BIEBER, CALIFORNIA

Thermal conductivity measurements on 10 samples from near Bieber, California are shown in the attached table. Most of the samples are tuffs of various kinds, with one basalt sample, one clay sample, and one sample labeled sandy gravel. In general the thermal conductivities of the tuffs indicate that they are made up principally of glass fragments. Depending on the porosity of the tuffs *in situ* thermal conductivity values for these rocks could be very low. Typical apparent values of thermal conductivity for pumaceous tuffs near the Harney Basin, for example, are about 1.8 ± 0.2 mcal/cmsec^{o}C. On the other hand, if the rocks are fairly compact welded glassy tuffs, the *in situ* thermal conductivity values could be nearly equal to the measured bulk values. The bulk value of the basalt is typical of basalts, but it is difficult to estimate the *in situ* conductivity because of the unknown porosity. A reasonable value, if the basalt is not too vesicular, is about .1 which gives an *in situ* thermal conductivity of about 4.2 mcal/cmsec^{o}C. The sandy gravels and clay probably have porosities in the range of 0.4 ± 0.1 which give *in situ* thermal conductivity values of 2.4 ± 0.4 and 2.0 ± 0.4 for the gravel and clay samples respectively.

BIEBER, CALIFORNIA

Cuttings Thermal Conductivity Measurements

Sample No.	Approx. Hole Loc.		Porosity (assumed)	Bulk and *In Situ*[*] Thermal Conductivity mcal/cmsec°C		Lithology
JD-1-75	BR-2 BR-5 BR-6 BR-7	0-12.2 m 89.9-91.4 m 79.3-94.5 m 24.4-33.5 m		2.88		Pumaceous lithic tuff
JD-2-75	BR-3	35.1-70.1 m	(0.1)	4.73	4.2	Basalt
JD-3-75	BR-3	0-35.1 m		2.68		Tuffaceous Basalt Agglomerate
JD-4-75	BR-1	36.6-50.3 m	0.4±0.1	3.35	2.4	Sandy Gravels
JD-5-75	BR-5 BR-7	6-73.2 m 61.0-79.3 m	0.4±0.1	2.55	2.0	Clay
JD-6-75	BR-2 BR-4	54.9-67.1 m 94.5-97.5 m		2.99		Tan Tuff
JD-7-75	BR-5	89.9-91.4 m		2.29		Pumaceous Tuff
JD-8-75	BR-4	94.5-97.5 m		2.49		Clayey Tuff
JD-9-75	BR-4	89.9-91.4 m		2.91		Pumaceous Lithic Tuff
JD-10-75	BR-4	85.3-89.9 m		2.79		White Tuff

*$K_{IS} = (K_B)^{1-\varphi}(1.4)^{\varphi}$

SMU Geothermal Laboratory
March 8, 1976