Technical Reviewers' Rating Summary

Proposal Number G-62-0 Application Title Proposal for Surfactant-Based EC Submitted By Devon Request For $1,535,000.00 Total Project Costs $3,370,000.00

Section A. Scoring

Statement	Weighting Factor	G-62-O1	G-62-O2	G-62-O3	Average Weighted Score
1. Objectives	9	**3**	**5**	**4**	**36**
2. Achievability	7	**4**	**4**	**3**	**21**
3. Methodology	8	**3**	**3**	**3**	**24**
4. Contribution	8	**4**	**5**	**4**	**32**
5. Awareness / Background	5	**4**	**3**	**3**	**15**
6. Project Management	3	**2**	**3**	**2**	**6**
7. Equipment / Facilities	2	**3**	**5**	**3**	**6**
8. Value / Industry - Budget	4	**3**	**5**	**4**	**16**
9. Financial Match - Budget	4	**3**	**3**	**4**	**12**
Average Weighted Score		**167**	**203**	**172**	**180**
	Total: 50				**250 possible points**

OVERALL RECOMMENDATION

FUND		**X**	
FUNDING TO BE CONSIDERED	**X**		**X**
DO NOT FUND			

Section B. Ratings and Comments

1. The objectives or goals of the proposed project with respect to clarity and consistency with North Dakota Industrial Commission/Oil and Gas Research Council goals are:

   The proposal clearly defines its goal to evaluate surfactant-based EOR in the Middle Bakken and Three Forks formations. It aligns directly with NDIC’s mission to enhance oil recovery, improve resource utilization, and support scalable technologies for North Dakota’s unconventional reservoirs.
   - Reviewer: G-62-O1
   - Rating: 3

   Devon was very clear and detailed in what in their standards of success that relate to the strategic objectives and technical approach summary.
   - Reviewer: G-62-O2
   - Rating: 5

   The objectives of this proposal align very well with the legislative intent in SB 2014
   - Reviewer: G-62-O3
   - Rating: 4

2. With the approach suggested and time and budget available, the objectives are:

   The two-phase approach with lab screening followed by field pilot is well-structured and feasible within the 24-month timeline and $3.37M budget. Devon's operational control and infrastructure readiness support successful execution.
   - Reviewer: G-62-O1
   - Rating: 4

   The reason this is scored most likely achievable, is that a more specific/descriptive timeline was not included outside the cover page stating 24 months. If the phases were broken down into a duration as well, that would have pushed it to certainly achievable. The budget looks certainly achievable barring any increases in pumping equipment.
   - Reviewer: G-62-O2
   - Rating: 4

   The proposed timetable and budget appear realistic and will deliver some results by the 2027 legislative assembly.
   - Reviewer: G-62-O3
   - Rating: 3

3. The quality of the methodology displayed in the proposal is:

   The methodology includes advanced lab testing (IFT, wettability, adsorption), core flood experiments, and field implementation with real-time diagnostics. The use of TORP labs and collaboration with surfactant providers adds technical depth.
   - Reviewer: G-62-O1
   - Rating: 3

   The Devon Project Team has a wealth of knowledge and they may have something proprietary that they can't share. As such, the methodology outlined within the application was average. The lab testing of suitable surfactant compatibility and the bullhead injection has been around for decades. There wasn't anything noted in the application that would make this any different from testing I have seen or have been part of in the past.
   - Reviewer: G-62-O2
   - Rating: 3

   The methodology uses a stepwise approach and extensive laboratory testing to increase the probability of success at the most expensive stage of field testing.
   - Reviewer: G-62-O3
   - Rating: 3

4. The scientific and/or technical contribution of the proposed work to specifically address North Dakota Industrial Commission/Oil and Gas Research Council goals will likely be:

   The project addresses a critical gap in surfactant EOR application in unconventional reservoirs. If successful, it could unlock incremental recovery across hundreds of wells and inform best practices for broader deployment.
   - Reviewer: G-62-O1
   - Rating: 4

   If surfactant EOR is successful, it could provide a lower cost and more immediate impact across thousands of Bakken/Three Forks wells. It could be deployed at a much faster rate than gas/CO2 recovery methods.
   - Reviewer: G-62-O2
   - Rating: 5

The scientific and technical information from this project could lead to large scale implementation of Bakken and Three Forks EOR. At a minimum the project will greatly improve future research projects. Project success will mean decades of additional oil and gas production in the state.
- Reviewer: G-62-O3
- Rating: 4

5. The background of the principal investigator and the awareness of current research activity and published literature as evidenced by literature referenced and its interpretation and by the reference to unpublished research related to the proposal is:

   The team includes seasoned professionals with decades of experience in EOR, reservoir engineering, and field operations. The proposal references current surfactant technologies and includes collaboration with academic and industry experts.
   - Reviewer: G-62-O1
   - Rating: 4

   Again, the Devon Team has a wealth of knowledge, but there wasn't any mention back to specific research or specific experience to other EOR projects managed.
   - Reviewer: G-62-O2
   - Rating: 3

   Surfactant flooding has been practiced for decades and there is a great deal of information available in existing literature to inform this project. While it is unproven in unconventional reservoirs this project leverages existing knowledge through extensive laboratory testing to increase the probability of success.
   - Reviewer: G-62-O3
   - Rating: 3

6. The project management plan, including a well-defined milestone chart, schedule, financial plan, and plan for communications among the investigators and subcontractors, if any, is:

   The plan includes milestone tracking, risk management, and stakeholder engagement. While the Gantt chart is pending, the structure and reporting commitments are solid and reflect good project governance.
   - Reviewer: G-62-O1
   - Rating: 2

   Devon mentions in their application that a project schedule will be developed and wasn't included. Due to this reason and lack of well-defined milestone chart, I am putting it as adequate knowing the framework for the project is 24 months. I think a tentative schedule and milestone chart could have been included.
   - Reviewer: G-62-O2
   - Rating: 3

   The applicant plans to use risk assessment, change management, and stakeholder engagement at each project stage to ensure the project stays on track.
   - Reviewer: G-62-O3
   - Rating: 2

7. The proposed purchase of equipment and the facilities available is:

   The proposal outlines the use of existing Devon-operated wells and infrastructure. While no major equipment purchases are listed, the use of bullhead injection and surveillance tools is appropriate and justified.

- Reviewer: G-62-O1
- Rating: 3

There isn't any purchase of equipment needed. The facilities available on location should be adequate to handle the flowback of water.
- Reviewer: G-62-O2
- Rating: 5

No equipment purchases are planned and the laboratory facilities required should be readily available.
- Reviewer: G-62-O3
- Rating: 3

8. The proposed budget “value”1 relative to the outlined work and the commitment from other sources is of:

The $3.37M budget is reasonable for the scope. Devon is requesting $1.535M from NDIC, with the remainder covered by internal funding. The cost breakdown is clear and reflects good value for the expected technical outcomes.
- Reviewer: G-62-O1
- Rating: 3

The value associated with the budget is exceptionally good. The lab testing, diagnostics, and data collection is of exceptionally good value.
- Reviewer: G-62-O2
- Rating: 5

The availability of experienced field personnel and suitable well bores along with the decades of information available on surfactants and the University partner provide good budget value.
- Reviewer: G-62-O3
- Rating: 4

9. The “financial commitment”2 from other sources in terms of “match funding” have been identified:

Devon is contributing more than 50% of the total project cost, meeting NDIC match requirements. This demonstrates strong internal commitment and reduces reliance on public funding.
- Reviewer: G-62-O1
- Rating: 3

I am putting this as average value due to the 50% match funding from Devon.
- Reviewer: G-62-O2
- Rating: 3

The financial position and operations of the applicant provide a very robust matching fund budget.
- Reviewer: G-62-O3
- Rating: 4

1 “value” – The value of the projected work and technical outcome for the budgeted amount of the project, based on your estimate of what the work might cost in research settings with which you are familiar. A commitment of support from industry partners equates to a higher value.

2 “financial commitment” from other sources – A minimum of 50% of the total project must come from other sources to meet the program guidelines. Support less than 50% from Industrial Commission sources should be evaluated as favorable to the application; industry partnerships equates to increased favorability.

General Comments

The Devon Energy proposal is a technically sound, well-scoped, and strategically aligned project that addresses a key opportunity for Enhanced Oil Recovery in North Dakota’s unconventional reservoirs. Its strengths include: A clear and achievable plan. Strong technical methodology and partnerships. Experienced team with operational control. High potential for scalability and economic impact. The project is recommended for funding consideration, with particular value in its ability to inform broader surfactant EOR deployment strategies across the Williston Basin.
- Reviewer: G-62-O1

The technical team at Devon and their EOR experience is of great value for the proposed project. Testing surfactant based EOR has more upside than downside and it is a niche of the industry that is constantly evolving. What may not have worked 5 years ago can become a viable solution due to delivery methods, formula changes, or a better understanding of the reservoir to name a few. While I thought the application hit all the points, it would have been nice to have more detail about the proposed project itself. For example, a map view diagram of the wells and what the current thinking is for which wells would be tested with the surfactant, why, preliminary volume estimates of what a treatment would look like. It also would have helped to hear about any examples where Devon has tried the surfactant based EOR in their portfolio or referenced other industry examples. Any details that would have shown why Devon thinks this project could ultimately be successful.
- Reviewer: G-62-O2

The applicant has the scalability to improve the probability of success with this project. The partner TORP has knowledge and experience to increase the probability of success. The undetermined location of the proposed project creates some uncertainty.
- Reviewer: G-62-O3