

FORT NELSON TEST SITE – SIMULATION REPORT

Plains CO₂ Reduction (PCOR) Partnership Phase III Task 9 – Deliverable D67 Update 1

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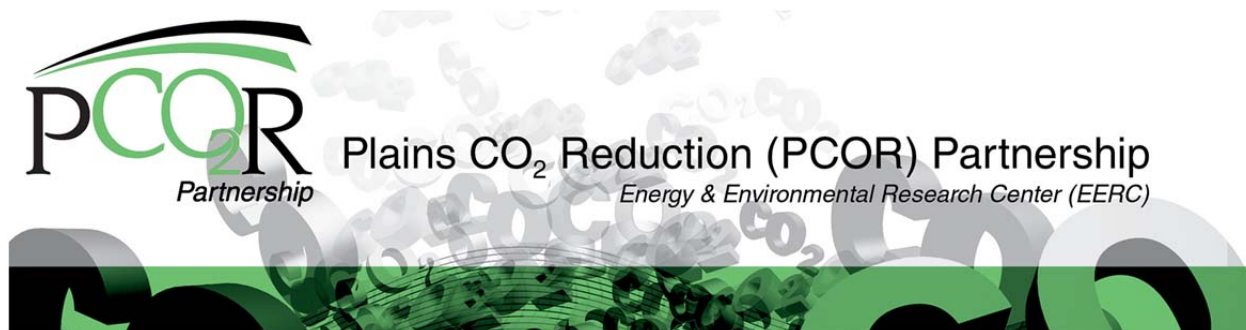
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FORT NELSON TEST SITE – SIMULATION REPORT (UPDATE 1)

BACKGROUND

Spectra Energy Transmission (SET) is working with the Energy & Environmental Research Center (EERC)-led Plains CO₂ Reduction (PCOR) Partnership to determine the feasibility of long-term storage of sour carbon dioxide (CO₂) in a saline formation near Fort Nelson, British Columbia, Canada. The EERC prepared a simulation report in August 2011 detailing the results of a simulation-based feasibility study conducted for the Fort Nelson site. The investigation scenarios included injection of 50 and 100 million tonnes of sour CO₂ over periods of 25 and 50 years, respectively. These injection scenarios were followed by 75 and 50 years of postinjection monitoring of the CO₂ plume for a total of 100 years. The potential for CO₂ plume migration to the adjacent gas pools (Clarke Lake Slave Points A and B) was also evaluated. Key conclusions were reached and recommendations made.

The initial Fort Nelson Test Site – Simulation Report was provided to SET via e-mail on September 2, 2011, and hand-delivered on a flash drive on September 13, 2011, during the PCOR Partnership Annual Meeting in Denver, Colorado. SET has been busy compiling data in order to make a successful business case for a commercial-scale CO₂ injection at Fort Nelson. Information provided in the 2011 simulation report was used to help document SET's injection initiative and move it through the SET approval and funding process.

To further confirm the evaluations presented in the initial study, the EERC suggested the following recommendations in August 2011 to be included in any future modeling and simulation studies:

- Collection of more geologic information in the C-47-E area by means of drilling, coring, and logging of a new well, and acquisition of a new 3-D seismic survey over the predicted CO₂ plume footprint.
- Integration of various physical phenomena such as geochemical reactions, geomechanical behaviors, and thermal effects into the dynamic model to comprehensively understand the sink–seal system for more reliable predictions.

SET's review of the 2011 simulation report continues. SET and the EERC are constructing an updated geologic model; however, no new results are ready at this time, and no new numerical simulations have been performed since the last report.

NEXT UPDATE: JULY 2013

The next update to the simulation report is scheduled for July 31, 2013. SET management personnel are currently reviewing plans for winter 2012–2013 activities. The current plan will likely include 1) gathering more geologic information in the injection region and 2) identifying various physical phenomena such as geochemical reactions, geomechanical behaviors, and geothermal effects that can be integrated into the dynamic model. The 2013 report will include any changes to the 2011 report, along with an updated geologic model with accompanying numerical simulations that will include multiphase flow, geochemical reactions, and geomechanical modeling.