

GEOPHYSICAL LOGS, OLD MAID FLAT #1  
CLACKAMAS COUNTY, OREGON

OPEN-FILE REPORT 0-78-6

STATE OF OREGON  
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

November 29, 1978

## GEOPHYSICAL LOGS, OLD MAID FLAT #1, CLACKAMAS COUNTY, OREGON

A geothermal exploratory test, Old Maid Flat #1, located in the SE-1/4 of SW-1/4 of sec. 15, T. 2 S., R. 8 E. at an elevation of 2,750 ft, was recently completed on August 15, 1978, to a depth of 4,003 ft. Specifically, the exploratory hole was drilled adjacent to the Sandy River, on the westerly flank of Mount Hood.

This test, funded by Northwest Natural Gas Company, was originally commenced on October 3, 1977, and suspended on December 7, 1977, at 1,850 ft because of mechanical failure of the rig and adverse weather conditions.

Originally, a cable tool rig with a casing hammer was used to drive a 12-inch diameter conductor pipe through unconsolidated volcanic mudflow debris to a depth of 80 ft. A truck-mounted rotary rig (Failing 1000) carried a 10-inch diameter hole to 150 ft with air, at which depth 8-7/8-inch casing was set and cemented to the surface. A 7-7/8-inch diameter hole was then drilled to 885 ft. At this depth, the air could not lift the column of water, and drilling was continued with bentonite mud to a total depth of 1,850 ft.

On July 30, 1978, a small, 4,500-ft capacity oil rig was used to re-enter the hole. The existing 7-7/8-inch diameter hole was carried to a total depth of 4,003 ft with bentonite mud. The hole was completed on August 15, 1978. The deepening of the hole was funded by the U.S. Department of Energy and Northwest Geothermal Corporation, a subsidiary of Northwest Natural Gas Company. The drilling contractor was Taylor Drilling Company of Chehalis, Washington.

WELEX provided the logging service. Geophysical logs which are a part of this report consist of:

1. Dual Induction
2. Compensated Density
3. Temperature
4. Drift
5. Fracture
6. Acoustic Velocity

The hole was also logged by the Oregon Department of Geology and Mineral Industries using equipment loaned to the Department by Southern Methodist University. Temperature logs were taken on August 17, 1978, and October 17, 1978, to a total depth of 3,500 ft, the capacity of the logging unit. These data were utilized in order to establish whether thermal equilibrium of the hole had occurred. On November 16, 1978, a temperature survey of the hole was done by the U.S. Geological Survey under the supervision of J.H. Sass. This latter information is a part of this report.

Interpretation of the geophysical logs has not been attempted at this time. The initial (August 17, 1978) bottom-hole temperature had been recorded by WELEX as 179°F, which is the same as that recorded by the U.S. Geological Survey log of November 1978.

Columbia River Basalt underlies the Old Maid Flat drill site at a depth interval from 2,028 to 3,250 ft. This composite thickness is similar to the Columbia River Basalt exposed in the Clackamas River area. From 80 to 2,028 ft, the rocks encountered are part of the Rhododendron Formation. Stratigraphic, petrologic, and geochemical studies are still continuing and will be made part of a future report to be published by the Department of Geology and Mineral Industries.