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TECHNICAL GROUP

Summaries of Projects Nominated for CSLF Recognition

Note by the Secretariat

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SUMMARIES OF PROJECTS NOMINATED FOR CSLF RECOGNITION

Note by the Secretariat

Background

A meeting of the Technical Group of the Carbon Sequestration Leadership Forum was held on 20-21 January 2004 in Rome, Italy. At that meeting, a total of thirteen projects were presented for CSLF recognition. Ten of those projects were submitted for evaluation by an interim task force established by the Technical Group, consisting of the Technical Group Chair and Vice Chairs, the CSLF Secretariat, and Technical Group delegates from Australia, India and Japan. This task force screened the ten projects against the CSLF Project Recommendation Guidelines and determined that they met all Guidelines. The CSLF Technical Group then reviewed these projects and approved all of them for recognition.

Action Requested

The Policy Group is requested to approve these projects for recognition.

Conclusion

The Policy Group is invited to note in its minutes of 13 September 2004 that:

"The Policy Group approved for Ministerial recognition the following collaborative projects nominated by CSLF Members:

- ARC Enhanced Coal-Bed Methane Recovery Project (Canada, United States and United Kingdom)
- CANMET Energy Technology Centre (CETC) R&D Oxyfuel Combustion for CO_2 Capture (Canada and United States)
- CASTOR (European Commission and Norway)
- CO_2 Capture Project, Phase II (United Kingdom, Norway, Italy, and United States)
- CO_2 Separation from Pressurized Gas Stream (Japan and United States)
- CO_2SINK (European Commission and Germany)
- CO2STORE (Norway and European Commission)
- Frio Project (United States and Australia)
- ITC CO_2 Capture with Chemical Solvents (Canada and United States)
- Weyburn II CO_2 Storage Project (United States, Canada, and Japan)

Summaries of Projects Nominated for CSLF Recognition

ARC Enhanced Coal-Bed Methane Recovery Project

Nominators: Canada (lead), United States, and United Kingdom

This is a pilot-scale project (3 test wells) located in Alberta, Canada, that will evaluate a previously-developed process of CO_2 injection into deep coal beds for simultaneous sequestration of the CO_2 and liberation (and subsequent capture) of coal-bed methane. This will be an extension of a proof-of-concept phase that was undertaken in 1997 and process evaluation done at a single-well micropilot facility in 1999-2001. The project could extend to the year 2010. The goal of the project is to demonstrate, from both economic and environmental criteria, the overall feasibility of coal-bed methane production from simultaneous CO_2 sequestration in deep unmineable coal seams.

CANMET Energy Technology Centre (CETC) R&D Oxyfuel Combustion for CO_2 Capture

Nominators: Canada (lead) and United States

This is a pilot-scale project (0.3 megawatt-thermal) located near Ottawa, Ontario, Canada, that will demonstrate oxyfuel combustion technology with CO_2 capture. The CO_2 gas stream will be greater than 95% purity, suitable for pipeline transport and use in enhanced oil recovery, enhanced coal-bed methane recovery and/or storage in geologic media. The pilot unit will have a CO_2 purification and compression stage that will deliver the gas at wellhead pressures. The goal of the project is to develop energy-efficient integrated multi-pollutant control, waste management and CO_2 capture technologies for combustion-based applications and to provide information for the scale-up, design and operation of large scale industrial and utility plants based on the oxyfuel concept.

CASTOR

Nominators: European Commission (lead) and Norway

This is a pilot-scale project that will attempt to validate, from process, economic, legal, and public acceptance perspectives, post-combustion capture and storage of CO_2. The project will separate CO_2 from a post-combustion gas stream for sequestration and will perform risk assessment studies for four new European storage sites: Casablanca (Mediterranean Sea - depleted oil field), Snohvit (Norway - saline formation), Lindbach (Austria - depleted gas field) and K12b (Netherlands - depleted gas field), three of which will commence injection during the lifetime of the project. Overall, about 16 million euros has been committed to the project, with about 8 million euros coming from the EC. The project began in February 2004 and will run for about five years, with operation of a pilot plant starting about 2006. The goal of the project is to achieve a major cost reduction in post-combustion per-ton CO_2 capture cost.

CO_2 Capture Project (CCP) – Phase 2

Nominators: United Kingdom (lead), Norway, Italy, and United States

This is a pilot-scale project that will continue the development of new technologies to reduce the cost of CO_2 separation, capture, and geologic storage from combustion sources such as turbines, heaters and boilers. CCP is an international public private R&D

partnership with public participation by the U.S., EC, and Norway in Phase 1. Industry partners from the U.K., U.S., Italy, Norway, Netherlands, and Canada have signed up to Phase 2; new international partners and further government partnerships are being established. Phase 1, which began in 2000, identified major cost reduction potential for capture and advanced the understanding of geologic storage via a broad program. Phase 2 begins in 2004 and will run for about four years; the budget is about $24 million. The overall goals of the project are to develop breakthrough technologies that will reduce the cost of CO_2 capture and to demonstrate safe and effective geologic storage of CO_2. The Phase 2 focus areas will be capture cost reduction, storage risk assessment, monitoring, well integrity, and networking best practice.

CO_2 Separation from Pressurized Gas Stream

Nominators: Japan (lead) and United States

This is a small-scale project that will evaluate processes and economics for CO_2 separation from pressurized gas streams. Testing will utilize membranes developed in Japan at a test facility near Pittsburgh, Pennsylvania, in the United States. The proposed project, which began in 2003 and is scheduled for completion in 2006, will evaluate primary promising new membranes under atmospheric pressure. The next stage is to improve the performance of the membranes for CO_2 removal from the fuel gas product of coal gasification and other gas streams under high pressure.

CO_2SINK

Nominators: European Commission (lead) and Germany

This is a pilot-scale project that will test and evaluate CO_2 capture and storage at an existing natural gas storage facility near Berlin, Germany, and in a deeper land-based saline formation. A key part of the project will be monitoring the migration characteristics of the stored CO_2. Overall, about 15 million euros has been committed to the project, with about 9 million euros coming from the EC. The project will begin in 2004 and run for about five years. The goal of the project is to advance understanding of the science and practical processes involved in underground storage of CO_2 and to provide real case experience for use in development of future regulatory frameworks for geologic storage of CO_2.

CO2STORE

Nominators: Norway (lead) and European Commission

This large-scale project is a follow-on to the current Sleipner project, which involves injection of about one million metric tons per year of CO_2 into an off-shore saline formation beneath the North Sea. This next phase will involve continuation of monitoring of the field to track CO_2 migration (involving a seismic survey) and additional studies to gain further knowledge of geochemistry and dissolution processes. There will also be several preliminary feasibility studies for additional geologic settings (in Wales, Germany, Denmark, and Norway) of future candidate project sites. The goal of the project is to develop sound scientific-based methodologies for the assessment, planning, and long-term monitoring of underground CO_2 storage, both onshore and offshore.

Frio Project

Nominators: United States (lead) and Australia

This is a pilot-scale project located near Houston, Texas, in the United States that will demonstrate CO_2 sequestration in an on-shore underground saline formation. The project involves injecting relatively small quantities of CO_2 into the formation and monitoring its movement for several years thereafter. The goals of the project are to verify conceptual models of CO_2 sequestration in such geologic structures, demonstrate that no adverse health, safety or environmental effects will occur from this kind of sequestration, demonstrate field-test monitoring methods, and develop experience necessary for larger-scale CO_2 injection experiments.

ITC CO_2 Capture with Chemical Solvents

Nominators: Canada (lead) and United States

This is a pilot-scale project (4 metric tons per day CO_2 capture) located on a flue gas slipstream of a lignite-fueled power plant near Regina, Saskatchewan, Canada, that will demonstrate CO_2 capture using chemical solvents. Supporting activities include bench- and lab-scale units that will be used to optimize the entire process using improved solvents and contactors, develop fundamental knowledge of solvent stability, and minimize energy usage requirements. More than $5 million has so far been spent on construction of the pilot facility at the project site and another $3 million on a pilot plant (1 metric ton per day CO_2 capture) at the University of Regina where additional testing is taking place. The goal of the project is to develop improved cost-effective technologies for separation and capture of CO_2 from flue gas. Current research is demonstrating significantly reduced regeneration energy requirements.

Weyburn II CO_2 Storage Project

Nominators: United States & Canada (leads) and Japan

This is a commercial-scale project that will utilize CO_2 for enhanced oil recovery at a Canadian oil field. The first phase began in 2000 and is scheduled to conclude in June 2004. Phase II will involve transport of 95 million cubic feet per day of 95% pure CO_2 from a North Dakota coal gasification facility in the United States through a 320-kilometer pipeline to an oil field in southern Saskatchewan, Canada, where it will be injected into the field for enhanced oil recovery. The project will include monitoring of CO_2 migration within the oil field. The project will begin in late 2004 and run for about four years. The goal of the project is to determine the performance and undertake a thorough risk assessment of CO_2 storage in conjunction with its use in enhanced oil recovery.

Note: "Lead Nominator" in this usage indicates the CSLF Member which proposed the project at the January 2004 CSLF meeting in Rome, Italy.

The Carbon Sequestration Leadership Forum (CSLF) is a framework for international cooperation in the research and development for the separation, capture, transportation and storage of carbon dioxide. The CSLF seeks to make carbon capture and storage commercially competitive and environmentally safe. The CSLF Charter does not create any legally binding obligations by, between or among the governments and entities that are Members of the CSLF or that participate in CSLF activities, and each CSLF Member's participation in CSLF activities is subject to its laws, regulations, availability of funds, personnel and other resources of the respective Member.