



**Plains CO<sub>2</sub> Reduction (PCOR) Partnership Monthly Update**  
**November 1–30, 2010**

**PHASE III ACTIVITIES**

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

**Highlights**

- Continued characterization and modeling efforts of the Rival oil field, including:
  - Acquired data for use in the petrophysical model.
  - Began writing a background and history of the field for the Rival Field case study.
  - Began formulating a laboratory testing plan for Rival Field core work.
  - Prepared for a progress and planning meeting scheduled for December 1 with TAQA personnel in Calgary, Alberta, Canada.
- Completed initial review of the PCOR Partnership's section in the U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL) national atlas.
- Ordered a second printing (3rd Edition, Revised) of the PCOR Partnership Atlas. In the past year, approximately 750 atlases were distributed to partners and nonpartners.
- Continued planning efforts and development of ideas and new maps for a revised PCOR Partnership Atlas, 4th Edition, due next September.
- Initiated an effort to increase the number and extent of formations characterized in the Williston Basin portion of the region.
- Attended and presented at the North American Carbon Atlas Partnership (NACAP) meeting in Ottawa, Ontario, Canada, on November 2.
- In follow-up to the NACAP meeting, drafted for review and comment a 3-page summary of methodologies used for CO<sub>2</sub> storage resource capacity calculations.
- Continued efforts to update and improve the information on the Decision Support System (DSS, © 2007–2010 EERC Foundation), including:
  - Added annual meeting information.
  - Updated the home page, “Keep Me Informed” page, and Regulations section.
  - Initiated development of a new value-added tool that would allow for investigation and cross-referencing of downhole techniques used for site characterization and monitoring, verification, and accounting (MVA) activities.
- Efforts conducted as part of the continuing work at the Zama, Alberta, Canada, field site included the following:
  - Completed preliminary static geological modeling. This model will be updated as datasets are acquired from Apache Canada.

- Developed methodologies, procedures, and time lines to conduct laboratory experiments to determine mineralogical and strength changes that may occur as wellbore cements and casing materials are exposed to acid gas.
- Contacted Baker Hughes to determine the best practices for conducting a vertical seismic profiling (VSP) survey at Zama.

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

### Highlights

- Promotional efforts continued regarding the documentary entitled “Global Energy and Carbon: Tracking Our Footprint” including:
  - On November 24, a DVD was mailed to each partner not in attendance at the annual meeting.
  - Efforts continued to prepare streaming video of the documentary for upload to the PCOR Partnership Web site.
- Efforts continued on the preparation of a fact sheet for the Bell Creek test site.
- Continued efforts on tracking outreach materials and activities, including:
  - Reviewed database options (create or buy off-the-shelf) to improve efficiency and tracking.
  - Discussed options with Prairie Public Broadcasting (PPB) for tracking and encouraging broadcast of the documentaries.
  - Prepared an in-house tracking report to make information more readily available.
- Continued investigation and assessment of social media usage (Facebook, Twitter, Flickr, etc.) and its potential use in PCOR Partnership outreach activities.
- Participated in several in-house meetings regarding plans for the next version of the atlas.

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

### Highlights

- Continued participation in activities associated with the Interstate Oil and Gas Compact Commission (IOGCC), including:
  - Participated in a conference call of the IOGCC Pipeline Transportation Task Force (PTTF) Executive Committee on November 12.
  - Reviewed and commented on the PTTF report.
  - Attended the IOGCC 2010 Annual Meeting in Tucson, Arizona (<http://www.iogcc.state.ok.us/>), and participated in an informal breakfast meeting with regulators in attendance from the PCOR Partnership region.
- Completed review of Craig Hart’s paper on Phase III of the Regional Carbon Sequestration Partnership (RCSP) Program, including financial, legal, and regulatory barriers.
- Participated in a conference call with North Dakota’s CCS Task Force on November 8.
- Participated in an internal meeting to discuss pipeline regulatory issues and began development of a regulatory outline to be included in D85 entitled “Opportunities and Challenges Associated with CO<sub>2</sub> Compression and Transportation During CCS Activities.”

- Participated on November 22 in a U.S. Environmental Protection Agency (EPA) stakeholder call to discuss finalization of two rules related to the capture and sequestration of carbon dioxide.
- Began review of the new EPA rules that aim to protect drinking water (entitled “Final Rule for Federal Requirements under the Underground Injection Control [UIC] Program for Carbon Dioxide [CO<sub>2</sub>] Geologic Sequestration [GS] Wells”) and to track the amount of CO<sub>2</sub> sequestered from facilities that carry out geologic sequestration (entitled “Mandatory Reporting of Greenhouse Gases from Petroleum and Natural Gas Systems [Subpart W] and from Carbon Dioxide Injection and Geologic Sequestration [Subpart RR]”).
- Initiated plans to attend the Ground Water Protection Council’s “Underground Injection Control: THE National Ground Water Protection Program” 2011 Conference scheduled for January 24–26 in Austin, Texas.
- Accepted an invitation to review a manuscript entitled “North Dakota Lignite and Pittsburgh Bituminous Coal: A Comparative Analysis in Application to CO<sub>2</sub> Sequestration” for possible publication in the International Journal of Oil, Gas and Coal Technology (IJOGCT).
- Reviewed the performance period and scope of work for the environmental questionnaire completed for the Fort Nelson test site.
- Initiated preparation of a NEPA for additional characterization and laboratory work under the PCOR Partnership program.

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

##### Highlights

- Continued laboratory characterization of outcrop samples from the Muddy Formation, the reservoir formation for Bell Creek.
- Initiated new laboratory experiments to determine the effects of injection on reservoir rocks. Samples obtained are in the form of cuttings retrieved from the Fort Nelson exploratory well (C-61-E) and will be exposed at low-temperature/high-pressure and high-temperature/low-pressure conditions.
- Traveled to Calgary, Alberta, Canada, to participate in a quarterly Fort Nelson project meeting with Spectra Energy personnel scheduled for December 2.
- Presented on November 8 at the Petroleum Technology Alliance Canada (PTAC) Conference entitled “Towards Clean Energy Production – CO<sub>2</sub> Management for EOR and CCS” in Calgary, Alberta, Canada.

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

##### Highlights

- On November 22, provided comments on the working draft of the NETL Best Practices Manual for Drilling, Well Installation, Permitting, Operations, Mitigation and Closure in Deep Geologic Formations.

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

### Highlights

- Completed performance of statistics (such as the percentages for each CO<sub>2</sub> source type) on the recently updated master sources spreadsheet.
- Continued preparation of D85, “Opportunities and Challenges Associated with CO<sub>2</sub> Compression and Transportation During CCS Activities” (due March 31, 2011).
- Continued a search for information on the breakdown of generation sources of electrical power (e.g., coal-fired, wind, hydro, natural gas-fired, etc.) used (as opposed to generated) in each state.
- Drafted a summary of the annual meeting roundtable discussion by combining all of the notes taken during the discussion.
- Responded to a partner’s request for a summary of capture technologies used in each of the RCSP Phase III demonstration projects.
- Prepared a table showing all of the sources of the PCOR Partnership master CO<sub>2</sub> sources spreadsheet.

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

### Highlights

- Continued discussions with Phase III demonstration partners.
- Continued efforts toward securing a cost-share agreement with Denbury Resources.

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

### Highlights

- On November 18, the PCOR Partnership program manager reassigned leadership of this task.
- The new task lead reviewed objectives and activities for this task and endeavored to eliminate potential duplication of effort with existing Task 6 activities.

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

### Highlights

- Bell Creek site activities continued, including the following:
  - Initiated searches for well data in the area surrounding the Bell Creek field.
  - Contacted TGS Geological Products and Services and the Montana Board of Oil and Gas to determine what data are publicly available. Unfortunately, the Montana Board cannot provide electronic data; i.e., data retrieval would require travel and photocopying.
  - Continued setup of the relative permeability apparatus which soon will be used to test Bell Creek plugs.
  - Created a secure file transfer portal (FTP) site for data transfer between Denbury Resources and the EERC.
  - Denbury Resources continued compilation of data for transmittal as well as review of cost-share documentation forms.
  - Coordinated a meeting on December 16 with personnel experienced in Bell Creek Field capillary pressures.

- Added all the unitized field outlines and digitized them in the permeability barriers in Petrel software.
- Fort Nelson site activities continued, including the following:
  - Continued development of the history-matching activities for the Fort Nelson June 2010 model.
  - Continued installation of software on the High-Performance Cluster. The computer cluster will greatly accelerate simulation processing time.
  - Continued setup of the relative permeability apparatus which will be used to test Fort Nelson plugs.
  - Reviewed progress on the subcontracted work with RPS Energy Canada.
  - Continued working on the rough history match of the Clark Lake “A” Pool to get more accurate pressure profiling across the reef front.
  - Prepared for the quarterly progress meeting with Spectra Energy scheduled for December 2, in Calgary, Alberta, Canada.
  - Reviewed potential training courses for modeling team members to learn Petrel’s Fracture Modeling to improve accuracy in modeling fractured reservoirs such as those located at Fort Nelson.
  - Under consideration is an invitation to present on the Fort Nelson modeling work at the IEA Greenhouse Gas R&D Programme’s modeling network meeting scheduled for April 2011 in Perth, Australia.
- Risk management activities continued, including the following:
  - Participated in the RCSP Sim/Risk Working Group conference call on November 2.
  - Developed a listing of data needs for the second-round Fort Nelson risk assessment.
  - Prepared a draft Fort Nelson risk assessment “path forward” document.

#### **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

- Began preparation of the next project assessment report due December 31, 2010.

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

##### Highlights

- Held a task leader meeting on November 19 during which the following topics were discussed:
  - Recap of the IOGCC annual meeting.
  - Review of the draft agenda and schedule for upcoming RCSP peer review meeting.

- Updates on the Fort Nelson and Bell Creek projects.
- Status of deliverables.
- Continued to review various methodologies for the development of a PCOR Partnership programmatic risk assessment.
- Continued efforts on the update to the project management plan.
- Notified the partnership about two new members: British Columbia Oil and Gas Commission and Aquistore.
- Notified the partnership about a DOE Fossil Energy Techline posted online regarding the Lignite field validation project and also provided a link to the Lignite Regional Technology Implementation Plan located on the DSS.
- Mailed a Global Energy and Carbon: Tracking Our Footprint DVD to each partner contact unable to attend the annual meeting in October.
- Mailed a flash drive bearing all of the annual meeting presentations, workshop results, and panel summary to every partner contact as well as to the annual meeting speakers, panelists, and guests.
- Provided information upon request from DOE NETL on pinnacle reefs and plume stabilization.
- Discussed potential field safety training opportunities with EERC's safety specialist in preparation for future work at the Bell Creek site.
- Provided cost-share preparation information to Denbury Resources.
- Provided information regarding the PCOR Partnership's Canadian partners and collaborations upon request from DOE.
- Submitted a presentation for the EUEC 2011: Energy, Utility, & Environmental Conference scheduled for January 31 – February 2 in Phoenix, Arizona (<http://www.euec.com/index.aspx>).
- Submitted an abstract to the 2011 Rocky Mountain Section – AAPG 60th Annual Meeting scheduled for next June in Cheyenne, Wyoming ([www.rms-aapg.org/2011\\_meeting/](http://www.rms-aapg.org/2011_meeting/)).
- Participated in the U.S.–Canada Clean Energy Dialogue: North American Knowledge Sharing Arrangement (NAKSA) meeting hosted by DOE and held in Columbus, Ohio.
- Deliverables and milestones completed in November:
  - October monthly update.
- Deliverables and milestones due in December:
  - November monthly update.
  - Task 12: D57 – project assessment annual report.
  - Task 14: M23 – monthly water working group (WWG) conference call.

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

##### Highlights

- The conference call for November was waived.
- Distributed the October conference call minutes on November 18.
- Continued preparation of the road map document and requested comments from the WWG on November 19.
- Submitted an abstract to the 2011 AWRA Spring Specialty Conference on *Managing Climate Change Impacts on Water Resources: Adaptation Issues, Options & Strategies*

scheduled for April 18–20, 2011 in Baltimore, Maryland  
([www.awra.org/meetings/Baltimore2011Call/](http://www.awra.org/meetings/Baltimore2011Call/)).

- Began working on a journal article based on the white paper on the nexus of water and CCS.

### **Travel/Meetings**

- October 29 – November 3, 2010: Presented at the 2010 Geological Society of America Annual Meeting held in Denver, Colorado.
- November 1–3, 2010: Participated in the NACAP meeting held in Ottawa, Ontario, Canada.
- November 7–9, 2010: Presented at the PTAC conference held in Calgary, Alberta, Canada.
- November 14–18, 2010: Participated in the IOGCC 2010 Annual Meeting held in Tucson, Arizona.
- November 29 – December 1, 2010: Participated in the U.S.–Canada Clean Energy Dialogue: NAKSA meeting held in Columbus, Ohio.
- November 29 – December 3, 2010: Participated in the Fort Nelson site quarterly progress meeting in Calgary, Alberta, Canada.