

Introducing SEISMOSAL® - Revolutionary Method of Prospecting for Salt ATS Electro-Seismic Mapping of Salt Deposits of Swiss Salines at Riburg, Switzerland

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Abstract

In March 2016, ATS Group approached Salt Partners with a proposal to test the ATS electro-seismic technology over some known salt deposits. The ATS electro-seismic technology facilitates mapping of geological structures, determination of their hydro-geological properties and 3D modelling of the results.

Salt Partners are active in the field of salt production and processing. It includes consultancy concerning feasibility of exploitation of salt and brine deposits. This requires drilling and core sampling, but the number of boreholes can be reduced if the extent of the deposit is determined, for example, by seismic exploration. The ATS electro-seismic method appears to be faster, more precise and cheaper, and therefore Salt Partners adopt it for their work.

In April 2016, Salt Partners approached Swiss Salines with the request to permit electro-seismic mapping of the salt deposit located to the north of the Riburg saltworks. The ATS electro-seismic mapping was performed on 22.6.16 by Yannick Schauwecker and Vladimir M. Sedivy of Salt Partners. Erica Sedivy was shooting pictures. The required equipment consisted of a GPS camera, 250 mm diameter metal plate, 2 metal electrodes, stereo recorder with wires and a sledge hammer. 20 mapping points in 3 lines along field roads were selected for the test. Along the roads, the mapping points were approx. 70 m apart. The lines were approx. 100 m apart. The GPS and stereo recordings were sent to ATS Group for evaluation. Their report, including a 3D model of the surveyed site, was issued on 30.6.16. Information available from Swiss Salines concerning the known salt deposit profiles and qualities was then incorporated into the model. Substantial amount of work was then carried out concerning the seismic velocities and their correlation with salt physical and chemical properties. Anomalies observed at some mapping points were explained by the influence of underground pipelines and cables, pumping station and overhead power lines crossing the mapped field. The final report was issued on 12.10.17.

The ATS electro-seismic mapping method, presented in this paper, determines the location of the top and bottom of the salt layer and its profile with an accuracy of about one meter to the depth of approx. 300 meters. The 3D model also indicates the presence of intermediate layers of poor quality salt. Accurate interpretation of the results is possible when correlated with just one core sample obtained from the investigated geological formation. In addition, detailed information concerning the formations overlying the salt deposit, such as porosity and water content, is made available for planning the productive boreholes. The ATS electro-seismic mapping method can be employed to depths exceeding 5'000 meters. However, the accuracy of such application remains yet to be tested.

The ATS electro-seismic mapping method is a revolutionary advancement in prospecting for salt. It is fast, accurate and substantially more economic than conventional drilling and

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seismic explorations. Salt Partners are pleased to announce the availability of ATS electro-seismic mapping method for commercial applications.

Key words: SEISMOSAL[®], electro-seismic mapping, electro-telluric mapping, rock salt, prospecting, solution mining

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