in the Bakken

27 **Exploring with completion techniques**
Whiting tests coiled tubing, plug-and-perf, slickwater and cemented liners to find right geology match and maximize production

29 **Completion timing and deep thinking**
WPX Energy stays 'proactive and opportunistic' as it adds drilling locations from density studies and seeks ideal completion methods

30 **Staying the course in the Bakken**
ExxonMobil sub XTO Energy holds rigs steady as pad development continues with optimized completions from proprietary technology

Petroleum news
BAKKEN

KAY CASHMAN
PUBLISHER & EXECUTIVE EDITOR

MARTI REEVE
SPECIAL PUBLICATIONS DIRECTOR

STEVEN MERRITT
PRODUCTION DIRECTOR

MIKE ELLERD
EDITOR-IN-CHIEF

MAXINE HERR
CONTRIBUTING WRITER

GARY PARK
CONTRIBUTING WRITER

STEVE SUTHERLIN
CONTRIBUTING WRITER

MARY MACK
CHIEF FINANCIAL OFFICER

HEATHER YATES
BOOKKEEPER

SUSAN CRANE
ADVERTISING DIRECTOR

RAYLENE COMBS
ADVERTISING EXECUTIVE

RENEE GARBUTT
ADVERTISING EXECUTIVE

BONNIE YONKER
ADVERTISING SPECIALIST

TOM KEARNEY
ADVERTISING DESIGN

REACHING THE WORLD WITH METHANOL IN A BOX®

The World's First And Only Single Step Natural Gas-to-Methanol Conversion Process

GasTechno®
Energy Efficient Recycle®

THE IDEAL GTL SOLUTION
- Simple, low maintenance design
- Small footprint
- Easily transportable product
- Low CAPEX
- Accepts off spec gas
- Accepts gas at variable flow rates

GasTechnologies offers the Micro-GTL®, Mini-GTL®, Methanol In A Box®, GTL In A Box® and small scale GasTechno® process technology which provides an excellent environmental compliance solution while converting flared gas into high value, commercially saleable liquid fuels and chemicals.

CONTACT
Walter Breidenstein, CEO
email: walterb@gastechno.com

CANADIAN EXCLUSIVE LICENSOR
GasTechno Energy & Fuels (Canada) LLC
Calgary, Canada
REGISTERED OFFICE
GasTechno Energy & Fuels (USA) LLC
Bismarck, North Dakota, USA
HEAD OFFICE GLOBAL LICENSING
GasTechno Energy & Fuels Holdings (UK) Ltd.
Surrey, United Kingdom
GLOBAL HEADQUARTERS
Gas Technologies, LLC
Walloon Lake, Michigan, USA
NORTH AMERICA EXCLUSIVE LICENSOR
GasTechno Energy & Fuels (USA) LLC
Charlevoix, Michigan, USA
☆ GasTechno Global Headquarters
● North America Exclusive Licensor and Planned Subsidiaries
● Worldwide Exclusive Licensor Holding Company & Centers
● Exclusive Sub-Licensor/Planned Subsidiary Locations
Lagos, Nigeria
Cairo, Egypt
Beirut, Lebanon
Istanbul, Turkey
Kurdistan, Iraq
Bagdad, Iraq
Riyadh, Saudi Arabia
Muscat, Oman
MIDDLE EAST ADMINISTRATIVE CENTER
Abu Dhabi, United Arab Emerites
SOUTHEAST ASIA REGIONAL CENTER
GasTechno Energy & Fuels (SG) Pte Ltd.
Changi Business Park, Singapore
GasTechno (ID) Indo Cemerlang
Jakarta, Indonesia
GasTechno (AU) Pty Ltd.
Perth, Western Australia
Beijing, China
GasTechno (IN) Pte Ltd.
Mumbai, India
GasTechno (TH) Co. Ltd.
Rayong, Thailand
GasTechno (ML) Sdn Bhd
Kuala Lumpur, Malaysia

Patented • Tested • Proven • Demonstrated
tel: +1 231-535-2914 • www.gastechno.com

Global Headquarters: Gas Technologies LLC
PO Box 640, Walloon Lake, Michigan 49796-0640 USA
Global Licensing (UK): Haybarn House Business Centre, 118 South Street, Dorking, Surrey, RH4 2EU United Kingdom
Southeast Asia Regional Center: Changi Business Park Central 2, Level 04-05 The Signature, Singapore 486066

The Bakken Explorers

Released April 2015

Petroleum news BAKKEN

THE BAKKEN EXPLORERS is a special annual supplement to Petroleum News Bakken, which is owned by Petroleum Newspapers of Alaska LLC.

MAILING ADDRESS: PO Box 231647 • Anchorage, AK 99523-1647
Phone: (907) 522-9469 • Fax: (907) 522-9583
Email: circulation@PetroleumNews.com • Web page: www.PetroleumNews.com

To order additional copies of this special publication, contact Heather Yates, Petroleum News circulation manager, at hyates@petroleumnews.com

Cover photos courtesy Maxine Herr and Vern Whitten Photography

Bakken Explorers looks again at those pushing the limits

Petroleum News Bakken is pleased to issue the third annual edition of The Bakken Explorers, the magazine that features the activities of exploration and production companies that continue to explore the limits of the Bakken petroleum system in the U.S. and Canada.

MIKE ELLERD

MARTI REEVE

As the publication of record for North America's Bakken play, we follow the activities of operators across the entire play on a regular, ongoing basis, and every spring we step back and take a look at the objectives and strategies of those operators that continually strive to enhance the development and ultimate recovery of the Bakken resource.

Companies for Bakken Explorers are selected using three criteria. First, we look for operators that explore the lateral limits of the Bakken petroleum system in the outlying or fringe regions of the system. However, as the play moves into the development stage, coupled with a weak global crude oil market that has sent many operators back into the high-return core of the play, there has been less lateral exploration in the last year than in previous years.

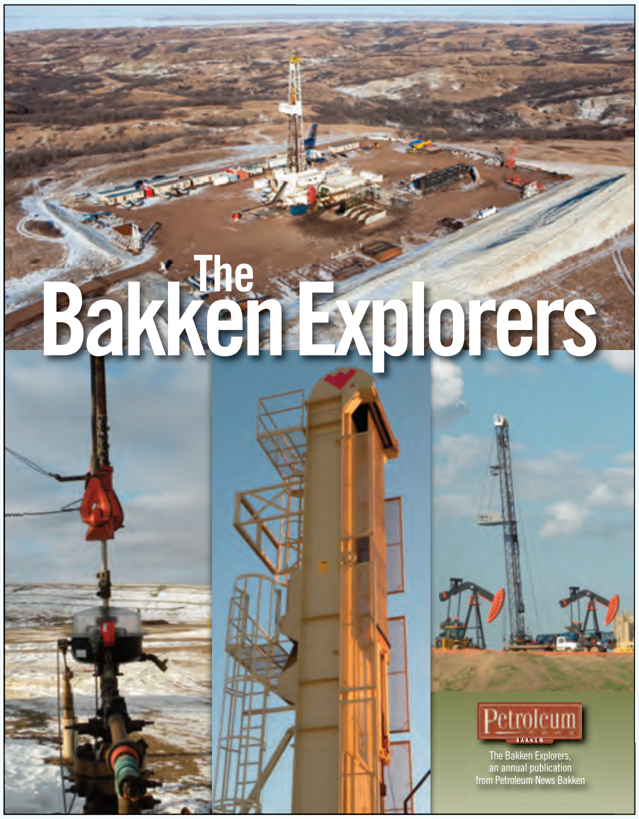
The second criterion is vertical exploration into some of the more non-traditional formations and members such as the False Bakken, upper Bakken shale, the lower benches of the Three Forks as well as the Tyler and Pronghorn formations. But for the same reasons cited above, vertical exploration has also tapered off over the last year.

Finally, we look for operators that are developing and utilizing innovative exploration and production technologies and completion techniques to enhance recoverable reserves within the system.

In the past, our preference was to feature companies that met all three criteria, although occasionally we did feature operators who meet two and even sometimes just one of the three criteria. This year, there were fewer operators who met any of the criteria and many of those met only one as many companies have shifted their attention away from geologic exploration and toward enhancing completion methods and optimizing well densities.

As in past years, Petroleum News Bakken greatly appreciates the information that companies make available and the infor-

continued on page 10


The Bakken Explorers
Petroleum
BAKKEN
The Bakken Explorers, an annual publication from Petroleum News Bakken

GET NOTICED IN 2016

To grow producible reserves in the Williston Basin's Bakken petroleum system it's going to take more exploration by E&P companies such as those featured in this magazine, be they evaluating other zones in the petroleum system, exploring the fringe, or advancing technology to better drill, complete and produce the play. Salute the Bakken explorers in 2016 by advertising in the next annual edition of The Bakken Explorers.

To find out more, please contact:

Susan Crane at (907) 770-5592,
scrane@petroleumnews.com

Renee Garbutt at (907) 522-9469,
rgarbutt@petroleumnews.com

Raylene Combs at (509) 290-5903,
rcombs@petroleumnewsbakken.com

Bonnie Yonker at (425) 483-9705,
byonker@petroleumnews.com

Petroleum news BAKKEN

Continental poised to weather downturn

Balancing capex to cash flow; focus on cost reductions, efficiencies, high rate of return wells; seeking acreage opportunities

By STEVE SUTHERLIN
For Petroleum News Bakken

NAME OF COMPANY:
Continental Resources
TOP EXECUTIVE: Harold G. Hamm, chairman and CEO
COMPANY HEADQUARTERS: 20 N Broadway, Oklahoma City, OK 73102
TELEPHONE: (405) 234-9000
COMPANY WEBSITE: www.contres.com

Continental Resources expects its production to grow in 2015, powered primarily by momentum from 2014, but as 2015 wears on, the company's slashed capital expenditure budget will move it into maintenance mode.

MIKE ELLERD

HAROLD HAMM

While Continental reduced its capex guidance by approximately 40 percent, it is planning to grow production in 2015.

"Looking ahead, our 2015 budget targets cash flow neutrality in the second half of the year," Chairman and CEO Harold Hamm said in a February press release. "We believe that our momentum coming out of 2014 will allow us to grow our production 16 percent to 20 percent this year; however, we are deferring completions in the Bakken to minimize the volumes we sell into this low price environment," Hamm continued.

Chief Financial Officer John Hart told industry analysts in an earnings conference call in February that Continental is looking for most of 2015 production growth to occur in the first half of the year. "We expect 2015 production to rise through midyear and level off in the second half of the year," Hart said. "Looking forward to 2016, we expect we can maintain a growth rate in the mid-single digits

continued on next page

Smarter energy development flows from great ideas

We approach projects the same way we approach our client relationships—as connections designed to last. After more than 25 years in the industry, we know how to minimize impact and maximize benefits, integrating our engineering and design services across the lifecycle of your asset. Our local presence in Bakken and flexibility allow us to meet your needs in more creative ways. Our team takes the long view, addressing your project goals in hand with the concerns of capital, regulators, and the community. Our tailor-made facilities minimize construction time by utilizing modular portable process unit (plug and play) designs.

For more information contact:

Pedro Diaz | Director, Oil & Gas Bakken & Midcontinent, US
1600 2nd Avenue SW, Suite 24 | Minot, ND 58701-3459
(832) 785-8750 | pedro.diaz2@stantec.com

stantec.com

Stantec
Design with community in mind

CONTINENTAL *continued from page 7*

with flat capex at $2.7 billion, so in essence, maintenance capex."

Continental took a one-time $338 million gain from the sale of crude hedges in November when oil prices fell, basically leaving it exposed to market prices in 2015, but the company has a plan to ride out the downturn.

"Our deep and diverse inventory provides us with a lot of optionality when designing our development plans," Hart said. "For 2015, our current $2.7 billion capex plan was developed with a focus on aligning capex to be near discretionary cash flow by mid-year 2015."

At a $60 benchmark WTI, Continental calculates it would be cash flow neutral by mid-year, but at $50 oil, the outspend in the back half of the year would be around $200 to $250 million.

The Bakken will see most of the capex spending, consuming 65 percent of the company's drilling capital in 2015.

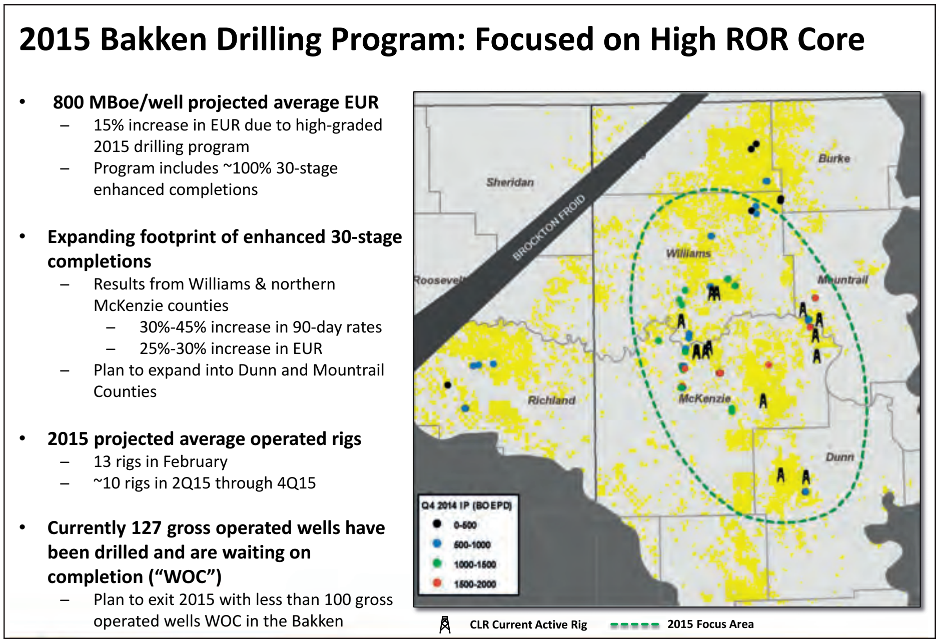
Continental entered 2015 with 10 stimulation crews in the Bakken and expected to be down to four in early March due to deferring completions. The company plans to continue with four stimulation crews through year end. Continental operated an average of 23 rigs in the Bakken play during the fourth quarter 2014, but expected to be down to 10 rigs in March and to hold its rig count at 10 for the balance of 2015.

Acquisition-minded

While exploration and production have been scaled back, Continental has not scaled back its hunt for opportunities in its Bakken or its south-central Oklahoma SCOOP core areas, according to company President and Chief Operating Officer Jack Stark.

"We continually evaluate our opportunities; we haven't really slowed down from an acquisition or a leasing standpoint in any

continued on page 10



2015 Bakken Drilling Program: Focused on High ROR Core

- **800 MBoe/well projected average EUR**
  - 15% increase in EUR due to high-graded 2015 drilling program
  - Program includes ~100% 30-stage enhanced completions
- **Expanding footprint of enhanced 30-stage completions**
  - Results from Williams & northern McKenzie counties
    - 30%-45% increase in 90-day rates
    - 25%-30% increase in EUR
  - Plan to expand into Dunn and Mountrail Counties
- **2015 projected average operated rigs**
  - 13 rigs in February
  - ~10 rigs in 2Q15 through 4Q15
- **Currently 127 gross operated wells have been drilled and are waiting on completion ("WOC")**
  - Plan to exit 2015 with less than 100 gross operated wells WOC in the Bakken

COURTESY CONTINENTAL RESOURCES

WHERE PROGRESS MEETS PRESERVATION

Accurate and efficient services for the energy industry.

• All phases of Cultural Resource Inventories • All phases of Paleontology Inventories & Curation

• NEPA & NHPA compliance assistance • Interdisciplinary GIS services • Native American consultation

Offices located in Bismarck, ND & Denver, CO

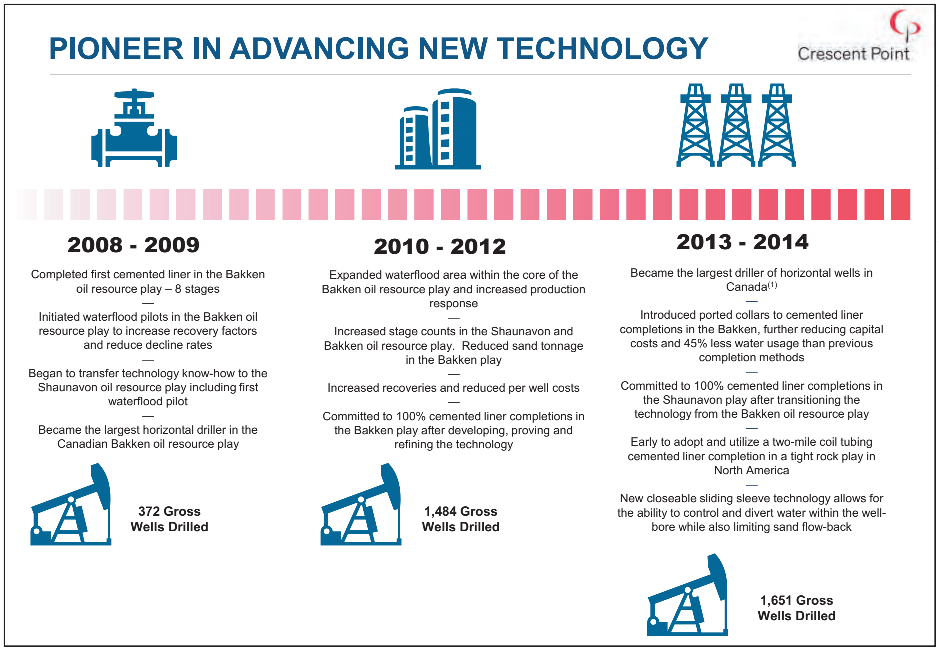
701-663-5521 | info@bcarch.org | www.bcarch.org

Beaver Creek ARCHAEOLOGY

Crescent Point: an international player

Canada's largest Bakken player employs 'huge technical change' in Saskatchewan as Uinta Basin reserves in Utah continue to rise

By GARY PARK
For Petroleum News Bakken



PIONEER IN ADVANCING NEW TECHNOLOGY

Crescent Point

2008 - 2009

Completed first cemented liner in the Bakken oil resource play – 8 stages
—
Initiated waterflood pilots in the Bakken oil resource play to increase recovery factors and reduce decline rates
—
Began to transfer technology know-how to the Shaunavon oil resource play including first waterflood pilot
—
Became the largest horizontal driller in the Canadian Bakken oil resource play

372 Gross Wells Drilled

2010 - 2012

Expanded waterflood area within the core of the Bakken oil resource play and increased production response
—
Increased stage counts in the Shaunavon and Bakken oil resource play. Reduced sand tonnage in the Bakken play
—
Increased recoveries and reduced per well costs
—
Committed to 100% cemented liner completions in the Bakken play after developing, proving and refining the technology

1,484 Gross Wells Drilled

2013 - 2014

Became the largest driller of horizontal wells in Canada[1]
—
Introduced ported collars to cemented liner completions in the Bakken, further reducing capital costs and 45% less water usage than previous completion methods
—
Committed to 100% cemented liner completions in the Shaunavon play after transitioning the technology from the Bakken oil resource play
—
Early to adopt and utilize a two-mile coil tubing cemented liner completion in a tight rock play in North America
—
New closeable sliding sleeve technology allows for the ability to control and divert water within the well-bore while also limiting sand flow-back

1,651 Gross Wells Drilled

COURTESY CRESCENT POINT ENERGY

Crescent Point Energy has an overriding operating belief that "if we aren't drilling no one is," says Chief Operating Officer Neil Smith.

For every aspect, the company is the leader in Canada's Bakken and Shaunavon plays — production, drilling, advances in technology — and now for strategic moves it might take to consolidate assets in its core holdings.

Chief Executive Officer Scott Saxberg, without discounting talk that Crescent Point is eying distressed companies and engaged in discussions with various parties, made the point in early March that the corporate approach is one of prudence and caution.

He said the objective is to determine whether prospective acquisitions would meet his company's prerequisites of low risk and the easiest to "bring in house," and mentioned that Colorado "is an area of interest."

For now, there is no avoiding the widely held view that Crescent Point might take a prominent role if an oil patch fire sale catches alight in North America.

The company is seen as a possible suitor in the Bakken region, especially now that hopes of a rebound in oil prices are crumbling.

Analysts analysis

Neal Dingmann of SunTrust Banks in Houston said that as the industry comes to terms with the price outlook there is a growing acceptance that "deals will start to happen sooner rather than later. You can only kick the can down the road for so long."

Kyle Preston, an analyst with National Bank Financial, said Crescent Point occupies the "driver's seat" as a likely buyer of assets or companies and topping the list of candidates is Lightstream Resources, which has struggled to sell its Saskatchewan Bakken assets, prompting speculation that the whole company is a target.

Preston values Lightstream's Bakken assets at C$1 billion, compared with its market capitalization of C$204 million.

NAME OF COMPANY: Crescent Point Energy Corp.
TOP EXECUTIVE: Scott Saxberg, president, CEO & director
COMPANY HEADQUARTERS: 111 5 Ave SW, Ste 2800, Calgary, AB T2P 3Y6
TELEPHONE: (720) 880-3610
WEBSITE: www.crescentpointenergy.com

Katrina Karkkkainen, who covers junior E&P companies for First Energy Capital, includes Crescent Point on her shortlist of companies that combine strong balance sheets with active hedging that has blunted the impact of oil's price drop.

Technology innovations

Whatever happens on the merger and acquisition front, Crescent Point is eagerly rolling out its latest technology breakthrough, which involves a closable sliding sleeve that facilitates the movement of fracturing water around a reservoir.

Smith told analysts the innovation is a "huge technical change" and that a year of testing has yielded positive results.

The company said the closing sleeve has the potential to "increase the efficiency and productivity of (its) waterfloods in both the Viewfield Bakken and Shaunavon resource plays."

"This technology will allow increased control over water displacement and, in combination with the waterflood, could lead to significant increases in recovery

continued on next page

CRESCENT POINT *continued from page 9*

factor."

Crescent Point also hopes the closable sleeve will lower capital costs by reducing the frequency of well clean-outs and is counting on using the technique across all of its operations.

In combination with a waterflood the technique has the potential to generate significant value for shareholders, with "increased recovery factors and capital savings when applied across our large drilling inventory," the company said.

Having set a new production high of 153,822 boe per day in the final quarter of 2014 — up 7 percent from a year earlier — Crescent Point believes "the steps we are taking now, in terms of lowering our cost structure and improving our efficiencies, will benefit the company in all price environments," Saxberg said.

The year ahead

The plans for 2015 include advancing and growing a "highly economic discovery" at the Torquay (Three Forks) zone in southeast Saskatchewan's Flat Lake play, where the company drilled 16 net oil wells in 2014.

Over the past year the company has doubled proved plus probable reserves at the play to 33.6 million boe, setting the stage to start a waterflood pilot project in mid-2015.

Saxberg said the achievements at Flat Lake demonstrate "the strength of our business strategy of acquiring, developing and exploiting large oil-in-place pools with low recovery factors." A new Flat Lake discovery in 2014 added 1 billion barrels of original-oil-in-place to kick start a play covering 614,000 acres.

In its other core United States operation in the Uinta Basin of Utah, Crescent Point has increased proved plus probable reserves by 58 percent since 2012 as it tests new well completion techniques and builds its resources in what Smith described as "one huge field."

While joining its peers in cutting spending at the start of 2015 and shrinking its capital budget by 28 percent, Crescent Point still has a drilling and completions program of C$1.27 billion on its books and expects to review those plans after the spring breakup.

To maintain a "financially strong organization," Crescent Point said it increased its syndicated credit facility in the fourth quarter by 40 percent to C$3.6 billion — a position it views as "increasingly important given the current low oil price environment."

Supporting its ongoing operations, the company said it has hedged 56 percent of its oil production for this year at an average price of C$89 per barrel and 33 percent of its 2016 production at C$84 per barrel.

It is also making a "concentrated effort" with its contractors to reduce costs, projecting savings since 2014 of 15 percent to 20 percent in "certain projects."

Contact Gary Park through publisher@petroleumnews.com

CONTINENTAL *continued from page 8*

of our plays at this time," Stark said, adding that the company plans to negotiate prices in line with the market.

Smartly grabbing leases

Continental moved boldly in an online auction offering of two 80-net acre North Dakota Department of Trust Lands oil and gas leases on March 10. With literally less than a minute remaining, Continental stepped in with its only bid, trumping the previous bid by $100, picking up the leases for $14,200 per acre and netting Trust Lands $2.272 million.

State records show no existing wells on the leases, which lie under and along the east shore of Lake Sakakawea in the Sanish field in southwest Mountrail County, but Continental has one active well on an adjacent section onshore with another six wells permitted.

Drew Combs, who heads Trust Lands' Minerals Management Division, said that even though the tracts are in a very productive region of the Bakken, he didn't think the tracts would bring that much money. "Our benchmark for those tracts was $10,000," Combs told Petroleum News Bakken.

Production up

In its Bakken development report, Continental said Bakken production averaged 130,783 barrels of oil equivalent per day in fourth quarter 2014, up 8 percent compared to third quarter and up 40 percent from fourth quarter 2013. Full-year 2014 Bakken production averaged 114,715 boe per day, up 30 percent compared to 2013.

The company completed 72 net (234 gross) operated and non-operated Bakken wells during fourth quarter 2014 and 312 net (921 gross) operated and non-operated Bakken wells for the year.

Continental said that in 2015 it will focus on further cost-cutting and increasing efficiencies.

The company will concentrate its drilling in high rate of return areas of Williams and McKenzie counties and to a lesser extent in Dunn and Mountrail counties.

Continental is employing enhanced completion techniques utilizing a combination of slickwater and hybrid stimulations, targeting an average estimated ultimate recovery of 800,000 boe per well.

Results of the enhanced completions are being monitored closely and continue to deliver 30 percent to 45 percent uplift in initial 90-day rates and an estimated 25 percent to 30 percent increase in EURs based on early results.

Based in Oklahoma City, Continental is the largest leaseholder and one of the largest producers in the Bakken play of North Dakota and Montana. It has significant positions in Oklahoma, including its SCOOP Woodford and SCOOP Springer discoveries and the Northwest Cana play.

Contact Steve Sutherlin at stevepna@hotmail.com

WELCOME *continued from page 6*

mation that a number of companies have shared directly with us. That information enables us to more thoroughly and accurately report on the activities that have unlocked the enormous potential of one of the most prolific unconventional oil plays in the world.

Our thanks also go to the many advertisers whose support makes Petroleum News Bakken and The Bakken Explorers possible.

All of us at Petroleum News Bakken hope you enjoy reading about the companies that continue to pioneer the development of the world-class Bakken resource.

Mike Ellerd, editor-in-chief
Marti Reeve, special publications director

DeeThree Exploration's 'fantastic' Alberta assets

Strong leadership coupled with early successes in Southern Alberta Bakken give Canadian junior high ratings among industry analysts

By GARY PARK
For Petroleum News Bakken

Of all the junior E&P companies in Canada, few have so consistently seized the attention of analysts as DeeThree Exploration.

Through good times and bad, for the company and the industry at large, DeeThree has attracted strong buy recommendations for its results in various Alberta plays, notably in the Southern Alberta Bakken.

Keith Schaefer is one of the most closely followed prognosticators. As editor and publisher of Oil & Gas Investments Bulletin, he tracks emerging growth companies and backs his evaluations by taking positions in the companies.

He is enthusiastic about DeeThree under the leadership of Martin Cheyne, who joined the company more than six years ago after 30 years of founding and leading several companies to the takeover point.

Schaefer says DeeThree has created "fantastic assets" out of its core operations in the Alberta Bakken and the Belly River play in west-central Alberta.

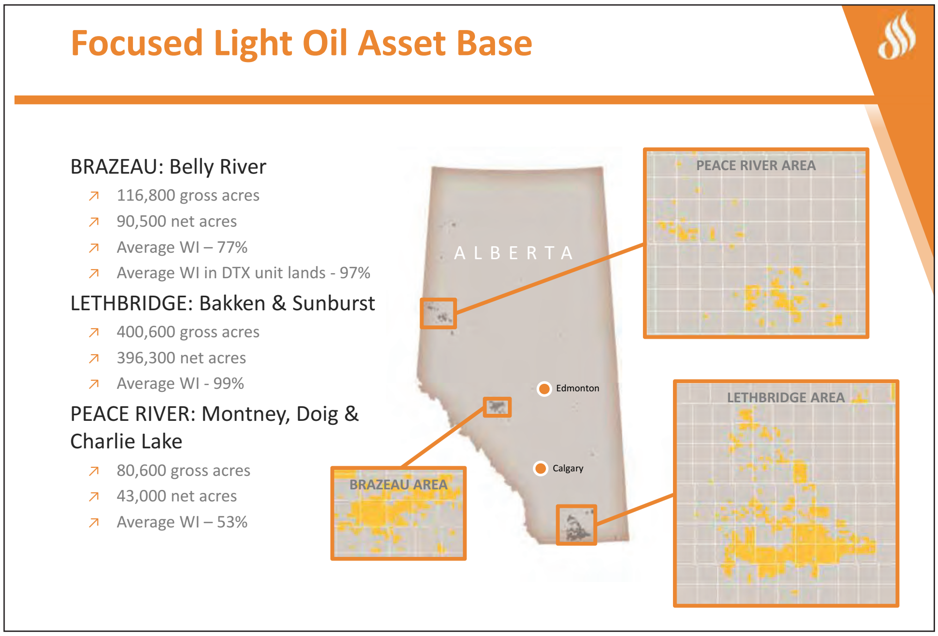
"They were able to read those assets way better than any previous operators and really figure out the geological code that allowed their teams to extract way more production than anybody else," he said in an interview last year.

He said the deals were "very expensive at the time, (but have since) ended up being very, very cheap because the company managed to successfully develop them."

Among those companies that have the "highest possible analyst recommendations," based on an average score, DeeThree topped the list of 17 (all with market capitalizations of at least C$500 million) at 5.0, which represents a "strong buy" assessment.

And it was one of the few from the energy sector at a time when fewer analysts are making "high-conviction" energy calls.

Chad Ellison, an analyst at Dundee Capital Markets told his clients earlier this year that DeeThree "maintains a relatively strong balance sheet and is expected to still grow production spending approximate cash flow, which is becoming a rarity given current commodity prices."


Focused Light Oil Asset Base

BRAZEAU: Belly River
- 116,800 gross acres
- 90,500 net acres
- Average WI – 77%
- Average WI in DTX unit lands - 97%

LETHBRIDGE: Bakken & Sunburst
- 400,600 gross acres
- 396,300 net acres
- Average WI - 99%

PEACE RIVER: Montney, Doig & Charlie Lake
- 80,600 gross acres
- 43,000 net acres
- Average WI – 53%

COURTESY DEETHREE EXPLORATION

NAME OF COMPANY:
DeeThree Exploration Ltd.
TOP EXECUTIVE: Martin Cheyne, president and CEO
COMPANY HEADQUARTERS: 2200, 520 - 3rd Ave SW, Calgary, AB T2P 0R3
TELEPHONE: (403) 767-3060
WEBSITE: www.deethree.ca

DeeThree Exploration Ltd.

Conservative capex

Shares in the E&P company immediately rose 11 percent after it announced a conservative C$160 million capital budget for 2015, while aiming to grow production by 18 percent to 13,300 barrels of oil equivalent per day. The company is allocating C$68 million to drill 13 wells in the first half on projections of an average West Texas Intermediate price of US$50 a barrel and C$92 million to drill 16 wells in the second half when it is banking on oil prices averaging US$60.

Shetlander Randhawa, an analyst with RBC Dominion Securities, said the DeeThree program seemed "reasonable," adding "we remain positive on DeeThree shares for the company's material unbooked upside and strong per share growth metrics via the drill-bit."

continued on next page

DEETHREE *continued from page 11*

Alberta Bakken status

For the Alberta Bakken, the focus will be on "building sustainability and maximizing the value and ultimate oil recovery of this very significant defined resource," DeeThree said.

It indicated that much of its optimism is attached to early results from a gas injection enhanced oil recovery program, which third-party consultants say will boost recovery factors by 200 percent beyond primary drilling.

Since starting a pilot in mid-2013 the company has spent C$7 million installing a built-for-purpose compressor and associated high pressure injection lines which allow it to reinject all currently produced gas.

The injection rate was stepped up in September, with early results pointing to reduced declines over a 9,000 acre area in the heart of the pool.

DeeThree said a horizontal infill well drilled and completed this year has "exceeded expectations and provides additional data which further support the case for gas reinjection."

The well has tested at various flowing rates of up to 1,800 barrels per day of crude and has continued to flow at a restricted rate of 37 bpd of oil and 450,000 cubic feet per day of gas after 14 days of production.

> *The reserve engineering firm of Sproule Associates has evaluated DeeThree's total proved plus probable reserves in the Alberta Bakken, the Brazeau area of west-central Alberta and the Peace River Arch of northwestern Alberta at 51.8 million boe (75 percent oil and natural gas liquids), up 31 percent in 2014, with the additions representing triple 2013 production.*

A second well using monobore technology was drilled into the pool, yielding cost reductions of 25 percent to 30 percent.

Given these results, DeeThree said it is confident the EOR scheme is effective, allowing it to plan for an accelerated transition to full implementation of EOR in the Alberta Bakken.

The company said it is focused on long-term development of the pool, aiming to maximize oil recovery and capital efficiency.

"With an improved decline rate, increasing pressure support, a large drilling inventory and reduced capital costs, the company is expecting to grow production and free cash flow at a sustainable rate even under current commodity pricing," it said.

Reserves, costs and capex

The reserve engineering firm of Sproule Associates has evaluated DeeThree's total proved plus probable reserves in the Alberta Bakken, the Brazeau area of west-central Alberta and the Peace River Arch of northwestern Alberta at 51.8 million boe (75 percent oil and natural gas liquids), up 31 percent in 2014, with the additions representing triple 2013 production.

Finding, development and acquisition costs are estimated at C$21.51 per boe on proved plus probable reserves.

Proved plus probable future net capital is earmarked at C$388 million, which represents less than 2.5 years of the company's forecasted capital budget.

In 2014, DeeThree drilled 47 gross (46.93 net) wells with a 94 percent success rate, including 18 gross (18 net) wells on the Alberta Bakken property.

A deeper look at SAB

In the Southern Alberta Bakken region, DeeThree holds 396,300 net acres of prospective land (400,600 gross acres), with the fairway stretching over 30 miles.

Production from the play is pushing towards 5,000 boe per day (80.5 percent oil and liquids).

The Bakken strategy includes drilling to expand the size of its play to the west where the company recently acquired a 100 percent working interest in 22,000 acres that DeeThree said was the last remaining block available between a 2012 discovery well and the existing core oil pool that exceeds 44,800 acres.

A discovery well was drilled in the third quarter of 2014, testing a 16 foot-thick pay section identified in a vertical strat test well.

The company said the successful horizontal well was a seven-mile step out from its existing Bakken production. About 4,600 feet of Bakken pay was successfully fracture stimulated, placing 155 metric tons of sand over 16 stages using an energized water based system.

The plan now involves modified well lengths, frack size and well placement to "optimize results from the large oil-in-place resource."

Contact Gary Park through publisher@petroleumnews.com

SAFETY ISN'T JUST A GOAL
IT'S A WAY OF LIFE
LOUNSBURY & ASSOCIATES
Surveyors • Engineers • Planners
Proudly serving the Oil and Gas industry for over 65 years, we specialize in complex projects where various Land Surveying, Right of Way, Remote Sensing, and Geographic information Systems (GIS) services are required.

experience you can use

ESTABLISHED 1949

lounsburyinc.com

Enerplus ensuring financial strength

Following a year of 'rigorous' resource assessment, 2015 will see 'strict capital allocation'

By GARY PARK
For Petroleum News Bakken

Although swept along on a wave of upbeat results from 2014, with its Fort Berthold operations contributing handsomely to the performance, Enerplus has decided to head for dry land.

Low oil and natural gas prices have prompted the Calgary-based mid-size producer to slash its year-over-year capital spending by 40 percent to C$480 million, chopping its dividend by 44 percent, selling non-core assets for C$182 million, shutting in gas wells in the Pennsylvania Marcellus and deferring North Dakota oil wells.

IAN DUNDAS

The corporate focus is on "driving costs out, without compromising economics or safety," according to Ray Daniels, senior vice president, operations.

He said 2015 will be a year when Enerplus is "very strict on capital allocation and maximizing savings in all areas."

That includes eliminating one of its two Bakken rigs, ending 2015 with about 16 uncompleted wells that Daniels said could be brought on stream "expeditiously" when market conditions recover.

Daniels said the "spend discipline" being exercised across the company will apply to both capital programs and operating activities after a year when he said Enerplus achieved "industry-leading well performance in Fort Berthold by advancing our completion design, optimizing our drilling density design and testing the lower benches of the Three Forks."

He said 30- and 60-day initial production rates were 20 percent higher on average than Enerplus' high-case type curve, boosting Fort Berthold production by 30 percent over 2013 to 21,700 boepd.

Initially, well costs did trend higher as a result of increasing the number of well-fracture stages, but by the end of 2014 cost reductions of 8 percent were recorded, primarily driven by the efficiencies of pad drilling, Daniels said.

He said the five wells drilled and completed averaged US$12.1 million each, while the combination of increasing initial production and reduced capital costs drove a 25 percent increase in capital efficiency, year-over-year.

'Rigorous' resource assessment

For 2014, Enerplus drilled 27.2 net wells at Fort Berthold and brought 18.4 on stream.

enerPLUS

NAME OF COMPANY:
Enerplus Corp.
TOP EXECUTIVE: Ian C. Dundas,
president and CEO
COMPANY HEADQUARTERS: 3000 Dome Tower, 333 7 Ave SW
Calgary, AB T2P 2Z1
TELEPHONE: (403) 298-2200 • **WEBSITE:** www.enerplus.com

It also completed a "rigorous" resource assessment of the play which resulted in original-oil-in-place estimates being hiked by 500 million barrels to 1.5 billion barrels, with an estimated recovery factor of 15 percent that enabled the company to increase its well density and boost the number of drilling locations by 127 percent, Daniels said.

The revised resource calculation and improved well performance added about 25 million barrels of proved plus probable reserves, equating to a replacement of 2014 production by more than 300 percent at an average F&D cost of C$16.87 per boe.

These results and outlook might, in other circumstances, have allowed Enerplus to hold out hopes for 2015 and beyond that would have wiped out memories of a 24 percent dive in share prices last summer that puzzled analysts such as TD Securities Aaron Bilkoski.

After speaking with the company and a series of institutional investors, he was unable to detect "any fundamental reason for the sell-off."

Instead, he was counting on "positive catalysts" in the final quarter of 2014 that "could again result in Enerplus' outperformance."

Ensuring financial strength

But, like its peers, Enerplus has been forced to take proactive measures affecting all of its core areas in the United States and Canada to "preserve value in the near term and ensure the financial strength of the company," as it navigates through current markets, said Chief Executive Officer Ian Dundas.

The prospects are so grim in the already battered natural gas sector that Eric Le Dain, senior vice president, corporate development, called on competitors in the Marcellus formation to join Enerplus in curtailing production.

He said Enerplus expects to remove an average of up to 7,000 boepd of Marcellus production in 2015, after doubling volumes from the play last year to 188 million cubic feet per day, despite trimming output during the second half.

"We just are not prepared to produce all of our capability into

continued on page 16

Applying years of experience

Leading horizontal developer EOG Resources slows spending to ride out oil slump with plans to ramp up when prices turn around

By STEVE SUTHERLIN
For Petroleum News Bakken

EOG Resources has a history of deftly navigating the landscape as unconventional oil activity skyrocketed in the United States.

The Houston-based exploration and production company, under the direction of then CEO Mark Papa, was a leader in developing horizontal oil production beginning with multi-stage fractured wells in the Permian Basin in 2000, in the Barnett shale in Texas in 2003 and in the Bakken in 2006. EOG continued horizontal shale exploration expanding into the Eagle Ford in 2009, and since has refined its technical knowledge of shale development.

Responding to high prices and short supply of fracking sand, in 2012 EOG opened a sand processing plant in Wisconsin, one of the largest facilities of its kind in the country. Low-cost sand allowed EOG to experiment liberally to find optimum levels of sand injection into its stimulation fractures.

Papa recognized early on that rail would be a key in moving Bakken oil to refineries. EOG christened its St. James, Louisiana, crude-by-rail unloading terminal in April 2012, giving it expanded access to Gulf Coast refining markets with new connections to pipelines, storage and barge facilities in the area. Its Stanley, North Dakota, rail terminal opened in 2009.

BILL THOMAS

In 2013, EOG Resources Inc. became the largest producer of oil in the onshore Lower 48 states, reaching 300,000 barrels of oil per day of gross operated production by September, and as of June 2014 EOG was producing 19 percent more oil than its next closest competitor, according to the company's website.

Times changed

But that was then, and now in the midst of a low oil price environment, EOG is putting on the brakes, slashing 2015 capital expenditures 40 percent from 2014.

CEO Bill Thomas told analysts in a February 2015 conference call that EOG does not believe that growing production "in what could turn out to be a short-cycle, low price environment, is the right thing to do." So EOG is implementing a strategy to ride out the oil market slump.

However, EOG is also looking ahead and is implementing a strategy to ramp up production when oil prices recover. "It is clear that current prices are too low to meet the world's supply needs and the market will re-balance," Thomas said. "We would be ready to respond swiftly when oil prices improve and resume our leadership and high return oil growth."

Top three plays

EOG's 2015 capex of approximately $5 billion will focus on its "top three plays" in the Bakken, the Eagle Ford in South Texas and the Delaware Basin in West Texas and New Mexico.

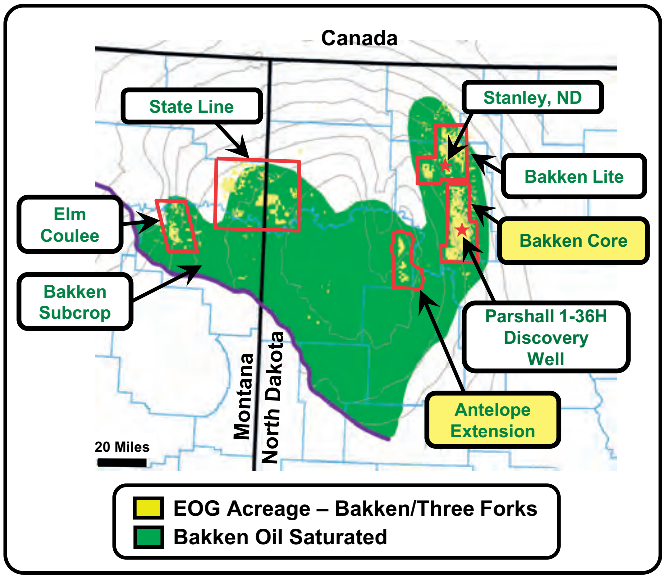
"At $55 oil, these premier assets deliver a direct after-tax rate of return greater than 35 percent without factoring in the potential for additional services cost reductions," Thomas said.

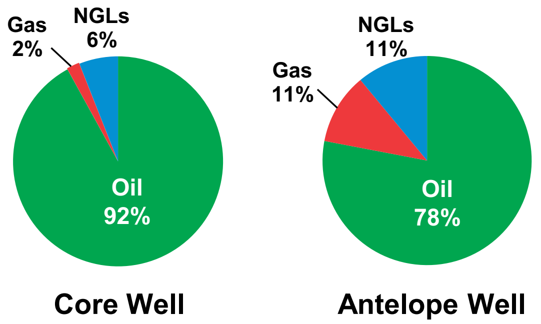
EOG is reducing the number of drill rigs and delaying well completions.

In the Bakken, EOG plans to complete just 25 wells as opposed to 59 wells completed in 2014. "Delaying completions increases returns, adds substantial net present value and prepares the com-

continued on page 16

NAME OF COMPANY:
EOG Resources Inc.
TOP EXECUTIVE: William R. Thomas, chairman of the board and CEO
COMPANY HEADQUARTERS: 111 Bagby, Sky Lobby 2, Houston, TX 77002
TELEPHONE: (713) 651-7000 • **WEBSITE:** www.eogresources.com





COURTESY EOG RESOURCES

Where tough guys sleep like babies.

- 240 Room Flex-Stay Hotel
- 24/7 Food Service
- Free WiFi
- Bar & Lounge
- North of Airport
- Daily Laundry Service

5813 Jefferson Lane • Williston, ND

RAMADA®
701-609-5555
www.ramada.com/hotel/48760

ENERPLUS *continued from page 13*

this low price market; therefore we see production on average of 170 million to 190 million cubic feet per day," Le Dain said.

"In the end it comes down to whether competitors act as we and our partners are doing to limit production into this market environment," he said.

Overall, Enerplus expects production this year to drop about 6 percent to 93,000-100,000 boepd, after selling 1,900 boepd (to a buyer believed to be Bonterra Energy), with oil and liquids accounting for 42 percent-44 percent.

Under its commodity hedging program, Enerplus has 52 percent of its forecasted net crude output hedged at just under US$92 per barrel for the first half of 2015 and 26 percent hedged for the second half at just under US$94.

Contact Gary Park through publisher@petroleumnews.com

EOG RESOURCES *continued from page 14*

pany to resume strong oil growth when commodity prices recover," the company said in a Feb. 18 press release.

EOG plans to complete approximately 345 Eagle Ford wells in 2015, a decrease of 35 percent from 2014. In the Delaware Basin, EOG will increase capex to complete approximately 95 wells, 53 percent more than in 2014.

The company will also continue efforts to lower finding costs and improve production rates. Thomas said because of cost and productivity improvements in the Eagle Ford, the company "can now generate better returns with $65 oil than we did with $95 oil just two or three years ago."

EOG's service costs have fallen, but Thomas said it sees room for further reductions. "Due to low oil prices, we have already seen service cost reductions in many areas and we see the potential for 10 percent to 30 percent vendor savings during this downturn."

EOG will continue to grow its acreage portfolio "through leasehold, farm-in or tactical acquisitions" in the weak market environment, Thomas said, adding that "low oil prices mean unique opportunities to add low-cost, high-quality acreage."

Thomas believes EOG will endure the weak market environment and emerge as a stronger company. "In my 36 years with the company I have seen many downturns, and each time EOG stays disciplined, performs well, and emerges on the other side in better shape than we entered it."

Production momentum

EOG's total crude oil and condensate production averaged 307,700 bpd in fourth quarter 2014, nearly all of which — 301,500 bpd or 98 percent — came from U.S. assets. Fourth quarter production was up 3 percent over the third quarter and up 26 percent over fourth quarter 2013.

EOG continues to view the Bakken as a high-return asset.

"While the Bakken will receive less capital in 2015, it remains a core, high-return asset in our drilling program," Billy Helms, EOG's executive vice president for exploration and production said. "A typical 10,000-foot lateral in the Bakken core generates greater than 35 percent after tax rate of return with a $55 flat oil price."

Contact Steve Sutherlin at stevepna@hotmail.com

Cold temperatures affecting epoxy cure!

RD-6®

Coating System

Users and Contractors are finding RD-6 to be their solution. Applied at temperatures as low as -40° F with no cure times and less installation problems.

Contact us at **281.580.5700**

www.PolyguardProducts.com/paz

Polyguard®

Innovation based. Employee owned. Expect more.

REGISTER NOW

for the industry's leading multidisciplinary unconventional conference

- 300+ technical presentations
- 5 field trips
- 9 short courses
- 5,000+ petroleum geoscientists and engineers
- 180+ exhibitors

The integrated event for unconventional resource teams

UNCONVENTIONAL®
RESOURCES TECHNOLOGY CONFERENCE
FUELED BY SPE • AAPG • SEG URTeC.org

20-22 JULY 2015 • SAN ANTONIO, TEXAS • HENRY B. GONZALEZ CONVENTION CENTER

- A superior quality, multidisciplinary science and technology event attracting more than 5,000 petroleum geologists, geophysicists, engineers and energy professionals
- An integrated conference developed by an interdisciplinary program committee comprising engineers, geophysicists and geologists
- One of the industry's most interactive networking forums for companies and individuals across all segments of the unconventional market

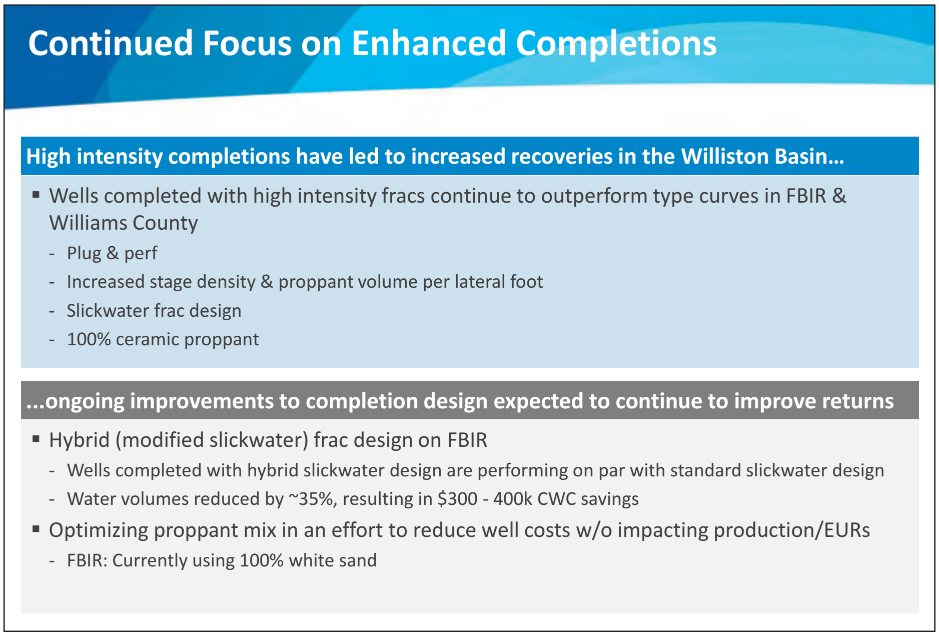
Register by 8 June and save
URTeC.org

SPE International AAPG SEG

On the cutting edge of completions

For four years, Halcon Resources has been experimenting with Bakken fracturing modifications, which has proven a good investment

By MIKE ELLERD
Petroleum News Bakken



Continued Focus on Enhanced Completions

High intensity completions have led to increased recoveries in the Williston Basin…

- Wells completed with high intensity fracs continue to outperform type curves in FBIR & Williams County
  - Plug & perf
  - Increased stage density & proppant volume per lateral foot
  - Slickwater frac design
  - 100% ceramic proppant

…ongoing improvements to completion design expected to continue to improve returns

- Hybrid (modified slickwater) frac design on FBIR
  - Wells completed with hybrid slickwater design are performing on par with standard slickwater design
  - Water volumes reduced by ~35%, resulting in $300 - 400k CWC savings
- Optimizing proppant mix in an effort to reduce well costs w/o impacting production/EURs
  - FBIR: Currently using 100% white sand

COURTESY HALCON RESOURCES

Within a year of entering the Williston Basin through its acquisition of GeoResources in 2012, Halcon Resources was seeing 77 to 91 percent improvements in 24-hour and 30-day initial production volumes by implementing modified completion methods.

FLOYD WILSON

Now, two years later the Houston-based independent continues to reap the benefits of continued completion method experimentation on its core Bakken acreage on the Fort Berthold Indian Reservation and in Williams County.

In April 2013, Halcon was experimenting with modifications intended to both increase production and lower well costs, including an increase in the number of frack stages, greater proppant loads, and a reduced gel component using plug and perf completion technology. The company reported that IPs on two Three Forks wells on FBIR completed with modified methods improved 20 percent over previously completed wells in the area. IPs for those two wells averaged 1,810 barrels of oil equivalent per day.

In August 2013, the company was using mostly ceramic proppant and in greater volumes, and was experimenting with slickwater in its FBIR completions. While the ceramic proppant costs were higher, they were offset by batch drilling and a tightening of drilling time.

By November 2014, however, Halcon had turned to using 100 percent sand in its FBIR well completions and those wells were outperforming the company's type curves. On FBIR, 24-hour IPs were averaging 2,935 boepd, 15 percent above the company average.

At the same time, the company was also experimenting with a hybrid slickwater design intended to deliver more proppant with less water. Test results showed those wells were producing on par with other completion methods, but by using approximately 35 percent less water the company was realizing cost savings of approximately $300,000 to $400,000 per well. By the end of the next quarter, the results were so favorable that Halcon had decided to apply the modified methods to nearly all of its Bakken play wells. "During 2014, up in North Dakota, we have been utilizing a modified or hybrid slickwater completion design in an effort to further decrease completed well costs and also the results have convinced us to move forward with this completion design on most wells," CEO Floyd Wilson told analysts in an earnings conference call in late February. This frack job is designed to place the same amount of proppant, but use less water."

Payoffs

The completion modifications, coupled with batch drilling, helped lower Hal-

continued on page 21

NAME OF COMPANY: HRC Operating (formerly G3 Operating)
PARENT COMPANY: Halcon Resources
TOP BAKKEN EXECUTIVE: Jon C. Wright, senior vice president operations, Bakken/Three Forks
COMPANY HEADQUARTERS: 1000 Louisiana St, Ste 6700, Houston, TX 77002
BAKKEN HEADQUARTERS: 465 17th St, Ste 1210, Denver, CO 80202
TELEPHONE: (303) 297-2028 • **WEBSITE:** halconresources.com

HALCÓN RESOURCES

Legacy Oil + Gas plays to its strengths

Canadian Bakken operator focuses on capital preservation and maintaining liquidity while innovating fracturing and waterfloods

By **GARY PARK**

For Petroleum News Bakken

For Canada's bruised and battered upstream companies there is no escaping talk these days about their chances of fending off takeover bids.

TRENT YANKO

Some may be inclined to wait for an acquisitor with bulging pockets to knock at the door.

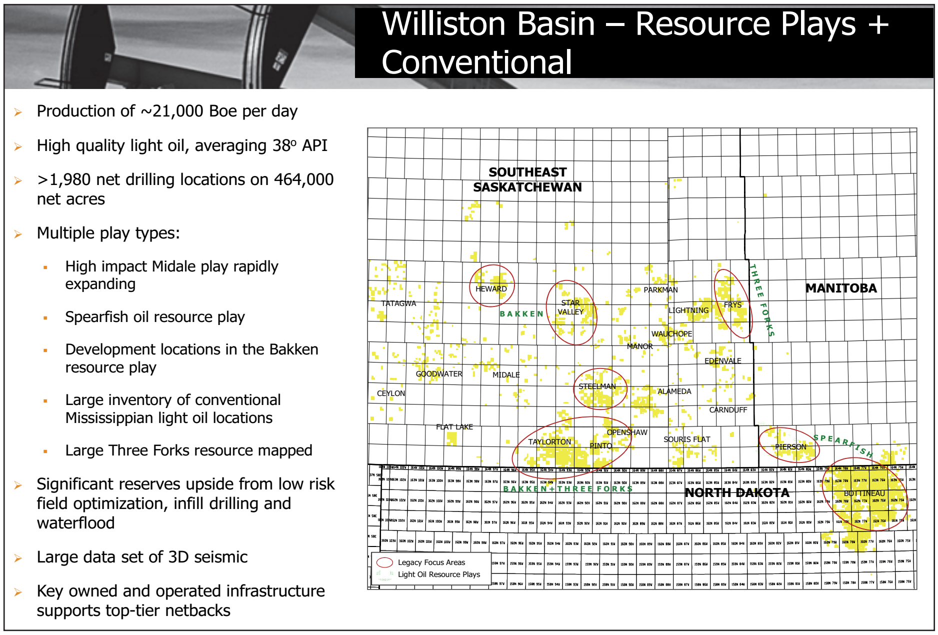
Others like Legacy Oil + Gas, a leading player in the Saskatchewan Bakken, are taking the high road.

Bryan Gould, chief executive officer of acquisition-minded Aspenleaf Energy, said companies weighed down by debt, struggling with low market credibility and lacking access to capital are getting squeezed.

He said that no matter how good their asset portfolios are, there are few companies that can avoid an overriding question.

They are all faced with trying to determine "whether there is light at the end of the tunnel and how far out it is. Maybe there is great upside and greater value, but it's a long ways off and there are a lot of hurdles between here and there."

Legacy, rather than dwelling on the unknowns, is playing to its strengths.



Williston Basin – Resource Plays + Conventional

- Production of ~21,000 Boe per day
- High quality light oil, averaging 38º API
- >1,980 net drilling locations on 464,000 net acres
- Multiple play types:
  - High impact Midale play rapidly expanding
  - Spearfish oil resource play
  - Development locations in the Bakken resource play
  - Large inventory of conventional Mississippian light oil locations
  - Large Three Forks resource mapped
- Significant reserves upside from low risk field optimization, infill drilling and waterflood
- Large data set of 3D seismic
- Key owned and operated infrastructure supports top-tier netbacks

COURTESY LEGACY OIL + GAS

Capital discipline

Having grown from 300 barrels of oil equivalent per day to what it hopes will be an exit rate this year of 27,300 boe per day (with a large chunk dependent on its trail-blazing contributions to waterflood recovery methods in Saskatchewan's Midale play) it is outwardly brimming with confidence.

Chief Executive Officer Trent Yanko said his company is focusing on capital preservation and maintaining liquidity under reduced cash flows by shrinking discretionary spending and high grading opportunities.

NAME OF COMPANY: Legacy Oil + Gas Inc.
TOP BAKKEN EXECUTIVE: Trent J. Yanko, president and CEO
COMPANY HEADQUARTERS: 4400, Eighth Ave. Plc. 525 – 8th Ave. SW Calgary, AB T2P 1G1
TELEPHONE: (403) 441-2300
WEBSITE: www.legacyoilandgas.com

He said that since fall 2013, Legacy has closely watched over its capital spending by living within and, since last year, underspending cash flow that has had the "positive effect of reducing our debt-to-cash flow ratio to 1.5 times or less."

In addition, two takeovers last year of privately owned Corinthian Exploration and Highrock Energy (with combined production of 4,800 boe per day) have placed Legacy in a "position of strength to begin ramping up our growth profile through a combination of cost control," Yanko said.

He said the acquisitions were primarily driven by the "upside" opportunity presented by the location of the assets, their associated drilling inventory and the "very high netback light oil which fits in perfectly with our strategy."

As well the acquired companies came with "very little debt" which in turn reduced Legacy's debt-to-cash flow, he said, adding: "So it was a very good strategy to pursue and we'd look at doing it again. We're always primarily focused on our organic drilling program."

Fracks and waterfloods

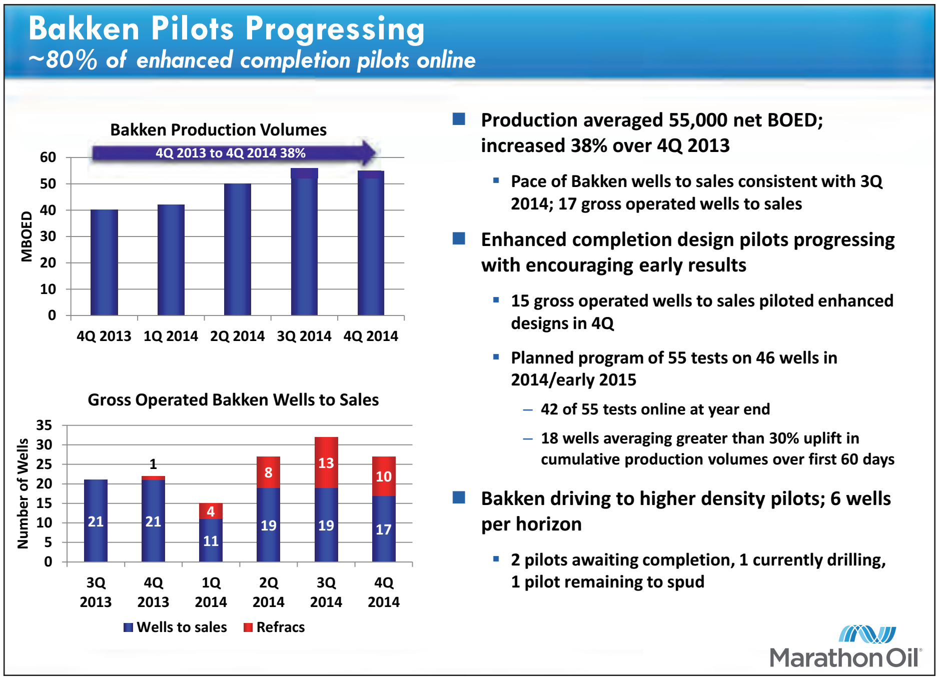
In the forefront of Legacy's growth

continued on page 21

Improving recovery efficiencies

Marathon Oil boosts early well results with enhanced completion designs along with increased density spacing on Bakken assets

By STEVE SUTHERLIN
For Petroleum News Bakken



Bakken Pilots Progressing

~80% of enhanced completion pilots online

- Production averaged 55,000 net BOED; increased 38% over 4Q 2013
  - Pace of Bakken wells to sales consistent with 3Q 2014; 17 gross operated wells to sales
- Enhanced completion design pilots progressing with encouraging early results
  - 15 gross operated wells to sales piloted enhanced designs in 4Q
  - Planned program of 55 tests on 46 wells in 2014/early 2015
    - 42 of 55 tests online at year end
    - 18 wells averaging greater than 30% uplift in cumulative production volumes over first 60 days
- Bakken driving to higher density pilots; 6 wells per horizon
  - 2 pilots awaiting completion, 1 currently drilling, 1 pilot remaining to spud

COURTESY MARATHON OIL

Marathon Oil Corp. will continue its enhanced completion design pilots in the Bakken during 2015, limiting drilling to its core Myrmidon area in Mountrail and McKenzie counties.

Eighteen of 42 enhanced completion wells yielded more than a 30 percent increase in cumulative production over the first 60 days, Lee Tillman, Marathon president and CEO said in a February conference call. "This material change in early production is clearly very encouraging, and we anticipate further updates as the production histories mature," he said. "In the Bakken we're aggressively piloting enhanced completions to improve value in this basin."

MAXINE HERR

LEE TILLMAN

By concentrating spending in the Bakken on intensive completions, returns have come at or above 100 percent in all areas, he said. The company has adopted the updated completion practices across the Myrmidon area and in its Hector area in Dunn County in the Middle Bakken and Three Forks intervals.

"We anticipate a combination of improved stimulation designs coupled with increasing spacing density to drive toward the highest value, incrementally improving the recovery efficiency across a drilling unit," Tillman said.

Marathon has benefited from lower costs as well with an average of $6.2 million to $6.6 million in 2014, reflecting a $1 million reduction per well, and with additional cost savings and high initial production expected, the company is aiming for 20 to 30 percent returns at current commodity pricing, according to Tillman.

Variety in testing

Marathon has drilled its first two spacing pilots with six wells per pad in Hector and Myrmidon, and is currently drilling a third such pad.

NAME OF COMPANY: Marathon Oil Corp.
TOP BAKKEN EXECUTIVE: Lee M. Tillman, president and CEO
COMPANY HEADQUARTERS: 5555 San Felipe St., Houston, TX 77056-2723
TELEPHONE: (713) 629-6600 • **WEBSITE:** www.marathonoil.com

Each pilot is comprised of six Middle Bakken and six Three Forks first bench wells per drilling-spacing unit, Tillman said in a November 2014 conference call.

From early on in the pilot program, Marathon has tested a variety of enhanced completion techniques on the wells, Tillman said.

By November, the company was specifically testing increased proppant loads — up to 6 million pounds of proppant per well, Lance Robertson, Marathon vice president of North America production operations said.

"We also tested incremental stages in those wells, surfactants in two or three of those wells, as well as incremental stages adding for small or more finite stage delivery, and then a change in fluid volume, both a decrease and in most cases an increase of fluid volume."

In the overwhelming majority of those wells, the early response of the 30 day IP was at or above type curve, Robertson said.

U.S. exploration halved

In February the Marathon announced

continued on page 23

HALCON *continued from page 18*

con's competed well costs by 25 percent through the first half of the first quarter of 2015. As of late February, the company put completed costs for its FBIR wells at approximately $8.5 million, down from approximately $11 million in the fourth quarter. In addition, those wells are outperforming the company's published 800,000 boe type curve.

And Wilson told analysts in late February that more savings are expected. "Drilling and completion efficiencies are ongoing as always at Halcon. Our drilling cycle times spud to rig release improved by over 20 percent on the reservation (FBIR) and approximately 15 percent in Williams County last year," Wilson said. "Our completion cycle times, rig release to the end of the completion improved by over 30 percent companywide."

Furthermore, those savings come at a time when the company's service costs are declining and it trims capital expenditures amid the global crude oil market slump, all while the company continues to grow production. "Costs are screaming down, and we're finding that we're targeting ... single rate of return investments that are similar to what we had last summer with the lower cost," Wilson said in late February.

Looking ahead

Halcon made several cuts to its 2015 capex ending up with plans to spend between $350 million and $400 million, less than half of the $1.2 billion the company spent in 2014. The company expects the 2015 capex to be "front-end loaded" in 2015 due to a large number of wells awaiting completion.

With a reduced capex in 2015, the company is anticipating production to remain flat in the first half of the year with an overall growth rate of 5 percent for the year. It has put first quarter production guidance at 42,000 to 44,000 barrels of oil equivalent per day.

Halcon beat its 2014 production guidance averaging 42,107 boepd over the year, up 26 percent over 2013. In the fourth quarter, production averaged 46,076 boepd. A majority of the company's production comes from its Williston Basin assets. Halcon grew its Williston Basin production 57 percent year over year in 2014.

The company holds approximately 127,000 net acres in the Williston Basin with proved reserves of 140 million boe.

Contact Mike Ellerd at mellerd.pnb@gmail.com

LEGACY *continued from page 18*

prospects is its Midale reservoir which offers a "new twist on an old play" that had produced in Saskatchewan and North Dakota for about 60 years, Yanko said.

"We've been able to go into areas of the reservoir that hadn't produced very well with either a conventional vertical well or a conventional horizontal well" and applied the company's expertise on innovation and multi-stage fracturing of horizontal wells to turn uneconomic wells into "very highly economic" producers, boosting the Midale output from 300 bpd to 7,500 bpd, he said.

Over three years, Legacy has had "superior well results," increasing drilling locations from six wells to 350 and raised that target to about 500 from two new pool discoveries in 2014, he said.

"From an inventory standpoint we could dwarf any of our competitors and our expertise is allowing us to generate some stellar economics," Yanko said.

On the waterflood front, Legacy has managed to utilize its skills to double recovery factors from many of its reservoirs, establishing a "very cost-effective, low-risk way of adding reserves and reducing the decline profile," while applying the technique to resource-style plays it has fracked in the past, he said.

The end result is that Legacy believes it has "found a great way of adding a lot of value and extending the life of the company," Yanko said.

2015 spending

On the cautious side, Legacy has set a capital budget for 2015 of C$238 million, down 40 percent in organic capital spending year-over-year, with 87 percent allocated to drilling, completions, equipping and waterfloods, targeting 94 gross (74.5 net) wells. Topping the list of plays is Taylorton/Pinto in Saskatchewan, which has a C$100 million budget, while Steelman will get C$37 million. It is currently awaiting approval for second waterfloods in both Saskatchewan and North Dakota.

The company has total current borrowing capacity of C$1.03 billion, including C$225 million of unsecured term debt that does not expire until 2017.

Over three years, Legacy has had "superior well results," increasing drilling locations from six wells to 350 and raised that target to about 500 from two new pool discoveries in 2014, Yanko said.

Legacy said that based on industry research and analysis over the past 40 years world oil prices "have generally averaged at or near the worldwide cost of reserves replacement" which is currently estimated at US$90 per barrel of West Texas Intermediate.

The company said it "expects oil prices to eventually return" to the US$90 level, but, setting that aside, it is prepared to use its high operating netbacks and high quality inventory to function through a "period of lower and volatile prices, preserving capital in anticipation of an eventual return to historical average prices."

Contact Gary Park through publisher@petroleumnews.com

Petroleum news BAKKEN

NEWS YOU CAN USE

Our writers scout for news the old-fashioned way — digging through government agency files, covering legislative hearings, scrutinizing SEC filings and developing contacts within industry and government. Petroleum News Bakken is written specifically for industry and government readers, plus financial analysts that cover companies with operations in the Bakken play in North Dakota, Montana, Saskatchewan and Manitoba.

SUBSCRIBE AT: **PETROLEUMNEWSBAKKEN.COM**
OR CALL: **907-522-9469**

An order-of-magnitude growth in 4 years

Oasis Petroleum's successes in the Williston didn't just happen — they came from innovative technical thinking coupled with a solid business plan

By MIKE ELLERD
Petroleum News Bakken

TOMMY NUSZ

COMPANY NAME: Oasis Petroleum Inc.
TOP EXECUTIVE: Thomas B. Nusz, chairman of the board of directors
HEADQUARTERS: 1001 Fannin St, Ste 1500, Houston, TX 77002
TELEPHONE: (281) 404-9500
BAKKEN HEADQUARTERS: 5437 137th Ave NW, Williston, ND 58801
WEBSITE: www.oasispetroleum.com

"Oasis has delivered substantial growth since our IPO (initial purchase offer), growing from around 5,000 boe's (barrels of oil equivalent) per day in 2010 to over 50,000 boe's per day in the fourth quarter of '14." That is how Tommy Nusz, chairman and CEO of Oasis Petroleum, began a fourth quarter and year-end earnings conference call with industry analysts in late February.

That order-of-magnitude growth from 5,000 to 50,000 boepd over four years, however, didn't come about by chance. Bakken-focused Oasis has been an innovator in testing well densities and various completion methods as well as exploring the lower benches of the Three Forks formation across its approximately 505,000 net acres and 405 operated drill spacing units in the Williston Basin of North Dakota and Montana.

On the business side, Oasis has optimized its position as an operator by building two separate fracture stimulation strings through its subsidiary Oasis Well Service which has added significantly to the company's bottom line. Also adding to that bottom line is the company's midstream operations through another subsidiary, Oasis Midstream Services.

But like all exploration and production companies operating in a challenging market environment, Oasis plans to spend less capital in 2015 while focusing on its highest return acreage with a new spacing unit development strategy. The company plans to spend $705 million in 2015, just half of what it spent in the Williston Basin in 2014. Of that $705 million, 80 percent is earmarked for drilling and completion and will be concentrated in the company's Indian Hills core area in north-central McKenzie County and the South Cottonwood core area in western Mountrail County "where we have the highest well productivity, the best predictability in results, the most established infrastructure and the best resolution on full spacing unit development," Nusz said.

TAYLOR REID

Oasis has set 2015 production guidance at 45,000 to 49,000 boepd over the year, which represents flat to 7 percent growth.

Understanding Three Forks

While other operators in certain areas of the Bakken have seen very positive results from testing the lower Three Forks benches, Oasis had a different experience. After completing approximately 30 wells in the second and third benches of the Three Forks formation across its acreage in 2014, along with "a significant number" of density and well interference tests, Oasis is turning its attention back to the middle Bakken and the first bench of the Three Forks and has revised upward its middle

continued on next page

FORTIS
ENERGY SERVICES, INC.

Designed Solutions:
The combination of industry leading service rigs, ancillary equipment and services that **safely reduce inefficiencies and costs by up to 56%**.

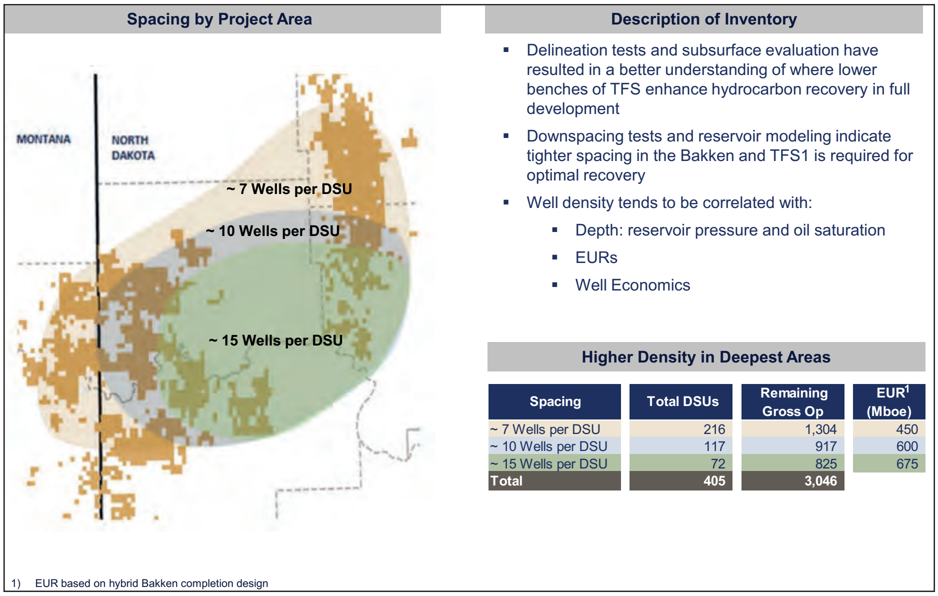
Available only from Fortis Energy Services.

- 350-550 Series Service Rigs
- Mud Pumps and Tanks
- Power swivels
- Hydraulic catwalks

www.fortisenergyservices.com

Call Edward Shelton, VP Business Development | (917) 239-3471 | eshelton@fortisenergyservices.com

OASIS *continued from page 22*



Spacing by Project Area

Description of Inventory

- Delineation tests and subsurface evaluation have resulted in a better understanding of where lower benches of TFS enhance hydrocarbon recovery in full development
- Downspacing tests and reservoir modeling indicate tighter spacing in the Bakken and TFS1 is required for optimal recovery
- Well density tends to be correlated with:
  - Depth: reservoir pressure and oil saturation
  - EURs
  - Well Economics

Higher Density in Deepest Areas

Spacing	Total DSUs	Remaining Gross Op	EUR[1] (Mboe)
~ 7 Wells per DSU	216	1,304	450
~ 10 Wells per DSU	117	917	600
~ 15 Wells per DSU	72	825	675
Total	405	3,046	

1) EUR based on hybrid Bakken completion design

COURTESY OASIS PETROLEUM

Bakken well inventory while revising the Three Forks inventory downward.

President and Chief Operating Officer Taylor Reid told analysts in late February that one of the company's goals in 2014 was to "push our understanding of the limits of the lower benches of the Three Forks" across its position in the basin. "Some areas have shown encouraging results while others have been more challenged," Reid said. "As a result, we have decided to adjust our inventory in the lower benches to reflect our current development plan, which now includes tighter spacing in the Bakken and first bench of the Three Forks." Reid added that the company believes it can "more effectively drain reserves by drilling more wells focused on the Bakken and the first bench, which will still capture reserves from the lower benches."

In addition, Reid said Oasis "invested heavily in testing and understanding the fracture patterns and drainage patterns" associated with down-spacing tests and lower Three Forks bench well tests, and based on results of those tests "we have increased our confidence in tighter Bakken spacing."

Stimulation testing

After beginning multiple completion method testing in 2013, Oasis continued that testing in 2014 "in an effort to enhance returns," Nusz said. Analysis of those test results, he said, "is pointing us towards focusing our efforts in 2015 on high-volume proppant and slickwater." He said early results from "high-intensity" completions "look very encouraging."

Oasis has 20 high-intensity wells completed with slickwater and/or higher proppant loads that are on production in its core area and another nearly 20 producing across its other Bakken acreage. Those wells are outperforming offset hybrid-completed wells by as much as 80 percent, depending on formation and location. Sixty percent of 2015 wells will be completed using slickwater and high-volume proppant.

A leader in gas capture

As reducing flaring of natural gas continues to be a focus of the North Dakota Industrial Commission, Oasis continues to be an industry leader on that front. In North Dakota, Oasis currently has 97 percent of its wells connected to gas gathering infrastructure.

In a panel discussion at the May 2014 Williston Basin Petroleum Conference in Bismarck, Nusz said it is "just good business management in making sure we have the infrastructure in place to handle all of the fluids," and referred to NDIC's flaring requirements implemented in June 2014 as "just prudent."

Contact Mike Ellerd
at mellerd.pnb@gmail.com

MARATHON *continued from page 20*

a $3.5 billion capital, investment and exploration budget for the year, down from a $4.3-$4.5 billion budget announced in December, which in turn was a 20 percent drop from 2014.

U.S. exploration spending will be cut by more than half. About 70 percent of the revised budget, or $2.4 billion, will be divided among the three core U.S. plays responsible for the company's highest returns. Rigs will be reduced from 33 to 18 across the trio of plays by the end of the first quarter, then drop to 14 rigs by the end of the second quarter and maintain that pace for the balance of the year.

Strategic shift

Marathon's U.S. resource plays now comprise more than half of its E&P production mix.

"That's a noteworthy increase over the last 12 months," Tillman said, adding that the resource plays have gone from 43 to 53 percent of the production mix.

"That strategic shift has occurred as we re-shaped our portfolio to concentrate on higher margin, higher return opportunities … and consistently executed across the resource plays, delivering value with that growth."

"The current low commodity price environment only serves to underscore the importance of subsurface quality and execution at scale," he said. "We have a deep inventory of resource play opportunities supported by compelling single well economics that are robust across a broad range of prices and that are further advantaged by capturing efficiencies and service cost reductions."

Even with announced rig reductions, 2015 fourth quarter exit rates for the resource plays will be up relative to 2014 exit rates, he said.

"In the Eagle Ford, we'll be maintaining execution scale on our highest return wells — however, at a reduced level. … In the Bakken, we'll be high-grading to the Myrmidon while continuing to pilot test completion designs and downspacing … and in the Oklahoma Resource Basins, our focus will be to protect our valuable acreage position and be prepared to step up execution as prices recover and cash flows allow," Tillman said.

In addition to its North American operations, Houston-based Marathon has activity in Europe, the Middle East and Africa.

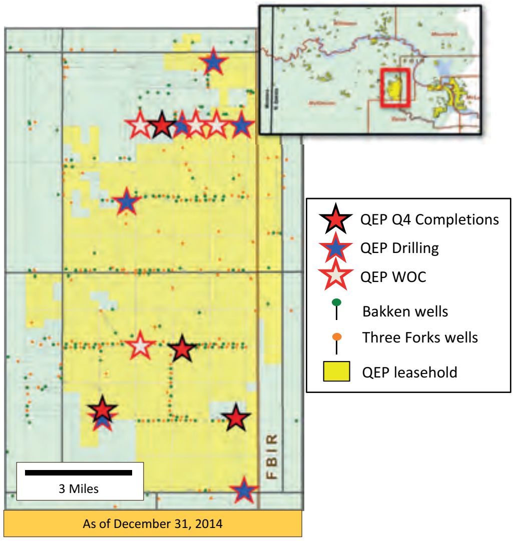
Contact Steve Sutherlin at stevepna@hotmail.com

Creating complex pressure networks

QEP triples proppant loads to 10 million pounds, ups fracturing stages to 50, and nets 90-day production gains of 60 percent

By STEVE SUTHERLIN
For Petroleum News Bakken

WILLISTON BASIN – SOUTH ANTELOPE



- 5,000 to 10,500-ft laterals
- Recent change to large proppant volume fracs
  - 50 stages (vs. 33 stages)
  - 10 million pounds of proppant (vs. 3.3 million pounds)
  - Some wells have exhibited 60% 90-day cumulative production uplift when compared with previous completion design
- Evaluating down spacing opportunities

CURRENT ACTIVITY	
Number of rigs (as of 12/31/2014)	4
Avg. gross EUR	
Bakken [1] (MBoe)	1,100
Three Forks [1] (MBoe)	1,060

[1] As of December 31, 2014

COURTESY QEP RESOURCES

Denver-based Bakken operator QEP Resources has achieved sharp gains in well productivity by aggressively pushing proppant levels higher and adding more fracturing stages in its South Antelope well completions core area in the Grail field in far eastern McKenzie County.

CHUCK STANLEY

In wells QEP completed with 10 million pounds of sand over approximately 50 stages, 90-day cumulative production increased by more than 60 percent, CEO Chuck Stanley said in a February conference call. “We believe this completion design results in a more complex pressure network that should, in turn, lead to a higher percentage recovery of the original oil in place in both the Three Forks and middle Bakken reservoirs.”

In mid 2014, QEP upped proppant loads from approximately 3.3 million pounds to approximately 10 million pounds, while increasing the number of fracturing stages from approximately 33 to approximately 50. Stanley said increased proppant loads in 33 stage wells increased 90-day cumulative production by more than 30 percent relative to offset wells completed with 3.3 million pounds of sand.

QEP will continue its downspacing pilots testing well spacings of 600 and 400 feet while also testing multiple benches of the Three Forks formation, Stanley said.

Falling rig count

QEP is sharply reducing its rig activity in the Bakken.

In February, QEP had five drill rigs in the South Antelope area and one on the Fort Berthold Indian Reservation, down from seven rigs drilling the Bakken in November 2013. The rig count will continue to fall. For the year Stanley said QEP plans to operate two to three rigs in the Williston Basin.

“Our 2015 capital budget reflects a more than 50 percent decrease in rig activity.”

QEP’s midpoint 2015 capex guidance was $975 million, approximately 57 percent of the $1.71 billion spent for exploration and production in 2014. Approximately half of the company’s 2015 capex is earmarked for the Williston Basin where production increased 94 percent between 2013 with 2014.

Fourth quarter 2014 output averaged 54,000 barrels of oil equivalent per day, up 18 percent over the third quarter and 95 percent over the fourth quarter 2013. The fourth quarter production was 95 percent liquids.

“In no uncertain terms we are slamming on the brakes hard, but let me also be clear that we are doing this from a position of strength,” Stanley said. Overall, QEP is “dramatically” cutting its drilling and completion activities, and plans to only drill wells that meet the company’s internal rate of return criteria.

QEP plans to cut its operated rig count from 21 in the third quarter to a count of 10 across its key plays in the Williston, Permian and Uinta basins and the Pinedale Anticline.

At the same time, QEP doesn’t believe it makes sense “to aggressively consume the highest return assets in our portfolio

continued on page 31

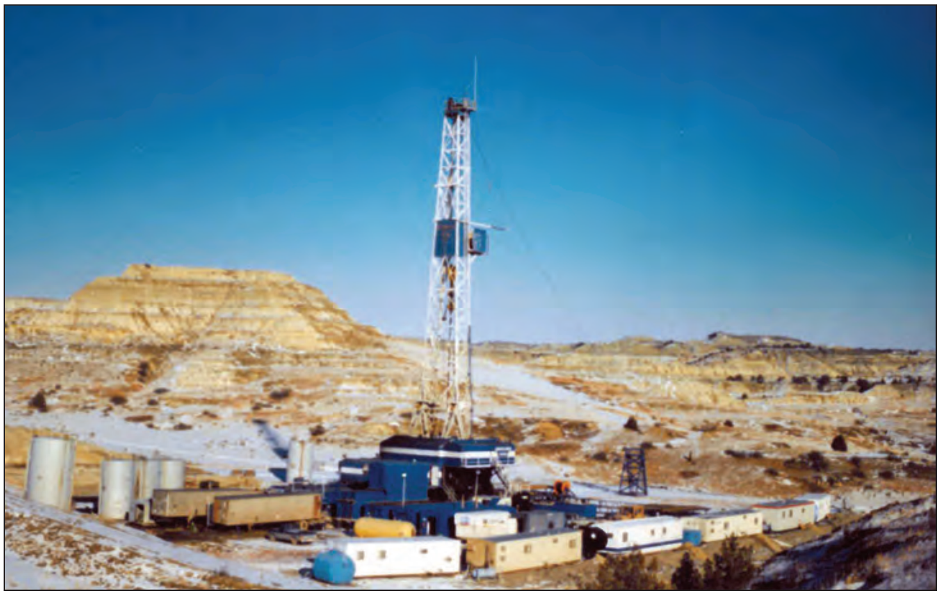
QEP RESOURCES

COMPANY NAME: QEP Resources Inc.
TOP EXECUTIVE: Charles B. Stanley, chairman, president and CEO
COMPANY HEADQUARTERS: 1050 17th Street, Ste. 500, Denver, CO 80265
TELEPHONE: (303) 672-6900 • **WEBSITE:** www.qepres.com

A family tradition

Slawson carries a long and rich history of exploration in the Bakken

By **MAXINE HERR**
For Petroleum News Bakken



COURTESY SLAWSON EXPLORATRION

Grace Drilling rig No. 58 spud Slawson Exploration's Sidewinder 1-17H horizontal upper Bakken shale well in the Ash Coulee field in northern Billings County on Dec. 11, 1989.

Slawson Exploration Co. seems to always know how to make money in the hunt for oil. In fact, exploration in the Williston Basin could be considered synonymous with the Slawson name. The Kansas-based private, family-owned company is an industry leader with a reputation of great success while facing tough challenges. As rigs migrate from the fringe areas of the Bakken to better producing core areas, Slawson finds itself in a coveted position with several rigs in southwest Mountrail County.

As of March, the company had more than 100 wells on confidential status in the Big Bend and Van Hooks fields, according to the state's Department of Mineral Resources data. But Slawson's activity covers an array of oil fields in western North Dakota counties including McKenzie, Dunn, Divide and Billings. In addition to exploring and developing the middle Bakken dolomite, Slawson Exploration has explored other formations in the Williston Basin including the upper Bakken shale and the False Bakken. The False Bakken is an organic-rich limestone interval in the Lodgepole formation overlying the upper Bakken shale that can appear very similar to the upper shale, hence the name "False" Bakken. When operators began horizontal drilling, the False Bakken became the point at which to start the curve transitioning from vertical to horizontal to drill into the middle Bakken.

But the formation was more than just a stratigraphic marker for Slawson. The company is believed to be the first and only operator to successfully drill and complete a producing well in the False Bakken, as it did it in eastern Montana where the company is an active operator. Its Weasel 1-36H False Bakken well in the Elm Coulee field in Richland County began producing in August of 2012 and as of January 2015 had produced 22,637 barrels of oil over 790 days, averaging 64 barrels of oil per day, according to data from the Montana Board of Oil and Gas Conservation.

A first for the Bakken

Slawson Exploration marks 40 years of drilling for oil in the Williston Basin having drilled its first well in the region in 1975. It also holds the distinction of being the only early operator remaining in the Bakken since the onset of horizontal drilling more than 25 years ago. In 1989, Slawson spud its first horizontal well, the Sidewinder 1-7H and reached new heights with its initial production rate. Never had a Bakken well exceeded 1,000 barrels of initial production, but in February 1990 when the Sidewinder went on production, the well produced 1,362 barrels in the first 24 hours. North Dakota's oil production at the time was a mere drop in the bucket to the nearly 1.2 million barrels per day the state is averaging today, but in November 1989 — a month before the Sidewinder was spud — the state produced just over 7,500 barrels per day. So an IP of 1,362 barrels was big news.

COMPANY NAME:
Slawson Exploration Co. Inc.
TOP BAKKEN EXECUTIVE:
Todd Slawson, president
COMPANY HEADQUARTERS: River Park Pl, Ste 400,
727 North Waco, Wichita, KS 67203
TELEPHONE: (316) 263-3201
WESTERN DIVISION HEADQUARTERS:
1675 Broadway, Ste 1600, Denver, CO 80202
WEBSITE: www.slawsoncompanies.com/exploration.html

Only a few years prior, Slawson was struggling to survive, having sold almost the entire company to Vintage Petroleum during the price collapse of the mid-1980s. Slawson was founded in 1957 by geologist Donald C. Slawson in Wichita, Kansas. His sons Todd, Craig and Steve eventually led the company. So in the 1980s, brothers Todd and Craig set out to explore the Williston Basin, and eventually the Sidewinder and other wells began successfully hitting numerous fractures in the upper Bakken shale.

"We were not drilling the middle Bakken (dolomite) but rather the Bakken shale itself," Todd Slawson told Petroleum News Bakken in the fall of 2014. "Meridian (Oil and Gas) and Slawson

continued on page 31

‘Simplify, standardize, work smarter’

Statoil makes exploration a priority despite cutting capex and incrementally reducing activity in the Bakken

By MAXINE HERR

For Petroleum News Bakken

The Bakken petroleum system is one of Statoil’s three U.S. onshore assets where it is realizing production of nearly 60,000 barrels of oil equivalent per day. The international energy company based in Norway has unlocked tremendous potential in western North Dakota, and despite a large cutback in spending in the U.S., Statoil has greater flexibility in the Bakken, Eagle Ford and Marcellus plays than other areas within its portfolio. The company has, however, slowed activity in the Bakken over the past few years in an attempt to find “the right balance,” according to Chief Financial Officer Torgrim Reitan.

TROND ISAKSEN, STATOIL ASA

TORGRIM REITAN

“We see good value in waiting with some of the drilling currently,” he told the audience at Capital Markets Day in London on Feb. 6. “What we also see is that our cost related to drilling and completions are coming significantly down. And it’s extremely important to be able to take care of the hydrocarbons … particularly in environments like this, when it comes to infrastructure and so on.”

He added that a few years ago Statoil invested around $4 billion a year in the U.S. onshore but it is now significantly below half of that total.

OLE JORGEN BRATLAND, STATOIL ASA

ELDAR SAETRE

Exploration is the core of business

While it may have limited some investment to the area, Statoil is committed to exploring the Bakken. Eldar Saetre, who officially shifted to his new role as president and CEO on Feb. 5 following the departure of Helge Lund in 2014, said he won’t make any changes to Statoil’s overall strategy since “it has served us well and is wisely designed for the future.” So exploration will remain a key component of Statoil’s business.

TROND ISAKSEN, STATOIL ASA

MARGARETH OVRUM

“We’d like to continue with exploration at a high level. We want to be an exploration company also in the future, and we want to be as successful in the future as we’ve been in the past,” Saetre said. “So this is important for us for the longer-term value creation to keep up a decent exploration level. But it’s at the same time, a tightening compared to what we have seen in the last year.”

NAME OF COMPANY: Statoil Oil and Gas
TOP BAKKEN EXECUTIVE (US):
Lance Langford, Vice President Bakken
COMPANY HEADQUARTERS (US):
Austin, Texas
TELEPHONE: (512) 427-3300
BAKKEN HEADQUARTERS: 14649 Brigham Dr.,
Williston, ND, 58801
COMPANY WEBSITE: www.statoil.com

Saetre is no stranger to the volatility of oil markets and yet is adamant that exploration is at the core of the oil and gas industry. “I’d been through this experience before and we cut exploration massively some years ago in the downturn,” he recalled. “And we were hurt by that for years. So I think it is extremely important that we try to maintain a decent exploration level.”

Topping initial production lists

Statoil maintains its stance at the top of the charts for initial production rates from its Bakken/Three Forks wells. In March, Petroleum News Bakken reported that two of Statoil’s Three Forks wells recorded 24-hour initial production rates of 3,454 and 3,302 barrels, respectively. They are located on the same pad in the Todd field of Williams County. A middle Bakken well on that pad also performed well with an IP of 2,638 barrels. Earlier in the year, Statoil also produced 2,490 barrels from a middle Bakken well in the Stony Creek field in south-central Williams County which fetched a top three spot on the state’s IP list.

The company said its exploration wells on a global scale in 2014 delivered at an average of 20 percent more than expected. Statoil is striving for greater cost reductions in 2015, just as it has achieved over the past couple of years. In 2014, costs per barrel of oil were reduced 16 percent from 2013. For unconventional U.S. plays in 2015, the company is aiming for a 30 percent reduction with even greater efficiency effects in 2016. The “main building block” to continue competitiveness is standardizing its processes and targeting technology development, said Margareth Ovrum, Statoil’s head of technology and drilling projects. Statoil has found well results are best with slickwater fracks, having nearly doubled the flow rate and produced three to four times the total volume while keeping proppant amounts about the same as its traditional method of using gelled fluid fracturing.

Growth projections

Saetre said Statoil plans to continue growing production with

continued on page 28

Exploring with completion techniques

Whiting tests coiled tubing, plug-and-perf, slickwater and cemented liners to find the right geology match and maximize production

By MAXINE HERR

For Petroleum News Bakken

COMPANY NAME:
Whiting Petroleum Corp.
TOP EXECUTIVE: James Volker, chairman and chief executive officer
HEADQUARTERS: 1700 Broadway, Ste 2300, Denver, CO 80290
TELEPHONE: (303) 837-1661 • **WEBSITE:** www.whiting.com

2014 brought a new leader to the number one spot on the production chart in the Bakken/Three Forks system of the Williston Basin when Whiting Petroleum, doing business as Whiting Oil and Gas Corp. in North Dakota, acquired Kodiak Oil and Gas, sealing the deal in December. In September, Whiting ranked third among the top 50 Bakken oil producers in North Dakota according to Department of Mineral Resources data with approximately 78,000 barrels of oil produced per day. After acquiring Kodiak, however, Whiting shot to the top and has remained in that position with more than 128,000 barrels of daily output.

MIKE ELLERD

JIM VOLKER

As the basin's largest producer holding 855,000 net acres and approximately 3,500 net drilling locations, Whiting is also a leader in innovation when it comes to better completion methods and reduced costs. In a March conference call with analysts, Chairman, President and CEO Jim Volker said that Whiting foresees a drop in well costs to $6.5 million in 2015 — a cost the company hasn't seen since it entered the Bakken in 2007.

The company has its own in-house core lab which allows it to achieve a greater understanding of the geology of the Bakken and Three Forks formations and create state-of-the-art completion techniques to maximize production. Whiting experimented in April 2014 with completions when it drilled three Bakken wells to compare three different designs: older sliding sleeve technology, cemented liners and a coiled tubing fracturing stimulation. Using coiled tubing proved the most successful with production 73 percent higher than sliding sleeves and 40 percent higher than cement liner wells.

"This new completion design better isolates the perforations to more effectively fracture the reservoir," Volker said at the time, adding that costs are comparable "because there are no plugs to drill out."

He also said he anticipated coiled tubing to be widely applicable because it allows more entry points within the tight rock.

"I think the main thing here is we've been on the hunt to find technologies that can get us more entry points — more reliable entry points," he said.

Dollars initiate a shift

But by the time Whiting announced its second quarter results in July, it was almost exclusively using plug-and-perf stimulations within its cemented liners. Whiting's Investor Relations Analyst Brandon Day told Petroleum News Bakken that the main driver is cost which is higher for coiled tubing since it is not as readily available as plug-and-perf equipment.

"(Plug-and-perf) is quick; everyone has that type of equipment. The coiled tubing unit that has to be used on a cemented liner process is pretty unique and hasn't really moved into the Bakken," Day said. "So it's much more expensive than plug-and-perf."

He said the company doesn't realize enough of a hike in estimated oil recovery to justify the higher price tag in some areas of the basin.

"If you do a plug-and-perf system with cemented liners and get 20 percent more EORs and the coiled tubing only gets us 21 percent but costs us 20 percent more, profitably it's just wrong," he said. "That's why it's been phased out in certain areas."

Coiled tubing is also not yet useable with slickwater fracks, Day said, so in areas where slickwater is the preferred technique, coiled tubing would not be an option. But Whiting is reaping the rewards of applying the best completion process based on formation geology. In 2014, the company's initial production rates increased by approximately 30 percent year-over-year, as did its 30-, 60- and 90-day average rates. It uses cemented liners and

continued on next page

ANVIL
Serving the Oil & Gas Industry since 1971
100% ESOP-Owned
Engineering and Procurement Solutions
Upstream | Midstream | Downstream
Safety • Quality • Experience • Leadership • Resources
Value to every client on every project

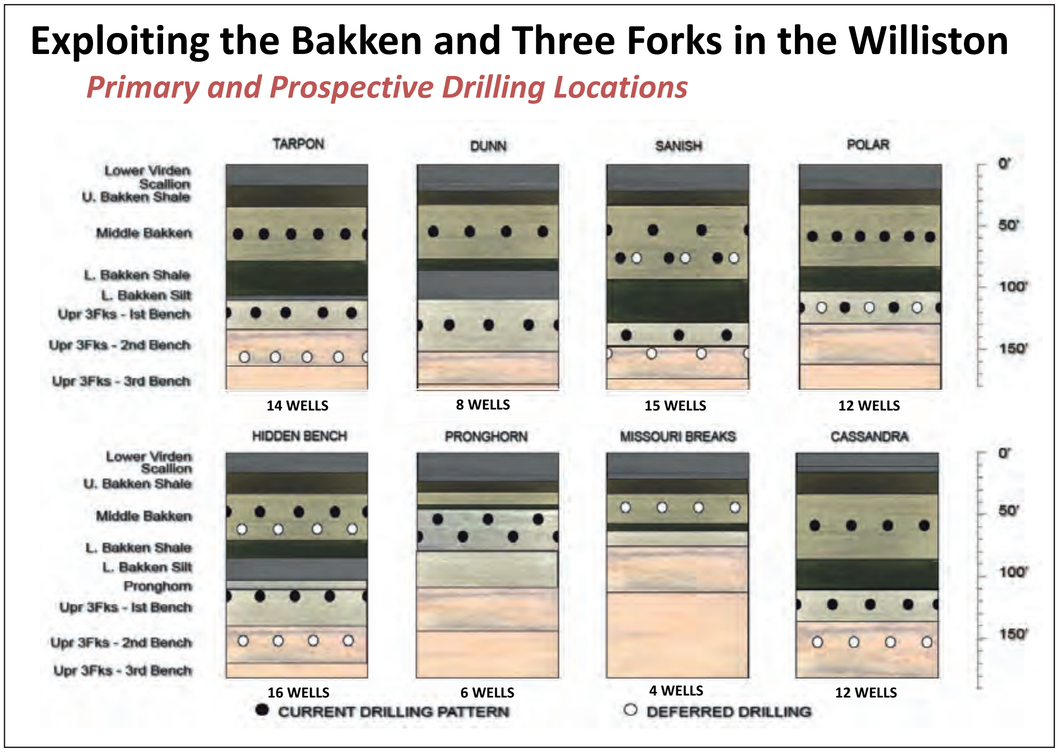
ANCHORAGE, AK	BELLINGHAM, WA	BILLINGS, MT	CONCORD, CA
509 W. 3RD AVE	1675 W. Bakerview	1015 Broadwater	5600 Imhoff Dr.

anvilcorp.com

WHITING *continued from page 27*

slickwater fracks to target the Bakken, but during a call to discuss fourth quarter 2014 results, Whiting said it was excited about its Three Forks program going into 2015. It said it had “fine-tuned” its completions within the Sanish and Parshall fields by doing a “Three Forks-style” frack. Day said Whiting is using the cemented liners and plug-and-perf process to target the Three Forks, but Senior Vice President of Exploration and Development Mark Williams wasn’t providing much additional detail.

“It’s a little tighter in the Three Forks, and we’ve remapped the Three Forks there and we’re just seeing a whole new renewed interest in our acreage there in Sanish and Parshall,” Williams said. “I think some of the other operators’ offsettings have seen similar things.”



Exploiting the Bakken and Three Forks in the Williston

Primary and Prospective Drilling Locations

TARPON
DUNN
SANISH
POLAR
Lower Virden
Scallion
U. Bakken Shale
Middle Bakken
L. Bakken Shale
L. Bakken Silt
Upr 3Fks - Ist Bench
Upr 3Fks - 2nd Bench
Upr 3Fks - 3rd Bench
0'
50'
100'
150'
14 WELLS
8 WELLS
15 WELLS
12 WELLS
HIDDEN BENCH
PRONGHORN
MISSOURI BREAKS
CASSANDRA
Lower Virden
Scallion
U. Bakken Shale
Middle Bakken
L. Bakken Shale
L. Bakken Silt
Pronghorn
Upr 3Fks - Ist Bench
Upr 3Fks - 2nd Bench
Upr 3Fks - 3rd Bench
0'
50'
100'
150'
16 WELLS
6 WELLS
4 WELLS
12 WELLS
● CURRENT DRILLING PATTERN
○ DEFERRED DRILLING

COURTESY WHITING PETROLEUM

Three Forks productive in Tarpon

The coiled tubing was an effective tool on Whiting’s Flatland Federal well in Tarpon field in northern McKenzie County, which targets the second bench of the Three Forks, allowing the well to flow nearly 6,000 barrels of oil equivalent per day. A few months earlier during the second quarter 2014, Whiting completed a Skaar Federal well within the second bench of the Three Forks in its Tarpon area. It produced more than 6,000 boepd and was completed in 30 stages. An offsetting well produced more than 6,600 boepd from the upper Three Forks. These two initial production rates marked the highest ever for the first and second benches of the Three Forks, based on data from DMR. Whiting actively targets the upper bench of the Three Forks, but it also is testing the third bench in its Tarpon area.

“We think that the third bench has the potential to work through our Tarpon area and beyond, but we’ll take it incrementally as we step out from Tarpon,” Williams told analysts in July.

Tapping the Pronghorn

In the Pronghorn area of Stark and Billings counties, Whiting continues to develop its nearly 127,000 acres. In recent weeks, Whiting wells in this sand formation have made the list of top 10 initial production rates with more than 2,000 barrels per day. Williams said the Pronghorn has performed well with slickwater fracks and the company has begun a new program this year to save money in the low oil price environment. It is fracking its Pronghorn wells with a mix of produced water and freshwater which has proved successful, according to Senior Vice President of Operations Rick Ross.

Contact Maxine Herr at maxine606@msn.com

STATOIL *continued from page 26*

an anticipated increase of 2 percent annually into 2016. It requires lower capital expenditures, capex, and strict prioritization, he said, which is reflected in the company’s 2015 capex where investments were reduced by US $2 billion from 2014. But with total capex at US$18 billion, $3.2 billion is still planned for exploration activity.

“This is not a program of simple cost cutting,” Saetre said. “We are targeting the underlying efficiency challenges of our industry. We simplify, we standardize and we work smarter together.”

A closer look at Statoil

Statoil, which operates in 36 countries besides the U.S., entered the Williston Basin in 2011 with its acquisition of Texas-based Brigham Exploration Co. which provided an initial stake of approximately 375,000 net Bakken / Three Forks acres. Statoil owns an extensive gathering system to transport and market resources from the basin, including three oil facilities, seven saltwater disposal facilities, approximately 700 miles of pipelines and 10 unit trains.

One aspect of Statoil’s business that has not gone unnoticed by North Dakota regulators is its track record for safety. The company has not had a serious well incident in almost five years, and North Dakota Department of Mineral Resources staff is quick to note Statoil’s environmental responsibility.

One aspect of Statoil’s business that has not gone unnoticed by North Dakota regulators is its track record for safety. The company has not had a serious well incident in almost five years, and North Dakota Department of Mineral Resources staff is quick to note Statoil’s environmental responsibility.

Contact Maxine Herr at maxine606@msn.com

Completion timing and deep thinking

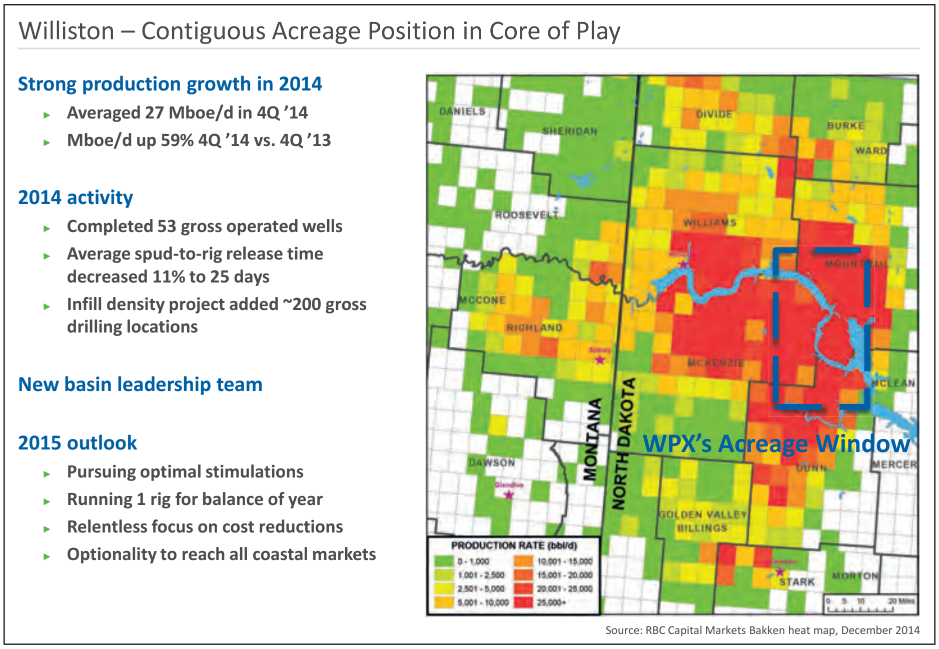
WPX Energy stays 'proactive and opportunistic' as it adds drilling locations from density studies and seeks ideal completion methods

By STEVE SUTHERLIN
For Petroleum News Bakken

For WPX Energy Inc., success in the low oil price environment requires staying "proactive and opportunistic" regarding the timing of well completions, Rick Muncrief, president and chief executive officer said in a Feb. 25 statement.

"You see everyone in the industry deferring completions, and that's the thing when I think about being opportunistic. We just have to be careful … make sure we do the right thing; don't get caught up in a herd mentality," he said.

RICK MUNCRIEF


Williston – Contiguous Acreage Position in Core of Play

Strong production growth in 2014

- Averaged 27 Mboe/d in 4Q '14
- Mboe/d up 59% 4Q '14 vs. 4Q '13

2014 activity

- Completed 53 gross operated wells
- Average spud-to-rig release time decreased 11% to 25 days
- Infill density project added ~200 gross drilling locations

New basin leadership team

2015 outlook

- Pursuing optimal stimulations
- Running 1 rig for balance of year
- Relentless focus on cost reductions
- Optionality to reach all coastal markets

Source: RBC Capital Markets Bakken heat map, December 2014

COURTESY WPX ENERGY

The company likely will direct much of its 2015 capital expenditures toward drilling forward in its schedule to give it flexibility to respond when oil prices rise.

In the Bakken, WPX will spend $200 million to $225 million of its anticipated total 2015 capital spending of $675 million to $775 million.

"This capital program considers drilling wells that are currently contemplated to be completed in 2016, yet gives us the optionality to complete in 2015 should we see a more favorable price environment," said Kevin Vann, chief financial officer. "Also this program is heavily weighted during the first half of the year as we slow down our drilling program from 2014 into 2015."

In 2015, the company plans a one rig drilling program in the Bakken, down from a five rig program in 2014.

Deep thinking

A slower pace in the oil field will free time for the WPX technical staff to make more rigorous studies of its acreage, and digest results of its completion testing and downspacing program.

WPX has added approximately 200 locations in the basin through an in-field density study, said Clay Gaspar, senior vice president of Operations and Resource Development.

The study is "exactly the sort of deep thinking, yet time-consuming work that we will be able to do in the slower activity during the year of 2015," Gaspar said. "The team is doing a great job of dissecting every cost component, and are focused on the maximum value solution taking in all of the reservoir inputs as well as the real-time economic inputs, he said."

Seeking ideal completion

Gaspar said WPX is experimenting with fracturing design and is "searching for that elusive ideal completion."

One seemingly ideal component in WPX's enhanced completion design arsenal — the use of substantially more proppant per well.

In July 2014, WPX finished its first well completion using 6 million pounds of sand on the Ruby multi-well pad, twice the size of its historical Williston completions.

Frack sand isn't the only proppant WPX is using more of. Despite the higher proppant loads it is using, WPX has no plans to reduce the use of ceramic proppants in its mix for the Bakken, Muncrief said in an August 2014 conference call.

WPXENERGY.

COMPANY NAME: WPX Energy Inc.
TOP EXECUTIVE: Richard E. Muncrief, president and CEO
HEADQUARTERS: One Williams Center, Tulsa, OK 74172
TELEPHONE: (855) 979-2012
BAKKEN HEADQUARTERS: Minot, ND
TELEPHONE: (701) 837-2900 • **WEBSITE:** www.wpxenergy.com

continued on page 31

Staying the course in the Bakken

ExxonMobil sub XTO Energy holds rigs steady as pad development continues with optimized completions from proprietary technology

By STEVE SUTHERLIN
For Petroleum News Bakken

XTO Energy will maintain a steady pace in its Bakken exploration and production program, thanks to operating efficiencies, increased well production, proprietary technology and the financial strength and long-term outlook of its parent company.

In the Bakken over the last four years, XTO has seen well drilling time decline by more than 30 percent, parent company ExxonMobil said in a March 2015 analyst presentation.

Completion costs have fallen dramatically, coupled with a dramatic increase in initial well production.

In 2011, XTO was spending approximately $250,000 per fracture stage on its completions. In 2014, the company spent approximately $150,000 per stage, which has translated into lower well completion costs even as the number of stages per well has increased.

REX TILLERSON

Completion savings are, in part, due to ExxonMobil's proprietary completion technique known as XFrac, the company announced in 2014. That process eliminates the need for multiple plugs commonly used in hydraulic fracture stimulations.

As costs fell, seven day initial production rates on XTO's Bakken wells doubled over four years, from approximately 600 barrels of oil equivalent in 2011 to approximately 1,200 boepd in 2014.

"In the Bakken, we increased net production by 38 percent last year, which reflects the addition of 144 new wells, increased well productivity, and accelerated pad development in our core acreage," ExxonMobil Chairman and CEO Rex Tillerson told analysts. "We averaged 13 operating rigs in 2014, and we will likely average close to that level this year."

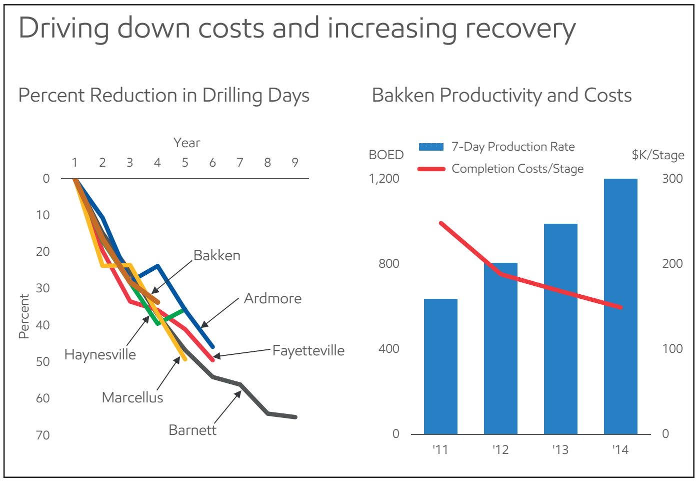
ExxonMobil anticipates capital spending of about $34 billion in 2015 — down $4.5 billion from 2014 largely due to major projects coming online. Annual capital and exploration expenditures are expected to average less than $34 billion in 2016 and 2017.

"Compared with last year's outlook, our capital spending plans are about 10 percent lower; I do want to emphasize that this does not reflect a change to our long-term investment approach," Tillerson said. "We are capturing cost savings, and we expect further bottom-of-cycle efficiencies, particularly in rig rates," he added.

"The wells we are drilling in the Bakken and the costs we are seeing in the Bakken are substantially different than they were back in 2010," said Jack Williams, ExxonMobil senior vice president. "We are putting many more stages into the fracks, and our costs are down 20 percent, 25 percent."

Williams said that the continuity in the company's drilling program allows it to maximize savings in a falling service cost environment, while most of its wells still make sense today.

NAME OF COMPANY: XTO Energy Inc.
TOP EXECUTIVE: R. J. Cleveland, president of XTO Energy Inc.
HEADQUARTERS: 810 Houston St, Fort Worth, TX 76102-6298
TELEPHONE: (817) 870-2800
WEBSITE: www.xtoenergy.com/en/home.html
PARENT COMPANY: ExxonMobil
TOP EXECUTIVE: Rex W. Tillerson, ExxonMobil chairman and CEO
HEADQUARTERS: 5959 Las Colinas Blvd, Irving, TX 75039-2298
WEBSITE: www.exxonmobil.com • **TELEPHONE:** (972) 444-1000



Driving down costs and increasing recovery

COURTESY EXXONMOBIL

"The Bakken wells are much more productive wells than they were just three or four years ago," Williams said. "We have run economics on every single well that we drill, and we are not going to go take any investment decisions on anything that doesn't make sense at today's prices."

ExxonMobil established its presence in the Williston Basin when it acquired Fort Worth-based XTO Energy in 2010.

XTO operates in eight North Dakota counties, primarily McKenzie, Williams and Dunn. It also has wells in Golden Valley, Billings, Mountrail, and along the border of Divide and Burke counties.

The subsidiary operates in 16 states across the U.S., and has a division in Calgary. It owns interests in approximately 40,000 producing oil and natural gas wells in North America. Its western U.S. operations range from the San Juan and Raton basins, to the Piceance and Uinta basins, to the Bakken and into offshore Cook Inlet in Alaska, all overseen by XTO's Denver office.

Contact Steve Sutherlin at stevepna@hotmail.com

SLAWSON *continued from page 25*

were drilling for fractures in an area known for brittleness, thus the high initial production rates were the result of hitting them."

Finding partners

With Slawson's reputation, finding partners comes easy. Australia-based Samson Oil & Gas Ltd. formed a joint venture with Slawson in 2013 to advance its plan for full-field development in the North Stockyard project in Williams County. But no operator is immune to sliding commodity markets, so Slawson has laid down its drilling rig in the area due to the weak oil prices. The infill development plan for North Stockyard includes eight middle Bakken wells and nine of 22 Three Forks wells that have been drilled. Eight of the nine Three Forks wells are targeting the first bench and the remaining well targets the second bench. Given the slowdown in development, 13 wells will remained undrilled until prices rebound.

Calgary-based PetroShale has also formed a non-operating partnership with Slawson and the company said it allows PetroShale to identify new opportunities to quickly grow in the Bakken.

"Slawson is known as an innovator and fast follower with extremely efficient operations," PetroShale says on its website.

That "innovator"-type thinking attracted North Dakota LNG, a subsidiary of Watford City-based Prairie Cos., which said in May 2014 that it would open a liquefied natural gas production facility near Tioga. It named Slawson as the first to utilize the service to fuel its six operated rigs in the Williston Basin.

Carrying on the business

The Slawson family has a rich history in the Bakken, one that perhaps the patriarch fully expected when he left Rocky Mountain operations to his sons some 25 years ago. "He basically gave us free rein to do what we wanted as long as we could find partners," Craig Slawson said. While Craig left the company to form his own exploration and production company in 2014, his brothers remain with the family company where Todd serves as president and Steve oversees operations in Kansas, Oklahoma and Texas. Their father passed away in 2014 at the age of 80.

Contact Mike Ellerd at mellerd.pnb@gmail.com

QEP *continued from page 24*

simply for the sake of driving production growth while commodity prices are low and while costs are still coming down," Stanley said, adding that the company has already seen "significant price responses from service providers and material suppliers," but "we think there is more room for improvement."

Transformation

Historically, QEP was primarily a natural gas producer, but in 2012 it began transitioning to more liquids-weighted production. In 2011, QEP's product mix was 86 percent natural gas, 8 percent crude oil and 6 percent natural gas liquids. In fourth quarter 2014, QEP's product mix consisted of 52 percent gas, 36 percent oil and 12 percent natural gas liquids.

QEP picked up its core South Antelope acreage in 2012 for $1.4 billion. In 2014, it acquired crude oil development properties in the Permian Basin in Texas for $950 million, while divesting non-core, Midcontinent E&P assets, including the Granite Wash and Woodford Cana.

In 2013, QEP divested non-core E&P assets in the Powder River Basin, San Juan Basin and the Marmaton/Tonkawa plays in the Anadarko Basin.

> *"In no uncertain terms we are slamming on the brakes hard, but let me also be clear that we are doing this from a position of strength." —Chuck Stanley, QEP Resources CEO*

In December 2014, the company became more of a pure play E&P company with the sale of its midstream business, including its ownership interest in QEP Midstream Partners LP to Tesoro Logistics LP in a $2.5 billion all-cash transaction.

"With the closing of this transaction, QEP has achieved a significant milestone in its transformation to become a more competitive and financially strong independent E&P company," Stanley said in a news release. "Emerging from this transaction, we believe QEP is well positioned to compete throughout all commodity market cycles as a result of our strong balance sheet, our focused portfolio of both crude oil and natural gas assets and our relentless commitment to creating value for our shareholders."

Contact Steve Sutherlin at stevepna@hotmail.com

WPX *continued from page 29*

Larger completions in the Bakken are accelerating production and increasing returns for WPX, Muncrief said in a November 2014 conference call.

As more of the high proppant wells come on line, WPX is seeing a hint of the promise they hold, he said. Updated type curves of the actual performance of the company's larger stimulations exceeded a blended infield curve of middle Bakken and Three Forks wells completed with 3 million pounds of proppant.

Muncrief said the Ruby 31-30HX well exceeded the blended type curve by 25,000 barrels of oil or 53 percent in its first 86 days of production following cleanout, the Alfred Old Dog 30-31HD well beat the curve by 13,800 barrels or 35 percent in its first 67 days and the Morsette 35-26HD well exceeded the curve by 21,700 barrels or 74 percent in its first 47 days.

In some earlier wells, WPX used submersible pumps to maximize production near term; its large stimulation wells have needed no such boost.

"These wells are all flowing naturally, and we're extremely excited about the productivity," Muncrief said.

"These wells are all in a fairly close location to each other, so we need to spend a little more time; get a little more data — but I can tell you that I personally am very interested," Muncrief said. "And after spending a lot of time in the Bakken, I think that we're going to continue to like the results."

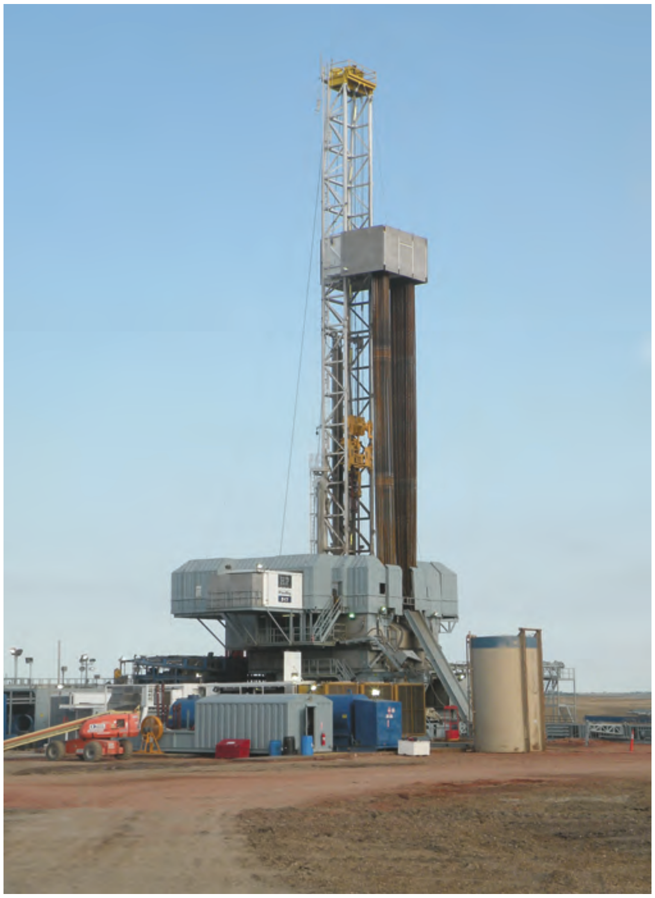
Muncrief said it will take time for WPX to test and assess the promise of its advanced completion designs across its Bakken acreage, adding, "I think we'll have a good idea by year end 2015."

Contact Steve Sutherlin at stevepna@hotmail.com

VERN WHITTEN PHOTOGRAPHY

Thank you Bakken explorers for securing future production

Anvil Corporation . . . 27
Beaver Creek Archaeology . . . 8
DET-TRONICS . . . 3
Fortis Energy Services . . . 22
Gas Techno Energy & Fuels USA, LLC . . . 5
Loenbro . . . 4
Lounsbury & Associates . . . 12
Lynden . . . 36
Miller Insulation . . . 3
Northern Electric . . . 2
Petroleum News Bakken . . . 6, 21,34
Polyguard Products Inc. . . . 16
Quality Mat Company . . . 35
Ramada Williston
(formerly Dakota Landing) . . . 15
Stantec . . . 7
Unconventional Resources . . . 17

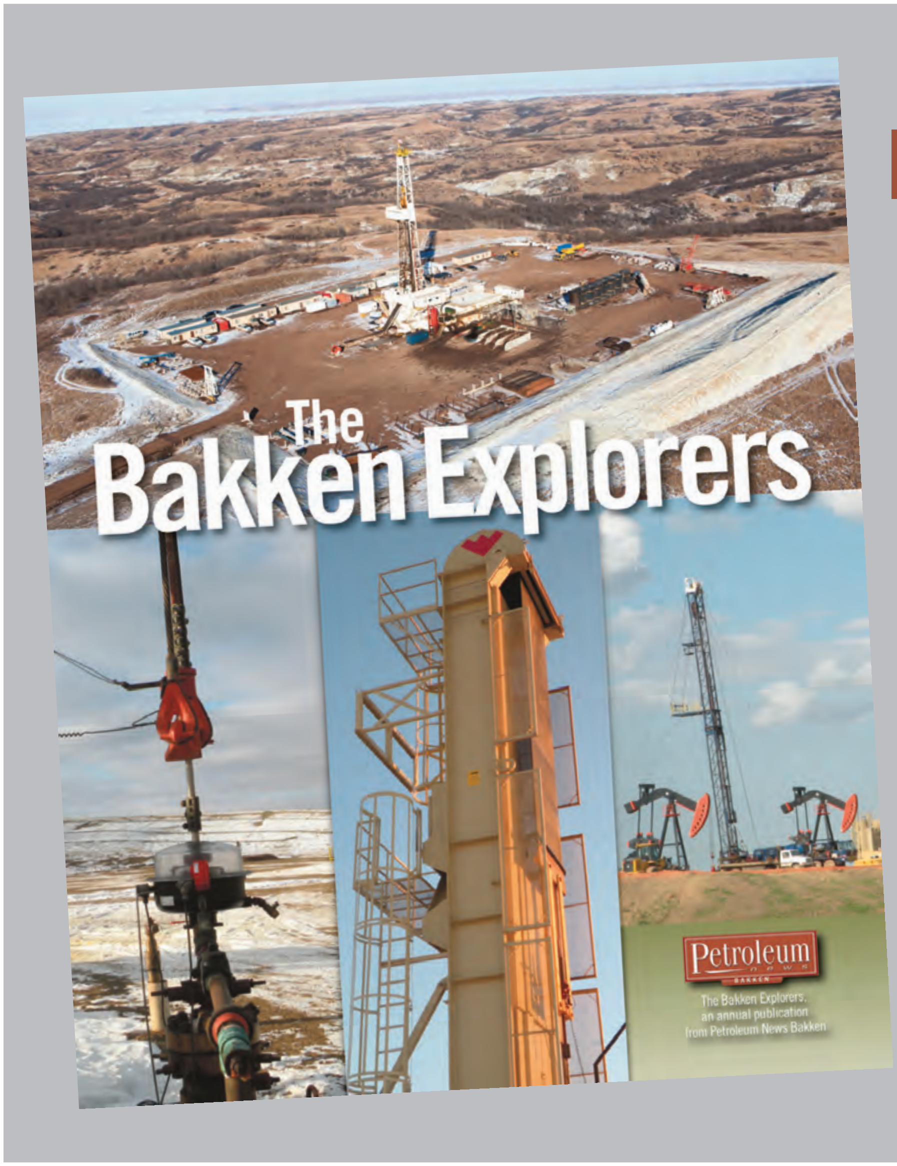


Bakken through the lens

Images by Maxine Herr

RESERVE AD SPACE TODAY

The Bakken Explorers is coming again in May 2016.


The Bakken Explorers
Petroleum news BAKKEN
The Bakken Explorers, an annual publication from Petroleum News Bakken

Call today to reserve space.

To salute explorers in the Bakken — be they evaluating the edges of the play, testing undeveloped formations within it, or developing new technology to explore more oil — advertise in The Bakken Explorers full color, annual magazine.

Contact Petroleum News Bakken advertising executives at the following email addresses or phone numbers:

Raylene Combs
509-290-5903
rcombs@petroleumnewsbakken.com

Susan Crane
907-770-5592
scrane@petroleumnews.com

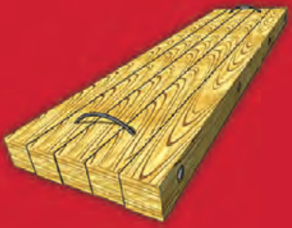
Renee Garbutt
907-522-9469
rgarbutt@petroleumnewsbakken.com

Bonnie Yonker
425-483-9705
byonker@petroleumnews.com

PetroleumNewsBakken.com | 907-522-9469

Petroleum news BAKKEN

QUALITY MAT COMPANY

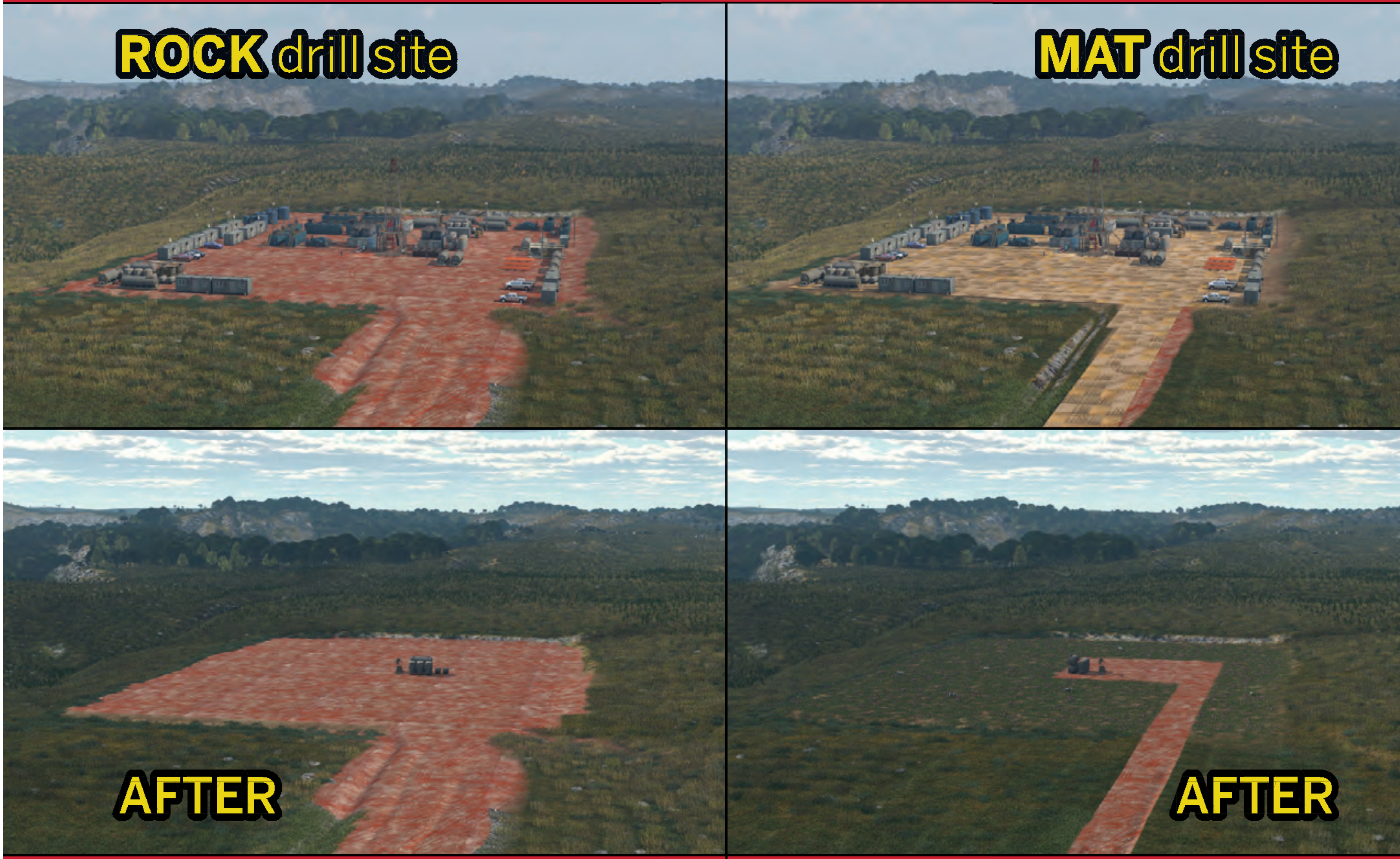


Beaumont
Texas

Houston
Texas

Killdeer
North Dakota

1-800-227-8159 \\ QMAT.COM



ROCK DRILL SITE

Disadvantages

- Damaging native farm land
- Lost work time due to unsafe work surface
- Delays in drilling
- Unable to access due to bad weather
- Wasting unnecessary amounts of rock
- Unnecessary extra cost
- High reclamation expense

MAT DRILL SITE

Advantages

- No reclamation cost
- Reduce the environmental impact
- Reduce the amount of rock on native farm lands
- Minimize unnecessary accidents
- Mats provide a safe and stable work surface
- 24/7 all-weather access with no down time
- Potential to drill one to two more additional wells per year
- Reduce the amount of truck traffic on roads
- No additional cost
- Protect existing flowlines

WORLDS LARGEST SUPPLIER **MANUFACTURING SINCE 1974**

Only pay for the speed you need...
Dynamic Routing!SM

At Lynden, we understand that plans change but deadlines don't. That's why we proudly offer our exclusive Dynamic Routing system. Designed to work around your unique requirements, Dynamic Routing allows you to choose the mode of transportation — air, sea or land — to control the speed of your deliveries so they arrive just as they are needed. With Lynden, you only pay for the speed you need!

LYNDEN
Innovative Transportation Solutions

www.lynden.com 1-888-596-3361