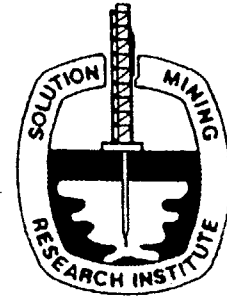


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**MEETING  
PAPER**



**Application of Seismic Surface  
Method to the Determination of  
Uncontrolled Water Flow Directions  
in Underground Melting of Native  
Sulphur Deposits**

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## Abstract

This paper shows the results of seismic research on some problems of sulphur in-situ mining.

The difficulties during exploitation were mainly connected with the lack of detailed information on the structure and tectonics of deposit and overburden strata. This kind of information could be obtained by the help of High Resolution seismic method.

Before the field measurements we constructed seismogeological model and calculated the synthetic seismograms. Then we have established field techniques parameters and conducted measurements on the few interesting places according to the technological needs of mine.

It is observed a good correlation between the state of the exploited deposit and quality of reflections on seismic records.

The use of seismic method to determine the range of subsidence provoked by well mining of sulphur is presented. It is very important to undertake the measurements before exploitation, because the comparison of the seismic sections before and during exploitation creates the possibility to determine the process of changing structure of the deposit and overburden strata and using this information for technological purposes. This kind of „feedback” is very important for surface and drinking water reservoirs protection during exploitation process.

Another problem in the area of High Resolution seismic applications was the possibility of determination the source of uncontrolled flows of technological water. The water saturated zones are observed on seismic record as a zone without reflections and with decay of seismic energy. The information from few seismic profiles allows to construct the seismic map with situation of water saturated zones between damaged well and place with technological water on surface.

Two examples of the seismic investigation conducted on the well mining of sulphur area are presented. Both are connected with the danger to main road on the surface caused by technological water uncontrolled flow.