

SSR Technology Operating in Severe Weather

Data management in rapidly changing atmospheric conditions

“The SSR has proven to consistently offer the information we require in all weather conditions, where other means of data collection are affected.”

Kent T. Christensen P.Eng.
Manager of Mine Engineering and New Projects
Huckleberry Mine LTD

Huckleberry Mine is an open pit copper / molybdenum mine located in central British Columbia. Imperial Metals Corporation, a Canadian mining company based in Vancouver, holds a 50% interest in the Huckleberry Mine with the other 50% owned by a consortium of Japanese companies. The mine started commercial production in October 1997 and an aggressive exploration program has been ongoing since to extend the mine life.

Huckleberry Mines' commitment to safety and the environment is demonstrated by its excellent safety record and being awarded the Jake McDonald B.C. Reclamation Award in 2000, Premier's Award – Reclamation and Prospecting Program 2010 and 2010 Collaborative Research Award presented by the Northern BC Business and Technology Awards sponsored by the University of Northern British Columbia.

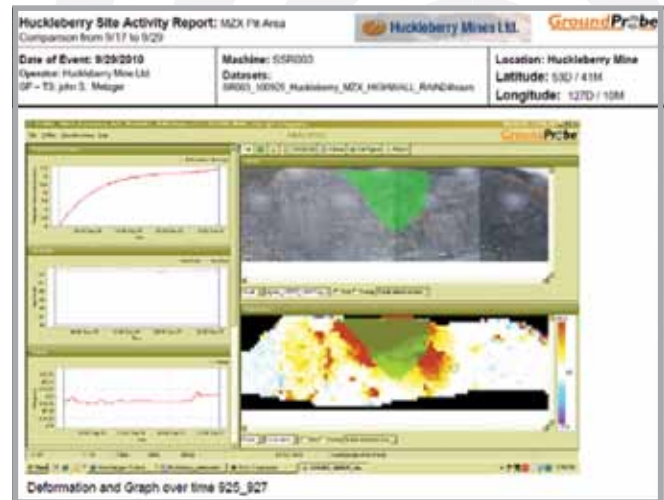
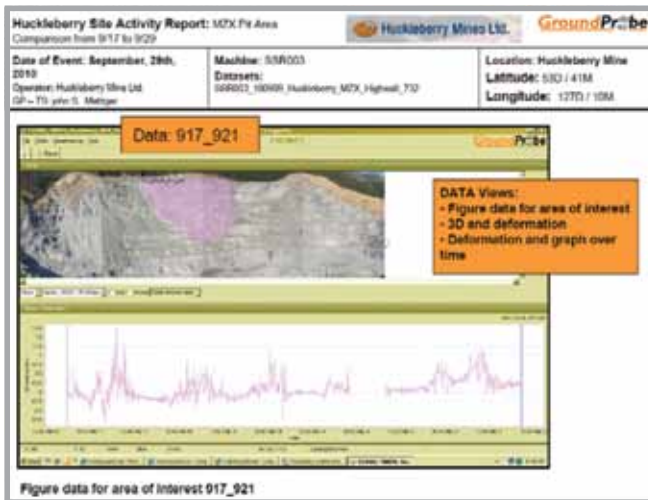
In keeping with Huckleberry Mines' commitment to safety the mine site has had GroundProbe Slope Stability Radar (SSR™) deployed for a number of years. One of the foremost challenges of operating SSR at the scenic site of Huckleberry is the seasonal weather and wind events that make for rapidly changing atmospheric conditions.

On September 25th, 2010 steady overcast weather loosened to heavy mist and fog, then rain. Rain continued unabated through to the 27th and rainfall of over 150mm was recorded. The resulting impact on the mine site were soil flows and raveling across the monitored slope areas. GroundProbe SSRViewer data indicated that a significant portion of the high wall – that had some exposure to water intrusion - was exhibiting accelerated activity across a wide area.

Site staff had established alarms for notification of movement and the alarms had triggered. In darkness, a physical inspection by the shift supervisor was unable to access the upper crest area due to the volume of water on the access road. The Mine Engineer, Operations Superintendent, and Shift Supervisor were notified. SSRViewer data was accessed remotely by the Mine Engineer and affirmed the need to order a pit shutdown and equipment removal, while a berm was quickly made across the pit floor facing the high wall.



Case Study



All Weather Service, Site Support and Visual Data Integration

Data was monitored continually through the event and a summary of activity was sent to all engineering staff for review. This data-set resulted in moves to address the high wall issues by mining a pushback into the tree-line and down through the unstable area. This was essential to achieve expansion plans and further successful mining. John Metzger, GroundProbe Technical Specialist at the time commented:

“Seasonal weather and wind events made for rapidly changing atmospheric conditions – proving SSR system and data algorithms to be adaptive while continuing to provide excellent returns.”



▲ Heavy rainfall created large volumes of water entering the diversion channels.

The SSR and GroundProbe team onsite, in collaboration with Huckleberry engineers and external consultants, had allowed for smooth ongoing operations, equipment extraction from a slope event, and valuable pre-summer and rainy season data.

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.