

ENERGY INSTITUTE

Box 3E1/Las Cruces, New Mexico 88003  
Telephone (505) 646-1745

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April 1, 1985

Dr. Harry J. Olson  
Vice President  
Steam Reserve Corporation  
1707 Cole Boulevard  
Golden, CO 80401

SUBJECT: Lithology logs, Hillsboro project

Dear Harry:

Enclosed are the lithologic descriptions of the samples obtained from temperature-gradient holes 1124-6, 7, 8, 9, and 10. The descriptions were made using both unwashed and washed samples with the assistance of a 10- to 25-power binocular microscope.

My feeling is that the in situ thermal conductivities may be somewhat different than Lohse's estimates. However, even conservative estimates yield an intriguing regional heat flow anomaly. Please note that we are using S.I. units ( $\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ) for all of our calculations.

Let me give you my personal bias:

Hole	Gradient ( $^{\circ}\text{C}/\text{Km}$ )	Conductivity ( $\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ )	Heat Flow ( $\text{mW}/\text{m}^2$ )	HFU
6	75	2.5 - 3.0	187.5 - 225.0	4.5 - 5.4
7	68	1.7 - 2.2	115.6 - 149.6	2.8 - 3.6
8	100	1.7 - 2.2	170.0 - 220.0	4.1 - 5.3
9	60	1.7 - 2.2	102.0 - 132.0	2.4 - 3.2
10	(190)	3.0 - 3.5	(570.0 - 665.0)	(13.6 - 15.9)

Hole number 10 should not be used to represent surface heat flow since it has clearly penetrated a convective system with some unknown component of thermal water. A first glance at structure suggests to us that this circulation system is probably a very local feature.

Two aspects of the thermal anomaly at Hillsboro are encouraging. First, we see no reason to expect a purely forced convective system in the geologic and topographic situation of the anomaly. Second, all 5 holes have anomalously high heat flow. We believe you have located a residual surface heat anomaly of at least 1 to 3 heat flow units over an area of some 20 square kilometers.

Dr. Harry J. Olson  
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We will be preparing our report on the project in the near future. In the meantime we will continue to regard Hillsboro data as confidential.

Sincerely,

A handwritten signature in cursive script that reads "Jim".

James T. Gross  
Staff Geologist

Enclosures (5)

xc: Dr. Schoenmackers  
Mr. Whittier