

G-013-B

Surface Microseismic Study of a Bakken Fracture Stimulation

Submitted by Marathon Oil Company

Principal Investigators: Ken Dunek and Chuck Meeder

Request for \$155,000; Total Project Costs \$310,000

Project Purpose

- To conduct a surface microseismic study of a fracture stimulation of a middle Bakken well in Dunn County.
- The project is designed to identify the orientation of subsurface fractures created during the fracture stimulation of a well.
- Data gathered will be compared to data collected in a tiltmeter study during the fracture stimulation from a well, also in Dunn County.
- The tiltmeter study is also designed to identify the orientation of subsurface fractures created during the fracture stimulation of a well.
- The facies (rock type) of the middle Bakken in Dunn County is one of the most common if not the most common in North Dakota.
- Surface microseismic data is much less costly to collect than microseismic survey data collected from nearby observation well bores at depth.
- Success in data collection would prove the validity of the application, reducing the risk of using the technology in a larger area by other operators.

Reviewers Comments and Applicant Response:

- Reviewers have pointed out that the middle Bakken may be too deep to collect meaningful data from a surface microseismic survey.
- Work by Marathon suggests meaningful data might be collected by such a survey.
- Of the three independent technical reviewers for this project, one recommended “fund” and two recommended “funding to be considered”.
- The average weighted technical reviewers score: 186.3 of 250 possible maximum.

Technical Advisor’s Comments:

- It is important for the OGRC to participate in projects that test the limits of various technologies.
- Should this project demonstrate that microseismic is a viable technology to be used in the middle Bakken completions in North Dakota, it would have significant benefit to enhancing the economics of the play.
- Demonstrating that data collected with microseismic is not suitable would also be valuable information for operators in the play.

Technical Advisor’s Recommendation:

Recommendation is to fund the Marathon Request.