EERC
Energy & Environmental Research Center

UNIVERSITY OF NORTH DAKOTA
15 North 23rd Street — PO Box 9018 / Grand Forks, ND 58202-9018 / Phone: (701) 777-5000 Fax: 777-5181
Web Site: www.undeerc.org

July 28, 2006

AAD Document Control
U.S. Department of Energy
National Energy Technology Laboratory
PO Box 10940, MS 921-107
Pittsburgh, PA 15236-0940

Dear AAD Document Control:

Subject: Plains CO_2 Reduction Partnership Quarterly Technical Progress PowerPoint Presentation for the Period April 1 – June 30, 2006
DOE Cooperative Agreement No. DE-FC26-05NT42592

Enclosed are hard copies of the Quarterly Technical Progress PowerPoint Presentation and the Request for Patent Clearance Form for the Plains CO_2 Reduction Partnership Program. Also enclosed is a disk containing the Quarterly Technical Progress PowerPoint Presentation. If you have any questions, please call me at (701) 777-5279 or e-mail at esteadman@undeerc.org.

Sincerely,

for Edward N. Steadman
Senior Research Advisor

ENS/slw

Enclosures

c/enc: John Litynski, NETL
Sheryl Landis, EERC (Patent Clearance Form)

U.S. DEPARTMENT OF ENERGY

REQUEST FOR PATENT CLEARANCE FOR RELEASE OF CONTRACTED RESEARCH DOCUMENTS

NETL F 510.1-5
(02/2002) OPI=CC01
(Previous Editions Obsolete)

TO: ■ For Technical Reports
AAD Document Control
MS 921-107
U.S. Department of Energy - NETL
P.O. Box 10940
Pittsburgh, PA 15236-0940

☐ For Technical Papers/Journal Articles/Presentations
Mark P. Dvorscak
U.S. Department of Energy
9800 S. Cass Avenue
Argonne, IL 60439
FAX: (630) 252-2779

♦Award No.
DE-FC26-05NT42592

Name & Phone No. of DOE COR
John Litynski (304) 285-1339

A. AWARDEE ACTION (AWARDEE COMPLETES PART A. 1-5)

1. Document Title: Plains CO_2 Reduction Partnership

2. Type of Document: ■ Technical Progress Report ☐ Topical Report ☐ Final Technical Report

☐ Abstract ☐ Technical Paper ☐ Journal Article ☐ Conference Presentation
Other (please specify) _____

3. Date Clearance Needed: _____

♦4. Results of Review for Possible Inventive Subject Matter:

a. ■ No Subject Invention is believed to be disclosed therein.

b. ☐ Describes a possible Subject Invention relating to _____

i. Awardee Docket No.: _____

ii. A disclosure of the invention was submitted on _____

iii. A disclosure of the invention will be submitted by the following date: _____

iv. A waiver of DOE's patent rights to the awardee: ☐ has been granted, ☐ has been applied for, or ☐ will be applied for by the following date: _____

♦5. Signed Sheryl E Landis (Awardee) Date 7-26-06

Name & Phone No. Sheryl E. Landis (701) 777-5124

Address Energy & Environmental Research Center, 15 North 23rd Street, Stop 9018, Grand Forks, ND, 58202-9018

B. DOE PATENT COUNSEL ACTION

☐ Patent clearance for release of the above-identified document is granted.

☐ Other: _____

Signed _____ Date _____
(Patent Attorney)

PLAINS CO_2 REDUCTION PARTNERSHIP

Quarterly Technical Progress PowerPoint Presentation

(for the period April 1 – June 30, 2006)

Prepared for:

AAD Document Control

U.S. Department of Energy
National Energy Technology Laboratory
PO Box 10940, MS 921-107
Pittsburgh, PA 15236-0940

Agreement No. DE-FC26-05NT42592
Contracting Officer's Representative: John Litynski

Prepared by:

Edward N. Steadman
John A. Harju
Erin M. O'Leary
James A. Sorensen
Daniel J. Daly
Lisa S. Botnen
Barry W. Botnen
Melanie D. Jensen
Wesley D. Peck
Steven A. Smith
Ronald J. Rovenko

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

July 2006

DISCLAIMER

EERC DISCLAIMER

University of North Dakota
Energy & Environmental Research Center
Plains CO_2 Reduction Partnership

Project Summary

DE-FC26-05NT42592

For Period April 1 – June 30, 2006

National Energy Technology Laboratory

Partnership Objectives

The Plains CO_2 Reduction (PCOR) Partnership is a collaborative regional framework to support the testing and demonstration of CO_2 sequestration technologies in the central interior of North America.

The PCOR Partnership project includes ten performance tasks:

- Task 1 – Project Management and Reporting
- Task 2 – Field Validation Test – Beaver Lodge, North Dakota
- Task 3 – Field Validation Test – Zama, Alberta
- Task 4 – Field Validation Test – Lignite in North Dakota
- Task 5 – Terrestrial Validation Test
- Task 6 – Continued Characterization of Regional Sequestration Opportunities
- Task 7 – Research, Safety, Regulatory, and Permitting Issues
- Task 8 – Public Outreach and Education
- Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment
- Task 10 – Regional Partnership Program Integration

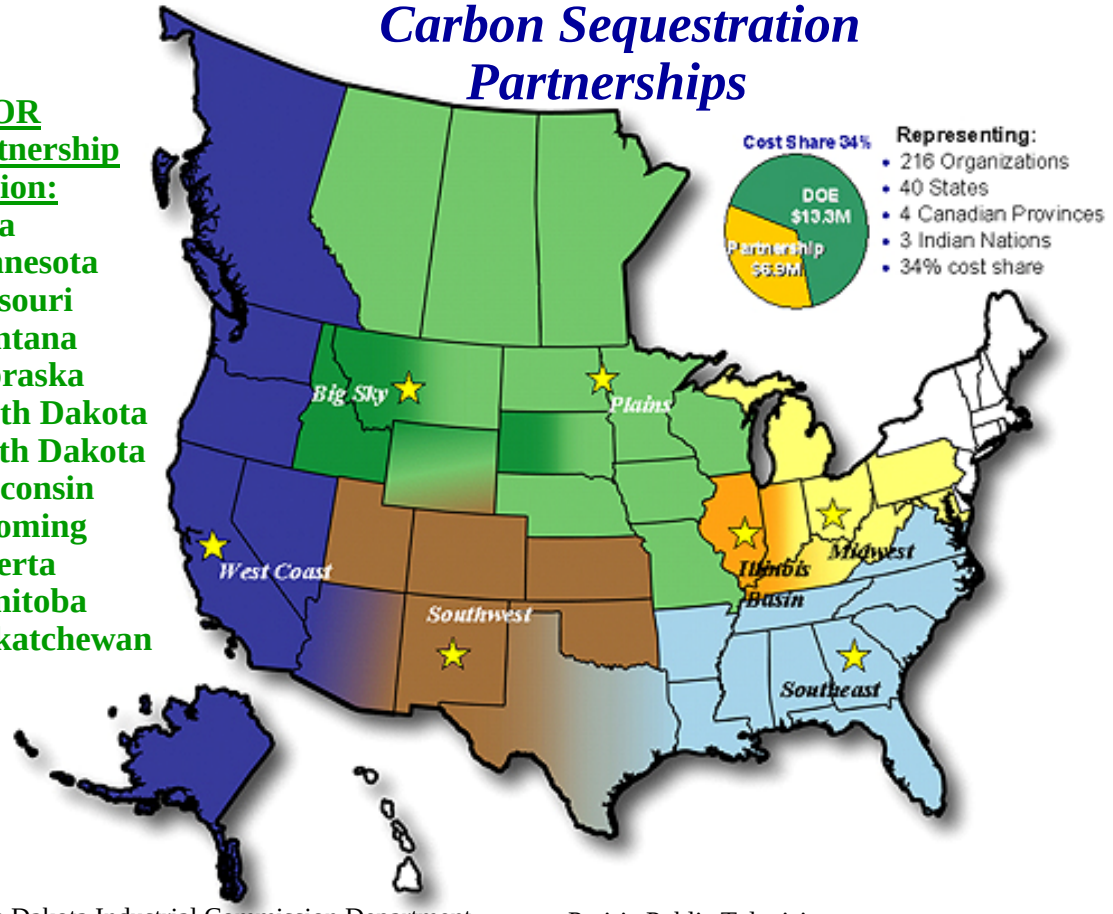
National Energy Technology Laboratory Regional Carbon Sequestration Partnerships

PCOR Partnership Phase II Partners:

- ☆ University of North Dakota Energy & Environmental Research Center (EERC)
- Alberta Department of Environment
- Alberta Energy and Utilities Board
- Alberta Geological Survey
- Amerada Hess Corporation
- Apache Canada Ltd.
- Basin Electric Power Cooperative
- British Columbia Ministry of Energy, Mines and Petroleum Resources
- Center for Energy & Economic Development (CEED)
- Dakota Gasification Company
- Ducks Unlimited Canada
- Ducks Unlimited, Inc.
- Eagle Operating, Inc.
- Eastern Iowa Community College District
- Encore Acquisition Company
- Environment Canada
- Excelsior Energy, Inc.
- Fischer Oil and Gas, Inc.
- Great Northern Power Development, LP
- Great River Energy
- Interstate Oil and Gas Compact Commission
- Iowa Department of Natural Resources – Geologic Survey
- Lignite Energy Council
- Minnesota Power
- Minnkota Power Cooperative, Inc.
- Montana–Dakota Utilities Co.
- Montana Department of Environmental Quality
- National Commission on Energy Policy
- Natural Resources Canada
- Nexant, Inc.
- North Dakota Department of Commerce Division of Community Services
- North Dakota Department of Health
- North Dakota Geological Survey

PCOR Partnership Region:

Iowa
Minnesota
Missouri
Montana
Nebraska
North Dakota
South Dakota
Wisconsin
Wyoming
Alberta
Manitoba
Saskatchewan



- North Dakota Industrial Commission Department of Mineral Resources, Oil and Gas Division
- North Dakota Industrial Commission Lignite Research, Development and Marketing Program
- North Dakota Oil and Gas Research Council
- North Dakota Natural Resources Trust
- North Dakota Petroleum Council
- North Dakota State University
- Otter Tail Power Company
- Petroleum Technology Transfer Council
- Prairie Public Television
- Ramgen Power Systems, Inc.
- Saskatchewan Industry and Resources
- SaskPower
- Suncor Energy Inc.
- U.S. Geological Survey Northern Prairie Wildlife Research Center
- Western Governors' Association
- Wisconsin Department of Agriculture, Trade and Consumer Protection
- Xcel Energy

Partnership Team

Partner Name	City	State	Congressional District
University of North Dakota Energy & Environmental Research Center (EERC)	Grand Forks	North Dakota	At Large
Alberta Department of Environment	Edmonton, Alberta		
Alberta Energy and Utilities Board	Edmonton, Alberta		
Alberta Geological Survey	Edmonton, Alberta		
Amerada Hess Corporation	Williston	North Dakota	At Large
Apache Canada Ltd.	Calgary, Alberta		
Basin Electric Power Cooperative	Bismarck	North Dakota	At Large
British Columbia Ministry of Energy, Mines and Petroleum Resources	Victoria, British Columbia		
Center for Energy & Economic Development (CEED)	Alexandria	Virginia	8
Dakota Gasification Company	Bismarck	North Dakota	At Large
Ducks Unlimited Canada	Stonewall, Manitoba		
Ducks Unlimited, Inc.	Memphis	Tennessee	9
Eagle Operating, Inc.	Kenmare	North Dakota	At Large
Eastern Iowa Community College District	Davenport	Iowa	1
Encore Acquisition Company	Fort Worth	Texas	12
Environment Canada	Manitoba and Saskatchewan Provinces		
Excelsior Energy, Inc.	Minnetonka	Minnesota	3
Fischer Oil and Gas, Inc.	Grand Forks	North Dakota	At Large

Continued. . .

Partnership Team (cont.)

Partner Name	City	State	Congressional District
Great Northern Power Development, LP	Townsend	Montana	At Large
Great River Energy	Elk River	Minnesota	6
Interstate Oil and Gas Compact Commission	Oklahoma City	Oklahoma	5
Iowa Department of Natural Resources – Geological Survey	Iowa City	Iowa	2
Lignite Energy Council	Bismarck	North Dakota	At Large
Minnesota Power	Duluth	Minnesota	8
Minnkota Power Cooperative, Inc.	Duluth	Minnesota	8
Montana–Dakota Utilities Co.	Bismarck	North Dakota	At Large
Montana Department of Environmental Quality	Helena	Montana	At Large
National Commission on Energy Policy	Washington	DC	1
Natural Resources Canada	Ottawa, Ontario		
Nexant, Inc.	San Francisco	California	8
North Dakota Department of Commerce Division of Community Services	Bismarck	North Dakota	At Large
North Dakota Department of Health	Bismarck	North Dakota	At Large
North Dakota Geological Survey	Bismarck	North Dakota	At Large
North Dakota Industrial Commission Department of Mineral Resources, Oil and Gas Division	Bismarck	North Dakota	At Large

Continued. . .

Partnership Team (cont.)

Partner Name	City	State	Congressional District
North Dakota Industrial Commission Lignite Research, Development and Marketing Program	Bismarck	North Dakota	At Large
North Dakota Industrial Commission Oil and Gas Research Council	Bismarck	North Dakota	At Large
North Dakota Natural Resources Trust	Bismarck	North Dakota	At Large
North Dakota Petroleum Council	Bismarck	North Dakota	At Large
North Dakota State University	Fargo	North Dakota	At Large
Otter Tail Power Company	Fergus Falls	Minnesota	7
Petroleum Technology Transfer Council	Houston	Texas	7
Prairie Public Television	Fargo	North Dakota	At Large
Ramgen Power Systems, Inc.	Bellevue	Washington	8
Saskatchewan Industry and Resources	Regina, Saskatchewan		
SaskPower	Regina, Saskatchewan		
Suncor Energy Inc.	Calgary, Alberta		
U.S. Geological Survey Northern Prairie Wildlife Research Center	Jamestown	North Dakota	At Large
Western Governors Association	Denver	Colorado	1
Wisconsin Department of Agriculture, Trade and Consumer Protection	Madison	Wisconsin	2
Xcel Energy	Golden	Colorado	7

Partnership Principals

- ***Principal Investigator: Ed Steadman, EERC***
- ***Task Leaders***

  Task 1 – Project Management and Reporting – **Ed Steadman** and **John Harju**

  Task 2 – Field Validation Test – Beaver Lodge, North Dakota – **Jim Sorensen**

  Task 3 – Field Validation Test – Zama, Alberta – **Steve Smith**

  Task 4 – Field Validation Test – Lignite in North Dakota – **Ron Rovenko**

  Task 5 – Terrestrial Validation Test – **Barry Botnen**

  Task 6 – Continued Characterization of Regional Sequestration Opportunities – **Erin O'Leary**

  Task 7 – Research, Safety, Regulatory, and Permitting Issues – **Lisa Botnen**

  Task 8 – Public Outreach and Education – **Dan Daly**

  Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment – **Melanie Jensen**

  Task 10 – Regional Partnership Program Integration – **Ed Steadman**

- ***National Energy Technology Laboratory Project Manager: John Litynski***

Budget

Start Date	End Date	Government Cost	Performer Cost	Total Cost	Cost Share
10/1/05	9/30/09	$14,300,000	$7,161,549	$21,461,549	33%

- **U.S. Department of Energy (DOE) Costs to Date: $1,575,123**

- **Cost Share to Date: $296,755**

Highlights of Progress to Date

Task 1 – Management and Reporting

Presented at and/or participated in the following meetings/conferences:

- North Dakota State Teacher's Meeting, Bismarck, North Dakota (April).
- Meeting of the Board of Directors of the Western Interstate Energy Board (April).
- 48th Cement Industry Technical Conference (Valley of the Sun), Phoenix, Arizona (April).
- Workshop on Public Communications for the Final Phase of the International Energy Agency Greenhouse Gas Weyburn-Midale CO_2 Monitoring and Storage Project, Calgary, Alberta (April).
- International Energy Agency (IEA) Greenhouse Gas (GHG) Research & Development Programme's Weyburn Midale CO_2 Monitoring and Storage Project Workshop on Communications, Outreach, and Regulatory Issues, Calgary, Alberta (April).
- North Dakota Academy of Science meetings, Valley City, North Dakota (April).
- 14th Petroleum Basin Conference and Prospect Expo, Minot, North Dakota (May).
- Fifth Annual Conference on Carbon Capture and Sequestration, Alexandria, Virginia (May).
- Interstate Oil & Gas Compact Commission 2006 Midyear Meeting, Billings, Montana (May).
- Greenhouse Gas Control Technologies Conference (GHGT-8),Trondheim, Norway (June).
- PCOR Partnership Terrestrial Team Meeting, Grand Forks, North Dakota (June).

Continued. . .

Highlights of Progress to Date (cont.)

Task 2 – Field Validation Test – Beaver Lodge, North Dakota

- Continued the development of the National Environmental Policy Act (NEPA) document for the Beaver Lodge field validation test.
- Continued a literature search for readily available documents and data specifically related to the Beaver Lodge field.
- Identified data gaps with respect to geochemical, geomechanical, and seismic data for the site.
- Continued the development of an experimental design package for the Beaver Lodge field validation test.
- Attended the 8th International Conference on Greenhouse Gas Control Technologies (GHGT-8) to develop an updated understanding of the current state of technology with respect to field-based CO_2 sequestration demonstration projects.

Continued. . .

Highlights of Progress to Date (cont.)

Task 3 – Field Validation Test – Zama, Alberta

- The following deliverables have been completed and sent to DOE this quarter:
  - Outreach Action Plan (April 29, 2006)
  - Sampling Protocols (June 30, 2006)
- Regional geological characterization is in the data collection and organization phase. This is a long-term characterization effort by the Alberta Energy and Utilities Board and Alberta Geological Survey over the course of Phase II.
- Historical Zama Field characterization and data collection is being completed by APA Petroleum Engineering, Inc., in Calgary. This will be completed by the end of Phase II Year 1.
- Injection equipment and site safety is being checked prior to injection. We anticipate injection at any time.
- Geomechanical work on the Zama area geology will commence as of July 1, 2006.

Continued. . .

Highlights of Progress to Date (cont.)

Task 4 – Field Validation Test – Lignite in North Dakota

- Visited site where wells will be drilled; it is open range with small rolling hills.
- Flatland Oil & Gas, subsidiary of Fischer Oil & Gas, Inc., will make preparations to drill the core hole in the late summer or early fall for the gas desorption of the lignite.
- Completed evaluation of the proposed site, Section 36-T159N-R90W in Burke County, for endangered species. Found no effect on any endangered species.
- Obtained permission from the State Land Department and Board for the proposed pilot well June 29, 2006.
- Preparing top maps and a cross section from well logs of adjacent oil and gas wells.
- Preparing procedures for the drilling of the core and injection well.
- Continued investigating water quality and coal from driller logs.

Continued. . .

Highlights of Progress to Date (cont.)

Task 5 – Terrestrial Validation Test

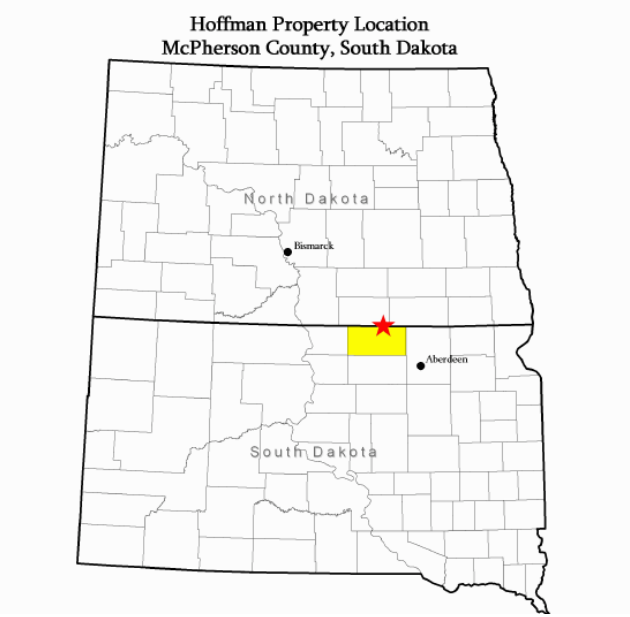
- The following deliverables have been completed and sent to DOE this quarter:
  - Outreach Action Plan (April 29, 2006)
  - Sampling Protocols (June 30, 2006)
- Work in Progress:
  - Gathering informational materials for Web site
  - Sample site selection
- Held second semiannual Terrestrial Validation Test team meeting, EERC, Grand Forks, North Dakota (June) with the following:
  - Ducks Unlimited, Inc. (DU)
  - U.S. Geological Survey Northern Prairie Wildlife Research Center (USGS)
  - North Dakota State University (NDSU)

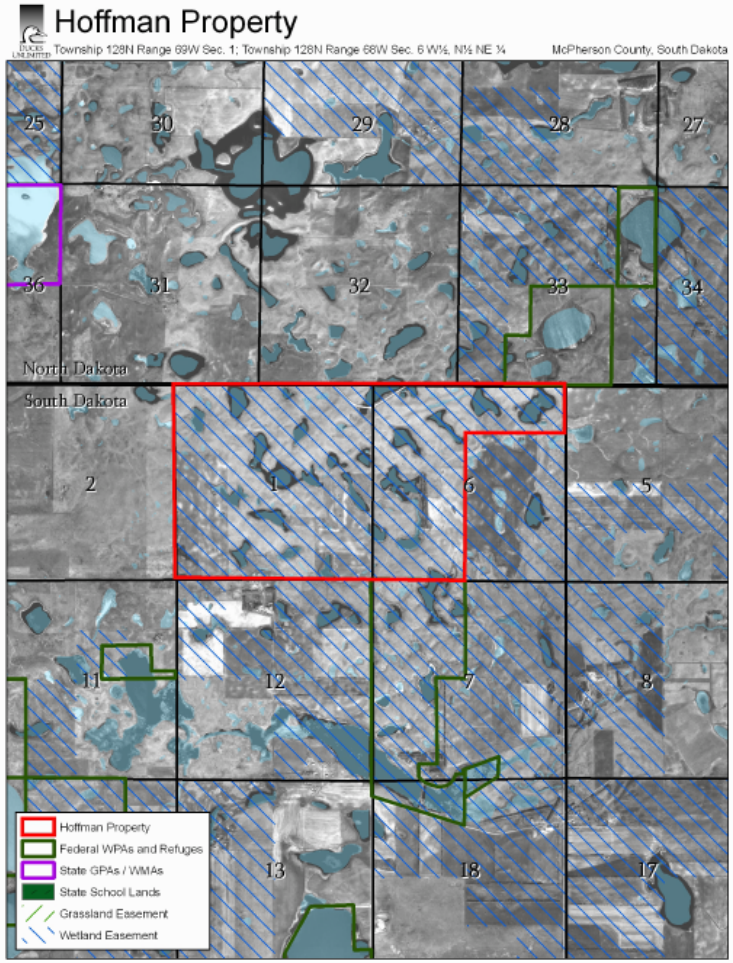
Continued. . .

Highlights of Progress to Date (cont.)

Task 5 – Terrestrial Validation Test

- Produced maps of DU properties in South Dakota to facilitate site selection.
- In the process of selecting field test sites
  - Compiling characterization data
  - Restoration activities planned on the Hoffman property, McPherson County, South Dakota, and other potential sites





Continued. . .

Highlights of Progress to Date (cont.)

Task 6 – Continued Characterization of Regional Sequestration Opportunities

Decision Support System (DSS)

The new release of the DSS contains these changes and features:

- New look for the home page with different colors and images.
- The geographic information system (GIS) Web site now opens to showing the demonstration sites as the active and visible layer. It previously opened with the sources as the active layer.
- Tightened up the action buttons on the left side of the map by using colors to separate.
- Added action buttons for multiselect and “add text.”
- Provided a method to save the visible map (including text) to an image file.
- Provided a method for a user to place a check mark next to a row in the grid in order to locate that particular object on the map, by color change. Also provided a method for the user to filter the grid and selections on the map to the checked rows.
- Changed look of layers by grouping common layers into folders.
- Added an option to auto-refresh the map when layers are selected.
- Added a hydrology later for the United States and Canada. This layer is visible only and does not contain any attribute data, as many of the stream segments do not have these data associated with the shape file.
- Added an ecosystem layer. This will be the base layer for terrestrial information.

Continued. . .

Highlights of Progress to Date (cont.)

Task 6 – Continued Characterization of Regional Sequestration Opportunities (cont.)

DSS (cont.)

- Removed the coal field layer. This will be added back when we have more descriptive information on the coal fields.
- Created a “Zama Zone” site. The Zama Zone is exclusive to Zama project team members. It is a Web site for the sharing of data pertinent to the Zama demonstration project.
- Added the Lower Cretaceous aquifer layer and associated data regarding sequestration potential.
- Removed the help file. It is too cumbersome and does not reflect the changes. This will be replaced by a more efficient and user-friendly help file.

Characterization

- Continued working on the gas analysis data acquired from the North Dakota Industrial Commission (NDIC).
- Acquired well data from Alberta. There have been significant problems in dealing with the data; however, it has now been imported into a SQL Server database were we can work with it more directly.
- Continued evaluation of the saline aquifer system in the southwest corner of North Dakota. Specifically, the Broom Creek Formation will be featured as a potential target for sequestration and will have a complete study to be incorporated into the PCOR Partnership DSS.
- Continued evaluation of the subsurface characterization of the Minnelusa FM and Madison River beds in the southwestern corner of North Dakota.

Continued. . .

Highlights of Progress to Date (cont.)

Task 7 – Research, Safety, Regulatory, and Permitting Issues

General

- Reviewed 1605(b) Voluntary Reporting Guidelines.
- Reviewed North Dakota UIC regulations and authorities.
- Had discussions with Mark Bohrer, NDIC, regarding the types and numbers of underground injection wells in North Dakota. We also discussed some of the outcomes of the recent Groundwater Protection Council Policy meeting in Washington, D.C.
- Continued review of recent publications relating to regulating CO_2 sequestration and monitoring, mitigation, and verification (MMV) issues.
- Attended Fifth Annual Conference on Carbon Capture and Sequestration, Alexandria, Virginia (May).
- Submitted an abstract with other PCOR Partnership task leaders and partners regarding the unitization of geologic formations for the purpose of monetizing geologic sequestration credits to the American Association of Petroleum Geologists special publication on geological sequestration of CO_2.
- Completed assessment of a model CCS code and developed comments to submit to the primary author.
- Attended the PCOR Partnership Annual Terrestrial Working Group Meeting on June 27, 2006, at the EERC, in Grand Forks, North Dakota.
- Spoke with Ted Flynn, Potomac Investment Capital, regarding coal-to-liquid (CTL) plant opportunities in North Dakota.

Continued. . .

Highlights of Progress to Date (cont.)

Task 7 – Research, Safety, Regulatory, and Permitting Issues

General cont.

- Conducted discussion with Dawn Browne, DU, regarding development of user-friendly documents that explain the 1605(b) guidelines.
- Conducted discussions with the Minnesota Pollution Control Agency regarding the bundling of water quality and carbon credits.
- Spoke to Joe Gillman, Missouri Department of Natural Resources – Division of Geology and Land Survey, to discuss PCOR Partnership membership.
- Spoke with Bobbie Kriz-Wickham, Nebraska Department of Agriculture, to discuss PCOR Partnership membership. A letter of commitment should be forthcoming.

Lignite Field Validation Test

- Reviewed drilling permit requirements, injection applications, and well completion documents required by the state of North Dakota.
- Reviewed U.S. Army Corps Wetland permit types and possible implications for potential Lignite Field Validation Test sites.
- Met with the task leader to discuss operating plans and procedures and to develop plans for land access, drilling, and water disposal.
- Participated in a conference call with the North Dakota State Land Department to discuss leases and easements for the Lignite Field Validation Test.

Continued. . .

Highlights of Progress to Date (cont.)

Task 8 – Public Outreach and Education

- Prairie Public Television subcontract approved.
- Draft final Outreach PowerPoint submitted on schedule May 30, 2006.
- Two draft final Site Outreach plans (for Tasks 3 and 5) submitted on schedule April 30, 2006.
- Draft final of Fact Sheet 7, Zama project, in preparation (due July 2006).
- Initial draft of public Web site update completed (due August 2006).
- Work under way on Documentary 1 – Carbon Market Trading (due January 2007) .
  - Filming and interviews completed in Brazil in January 2006.
  - Filming and interviews completed in Alexandria in May 2006.
  - Filming and interviews completed in Europe in June 2006.
- Collaboration on Regional Carbon Sequestration Program (RCSP) Outreach Working Group activities.

Continued. . .

Highlights of Progress to Date (cont.)

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment

- Hosted a meeting at the EERC by Dr. Michael Trachtenberg, President of Carbozyme, Inc., to discuss possible collaboration between Carbozyme and the EERC and/or the PCOR Partnership.
- Attended the 5th Annual Conference on Carbon Capture and Sequestration in Alexandria, VA, in May.
- Prepared two proposals in response to the DOE Capture and Separation RFP.
- Summarized CO_2 emissions information for use on the PCOR Partnership public Web site.
- Responded to CO_2 emissions information requests from PCOR partners.

Continued. . .

Highlights of Progress to Date (cont.)

Task 10 – Regional Partnership Program Integration

- Membership discussions continued with numerous organizations.
- Participation continued in geologic, outreach, capture and separation, and GIS working group conference calls.
- Developing Regional Partnership Program Integration Plan.

Project Tasks and Status

Task 1 – Management and Reporting		
Activity	**Description**	**Status**
1	Design Project Management and Reporting Plan	Completed (December 30, 2005)
2	Perform Project Management	Ongoing
3	Develop PCOR Partnership Phase II Final Report	Future activity

Continued. . .

Project Tasks and Status (cont.)

Task 2 – Field Validation Test at Beaver Lodge, North Dakota		
Activity	**Description**	**Status**
1	Project Design	Ongoing
2	Project Implementation	Future activity
3	Project Operations	Future activity
4	Closeout and Reporting	Future activity

Continued. . .

Project Tasks and Status (cont.)

Task 3 – Field Validation Test at Zama, Alberta		
Activity	**Description**	**Status**
1	Project Design	Complete
2	Project Implementation	Anticipated any time
3	Project Operations	Future activity
4	Closeout and Reporting	Future activity

Continued. . .

Project Tasks and Status (cont.)

Task 4 – Field Validation Test of North Dakota Lignite		
Task	**Description**	**Status**
1	Project Design	Ongoing
2	Project Implementation	Future activity
3	Project Operations	Future activity
4	Closeout and Reporting	Future activity

Continued. . .

Project Tasks and Status (cont.)

Task 5 – Terrestrial Validation Test		
Task	**Description**	**Status**
1	Project Design	Ongoing
2	Project Implementation	Ongoing
3	Project Operations	Initiating
4	Closeout and Reporting	Ongoing

Continued. . .

Project Tasks and Status (cont.)

Task 6 – Characterization of Regional Characterization Opportunities		
Task	**Description**	**Status**
1	Regional Characterization Gap Assessment	First assessment completed (February 28, 2006) (Second assessment due third budget period)
2	Data Collection	Ongoing
3	Improvements to the PCOR Partnership Decision Support System	Ongoing
4	Reporting	Ongoing

Continued. . .

Project Tasks and Status (cont.)

Task 7 – Research, Safety, Regulatory, and Permitting Issues		
Task	**Description**	**Status**
1	Existing Regulations Related to the Sequestration of CO_2 Identified and Tracked	Ongoing
2	New Regulatory Guidelines Collated for Projects Implemented and Commercially Ready Future Sequestration Projects	Ongoing
3	Reporting	Ongoing

Continued. . .

Project Tasks and Status (cont.)

Task 8 – Public Outreach and Education		
Activity	**Description**	**Status**
1	Outreach Planning	Outreach Action Plan completed Two of four site outreach plans submitted
2	Web Site	In progress (initial draft completed)
3	Outreach Booth	Will be initiated in Year 2, Quarter 1
4	Outreach PowerPoint	Submitted
5	Fact Sheets	Fact Sheet 6 completed Fact Sheet 7 in progress
6	Television Programs	Documentary 1 – Carbon Market Trading, in progress
7	Progress Reports	Report for Year 1, Quarter 1 and 2, completed

Continued. . .

Project Tasks and Status (cont.)

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment		
Task	**Description**	**Status**
1	Economic Assessment of Regional Sequestration Opportunities	In progress
2	New Sequestration Approaches	In progress
3	Reporting	Ongoing

Continued. . .

Project Tasks and Status (cont.)

Task 10 – Regional Partnership Program Integration		
Task	**Description**	**Status**
1	Development of Regional Partnership Program Integration Plan	Completed (July 18, 2006)
2	Integration of Partnership Program Activities	Ongoing
3	Reporting	Ongoing

Project Milestones

Milestone	Description	Status
Task 1 – Management and Reporting		
1	Design Project Management and Reporting Plan	Completed (December 30, 2005)
2	Manage writing of Progress Report	Future activity
3	Provide overall project management	Ongoing
4	Provide Quarterly and Semiannual Reports	Ongoing
5	PCOR Partnership Phase I Wrap-Up/Phase II Kickoff Meeting	Completed (November 1–2, 2005)
Task 2 – Field Validation Test at Beaver Lodge, North Dakota		
1	Finalization of site-specific monitoring, mitigation, and verification (MMV) plan	Ongoing
2	Initiation of baseline characterization activities	Initiated
3	Historical data collection	Initiated
4	Identification of data gaps	Initiated
5	Analytical activities on reservoir and caprock core samples	Future activity

Continued. . .

Project Milestones (cont.)

Milestone	Description	Status
Task 2 – Field Validation Test at Beaver Lodge, North Dakota (cont.)		
6	Identification of specific well locations within the Beaver Lodge field	Future activity
7	Facilitate the development of a site-specific plan for the installation and/or application of selected MMV technologies	Future activity
8	Facilitate the identification of infrastructure requirements	Future activity
9	Finalization of Amerada Hess Corporation CO_2 flood design	Future activity
10	Installation of CO_2 delivery system by Amerada Hess Corporation	Future activity
11	Collection of site-specific baseline surface and subsurface data	Future activity
12	Installation of CO_2 injection wells by Amerada Hess Corporation	Future activity
13	Progress reports 60 days prior to conclusion of Budget Period 1	Future activity
14	Regional Technology Implementation Plan detailing MMV activities at an ongoing oil-producing facility	Future activity

Continued. . .

Project Milestones (cont.)

Milestone	Description	Status
Task 3 – Field Validation Test at Zama, Alberta		
1	H_2S/CO_2 injection commences	Anticipated at any time
2	Reservoir modeling	Currently obtaining existing model. Will review and modify as needed.
3	Data acquisition and design	Ongoing
4	Geologic characterization of the region (northwestern Alberta/northeastern British Columbia)	Ongoing
5	Establish hydrogeology of the study area	Ongoing
6	Conduct geomechanical tests of reservoir and caprock core samples to determine the mechanical integrity of those formations; results will be used to predict pressure that can be applied to pinnacle before the sealing formation will be fractured	Will commence July 1, 2006
7	Significant achievements/MMV updates	Future activity
8	Stress regimes of the injection zone	Future activity
9	Assessment of influence of underlying aquifers	Future activity
10	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
11	Geochemistry of the surface to subsurface	Future activity
12	Assessment of leakage potential as a result of injection	Future activity
13	Regional Technology Implementation Plan detailing MMV activities at an ongoing oil-producing facility	Future activity

Continued. . .

Project Milestones (cont.)

Milestone	Description	Status
Task 4 – Field Validation Test of North Dakota Lignite		
1	Initiation of baseline characterization activities	Completed (December 30, 2005)
2	Identification of specific well locations within the North Dakota lignite CBM test	Well locations will be identified summer 2006
3	Finalization of CO_2 flood design	Future activity
4	Collection of site-specific baseline surface and subsurface data	Initiated
5	Installation of selected MMV technologies	Future activity
6	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
7	Finalization of site-specific MMV plan	Ongoing
8	Installation of CO_2 delivery system	Future activity
9	Installation of CO_2 injection wells	Future activity
10	Initial injection of CO_2 into subsurface	Future activity
11	Initial collection of MMV data	Future activity
12	Review and analysis of results of first year of operation	Future activity
13	Review and analysis of results of second year of operation	Future activity
14	Regional Technology Implementation Plan detailing MMV activities at an ongoing oil-producing facility	Future activity

Continued. . .

Project Milestones (cont.)

Milestone	Description	Status
Task 5 – Terrestrial Validation Test		
1	Develop an experimental design package	Completed (February 28, 2006)
2	Safety, regulatory, and permitting	Completed (March 31, 2006)
3	GIS modeling to extrapolate survey site information to region	Ongoing
4	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
5	Preparation and distribution of materials to solicit participation	Future activity
6	Indirect benefits	Ongoing
7	Regional partnerships for CO_2 sequestration	Future activity
8	Land use management practices that increase SOC	Future activity
9	Business flow process for carbon credit trading	Ongoing
10	Economic feasibility of CO_2 sequestration	Ongoing
11	Regional Technology Implementation Plan	Future activity
12	Compiling design criteria	Ongoing
13	Develop Web-based landowner outreach strategy	Ongoing
14	Data compilation and analysis	Future activity

Continued. . .

Project Milestones (cont.)

Milestone	Description	Status
Task 6 – Characterization of Regional Characterization Opportunities		
1	Conduct DSS data gap assessment **(1st Budget Period)**	Completed (February 28, 2006)
2	Place updated DSS into production	Completed (June 2006).
3	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
4	Conduct data gap assessment (3rd Budget Period)	Future activity
5	Create field project data warehouse and put into production	Zama site completed (June 2006)
Task 7 – Research, Safety, Regulatory, and Permitting Issues		
1	Provide regulatory support to Tasks 3 and 5 field validation testing	Ongoing
2	Provide summary of regulations related to four Phase II validation tests	Ongoing
3	Provide regulatory input to Progress Report	Future activity
4	Provide regulatory support to Tasks 2 and 4	Ongoing
5	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
6	Road map document produced	Future activity

Continued. . .

Project Milestones (cont.)

Milestone	Description	Status
Task 8 – Public Outreach and Education		
1	Fact sheet production	Fact Sheet 6 completed Fact Sheet 7 in progress
2	Outreach Action Plan	Completed (February 28, 2006)
3	PowerPoint presentation	Submitted
4	Update to PCOR Partnership Web site	In progress
5	First Phase II video produced with Prairie Public Television (PPTV) (carbon credit trading)	In progress
6	Outreach booth	Future activity
7	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
8	Second Phase II video produced with PPTV (terrestrial)	Future activity
9	Third Phase II video produced with PPTV (geologic)	Future activity
10	Fourth Phase II video produced with PPTV (CO_2 sequestration overview)	Future activity
11	Best Practices Manual detailing outreach activities	Future activity
12	Balancing the regional and general outreach with needs at the specific field validation test locations	Ongoing
13	Keeping regional outreach activity in tune with the national RCSP program message and goals	Ongoing

Continued. . .

Project Milestones (cont.)

Milestone	Description	Status
Task 8 – Public Outreach and Education (cont.)		
14	Ensuring appropriate feedback opportunities for input and review by partners in the outreach process	Ongoing
15	Documentation of impact of outreach activities	Future activity
Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment		
1	Economic assessment of regional sequestration opportunities	Ongoing
2	New sequestration approaches – wind power	Ongoing
3	New sequestration approaches – Excelsior Energy	Future activity
4	Economic assessment of regional sequestration opportunities	Future activity
5	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
Task 10 – Regional Partnership Program Integration		
1	Development of Regional Partnership Program Integration Plan	Completed (July 18, 2006)
2	PCOR Partnership Annual Meeting	Future activity – September 14, 2006 Calgary, Alberta
3	Progress Report 60 days prior to conclusion of Budget Period 1	Future activity
4	Participation in DOE Regional Partnership Working Groups	Ongoing

Project Recognition

Meetings/Conferences

- North Dakota State Teacher's Meeting, Bismarck, North Dakota (April).
- Meeting of the Board of Directors of the Western Interstate Energy Board (April).
- 48th Cement Industry Technical Conference (Valley of the Sun), Phoenix, Arizona (April).
- Workshop on Public Communications for the Final Phase of the International Energy Agency Greenhouse Gas Weyburn-Midale CO_2 Monitoring and Storage Project, Calgary, Alberta (April).
- International Energy Agency (IEA) Greenhouse Gas (GHG) Research & Development Programme's Weyburn Midale CO_2 Monitoring and Storage Project Workshop on Communications, Outreach, and Regulatory Issues, Calgary, Alberta (April).
- North Dakota Academy of Science meetings, Valley City, North Dakota (April).
- 14th Petroleum Basin Conference and Prospect Expo, Minot, North Dakota (May).
- Fifth Annual Conference on Carbon Capture and Sequestration, Alexandria, Virginia (May).
- Interstate Oil & Gas Compact Commission 2006 Midyear Meeting, Billings, Montana (May).
- Greenhouse Gas Control Technologies Conference (GHGT-8),Trondheim, Norway (June).
- PCOR Partnership Terrestrial Team Meeting Grand Forks, North Dakota (June).

Project Deliverables

Deliverable	Description	Status
Task 1 – Management and Reporting		
1	Project Management Plan	Completed (December 30, 2005)
2	Quarterly reports	Ongoing
3	Continuation application for Budget Period 2	Future activity
4	Attendance/presentations at technical meetings	Ongoing
5	PCOR Partnership meetings/workshops	Ongoing
6	PCOR Partnership Phase II Final Report	Future activity
Task 2 – Field Validation Test at Beaver Lodge, North Dakota		
1	Experimental design package and NEPA compliance document	Ongoing
2	Site health and safety plan	Future activity
3	Outreach action plan	Future activity
4	Regulatory permitting action plan	Future activity
5	Sampling protocols	Future activity
6	Progress report	Future activity
7	Regional Technology Implementation Plan	Future activity

Continued. . .

Project Deliverables (cont.)

Deliverable	Description	Status
Task 3 – Field Validation Test at Zama, Alberta		
1	Experimental design package and NEPA compliance document	Completed (February 28, 2006)
2	Site health and safety plan	Completed (March 31, 2006)
3	Outreach action plan	Completed (April 28, 2006)
4	Regulatory permitting action plan	Completed (March 27, 2006)
5	Sampling protocols	Completed (June 30, 2006)
6	Progress report	Future activity
7	Regional Technology Implementation Plan	Future activity
Task 4 – Field Validation Test of North Dakota Lignite		
1	Experimental design package and NEPA compliance document	Ongoing
2	Site health and safety plan	Future activity
3	Outreach action plan	Future activity
4	Regulatory permitting action plan	Future activity
5	Sampling protocols	Future activity
6	Progress report	Future activity
7	Regional Technology Implementation Plan	Future activity

Continued. . .

Project Deliverables (cont.)

Deliverable	Description	Status
Task 5 – Terrestrial Validation Test		
1	Experimental design package and NEPA compliance document	Completed (February 28, 2006)
2	Site health and safety plan	Completed (February 28, 2006)
3	Outreach action plan	Completed (April 28, 2006)
4	Regulatory permitting action plan	Completed (March 31, 2006)
5	Sampling protocols	Completed (June 21, 2006)
6	Progress report	Future activity
7	Regional Technology Implementation Plan	Future activity
Task 6 – Characterization of Regional Characterization Opportunities		
1	Regional characterization gap assessment – budget period 1	Completed (February 28, 2006)
2	Progress report	Future activity
3	Regional characterization gap assessment – budget period 2	Future activity
4	Regional atlas	Future activity
Task 7 – Research, Safety, Regulatory, and Permitting Issues		
1	Progress report	Future activity
2	Road map document	Future activity

Continued. . .

Project Deliverables (cont.)

Deliverable	Description	Status
Task 8 – Public Outreach and Education		
1	Fact sheets	Fact Sheet 6 completed; Fact Sheet 7 in progress; Fact Sheets 8, 9, and 10 future activities
2	Outreach action plan	Completed (February 28, 2006)
4	PowerPoint presentations	Completed first presentation (May 31, 2006) updates to follow (future activity)
5	Videos	Documentary 1 in progress; Documentaries 2, 3, and 4 future activities
6	Web site update	In progress
7	Outreach booth	Future activity
8	Progress report	Year 1, Quarter 1 and 2 reports completed
Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment		
1	Best Practices Manual – Regional Sequestration Opportunities	Future activity
2	Best Practices Manual – Excelsior Energy, Inc.	Future activity
3	Best Practices Manual – Wind Energy	Future activity
4	Progress report	Future activity
Task 10 – Regional Partnership Program Integration		
1	Regional Partnership Program Integration Plan	Completed (July 18, 2006)
2	Progress report	Ongoing

Next Steps

Task 1 – Management and Reporting

- Continue to ensure timely production of deliverables and overall project management.

Task 2 – Field Validation Test – Beaver Lodge, North Dakota

- Finalization of Amerada Hess CO_2 flood EOR pilot project plans.
- Identification of specific site location within the Beaver Lodge field where CO_2 injection and EOR activities will be conducted.
- Identification of potential subcontractors for selected MMV activities.

Task 3 – Field Validation Test – Zama, Alberta

- Site visit on August 3, 2006.
- Continued characterization of the region.
- Develop geomechanical test program.
- Commence project implementation at any time.

Continued. . .

Next Steps (cont.)

Task 4 – Field Validation Test – North Dakota Lignite

- After a lease is obtained, the drilling permit will be filed with the state for the drilling of the first well where the cores will be taken.
- We are continuing to have conversations with various operating companies about involvement in field validation tests. The fallback position is that Fischer Oil and Gas, Inc. (subcontractor), will drill pilot well.
- Continuing to work on securing CO_2 for injection in 2007.

Task 5 – Terrestrial Validation Test

- Select sites to be sampled and/or restored.
- Visit sites to establish baselines.
- Implement sampling protocols.
- Continue to evaluate terrestrial carbon markets.

Continued. . .

Next Steps (cont.)

Task 6 – Characterization of Regional Sequestration Opportunities

- Create terrestrial specific data warehouse for terrestrial demonstration project.
- Implement changes to DSS resulting from analysis provided by Jim Evans, EERC.

Task 7 – Research, Safety, Regulatory, and Permitting Issues

- Provide input to all Field Validation Test task leaders in the development of NEPA compliance documents, site health and safety plans, regulatory permitting action plans, and experimental design packages.
- Provide guidance with regard to regulatory issues to other Task Leaders.
- Continue to assess regulatory developments.
- Continue to pursue regulatory partners.

Continued. . .

Next Steps (cont.)

Task 8 – Public Outreach and Education

- Complete draft final Fact Sheet 7 and submit (due July 31).
- Continue preparations for Web update (due August 31).
- Continue preparation of Documentary 1 (due January 2007).

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment

- Continue to compare existing source data with updated data sets from the U.S. Environmental Protection Agency (EPA) and others.
- Continue to fill DSS infrastructure data gaps.
- Explore possible collaboration with Visage Energy Corporation.
- Continue to evaluate the use of wind power to provide a portion of the energy required for pipeline compression of CO_2.
- Begin development of a carbon management plan for the planned Excelsior Energy plant.

Task 10 – Regional Partnership Integration

- Increase development to integrate all Regional Carbon Sequestration Partnerships.

Upcoming Issues

Task 1 – Management and Reporting

- None anticipated at this time.

Task 2 – Field Validation Test – Beaver Lodge, North Dakota

- None anticipated at this time.

Task 3 – Field Validation Test – Zama, Alberta

- None anticipated at this time.

Task 4 – Field Validation Test – North Dakota Lignite

- Have operator drill wells by summer/fall 2006 to initiate program.

Task 5 – Terrestrial Validation Test

- None anticipated at this time.

Task 6 – Characterization of Regional Sequestration Opportunities

- None anticipated at this time.

Continued. . .

Upcoming Issues (cont.)

Task 7 – Research, Safety, Regulatory, and Permitting Issues

- None anticipated at this time.

Task 8 – Public Outreach and Education

- Finalizing story board and review of raw film footage in preparation for initial narration and draft Documentary 1.
- Ensuring coordinated outreach to general public and test sites.

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment

- Finding appropriate projects for collaboration with Visage Energy Corporation.

Task 10 – Regional Partnership Integration

- None anticipated at this time.