Petroleum news
BAKKEN

page 6 Harold Hamm: oilman, elephant hunter, true believer in the Bakken

Vol. 1, No. 1 • www.PetroleumNewsBakken.com — A semi-monthly newspaper for industry and government — Week of April 15, 2012 • $2

FINANCE & ECONOMY

Producers beware

$40-$60 per barrel price needed to stay in business; taxes, EPA also threats

By RAY TYSON
Petroleum News Bakken Editor

Bakken producers, depending on location and other factors, must receive from $40 to as much as $60 per barrel of oil to stay in business, according to industry representatives.

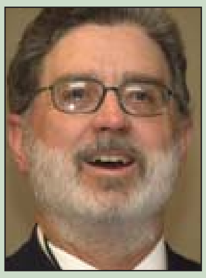
These kinds of oil prices may not seem all that threatening to producers when considering oil sells for $120 per barrel and even more on some world markets. In North Dakota, life is good and the unprecedented oil boom continues unabated.

But a darker side to this Cinderella story was expressed earlier this month at the 2nd Annual Bakken Investor Conference in Minot, North Dakota.

For one, Bakken's hefty discount to other benchmark crudes, such as North Sea Brent and West Texas Intermediate, or WTI, exasperated by a major downturn in world oil prices (it's happened before), could put a real hurt on producers.

see PRODUCERS BEWARE *page 17*

Lynn Helms in ballpark



DAVE HARBOUR

Department of Mineral Resources Director Lynn Helms says if the price for North Dakota oil "drops to $55 per barrel we'll lose rigs and that will put us on the black curve." See chart page 2.

DRILLING & COMPLETION

Well costs nearly peak

Company executive sees well expenses falling 10-20% as bottleneck issues resolved

PETROLEUM NEWS BAKKEN

Williston Basin well costs should peak this year at roughly $10 million per well on average as field operators fix and better manage a multitude of "bottlenecks," or system inefficiencies that have slowed the production process, causing expenses to mount over past few years on the heels of the Bakken oil boom.

"The efficiencies right now relate more to the timing of a well producing – from the time it is spud or drilled to when the well comes into production," said Marty Beskow, executive vice president of Voyager Oil & Gas, Inc., a Billings, Montana-based E&P independent.

> *"There seems to always be a bottleneck at any point of time. And it's even different for different operators and different areas. But they are all manageable problems."*
> —Marty Beskow, Voyager Oil & Gas

Bottlenecks include shortage of crews, equipment, supplies, infrastructure and housing for the workers.

"There seems to always be a bottleneck at any point of time," Beskow said. "And it's even different for different operators and different areas. But they are all manageable problems."

see WELL COSTS *page 17*

GEOLOGICAL ANALYSIS

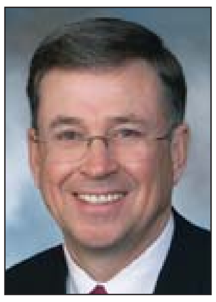
Bakken reserves to jump

USGS next recoverable oil estimate expected to double to 8 billion barrels

By RAY TYSON
Petroleum News Bakken Editor

The U.S. Geological Survey, in a highly anticipated report to be released next year, is expected to at least double the amount of oil reserves that can be recovered from the U.S. portion of the massive Bakken play in North Dakota and Montana. This is the consensus of company executives and industry consultants interviewed by Petroleum News on the sidelines of the 2nd Annual Bakken Investor Conference held April 2-4 in Minot, North Dakota.

April 2008 was the last time the USGS reported on the immense play, estimating it held from 3-to 4.3 billion barrels of undiscovered, technically recoverable oil in an area generally known as the Bakken formation. The study estimated mean undiscovered volumes of 3.65 billion barrels of oil, plus 1.85 trillion cubic feet of associated-dissolved natural gas, and 148 million barrels of natural gas liquids. That estimate represented a 25-fold increase in the amount of oil that could be recovered compared to the agency's 1995 estimate of 151 million barrels of oil.



TERRY HILDESTAD

The Upper Devonian-Lower Mississippian Bakken formation is a thin but widespread unit wit in

see BAKKEN RESERVES *page 16*

Pipeline bottleneck, rail relief

VERN WHITTEN PHOTOGRAPHY

Railroads haul about 23% of the oil out of the Williston basin.

Bakken pushing Nigerian crude out of U.S. market

Cheaper crude oil supplies from domestic sources such as the Bakken, as well as two idle East Coast refineries, helped cut Nigerian imports to the United States by more than half over the past year, according to figures from the U.S. Energy Information Administration.

The African nation imported just 449,000 barrels per day of oil into the U.S. in January 2012, down 54 percent from 519,000 bpd in January 2011 and the lowest monthly rate since 2002, according to the statistical arm of the U.S. Department of Energy. And preliminary data suggests the decline continued in February and March of this year.

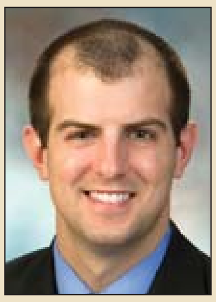
The decline is coming primarily from Gulf Coast refineries switching to cheaper domestic supplies of crude oil, according to the EIA.

"Given the growing production from the Bakken and Eagle Ford formations and associated transportation constraints,

see NIGERIAN CRUDE *page 17*

Petrochemical companies, refiners, take serious look at North Dakota

Sen. John Warner got a positive answer March 20 from the director of the North Dakota Pipeline Authority when he asked whether there had been any progress in attracting petrochemical businesses to North Dakota, companies that would "utilize the liquid portions" of the state's increasing production of natural gas.



JUSTIN KRINGSTAD

Not only "value-added" products, Warner asked Justin Kringstad, who was making a presentation to the state Legislature's Energy Development and Transmission Committee, but outside interest in "developing a more aggressive manufacturing sector in North Dakota, based on this natural resource we have."

While Kringstad did not have an answer to the senator's manufacturing question, he said firms were "definitely eyeing" North Dakota's propane and butane supplies, both a component of natural gas liquids, or NGLs.

"I don't know how much they want to disclose in an open forum like this but I can tell you that there are folks very aggres-

see A SERIOUS LOOK *page 16*

Helms: well costs up, industry uses $86 oil, at $55 lose rigs

The North Dakota Industrial Commission, Department of Mineral Resources, has released a new and higher average cost for drilling and completing Bakken wells in North Dakota.

Lynn Helms, director of the department that includes the state's oil and gas division and geological survey, is now quoting $8.5 million for drilling and completing a Bakken well, versus the $7.3 million estimate he used in a December presentation, and the $6.6 million figure he used in August. (See related story on well costs on page 1 of this issue.)

The latest estimate is in a slide he used in a March 20 presentation to the North Dakota Legislature's Energy Development and Transmission Committee, titled "What Does Every New Bakken Well Mean to North Dakota."

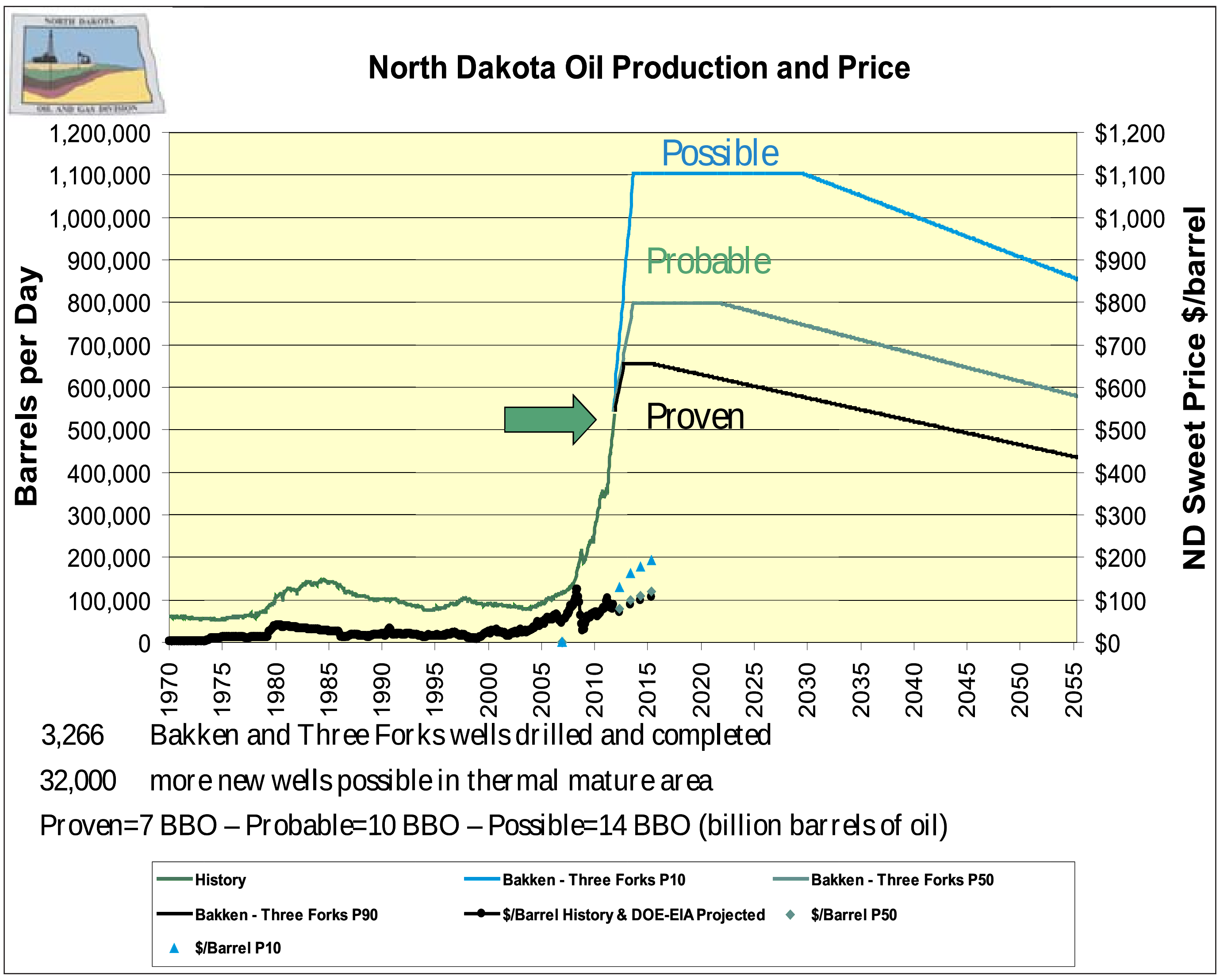
Helms told legislators that oil companies are using a "flat $86 per barrel" for their "forward economics."

If the oil price "drops to $55 per barrel we'll lose rigs and that will put us on the black curve," he says.

A typical 2012 North Dakota Bakken well will produce for 29 years, producing an average of 580,000 barrels of oil.

The life of the well can be extended, Helms notes, with enhanced oil recovery efforts.

—KAY CASHMAN



What does every new Bakken well mean to North Dakota?

A typical 2012 North Dakota Bakken well will produce for 29 years

If economic, enhanced oil recovery efforts canextend the life of the well

In those 29 years the average Bakken well:

- Produces approximately 580,000 barrels of oil
- Generates over $22 million net profit
- Pays approximately $4,610,000 in taxes
  - $2,200,000 gross production taxes
  - $2,000,000 extraction tax
  - $410,000 sales tax
- Pays royalties of $7,925,000 to mineral owners
- Pays salaries and wages of $1,500,000
- Pays operating expenses of $2,300,000

Cost $8,500,000 to drill and complete

contents

Petroleum News Bakken

Petroleum news BAKKEN

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Resource Plays

- 1) **Large area** of organic-rich source rock.
- 2) **Heat, pressure, and time to mature** source rock.
- 3) **Expulsion** of hydrocarbons from source rocks into adjacent rocks.
- 4) **Trapping** of hydrocarbons in overlying and underlying reservoirs that are porous, but low permeability.
- 5) **Technology to extract** hydrocarbons using natural or artificial fractures to get economic amounts of petroleum production.

NORTH DAKOTA DEPARTMENT OF MINERAL RESOURCES

● EDITORIAL

Oil not from shale

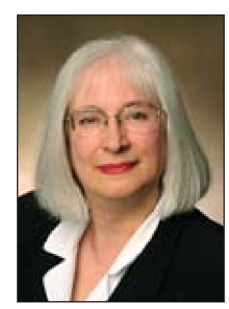
In the process of putting together the first edition of Petroleum News Bakken, we decided a geology lesson was needed

Welcome to Petroleum News Bakken. I hope you like our first edition well enough to check in twice a month — first and third weeks.

Our editor, Ray Tyson, and I were born and raised in the Midwest; Ray in South Dakota, where he returned to live and work several years ago, and me in Minnesota.

But nothing prepared us for the shock of the oil boom in nearby states and provinces.

I'm staying in Alaska, focusing on the industry here, but Ray is building a news staff in the Williston basin, so if you're an experienced reporter or retired geologist who prefers to work in cyberspace rather than report to an office, we may be the publication for you.



KAY CASHMAN

Bakken oil not produced directly from shale

Three things fascinated me as I worked on this first edition of Petroleum News Bakken.

The first was the fact that Bakken oil and gas is not produced from shale, the primary source rock for hydrocarbons. Rather, it comes from a dolomitic sandstone reservoir sandwiched between the Bakken shale that generated the oil, which, in turn, escaped into that reservoir. That's where the drill bit goes; that's where the oil is produced from. It's called the Middle Bakken, but it's not shale.

Tyson tells me it doesn't matter. After all, the hydrocarbons initially come from the shale source rock.

Yeah, well, so does the oil in Alaska's Prudhoe Bay field. But we don't call Prudhoe a shale play.

(Admittedly, the Prudhoe reservoir is not sandwiched between its source rocks.)

Even more peculiar is the adjacent slide from one of Lynn Helm's recent presentations. Note points 3 and 4. When Helms, the director of North Dakota's Department of Minerals, was showing this slide to state legislators, he said, "I think it's important to note that our geologists at the survey (North Dakota Geological Survey) have developed four or five critical elements it takes to generate a resource play. … We have them in two plays in North Dakota … the Bakken and the Three Forks."

Reading points 3 and 4 of what constitutes a resource play — "Expulsion of hydrocarbons from source rocks into adjacent rocks" AND "Trapping of hydrocarbons in overlying and underlying reservoirs that are porous, but low permeability" — does this mean shale plays where the shale is drilled into, hydraulically fractured and produced are NOT resource plays? (My email address is publisher@petroleumnews.com.)

Re-emergence of the railroads

The second thing that fascinated me was the railroads. Hence, Vern Whitten's

see EDITORIAL page 13

COLUMN

WPX sale highlights Bakken returns

Tulsa company increasingly shifting spending to liquids in Bakken, Piceance and Marcellus; Bakken pre-tax IRR 44-52 percent

By ERIC LIDJI
For Petroleum News Bakken

While most of the major shale players are pulling away from drilling dry gas this year in the face of low prices, WPX Energy Inc. appears to be yanking up the tracks, as well.

Looking to generate capital for liquids-rich plays including the Bakken, the Tulsa-based company recently sold its holdings in Texas and Oklahoma to KKR Natural Resources and Premier Natural Resources for $306 million, WPX announced April 2.

"We're receiving good value for assets that are not core to our strategy of growing our primary operations in the Bakken shale, Piceance basin and Marcellus shale," WPX CEO Ralph Hill said. "This strengthens our balance sheet, reflects our strong commitment to running our business in a disciplined manner and provides funds we could use to further expand the oil and natural gas liquids components of our business."

When the company released its annual earnings filings in late February, it wrote, "In determining which drilling opportunities to pursue, we target a minimum after-tax internal rate of return on each operated well we drill of 15 percent. While we have a significant portfolio of drilling opportunities that we believe meet or exceed our return targets even in challenging commodity price environments, we are disciplined in our approach to capital spending and will adjust our drilling capital expenditures based on our level of expected cash flows, access to capital and overall liquidity position."

Bakken gets one-third 2012 capex

The Bakken is an opportunity that definitely exceeds WPX's return targets. With an average gross well cost of $10.5 million, the company is estimating a pre-tax IRR between 44 and 52 percent at a West Texas Intermediate oil price of $95 per barrel. That is several dollars below the current price, but WPX expects Bakken oil to trade $10-15 lower than WTI in 2012.

IRR Chatter

With an average gross well cost of $10.5 million, the company is estimating a pre-tax IRR between 44 and 52 percent at a West Texas Intermediate oil price of $95 per barrel. That is several dollars below the current price … expects Bakken oil … to trade $10-15 lower than WTI.

The company plans to spend about a third of its $1.2 billion capital budget on the Bakken this year, running six rigs on its 86,000 net acres.

The Bakken isn't WPX's only opportunity to exceed those return targets, though. Between 2009 and 2011, liquids went from being 10 percent of its total production mix to 17 percent, and from 12 percent liquids of its total reserves mix to 23 percent liquids.

The economics of its wet-gas aren't as favorable as Bakken oil in the current price environment. In the Piceance basin of Colorado, WPX estimated its average gross well cost to be around $1.43 million and its pre-tax IRR to be 31 percent at a Nymex price of $4 per thousand cubic feet, considerably higher than current natural gas prices. In the Marcellus shale of northeastern Pennsylvania, the company spends between $6 million and $8 million per well and earns a pre-tax IRR between 23 and 26 percent at $4 gas.

WPX (WPX on the New York Stock Exchange) releases its first quarter earnings May 3. ●

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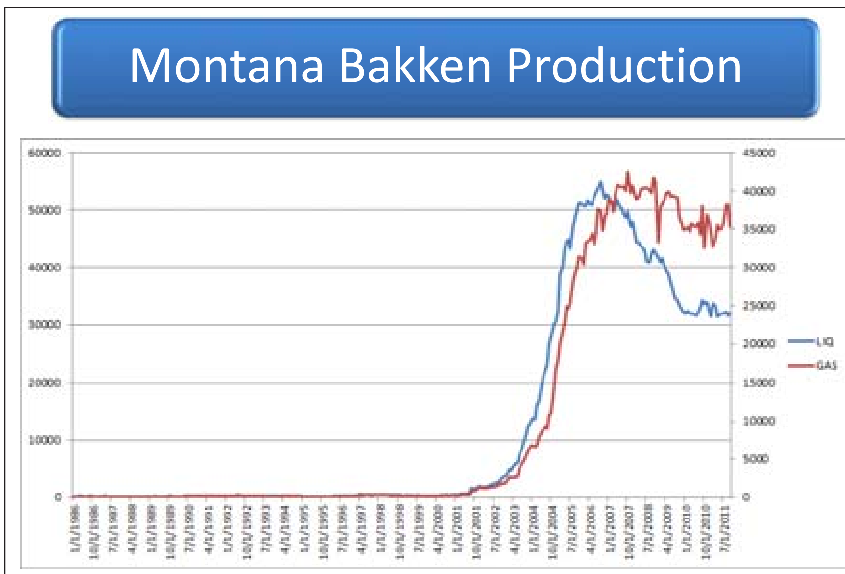
NATURAL GAS



Source: EPRINC – Left Axis Oil, BOPD – Right Axis Gas, MCFD

NORTH DAKOTA PIPELINE AUTHORITY

Studying older Montana fields to predict gas output in North Dakota's future

If North Dakota oil production peaks 20-30 years from now, what can state leaders expect gas production to do? Will it imitate Montana's fields, which means North Dakota is going to be a very large gas producing state after its Bakken oil production declines?

North Dakota Pipeline Authority Director Justin Kringstad wants those questions answered in the $120,000 study Bentek Energy was recently awarded by the North Dakota Industrial Commission, and is targeted to complete by mid-July.

One of the fields Bentek will study is Elm Coulee in eastern Montana, because it began producing from the Bakken in 2001-2002, versus 2008 for North Dakota. Other Montana Bakken production, although small by today's standards, got under way in 1986.

"We want to understand where we're headed," Kringstad said, pointing to the adjacent graph, which shows Montana's Bakken oil and gas declining together until "about 2006, when the gas production basically turned around, and the gas/oil ratio started increasing dramatically."

"How can we expect our … wells to produce, because this has a tremendous impact on how we design our gathering systems, our gas plants, our interstate pipeline systems," something the second phase of the study will address, he said.

—KAY CASHMAN

FINANCE & ECONOMY

PetroBakken stays the course

PetroBakken, a pioneer in southeastern Saskatchewan's Bakken formation and one of the leaders in Western Canada's resource plays, is sticking with its 2012 capital budget of C$875 million as it targets an increase of up to 8 percent in production by year's end.

The Calgary-based company reported first-quarter output of at least 46,500 barrels of oil equivalent per day — 87 percent light oil and natural gas liquids — including 20,700 boe per day from its Bakken business unit and 16,400 boe per day from its Cardium operations in central Alberta, compared with 41,562 boe per day in the same quarter of 2011.

Although March output was down to 44,200 boe per day, with the Bakken at 19,000 boe per day, PetroBakken reiterated it is still targeting 52,000-56,000 boe per day by Dec. 31.

The drop in March largely resulted from the sale that closed March 19 of non-core assets producing 450 boe per day, including a C$427 million sale in southeastern Saskatchewan, for gross cash proceeds of C$427 million, which gives the company C$1.1 billion of available liquidity from diversified sources of credit.

Transactions so far this year have yielded gross proceeds of C$622.5 million and consisted of about 3,480 boe per day of production and 10.2 million boe of proved reserves. First quarter activity totalled 68 (47 net) wells, including 32 (23 net) in the Bakken and 12 (7 net) in the Cardium.

Entering April, PetroBakken had 22 net wells waiting to be completed or placed on production, five of them in the Bakken and 12 in the Cardium.

—GARY PARK

● COLUMN

Harold Hamm: A true believer in the Bakken

Oklahoma oilman, with a talent for elephant hunting, blazes trail on new frontier of domestic oil production

By ROSE RAGSDALE
For Petroleum News Bakken

If any company's record reflects the remarkable recent history of the Bakken/Three Forks oil play in the northern plains of the United States, it's that of Oklahoma-based Continental Resources Inc. Likewise, Continental's founder, chairman and CEO Harold Hamm, 65, has emerged as the industry leader in the forefront of championing the Bakken petroleum system's increasing importance as a source of U.S. crude.


Harold Hamm is founder, chairman and CEO of Continental Resources Inc.

Hamm was ranked in the March issue of Forbes as the 30th richest person in America and 76th richest person in the world with a personal fortune valued at about $11 billion. He founded Continental's predecessor, Shelly Dean Oil Co., 45 years ago in Oklahoma.

Renamed Continental in the 1990s, the independent has grown rapidly in the past decade — last year revenue climbed 34 percent — and is currently the 14th-largest oil company in America, pumping most of its oil and gas out of North Dakota's Bakken.

The Bakken, a tight oil resource play covering an area in the United States and Canada roughly the size of West Virginia, currently ranks as the largest continuous onshore oil accumulation in the Lower 48 states.

Talent for elephant hunting

Hamm grew up in rural Oklahoma, youngest of 13 kids born to sharecroppers. He went to work in the oil fields as a teenager and soon developed a passion for finding oil. After becoming a wildcat driller, he founded Shelly Dean.

Hamm's uncanny knack for finding black gold eventually made him a legend in the industry. But it was his ability to make key acquisitions of land and assets and effectively lead a team of innovators that has propelled his company down the high-growth path that it travels today.

Who's Who

"Oil exploration requires creativity, curiosity and a willingness to take bold risks, like drilling where others have given up on finding oil. We continue to guide the company with a no-blame policy for exploration and innovation endeavors so we retain that tolerance for risk that has brought us our greatest finds. Our culture has made us who we are, and while we have plans to keep on growing, we plan to never outgrow the spirit that got us here," Hamm recently told investors.

In 1990, Hamm changed his company's name to Continental Resources, and soon after the independent discovered Ames Hole, one of only six oil-producing meteorite craters in the nation.

By 1995, Continental had ventured into North Dakota where it discovered the Cedar Hills field — the seventh-largest onshore field in the lower 48 United States ranked by liquid proved reserves — and began to develop the field exclusively through precision horizontal drilling, an industry first.

Belief in the Bakken

Hamm, after nearly 50 years of working in the oil industry, believes in the Bakken.

Acting on a growing conviction that the Bakken Shale offered America an untapped treasure in domestic oil production, he purchased 300,000 acres in the North Dakota play in 2003. A year later, the company cracked the code for unlocking the Bakken's tight rocks with the completion of the Heuer 1-17R well.

He has estimated recoverable oil from "the Bakken and Three Forks reservoirs collectively hold 24 billion barrels of potentially recoverable crude oil equivalent — 20 billion in oil and 4 billion in natural gas."

In fact, the outspoken oilman has dubbed the Bakken "America's Saudi Arabia."

"I have been quoted as saying that of all the oil fields in North America, there's just one Bakken, and I've believed it since Continental completed the Robert Heuer 1-17R in Divide County in 2004. The Heuer was the first commercially successful well in the North Dakota Bakken to be both horizontally drilled and fracture stimulated, and that early success stirred interest and investment. That well grew the Bakken into the play we know today," Hamm told investors in 2011.

"Now here we are seven years later and Lynn Helms with the Department of Mineral Resources has confirmed that North Dakota will become the third-largest oil-producing state in the nation by third-quarter 2012. North Dakota surpassing California, and predicted to top Alaska's Prudhoe Bay, too — that will put the Bakken just behind Texas," he added.

Other company firsts soon followed, including completion in 2007 of the first 1,280 long-lateral multi-stage frac in North Dakota and in 2008, the first horizontal well in the Three Forks play.

"Equipping our people with the right tools enables Continental to confidently continue on the aggressive five-year growth path we have planned — a path which, after completing year one, we are on target to achieve," Hamm said.

Today, Hamm is known as an outspoken critic of President Barack Obama's green energy policies, which he calls "disappointing." He was tapped earlier this year by Mitt Romney to head the presidential candidate's Energy Policy Advisory Group.

Hamm is also a philanthropist and industry leader who recently co-founded the Domestic Energy Producers Alliance to preserve the oil and gas markets for oil and gas produced in the United States. In 2011, he was inducted into the Oklahoma Independent Petroleum Association's Wildcatters Hall of Honor, the association's highest recognition. ●


COURTESY OF CONTINENTAL RESOURCES INC.

Continental Resources drill rig looms in the midst of farm fields in North Dakota's Williston basin.


COURTESY OF CEO INSIGHTS, WWW.HAROLDHAMMONLINE.COM

In 2004, Continental completes the Robert Heuer 1-17R in Divide County, the first commercially successful well in North Dakota's Bakken to be both horizontally drilled and fracture stimulated. Here, landowner Robert Heuer and Harold Hamm commemorate the Heuer 1-17R in North Dakota.

● DEVELOPMENT & PRODUCTION

Spearfish seizes spotlight

Play might not be Bakken twin, but Legacy Oil getting 'superior results' compared to previous operator's performance

By GARY PARK

For Petroleum News Bakken

There has been a tendency to present the emerging Spearfish play as an identical twin of the Bakken formation because they have a similar drilling history.

Not quite, as some experts have pointed out, claiming Spearfish is sour crude with a high sulfur content, compared with Bakken's sweet crude.

What they do share is the prospect of thousands of wells and billions of barrels of unconventional resources drawn from the Williston Basin.

Calgary-based Atikwa Resources, which is pushing ahead with its Spearfish operations, has talked about five billion barrels of oil in place in the Manitoba segment, which explains why Manitoba has suddenly found itself in Canada's minor petroleum leagues.

And those looking for a guide to the future of Spearfish, which covers the territory from Pierson, Manitoba, (where it's known as the Waskada field) to Bottineau County, North Dakota, could do worse than track the fortunes of Legacy Oil + Gas which, by the way, says although Spearfish crude has a "slightly higher sulfur content and is marketed differently than Bakken crude, it is not designated as sour."

The Calgary-based company is one of the front-runners, probing the fairway on both sides of the Canada-United States border, reporting earlier this month that its drilling, completion design and production practises have demonstrated "superior results" compared to the previous operator's drilling.

Legacy said production from its wells at Pierson, where it has 28,233 net undeveloped acres and 210 net drilling locations, have averaged 96 bpd of oil from 16 wells over 30 days; 86 bpd from 12 wells over 60 days; and 95 bpd from 10 wells over 90 days.

(Legacy) said waterflood potential is being evaluated in the play and recovery factors of 14 percent are anticipated.

The company said it has achieved those rates while constraining production to maximize ultimate recovery, estimating that initial productive capacity would be far in excess of the constrained rates.

Superior long-term performance

Legacy also reported that five wells with the longest producing history have averaged 101 bpd over 147 days, setting the stage for what it believes will be superior long-term performance, higher per-well reserve bookings and additional locations booked.

The company said it has had similar success on its Bottineau County lands, averaging 90 bpd from five wells over 30 days; 102 bpd from five wells over 60 days; 98 bpd from five wells over 90 days and, as with Pierson, production was constrained to maximize ultimate recovery.

Waterflood being evaluated

Legacy said it has identified 230 net drilling locations at eight wells per section on just the north portion of its Bottineau County lands, which cover 50,836 net acres.

It said the location count could increase by 50 percent through downspacing,

In addition, the company said waterflood potential is being evaluated in the play and recovery factors of 14 percent are anticipated.

Modest start 60 years ago

Like so many beneficiaries of horizontal drilling and multi-stage fracturing, Spearfish had a modest commercial and exploration beginning 60 years ago, with drilling reaching its peak in the 1957-1959 period, then tapering off until a 1980 discovery spurred significant leasing activity in North Dakota.

The real breakthrough occurred in 2008 when EOG Resources revisited the Waskada play and applied the new drilling and fracturing methods, then moved across the border to the Waskada South field, which is estimated to have a very high rates of return.

Early reserve figures in the Manitoba portion are estimated at 25 million barrels and in North Dakota, where many wells require four days to complete at US$1 million per well, at 20 million barrels.

EOG, which is now concentrating more on the Eagle Ford in Texas, has estimated returns from reserves of 70 percent to 100 percent.

Cheaper to drill?

Spearfish oil is also at a shallower depth than Bakken oil, indicating it should be cheaper to drill.

Calgary-based Atikwa Resources, which is pushing ahead with its Spearfish operations, has talked about five billion barrels of oil in place in the Manitoba segment, which explains why Manitoba has suddenly found itself in Canada's minor petroleum leagues.

The provincial well count rose last year to 531, up 13 percent from the previous year, and well licenses increased to 673 from 632, mostly concentrated in the Waskada region.

Total Manitoba production for 2011 was a record 37,500 bpd, up 2,500 bpd from 2010.

Tundra budgets for 200 wells

Dan MacLean, chief executive officer of privately-owned Tundra Oil & Gas Partnership, told Calgary investors last year he expects producers working Manitoba to have spent C$1 billion in 2011, more than a third coming from his own firm.

This year, Tundra has budgeted for more than 200 wells and a capital program of C$400 million.

"Technology drives our success and we consider it our key to the future," MacLean said, forecasting Manitoba output of 40,000 bpd this year. ●

Contact Gary Park through publisher@petroleumnews.com

ENVIRONMENT & SAFETY

OSHA cites Cyclone Drilling

The Occupational Safety and Health Administration is proposing $65,600 in fines for a Wyoming-based oil drilling company operating in western North Dakota.

OSHA has cited Cyclone Drilling Inc. for several violations of safety and health standards for allegedly exposing workers on an oil rig near Ray to electrical, fire and fall hazards.

OSHA spokeswoman Rhonda Burke says no injuries have been tied to the hazards. She says the amount of the proposed fines reflects that Cyclone has been cited for safety violations in Montana and Colorado in recent years.

Cyclone has the right to contest OSHA's findings.

Company spokesman Patrick Hladky declined comment.

—THE ASSOCIATED PRESS

PEOPLE

Cantrell joins Continental's executive team

Mike Cantrell has joined Continental Resources Inc. as the company's vice president of government and regulatory affairs, Continental said April 11.

Continental Resources is the largest producer of oil in the Williston basin, per a company press release.

Cantrell has owned and operated several oil and gas exploration and production companies; is president of the Domestic Energy Producers Alliance; is a member of the board of directors of the Oklahoma Independent Petroleum Association; is a member of the board of directors and executive committee of the North Dakota Petroleum Council; is a member of the board of directors of the Texas Alliance of Energy Producers; is a member of the board of directors of the National Stripper Well Association; and co-founded the Oklahoma Energy Resources Board, Continental Resources said.

—ALAN BAILEY

COURTESY EPA

Oil booming activities along the Yellowstone River in Division A.

COURTESY EPA

International Bird Rehabilitation (IBR) facility decontamination line.

● ENVIRONMENT & SAFETY

Better spill plan eyed by Exxon, agencies

By THE ASSOCIATED PRESS
& PETROLEUM NEWS BAKKEN

ExxonMobil is working with government agencies on a plan to speed up the response to oil spills along Montana's upper Yellowstone River, after a major spill last year left local officials scrambling to deal with an ill-defined threat, state and federal officials said in early April.

The goal is to provide enough training and resources to take action on major pipeline, refinery or railway spills within 24 hours, or before outside help can arrive.

ExxonMobil Pipeline Company, which said from the beginning that it takes full responsibility for the incident and cleanup, would pay to plan and possibly equip the stepped-up response under a settlement with the state over pollution violations from its July pipeline break near Laurel, Montana.

The effort is in the early stages and the company has not yet submitted a formal proposal, although it has had more than 1,000 people involved in the response and cleanup effort including ExxonMobil's North America Regional Response Team, the Clean Harbors and ER oil spill response organizations, as well as other contractors. The estimated cost of the cleanup is $135 million, including pipeline repairs.

State approval is needed for the work to count toward Exxon's remaining $1.3 million obligation under the settlement.

Pipeline buried 4 feet under river bed

The company's 12-inch Silvertip pipeline broke beneath the Yellowstone one weekend last July, releasing an estimated 63,000 gallons of oil. The 12-inch pipeline was buried about four feet under the river bed. What caused it to sever is still under investigation.

Oil was found as far as 72 miles downstream from the spill site. State officials estimate that only 1 percent of the oil released was recovered because the swift current swept much of it away.

Because not all the oil was able to be captured, officials fear some oil leftover from Silvertip could re-emerge during high waters this spring. Samples of possible oil sheen found on the river the first week of April near Laurel are being tested, and results are due before the end of April from the Montana Department of Environmental Quality.

DEQ scientist Laura Alvey said Exxon will be responsible for cleaning up any more oil discovered from last year's spill.

Exxon committed start to finish

ExxonMobil Pipeline says it is committed to completing the effort from start to finish.

"We continue to work under the direction of the Montana Department of Environmental Quality as we have now transitioned into reclamation and remediation work. This includes a comprehensive soil and water monitor and sampling program," an Exxon spokesman told Petroleum News Bakken April 11.

The company is currently monitoring about 45 sites along the river where oil was left in place because officials determined removal would be more damaging, Alvey said.

COURTESY EPA

Decontamination area.

The plan for future spills would cover seven counties in south-central and southeast Montana — Yellowstone, Carbon, Stillwater, Sweetgrass, Park, Gallatin and Big Horn. Most of the region's oil and gas facilities, including three refineries, are concentrated in two counties — Yellowstone and Carbon counties.

No major drinking water sources hit

Steve Merritt with the Environmental Protection Agency said the hope is to have any needed training done and equipment in place by the end of the year to handle a significant spill.

An Exxon spokesperson said it was premature to comment since it has not submitted its proposal. But an Exxon emergency response advisor, John Dunn, said in early April that the company wants to make the effort "as productive as possible."

"We recognize the emerging oil transportation that's going to happening because of the Bakken. We want to make sure all those operators that are here and all those refineries that have been there for a long time are engaged in this process."
—Steve Merritt, EPA

Pipelines, railways and oil industry trucking routes cross the entire region — a mix of developed and pristine areas that includes the Yellowstone River's world famous trout fishery and Montana's largest city, Billings.

No major drinking water sources were contaminated.

Because the river was flooding at dangerous levels during the spill, Merritt said there was little that local emergency responders could have done to stop the oil from moving downstream even with a better response plan in place.

But he said better communications among government agencies and the company could have made downstream residents and communities more prepared.

Merritt said having sufficient equipment and training in place to handle the next spill becomes all the more important as an energy boom in eastern Montana's Bakken shale play. More drilling is increasing the amount of crude being piped, railed and trucked in the Yellowstone watershed.

"We recognize the emerging oil transportation that's going to happening because of the Bakken," Merritt said. "We want to make sure all those operators that are here and all those refineries that have been there for a long time are engaged in this process." ●

DRILLING & COMPLETION

Argosy Energy reports well results

Argosy Energy Inc. has reported the performance of a horizontal well that it drilled recently in the company's southern Alberta Bakken prospect. In an April 10 press release the company said that it had shut the well in for a while, to enable a pressure build up, but that it had subsequently brought the well back into production for eight days.

Using a bottom hole pump assembly, the well produced 36 degrees API oil at the rate of 125 to 140 barrels per day in a fluid mix containing 50 percent water, Argosy said.

Argosy said that more than 10,000 barrels of fracking fluid remained to be recovered from the well and that experience from a competitor's nearby well suggested that water production would drop and oil production increase over time.

Activities in the Bakken prospect continue to dominate Argosy's operations, the company said.

—ALAN BAILEY

GOVERNMENT

North Dakota oil output up

Daily production in February hit new high as rig count increases, more fracturing crews move to state and idle well count falls

By ALAN BAILEY

Petroleum News

With an estimated average rate of 558,254 barrels per day, oil production in North Dakota reached a new high in February, according to the April "Director's Cut" report by Lynn Helms, director of North Dakota's Department of Mineral Resources. Natural gas production, at 601,292 thousand cubic feet per day, also hit a new peak, Helms says.

According to data on the Department of Mineral Resources website, oil production a year earlier was 348,777 barrels per day, with the production rate increasing every month over the course of the year.

North Dakota production

- Jan Oil 16,935,846 barrels = 546,318 barrels/day
- Feb Oil 16,189,355 barrels = 558,254 barrels/day (preliminary) (NEW all-time high)
- Jan Gas 17,738,391 MCF = 572,206 MCF/day
- Feb Gas 17,437,469 MCF = 601,292 MCF/day (preliminary) (NEW all-time high)
- Jan Producing Wells = 6,624
- Feb Producing Wells = 6,726 (NEW all-time high)
- Jan Permitting: 170 drilling and 0 seismic
- Feb Permitting: 181 drilling and 5 seismic (all time high was 245 in Nov 2010)
- Jan Sweet Crude Price = $88.09/barrel
- Feb Sweet Crude Price = $83.26/barrel
- Today Sweet Crude Price = $76.00/barrel ND (all-time high was $136.29 July 3, 2008)
- Jan rig count 200 ■ Feb rig count 202 ■ Mar rig count 205
- Today's rig count is 208 (all-time high was 209 on Apr 9-10, 2012)

Source: North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division

Oil production in North Dakota now significantly exceeds the capacity of the oil pipeline network for transporting the oil to market. Delay and uncertainty in the approval of the Keystone XL pipeline, and a bottleneck at Cushing, Okla., has resulted in the price of North Dakota Sweet being discounted 25 percent below West Texas Intermediate, and West Texas Intermediate being discounted 19 percent below Brent crude, Helms said.

Insufficient pipeline capacity

Oil production in North Dakota now significantly exceeds the capacity of the oil pipeline network for transporting the oil to market. Delay and uncertainty in the approval of the Keystone XL pipeline, and a bottleneck at Cushing, Okla., has resulted in the price of North Dakota Sweet being discounted 25 percent below West Texas Intermediate, and West Texas Intermediate being discounted 19 percent below Brent crude, Helms said.

However, arrangements for the transportation of North Dakota oil by rail and truck are adequate to keep up with near-term production expectations, he said.

North Dakota natural gas production is rising, while the warming weather is enabling the construction of processing plants and gathering systems to accelerate. However, with U.S. gas storage levels currently 61 percent above the five-year average, gas prices seem set to remain low. The price of natural gas delivered to Northern Border at Watford City has dropped to $1.65 per thousand cubic feet, Helms said.

Exploration for shallow natural gas is not economic in North Dakota at present, he said. However, the high liquids content of deeper gas from the Bakken formation does make production of this gas viable. And, with new additions to gas processing capacity beginning to take effect, the percentage of gas flared has dropped to 30.4 percent from a high of 36 percent in September 2011, Helms said. Gas flaring should continue to decline, he said.

More fracturing crews moving in

Meantime drilling in North Dakota continues apace.

Rig counts in the Williston basin are at record levels in excess of 200 rigs and are slowly increasing, with more than 95 percent of the rigs capable of drilling to more than 20,000 feet in use. But only about 50 percent of shallow-well rigs, designed for drilling to 7,000 feet or less, are being used, Helms said. The idle well count is falling, with about 240 wells waiting for fracturing services. More fracturing crews are moving to North Dakota from natural gas plays, Helms said

Over 95 percent of the drilling is targeting the Bakken and Three Forks formations, he said.

Drilling permitting activity is high, although well below record levels. And seismic surveying is very active, with six surveys currently in progress.

Environmental Protection Agency regulation of hydraulic fracturing remains on hold while the Obama administration's Office of Management and Budget, or OMB, reviews the proposed guidance documents. EPA plans a 60-day public comment period after the OMB review, Helms said.

Most North Dakota leasing activity currently consists of lease renewals, or the purchase of so-called "top leases" on land already leased, he said. ●

Contact Alan Bailey at abailey@petroleumnews.com

MEETINGS

Focus on oil boom effects on SD

Representatives from several industries are going to be on hand in Spearfish, South Dakota, May 2-3 to learn about the effects of the North Dakota oil boom on people and businesses in South Dakota.

The Black Hills Bakken Conference will feature discussions on infrastructure planning, landowner issues and how businesses can best benefit from the boom that is moving south. It will be held at the Spearfish Holiday Inn Convention Center.

North Dakota Petroleum Council President Ron Ness says at least one North Dakota drilling operator is starting to drill in South Dakota to save on costs. Sturgis businessman Branden Bestgen is organizing the conference. He wants to see a bigger push in South Dakota to get in on oil opportunities.

—THE ASSOCIATED PRESS

GOVERNMENT

Fort Peck tribes get $1M grant

Montana's Fort Peck tribes are getting a $1 million from the U.S. Department of Commerce for equipment to expand oil drilling and manufacturing on the reservation at the western edge of the booming Bakken oil play.

On April 6, Commerce Secretary John Bryson said the economic development grant could create 15 new jobs and leverage more than $600,000 in private investment.

The money will support the expansion of a metal fabrication facility by Fort Peck Tech Services, a tribe-affiliated company based in Poplar, Montana.

It will also buy equipment to advance oil exploration and drilling activities in the Bakken formation, which is partially located on the Fort Peck Indian Reservation.

In northeastern Montana, the Reservation is homeland of Assiniboine and Sioux tribes.

TRANSPORTATION & PIPELINES

Seaway seeks tariff freedom

Enterprise Products Partners, co-owner with Enbridge of the Seaway crude oil pipeline, is asking the U.S. Federal Energy Regulatory Commission to break with tradition and allow it to set a market-based tariff for the connection from the storage hub at Cushing, Oklahoma, to Gulf Coast refineries.

But oil producers have raised immediate objections, saying a precedent-setting approval by FERC to let Enterprise and Enbridge set their own rates would give them too much control over the system that is designed to ease the bottleneck at Cushing and provide an outlet for Bakken crude.

Although FERC has never granted such a tariff for a crude pipeline it has allowed market-based rates on 22 pipelines that carry refined products.

OIPA worried about smaller companies

The Oklahoma Independent Petroleum Association, in asking for the request to be turned down or FERC to hold a public hearing, is among those arguing that a market-based tariff would see large producers "take advantage" of the smaller companies.

Oklahoma Gov. Mary Fallin, through a legal submission to FERC, opposed the Seaway application, arguing a floating rate would "significantly reduce" taxes in the state by lowering prices realized by producers.

Enterprise has asked for a decision by June.

Strong open season response

In 2010 the federal agency turned down a request by ExxonMobil for a market rate on its Pegasus pipeline from Illinois to the Gulf Coast, a decision that is still being appealed.

In that decision, FERC said oil pipelines have the ability to seek market-based rates, but "do not have the right to them. The burden of proof is on the pipeline to establish that it lacks significant market power."

Reversing the Seaway line is on track to start carrying 150,000 barrels per day by late May, increasing to 400,000 bpd in early 2013 and 850,000 bpd by mid-2014 based on a strong open season response from shippers.

—GARY PARK

TRANSPORTATION & PIPELINES

Sunoco plans third Gulf link

Sunoco Logistics Partners is seeking shipper backing for its third pipeline to ease the crude bottleneck in the Texas Gulf Coast regions.

It has launched an open season for a system to carry 40,000 barrels per day of West Texas Sour from the western part of the state to its crude terminal in Nederland, Texas, with a scheduled in-service date in the first quarter of 2013.

Sunoco brought a 40,000 bpd line from West Texas to Houston on line earlier this month and is planning a 30,000 bpd line to carry crude from West Texas to the Mid-Valley pipeline in Longview, Texas, starting in January 2013.

The scramble for pipeline capacity is being fuelled by surging output from resource plays such as Eagle Ford in Texas, which has revived the declining Permian basin in West Texas, and Bakken in North Dakota, along with rising volumes from Canada.

The resulting glut of crude in the Midwest has dragged down the value of West Texas Intermediate compared with crude priced against the Brent benchmark, forcing Gulf refiners to pay Brent prices and inflate U.S. fuel costs in the process.

But the price differential is expected to narrow when the Enbridge-Enterprise Products Partners Seaway pipeline starts delivering 150,000 bpd later this month and expands rapidly to 450,000 bpd, followed by the southern leg of TransCanada's Keystone XL system from Cushing, Oklahoma, to the Gulf Coast.

—GARY PARK

FINANCE & ECONOMY

Pelican to fund service firms

The private equity firm Pelican Energy Partners LP raised $103.6 million in investment capital as part of its initial closing, the company announced at the end of March.

With the capital, the Houston-based firm plans to begin making $5 million to $15 million investments in energy product and service companies.

Pelican is focused on "strategic investments in smaller but highly promising energy service companies."

"With the business skills and industry knowledge of our team, Pelican is positioned to be more than just a capital provider to prospective portfolio companies," the company's managing partner, Mike Scott, said.

"The unique benefit from our combined operational and financial talents stems not only from the general partner, but from our limited partners as well. Our limited partners comprise a very broad network within the energy services industry and contribute valuable knowledge, experience and relationships. This uniquely positions Pelican to excel in the underserved but aggressively growing lower valued end of the energy services sector. We will provide our portfolio companies with unmatched access to capital, talent and real-world experience," he said.

In his 15 years in energy and private equity, Scott has been a principal in a $650 million private equity fund, chairman of the board of NCS Energy Services and a board member of Southeast Directional Drilling and M&M Pipeline.

In addition to Scott, the general partnership includes Philip Burguières, chairman emeritus of Weatherford International Ltd., and John Huff, chairman of the board of Oceaneering International Inc.

Pelican completed the closing in four months and exceeded its target funding.

— ERIC LIDJI

DRILLING & COMPLETION

GMX hails Lange well results

GMX Resources Inc. released results from its fourth operated Bakken well April 3.

The horizontal Lange 11-30-1H well in McKenzie County, ND, produced at a peak rate of 2,549 barrels of oil equivalent per day at 1,500 pounds per square inch of pressure.

The Oklahoma City-based company drilled the well to depth of 20,519 feet with a lateral length of 9,348 feet and completed the well with 32 stages of hydraulic fracturing.

"The Lange result is consistent with our belief that the acreage position we have in Billings and McKenzie counties will deliver terrific results. The Lange's initial rate is more than 50 percent greater than the rate that was reported on our non-operated Taboo well, which is a direct offset to the Lange. Our 2012 drilling plan will continue to be focused in this very productive region," GMX President Michael J. Rohleder said.

GMX owns at 89 percent stake in the well.

GMX operates oil production in the Williston basin of North Dakota and Montana, and the Denver-Julesburg basin of Wyoming, and natural gas production in the East Texas basin, in the Haynesville/Bossier gas shale and the Cotton Valley sand formation.

—ERID LIDJI

● TRANSPORTATION & PIPELINES

Reaching for pipeline supremacy

Enbridge, TransCanada try to outflank each other in securing shippers; room for all mega-projects to narrow price differential

By GARY PARK
For Petroleum News Bakken

The race to carry burgeoning new crude volumes from the Bakken and Alberta's oil sands to the prized market on the Texas Gulf Coast has been portrayed as a winner-take-all contest between Canadian pipelines TransCanada and Enbridge.

But not in the eyes of the rival chief executive officers, TransCanada's Russ Girling and Enbridge's soon-to-retire Pat Daniel.

They insist there's ample demand for all of the biggest pipeline proposals of the past generation in North America — TransCanada's Keystone XL, regardless of the political uncertainties surrounding the full trans-national pipeline expansion from Alberta to Texas, and Enbridge's combination of its Seaway and Flanagan South plans.

Even so, the Calgary-based giants have been actively trying to outflank each other in rounding up shipper support for their megaprojects and, in TransCanada's case, trying to cling to the backing it previously received for XL.

Analysts are warning that crude from the Bakken, regardless of the modest relief valve offered by railroads, barges and tank trucks, may quickly run out of shipping capacity on both sides of the Canada-U.S. border. Oil sands production is expected to add 600,000 barrels per day, reaching 2.2 million bpd, colliding with the rapid rise in Bakken volumes towards 1 million bpd.

Opinions differ on when

Greg Stringham, vice-president of markets at the Canadian Association of Petroleum Producers, said his organization sees tightness coming in 2014 or 2015, a view shared by Steve Fekete, managing consultant at Purvin & Gertz.

Vern Yu, vice-president of business development at Enbridge, thinks more capacity won't be needed until the 2015-2017 period.

He estimates that about 300,000-400,000 bpd of unused capacity can be immediately accessed on Enbridge's 2.5 million bpd Mainline system, which extends as far east as Sarnia, Ontario, and south to Cushing.

Additional space is also available on two more Enbridge systems — the 450,000 bpd Alberta Clipper pipeline from Alberta to Superior, Wis., and the 796,000 bpd Line 4, which carries heavy crude from Alberta. (See CAPP map of all Canada and U.S. crude lines on page 23 of this issue.)

In addition, Yu said Enbridge could convert its 390,000 bpd Line 3 from light and synthetic crude, condensates and some light sour crudes to run heavy crude.

Other lines that are running at capacity are TransCanada's original 590,000 bpd Keystone pipeline and Kinder Morgan Energy partners' 280,000 bpd Express-Platte system into southern Illinois.

Bump in the road: Obama

Until a year ago, it seemed the $7 billion Keystone XL project would sail through the regulatory and political stages, offering 830,000 bpd of new capacity by 2013 and drawing about 200,000 bpd from the Bakken.

Then the best laid plans came unglued as political infighting in Washington, D.C.,

Rival chief executive officers: TransCanada's Russ Girling and Enbridge's Pat Daniel

and opposition from environmentalists and landowners in Nebraska, tipped the balance, with the State Department denying the necessary trans-border permits and President Barack Obama agreeing that TransCanada should have to find a new route through Nebraska. That pushed a final decision beyond the November presidential election.

Enbridge buys 50% of Seaway

For TransCanada, the spotlight quickly shifted from environmental obstructionism to competition. Enbridge seized the initiative by purchasing ConocoPhillips' 50 percent stake in the Seaway pipeline from the Gulf Coast to Cushing, announcing plans with joint owner Enterprise Products Partners to reverse the flow.

The line is now scheduled to start delivering 150,000 bpd by late May and increasing to 400,000 bpd in early 2013 with additional pumping capacity, and displacing Enbridge's earlier plans to build the 800,000 bpd Wrangler pipeline along a similar route to Texas refineries in Houston and Port Arthur.

The Enbridge-Enterprise partnership followed that move by announcing in late March they would add another 450,000 bpd to Seaway as part of its Gulf Coast Access projects, with an in-service date of mid-2014, after lining up enough binding commitments from shippers covering terms of five years to 20 years.

Flanagan South, Spearhead

Enbridge also said it would move forward with construction of its Flanagan South project from Flanagan, Illinois, to Cushing, completing the parallel 190,000 bpd Spearhead line.

The wholly-owned Flanagan South line is designed to offer initial capacity of 585,000 bpd by mid-2014, with possible expansion to 800,000 bpd. That would give Bakken producers and "other emerging crude oil sources (in the Midcontinent) capacity to move secure reliable supply to U.S. Gulf Coast refineries, offsetting supplies of imported crudes.

"By leveraging existing infrastructure wherever possible, impacts to landowners, communities and the environment will be minimized," Daniel said.

Daniel said the Gulf Coast Access projects would give Bakken and Western Canadian producers "timely, economical and reliable options to deliver a variety of crudes to refinery hubs throughout the heart of North America and now as far as the Gulf Coast" by extending Seaway from Houston to the Port Arthur/Beaumont refining hub.

Mainline system expansion

In addition, based on results from an open season, a separate pipeline from Enterprise's ECHO terminal in Houston to Port Arthur, Texas, is expected to come on line in early 2014.

Chad Friess, a UBS Investment Research analyst, said Enbridge will also have to expand its Mainline system out of Alberta, to move additional volumes from Canada into the U.S.

In an apparent change of heart caused by rising gasoline prices, the Obama administration is showing a willingness to expedite approval of TransCanada's plans to build the southern leg of Keystone XL from Cushing to the Gulf Coast. An Enterprise spokesman said the Seaway plan presents the administration with a chance to expedite a pipeline project along the same lines, a year after a TransCanada executive said that link was not financially viable.

Now TransCanada says the constraints on moving crude from North Dakota and Montana, along with Oklahoma and Texas, to Gulf Coast refineries require an answer.

"Dramatic' build out of new pipelines

Although not a Keystone XL substitute, Seaway would help address WTI's wide discount to Brent, which has hovered around $18-$20 per barrel over recent times, and allow Midcontinent producers to secure higher prices.

But it is the first project on the drawing boards to alleviate the bottleneck at Cushing and, in Daniel's view, eat away at stockpiles of crude in the Midwest to bring U.S. oil prices closer to global barrels.

It's especially crucial for Canadian producers grappling with heavy discounting of their new wave of light crude from Bakken and other plays and heavy crudes from the oil sands. Those have traded as much as $5.25 and $24 per barrel, respectively, below other U.S. prices.

Michael Tims, chairman of Calgary-based investment banker Peters & Co., describes the massive build out of new pipelines across the continent as "dramatic."

He said "a lot comes from simultaneous dramatic growth in oil sands production, at the same time the Bakken production has been increasing."

Although neither TransCanada nor Enbridge has conceded there might be a downside to the wave of pipeline construction they are spawning, others are not so sure.

Political and environmental reactions

Len Racioppo, president and director of Canadian money manager Jarislowsky Fraser, which has C$35 billion under management, including investments in four pipeline companies, said the stampede to build infrastructure could become politically and environmentally contentious.

He said alternatives could include competitors linking pipe to each other's systems.

But the rivalry between TransCanada and Enbridge is so deeply rooted they are unlikely to share Racioppo's view that "collaboration could result in much quicker

see PIPELINE SUPREMACY page 12

continued from page 11

PIPELINE SUPREMACY

approvals (along with) less profile and sensitivity."

Another voice of doubt came from refiner Valero Energy, which has committed to taking 20 percent of the volumes from Keystone XL, but is unlikely to take oil from the southern leg.

A Valero spokesman said his company's support was for the entire Keystone XL, "not just the southern leg, which will bring mostly light sweet crude, which helps but is not really what Valero is after."

Stringham suggested that refiners who committed to Keystone XL were heavy oil refiners that were losing supplies from Mexico and Venezuela "and really need access to that heavy oil."

However, a TransCanada spokesman said his company does not need the "same level of contractual support" for the southern leg as for the full project, adding that Valero is "not the only or the majority shipper on Keystone XL."

Plenty of room for crude in Gulf Coast

Roger Ihne, a Houston-based refining market specialist at Deloitte & Touche, said there is plenty of demand for crude in the Gulf Coast for Seaway and TransCanada's pre-build portion.

A spokesman for TransCanada said the company estimates the growth in U.S. light oil production will amount to 2 million bpd within a decade, and Seaway is designed to move only 400,000 bpd in its first phase.

"There will be a need for Seaway and (TransCanada's Gulf Coast project) and additional pipeline projects once those two are in service to keep up with growth," he said.

And it's that thinking, apparently shared by Enbridge, that cools off the desire to portray the current arm-wrestling between TransCanada and Enbridge as a battle to the bitter end. ●

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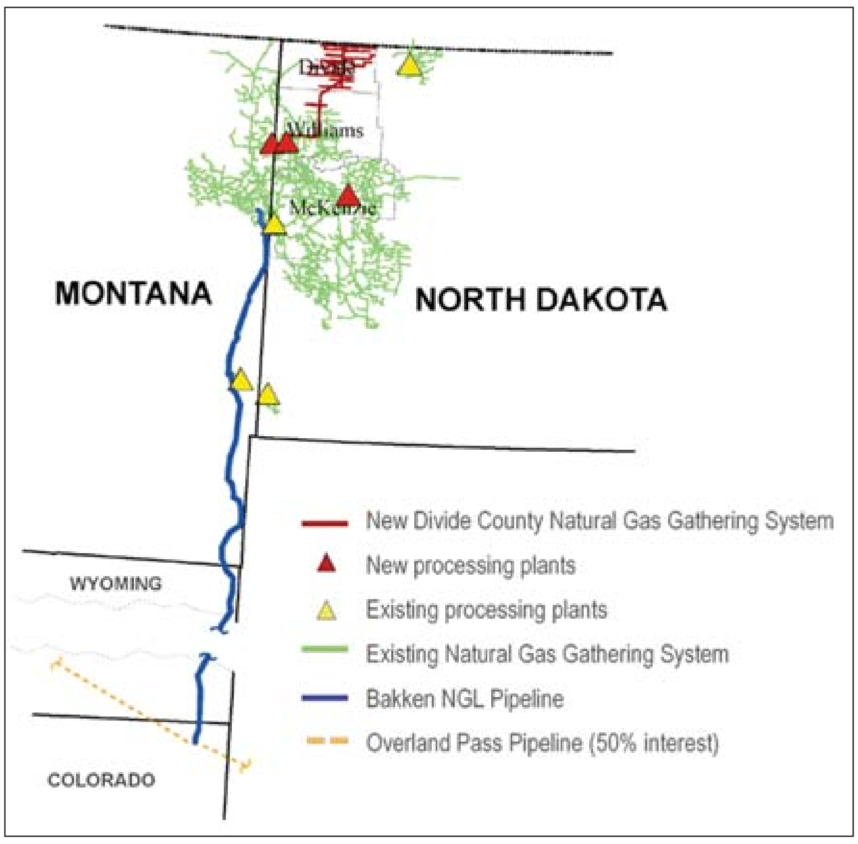


COURTESY ONEOK PARTNERS

Oneok: waste not, want not

Oneok Partners has joined Plains All American in rolling out plans to cash in on natural gas that is currently going up in flames in the Bakken.

It has announced the first phase of a 270-mile gas gathering system and related infrastructure costing up to $160 million in North Dakota's Divide and Williams counties, following Plains decision earlier this year to build a processing plant at Ross.

Oneok has even larger goals in mind for the Divide County plant, planning to invest up to $1.8 billion in Bakken projects over the next three years, including a natural gas liquids pipeline and three processing plants.

"This project is the latest example of our ongoing commitment to reduce the amount of natural gas being flared in the Bakken Shale," said ONEOK Partners president Terry K. Spencer.

The system, due for completion in the second half of 2013, will collect and deliver gas to the partnership's previously announced 100 million cubic feet per day Stateline II processing facility in Williams County, expected to be in service in the first half of 2013.

Oneok said it has already secured long-term commitments from producers structured with percent-of-proceeds and fee-based components.

Spencer said Oneok's objective is to give producers in the Bakken and Three Forks formations "the infrastructure they need to process and deliver gas to the marketplace."

The partnership estimates the gathering system and infrastructure will generate EBITDA (earnings before interest, taxes, depreciation and amortization) multiples of five to seven times.

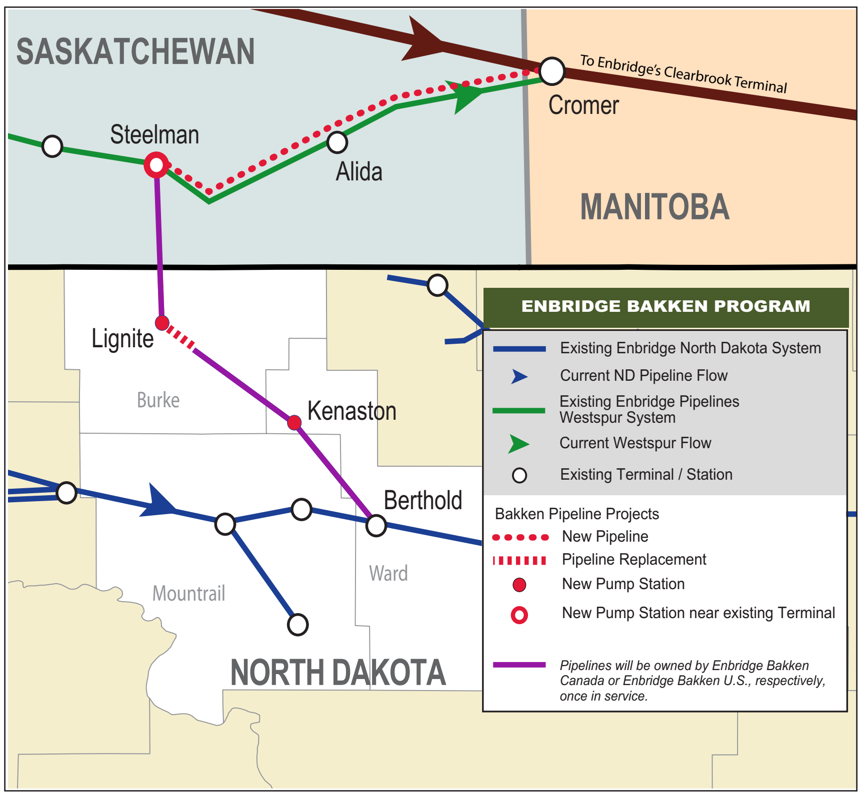
The incremental earnings from the projects are expected to increase distributable cash flow and value to unitholders.

Oneok said the next phase of growth projects include a 500-mile gas liquids pipelines and three 100 million cubic feet per day processing facilities.

Completion of the Divide County gathering system will provide the infrastructure to fill all four of the partnership's processing plants in the Bakken and Three Forks formations.

Oneok has more than 3,500 miles of gas gathering systems in the Williston basin and dedications of more than 2.2 million acres.

—GARY PARK



COURTESY ENBRIDGE

Opening door to Eastern Canada

The Texas Gulf Coast is not the only destination available to Bakken producers in the United States and Canada.

Companies intent on securing new customers are suddenly paying attention to eastern North America, where refiners are eyeing the Canadian Prairies and U.S. Plains for the first time in decades, attracted by crude that is selling at steep discounts to international crudes they source at Brent prices.

Canadian political and business leaders are paying special attention to the prospects of market diversification, with their sights set on using western crude as feedstock for refineries in Ontario, Quebec and Atlantic Canada.

Refineries in Eastern Canada import 44 percent of their crude, a number Derek Burney, a former ambassador for Canada in the United States, wants to shrink.

"Even though we have a huge reservoir of oil of our own, we're still importing more than 500,000 bpd of foreign oil, which is coming at a much higher price than what is being extracted in the Alberta oil sands," said Burney, a member of TransCanada's board of directors.

Family-owned Irving Oil has already brought crude by rail from Western Canada to its 300,000 bpd refinery in Saint John, New Brunswick, to test its processing ability and sources say Irving executives are now trying to contract firm supply.

Suncor Energy ran its own test by a daunting route, shipping crude from the oil sands to tankers in Vancouver, which reached the company's Montreal refinery via the Panama Canal.

Little wonder that Suncor endorses Enbridge's proposal before the National Energy Board to reverse its 240,000 bpd Line 9 from Montreal to Sarnia, Ontario, so its 137,000 bpd Montreal facility can process Western Canadian crude.

TransCanada is not prepared to leave that field wide open to Enbridge.

A company spokesman said that although the U.S. remains a key market for Canadian crude, Canada must "explore other markets," partly because of the delays imposed on Keystone XL.

"As others have highlighted in recent months, the concept of an East Coast oil pipeline has merit," he said, affirming word from sources that TransCanada first proposed opening that route six years ago.

Shipping crude to the East Coast might also open the way to tanker deliveries of Canadian crude to Europe, India and China.

"At present, there is limited access to crude oil produced in Western Canada, including the growing supplies of light crude from emerging shale basins," the spokesman said.

The oil sands aside, pipeline connections to Eastern Canada present some relief to the rapid production growth in the Williston basin.

The National Energy Board already approved Enbridge's C$180 million Bakken Pipeline Project Canada. The 75-mile pipeline from Steelman, Saskatchewan, to Cromer, Manitoba, will initially transport crude from the Bakken and Three Forks formations in Montana and North Dakota, feeding into Enbridge's mainline system to North American markets and could easily be expanded to 350,000 bpd.

The NEB determined there is enough commercial interest to support the Bakken pipelines based on firm commitments of 100,000 bpd, representing 68 percent of the national initial capacity of 148,500 bpd. The average shipping term is 9.25 years.

The NEB also found Enbridge successfully demonstrated there would be sufficient oil supply markets for the projected volumes. Enbridge's Commodity Future Group estimated total reserves of 7.6 billion barrels from the Bakken formation and 3.2 billion barrels from Three Forks, with an estimated recovery factor of 3.5 percent, would underpin the project.

Enbridge said that if a Canadian shipper requested service on the pipeline it would be willing to consider an agreement for adding a receipt point.

The company said it would not differentiate between barrels nominated by a U.S. shipper and those nominated by a Canadian shipper, adding that those barrels would still be subject to a pro rata apportionment under Enbridge Bakken's rules and regulations.

—GARY PARK

GOVERNMENT

Drilling not disturbing underground nukes

Military's sensitive equipment records earthquakes in Mexico, but has never detected seismic activity from hydraulic fracturing

By JAMES MACPHERSON

The Associated Press

Intense oil drilling that's honeycombing western North Dakota has not disturbed nuclear-tipped missiles buried beneath much of the same real estate that companies are targeting for crude, the military says.

But the U.S. Air Force is concerned about the booming oil activity above ground rather than below and has been meeting with industry officials as a precaution against potential conflicts.

The Minot Air Force Base is the command center for 150 Minuteman III missiles, sunk in hardened silos across 8,500 square miles of northwest North Dakota.

Col. S.L. Davis, the base's 91st Missile Wing commander, said security and maintenance crews are dealing with the same issues as everyone else in the oil patch: heavy oil traffic and beat up roads.

Air Force officials met in March with oil industry officials and intend to hold another meeting in early June to emphasize the mission of the nation's nuclear enterprise and to stress that the military has the right-of-way in the oil patch when it comes to roads and truck traffic.

Davis called it a proactive approach.

"We certainly can coexist with the oil industry and their development," Davis said.

Military has jurisdiction

"Obviously, the Air Force has jurisdiction when they have to move things around and the oil industry is aware of that," said Kari Cutting, vice president of the Bismarck-base North Dakota Petroleum Council, which represents more than 200 companies in the state. "I don't think we'll have any conflicts — we're communicating how we can share that territory. We can coexist and be happy with each other."

Davis said Air Force crews log 7 million miles annually tending to the missile field in northwest North Dakota. Though no conflicts have occurred between the military and industry vehicles, there have been crashes in recent years involving vehicles carrying missile parts.

In 2008, a vehicle carrying a rocket booster for an unarmed Minuteman III ballistic missile overturned while being transported from the base to a launch facility in northwestern North Dakota. The military blamed "driver and safety observer error" for that accident and said the public never was in danger. The military estimated it spent about $5.6 million to recover the rocket from a ditch.

A year later, a semitrailer carrying rocket engine parts from the base overturned when the driver became distracted by an insect that flew in a window and landed on the driver's back, the military said.

Beehive-like oil activity spurred by a combination of horizontal drilling and hydraulic fracturing technology has made North Dakota the nation's No. 3 oil producer, up from ninth in 2006.

Hydraulic fracturing, or fracking, is a process that uses pressurized fluid and tiny particles to break open oil and gas bearing rock up to 2 miles underground. The technique is credited with developing the rich Bakken and Three Forks formations in North Dakota.

A record 209 drill rigs were piercing the prairie on April 12.

No ill effects, said Davis

Davis, the missile wing commander, said the drilling activity has caused no ill-effects to the underground intercontinental ballistic missile sites, which lie about 100 feet below the surface.

Each site is equipped with ultra-sensitive instruments that can detect seismic activity. Davis said the equipment at the North Dakota sites has recorded earthquakes as far away as Mexico and even vibrations caused by thunderstorms.

The equipment has never detected seismic activity caused by hydraulic fracturing, he said. The closest oil well that has been hydraulic fractured is more than a mile away from any missile site.

"We're pretty confident it's not having any impact," Davis said. ●

continued from page 4

EDITORIAL

stunning rail roadphoto on page 1.

My Dad, Hisle Cashman, and his father before him, were Great Northern Railway employees, and proud of it. At the time, Great Northern's route was the northernmost transcontinental track in the United States. Completed in 1893, it was the only privately funded and successfully built, transcontinental railroad route in U.S. history. And, unlike its counterparts, no federal land grants were used for its construction.

Dad left the railroad to form his own business when I was just a kid, but he instilled in me a passion for trains, something I never lost.

I am very happy to see growth in the railroads, as I'm sure Ayn Rand would be if she were alive today. And so much of that expansion is because of shale oil and gas development in the Lower 48.

For all its devotion to high tech, North America's greatness came from its natural resources.

Oil forced so

The third thing that grabbed my attention was the destinations of the existing and planned crude pipelines for transporting North Dakota, Montana and western Canada crude to market.

The highest prices to be had for oil — North Sea Brent — are along the East, West and Gulf coasts. That's where the tankers come in with crude from West Africa and the Middle East.

We have seen in the last year or so, especially this year, a big disconnect in what a barrel of oil is worth in the mid-continent of the U.S. versus what it's worth on those three coasts.

We all know this, but have you looked at a Canada and U.S. crude pipeline map lately?

Since Justin Kringstad inadvertently pointed this out to me with a map of Canada and U.S. crude pipelines when I listened to his March 20 presentation to a legislative committee.

In his words:

"What's occurring is that there has been a tremendous amount of crude oil produced in North Dakota, but also from … western Canada. That crude oil is all flowing down to the Mid-Continent area," he said pointing at the map, which is reprinted on page 18 of this issue. "The Enbridge mainline system, going through North Dakota, travelling down to the Great Lakes. North Dakota's crude oil is also being forced into this same area going east on the Enbridge System or south to the Guernsey Hub (Montana-Wyoming-Colorado-Nebraska pipeline infrastructure, which is filled to capacity with oil supplies from Canada). It still heads over to the Illinois area. This area of the U.S. is getting oversupplied; it's getting extremely congested as far as crude pricing goes. …

"We can get our crude oil out of North Dakota but unfortunately it's being forced into these regions (almost all existing pipelines flow south, most into the Mid-Continent) where the crude pricing is deeply depressed, and it's not just North Dakota crude oil that's getting hit with these huge discounts, it's anything that's being produced and by the nature of the pipeline system being forced into the Mid-Continent region," Kringstad said. …

"Almost one-quarter (23 percent) of U.S. Bakken oil is moving by rail," he said, "primarily to coastal facilities."

Refineries on the east and west coasts have been touting the fact that they can get cheaper oil from the Bakken and therefore improve their profit margins, even with the higher cost of rail versus pipelines, while Bakken area producers tell their shareholders they're getting a higher price by taking their oil to the coast.

The price is obviously somewhere in between.

Kringstad, by the way, is the director of the North Dakota Pipeline Authority, which was created in 2007 to facilitate the diversification and expansion of the state's economy by expediting the development of pipelines to support the production, transportation and utilization of North Dakota energy-related commodities, thus improving the state's economy.

His presentation, and his responsiveness since then, was very helpful in understanding the oil and gas industry in North Dakota.

In closing, I would also like to thank the following individuals for their help and courtesy to Tyson, Marti Reeve, Clint Lasley and myself over the last few weeks: Vern Whitten, photographer; Alison Ritter, public information officer, Department of Mineral Resources; David Houseknecht, U.S. Geological Survey; James MacPherson, Associate Press, Bismarck; Alexis Brinkman, public relations manager, North Dakota Petroleum Council; Jeff Zarling, Bakken Investor Conference; Wadeen Hepworth, Canadian Mat Systems; Eric Dompeling, SolstenXP; and even though we played far too much phone tag, Tom Rolfstad, executive director, Williston Economic Development.

Finally, my thanks to Harold Hamm, a giant of man who was willing to take a chance on something new.

Cheers,

Kay Cashman

LAND & LEASING

Firm touts farm-out

Nordic Oil and Gas Ltd. has entered into a farm-out agreement that provides for drilling up to six wells in Tatagwa, Saskatchewan, the Winnipeg company said April 3.

Through the agreement, 6470239 Manitoba Ltd., the general partner of Nordic Limited Partnership No.1, is selling up to 250,000 Limited Partnership Units at $10 per unit for a maximum of $2.5 million. The minimum subscription amount will be $5,000 and is available to qualified accredited investors. The offer includes a 10 percent finder's fee.

"Nordic recently acquired 16 kilometers (10 miles) of 2-D seismic data over the land and from the analysis of this seismic data, an un-tested look-a-like feature to the nearby Union Jack Oil field has been identified," Nordic Chairman and CEO Donald Benson said. "This feature not only indicates oil potential from the Midale/Frobisher formation but also indicates potential from the un-tested deeper Bakken and Red River formations."

Nordic is a junior oil and gas firm engaged in the exploration and development of oil, natural gas and coalbed methane in Alberta and Saskatchewan.

—ERIC LIDJI

DRILLING & COMPLETION

Wind Rivers preps 2nd Phat City well

Wind River Energy Corp. plans to drill a second well in its 56,785-acre Phat City oil project in Montana in early May, the Denver-based company said April 11.

"We expect this well to help us optimize the drilling and completion strategies to be utilized to develop a multi-pay oil field," Wind River CEO Alan O'Hare said.

Wind River holds 67,745 acres among its two natural gas projects in Wyoming and three oil projects located in the Colorado/New Mexico area, Kansas and Montana.

The company originally expected to begin drilling in mid-March, but pushed back the date until May 5 because its drilling contractor needed to accommodate customers that preceded Wind River on its operations schedule. However, Wind River said it is currently constructing a drilling pad for the second well in case the rig is available sooner.

The well "is designed to individually test two benches of the Nisku formation and will also be configured to test the Bakken/Three Forks formation at a later date. This drilling location was selected with the benefit of seismic data acquired earlier this year."

Wind River holds 67,745 acres among its two natural gas projects in Wyoming and three oil projects located in the Colorado/New Mexico area, Kansas and Montana.

—ERIC LIDJI

● GOVERNMENT

BLM to expedite permitting

By THE ASSOCIATED PRESS & PETROLEUM NEWS BAKKEN

The Obama Administration will expedite permitting of oil and gas development on federal lands, U.S. Secretary of the Interior Ken Salazar announced during a two-day visit in early April to Bakken developments around North Dakota.

The changes will move the Bureau of Land Management, the agency responsible for oil and gas production on federal onshore lands, into the digital age by automating permitting and leasing decisions. Today, those negotiations are done on paper, and the back-and-forth has resulted in permits taking on average 298 days to approve.

Bureau of Land Management Director Bob Abbey said the new process unveiled April 3 and in place nationwide by May would drop it to 60 days or less, without compromising safety or the environment.

"We have heard from the industry that they believe that BLM's administrative processes are too slow and result in unnecessary delay and added costs," Abbey said in a conference call with reporters. "And to some degree, their criticism is valid.

The announcement comes as Republican presidential contenders and the oil industry are attacking the administration for policies they claim have diminished oil and gas production on public property — and contributed to high prices at the pump. North Dakota has played prominently in their attacks because the state is in the midst of an oil shale drilling boom, most of which is occurring on private property outside of the federal government's control.

Agencies are understaffed

Ron Ness, president of the North Dakota Petroleum Council, which represents more than 200 companies working in the state, said the permitting process on federal land is overly burdensome and agencies are understaffed at present to deal with the rise in oil production in North Dakota and elsewhere.


TAMI A. HEILEMANN-OFFICE OF COMMUNICATIONS

Secretary Salazar visits a drilling rig actively producing oil from federal resources.

Ness said streamlining the permit process on federal land is welcome, "but proof is in the pudding."

The American Petroleum Institute and Republican critics also expressed cautious optimism, but again called for the administration to open up more areas to drilling and to simplify environmental reviews.

"Better government efficiency is certainly positive," said Rep. Doc Hastings, R-Wash., and chairman of the House Natural Resources Committee. "But the real problem over the past three years of the Obama administration isn't slow computers but policies that punish and discourage American-made energy on public lands." ●

● LAND & LEASING

Magnum Hunter closes on Eagle

By ERIC LIDJI

For Petroleum News Bakken

Magnum Hunter Resources Corp. subsidiary Williston Hunter ND LLC has closed on its acquisition of Eagle Operating Inc.'s assets in the Williston Basin, the company said April 2.

The acquisition includes Eagle's working interest ownership in 191 wells and some 15,500 gross acres in four counties in North Dakota.

The wells are currently producing around 350 barrels of oil equivalent per day and the leases have total proved reserves of 2.1 million barrels of oil equivalent, according to Houston-based Magnum Hunter.

From 47% to 95% interest

Magnum Hunter previously owned a 47 percent working interest in the properties and now owns a 95 percent working interest. The deal was effective a year ago, on April 1, 2011.

Although the original $57 million agreement included $55 million in cash and $2 million in Magnum Hunter restricted common stock, the companies adjusted the value because of the year-long delay between the announcement of the deal and the closing.

The purchase price was adjusted to around $48.5 million, Magnum Hunter said.

"We are pleased to complete this final agreement and acquire these operated Williston basin properties where we have been a minority owner for a number of years," Williston Hunter President Glenn Dawson said. "With this additional 'bolt-on' transaction, we will be establishing our first operating base in North Dakota, which has been a primary objective as we continue to grow our presence in the Williston basin. We are continuing our engineering evaluation of the properties and plan to implement additional pressure maintenance operations in an effort to enhance secondary oil recovery. A geological study of the properties has positioned the company to prudently begin development of the Bakken/Three Forks Sanish potential associated with the undeveloped leasehold."

Magnum Hunter and its subsidiaries operate crude, natural gas and natural gas liquids projects in West Virginia, Kentucky, Ohio, Texas, North Dakota and Saskatchewan. ●

● DRILLING & COMPLETION

Primary completes Montana test wells

By ERIC LIDJI

Petroleum News Bakken

Primary Petroleum Corp. has completed the drilling, coring and logging of six stratigraphic test wells as part of a joint venture exploration program in the Pondera and Teton counties in northwestern Montana, the company said April 10. The JV is testing the resource potential in its Pondera-Teton prospect in the southern Alberta basin Bakken fairway.

The vertical depths of the test wells ranged from 4,200 to 6,500 feet with at least 120 feet of Bakken core recovered from each well, Primary Petroleum said.

The joint venture will issue a more detailed update on its program after the analysis of data from the test wells and before embarking on a horizontal drilling program in the Bakken.

Meantime, production casing has been set in two wells, to test them for the planning phase of the horizontal program and to test the conventional or secondary hydrocarbon reservoirs — the JV has been analyzing data both from the Bakken and from conventional reservoirs, Primary Petroleum said.

The JV is testing the resource potential in its Pondera-Teton prospect in the southern Alberta basin Bakken fairway.

Four more wells

Based on data from the test wells, the partners have decided to drill up to four further vertical wells, to evaluate the Niksu, Sun River and Sunburst reservoirs. This drilling program will start immediately and will be completed prior to the start of the horizontal drilling, Primary Petroleum said.

Primary Petroleum also said that its joint venture partner is formulating plans to secure a drilling rig and support services for the horizontal drilling, with that program likely to start in late June or early July.

Primary Petroleum is continuing to acquire land in its area of interest, the company said. ●

COURTESY RANGELAND ENERGY

Exterior view of the rail loading canopy at COLT. Loading will initially be done through 10 loading arms. Plans are underway to add four additional loading arms.

● TRANSPORTATION & PIPELINES

Rangeland signs fourth crude buyer

North Dakota's first open-access crude marketing hub to start receiving test oil in early May; rail service follows month-end

By KAY CASHMAN

Petroleum News Bakken

In early May, one year after Rangeland Energy LLC began building North Dakota's first open-access crude marketing hub, the company expects to start receiving Bakken and Three Forks oil for testing and commissioning at its COLT Hub in Williams County.

At the same time, Rangeland will start building customer inventory for the hub and the COLT Connector, with rail service to begin the last week of May.

"The market's response to COLT has been outstanding," Rangeland President and CEO Christopher W. Keene told Petroleum News Bakken in an April 9 email. "We previously signed contracts with Tesoro, Flint Hills Resources (pipeline only) and Sunoco Logistics. Flint Hills recently amended their contract to include committed rail volumes in addition to their previously contracted pipeline volumes. "

And, he says, Rangeland just signed its fourth customer for its remaining rail capacity.

At the customer's request, Keene did not divulge its name.

But he did say COLT is now "contracted for a little more than 100,000 barrels per day of unit-train loading capacity," and is expanding its facility by 20,000 barrels a day to accommodate the increased rail volume.

'Point of liquidity' in the Bakken

Rangeland's four COLT customers are all crude oil buyers.

"They are all refiners … who have an operational need for Bakken crude. In addition to supplying their own refining interests, they all also have interest in third party marketing," Keene says. "By aggregating four large crude buyers at the COLT Hub, we have created a 'point of liquidity' in the Bakken."

As a result, Keene says Rangeland has producers interested in "gaining access to the COLT terminal, leasing tankage and selling 'bulk' to our four rail customers. In addition, we are continuing to market our pipeline capacity — the COLT Connector — and our ability to build additional tankage."

Pipeline services in and out of the Hub through Rangeland's COLT Connector and other planned gathering lines are also part of the package.

The Connecter is a 21-mile, 10-inch, bidirectional pipeline that will connect the COLT Hub to the Beaver Lodge/Ramberg junction and will be capable of transporting an additional 70,000 barrels per day.

Rangeland says it is building a 120,000-barrel storage tank at Ramberg to facilitate these movements.

When Rangeland announced the initial deal with Flint Hills in November, Flint Hills President Brad Razook said that COLT's "state-of-the-art facility" would "greatly enhance" his firm's ability to serve its customers in the Williston basin. Among others, Flint Hills owns a large refinery in Rosemount, Minn. That both buys Bakken crude and produces products for the Mid-west.

In January, Rangeland announced an agreement with Strobel Strarostka Transfer for rail operation services at COLT.

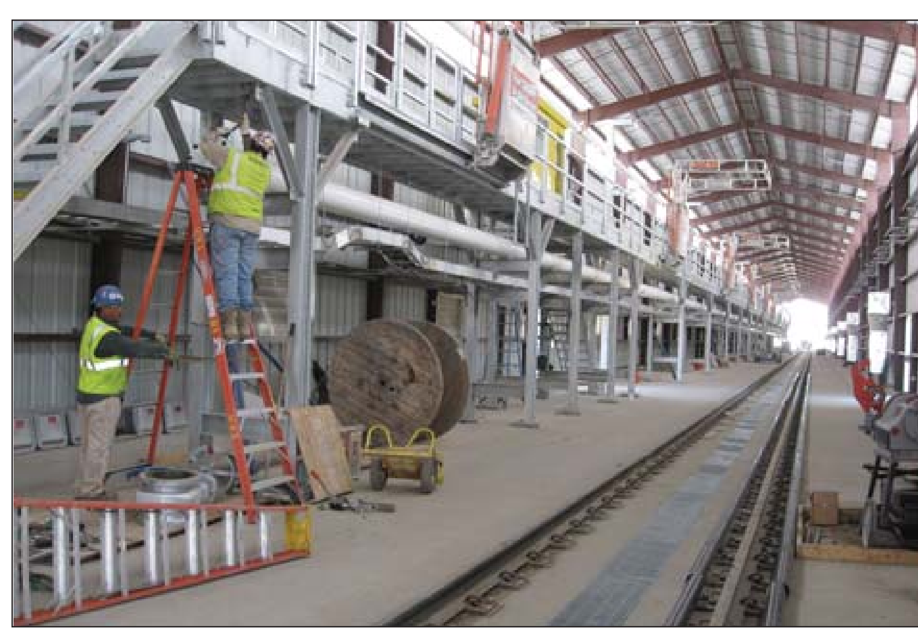
Headquartered in Nebraska, Strobel was formed in 1946. The company's primary focus is designing, constructing and operating rail trans-loading facilities for various industries, including the energy sector.

Rangeland was established in 2009 to focus on "developing, acquiring, owning and operating infrastructure for crude oil, natural gas and natural gas liquids, "with its primary focus being North Dakota and other shale oil and gas producing areas. ●

Contact Kay Cashman at publisher@petroleumnews.com

COURTESY RANGELAND ENERGY

The tank and receipt and delivery manifold for all truck and pipeline movements in and out of the COLT Hub. Three of the five crude oil storage tanks are visible in the background.



COURTESY RANGELAND ENERGY

Interior view of the rail loading canopy at COLT. Loading will initially be done through 10 loading arms. Plans are underway to add four additional loading arms.

COURTESY RANGELAND ENERGY

Taken at the COLT site in early April, on the left is Christopher W. Keene, president and CEO of Rangeland Energy, and on the right is Kevin Goins, president of Strobel Starostka Transfer.

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BAKKEN RESERVES

the central and deeper portions of the Williston basin that in addition to Montana and North Dakota, include the Canadian provinces of Saskatchewan and Manitoba. However, USGS reserve estimates on the Bakken are limited to U.S. territory.

The Bakken reserve estimate of 2008 was larger than all other USGS oil assessments of the lower 48 states and was the largest continuous oil accumulation ever assessed by the USGS. A "continuous" oil accumulation means that the resource is dispersed throughout a geologic formation rather than existing as discrete, localized occurrences, according to the USGS. At the time, the next largest continuous oil accumulation in the United States was the Austin Chalk of Texas and Louisiana, with an estimated 1 billion barrels of technically recoverable oil.

The next Bakken reserve update was to begin in October 2011 and take two years to complete, depending on project financing, according to the U.S. Interior Department.

Drilling, fracking more advanced

But a lot of Bakken oil has gone to market since the 2008 USGS reserve estimate. For one, more well data is available for analysis. Back then information was gleaned from just a few hundred producing wells, compared to thousands of wells that have since been drilled and put on line. Moreover, the technologies of horizontal drilling and shale fracturing, which made the Bakken oil boom possible, are far more advanced.

Therefore, the USGS 2013 reserve estimate is expected to be around 8 billion barrels or more of technically recoverable oil, depending on whether additional oil zones, such as the Three Forks, located below the Bakken formation and sourced by the Bakken, is included in the next reserve assessment, according to industry leaders.

"That's what I'm hearing based on new data that's come in on the wells that have been drilled," Laura Erickson, an industry consultant and head of Williston, North Dakota-based Plains Energy Technical Resources, LLC, said of the 8 billion barrels reserve projection. "There have been a lot of development areas; new fields that have been developed; and plenty of wells that have been drilled."

"I think there are a lot of people who think that (8 billion barrels) is reasonable," Terry D. Hildestad, president and chief executive officer of MDU Resources Group, told PN, noting that production from his company's last eight wells was up more than 40 percent from wells MDU drilled a year earlier.

"I mean that is phenomenal," Hildestad added. "That's because we're getting better at understanding the geology, the fracking and all of that stuff you do in a well. And that's not unusual. That probably happened in Alaska and to a lot of other oil plays. People get smarter and get better."

Recovery rate is 3-6%

Moreover, the Bakken is in a relatively early phase of development, with a paltry 3-6% recovery rate of all the oil in place. However, once in-field drilling begins in earnest, and enhanced recovery techniques, such as CO2 injection and water flooding, are employed, the Bakken's ultimate oil reserves could reach well beyond the 2013 estimate of 8 billion barrels.

Marty Beskow, executive vice president of Voyager Oil & Gas, pointed out that many operators have been drilling single wells on a typical 1,280-acre spacing unit in order to secure mineral rights to their leases while booking some reserves. However, he said, each unit could ultimately support five wells in the Bakken alone and another five in the Three Forks, for a total of 10 wells per unit.

"I don't know whether the study will include Three Forks estimates," Beskow said of the 2013 USGS study. "But both of them should be increasing because of those technology advances and just being farther along the learning curve. For each well that an operator drills that's another piece of information they didn't have before. I believe the estimates for the Bakken and Three Forks will be higher on whatever number they come up with."

Geological and engineering consultant Kathleen Neset, president of Neset Consulting, came to North Dakota 33 years ago as a geologist with Core Laboratories. She's known as the "Godfather of the Bakken."

More rock, more reservoir

"I've seen people coming up with even larger numbers" than 8 billion barrels, depending on how much of the Three Forks formation is included in the USGS study," she said. "You add more rock to the reservoir, you add more reserves. But keep in mind that the entire system is sourced by that Bakken shale. Even the Three Forks is sourced by that same rock."

The USGS will include both the Bakken and Three Forks formations in its 2013 assessment.

"The more we know about the geology, the more robust and accurate the assessment can be," Stephanie Gaswirth, USGS task chief of the Williston basin assessment, was quoted as saying in the April 7 edition of the Dickinson Press.

The USGS did not study the Three Forks formation in its 2008 assessment, Gaswirth added, telling the newspaper, "at that point, there was little activity in the Three Forks, and there has been quite a boom in the Bakken and Three Forks. There's a lot of new information both geologic and production wise." ●

continued from page 1

A SERIOUS LOOK

sively researching the petrochemical, value-added aspects of utilizing the natural gas liquids in North Dakota, in order to take it that next step further down the petrochemical chain," Kringstad said.

"Without disclosing proprietary information," Warner asked whether Kringstad could give him an approximate "time window," when plans might come together.

"Right now they are doing quite a bit of homework. If they decide to move forward you could see activity within the next 2-5 years," Kringstad replied.

"They," as it turns out, is more than one firm, per Ken Otto, senior vice president with energy consultancy Purvin & Gertz.

"There is more than one party involved," he told Petroleum News Bakken April 12; not only petrochemical plants, but at least one party is "looking at grassroots refineries" — a party other than the joint venture announced in February between MDU Resources Group subsidiary WBI Holdings Inc. and Calumet Refining LLC, to explore the feasibility of building and operating a 20,000 barrel per day diesel refinery in southwestern North Dakota.

In an interview with Petroleum News Bakken on April 9, Kringstad "for confidentiality reasons," could still not reveal company names, but he confirmed "propane and butane is the feedstock" one "particular (petrochemical) group is looking at," because of the "growing supply of natural gas liquids," produced in North Dakota.

Propane and butane are both used as a petrochemical feedstock in the production of ethylene, among other things, and propane is also used as a heating, engine and industrial fuel.

Feedstock made from cheap natural gas versus the more expensive crude oil is proving a boon for the petrochemical industry.

Due to an "improved outlook for U.S. natural gas supply from shale," Dow Chemical is building an ethylene plant in Louisiana and re-starting its ethylene facility near Hahnville, La.

Shell, which is building a new petrochemical refinery in Pennsylvania for access to Marcellus shale NGLs, is also looking at a $10 billion Louisiana plant to convert natural gas to diesel.

In North Dakota, Oneok Partners has joined Plains All American in rolling out plans to cash in on Bakken natural gas, a chunk of which is being flared, recently announcing the first phase of a 270-mile gas gathering system and related infrastructure, which followed Plains' decision to build a natural gas processing plant at Ross.

Oneok, which is planning to invest up to $1.8 billion in Bakken projects over the next three years, has said the projects it announced in 2011 and 2012 will accommodate the growing NGL supplies in the Mid-Continent and help alleviate the infrastructure constraints between it and Gulf Coast markets.

In the Permian basin Apache is producing so much oil and associated natural gas and gas liquids that it has partnered with Crosstex Energy to build an $85 million natural gas processing plant to avoid flaring wasted gas. Crosstex in turn has bought and upgraded a nearby railroad terminal to transport the gas liquids to Louisiana for petrochemical refining.

In the latest Fortune Hunt, Don Logan, president of the Louisiana Oil and Gas Association, was quoted as saying, "low-cost natural gas is the elixir, the sweetness, the juice, the Viagra. What it's doing is changing the U.S. back into the industrial power of the day."

So, taking a few steps down the value-added chain, as Warner asked Kringstad, could a petrochemical industry along with a "more aggressive manufacturing sector" be a possibility for North Dakota?

In that same Fortune Hunt issue U.S. Steel CEO John Surma was quoted as saying, "The discovery and development of North America's shale resources has the potential to be the most remarkable source of economic growth and prosperity that any of us are likely to encounter in our lifetimes." Surma said "it's a virtuous cycle: More drilling requires more steel, and lower energy costs give U.S. steel producers a cost edge. This at a time when the Department of Energy reports that the energy intensity of U.S. steel companies is now among the lowest in the world."

In Louisiana's St. James Parish, Nucor Steel broke ground last year on a $3.4 billion steel plant, the first major facility built in the U.S. in decades, Fortune Hunt reported.

U.S. Steel is also investing in a new facility in Lorain, Ohio, and V&M Star Steel plans to spend $650 million on a small-diameter rolling mill in Youngstown, Ohio, the publication reported.

But what about producing steel or other goods in North Dakota, especially western North Dakota, which is already having problems getting its raw products to market and finding enough workers, despite above-average wages?

Kenneth Otto said that from a "hydrocarbon perspective there's plenty of hydrocar-

see **A SERIOUS LOOK** *page 17*

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PRODUCERS BEWARE

Moreover, add to the mix North Dakota's high production tax, plus possible heavy-handed U.S. Environmental Protection Agency, or EPA, regulations, and industry could be headed for big trouble.

John Zimmerman, founder and managing member of Intervention Energy, a small E&P independent based in Minot, pointed out during his conference presentation that many Bakken producers were hurt by the 2008 economic recession and collapsing oil prices. Since then producers have learned the wisdom of hedging their production to guard against sudden, steep declines in prices, he added.

"We've got to make sure we are protected because, if we keep on drilling and oil falls to 50 bucks, our economics would be severely hampered," Zimmerman said. "That's one price risk that we do manage."

However, he said, one risk that can't currently be managed is the actual price of Bakken oil, which because of transportation limitations and other bottlenecks, trades at a big discount to WTI and a huge discount to Brent. The monthly average for Bakken crude through April 11 was $81 per barrel versus $97.60 for WTI. At PN's deadline, Brent was steady at around $120 per barrel.

The oil blowout

During the so-called oil price blowout earlier this year, thought to be spurred by President Obama's decision not to permit the U.S. portion of the Canadian Keystone pipeline, Bakken oil fell in to the $70-$80 per barrel range and came dangerously close to the upper end of the $40-$60 price threshold thought to be required to do business in the Bakken play.

"The main thing for us is that if you look at what's happening in the world, you've got Brent crude about $20 above WTI," Zimmerman said. "And you've got Bakken crude $25-to-$30 below that. So, you've got, say, a $40 spread in there and it cost me $10 to get the oil down (by rail) to St. James" refinery in Louisiana.

He added: "We're confident that over time this might be a short-term hit. The infrastructure's going to come; the pipelines are going to get built. You've seen how rail has been a bit of a savior and in a big way; because it is the outlet we would not have had if we just had a pipeline."

Industry: production tax too high

For the most part, industry seems to be well satisfied with the current business climate in North Dakota, except when it comes to the state's production tax, believed to be among the highest in the country.

"We're at 11.5 percent tax right now on production," Zimmerman noted. "So if you throw in 20 percent royalty and an 11.5 percent tax in there, you're already 30 percent off the top line before you get anything else."

GeoResources Inc. Chief Operating Officer Robert J. Anderson, in his conference presentation, called on attendees to urge the state of North Dakota to reduce the production tax, or at least provide oil companies with more incentives.

"If the tax structure got out of whack or got too high, I guarantee that companies would probably find somewhere else to go," he said. "I'm not saying that (North Dakota) is the most difficult environment tax wise to operate in, and there are some advantages we got early on. But I wish they would keep those for a few more years."

GeoResources, in addition to the Bakken, is also heavily invested in other regions, including the Eagle Ford shale play in Texas, where the company's returns are slightly better than in North Dakota.

"First, it's a little easier and cheaper to operate in Texas, mostly because of weather," Anderson said. "But there is a little better take-away capacity, so you get access to market a little bit better. And lastly, what a lot of people don't recognize is the state of Texas does have a lower production tax than the state of North Dakota."

He added: "There are some companies that are tied to the Bakken. They are going to stay here regardless because they don't have other assets. But companies that have a portfolio of opportunities … they could take their dollar to somewhere else."

EPA's fracking study

But perhaps industry's biggest concern these days has to do with possible stiff EPA regulations dealing the effects, if any, of hydraulic fracturing on drinking water resources, which at the extreme could shut down the entire Bakken oil patch.

"It would certainly kill this play, or be detrimental to this play," said Laura Erickson, an industry consultant and head of Williston, North Dakota-based Plains Energy Technical Resources, LLC. ●

continued from page 1

NIGERIAN CRUDE

these inland crudes have been selling at a discount to waterborne crudes on the Gulf Coast, providing refiners in that area further incentive to switch from imported crude to inland, domestically-produced crude when available," the agency noted in a briefing.

A third of the decline, however, can be traced to two Philadelphia-area refineries idled in the second half of last year, the EIA said. ConocoPhillips' Trainer refinery and Sunoco's Marcus Hook refinery imported 173,000 bpd of Nigerian crude in January 2011.

—ERIC LIDJI

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A SERIOUS LOOK

bons to support some level of petrochemical facility in the state or the region."

But the discussion is whether or not North Dakota is the "optimum location," he said.

Some would contend "western North Dakota is not the easiest place to build an industrial infrastructure. It's somewhat analogous to Alaska, to the state there trying to entice a petrochemical industry to Alaska, based on North Slope hydrocarbons," he said, noting the effort had not been successful.

That said, North Dakota, Otto pointed out, "is closer to markets for petrochemicals, but Ohio, West Virginia and Pennsylvania are probably better situated — and that's where companies are looking at siting some new facilities, taking advantage of Marcellus NGLs."

Still, Otto did not rule out the possibility of North Dakota being successful in securing value-added petrochemical plants or refineries, noting both had the support of the state.

"But then the state of Alaska also supported them — so does Ohio, West Virginia, and Pennsylvania," he added.

—KAY CASHMAN

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WELL COSTS

Before joining Voyager in early April, Beskow was a senior equity analyst at Northland Securities, operating as Northland Capital Markets, covering oil exploration and production companies, many with operations focused on the Williston Basin.

Well costs about $10 million

It costs about $10 million to drill a well in the Williston Basin, compared to $5 million per well just a few years ago, Beskow said, adding that actual costs vary depending on well location and degree of bottlenecks.

However, in addition to the inefficiencies, he added, well costs have increased because operators are drilling more and longer horizontal wells. More hydraulic fracturing stages are involved; and sand, ceramic or other granular material (proppants) pumped with water and chemicals under high pressure into the fractured rock to keep the channels in the rock open and draining oil also are more expensive.

"A lot of things have been done to improve the completion techniques that have added to that cost," Beskow said. "But I would say that $10 million (per well) is pretty close to the peak. The expenses are probably not going to increase much more than that. Again, it is different for each operator in different areas, but I think we are reaching that plateau here in 2012. I think we are very close to the peak."

Beskow said he expects well costs eventually to decline 10 percent to 20 percent, "assuming we can get our arms around those bottlenecks. The costs should start working themselves down with having adequately trained employees and having the equipment available."

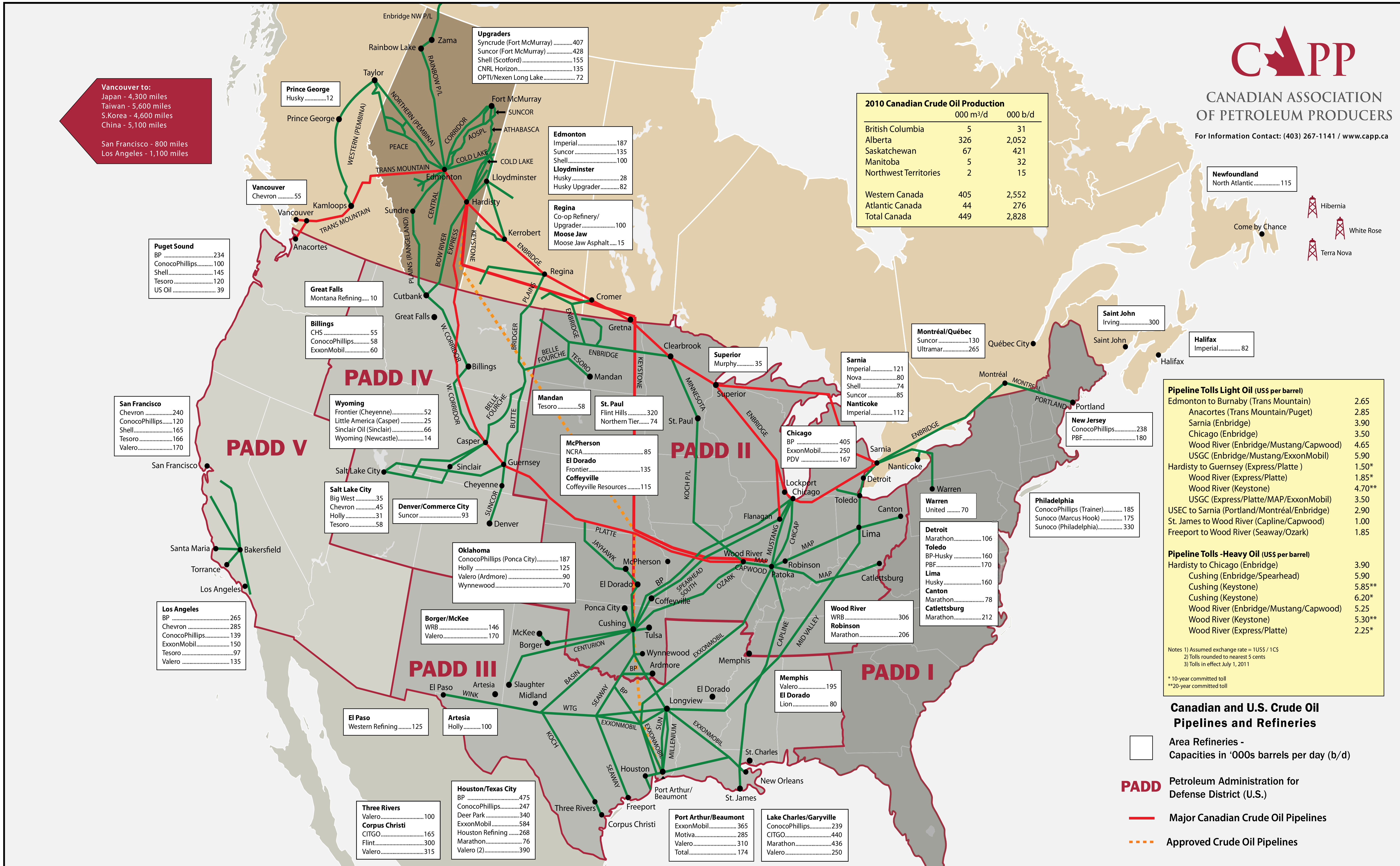
Bakken challenges endless

For MDU Resources Group and its president and chief executive officer, Terry D. Hildestad, challenges posed by the Bakken have been endless. That's because as a large, diversified company, North Dakota-based MDU participates in virtually every aspect of the Bakken boom: utilities, exploration and production, and construction.

"We're in the utility business and it's a challenge with the hookups and can you get them done fast enough. And the E&P business — can you get enough crews in there to complete the wells? And then there are our construction people. We can get the work, but you need to house your people. So I would have to say that … the infrastructure needed to support all of this development is a big issue," Hildestad said.

He agrees with Voyager's Beskow that companies are getting a better grip on bottlenecks that have slowed the production process in the Bakken.

Hildestad said: "It used to be that fracking was the challenge. But I think the fracking is getting caught up. Then it was the workover rigs. I think they are getting caught up on the workover rigs. But now, of course, it is the housing. We were blessed to have a very mild winter, and people got to stay in their campers. But here you can get some famous North Dakota winters. So it's a combination. The basic infrastructure is working to get caught up. I drive around Minot here. They are building apartments all over. But if you get a good rain you are going to park in the mud." ●


CAPP
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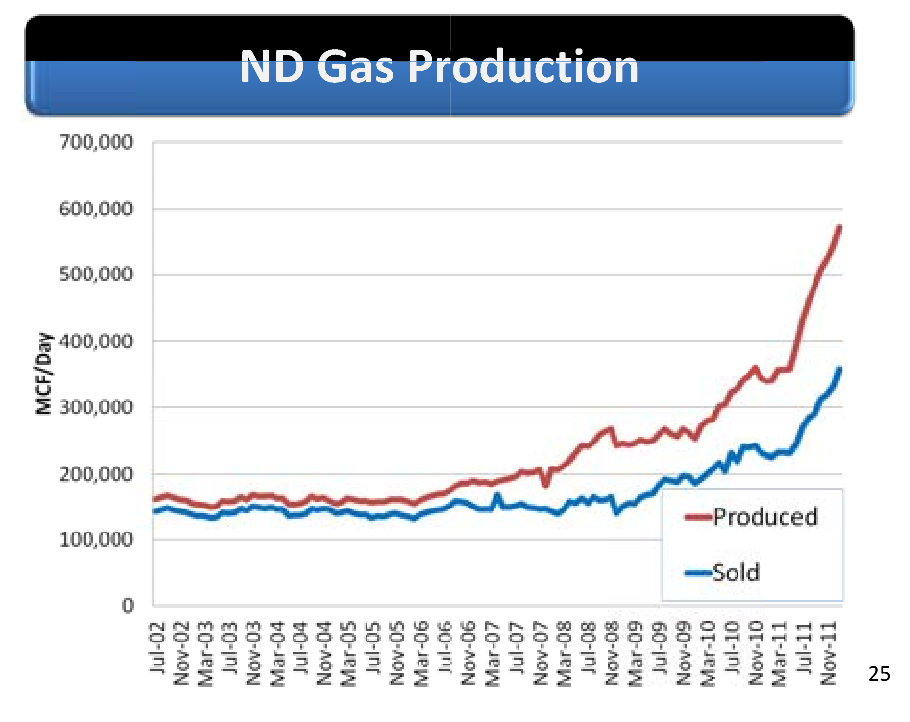
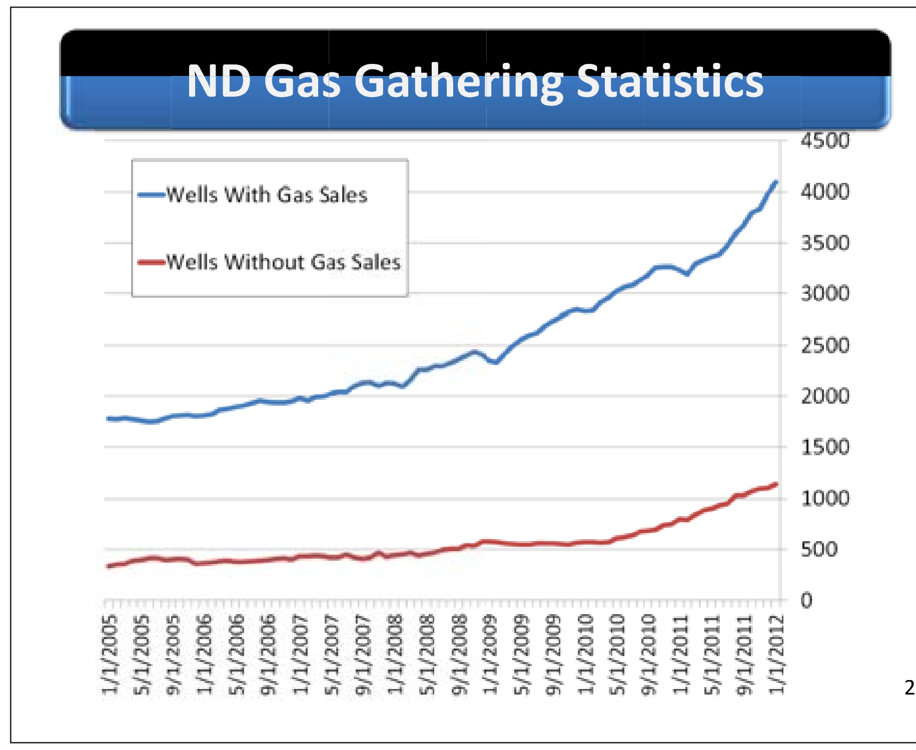
2010 Canadian Crude Oil Production
000 m³/d 000 b/d
British Columbia 5 31
Alberta 326 2,052
Saskatchewan 67 421
Manitoba 5 32
Northwest Territories 2 15
Western Canada 405 2,552
Atlantic Canada 44 276
Total Canada 449 2,828
Vancouver to:
Japan - 4,300 miles
Taiwan - 5,600 miles
S.Korea - 4,600 miles
China - 5,100 miles
San Francisco - 800 miles
Los Angeles - 1,100 miles
Upgraders
Syncrude (Fort McMurray) 407
Suncor (Fort McMurray) 428
Shell (Scotford) 155
CNRL Horizon 135
OPTI/Nexen Long Lake 72
Prince George
Husky 12
Vancouver
Chevron 55
Puget Sound
BP 234
ConocoPhillips 100
Shell 145
Tesoro 120
US Oil 39
Edmonton
Imperial 187
Suncor 135
Shell 100
Lloydminster
Husky 28
Husky Upgrader 82
Regina
Co-op Refinery/Upgrader 100
Moose Jaw
Moose Jaw Asphalt 15
Great Falls
Montana Refining 10
Billings
CHS 55
ConocoPhillips 58
ExxonMobil 60
Wyoming
Frontier (Cheyenne) 52
Little America (Casper) 25
Sinclair Oil (Sinclair) 66
Wyoming (Newcastle) 14
San Francisco
Chevron 240
ConocoPhillips 120
Shell 165
Tesoro 166
Valero 170
Salt Lake City
Big West 35
Chevron 45
Holly 31
Tesoro 58
Denver/Commerce City
Suncor 93
Mandan
Tesoro 58
St. Paul
Flint Hills 320
Northern Tier 74
McPherson
NCRA 85
El Dorado
Frontier 135
Coffeyville
Coffeyville Resources 115
Oklahoma
ConocoPhillips (Ponca City) 187
Holly 125
Valero (Ardmore) 90
Wynnewood 70
Borger/McKee
WRB 146
Valero 170
Los Angeles
BP 265
Chevron 285
ConocoPhillips 139
ExxonMobil 150
Tesoro 97
Valero 135
El Paso
Western Refining 125
Artesia
Holly 100
Three Rivers
Valero 100
Corpus Christi
CITGO 165
Flint 300
Valero 315
Houston/Texas City
BP 475
ConocoPhillips 247
Deer Park 340
ExxonMobil 584
Houston Refining 268
Marathon 76
Valero (2) 390
Port Arthur/Beaumont
ExxonMobil 365
Motiva 285
Valero 310
Total 174
Lake Charles/Garyville
ConocoPhillips 239
CITGO 440
Marathon 436
Valero 250
Memphis
Valero 195
El Dorado
Lion 80
Wood River
WRB 306
Robinson
Marathon 206
Chicago
BP 405
ExxonMobil 250
PDV 167
Superior
Murphy 35
Sarnia
Imperial 121
Nova 80
Shell 74
Suncor 85
Nanticoke
Imperial 112
Warren
United 70
Detroit
Marathon 106
Toledo
BP-Husky 160
PBF 170
Lima
Husky 160
Canton
Marathon 78
Catlettsburg
Marathon 212
Montréal/Québec
Suncor 130
Ultramar 265
Saint John
Irving 300
Halifax
Imperial 82
Newfoundland
North Atlantic 115
New Jersey
ConocoPhillips 238
PBF 180
Philadelphia
ConocoPhillips (Trainer) 185
Sunoco (Marcus Hook) 175
Sunoco (Philadelphia) 330
Hibernia
White Rose
Terra Nova
Come by Chance
PADD I
PADD II
PADD III
PADD IV
PADD V
Pipeline Tolls Light Oil (US$ per barrel)
Edmonton to Burnaby (Trans Mountain) 2.65
Anacortes (Trans Mountain/Puget) 2.85
Sarnia (Enbridge) 3.90
Chicago (Enbridge) 3.50
Wood River (Enbridge/Mustang/Capwood) 4.65
USGC (Enbridge/Mustang/ExxonMobil) 5.90
Hardisty to Guernsey (Express/Platte) 1.50*
Wood River (Express/Platte) 1.85*
Wood River (Keystone) 4.70**
USGC (Express/Platte/MAP/ExxonMobil) 3.50
USEC to Sarnia (Portland/Montréal/Enbridge) 2.90
St. James to Wood River (Capline/Capwood) 1.00
Freeport to Wood River (Seaway/Ozark) 1.85
Pipeline Tolls -Heavy Oil (US$ per barrel)
Hardisty to Chicago (Enbridge) 3.90
Cushing (Enbridge/Spearhead) 5.90
Cushing (Keystone) 5.85**
Cushing (Keystone) 6.20*
Wood River (Enbridge/Mustang/Capwood) 5.25
Wood River (Keystone) 5.30**
Wood River (Express/Platte) 2.25*
Notes 1) Assumed exchange rate = 1US$ / 1C$
2) Tolls rounded to nearest 5 cents
3) Tolls in effect July 1, 2011
* 10-year committed toll
**20-year committed toll
Canadian and U.S. Crude Oil Pipelines and Refineries
Area Refineries - Capacities in '000s barrels per day (b/d)
PADD Petroleum Administration for Defense District (U.S.)
Major Canadian Crude Oil Pipelines
Approved Crude Oil Pipelines
Designed by Western Sky Creative www.westernsky.ca

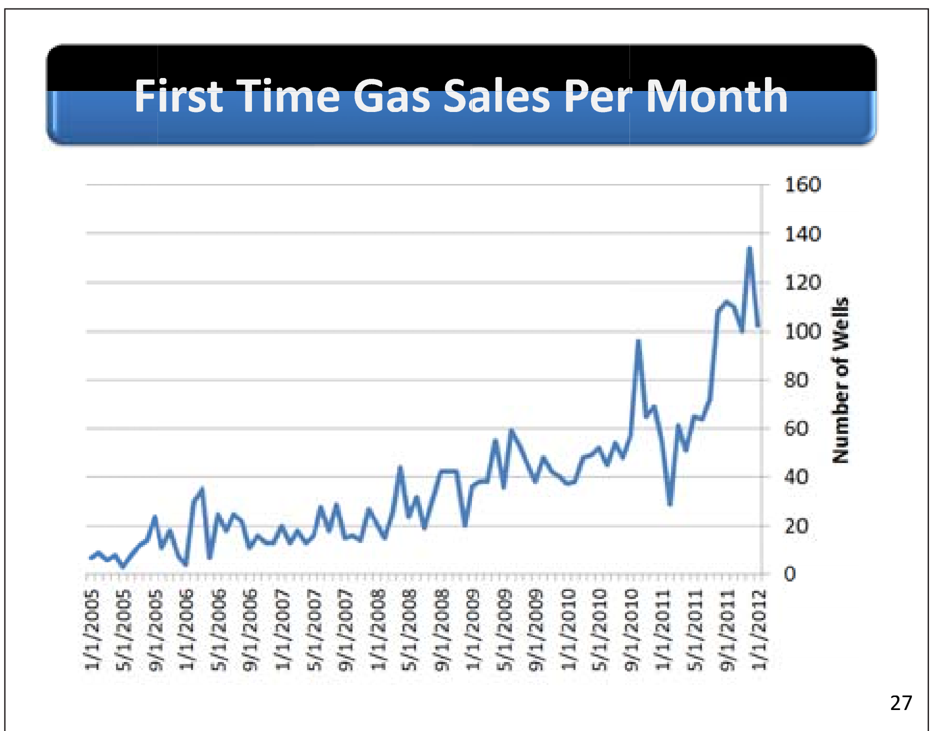
North Dakota's natural gas



NORTH DAKOTA PIPELINE AUTHORITY



NORTH DAKOTA PIPELINE AUTHORITY



NORTH DAKOTA PIPELINE AUTHORITY

Moving away from gas flaring

According to a late 2011 report from the U.S. Department of Energy's Energy Information Administration, natural gas production in North Dakota has more than doubled since 2005, largely due to associated natural gas from growing oil production in the Bakken petroleum system. Gas production averaged more than 601 million cubic feet per day in February, compared to a 2005 average of about 160 mmcf/d.

Due to insufficient natural gas pipeline capacity and processing facilities, about one-third of North Dakota's natural gas production is being flared.

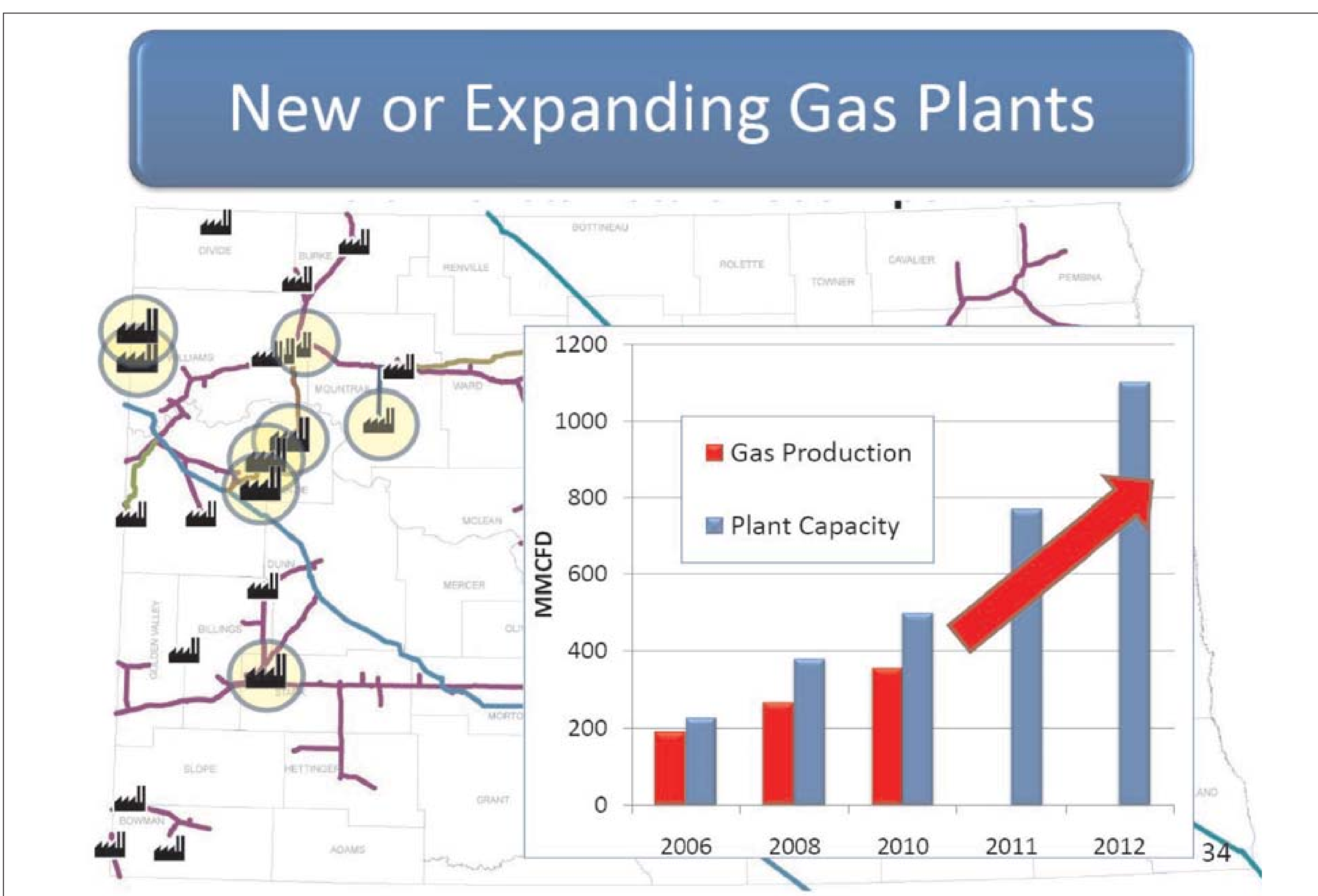
According to EIA, it is generally better to flare natural gas than to vent it into the atmosphere because natural gas — methane — is a much more powerful greenhouse gas than carbon dioxide.

But as natural gas infrastructure is built, the trend of flaring gas is painstakingly reversing.

According to Justin Kringstad, director of the North Dakota Pipeline Authority, in December and January more than 100 new wells started selling gas each month.

A year ago there were less than 40 wells hooked up to infrastructure to sell gas every month, he said.

—KAY CASHMAN



NORTH DAKOTA DEPARTMENT OF MINERAL RESOURCES