NORTH DAKOTA PETROLEUM COUNCIL

Ron Ness
President

Marsha Reimnitz
Office Manager

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November 15, 2006

Ms. Karlene Fine
North Dakota Industrial Commission
600 E. Boulevard Avenue
Bismarck, ND 58505

Subject: Grant Application for the Study of a North Dakota Crude Oil Quality Equalization System

Dear Ms. Fine:

Enclosed is a grant application requesting the North Dakota Industrial Commission to approve funding from the Oil and Gas Research Council to participate in a study assessing the quality of North Dakota crude oil and potential methods to expand export capacity of that crude through existing pipelines. A $100 check is enclosed to cover the application fee.

The problems associated with restricted export of North Dakota crude oil have been widely documented over the past 10 months. An unbiased study evaluating the quality of North Dakota crude oil and assessing the potential value of some type of quality bank, as well as other options to increase the flow of oil through pipelines, is an essential step in order for state leaders and the industry to develop an understanding of the restrictions on crude oil export and possible remedies. The North Dakota Petroleum Council is responding to a Request for Proposal from the Oil and Gas Research Council on this issue.

Please contact me if you have any questions or need additional information for the enclosed grant application.

Sincerely,

Ron Ness
President

enclosures

Applicant: North Dakota Petroleum Council
PO Box 1395, Bismarck, ND 58502
701-223-6380 / 701-226-0006 (fax)
Principal Investigator: Ron Ness, President
Date of Application: November 1, 2006

Study of a North Dakota Crude Oil Quality Equalization System Quality Bank

Grant Requested from the
North Dakota Oil and Gas Research Council

Submitted by
North Dakota Petroleum Council

Amount Requested: $50,000

Grant Deadline: November 1, 2006

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1.0 Abstract

The objective of this project is to conduct an unbiased study/assessment of North Dakota crude oil to determine whether a quality bank or some form of quality regulation can provide a tool that will create more pipeline capacity to export crude oil to market.

The scope of work is divided into three (3) distinct phases, each composed of a number of tasks. The first phase of the work provides a study of the current market environment and the potential impact of quality regulation on pipeline capacity. The second phase of work concentrates on specific issues related to designing and implementing a quality bank. The third phase provides for ad hoc assistance and ongoing advisory or administrative services.

Although we do not know the deadline for completion of the assignment, we can complete the elements outlined for Phase 1 in a 4-6 week time period, allowing for a presentation by year-end, if required. The activities for Phase 2 would likely take several months to complete and would obviously depend on the ability to efficiently collect required data, schedule necessary meetings, etc. The total project cost is $100,000. The participants are the North Dakota Petroleum Council (NDPC), the North Dakota Oil and Gas Research Council (NDOGRC), and Purvin & Gertz Inc. (PGI).

2.0 Project Description

This study will provide a comprehensive assessment of whether the establishment of a quality bank or some quality regulations in North Dakota would help mitigate the crude oil transportation bottleneck North Dakota and Williston Basin oil producers are facing. Oil production in the Williston Basin has surpassed existing transportation capacity and local crude producers have seen their ability to market crude restricted or have experienced significant differentials from NYMEX posted crude oil prices. The prospect of not being able to market crude, or having to market at significantly reduced rates, is likely to create great uncertainty with

investors drilling new wells and could have long-term impacts as companies place their investments in other areas of the country or world.

There is a sense of urgency because exploration in the Bakken formation in North Dakota has not been as successful as in Montana. Continued research, through drilling, is needed to develop the right completion techniques for economic Bakken oil play in the North Dakota portion of the Basin. Unfortunately, the cost of drilling a Bakken well has risen dramatically in the past year and is now between four and six million dollars per well. Investors may become hesitant to continue drilling such expensive wells in an area where there are also problems marketing the oil.

The oil industry is important to the state of North Dakota. North Dakota's oil industry has added more than 2,000 jobs in the past 18 months and still has over 200 jobs available through Job Service North Dakota. There are currently 40 rigs drilling new wells in North Dakota and 25 in eastern Montana and more than 3,500 operating oil wells in the state. Oil activity in the state is having a significant impact on the state's economy. The state's average wage is up, oil tax revenues are creating a budget surplus for the state, and western counties are seeing housing shortages and vibrant economies once again. The state of North Dakota collected more than $152 million in general fund revenues from oil taxes alone in 2005. Decreased oil production or reduced price per barrel is impacting tax revenues for the state, counties, cities, and schools in oil producing areas.

The scope of the work will be as follows:

PHASE 1

Task 1 – Background Market Analysis

The work for this task would focus on the potential markets for crude oil blend(s) to be transported by the Enbridge North Dakota system, considering current and potential future crudes which may be transported by the pipeline. PGI will receive assistance in defining a

production and quality profile for current and potential future crude oils from the North Dakota Petroleum Council. Given antitrust issues, it may be necessary to use publicly available data to derive qualities to be used in the analysis, or use generic types of crude in order to cover the expected range of properties.

Based on existing knowledge of the crude quality and production we would anticipate that the main market would be the Midwest market, centered at Chicago. The Enbridge North Dakota system ties into the main Enbridge system at Clearbrook, MN. The primary focus of this task would be based on the crude supply and demand outlook in Chicago. In order to undertake this analysis, Purvin & Gertz would draw mainly on existing work undertaken as part of its ongoing Global Petroleum Market Outlook (GPMO) service. The balances contained in this service would be refined as necessary to improve the level of detail required for this task, but much of the fundamental work is in place allowing a cost effective analysis to be completed.

Task 2 – Impact Crude Quality Regulation on Pipeline Capacity

In this task, the potential for quality regulation, as potentially implemented with a quality bank scheme will be investigated, with the ultimate goal of maximizing pipeline capacity. The mechanisms for imposing quality regulation are varied, and could include receipt limitations for crude oil gravity, sulfur or potentially other characteristics such as viscosity. A quality bank system may be thought of as a method for quality regulation.

As part of a final presentation regarding Phase 1, an overview of quality bank principles and examples of pipeline quality banks in use around the world would be provided. This would be done to illustrate the variety of quality regulation systems currently in use.

Task 3 - Documentation

The deliverable from this task would be a presentation-style (PowerPoint) report that illustrates the concepts described above. It is expected that the presentation would be reviewed

with various stakeholders, including the OGPC, OGRC, and the NDIC, before proceeding to complete any subsequent tasks.

PHASE 2

Task 1 – Quality Bank Design

Based on the analysis of the crude oil supply and demand, and the expected quality of the crude oil to be transported, the objectives of the quality bank would be reviewed and an assessment made of the likelihood of them being met. This task would require consultation with the clients (NDPC, OGRC, NDIC), acting on behalf of North Dakota producers. We would require basic data to conduct our analysis, as listed below:

- Assay data for the potential crude oils to be included in the quality bank
- Pipeline configuration data
- Historical pricing information

In the event that the objectives of the quality bank were deemed by PGI to not be met for any reason, possible solutions or alternative approaches would be noted and discussed with the clients.

For this task, PGI would present a review of different methodologies for the quality bank, assuming that a design had not already been proposed. This task would likely include meetings and presentations with the clients to define the different methodologies, and to identify the advantages and disadvantages of different quality bank methodologies. Solutions or alternative approaches would be noted and discussed, based on PGI's ongoing design and administrative work with a range of quality banks around the world.

Based on the range of proposed quality bank designs, a recommendation would be made as to the specific methodology to be adopted for the Enbridge North Dakota system. The

recommendation would include general guidelines for the recommended approach, and identify valuation and price sources to be used.

Task 2 – Quantified Comparison of Proposed Quality Bank Methodology

In this task, the calculated value of Williston Basin crude oil blend(s) relative to defined marker crude(s), using PGI's standard crude oil valuation methodology, would be compared with the relative value obtained using the quality bank approach recommended in Task 1 above. The degree of fit would be examined against historical average prices for the period 2000 to 2006. Differential values for individual crude oils would be derived for the proposed quality bank design, based on the best fit estimated coefficients.

Once the comparison between the quality bank and standard methodology for Williston Basin crude had been completed, the exercise would be repeated for additional streams that may be transported by the system.

Task 3 – Documentation

The deliverable from Phase 2 would be a written report that documents the review of the proposed quality bank methodology and the results of the comparison of the of the crude value differentials obtained from the analysis.

For this task, PGI would present a review of different methodologies for the quality bank, assuming that a design had not already been proposed. This task would likely include meetings and presentations with the clients to define the different methodologies, and to identify the advantages and disadvantages of different quality bank methodologies. Solutions or alternative approaches would be noted and discussed, based on PGI's ongoing design and administrative work with a range of quality banks around the world.

Based on the range of proposed quality bank designs, a recommendation would be made as to the specific methodology to be adopted for the Enbridge North Dakota system.

The recommendation would include general guidelines for the recommended approach, and identify valuation and price sources to be used.

PHASE 3 – Ad Hoc Support and Assistance

The development of the quality bank methodology will require the support of all of the current system shippers. PGI would assist the clients in representing the results of its analysis at shipper meetings or other relevant forums. This may require the evaluation of alternative scenarios as requested by shippers as required to reach a satisfactory conclusion that meets the objectives of the quality bank. Other support and assistance would be provided as required. This may include, but is not limited to, assistance with the preparation of detailed procedures for the quality bank and assistance in discussions with financial institutions, tax and/or customs authorities. Professional time for meeting preparation and attendance, as well as expenses, would be considered part of this task. Other support activities, including further meetings, may be requested over the course of the assignment.

3.0 Standards of Success

The intent of this project is to develop an understanding of the potential role a quality bank or other quality regulations may have in creating additional pipeline capacity to export crude oil to market. Success in this project will be attained if sufficient data and information is made available through the tasks outlined to decide whether a quality bank or quality regulations would positively or negatively affect the issue, or to outline additional steps necessary to answer the question.

4.0 Background /Qualifications

The Williston Basin is currently producing up to 200,000 B/D of crude oil. Most of the crude produced in southwestern North Dakota and southeastern Montana is shipped to the Guernsey market via pipeline. Canadian crude oil exports into the PADD IV market have been

increasing, in line with growth in production. The Enbridge North Dakota system has been operating under apportionment in recent months. All of the above factors have contributed to transportation constraints for crude producers in the Williston Basin.

Ron Ness and Dave Fischer will serve as managers for this research effort. In addition, the North Dakota Petroleum Council has a Quality Bank Task Force that is comprised of key oil and gas industry members representing the broad interests on the North Dakota oil and gas industry including large and small producers, refiners, pipelines, and marketers. The Task Force will provide oversight and direction for the study.

The primary investigator will be Purvin & Gertz, Inc. PGI has extensive practical experience with the design and administration of crude oil pipeline quality banks. The PGI project team for this assignment would be comprised of consultants with experience in crude oil marketing and pricing, and also refining. Consultants with experience in the design and operation of quality banks would be included on the team.

The Project Director for PGI would be Mr. Stephen Fekete. Steve is a Senior Principal of PGI. Mr. Fekete has extensive quality bank experience, having been involved in the design as well as being the administrator for several quality banks in the USGC and Latin America before his transfer to Calgary in 2004. Mr. Steven Kelly (Senior Vice President, Calgary) and Mr. Tom Wise (Vice President, Calgary) would be involved in the work. Steve has managed and worked on a large number of crude oil marketing and pricing assignments. He was actively involved in the design of a Caspian pipeline quality bank while on foreign assignment in London. Tom is very knowledgeable about crude oil production and logistics matters in Western Canada and the U.S., and has participated in numerous studies for producing and transportation companies during his 25-year career with PGI. Other qualified consultants, including Houston-based consultants with quality bank design and administration experience, would be involved in the project based on the above criteria. In addition, the firm's analysts would assist the consultants and other staff on this assignment, as required.

5.0 Management

The North Dakota Petroleum Council, with the assistance of Dave Fischer, Technical Advisor for the Oil and Gas Research Council, will manage and oversee the project. The North Dakota Petroleum Council Board of Directors will establish the guidelines for the program, budget, and communications plan. Ron Ness, President of the Petroleum Council, will manage the project for the association.

6.0 Timetable

Purvin & Gertz, Inc. would be able to commence work on this assignment immediately upon receipt of approval of the project. The length of time required for each of the tasks would, to some extent, depend on the final scope of analysis requested by the clients. Although we did not discuss the deadline for completion of the assignment, we can complete the elements outlined for Phase 1 in a 4-6 week time period, allowing for a presentation by yearend, if required. The activities for Phase 2 would likely take several months to complete and would obviously depend on the ability to efficiently collect required data, schedule necessary meetings, etc.

The timing of Phase 1 – 3 is outlined below.

Phase 1	---------->X					
Phase 2					------->X	
Phase 3						----->
Month	1	2	3	4	5	6

7.0 Project Budget

The proposed direct cost for completing this analysis is $100,000 to complete all tasks. A Cost Basis Summary is shown below. The North Dakota Petroleum Council request is based on a match for this project.

North Dakota Petroleum Council	(50%)	$ 50,000.00
Oil and Gas Research Council	(50%)	$ 50,000.00
Total Project Expenses		$100,000.00

The following table sets out an indicative estimate of the project budget for each phase of the work. In view of the somewhat uncertain extent of the work for Phase 3, it is not possible at this stage to provide a firm estimate for the complete assignment. For planning purposes, you might consider a total of at least $100,000 to be appropriate as the budget for the complete analysis described above.

PROJECT BUDGET ESTIMATE
(US Dollars)

		Fees
PHASE 1		
Task 1	Market Analysis	15,000
Task 2	Impact of Pipeline Tariff on Capacity	25,000
		40,000
PHASE 2		
Task 1	Recommend Quality Bank Design	25,000
Task 2	Quantitative Analysis of Proposed QB Design	20,000
		45,000
PHASE 3	Ad hoc Assistance	as incurred

It is proposed that reimbursement for Phase 3 (and for any additional work requested by the clients) would be based on the actual time required for completion.

8.0 Tax Liability

I, Craig Smith, certify that the North Dakota Petroleum Council does not have any outstanding tax liability owed to the State of North Dakota or any of its political subdivisions.

_____ _____

Craig Smith Date
Treasurer, NDPC

9.0 Confidential Information

The North Dakota Petroleum Council does not request that any of the information related to this application be confidential.

10.0 Patents Rights to Technical Data

The North Dakota Petroleum Council does not request to reserve any patent rights to technical data.

11.0 Appendices

The relevant experience of PGI and of the consultants who would work on the assignment are presented in this section of the proposal. PGI is an international consulting firm, established in 1947, which provides advice and assistance concerning the energy and chemical industries.

Purvin & Gertz, Inc. is independently owned and operated. The firm is entirely owned by current member consultants, and therefore not influenced by any organization in the energy, engineering and construction or financial services industries or in any other field.

Purvin & Gertz' clients include large and small companies in the energy and chemical industries, financial institutions, and government organizations in all parts of the world. The firm's corporate clients are frequently involved in the production, transportation, refining/processing and marketing of crude oil, condensates and natural gas liquids, petroleum products and natural gas. A list of Purvin & Gertz, Inc's work is available upon request.