

DRILLING HISTORY

Baltazor 1500-1, Humboldt County, Nevada

5 May - 5 June 79

1. OPERATOR: Earth Power Production Company
Tulsa, Oklahoma
 2. CONTRACTOR: American Geothermal Drilling Co.
Tulsa, Oklahoma
 3. WELL LOCATION: T.46N, R.28E, Sec. 14 - NW NE NW
Elevation: 4218'
 4. SPUD DATE: 5 May 79
 5. COMPLETION DATE: 5 June 79
 6. RIG DESCRIPTION: Portadrill Model 524, Serial #662,
60,000 lb. mast, 5½x8 Gardner-Denver
mud pump, Atlas Copco 125 psi @ 330
CFM air compressor. 2000 ft. 2-7/8"
IF drill pipe. 80 ft. 4½" drill
collars.
 7. TOTAL DEPTH: 1581'
Cased to 1528½' with 2-3/8" API
tubing.
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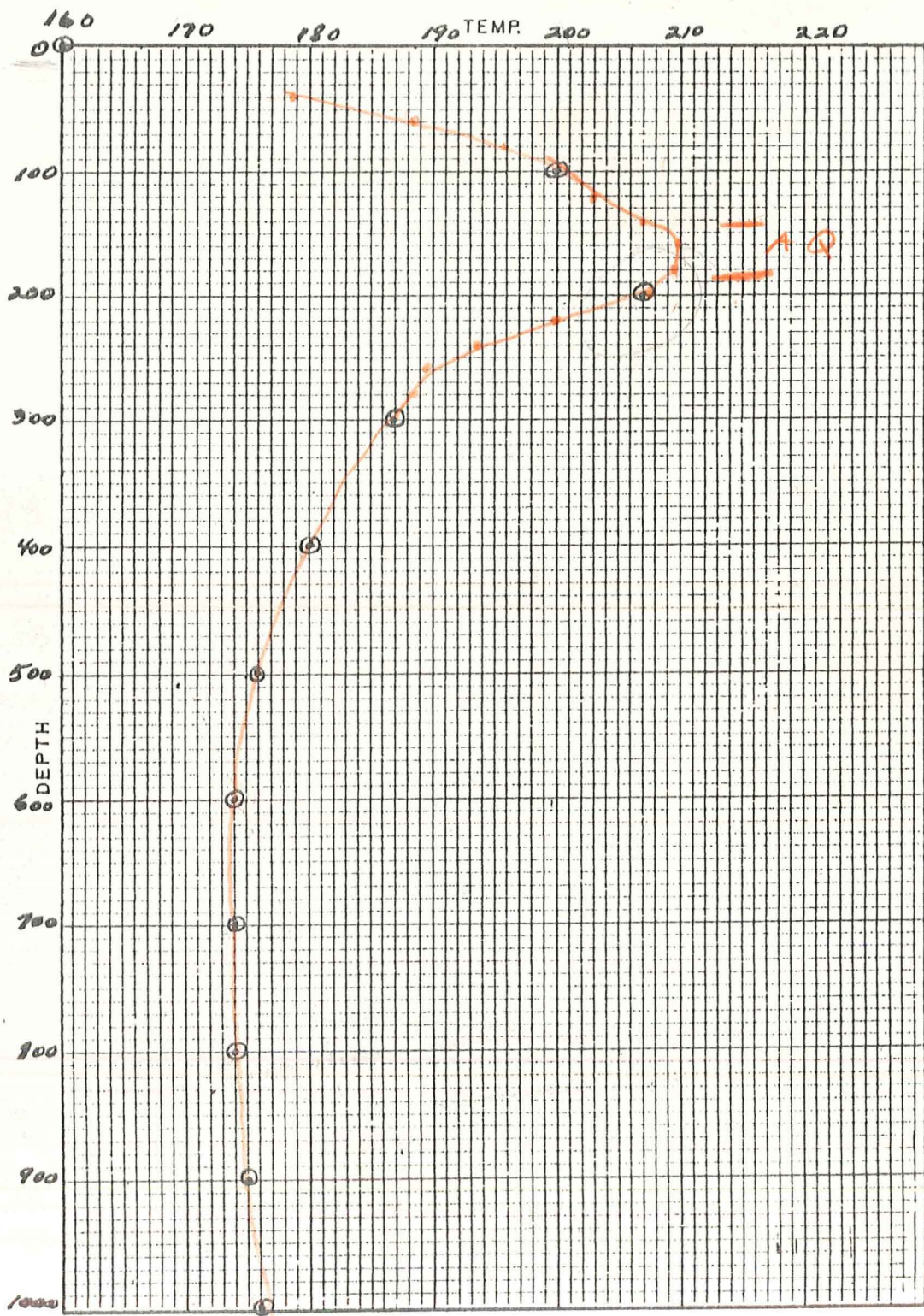
<u>DATE</u>	<u>DEPTH</u>	<u>SUMMARY OF OPERATIONS</u>
5 May 79	0-88	Rig up. Dig mud pits. Spud with 12¼" bit at 3:15 p.m. Drive 20 ft. 14" casing in soft clay. Begin drilling with 12¼" bit below conductor pipe. Lost circulation at 25 ft. Add cottonseed hulls and Fibertex to mud. Circulation recovered. Depth is 88 ft. at 8:00 p.m. Trip out of hole.
6 May 79	88-154	Trip into hole. Drilling in basaltic gravels with occasional clay layers. Return circulation good. Initial mud return temperature = 145°F, dropping to 80°F as circulation continues. Lost circulation at 115 ft. Static water level drops from 3 ft. to 8 ft. below ground level. Add LCM to mud system. Circulation partially recovered. Severe lost circulation at 151 ft. Make up fresh mud pits. Pump in mud and LCM slowly. No recovery. Static water level at 5 ft. Mix up new pits. No recovery. Out of mud. Rig up to drill with foam. Trip up the hole to 40 ft. Well blows out when air is turned on. Much steam and hot water. Kill well by pumping 1500 gals. cold water.
7 May 79	154-154	Out of mud. Well apparently flowed overnight. Well blows out at 11:00 a.m. and dies spontaneously. Pump 3000 gals. of cold water to cool hole. Mud arrives 10:30 p.m.
8 May 79	154-166	Mix up new mud pits. Trip into hole. 15 ft. of fill up on bottom. Cannot keep hole clean because of low viscosity. Mud weight of 9 lbs./gal. or more results in lost circulation. Static water level at 8 ft. Trip out of hole at 166 ft. Decide to case to 166 ft.
9 May 79	166	Trip into hole. 3 ft. of fill up on bottom. Prepare to case. Begin running casing. Run 158 ft. of 8-5/8" T&C, K-55 casing. Rig up to cement casing. Cement thru casing with 38 sax Portland Type I-II low alkali neat cement and water to make 440 gals. No return to surface. W.O.C.
10 May 79	166	Probe down annulus to 151 ft. with plastic pipe. No sign of cement. Come out of hole

<u>DATE</u>	<u>DEPTH</u>	<u>SUMMARY OF OPERATIONS</u>
		with plastic pipe. Drop 120 ft. of pipe. Fish out pipe. Run in annulus with iron pipe. Hole open to 149 ft. Prepare to cement. Cement thru iron pipe in annulus at 149 ft. Stage 3, 200 gal. slugs of cement. W.O.C.
11 May 79	166-10	Run iron pipe down annulus. Annulus bridged at 20 ft. Try to wash out bridge. Cannot break thru bridge. Pressure up on casing. Casing leaking at 100 psi. Cement 12 sax down annulus. Mix up cement to pump down annulus (25 sax cement with 3 sax hulls). Pump cement down casing. Casing comes up out of hole 2½ ft. Decide to abandon hole because of bad cement job. Move rig 15 ft. west. Spud new hole with 12¼" bit; set 10 ft. of 14" conductor.
12 May 79	10-130	Mix up mud pits. Drilling with 12¼" bit. Lost circulation at 126 ft. Mix up new pits with hulls and Fibertex. Cannot recover circulation. Trip out of hole.
13 May 79	130-153	Mix up pits. Trip into hole. 15 ft. of fill up on bottom. Slight return flow begins at 136 ft. Prepare to case at 153 ft.
14 May 79	153-156	Trip into hole. Hole is clean. Drill to 156 ft. to make extra hole for casing. Trip out of hole. Set 153' 6" of 8-5/8" T&C, K-55 casing at 155 ft. Cement baskets at 150 and 140 ft. Prepare to cement. Cement thru casing with 24 sax neat cement. Cement down annulus with 1" pipe with 26 sax. W.O.C. 6 Hrs. Cement down annulus with 24 sax. W.O.C. 8 Hrs.
15 May 79	156	Cement down annulus with 22 sax neat cement and 2 sax hulls. W.O.C. 6 Hrs. Probe down annulus. Cement at 35 ft. and still soft. W.O.C. 7 Hrs. Cement down annulus with 44 sax cement and 3 sax hulls. W.O.C. 8 Hrs.
16 May 79	156	Probe down annulus. Cement at 26 ft. and hard. Cement down annulus with 20 sax cement and 2 sax hulls. Cement returns to surface, approximately 50 gals. Cement down annulus of previously abandoned hole with 12 sax. Prepare to nipple up.

<u>DATE</u>	<u>DEPTH</u>	
16 May 79 (cont'd)		Wellhead as installed from casing up: a) 900 series flange screw into 8-5/8" casing collar, b) 900-600 series drilling spool 2" line pipe side outlets, c) Double manual schaffer 2000-3000 B.O.P. with blind rams on bottom and 2-7/8" pipe rams on top, d) 600 series companion flange, e) flow nipple. Test B.O.P. Close blind rams. Pressure up to 250 psi. Pressure drops to 221 psi after 10 minutes. Close 2-7/8" rams on drill pipe. Pressure up to 250 psi. Pressure drops to 225 after 10 minutes. Test passes.
17 May 79	156-181	Trip into hole. Top of cement at 110 ft. Begin drilling out cement with 6-3/4" bit. 161 ft. lost circulation. Mix up new pits with hulls and Fibertex. Trucks arrive at noon with mud, LCM, drill pipe and collars. Drilling with no returns. Trip up into casing.
18 May 79	181-261	Trip into hole. Drilling with no returns. Occasional 2-3 ft. cavern from 181-201 ft. Bottom of hole staying clean with 33-35 vis. Trip up into casing
19 May 79	261-381	Trip into hole. Hole bridged at 185 ft. Wash out bridge. No fill up on bottom. Consuming ~6000 gals. hr. of mud drilling with no returns. Drilling at 25 ft./hr. at 281 ft. 320-381 soft rock drilling at 40-60 ft./hr. Trip up into casing.
20 May 79	381-519	Trip into hole. Mix mud. Hole bridged at 171 and 188 ft. Drilling with no returns. Bottom of hole staying clean. Trip up into casing.
21 May 79	519-610	Trip into hole. Drilling with no returns. Trip out of hole.
22 May 79	610-721	New 6-3/4" bit. Trip into hole. Drilling with no returns. Water truck cannot keep up with lost circulation. Trip up into casing.

<u>DATE</u>	<u>DEPTH</u>	
23 May 79	721-819	Trip into hole. Drilling with no returns. Trip out of hole with plugged bit. Trip into hole. Drilling with no returns. Trip up into casing.
24 May 79	819-881	Trip into hole. Drilling with no returns. Trip out of hole. Rig down. Build fence around drill site. Move equipment.
25 May 79		Rig in Reno for maintenance on auxiliary transmission.
4 June 79	881-1044	Rig up. Mix up new pits. Begin tripping into hole at 2:15 p.m. Hole bridged at 165, 171, 185 and 240 ft. Drilling with no returns at 20 ft./hr. Static water level at 5 ft. when not drilling and at 8-9 ft. when drilling. Drilling thru interlayered hard and soft: Hard rock is 20 ft./hr. for 10-15 ft. then 3-5 ft. of 40 ft./hr. material. Trip up 60 ft. of bottom and rotate.
5 June 79	1044-1581	Drill with no returns. Trip out of hole.
6 June 79	1581	Standby for logging truck. Century Geophysical truck arrives at 2:30 p.m. to run Gamma-SP-Resistivity. Hole bridged at 210 ft. Loggers probe not working. No log. Run 1528½ ft. of 2-3/8" API tubing. Wellhead consists of homemade casing hammer and 2" Hi pressure ball valve on 2-3/8" tubing.
7 June 79		Rig down. Clean up site.

DEPTH	TEMP.	DEPTH	TEMP.
0	160.9	500	176.7
20	162.9	520	175.8
40	178.9	540	175.6
60	188.4	560	175.3
80	195.8	580	175.1
100	200.4	600	174.9
120	204.1	620	174.7
140	207.4	640	174.7
160	210.1	660	174.4
180	209.6	680	174.0
200	207.7	700	174.0
220	200.8	720	173.8
240	193.5	740	173.8
260	189.3	760	174.0
280	187.5	780	174.0
300	187.3	800	174.2
320	187.1	820	174.4
340	185.7	840	174.7
360	183.5	860	174.7
380	181.9	880	174.9
400	180.8	900	175.6
420	179.6	920	175.6
440	178.5	940	175.8
460	178.0	960	175.8
480	177.8	980	175.8



Baltazor HOLE # 1500-1
LITHOLOGY

15 Min Hang @ 1398'

0 Min	182.8
2	183.0
4	183.2
6	183.2
8	183.2
10	183.2
12	183.2
14	183.2
15	183.2

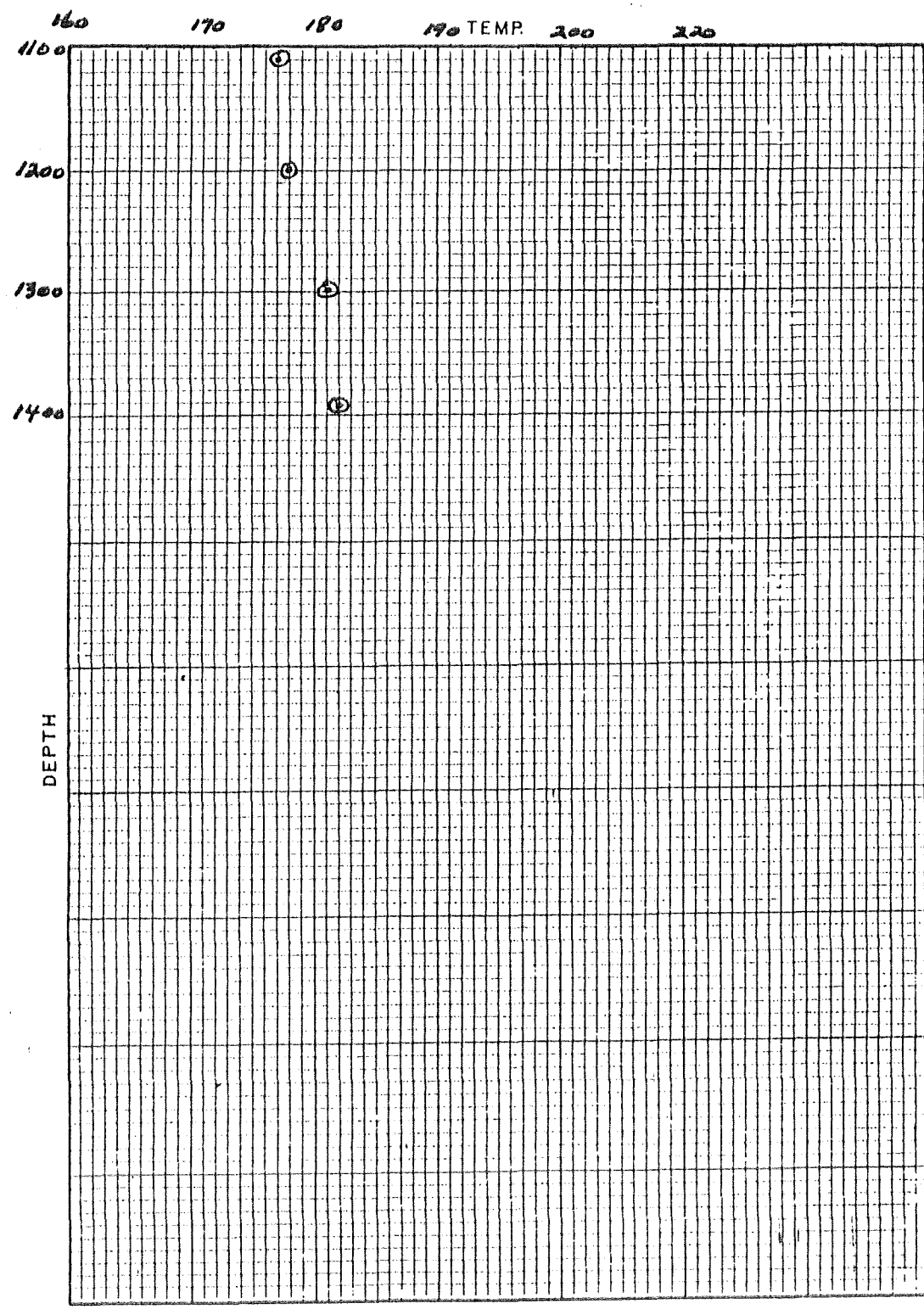
PROSPECT Baltazor
LOCATION Shumboldt Co.
SURF. ELEV. Neveda
DATE DRLD. 5 JUNE 79

GRADIENT 15.81
T.D. 182.8
TEMP. AT T.D. 182.8
SURVEY DATE 25 JUNE 79
SURVEY BY AGNEW & SWEET

Note: Hole bridged at 1398'

EARTH POWER
PRODUCTION COMPANY
TULSA, OKLAHOMA

DEPTH	TEMP.	DEPTH	TEMP.
1000	176.0		
1020	175.5		
1040	176.9		
1060	177.1		
1080	177.4		
1100	177.6		
1120	177.8		
1140	178.0		
1160	178.3		
1180	178.7		
1200	178.9		
1220	179.6		
1240	180.1		
1260	180.5		
1280	181.0		
1300	181.2		
1320	181.7		
1340	181.9		
1360	182.3		
1380	182.8		
1398	182.8		



EARTH POWER
 PRODUCTION COMPANY
 TULSA, OKLAHOMA

PROSPECT Baltazor
 LOCATION Idumbeket Co., Nevada

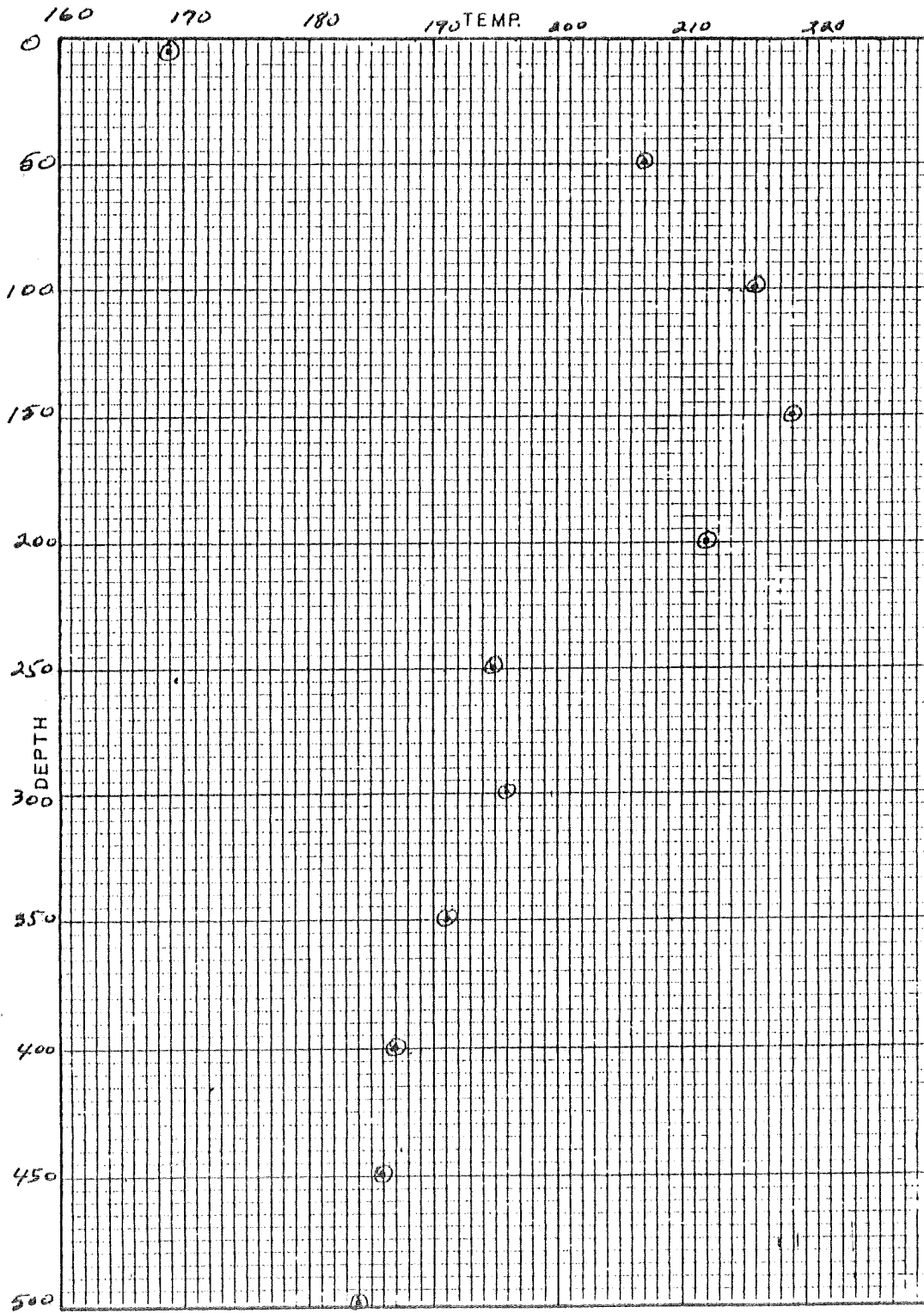
GRADIENT 1581'
 T.D. 183.8

SURF. ELEV. _____
 DATE DRLD. 3 JUNE 77

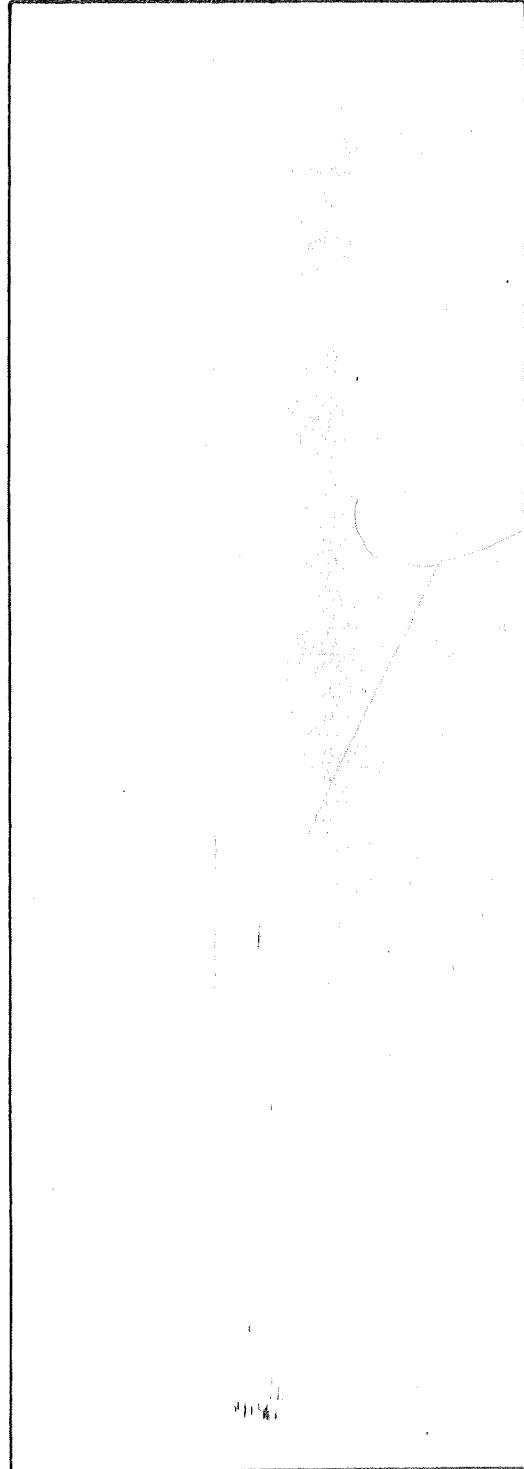
TEMP. AT T.D. 183.8
 SURVEY DATE 25 JUNE 79
 SURVEY BY AGNEW + SWEET

7-17

DEPTH	TEMP.	DEPTH	TEMP.
0	169.3	250	193.2
10	171.7		195.6
	187.2		196.0
	196.5		196.4
	202.3		196.6
50	207.0	300	196.7
	210.1		196.2
	213.0		195.4
	214.6		194.0
	216.0		192.3
100	216.8	350	191.0
	217.2		189.6
	217.8		189.2
	218.4		188.6
	218.8		188.2
150	219.2	400	187.4
	219.3		186.9
	218.8		186.5
	216.4		186.3
	214.2		186.1
200	212.4	450	186.2
	209.7		185.5
	203.5		185.1
	194.9		184.9
	194.6		184.6



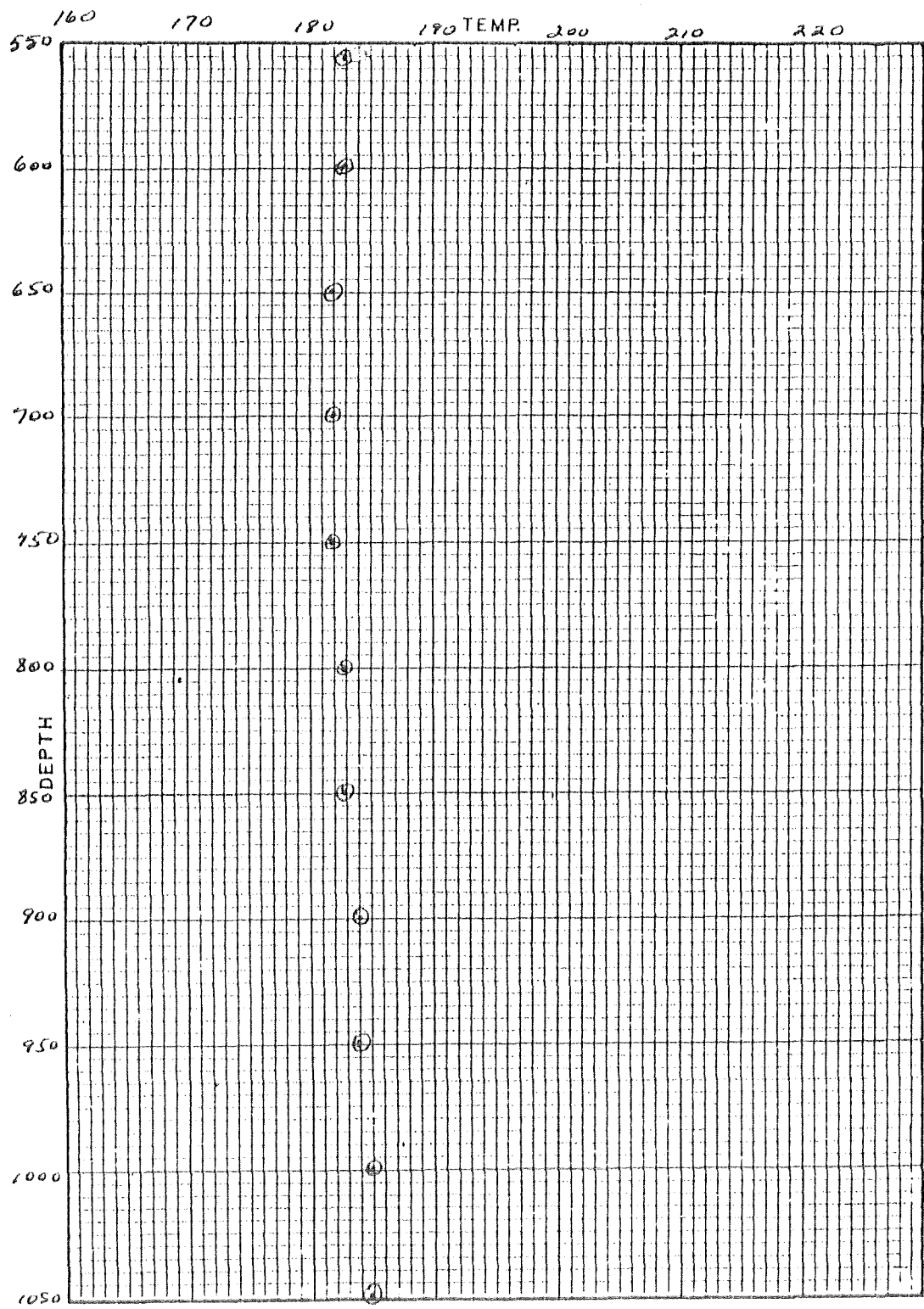
Baltazor HOLE # 1500-1
LITHOLOGY



PROSPECT Baltazor GRADIENT 1581
 LOCATION Bomboldt Co., T.D. 195.0
73va 22 TEMP. AT T.D. 86 July 79
 SURF. ELEV. 73va 22 SURVEY DATE 86 July 79
 DATE DRLD. 7 July 79 SURVEY BY EPAC

EARTH POWER
 PRODUCTION COMPANY
 TULSA, OKLAHOMA

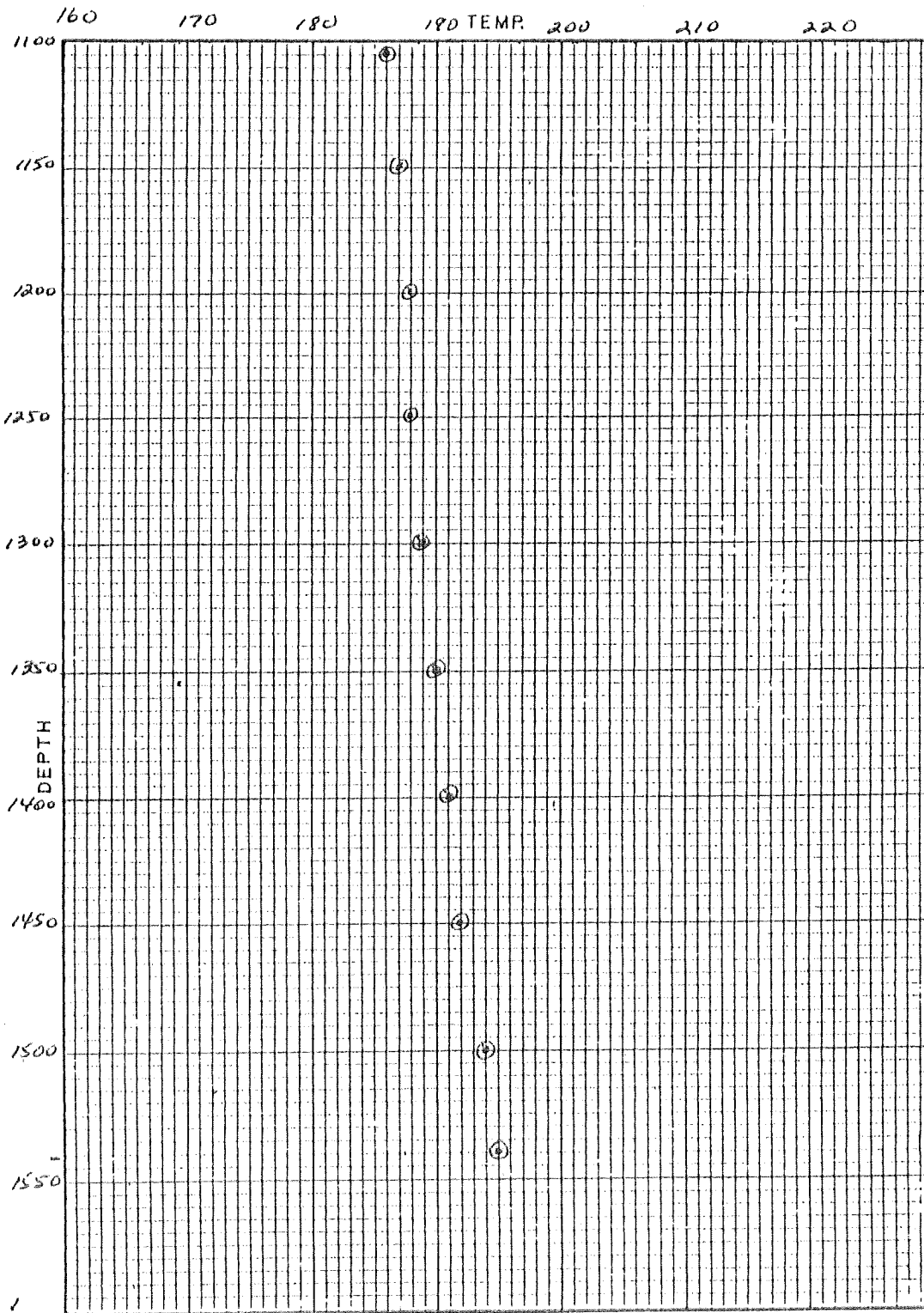
DEPTH	TEMP.	DEPTH	TEMP.
500	184.4	750	182.7
	184.3		182.8
	184.2		182.9
	184.0		183.0
	183.8		183.0
550	183.8	800	183.0
	183.7		183.1
	183.6		183.2
	183.5		183.2
	183.4		183.4
600	183.4	850	183.6
	183.2		183.6
	183.0		183.7
	183.0		183.8
	182.9		183.9
650	182.7	900	184.0
	182.6		184.1
	182.5		184.1
	182.2		184.2
	182.1		184.2
700	182.4	950	184.2
	182.5		184.2
	182.6		184.6
	182.6		184.8
	182.6		185.0



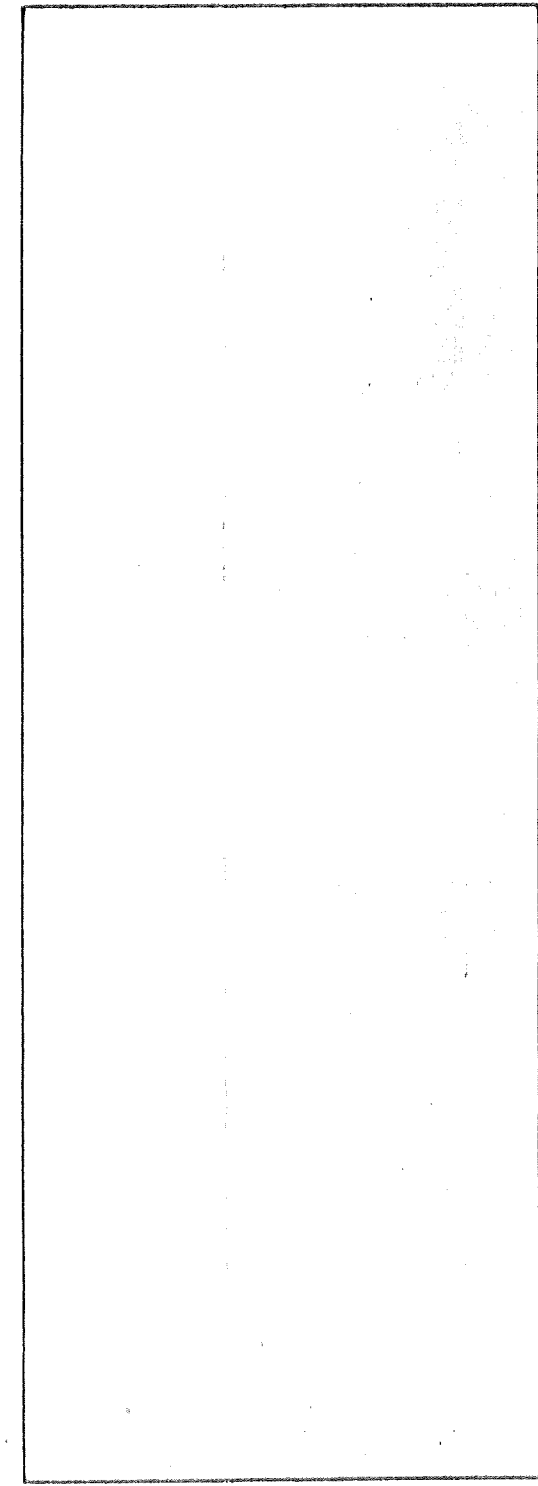
PROSPECT Battagor GRADIENT 1581'
 LOCATION Chamberlain Co., T.D. 195.0
Nevelde SURVEY DATE 26 July 79
 SURF. ELEV. _____ SURVEY BY EPAC
 DATE DRLD. 7 July 79

EARTH POWER
 PRODUCTION COMPANY
 TULSA, OKLAHOMA

DEPTH	TEMP.	DEPTH	TEMP.
1000	185.1	1250	189.9
	185.2		189.0
	185.3		189.3
	185.4		189.4
	185.6		189.5
1050	185.7	1300	189.7
	185.8		189.9
	186.0		190.1
	186.1		190.4
	186.3		190.6
1100	186.4	1350	190.7
	186.5		190.8
	186.8		191.0
	186.9		191.3
	187.1		191.5
1150	187.2	1400	191.7
	187.3		191.9
	187.4		192.0
	187.7		192.2
	187.8		192.5
1200	188.0	1450	192.7
	188.1		192.9
	188.2		193.1
	188.4		193.4
	188.7		193.7

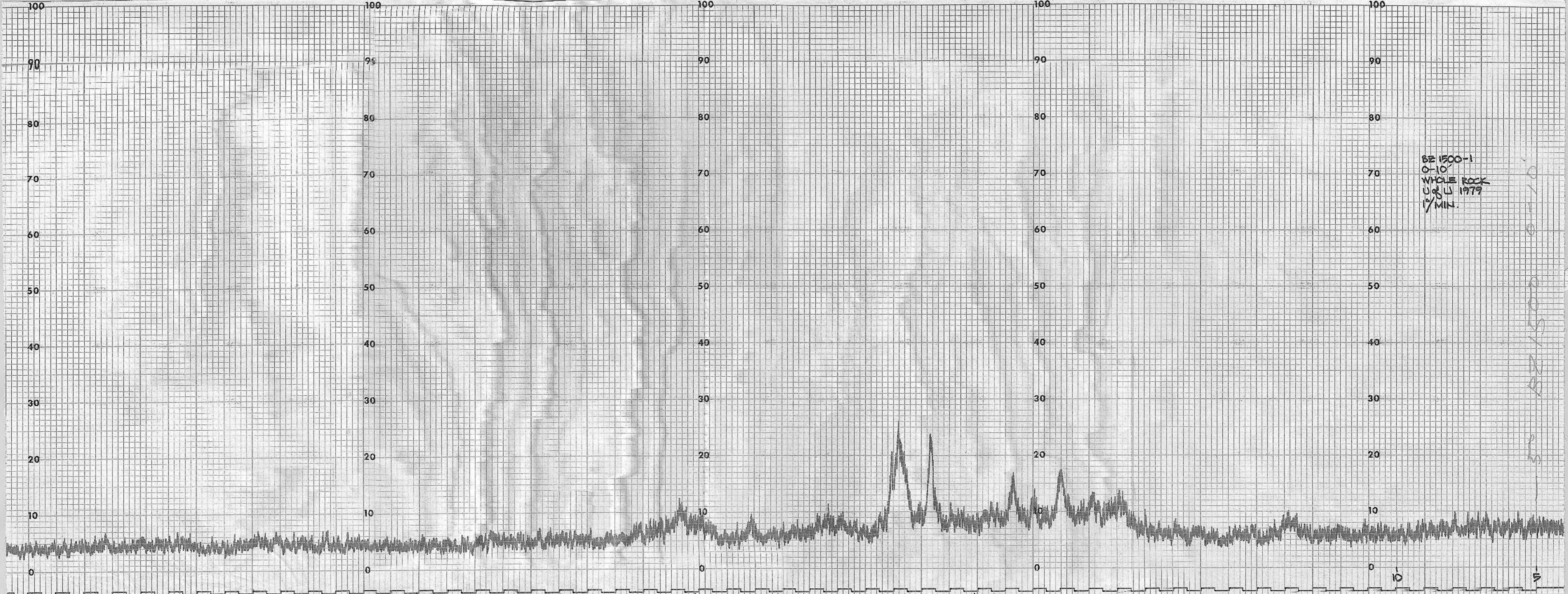


Baltasar LITHOLOGY HOLE # 1500-1



PROSPECT Baltasar GRADIENT 1581
 LOCATION Lumboldt Co., Nevada T.D. 195.0
 SURF. ELEV. 7 July 79 SURVEY DATE 26 July 79
 DATE DRLD. 7 July 79 SURVEY BY EPPC

EARTH POWER
 PRODUCTION COMPANY
 TULSA, OKLAHOMA

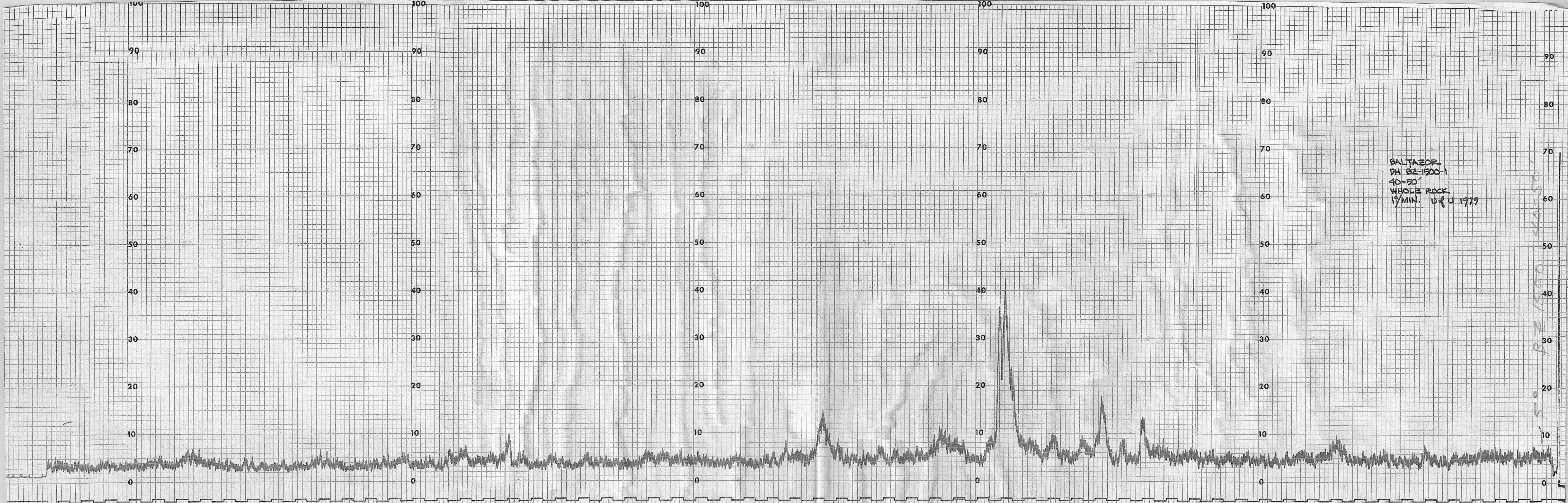


BZ 1500-1
0-10'
WHOLE ROCK
U & U 1979
1%/MIN.

0-10'
005129
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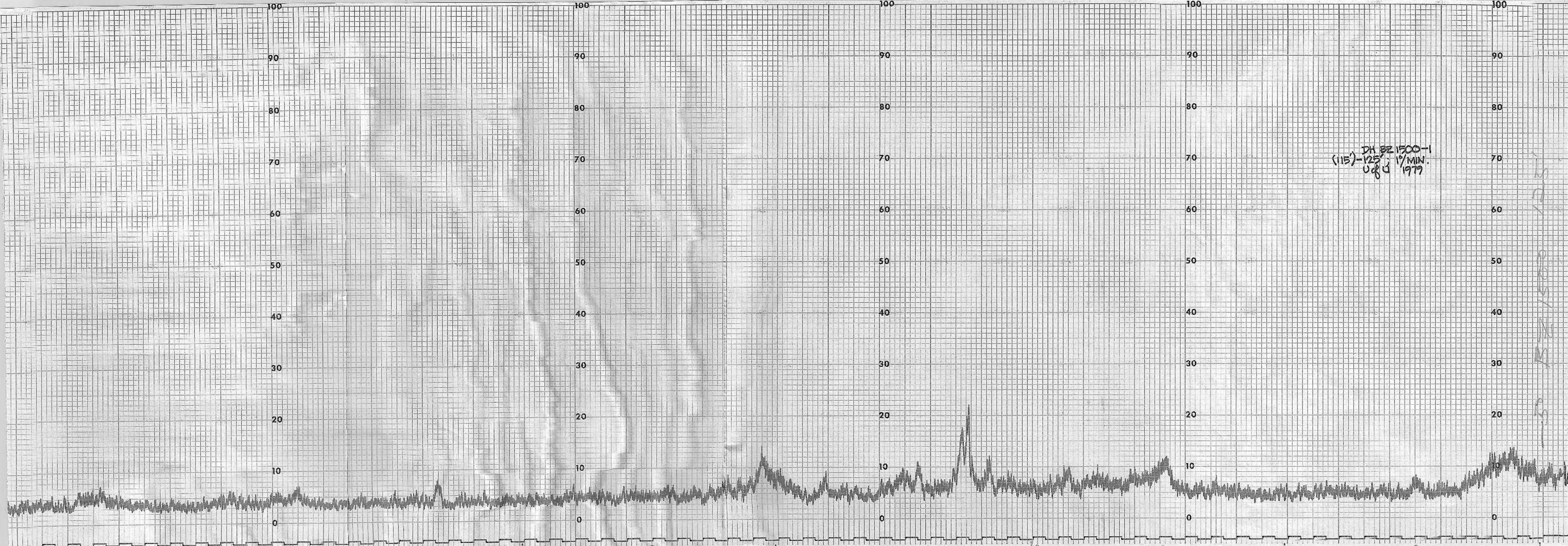
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BALTAZOR
DH BZ-1500-1
40-50'
WHOLE ROCK
1"/MIN. U of U 1979

BZ-1500
40-50'



DH BZ 1500-1
(115)-125
U of U
1979

1500-1
1500-1
1500-1
1500-1