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MEETING
PAPER



THE USE OF GROUND PROBING RADAR IN MINES AND QUARRIES

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ABSTRACT

This paper traces the TAMU research from its original SMRI-supported radar and sonar probing of salt mines in domes and beds, to government-supported research for linear and nonlinear sonar probing of rocks, to our present interest in applying Ground Probing Radar or GPR to the problems of miners and those in the quarrying business. We discuss the fundamental GPR principles, showing how it is different from the radar we formerly used, and how its use of signal sampling gives it great promise for use in probing above and below the present mine workings to detect and record in real time the geological stratigraphy in a fast and nondestructive manner, using a battery-operated system. The maximum range obtained so far for GPR scans of salt has been 65 meters or 213 feet. We can map geologic strata to this range above and below the mine workings.

Many examples of radar profiling and penetration are shown, from ranges of 150 meters in granite to mapping the effect of stresses in salt due to a known fault. Dipping beds above and below mine workings have been recorded. Fractures and impurities in granite have been detected, as well as finding the precise location where the fracture ends. This is very useful to the quarry people.