

## **Geological 3D-Model of the Rüdersdorf Gas Cavern Storage Project, Germany**

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### **Abstract**

The Rüdersdorf salt structure situated east of Berlin consists of a characteristic common built salt swelling containing the salt formations Zechstein 2 to 5. It corresponds to a salt pillow in terms of TRUSHEIM's ideas.

The pre-modelling work covered the consistency proof of old and recently drilled boreholes, of geophysical and geochemical investigations, and of the topographical data. All informations gathered were incorporated into the model area.

The salt pillow including the cover rocks is presented in a 3-D model for a section within the area of the Rüdersdorf gas cavern field. Due to the modelling work a clarification of the tectonic conditions was possible. Additional results and insights from the 3 D modelling are: a seismically non-interpretable part of the southern flank of the structure so far seen as a large fault zone is now interpreted as a simple bulge of cover rocks and additionally, the faults within the cover rocks are not proceeding into the salt rock. The different geomechanical conditions within the cover rocks and salt rocks (compression in the flowable salt rocks Extension in the rigid cover rocks) result in a mechanical decoupling of both beds. This means that the faults were not created by the salt rocks dynamics.

Detailed investigations of bromide demonstrated that the Hauptsalz (z2) as host rock for the planned gas caverns is free of faults. But it has been determined an intensive internal folding of the Hauptsalz.

The geological 3-D model is an authentic spacefaithfully planning tool and can be used as base for the control of the solution mining process, for stability calculations and for the planning of new caverns.