Carbon Sequestration leadership forum
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Plans and Status
TASK FORCE ON OFFSHORE CO_2-EOR

Enabling Large-scale CCS using Offshore CO_2 Utilization and Storage Infrastructure Developments

Lars Ingolf Eide, Norway

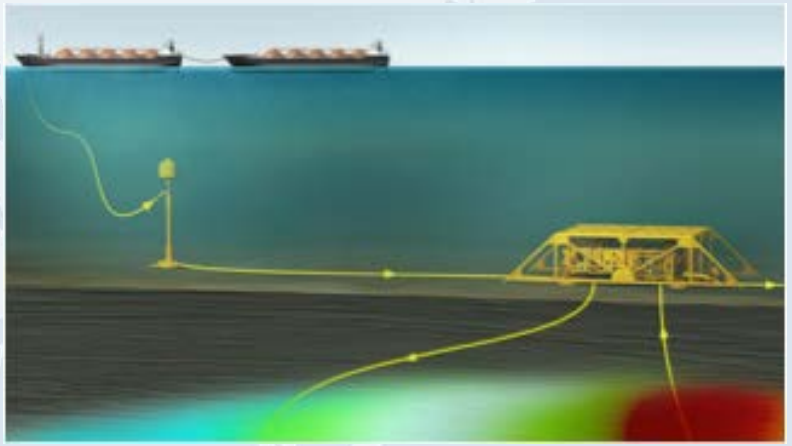
Technical Group Meeting

London, UK

June 28, 2016

Purpose of Task Force

- The purpose of the Task Force is to highlight
  - Main differences between offshore and onshore CO_2-EOR
  - Issues that are different between offshore CO_2-EOR and pure offshore CO_2 storage
  - Technical solutions that will benefit both pure offshore CO_2 storage and offshore CO_2-EOR.



Courtesy: AkerSolutions

Background

- **June 2015, Regina, Saskatchewan, Canada:**
  - Working group formed to develop additional Action Plan activities
- **November 2015, Riyadh, Saudi Arabia**
  - Offshore CO_2-EOR selected as topic for a new task force

Planned Timeline of the Task Force

- *November 2015: Task Force decided at Riyadh Meeting.*
- *March, 2016: Membership Established/Finalized.*
- *April 20, 2016: First informal meeting with limited attendance, Austin, Texas, USA*
- *June 28, 2016: Outline of Report Drafted and contributors established, CSLF Technical Group Meeting, London.*
- *October 04, 2016: Progress/Status report at CSLF Technical Group Meeting, Tokyo.*
- *Spring 2017: First draft of report completed and presented at mid-year CSLF Technical Group Meeting*
- *Fall, 2017: Task Force Report finalized and report findings and conclusions to Technical Group at Ministerial meeting*

Task Force Members

Member state	Persons
Brazil	1
Canada	1
IEAGHG	1
Norway	4
USA	1

Contributors that will strengthen the Task Force:

- TNO, the Netherlands
- SCCS, UK

May also seek other contributions, e.g. from more oil companies

Report Outline

TABLE OF CONTENTS - DRAFT

EXECUTIVE SUMMARY (~ 3 pages; lead Norway)

TABLE OF CONTENTS
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1. INTRODUCTION (~ 1.5 pages; lead Norway)
- Background
- Task Force purpose and mandate
- Objective and structure of report

Report Outline

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2. REVIEW OF OFFSHORE CO_2-EOR STORAGE (Current status) (~ 10 pages)

- CO_2-EOR – how it works (~2 pages; lead Norway)
- Global potential (~ 1.5 pages; lead Norway)
- History of offshore CO_2-EOR projects (~ 1.5 pages; lead Norway)
- Insights from LULA project (World's first Offshore CO_2-EOR project) (~ 4 pages; lead Brazil)

3. FUTURE POTENTIAL FOR OFFSHORE CO_2-EOR (~ 8 pages; lead Norway)

- Oil fields amenable to CO_2-EOR
- Use of late-life oilfield infrastructure
- Residual oil zone potential (ROZ)
- Enhanced Gas Recovery (input from Netherland, TNO – K12-B?)
- CO_2-EOR on oilfield satellite projects

Report Outline

4. EMERGING TECHNICAL SOLUTIONS FOR OFFSHORE STORAGE AND CO_2-EOR (~ 10 pages; lead Norway)

- Topside solutions
- Subsea solutions
- Novel capture and separation technology
- Novel well technology
- Offshore offloading options
- Using CO_2 foam (input from Arne Graue)

5. CO_2 SUPPLY CHAIN ISSUES **(**~ 5 pages**)**

- CO_2 quality and characteristics
- Considerations when choosing Transport Methods
- Status and challenges Pipelines
- Status and challenges Ships

6. DEVELOPMENT OF INFRASTRUCTURES AND CCS HUBS **(**~ 5 pages; lead Norway**)**

- Gullfaks and/or Sleipner case studies (lead Norway)
- Korean case study
- Initiating new offshore transport systems

Report Outline

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7. REGULATORY REQUIREMENTS FOR OFFSHORE CO_2 UTILIZATION AND STORAGE (~ 3 pages; lead IEAGHG)
- Differences between frameworks for storage and EOR
- How regulations transition might be achieved
- Risk analysis

8. MONITORING, VERIFICATION AND ASSESSMENT TOOLS FOR OFFSHORE CO_2-EOR (~ 4 pages; lead USA)
- Differences between MVA for storage and EOR
- How the transition from EOR to storage might be handled

9. RECOMMENDATIONS FOR OVERCOMING BARRIERS EOR (~ 3 pages; lead Norway)
- Barriers for new Offshore CO_2-EOR projects
- Barriers for initiating new Offshore CO_2 Utilization and Storage hubs
- Financial and regulatory aspects

10. SUMMARY AND CONCLUSIONS (~ 4 pages; lead Norway, Lars Ingolf Eide)

11. REFERENCES (Lead Norway, Lars Ingolf Eide)