

Max Tool Temp (degF) / Source	70.82 / HCIM	120.24 / HCIM	127.29 / HCIM	120.24 / HCIM	148.47 / HCIM
Rm @ Max Tool Temp (degF)	N/A @ 70.82	N/A @ 120.24	N/A @ 127.29	N/A @ 120.24	N/A @ N/A
Lead MWD Engineer	Forrest Gibson	Forrest Gibson	Forrest Gibson	Forrest Gibson	Forrest Gibson
Customer Representative	Syd Griffin	Stuart Nelson	Stuart Nelson	Stuart Nelson	Micha Beale

SENSOR INFORMATION

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC	PCDC	PCDC
Distance From Bit (ft)	63.91	62.08	59.50	59.50	57.16
Software Version	6.21	6.21	6.21	6.21	6.21
Sub Serial Number	SD48451	SD48451	11736549	11736549	11408054
Sonde Serial Number	11297564	11297564	11478013	11478013	11297564
Sensor ID Number	N/A	N/A	N/A	N/A	N/A
Toolface Offset (deg)	207.88	209.29	88.39	88.39	242.53

Gamma Ray Sensor Information

Tool Type	DGR	DGR	DGR	DGR	DGR
Distance From Bit (ft)	40.13	38.30	34.15	34.15	44.98
Recorded Sample Period (sec)	6	6	12	12	12
Software Version	N/A	N/A	N/A	N/A	N/A
Sub Serial Number	11306095	11306095	163685	163685	181373
Insert/Sonde Serial Number	274060	274060	1	163685	181373

Resistivity Sensor Information

Tool Type	EWR-P4	EWR-P4	EWR-Solar	EWR-Solar	Slim P4
Distance From Bit (ft)	48.40	46.57	42.48	42.48	37.98
Recorded Sample Period (sec)	6	6	12	12	12
Software Version	1.50	1.50	5.55	5.55	5.55
Sub Serial Number	10505932	10505932	11204306	11204306	93265
Receiver Insert Serial Number	159123	159123	11496774	11496774	172491
Transmitter Insert Serial Number	65102	65102	10914233	10914233	256973
Receiver Orientation	Down	Down	Down	Down	Up

DDSr-DGR Sensor Information

Tool Type	DDSr-DGR	DDSr-DGR	DDSr-DGR	DDSr-DGR	DDSr-DGR
Distance From Bit (ft)	5.00	5.00	5.00	5.00	5.00
Recorded Sample Period (sec)	12	12	12	12	12
Software Version	10.88	10.88	10.88	10.88	10.88
Sub Serial Number	11306095	11306095	90385760	90385760	90391771
Insert Serial Number	11290520	11290520	11327772	11327772	11284203
Sensor ID Number	6429	6429	6620	6620	6337

DDSr-HCIM Sensor Information

Tool Type	DDSr-HCIM	DDSr-HCIM			
Distance From Bit (ft)	5.00	5.00			
Recorded Sample Period (sec)	12	12			
Software Version	20.88	20.88			
Sub Serial Number	11157263	11157263			
Insert Serial Number	11368813	11368813			
Sensor ID Number	6853	6853			

Electro Magnetic Downhole Terminal Unit Sensor Information

Tool Type	EMT-DTU	EMT-DTU	EMT-DTU	EMT-DTU	EMT-DTU
Distance From BWD To Bit (ft)	N/A	N/A	N/A	N/A	N/A

Distance From FWD to Bit (ft)	N/A	N/A	N/A	N/A	N/A
Hardware Type	EMT Sonde	EMT Sonde	EMT Sonde	EMT Sonde	EMT Sonde
Electronics Hardware Rev	Phase 3.0	Phase 3.0	Phase 3.0	Phase 3.0	Phase 3.0
Software Version	8.12A	8.12A	8.12A	8.12A	8.12A
Telemetry Type	PPM	PPM	PPM	PPM	PPM

REMARKS

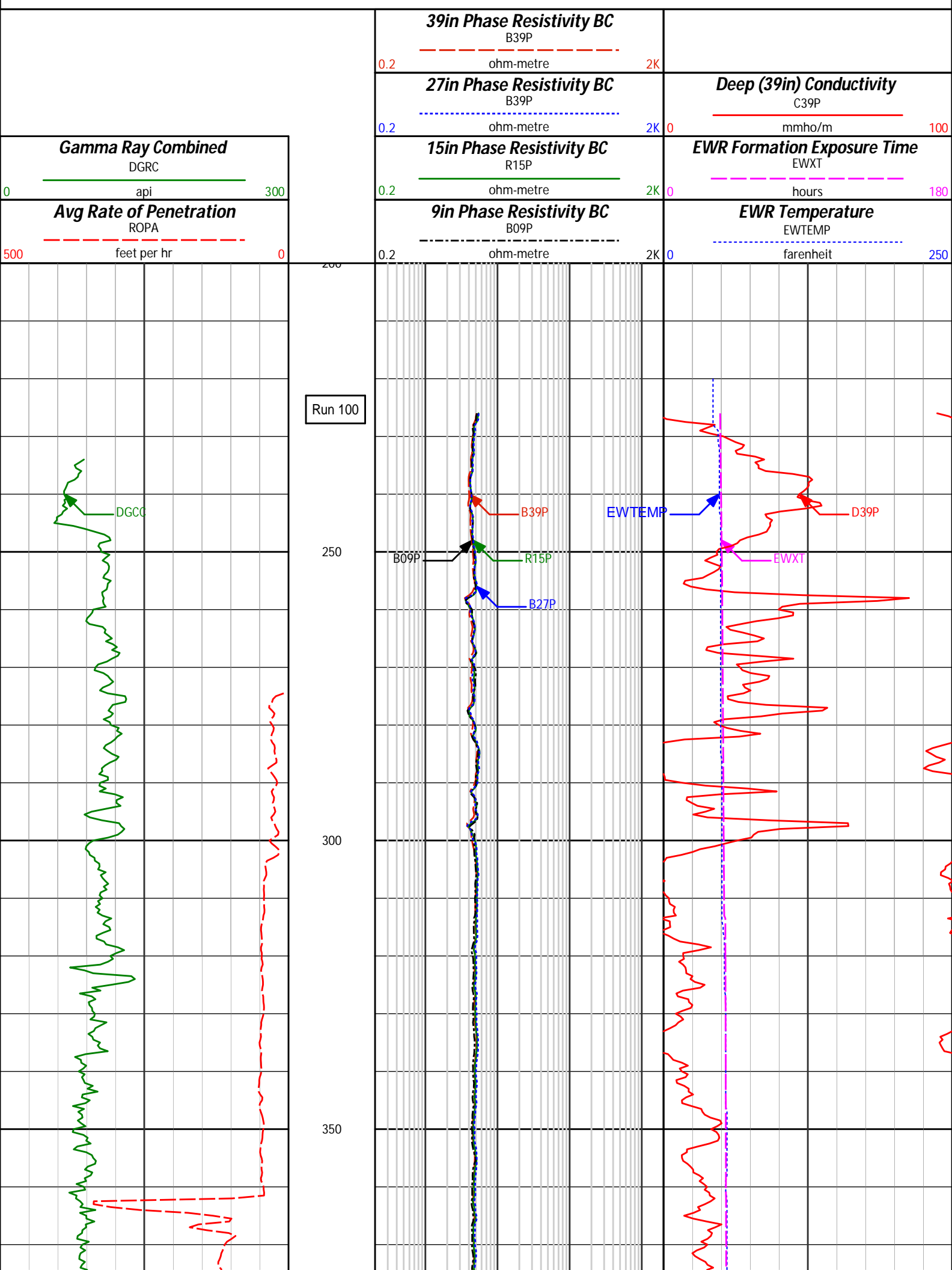
1. All depths are calibrated to the driller's pipe tally, and are measured bit depths, measured from the drill floor.
2. No depth corrections have been made for pipe stretch or compression.
3. Critical annular velocities have been calculated using the "Power Law" model for water based fluids and the "Bingham Plastic" model for synthetic and oil based fluids.
4. All data presented is recorded (memory) data unless otherwise stated. ROPA is realtime data
5. Environmental parameters used to process the data are as follows:
 Hole Diameter: 6.13-17.50 inches
 Mud Weight: 7.00-9.00 ppg
 KCl Concentration: 0%
 Mud Resistivity: 2-2.6 ohmm
6. The following smoothing parameters have been applied to the data:
 ROPA: 0.5 ft interval, 1.2 ft coercion distance, 3 ft gap fill
 R15P: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill
 B39P: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill
 B39A: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill
 C39P: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill
 EWXT: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill
 DGRCC: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill
 EWTEMP: 0.5 ft interval, 0.6 ft coercion distance, 3 ft gap fill
7. Insite Version 8.0.10

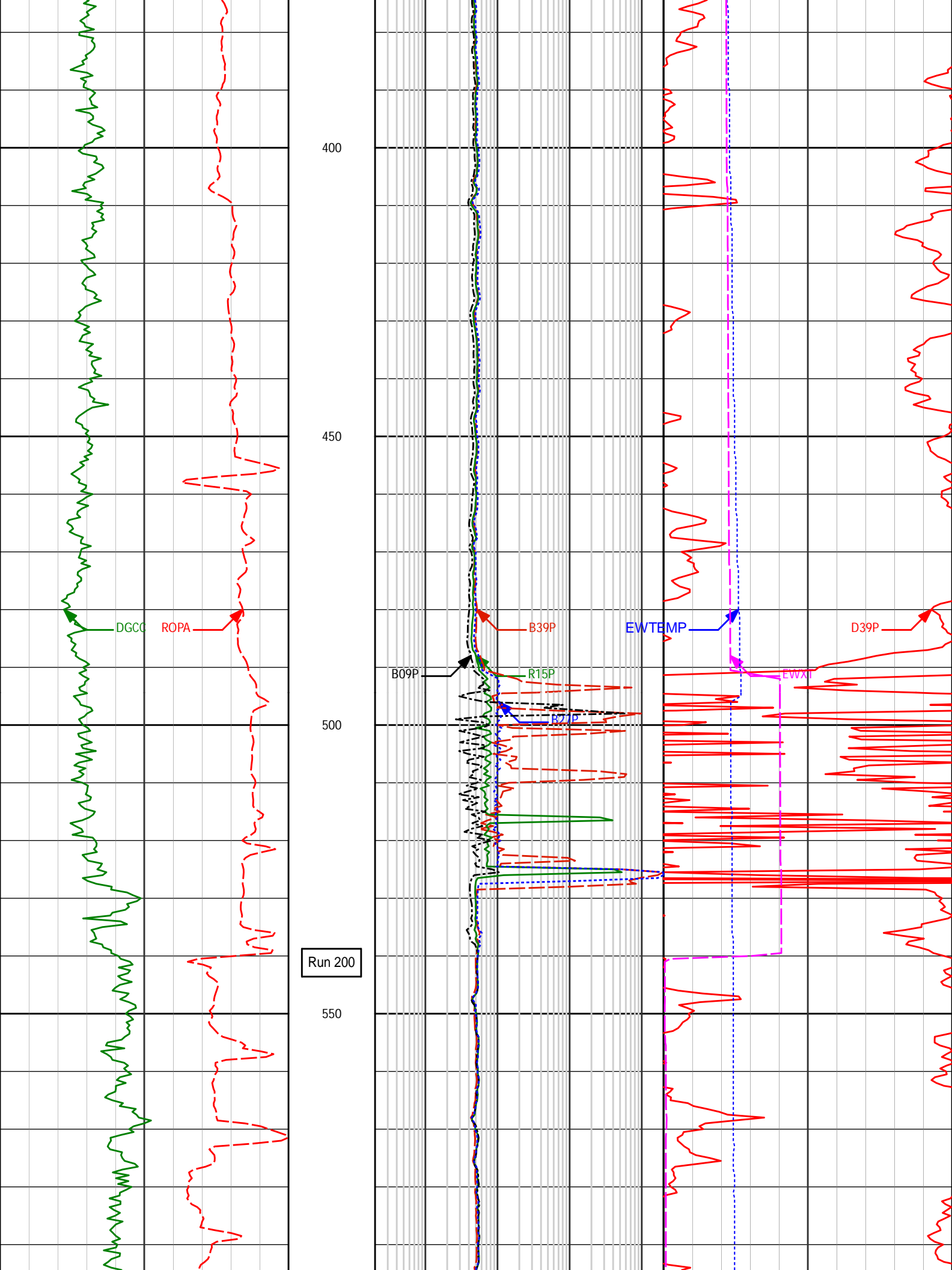
WARRANTY

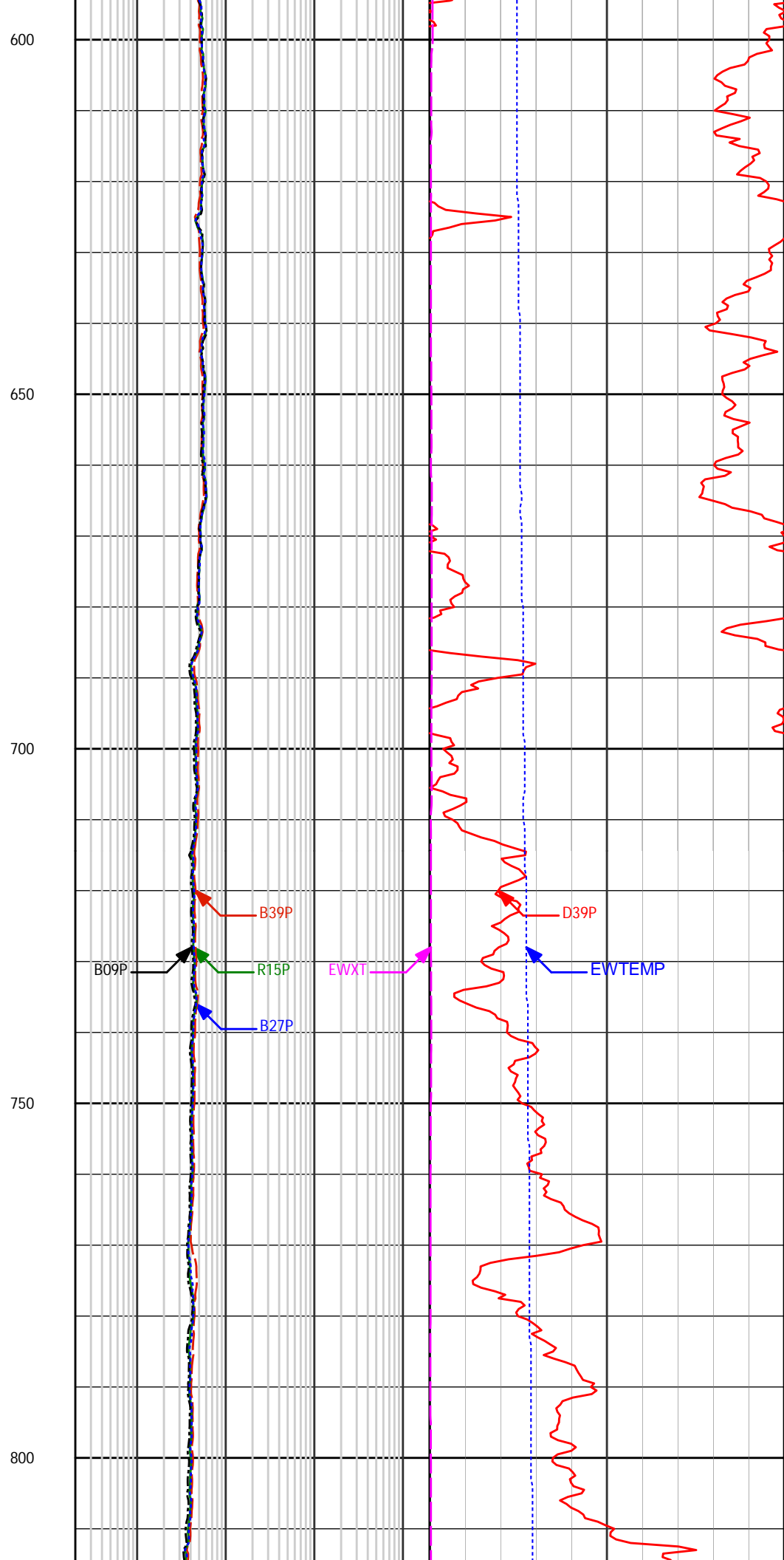
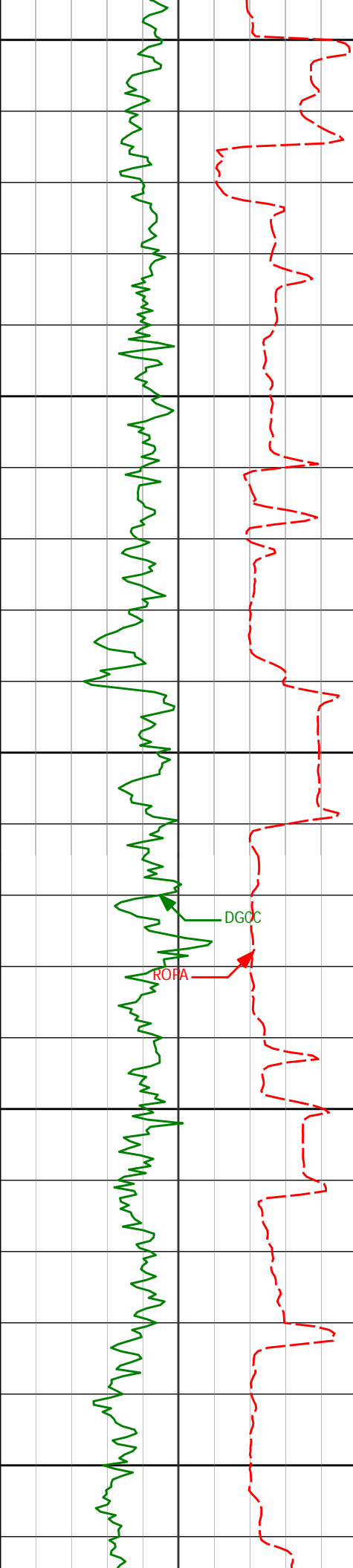
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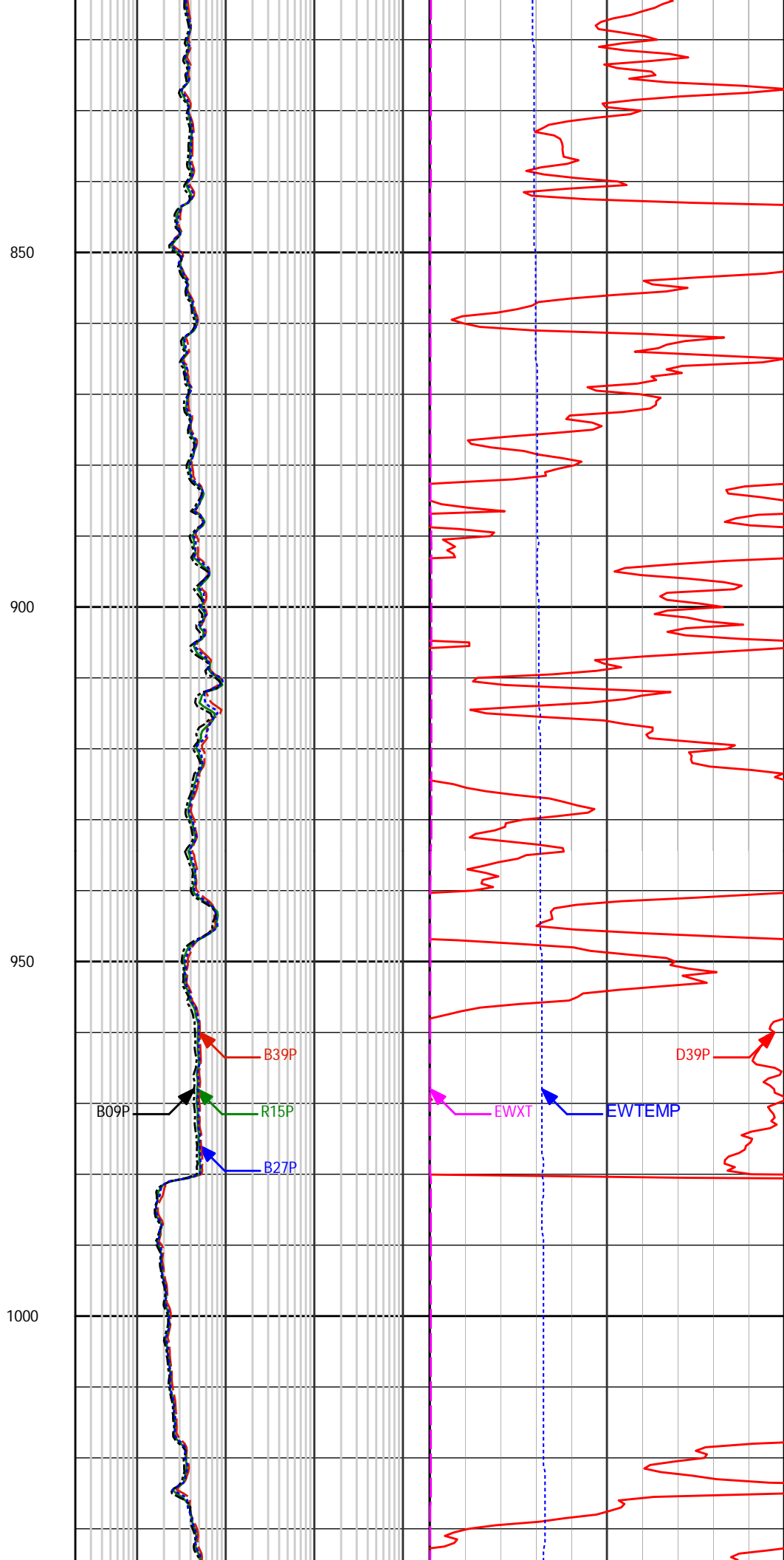
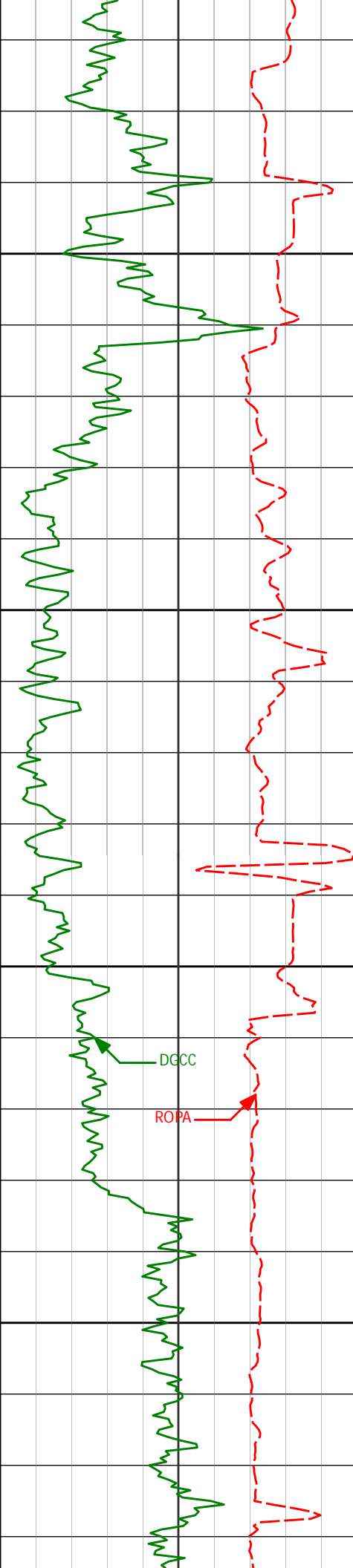
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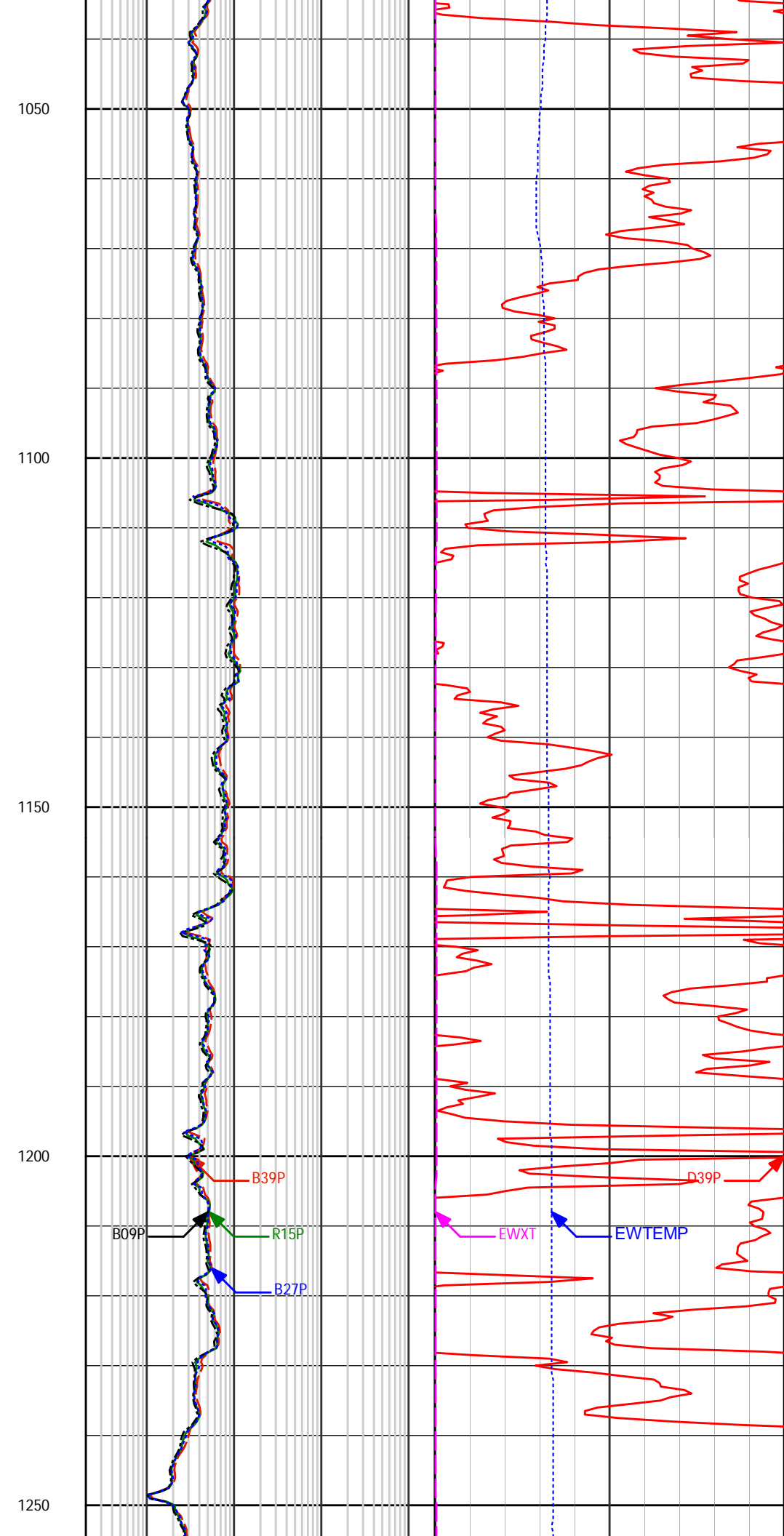
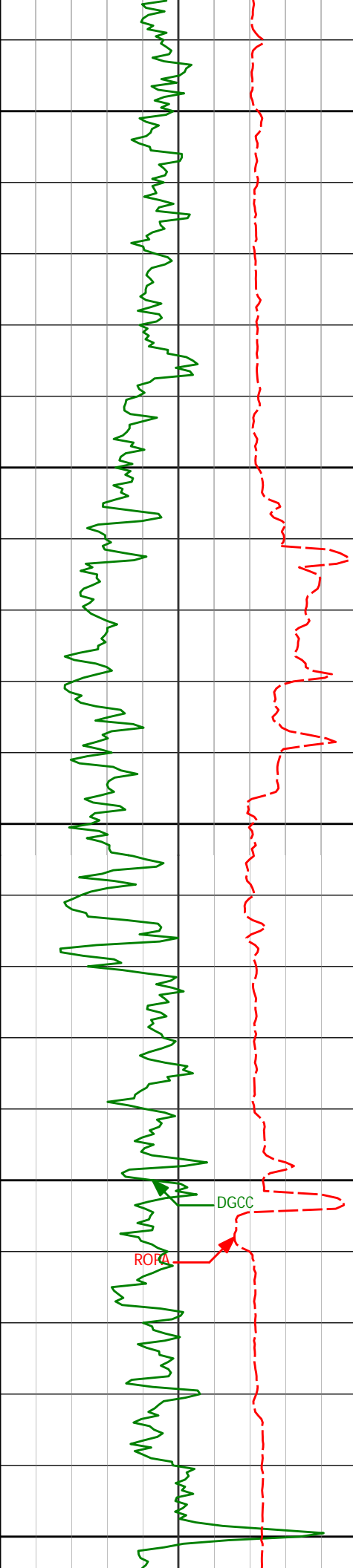
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 Caboose 1548-21-44 SWD
 Pioneer 54

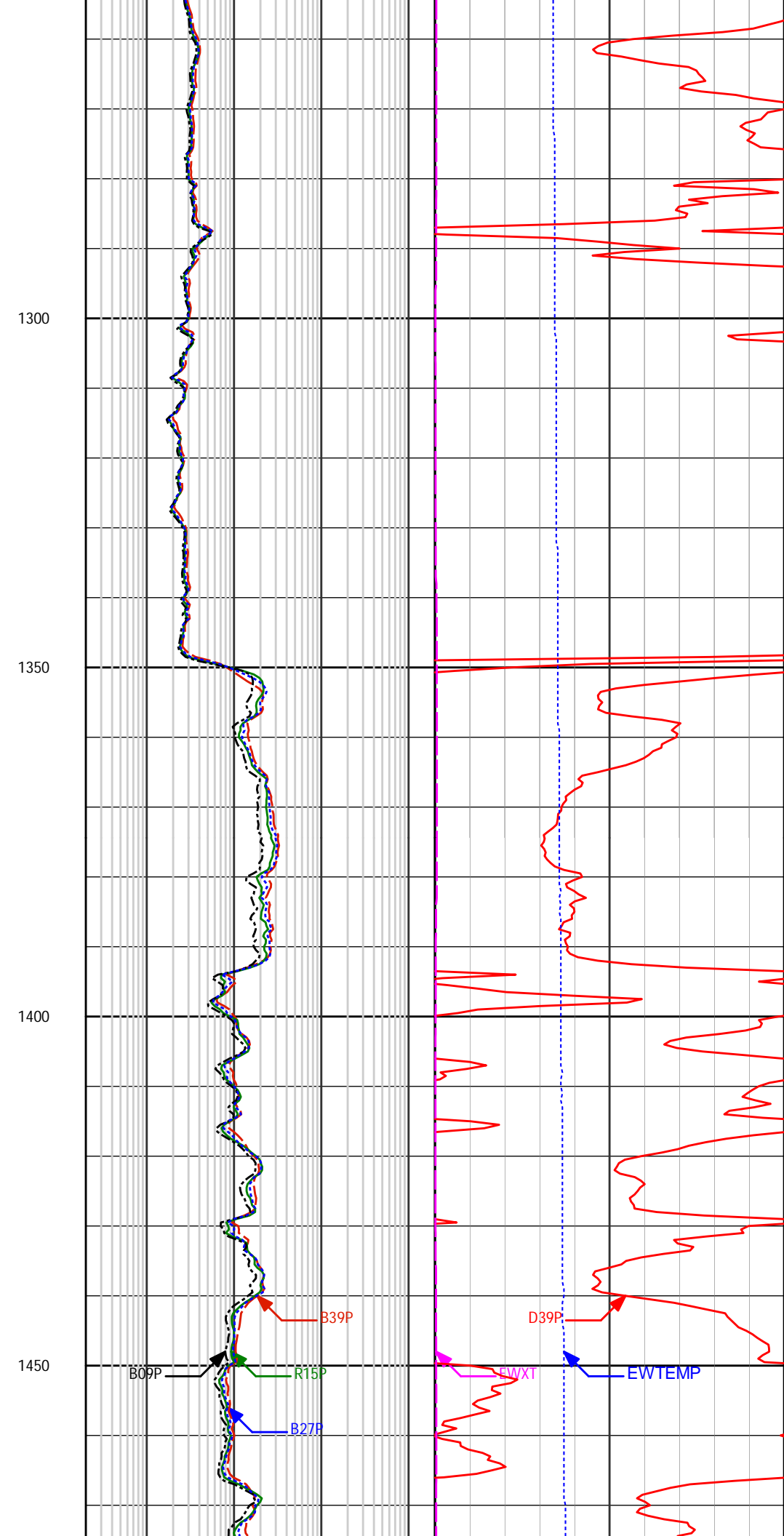
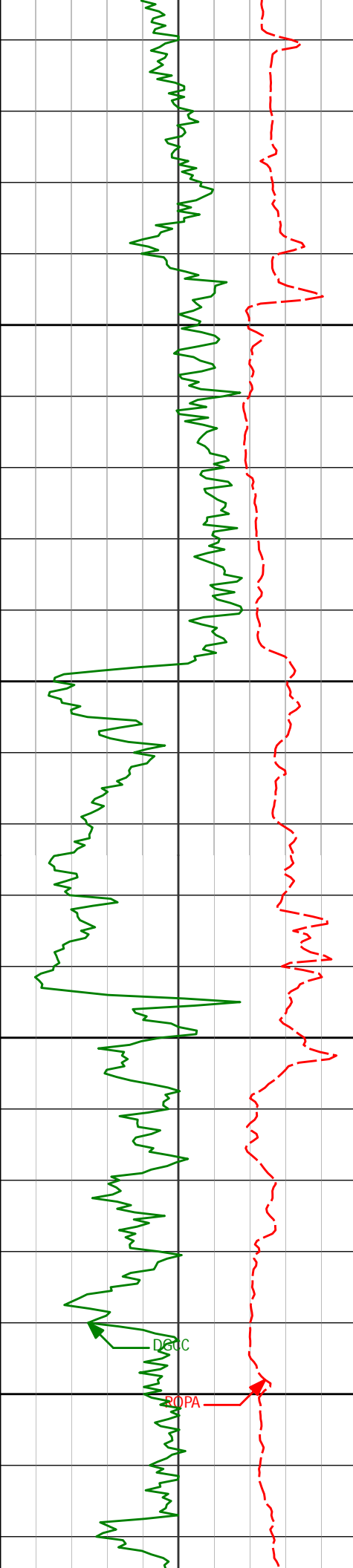


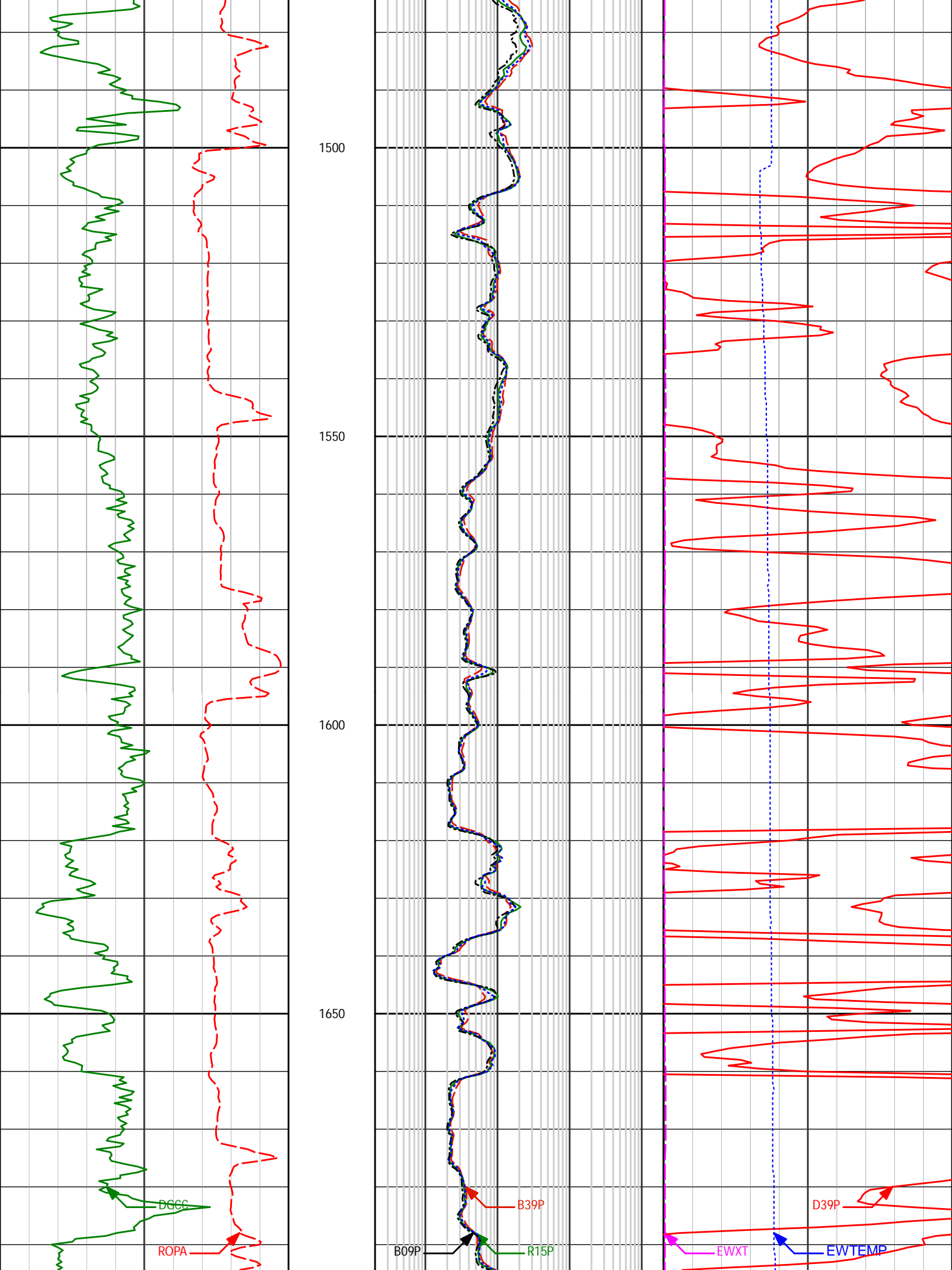


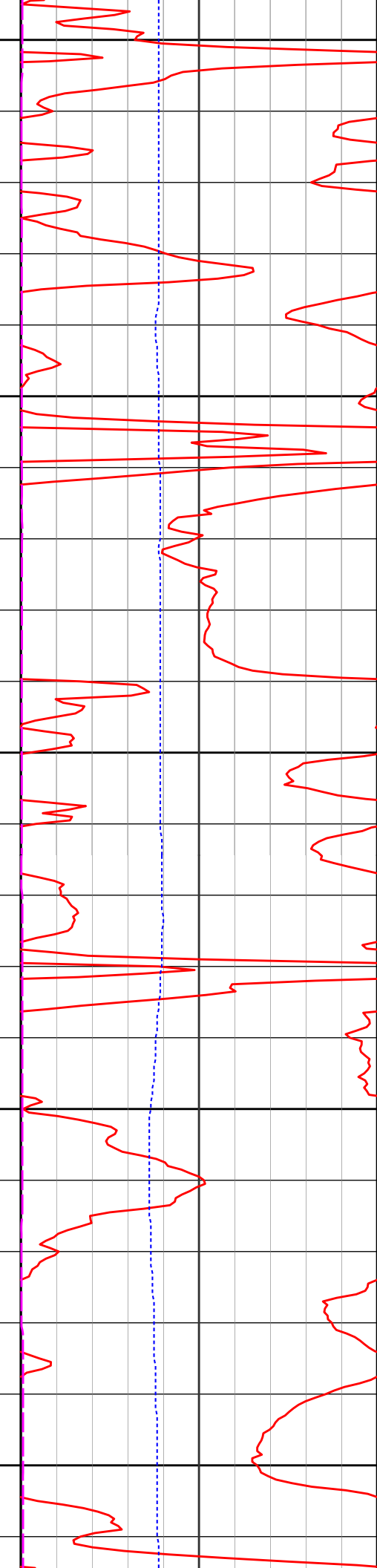
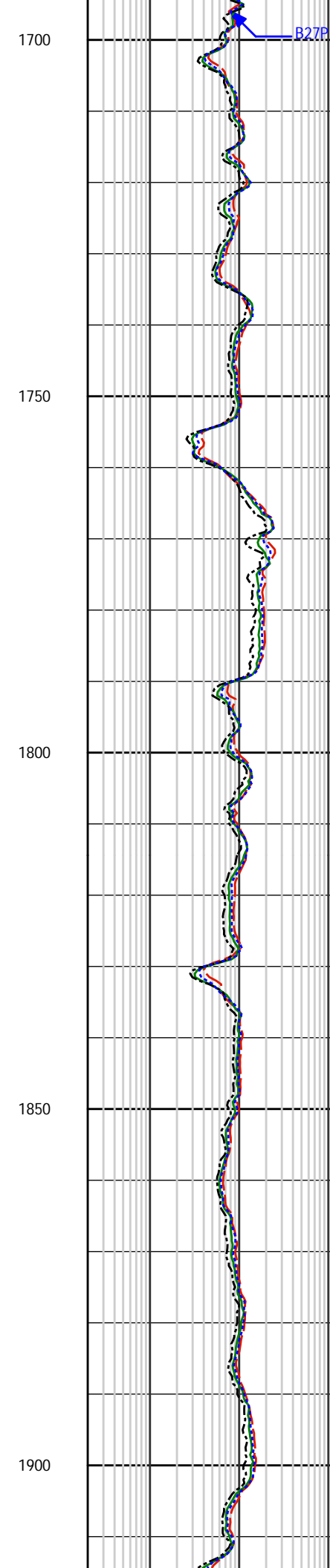
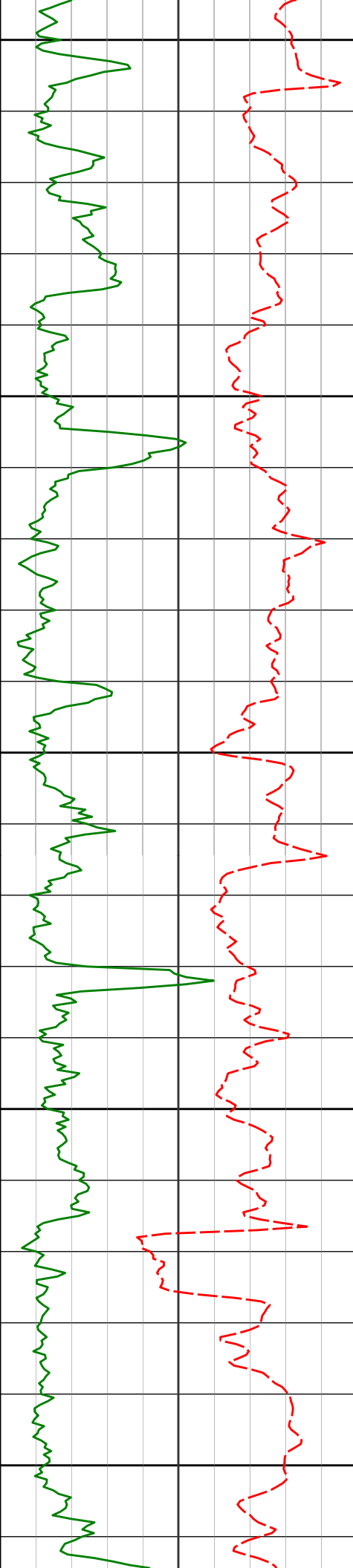


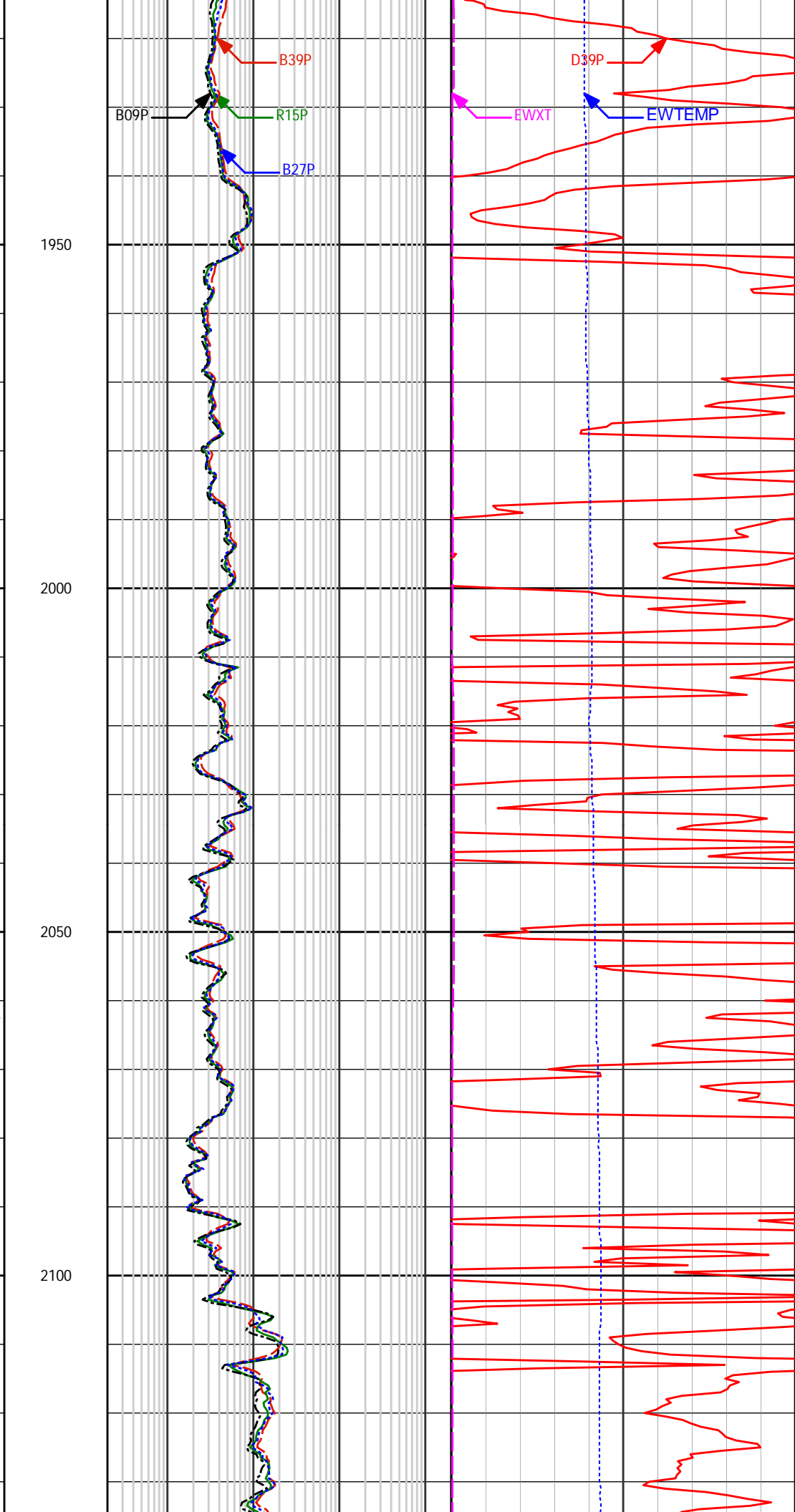
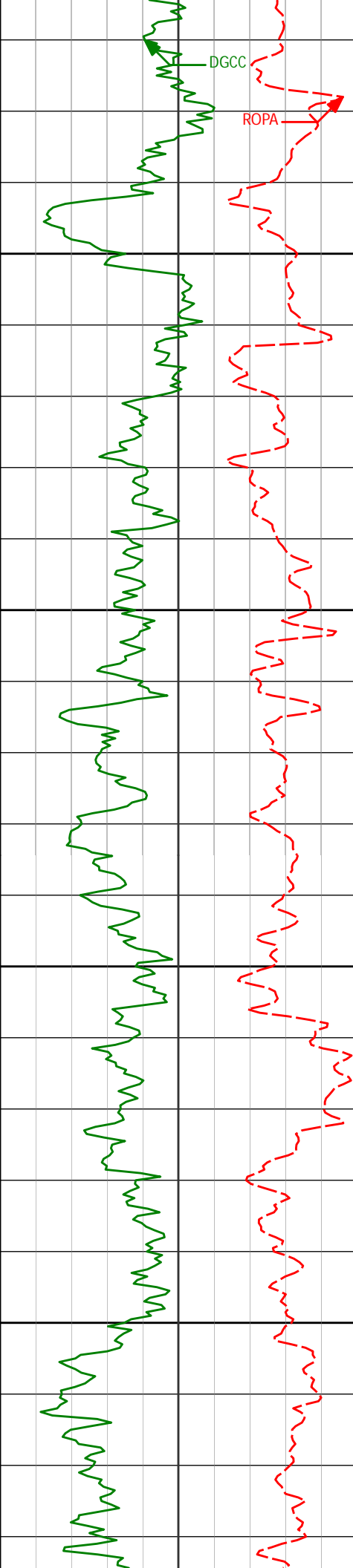


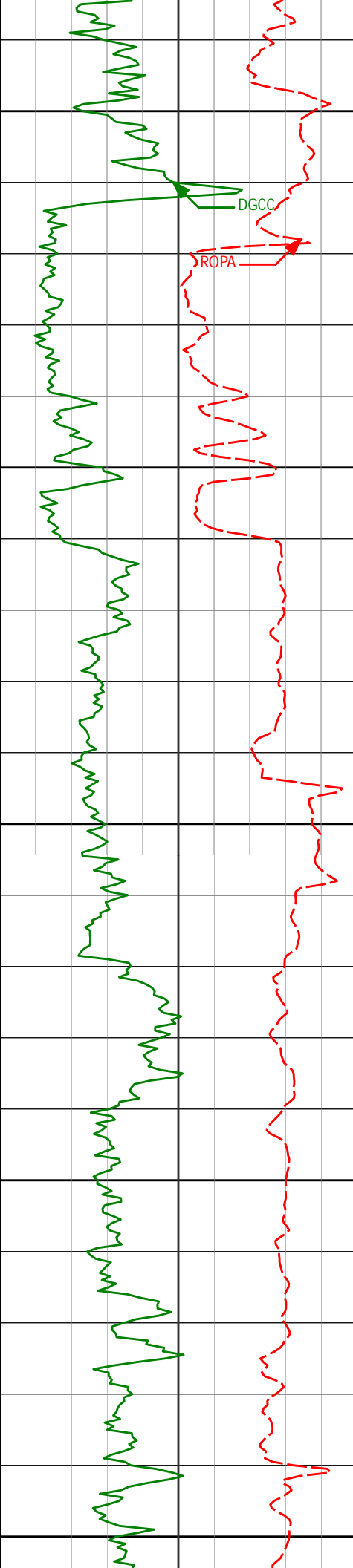












2150

B09P

B39P

R15P

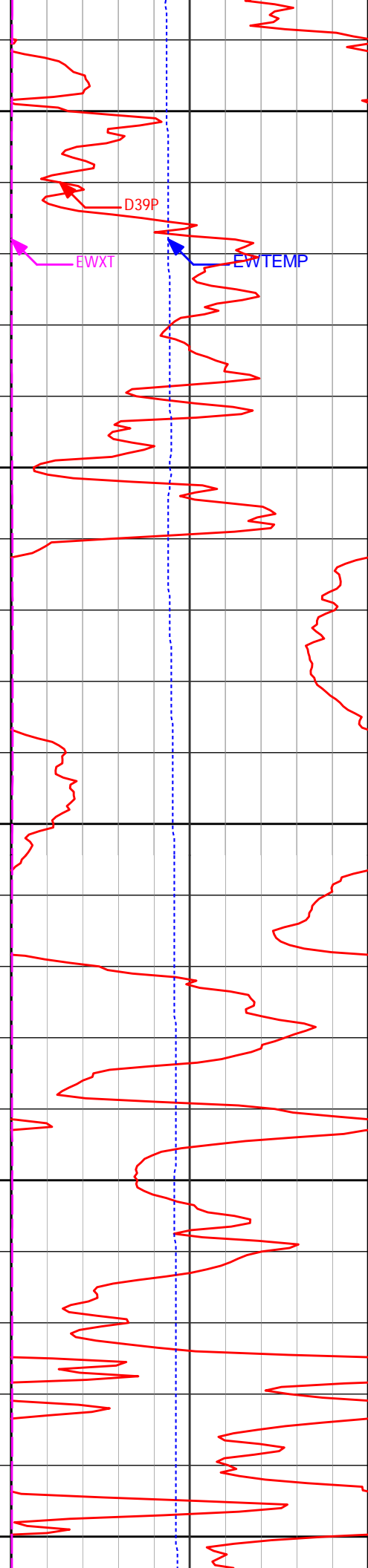
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2200

2250

2300

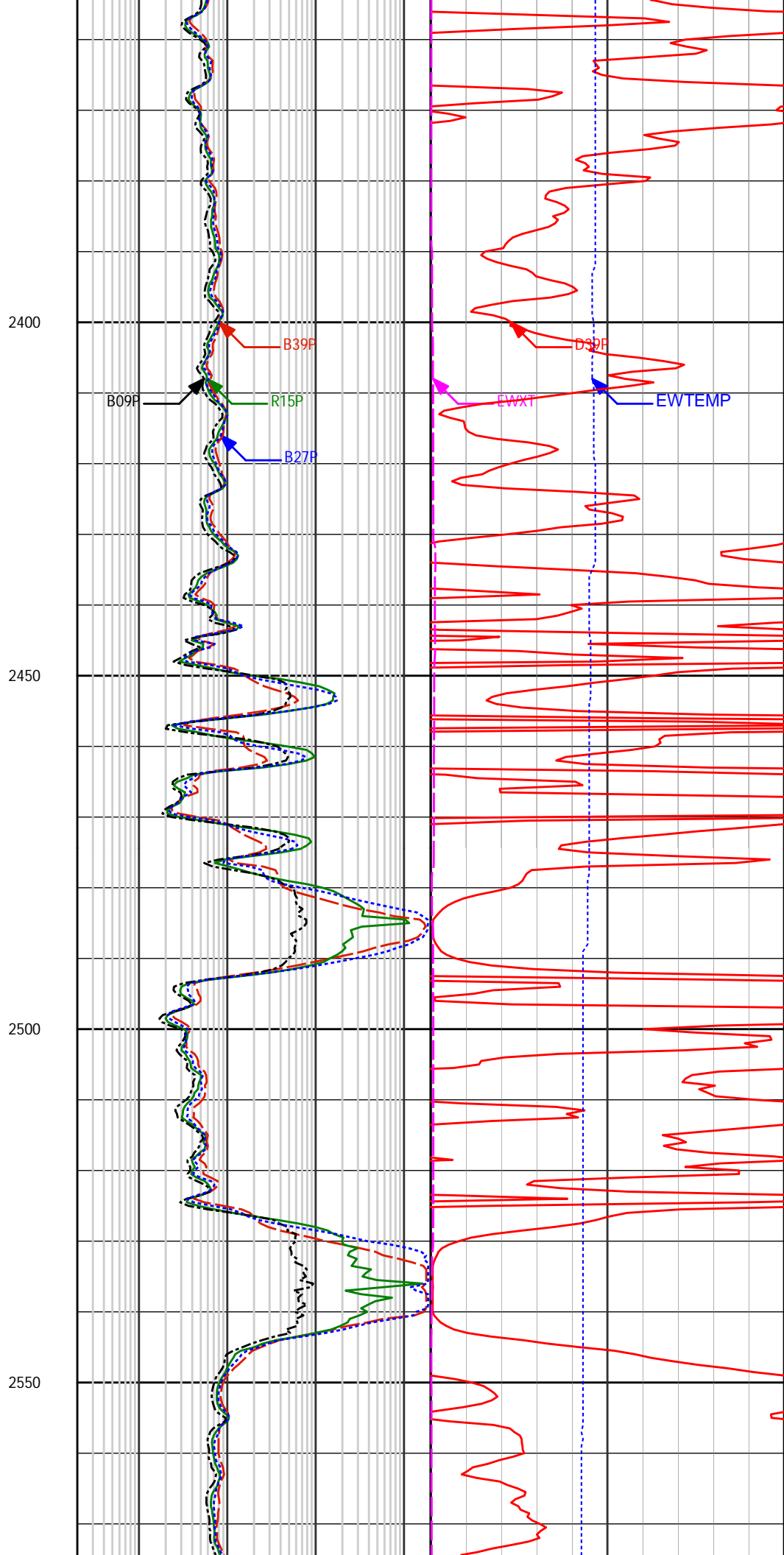
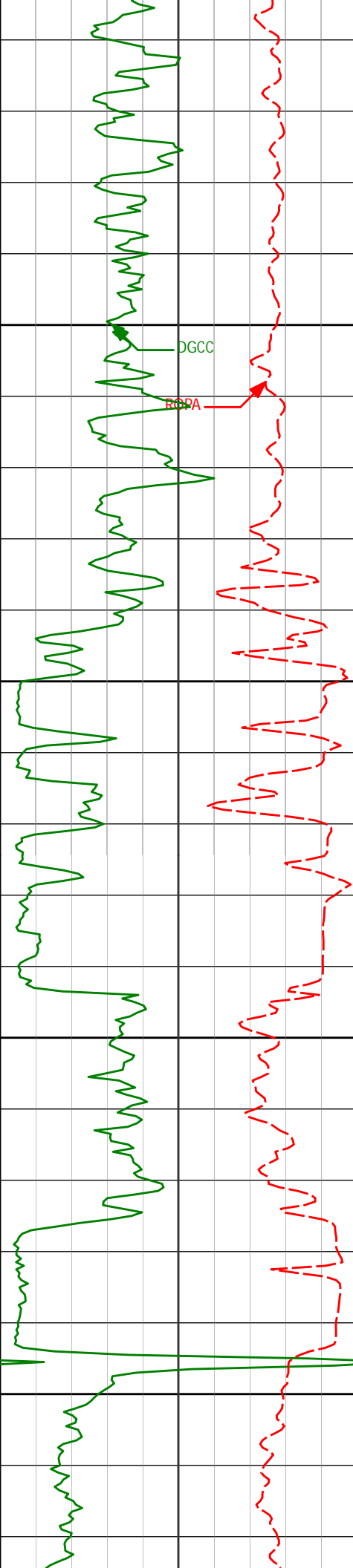
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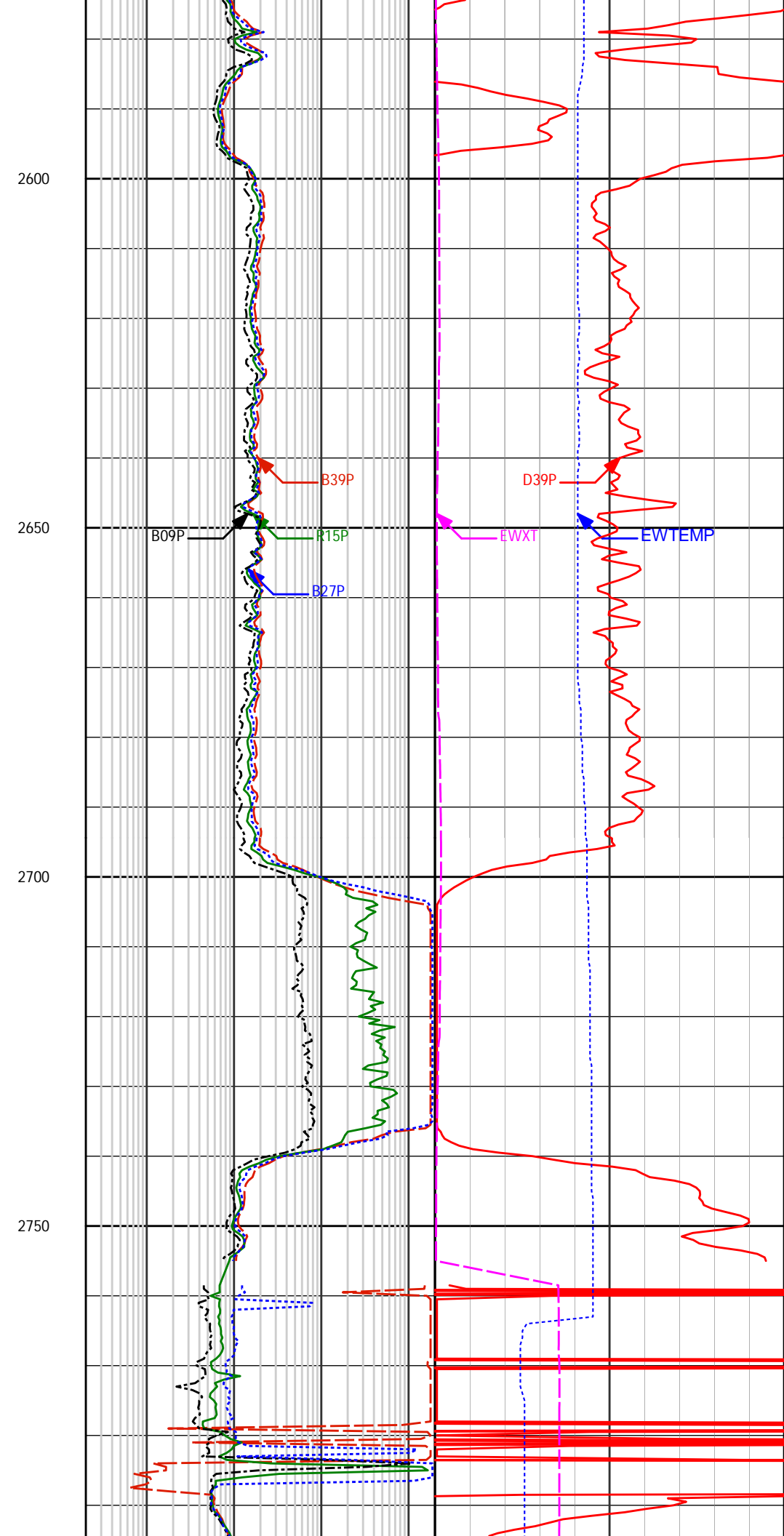
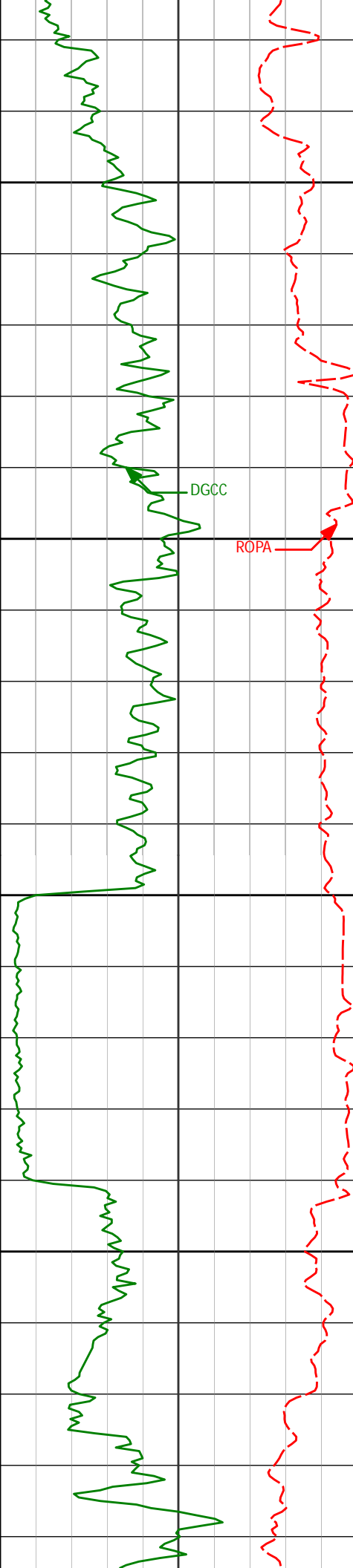


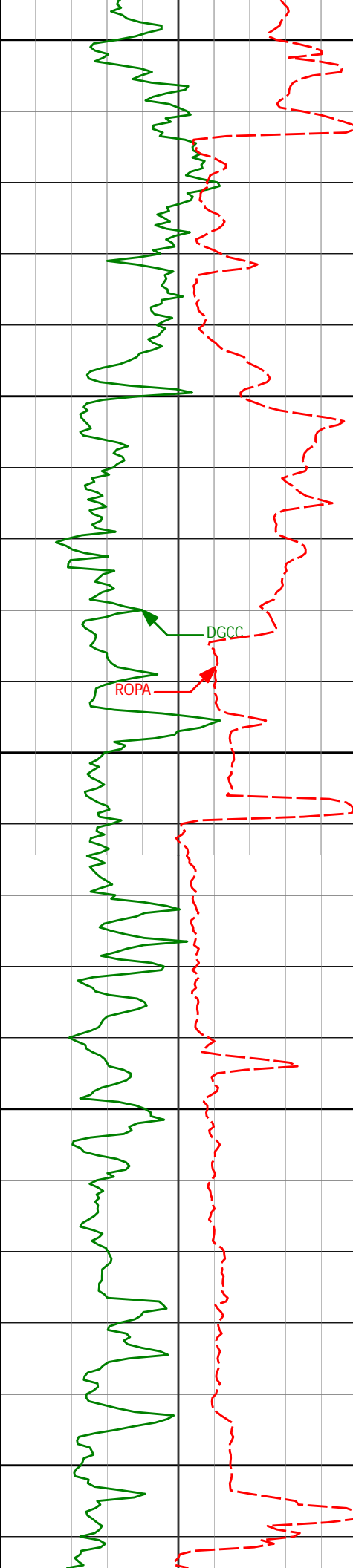
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EWXT

EWTEMP







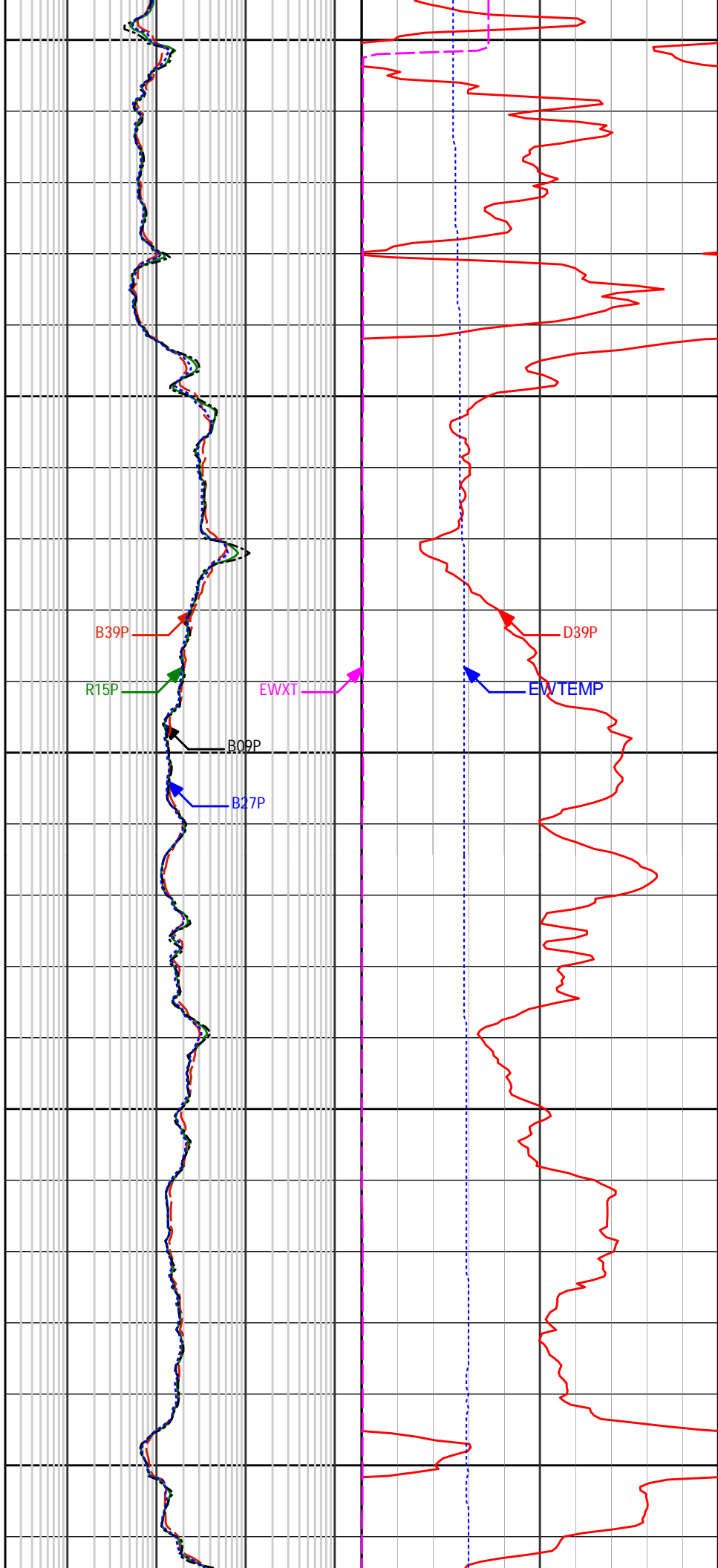
2800
Run 300

2850

2900

2950

3000



B39P

R15P

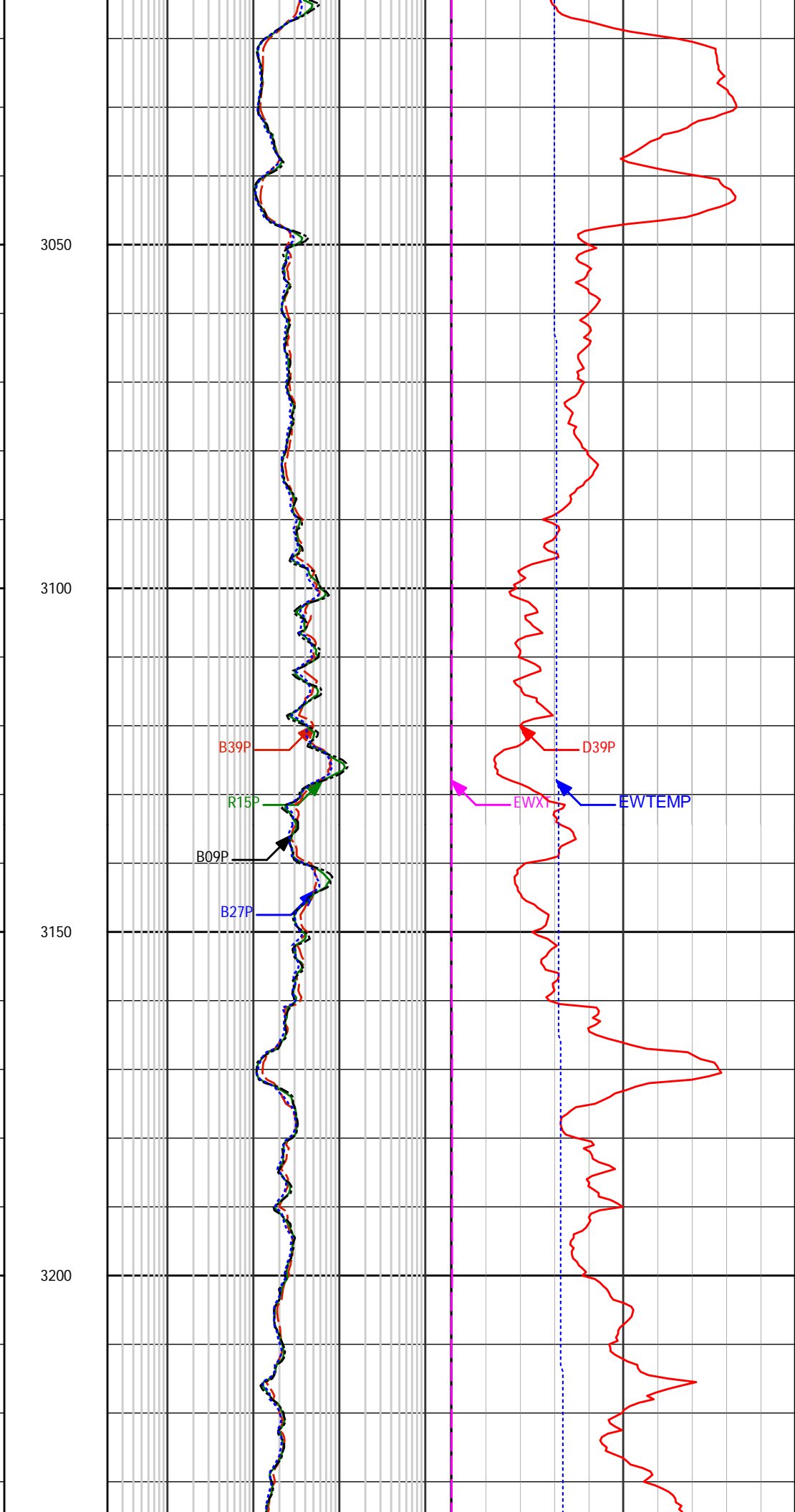
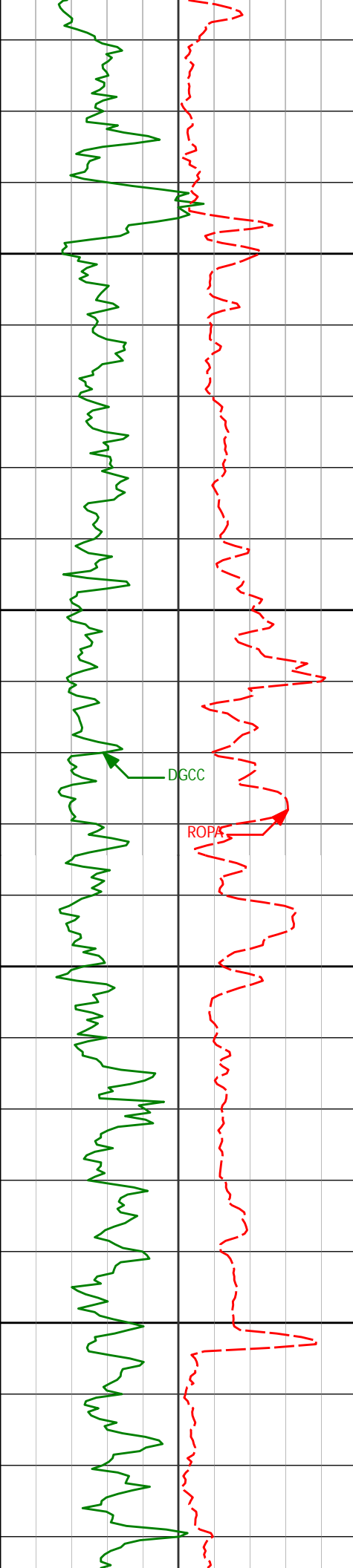
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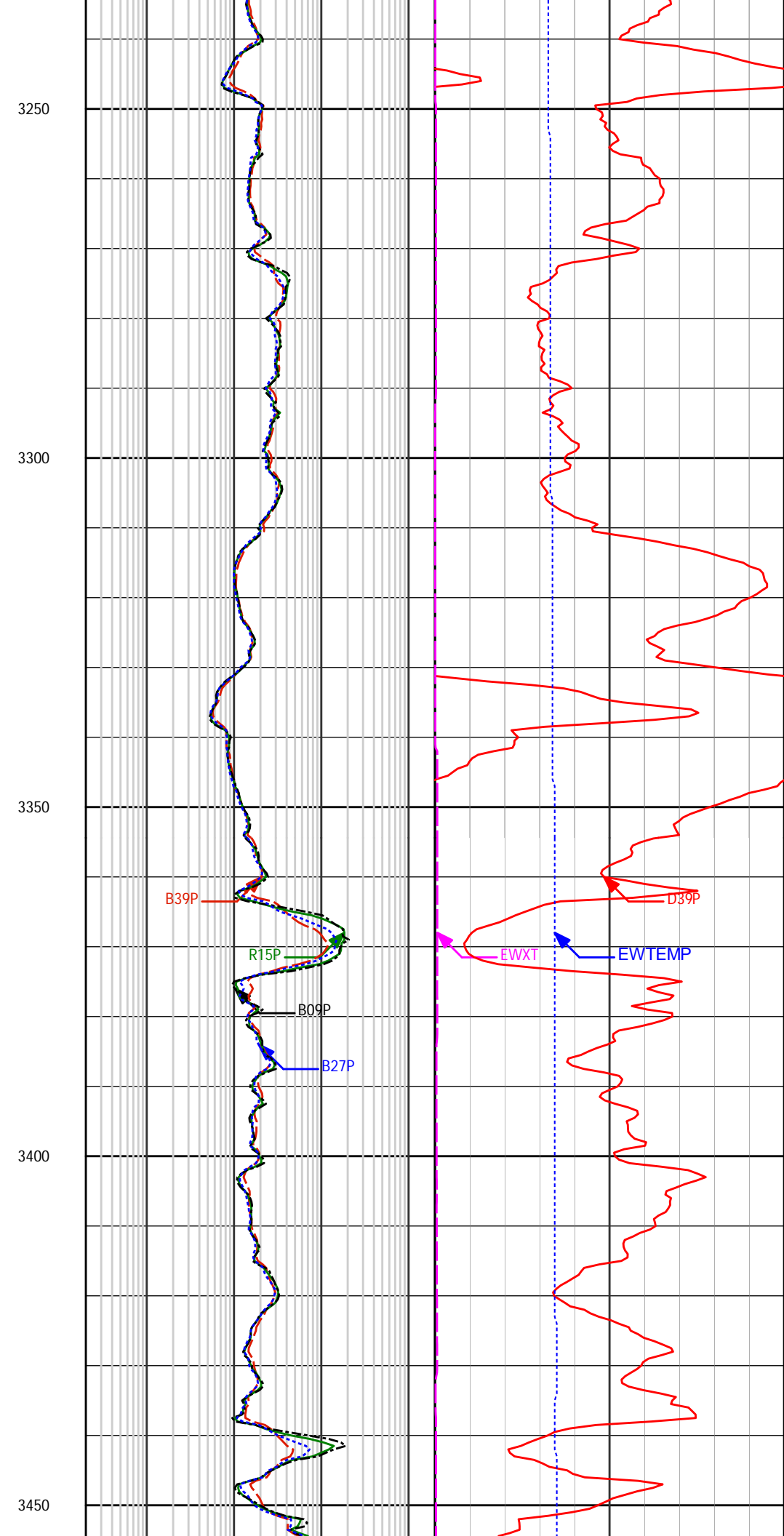
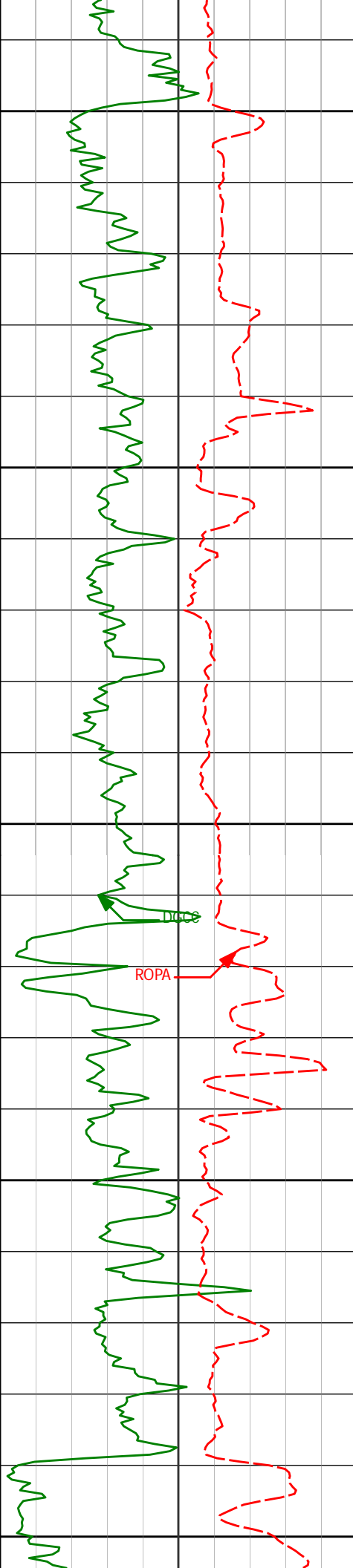
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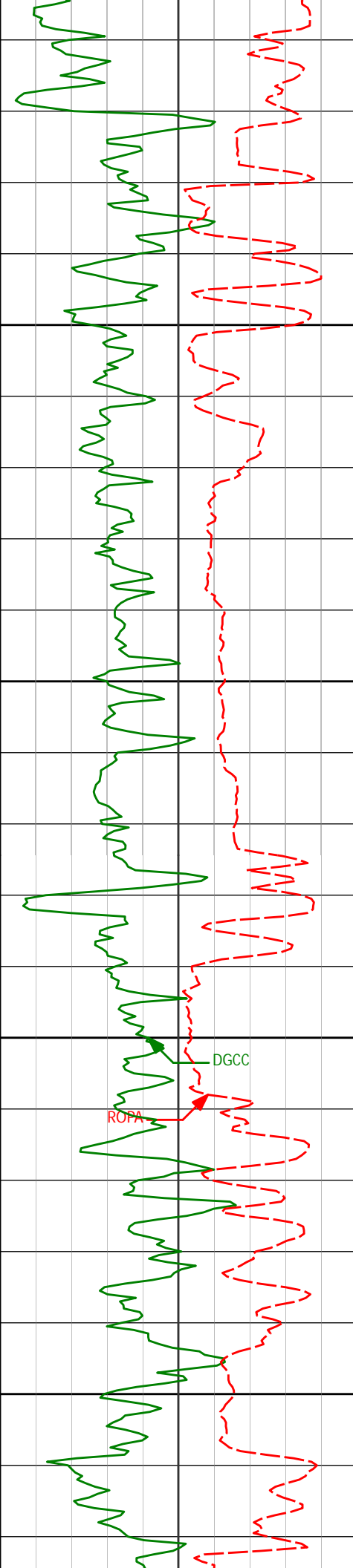
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EWTEMP





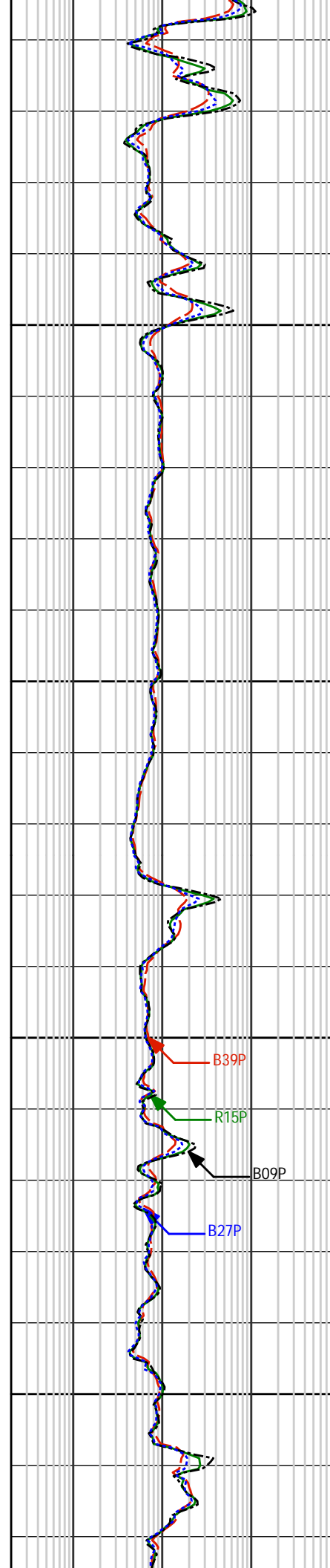


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3550

3600

3650

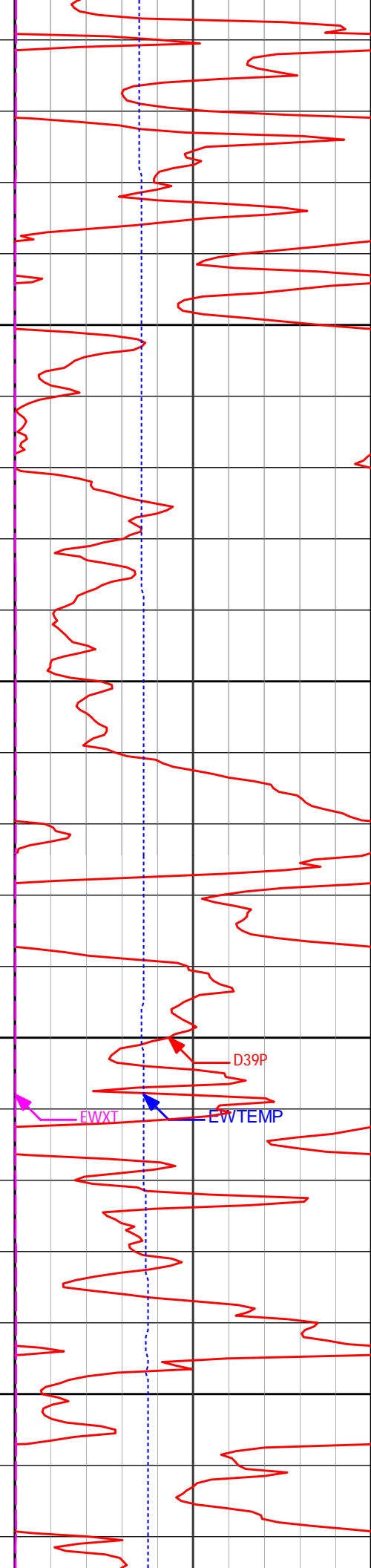


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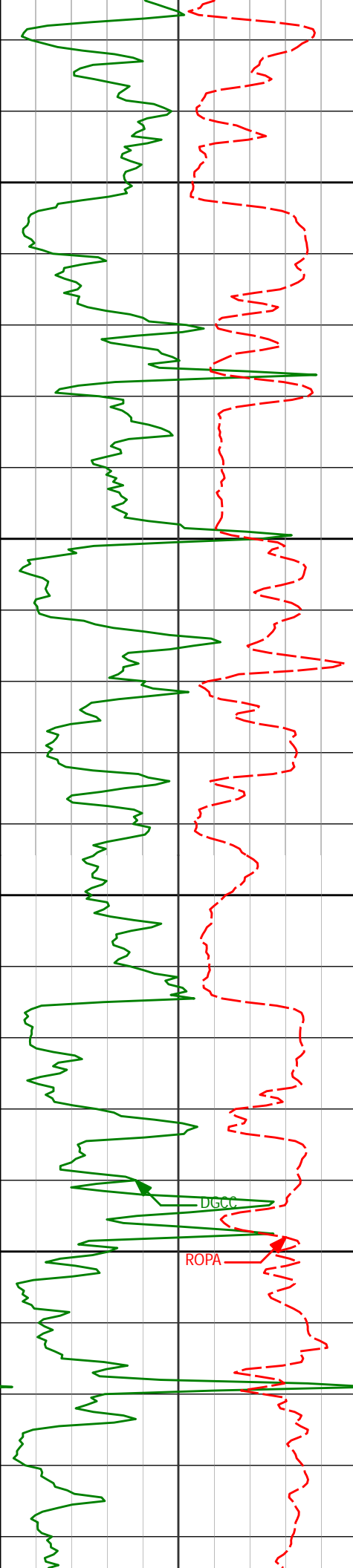
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D39P

EWXT

EWTEMP



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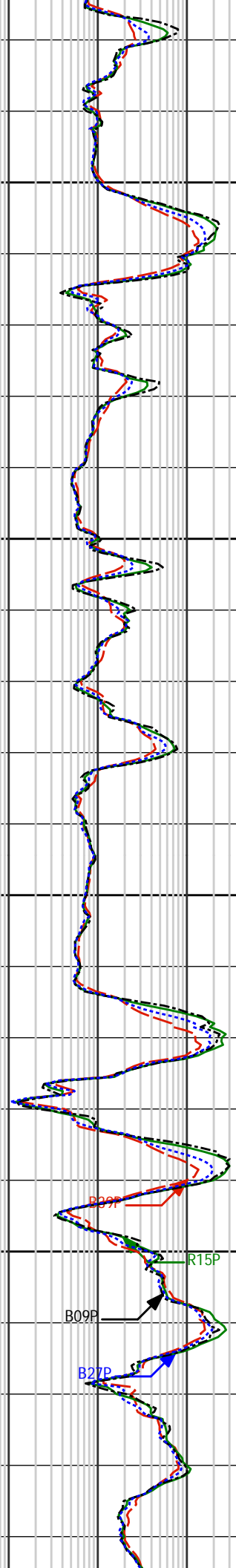
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3800

3850

DGCC

ROPA

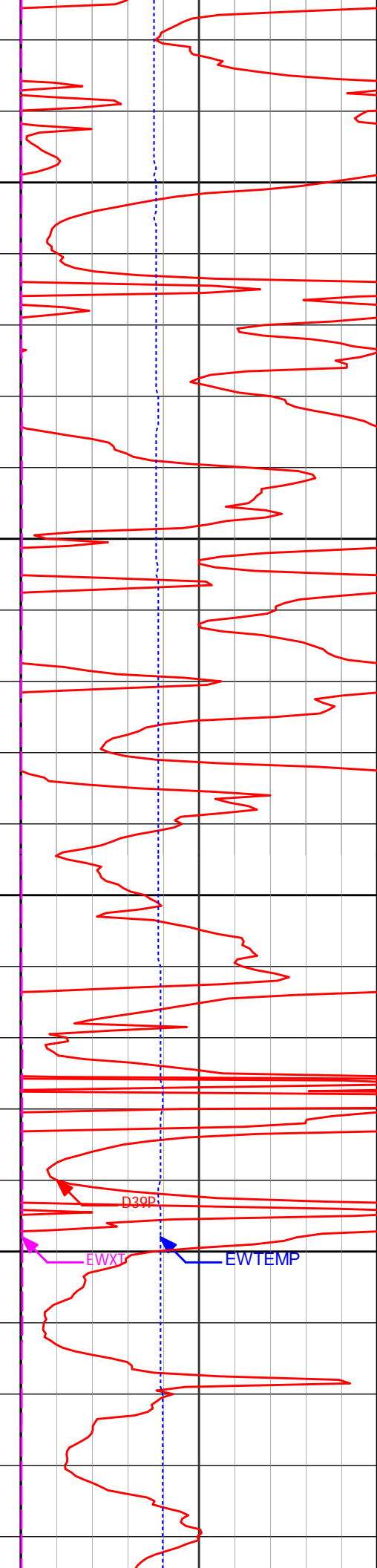


B39P

B09P

B27P

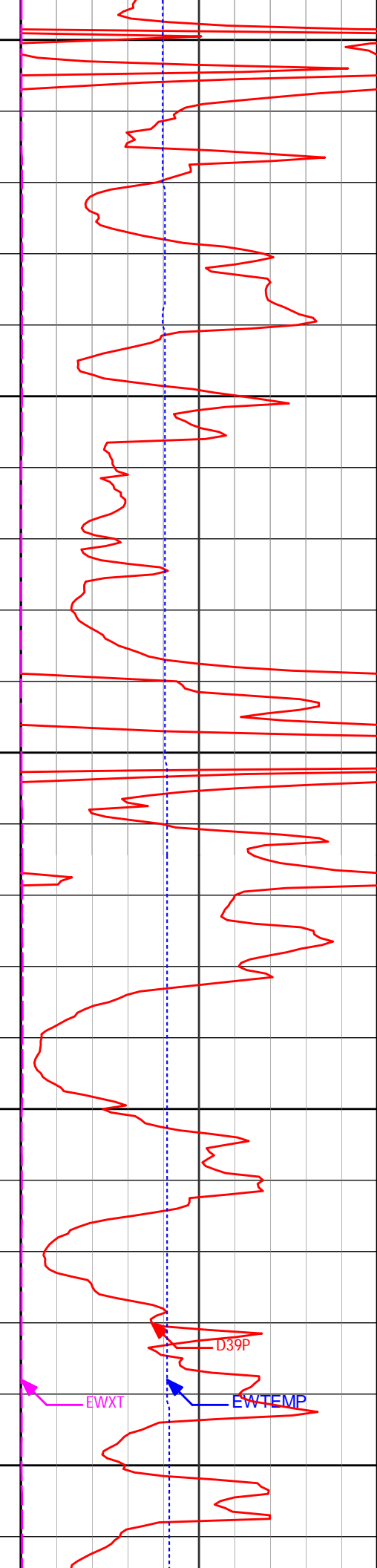
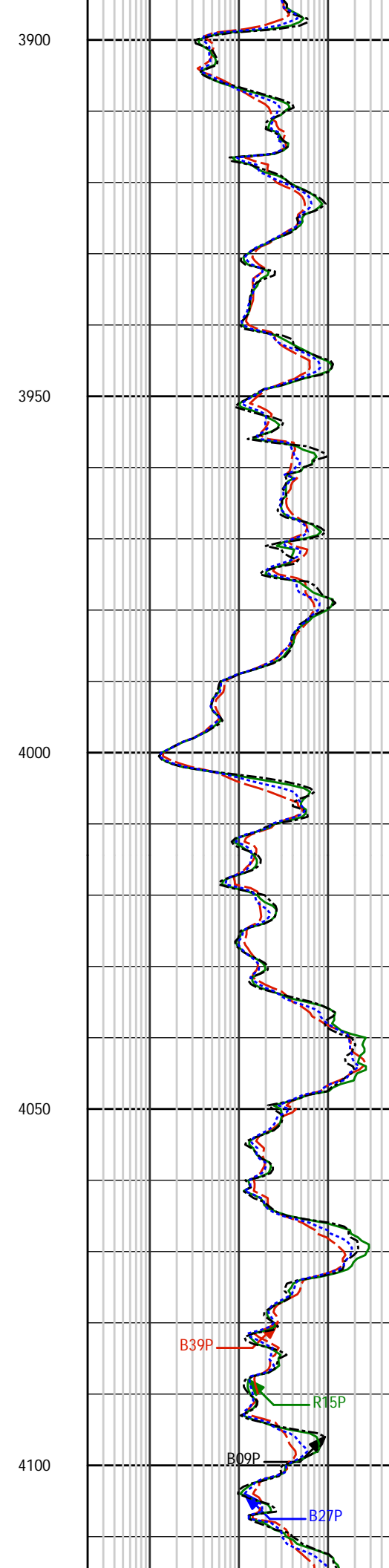
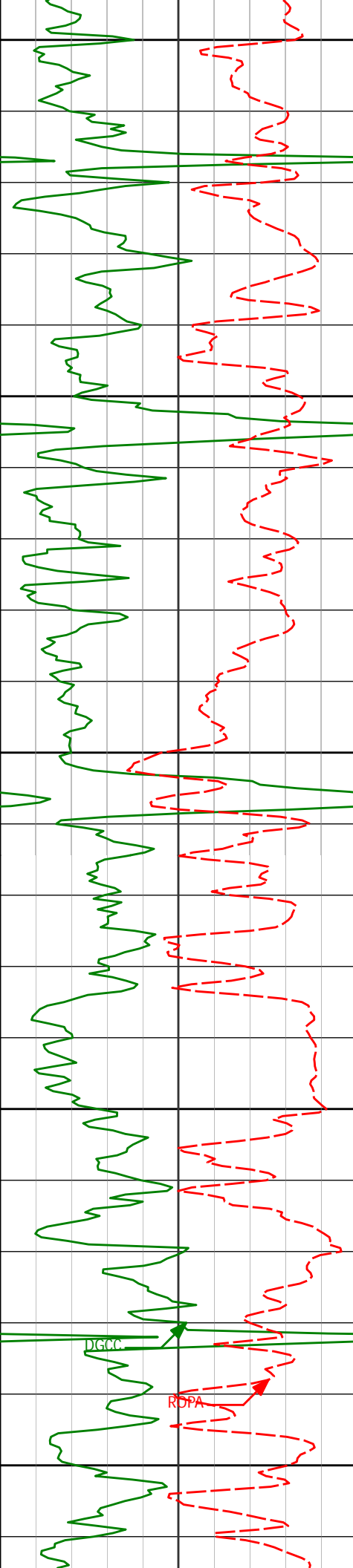
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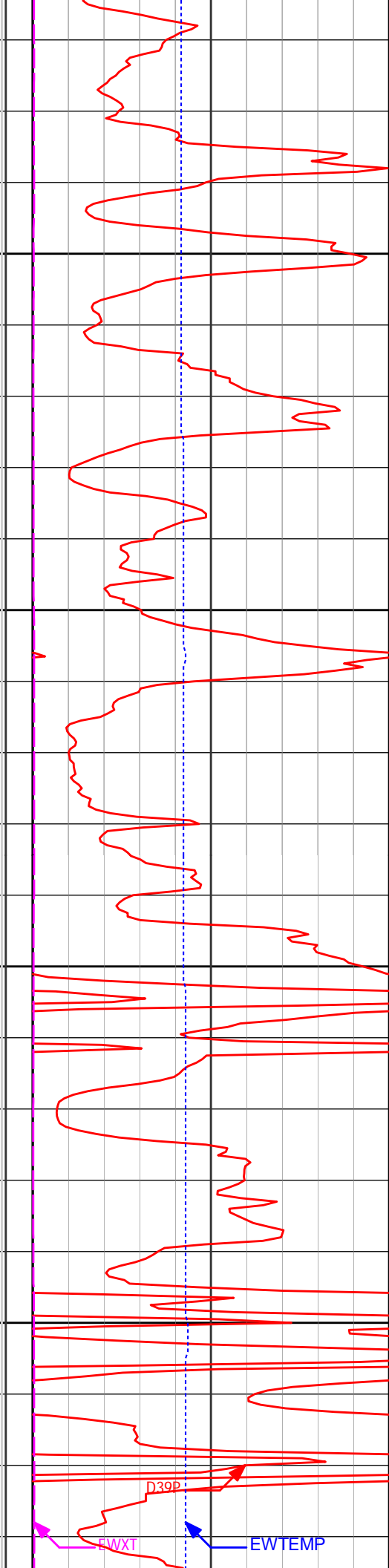
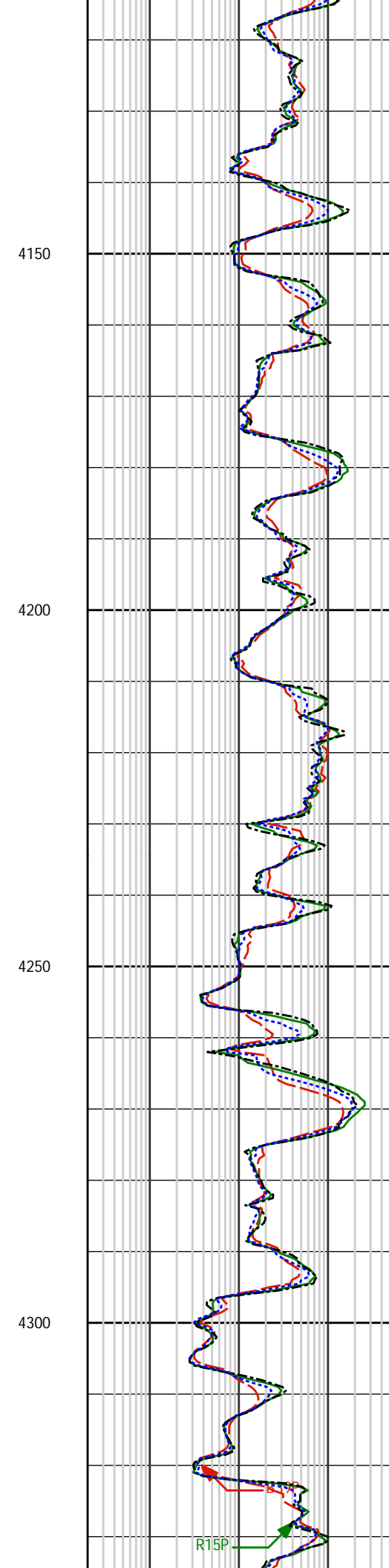
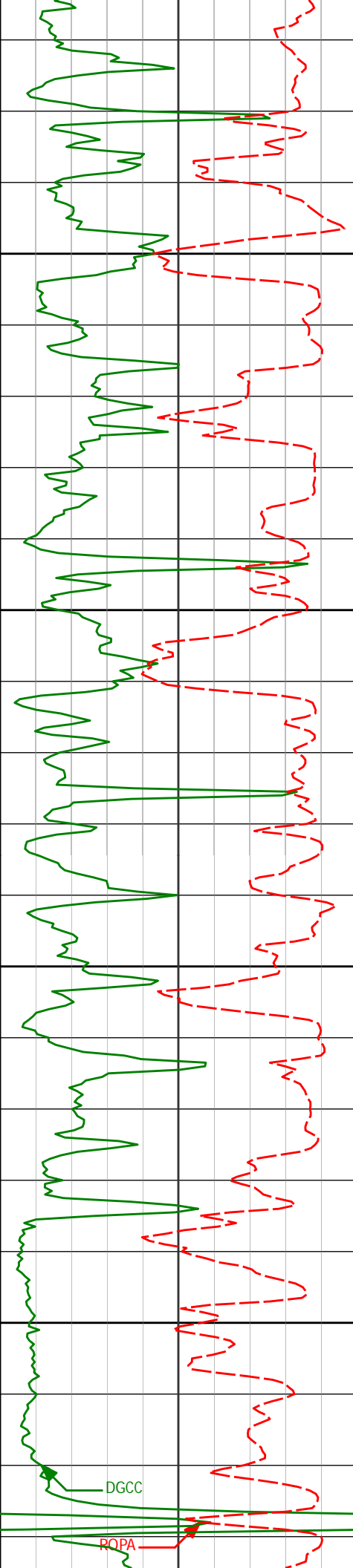


D39P

EWXT

EWTEMP





DGCC

ROPA

R15P

FWXT

EWTEMP

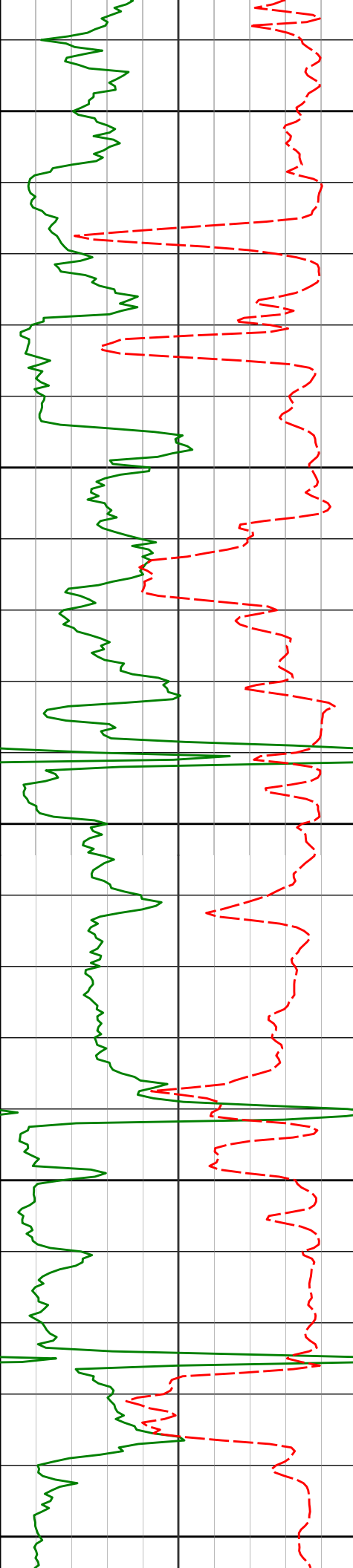
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4150

4200

4250

4300



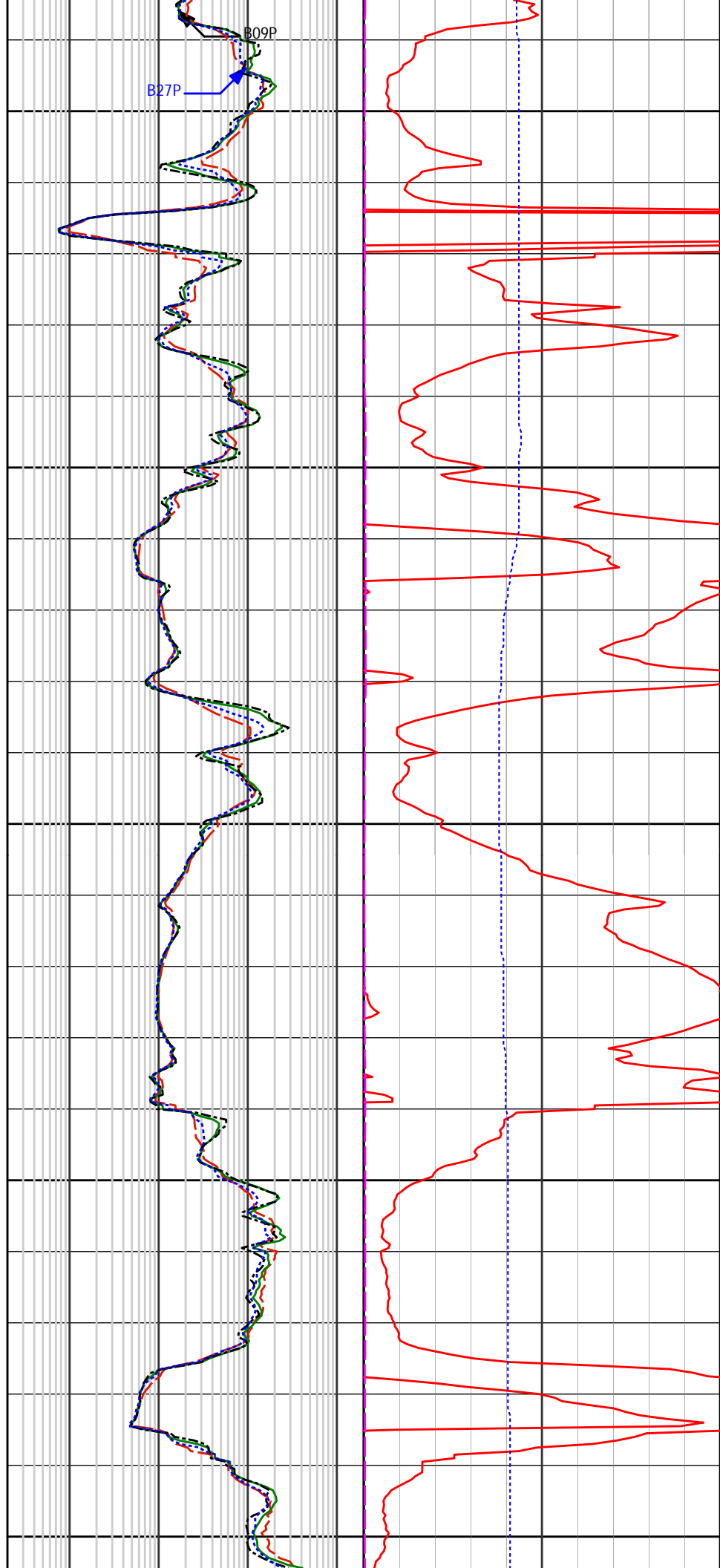
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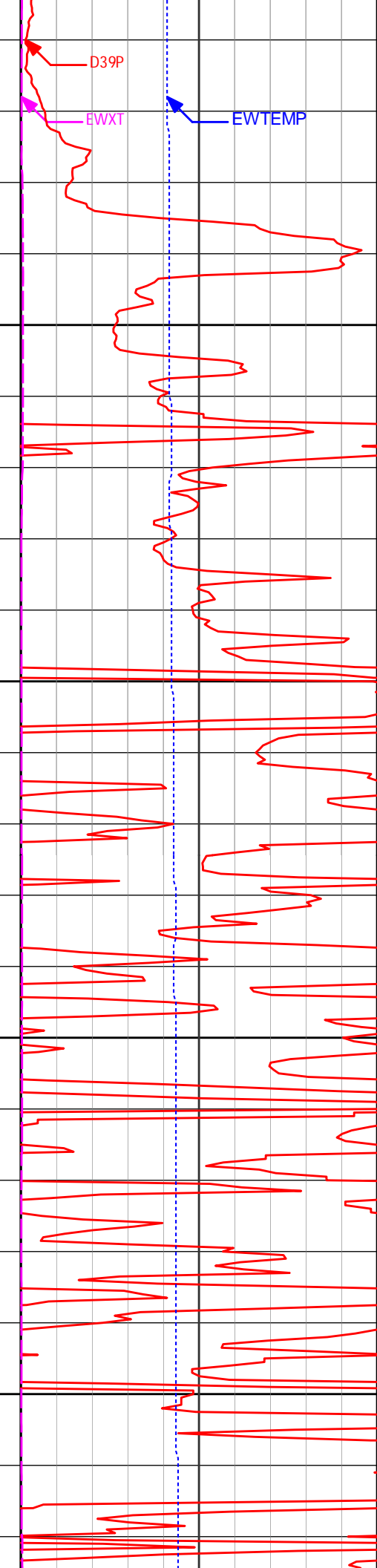
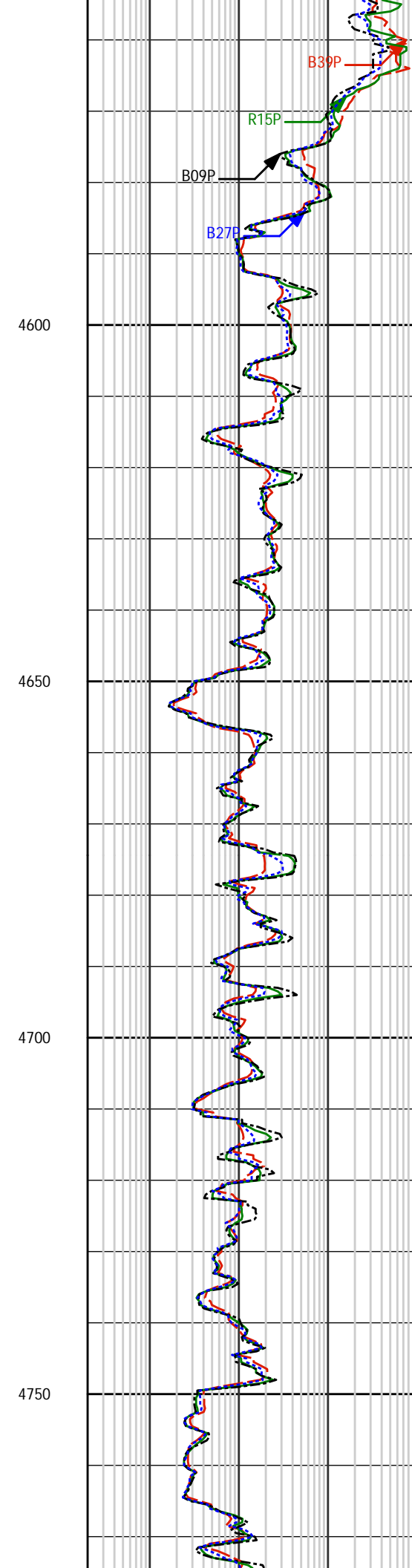
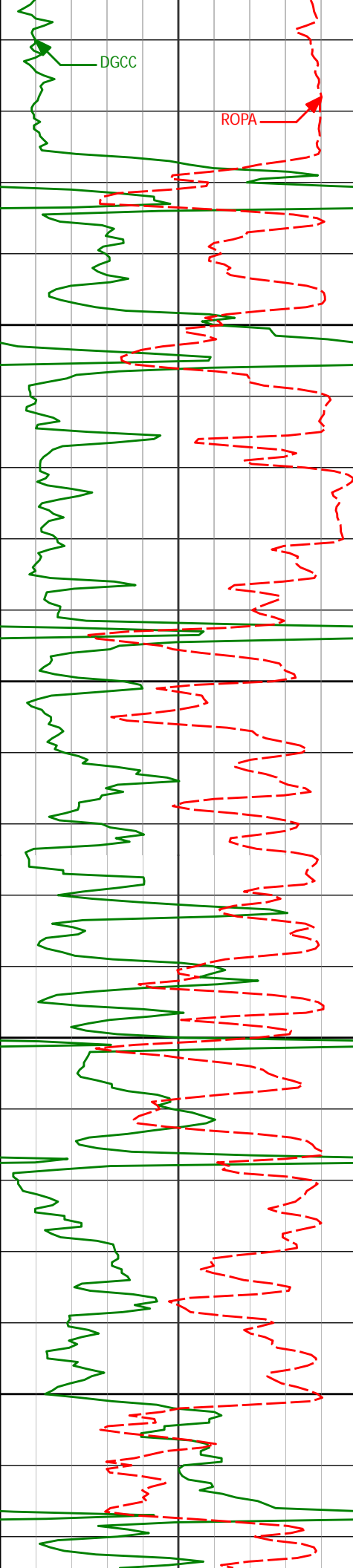
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B27P

B09P

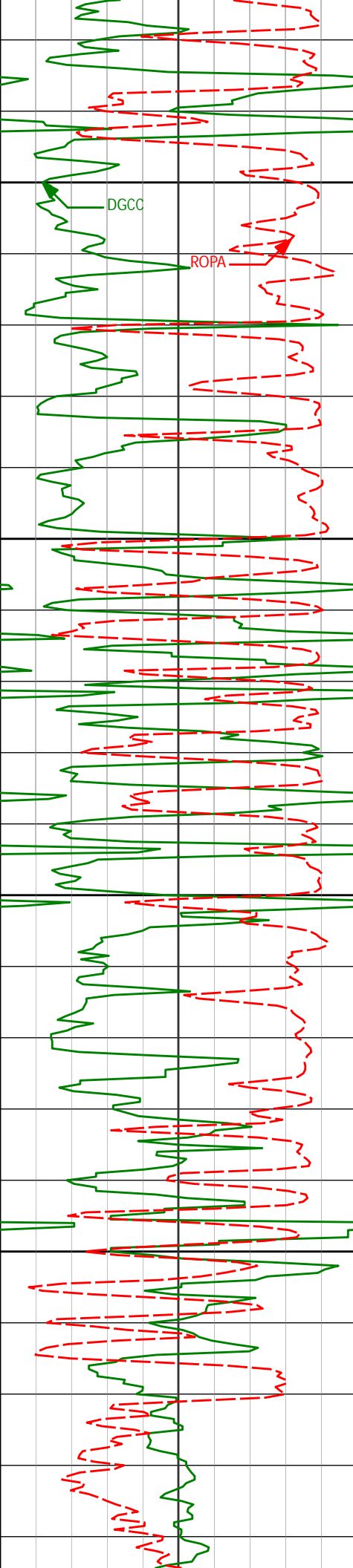


4600

4650

4700

4750

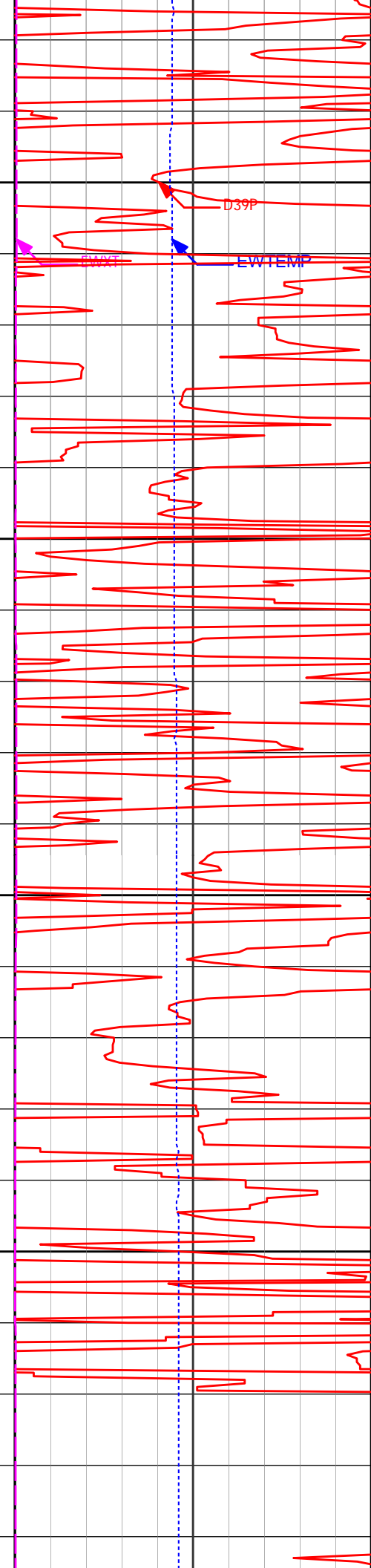
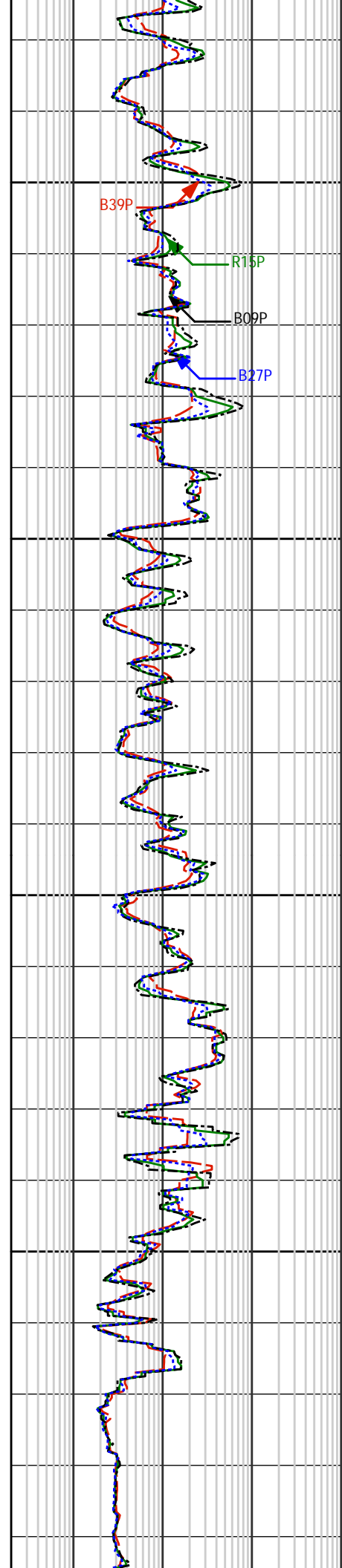


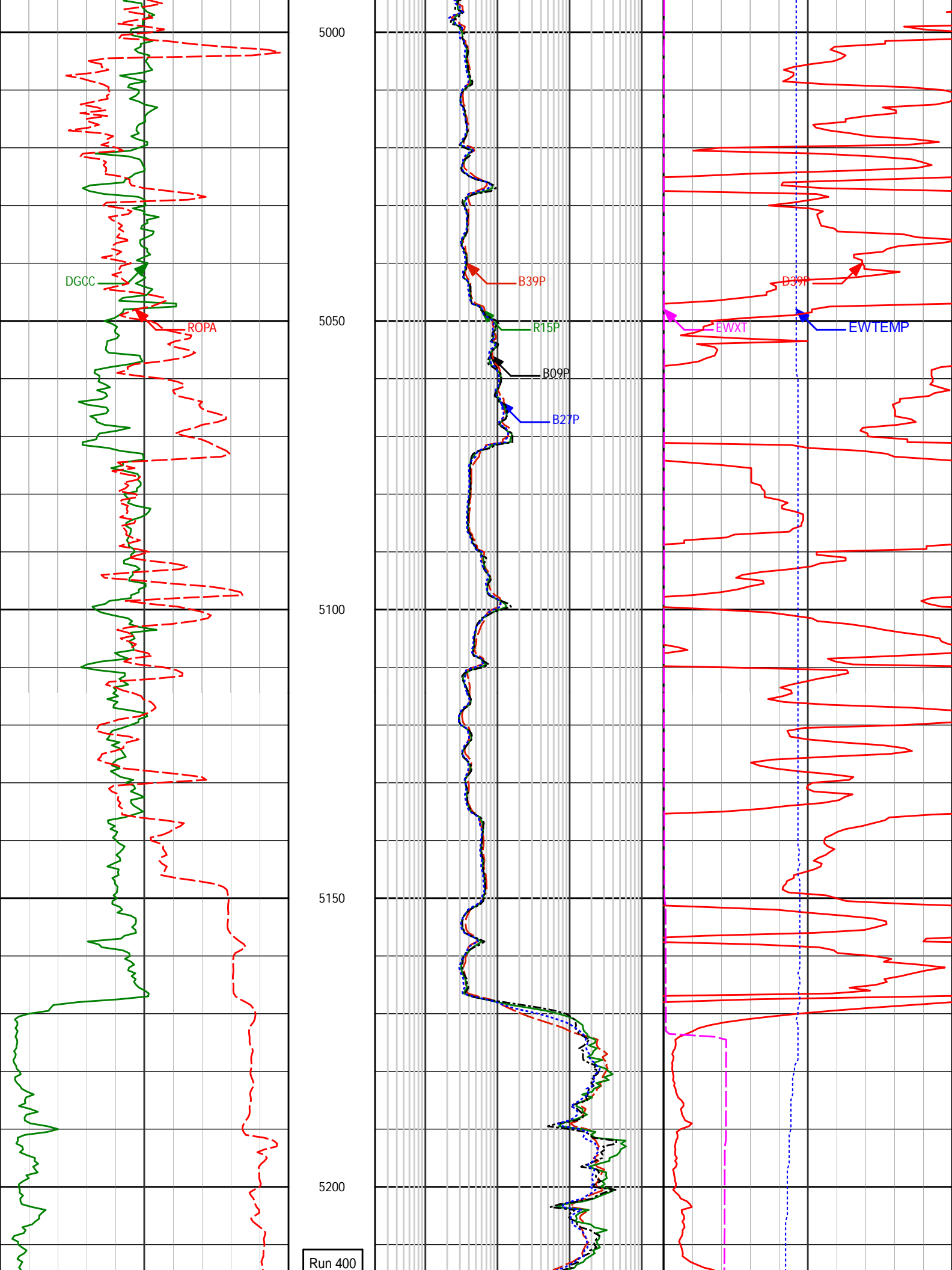
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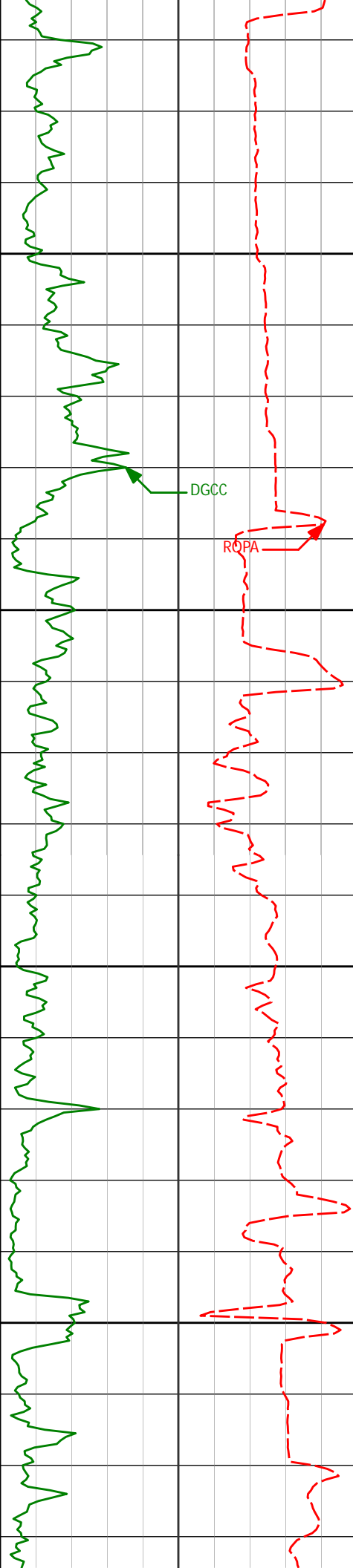
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4950







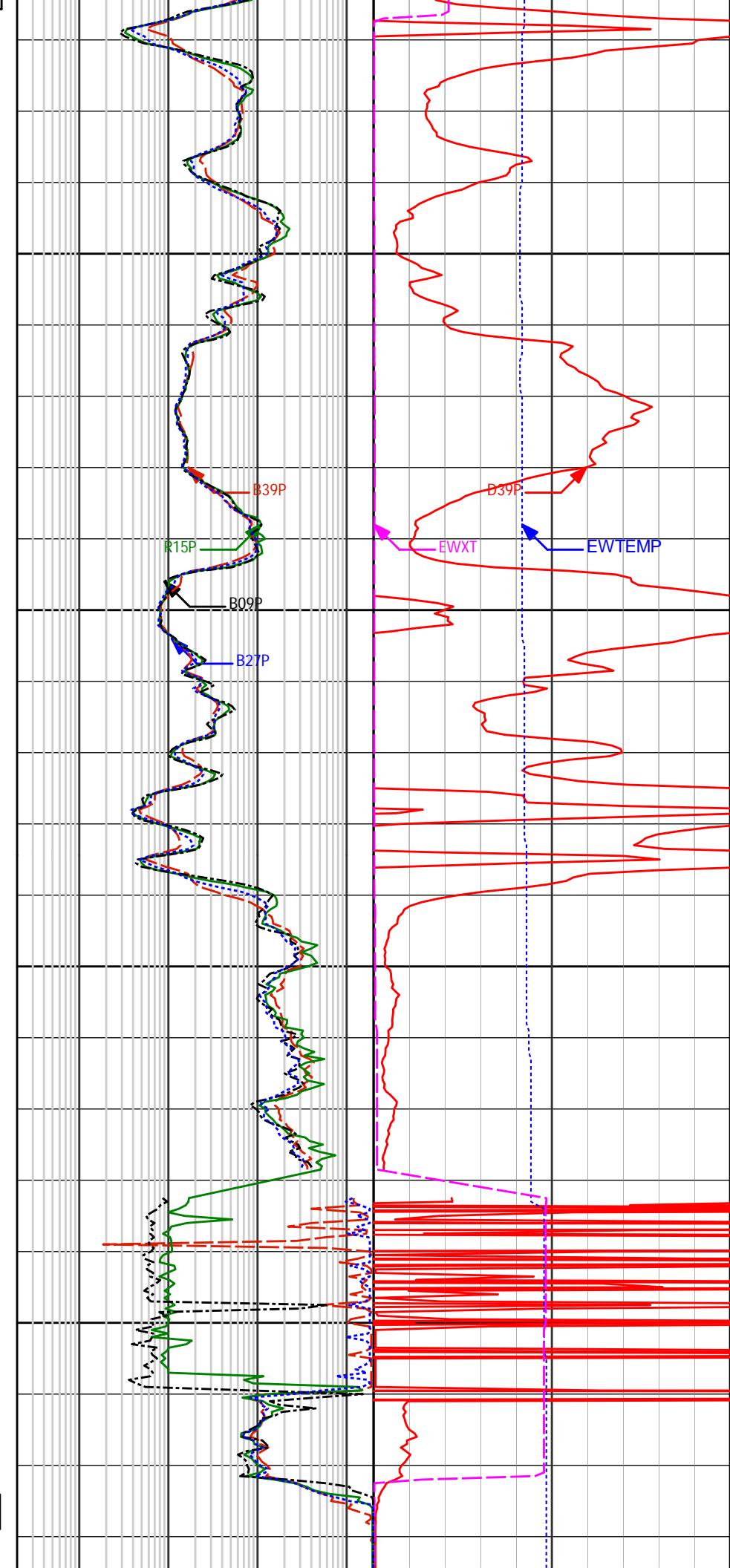
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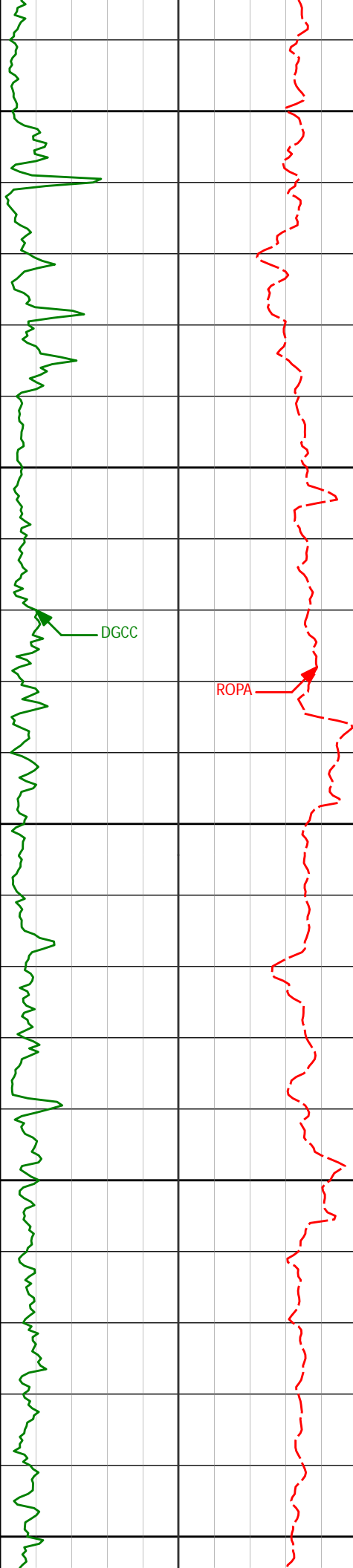
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5350

5400

Run 500





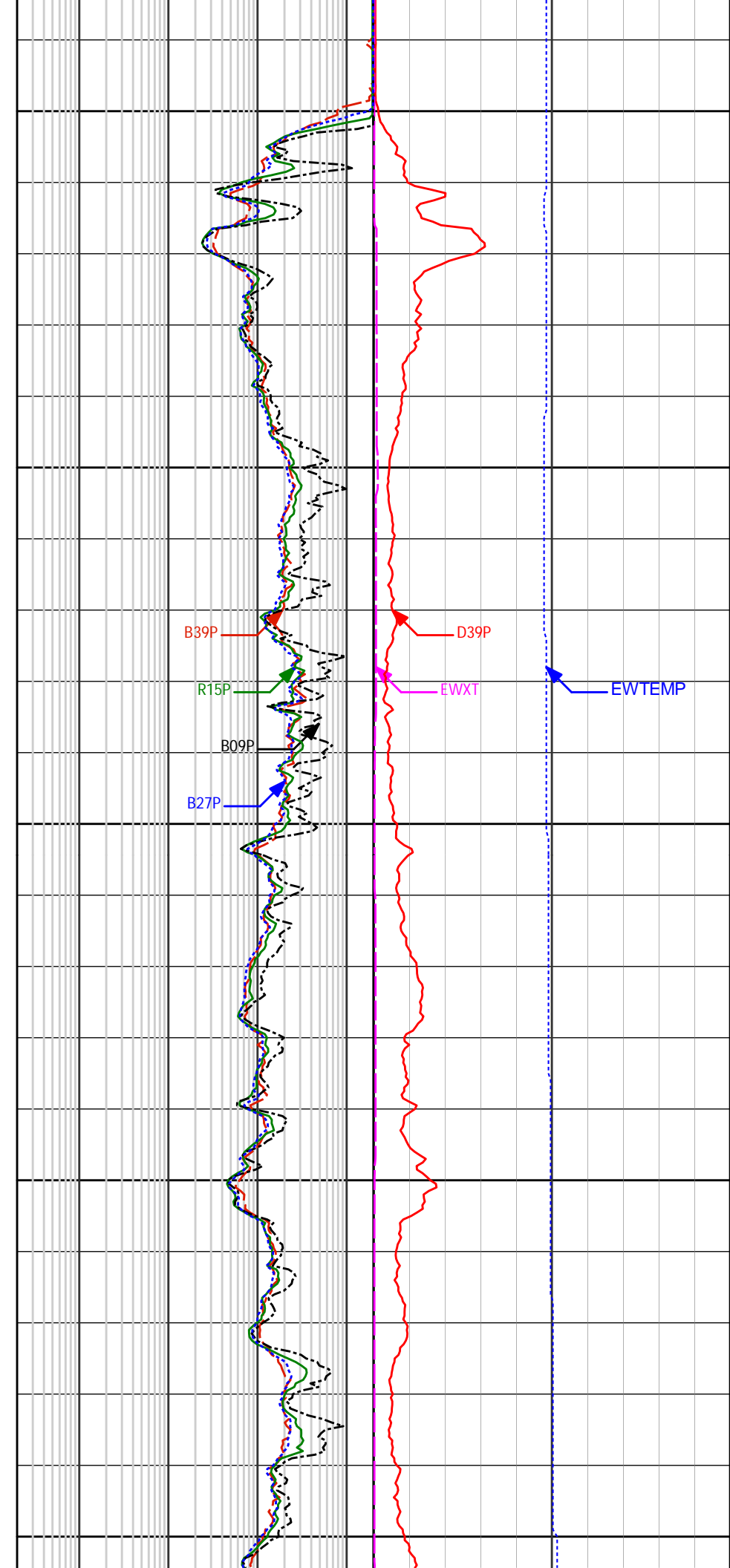
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B39P

R15P

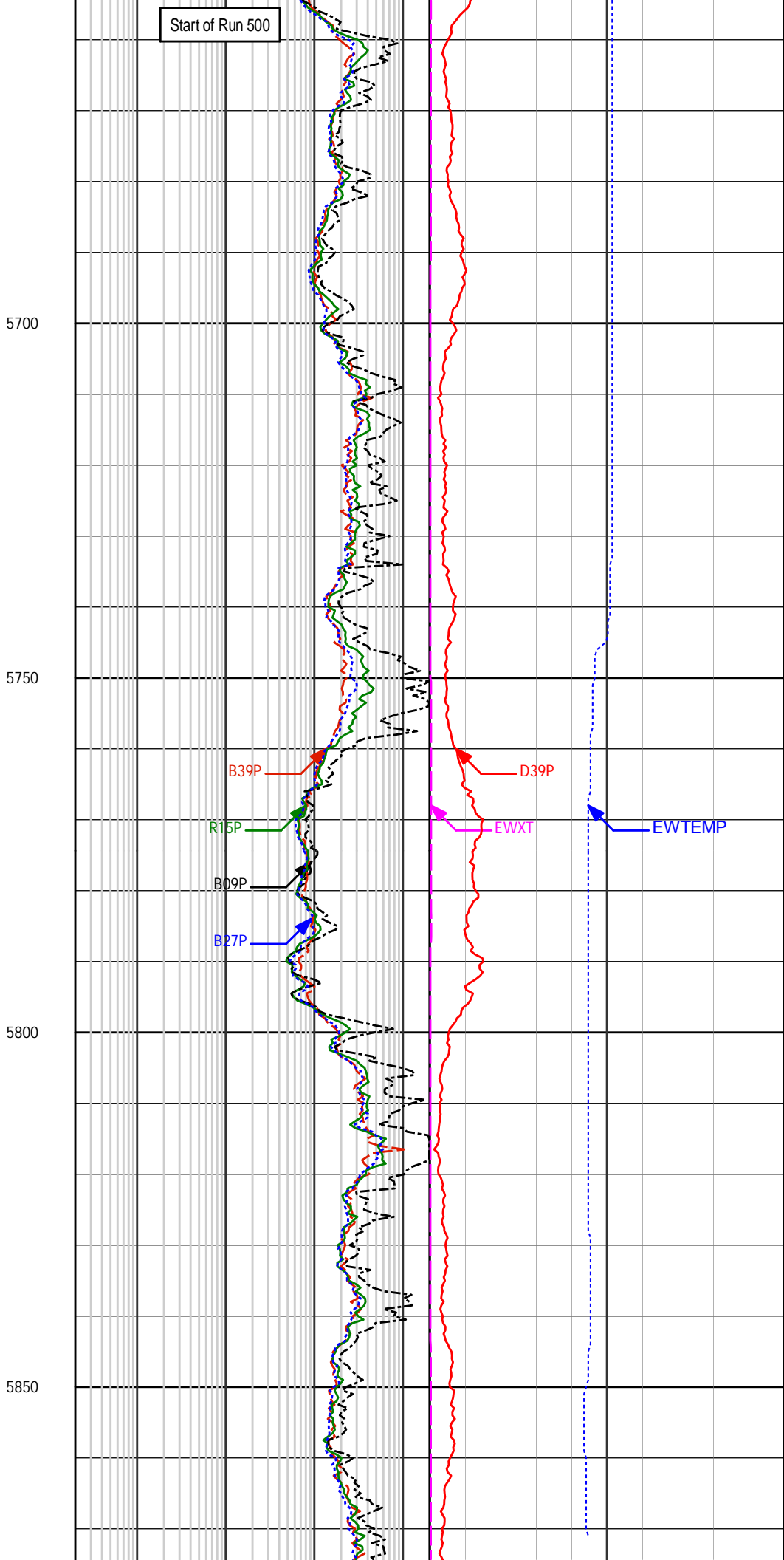
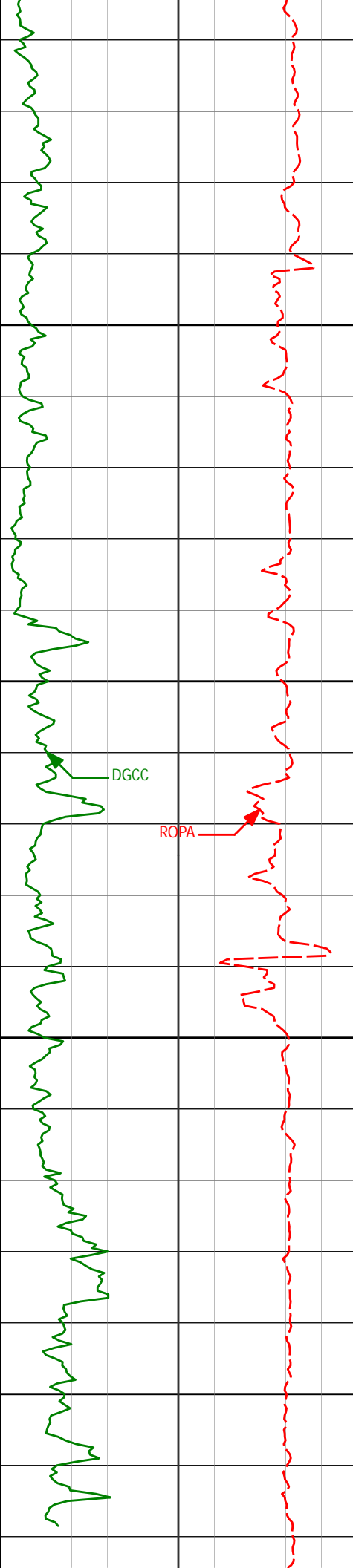
B09P

B27P

D39P

EWXT

EWTEMP



0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
117.00	0.77	63.03	117.00	0.36 N	0.70 E	-0.52	0.66
207.00	0.51	130.49	206.99	0.37 N	1.55 E	-1.30	0.83
297.00	0.53	67.08	296.99	0.28 N	2.24 E	-1.98	0.61
386.00	0.58	208.61	385.99	0.04 N	2.41 E	-2.22	1.18
469.00	0.56	181.92	468.98	0.73 S	2.19 E	-2.31	0.32
534.00	1.24	163.82	533.97	1.72 S	2.37 E	-2.84	1.12
595.00	1.51	160.67	594.96	3.11 S	2.82 E	-3.77	0.46
686.00	1.32	166.73	685.93	5.26 S	3.46 E	-5.15	0.26
777.00	1.11	171.64	776.91	7.16 S	3.83 E	-6.20	0.26
868.00	0.83	157.44	867.90	8.64 S	4.21 E	-7.10	0.41
959.00	0.44	153.73	958.89	9.56 S	4.62 E	-7.82	0.44
1051.00	0.59	147.34	1050.89	10.28 S	5.03 E	-8.46	0.17
1142.00	0.40	108.78	1141.88	10.77 S	5.58 E	-9.15	0.41
1233.00	0.56	108.91	1232.88	11.01 S	6.29 E	-9.91	0.18
1323.00	0.79	103.31	1322.87	11.30 S	7.31 E	-10.96	0.27
1418.00	0.94	96.32	1417.86	11.53 S	8.73 E	-12.36	0.19
1513.00	0.97	101.61	1512.85	11.78 S	10.29 E	-13.90	0.10
1608.00	0.68	116.01	1607.84	12.19 S	11.58 E	-15.26	0.37
1703.00	0.31	108.34	1702.84	12.52 S	12.33 E	-16.08	0.40
1798.00	0.33	100.13	1797.83	12.65 S	12.85 E	-16.60	0.05
1894.00	0.45	122.68	1893.83	12.90 S	13.44 E	-17.25	0.20
1989.00	0.90	134.52	1988.83	13.63 S	14.29 E	-18.30	0.49
2084.00	0.62	136.22	2083.82	14.52 S	15.17 E	-19.45	0.29
2179.00	0.33	203.39	2178.81	15.15 S	15.42 E	-19.91	0.61
2274.00	0.12	272.64	2273.81	15.39 S	15.21 E	-19.81	0.33
2369.00	0.32	318.90	2368.81	15.19 S	14.93 E	-19.48	0.26
2464.00	0.56	339.19	2463.81	14.56 S	14.60 E	-18.93	0.30
2559.00	1.31	352.28	2558.80	13.05 S	14.29 E	-18.09	0.82
2654.00	1.74	348.91	2653.76	10.55 S	13.86 E	-16.77	0.46
2736.00	1.81	334.40	2735.72	8.16 S	13.06 E	-15.15	0.55
2790.00	2.16	347.37	2789.69	6.40 S	12.47 E	-13.95	1.05
2845.00	1.57	341.88	2844.66	4.67 S	12.01 E	-12.89	1.11
2940.00	0.93	318.82	2939.64	2.85 S	11.10 E	-11.37	0.84
3035.00	0.96	319.04	3034.63	1.67 S	10.06 E	-9.97	0.03
3131.00	1.00	326.03	3130.61	0.37 S	9.07 E	-8.57	0.13
3226.00	1.00	323.27	3225.60	0.98 N	8.11 E	-7.18	0.05
3321.00	1.19	328.29	3320.58	2.49 N	7.10 E	-5.68	0.22
3416.00	1.23	333.00	3415.56	4.24 N	6.11 E	-4.12	0.12
3511.00	1.27	330.66	3510.54	6.07 N	5.14 E	-2.54	0.06
3607.00	1.20	330.87	3606.52	7.87 N	4.13 E	-0.94	0.07
3702.00	1.22	332.51	3701.49	9.63 N	3.18 E	0.59	0.04
3797.00	1.10	332.23	3796.47	11.34 N	2.28 E	2.05	0.12
3892.00	1.11	334.91	3891.46	12.98 N	1.47 E	3.42	0.06
3988.00	1.08	333.13	3987.44	14.63 N	0.66 E	4.77	0.05
4083.00	1.00	336.58	4082.42	16.19 N	0.07 W	6.02	0.11
4177.00	0.94	333.72	4176.41	17.63 N	0.74 W	7.17	0.08
4273.00	0.94	329.67	4272.40	19.02 N	1.48 W	8.38	0.07
4368.00	1.00	325.92	4367.38	20.38 N	2.34 W	9.68	0.09
4463.00	1.05	326.17	4462.37	21.78 N	3.29 W	11.08	0.06
4559.00	1.00	323.10	4558.35	23.19 N	4.28 W	12.52	0.07
4654.00	0.44	241.13	4653.35	23.68 N	5.10 W	13.46	1.09
4749.00	0.74	218.24	4748.34	23.02 N	5.80 W	13.87	0.40
4844.00	0.80	216.98	4843.33	22.01 N	6.58 W	14.22	0.06
4939.00	0.72	210.39	4938.32	20.96 N	7.28 W	14.49	0.12
5035.00	0.88	204.27	5034.32	19.76 N	7.89 W	14.61	0.19
5130.00	1.18	196.95	5129.30	18.16 N	8.48 W	14.57	0.34
5225.00	1.11	195.99	5224.28	16.33 N	9.02 W	14.40	0.07
5358.00	1.10	193.34	5357.26	13.85 N	9.67 W	14.09	0.04
5474.00	1.51	207.67	5473.23	11.42 N	10.64 W	14.09	0.45
5537.00	1.31	227.44	5536.21	10.20 N	11.55 W	14.49	0.83
5632.00	1.15	282.30	5631.19	9.67 N	13.29 W	15.91	1.20
5727.00	1.33	294.38	5726.17	10.32 N	15.22 W	17.96	0.33
5855.00	2.69	246.88	5854.09	9.75 N	19.34 W	21.57	1.60
5914.00	2.69	246.88	5913.03	8.67 N	21.89 W	23.54	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 291.60 DEGREES (TRUE)

A TOTAL CORRECTION OF 7.39 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 5914.00 FEET
IS 23.54 FEET ALONG 291.60 DEGREES (TRUE)

Last survey is a projection to bit.
Vertical section is calculated to closure.

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