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Meeting Paper



**The Mass Transfer Processes
Intensification and Improvement
of Caverns Configuration Formation
at the Construction of Underground
Gas Storages in Rock Salt**

by

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Spring 1998 Meeting
New Orleans, Louisiana, USA
April 19-22, 1998

Abstract

Greater intensity of mass-transfer processes and favorable cavity shaping conditions are essential when underground storage is built in rock salt by means of salt dissolvent through drilled wells.

Traditional schemes for configuring cavities by rock salt dissolvent by water fed through wells were analyzed. Given the limited thickness of salt deposits (normally bedded fields) and with regard to limitations concerning the solvent feed rate (80 – 100 m³/h or less), improvements of traditional technologies will be essential for construction of large cavities with appropriate geometry and under reasonable schedules.

The report addresses mass-transfer stimulation techniques applicable to storage construction in rock salt, they center on submerged steams and solvent rotation in a cavity.

Appropriate shaping of underground cavities is achieved by feeding the solvent to cavity bottom where submerged jets or solvent rotation in the cavity are maintained.

Results of commercial underground storage construction using the submerged jet technology are documented in the paper.

In addition, experimental results are highlighted. They relate to rock salt dissolution by water brought to rotation by means of a cylinder-shaped head revolving at controlled speed in a cylinder cavity.

The experimental data has enabled to derive an analytical expression for mass-transfer coefficient depending on internal cylinder rotational speed and Taylor number.