

**AAPG HEDBERG CONFERENCE**  
**"Geological Carbon Sequestration: Prediction and Verification"**  
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**Second Iteration: Re-Assessing CCS Project Risk Using New Data**

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As part of the monitoring, verification, and accounting (MVA) kickoff meeting for the Illinois Basin - Decatur Project, we evaluated risks to project values that include safety, research, and image / public opinion, as well as successfully storing CO<sub>2</sub>. Starting with a list of features, events, and processes (FEPs), 28 experts in six working groups identified risks, and characterized the “Likelihood” (L) and “Severity” (S) of negative impact. L and S are scored on five-point scales and the product L\*S is identified as the quantity “Risk”. Evaluations were made both by group consensus and by later independent scoring, yielding ranked risks and allowing prioritization of risk-reduction actions.

Site-characterization uncertainties involving specific geologic parameters can rank high among risk-bearing factors, because such uncertainties limit our ability to fully characterize a site’s ability to receive and retain the intended mass of CO<sub>2</sub>; to predict its fate; and to optimize designs for well construction, injection operations, and acquisition of baseline and monitoring data. Lastly, if data are sparse in relation to scenarios that have a high potential for public concern, this can limit the project’s ability to communicate that in-place preventive measures are indeed reliable.

No FEPs were judged to represent risks ranked high enough to prevent the site development from going forward; that is, project experts believed that all identified risks could be lowered to acceptable levels, through acting to reduce Likelihood and/or Severity of negative impact. After the large-group risk identification and evaluation process, a smaller group of project leaders identified and assigned risk-reduction actions.

The results of initial risk evaluation for the Illinois Basin - Decatur Project were used to influence data acquisition plans for site characterization and the MVA program. Plans affected included those for sidewall and whole cores, wireline logs, downhole geophones, and well engineering factors such as casing points. The MVA program addresses risks related to groundwater contamination by developing an extensive groundwater monitoring program and the use of verification wells and dedicated seismic monitoring wells to monitor CO<sub>2</sub> plume migration within and above the injection reservoir.

It is expected that by early summer of 2009 – a little in advance of the Hedberg Conference – the injection well will have been drilled, core samples and wireline logs acquired and analyzed, and geologic uncertainties re-evaluated. The presentation will: address how the newly acquired data affect uncertainties and thereby risk reassessment; indicate the potential higher-risk scenarios that remain to be addressed; and suggest what further data acquisition will serve to minimize risk.