



## **Plains CO<sub>2</sub> Reduction (PCOR) Partnership Monthly Update February 1–28, 2011**

### **PHASE III ACTIVITIES**

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

##### **Highlights**

- Presented information on the PCOR Partnership at the EUEC 2011 Conference ([www.euec.com](http://www.euec.com), Energy, Utility & Environment Conference) in Phoenix, Arizona. An Energy & Environmental Research Center (EERC) booth displayed PCOR Partnership outreach materials, e.g., DVDs, atlas, etc., at the event.
- Drafted an abstract on the Deadwood Formation characterization efforts for submittal to the 10th Annual Conference on Carbon Capture & Sequestration (CCS) ([www.carbonsq.com](http://www.carbonsq.com)).
- Renewed the PennWell MAPSearch (pipeline) Premium Data License Agreement.
- Prepared numerous maps, including several for inclusion in the peer review PowerPoint presentation, base maps for the Bell Creek project, and a documentary broadcast area map.
- Continued efforts on the revised atlas (4th Edition).
- Regarding the Rival Field characterization:
  - Participated in a conference call with TAQA North Ltd. (TAQA) and continued efforts to plan a meeting in Grand Forks.
  - Received pressure data from the most recent injection well.
  - Continued locating mud logs for the horizontals.
  - Continued use of MudLog software to log core data from core photos.
  - Contacted TAQA for additional information on the 3-D seismic survey data it provided.

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

##### **Highlights**

- Met with Prairie Public Broadcasting's (PPB's) education group on February 2 and 11 to learn about its Teacher Training Institutes and the potential application to the PCOR Partnership's outreach activities for educators in the region.
- Met with the Indian Land Tenure Foundation at the EERC on February 9.
- Reviewed documentary broadcast tracking reports from 2010 provided by PPB.
- Summarized documentary broadcast data on public television for the period May 2005 – February 2011.

- Participated in the Regional Carbon Sequestration Partnership Outreach Working Group (OWG) monthly conference call on February 17. The call included a discussion of the OWG abstract submitted to the 10th Annual Conference on CCS.
- Continued efforts to create a database to more efficiently track the outreach products, including participation in meetings on February 16 and 25.
- Received and incorporated comments from Denbury Resources on the Bell Creek fact sheet (D15).
- Continued efforts as a member of the Weyburn–Midale Project Outreach Panel.

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

#### Highlights

- Continued development of the revised/updated Regulatory Roundup document.
- Attended the Texas Carbon Capture and Storage Association’s 4th Annual Preconference Workshop on CCS in Austin, Texas.
- Attended a project meeting on February 16 with Denbury Resources in Plano, Texas, where regulatory issues such as permitting, greenhouse gas reporting, and NEPA analysis were discussed.
- Plans for the next PCOR Partnership Regulatory Meeting (June 29–30) are under way. The meeting will follow the IOGCC (Interstate Oil and Gas Compact Commission) Midyear Issues Meeting in Bismarck.
- Continued development of the NEPA questionnaire for the Bell Creek project.
- Distributed log-in information for the partners-only Web site to Denbury Resources personnel.
- Participated in the Fort Nelson monthly conference call and discussed the status of permitting activities, British Columbia government participation, and plans for the upcoming risk assessment meeting in Grand Forks.

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

#### Highlights

- Bell Creek test site activities included the following:
  - Continued work on a report of the petrophysical properties and relative permeability results determined from testing representative Bell Creek outcrop samples.
  - Initiated development of a near-surface (surface waters, groundwater, and soil gas) testing plan.
  - Initiated efforts on the baseline hydrogeological work that will be documented in an upcoming deliverable report (D34).
  - Developed a plan for the resaturation of old cores (vintage ~1960s), in order to perform geochemical and geomechanical testing.
  - Submitted an abstract to the 25th International Symposium of the Society of Core Analysts scheduled for September 2011 in Austin, Texas ([www.scaweb.org/symposium\\_2011\\_callforabstracts.shtml](http://www.scaweb.org/symposium_2011_callforabstracts.shtml)).
  - Met with Denbury Resources on February 16 in Plano, Texas.

- Scheduled an appointment in mid-March to examine and evaluate Bell Creek reservoir core samples at the Texas Bureau of Economic Geology core library in Houston, Texas. Both EERC and Denbury personnel will be involved in evaluating the core.
- Scheduled three EERC personnel to travel in mid- to late March to Denbury's offices in Plano, Texas, to search through Denbury's library of Bell Creek well files.
- Fort Nelson test site activities included the following:
  - Continued petrological and geochemical analysis work using cuttings and chips from Fort Nelson reservoir and seal formations continued.
  - Met with RPS Energy to discuss the status of laboratory work being performed by Weatherford Labs.
  - Initiated preparation of a tracking checklist that will outline the work requested, work completed, and work not started.
  - Confirmed the injected gas stream chemistry for the start of cap rock integrity studies.
  - Prepared a PowerPoint presentation for the Denbury meeting based on previous studies on all proposed depositional models for the Bell Creek field.
  - Held the monthly conference call on February 24 between the EERC and the Spectra team, and updated the activity list.
  - Forwarded documents related to the experimental conditions of the ongoing EERC lab work, planned activities for core analyses, and subcontracted lab work time lines to Spectra Energy.

#### **Task 5 – Well Drilling and Completion (Steven A. Smith)**

##### Highlights

- Participated in Bell Creek project discussions with Denbury Resources on February 16, including well drilling and utilization of wellbores for MVA activities.

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

##### Highlights

- Continued preparation of D85, “Opportunities and Challenges Associated with CO<sub>2</sub> Compression and Transportation During CCS Activities” (due March 31, 2011).
- Continued preparation of value-added report entitled “Current Status of CO<sub>2</sub> Capture Technology Development and Application.”

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

##### Highlights

- Participated in project discussions with Denbury Resources at its headquarters in Plano, Texas, on February 16.

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

##### Highlights

- Attended several in-house Bell Creek project status meetings.

- Began reading about surface facilities design at an enhanced oil recovery (EOR) injection site in *Nontechnical Guide to Petroleum Geology, Exploration, Drilling, and Production* (2nd Edition) by Norman J. Hyne, Ph.D.

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

### Highlights

- Modeling staff attended Schlumberger’s Petrel Seismic Visualization and Interpretation training course in Houston.
- Continued Bell Creek site activities, including the following:
  - Finished tuning the equation of state (EOS) for the Bell Creek Field from the Pressure–volume–temperature (PVT) data.
  - Continued work on the report on the Minimum Miscibility Pressure of the Bell Creek Oil with CO<sub>2</sub>.
  - Prepared for and presented at the meeting on February 16 in Plano with Denbury Resources.
  - Continued development of a baseline soil gas and groundwater monitoring plan for the Bell Creek Field. Prepared and submitted an abstract to the 10th Annual Conference on CCS in Pittsburgh, Pennsylvania.
  - Completed a report on lab work performed on representative outcrop samples.
  - Continued preparation of the report entitled “Site Characterization, Modeling, and Monitoring Plan” (D50).
- Continued Fort Nelson site activities, including the following:
  - Continued work on the history match of the historic production of the site’s surrounding gas fields.
  - Initiated plans for a history matching meeting in Grand Forks on March 1 and 2.
  - Participated in an in-house Fort Nelson risk assessment meeting to work on the 2010 version with Nakles Consulting and EERC staff.
  - Initiated efforts on a PowerPoint presentation for the IEAGHG (IEA Greenhouse Gas R&D Programme) Modeling Network Meeting in Perth, Australia, based on work at Fort Nelson.
  - Received and began incorporating final comments from Spectra Energy on D52 entitled “Site Characterization, Modeling, and Monitoring Plan.”
  - Submitted an abstract based on D52 to the Trondheim CCS Conference scheduled for June in Norway (<http://www.sintef.no/Projectweb/TCCS-6/>).
  - Spectra Energy reviewed an abstract for submittal to the 10th Annual Conference on CCS.

## **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)**

- The project assessment report (D57) for the period October 1, 2010 – September 30, 2011, will be submitted by December 31, 2011. The report for the previous program year is available on the partners-only Web site.

## **Task 13 – Project Management (Edward N. Steadman)**

### Highlights

- Prepared two abstracts for the upcoming 10th Annual Conference on CCS in Pittsburgh ([www.carbonsq.com](http://www.carbonsq.com)) for the following “hot topics”: The U.S.–Canadian CCS Collaboration and Regional Carbon Sequestration Partnerships – Large-Scale Field Testing.
- Attended the Canadian Institute’s 5th Annual CCS Conference in Calgary.
- Attended the Basal Cambrian kickoff meeting with Alberta Innovates – Technology Futures (AITF) in Calgary.
- Initiated an extension to the subcontract with AITF.
- Met with Dave Nakles and Nick Azzolina regarding the programmatic and Fort Nelson risk assessment and received information to include in the peer review presentation.
- Continued preparation of the updated project management plan, including updating the risk management section based on recent work.
- Received an invitation to attend the next NACAP (North American Carbon Atlas Partnership) meeting scheduled for April 5 and 6 in Morgantown, West Virginia.
- Continued work on the programmatic risk assessment.
- Prepared and submitted the peer review PowerPoint presentation.
- Presented at the European CCS Demonstration Project Network meeting in Brindisi, Italy, on February 16.
- Prepared updates on both the Fort Nelson and Zama projects for the CSLF (Carbon Sequestration Leadership Forum) Storage and Monitoring Projects Interactive Workshop scheduled for February 28 – March 3, 2010, in Saudi Arabia.
- On February 23, participated in a teleconference with Spectra’s project lead in preparation for the team’s monthly conference call held February 24.
- Deliverables completed in February include the following:
  - January monthly update
  - Task 2: D15 – Bell Creek fact sheet
- Deliverables and milestones due in March include the following:
  - Task 1: D10 – Demonstration Project Reporting System Update
  - Task 2: D18 – Bell Creek Test Site PowerPoint Presentation
  - Task 2: D26 – Fort Nelson Test Site Poster
  - Task 3: D28 – Environmental Questionnaire – Bell Creek Test Site
  - Task 6: D85 – Report – Opportunities and Challenges Associated with CO<sub>2</sub> Compression and Transportation During CCS Activities
  - Task 14: M23 – Monthly WWG Conference Call Held

## **Task 14 – RCSP Water Working Group (WWG) Coordination (Charles D. Gorecki)**

### Highlights

- Continued work on the Nexus of Water and CCS – Technology Gaps document (f/k/a the roadmap document).
- Continued planning the WWG annual meeting, including selection of date and location, as well as preparation of an agenda. Tentative plans point to May 5, 2011, 1:00–5:00 p.m., to be held in conjunction with the Pittsburgh CCS conference.
- The February conference call was canceled.

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

### Highlights

- Spoke with RPS Energy regarding the wellbore integrity work and the availability of obtaining core representative of the cap rock in the system.
- Used the current version of static geological model to estimate storage capacity for the Zama F Pool.
- Applied DOE methodology for EOR to the pore volume generated from the modeling exercise, and obtained a recovery factor using historical production data.
- Also generated an estimate for the entire Zama Field using the F pool as an analogue size for the rest of the pinnacles. This evaluation will be ongoing and updated in subsequent reports.
- Received an invitation to present on the Zama project to the Second France/EU-Canada Workshop on CCS scheduled for March 30 and 31 in Paris.

## **Task 16 – Characterization of the Basal Cambrian System (Steven A. Smith)**

### Highlights

- Traveled to Calgary to participate in a technical briefing/steering committee meeting.
- Traveled to Ottawa, Canada, on February 8–11 to visit with representatives from Natural Resources Canada, Canmet Energy, and the National Research Council of Canada. Specific topics discussed included overviews of each specific organization, storage of CO<sub>2</sub> streams containing impurities, development of laboratory programs researching this topic, high-temperature and -pressure x-ray diffraction capabilities of the National Research Council, and capture technologies being investigated by Canmet. The trip also included facility tours of each organization.
- Assigned “themes” and “theme leaders” for the project and scheduled ongoing in-house meetings to discuss scheduling, budgeting, and technical aspects of the project.

### **Travel/Meetings**

- January 28 – February 6, 2011: Attended a Petrel Seismic Visualization and Interpretation software training course with Schlumberger in Houston, Texas.
- January 29 – February 5, 2011: Presented at the 14th Annual Energy, Utility, and Environment Conference in Phoenix, Arizona.
- January 30 – February 3, 2011: Attended the Canadian Institute’s 5th Annual Carbon Capture and Storage Conference in Calgary, Alberta, Canada.

- January 30 – February 3, 2011: Participated in the steering committee meeting for the basal Cambrian formation project in Calgary, Alberta, Canada.
- February 8–10, 2011: Attended the Carbon Capture and Storage Association’s 4th Annual Preconference Workshop on CCS in Austin, Texas.
- February 8–11, 2011: Attended meetings with Natural Resources Canada, National Research Council, and others to discuss potential areas of collaboration in Ottawa, Ontario, Canada.
- February 11, 2011: Traveled to PPB’s offices to discuss education outreach activities in Fargo, North Dakota.
- February 12–21, 2011: Attended a 3-day simulation software training session, entitled “CO<sub>2</sub>-Based EOR Miscible Flood,” with the Computer Modeling Group in Houston, Texas.
- February 13–18, 2011: Attended a 2-day CMOST and 1-day Wellbore Modeling in STARS simulation training sessions in Calgary, Alberta, Canada.
- February 14–20, 2011: Presented at the European CCS Demonstration Project 2011 Network Sharing Event held in Brindisi, Italy.
- February 15–17, 2011: Met with Denbury Resources at its headquarters in Plano, Texas.
- February 16 and 17, 2011: Traveled to locate a hotel and meeting space for the 2011 PCOR Partnership Annual Meeting in Denver, Colorado.
- February 19–24, 2011: Attended a Society of Petroleum Engineers Reservoir Simulation Symposium, as well as a training course on history matching, in The Woodlands, Texas.
- February 25 – March 4, 2011: Presented at the CSLF Storage Projects Interactive Workshop in Al Khobar, Saudi Arabia.
- February 28 – March 2, 2011: Attended Schlumberger’s Petrel Reservoir Engineering simulation software training in Houston, Texas.

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