

SSR Technology in the Arctic Circle

If it cannot be done safely, it's not done at Diavik

“The SSRs have been instrumental in our commitment to safe operations by delivering high quality data despite extreme conditions.”

Richard LeBreton M.I.T.
Geotechnical Engineer
Diavik Diamond Mines Inc.



Far in the Northwest Territories of Canada, the Diavik Diamond Mine delves into the roots of ancient volcanoes beneath the arctic waters of Lac de Gras in search of diamonds. Located 300 kilometres northeast of Yellowknife, the Diavik Diamond Mine exists in a region as remote as it is desolate.

The Diavik Diamond Mine, a joint venture between Rio Tinto and Harry Winston Diamond Corporation, began production in January 2003 and employs approximately 1,000 people. Since its inception, the mine has delivered millions of carats of natural diamonds every year.

What is unique about the Diavik Diamond Mine is its location in one of the most remote regions of the world and the innovative approach to mining implemented there. In all its activities and operations, Diavik is committed to operating safely, protecting the environment and making a positive contribution to communities of the region.

At Diavik there are two Slope Stability Radar (SSR™) systems supporting the core principles of safe working, applied technology to tasks, and responsible management. SSR technology was introduced to the mine in late 2008, an unforgiving winter arrived quickly with temperatures soon plummeting past -20°C and reaching -45°C. Each day presented a new challenge but the SSR and John Metzger, Technical Specialist at GroundProbe, continued to scan, generate daily reports and review the data. At the time John commented:

“The mine staff and Diavik Geotechnical team were tremendous, each activity, deployment, blast move and weather event were met with constructive safety reviews, consideration, and a plan to move forward.”

In the middle of winter a vital drilling program had to be completed on budget, or under. Any downtime could mean significant cost overruns as drillers sat idle, and any delay meant access to the ice road would be in jeopardy. It was clear how important the drilling timeline was – GroundProbe pledged to support it – with data, reports and NO downtime. GroundProbe's onsite Technical Specialists and the Diavik Geotechnical, Operations, and IT support teams reviewed the SSR system, maintenance schedules, daily temperature and weather reports, and prepared for drilling to begin. **The weather turned to zero visibility and ice fog.**

Case Study

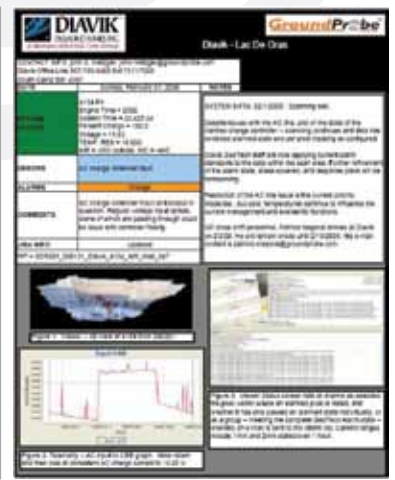
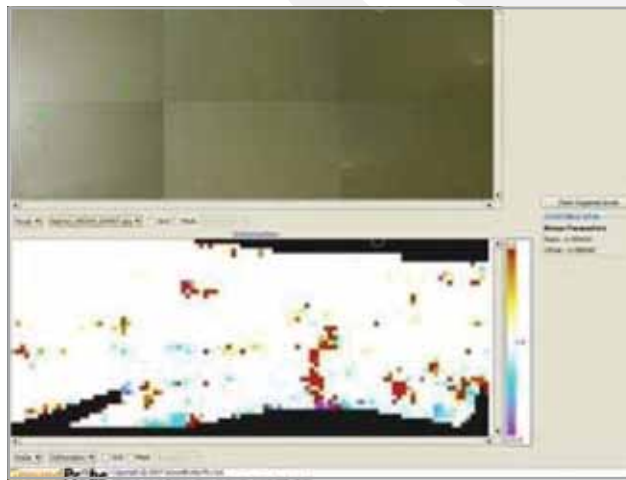
The SSR has operated at minus 45°C at Diavik Diamond Mine.

The GroundProbe SSR is the only Slope Stability Radar system that is proven at these extreme temperatures.

▼ RC Drillers in the kimberlite during the 2009 drilling program.



▼ SSRViewer screen shot from ice fog drill session.



Slope Stability Radar operating in extreme temperatures

SSRViewer provided detailed atmospheric, system, and deformation information, the visual image below highlights the fact that despite zero visibility, scanning continued, data was monitored on a 24/7 basis, and the drilling continued until the program was completed. The skilled Diavik staff applied the on-site training received and took over all SSR operations successfully.

GroundProbe is a market-leading Australian company that develops and supplies measurement systems and services to mining and infrastructure organisations for the management of risk. Since the launch of the revolutionary SSR in 2003 GroundProbe have been providing high value information to mines around the globe making mining safer and more profitable. GroundProbe holds internationally valid patents in key areas of the technology and was the first company globally to introduce slope monitoring radar to the mining industry.

With the SSR and the WAM, GroundProbe provides the most suitable systems to measure short and long-term mine wall movements. Many slope failures have been successfully captured using GroundProbe's systems, providing sufficient warning for the safe evacuation of people and equipment. With the experience of having deployed hundreds of SSRs around the globe, with millions of hours of operation, GroundProbe achieves world-class standards in reliability and has an unrivalled understanding of slope stability in open pit mining.

