Carbon Sequestration leadership forum
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TECHNICAL GROUP

Planning Document:
Technical Challenges for Conversion of CO_2-EOR to CCS Task Force

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TECHNICAL CHALLENGES FOR CONVERSION OF CO2-EOR TO CCS TASK FORCE

Note by the Secretariat

Background

At the 4th CSLF Ministerial Meeting, at Beijing, China in September 2011, the Technical Group approved a new multi-year Action Plan. "Technical Challenges for Conversion of CO_2-EOR to CCS" is one of the twelve Actions that comprise the Action Plan, and Canada has volunteered to lead a new Task Force to examine the technical challenges in the transition from CO_2-EOR operations to CO_2 storage operations. This paper is a Planning Document for the new Task Force that describes its mandate, timeframe, and expected outcomes.

Action Requested

The Technical Group is requested to review and approve this Planning Document.

Planning Document for Technical Group Action Plan #7: Technical Challenges for Conversion of CO_2-EOR to CCS

Background

Since its inception in 2003, the Technical Group of the Carbon Sequestration Leadership Forum (CSLF) has focused its efforts on the facilitation of information and knowledge dissemination regarding research, development, demonstration and deployment of effective, low-cost carbon capture and storage (CCS) technologies as a viable option to reduce greenhouse gas emissions in an effort to combat the effects of global warming. On the CO_2 capture side, efforts have focused on a variety of capture technologies applicable to power and industrial plants that use or process fossil fuels, while CO_2 storage technologies focused primarily on geological sequestration. Although deep saline formations have been assessed as having the largest storage potential, possessing also the advantage that they are present worldwide in all sedimentary basins, oil and gas reservoirs have been recognized as having significant storage potential, possessing the advantages that their storage properties have been demonstrated by the presence of oil and/or natural gas and that they are better known (understood) as a result of exploration and production activities.

A particular sub-class of CO_2 storage in hydrocarbon reservoirs is CO_2 storage in enhanced oil recovery (CO_2-EOR) operations where CO_2 is used in tertiary oil recovery to produce additional oil. From a CO_2 storage point of view, this technology presents the economic advantage of reducing CO_2 storage costs by producing oil, which has a well-defined market value. In fact, CO_2-EOR is a form of CO_2 utilization that has not been sufficiently explored to date. In today's economic and financial environment where a market signal regarding CO_2 storage is lacking, this makes CO_2 storage in CO_2-EOR operations particularly attractive. However, although there are currently more than 100 CO_2-EOR operations in the world, only the CO_2-EOR Weyburn-Midale project in Canada has been identified and recognized as a CCS project. Although not supported by any systematic study to date, it seems that there are technical and policy reasons as to why there is a dearth of CO_2-EOR projects whose purpose is also CO_2 storage.

Mandate

At the CSLF Ministerial meeting in Beijing, China (September 19-23, 2011) the CSLF Charter was amended to, among other things, include CO_2 utilization technologies as an important aspect of a CO_2 emission reduction strategy, in addition to carbon capture and storage technologies that have been the main focus of CSLF efforts since its inception in 2003. On the geological-storage side, the focus of CO_2 Utilization is on the use of CO_2 in CO_2-EOR operations. In response, the CSLF Technical Group included in its Five-Year Action Plan (2011-2016) an action item to examine the technical challenges in the transition from CO_2-EOR operations to CO_2 storage operations (Action Plan #7). At the Beijing meeting it was proposed to set up a new task force under the direction of the CSLF Technical Group to examine and report on these challenges. At the September 2011 joint meeting of the Technical and Policy Groups in Beijing, China, the Five-Year Action Plan, including the formation of the task force to implement Action Plan #7, was approved.

The Mandate of the CSLF Task Force on "Technical Challenges for Conversion of CO_2-EOR to CCS" is to review, compile and report on technical challenges that may constitute a barrier to the broad use of CO_2 for enhanced oil recovery and/or for the conversion of CO_2-EOR operations to CO_2 storage operations. There are recognized economic and policy barriers and

challenges, such as the high price of CO_2, the lack of market value on stored CO_2, and the interest of the operators of CO_2-EOR operations in maximizing oil production and minimizing CO_2 storage. These economic and policy barriers and challenges are outside the scope of the Task Force, which will focus on purely technical challenges.

Outcome and Timeframe

The Task Force on "Technical Challenges for Conversion of CO_2-EOR to CCS" will produce a report that will be submitted for review and approval by the CSLF Technical Group and will be then posted on the open-access CSLF web site.

The proposed timeframe for the Task Force activities is as follows:

- Set up and announcement of Task Force membership at the meeting of the CSLF Technical Group in Bergen, Norway, on June 12, 2012.
- Production of a list of subjects to be covered and a preliminary Table of Contents for the report by the CSLF meeting scheduled for the week of October 22, 2012 in Perth, Australia
- Production of a preliminary draft of the report by the time of the meeting of the CSLF Technical Group in the spring of 2013 (date and place to be decided)
- Dissemination of the Draft Final Report by August 2013 to members of the CSLF Technical Group for review and comments
- Delivery of the Final Report at the CSLF meeting in the fall of 2013 (date and place to be decided)
- Decision about continuation of the Task Force beyond 2013 at the CSLF meeting in the fall of 2013.

Membership

Canada has agreed to lead or co-lead this Task Force (Task Force Chairman: Dr. Stefan Bachu, e-mail: stefan.bachu@albertainnovates.ca) and has invited CSLF member countries that have identified this Action Plan item as a high priority to nominate experts in the field to participate as subject-matter experts on the Task Force.