

## PRESS RELEASE

# Definitive report published to address safe subsurface storage of CO<sub>2</sub>

Oil exploration and production technology holds the key to secure CO<sub>2</sub> storage as part of large scale deployment of CO<sub>2</sub> Capture & Storage (CCS), according to a report published by the CO<sub>2</sub> Capture Project (CCP). The report provides a definitive treatment of the CO<sub>2</sub> storage subsurface technical issues and how oil and gas experience technology and protocols are available now to address them.

The report draws on the shared expertise of the CCP participants, research of more than 50 academic institutions, and feedback from leading environmental non-governmental organizations (NGOs).

Entitled “*A Technical Basis for Carbon Dioxide Storage*”, the 86-page report, edited by Cal Cooper (formerly of ConocoPhillips), provides guidance on how to assess and manage industrial-scale CO<sub>2</sub> Geological Storage (CGS) projects through appropriate site assessment, operational parameters and monitoring.

Aimed at technical and non-technical stakeholders, it provides key lessons and experience that could support the deployment of CCS at industrial scale by enabling decision makers to draw upon more than 50 years of subsurface expertise from the oil and gas industry. The Intergovernmental Panel on Climate Change believes CCS could contribute 15-55% of the cumulative mitigation effort until 2100, while the International Energy Agency found that the cost of containing climate change would be 70% higher without CCS.

Scott Imbus, CCP Storage Team Leader, said: “The report – and the ongoing work of CCP - is the result of a remarkable collaboration between industry, government and academia in pursuit of the goal of finding real world, industry scale solutions to the issue of carbon management. Understanding secure storage of CO<sub>2</sub> underground is critical to advancing CCS deployment, even as work continues to resolve other related issues such as carbon capture cost, regulatory frameworks and market incentives”.

There are four main topical areas covered in the report: site selection; well construction and integrity; monitoring programs; and development, operations and closure. Key findings include:

- **Site Selection** – The most effective way to ensure permanent safe storage is to choose sites of sufficient depth (deeper than 800m where CO<sub>2</sub> can be injected efficiently in its dense phase) with adequate capacity and an overlying sealing system to ensure containment of fluids. With well-chosen sites, CO<sub>2</sub> will be efficiently stored while greatly reducing the risk of operational and containment problems.

CO<sub>2</sub> Capture Project participant organisations



- **Well Construction and Integrity** – Wells must have functional barriers that provide isolation between geological storage intervals and from drinking water and the near surface environment. The well integrity study example included illustrates that good drilling and cementing practices are more important than specific materials used in well construction.
- **Monitoring Programs** – A wide array of monitoring technologies have been successfully applied by the oil and gas industry to understand fluid movement in the subsurface [e.g. geological structures below the surface]. These techniques are readily adaptable to CO<sub>2</sub> storage. The challenge is to select to most appropriate techniques to apply based on site specifics and level of risk.
- **Development, Operations and Closure** – As in hydrocarbon extraction, the progression of a CO<sub>2</sub> project from site assessment to closure will be accompanied by learning that will greatly improve its efficiency and risk profile. With operational and monitoring data, anomalous events can be detected and intervention applied. At the time of project closure, a thorough understanding of the geology of the system and fluid movement within it will form the basis for the future behaviour of CO<sub>2</sub> and longer term needs for monitoring and intervention contingencies.

The CCP is a technical authority on CCS, formed in 2000, with the aim of facilitating the sharing of expertise to advance the development of next-generation capture technologies, transport and the development of key aspects of CO<sub>2</sub> geological storage, including a certification framework for CO<sub>2</sub> Geological Storage.

Scott Imbus, CCP Storage Team Leader continued:

“With this report, the oil and gas industry is transferring decades of experience and nine years of technology development to the fledgling industry of CCS. We hope this will provide the critical boost to turn the potential of CCS into a practical reality.

“*A Technical Basis for Carbon Dioxide Storage*” is not just based on scientific and academic research and CCS demonstration projects but also the considerable expertise and operational data from analogous oil and gas operations by all of the CCP’s member companies. The findings further validate that, with the right site selection, CO<sub>2</sub> can be – and is – safely stored in geological formations, and that the expertise available to select and manage storage sites is available now.”

The report can be downloaded from [www.co2captureproject.com](http://www.co2captureproject.com).

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## Notes to Editors

CO<sub>2</sub> Capture and Geological Storage involves capturing the carbon from fossil fuels before, during or after combustion and permanently storing it in deep geological formations (such as depleted oil/gas fields and deep saline formations). With fossil fuels predicted to be a continuing source of the world’s energy and emissions in the short- to medium-term, CCS is an essential ‘bridging’ technology to help address the challenge of reducing overall CO<sub>2</sub> emissions now while the world moves to renewable energy sources.

## About the CO<sub>2</sub> Capture Project

- Membership includes
  - Funding industry members: BP, Chevron, ConocoPhillips, Eni, Petrobras, Shell, StatoilHydro, Suncor and Associate Members: EPRI and Repsol YPF
  - CCP2 worked with government members: European Commission, Norwegian Research Council, US Department of Energy and UK DTI
- Two phases of CCP have now been completed:
  - Phase 1 (2000-2004)
  - Phase 2 (2004-2009)

Phase 2 of the CCP's work continues the development of the most promising capture and storage technologies for CCS identified in Phase 1. The CCP2 program has focused on the advancement of cost-effective, next-generation capture technologies and on ensuring the framework for the CO<sub>2</sub> Geological Storage, monitoring and long-term verification tools and processes.

During this phase, CCP has leveraged its combined expertise in the oil and gas industry and has worked in collaboration with government, industry, over 50 world-leading academic institutions and leading environmental groups to demonstrate the science and steps required to deliver secure CO<sub>2</sub> geological storage

- CCP1 (2000-2004) published a collection of authoritative technical findings in 2005 (Carbon Dioxide Capture for Storage in Deep Geologic Formations – Results from the CO<sub>2</sub> Capture Project volume 1, (David C. Thomas) and volume 2 (Sally M. Benson)). CCP1 identified technologies that had the potential to deliver significant reductions in the cost of CO<sub>2</sub> capture and identified next generation capture technologies that promised to deliver further performance and cost improvements. CCP1 also pioneered a risk-based approach for geological site selection, operation and closure; and developed new CO<sub>2</sub> monitoring tools and the science behind CO<sub>2</sub> geological storage
- CCP Phase 3 (further technology development and demonstration) began in 2009 and will conclude in 2013.
- The industry and government organisations in the CCP jointly fund and actively participate in the program; sharing and contributing their own internal technical resources, as well as engaging the world's premier technologists, scientists, economists, policy makers and academics from universities, technology companies and research institutions across the globe to investigate and develop realistic and cost-effective technical CCS solutions..

For more information go to: <http://www.co2captureproject.org/aboutus.html>

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