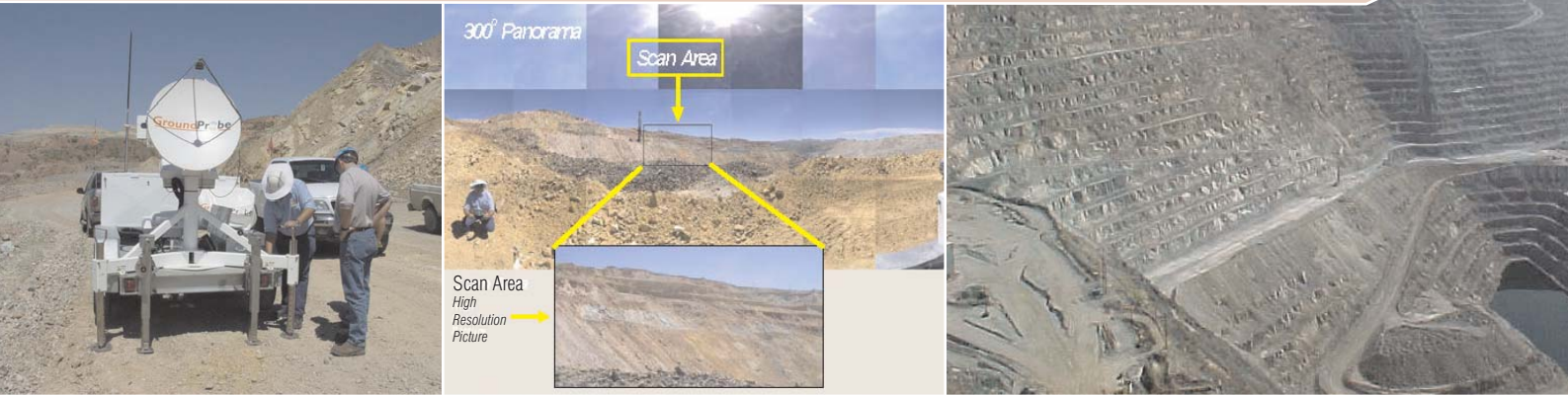


# Phelps Dodge Sierrita Mine USA



## SSR Making mining safer™

Phelps Dodge Mine Technology Group began testing the GroundProbe Slope Stability Radar (SSR) in May 2004, at the Sierrita Mine site in south of Tucson, Arizona. This unit, the first GroundProbe SSR in the U.S., was brought into the country under FCC Special Temporary Authority grant for experimental trial.

The radar system has proven to provide early warning of accelerating wall movement at Sierrita. It has also provided much needed information about slope behaviour in areas where access limitations prevented the use of other monitoring tools.

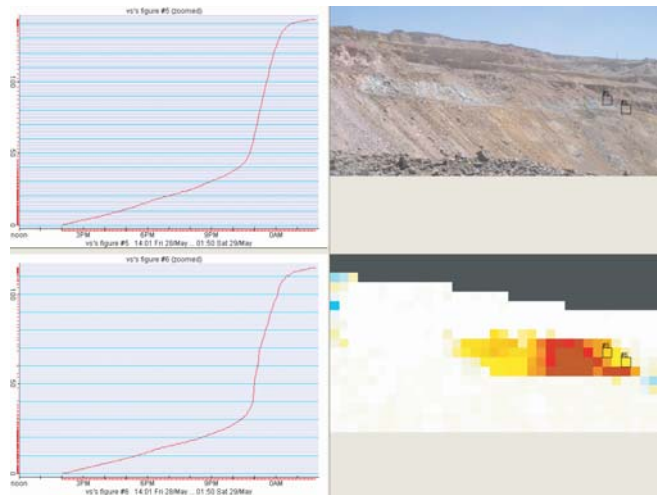
The set of Figures provided describe a slope movement at Sierrita Mine, where the radar unit provided approximately three hours additional warning of slope acceleration over slide-wire extensometers and prism targets located within the moving mass.

Additionally, the deformation plot on the SSRViewer™ gave clear spatial definition of the extent of the wall that ultimately released some eight hours later (~20k tons). Due to the early warning provided by the SSR, operations had sufficient time to ensure that no equipment or personnel were exposed to the potential rock fall hazard.

The SSR technology complements existing slope monitoring programs and has demonstrated early warning of slope movements with good definition of the extent of the affected areas.

The precision of the deformation data collected, the ability to monitor in all weather conditions, the broad area coverage, the reflector-less scanning, the ease of deployment, and the automated alarming capabilities are strong positive features of the SSR technology.

The Phelps Dodge Mine Technology Group has recommended this technology to most of its mine sites. FCC licensing has been granted and mines are on track for integration of additional SSR units within the Phelps Dodge Mining Company.



Vicki Seppala, Mine Technology Group  
Phelps Dodge Mining Company

**GroundProbe®**  
Unique Measurement Systems™

