HALLIBURTON | Sperry Drilling

ROP Rate of Penetration
DGR Dual Gamma Ray
EWR-Phase 4
ALD Azimuthal Lithodensity
CTN Compensated Thermal Neutron

1 : 600 / 1 : 240

Company	**Great Bear Petroleum, LLC**
Rig	**Nabors 105E**
Well	**Alcor 1**
Field	**Alcor**
Country	**USA**
API Number	**50-223-20026-00**

Country	**USA**
Field	**Alcor**
Location	**Lat: 69° 59' 26.11" North** **Long: 148° 40' 40.99" West**
Well	**Alcor 1**
Company	**Great Bear Petroleum, LLC**
Rig	**Nabors 105E**

LOCATION

Latitude : **69° 59' 26.11" North**
Longitude : **148° 40' 40.99" West**

ASP Zn 4: Y = 5,847,838.30 ft
ASP Zn 4: X = 665,672.48 ft

Other Services
DDSr PWD BAT

Permanent Datum : **Mean Sea Level** Elevation : **0.00 ft**
Log Measured From : **Drill Floor** **186.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB
DF **186.00 ft**
GL **163.70 ft**
WD

Depth Logged : **102.00 ft** To **10,812.00 ft**
Date Logged : **16-Jun-12** To **09-Aug-12**
Total Depth MD : **10,812.00 ft** TVD : **10,802.05 ft**
Spud Date : **16-Jun-12**

Unit No. : **117**
Plot Type : **Final**
Plot Date : **31-Oct-12**

Job No. : **AK-XX-0009285348**

Run No.	Borehole Record (MD) Size	From	To
1	12.250 in	102.00 ft	2,510.00 ft
2	8.500 in	2,510.00 ft	6,364.00 ft
3	8.500 in	6,364.00 ft	8,320.00 ft
4	6.125 in	8,320.00 ft	8,348.00 ft
5	6.125 in	8,348.00 ft	8,640.00 ft
6	6.125 in	8,640.00 ft	8,676.00 ft
8	6.125 in	8,676.00 ft	10,015.00 ft
9	6.125 in	10,015.00 ft	10,103.00 ft
10	6.125 in	10,103.00 ft	10,574.00 ft
11	6.125 in	10,574.00 ft	10,603.00 ft
12	6.125 in	10,603.00 ft	10,662.00 ft

Run No.	Borehole Record (MD) Size	From	To
13	6.125 in	10,662.00 ft	10,812.00 ft

Casing Record (MD)

Size	Weight	From	To
16.000 in	52.40 lbpf	SURFACE	80.00 ft
9.562 in	46.20 lbpf	SURFACE	2,491.00 ft
7.000 in	28.70 lbpf	SURFACE	8,311.00 ft

WELL INFORMATION

MWD Run Number	200	300	400	500	800
Date run completed	03-Jul-12	10-Jul-12	17-Jul-12	19-Jul-12	27-Jul-12
Rig Bit Number	2	3	4	5	8
Bit Size (in)	8.500	8.500	6.125	6.125	6.125
Tool Nominal OD (in)	6.750	6.750	4.750	4.750	4.750
Log Start Depth (MD, ft)	2,510.00	6,364.00	8,320.00	8,348.00	8,676.00
Log End Depth (MD, ft)	6,364.00	8,320.00	8,348.00	8,640.00	10,015.00
Drill or Wipe	Drill	Drill	Drill	Drill	Drill
Drill/Wipe Start Date and Time	27-Jun-12 14:51	05-Jul-12 20:08	15-Jul-12 15:41	18-Jul-12 13:59	23-Jul-12 19:10
Drill/Wipe End Date and Time	01-Jul-12 17:01	09-Jul-12 10:59	15-Jul-12 19:53	19-Jul-12 06:34	26-Jul-12 01:06
Min Inc (deg) @ Depth (MD, ft)	0.12 @ 2,700.00	0.32 @ 7,011.46	2.50 @ 8,437.00	3.67 @ 8,360.29	2.50 @ 9,912.28
Max Inc (deg) @ Depth (MD, ft)	1.05 @ 2,606.45	2.22 @ 8,276.71	2.50 @ 8,437.00	9.50 @ 8,598.25	10.12 @ 8,659.00
Bit TFA(in2) / Bit Type	0.98 / PDC	0.98 / PDC	0.45 / PDC	0.45 / PDC	0.45 / PDC
Flow Rate (gpm)	400.00	375.00	282.00	265.50	232.00
Max AV (fpm) / CV (fpm) @ MWD	366.0 / 450.0	337.0 / 488.0	322.0 / 467.0	322.4 / 445.4	343.0 / 445.0
Fluid Type	Mineral Oil Bas	Mineral Oil Bas	Mineral Oil Bas	Polymer	Polymer
Density (ppg) / Viscosity (spqt)	9.90 / 74.00	9.60 / 86.00	10.15 / 85.00	9.40 / 72.00	10.00 / 50.00
Filtrate CL (ppm)	N/A	235,000.00	276,585.00	16,500.00	37,000.00
pH / Fluid Loss (mptm)	N/A / 2	N/A / 2	N/A / 3	8.20 / 8	9.50 / 7
PV (cP) / YP (lhf2)	28 / 12.00	34 / 12.00	39 / 13.00	21 / 15.00	21 / 17.00
% Solids / % Sand	13.00 / 0.25	10.00 / 0.10	13.30 / 0.01	6.00 / 0.01	8.00 / 0.00
% Oil / Oil:Water Ratio	80.00 / 80:20	30.00 / 30:70	68.50 / 80:20	0.0 / 0.0:92.6	0.0 / 0.0:90
Rm @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	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	N/A @ N/A	N/A @ N/A
Rmc @ Measured Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Max Tool Temp (degF) / Source	127.22 / HCIM	155.00 / HCIM	168.80 / TM	177.08 / HCIM	180.00 / PWD

Rm @ Max Tool Temp (degF)	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A	N/A @ N/A
Lead MWD Engineer	Alex Munro	Alex Munro	Alex Munro	Julie Wilson	Julie Wilson
Customer Representative	Mike Grubb	Mike Grubb	Mike Grubb	Mike Grubb	Mike Grubb

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM	HCIM	TM	HCIM	HCIM
Software Version	88.47	88.47	4.30	88.47	88.47
Sub Serial Number	10836658	11709268	11293602	10506926	90317612
Insert Serial Number	11400437	11659375	10456579	10883844	288073
Date and Time Initialized	26-Jun-12 21:05	05-Jul-12 00:02	13-Jul-12 00:18	17-Jul-12 06:37	23-Jul-12 09:47
Date and Time Read	03-Jul-12 22:16	10-Jul-12 07:05	17-Jul-12 19:47	19-Jul-12 15:51	27-Jul-12 00:56
ECMB SW Version	N/A	N/A	N/A	N/A	N/A

Directional Sensor Information

Tool Type	PCDC	PCDC	DM	PCDC	PCDC
Distance From Bit (ft)	38.22	40.09	16.92	40.17	62.34
Software Version	6.21	6.21	3.15	6.21	6.21
Sub Serial Number	11507607	11507607	11644765	11644765	11644765
Sonde Serial Number	11638619	11638619	1045015	11638619	11145693
Sensor ID Number	N/A	N/A	N/A	N/A	N/A
Toolface Offset (deg)	81.48	55.92	N/A	N/A	44.09

Gamma Ray Sensor Information

Tool Type	DGR	DGR	GM	DGR	DGR
Distance From Bit (ft)	49.88	51.66	7.03	19.04	50.33
Recorded Sample Period (sec)	10	10	10	10	10
Software Version	N/A	N/A	1.22	N/A	N/A
Sub Serial Number	11064802	10687560	11644773	10506926	90317612
Insert/Sonde Serial Number	11337824	10718517	10450158	11674410	261396

Resistivity Sensor Information

Tool Type				Slim P4	Slim P4
Distance From Bit (ft)				12.07	43.35
Recorded Sample Period (sec)				12	10
Software Version				5.55	5.55
Sub Serial Number				167219	11198199
Receiver Insert Serial Number				10911837	11159214
Transmitter Insert Serial Number				166464	10917715
Receiver Orientation				Up	Up

Neutron Sensor Information

Tool Type					
Distance From Bit (ft)					
Recorded Sample Period (sec)					
Sub Serial Number					
Insert Serial Number					
Source Serial Number					
Source Factor					
Pin Orientation					

Density Sensor Information

Tool Type					
Distance From Bit (ft)					
Recorded Sample Period (sec)					

Software Version					
Sub Serial Number					
Insert Serial Number					
Sensor ID Number					
Source Serial Number					
Pin Orientation					
Stabilizer Blade O.D. (in)					
DPA Offset					

WELL INFORMATION

MWD Run Number	1000	1300	1400		
Date run completed	01-Aug-12	07-Aug-12	09-Aug-12		
Rig Bit Number	10	13	14		
Bit Size (in)	6.125	6.125	6.125		
Tool Nominal OD (in)	4.750	4.750	4.750		
Log Start Depth (MD, ft)	10,103.00	10,662.00	8,311.00		
Log End Depth (MD, ft)	10,574.00	10,812.00	10,812.00		
Drill or Wipe	Drill	Drill	Wipe		
Drill/Wipe Start Date and Time	30-Jul-12 11:05	06-Aug-12 09:06	07-Aug-12 23:29		
Drill/Wipe End Date and Time	31-Jul-12 17:47	06-Aug-12 14:50	08-Aug-12 19:10		
Min Inc (deg) @ Depth (MD, ft)	1.20 @ 10,539.87	0.52 @ 10,731	0.52 @ 10,731.00		
Max Inc (deg) @ Depth (MD, ft)	2.50 @ 9,912.28	0.57 @ 10,812	0.57 @ 10,812.00		
Bit TFA(in2) / Bit Type	0.46 / PDC	0.46 / PDC	0.46 / PDC		
Flow Rate (gpm)	224.00	180.00	150.00		
Max AV (fpm) / CV (fpm) @ MWD	823.0 / 439.0	823.0 / 439.0	823.0 / 439.0		
Fluid Type	Polymer	Polymer	Polymer		
Density (ppg) / Viscosity (spqt)	10.70 / 52.00	10.60 / 48.00	11.20 / 48.00		
Filtrate CL (ppm)	37,000.00	36,000.00	36,000.00		
pH / Fluid Loss (mptm)	9.60 / 6	10.40 / 10	10.40 / 10		
PV (cP) / YP (lhf2)	21 / 17.00	14 / 19.00	14 / 19.00		
% Solids / % Sand	9.20 / 0.01	11.30 / 0.00	11.30 / 0.00		
% Oil / Oil:Water Ratio	0.0 / 0.0:86	N/A / N/A	0.0 / 0.0:86		
Rm @ Measured Temp (degF)	0.160 @ 65.00	N/A @ N/A	1.800 @ 74.00		
Rmf @ Measured Temp (degF)	0.100 @ 65.00	N/A @ N/A	1.000 @ 74.00		
Rmc @ Measured Temp (degF)	0.260 @ 65.00	N/A @ N/A	2.000 @ 74.00		
Max Tool Temp (degF) / Source	94.85 / SP4	100.00 / 100	211.00 / DDSr-DGR		
Rm @ Max Tool Temp (degF)	0.1130 @ 94.85	N/A @ N/A	0.6676 @ 211.00		
Lead MWD Engineer	Julie Wilson	William Cartwright	William Cartwright		
Customer Representative	Mike Grubb	Mike Grubb	Mike Grubb		

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM	HCIM	HCIM		
Software Version	88.47	88.47	88.47		
Sub Serial Number	10568888	9038055	10486771		
Insert Serial Number	10883844	11042893	10911837		
Date and Time Initialized	30-Jul-12 00:49	05-Aug-12 15:27	07-Aug-12 12:09		
Date and Time Read	01-Aug-12 09:55	07-Aug-12 07:26	09-Aug-12 03:26		
ECMB SW Version	N/A	N/A	N/A		

Directional Sensor Information

Tool Type	PCDC	PCDC	PCDC		
Distance From Bit (ft)	30.96	32.66	30.86		
Software Version	6.21	6.21	6.21		
Sub Serial Number	11644765	11644773	11837503		
Sonde Serial Number	10809536	11297555	10809536		
Sensor ID Number	N/A	N/A	N/A		

Toolface Offset (deg)	N/A	N/A	N/A		

Gamma Ray Sensor Information

Tool Type	DGR	DGR	DGR		
Distance From Bit (ft)	19.01	21.34	19.46		
Recorded Sample Period (sec)	10	10	10		
Software Version	N/A	N/A	N/A		
Sub Serial Number	10506926	10869432	10506926		
Insert/Sonde Serial Number	10610886	11295303	10436096		

Resistivity Sensor Information

Tool Type	Slim P4	Slim P4	Slim P4		
Distance From Bit (ft)	12.04	14.49	12.54		
Recorded Sample Period (sec)	10	10	10		
Software Version	5.55	5.55	5.55		
Sub Serial Number	16721923	90328055	10486771		
Receiver Insert Serial Number	10911837	11295303	10911837		
Transmitter Insert Serial Number	16646423	10907574	10452017		
Receiver Orientation	Up	Up	Up		

Neutron Sensor Information

Tool Type	CTN	CTN	CTN		
Distance From Bit (ft)	55.31	57.31	55.75		
Recorded Sample Period (sec)	10	10	10		
Sub Serial Number	10837382	11354958	10837382		
Insert Serial Number	10907163	10450320	10907163		
Source Serial Number	5931/32NN	5931NN/5932NN	5931NN/5932NN		
Source Factor	N/A	N/A	N/A		
Pin Orientation	Down	Up	Down		

Density Sensor Information

Tool Type	ALD	ALD	ALD		
Distance From Bit (ft)	40.55	43.72	41.06		
Recorded Sample Period (sec)	10	10	10		
Software Version	3.04	3.04	3.04		
Sub Serial Number	10907303	1050849	249341		
Insert Serial Number	10962548	10677569	239217		
Sensor ID Number	32767	21042	32767		
Source Serial Number	31779B	12643B	31779B		
Pin Orientation	Down	Down	Down		
Stabilizer Blade O.D. (in)	5.75	5.75	5.75		
DPA Offset	102.29	314.18	200.00		

REMARKS

1. ALL DEPTHS ARE MEASURED DEPTHS (MD), UNLESS OTHERWISE NOTED. THESE DEPTHS ARE BIT DEPTHS.
2. ALL VERTICAL DEPTHS ARE TRUE VERTICAL DEPTH (TVD).
3. MWD RUN 100 WAS DIRECTIONAL ONLY AND IS NOT PRESENTED.
4. MWD RUNS 200 AND 300 COMPRISED DIRECTIONAL WITH DUAL GAMMA RAY (DGR), PRESSURE WHILE DRILLING (PWD) AND DRILLSTRING DYNAMICS SENSOR (DDSr).
5. MWD RUN 400 COMPRISED DIRECTIONAL AND GAMMA MODULE (GM).
6. MWD RUN 500 COMPRISED DIRECTIONAL, DGR, PWD, AND DDSr.
7. MWD RUNS 600,900,1100,1200 WERE CORING RUNS - NO MWD TOOLS WERE INCLUDED

IN THE BHA'S.

8. NO PROGRESS WAS MADE ON MWD RUN 700 DUE TO A TOOL FAILURE.

9. MWD RUN 800 COMPRISED DIRECTIONAL, DGR, PWD, AND DDSr. DGR MAD PASS DATA WERE ACQUIRED OVER THE RUN 6 CORED INTERVAL WHILE RIH.

10. MWD RUN 1000 COMPRISED DIRECTIONAL, DGR, ELECTROMAGNETIC WAVE RESISTIVITY PHASE-4 (EWR-P4), COMPENSATED THERMAL NEUTRON (CTN), AZIMUTHAL LITHODENSITY (ALD), BI-MODAL ACOUSTIC TOOL (BAT), PWD, AND DDSr. MAD PASS DATA WERE ACQUIRED FROM CASING SHOE AT 8,311'MD - 10,103'MD WHILE RIH. BAT MAD DATA WERE DEEMED UNRELIABLE DUE TO A PARTIAL TOOL FAILURE.

11. MWD RUN 1300 COMPRISED DIRECTIONAL, DGR, EWR-P4, CTN, ALD, PWD, AND DDSr. THE PULSER FAILED - NO MWD DATA WERE ACQUIRED. HOWEVER, DRILLING CONTINUED TO FINAL TD.

12. MWD RUN 1400 WAS A MAD PASS TO FILL IN GAPS OVER CORED INTERVALS AND OVER THE RUN 13 INTERVAL. DATA WERE ACQUIRED WHILE POOH FROM FINAL TD TO THE CASING SHOE. IT COMPRISED DIRECTIONAL, DGR, EWR-P4, CTN, ALD, BAT, PWD, AND DDSr.

13. MWD RUNS 100-1400 REPRESENT WELL ALCOR 1 WITH API # 50-223-20026-00. THIS WELL REACHED A TOTAL DEPTH OF 10,812'MD/10,802'TVD.

REMARKS

MNEMONICS	CURVE DESCRIPTION
ROPA	AVERAGE RATE OF PENETRATION
RSPD	TOOL RUNNING SPEED DURING MAD PASS
DGRC	DGR COMBINED GAMMA RAY
R09P	9 INCH PHASE RESISTIVITY
R15P	15 INCH PHASE RESISTIVITY
R27P	27 INCH PHASE RESISTIVITY
R39P	39 INCH PHASE RESISTIVITY
EWXT	EWR FORMATION EXPOSURE TIME
TNPS	CTN POROSITY - SANDSTONE
TNFA	CTN FAR AVERAGE COUNT RATE
TNNA	CTN NEAR AVERAGE COUNT RATE
ACDL/ALCDLC	ALD LCRB COMPENSATED DENSITY
ADCL/ALDCLC	ALD LCRB DENSITY CORRECTION
APEL/ALPELC	ALD LCRB Pe FACTOR
ALRP/ALRPM	ALD RPM (SLIDE INDICATOR)
AHSI/ALHSI	ALD HOLE SIZE INDICATOR
BTCS	BAT COMPRESSIONAL SLOWNESS
BCSS/BTCSS	BAT COMBINED SHEAR SLOWNESS
BVPS/BTVPVS	BAT VP/VS RATIO
BSFG/BTSFLAG	BAT SHEAR FLAG

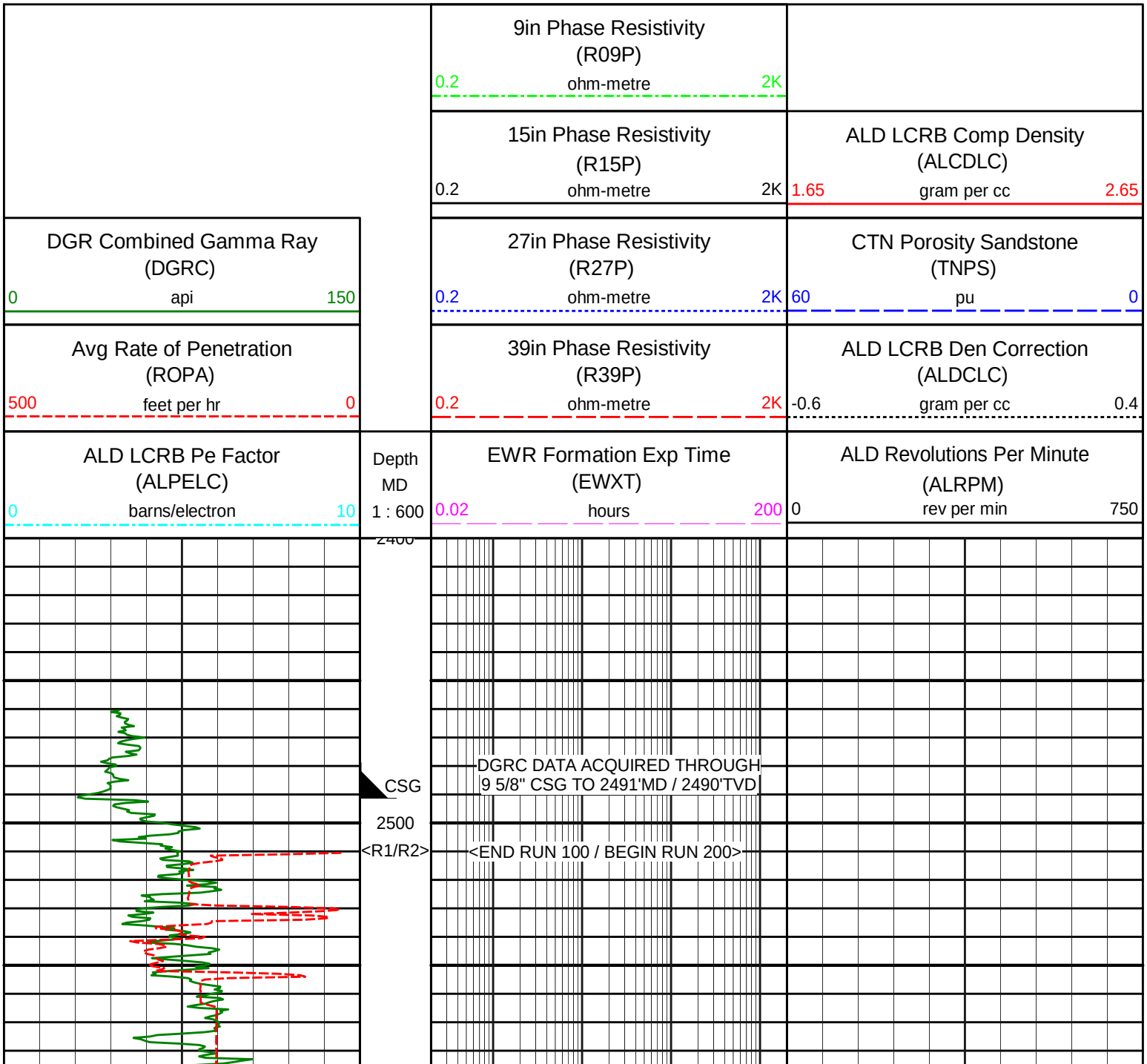
PARAMETERS USED IN NUCLEAR LOG PROCESSING:

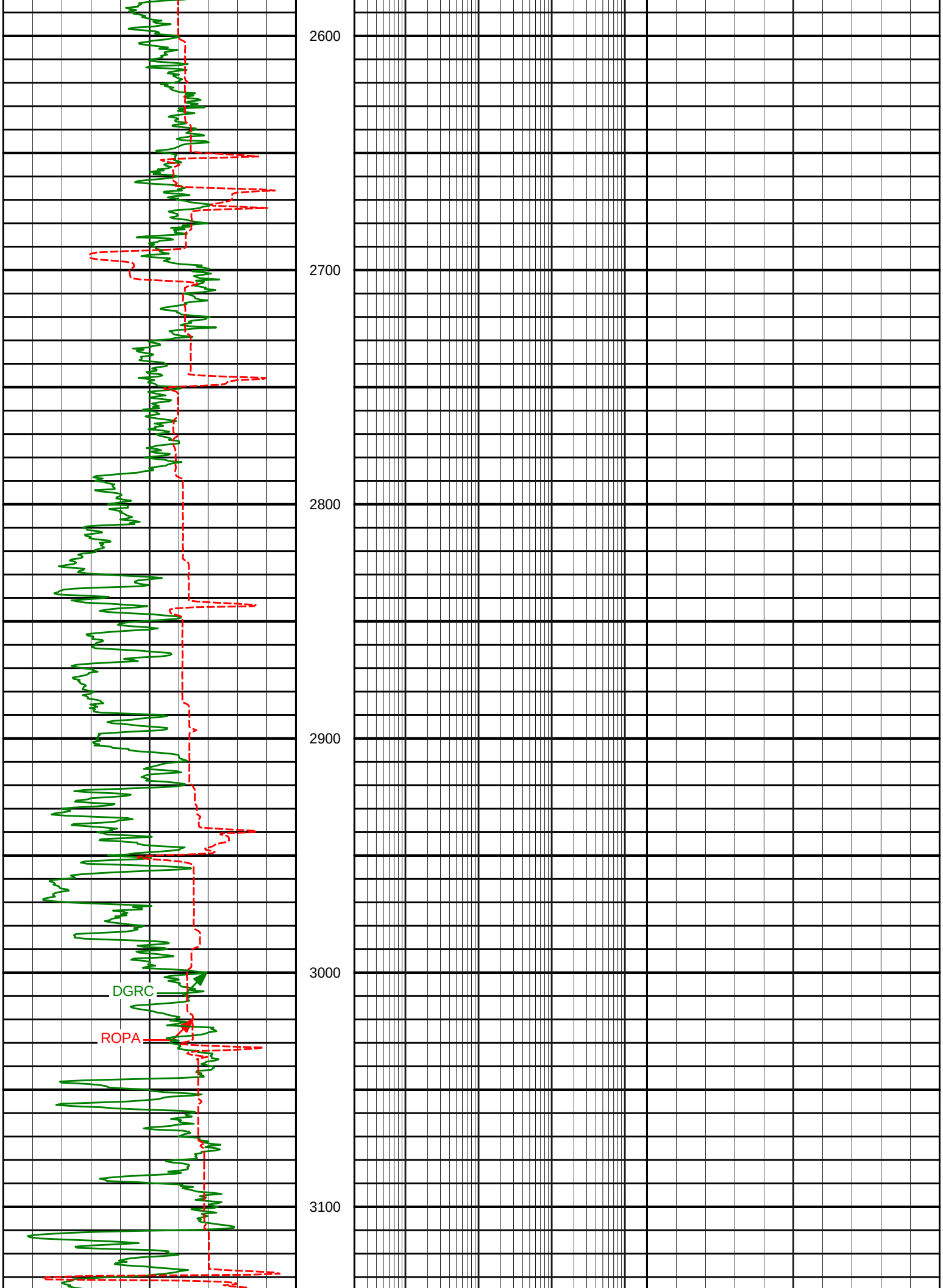
HOLE SIZE: 6.125" FIXED
MUD WEIGHT: 10.5 - 11.2 PPG
WHOLE MUD CHLORIDES: 24,000 - 38,000 PPM CL
FORMATION WATER SALINITY: 37,000 PPM CL
FLUID DENSITY: 1.0 G/CC
MATRIX DENSITY 2.65 G/CC
LITHOLOGY: SANDSTONE
TEMPERATURE: DYNAMIC FROM EWR-P4, 133.5°F @ TD

ALL DATA CURVES ARE SMOOTHED TO A STEP OF 0.5 FT, WITH A WINDOW OF 0.6 FT, EXCEPT FOR ROP AND GAMMA RAY. THESE CURVES ARE SMOOTHED

WITH A 1.1 FT WINDOW. GAP FILL IS SET TO 5 FT FOR ALL CURVES.

WARRANTY

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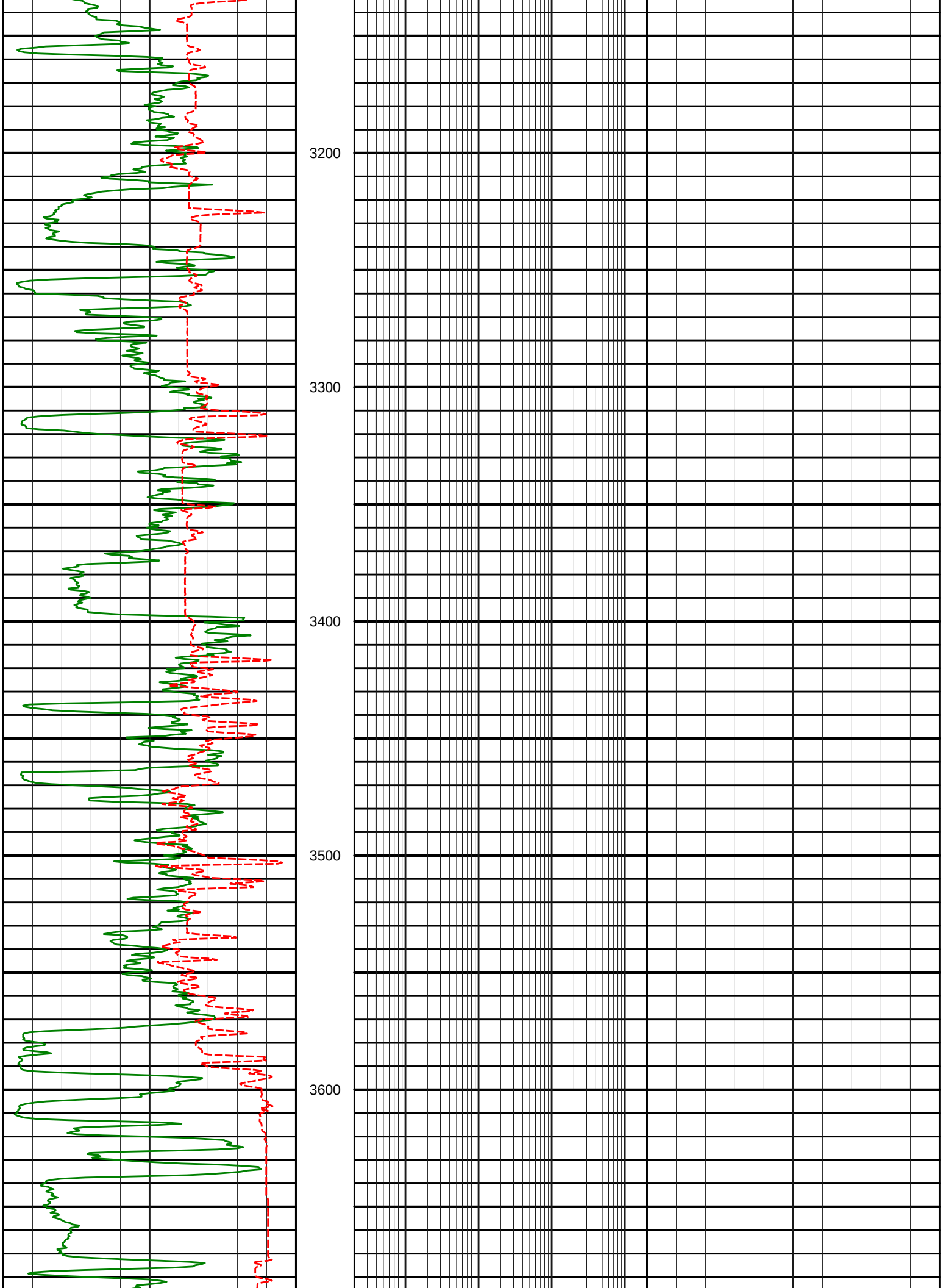
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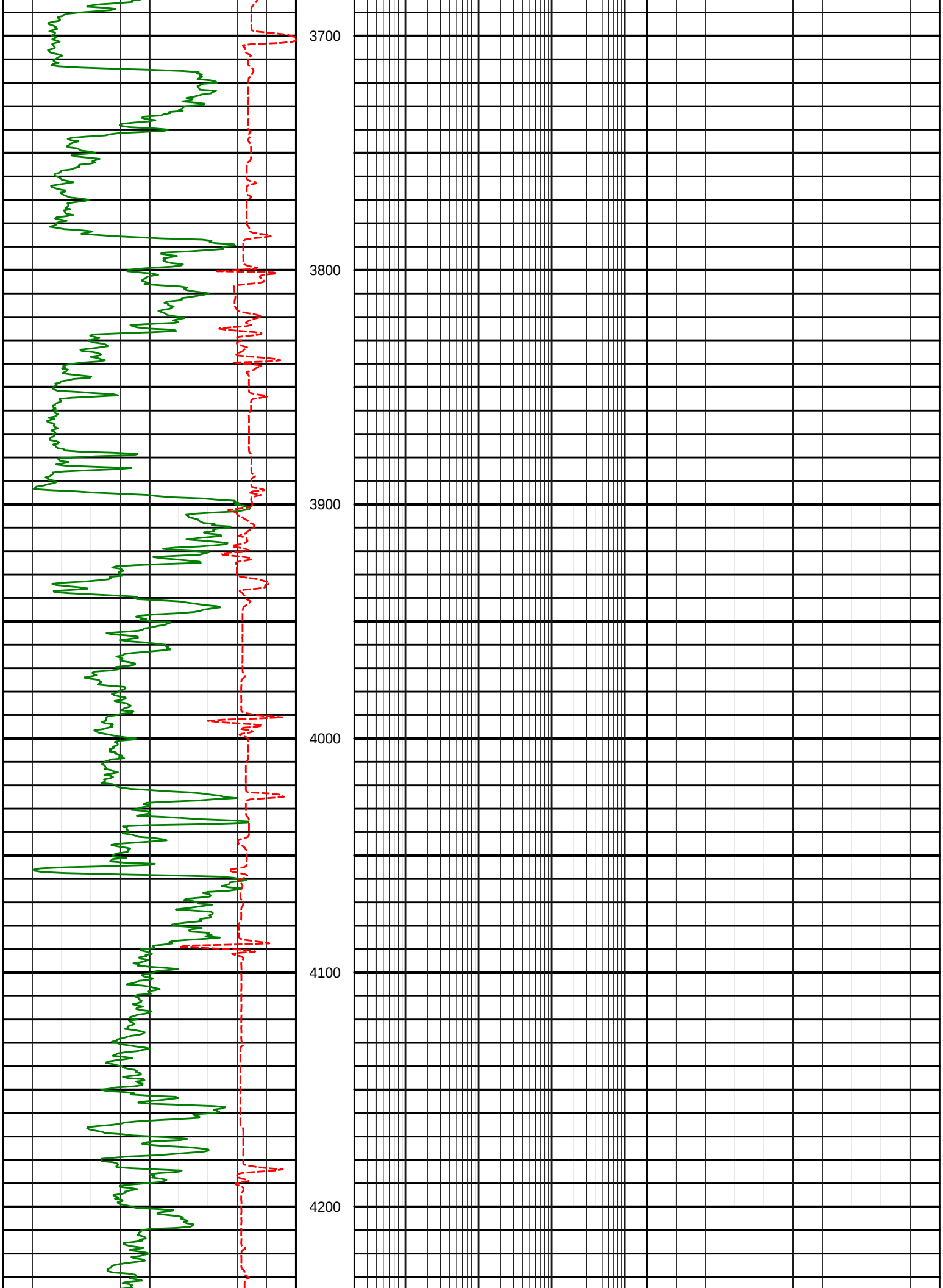
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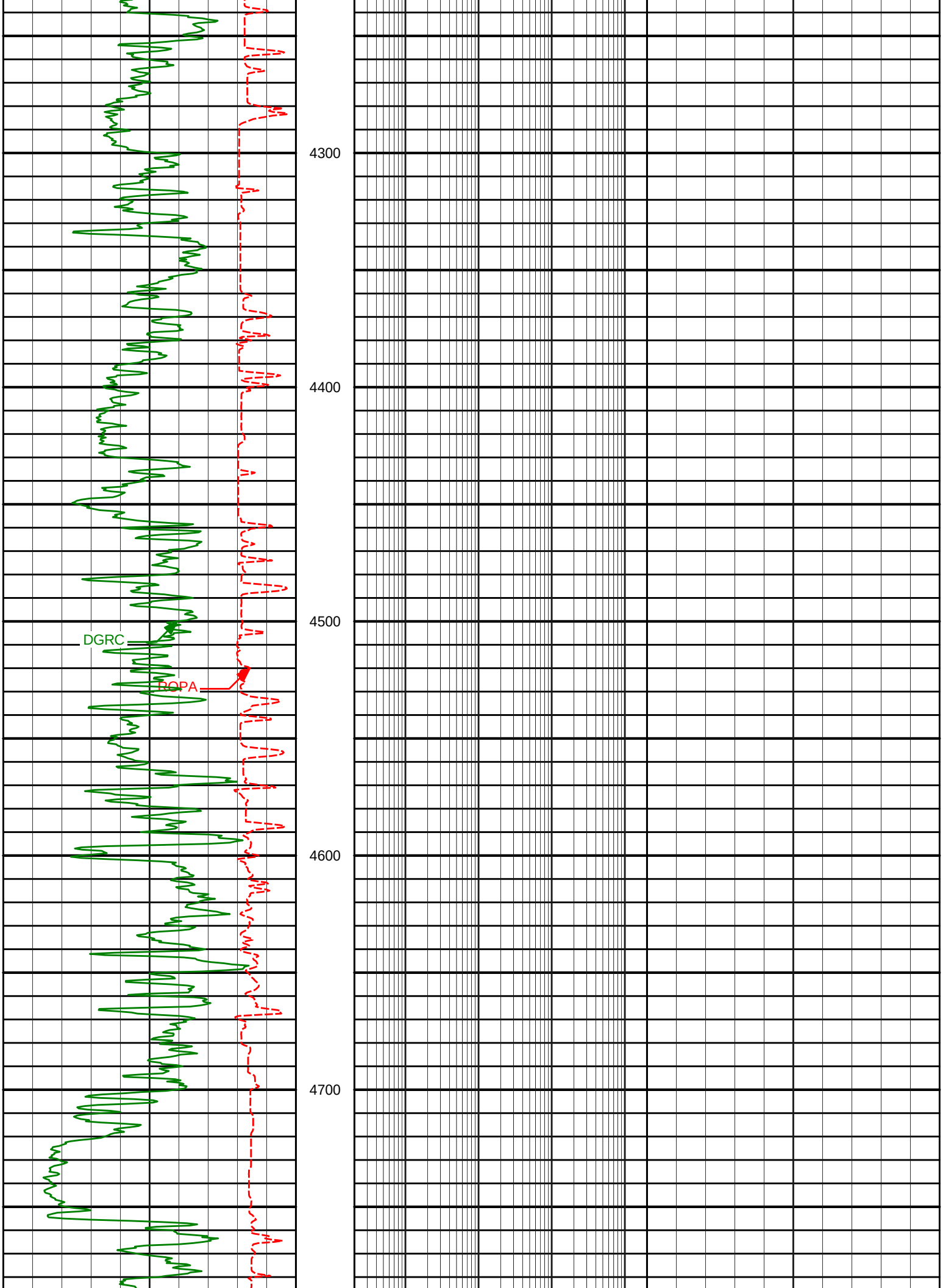
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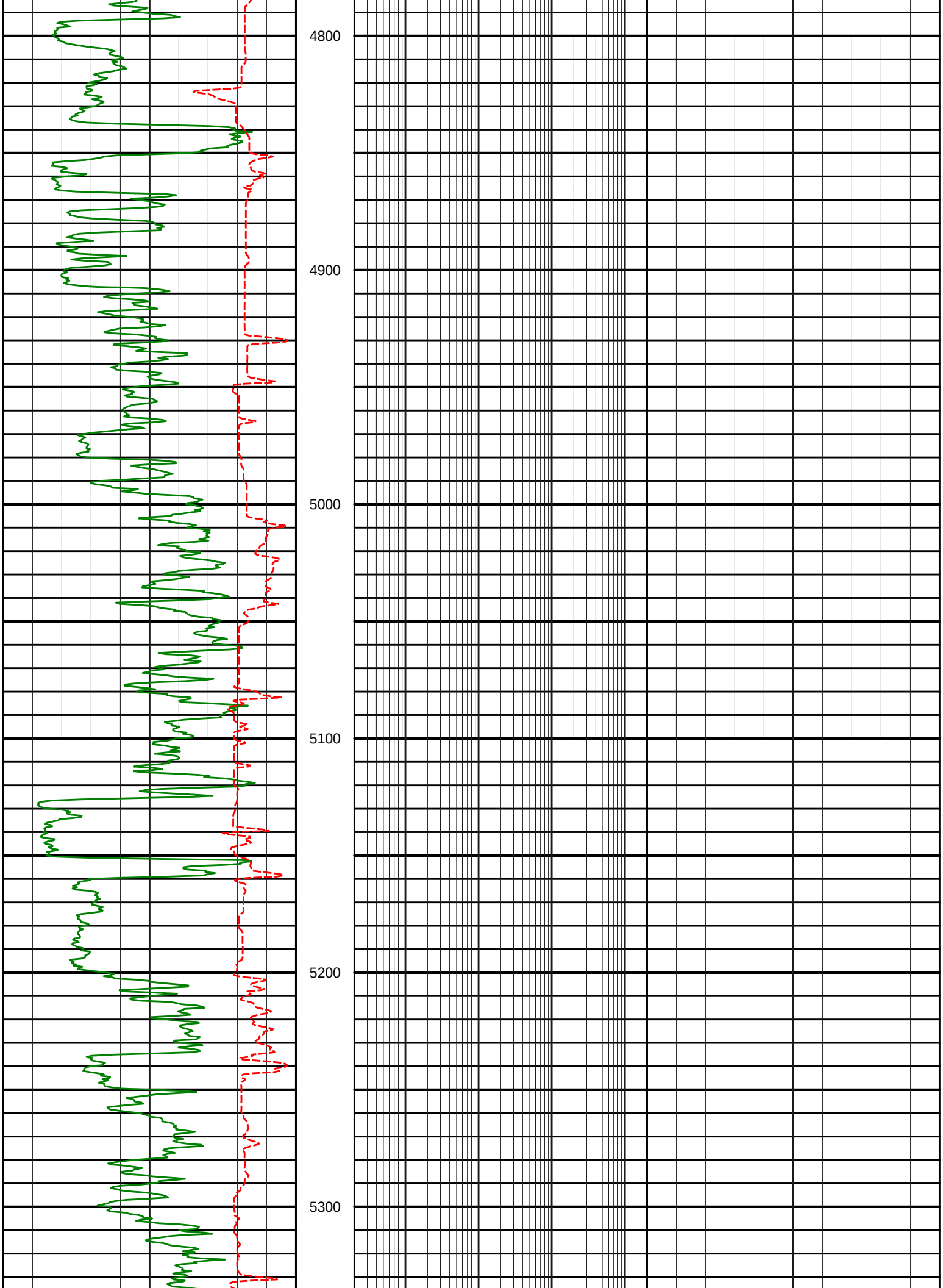
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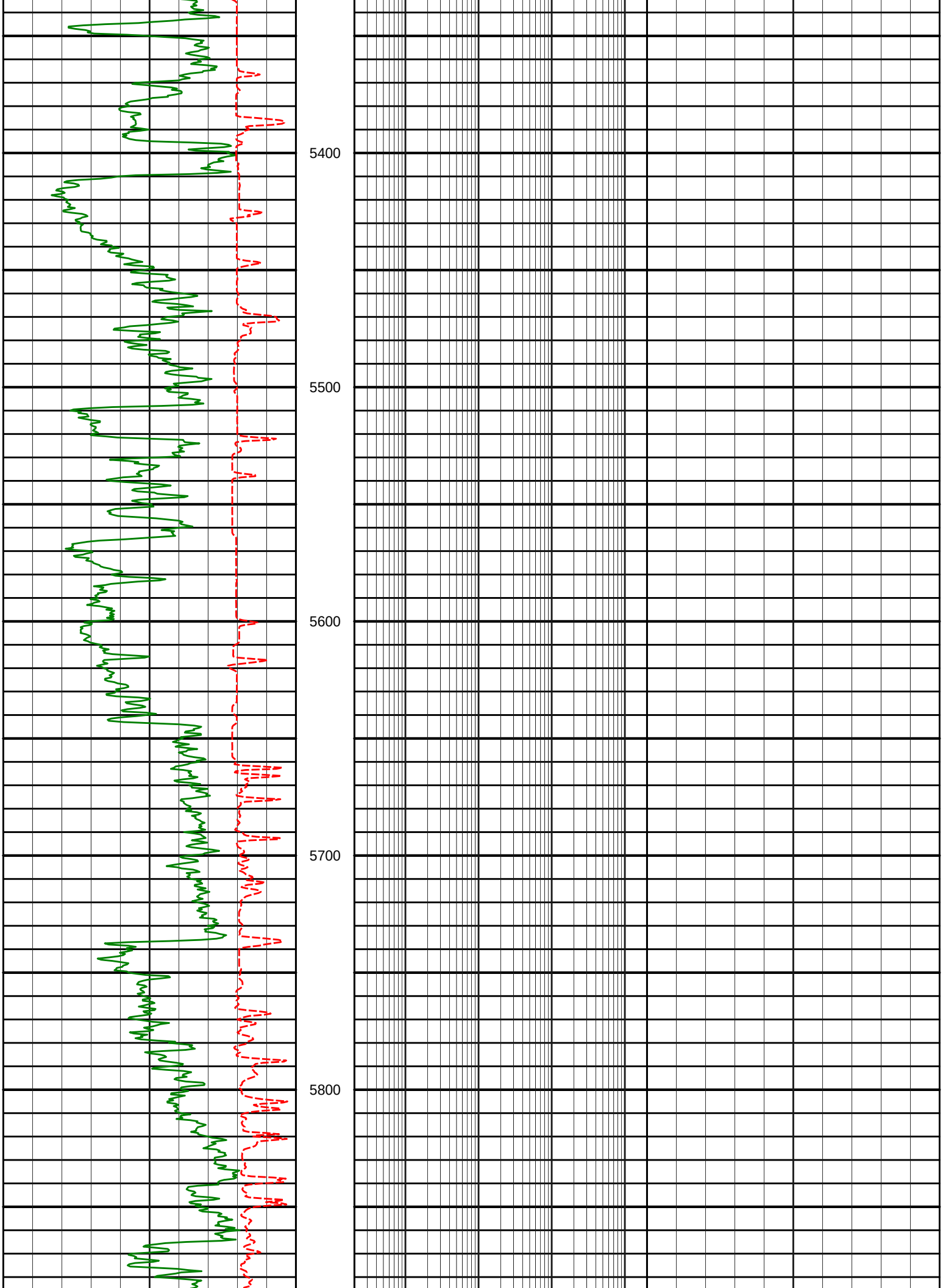
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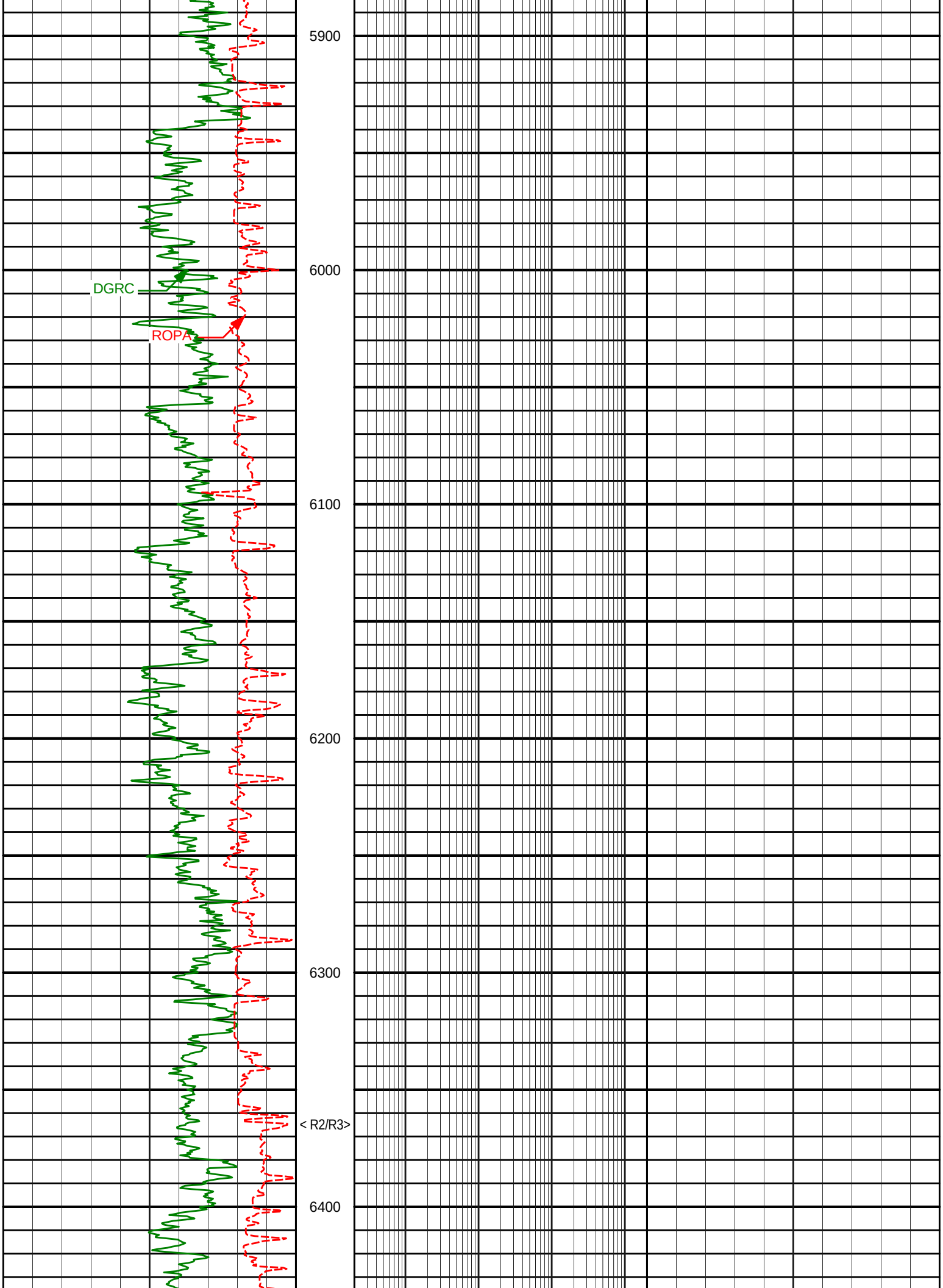
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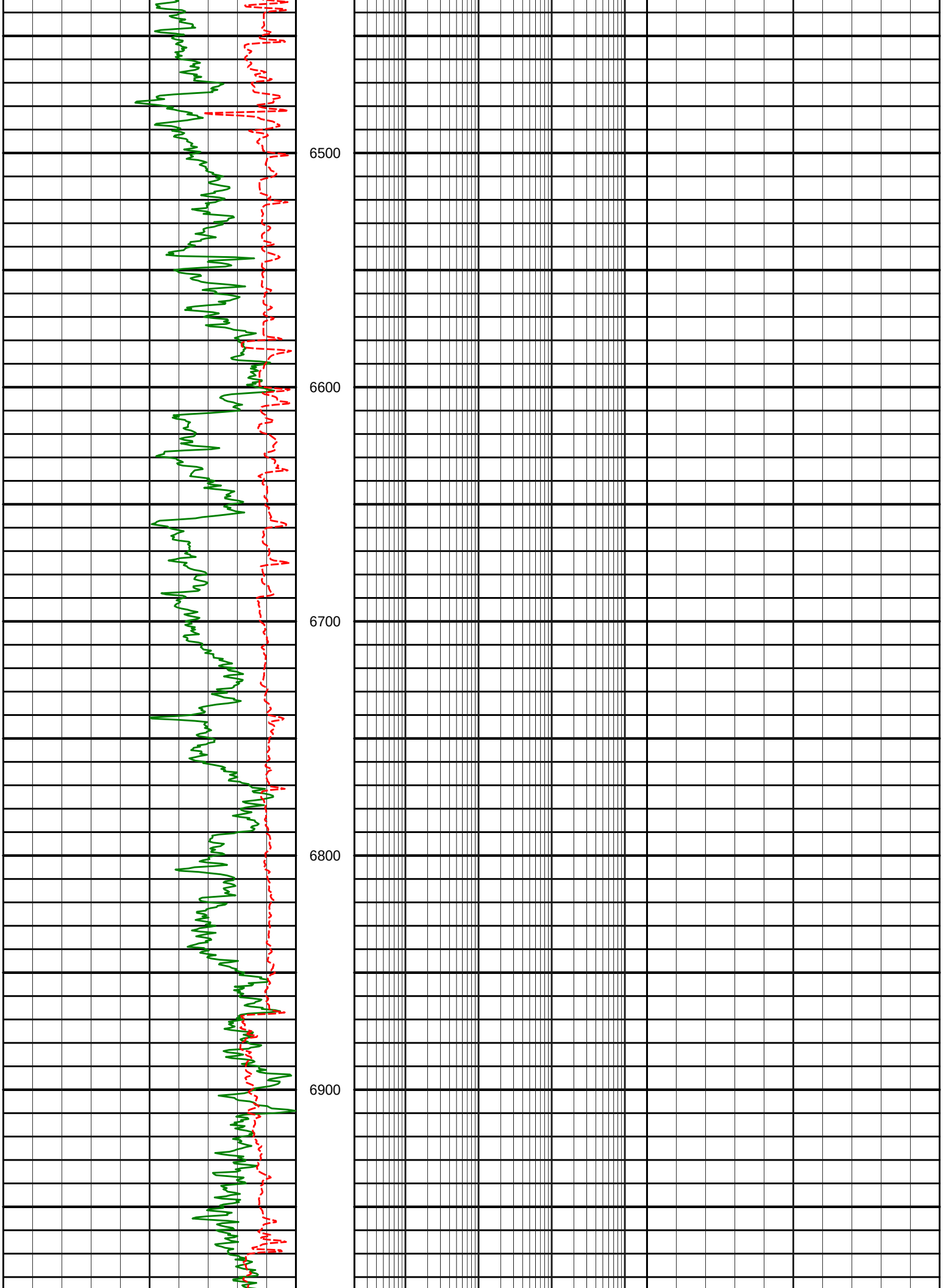
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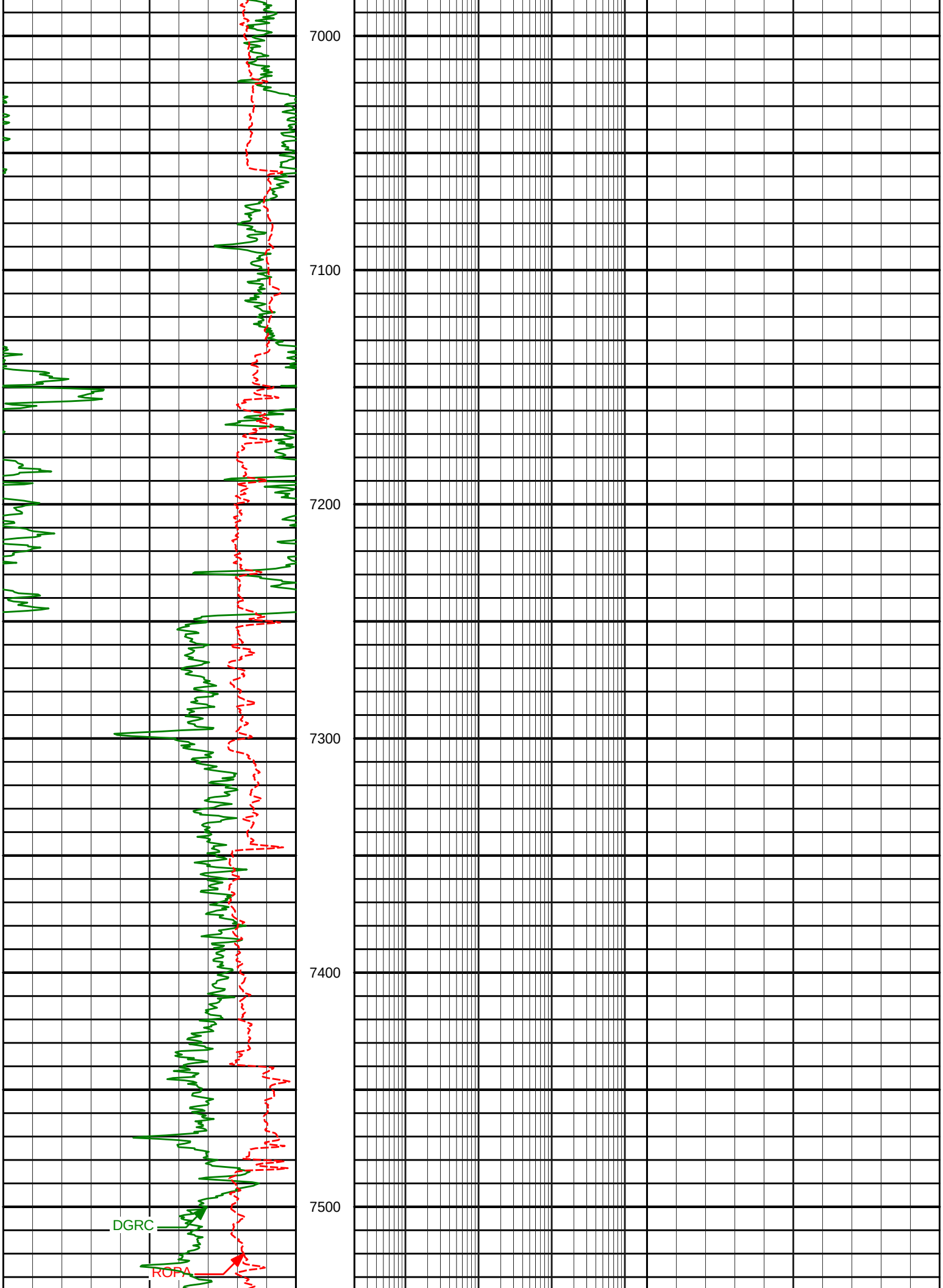
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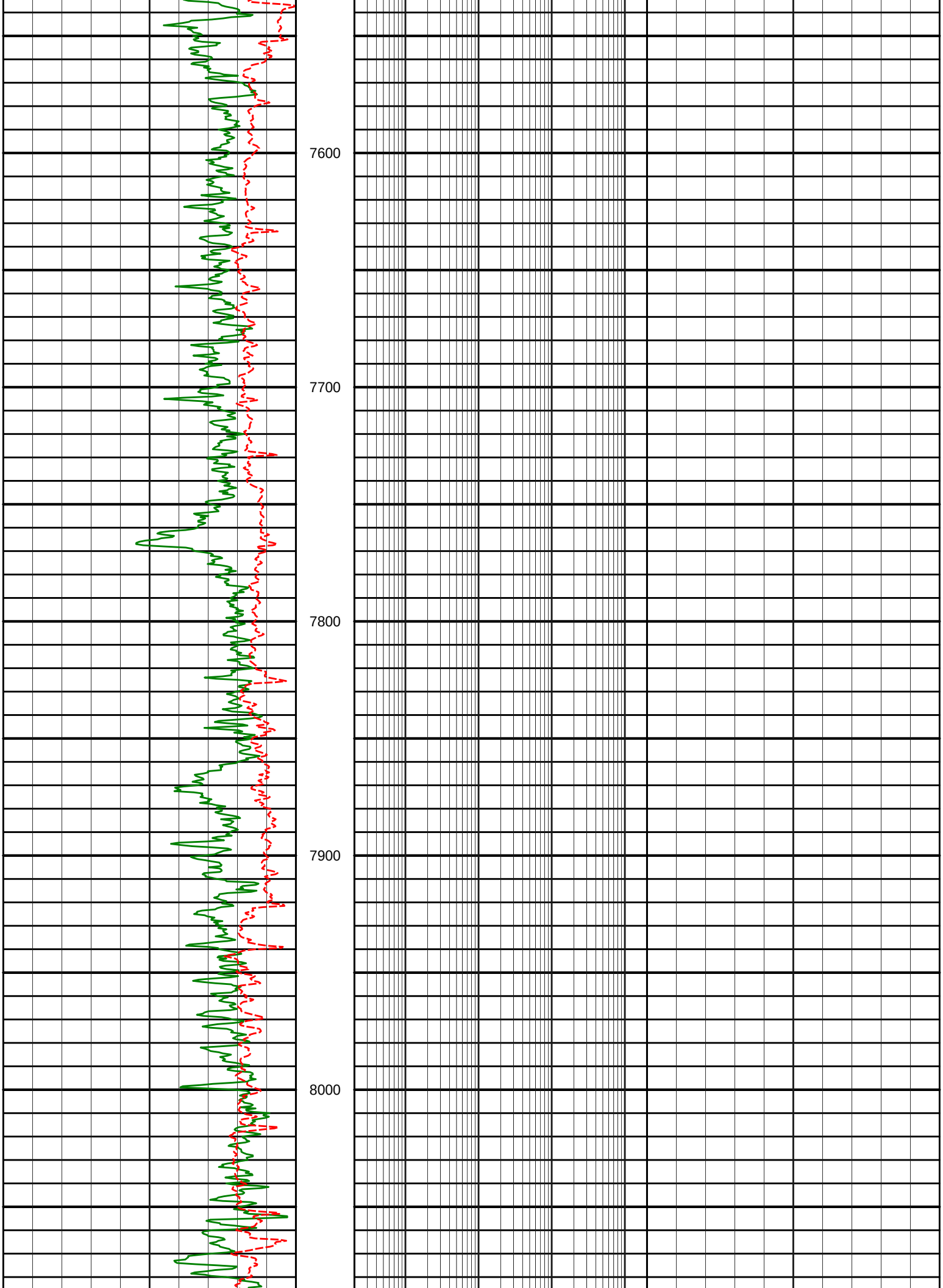
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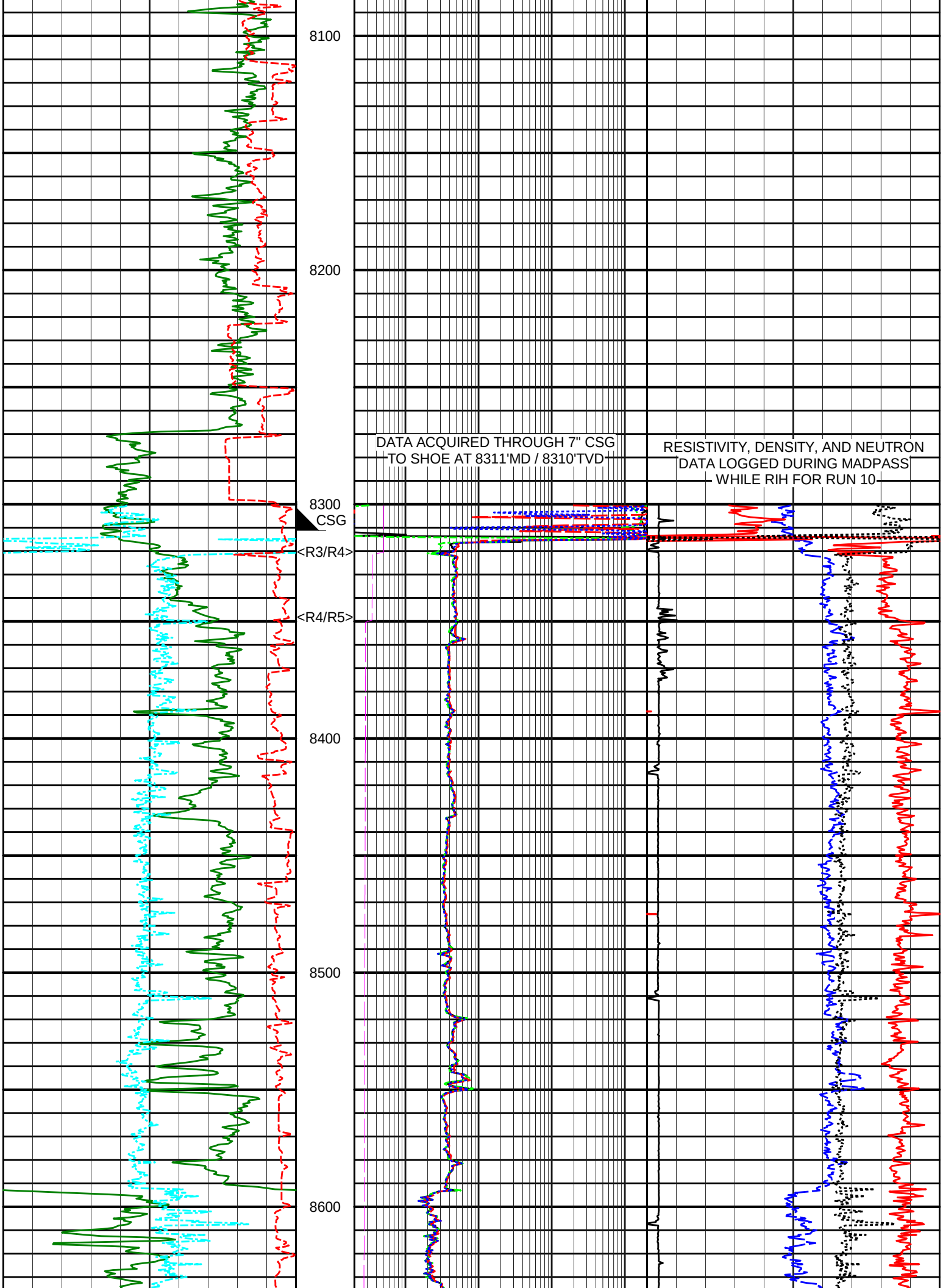
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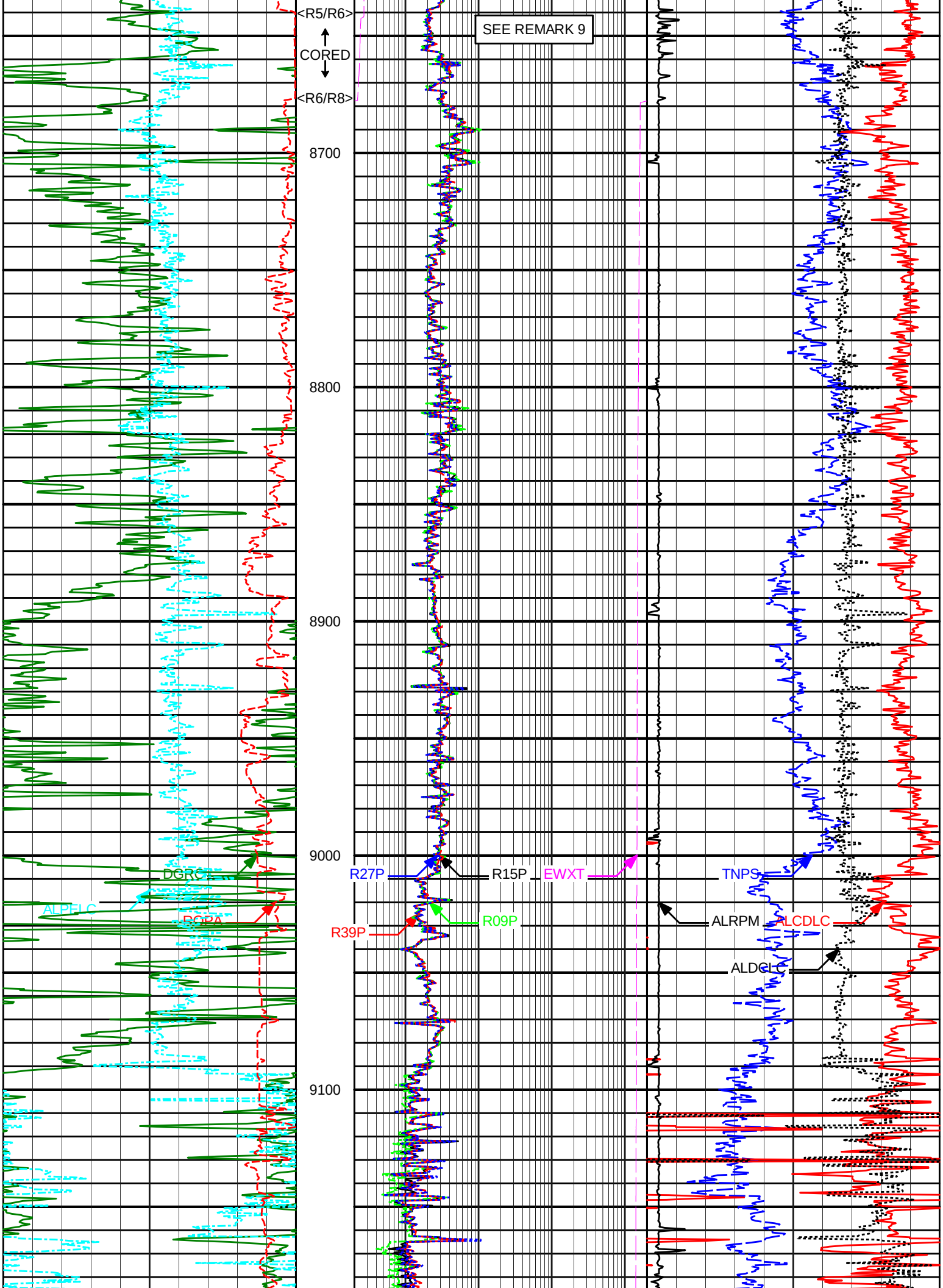
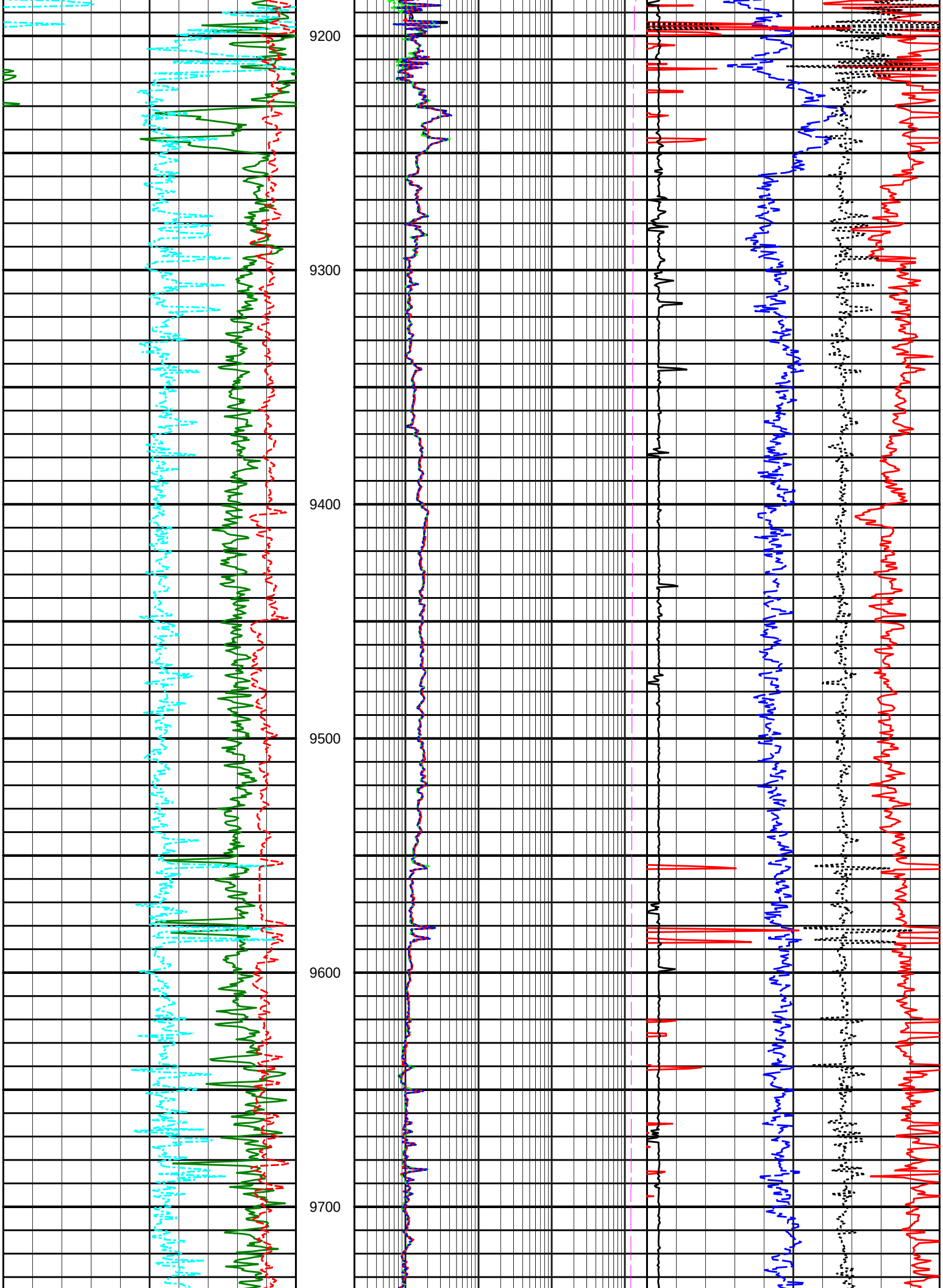
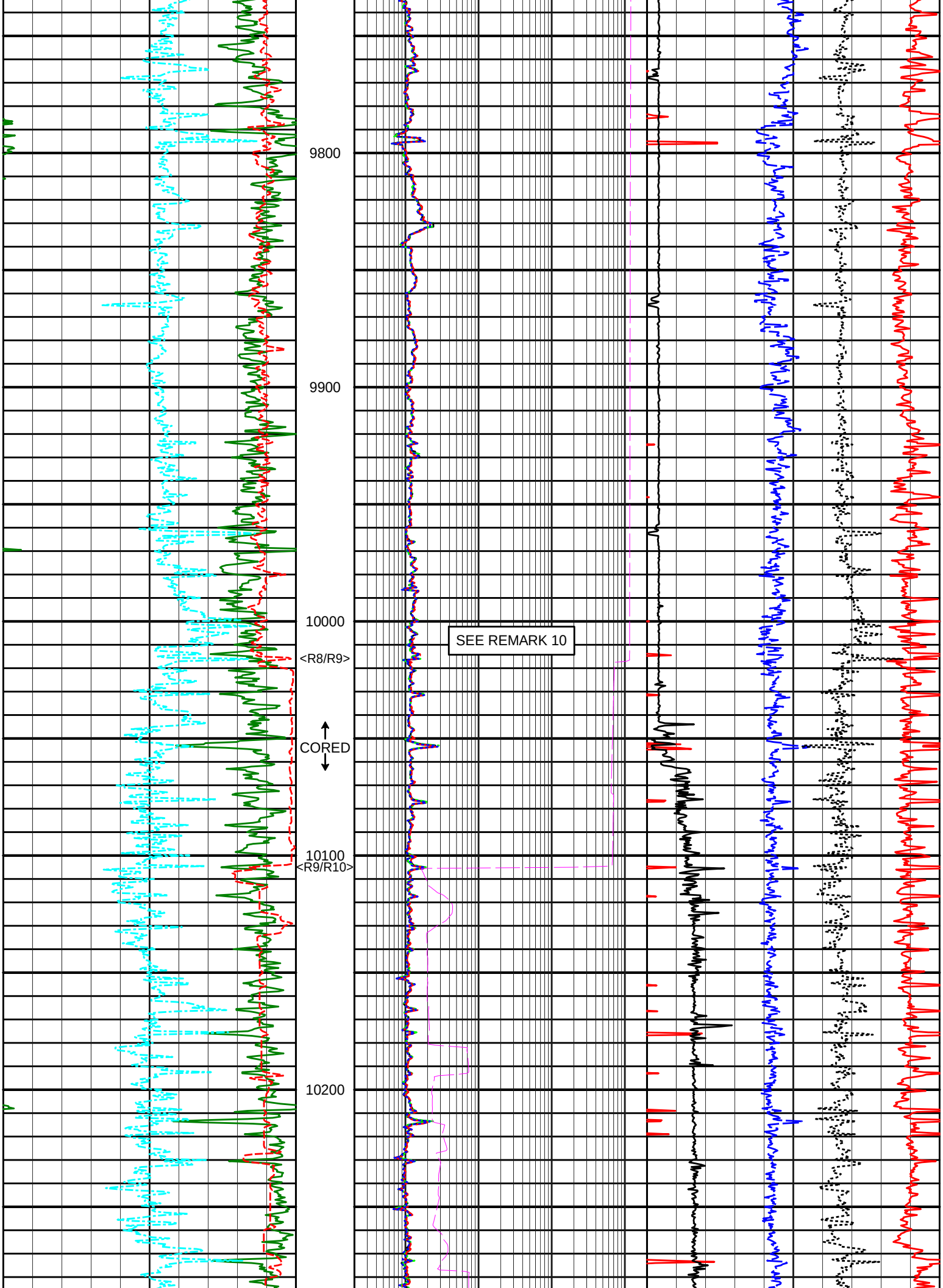
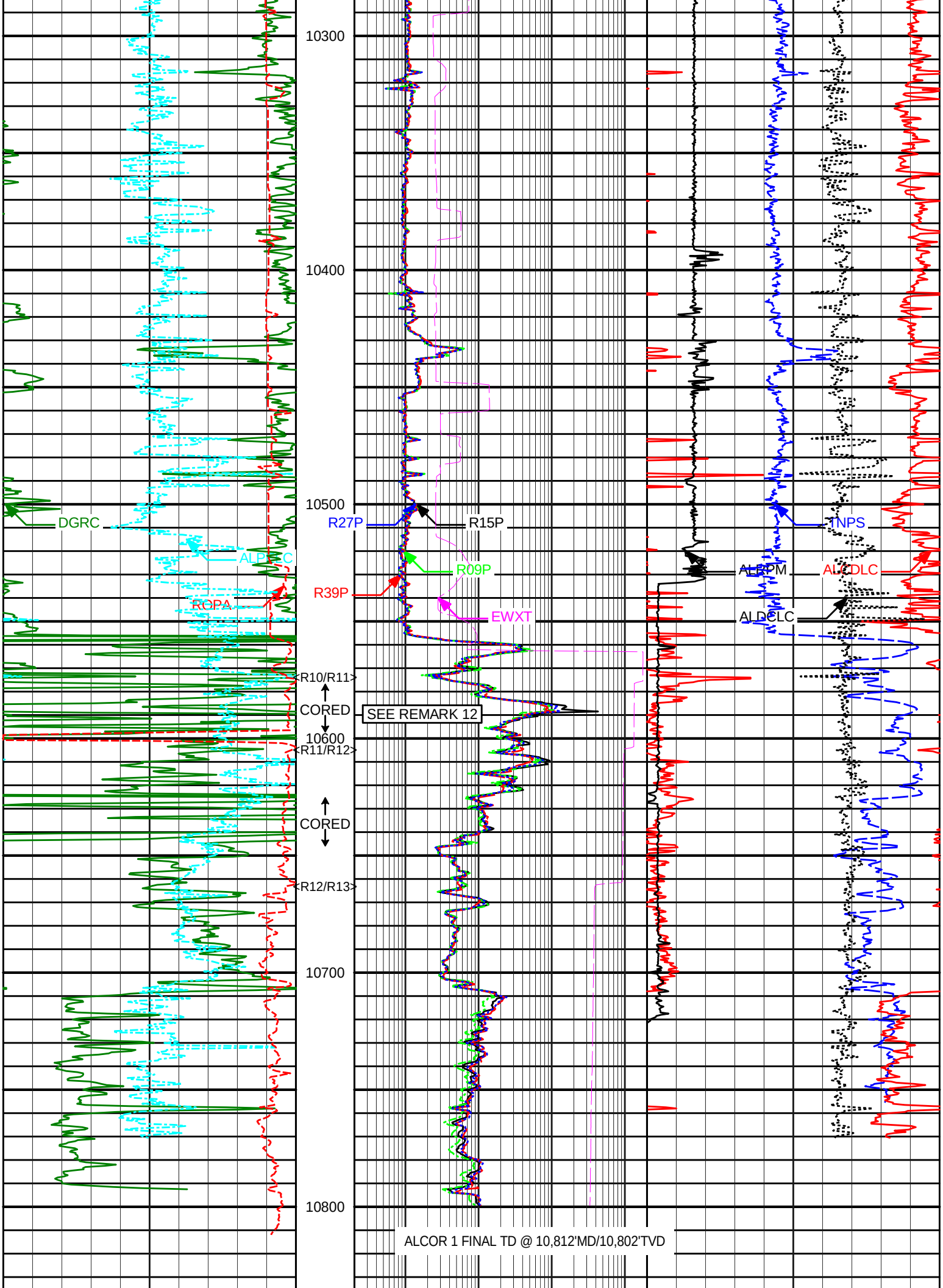
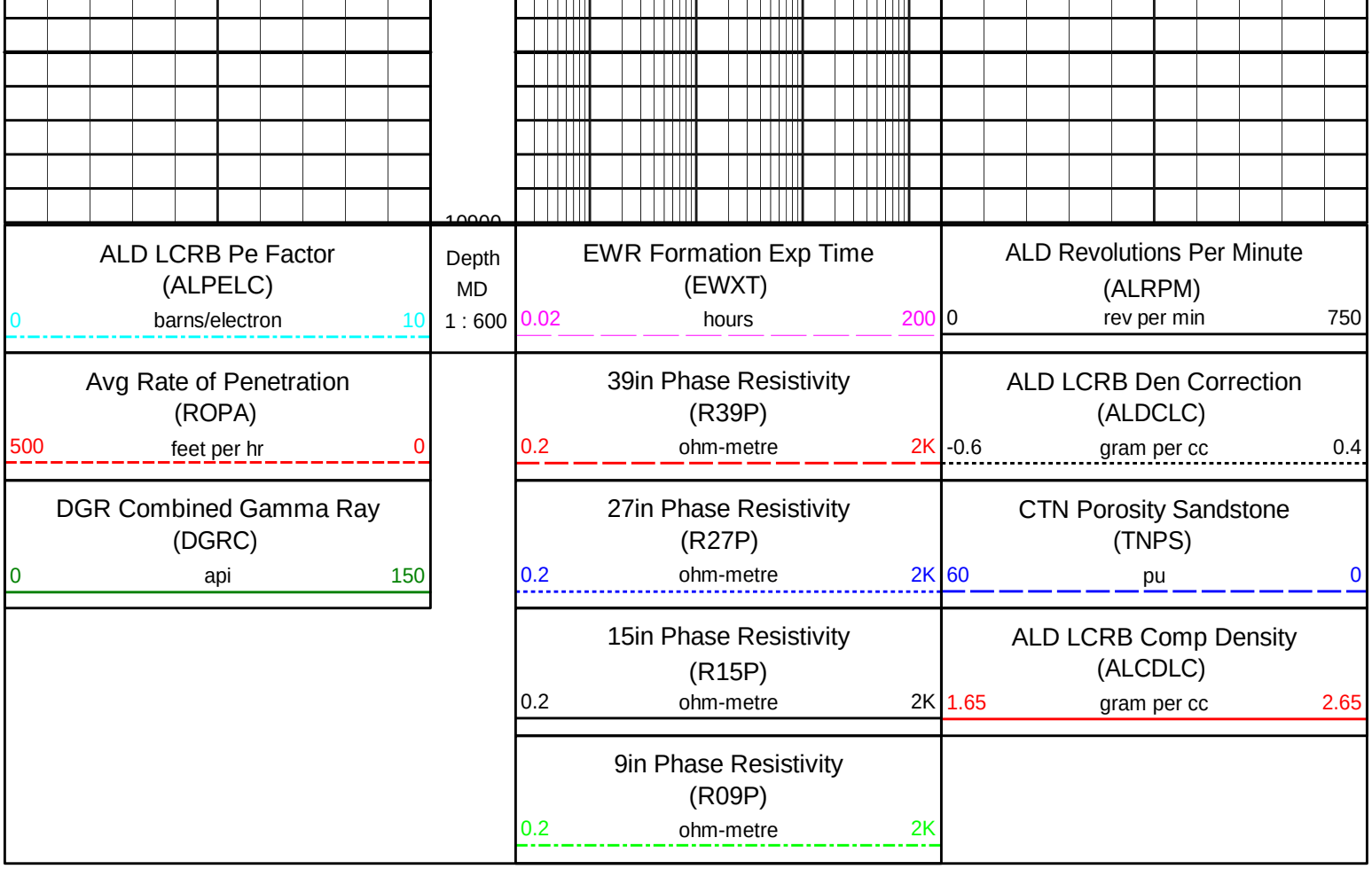
8200
DATA ACQUIRED THROUGH 7" CSG
TO SHOE AT 8311'MD / 8310'TVD
RESISTIVITY, DENSITY, AND NEUTRON
DATA LOGGED DURING MADPASS
WHILE RIH FOR RUN 10
8300
CSG
<R3/R4>
<R4/R5>
8400
8500
8600

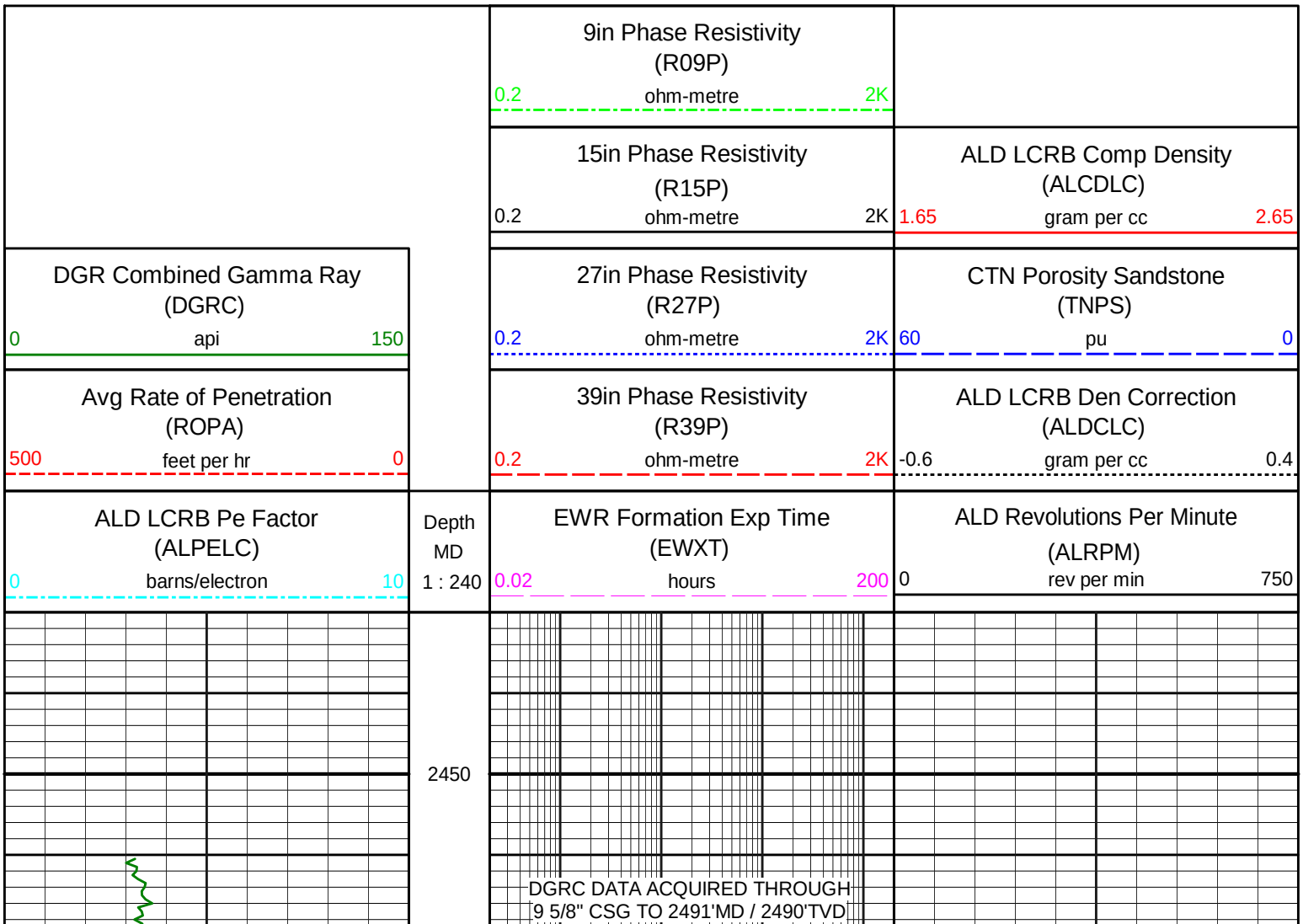

<R5/R6>
CORED
<R6/R8>
SEE REMARK 9
8700
8800
8900
9000
9100
DGRC
ALPELC
RGPA
R27P
R15P
EWXT
R39P
R09P
TNPS
ALRPM
ALCDLC
ALDCLC

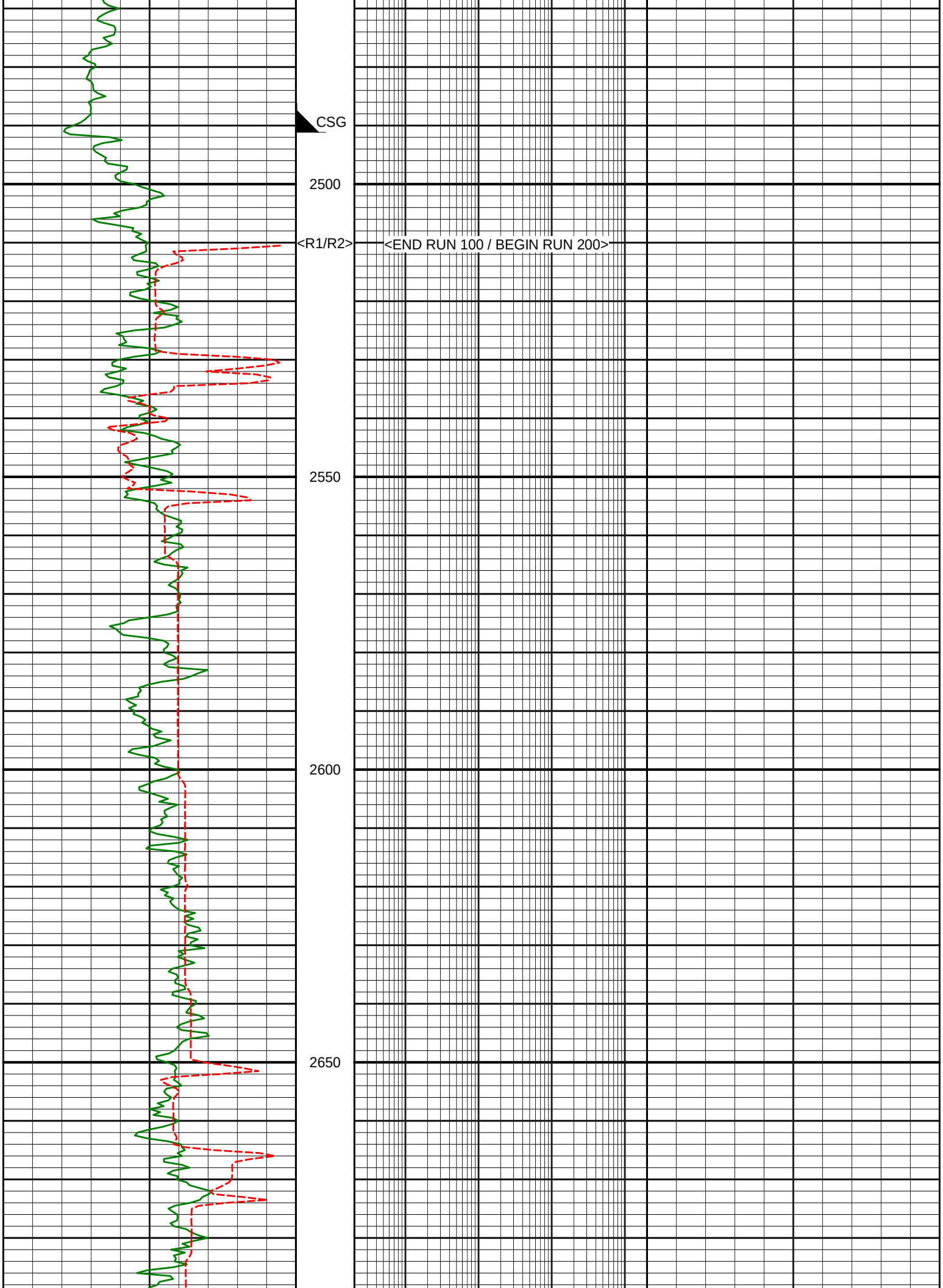

9200
9300
9400
9500
9600
9700

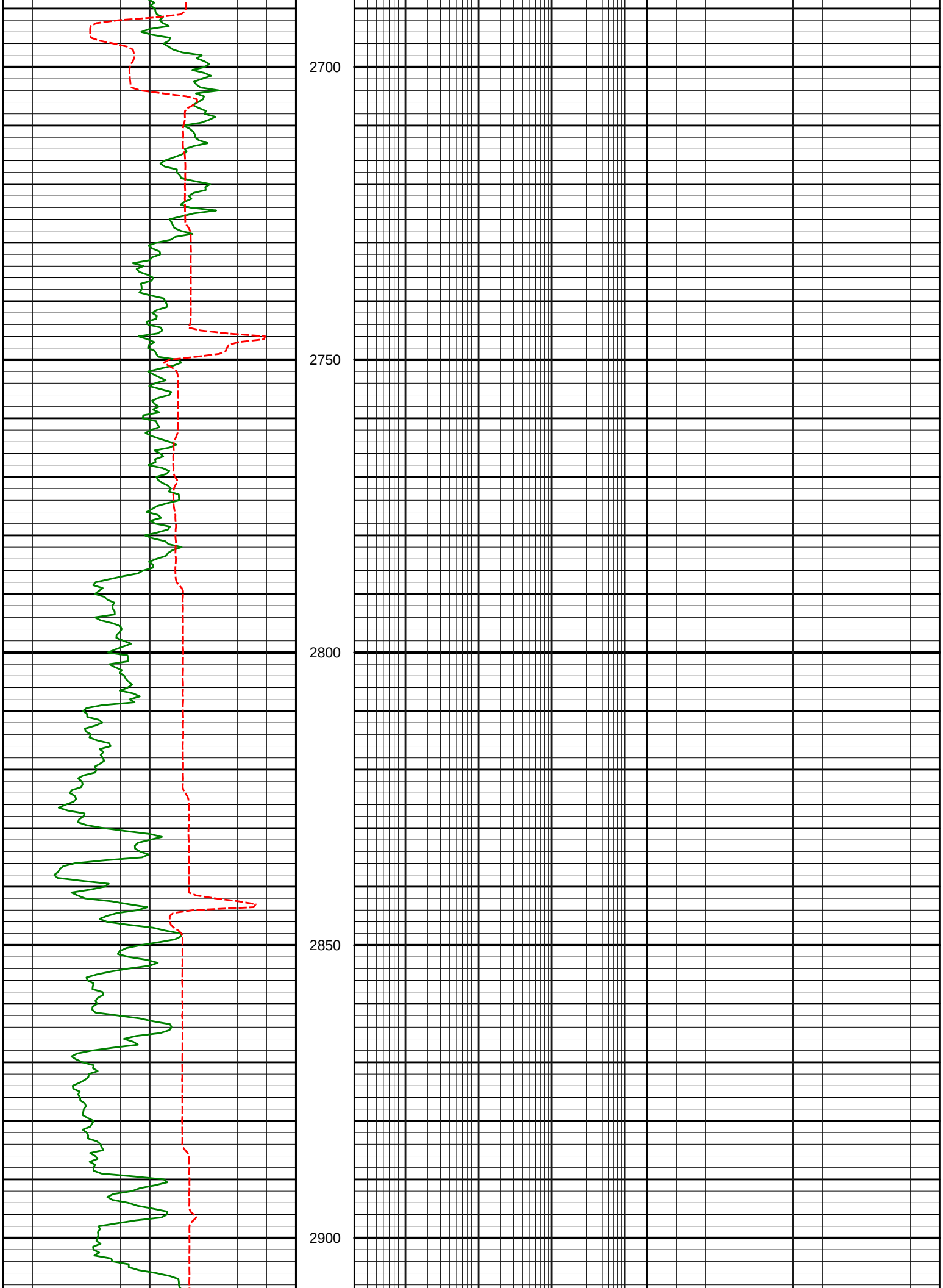

9800
9900
10000
SEE REMARK 10
<R8/R9>
CORED
10100
<R9/R10>
10200

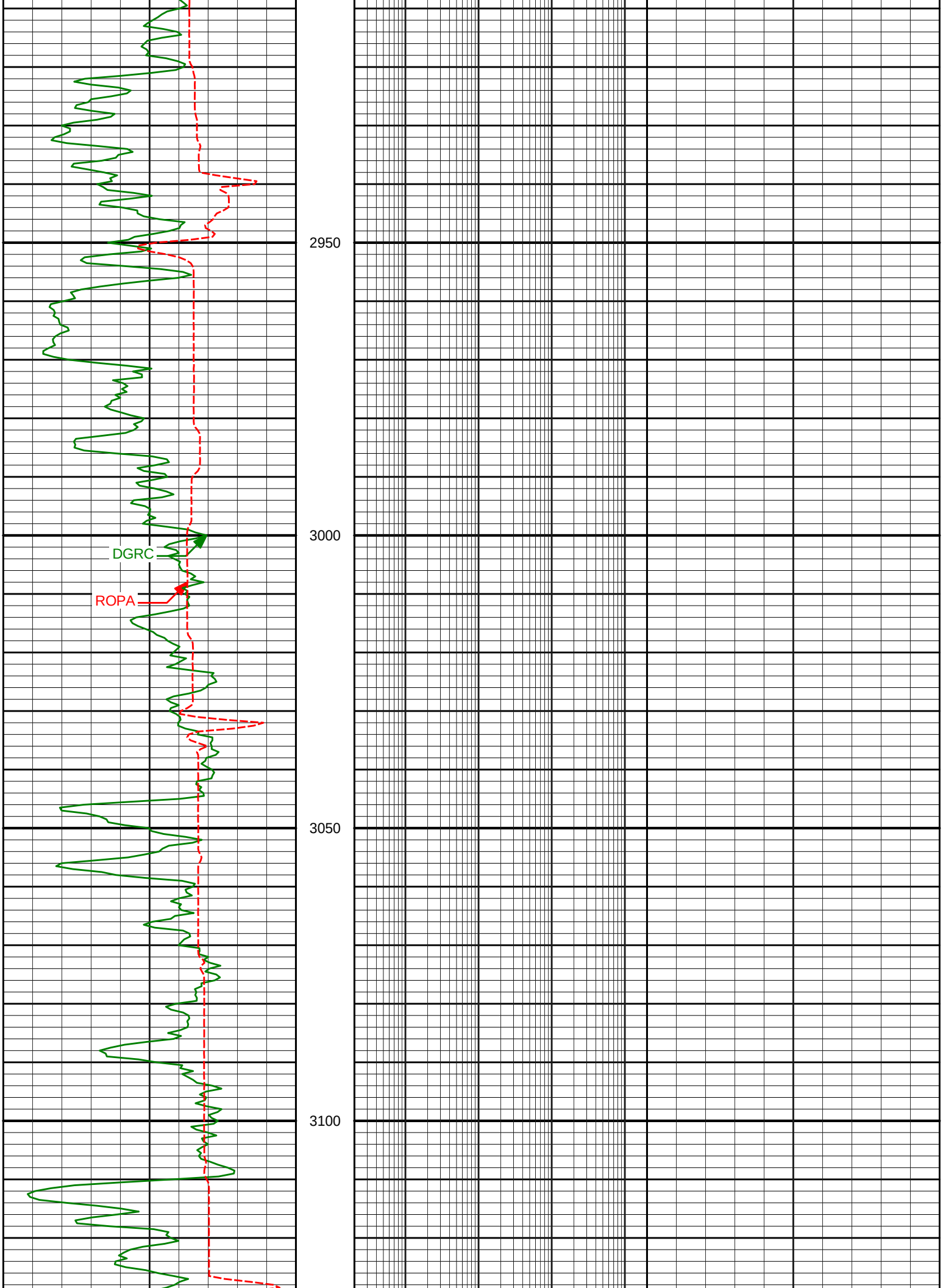

10300
10400
10500
10600
10700
10800
DGRC
ALPDLC
ROPA
R27P
R15P
R09P
R39P
EWXT
TNPS
ALPDM
ALPDLC
ALPDLC
<R10/R11>
CORED
SEE REMARK 12
<R11/R12>
CORED
<R12/R13>
ALCOR 1 FINAL TD @ 10,812'MD/10,802'TVD

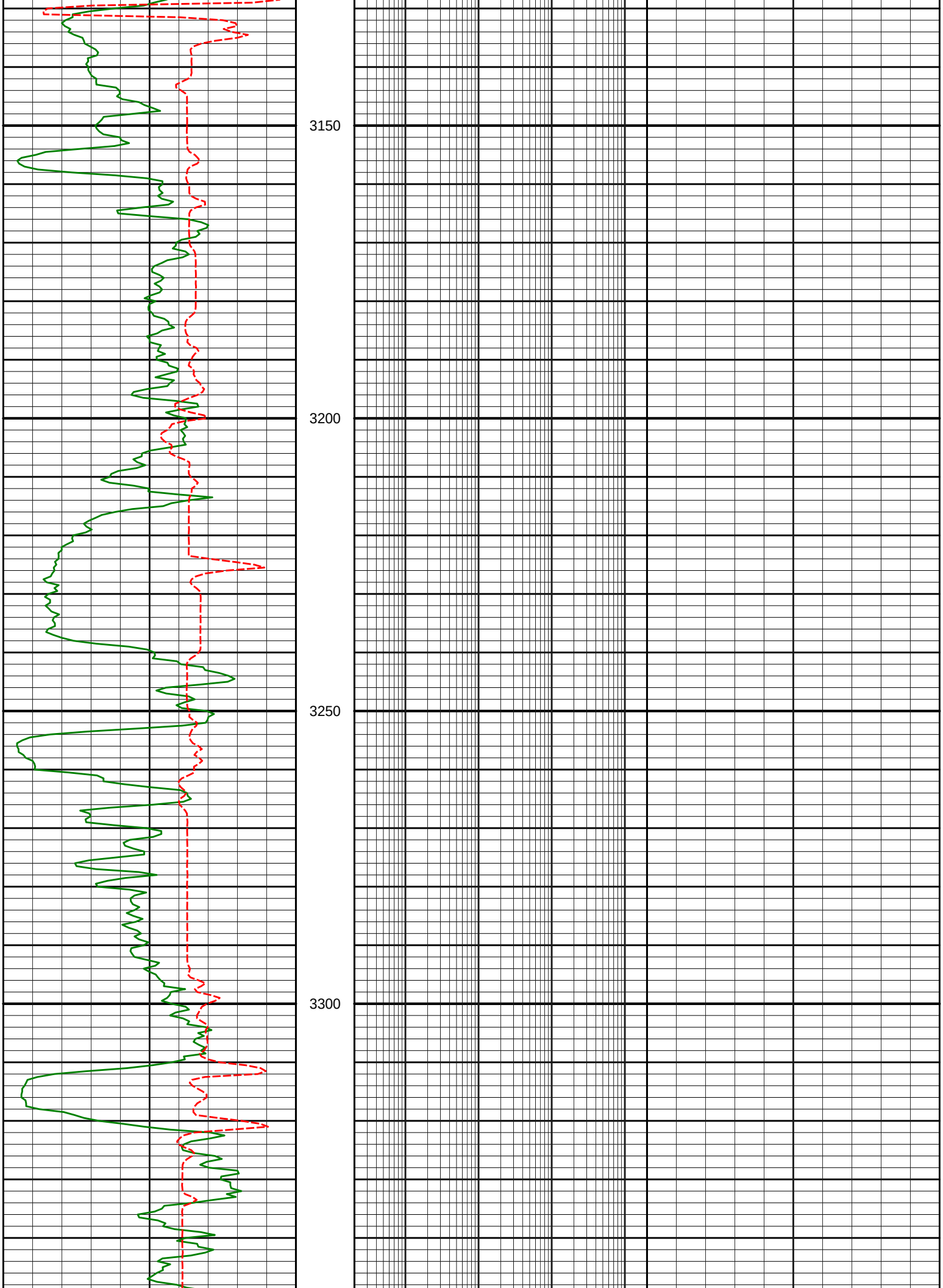

10000
ALD LCRB Pe Factor (ALPELC)
0 barns/electron 10
Depth MD
1 : 600
EWR Formation Exp Time (EWXT)
0.02 hours 200
ALD Revolutions Per Minute (ALRPM)
0 rev per min 750
Avg Rate of Penetration (ROPA)
500 feet per hr 0
39in Phase Resistivity (R39P)
0.2 ohm-metre 2K
ALD LCRB Den Correction (ALDCLC)
-0.6 gram per cc 0.4
DGR Combined Gamma Ray (DGRC)
0 api 150
27in Phase Resistivity (R27P)
0.2 ohm-metre 2K
CTN Porosity Sandstone (TNPS)
60 pu 0
15in Phase Resistivity (R15P)
0.2 ohm-metre 2K
ALD LCRB Comp Density (ALCDLC)
1.65 gram per cc 2.65
9in Phase Resistivity (R09P)
0.2 ohm-metre 2K

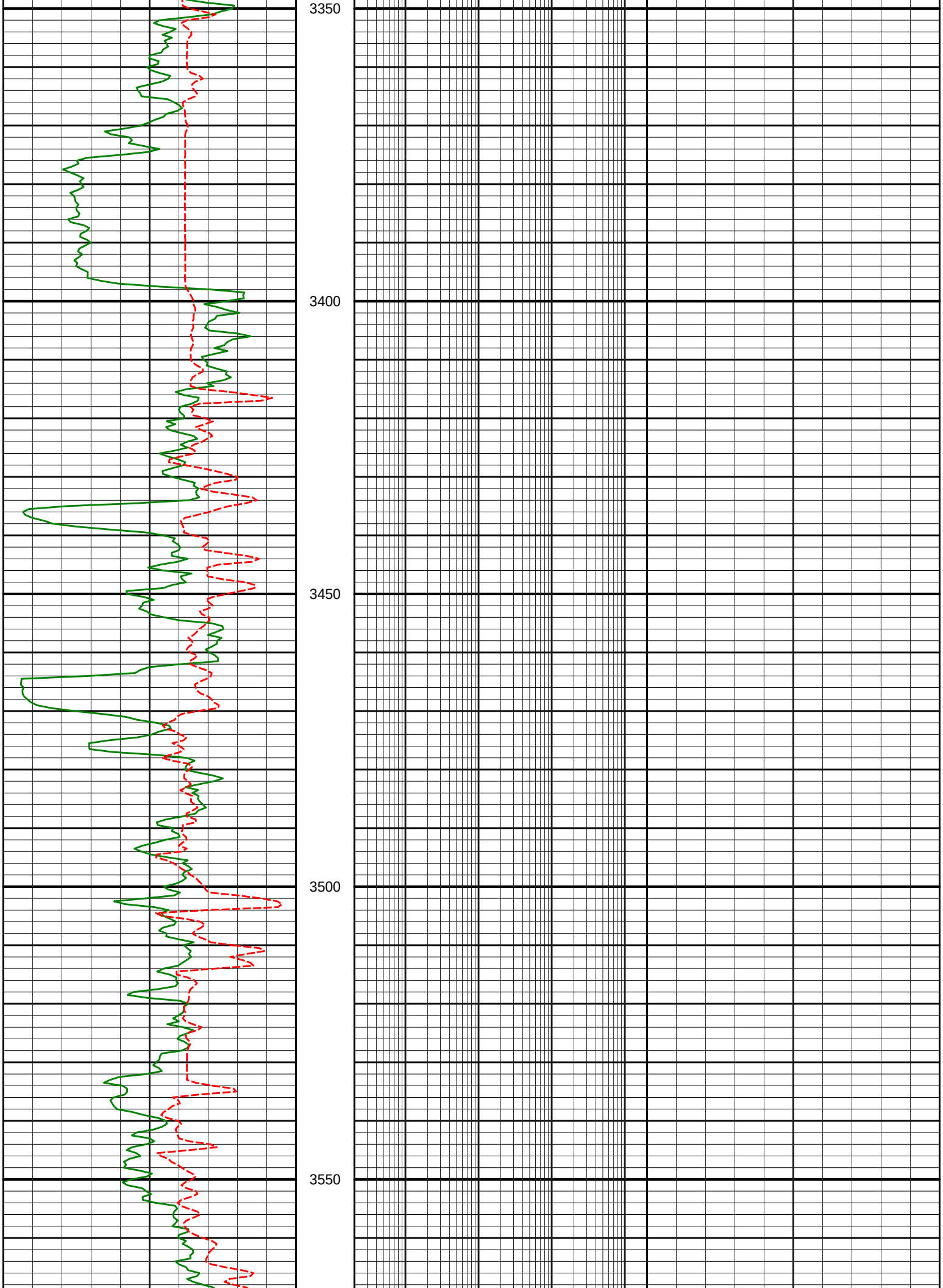

9in Phase Resistivity (R09P)
0.2 ohm-metre 2K
15in Phase Resistivity (R15P)
0.2 ohm-metre 2K
ALD LCRB Comp Density (ALCDLC)
1.65 gram per cc 2.65
DGR Combined Gamma Ray (DGRC)
0 api 150
27in Phase Resistivity (R27P)
0.2 ohm-metre 2K
CTN Porosity Sandstone (TNPS)
60 pu 0
Avg Rate of Penetration (ROPA)
500 feet per hr 0
39in Phase Resistivity (R39P)
0.2 ohm-metre 2K
ALD LCRB Den Correction (ALDCLC)
-0.6 gram per cc 0.4
ALD LCRB Pe Factor (ALPELC)
0 barns/electron 10
Depth MD
1 : 240
EWR Formation Exp Time (EWXT)
0.02 hours 200
ALD Revolutions Per Minute (ALRPM)
0 rev per min 750
2450
DGRC DATA ACQUIRED THROUGH
9 5/8" CSG TO 2491'MD / 2490'TVD

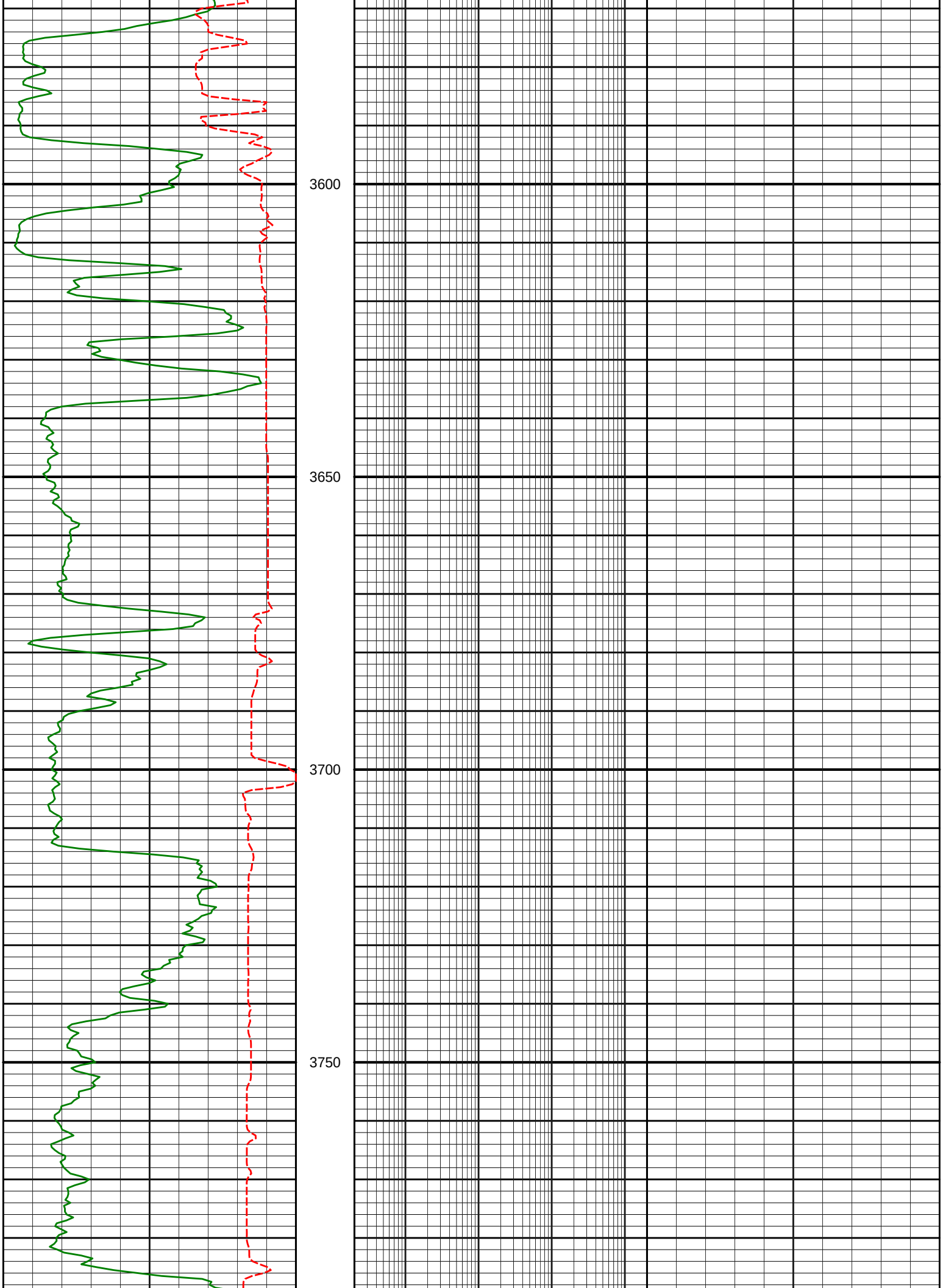

CSG
2500
<R1/R2>
<END RUN 100 / BEGIN RUN 200>
2550
2600
2650

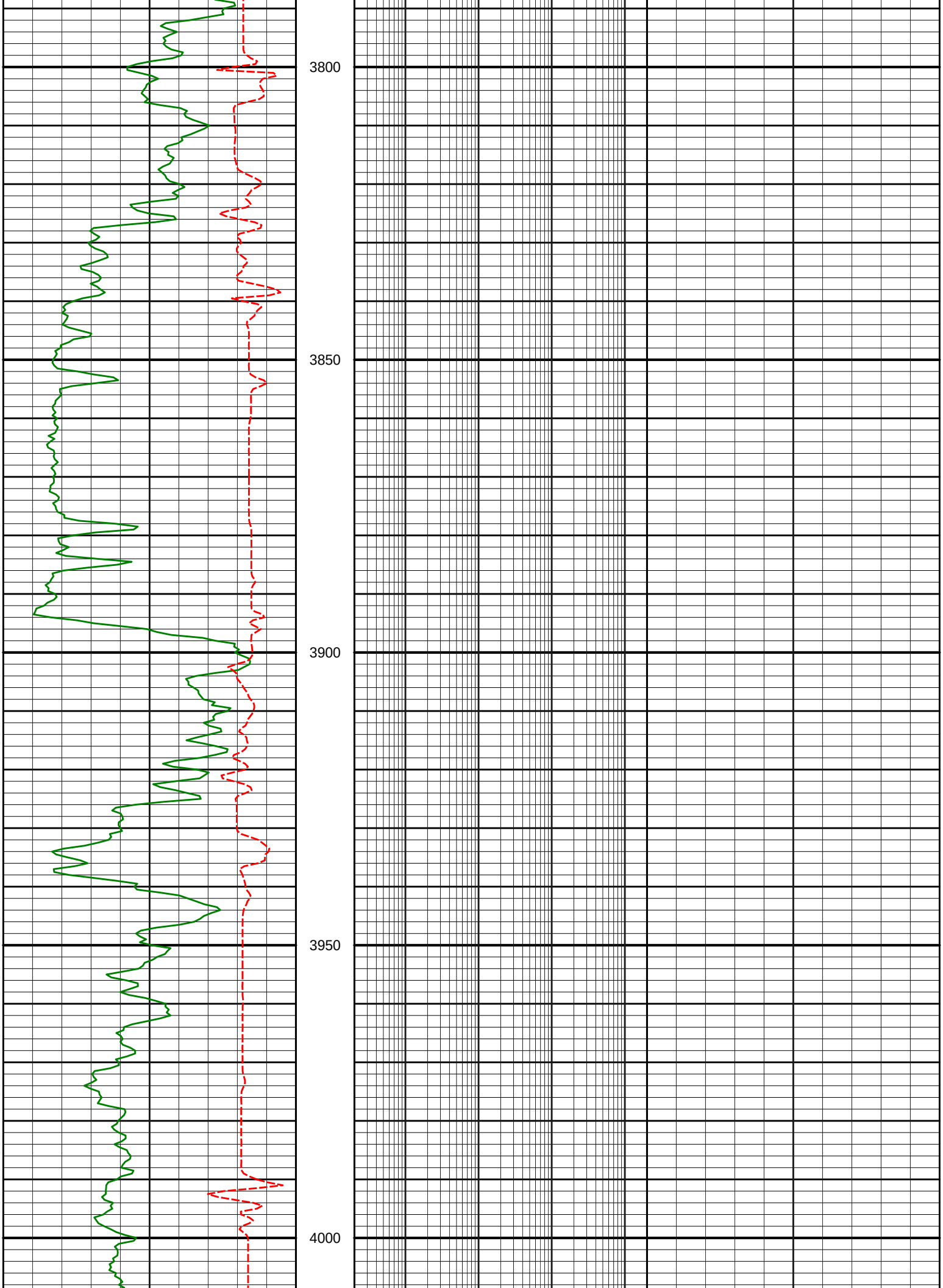

2700
2750
2800
2850
2900

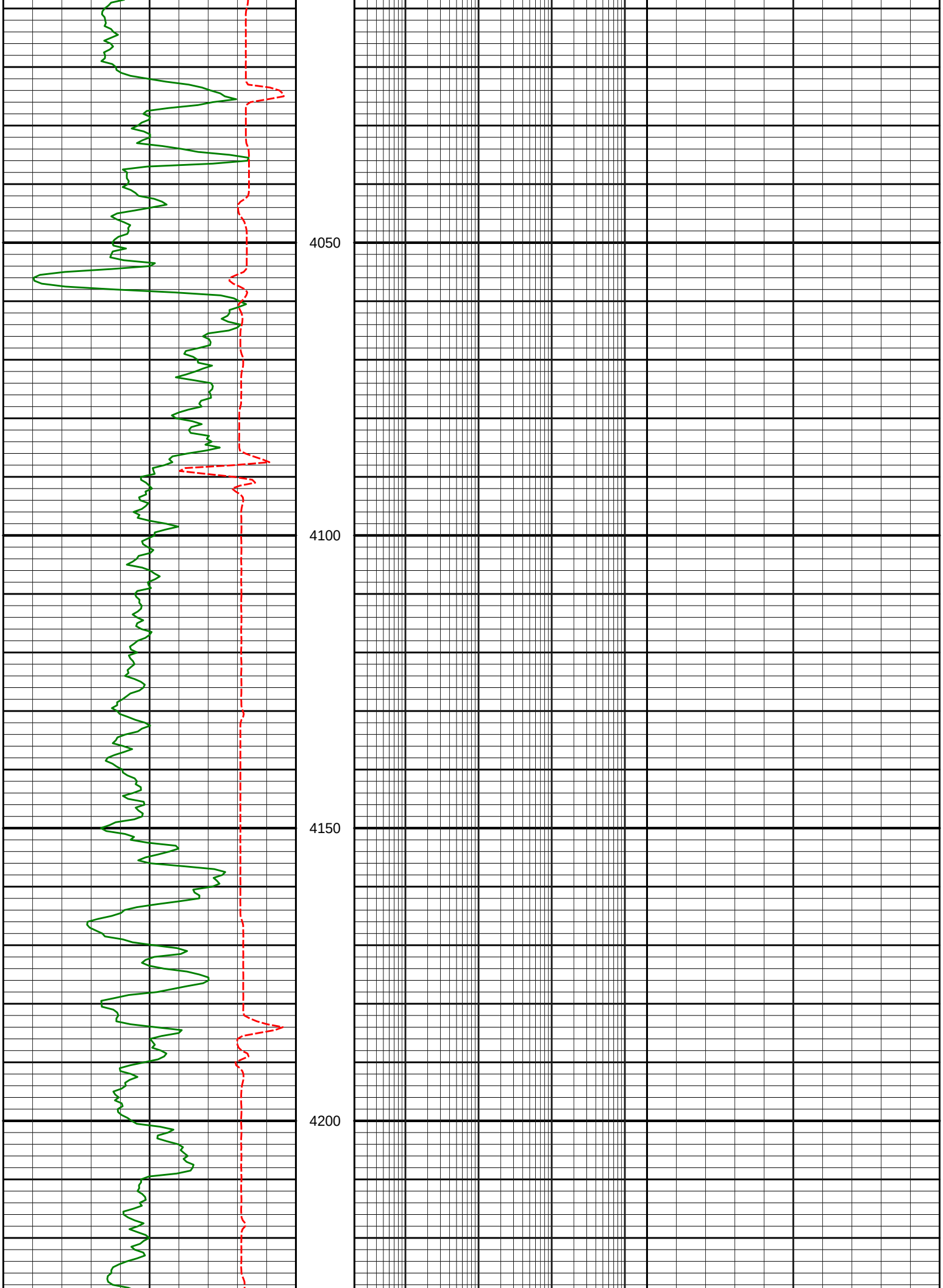

2950
3000
DGRC
ROPA
3050
3100

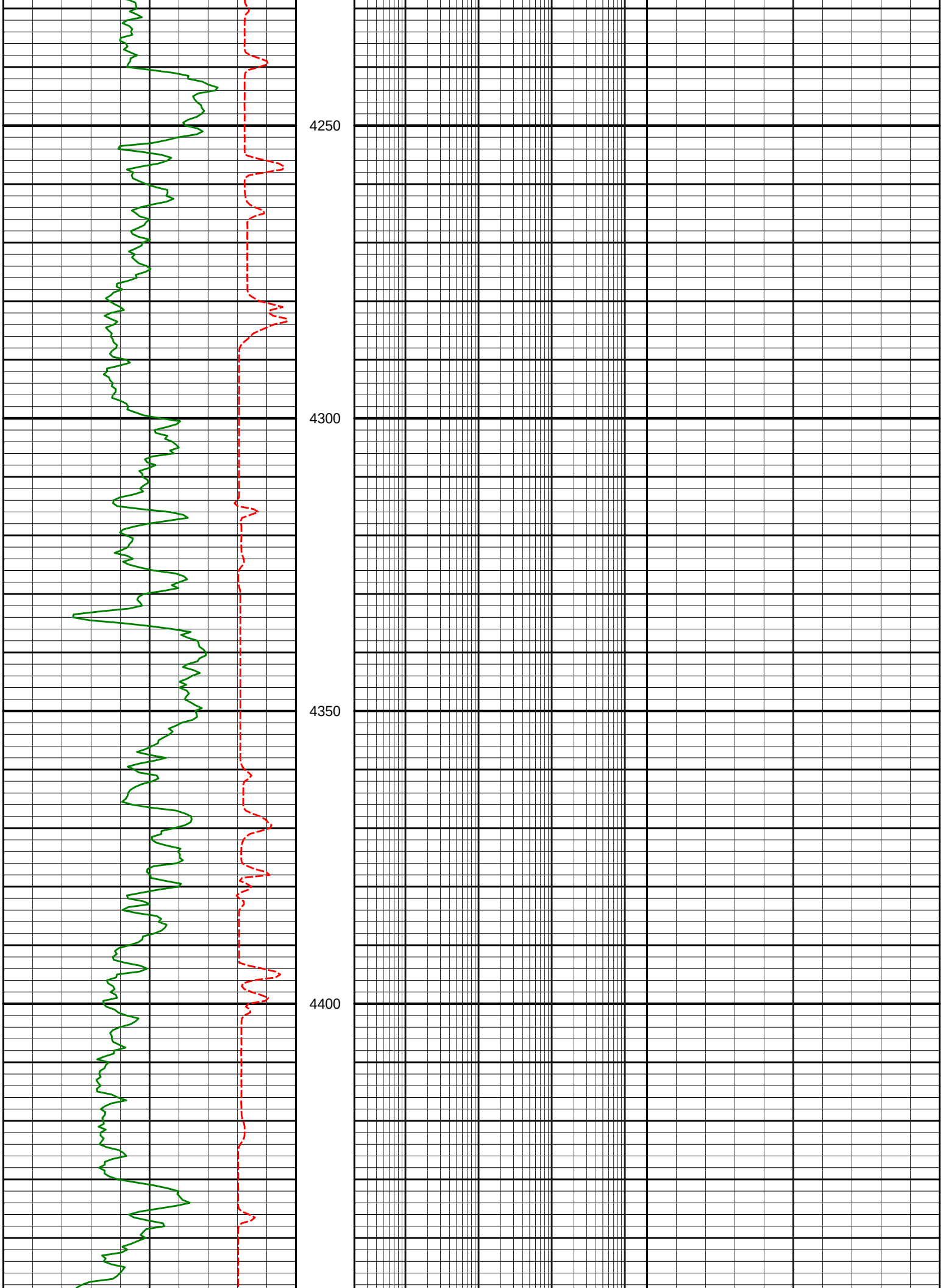

3150
3200
3250
3300

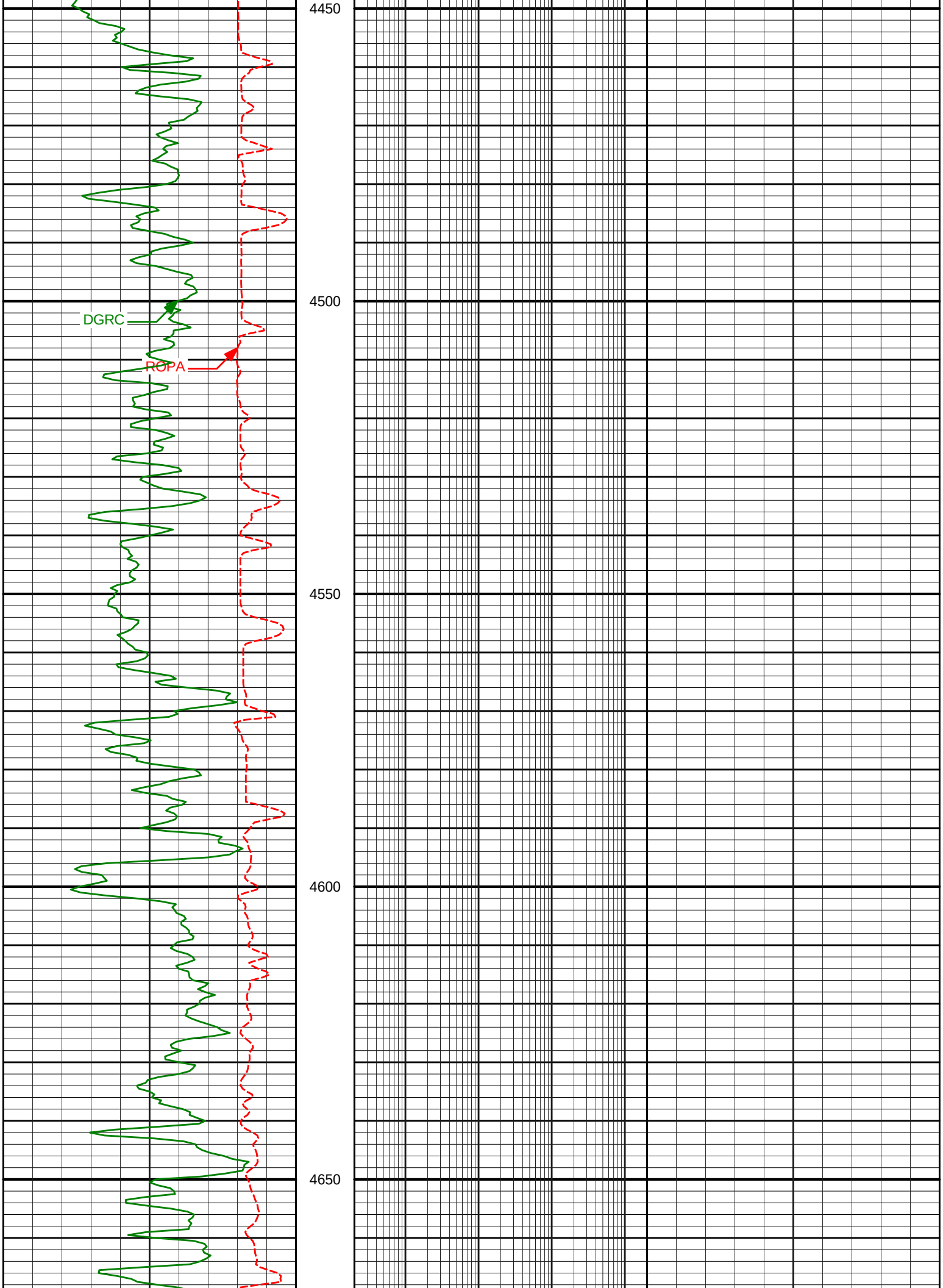

3350
3400
3450
3500
3550

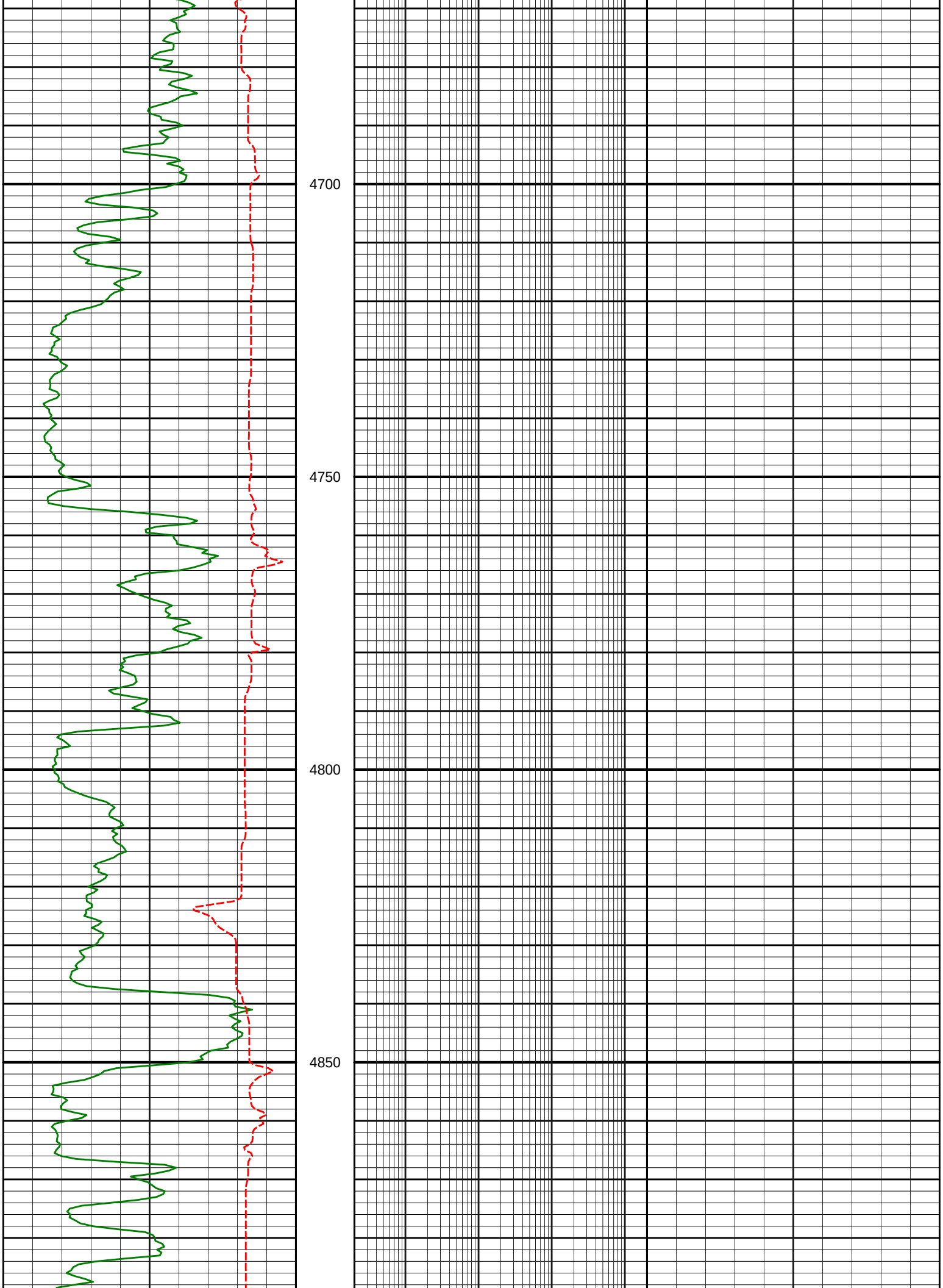

3600
3650
3700
3750


3800
3850
3900
3950
4000


4050
4100
4150
4200


4250
4300
4350
4400


4450
4500
4550
4600
4650
DGRC
ROPA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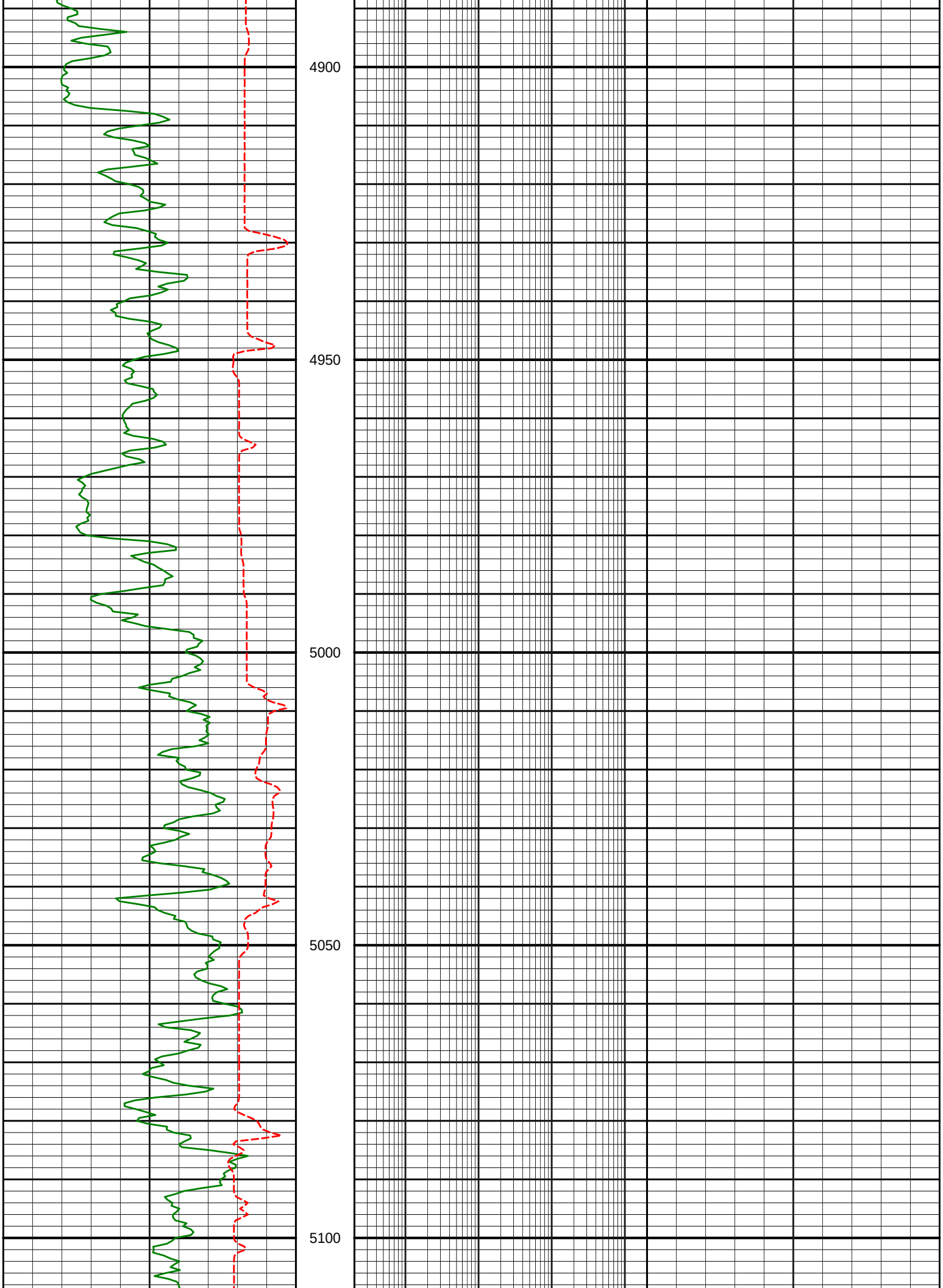
4750
4800
4850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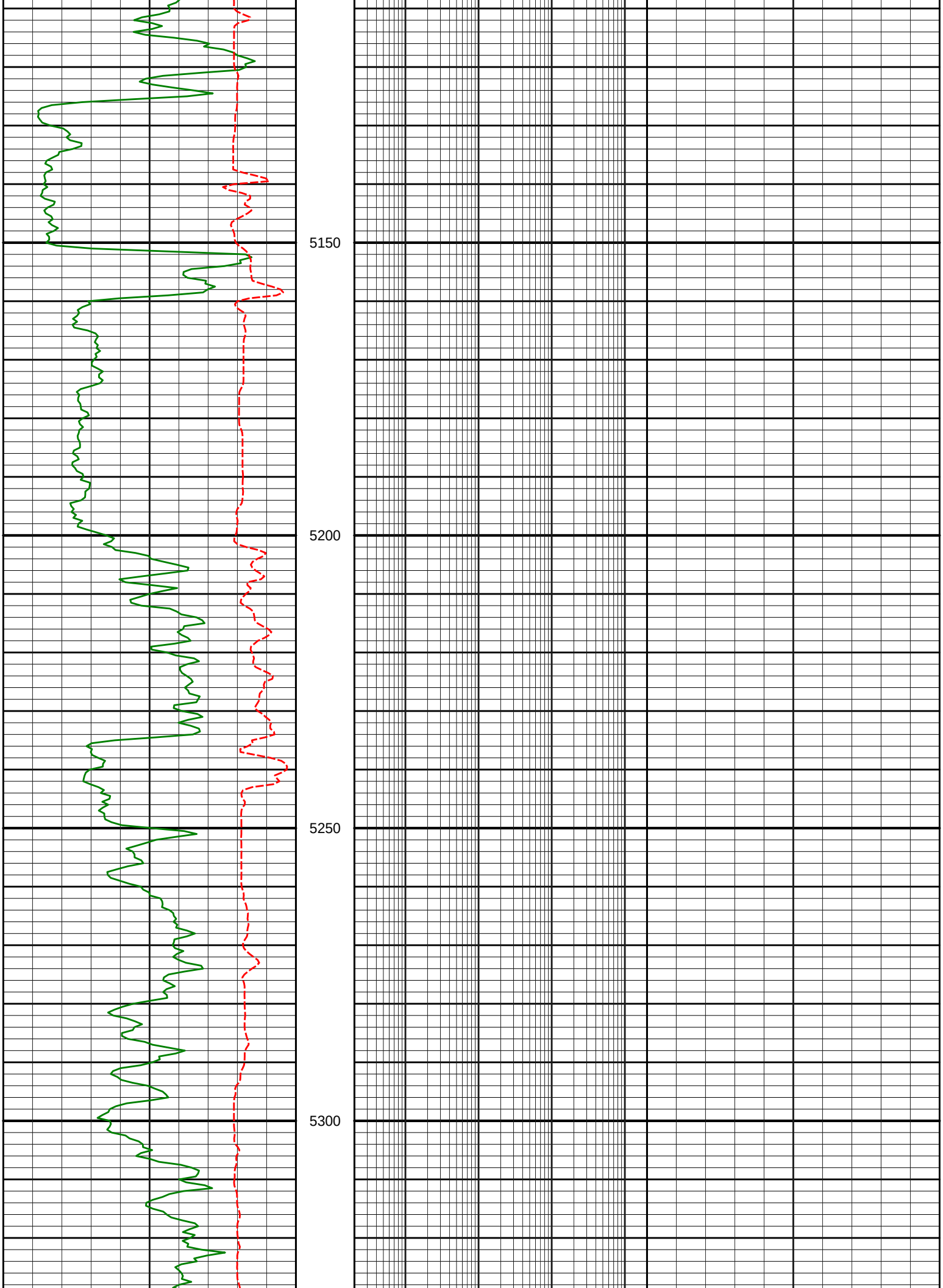
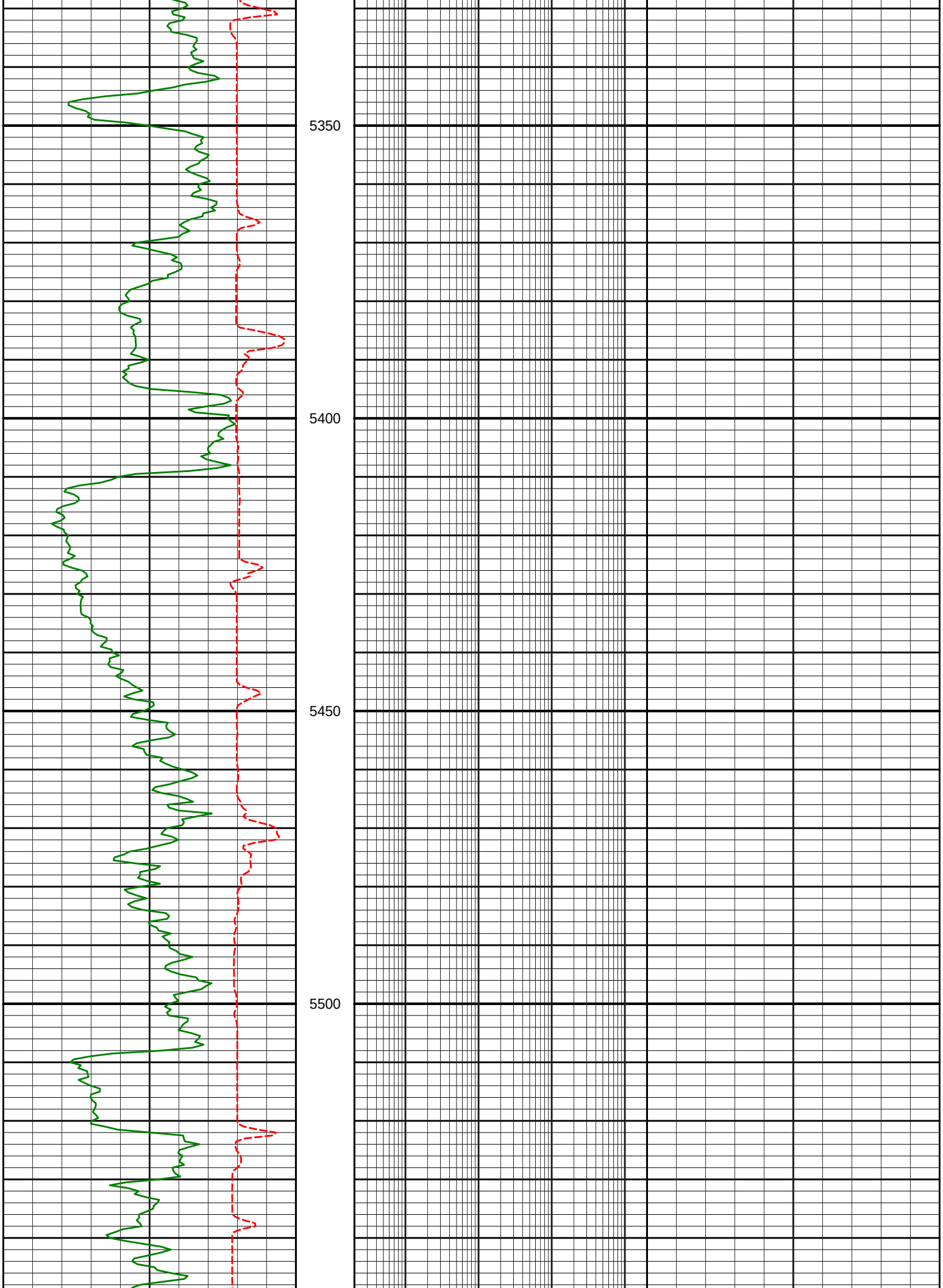
4950
5000
5050
5100


5150
5200
5250
5300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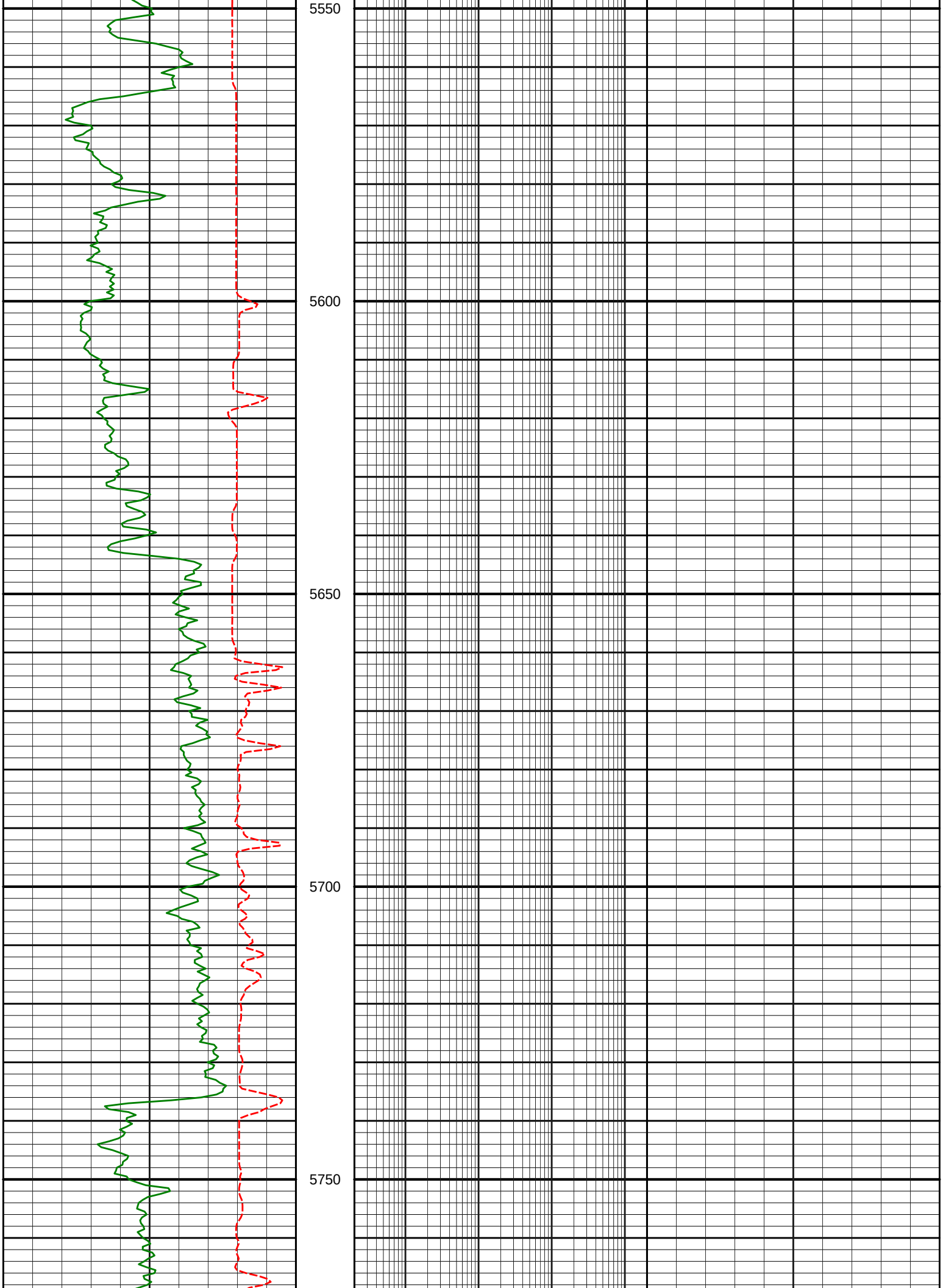
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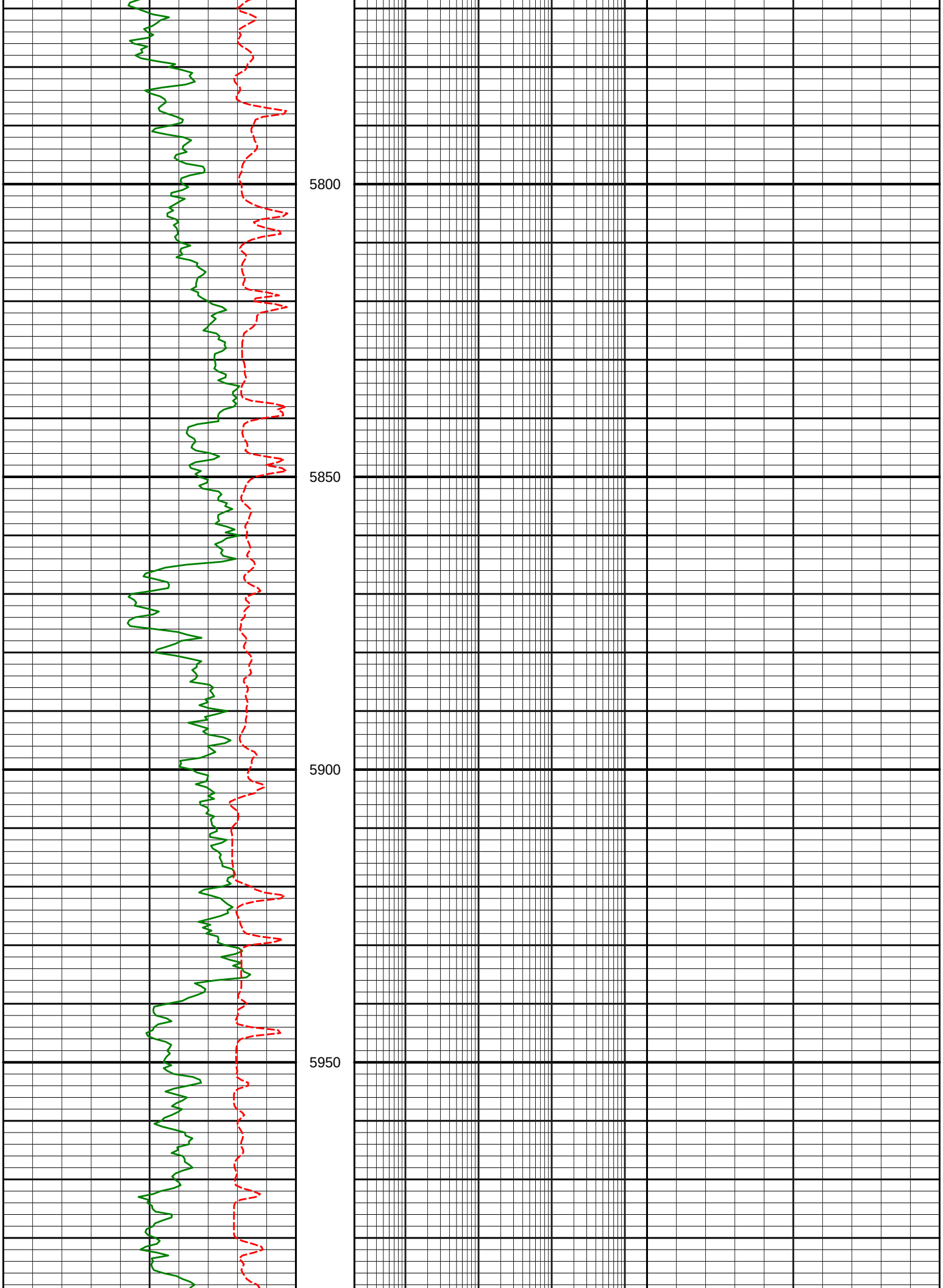
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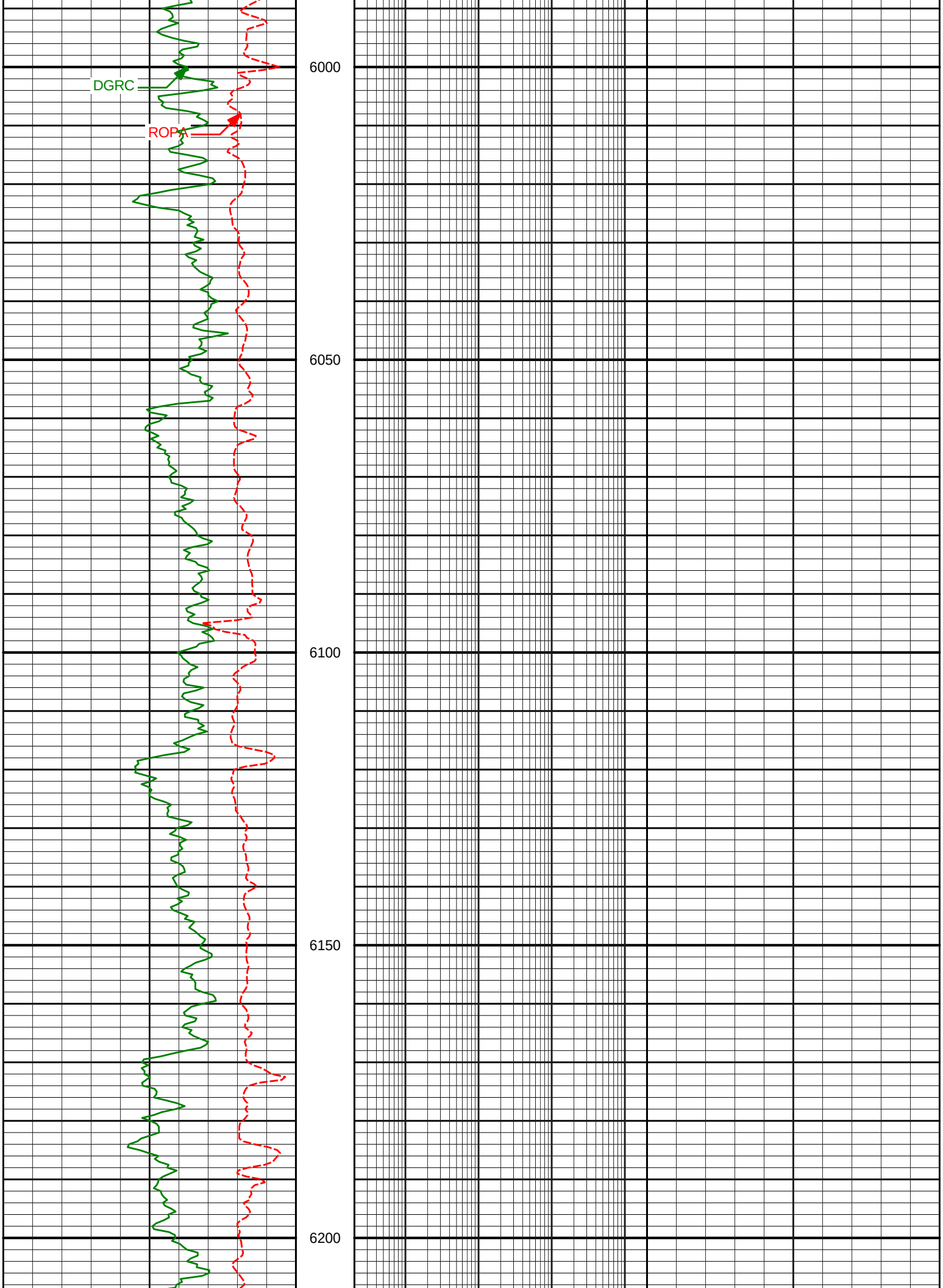
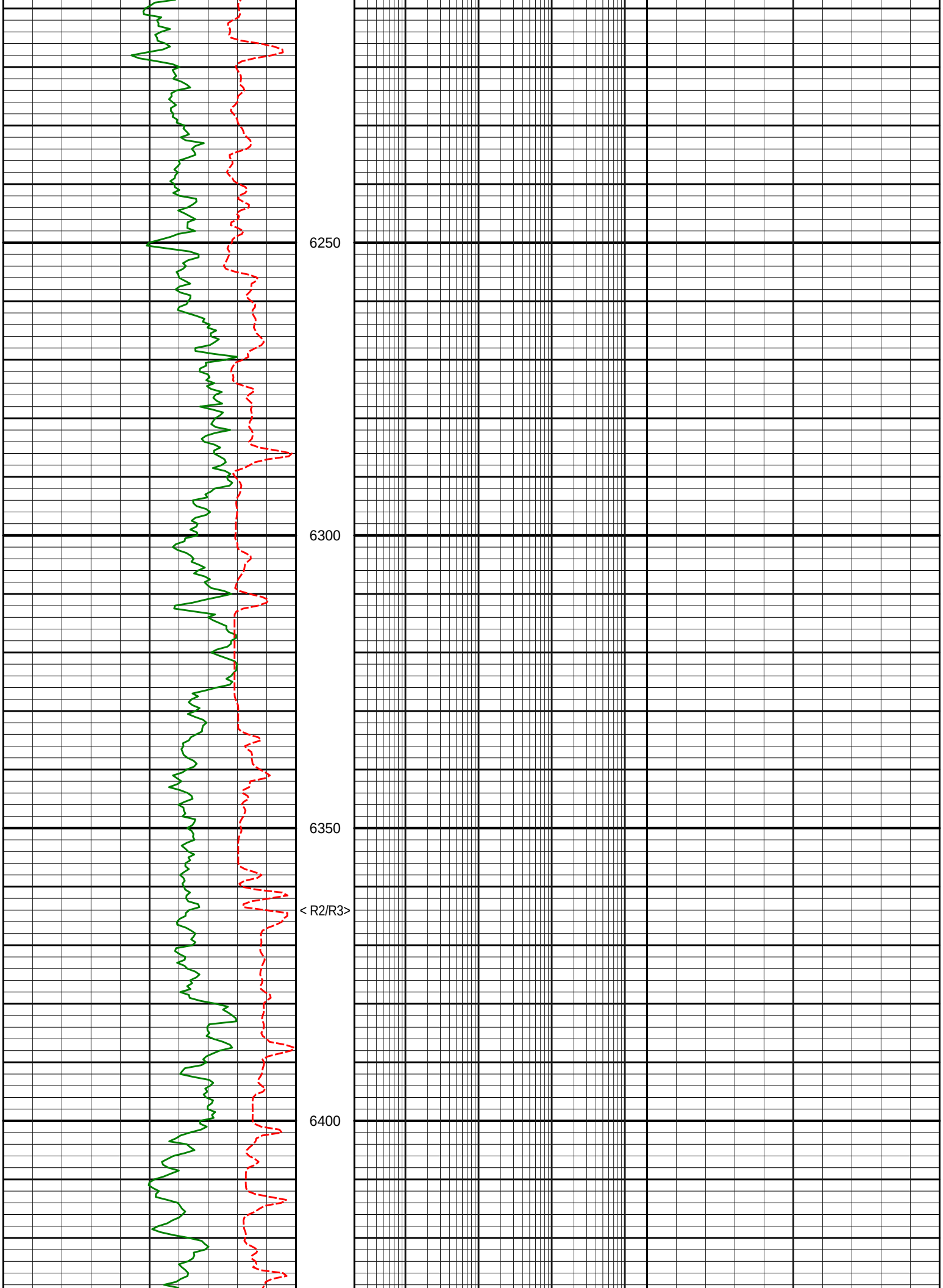
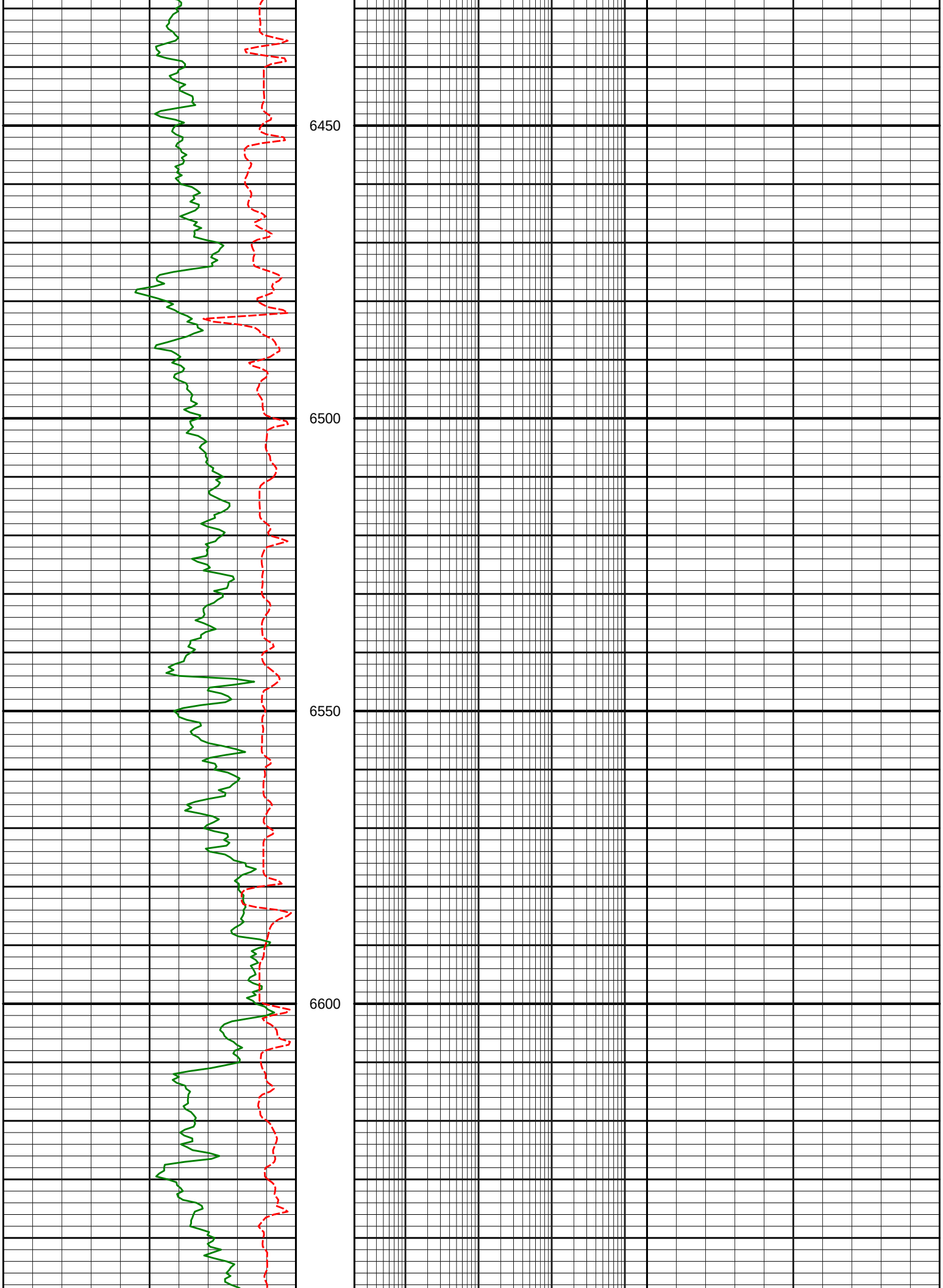
5850
5900
5950


DGRC
ROPA
6000
6050
6100
6150
6200


6250
6300
6350
< R2/R3>
6400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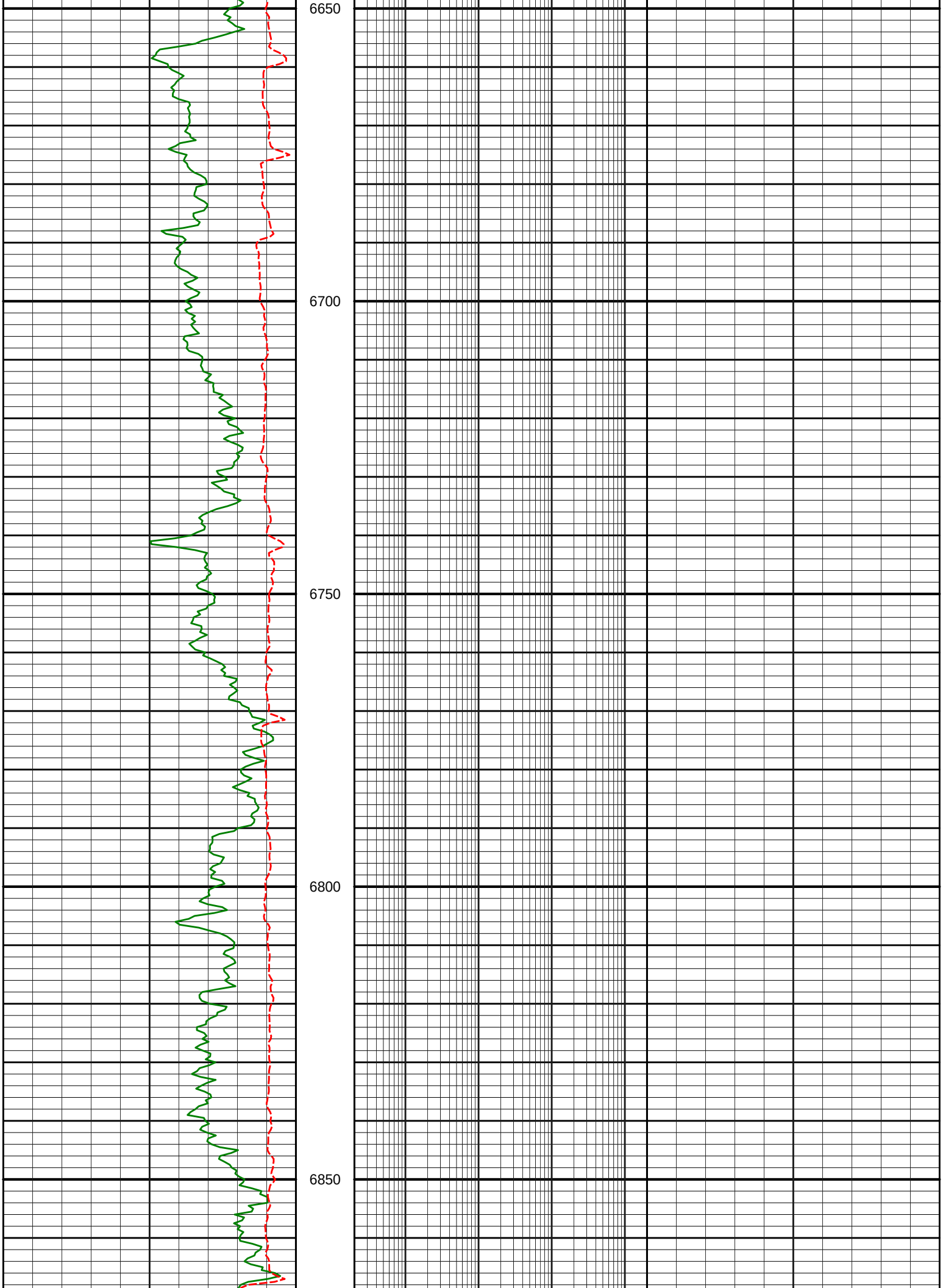
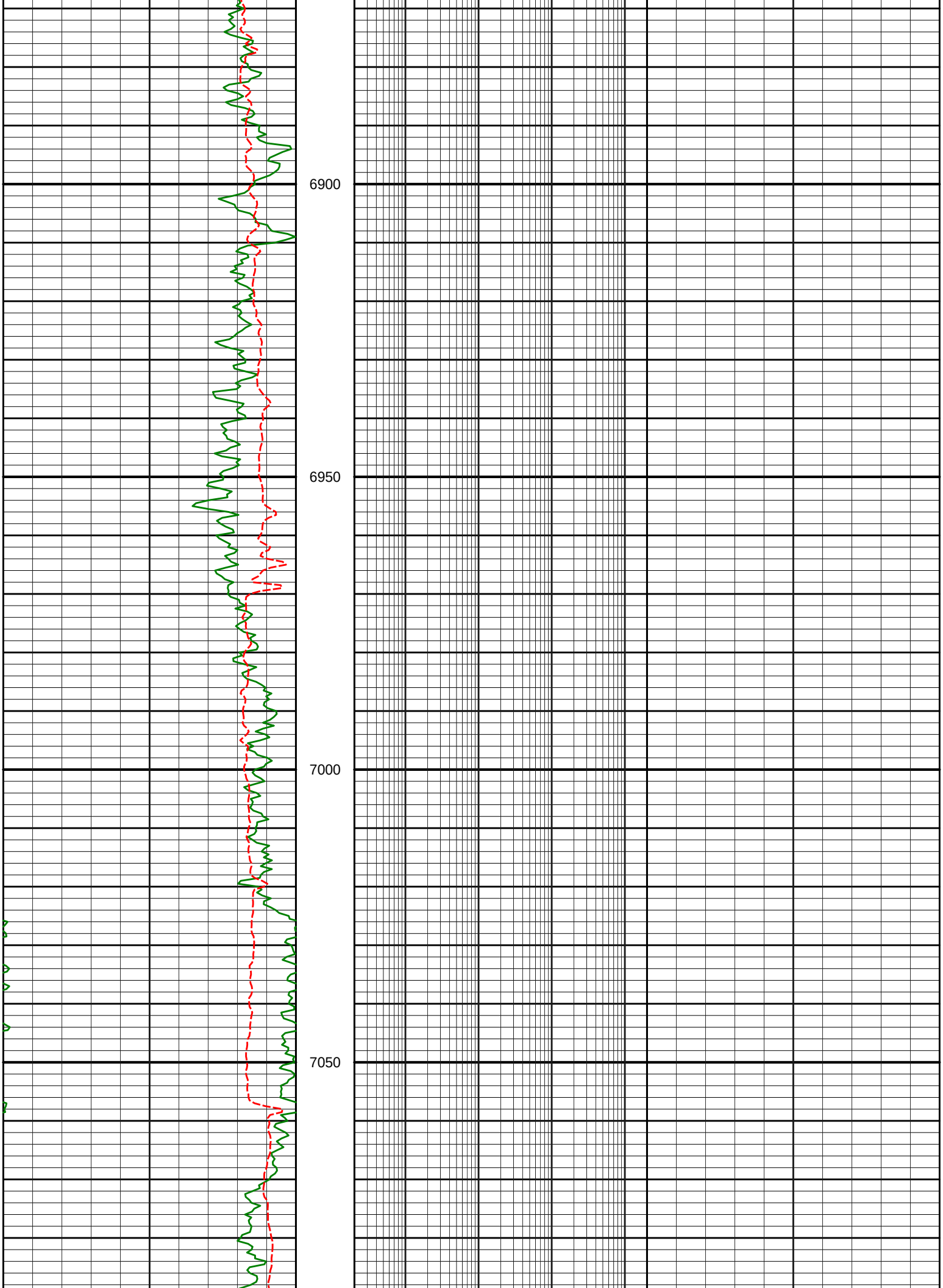
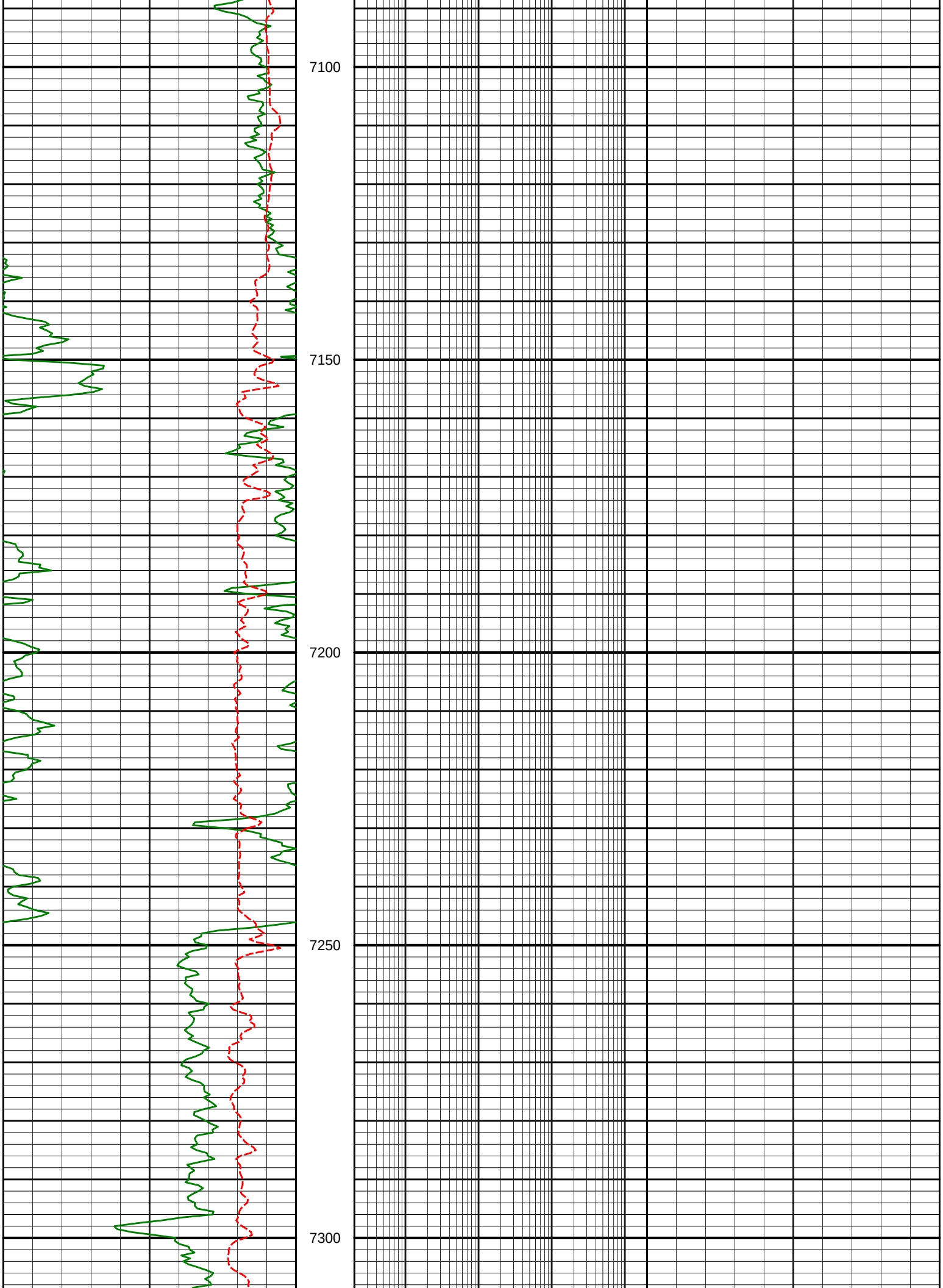
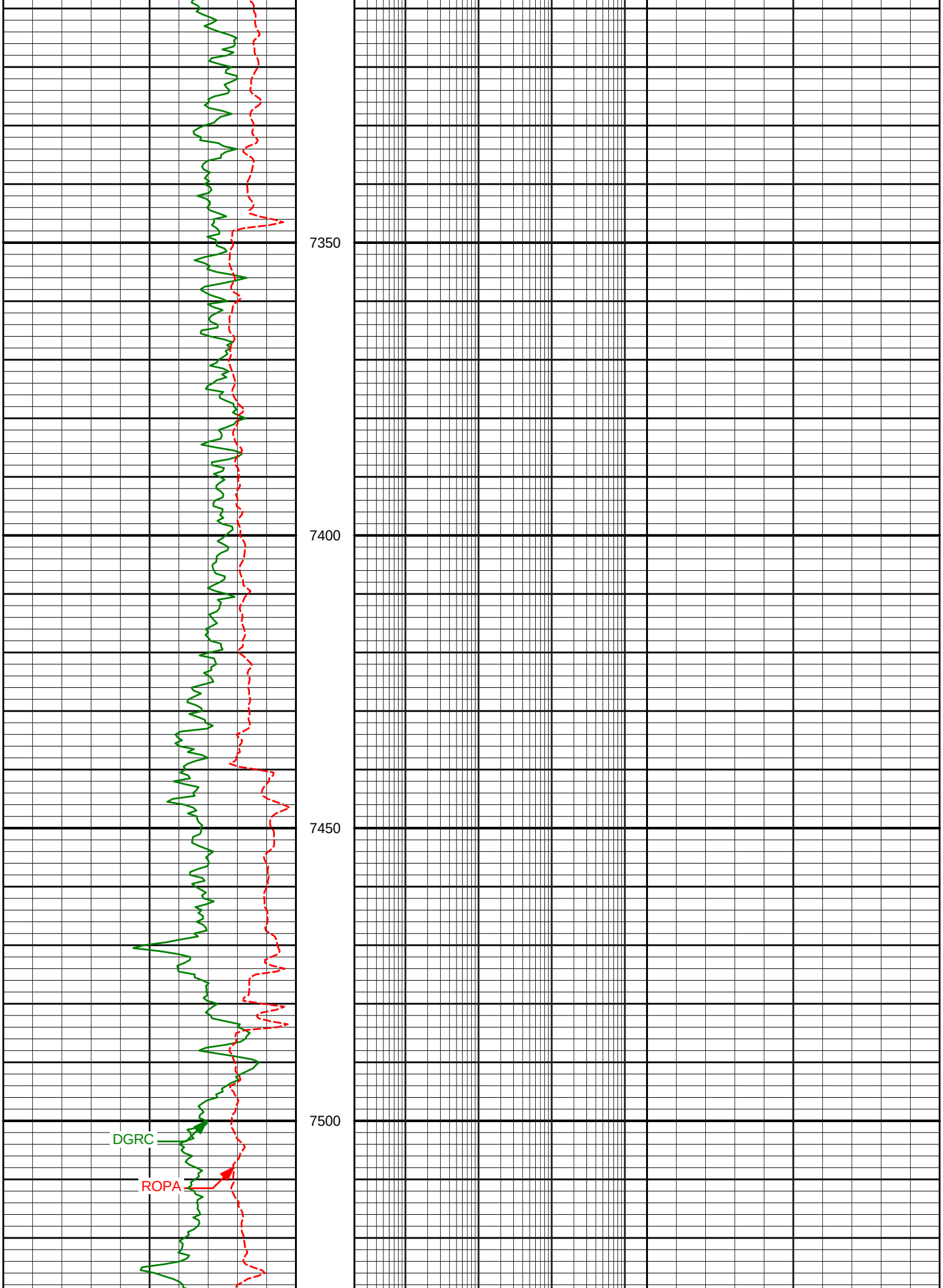
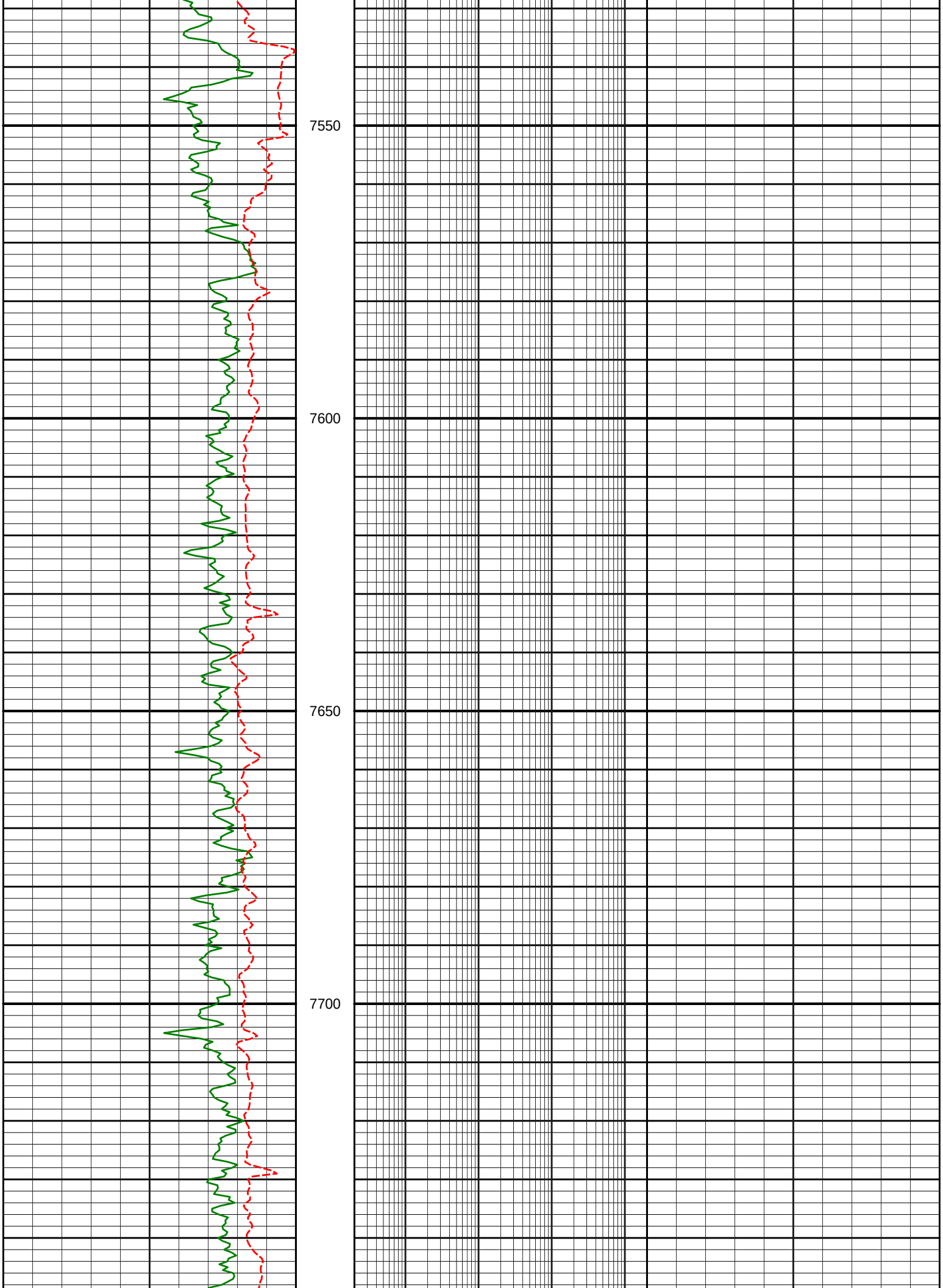
6550
6600

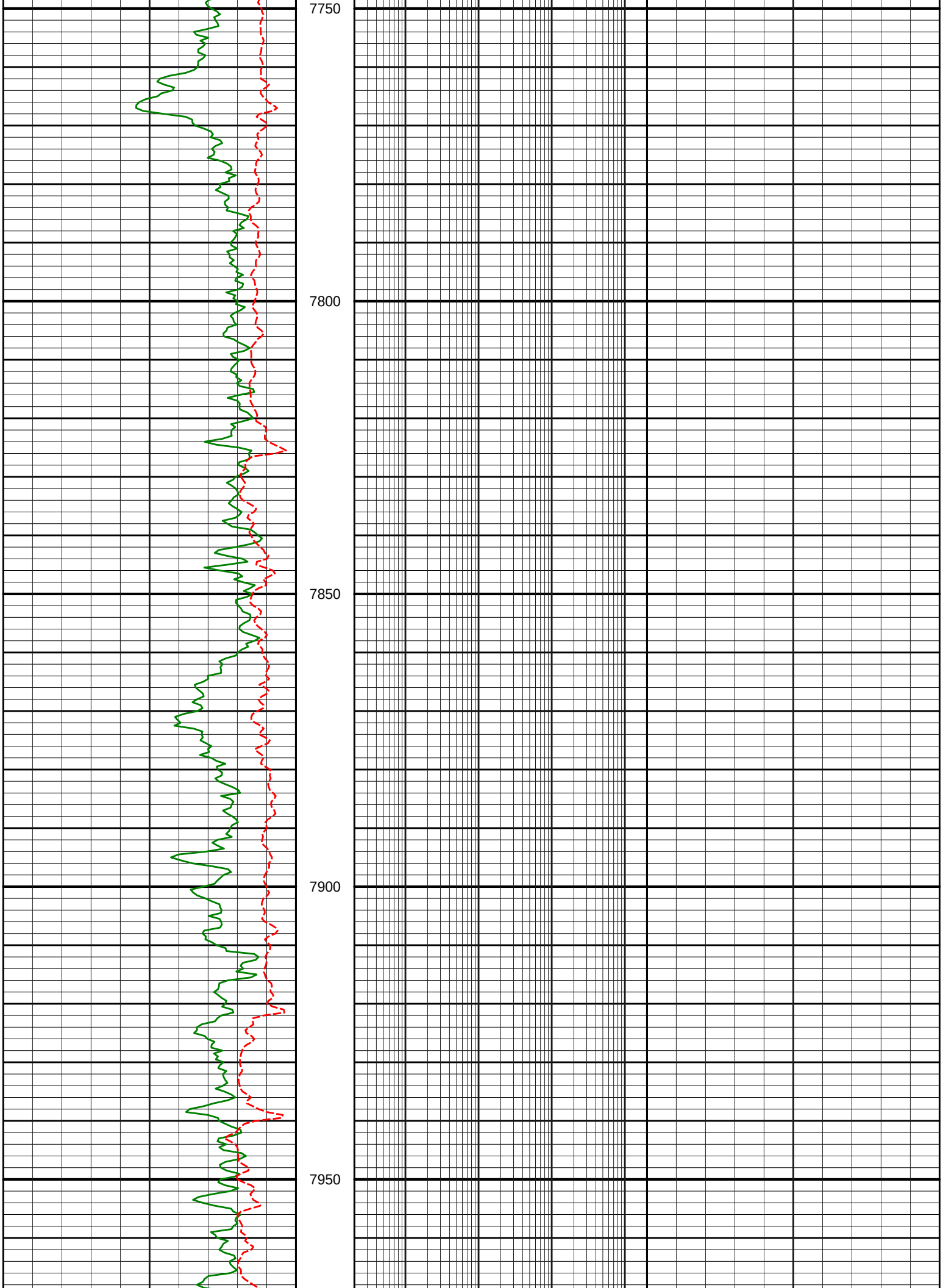

6650
6700
6750
6800
6850

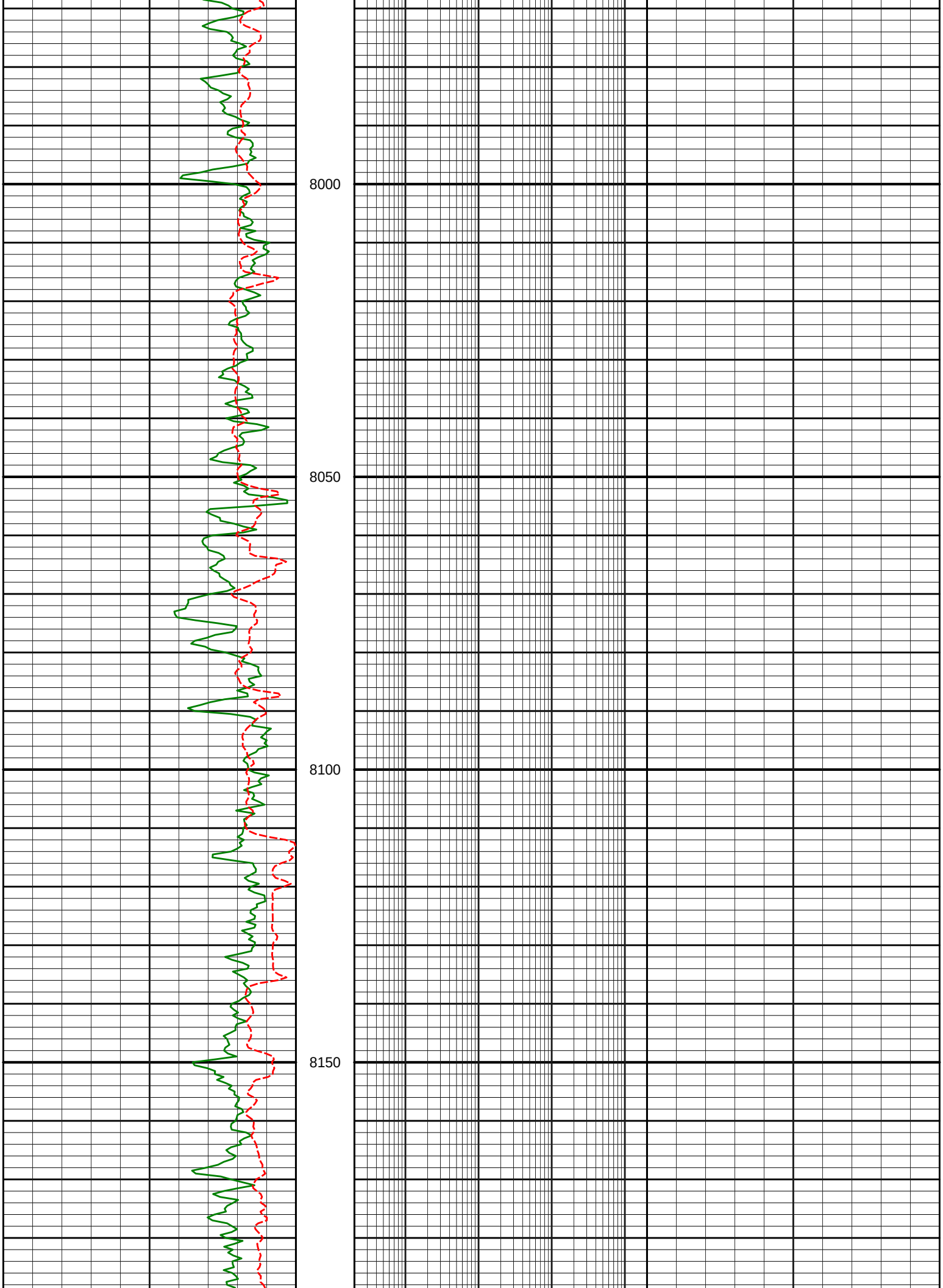

6900
6950
7000
7050

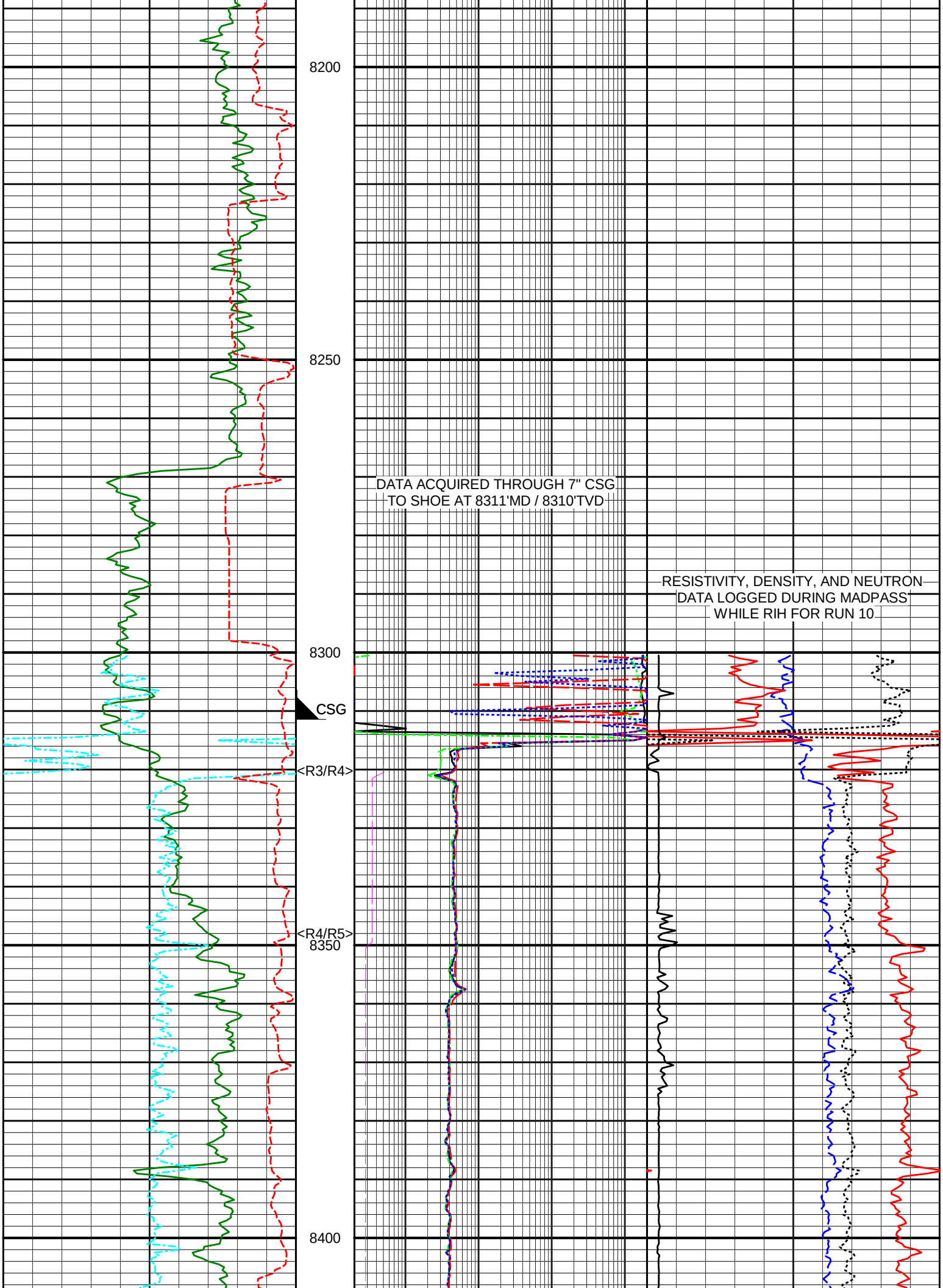

7100
7150
7200
7250
7300

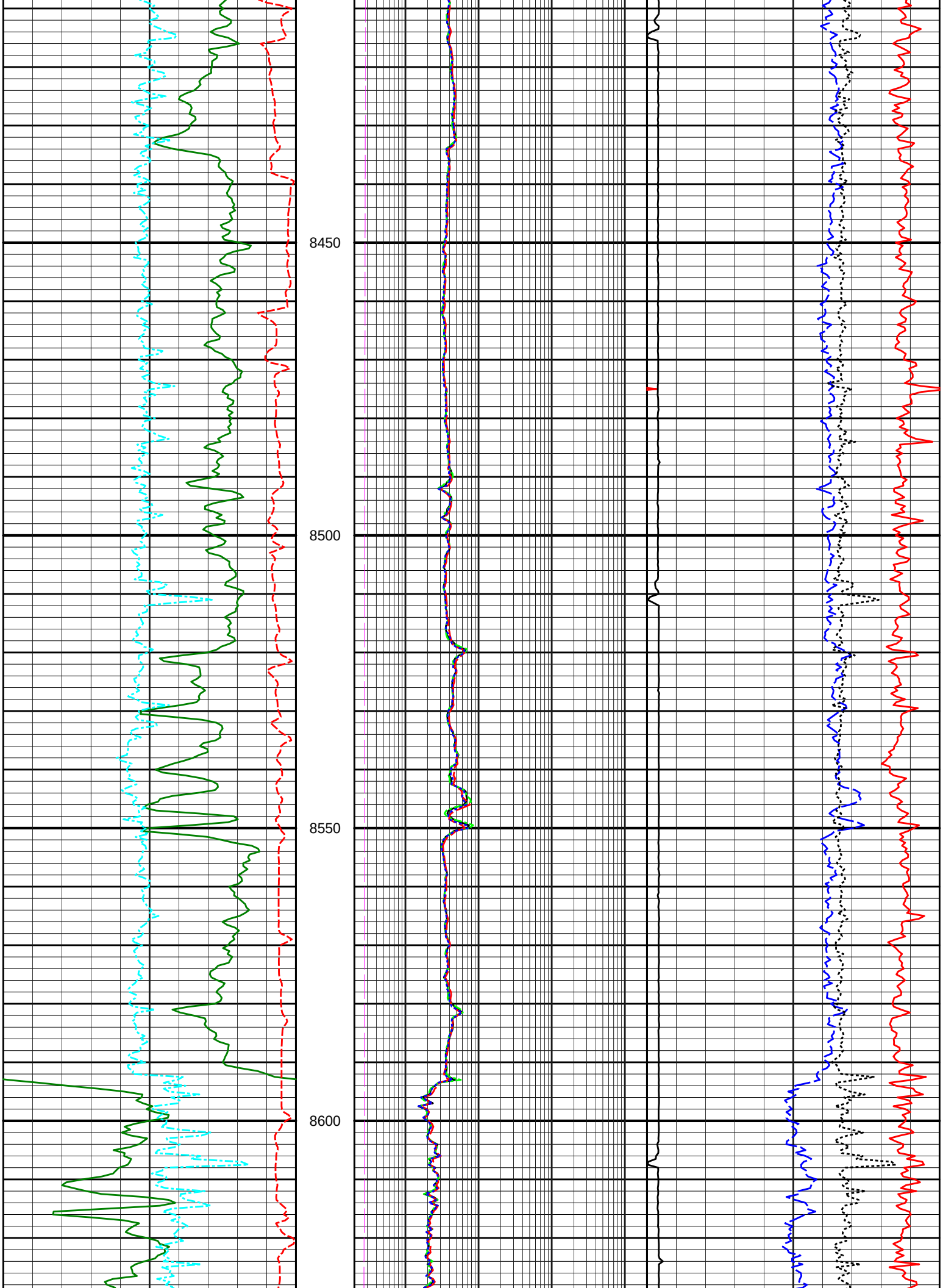

7350
7400
7450
7500
DGRC
ROPA

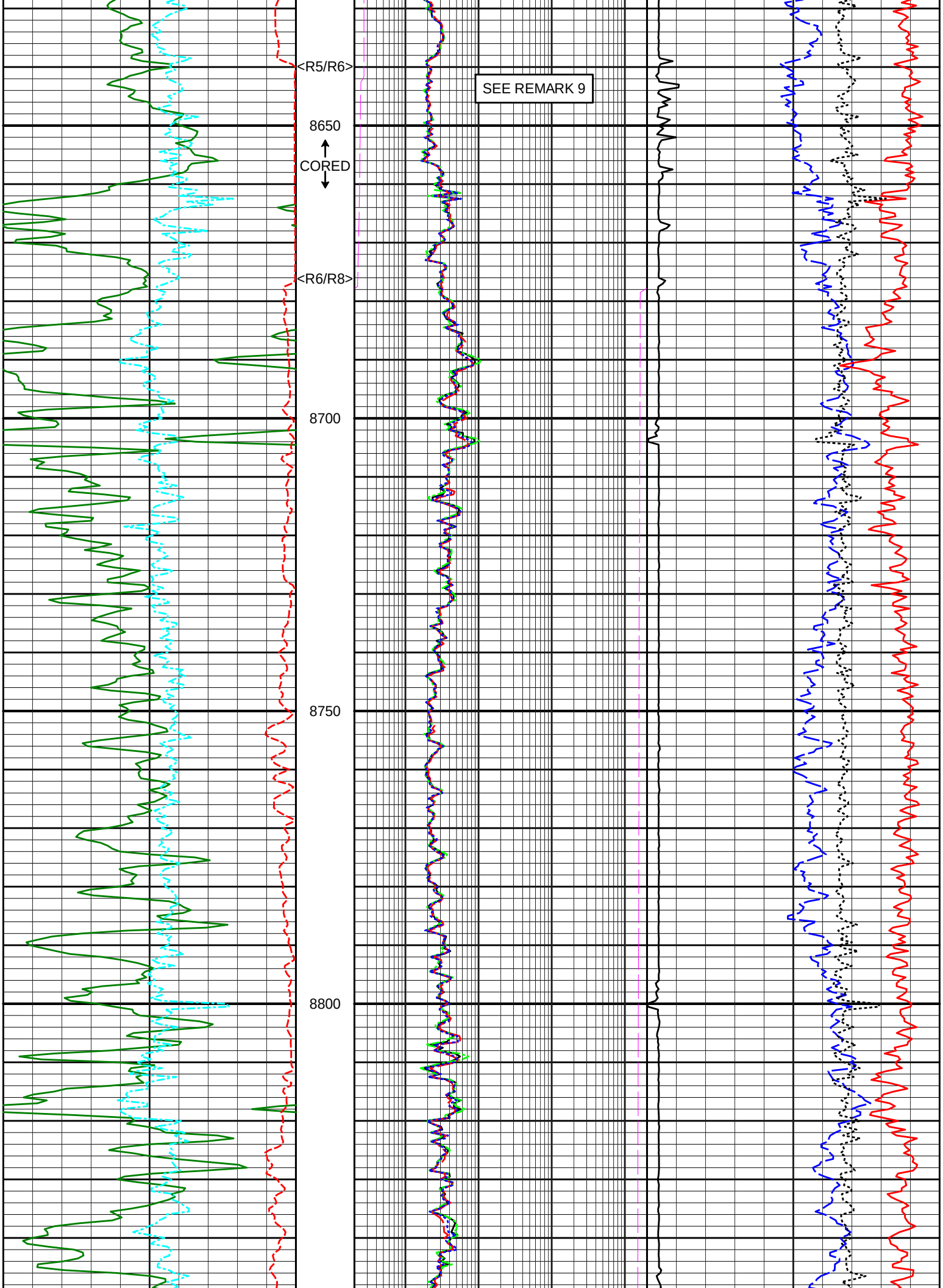

7550
7600
7650
7700

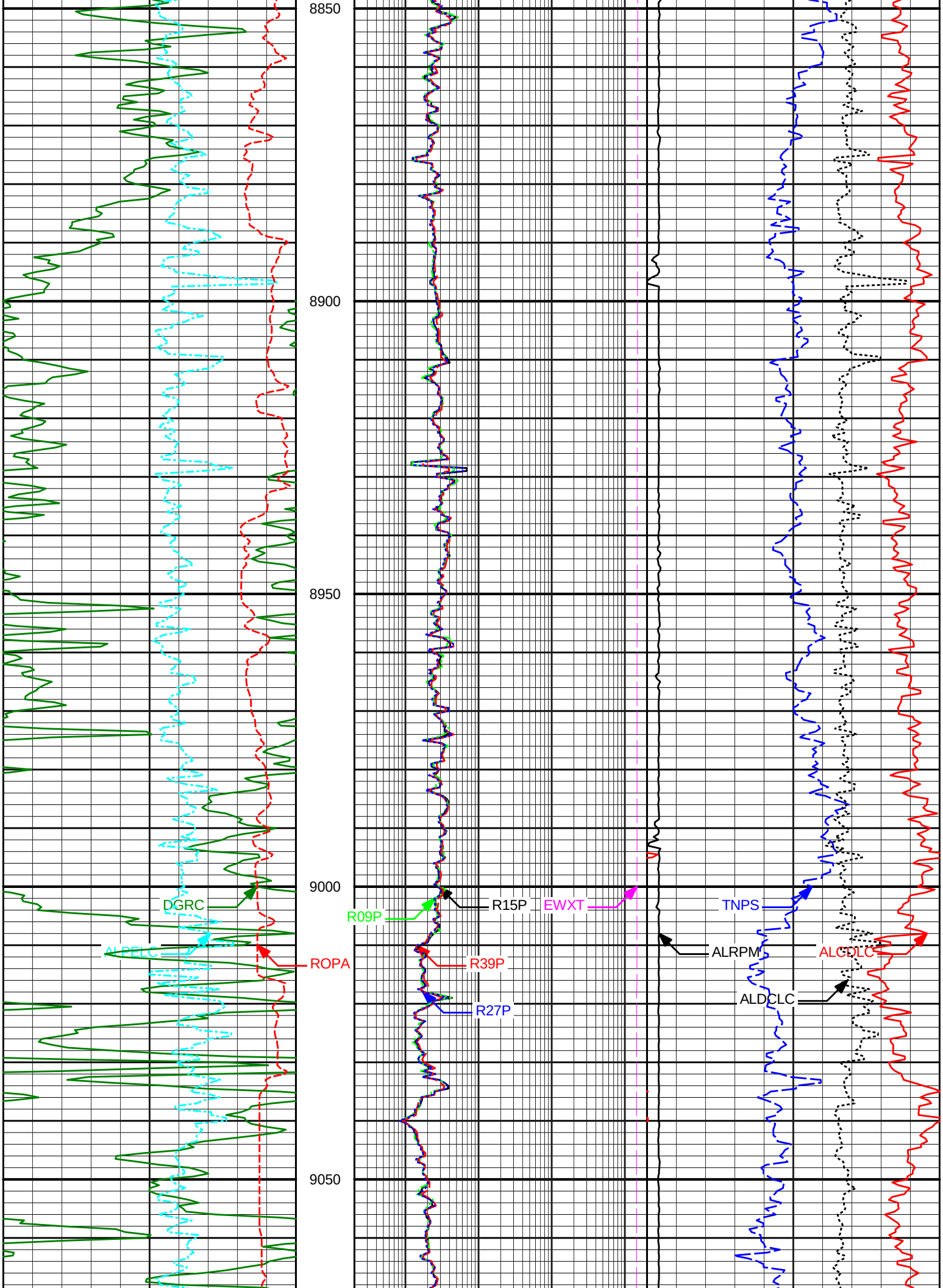

7750
7800
7850
7900
7950

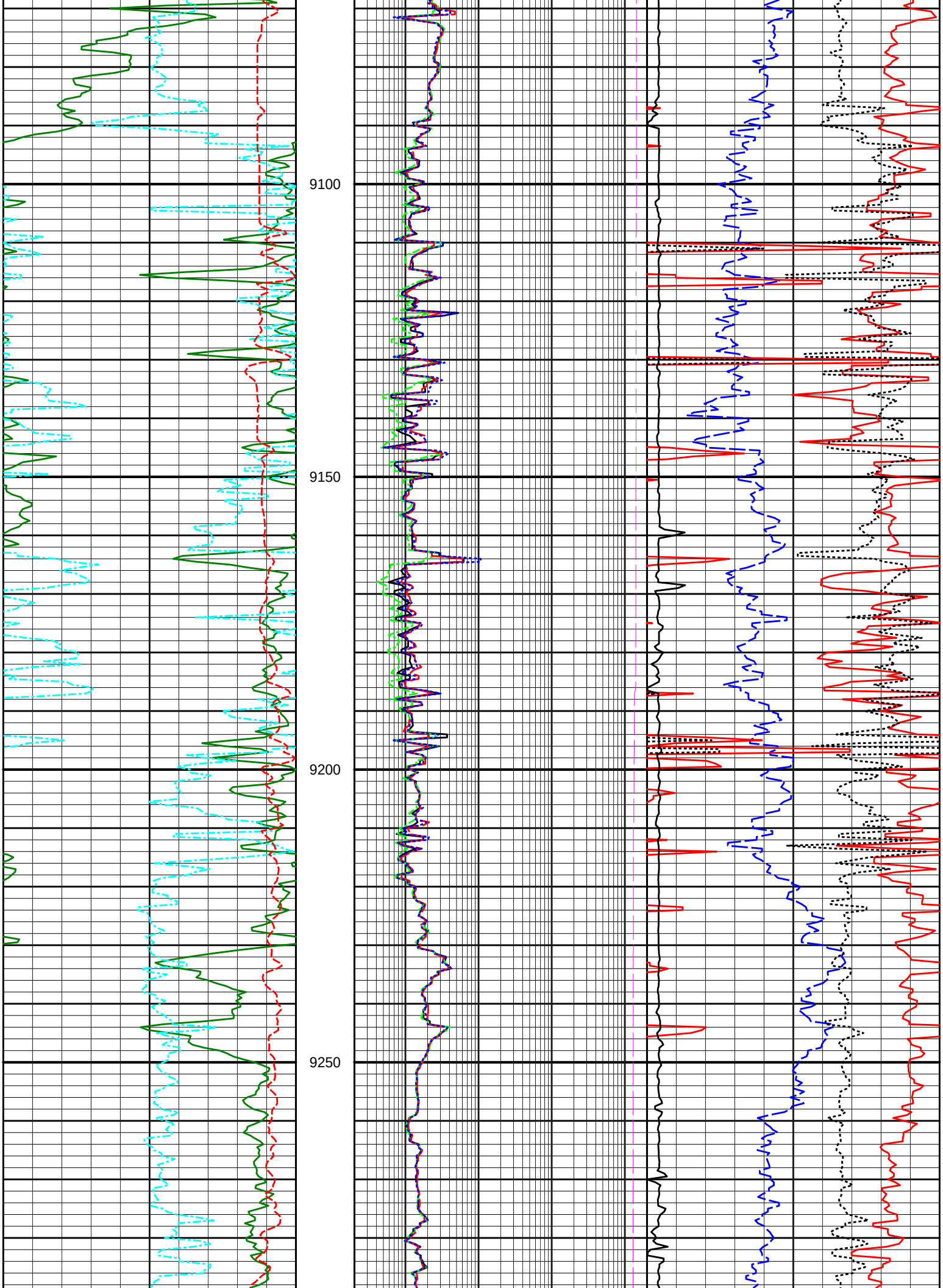

8000
8050
8100
8150

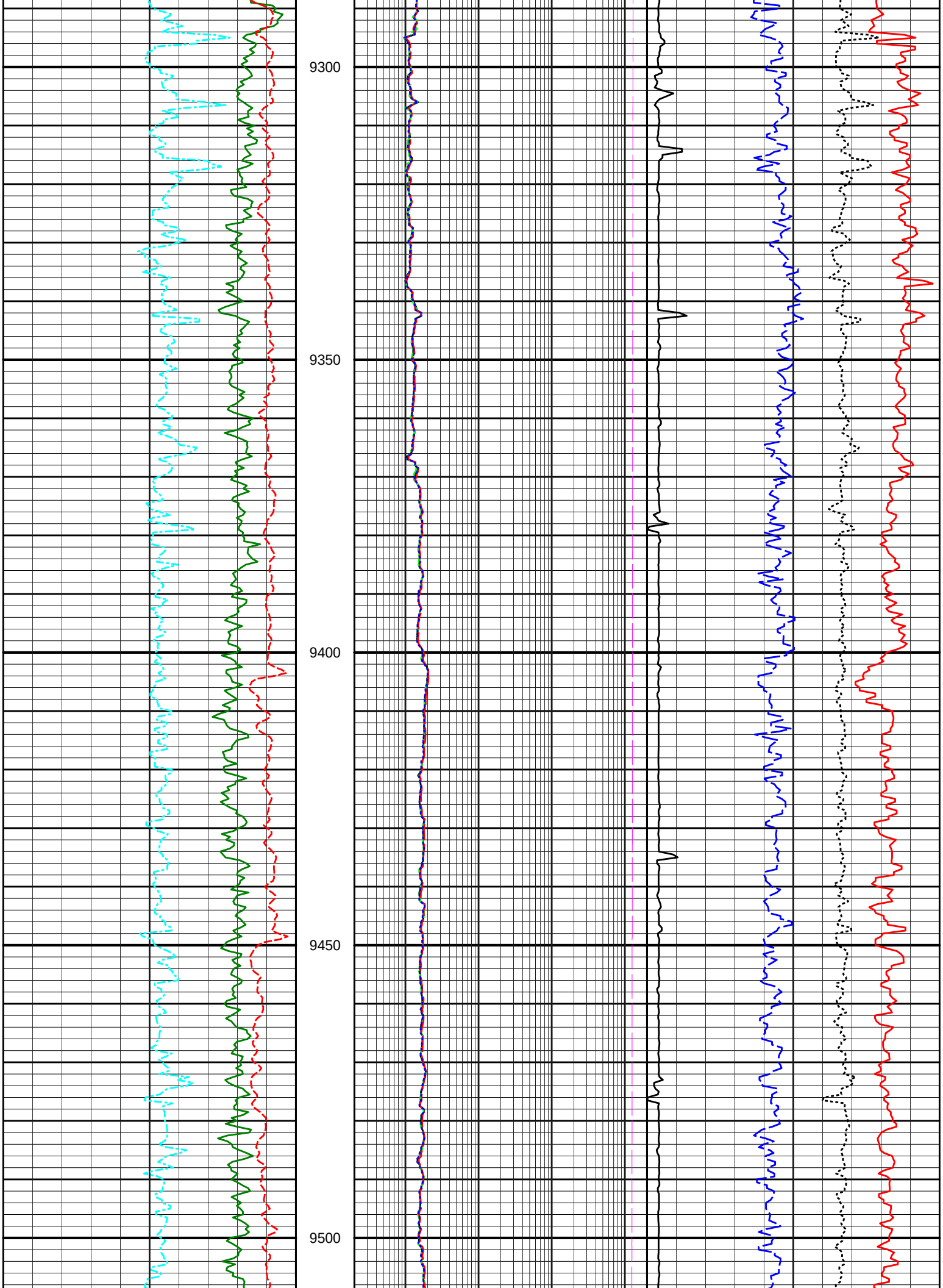

8200
8250
DATA ACQUIRED THROUGH 7" CSG
TO SHOE AT 8311'MD / 8310'TVD
RESISTIVITY, DENSITY, AND NEUTRON
DATA LOGGED DURING MADPASS
WHILE RIH FOR RUN 10
8300
CSG
<R3/R4>
<R4/R5>
8350
8400

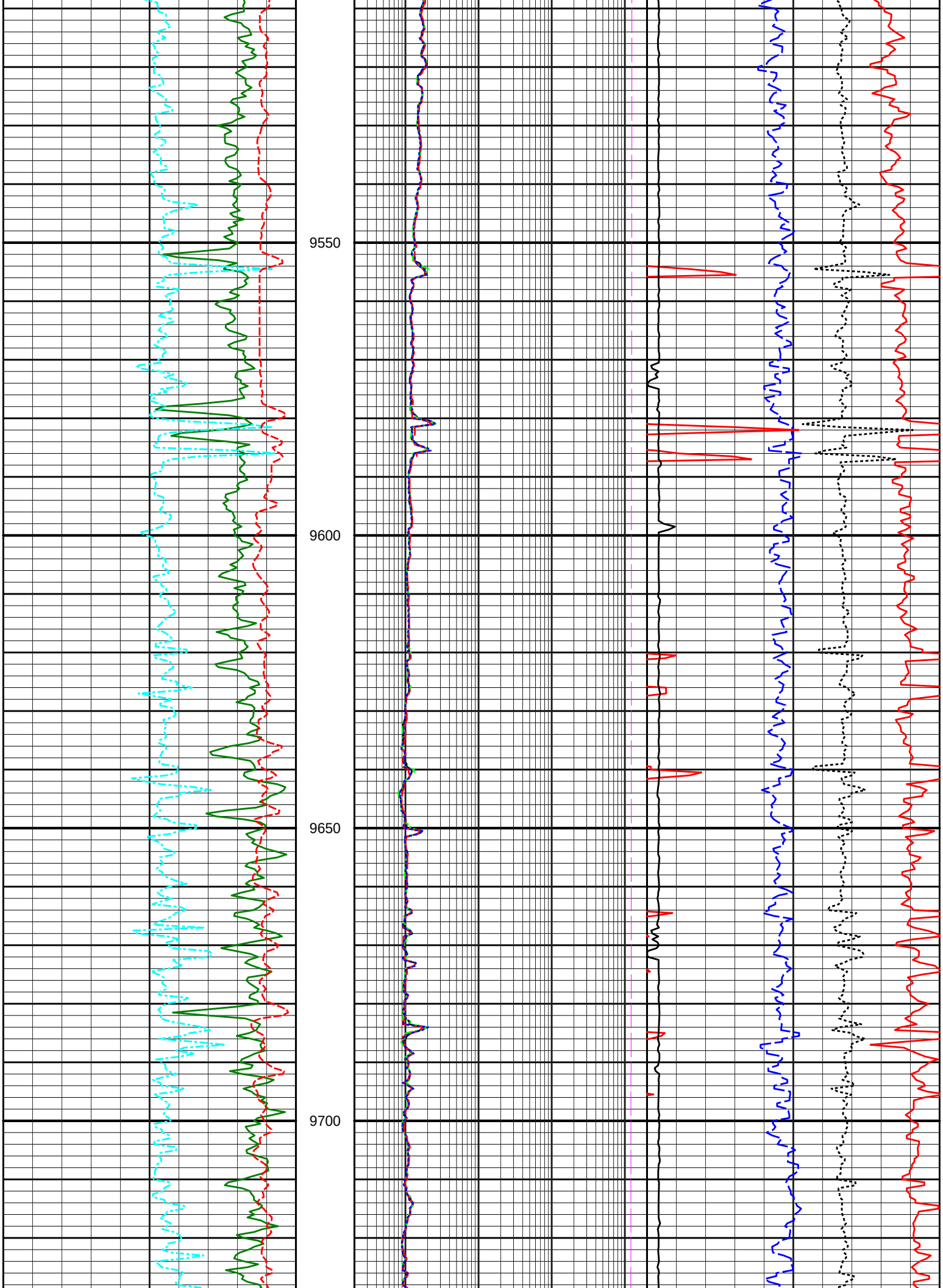

8450
8500
8550
8600


<R5/R6>
SEE REMARK 9
8650
CORED
<R6/R8>
8700
8750
8800


8850
8900
8950
9000
9050
DGRC
ALPELC
ROPA
R09P
R15P
EWXT
R39P
R27P
ALRPM
TNPS
ALCDLC
ALDCLC


9100
9150
9200
9250


9300
9350
9400
9450
9500


9550
9600
9650
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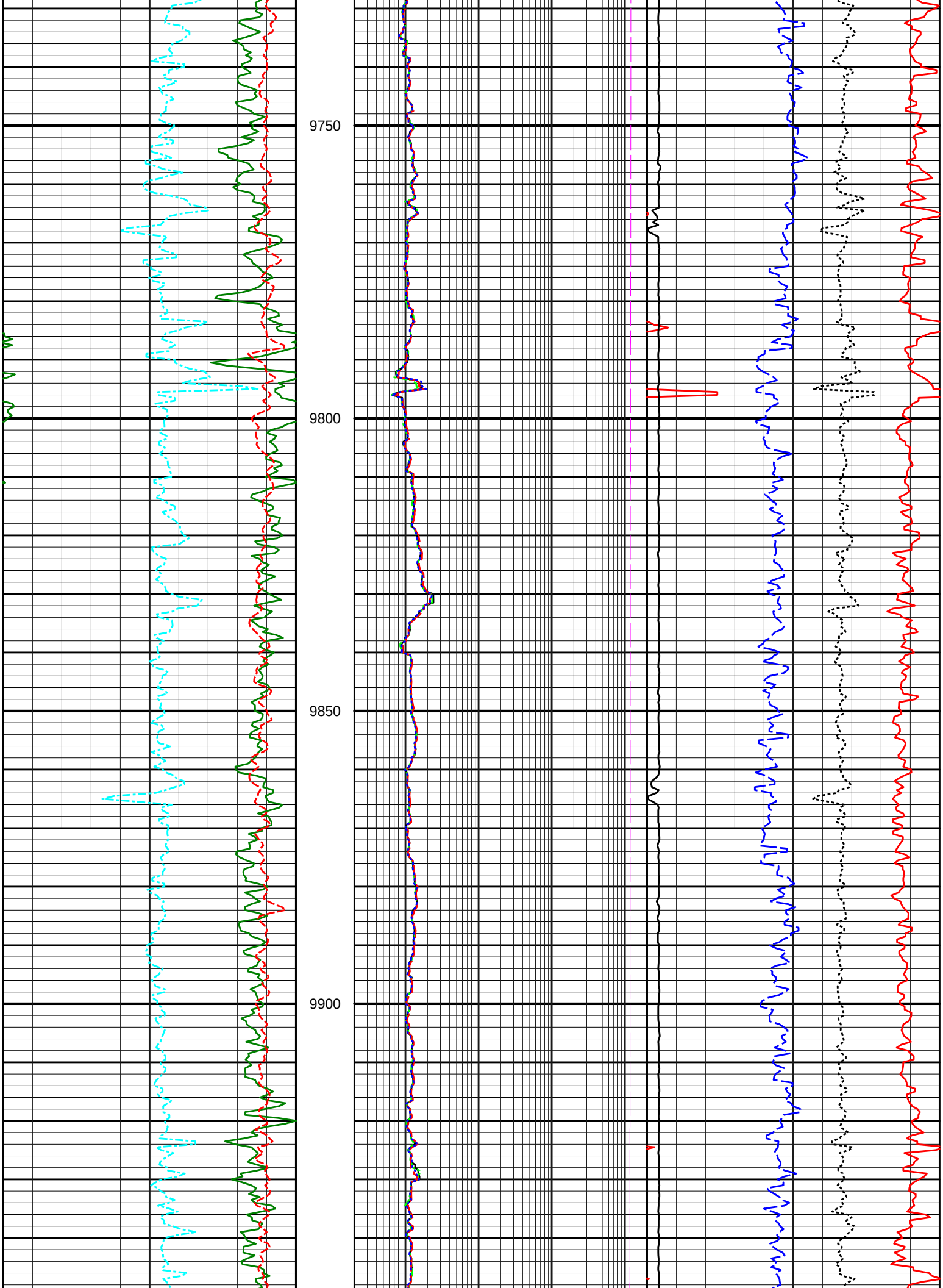
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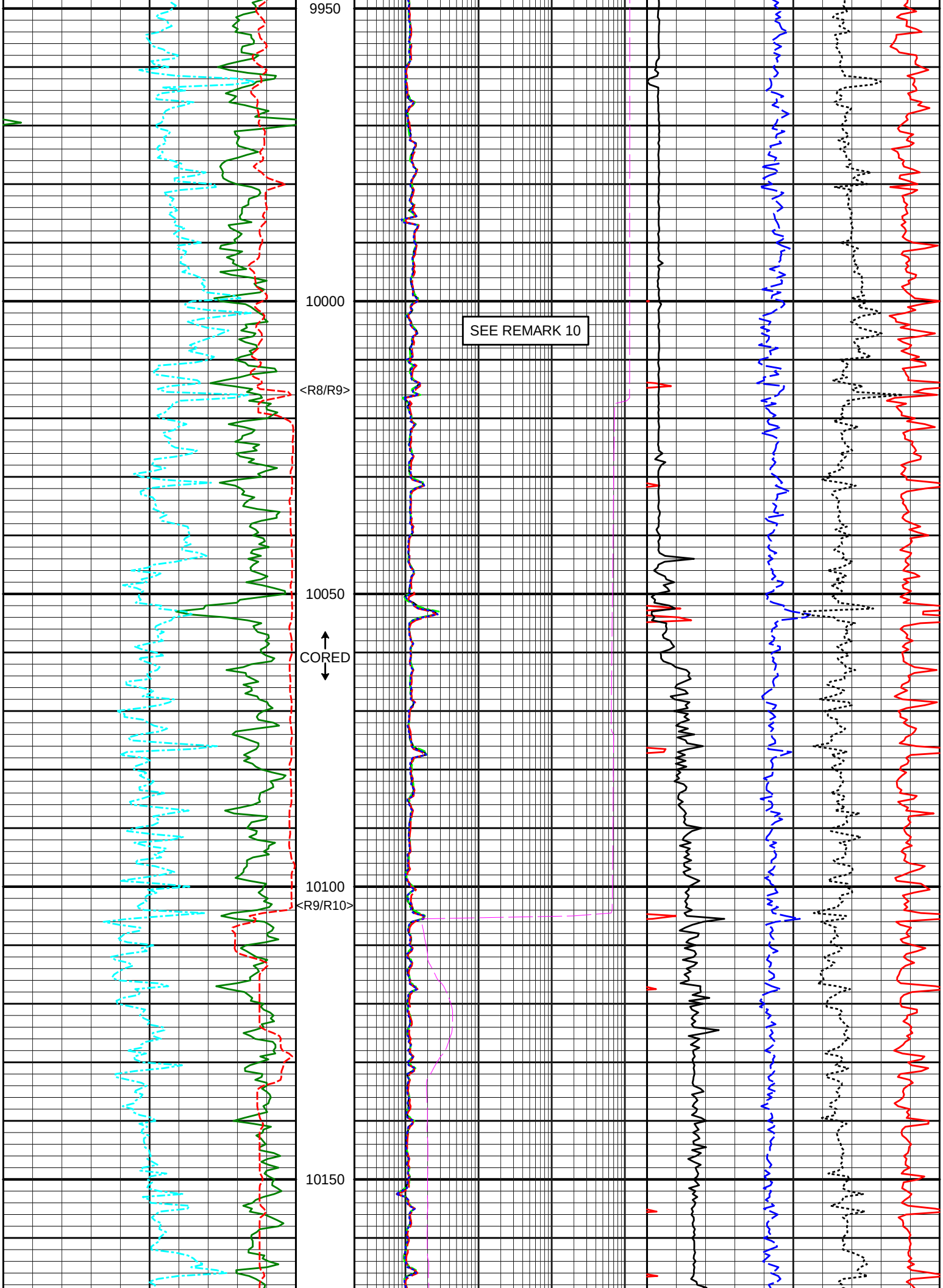
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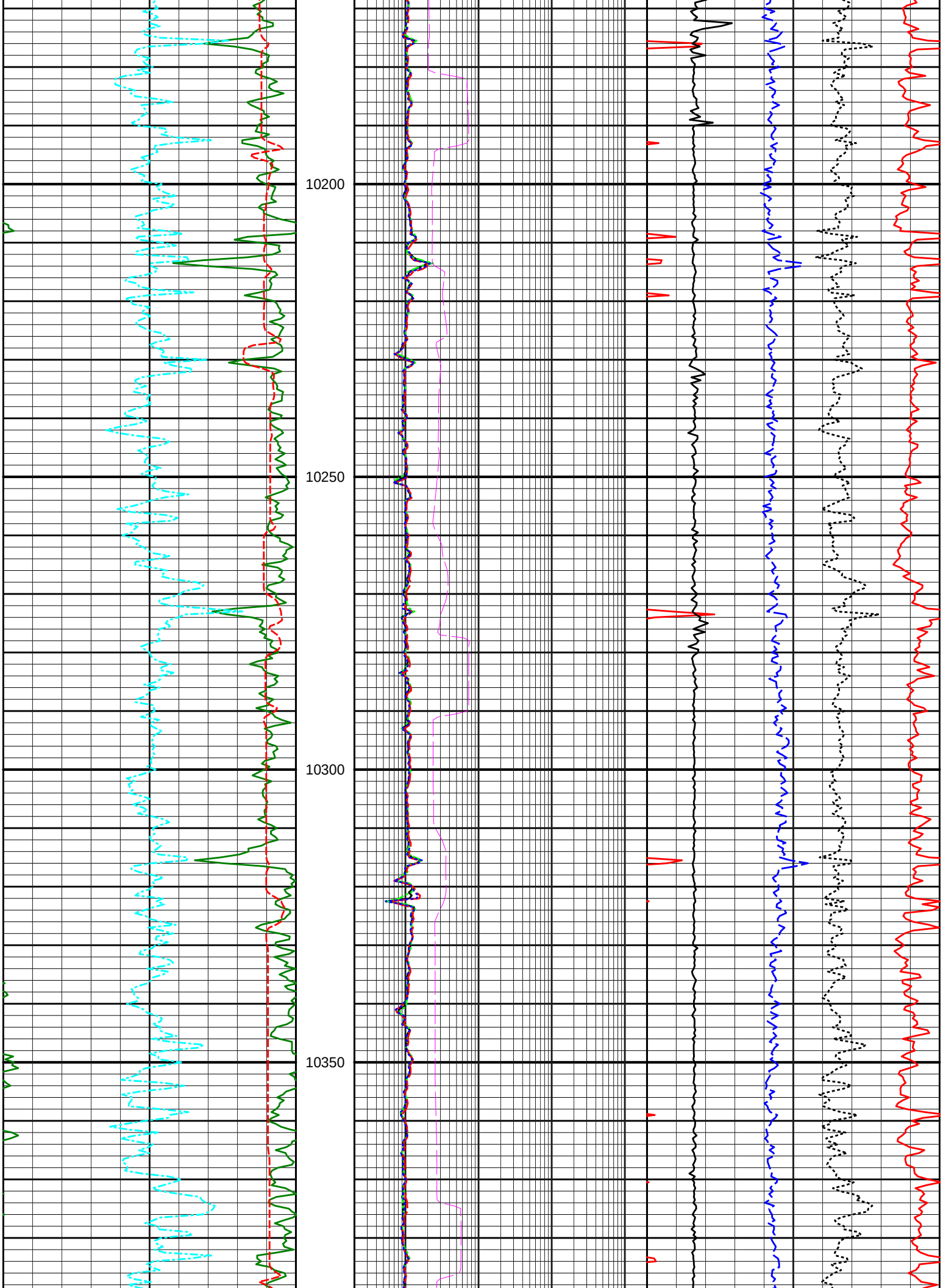
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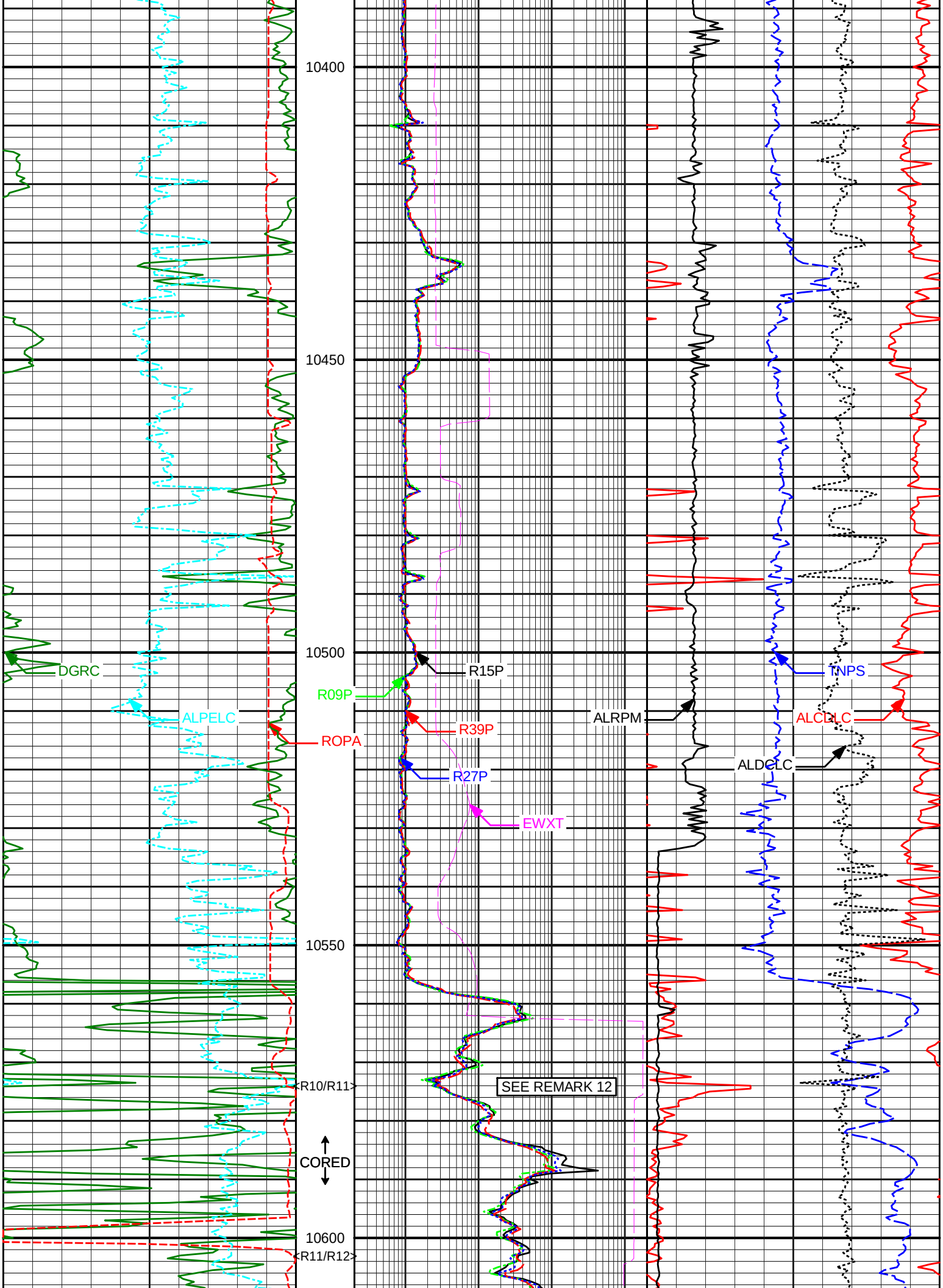
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R15P
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ALCDLC
ALDCLC
SEE REMARK 12
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CORED
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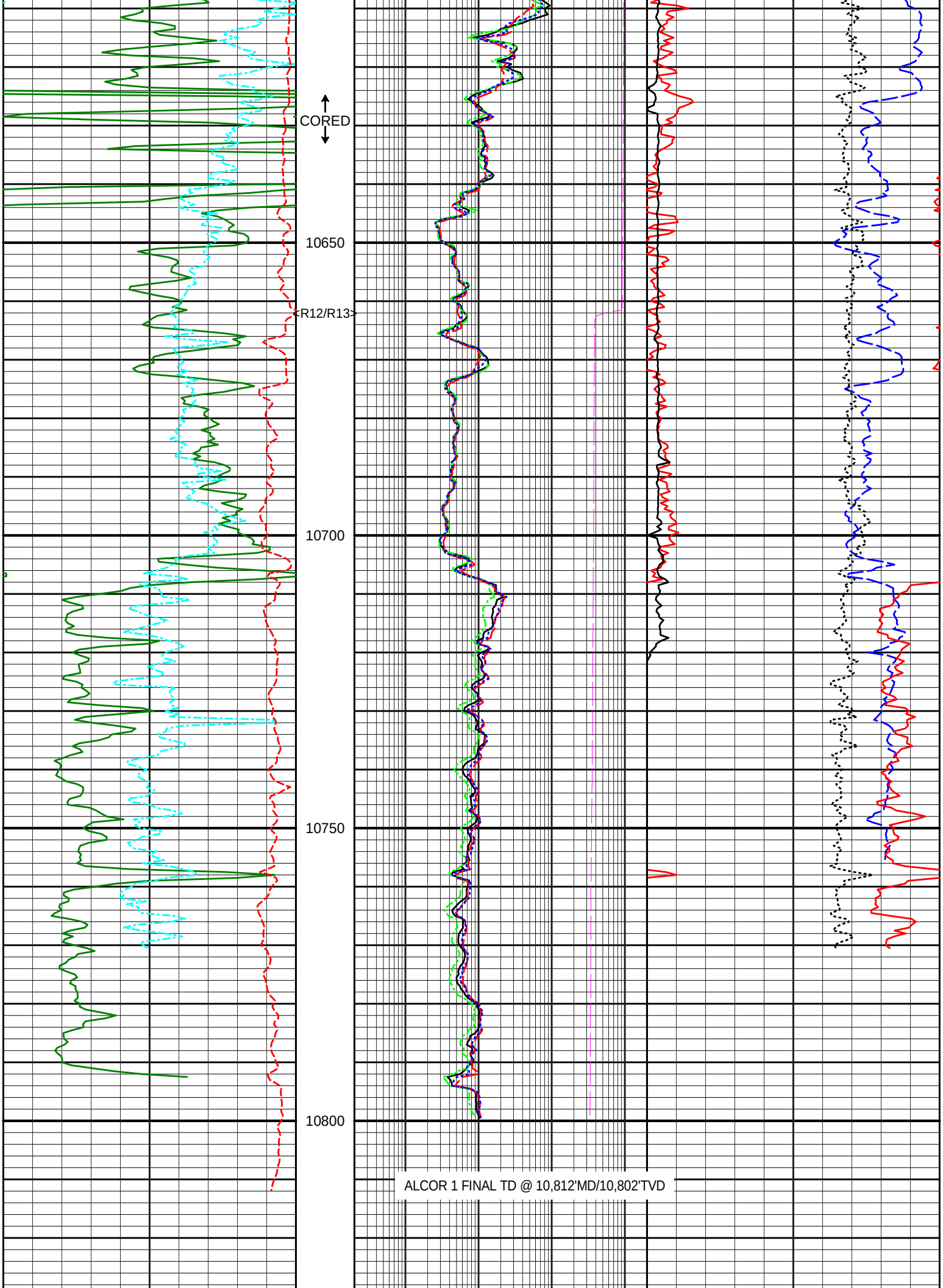
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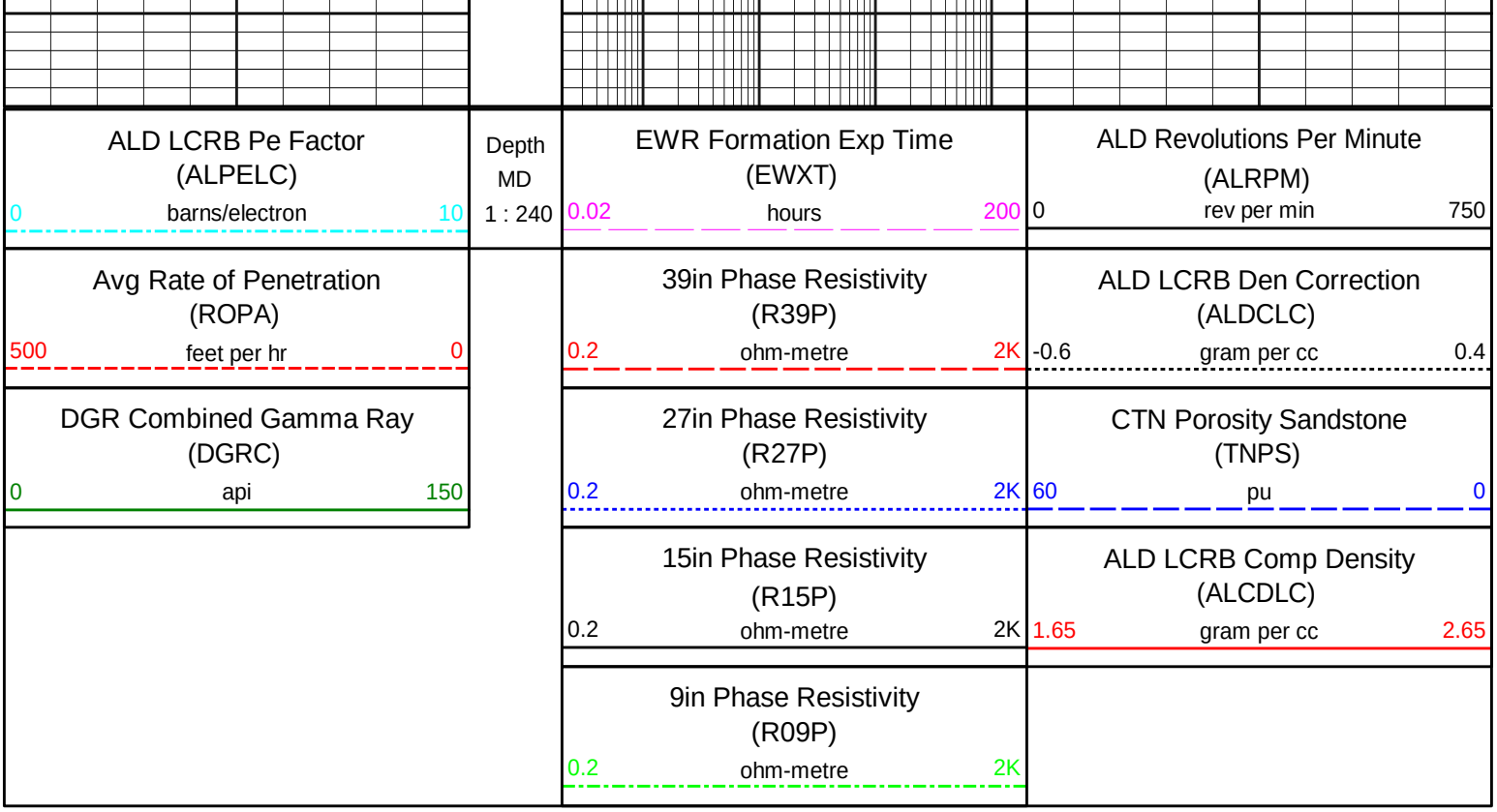
ALCOR 1 FINAL TD @ 10,812'MD/10,802'TVD



HALLIBURTON

INSITE

DIRECTIONAL SURVEY REPORT

Great Bear Petroleum, LLC
Alcor 1
Alcor
North Slope Borough Alaska
USA
AK-XX-0009285348
Surveys from 139.03' to 416.62' are MWD with interpolated azimuth.
Surveys from 416.62' to 10778.66' are MWD+ SAG
Final Survey Projected to TD

Measured Depth (feet)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (feet)*	*Latitude (feet)*	*Departure (feet)*	*Vertical Section (feet)*	*Dogleg (deg/100ft)*
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
22.30	0.00	0.00	22.30	0.00 N	0.00 E	0.00	0.00
139.03	0.37	207.79	139.03	0.33 S	0.18 W	0.38	0.32
231.15	0.19	271.35	231.15	0.59 S	0.47 W	0.74	0.36
322.39	0.46	261.45	322.39	0.64 S	0.98 W	1.03	0.30
416.62	0.80	219.77	416.61	1.21 S	1.78 W	1.90	0.58
503.87	1.11	201.58	503.85	2.46 S	2.48 W	3.34	0.49
592.94	1.04	196.68	592.90	4.04 S	3.03 W	4.99	0.13
685.39	0.95	186.77	685.34	5.60 S	3.36 W	6.52	0.21
780.20	0.94	208.49	780.14	7.07 S	3.82 W	8.03	0.38
877.37	0.65	225.85	877.30	8.15 S	4.60 W	9.35	0.38
976.87	0.55	217.66	976.79	8.92 S	5.29 W	10.36	0.13
1070.52	0.84	233.02	1070.44	9.69 S	6.12 W	11.43	0.37
1161.77	0.84	184.97	1161.68	10.76 S	6.71 W	12.65	0.75
1259.04	0.65	208.98	1258.94	11.95 S	7.04 W	13.86	0.37
1355.56	0.78	205.42	1355.45	13.02 S	7.58 W	15.06	0.14
1451.70	0.70	209.13	1451.58	14.13 S	8.15 W	16.30	0.10
1547.61	0.87	214.97	1547.48	15.24 S	8.85 W	17.61	0.20
1642.98	0.86	205.66	1642.84	16.47 S	9.58 W	19.05	0.15
1739.38	0.64	193.71	1739.23	17.65 S	10.02 W	20.29	0.28
1836.78	0.69	209.38	1836.63	18.69 S	10.44 W	21.40	0.19
1931.60	0.71	175.26	1931.44	19.77 S	10.67 W	22.47	0.43

2028.33	0.48	183.94	2028.17	20.77 S	10.65 W	23.34	0.25
2123.91	0.46	205.20	2123.74	21.52 S	10.84 W	24.08	0.18
2217.21	0.50	180.79	2217.04	22.27 S	11.00 W	24.82	0.22
2312.62	0.53	181.16	2312.45	23.12 S	11.02 W	25.58	0.03
2409.08	0.22	169.25	2408.90	23.75 S	10.99 W	26.12	0.33
2463.32	0.57	179.55	2463.14	24.12 S	10.97 W	26.44	0.66
2510.66	0.67	119.99	2510.48	24.50 S	10.73 W	26.65	1.31
2606.45	1.05	112.70	2606.26	25.12 S	9.43 W	26.58	0.41
2700.00	0.12	96.30	2699.80	25.46 S	8.54 W	26.46	1.00
2799.23	0.18	69.63	2799.03	25.41 S	8.30 W	26.30	0.09
2894.32	0.50	111.12	2894.12	25.51 S	7.77 W	26.14	0.40
2990.67	0.53	133.19	2990.47	25.97 S	7.05 W	26.20	0.21
3084.68	0.88	117.17	3084.47	26.60 S	6.09 W	26.29	0.42
3180.11	0.85	116.51	3179.89	27.25 S	4.81 W	26.25	0.03
3275.33	0.61	141.14	3275.10	27.96 S	3.86 W	26.43	0.41
3372.36	0.83	141.77	3372.12	28.91 S	3.10 W	26.91	0.23
3468.66	0.65	129.82	3468.42	29.81 S	2.25 W	27.29	0.25
3560.34	1.00	128.73	3560.09	30.64 S	1.22 W	27.54	0.38
3656.27	0.94	157.86	3656.00	31.89 S	0.27 W	28.19	0.51
3755.14	0.94	121.17	3754.86	33.07 S	0.73 E	28.74	0.60
3851.82	0.94	107.39	3851.53	33.71 S	2.16 E	28.63	0.23
3948.95	0.63	109.99	3948.65	34.13 S	3.42 E	28.40	0.32
4043.92	0.19	103.09	4043.62	34.35 S	4.07 E	28.28	0.47
4140.04	0.15	126.06	4139.74	34.46 S	4.32 E	28.26	0.08
4236.56	0.32	102.08	4236.26	34.59 S	4.69 E	28.20	0.20
4331.54	0.29	159.75	4331.23	34.87 S	5.03 E	28.28	0.31
4425.85	0.62	116.22	4425.54	35.32 S	5.57 E	28.42	0.48
4523.07	0.27	149.90	4522.76	35.75 S	6.16 E	28.52	0.43
4618.45	0.53	131.14	4618.14	36.23 S	6.61 E	28.74	0.30
4710.67	0.31	184.86	4710.35	36.76 S	6.91 E	29.06	0.46
4808.64	0.68	180.96	4808.32	37.61 S	6.87 E	29.82	0.38
4903.55	0.33	180.86	4903.23	38.45 S	6.86 E	30.56	0.37
4999.95	0.55	168.26	4999.62	39.18 S	6.95 E	31.16	0.25
5095.22	0.47	204.56	5094.89	39.98 S	6.88 E	31.90	0.34
5190.87	0.69	179.59	5190.53	40.91 S	6.72 E	32.80	0.35
5286.20	0.26	183.07	5285.86	41.70 S	6.71 E	33.49	0.45
5382.80	0.32	212.82	5382.46	42.15 S	6.56 E	33.96	0.17
5476.87	0.51	208.96	5476.53	42.73 S	6.21 E	34.64	0.20
5573.78	0.60	174.46	5573.43	43.62 S	6.05 E	35.49	0.35
5669.61	0.39	169.03	5669.26	44.44 S	6.16 E	36.16	0.22
5764.88	0.46	176.14	5764.53	45.14 S	6.25 E	36.74	0.09
5860.77	0.50	196.81	5860.41	45.92 S	6.15 E	37.47	0.18
5956.68	0.61	212.35	5956.32	46.75 S	5.76 E	38.39	0.19
6054.74	0.58	217.79	6054.37	47.59 S	5.18 E	39.40	0.07
6149.17	0.43	229.35	6148.80	48.19 S	4.61 E	40.20	0.19
6241.53	0.53	187.93	6241.16	48.84 S	4.29 E	40.93	0.38
6336.73	0.44	156.77	6336.35	49.62 S	4.38 E	41.57	0.29
6388.96	0.51	174.23	6388.58	50.03 S	4.48 E	41.88	0.31
6437.33	0.65	159.50	6436.95	50.50 S	4.60 E	42.24	0.42
6534.86	0.49	172.94	6534.48	51.43 S	4.84 E	42.95	0.21
6630.89	0.45	184.45	6630.50	52.22 S	4.86 E	43.63	0.11
6726.83	0.44	180.68	6726.44	52.96 S	4.83 E	44.30	0.03
6822.44	0.40	162.88	6822.05	53.65 S	4.92 E	44.85	0.14
6918.13	0.56	174.04	6917.73	54.43 S	5.07 E	45.48	0.19
7011.46	0.32	185.63	7011.06	55.14 S	5.09 E	46.09	0.27
7109.41	0.54	204.95	7109.01	55.84 S	4.87 E	46.80	0.27
7205.30	0.45	211.55	7204.89	56.57 S	4.48 E	47.63	0.11
7301.43	0.57	216.27	7301.02	57.27 S	4.00 E	48.48	0.13
7394.03	0.88	237.89	7393.61	58.02 S	3.13 E	49.56	0.44
7492.35	1.06	248.06	7491.92	58.76 S	1.64 E	50.91	0.25
7589.06	0.64	283.13	7588.62	58.98 S	0.29 E	51.75	0.67
7684.78	0.72	280.36	7684.33	58.75 S	0.82 W	52.07	0.09
7779.85	0.64	297.13	7779.40	58.40 S	1.88 W	52.27	0.22
7877.15	0.79	282.23	7876.69	58.01 S	3.02 W	52.47	0.24
7973.13	0.91	268.39	7972.66	57.89 S	4.43 W	53.03	0.25
8066.71	1.07	262.34	8066.22	58.02 S	6.04 W	53.92	0.20
8163.21	1.06	183.52	8162.71	59.04 S	6.99 W	55.26	1.40
8256.61	2.03	187.48	8256.08	61.54 S	7.26 W	57.59	1.04
8276.71	2.22	188.14	8276.16	62.28 S	7.36 W	58.29	0.95
8360.29	3.67	182.39	8359.63	66.55 S	7.70 W	62.21	1.77
8396.65	4.99	183.01	8395.88	69.29 S	7.83 W	64.68	3.63
8428.91	5.96	184.13	8428.00	72.37 S	8.03 W	67.48	3.02
8457.38	6.62	184.77	8456.30	75.48 S	8.27 W	70.33	2.33
8491.89	7.22	186.53	8490.55	79.61 S	8.68 W	74.16	1.84
8525.32	8.06	186.68	8523.69	84.03 S	9.19 W	78.29	2.51

8554.46	8.67	185.91	8552.52	88.24 S	9.66 W	82.22	2.13
8598.25	9.50	184.77	8595.76	95.13 S	10.30 W	88.58	1.94
8659.65	10.12	183.80	8656.26	105.56 S	11.07 W	98.13	1.04
8693.51	9.83	182.61	8689.61	111.41 S	11.40 W	103.44	1.05
8723.57	9.80	181.00	8719.23	116.53 S	11.57 W	108.02	0.92
8756.25	9.65	180.09	8751.44	122.05 S	11.62 W	112.90	0.66
8790.22	8.91	178.99	8784.96	127.53 S	11.58 W	117.70	2.24
8825.57	8.56	177.37	8819.90	132.90 S	11.41 W	122.34	1.21
8850.66	8.67	176.28	8844.71	136.65 S	11.20 W	125.54	0.78
8950.92	7.22	181.35	8944.01	150.49 S	10.86 W	137.55	1.60
9046.40	6.24	171.45	9038.83	161.62 S	10.23 W	147.04	1.59
9143.03	4.89	174.66	9135.00	170.91 S	9.06 W	154.67	1.43
9240.11	4.61	172.51	9231.75	178.90 S	8.17 W	161.27	0.34
9335.90	4.22	173.94	9327.26	186.22 S	7.29 W	167.29	0.42
9431.91	3.88	174.51	9423.03	192.97 S	6.61 W	172.90	0.36
9527.21	3.48	174.68	9518.13	199.06 S	6.03 W	177.99	0.42
9622.34	3.07	176.04	9613.10	204.47 S	5.59 W	182.54	0.44
9719.33	3.05	174.83	9709.96	209.64 S	5.18 W	186.89	0.07
9815.52	2.76	177.03	9806.02	214.50 S	4.83 W	191.00	0.32
9912.28	2.50	181.36	9902.68	218.93 S	4.76 W	194.86	0.34
10064.19	2.23	194.12	10054.46	225.11 S	5.56 W	200.68	0.39
10157.05	1.66	203.99	10147.27	228.09 S	6.55 W	203.77	0.71
10254.18	1.66	200.62	10244.36	230.69 S	7.61 W	206.57	0.10
10349.19	1.60	196.87	10339.33	233.25 S	8.48 W	209.23	0.13
10447.17	1.59	196.11	10437.27	235.87 S	9.26 W	211.90	0.02
10539.87	1.20	196.93	10529.94	238.03 S	9.90 W	214.11	0.42
10731.66	0.57	144.06	10721.71	240.72 S	9.92 W	216.49	0.51
10778.66	0.52	224.28	10768.71	241.07 S	9.93 W	216.80	1.50
10812.00	0.52	224.28	10802.05	241.28 S	10.14 W	217.09	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 208.39 DEGREES (TRUE)
A TOTAL CORRECTION OF 20.87 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 10812.00 FEET
IS 241.50 FEET ALONG 182.41 DEGREES (TRUE)

Map System: US State Plane 1927 (Exact Solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: Alaska Zone 04

Date Printed:31 October 2012