RESEARCH ON IMPROVED SALT SOLUTION METHODS

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SUMMARY

The Paper presents some of the research results under the Joint Yugoslav-U.S.A. Project JF-748 on improved methods of salt solution by boreholes, based on experiments being performed in the Tusanj Salt Mine, Tuzla, Yugoslavia.

INTRODUCTION

Within the Agreement on Scientific - Technological Cooperation between Yugoslavia and the U.S.A., a joint project on improved methods of controlled salt solution by boreholes, without terrain subsidence, was established in 1987. The Tuzla Mining Institute is in charge of implementation of the Project from the Yugoslav side, and the U.S. Bureau of Mines, from the American side. To improve salt solution method without terrain subsidence is of a great significance for Yugoslav mining industry, since a several hundred years of salt exploitation in a Yugoslav town of over 100.000 inhabitants has completely ruined its center, being located over the salt deposit.

Exploitation of the Tuzla salt deposit by boreholes (salt wells) from the ground surface has been going on since the Old Roman and Turkish times. Under the rule of Austria-Hungary, an industrial exploitation with pumps installed into the salt wells was introduced in 1880. Salt solution was done by ground water circulation towards the bottom of the salt wells. Ground water flows could not be controlled and the whole method of exploitation was, therefore, named "method of uncontrolled salt solution".

After the Second World War, the production of brine by this method increased continually, causing land subsidence and severe damage to the town of Tuzla. Maximum vertical subsidence in the center of the exploitation area has reached as much as 12.3 m in the period from 1914, when the first measurements were made, up to 1990, which is probably a world record of land subsidence.