

**PCDC - Pressure Case Directional
PCGK - Pressure Case Gamma**



1 : 240 / 1 : 600

Country	: USA
Field	: Wattenburg
Location	: Lat: 40° 17' 22.85" North Long: 104° 36' 39.42" West
Well	: Shelton G25-75HN
Company	: Noble Energy
Rig	: H&P 321
LOCATION	Company : Noble Energy
	Rig : H&P 321
Other Services Directional Drilling	Well : Shelton G25-75HN
	Field : Wattenburg
Latitude : 40° 17' 22.85" North Longitude : 104° 36' 39.42" West	Country : USA
	API Number : 0512335541
UTM Easting = 3,248,008.40 ft	
UTM Northing = 1,349,615.09 ft	

Permanent Datum	: Ground Level	Elevation	: 4794.00 ft	Elev.	KB	N/A
Log Measured From	: Drill Floor	30.00 ft	Above Permanent Datum	DF	4824.00 ft	
Drilling Measured From	: Drill Floor			GL	4794.00 ft	
				WD	N/A	

Depth Logged	: 682.00 ft	To	11,061.00 ft	Unit No.	: 11210424	Job No.	: CA-XX-0900065798
Date Logged	: 21-Dec-12	To	26-Dec-12	Plot Type	: Final		
Total Depth MD	: 11,061.00 ft	TVD	: 6,986.40 ft	Plot Date	: 27-Dec-12		
Spud Date	: 20-Dec-12						

Run No.	Borehole Record (MD)		Run No.	Borehole Record (MD)	
	Size	From		Size	From
2	8.750 in	682.00 ft			
3	8.750 in	6,238.00 ft			
4	8.750 in	6,442.00 ft			
5	6.125 in	7,387.00 ft			

WELL INFORMATION

MWD Run Number	100	200	300	400
Date run completed	22-Dec-12	22-Dec-12	23-Dec-12	26-Dec-12
Rig Bit Number	2	3	4	5
Bit Size (in)	8.750	8.750	8.750	6.125
Tool Nominal OD (in)	6.750	6.750	6.750	4.750
Log Start Depth (MD, ft)	692.00	6,238.00	6,442.00	7,387.00
Log End Depth (MD, ft)	6,238.00	6,442.00	7,387.00	11,061.00
Drill or Wipe	Drill	Drill	Drill	Drill
Drill/Wipe Start Date and Time	21-Dec-12 11:00	22-Dec-12 13:31	23-Dec-12 01:07	25-Dec-12 02:10
Drill/Wipe End Date and Time	22-Dec-12 04:29	22-Dec-12 17:00	23-Dec-12 16:38	26-Dec-12 11:57
Min Inc (deg) @ Depth (MD, ft)	.22 @ 5,061.00	1.14 @ 6,245.00	17.89 @ 6,483.00	85.38 @ 7,413.00
Max Inc (deg) @ Depth (MD, ft)	10.36 @ 2,689.00	9.84 @ 6,388.00	81.71 @ 7,333.00	92.65 @ 11,061.00
Bit TFA(in2) / Bit Type	0.96 / PDC	0.71 / PDC	0.47 / PDC	.46 / PDC
Flow Rate (gpm)	593.80	556.00	534.55	270.00
Max AV (fpm) / CV (fpm) @ MWD	487.8 / 345.0	480.7 / 450.0	405.9 / 328.7	488.0 / 410.0
Fluid Type	Native/Spud Mud	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel
Density (ppg) / Viscosity (spqt)	8.45 / 28.00	9.70 / 36.00	10.65 / 42.00	9.40 / 33.00
Filtrate CL (ppm)	2,350.00	3,100.00	3,000.00	3,300.00
pH / Fluid Loss (mptm)	10.40 / 32	8.80 / 11	9.70 / 7	9.60 / 10
PV (cP) / YP (Ihf2)	1 / 4.00	8 / 8.00	14 / 16.00	6 / 7.00
% Solids / % Sand	1.00 / 0.20	6.90 / 0.20	10.70 / 0.20	5.00 / 0.40
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / N/A	N/A / N/A
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Rmf @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A

Max Tool Temp (degF) / Source	154.30 / PCM	150.10 / PCM	167.00 / PCM	238.70 / PCM	
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	
Lead MWD Engineer	Adam Sampson	Adam Sampson	Adam Sampson	Adam Sampson	
Customer Representative	Jim Turner	Jim Turner	Jim Turner	Jim Turner	

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM	PCM	
Software Version	5.76	5.76	5.76	5.76	
Sub Serial Number	233811	233811	233811	11854096	
Insert Serial Number	11145594	11680777	11145594	11227556	
Date and Time Initialized	20-Dec-12 21:05	22-Dec-12 06:47	22-Dec-12 19:54	24-Dec-12 05:48	
Date and Time Read	22-Dec-12 08:25	22-Dec-12 22:03	23-Dec-12 21:46	26-Dec-12 21:00	
ECMB SW Version	N/A	N/A	N/A	N/A	

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	
Distance From Bit (ft)	56.00	61.00	54.00	61.00	
Software Version	6.21	6.21	6.21	6.21	
Sub Serial Number	233811	233811	233811	11854096	
Sonde Serial Number	11833241	11297622	11833241	11478177	
Sensor ID Number	N/A	N/A	N/A	N/A	
Toolface Offset (deg)	193.40	82.00	83.60	3.70	

Gamma Ray Sensor Information

Tool Type	N/A	PCG	PCG	PCG	
Distance From Bit (ft)	N/A	64.43	47.35	63.75	
Recorded Sample Period (sec)	N/A	10	10	10	
Software Version	N/A	8.15	8.15	8.15	
Sub Serial Number	N/A	233811	233811	11854096	
Insert/Sonde Serial Number	N/A	11293319	11293332	11579828	

REMARKS

1. All depths are calibrated to driller's pipe tally and are measured depth from the Drill Floor.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annular velocities are calculated using the "Power Law" model for water based fluids and the "Brigham Plastic" model for oil and synthetic based fluids.
4. All data presented is recorded data unless otherwise specified.
5. The following smoothing parameters have been applied to the data:

PGRC (Gamma CG):
Interval Resolution: 0.5 ft
Interval Distance: 0.6 ft
Gap Fill: 3.0 ft

ROPA (Average Rate Of Penetration):
Interval Resolution: 0.5 ft
Interval Distance: 1.2 ft
Gap Fill: 3.0 ft

6. Insite Version 7.4.1

WARRANTY

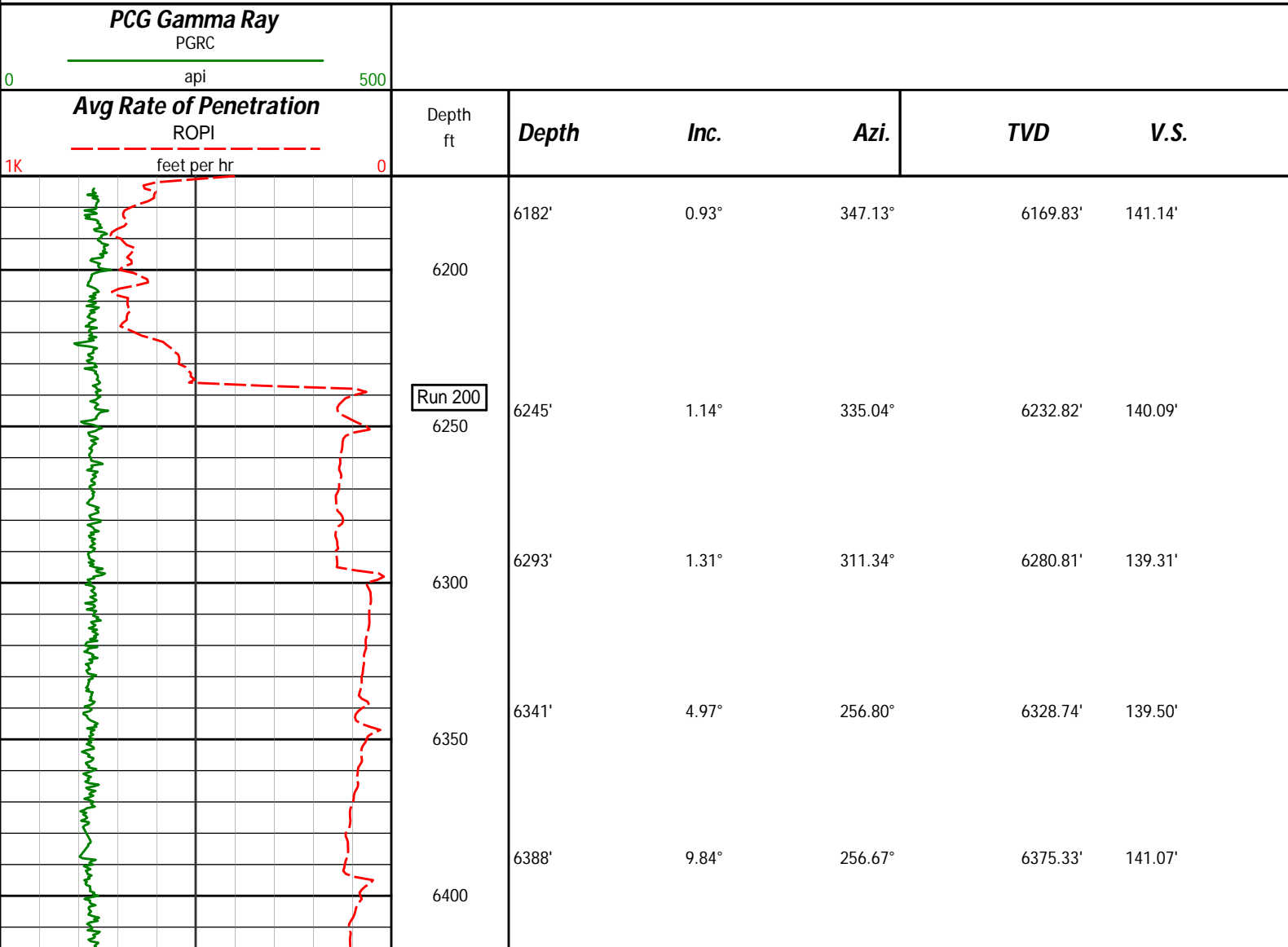
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HALLIBURTON

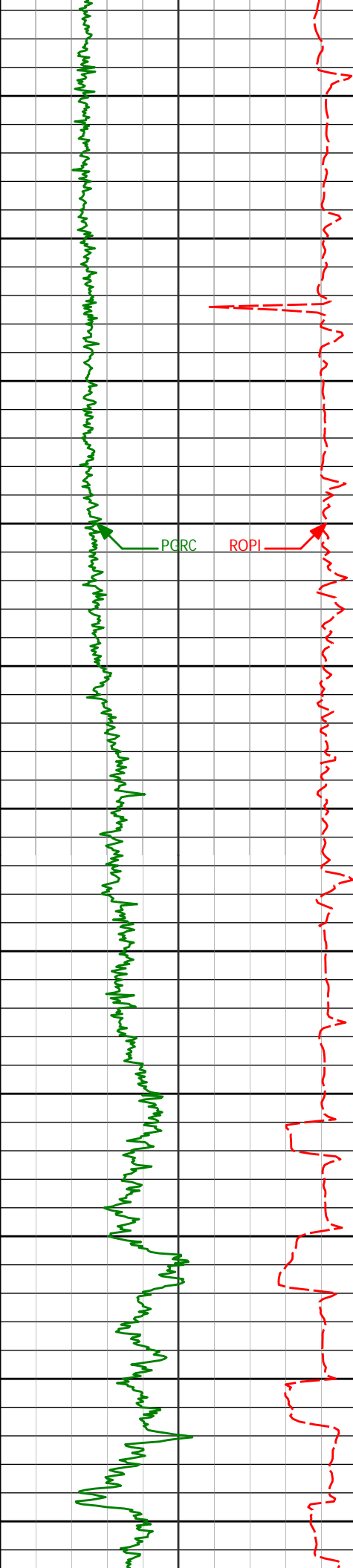
Sperry Drilling Services

MD Main Log 1:600

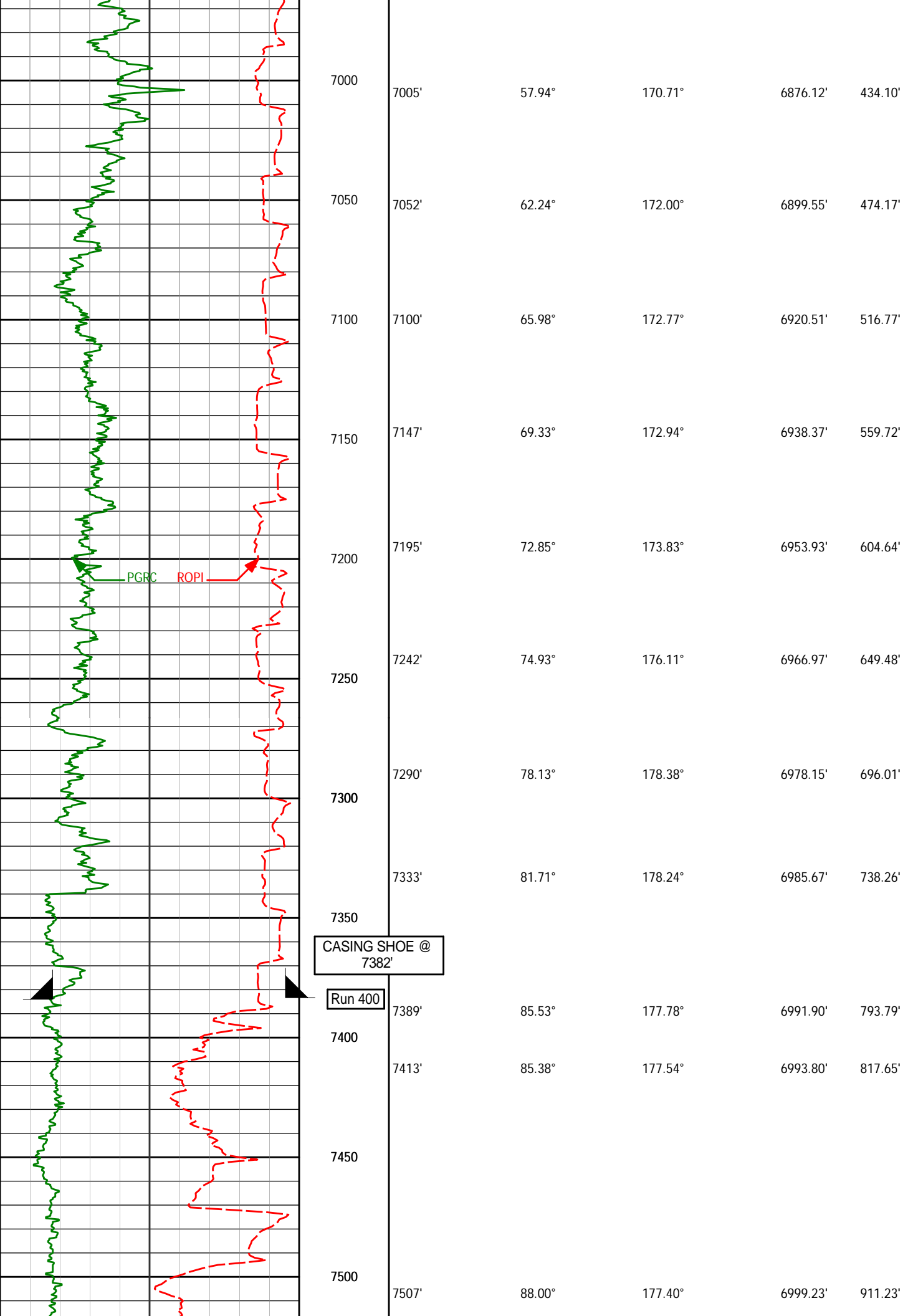
Noble
Shelton G25-75HN
HP 321
T4N R65W



Run 300

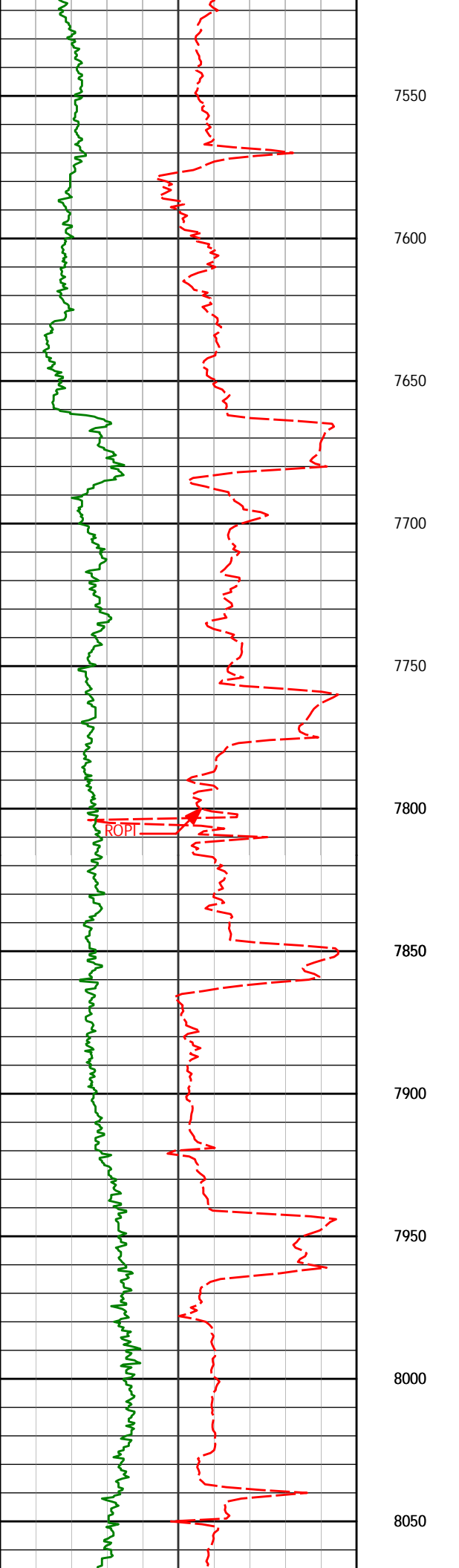


6436'	15.14°	259.85°	6422.18'	143.42'
6450				
6483'	17.89°	245.11°	6467.25'	147.92'
6500				
6531'	22.21°	232.88°	6512.36'	156.92'
6550				
6578'	25.51°	222.49°	6555.35'	170.16'
6600				
6626'	28.67°	209.76°	6598.12'	188.17'
6650				
6673'	30.90°	197.91°	6638.94'	209.74'
6700				
6721'	33.92°	186.38°	6679.50'	234.95'
6750				
6768'	37.16°	177.61°	6717.76'	262.21'
6800				
6816'	41.96°	174.49°	6754.76'	292.61'
6850				
6862'	45.40°	172.31°	6788.03'	324.03'
6900				
6910'	49.84°	169.79°	6820.38'	358.85'
6950				
6957'	54.15°	169.89°	6849.31'	395.08'



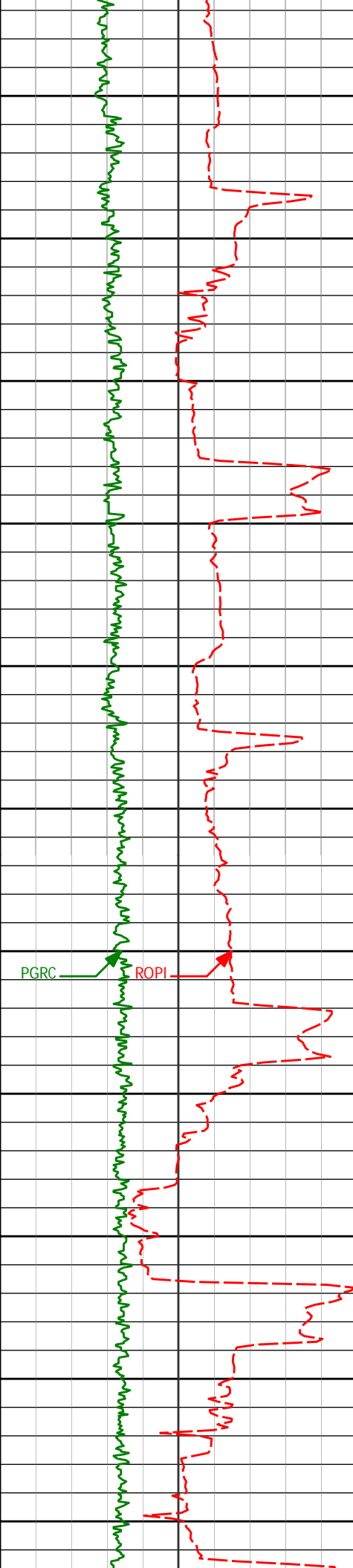
CASING SHOE @
7382'

Run 400

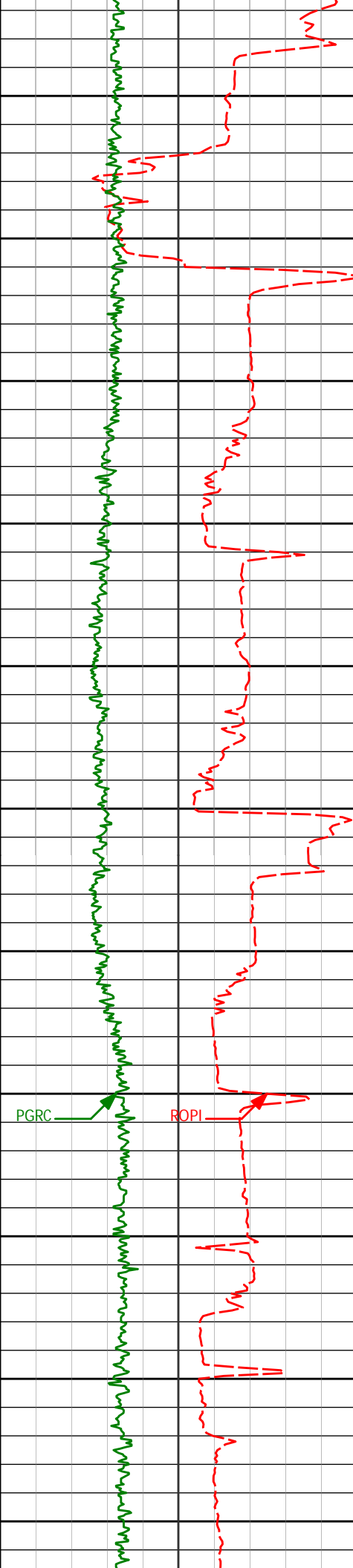


7550				
7600	7602'	88.61°	177.30°	7002.04' 1005.91'
7650				
7700	7697'	91.48°	177.79°	7001.97' 1100.65'
7750				
7800	7791'	90.37°	178.36°	7000.45' 1194.44'
7850				
7900	7886'	90.40°	178.35°	6999.81' 1289.28'
7950				
8000	7981'	90.06°	181.29°	6999.43' 1384.21'
8050				

ROPT



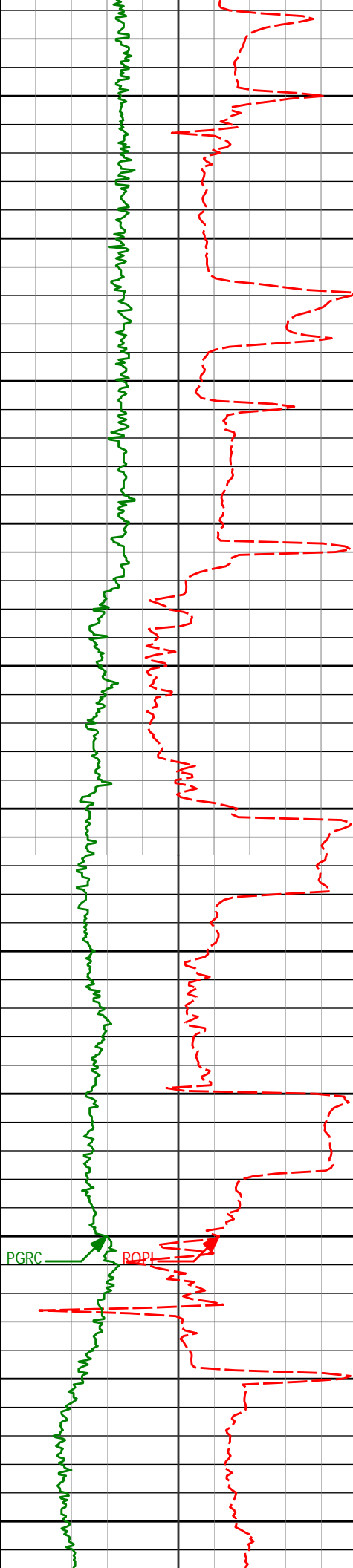
8076'	90.22°	180.07°	6999.20'	1479.19'
8100				
8150				
8171'	90.96°	179.73°	6998.23'	1574.14'
8200				
8250				
8265'	89.78°	179.70°	6997.62'	1668.08'
8300				
8350				
8360'	90.49°	178.70°	6997.39'	1762.99'
8400				
8450				
8455'	89.54°	178.95°	6997.37'	1857.86'
8500				
8550				
8550'	90.31°	180.70°	6997.49'	1952.81'
8600				



8650	8645'	89.01°	181.06°	6998.05'	2047.79'
8700					
8750	8739'	89.97°	181.39°	6998.89'	2141.78'
8800					
8850	8834'	90.80°	180.38°	6998.25'	2236.77'
8900					
8950	8929'	89.14°	181.02°	6998.30'	2331.75'
9000					
9050	9024'	89.41°	180.76°	6999.50'	2426.73'
9100					
9150	9119'	89.88°	179.95°	7000.09'	2521.70'

PGRC

ROPI



9200

9213' 90.28° 179.26° 6999.96' 2615.64'

9250

9300

9308' 90.22° 180.14° 6999.55' 2710.58'

9350

9400

9403' 91.26° 179.23° 6998.32' 2805.51'

9450

9500

9498' 90.09° 179.64° 6997.20' 2900.42'

9550

9600

9593' 89.94° 181.75° 6997.17' 2995.40'

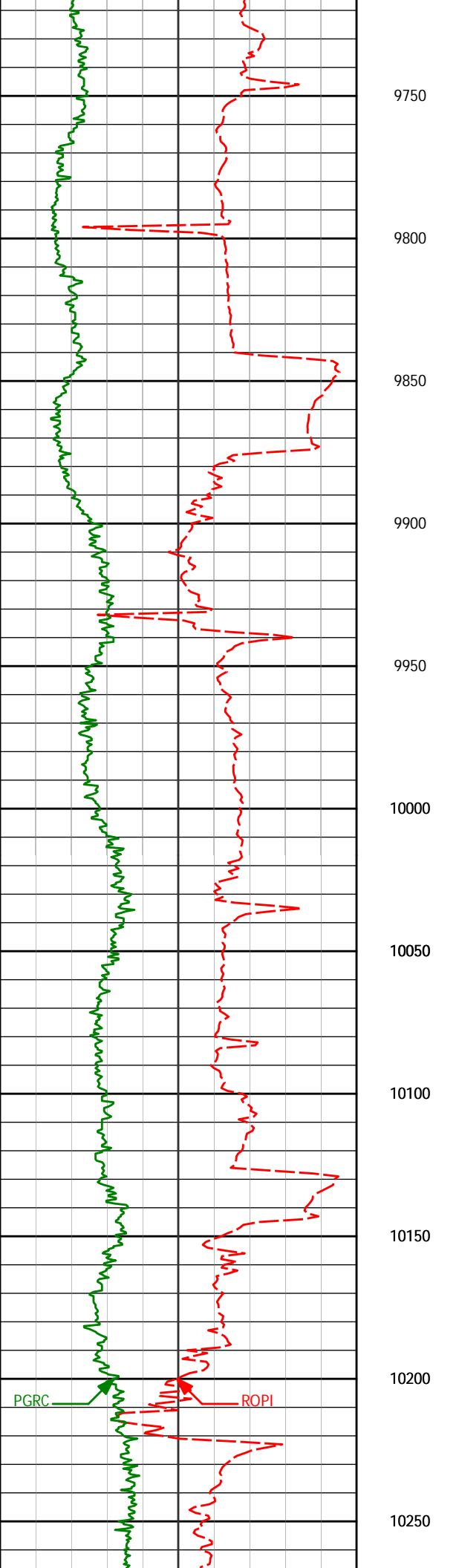
PGRC

ROP

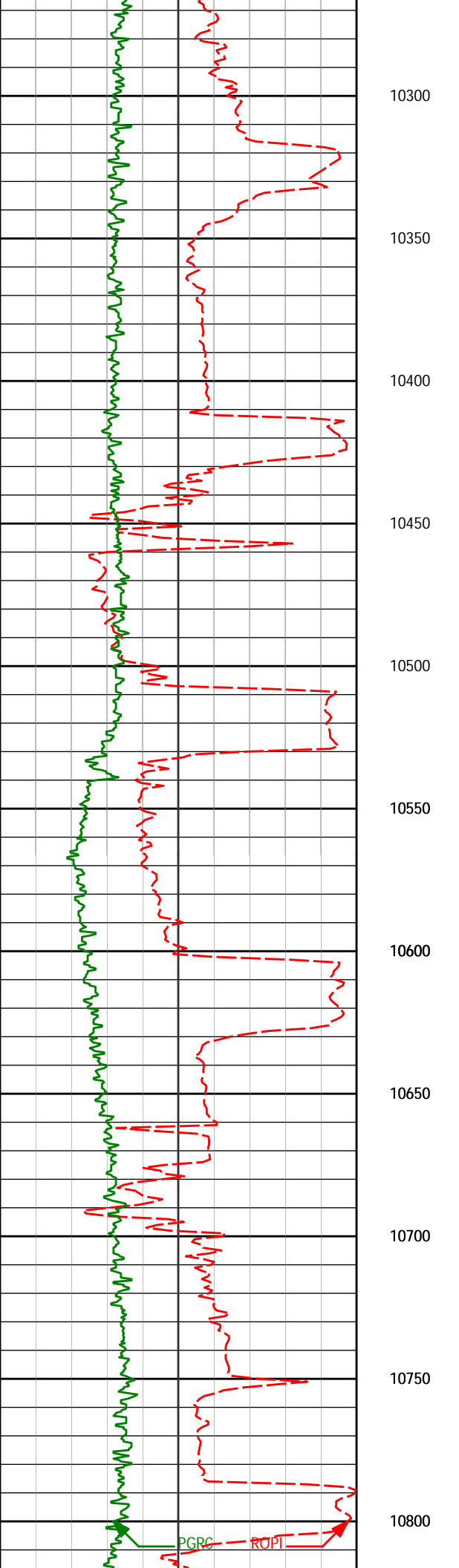
9650

9700

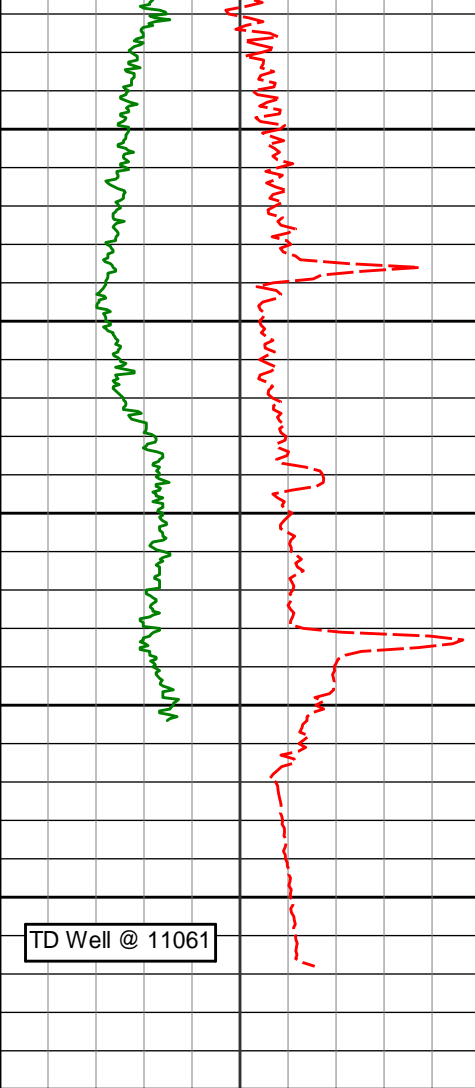
9688' 90.86° 181.94° 6996.51' 3090.40'



9783'	92.59°	182.86°	6993.65'	3185.34'
9878'	89.75°	180.83°	6991.71'	3280.31'
9973'	90.31°	180.99°	6991.66'	3375.30'
10067'	91.30°	180.57°	6990.34'	3469.28'
10162'	89.54°	179.09°	6989.65'	3564.22'
10256'	89.82°	178.62°	6990.18'	3658.10'



10351'	90.15°	179.45°	6990.21'	3752.99'
10445'	89.11°	178.66°	6990.82'	3846.89'
10540'	88.27°	180.50°	6992.99'	3941.79'
10634'	88.89°	183.19°	6995.32'	4035.75'
10729'	89.54°	182.08°	6996.62'	4130.73'



10824'	91.48°	182.28°	6995.78'	4225.72'
10850				
10900				
10919'	92.25°	181.83°	6992.68'	4320.67'
10950				
11000				
11000'	92.65°	181.11°	6989.22'	4401.59'
11050				
11061'	92.65°	181.11°	6986.40'	4462.52'
11100				

Avg Rate of Penetration ROPI feet per hr 1K 0	Depth ft	Depth	Inc.	Azi.	TVD	V.S.
PCG Gamma Ray PGRC api 0 500						

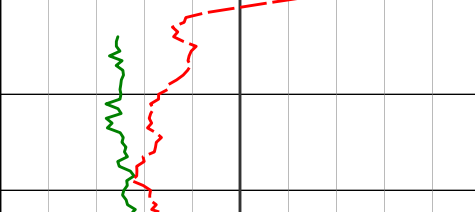
HALLIBURTON

Sperry Drilling Services

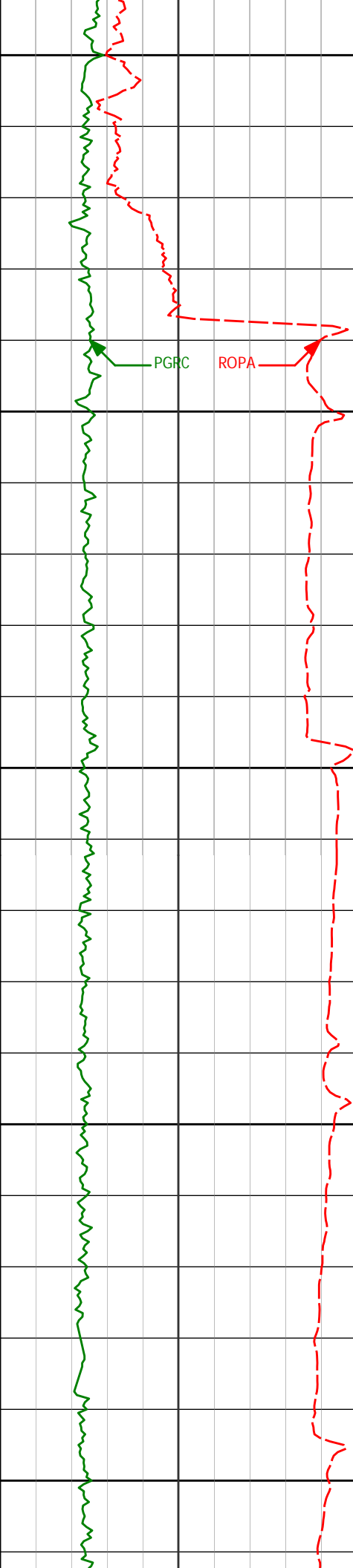
MD Detail Log 1:240

Noble
 Shelton G25-75HN
 HP 321
 T5N R65W

PCG Gamma Ray PGRC api 0 500	Depth ft	Depth	Inc.	Azi.	TVD	V.S.
Avg Rate of Penetration ROPA feet per hr 1K 0						



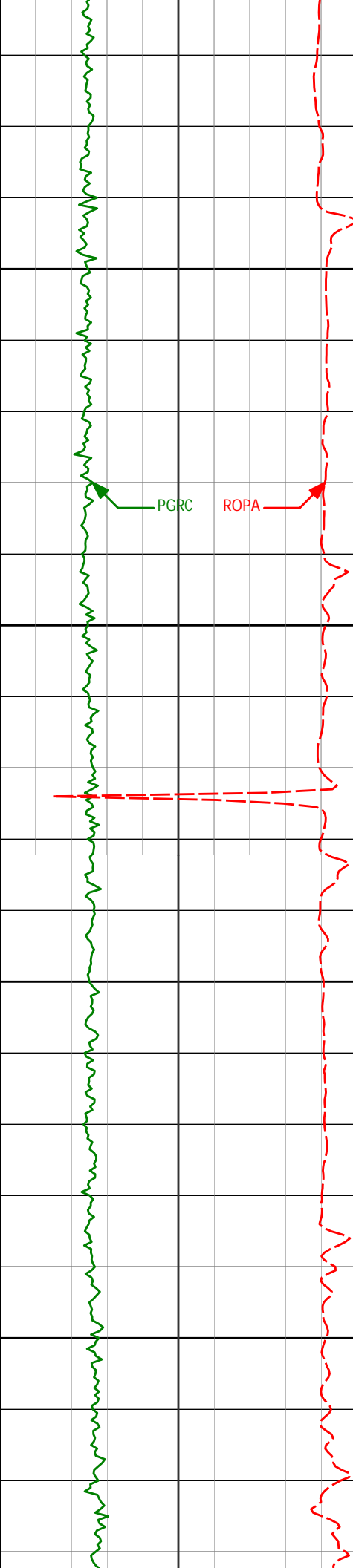
6182'	0.93°	347.13°	6169.83'	141.14'
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Run 200

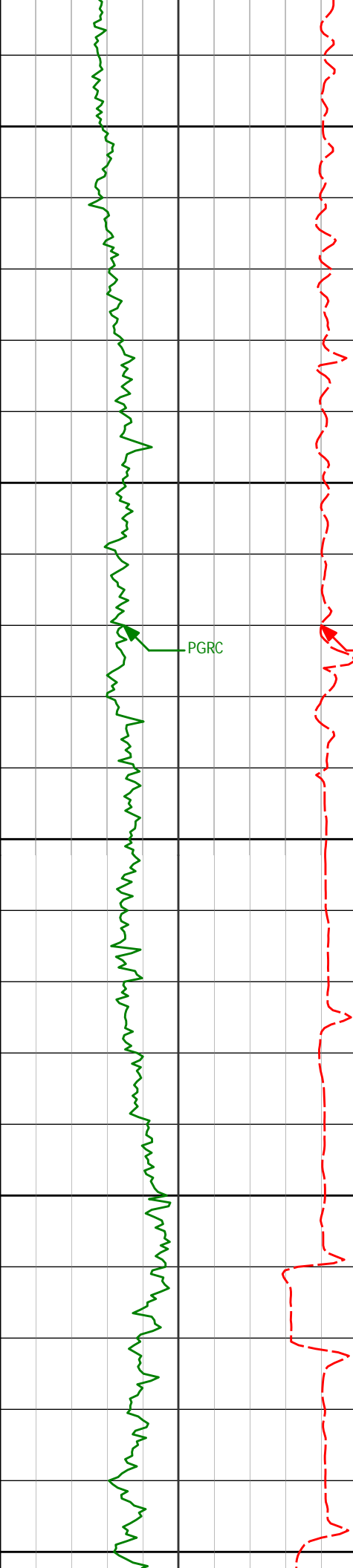
6245'	1.14°	335.04°	6232.82'	140.09'
6293'	1.31°	311.34°	6280.81'	139.31'
6341'	4.97°	256.80°	6328.74'	139.50'
6388'	9.84°	256.67°	6375.33'	141.07'

6400



Run 300

6436'	15.14°	259.85°	6422.18'	143.42'
6450				
6483'	17.89°	245.11°	6467.25'	147.92'
6500				
6531'	22.21°	232.88°	6512.36'	156.92'
6550				
6578'	25.51°	222.49°	6555.35'	170.16'
6600				
6626'	28.67°	209.76°	6598.12'	188.17'



6650

6673'

30.90°

197.91°

6638.94'

209.74'

6700

6721'

33.92°

186.38°

6679.50'

234.95'

6750

6768'

37.16°

177.61°

6717.76'

262.21'

6800

6816'

41.96°

174.49°

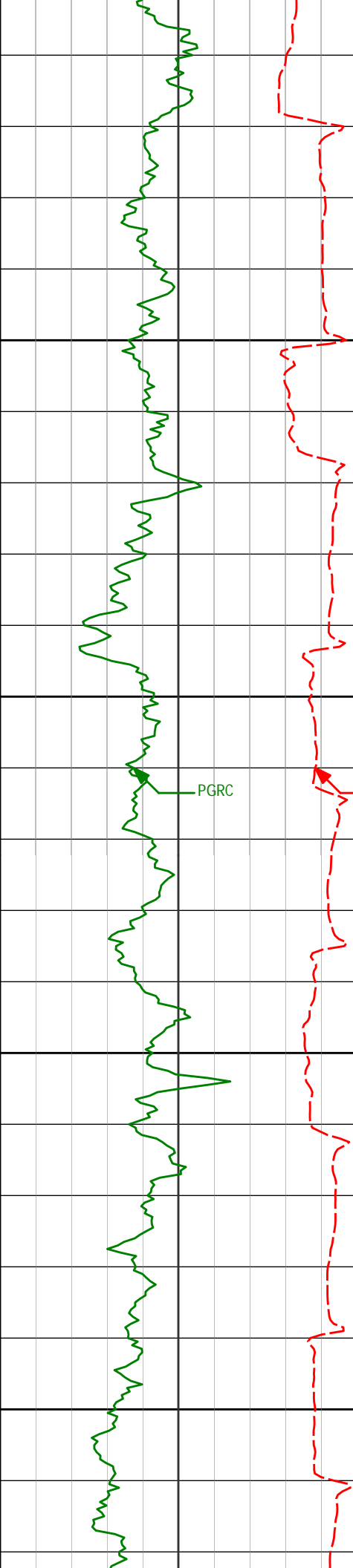
6754.76'

292.61'

6850

PGRC

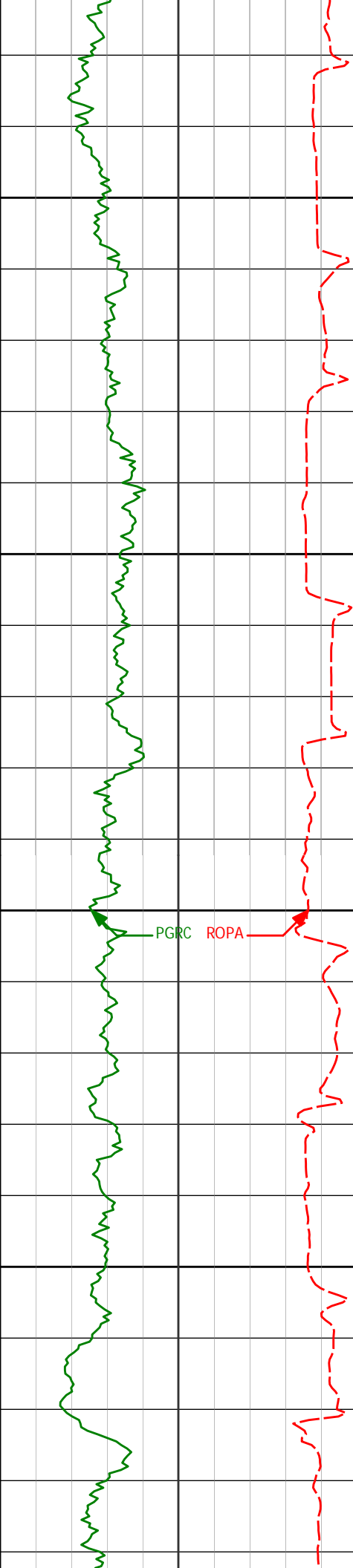
ROPA



6862'	45.40°	172.31°	6788.03'	324.03'
6900				
6910'	49.84°	169.79°	6820.38'	358.85'
6950				
6957'	54.15°	169.89°	6849.31'	395.08'
7000				
7005'	57.94°	170.71°	6876.12'	434.10'
7050				
7052'	62.24°	172.00°	6899.55'	474.17'

PGRC

ROPA



7100 7100' 65.98° 172.77° 6920.51' 516.77'

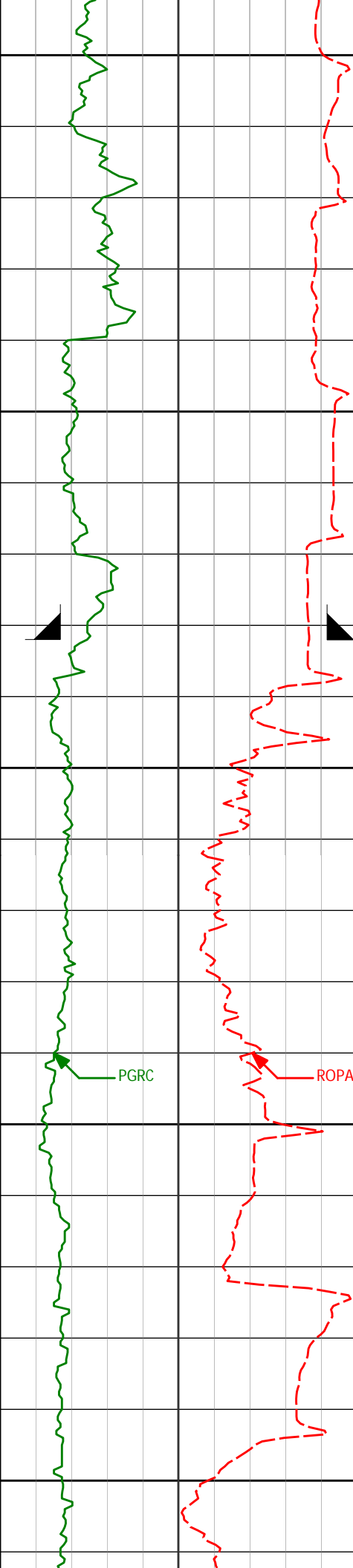
7150 7147' 69.33° 172.94° 6938.37' 559.72'

7200 7195' 72.85° 173.83° 6953.93' 604.64'

7250 7242' 74.93° 176.11° 6966.97' 649.48'

7290' 78.13° 178.38° 6978.15' 696.01'

PGRC ROPA

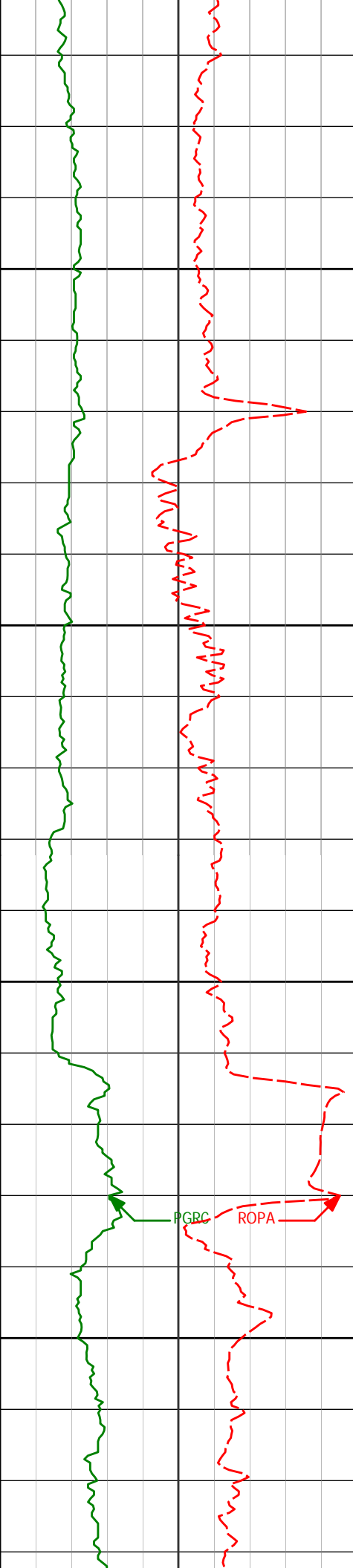


CASING SHOE @ 7382'
Run 400

7300				
	7333'	81.71°	178.24°	6985.67' 738.26'
7350				
	7389'	85.53°	177.78°	6991.90' 793.79'
7400				
	7413'	85.38°	177.54°	6993.80' 817.65'
7450				
7500				
	7507'	88.00°	177.40°	6999.23' 911.23'

PGRC

ROPA



7550

7600

7650

7700

7602'

88.61°

177.30°

7002.04'

1005.91'

PGBC

ROPA

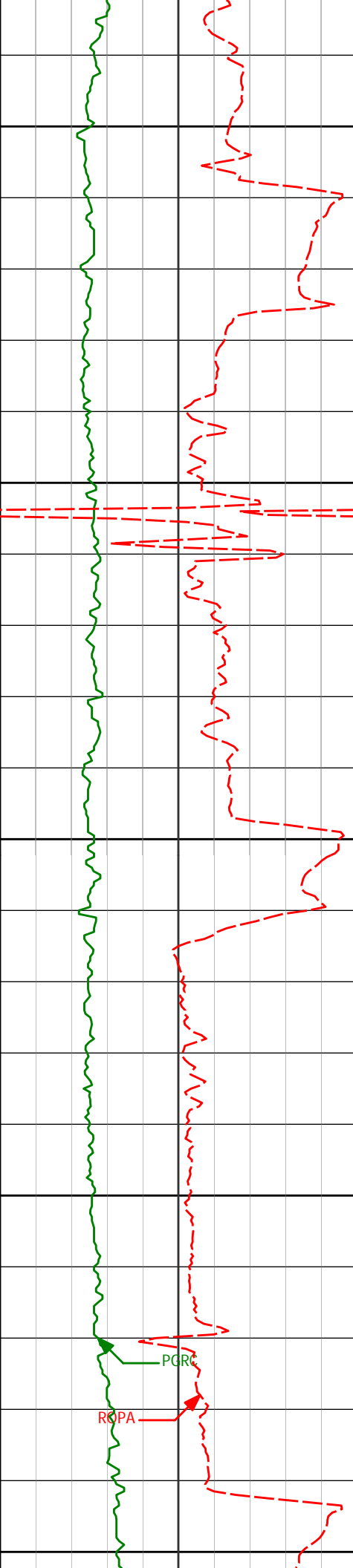
7697'

91.48°

177.79°

7001.97'

1100.65'



7750

7791'

90.37°

178.36°

7000.45'

1194.44'

7800

7850

7886'

90.40°

178.35°

6999.81'

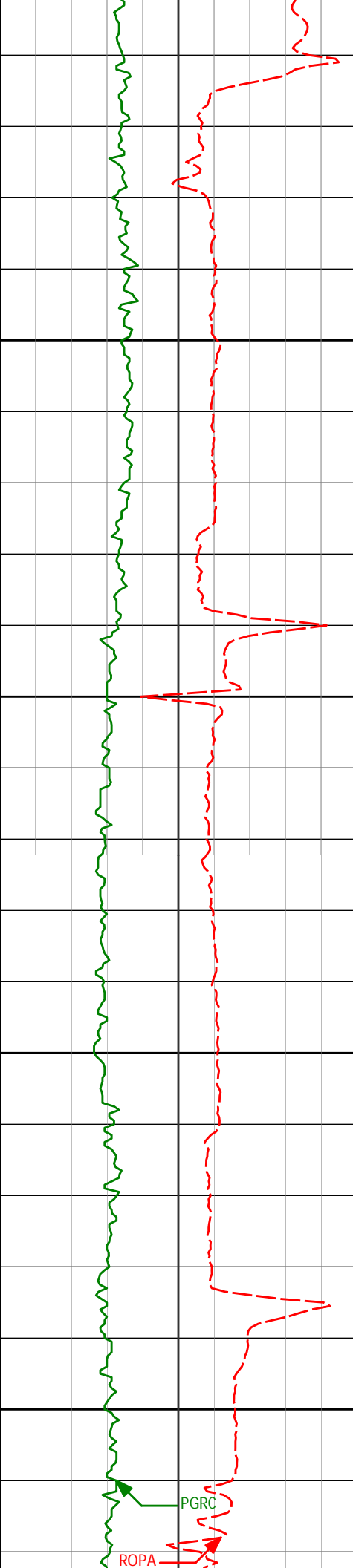
1289.28'

7900

7950

PGRC

RCPA



7981' 90.06° 181.29° 6999.43' 1384.21'

8000

8050

8076' 90.22° 180.07° 6999.20' 1479.19'

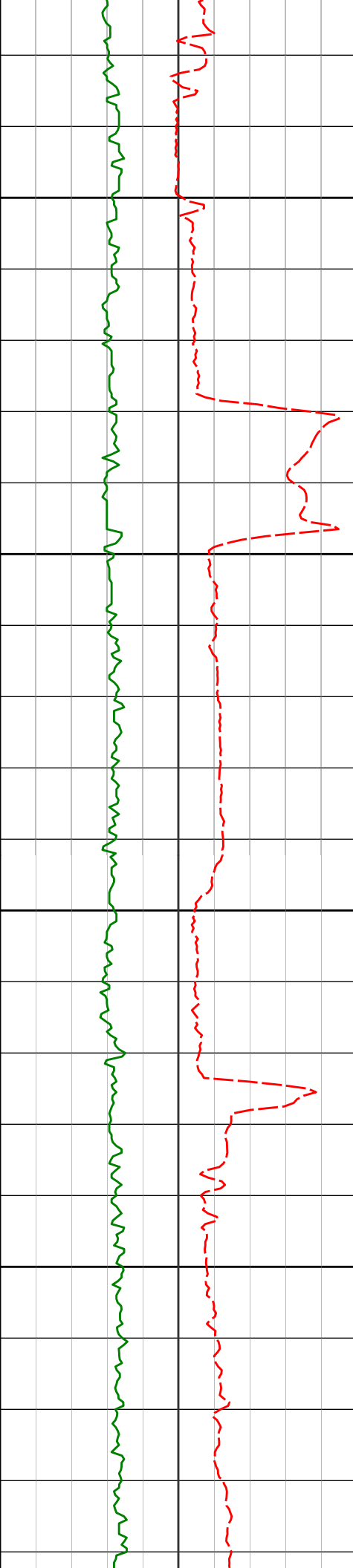
8100

8150

PGRC

ROPA

8171' 90.96° 179.73° 6998.23' 1574.14'



8200

8250

8300

8350

8265'

89.78°

179.70°

6997.62'

1668.08'

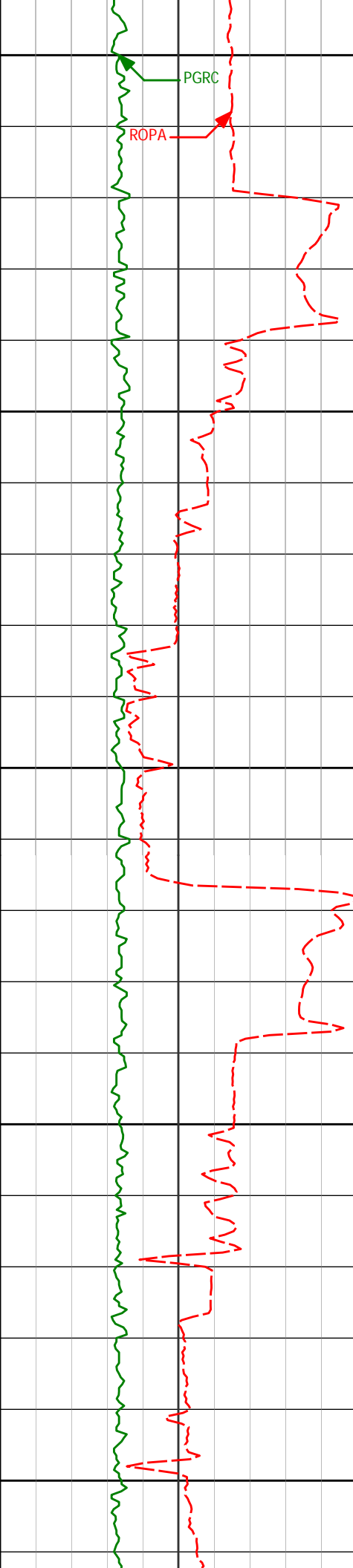
8360'

90.49°

178.70°

6997.39'

1762.99'



8400

PGRC

ROPA

8450

8455'

89.54°

178.95°

6997.37'

1857.86'

8500

8550

8550'

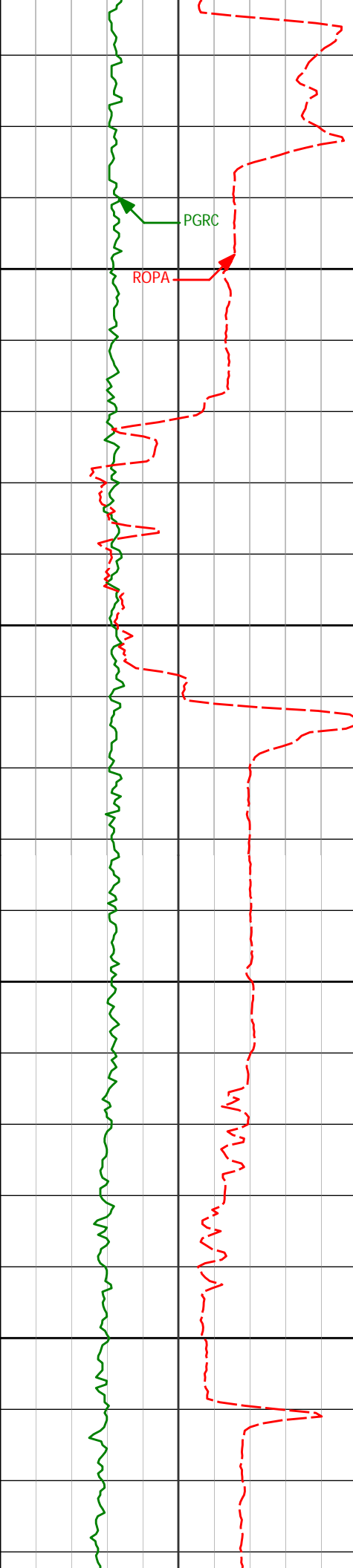
90.31°

180.70°

6997.49'

1952.81'

8600



8645' 89.01° 181.06° 6998.05' 2047.79'

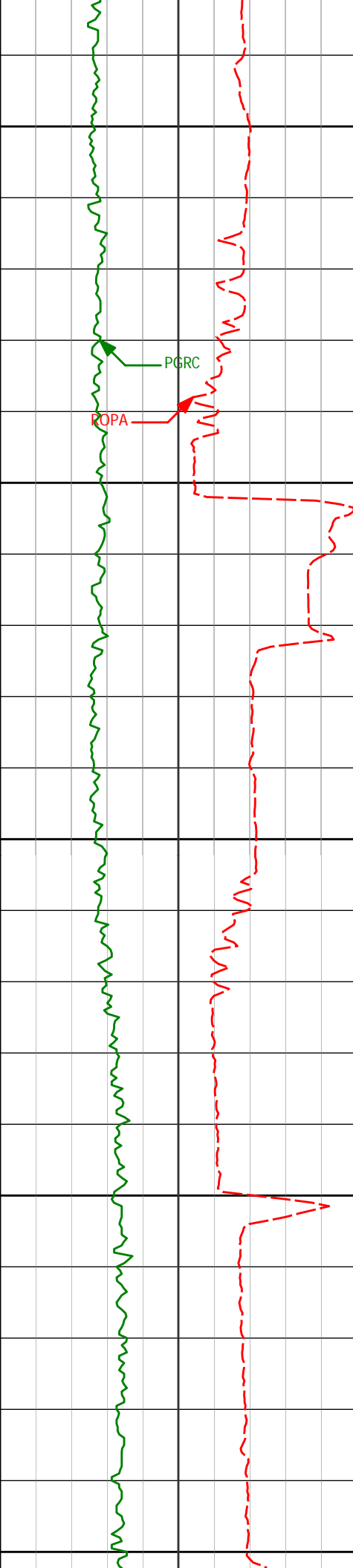
8650

8700

8739' 89.97° 181.39° 6998.89' 2141.78'

8750

8800



8850

PGRC

ROPA

8900

8950

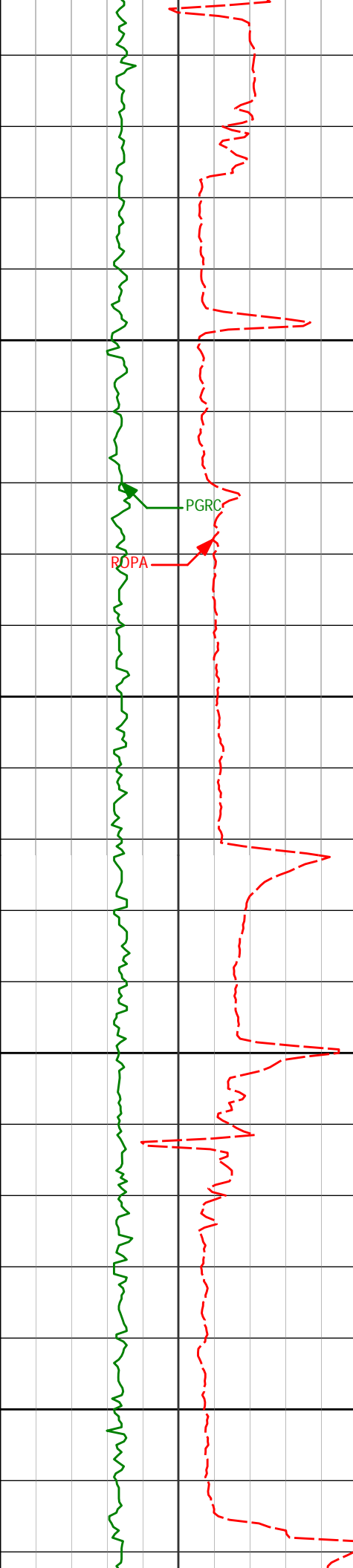
9000

9050

8834' 90.80° 180.38° 6998.25' 2236.77'

8929' 89.14° 181.02° 6998.30' 2331.75'

9024' 89.41° 180.76° 6999.50' 2426.73'



9100

9119'

89.88°

179.95°

7000.09'

2521.70'

PGRC

ROPA

9150

9200

9213'

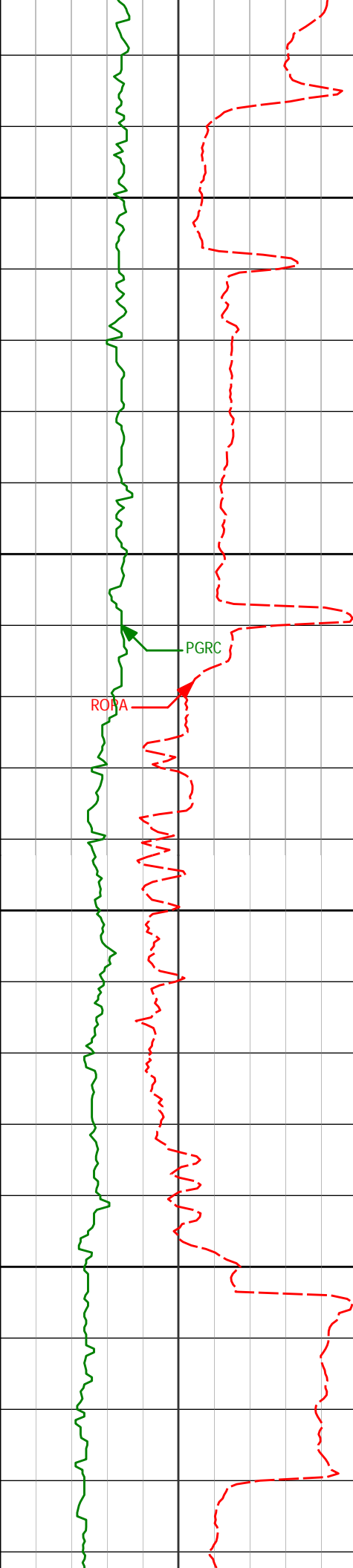
90.28°

179.26°

6999.96'

2615.64'

9250



9300

9308'

90.22°

180.14°

6999.55'

2710.58'

9350

PGRC

ROPA

9400

9403'

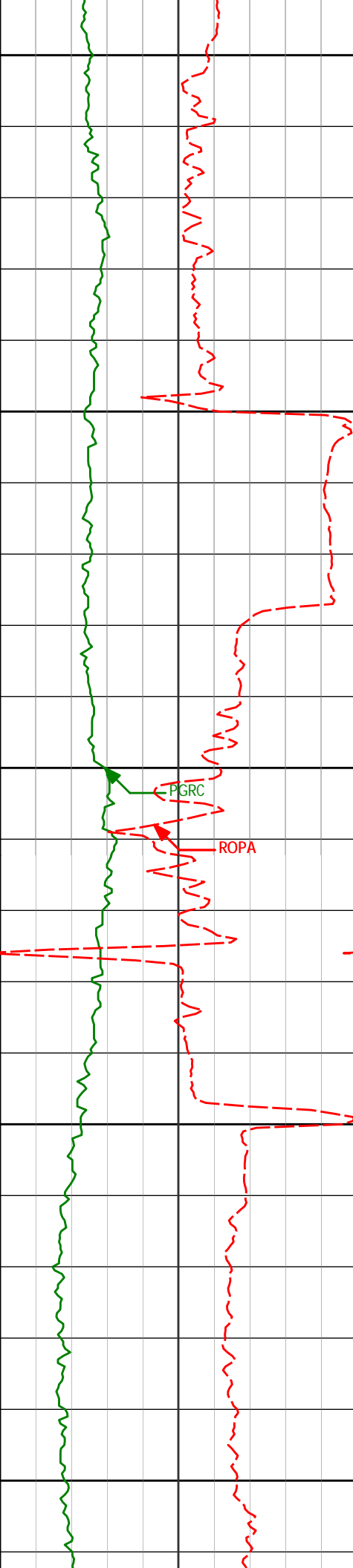
91.26°

179.23°

6998.32'

2805.51'

9450



9500

9550

9600

9650

9700

9498'

90.09°

179.64°

6997.20'

2900.42'

9593'

89.94°

181.75°

6997.17'

2995.40'

9688'

90.86°

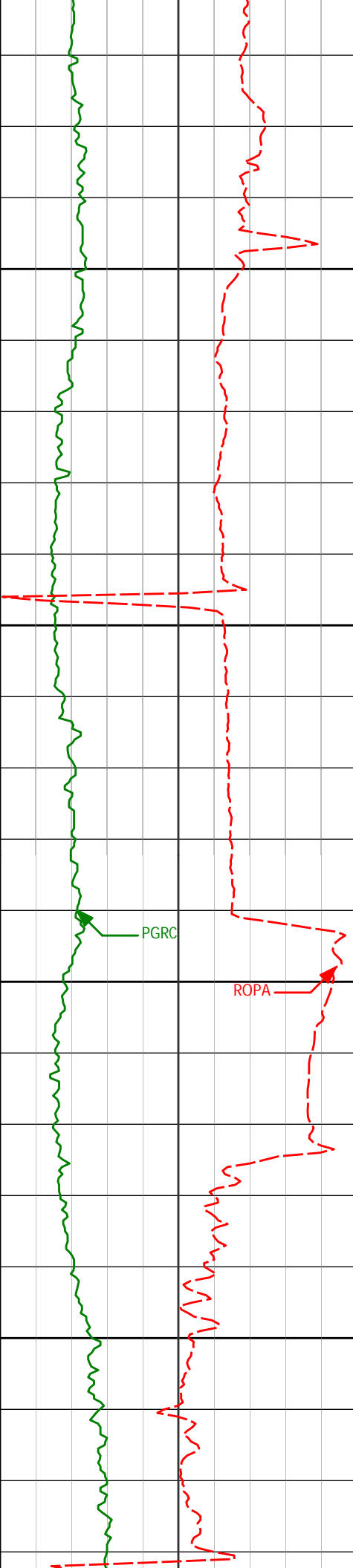
181.94°

6996.51'

3090.40'

PGRC

ROPA



9750

9783' 92.59° 182.86° 6993.65' 3185.34'

9800

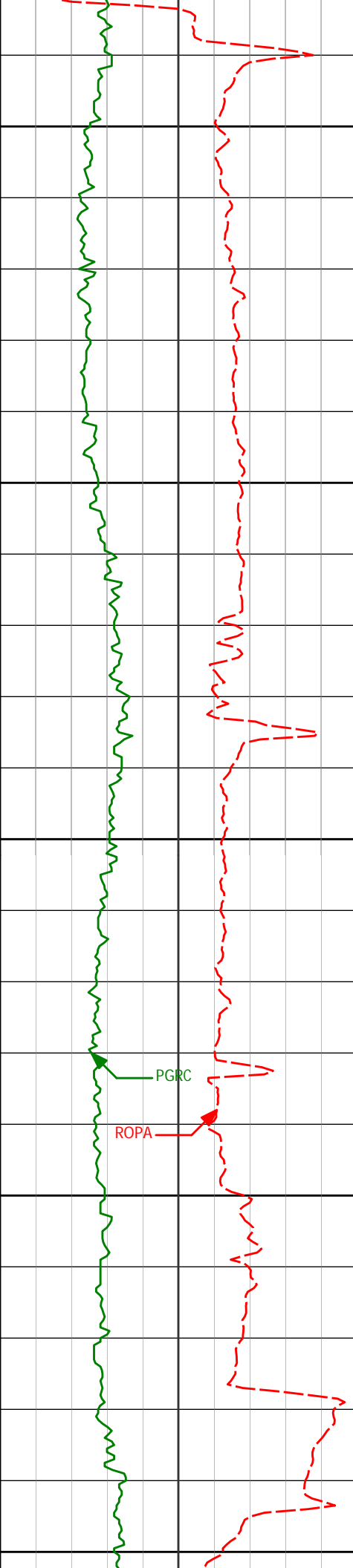
PGRC

ROPA

9850

9878' 89.75° 180.83° 6991.71' 3280.31'

9900



9950

9973'

90.31°

180.99°

6991.66'

3375.30'

10000

10050

10067'

91.30°

180.57°

6990.34'

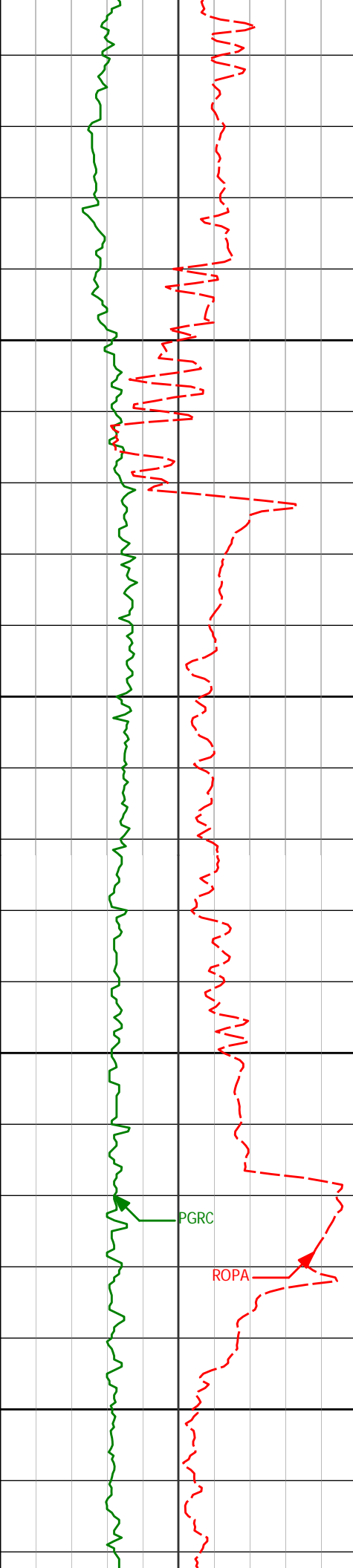
3469.28'

10100

10150

PGRC

ROPA



10162'

89.54°

179.09°

6989.65'

3564.22'

10200

10250

10256'

89.82°

178.62°

6990.18'

3658.10'

10300

PGRC

ROPA

10350

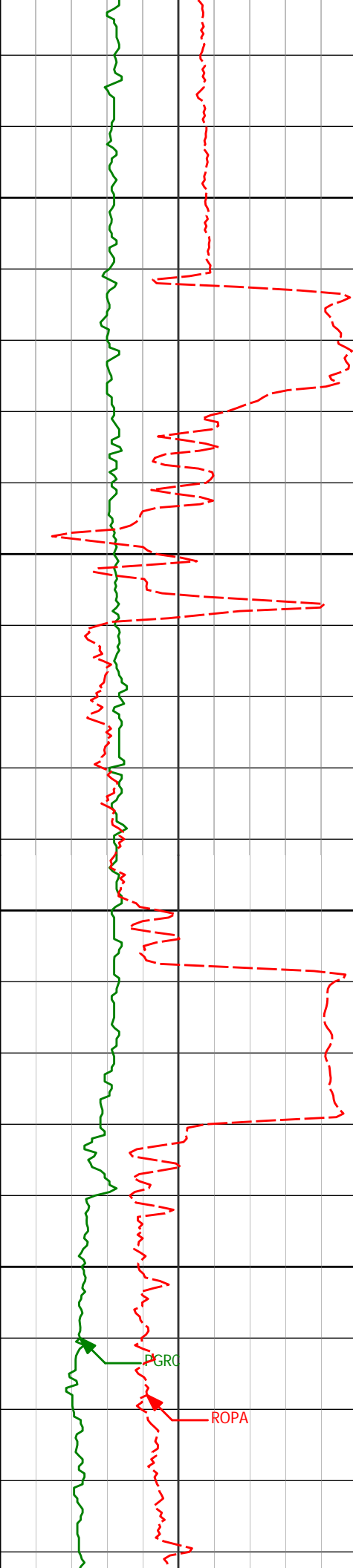
10351'

90.15°

179.45°

6990.21'

3752.99'



10400

10445'

89.11°

178.66°

6990.82'

3846.89'

10450

10500

10540'

88.27°

180.50°

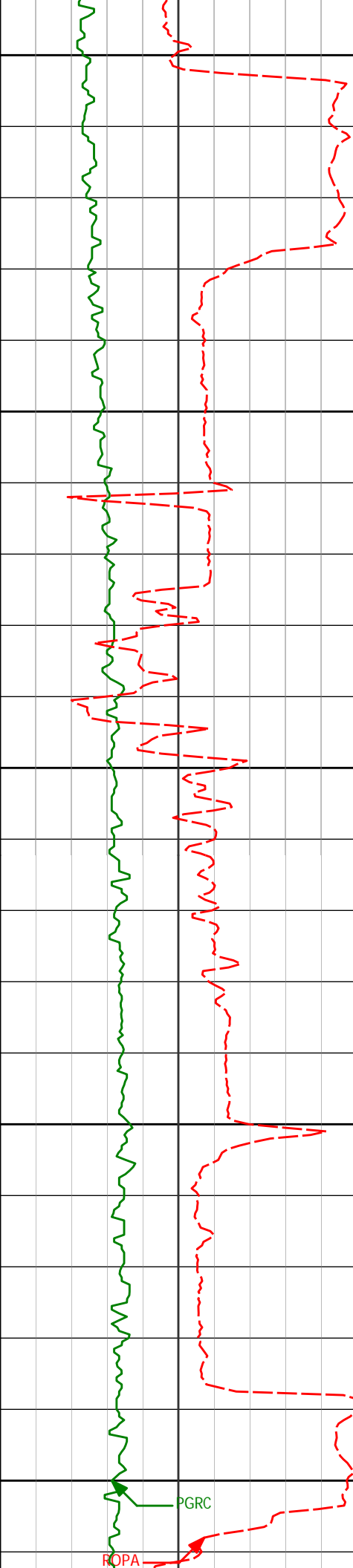
6992.99'

3941.79'

10550

PGRC

ROPA



10600

10634'

88.89°

183.19°

6995.32'

4035.75'

10650

10700

10750

10800

10729'

89.54°

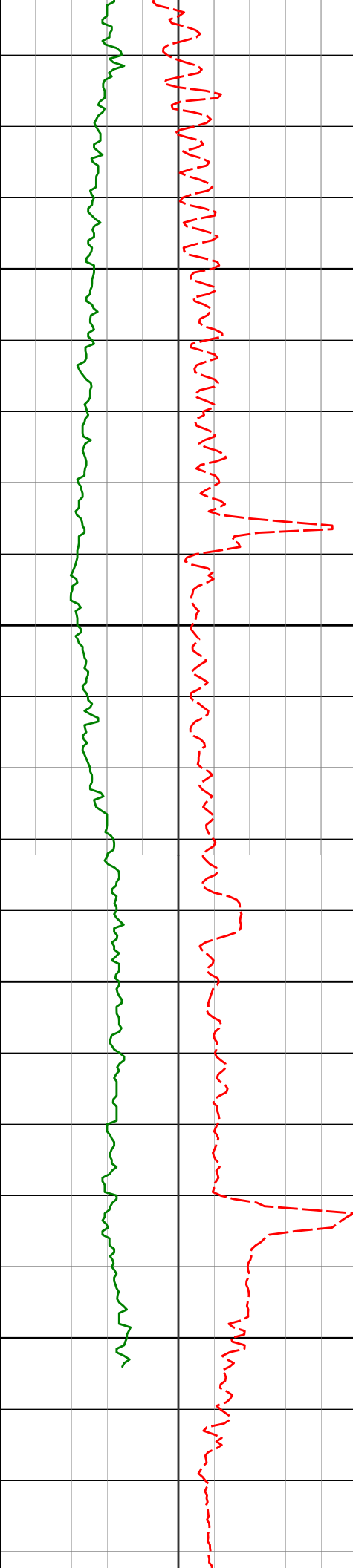
182.08°

6996.62'

4130.73'

PGRC

ROPA



10824'

91.48°

182.28°

6995.78'

4225.72'

10850

10900

10950

11000

10919'

92.25°

181.83°

6992.68'

4320.67'

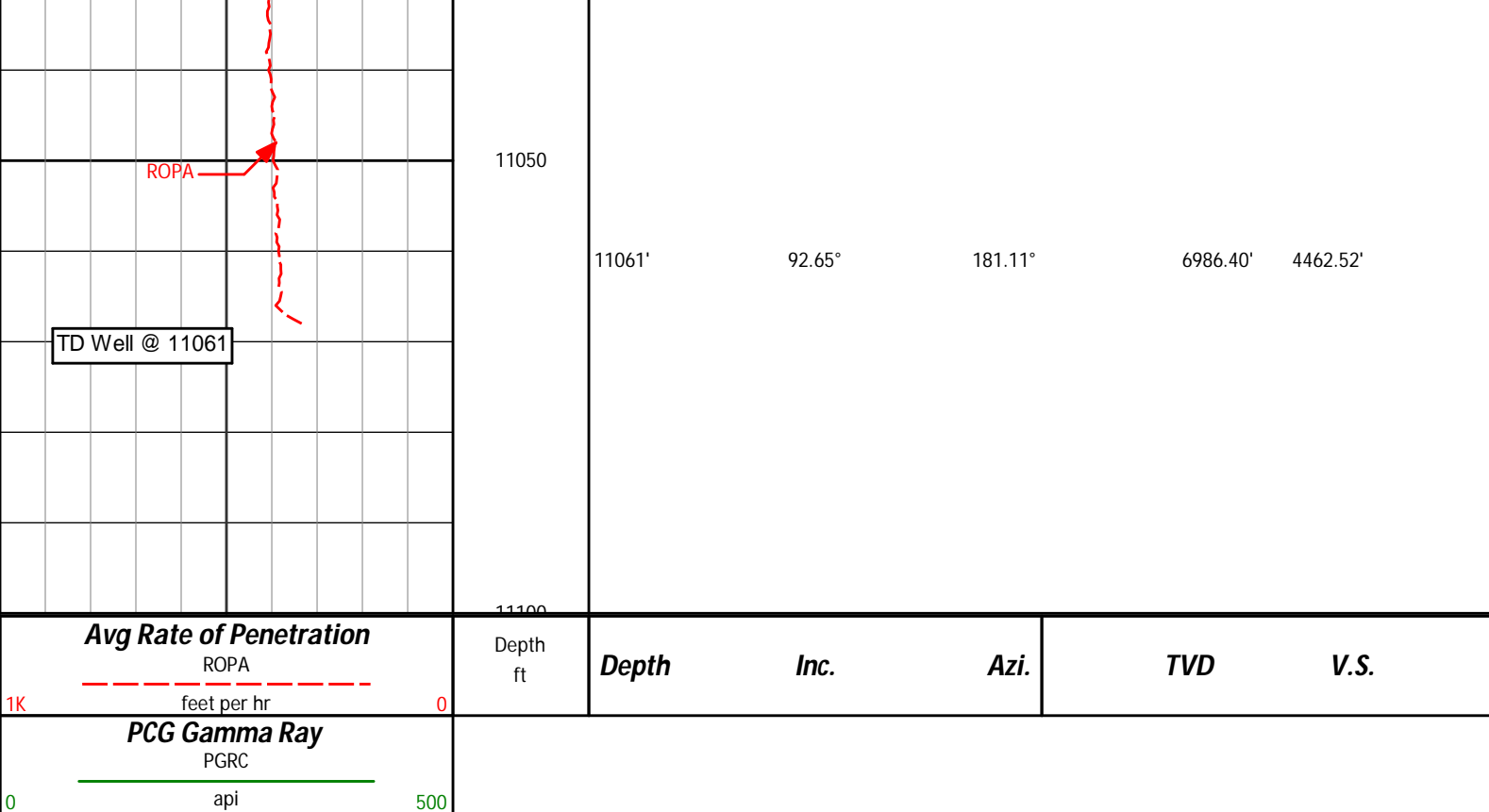
11000'

92.65°

181.11°

6989.22'

4401.59'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Noble Energy
Shelton G25-75HN
Wattenburg
Weld Colorado
USA
CA-XX-0900065798

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
682.00	0.00	0.00	682.00	0.00 N	0.00 E	0.00	TIE-IN
721.00	0.39	55.44	721.00	0.07 N	0.11 E	-0.08	0.99
997.00	0.68	166.84	996.99	1.00 S	1.25 E	0.96	0.33
1272.00	0.72	192.86	1271.97	4.27 S	1.24 E	4.23	0.12
1551.00	0.92	213.84	1550.94	7.85 S	0.41 W	7.86	0.13
1836.00	1.42	235.08	1835.89	11.77 S	4.57 W	11.90	0.23
2025.00	1.71	218.34	2024.82	15.32 S	8.24 W	15.56	0.29
2120.00	3.13	194.12	2119.73	18.95 S	9.75 W	19.24	1.81
2214.00	5.09	214.31	2213.49	24.89 S	12.73 W	25.26	2.57
2309.00	5.91	215.93	2308.05	32.33 S	17.98 W	32.86	0.88
2404.00	8.37	218.23	2402.31	41.73 S	25.13 W	42.46	2.60
2499.00	9.48	214.19	2496.16	53.63 S	33.81 W	54.62	1.35
2594.00	9.35	213.26	2589.88	66.55 S	42.43 W	67.80	0.22
2689.00	10.36	213.79	2683.47	80.10 S	51.41 W	81.61	1.07
2784.00	10.00	212.11	2776.98	94.19 S	60.55 W	95.97	0.49
2879.00	9.35	216.78	2870.63	107.36 S	69.56 W	109.40	1.07
2973.00	8.84	215.61	2963.44	119.35 S	78.34 W	121.65	0.58
3068.00	7.86	214.57	3057.44	130.64 S	86.28 W	133.17	1.04
3163.00	7.12	213.88	3151.62	140.88 S	93.25 W	143.61	0.79
3258.00	3.51	218.86	3246.20	148.04 S	98.36 W	150.92	3.83
3353.00	2.17	197.99	3341.08	152.01 S	100.74 W	154.97	1.76
3448.00	1.01	125.53	3436.05	154.21 S	100.61 W	157.16	2.21
3542.00	0.88	347.45	3530.05	153.99 S	100.09 W	156.92	1.88
3827.00	0.85	280.69	3815.02	151.46 S	102.64 W	154.48	0.33
3922.00	0.83	348.56	3910.01	150.66 S	103.47 W	153.69	0.99

4017.00	1.10	82.36	4005.00	149.86 S	102.71 W	152.87	1.50
4301.00	1.00	80.70	4288.96	149.09 S	97.56 W	151.95	0.03
4586.00	0.50	118.00	4573.93	149.27 S	94.00 W	152.02	0.24
4871.00	1.45	339.31	4858.91	146.48 S	94.18 W	149.24	0.65
4966.00	1.42	326.95	4953.88	144.36 S	95.25 W	147.16	0.33
5061.00	0.22	332.72	5048.87	143.22 S	95.98 W	146.03	1.27
5346.00	0.31	224.61	5333.86	143.29 S	96.77 W	146.13	0.15
5630.00	0.28	337.56	5617.86	143.20 S	97.59 W	146.06	0.18
5915.00	0.59	322.37	5902.85	141.39 S	98.75 W	144.29	0.11
6182.00	0.93	347.13	6169.83	138.20 S	100.06 W	141.14	0.17
6245.00	1.14	335.04	6232.82	137.14 S	100.44 W	140.09	0.48
6293.00	1.31	311.34	6280.81	136.34 S	101.05 W	139.31	1.10
6341.00	4.97	256.80	6328.74	136.45 S	103.49 W	139.50	9.05
6388.00	9.84	256.67	6375.33	137.85 S	109.38 W	141.07	10.36
6436.00	15.14	259.85	6422.18	139.90 S	119.55 W	143.42	11.14
6483.00	17.89	245.11	6467.25	144.02 S	132.15 W	147.92	10.61
6531.00	22.21	232.88	6512.36	152.60 S	146.08 W	156.92	12.50
6578.00	25.51	222.49	6555.35	165.43 S	160.00 W	170.16	11.34
6626.00	28.67	209.76	6598.12	183.07 S	172.71 W	188.17	13.72
6673.00	30.90	197.91	6638.94	204.37 S	182.03 W	209.74	13.37
6721.00	33.92	186.38	6679.50	229.43 S	187.32 W	234.95	14.31
6768.00	37.16	177.61	6717.76	256.67 S	188.18 W	262.21	12.83
6816.00	41.96	174.49	6754.76	287.15 S	186.04 W	292.61	10.81
6862.00	45.40	172.31	6788.03	318.70 S	182.37 W	324.03	8.17
6910.00	49.84	169.79	6820.38	353.70 S	176.83 W	358.85	10.02
6957.00	54.15	169.89	6849.31	390.15 S	170.30 W	395.08	9.17
7005.00	57.94	170.71	6876.12	429.39 S	163.60 W	434.10	8.04
7052.00	62.24	172.00	6899.55	469.65 S	157.48 W	474.17	9.44
7100.00	65.98	172.77	6920.51	512.45 S	151.77 W	516.77	7.93
7147.00	69.33	172.94	6938.37	555.58 S	146.37 W	559.72	7.14
7195.00	72.85	173.83	6953.93	600.68 S	141.14 W	604.64	7.53
7242.00	74.93	176.11	6966.97	645.65 S	137.19 W	649.48	6.43
7290.00	78.13	178.38	6978.15	692.27 S	134.95 W	696.01	8.09
7333.00	81.71	178.24	6985.67	734.58 S	133.70 W	738.26	8.32
7389.00	85.53	177.78	6991.90	790.19 S	131.77 W	793.79	6.87
7413.00	85.38	177.54	6993.80	814.09 S	130.79 W	817.65	1.18
7507.00	88.00	177.40	6999.23	907.83 S	126.64 W	911.23	2.79
7602.00	88.61	177.30	7002.04	1002.69 S	122.25 W	1005.91	0.65
7697.00	91.48	177.79	7001.97	1097.59 S	118.18 W	1100.65	3.07
7791.00	90.37	178.36	7000.45	1191.53 S	115.02 W	1194.44	1.33
7886.00	90.40	178.35	6999.81	1286.48 S	112.29 W	1289.28	0.03
7981.00	90.06	181.29	6999.43	1381.47 S	111.99 W	1384.21	3.11
8076.00	90.22	180.07	6999.20	1476.46 S	113.12 W	1479.19	1.30
8171.00	90.96	179.73	6998.23	1571.46 S	112.94 W	1574.14	0.86
8265.00	89.78	179.70	6997.62	1665.45 S	112.48 W	1668.08	1.25
8360.00	90.49	178.70	6997.39	1760.44 S	111.15 W	1762.99	1.29
8455.00	89.54	178.95	6997.37	1855.42 S	109.20 W	1857.86	1.03
8550.00	90.31	180.70	6997.49	1950.42 S	108.92 W	1952.81	2.01
8645.00	89.01	181.06	6998.05	2045.40 S	110.38 W	2047.79	1.41
8739.00	89.97	181.39	6998.89	2139.37 S	112.39 W	2141.78	1.07
8834.00	90.80	180.38	6998.25	2234.36 S	113.85 W	2236.77	1.38
8929.00	89.14	181.02	6998.30	2329.35 S	115.02 W	2331.75	1.88
9024.00	89.41	180.76	6999.50	2424.33 S	116.50 W	2426.73	0.40
9119.00	89.88	179.95	7000.09	2519.32 S	117.09 W	2521.70	0.98
9213.00	90.28	179.26	6999.96	2613.32 S	116.45 W	2615.64	0.85
9308.00	90.22	180.14	6999.55	2708.32 S	115.95 W	2710.58	0.93
9403.00	91.26	179.23	6998.32	2803.31 S	115.43 W	2805.51	1.46
9498.00	90.09	179.64	6997.20	2898.29 S	114.49 W	2900.42	1.31
9593.00	89.94	181.75	6997.17	2993.28 S	115.63 W	2995.40	2.22
9688.00	90.86	181.94	6996.51	3088.23 S	118.69 W	3090.40	0.99
9783.00	92.59	182.86	6993.65	3183.10 S	122.66 W	3185.34	2.06
9878.00	89.75	180.83	6991.71	3278.01 S	125.71 W	3280.31	3.67
9973.00	90.31	180.99	6991.66	3373.00 S	127.22 W	3375.30	0.61
10067.00	91.30	180.57	6990.34	3466.98 S	128.50 W	3469.28	1.14
10162.00	89.54	179.09	6989.65	3561.97 S	128.22 W	3564.22	2.42
10256.00	89.82	178.62	6990.18	3655.95 S	126.34 W	3658.10	0.59
10351.00	90.15	179.45	6990.21	3750.94 S	124.75 W	3752.99	0.95
10445.00	89.11	178.66	6990.82	3844.92 S	123.20 W	3846.89	1.40
10540.00	88.27	180.50	6992.99	3939.89 S	122.50 W	3941.79	2.12
10634.00	88.89	183.19	6995.32	4033.80 S	125.53 W	4035.75	2.94
10729.00	89.54	182.08	6996.62	4128.69 S	129.90 W	4130.73	1.35
10824.00	91.48	182.28	6995.78	4223.61 S	133.51 W	4225.72	2.06
10919.00	92.25	181.83	6992.68	4318.50 S	136.91 W	4320.67	0.93
11000.00	92.65	181.11	6989.22	4399.40 S	139.00 W	4401.59	1.01
11061.00	92.65	181.11	6986.40	4460.32 S	140.18 W	4462.52	0.01

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 CLOSURE OF 181.80 DEGREES (GRID)
A TOTAL CORRECTION OF 8.04 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11061.00 FEET
IS 4462.53 FEET ALONG 181.80 DEGREES (GRID)**

Final survey projected to TD