



**Contract No. G-013-025**  
**“North Dakota Petroleum Council’s Teacher Education Program”**  
Submitted by **North Dakota Petroleum Council**  
Principal Investigator: Ron Ness, President

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
North Dakota Petroleum Council	\$ 13,025
North Dakota Landmans’ Association & API Chapters	\$ 4,875
North Dakota Industrial Commission	<u>\$ 17,900</u>
Total Project Cost	\$ 35,800*

\*In-kind services are also provided by the North Dakota Petroleum Council staff, Petroleum Council membership, Department of Mineral Resources, Energy Career Awareness Partnership and Forest Service staff support.

Project Schedule – 24 months  
Contract Date – July 19, 2007  
Start Date – June 1, 2007  
Completion Date – June 1, 2009

Project Deliverables:  
Status Report: August 1, 2007 ✓  
Status Report: August 1, 2008 ✓  
Final Report: June 1, 2009 ✓

**OBJECTIVE/STATEMENT OF WORK:**

The objective of the North Dakota Petroleum Council Teacher Education Seminar is to educate teachers about the economic benefits and career opportunities provided by the North Dakota oil and gas industry enabling them to educate their students about the industry. This project is a continuance of the Oil and Gas Research Program’s participation in an important and successful outreach program. In addition this funding includes the costs of a newsletter titled *Oil and Gas Tidbits*.

**STATUS**

All status reports have been received along with the final report. This project funded the North Dakota Petroleum Council Teacher Education Seminars for the years 2007 (a three-day seminar in Bismarck) and 2008 (a four-day seminar in Bismarck). These were the 16<sup>th</sup> and 17<sup>th</sup> Teacher Education Seminars. Since inception of the seminars 633 teachers have participated. It is believed that the information gained by these teachers could have exposed tens to thousands of students and their parents about the oil and gas industry.

This project also funded the production and distribution of the newsletter titled *Oil and Gas Tidbits*. *Tidbits* was distributed in July 2007 (Workforce Needs Study), March 2008 (focus on distribution of oil tax revenues), August 2008 (focus on education efforts of the industry to educate the public—Town Hall meetings and Energy Career Awareness), December 2008 (economic growth of the oil and gas industry from 2005-2007 and economic impact study), June, 2009 (focus on developing technology in North Dakota’s oil industry), August 2009 (focused on the Oil Can! Bakken Rocks Cookfest) and October 2009 (focused on the Royalty Owner Information Center). The October 2009 *Tidbits* was distributed to over 1,400 individuals by direct mail, another 700 via e-mail and 500 copies were printed for distribution at presentations. (Note there was an October 2007 *Tidbits* issued regarding the Economic Impact of the Petroleum Industry in North Dakota but it was not funded under this project.)

**Contract No. G-017-038**  
**“Commercial Driver Training Program”**  
Submitted by **Fort Berthold Community College**  
Principal Investigator: Dr. Clarice Baker-Big Back

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
Fort Berthold Community College	\$125,206
North Dakota Industrial Commission	<u>\$ 11,900</u>
Total Project Cost	\$137,106

Project Schedule – 12 months  
Contract Date – May 28, 2009  
Start Date – December 1, 2008  
Completion Date – November 30, 2009

Project Deliverables:  
Status Report: June 30, 2009 v  
Final Report: November 30, 2009 v

**OBJECTIVE/STATEMENT OF WORK:**

Fort Berthold Community College has developed a Commercial Driver Training Program to train individuals interested in careers in driving, with a focus on providing a skilled, safe, workforce for the oil industry. The application requested funding for program start-up and operations for one year, including two part-time positions, fees, stipends and tuition for 15 financially needy trainees.

The Oil and Gas Research Program funding of \$11,900 was limited to being used for the salaries and fringe benefits of the two part-time positions. The funding was utilized for the Safety/Permit Training and the Project Manager.

**STATUS**

Fort Berthold Community College provided its reports on a timely basis. The final report shows that this program served a total of 51 students. A total of 10 students successfully completed the class and are currently working in the oil and gas industry on the Fort Berthold Reservation as truck drivers. One of the students owns a trucking company and hires local truckers. The College originally had requested \$62,900 in funding. In that the Oil and Gas Research Program was unable to provide funding at that level, the College sought funding from other sources. The College was able to obtain funding from TERO and Job Service to help with the costs of training the students.

**Contract No. G-005-013**  
**“Education of Oilfield Fire Safety”**

Submitted by: ND Association of Oil and Gas Producing Counties

Principal Investigator: Vicky Steiner

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
ND Insurance Premium Tax (state appropriation)	\$100,000
City of Dickinson (Energy Impact Fund)	\$ 50,000
City of Dickinson (land value)	\$ 17,500
ND Association of Oil and Gas Producing Counties and The City of Dickinson Fire Department (In-kind salaries)	\$ 19,000
North Dakota Industrial Commission	<u>\$ 15,000</u>
Total Project Cost	\$201,500

Project Schedule – 24 months

Contract Date – December 13, 2005

Start Date – August 1, 2005

Completion Date – December 31, 2008

Project Deliverables:

Status Report: March 31, 2006 v

Status Report: August 31, 2007 v

Final Report: December 31, 2008

**OBJECTIVE/STATEMENT OF WORK:**

To provide education to 3,000 volunteer and staff firefighters in western and central North Dakota and other state officials about oilfield fire safety and encourage them to learn more about oilfield fire safety by attending, training at the Dickinson-based Williston Basin Oilfield Fire Training facility.

**STATUS**

Contract executed. The March 31, 2006 and August 31, 2007 status reports were provided. An extension was requested for completion of this project by December 31, 2008 or until such time as funding has been utilized for newsletters. The following newsletters have been printed and distributed:

February, 2006 – Firefighting Tips – New Fire Props

June, 2006 – Firefighting Tips

August, 2006 – Patterson 490 Fire

June 2007 – Water-Foam-Gel

**Contract No. G-006-016**  
**“Cretaceous Gas/Shale-Gas Expansion”**  
Submitted by **Continental Resources Inc.**

Principal Investigator: Dr. Michael Husband / Archie Taylor / Gene Carlson

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
Continental Resources, Inc.	\$444,000
North Dakota Industrial Commission	<u>\$186,120</u>
Total Project Cost	\$630,120

Project Schedule – 12 months  
Contract Date – March 13, 2006  
Start Date – March 1, 2006  
Completion Date – March 31, 2007

Project Deliverables:  
Status Report: June 30, 2006 ✓  
Status Report: October 31, 2006  
Status Report: December 31, 2006  
Final Report: March 31, 2007

**OBJECTIVE/STATEMENT OF WORK:**

The project was designed to provide information on how the use of newer well log technologies could expand current North Dakota shallow gas production and generate interest in Cretaceous gas prospects statewide. The objectives of the project are to develop a method of evaluating the shallow gas potential of the Pierre Shale and Eagle Sand in the Cedar Hills area, creating a template that can be used/modified for exploration through the State. The 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 logging suites for the identification of producing Cretaceous gas reservoirs can be identified, and a useable well logging template developed. This was to be done in two steps. Step 1 – Use log and core data to build a template for evaluating logs from other wells. Step 2 – Compare production from the wells to validate the template.

**STATUS**

The contract was executed. The first status report was received and it is posted on the Industrial Commission/OGRP website. Several contacts have been made since receipt of the first status report requesting the filing of the additional and final reports or at a minimum a request for an extension. To date the Commission has paid \$75,000 of their commitment of \$186,120.

**Contract No. G-05-031**  
**“Geomechanical Study of Bakken Formation Nesson Anticline, Williams County, ND”**  
Submitted by **University of North Dakota**  
Principal Investigator: Dr. Zhengwen Zeng

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
Encore Acquisition Company	\$ 20,000
Hess Corporation	\$ 20,000
Marathon Oil Corporation	\$ 20,000
St. Mary Land Exploration Company	\$ 20,000
Whiting Petroleum Corporation	\$ 20,000
North Dakota Industrial Commission	<u>\$ 100,000</u>
Total Project Cost	\$200,000

Project Schedule – 24 months  
Contract Date – April 16, 2008  
Start Date – January 1, 2008  
Completion Date – December 31, 2009

Project Deliverables:  
Status Report: June 30, 2008 ✓  
Status Report: December 31, 2008 ✓  
Status Report: June 30, 2009  
Final Report: December 31, 2009

**OBJECTIVE/STATEMENT OF WORK:**

This project has four objectives:

1. Determine the in-situ stress field of the targeted formation for better design of horizontal wells and hydraulic fracturing.
2. Measure the geomechanical properties, such as rock strength, to improve well stability during both drilling and production stages;
3. Develop local geomechanical laboratory capacities to serve the state and the regional demand; and
4. Establish lab facilities to teach lab classes for courses that include geomechanics components.

**STATUS**

Contract executed with the condition that the applicant obtain a dollar for dollar match from industry. The applicant provided evidence that commitments totaling \$100,000 had been received.

The December 31, 2008 progress report was received. During the July 1, 2008 through December 31, 2008 time period the following work was completed:

1. Completed two papers on Bakken formation geomechanics:
  - a. Geomechanical study of Bakken formation for improved oil recovery,
  - b. Geomechanical stability assessment of Williston Basin formations for petroleum production and CO2 sequestration
2. Estimated the average in-situ stresses (overburden pressure and horizontal stress) of the Bakken formation in the ND Williston Basin
3. Developed and tested an alternative triaxial geomechanical testing method,
4. Built a portable Bakken Shale core sampling system,

5. Completed core observation and fracture description of all the 22 industrial partners' cored Bakken Formation rocks. These core description and microfracture observation set up the foundation for future in-depth study.

Using Bakken well logs, average Bakken formation in-situ stresses were estimated based on the results of all 22 Bakken wells. While this provides some lights in the in-situ stress fields, more detailed study is on-going based on each of these 22 wells. One of the major components in this project is an alternative method for lab geomechanical tests under reservoir conditions (temperature, pore pressure, and in-situ stresses). This method has been successfully developed, tested and verified. A portable shale core sampling system was designed and built so as to be used in the NDGS Core Library for plugging 1-in diameter by 2-in long Bakken samples for geomechanical tests. The portable core sample system has been completed and tested using a reference shale sample. On going efforts are focused on obtaining the Bakken shale samples for the testing.

Prior to the August 6, 2009 meeting the Oil and Gas Research Program Technical Advisor met with the principal investigator. Mr. Fischer's summary report to the Council stated the following:

- Laboratory is complete and operational.
- An alternative triaxial testing system has been developed:
  - a) Pumps, core holder and oven
  - b) Control and data acquisition system
- Research team has finished core observation and fracture description core;
- Using Bakken well logs, average Bakken formation in-situ stresses have been estimated for cored wells in study;
- Laboratory tests are underway and will continue;
- Approximately 4 papers have been published in journals and/or presented at national and international conferences. (Copies of these papers are available in the Commission files.)
- As a result of this program an additional (approximately) 1 million dollars have been contributed to the program; additional funds are anticipated;
- This program has been incorporated into a "North Dakota Center of Excellence" program;
- The program has attracted new students to UND (around 10 new students (1/2 are at the graduate level); additional student interest has been identified, including transfers from other universities; some students have had to be turned down at this time to allow for program and growth to be able to accommodate them.

01/14/10

**Contract No. G-016-034**  
**“Oil Can! Good Neighbor Initiative and Outreach Program”**  
Submitted by **North Dakota Petroleum Council**  
Principal Investigator: Ron Ness, President

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
North Dakota Petroleum Council	\$ 83,000
North Dakota Industrial Commission	<u>\$ 50,000</u>
Total Project Cost	\$133,000

Project Schedule – 24 months  
Contract Date – April 6, 2009  
Start Date – September 15, 2008  
Completion Date – November 15, 2010

Project Deliverables:  
Status Report: April 15, 2009 v  
Status Report: November 15, 2009 v  
Status Report: May 15, 2010  
Final Report: November 15, 2010

**OBJECTIVE/STATEMENT OF WORK:**

This project will focus on engaging in a continuous dialog about the key issues relating to oil and gas development with the neighbors, policymakers and the general public. The education and outreach efforts will strive towards adapting to the key interests of our neighbors, the policymakers while using a lessons learned approach as we construct the initiatives to meet desired objectives. It is anticipated that the program will have to be flexible, adapting as new issues, ideas and concerns occur. The Initiative will stress responsible development by industry and includes improving relationships and communications with our neighbors and a commitment to environmental protection.

**STATUS**

Contract executed. One of the conditions of this contract is that there is coordination in the planning and implementation of the program with the Department of Mineral Resources Director. Written confirmation has been provided that the Director has been involved.

The first status report has been received for the September, 2008 through March, 2009 time period and is posted on the Industrial Commission/Oil and Gas Research Program website. The *Oil Can!* program has been developed based on feedback from the eight Town Hall meetings held in 2008. This program is a part of the good neighbor initiative to partner with the Petroleum Council’s current energy education outreach efforts. The program will have several deliverables all with a focus of not only improved communications to landowners, stakeholders, neighbors and policy makers, but continually working to improve actions and responses to questions and concerns by all North Dakotans.

During the first phase of this contract an action committee/advisory committee was established and the program was named and a branding logo was developed. The guiding principles for the program have been developed:

- 1) Listen first
- 2) Broaden outreach
- 3) Respect others

New website features have been implemented on the North Dakota Petroleum Council website with links to the Department of Mineral Resources website. Two town hall meetings were held November 11 & 12 in Bowbells, Powers Lake, Parshall, Stanley and Killdeer. Approximately 450 citizens attended these meetings. Media relations included newspaper advertising throughout western North Dakota. In addition there has been radio advertising. During the spring of 2009 the *Oil Can!* program served as a means to promote responsible road care in western North Dakota during the unusually wet spring weather. Advertisements ran in all major western newspapers listing proper steps to be taken to avoid excessive road damage during softer road conditions. Both radio packages also ran 30 second advertisements which encouraged the oil and gas industry to take extra precautions while driving heavy equipment and vehicles on western roads. This program also sponsored a "Roughneck Player of the Game" for UND Sioux hockey and basketball games. Planning for Phase II of the project took place during the first seven months.

*Oil Can!* through Phase I has proven to be a valuable tool for improving communications between industry, key stakeholders, policy makers and the general public. *Oil Can!* provides an immediate response mechanism for situations, such as impacts to roads and urging the oil and gas industry to use discretion. This was an important, time sensitive issue and the immediate proactive steps through *Oil Can!* appeared to have been successful.

The second status report has been received for the April 15 – November 15, 2009 time period. The status report is posted on the Industrial Commission/Oil and Gas Research Program website. During this time period the goals of the *Oil Can!* program were further refined to be:

- Assess and effectively respond to the issues, concerns and needs of the stakeholder groups as they relate to being a "good neighbor" and "good steward;"
- Increase the level of awareness, understanding and support for the oil and gas industry in North Dakota among key stakeholder groups, especially as it relates to positive economic employment impacts; and
- Build and reinforce a unified brand identity and positive image for the oil and gas industry in North Dakota that utilizes *Oil Can!* as a known brand affiliated with the education and outreach efforts of the Petroleum Council.

During this Phase II time period the program included the hosting of community events, development and distribution of safety and education materials, development and post of web-based information and media coverage.

On October 5, 2009 the Petroleum Council received the Interstate Oil and Gas Compact Commission Chairman's Stewardship Award in the category of Energy Education for the *Oil Can!* project.

The Community Outreach was achieved through the Petroleum Council's donation to the American Red Cross (\$80,000 for North Dakota flood relief), the 2009 Bakken Rocks CookFest and the development of the Safety Alert flyer. This flyer emphasizes that oil well facilities are private property and should not be used by anyone other than trained industry personnel. The 2009 Bakken Rocks CookFest brought together over 1,800 people in the western part of State. (Killdeer and Stanley)

New web-based informational resources were implemented during this time period. Two informational sections were developed – a Royalty Owner Information Center and Frequently Asked Questions.

Media efforts continued during this phase utilizing newspapers and radio as well as sponsorship of UND Roughneck Performance of the Game for Fighting Sioux football and hockey radio broadcasts and Impact Player of the Game for western North Dakota high school sports.

01/14/10

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**Contract No. G-017-037**  
**“Improved Directional Drilling Technology for the Bakken Formation”**  
Submitted by **Laserlith Corporation**  
Principal Investigator: Wallace Tang

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
Laserlith Corporation	\$200,000
North Dakota Industrial Commission	<u>\$200,000</u>
Total Project Cost	\$400,000

Project Schedule – 12 months  
Contract Date – June 22, 2009  
Start Date – June 1, 2009  
Completion Date – June 30, 2010

Project Deliverables:  
Status Report: September 30, 2009 v  
Status Report: December 31, 2009 v  
Status Report: March 31, 2010  
Final Report: June 30, 2010

**OBJECTIVE/STATEMENT OF WORK:**

The objective of this project as originally submitted is to increase the efficiencies of horizontal drilling in the Bakken Formation through a redesign of drilling tools by including the use of miniature gyroscopes in the drilling assemblage. The result of the project will be a prototype miniature MEMS gyroscope demonstrated at temperature typical in the drilling environment. High-temperature shock-resistant MEMS gyroscopes enable the directional sensor to be positioned next to the drill bit, resulting in a reduction of backtracking, more accurate navigation and time-savings. The original request from Laserlith was for \$500,000. The Commission funded only Phase I of the project. The goal for Phase I is to develop the micromechanical sensing element, select the specialized high temperature semiconductor foundry and design the sensor circuit. The deliverable for the 1-year Phase I project is the test data demonstrating the ability of the micromechanical sensor to operate in the simulated down-hole temperatures.

**STATUS**

The September 30, 2009 quarterly report was received. A copy of the non-confidential report has been posted on the Industrial Commission website. It states in part: “The main focus of the last quarter was to design a basic MEMS gyroscope and perform temperature sensitivity analysis on it to study the effects of temperature. FEA modelers were used to study thermal-structural interactions for fixed-fixed flexure structures and simplified gyroscope frames.

In the first simulation, the fixed-fixed flexure, one of the basic and critical parts of the gyro was studied. This was performed for temperatures ranging from 0 to 200 degrees C. The maximum displacement observed is a 0.6% deflection of the total thickness of the structure.

As each study confirmed thermal compatibility, the next level of complexity was added to create a more realistic representation of the actual gyro. The same input parameters for the simulation were used. The results showed that the beams had made less out-of-plane deformation (maximum of 0.1%) along its length. Structural deformation of the device layer is reduced since the substrate will expand along with the flexure as opposed to the last study where the anchors were fixed.

The next step toward demonstrating the thermal robustness of the MEMS gyroscope design was to include a full structure simulation at a temperature of 200 degrees C. The total deformation at this temperature was considered negligible. All of these results confirm that the thermal effects the gyro would encounter in a drilling environment will not affect its performance.”

The December 31, 2009 quarterly report was received. A copy of the non-confidential portion of the report has been posted on the Industrial Commission website. During the past quarter the high temperature gyroscope designs were completed. Computer simulation results indicate that the gyro sensor design will not buckle under the harsh thermal conditions and should operate successfully. An initial MEMS fabrication run was also performed to produce MEMS test structures within design specifications for linewidth and sidewall quality. An initial circuit design has been developed for driving the gyroscopes and sensing changes in capacitance in the range of picofarads.

01/13/10

**Contract No. G-019-040**  
**“North Dakota Petroleum Council Oil and Gas Education Program”**  
Submitted by **North Dakota Petroleum Council**  
Principal Investigator: Ron Ness, President

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
ECAP Matching Contributions	\$135,000
North Dakota Petroleum Council & API Chapters & Landman’s Association	\$ 36,000
North Dakota Industrial Commission	<u>\$ 72,000</u>
Total Project Cost	\$243,000*

\*In-kind services are also provided by the North Dakota Petroleum Council staff, Petroleum Council membership, Department of Mineral Resources, Energy Career Awareness Partnership and Forest Service staff support.

Project Schedule – 36 months  
Contract Date – January XX, 2010  
Start Date – June 1, 2009  
Completion Date – June 30, 2012

Project Deliverables:  
Status Report: XXXX  
Status Report: XXXX  
Final Report: June 30, 2012

**OBJECTIVE/STATEMENT OF WORK:**

The overall objective of this project is the continuance of three education and outreach programs regarding the oil and gas industry. The three programs are: 1) Energy Career Awareness Partnership (ECAP); 2) Teacher Education Seminar and 3) *Oil & Gas Tidbits*. These education efforts have a proven track record of success and have been nationally recognized and modeled by other industries in North Dakota. These education programs provide targeted education to students, teachers, parents, policy-makers and the general public.

ECAP is a year-round program that puts someone in classrooms across the state on a regular basis to make presentations, conduct seminars, attend trade-shows and hold training sessions about careers in the energy industry. ECAP encourages students to consider career opportunities in North Dakota’s energy industry when they begin thinking about what career paths and courses to take in high school and college. The ECAP expenses are for three school years – salary benefits for 3 years along with related travel and materials.

The Teachers Education Seminar is a 4-day course that consists of classroom and field experiences. As a result of the Seminar the teachers gain a better understanding of the complexity of the oil and gas industry and develop a factual basis and background of the substantial costs and risk required to explore, produce and refine a barrel of oil. In addition the Seminar educates teachers about the economic benefits and career opportunities provided by the North Dakota oil and gas industry enabling them to educate their students about the industry. This proposal includes funding for four years – 2009, 2010, 2011 and 2012.

The *Oil and Gas Tidbits* is a quarterly one-page educational newsletter. This publication is designed to provide short articles on the use of new technology and items of interest to policymakers across the state to educate them about the oil and gas industry. This funding includes 10 issues of the *Oil & Gas Tidbits* from January 2010 through June 30, 2012 (30 months)

**STATUS**

Contract being reviewed by applicant. The June 2009 Teacher Seminar was held and was successful based on the feedback from the teachers.

01/14/10

**Contract No. G-019-041**  
**“Identification of Shallow Biogenic Gas Systems in Eastern North Dakota – Phase I”**  
Submitted by **GeoShurr Resources LLC**  
Principal Investigator: George W. Shurr

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
GeoShurr Resources, LLC	\$ 32,000
Fischer Oil & Gas, Inc.	\$ 3,000
White Eagle Exploration, Inc.	\$ 10,000
North Dakota Industrial Commission	<u>\$ 45,000</u>
Total Project Cost	\$ 90,000

Project Schedule – 6 months  
Contract Date – December 8, 2009  
Start Date – December 1, 2009  
Completion Date – Phase I – June 15, 2010

Project Deliverables:  
Status Report: March 15, 2010  
Final Report: June 15, 2010

**OBJECTIVE/STATEMENT OF WORK:**

The objective of this project is to generate information that will enhance exploration and development of shallow biogenic gas in counties in eastern North Dakota that are currently not producing oil or gas. The methodology employed in this investigation would utilize published structural and stratigraphic information, satellite images as well as compilation of published gravity and magnetic, syntheses of Precambrian basement geology to identify regional lineament zones as “sweetspots.” The deliverables would include a map of regional lineament zones, locations of ranked sweetspots and a set of supporting field and laboratory measurements.

Conditions placed on the Phase I funding was that the applicant work with the North Dakota Geological Survey. The deliverable for the Phase I work is to be an interim report to the Council post January 1, 2010. The deliverable for the Phase I work shall include a map depicting the regional lineament zones.

**STATUS**

The contract has been executed and the work has been started. The applicant has held meetings with the North Dakota Geological Survey.

**Contract No. G-019-042**  
**“Remote Monitoring and Reporting of Conditions for Salt Water Injection Sites”**  
Submitted by **Pedigree Technologies**  
Principal Investigator: Will Shulstad

**PARTICIPANTS**

<b>Sponsor</b>	<b>Cost Share</b>
Pedigree Technologies	\$ 9,312
Berenergy Corp.	\$ 16,200
North Dakota Industrial Commission	<u>\$ 25,350</u>
Total Project Cost	\$ 50,862

Project Schedule – 39 months  
Contract Date – December 29, 2009  
Start Date – September 1, 2009  
Completion Date – November 1, 2012

Project Deliverables:  
Status Report: January 15, 2010  
Final Report: November 1, 2012

**OBJECTIVE/STATEMENT OF WORK:**

To develop capabilities to allow for remote data collection from injection well sites allowing for continuous monitoring of those sites as well as providing reportable injection data to government agencies. Pedigree Technologies proposes the creation and demonstration of a system for remote, automated monitoring and reporting of conditions at salt water injection sites with the following technical objectives:

- 1) The system will regularly monitor and record pressure readings from gauges in the (a) tubing and (b) annular regions of injection wells as well as the (c) volume of material injected.
- 2) This data will be stored at and made accessible from a remote location at Pedigree Technologies’ data center.
- 3) From this data, reports will be automatically generated meeting State of North Dakota reporting requirements.
- 4) The system will be field-tested at ten injection sites in North Dakota operated by Berenergy Corp.

**STATUS**

Contract has been executed. Pedigree Technologies has begun the work on the project.

**OIL AND GAS RESEARCH COUNCIL GRANTS REPORT**

Revised 1/18/2010											
	Project	Company	Total Project Cost	Date Awarded	Amount	Spent to Date	Returned Commitment	Balance	Contract Number	Report Status	
D	Custom North Dakota ArcIMS Map Server	Kadrmass, Lee & Jackson	17,260	4/23/04	7,000	7,000.00		0.00	G-001-001	R	
D	Custom North Dakota ArcIMS Map Server-Management	Oil & Gas Division		4/23/04	0	0.00		0.00	G-001-002	R	
D	ND Petroleum Council's Teacher Education Seminar I	ND Oil & Gas Association	12,880	4/23/04	5,152	5,152.00		0.00	G-001-003	E	
C	ND Studies and the Energy Industry- <b>Canceled</b>	Gateway to Science Center	20,000	4/23/04	10,000	0.00	10,000.00	0.00	G-001-004	E	
D	Train the Trainer for Oilfield Emergencies	ND Assoc of Oil & Gas Prod	8,500	4/23/04	4,000	4,000.00		0.00	G-001-005	E	
D	Digital Thin Section and Core Photo Project	DMR/Oil & Gas/GS	35,000	10/21/04	10,000	10,000.00		0.00	G-002-006	R	
D	North American Prospect Expo (NAPE)	DMR/Geological Survey	10,000	10/21/04	5,000	4,428.00	572.00	0.00	G-002-007	E	
D	North Dakota Petroleum Council Oil and Gas Education Program	ND Petroleum Council	210,000	7/21/05	100,000	100,000.00		0.00	G-004-008	E	
D	Industrial Safety Training Program	NW ND Workforce Train-WSC	281,601	7/21/05	65,540	65,540.00		0.00	G-004-009	E	
D	Contribution of Petroleum Industry to the ND Economy	ND Petroleum Council	40,000	11/22/05	20,000	20,000.00		0.00	G-005-010	E	
D	Remediation of Salt and Hydrocarbon Impacted ND Soils	BioRem Envir Cons, Amerada, DMR-O	40,000	11/22/05	20,000	20,000.00		0.00	G-005-011	R	
D	North American Prospect Expo	DMR-GS	6,725	11/22/05	1,445	1,251.25	193.75	0.00	G-005-012	E	
	Education of Oilfield Fire Safety	ND Assoc Oil & Gas Prod Counties	201,500	11/22/05	15,000	14,000.00		1,000.00	G-005-013	E	12/31/08
D	Plains CO2 Reduction Partnership Program – Phase II	EERC	21,487,892	11/22/05	500,000	500,000.00		0.00	G-005-014	R	
D	Public Education Program	Northern Alliance of Independent Produce	210,000	11/22/05	20,000	10,000.00	10,000.00	0.00	G-005-015	E	
	Cretaceous Gas/Shale Gas Expansion	Continental Resources	630,120	3/3/06	186,120	75,000.00		111,120.00	G-006-016	R	3/17/07
D	Polymer Gel Treatment: A Remediation for Produced Water	Aeon Energy Corp	74,916	4/20/06	50,500	37,457.97	13,042.03	0.00	G-008-017	R	
D	Crude Oil Transportation Capacity Study	Northern Alliance of Independent Produce	16,000	4/20/06	8,000	8,000.00		0.00	G-006-018	E	
D	Study of ND Crude Oil Quality Equalization System Quality Bank	ND Petroleum Council	100,000	11/22/06	50,000	21,000.00	29,000.00	0.00	G-010-019	A	
D	Surface Tiltmeter Study of a Bakken Fracture Stimulation	Marathon Oil Company	240,000	11/22/06	120,000	120,000.00		0.00	G-007-020	R	
D	Vertical Seismic Profiling Test of Seismic Fault & Fracture Detection in the Bakken Formation	Marathon Oil Company	300,000	11/22/06	150,000	150,000.00		0.00	G-007-021	R	
D	Petroleum Safety and Technology Center	NW ND Workforce Training Division	1,235,638	4/19/07	27,066	27,066.00		0.00	G-011-022	E	
D	Energy Transmission Needs Study on ND Oil Develop	Basin Electric	201,600	4/19/07	49,000	49,000.00		0.00	G-012-023	R	
D	Identification of a Shallow Gas Source System in Southwestern Steele County ND	Fischer Oil & Gas	12,033	6/27/07	15,100	5,000.00	10,100.00	0.00	G-013-024	R	
D	North Dakota Petroleum Council Teacher Education Seminar	ND Petroleum Council	35,800	6/27/07	17,900	17,900.00		0.00	G-013-025	E	
D	Surface Microseismic Study of a Bakken Fracture Stimulation	Marathon Oil Company	212,580	6/27/07	155,000	106,290.00	48,710.00	0.00	G-013-026	R	
D	Preliminary Engineering Feasibility Study - Refinery	Northwest Refining	80,000	10/17/07	40,000	40,000.00		0.00	G-014-027	R	
D	Hydraulic Fracturing & Microseismic Monitoring Project - Bakken Research Consortium-Headington	Headington	14,000,000	1/23/08	750,000	750,000.00		0.00	G-015-028	R	
D	Surface Microseismic Study of a Bakken Simultaneous Fracture Simulation-Marathon Oil	Marathon Oil Company	415,100	1/23/08	207,550	207,550.00		0.00	G-015-029	R	
	Plains CO2 Reduction Partnership – Phase III	EERC	135,731,052	1/23/08	500,000	350,000.00		150,000.00	G-015-030	R	10/31/09
	Geomechanical Study of Bakken Formation in the Nesson Anticline Area, Williams CountyND	UND	377,967	1/23/08	100,000	70,000.00		30,000.00	G-015-031	E	12/31/09
	Purpose-Fit Portable Multi-Phase Production Measurement System	Ward Williston Oil	196,000	1/23/08	98,000	80,000.00		18,000.00	G-015-032	R	7/31/09
D	Town Hall Meeting - A Conversation on Oil & Gas	ND Assoc Oil & Gas Prod Counties	20,000	1/23/08	10,000	10,000.00		0.00	G-015-033	E	
	Oil Can! Good Neighbor Initiative and Outreach Program	ND Petroleum Council	133,000	8/20/08	50,000	25,000.00		25,000.00	G-016-034	E	5/15/10
D	Contribution of Petroleum Industry to the ND Economy	ND Petroleum Council	26,000	8/20/08	13,000	13,000.00		0.00	G-016-035	E	
D	Commercial Driver Training Program	Fort Berthold Community College	137,106	2/5/09	11,900	11,900.00		0.00	G-017-038	E	
	Improved Directional Drilling Technology for the Bakken	Laserlith Corporation	1,207,000	2/5/09	200,000	90,000.00		110,000.00	G-017-037	R	3/31/10
	Bakken Water Opportunities Assessment - Phase I	EERC	60,000	2/5/09	25,000	10,000.00		15,000.00	G-018-036	R	10/31/09
	Determination of Middle Bakken & Three Forks Sanish Zones	Continental Resources	7,395,000	2/5/09	600,000	0.00		600,000.00	G-018-039	R	1/20/10
	ND Petroleum Council Oil and Gas Education Program	ND Petroleum Council	243,000	9/10/09	72,000	0.00		72,000.00	G-018-040	E	xxxxxxx
	ID of Shallow Biogenic Gas Systems in Eastern ND	GeoShurr	90,000	9/10/09	45,000	10,000.00		35,000.00	G-019-041	R	3/15/10
	Remote Monitoring & Rep Conditions Salt Water Injection	Pedigree Tech	50,862	9/10/09	23,350	5,000.00		18,350.00	G-019-042	R	1/15/10
	☐	Allocations	185,802,132		4,357,623.00	3,050,535.22	121,617.78	1,185,470.00			
		<b>Returned Commitment/Cash</b>			<b>121,617.78</b>			<b>0.00</b>			
		<b>TOTAL</b>			<b>4,236,005.22</b>	<b>3,050,535.22</b>		<b>1,185,470.00</b>			