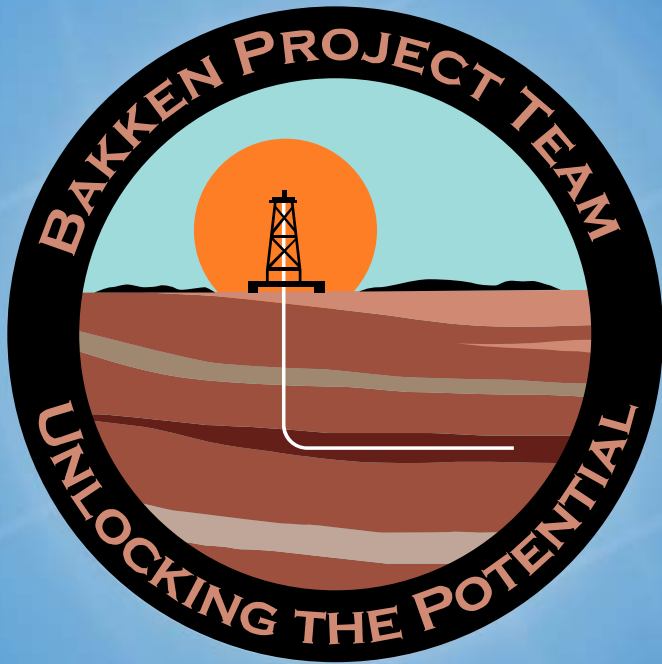


An Operator's View of the Bakken Play Investigations



David Brimberry
Subsurface Manager
Bakken Project Team

November 6, 2007

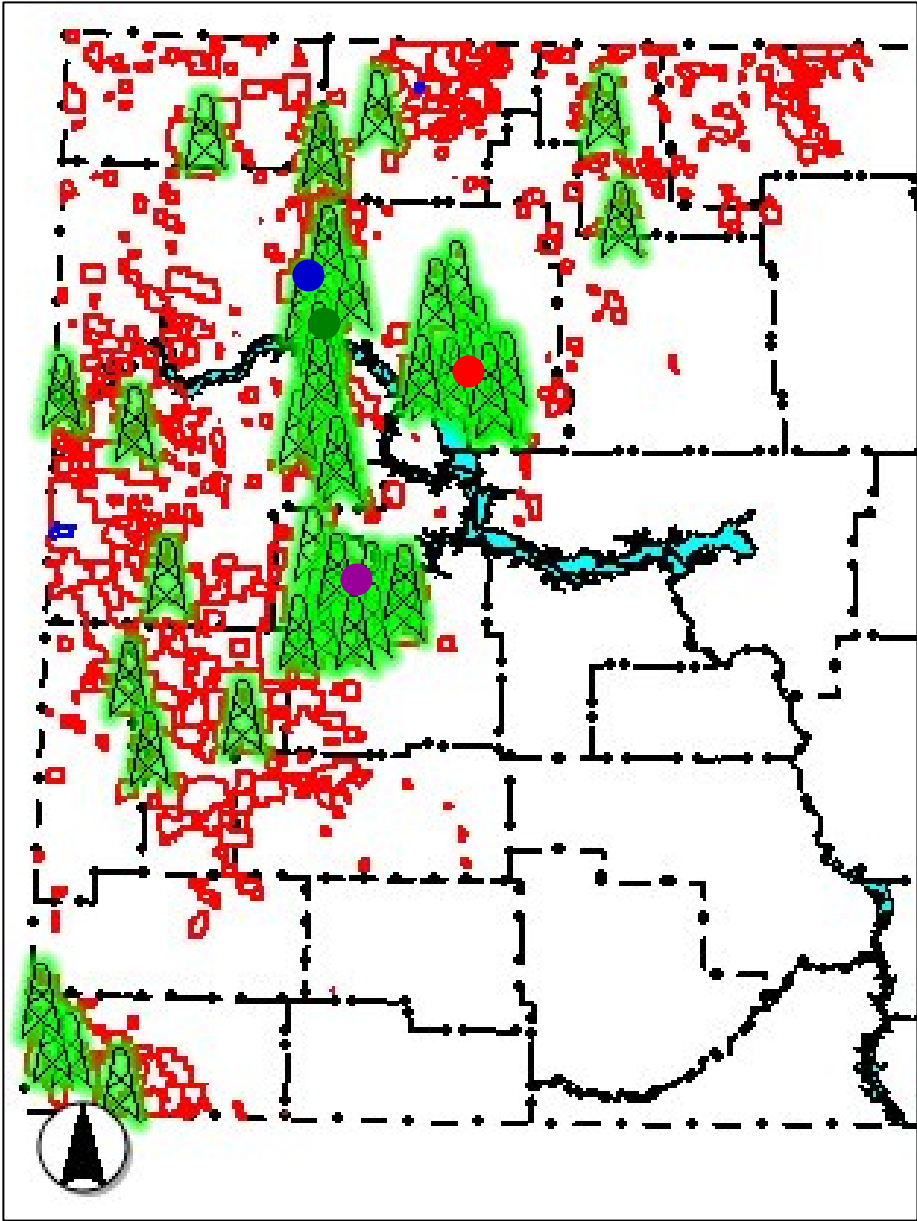

Marathon

Intro

- ◆ The Bakken Play Today in Marathon's View
- ◆ Play Investigation
- ◆ What's Important to an Operator



Drilling Activity Has Ebbed and Flowed



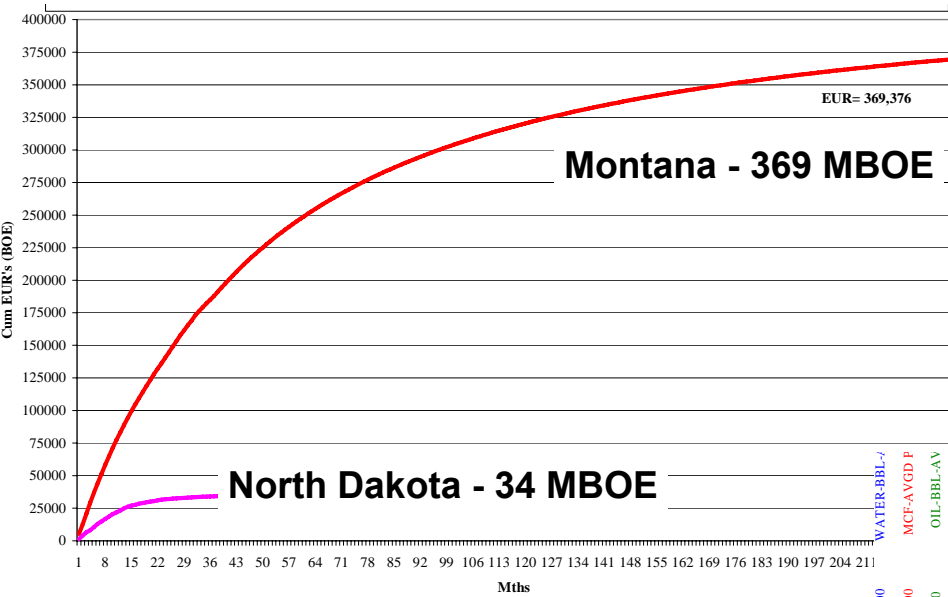
- ◆ Current Rigs In the Bakken
- ◆ One Year View
- ◆ Results Over the Year
 - EOG ●
 - Murex ●
 - Marathon/Continental/CoP/Encore ●
 - Hess/Headington ●
 - Others ●
- ◆ Based on Public Data



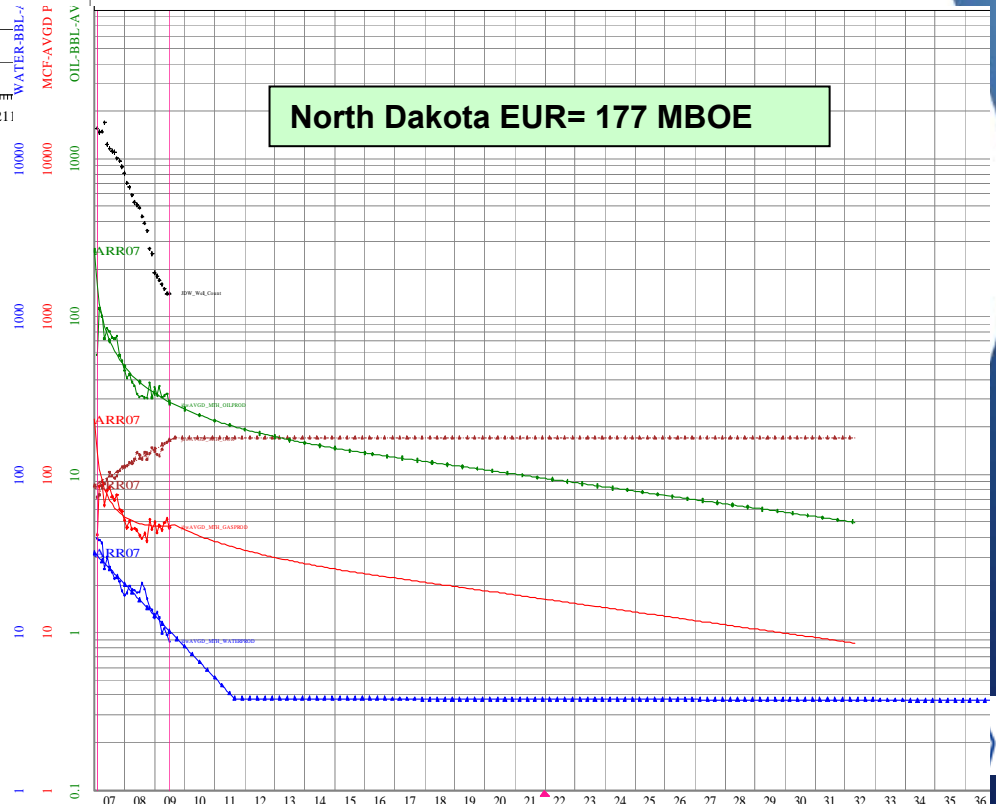


Time Value – North Dakota Production Evaluation Horizontal Bakken Wells Since 2003 (Public Data)

August 2006 – 40 Wells



October 2007 – 125 Wells



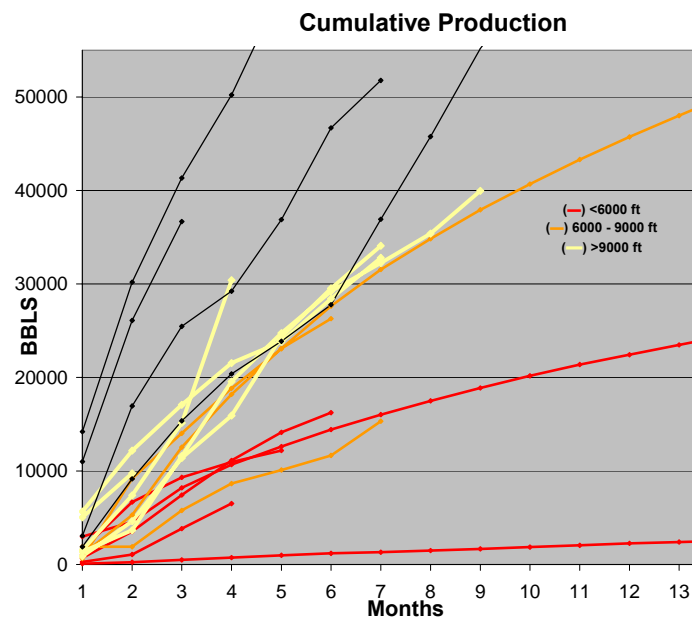
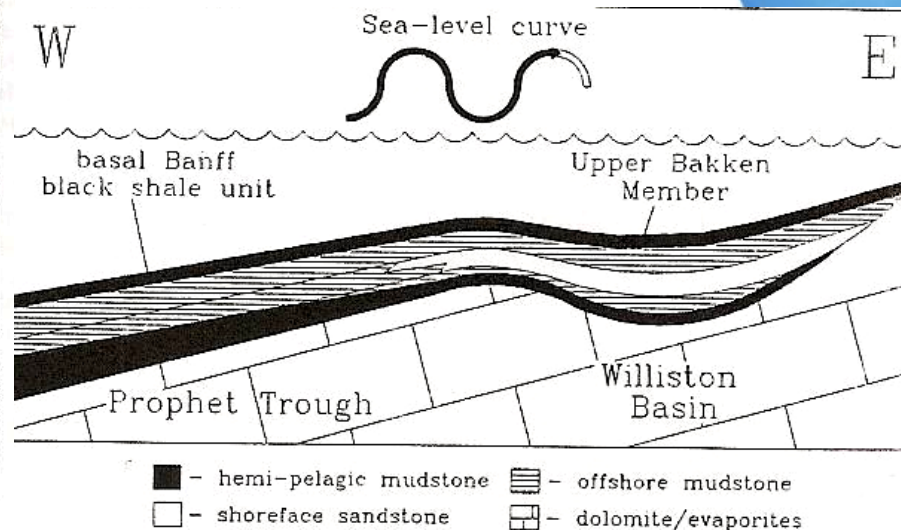
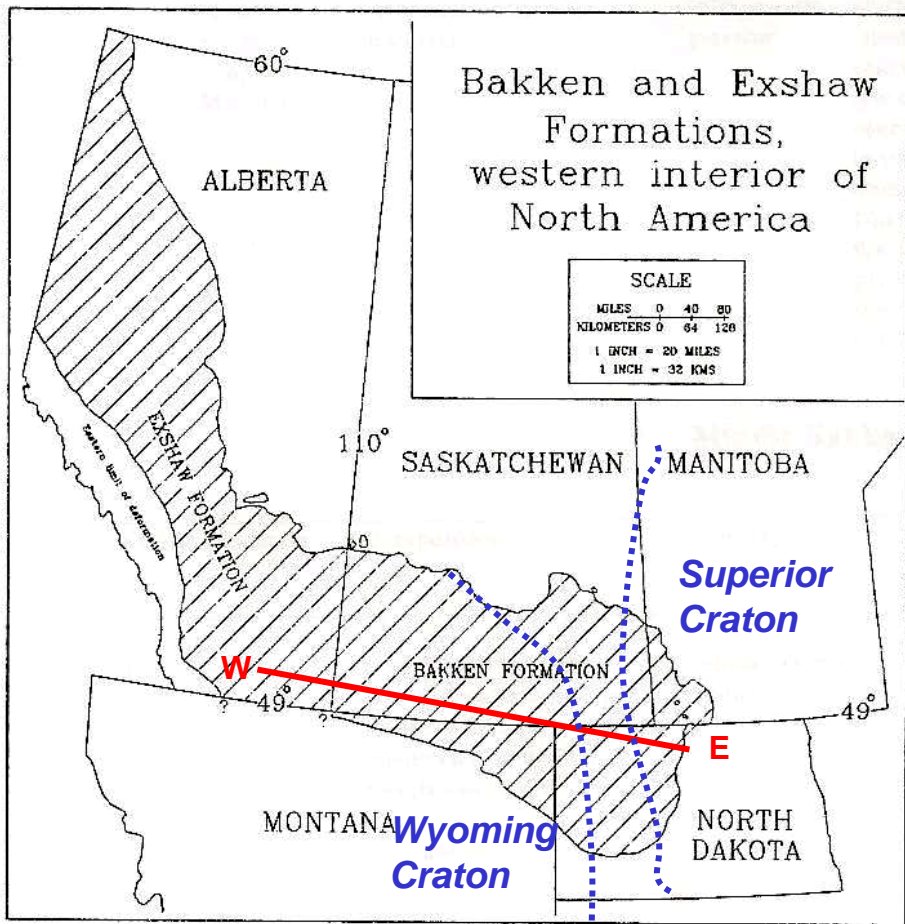
Play Investigations – Identify Uncertainty

- ◆ Regional Variables – Montana to North Dakota
- ◆ Reservoir Characterization
 - Production mechanism
 - Oil Storage
 - Rate, Decline and Longevity
 - Reserve
- ◆ Drilling
 - Schedules
 - Well Construction
 - Costs
 - Complications
- ◆ Completion
 - Schedules
 - Fluids
 - Proppant
 - Complexity
 - Costs
- ◆ Development
 - Infrastructure



Regional Depositional Setting Understood

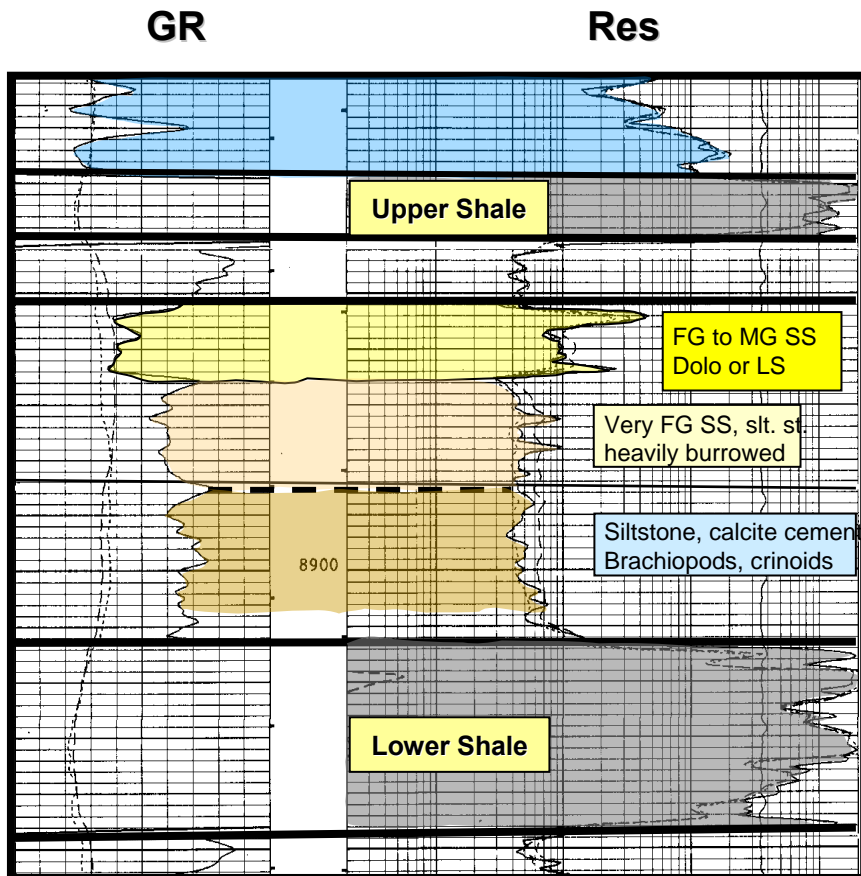
Who develops the prospect level detail?



(modified from Smith, Bustin, and Caplan, 1995 and Kent, 1987)

Characterization of Play – Reservoir Level

SENW Sec. 11, T160N, R95W
Conoco, Inc. - #17 Watterud "A"



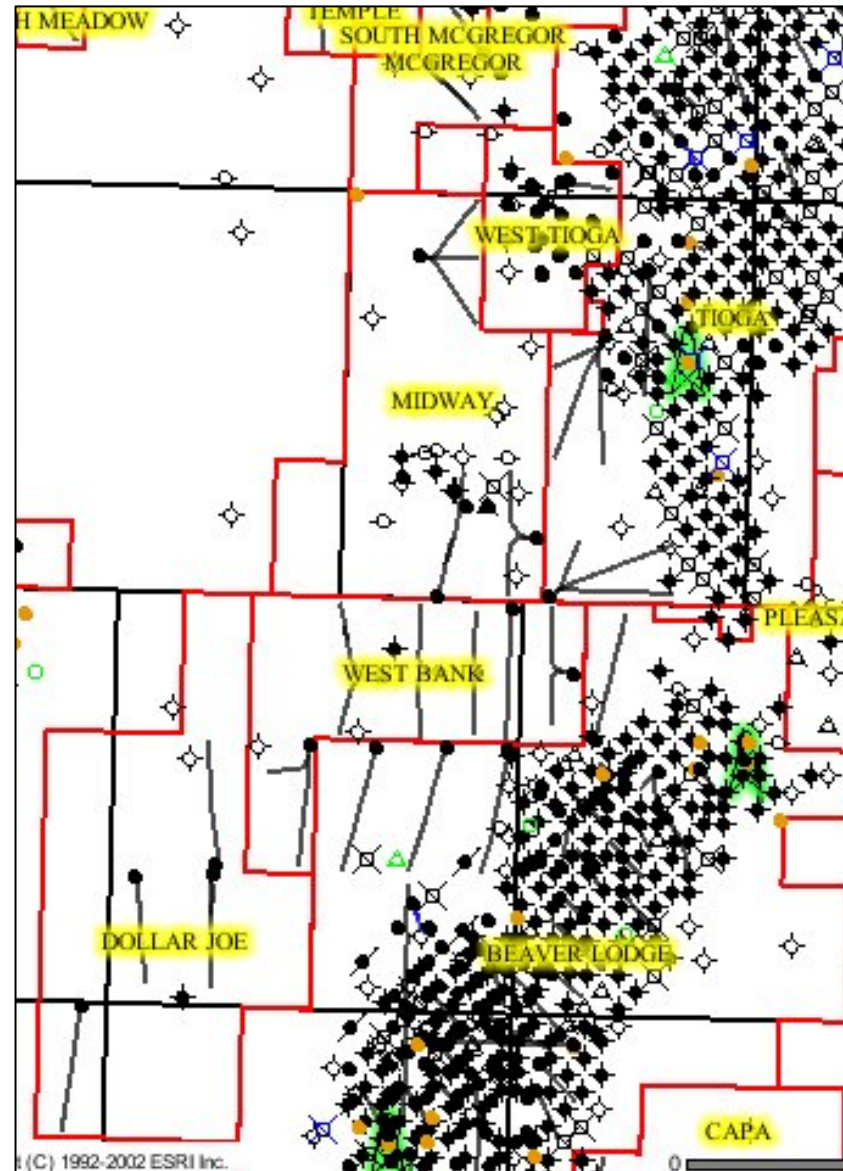
Data Acquisition to Unravel Reservoir

- Operators with Differing Approaches
- Open Hole
 - Logging
 - Core
 - Difficulties
- Engineering Data
 - Build Up
 - Logging
 - Production
 - Difficulties

Drilling Considerations



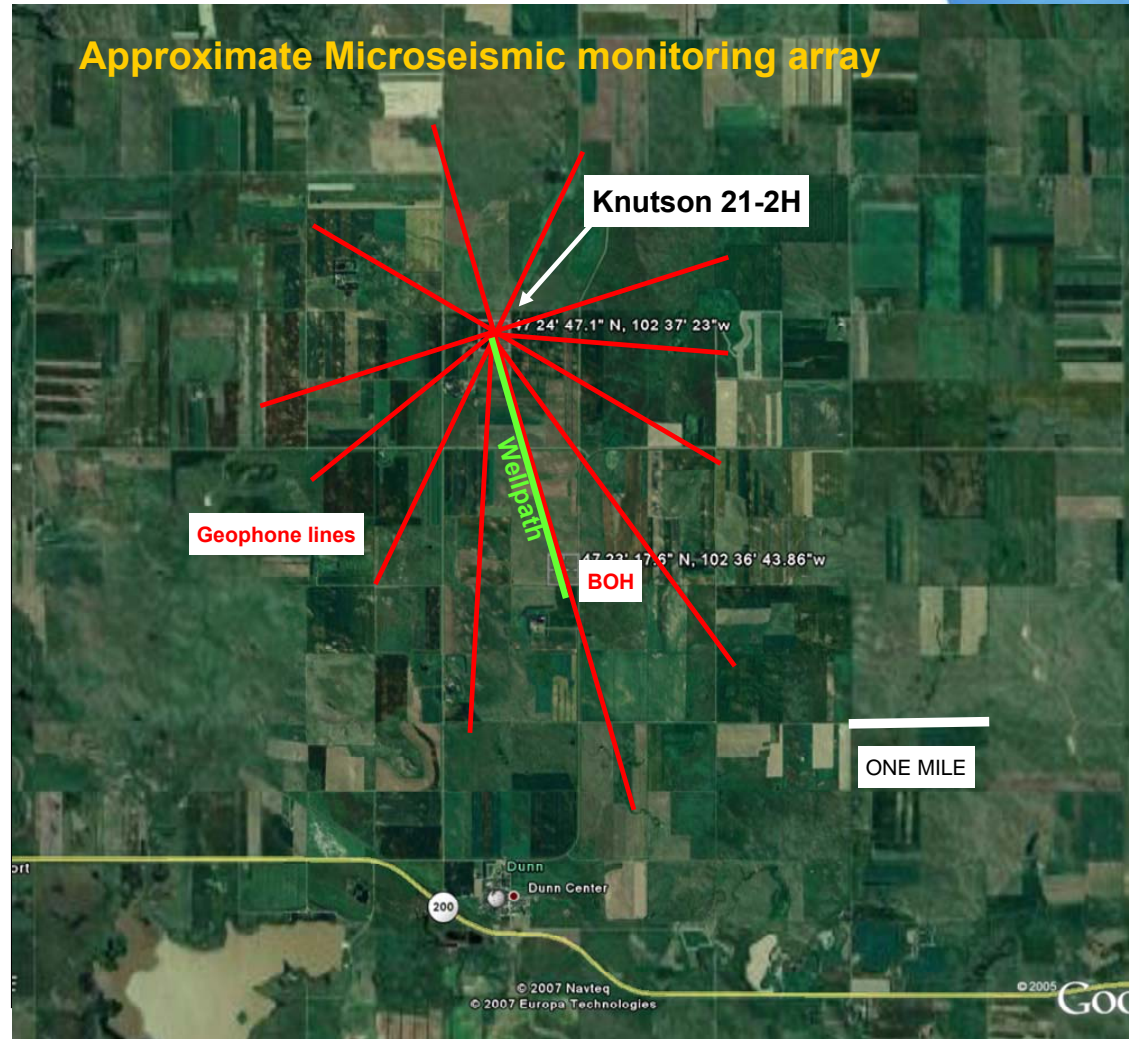
- ◆ Reducing Days
 - Bits
 - Mud
 - Efficiencies
 - Difficulties
 - **BHA Reliability**
- ◆ Well Construction
 - Applications from Montana
 - Direction
 - Not settled
 - Cost Matching AFEs?





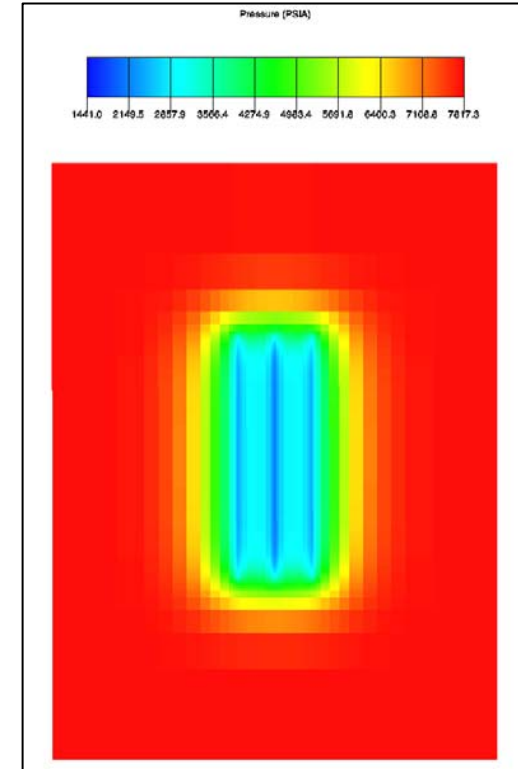
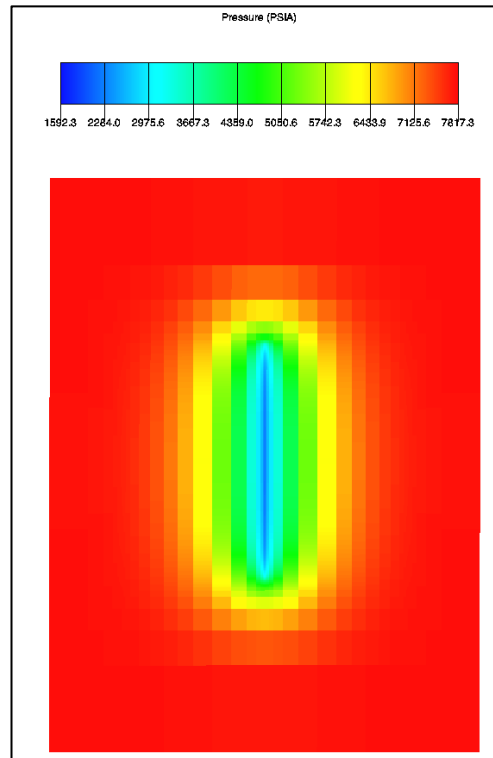
Completions – The Current Experimentation

- Simple or Complex
- What are We Doing?
- Effectiveness
 - Area
 - Down Wellbore
 - Data To Confirm
- Cost Control



Development

- ◆ Drainage Spacing
- ◆ Water Handling
- ◆ Infrastructure
 - Facilities
 - Roads



Going Ahead

- ◆ Bakken Uncertainty Reduced?
- ◆ Operators Focusing on Specifics
- ◆ Specifics All Related to Profitability
- ◆ Investigations Require Timeliness
- ◆ Studies Will Benefit the State of North Dakota

