



Plains CO₂ Reduction (PCOR) Partnership Energy & Environmental Research Center (EERC)

Plains CO₂ Reduction (PCOR) Partnership Monthly Update August 1–31, 2018

PHASE III ACTIVITIES

Task 1 – Regional Characterization (Wesley D. Peck)

This task ended in Quarter 1 – Budget Period (BP) 5, Year 11 (March 2018).

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

Highlights

- Submitted a value-added report entitled "Household Energy and Carbon Web Pages Report" for the period of April 1 – June 30, 2018, for review on August 1, 2018.
- Submitted the outreach paper for the 14th International Conference on Greenhouse Gas Control Technologies (GHGT-14) entitled "PCOR Partnership Outreach: An Evolving Regional Capability Based on RCSP [Regional Carbon Sequestration Partnership] Outreach Best Practices," as noted in Task 13. Worked on preparation of the poster.
- Participated in the Outreach Working Group (OWG) conference call on August 16, 2018. Discussed the status and path forward for the OWG final report.
- Continued writing text and revising layout for the draft updated Phase II Zama fact sheet.
- Continued internal discussions and work on the planned PCOR Partnership public Web site technical upgrade design, including the following:
 - Worked on sections of the Coal: Engine of Change page.
 - Converted video clips for Web site streaming.

Task 3 – Permitting and NEPA (National Environmental Policy Act) Compliance (Charles D. Gorecki)

This task ended in Quarter 1 – BP5, Year 11 (March 2018).

Task 4 – Site Characterization and Modeling (Charles D. Gorecki)

This task ended in Quarter 1 – BP5, Year 10 (March 2017).

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

This task ended in Quarter 3 – BP4, Year 7 (June 2014).

Task 6 – Infrastructure Development (Melanie D. Jensen)

This task ended in Quarter 1 – BP5, Year 11 (March 2018).

Task 7 – CO₂ Procurement (John A. Harju)

This task ended in Quarter 4 – BP4, Year 6 (September 2013).

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

This task ended in Quarter 4 – BP4, Year 8 (September 2015).

Task 9 – Operational Monitoring and Modeling (John A. Hamling and Larry J. Pekot)

This task ended in Quarter 1 – BP5, Year 11 (March 2018).

Task 10 – Site Closure (John A. Hamling)

Highlights

- Submitted a memo on August 10, 2018, regarding official updated quantities of CO₂ purchased for injection and stored at Bell Creek. As of July 31, 2018, the most recent month of record, 5.944 million tonnes of total gas (composition of approximately 98% CO₂) has been purchased for injection into the Bell Creek Field, equating to an estimated **5.876 million tonnes of CO₂ stored**. At the end of BP4, 2.979 million tonnes of CO₂ had been stored.
- Traveled August 14–16, 2018, to the Bell Creek field office site to discuss site closure plans with a Denbury Onshore (Denbury) representative. Disconnected the geophone cable and satellite dish and prepared mobile office trailer and passive seismic recording shack for decommissioning. Received go ahead from Denbury to abandon in place (i.e., relinquish operations and ownership to Denbury) the 04-03 OW (observation well) location and soil gas profile stations. This provides continued access for future project needs as opposed to removal and reclamation.
- Worked on text to accompany Milestone (M) 61 (Site Closure for Bell Creek Test Site Completed), which will occur at the end of Phase III (December 31, 2018).

Task 11 – Postinjection Monitoring and Modeling (John A. Hamling and Larry J. Pekot)

This task ended in Quarter 1 – BP5, Year 11 (March 2018).

Task 12 – Project Assessment (Loreal V. Heebink)

This task ended in Quarter 1 – BP5, Year 11 (March 2018).

Task 13 – Project Management (Charles D. Gorecki)

Highlights

- Presented “Plains CO₂ Reduction (PCOR) Partnership” at the U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL) Mastering the Subsurface Through Technology Innovation, Partnerships, and Collaboration: Carbon Storage and Oil and Natural Gas Technologies Review Meeting held August 13–16, 2018, in Pittsburgh, Pennsylvania.
- Held a PCOR Partnership Technical Advisory Board (TAB) Webinar on August 22, 2018. Six of the nine TAB members attended. Activities included the following:
 - Discussed PCOR Partnership Membership Meeting agenda.
 - Discussed and solicited input on final report key messages.
 - Provided the TAB with an update on the status of the *International Journal of Greenhouse Gas Control* (IJGGC) special issue and other journal manuscripts in preparation.
- Submitted a manuscript entitled “A Comparison of Crude Oil Hydrocarbon Mobilization by Vaporization Gas Drive into Methane, Ethane, and Carbon Dioxide at 15.6 MPa and 42°C” to *Fuel*.
- Completed peer review process of the virtual special issue (VSI) of IJGGC entitled PCOR Partnership Assessment of CO₂ Geologic Storage Associated with Enhanced Oil Recovery. Seven new papers have been accepted, added to the three previously accepted by the journal. The VSI should be available online prior to the end of 2018. The paper titles are as follows:
 - “CO₂ Storage Associated with CO₂ Enhanced Oil Recovery: A Statistical Analysis of Historical Operations” – previously published
 - “How Green is My Oil? A Detailed Look at Greenhouse Gas Accounting For CO₂-Enhanced Oil Recovery (CO₂-EOR) Sites” – previously published
 - “Quantifying CO₂ Storage Efficiency Factors in Hydrocarbon Reservoirs: A Detailed Look at CO₂-Enhanced Oil Recovery” – in publication
 - “Effects of Gas Relative Permeability Hysteresis and Solubility on Associated CO₂ Storage Performance” – new
 - “Evaluation of Recycle Gas Injection on CO₂ Enhanced Oil Recovery and Associated Storage Performance” – new
 - “Implementing Adaptive Scaling and Dynamic Well-Tie for Quantitative 4-D Seismic Evaluation of a Reservoir Subjected to CO₂ Enhanced Oil Recovery and Associated Storage” – new
 - “Lessons Learned and Best Practices Derived from Environmental Monitoring at a Large-Scale CO₂ Injection Project” – new
 - “Life Cycle Analysis: A Case Study of Associated Storage with Enhanced Oil Recovery” – new
 - “Statistical Analysis of Pulsed-Neutron Well Logs (PNLs) in Monitoring Injection Carbon Dioxide (CO₂)” – new
 - “Laboratory Determination of Oil Draining CO₂ Hysteresis Effects During Multiple Floods of a Conventional Clastic Oil Reservoir” – new
- Continued writing text and making modifications to Deliverable (D) 62 – Final Report.
- Submitted papers for GHGT-14. Continued preparation of presentations and posters for the conference. The titles include the following:

- “Passive Microseismic Monitoring of CO₂ EOR and Associated Storage Using a Downhole Array in a Noisy Subsurface Environment” (presentation – continued development of content)
- “An Improved Numerical Modeling and Simulation Study of the Aquistore CO₂ Storage Project” (presentation – submitted draft to Petroleum Technology Research Centre for review)
- “Successes and Lessons Learned from 15 years of the PCOR Partnership” (presentation – continued development of content)
- “Determining the Long-Term Fate of CO₂ Storage Associated with an Enhanced Oil Recovery Project” (poster – submitted draft layout to graphics department for preparation)
- “PCOR Partnership Outreach: An Evolving Regional Capability Based on RCSP Outreach Best Practices” (poster – continued development of content)
- “Viability of InSAR as a Monitoring Tool in Challenging Terrain: Bell Creek, Montana” (poster – continued development of content)
- “Evaluation of Measured Differences in Liquid Versus Gas Permeability and Identification of Potential Causes” (poster – continued development of content)
- Worked on value-added documents to submit to journals for consideration.
- Continued planning for the 2018 PCOR Partnership Membership Meeting scheduled to be held September 18–19, 2018, in Washington, D.C., including the following:
 - Sent several e-mail blasts, including the following:
 - ♦ On August 2, 2018, with a registration reminder.
 - ♦ On August 16, 2018, noting the agenda is available and a reminder of the hotel block deadline.
 - ♦ On August 21, 2018, noting a hotel block extension to August 22, 2018.
 - ♦ On August 29, 2018, announcing U.S. Senator John Hoeven as the keynote speaker, describing the expert panels for each day of the meeting, and noting the evening event.
 - Discussed meeting room and materials logistics.
 - Received additional speaker and panel participant confirmations.
 - Updated the agenda on the Web page (www.undeerc.org/PCOR18).
 - Held planning meetings on August 21 and 27, 2018. Topics included firming up the agenda, interrogatory hearing format and panel replacements, transportation to Washington, D.C., and calling partners.
 - Prepared meeting materials, including agenda, name tags, tent cards, and welcome letter for agenda.
- Continued to evaluate data to determine appropriate content to upload into the DOE NETL Energy Data eXchange (EDX). Continued discussions of plans to upload PCOR Partnership data to EDX and a pathway for long-term data management, including the following:
 - Continued evaluation and preparation of Phase II data.
 - Began Phase III data upload on August 15, 2018. Steady progress in the uploading process continued with review of the data. Revised ReadMe files and metadata associated with data.
- Held a task leader meeting August 23, 2018. The focus of discussion was activities leading to the close out of PCOR Partnership Phase III, including the final report, journal articles including the special issue of IJGGC, conference papers, site closure, and the 2018 PCOR Partnership Membership Meeting.
- Completed reporting in August:

- July monthly update

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

This task ended in Quarter 1 – BP5, Year 11 (March 2018).

Task 15 – Further Characterization of the Zama Acid Gas EOR, CO₂ Storage, and Monitoring Project (Charles D. Gorecki)

This task ended in Quarter 2 – BP4, Year 7 (February 2014).

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

This task ended in Quarter 2 – BP4, Year 7 (March 2014).

Travel/Meetings

- August 12–17, 2018: traveled to Pittsburgh, Pennsylvania, to attend and present at the Mastering the Subsurface Through Technology Innovation, Partnerships, and Collaboration: Carbon Storage & Oil National Gas Technologies Review Meeting.
- August 14–16, 2018: traveled to Miles City, Montana, for the Bell Creek Project.

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