

#1

AMAX EXPLORATION, INC.
4704 HARLAN STREET • DENVER, COLORADO 80212

INTER-OFFICE MEMORANDUM

SUBJECT: Geothermal Potential - Twin Peaks Area, Utah

DATE April 24, 1979

TO: O'Brien Resources Corporation

FROM: H. D. Pilkington

Because of chargeability problems in Utah, AMAX finds it necessary to reassign Federal leases U-25331 and U-25334 back to O'Brien Resources. In order to present a more complete picture of the geothermal potential of the area you will find enclosed copies of the thermal map, MT maps, SP maps and a geologic map.

The only geothermal manifestation known in the Twin Peaks area is the warm spring on the northeastern flank of North Twin Peak. The spring has a temperature of 30°C. Geologically, the Twin Peaks and the area of low hills to the west are underlain by rhyolitic rocks. A considerable discrepancy has been found in radiometric age dates for the rocks. The U. S. Geological Survey obtained a date of 2.38 m.y. rholite obsidian from the Cudahy Mine area and a date of 2.33 m.y. from sanidine rhyolite of South Twin Peak. AMAX received a whole-rock date of 19.5 m.y. on a sample from South Twin Peak.

Geochemically the water from Twin Peaks Warm Spring gives the following (units mg/l):

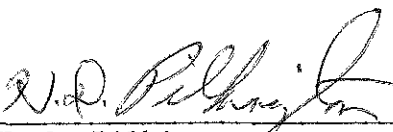
T°C	30
Flow gpm	25
pH	7.62
F	5.2
Cl	2100
SO ₄	400
HCO ₃	188
CO ₃	0
SiO ₂	56
Na	1490
K	14
Ca	170
Mg	48
Li	0.9
B	0.6
NH ₃	<0.1
TDS	4473

TS10, °C	107
TNa/K °C	12
TNa-K-Ca °C	93
Cl/HCO ₃	11
Cl/SO ₄	5
Cl/B ⁴	3500
Cl/Li	2333
Cl/F	404

The thermal maps (heatflow, T@100m, gradient and depth to 200°C) have been drawn on the basis of all available data. Hole numbers in the 200 and 400 series were drilled by AMAX while hole numbers in the 100 and 300 series represent acquired data, and should be discussed with AMAX prior to release or discussions with any third party. Copies of the lithologic and temperature logs for the AMAX holes are included for your files.

The geothermal anomaly is large enough to be of interest. The geochemistry is not very exciting and suggests deep circulation along an east-west fault system. We encountered similar waters in drill hole 779-201 approximately one mile west of the Twin Peaks Warm Spring. If the ascending warm waters encounter an aquifer, then later migration of 30°C to 100°C water could explain the thermal anomaly. However, the presence of a large area of young rhyolitic volcanics, 2.3-2.4 m.y., suggests there may be some residual heat present at depth. One or more deep thermal gradient holes should permit one to assess the property.

If you elect to do a deal on the property, I have enclosed a property map so that you will know who the players are.



H. D. Pilkington

HDP/c

Enclosures

LITHOLOGIC LOG B-201 (SWU-1) OK

NW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 22 T23S R8W

Elevation: 5,000'

<u>Depth</u>	<u>Description</u>
0 - 61.7	White to light gray, fine-grained, dense, porphyritic rhyolite. Phenocrysts of quartz, plagioclase and biotite.
61.7 - 76	Bleached, non-stained rhyolite all of the biotite has been bleached or altered to chlorite. Made 50-60 gpm water at 32 degrees C.

H. D. Pilkington
H. D. Pilkington (M.C.)

HDP:mmo

cc: Art Lange
Cheryl Caywood
John Deymonaz
File Copy to Dean

PROJECT NAME: IT

PROJ WELL DA MO YR WELL TITLE EDITOR TERRAIN LF IT TSZ IST
779 201 06 00 76 1.6 KM WEST OF TWIN PEAK SPG DPZ/PLH 0.0 C 0 1 1

YCM XCM N. LAT N. LONG ELEV
8.2000 1.8500 38.7363 112.7367 1536.2

J SEG START SEG END CONDUCTIVITY X STD DEV.
1 10.000 40.000 5.000 0.500
PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS
2 40.000 54.000 0.000 0.000
3 54.000 76.000 0.000 0.500
*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

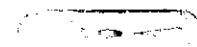
PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	201	06	00	76	1.000	18.960	99999.000	1
					1.500	19.630	1459.992	2
					2.000	20.110	839.997	3
					2.500	20.270	320.007	4
					3.000	20.250	-39.978	5
					3.500	19.650	-1200.012	6
					4.000	19.265	-769.989	7
					4.500	18.750	-1029.999	8
					5.000	18.400	-700.012	9
					5.500	18.075	-649.994	10
779	201	06	00	76	6.000	17.800	-550.019	11
					6.500	17.600	-399.994	12
					7.000	17.500	-199.982	13
					7.500	17.450	-100.005	14
					8.000	17.450	0.000	15
					8.500	17.495	89.996	16
					9.000	17.565	139.984	17
					9.500	17.680	230.011	18
					10.000	17.810	260.010	19
					10.500	17.975	329.987	20
779	201	06	00	76	11.000	18.245	540.009	21
					11.500	18.440	389.984	22
					12.000	18.585	290.009	23
					12.500	18.740	309.998	24
					13.000	18.950	420.013	25
					13.500	19.195	489.990	26
					14.000	19.315	239.990	27
					14.500	19.630	430.023	28
					15.000	19.605	149.994	29



779	201 06 00 76	15.500	19.770	329.987	30
		16.000	19.950	360.016	31
		16.500	20.130	459.991	32
		17.000	20.395	429.993	33
		17.500	20.400	410.004	34
		18.000	20.795	390.015	35
		18.500	20.980	369.995	36
		19.000	21.130	299.988	37
		19.500	21.305	350.006	38
		20.000	21.465	320.007	39
		22.000	22.120	327.500	40
779	201 06 00 76	24.000	22.835	357.498	41
		26.000	23.485	324.997	42
		28.000	24.200	367.506	43
		30.000	24.880	379.996	44
		32.000	25.390	255.005	45
		34.000	26.075	342.499	46
		36.000	26.875	400.002	47
		38.000	27.790	457.497	48
		40.000	28.400	305.000	49
		42.000	28.325	212.502	50
779	201 06 00 76	44.000	29.370	272.499	51
		46.000	29.265	247.498	52
		48.000	30.355	245.003	53
		50.000	30.800	222.496	54
		52.000	31.195	197.502	55
		54.000	31.555	180.000	56
		56.000	31.755	99.998	57
		58.000	31.930	27.502	58
		60.000	32.010	40.001	59
		62.000	32.055	22.499	60
779	201 06 00 76	64.000	32.145	44.998	61
		64.000	32.145	0.000	62
		68.000	32.145	0.000	63
		70.000	32.130	-7.500	64
		72.000	32.130	0.000	65
		74.000	32.130	0.000	66
		76.000	32.130	0.000	67

SURFACE INTERCEPT FOR SEGMENT 1 = 14.440

SEG	ZSTART	TSTART	ZEND	TEND	CBND & DCBN	GRADIENT & S.D.	HFL &	DHF	T AT 100M	KM
1	10.000	17.810	40.000	28.400	5.000 0.500	347.801 79.259	17.784	5.702	49.268	0.533
2	40.000	28.400	54.000	31.555	7.720 0.000	230.387 32.358	17.784	5.702	42.153	0.785
3	54.000	31.555	76.000	32.130	84.308 0.500	20.948 38.242	17.784	5.702	32.633	1.090



MINDCOMF CORPORATION

2.5 KM SSE OF TWIN PEAK SPRING

N. LAT 38.776, W. LONG 112.709

PROJ. 779

WELL 202

07 OC 76

TEMPERATURE °C

10

15

20

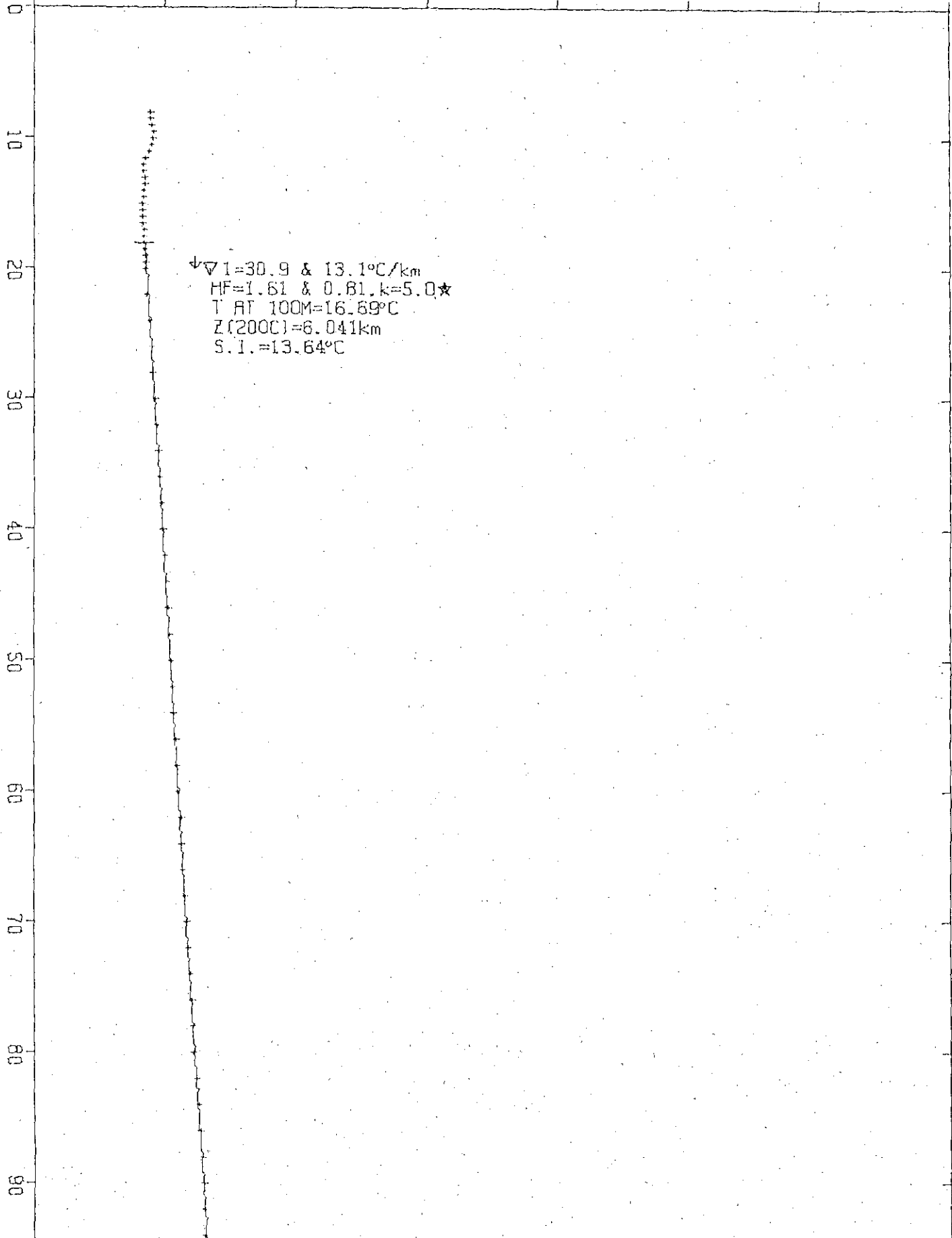
25

30

35

40

45



19 AC 77

PP/MLH

OK, UT

1.6 KM WEST OF TWIN PEAK SPC

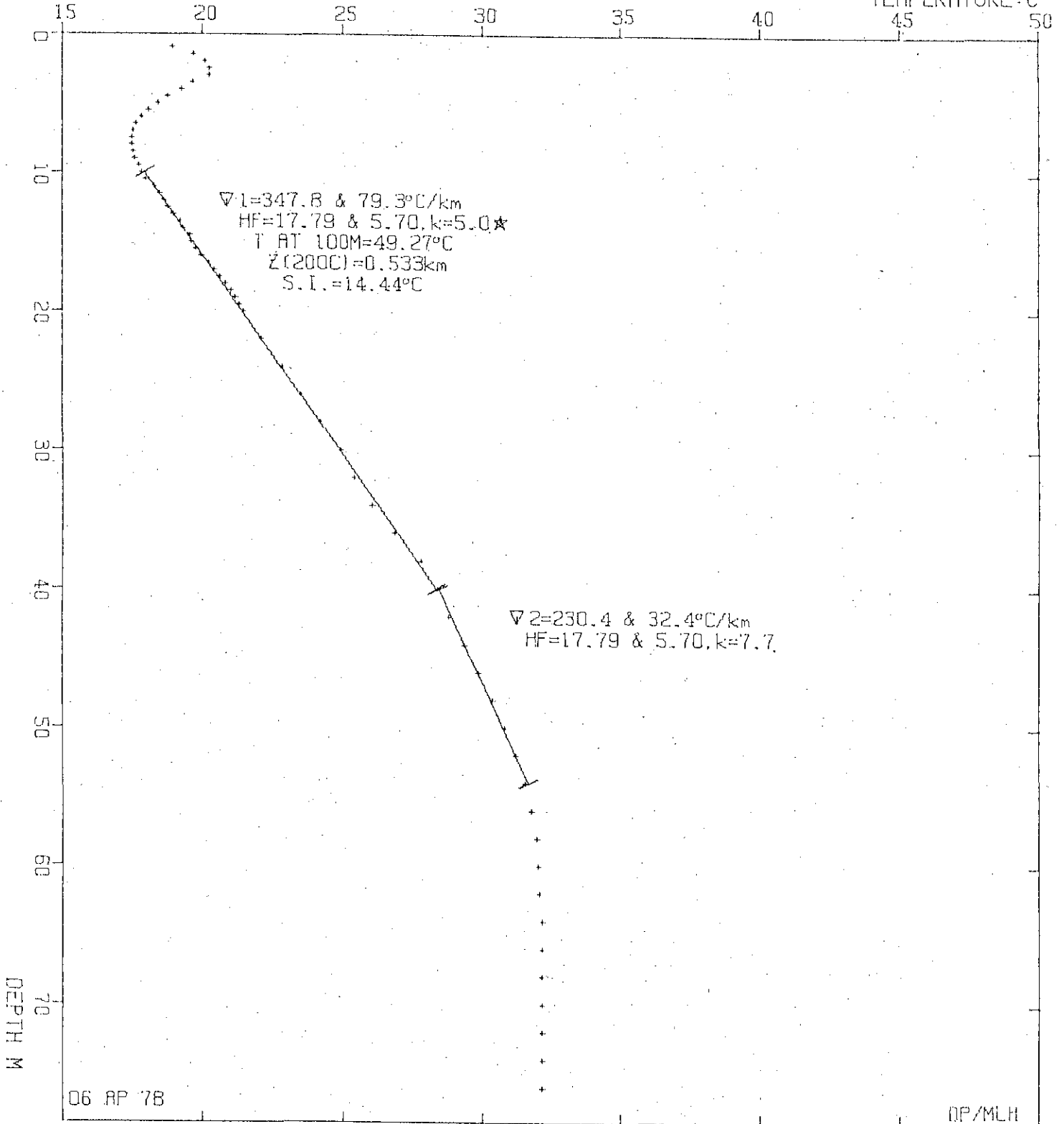
N. LAT 38.796; W. LONG 112.737

PROJ. 779

WELL 201

06 OC 76

TEMPERATURE °C



OK, UT

1.6 KM WEST OF TWIN PEAK SPG

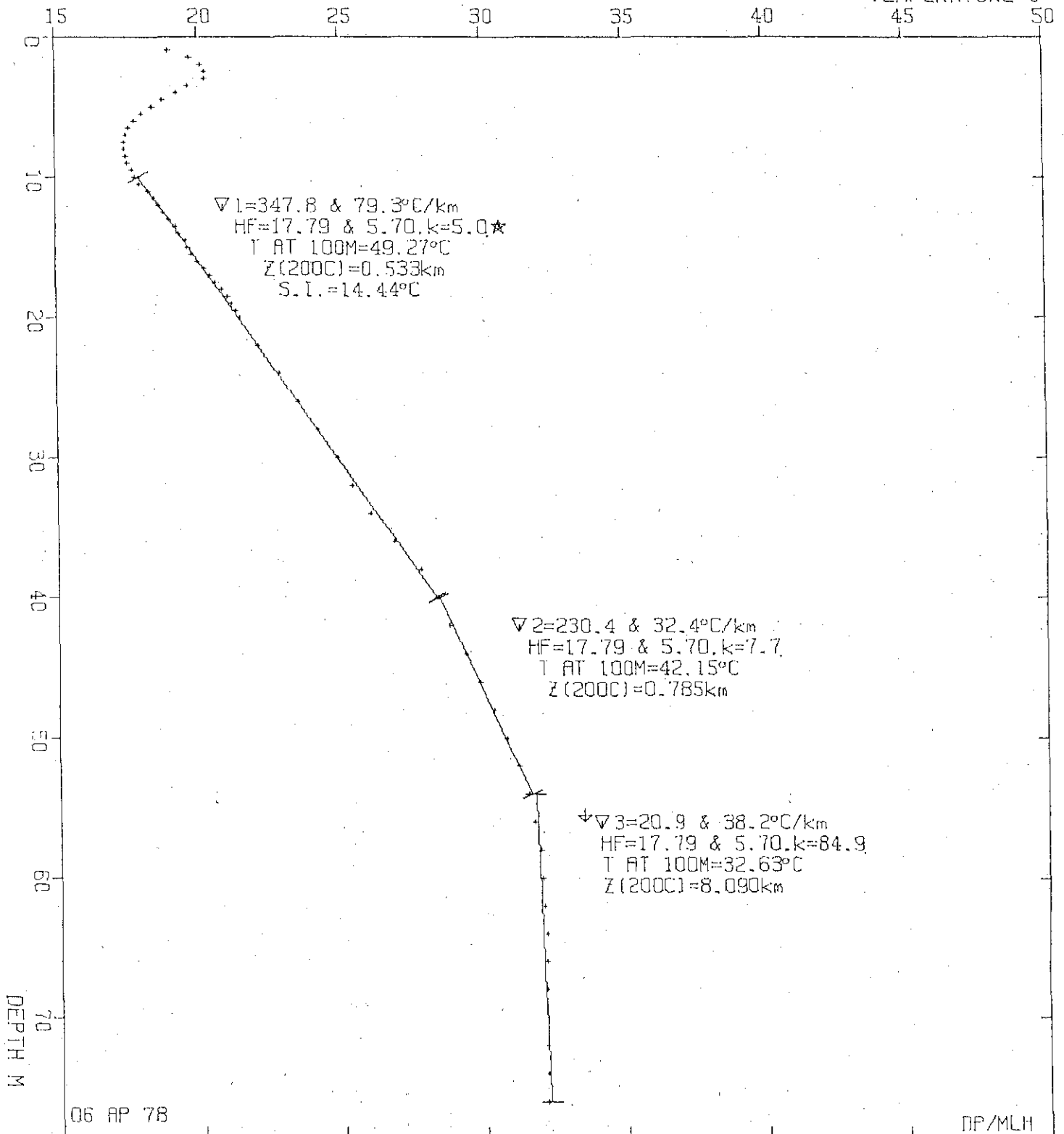
N.LAT 38.796, W.LONG 112.737

PROJ. 779

WELL 201

06 OC 76

TEMPERATURE °C



PROJECT: OK, UT

WELL NO DA MO YR WELL TITLE EDITOR TERRAIN LP LI ISZ IST
 779 202 07 00 76 2.5 KM SSE OF IWIN PEAK SPRING DP/MLH 0.0 0 0 1 1

YCM XCM N.LAT W.LONG ELEV
 4.6000 5.7000 98.7760 112.7090 1517.13

J SEG START SEG END CONDUCTIVITY & STD DEV.
 1 18.000 95.000 5.000 0.500

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS
 ** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

WELL NO	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.	
779	202	07	00	76	8.000	14.390	99.999	1
					8.500	14.415	50.001	2
					9.000	14.445	59.999	3
					9.500	14.570	250.000	4
					10.000	14.525	790.000	5
					10.500	14.450	7150.000	6
					11.000	14.330	7240.000	7
					11.500	14.200	7260.000	8
					12.000	14.150	7100.000	9
					12.500	14.160	70.000	10
779	202	07	00	76	13.000	14.180	39.999	11
					13.500	14.180	30.001	12
					14.000	14.175	740.001	13
					14.500	14.135	780.000	14
					15.000	14.120	729.999	15
					15.500	14.115	710.000	16
					16.000	14.115	0.000	17
					16.500	14.120	70.000	18
					17.000	14.130	79.999	19
					17.500	14.140	20.000	20
779	202	07	00	76	18.000	14.155	30.001	21
					18.500	14.170	29.999	22
					19.000	14.190	40.001	23
					19.500	14.205	30.001	24
					20.000	14.210	9.998	25
					22.000	14.260	25.000	26
					24.000	14.355	47.500	27
					26.000	14.465	55.000	28
					28.000	14.525	30.000	29
					30.000	14.585	30.000	30
779	202	07	00	76	32.000	14.650	32.500	31

		34.000	14.700	25.000	32
		36.000	14.765	32.500	33
		38.000	14.830	32.500	34
		40.000	14.895	32.500	35
		42.000	14.960	32.500	36
		44.000	15.025	32.500	37
		46.000	15.090	32.500	38
		48.000	15.165	37.500	39
		50.000	15.215	25.000	40
779	202 07 00 76	52.000	15.270	27.500	41
		54.000	15.325	27.500	42
		56.000	15.410	42.500	43
		58.000	15.435	12.500	44
		60.000	15.475	20.000	45
		62.000	15.525	55.000	46
		64.000	15.605	10.000	47
		66.000	15.665	30.000	48
		68.000	15.730	32.500	49
		70.000	15.800	35.000	50
779	202 07 00 76	72.000	15.865	32.500	51
		74.000	15.975	55.000	52
		76.000	16.010	17.498	53
		78.000	16.040	14.999	54
		80.000	16.075	17.502	55
		82.000	16.145	34.996	56
		84.000	16.245	50.003	57
		86.000	16.320	37.498	58
		88.000	16.365	22.499	59
		90.000	16.395	14.999	60
779	202 07 00 76	92.000	16.440	22.499	61
		94.000	16.465	12.505	62
		95.000	16.535	69.992	63

SURFACE INTERCEPT FOR SEGMENT 1 = 13.640

SEG	ZSTART	TSTART	ZEND	TEND	COND &	UCON	GRAVIENT &	S.D.	HFO &	DHF	T AT 100M	KM
1	13.000	14.155	95.000	16.535	5.000	0.500	30.855	13.141	1.608	0.811	15.689	6.041

PRECEDING SEGMENT USED FOR EXTRAPOLATION

LITHOLOGIC LOG B-202 (SWU-2) OK

NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 36 T23S R8W

Elevation: 4,980'

<u>Depth</u>	<u>Description</u>
0 - 2	Soil with large basalt boulders.
2 - 6.2	Interbedded gravel and reworked tuff.
6.2 - 95	No sample return.

H. D. Pilkington
H. D. Pilkington (MC)

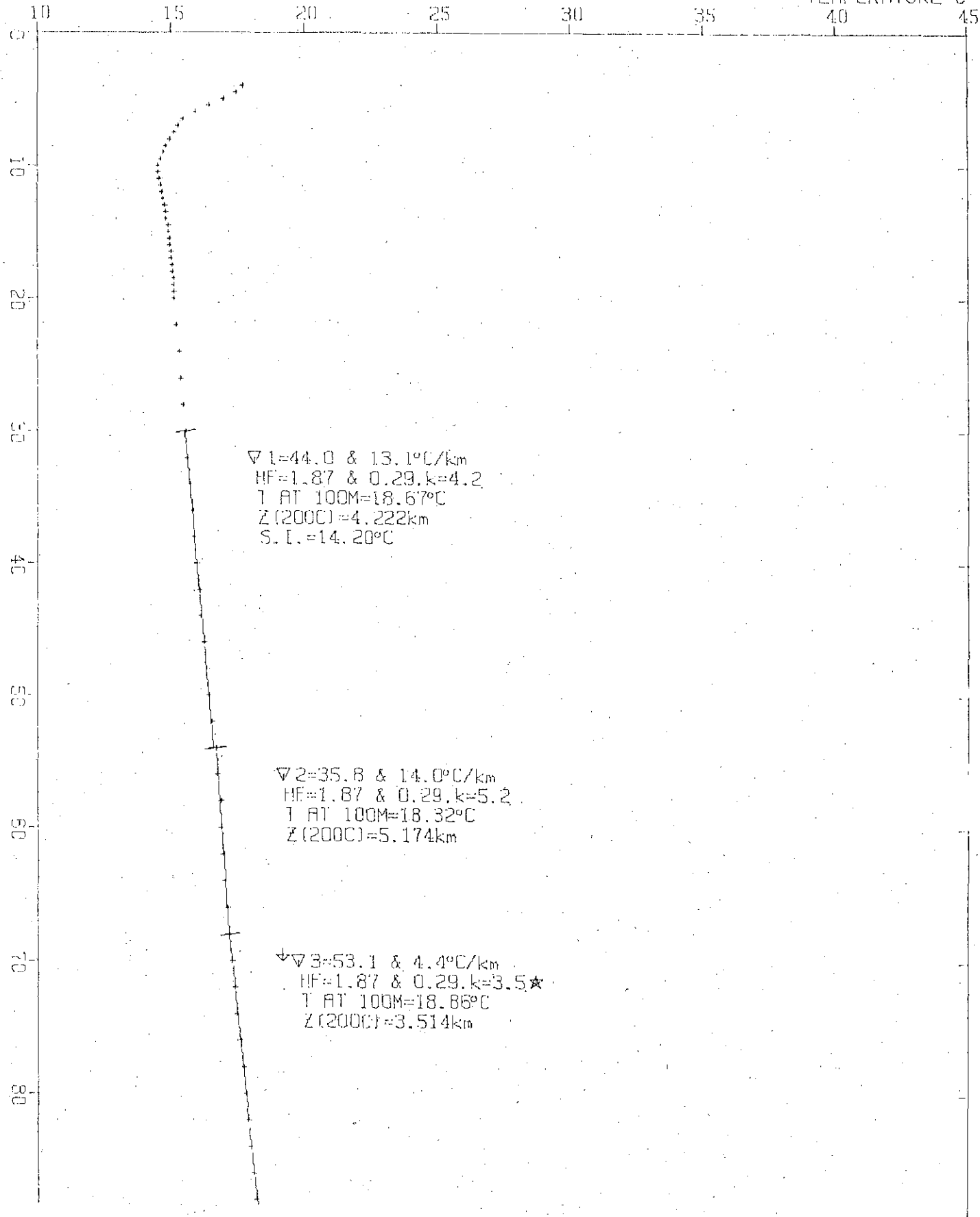
HDP:mno

cc: Art Lange
Cheryl Caywood
John Deymonaz
File Copy to Dean

UK, UI
B203, SO. END, SO. TWIN PK., UTAH
PROJ. 779 WELL 203 6 OC 76

N. LAT 38.735, W. LONG 112.777

TEMPERATURE °C



GEOHERMAL LOG, AMAX EXPLORATION, INC., A.L.LANGE
 24 AG 77

PROJECT: BK, UT

PROJ	WELL	DA	MO	YR	WELL TITLE	EDITOR	TERRAIN	LP	LI	ISZ	IST
779	203	6	06	76	B203: S9.END, S3.TWIN PK, JTAH	HDP	0.0	C	0	1	1
		YCM	XCM	N.LAT	W.LONG	ELEV					
		50.7238	35.3314	38.7351	112.7775	1615.4					

J	SEG START	SEG END	CONDVTY	STD DEV.
1	30.000	54.000	4.000	0.300
2	54.000	68.000	5.000	0.300
3	68.000	98.000	3.500	0.250

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS
 *** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	203	6	06	76	4.000	17.635	99999.000	1
					4.500	17.400	7470.001	2
					5.000	16.930	5940.002	3
					5.500	16.420	-1019.989	4
					6.000	15.900	-1039.997	5
					6.500	15.470	-860.000	6
					7.000	15.250	-439.999	7
					7.500	15.110	-250.001	8
					8.000	14.940	-340.000	9
					8.500	14.800	-280.001	10
779	203	6	06	76	9.000	14.680	-240.000	11
					9.500	14.600	-180.000	12
					10.000	14.480	-240.000	13
					10.500	14.495	30.001	14
					11.000	14.535	80.000	15
					11.500	14.595	119.999	16
					12.000	14.635	80.000	17
					12.500	14.690	110.001	18
					13.000	14.740	100.000	19
					13.500	14.790	100.000	20
779	203	6	06	76	14.000	14.825	70.000	21
					14.500	14.875	100.000	22
					15.000	14.900	49.999	23
					15.500	14.940	80.000	24
					16.000	14.960	39.999	25
					16.500	14.990	60.001	26
					17.000	15.015	49.999	27
					17.500	15.050	70.000	28
					18.000	15.055	10.000	29

			18.500	15.080	50.001	30
779	203	6 00 76	19.000	15.095	29.999	31
			19.500	15.115	40.001	32
			20.000	15.120	10.000	33
			22.000	15.200	40.000	34
			24.000	15.290	45.000	35
			26.000	15.350	30.000	36
			28.000	15.430	40.000	37
			30.000	15.545	57.500	38
			32.000	15.620	37.500	39
			34.000	15.700	40.000	40
779	203	6 00 76	36.000	15.785	42.500	41
			38.000	15.870	42.500	42
			40.000	15.945	37.500	43
			42.000	16.035	44.994	44
			44.000	16.115	40.001	45
			46.000	16.185	35.004	46
			48.000	16.280	47.501	47
			50.000	16.395	57.495	48
			52.000	16.485	44.998	49
			54.000	16.650	82.504	50
779	203	6 00 76	56.000	16.720	34.996	51
			58.000	16.835	57.503	52
			60.000	16.865	14.999	53
			62.000	16.915	25.002	54
			64.000	17.005	44.995	55
			66.000	17.085	40.001	56
			68.000	17.170	42.503	57
			70.000	17.270	49.995	58
			72.000	17.370	50.003	59
			74.000	17.475	52.498	60
779	203	6 00 76	76.000	17.580	52.498	61
			78.000	17.690	55.000	62
			80.000	17.795	52.505	63
			82.000	17.900	52.498	64
			84.000	18.015	57.503	65
			86.000	18.110	47.493	66
			88.000	18.220	55.000	67
			90.000	18.325	52.505	68
			92.000	18.445	59.998	69
			94.000	18.535	44.998	70
779	203	6 00 76	96.000	18.655	60.005	71
			98.000	18.750	47.501	72

SURFACE INTERCEPT FOR SEGMENT 1 = 14.199

SEG	ZSTART	TSTART	ZEND	TEND	CND & DCN	GRADIENT & S.D.	HFL &	DHF	T AT 100M	KM		
1	30.000	15.545	54.000	16.650	4.247	0.300	43.989	13.078	1.868	0.287	18.673	4.222

SEG	ZSTART	TSTART	ZEND	TEND	CND & DCN	GRADIENT & S.D.	HFL &	DHF	T AT 100M	KM
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2 54.000 16.650 68.000 17.170 5.217 0.300 35.807 43.952 1.868 0.287 18.316 5.174

SEG ZSTART TSTART ZEND TEND CSND S DCBN GRADIENT S S.D. HFL S DHF T AT 100M KM
3 68.000 17.170 98.000 18.700 3.500 0.250 53.062 4.398 1.868 0.287 18.856 3.514

PRECEDING SEGMENT USED FOR EXTRAPOLATION

LITHOLOGIC LOG B-203 (SWU-3) OK

SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 8 T24S R8W

Elevation: 5,300'

<u>Depth (m)</u>	<u>Description</u>
0 - 9.3	Gravel with some sand as a matrix. Fragments composed of rhyolite.
9.3 - 12.4	Iron stained, yellow-brown tuff.
12.3 - 32.4	Gray, fine-grained tuffaceous lake sediment.
32.4 - 41.7	Basalt gravels mixed with gray clayey tuffs.
41.7 - 49.4	Gray, fine-grained tuffaceous lake sediments.
49.4 - 63.3	Basalt.
63.3 - 98	Gray tuffaceous lake sediment.

H. D. Pilkington
(M.C.)

H. D. Pilkington

HDP:MMO

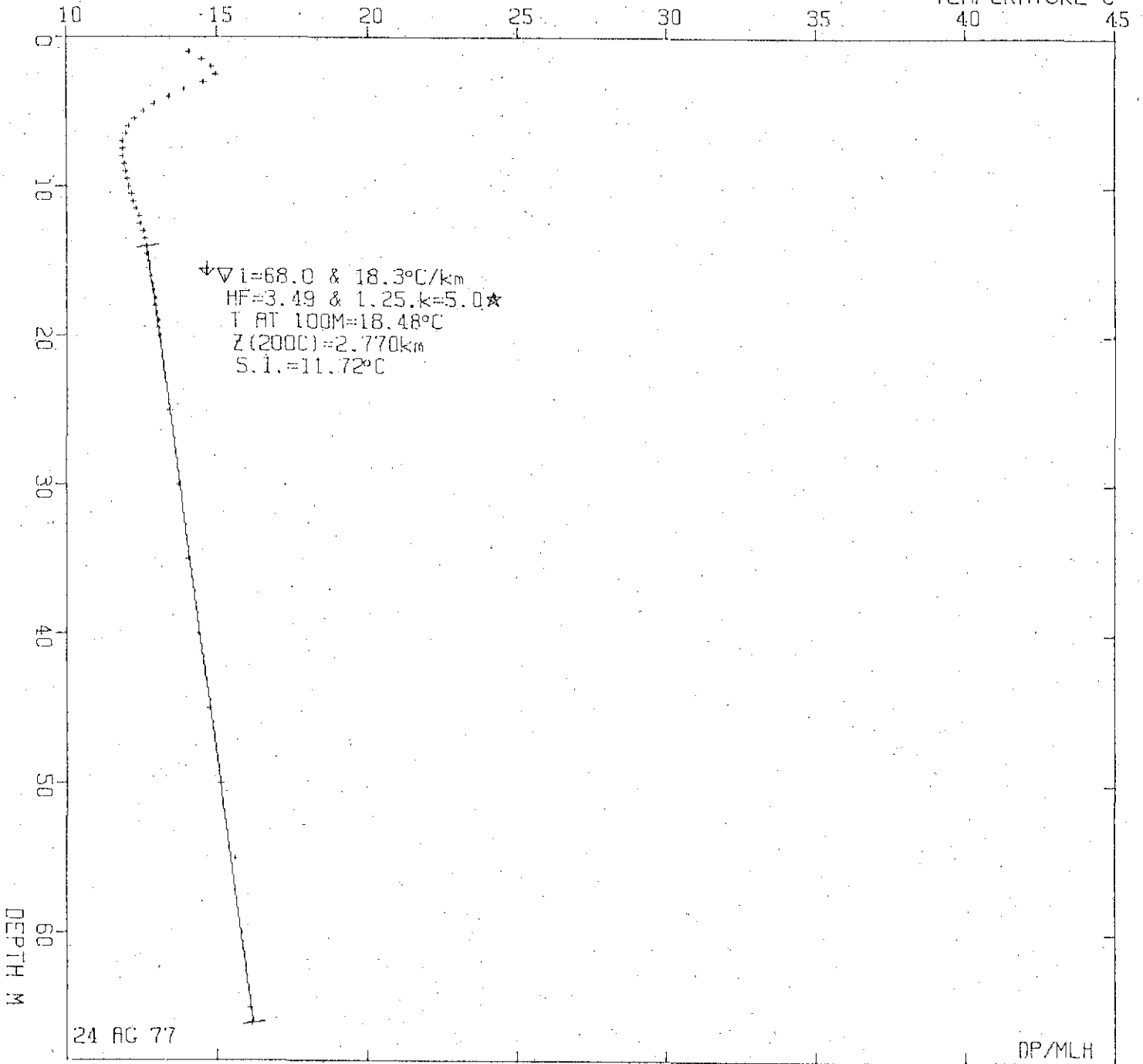
cc: Art Lange
Cheryl Caywood
John Deymonaz
File Copy to Dean

BEST, UT
19.4 KM NW OF COVE FORT, UTAH

N.LAT 38.724, W.LONG 112.741

PROJ. 755 WELL 241 27 OC 76

TEMPERATURE °C



GEO THERMAL LOG, AMAX EXPLORATION, INC., A.L. LANGE
 24 AG 77

PROJECT: BEST, UT

PROJ WELL DA MO YR WELL TITLE EDITOR TERRAIN LP LI ISZ IST
 755 241 27 00 76 19.4 KM N of COVE FORT, UTAH DP/BLH 0.0 0 0 1 1

YCM YCM N.LAT W.LONG ELEV
 39.5500 1.2000 38.7236 112.7414 1743.5

UT SEG START SEG END CONDUCTIVITY & STD DEV.
 1 14.000 66.000 5.000 0.500

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS

*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
755	241	27	00	76	1.000	14.070	99999.000	1
					1.500	14.480	820.000	2
					2.000	14.780	600.000	3
					2.500	14.945	330.000	4
					3.000	14.855	-780.000	5
					3.500	13.900	-1310.000	6
					4.000	13.405	-990.000	7
					4.500	12.920	-970.001	8
					5.000	12.535	-769.999	9
					5.500	12.265	-540.001	10
755	241	27	00	76	6.000	12.060	-410.000	11
					6.500	11.930	-260.000	12
					7.000	11.265	-129.999	13
					7.500	11.840	-50.001	14
					8.000	11.250	20.000	15
					8.500	11.880	59.999	16
					9.000	11.935	110.001	17
					9.500	11.985	100.000	18
					10.000	12.055	139.999	19
					10.500	12.125	140.001	20
755	241	27	00	76	11.000	12.210	169.998	21
					11.500	12.300	180.000	22
					12.000	12.385	170.000	23
					12.500	12.450	130.001	24
					13.000	12.535	170.000	25
					13.500	12.585	99.998	26
					14.000	12.630	90.000	27
					14.500	12.675	90.000	28
					15.000	12.720	90.000	29
					15.500	12.755	70.000	30
755	241	27	00	76	16.000	12.805	100.000	31

16.500	12.260	110.001	32
17.000	12.905	90.000	33
17.500	12.935	59.999	34
18.000	12.970	70.000	35
18.500	13.000	60.001	36
19.000	13.030	59.999	37
19.500	13.075	50.000	38
20.000	13.110	70.000	39
25.000	13.425	63.000	40
30.000	13.715	58.000	41
35.000	14.040	65.000	42
40.000	14.400	72.000	43
45.000	14.755	71.000	44
50.000	15.115	72.000	45
55.000	15.600	97.000	46
60.000	15.805	41.000	47
65.000	16.120	62.999	48
66.000	16.170	50.003	49

55 241 27 20 76

SURFACE INTERCEPT FOR SEGMENT 1 = 11.721

SEG	ZSTART	TSTART	ZEND	TEND	CSND	DCEN	GRADIENT	S.D.	HFC	DHF	T AT 100M	KM
1	14.000	12.630	66.000	16.170	5.000	0.500	67.978	18.293	3.490	1.255	18.481	2.770

PRECEDING SEGMENT USED FOR EXTRAPOLATION

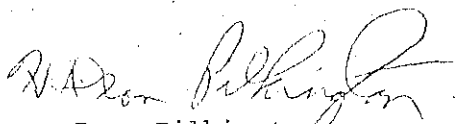
LITHOLOGIC LOG B-241

Twin Peaks

NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 15 T24S R8W

Elevation: 5,720'

<u>Depth (m)</u>	<u>Description</u>
0 - 3	White to buff, calcareous marl, in part tuffaceous.
3 - 34	Medium-gray to black, fine-grained, dense, somewhat vesicular basalt.
34 - 40	Buff to yellow-brown clayey tuff of water laid origin.
40 - 63	Gray to blue-gray clayey tuffaceous lake sediment.
63 - 68	Yellow-brown clayey tuffaceous lake sediment. Some water at 67 meters.


H. Dean Pilkington

HDP:mno

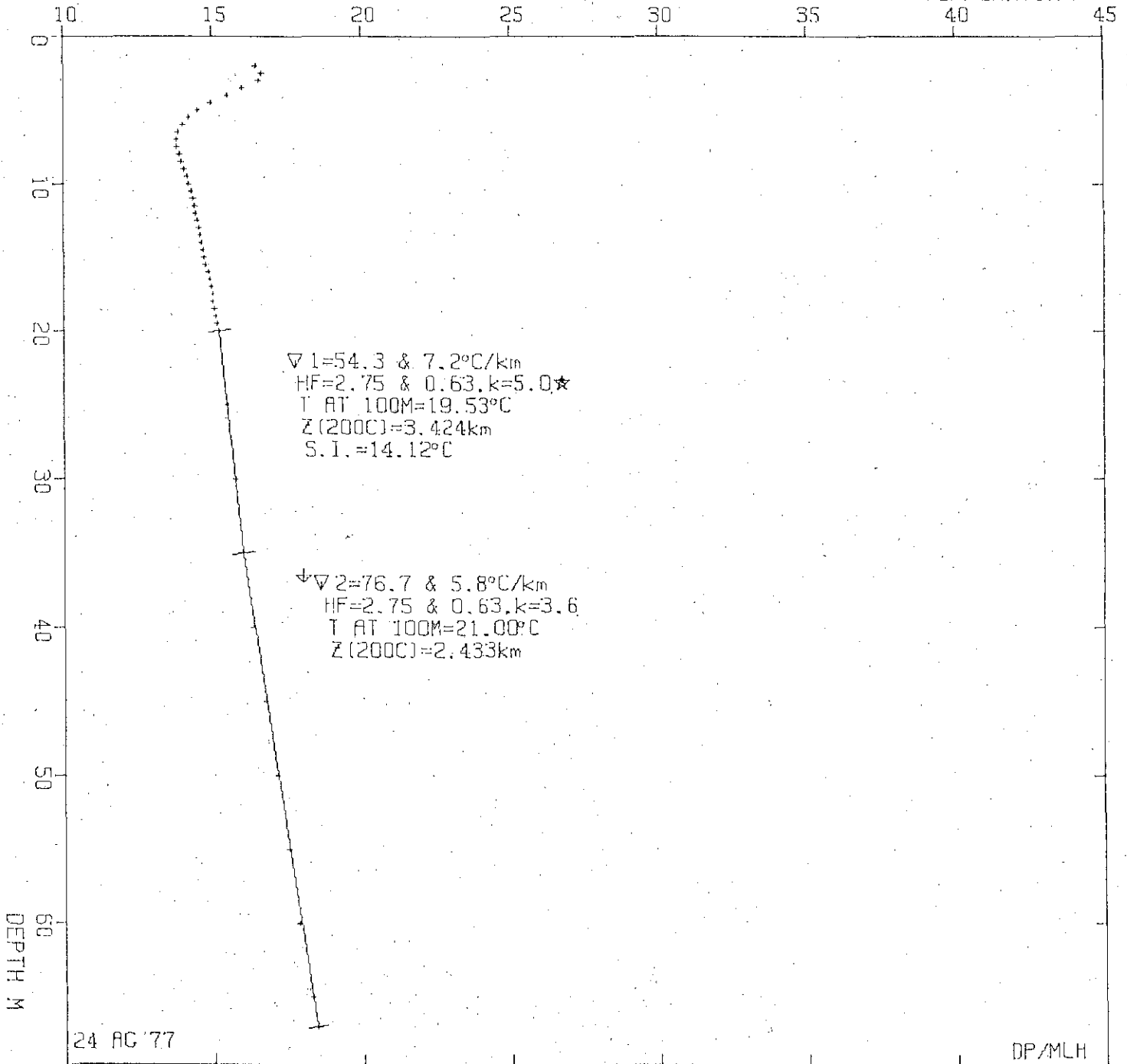
cc: Art Lange
Cheryl Caywood
Mark Alldredge

BEST, UT
17.7 KM. NW OF COVE FORT, UTAH

N. LAT 38.740, W. LONG 112.687

PROJ. 755 WELL 242 27 OC 76

TEMPERATURE °C



LITHOLOGIC LOG B-242 Twin Peaks

SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 7 T24S R7W

Elevation: 5,200'

<u>Depth (m)</u>	<u>Description</u>
0 - 3	Soil with some lag gravel.
3 - 14	Mixed sand and gravel. Fragments of rhyolite and basalt.
14 - 25	Dark gray to red-brown, slightly vesicular crystal tuff - Probably of rhyodacitic composition.
25 - 40	Medium gray crystal tuff of rhyolitic composition. Bottom strongly oxidized.
40 - 51	Iron stained, fine-grained sand with some interlayered gravel. The gravel consists of limestone, quartzite and Belknap volcanics.
51 - 56	Buff to yellow-brown clayey tuff.
56 - 68	Gravel composed of basalt, limestone and Belknap volcanics in clay. Below 65m makes 5-10 gpm water.


H. Dean Pilkington

HDP:mno

cc: Art Lange
Cheryl Caywood
Mark Alldredge

SEATHERMAL LOG, ARMAX EXPLORATION, INC., A.L.LANGE
24 AG 77

PROJECT: REST, UT

PROJ WELL DA MO/YR WELL TITLE EDITOR TERRAIN LP LI ISZ IST
755 242 27 0C 76 17.7 KM N OF COVE FORT, JTAH DP/LH 0.0 0 0 1 1

YCM 42.4000 XCM 3.2000 N.LAT 33.7397 ELEV 1525.0
4.3NG 112.6867

J SEG START SEG END CONDUCTIVITY & STD DEV.

1 20.000 35.000 5.000 0.500
PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS

2 35.000 27.000 0.500 0.500

*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ WELL DA MO/YR	DEPTH (M)	DEG C	DEG C/KH	SAMPLE NO.
755 242 27 0C 76	2.000	16.440	9999.000	1
	3.000	16.675	470.001	2
	3.000	16.570	7209.931	3
	3.500	15.980	-1179.985	4
	4.000	15.485	-390.000	5
	4.500	14.560	-1050.001	6
	5.000	14.525	-569.999	7
	5.500	14.185	7680.000	8
	6.000	13.990	-390.000	9
	6.500	13.835	-310.001	10
	7.000	13.795	-80.000	11
	7.500	13.815	40.001	12
	8.000	13.880	129.999	13
	8.500	13.970	180.000	14
	9.000	14.060	180.000	15
	9.500	14.145	170.000	16
	10.000	14.220	150.000	17
	10.500	14.300	160.000	18
	11.000	14.355	110.001	19
	11.500	14.420	129.999	20
	12.000	14.470	100.000	21
	12.500	14.510	80.000	22
	13.000	14.555	90.000	23
	13.500	14.595	80.000	24
	14.000	14.635	80.000	25
	14.500	14.680	90.000	26
	15.000	14.720	80.000	27
	15.500	14.775	110.001	28
	16.000	14.845	139.999	29
	16.500	14.915	140.001	30

755 242 27 0C 76

755	242 27 00 76	17.000	14.955	80.000	31
		17.500	14.995	80.000	32
		18.000	15.020	49.999	33
		18.500	15.065	90.000	34
		19.000	15.105	80.000	35
		19.500	15.145	80.000	36
		20.000	15.185	80.000	37
		25.000	15.500	63.000	38
		30.000	15.755	51.000	39
		35.000	16.005	49.998	40
755	242 27 00 76	40.000	16.365	72.000	41
		45.000	16.765	80.002	42
		50.000	17.155	78.000	43
		55.000	17.510	70.999	44
		60.000	17.875	73.001	45
		65.000	18.305	85.999	46
		67.000	18.470	82.497	47

SURFACE INTERCEPT FOR SEGMENT 1 = 14.118

SEG	ZSTART	TSTART	ZEND	TEND	COND	DCON	GRADIENT	S.D.	HFC	DHF	T AT 100M	KM
1	20.000	15.185	35.000	16.005	5.000	0.500	54.297	7.242	2.751	0.634	19.534	3.424

SEG	ZSTART	TSTART	ZEND	TEND	COND	DCON	GRADIENT	S.D.	HFC	DHF	T AT 100M	KM
2	35.000	16.005	67.000	18.470	3.586	0.500	76.721	5.784	2.751	0.634	21.002	2.433

PRECEDING SEGMENT USED FOR EXTRAPOLATION

3.9 KM NNW OF BLACK POINT

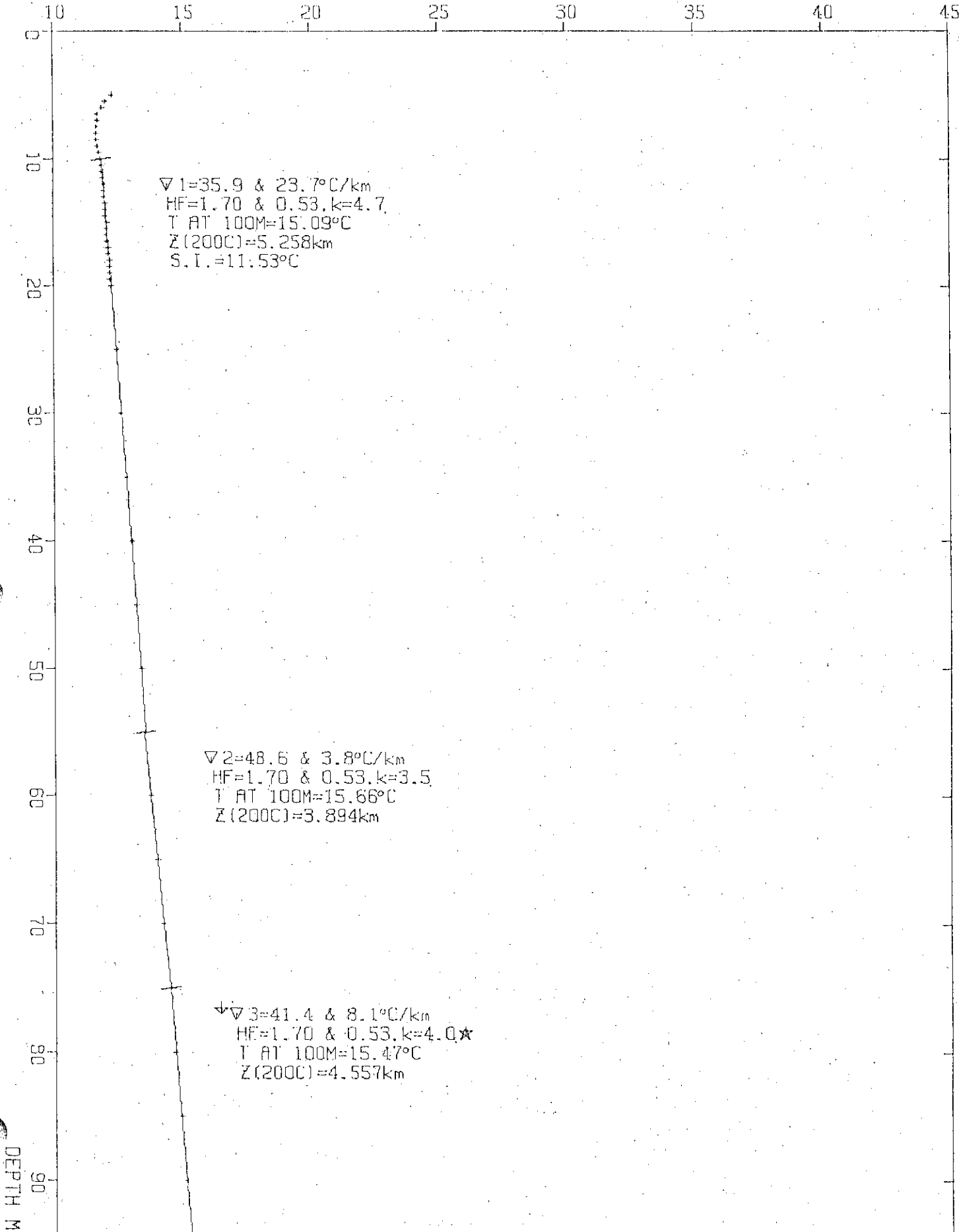
N. LAT 38.845, W. LONG 112.686

PROJ. 755

WELL 256

03 NV 76

TEMPERATURE °C



LITHOLOGIC LOG B-256 *Fillmore - 01*

NE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 6 T23S R7W

Elevation: 4,773'

<u>Depth (m)</u>	<u>Description</u>
0 - 4.6	Soil - mixture of wind blown sand and reworked lake sediments.
4.6 - 6.2	Light gray, fine-grained, tuffaceous lake sediment.
6.2 - 14.0	Light brown, fine-grained tuffaceous lake sediment.
14.0 - 154	Medium gray to blue-gray, fine-grained tuffaceous lake sediment. Made water between 131 and 136 meters at a rate of approximately 15-20 gpm.

H. Dean Pilkington
H. Dean Pilkington (MD)

HDP:mno

cc: Art Lange
Cheryl Caywood
Mark Alldredge

GEOTHERMAL LOG, AMAX EXPLORATION, INC., A.L.LANGE
 24 AUG 77

PROJECT: BESE, UT

PROJ WELL DA MO YR WELL TITLE EDITOR TERRAIN LP LI ISZ IST
 755 256 03 NV 76 3.9 KM NNW OF BLACK POINT DP/PLH 0.0 0 0 1 1

YCM XCM N.LAT W.LONG ELEV
 16.8000 8.9000 38.8450 112.6859 1454.8

J. SEG START SEG END CONDUCTV & STD DEV.
 1 10.000 55.000 0.000 0.000
 2 55.000 75.000 0.000 0.000
 3 75.000 95.000 4.000 0.000

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS
 *** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
755	256	03	NV	76	5.000	12.300	99999.000	1
					5.500	12.030	-539.999	2
					6.000	11.885	-290.001	3
					6.500	11.760	-250.000	4
					7.000	11.755	-110.000	5
					7.500	11.695	-1197.999	6
					8.000	11.705	20.000	7
					8.500	11.725	39.999	8
					9.000	11.775	100.000	9
					9.500	11.815	80.000	10
755	256	03	NV	76	10.000	11.855	80.000	11
					10.500	11.880	49.999	12
					11.000	11.925	90.000	13
					11.500	11.965	60.000	14
					12.000	11.985	40.001	15
					12.500	11.995	20.000	16
					13.000	12.025	59.999	17
					13.500	12.035	20.000	18
					14.000	12.040	10.000	19
					14.500	12.065	49.999	20
755	256	03	NV	76	15.000	12.030	30.001	21
					15.500	12.090	19.999	22
					16.000	12.100	20.000	23
					16.500	12.100	0.000	24
					17.000	12.140	80.000	25
					17.500	12.140	0.000	26
					18.000	12.180	80.000	27
					18.500	12.190	20.000	28
					19.000	12.210	39.999	29

755	256 03 NV 75	19.500	12.225	30.001	30
		20.000	12.250	50.001	31
		25.000	12.430	36.000	32
		30.000	12.615	37.000	33
		35.000	12.785	34.000	34
		40.000	12.985	40.000	35
		45.000	13.150	33.000	36
		50.000	13.340	38.000	37
		55.000	13.480	28.000	38
		60.000	13.700	44.000	39
755	256 03 NV 76	65.000	13.965	53.000	40
		70.000	14.200	47.000	41
		75.000	14.445	49.000	42
		80.000	14.675	46.000	43
		85.000	14.885	42.000	44
		90.000	15.115	46.000	45
		95.000	15.260	29.000	46

SURFACE INTERCEPT FOR SEGMENT 1 = 11.533

SEG	ZSTART	TSTART	ZEND	TEND	COND	DCON	GRADIENT	S.D.	HFL	DHF	T AT 100M	KM
1	10.000	11.855	55.000	13.480	4.733	0.500	35.851	23.743	1.697	0.531	15.093	5.258
2	55.000	13.480	75.000	14.445	3.492	0.000	43.589	3.795	1.697	0.531	15.660	3.894
3	75.000	14.445	95.000	15.260	4.000	0.500	41.406	8.093	1.697	0.531	15.467	4.557

PREVIOUS SEGMENT USED FOR EXTRAPOLATION

6.0 KM WEST OF BLACK POINT

N. LAT 38.811, W. LONG 112.733

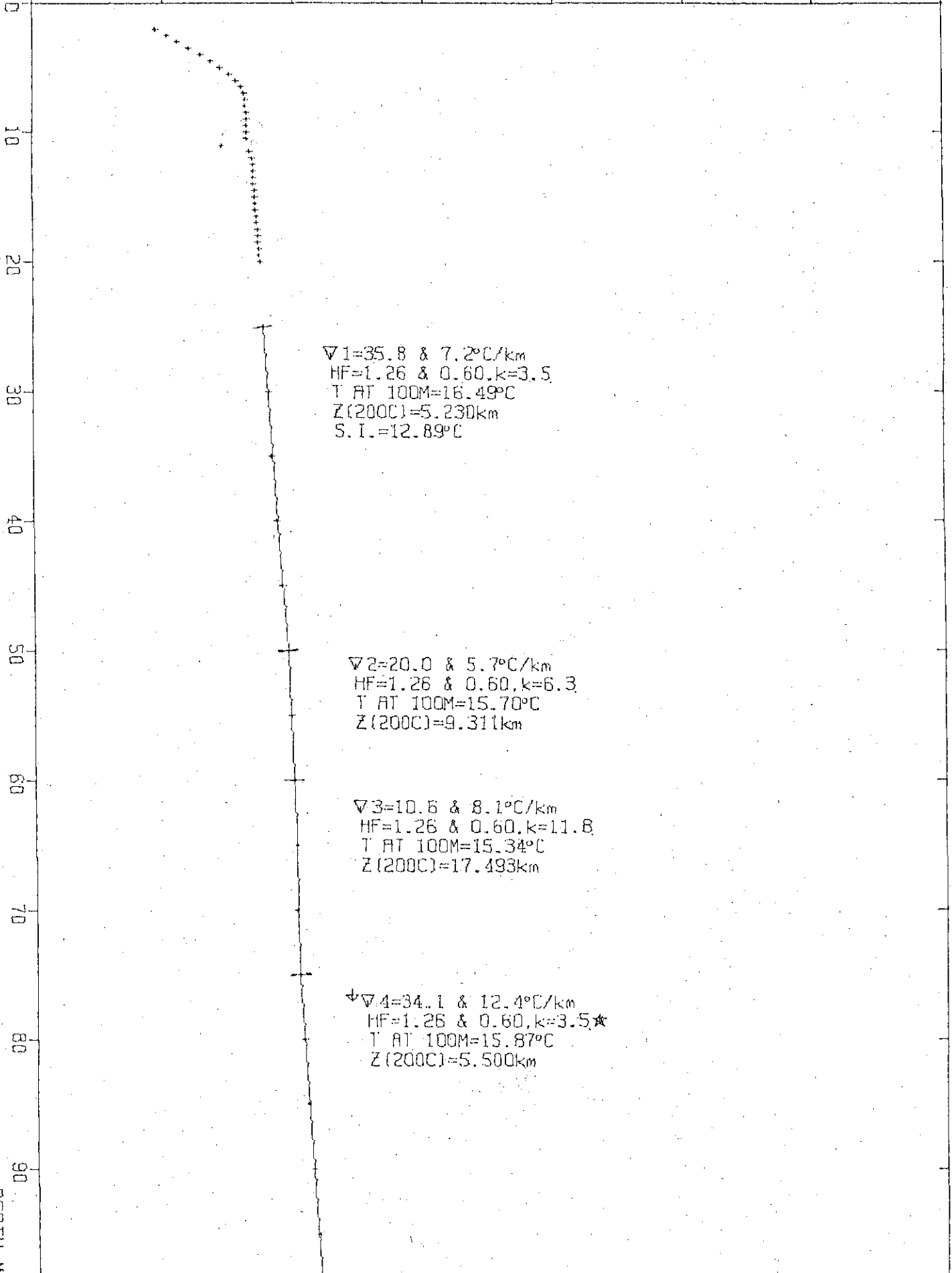
PROJ. 779

WELL 266

21 AP 77

TEMPERATURE °C

5 10 15 20 25 30 35 40



DEPTH M

Lange
Deymonaz
Caywood

LITHOLOGIC LOG B-266 (779-2)

OK PROJECT

ELEVATION: 4,820'

NW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 15 T23S R8W

DATE DRILLED: 4/13/77

Depth (m)	DESCRIPTION
0 - 6	Qal Sandy Clay - buff
6 - 12	Qal Clayey Gravel - w 45% clay matrix; subrounded; 1mm-30mm; ave 5mm; ~85% rhyolite, ~10% travertine, ~5% feldspar, bi, hb and obsidian.
12 - 18	Qal Sandy Clay - buff
18 - 24	Qal Clay - blue gray
24 - 37	Qal Sandy Clay - buff
37 - 43	Qal Sand - 20% clay matrix; angular; 1mm-5mm, ave 2mm; ~75% rhyolite, ~20% travertine, ~5% feldspar, bio, and obsidian.
43 - 46	Qal Sand - repeat (120-140) except less clay and ave size less than .5mm. Water ~15-25 gpm.
46 - 73	Qal Clayey Sand - ~45% clay; pale green; angular; 2mm-15mm; ~80% rhyolite, ~15% travertine, ~5% feldspar and biotite.
73 - 76	No sample
76 - 99	Qal Clayey Sand - 40% clay matrix; buff; very fine.

HECTHERMAL LOG, AMAX EXPLORATION, INC., A.L. LANGE
22 AG 77

PROJECT: OK, UT

PROJ WELL DA MO YR WELL TITLE EDITOR TERRAIN LP LI ISZ IST
779 266 21 AP 77 6.0 KM WEST OF BLACK POINT DAE/MLH 0.0 0 0 1 1

YCM XCM N.LAT N.LONG ELEV
10.7500 2.3000 28.8108 112.7334 1469.1

J	SEG START	SEG END	CONDUCTIVITY & STD DEV.	
1	25.000	50.000	0.000	0.000
2	50.000	60.000	0.000	0.000
3	60.000	75.000	0.000	0.000
4	75.000	99.000	3.500	0.000

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS

*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	266	21	AP	77	2.000	9.710	9999.000	1
					2.500	10.150	880.001	2
					3.000	10.540	780.000	3
					3.500	11.010	939.999	4
					4.000	11.460	900.000	5
					4.500	11.830	740.001	6
					5.000	12.220	779.999	7
					5.500	12.540	640.001	8
					6.000	12.800	519.999	9
					6.500	12.980	360.001	10
779	266	21	AP	77	7.000	13.090	219.999	11
					7.500	13.140	100.000	12
					8.000	13.170	59.999	13
					8.500	13.180	20.000	14
					9.000	13.200	40.001	15
					9.500	13.200	0.000	16
					10.000	13.200	0.000	17
					10.500	13.210	19.999	18
					11.000	12.240	1939.999	19
					11.500	13.290	4100.000	20
779	266	21	AP	77	12.000	13.410	240.000	21
					12.500	13.450	80.000	22
					13.000	13.460	19.999	23
					13.500	13.460	0.000	24
					14.000	13.470	20.000	25
					14.500	13.480	20.000	26
					15.000	13.500	40.001	27
					15.500	13.510	19.999	28

	16.000	13.520	20.000	29
	16.500	13.540	40.001	30
779 266 21 AP 77	17.000	13.560	39.999	31
	17.500	13.580	40.001	32
	18.000	13.600	39.999	33
	18.500	13.620	40.001	34
	19.000	13.650	59.999	35
	19.500	13.670	39.999	36
	20.000	13.680	20.000	37
	25.000	13.720	20.000	38
	30.000	13.990	42.000	39
	35.000	14.120	26.000	40
779 266 21 AP 77	40.000	14.310	38.000	41
	45.000	14.430	34.000	42
	50.000	14.700	44.000	43
	55.000	14.780	16.000	44
	60.000	14.900	24.000	45
	65.000	14.950	10.000	46
	70.000	14.970	4.000	47
	75.000	15.070	20.000	48
	80.000	15.200	26.000	49
	85.000	15.330	26.000	50
779 266 21 AP 77	90.000	15.560	46.000	51
	95.000	15.770	42.000	52
	99.000	15.840	17.500	53

SURFACE INTERCEPT FOR SEGMENT 1 = 12.888

SEG	ZSTART	TSTART	ZEND	TEND	COND	DCON	GRAVIENT	S.D.	HFC	DHF	T AT 100M	KM
1	20.000	13.780	50.000	14.700	3.509	0.000	39.776	7.246	1.255	0.603	16.489	5.230
2	50.000	14.700	60.000	14.900	6.273	0.000	24.010	5.657	1.255	0.603	15.700	9.311
3	60.000	14.900	75.000	15.070	11.823	0.000	14.617	8.130	1.255	0.603	15.330	17.493
4	75.000	15.070	99.000	15.840	3.500	0.500	34.099	12.357	1.255	0.603	15.874	5.500

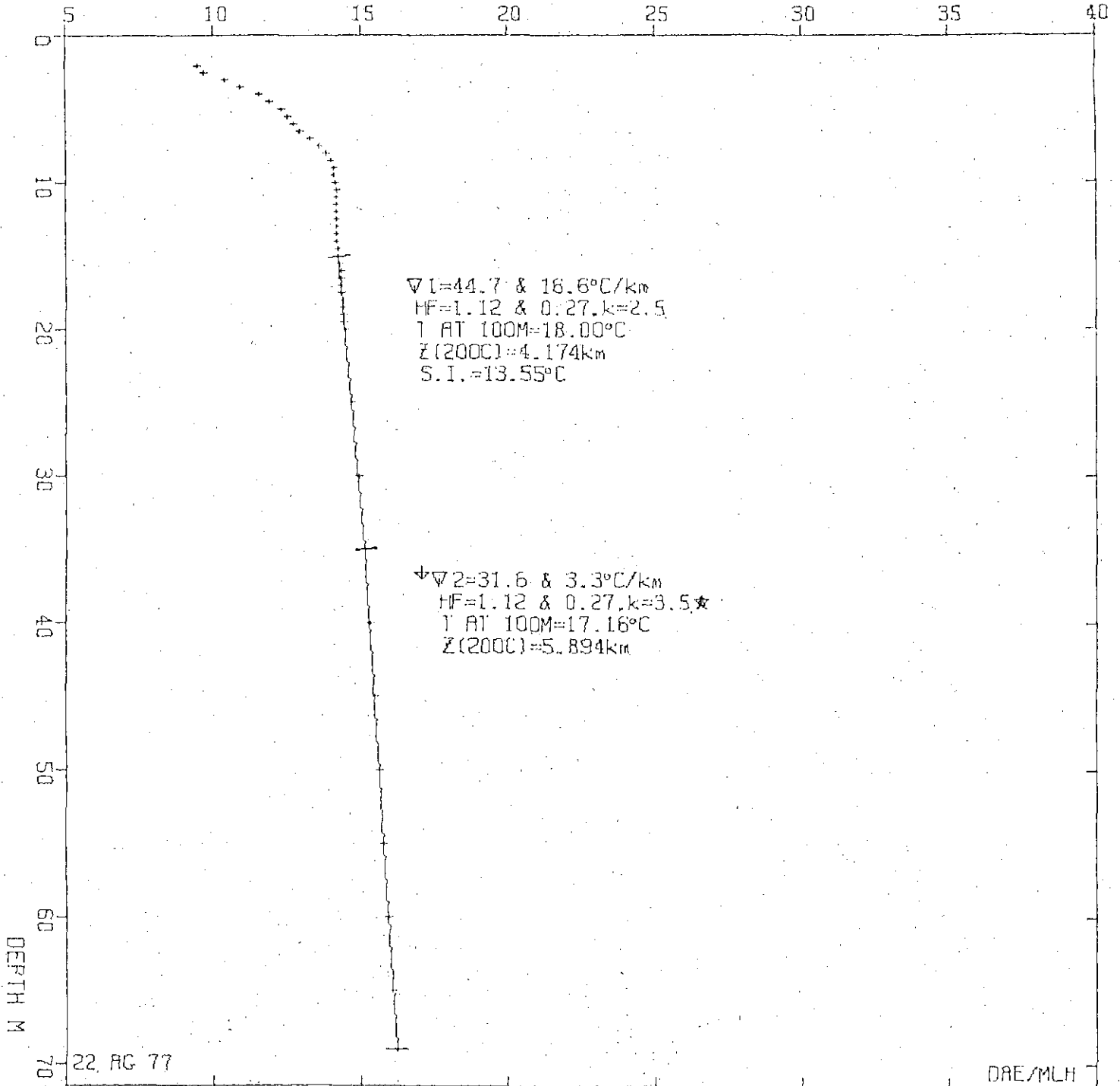
PRECEDING SEGMENT USED FOR EXTRAPOLATION

OK, UT
5.6 KM SW OF BLACK POINT

N. LAT 38.782, W. LONG 112.714

PROJ. 779 WELL 277 21 AP 77

TEMPERATURE °C



Deymonaz
Caywood

LITHOLOGIC LOG B-277 (779-5)

OK PROJECT

ELEVATION: 5,000'

DATE DRILLED: 4/13/77

NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 26 T23S R8W

Depth (m)

DESCRIPTION

0 - 9	Qal Gravel - light gray w iron staining; rounded-angular; 90% rhyolite, 10% feldspar, bio and hb.
9 - 15	Qal Sand - light gray; subrounded-angular; ave 2mm; 90% rhyolite, 10% feldspar, bio and hb.
15 - 18	Qal Gravel - light gray; 20% clay matrix; ave 4 mm; subrounded; 90% rhyolite, 10% feldspar, quartz, bio and hb.
18 - 21	Qal Sandy Clay - buff
21 - 27.5	Qal Sand - repeat (30-50)
27.5 - 33.5	Qal Sandy Clay - buff
33.5 - 61	Qal Clayey Sand - 30-40% clay matrix; 1mm-10mm; subrounded-angular; 90% rhyolite.
61 - 49	Water
61 - 64	Qal Clayey Sand - repeat 110-200 except range 1mm-5mm.
64 - 68	Qal Sandy Clay - blue gray

GEOHERMAL LOG, AMAX EXPLORATION, INC., A.L.LANGE
 22 AG 77

PROJECT: OK, UT

PROJ WELL DA MO YR WELL TITLE EDITOR TERRAIN LP LI ISZ IST
 779 277 21 AP 77 5.6 KM SW OF BLACK POINT DAE/PLH 0.0 0 0 1 1

YCM XCM N:LAT W:LONG ELEV
 5.7500 5.0000 35.7825 112.7140 1524.0

J SEG START SEG END CONDVITY & STD DEV.
 1 15.000 35.000 0.000 0.000
 2 35.000 65.000 3.500 0.500

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS

*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	277	21	AP	77	2.000	9.500	9999.000	1
					2.500	9.710	419.998	2
					3.000	10.380	1340.000	3
					3.500	10.910	1060.001	4
					4.000	11.550	1279.999	5
					4.500	11.890	680.000	6
					5.000	12.310	840.000	7
					5.500	12.520	420.000	8
					6.000	12.700	350.001	9
					6.500	12.900	400.000	10
779	277	21	AP	77	7.000	13.240	580.000	11
					7.500	13.570	660.000	12
					8.000	13.820	500.000	13
					8.500	13.970	299.999	14
					9.000	14.040	140.001	15
					9.500	14.070	89.999	16
					10.000	14.110	80.000	17
					10.500	14.140	59.999	18
					11.000	14.130	20.000	19
					11.500	14.130	0.000	20
779	277	21	AP	77	12.000	14.140	20.000	21
					12.500	14.140	0.000	22
					13.000	14.150	20.000	23
					13.500	14.150	0.000	24
					14.000	14.170	39.999	25
					14.500	14.180	20.000	26
					15.000	14.210	59.999	27
					15.500	14.250	80.002	28
					16.000	14.280	59.999	29
					16.500	14.290	20.000	30

779	277 21 AP 77	17.000	14.310	39.999	31
		17.500	14.320	20.000	32
		18.000	14.350	59.999	33
		18.500	14.370	40.001	34
		19.000	14.400	59.999	35
		19.500	14.420	39.999	36
		20.000	14.440	40.001	37
		25.000	14.670	46.000	38
		30.000	14.910	48.000	39
		35.000	15.100	38.000	40
779	277 21 AP 77	40.000	15.280	36.000	41
		45.000	15.450	34.000	42
		50.000	15.620	34.000	43
		55.000	15.760	28.000	44
		60.000	15.910	30.000	45
		65.000	16.070	31.998	46
		69.000	16.180	27.500	47

SURFACE INTERCEPT FOR SEGMENT 1 = 19.550

SEG	ZSTART	TSTART	ZEND	TEND	COND & UCON	GRADIENT & S.D.	HFO &	DHF	T AT 100M	KM
1	15.000	14.210	35.000	15.100	2.509 0.000	47.668 15.621	1.121	0.272	18.003	4.174

SEG	ZSTART	TSTART	ZEND	TEND	COND & UCON	GRADIENT & S.D.	HFO &	DHF	T AT 100M	KM
2	35.000	15.100	69.000	16.180	3.500 0.500	31.560 3.251	1.121	0.272	17.158	5.894

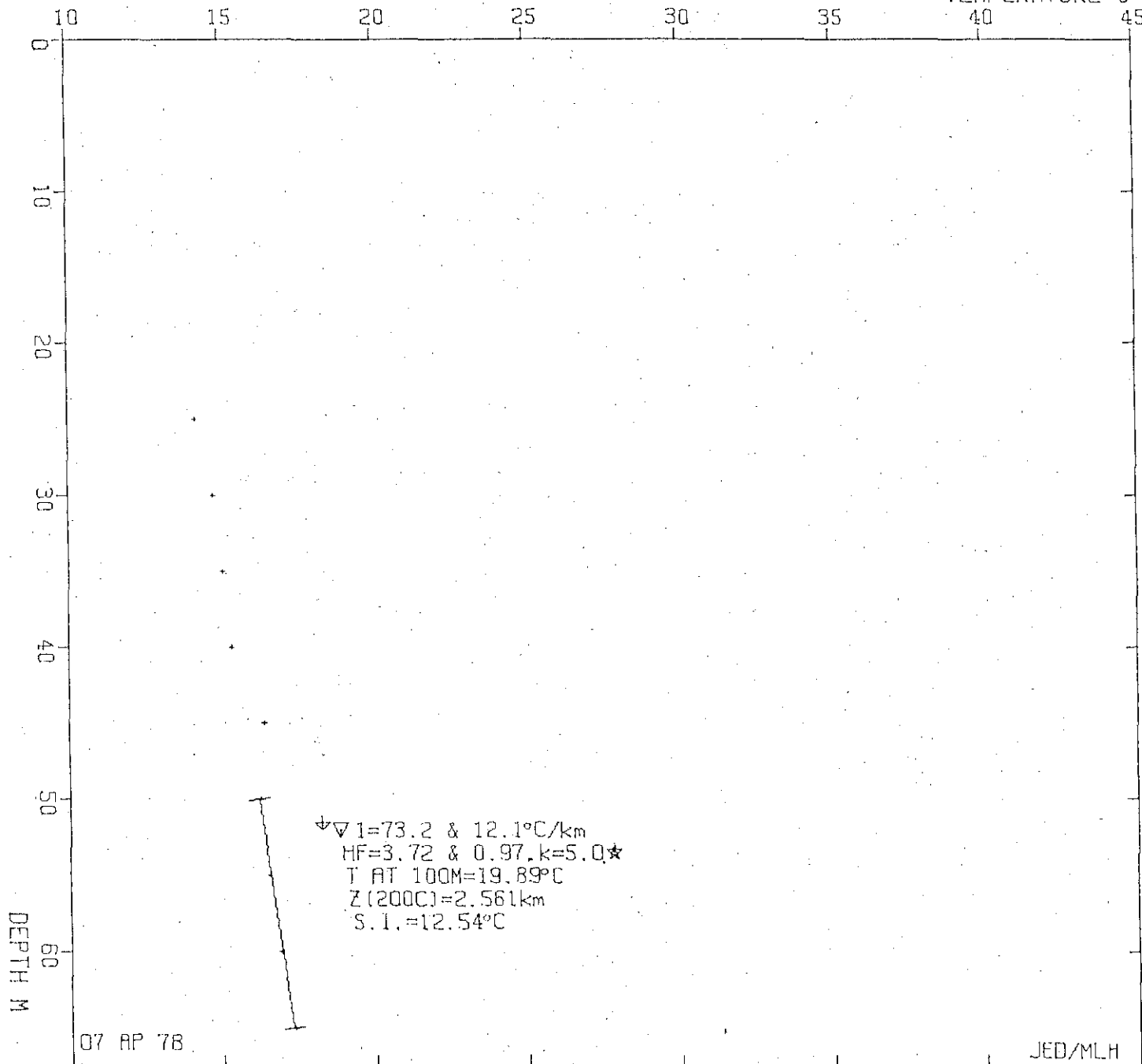
PRECEDING SEGMENT USED FOR EXTRAPOLATION

TWIN PEAKS, UT
9.4 KM NNW OF DANISH RESERVOIR

N. LAT 38.701, W. LONG 112.715

PROJ. 806 WELL 294 02 MY 77

TEMPERATURE °C



GEMTHERMAL LOG, ANAX EXPLORATION, INC., A-1 RANGE
07 APR 78

PROJECT TWIN PEAKS, UT

PROJ WELL	DATE YR	WELL TITLE	LOGGED M/D/YR	TEMPERATURE	IP	IT	ISZ	IST
806	294 02 MY 77	9.4 KM INW OF DANISH RESERVOIR		0.0	C	0	1	1
		YCM	XCM	N. LAT	W. LONG	ELEV		
		35.5500	4.9000	38.7009	112.7142	1749.5		

J	SEG START	SEG END	CONDUCTIVITY & STD DEV.	
1	50.000	65.000	5.000	0.500

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS
*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

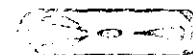
PROJ WELL	DATE YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
806	294 02 MY 77	25.000	14.140	99999.000	1
		30.000	14.760	124.000	2
		35.000	15.030	54.000	3
		40.000	15.330	60.000	4
		45.000	16.420	218.000	5
		50.000	16.230	78.000	6
		55.000	16.540	62.000	7
		60.000	16.900	72.000	8
		65.000	17.330	85.999	9

SURFACE INTERCEPT FOR SEGMENT 1 = 12.542

SEG	Z START	Z END	CBND	DCBN	GRADIENT & S.D.	HFL	K	DHF	T AT 100M	KM
1	50.000	65.000	5.000	0.500	73.137 12.054	3.780		0.969	19.892	2.564

PRECEDING SEGMENT USED FOR EXTRAPOLATION

DATA FOR THIS WELL AND PROJECT # ALREADY ON DISK!!



MINCEM
CORPORATION

cc: Hall
Lange
Deymonaz
Caywood

LITHOLOGIC LOG B-294 (806-1)

Twin Peaks Project

ELEVATION: 5,700'

NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 26 T24S R8W

DATE DRILLED: 4/16/77

Depth (m)	DESCRIPTION
0 - 3	Basalt - dark gray; vesicular ave size 1-2mm; small amt. of fracturing with secondary calcite/quartz, clay, and iron oxidation.
3 - 6	Basalt - gray; aphanitic, small amt. of vesiculation.
6 - 9	Basalt - reddish dark gray; small amt. of vesiculation; fractured with iron oxidation.
9 - 15	Basalt - reddish gray
15 - 21	Basalt - reddish gray; vesicular ave size 1-2mm
21 - 24	Cinder - black, red; vesicular ave size 2mm; fractured with clay filling and iron oxidation.
24 - 27.5	Basalt - dark gray w iron staining; vesicular ave size 1.5mm, some amygdaloidal with calcite filling; highly fractured with calcite and clay filling and some iron staining.
27.5 - 30	Basalt - repeat 80-90 except not as vesicular
30 - 33.5	Basalt - dark gray; slightly porphritic w lathes of plagioclase ave .5mm, small amt. of fracturing accompanied by iron staining.
33.5 - 43	Basalt - dark gray; porphritic w lathes of plag. ave .2mm; small amt. of vesiculation w growths of secondary quartz/calcite; small amt. of fracturing with iron staining.
43 - 68	Loss of circulation in basalt.

6.8 KM SW OF BLACK POINT

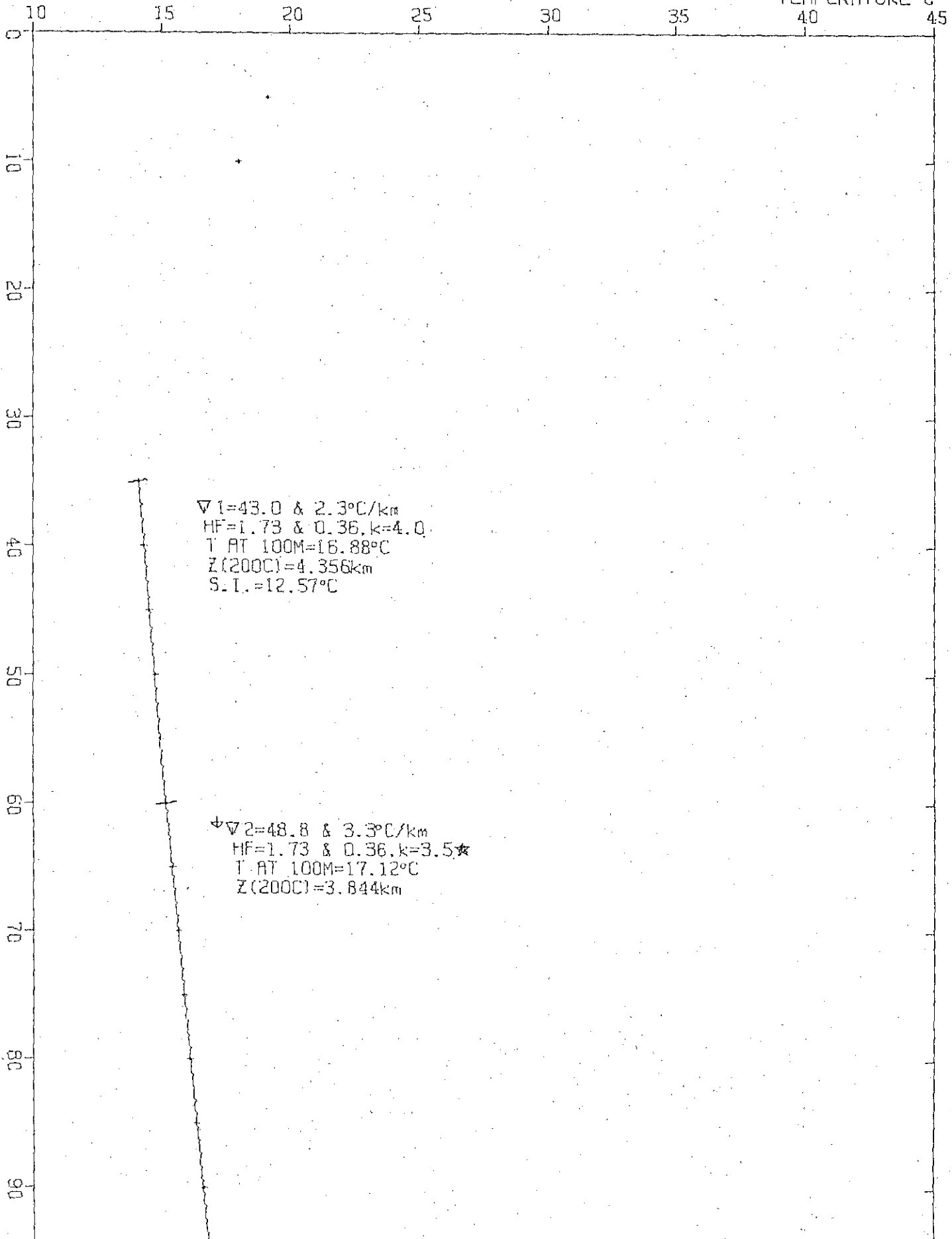
N. LAT 38.770, W. LONG 112.721

PROJ. 779

WELL 295

02 MY 77

TEMPERATURE °C



22 AC 77

JED/MLH

Deymonaz
Caywood

LITHOLOGIC LOG B-295 (779-4)

OK PROJECT

ELEVATION: 5,030'

NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 35 T23S R8W

DATE DRILLED: 4/12/77

Depth (m)	DESCRIPTION
0 - 3	Qal Alluvium - pebbly to silty clay
3 - 6	Basalt - dark gray; highly fractured <u>w</u> iron/manganese staining and clay filling; some vesiculation.
6 - 27.5	Clay - pale green
15 - 23	Lost circulation
27.5 - 43	Clay - pale blue
43 - 99	Clay - blue gray

PROJECT: OK, UT

PROJ WELL DA MO YR. WELL TITLE EDITOR TERRAIN LP LI ISZ IST
 779 295 02 NY 77 6.8 KM SW OF BLACK POINT JED/PLH 0.0 0 0 1 1

YCM XCM N.LAT N.LONG ELEV
 3.5000 4.0500 38.7693 112.7209 1533.1

J SEG START SEG END CONDUCTIVITY & STD DEV.
 1 35.000 60.000 0.000 0.000
 2 60.000 95.000 3.500 0.500

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS

*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	295	02	NY	77	5.000	13.160	99999.000	1
					10.000	17.980	233.999	2
					35.000	14.090	155.600	3
					40.000	14.290	40.000	4
					45.000	14.500	42.000	5
					50.000	14.730	45.000	6
					55.000	14.940	42.000	7
					60.000	15.160	44.000	8
					65.000	15.410	50.000	9
					70.000	15.660	50.000	10
779	295	02	NY	77	75.000	15.870	42.000	11
					80.000	16.120	40.999	12
					85.000	16.370	50.000	13
					90.000	16.630	51.999	14
					95.000	16.880	50.000	15

SURFACE INTERCEPT FOR SEGMENT 1 = 12.575

SEG	ZSTART	TSTART	ZEND	TEND	COND &	UCON	GRADIENT &	S.D.	HFC &	DHF	T AT 100M	KM
1	35.000	14.090	60.000	15.160	4.012	0.000	4.025	2.294	1.726	0.358	16.881	4.356

SEG	ZSTART	TSTART	ZEND	TEND	COND &	UCON	GRADIENT &	S.D.	HFC &	DHF	T AT 100M	KM
2	60.000	15.160	95.000	16.880	3.500	0.500	4.849	3.252	1.726	0.358	17.124	3.844

PRECEDING SEGMENT USED FOR EXTRAPOLATION

LITHOLOGIC LOG B-297 (779-1)

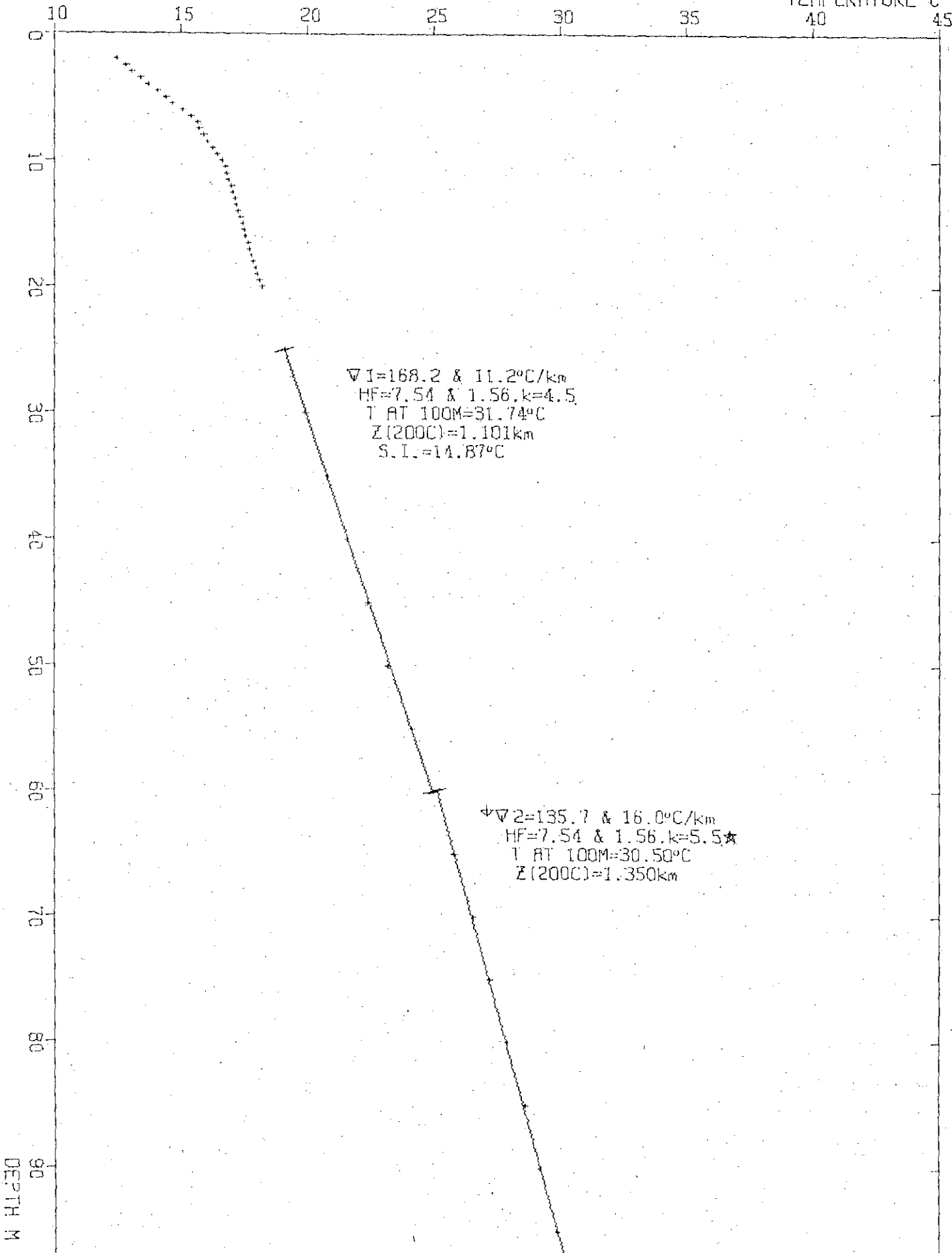
OK PROJECT

ELEVATION: 5,160'

DATE DRILLED: 4/14/77

NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 34 T23S R8W

Depth (m)	DESCRIPTION
0 - 3	Qal Clayey Sand - buff; 35% clay matrix; subrounded-angular; .5mm-2mm; 50% quartz, 45% rhyolite, 5% hornblend(?).
3 - 6	Qal Porphyritic Rhyolite - gravel fractured and filled with clay and secondary quartz; phenocrysts make up 30% of rock and consist of K-spar, plagioclase and qtz; K-spar 25-30%; plagioclase 30%, qtz 25%, hornblend or px 10-20%.
6 - 12	Sand - buff; subrounded; .25-1mm; 50% smokey and colorless quartz; 40% feldspar, 10% hb(?)
12 - 15	Clayey Sand - 35% clay matrix; angular; .25mm-2mm; 45% quartz; 35% feldspar, 15% rhyolite, 5% hornblend and biotite.
15 - 18	Clayey Gravel - 40% clay matrix; subrounded; 2mm-4mm; rhyolitic
18 - 36.5	Clayey Sand - buff; subrounded-angular; .25mm-1mm; 40% quartz, 30% feldspar, 20% rhyolite, 10% hornblend and biotite; 35% clay matrix.
36.5 - 39.5	Gravelly sand - 30% clay matrix; .25-5mm; subrounded-angular; 40% quartz, 30% feldspar, 20% rhyolite, 10% hornblend and biotite.
39.5 - 99.0	Porphyritic Rhyolite - repeat 10-20 except less fracturing and alteration with depth.



$\nabla 1 = 168.2 \text{ \& } 11.2^\circ\text{C/km}$
 $HF = 7.54 \text{ \& } 1.56, k = 4.5$
 $T \text{ AT } 100M = 31.74^\circ\text{C}$
 $Z(200C) = 1.101\text{km}$
 $S.I. = 14.87^\circ\text{C}$

$\nabla 2 = 135.7 \text{ \& } 16.0^\circ\text{C/km}$
 $HF = 7.54 \text{ \& } 1.56, k = 5.5^*$
 $T \text{ AT } 100M = 30.50^\circ\text{C}$
 $Z(200C) = 1.350\text{km}$

DEPTH M

GEOHERMAL LOG, AMAX EXPLORATION, INC., A.L.LANGE
22 AG 77

PROJECT: GK, UT

PROJ WELL DA MM YR WELL TITLE EDITOR TERRAIN LP LI ISZ IST
779 297 23 AP 77 8.2 KM SW OF BLACK POINT DAE/PLH 0.0 0 0 1 1

YCM XCM N.LAT W.LONG ELEV
4.5000 0.7500 38.7754 112.7446 1572.8

J SEG START SEG END CONUTVITY & STD DEV.
1 25.000 60.000 0.000 0.000
2 60.000 97.000 5.500 0.900

PRECEDING CONDUCTIVITY USED TO COMPUTE DIMERS

*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MM	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	297 23 AP 77				2.000	12.460	99999.000	1
					2.500	12.790	960.002	2
					3.000	13.070	960.000	3
					3.500	13.400	960.000	4
					4.000	13.680	960.000	5
					4.500	14.030	700.001	6
					5.000	14.380	699.999	7
					5.500	14.660	660.001	8
					6.000	15.030	740.000	9
					6.500	15.400	740.000	10
779	297 23 AP 77				7.000	15.630	659.999	11
					7.500	15.720	180.000	12
					8.000	15.900	360.001	13
					8.500	15.070	333.985	14
					9.000	16.240	339.996	15
					9.500	16.430	380.005	16
					10.000	16.630	399.994	17
					10.500	16.740	220.001	18
					11.000	16.820	160.004	19
					11.500	16.910	179.993	20
779	297 23 AP 77				12.000	16.990	160.004	21
					12.500	17.060	140.015	22
					13.000	17.140	160.004	23
					13.500	17.200	119.995	24
					14.000	17.270	139.984	25
					14.500	17.330	119.995	26
					15.000	17.440	220.001	27
					15.500	17.490	100.006	28
					16.000	17.560	140.015	29
					16.500	17.630	139.984	30

779	297 23 AP 77	17.000	17.710	160.004	31
		17.500	17.780	140.015	32
		18.000	17.860	159.973	33
		18.500	17.940	160.004	34
		19.000	18.020	160.004	35
		19.500	18.090	140.015	36
		20.000	18.180	179.993	37
		25.000	19.100	184.000	38
		30.000	19.920	164.001	39
		35.000	20.780	172.000	40
779	297 23 AP 77	40.000	21.600	163.998	41
		45.000	22.400	160.001	42
		50.000	23.200	160.001	43
		55.000	24.160	191.998	44
		60.000	25.010	170.001	45
		65.000	25.820	162.000	46
		70.000	26.570	150.000	47
		75.000	27.220	129.999	48
		80.000	27.910	138.000	49
		85.000	28.620	142.001	50
779	297 23 AP 77	90.000	29.180	112.000	51
		95.000	29.850	134.000	52
		97.000	30.090	120.003	53

SURFACE INTERCEPT FOR SEGMENT 1 = 14.874

SEG	ZSTART	TSTART	ZEND	TEND	COND	UCON	GRAVIENT	S.D.	HFL	DHF	T AT 100M	KM
1	25.000	19.100	60.000	25.010	4.484	0.000	160.162	11.211	7.541	1.557	31.736	1.101

SEG	ZSTART	TSTART	ZEND	TEND	COND	UCON	GRAVIENT	S.D.	HFL	DHF	T AT 100M	KM
2	60.000	25.010	97.000	30.090	5.500	0.500	137.654	15.968	7.541	1.557	30.437	1.350

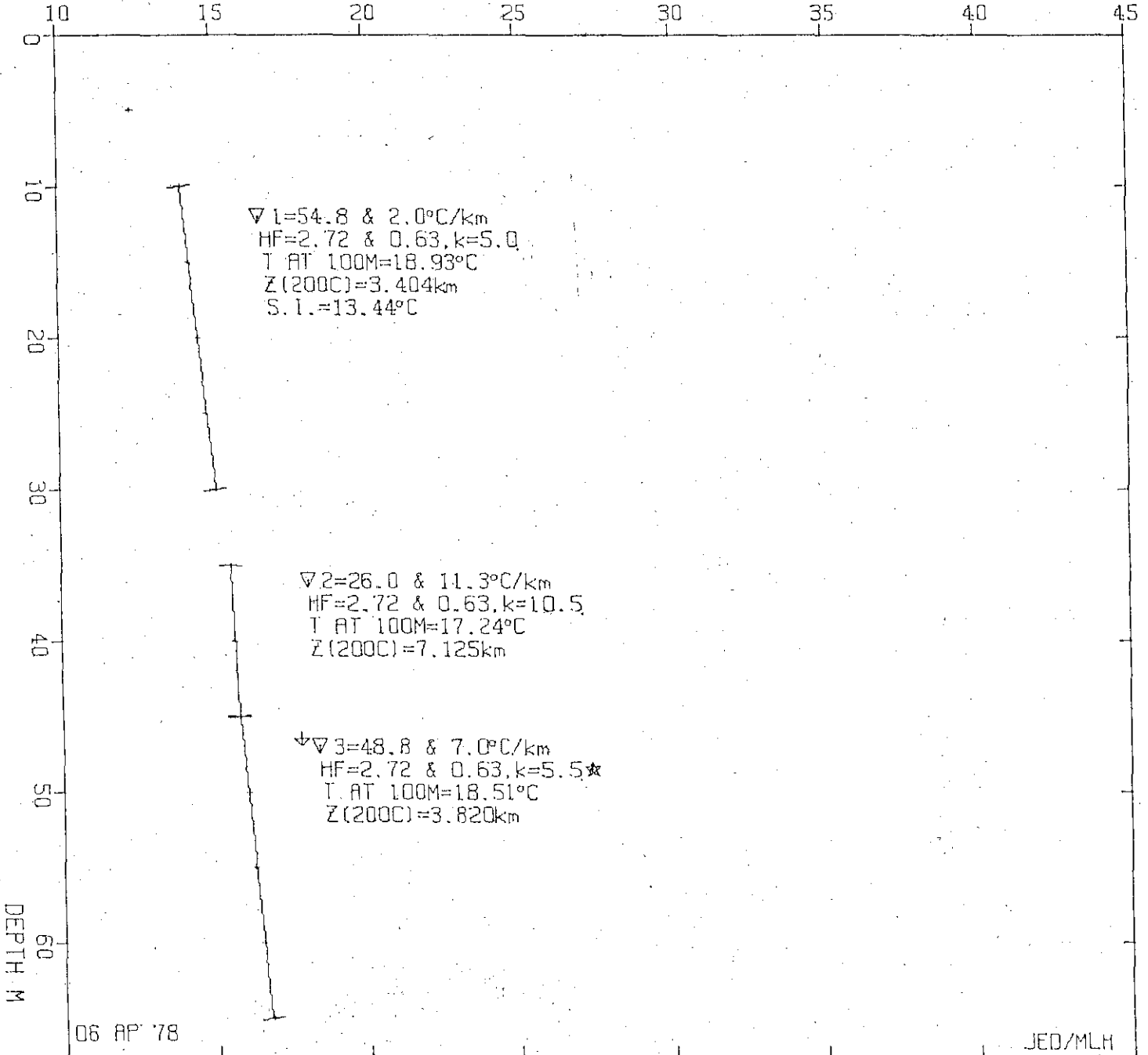
PRECEDING SEGMENT USED FOR EXTRAPOLATION

OK, UT
9.9 KM SW OF BLACK POINT
PROJ. 779 WELL 298

N. LAT 38.751; W. LONG 112.743

30 AP 77

TEMPERATURE °C



PROJECT 4K, UT

PROJ WELL DA MO YR WELL TITLE EDITOR TERRAIN LF FT ISZ 1ST
779 298 30 AP 77 9.9 KM SW OF BLACK PRINT JEAN-PLH C C 0 1 1
YCM XCM T. AT W. LOG ELEV
0.1500 0.9700 38.7508 112.7430 1585.0

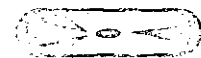
J SEG START SEG END CONDUCTIVITY & STD DEV.
1 10.000 30.000 0.000 0.000
2 35.000 45.000 0.000 0.000
3 45.000 65.000 5.500 0.500
PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS
*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	298 30 AP 77	5.000	12.410	99999.000	1			
		10.000	13.990	316.000	2			
		15.000	14.260	54.000	3			
		20.000	14.530	54.000	4			
		25.000	14.800	54.000	5			
		30.000	15.090	58.000	6			
		35.000	15.550	92.000	7			
		40.000	15.640	18.000	8			
		45.000	15.810	34.000	9			
		50.000	16.040	45.999	10			
779	298 30 AP 77	55.000	16.270	45.999	11			
		60.000	16.500	46.002	12			
		65.000	16.800	59.998	13			

SURFACE INTERCEPT FOR SEGMENT 1 = 13.438

SEG	ZSTART	ZSTART	ZEND	ZEND	COND & DCEN	GRADIENT & S.D.	HFL & DHF	T AT 100M	KM
1	10.000	13.990	30.000	15.090	4.961 0.000	54.800 2.012	2.749 0.632	18.926	3.404
2	35.000	15.850	45.000	15.810	10.450 0.000	26.016 11.314	2.749 0.632	17.241	7.125
3	45.000	1.810	65.000	16.800	5.500 0.500	48.789 7.047	2.749 0.632	18.508	7.820

PRECEDING SEGMENT USED FOR EXTRAPOLATION



LITHOLOGIC LOG B-298 (779-3)

OK PROJECT

ELEVATION: 5,200'

DATE DRILLED: 4/15/77

NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 1 T24S R8W

Depth(m)	DESCRIPTION
0 - 6	Qal Clayey Sand - 30% clay or silt; .5mm-5mm; rhyolitic
6 - 9	Qal Gravel - Less than 10% clay; buff; subrounded=angular; 3mm-25mm; mostly rhyolite.
9 - 12	Qal Gravelly Clay - 30% rhyolitic gravel; buff
12 - 15	Rhyolite - pink; fractured and filled with clay and silica; shows iron/manganese staining; porphyritic potash feldspar and plagioclase ave 5mm and make up ~30% of the rhyolite; feldspars in general approximate 60% of the rhyolite, quartz 25%, hornblend 10%, biotite 5%.
15 - 64	Rhyolite - repeat 40-50, but not as fractured and altered.

OK, UT

4.5 KM SE BLACK SPRING

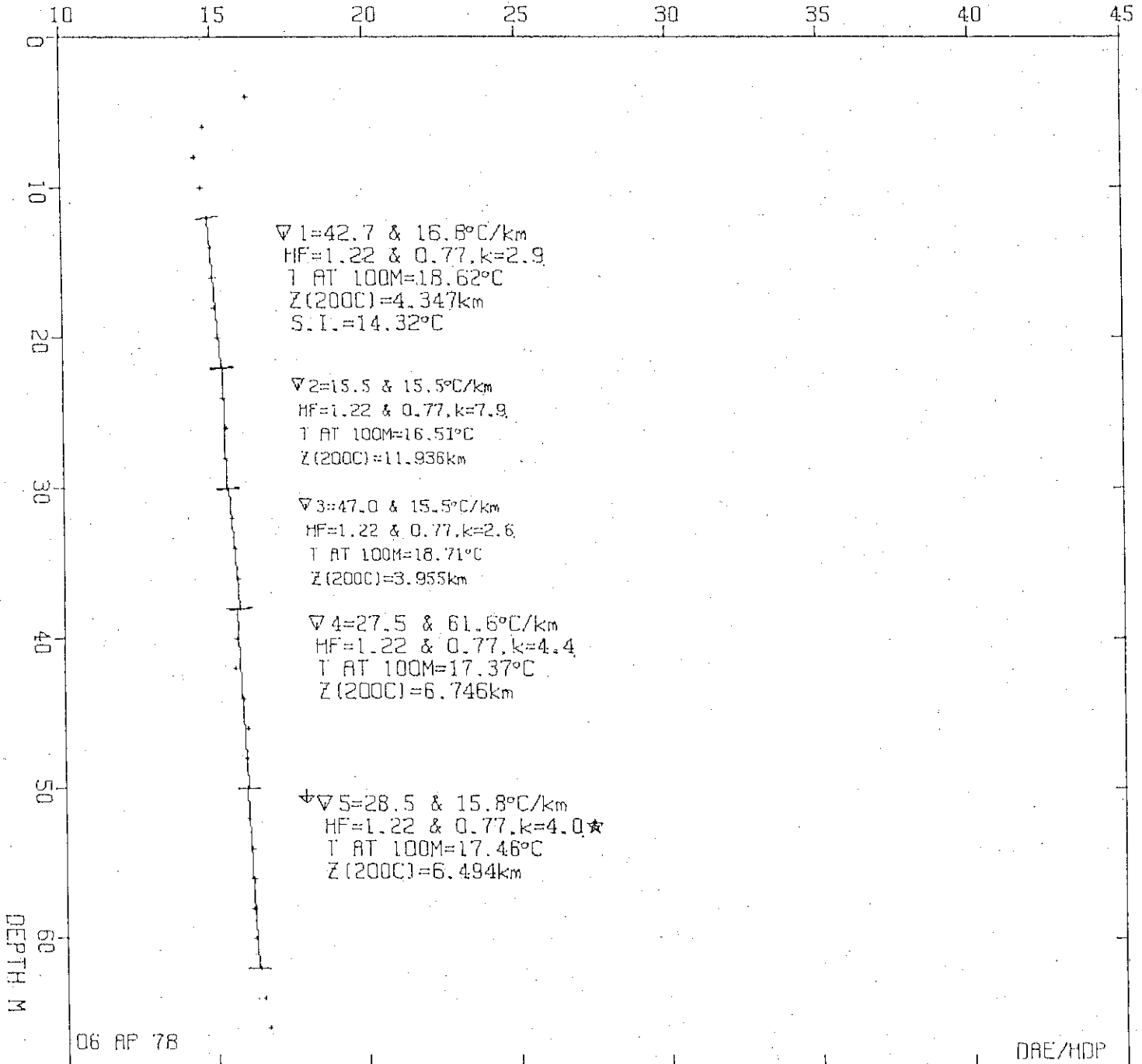
N. LAT 38.757, W. LONG 112.784

PROJ. 779

WELL 439

09 09 77

TEMPERATURE °C



PROJECT JK. HT

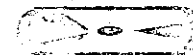
PROJ	WELL	DA	MO	YR	WELL TITLE	EDITOR	TERRAIN	LF	IF	ISZ	IST
779	439	09	09	77	4.5 KM SE BLACK SPRING	DAS/MOP	0.0	0	0	1	1

YCH	XCH	N.IAT	N.LONG	ELEV
3.4000	33.1000	38.7574	112.7836	1548.4

N	SEG START	SEG END	CONDUCTIVITY	STD DEV.
1	12.000	22.000	0.000	0.000
2	22.000	30.000	0.000	0.000
3	30.000	38.000	0.000	0.000
4	38.000	50.000	0.000	0.000
5	50.000	62.000	4.000	0.500

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS
*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
779	439	09	09	77	4.000	16.130	99999.000	1
					6.000	14.760	-684.995	2
					8.000	14.440	-160.000	3
					10.000	14.640	100.000	4
					12.000	14.840	100.000	5
					14.000	14.940	50.000	6
					16.000	14.980	20.000	7
					18.000	15.060	40.000	8
					20.000	15.160	50.000	9
					22.000	15.290	65.000	10
779	439	09	09	77	24.000	15.320	15.000	11
					26.000	15.380	30.000	12
					28.000	15.370	-5.000	13
					30.000	15.420	25.000	14
					32.000	15.540	60.000	15
					34.000	15.650	55.000	16
					36.000	15.740	45.000	17
					38.000	15.790	25.000	18
					40.000	15.720	-35.000	19
					42.000	15.670	-25.000	20
779	439	09	09	77	44.000	15.890	110.000	21
					46.000	16.040	74.997	22
					48.000	15.990	-24.997	23
					50.000	16.000	5.000	24
					52.000	16.070	34.996	25
					54.000	16.130	29.999	26
					56.000	16.180	25.002	27



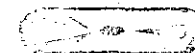
	58.000	16.210	14.999	25
	59.000	16.260	25.002	29
	62.000	16.380	59.998	30
779	64.000	16.500	90.004	31
	66.000	16.690	64.995	32

SURFACE INTERCEPT FOR SEGMENT 1 = 14.319

SEG	ZSTART	TSTART	ZEND	TEND	CBND & DCBN	GRADIENT & S.D.	HFL	K	DHF	T AT 100M	KM
1	12.000	14.840	22.000	15.290	2.858 0.000	42.708 14.780	1.221		0.773	18.621	41347
2	22.000	15.290	30.000	15.420	7.874 0.000	15.503 15.502	1.221		0.773	14.505	111934
3	30.000	15.420	38.000	15.790	2.596 0.000	47.028 15.505	1.221		0.773	18.706	31955
4	38.000	15.790	50.000	16.000	4.442 0.000	27.481 61.619	1.221		0.773	17.374	61746
5	50.000	16.000	62.000	16.380	4.000 0.500	28.549 15.757	1.221		0.773	17.465	61494

PRECEDING SEGMENT USED FOR EXTRAPOLATION

DATA FOR THIS WELL AND PROJECT # ALREADY ON DISK!!

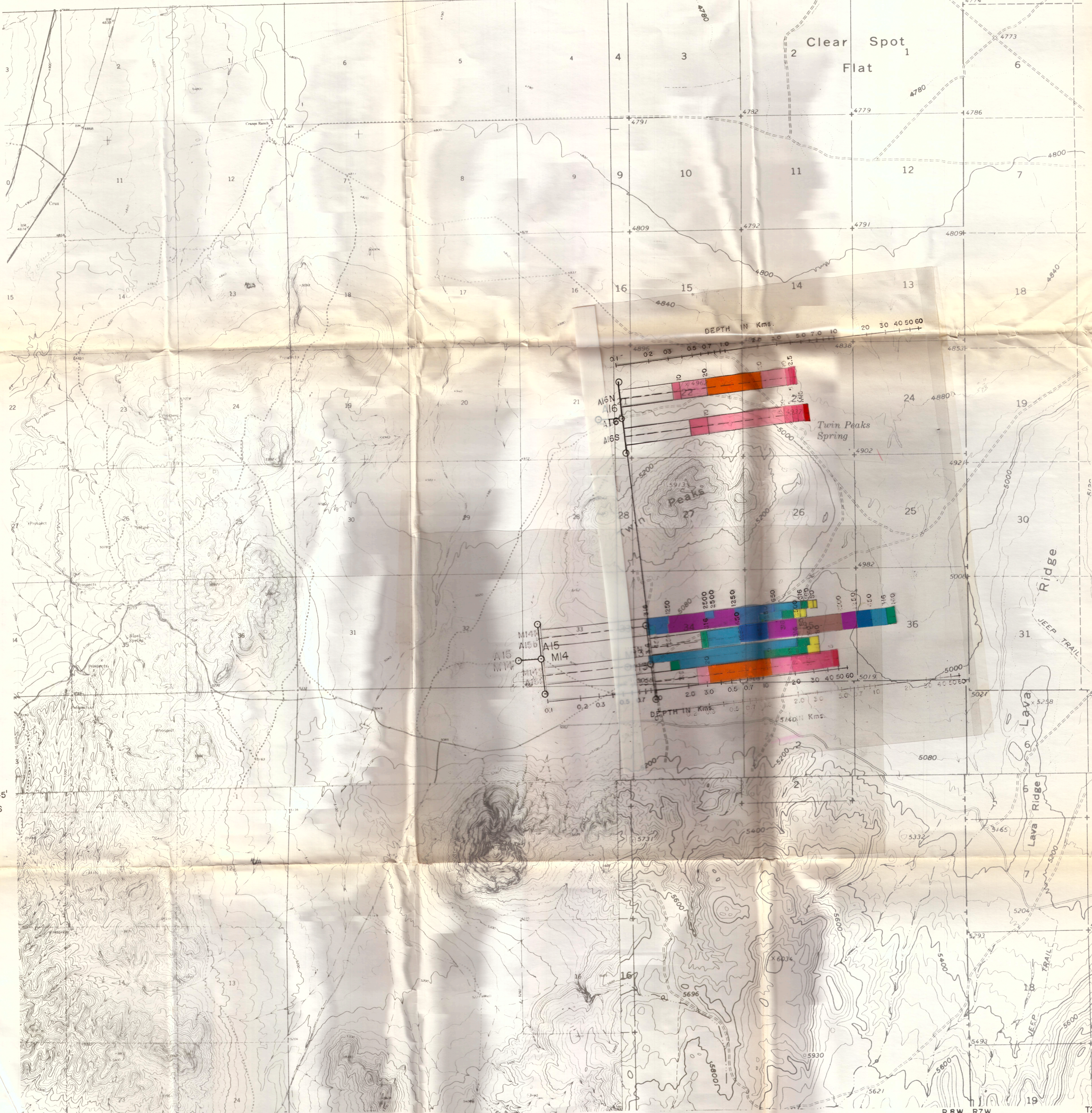


MINCOMF
CORPORATION

R9W R8W

112°45'

R8W R7W



T 23S
38° 45'
T 24S

T 23S
38° 45'
T 24S

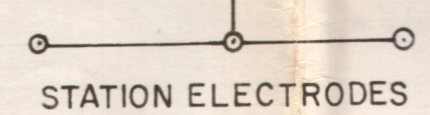
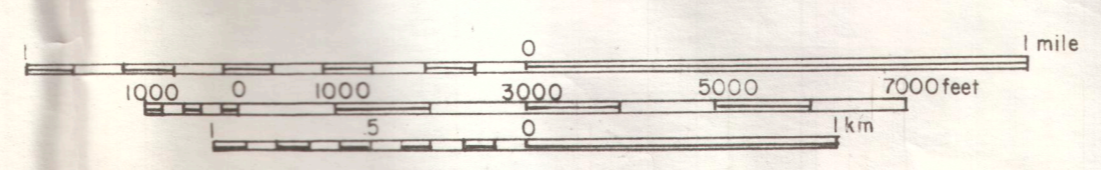
R9W R8W

112°45'

R8W R7W

T 26S

SCALE 1:24000



AMAX EXPLORATION, INC.
DENVER, COLORADO

TWIN PEAKS AREA (EAST)
UTAH
MAGNETOTELLURIC SURVEY
TE MODE

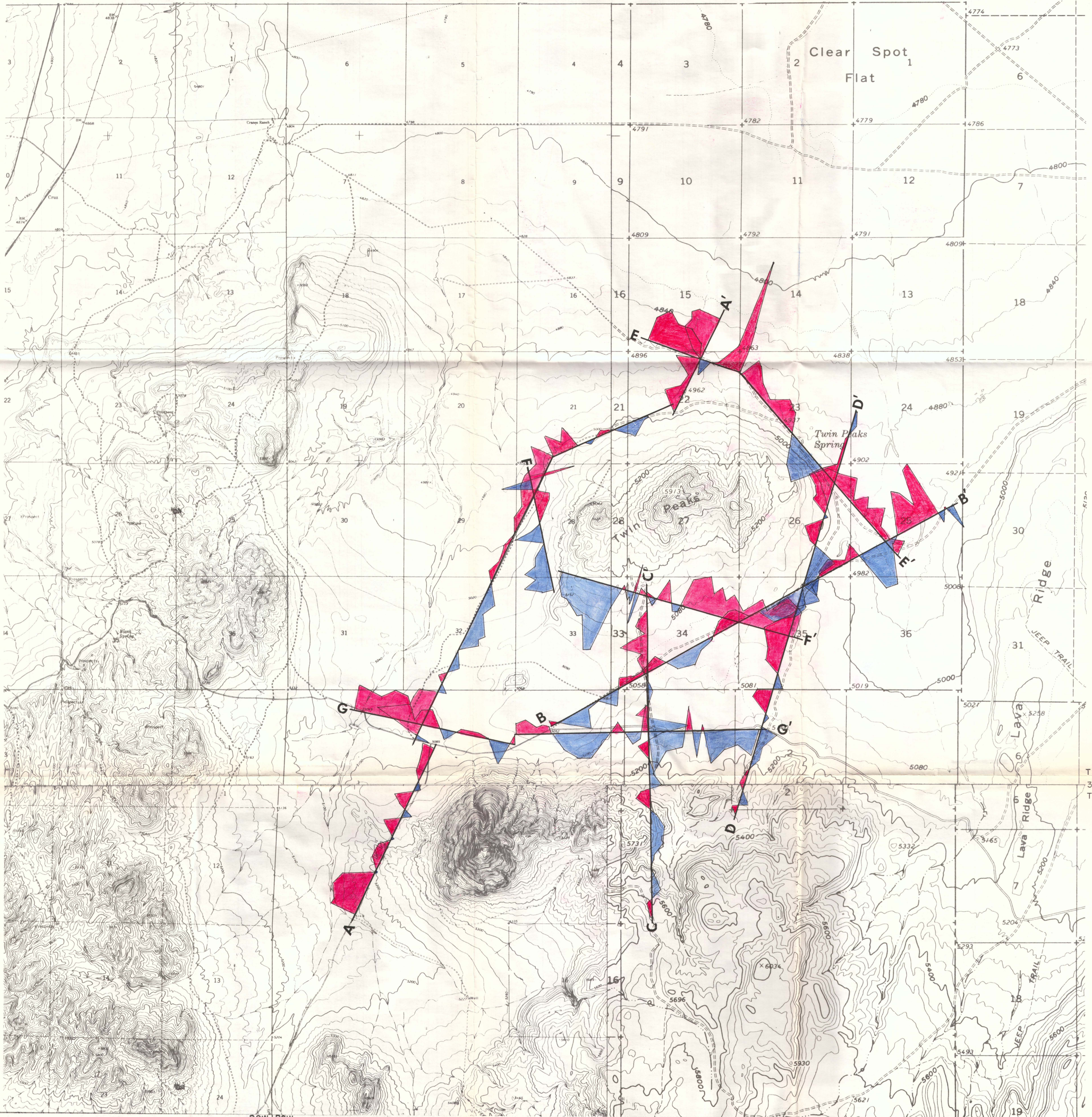
RESISTIVITY (Ωm) vs. DEPTH (kms)
by continuous inversion method

SOURCE: TERRAPHYSICS, 1977-78 10-78

R9W R8W

112°45'

R8W R7W



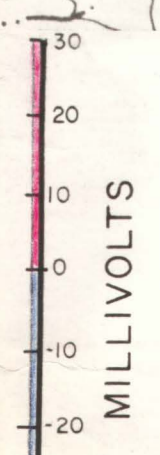
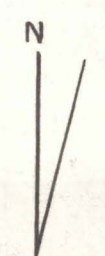
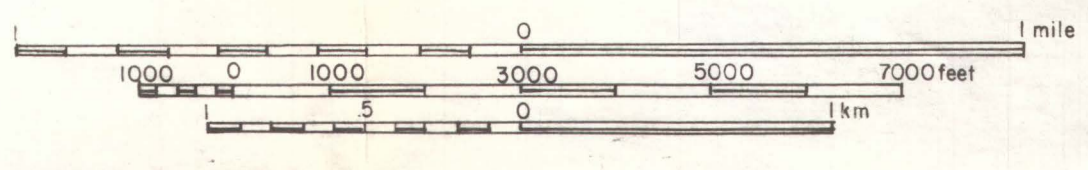
T23S
38°45'
T24S

T23S
38°45'
T24S

R9W R8W

112°45'

SCALE 1:24000



AMAX EXPLORATION, INC.
DENVER, COLORADO

TWIN PEAKS AREA (EAST)
UTAH

SELF POTENTIAL SURVEY

SOURCE: TERRAPHYSICS, 1977

R9M R8W

112° 45'

(15.5) 36.4, 44.5
4.25 (256) 1.8 @ 4.0

Clear Spot
Flat

(15.9) 37, 20, 11, 38
4.94 (266) 1.3 @ 3.5

(32.4) 352, 227, 0
0.89 (201) 0-126 @ 5.0
NVD

(31.7) 155, 186
1.0 (185) 6.6 @ 3.5

9.5 45, 80, 0, 20, 35, 28
7.00 (372) 1.1 @ 4.0

(17.1) 45, 32
6.30 (277) 1.1 @ 3.0

(16.7) 30.0 (?)
6.21 (202) 1.5 @ 5.0

(17.1) 43, 49
3.82 (295) 1.7 @ 3.5

(19.9) 3.15
(2)

(19.4) 33, 86, 40, 49
3.82 (140) 2.6 @ 5.0

(23.4) 108.1
1.73 (159) 4.3 @ 4.0

(14.0) 40, 18, 45, 90, 0, 32, 78
4.7 (439) 1.3 @ 4.0

(19.6) 58, 22, 11
3.23 (184) 2.0 @ 3.5

(18.5) 50, 90, 27, 50
3.77 (298) 2.9 @ 5.8

(24.6) 1.83
(2)

(18.5) 45.9
4.07 (182) 2.3 @ 5.0

(21.1) 51, 77
2.42 (242) 2.5 @ 5.0

(18.6) 13, 33, 40, 46
4.03 (181) 2.3 @ 5.0

(18.8) 43, 47, 52
3.59 (203) 1.8 @ 3.5

(18.5) 62, 72, 85, 53
2.79 (241) 3.1 @ 5.0

(23.7) 143, 98
1.96 (178) 3.4 @ 3.5

(18.8) 42, 35, 69
2.73 (180) 2.1 @ 5.0

(20.0) 124, 57, 218, 73
2.45 (294) 3.1 @ 4.3

(14.1) 0, 18 (?)
10 45 (179) NVD

20m deep (166)

(19.0) 25, 61, 71
2.64 (124) 2.5 @ 3.5

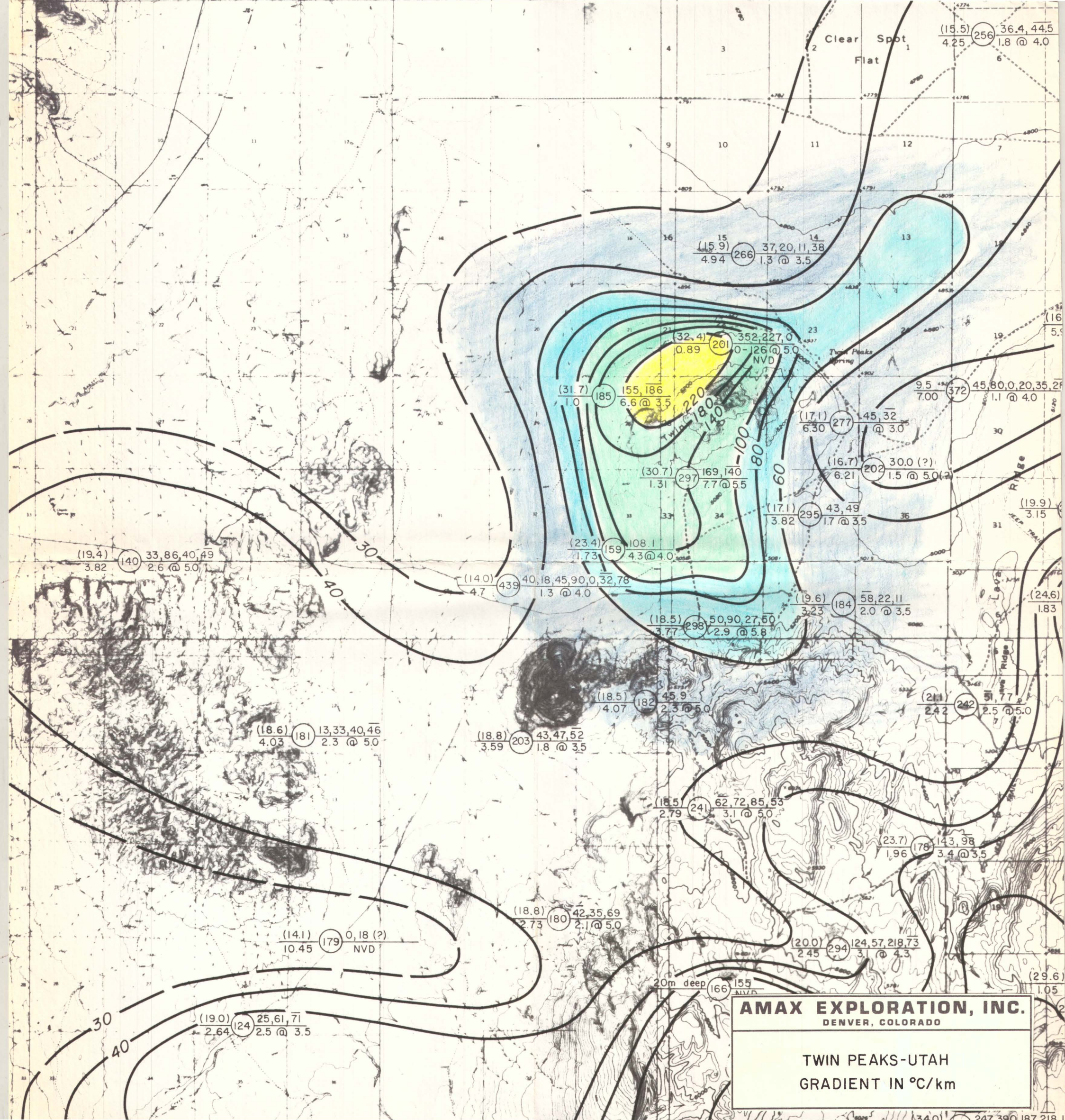
AMAX EXPLORATION, INC.
DENVER, COLORADO

TWIN PEAKS - UTAH
TEMPERATURE @ 100m

T
23
S

T
24
S

38° 45'



AMAX EXPLORATION, INC.
DENVER, COLORADO

TWIN PEAKS-UTAH
GRADIENT IN °C/km

(15.5) 36.4, 44.5
4.25 (256) 1.8 @ 4.0

(15.9) 37, 20, 11, 38
4.94 (266) 1.3 @ 3.5

(32.4) 352, 227, 0
0.89 (201) 0-126 @ 5.0
NVD

(31.7) 155, 186
1.0 (185) 6.6 @ 3.5

(9.5) 45, 80, 0, 20, 35, 28
7.00 (372) 1.1 @ 4.0

(17.1) 45, 32
6.30 (277) @ 3.0

(16.7) 30.0 (?)
6.21 (202) 1.5 @ 5.0 (?)

(19.4) 33, 86, 40, 49
3.82 (140) 2.6 @ 5.0

(23.4) 108.1
1.73 (159) 4.3 @ 4.0

(14.0) 40, 18, 45, 90, 0, 32, 78
4.7 (439) 1.3 @ 4.0

(19.6) 58, 22, 11
3.23 (184) 2.0 @ 3.5

(18.5) 50, 90, 27, 50
3.77 (298) 2.9 @ 5.8

(18.5) 45.9
4.07 (182) 2.3 @ 5.0

(18.8) 43, 47, 52
3.59 (203) 1.8 @ 3.5

(21.1) 51, 77
2.42 (242) 2.5 @ 5.0

(18.6) 13, 33, 40, 46
4.03 (181) 2.3 @ 5.0

(18.5) 62, 72, 85, 53
2.79 (241) 3.1 @ 5.0

(23.7) 143, 98
1.96 (178) 3.4 @ 3.5

(14.1) 0, 18 (?)
10.45 (179) NVD

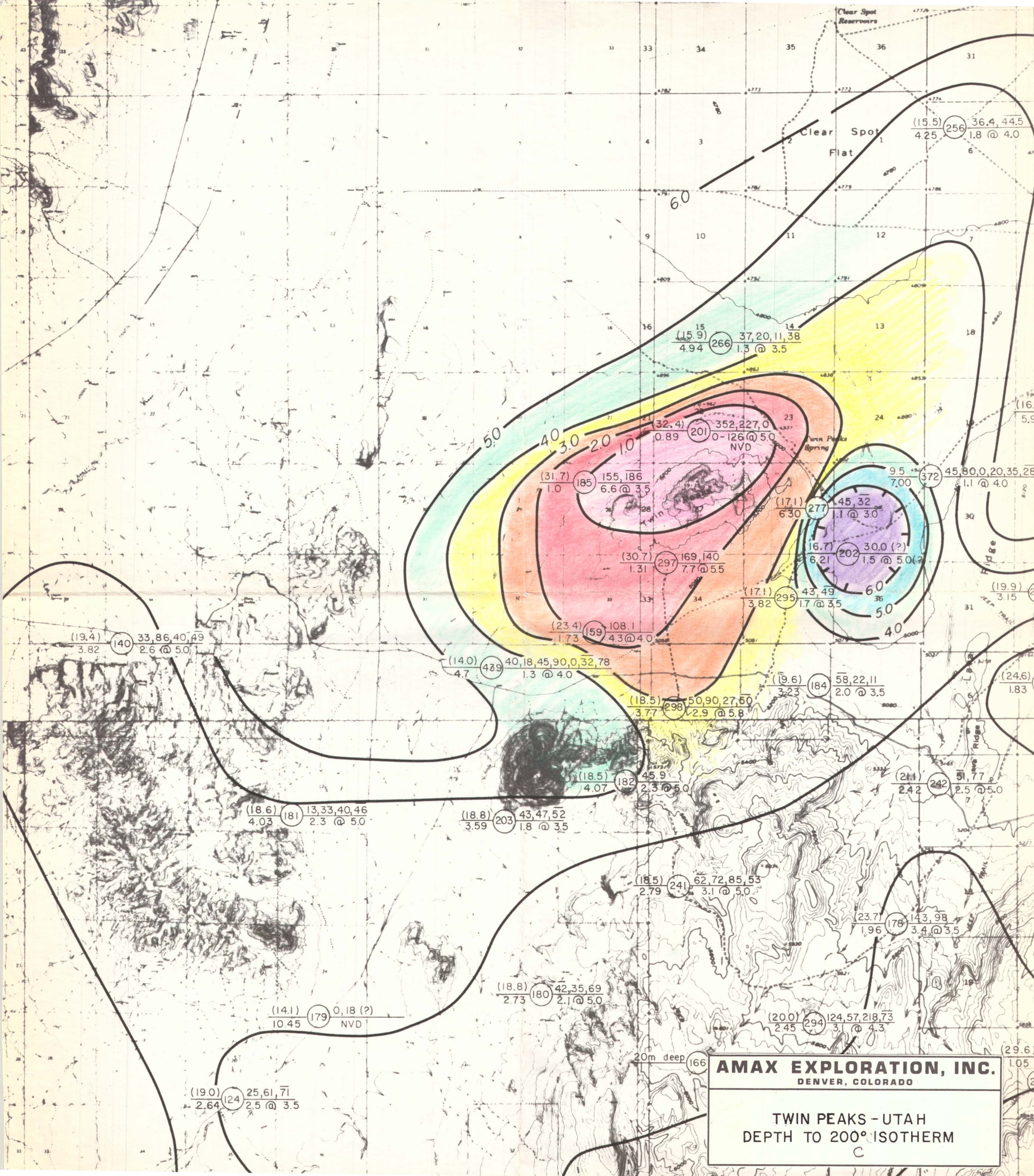
(18.8) 42, 35, 69
2.73 (180) 2.1 @ 5.0

(20.0) 124, 57, 218, 73
2.45 (294) 3.1 @ 4.3

(19.0) 25, 61, 71
2.64 (124) 2.5 @ 3.5

20m deep (166) 155
NVD

(29.6) 1.05



(19.4) 33, 86, 40, 49
3.82 (140) 2.6 @ 5.0

(14.0) 40, 18, 45, 90, 0, 32, 78
4.7 (439) 1.3 @ 4.0

(18.6) 13, 33, 40, 46
4.03 (181) 2.3 @ 5.0

(18.8) 43, 47, 52
3.59 (203) 1.8 @ 3.5

(18.5) 62, 72, 85, 53
2.79 (241) 3.1 @ 5.0

(23.7) 143, 98
1.96 (178) 3.4 @ 3.5

(14.1) 0, 18 (?)
10.45 (179) NVD

(18.8) 42, 35, 69
2.73 (180) 2.1 @ 5.0

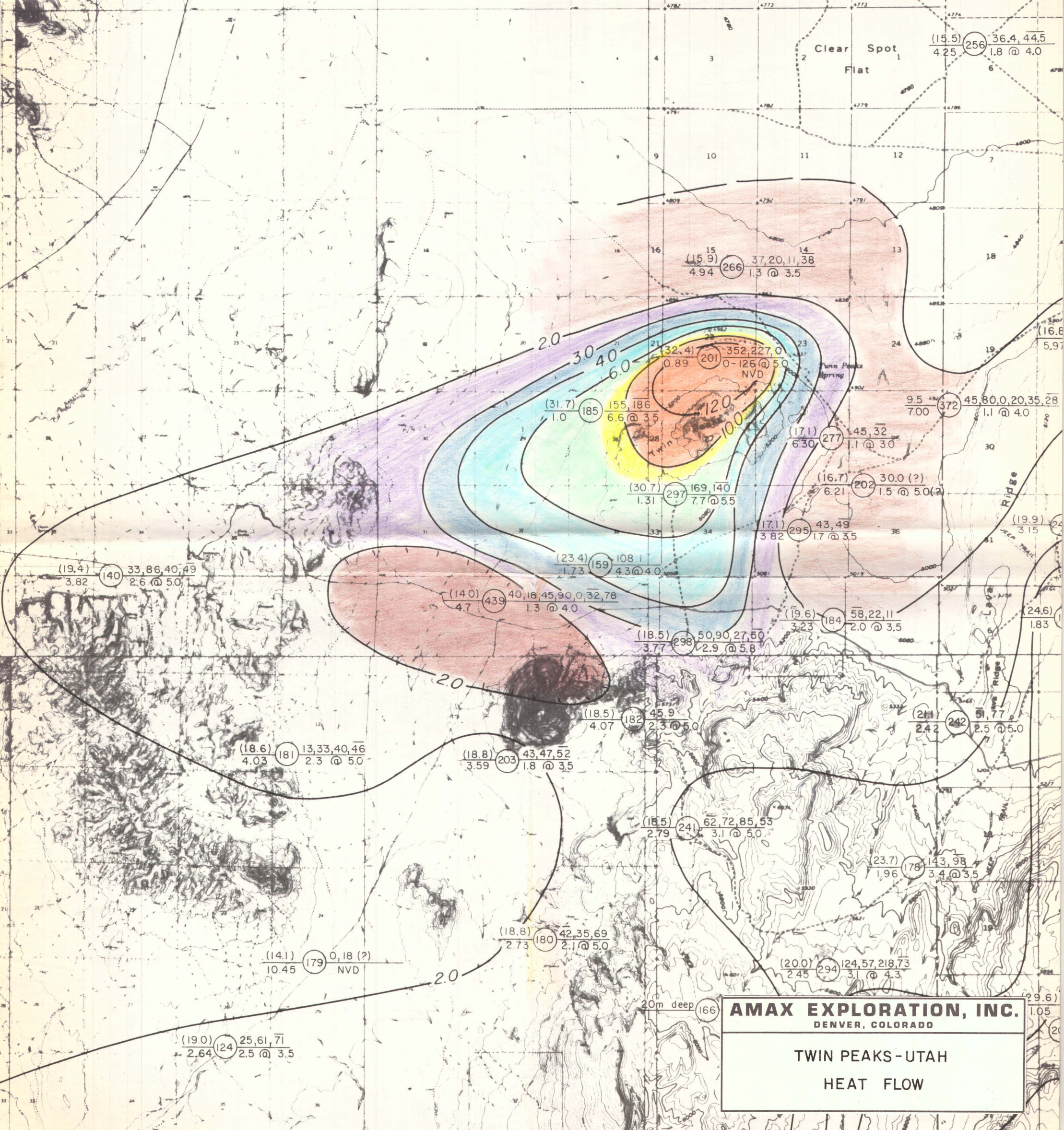
(20.0) 124, 57, 218, 73
2.45 (294) 3.1 @ 4.3

(19.0) 25, 61, 71
2.64 (124) 2.5 @ 3.5

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DENVER, COLORADO

TWIN PEAKS - UTAH
DEPTH TO 200° ISOTHERM

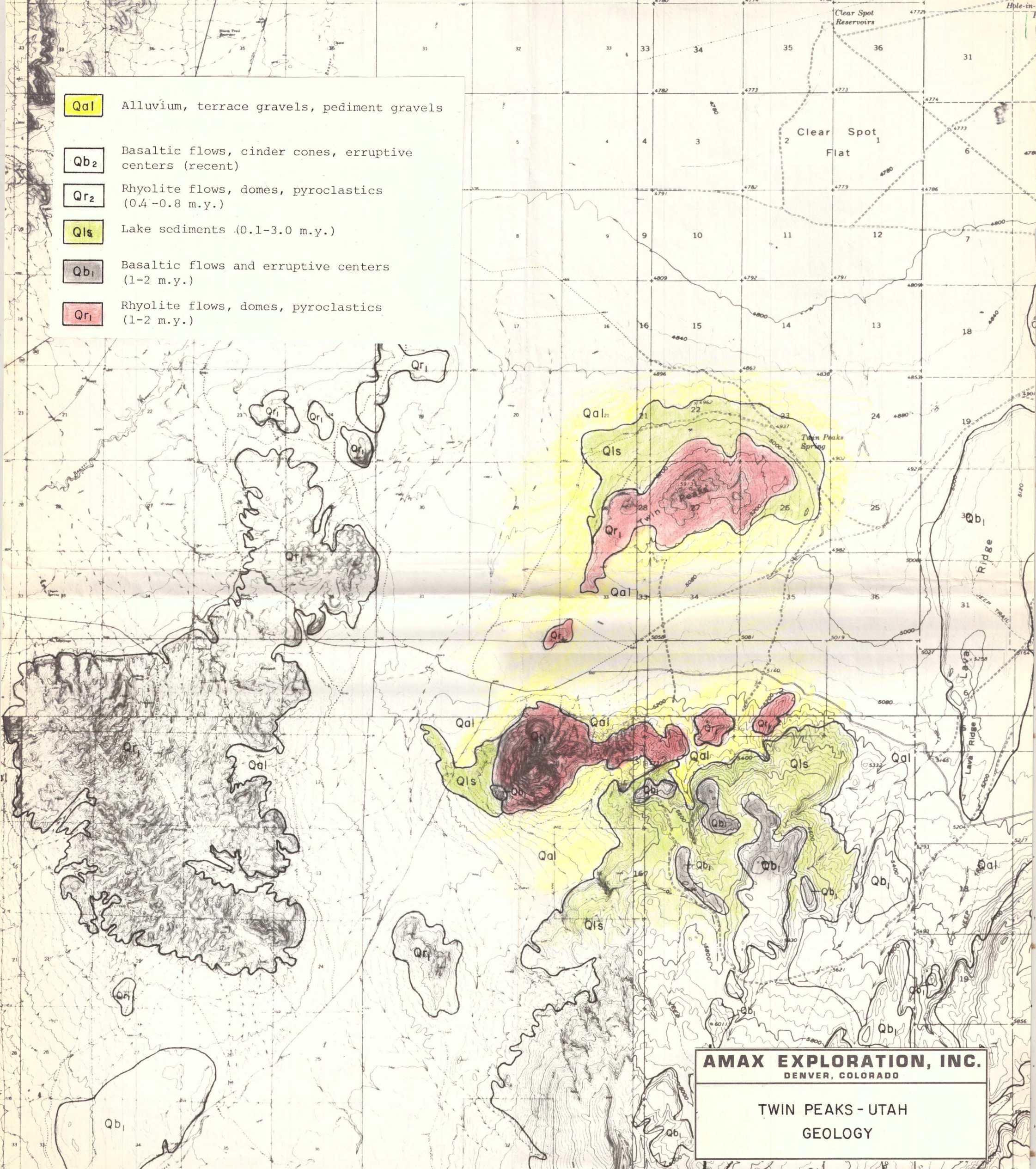
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TWIN PEAKS-UTAH
HEAT FLOW

- Qa₁ Alluvium, terrace gravels, pediment gravels
- Qb₂ Basaltic flows, cinder cones, eruptive centers (recent)
- Qr₂ Rhyolite flows, domes, pyroclastics (0.4-0.8 m.y.)
- Ql_s Lake sediments (0.1-3.0 m.y.)
- Qb₁ Basaltic flows and eruptive centers (1-2 m.y.)
- Qr₁ Rhyolite flows, domes, pyroclastics (1-2 m.y.)

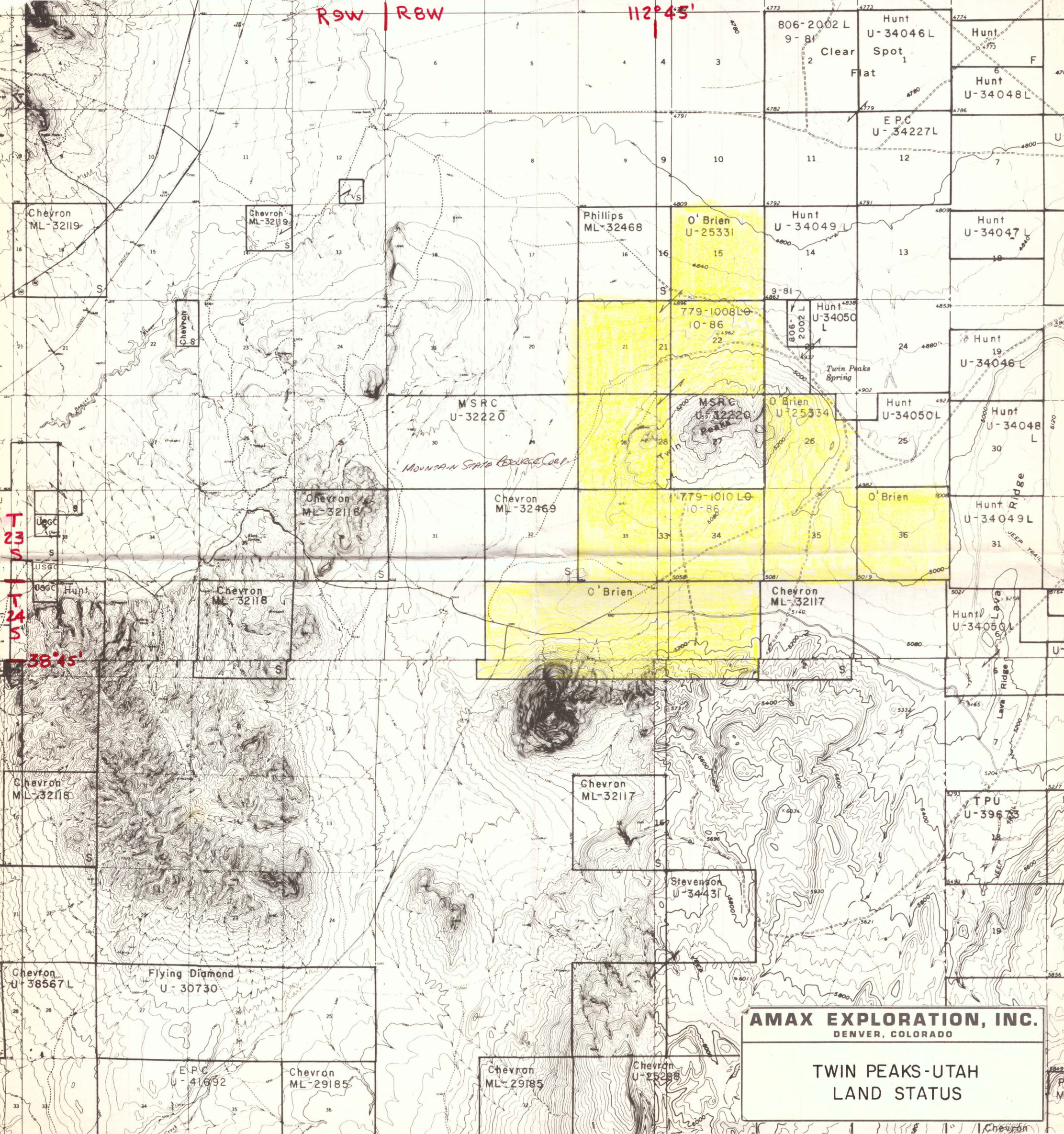


AMAX EXPLORATION, INC.
DENVER, COLORADO

TWIN PEAKS - UTAH
GEOLOGY

R9W | R8W

112°45'



T 23 S
T 24 S
38°45'

MOUNTAIN STATE RESOURCE CORP.

AMAX EXPLORATION, INC.
DENVER, COLORADO

**TWIN PEAKS-UTAH
LAND STATUS**

Chevron