

PCGC: Pressure Case Gamma
PCDC: Pressure Case Directional

[illegible]

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	20-Apr-13	21-Apr-13			
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)	639.99	5,776.31			
Log End Depth (TVD, ft)	5,776.31	6,577.71			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	19-Apr-13 15:45	20-Apr-13 17:00			
Drill/Wipe End Date and Time	20-Apr-13 07:30	21-Apr-13 08:05			
Min Inc (deg) @ Depth (TVD, ft)	.10 @ 5,243.41	.48 @ 5,777.31			
Max Inc (deg) @ Depth (TVD, ft)	10.91 @ 2,407.23	87.02 @ 6,577.71			
Bit TFA(in2) / Bit Type	.75 / PDC	.75 / PDC			
Flow Rate (gpm)	588.32	583.28			
Max AV (fpm) / CV (fpm) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Fresh Water Gel	Fresh Water Gel			
Density (ppg) / Viscosity (spqt)	9.25 / 31.00	10.50 / 37.00			
Filtrate CL (ppm)	1,000.00	1,000.00			
pH / Fluid Loss (mptm)	9.80 / 0	9.30 / 0			
PV (cP) / YP (lbf2)	7 / 6.00	13 / 11.00			
% Solids / % Sand	6.7 / 0.35	12.1 / .3			
% 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) @ Depth (ft)	145.00 / 100M	175.01 / 100M			

Max Tool Temp (degF) / Source	145.90 / PCM	175.21 / PCM			
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A			
Lead MWD Engineer	Paul Kock	Paul Kock			
Customer Representative	Martin Suarez	Martin Suarez			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM			
Software Version	5.76	5.76			
Sub Serial Number	246473	246473			
Insert Serial Number	11680801	11680801			
Date and Time Initialized	19-Apr-13 07:40	19-Apr-13 07:40			
Date and Time Read	21-Apr-13 15:25	21-Apr-13 16:15			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (ft)	55.88	52.46			
Software Version	6.21	6.21			
Sub Serial Number	246473	246473			
Sonde Serial Number	11833052	11833052			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	128.00	30.98			

Gamma Ray Sensor Information

Tool Type	PCG	PCG			
Distance From Bit (ft)	50.88	47.46			
Recorded Sample Period (sec)	10	10			
Software Version	8.15	8.15			
Sub Serial Number	246473	246473			
Insert/Sonde Serial Number	11579806	11579806			

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:
 - All 2" (1:600) logs - 1 ft. interval, 3 ft. coercion distance.
 - All 5" (1:240) logs - .5 ft. interval, .6 ft. coercion distance.
5. INSITE version 7.4.20

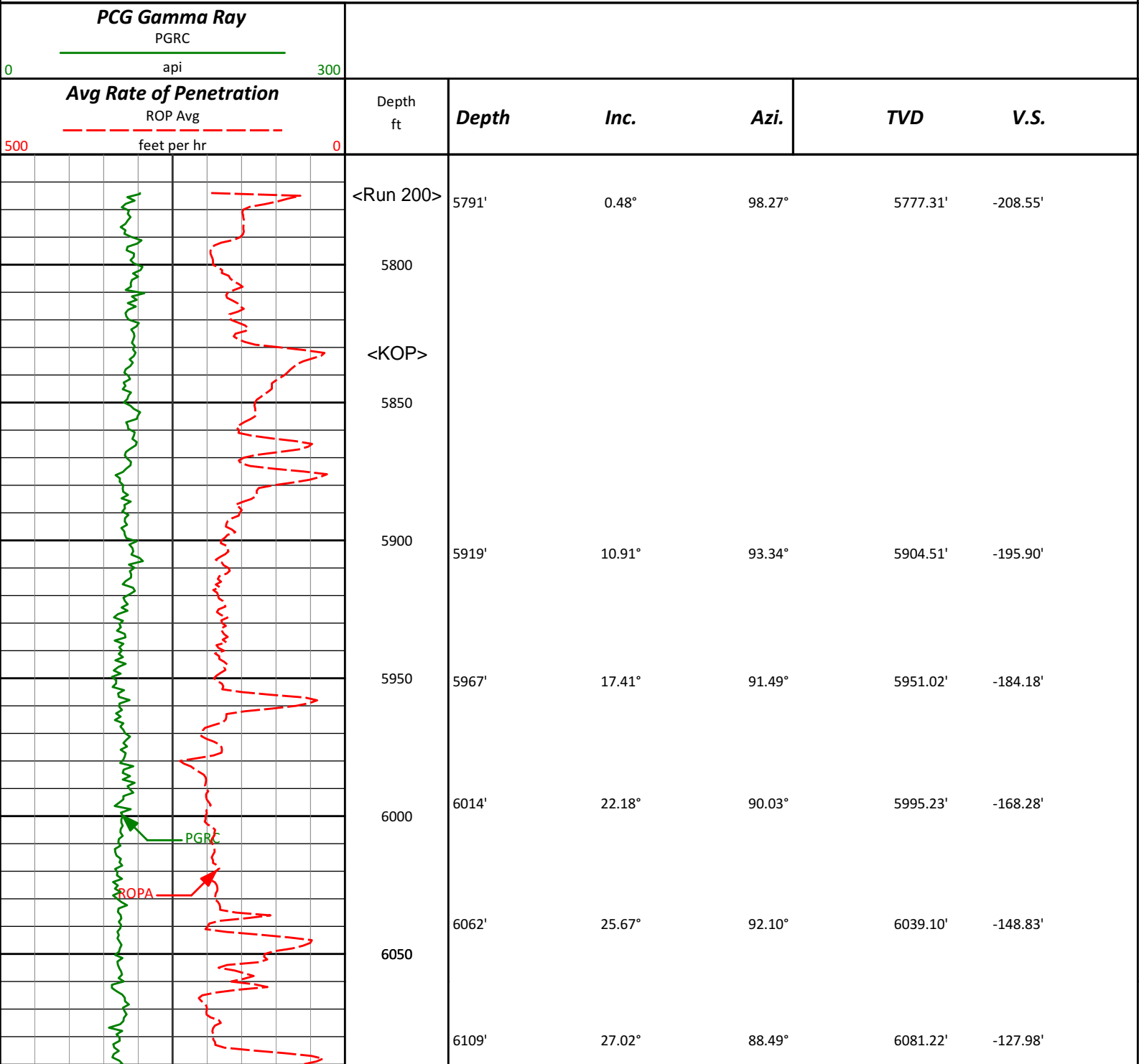
WARRANTY

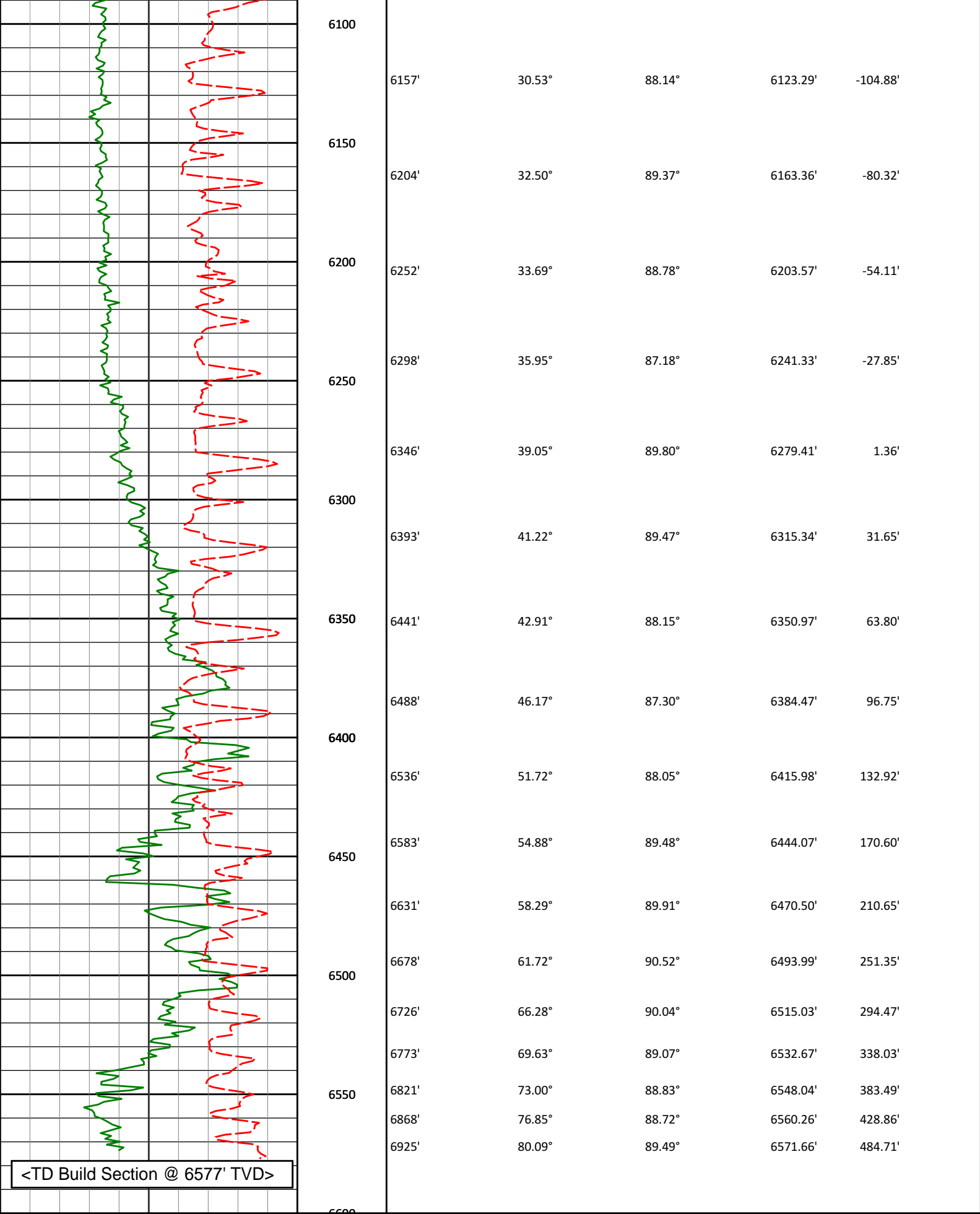
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Sperry Drilling Services
TVD Detail Log 1:600

Noble Energy, Inc
SLW Ranch State B12-65HN
H&P 315
T5N R64W





Avg Rate of Penetration ROP Avg feet per hr		Depth ft	Depth	Inc.	Azi.	TVD	V.S.
PCG Gamma Ray							

HALLIBURTON

Sperry Drilling Services

TVD Detail Log 1:240

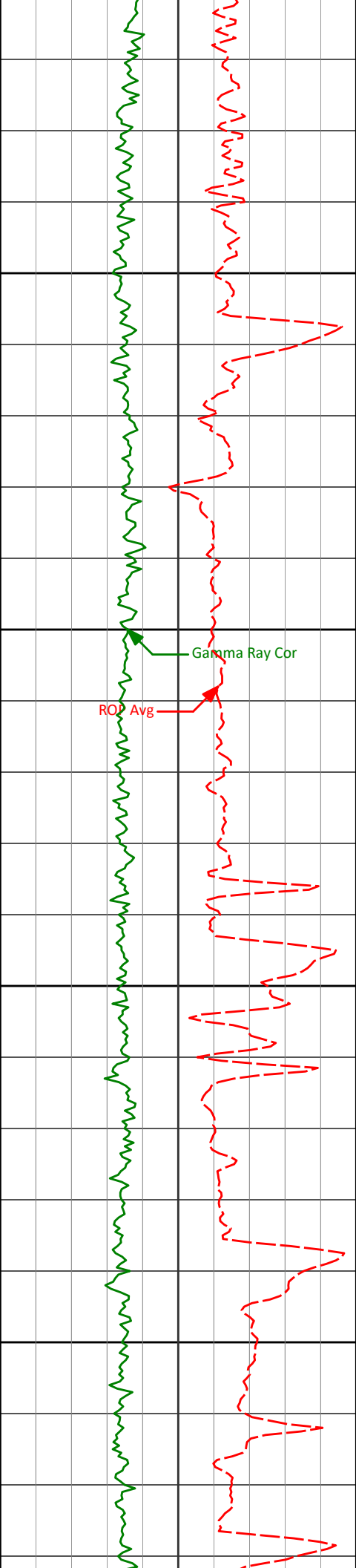
Noble Energy, Inc

SLW Ranch State B12-65HN

H&P 315

T5N R64W

PCG Gamma Ray								
PGRC								
0								
api								
300								
Avg Rate of Penetration			Depth					
ROP Avg			ft		Depth		Inc.	
500			0		Azi.		TVD	
feet per hr					V.S.			



5950

5967'

17.41°

91.49°

5951.02'

-184.18'

6000

6014'

22.18°

90.03°

5995.23'

-168.28'

6050

6062'

25.67°

92.10°

6039.10'

-148.83'

6100

6109'

27.02°

88.49°

6081.22'

-127.98'

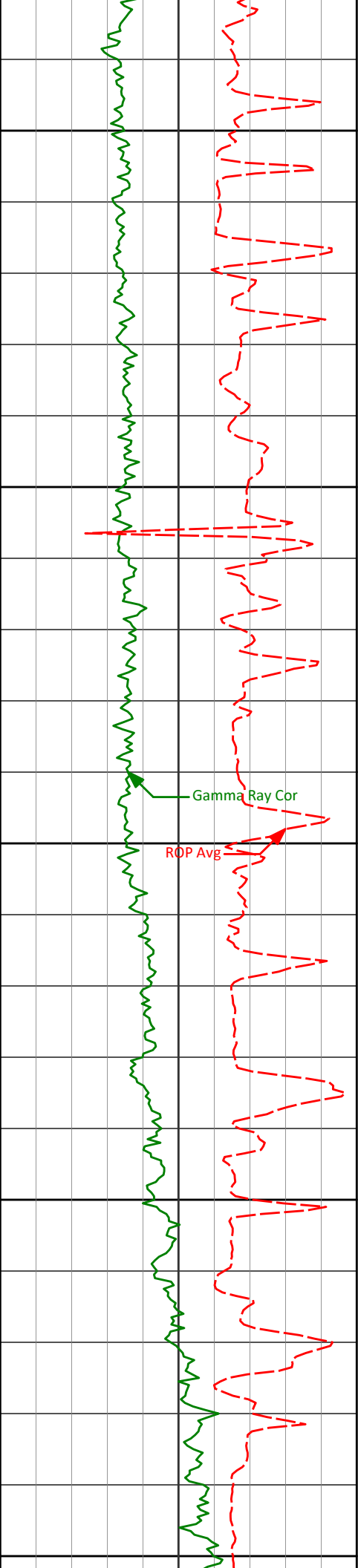
6157'

30.53°

88.14°

6123.29'

-104.88'



6150

6204'

32.50°

89.37°

6163.36'

-80.32'

6200

6252'

33.69°

88.78°

6203.57'

-54.11'

6250

6298'

35.95°

87.18°

6241.33'

-27.85'

6300

6346'

39.05°

89.80°

6279.41'

1.36'

6350

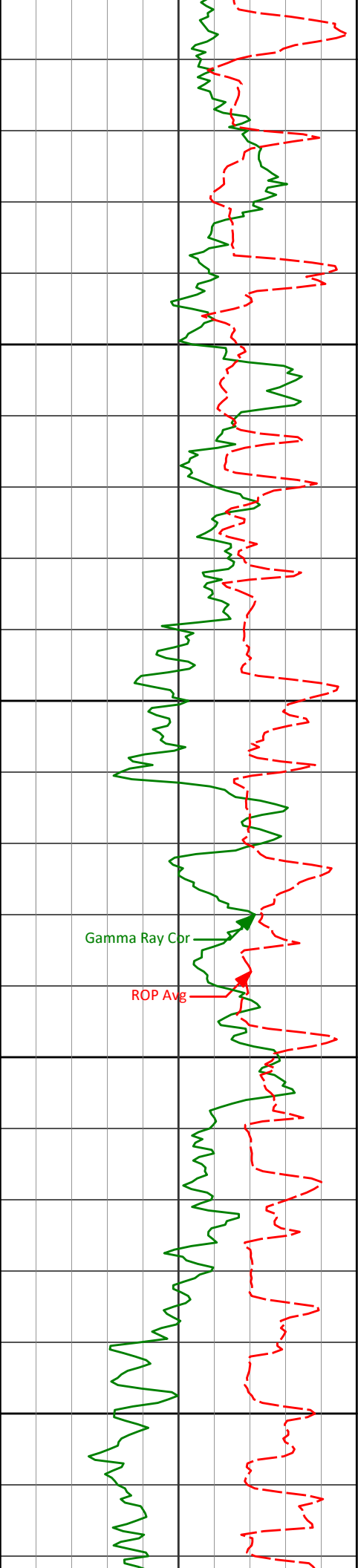
6441'

42.91°

88.15°

6350.97'

63.80'



6400

6450

6500

6550

6488'

46.17°

87.30°

6384.47'

96.75'

6536'

51.72°

88.05°

6415.98'

132.92'

6583'

54.88°

89.48°

6444.07'

170.60'

6631'

58.29°

89.91°

6470.50'

210.65'

6678'

61.72°

90.52°

6493.99'

251.35'

6726'

66.28°

90.04°

6515.03'

294.47'

6773'

69.63°

89.07°

6532.67'

338.03'

6821'

73.00°

88.83°

6548.04'

383.49'

6868'

76.85°

88.72°

6560.26'

428.86'

6925'

80.00°

89.40°

6571.66'

484.71'

<div> <div><TD Build Section @ 6577' TVD></div> </div>									
<div> <div> <div>Avg Rate of Penetration</div> <div>ROP Avg</div> <div>500</div> <div>feet per hr</div> <div>0</div> </div> <div> <div>PCG Gamma Ray</div> <div>PGRC</div> <div>0</div> <div>api</div> <div>300</div> </div> </div>									
<div> <div>Depth</div> <div>ft</div> </div>			<div> <div>Depth</div> <div>Inc.</div> </div>		<div> <div>Azi.</div> <div>TVD</div> </div>		<div> <div>V.S.</div> </div>		



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
SLW Ranch State B12-65HN
Wattenberg
Weld Colorado
USA
CA-XX-0900240634

Surface surveys at 351 ft and 598 ft have had azimuths corrected to grid north, but were not taken by Halliburton.

Last survey is a projection from 6925 ft MD to TD at 6979 ft MD

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
351.00	0.30	312.09	351.00	0.62 N	0.68 W	-0.67	0.09
598.00	0.30	10.39	598.00	1.69 N	1.05 W	-1.02	0.12
720.00	0.62	69.70	719.99	2.23 N	0.37 W	-0.34	0.44
812.00	0.50	150.41	811.99	2.05 N	0.30 E	0.32	0.79
905.00	0.66	97.26	904.98	1.63 N	1.03 E	1.05	0.58
1089.00	0.34	76.58	1088.98	1.62 N	2.61 E	2.63	0.20
1183.00	0.65	117.63	1182.97	1.44 N	3.35 E	3.37	0.48
1275.00	0.50	74.68	1274.97	1.31 N	4.20 E	4.22	0.48
1367.00	0.69	111.06	1366.97	1.21 N	5.11 E	5.12	0.45
1462.00	0.50	72.16	1461.96	1.13 N	6.04 E	6.05	0.46
1557.00	0.51	92.28	1556.96	1.24 N	6.85 E	6.87	0.19
1652.00	1.11	263.65	1651.95	1.13 N	6.36 E	6.38	1.70
1747.00	0.58	244.01	1746.94	0.81 N	5.01 E	5.02	0.63
1841.00	2.90	268.33	1840.89	0.54 N	2.21 E	2.22	2.54
1936.00	2.95	252.03	1935.77	0.29 S	2.52 W	-2.52	0.87
2031.00	4.80	265.92	2030.55	1.33 S	8.81 W	-8.82	2.17
2126.00	5.27	267.79	2125.18	1.78 S	17.13 W	-17.15	0.52
2221.00	7.96	265.48	2219.54	2.46 S	28.05 W	-28.08	2.84
2316.00	8.43	281.30	2313.59	1.62 S	41.44 W	-41.46	2.42
2411.00	10.91	278.75	2407.23	1.12 N	57.16 W	-57.14	2.65
2506.00	10.51	274.46	2500.58	3.16 N	74.68 W	-74.63	0.94
2601.00	9.07	277.23	2594.19	4.77 N	90.75 W	-90.68	1.59
2696.00	10.53	273.05	2687.80	6.18 N	106.85 W	-106.76	1.71
2790.00	10.19	273.97	2780.27	7.21 N	123.72 W	-123.61	0.40
2885.00	8.52	271.40	2874.00	7.96 N	139.14 W	-139.02	1.81
2980.00	7.78	274.92	2968.04	8.69 N	152.58 W	-152.45	0.94
3075.00	5.70	274.61	3062.38	9.62 N	163.69 W	-163.55	2.19
3170.00	4.59	272.40	3157.00	10.16 N	172.19 W	-172.04	1.19
3265.00	3.09	265.17	3251.78	10.10 N	178.54 W	-178.39	1.66
3360.00	2.07	271.46	3346.69	9.93 N	182.81 W	-182.66	1.11
3455.00	1.44	271.43	3441.64	10.00 N	185.71 W	-185.57	0.66
3550.00	1.24	267.49	3536.61	9.99 N	187.93 W	-187.79	0.23
3645.00	1.47	285.58	3631.59	10.27 N	190.14 W	-189.99	0.51
3739.00	1.91	281.51	3725.55	10.90 N	192.83 W	-192.67	0.48
3834.00	0.44	307.87	3820.52	11.44 N	194.67 W	-194.51	1.61
3929.00	0.34	261.35	3915.52	11.63 N	195.24 W	-195.07	0.34
4024.00	0.66	236.82	4010.52	11.28 N	195.97 W	-195.81	0.40

4119.00	0.50	235.80	4105.51	10.75 N	196.78 W	-196.62	0.17
4214.00	1.05	246.50	4200.50	10.17 N	197.92 W	-197.77	0.60
4309.00	1.45	241.03	4295.48	9.24 N	199.77 W	-199.63	0.44
4404.00	0.37	338.02	4390.47	8.94 N	200.93 W	-200.80	1.62
4498.00	1.79	333.25	4484.45	10.54 N	201.71 W	-201.55	1.51
4593.00	0.59	351.12	4579.43	12.35 N	202.45 W	-202.27	1.31
4688.00	0.77	111.50	4674.43	12.59 N	201.93 W	-201.75	1.25
4783.00	0.70	236.21	4769.42	12.04 N	201.82 W	-201.65	1.37
4878.00	0.73	224.31	4864.42	11.28 N	202.73 W	-202.56	0.16
4972.00	0.35	184.66	4958.41	10.57 N	203.17 W	-203.01	0.54
5067.00	0.39	234.61	5053.41	10.09 N	203.45 W	-203.31	0.33
5162.00	0.63	107.83	5148.41	9.74 N	203.22 W	-203.08	0.97
5257.00	0.10	103.28	5243.41	9.57 N	202.64 W	-202.50	0.56
5352.00	0.72	303.82	5338.40	9.88 N	203.06 W	-202.91	0.86
5447.00	1.22	230.66	5433.39	9.57 N	204.34 W	-204.20	1.29
5541.00	1.40	243.68	5527.37	8.43 N	206.14 W	-206.01	0.37
5636.00	1.83	239.38	5622.33	7.14 N	208.48 W	-208.38	0.47
5730.00	0.65	85.09	5716.32	6.42 N	209.25 W	-209.14	2.59
5791.00	0.48	98.27	5777.31	6.41 N	208.65 W	-208.55	0.35
5919.00	10.91	93.34	5904.51	5.63 N	195.99 W	-195.90	8.15
5967.00	17.41	91.49	5951.02	5.18 N	184.26 W	-184.18	13.57
6014.00	22.18	90.03	5995.23	4.99 N	168.35 W	-168.28	10.20
6062.00	25.67	92.10	6039.10	4.60 N	148.90 W	-148.83	7.48
6109.00	27.02	88.49	6081.22	4.51 N	128.05 W	-127.98	4.46
6157.00	30.53	88.14	6123.29	5.19 N	104.96 W	-104.88	7.32
6204.00	32.50	89.37	6163.36	5.72 N	80.40 W	-80.32	4.41
6252.00	33.69	88.78	6203.57	6.15 N	54.19 W	-54.11	2.57
6298.00	35.95	87.18	6241.33	7.08 N	27.95 W	-27.85	5.30
6346.00	39.05	89.80	6279.41	7.83 N	1.25 E	1.36	7.26
6393.00	41.22	89.47	6315.34	8.02 N	31.55 E	31.65	4.64
6441.00	42.91	88.15	6350.97	8.70 N	63.70 E	63.80	3.97
6488.00	46.17	87.30	6384.47	10.01 N	96.63 E	96.75	7.05
6536.00	51.72	88.05	6415.98	11.47 N	132.78 E	132.92	11.62
6583.00	54.88	89.48	6444.07	12.27 N	170.45 E	170.60	7.15
6631.00	58.29	89.91	6470.50	12.48 N	210.51 E	210.65	7.14
6678.00	61.72	90.52	6493.99	12.33 N	251.21 E	251.35	7.38
6726.00	66.28	90.04	6515.03	12.12 N	294.34 E	294.47	9.54
6773.00	69.63	89.07	6532.67	12.46 N	337.90 E	338.03	7.38
6821.00	73.00	88.83	6548.04	13.30 N	383.35 E	383.49	7.04
6868.00	76.85	88.72	6560.26	14.27 N	428.71 E	428.86	8.19
6925.00	80.09	89.49	6571.66	15.14 N	484.55 E	484.71	5.84
6979.00	87.02	89.48	6577.71	15.62 N	538.17 E	538.33	12.83

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 89.26 DEGREES (GRID)
A TOTAL CORRECTION OF 7.89 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6979.00 FEET
IS 538.40 FEET ALONG 88.34 DEGREES (GRID)**