



Plains CO₂ Reduction (PCOR) Partnership Monthly Update

March 1–30, 2007

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

Highlights

- The Zama Field Validation Test was recognized as a Carbon Sequestration Leadership Forum Meeting (CSLF) project.
- Two news articles were added to the Phase II products section of the Decision Support System (DSS) Web site:
 - “A Study of the Great Plains of North America: Carbon Dioxide Sequestration Communications Supported by Geographic Information System (GIS)”
 - “Zama Acid Gas Project: Plains CO₂ Reduction (PCOR) Partnership”
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).

Travel/Meetings

- March 7, 2007: Attended a Capture and Transportation Model Seminar in Pittsburgh, Pennsylvania.
- March 20–21: Attended the Minnesota Geological Survey Meeting and met with Excelsior Energy to discuss Phase III in St. Paul, Minnesota.
- March 23–29: Attended CSLF Meeting held in Paris, France.
- April 18–20, 2007: Meet with Natural Resources Canada (NRCan) and Spectra Energy in Ottawa, Ontario, Canada.
- April 29 – May 1, 2007: Williston Basin Symposium in Regina, Saskatchewan, Canada.
- May 6–8, 2007: Interstate Oil and Gas Compact Commission Conference in Point Clear, Alabama.

Task 2 – Field Validation Test at Beaver Lodge, North Dakota (James A. Sorensen)

Highlights

- Met with Bill Jackson (Apache Canada, Ltd.), Stefan Bachu (Energy & Utilities Board [EUB]), and Zama subcontractors regarding the status and future direction of activities at Zama.
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).
- Continued the evaluation of Class II injection well data from North Dakota, South Dakota, Montana, Nebraska, Wyoming, and Iowa.
- Developed a Web-based GIS framework for Beaver Lodge Duperow Unit geologic and engineering data.
- Initiated the process of manipulating geologic and engineering data within the ECLIPSE reservoir model. Preliminary results suggest additional work is needed to fully integrate the data and modify the specific modules within the model that will maximize its usefulness with regards to predicting the effects of CO₂ injection.

Travel/Meetings

- March 7–9, 2007: Met with Spectra Energy about potential spin-off projects and with Husky Oil Company to discuss their potentially joining the PCOR Partnership Zama group meeting in Calgary, Alberta, Canada.

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

Highlights

Zama Updates

- March 8, 2007, Meeting:
 - Discussed well-bore leakage detection; believe leakage will be very unlikely to occur and translated to the surface.

Apache's Well-Drilling Schedule

- 5-10 being drilled on March 8 – reaching core depth on March 9.
- 7-10 is in plan but timing questionable; depends on water injection.
- Putting together summer drilling program (August–December 2007).
- Drilling well in Zama basin in August:
 - Sour and near town (within 5 km)
 - No acid gas disposals around
 - More expensive than usual for coring due to safety precautions (around 20-25k extra)
- Drilling Shekilie well in summer; opportunity for Watt Mountain coring.
- 8-33 not yet approved for drilling; waiting on technical evaluation.
- Next couple of weeks taking bottom hole samples from other Zama pinnacles.

Core Collection/Logging Activities Update

- Geomechanical/mineralogical/relative permeability/core description testing is in Alberta Geological Survey/EUB budget.
- Should look at taking full diameter cores for PPC testing, full diameter permeability, etc.
- Advanced Geotechnology, Inc., is going to be the leader on core management.
- Discussion on the need to design program for core testing; decided to send core to Hycal initially for routine analyses then to Advanced Geotechnology, Inc., afterwards.
- Discussed obtaining core from rock used for acid gas disposal. I
- 5-10 logged; need to look at logging program for 7-10 and 8-33.

APA Updates

- Work primarily done on Web document since last meeting.
- ProTechnics is testing sweetening products with mixed results, designing a new “live” test protocol to monitor sweetening process to be able to sweeten sample completely. Tracer stripping tests during sweetening process are being done.
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).

Travel/Meetings

- March 7–10, 2007: Attended Zama Meeting in Calgary, Alberta, Canada.
- March 31 – April 4, 2007: American Association of Petroleum Geologist Conference in Long Beach, California.

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

Highlights

- The Site Health and Safety Plan and Regulatory Permitting Action Plan were submitted on March 30.
- Continued to work on the Outreach Action Plan.
- Baseline characterization is continuing.
- Schlumberger responded regarding the model and gave recommendations. Schlumberger's changes have been incorporated, and the model has been run.
- A meeting was held with Eagle Operating, Inc., to finalize drilling plans. This resulted in some changes to our plans with Schlumberger, and they are in the process of developing an alternative logging suite.
- The drilling prognosis has been completed.
- The meeting with the North Dakota State Land Department to go over the experimental design and drilling plans will be within the next month or so.
- Once we have finalized the drilling plans and anticipated logging package, we anticipate meeting with local officials in Burke County to provide them with more details regarding the research project.
- Internal discussions were held to design the pump test for the dewatering phase.
- Drilling is anticipated for May or June as load restrictions are on local roads, and the land needs to dry before pad setup and drilling can commence.
- Met with WellDog personnel to gather information regarding their Critical Gas Content Tool and CO₂ Detection tool to determine whether or not their services would be beneficial to the Lignite test.
- Work continues on the site health and safety plan and regulatory permitting action plan.
- The ECLIPSE model was having difficulty "understanding" the low pressure coals. It has been sent back to Schlumberger for troubleshooting.
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).

Travel/Meetings

- Nothing to note at this time.

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

Highlights

- Hosted a Terrestrial team meeting at the Energy & Environmental Research Center (EERC) on March 22, 2007. Field planning was finalized and general updates discussed.
- Initiating work on Carbon Sequestration program brochure and detail fact sheet for investors.
- Reviewing the following documents:
 - Ducks Unlimited, Inc. (DU), Carbon Offset Program document
 - Elements of DU Carbon Offsets Document
 - Department of Energy Final Technical Guidelines Issues of Direct Relevance to DU Carbon Offsets and Aggregator Role document
 - DU Carbon Fact Sheet
- The following documents are in draft form:
 - Private carbon/easement legal document

- Legal document to transfer carbon to the investor
- Legal document to transfer carbon from landowner to aggregator
- Best Management Practices for Terrestrial Sequestration fact sheet
- Business Requirements document
- Business Model and Term Sheet for packaged carbon offsets
- Working with all partners on field strategies for the 2007 spring field season.
- Working on characterization inputs and the Terrestrial portion of the DSS.
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).

Travel/Meetings

- March 22, 2007: the EERC hosted a terrestrial group meeting with DU, U.S. Geological Survey, and North Dakota State University.

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

Highlights

Characterization

- Internally met about the potential of updating CO₂ emission totals for the PCOR Partnership region based on newer reports from the U.S. Environmental Protection Agency and Environment Canada.
- Received North Dakota Industrial Commission’s latest geographic files for the delineation of unitized and nonunitized oil/gas fields in North Dakota. The files also contained the latest cumulative production data for the fields. The data will be incorporated into the DSS and will allow for updated capacity estimates for the fields.
- Continued working on the gas analysis Web site.
- The new pipeline data was imported into the test SQL Server database.

Class II Wells Project

- The database for Nebraska Class II Wells was completed (total of 167 wells), target formations are identified, and data gaps are identified.
- Data analysis for Class II Wells for the rest of the states is in progress.
- A methodology for Class II Wells is agreed with the working group.
- Class II Wells data analysis is in progress.
- A list of data desired for Class II Wells task was compiled and forwarded to students to work with North Dakota data.
- Gaps in readily available data in respect to Class II Wells in states other than North Dakota were identified.
- Montana, Nebraska, and South Dakota Oil and Gas Commissions were contacted with respect to Class II Wells; South Dakota provided high quality data; Montana provided a list of the data available from their database. Online databases for the states have been evaluated.

DSS

- The pipeline layer is ready to be activated on the DSS.
 - Internally we will be showing the approval process for the PennWell Pipeline Use Agreement that will be presented to the users each time they use the DSS.

- Worked on displaying map tips on the map. If the user has Map Tips turned on, when they hover the mouse over a map feature, preselected attributes of the feature are displayed as a map tip.
- Working on changes to the terrestrial Web site pages. The pages are being reviewed internally.
- Working on installing Graphics Server software on the test Web server.
- Working on the gas analysis Web site – creating a search page for the selection of gas source data and thematic maps.
- Working on setting up the new ArcGIS server. So far we have only installed the operating system. We hope to have SQL Server, ArcSDE, and ArcIMS installed within the next week.

Other

- Worked on Zama Field Validation Test poster for approval by CSLF meeting.
- Participated in a GIS conference call.
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).
- Work continues on the latest edition of the PCOR Partnership Atlas.
 - Calculated more current regional CO₂ emissions values for the new version of the atlas that is in preparation.
- An article were submitted and published in ArcNews. ArcNews is a quarterly news magazine for ESRI users (www.esri.com/news/arcnews/winter0607/articles/carbon-dioxide.html). The article is now linked onto the PCOR Partnership DSS Web site.

Travel/Meetings

- February 26 – March 2, 2007: Attended the Environmental Systems Research Institute Petroleum Users Group annual meeting in Houston, Texas.

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

Highlights

- Continued writing an analysis of carbon market strategies.
- Submitted the Site Health and Safety Plan and Regulatory Permitting Action Plan for Lignite Field Validation Test on March 30.
- Continued development of a presentation on carbon markets.
- Completed review of American Petroleum Institute Carbon Capture and Storage guidelines.
- Continued to follow legislative actions occurring in Congress.
- Reviewed Memorandum of Understanding signed by five western governors calling on their respective states to reduce greenhouse gases. It is called the Western Regional Climate Action Initiative.
- Continued review of recent publications relating to regulating CO₂ sequestration and monitoring, mitigation, and verification issues.
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).

Travel/Meetings

- Nothing to note at this time.

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

Highlights

Video

- Blue Source interview is scheduled for April 3, 2007, at the EERC.

Outreach Action Plans (OAPs)

- Lignite is due to National Energy Technology Laboratory (NETL) on April 30, 2007.
- Beaver Lodge is due to NETL June 30, 2007.
- Draft OAP completed for Lignite; being reviewed internally.

Public Web Site

- Being reviewed internally.

Outreach Booth

- Due to NETL by April 30, 2007.
- Working on draft.

Fact Sheet 9

- Due at the end of May.

Outreach Working Group (OWG)

- Received an abstract via e-mail from Sarah Wade for an OWG paper at the May meeting in Pittsburgh. A rough outline of the concept for the paper is due by mid-March.
- Sarah Wade requested that each partnership have approximately six slides available to support the presentation at the national meeting in May.

Travel/Meetings

- Nothing to note at this time.

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

Highlights

- Participated in meetings on March 12 and 13 with Jeff Burgess of the Lignite Energy Council. The purpose of the meetings was to construct a road map to serve as an umbrella for the Lignite Technology Development Workgroup. When completed, the road map will include advanced combustion technologies, gasification technologies, and carbon management technologies specific to lignite.
- Participated in a conference call with Aaron Koopman (Ramgen COO), Shawn Lawlor (Ramgen CTO), and other Ramgen engineers regarding the specifics required for completion of the design of their Rampressor as applied to CO₂ compression.
- Participated in the Regional Partnerships capture–separation–transportation working group (CSTWG) conference call. Discussions were regarding the CSTWG workshop to be held at the EERC in June.

Other

- Working on the proposal to the Lignite Research Council for cost-share funding for the Carbozyme project.

Travel/Meetings

- March 7–10, 2007: attended the 6th Annual Carbon Capture and Sequestration meeting in Pittsburgh, Pennsylvania.

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

- The Regional Atlas was released and is now on Department of Energy's Web site. (www.netl.doe.gov/publications/carbon_seq/atlas/index.html)
- Quarterly reports should be arriving soon from subcontractors (due April 15, 2007).

Travel/Meetings

- Formulating details on 2007 PCOR Partnership Annual Meeting. October 18 and 19 has been tentatively determined. Location will be at the EERC in Grand Forks, North Dakota.