(200)
R290

USGS - OFR - 75-669

75-669

✓ UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

[Reports - Open file series]

Audio-magnetotelluric Data Log and Station
Location Map for Gerlach Known Geothermal
Resource Area, Nevada

TIV
Cm
Juv. n. h. -

By

Carl L. Long, Mike Senterfit, and Harold Kaufmann
U.S. Geological Survey

Open-file Report 75-669
1975

This report is preliminary and has not been
edited or reviewed for conformity with U.S.
Geological Survey standards and nomenclature.

267263

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

Rec'd 9-17-76 PO OR 76-1948

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

ADVISORY NOTE

Running along the edge of the KGRA (Known Geothermal Resource Area) is a high-voltage ($\pm 400,000$ V), D.C. transmission line belonging to the city of Los Angeles. The transmission line was a serious source of noise in the AMT frequency band. Large-amplitude, even harmonics of 60Hz were radiated by the line, providing difficulty in operating in the mid-frequency range. In addition, large-amplitude, apparently natural signals in the lower frequency AMT range were noted when operating near the transmission line. It is not known whether this latter effect is due to concentration of the natural fields in the vicinity of the transmission line or noise due to DC/AC converters and load variations on the line.

Users of this data should keep in mind that the plane-wave assumptions used in computing the apparent resistivities may not be valid.

U.S. GEOLOGICAL SURVEY A.M.T. DATA LOG

pa = observed apparent resistivity in ohm-metres

N = number of observations

Er = standard error in ohm-metres

- = no data

"NOTE" - Telluric line orientation indicated with station numbers.

		FREQUENCY											
Sta. No.		7.5	10	14	27	76	285	685	1.2K	3.3K	6.7K	10.2K	18.6K
1 NS	pa	1.84	6.45	9.1	7.2	6.5	-	-	-	-	26.3	44.6	167
	N	5	6	8	12	7	-	-	-	-	9	6	1
	Er	.51	1.0	.89	.65	.25	-	-	-	-	.9	5	-
1 EW	pa	8.66	3.97	3.44	2.6	2.81	-	-	-	-	20	146	259
	N	6	7	5	11	7	-	-	-	-	13	6	1
	Er	2.0	.62	.28	.24	.30	-	-	-	-	1.0	2.7	-
2 NS	pa	27.5	35.9	31.3	83.1	24.5	-	-	-	-	214	174	849
	N	6	8	12	6	7	-	-	-	-	7	8	1
	Er	.72	2.5	1.6	4.8	1.9	-	-	-	-	21.7	12.9	-
2 EW	pa	84.7	53.9	37.7	19.2	12.8	38.1	-	-	-	27.7	108	62
	N	6	7	8	6	7	7	-	-	-	6	7	1
	Er	3.9	6.1	4.5	1.2	.36	3.2	-	-	-	3.4	11.7	-
3 NS	pa	16.8	-	15.7	5.4	97.5	-	-	-	-	-	-	-
	N	8	-	4	11	7	-	-	-	-	-	-	-
	Er	2.8	-	.44	1.7	13.8	-	-	-	-	-	-	-
3 EW	pa	-	-	-	-	-	-	-	-	-	-	-	-
	N	-	-	-	-	-	-	-	-	-	-	-	-
	Er	-	-	-	-	-	-	-	-	-	-	-	-
5 NS	pa	-	-	.83	0.6	-	.25	-	-	-	64.9	44.3	327
	N	-	-	7	14	-	2	-	-	-	10	6	1
	Er	-	-	.25	.01	-	0	-	-	-	3.7	.12	-
5 EW	pa	-	-	.57	.29	.26	.52	-	-	-	7.6	39.4	162
	N	-	-	8	13	10	7	-	-	-	8	7	1
	Er	-	-	.17	.02	.01	.02	-	-	-	.6	.05	-

pa = observed apparent resistivity in ohm-metres

N = number of observations

Er = standard error in ohm-metres - = no data

"NOTE" - Telluric line orientation indicated with station numbers.

		FREQUENCY											
Sta. No.		7.5	10	14	27	76	285	685	1.2K	3.3K	6.7K	10.2K	13.6K
6 _{NS}	pa	7.9	6.1	7.6	4.0	1.5	1.5	-	-	-	132	170	629
	N	8	6	7	6	7	7	-	-	-	6	1	1
	Er	.67	.83	1.3	1.38	.14	.03	-	-	-	8.2	-	-
6 _{EW}	pa	15.0	12.0	3.75	2.9	2.6	3.1	-	-	-	22.5	109	575
	N	6	6	8	6	8	7	-	-	-	7	1	1
	Er	2.3	1.07	.55	.8	.15	.12	-	-	-	.9	-	-
7 _{NS}	pa	1.8	1.9	2.1	2.1	.92	.47	-	-	-	56.5	48.2	431
	N	12	9	7	9	7	11	-	-	-	7	7	1
	Er	.19	.16	.54	.17	.04	.03	-	-	-	6.3	1.0	-
7 _{EW}	pa	3.4	2.3	1.39	1.24	.88	1.32	-	-	-	8.6	40.7	175
	N	18	8	8	11	8	10	-	-	-	12	6	1
	Er	.44	.40	.15	.07	.05	.07	-	-	-	.3	.6	1
8 _{NS}	pa	7.51	4.14	6.9	7.0	-	11.9	-	-	-	-	-	-
	N	8	6	8	7	-	6	-	-	-	-	-	-
	Er	1.30	.54	1.14	.72	-	4.7	-	-	-	-	-	-
8 _{EW}	pa	6.9	7.5	6.73	5.11	-	-	-	-	-	-	-	-
	N	6	7	7	7	-	-	-	-	-	-	1	-
	Er	2.7	2.6	.92	.82	-	-	-	-	-	-	-	-
9 _{NS}	pa	9.16	8.47	7.52	7.16	2.23	1.59	-	-	-	62.0	63.7	334
	N	9	7	8	13	7	13	-	-	-	10	7	1
	Er	.41	.74	.55	.46	.12	.09	-	-	-	1.9	2.6	-
9 _{EW}	pa	4.39	231	3.70	1.58	2.19	1.44	-	-	-	14.6	160	174
	N	7	6	7	11	10	10	-	-	-	13	6	7
	Er	.61	.26	.36	.12	.18	.14	-	-	-	.99	6.2	-

pa = observed apparent resistivity in ohm metres

N = number of observations

Er = standard error in ohm-metres - = no data

"NOTE" - Telluric line orientation indicated with station numbers.

Sta. No.		FREQUENCY											
		7.5	10	14	27	76	285	685	1.2K	3.3K	6.7K	10.2K	18.6K
10NS	pa	3.67	3.05	3.67	1.62	1.10	1.80	-	-	-	71.3	83.1	305
	N	9	10	7	8	7	8	-	-	-	8	1	1
	Er	.21	.18	.80	.17	.07	.16	-	-	-	1.8	-	-
10EW	pa	2.77	1.57	.66	.93	1.91	4.38	-	-	-	17.1	125	68.3
	N	7	8	8	8	8	7	-	-	-	8	1	1
	Er	.42	.21	.12	.07	.28	.66	-	-	-	1.3	-	-
11NS	pa	46	.33	.53	.40	1.04	.13	-	-	-	31.6	33.3	178
	N	8	7	9	14	9	9	-	-	-	9	1	1
	Er	.10	.10	.11	.04	.06	.02	-	-	-	2.8	-	-
11EW	pa	1.37	.60	.32	.23	.22	.26	-	-	-	3.3	16.9	164
	N	11	7	8	13	7	13	-	-	-	12	1	1
	Er	.17	.07	.05	.03	.01	.01	-	-	-	.24	-	-
12NS	pa	.69	.63	.44	.45	.32	-	-	-	-	14.7	14.8	96
	N	6	9	6	6	8	-	-	-	-	3	1	1
	Er	.22	.14	.08	.08	.10	-	-	-	-	.68	-	-
12EW	pa	1.42	.44	.15	.18	.16	-	-	-	-	1.6	10.1	38.9
	N	6	8	8	8	11	-	-	-	-	6	1	1
	Er	.34	.06	.03	.02	.02	-	-	-	-	.17	-	-
13NS	pa	.32	.36	.55	.48	-	-	-	-	-	38.1	27.6	156
	N	15	8	9	9	-	-	-	-	-	8	1	1
	Er	.02	.06	.03	.04	-	-	-	-	-	3.5	-	-
13EW	pa	.27	.26	.23	.24	-	-	-	-	-	9.6	196	70
	N	15	7	9	17	-	-	-	-	-	9	1	1
	Er	.02	.06	.03	.04	-	-	-	-	-	.48	-	-

pa = observed apparent resistivity in ohm-metres

N = number of observations

Er = standard error in ohm-metres

- = no data

"NOTE" - Telluric line orientation indicated with station numbers.

		FREQUENCY											
Sta. No.		7.5	10	14	27	76	285	685	1.2K	3.3K	6.7K	10.2K	18.6K
14 _{NS}	pa	2.3	3.63	2.87	1.29	.71	.85	-	-	-	208	176	1290
	N	8	7	6	13	7	7	-	-	-	3	1	1
	Er	.35	.42	.64	.18	.05	.13	-	-	-	32.7	-	-
14 _{EW}	pa	6.4	7.39	.61	.44	.44	.49	-	-	-	864	76.3	436
	N	6	5	6	7	6	8	-	-	-	6	1	1
	Er	.62	1.76	.11	.08	.02	.03	-	-	-	.45	-	-
15 _{NS}	pa	1.74	16.7	13.11	-	-	-	-	-	-	14.2	16.4	36.4
	N	10	3	3	-	-	-	-	-	-	12	1	1
	Er	.31	3.02	2.4	-	-	-	-	-	-	.87	-	-
15 _{EW}	pa	218	414	214	-	-	-	-	-	-	11.3	6.12	735
	N	9	3	3	-	-	-	-	-	-	6	1	1
	Er	.55	1.38	.53	-	-	-	-	-	-	1.04	-	-
16 _{NS}	pa	1.21	1.29	1.04	1.16	2.2	-	-	-	-	96.5	107	482
	N	6	12	8	8	5	-	-	-	-	2	6	1
	Er	.18	.11	.13	.12	.10	-	-	-	-	11.6	4.8	-
16 _{EW}	pa	1.98	.91	.44	.69	4.10	-	-	-	-	6.76	105	16.6
	N	7	8	6	6	3	-	-	-	-	6	6	1
	Er	.48	.18	.04	.06	.44	-	-	-	-	.60	1.9	-
17 _{NS}	pa	69.7	60.7	64.4	119.7	343	1974	-	-	-	73.6	623	296
	N	7	8	5	7	6	10	-	-	-	7	1	1
	Er	6.12	2.7	13.5	8.0	23.7	.95	-	-	-	7.58	-	-
17 _{EW}	pa	61.0	140	48.6	43.9	1552	1425	-	-	-	41.5	1011	205
	N	7	6	8	7	7	8	-	-	-	7	1	1
	Er	8.3	31.5	1.66	12.9	96.5	114	-	-	-	2.5	-	-

Figure 1. Audio-magnetotelluric station location map for the Gerlach KGRA (Known Geothermal Resource Area), Nevada.