

Technical Reviewers' Rating Summary

Proposal Number Application Title Submitted By
 Request For Total Project Costs

Section A. Scoring

Statement	Weighting Factor	G-45-03A	G-45-03B	G-45-03C	Average Weighted Score
1. Objectives	9	5	4	3	36
2. Achievability	7	4	4	4	28
3. Methodology	8	4	4	4	32
4. Contribution	8	3	5	3	24
5. Awareness / Background	5	3	3	3	15
6. Project Management	3	4	3	5	12
7. Equipment / Facilities	2	3	3	3	6
8. Value / Industry - Budget	4	5	3	3	12
9. Financial Match - Budget	4	4	4	3	12
Average Weighted Score		198	194	171	187
	Total: 50				250 possible points

OVERALL RECOMMENDATION

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

Section B. Ratings and Comments

- 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:

Presentation is very clear in describing what will be done in this study.
 - Reviewer: G-45-03A
 - Rating: 5

The proposed project is a necessary first step towards developing tertiary recovery methods.
 - Reviewer: G-45-03B
 - Rating: 4

The objectives and goals were clearly stated. I would like to have seen more tasks, subtasks, and timings listed for a project with such a big dollar ask, but what is listed is solid. It clearly will benefit research and education plus enhance the industry viability. It could also lead to spurring other development of older fields in the State.
 - Reviewer: G-45-03C
 - Rating: 3

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

Requestor has good experience in oil and gas operations. Project will access necessary resources that the requestor does not appear to have in house. EERC has those resources. If EERC can commit the staff and computer resources necessary, then a study that is comprehensive should result.

- Reviewer: G-45-03A
- Rating: 4

The data collection and review component of this study should be easily completed within the time span allotted.

- Reviewer: G-45-03B
- Rating: 4

The goals are clearly outlined and can be achieved. EERC has a lot of experience in carrying out projects of this type, and with so much of it being conducted at their facilities and with their staff, there is no reason to believe the objectives won't be met in time.

- Reviewer: G-45-03C
- Rating: 4

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

EEPI has apparently reviewed other studies and applied the good presentation plan from them. Method is solid.

- Reviewer: G-45-03A
- Rating: 4

The methodology appears to be a fairly straight forward approach that will provide meaningful guidance for CO2 EOR in the Williston Basin (in particular the Heath/Tyler Fm.

- Reviewer: G-45-03B
- Rating: 4

The methodology is strong. It has all the steps for a traditional look at field development as used by Producing Companies, plus the blending of newer technologies using EERC's labs, equipment, and testing procedures. I believe the categorizing of all existing data for the mature field; lab testing as required, a look at existing facilities and infrastructure for improvement/ enhancement; improving or developing secondary recovery (waterflood) efficiencies, and then preparing for future EOR recovery is well thought out.

- Reviewer: G-45-03C
- Rating: 4

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 study should be useful for future projects of this type. Even if the future project is in a different reservoir, the techniques applied will be a good guide. Use of EERC adds to the project credentials.

- Reviewer: G-45-03A
- Rating: 3

The proposed research is likely to produce results that could significantly increase ultimate oil recoveries by overcoming some of the viscosity and pour point issues associated with the crudes in the proposed unitized fields.

- Reviewer: G-45-03B
- Rating: 5

This is a strong research project, which is enhanced by the partnering of EEPI & EERC to jointly research and develop meaningful results. Results that can be used for a private company's benefit as well as meaningful data that can be shared in the public domain. This certainly meets the goal of developing research and education in the industry. The findings can be used by others as a go-by or prototype of developing other older conventional reservoirs/reserves in ND.

- Reviewer: G-45-03C

- Rating: 3

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:

EEPI does not attempt to pretend they have the resources that they will access with EERC. EERC has the competence needed in the reservoir evaluation.

- Reviewer: G-45-03A

- Rating: 3

No comment

- Reviewer: G-45-03B

- Rating: 3

The PI, Mr Nickodemus has good credentials for risk management. The OGRP mission to promote the growth of the oil and gas industry through research and education is clearly identified and this is definitely a research and education type project. There is a good list of references at the end of the document which are pertinent to the project.

- Reviewer: G-45-03C

- 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:

Milestones and deliverables appear to be clearly defined and attainable.

- Reviewer: G-45-03A

- Rating: 4

The project management plan follows a well established format and should work well for this type of project.

- Reviewer: G-45-03B

- Rating: 3

The Gantt chart with a few tasks, subtasks, milestones and deliverables indicated was good, but I do think it, as well as the financial plan could have been more robust for a \$6-million project/\$3-million dollar request of support. I like the idea of quarterly & yearly reports and possible sharing of findings at conferences or other opportunities plus the use in educational settings. Also, EEPI will be able to use and implement findings as the project is in progress.

- Reviewer: G-45-03C

- Rating: 5

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

EEPI plans to purchase these fields and has plans to operate them with the anticipation of economic return. If this study identifies the upside of CO₂ injection, then that is added value.

- Reviewer: G-45-03A

- Rating: 3

There are no new equipment purchases explicitly listed and the facilities listed are fully capable of performing the tasks listed.

- Reviewer: G-45-03B

- Rating: 3

There really is no major purchase of equipment as this is mostly research and education. EERC's addition to the project provides top notch facilities to perform the various lab tests that need to be performed. The other facilities will be the data contained from EEPI offices or files.

- Reviewer: G-45-03C

- Rating: 3

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

EERC is a respected resource. The fact that they are in North Dakota adds value to this project . Local funds being utilized in a local business. EEPI does not identify other partners in the project nor does it indicate there are any.

- Reviewer: G-45-03A

- Rating: 5

No comment

- Reviewer: G-45-03B

- Rating: 3

The budget contains minimal information on what the industry partner's money is spent on. EERC did breakdown their costs, but again, it is general charges to the entire project and not broke down per specific tasks or objectives. I would expect to see more breakdown on a \$6-million project. It would have been nice to see how many dollars were dedicated to each one of the subtasks as a minimum.

- Reviewer: G-45-03C

- Rating: 3

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

EEPI has "skin" in the project at 50% or \$3,000,000. In addition, they have significant (I presume, purchase price is not identified) investments outside of the proposed project in the purchase of the properties.

- Reviewer: G-45-03A

- Rating: 4

Collecting and organizing the historic production and engineering data for these fields along with gaining access to the production facilities under a single operator is likely to produce a valuable set of data that may be built upon over time.

- Reviewer: G-45-03B

- Rating: 4

Meets the minimum requirement of 50% from other sources. The other 50% is from an industry partner which is favorable.

- Reviewer: G-45-03C

- 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

Merits of the project are the work plan is logical and follows industry established methods. Considerable work will be required to properly identify the likelihood of success of a CO2 project. Consideration of the condition of the existing wells and facilities is good. The reality of additional drilling is expected. The work and studies done by the long time previous operator/owner Hess are apparently not in their possession. I suspect there is a considerable dossier of information of the type needed for this study. Well presented plan utilizing in house expertise for the field facilities as well as EERC reservoir evaluation experts and tools is good. Study will be a good resource for future implementation of similar studies by others in the industry.

- Reviewer: G-45-03A

The proposed study has identified unitized fields that are likely candidates for successful tertiary recovery. The proposed methods appear to be focused on addressing specific aspects of the petroleum present in these fields and are certainly worthy of significant study. If successful this study may lead to technologies that extend and enhance oil production from up a significant portion of the existing inventory of conventional wells.

- Reviewer: G-45-03B

This project is one typically carried out by a Producing company's engineering staff (for larger companies) or an engineering firm (for smaller companies). In this case EERC will preform a good portion of the engineering and testing work, which benefits industry and well as higher education and public domain communication. I thought the budget for a project this large should have been much more robust, more listing of what tasks will be performed over what timeline and the dollars associated for each. Also, would have liked to see more specific information regarding FHMU & MHMU fields in the write-up, but I understand the acquisition of the fields hasn't actually occurred yet.

- Reviewer: G-45-03C