

PROJECT DESCRIPTION

Confidential Client

Russia



The open pit mine is part of a Greenfield exploration project. Itasca Consultants GmbH in corporation with Itasca Chile were contracted to develop a stability design of the pit. The analysis has been performed using Itasca's three-dimensional distinct element code, 3DEC (Itasca, 2016). 3DEC allows important structural features (e.g. faults, contacts) to be modelled explicitly and other minor structures to be included implicitly. The pit is about 1000 m long, 700 m wide and has a depth of 350 m. In past years failures occurred on the eastern and southern slope of the pit. The rock units at the location are traversed by numerous principal and minor faults. The material of the excavated rocks weather strongly.

ITASCA'S ROLE

To gain a greater understanding of stability issues at the open pit mine Itasca calibrated the material properties with the help of in situ measurements and analyzed the current situation. Subsequently Itasca evaluated the future mining plans for upcoming years in predictive scenarios. For the predictive scenarios hydrogeological information were based on a hydrogeological model analyzed by Itasca.

PROJECT RESULTS

Itasca was able to confirm that the hydrogeological conditions had only minor effect on the FoS. Major influences were related to the weak material parameter due to the strong weathering in combination with the principal and minor faults.

Based on the results redesigned mining planes have been proposed.

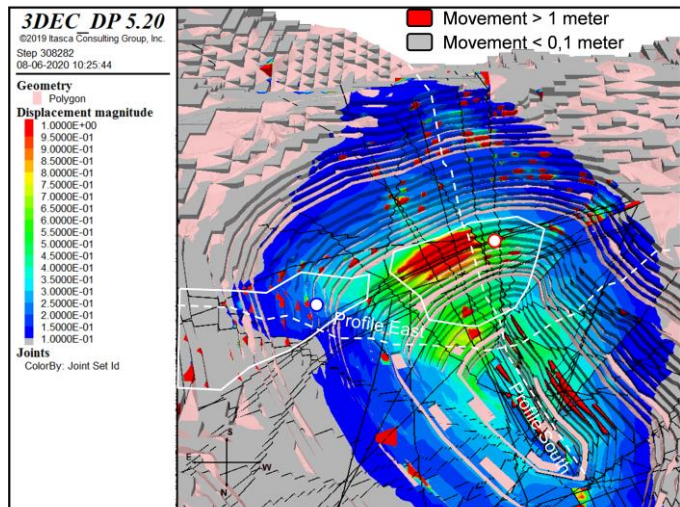


Figure 1. Displacement distribution on the south wall

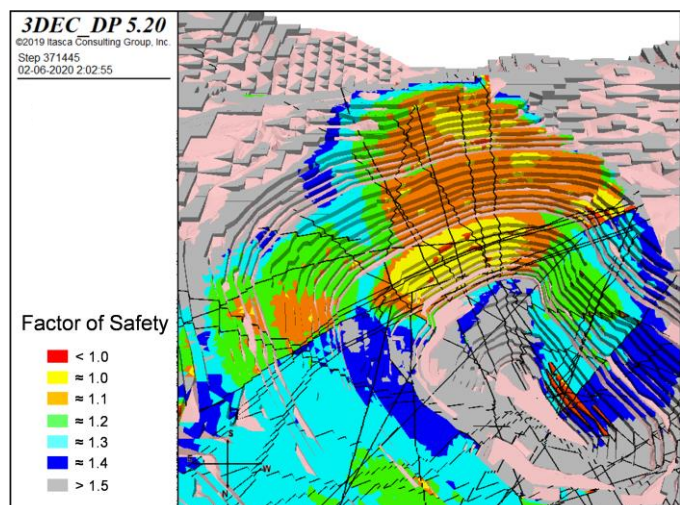


Figure 2. Factor of Safety distribution