



EWR-Phase 4
DGR Dual Gamma Ray
PCDC Pressure Case Directional
PCGK Pressure Case Gamma

1 : 1200 / 1 : 240

Country : USA							
Field : Wattenburg							
Location : Lat: 40° 26' 7.84" North Long: 104° 17' 54.17" West							
Well : Antelope 11-2HZ							
Company : Bonanza Creek Energy, Inc							
Rig : Ensign 14							
LOCATION		Company : Bonanza Creek Energy, Inc Rig : Ensign 14 Well : Antelope 11-2HZ Field : Wattenburg Country : USA API Number : 05-12333353-00					
Latitude : 40° 26' 7.84" North Longitude : 104° 17' 54.17" West UTM Easting = 3,334,477.92 ft UTM Northing = 1,403,763.29 ft							
Permanent Datum : Ground Level		Elevation : 4655.00 ft	Elev. KB 4671.00 ft				
Log Measured From : Kelly Bushing		16.00 ft Above Permanent Datum	DF 4670.00 ft				
Drilling Measured From : Kelly Bushing		MD LOG	GL 4655.00 ft WD N/A				
Depth Logged : 5,560.00 ft To 11,216.00 ft		Unit No. : 11610117	Job No. : CA-MJ-0008259296				
Date Logged : 18-Jun-11 To 28-Jun-11							
Total Depth MD : 11,216.00 ft TVD: 6,218.93 ft		Plot Type : Final					
Spud Date : 15-Jun-11		Plot Date : 29-Jun-11					
Run No.	Borehole Record (MD)		Run No.	Borehole Record (MD)			
	Size	From		To	Size	From	To
	3	8.750 in		5,560.00 ft	6,015.00 ft		
	4	8.750 in		6,015.00 ft	6,654.00 ft		
	5	6.130 in		6,554.00 ft	11,216.00 ft		
			Casing Record (MD)				
			Size	Weight	From	To	
				9.625 in	36.00 lbpf	SURFACE 443.00 ft	
				7.000 in	23.00 lbpf	SURFACE 6,545.00 ft	

WELL INFORMATION

MWD Run Number	100	200	300		
Date run completed	22-Jun-11	23-Jun-11	29-Jun-11		
Rig Bit Number	3	4	5		
Bit Size (in)	8.750	8.750	6.130		
Tool Nominal OD (in)	6.750	6.750	4.760		
Log Start Depth (MD, ft)	5,560.00	6,015.00	6,554.00		
Log End Depth (MD, ft)	6,015.00	6,554.00	11,216.00		
Drill or Wipe	Drill	Drill	Drill		
Drill/Wipe Start Date and Time	20-Jun-11 17:00	22-Jun-11 16:30	25-Jun-11 04:00		
Drill/Wipe End Date and Time	22-Jun-11 13:00	23-Jun-11 12:30	28-Jun-11 15:40		
Min Inc (deg) @ Depth (MD, ft)	1.97 @ 5,537.00	35.16 @ 5,982.00	88.33 @ 11,071.00		
Max Inc (deg) @ Depth (MD, ft)	35.16 @ 5,982.00	86.60 @ 6,521.00	92.13 @ 6,931.00		
Bit TFA(in2) / Bit Type	.86 / PDC	.86 / PDC	.55 / PDC		
Flow Rate (gpm)	435.00	420.00	230.00		
Max AV (fpm) / CV (fpm) @ MWD	357.0 / 360.0	331.9 / 331.4	375.3 / 237.1		
Fluid Type	Fresh Water Gel	Fresh Water Gel	Fresh Water Gel		
Density (ppg) / Viscosity (spqt)	9.50 / 46.00	9.50 / 46.00	8.70 / 37.00		
Filtrate CL (ppm)	1,500.00	1,500.00	1,100.00		
pH / Fluid Loss (mptm)	9.10 / 6	9.10 / 6	8.60 / 7		
PV (cP) / YP (Ihf2)	16 / 18.00	16 / 18.00	8 / 8.00		
% Solids / % Sand	5.9 / .03	5.9 / .03	2.2 / 0.25		
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A	N/A / 0/97.5		
Rm @ Measured Temp (degF)	4.500 @ 70.00	4.500 @ 70.00	N/A @ N/A		
Rmf @ Measured Temp (degF)	4.000 @ 70.00	4.000 @ 68.00	N/A @ N/A		
Rmc @ Measured Temp (degF)	3.600 @ 70.00	3.600 @ 68.00	N/A @ N/A		

Max Tool Temp (degF) / Source	144.94 / HCIM	155.53 / HCIM	205.16 / PCM		
Rm @ Max Tool Temp (degF)	2.2771 @ 144.94	2.1286 @ 155.53	N/A @ 205.16		
Lead MWD Engineer	J. Huckleby	J. Huckleby	B. Cristian		
Customer Representative	R. Hoffman	R. Hoffman	R. Hoffman		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM	HCIM	PCM		
Software Version	88.47	88.47	5.76		
Sub Serial Number	90283213	90283213	11432611		
Insert Serial Number	11603378	11603378	11400882		
Date and Time Initialized	20-Jun-11 10:01	22-Jun-11 12:44	24-Jun-11 06:57		
Date and Time Read	22-Jun-11 03:56	23-Jun-11 21:44	29-Jun-11 01:13		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	31.09	31.09	50.00		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11677158	11677158	11432611		
Sonde Serial Number	11297623	11297623	11478078		
Sensor ID Number	N/A	N/A	N/A		
Toolface Offset (deg)	288.10	288.10	44.80		

Gamma Ray Sensor Information

Tool Type	DGR	DGR	PCG		
Distance From Bit (ft)	53.92	53.92	53.05		
Recorded Sample Period (sec)	12	12	10		
Software Version	N/A	N/A	8.15		
Sub Serial Number	10806511	10806511	11432611		
Insert/Sonde Serial Number	90283213	90283213	11579783		

Resistivity Sensor Information

Tool Type	EWR-P4	EWR-P4	N/A		
Distance From Bit (ft)	44.06	44.06	N/A		
Recorded Sample Period (sec)	12	12	N/A		
Software Version	1.50	1.50	N/A		
Sub Serial Number	90283213	90283213	N/A		
Receiver Insert Serial Number	90283213	90283213	N/A		
Transmitter Insert Serial Number	90283213	90283213	N/A		
Receiver Orientation	Down	Down	N/A		

Pulser Controller Sensor Information

Tool Type	PCM	PCM	PCM		
Software Version	8.04	8.04	5.76		
PIC Software Version	N/A	N/A	1.30		
Sub/HOC Serial Number	11608312	11608312	11432611		
Insert/Probe/Module SN	11227486	11227486	11400882		
Battery Serial Number	N/A	N/A	N/A		
Valve Insert SN	N/A	N/A	N/A		
DC Insert Serial Number	N/A	N/A	N/A		
Choke Size (32nd)	N/A	N/A	N/A		
Driver Current (amps)	N/A	N/A	N/A		
Driver SMI Current (amps)	N/A	N/A	N/A		

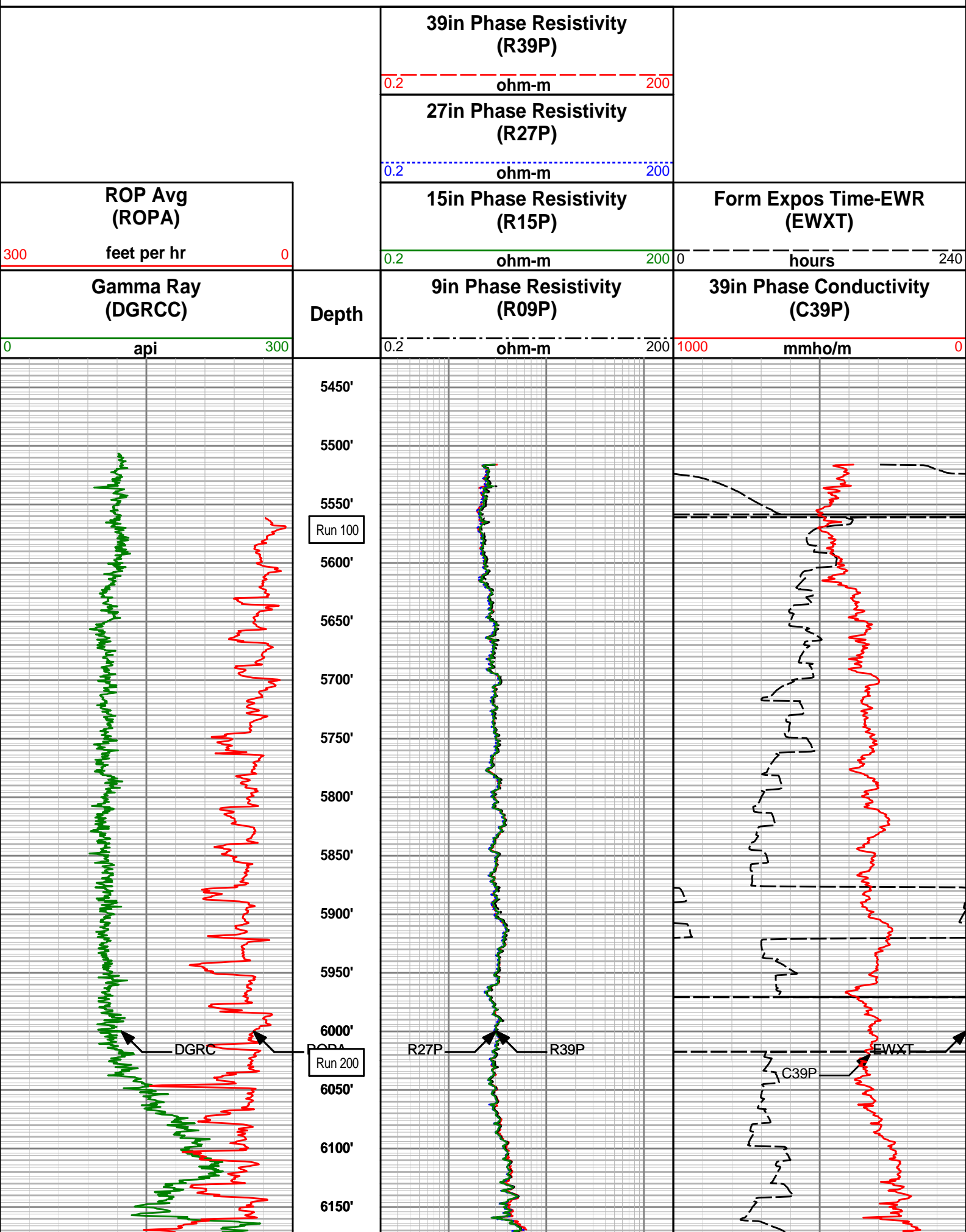
Boot Strap Version	N/A	N/A	4,130.00		
DDSr-DGR Sensor Information					
Tool Type	DDSr-DGR	DDSr-DGR	N/A		
Distance From Bit (ft)	52.93	52.93	N/A		
Recorded Sample Period (sec)	12	12	N/A		
Software Version	10.72	10.72	N/A		
Sub Serial Number	10806511	10806511	N/A		
Insert Serial Number	90283213	90283213	N/A		
Sensor ID Number	5548	5548	N/A		

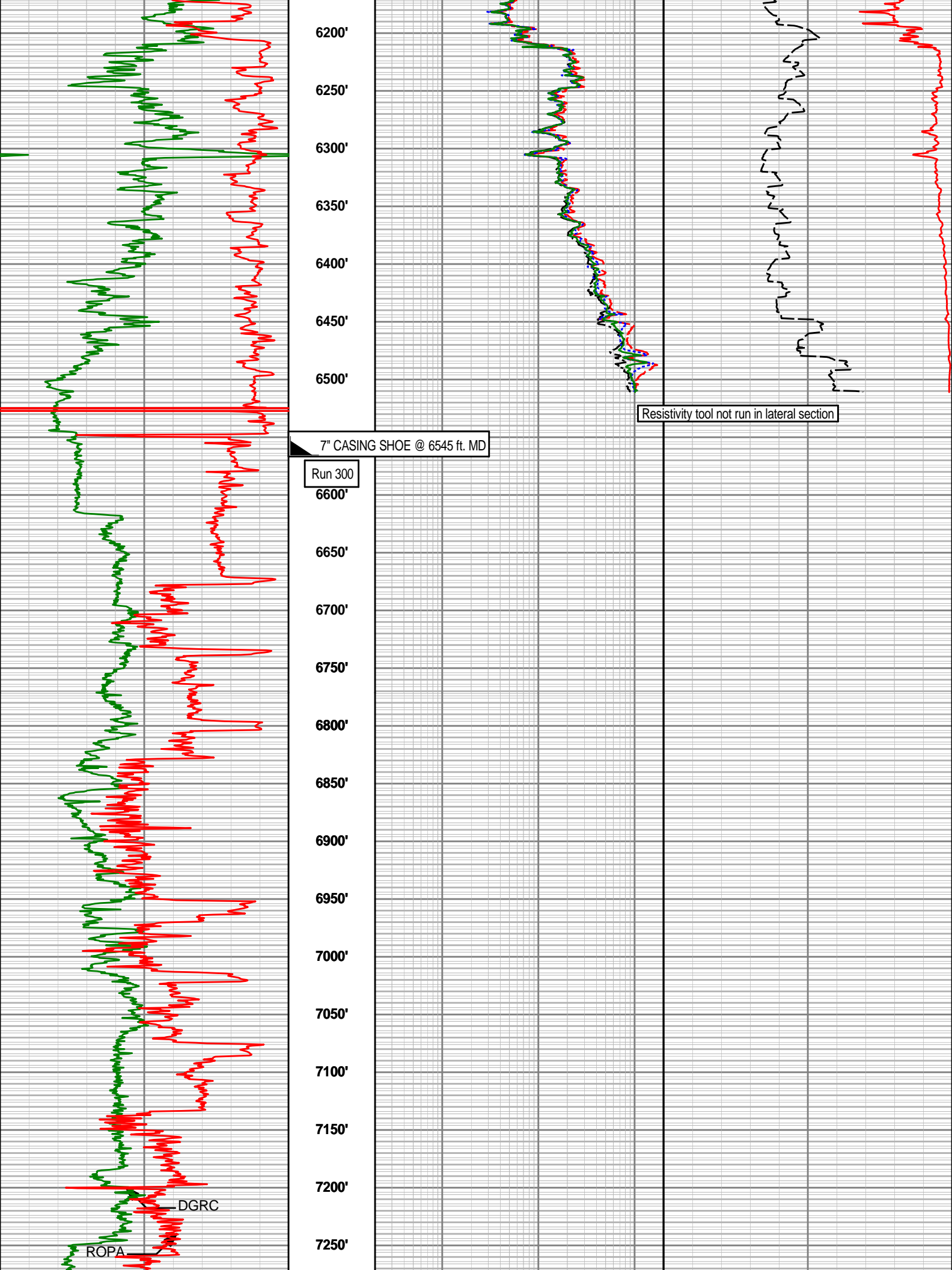
REMARKS					
<p>1. All depths are measured bit depths, referenced to the Driller's pipe tally and are measured from the Kelly Bushing, unless otherwise specified.</p> <p>2. No depth corrections have been made for pipe stretch or compression.</p> <p>3. Critical annular velocities are calculated using the "Power Law" model for water based fluids and the "Bingham Plastic" model for oil and synthetic based fluids.</p> <p>4. All data presented is recorded data unless otherwise specified</p> <p>5. The following smoothing parameters have been applied to the data:</p> <p>ROPA (Average Rate of Penetration):</p> <p style="padding-left: 40px;">Interval Resolution: 0.5 ft</p> <p style="padding-left: 40px;">Interval Distance: 1.2 ft</p> <p style="padding-left: 40px;">Gap Fill : 3.0 ft</p> <p>All other data:</p> <p style="padding-left: 40px;">Interval Resolution: 0.5 ft</p> <p style="padding-left: 40px;">Interval Distance: 0.6 ft</p> <p style="padding-left: 40px;">Gap Fill: 3.0 ft</p> <p>6. INSITE version 7.2.4 Build 03</p>					

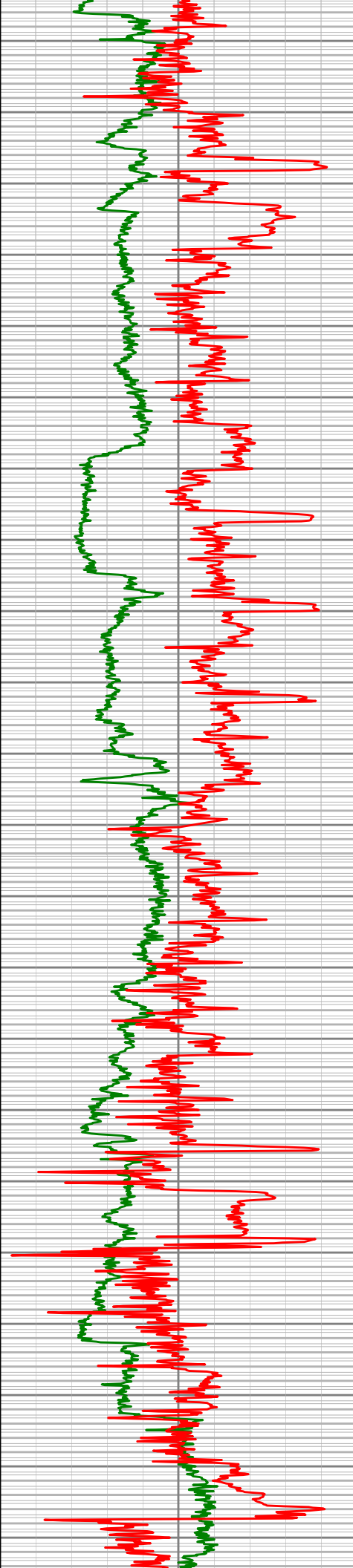
WARRANTY					
<p>HALLIBURTON WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HALLIBURTON CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY OTHER THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION AND PRODUCTION OPERATION. HALLIBURTON MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SERVICES RENDERED. IN NO EVENT WILL HALLIBURTON BE LIABLE FOR FAILURE TO OBTAIN ANY PARTICULAR RESULTS OR FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, RESULTING FROM THE USE OF ANY INFORMATION OR INTERPRETATION PROVIDED BY HALLIBURTON.</p>					

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MD Detail Log 1:1200







7300'

7350'

7400'

7450'

7500'

7550'

7600'

7650'

7700'

7750'

7800'

7850'

7900'

7950'

8000'

8050'

8100'

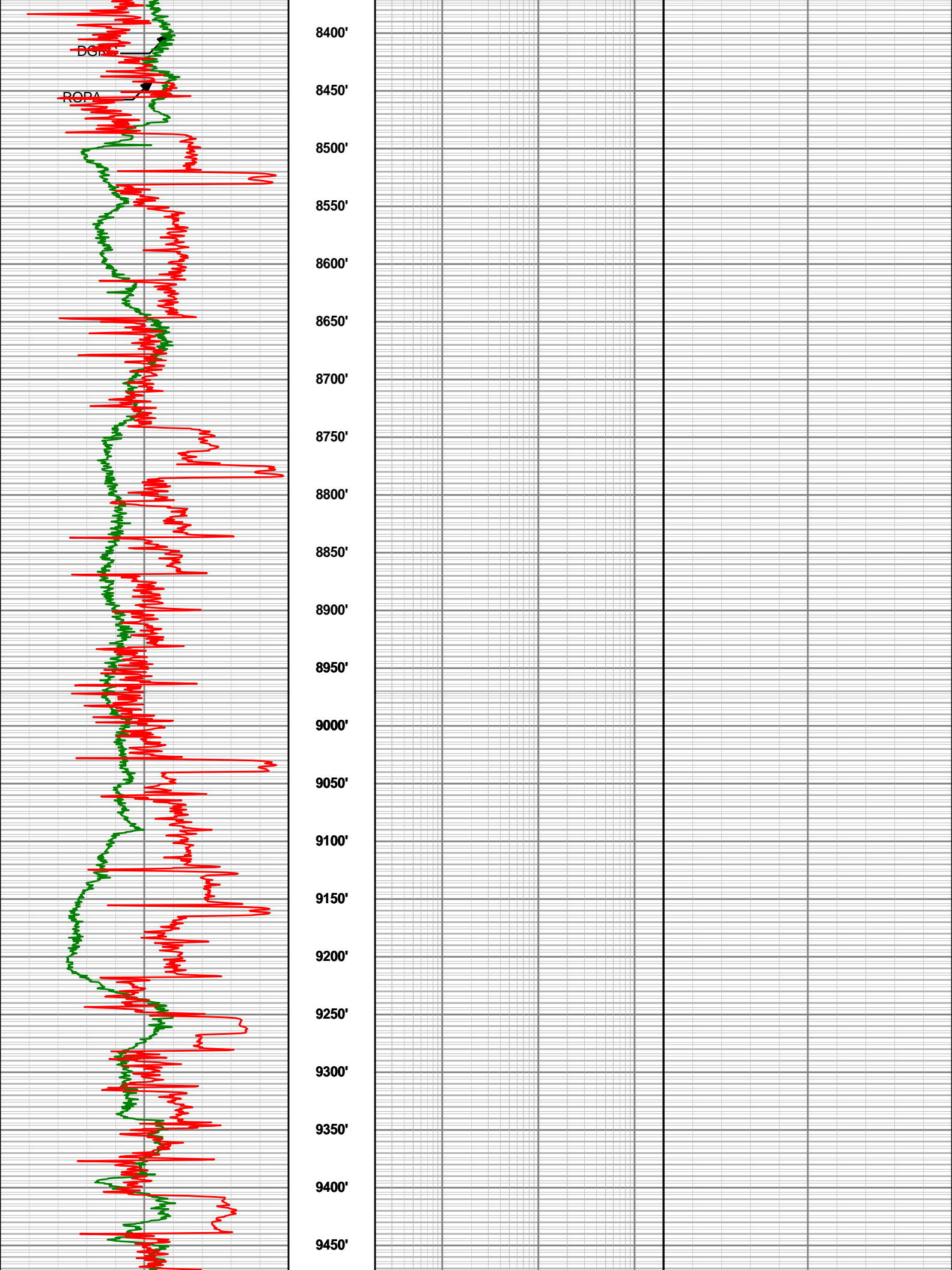
8150'

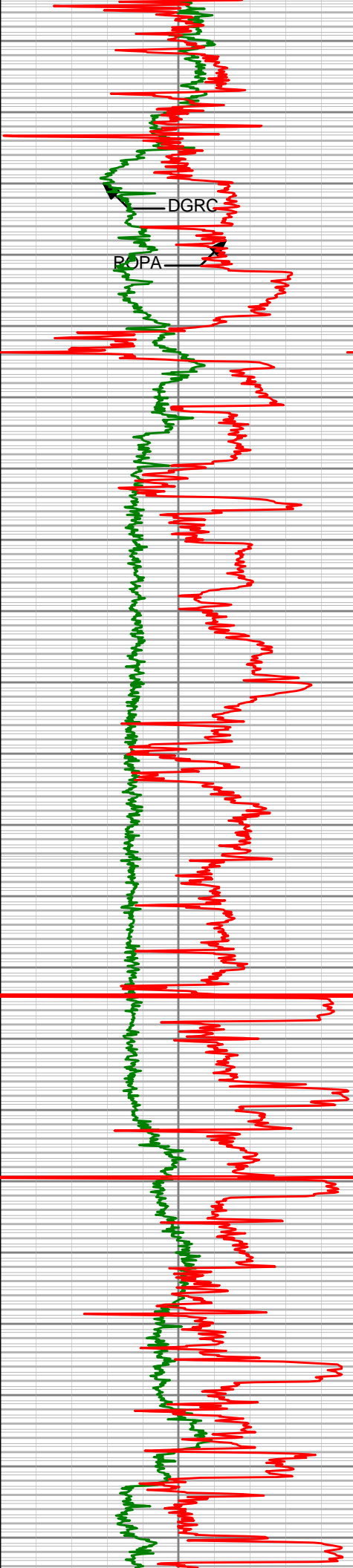
8200'

8250'

8300'

8350'





9500'

9550'

9600'

9650'

9700'

9750'

9800'

9850'

9900'

9950'

10000'

10050'

10100'

10150'

10200'

10250'

10300'

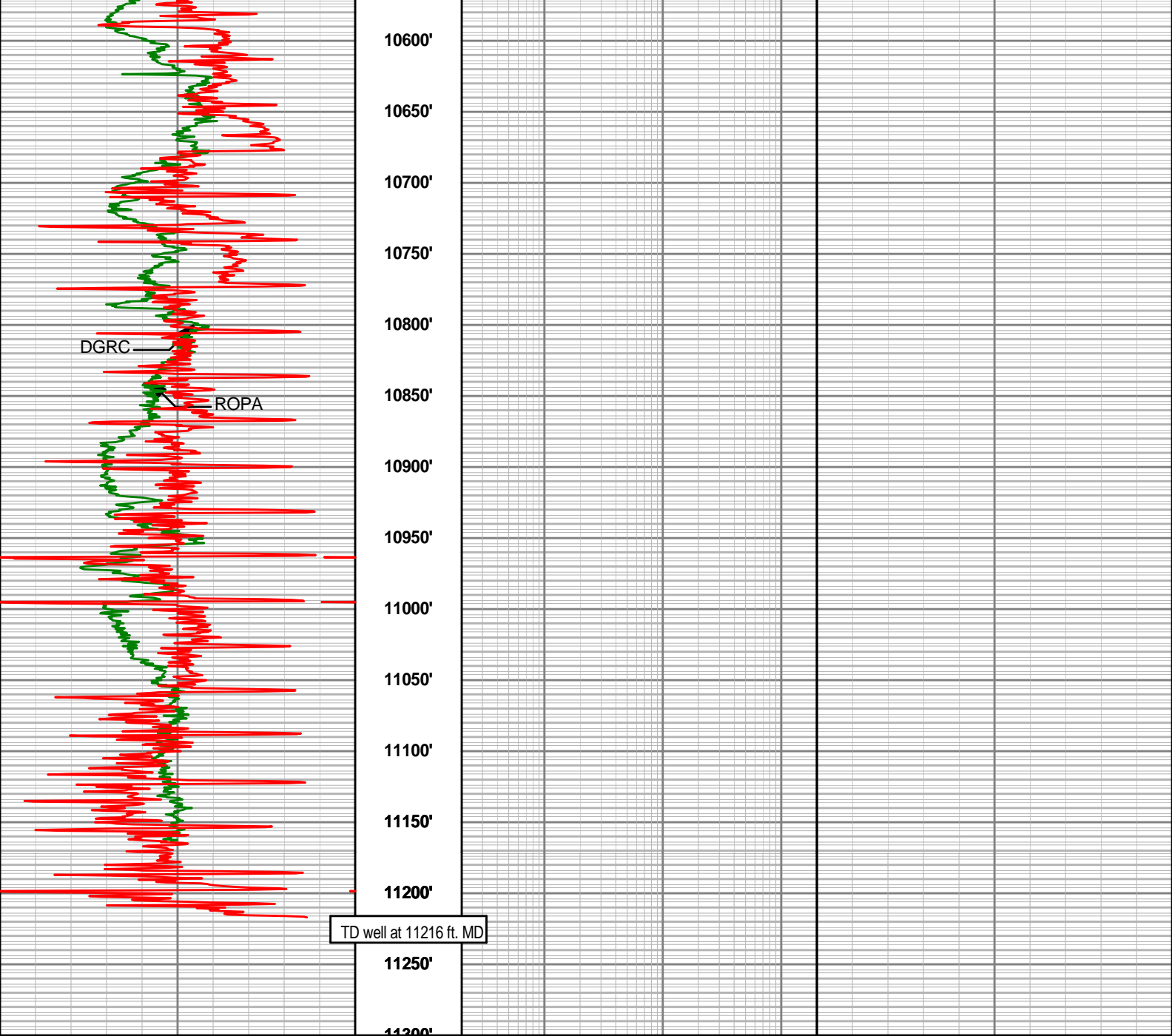
10350'

10400'

10450'

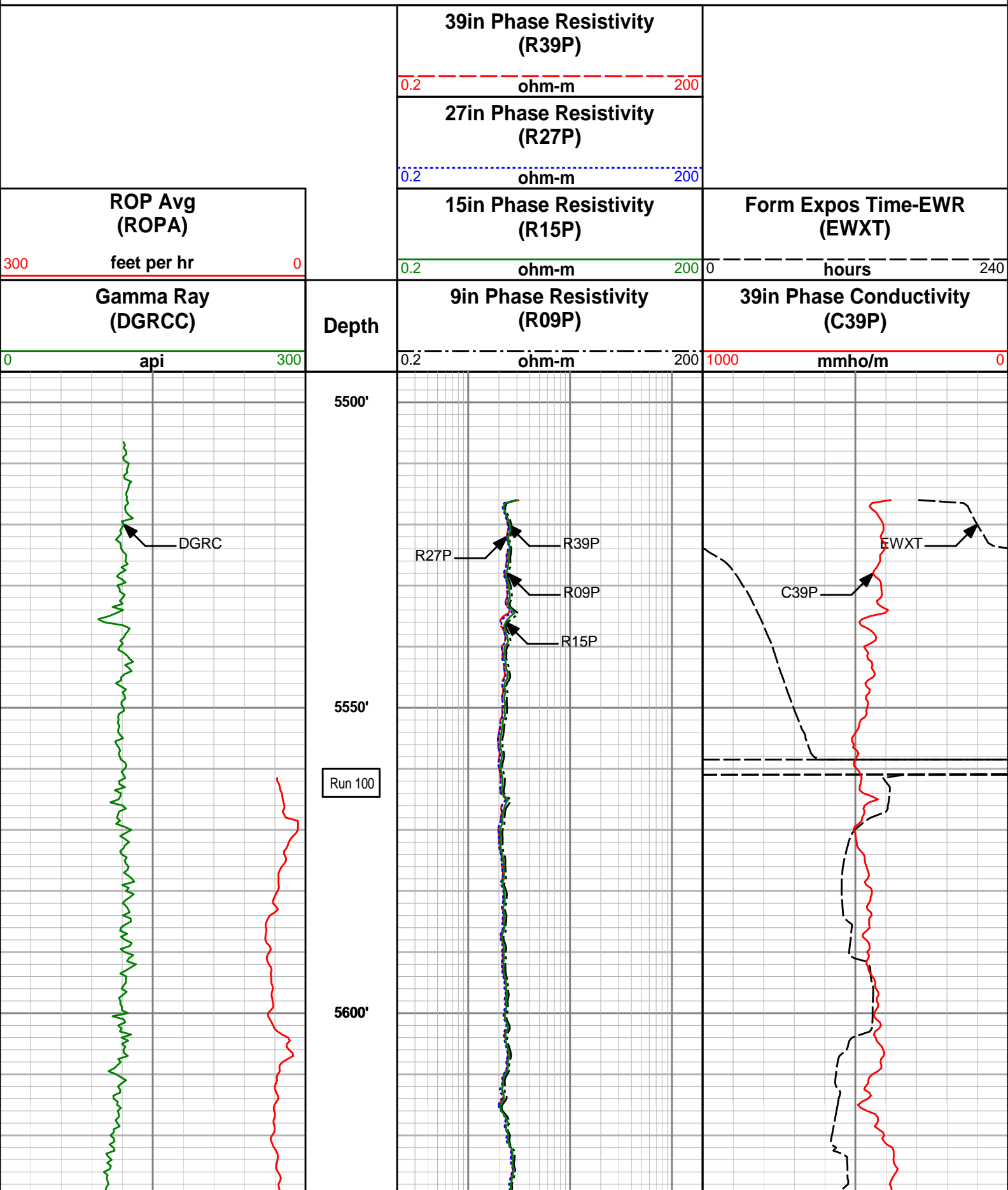
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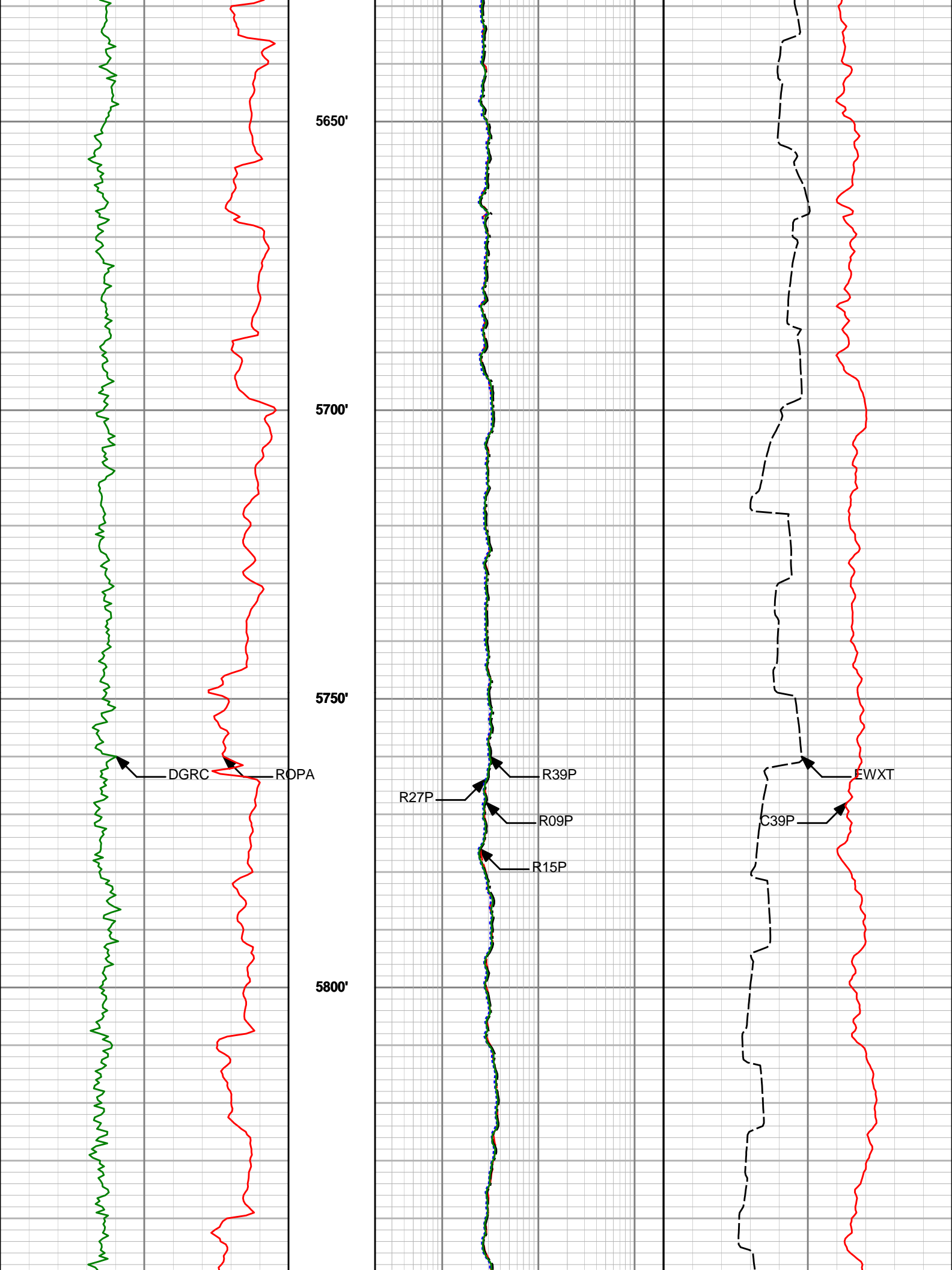
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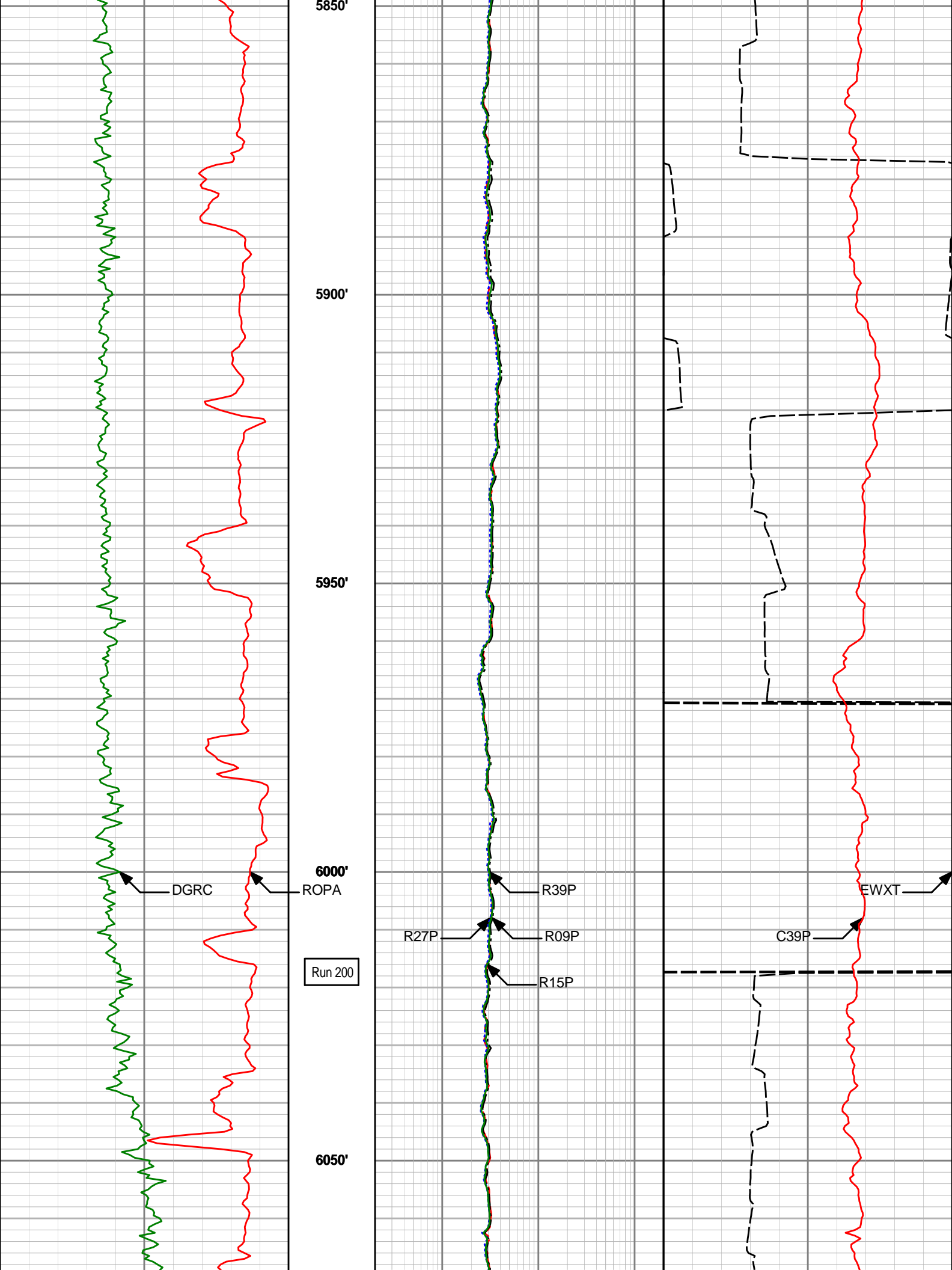


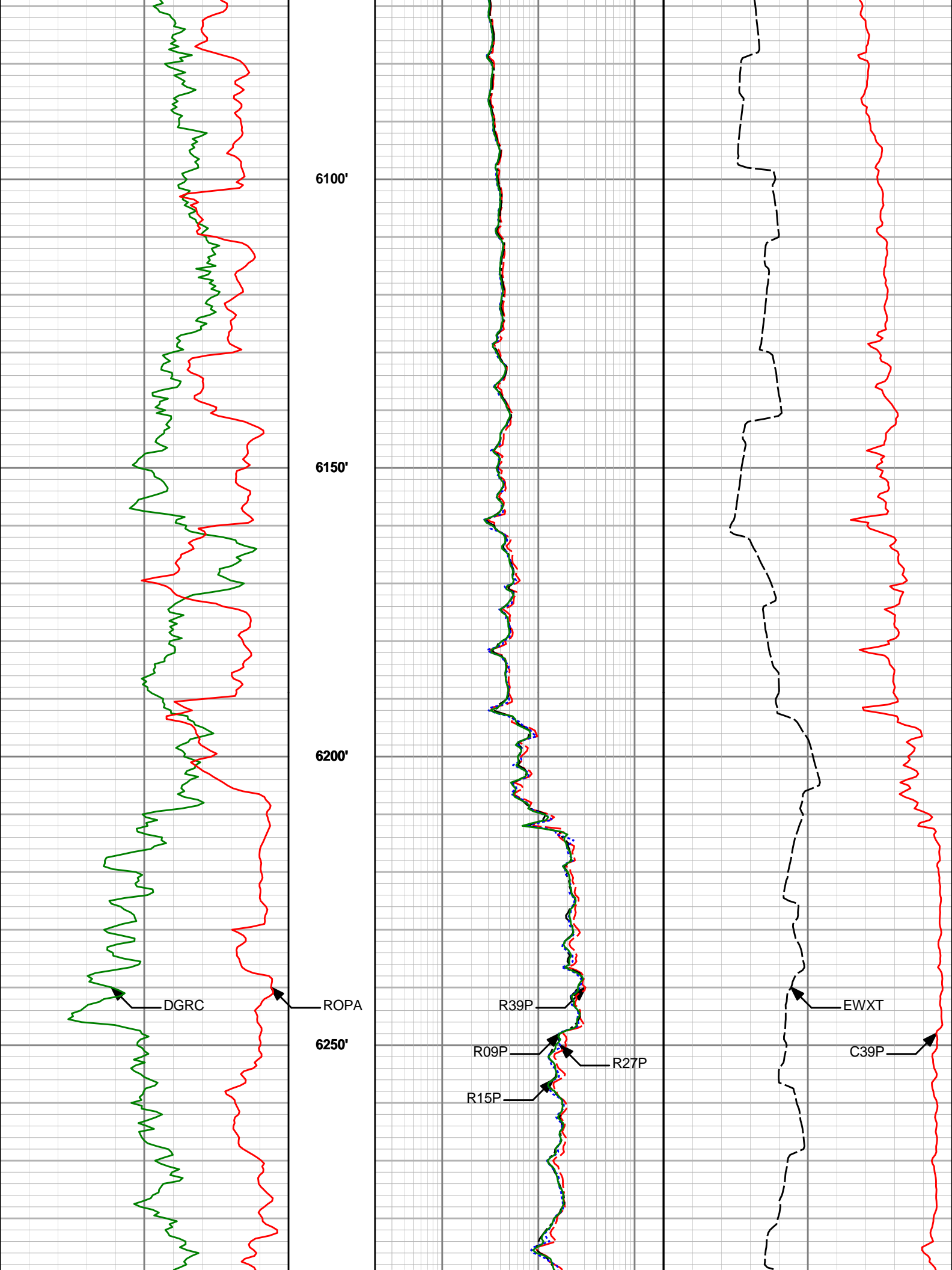
Gamma Ray (DGRCC)	Depth	9in Phase Resistivity (R09P)	39in Phase Conductivity (C39P)
0 api 300		0.2 ohm-m 200	1000 mmho/m 0
ROP Avg (ROPA)		15in Phase Resistivity (R15P)	Form Expos Time-EWR (EWXT)
300 feet per hr 0		0.2 ohm-m 200	0 hours 240
		27in Phase Resistivity (R27P)	
		0.2 ohm-m 200	
		39in Phase Resistivity (R39P)	
		0.2 ohm-m 200	

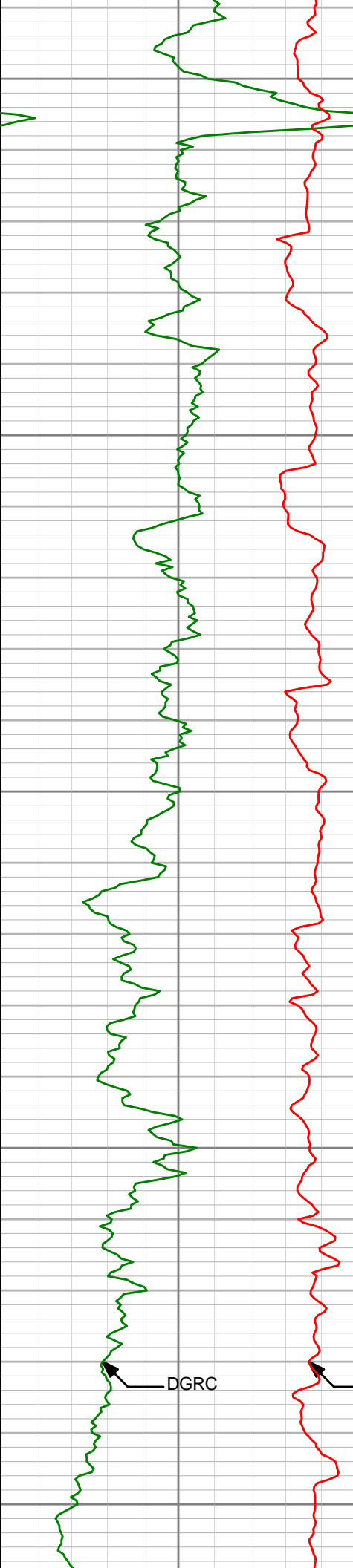
MD Detail Log 1:240











6300'

6350'

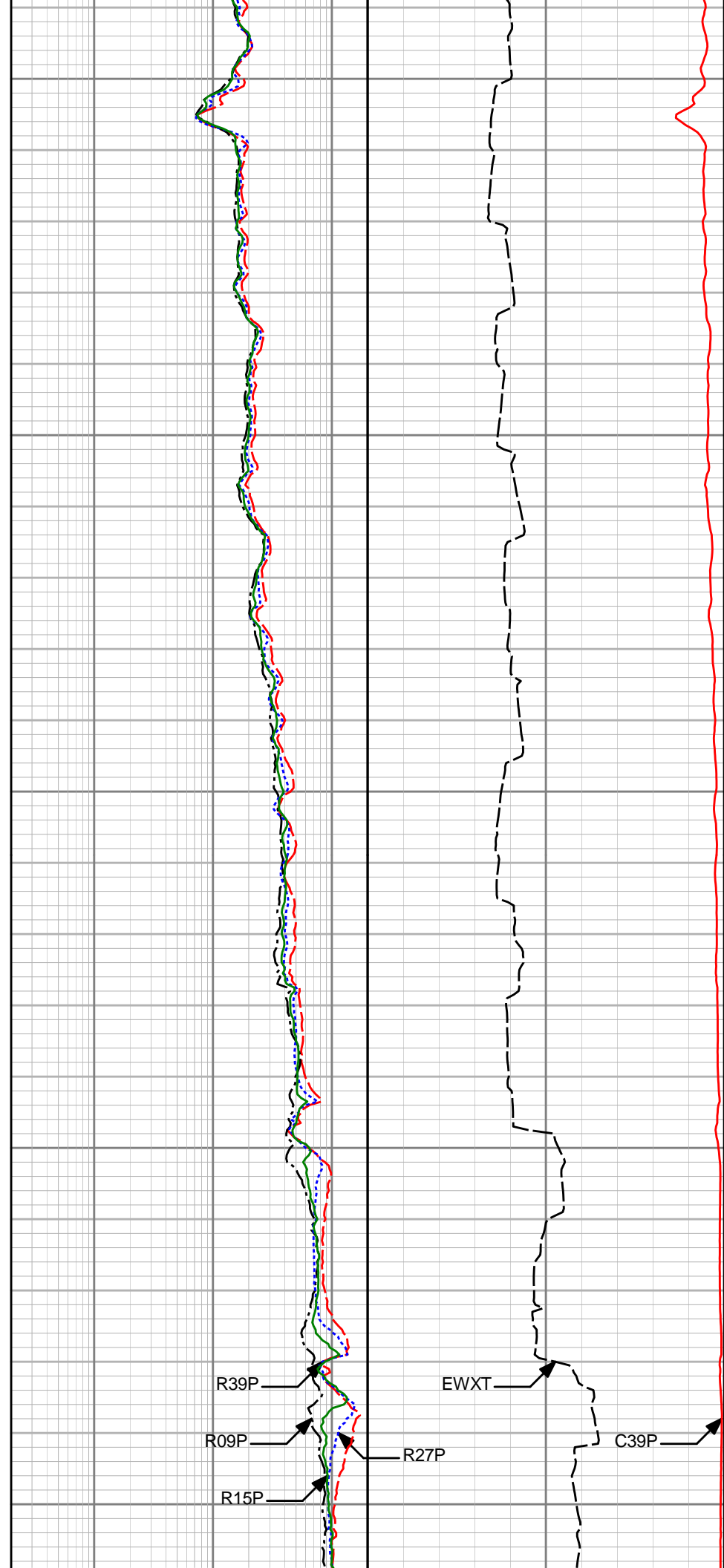
6400'

6450'

6500'

DGRC

ROPA



R39P

R09P

R15P

EWXT

C39P

R27P

Resistivity tool not run in lateral section

7" CASING SHOE @ 6545 ft. MD

6550'

Run 300

6600'

6650'

6700'

DGRC

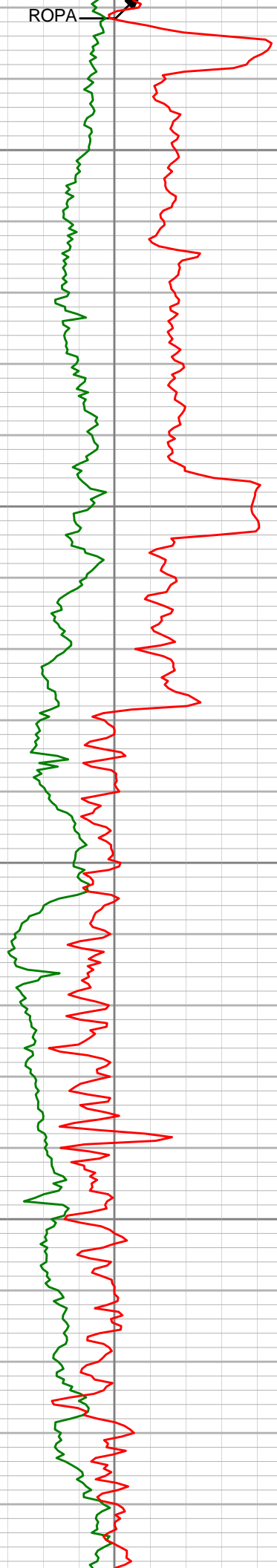
ROPA

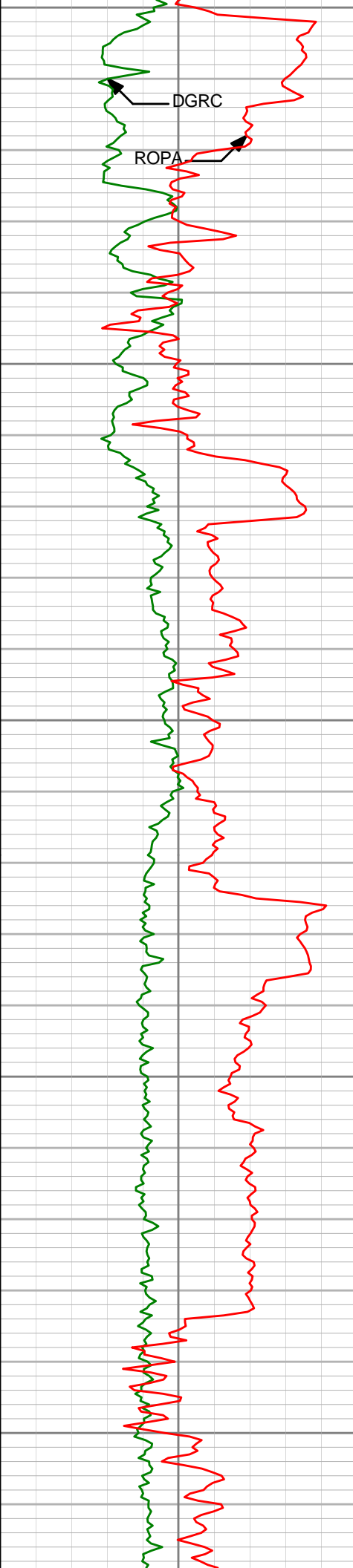
6750'

6800'

6850'

6900'





6950'

DGRC

ROPA

7000'

7050'

7100'

7150'



7200'

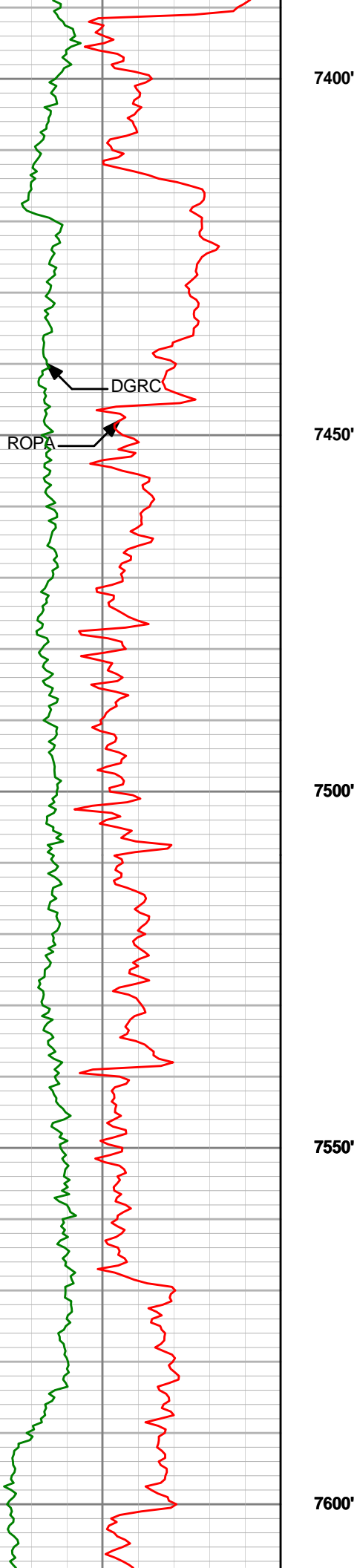
DGRC

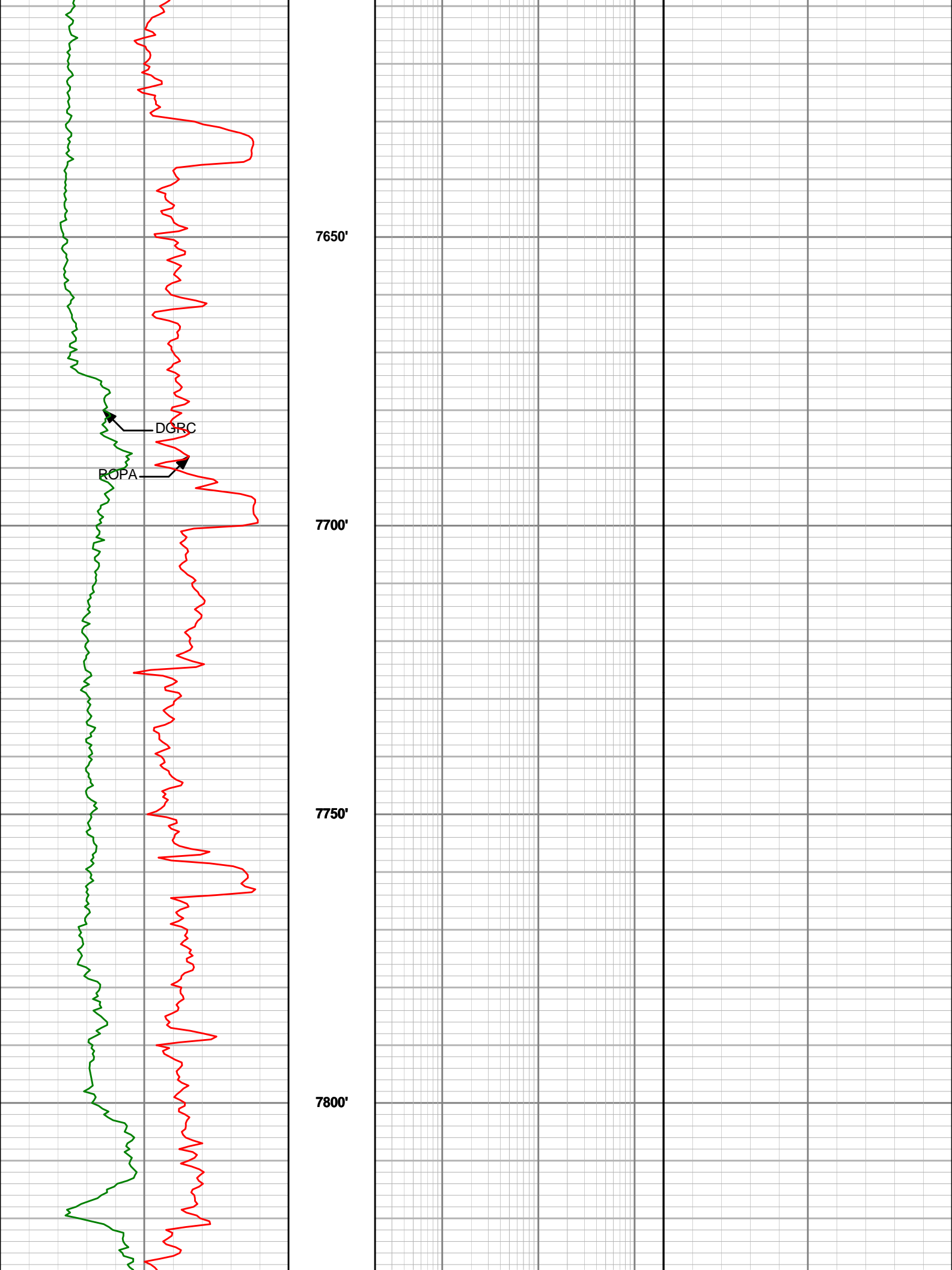
ROPA

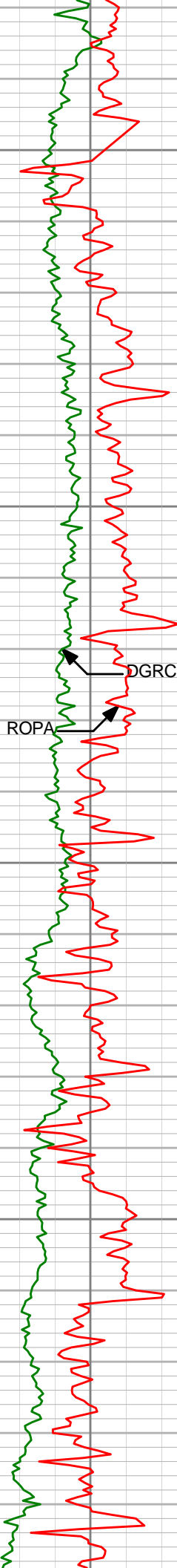
7250'

7300'

7350'







7850'

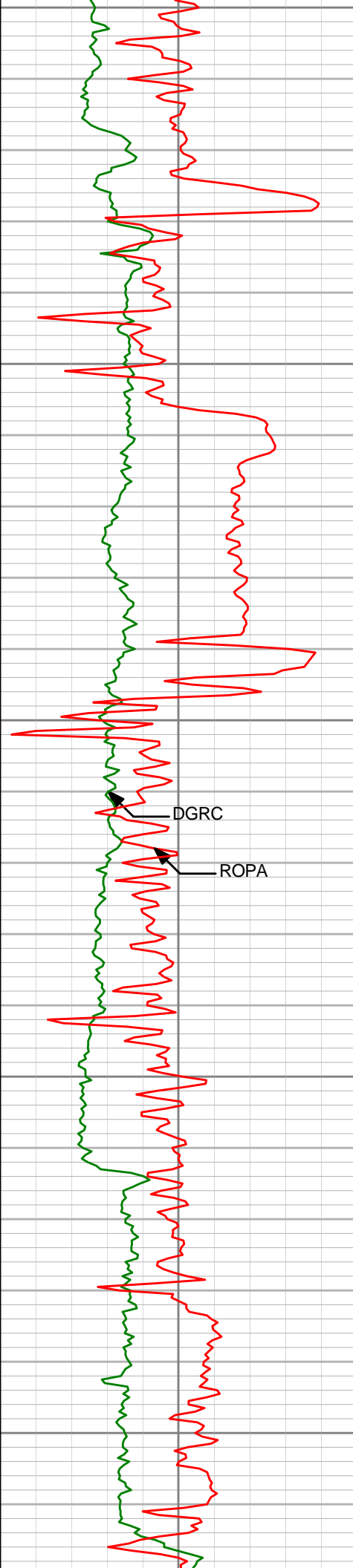
7900'

7950'

8000'

DGRC

ROPA



8050'

8100'

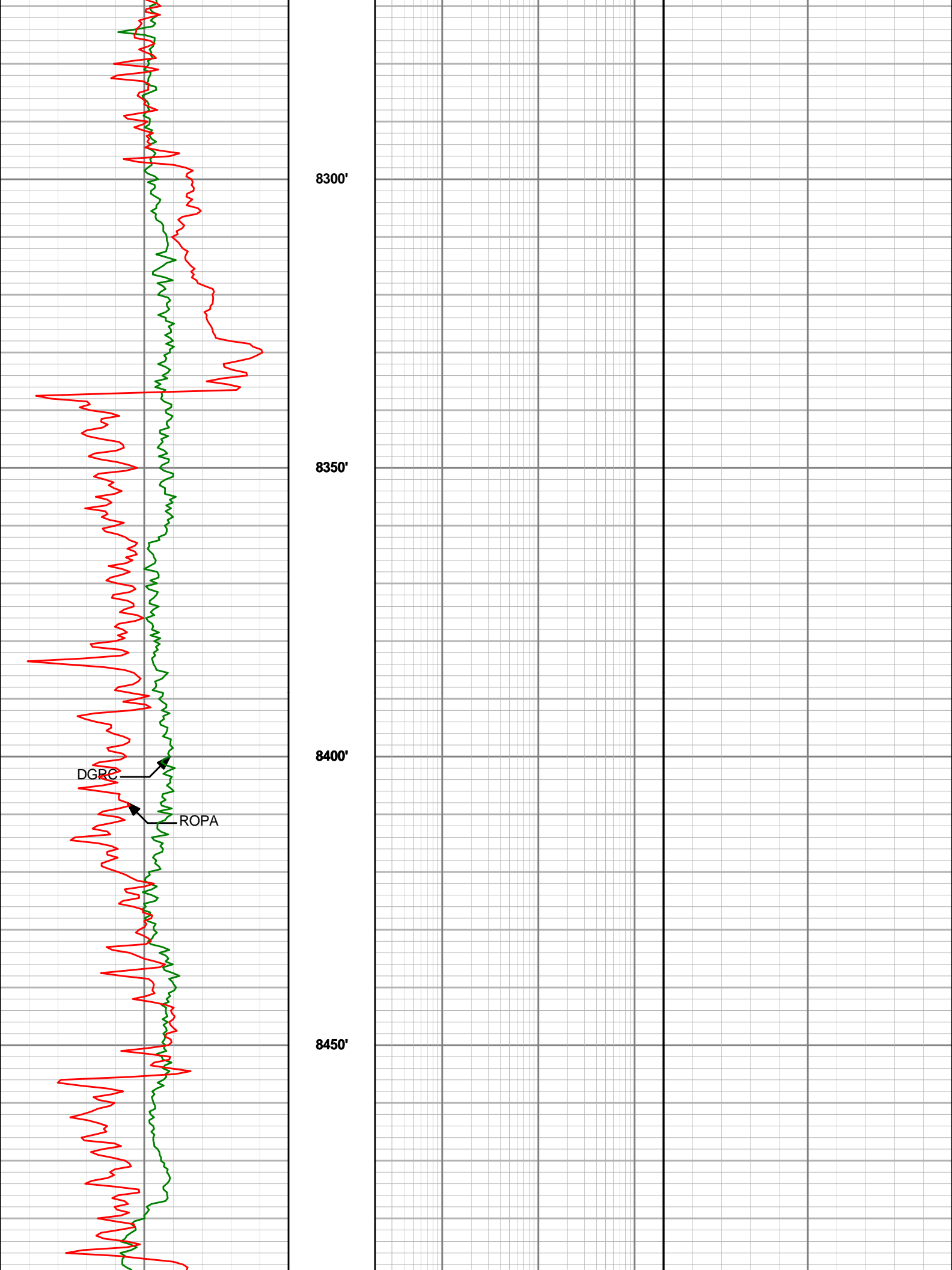
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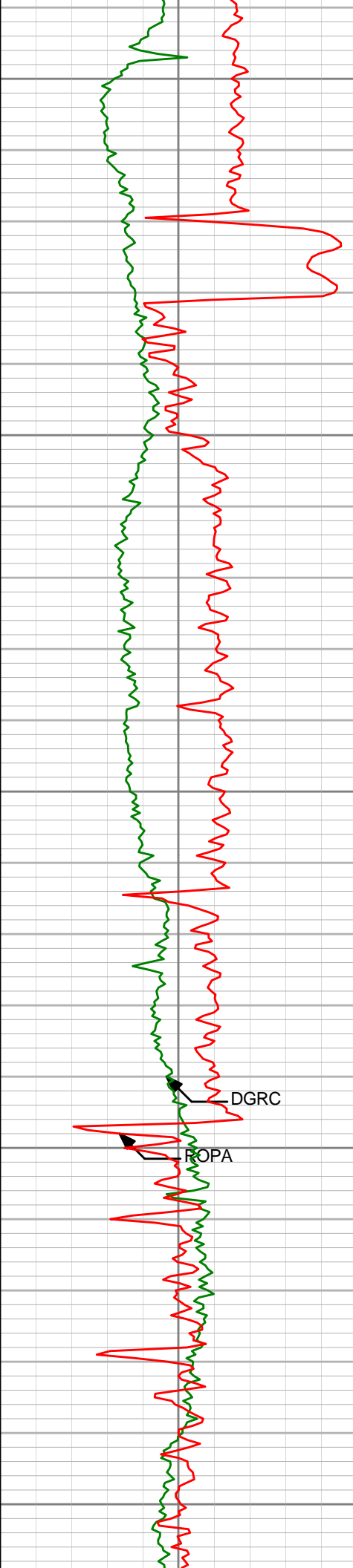
8200'

8250'

DGRC

ROPA





8500'

8550'

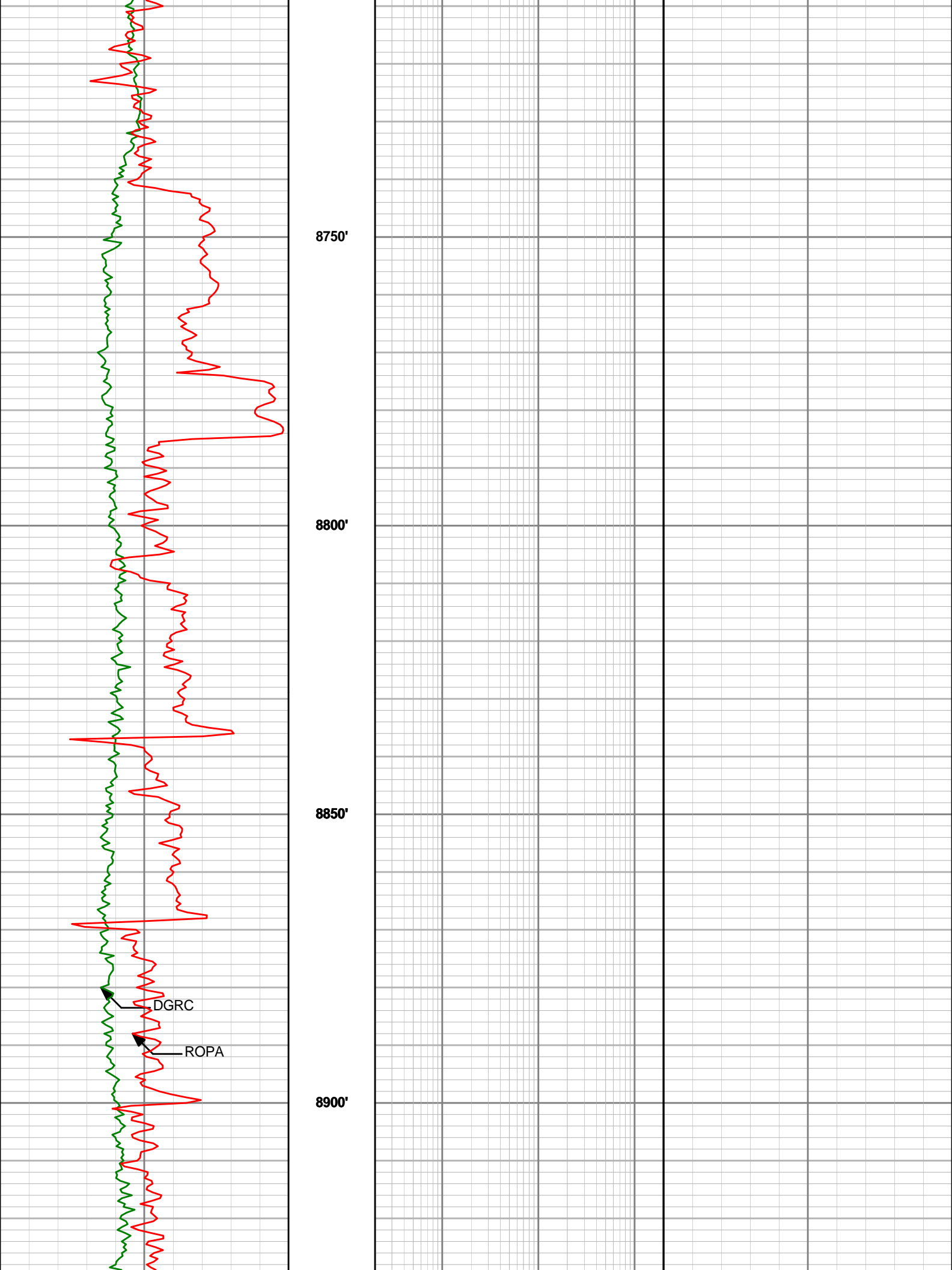
8600'

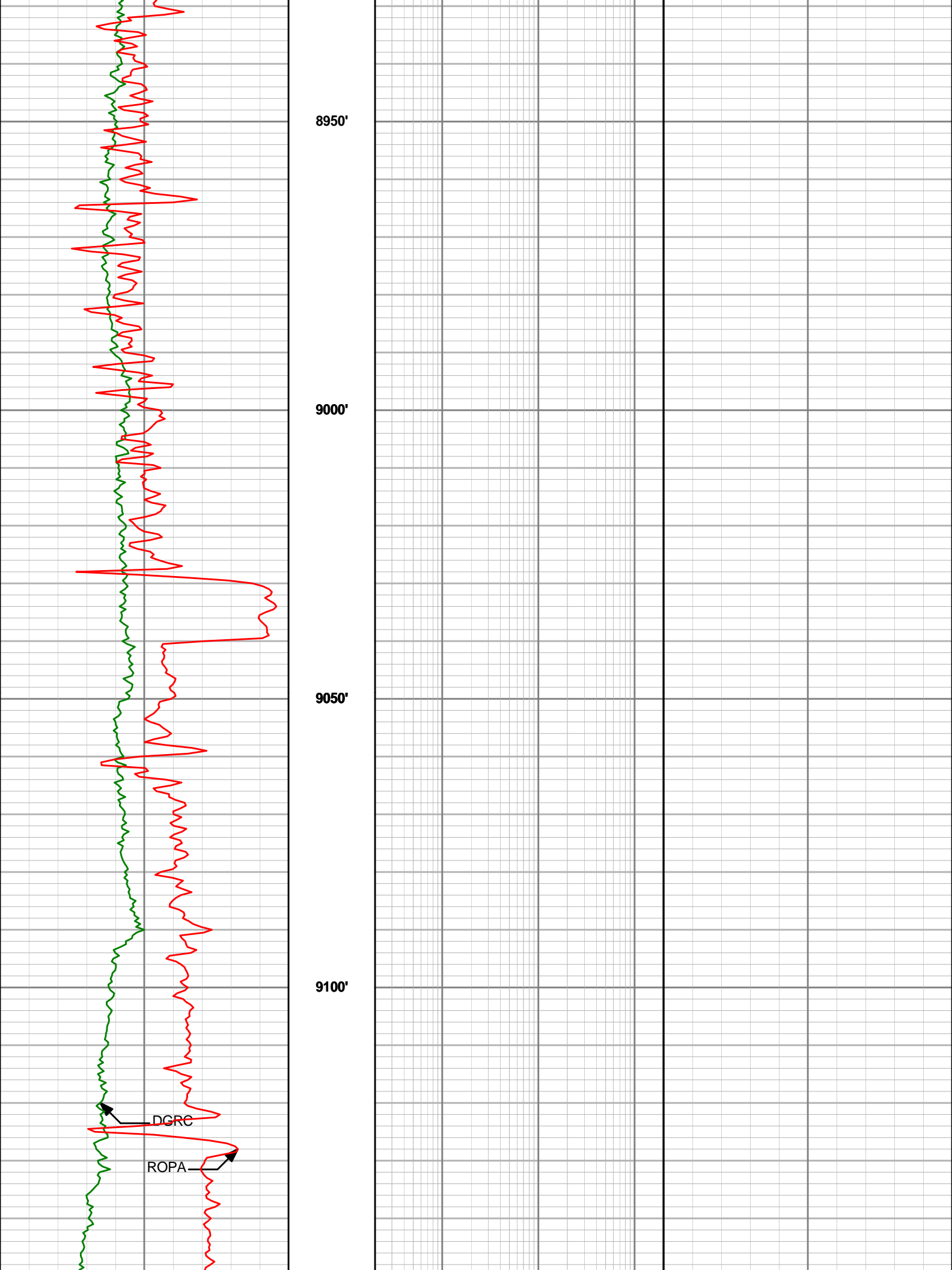
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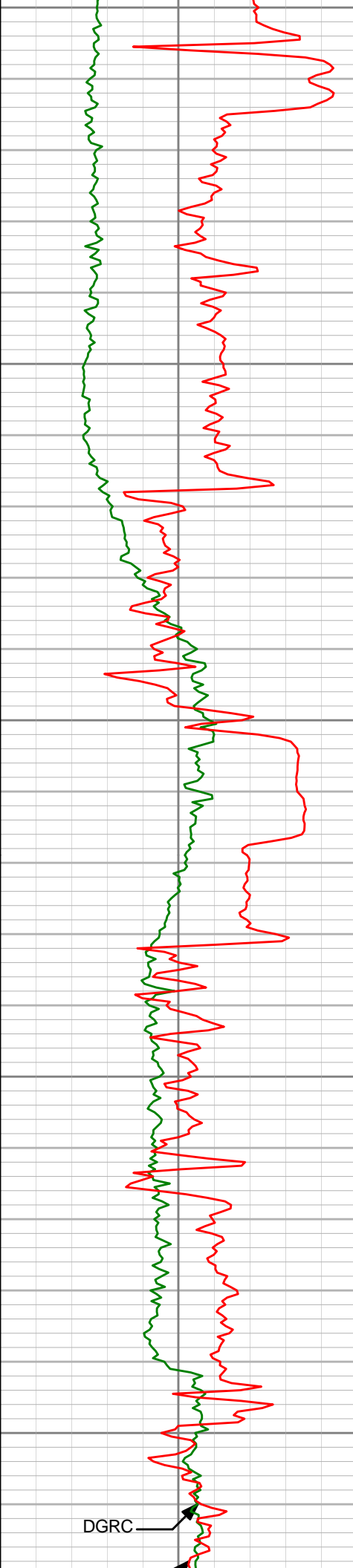
8700'

DGRC

ROPA







9150'

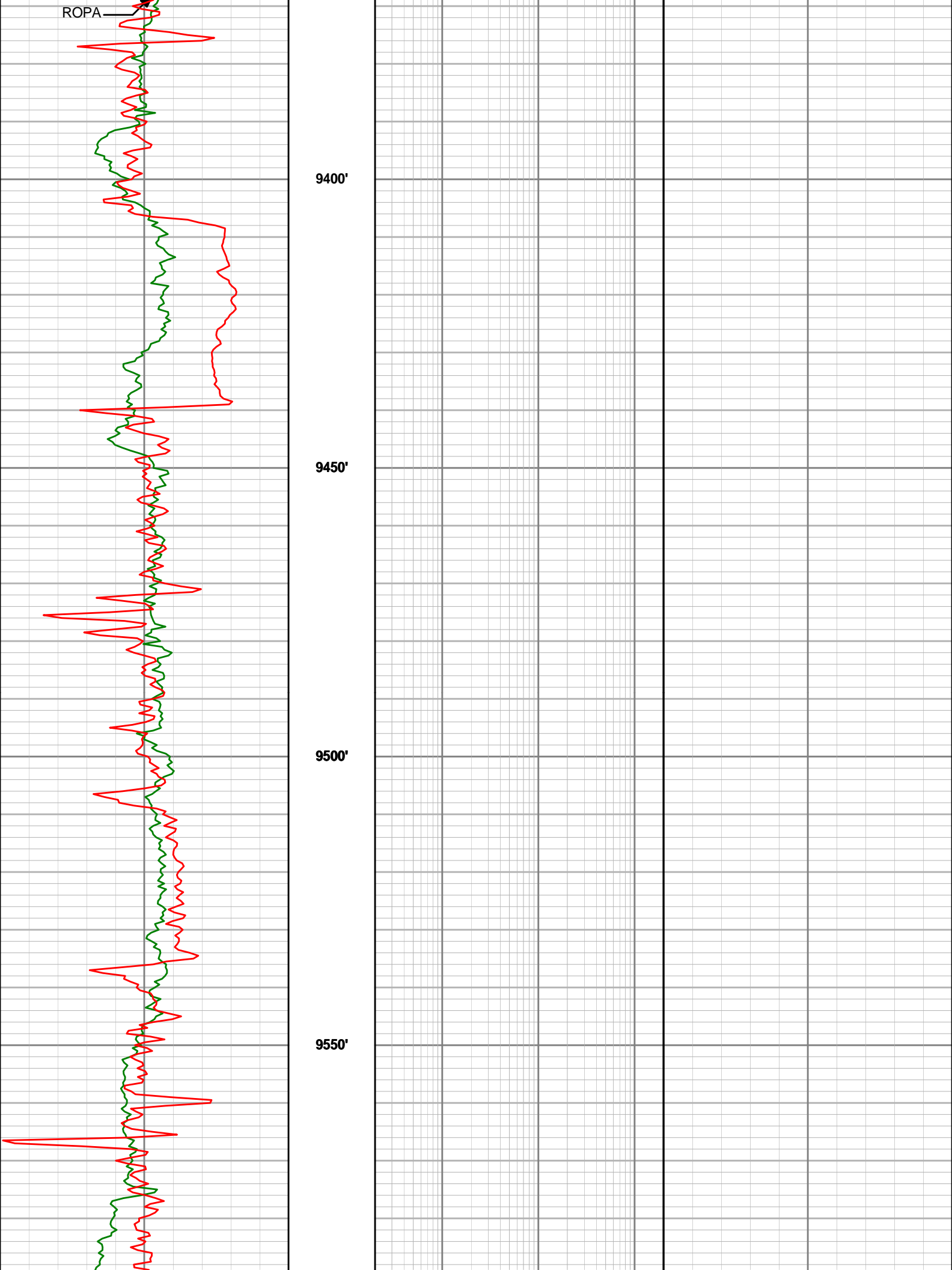
9200'

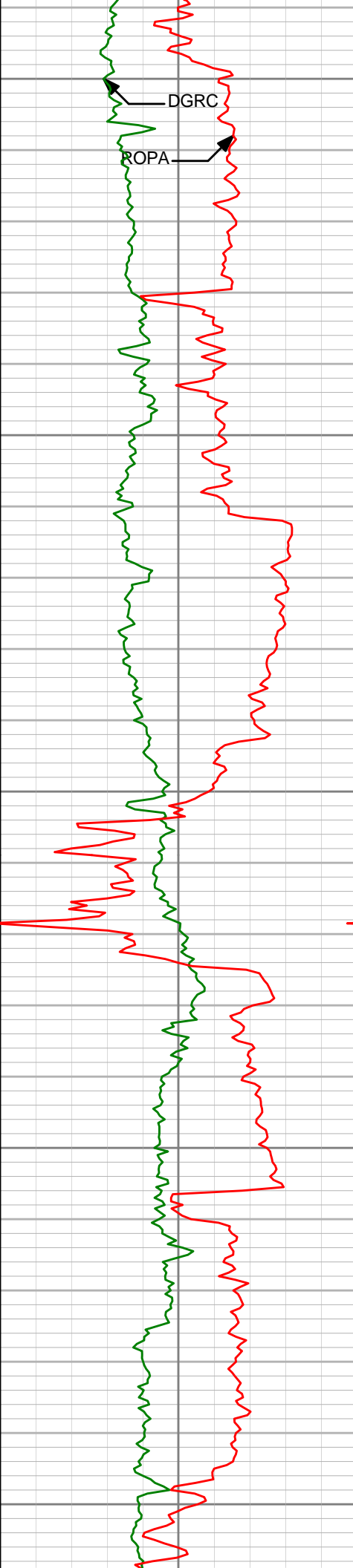
9250'

9300'

9350'

DGRC





9600'

DGRG

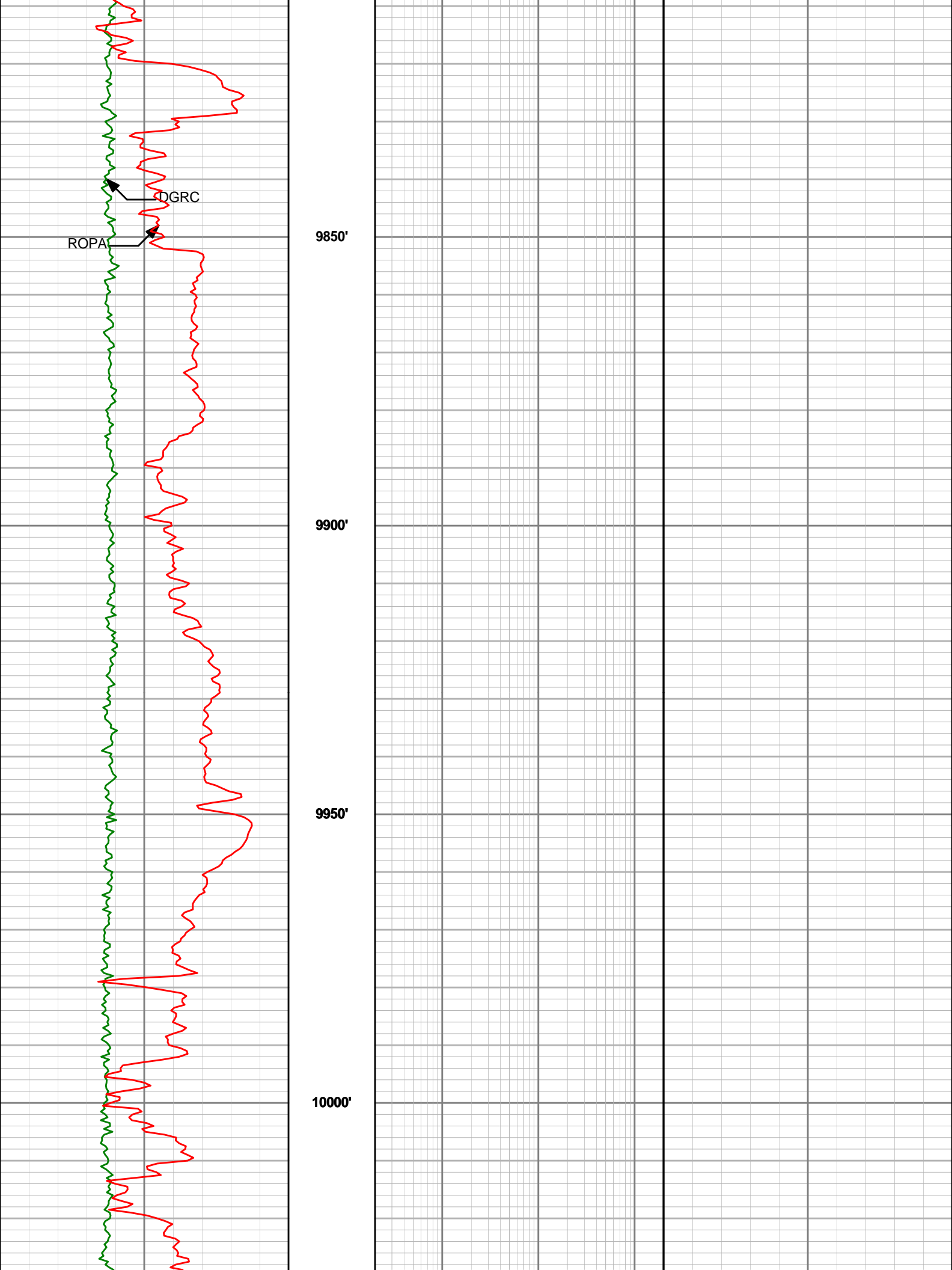
ROPA

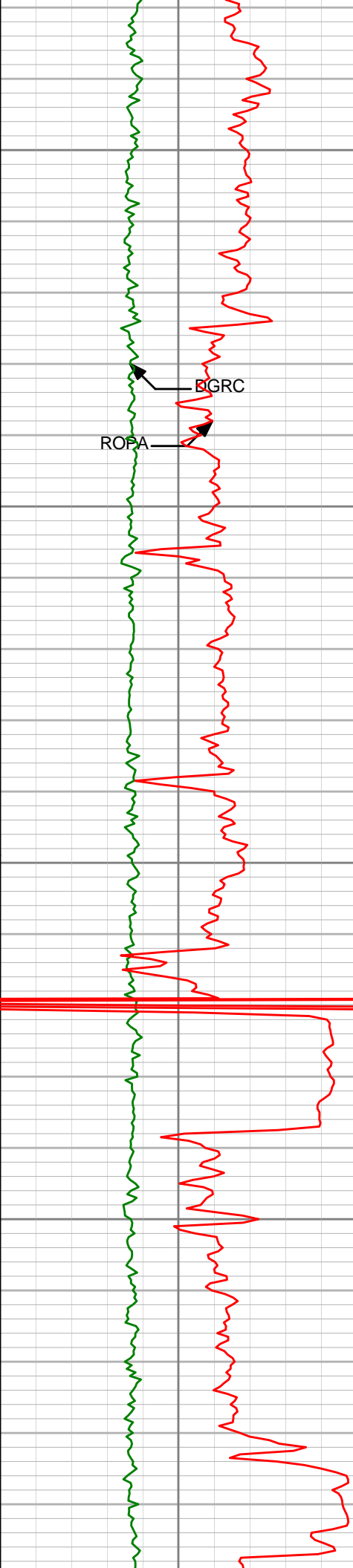
9650'

9700'

9750'

9800'





10050'

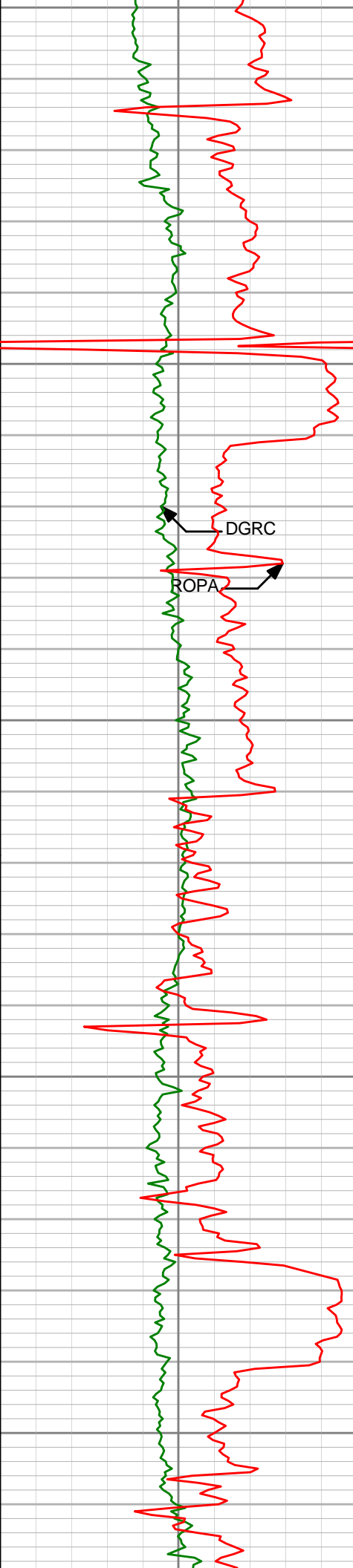
10100'

10150'

10200'

RGRC

ROPA



10250'

10300'

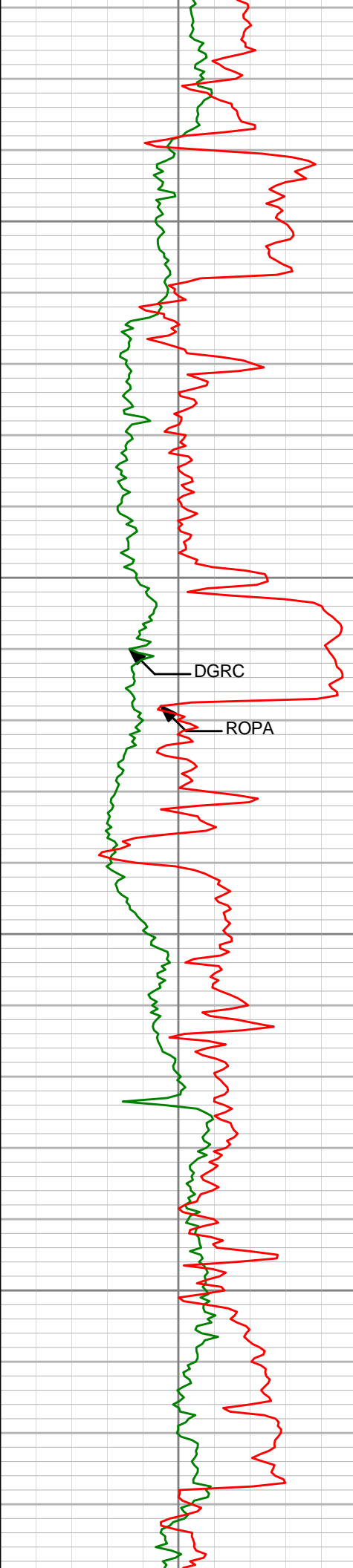
10350'

10400'

10450'

DGRC

ROPA



10500'

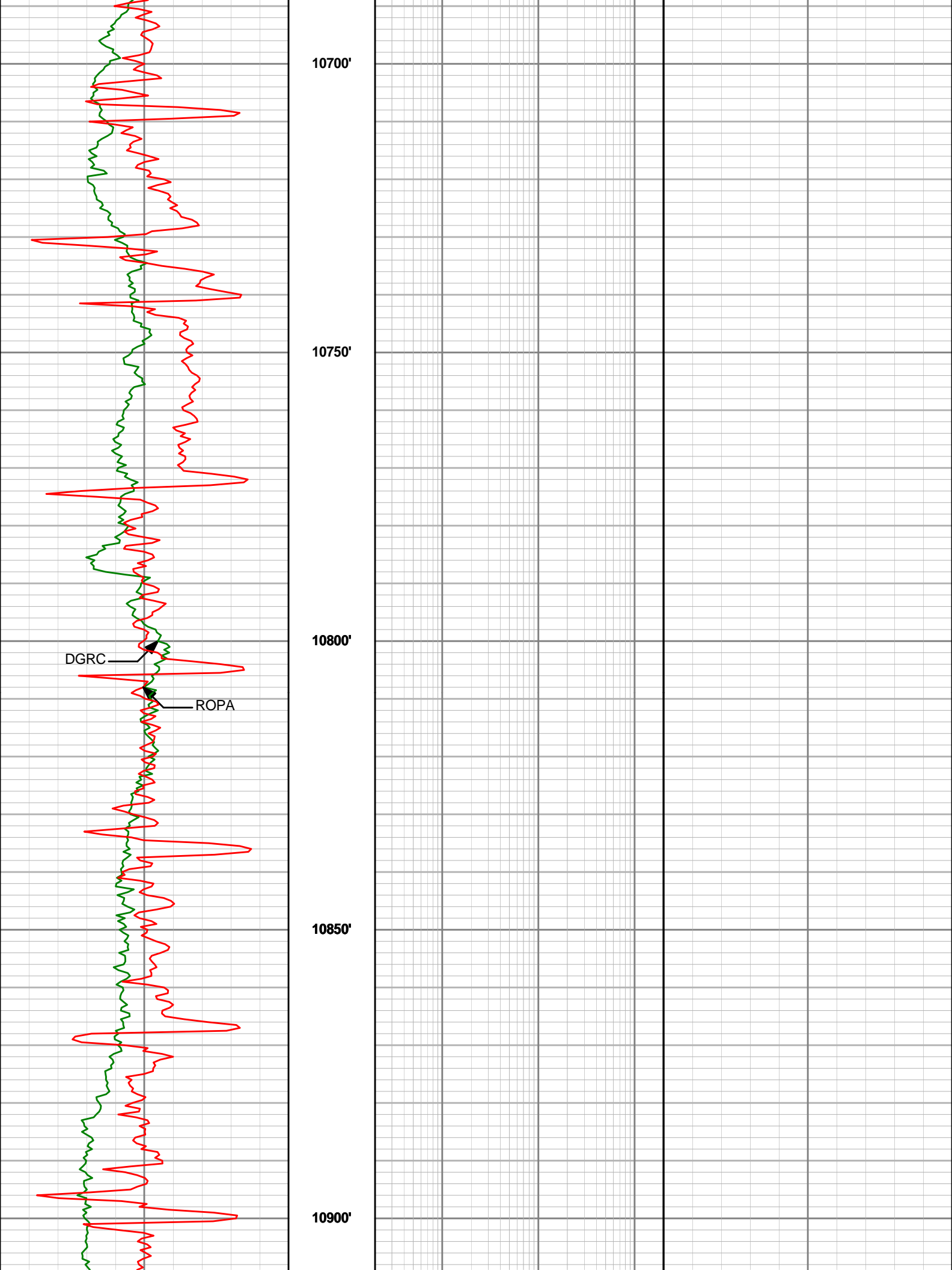
10550'

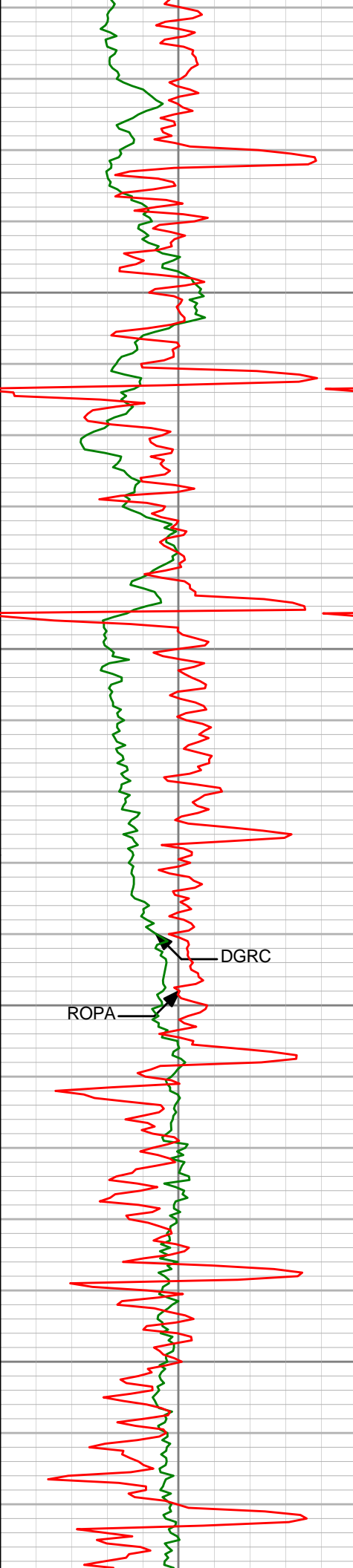
10600'

10650'

DGRC

ROPA





10950'

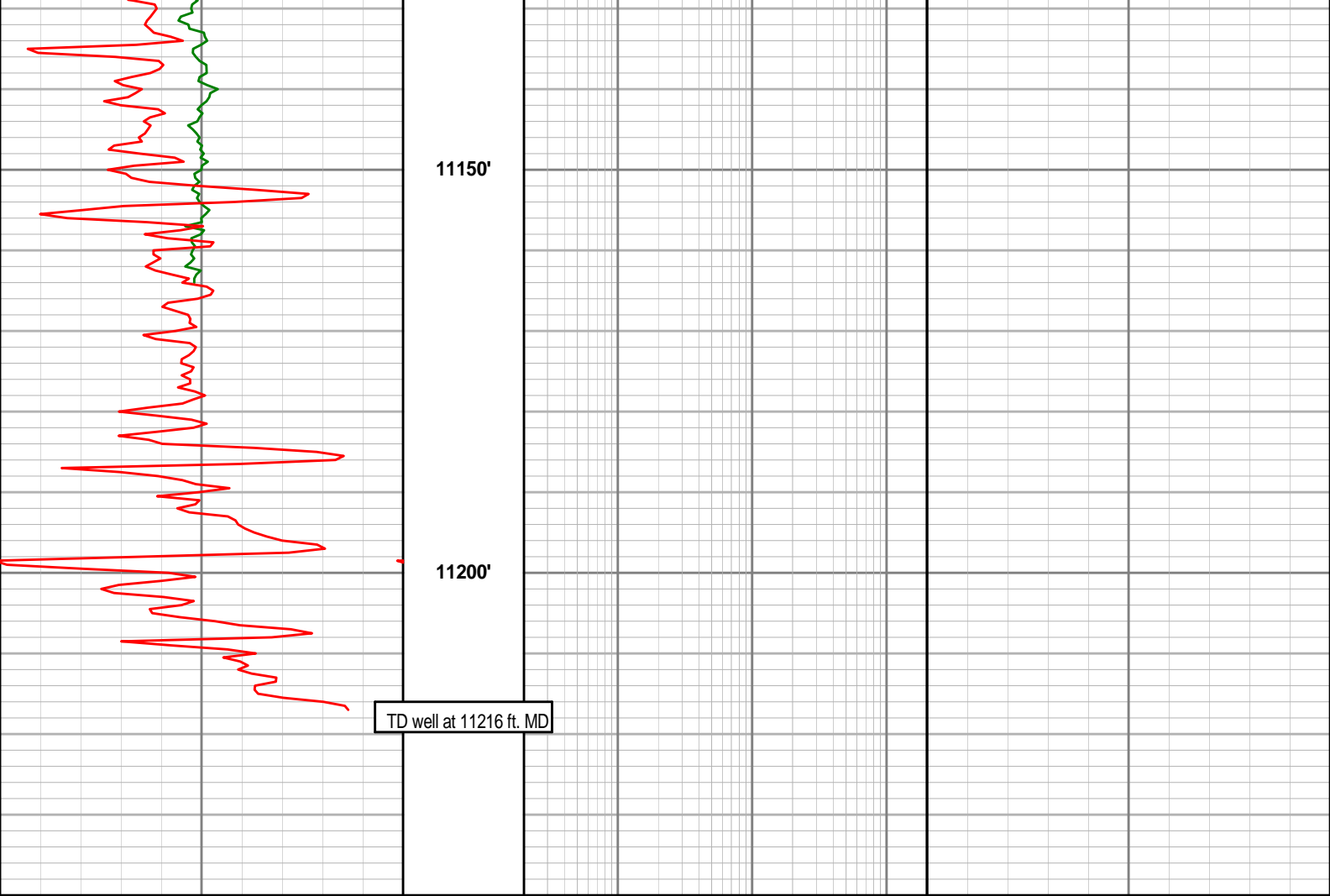
11000'

11050'

11100'

ROPA

DGRC



Gamma Ray (DGRCC)	Depth	9in Phase Resistivity (R09P)	39in Phase Conductivity (C39P)
0 api 300		0.2 ohm-m 200	1000 mmho/m 0
ROP Avg (ROPA)		15in Phase Resistivity (R15P)	Form Expos Time-EWR (EWXT)
300 feet per hr 0		0.2 ohm-m 200	0 hours 240
		27in Phase Resistivity (R27P)	
		0.2 ohm-m 200	
		39in Phase Resistivity (R39P)	
		0.2 ohm-m 200	



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Bonanza Creek Energy, Inc

Antelope 11-2HZ

Wattenburg

Weld Colorado

USA

CA-MJ-0008259296

Survey at 11216 ft. MD it's a projection to the bit.

0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
517.00	0.40	123.70	517.00	1.00 S	1.50 E	1.80	0.08
915.00	1.40	149.60	914.94	5.97 S	5.12 E	7.66	0.27
1069.00	1.10	153.00	1068.91	8.91 S	6.74 E	10.71	0.20
1161.00	1.40	154.20	1160.88	10.70 S	7.63 E	12.50	0.33
1252.00	1.90	160.50	1251.85	13.13 S	8.62 E	14.73	0.58
1403.00	2.10	147.10	1402.75	17.81 S	10.96 E	19.40	0.34
1466.00	0.40	166.40	1465.74	18.99 S	11.64 E	20.64	2.74
1530.00	0.70	180.00	1529.73	19.60 S	11.69 E	21.05	0.51
1593.00	0.50	95.90	1592.73	20.01 S	11.96 E	21.51	1.30
1685.00	0.30	133.10	1684.73	20.22 S	12.54 E	22.10	0.35
1805.00	0.30	187.20	1804.73	20.75 S	12.73 E	22.56	0.23
1901.00	0.10	144.60	1900.73	21.06 S	12.74 E	22.77	0.25
1995.00	0.50	244.30	1994.73	21.31 S	12.42 E	22.65	0.56
2088.00	0.90	196.20	2087.72	22.19 S	11.85 E	22.72	0.73
2182.00	1.20	211.60	2181.70	23.73 S	11.13 E	23.06	0.44
2309.00	0.80	136.20	2308.69	25.51 S	11.05 E	24.04	0.99
2473.00	1.20	229.80	2472.67	27.44 S	10.53 E	24.77	0.90
2600.00	0.70	238.60	2599.66	28.70 S	8.85 E	24.17	0.41
2727.00	1.20	222.50	2726.64	30.09 S	7.29 E	23.74	0.44
2854.00	0.70	198.90	2853.62	31.80 S	6.14 E	23.84	0.49
2981.00	1.10	221.10	2980.60	33.45 S	5.09 E	23.97	0.41
3108.00	0.70	187.20	3107.59	35.14 S	4.19 E	24.25	0.51
3235.00	0.90	227.50	3234.58	36.59 S	3.36 E	24.44	0.46
3362.00	1.10	244.40	3361.56	37.79 S	1.52 E	23.68	0.28
3489.00	1.80	243.80	3488.52	39.19 S	1.37 W	22.19	0.55
3616.00	2.10	239.40	3615.44	41.26 S	5.16 W	20.37	0.26
3712.00	1.90	234.10	3711.39	43.09 S	7.96 W	19.20	0.28
3743.00	2.20	241.20	3742.37	43.68 S	8.90 W	18.80	1.27
3775.00	1.70	261.80	3774.35	44.04 S	9.91 W	18.20	2.67
3838.00	1.40	259.90	3837.32	44.31 S	11.59 W	17.01	0.48
3870.00	1.30	290.00	3869.32	44.25 S	12.32 W	16.39	2.21
3902.00	1.60	297.30	3901.31	43.92 S	13.06 W	15.60	1.10
3966.00	2.20	289.40	3965.27	43.11 S	15.01 W	13.54	1.02
4030.00	1.90	304.00	4029.23	42.10 S	17.05 W	11.31	0.94
4093.00	2.70	322.60	4092.18	40.34 S	18.81 W	8.84	1.72
4125.00	2.20	333.50	4124.15	39.19 S	19.55 W	7.57	2.13
4156.00	2.80	328.50	4155.12	38.01 S	20.21 W	6.34	2.06
4220.00	2.50	342.70	4219.05	35.35 S	21.44 W	3.76	1.12
4283.00	2.20	347.40	4282.00	32.86 S	22.11 W	1.74	0.57
4315.00	1.80	7.90	4313.98	31.76 S	22.18 W	1.04	2.54
4347.00	1.50	7.00	4345.97	30.85 S	22.06 W	0.59	0.94
4379.00	1.80	24.50	4377.95	29.97 S	21.80 W	0.28	1.82
4411.00	1.60	23.10	4409.94	29.11 S	21.41 W	0.07	0.64
4442.00	2.00	43.70	4440.92	28.32 S	20.87 W	0.04	2.43
4474.00	1.80	38.30	4472.91	27.52 S	20.17 W	0.13	0.84
4537.00	2.40	45.10	4535.86	25.81 S	18.62 W	0.36	1.03
4569.00	2.00	46.00	4567.84	24.95 S	17.75 W	0.55	1.25
4664.00	1.90	31.60	4662.79	22.46 S	15.73 W	0.69	0.52
4759.00	1.20	19.80	4757.75	20.18 S	14.57 W	0.27	0.81
4883.00	1.50	10.20	4881.72	17.36 S	13.84 W	-0.82	0.30
4976.00	1.70	26.70	4974.68	14.93 S	13.01 W	-1.59	0.54
5069.00	1.90	39.90	5067.64	12.51 S	11.40 W	-1.73	0.49
5162.00	2.30	56.40	5160.57	10.30 S	8.85 W	-1.00	0.78
5255.00	1.60	72.40	5253.52	8.87 S	6.06 W	0.40	0.95
5348.00	1.90	80.40	5346.48	8.22 S	3.30 W	2.23	0.42
5515.00	1.80	89.90	5513.39	7.76 S	2.05 E	6.26	0.19
5537.00	1.97	95.36	5535.38	7.79 S	2.77 E	6.86	1.14
5569.00	3.90	118.07	5567.34	8.36 S	4.28 E	8.41	6.92
5601.00	7.35	123.88	5599.18	10.01 S	6.94 E	11.53	10.90
5632.00	10.56	123.60	5629.80	12.69 S	10.95 E	16.35	10.37
5664.00	13.28	124.77	5661.10	16.41 S	16.41 E	22.95	8.52
5696.00	15.93	126.38	5692.07	21.11 S	22.97 E	31.02	8.39
5728.00	17.99	126.20	5722.67	26.63 S	30.49 E	40.35	6.43
5759.00	20.10	127.35	5751.98	32.69 S	38.59 E	50.46	6.92
5791.00	22.17	126.44	5781.82	39.61 S	47.82 E	62.00	6.55
5823.00	23.64	126.84	5811.30	47.04 S	57.81 E	74.45	4.60
5855.00	25.25	127.00	5840.43	55.00 S	68.40 E	87.69	5.03
5886.00	26.97	126.51	5868.27	63.16 S	79.33 E	101.33	5.61
5918.00	29.26	125.91	5896.49	72.06 S	91.49 E	116.41	7.20
5950.00	31.75	127.16	5924.06	81.73 S	104.54 E	132.65	8.03
5982.00	35.16	127.22	5950.75	92.20 S	118.50 E	150.28	10.66

5982.00	35.16	127.22	5950.73	92.39 S	118.39 E	130.28	10.66
6013.00	38.28	125.60	5975.60	103.39 S	133.51 E	168.82	10.55
6045.00	40.81	125.71	6000.27	115.26 S	150.06 E	189.19	7.89
6076.00	43.60	125.22	6023.24	127.34 S	167.02 E	210.00	9.07
6108.00	46.45	124.38	6045.85	140.26 S	185.61 E	232.63	9.12
6140.00	49.20	124.62	6067.33	153.69 S	205.15 E	256.33	8.61
6172.00	51.27	125.30	6087.80	167.78 S	225.31 E	280.92	6.67
6203.00	53.79	124.73	6106.65	181.90 S	245.46 E	305.51	8.25
6235.00	56.63	124.78	6124.91	196.88 S	267.05 E	331.78	8.89
6267.00	59.20	125.34	6141.91	212.45 S	289.24 E	358.88	8.17
6299.00	62.80	125.81	6157.42	228.74 S	312.00 E	386.86	11.32
6331.00	65.88	125.88	6171.27	245.62 S	335.38 E	415.70	9.62
6362.00	68.94	126.18	6183.17	262.46 S	358.52 E	444.32	9.92
6394.00	72.10	126.63	6193.84	280.36 S	382.80 E	474.48	9.94
6425.00	75.06	127.34	6202.61	298.25 S	406.55 E	504.22	9.82
6457.00	77.86	126.98	6210.10	317.04 S	431.34 E	535.32	8.81
6489.00	82.01	126.32	6215.69	335.84 S	456.62 E	566.82	13.11
6521.00	86.66	126.51	6218.85	354.74 S	482.23 E	598.66	14.56
6554.00	89.60	125.70	6219.92	374.17 S	508.88 E	631.63	9.23
6590.00	89.54	124.81	6220.20	394.96 S	538.27 E	667.62	2.48
6621.00	89.41	125.21	6220.48	412.74 S	563.66 E	698.61	1.34
6652.00	89.45	125.59	6220.79	430.70 S	588.93 E	729.61	1.22
6683.00	90.00	124.49	6220.94	448.50 S	614.31 E	760.60	3.96
6714.00	89.51	124.72	6221.07	466.10 S	639.82 E	791.58	1.76
6745.00	90.15	125.14	6221.16	483.85 S	665.24 E	822.57	2.49
6776.00	90.52	125.53	6220.98	501.78 S	690.53 E	853.56	1.73
6807.00	91.17	124.61	6220.52	519.59 S	715.89 E	884.55	3.62
6838.00	91.54	124.93	6219.79	537.27 S	741.35 E	915.53	1.57
6869.00	91.85	125.35	6218.87	555.10 S	766.69 E	946.50	1.68
6900.00	91.97	125.32	6217.84	573.02 S	791.97 E	977.48	0.40
6931.00	92.13	125.12	6216.73	590.89 S	817.28 E	1008.45	0.83
6962.00	91.64	125.62	6215.71	608.82 S	842.54 E	1039.43	2.27
7024.00	91.51	125.45	6214.00	644.84 S	892.98 E	1101.40	0.34
7086.00	90.43	126.22	6212.95	681.13 S	943.24 E	1163.39	2.14
7147.00	89.85	125.87	6212.81	717.02 S	992.56 E	1224.38	1.12
7208.00	89.82	126.06	6212.99	752.84 S	1041.93 E	1285.38	0.31
7270.00	89.75	125.91	6213.22	789.27 S	1092.10 E	1347.38	0.26
7332.00	89.48	126.03	6213.64	825.69 S	1142.28 E	1409.37	0.49
7394.00	90.06	126.55	6213.89	862.38 S	1192.25 E	1471.37	1.27
7456.00	90.34	127.56	6213.67	899.74 S	1241.73 E	1533.37	1.68
7517.00	90.65	126.81	6213.15	936.61 S	1290.32 E	1594.36	1.32
7579.00	90.99	127.51	6212.26	974.06 S	1339.73 E	1656.35	1.24
7642.00	90.77	127.78	6211.29	1012.53 S	1389.61 E	1719.33	0.55
7705.00	90.15	127.91	6210.79	1051.18 S	1439.36 E	1782.31	1.00
7769.00	89.14	126.57	6211.18	1089.90 S	1490.30 E	1846.30	2.62
7832.00	89.07	127.06	6212.16	1127.65 S	1540.73 E	1909.29	0.79
7896.00	89.29	126.85	6213.08	1166.12 S	1591.87 E	1973.28	0.47
7959.00	89.32	126.90	6213.84	1203.93 S	1642.26 E	2036.27	0.10
8023.00	89.38	127.66	6214.56	1242.69 S	1693.18 E	2100.26	1.19
8087.00	89.57	127.64	6215.15	1281.78 S	1743.85 E	2164.25	0.29
8150.00	89.97	127.95	6215.40	1320.39 S	1793.64 E	2227.23	0.80
8214.00	90.37	127.76	6215.22	1359.66 S	1844.17 E	2291.21	0.69
8277.00	91.27	128.99	6214.32	1398.77 S	1893.55 E	2354.17	2.42
8341.00	90.18	128.57	6213.51	1438.85 S	1943.44 E	2418.11	1.81
8404.00	90.92	128.97	6212.90	1478.30 S	1992.55 E	2481.05	1.34
8468.00	91.85	128.92	6211.35	1518.52 S	2042.31 E	2544.97	1.45
8531.00	90.71	128.57	6209.94	1557.94 S	2091.43 E	2607.91	1.90
8595.00	90.43	128.84	6209.30	1597.96 S	2141.38 E	2671.85	0.60
8658.00	90.28	128.63	6208.91	1637.37 S	2190.52 E	2734.80	0.41
8722.00	90.46	128.88	6208.50	1677.44 S	2240.43 E	2798.75	0.48
8785.00	90.49	127.67	6207.98	1716.46 S	2289.88 E	2861.71	1.92
8849.00	89.57	127.15	6207.94	1755.34 S	2340.72 E	2925.70	1.66
8912.00	90.09	127.22	6208.13	1793.41 S	2390.91 E	2988.70	0.84
8976.00	91.11	127.63	6207.46	1832.31 S	2441.73 E	3052.69	1.71
9039.00	90.40	127.19	6206.63	1870.57 S	2491.77 E	3115.67	1.33
9103.00	90.46	126.70	6206.14	1909.03 S	2542.92 E	3179.67	0.77
9166.00	89.69	126.53	6206.06	1946.61 S	2593.49 E	3242.67	1.25
9230.00	89.66	125.89	6206.42	1984.41 S	2645.13 E	3306.66	1.00
9293.00	89.44	126.31	6206.91	2021.53 S	2696.03 E	3369.66	0.75
9356.00	89.85	126.22	6207.30	2058.79 S	2746.83 E	3432.66	0.65
9420.00	89.97	125.91	6207.41	2096.47 S	2798.56 E	3496.66	0.52
9483.00	89.94	125.75	6207.46	2133.36 S	2849.64 E	3559.65	0.26
9547.00	90.46	125.86	6207.23	2170.80 S	2901.54 E	3623.65	0.83
9610.00	90.55	125.92	6206.67	2207.73 S	2952.58 E	3686.64	0.17
9674.00	90.19	125.88	6206.26	2245.25 S	3004.42 E	3750.64	0.58

9737.00	90.49	125.98	6205.89	2282.22 S	3055.43 E	3813.63	0.51
9801.00	90.43	125.78	6205.37	2319.73 S	3107.28 E	3877.63	0.33
9864.00	90.46	126.78	6204.88	2357.01 S	3158.07 E	3940.63	1.59
9928.00	90.37	126.49	6204.41	2395.20 S	3209.42 E	4004.62	0.47
9991.00	90.31	127.15	6204.04	2432.95 S	3259.86 E	4067.62	1.05
10055.00	90.25	127.88	6203.73	2471.93 S	3310.62 E	4131.61	1.16
10118.00	90.37	128.38	6203.39	2510.83 S	3360.17 E	4194.58	0.81
10182.00	90.49	128.41	6202.91	2550.58 S	3410.33 E	4258.54	0.20
10245.00	89.72	127.60	6202.79	2589.37 S	3459.97 E	4321.52	1.77
10309.00	89.57	126.64	6203.19	2627.99 S	3511.00 E	4385.51	1.53
10372.00	90.28	126.75	6203.27	2665.64 S	3561.52 E	4448.51	1.14
10436.00	89.66	126.00	6203.31	2703.59 S	3613.05 E	4512.51	1.52
10499.00	89.26	126.40	6203.90	2740.80 S	3663.88 E	4575.51	0.90
10563.00	88.61	123.99	6205.09	2777.68 S	3716.17 E	4639.48	3.89
10626.00	88.40	124.08	6206.73	2812.92 S	3768.36 E	4702.40	0.37
10690.00	88.61	124.22	6208.40	2848.84 S	3821.31 E	4766.32	0.41
10753.00	88.70	124.18	6209.88	2884.24 S	3873.40 E	4829.26	0.16
10817.00	88.92	124.01	6211.20	2920.11 S	3926.38 E	4893.19	0.43
10881.00	88.67	124.52	6212.55	2956.13 S	3979.27 E	4957.13	0.89
10944.00	88.70	124.10	6213.99	2991.64 S	4031.29 E	5020.07	0.67
11008.00	88.43	124.21	6215.59	3027.56 S	4084.23 E	5084.00	0.47
11071.00	88.33	124.18	6217.37	3062.95 S	4136.32 E	5146.92	0.16
11134.00	89.57	125.20	6218.52	3098.80 S	4188.11 E	5209.88	2.54
11166.00	89.75	125.06	6218.71	3117.22 S	4214.28 E	5241.87	0.72
11216.00	89.75	125.06	6218.93	3145.94 S	4255.21 E	5291.85	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 DIRECTION OF 126.46 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.59 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11216.00 FEET
IS 5291.85 FEET ALONG 126.48 DEGREES (TRUE)**

SURVEYS THROUGH 5515 MD ARE FROM ENSIGN DIRECTIONAL'S MWD TOOL.