IMPACTS Information Workshop GHGT

October 7th, 2014, 14:15-15:55

Summary by Marit Mazzetti, SINTEF ER

IMPACTS GOAL: To develop the CO₂ quality knowledge base required for defining norms and regulations to ensure safe and reliable design, construction and operation of CO₂ pipelines and injection equipment, and safe long-term geological storage of CO₂

An IMPACTS informational workshop was held during the GHGT 12 meeting in Austin on October 7^{th} , 2014. Marit Mazzetti gave an overview presentation of IMPACTS. Marie Bysveen also from SINTEF gave an overview of the EERA CCS project. Then all the work packages gave a presentation Jacob Stang from SINTEF represented WP1 talking about impact of impurities in CO_2 transport. And Sebastian Fischer from GFZ showed results from the important $CO_2/N2$ injection experiments at Ketzin.

Filip Neele presented the work to be performed in WP3 as that has just now started. There was great interest in the techno economic assessment and the tools that are under development in WP3. The techno-economic tool aims to study the relation between CO_2 quality and the cost of constructing and operating a CCS system (including capture, transport and storage).

There was also a very interesting guest lecture by Rebecca Hollins from CO_2 Global, USA. As Texas has the longest experience with operating CO_2 pipelines in the world, it was interesting to learn from the US Experience of impact of impurities in CO_2 pipelines.

The US has an extensive network of CO_2 pipelines as can be seen from the picture from Dr. Hollis's presentation shown below. The US pipelines are regulated by the US Department of Transportation. The CO_2 pipelines are not hazardous. A 90% molar purity is required for supercritical. Pressure rating is 2-3000 psig, about 3 times that of natural gas pipelines.

The standard in the US has been CO_2 for use in EOR. The CO_2 quality is therefore all about corrosion and MMP (Minimum Miscibility Pressure) which impacts total oil recovered and project valuation. The CO_2 is set to 95% purity. The nitrogen is limited to 4% as it usually has a detrimental impact on MMP depending on reservoir depth and conditions.

Oxygen is set at 10 ppm max. It is a major concern for the field operator. It needs to be better evaluated to assess impact on both the reservoir and sub-surface corrosion/metallurgy. There is a H_2S requirement set at 10-200ppm (max.). It is a safety issue. It can be re-injected however.

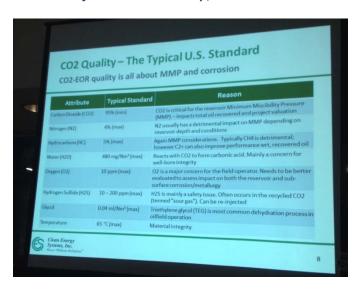
Points brought up for further consideration was:

- There is extensive experience with CO_2 for EOR, however there is little compatibility with this and the requirements for storage in Deep Saline Formations (DSF)
 - o DSF is more related to criteria for environment and safe drinking water
- There also remains challenges for defining CO_2 quality criteria with various capture technologies that require differing downstream CO_2 processing and clean-up.

Overall it was an interesting workshop with great interaction and discussions among the participants.



IMPACTS Information workshop, GHGT12



Summary of the US Standard for CO2 Quality by Rebecca Hollins, Clean Energy Systems, USA

Impacts Informational Workshop Programme

14:15-14:30: Welcome and Introduction to the IMPACTS project

Marit Mazzetti, SINTEF

14:30-14:40: The EERA CCS project

Marie Bysveen, SINTEF

14:40-15:00: EOR requirements for CO₂ quality and composition- Experience from US Projects *Rebecca Hollis, Clean Energy Systems*

15:00-15:15: Impact of impurities on CO₂ transport

Jacob Stang, SINTEF

15:15-15:30: Results from CO₂/N₂ injection experiment

Sebastian Fischer, GFZ

15:30-15:45 Techno-economic evaluation in Impacts

Filip Neele, TNO

15:45-15:55: Discussion and Wrap-Up