

Texas A & M University
Department of Geophysics

ELECTROMAGNETIC WAVE PROBING FOR
SALT DISCONTINUITIES

Eighth Biannual Report
May, 1973

Prepared for the
Solution Mining Research Institute
by
Dr. Robert R. Unterberger
Professor of Geophysics
Department of Geophysics
Texas A & M University

Research Conducted Through the
Texas A & M University Research Foundation, Project 682A
College Station, Texas 77843

SUMMARY

We have shown that insofar as we can presently determine the sticky parameters are about equal--with no advantage for either laser or VHF radar. For the non-sticky parameters, considering the attenuation in salt, the laser radar has a clear advantage of 10^6 or its performance should be 60 dB better than the VHF radar which has been so successful thus far. While this sounds like a powerful incentive to develop a laser radar to probe salt for discontinuities, the deciding factor will probably be the amount of infrared scattering one obtains in trying to transmit a narrow infrared beam into salt. This may well prove to be analogous to the visible problem of trying to drive a car in the fog. All the water molecules scatter the light and you see nothing.