

Associated Event

After the Big Bang Workshop: Rehabilitation and resumption of production in Block 22 at the Kiruna mine after the 4.2 magnitude seismic event 28 August 2022 | Adelaide, South Australia | Online

The workshop will be held prior to Caving 2022. The ACG's priority is the safety and well-being of the delegates and speakers of this event. All attendees are strongly encouraged to attend in person; the ACG looks forward to welcoming many cave mining industry professionals to Adelaide in August 2022. Worldwide delegates are able to participate via a leading online event platform.

Objectives

The Kiiirunavaara mine situated in northern Sweden is the largest sublevel caving operation in the world with an average annual production of 27 Mt. On 18 May 2020, the mine experienced a seismic event that was, by far, larger than anything previously experienced. Based on the regional seismic networks, the moment magnitude was estimated to 4.2. The regional networks had to be used for magnitude estimation, since it exceeded the range of the mine's seismic system. The event occurred in the central part of the mine and caused major damage to the footwall infrastructure over a length of around 700 m on several sublevels. Following the event, the mine started a concentrated effort to rehabilitate and restart the central production blocks under 'Block 22 Project'. The mine has worked intensively since August 2020 on this project and is expected to start production by Q2 2022. In this workshop, the problem statement, the challenges, and the proposed solution for resuming production in the central blocks will be presented for the international caving community. The two primary objectives of the workshop are:

- Share experiences from the project
- Generate active audience inputs on possible improvements

Who should attend

Participants who are interested in learning about the different aspects of caving operations ranging from geotechnical challenges, seismic analysis, rehabilitation strategies, numerical modelling, mine instrumentation, mining sequence, mine planning and draw control.

Workshop Presenters

- Mirjana Boskovic, Seismic Analysis Specialist, LKAB, Sweden
- Dr Nikolaos Petropoulos, Senior Researcher, LKAB, & Assistant Professor, Luleå University of Technology, Sweden
- Dr Gurmeet Shekhar, Senior Mining Engineer, LKAB, Sweden
- Dr Mikael Svartsjaern, Senior Engineer, Itasca, Sweden
- Erik Swedberg, Rock Mechanics Engineer, LKAB, Sweden

Workshop Program*

Sunday 28 August 2022	
11:30	Registration
12:00	Welcome and background <i>Overview, challenges with mining sequence before the event, local geology and geotechnical information</i>
12:15	Description of the seismic event <i>Details about the seismic event and forensic analysis of the event</i>
12:30	Damage mapping and development <i>Damage mapping of the production block, plan for rehabilitation, plan for new footwall drive, use of instrumentation for mapping, and seismic response during development</i>
12:50	Mining sequence and rock mass state <i>Selection of which level to resume production (1079 versus 1108), advantages of each option, extension of crosscuts to increase hydraulic radius</i>
13:30	Discussion <i>At which level should production start: 1079 versus 1108</i>
14:00	Afternoon break
14:30	Local mining sequence and rock mass response <i>Selection of the direction of mining (north to south versus south to north), challenges with cave propagation, rehabilitation of crosscuts between old and new footwall drifts, challenges with ring design, and blasting design for the production level</i>
15:00	Discussion <i>What mining direction should be selected? Rehabilitation crosscuts on cave propagation and confinement of pillar</i>
15:30	Monitoring systems and risk assessment <i>Describe the various instrumentation and monitoring systems installed in the production area, highlight the key risk the mine has identified in the project</i>
16:00	Discussion <i>Additional risks missed in the assessment</i>
16:20	Concluding comments
16:30	Workshop close – Drinks & nibbles



*This program is subject to change. For updates visit acg.caving.com