

January 31, 2006

Dear Oil and Gas Research Council Members:

Attached you will find a funding request for a project to be completed by Continental Resources, Inc. (CRI).

Please accept this letter as a binding commitment on behalf of the above to complete the project as described in the application if the Commission approves the grant requested.

Sincerely,

Jeff Hume
Senior Vice President
Resource & Business Development.
Continental Resources, Inc.

Oil and Gas Research Council

Project

“Cretaceous Gas/Shale-Gas Expansion”

Evaluation of Potentially Productive
Cretaceous Gas Reservoirs
through
Comparison of Well Core
and Modern Well-Logging Technologies

Respectfully Submitted by:
Continental Resources, Inc., Applicant

Dr. Michael Husband
Principal Investigator for Continental Resources, Inc.

A Grant Proposal Requesting Petroleum Council Funding
for the Amount of \$186,120

1/31/06

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Abstract

The proposed project entitled “Cretaceous Gas/Shale-Gas Expansion” is designed to provide information on how the use of newer well logging technologies could expand current North Dakota shallow gas production and generate interest in Cretaceous gas prospects statewide. The intent of the project is to develop a well logging template to be utilized throughout the state to help in identifying shallow Cretaceous gas reservoirs. This template will be developed by collecting data from normal and special core analysis, coupled with a series of modern well log suites. Well log signatures will be compared to the core and core analysis. From this extensive data set, the best combination of well logging suites for the identification of producing Cretaceous gas reservoirs can be identified, and a useable well logging template can be put forward. Creation of this template will encourage investment in North Dakota shallow gas prospects resulting in increased leasing and drilling in the state.

Interest in Cretaceous gas is expected to lead oil and gas companies to invest in parts of the state outside historic producing areas.

The duration of the project is expected to be 12 months. Total project cost is expected to be \$630,120 for drilling, coring, core analysis, advanced logging, and completing 2 wells in the Eagle Sand and Pierre Shale. The project work will be performed or supervised by CRI technical staff, field personnel, and management.

Project Description

The proposed project entitled “Cretaceous Gas/Shale-Gas Expansion” is designed to provide information on how the use of newer well logging technologies could expand current North Dakota shallow gas production and generate interest in Cretaceous gas prospects statewide.

Providing this information will encourage investment in North Dakota shallow gas prospects, resulting in increased leasing and drilling in the state. Interest in Cretaceous gas is expected to lead oil and gas companies to invest in parts of the state outside historic producing areas. However, the project will occur in an existing oil field with established infrastructure so environmental impact will be minimized.

Traditional methods using log analysis have not been satisfactory for accurately estimating the hydrocarbon potential of Cretaceous sediments in North Dakota. The formations are very complex shoreline deposits composed primarily of thinly bedded shale, sandstone, and siltstone. New logging technologies have been developed that are more sensitive to gas-saturated thin beds. This logging technology has significant potential as a tool for exploration and development of Cretaceous gas reservoirs throughout the state. However, before these technologies can be accepted as a standard by Industry, a successful logging template must be developed that is shown to be capable of reflecting subtle Cretaceous geology as well as associating that geology with gas. CRI has identified locations in Bowman County and is proposing a project to drill a series of wells to test the commerciality of Cretaceous gas. CRI, with Council support, would like to develop a well logging template supported by core analysis that could

be utilized to identify gas zones in the Cretaceous with applicability to the entire state.

CRI is proposing to drill 4 wells to test the Cretaceous Eagle Sand and Pierre Shale. The estimated total depth is 2000 feet, with a target depth of 1,500-1,800 feet. CRI plans to drill the first well and run logs over the Eagle Formation and Pierre Shale and use the information to adjust the drilling program for coring the next well in the drilling schedule.

The log package for the first well will include spectral gamma-ray, dipole sonic, pulse neutron, and neutron-density and induction logs. The neutron-density and induction logs will be run at high resolution. The log interpretation will be used to determine the interval to be cored in the second well drilled in the program. We estimate that 60-120 feet of core will be taken in the well to be cored. The log package for the cored well will also include spectral gamma-ray, dipole sonic, pulse neutron, neutron-density and induction logs. The log suite will include a geo-chemistry log. Core analysis will include gas-desorption of shale samples, porosity, permeability, clay analysis and water sensitivity.

If CRI were to receive funding, it proposes to evaluate these logs supported by core analysis to develop a well logging template for Cretaceous shallow-gas reservoirs that could be utilized throughout the state. The template will be developed by collecting a series of data sets including core, detailed core analysis, and a series of modern well log suites. Well log signature will be compared to the core and core analysis. From this extensive data set, the best combination of well logging suites for the identification of producing Cretaceous gas reservoirs can be identified, and a useable well logging template can be put forward. This template should have applicability to other shale and shaly-sand formations. The work on

this project will be performed by or under the supervision of CRI technical staff and management. The duration of the project is expected to be 12 months. Total project cost is expected to be \$630,120. Of this amount, \$186,120 is attributable to activities of additional coring and core analysis, and logging runs and log processing. Appendix 1 contains a table listing proposed coring and logging activities as well as estimated costs.

Although indications for gas production are encouraging, there are risks involved in testing gas potential in this area. Because of these risks, CRI is requesting Council support to develop a logging template that could then be utilized throughout the state to explore for and successfully develop Cretaceous gas reservoirs.

Standards of Success

Success will be assessed through the following measures:

1. Obtain modern logs and core analysis of the Cretaceous formations in the Cedar Hills Field
2. Develop logging templates that are applicable in Cretaceous gas exploration throughout the state
3. Establish a new methodology for apply modern log interpretation for the expansion of gas resource development in Bowman County and other areas
4. Prepare results for publication.

Background/Qualifications of Participants

The potential for Cretaceous gas production throughout North Dakota is very large, but the resource remains under-explored. One significant problem that deters exploration is the ability to identify producing zones using conventional well log analysis. If a well logging template is successfully developed, that template could then be applied throughout the state in exploration efforts.

CRI is a primary operator of oil wells in the Bowman County area. Its geologists, engineers, field personnel and managers bring years of experience operating this type of project. Data collected by CRI personnel over the last 5 years indicate the potential exists to expand the Cretaceous gas productive area in Bowman County into a new trend 5-10 miles northeast of current production. Flow tests conducted on 2 unstimulated wells by CRI personnel during the development phase of the Cedar Hills Red River field indicated 5-6 MCFD production from Cretaceous rocks in those wells. The potentially productive area covers 75-100 square miles and could hold 15-20 BCF of recoverable gas.

CRI is planning to drill 4 wells to test Cretaceous gas potential. With Council support, CRI is willing to core and analyze the potential productive interval and compare those findings to a suite of modern well logs to better understand the relationship between reservoir rock, production and well log signatures.

The project work will be performed by a partnership of CRI geologists, engineers, field personnel, and management. Dr. Michael Husband, Senior Reservoir Engineer, will serve as the Principle Investigator. He has worked exploration and development for 10 years. CRI is a primary operator of oil and gas wells in the Williston Basin. CRI was established in 1967 and operated in the

Rockies since 1991. It has been in the Cedar Hills field since 1995 and played a major role in its discovery and development. CRI's geologists, engineers, field personnel and managers bring years of experience building and managing these types of projects.

Value to North Dakota

Data collected by CRI indicate significant potential to expand the Cretaceous gas productive area in Bowman County into a new trend to the northeast of current production. The potentially productive area covers an estimated 75-100 square miles and could hold potentially 15-20 BCF recoverable gas.

If successful, the proposed project entitled "Cretaceous Gas/Shale-Gas Expansion" will provide information on the use of newer well logging technologies to expand current North Dakota shallow gas production and generate interest in Cretaceous gas prospects statewide.

Providing this information will encourage investment in North Dakota shallow gas prospects resulting in increased leasing and drilling in the state. Interest in Cretaceous gas is expected to lead oil and gas companies to invest in parts of the state outside historic producing areas.

Project Management

The project work will be performed by CRI geologists, engineers, field personnel, and managers. Dr. Michael Husband, Senior Reservoir Engineer, will be the Principle Investigator for CRI. CRI has permitted the 4 exploratory wells to

be drilled in the program, has a rig contracted to drill the wells and will begin the drilling and testing phase of the program in the first quarter of 2006. Grant and contract administration will be performed by CRI as operator of the wells. The work on this project will be performed by or under the supervision of CRI geologists, engineers, and field personnel.

Project Timetable

Drilling	1 st quarter 2006 concluded (weather permitting)
Well completion	2 nd quarter 2006 concluded (weather permitting)
Core analysis	2 nd quarter 2006 completed
Template development	3 rd quarter 2006 completed
Final results	4 th quarter 2006 completed
Results published	4 th quarter 2006 or 1 st quarter 2007

Project Budget

CRI Original Cost

\$282,000	Drill and complete - 2 of 4 wells
\$0	Coring and core analysis
\$18,000	Well logging - 2 of 4 wells
\$72,000	Ditching, flow lines, electric - 2 of 4 wells
\$14,000	Road and location work - 2 of 4 wells
\$20,000	Separators, water tanks, pumps - 2 of 4 wells
\$24,000	Operations (6 months) - 2 of 4 wells
\$14,000	Salary (site supervision during project) - 2 of 4 wells
<u>\$444,000</u>	Total

Grant Support

\$134,920	Coring, core analysis - 1 well
\$51,200	Well logging – 2 wells
<u>\$186,120</u>	Total grant Support

Cost Share

\$282,000	Drill and complete - 2 of 4 wells
\$134,920	Coring and core analysis
\$47,200	Well logging - 2 of 4 wells
\$72,000	Ditching, flow lines, electric - 2 of 4 wells
\$14,000	Road and location work - 2 of 4 wells
\$20,000	Separators, water tanks, pumps - 2 of 4 wells
\$24,000	Operations (6 months) - 2 of 4 wells
\$14,000	Salary (site supervision during project) - 2 of 4 wells
<u>\$630,120</u>	Total

The funding requested is necessary to achieve the project's objectives within the proposed timetable. If no funding or less funding is available than that requested, the project's objectives will not be attainable.

Project Matching Funds

\$444,000 Drilling and completion monies furnished by CRI

Confidential Information

None of the information in this application is of a confidential nature.

Patents and Rights to Technical Data

There are no patents or rights that the applicant wishes to reserve.

Tax Liability Affidavit

I, _____, do hereby confirm that the North Dakota Oil & Gas Division does not have an outstanding tax liability owed to the State of North Dakota or any of its political subdivisions.

(Affiant's Signature)
STATE OF _____)
)ss
COUNTY OF _____)

On _____, _____,
known to me to be the person described in and who executed the foregoing instrument,
personally appeared before me and acknowledged that (s)he executed the same as a free act
and deed.

Notary Notary Public
Seal State of _____, County of _____
My Commission expires _____

Appendix 1

Cretaceous Gas/Shale-Gas Expansion (Eagle Sand/Pierre Shale)

Coring and Core Analysis			
	Coring	\$65,000	120 feet
	Gas Desorption	\$54,000	12 Samples
	Porosity/Permeability	\$ 6,720	24 Samples
	Clay Analysis	\$ 4,200	12 Sampled XRF
	Water Sensitivity	\$ 5,000	5 Samples
	Total	\$134,920	
Logging First Well			
	Spectral Gamma Ray	\$ 3,500	
	Dipole Sonic	\$ 9,900	Dipole Shear Sonic Imager
	Platform Express	\$ 9,000	CND, Induction, Microlog
	Setup	\$ 6,200	
	Total	\$28,600	
Logging Cored Well			
	Spectral Gamma Ray	\$ 3,500	
	Dipole Sonic	\$ 9,900	Dipole Shear Sonic Imager
	Platform Express	\$ 9,000	CND, Induction, Microlog
	Geo-Chemical Log	\$ 8,000	Elemental Capture Spectroscopy
	Pulse Neutron	\$ 4,000	
	Setup	\$ 6,200	
	Total	\$40,600	
	Project Total	\$204,120	
	Funds Requested	\$186,120	Platform express excluded