

**THE USE OF SOLVENT RECIRCULATION AT TARGET  
CAVERN LEACHING FOR HORIZONTAL CAVITY  
CREATION AND QUALITY BRINE OUTPUT.**

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**Abstract**

The target cavern on vertical well is developed to create the horizontal cavern for gaseous and liquid hydrocarbons storage. At the same time, it is necessary to produce the brine with appropriate concentration to pump it into reservoir bed for oil extraction stimulation.

When leaching the preparatory cavity five meters in height for the vertical target cavern, the average temperature of brine withdrawn in the first cycle of recirculation was 8°C. The rock temperature at the depth of the cavity was 9°C. The temperature of brine withdrawn from the cavity under conditions being considered varied in a range from 3°C to 14°C during the cycles of recirculation.

The minimum temperature of brine withdrawn from the cavity was +3°C. The average dissolution rate coefficient for rock salt core samples at low temperature (+3°C) was 0.0344 m/h, which is 1.75 times less than under standard conditions at a temperature of 20°C.

The construction of the initial preparatory cavity in rock salt has been carried out with the repeated recirculation of solvent. Upon its treatment the construction brine was pumped into the reservoir bed to intensify oil withdrawal.

**Key words: recirculation, target cavern, rock salt, solution mining, well, oil-bearing field, vertical-horizontal well, horizontal cavity.**