

BAKKEN

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Breakout 2015

BAKKEN MID-YEAR REVIEW

**RIDING THE ROLLERCOASTER:
HOW INDUSTRY SUPPLIERS
WEATHER THE DRILLING SLOWDOWN**

**NATIONAL RIG COUNT REMAINS
LOW, PUSHING NIMBLY UPWARD**

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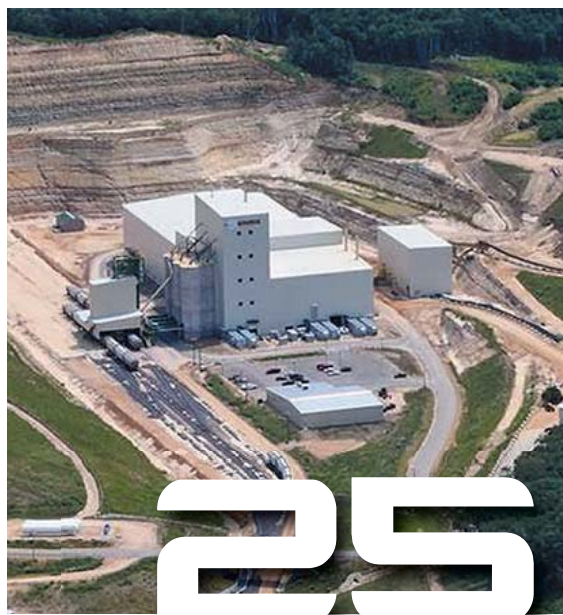
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BROADENING BAKKEN OIL MARKETS

By Brian Kroshus, Publisher



AP Photo/Nati Harnik

Pipes for the proposed Dakota Access oil pipeline, that would stretch from the Bakken oil fields in North Dakota to Patoka, Ill., arrive by rail, Saturday, May 9, 2015, at a staging area in Worthing, S.D. The proposed oil pipeline will traverse North and South Dakota, Iowa and Illinois.

As oil activity in the Bakken continues to mature, infrastructure build out which has lagged production, is slowly catching up. That's especially true when it comes to moving product to market. Pipeline capacity in particular, necessary to efficiently move oil and natural gas produced from the highly prolific play to market, continues to be in high demand.

Without question, pipelines, especially those capable of moving oil directly to final-destination refineries, or to points in-between where it can be shifted to

other pipelines or rail transport in order to complete the shipping phase, are typically more attractive than relying on rail as a means of moving oil to market.

Shipping oil by rail is generally more expensive than by pipeline, at a cost of \$10 to \$15 per barrel versus \$5 per barrel when pipelines are used. Cost difference alone doesn't necessarily offer a complete picture of how shipping methods impacts the bottom line, however. More so, what refiners are willing to pay for various grades of oil, especially Bakken crude, does.

Support or demand from a refinery standpoint, in effect processors capable of refining Bakken crude, continues to change. Bakken crude's composition, compared to heavy crude from Canada, can't be processed by all refineries.

Often, Bakken crude is transported considerable distances from the Williston Basin to coastal refineries capable of handling the light-sweet, shale based oil, meaning higher shipping costs.

Currently, a number of refineries equipped to process Bakken crude are

Pipeline capacity in particular, necessary to efficiently move oil and natural gas produced from the highly prolific play to market, continues to be in high demand.

located in eastern U.S. markets. Their removed location in terms of where the Bakken is geographically located, often means sufficient pipeline capacity necessary to connect them directly to Williston Basin oil supplies, isn't always available.

More refineries utilizing Bakken crude

Increasingly, more U.S. midcontinent refineries situated closer to the Williston Basin are being reconfigured to handle Bakken crude. Although the conversion has been late in coming considering the Bakken boom began in 2008, it's gaining momentum. More and more crude oil processors are making the switch, in order to process Bakken crude.

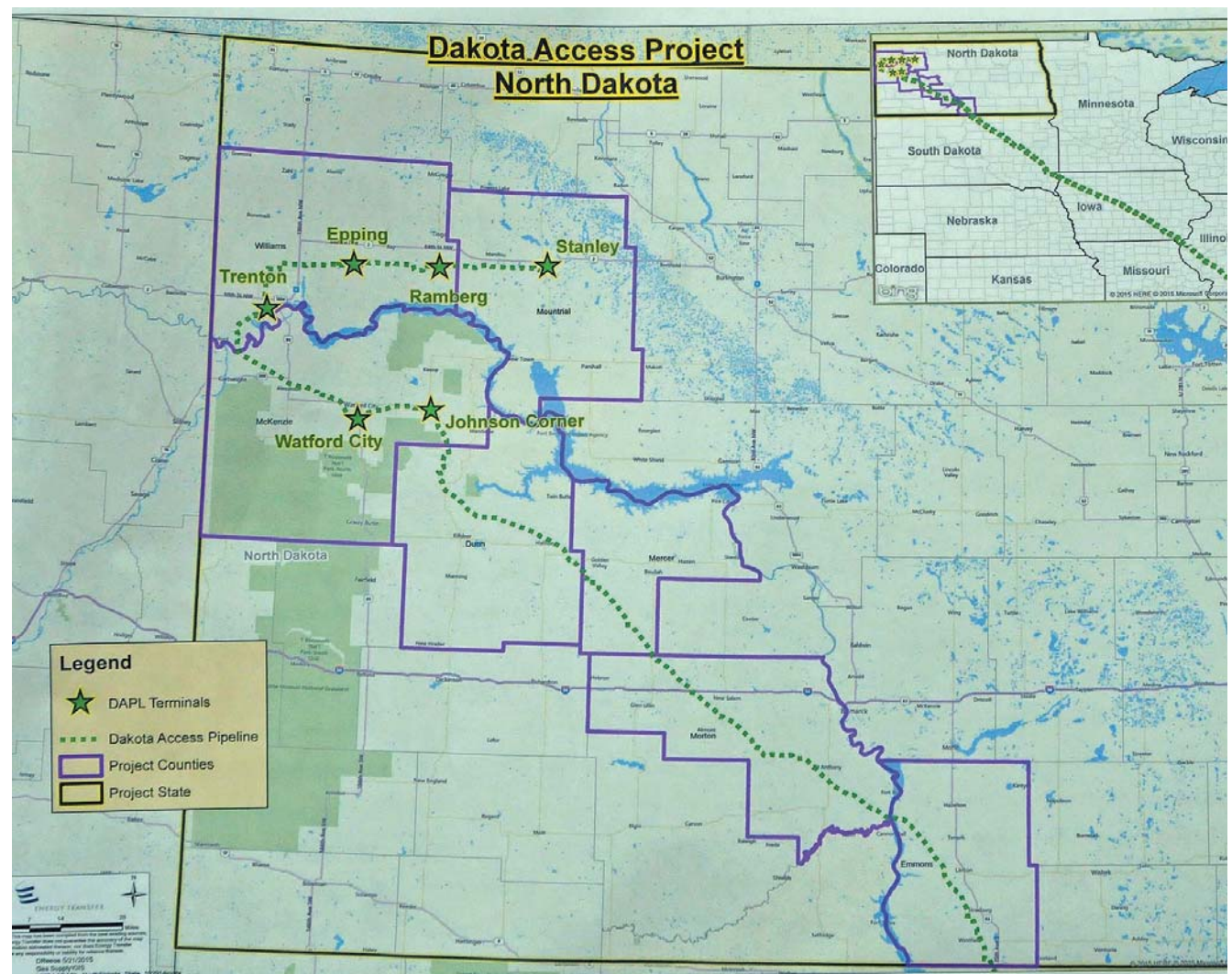
St. Paul Park Refinery, located on the Mississippi River in St. Paul Park, Minn., is a prime example. The refinery plans \$100 million in upgrades that will boost its refining capacity to more the 100,000 barrels per day, in effect allowing it to process more light sweet crude from the Bakken.

The Minnesota refinery currently relies on Bakken crude to meet 58 percent of its needs. After upgrades, more light sweet crude from the Bakken instead of heavy Canadian crude, can be utilized. As more refiners adapt their operations to handle more light sweet crude and additional east-west, direct-to-refinery pipeline infrastructure is placed in service, oil producers in the Williston Basin benefit.

Marathon Petroleum is another company focused on using more on Bakken oil for its refineries in Canton, Ohio, and Catlettsburg, Ky. Recently, it invested \$250 million to upgrade both facilities to handle more oil produced from the Williston Basin. Next year, it plans to spend an additional \$140 million on its Robinson, Ill., refinery to increase light sweet crude use by 30,000 barrels per day.

In the Bakken's back yard, a joint venture by WBI Energy, Inc., a part of the MDU Resources Group and Calumet Specialty Products Partners, facilitated the construction of the first new greenfield fuels refinery built in the U.S. in nearly 40 years, the Dakota Prairie Refinery.

Located near Dickinson, N.D., the refinery which opened in May with a



TOM STROMME/Tribune

The proposed route of the Dakota Access Pipeline project.

construction cost over \$400 million, will utilize 20,000 barrels of Bakken crude daily, converting it to 7,000 barrels per day of diesel fuel, 6,500 barrels per day of naphtha and up to 6,000 barrels per day of atmospheric tower bottoms.

For North Dakota, the Dakota Prairie Refinery is another example of the state's aggressive value-added approach

for commodities produced within the state's borders.

Linking Bakken crude directly to refineries

As more refineries adapt and utilize more Bakken crude, a more direct means of moving oil from the Williston Basin to them via pipeline, will be needed. While the Keystone XL often dominates

pipeline discussions, other pipelines of even greater significance to North Dakota oil producers, are in the works.

Enbridge Energy's Sandpiper Pipeline project, in terms of its importance to Bakken producers, is one such project. The nearly \$2.6 billion, approximately 616-mile pipeline is designed to move oil from Tioga, N.D., through Northern

As more refineries adapt and utilize more Bakken crude, a more direct means of moving oil from the Williston Basin to them via pipeline, will be needed. While the Keystone XL often dominates pipeline discussions, other pipelines of even greater significance to North Dakota oil producers, are in the works.

Minnesota, to terminals in Clearbrook, Minnesota, and Superior, Wis.

Once constructed, the Sandpiper could handle roughly one-half of current Bakken production, 600,000 barrels, greatly reducing reliance on rail as a means of transporting Bakken oil. Enbridge indicates that from its Minnesota and Wisconsin terminals, oil can then be shipped through other Enbridge and third-party pipelines to North American refineries in the Midwest and along the East Coast.

A few more hurdles need to be cleared in order for the Sandpiper Pipeline to be built. Finalizing landowner easement agreements, and garnering additional support from local and state elected officials, will allow the project to become a reality. Current projections are for construction to begin in 2016, and for the pipeline to be in service sometime in 2017.

Another proposed pipeline is the Dakota Access Pipeline Project. The pipeline would stretch 1,134 miles,

connecting Bakken and Three Forks production areas to Patoka, Ill. The 30 inch pipeline would carry 450,000 barrels per day, with capacity as high as 570,000 barrels per day or more, of Bakken crude.

Once complete, shippers will be able to access multiple markets, including Midwest and East Coast markets as well as Gulf Coast facilities. Similar to the Sandpiper project, more work lies ahead in order for construction to begin.

Enhancing access to markets located throughout the country, particularly to those in Midwestern states, through the creation of new pipeline infrastructure linking Bakken oil producers directly to processors, has and continues to be a key strategy.

Broadening the market for Bakken crude oil, ensures oil production in the Williston Basin will be economically feasible for years to come. ■

Enhancing access to markets located throughout the country, particularly to those in Midwestern states, through the creation of new pipeline infrastructure linking Bakken oil producers directly to processors, has and continues to be a key strategy.



TOM STROMME/Tribune

This railroad siding near the Enbridge Energy facility in Berthold is part of the growing Enbridge North Dakota System that will soon have the capacity to move 148,500 barrels of oil per day from the Bakken and Three Forks formations.

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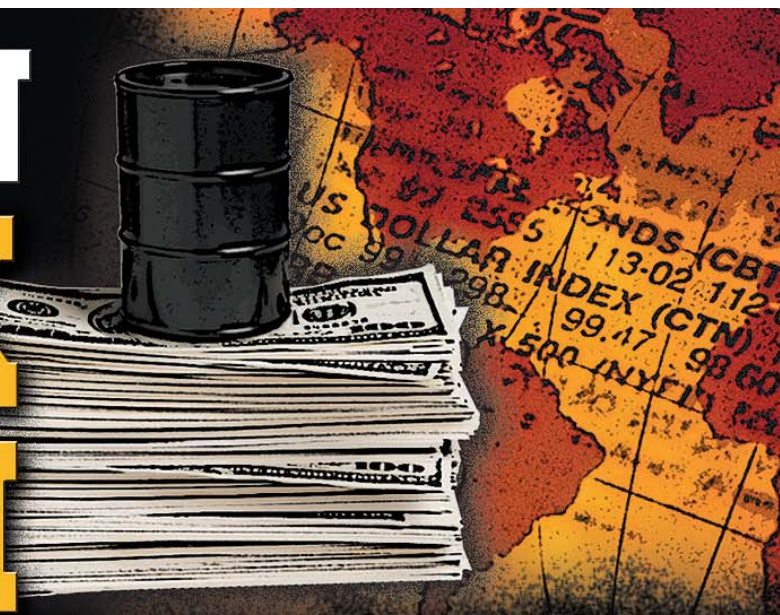
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BAKKEN STOCK WATCH



Company Name	Ticker Symbol	Market Cap	Number of Outstanding Shares	Stock Price 7/22/15	52 Wk Range	Number of Employees	Website
AECOM Technology Corporation	ACM	4.69B	150.38M	31.56	24.82 - 38.24	95,000	http://www.aecom.com
American Eagle Energy Corp.	AMZG	5.87M	30.45M	0.19	.12 - 6.70	24	http://www.eternalenergy.com
Baker Hughes	BHI	25.76B	434.68M	58.28	47.51 - 74.96	59,000	http://www.bakerhughes.com
Basic Energy Services, Inc.	BAS	269.46M	42.64M	6.25	5.00 - 28.68	5,400	http://www.basicenergyservices.com
Baytex Energy Corp.	BTE	2.21B	205.60M	10.56	10.42 - 45.44	N/A	http://www.baytex.ab.ca
Berkshire Hathaway	BRK-B	350.73B	1.23B	143.52	122.72 - 152.94	302,000	http://www.berkshirehathaway.com
Calfrac Well Services	CFW.TO	632.73M	95.87M	6.66	6.20 - 22.57	4,300	http://www.calfrac.com
Carbo Ceramics Inc.	CRR	808.46M	23.27M	33.67	27.97 - 148.52	1,025	http://www.carboceramics.com
CH Robinson Worldwide Inc.	CHRW	9.43B	145.84M	65.25	61.46 - 77.49	11,676	http://www.chrobinson.com
Chesapeake Energy	CHK	5.81B	663.55M	9.05	8.40 - 27.58	10,800	http://www.chk.com
Concho Resources	CXO	12.56B	118.70M	105.41	77.22 - 148.30	868	http://www.conchoresources.com
Conoco Phillips	COP	66.746B	1.23B	55.83	53.30 - 87.09	18,800	http://www.conocophillips.com
Continental Resources	CLR	13.319B	373.11M	35.13	30.06 - 80.91	986	http://www.clr.com
Denbury	DNR	1.42B	353.19M	3.95	3.81 - 18.07	1,498	http://www.denbury.com
Dresser Rand Group	DRC	6.55B	76.93M	85.18	56.79 - 85.20	8,100	http://www.dresser-rand.com
Earthstone Energy	ESTE	240.18M	13.84M	17.5	14.71 - 37.21	14	http://www.earthstoneenergy.com
Emerald Oil Inc.	EOX	15.63M	7.86M	2.01	1.87 - 172.60	30	http://www.emeraldoil.com
Enbridge Energy Partners LP	EEP	10.93B	262.21M	30.34	30.09 - 41.68	N/A	http://www.enbridgepartners.com
Enerplus Resources Fund	ERF	1.44B	206.22M	7.13	6.79 - 24.30	707	http://www.enerplus.com
Enterprise Products Partners LP	EPD	54.68B	2.00B	27.55	17.78 - 41.38	N/A	http://www.epplp.com
EOG Resources Inc.	EOG	41.963B	548.93M	76.09	75.47 - 116.93	2,800	http://www.eogresources.com
Exxon Mobil	XOM	339.05B	4.18B	81.79	80.97 - 104.76	75,000	http://www.exxonmobil.com
FMCTechnologies Inc.	FTI	7.48B	230.91M	32.76	31.83 - 63.92	19,300	http://www.fmctechnologies.com
Forestar Group Inc.	FOR	438.16M	33.60M	13.32	12.64 - 20.33	145	http://www.forestargroup.com
Halcon Resources Corp.	HK	501.167M	585.48M	0.953	0.82 - 7.00	420	http://www.halconresources.com
Halliburton	HAL	36.16B	850.87M	41.54	37.21 - 74.33	78,000	http://www.halliburton.com
Helmerich & Payne Inc.	HP	6.44B	107.65M	58.82	54.00 - 118.07	10,318	http://www.hpinc.com
Hess	HES	17.03B	287.38M	59	58.35 - 104.50	3,045	http://www.hess.com
Key Energy	KEG	203.533M	155.96M	1.33	1.00 - 6.90	8,100	http://www.keyenergy.com
Magnum Hunter Resources	MHR	232.067M	208.30M	1.14	1.07 - 7.27	440	http://www.magnumhunterresources.com
Major Drilling	MDI.TO	375.04M	80.14M	4.93	4.67 - 9.41	N/A	http://majordrilling.com
Marathon Oil	MRO	14.9818B	674.95M	22.34	21.72 - 41.92	3,330	http://www.marathonoil.com
MDU Resources	MDU	3.5365B	194.77M	18.58	18.14 - 33.53	8,451	http://www.mdu.com
Nabors Industries	NBR	3.51B	291.57M	11.96	9.91 - 29.97	24,700	http://www.nabors.com
National Oilwell Varco	NOV	16.66B	387.87M	41.91	41.63 - 86.55	54,540	http://www.natoil.com

BAKKEN STOCK WATCH



Company Name	Ticker Symbol	Market Cap	Number of Outstanding Shares	Stock Price 7/22/15	52 Wk Range	Number of Employees	Website
Newfield Exploration Co.	NFX	5.4B	160.90M	33.4	22.31 - 45.43	1,331	http://www.newfld.com
Northern Oil & Gas	NOG	327.73M	61.60M	5.3	4.79 - 17.09	23	http://www.northernoil.com
Nustar Energy LP	NS	4.3B	77.89M	55.02	50.91 - 68.10	N/A	http://www.nustarenergy.com
Nuverra Environmental Solutions	NES	86.8028M	28.00M	3.44	1.65 - 19.30	2,200	http://www.nuverra.com
Oasis Petroleum	OAS	1.47B	139.20M	10.52	10.07 - 58.09	558	http://www.oasispetroleum.com
Occidental Petroleum	OXY	53.45B	768.12M	69.47	68.90 - 100.27	11,700	http://www.oxy.com
Oil States International	OIS	1.57B	51.59M	30.25	29.66 - 65.05	5,290	http://www.oilstatesintl.com
Oneok Inc.	OKE	8.06B	208.76M	38.3	37.46 - 71.19	2,269	http://www.oneok.com
Patterson-UTI Energy Inc.	PTEN	2.47B	146.45M	16.7	13.3 - 38.43	7,900	http://www.patenergy.com
PDC Energy Inc.	PDCE	1.72B	40.03M	42.84	27.91 - 61.78	343	http://www.pdce.com
Pioneer Energy Services	PES	265.34M	64.25M	3.99	3.67 - 18.09	3,400	http://www.pioneerres.com
Plains All American Pipeline	PAA	15.74B	397.24M	39.23	38.56 - 61.09	5,300	http://www.paalp.com
Precision Drilling Corp.	PDS	1.53B	292.82M	5.13	4.53 - 14.19	N/A	http://www.precisiondrilling.com
QEP Resources Inc.	QEP	2.442B	176.66M	14.16	13.48 - 35.91	765	http://www.qepres.com
Quality Distribution Inc.	QLTY	446.102M	28.10M	15.89	8.32 - 15.94	N/A	http://www.qualitydistribution.com
Questar	STR	3.77B	175.71M	21.71	20.81 - 26.44	1,745	http://www.questar.com
Rosetta Resources	ROSE	1.54B	76.87M	19.98	15.92 - 54.15	318	http://www.rosettaresources.com
Schlumberger Ltd.	SLB	108.9B	1.26B	85.26	75.60 - 113.29	120,000	http://www.slb.com
Schneider Electric (Paris)	SU.PA	36.76B	574.28M	63.42	52.59 - 75.29	185,965	http://www.schneider-electric.com
SM Energy Co.	SM	2.38B	67.46M	34.61	29.41 - 90.38	896	http://sm-energy.com
Statoil ASA	STO	53.11B	3.18B	16.71	15.76 - 30.54	22,516	http://www.statoil.com
Stone Energy	SGY	490.12M	57.19M	8.65	8.10 - 41.43	384	http://www.stoneenergy.com
Superior Energy Services Inc.	SPN	2.82B	150.45M	18.28	16.70 - 36.25	14,300	http://www.superiorenergy.com
TransCanada Corp.	TRP	26.5B	709.00M	37.85	37.22 - 58.40	6,059	http://www.transcanada.com
Triangle Petroleum Corp.	TPLM	289.103M	75.39M	3.9	3.10 - 12.14	332	http://www.trianglepetroleum.com
Unit Corp.	UNT	1.1B	50.40M	21.78	21.20 - 68.91	1,880	http://www.unitcorp.com
US Energy Corp.	USEG	11.0734M	28.05M	0.37	0.37 - 4.46	15	http://www.usnrg.com
Vanguard Natural Resources	VNR	933.76M	85.96M	10.57	10.44 - 33.04	260	http://www.vnrllc.com
Weatherford International LTD	WFT	8.54B	774.69M	10.68	9.40 - 24.88	56,000	http://www.weatherford.com
Whiting Petroleum Co.	WLL	5B	204.12M	24.31	23.36 - 92.92	1,282	http://www.whiting.com
Williams Companies	WMB	39.71B	749.01M	53.54	40.07 - 61.38	6,742	http://www.williams.com
WorleyParsons	WOR.AX	2.32B	244.41M	9.47	8.52 - 18.77	35,600	http://www.worleyparsons.com

BAKKEN MID-YEAR REVIEW

By Maxine Herr for Bakken Breakout



Maxine Herr

In April 2014, adverse weather and road restrictions were to blame for a hefty 600 wells awaiting completions as oil prices were above \$90 a barrel. But a year later, oil prices around \$40 a barrel have sent that inventory soaring to an estimated 925 wells.

Just over a year ago, North Dakota's oil industry surpassed the one million barrels mark as production reached 1,001,149 barrels a day in April 2014, putting the state among the top 17 percent of oil producers worldwide. At the time, analysts were projecting that the state would see 15,000 to 20,000 barrels per day (bpd) increases every month until it hit two million barrels.

But, when members of the Organization of the Petroleum Exporting Countries (OPEC) met on Thanksgiving Day 2014

and Saudi Arabia announced it had no plans to curb production, but instead flood the market with a surplus of oil, it turned the tide for U.S. oil exploration and production.

While Saudi Arabia and Russia have been able to sustain revenue with record production, other OPEC countries are struggling. Lynn Helms, director of North Dakota's Department of Mineral Resources said. "In the last OPEC meeting, there was no re-allocation of production quotas," and summing up Saudi Arabia's attitude, Helms added,

"this is how much we're going to produce and the rest of you are going to have to fend for yourself."

While the industry continues to maintain production above a million barrels in North Dakota, it is not achieving consistent monthly increases and Helms said he expects the roller coaster ride to continue. "I think our prediction is that there are going to be two to three down months, followed by an up month that brings us back up to that 1.2 million per day," he said. "We're going to kind of seesaw between 1.1 million and 1.2

million barrels."

The state had settled into down months following a high of 1.22 million barrels per day in December, 2014, but the figures bumped up again in May. While April production only reached 1,168,636 bpd, which was down from 1,190,502 bpd in March, May production crept to 1,201,159 bpd.

The most current data available does not include June production, but Helms predicts the month is likely to be a record-breaker. He also anticipates

“ I think people are hoping prices increase and we can go back into a growth mode, but we're capable of sustaining production for a couple years. ”

operators to sustain production at these levels for 24 months based on well inventory.

“Industry is going to find it pretty easy to stick at the 1.2 million barrels per day mark,” Helms said. “I think people are hoping prices increase and we can go back into a growth mode, but we’re capable of sustaining production for a couple years.”

Positives and negatives

Demand for oil is increasing and the oil tax rate was lowered slightly by the 2015 Legislature to encourage the industry to complete wells, but a number of obstacles to achieving increased production still exist beyond oil prices, such as the availability of completion crews. With operators delaying completion, some hydraulic fracturing companies have either left the state for other plays or laid off some of their workforce.

“If we can catch up on housing demand and lower the rents, that will have a big impact on how long it would take to recruit workers back,” said North Dakota



Maxine Herr

The availability of completion crews still remains an obstacle to achieve increased production despite the fact that demand for oil is increasing and the oil tax rate was lowered slightly by the 2015 Legislature to encourage the industry to complete wells.

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Petroleum Council President Ron Ness. “Clearly, competition has become fierce for drilling rigs and completion services with the decreased demand. The market will have to sort it out.”

Another obstacle to completing wells are new regulations that could become a burden on the industry. The Bureau of Land Management recently released new hydraulic fracturing rules, which include significant red tape for operators with wells on either federal or tribal land. Those areas make up a third of the state’s production.

Also, a new nonprofit commission on the Fort Berthold Indian Reservation plans to regulate a segment of oil activity near Mandaree. The West Segment Regulatory Commission was formed to better monitor the industry, but how it will coordinate with current state and tribal regulatory bodies remains to be seen. That type of regulatory uncertainty causes industry to proceed with great caution, if at all.

NDIC “reluctant” to grant extensions on well completions

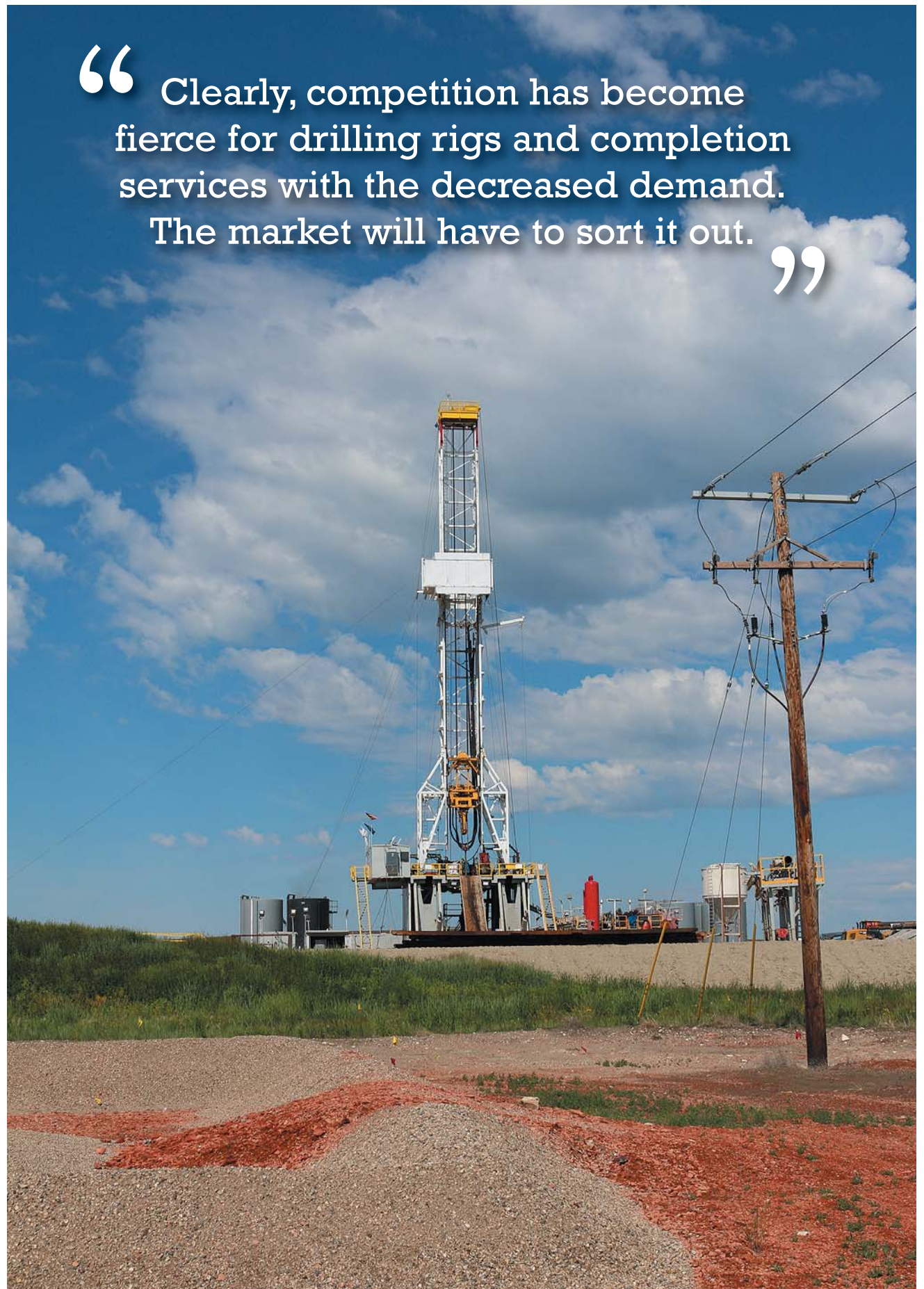
In April 2014, adverse weather and road restrictions were to blame for a hefty 600 wells awaiting completions as oil prices were above \$90 a barrel. Fast forward to the end of June 2015, and an estimated 925 wells were waiting to be completed because oil prices were hovering around \$40 a barrel.

Completions aren’t the only statistics that fall with oil prices. Rig counts from April 2014 to April 2015 went from 189 to 91, falling further into the 70s into June. Over the same period, well completions dropped from 200 to just 94.

Helms said in order to maintain 1.2 million barrels per day of production, the industry needs to sustain 110 to 120 drilling rigs within the state. “Along with rig efficiency, the current 80 rigs can probably drill between 95 and 100 wells a month,” Helms said “So they can come close, but we will eat into that uncompleted wells inventory over time, and there will be a point where to sustain that 1.1 to 1.2 million barrels, we will need 120 drilling rigs.”

The state’s budget is based on earning

“ Clearly, competition has become fierce for drilling rigs and completion services with the decreased demand. The market will have to sort it out. ”



Maxine Herr

In order to maintain 1.2 million barrels per day of production, the industry needs to sustain 110 to 120 drilling rigs within the state, but each rig has become much more efficient than even a year ago.



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Maxine Herr

Operators have one year to complete a well and many will choose to apply for an extension in hopes of a price rebound, but the North Dakota Industrial Commission is “very reluctant” to grant them since state budgets require maintaining 1.1-1.2 million barrels per day of production.

revenue at that production volume, so as operators come to the end of their one-year deadline to complete their wells the North Dakota Industrial Commission will not be keen on granting extensions. “We’re very reluctant to grant extensions,” Helms said. “It’s going to take some good justification.”

At the beginning of June, 125 wells were due to be completed, but about two dozen of them remained uncompleted as the month came to a close. Helms said his office sent written notice to companies that they were out of compliance, and that they must submit a plan of action and implement it within six months.

Operators can choose to complete the well, plug it, or submit a temporary abandonment, or extension, request. Plugging is unlikely since operators have

several millions of dollars invested in the well. A one-year extension costs approximately \$50,000.

But if an operator doesn’t request the extension, it must complete the well so it begins producing or face losing its bond and be forced to create a new single well, \$200,000 bond to cover full plugging and reclamation costs. If the operator still fails to complete the well after another six months, the state can confiscate it and turn it over to a new operator, or plug the well.

“It’s an escalating thing over a one-year time period and that begins to get very expensive,” Helms said. If oil prices rebound to \$65 a barrel, the industry is expected to start implementing completions, but when that magic target will appear is still up for debate. Though oil traders have speculated that the \$65 a

barrel mark could happen before the end of the year, the latest New York Mercantile Exchange’s “12-month strip,” which gives an average price outlook based on contracts over the next year, doesn’t predict oil to reach \$65 a barrel until the end of 2017.

“That seems a lot longer than what typical geopolitics can tolerate,” Helms said. “It’s factoring in the ongoing negotiations in Iran and willingness to keep moving the goal post to reach an agreement and get those barrels on the market. I think it’s closer than that just because of well decline rates and geopolitics.”

Hopes of price improvement

Some oil producers have been very outspoken in recent months about lifting the ban on exports that has been in place since the 1973 Arab oil embargo. In

Some oil producers have been very outspoken in recent months about lifting the ban on exports that has been in place since the 1973 Arab oil embargo.

March, U.S. oil company executives including Conoco Phillips CEO Ryan Lance, Marathon Oil's Lee Tillman, and Occidental Petroleum's Steve Chazen flew to the nation's capital in an attempt to persuade lawmakers to lift the 40-year ban.

With the ban in place, U.S. oil sells for about \$10 less than the global benchmark. But whether Washington will lift the ban is yet to be determined.

"It's a very important piece, but the folks I talk to have it at a coin flip," Helms said. "The best possibility it has is a 50-50 chance of being lifted. There is a lot of education that needs to happen to overcome the perception that exporting our crude oil could drive gasoline prices up."

The U.S. Energy Information Administration released a study in November which showed that domestic oil prices will not rise if the U.S. ban on oil exports is lifted, therefore not increasing gas prices. EIA Administrator Adam Sieminski said the global market dictates domestic gasoline prices more, so than U.S. benchmarks like West Texas Intermediate.

"If you allowed the ban to be lifted, WTI prices could indeed go up, but it probably wouldn't do a great deal one way or the other with gasoline prices," Sieminski said.

But until the ban is lifted, or OPEC countries like Saudi Arabia start production declines, production in the Bakken is not likely to start soaring toward two million barrels. Helms said he anticipated soft oil prices in 2015 since production was set to outpace world demand by the first of the year, but the degree to which prices fell did come as a surprise.

"When you looked at it a year ago, there were warning clouds on the horizon," Helms said. "The Eagle Ford had come online and was really surpassing the Bakken in terms of production and adding a lot of shale production. I think industry as a whole was really, really optimistic. They were not paying attention to those warning signs." ■



Maxine Herr

In June, about 100 of 125 wells due to be completed went into production and the state issued notices to the operators of the remaining wells telling them they have six months to either complete the well, file for an extension, or plug the well.

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IT'S A SMALL WORLD AFTER ALL - THE CRUDE OIL CORRAL

By Jason Spiess for Bakken Breakout

If there was ever a better time to understand how and why the Bakken is considered a world class play, now is the time. The upper-Midwest region has heard, felt and seen the impact \$100 oil has had.

But the Bakken is a world class play

and Murphy's Law suggests that when there are good times, there will be some bad times too. Now that oil prices are hovering around half of what they were, the flip side of this world class play is becoming noticed all the way on the other side of the world, specifically in Saudi Arabia.

At least that's true according to Dr. Loren Scott, President, Loren Scott & Associates. Scott has worked with ExxonMobil, Entergy Corporation, J.P. Morgan Chase, Capital One Financial, Nucor, and a host of others directly related to the energy industry.

"The argument I've tried to make is

what the Saudis are doing is driving the price down. They're trying to kill the edges of the shale plays. That is in areas like in North Dakota, where the breakeven is much higher," Scott said. "If they can kill the edges of the shale plays not only in North Dakota but in Texas, Colorado and other areas, they're going to cause oil production

Paul Flessland

Ron Ness shakes North Dakota Gov. Jack Dalrymple's hand at the 1 Million Barrels 1 Million Thanks celebration.

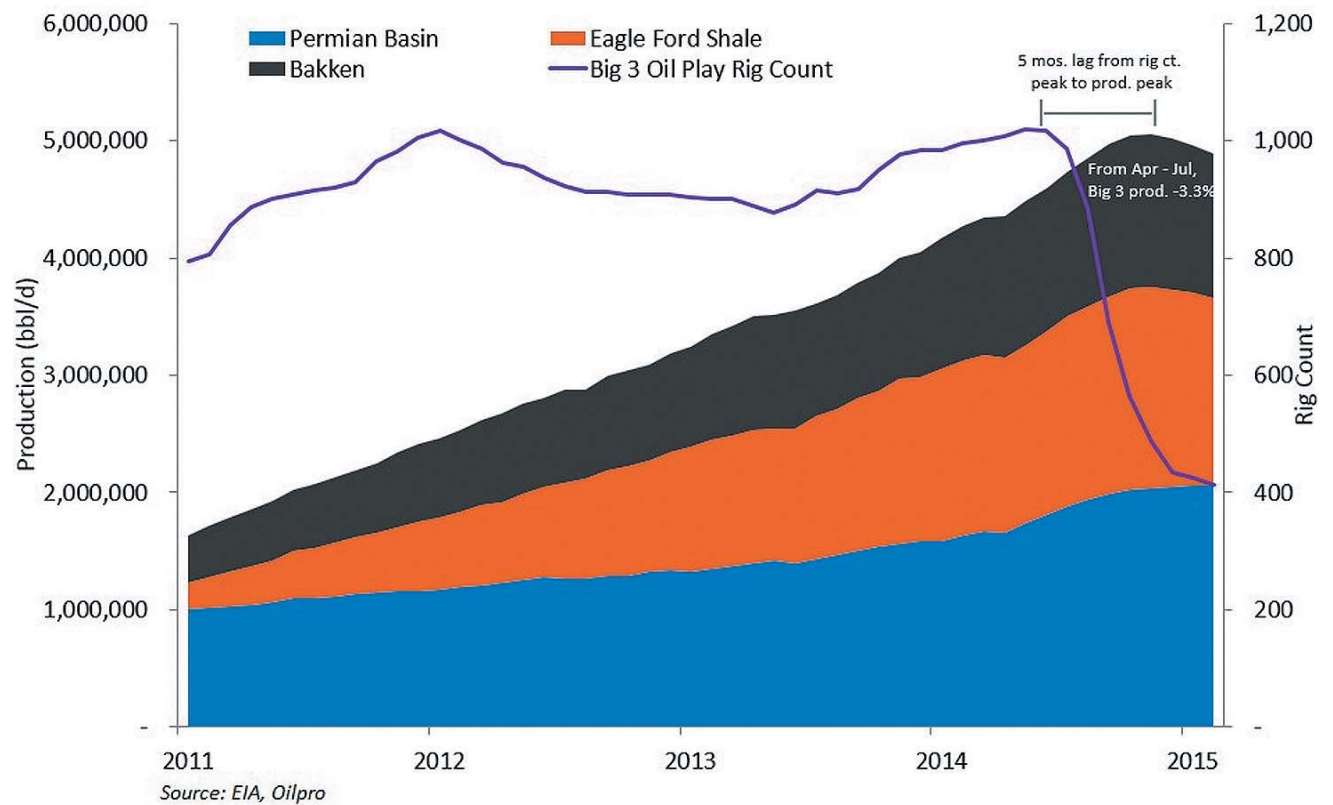
in the United States to not only peak, but taper off as we get into the fall."

Scott continued explaining how Bakken investors and breakeven trackers need to pay attention to global markets, geopolitics, and general shale production numbers. "They (Saudi Arabia) are trying to cause oil production in the United States to decline so we'll not try and export crude oil into the international market and be able to compete with them out there," Scott said. "They're trying to protect their international market from U.S. oil production."

Scott continued saying Saudi Arabia and OPEC, realized the U.S. fracking craze resulted in the U.S. reducing oil imports from 66% to 44% over a short period of time.

"So first of all they've lost a big chunk of the U.S. market and now the U.S. is going to start exporting this stuff to the international market. The Saudis are saying 'I don't think so'," Scott said. "So what they did was drop the price of oil

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and by doing that they essentially killed off the edges in shale plays across the United States. All the shale plays have a nice rich middle, and an outer area where the breakeven is higher."

"And what has happened is the rig count has plummeted because they can't make the numbers work," Scott said. "You've seen the rig count almost drop in half in the United States. And because of the nature of shale production, there is a very steep decline curve when you drill one of these wells."

This is another reason Scott believes the Export Ban is the critical item in determining the future of the Bakken.

"So first of all they've lost a big chunk of the U.S. market and now the U.S. is going to start exporting this stuff to the international market. The Saudis are saying 'I don't think so.' "

So does Congressman Kevin Cramer (R-ND), who sits on the House Committee on Energy and Commerce.

"By not allowing the United States to export crude oil we're acquiescing to the monopoly power of Saudi Arabia. You could say OPEC but let's face it, Saudi Arabia is OPEC," Cramer said. "We are allowing them to do that to us. It's a classic example of when you have too much supply power in the hands of one entity. We no longer need to do that with the removal of the crude oil export ban."

Cramer continued explaining how the sweet crude could make the Bakken's place on the planet even more special than it already is. "By putting light sweet crude oil out in the global marketplace, it



Paul Flessland

Ron Ness at the North Dakota Petroleum Council's Annual Meeting.

would make the United States the stabilizing force in the global marketplace," Cramer said. "Stabilizing pricing force, stabilizing democracy force, utilization of the peaceful tools of domestic energy production. Use those tools rather than weapons of war."

Weapons of war may appear to be a bit linguistically over-the-top, but when you are talking about a global marketplace, Scott paints a good picture how the transporting commodities can have major influences from the military.

"Here's what you find when looking at the price of oil. Typically, it is the same everywhere in the world because there are about 3,700 very large crude carriers floating on the surface of the ocean taking oil where they get the highest price. And that has a tendency to keep the price of oil the same everywhere," Scott said.

Scott explains further how layering the very real element of geopolitics with fracking chemistry, can create dynamic and unpredictable breakeven numbers across every local shale play. "The

breakeven points are very different within the shale plays across the United States," Scott said. "The Bakken breakeven average number, which is around \$50 and the word average, is important. They can change easily. Now compare it with Tuscaloosa Marine Shale down in Louisiana where the breakeven number is \$92."

According to Scott, deeper drills and clay-like rock are the main culprits for higher breakeven prices in Louisiana. "When you frack it and cause explosions down there, the cracks tend to close up, Scott said. "So figuring out how to keep the cracks open so the oil and natural gas can flow out is way more difficult and costs a lot more."

Using ballpark numbers when talking about oil and gas prices is something Ron Ness, president, North Dakota Petroleum Council, is very used to, especially when talking about a breakeven price.

"Every company has a different debt ratio, different contact or different level of production. To me it's very difficult to predict." Ness said. "At this point we need to focus on getting back to \$60 barrels."

Ness believes the price of oil needs to increase \$10 or \$20 more before North Dakota will see an increase in drilling activity. Even then it will take some time. "I think it will have to get in that

\$65-\$70 price range before you start to see the type of activity we need to see," Ness said.

In the meantime, the energy industry has been restructuring contracts as another cost saving measure in order to keep wells pumping, according to Scott.

"Oil companies are doing a number of things because they are smart, clever capitalists," Scott said. "Number one thing they are doing is going to the companies who do the fracking and saying 'look the price of oil was \$100 and now it is \$52. We need to restructure the costs.'"

Scott said his industry contacts and

“ Every company has a different debt ratio, different contact or different level of production. To me it's very difficult to predict. At this point we need to focus on getting back to \$60 barrels. ”

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reports all indicate their hard work is paying off.

"Fracking costs are down about 32% in the last year or so," Scott said. "They are also increasing their investigation on how to drill faster, deeper, quicker, more efficiently. So drilling costs are down about 20%."

According to Scott this downturn has created more industry innovation that has resulted in more efficiency. "You take a company like Anadarko, back in 2009 it took them 18 days to drill a well, now it takes them about 7 and a-half," Scott said. "Companies are tightening their belts a lot more and one of the ways they're doing that is requiring suppliers to charge them less. Second, they're being forced to figure out how to get the oil out of there a lot more efficiently, drill faster and overall get it down quicker. That way they're able to reduce the cost of the well."

Scott also pointed out how industry is proving to the world their innovative ideas are not being wasted.

"The other thing that is going on to keep that breakeven point down is they're honing their fracking skills. So they get a whole lot more oil out of the well," Scott said. "For example, if you look back to 2007 in the Bakken, when they fracked a well they were getting like 100 barrels of oil a day. Now they're getting 500 barrels of oil per day."

Ness agrees that efficiencies have certainly been instrumental in withstanding the long period of low oil prices. "We have seen cost, in pad drilling, come down substantially. Of course you're going to see better results when you move to the best areas that you are producing in," Ness said. "In addition to that the efficiencies of drilling have really improved. The technology has improved. You also have you top quality crews working."

In an industry of dynamic changes and roller coaster charts, it's refreshing to know that energy companies are remaining static with their Bakken wells by providing world class workers, for this world class shale play. ■



Paul Flessland

Loren Scott was the featured speaker and presenter at the Rocky Mountain Energy and Infrastructure Summit, Jackson Hole, Wyo.



Unimin Energy Solutions' Tunnel City, Wis. frac sand mining facility's state-of-the-art design reduces its footprint while providing frac sand to North Dakota's Bakken Oil Fields. It ships directly to Unimin's New Town, N.D. transload terminal.

By Patricia Stockdill for Bakken Breakout

In growing from a small sand mining company founded in 1970 to becoming an integral part of Sibelco Group, a global industrial minerals supplier, The Woodland, Texas-based Unimin Energy Solutions is all too familiar with the nuances that are the nature of the oil and gas industry.

About the only constant in the industry is change, whether it's technology or oil prices. Companies that can weather a storm will live to see another sunny day.

"We (Unimin Energy Solutions) are in the energy business for the long-term. This is not our first rodeo and it won't be our last," Sameer Rupani, Unimin vice-president of strategy and development, matter-of-factly described. "Oil prices have fluctuated throughout history," he continued. "Just consider that within 10 years of the first commercial oil well in Pennsylvania, oil rose from 46 cents per barrel to more than \$8 per barrel in 1864, only to plummet to \$2.46 per barrel in 1867 because of excess supply.

Some in the industry adjusted and survived; many didn't. Sound familiar?" he queried.

It was true more than 100 years ago and it's true in 2015.

Unimin, like others in the Oil Field Services (OFS) industry, feel the impact of fewer drilling rigs and new wells. "The company has adjusted output of our frac sand production and mining operations since oil prices first dropped in late

About the only constant in the industry is change, whether it's technology or oil prices. Companies that can weather a storm will live to see another sunny day.

2014. However, Unimin Energy Solutions takes a longer term view on its returns and is operating with the next phase of the market cycle in mind,” Rupani described. That’s fitting, he said, for a family-owned company like Sibelco, which after 140 years in operation is almost as old as the commercial oil industry.

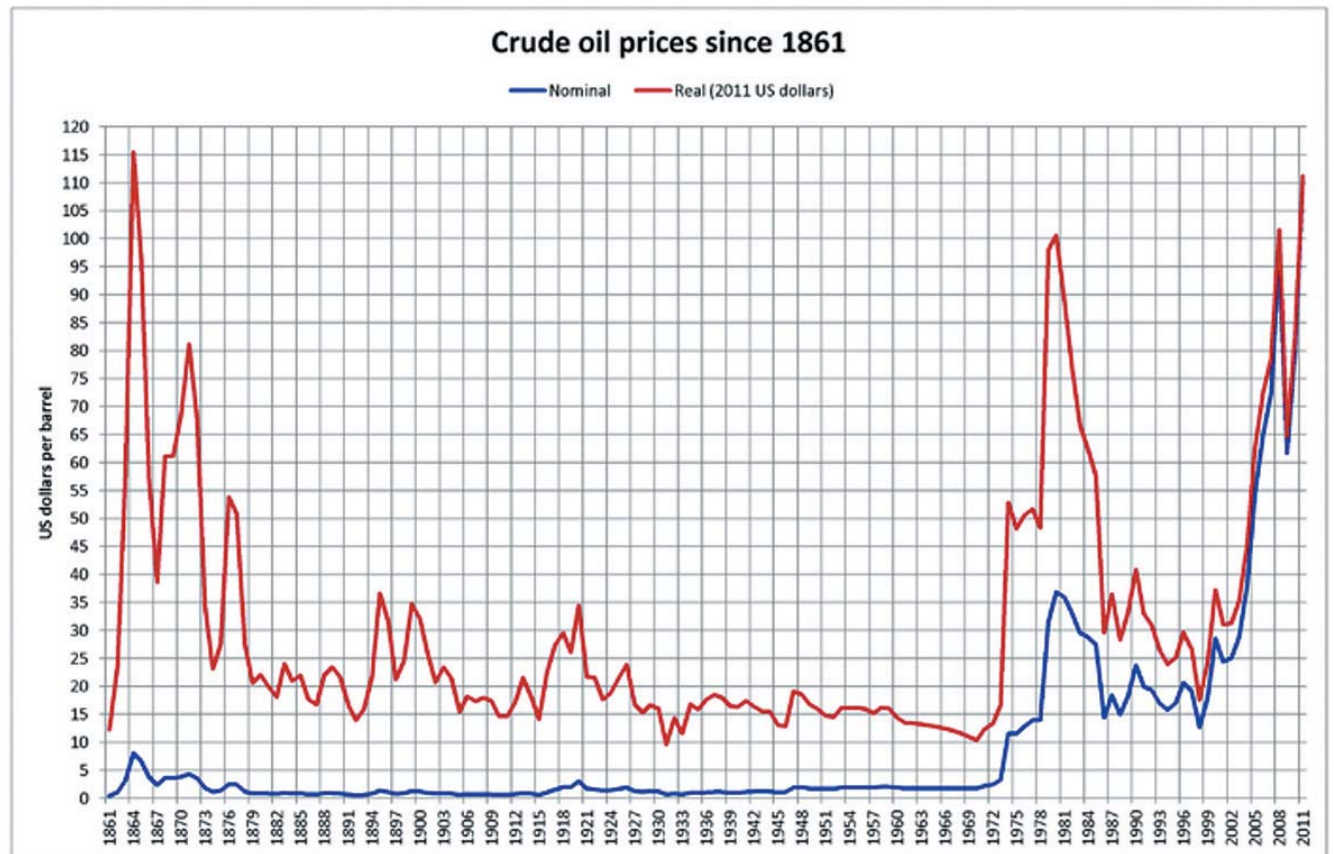
Another frac sand and proppant company is also scaling back even though its frac sand volume increased in the first-quarter of 2015 compared to the same period in 2014.

In announcing its first-quarter 2015 results and activity in a May 12 press release, Fairmount Santrol website, (www.fairmountsantrol.com), said the company closed its Readfield, Wis. sand facility. It is also idling or scaling back sand and coating facilities in Texas, Missouri, Michigan, and Mexico early in second-quarter 2015.

Superior Silica Sands, part of Emerge Energy Services based in Texas, has a transload terminal in Bainville, Mont. serving the Bakken region.

Its website, (www.sssand.com) also discussed how lower oil prices impacted the company in the first three months of 2015 when presenting its first-quarter 2015 report on May 4: Total frac sand demand decreased approximately 30 to 40 percent compared to its 2014 peak, CEO Richard Shearer described in his report. Well completions and refracturing remains slow. The average frac sand price decreased 20 to 25 percent, Shearer’s report continued, although there is an increasing demand for finer grade frac sand.

Oil is a global business, Rupani stressed, “Something we lost sight of over the last 3 years.” While the drop in prices may not have come as a surprise to the industry, its severity and choice by Saudi-led OPEC to defend market share and not price, was generally unexpected. When prices will rebound enough to spur completion activity, “is anybody’s guess, although predictions abound,” Rupani continued. “There are so many ways this could play out but there is consensus that U.S. onshore has established itself as the world’s wing-oil producer.”



BP WORKBOOK OF HISTORICAL DATA

The BP Workbook of Historical Data underscores how oil prices fluctuated throughout the commercial history of the industry.

While oil prices and supply and demand have always ebbed and flowed, today’s global industry is impacted as much by geo-politics as it is global supply and demand imbalances. “We have to now also consider the impact that lifting sanctions on Iran that has curbed more than 1 million barrels per day oil exports,” Rupani explained.

Oil’s supply and supply potential currently exceeds global demand. “If you look through your binoculars that’s not likely to change soon,” Rupani added. For years, economists and the industry grappled with peak oil supply. However, because of horizontal drilling and hydraulic

fracturing technological advances, the trend appears to have reversed and the global oil market is demand-limited.

In the meantime, OFS companies in the frac sand and proppant industry will likely continue scaling back production to match fewer well completions across all U.S. shale plays with the focus on wells providing the lowest cost and most productive acreage.

Unimin has been a player in the Bakken Play throughout its history. They built a mining facility in Tunnel City, Wis. specifically to meet Bakken frac sand demands with a



Sameer Rupani is Unimin vice-president of strategy and development.

“ There are so many ways this could play out but there is consensus that U.S. onshore has established itself as the world’s wing-oil producer. ”

transload terminal in North Dakota that is located in the heart of the Bakken's most productive four-county core acreage. "You have a direct shot (via CP rail) to New Town," he added.

The 3-million ton-per-year, state-of-the-art facility for safety, quality, and environmental best practices was designed to have minimal impact on its neighbors, Rupani described, and recycles almost 100 percent of its water.

Despite drilling 40 percent fewer wells, demand for sand at Unimin's New Town terminal remains strong because of its location. Where there was a 25 percent shortage of rail cars to meet frac sand shipping demands in July 2014, Rupani said there is now a 15 to 20 percent over-supply of rail cars to carry frac sand and proppants.

One reason the need for more frac sand could continue to increase in North Dakota is the sheer volume used for a horizontal well. The amount of frac sand and proppant used in any Bakken particular well varies greatly from a few million to several million pounds. The quantity needed is a function of the operator's design and analysis of cost versus return and varies with the number of stages and the well's lateral length.

By definition as a proppant, frac sand props open and expands cracks within the shale rock containing hydrocarbons. By stimulating the well, hydrocarbons can flow into the well bore.

A growing body of data suggests increasing the amount of frac sand and proppant increases potential production rates.

Unconventional horizontal wells require significantly more frac sand and proppant than traditional vertical wells given shale's impermeable nature. Envision a lake, Rupani said, of oil beneath the earth's surface in places such as Saudi Arabia where conventional drilling is standard. Compare that to Swiss cheese – which would be the Bakken and other shale oil plays – with small pockets of oil that need to be coaxed out compared to a much larger lake. It takes more proppant to prop open fractures to move the oil via a horizontal well.



Unimin Energy Solutions' Tunnel City, Wis. frac sand mining facility's state-of-the-art design reduces its footprint while providing frac sand to North Dakota's Bakken Oil Fields. It ships directly to Unimin's New Town, N.D. transload terminal.

The need for industrial minerals in the oil and gas industry extends beyond their use in well stimulation. They are also used in drilling muds, well cementing additives, and sand control in production.

The need for industrial minerals in the oil and gas industry extends beyond their use in well stimulation. They are also used in drilling muds, well cementing additives, and sand control in production, Rupani added.

The role of proppant technology

The technology of horizontal drilling played a major role in unleashing Bakken productivity and proppant technology could play a role in helping companies during a drilling downturn. "This business is all about technology and the willingness to explore new technology, but at a cost the operator can afford. This threshold has been lowered with the more than 50 percent drop in oil price," Rupani said.

Typically, smaller companies have the ability, willingness, agility, and risk appetite to be able to move quickly and adjust to technology and rapid changes in the technological and economic climate. "Small companies tend to be able to do that...large companies are like an aircraft carrier. They're slow to turn," Rupani described.

One issue with ceramic proppants compared to sand is its cost, which tends to be three to five times more expensive. In addition, companies such as EOG provided the industry with evidence that less coarse grades of frac sand work as effectively in the Bakken. The cost savings can be used to increase proppant per foot and still save on total completion cost.

Fairmount Santrol's Propel SSP (Self-suspending Proppant) is an example of proppant technology involving sand. Its first-quarter statement said more than 10 companies are using the new technology.

Other companies, including Unimin with its PROPSTAR pre-cured and curable resin coated proppants, developed coatings designed to provide numerous benefits including flow back control to ensure retention of the proppant pack, ultimately increasing well production rates – both initial production (IP) and estimated ultimate recovery (EUR) – which along with cost are important measures of well productivity. ■

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Aqua Terra currently operates four facilities in the Bakken, two in North Dakota and has recently launched two new sites in South East Saskatchewan. These new facilities have been added to the existing fifteen facilities Aqua Terra operates throughout North America.

When asked about the company's motto "Partnering with Producers" an Aqua Terra representative stated "We understand the difficult economic climate we are all currently dealing with and we feel that our Motto of partnership is more important than ever. We see our role during this trying time is to work with our customers to ensure that their operations are successful and remain economically viable. We are a different type of disposal company and welcome building sustainable relationships with our customers in good times and in bad."

Aqua Terra continues to look for opportunities to expand its operations throughout the Bakken. Please contact our business development department for details. Learn more about Aqua Terra's services and facilities by visiting their website, aquaterrawatermanagement.com, or calling 1 (888) 538-3967.

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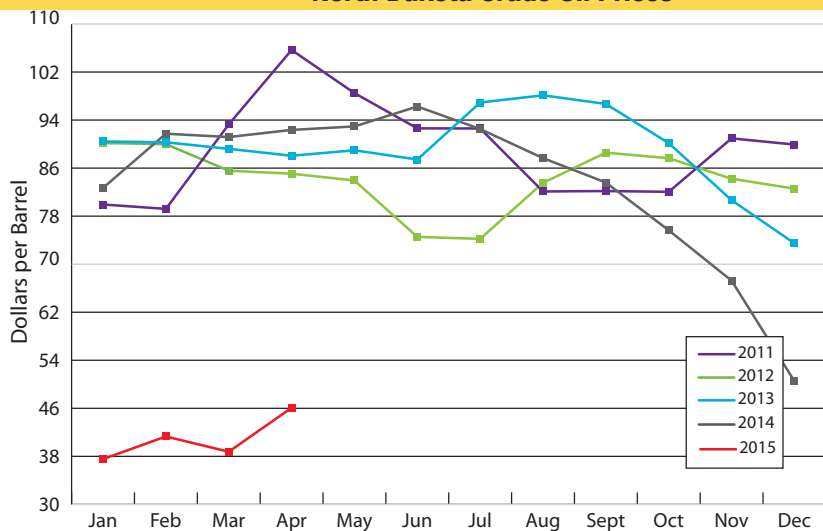


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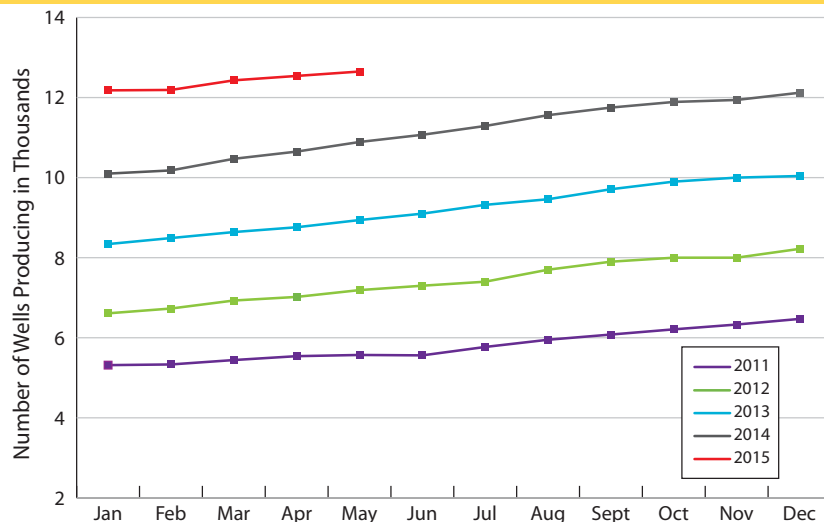
BAKKEN BRIEFS

North Dakota Crude Oil Prices



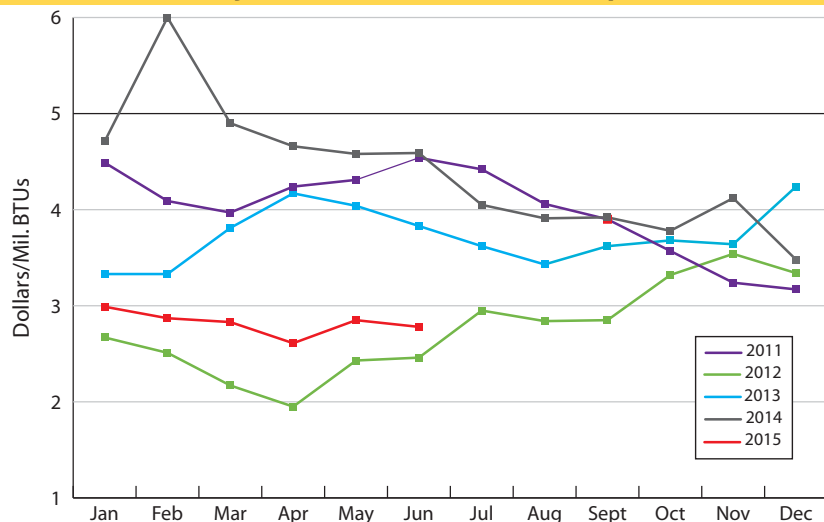
Source: U.S. Energy Information Administration

North Dakota Wells Producing



Source: Industrial Commission of North Dakota, Oil & Gas Division

Henry Hub Gulf Coast Natural Gas Spot Price



Source: U.S. Energy Information Administration

Home grown trucking firm sold
Gibson Energy has purchased T&R Transport of Crosby, the trucking company Ross “Chico” and Tonia Eriksmoen built from a single semi-truck in 2008 into a fleet that, at its zenith, had as many as 185 trucks hauling water and oil field services.

Brian Recatto, Gibson’s president of U.S. operations, called Gibson’s acquisition of T&R a “great fit.”

He said Gibson first became interested in T&R when the two companies crossed trails at a Gibson waste facility in the Williston Basin.

“We’re a Houston-based company, traded on the NYSE and in Canadian markets, with other assets in the Williston Basin,” Recatto said. “Our first acquisition here was WISCO, in Williston.”

WISCO remains one of the largest oil field service companies in the Williston Basin.

T&R Transport is Gibson’s second acquisition, Recatto said.

“We love the area and we’re committed to the community,” he said.

“We like the way the company works. We love the management team – they’re entrepreneurial, just like we are. This is a complete package,” said Recatto.

He declined to disclose any financial details of the purchase.

-- The Journal, Crosby

Vandals still plague Tioga
Despite an arrest last week in a graffiti case, the vandalism in Tioga continues.

“It’s getting old,” said Ray Crain, who manages Tioga’s parks.

The Tioga City Commission last week supported strict police enforcement of an existing curfew ordinance to combat vandals.

A memorial bench donated by the family of the late Dorothy Dahl is the latest target of vandals.

Last month, vandals tagged several buildings with graffiti depicting male genitalia. Fortunately for police, the perpetrators were so proud of their work,

they bragged to friends, leading to juvenile citations for those responsible.

However, it appears there are more people involved in the ongoing acts of destruction, said Police Administrator Jeff Spivey.

A couple weeks ago, police found graffiti on a gazebo at one of the city parks, and early Friday morning, vandals broke a granite memorial bench.

“It’s quite certain it’s more than one party involved,” Spivey said.

Damage to the bench could exceed \$2,000, which would make it a felony.

Several other vandalism incidents, all involving public property at the parks, have been reported since last fall.

-- Tioga Tribune

Watford seeks bigger PO
With Watford City’s population still booming the U.S. Postal Service is looking for much bigger digs in the community.

“Because of the continued rapid population growth in the Watford City area, it has left the Postal Service needing additional space to process and deliver mail and properly serve our retail customers,” said USPS spokesman Peter Nowacki.

The current postal facility contains 4,290 square feet. A new one will need at least 7,043 net interior square feet and parking for 66 vehicles, Nowacki said.

The Postal Service hopes to find a suitable existing building close to the site of the current downtown post office.

“At this time, we are concentrating our effort on finding an existing building,” says Nowacki. “We’d like to lease an existing building. If none exists, we may have to reevaluate our plans at a future date.”

If the proposal for relocation and expansion is approved, Nowacki says they would like to be in the new location some time next year.

-- McKenzie County Farmer, Watford City

Law center construction starts
Groundbreaking ceremonies for the new Mountrail County Law Enforcement Center

were held on the front lawn of the Mountrail County Courthouse July 14.

The date is significant for Mountrail County because 100 years ago to the day the Courthouse was dedicated.

The new facility will be an addition to the historically significant courthouse building.

Architect Anthony Enright of Klein/McCarthy said he has worked with commissioners to make sure the new center will be unique while also fitting with the existing building.

The addition will include 40-bed jail facilities, a 911 dispatch center and law enforcement center, as well as a court room, judge's chamber and jury room.

-- Mountrail County Promoter, Stanley

Ray housing moves forward

A 47-unit affordable housing project on Ray's east side could break ground this year if the project can piece together the funding it needs for the project and the infrastructure to support it.

The project consists of two three-story buildings with a total of 47 units between them. Of those, 24 will be set aside for essential service workers at reduced rents. This includes firefighters, police, nurses, and teachers.

The \$8.2 million project has about \$2.5 million in support from the North Dakota Housing Finance Agency through its Housing Incentive Fund.

"That's a grant to keep the apartment rents affordable," said developer Tom Serie, who spoke at a Ray City Commission meeting earlier this month.

To secure the monies, Serie must match the award with commitments from people willing to commit to the Housing Incentive Fund in exchange for state income tax credits.

Another hurdle is the curb, gutter, water and sewer infrastructure costs, which are not part of the \$8.2 million. These costs amount to about \$500,000.

Serie asked the Ray Commission for a tax exemption to cover these costs. The developer would pay the money up front for these costs. That money would then get paid back through the tax exemptions over five years.

-- The Tioga Tribune

Kenmare airport gets funds

It appears the Kenmare Municipal Airport will get all the upgrades it needs by this fall following the announcement July 13 of a \$350,000 federal grant.

The airport has already received energy impact funds, but this new grant provides enough money to get all the needed work done, according to airport manager Hank Bodmer.

That means new LED lights, a new beacon and a new building to house the electrical transfer, Bodmer said.

And that, he said, will amount to nearly \$550,000 when it is expected to be completed in October.

"All of us on the board were shocked with a \$500,000 cost, but we're doing a first-class job," Bodmer said. "We have one shot to do this for the next 20 years."

-- Kenmare News

Sanford Health brings clinic to Watford City

WATFORD CITY, N.D. – In order to continue providing quality care close to home, Sanford Health is opening a 1,900-square-foot clinic in Watford City. Starting Aug. 11, Sanford specialists will begin seeing patients at Sanford Health Watford City Clinic, located at 116 8th St. NE.

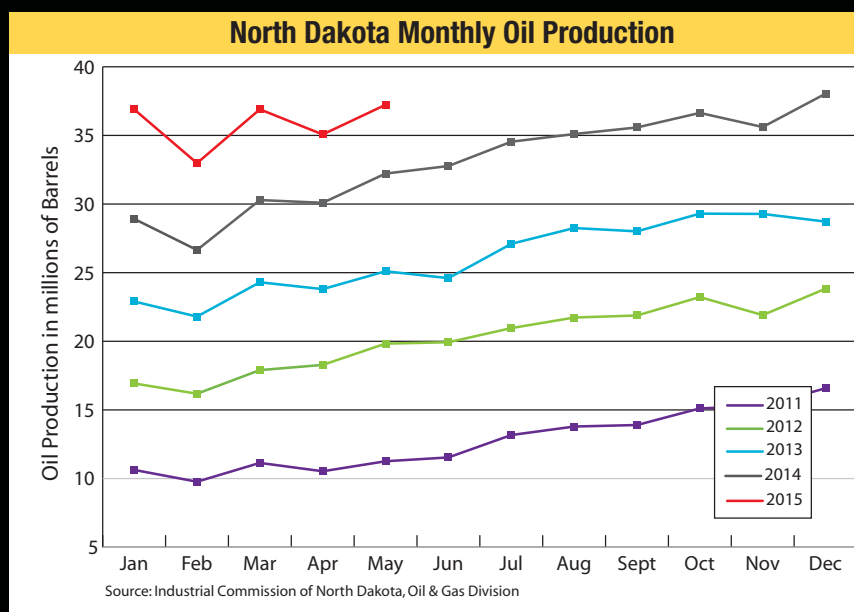
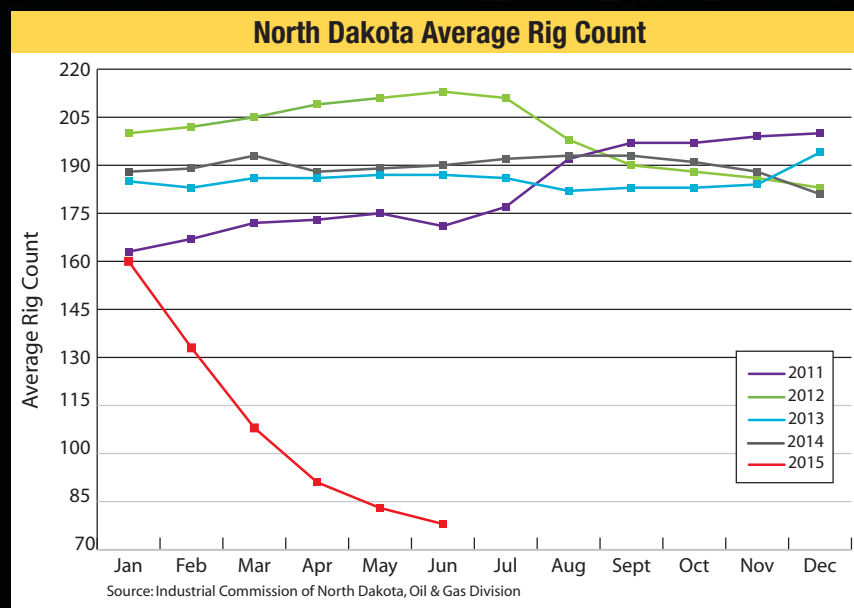
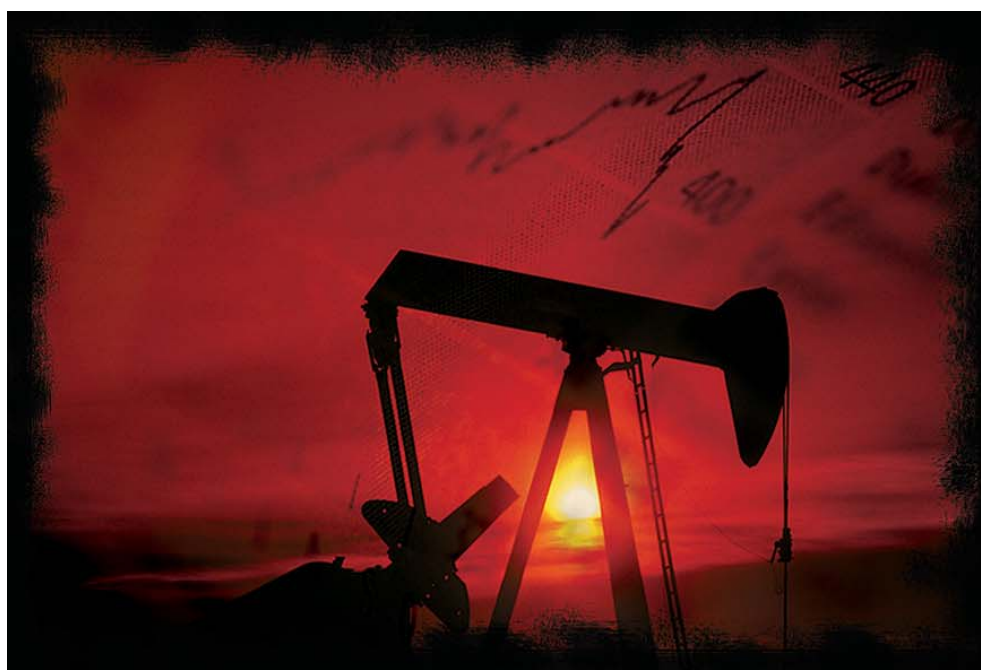
"At Sanford Health, we believe quality care should be delivered close to home. That's why we are expanding services in Watford City," said Craig Lambrecht, MD, president of the Bismarck region of Sanford Health. "We are grateful to have local support with a strong partner in McKenzie County Healthcare Systems."

The clinic will offer cardiology, podiatry, orthopedics and free injury screenings. The intent is that these specialists will see patients at the new McKenzie County Healthcare Systems medical center once it's complete as Sanford intends to lease space there.

Sanford specialists seeing patients at the new Sanford Health Watford City Clinic include Dragos Balf, MD, interventional cardiologist; Clark Fullmer, DPM, podiatrist; and David O'Regan, MD, orthopedic surgeon. These physicians will travel from Sanford clinics in Bismarck and Dickinson to Watford City each month to care for patients. Sanford will continue to send the following specialists to the ANOVA Family Health Center in Watford City; Nicolas Hayes, DO, general surgeon; Richelle Bautista-Azores, MD, pediatrician; and Marc Ricks, MD, pediatrician.

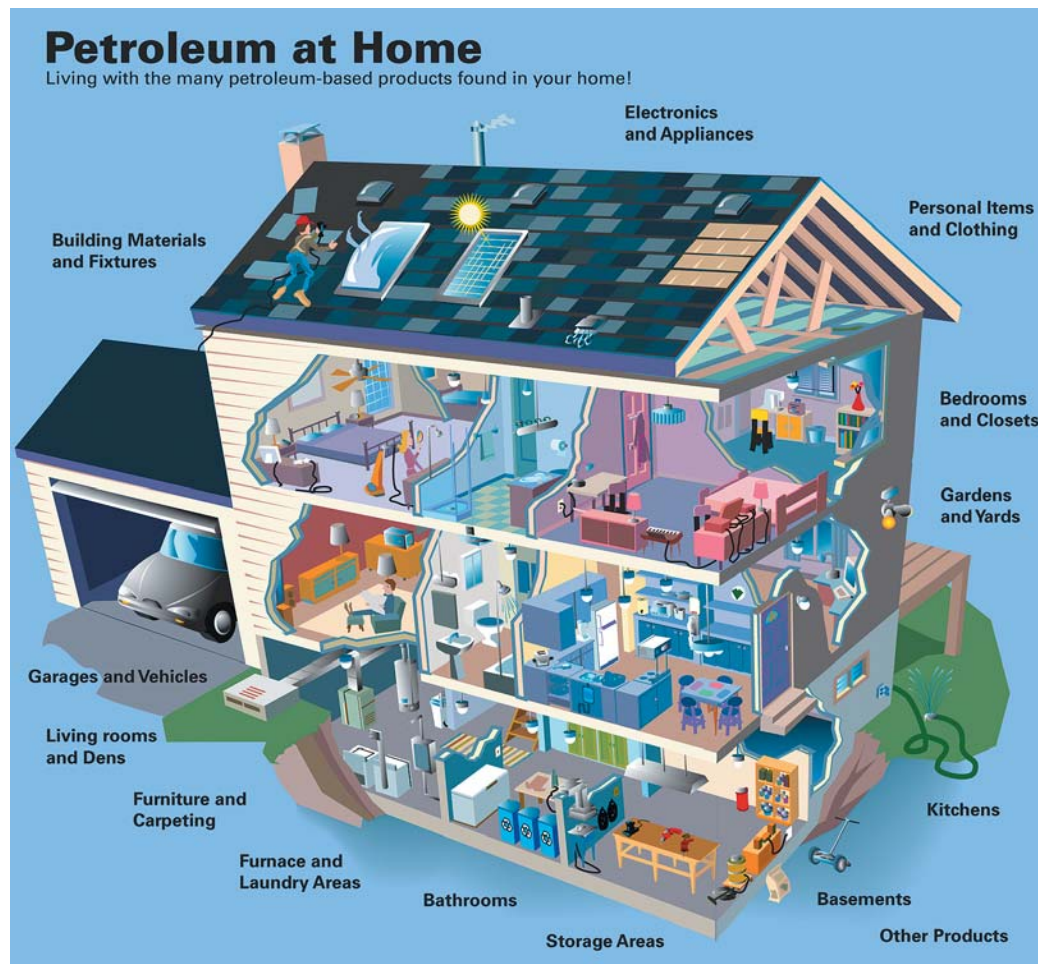
Sanford recently became the official sports medicine provider for Watford City public schools. Leah Washington, licensed Sanford athletic trainer, will provide free sports injury screenings at the Sanford Health Watford City Clinic.

To make an appointment with a Sanford specialist in Watford City, call (701) 456-6244 or (800) 695-7245. ■



MYTHS OF THE BAKKEN

MYTH #11:



ONLY FUEL AND LUBRICANTS ARE MADE FROM BAKKEN CRUDE OIL!



By Kathleen Neset,
President of Neset Consulting Service



Only fuel and lubricants are made from Bakken Crude. Actually, it's difficult to find items in our everyday life that aren't made from crude oil. Surprising, isn't it?

We all think of the common products that are made from crude oil, those being fuels and lubricants. However, crude oil is used in many products we use every day.

Why is this important to understand? Just as a reliable source of energy is paramount to our national security – so is a reliable source of petroleum, necessary for a diverse set of products that are not only low cost but have also become essential to our everyday lives.

Let's look at some of these products so we can understand the widespread use of petroleum projects beyond fuels and lubricants.

Depending on the type of crude oil refined, approximately 46 to 50% of a barrel of crude oil is used to make gasoline. We currently enjoy benefits of our Bakken and Three Forks success directly, in the form of reliable supply and low cost gasoline at the pump.

There was a time in the 1970s when that wasn't the case. If you were a teenager or adult during the 1970s you may remember gasoline rationing and a very unstable market, caused by an unreliable

source of oil imports from foreign nations. The United States was in a very difficult situation of not meeting the needs of our great nation's energy demand.

Fast forward to today. We now have a reliable, safe, and secure source of domestic crude oil readily available to us. This is due in large part to the tremendous success of our energy industry and domestic oil companies in the Bakken, Three Forks, and other oilfields and shale oils around the United States.

In addition to gasoline, much of our crude oil goes to making diesel, jet fuel,

Depending on the type of crude oil refined, approximately 46 to 50% of a barrel of crude oil is used to make gasoline.

propane, home heating oil and a myriad of other fuels used to meet our transportation and energy needs. These energy sources fuel our industrial sector and business world. Now, let's take a look at some of the less known uses of crude oil, so we can more fully understand the balance and importance of developing and maintaining a safe and reliable source of crude oil for America.

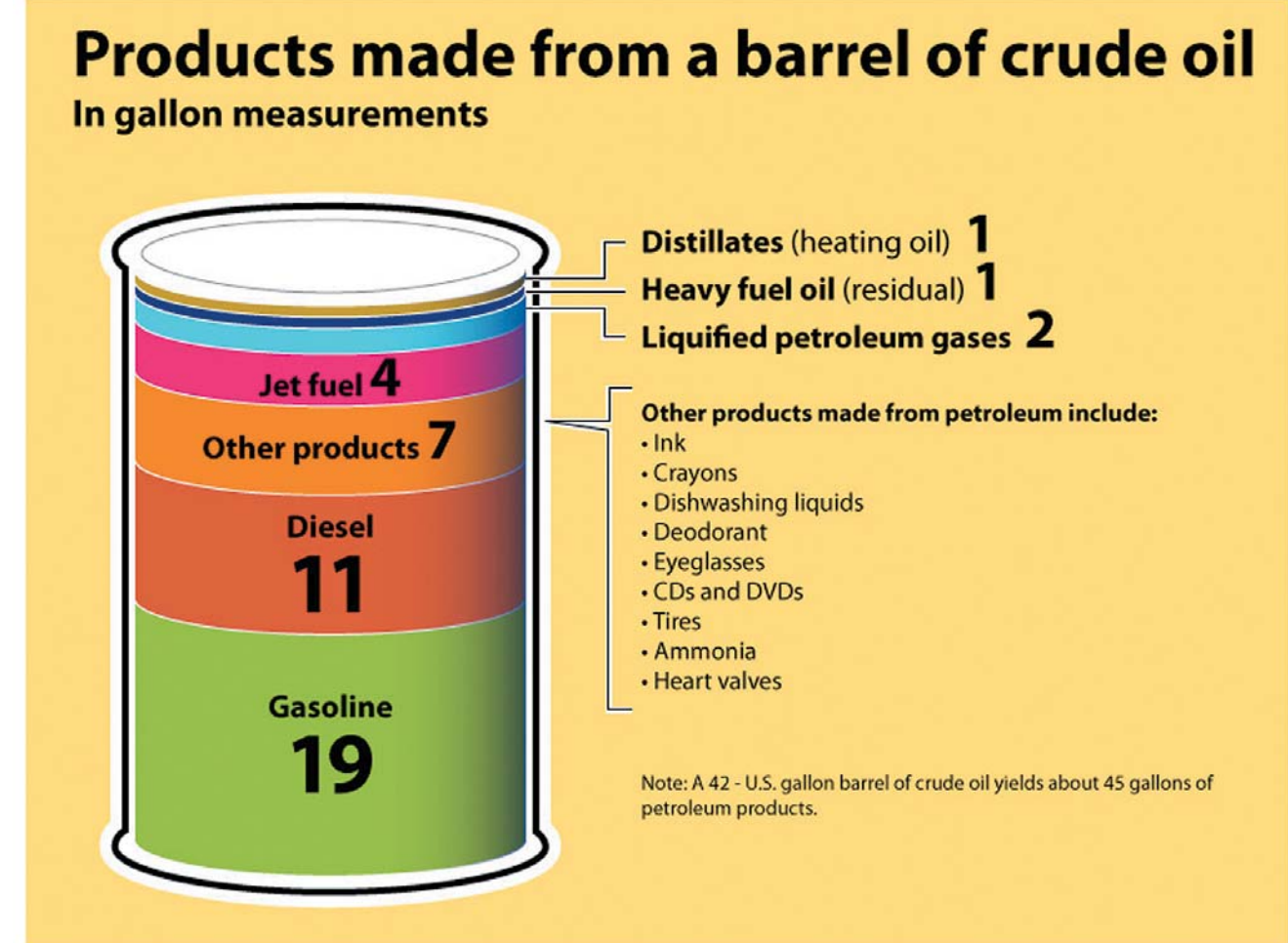
Plastics – nearly all plastics are made from petrochemicals. It's difficult to imagine what life would be like without plastics. From soda bottles to toys, vehicle parts to tractor parts, our lives are integrated with plastics. Nearly 4 to 5% of U.S. petroleum consumption is used in the manufacture of plastic products.

Plastics are used in so many varied items, that it's hard to imagine life without them. Think of our medical community, and how important using various plastic products is to the success of medical advancements, in and out of the operating room.

Food industry – it is difficult to find a food product that has not been touched in some way by petroleum products. Even organic foods are influenced by petroleum products. Machinery that harvests the grains, need plastics and therefore petroleum to build them.

Fertilizers and herbicides are also petroleum-based products. Wrappers that package our foods, are derived from petroleum products. Ingredients in many of our foods, including chewing gum, are petroleum-based polymers.

Fabrics – it's not just cotton anymore! As much as we enjoy natural fibers such as cotton and wool, there are wonderful textiles that are derived from petroleum products. Look at nylons, spandex, lycra



Source: U.S. Energy Information Administration

and polyester. The fashion industry has found ways to develop some pretty neat fabrics, clothes and textiles with this variation on natural fibers.

Look around your home – curtains, furniture cushions and carpets, are just a few of the many items in our clothes closet and homes that are based on the petroleum cycle.

Asphalt – the material that binds our roadways together. Asphalt acts as the glue that holds together various minerals to make asphalt roads. Tar, a product of the coal industry and similar, is still

different than asphalt.

Cleaning products – many of the ingredients in our cleaning products are derived from petroleum products. The names on the labels of our cleaners are not only long – but difficult to pronounce. Many have been created from the petrochemical business. Look at laundry and dishwashing detergents – most are made from a petroleum base.

Medicines – ok, this one is hard to swallow! Many pain medications are derived from benzene, which in turn is derived from petroleum. Imagine that,

the very things that make us better and relieve our aches and pains, are influenced by the petroleum industry.

Many would have a difficult day getting by without a pain medication. Our medical community and advancements have been expanded due to the influence, and use of benzenes and petroleum based products.

Cosmetics – I find it had to believe that the nice smelling face cream put on skin, is actually made from petroleum based products. Imagine smearing dead, organic molecules on skin to look better



and yet that is exactly what we do! From the lipstick to perfumes, dyes, shampoos and conditions, all are byproducts of petroleum products.

Adhesives – think of all the ways adhesives impact our lives. From the glue that holds our cereal bag closed in the morning, to the adhesive that helps build the wood product to construct our homes, adhesives are a big part of our lives.

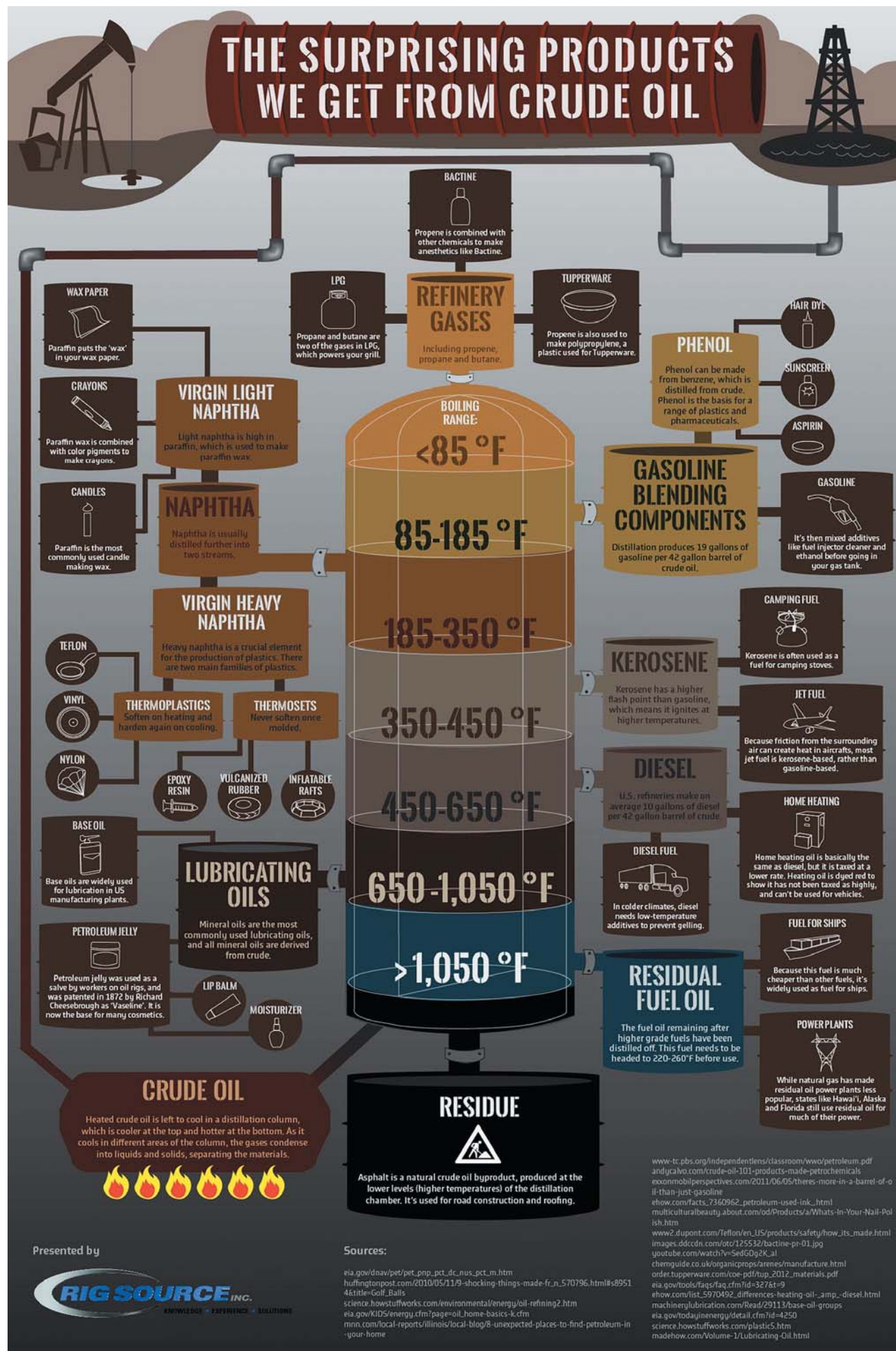
Why is this discussion important? It is extremely important that we understand the vast and widespread use of petroleum

There is a balance between exploring for and producing crude oil and natural gas safely and effectively, and the need for petroleum products in our daily lives.

products and petroleum derivatives in our daily lives. We should also recognize the importance of our oil and gas industry in using environmentally safe means to extract this natural energy source from deep beneath our beautiful North Dakota landscape.

There is a balance between exploring for and producing crude oil and natural gas safely and effectively, and the need for petroleum products in our daily lives. It is disingenuous to condemn oil and gas exploration, and then take a vacation using petroleum products, wearing petroleum based fabrics and eating foods aided by petroleum enhanced fertilizers.

We enjoy the benefits, and hopefully appreciate just how widespread petroleum-based products are in our daily lives. Congratulations to an energy industry that is working to develop this natural resource safely. By doing so, they help to ensure our national security by providing oil not only to fuel our vehicles, but to also fuel our lives. It's all about a balance! ■





NATIONAL RIG COUNT REMAINS LOW, PUSHING NIMBLY UPWARD

By Dan Sharp for Bakken Breakout

Depressed oil prices amid record high inventories continue to dampen drilling rig activity across the country. Efficient operators are focused primarily on maintaining production levels and repaying debt. In early July, 2015 Baker Hughes

reported 640 active oil rigs and 231 natural gas rigs in operation. The good news is that the weekly rig count increased by 12 thereby ending a decline that began in December 2014. The top five states with operating rigs were: Texas (363), Oklahoma (106), North

Dakota (76), Louisiana (73), and Pennsylvania (47).

Rigs drilling for crude oil reached a peak in October 2014 with 1,609 in the field. Natural gas rig count peaked in early 2012 with more than 900 rigs. According to Baker

Hughes, the one-year rig count decline is the steepest since 1987. Operating rigs in Canada totaled 139, down 170 from one year earlier.

The national slowdown is mirrored across the Williston Basin's Bakken

Efficient operators are focused primarily on maintaining production levels and repaying debt.

Above photo: Occidental Petroleum

Occidental Petroleum has employed carbon dioxide-flooding enhanced oil recovery techniques on many its older Permian Basin wells recovering 10-25 percent more oil from each well.



Marcellus Shale Coalition

Pennsylvania is considering a new tax on natural gas production that would set a minimum price for taxation purposes. The Marcellus Shale Coalition, a group of business, industry, and community leaders, opposes the new tax and supports the economic benefits natural gas production is providing.

play as well. Baker Hughes counted 76 rigs in operation – all but one were horizontal wells seeking crude oil. McKenzie County continued to lead North Dakota counties, followed by Williams County and Mountrail County. One year earlier, some 200 rigs were active in the Bakken in North Dakota and Montana.

Here's a review of rigs now operating in the country's major shale oil and gas plays along with some recent news events.

Texas drilling remains depressed, production stable

The largest drilling decline has occurred in the Permian Basin, which underlies much of western Texas and adjacent parts of New Mexico. The play, the country's most prolific crude oil producer, had 233 rigs operating in late June 2015, down from 554 rigs one year earlier. The first commercial well was drilled here in 1921, now, roughly one of every five barrels of oil produced in the United States comes from the Permian Basin.

Oil production has remained steady at just over two million barrels per day with average daily natural gas production steady at about six billion cubic feet. This basin, more than any other in the United States, is the home

of "Big Oil". Major operators include: Chevron, Occidental Petroleum, Apache Corp., Concho Resources, and Pioneer Resources. While the large operators have maintained active, if less aggressive, drilling during the first half of 2015, many small operators in the

Texas' two smaller oil and gas plays, the Eagle Ford and Barnett, have felt the rig count down-turn as well. Eagle Ford play drilling declined from 214 active rigs to 103 rigs, late June 2014 to the same period in 2015. The play extends across 14 south Texas counties and

immigrants from Mexico. The problem has become more acute over the past two years and has prompted the Texas Railroad Commission to take steps to protect its pipeline inspectors. Those steps include permission to carry handguns for those inspectors who are properly licensed to do so.

Of special note here, over the past several years Occidental has employed carbon dioxide-flooding enhanced oil recovery techniques (EOR) on many its older Permian basin wells recovering 10-25 percent more oil from each well.

basin have either severely curtailed or stopped drilling altogether, accounting for most of the basin's rig count decline.

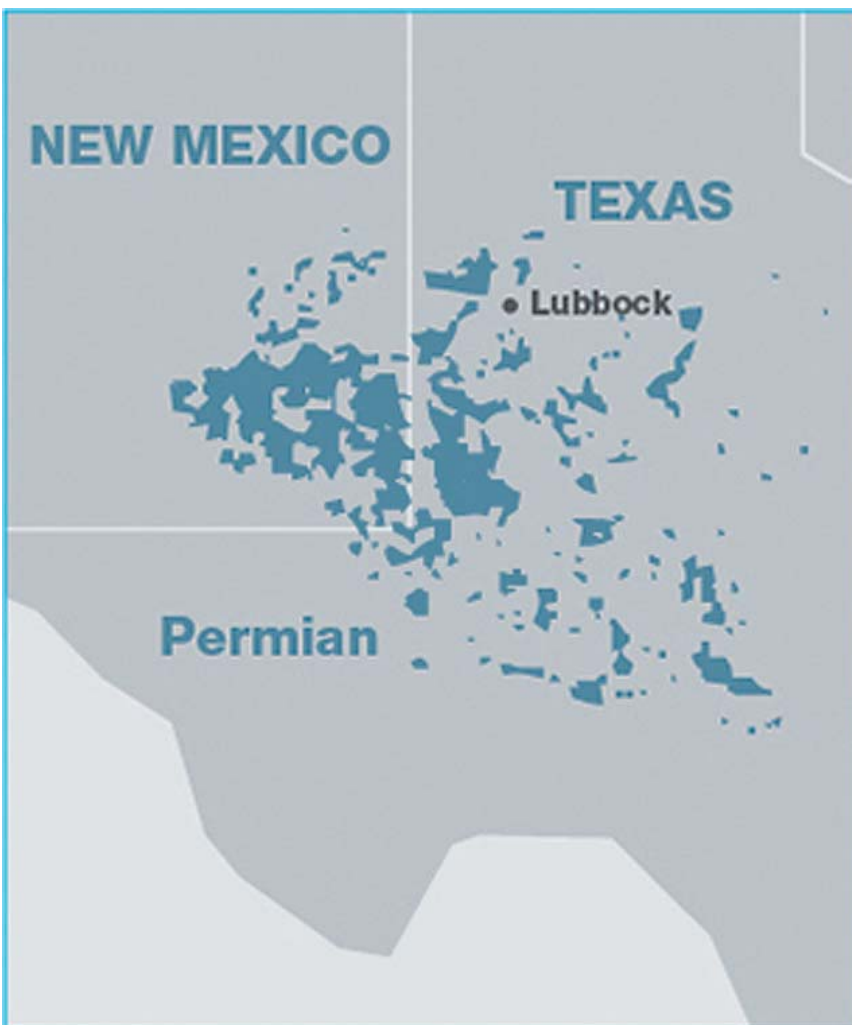
Of special note here, over the past several years Occidental has employed carbon dioxide-flooding enhanced oil recovery techniques (EOR) on many its older Permian basin wells recovering 10-25 percent more oil from each well. The carbon dioxide (CO₂) gas is piped from natural gas fields with high CO₂ content in southwestern Texas and northeastern New Mexico.

continues across the international border into Mexico. Crude oil production has dropped slightly, to just over 1.7 million barrels per day. Natural gas production, also slightly down, averages about seven billion cubic feet per day. EOG Resources is the play's largest operator.

An unintended consequence of the Eagle Ford's near meteoric rise in drilling and production prominence has been the increased use of private oil field roads for smuggling drugs and illegal

Further north, in and around Ft. Worth, drilling in the state's Barnett shale play has declined by 80 percent with just five rigs operating. The Barnett is one of the country's premier natural gas plays with oil production here in its infancy. Major operators include: Devon Energy, Chesapeake Energy, XTO Energy, and EOG Resources. In May 2015, Texas Governor Greg Abbot signed into law a bill that prohibits Texas municipalities from banning fracking within city limits. The issue came to a head in late 2014 when, by referendum, the City of Denton banned fracking, which here primarily involves the Barnett shale.

Two Pennsylvania plays limping along
The nation's most prolific natural gas play – the Marcellus shale – has enjoyed a fairly strong rig count when compared to other gas plays across the country. The late June 2015 rig count stood at 65, down 17 rigs from one year earlier. The Marcellus underlies several eastern states with most development centered in Pennsylvania. With daily gas



Occidental Petroleum

The Permian Basin produces one of every five barrels of American oil. Its rig count is down more than 300 from one year ago.

production averaging over 14 billion cubic feet, this play alone would rank 13th in the world compared to the top natural gas producing countries.

Geologists have known for decades that the Marcellus harbored enormous volumes of gas. But, prior to horizontal drilling and fracking technology, the shale was never given serious attention. That all began to change about 2007, when the first horizontal wells were

completed. Since then, nearly nine thousand wells have been drilled into Pennsylvania's Marcellus with hundreds more drilled in eastern Ohio and northern West Virginia counties. The U.S. Geological Survey (USGS) estimates the Marcellus to contain somewhere between 141 and 400 trillion cubic feet of natural gas. The United States consumes about 27 trillion cubic feet per year.

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Bill Barret Co

Although Colorado's Niobrara play rig count has declined by about 80 units in the past year, Denver-based Bill Barrett Corp. recently announced it will increase its 2015 well completions by 11 to 40 by year's end.

Underlying the Marcellus by several thousand feet, the Utica shale's rig count declined to 19 in late June compared to 43 a year ago. The Utica is both an oil and natural gas play producing about 60,000 Bpd and about 2.5 million cubic feet of natural gas. Development has been strong in eastern Ohio, northwestern West Virginia and western Pennsylvania. It has a much wider footprint than the Marcellus extending from Kentucky to northern New York and into Quebec.

Earlier this year, Pennsylvania Governor Tom Wolf proposed a natural gas extraction tax that includes a unique feature – no matter how low the wellhead price of natural gas actually drops, it would be taxed at a minimum price of \$2.97 per thousand cubic feet. The measure would not allow natural

gas producers to pass any losses due to the tax on to royalty recipients. The proposed tax is being opposed by a broad coalition of operators, business leaders, manufacturers, and community officials. Chesapeake Energy, Anadarko Petroleum, XTO Energy, EOG Resources, and Range Resources are among the biggest operators in the Marcellus and Utica plays. In December 2014, Chesapeake closed on a \$5 billion deal selling some of its older Marcellus assets to Houston-based Southwestern Energy Co.

Other plays continue to lag

During the past 10 years, the Niobrara shale has become a major oil and gas producer. The play, which is located mostly in Colorado and to a lesser extent in neighboring Nebraska, Kansas, and Wyoming, produces 400,000

barrels per day and 5.8 million cubic feet of natural gas. The rig count, which exceeded 140 in late 2014, has declined to just 60 in early July.

In spite of the continued low prices, Denver-based Bill Barrett Corp. is bucking the cutback trend and announced in June 2015 that it plans to accelerate its 2015 drilling plans into the Niobrara. The company expects to complete an additional 11 wells bringing its 2015 well completions to 40 and its capital expenditures to \$320-\$350 million. The new wells will increase the company's production by 60 percent. Other Niobrara operators include: ConocoPhillips, Encana, Noble Energy, and Whiting Petroleum.

Two other major tight formation plays, the Haynesville and the Mississippian

lime, have also followed the national downward rig count trend. The Haynesville, a promising natural gas play straddling the Texas-Louisiana state line, had 43 operating rigs beginning July 2015, down 15 rigs from one year earlier.

The Mississippian lime, extending from northern Oklahoma through western Kansas and into southern Nebraska, is an old play that has been given new life through horizontal drilling and fracking. Named for the Mississippian period of geologic history (about 360-320 million years ago), this oil and natural gas play is found in limestone that is 300-500 feet thick and only 3,000 to 6,000 feet deep. The play had 22 rigs operating in early July 2015, down 55 rigs from one year earlier. ■

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WILL THE BAKKEN M & A ACTIVITY TURN CRUDE?

By Jason Spiess for Bakken Breakout

Over the past five years a number of prominent owners in industry, high level executives and dignitaries have visited the Bakken oil fields. Whether it was a scouting mission, a boots-on-the-ground project or conference, for many, it was their first time in North Dakota.

That alone should have been an indication how special the Bakken really is. Additionally, the one common theme, or words, those high level minds seemed to have was paradigm shift or major change in the industry. They

weren't sensational phrases to appease the local media. Rather, they were verbal signals indicating the unpredictable future that lies ahead for the oil and gas industry.

Honestly, when oil and gas is sending their rock stars, in effect professionals with clout to North Dakota, everyone should perk up. The simple explanation is the industry is truly experiencing a paradigm shift.

Paradigm shifts are real and naturally create their own economic cycle. Most

often in an industry shift you will see mid-level M&A activity. However, when human marketplace industries go through an industry wide paradigm shift, a much larger M&A cycle occurs.

U.S. Congressman Kevin Cramer understands what is happening in the energy industry and sees low crude oil prices as a catalyst in the M&A world.

"Mergers and acquisitions are sort of a natural consequence of when there is price collapse. Whenever the market gets tight you see a lot of that activity,"

Honestly, when oil and gas is sending their rock stars, in effect professionals with clout to North Dakota, everyone should perk up.



Paul Flessland

Cramer said. "During the past several months whenever I have met with, say a larger company, I ask them if they've seen any acquisition opportunities as a result of the slide in the market. If it's a smaller company I would ask them if they've seen any opportunities for mergers or partnerships or even to be acquired."

Cramer cautioned that history hasn't always been easy on the "little guy" during these M&A cycles.

"Now the problem with being the little guy in a market like this is it can become kind of a fire sale, and that's not good for the little guy," Cramer said. "You prefer to make yourself

available for acquisition when the market's high and the value of your company is high."

Robert Bryce, senior fellow, Manhattan Institute agrees with Congressman Cramer's M&A cycle analogy, and believes industry is still gathering resources before the next M&A phase

kicks in.

"I think there are some rivers that are just dry right now," Bryce said. "There are some consolidations on the midstream sector, but when it comes to upstream companies it may be awhile before we start to see more M&A activity."

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”

Bryce elaborated on his economic energy outlook. "I think a lot of companies have been reluctant to slow down drilling and are hoping for an increase in oil prices," Bryce said. "If oil and gas prices stay at these levels, M&A activity will likely pick up in 2016."

He believes some companies will not have the cash flow or financial backing to sustain a long period of soft oil prices. "Companies will not be able to afford to continue on how they have been," Bryce said.

Bryce then pointed out many companies operating in shale plays, like the Bakken, are private companies who don't fall under the same obligations as a publically held company.

"Some of these companies that are already under pressure are not necessarily publicly held," Bryce said. "If you look at Aubrey McClendon's company, American Energy Partners - they purchased a lot of leases at top of the market and have committed themselves to a number of drilling programs and they're already looking at raising more cash because they overextended themselves. M&A activity may not necessarily be in public markets and may happen as a private transaction, therefore may not be as well known."

Dr. Loren Scott, president, Loren C. Scott & Associates, agrees current prices are definitely creating an environment for an active M&A cycle, but believes there is more happening due to the shale revolution.

"When you have declines in oil prices like we've seen over the past year, M&A's are one of the things that tend to happen," Scott said. "You say M&A, because some of these firms are highly leveraged and when price falls, can really get themselves into trouble. One of the ways you can save yourself is merging with someone else."

Scott said the Crude Oil Export Ban is the critical item in determining the future of U.S. oil production and industry's sustainability.

"If you think about it, when did the price of oil start to fall?" Scott asks. "It started to fall about late summer or early fall of last year. What happened to precipitate this decline was that there was an oil drilling company that went to the Department of Commerce and said they understood it was against the law to export crude oil. But suppose we took a barrel of crude and skimmed a little bit of the volatile gases off the top of it. Could we export that?"

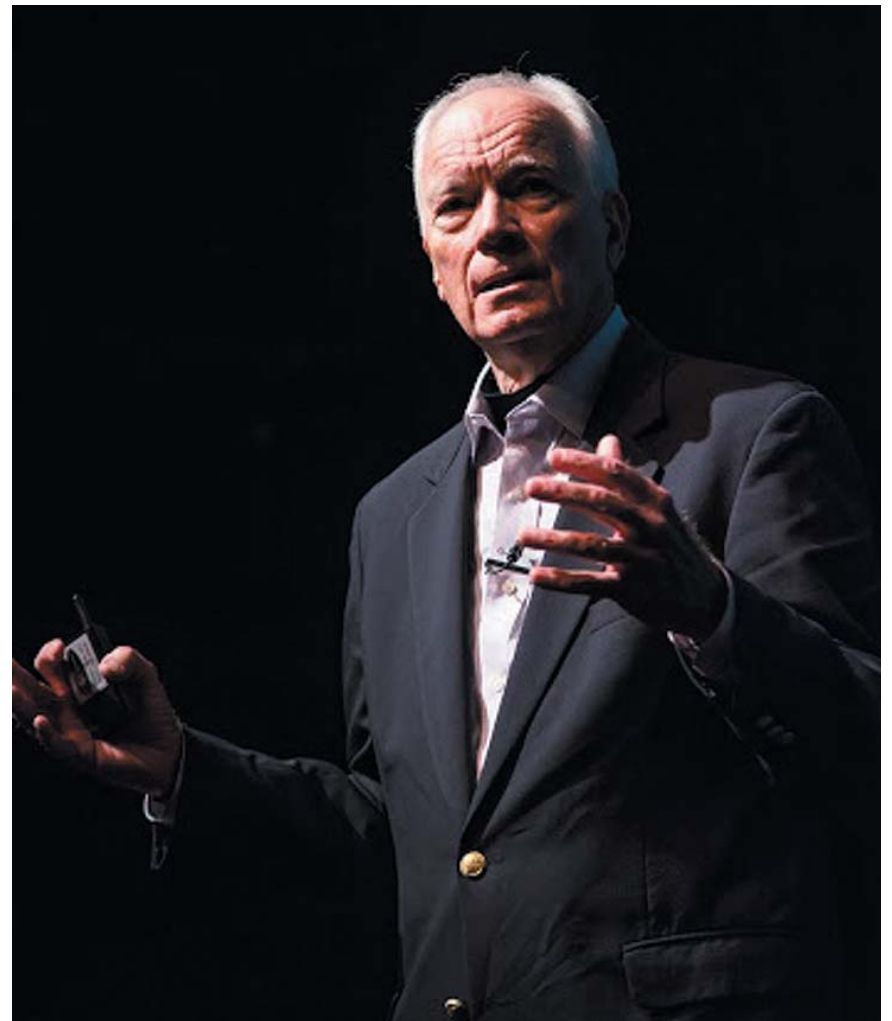
Scott said then more companies started asking the Department of Commerce if they could skim a little bit off the top, then another company. "You see it's illegal to export crude, but it's not illegal to export crude products," Scott said. "You can export diesel, you can export gasoline all you want, there's no rule against that."

Bryce sees the crude oil ban as a major piece that could influence future M&A activity, too. In fact Bryce believes this piece of legislation is one of the top issues in oil and gas today.

"When was the last time you heard a farmer say we shouldn't be exporting our corn. Or Intel saying we shouldn't be exporting microchips," Bryce said. "Instead we're stuck in this disco era attitude toward petroleum, that somehow we're going to run out or prices are going to go up. Well this is a global commodity. It's one of the most important global commodities in all of human history and the U.S. has this disco era idea that it's our oil, so we shouldn't be exporting it. It's way past time to repeal the export ban - it should have been done a long time ago."

Congressman Cramer believes the crude oil ban is very instrumental in M&A activity, as well as global power positioning.

"When you take the antiquated crude oil export ban and add to that President Obama is now bragging about a deal with Iran that suddenly allows them to sell their oil in the global marketplace you're going to see a further dilution of our role as a stabilizing force in the global marketplace. So really it's time



Paul Flessland

“When you take the antiquated crude oil export ban and add to that President Obama is now bragging about a deal with Iran that suddenly allows them to sell their oil in the global marketplace you're going to see a further dilution of our role as a stabilizing force in the global marketplace. So really it's time to lift that export ban.”



Paul Flessland

to lift that export ban."

Circling around, Cramer continued with specifics on how it all ties back into the Bakken's M&A cycle.

"Here is the role I think lifting the export ban can have specifically, when talking about mergers and acquisitions, because we're now up against the wall with light sweet crude. We're now producing as much as our domestic refinery capacity can handle. On any given day we're at the wall."

Cramer cautions without lifting the ban and creating a more even playing field, companies may freeze activities and hurt America's

role in energy independence.

"When that happens you don't drill new holes, you don't drill for new oil," Cramer said. "We've doubled the production in the United States since 2008 to now," Cramer said. "We can double it again in roughly the same time frame if we have a place to sell the oil. If we don't have a place to sell the oil, obviously we can't produce more of it."

Whether it is loosening federal reign to allow more refineries, more storage, or more overseas shipments, Cramer sees enormous amounts of economic potential as long as the drilling is able to

continue and the oil can get to market.

"When you're producing more than the market allows, even at \$60, it takes more people, more steel, more transportation infrastructure. It presents a lot more opportunity for entrepreneurship and innovation, because you're going to go after that oil," Cramer said. "You're going to do research and develop new ways to frack, to be more productive and efficient with your operation. All of that presents entrepreneurial opportunity. But at the same time, it presents more market opportunities for mergers and acquisitions." ■

Cramer cautions without lifting the ban and creating a more even playing field, companies may freeze activities and hurt America's role in energy independence.

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VIEW FROM THE OIL PATCH:

BAKKEN IS DOWN — BUT NOT OUT



Source: North Dakota Oil Can



By Tessa Sandstrom
North Dakota Petroleum Council



Flags and banners fluttered in the breeze, on what were beautiful North Dakota summer days. Hundreds of people wandering from one brightly colored table to another, sampled ribs, brisket, “pasta-laya” and more while local musicians sang their tunes. Those jovial scenes belonged to both Alexander and South Heart last month, as the North Dakota Petroleum Council hosted its 7th Annual Bakken Rocks CookFest.

For anyone not familiar with CookFest, or any of the other festivals and events held in western North Dakota each summer, the cheerful scenes may have been surprising. The bright colors, smiling faces and festive atmosphere stood in stark contrast to stories and articles, those painting gray scenes of doom and gloom amid low oil prices.

From these stories, one might expect tumbleweeds and dirt blowing through deserted towns, but instead, CookFest brought out hundreds of people tripling,

if not quadrupling, the population of both communities for the afternoon.

For companies participating, this year’s CookFests were special for that reason. While trinkets and goodies adorned with company logos weren’t as plentiful as past years, the turnout was. In Alexander, 18 teams from 38 companies came out to cook for the town. In South Heart, 15 teams made up of 32 companies, moved in to dish out some of the best BBQ in the state. For all of them, it wasn’t just an opportunity to give back; it was an opportunity to stand up and say, “We’re still here, we’re still committed.”

Yes, oil prices are down and activity has slowed, but it isn’t gone. For those of us who live in or travel to western North Dakota often, we know traffic is still heavy, towns are still bustling, and construction is still occurring, just not as much as before.

But, it is difficult to dispute the doom and gloom by touting great things

happening when there are human factors to consider. I have friends who have had the miserable job of laying people off this year. I’ve been the recipient of emails that have bounced back from friends and colleagues as either undeliverable or stating, “this person no longer works here.”

I’ve had to be the person telling a deserving nonprofit that unfortunately, due to oil prices, many companies are forced to be more diligent with community spending, and just don’t have the resources this year. It’s hard for some to understand, but it’s difficult for these companies to dole out big contributions while employees are being let go.

I’ve also talked to friends who had been fortunate enough in the past to receive small royalty checks to help pay bills, or live more comfortably than in the past. They’ve confided that their checks are getting much smaller.

When you talk to those people and think



Source: North Dakota Oil Can

about the thousands of others you know are out there, those who have lost their job or seen their businesses slow, it's not realistic to tell inquiring reporters or others that everything is still great. That would be insensitive. For many, it's not great.

Yet, while we may be in a slowdown, it would be inaccurate to call it a bust.

At the 2015 Williston Basin Petroleum Conference, a presenter, Tony Cadrin, spoke about the slowdown and cycles

and every one of these cycles, coming out stronger through innovation and optimization. After all, hydraulic fracturing and horizontal drilling were born from a bust, and they've helped create perhaps the single greatest opportunity for our nation to improve its economic trajectory and standing in the world.

So as I look back at the photos from CookFest at the people who happily dished out salads and sides, I am also looking at the people who are dedicated

For those of us who live in or travel to western North Dakota often, we know traffic is still heavy, towns are still bustling, and construction is still occurring, just not as much as before.

we've seen before. Coincidentally, he, too, had been laid off not long before the conference. Still, Cadrin didn't lose perspective and didn't fall victim to the bust mentality. Instead, he saw opportunity.

After all, there are two things to keep in mind about the petroleum sector. First, we have gone through numerous commodity cycles in the past, and will continue to in the future. It's the nature of commodities.

Second, the industry has survived each

to and care for our communities. The industry may not be able to contribute as much financially as before, but we're finding ways to pitch in and give back to show our dedication.

As CookFest shows, we have people ready and willing to volunteer. We're planning blood, food and coat drives to help give back as well. We have teams entering marathons and 10K's to help worthy causes. Activity may have slowed down, but our dedication and commitment to communities has not. In other words, we're here to stay. ■



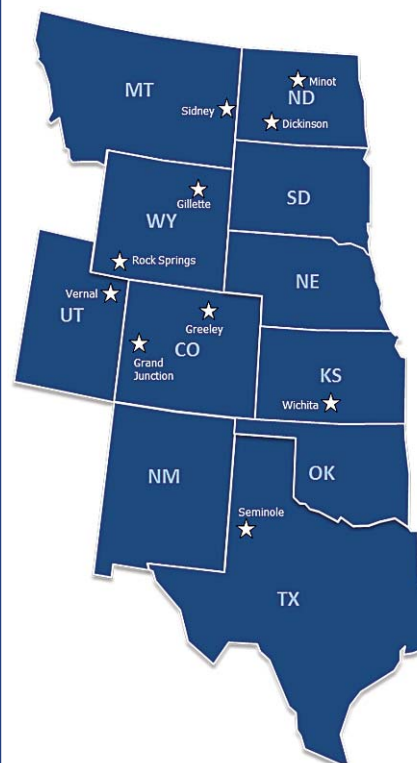
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CAN ARGENTINA RESPONSIBLY DEVELOP ITS MASSIVE SHALE OIL AND GAS POTENTIAL?

By Dan Sharp for Bakken Breakout



Source: Chevron

Chevron plans to frack as many as 1,500 wells in the Vaca Muerta play. The company's holdings are in cooperation with YPF, Argentina's state-owned oil company.

Just a quick glance at a world map shows you two basic facts about Mother Earth – 1) there is a lot more water than land, and 2) the Northern Hemisphere has a lopsided share of the planet's terra firma. In fact, two-thirds of earth's dry land is north of the Equator. Four out of every five square miles in the Southern Hemisphere is seascapes.

Even so, Southern Hemisphere countries have been blessed with more than their share of mineral resources – gold and iron ore in Australia, copper in Chile, diamonds in South Africa, just to scratch the surface. Conspicuously absent from the list of abundant natural riches, however, are oil and natural gas. Of the world's top ten oil-producing countries not one is in the Southern Hemisphere. With very few exceptions, countries there have been (and still are) net importers of fossil fuels. But, that is gradually changing largely due to Northern Hemisphere technology – horizontal

drilling and hydraulic fracturing.

World-class potential

In June 2013, the United States Energy Information Administration (EIA) updated its assessment of technically recoverable shale oil and gas reserves outside the United States. One Southern Hemisphere country made the top five with both fuels – Argentina. According to EIA, Argentina ranks fourth in shale oil reserves at 27 billion barrels, and second in shale gas with 802 trillion cubic feet. The report focused on 41 countries, 96 sedimentary basins, and 137 tight shale formations.

Argentina has the potential to become a world-class oil and gas producer. The good news is more than welcomed in a country that has historically been self-sufficient in oil and natural gas, somewhat unique among southern countries. Argentina's oil industry dates back to 1907 when oil was discovered by accident along the Patagonian coast.

Afrikaner immigrants settled there just after the Boer War ended in South Africa. Drilling for water in the semiarid region, they discovered oil. Argentine law forbade private ownership of mineral resources, so the Boers were moved elsewhere and the government took over the oil.

The potential shale oil wealth is entrusted to a country with a long history of conflict between government and private enterprise, historically causing some hesitation for foreign investment. One Argentine regime after another has viewed oil and natural gas as a cash cow for helping fund decades of government largesse and mismanagement. In the late 1920s, the government constructed the town of Comodoro Rivadavia to service the fledgling industry. Comodoro, as it is called, quickly became the Argentine Houston. In 1922, the government established a company called Yacimientos Petroliferos Fiscales, or YPF, as the

world's first state-run oil company, which subsequently served as a model for nationalization in other Latin American countries.

During its first year of operation, YPF produced 2.2 million barrels of oil – comparable to less than two days of current Bakken production – which accounted for one-fourth of the country's needs. The remainder of Argentine production was controlled by Standard Oil of New Jersey – today's ExxonMobil – and Royal Dutch Shell. Anti-Standard Oil forces nationalized the country's oil exploration and production industry in 1927. A coup, some say engineered by Standard Oil, ousted the government in 1929, which preserved private investment for the time-being.

Drilling contracts with foreign companies enabled YPF to increase production from five million barrels in 1934 to 109 million barrels in 1998, roughly three-fourths of total Argentine production.

Argentina has the potential to become a world-class oil and gas producer. The good news is more than welcomed in a country that has historically been self-sufficient in oil and natural gas, somewhat unique among southern countries



Source: Gazprom

On April 23, 2015, Argentine President Christina Kirchner and Russian President Vladimir Putin signed a memorandum of cooperation in Moscow whereby Russia will provide technical and financial assistance in developing Argentina's Vaca Muerta shale oil and gas resources. (Source: Gazprom)

With the Comodoro fields in steady decline, YPF developed newly discovered resources principally in Salta Province in the far northwest and the Neuquen basin in the rain shadow of the Andes. Madrid-based Repsol S.A. purchased YPF in 1999, starting another episode in Argentina's topsy-turvy oil industry.

Repsol paid \$15 billion for YPF and thereby increased its reserves by 40 percent and its production by one-half. (Its new acquisition was called Repsol-YPF.) However, production and profits under Repsol began to fall almost immediately. The company blamed the Argentine government's price controls and other regulations for the downturn, while the government blamed the company for mismanagement and

neglect. By 2011, sentiment within Argentina favored government takeover of Repsol-YPL.

Nationalization rumors fueled a sharp decline in the company's value. In 2014, following arbitration by the World Bank, Argentina nationalized YPF paying Repsol \$5 billion for the share nationalized. The federal government subsequently agreed to share ownership of YPF with the provincial governments. Following nationalization, the government increased investment in YPF, especially in exploration.

Hopes pinned on a dead cow

In 2011, Argentina's Oil & Gas Institute reported that domestic oil production had declined 22 percent in the decade

2001-2010. Natural gas production had dropped 15 percent since 2004 with proven natural gas reserves down by 43 percent. The decline was the first decade since 1907 that domestic production had not increased. The nation faced an annual oil import bill of at least \$10 billion.

Things began to turn around in 2010 – or so it appears. After drilling two vertical wells into a tight shale formation called the Vaca Muerta ("Mad Cow" in Spanish), YPF completed its first horizontal well in July 2011. The formation is located in western Argentina just east of the Andes in the Neuquen basin. (It is one of four shale basins in the country.) Current reserve estimates for the Vaca Muerta are 16-22 billion barrels of oil and 308 trillion cubic feet

of natural gas. Numbers like those attract lots of attention.

The Vaca Muerta is made up of shales, chinks and other sedimentary rock units. It was laid down about 145 million years ago, so it predates the Bakken by nearly a quarter of a billion years of earth history. At that time the area to the east of the emerging Andes was covered by a shallow sea, which ultimately accumulated the microscopic organisms that became oil and gas. It's also a time when the super continent Gondwana was breaking up sending South America, Australia, Africa, India, and Antarctica on their separate ways.

The formation covers about 12,000 square miles, about the size of Maryland,

with incredible thicknesses that reach 1,000 feet in places. Its depth averages 7,000 to 8,000 feet. Similar to the Bakken and other North American tight shale plays, the Neuquen basin has had a conventional oil and gas industry for decades, which offers a number of advantages for further development. First and foremost is that local officials understand the oil business and are generally amenable to further development. In addition, the region has a skilled workforce, one steeped in all technical aspects of exploration and production.

Other practical advantages abound here as well. Neuquen basin geology is well understood due to more than 100 years of mapping and characterization. The region has one of South

December, Shell said it would invest \$500 million in 2014 – up from \$170 million the year before. YPF also signed a \$400 million deal with oilfield service company Archer Ltd. and a memorandum of understanding with PETRONAS, the state-owned oil company of Malaysia (that deal was completed as a three-year, \$550 million pilot project in August 2014). In October 2014, YPF announced it had signed a confidential deal with Russia's Gazprom, the world's largest natural gas producer.

By the end of March, Chevron and YPF announced 161 wells had been fracked and an additional \$1.6 billion would be invested by year's end with a goal of 170 additional fracked wells. The company's long-term goal is to frack an additional 1,500 wells.

In addition, the region has a skilled workforce, one steeped in all technical aspects of exploration and production.

America's most extensive pipeline systems and also boasts good road and power infrastructure and is served by a mature oilfield service industry.

Lots of foreign interest

Development of the Vaca Muerta is where Bakken development was nearly a decade ago. That is, it is in its very early stages. Nonetheless, activity is rapidly ramping up. In July 2013, YPF signed a joint exploration deal with Chevron aimed primarily at developing tight shale oil and gas resources. Chevron agreed to invest \$1.6 billion and drill 132 wells. Then the investment floodgates opened.

In September 2013, Dow Chemical Company's Argentine subsidiary, Dow Argentina, announced it would drill 16 horizontal natural gas wells in 2014 investing \$130 million. In

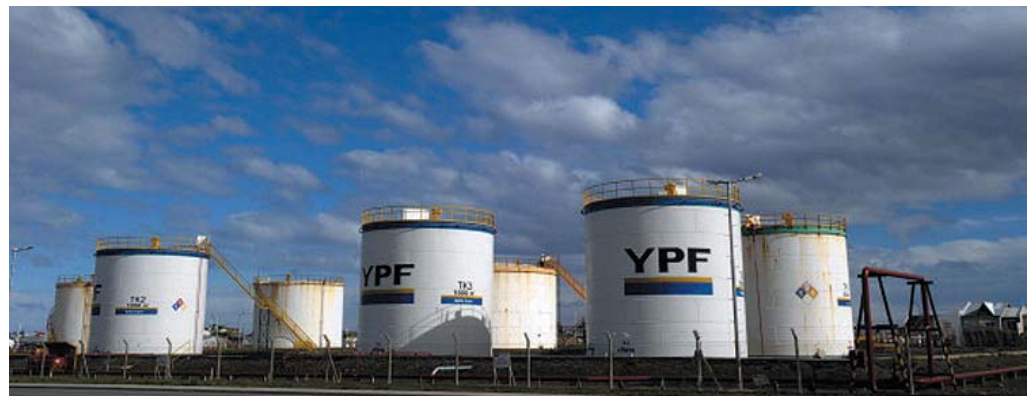
By September 2014, existing wells were producing 31,000 barrels per day, which increased to 45,000 barrels per day in April 2015.

The Argentine government has divided the Vaca Muerta play into exploration and development blocks managed by the consortiums of companies with which the government has deals. YPF is a partner in several blocks. While the Vaca Muerta has gotten the lion's share of attention, Argentina has three other tight shale formations that harbor significant amounts of oil/and or natural gas and will require fracking to exploit. They include the Chaco basin along the Paraguay-Brazil-Uruguay border, the Golfo San Jorge basin in Patagonia centered on Comodoro, and the Austral- Magallanes basin in the extreme south. ■



Source: U.S. Energy Information Administration

In 2013, the U.S. Energy Information Administration ranked Argentina as second in world tight shale gas resources and fourth in tight shale oil. The country's reserves are found in four basins.



Source: YPF

YPF, Argentina's state-owned oil and gas producer, estimates \$200 billion investments will be required to fully develop the Vaca Muerta play. Most of those dollars will come from foreign companies.



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North Dakota Industrial Commission seeks fines

The North Dakota Industrial Commission moved forward Tuesday to seek fines against an oil company for not cleaning up a pair of spills at well sites.

The three-member commission will pursue \$900,000 in fines against Hailey, Idaho-based Alturas Energy LLC for nearly a dozen separate counts.

The complaint moves to district court. A date for the hearing hasn't been set.

Department of Mineral Resources director Lynn Helms said Alturas' assets include eight wells and one treatment plant in western McKenzie County. Six of the wells have been inactive for more than three months, and the other two have been abandoned for more than one year. The treatment plant has also been abandoned for more than one year.

Spills at well sites owned by Alturas were found during inspections in November 2014 and January of this year, neither of which have been cleaned up.

Additional violations include not having proper dikes in place at multiple well sites and failing to file accurate sworn statements as to the amount of fluids injected into wells.

Multiple calls to Alturas for comment were not returned on Tuesday.

Helms said the company failed to respond to a complaint filed May 14 within the 21-day period allowed. He said the company has been operating in the state since 2010, and the department has had problems with it in the past.

"(A) \$900,000 fine is certainly in order with the record these guys have," Gov. Jack Dalrymple said.

The bulk of the complaint consists of a \$12,500 per month fine for the months of November 2010 through January of this year for failing to plug an abandoned well and reclaiming the site; the fine amounts to \$625,000 of the \$900,000. The remaining counts in the complaint are numerous violations carrying fines of \$12,500 apiece.

"We are not going to have an indefinite amount of patience," said Helms, adding the state is willing to work with companies on compliance to a point.

Fining Alturas also sends a warning to other companies, according to Helms.

"We think it's important to move aggressively at the beginning of this thing," Helms said.

Additional legal action may be taken in the future as well, Helms said. This could include confiscating assets and equipment.

The state's Abandoned Oil and Gas Well Plugging and Site Reclamation Fund may be used to clean the spills at the two sites. This could lead to additional costs to recoup from Alturas.
- Nick Smith

ConocoPhillips to move trails

The oil company that's having a huge impact on the Little Missouri State Park north of Killdeer has pledged to move some hiking and riding trails away from its operations.

ConocoPhillips, developer of the 30,000-acre Corral Creek Unit - the biggest drilling unit in the Bakken - says it will pay \$100,000 to move two trails away from a seven-pad drilling platform that will eventually contain 30 wells, service roads and three separate storage tank batteries.

The mega-unit, which is not constrained to the usual two-section drilling spacing unit, was created in 2011 to give the oil company more flexibility in where it drills wells.

Jim Lowry, spokesman for ConocoPhillips, said the company has worked with the North Dakota Parks and Recreation Department to be as least disruptive as possible.

"Part of that is working on those trails to maintain some distance so they (users) have a quality experience and not see our operations. That's our goal," Lowry said.

Because of oil discoveries in the Three Forks formation, the company has already exceeded its original plans to drill 83 wells in the unit. It is now at 86 wells, producing 471,000 barrels a month, with another 20

wells permitted.

Lowry said the downturn in oil prices has slowed the company's development pace in Corral Creek.

"It is ongoing but it's not proceeding as quickly," he said.

Lowry said concentrating wells onto multi-well pads is another way to reduce its footprint in the park area.

There are two rigs drilling in the unit now, according to the state's Oil and Gas Division.

Parks department project manager Jesse Hanson said the trails are located on private land owned by Burnell and Elaine Appledorn. The land has been leased to the state since 1971 as part of 3,500 private and federal acres that form the larger boundary of the park. The state owns 900 acres in the middle for camping, horse corrals and facilities.

Hanson said work will start sometime this summer to relocate four miles of the Wagon and Jim Creek trails, and when done, trail users will get a more pristine experience.

In the meantime, he urges trail users to head out on trails going north and northeast.

"In the short-term, they can go that direction to avoid the disruption," Hanson said. Some trails funding was used to improve those northerly trails for this very reason, he said.

Hanson said the camping and trail riding experience at the Little Missouri State Park is definitely changed from a time when one could look to the Little Missouri River and beyond without seeing a single light in the darkness.

"It's changed like everything has out west, but we have to move forward with what we have," he said.

- Lauren Donovan

Bakken Strike Force leadership named

Nearly two months after the Bakken Strike Force was announced, its leadership has been named.

Assistant U.S. Attorney Rick Volk, based in Bismarck, will supervise the prosecutors and

law enforcement officers assigned to the local, state and federal task force that will investigate and prosecute organized crime in the oil patch, ranging from gun running to drug and human trafficking to counterfeit and fraud operations.

In 2013, Volk received the director's award — the highest accolade given by the Department of Justice for assistant U.S. attorneys — for his involvement in the prosecution of a Fort Berthold human trafficking case.

His primary assignment was to prosecute violent crime in Indian country, according to a statement from Acting U.S. Attorney for North Dakota Christopher Myers.

Volk will supervise about 50 agents working out of four offices in Williston, Dickinson, Bismarck and Minot.

The Bakken Strike Force has been called the successor to Project Safe Bakken which, in 2013, marked the beginning of coordination between Montana, North Dakota and the federal government in addressing rising crime in that region.

- Andrew Sheeler

Incentives might entice companies

Incentives, such as sales tax exemptions, might entice companies to utilize techniques for enhanced oil recovery and should be considered, according to the state's top oil industry regulator.

Department of Mineral Resources director Lynn Helms made the suggestion Tuesday while outlining such recovery techniques as water, carbon dioxide or air before the interim Taxation Committee in the Roughrider Room at the state Capitol.

Helms told committee members the cost of such techniques may double the cost of a well.

"You can make a big difference with a relatively small investment," said Helms, citing that unconventional shale oil plays, such as the Bakken, can see a rate of recovery between 2 percent and 12 percent.

Lawmakers should consider options such as sales tax exemptions or other tax exemptions

BUSINESS BRIEFS

on the front end, according to Helms, adding that offsetting some of up-front costs would entice companies to experiment further with enhanced oil recovery projects.

“The entrepreneurs will beat the path to that door,” Helms said.

As for newer wells in the Bakken Formation, he said there have been unsuccessful tests with injecting water while one project for injecting gas has been approved but hasn't yet been conducted.

With Bakken drilling expected to last for decades, Helms said enhanced oil recovery will take years before becoming a major source of production in newer wells. He said this will provide time for industry to develop successful methods.

With the drop in oil prices, Helms said

companies have been hesitant to begin enhanced oil recovery projects due to cost and the need to ensure they can remain in operation.

“Once they start, they really can't stop. It's a freight train you have to keep going,” Helms said.

Committee chairwoman Sen. Jessica Unruh, R-Beulah, agreed with Helms that the issue of enhanced oil recovery provides options for consideration.

“There are many places where taxation comes into play,” Unruh said.
- Nick Smith

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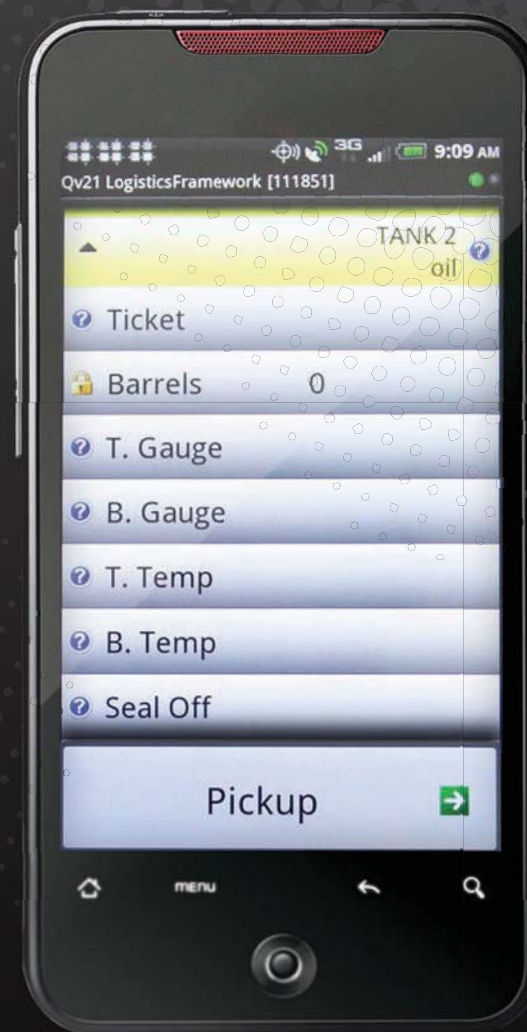
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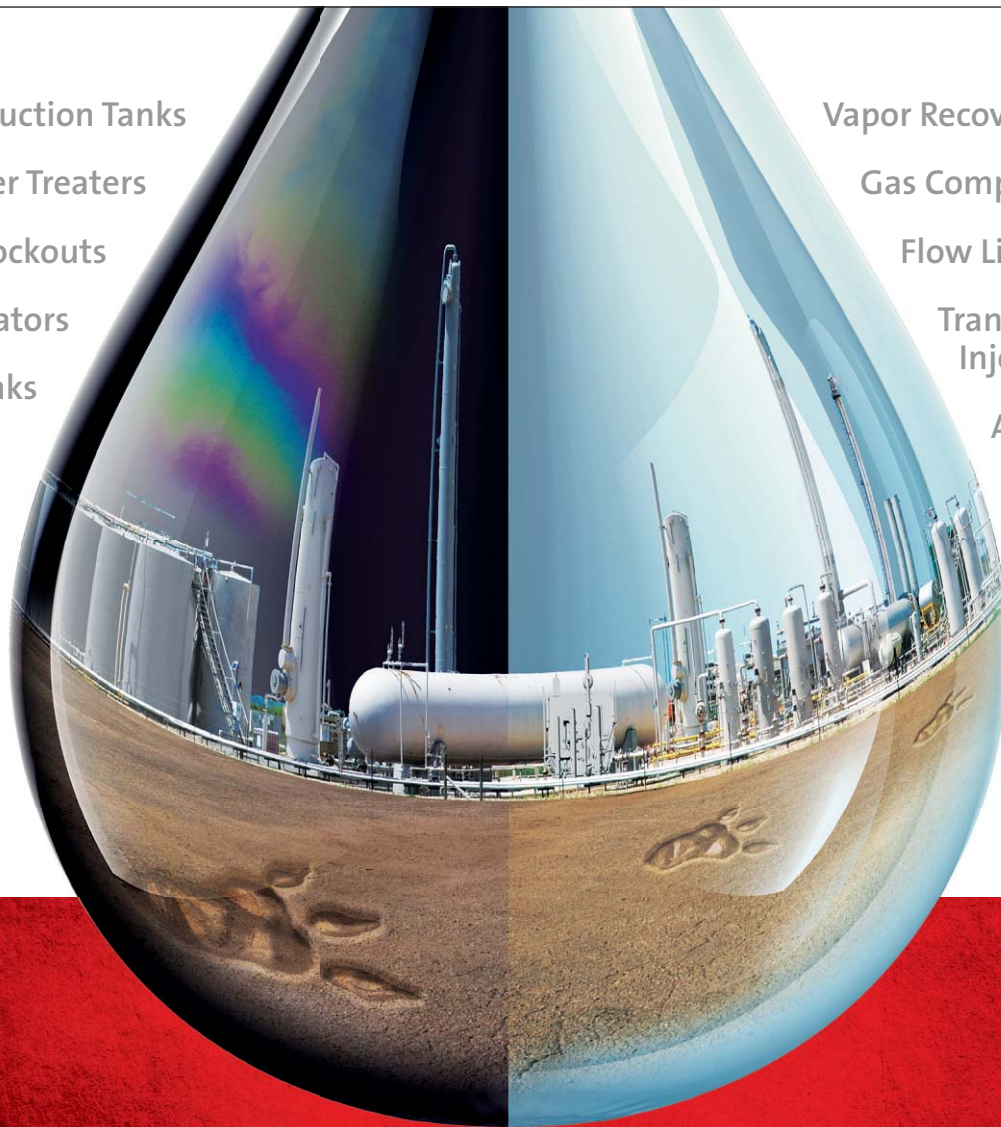
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