TECHNICAL REVIEWERS' RATING SUMMARY

G-017-A
Northwest Refining, Inc. Phase II Permitting and Business Plan Development
Submitted by: Northwest Refining, Inc.
Principal Investigator: Mel Falcon
Request for $650,000; Total Project Costs: $2,500,000
Duration: 24 months

Rating Category	Weighting Factor	Technical Reviewer 17A-02 Rating	17A-07 Rating	17A-10 Rating	Average Weighted Score
Objective	9	4	2	3	27.0
Achievability	9	2	1	2	15.0
Methodology	7	2	2	2	14.0
Contribution	7	4	2	3	21.0
Awareness	5	2	1	2	8.3
Background	5	3	3	3	15.0
Project Management	2	2	2	3	4.7
Equipment Purchase	2	5	5	5	10.0
Facilities	2	3	5	3	7.3
Budget	2	2	3	3	5.3
Average Weighted Score		145	105	133	**127.6**
Maximum Weighted Score		250	250	250	**250**

OVERALL RECOMMENDATION

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

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: 1 – very unclear; 2 – unclear; 3 – clear; 4 – very clear; or 5 – exceptionally clear.*

Reviewer 17A-02 (Rating:4)
The objectives of the proposed project are very clearly stated: 1) to explore, develop and apply for all permits necessary to construct a 100,000 BPD oil refinery, and 2) to develop a business plan to meet investor criteria of costs and profitability. These objectives are consistent with the OGRC goals to bring new oil & gas jobs and industry to North Dakota. Refining is not identified in the OGRC goals and purposes as an area of grant priority. However, increased oil and gas exploration, and production may necessitate additional refining capability. In addition refining may be viewed as oil and gas utilization.

Reviewer 17A-07 (Rating: 2)
The proposal meets 3 of the 5 statutory goals and 5 of the 10 priorities of the Council. However, many of the action items in the project description repeat work items included in the previous application or requested by the Council at the presentation of that project. This would include at least 2 of the work items on Pages 5 and 6 of the 11 work items under Business Plan on Pages 8 and 9.

Reviewer 17A-10 (Rating: 3)
(See overall comments below)

2. *With the approach suggested and time and budget available, the objectives are: 1 – not achievable; 2 – possibly achievable; 3 – likely achievable; 4 – most likely achievable; or 5 – certainly achievable.*

Reviewer 17A-02 (Rating: 2)
The objectives are possibly achievable. The expected project duration is stated as 12 to 16 months on page 4. Yet on page 12 the estimated permitting process is given as 6 to 24 months. Achieving the project objectives within either timeframe is very ambitious. I have some concern that the Prevention of Significant Deterioration (PSD) provisions, FLAG and FLM considerations may require more time than provided in the proposal budget. These environmental issues will become more difficult with increased proximity to national parks. Also, there are business and marketing issues that merit additional time and funding.

Reviewer 17A-07 (Rating: 1)
Neither the Three Affiliated project which began 11/7/03 or the Hyperion project which was announced in June 2007 have come close to the 12-16 month time frame in the project abstract on Page 4 of the proposal. Even the 6–24 months for permitting on Page 12 of the proposal appears unrealistic.

Reviewer 17A-10 (Rating: 2)
(See overall comments below)

3. *The quality of the methodology displayed in the proposal is: 1 – well below average; 2 – below average; 3 – average; 4 – above average; or 5 – well above average.*

Reviewer 17A-02 (Rating: 2)
The quality of the methodology is below average. The timeline topics on page 14 could be the basis for a statement of work activities or SOW. This SOW can identify tasks that serve as the basis for defining the environmental and business plan objectives for the project. The proposal

could be enhanced with additional detail in these two areas and facilitate the development of subsequent project management tools.

Reviewer 17A-07 (Rating: 2)
The proposal doesn't provide adequate detail on the methodology for Title V permits and "various other permits" which are the budget items that Council funds would be used for.

Reviewer 17A-10 (Rating: 2)
(See overall comments below)

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: 1 – extremely small; 2 – small; 3 – significant; 4 – very significant; or 5 – extremely significant.*

Reviewer 17A-02 (Rating: 4)
If the project is successful, the issues addressed in the proposed work would be very significant for NDIC/OGRC goals. Growth within the industry and state could be enhanced if the challenges of the proposed work are identified and resolved.

Reviewer 17A-07 (Rating: 2)
The proposal budget does not indicate any spending on new scientific or technical information.

The project objective on Page 4 is to 1) apply for all permits necessary to construct a 100,000 barrel per day oil refinery in North Dakota and 2) to develop a business plan that will provide potential investors the criteria to determine profitability and costs of the project.

Council funds are dedicated to permitting, which in my opinion should not go forward until objective 2 is completed.

Reviewer 17A-10 (Rating: 3)
(See overall comments below)

5. *The principal investigator's 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: 1 – very limited; 2 – limited; 3 – adequate; 4 – better than average; or 5 – exceptional.*

Reviewer 17A-02 (Rating: 2)
Referenced published literature is evidenced through citations incorporated within the text or preferably placed in footnotes. Referenced publications and unpublished research citations are limited in this proposal.

Reviewer 17A-07 (Rating: 1)
The PI does not even mention the current activity, lessons learned, or status of the two other widely known and publicized refinery projects currently under way in North Dakota and South Dakota.

Reviewer 17A-10 (Rating: 2)
(See overall comments below)

6. *The background of the investigator(s) as related to the proposed work is: 1 – very limited; 2 – limited; 3 – adequate; 4 – better than average; or 5 – exceptional.*

Reviewer 17A-02 (Rating: 3)

The background of the investigators may be adequate but could be enhanced in the areas of environmental operations and North Dakota O&G industry operation. The proposal could be strengthen with more detail and expertise in marketing.

Reviewer 17A-07 (Rating: 3)
The PI is managed by successful entrepreneurial individuals, but their experience and background in the area of the proposal is extremely limited.

The primary contractor has a long and successful history with projects of this type.

Reviewer 17A-10 (Rating: 3)
(See overall comments below)

7. 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: 1 – very inadequate; 2 – inadequate; 3 – adequate; 4 – very good; or 5 – exceptionally good.

Reviewer 17A-02 (Rating: 2)
The project management plan could be strengthened with a SOW, milestone chart, schedule, financial plan and communication plan. A milestone chart with identified tasks and timeframes will increase confidence in completion of the project and facilitate project evaluations.

Reviewer 17A-07 (Rating: 2)
The project management plan includes a milestone chart, but the only schedule provided is for the permitting portion of the project.

By contrast, the financial plan is fairly detailed for everything else, but provides no details for the permitting, so it can't be determined what the Council will be paying for.

There is no communications plan.

Reviewer 17A-10 (Rating: 3)
(See overall comments below)

8. The proposed purchase of equipment is: 1 – extremely poorly justified; 2 – poorly justified; 3 – justified; 4 – well justified; or 5 – extremely well justified. (Circle 5 if no equipment is to be purchased.)

Reviewer 17A-02 (Rating: 5)
None identified.

Reviewer 17A-07 (Rating: 5)
Not applicable.

Reviewer 17A-10 (Rating: 5)
(See overall comments below)

9. The facilities and equipment available and to be purchased for the proposed research are: 1 – very inadequate; 2 – inadequate; 3 – adequate; 4 – notably good; or 5 – exceptionally good.

Reviewer 17A-02 (Rating: 3)

The facilities and equipment may be adequate for the proposed work. If the "topping plant" is used to provide the guidelines for permitting and design of the 100,000 BPD refinery: When will it be operational? Where is it located? What is the status? How will the "topping plant" experience be used to provide feedstock and product marketing input needed to complete the marketing and business plan for the 100,000 BPD facility?

Reviewer 17A-07 (Rating: 5)
Not applicable.

Reviewer 17A-10 (Rating: 3)
(See overall comments below)

10. The proposed budget "value"[1] relative to the outlined work and the financial commitment from other sources is of: 1 – very low value; 2 – low value; 3 – average value; 4 – high value; or 5 – very high value. (See below)

Reviewer 17A-02 (Rating: 2)
The budget on page 15 identifies $162,500 of NDIC/ORG funds for the Title V Air Quality Permits and $162,500 of NDIC/ORG funds for various other permits. The total costs in these two areas are larger than what I would estimate and premature for this stage of project development. Also, items 3, 4, 5, 6, 8, and 9 are premature and of questionable value. Item 7, Business Plan Development merits additional funding and project emphasis. The proposed budget is of overall low value. Re-directing funding and work priorities would improve the proposed project and budget value. Additional involvement and funding by ND O&G industry interests and others would improve the budget value. The estimated project costs given on page 15 total $2,550,000.

Reviewer 17A-07 (Rating: 3)
The stated ultimate value of the project is a possible 1,000 construction jobs, 250 permanent jobs, $0.10 per gallon reduction in fuel prices to ND consumers, and spin off industries. None of this is documented and this project represents just an incremental step toward those goals.

Reviewer 17A-10 (Rating: 3)
(See overall comments below)

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[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.*

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.

Section C. Overall Comments and Recommendations:
Please comment in a general way about the merits and flaws of the proposed project and make a recommendation whether or not to fund.

Reviewer 17A-02 (**DO NOT FUND)**

Construction and operation of a 100,000 BPD refinery in North Dakota could be a significant economic stimulus for the state and the O&G industry. The project should proceed in a logical and detailed manner.

This proposal lacks detail consistent with logical project development. There is a discontinuity between proposal objectives and estimated budget costs. Development of a marketing plan should be a top priority. The plan should include marketing data analysis of available feedstock, feedstock quality, location and product markets, specification and locations. Historical data and market projects covering a minimum of a 10-year horizon should be included. Marketing decisions should not be based on anecdotal evidence. Business and marketing decisions should be based on statistical evidence and analysis. The business plan should include project development phases, financial information, and economic analysis. The economic analysis should include capital cost, O&M cost and financial criteria and assumptions. The environmental portion of the proposal should include additional detail and plans to proceed in a stepwise manner from data collection, permit identification, modeling, monitoring, and BACT analysis as required.

The developers of the project are to be commended for their initiative. They should be encouraged to undertake more detailed projected planning and to re-submit a new proposal.

Reviewer 17A-07 (**DO NOT FUND**)
The ultimate goal of the PI to add value to ND crude oil is laudable.

This proposal leaves many of the questions that were to be answered by the previous application or were requested by the council at the presentation of that project unanswered.

The standards of success for the proposal are very vague and either not backed up by references or are not documentable:
Construction feasible, but profitability
Property tax reduction.
Jobs created.
Creation of an Energy Cooperative.
Crude oil back log reduction. (heavier crude now shut in).
Reduced fuel costs.
Product pipeline needs and interested parties.
Carbon dioxide recovery and utilization interest.

Reviewer 17A-10 (**FUNDING MAY BE CONSIDERED**)
Rather than try to answer each of these questions individually, I offer a broad overview of my opinion of NWR's request for funding.

The overall objective of this project is basically clear and the idea of building a 100,000/bpd refinery in North Dakota is admirable.

However, I am a bit concerned about the methodology of this project. I have built businesses from scratch before, and the first step has always been developing a sound business plan to see if a project is economically feasible and to lay the ground work to secure potential funding. Under the *Standards for Success* portion of this analysis, NWR and EnGlobal engineering talk about already having completed a feasibility study which essentially shows the proposed refinery being a "can't miss" business opportunity for North Dakota. If that is the case and the feasibility study is already completed, I assume the economics of this project have been well reviewed, including profit and loss projections for the refinery. This leads me to question the need for funding a business plan if the project is already deemed feasible. I would be interested in exactly what data

was used to determine that this project is "feasible". I have to believe much of it would fall into the categories used in developing a business plan.

I also question why you would be seeking out permits and licenses before the business plan is complete. It seems to me these issues are mute points until you know for sure a refinery will be built. In regards to the time frame for the permitting and licensing process, 6-24 months to secure this type of paperwork is a bit optimistic. Most of the information I have seen sets a timetable of nearly five years to get all the permits and licenses approved and in place for projects similar to this one.

While the researchers may have a good handle on the refining aspects of this project, the lack of detail on the retailing of the refined product is a concern. A 100,000/bpd refinery is nearly twice the size of the Tesoro Refinery in Mandan. Nowhere in this report is a list of clientele for the finished product. This is a concern because transmission is still the key to another refinery succeeding in North Dakota. If marketers have to drive long distances to pick up refined products or the refinery has to move product long distances in order to market it, long term sustainability of the refining operations becomes an issue. NWR's product must be moved in the most cost efficient manners in order to complete. It is a bit premature to think NWR product will instantly be available in the ND retail market. You can refine all the Basin oil, but it still has to be moved You have some pretty big players in this market who have entrenched operations. I can't foresee these folks just rolling over because of increased competition. To my knowledge, many retailers are under contract with branched suppliers (70-75%) and would have a hard time getting out of current contracts without paying a financial penalty. There is no real discussion in this proposal in terms of how NWR would "crack" the retail market. Predicting a 10 cent decrease in the price of refined products in ND is nothing more than an assumption that needs to be backed up with some hard data.

I also look at the language associated with the feasibility of this project and see Bakken crude being mentioned as a 75-year source. Yet at another meeting I attended in which Mr. Falcon gave a presentation he talked about Canadian syn crude as a primary raw oil for NWR. I have been told by industry experts you can't use both in a refining process. Your refinery has to be set up to use one type of raw oil only. Some clarification is needed on this issue.

More information on a refined product slate would be useful. What type of gases or diesels will NWR be producing in hopes of finding a place in the retail market? I saw at one time where NWR had talked about focusing on diesel fuel and jet fuel/aviation gas. Is that still the plan moving forward?

My last concern centers on the labor issue. This report states 650 direct and indirect jobs will be created by building this refinery. Where will the people come from to fill the positions? North Dakota unemployment numbers are at record lows and thousands of workers are still needed in the oil patch. I think more clarification is needed on how staffing a facility this size is being addressed.

Overall, I find it hard to believe a feasibility plan wouldn't have covered a lot of the above information I'm referring to in this review. If so, this information could be gleaned off the feasibility study and used in the business plan.

This proposal is generic and vague when it comes to the business details of the proposed refinery. There is no identification of the company responsible for producing the actual business plan. The overall project management plan is adequate, but not extremely well-defined.

That being said, if NWR can achieve all the goals it's proposing for this project, western North Dakota certainly stands to benefit greatly. I believe there is a great need for more refinery capacity in our nation.

The value of this work is hard to determine without seeing the information in the feasibility study. I think NWR is willing to front the money needed on their behalf, yet spending $650,000 on the State's end is debatable.

I propose "Funding May Be Considered" for the NWR project.

I further propose funding only for the business plan at this time. Seeking permitting and licensing before you have a bona fide business plan is putting the cart before the horse.