Special methods to secure the deformed shaft collar of the shaft 363 standing in unconsolidated weak rocks

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Project objective: Conception and planning works to secure the shaft collar and to establish load–bearing capacity for the covering elements of the shaft 363

Location: Thuringia

Client: WISMUT GmbH

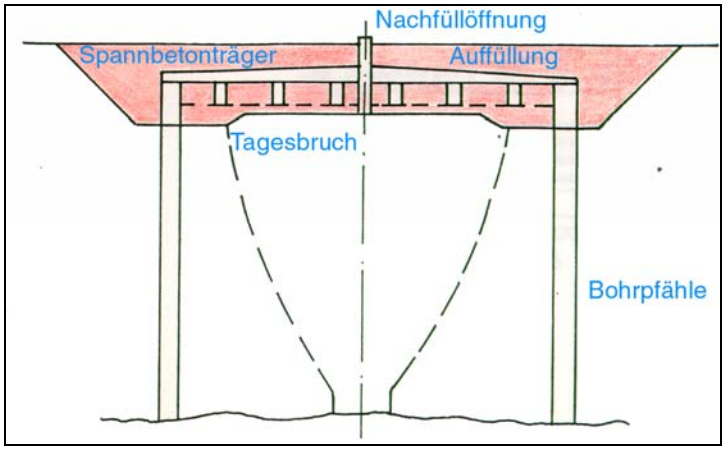
Beneficiary: WISMUT GmbH

Time period: 1992 – 1995

Budget: 480.000 EURO

Initial situation:

The shaft 363 – characterised by a broken timber support – was initially filled up with rock fills without securing the draw points. This enables the rock masses to discharge on the draw points.



Draft of the generally technical solution
Client: WISMUT GmbH, SB Ronneburg

In the unconsolidated rocks on the surface a serious subsidence area of conical form was observed. The cavities on the draw points were partly closed by cohesive filling materials, which was implemented by means of drilling holes realised from the surface. The collar of the shaft was secured by a ring of drilling piles from concrete, which was used to make sure the load–bearing capacity in the loose rocks and to stop existing slope failures.

Main tasks:

- Analysis of the underground situation and the conical depression on the surface
- Reducing the connections between the shaft and the horizontal drivings underground by bringing in cohesive filling materials through drilling holes from the surface
- Investigation of possibilities to stabilise the shaft collar and the slopes in unconsolidated rocks
- Planning and implementation a ring–shaped wreath of drilling piles filled with concrete to create an appropriate load–bearing capacity for the top covering elements of the shaft, which was sunk in a weak unconsolidated rock basis