

Williston Basin Resources Optimization: Large-scale Miscible Gas Huff n Puff EOR Pilot in Continental's Dunn County Acreage – Roadrunner/Clover Pad

Submitted by:

Continental Resources

Principal Investigator: Jose Zaghloul, Ph D

- ☐ **Total Funding Request - \$8,771,905**
- ☐ **Total Project Costs - \$26,889,228**
- ☐ **Project Duration: 42 Months**

PROJECT DESCRIPTION

- The proposed project objective is to pilot Enhanced Oil Recovery (EOR) in the Bakken and Three Forks formations of the Williston Basin. Its primary goal is to evaluate the potential of Intermittent Gas Injection (IGI), also known as miscible gas Huff n Puff, to enhance oil recovery post-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 surrounding completed wells. 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.

- The large-scale pilot proposed herein involves evaluation of intermittent miscible gas injection in four wells: Clover 4-10H, Clover 5-10H, Roadrunner 6-15H, and Roadrunner 7-15H, all located in Dunn 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 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.
- Preliminary integrated modeling results suggest an expected incremental oil recovery of ~100,000 barrels of oil per well for a pilot spanning 3 Huff n Puff cycles (~ 20% uplift). The three Huff n Puff cycles are expected to last approximately two years and may yield a total incremental oil recovery of ~ 400,000 barrels between all four wells. The pilot may be extended beyond this timeline if economically viable.

TECHNICAL REVIEWERS' RATING SUMMARY

Statement	Weighting Factor	<u>TR G-62-M1</u>	<u>TR G-62-M2</u>	<u>TR G-62-M3</u>	<u>Average Weighted Score</u>
Objectives	9	5	5	4	36
Achievability	7	5	5	3	28
Methodology	8	5	5	4	32
Contribution	8	5	5	4	32
Awareness/ Background	5	5	5	5	25
Project Management	3	4	4	4	12
Equipment / Facilities	2	4	5	3	8
Value/Industry- Budget	4	4	5	4	16
Financial Match – Budget	4	5	4	5	16
<i>Average Weighted Score</i>		241	243	200	228
<i>Maximum Weighted Score</i>				250 possible points	

TECHNICAL REVIEWER TOTALS

- G-62-M1

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

FUND

- G-62-M2

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

FUND

- G-62-M3

Average Weighted Score: **200 out of 250**

FUNDING TO BE CONSIDERED

TECHNICAL REVIEWER COMMENTS

Reviewer G-62-M1

This is a flagship EOR pilot with basin-wide implications. The technical rigor, economic potential, and strategic alignment with NDIC goals make it a top-tier proposal. Strong industry support and infrastructure readiness further enhance its merit.

Recommendation: FUND

Reviewer G-62-M2

Continental's project is very well thought out. The technical screening to identify the proper wells/pads for the highest chance of success, the implementation of previous knowledge from a past huff n puff, and the reservoir characterization and modeling already underway shows a very high likelihood to meet the objectives put forth in the application. There are concerns about semibounded wells in the project and how that may impact offsetting DSUs in terms of pressure responses from gas breakthrough and production accounting. Additional details surrounding how/why 1,100 BTU/MSCF gas was selected vs other hydrocarbon sources (ethane, propane, field gas, etc.) would have been helpful. Any lab tests, miscibility tests, etc. for additional candidates could prove useful, understanding that there is constraints as it relates to availability and economics.

Recommendation: FUND

TECHNICAL REVIEWER COMMENTS

Reviewer G-62-M3

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 relatively new reservoir to be tested and there is gas gathering and processing infrastructure in the area. The applicant should provide more information about how this project differs from the previous project, what lessons were learned from previous projects, and how that increases the probability of success.

Recommendation: Funding to be Considered

Director's Recommendation:

☐ Fund in the amount of \$8,333,905