

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


Country : USA		<div>Company : Anadarko</div> <div>Rig : Ensign 132</div> <div>Well : Gobbler 27N-23HZ</div> <div>Field : Wattenburg</div> <div>Country : USA</div> <div>API Number : 05-123-36818</div>					
Field : Wattenburg							
Location : Lat: 40° 7' 1.73" North Long: 104°44' 25.98" West							
Well : Gobbler 27N-23HZ							
Company : Anadarko							
Rig : Ensign 132		<div>LOCATION</div> <div>Latitude : 40° 7' 1.73" North Longitude : 104°44' 25.98" West</div> <div>UTM Easting = 3,212,394.56 ft UTM Northing = 1,286,430.29 ft</div>					
Permanent Datum : Ground Level						Elevation : 5093.00 ft	
Log Measured From : Drill Floor						13.00 ft Above Permanent Datum	
Drilling Measured From : Drill Floor		MD LOG		Elev. KB N/A DF 5106.00 ft GL 5093.00 ft WD N/A			
Depth Logged : 1,069.00 ft To 11,915.00 ft		Unit No. : 11210429		Job No. : CA-XX-0900275965			
Date Logged : 15-May-13 To 26-May-13		Plot Type : Final					
Total Depth MD : 11,915.00 ft TVD : 7,385.96 ft		Plot Date : 26-May-13					
Spud Date : 15-May-13							
Run No.	Borehole Record (MD)		Run No.	Borehole Record (MD)			
	Size	From To		Size	From To		
2	8.750 in	1,069.00 ft 6,854.00 ft					
3	8.750 in	6,854.00 ft 7,886.00 ft					
4	6.125 in	7,886.00 ft 11,915.00 ft					

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	17-May-13	21-May-13	26-May-13		
Rig Bit Number	2	3	4		
Bit Size (in)	8.750	8.750	6.125		
Tool Nominal OD (in)	6.750	6.750	4.790		
Log Start Depth (MD, ft)	1,069.00	6,854.00	7,886.00		
Log End Depth (MD, ft)	6,854.00	7,886.00	11,915.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	15-May-13 23:36	17-May-13 19:26	23-May-13 06:00		
Drill/Wipe End Date and Time	17-May-13 03:00	21-May-13 12:25	25-May-13 09:00		
Min Inc (deg) @ Depth (MD, ft)	.13 @ 2,372.00	.81 @ 6,859.00	87.81 @ 10,131.00		
Max Inc (deg) @ Depth (MD, ft)	11.54 @ 4,378.00	86.33 @ 7,838.00	92.99 @ 11,372.00		
Bit TFA(in2) / Bit Type	1.09 / PDC	1.04 / PDC	.98 / PDC		
Flow Rate (gpm)	612.54	557.29	296.12		
Max AV (fpm) / CV (fpm) @ MWD	563.0 / 109.4	513.0 / 200.0	510.6 / 310.4		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	8.50 / 27.00	10.20 / 41.00	9.85 / 44.00		
Filtrate CL (ppm)	1,000.00	2,000.00	20,000.00		
pH / Fluid Loss (mptm)	9.00 / 5	8.90 / 4	9.20 / 4		
PV (cP) / YP (lhf2)	1 / 3.00	16 / 8.00	15 / 11.00		
% Solids / % Sand	2.00 / N/A	9.00 / 0.20	8.00 / 0.10		
% Oil / Oil:Water Ratio	N/A / N/A	1.00 / N/A	2.50 / 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		

Max Tool Temp (degF) / Source	172.78 / PCM	189.99 / PCM	221.87 / RI		
Rm @ Max Tool Temp (degF)	N/A @ 172.78	N/A @ 189.99	N/A @ 221.8		
Lead MWD Engineer	Patrick Megee	Patrick Megee	Patrick Megee		
Customer Representative	Sam Taylor	Sam Taylor	Sam Taylor		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	PCM	PCM	PCM		
Software Version	5.84	5.84	5.84		
Sub Serial Number	11341336	11341336	12187587		
Insert Serial Number	11400850	11680796	11227484		
Date and Time Initialized	14-May-13 10:01	17-May-13 03:50	22-May-13 13:43		
Date and Time Read	17-May-13 15:46	21-May-13 20:06	26-May-13 10:00:00		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	49.95	46.04	45.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11341336	11341336	12187587		
Sonde Serial Number	11297584	11638477	10993273		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	103.24	102.33	110.65		

Gamma Ray Sensor Information

Tool Type		PCG	PCG		
Distance From Bit (ft)		50.99	49.19		
Recorded Sample Period (sec)		10	10		
Software Version		8.15	8.15		
Sub Serial Number		11341336	12187587		
Insert/Sonde Serial Number		11680968	11680944		

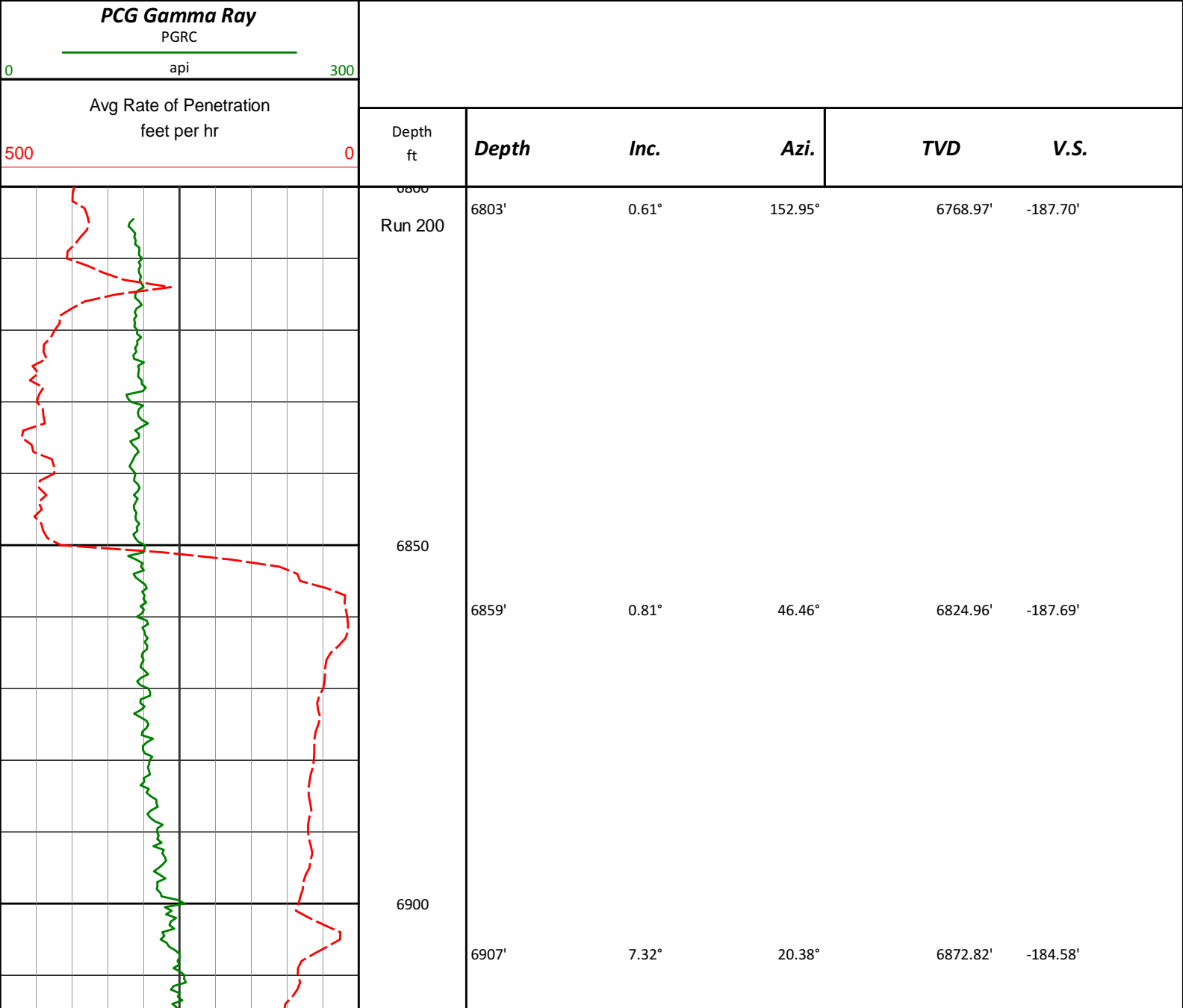
REMARKS

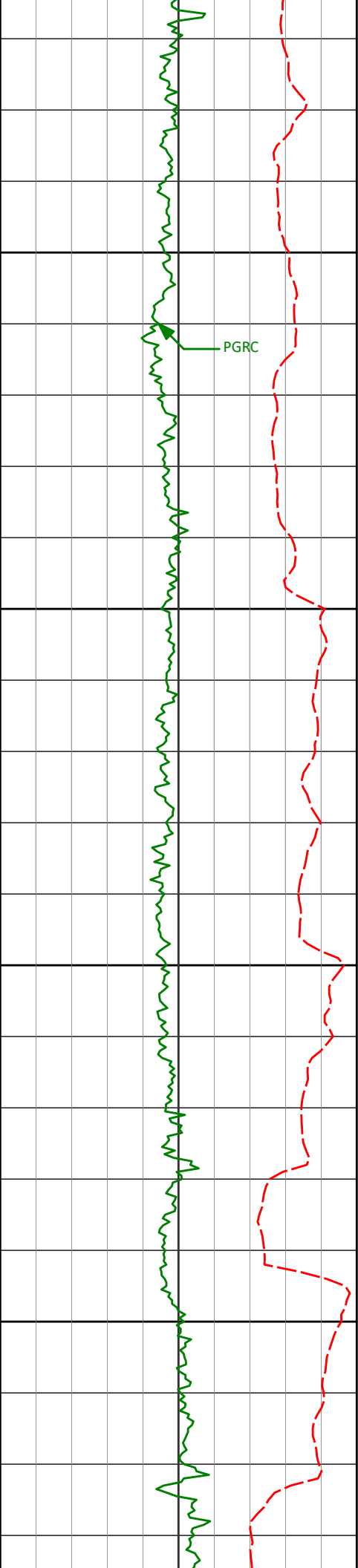
1. All depths are calibrated to the driller's pipe tally and are measured from the rotary table.
2. No depth corrections have been made for pipe stretch or compression.
3. All data presented is recorded (memory data) unless otherwise stated.
4. All main log data was logged while drilling
5. Environmental parameters used to process Gamma Ray are as follows:
Hole Size: 8.75" 6.125"
Mud Density: 8.6 to 10.3 ppg
6. The following smoothing parameters have been applied to the data:
ROP: 0.5 ft interval, 1.2 ft coercion distance
All other curves: 0.5 ft interval, 0.6 ft coercion distance
7. Final Survey is Projection to Bit
INSITE v7.4.10 Build 39

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Anadarko Petroleum Corp.
Well: Gobbler 27N-23Hz
Scale 1:240





6950

6955'

13.49°

12.90°

6920.01'

-176.24'

PGRC

7000

7003'

20.59°

14.33°

6965.87'

-162.57'

7050

7050'

27.20°

11.10°

7008.82'

-143.98'

7100

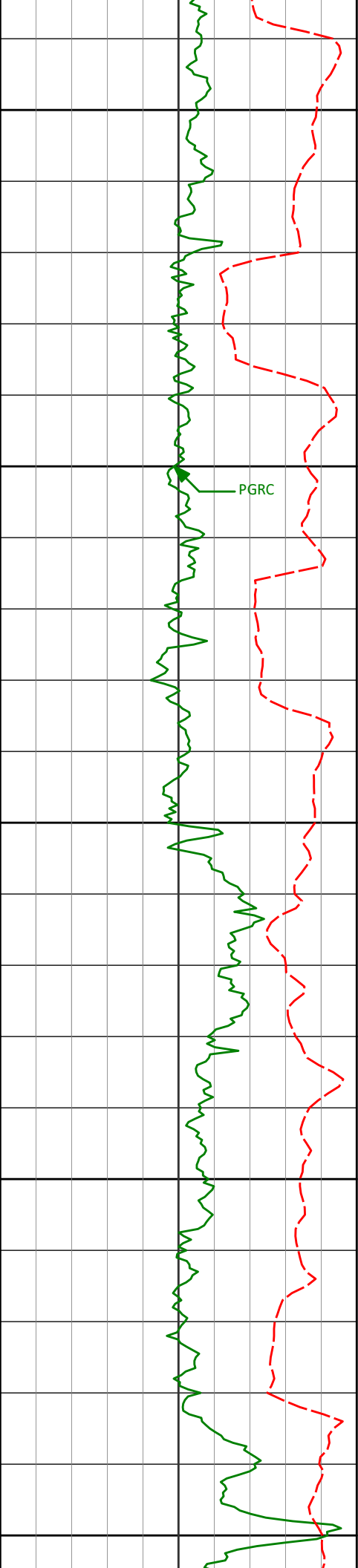
7098'

31.23°

8.66°

7050.71'

-120.88'



7150

7146'

35.47°

8.66°

7090.79'

-94.77'

7200

7194'

38.68°

6.07°

7129.09'

-66.06'

7250

7241'

42.16°

4.65°

7164.87'

-35.71'

7300

7289'

48.84°

1.31°

7198.50'

-1.54'

7350

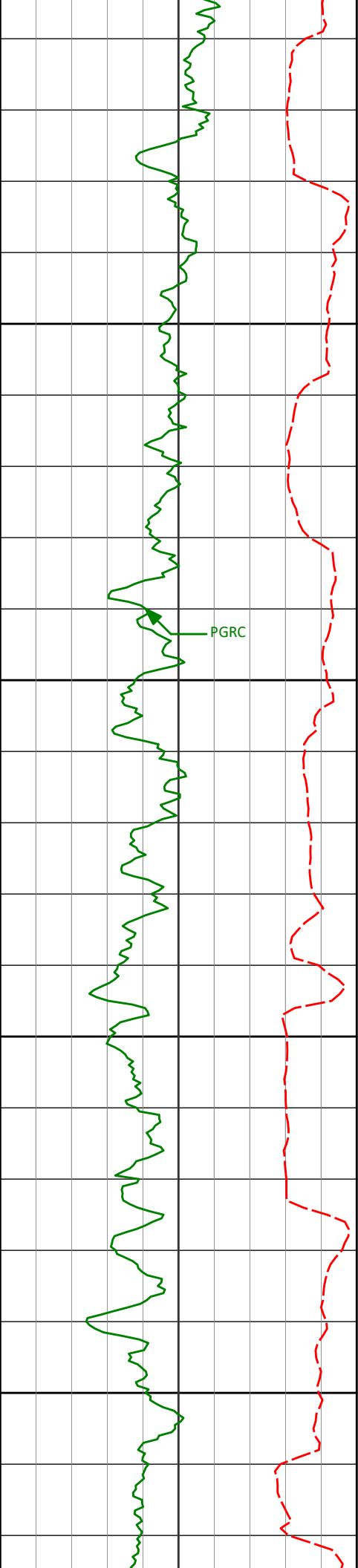
7337'

53.15°

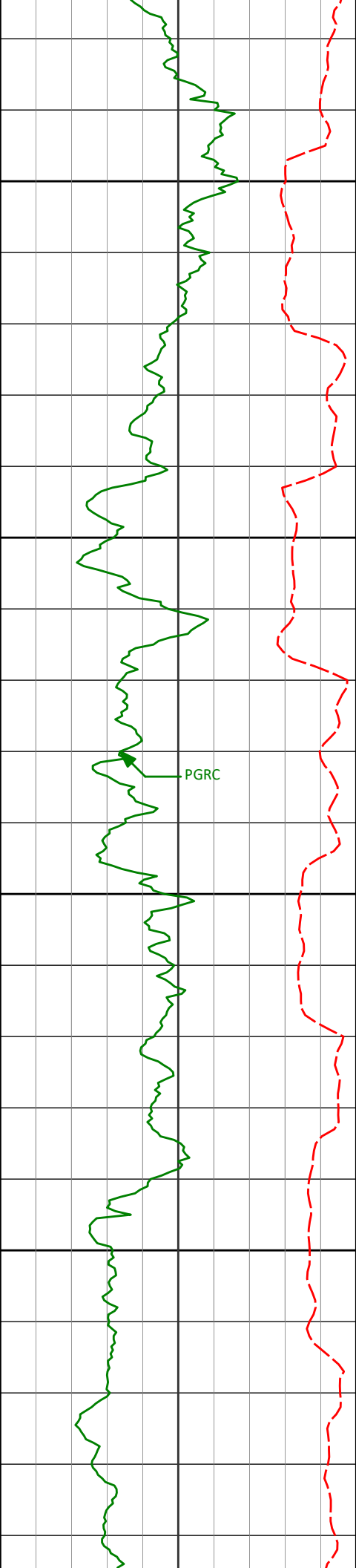
0.06°

7228.70'

35.75'



7385'	56.58°	359.87°	7256.32'	75.00'
7400				
7432'	60.14°	359.72°	7280.97'	115.00'
7450				
7480'	61.69°	359.71°	7304.30'	156.95'
7500				
7528'	62.95°	359.80°	7326.60'	199.45'
7550				



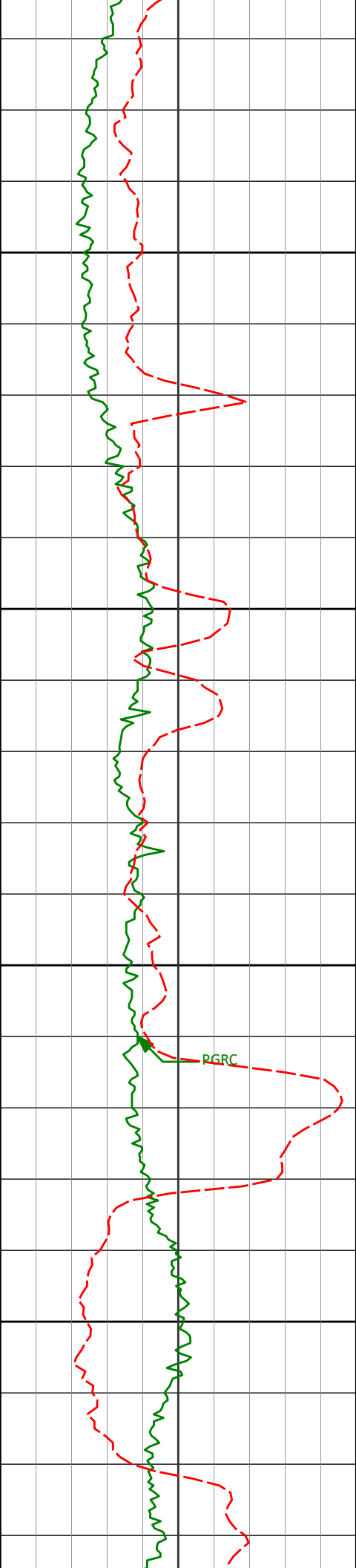
7600

7650

7700

7750

7576'	68.31°	359.03°	7346.40'	243.15'
7624'	71.82°	358.31°	7362.76'	288.25'
7672'	75.13°	359.11°	7376.41'	334.24'
7719'	78.24°	0.27°	7387.24'	379.97'
7767'	80.44°	1.69°	7396.12'	427.13'



8028'

89.94°

1.22°

7404.52'

687.38'

8050

8100

8123'

87.99°

0.20°

7406.23'

782.35'

8150

PGRC

8200

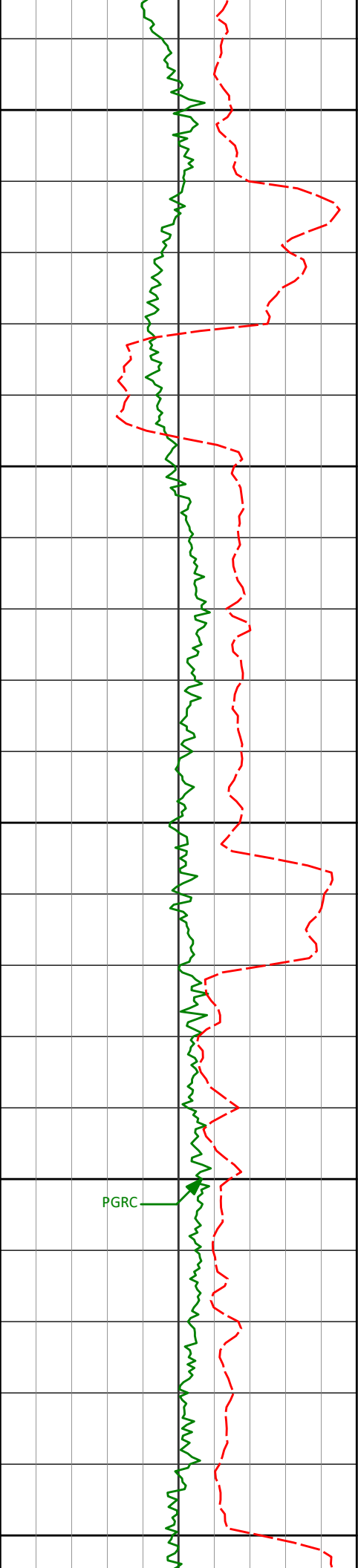
8220'

87.99°

0.88°

7409.63'

879.29'



8250

8300

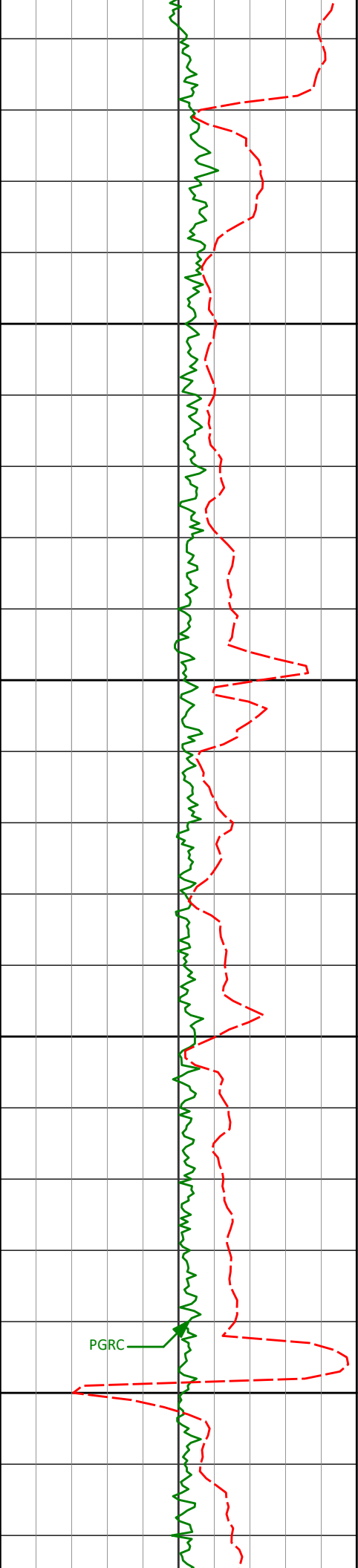
8350

8400

8450

PGRC

8315'	89.17°	358.27°	7411.99'	974.25'
8411'	90.03°	358.21°	7412.66'	1070.18'



8500

8507'

90.80°

358.41°

7411.96'

1166.12'

8550

8600

8603'

90.62°

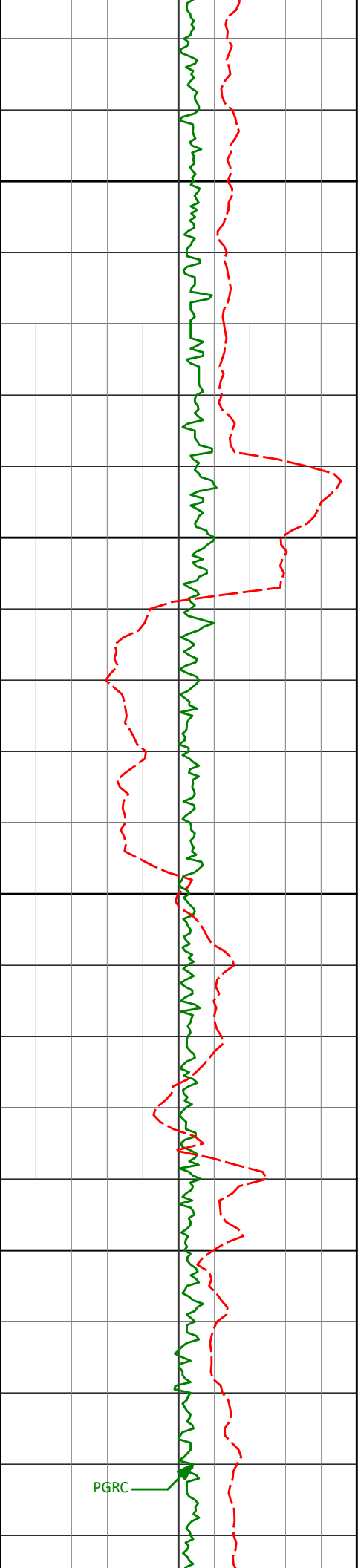
358.64°

7410.77'

1262.06'

PGRC

8650



8700

8698'

89.94°

356.97°

7410.31'

1356.97'

8750

8800

8794'

90.86°

357.17°

7409.64'

1452.81'

8850

PGRC

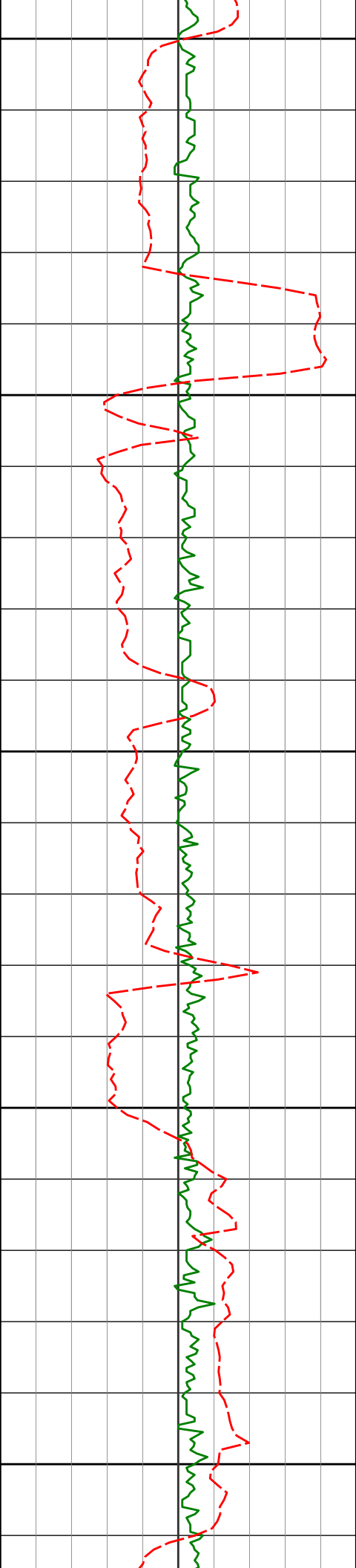
8889'

90.31°

356.28°

7408.67'

1547.62'



8900

8950

9000

9050

9100

8985'

91.08°

357.03°

7407.50'

1643.42'

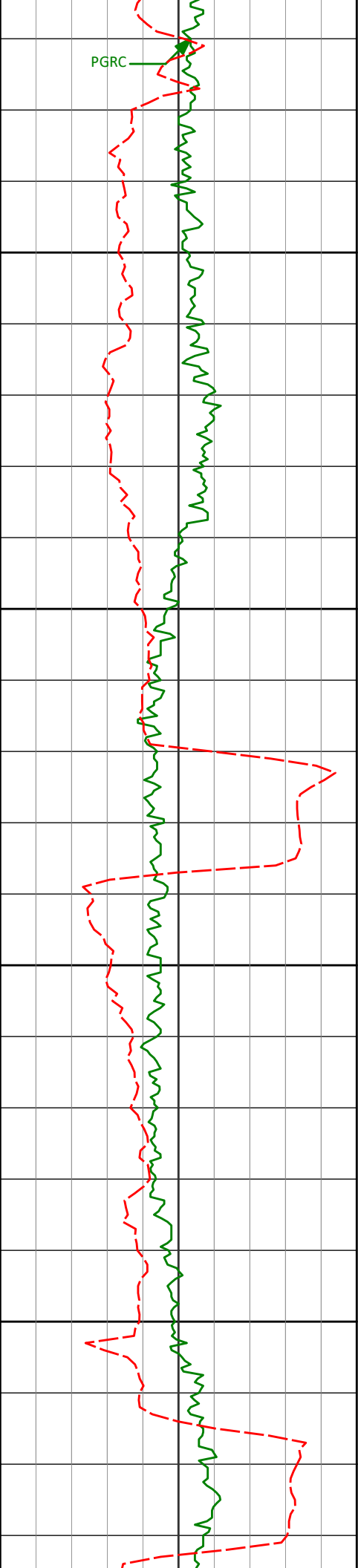
9080'

90.92°

356.32°

7405.85'

1738.21'



PGR

9150

9200

9250

9300

9175'

90.74°

355.56°

7404.47'

1832.92'

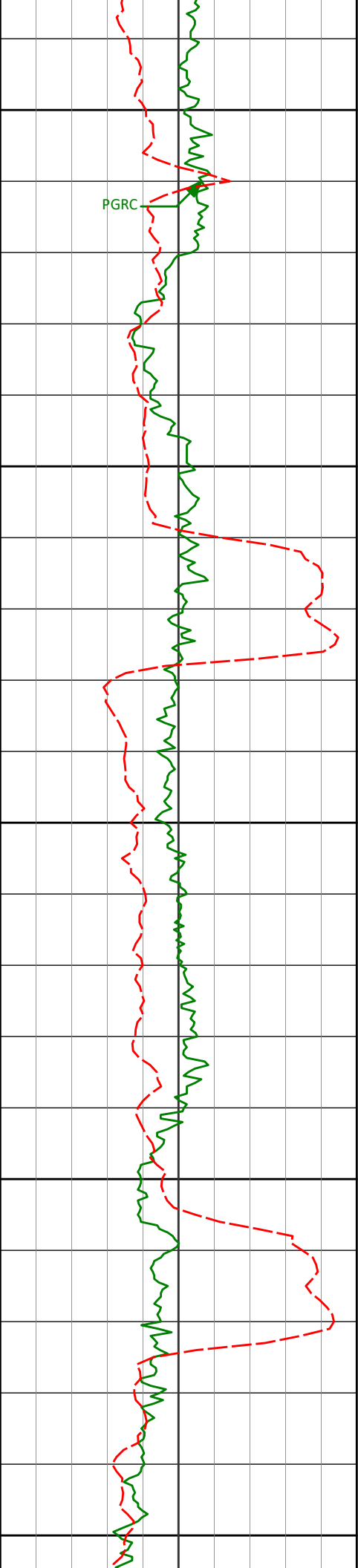
9272'

90.09°

358.43°

7403.77'

1929.75'



9350

9367'

89.69°

358.12°

7403.95'

2024.69'

9400

9450

9462'

90.06°

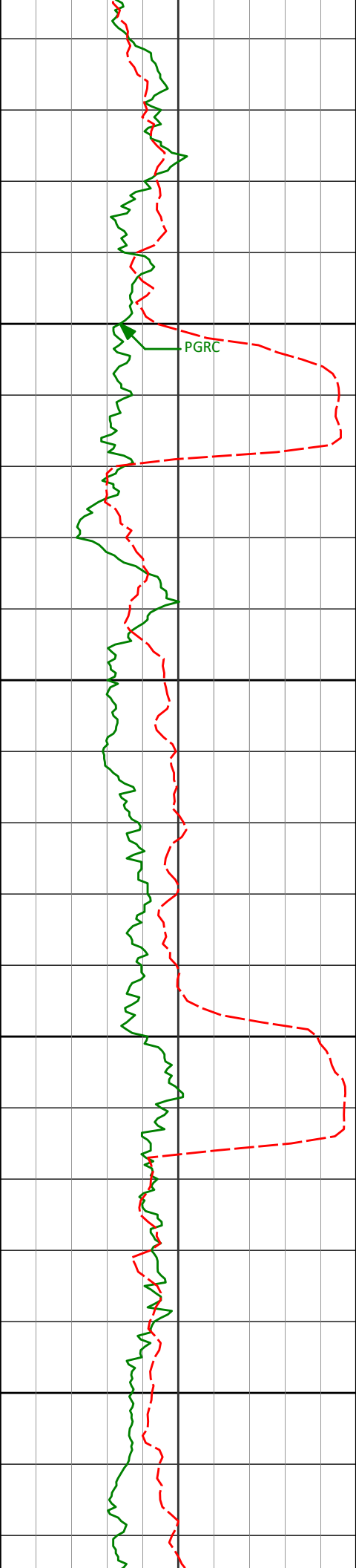
359.20°

7404.16'

2119.65'

9500

9550



9558'

90.71°

358.62°

7403.51'

2215.61'

9600

PGRC

9650

9654'

89.07°

0.08°

7403.70'

2311.59'

9700

9750

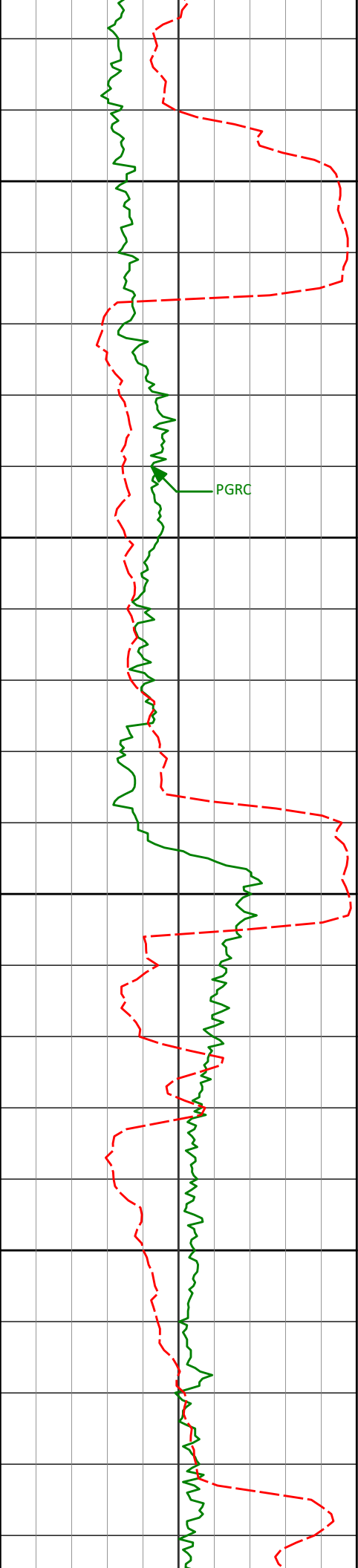
9749'

89.48°

358.68°

7404.90'

2406.57'



9800

9850

9900

9950

PGRC

9845'

91.32°

359.69°

7404.23'

2502.55'

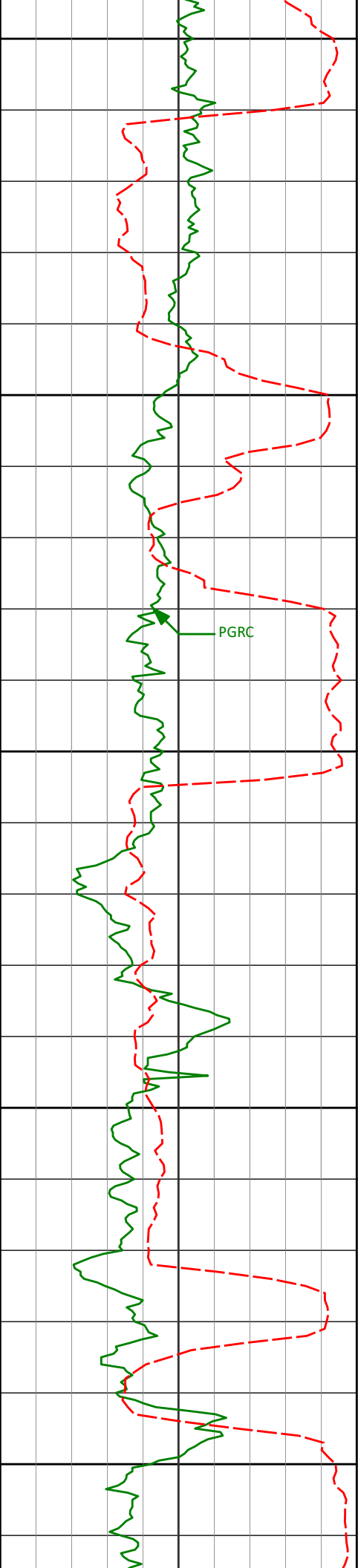
9940'

90.74°

0.74°

7402.52'

2597.53'



10000

10035'

89.63°

0.96°

7402.21'

2692.52'

10050

10100

10131'

87.81°

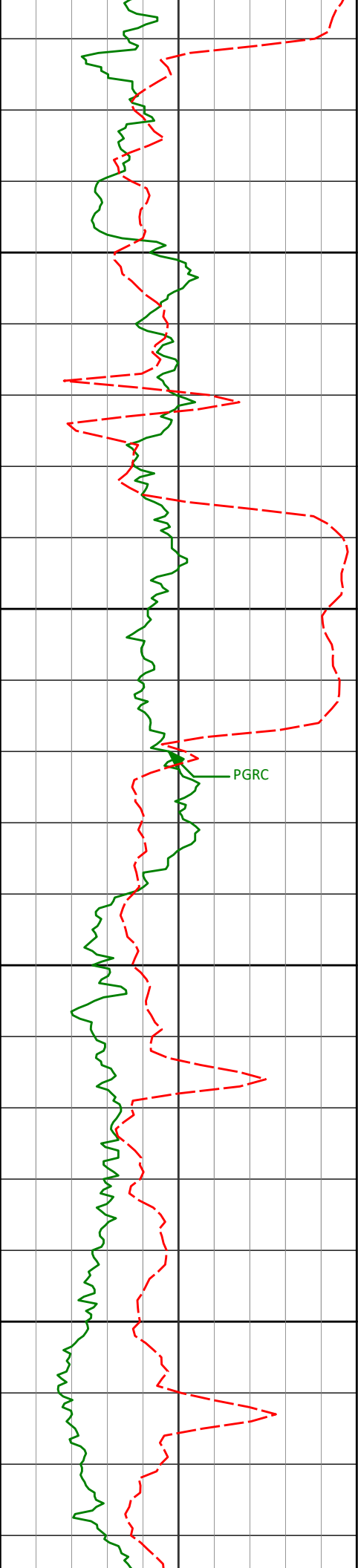
2.95°

7404.36'

2788.45'

10150

10200



10227'

87.87°

4.54°

7407.98'

2884.21'

10250

10300

10323'

90.34°

5.91°

7409.48'

2979.83'

10350

10400

10417'

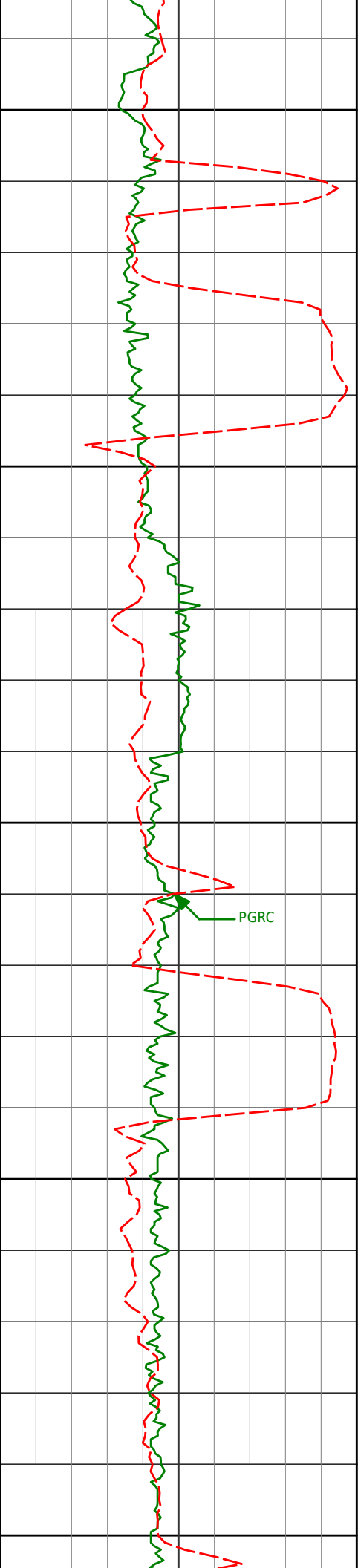
89.23°

4.79°

7409.83'

3073.47'

PGRC



10450

10500

10550

10600

10650

10513'

89.91°

4.47°

7410.55'

3169.19'

PGRC

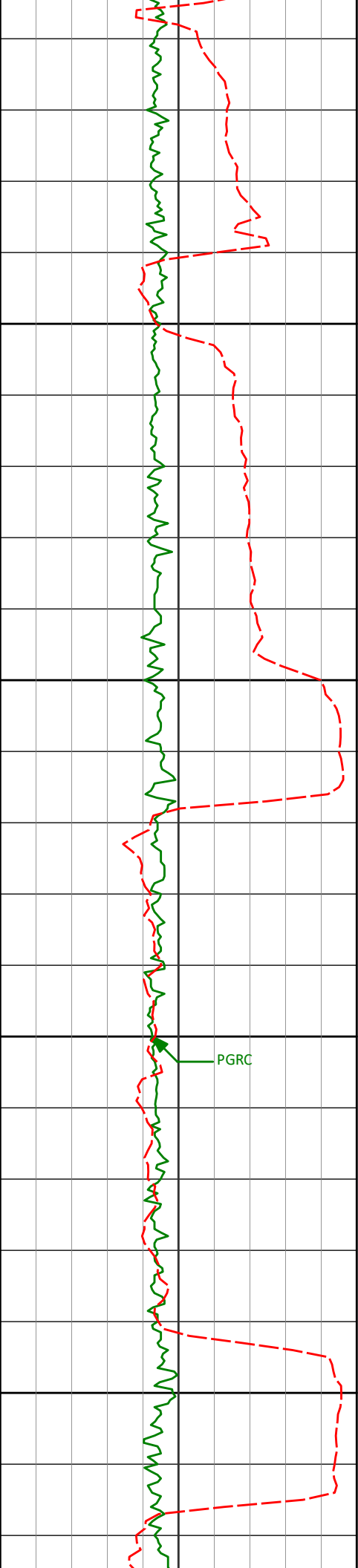
10608'

91.45°

5.72°

7409.42'

3263.85'



10700

10750

10800

10850

10703'

10799'

90.52°

89.44°

6.19°

3.18°

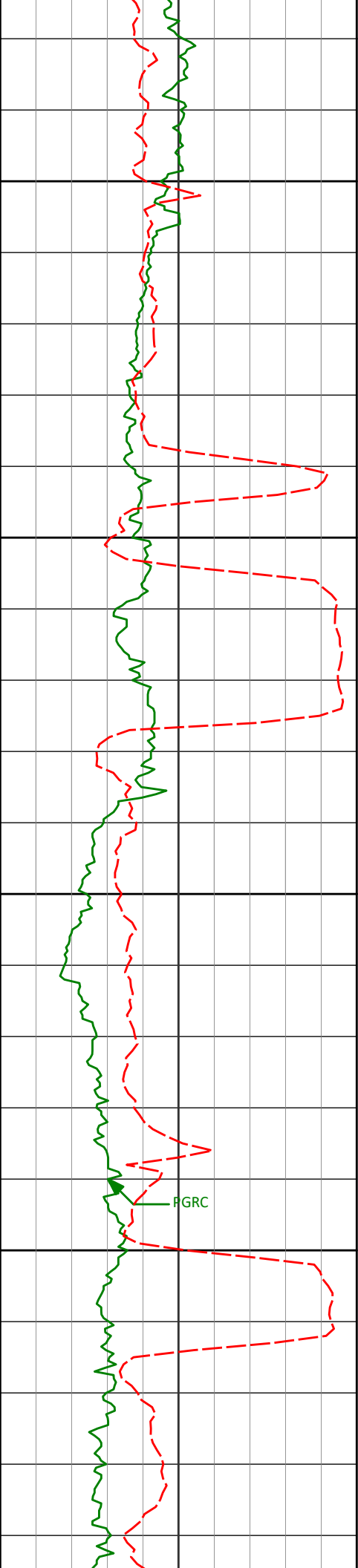
7407.79'

7407.82'

3358.37'

3454.08'

PGRC



10900

10950

11000

11050

10894'

91.73°

4.33°

7406.85'

3548.89'

10989'

92.43°

0.18°

7403.40'

3643.76'

11084'

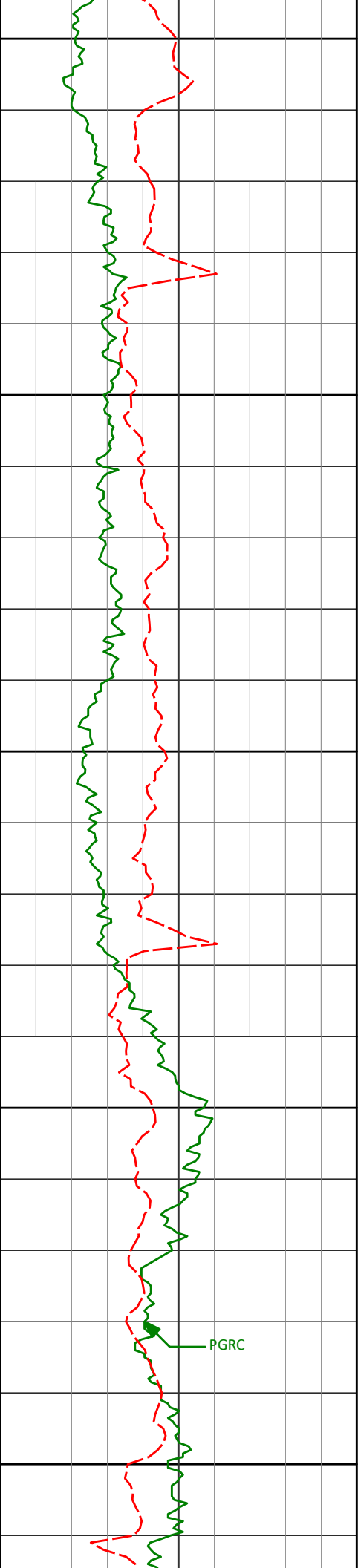
92.40°

359.42°

7399.40'

3738.67'

FGRC



11100

11150

11200

11250

11300

11180'

92.37°

359.09°

7395.41'

3834.57'

11276'

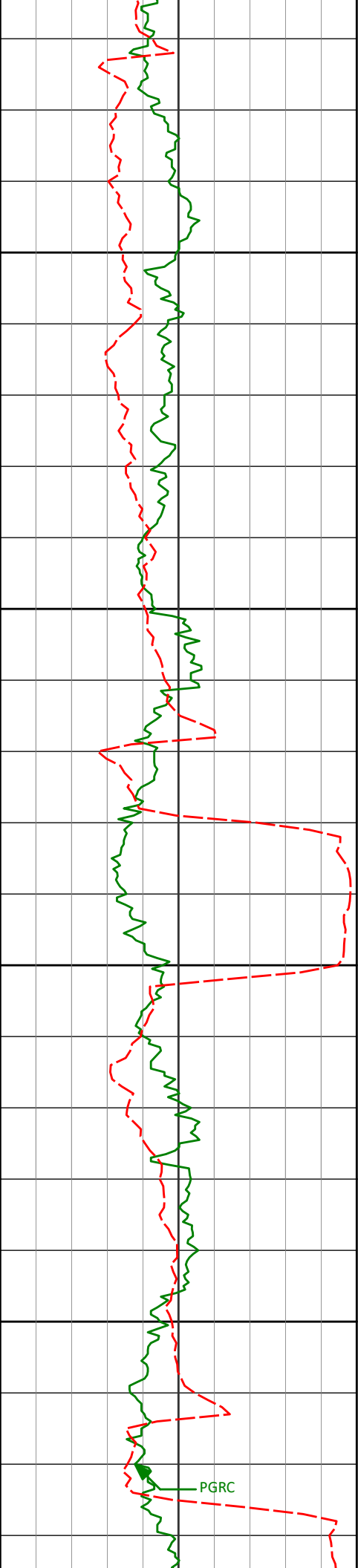
92.40°

358.35°

7391.41'

3930.45'

PGRC



11350

11372'

92.99°

357.89°

7386.90'

4026.27'

11400

11450

11467'

88.39°

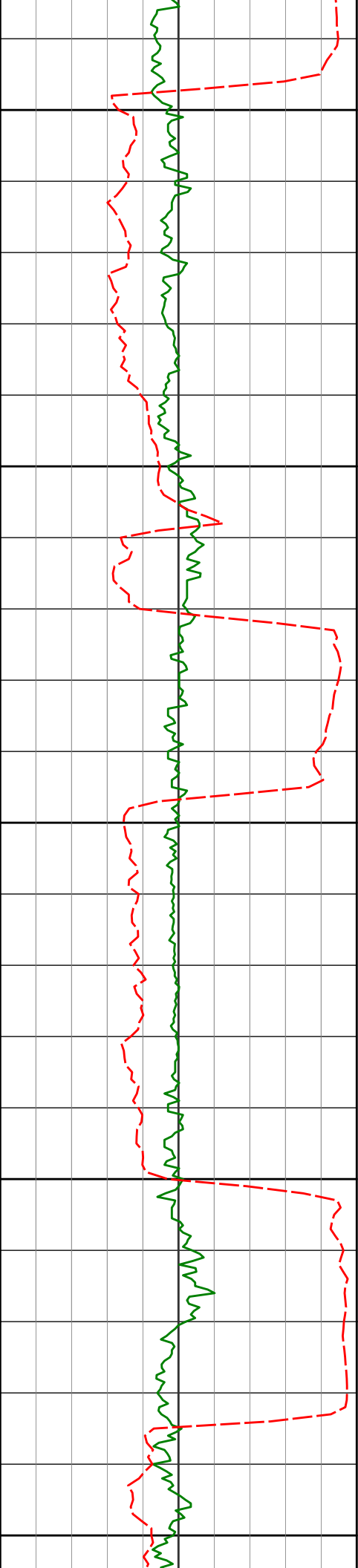
356.26°

7385.75'

4121.08'

11500

PGRC



11550

11562'

88.46°

359.10°

7388.37'

4215.94'

11600

11650

11658'

89.48°

359.93°

7390.09'

4311.91'

11700

11750

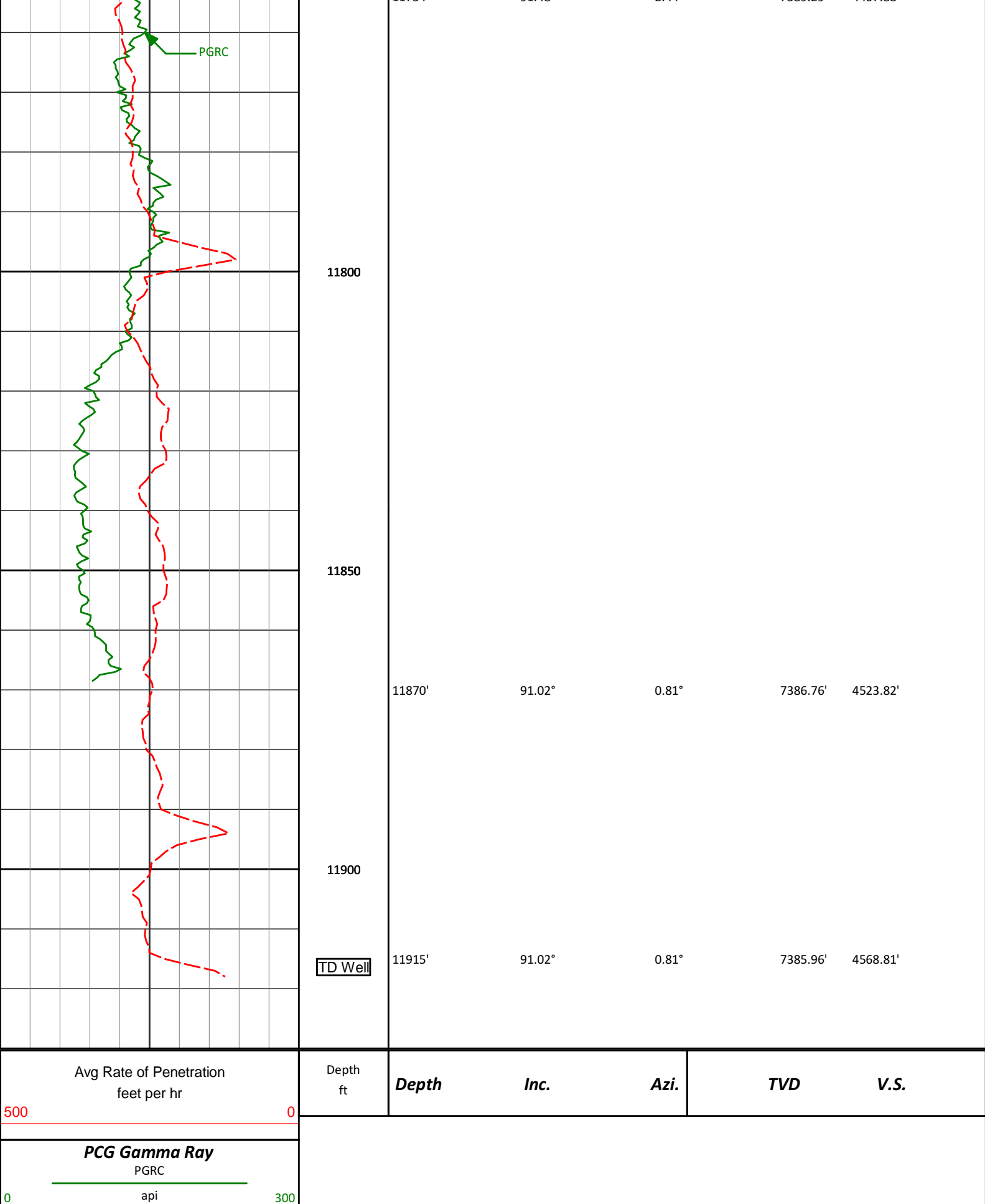
11754'

91.48°

2.44°

7389.29'

4407.88'



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Anadarko
Gobbler 27N-23HZ
Wattenburg
Weld Colorado
USA
CA-XX-0900275965

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
1001.00	0.36	99.08	1000.98	1.35 N	3.94 E	1.37	TIE-IN
1250.00	0.34	139.06	1249.98	0.67 N	5.20 E	0.70	0.10
1527.00	0.92	98.32	1526.96	0.27 S	7.94 E	-0.23	0.25
1804.00	0.74	116.56	1803.93	1.40 S	11.74 E	-1.33	0.11
2087.00	0.58	122.45	2086.91	2.98 S	14.58 E	-2.90	0.06
2372.00	0.13	214.37	2371.91	4.02 S	15.61 E	-3.94	0.21
2564.00	1.51	122.39	2563.88	5.56 S	17.63 E	-5.46	0.79
2660.00	4.08	119.13	2659.76	7.90 S	21.68 E	-7.78	2.68
2755.00	5.96	117.18	2754.39	11.80 S	29.02 E	-11.64	1.99
2851.00	6.80	117.84	2849.80	16.73 S	38.48 E	-16.52	0.88
2946.00	8.03	113.11	2944.00	21.96 S	49.56 E	-21.69	1.44
3042.00	9.95	118.73	3038.82	28.58 S	63.00 E	-28.24	2.20
3138.00	9.39	118.35	3133.46	36.28 S	77.16 E	-35.86	0.59
3233.00	9.48	118.17	3227.17	43.66 S	90.88 E	-43.16	0.10
3329.00	8.98	116.84	3321.93	50.77 S	104.53 E	-50.21	0.57
3425.00	7.87	113.36	3416.89	56.76 S	117.25 E	-56.13	1.27
3520.00	9.44	114.08	3510.81	62.52 S	130.34 E	-61.81	1.66
3614.00	9.24	112.65	3603.56	68.57 S	144.34 E	-67.79	0.33
3710.00	7.06	110.18	3698.59	73.57 S	156.99 E	-72.72	2.30
3804.00	8.12	115.43	3791.76	78.42 S	168.41 E	-77.51	1.35
3900.00	9.11	122.26	3886.68	85.39 S	180.96 E	-84.41	1.48
3996.00	10.53	117.34	3981.27	93.47 S	195.18 E	-92.41	1.72
4091.00	9.71	111.63	4074.80	100.41 S	210.34 E	-99.27	1.36
4187.00	9.82	118.97	4169.41	107.36 S	225.03 E	-106.14	1.30
4282.00	11.50	116.48	4262.77	115.51 S	240.59 E	-114.20	1.83
4378.00	11.54	117.25	4356.83	124.17 S	257.70 E	-122.78	0.17
4474.00	9.82	114.92	4451.17	132.02 S	273.66 E	-130.54	1.85
4569.00	9.33	110.20	4544.84	138.09 S	288.23 E	-136.53	0.97
4665.00	9.31	113.63	4639.58	143.89 S	302.65 E	-142.25	0.58
4759.00	10.19	118.40	4732.22	150.89 S	316.93 E	-149.18	1.27
4854.00	9.65	118.64	4825.80	158.71 S	331.31 E	-156.91	0.57
4949.00	11.03	121.93	4919.26	167.33 S	346.01 E	-165.46	1.58
5045.00	10.46	125.32	5013.57	177.23 S	360.92 E	-175.27	0.89
5141.00	7.96	114.88	5108.33	185.06 S	374.06 E	-183.04	3.12
5236.00	6.29	112.26	5202.60	189.80 S	384.85 E	-187.72	1.79
5332.00	4.13	101.97	5298.20	192.51 S	393.10 E	-190.38	2.44
5427.00	1.94	78.72	5393.06	192.91 S	398.02 E	-190.75	2.60
5808.00	0.52	323.91	5773.99	190.25 S	403.33 E	-188.06	0.58
6190.00	0.48	292.29	6155.98	188.24 S	400.82 E	-186.07	0.07
6573.00	0.37	125.73	6538.97	188.35 S	400.34 E	-186.18	0.22
6803.00	0.61	152.95	6768.97	189.88 S	401.50 E	-187.70	0.14
6859.00	0.81	46.46	6824.96	189.87 S	401.93 E	-187.69	2.04
6907.00	7.32	20.38	6872.82	186.77 S	403.24 E	-184.58	13.75
6955.00	13.49	12.90	6920.01	178.43 S	405.56 E	-176.24	13.13
7003.00	20.59	14.33	6965.87	164.78 S	408.90 E	-162.57	14.82
7050.00	27.20	11.10	7008.82	146.21 S	413.02 E	-143.98	14.33
7098.00	31.23	8.66	7050.71	123.13 S	417.00 E	-120.88	8.75
7146.00	35.47	8.66	7090.79	97.05 S	420.98 E	-94.77	8.83
7194.00	38.68	6.07	7129.09	68.36 S	424.66 E	-66.06	7.44
7241.00	42.16	4.65	7164.87	38.03 S	427.49 E	-35.71	7.66
7289.00	48.84	1.31	7198.50	3.86 S	429.21 E	-1.54	14.77
7337.00	53.15	0.06	7228.70	33.43 N	429.65 E	35.75	9.20
7385.00	56.58	359.87	7256.32	72.67 N	429.62 E	75.00	7.15
7432.00	60.14	359.72	7280.97	112.68 N	429.48 E	115.00	7.58
7480.00	61.69	359.71	7304.30	154.63 N	429.27 E	156.95	3.23
7528.00	62.95	359.80	7326.60	197.13 N	429.09 E	199.45	2.63
7576.00	68.31	359.03	7346.40	240.84 N	428.64 E	243.15	11.26
7624.00	71.82	358.31	7362.76	285.94 N	427.59 E	288.25	7.45
7672.00	75.13	359.11	7376.41	331.94 N	426.55 E	334.24	7.08
7719.00	78.24	0.27	7387.24	377.67 N	426.31 E	379.97	7.04
7767.00	80.44	1.69	7396.12	424.83 N	427.12 E	427.13	5.43
7838.00	86.33	3.20	7404.29	495.26 N	430.13 E	497.58	8.56

7933.00	91.73	2.63	7405.90	590.09 N	434.96 E	592.43	5.72
8028.00	89.94	1.22	7404.52	685.02 N	438.15 E	687.38	2.40
8123.00	87.99	0.20	7406.23	779.99 N	439.33 E	782.35	2.32
8220.00	87.99	0.88	7409.63	876.92 N	440.24 E	879.29	0.70
8315.00	89.17	358.27	7411.99	971.88 N	439.53 E	974.25	3.01
8411.00	90.03	358.21	7412.66	1067.83 N	436.59 E	1070.18	0.90
8507.00	90.80	358.41	7411.96	1163.79 N	433.75 E	1166.12	0.83
8603.00	90.62	358.64	7410.77	1259.75 N	431.28 E	1262.06	0.30
8698.00	89.94	356.97	7410.31	1354.68 N	427.64 E	1356.97	1.90
8794.00	90.86	357.17	7409.64	1450.55 N	422.74 E	1452.81	0.98
8889.00	90.31	356.28	7408.67	1545.38 N	417.31 E	1547.62	1.10
8985.00	91.08	357.03	7407.50	1641.21 N	411.71 E	1643.42	1.12
9080.00	90.92	356.32	7405.85	1736.04 N	406.20 E	1738.21	0.77
9175.00	90.74	355.56	7404.47	1830.79 N	399.48 E	1832.92	0.82
9272.00	90.09	358.43	7403.77	1927.64 N	394.39 E	1929.75	3.03
9367.00	89.69	358.12	7403.95	2022.60 N	391.53 E	2024.69	0.53
9462.00	90.06	359.20	7404.16	2117.57 N	389.31 E	2119.65	1.20
9558.00	90.71	358.62	7403.51	2213.55 N	387.48 E	2215.61	0.91
9654.00	89.07	0.08	7403.70	2309.54 N	386.39 E	2311.59	2.29
9749.00	89.48	358.68	7404.90	2404.52 N	385.37 E	2406.57	1.54
9845.00	91.32	359.69	7404.23	2500.51 N	384.00 E	2502.55	2.19
9940.00	90.74	0.74	7402.52	2595.49 N	384.36 E	2597.53	1.26
10035.00	89.63	0.96	7402.21	2690.47 N	385.77 E	2692.52	1.19
10131.00	87.81	2.95	7404.36	2786.39 N	389.04 E	2788.45	2.81
10227.00	87.87	4.54	7407.98	2882.11 N	395.31 E	2884.21	1.66
10323.00	90.34	5.91	7409.48	2977.69 N	404.05 E	2979.83	2.94
10417.00	89.23	4.79	7409.83	3071.28 N	412.81 E	3073.47	1.68
10513.00	89.91	4.47	7410.55	3166.96 N	420.56 E	3169.19	0.78
10608.00	91.45	5.72	7409.42	3261.57 N	428.99 E	3263.85	2.09
10703.00	90.52	6.19	7407.79	3356.05 N	438.85 E	3358.37	1.10
10799.00	89.44	3.18	7407.82	3451.71 N	446.69 E	3454.08	3.33
10894.00	91.73	4.33	7406.85	3546.50 N	452.91 E	3548.89	2.70
10989.00	92.43	0.18	7403.40	3641.34 N	456.65 E	3643.76	4.43
11084.00	92.40	359.42	7399.40	3736.25 N	456.31 E	3738.67	0.80
11180.00	92.37	359.09	7395.41	3832.16 N	455.07 E	3834.57	0.34
11276.00	92.40	358.35	7391.41	3928.05 N	452.92 E	3930.45	0.77
11372.00	92.99	357.89	7386.90	4023.89 N	449.78 E	4026.27	0.78
11467.00	88.39	356.26	7385.75	4118.74 N	444.93 E	4121.08	5.14
11562.00	88.46	359.10	7388.37	4213.61 N	441.09 E	4215.94	2.99
11658.00	89.48	359.93	7390.09	4309.59 N	440.28 E	4311.91	1.37
11754.00	91.48	2.44	7389.29	4405.55 N	442.26 E	4407.88	3.34
11870.00	91.02	0.81	7386.76	4521.48 N	445.55 E	4523.82	1.46
11915.00	91.02	0.81	7385.96	4566.46 N	446.18 E	4568.81	0.00

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 0.31 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.62 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11915.00 FEET
IS 4588.21 FEET ALONG 5.58 DEGREES (TRUE)

Surveys tied on to gyro at 1001'