



## **Plains CO<sub>2</sub> Reduction (PCOR) Partnership Monthly Update March 1–31, 2012**

### **PHASE III ACTIVITIES**

#### **Task 1 – Regional Characterization (Wesley D. Peck)**

##### **Highlights**

- Uploaded to the U.S. Department of Energy's (DOE's) SharePoint site on March 29 the PCOR Partnership's text and images for the next version of the DOE atlas.
- Began planning for an update to the oil and gas field storage values for the PCOR Partnership region.
- Began modification of the GIS (geographic information system) portion of the Partners-Only Web site to add functionality for information on oil fields in the region.
- Continued reviewing the U.S. Environmental Protection Agency's (EPA's) CO<sub>2</sub> sources data provided by NATCARB (the National Carbon Sequestration Database and Geographic Information System).
- Continued preparation of three posters highlighting the Rival Field activities for the upcoming American Association of Petroleum Geologists (AAPG) 2012 Annual Convention and Exhibition scheduled for April 22–25 in Long Beach, California.
- Submitted Deliverable 5 (D5) entitled "Site Characterization and 3-D Geologic Modeling of the Rival Field (Second Target Area Completed)" on March 30.

#### **Task 2 – Public Outreach and Education (Daniel J. Daly)**

##### **Highlights**

- Continued to review film footage taken at the Bell Creek 0506 OW monitoring well.
- Received raw film footage and photos taken by Prairie Public Broadcasting (PPB) during the trip to Fort Nelson.
- Submitted D18 entitled "Bell Creek Test Site PowerPoint Presentation – Update 1" on March 30.
- Continued preparation of a poster on behalf of the Regional Carbon Sequestration Partnership (RCSP) Outreach Working Group (OWG) for the upcoming 11th Annual Carbon Capture, Utilization & Sequestration (CCUS) Conference scheduled for April 30 – May 3 in Pittsburgh, Pennsylvania.
- Participated in the RCSP OWG monthly conference call on March 22.

- Continued efforts to compile a “fact book” for the Bell Creek region for local Bell Creek project outreach.
- Continued efforts to finalize the Fort Nelson poster (D26).
- Continued efforts to update the public Web site (D13), and held weekly in-house progress meetings.
- Participated in an Aquistore Communication Committee conference call on March 19.
- Received a request from a Swedish communication company to use PPB video materials in a film being prepared on Biorecro for the Royal Institute for Technology in Stockholm, Sweden.
- Supported the efforts of the North Dakota Geographic Alliance to arrange tours of the Great Plains Synfuels Plant and Antelope Valley Station as part of its June meeting.

### **Task 3 – Permitting and NEPA (National Environmental Policy Act) Compliance (Lisa S. Botnen)**

#### Highlights

- Continued in-depth analysis of EPA’s Mandatory Greenhouse Gas Reporting Rule Subpart RR.
- Continued planning for the 4th Annual Regulatory Roundup meeting to be held this summer in Deadwood, South Dakota.
- Continued review of EPA’s draft guidance document for testing and monitoring Class VI wells.
- Participated in Alberta’s Stakeholder Review of Draft Quantification Protocol for Fuel Switching in Mobile Equipment webinar.
- Reviewed information regarding the North American Climate Exchange, which is a Calgary-based offset exchange that launched a new platform for trading carbon offset credits in mid-March.
- Continued in-house review of the Phase II Lignite site closure report.

### **Task 4 – Site Characterization and Modeling (James A. Sorensen)**

#### Highlights

- Fort Nelson test site activities included the following:
  - Continued efforts on the geochemical report (D41/Milestone 32 [M32]).
  - Continued development of the latest updated version of the static geologic model.
  - Continued work on geomechanical modeling.
  - Reviewed information for potential inclusion on the public Web site.
  - Completed work on a quarterly update requested by the Carbon Sequestration Leadership Forum (CSLF).
  - Participated in a project update meeting on March 20 along with Spectra Energy at DOE National Energy Technology Laboratory (NETL) headquarters. The following items were discussed:
    - ♦ Spectra Energy’s business plan for the Fort Nelson project.
    - ♦ Spectra Energy’s schedule for the project, including a new target date for injection in the third quarter of 2016.

- Held an in-house project update meeting on March 26. Topics discussed included the following:
  - ◆ Summary of the Pittsburgh meeting with DOE and Spectra Energy.
  - ◆ Status of the modeling activities.
  - ◆ Status of the geochemical report.
  - ◆ Potential future technical meetings in Grand Forks with Spectra Energy.
- Bell Creek test site activities included the following:
  - An abstract entitled “Subsurface Core and Analogous Outcrop Characterization of the Muddy/Newcastle Formation for the Bell Creek Oil Field, Powder River County, Montana” was submitted for the 2012 AAPG Rocky Mountain Section Meeting scheduled for September 9–12 in Grand Junction, Colorado.
  - Continued work on geomechanical modeling.
  - Submitted M10 entitled “Bell Creek Test Site Wellbore Leakage Data Collection” on March 12.
  - Continued EERC laboratory testing on sidewall cores from the 0506 OW monitoring well, including the following activities:
    - ◆ Completed 18 thin sections and began analysis.
    - ◆ Completed Dean Stark extraction on five of the nine samples.
    - ◆ Completed XRD for all nine samples, and analysis is under way.
    - ◆ Completed porosity and bulk volume tests.
    - ◆ Initiated permeability measurements.
  - Full-diameter (slabbed) core will be tested at an external laboratory.
  - Began development of a scope of work for additional samples collected from the U.S. Geological Survey (USGS) Core Research Center in Denver, Colorado.

## **Task 5 – Well Drilling and Completion (John A. Hamling)**

### Highlights

- Held an in-house Bell Creek project update meeting on March 8.
- Continued planning for electrical installation of PDM (permanent downhole monitoring) equipment on Monitoring Well 0506 OW.
- Continued interpreting the first-round soil gas and water samples.
- Began the second round of soil gas and water baseline sampling.
- Continued planning for an upcoming well log review meeting with Denbury and Halliburton in Plano, Texas.

## **Task 6 – Infrastructure Development (Melanie D. Jensen)**

### Highlights

- Continued testing the interactive technology tree on the PCOR Partnership Decision Support System (DSS, © 2007–2012 EERC Foundation®).
- Continued work on an interactive compression technology tree for the DSS.
- Continued work on D84, a report entitled “A Phased Approach to Building a Pipeline Network for CO<sub>2</sub> Transport During CCUS.” Activities included the following:

- Researched three analogs (the U.S. natural gas pipeline system, the electrical grid, and the U.S. interstate highway system) to identify methods that were used to develop those networks.
- Continued updating the CO<sub>2</sub> emissions in the PCOR Partnership database to incorporate combustion-related CO<sub>2</sub> emissions data recently made available by EPA. These updated emissions from plant types other than ethanol plants will improve the accuracy of pipeline network planning.
- Developed a revised decision tree for pipeline network planning and began estimating CO<sub>2</sub> emissions for clusters of sources as well as the storage capacity of geological sinks. Forecasts will be made to assist with determining the pipeline route and capacity needs at various points in the future.

### **Task 7 – CO<sub>2</sub> Procurement (John A. Harju)**

#### Highlights

- Participated in ongoing project discussions with Denbury.

### **Task 8 – Transportation and Injection Operations (Melanie D. Jensen)**

#### Highlights

- Nothing to note at this time.

### **Task 9 – Operational Monitoring and Modeling (Charles D. Gorecki)**

#### Highlights

- Held an in-house modeling and simulation meeting on March 12.
- Participated in the RCSP Risk-Sim Conference Call on March 27.
- Welcomed Jim Erdle, Computer Modelling Group (CMG), to the EERC on March 29. Topics discussed included the Bell Creek, Fort Nelson, and Zama history-matching activities using CMG software.
- Began a literature review of software integration for geomechanical modeling and simulation.
- Continued Fort Nelson site activities, including the following:
  - Continued working on the existing geomechanical data, constructing and correlating for the mechanical earth model (MEM) in Petrel.
  - Continued development of the two-track deep geological system monitoring, verification, and accounting (MVA) plan.
- Continued Bell Creek site activities, including the following:
  - Continued work on history matching.
  - Continued planning for the Bell Creek risk assessment.
  - Continued work on obtaining waterflood history matching for the Bell Creek CO<sub>2</sub> Prophet model.
  - Continued work on the 1-D MEM.

### **Task 10 – Site Closure (to be announced [TBA])**

- This task is anticipated to be initiated in Quarter 1 – Budget Period (BP) 5, Year 9 (October 2015).

### **Task 11 – Postinjection Monitoring and Modeling (TBA)**

- This task is anticipated to be initiated in Quarter 1 – BP5, Year 9 (October 2015).

### **Task 12 – Project Assessment (Katherine K. Anagnost)**

#### Highlights

- Submitted the draft project assessment report (D57) for the period October 1, 2010 – September 30, 2011, on December 29, 2011. The next assessment report is due by December 31, 2012.

### **Task 13 – Project Management (Charles D. Gorecki)**

#### Highlights

- Continued planning for the upcoming PCOR Partnership Annual Meeting and Workshop scheduled for September 11–13 in Milwaukee, Wisconsin.
- Plans are under way to contact a Milwaukee-area geologist familiar with the Schoonmaker Reef (a Silurian-age tropical reef similar to the geology of the Fort Nelson area) and to develop a core analysis workshop and field trip in conjunction with the annual meeting.
- Participated in a post-Technical Advisory Board (TAB) conference call with the board chairman.
- Held in-house task leader meeting on March 7.
- In response to requests received from the CSLF Secretariat, updates were prepared for both the Fort Nelson CCS Project and the Zama Acid Gas EOR, CO<sub>2</sub> Sequestration, and Monitoring Project for inclusion in the March 2012 Strategic Plan Implementation Report.
- Traveled to Denver, Colorado, to attend the North Dakota Petroleum Council (NDPC) Spring Social on March 14.
- Participated in a meeting with personnel from Spectra Energy and DOE on March 20 in Pittsburgh, Pennsylvania.
- Management staff presented at the Workshop of CO<sub>2</sub> Geological Storage and Enhanced Oil Recovery (EOR) in Mexico City. In addition, the attendees viewed the “Managing Carbon Dioxide: The Geologic Solution” documentary.
- Submitted M36, TAB meeting scheduled, on March 28.
- Began work on a Bell Creek poster for the upcoming CCUS-11 conference.
- Provided a letter confirming completion in January 2012 of the Bell Creek monitoring well upon request from DOE.
- Provided documentary DVDs and PCOR Partnership Atlases to the Nebraska Public Power District (NPPD) for upcoming public information meetings (the first meeting was held March 16).
- Received a request from NPPD for additional PCOR Partnership Atlases for use at upcoming public meetings scheduled in April.

- Deliverables and milestones completed in March:
  - February monthly update
  - Task 1: D5 – Site Characterization and 3-D Geologic Modeling of the Rival Field (Second Target Area Completed)
  - Task 2: D18 – Bell Creek Test Site PowerPoint Presentation (Update 1)
  - Task 4: M10 – Bell Creek Test Site Wellbore Leakage Data Collection Completed
  - Task 13: M36 – Annual Advisory Board Meeting Scheduled
  - Task 14: M23 – Monthly WWG Conference Call Held

#### **Task 14 – RCSP Water Working Group (WWG) Coordination (Ryan J. Klapperich)**

##### Highlights

- Held the monthly conference call on March 27.
- Distributed the March 27 monthly conference call minutes on April 4.
- Began planning for the April monthly conference call.
- Formalized the Interest Inventory Plan with the WWG members, and distributed it to the members for testing.
- Continued planning for the annual meeting to be held the afternoon of May 3 following the CCUS conference in Pittsburgh, Pennsylvania.
- Began identifying potential guests for the annual meeting.

#### **Task 15 – Further Characterization of the Zama Acid Gas EOR, CO<sub>2</sub> Storage, and Monitoring Project (James A. Sorensen)**

##### Highlights

- Worked on the conditional static geologic model construction.
- Prepared a quarterly update as requested by CSLF.
- Continued development of a public outreach brochure on the Zama project.
- Reviewed project information for potential inclusion on the public Web site.
- Continued working on the construction of the dynamic model and running simulations for history match using new conditioned static realizations.
- Began preparation of a poster for the upcoming AAPG 2012 Annual Convention and Exhibition scheduled for April 22–25 in Long Beach, California.

#### **Task 16 – Characterization of the Basal Cambrian System (Wesley D. Peck)**

##### Highlights

- Continued work on the well test for DST (drill stem test) analysis.
- Continued preparations for the upcoming joint U.S. and Canada project meeting scheduled for April 18 in Regina, Saskatchewan, Canada.
- Continued work on the 3-D model for the entire U.S.–Canada project area.
- Completed review of nearly 300 North Dakota well files with respect to harvesting data for the well integrity aspect of the Basal Cambrian study.
- Began analysis of the well data for inclusion in a risk assessment matrix.

**Travel/Meetings**

- February 27 – March 2, 2012: visited Spectra's gas-processing plant and potential CO<sub>2</sub> injection site near Fort Nelson, British Columbia, Canada.
- February 28 – March 2, 2012: examined core samples at the USGS Core Research Center and Core Labs offices in Denver, Colorado.
- March 13–15, 2012: attended the NDPC Spring Social in Denver, Colorado.
- March 19–20, 2012: participated in a meeting with DOE and Spectra at NETL headquarters in Pittsburgh, Pennsylvania.
- March 21–23, 2012: presented at the Workshop of CO<sub>2</sub> Geological Storage and EOR in Mexico City, Mexico (U.S. Energy Association paid for expenses).

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