BLANKETLESS SOLUTION-MINING OF SALT CAVERNS

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Abstract

The technology for construction of caverns in rock salt by solution-mining through wells which does not involve any blanketing material to control the process of cavern development is considered. This technology improves significantly the construction efficiency as compared with the conventional technologies.

The available technologies for construction of salt caverns incorporate, as a rule, the formation of a cavern of design shape with the help of a blanketing material. Oil products or compressed gases are used as blankets.

The blanketless technology of cavern construction is intended to exclude the artificial protective layer (blanket) that covers the salt cavity ceiling and accelerate the process of developing a cavern of stable shape.

The blanketless solution mining technology was used in the gas-condensate field to construct a cavern for utilization of purge gases from development wells. The cavern having been constructed is of cylindrical form with a cupola roof and an insignificant asymmetry in the south-north direction.

The use of the blanketless technology for constructing the salt cavern allows one to use the natural relationships between the mass-transfer parameters as the cavern height increases with a constant rate. In this case the water flow reduces approximately by 20%, the quantity of nonstandard brine withdrawn onto the surface decreases by 20%, the environmental impact weakens, and the savings achieve 15% of the estimated cost of the cavern (without allowance for its commissioning ahead of a time).

Key words: **rock salt, well, solution mining, blanket, cavern, brine, sonar**