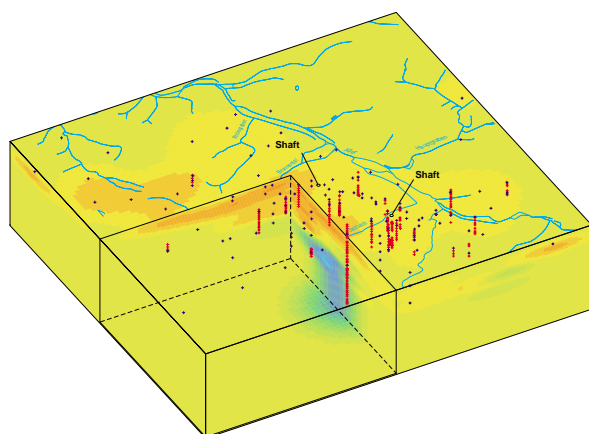


Mining Shafts Marie and Bartensleben Geological & Hydrogeological Synthesis of the Near Field

COUNTRY:	Germany
CLIENT:	Federal Office for Radiation Protection (BfS)
SERVICE PROVIDED:	Synthesis and graphical presentation of the geological and hydrogeological situation
PROJECT STATUS:	completed in July 1999

The two shafts Marie and Bartensleben are the main access routes to the radioactive waste repository in a mine at Morsleben (ERAM). The project represented an extensive investigation of the geological and hydrogeological situation in the near field of the two shafts.

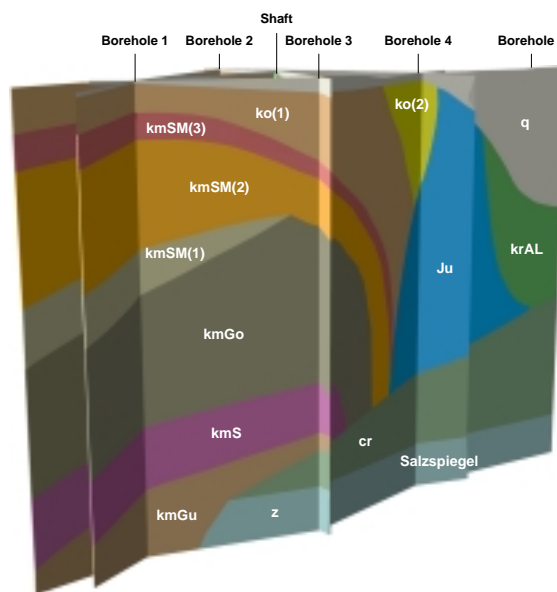
The framework for the hydrogeological studies was provided by the definition of the local stratigraphy. The shafts reach down to the Zechstein salt formation. It is overlain by a complexly assembled series of Jurassic and Triassic sedimentary formations including a cap rock, followed by clay, silt and sandstone formations with various degrees of dolomitisation. The surficial cover is provided mostly by Quaternary sediments. One of the consequences of the intricate structural geology and the lithological heterogeneity is the combination of groundwater flow in both porous media and fracture networks.



Spatial variability of formation water density

The required information for the geological and hydrogeological synthesis was drawn from geological profiles, geophysical logs, hydraulic borehole tests, structural interpretations from boreholes and shafts as well as results from the analysis of the fracture net-

work. Colenco Power Engineering Ltd co-operated with Büro Geologische Forschung und Erkundung (D) for the geological and hydrogeological synthesis and its visualisation. One of Colenco's main tasks was the spatial integration of the diverse investigation results in preparation of the graphical presentation.



Fence diagram showing stratigraphic model

The continual spatial distribution of the hydrogeological parameters was derived from point values by applying suitable geostatistical models and the state of the art software ISATIS. Colenco further used a variety of software packages for data administration, processing and visualisation: MATLAB, TECPLOT, LYNX and AVS. The results are conclusive 2D and 3D images incl. potentiometric surface maps of individual aquifers; cross-sections with the spatial distribution of transmissivity or freshwater head; block diagrams of the spatial variability of formation water density; and fence diagrams of the stratigraphy.