TEC-13

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INTER-OFFICE MEMORANDUM

SUBJECT: Thermal gradient measurements at Soda Springs, Idaho DATE February 3, 1977

TO: W. M. Dolan, H. J. Olson, A. L. Lange, H. D. Pilkington, M. H. Alldredge

FROM: Frank Dellechaie

Eight thermal gradient holes were drilled in the Soda Springs area. Drilling proceeded from January 5 through 21, 1977, with one four-day break for the exceptionally cold weather. Northwest Air Drilling of Logan, Utah, performed favorably, utilizing a CP-1000 drill. Total drilling costs were $9884. which equates to $4.19 per drilled foot. Drilling was generally slow and frustrating. In all but one hole, caving dictated PVC implacement via the drill steel. Great volumes of water (>500gpm), loss of circulation, sand beds and the weather lessened drilling efficiency.

Gradients and heatflow data for the initial measurements are generally unattractive (Table 1 and Figure 1). SE1-15 penetrated spring travertine deposits for about half the total depth. Drilling was stopped at 53 meters because of a 16°C-50gpm flow of artesian soda water. The flow was stopped with three yards of quickset grout. The high gradient from this hole has little significance.

Table 1. Gradient and heatflow data from the Soda Springs area.

Hole	Gradient °C/km	Heatflow
SE1-10	57	2.6
12	80	2.9
13	29	1.5
14	35	1.8
15	200	4.0
16	66	3.3
17	23	0.7
18	50	2.0
Simplot holes in Aspen Range		
75-509	7	0.3
75-502	7	0.3
76-X	2	0.1

SE1-13 was drilled into the 0.04-0.08 my old China Hat rhyolite. It is apparently, thermally normal down to 91.4 meters.

SE1-12 was drilled between the two most interesting thermal springs in the area. The 80°C/km gradient appears in two segments of the themal log and is seemingly valid.

SE1-18 was drilled directly into a north-south fault zone in Sulfur Canyon. Sulfate water, carbon dioxide and hydrogen sulfide are presently coming out of this fault in copious quantities. Two sulfur mines flank the canyon. The hole has a gradient of 50°C/km.

Several holes owned by J. R. Simplot, Inc., were probed. These holes are located in the central Aspen Range, east of Soda Springs. They exhibit depressed gradients (Table 1).

A second measurement of the holes will be conducted during March of this year when the holes can be properly reclaimed and more detailed analysis will be done.

Frank Dellechaie

FD:d

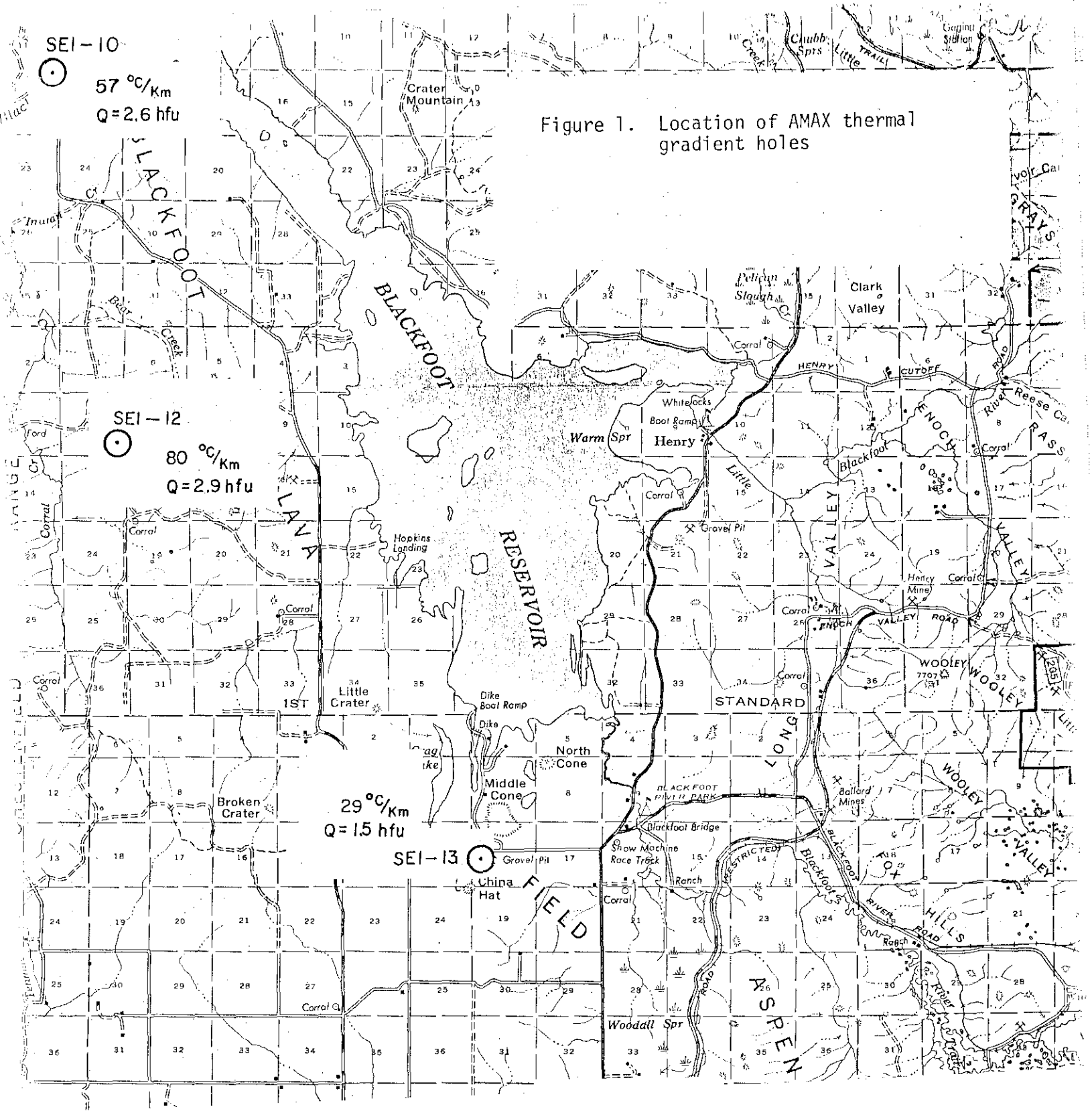

Figure 1. Location of AMAX thermal gradient holes