



## INTER-OFFICE MEMORANDUM

SUBJECT: GEOTHERMAL EXPLORATION TARGETS-SOUTH CENTRAL, DATE: December 19, 1975  
OREGON

TO: Harry Olson

FROM: D. Pilkington

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South central Oregon has several areas which have received considerable play by the oil companies in their geothermal land acquisitions. Open-file reports by Walker (1974) and by MacLeod, Walker and McKee (1975) call attention to the rhyolitic domes and the northwestward decrease in their radiometric ages. A contour map of the published ages shows two distinct lines of domes (see enclosed map). The northern line coincides, at least in part, with the Brothers Fault Zone and the southern line is sub parallel to the Brothers Fault Zone.

The youngest rhyolite domes occur near Newberry Crater where the rocks are between 0.6 and 1.1 m.y. old. The only possible way to get into a land position in the Newberry area will be through a joint venture as over 500 square miles have been filed upon. At last report the National Forest Service is favorably disposed toward the issuance of geothermal leases around the flanks of Newberry volcano.

If one projects the trend of the rhyolite domes northwestward from Newberry the trend intersects the Cascades near the Three Sisters. At South Sister (see enclosed map area #2) there are a series of dacitic flows and domes less than 7,000 years old. Farther to the northwest, along the trend, Belknap Hot Springs occur on the west flank of the High Cascades. The area between the Balknap Hot Springs KGRA and the Deschutes River appears to represent a favorable geothermal target. As a first pass through we should sample the springs and do some preliminary ground checking on the dacitic flows and domes.

The rhyolitic domes along the southern trend (enclosed map) intersect the High Cascades near Diamond Peak. The youngest rhyolites thus far dated are found at Burn Butte, and give an age of 2.5 m.y. The dome and associated flows are much larger than those found in the Newberry Crater area and covers approximately 50 square miles (see enclosed map area #1). McCredie Springs and several other warm springs occur within the area outlined. The area should be sampled geochemically and a brief ground reconnaissance made to determine whether additional work and land acquisition is worthwhile.

A third type of geothermal area occurs where the Basin and Range structures intersect the lines of rhyolitic intrusions. The Lakeview

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and Adel areas are examples of such intersections, and both are well covered by the oil companies. The Glass Butte area along the northern line also appears to be an intersection of a Basin and Range structure with the line of rhyolite intrusions. The land position in the Glass Butte area is largely controlled by the oil companies. The results of the State Department of Geology and Mineral Industries temperature gradient drilling the Glass Butte area have not been published yet, but rumor has it that some anomalies were found. We should continue to watch the Glass Butte area but will have to consider a joint venture approach if we decide to do anything in the area.



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D. Pilkington

DP:mf

Encl: 1



