Geophysical Research Abstracts,
Vol. 11, EGU2009-13724, 2009
EGU General Assembly 2009

Status Report on the First European on-shore CO Storage Site at Ketzin (Germany)

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The CO2SINK (CO2 Storage by Injection into a Natural Saline Aquifer at Ketzin) integrated project aims to advance the understanding of the science and practical processes involved in underground storage of CO2 to reduce emissions of greenhouse gases to the atmosphere. The consortium running this EU project consists of 18 partners from universities, research institutes and industry out of 9 European countries (www.co2sink.org). It is the first demonstration project for large scale on-shore CO2 storage in Europe. The storage site near the town of Ketzin, close to Berlin in Germany, includes industrial land and infrastructure which make it suitable as a testing site for underground injection of CO2 into a deep saline aquifer. The operation of the CO2 underground storage is regulated under German law according to the legislation of mining from the state of Brandenburg. From March to September 2007 one injection well and two observation wells were drilled to a depth of 750 m to 800 m and completed with “smart” casings at a distance of 50 m to 100 m from each other. The reservoir characterization was done by cutting and core analysis of the three wells, petrophysical well logs and 3D-seismics. The Triassic Stuttgart formation consists of siltstones and sandstones, interbedded by mudstones, deposited in a fluvial environment. The target formation in 600 - 700 m depth is 80 m thick with sand channels measuring up to 20 m. At the depth of CO2 injection the in situ temperature of the formation is around 35 °C. Hydraulic tests revealed formation productivities of around 0.04 m3 day-1 kPa-1 and 0.06 m3 day-1 kPa-1, respectively. Based on the thickness of the more permeable zone of the formation this calculates to permeabilities between 40 and 80 mD. CO2 - a byproduct from H2-refinery - is used for the first injection phase at the Ketzin site. The injection of CO2 started in June 2008 and is intended to last up to two years. The CO2 is injected as supercritical fluid, but due to reservoir P/T conditions the CO2 will transform into a gaseous state during migration in the reservoir. In April 09 about 15.000 t of CO2will be injected which is about 25Arrival of CO2 at the first observation well was monitored by the GMS sensor two weeks after start of injection while an amount of about 500t CO2 had been injected. Breakthrough to the second observation well is awaited, but hydraulic tests have shown that flow boundary may delay or hinder arrival of CO2. During injection several repeats of resistivity tomography were successful in monitoring migration of CO2. In April 2009 results from 10 month of storage operation will be presented.