

## Securing of surface shafts of the uranium ore deposit Königstein in unconsolidated sedimentary rocks

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<b>Project objective:</b>	Elaboration of drawings in approved and workable form for the safe closure of the surface shafts N°387 and N°392 (with a depths of 260 m and 210 m, respectively). The essential target was to fill up these shafts completely with concrete – like cohesive materials, to enable a safe closure of the shaft column and to make a strict hydraulic separation of the various aquifers, having different water qualities. This was necessary to protect the drinking water aquifers at the hanging wall from the contamination by the lowest aquifer, which was affected by mining.
<b>Location:</b>	Saxonia
<b>Client:</b>	WISMUT GmbH
<b>Beneficiary:</b>	WISMUT GmbH
<b>Time period:</b>	2000
<b>Budget:</b>	about 75,000 Euro for each shaft (planning and supervision)
<b>Initial situation:</b>	After finishing the active mining process in the region of Königstein it was necessary to secure a great number of mining shafts. Conceptual and pre-planning documents had to be elaborated for closure of the shafts, considering the different conditions in the shaft columns. The filling with concrete – like cohesive materials was the favoured option due to the need to separate different aquifers. In this context, it was substantial to use binding agents with the right consistency and long-term resistance against the attacks of highly aggressive flooding waters. Special considerations had to be given to the kind of transport of the filling material into the shafts, which could be made either by free-hanging pipelines or in free fall conditions.
<b>Main tasks:</b>	Elaboration of the technical solution for all planning stages from the pre-planning to workable drawings including required static calculations and investigations into the special fields of : <ul style="list-style-type: none"><li>• mining</li><li>• building</li><li>• ground excavation and traffic building</li><li>• consulting during project execution</li><li>• supervision of construction work and documentation</li></ul>

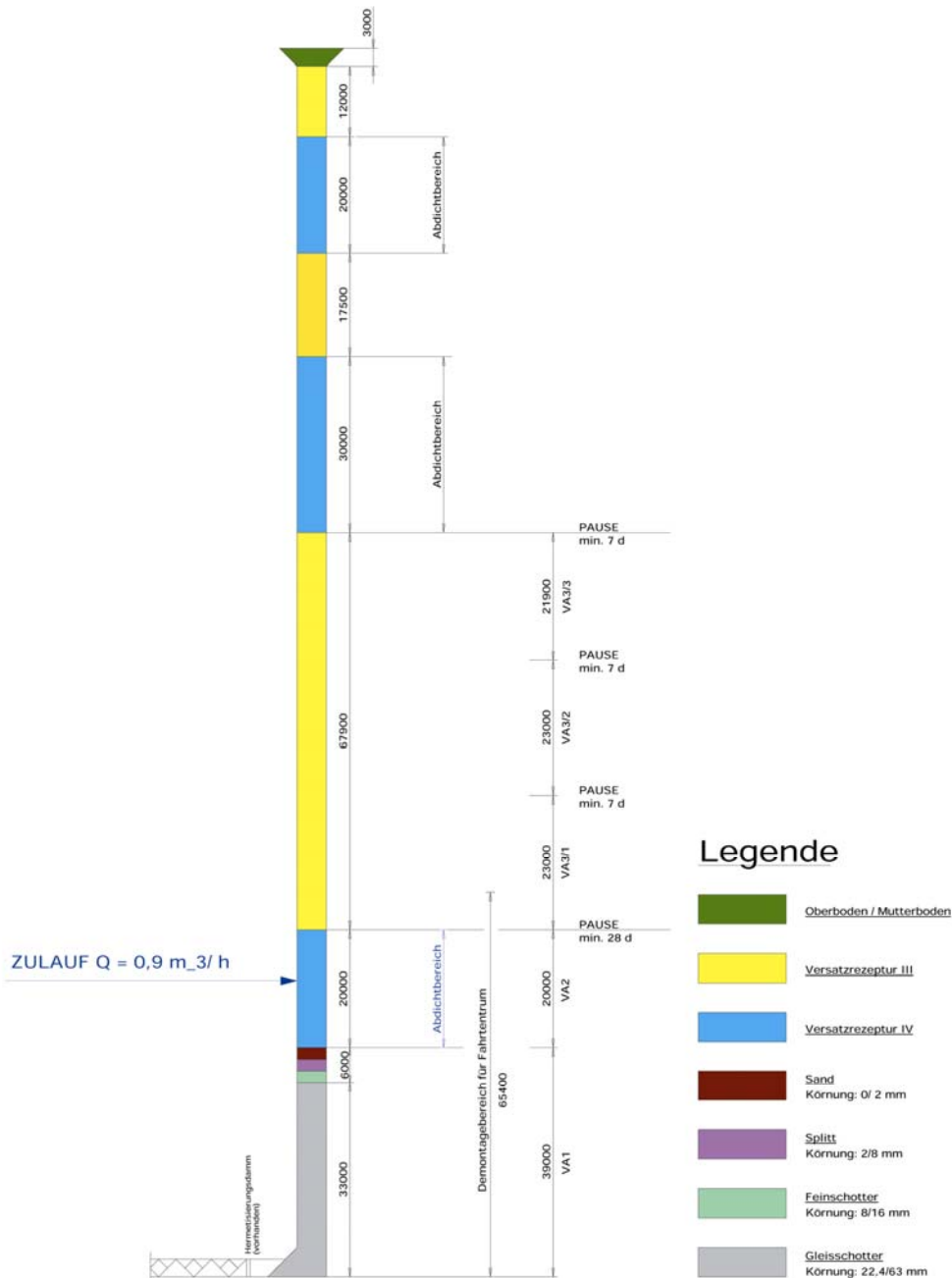
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## Vertikalschema



Sample of shaft securing using concrete and gravel