

## **An Abbreviated History Behind the "Bakken Boom"**

**Stephan H. Nordeng<sup>1</sup>**

<sup>1</sup>University of North Dakota

### **Abstract**

The Parshall 1-36 came off of tight hole status just prior to the 2006 Williston Basin Petroleum Conference in Minot. The public release of production 1500 bbls/day of light crude from a wildcat test many miles from older production put North Dakota in the national spotlight overnight. The state geological survey found itself, in its role of being the source of public information trying to understand precisely what had happened. As it turns out this discovery had its roots in ideas floated in the 1970's. The basic idea was that oil generated within source beds, like the Bakken, will accumulate vast quantities of oil over large areas within and immediately adjacent to the source beds when the encasing rocks are porous and almost impermeable. Over time and through the efforts of a number of workers, the technology needed to extract this resource matured. The Bakken was first produced in the 1950's using conventional vertical wells that exploited natural fractures developed along the Antelope Anticline. Beginning in the mid-1980's, horizontal wells drilled into the Upper Bakken produced a few successes, but the shale was difficult to drill and complete. In the early 2000's the giant Elm Coulee field was discovered in Western Montana. This field also used horizontal drilling but instead targeted the somewhat porous and permeable middle member. The idea of drilling into the mechanically competent middle member was key in subsequent development. Mike Johnson recognized that log responses in the Elm Coulee field were very similar to logs of the Bakken Formation along the Eastern Flank of the Williston Basin. However, permeabilities in the eastern part of the basin were too low to permit economic flow rates. The solution to this was to couple 5000 foot laterals drilled into the upper portion of the middle member and to hydrofracture the entire length of the lateral with some two million gallons of water and two and a half million pounds of proppant. This success initiated the "Bakken boom" and, within a few years, ended America's dependence on foreign oil.