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# Association of Engineering Geologists

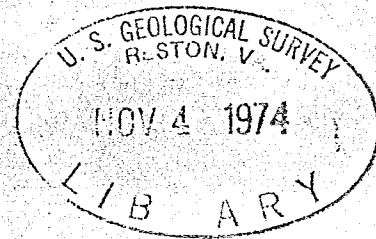
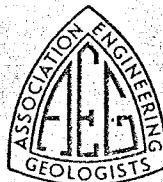
## 17th ANNUAL MEETING

Brown Palace  
Denver, Colorado

October 14 - 19, 1974

PROGRAM and ABSTRACTS

“ENGINEERING GEOLOGY and the  
NATURAL RESOURCES ENERGY SPECTRUM”



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## ABSTRACTS OF PAPERS FOR OCTOBER 14 - 19, 1974 GENERAL SESSIONS

### THE ROCK MELTING SUBTERRANE AND ITS POTENTIAL ROLE IN GEOTHERMAL ENERGY EXPLORATION AND EXPLOITATION

J. H. Altseimer and C. A. Bankston, University of California, Los Alamos Scientific Laboratory, P. O. Box 1663, Los Alamos, NM 87544

National awareness of the potential shortages in energy resources has heightened interest in exploration and exploitation of a variety of geothermal energy (GTE) resources. The status of conventional drilling of GTE wells is reviewed briefly and problem areas which lead to drilling costs that are two to five times the national average oil and gas costs are identified and appropriate methods of solution are suggested. In the immediate future, an expanded program of drilling in GTE formations can benefit from improvements in drilling equipment normally associated with oil or gas wells. Over a longer time period, the new rock-melting drill bits being developed as a part of the Los Alamos Scientific Laboratory's Subterrene Program offer new solutions to a number of problems which frequently hamper GTE drilling, including the most basic problem - high temperature. Two of the most favorable characteristics of rock-melting penetrators are their ability to operate effectively in hot rock and produce strong glass linings around the hole as an integral part of the drilling process. The technical advantages to be gained by use of rock-melting penetrators are discussed in relation to the two basic needs for GTE wells: (1) small-diameter wells for exploration, reinjection and disposal purposes, and (2) larger diameter, deep wells for production.

The present status of the Subterrene Program in the development of rock-melting penetrators for hard, hot rock drilling is reviewed. Extruding penetrators which condition the melt into predictable debris forms, i.e., glass rods, pellets or rock wool, have been developed and utilized in a variety of igneous and metamorphic rocks. Systems for deep and shallow holes are being developed and tested.

### DOWN-HOLE SHEAR WAVE AND SOILS STUDY

Bailey, Allen D., 2791 Del Monte Street, West Sacramento, California 95691

Van Alstine, Charles L., 536 Galveston Street, West Sacramento, California 95691

Two orthogonal geophone packages, placed in a PVC lined drill hole, are used in a down-hole seismic survey in which