

## **ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies**

**Region:** Headquarters

**Title:** Sub-Seabed Geologic Carbon Dioxide Sequestration Worldwide Synthesis and Best Management Practices

**Period of Performance:** FY 2010 – FY 2013

**Total Cost:** \$497,000

**Conducting Organization:** University of Texas at Austin, Bureau of Economic Geology

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### **Description:**

#### Background:

Under the authority of the Outer Continental Shelf Lands Act (OCSLA), the Department of the Interior (DOI), Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), has authority for managing the energy and natural resources on 1.7 billion acres of the Outer Continental Shelf (OCS). Section 8(p)(1)(C) of the OCSLA (43 U.S.C. 1337)(p)(1)(C)), as amended by the Energy Policy Act of 2005, gave the BOEMRE the authority to issue leases, easements, and rights-of-way for activities that “produce or support production, transportation, or transmission of energy from sources other than oil and gas”. In certain circumstances, sub-seabed CO<sub>2</sub> sequestration falls under this authority, including CO<sub>2</sub> produced as by-product of the production of electricity from a coal-fired power plant. An example of one such potential project is PURGeN One, an onshore 400-Megawatt coal-fueled integrated gasification combined cycle (IGCC) electric-generating and manufacturing facility that will be constructed in Linden, NJ. The CO<sub>2</sub> emissions from the new plant and potentially neighboring industrial operations, totaling up to approximately 6 million tons annually, would be captured and transported via a submarine pipeline to injection wells 70 miles off the Atlantic coast for sequestration approximately 8,000 feet beneath the seabed.

The BOEMRE is developing proposed regulations to implement this authority for sub-seabed CO<sub>2</sub> sequestration in the OCS, which will cover the BOEMRE’s “cradle to grave” authority for OCS activities related to energy and mineral resources. To support regulation development, the BOEMRE is conducting research to develop best management practices (BMPs) for CO<sub>2</sub> sub-seabed sequestration on the OCS.

#### Objectives:

The purpose of this study is to conduct a worldwide literature synthesis of and develop Best Management Practices (BMPs) for CO<sub>2</sub> transport and sequestration projects on the OCS.

#### Methods:

A worldwide literature survey will be conducted to review and analyze the current literature base and other material from domestic and international private, academic, non-profit, and governmental sources regarding sub-seabed geologic CO<sub>2</sub> transport and sequestration. Information may include regulations, guidelines, management frameworks, best management practices, “lessons-learned”, etc. from offshore and onshore geologic carbon sequestration projects and programs that may translate to the offshore environment. The synthesis will

leverage concurrent efforts underway by the Department of Energy, the Environmental Protection Agency, European Union, International Energy Agency, World Resources Institute, etc. The synthesis will be utilized to develop BMPs that will address all aspects of sub-seabed geologic CO<sub>2</sub> transport and sequestration projects.

Topics to contain in the synthesis and discussion include:

- Describe how the BOEMRE can apply these BMPs to the offshore environment and if not, why.
- Identify where gaps exist in the information and practices.
- Present an adaptive management methodology to identify gaps and a framework with indicators and criteria to develop mitigations and best management practices where these gaps are present.
- The synthesis and best management practices must address the following:
  - Site selection and characterization
  - Data collection requirements to support geological, geophysical, modeling, and risk-analysis information needs
  - CO<sub>2</sub> injection protocols
  - Operational and facility monitoring, mitigation, verification, and accounting
  - Environmental impact monitoring, mitigation, verification, and accounting
  - Facility and CO<sub>2</sub> plume footprint and conflict-of-use
  - Emergency response/Contingency plan
  - Inspection and auditing
  - Reporting requirements
  - Facility and well closure
  - Long-term monitoring and liability
  - Bonding

**Current Status:** Ongoing

**Final Report End:** End of FY 2013

**Revised Date:** February 17, 2011