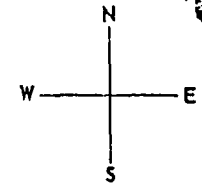


**SURVEY TABULATION SHEET
SPERRY - SUN**



CUSTOMER PHILLIPS PETROLEUM COMPANY
 WELL NO. Cambell #E-1
 FIELD Humboldt



SHEET NO. 1 OF 1
 SURVEY JOB NO. SU3-12245
 SURVEY DATE 12-03-77

MEASURED DEPTH		VERTICAL DEPTH		INCLINATION		CORRECTED DIRECTION		MEASURED COURSE DISPLACEMENT				TOTAL DISPLACEMENT			
COURSE	TOTAL	COURSE	TOTAL	DEG.	MIN.			NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
100	100		99.99	0	29	N	30	E				.362		.207	
	200		199.99	0	29	N	14	E				1.131		.511	
	300		299.99	0	49	N	01	E				2.242		.625	
	400		399.98	1	04	N	01	W				3.870		.618	
	500		499.95	1	33	N	00	W				6.150		.594	
	600		599.90	1	48	N	01	W				9.085		.577	
	700		699.84	2	18	N	03	W				12.669		.444	
	800		799.74	2	48	N	00	E				17.125		.332	
	900		899.62	2	53	N	08	W				22.067		.220	
	1000		999.48	3	08	N	14	W				27.213		1.051	
	1100		1099.33	3	08	N	11	W				32.552		2.260	
	1200		1199.18	3	03	N	13	W				37.834		3.394	
	1300		1299.05	2	53	N	14	W				42.875		4.607	
100	1400		1398.91	3	03	N	25	W				47.743		6.321	
70	1470		1468.81	3	13	N	28	W				51.171		8.031	

HORIZONTAL DISPLACEMENT = 51.8 FEET @ NORTH 08° 55' WEST

CALCULATED MINIMUM CURVATURE

DONE BY:
 CK. BY:

DAILY REPORT DETAILED

LEASE Campbell E #1 WELL NO. 1 SHEET NO. 1

DATE
NATURE OF WORK

TOTAL
DEPTH
PERFORMED

DATE	TOTAL DEPTH PERFORMED	NATURE OF WORK
11-03-77		Prep. to spud. Loc: 342' FSL & 830' FEL Sec. 21-31N-33E Pershing Co., NV. 6000' Geothermal Exploratory Well. Phillips Petroleum Company 100% oper. AFE PE-5516. Camay Drilling Company, contractor. MI&RU Burns Rat Hole Drilling, Inc. Set 30" 1/4" wall 73.9# PE conductor pipe at 21' GL. Cemented to surface w/9 yds. ready mix. MI&RUR. Elev: GL 4550'.
11-04-77	150	Picking up 17 1/2" bottom hole assembly. Spdd. 12 1/4" hole at 9:15 a.m. 11-03-77, drilled to 150'. Pulled out of hole to pick up 17 1/2" drilling assembly. Totco 3/4" at 107', mis-run at 150'.
11-05-77	400	Drilling alluvial fill. Reamed hole to 17 1/2". Mud 8.9 Vis. 60. Totco 1/2" at 220', 3/4" at 347'.
11-06-77	590	Drilling alluvial fill. Mud 9.3, Vis. 52. Totco 3/4" at 431'.
11-07-77	794	Drilling alluvial fill & limestone. Mud 9.5, Vis. 55. Totco 1 3/4" at 619', 1 3/4" at 722'. Flow line temperature at 794'-89°F in, 95°F out.
11-08-77	961	Drilling gravel, quartz & silica. Mus 9.5, Vis. 49. Trip for bit at 891'. Flow line temperature at 961'-85°F in, 94°F out. Totco 3" at 890', 3 1/4" at 955'.
11-09-77	1058	Drilling Sinter. Mud 9.5, Vis. 65. Totco 3 1/4" at 1039'. Flow line temperature at 1058', 95°F in, 100°F out.
11-10-77	1159	Drilling siliceous sinter. Mud 9.7, Vis. 55. Flow line temperature at 1159'-96°F in, 105°F out. Totco 3 1/4" at 1039'.
11-11-77	1318	Drilling interbedded travertine & gravel. Totco 3" at 1237'. Flow line temperature at 1318'-101°F in, 108°F out.
11-12-77	1423	Drilling Travertine, interbedded sediments & gravel. Mud 9.5, Vis. 48. Trip for bit at 1330'. Reduced hole to 12 1/4" at 1330'. Totco 3" at 1376'. Flow line temperature at 1423', 98°F in, 109°F out.

DAILY REPORT DETAILED

LEASE Campbell E #1 WELL NO. 1 SHEET NO. 2

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
11-13-77	1742	Drilling basalt. Totco 3 ⁰ at 1511', 3 1/4 ⁰ at 1637', 3 1/4 ⁰ at 1761'.
11-14-77	1825	Running 13 3/8" OD casing. Drilled 12 1/4" hole to 1825'. Ran 17 1/2" bit, circulated & conditioned hole to 1330'. Started running casing. Flow line temperature at 1825'-122 ⁰ F in, 130 ⁰ F out.
11-15-77	1825	WOC. Ran 31 jts., 1212', 13 3/8" OD, 54.5#, K-55, BT&C Casing, set at 1214' FKB. Cemented with 706 sacks class G cement, 1:1 perlite, 3% gel, 3/10% R-5 & 3/4 % D-31. Plug down at 9:40 a.m. 11-14-77, good cement returns to surface. WOC.
11-16-77	1825	Nippling up.
11-17-77	1825	Waiting on 2' spacer spool for BOP stack. Will test stack today.
11-18-77	1825	GIH w/12 1/4" BHA. Fin. N.U. BOP stack. Tested 13 3/8" casing, blind rams, pipe rams & hydril with 1000# for 15 minutes each-ok. RIH w/rerun bit & slick BHA. TOC 1173' FKB. Drilled cement & float equipment. Circulated 1/2 hr. & POOH. Picked up rerun 12 1/4" button bit & BHA.
11-19-77	1841	Circulating & conditioning hole. Finished going in hole with BHA, drilled to 1841', limestone with fractures, hot water flow. Flowed 2 hrs., max. flwg. temperature 196 ⁰ F. H ₂ S 40 ppm, decr. to 12 ppm, CO ₂ 8500 ppm, Methane 300 ppm, petroleum vapors 10 ppm, dissolved salts 3200 ppm. Shut well in, SIP 150#. Mixed mud to 11.5#/gal., killed well, circulated & conditioned mud.
11-22-77	1841	Waiting on cementers. Circulated & conditioned mud 24 hrs.
11-23-77	1841	WOC. Circulated and conditioned hole 14 hrs., spotted 25 sacks geothermal mix cement 1825-1800'. Pulled out of hole. Job complete at 12 midnight 11-22-77. WOC.

DAILY REPORT DETAILED

LEASE Campbell E #1WELL NO. 1SHEET NO. 3

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
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11-24-77	OTD 1841 PTD 1790	WOC. Ran DP & bit, top of cement 1790'. Ran 41 jts., 1774', 9 5/8" OD, 40#, K-55 BT&C casing, set at 1777'. Cemented w/400 sacks class G cement, 1:1 perlite, 40% silica flour, 2% gel, 3/4% D-31 & 1% R-11, plug down at 12 midnight 11-23-77, good cement returns to surface.
11-25-77	PTD 1790	Nippling up.
11-26-77	PTD 1790	Shut down, repairing rig. Finished nipping up, shut down at 4:00 pm 11-25-77 to winterize rig.
11-27-77	PTD 1790	Shut down.
11-28-77	PTD 1790	Shut down. Will repair Hydromatic.
11-29-77	PTD 1790	Repairing rig.
11-30-77	PTD 1790	Repairing rig.
12-01-77	PTD 1790	Repairing rig.
12-02-77	PTD 1790	Repairing rig.
12-03-77	PTD 1790	Repairing rig.
12-04-77	PTD 1790	Repairing rig.
12-05-77	PTD 1790	Going in hole to drill cement. Finished repairs, installed boiler & winterized rig.
12-06-77	1847	Circulating and conditioning hole. Went in hole to top of cement at 1729'. Tested casing and BOP's to 1000#, 15 mins each, OK. Drilled cement 1729-77'. Pulled out of hole, worked on BOP & accumulator 1 hr. Went in hole, circulated and cleaned out to 1838', well tried to kick. Circulated 6 hrs, pulled up to 1768' to let mud set. Went back to bottom, had 15-20' fill on bottom. Drilled to 1847', circulated and cleaned hole 1 hr.

DAILY REPORT DETAILED

LEASE Campbell E #1WELL NO. 1SHEET NO. 4

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
12-07-77	OTD 1847	Going in hole to drill cement plug. Pulled out of hole, reran DP open ended, spotted 100 sacks cement on bottom. Pulled up 5 stands, WOC 7 hrs. Reran open ended, tagged top of cement at 1591'. Pulled out of hole.
12-08-77	1847	Drilling limestone w/quartz veins. Washed cement stringers 1591-1695', drilled solid cement 1695-1847'. Circulated 2 1/2 hrs. to clean hole & 3 hrs. to condition mud. Max. bottoms up temp. 127 ^o F. Came out of hole, started drilling ahead, no indication of hole sloughing. Mud 11.5, Vis. 68.
12-09-77	1848	WOC. Drilled to 1848', lost complete returns. Mixed mud & LCM, no returns, FL 500' from top. Spotted 31 sacks class G cement on bottom, attempted to squeeze w/200#, would not hold. Job complete at 1:30 am 12-09-77. Pulled out of hole, WOC.
12-10-77	1849	Flowing well. WOC 1 1/2 hrs. Went in hole, drld. cement, lost full returns, well tried to flow. Pulled out of hole. Opened well to pit at 4:05 pm 12-09-77. FWHP 200#, manifold press 150#, FWHT 325 ^o F. Flwg. thru 3" line to manifold, 1-2 7/8" line w/1 1/4" choke & 1-3" line (wide open) to pit. (Corrected TD 1848' to 1849').
12-11-77	1849	Running Agnew & Sweet Temperature Survey. Flwd. well 6 hrs., laid down drill pipe. Removed BOP.
12-12-77	1849	Tearing down rotary. Ran Agnew & Sweet Temperature Survey. Max. temp. 325.9 ^o F at 1816'. Released rig at 6:00 pm 12-11-77.
12-13-77	1849	Moving out rotary.
12-14-77	1849	Waiting to test.
12-15-77	1849	Waiting to test well.
12-16-77	1848	Moving out rotary.

DAILY REPORT DETAILED

LEASE Campbell-E #1 WELL NO. 1 SHEET NO. 5

DATE TOTAL
NATURE OF WORK DEPTH
PERFORMED

12-22-77 1848 Shut-in geothermal well.
Opened well through test unit at 4:10 p.m. 12-20-77,
shut in at 9:20 a.m. 12-21-77 due to lack of pit capacity.
ISIWHP 150 psig, IFWHP 175 psig gradually decreasing to
163 psig at shut in. Average flow rate for the period
was 798,28#/Hr of saturated hot water at 350^oF. Several
flow rates vs wellhead pressures were obtained prior to
shut in.

<u>LBS/HR</u>	<u>PRESS-Psig</u>	<u>LBS/HR</u>	<u>Press-Psig</u>
849,645	163	304,677	180
731,516	166	225,814	184
429,895	176	169,589	186

Shut in geothermal well producing from open hole 1777-
1848'. 9 5/8" casing set at 1777'.
FINAL REPORT.