

Bakken Resource Development Optimization: A Multi Well, Multi Zone Enhanced Oil Recovery Project Utilizing Produced Natural Gas in Williams County – Durant Pad

Submitted by:

Continental Resources

Principal Investigator: Dave Ratcliff

- ☐ **Total Funding Request - \$9,836,905**
- ☐ **Total Project Costs - \$29,918,810**
- ☐ **Project Duration: 2-4 Years**

PROJECT DESCRIPTION

- The pilot's primary objective is to evaluate the potential of Intermittent Gas Injection ("Huff n Puff") Enhanced Oil Recovery (EOR) to unlock the vast resource remaining in the Bakken and Three Forks formation after primary development.
- Miscible Gas Huff n Puff EOR, proven effective in low permeability conventional reservoirs, is in a stage that still requires further research and development for consistent and successful application in unconventional reservoirs. Huff n Puff EOR involves injecting sufficient miscible gas to increase pressure and dissolve gas in the stimulated reservoir areas. The injected gas swells the contacted oil, reduces its viscosity, enhances near-fracture permeability, and significantly improves reservoir deliverability. This technique has the potential to unlock vast remaining resources in the Bakken and Three Forks formations after primary development.
- This multi well, multi bench pilot proposed herein involves evaluation of intermittent miscible gas injection in up to four wells all located on the Durant Pad of Continental's Williston North acreage in Williams County. The project includes the design, construction, and operation of the facilities necessary to assess the incremental oil recoveries for the selected wells. Field and experimental evaluation goals include assessing gas injectivity, containment, injection conformance, efficiency of the miscible gas injection process, uplift, and potential scalability of the outcome. Gas cycling optimization and understanding the issues involved with scalability will be a key part of this project. Novel technologies for improving gas injection conformance, such as gas-foam cycling, may also be implemented as determined by Continental, if feasible and necessary.

TECHNICAL REVIEWERS' RATING SUMMARY

Statement	Weighting Factor	<u>TR G-62-N1</u>	<u>TR G-62-N2</u>	<u>TR G-62-N3</u>	<u>Average Weighted Score</u>
Objectives	9	5	5	4	36
Achievability	7	4	5	4	28
Methodology	8	5	5	5	40
Contribution	8	5	5	5	40
Awareness/ Background	5	5	4	5	20
Project Management	3	5	5	5	15
Equipment / Facilities	2	5	5	4	8
Value/Industry- Budget	4	5	5	5	20
Financial Match – Budget	4	5	4	5	16
<i>Average Weighted Score</i>		243	241	232	238
<i>Maximum Weighted Score</i>				250 possible points	

TECHNICAL REVIEWER TOTALS

- G-62-N1

Average Weighted Score: **243 out of 250**

FUND

- G-62-N2

Average Weighted Score: **241 out of 250**

FUND

- G-62-N3

Average Weighted Score: **232 out of 250**

FUND

TECHNICAL REVIEWER COMMENTS

Reviewer G-62-N1

The proposal is a highly compelling and well-developed application for Enhanced Oil Recovery research. It demonstrates: Strong alignment with NDIC/OGRC goals. Technical excellence in methodology and modeling. Robust project management and operational planning. Exceptional team qualifications and industry collaboration. High financial commitment from Continental and other sources. The proposal addresses key challenges in unconventional reservoir recovery and offers scalable solutions with significant economic and environmental benefits for North Dakota. It is recommended for full funding consideration.

Recommendation: FUND

Reviewer G-62-N2

Continental has put forth a very detailed and thought out approach to their project that is backed by technical rigor, previous Bakken EOR experience, and a strong plan to achieve the objectives set forth in the application. Again, these projects are crucial to the next phase of unconventional oil and gas production. More explanation surrounding the sourced gas (1,100 btu/mscf) and why it was chosen, would have been helpful as well as any miscibility testing done with other EOR substances (ethane, propane, CO₂, etc.) and the results. All in all, a very solid project underpinned by a high degree of technical application. **Recommendation: Fund**

Recommendation: FUND

TECHNICAL REVIEWER COMMENTS

Reviewer G-62-N3

The applicant has the knowledge, experience, and scalability to greatly increase the probability of success with this project. The location of the proposed project allows the use of existing infrastructure and equipment. The applicant should provide more information about how this project differs from the previous nearby project, what lessons were learned from previous projects, and how that increases the probability of success.

Recommendation: FUND

Director's Recommendation:

☐ Fund in the amount of \$9,345,059.75