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MEETING
PAPER



Solution Mining and Cavern Storage in Bedded Salts of Ontario

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Abstract:

This paper provides an overview of the geology of Ontario salt formations and the solution mining industry; the development and strategic significance of petrochemical storage caverns and an evaluation of potential future trends in the utilization of the salt caverns.

In Ontario salt occurs in the subsurface at depths ranging from 300 to 700 metres below the surface within the rock strata known as the Salina Group. The Salina Group is divided into eight units with salt occurring in four of these units; the A2, B, D, and F units. The total combined salt thickness in these four units is up to 215 metres. The B salt unit has the widest distribution of these salt units in Southwestern Ontario.

Salt was first discovered in Ontario in 1866 during drilling of an exploratory oil well. Since then, a major industry has developed dealing with solution mining of the salt, and the use of salt solution mined caverns for storage of petrochemicals. There are four major salt solution mining operations extracting approximately 1.6 million tonnes annually. Beyond solution mining of salt, the salt caverns provide good containers for light hydrocarbons and petrochemicals. There are seventy-one active petrochemical storage caverns with a storage capacity of 3.9 million cubic metres.

The solution-mined caverns provide effective storage containers from environmental, safety, and economic perspectives. Products currently stored include petroleum products such as liquefied petroleum gas, ethylene, ethane, propane, butane and pentane. The salt formation at the depths encountered in the area allow for storage of high pressure and high volume petrochemicals. The utilization of salt solution mined caverns provides an opportunity to reuse a natural resource for storage of hydrocarbons, air and other inert materials.

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