

PCGC: Pressure Case Gamma
PCDC: Pressure Case Directional



1 : 600 / 1 : 240

[illegible]

WELL INFORMATION

MWD Run Number	200	300			
Date run completed	24-May-14	24-May-14			
Rig Bit Number	2	3			
Bit Size (in)	8.750	8.750			
Tool Nominal OD (in)	6.750	6.750			
Log Start Depth (TVD, ft)	625.99	5,445.16			
Log End Depth (TVD, ft)	5,445.16	6,139.36			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	23-May-14 12:45	24-May-14 07:30			
Drill/Wipe End Date and Time	23-May-14 22:45	24-May-14 18:10			
Min Inc (deg) @ Depth (TVD, ft)	0.15 @ 1,365.98	1.87 @ 5,417.18			
Max Inc (deg) @ Depth (TVD, ft)	10.79 @ 2,769.40	85.68 @ 6,136.38			
Bit TFA(in2) / Bit Type	0.74 / PDC	0.98 / PDC			
Flow Rate (gpm)	593.66	580.57			
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Polymer	Polymer			
Density (ppg) / Viscosity (spqt)	9.00 / 32.00	10.20 / 43.00			
Filtrate CL (ppm)	200.00	200.00			
pH / Fluid Loss (mptm)	8.30 / 0	8.20 / 0			
PV (cP) / YP (lbf2)	7 / 2.00	10 / 9.00			
% Solids / % Sand	2 / .1	10.1 / .1			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A			
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A			
Max Tool Temp (deg F) @ 100 ft	127.50 / 120M	122.00 / 120M			

Max Tool Temp (degF) / Source	137.50 / PCM	162.80 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Paul Kock	Paul Kock			
Customer Representative	Dave Nielsen	Dave Nielsen			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.84	5.84			
Sub Serial Number	11404264	11404264			
Insert Serial Number	11399998	11399998			
Date and Time Initialized	23-May-14 03:29	23-May-14 03:29			
Date and Time Read	25-May-14 00:39	01-Jan-70 00:00			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	54.24	52.31			
Software Version	6.21	6.21			
Sub Serial Number	11404264	11404264			
Sonde Serial Number	11297583	11297583			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	46.18	3.60			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	49.14	47.21			
Recorded Sample Period (sec)	15	15			
Software Version	8.15	8.15			
Sub Serial Number	11404264	11404264			
Insert/Sonde Serial Number	11681029	11681029			

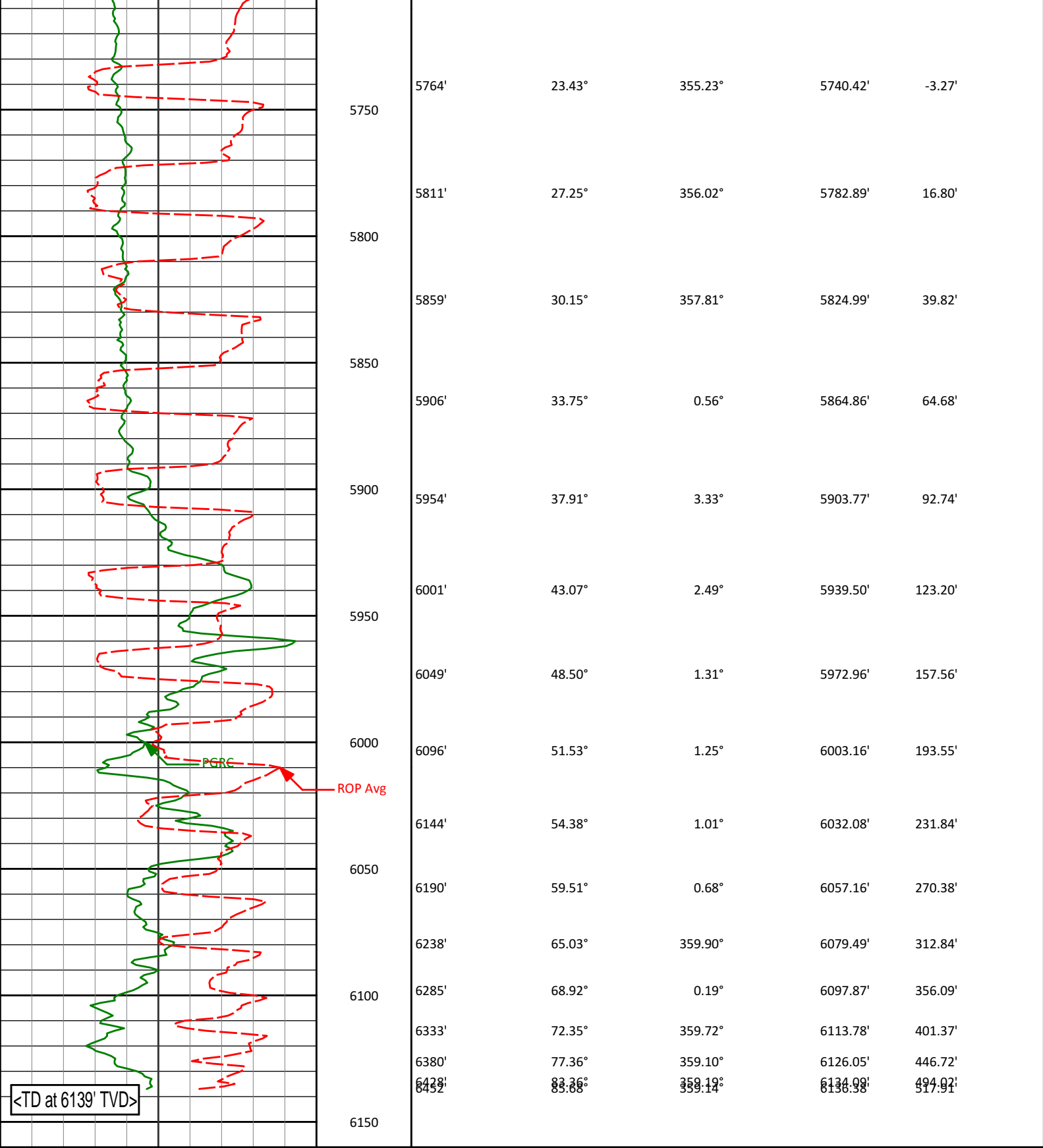
REMARKS

1. All depths are calibrated to the driller's pipe tally and are measured from the rig drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
 - ROPA: Average Rate of Penetration is real time data.
 - PGRC: Smooth Pressure Case Gamma Ray Borehole corrected is recorded data.
4. The following smoothing parameters have been applied to the data:
 - 2" (1:600) log - 1 ft. interval, 3 ft. coercion distance, 5 ft. gap fill.
 - 5" (1:240) log for ROP - 0.5 ft. interval, 1.2 ft. coercion distance, 3 ft. gap fill.
 - 5" (1:240) log for Gamma Ray - 0.5 ft. interval, 0.6 ft. coercion distance, 3 ft. gap fill.
5. INSITE version 8.0.20

WARRANTY

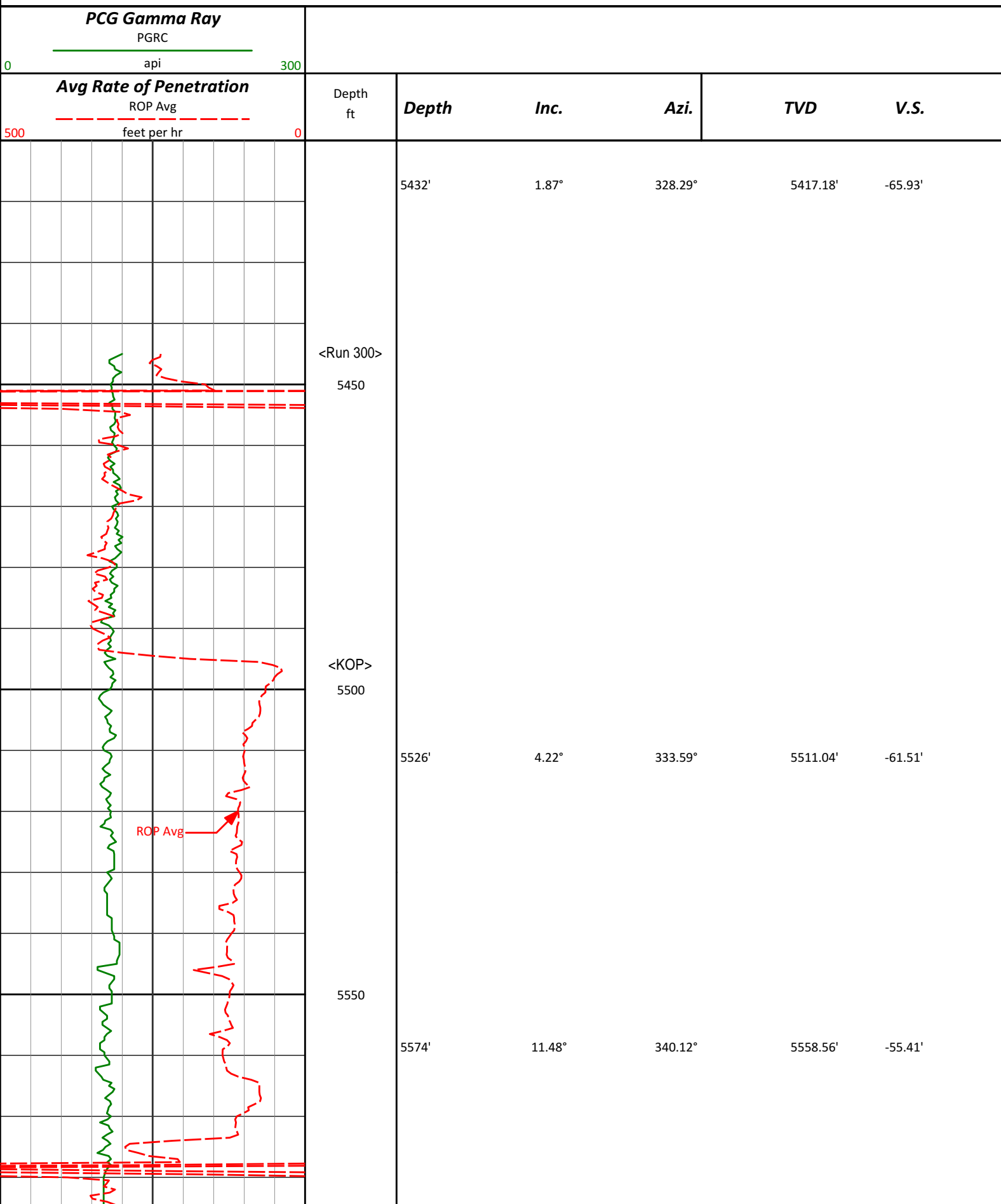
HALLIBURTON
Sperry Drilling Services
TVD Main Log 1:600

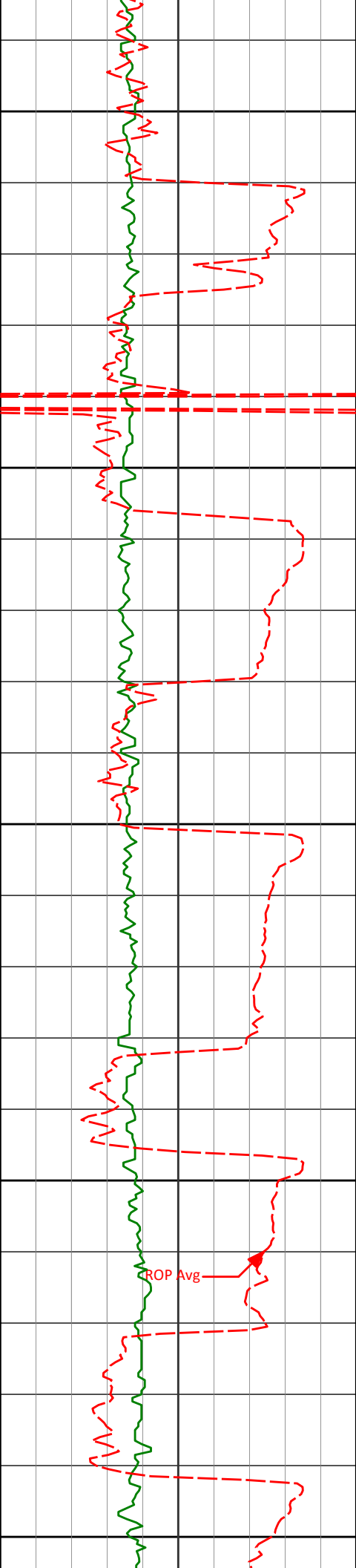
PCG Gamma Ray PGRC								
0 api 300			Depth ft	<i>Depth</i>	<i>Inc.</i>	<i>Azi.</i>	<i>TVD</i>	<i>V.S.</i>
<i>Avg Rate of Penetration</i> ROP Avg feet per hr 0				5432'	1.87°	328.29°	5417.18'	-65.93'
			<Run 300> 5450					
			<KOP> 5500					
			5526'	4.22°	333.59°	5511.04'	-61.51'	
			5550					
			5574'	11.48°	340.12°	5558.56'	-55.41'	
			5600					
			5621'	14.13°	339.95°	5604.39'	-45.60'	
			5650					
			5669'	15.71°	341.67°	5650.77'	-33.90'	
			5700	5716'	18.84°	348.34°	5695.65'	-20.40'



<div><div>Avg Rate of Penetration</div><div>ROP Avg</div><div>feet per hr</div></div>		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
<div><div>PCG Gamma Ray</div><div>PGRC</div><div>api</div></div>							

Noble Energy
Trisha LC29-74HNB
H&P 273
T9N, R59W





5600

5621'

14.13°

339.95°

5604.39'

-45.60'

5650

5669'

15.71°

341.67°

5650.77'

-33.90'

5700

5716'

18.84°

348.34°

5695.65'

-20.40'

5750

5764'

23.43°

355.23°

5740.42'

-3.27'

5800

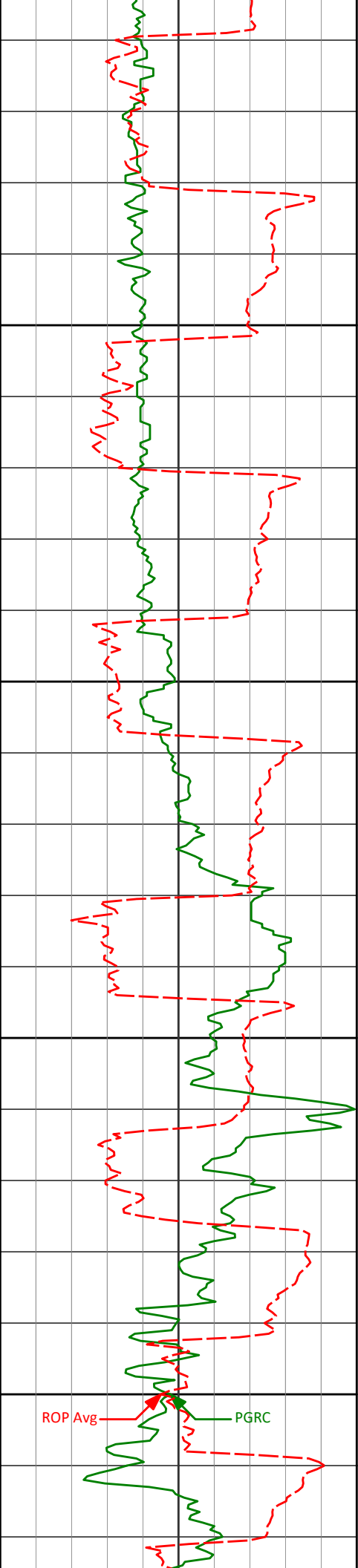
5811'

27.25°

356.02°

5782.89'

16.80'



5850

5900

5950

6000

5859'

30.15°

357.81°

5824.99'

39.82'

5906'

33.75°

0.56°

5864.86'

64.68'

5954'

37.91°

3.33°

5903.77'

92.74'

6001'

43.07°

2.49°

5939.50'

123.20'

6049'

48.50°

1.31°

5972.96'

157.56'

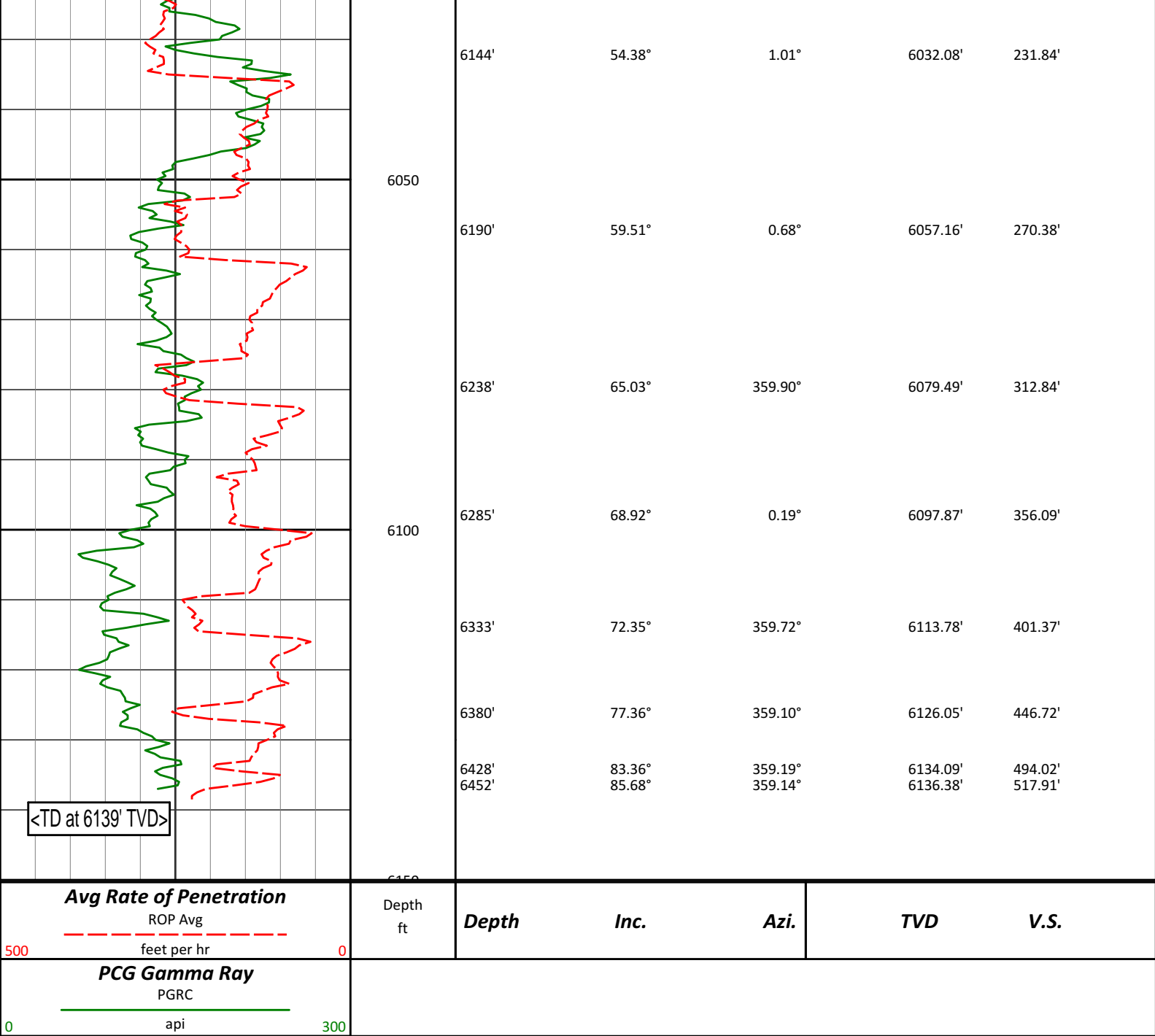
6096'

51.53°

1.25°

6003.16'

193.55'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

**Noble Energy
Trisha LC29-74HNB
Wattenberg
Weld Colorado
USA
CA-XX-0901287195
Surveys are IFR1 and MSA corrected.**

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
350.00	0.60	209.14	349.99	1.60 S	0.89 W	-1.59	0.17
600.00	0.20	317.14	599.99	2.42 S	1.83 W	-2.41	0.28
716.00	0.44	281.14	715.99	2.19 S	2.40 W	-2.17	0.26
809.00	0.38	266.55	808.98	2.14 S	3.06 W	-2.12	0.13

902.00	0.23	266.97	901.98	2.17 S	3.55 W	-2.14	0.16
1088.00	0.19	231.79	1087.98	2.38 S	4.17 W	-2.35	0.07
1180.00	0.21	145.79	1179.98	2.61 S	4.19 W	-2.58	0.30
1366.00	0.15	122.93	1365.98	3.03 S	3.80 W	-3.00	0.05
1459.00	0.40	92.48	1458.98	3.11 S	3.37 W	-3.08	0.30
1551.00	0.37	85.03	1550.98	3.09 S	2.75 W	-3.08	0.06
1644.00	0.22	122.68	1643.98	3.16 S	2.31 W	-3.15	0.26
1737.00	0.19	98.57	1736.98	3.28 S	2.00 W	-3.27	0.10
1831.00	2.47	134.71	1830.94	4.73 S	0.41 W	-4.73	2.47
1926.00	4.21	137.56	1925.78	8.75 S	3.40 E	-8.77	1.84
2021.00	4.72	121.55	2020.50	13.37 S	9.08 E	-13.42	1.41
2115.00	6.25	125.53	2114.06	18.36 S	16.54 E	-18.47	1.68
2210.00	7.66	126.51	2208.36	25.14 S	25.84 E	-25.30	1.49
2305.00	8.91	118.64	2302.37	32.43 S	37.39 E	-32.67	1.77
2399.00	7.91	115.71	2395.36	38.72 S	49.61 E	-39.04	1.16
2494.00	9.80	120.89	2489.22	45.71 S	62.43 E	-46.11	2.16
2589.00	10.68	117.81	2582.71	53.97 S	77.16 E	-54.47	1.09
2684.00	10.68	118.21	2676.06	62.24 S	92.70 E	-62.83	0.08
2779.00	10.79	116.31	2769.40	70.34 S	108.43 E	-71.04	0.39
2873.00	9.17	115.02	2861.98	77.41 S	123.11 E	-78.20	1.74
2968.00	7.59	114.18	2955.96	83.18 S	135.69 E	-84.05	1.67
3063.00	5.37	118.07	3050.35	87.84 S	145.34 E	-88.78	2.38
3158.00	4.65	126.35	3144.99	92.22 S	152.36 E	-93.20	1.07
3253.00	4.07	131.24	3239.71	96.72 S	158.00 E	-97.74	0.72
3348.00	2.53	127.85	3334.55	100.23 S	162.19 E	-101.28	1.63
3442.00	1.66	108.69	3428.49	101.94 S	165.12 E	-103.00	1.18
3537.00	2.04	109.46	3523.44	102.94 S	168.02 E	-104.03	0.40
3632.00	2.32	108.66	3618.37	104.12 S	171.43 E	-105.23	0.30
3727.00	2.48	110.73	3713.29	105.47 S	175.18 E	-106.59	0.19
3822.00	0.87	90.20	3808.24	106.20 S	177.82 E	-107.34	1.78
3917.00	1.25	295.07	3903.24	105.76 S	177.60 E	-106.90	2.18
4011.00	1.23	304.84	3997.21	104.75 S	175.84 E	-105.88	0.23
4106.00	1.75	291.90	4092.18	103.62 S	173.66 E	-104.74	0.65
4201.00	2.16	279.63	4187.13	102.78 S	170.55 E	-103.88	0.61
4296.00	2.19	284.63	4282.06	102.03 S	167.03 E	-103.10	0.20
4391.00	2.15	294.48	4376.99	100.83 S	163.65 E	-101.88	0.39
4486.00	2.06	308.04	4471.93	99.04 S	160.69 E	-100.07	0.53
4581.00	2.47	332.93	4566.85	96.16 S	158.41 E	-97.18	1.11
4676.00	2.82	344.08	4661.75	92.09 S	156.84 E	-93.10	0.65
4770.00	3.27	4.19	4755.62	87.20 S	156.40 E	-88.20	1.22
4865.00	2.26	358.11	4850.51	82.62 S	156.53 E	-83.63	1.11
4960.00	1.80	348.31	4945.45	79.29 S	156.17 E	-80.30	0.60
5055.00	2.19	340.20	5040.40	76.12 S	155.25 E	-77.12	0.51
5150.00	1.95	338.58	5135.33	72.91 S	154.05 E	-73.90	0.26
5245.00	1.86	329.27	5230.28	70.08 S	152.67 E	-71.06	0.34
5339.00	1.81	329.45	5324.23	67.49 S	151.14 E	-68.46	0.05
5404.00	1.90	323.79	5389.20	65.73 S	149.98 E	-66.70	0.31
5432.00	1.87	328.34	5417.18	64.97 S	149.46 E	-65.93	0.54
5526.00	4.22	333.64	5511.04	60.57 S	147.12 E	-61.51	2.52
5574.00	11.48	340.16	5558.56	54.48 S	144.71 E	-55.41	15.21
5621.00	14.13	339.99	5604.39	44.69 S	141.16 E	-45.60	5.64
5669.00	15.71	341.71	5650.77	33.01 S	137.12 E	-33.90	3.42
5716.00	18.84	348.38	5695.65	19.53 S	133.59 E	-20.40	7.87
5764.00	23.43	355.28	5740.42	2.42 S	131.24 E	-3.27	10.86
5811.00	27.25	356.06	5782.89	17.63 N	129.73 E	16.80	8.16
5859.00	30.15	357.85	5824.99	40.65 N	128.53 E	39.82	6.30
5906.00	33.75	0.61	5864.86	65.51 N	128.22 E	64.68	8.26
5954.00	37.91	3.38	5903.77	93.58 N	129.23 E	92.74	9.30
6001.00	43.07	2.54	5939.50	124.04 N	130.80 E	123.20	11.04
6049.00	48.50	1.35	5972.96	158.41 N	131.95 E	157.56	11.45
6096.00	51.53	1.30	6003.16	194.41 N	132.78 E	193.55	6.45
6144.00	54.38	1.05	6032.08	232.71 N	133.57 E	231.84	5.95
6190.00	59.51	0.72	6057.16	271.25 N	134.16 E	270.38	11.17
6238.00	65.03	359.94	6079.49	313.72 N	134.39 E	312.84	11.59
6285.00	68.92	0.23	6097.87	356.96 N	134.46 E	356.09	8.30
6333.00	72.35	359.76	6113.78	402.24 N	134.45 E	401.37	7.21
6380.00	77.36	359.14	6126.05	447.59 N	134.02 E	446.72	10.74
6428.00	83.36	359.23	6134.09	494.89 N	133.34 E	494.02	12.50
6452.00	85.68	359.19	6136.38	518.78 N	133.01 E	517.91	9.67
6506.00	88.00	359.19	6139.36	572.68 N	132.25 E	571.82	4.30

CALCULATION BASED ON MINIMUM CURVATURE METHOD

**SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT**

**VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 359.63 DEGREES (GRID)
A TOTAL CORRECTION OF 7.16 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6506.00 FEET
IS 587.76 FEET ALONG 13.00 DEGREES (GRID)**

Surface surveys at 350 ft and 600 ft have had azimuths corrected to grid north, but were not taken by Halliburton.

Final survey is a projection from 6452' MD to TD at 6506' MD.

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