

# Technical Reviewers' Rating Summary

Proposal Number  Application Title  Submitted By  Request For  Total Project Costs

## Section A. Scoring

Statement	Weighting Factor	G-51-07A	G-51-07B	G-51-07C	Average Weighted Score
1. Objectives	9	5	3	3	27
2. Achievability	7	4	3	3	21
3. Methodology	8	5	3	5	32
4. Contribution	8	5	3	5	32
5. Awareness / Background	5	5	4	5	20
6. Project Management	3	4	3	3	9
7. Equipment / Facilities	2	5	3	4	8
8. Value / Industry - Budget	4	4	4	5	16
9. Financial Match - Budget	4	5	3	3	12
<b>Average Weighted Score</b>		<b>236</b>	<b>159</b>	<b>202</b>	<b>199</b>

Total: 50

**250 possible points**

## OVERALL RECOMMENDATION

FUND X X

FUNDING TO BE CONSIDERED 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 proposers have clearly stated the goals of the proposed activity  
 - Reviewer: G-51-07A  
 - Rating: 5

The goals for the proposed project are quite broad in nature and constitute a general consulting agreement with industry, the NDIC, and DOE as opposed to specific project goals being outlined.  
 - Reviewer: G-51-07B  
 - Rating: 3

The objective is in line with the overall goals of the NDIC OGRC goals. The specific objectives within the proposed BPOP 3.0 project are necessarily vague, due to the expected evolution of the project over the three year extension to the existing and highly successful BPOP 2.0 project.  
 - Reviewer: G-51-07C  
 - Rating: 3

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

Based on the experience of the team assembled and the results of the prior work of the team it is reasonable to assume that they will be successful with the approach, time and budget noted in the proposal  
 - Reviewer: G-51-07A  
 - Rating: 4

As described above, the proposed project is very broad in nature without specific quantifiable goals, making it difficult to assess the likelihood of achieving the objectives.  
 - Reviewer: G-51-07B  
 - Rating: 3

The experience gained by the EERC and partner operators in the prior BPOP 1.0 and 2.0 projects, as well as Liberty Resources, LLC should allow them to meet the proposed timeline and budget goals, even while navigating through or around new challenges as they proceed.  
 - Reviewer: G-51-07C  
 - Rating: 3

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

The methodology presented is of high quality

- Reviewer: G-51-07A

- Rating: 5

See comments above.

- Reviewer: G-51-07B

- Rating: 3

The methodology proposed is state of the art, within the oil and gas industry, as the EERC and BPOP partners lead the pack with this type of industry and state government partnership in research and technology transfer. The reputation of the EERC's ability to produce and manage complex research projects is well documented and recognized within the oil and gas industry and research circles.

- Reviewer: G-51-07C

- Rating: 5

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:

Based on the results from the earlier work and that proposed in this submission I would expect that the technical contribution to address the goals established by the NDIC and the OGRC will be very significant.

- Reviewer: G-51-07A

- Rating: 5

The high level description of proposed work is on target with the technical challenges that need to be addressed by industry and the NDIC over the next 3-5 years. The scientific and technical contribution from this work should contribute with the greater body of work in industry to determine the future direction of Bakken/Three Forks development optimization.

- Reviewer: G-51-07B

- Rating: 3

Project results will be on the cutting edge of research and technology application as North Dakota and industry lead the way in unconventional resource development. The unique position of being the bellwether region initiating the worldwide unconventional shale oil revolution, also puts North Dakota ahead of the curve, and best suited to also lead the way in optimization research and technology implementation, as the unconventional shale oil basin development matures.

- Reviewer: G-51-07C

- Rating: 5

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 background of the principals in this work are exceptional

- Reviewer: G-51-07A

- Rating: 5

The EERC resources assigned to this project are quite capable and well informed and experienced in the project goals outlined.

- Reviewer: G-51-07B

- Rating: 4

All parties involved within the EERC have a proven record of excellence in research and technology evaluation, and as the existing management of the previous BPOP 1.0 and 2.0, are best suited to continue in that role, to the certain advantage of the BPOP 3.0 project. They appear to have the confidence and support of the industry partners who have maintained their support through the past projects, and into this new extended endeavor.

- Reviewer: G-51-07C

- Rating: 5

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 outlined in this project should result in successful completion of the work.

- Reviewer: G-51-07A

- Rating: 4

The project management plan, schedule, and financial plan are quite general.

- Reviewer: G-51-07B

- Rating: 3

While somewhat generic, the schedule is explained by the necessary evolving nature of the project. The milestone chart for reporting and meetings is adequate, but will also like evolve, to evaluate new important information, direction changes and other decisions, as the project moves forward.

- Reviewer: G-51-07C

- Rating: 3

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

The proposed purchases will add significant value to this activity  
- Reviewer: G-51-07A  
- Rating: 5

The project does not include significant investment in equipment or facilities.  
- Reviewer: G-51-07B  
- Rating: 3

The needed purchase of a crude oil analyzer to facilitate fluids characterization and computational modeling of wellsite process equipment, a server for the DMS to host software and GIS data files, and a high-end computer workstation for ML activities, is well documented.  
- Reviewer: G-51-07C  
- Rating: 4

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

The proposed budget should result in success in achieving the goals outlined in this project.  
- Reviewer: G-51-07A  
- Rating: 4

The project goals, while very high level, are well directed at informing the major opportunities and needs regarding future management, development and operation of the Bakken and Three Forks resource in North Dakota.  
- Reviewer: G-51-07B  
- Rating: 4

There is likely no other avenue currently available that could provide this data as efficiently as this partnership between the oil and gas industry partners, the EERC, DOE/NETL funding, and the ND OGRP.  
- Reviewer: G-51-07C  
- Rating: 5

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

the commitment of matching funds represents commitments from key stakeholders in the proposed activity which helps to ensure success in the activities noted and will also most likely lead to implementation of the findings from this work thus ensuring continued value to the state of ND from the enormous resource of the Bakken.  
- Reviewer: G-51-07A  
- Rating: 5

Financial contribution from industry for this project is quite low, excluding the in kind value assigned to the Liberty EOR project. However, the OGRC funding criteria have been met. Good to see significant DOE contribution.  
- Reviewer: G-51-07B  
- Rating: 3

Current ND OGRP funding requests, versus expected matching funds from industry partners and the DOE/NETL, is not expected to exceed the 50% ND OGRP funding share limit.  
- Reviewer: G-51-07C  
- Rating: 3

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 proposed work will help to ensure the continued development of the oil and gas resources of the Bakken formation in ND in a responsible manor for the benefit of the ND and the country. The development of this resource has had an enormous impact on ND and this work will help to ensure that benefit will continue well into the future.  
- Reviewer: G-51-07A

The goals for the proposed project are quite broad in nature and constitute a general consulting agreement with industry, the NDIC, and DOE as opposed to specific project goals being outlined. The project goals, while very high level, are well directed at informing the major opportunities and needs regarding future development and operation of the Bakken and Three Forks resource in North Dakota.  
- Reviewer: G-51-07B

This BPOP 3.0 extension is the logical continuation of previous research the ND OGRP has funded, and is very likely to produce valuable information to extend and even expand the value and producing lifetime of the huge Bakken/Three Forks unconventional resource, with obvious economic benefits to the state of North Dakota. Developing an effective EOR method is an important factor in meeting Governor Burgum’s goal of 2.0 million BOPD for North Dakota. Using an existing low value gas fraction for EOR potentially allows operators and mid-stream gas companies an opportunity to use this resource to the benefit of North Dakota, while offsetting losses for storage or below

cost sales.  
- Reviewer: G-51-07C