

Current activities

The 2001 discovery of the Elm Coulee field in Richland County, Mt. spurred industry to explore for the Middle Member Bakken in North Dakota. In 2006, the Parshall Field, was discovered in Mountrail County, North Dakota, east of the Nesson Anticline. Other significant Bakken fields are being developed about the Parshall accumulation. These North Dakota fields will likely prove contiguous in this resource play.

New interest developed in 2007 when EOG Resources of Houston, Texas reported that a single well it had drilled into an oil-rich layer of shale below Parshall, North Dakota was anticipated to produce 700,000 barrels of oil. This, combined with other factors, including an oil-drilling tax break enacted by the state of North Dakota in 2007, shifted attention in the Bakken from Montana to North Dakota. The number of wells drilling the North Dakota Bakken jumped from 300 in 2006 to 457 in 2007. Those same sources show oil production in the North Dakota Bakken increased 229%, from 2.2 million barrels in 2006 to 7.4 million barrels in 2007.

The current rig count in North Dakota recently stood at 96 (with a 71% utility) effectively doubling during 2008.

Largest US Oil Fields
Bakken is Potentially Largest in ~40 Years

	<u>Discovered</u>	<u>Approximate Reserves</u>
1. Prudhoe Bay, Alaska	1968	15 billion barrels
2. East Texas	1930	5.1 – 6.0 billion barrels
3. Bakken, ND & MT	2001	~3.65 billion barrels
4. Wilmington, California	1932	2.8 – 3.0 billion barrels
5. Midway-Sunset, California	1894	2.8 billion barrels
6. Kuparuk River, Alaska	1969	2.6 billion barrels
7. Thunder Horse, GOM	1999	1.5 – 2.0 billion barrels

* Bakken is based on USGS assessment.

Table 1 Approximate potential size of Bakken in relation to recent US onshore and offshore discoveries. Source Whiting Petroleum.

Magnolia Petroleum

18 March 2009

The US Geological Survey (USGS) currently estimates that mean undiscovered volumes of 3.65 BBbls and 1.85 TCF are contained in the Bakken Shale of Montana and North Dakota making the Bakken of the Williston basin potentially the single largest oil find in US history. The USGS summary indicates that their estimates are “undiscovered, technically recoverable oil and gas resources of the Bakken Formation in the United States.” The term “undiscovered” suggests that the currently known reserves have been excluded from their totals. Associated with the oil reserves are 1,850 billion cubic feet of natural gas and 148 million barrels of NGLs.

The main centre of current Bakken Shale activity is in North Dakota where there are 4,000 active wells. The counties that have seen the highest level of exploration are McKenzie and the eastern part of Richland where the shale is considered to be the most favourable for oil generation.

The largest Bakken Shale field is at Parshall, operated by EOG, which produces around 30,000 BOPD from 60 wells. In November of 2008 there were 15 rigs operating in Dunn County and 31 operating in Mountrail County. Marathon was operating seven rigs, six in Dunn County North Dakota.

On 4 November 2008, the Northern Bureau of Land Management (BLM) held a lease sale auction for acreage in the Bakken Play. Bonus bids at the Bureau of Land Management's November 4th oil and gas lease sale in Billings reached \$22,611,614. Contex Energy of Dickinson, N.D., bid \$5,440,000 for leasing rights on a 1,600-acre parcel in Mountrail County, N.D.

The highest per-acre bid was \$3,600, again from Contex Energy, for a 1,120-acre parcel also in Mountrail County. Of the 78 parcels offered, 17 were in Montana, 45 in North Dakota and 16 in South Dakota with, we understand the majority of the drilling activity taking place east of the Nesson Anticline to exploit the middle Bakken and the 'Three Forks' zones. (<http://dr.divestco.com/RigCount/Pages/RigCount.aspx?ClientID>)

The Parshall field lies approximately 100 miles east-northeast of the Elm Coulee field. Unlike Elm Coulee, the reservoir is a mixed sandy carbonate, not clean dolomite, and natural fractures enhance productivity. Multistage frac jobs along lateral lengths of 1,500-9,000' are conducted to accelerate production from the low permeability reservoir. Initial rates exceeding 3,000 BOPD have occurred in the Parshall field. EOG Resources, the primary operator and discoverer of the field, currently assigns gross reserves of ~850MBO EUR per well at Parshall with 250-450 MBO EUR per well in Parshall's periphery (<http://www.eogresources.com/media/slides/InvPres.pdf> p8). It is EOG's most economic project containing high quality, sweet crude of 42° API.

The play boundaries of the Middle Member Bakken play are rapidly expanding. Eight rigs were recently drilling in the Parshall field and the

Magnolia Petroleum

18 March 2009

Sanish field, west of Parshall. In the Ross field area and further north (T156-160N) of the Parshall field Hess, Fidelity, EOG, Brigham, Encore, St. Mary, Oasis, Samson Resources, Cirque, and Golden Eye Resources are active. In the northern area, a clean (<60 API Unit) Middle Member thick Bakken interval, like that at the Parshall field, is being exploited.