



1 : 240 / 1 : 600

WELL INFORMATION					
MWD Run Number	100	200	300		
Date run completed	08-Oct-12	09-Oct-12	13-Oct-12		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.750		
Log Start Depth (MD, ft)	815.00	4,963.00	7,146.00		
Log End Depth (MD, ft)	4,963.00	7,146.00	11,148.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	02-Oct-12 21:35	08-Oct-12 10:39	03-Oct-12 01:01		
Drill/Wipe End Date and Time	02-Oct-12 21:35	09-Oct-12 19:30	03-Oct-12 01:01		
Min Inc (deg) @ Depth (MD, ft)	.13 @ 4,676.00	.36 @ 5,243.00	85.64 @ 7,166.00		
Max Inc (deg) @ Depth (MD, ft)	13.06 @ 3,158.00	82.27 @ 7,095.00	92.13 @ 8,076.00		
Bit TFA(in2) / Bit Type	.75 / PDC	.86 / PDC	.46 /		
Flow Rate (gpm)	586.96	566.73	269.20		
Max AV (fpm) / CV (fpm) @ MWD	325.0 / 255.0	466.4 / 415.0	355.0 / 426.0		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	9.00 / 30.00	9.90 / 51.00	9.33 / 35.00		
Filtrate CL (ppm)	1,600.00	2,000.00	1,700.00		
pH / Fluid Loss (mptm)	9.30 / 20	9.50 / 7	9.80 / 9		
PV (cP) / YP (Ihf2)	4 / 2.00	16 / 19.00	8 / 8.00		
% Solids / % Sand	4.00 / 0.50	10.20 / 0.15	6.00 / 0.15		
% Oil / Oil:Water Ratio	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		
Rmf @ Measured Temp (degF)	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		
Min Tool Temp (deg F) / S	107.50 / PDC	106.00 / PDC	222.10 / PDC		

Max Tool Temp (degF) / Source	137.50 / PCDC	162.80 / PCM	226.10 / PCM		
Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A		
Lead MWD Engineer	Adam Sampson	Adam Sampson	Adam Sampson		
Customer Representative	Jim Turner	Jim Turner	Jim Turner		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.76	5.76	5.76		
Sub Serial Number	10917007/246475	10917007/246475	11706795		
Insert Serial Number	11680798	11680798	11145594		
Date and Time Initialized	26-Sep-12 22:27	26-Sep-12 22:27	10-Oct-12 04:27		
Date and Time Read	10-Oct-12 02:00	10-Oct-12 02:17	13-Oct-12 06:53		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	52.00	51.00	62.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	10917007/246475	10917007/246475	11706795		
Sonde Serial Number	11145699	11145699	11833228		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	80.60	260.90	345.60		

Gamma Ray Sensor Information

Tool Type	PCG	PCG	PCG		
Distance From Bit (ft)	54.61	53.37	64.53		
Recorded Sample Period (sec)	10	10	10		
Software Version	8.15	8.15	8.15		
Sub Serial Number	10917007/246475	10917007/246475	11706795		
Insert/Sonde Serial Number	11293406	11293406	11293298		

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

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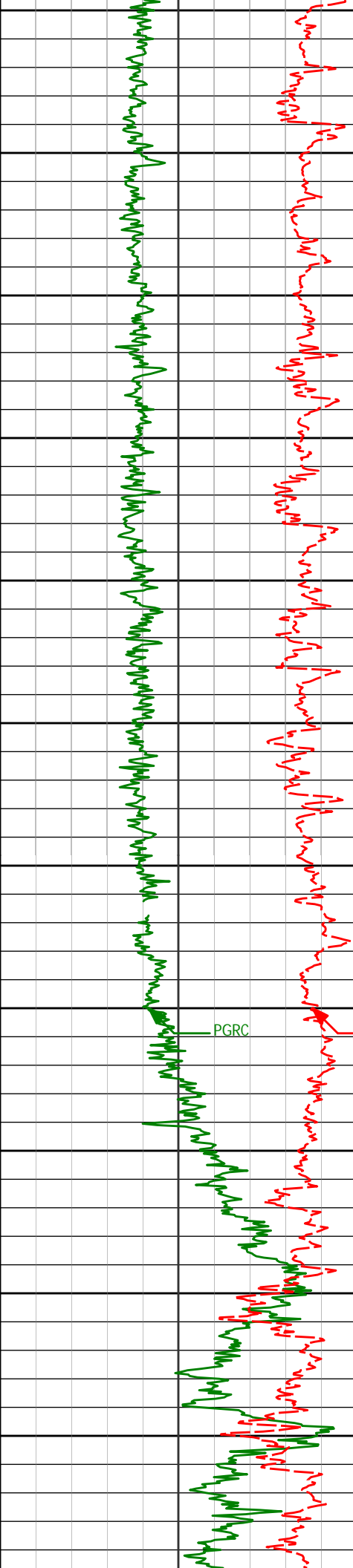
HALLIBURTON

Sperry Drilling Services

MD Main Log 1:600

Noble
Wells Ranch AE08-67-1HNR
HP 321
T5N R62W





6250

6287'

20.59°

101.23°

6261.56'

-170.87'

6300

6335'

23.48°

94.47°

6306.06'

-153.06'

6350

6382'

26.94°

89.73°

6348.58'

-133.07'

6400

6430'

30.20°

90.13°

6390.73'

-110.12'

6450

6477'

33.33°

90.45°

6430.68'

-85.38'

6500

6525'

36.42°

89.84°

6470.06'

-57.94'

6550

6571'

39.69°

89.23°

6506.27'

-29.59'

6600

6619'

43.46°

89.40°

6542.17'

2.26'

6650

6666'

48.46°

87.75°

6574.84'

36.03'

6700

6714'

53.03°

87.29°

6605.20'

73.15'

6750

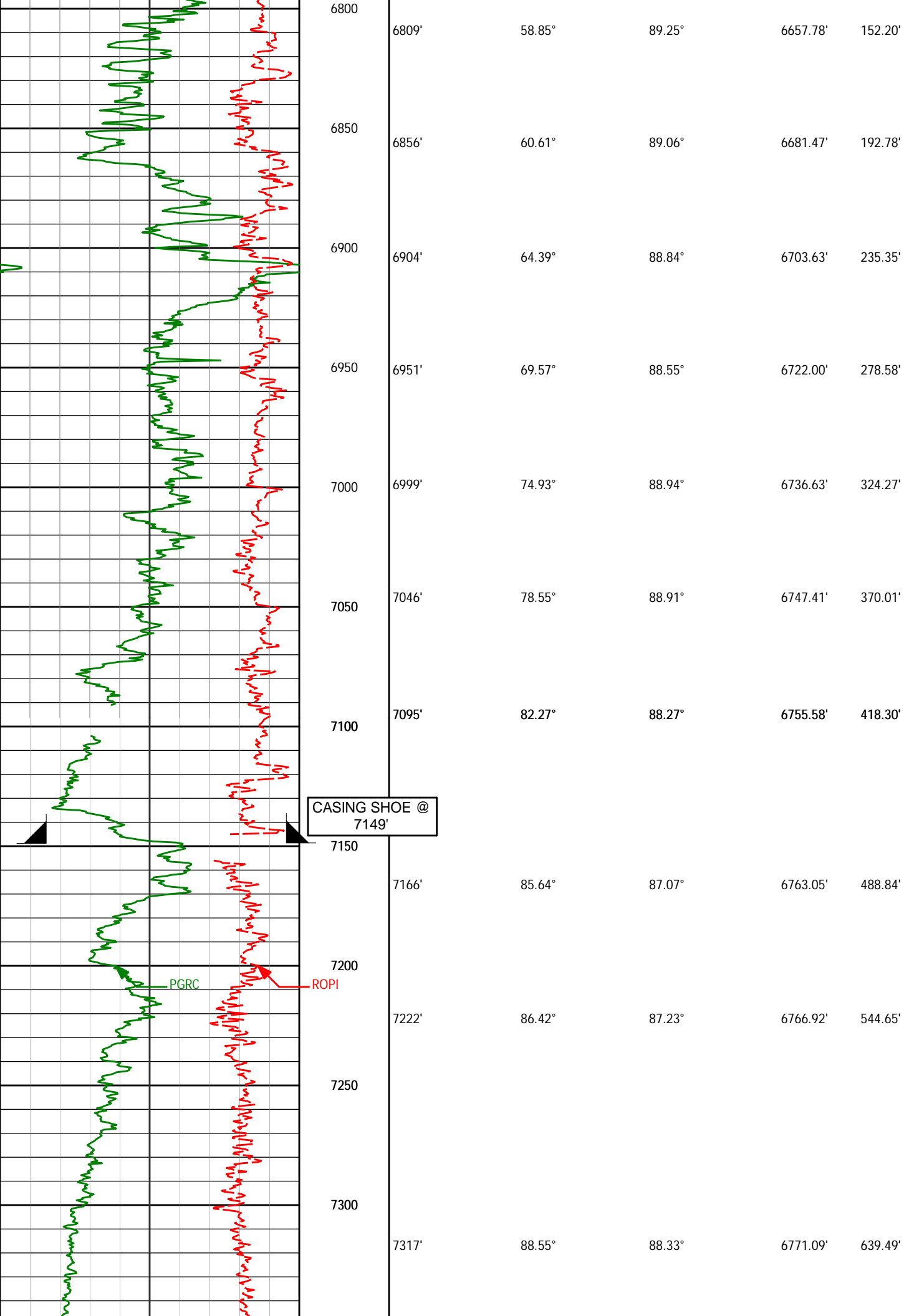
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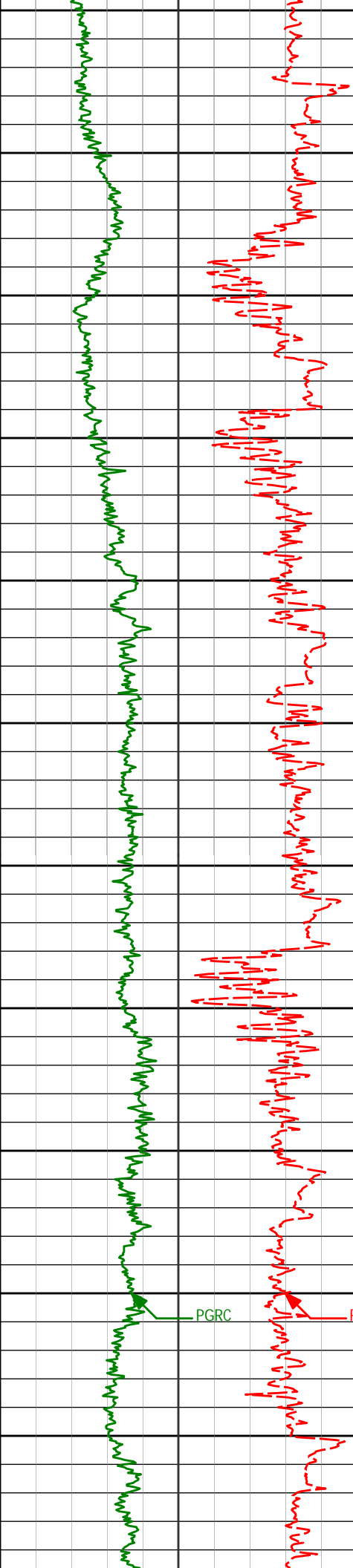
56.80°

88.12°

6632.22'

111.58'





7350
7400
7450
7500
7550
7600
7650
7700
7750
7800
7850

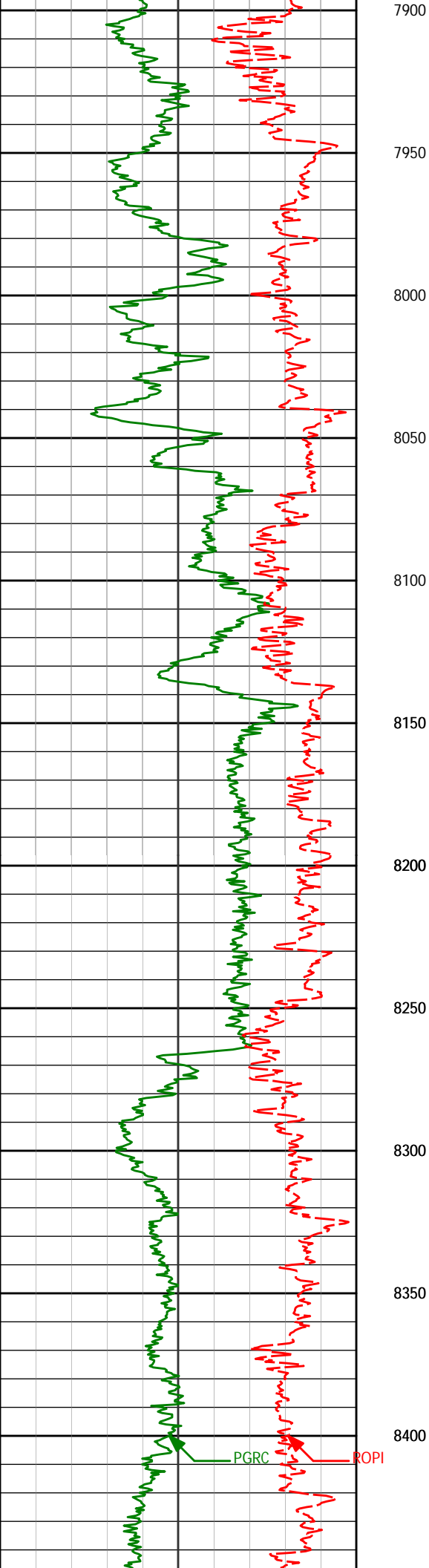
7412'
7507'
7602'
7697'
7792'
7887'

89.01°
90.03°
89.41°
89.69°
87.44°
90.86°

89.00°
87.72°
87.24°
88.12°
84.89°
86.70°

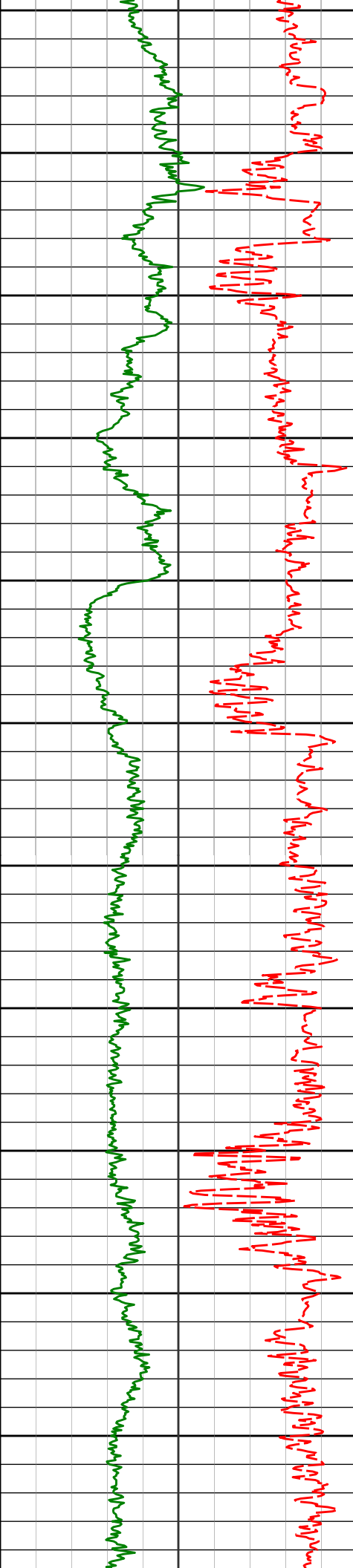
6773.10'
6773.90'
6774.36'
6775.10'
6777.47'
6778.88'

734.45'
829.41'
924.33'
1019.26'
1114.05'
1208.79'



7981'	91.70°	89.96°	6776.78'	1302.72'
8076'	92.13°	89.50°	6773.60'	1397.67'
8171'	91.26°	88.74°	6770.79'	1492.62'
8266'	89.04°	88.40°	6770.54'	1587.59'
8361'	89.48°	87.11°	6771.77'	1682.52'

PGRC
ROPI



8450

8500

8550

8600

8650

8700

8750

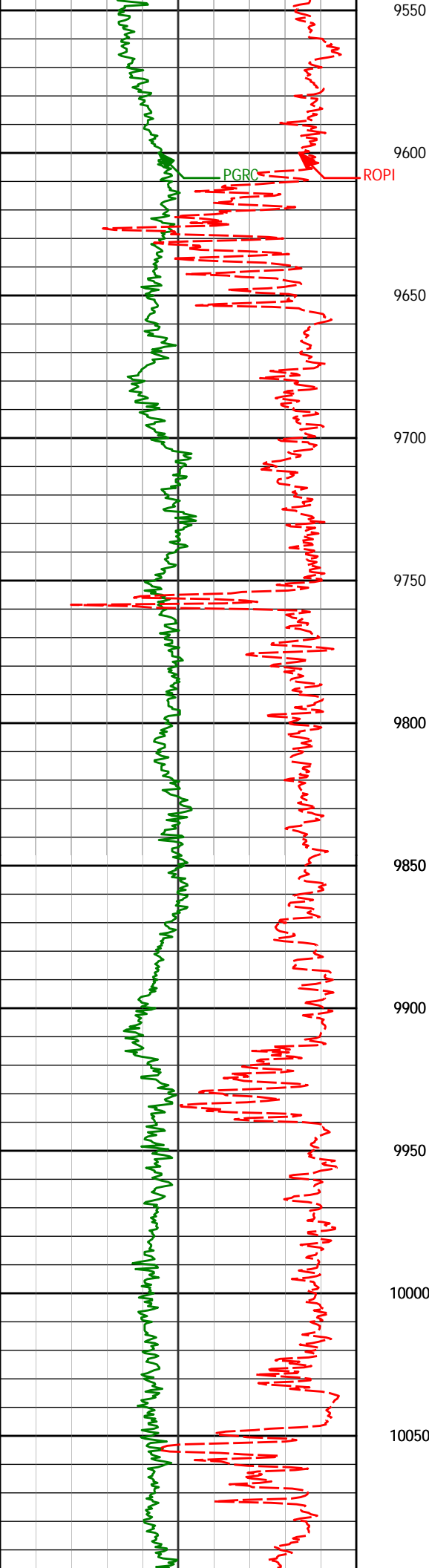
8800

8850

8900

8950

8456'	90.09°	88.66°	6772.12'	1777.46'
8551'	90.93°	88.64°	6771.28'	1872.43'
8646'	90.65°	89.03°	6769.98'	1967.41'
8740'	89.04°	89.49°	6770.23'	2061.40'
8835'	90.06°	88.66°	6770.97'	2156.39'
8930'	89.88°	90.09°	6771.02'	2251.39'



9550

9600

9650

9700

9750

9800

9850

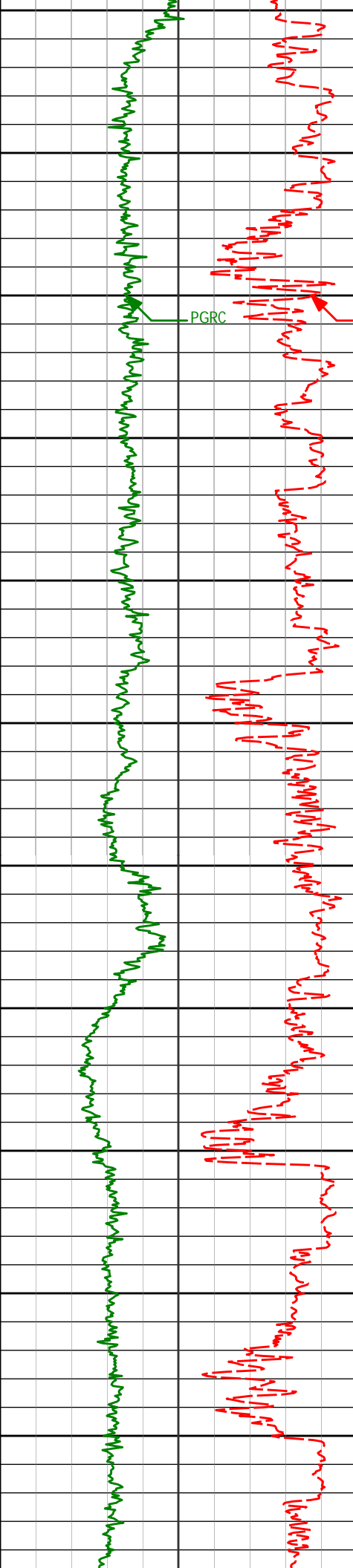
9900

9950

10000

10050

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9689'	89.08°	86.67°	6773.43'	3009.89'
9784'	90.86°	87.05°	6773.49'	3104.76'
9879'	91.14°	87.74°	6771.83'	3199.66'
9974'	90.12°	88.14°	6770.78'	3294.60'
10069'	90.83°	88.86°	6769.99'	3389.57'



10100

10150

10163'

90.40°

90.00°

6768.97'

3483.56'

10200

PGRC

10250

10258'

89.97°

90.24°

6768.67'

3578.56'

10300

10350

10353'

91.39°

89.64°

6767.54'

3673.55'

10400

10450

10448'

91.05°

88.00°

6765.52'

3768.51'

10500

10550

10543'

90.31°

88.36°

6764.40'

3863.47'

10600

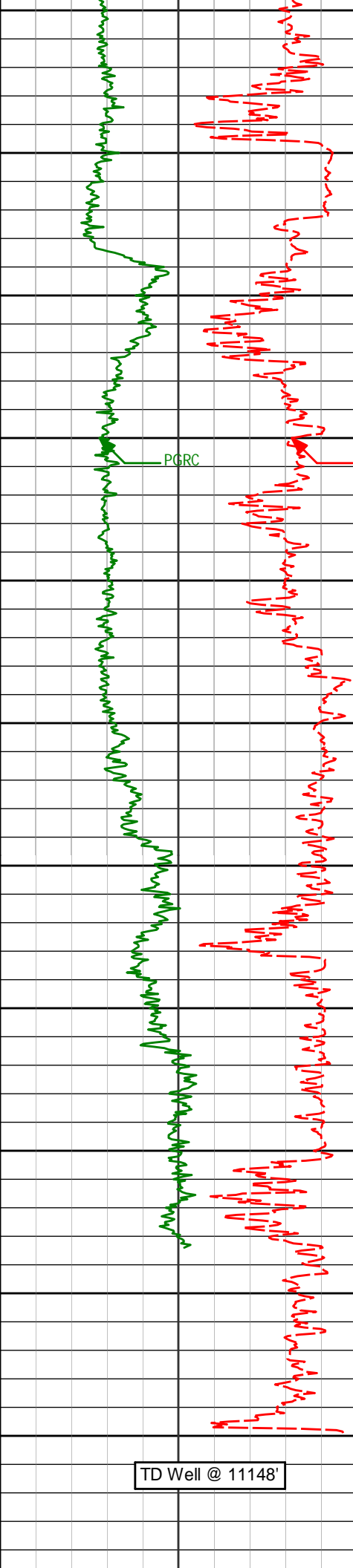
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89.75°

89.38°

6764.34'

3958.45'



10650

10700

10733'

10750

10800

10828'

10850

10900

10923'

10950

11000

11017'

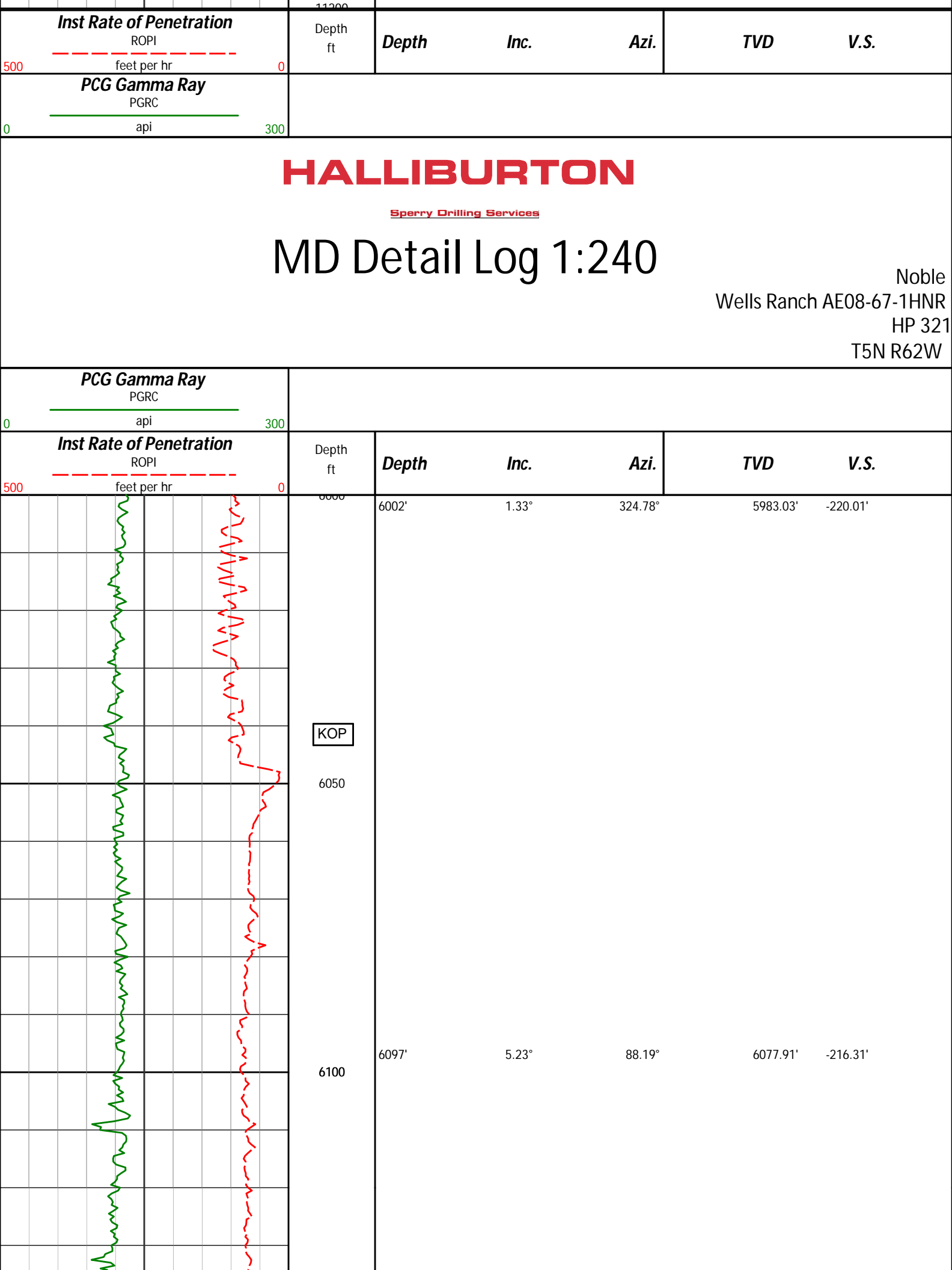
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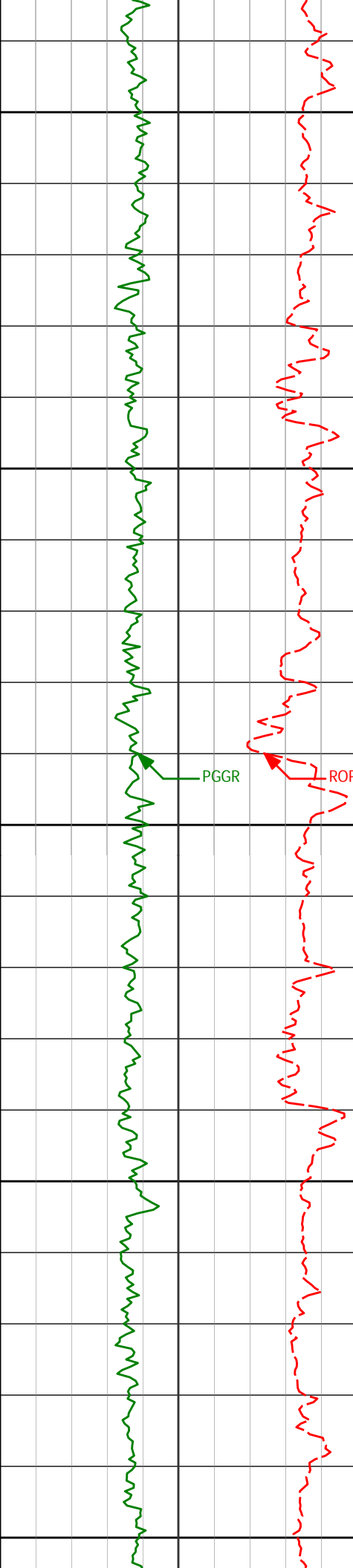
11086'

11100

11148'

10733'	88.79°	87.61°	6765.55'	4053.41'
10828'	89.91°	87.94°	6766.62'	4148.35'
10923'	88.46°	87.86°	6767.98'	4243.28'
11017'	89.91°	87.79°	6769.32'	4337.21'
11086'	90.93°	89.07°	6768.82'	4406.19'
11148'	90.93°	89.07°	6767.81'	4468.17'





6150

6200

6250

6300

6350

6145'

10.97°

96.32°

6125.41'

-209.58'

6192'

14.85°

104.01°

6171.22'

-199.29'

6240'

18.20°

104.53°

6217.23'

-186.07'

6287'

20.59°

101.23°

6261.56'

-170.87'

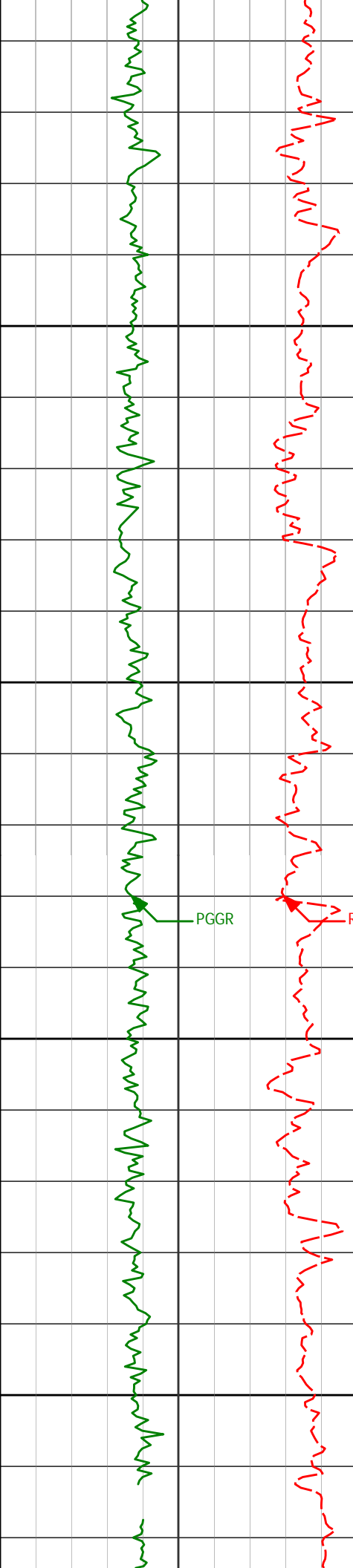
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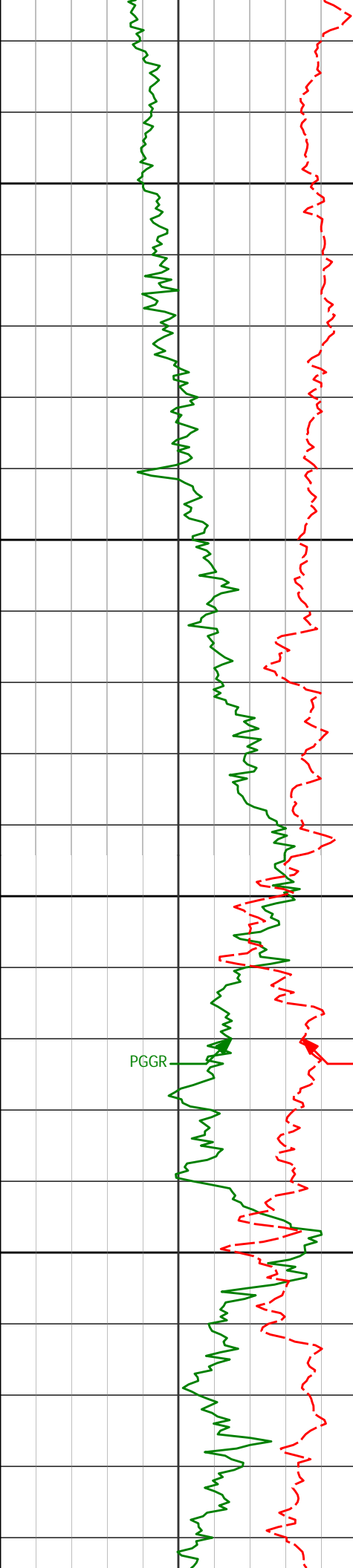
94.47°

6306.06'

-153.06'



6382'	26.94°	89.73°	6348.58'	-133.07'
6400				
6430'	30.20°	90.13°	6390.73'	-110.12'
6450				
6477'	33.33°	90.45°	6430.68'	-85.38'
6500				
6525'	36.42°	89.84°	6470.06'	-57.94'
6550				
6571'	39.69°	89.23°	6506.27'	-29.59'



6600

6619'

43.46°

89.40°

6542.17'

2.26'

6650

6666'

48.46°

87.75°

6574.84'

36.03'

6700

6714'

53.03°

87.29°

6605.20'

73.15'

PGGR

ROPI

6750

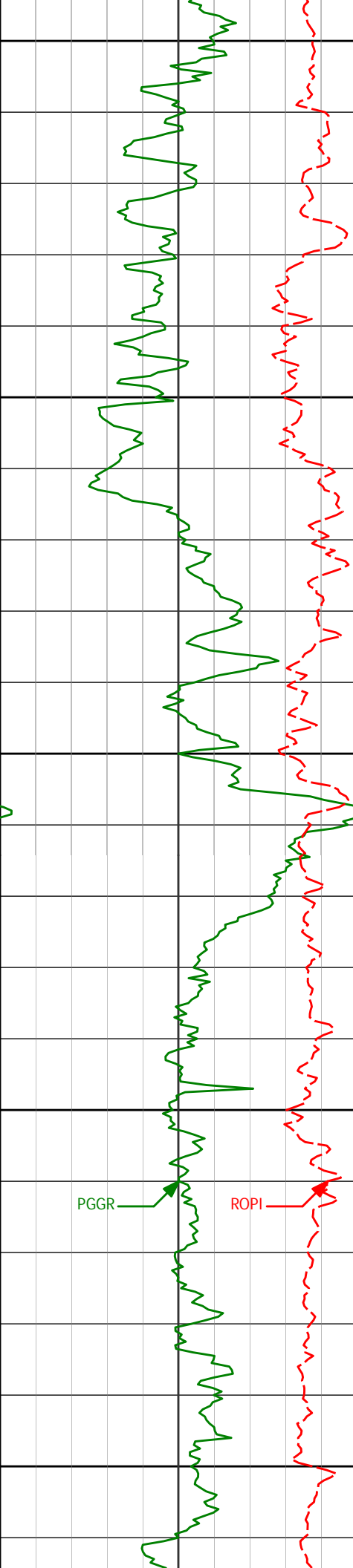
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56.80°

88.12°

6632.22'

111.58'



6800

6809'

58.85°

89.25°

6657.78'

152.20'

6850

6856'

60.61°

89.06°

6681.47'

192.78'

6900

6904'

64.39°

88.84°

6703.63'

235.35'

6950

6951'

69.57°

88.55°

6722.00'

278.58'

PGGR

ROPI

7000

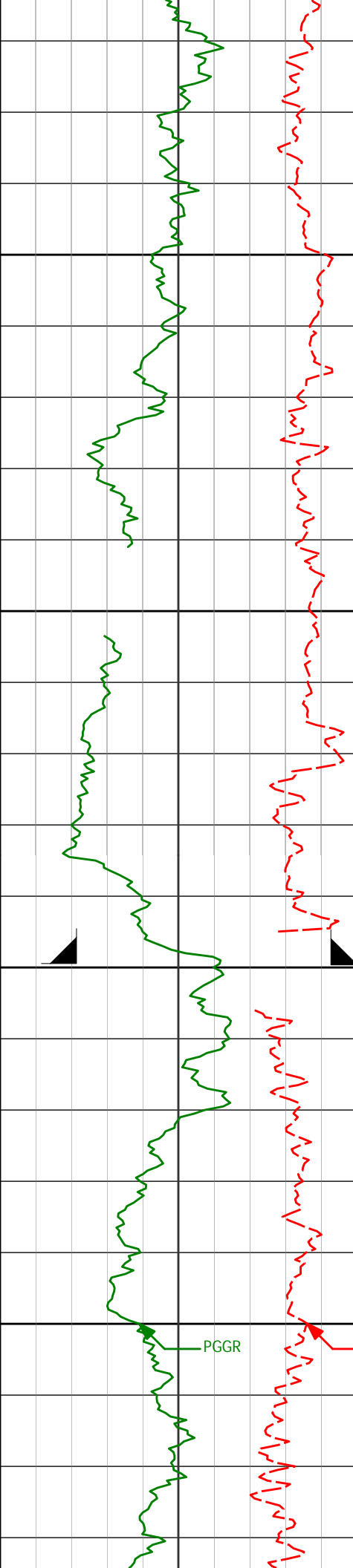
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74.93°

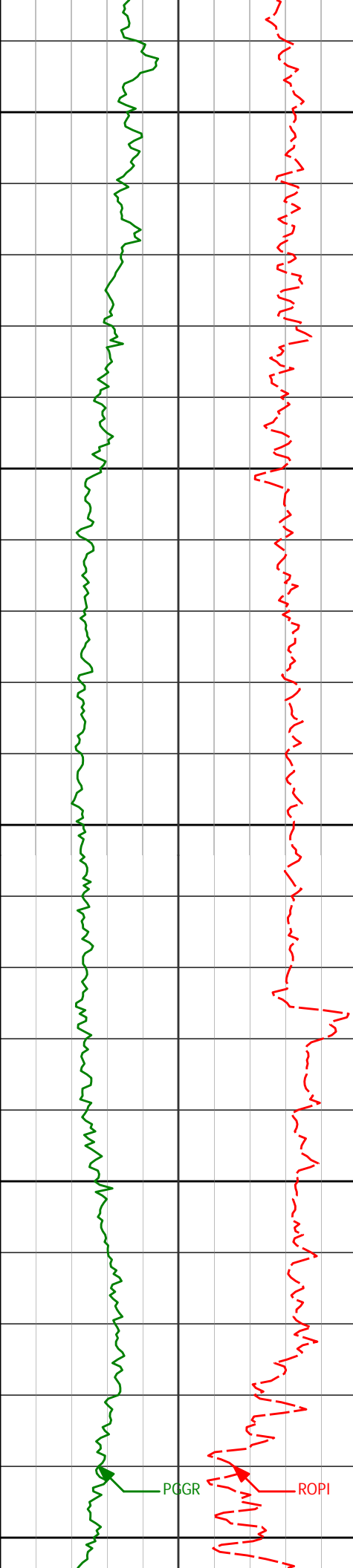
88.94°

6736.63'

324.27'



7050	7046'	78.55°	88.91°	6747.41'	370.01'
7100	7095'	82.27°	88.27°	6755.58'	418.30'
7150	CASING SHOE @ 7149'				
7200	7166'	85.64°	87.07°	6763.05'	488.84'
	7222'	86.42°	87.23°	6766.92'	544.65'



7250

7300

7350

7400

7450

7317'

88.55°

88.33°

6771.09'

639.49'

7412'

89.01°

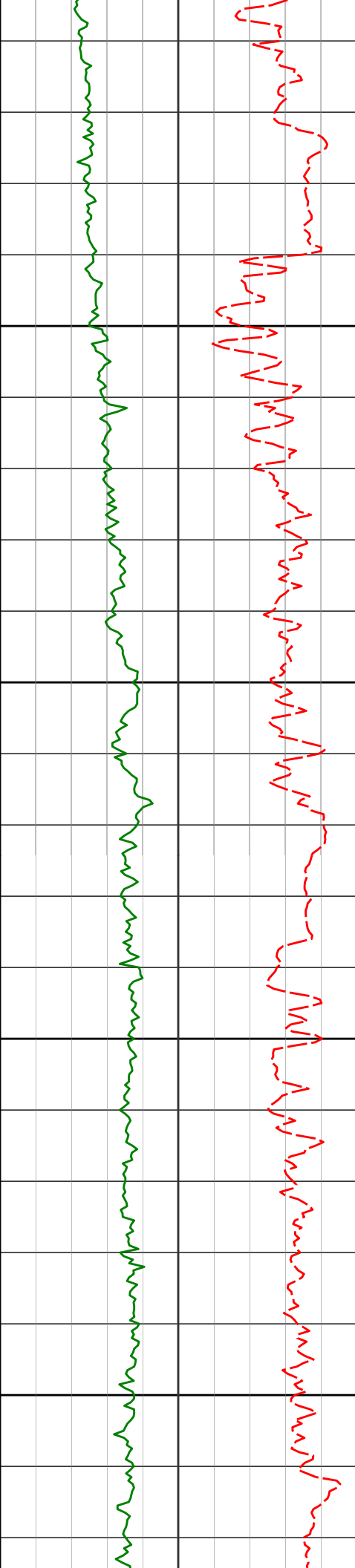
89.00°

6773.10'

734.45'

PGGR

ROPI



7500

7507'

90.03°

87.72°

6773.90'

829.41'

7550

7600

7602'

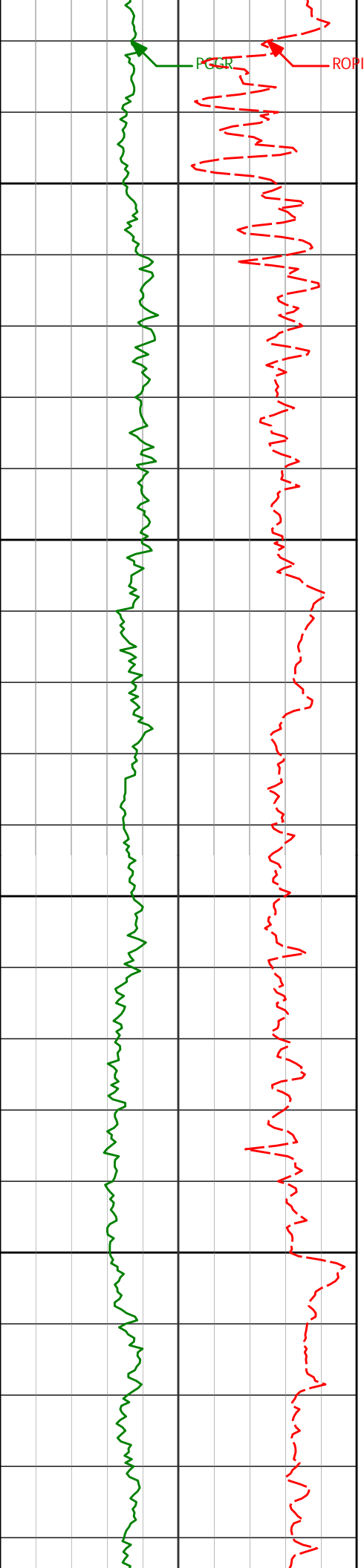
89.41°

87.24°

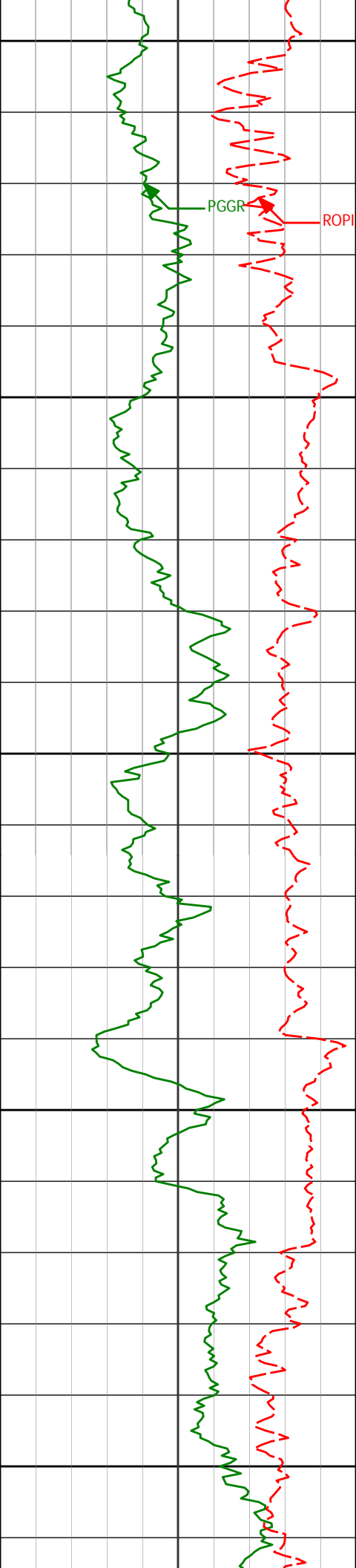
6774.36'

924.33'

7650



Station	Distance (ft)	Bearing	Distance (ft)	Bearing	Distance (ft)	Bearing	Distance (ft)	Bearing
7700	7697'	89.69°	88.12°	6775.10'	1019.26'			
7750								
7800	7792'	87.44°	84.89°	6777.47'	1114.05'			
7850								
	7887'	90.86°	86.70°	6778.88'	1208.79'			



7900

7950

8000

8050

8100

7981'

91.70°

89.96°

6776.78'

1302.72'

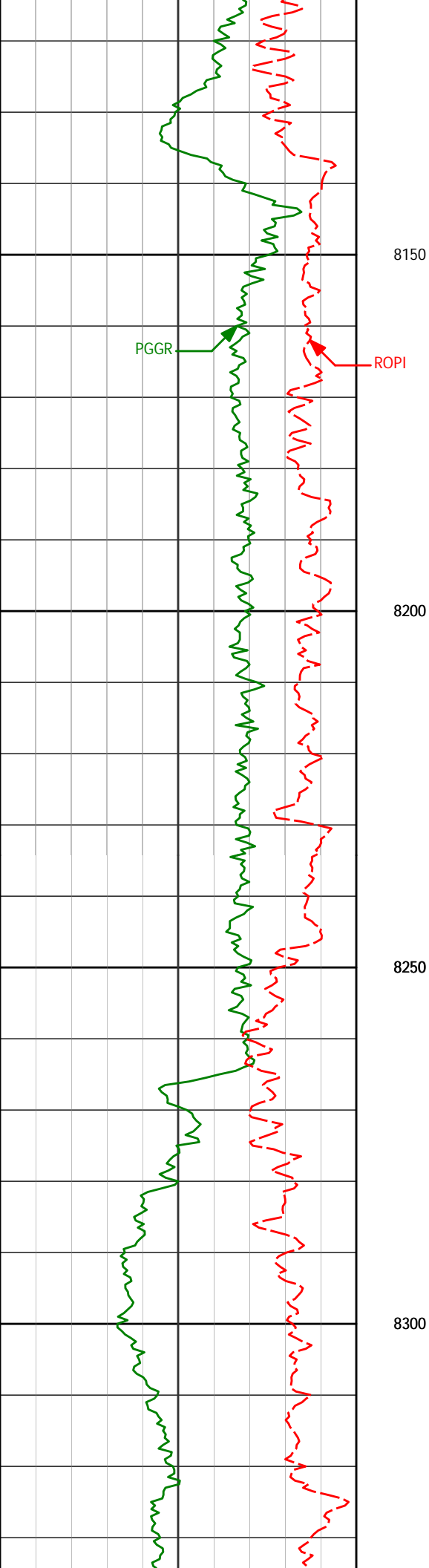
8076'

92.13°

89.50°

6773.60'

1397.67'



8171'

91.26°

88.74°

6770.79'

1492.62'

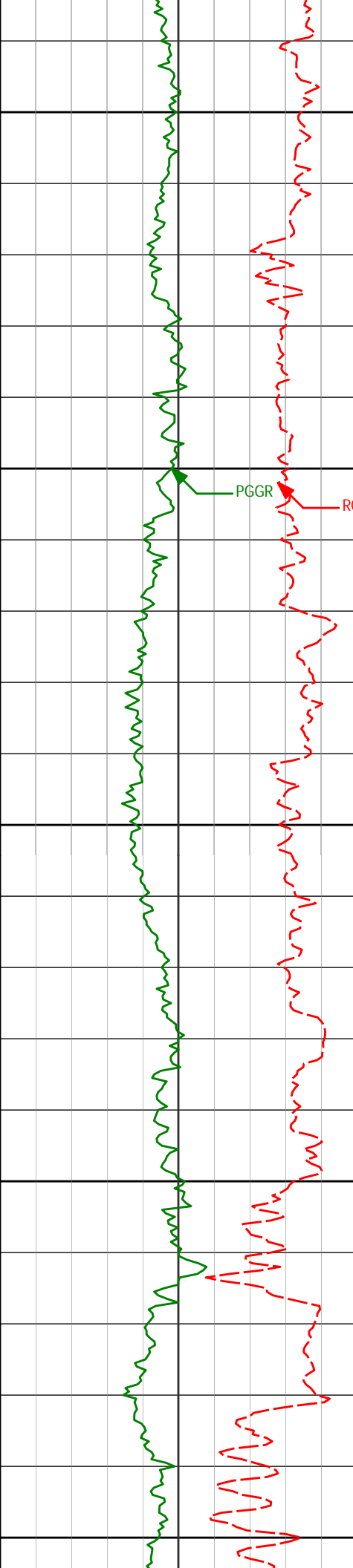
8266'

89.04°

88.40°

6770.54'

1587.59'



8350

8361'

89.48°

87.11°

6771.77'

1682.52'

8400

PGGR

ROPI

8450

8456'

90.09°

88.66°

6772.12'

1777.46'

8500

8550

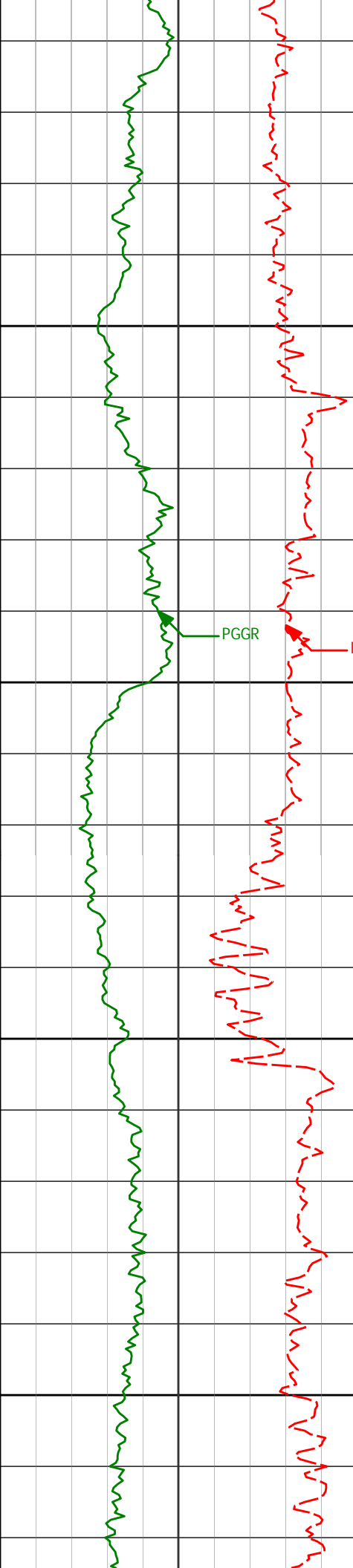
8551'

90.93°

88.64°

6771.28'

1872.43'



8600

8650

8700

8750

PGGR

ROPI

8646'

90.65°

89.03°

6769.98'

1967.41'

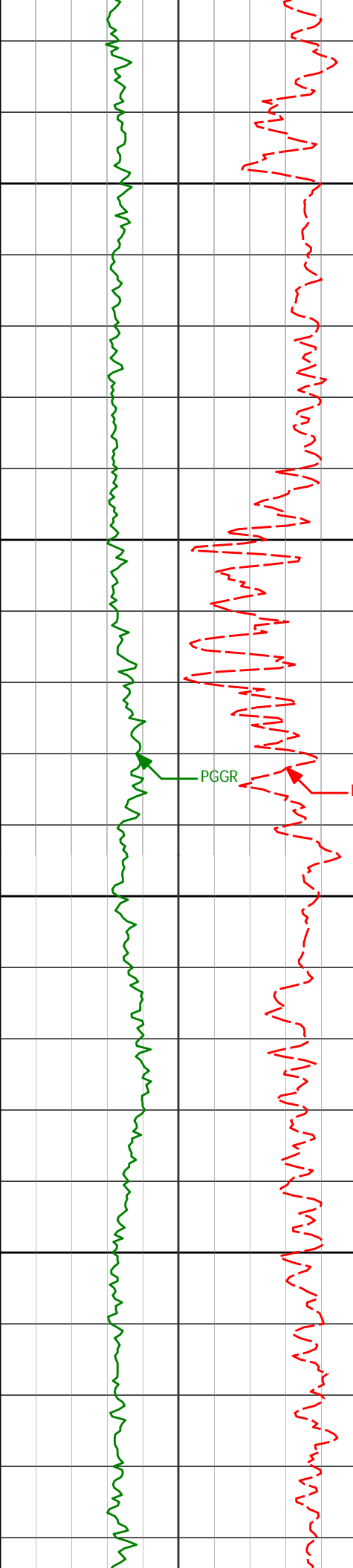
8740'

89.04°

89.49°

6770.23'

2061.40'



8800

8835'

90.06°

88.66°

6770.97'

2156.39'

8850

PGGR

ROPI

8900

8930'

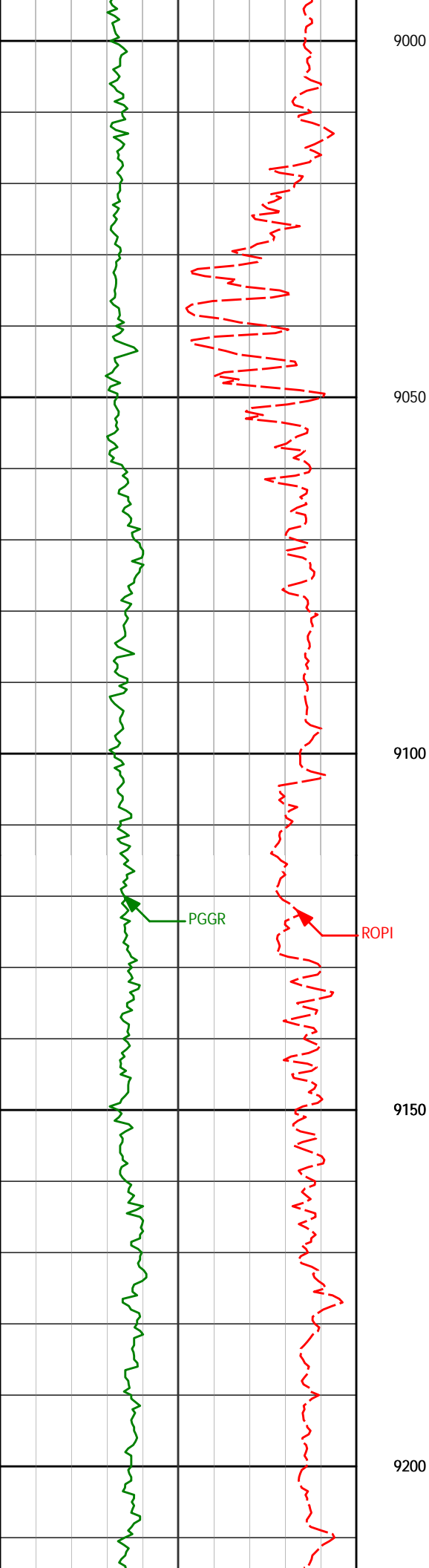
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90.09°

6771.02'

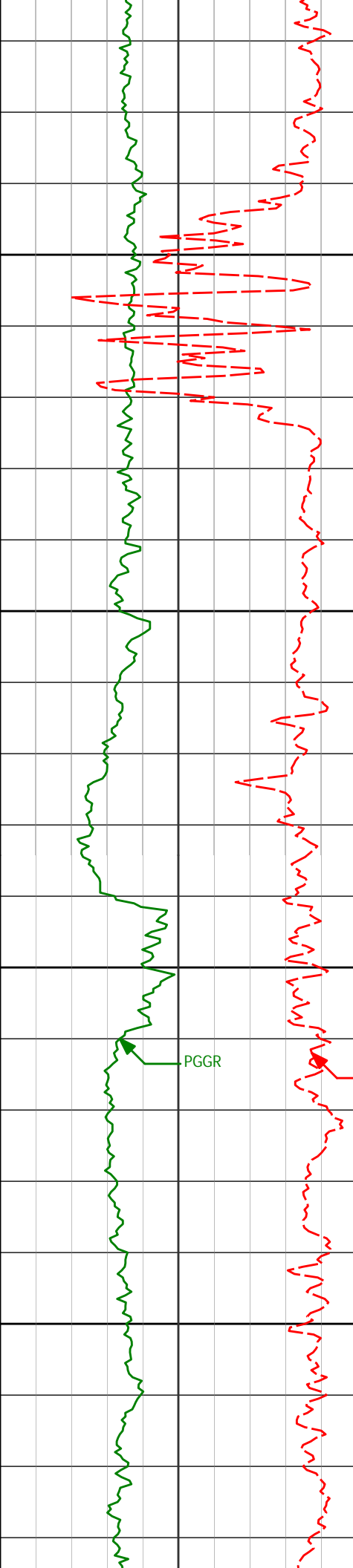
2251.39'

8950



9025' 90.37° 88.71° 6770.82' 2346.38'

9120' 90.40° 89.39° 6770.18' 2441.37'



9250

9300

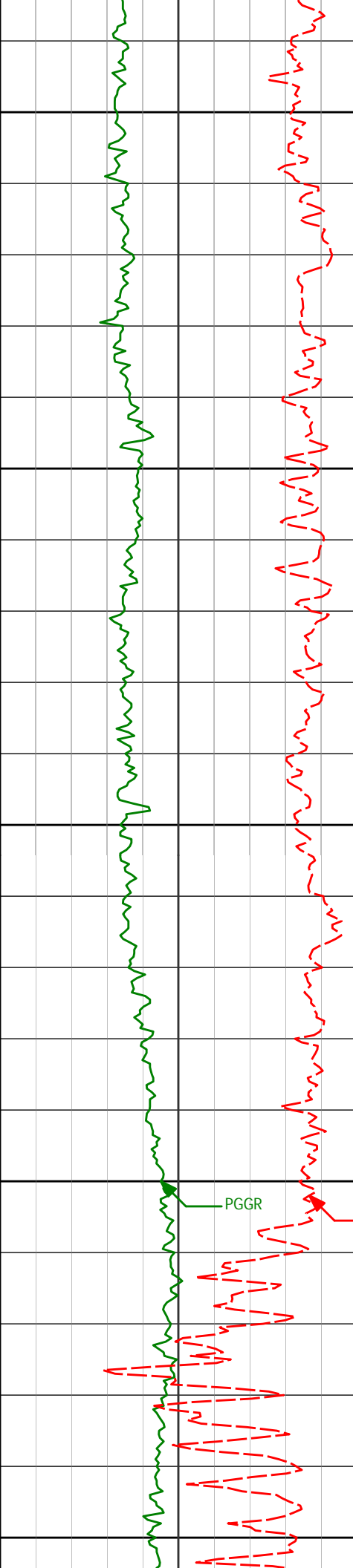
9350

9400

PGGR

ROPI

9215'	91.02°	88.30°	6769.00'	2536.35'
9310'	87.19°	87.87°	6770.49'	2631.27'
9405'	90.09°	88.30°	6772.75'	2726.19'



9450

9500

9550

9600

9650

9499'

89.78°

85.86°

6772.85'

2820.08'

9594'

90.22°

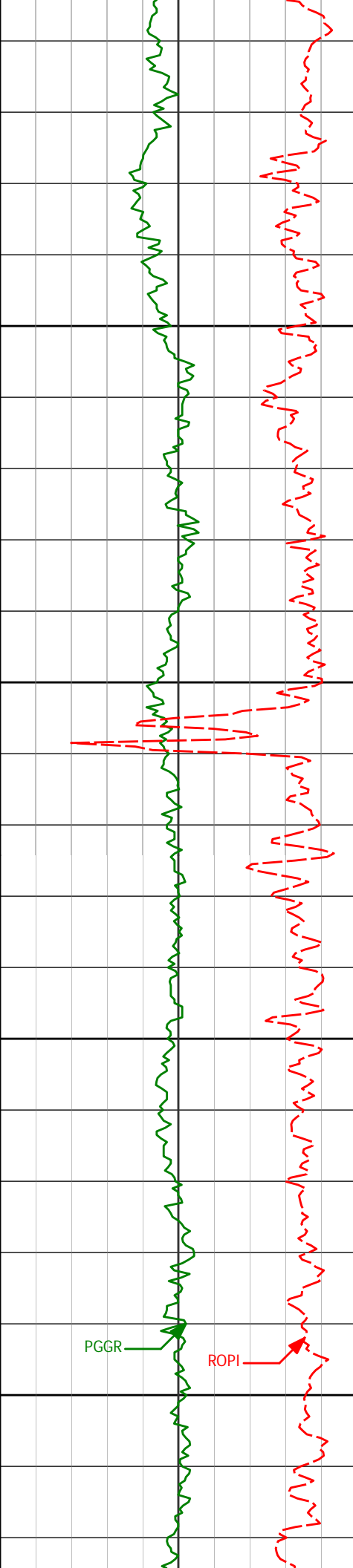
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6772.85'

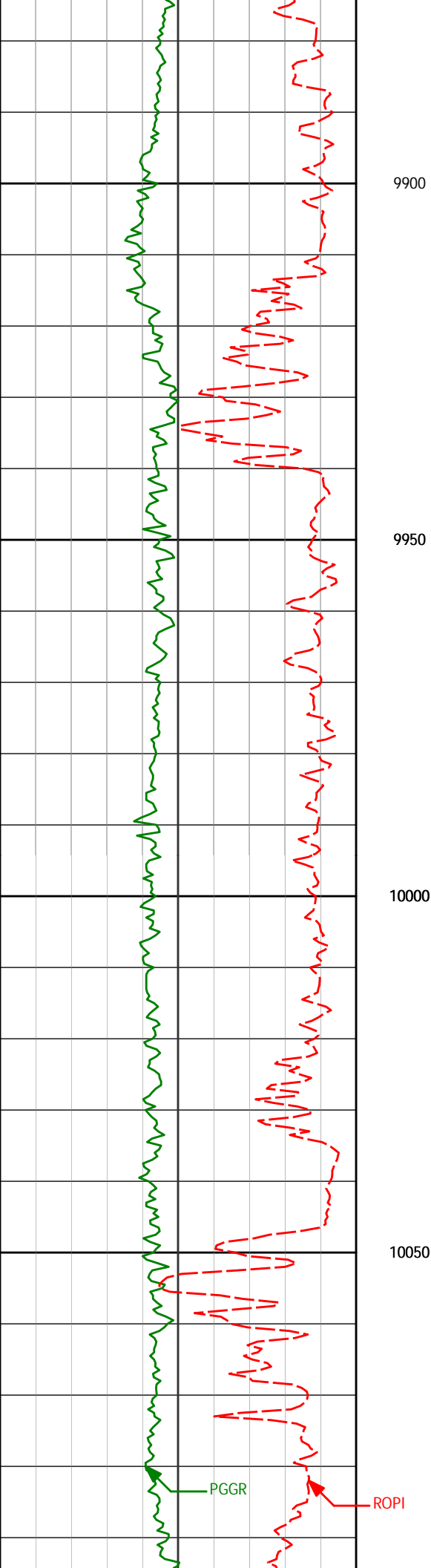
2914.97'

PGGR

ROPI



9689'	89.08°	86.67°	6773.43'	3009.89'
9700				
9750				
9784'	90.86°	87.05°	6773.49'	3104.76'
9800				
9850				



9879'

91.14°

87.74°

6771.83'

3199.66'

9900

9950

9974'

90.12°

88.14°

6770.78'

3294.60'

10000

10050

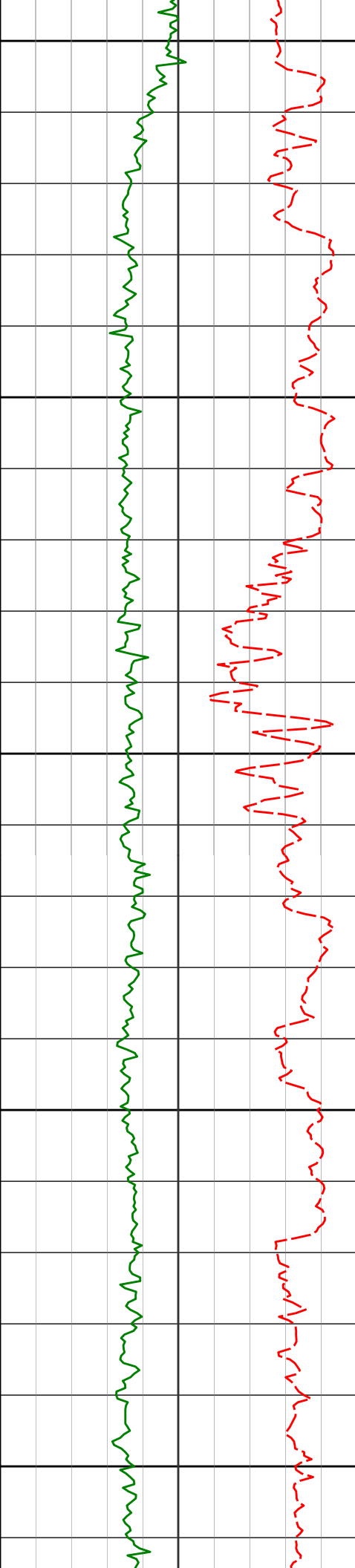
10069'

90.83°

88.86°

6769.99'

3389.57'



10100

10150

10200

10250

10300

10163'

90.40°

90.00°

6768.97'

3483.56'

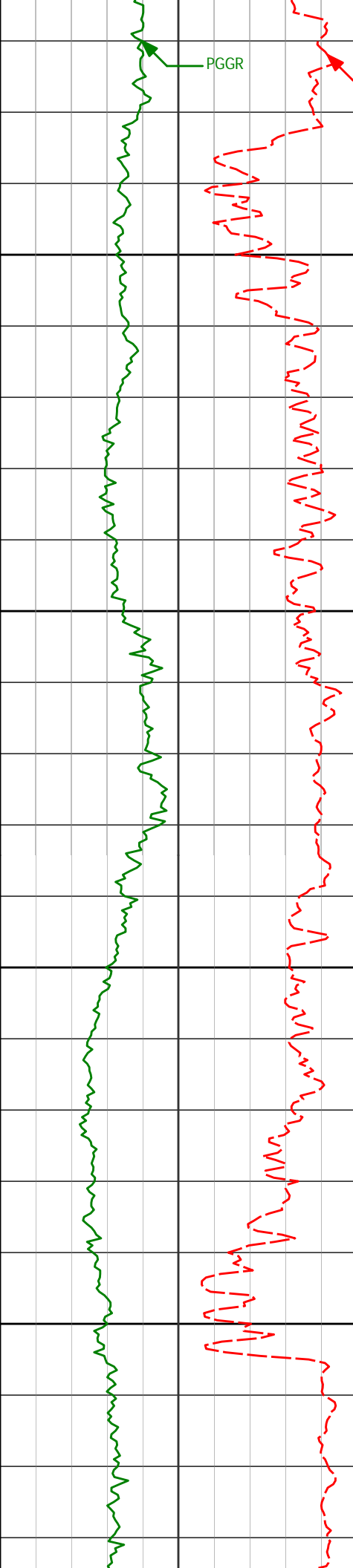
10258'

89.97°

90.24°

6768.67'

3578.56'



10350

10400

10450

10500

10353'

10448'

91.39°

91.05°

89.64°

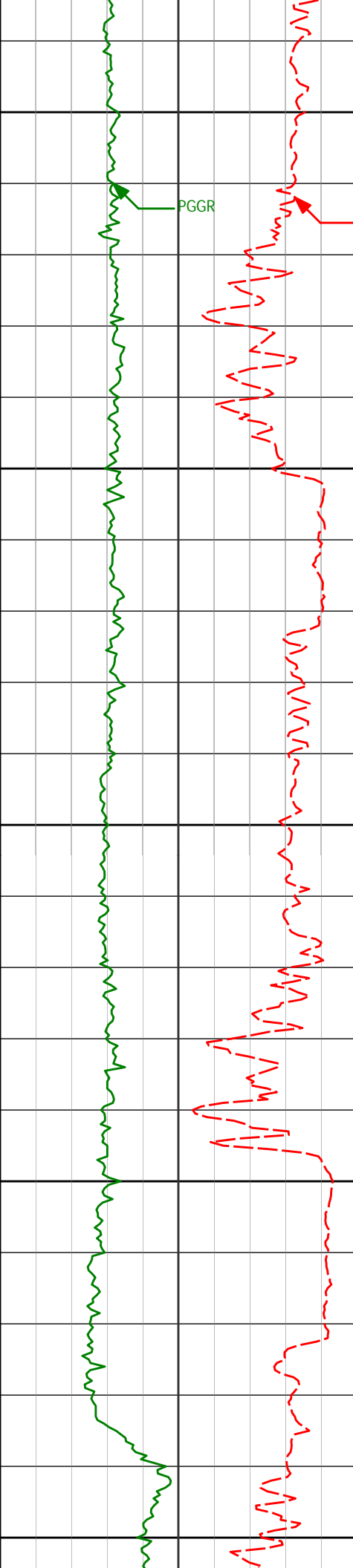
88.00°

6767.54'

6765.52'

3673.55'

3768.51'



10550

10600

10650

10700

10750

10543'

90.31°

88.36°

6764.40'

3863.47'

10638'

89.75°

89.38°

6764.34'

3958.45'

10733'

88.79°

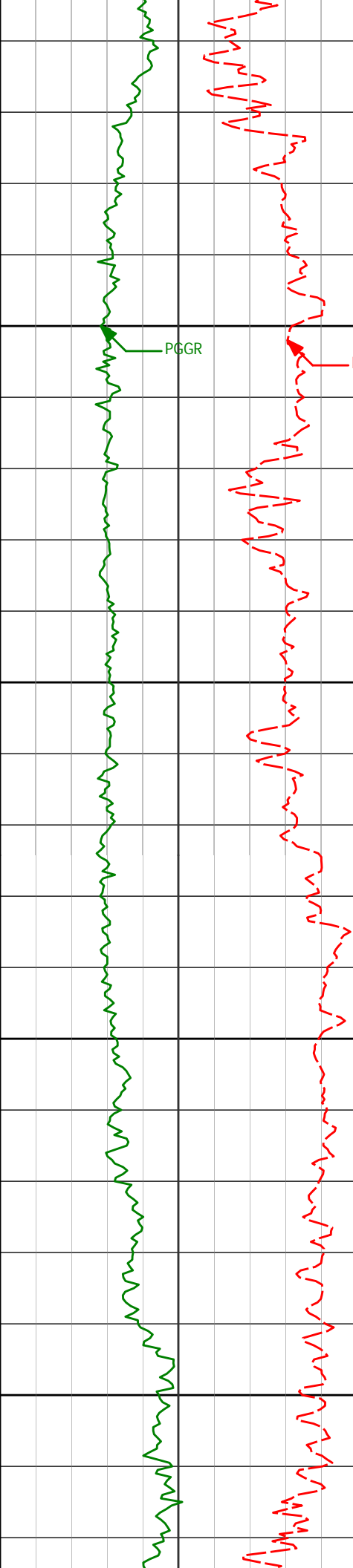
87.61°

6765.55'

4053.41'

PGGR

ROPI



PGGR

ROPI

10800

10850

10900

10950

10828'

89.91°

87.94°

6766.62'

4148.35'

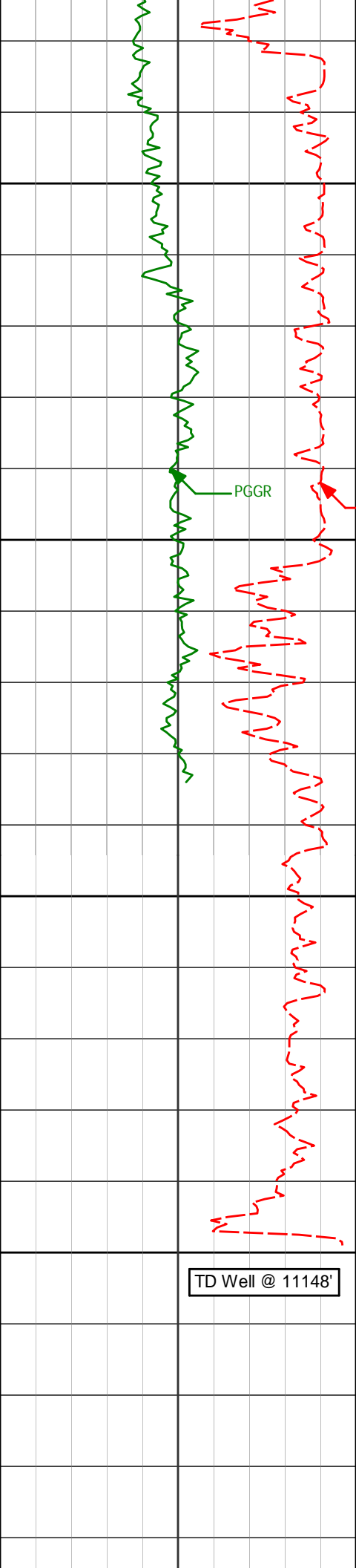
10923'

88.46°

87.86°

6767.98'

4243.28'



11000

11017'

89.91°

87.79°

6769.32'

4337.21'

PGGR

ROPI

11050

11086'

90.93°

89.07°

6768.82'

4406.19'

11100

11150

11148'

90.93°

89.07°

6767.81'

4468.17'

TD Well @ 11148'



DIRECTIONAL SURVEY REPORT

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
815.00	0.00	0.00	815.00	0.00 N	0.00 E	0.00	TIE-IN
898.00	0.79	344.77	898.00	0.55 N	0.15 W	-0.15	0.95
1174.00	1.17	8.62	1173.96	5.16 N	0.23 W	-0.21	0.20
1450.00	1.11	5.42	1449.90	10.61 N	0.45 E	0.48	0.03
1735.00	0.96	356.30	1734.86	15.75 N	0.56 E	0.60	0.08
2019.00	0.68	341.83	2018.83	19.73 N	0.13 W	-0.06	0.12
2304.00	0.38	153.87	2303.82	20.50 N	0.24 W	-0.18	0.37
2399.00	0.22	106.24	2398.82	20.17 N	0.07 E	0.13	0.29
2494.00	2.83	231.09	2493.78	18.65 N	1.59 W	-1.53	3.12
2589.00	4.72	235.91	2588.57	14.98 N	6.65 W	-6.60	2.02
2684.00	6.06	250.42	2683.16	11.11 N	14.61 W	-14.58	2.00
2779.00	9.24	251.35	2777.30	6.99 N	26.57 W	-26.55	3.36
2874.00	10.77	252.21	2870.85	1.84 N	42.25 W	-42.25	1.62
2969.00	12.30	250.22	2963.93	4.30 S	60.23 W	-60.25	1.66
3063.00	11.57	249.41	3055.89	11.00 S	78.48 W	-78.52	0.80
3158.00	13.06	248.71	3148.70	18.25 S	97.41 W	-97.46	1.58
3253.00	12.26	248.56	3241.39	25.84 S	116.80 W	-116.88	0.85
3348.00	10.79	247.71	3334.48	32.90 S	134.41 W	-134.52	1.55
3443.00	9.34	247.66	3428.01	39.20 S	149.77 W	-149.89	1.53
3538.00	7.53	248.83	3521.98	44.38 S	162.71 W	-162.84	1.91
3633.00	6.51	249.74	3616.27	48.49 S	173.57 W	-173.72	1.08
3728.00	6.14	250.45	3710.69	52.06 S	183.41 W	-183.58	0.40
3822.00	6.89	241.09	3804.08	56.47 S	193.09 W	-193.27	1.38
3917.00	4.85	229.14	3898.58	61.85 S	201.11 W	-201.31	2.49
4012.00	1.72	219.47	3993.42	65.58 S	205.06 W	-205.26	3.33
4107.00	1.76	219.67	4088.37	67.81 S	206.90 W	-207.11	0.04
4202.00	1.46	232.56	4183.33	69.67 S	208.79 W	-209.01	0.50
4297.00	0.87	259.41	4278.32	70.53 S	210.46 W	-210.68	0.83
4582.00	0.58	273.45	4563.29	70.84 S	214.02 W	-214.24	0.12
4676.00	0.13	268.76	4657.29	70.82 S	214.60 W	-214.82	0.48
4771.00	1.13	183.06	4752.28	71.75 S	214.75 W	-214.98	1.19
4866.00	1.54	171.23	4847.26	73.95 S	214.61 W	-214.84	0.52
4958.00	1.51	166.36	4939.23	76.36 S	214.13 W	-214.37	0.15
5148.00	1.87	162.48	5129.14	81.76 S	212.61 W	-212.86	0.20
5243.00	0.36	302.44	5224.13	83.07 S	212.39 W	-212.65	2.27
5528.00	0.89	325.20	5509.11	80.78 S	214.41 W	-214.66	0.20
5812.00	0.98	315.61	5793.07	77.24 S	217.36 W	-217.61	0.06
6002.00	1.33	324.78	5983.03	74.28 S	219.77 W	-220.01	0.21
6097.00	5.23	88.19	6077.91	73.24 S	216.08 W	-216.31	6.38
6145.00	10.97	96.32	6125.41	73.67 S	209.35 W	-209.58	12.17
6192.00	14.85	104.01	6171.22	75.63 S	199.05 W	-199.29	9.01
6240.00	18.20	104.53	6217.23	79.00 S	185.82 W	-186.07	6.98
6287.00	20.59	101.23	6261.56	82.45 S	170.61 W	-170.87	5.59
6335.00	23.48	94.47	6306.06	84.84 S	152.79 W	-153.06	8.01
6382.00	26.94	89.73	6348.58				

6477.00	33.33	90.43	6430.68	85.62 S	85.11 W	-85.38	6.68
6525.00	36.42	89.84	6470.06	85.68 S	57.67 W	-57.94	6.46
6571.00	39.69	89.23	6506.27	85.44 S	29.32 W	-29.59	7.17
6619.00	43.46	89.40	6542.17	85.06 S	2.53 E	2.26	7.86
6666.00	48.46	87.75	6574.84	84.20 S	36.29 E	36.03	10.92
6714.00	53.03	87.29	6605.20	82.59 S	73.41 E	73.15	9.55
6761.00	56.80	88.12	6632.22	81.05 S	111.84 E	111.58	8.15
6809.00	58.85	89.25	6657.78	80.13 S	152.45 E	152.20	4.72
6856.00	60.61	89.06	6681.47	79.53 S	193.04 E	192.78	3.76
6904.00	64.39	88.84	6703.63	78.75 S	235.60 E	235.35	7.89
6951.00	69.57	88.55	6722.00	77.77 S	278.83 E	278.58	11.02
6999.00	74.93	88.94	6736.63	76.77 S	324.51 E	324.27	11.21
7046.00	78.55	88.91	6747.41	75.91 S	370.25 E	370.01	7.69
7095.00	82.27	88.27	6755.58	74.72 S	418.54 E	418.30	7.71
7166.00	85.64	87.07	6763.05	71.85 S	489.07 E	488.84	5.04
7222.00	86.42	87.23	6766.92	69.07 S	544.87 E	544.65	1.42
7317.00	88.55	88.33	6771.09	65.39 S	639.70 E	639.49	2.52
7412.00	89.01	89.00	6773.10	63.18 S	734.65 E	734.45	0.86
7507.00	90.03	87.72	6773.90	60.46 S	829.61 E	829.41	1.73
7602.00	89.41	87.24	6774.36	56.28 S	924.51 E	924.33	0.82
7697.00	89.69	88.12	6775.10	52.44 S	1019.43 E	1019.26	0.97
7792.00	87.44	84.89	6777.47	46.65 S	1114.21 E	1114.05	4.14
7887.00	90.86	86.70	6778.88	39.69 S	1208.92 E	1208.79	4.08
7981.00	91.70	89.96	6776.78	36.95 S	1302.84 E	1302.72	3.57
8076.00	92.13	89.50	6773.60	36.50 S	1397.79 E	1397.67	0.66
8171.00	91.26	88.74	6770.79	35.05 S	1492.74 E	1492.62	1.21
8266.00	89.04	88.40	6770.54	32.68 S	1587.70 E	1587.59	2.36
8361.00	89.48	87.11	6771.77	28.96 S	1682.62 E	1682.52	1.42
8456.00	90.09	88.66	6772.12	25.45 S	1777.55 E	1777.46	1.75
8551.00	90.93	88.64	6771.28	23.21 S	1872.52 E	1872.43	0.88
8646.00	90.65	89.03	6769.98	21.28 S	1967.49 E	1967.41	0.50
8740.00	89.04	89.49	6770.23	20.06 S	2061.48 E	2061.40	1.78
8835.00	90.06	88.66	6770.97	18.52 S	2156.46 E	2156.39	1.38
8930.00	89.88	90.09	6771.02	17.48 S	2251.45 E	2251.39	1.52
9025.00	90.37	88.71	6770.82	16.48 S	2346.44 E	2346.38	1.55
9120.00	90.40	89.39	6770.18	14.90 S	2441.43 E	2441.37	0.72
9215.00	91.02	88.30	6769.00	12.99 S	2536.40 E	2536.35	1.31
9310.00	87.19	87.87	6770.49	9.82 S	2631.32 E	2631.27	4.05
9405.00	90.09	88.30	6772.75	6.65 S	2726.23 E	2726.19	3.09
9499.00	89.78	85.86	6772.85	1.86 S	2820.10 E	2820.08	2.62
9594.00	90.22	88.58	6772.85	2.74 N	2914.98 E	2914.97	2.90
9689.00	89.08	86.67	6773.43	6.68 N	3009.89 E	3009.89	2.35
9784.00	90.86	87.05	6773.49	11.88 N	3104.74 E	3104.76	1.92
9879.00	91.14	87.74	6771.83	16.20 N	3199.63 E	3199.66	0.78
9974.00	90.12	88.14	6770.78	19.61 N	3294.56 E	3294.60	1.15
10069.00	90.83	88.86	6769.99	22.10 N	3389.52 E	3389.57	1.06
10163.00	90.40	90.00	6768.97	23.04 N	3483.51 E	3483.56	1.29
10258.00	89.97	90.24	6768.67	22.84 N	3578.51 E	3578.56	0.52
10353.00	91.39	89.64	6767.54	22.94 N	3673.50 E	3673.55	1.63
10448.00	91.05	88.00	6765.52	24.90 N	3768.45 E	3768.51	1.76
10543.00	90.31	88.36	6764.40	27.91 N	3863.40 E	3863.47	0.87
10638.00	89.75	89.38	6764.34	29.79 N	3958.38 E	3958.45	1.21
10733.00	88.79	87.61	6765.55	32.28 N	4053.33 E	4053.41	2.11
10828.00	89.91	87.94	6766.62	35.97 N	4148.25 E	4148.35	1.22
10923.00	88.46	87.86	6767.98	39.45 N	4243.18 E	4243.28	1.53
11017.00	89.91	87.79	6769.32	43.02 N	4337.10 E	4337.21	1.54
11086.00	90.93	89.07	6768.82	44.92 N	4406.07 E	4406.19	2.37
11148.00	90.93	89.07	6767.81	45.93 N	4468.05 E	4468.17	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 89.41 DEGREES (GRID)
A TOTAL CORRECTION OF 7.79 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.

**HORIZONTAL DISPLACEMENT(CLOSURE) AT 11148.00 FEET
IS 4468.29 FEET ALONG 89.41 DEGREES (GRID)**

Final survey projected to TD