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

April, 29, 2007

Subject: Grant Application:

Identification of a Shallow Gas Source System in Southwestern Steele County, North Dakota

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 to identify the source system of shallow natural gas measured in a State water observation well in southwestern Steele County. The project will sample water and gas from a well or wells in the project area, analyze the collected samples, and determine the source system for the gas. Understanding the source system is important in developing an exploration strategy. A $100 check is enclosed to cover the application fee.

Please contact me if you have any questions or need additional information.

Sincerely,

David W. Fischer
Fischer Oil and Gas, Inc.

Identification of a Shallow Gas Source System in Southeastern Steele County, North Dakota.

Grant Requested from the
North Dakota Oil and Gas Research Council

Submitted by
Fischer Oil and Gas, Inc.

Principle Investigators:
George Shurr: GeoShurr Resources
&
David Fischer: Fischer Oil and Gas, Inc.

Amount Requested: $15,100.00
Total Project Cost: $30,200.00

Grant Deadline: May 1, 2007

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ABSTRACT

In order to begin to identify areas in the State that may be of potential interest for gas exploration, the North Dakota Geological Survey (NDGS) has initiated a program to map areas where gas is present in shallow water wells. To complete this task, a portable flame-ionization detector (FID) was used to check for methane in existing State groundwater observation wells. Wells include both shallow bedrock and glacial aquifers. If gas is present at any given location, it may have migrated from deeper sources, may be early biogenic gas, may be late-stage microbial methane that is currently being formed, or a mix of these sources.

The purpose of this project is to expand the reconnaissance work completed by the NDGS, in T145N R56W, southeastern Steele County. The focus of the project will be an observation well recently installed by the North Dakota water Commission. The project will result in the identification of a gas source system for the project area, which can be used to develop an exploration strategy for the area.

The project will be undertaken by GeoShurr Resources of Ellsworth, Minnesota and Fischer Oil and Gas of Grand Forks, North Dakota in consultation with the NDGS. Data from the project will be made available to the NDGS for publication. In addition, data and results will be given at the 2008 Williston basin Petroleum Conference. The expected duration of the project will be approximately 6+ months from the beginning of field activities sometime in the spring or summer of 2007. The total cost of the project is $30,200.00. Funding of $15,100.00 is requested from the Oil and Gas Research Council.

PROJECT DESCRIPTION

Natural gas accumulations fall into three separate categories: migrated thermogenic gas, early generation biogenic gas, and late generation biogenic gas. Each category is characteristic of a distinct source system, which also defines migration and trapping mechanisms. Migrated thermogenic gas forms in the deep basin "kitchen" and migrates laterally and vertically to shallow traps, especially on basin margins. Early generation biogenic gas forms by microbial activity at the sediment–water interface during deposition of the host rocks. The gas generated migrates locally and is trapped structurally. Late generation biogenic gas (also called microbial methane) forms by microbial activity in the relatively recent geologic past, does not migrate and does not need structure to produce. In order to successfully explore for natural gas the source system needs to be identified.

There is potential for shallow natural gas production throughout most of the state of North Dakota. Before that potential can be realized regional (play) and local (prospect) exploration strategies need to be defined. In order to do so, gas source systems need to be defined.

The North Dakota State Geological Survey (NDGS) is an important research component in the State's initiative to develop shallow gas resources. In order to begin to identify areas in the State that may be of potential interest for gas exploration, the NDGS

has initiated a program to map areas where gas is present in shallow water wells. To complete this task, a portable flame-ionization detector (FID) was used to check for methane in existing groundwater observation wells installed and maintained by the State. Wells include both shallow bedrock and glacial aquifers. If gas is present at any given location, it may have migrated from deeper sources, may be early biogenic gas, may be late-stage microbial methane that is currently being formed, or a mix of these sources.

The purpose of this project is to expand reconnaissance gas detection field work completed by the NDGS in southeastern Steele County. The focus of the project will be an observation well recently installed by the North Dakota Water Commission in S4 T145N R56W. When tested in September, 2006, there was a gas response of 89.2 ppm C1, just above the groundwater atmospheric interface (NDGS GI 30, 2006). The screened interval of the well was the Pierre shale.

The project will collect a water sample and a gas sample for analysis from the NDWC well. The gas and water samples will be analyzed to determine the gas system source type. Water will also be incubated to determine if gas is currently being generated and for the presence of metahnogens. The FID survey will be expanded to any available adjacent private water wells in a 2 mile radius from the NDWC well. Gas and water samples will be taken from some or all private sector wells in the project area. Gas and water samples will be forwarded to laboratories in Williston, North Dakota, for analysis. Testing water for gas generation and for methanogens will be done at laboratories at the Energy and Environmental research Center (EERC) in Grand Forks.

STANDARDS of SUCCESS

This project will be considered a success when a gas source system can be identified for the studied interval in the project area. In addition it is the intent of this project to elevate interest in shallow gas exploration throughout the State, and present a template that may be utilized elsewhere in the identification of shallow gas source systems. An expansion of this project is needed throughout the State and the Oil and Gas Research Council may receive further funding requests in the future from industry as a research partner.

BACKGROUND/QUALIFICATIONS

The North Dakota State Geological Survey (NDGS) is an important research component in the State's initiative to develop shallow gas resources. In order to begin to identify areas in the State that may be of potential interest for gas exploration, the NDGS has initiated a program to map areas where gas is present in shallow water wells. To complete this task, a portable flame-ionization detector (FID) was used to check for methane in existing groundwater observation wells installed and maintained by the State. In 2006, the NDGS published GI30 that reported on gas screening in southeastern Steele County. In that report a gas response was reported from recently completed water well screened in the Cretaceous Pierre shale. This project will focus on data collection from and near this well. The Principle Investigators for the project will be Dr. George Shurr and David

Fischer. Dr. George Shurr is partner in GeoShurr Resources, Ellsworth, Minnesota. David Fischer is the principle of Fischer Oil and Gas, Inc., Grand Forks, North Dakota. Dr. Shurr is a recognized expert on Cretaceous stratigraphy and shallow gas in the northern plains including North Dakota. He has been active in shallow gas exploration and research in for many years, and has published numerous articles on the subject. David Fischer, Fischer Oil and Gas, Inc., Grand Forks, North Dakota, has also been an involved in North Dakota oil and gas exploration since 1980. He has authored and co-authored numerous articles on the Willistion Basin. Recently Dr. Shurr and Mr. Fischer have acted as volunteer advisors for the NDGS, helping with their initiative to develop shallow gas resources. Together they have as co-authored a series of publications with Fred Anderson of the NDGS.

MANAGEMENT

The project will be managed by Dr. Shurr and Mr. Fischer. They will be involved in every aspect of the project with the exception of laboratory analysis. Together and with the assistance of Fred Anderson of the NDGS they will serve as the field technical staff for the project.

TIMETABLE

It is anticipated that field work will commence by late June or early July of 2007. Field activities should take approximately 1 week. Gas and water analysis turn around time should take no longer than 60 days. Incubation of water samples for gas generation will vary depending on the laboratory commitments and rate of generation, but could take 60 – 90+ days. The final report to the Oil and Gas Research Council should be delivered 6+ months after the start of the project.

REFERENCES

GI-30: 2006, Anderson, F.J. *Shallow Gas Field Screening in Southeastern Steele County, North Dakota*: NDGS.

BUDGET

Project Costs	
FID Equipment Rental	$2,000.00
Miscellaneous Field Costs	$225.00
Laboratory Cost	
culture 2 water samples*	$2,800.00
Consultant Fees & Expenses	
Labor @ $125/hr (4 weeks)	$20,000.00
travel/lodging/perdiem	$1,575.00
NDGS Fees & Expenses	
Labor/travel/lodging/perdiem	$2,000.00
Final report editing and publishing as NDGS Geological Investigation	$1,600.00
Total	$30,200.00

Summary of Matching Funds	
Cash Contribution	$4,000.00
NDGS Fees & Expenses	$3,600.00
Labor Contribution	
Fischer Oil & Gas	$5,000.00
GeoShurr	$2,500.00
Total	$15,100.00

TOTAL FUNDS REQUESTED FROM OGRC	$15,100.00

* Actual laboratory costs will vary depending on incubation time.

Actual costs will be reported when they are available.
OGRC funds will be reduced proportionately to reflect any reduction in costs.

Tax Liability

I, David Fischer, certify that Fischer Oil and Gas, Inc. does not have any outstanding tax liability owed to the State of North Dakota or any of its political subdivisions.

David Fischer Fischer Oil and Gas, Inc.	Date

Confidential Information

The applicants do not request any confidentiality period for this project.

Patents Rights to Technical Data

The applicants do not request to reserve any patent rights to technical data.

Appendices

None