

Development of criteria due to seismic risk for temporary closing/re-opening of seismically active mines (mining areas)

Utveckling av kriterier på grund av seismiska risker för tillfällig stängning / öppning av seismiskt aktiva gruvor (brytningsområden)

LTU – project leader



Projektets syfte och mål



Criteria for increased risk for damage or injuries due to rockbursts

⇒ Warn the mine personnel and close mining areas
(for specific area and time)

Projektets syfte och mål

1. Define relationships between seismic hazard and the mining process
2. Define correlations between seismic hazard and damage hazard (seismic risk)
3. Develop criteria and recommendations for closing certain areas in the mines, and subsequent re-opening based on relationships (1-2)

Projektets syfte och mål

Final goals:

- Reduce the risk of personal injuries caused by seismic events
- Improve safety and productivity, by improving
 - mine planning and sequencing,
 - ground control strategy in seismically active mines

Resultat hittills

Four possible cases identified for temporary closing of mine areas:

- Before large seismic events
- After large seismic events
- After production blasting
- Increased stresses

Resultat hittills

Data collection, analysis, developing methods and tools

- Preliminary overall analysis of the seismicity at Garpenberg mine - After blasting and after some large seismic events
- First results from seismic passive tomography in Kiirunavaara mine are obtained

Two PhD students started in September 2017



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Kommande aktiviteter/Nästa steg

Examples

- Garpenberg and Kiirunavaara mines
 - Establish seismicity patterns related to production and blasting
 - Development of a model of the time-dependent model
- Kiirunavaara mine
 - Studies of temporal and spatial behaviour of established indicators of increased probability for larger seismic events on a large scale
- Garpenberg mine
 - Seismic events that caused damage will be analysed in detail