

## ***Barnett Shale: The Latest Word in Oil Exploration***

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The Barnett shale is globally famous for having transformed the natural gas E&P business in North America and potentially in Europe and Asia as well. It is now emerging as an oil play as well. American independents active and experienced in shale natural gas are beginning to see (or rather hope, since it is too early to see clearly) the Barnett as a major new onshore oil play. It is premature to even guess at how large the oil endowment of the Barnett is but it merits close watching.

The companies best positioned to benefit are those that have a substantial resource position in the Barnett and important operating experience drilling for and producing oil in a shale basin. The most attractive oil from shale basin in North America, at present, is the Bakken (North Dakota, Montana and extending far into the Canadian Rockies). The technologies and processes being developed in the Bakken are migrating to the Barnett via companies that have or soon will have a presence in both basins.

Should the Barnett oil play prove significant, many US oil and gas independent E&P companies could use it make the transition from a mostly natural gas to a balanced onshore portfolio of natural gas and oil prospects, reserves and potential. This, in turn, means a higher aggregate return on invested capital and a lower enterprise risk profile.

A company that exemplifies this strategy is EOG Resources ([EOG](#)). The company has emerged as a pioneer in horizontal drilling for oil in rocks deemed to be "unconventional" (which simply means places where people had neither the technology nor the confidence to drill before). The company has 500,000 net acres in the Bakken and has demonstrated sound results in producing oil there from shale (technically from a carbonate formation sandwiched between two shale formations). Its experience indicates that horizontal wells, with long laterals, multiple (up to two dozen) frac stages and ceramic proppants yield superior results. The current industry view is that with such a technology suite the Bakken is commercial at \$50 per barrel oil while at current prices the returns are around 30%.

EOG plans to drill 246 wells in its Barnett play north of Ft. Worth, where it has 90,000 net acres. It estimates that there are 70 million barrels of oil and 175 billion cubic feet of gas per section (640 gross acres). The company asserts that its Barnett resource is one of richest oil deposits it has ever encountered. It has been producing 250 to 1,000 barrels per day (bpd) of oil, 130 bpd of gas liquids and 1 to 2 million cubic feet per day (mmcf) of natural gas per well, initial production. The Barnett oil play is so new that even EOG has been operating there for just two years. Even so, there is clear evidence of improved performance via a combination of technological innovation, local knowledge and adapting operating processes to specific sites. In early 2008, it estimated that reserves per well were 152,000 barrels of oil equivalent (boe). Its last 14 horizontal wells indicate average reserves of 280,000 boe per well, which is a remarkable improvement and hints at the oil and oil liquids bounty of the Barnett.

The resource potential of both the Bakken and Barnett shales was considered negligible as recently as 15 years ago by both the US Government and by Big Oil. It was the imagination, tenacity and inventiveness of the independents that made this potential manifest. Over the past decade every resource study by the US Government has grossly underestimated this potential.

As most readers know, the modern development of the Bakken began in 1987 when Meridian Oil examined the benefits of horizontal drilling in the Upper Bakken. That first modern well (the very first well was drilled in 1953 in Williams County, ND) cost \$2 million and produced about 350,000 barrels of oil through 1998. It demonstrated that the Bakken was a commercial oil province and horizontal drilling was a major innovation. It attracted several intrepid independents including Headington Oil and LYCO Energy, who drilled vertical wells in Montana. When the latter drilled a horizontal well in the Elm Coulee field in 2000 and was impressively successful, it showed other companies where the payoff was. Since then, the Elm Coulee has produced over 60 % of the Bakken oil output. At present the most active (in terms of drilling) publicly traded companies in the Bakken are EOG, Whiting Oil and Gas ([WLL](#)), Continental Resources ([CLR](#)), ([XTO](#)) and Hess ([HES](#)).

US oil production increased for the first time in 18 years in 2009, and the gain of 7.5% was the largest since 1955. Production is forecast to rise again, propelled by continued success in the Gulf of Mexico and to some small degree by growth in the Bakken. If oil prices stay above \$70 per barrel, the Bakken will continue to attract risk capital and technological innovation and hence, growth in production

The success of the Bakken and the growing evidence that the Barnett can yield notable amounts of oil and gas liquids suggests that onshore oil in the US may again become a frontier play. If the Bakken is even a rough analog for the Barnett, then the latter may see very rapid deployment of capital and technology in oil and gas liquids production in 2010 and 2011. Unlike the Bakken, the Barnett is already the domicile (or soon will be via pending acquisitions and buy-ins) of the largest and most technologically sophisticated oil and gas companies in the world. They came looking for gas but if they are persuaded that the Barnett is also a rewarding oil and gas liquids play, they will accelerate the deployment of talent, technology and capital. US oil and gas liquids production may well be on the verge of sustained growth for several years to come. Surely this will be good and welcome news for American jobs and income. The next 18 to 24 months will be dispositive in determining whether the Barnett is also an important oil play and in helping quantify the magnitude of this play.