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*Borehole Geophysics Evaluation of the Raft River  
Geothermal Reservoir, Idaho*

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One of the geothermal reservoirs that has been drilled using borehole geophysical techniques is the Raft River Geothermal System in Idaho. Three deep holes (5000-6000 ft) into this reservoir drilled by the Energy Research and Development Administration-Aerojet Nuclear Corp. have all been geophysically logged by commercial firms.

The Raft River Valley is part of the Basin-and-Range geomorphic province. The valley is filled with approximately 5000 feet of sediments and metamorphosed sediments ranging in age from Precambrian to Recent with a quartz monzonite basement. The geothermal system does not appear to have a local heat source, but results from a blanket of sediments insulating an area of high heat flow.

A major problem in evaluating the Raft River geothermal reservoir is to establish a viable model for the system. The assumed model for the hot water (293°F) reservoir was a zone of higher conductivity, increased porosity, decreased density, and lower sonic velocity. It was believed that the long-term contact with the hot water would cause alteration producing these effects. With this model in mind, crossplots of the above parameters were made to attempt to delineate the reservoir. It appears that the most meaningful data include smoothed and expanded plots of transit time, porosity, and density as a function of depth, and triangular plots of transit time, porosity, and density; and plots of  $Q[(\phi_v - \phi_D)/\phi_v]$  versus depth. These data yield discrete zones which appear to be the productive zones. Further studies and testing are continuing to verify these relationships.