Preliminary Quantification of Scaling Bar Impacts for Underground Mine Safety, University of Saskatchewan

This project will establish the feasibility of developing a device capable of providing a simple to understand "safe-unsafe-unknown" evaluation of the impact from a scaling bar impact, that can be used to inform the decision of whether installation of ground support or further testing (e.g. drilling or ground penetrating radar) is needed.

Preliminary data indicates that there are at least two methods of discriminating between safe and unsafe conditions using an acoustic recording of an impact. The first is to evaluate the frequency content: unsafe conditions produce a signal with more low-frequency content than in solid ground. The second is to evaluate reverberation decay time: a beam of potash separated from the solid ground above it will ring for some time, which can be detected in the response. This preliminary data has also highlighted the importance of mitigating the impact of the room's acoustic reverberation, which can mask this effect.