



**Plains CO₂ Reduction (PCOR) Partnership Monthly Update
September 1–30, 2007**

Task 1 – Project Management and Reporting (Edward N. Steadman/John A. Harju)

Highlights

- The PCOR Partnership Task 9 Best Practices Manual (November 2006 deliverable) is currently being revised.
- The Task 8 Web site update was sent for review on August 31, 2007, and U.S. Department of Energy (DOE) approval was given on September 5, 2007.
- The draft Task 5 (2007 Q4 Milestone) – Fact Sheet 11, “Land Use Management Practices that Increase Soil Organic Carbon,” was submitted to DOE for review.
- The draft Task 8 – Carbon Markets and Trading Video was submitted to DOE for review.
- Participated in the 24th Pittsburgh Coal Conference (September 10–14, 2007, Johannesburg, South Africa).
- Participated in the Air Quality VI Conference (September 24–27, 2007, Arlington, Virginia).
 - Sunday, September 23 – Workshop 1 (CO₂ Separation and Sequestration)
 - Wednesday, September 26 – Session 6 (CO₂ Sequestration and Monitoring, Mitigation, and Verification [MMV])
 - Wednesday, September 26 – Session 7 (CO₂ Sequestration)

Travel/Meetings

- September 10–14, 2007: 24th Pittsburgh Coal Conference in Johannesburg, South Africa
- September 18–20, 2007: North Dakota Petroleum Council 26th Annual Meeting in Medora, North Dakota
- September 24–27, 2007: Air Quality VI in Arlington, Virginia
- October 14–17, 2007: Gasification Technologies Council in San Francisco, California
- October 16–17, 2007: Climate Change Investment Opportunities in New York, New York
- October 18–19, 2007: PCOR Partnership Annual Meeting at the Energy & Environmental Research Center (EERC) in Grand Forks, North Dakota
- October 29–31, 2007: Carbon Market Insights in New York, New York
- November 7–9, 2007: Clean Power in the West Summit in San Francisco, California
- November 14–16, 2007: Carbon Reduction Project Development and Finance in Houston, Texas
- January 27–30, 2008: 11th Annual Conference on Clean Air, Mercury, Global Warming, and Renewable Energy in Tucson, Arizona
- June 29–July 2, 2008: 4th International Symposium on Energy, Informatics and Cybernetics: EIC '08 in Orlando, Florida
- August 13–15, 2007: Coal-Gen in Louisville, Kentucky
- November 16–20, 2008: Greenhouse Gas Technology Conference (GHGT-9) in Washington, D.C.

Task 2 – Field Validation Test at a Williston Basin Oil Field, North Dakota (James A. Sorensen)

Highlights

- Activities were initiated to identify and characterize fields that may be chosen for the Phase II Williston Basin demonstration.

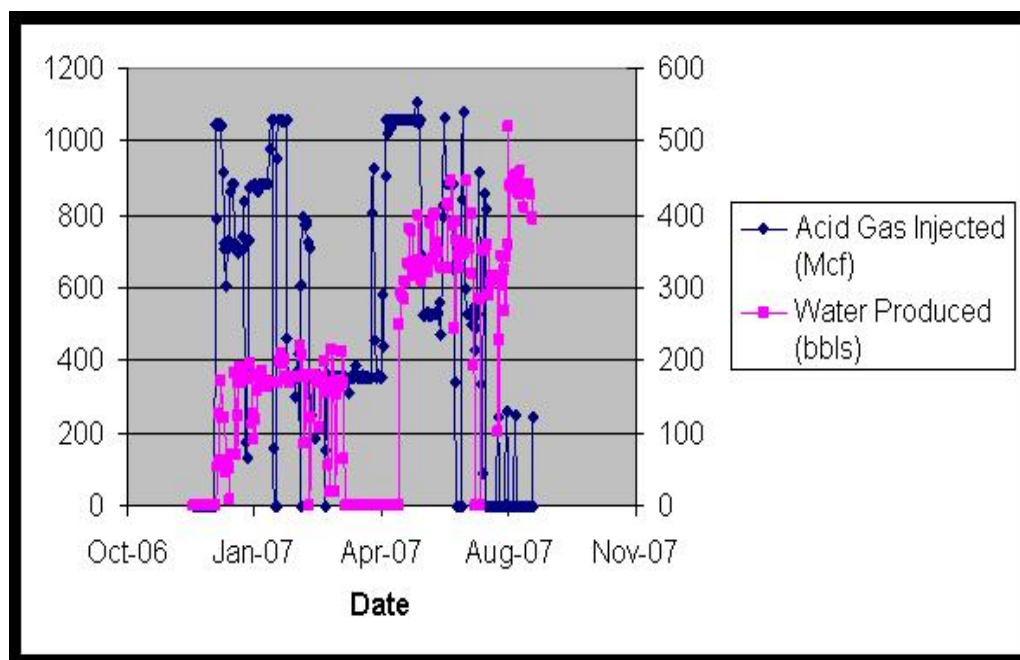
Travel/Meetings

- September 4–7, 2007: Zama Quarterly Meeting in Calgary, Alberta
- September 18–20, 2007: North Dakota Petroleum Council 26th Annual Meeting in Medora, North Dakota
- September 27, 2007: North Dakota Association of Oil and Gas Counties Annual Meeting in Williston, North Dakota

Task 3 – Field Validation Test at Zama, Alberta (Steven A. Smith)

Highlights

- Zama site visit and quarterly meeting held on September 6, 2007.
- Injection at Zama has continued with rates reaching as high as 1 million cubic feet per day. Injection has been scaled back during August and September because of increasing pressure within the pinnacle. The current producing unit (pump jack) on location is not large enough to handle the increased water production resulting from acid-gas injection. The problem will be mitigated by installing a new pump jack with the capability to handle such volumes. No oil production has occurred to date. This is considered a positive result and may indicate that the top-down injection scheme is working effectively to push oil to the producing well. Current injection volumes are shown below.



- Current reports completed on the Zama project:
 - Acid Gas-Brine Static Partitioning Study
 - A Study of the Reservoir Condition Drainage and Imbibition Permeability
 - Displacement Characteristics of Supercritical Carbon Dioxide in the Zama Area, Sulphur Point Formation
 - Experimental Study of CO₂ and H₂S Partitioning in a Brine-Saturated Porous Medium
 - Evaluation of Zama Field Wellbore Integrity, Part I
 - Evaluation of Zama Field Wellbore Integrity, Part II (Evaluation of Leakage Potential by Well)
 - Regional-Scale Geology and Hydrogeology of Acid-Gas
 - Enhanced Oil Recovery in the Zama Oil Field in Northwestern Alberta, Canada
 - Reservoir Condition CO₂-Brine Drainage and Imbibition Relative Permeability Displacement Characteristics in the Zama Area, Muskeg Anhydrite Formation (Caprock)
 - Uniaxial, Triaxial and Elastic Properties Determinations on Samples from the Zama Field, Northwest Alberta
 - Continued core collection activities; working on increasing Zama budget to increase analytical work on as much new core as possible

Travel/Meetings

- September 4–7, 2007: Zama Quarterly Meeting in Calgary, Alberta
- September 18–20, 2007: North Dakota Petroleum Council 26th Annual Meeting in Medora, North Dakota
- September 28, 2007: Society of Exploration of Geophysicists Post Convention Workshop on “CO₂ Sequestration Monitoring” in San Antonio, Texas
- November 11–14, 2007: Society of Petroleum Engineers Conference in Anaheim, California
- April 20–23, 2008: American Association of Petroleum Geologists in San Antonio, Texas

Task 4 – Field Validation Test of Lignite Coal in North Dakota (Lisa S. Botnen)

Highlights

- All five wells have been drilled, cemented, and logged. On Well 36-16, open hole logs were not run because of a severe bridging problem at 117 feet. After multiple attempts to complete the logging, it was concluded that obtaining open hole logs would be unsuccessful. The State of North Dakota was contacted, and an open hole log waiver was requested and received. A cased hole neutron log as well as a cement bond log were run on this well. A cement bond log was also run on the other four wells.
- The zones of interest in all five wells have been perforated, and initial swabbing has occurred.
- Form 6 Completion Notices were submitted to the North Dakota Oil and Gas Division for all five wells. Supplemental completion forms will be submitted when appropriate.
- A meeting was conducted with Schlumberger to go over processing techniques and initial data analysis.
- Core analysis and log interpretation by Terratek and Schlumberger are continuing.
- Model development and baseline characterization are continuing.
- The applicability of various MMV technologies (tiltmeter survey, gravity survey, tracer study, and seismic survey) to the lignite test continues to be researched and evaluated.

- CO₂ sources for injection have been contacted, and various delivery methods are being evaluated.

Travel/Meetings

- To be determined: Denver, Colorado, to observe Schlumberger and Terratek processing of data collected in the field.

Task 5 – Terrestrial Validation Test (Barry W. Botnen)

Highlights

- Completed sampling efforts (wetland catchment sampling) at North Dakota and South Dakota sites; this was initiated in late March 2007.
- Completed eleven sample events to date.
- Photo stations for each treatment have been established.
- Grazing study and vegetation study are complete.
- Grassland samples from 2006 have been analyzed, and the results are available.
- 2007 grassland sampling continues in Minnesota.
- The business requirements document for the carbon-tracking database is complete and has been reviewed by the EERC.
- The best management practices fact sheet draft has been sent to DOE.
- Completed a prospectus for grassland carbon offset sale in the Prairie Pothole Region (PPR).
- Completed a carbon sequestration fact sheet for investors.
- Completed a private carbon/easement document.
- Working on a draft Landowner Agreement document for carbon marketing.
- Working on a draft legal document to transfer carbon rights from landowner to aggregator.
- Completed a business model and term sheet for packaged carbon offsets.
- Working on draft topical reports for providing a primer on carbon market basics and an overview of the business flow process for terrestrial offsets from private lands. We anticipate submitting this report next quarter.
- Evaluating other state and regional greenhouse gas or cap-and-trade program rules and policies.
- Evaluating DOE Guidelines for Aggregators and Terrestrial Offset Providers.
- Preparing overview of voluntary carbon market, active players, certification standards, market activity, etc.
- Documents have been developed to answer potential grassland carbon sequestration investor questions on issues such as leakage and, additionally, biotic values of PPR, emission offsets because of tillage practices, and sequestration rates. These documents will be presented as a fact sheet or a topical report.
- Continuing to update Ducks Unlimited (DU)–PCOR Partnership terrestrial project Web site.
- Review of DOE technical guidelines (1605b) is ongoing.
- Working on characterization inputs and the terrestrial portion of the Decision Support System (DSS, © 2007 EERC Foundation).

Travel/Meetings

- September: DU, Bismarck, North Dakota

- September: Minnesota to sample with North Dakota State University

Task 6 – Continued Characterization of Regional Sequestration Opportunities (Erin M. O’Leary)

Highlights

Characterization

- Met to discuss the results of the PCOR Partnership source review. It was indicated that new emission data recently became available and that the team was in the process of updating the CO₂ emissions for the electrical generation facilities in the U.S. portion of the PCOR Partnership region. The overlap issues with Big Sky and Southwest Partnership are being addressed.
- Reviewed the potential to create a map of the PCOR Partnership region depicting the saline sequestration as defined by the geologic work group during the most recent conference call. Produced examples of how the basins and saline formations in the PCOR Partnership region would appear on maps using scenarios proposed by the geologic working group and sent it out to group members. The biggest hurdle in creating the map is to decide on the appropriate scale and accuracy of the final product. From a perspective of viewing the information for all of Canada and the United States on one map in a paper atlas, accuracy falls lower on the list. If there is an expectation of zooming in on the map to specific areas, then much more accuracy (i.e., work) is needed.
- Additional information for input into the Broom Creek Formation model is being constructed in the Petrel software suite.

Gas Analysis Web Site

- Working on a method to ensure that all bar columns within a bar graph are accurately represented.

DSS

- Created the latest depiction of the Western Canadian Sedimentary Basin and added it to the DSS. This polygon replaces the earlier outline of the Alberta Basin.
- Put together a test page showing how the references for terrestrial sequestration research in the PCOR Partnership region would be displayed on the DSS. This database-driven retrieval system works nicely and will allow for easy addition to the reference list.
- Created a database-driven Web page to list literature for each state in the terrestrial section. The page was moved to live.
- Added functionality to print the displayed map into a PDF document at 300 dpi. The option is available from the top menu as “Print Map.”

Other

- Worked on planning for migration of the geographic information system (GIS) portion of the DSS to the .NET environment. According to the documentation, there is no direct way to migrate it. This will be a good opportunity to clean up and rewrite the DSS to take advantage of some of the functionality available in 9.2.
- All 13 cases of the atlases have arrived.

- Worked on Petrel configuration and installation.

Travel/Meetings

- Nothing to note at this time.

Task 7 – Research, Safety, Regulatory, and Permitting Issues (Lisa S. Botnen)

Highlights

- Form 6 Completion Notices were submitted to the North Dakota Oil and Gas Division for all five wells for the Lignite Field Validation test. Supplemental completion forms will be submitted when appropriate.
- Comments were provided to the North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division on its proposed new chapter to the North Dakota Administrative Code, Geologic Storage of Carbon Dioxide Chapter 43-02-04.1.
- Continue to follow the developments of various state and regional initiatives.
- Continued analysis of carbon market strategies.
- Continued to follow legislative actions occurring in Congress.
- Continued review of recent publications relating to regulating CO₂ sequestration and MMV issues.

Travel/Meetings

- Nothing to note at this time.

Task 8 – Public Outreach and Education (Daniel J. Daly)

Highlights

Documentaries

- Carbon Market Video sent to DOE September 24, 2007.
- Terrestrial video scheduling in process with DU and Prairie Public Television in the Mississippi Delta.

Public Web Site

- Approved by DOE September 24, 2007.

Outreach Working Group

- Call held on September 14, 2007, to discuss focus group activities and possibility for a survey on public attitudes on sequestration.

Travel/Meetings

- December 12–14, 2007: Regional Carbon Sequestration Review Meeting in Pittsburgh, Pennsylvania

Task 9 – Identification of Commercially Available Sequestration Techniques Ready for Large-Scale Deployment (Melanie D. Jensen/Michael L. Jones)

Highlights

- Completed review of the CO₂ emissions and location data for 62 sources that overlap with the Big Sky Partnership (as indicated in the Task 6 update).
- Participated in joint GIS–Capture working group conference call; the topic was data overlap between partnerships.
- Calculations were made to determine the level of capture and selling price of CO₂ that would be required if the increased cost of electricity were limited to less than 10%.

Travel/Meetings

- Nothing to note at this time.

Task 10 – Regional Partnership Program Integration (Edward N. Steadman)

Highlights

- The second edition of the PCOR Partnership Regional Atlas is complete. Stakeholders will receive a copy at the PCOR Partnership 2007 Annual Meeting.
- The PCOR Partnership presented at the Peer Review Meeting in Pittsburgh, Pennsylvania (September 17–20, 2007).

Travel/Meetings

- September 17–20, 2007: Peer Review of the Carbon Sequestration Program in Pittsburgh, Pennsylvania
- October 18–19, 2007: PCOR Partnership Annual Meeting at the EERC in Grand Forks, North Dakota
- December 12–14, 2007: Regional Carbon Sequestration Review Meeting in Pittsburgh, Pennsylvania
- November 16–20, 2008: Greenhouse Gas Technology Conference (GHGT-9) in Washington, D.C.