A NEW RISK MANAGEMENT METHODOLOGY FOR LARGE-SCALE CO_2 STORAGE: APPLICATION TO SPECTRA ENERGY'S PROPOSED FORT NELSON CARBON CAPTURE AND STORAGE PROJECT

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ABSTRACT

To move carbon capture and storage (CCS) forward and assure stakeholders that CO_2 can be geologically stored safely and reliably, it should be demonstrated that the risks associated with a specific CCS project can be managed throughout the life of that project. With an anticipated storage volume of 1.3 to 2 Mt/yr of CO_2, the proposed Fort Nelson CCS project operated by Spectra Energy is among the most promising industrial-scale CCS projects being considered in North America. This paper describes the application of an original, CCS-specific risk management methodology to the subsurface technical risks of Spectra Energy's Fort Nelson CCS project:

- Phase 1: Establishment of a risk management policy utilizing input from key project stakeholders to help define a project-specific metric system for risk estimation.
- Phase 2: First risk assessment based on physical models, first simulations, and expert judgment, including risk mapping and evaluation of high-criticality risks.
- Phase 3: Risk treatment plan and first recommendations for a risk-based monitoring, verification, and accounting plan based on the results of the risk assessment.

The successful application of this original risk management framework to the Fort Nelson CCS project would support the idea that a risk management framework, including technical risk assessment, can be implemented for large-scale CCS projects. It would provide an invaluable decision-making and communication tool to support project approval, communication with stakeholders, and the demonstration of safety and reliability essential for the success of CCS as a viable climate change mitigation option.