

CLO2221

MAX EXPLORATION, INC.
 USCADORA NO. 66-5 WELL
 ILDCAT-FIELD
 LKO COUNTY NEVADA
 MAGNETIC MULTISHOT

DATE OF SURVEY APRIL 27, 1980
 VERTICAL SECTION DIRECTION CLOSURE

MS-14576

SPERRY-SUN, INC.
 RECORD OF SURVEY

MEASURED DEPTH	TRUE VERTICAL DEPTH	SUB SEA TVD	COURSE INCLINATION DEG MIN	COURSE DIRECTION DEG	DUG-LEG SEV DEG/100	TOTAL RECTANGULAR NORTH/SOUTH	TOTAL COORDINATES EAST/WEST	VERTICAL SECTION
1750	1750.00	1750.00	ASSUMED VERTICAL TO 1750 FT.			0. N	0. E	0.
2250	2249.97	2249.97	1 5	S	67 W 0.22	1.85 S	4.35 W	4.66
2700	2699.72	2699.72	2 40	S	52 W 0.37	9.95 S	16.52 W	18.40
3200	3199.33	3199.33	1 50	S	48 W 0.17	22.47 S	31.63 W	36.03
3700	3699.14	3699.14	1 20	S	38 W 0.11	32.40 S	41.15 W	47.63
4200	4199.06	4199.06	1 0	N	54 W 0.33	34.42 S	48.26 W	55.02
4700	4698.95	4698.95	1 25	N	55 W 0.08	28.31 S	56.86 W	61.93
5188	5186.72	5186.72	2 15	N	13 W 0.31	15.52 S	63.95 W	65.81

** THE CALCULATIONS ARE BASED ON THE MINIMUM RADIUS OF CURVATURE METHOD **

HORIZONTAL DISPLACEMENT = 65.81 FEET AT SOUTH 76 DEG. 22 MIN. WEST (TRUE)

ENTHALPY INC

REPORT ON FLOW TESTS
TUSCARORA 66-5.
22nd APRIL - 1980

FOR

AMAX EXPLORATION INC.

BY

ENTHALPY INC.
JULY 1980

ENTHALPY INC

AMAX EXPLORATION INC. WELL TESTS TUSCARORA 66-5

Introduction

Enthalpy Inc., of Santa Rosa, California, was engaged by Amax Exploration Inc., of Denver, Colorado in April of 1980 to conduct flow tests on a geothermal prospect in Northern Nevada. The well site, Tuscarora 66-5, is located approximately 11 miles north east of the town of Tuscarora within Independence Valley, Elko County, Nevada.

The testing program was set up by Enthalpy Inc. and run by D. Ensrud of Enthalpy Inc. The initial tests included measuring temperature, pressure, total dissolved solids (T.D.S.) and pH of the fluid produced. These parameters were used to examine the well's mass flow and deliverability. The tests were terminated 7:00 p.m. April 22, 1980 because of low temperatures. Subsurface surveys (pressure: temperature) were run on April 21st and again on April 23rd.

Testing Equipment

The blooie line, which was used as the test run, consisted of a 53' length of 13 3/8" O.D. 48# casing with one 45° elbow located 6 feet from the well head. Orifice flange placement was 30 feet from well head and was horizontally bored and tapped 1/2 inch O.D. for measuring the differential pressures across an orifice plate. The blooie line had two 1 inch collars welded horizontally 24 inches on either side of the orifice flanges. These two collars were used as pressure and temperature monitoring ports. The temperature readings were taken with a hand held thermocouple meter and a thermocouple probe with an accuracy of $\pm 0.2\%$ of reading. Pressure readings were taken from a 6 inch, 200 pound Marsh master gauge; the gauge was calibrated with an accuracy of ± 1 psig.

ENTHALPY INC

Flow Test

Flow testing was begun on April 22, 1980 at 3:00 p.m. Initially the flow was air assisted from 1500 feet with temperatures and pressures ranging from 156°F and 75 psig (Surge) to 210°F and 20 psig. The T.D.S. ranged from 320 ppm on initial flow to 600 ppm before the injection of soap. The pH ranged from 8.2 to 8.8. Soap was injected at this point to assist in flowing the well, T.D.S. and pH tests were no longer taken after this injection. At 4:11 p.m., 10 stands of drill pipe, approximately 900 feet, were added, making the total length of drill pipe approximately 2500'. At 5:00 p.m., the first air assisted water returns were observed with temperatures of 144°F. The well was then flowed, air assisted, until 7:00 p.m. with temperatures from 198°F to 225°F and pressures from 10 psig to 25 psig with surge pressures as high as 125 psig. During flow testing, the well never sustained unassisted flow. It was visually estimated that the water flow was approximately 1200 barrels/hour. Flow rate was too low for critical flow (Russell James method).

Pressure:Temperature Survey

The original numbers quoted from the field gave an impossible pressure vs. depth curve (broken line FIG I) but this appeared to be a simple transcription error. Adjusting the quoted depths gave internally consistent plots (solid lines FIG I). The reservoir pressure was too low for the well to flow unassisted (artesian flow). An increase in temperature of 70°F or more, however, would reduce the static head pressure below the static reservoir pressure and there would be a possibility of unassisted flow. Considerable fluid loss had occurred during drilling, cooling the reservoir in the vicinity of the well bore & it was decided, therefore, to unload the hole and draw the hotter fluid (if any) from the reservoir into the well bore.

Results

The well bore was unloaded and some 3000+ bbls of fluid produced but the highest temperature recorded was 225°F at 15 psig. (Saturation temp. for pure water 247°F+). The amount of fluid which could be produced was limited by sump capacity and flow testing was suspended until a second subsurface survey could be run.

ENTHALPY INC

The second survey did not indicate substantially higher bottom hole temperatures and testing was terminated.

Conclusions

The temperatures encountered were too low for a commercial geothermal well & the reservoir pressure was too low for unassisted (artesian) flow. No data were obtained on permeability thickness.

FIELD NOTES
TUSCARORA 66-5
April 22, 1980

<u>TIME</u>	<u>COMMENTS</u>
1450	Air on @ 1500'
1458	Water returns - 156°F 75 psig
1502	Air off-no flow T.D.S. 340 ppm pH 7.8
1508	Water returns - 159°F 10 psig
1510	185°F 35 psig T.D.S. 320 ppm pH 8.8
1515	Water returns
1518	197°F 20 psig T.D.S. 500 ppm pH 8.2
1528	188°F 10 psig
1545	186°F 8 psig T.D.S. 600 ppm pH 8.4
1558	210°F 26 psig soapy
1610	210°F 20 psig soapy
1611	Shut-in; air off, added 10 stands of drill pipe
1700	1st water returns 144°F
1703	204°F 10 psig
1705	221°F 125 psig (surge)
1707	215°F 35 psig
1710	198°F 5 psig soapy
1716	217°F 50 psig soapy - air off
1730	200°F 20 psig soapy - air on
1737	225°F 15 psig no more soap added
1743	207°F 25 psig
1750	198°F 20 psig
1755	205°F 25 psig
1812	220°F 20 psig
1820	220°F 20 psig
1835	222°F 21 psig
1844	221°F 19 psig T.D.S. 800 ppm pH 9.0
1857	222°F 19 psig

Estimate of water flow approx. 1200 B1/hr.

ENTHALPY INC.
 AMAX
 EXPLORATION, INC
 PRESSURE TEMPERATURE
 SURVEY
 Tuscarora 66-5
 PREPARED BY: D. ENSRUD DATE: 7/9/80
 CHECKED BY: T. JAMIESON

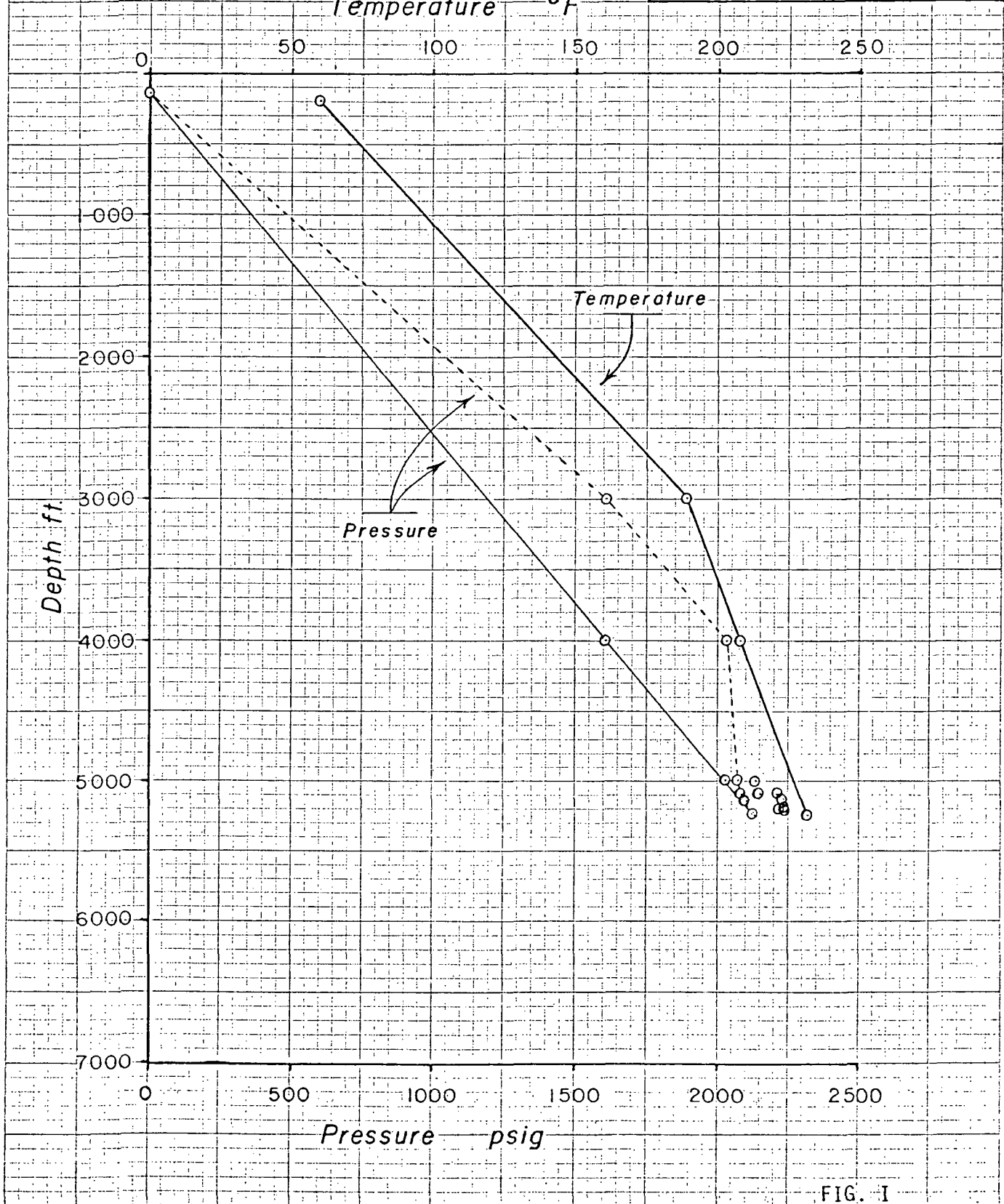


FIG. 1

DRILLING SUMMARY

TUSCARORA 66-5

ELKO COUNTY, NEVADA

Operations

Move in on the well began on February 6, 1980 in the midst of unseasonably warm weather that included quite a bit of rain. As a result of the weather, movement on the access road and the drill pad was slow and difficult. Mobilization took ten days rather than the estimated seven. The well was spudded on February 16th. The road and location problem continued to plague the project until about the first of April and is estimated to have cost \$603,000 in direct costs (not including lost rig time and intangible affects on attitudes, performance, extra transportation charges, etc.). Drilling proceeded well with minor lost circulation until 2232 feet. At 2220 feet we decided to set casing when the kelly was drilled down because the #2 pump cratered. At 2232 feet circulation was lost but was regained using lost circulation material in a gel pill. Logs were run, casing was run and cement pumped. Cement returns were lost and cement did not reach surface. A Cement Bond Log indicated that the cement top was at 1772 feet. The annulus was sanded back to surface while the pad under the mud pits was replaced because of settlement due to the contractor filling over two foot of ice and snow (4 days lost). Drilling proceeded with minor problems (one fishing job, 10 hrs) until 4760 feet. At 4760 feet, a major lost circulation zone was encountered. A cement plug was required to control the zone as was also the case with a zone at 4970 feet. Lost circulation was again encountered at 5184-5214 feet. Control over this zone was never obtained in spite of spotting 5 LCM-gel pills, three cement plugs and one open hole squeeze. After the squeeze attempt

failed, the drilling fluid was switched to water until air compressors arrived at which time aerated water was used. About six hours after beginning to drill with aerated water, the well began flashing steam and hot water.

At that point, a test flowline was installed and the well was tested. Downhole temperatures and pressures were insufficient to permit unassisted flow. Hole size was reduced and an attempt to drill ahead was made. The hole continued to surge intermittently and hole stability deteriorated causing constant sloughing. It was decided not to set an intermediate casing string so drilling ceased. Attempts to log the hole resulted in only two logs being run to TD because of hole caving problems. The rig was released on April 29th.

Statistics:

TD - 5454 ft

Rotation: 624-1/2 hrs

Tripping: 143 hrs

Evaluation: 346 hrs

Bits: 17-1/2 - 3

12-1/4 - 11

8-3/4 - 1

DRILLING HISTORY
Tuscarora 66-5
Elko Co., Nevada

2-16-80 Spud. Gel-water. 17-1/2 in hole
2-17-80 Drlg 844. Gel-water
2-18-80 Stuck pipe @ 970. Gel-cellex-water. Drlg. 1063
2-19-80 Repairs. Drld to 1324
2-20-80 Drlg. 1420. Lost 65 bbl mud. NB #2
2-21-80 Drlg 1504
2-22-80 Drld to 1567. Tripping for shock sub
2-23-80 Drlg 1736. Losing 2-4 bbl/hr
2-24-80 Drlg 1795. Losing 2-4 bbl/hr. Mix LCM
2-25-80 Drld to 1869. Tripping for bit
2-26-80 NB #3. Drld to 1926. Tripping for shock sub
2-27-80 Drlg 2092
2-28-80 Drld to 2232. Formation change. Losing fluid 2-5 bbl/hr POH
2-29-80 Mixed LCM and gel pill. Spotted at 2232. Regained 100% returns
Conditioning hole for logging
3-1-80 Ran Schlumberger logs. Made wiper run. Preparing to run casing
3-2-80 Ran 785 ft 13-3/8, 61.-#, K-55 Butt and 1447 ft, 13-3/8 54.5#,
K-55 Butt w/guide shoe and insert float. Shoe was welded on,
bottom 3 jts Bakerlok. 8 centralizers run. BJ cemented w/3295
ft³ 1:1 poz + 35% silica flour + 2% gel + .4% R-5 + .25% R-11
Tailed in w/686 ft³ Class G + 40% silica flour + .4% R-5 +
.225% R-11. No returns to surface
3-3-80 WOC. Tried to run Schlumberger CBL-tool failed
3-4-80 Ran CBL. WOO
3-5-80 Sanded back csg. Rebuild loc
3-6-80 N.U. BOPE. Rebuild location
3-7-80 " "
3-8-80 " "
3-9-80 Tested BOPE. Drld out cmt. Lost 85 bbl 2233-2280. Drld to 2315.
POH for BHA
3-10-80 Drld 12-1/4 hole to 2500. Mud: gel-cellex-water. POH for
Kuster survey
3-11-80 Ran Kuster survey. Drld to 2642
3-12-80 Tripped for bit. NB #5. Drlg 2761
3-13-80 Drld to 2798. Backed off bit. Screwed back into bit.
POH. RR #4. Drlg 2813
3-14-80 Tripped for NB #6. Drlg 2909
3-15-80 Drld to 2961. Twisted off. POH. RIH w/overshot; caught fish
POH w/fish
3-16-80 Kuster survey. NB #7. Drlg. 2977
3-17-80 Drld to 3068. TOH for NB #8. Drlg. 3088
3-18-80 Formation change. Fluid loss 10-65 bbl/hr. Drlg 3241
3-19-80 Drld to 3275. Tripped for NB #9. Tripped for wrong stabilizers

3-20-80 Tripped for wrong stabilizers. Drlg 3408
 3-21-80 Drilling 3555
 3-22-80 Drld to 3561. Tripped for NB #10. Drlg. 3607
 3-23-80 Drlg 3757
 3-24-80 Drld to 3802. Tripped for NB #11. Drlg. 3821
 3-25-80 Drlg 3954
 3-26-80 Drlg 4106
 3-27-80 Drld to 4118. POH. Ran GO Temp log. Ran Kuster survey
 NB #12. Drlg. 4141
 3-28-80 Drlg. 4350
 3-29-80 Drld to 4417. Tripped for NB #13
 3-30-80 Drlg. 4585
 3-31-80 Drld to 4768. Lost 1120 bbl. Tripping for bit
 4-1-80 NB #14. Mixed LCM. Hole sloughing. POH. Build volume
 4-2-80 RIH. Lost 45% returns. Ran Kuster survey. Mix LCM pill
 4-3-80 Spotted LCM pill. CO hole. Still losing. Spotted 175 ft³
 Class G cement. RIH tagged cement
 4-4-80 Cleaned out cement. Cleaned out mud pits. Mixing new mud
 4-5-80 Drld to 4970. Lost circulation. Building volume
 4-6-80 Build mud volume. RIH drilled out bridge @ 4820. Mix LCM. C.O.
 hole to 4970. Drld to 4987 w/partial returns. Pits empty.
 Building volume
 4-7-80 Spotted gel-LCM pill. Spotted 175 ft³ Class G. Cleaned out
 cement. Drlg. 5014
 4-8-80 Drld to 5184. Lost circulation. Spotted gel-LCM pill. Drld to
 5214. POH-5 stands. Mixing gel pill
 4-9-80 Spotted gel-LCM pill. Spotted 141 ft³ Class G. WOC. Tried
 to fill hole - no returns. RIH and tagged cement. Spotted
 175 ft³ Class G. WOC
 4-10-80 RIH. Drld firm cement. Lost circ. @ 5180. Spotted 175 ft³
 Class G. Mixed mud. WOC. Drld hard cement to 5184. Lost returns
 4-11-80 Mixed LCM pill and spotted @ 5184 w/70% returns. Waited 2 hrs.
 Established 100% returns @ 5184. Drld cement to 5187. Lost
 returns. Drld w/10% returns to 5214 Spotted LCM pill -
 10% returns
 4-12-80 Spotted 440 gal sodium silicate followed by 175 ft³ Class G
 cement. Drld cement to 5215 w/complete returns
 4-13-80 Drld to 5247. Losing too much fluid. Spotted LCM pill.
 Ran Kuster survey
 4-14-80 W.O. Loggers. Ran spinner and tracer surveys. Tool failure.
 W.O. tools
 4-15-80 Ran temp. survey. Circ. hole. Ran tracer and spinner surveys.
 Tools failed
 4-16-80 Ran caliper log. Experimented w/pump rates and measured fluid
 loss for water. Ran tracer survey. Tool failed. RIH w/Lynes
 packer. Set packer. Pumped cement. Squeezed at 650 psi
 4-17-80 ROH w/packer. WOC. Drld cement. Drlg @ 5287 w/water
 4-18-80 Drld to 5374. Hole not cleaning. Mixing gel to pill to clean
 hole.
 4-19-80 Drld to 5409. Swept hole w/gel pill. Rigging up for air

4-20-80 Began using aerated water. Reamed to 5359. Well began flowing and flashing steam over shaker. Hole caving. Lost circ. Regained circ. POH. Monitor well

4-21-80 Rig up for flow test

4-22-80 Rig up for flowtest. Ran Pruett temp and press survey. RIH w/drillpipe to lift off well

4-23-80 Attempted to flow well. Ran Pruett temp and press survey. laid down 8" collars. Preparing to reduce hole

4-24-80 Cleaned out fill. Swept w/gel pill. Drld to 5454 w/aerated water. 803/4" hole

4-25-80 Drawworks broke. Stuck pipe. Freed pipe. Hole caving. Made short trip. Mix gel pill. 210' firm fill. Hard fill 5244-5307 Short trip - 60' fill 45 min. Waiting on loggers

4-26-80 Wait on loggers

4-27-80 Ran logs. Bridge @ 2730. RIH cleaned out bridge 2730-2909. Tagged bottom @ 5289. POH

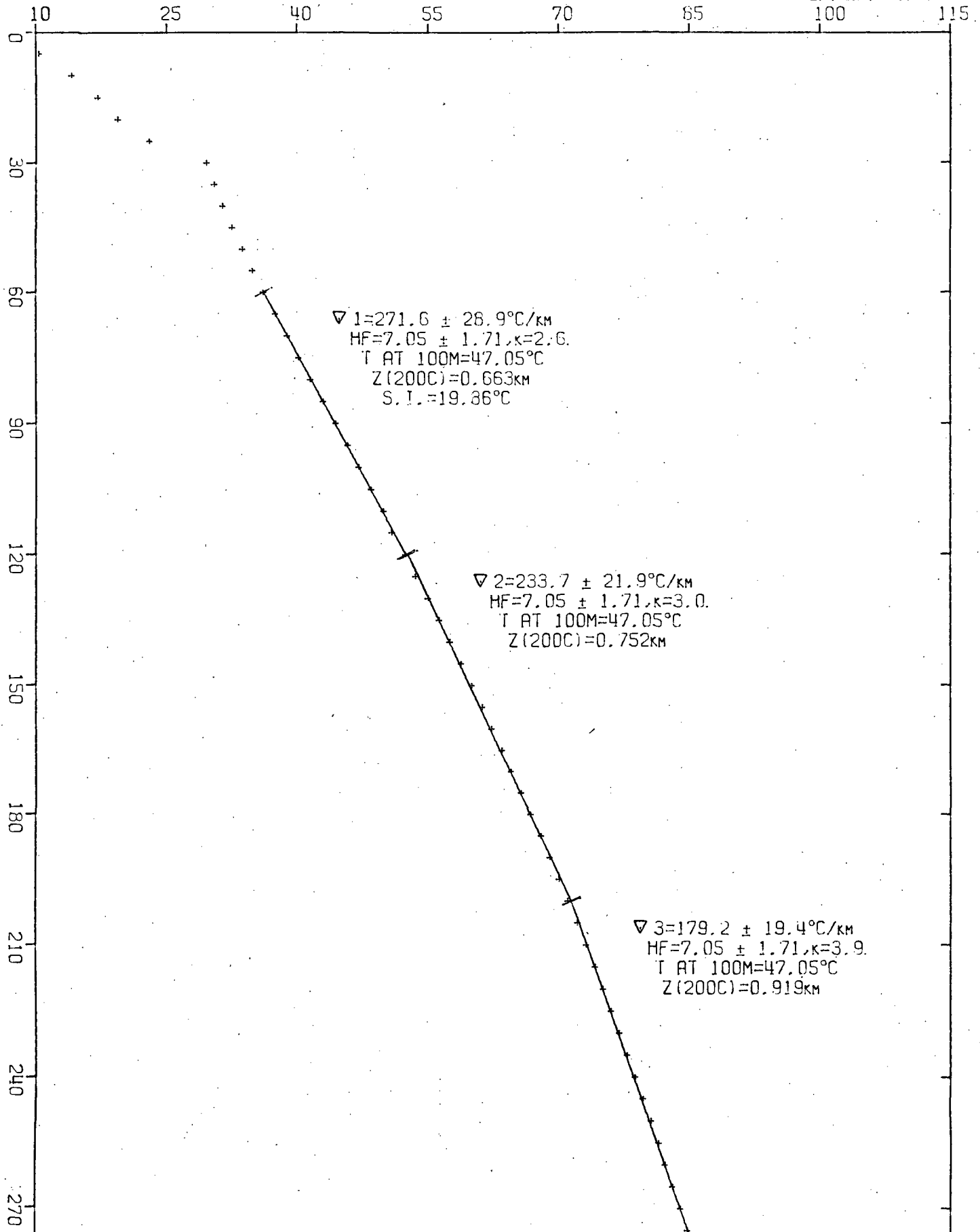
4-28-80 Ran Sperry Sun survey. Ran GO DIL-GR, BHC-GR-Cal Temp log would not go past 2790. Rigging down

4-29-80 Rig released 0800.

TUSCARORA, NV
0.7 KM NNE HOT SULPHUR SPS
PROJ. 360 WELL 665 2 6 30

N. LAT 41.479; W. LONG 116.151

TEMPERATURE °C



300
330
DEPTH M

▽ $\gamma = 119.9 \pm 19.2^\circ\text{C}/\text{KM}$
HF = 7.05 ± 1.71 , $k = 5.6^*$
T AT 100M = 47.05°C
Z(200C) = 1.230KM



25 07 80

JSS / DP

+

LITHOLOGIC LOG

Project: TuscaroraHole: 66-5Elevation: 5900'Date Drilled: Spud in Feb. 16, 1980Location: NW-1/4, SE-1/4 Sec. 5
41N 52EMethod: rotary/mud & water
rotary airGeologist: Pilkington/Sarber

Gamma: _____

Depth (#)(ft)	Description
0 - 1000	Volcanoclastic sediments, sandstones, brown siltstones, brown oil shale. Tertiary
1000-1660	Crystal-lithic tuff, likely pipe feature. Lithic fragments black siltstone. Some celadinite alteration, pyrite and quartz fracture fillings. Lithics bedrock (paleozoic)?
1660-1810	Dark gray/black siltstone and fine sandstone. Some gray cherty layers. At 1700' rocks similar to those from 860-24 drilled in schoonover formation.
1810-2000	Crystal lithic tuff, altered, silicified, pyritized as above
2000-2150	Interbedded dark gray siltstone, sandstone. Fracture fillings quartz, disseminated pyrite.
2150-2240	Crystal lithic tuff as above
2240-2400	Interbedded gray/black siltstone, very fine sandstone, black shaly siltstone. At 2290 1st appearance of foliated texture related to hornfelsing.
2400-2530	Tuff pipe and sediments as above
2530-2570	Siltstone, sandstone, shale, hornfelsed, phyllitic sheen
2570-2940	Med. to course grained orthoquartzite some recrystallization of silica cement
2940-3070	Interbedded sandstone, siltstone & shale more evidence of thermal metamorphism phyllitic sheen, green cast (chlorite development)
3070-3420	mostly quartzite, some foliated layers of chlorite schist
3420-3520	Quartz-feldspar dike, white sugary texture, embayed qtz crystals

LITHOLOGIC LOG

Project: TuscaroraHole: 66-5

Elevation: _____

Date Drilled: _____

Location: _____

Method: _____

Geologist: _____

Gamma: _____

Depth (m)	Description
3520-3660	hornfels
3660-3820	mostly quartzite
3820-3850	calc-silicates, first appearance of talc and first impure limestone
3850-4470	interbedded hornfels and quartzite.
4470-4500	calc-silicates, talc, tremolite
4500-4610	interbedded siliceous rocks
4610-5160	carbonates, tremolite, chlorite, talc, pyrite
5160-5270	(no returns)
5270-5330	massive translucent quartz.
5330-5443	argillite, silty, abundant quartz veins formation highly fractured and silicified. veins micro sized and larger filled with translucent quartz very hard drilling
5443-5456	soft; cuttings a slurry red/orange clay, sticky and striated color patterns in larger pieces argillite that disintegrates under bit 30% red orange clay possible fault zone
TD	

25 07 80

PROJECT: TUSCARORA, NV

PROJ	WELL	DA	MO	YR	WELL TITLE	EDITOR	DRL DATE	LP	LI	ISZ	IST
860	665	2	6	80	0.7 KM NNE HOT SULPHUR SPS	JSS / DP	25 4 80	0	0	1	1

YCM	XCM	N.LAT	W.LONG	ELEV
40.6000	13.2000	41.4795	116.1512	1798.3

J	SEG START	SEG END	CONDIVITY	STD DEV.
1	60.000	120.000	0.000	0.000
2	120.000	200.000	0.000	0.000
3	200.000	290.000	0.000	0.000
4	290.000	340.000	5.800	0.500

PRECEDING CONDUCTIVITY USED TO COMPUTE OTHERS.

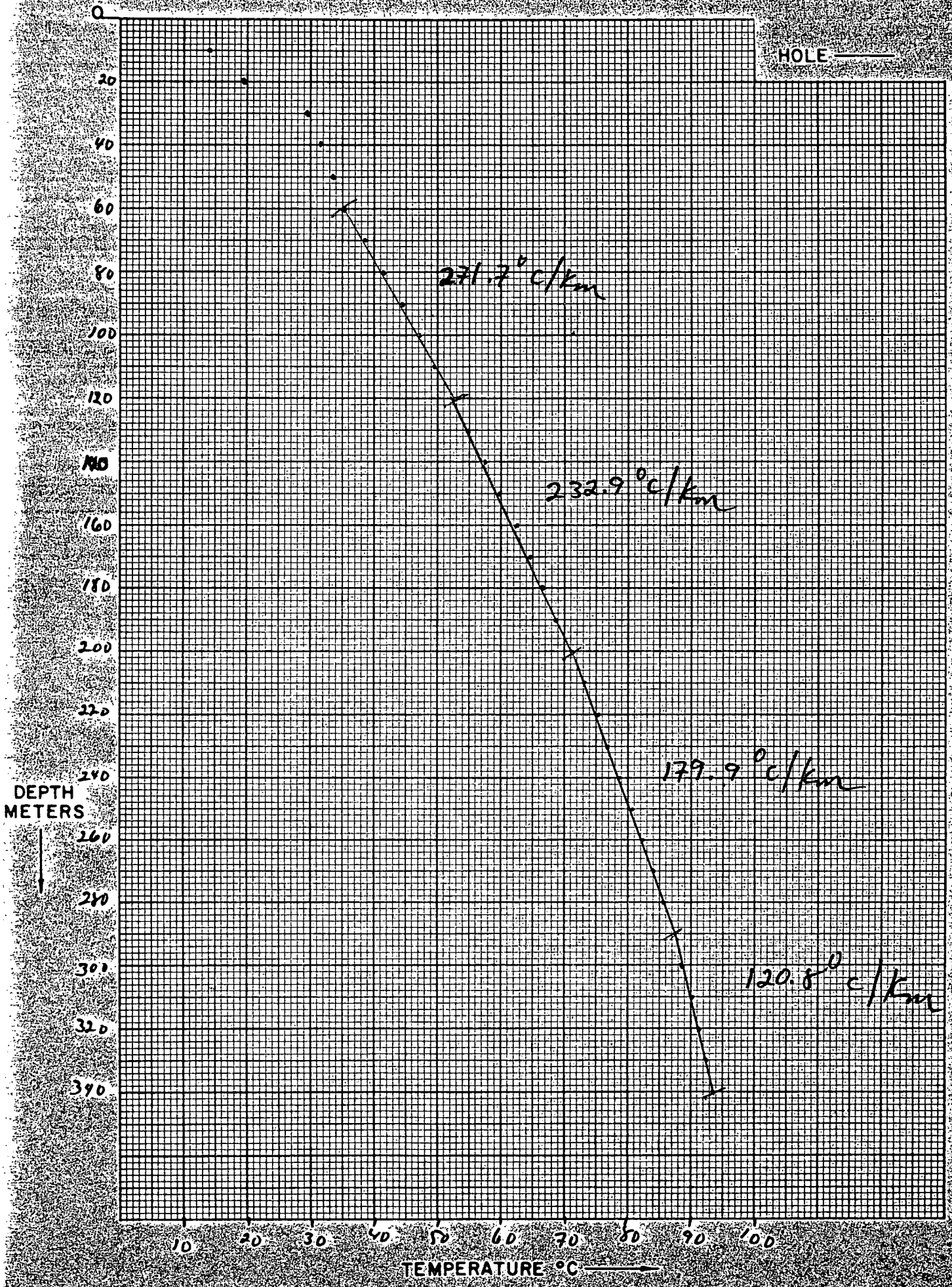
*** PREVIOUS SEGMENT USED TO EXTRAPOLATE TO DEPTH ***

PROJ	WELL	DA	MO	YR	DEPTH (M)	DEG C	DEG C/KM	SAMPLE NO.
860	665	2	6	80	5.000	10.340	99999.000	1
					10.000	14.080	748.000	2
					15.000	17.070	598.000	3
					20.000	19.380	462.000	4
					25.000	23.010	726.000	5
					30.000	29.630	1324.000	6
					35.000	30.490	172.000	7
					40.000	31.440	190.000	8
					45.000	32.490	210.000	9
					50.000	33.730	248.000	10
860	665	2	6	80	55.000	34.870	228.000	11
					60.000	36.120	250.000	12
					65.000	37.500	276.001	13
					70.000	38.890	278.000	14
					75.000	40.190	259.999	15
					80.000	41.510	264.000	16
					85.000	42.970	292.000	17
					90.000	44.410	288.000	18
					95.000	45.750	268.001	19
					100.000	47.050	259.999	20
860	665	2	6	80	105.000	48.450	280.000	21
					110.000	49.880	286.000	22
					115.000	50.850	194.000	23
					120.000	52.420	314.000	24
					125.000	53.550	225.999	25
					130.000	54.960	262.001	26
					135.000	56.220	251.999	27
					140.000	57.470	250.000	28
					145.000	58.740	254.001	29
					150.000	59.990	250.000	30

860	665	2	6	80	155.000	61.170	236.000	31
					160.000	62.260	217.999	32
					165.000	63.450	238.000	33
					170.000	64.510	212.000	34
					175.000	65.690	235.999	35
					180.000	66.830	228.000	36
					185.000	67.990	232.001	37
					190.000	68.970	195.999	38
					195.000	70.020	210.001	39
					200.000	71.050	206.000	40
860	665	2	6	80	205.000	72.120	214.001	41
					210.000	73.140	204.001	42
					215.000	74.160	203.998	43
					220.000	75.060	180.002	44
					225.000	75.990	185.999	45
					230.000	76.940	189.999	46
					235.000	77.860	184.000	47
					240.000	78.800	188.000	48
					245.000	79.720	184.000	49
					250.000	80.660	188.000	50
860	665	2	6	80	255.000	81.510	170.001	51
					260.000	82.220	141.998	52
					265.000	83.120	180.002	53
					270.000	84.020	179.999	54
					275.000	84.810	158.002	55
					280.000	85.650	167.999	56
					285.000	86.540	178.000	57
					290.000	87.240	139.999	58
					295.000	88.000	152.002	59
					300.000	88.740	147.998	60
860	665	2	6	80	305.000	89.390	130.002	61
					310.000	90.020	125.998	62
					315.000	90.640	124.002	63
					320.000	91.230	117.999	64
					325.000	91.750	104.001	65
					330.000	92.260	101.999	66
					335.000	92.810	110.001	67
					340.000	93.280	94.000	68

SURFACE INTERCEPT FOR SEGMENT 1 = 19.863

SEG	ZSTART	TSTART	ZEND	TEND	COND & DCON	GRADIENT & S.D.	HFU & DHF	T AT 100M	KM
1	60.000	36.120	120.000	52.420	2.596 0.000	271.594 28.893	7.050 1.714	47.050	0.563
2	120.000	52.420	200.000	71.050	3.016 0.000	233.742 21.915	7.050 1.714	47.050	0.752
3	200.000	71.050	290.000	87.240	3.933 0.000	179.245 19.384	7.050 1.714	47.050	0.919
4	290.000	87.240	340.000	93.280	5.800 0.500	119.893 19.212	7.050 1.714	47.050	1.230



Date Logged: JUNE 2, 1980

ΔT Well No. 66-5

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Grad. °C/km	K (Est.)	H ₂ O Air	Lithology, etc.
5	146.25	10.34				air	began probing at ground level minus 5m
10	129.33	14.08				air	
15	116.83	17.07				air	
20	107.81	19.38				air	
25	94.81	23.01				air	
30	74.51	29.63				air	
35	72.15	30.49				air	
40	69.68	31.44				H ₂ O	1st stable reading
45	67.01	32.49				"	
50	64.01	33.73				"	
55	61.34	34.87				H ₂ O	water noted on cable when coming out indicate
60	58.56	36.12				"	
65	55.62	37.50				"	
70	52.82	38.89				↓	
75	50.31	40.19					
80	47.89	41.51					
85	45.35	42.97					
90	42.99	44.41					
95	40.90	45.75					
100	38.97	47.05					
105	37.00	48.45					
110	35.09	49.88					
115	33.86	50.85					
120	31.96	52.42					
125	30.66	53.55					
130	29.12	54.96					
135	27.81	56.22					

K=Conductivity

Date Logged: _____

ΔT Well No. _____

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Grad. °C/km	K (Est.)	H ₂ O Air	Lithology, etc.
140	26.57	57.47					
145	25.38	58.74					
150	24.26	59.99					
155	23.25	61.17					
160	22.36	62.26					
165	21.43	63.45					
170	20.63	64.51					
175	19.78	65.69					
180	19.00	66.83					
185	18.24	67.99					
190	17.62	68.97					
195	16.99	70.02					
200	16.39	71.05					
205	15.79	72.12					
210	15.24	73.14					
215	14.72	74.16					
220	14.27	75.06					
225	13.82	75.99					
230	13.38	76.94					
235	12.97	77.86					
240	12.56	78.80					
245	12.19	79.72					
250	11.80	80.66					
255	11.47	81.51					
260	11.20	82.22					
265	10.87	83.12					
270	10.55	84.02					

K=Conductivity

