

WELL INFORMATION

[illegible]

WELL INFORMATION					
MWD Run Number	400				
Date run completed	03-Aug-13				
Rig Bit Number	4				
Bit Size (in)	6.125				
Tool Nominal OD (in)	8.000				
Log Start Depth (MD, ft)	7,655.00				
Log End Depth (MD, ft)	11,792.00				
Drill or Wipe	Drill				
Drill/Wipe Start Date and Time	30-Jul-13 09:15				
Drill/Wipe End Date and Time	03-Aug-13 05:00				
Min Inc (deg) @ Depth (MD, ft)	88.02 @ 10,543.00				
Max Inc (deg) @ Depth (MD, ft)	93.09 @ 9,878.00				
Bit TFA(in2) / Bit Type	.98 / PDC				
Flow Rate (gpm)	299.24				
Max AV (fpm) / CV (fpm) @ MWD	0 / 0				
Fluid Type	Fresh Water Gel				
Density (ppg) / Viscosity (spqt)	9.60 / 34.00				
Filtrate CL (ppm)	750.00				
pH / Fluid Loss (mptm)	9.50 / 0				
PV (cP) / YP (lhf2)	11 / 11.00				
% Solids / % Sand	1.2 / 0				
% Oil / Oil:Water Ratio	/				
Rm @ Measured Temp (degF)	@				
Rmf @ Measured Temp (degF)	@				
Rmc @ Measured Temp (degF)	@				
Max Tool Temp (deg F) / S	622.05 / 40.00				

Max Tool Temp (degF) / Source	229.65 / HCIM				
Rm @ Max Tool Temp (degF)	@ 229.65				
Lead MWD Engineer	Evan LeBlanc				
Customer Representative	Terry Bradshaw				

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM				
Software Version	88.56				
Sub Serial Number	11252401				
Insert Serial Number	11252401				
Date and Time Initialized	31-Jul-13 20:05				
Date and Time Read	03-Aug-13 22:01				
ECMB SW Version	N/A				

Directional Sensor Information

Tool Type	PCDC				
Distance From Bit (ft)	48.04				
Software Version	6.21				
Sub Serial Number	1				
Sonde Serial Number	11297584				
Sensor ID Number	N/A				
Toolface Offset (deg)	195.96				

Gamma Ray Sensor Information

Tool Type	DGR				
Distance From Bit (ft)	70.92				
Recorded Sample Period (sec)	8				
Software Version	N/A				
Sub Serial Number	10911224				
Insert/Sonde Serial Number	10873620				

Resistivity Sensor Information

Tool Type	Slim P4				
Distance From Bit (ft)	63.92				
Recorded Sample Period (sec)	12				
Software Version	5.55				
Sub Serial Number	223559				
Receiver Insert Serial Number	57772				
Transmitter Insert Serial Number	163196				
Receiver Orientation	Down				

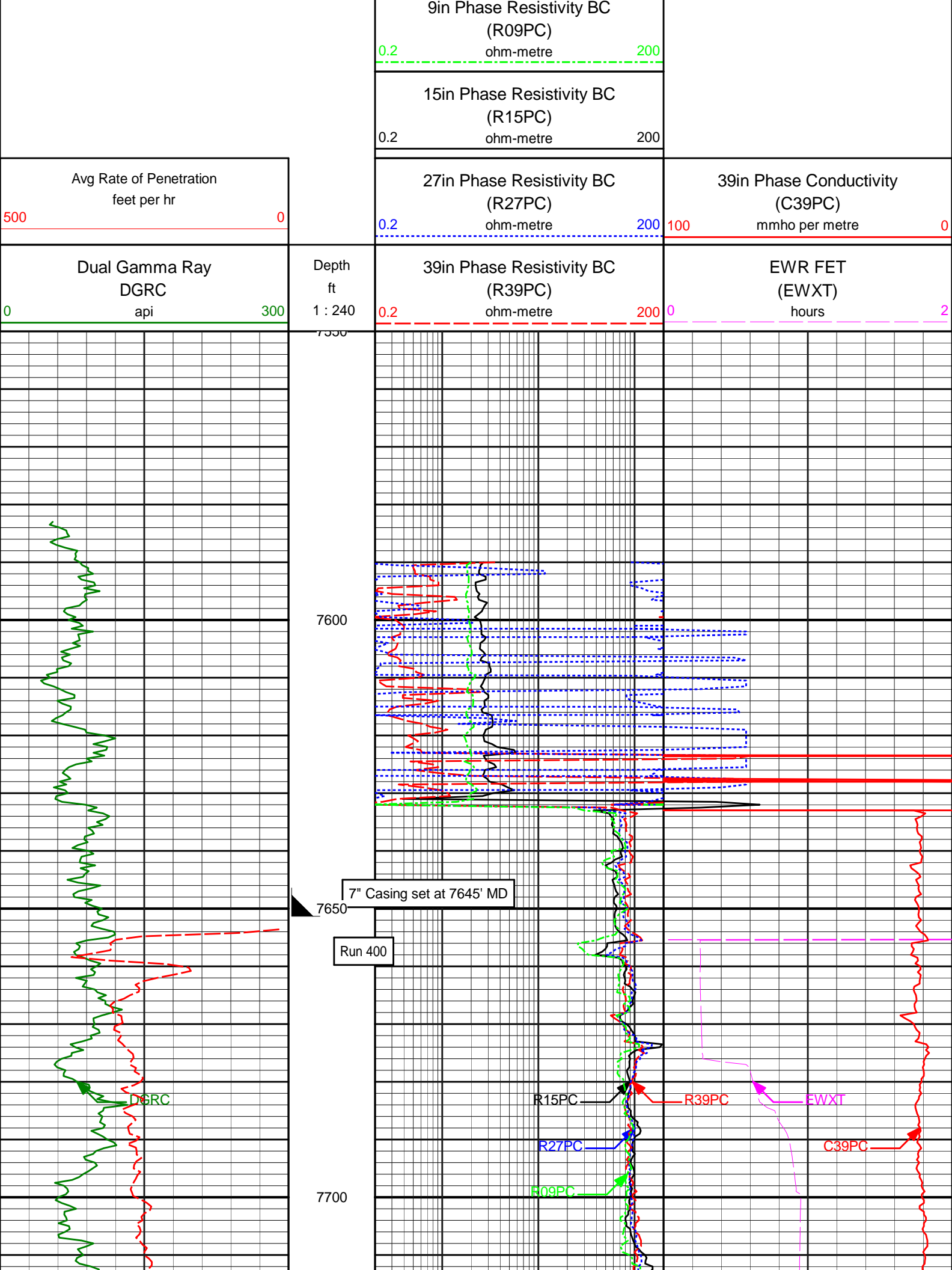
Pulser Controller Sensor Information

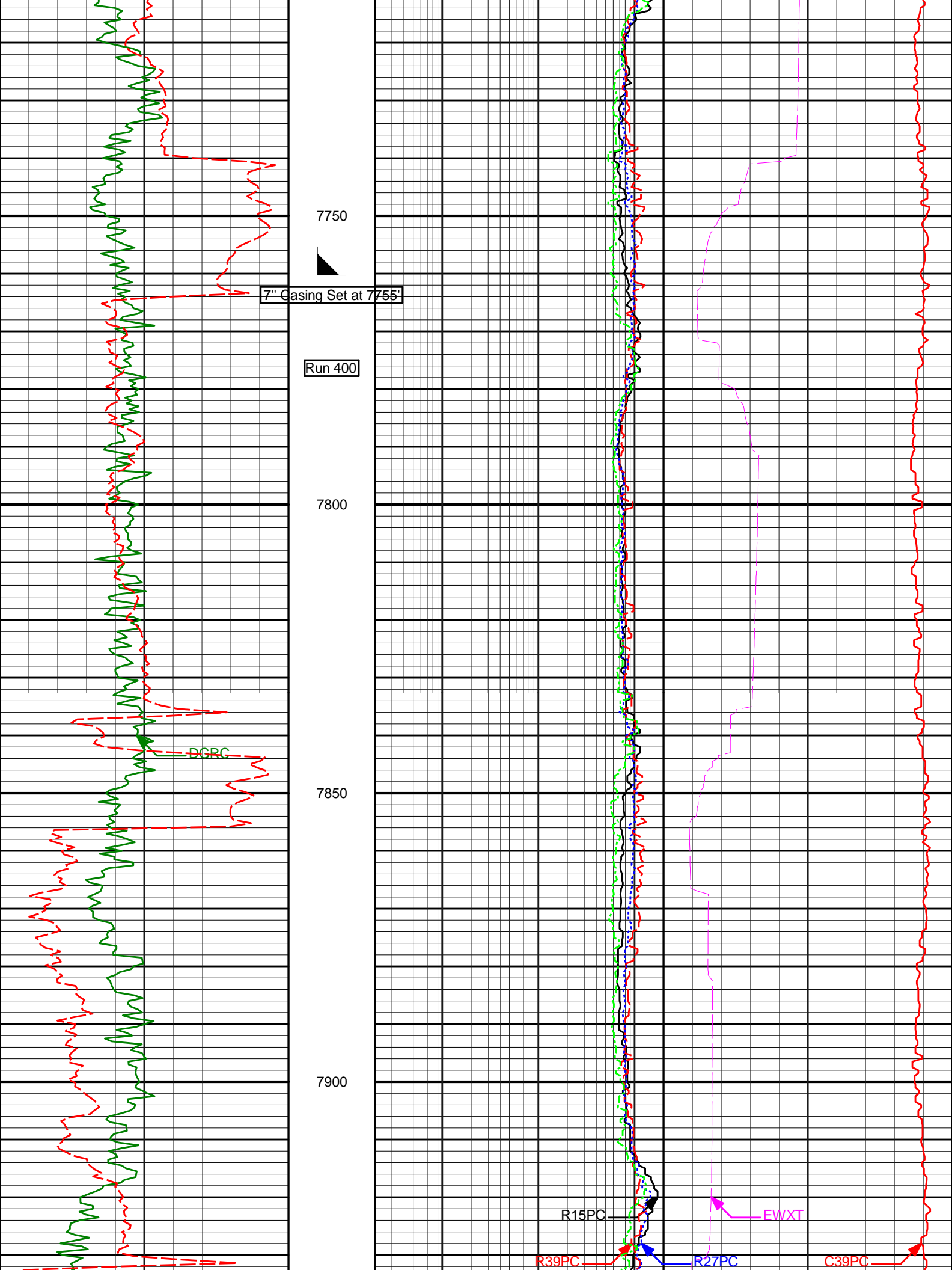
Tool Type	PCM				
Software Version	8.17				
PIC Software Version					
Sub/HOC Serial Number	11633655				
Insert/Probe/Module SN	11227549				
Battery Serial Number	N/A				
Valve Insert SN	N/A				
DC Insert Serial Number	N/A				
Choke Size (32nd)	N/A				
Driver Current (amps)	N/A				
Driver SMI Current (amps)	N/A				

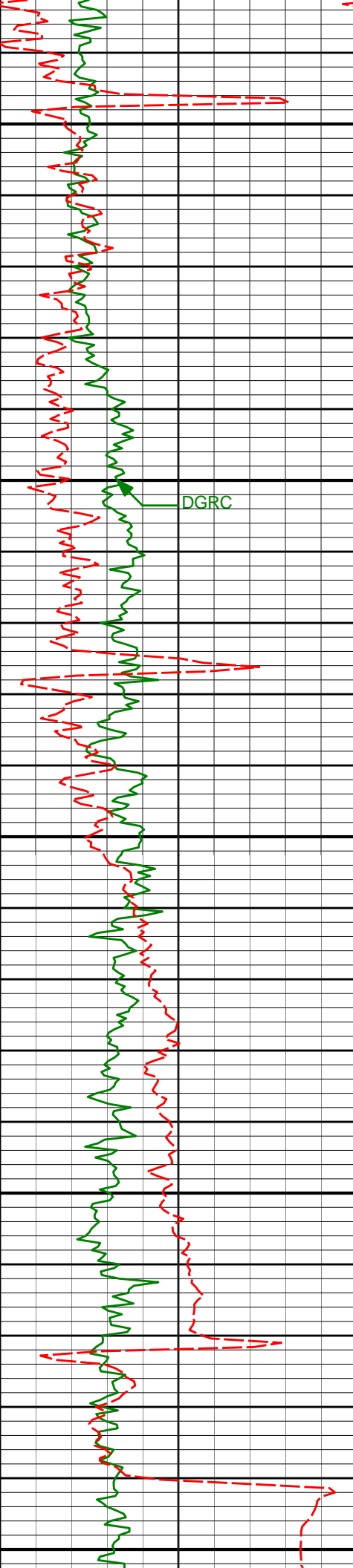
Boot Strap Version					
DDSr-DGR Sensor Information					
Tool Type	DDSr-DGR				
Distance From Bit (ft)	0				
Recorded Sample Period (sec)	12				
Software Version	10.88				
Sub Serial Number					
Insert Serial Number	12203402				
Sensor ID Number	10497				

REMARKS					
<p>1. All depths are measured 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. All data presented is recorded data unless otherwise specified.</p> <p>4. The following smoothing parameters have been applied to the data:</p> <p style="margin-left: 40px;">Gamma Ray and Resistivity:</p> <p style="margin-left: 80px;">Interval Resolution: 0.5 ft</p> <p style="margin-left: 80px;">Interval Distance: 0.6 ft</p> <p style="margin-left: 80px;">Gap Fill: 3.0 ft</p> <p style="margin-left: 40px;">ROPA (Average Rate Of Penetration):</p> <p style="margin-left: 80px;">Interval Resolution: 0.5 ft</p> <p style="margin-left: 80px;">Interval Distance: 1.2 ft</p> <p style="margin-left: 80px;">Gap Fill: 3.0 ft</p> <p style="margin-left: 40px;">Insite version: 7.4.10</p>					

WARRANTY					
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<p>Anadarko Petroleum Corp. Well: USA Fed 03N-36HZ Scale 1:240 MD Log</p>					







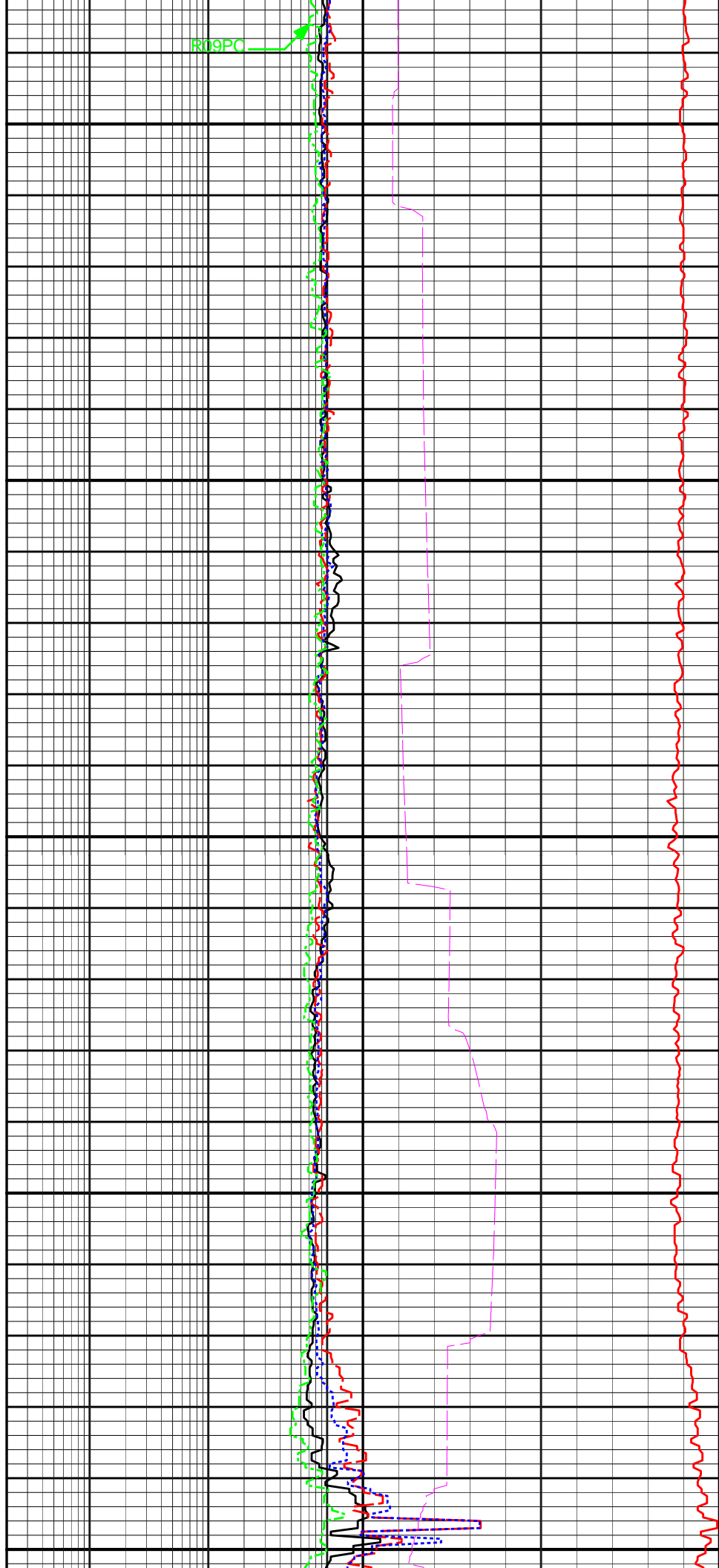
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8050

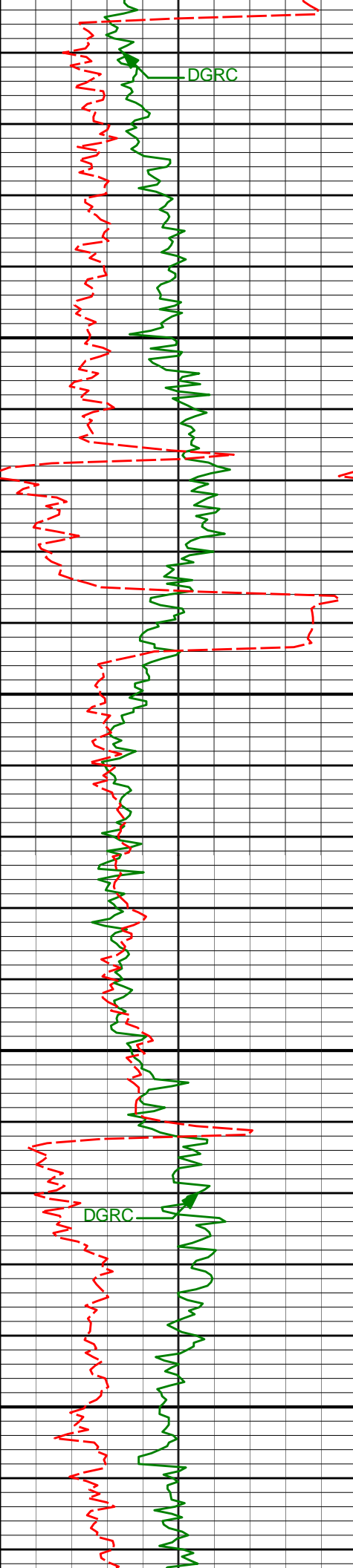
8100

8150



R09PC

DGRC

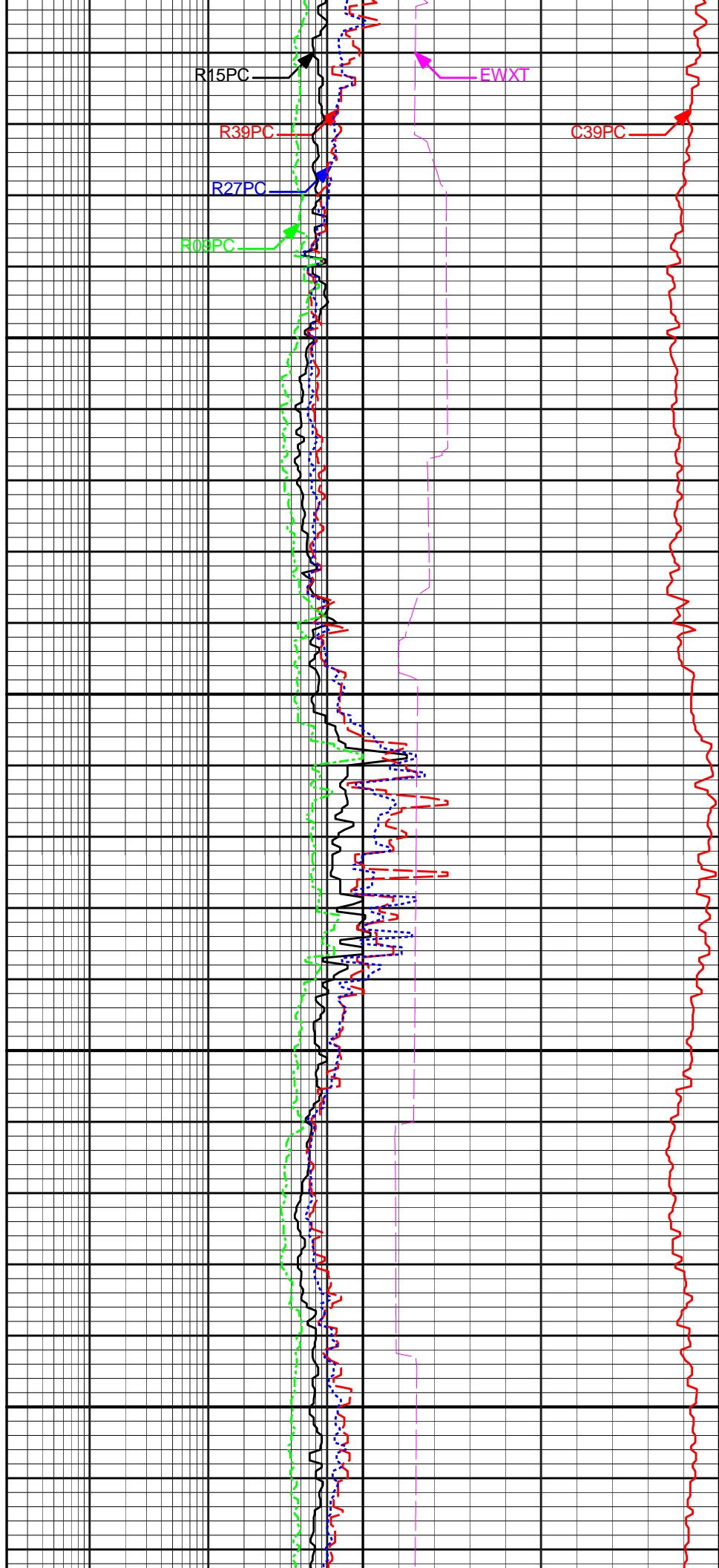


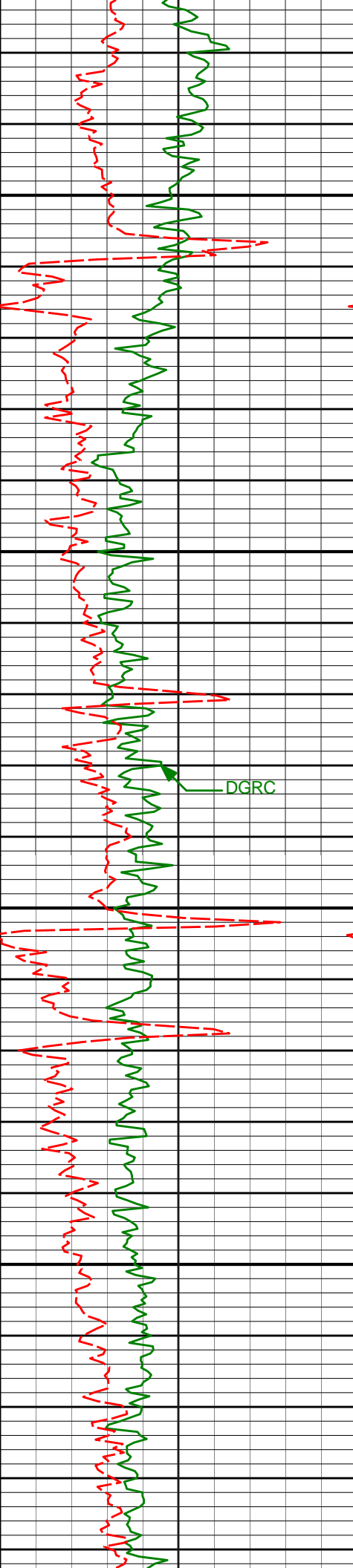
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8250

8300

8350



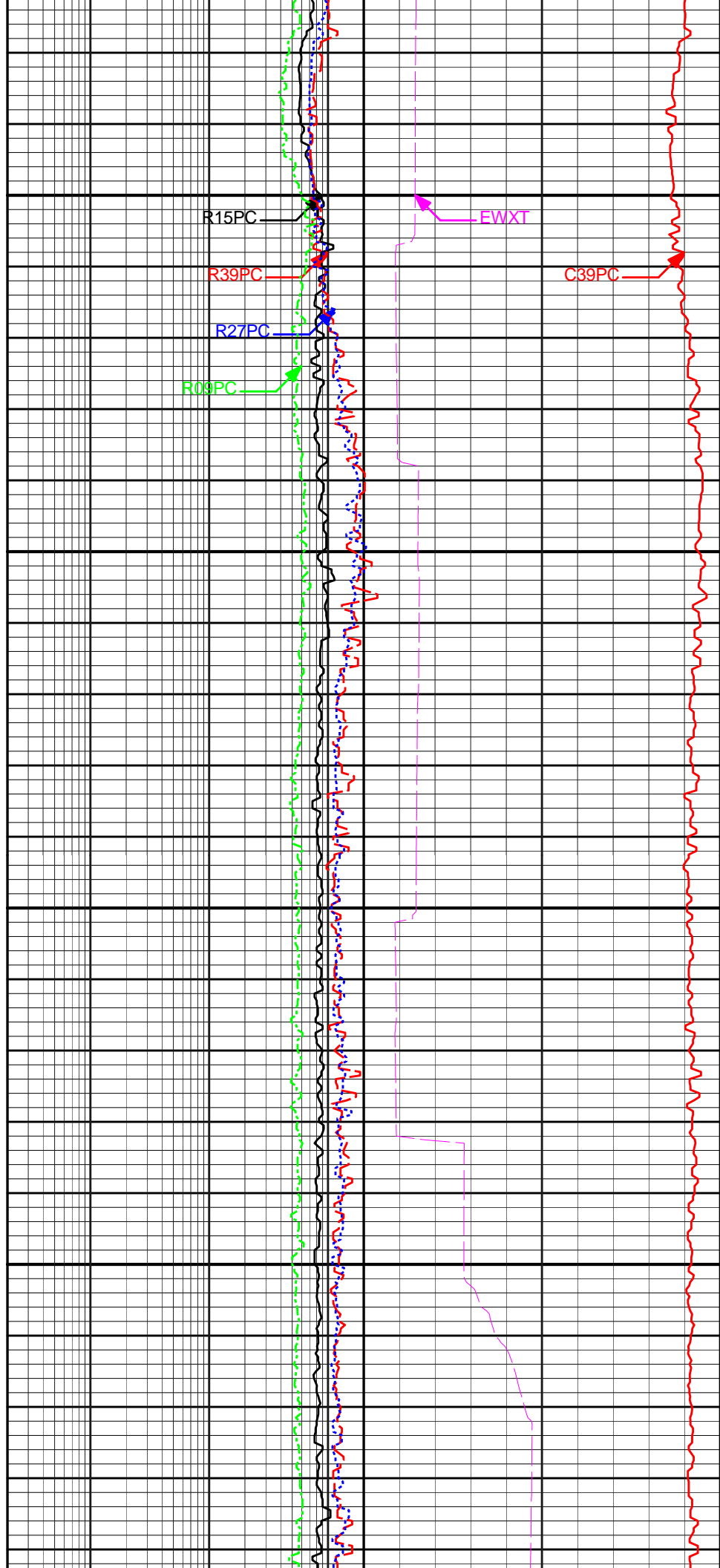


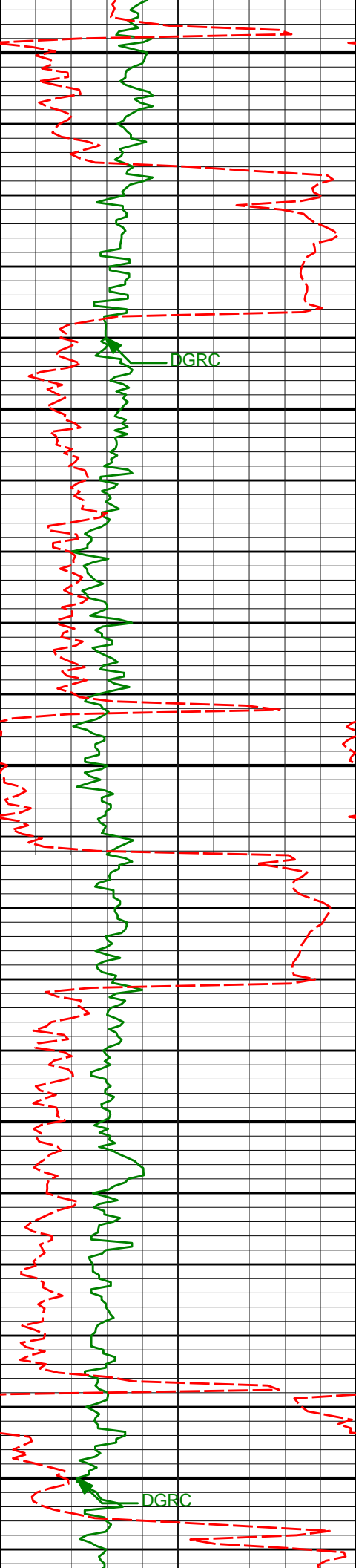
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8450

8500

8550





8600

8650

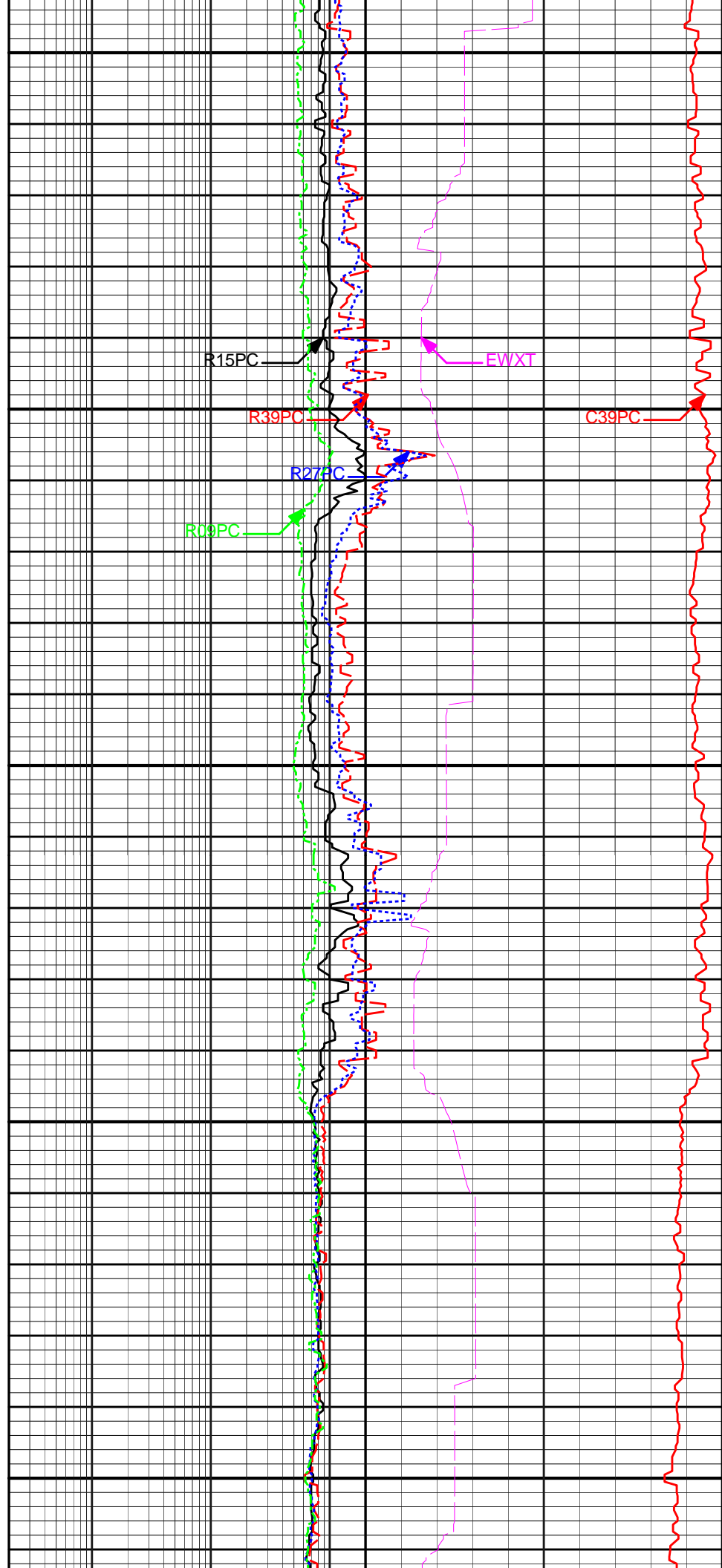
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8750

8800

DGRC

DGRC



R15PC

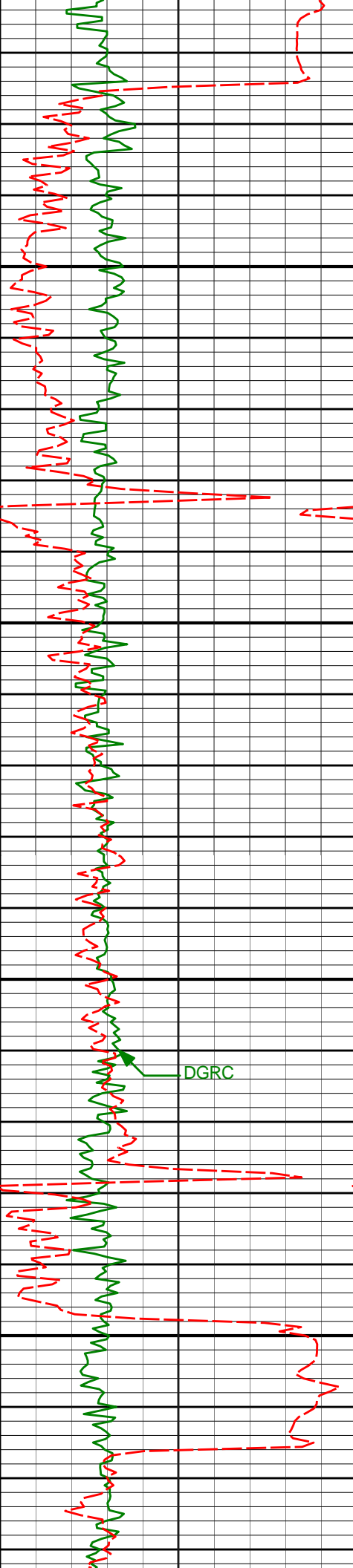
R39PC

R27PC

R09PC

EWXT

C39PC



8850

8900

8950

9000

DGRC

R15PC

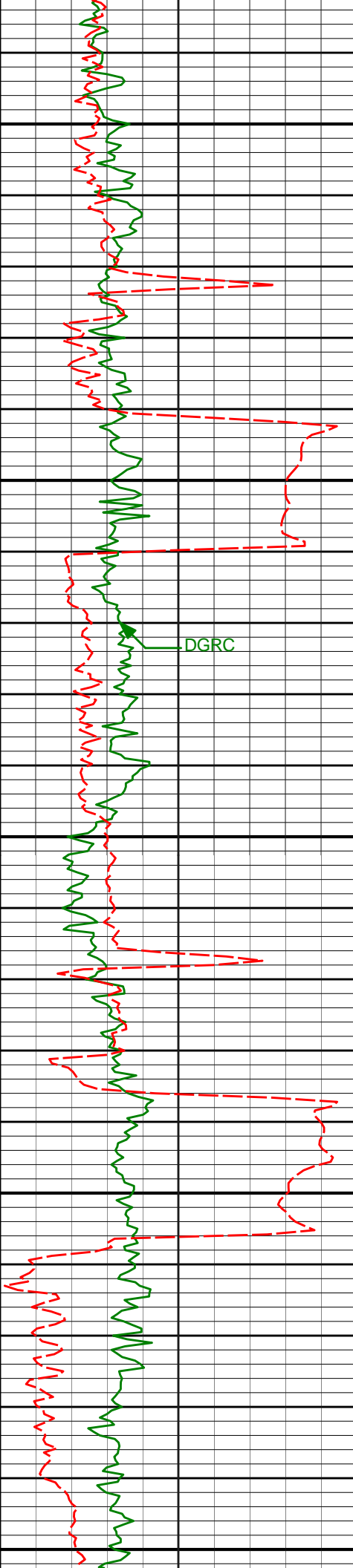
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R27PC

R09PC

EWXT

C39PC



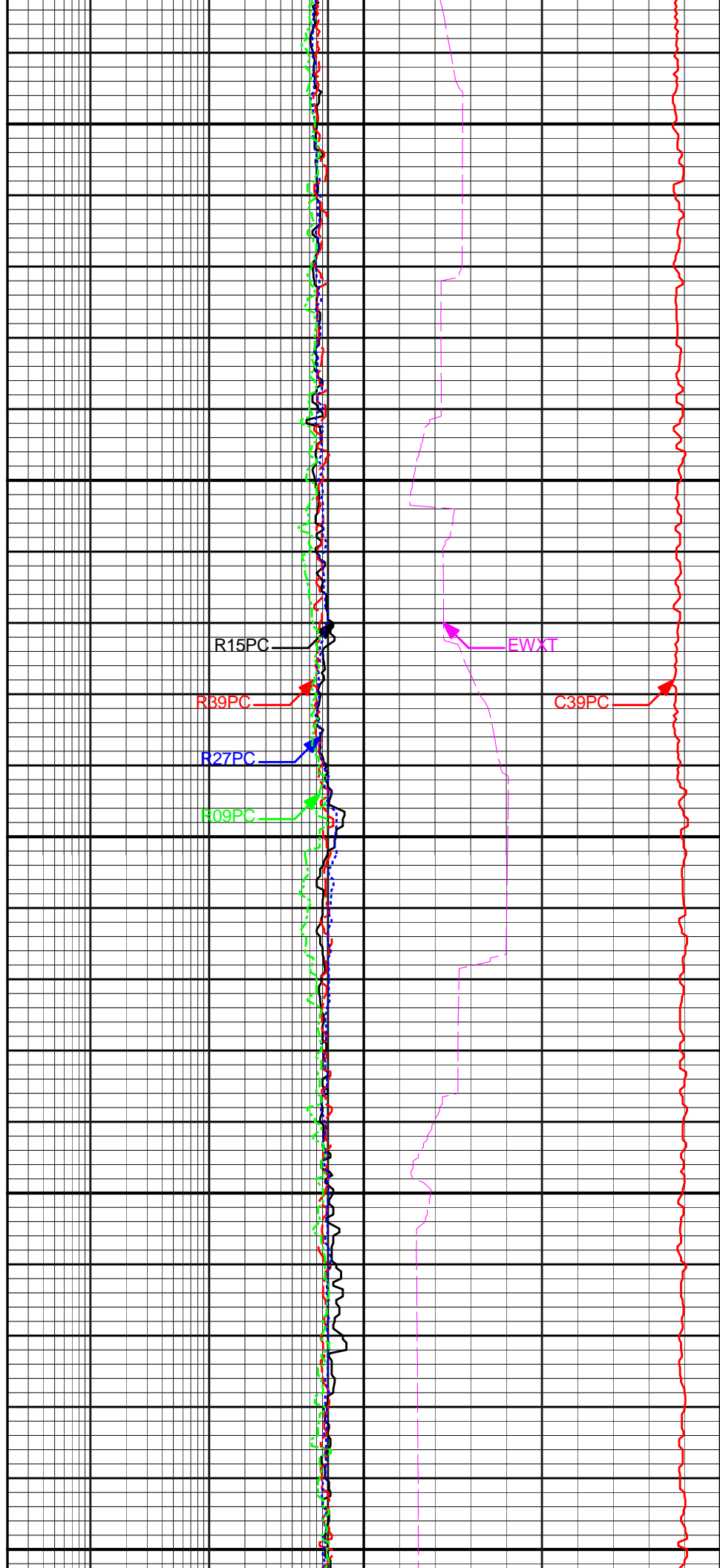
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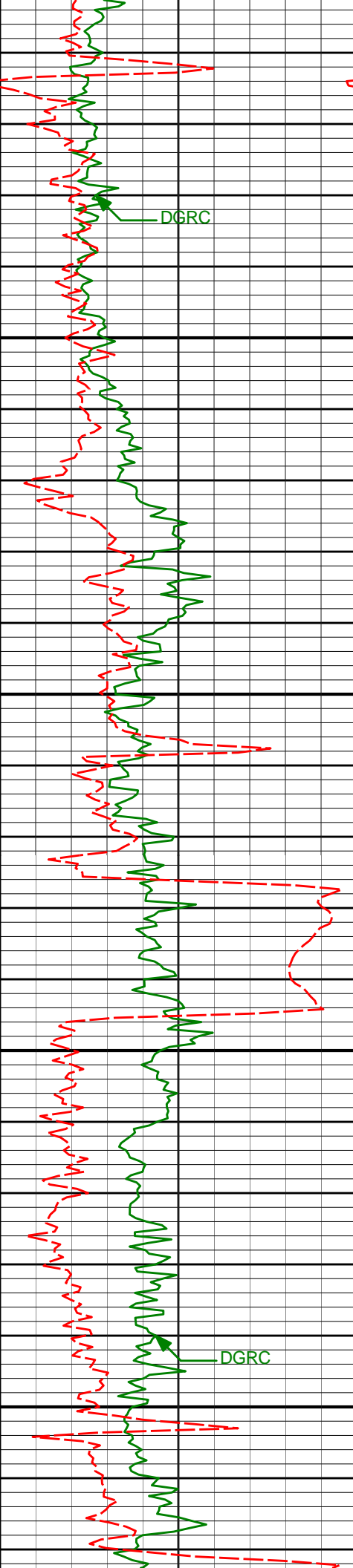
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9150

9200

9250



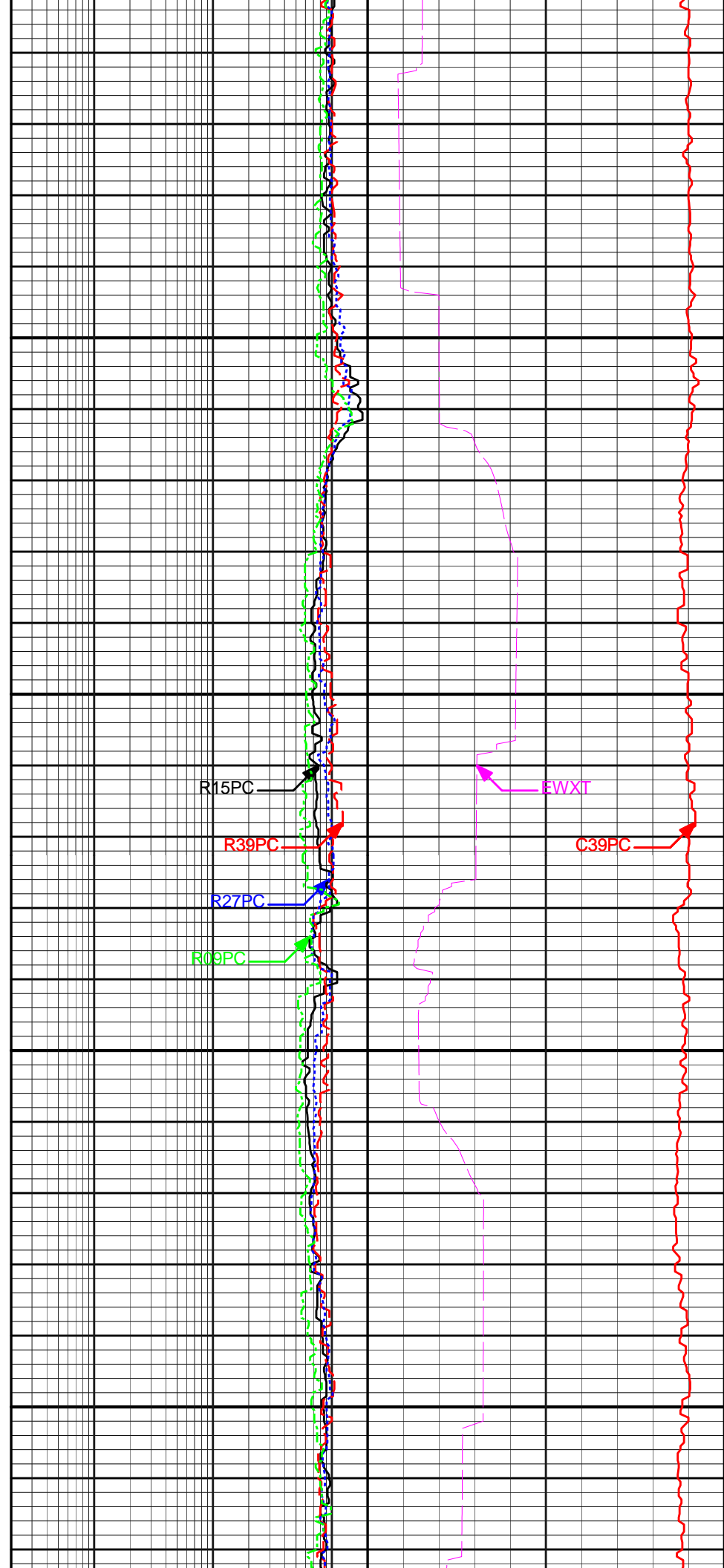


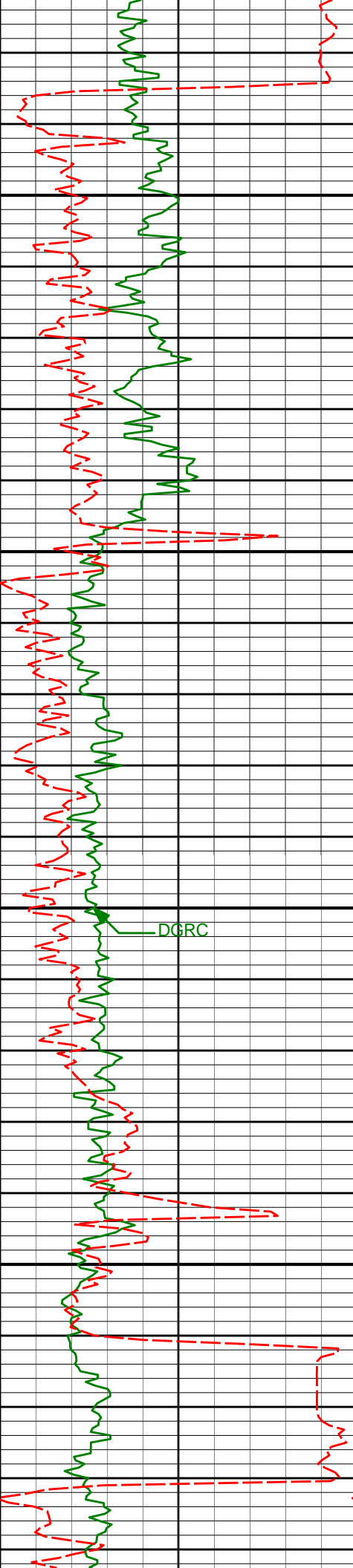
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9350

9400

9450





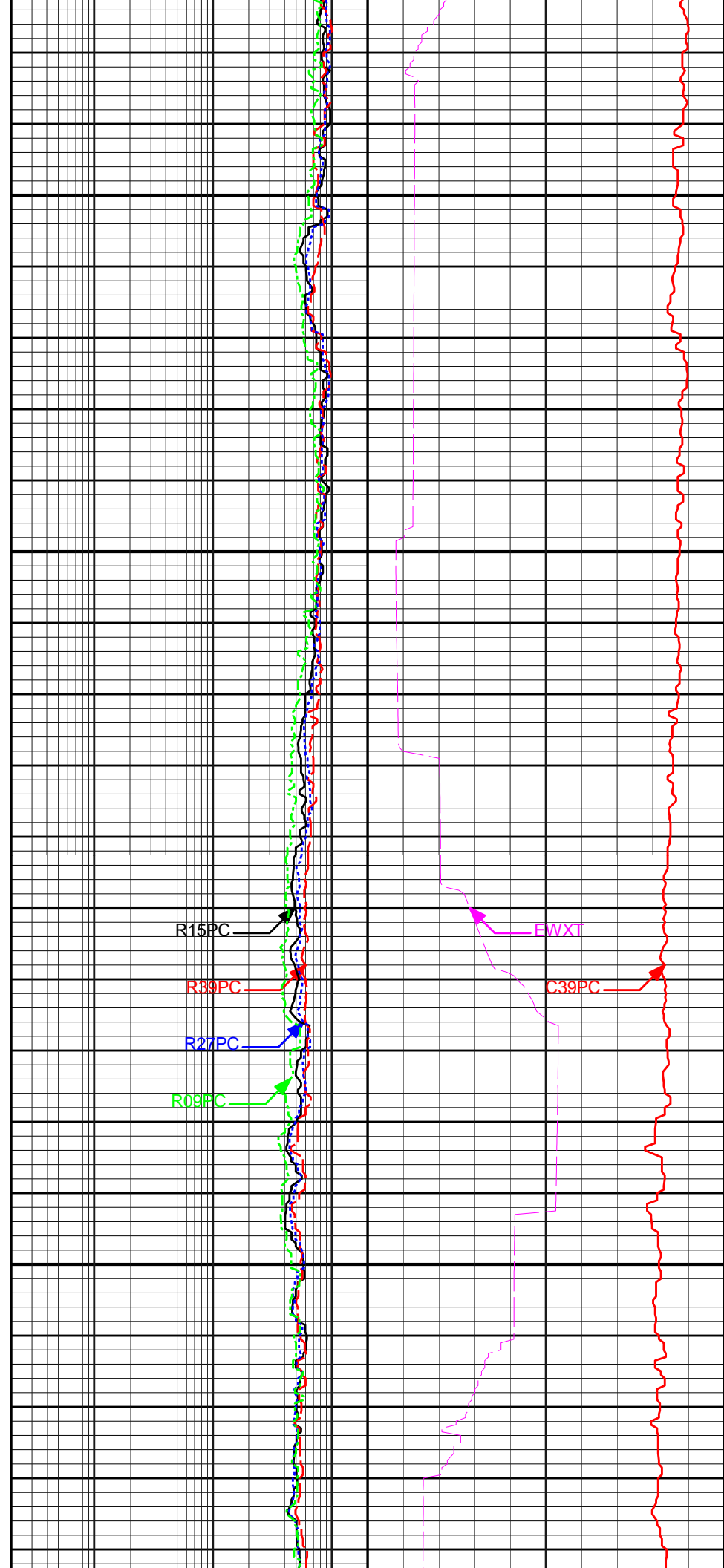
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9550

9600

9650

DGRC



R15PC

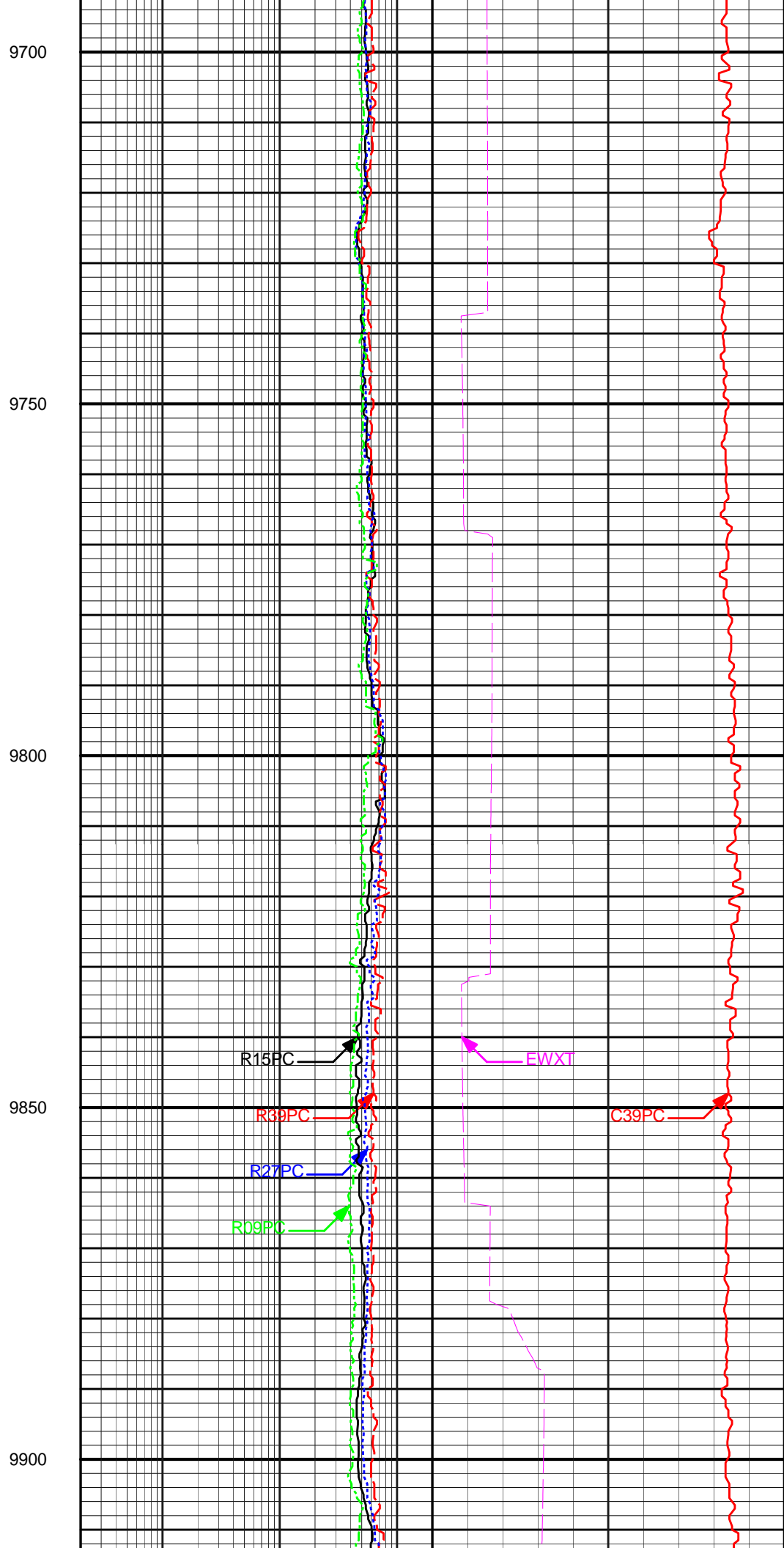
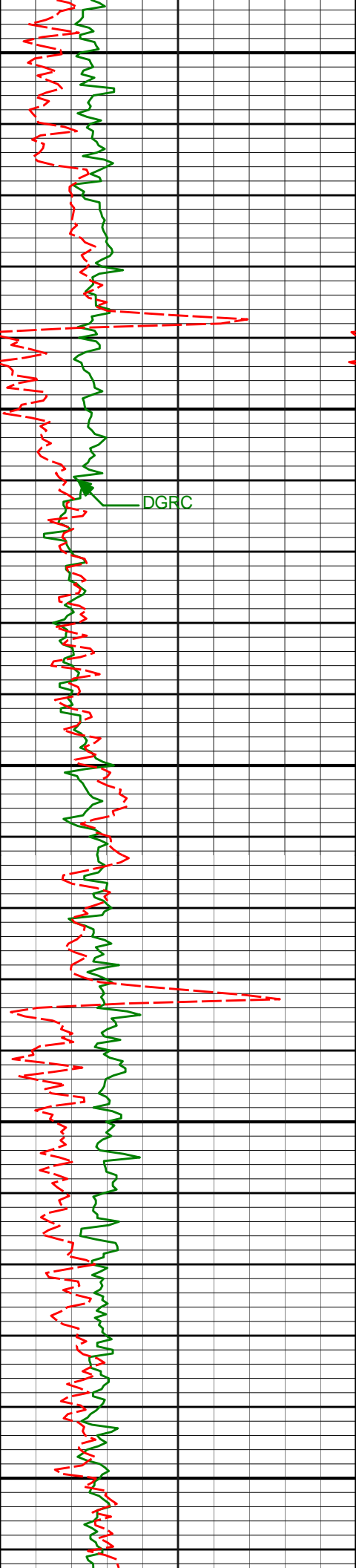
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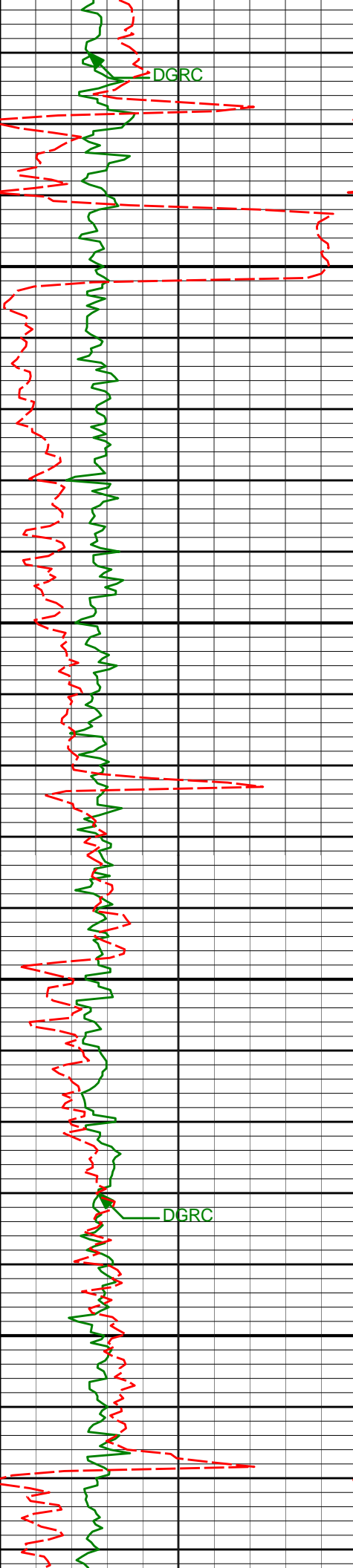
R27PC

R09PC

EWXT

C39PC



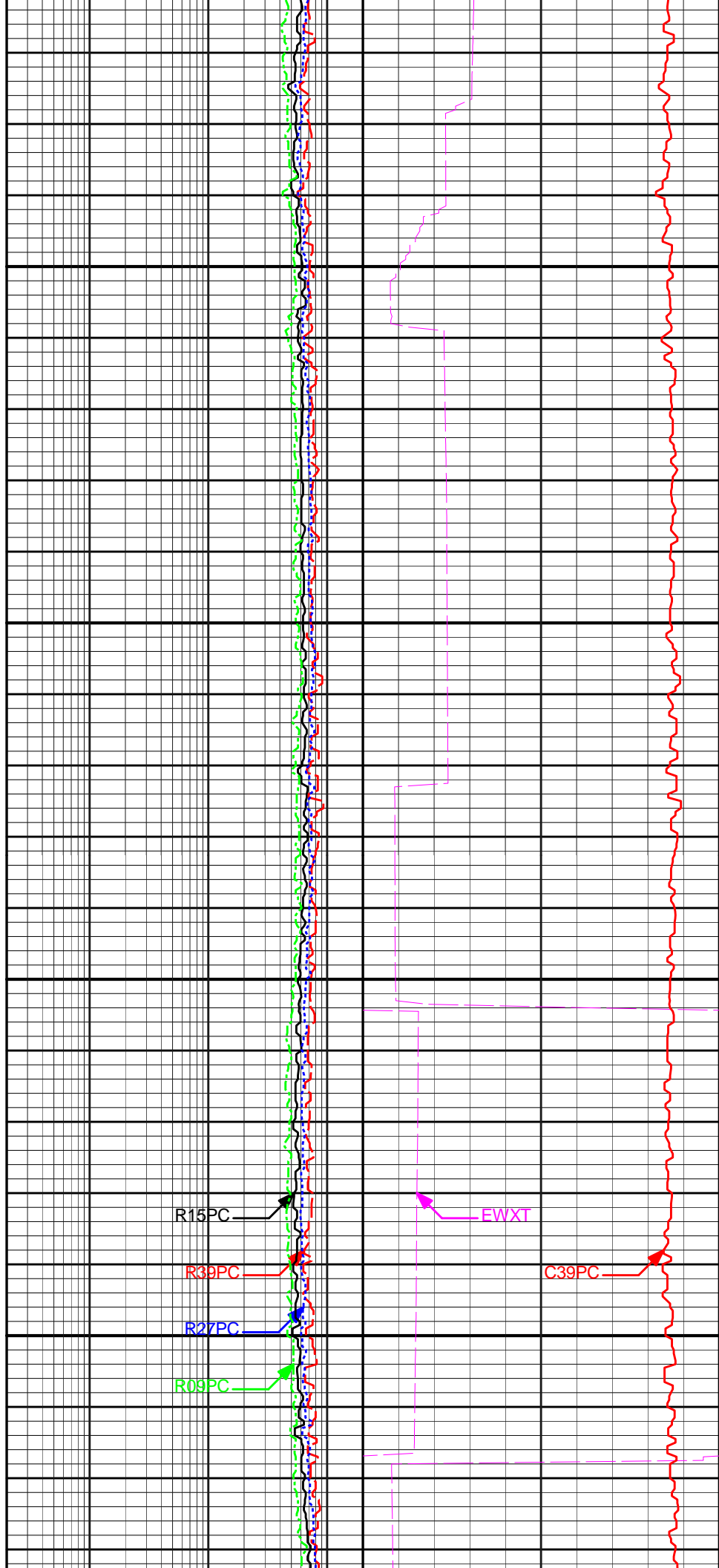


9950

10000

10050

10100



R15PC

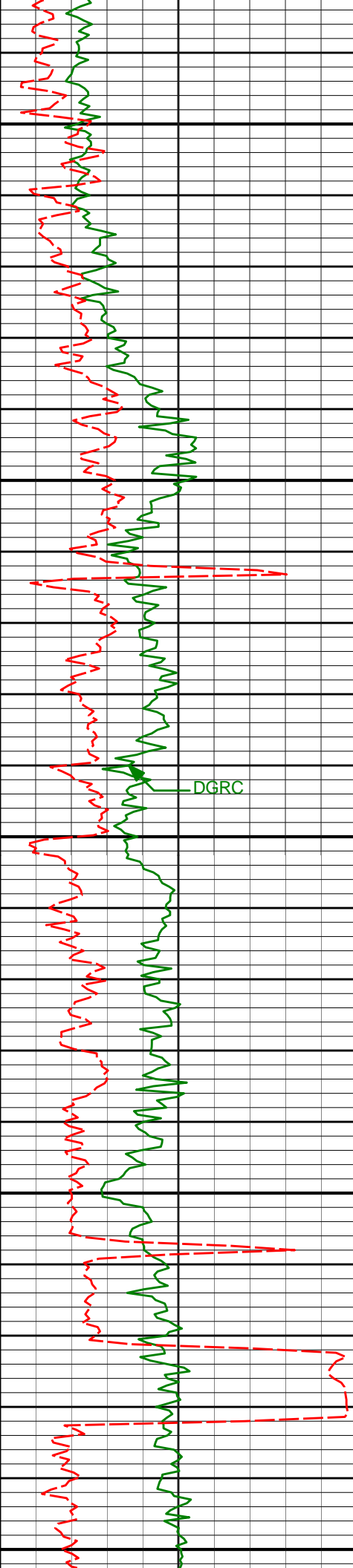
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R27PC

R09PC

FWXT

C39PC



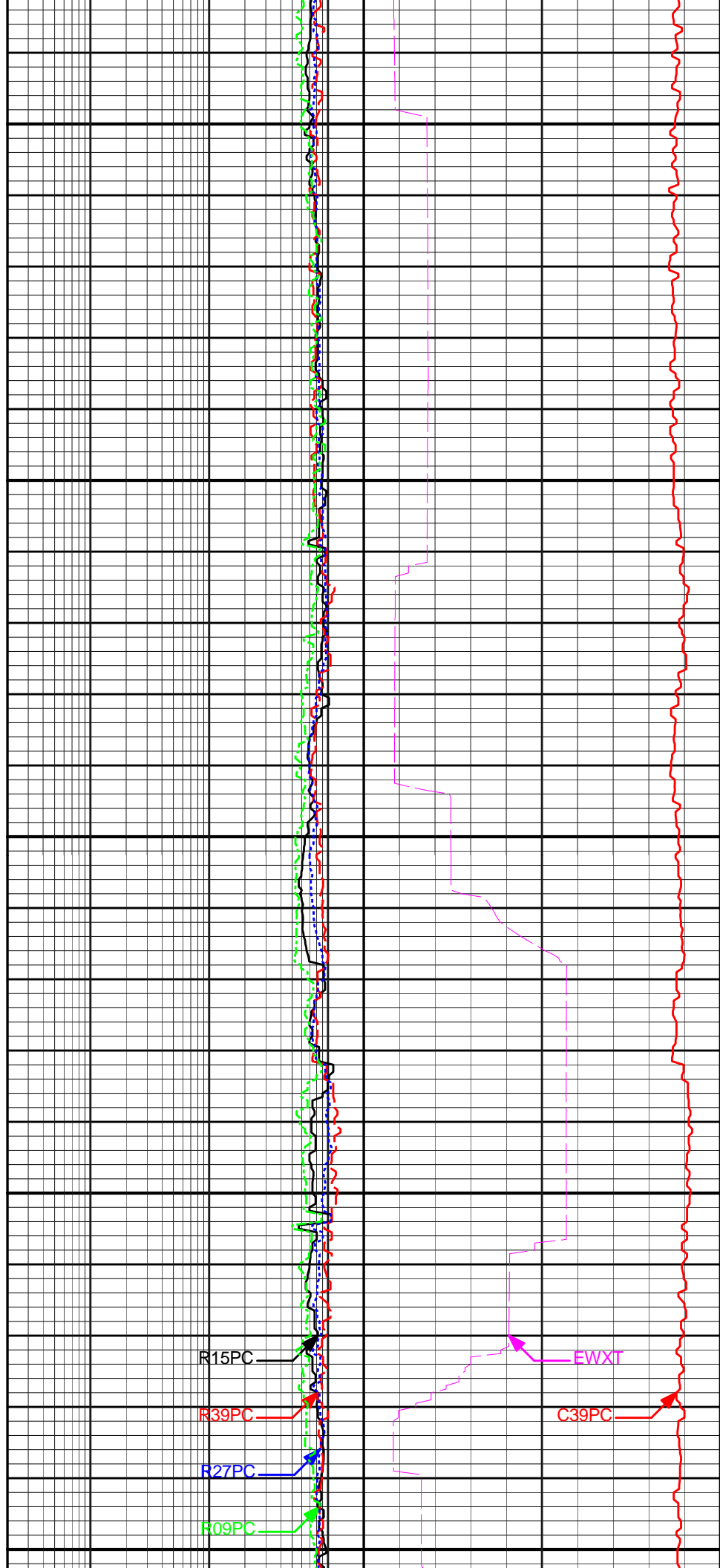
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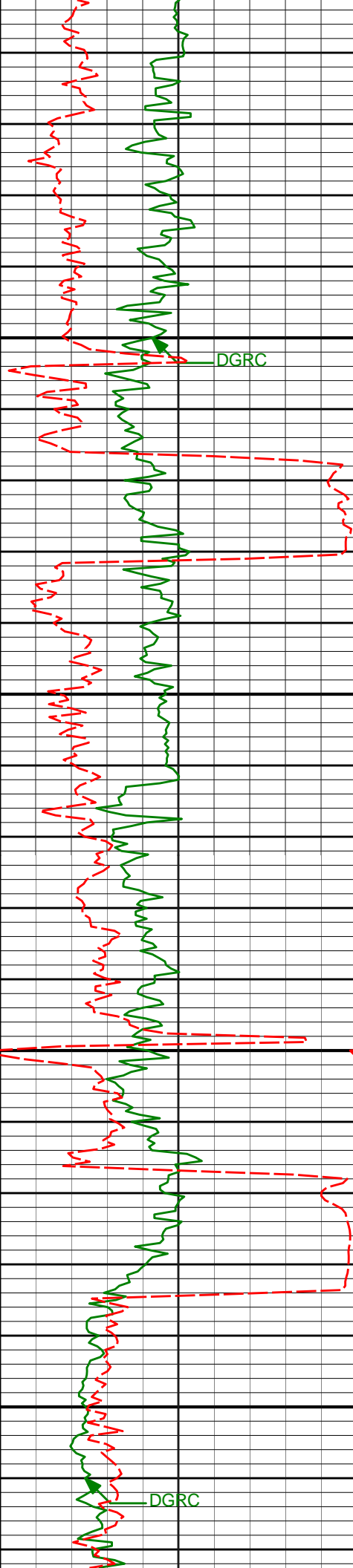
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10300

10350





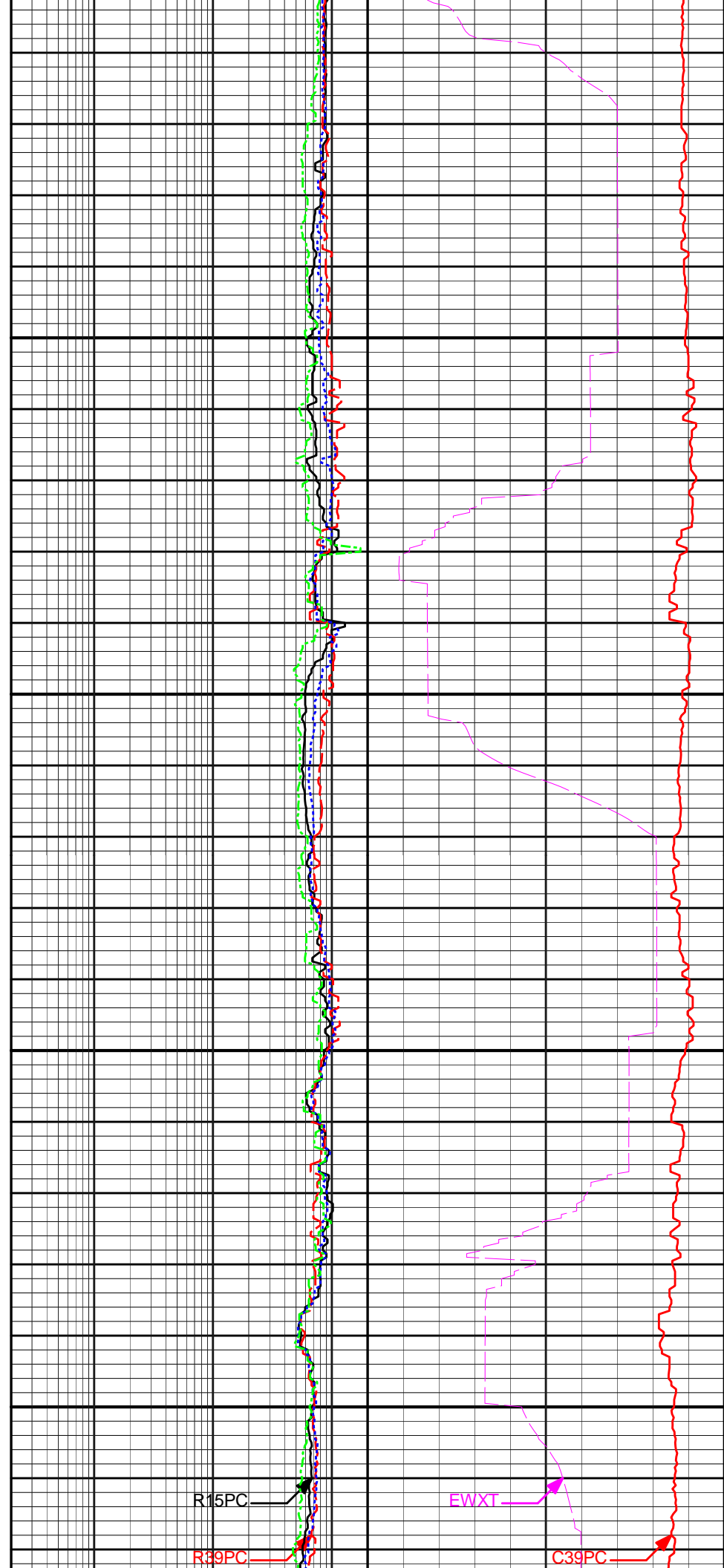
10400

10450

10500

10550

DGRC

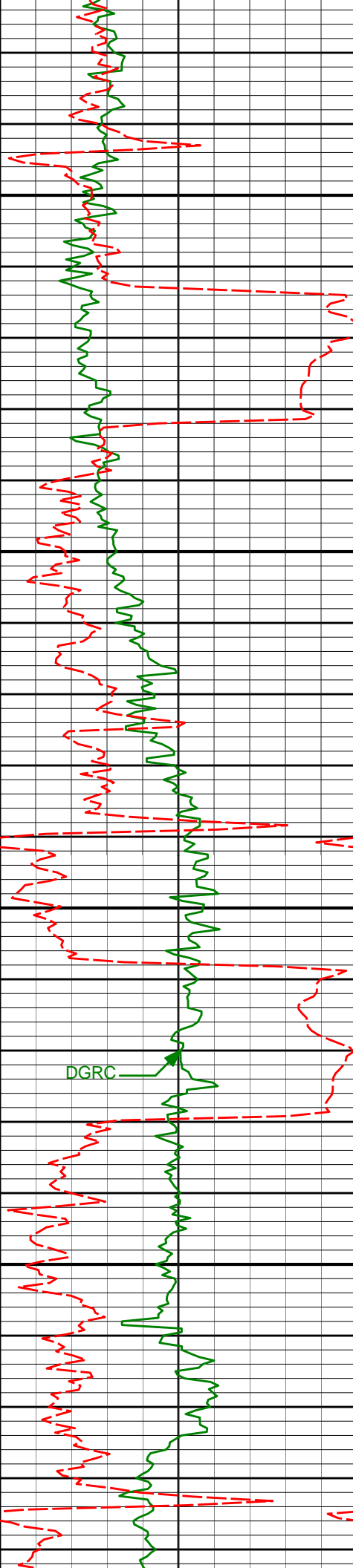


R15PC

R39PC

EWXT

C39PC



10600

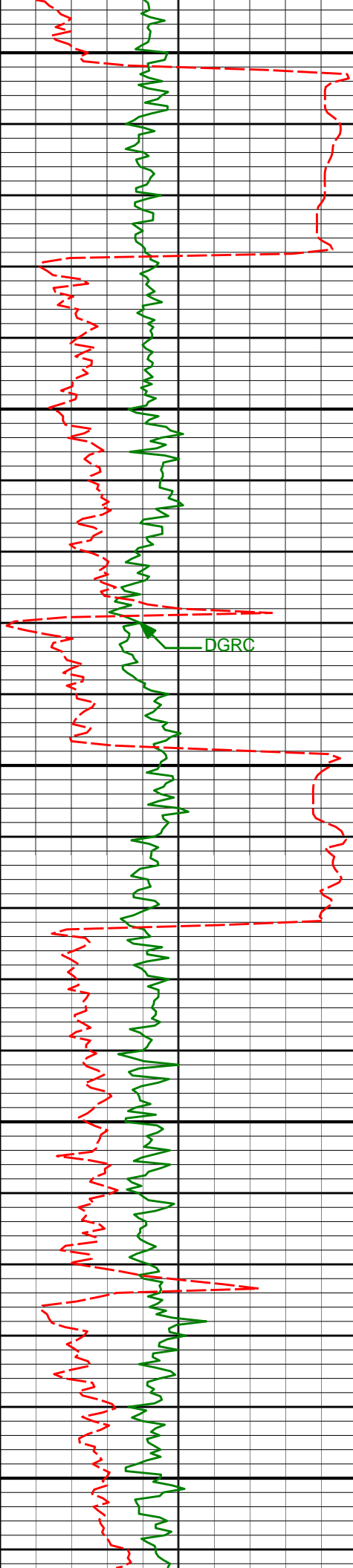
10650

10700

10750

R27PC

R09PC



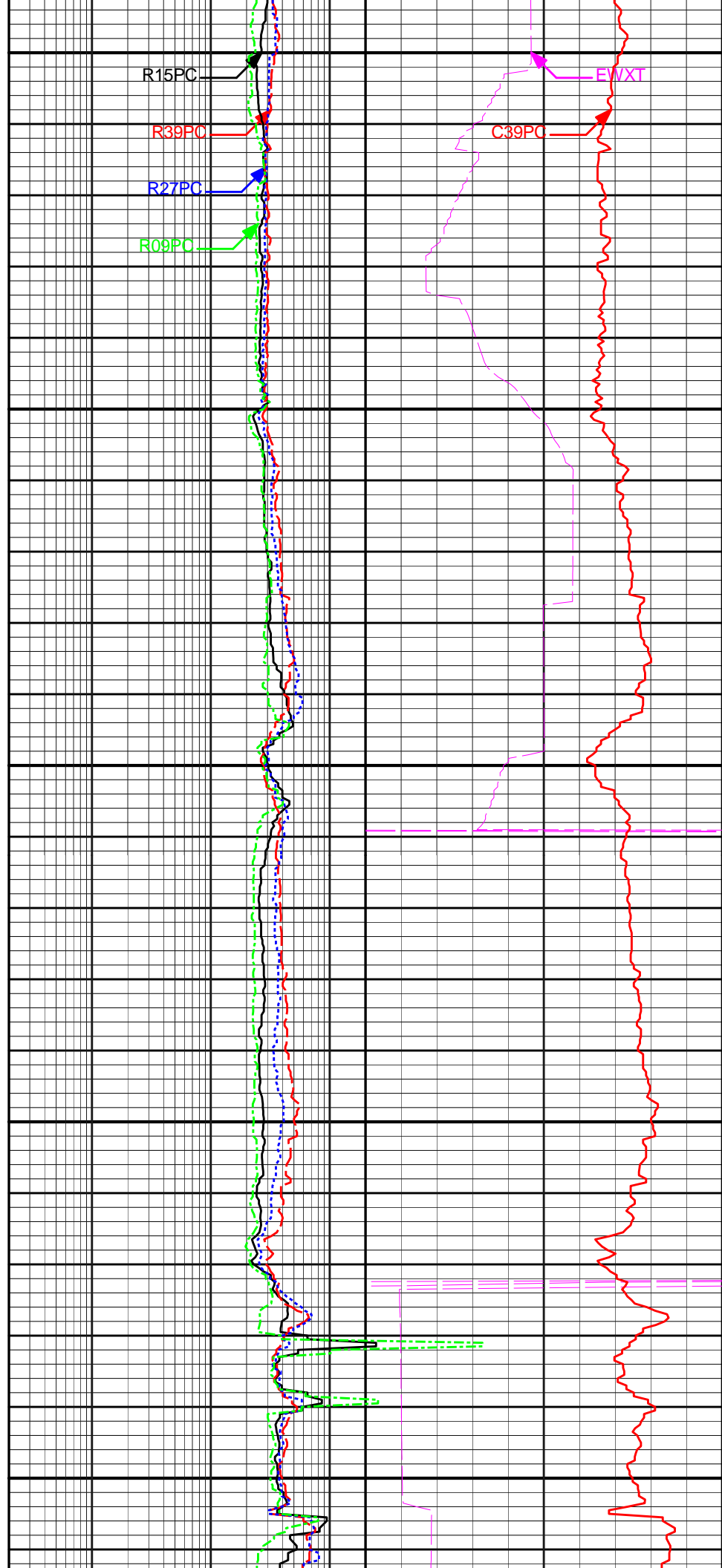
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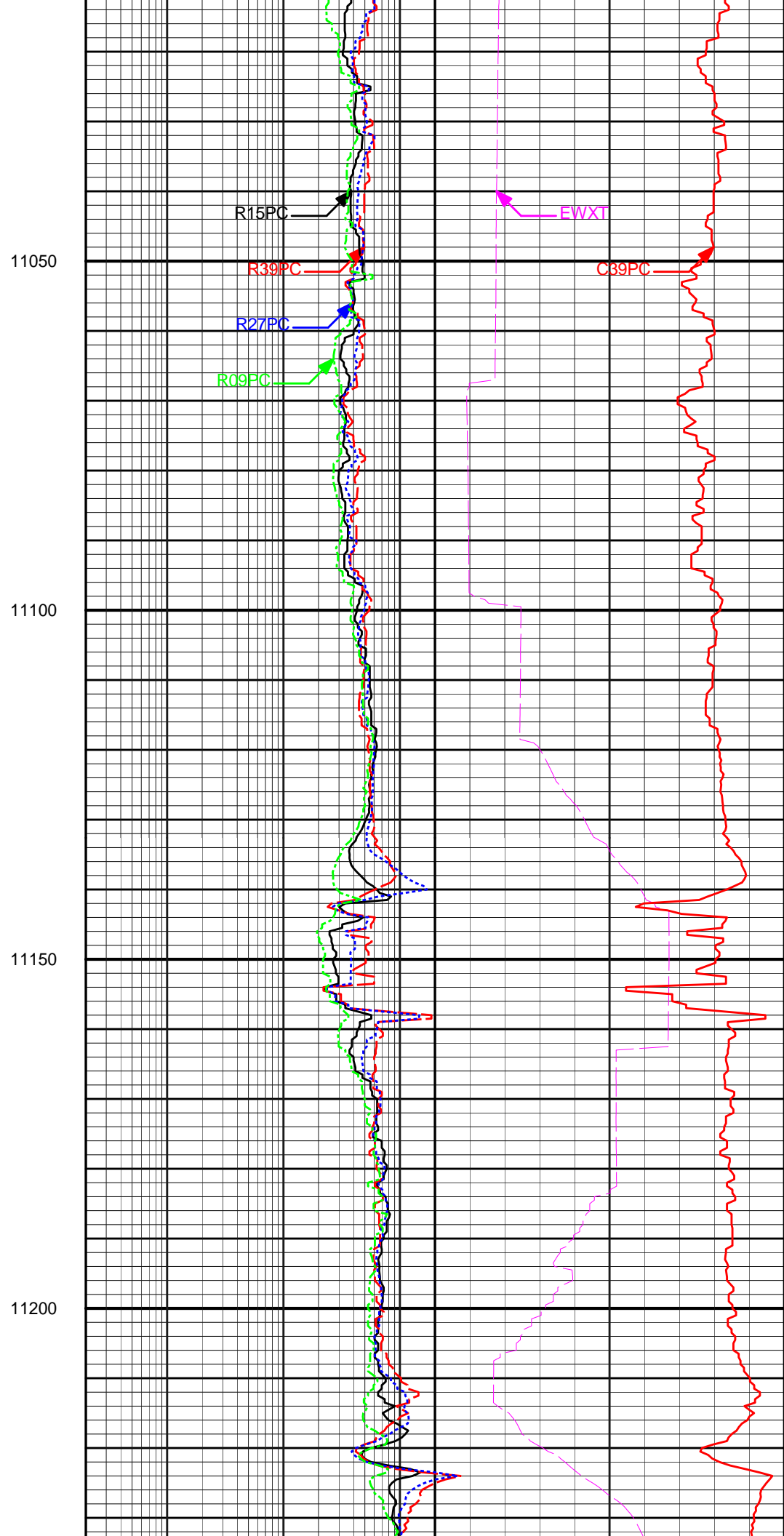
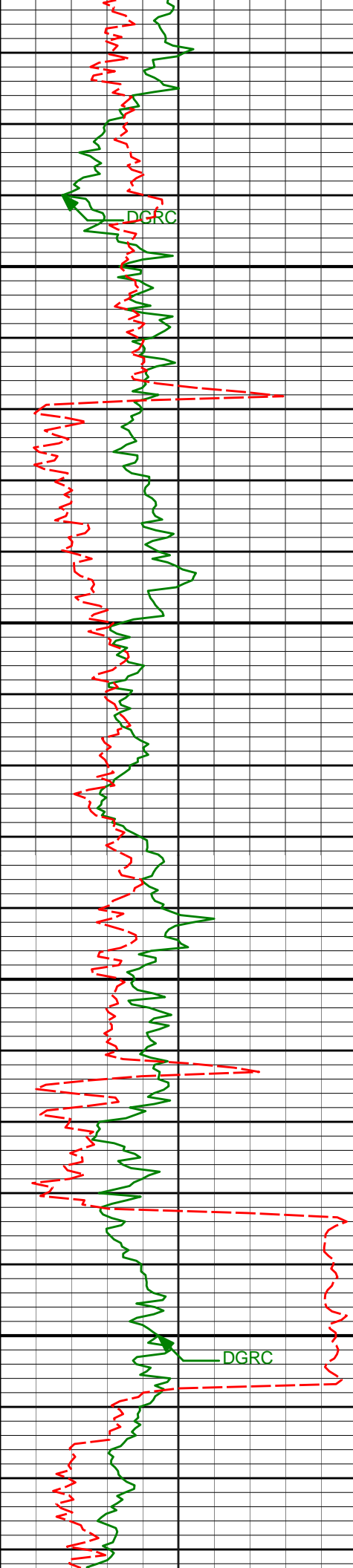
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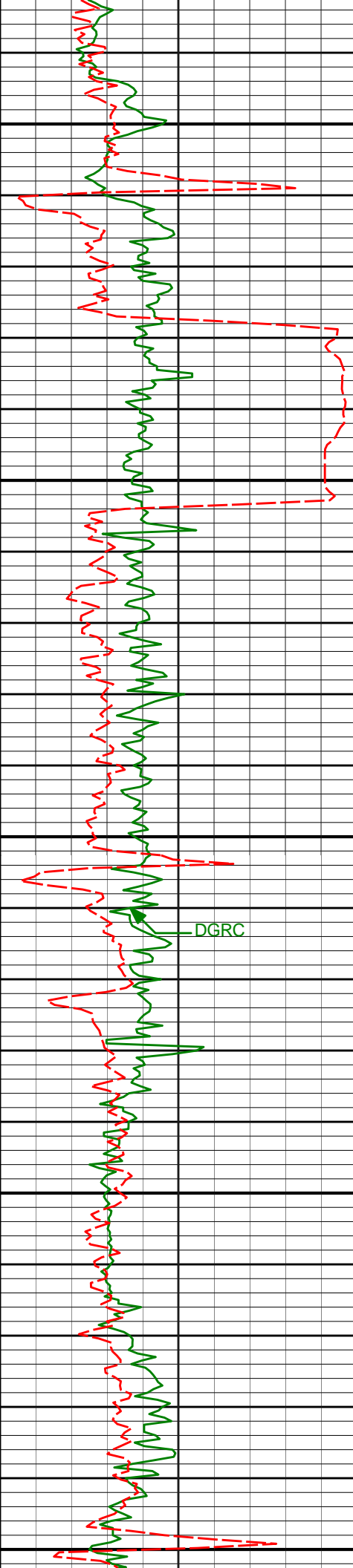
10900

10950

11000







11250

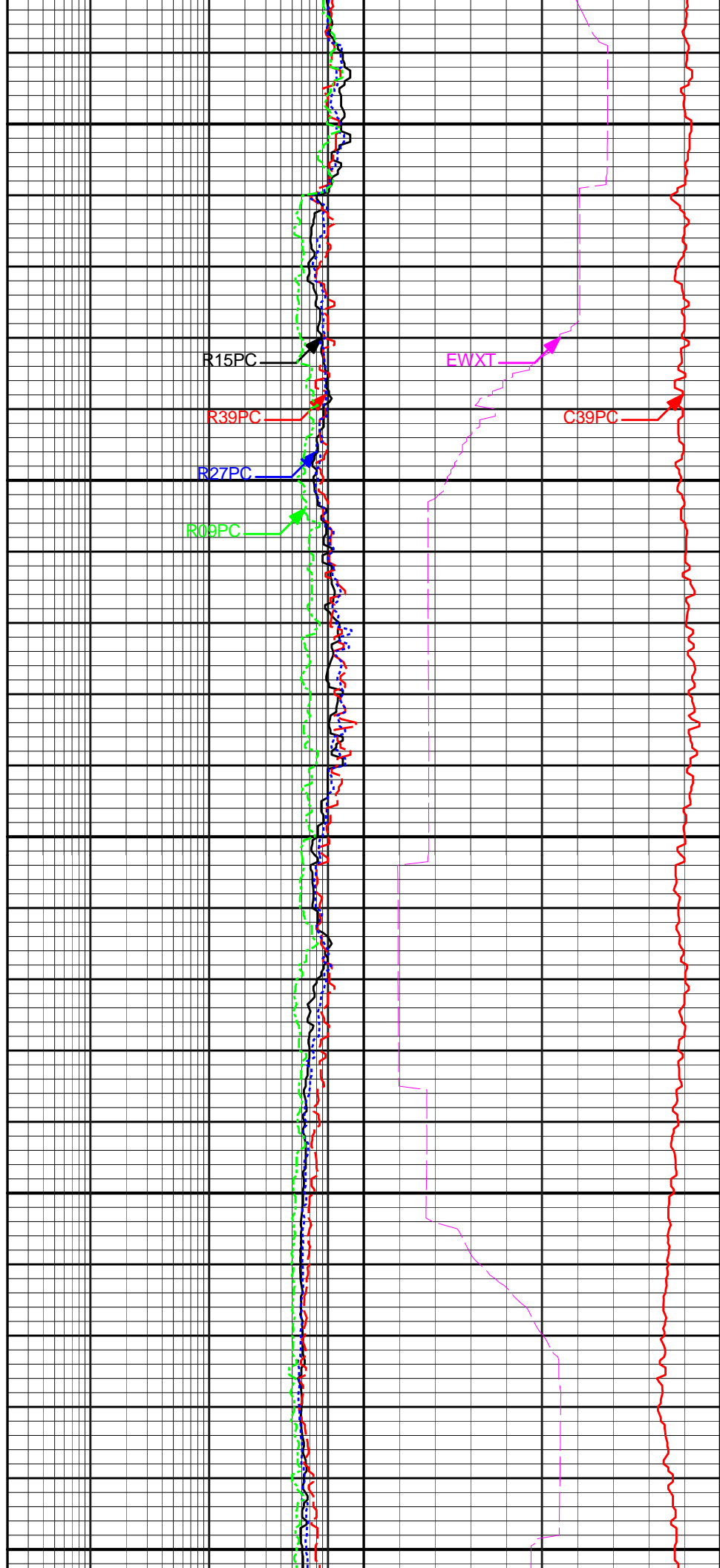
11300

11350

11400

11450

DGRC



R15PC

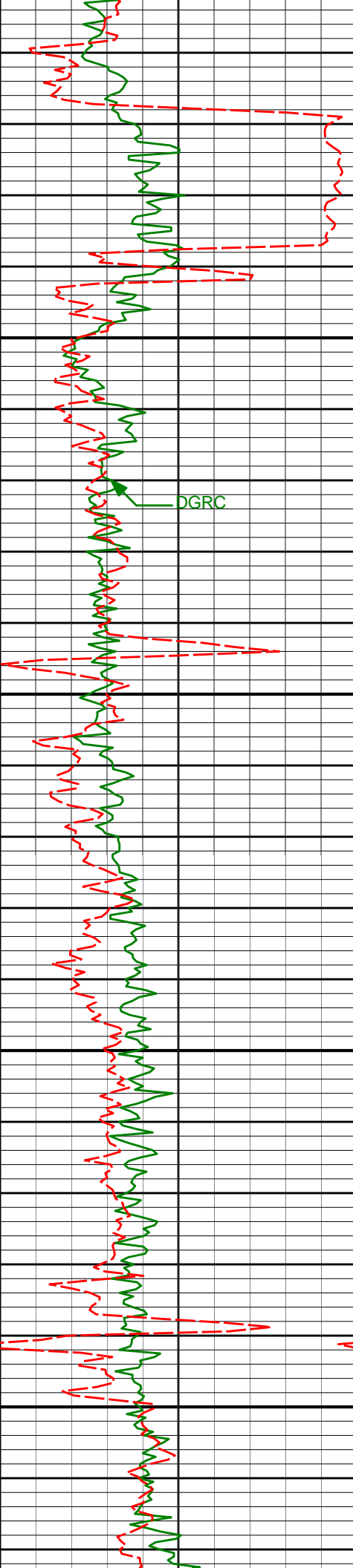
R39PC

R27PC

R09PC

EWXT

C39PC

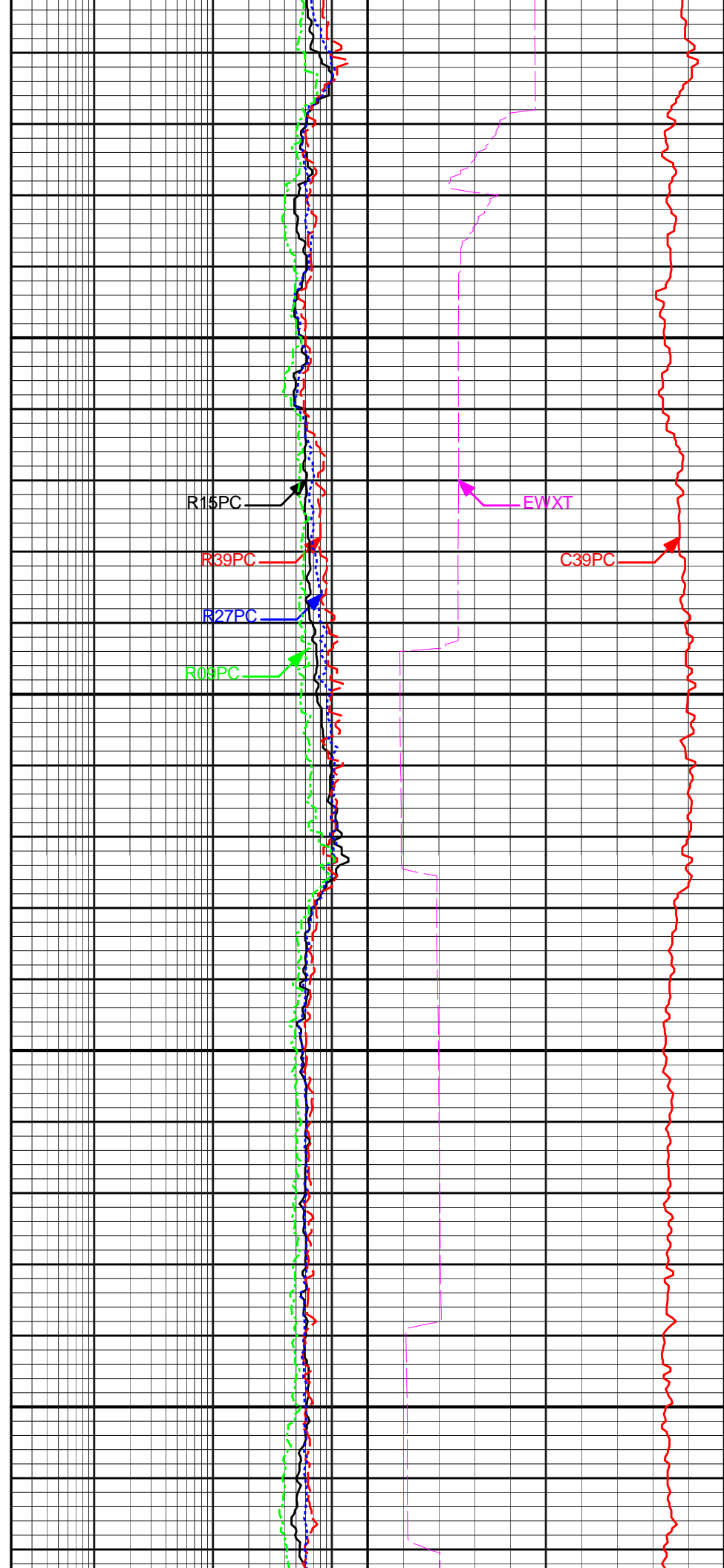


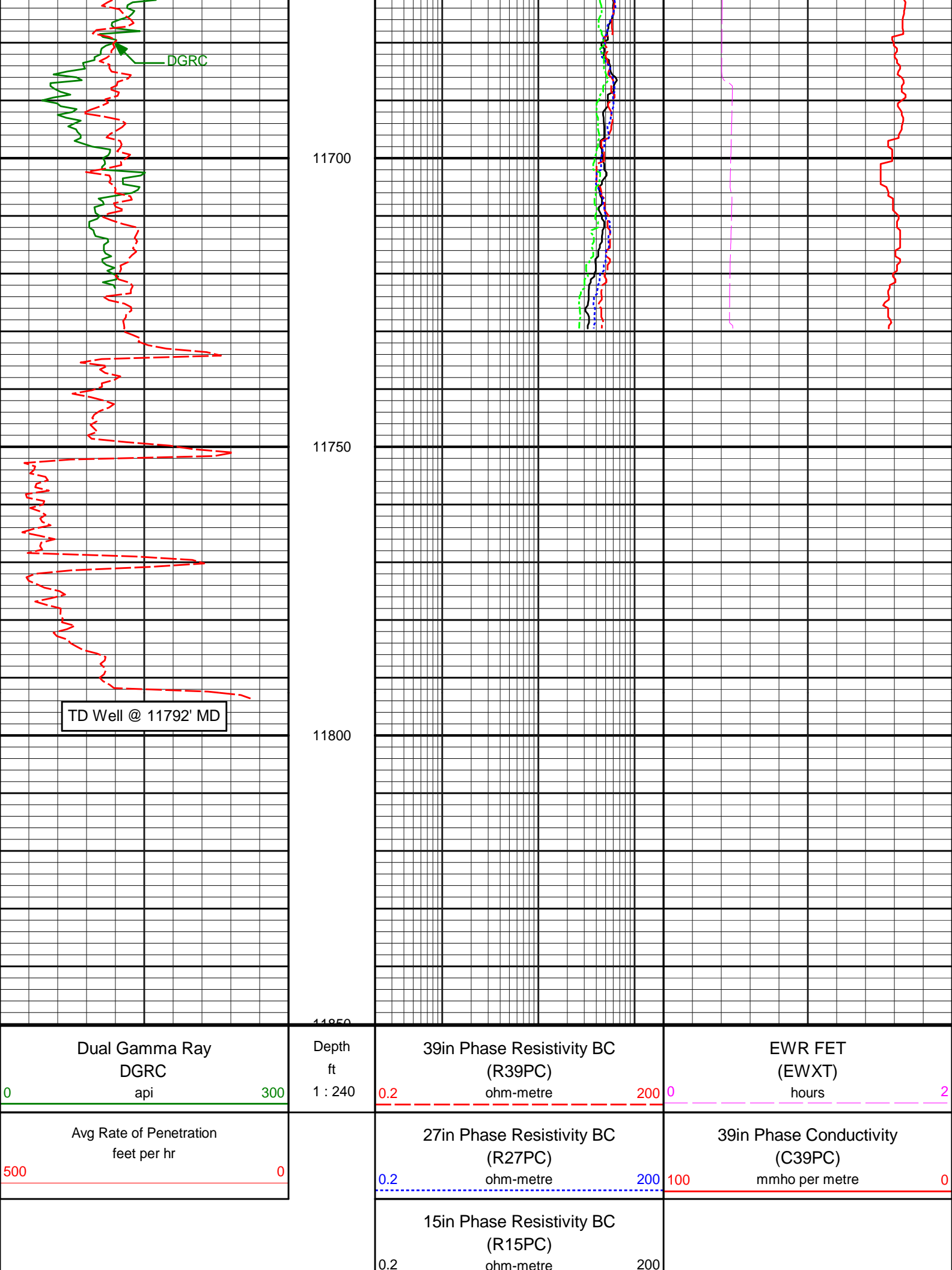
11500

11550

11600

11650





9in Phase Resistivity BC
(R09PC)

0.2

ohm-metre

200



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Anadarko Petroleum Corp
USA Fed 03N-36HZ
Wattenburg
Weld Colorado
USA
CA-XX-0900512977

<i>Measured Depth (feet)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (feet)</i>	<i>Latitude (feet)</i>	<i>Departure (feet)</i>	<i>Vertical Section (feet)</i>	<i>Dogleg (deg/100ft)</i>
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
142.00	0.24	312.39	142.00	0.20 N	0.22 W	0.20	0.17
236.00	0.32	196.55	236.00	0.08 N	0.44 W	0.09	0.51
329.00	0.17	304.20	329.00	0.09 S	0.63 W	-0.08	0.44
360.00	0.24	282.23	360.00	0.05 S	0.73 W	-0.04	0.34
451.00	0.62	250.29	451.00	0.18 S	1.38 W	-0.16	0.48
545.00	0.58	236.16	544.99	0.61 S	2.25 W	-0.59	0.16
638.00	0.36	256.24	637.99	0.94 S	2.93 W	-0.92	0.29
731.00	0.54	247.46	730.98	1.18 S	3.62 W	-1.15	0.21
825.00	0.56	244.05	824.98	1.55 S	4.44 W	-1.52	0.04
912.00	0.29	260.14	911.98	1.78 S	5.04 W	-1.73	0.34
975.00	0.55	263.16	974.98	1.84 S	5.50 W	-1.79	0.41
1066.00	0.55	270.51	1065.97	1.89 S	6.37 W	-1.83	0.08
1158.00	0.67	274.56	1157.97	1.84 S	7.34 W	-1.78	0.14
1250.00	0.68	267.28	1249.96	1.82 S	8.42 W	-1.75	0.09
1341.00	0.77	273.68	1340.95	1.81 S	9.57 W	-1.73	0.13
1433.00	0.88	271.47	1432.94	1.75 S	10.90 W	-1.66	0.12
1525.00	0.81	259.53	1524.93	1.85 S	12.24 W	-1.75	0.21
1617.00	2.22	202.22	1616.90	3.62 S	13.56 W	-3.51	2.07
1708.00	4.57	189.89	1707.74	8.82 S	14.85 W	-8.70	2.69
1800.00	6.68	178.03	1799.29	17.78 S	15.29 W	-17.66	2.61
1891.00	8.53	178.36	1889.49	29.82 S	14.92 W	-29.69	2.03
1986.00	10.67	182.83	1983.15	45.65 S	15.15 W	-45.52	2.38
2081.00	10.12	181.88	2076.59	62.78 S	15.86 W	-62.64	0.61
2176.00	11.18	179.98	2169.96	80.33 S	16.13 W	-80.19	1.18
2271.00	10.06	178.00	2263.33	97.83 S	15.83 W	-97.69	1.24
2366.00	9.77	182.22	2356.91	114.18 S	15.86 W	-114.04	0.82
2462.00	10.46	187.57	2451.42	130.96 S	17.32 W	-130.81	1.21
2557.00	8.65	187.51	2545.10	146.59 S	19.39 W	-146.42	1.91
2652.00	9.18	182.25	2638.95	161.24 S	20.62 W	-161.06	1.02
2747.00	10.17	181.18	2732.60	177.20 S	21.09 W	-177.02	1.06
2842.00	8.66	181.10	2826.32	192.74 S	21.40 W	-192.55	1.59
2937.00	10.64	180.68	2919.97	208.66 S	21.64 W	-208.47	2.09
3032.00	10.74	181.58	3013.32	226.28 S	21.99 W	-226.09	0.20
3127.00	10.24	181.43	3106.73	243.57 S	22.45 W	-243.37	0.53
3222.00	9.14	177.98	3200.38	259.55 S	22.39 W	-259.35	1.31
3318.00	9.02	176.52	3295.17	274.68 S	21.67 W	-274.49	0.27
3413.00	10.91	185.61	3388.74	291.06 S	22.09 W	-290.87	2.58
3508.00	9.56	188.86	3482.23	307.81 S	24.19 W	-307.59	1.55
3603.00	9.26	184.08	3575.95	323.23 S	25.95 W	-323.00	0.88
3698.00	9.02	189.83	3669.75	338.19 S	27.76 W	-337.94	0.99
3793.00	10.89	185.34	3763.31	354.46 S	29.87 W	-354.20	2.13
3888.00	10.37	180.60	3856.68	371.95 S	30.79 W	-371.68	1.07
3983.00	8.53	178.91	3950.39	387.54 S	30.75 W	-387.27	1.96
4079.00	9.20	181.40	4045.24	402.33 S	30.80 W	-402.06	0.80
4174.00	11.42	185.60	4138.71	419.29 S	31.90 W	-419.01	2.47
4269.00	11.83	186.35	4231.76	438.33 S	33.90 W	-438.03	0.46
4364.00	11.22	187.13	4324.84	457.18 S	36.12 W	-456.86	0.66
4459.00	9.92	185.99	4418.23	474.49 S	38.12 W	-474.15	1.39
4554.00	8.68	185.24	4511.98	489.76 S	39.63 W	-489.41	1.31

4650.00	7.76	187.20	4606.99	503.41 S	41.11 W	-503.05	1.00
4745.00	7.44	181.49	4701.16	515.92 S	42.07 W	-515.55	0.86
4840.00	8.34	173.51	4795.26	528.91 S	41.45 W	-528.55	1.49
4935.00	8.11	177.32	4889.28	542.45 S	40.36 W	-542.10	0.62
5030.00	7.38	180.51	4983.42	555.25 S	40.10 W	-554.89	0.89
5125.00	8.47	178.22	5077.51	568.34 S	39.94 W	-567.99	1.19
5220.00	7.40	184.53	5171.60	581.44 S	40.20 W	-581.08	1.45
5315.00	5.86	177.03	5265.96	592.38 S	40.44 W	-592.02	1.86
5410.00	2.34	177.90	5360.70	599.16 S	40.11 W	-598.80	3.71
5506.00	0.32	222.14	5456.67	601.32 S	40.22 W	-600.96	2.21
5696.00	0.54	263.05	5646.67	601.82 S	41.47 W	-601.45	0.19
5791.00	0.62	266.54	5741.66	601.91 S	42.42 W	-601.53	0.09
5981.00	0.28	266.08	5931.66	602.00 S	43.91 W	-601.61	0.18
6076.00	0.40	171.98	6026.66	602.34 S	44.10 W	-601.95	0.53
6171.00	0.37	178.11	6121.65	602.98 S	44.04 W	-602.59	0.05
6266.00	0.48	153.04	6216.65	603.64 S	43.85 W	-603.25	0.22
6361.00	0.72	149.41	6311.65	604.51 S	43.37 W	-604.12	0.26
6456.00	0.72	151.68	6406.64	605.55 S	42.78 W	-605.17	0.03
6552.00	1.00	158.65	6502.63	606.86 S	42.19 W	-606.48	0.31
6647.00	0.94	154.97	6597.62	608.34 S	41.56 W	-607.97	0.09
6695.00	0.58	109.01	6645.61	608.77 S	41.16 W	-608.41	1.42
6742.00	4.76	2.84	6692.56	606.90 S	40.84 W	-606.54	10.54
6790.00	9.71	357.48	6740.16	600.87 S	40.92 W	-600.50	10.40
6837.00	13.30	354.72	6786.21	591.52 S	41.59 W	-591.15	7.73
6885.00	17.21	357.35	6832.51	578.92 S	42.43 W	-578.55	8.27
6932.00	17.86	2.37	6877.33	564.78 S	42.45 W	-564.40	3.50
6980.00	21.63	359.73	6922.50	548.57 S	42.19 W	-548.20	8.07
7027.00	26.01	356.23	6965.49	529.61 S	42.91 W	-529.23	9.79
7075.00	30.71	355.28	7007.71	506.88 S	44.61 W	-506.49	9.84
7122.00	35.81	354.24	7047.00	481.22 S	46.98 W	-480.81	10.92
7170.00	39.90	353.83	7084.89	451.93 S	50.04 W	-451.50	8.54
7218.00	43.72	356.72	7120.67	420.05 S	52.65 W	-419.60	8.91
7266.00	50.16	357.59	7153.42	385.05 S	54.37 W	-384.58	13.48
7313.00	56.02	358.28	7181.64	347.51 S	55.72 W	-347.03	12.52
7361.00	62.98	358.31	7205.99	306.19 S	56.95 W	-305.70	14.50
7408.00	68.63	359.58	7225.24	263.35 S	57.73 W	-262.85	12.27
7456.00	74.06	1.58	7240.59	217.89 S	57.25 W	-217.40	11.98
7503.00	78.23	3.25	7251.84	172.31 S	55.32 W	-171.84	9.52
7551.00	81.18	3.23	7260.42	125.16 S	52.66 W	-124.72	6.15
7598.00	84.94	4.66	7266.10	78.63 S	49.44 W	-78.21	8.55
7612.00	85.43	4.75	7267.27	64.72 S	48.30 W	-64.32	3.56
7691.00	90.25	4.76	7270.25	13.92 N	41.76 W	14.27	6.10
7786.00	90.99	1.78	7269.22	108.75 N	36.34 W	109.05	3.23
7881.00	91.73	359.14	7266.97	203.71 N	35.58 W	204.00	2.89
7976.00	92.04	358.87	7263.84	298.65 N	37.23 W	298.95	0.43
8071.00	92.47	358.70	7260.10	393.55 N	39.24 W	393.87	0.49
8166.00	90.93	358.52	7257.29	488.48 N	41.54 W	488.81	1.63
8261.00	89.75	358.47	7256.72	583.44 N	44.04 W	583.79	1.24
8356.00	89.94	357.91	7256.98	678.40 N	47.04 W	678.77	0.62
8452.00	90.19	357.18	7256.87	774.31 N	51.15 W	774.71	0.80
8547.00	90.19	355.96	7256.56	869.13 N	56.83 W	869.58	1.28
8642.00	90.25	357.11	7256.19	963.96 N	62.58 W	964.45	1.21
8737.00	90.31	358.86	7255.73	1058.89 N	65.92 W	1059.41	1.84
8832.00	89.07	359.87	7256.24	1153.88 N	66.97 W	1154.41	1.68
8927.00	89.26	357.65	7257.63	1248.85 N	69.02 W	1249.38	2.35
9022.00	89.01	357.95	7259.06	1343.77 N	72.67 W	1344.33	0.41
9117.00	88.33	359.75	7261.27	1438.72 N	74.58 W	1439.29	2.02
9212.00	89.07	1.16	7263.42	1533.69 N	73.82 W	1534.25	1.68
9307.00	89.26	0.35	7264.81	1628.67 N	72.57 W	1629.22	0.88
9402.00	89.38	1.51	7265.93	1723.65 N	71.03 W	1724.18	1.23
9497.00	89.75	1.80	7266.65	1818.60 N	68.29 W	1819.11	0.49
9592.00	88.70	0.67	7267.94	1913.57 N	66.24 W	1914.06	1.62
9688.00	90.86	0.53	7268.31	2009.56 N	65.23 W	2010.03	2.25
9783.00	92.47	0.56	7265.55	2104.51 N	64.33 W	2104.98	1.70
9878.00	93.09	359.34	7260.94	2199.40 N	64.41 W	2199.86	1.44
9973.00	91.05	359.35	7257.51	2294.32 N	65.50 W	2294.79	2.15
10068.00	89.32	358.58	7257.20	2389.30 N	67.21 W	2389.78	1.99
10163.00	89.69	358.31	7258.02	2484.26 N	69.79 W	2484.76	0.48
10258.00	90.93	357.41	7257.51	2579.19 N	73.34 W	2579.72	1.61
10353.00	90.56	358.14	7256.27	2674.11 N	77.03 W	2674.66	0.86
10448.00	89.26	358.31	7256.42	2769.06 N	79.97 W	2769.64	1.38
10543.00	88.02	359.26	7258.68	2864.01 N	81.98 W	2864.60	1.64
10639.00	89.38	359.27	7260.85	2959.98 N	83.22 W	2960.57	1.42
10734.00	89.81	359.74	7261.53	3054.97 N	84.04 W	3055.57	0.67
10829.00	90.68	0.80	7261.12	3149.97 N	83.59 W	3150.56	1.44

10924.00	89.81	2.18	7260.71	3244.93 N	81.12 W	3245.50	1.72
11019.00	90.06	1.12	7260.82	3339.89 N	78.38 W	3340.43	1.15
11114.00	89.32	359.63	7261.34	3434.88 N	77.76 W	3435.42	1.75
11209.00	90.25	359.80	7261.69	3529.88 N	78.23 W	3530.41	1.00
11304.00	91.05	1.56	7260.61	3624.86 N	77.11 W	3625.38	2.03
11399.00	90.99	0.30	7258.92	3719.83 N	75.56 W	3720.34	1.33
11494.00	90.93	1.40	7257.33	3814.81 N	74.16 W	3815.30	1.16
11589.00	91.24	0.29	7255.53	3909.78 N	72.75 W	3910.25	1.21
11684.00	91.73	1.75	7253.07	4004.73 N	71.06 W	4005.19	1.62
11742.00	91.61	0.59	7251.38	4062.69 N	69.88 W	4063.14	2.01
11792.00	91.61	0.59	7249.98	4112.67 N	69.37 W	4113.11	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 359.52 DEGREES (TRUE)
A TOTAL CORRECTION OF 8.57 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 11792.00 FEET
IS 4113.26 FEET ALONG 359.03 DEGREES (TRUE)**

All directional surveys tied onto surface at 0' MD. Final survey is a straight-line projection to the bit.