Schlumberger

Company: NGL Water Solutions DJ LLC

Well: NGL C10

Field: Eaton

County: Weld State: Colorado

Platform Express

Triple Combo

County: Weld
Field: Eaton
Location: SHL: SWSE 878' FSL & 2069' FEL
Well: NGL C10
Company: NGL Water Solutions DJ LLC

Location:				
SHL: SWSE 878' FSL & 2069' FEL		Elev.:	K.B.	4820.50 ft
Section 35, Township 7N, Range 65W			G.L.	4807.00 ft
Lat: 40.525140, Long: -104.628010			D.F.	4819.50 ft
Permanent Datum:	Ground Level	Elev.:		4807.00 f
Log Measured From:	Kelly Bushing	13.50 ft		above Perm.Datum
Drilling Measured From:	Kelly Bushing			

API Serial No.	Section:	Township:	Range:
05-123-40772	35	7N	65W

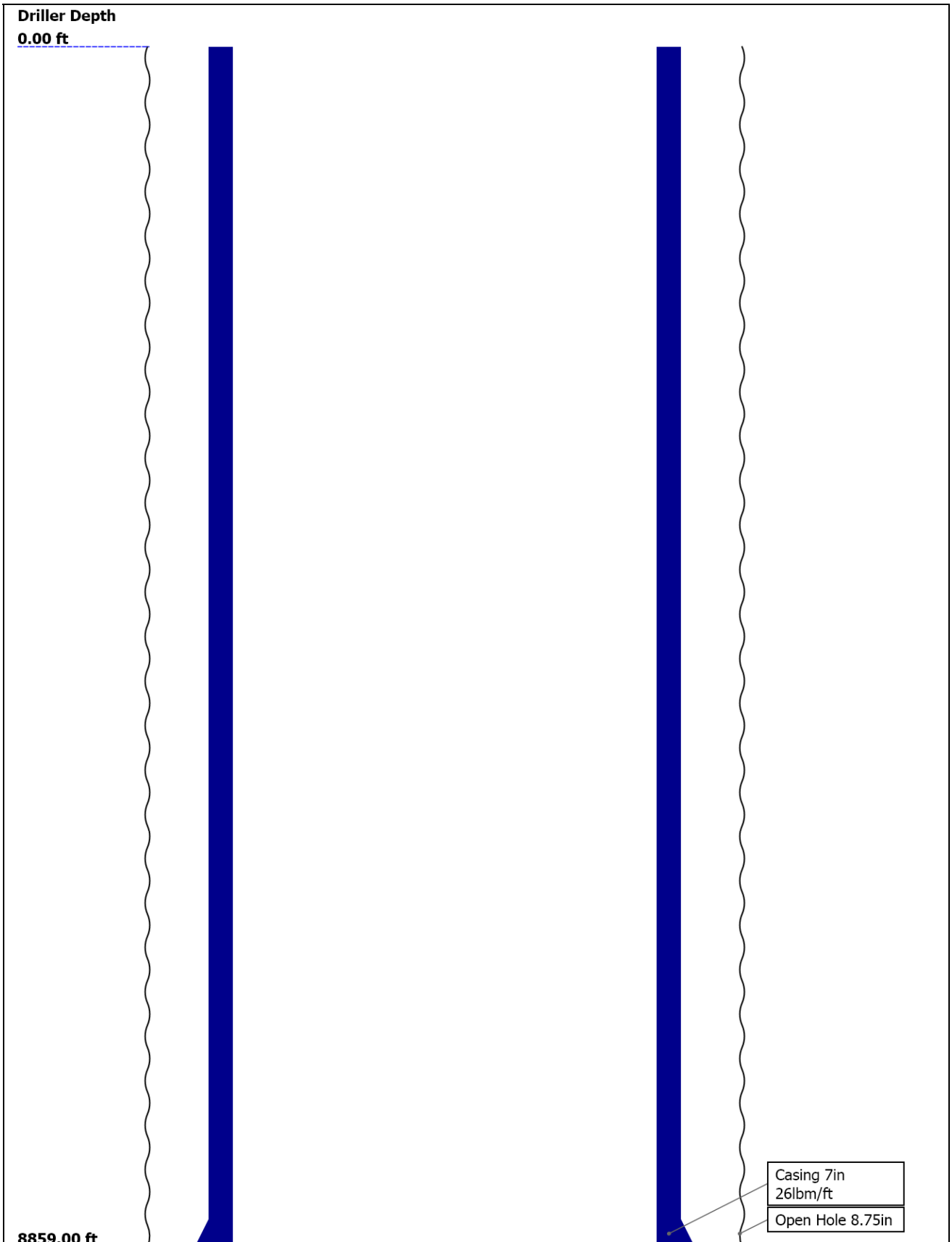
Logging Date		31-Mar-2015				
Run Number		Run 2				
Depth Driller		10442.00 ft				
Schlumberger Depth		10482.00 ft				
Bottom Log Interval		10482.00 ft				
Top Log Interval		8890.00 ft				
Casing Driller Size @ Depth		7 in @ 8859.00 ft				
Casing Schlumberger		8890 ft				
Bit Size		6.125 in				
Type Fluid In Hole		Water				
MUD	Density	Viscosity	9 lbm/gal	52 s		
	Fluid Loss	PH	5.4 cm3	9.5		
	Source of Sample		Active Tank			
RM @ Meas Temp			0.4 ohm.m @ 73 degF			
RMF @ Meas Temp			0.3 ohm.m @ 73 degF			
RMC @ Meas Temp			0.5 ohm.m @ 73 degF			
Source RMF	RMC		Calculated	Calculated		
RM @ BHT	RMF @ BHT		0.12 @ 269	0.09 @ 269		
Max Recorded Temperatures			269 degF			
Circulation Stopped	Time		31-Mar-2015	09:30:00		
Logger on Bottom	Time		31-Mar-2015	15:54:00		
Unit Number	Location:		9115	Fort Morgan, CO		
Recorded By			Max Pace			
Witnessed By			Mike Seidensticker			

Disclaimer

Contents

11. Calibration Report
12. Tail

Well Sketch



Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	8.75	6.125				
Top Driller (ft)	0	8859				
Top Logger (ft)	0	8859				
Bottom Driller (ft)	8859	10442				
Bottom Logger (ft)	8859	10482				
Casing						
Size (in)	7					
Weight (lbm/ft)	26					
Inner Diameter (in)	6.276					
Grade	J55					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	8859					
Bottom Logger (ft)	8890					

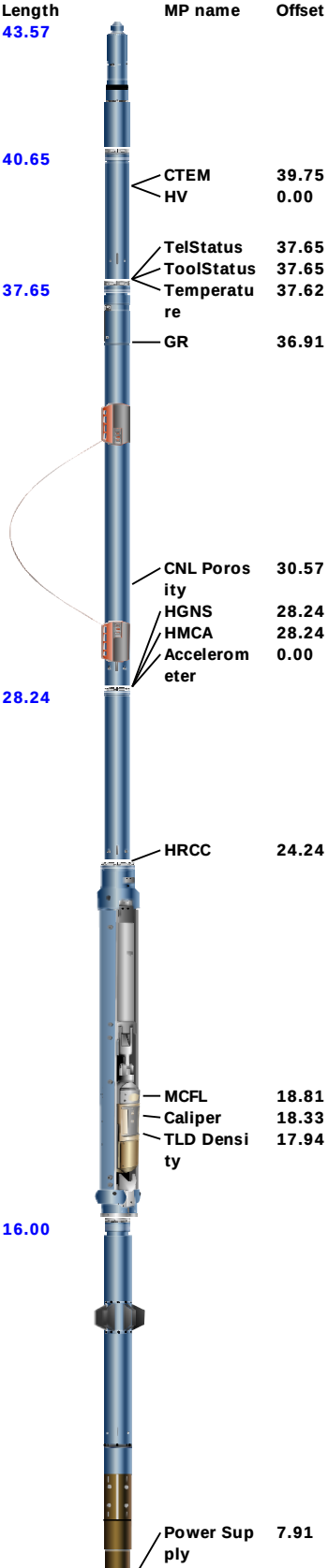
Borehole Fluids

Parameter(unit)	Run 2					
Fluid Type	Water					
Max Recorded Temperatures (degF)	269					
Source of Sample	Active Tank					
Salinity (ppm)	1200					
Density (lbm/gal)	9					
Funnel Viscosity (s)	52					
Fluid Loss (cm3)	5.4					
PH	9.5					
Date/Time Circulation Stopped	31-Mar-2015 09:30:00					
Date Logger on Bottom	31-Mar-2015					
Time Logger on Bottom	15:54:00					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	0.4 @ 73					
RMF @ Meas Temp (ohm.m@degF)	0.3 @ 73					

RMC @ Meas Temp (ohm.m@degF)	0.5 @ 73					
RM @ BHT (ohm.m@degF)	0.12 @ 269					
RMF @ BHT (ohm.m@degF)	0.09 @ 269					
RMC @ BHT (ohm.m@degF)	0.14 @ 269					
Total Solid (%)						
High Gravity Solids (%)						

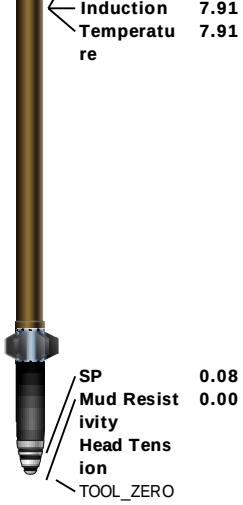
Remarks and Equipment Summary

Run 2: Toolstring



Run 2: Remarks

Run 2: Remarks
All Schlumberger depth control procedures followed
IDW used as primary depth reference
Z Chart used as secondary depth reference
Matrix zoned per client request
This is the second run in hole



Lengths are in ft
Maximum Outer Diameter = 5.000 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

	Run 2		
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		
Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		
Logging Cable			
Type	7-46A-XS		
Serial Number			
Length	23800.00 ft		
Conveyance Type	Wireline		
Rig Type	Land		

Run 2:Depth Control Parameters		Depth Control Remarks
Log Sequence	First Log In the Well	
Rig Up Length At Surface		
Rig Up Length At Bottom		
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

Run 2

5" Triple Combo

Software Version

Acquisition System	Version
Maxwell	5.1.33858.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 2	Main[3]:Up	Up	197.99 ft	10502.33 ft	31-Mar-2015 4:05:27 PM	31-Mar-2015 5:37:37 PM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:NGL Water Solutions DJ LLC Well:NGL C10

Run 2: Main[3]:Up:S006

Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 31-Mar-2015 17:40:16

Channel	Source	Sampling
AT10	AIT-M:AMIS:AMIS	3in
AT20	AIT-M:AMIS:AMIS	3in
AT30	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in
GR	HGNS-H:HGNS-H:HGNS-H	6in
NPOR	HGNS-H:HGNS-H:HGNS-H	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
STIT	DepthCorrection	6in
TIME_1900	WLWorkflow	0.1in

TIME_1900 - Time Marked every 60.00 (s)

Array Induction Two Foot Resistivity A10 (AT10) AIT-M
0.2 ohm.m 2000

Array Induction Two Foot Resistivity A30 (AT30) AIT-M
0.2 ohm.m 2000

Array Induction Two Foot Resistivity A90 (AT90) AIT-M
0.2 ohm.m 2000

Array Induction Two Foot Resistivity A20 (AT20) AIT-M
0.2 ohm.m 2000

Array Induction Two Foot Resistivity A60 (AT60) AIT-M
0.2 ohm.m 2000

Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H
0 10

Gas Effect

NPOR Backup

Standard Resolution Density Porosity (DPHZ) HDRS-H
0.3 ft3/ft3 -0.1

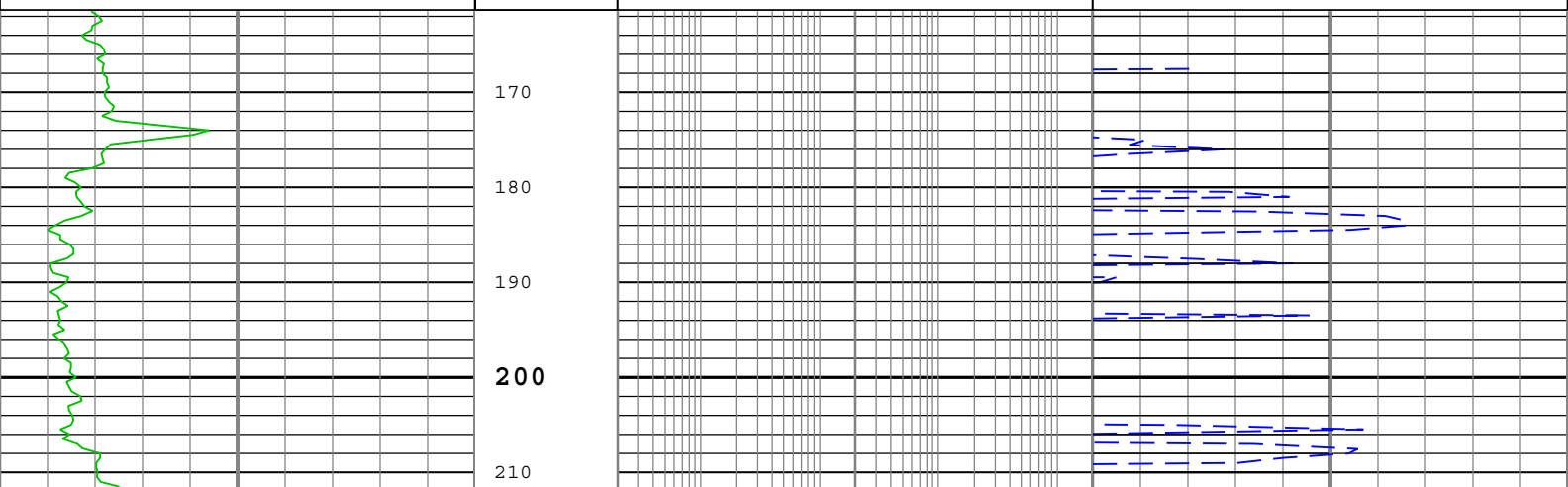
Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H
0.3 m3/m3 -0.1

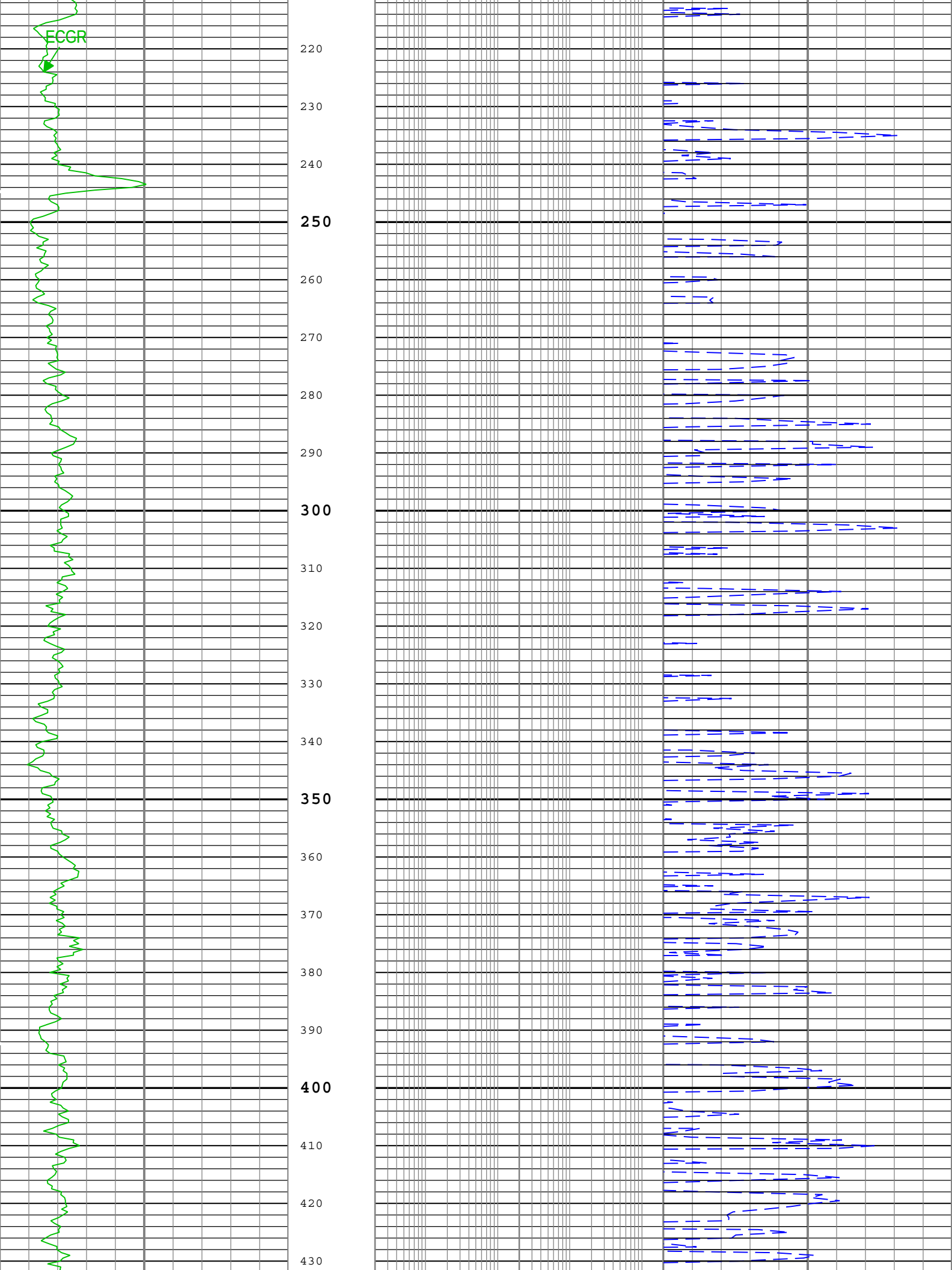
Gamma Ray Back up

Caliper (HCAL) HDRS-H
1 in 11

Gamma Ray (ECGR) HGNS-H
0 gAPI 200

Stuck Tool Indicator, Total (STIT)
0 ft 50

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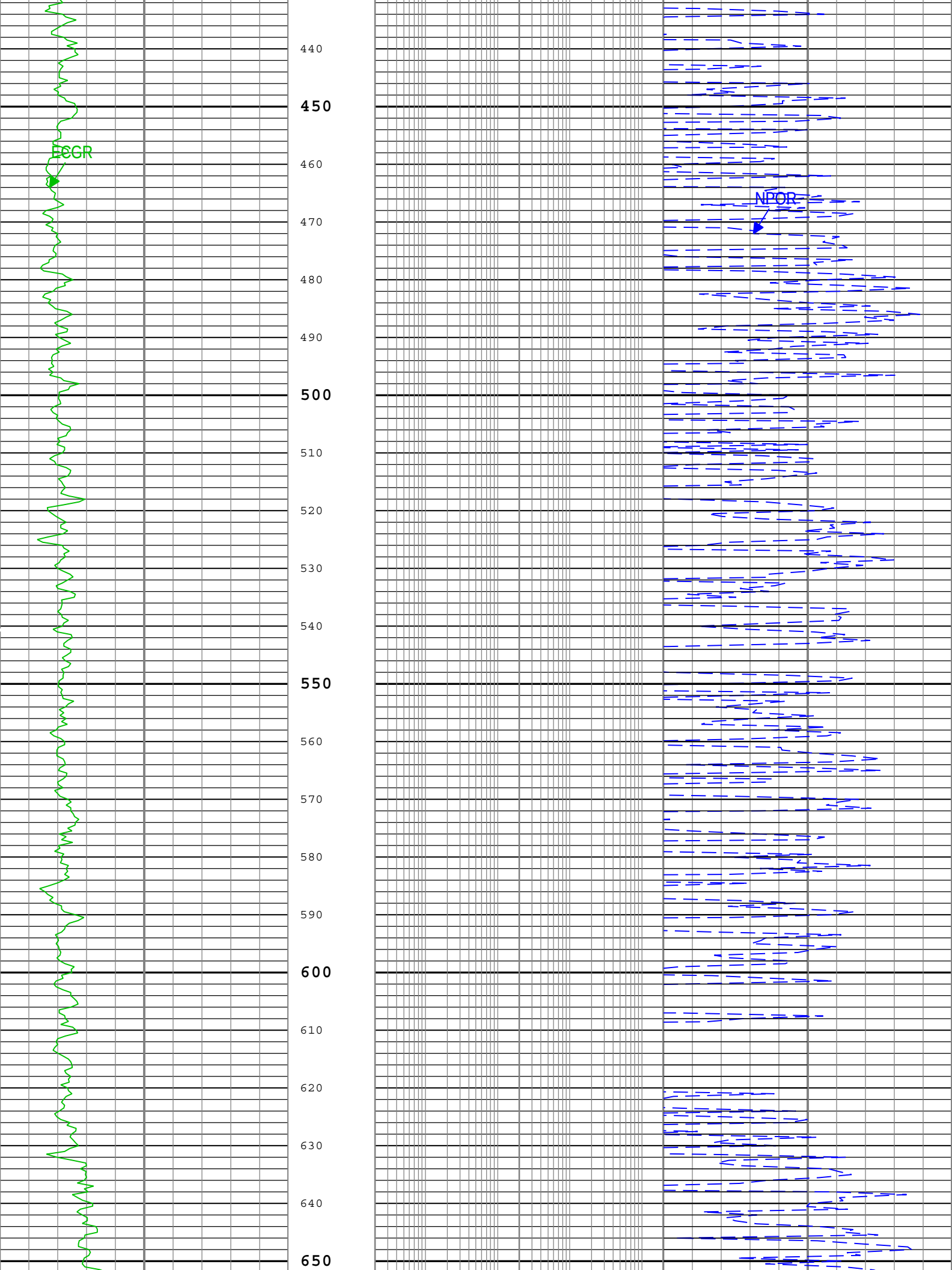
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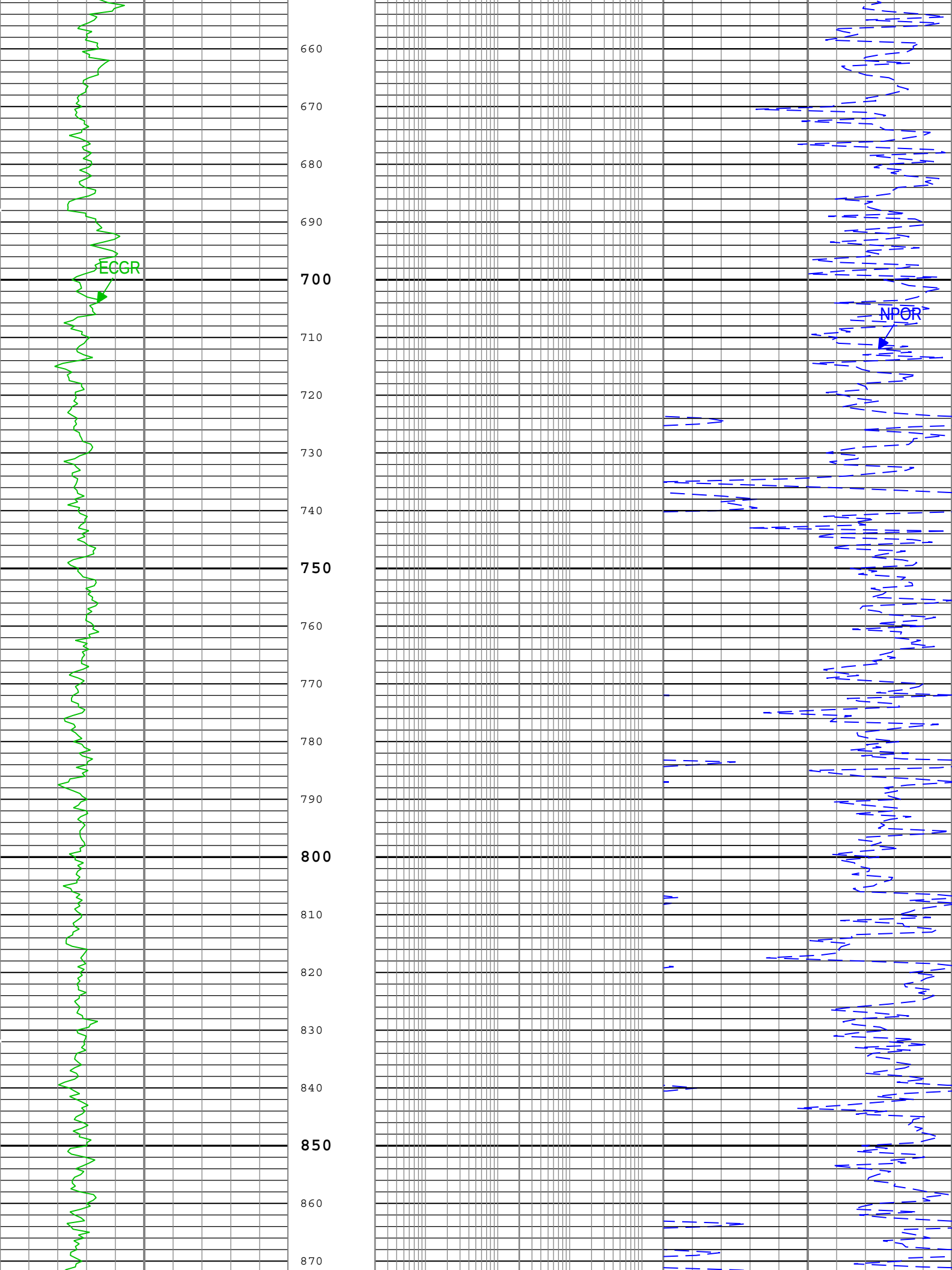
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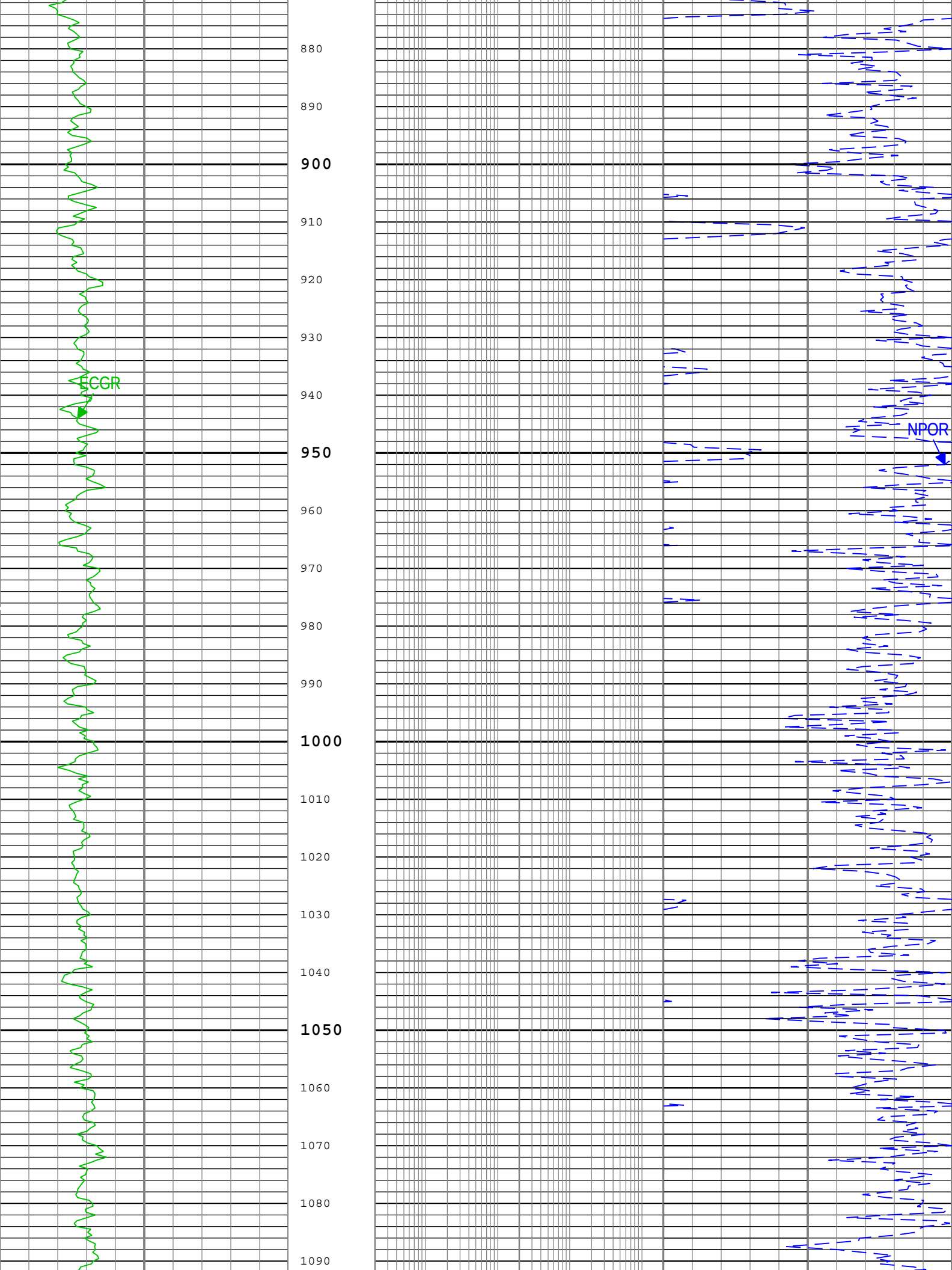
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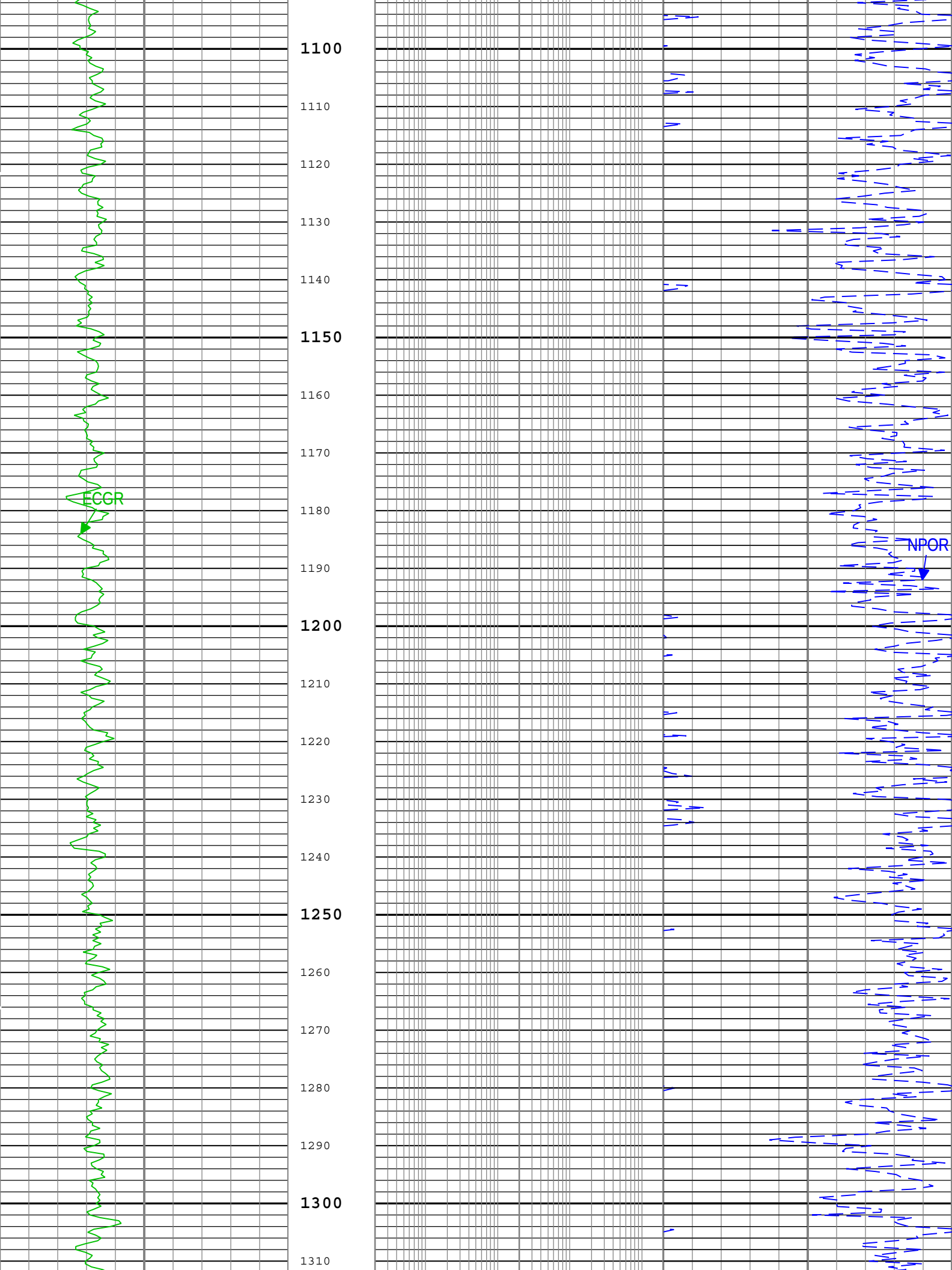
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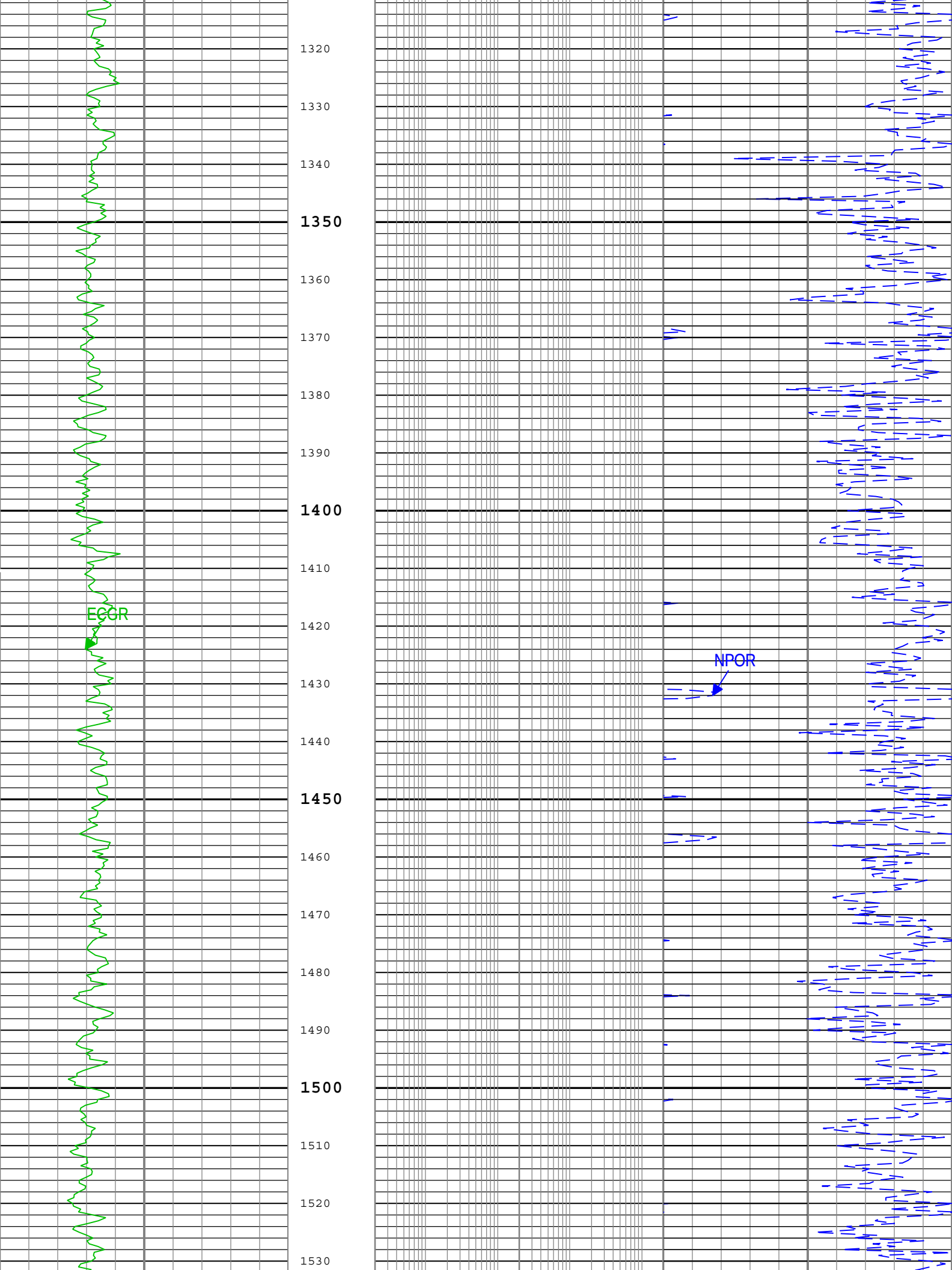
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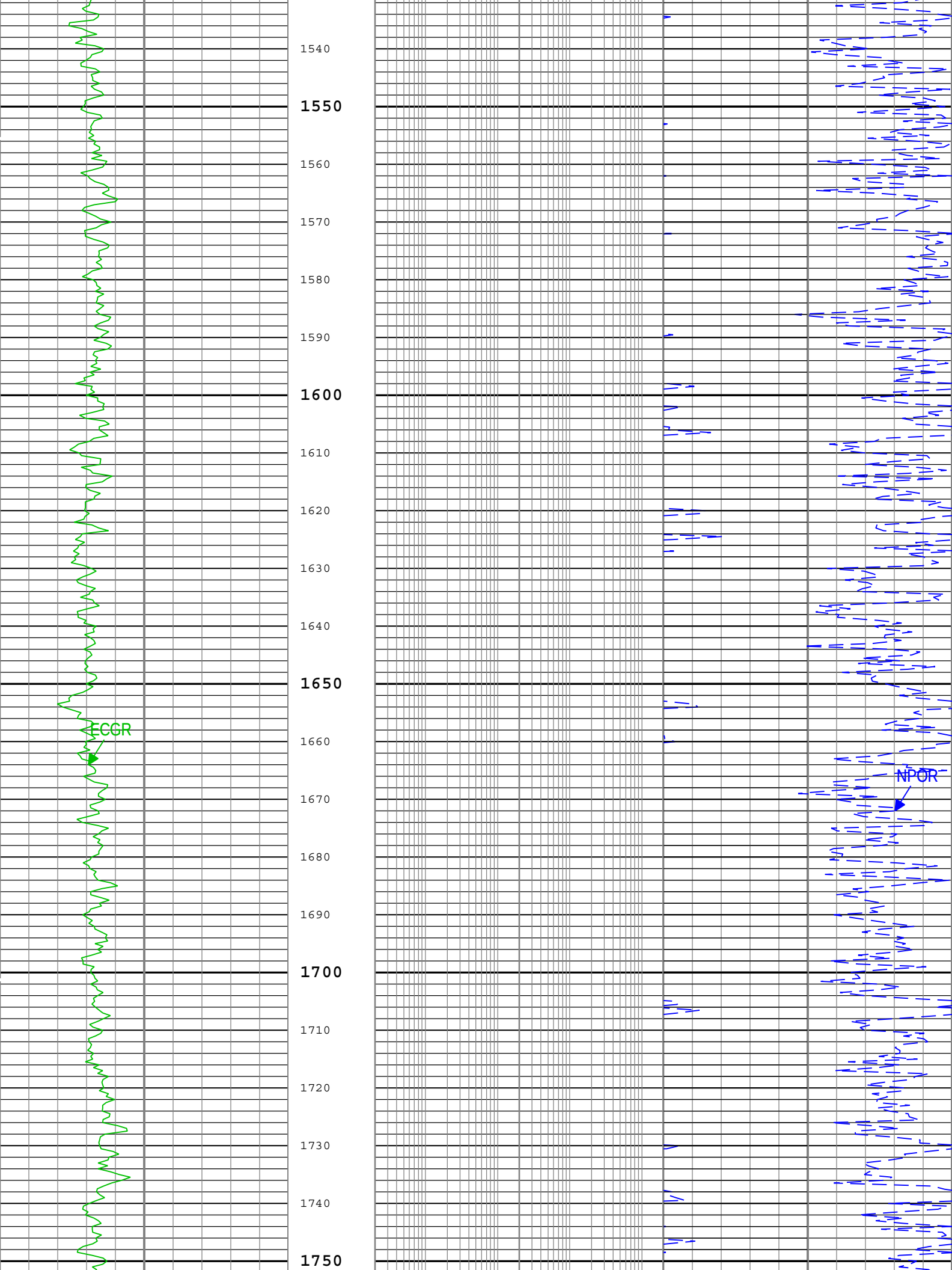
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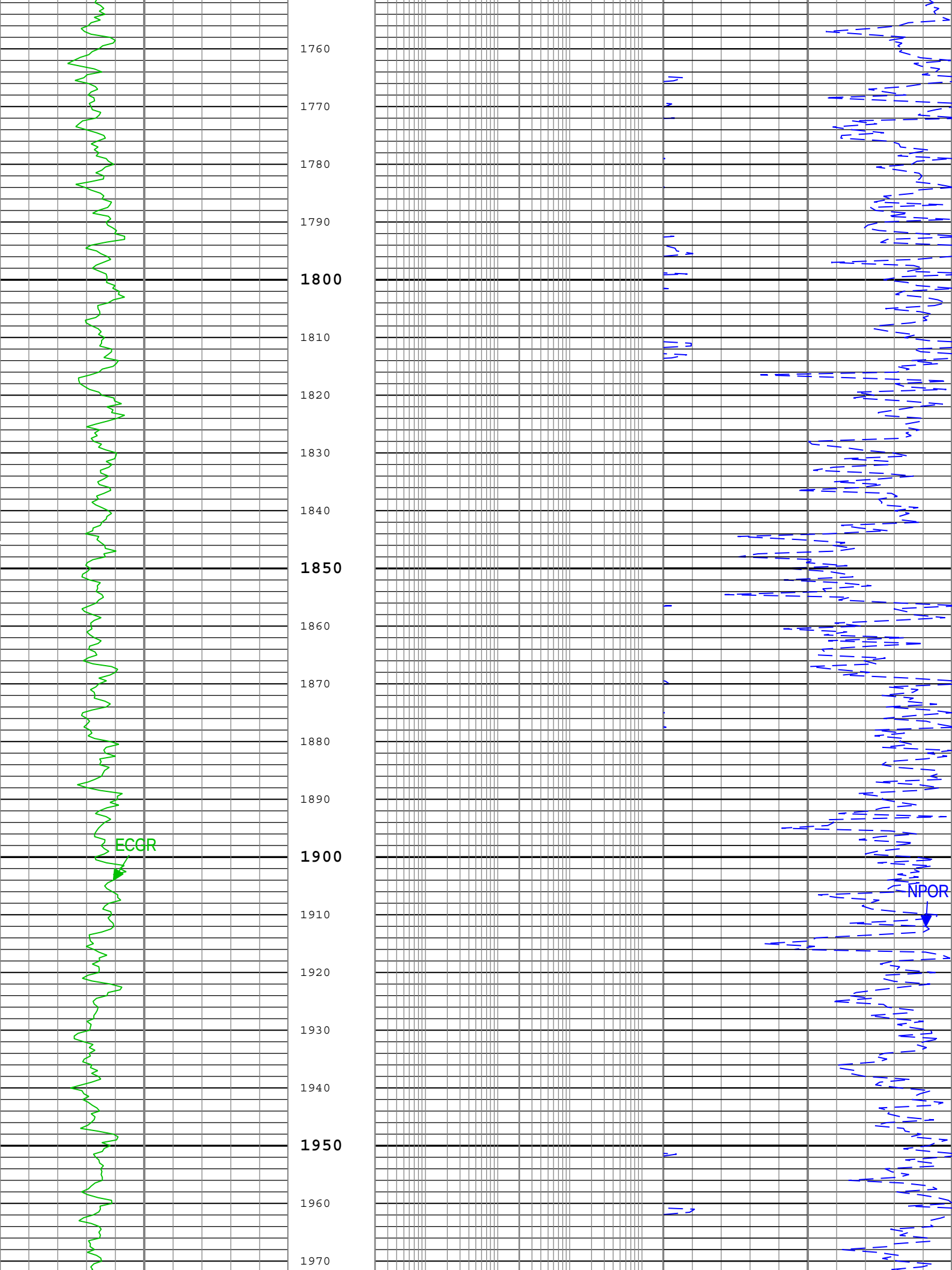
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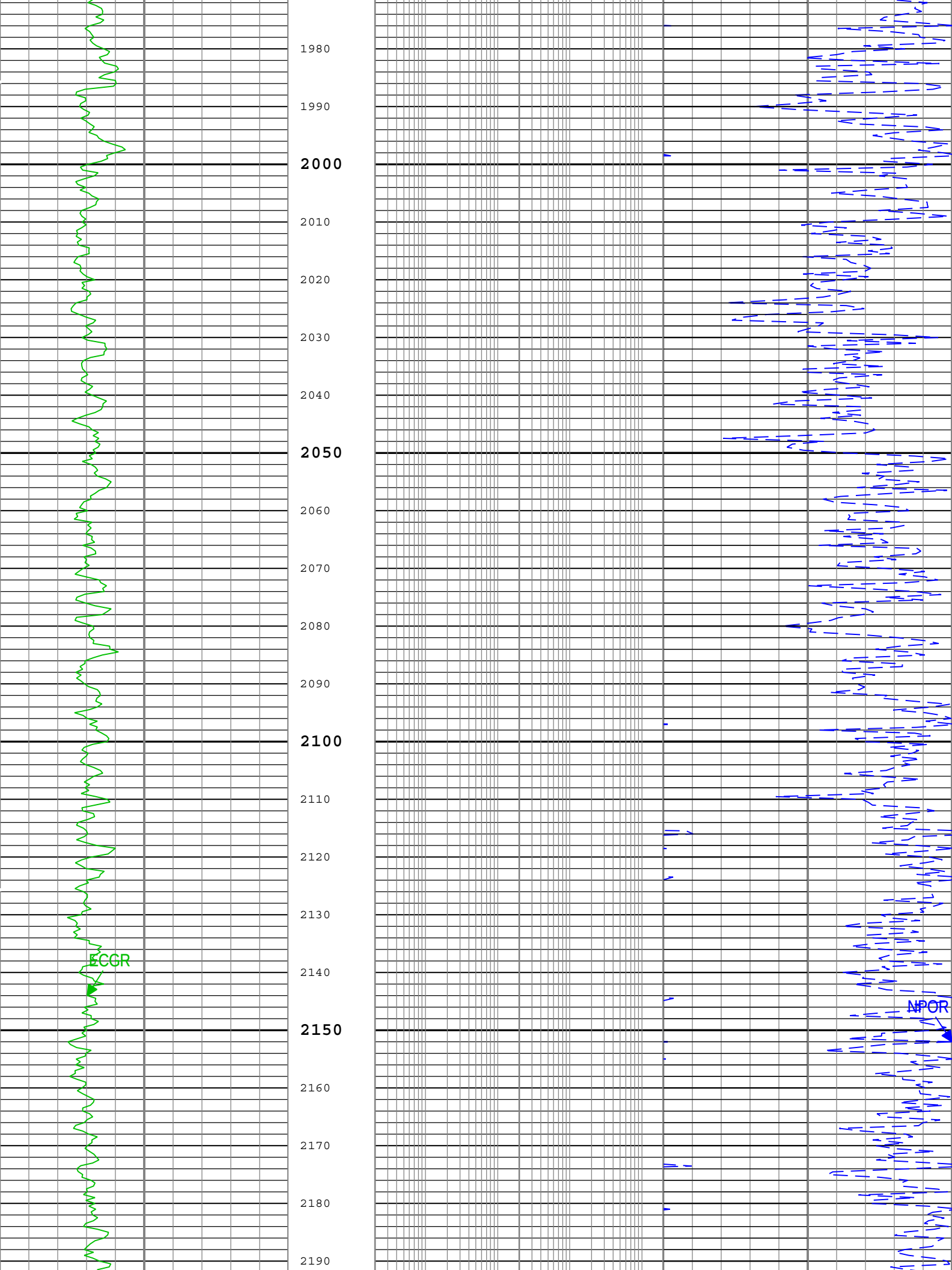
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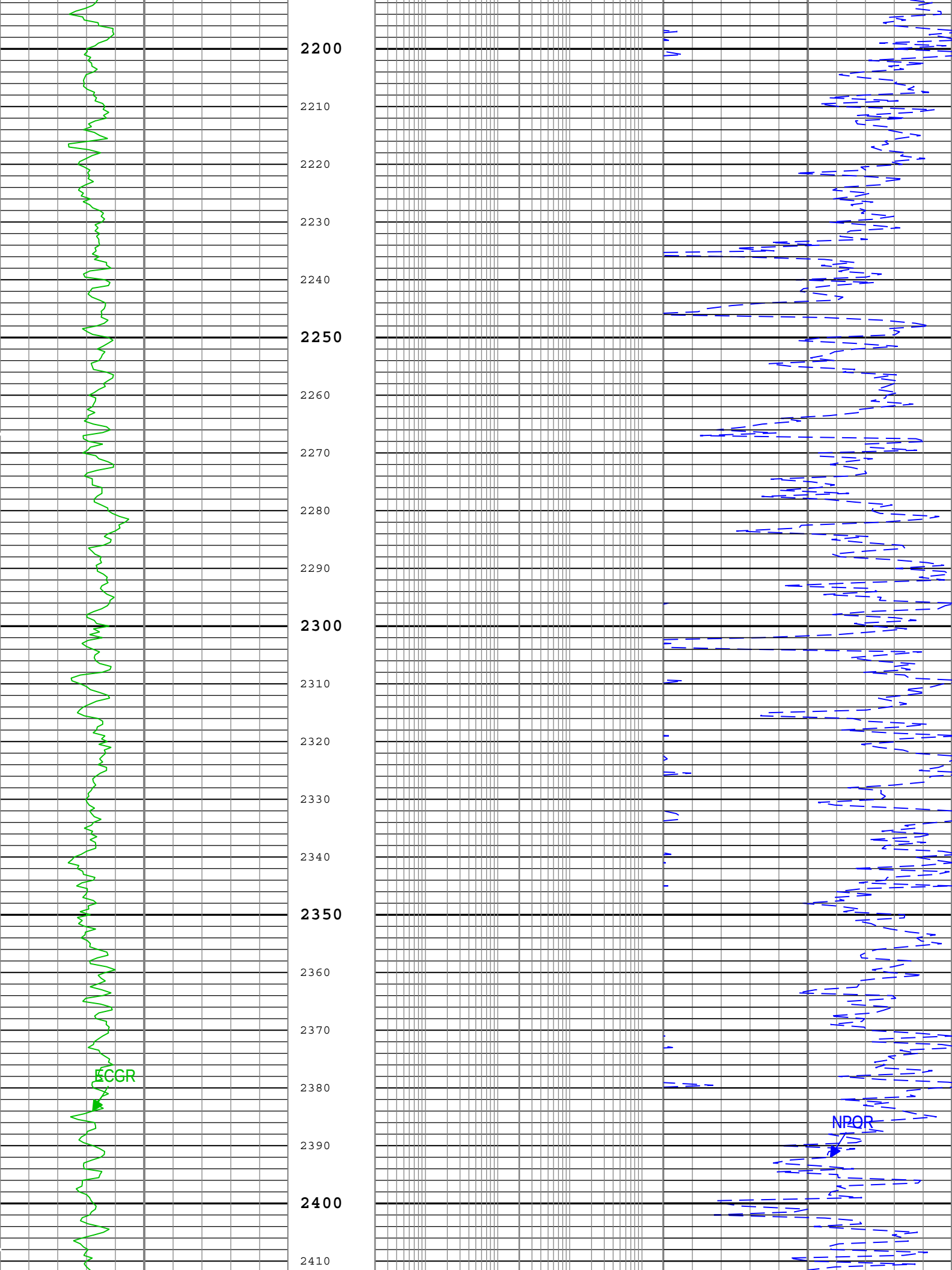
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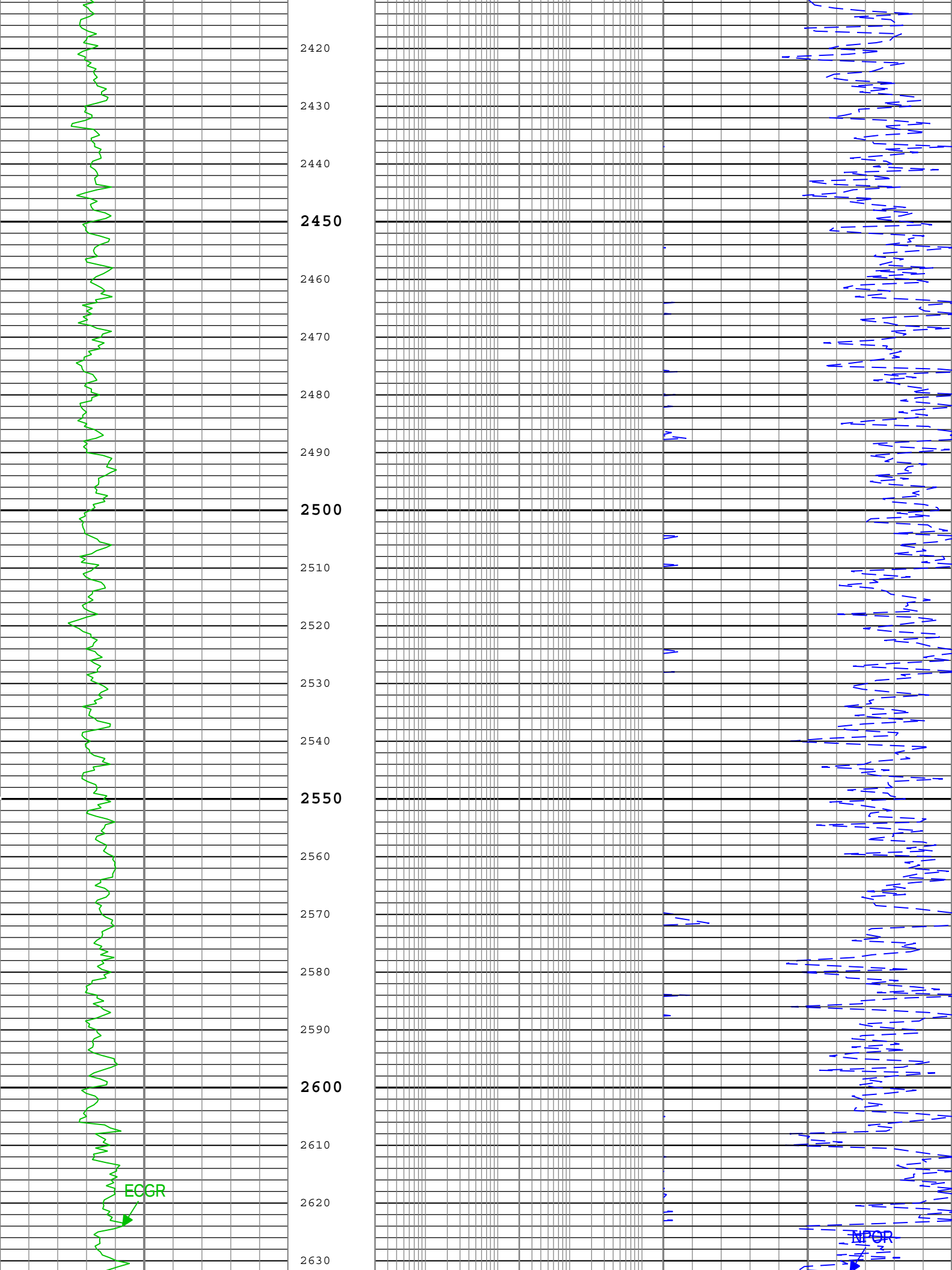
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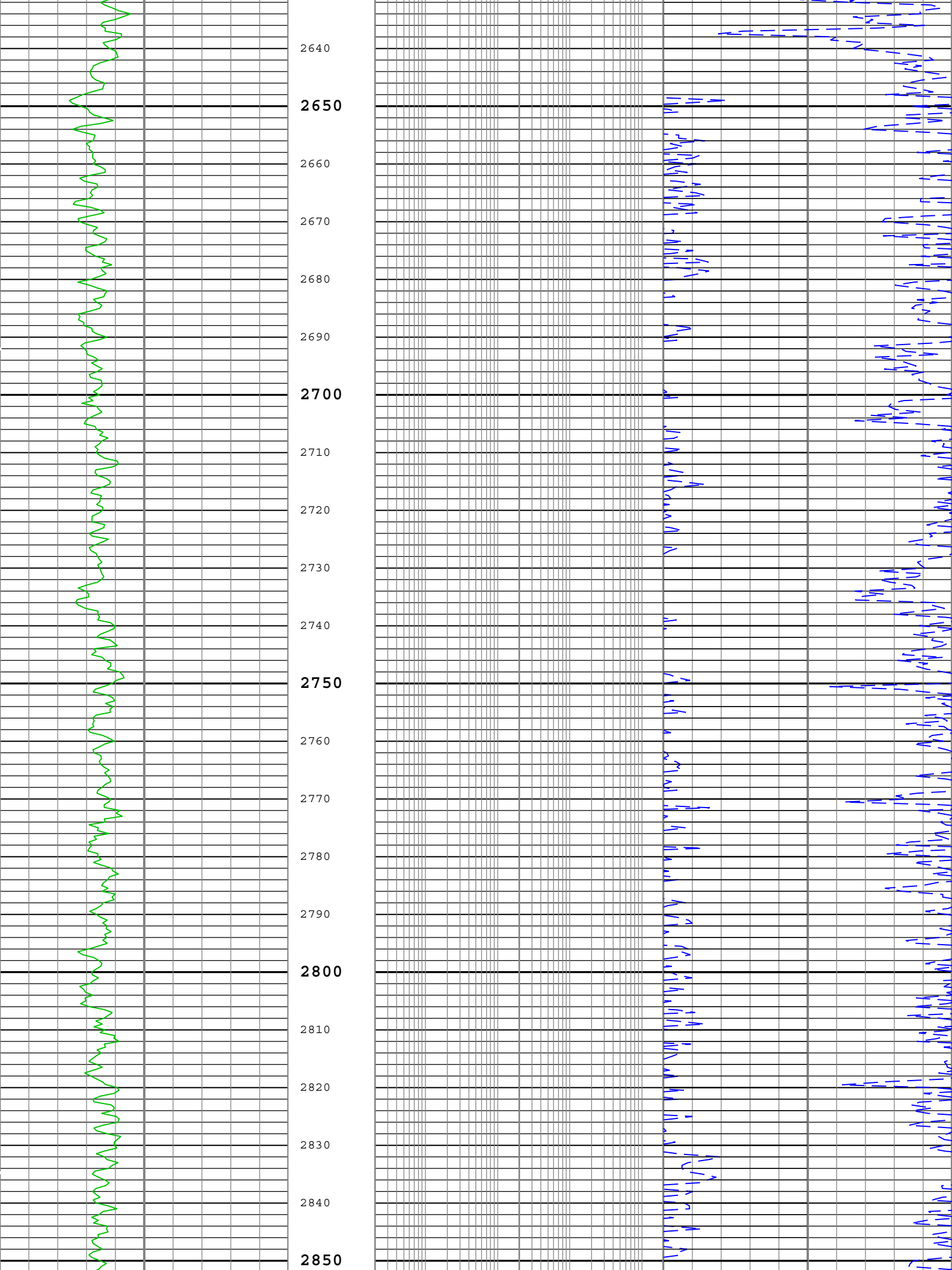
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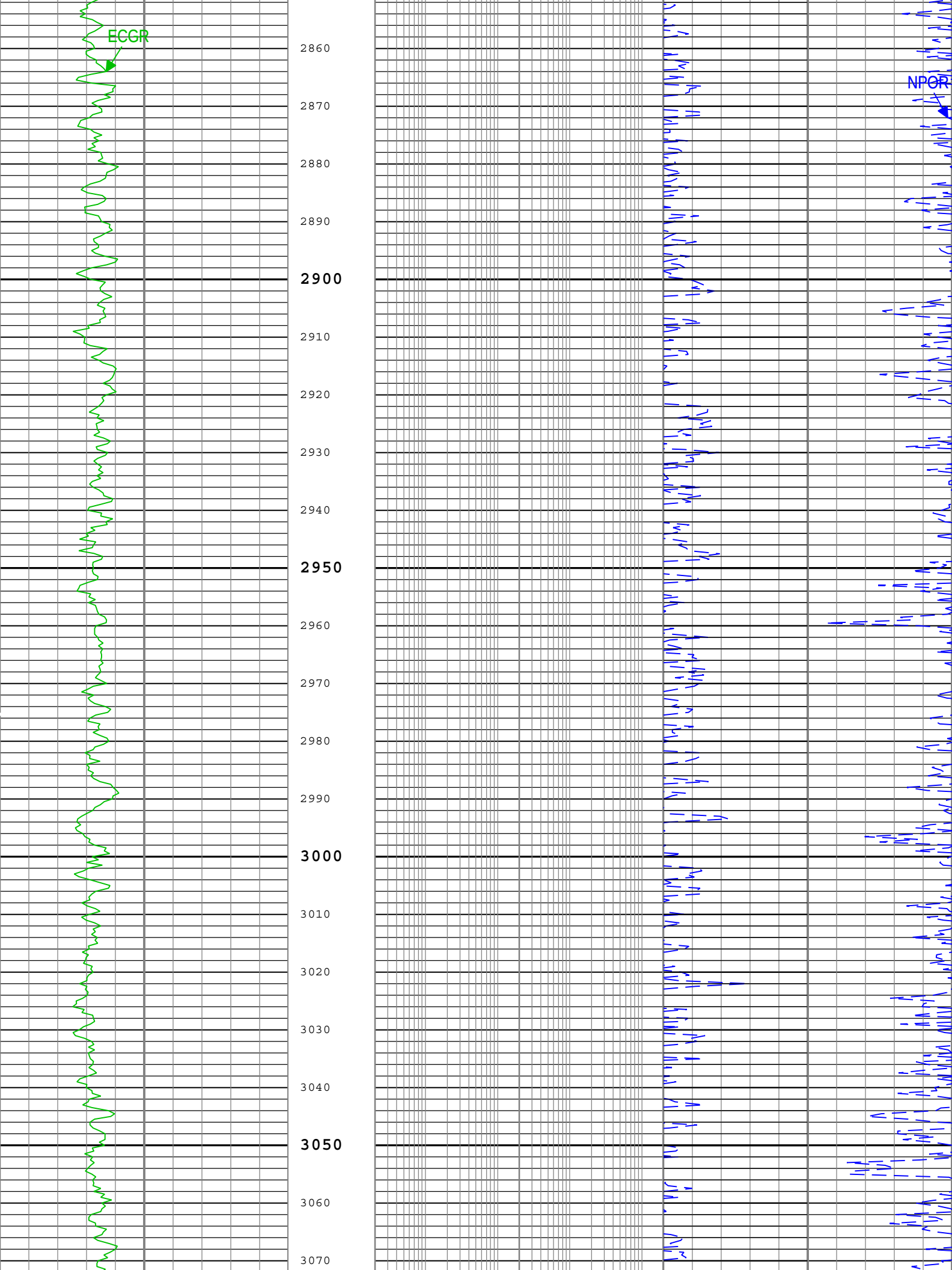
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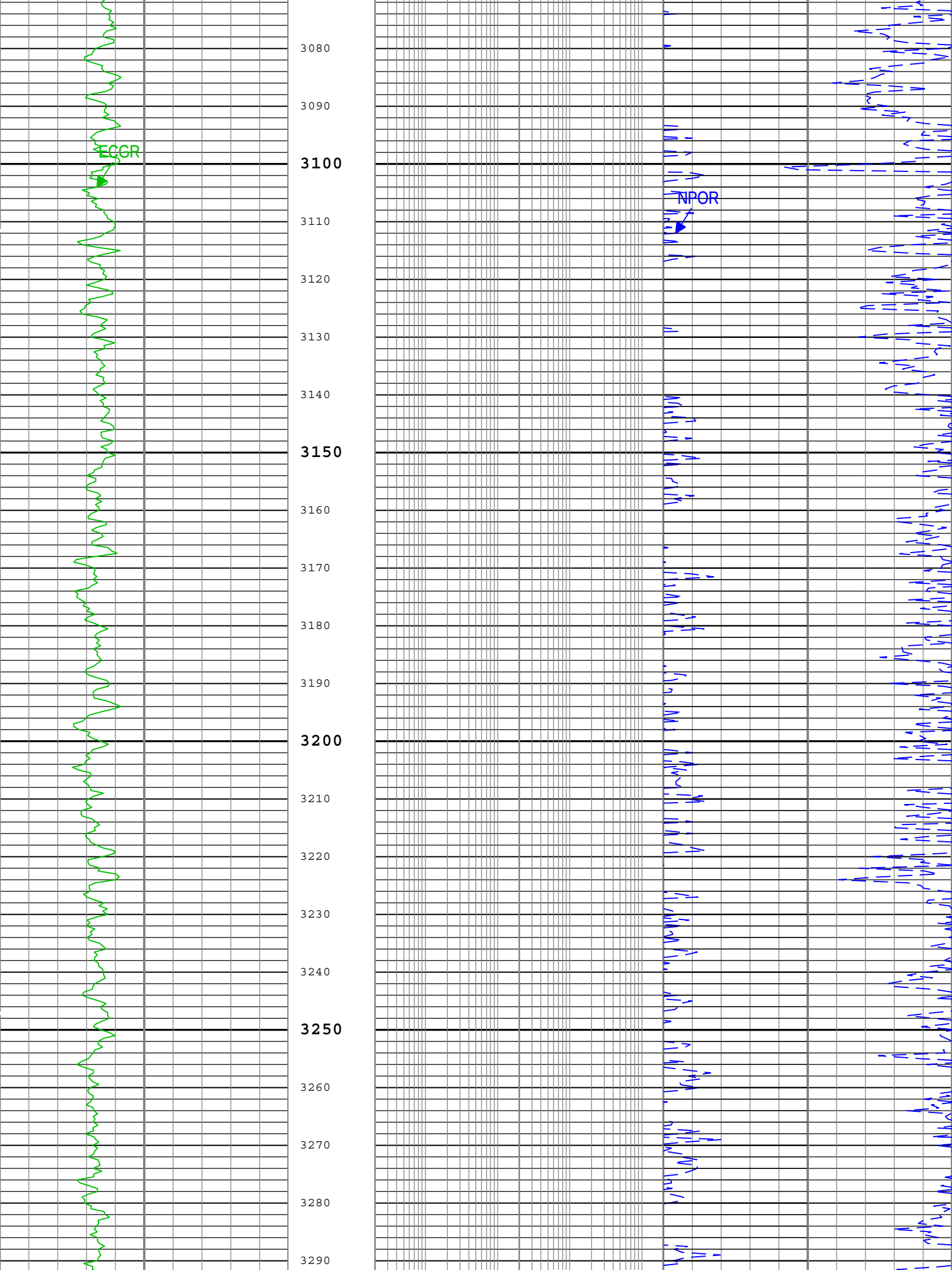
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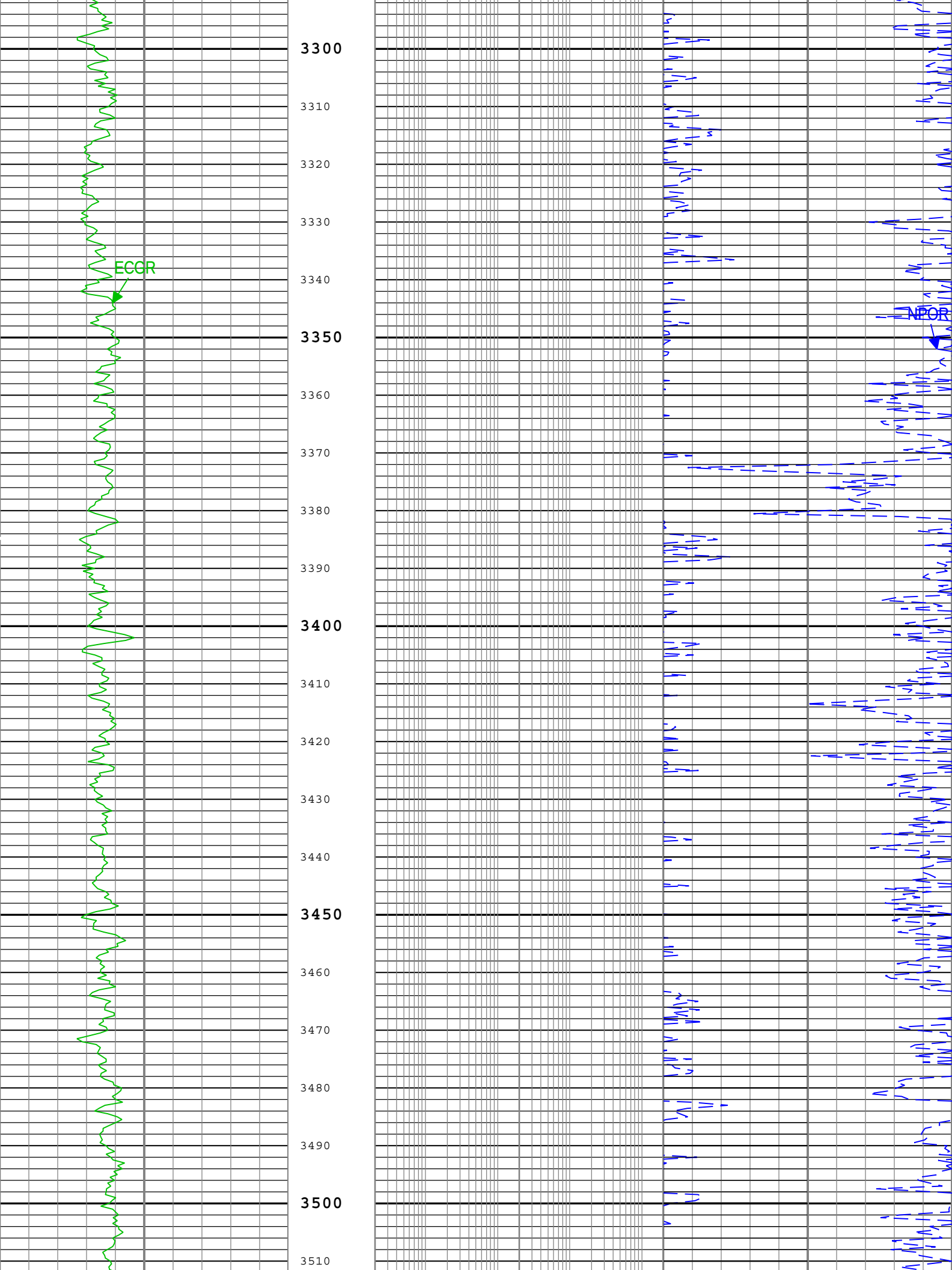
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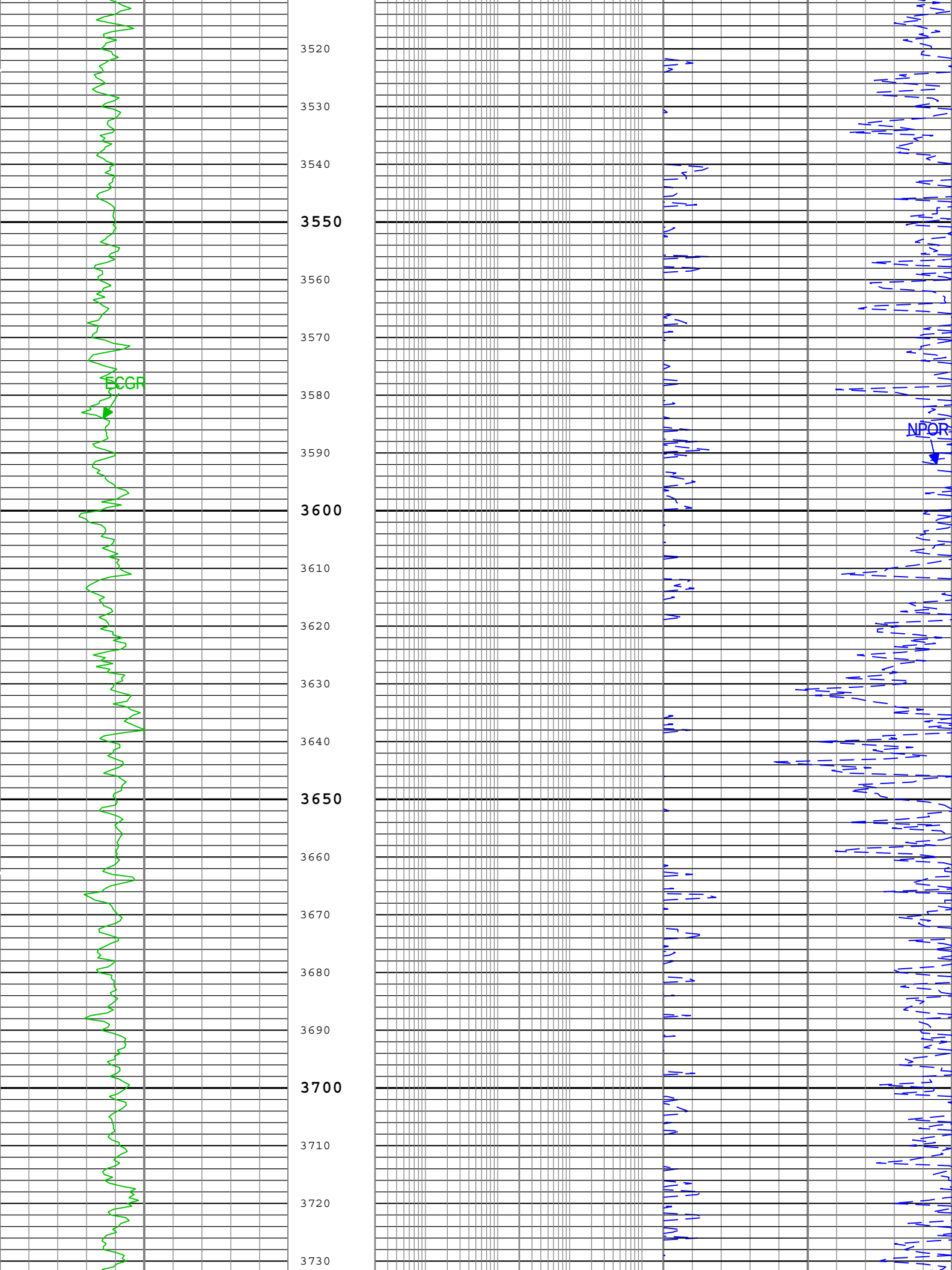
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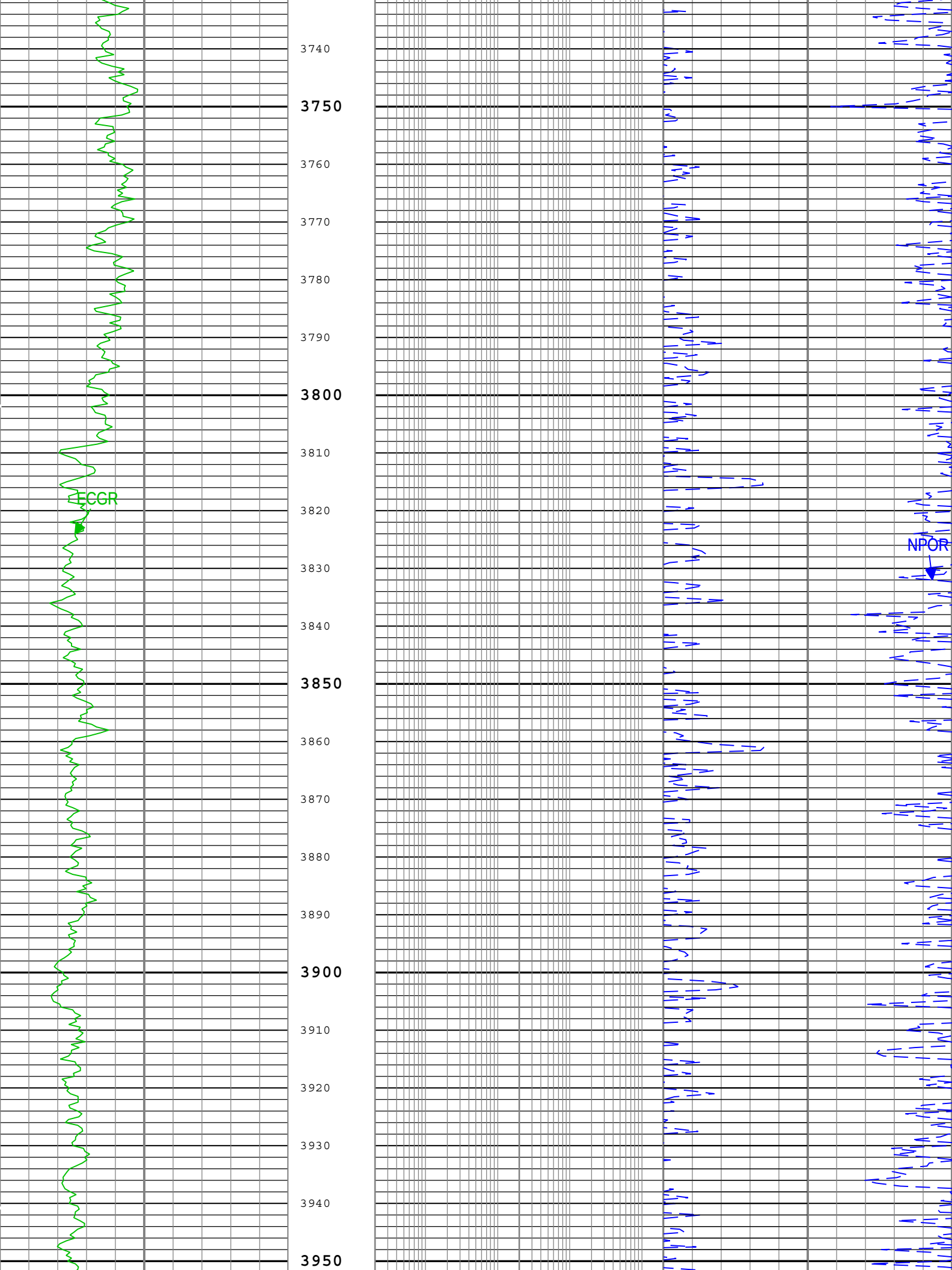
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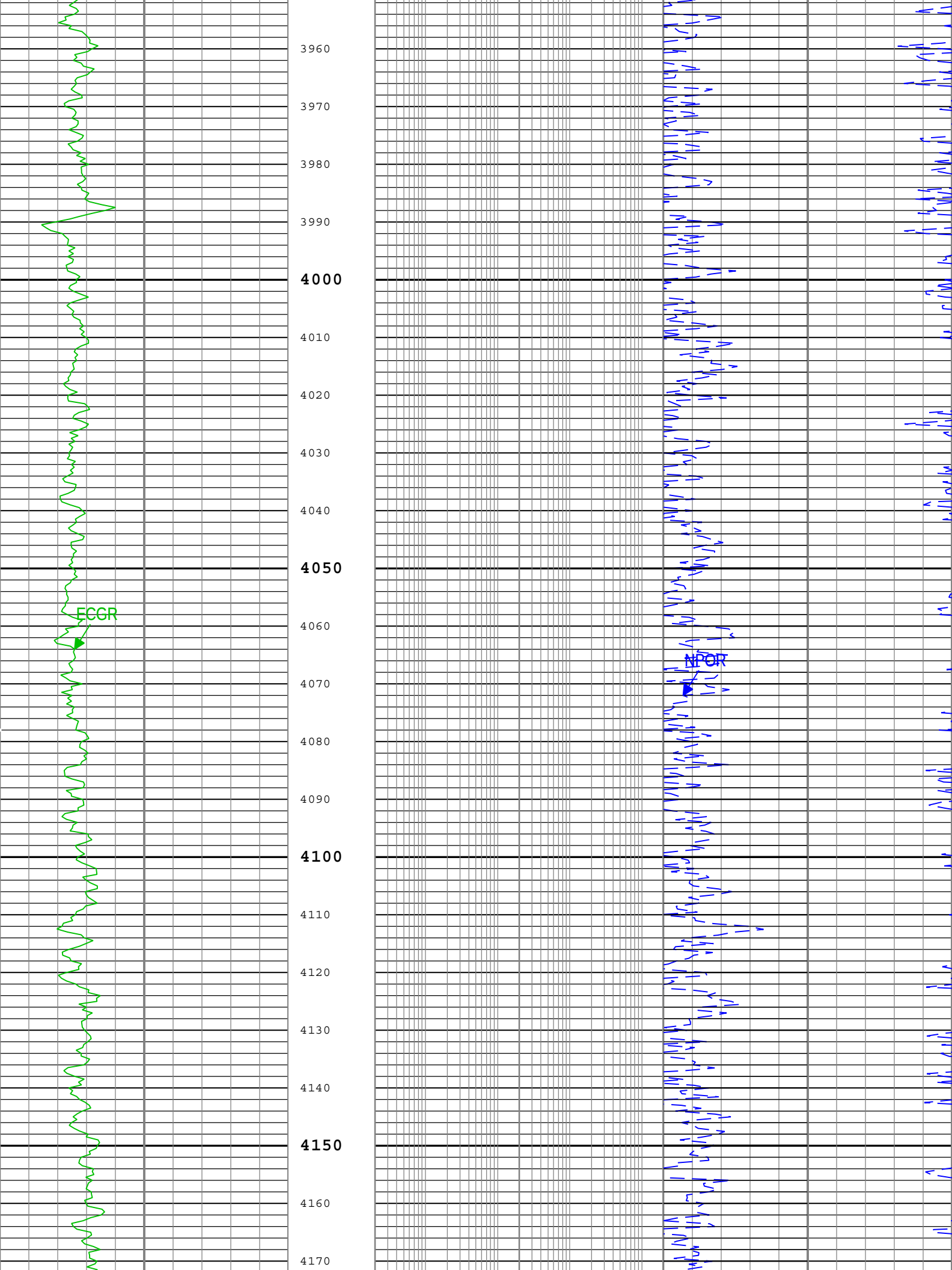
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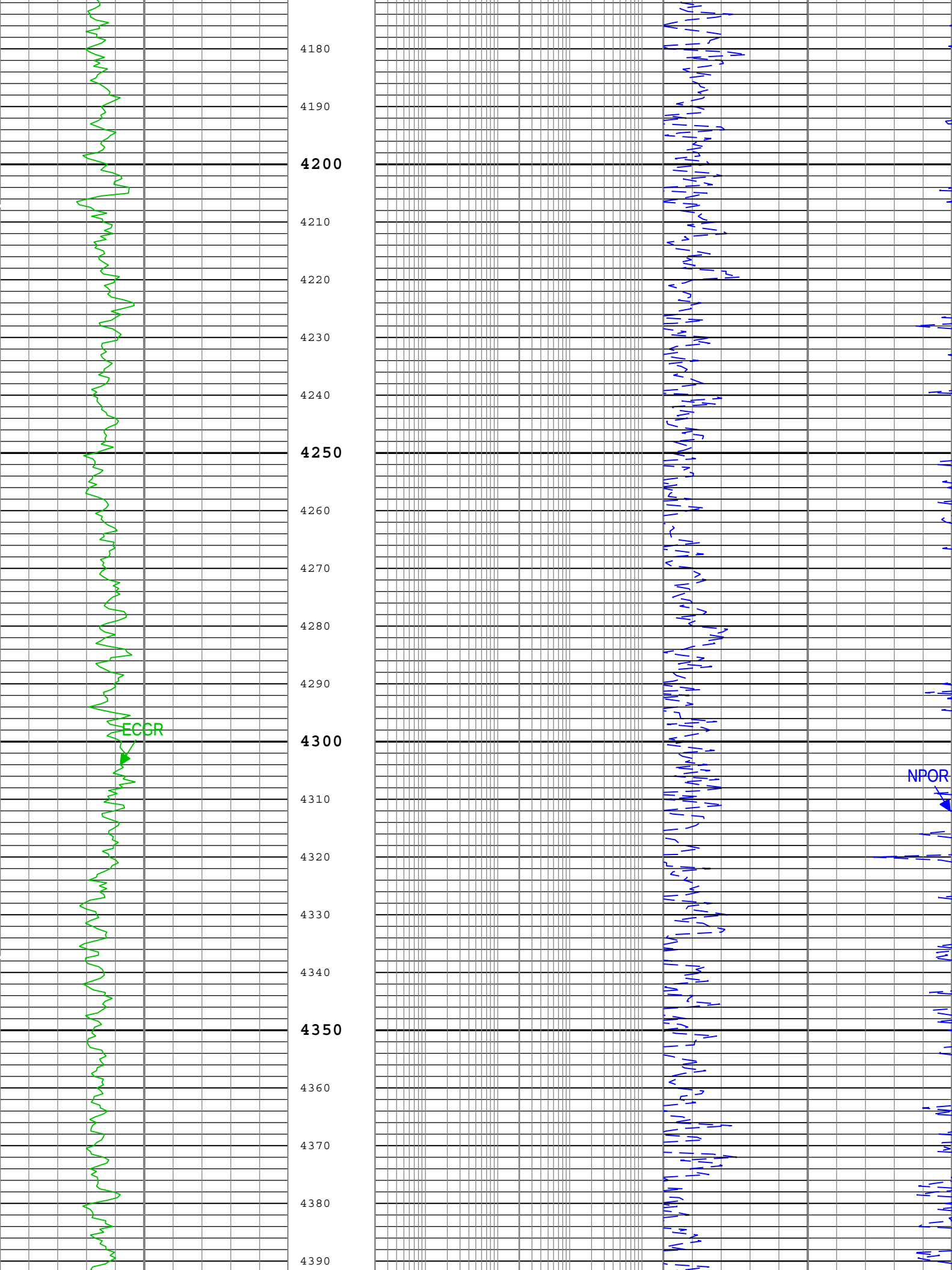
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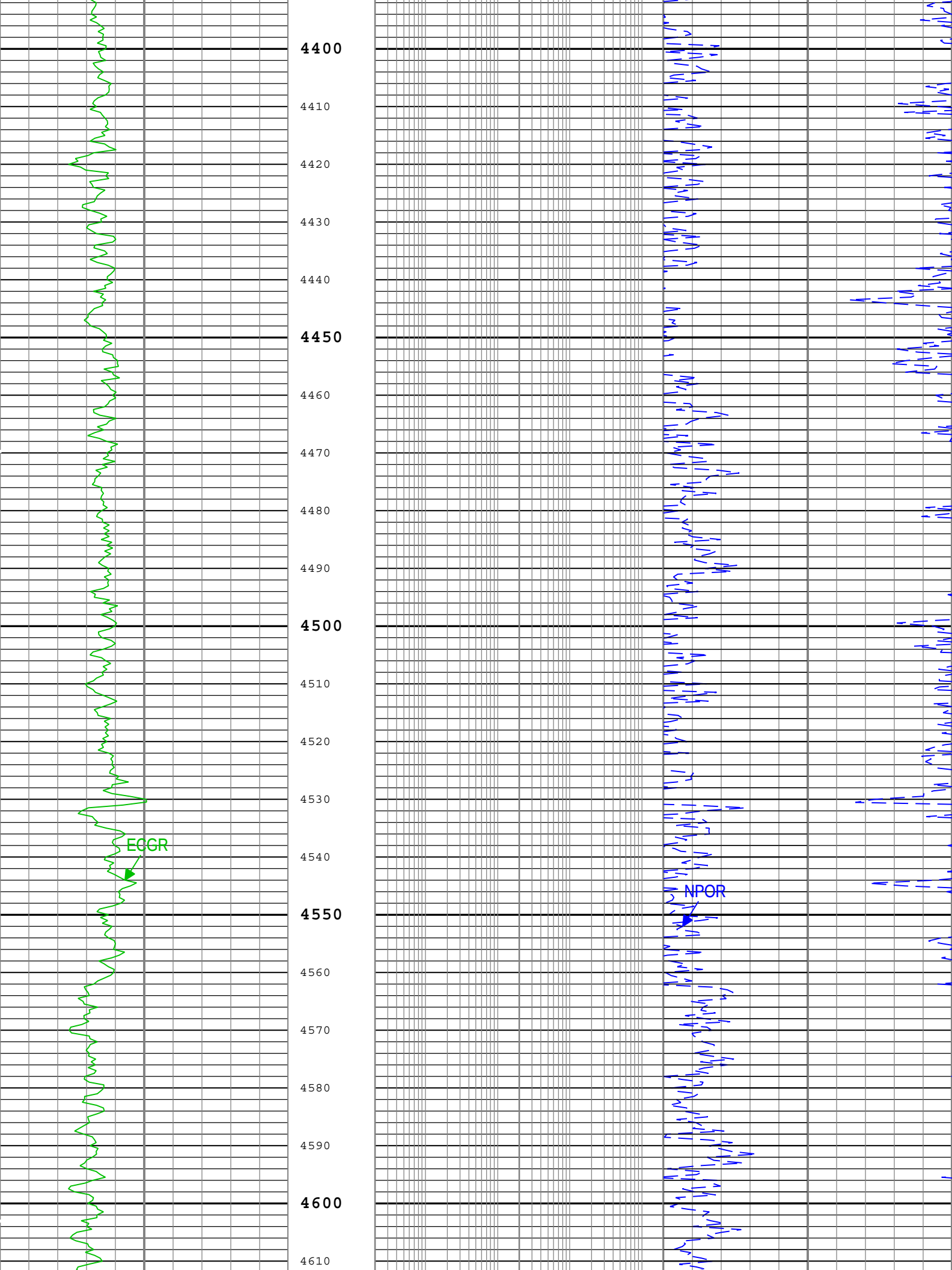
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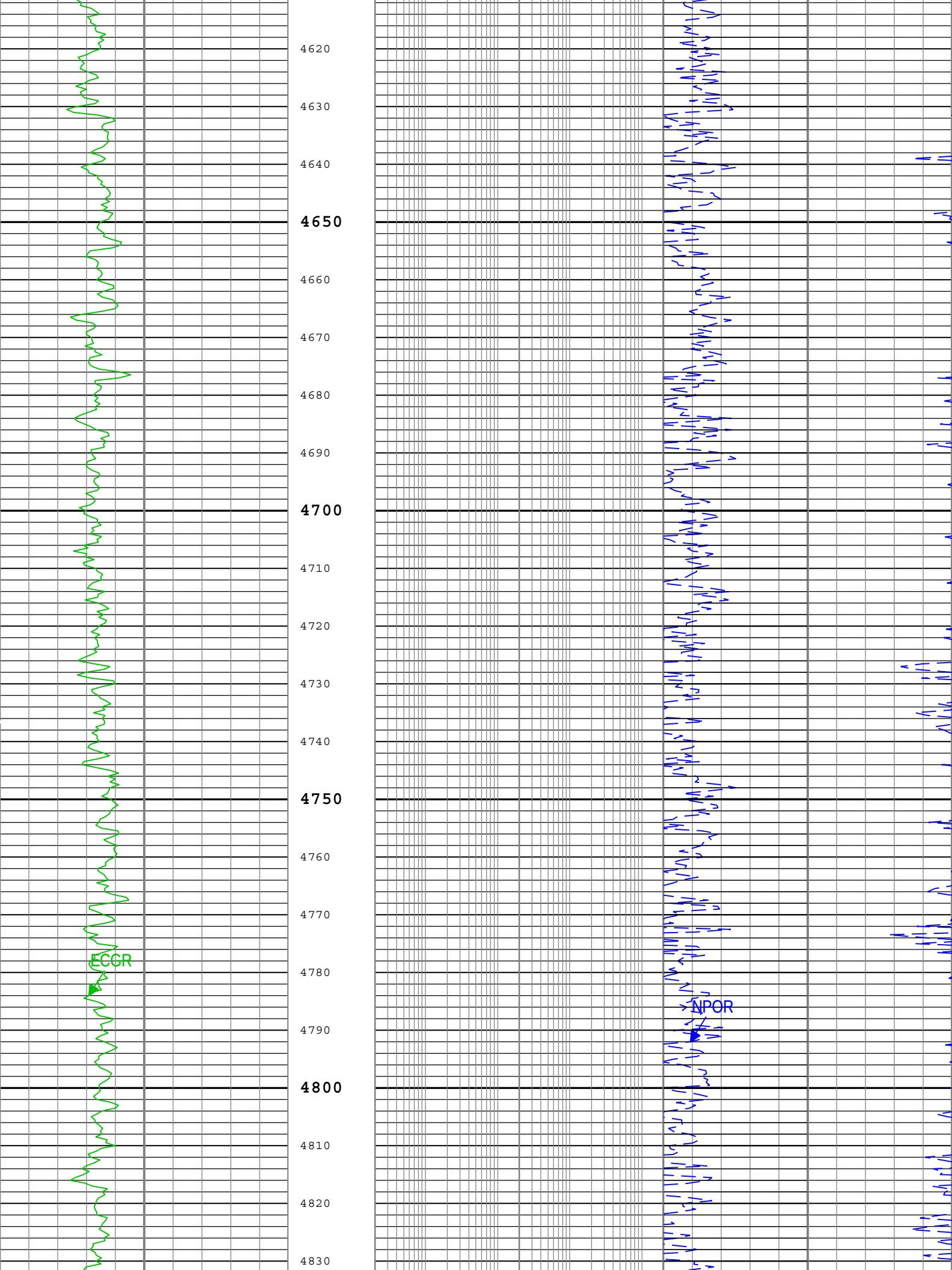
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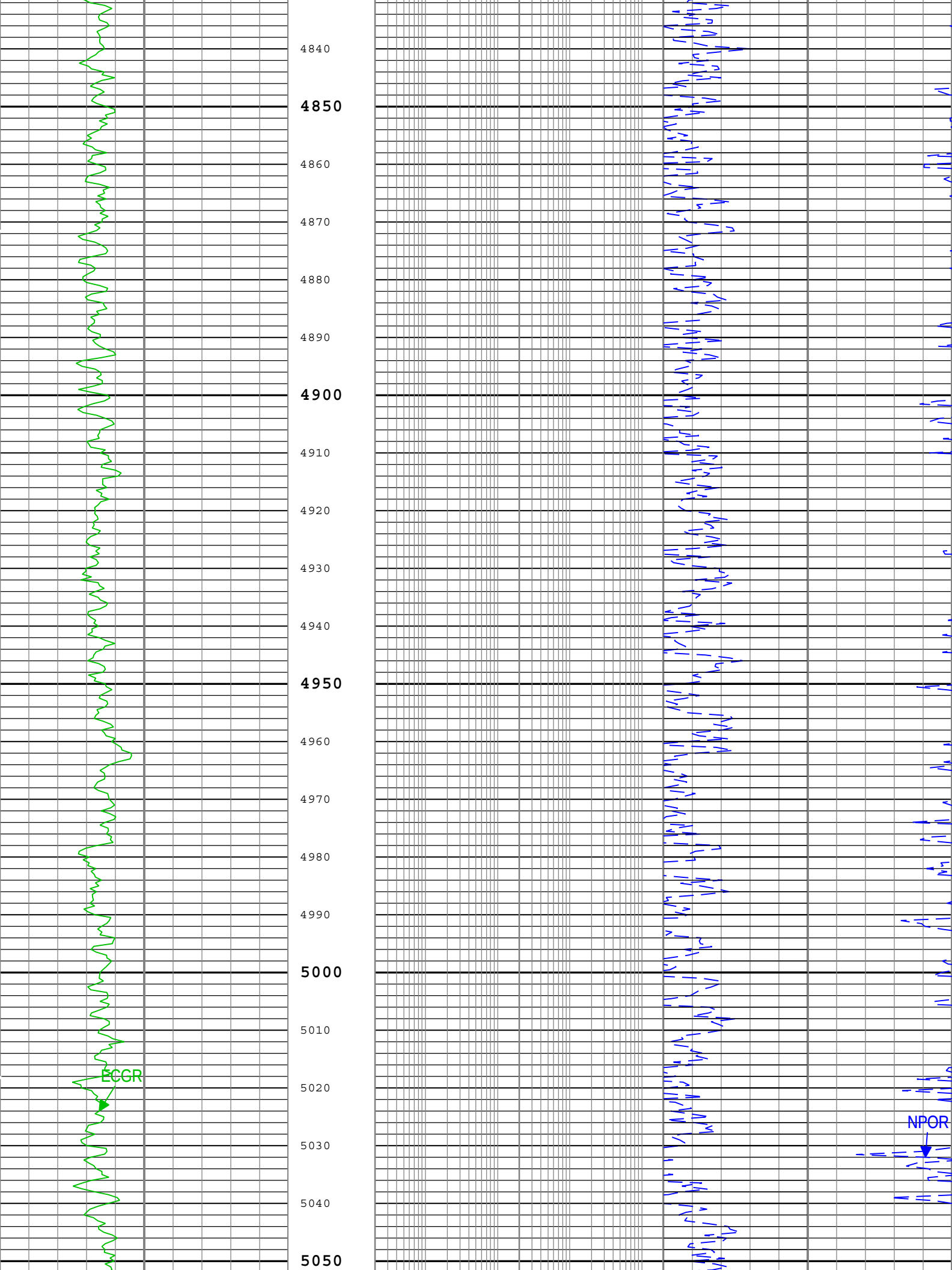
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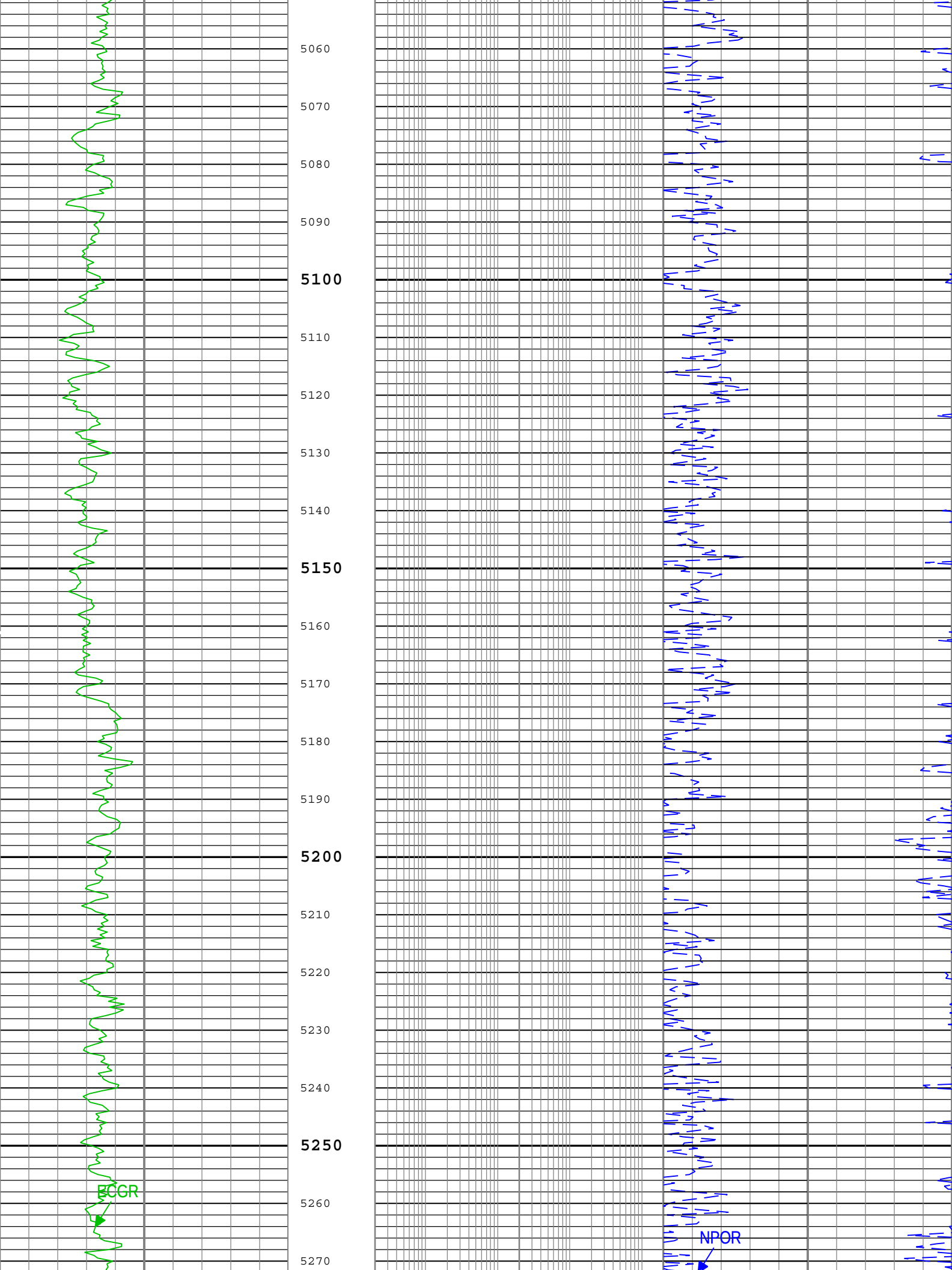
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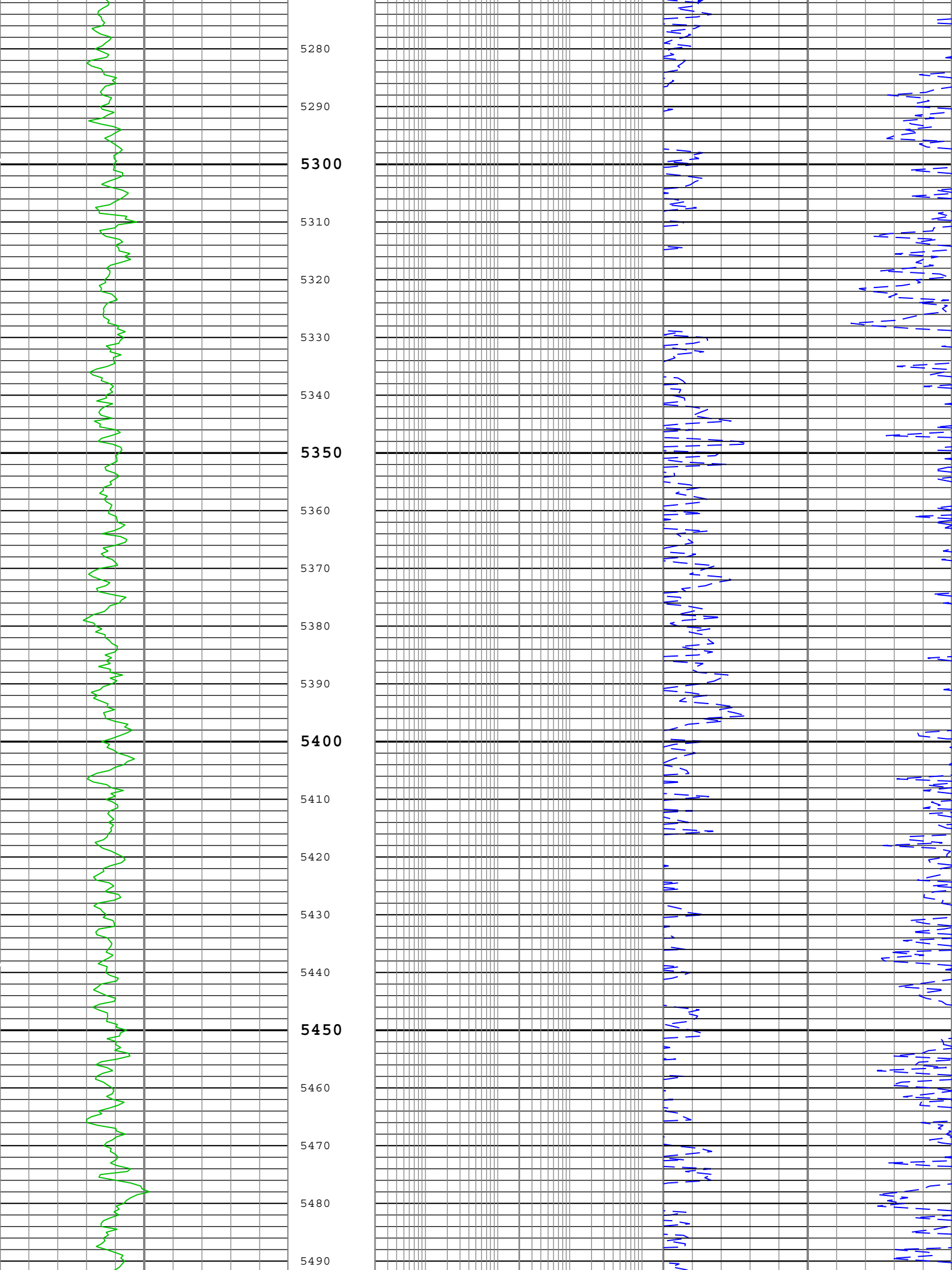
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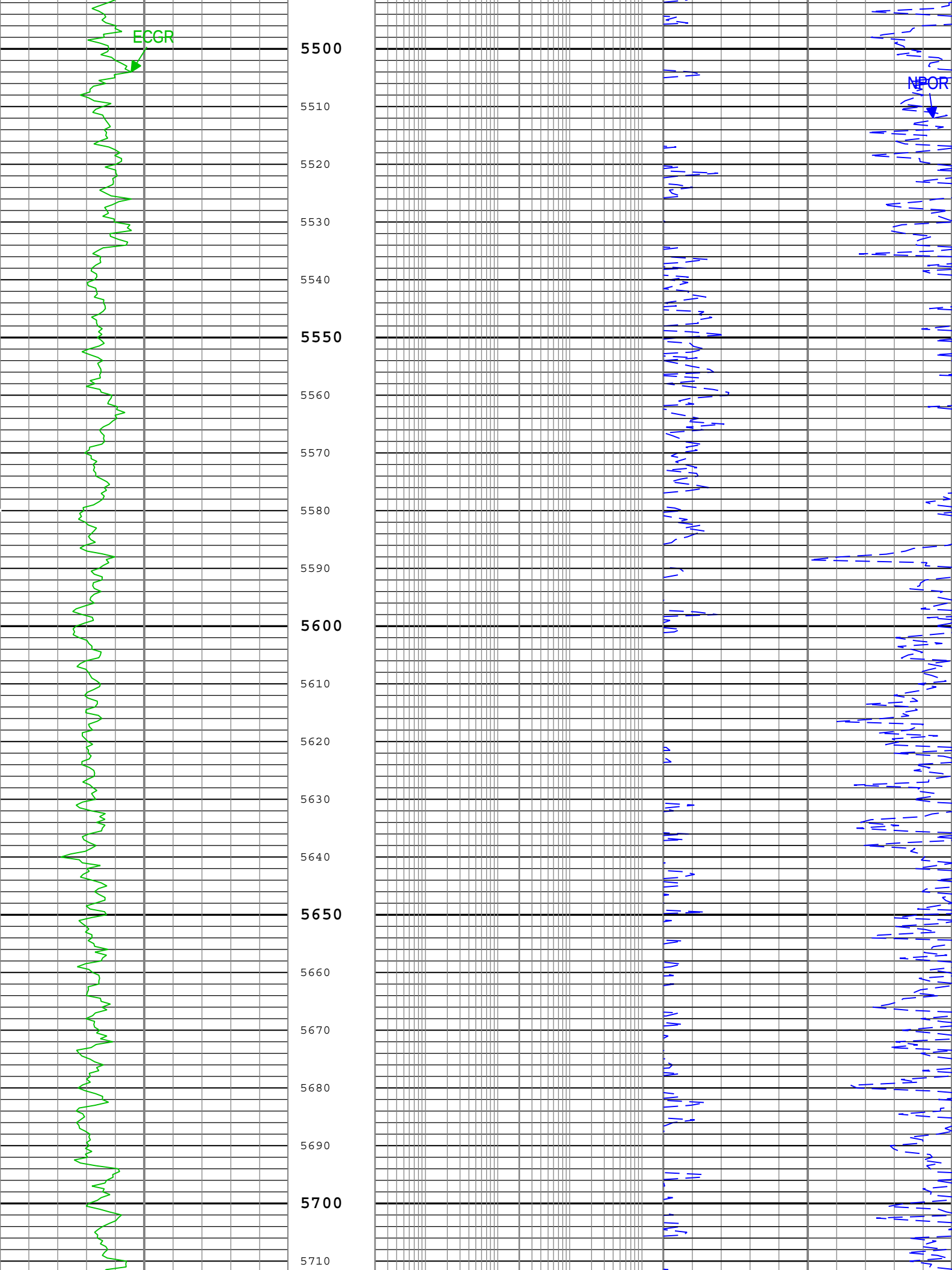
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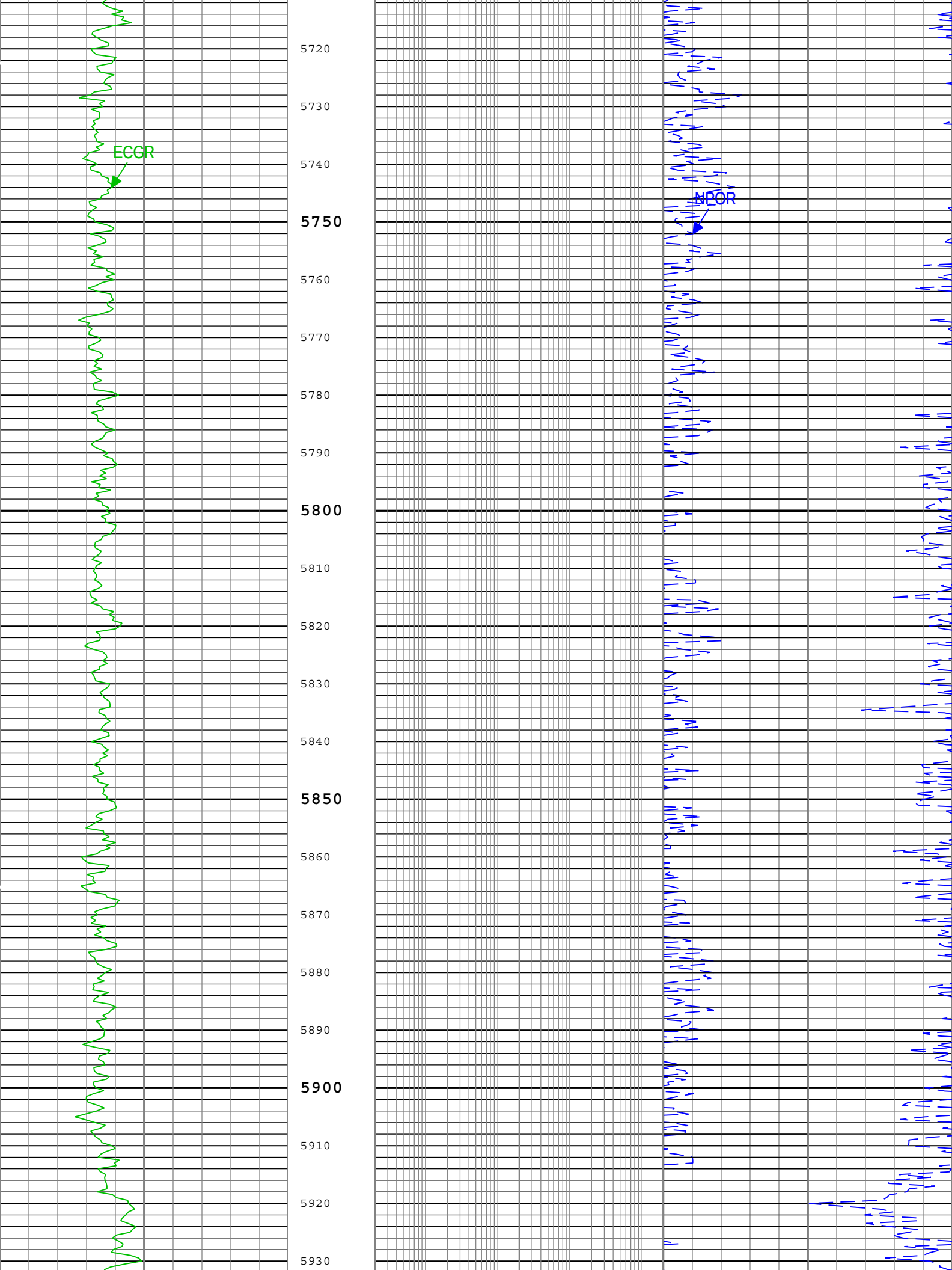
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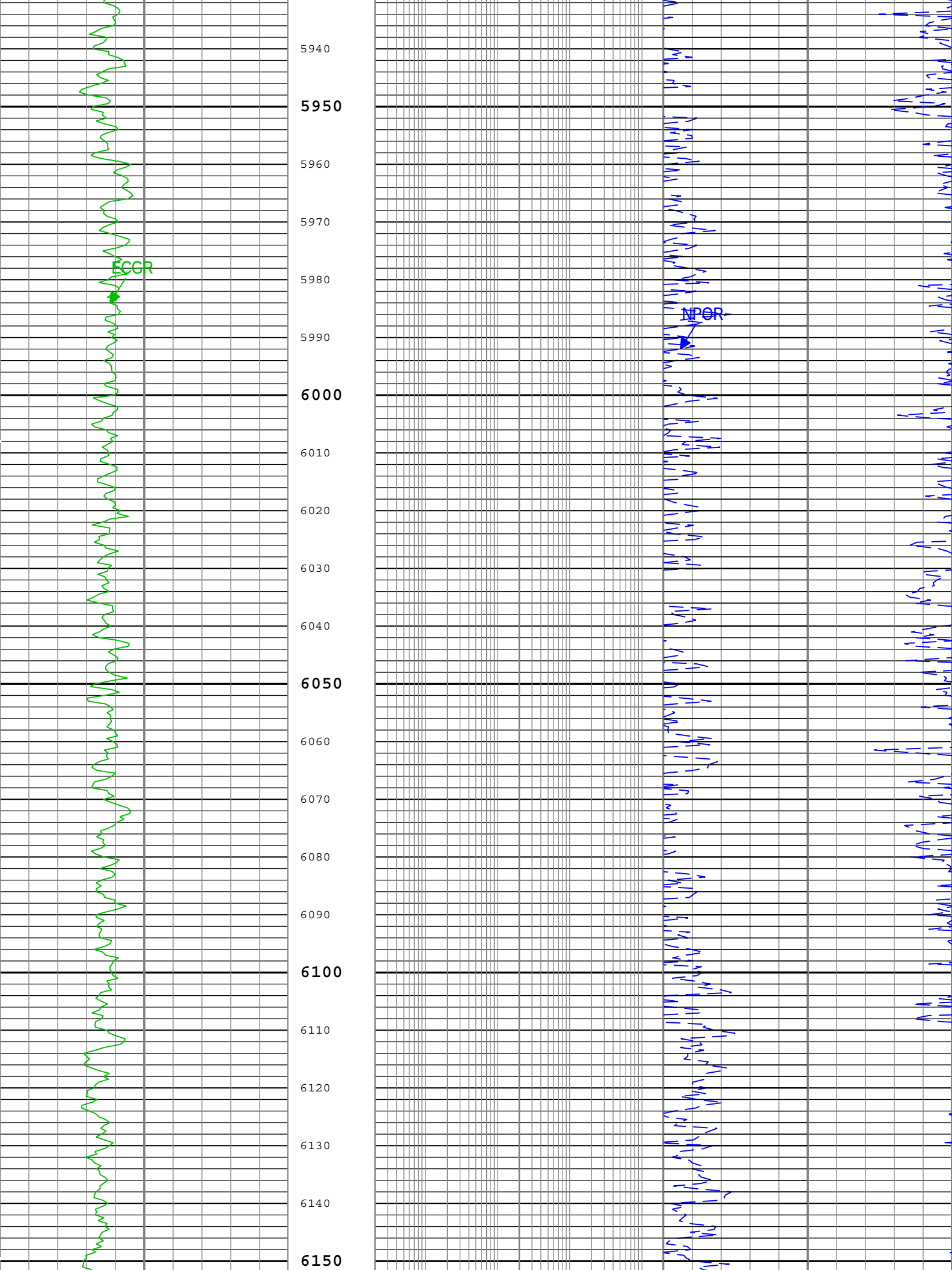
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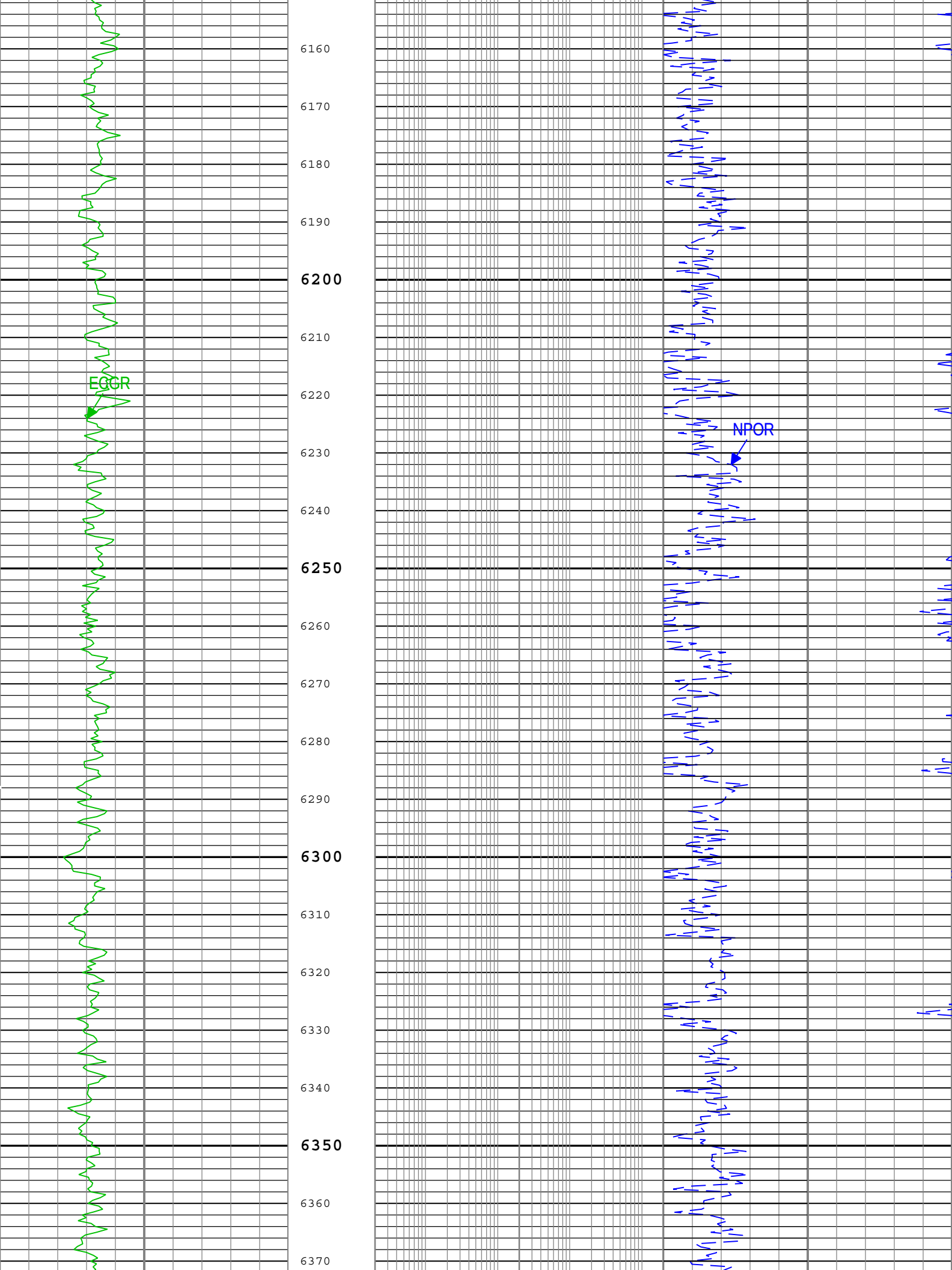
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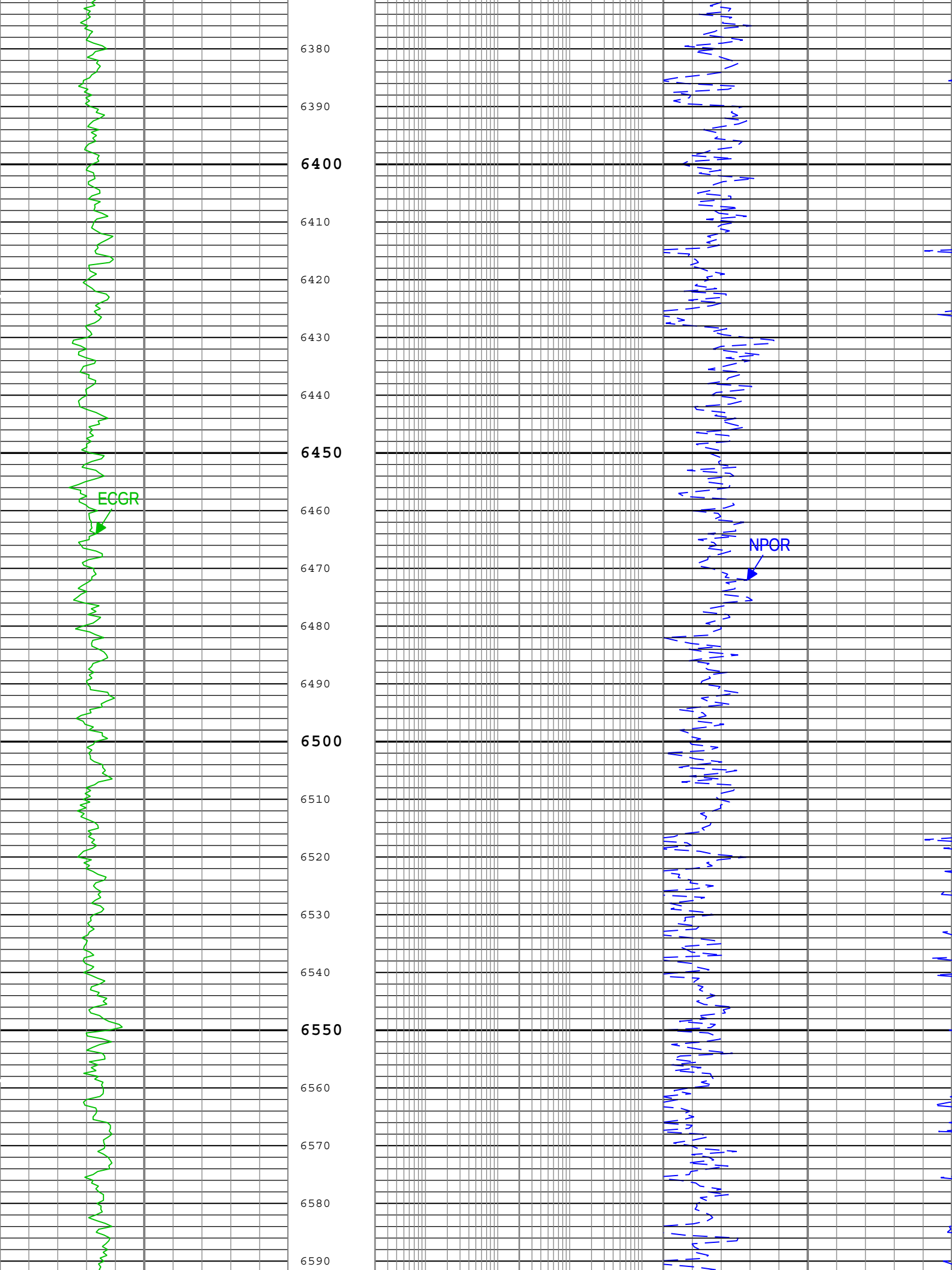
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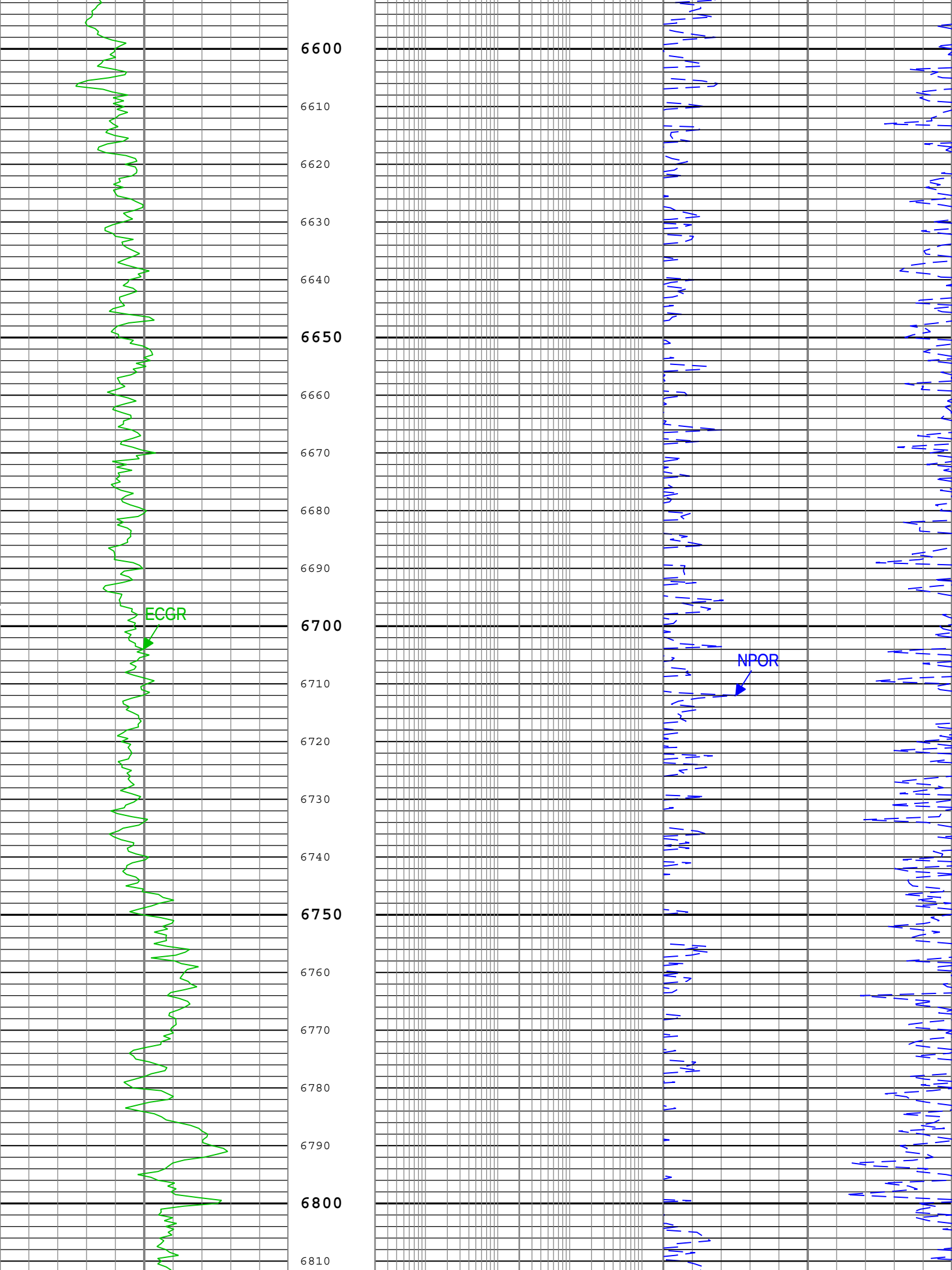
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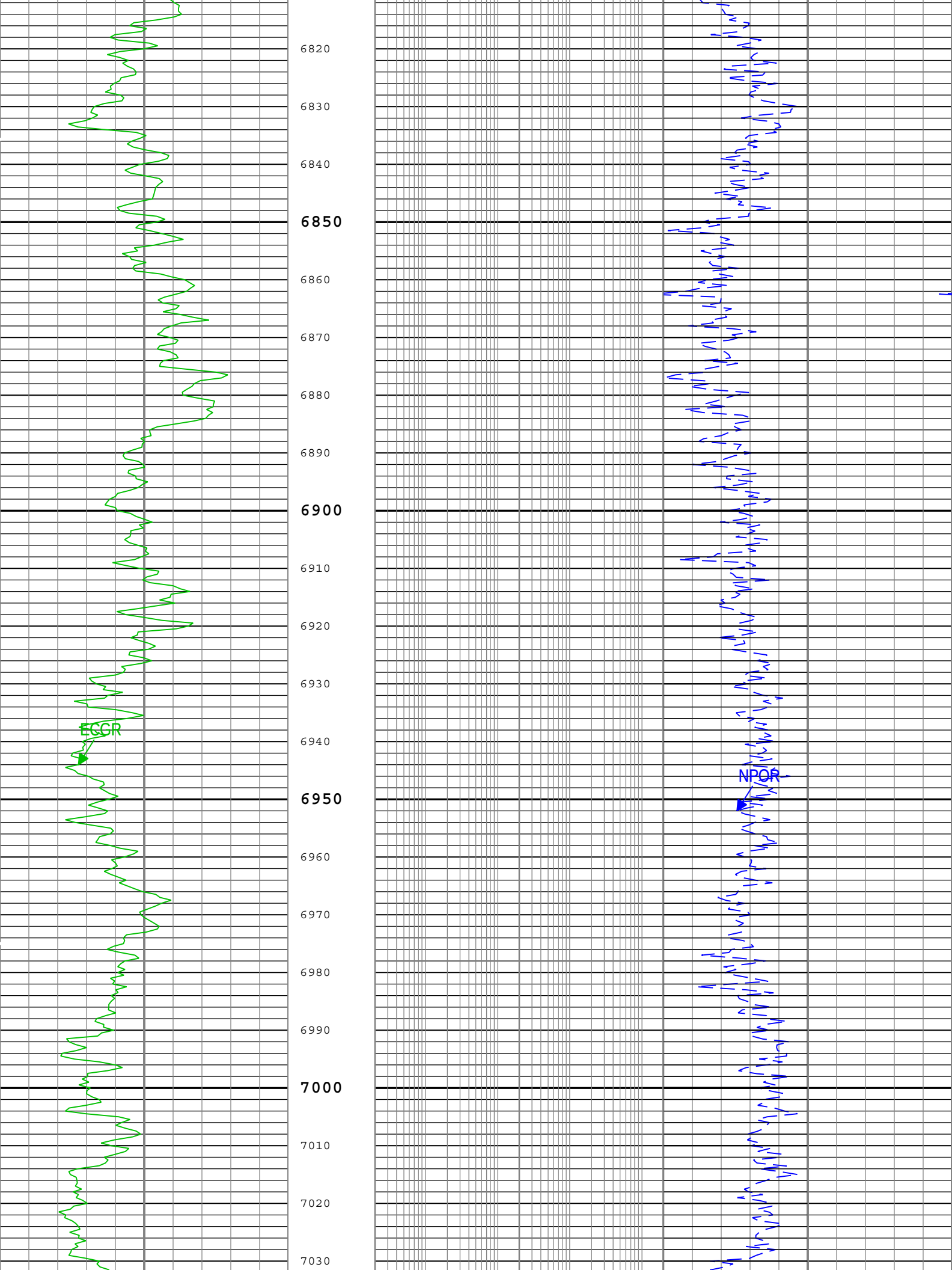
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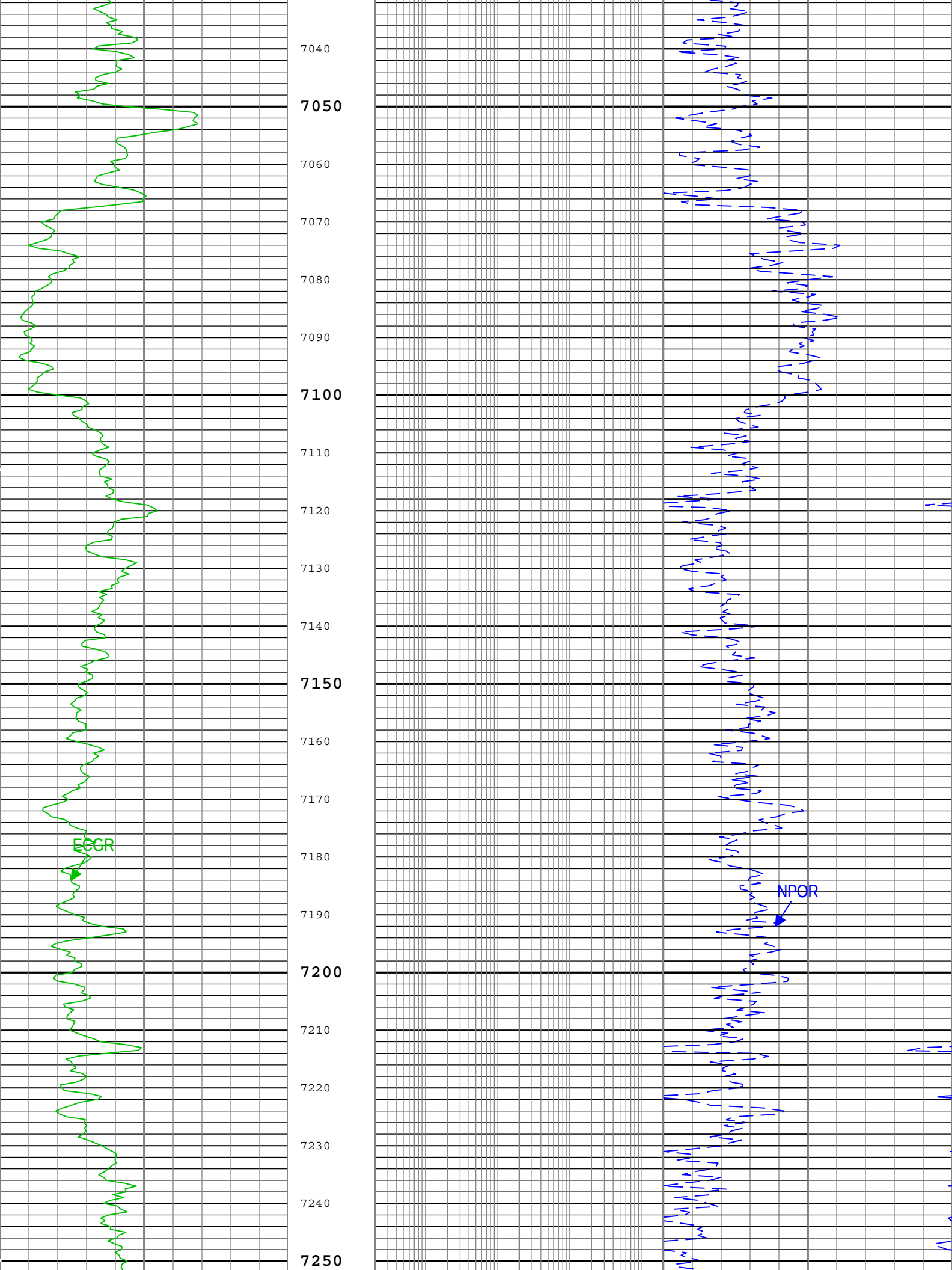
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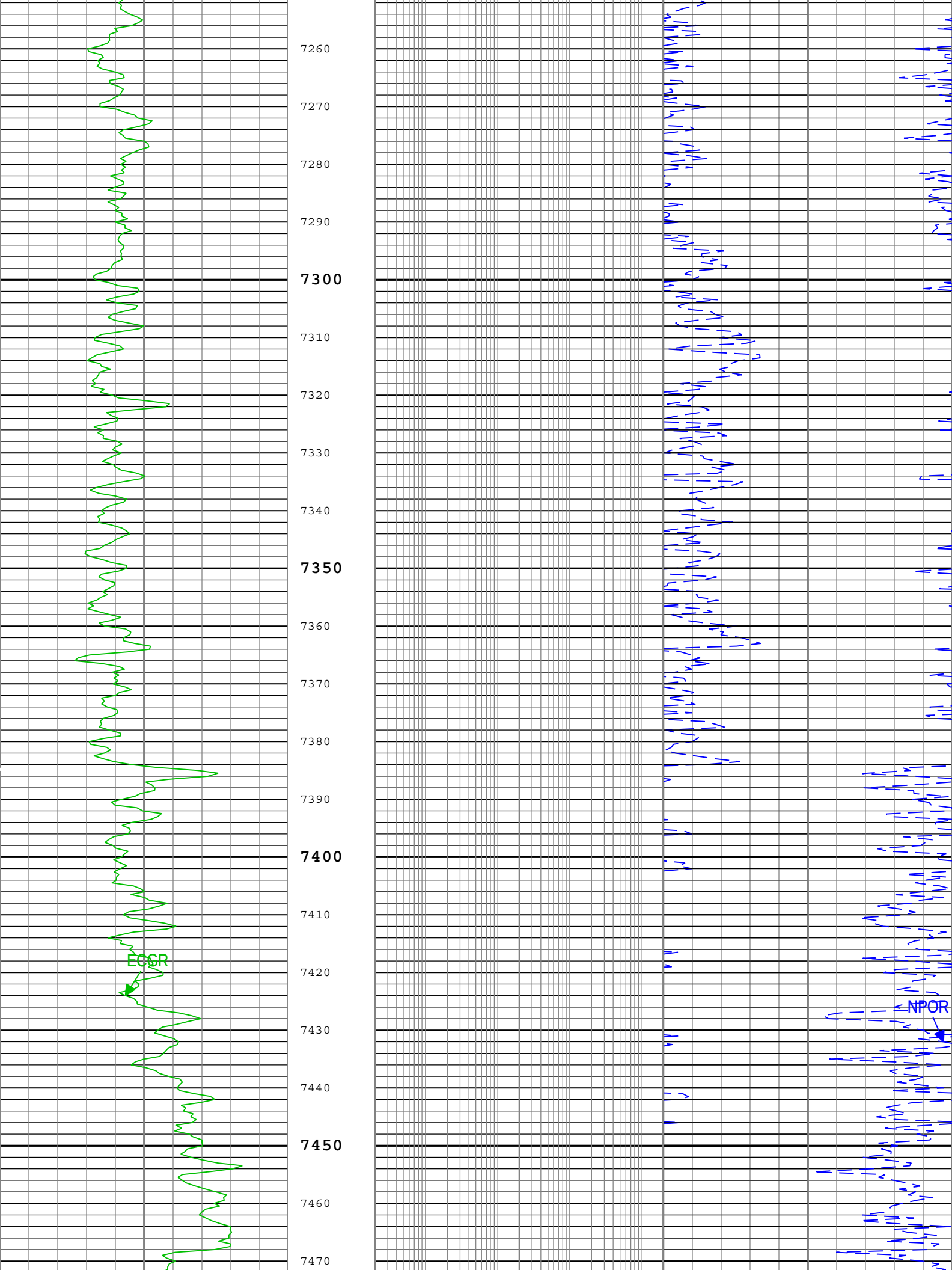
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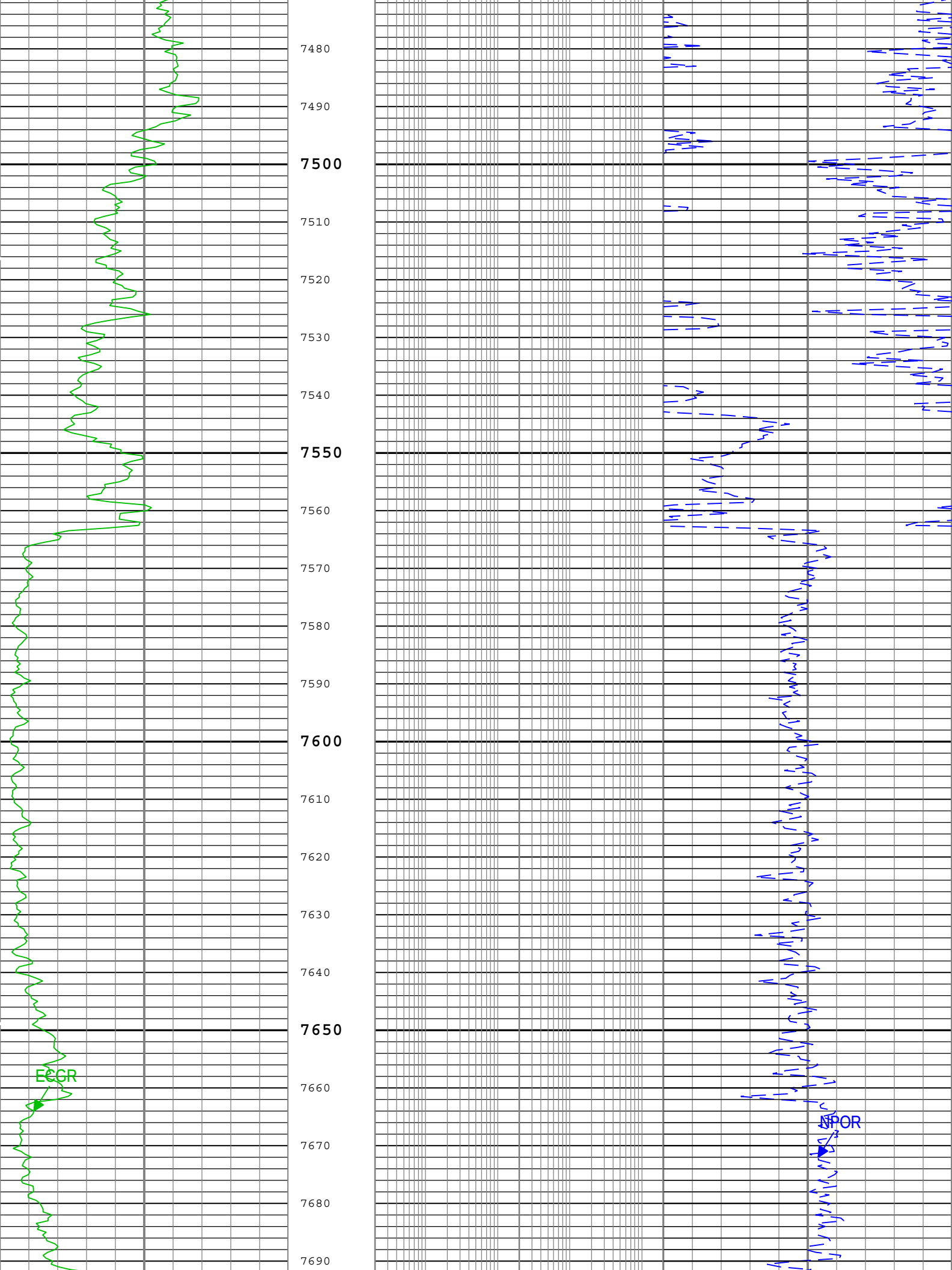
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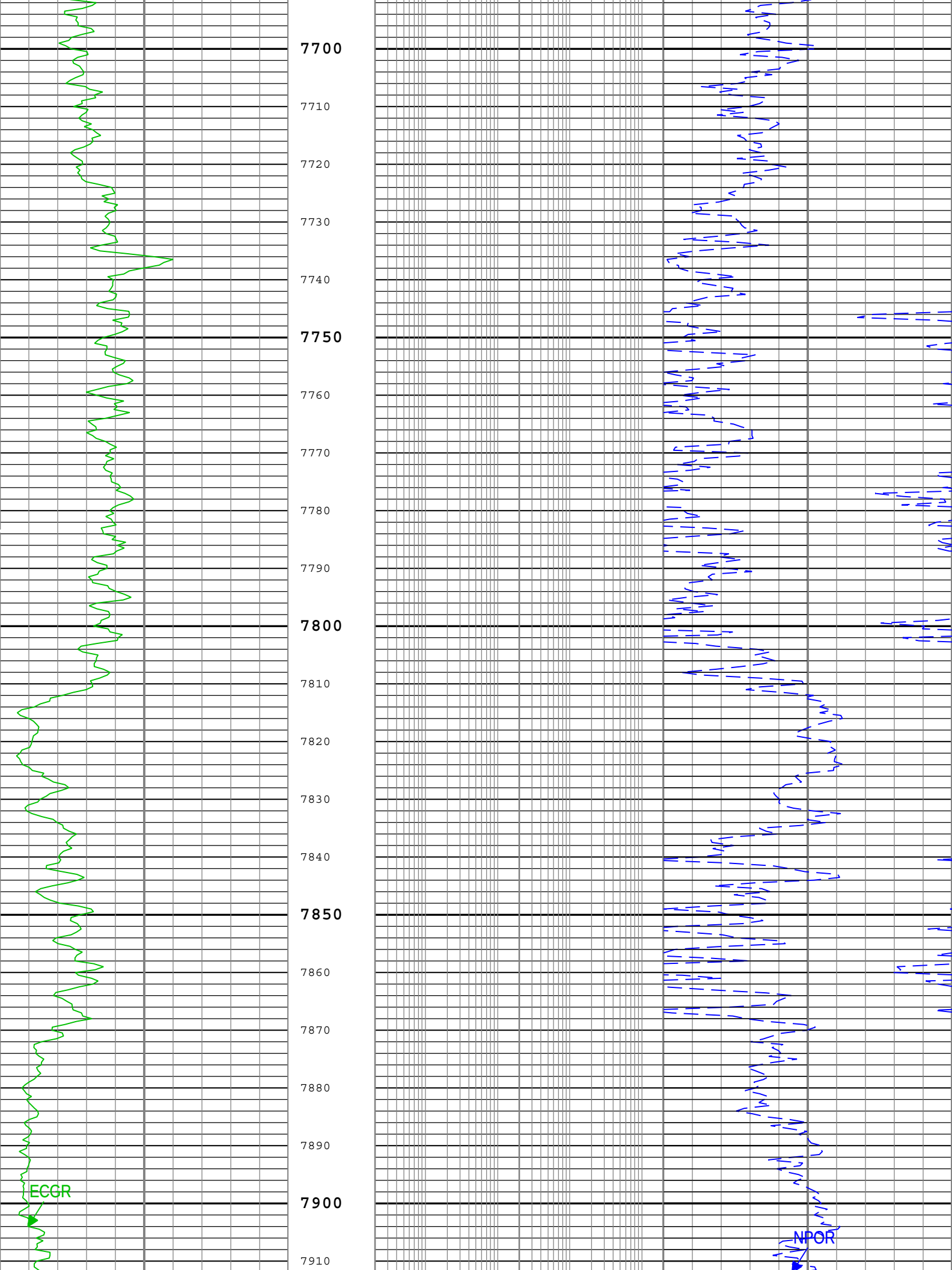
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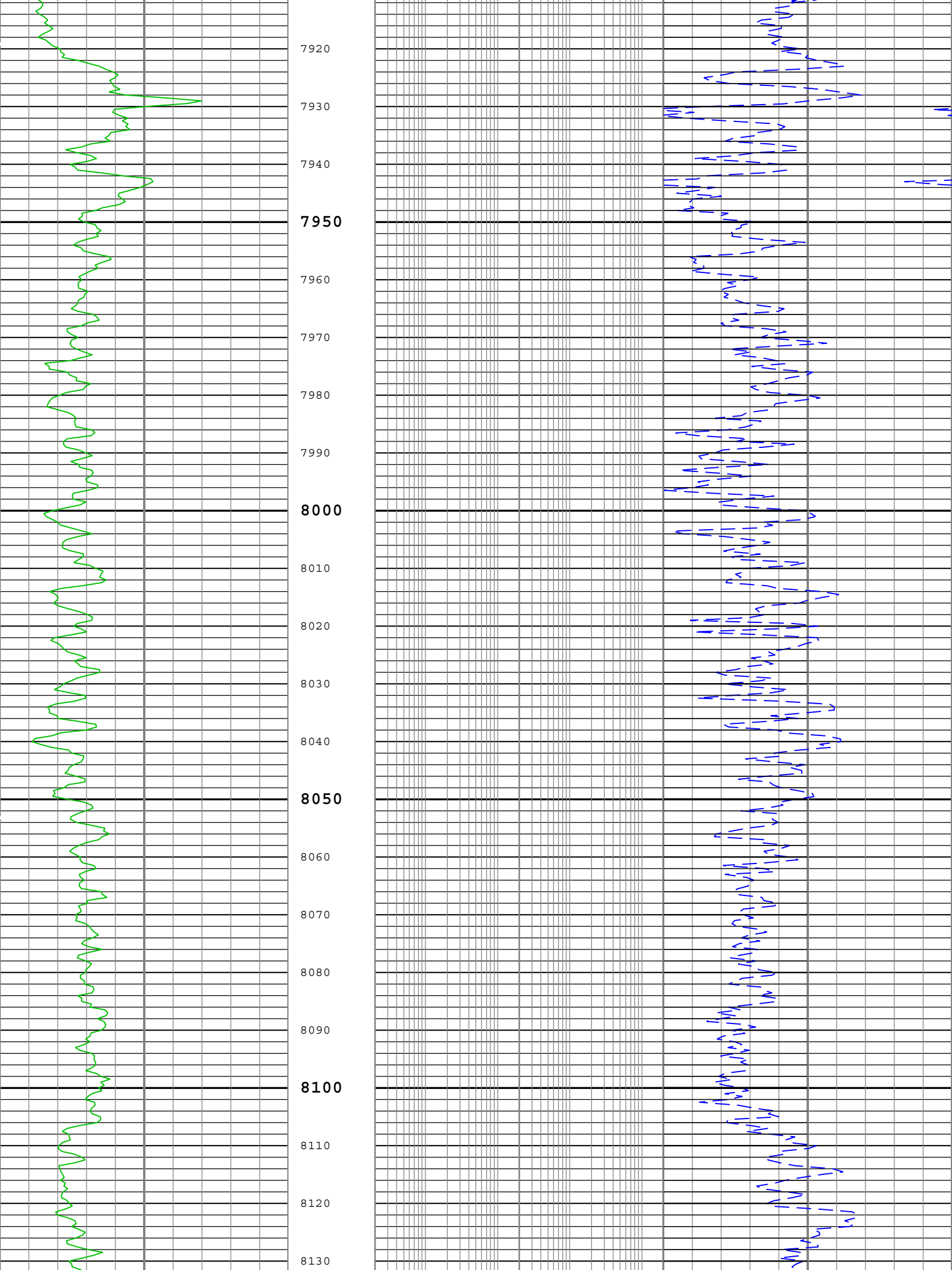
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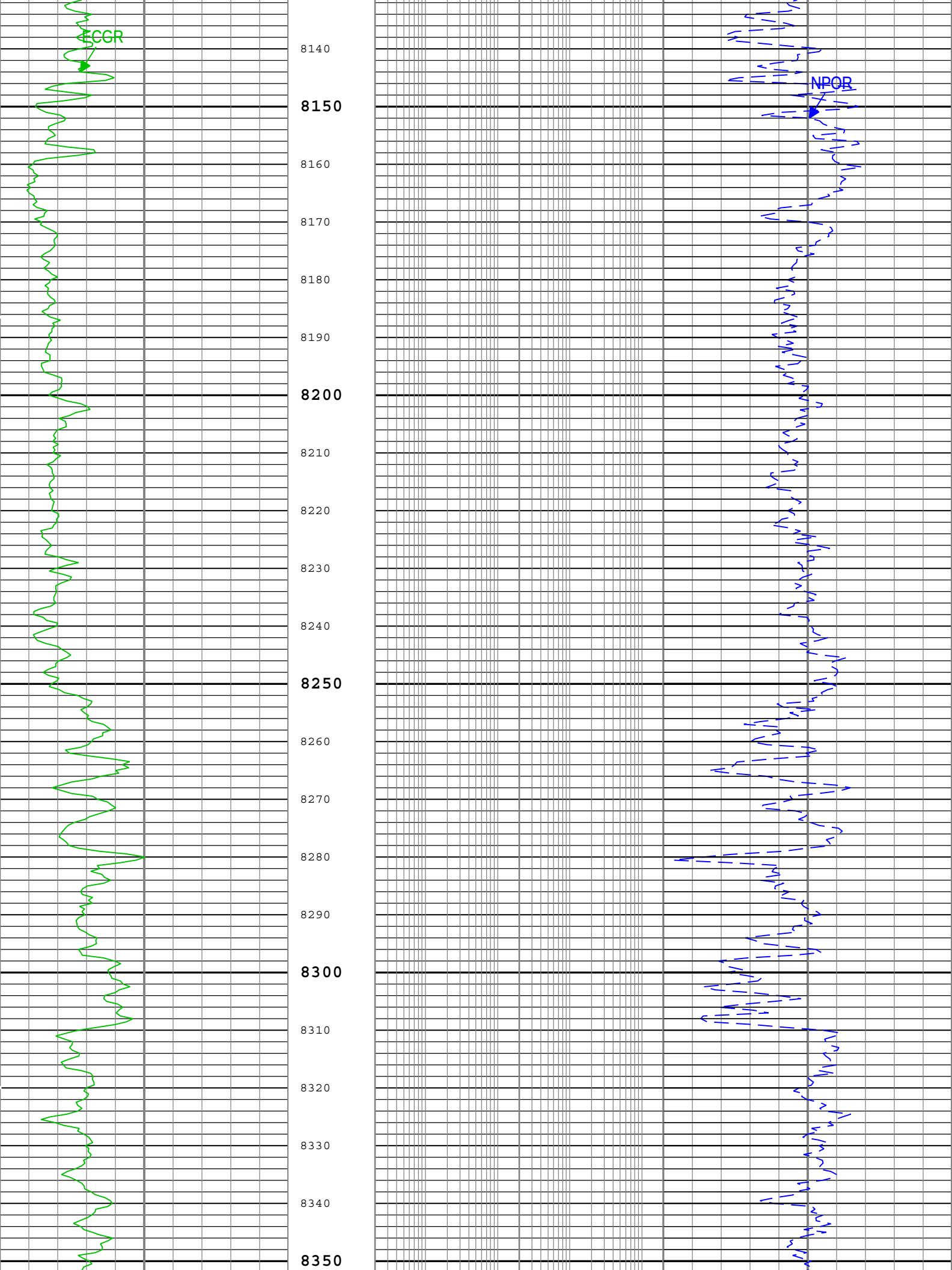
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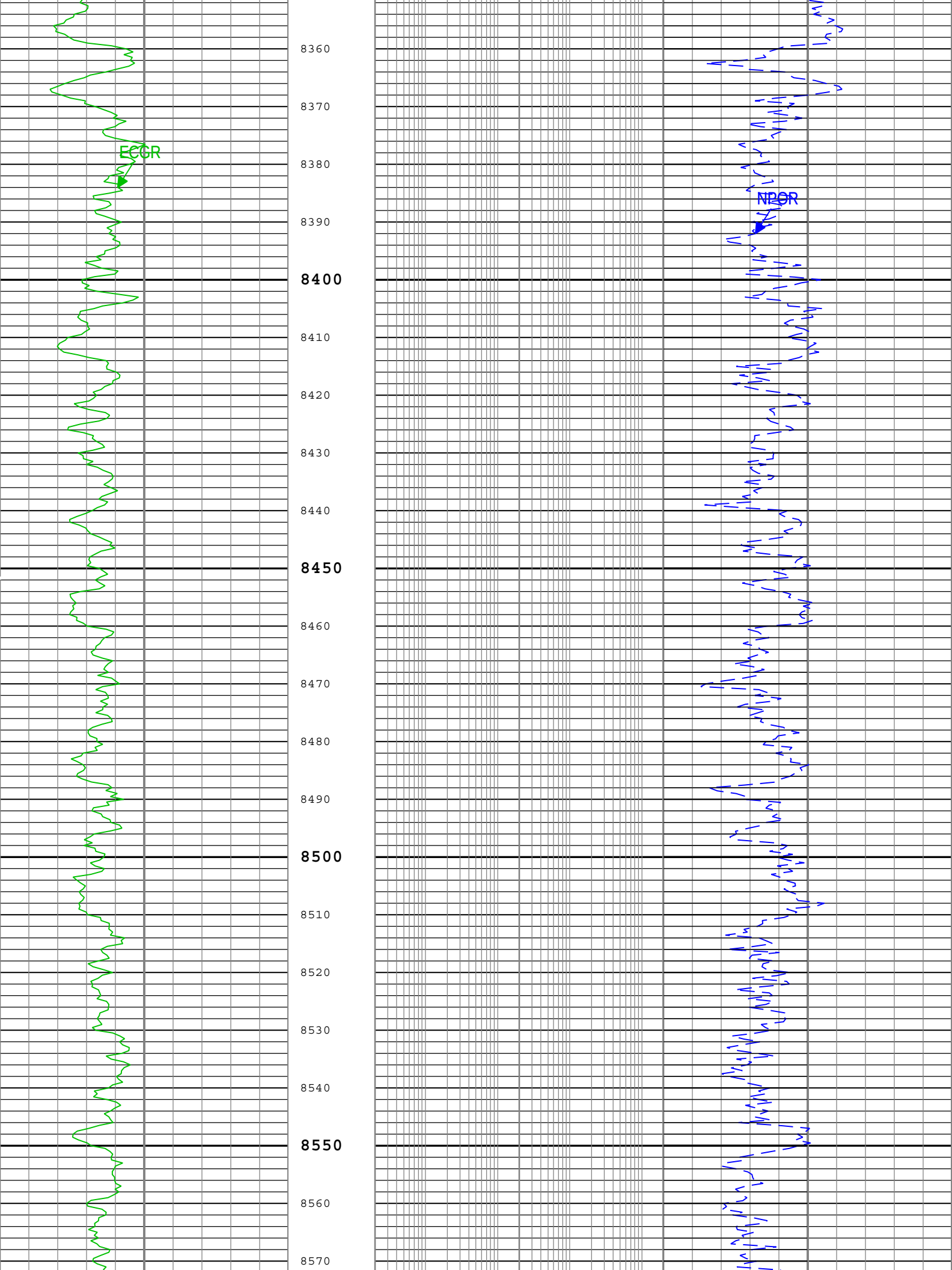
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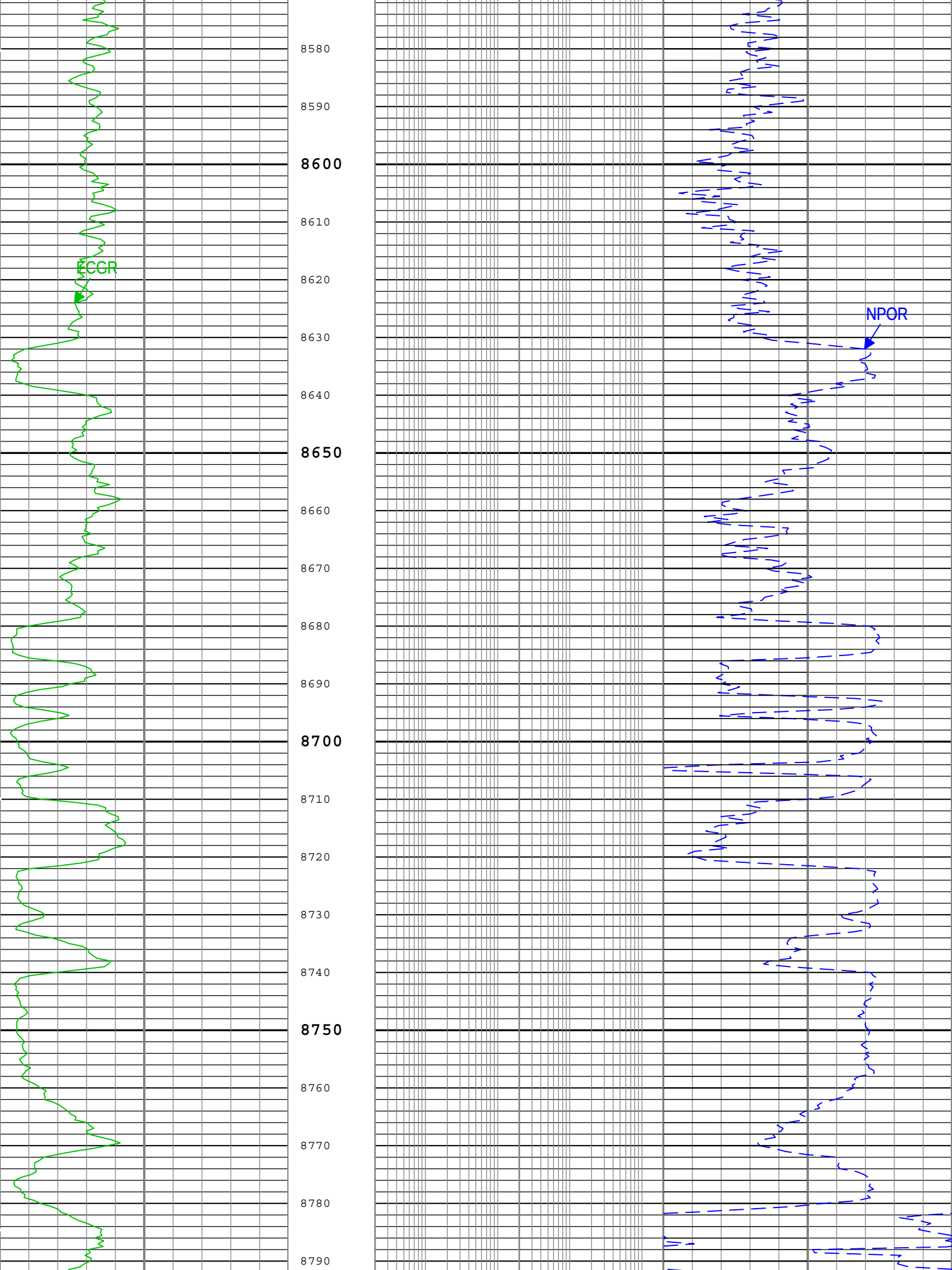
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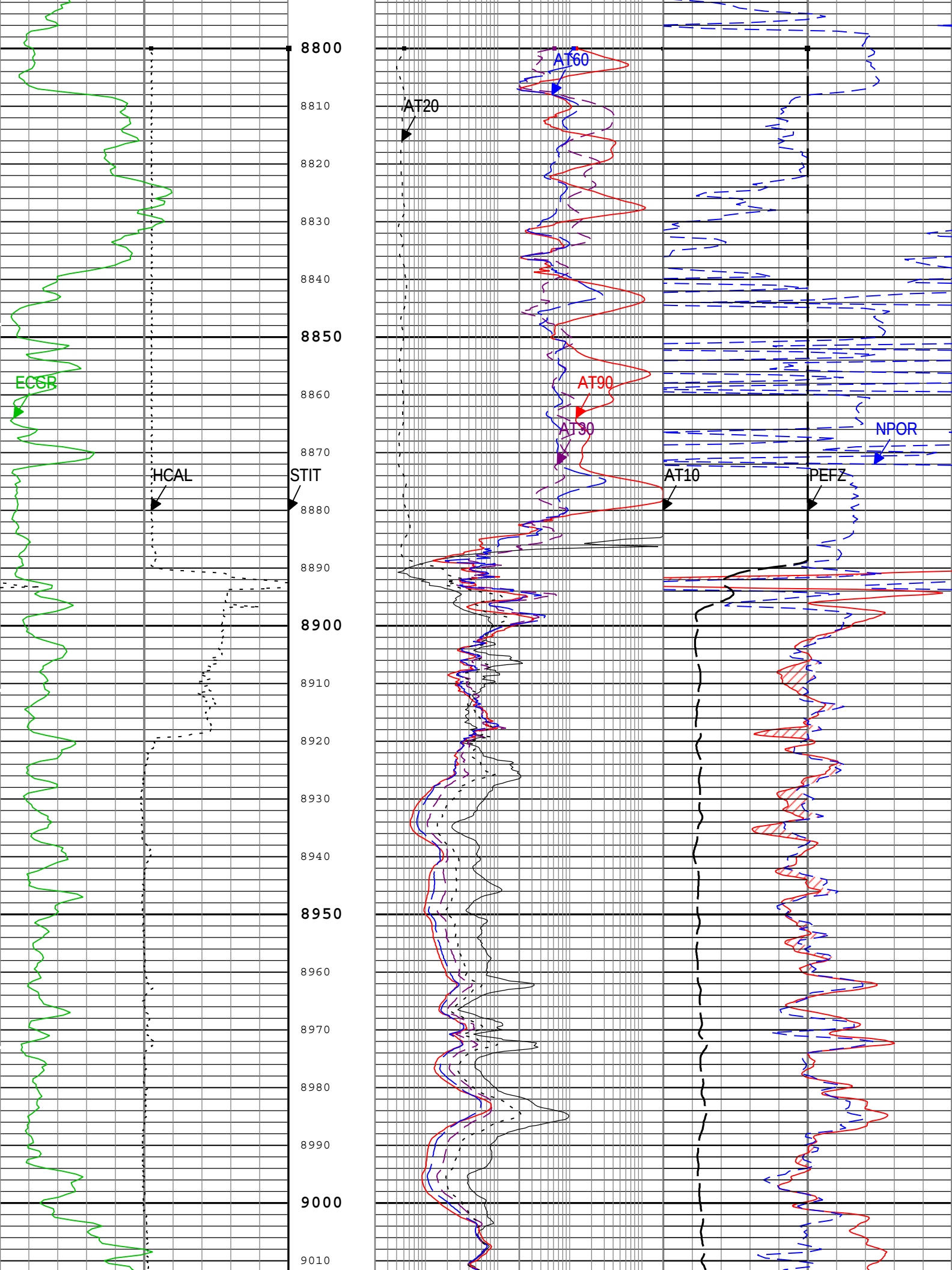
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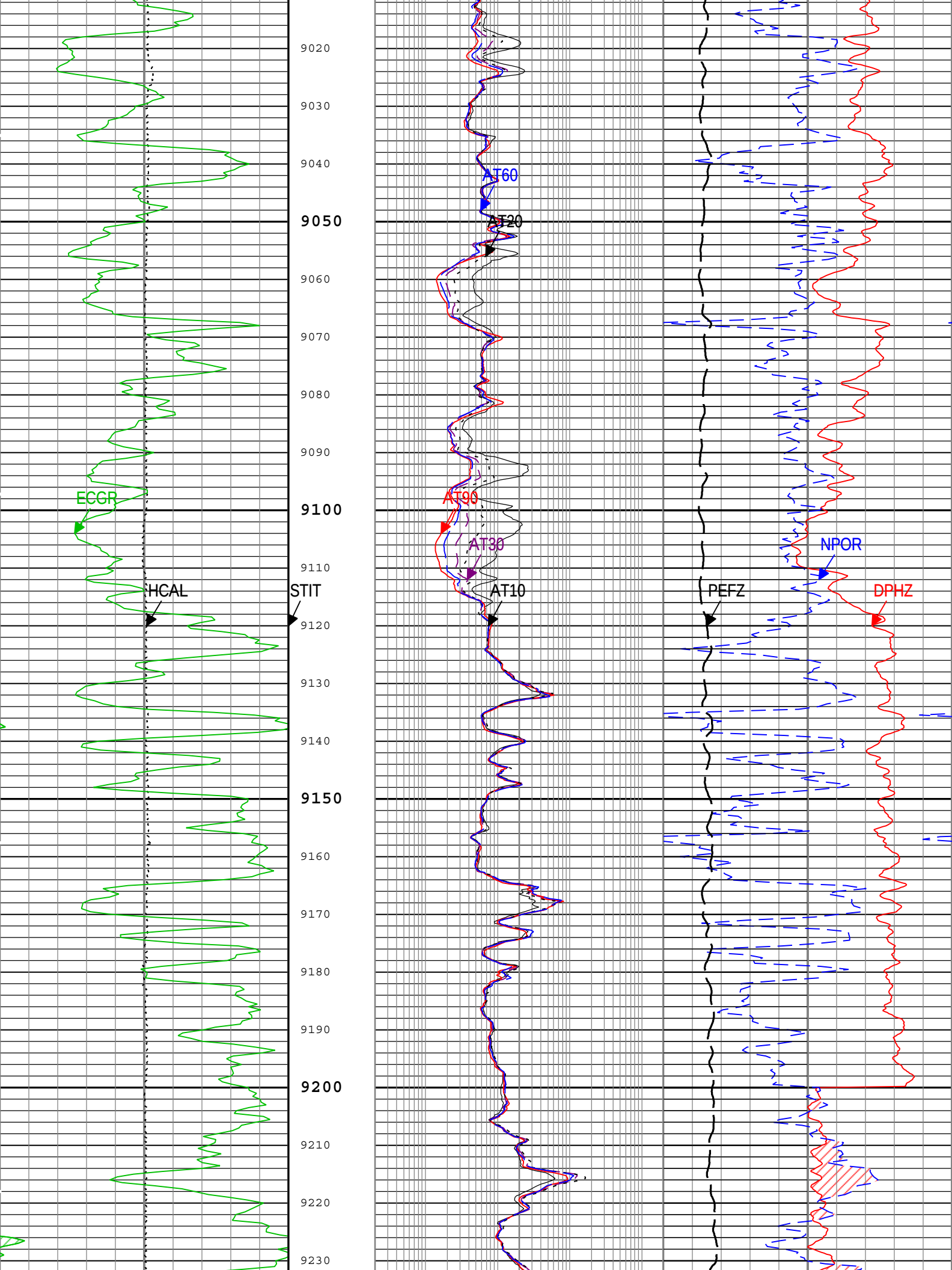
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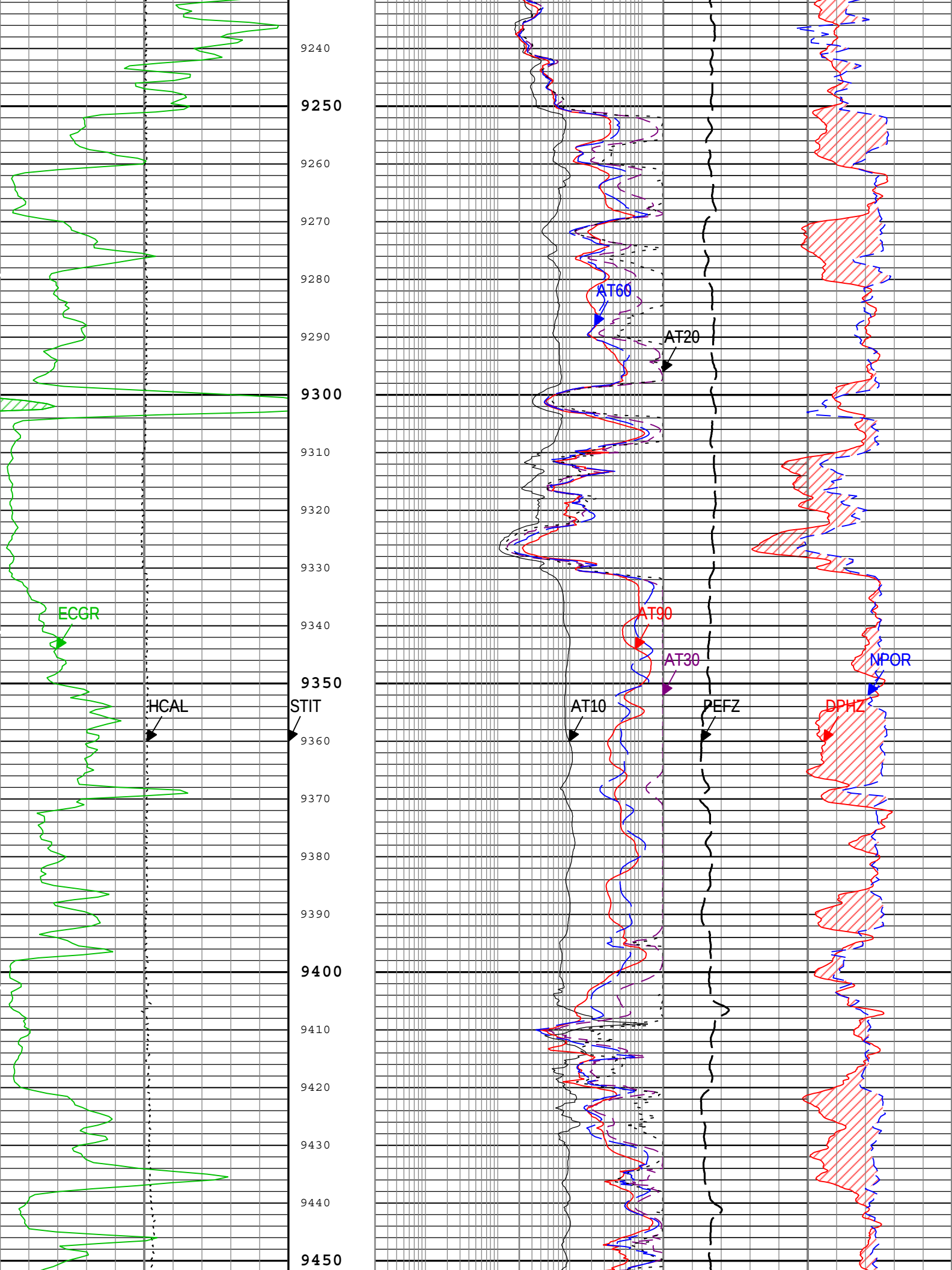
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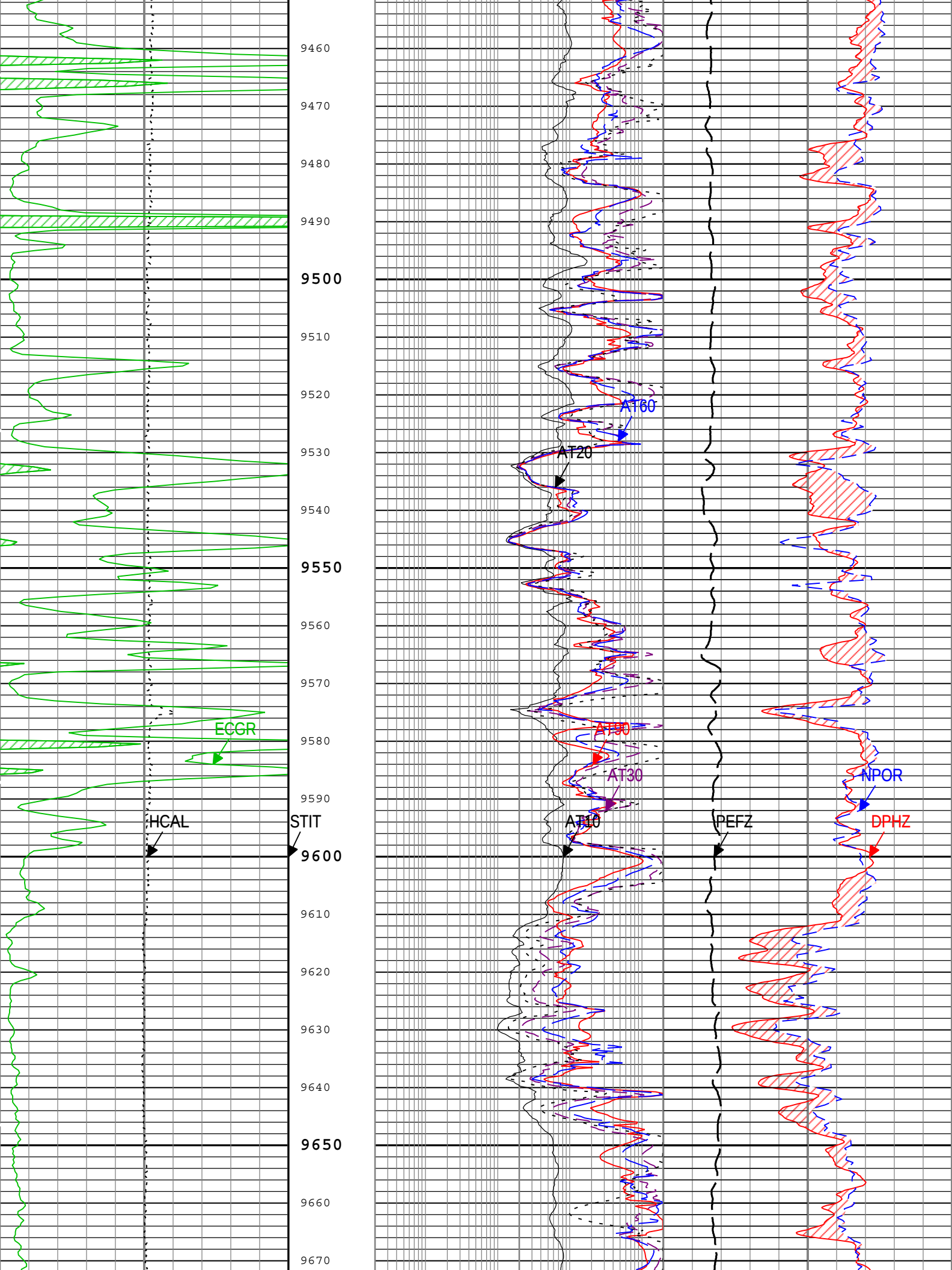
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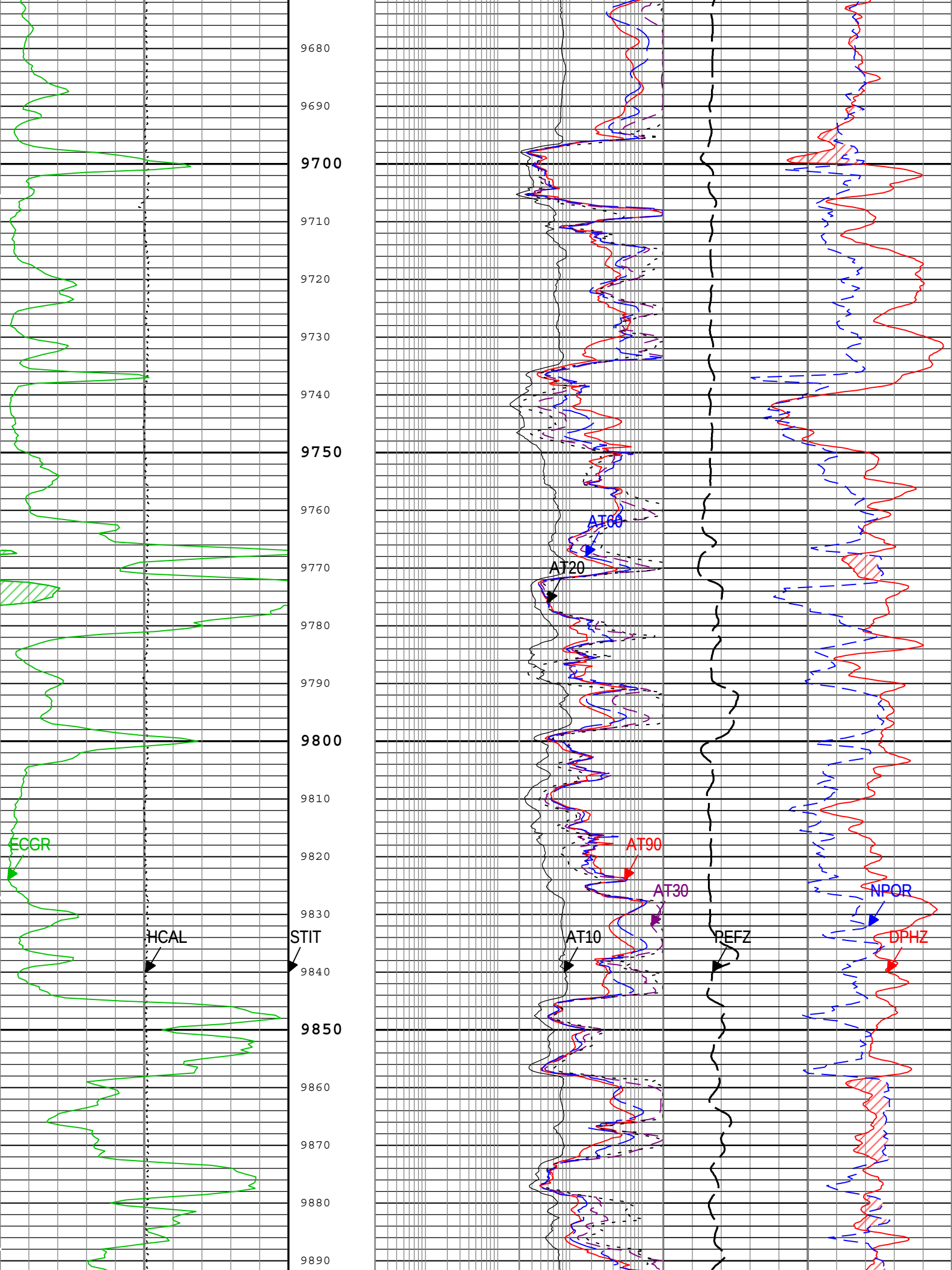
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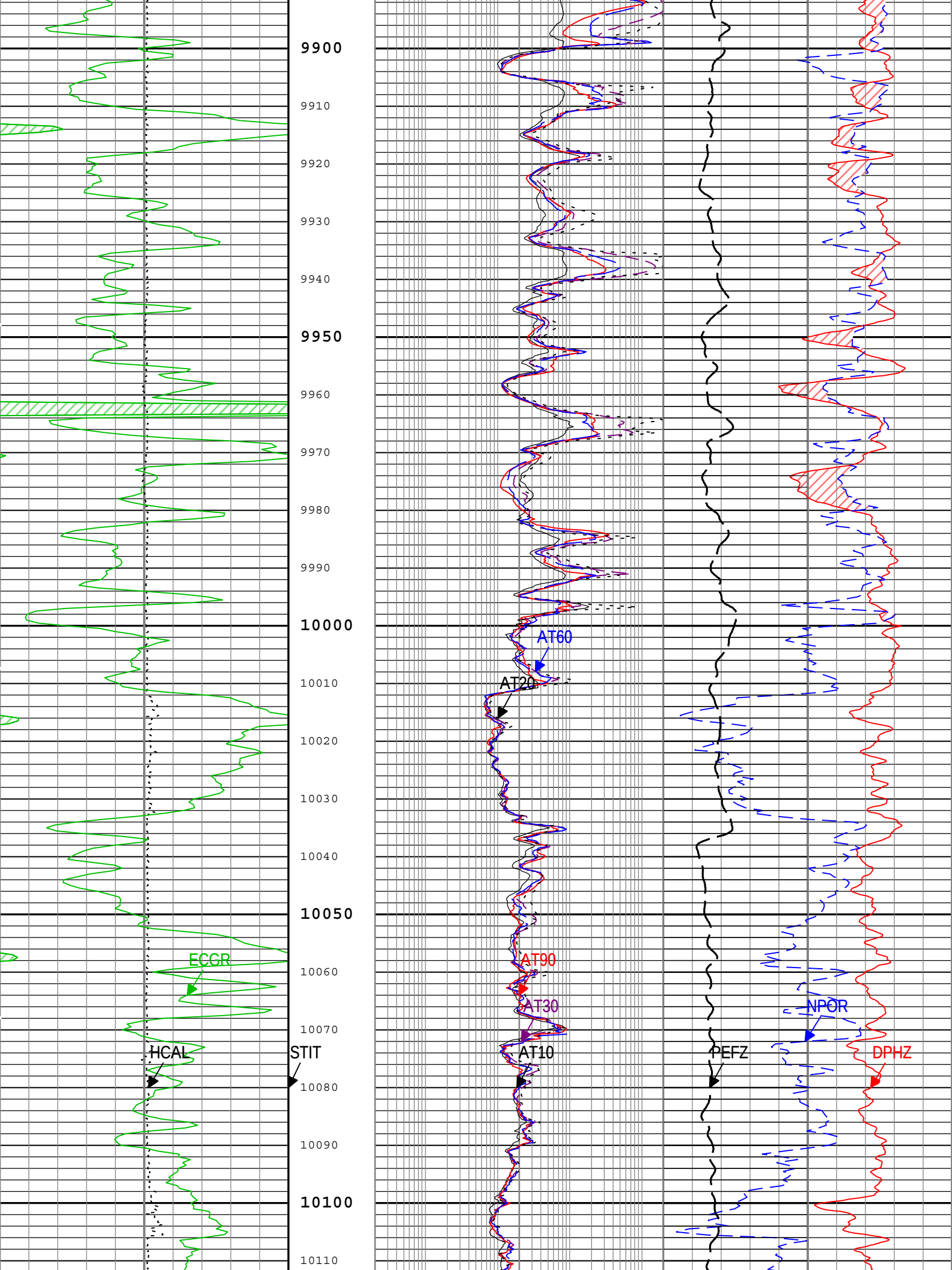
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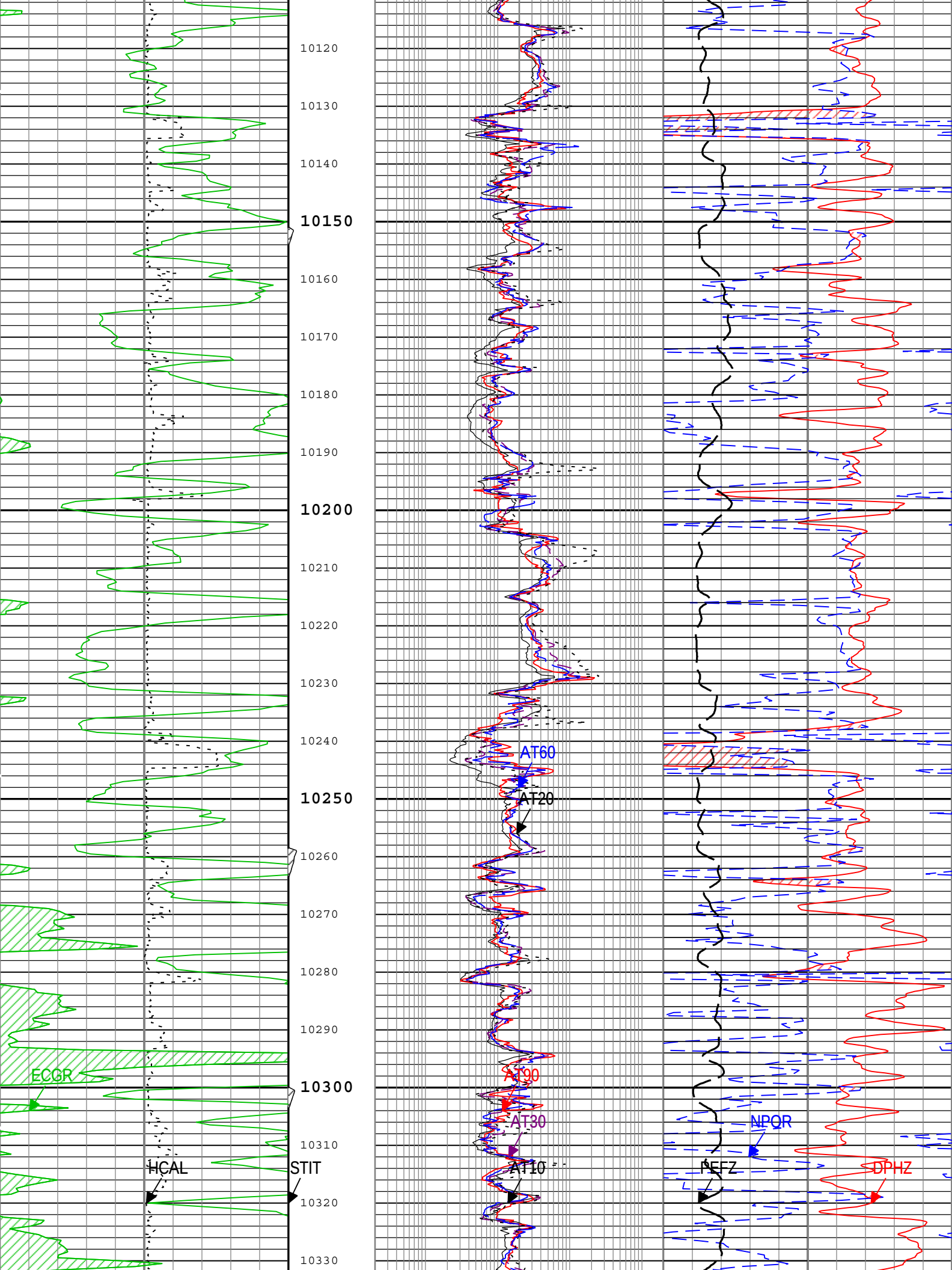
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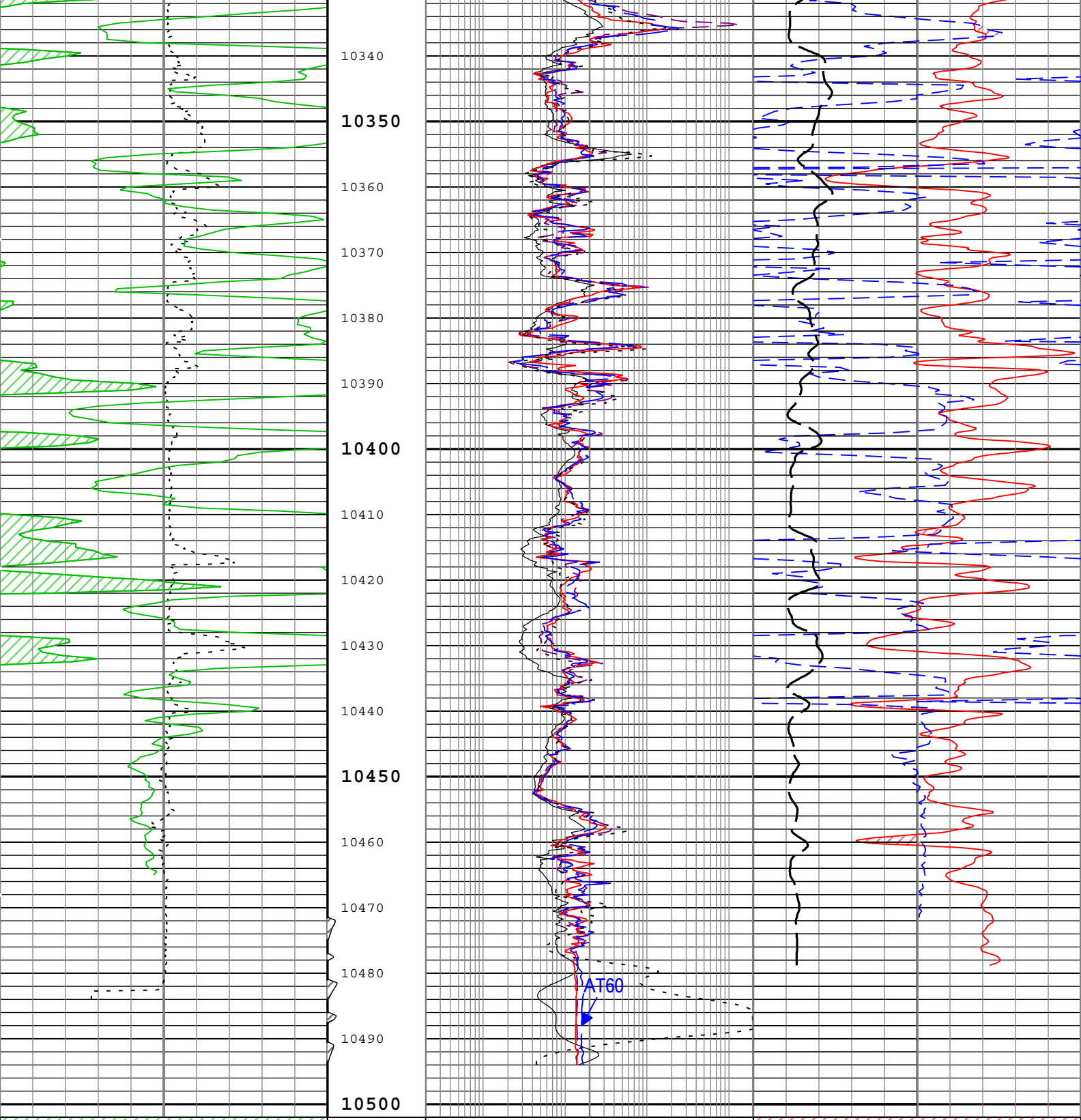


Gamma Ray Back up

Caliper (HCAL) HDRS-H

1 in 11

Gamma Ray (ECGR) HGNS-H

0 gAPI 200

Stuck Tool Indicator, Total (STIT)

0 ft 50

Array Induction Two Foot Resistivity A10 (AT10) AIT-M

0.2 ohm.m 2000

Array Induction Two Foot Resistivity A30 (AT30) AIT-M

0.2 ohm.m 2000

Array Induction Two Foot Resistivity A90 (AT90) AIT-M

0.2 ohm.m 2000

Array Induction Two Foot Resistivity A20

Gas Effect

NPOR Backup

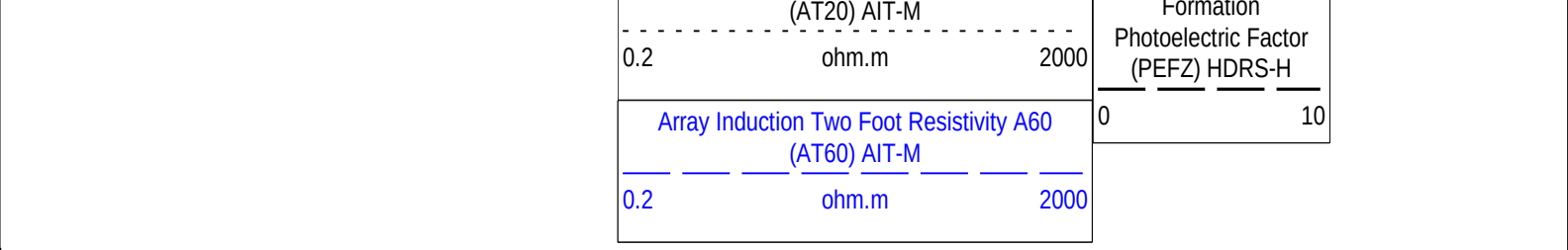
Standard Resolution Density Porosity (DPHZ) HDRS-H

0.3 ft3/ft3 -0.1

Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H

0.3 m3/m3 -0.1

Standard Resolution



TIME_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 31-Mar-2015 17:40:16

Channel Processing Parameters

Run 2: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ASTA	Array Induction Tool Standoff	AIT-M	0.625	in
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Depth Zoned	
BHT	Bottom Hole Temperature	Borehole	269	degF
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	1200	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	8890	ft
CCCO	Casing & Cement Thickness Correction Option	HGNS-H	Yes	
CDEN	Cement Density	HGNS-H	2	g/cm3
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	Depth Zoned	
MDEN	Matrix Density for Density Porosity	Borehole	Depth Zoned	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	73	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.3	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BHS	Cased	161.5	8890
BHS	Open	8890	10502
BS	8.75	161.5	8859
BS	6.125	8859	10482
MATR	SANDSTONE	161.5	9200
MATR	DOLOMITE	9200	9700
MATR	LIMESTONE	9700	10000
MATR	SANDSTONE	10000	10502
MDEN	2.65	161.5	9200

MDEN	2.87	9200	9700
MDEN	2.71	9700	10000
MDEN	2.68	10000	10502

All depth are actual.

Tool Control Parameters

Run 2: Parameters

Parameter	Description	Tool	Value	Unit
HMCA_BOARD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

Run 2

5" Triple Combo

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 2	Repeat[2]:Up	Up	10096.73 ft	10509.59 ft	31-Mar-2015 3:52:26 PM	31-Mar-2015 4:00:32 PM	ON	7.50 ft	Yes
Run 2	Main[3]:Up	Up	197.99 ft	10502.33 ft	31-Mar-2015 4:05:27 PM	31-Mar-2015 5:37:37 PM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

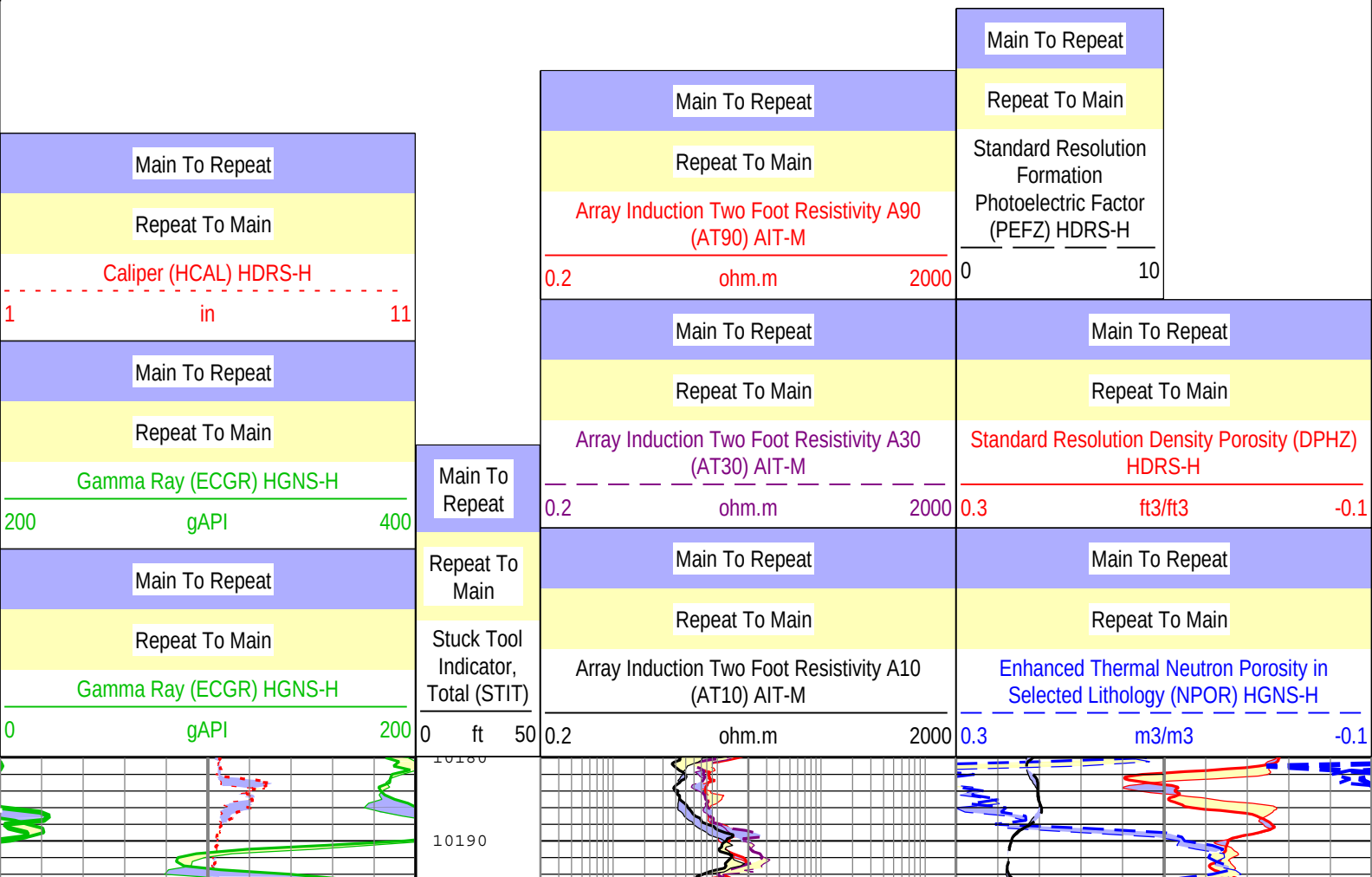
Log

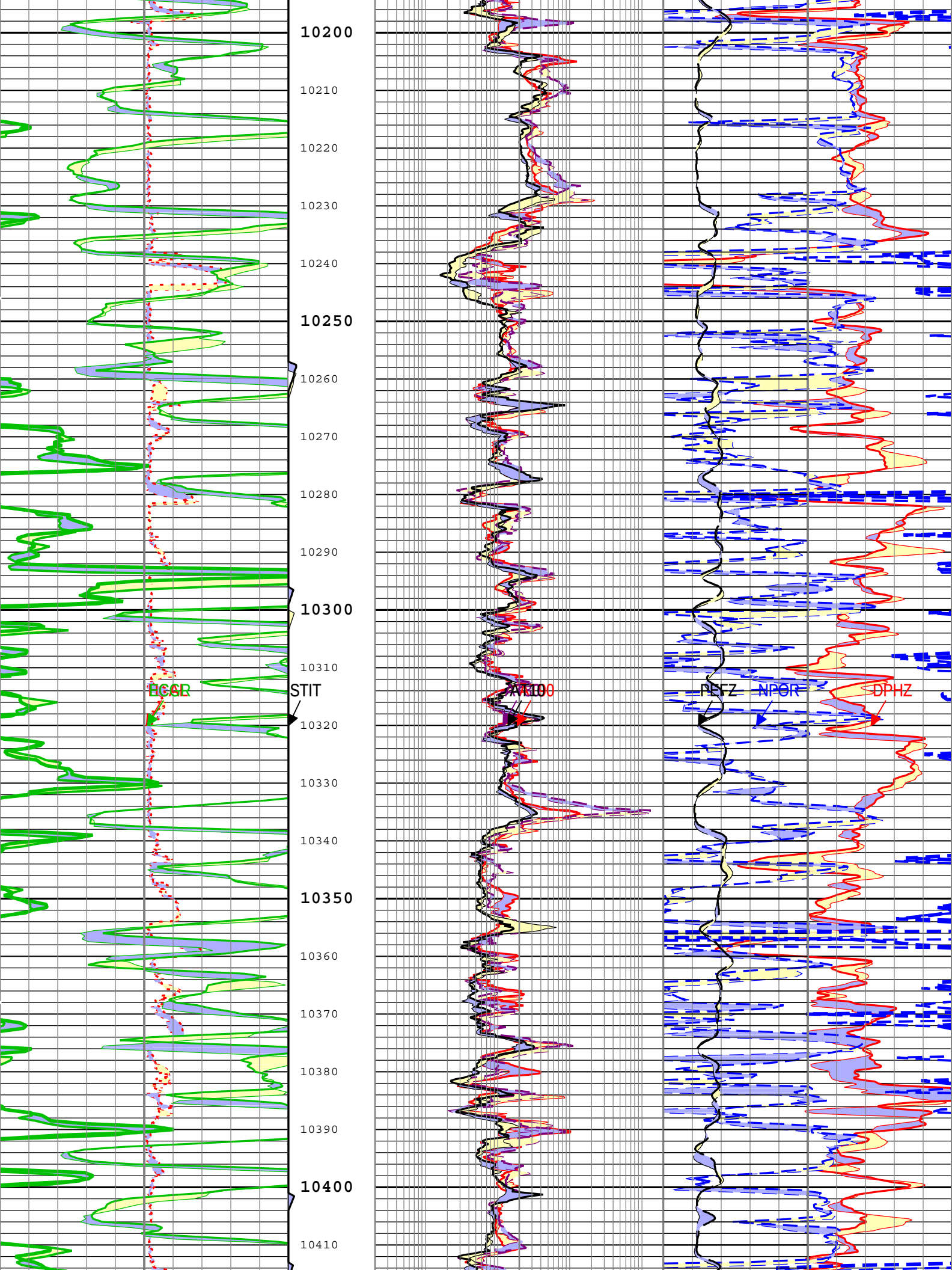
Company:NGL Water Solutions DJ LLC Well:NGL C10

Run 2: Main[3]:Up:S006

Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo RA) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 31-Mar-2015 17:40:21

TIME_1900 - Time Marked every 60.00 (s)

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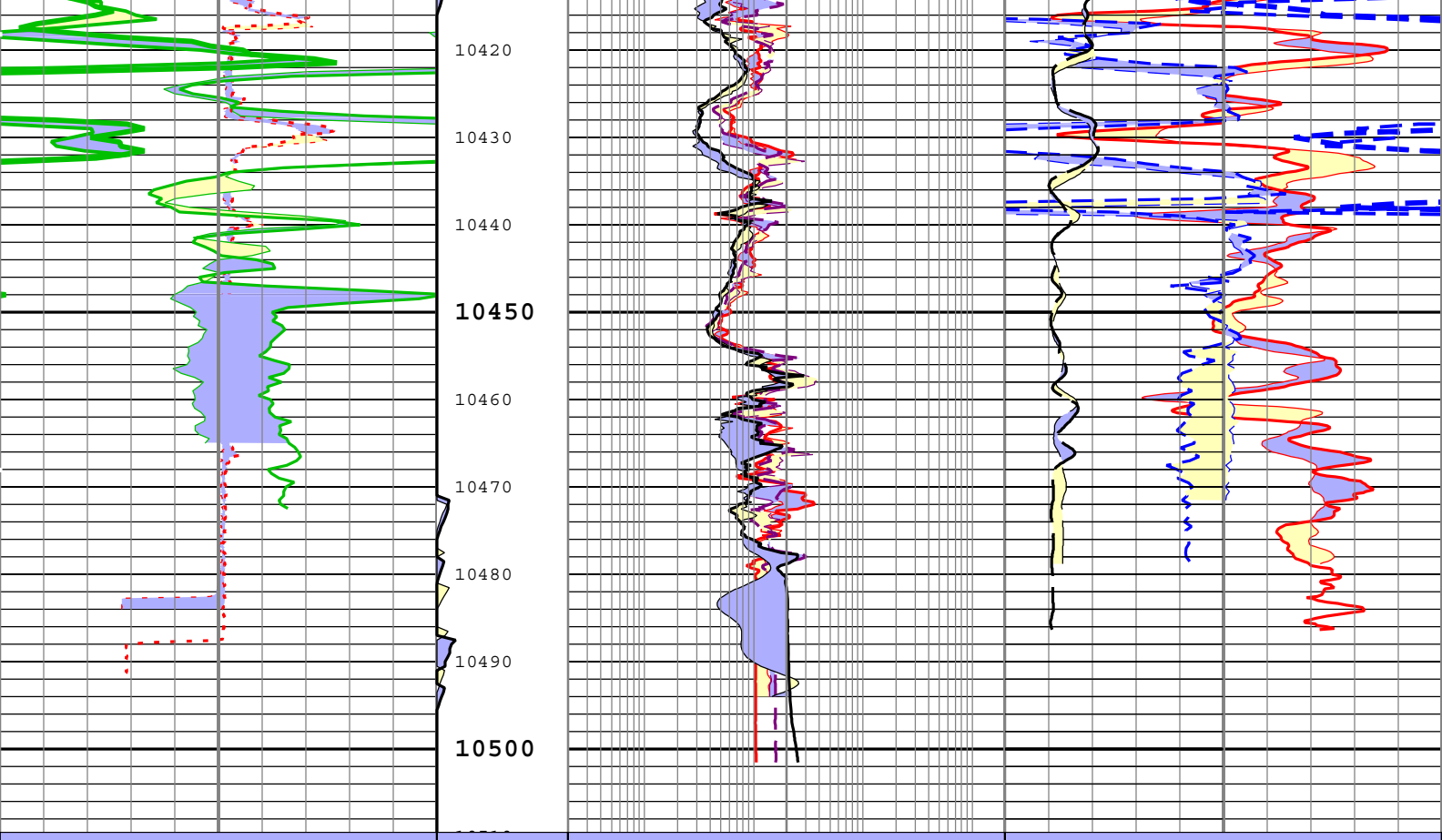

Main To Repeat

Repeat To Main

Caliper (HCAL) HDRS-H

1 in 11

Main To Repeat

Repeat To Main

Gamma Ray (ECGR) HGNS-H

200 gAPI 400

Main To Repeat

Repeat To Main

Gamma Ray (ECGR) HGNS-H

0 gAPI 200

Main To Repeat

Repeat To Main

Stuck Tool Indicator, Total (STIT)

0 ft 50

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A90 (AT90) AIT-M

0.2 ohm.m 2000

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A30 (AT30) AIT-M

0.2 ohm.m 2000

Main To Repeat

Repeat To Main

Array Induction Two Foot Resistivity A10 (AT10) AIT-M

0.2 ohm.m 2000

Main To Repeat

Repeat To Main

Standard Resolution Density Porosity (DPHZ) HDRS-H

0.3 ft3/ft3 -0.1

Main To Repeat

Repeat To Main

Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H

0.3 m3/m3 -0.1

Main To Repeat

Repeat To Main

Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H

0 10

TIME_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo RA) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 31-Mar-2015 17:40:21

Calibration Report

AIT-M (Array Induction Tool - M) Calibration - Run 2

Primary Equipment :

File code for AIT-MA Sonde Tool Element	AMIS	1538

Auxiliary Equipment :

File code for AIT Bottom Nose Tool Element	AMRM	1251

AIT Sonde Calibration - Test Loop Gain

Master (EEPROM): 20:26:40 05-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Test Loop Gain - 0		Master	1.000	0.950	1.011	1.050
Test Loop Phase - 0	deg	Master	0	-3.000	0.637	3.000
Test Loop Gain - 1		Master	1.000	0.950	1.011	1.050
Test Loop Phase - 1	deg	Master	0	-3.000	0.727	3.000
Test Loop Gain - 2		Master	1.000	0.950	1.029	1.050
Test Loop Phase - 2	deg	Master	0	-3.000	0.144	3.000
Test Loop Gain - 3		Master	1.000	0.950	1.010	1.050
Test Loop Phase - 3	deg	Master	0	-3.000	0.210	3.000
Test Loop Gain - 4		Master	1.000	0.950	1.039	1.050
Test Loop Phase - 4	deg	Master	0	-3.000	0.231	3.000
Test Loop Gain - 5		Master	1.000	0.950	1.023	1.050
Test Loop Phase - 5	deg	Master	0	-3.000	-0.046	3.000
Test Loop Gain - 6		Master	1.000	0.950	0.991	1.050
Test Loop Phase - 6	deg	Master	0	-3.000	0.322	3.000
Test Loop Gain - 7		Master	1.000	0.950	1.004	1.050
Test Loop Phase - 7	deg	Master	0	-3.000	-0.051	3.000

AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM): 20:26:40 05-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-73.992	119.000
Sonde Error Correction Quad - 0		Master	-----	-2250.000	-1459.931	2250.000
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	143.180	204.000
Sonde Error Correction Quad - 1		Master	-----	-625.000	73.990	625.000
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	122.707	156.000
Sonde Error Correction Quad - 2		Master	-----	-350.000	21.288	350.000
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	60.991	89.000
Sonde Error Correction Quad - 3		Master	-----	-250.000	-17.772	250.000
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	27.158	35.000
Sonde Error Correction Quad - 4		Master	-----	-63.000	14.428	63.000
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	14.733	24.000
Sonde Error Correction Quad - 5		Master	-----	-50.000	4.680	50.000
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	9.694	15.000
Sonde Error Correction Quad - 6		Master	-----	-30.000	6.194	30.000
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-1.919	5.000
Sonde Error Correction Quad - 7		Master	-----	-30.000	0.034	30.000

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM): 20:26:40 05-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Coarse Gain		Master	1.000	0.800	0.841	1.200
Fine Gain		Master	1.000	0.800	0.841	1.200

AIT Electronics Check - Thru Calibration Check

Master (EEPROM): 20:26:40 05-Mar-2015 Before (Measured): 06:08:59 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Thru Cal Mag - 0	V	Master	-----	0.366	0.617	0.854
		Before	-----	0.366	0.617	0.854
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 0	deg	Master	-----	137.000	-173.820	-103.000
		Before	-----	137.000	-173.871	-103.000
		Before-Master	-----	-----	-0.051	-----
Thru Cal Mag - 1	V	Master	-----	0.762	1.263	1.778
		Before	-----	0.762	1.263	1.778
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 1	deg	Master	-----	136.000	-174.859	-104.000
		Before	-----	136.000	-174.910	-104.000
		Before-Master	-----	-----	-0.051	-----

Thru Cal Mag - 2	V	Master	-----	0.372	0.627	0.868
		Before	-----	0.372	0.627	0.868
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 2	deg	Master	-----	132.000	-178.226	-108.000
		Before	-----	132.000	-178.276	-108.000
		Before-Master	-----	-----	-0.050	-----
Thru Cal Mag - 3	V	Master	-----	0.420	0.708	0.980
		Before	-----	0.420	0.708	0.980
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 3	deg	Master	-----	131.000	-178.948	-109.000
		Before	-----	131.000	-179.000	-109.000
		Before-Master	-----	-----	-0.052	-----
Thru Cal Mag - 4	V	Master	-----	0.804	1.329	1.876
		Before	-----	0.804	1.329	1.876
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 4	deg	Master	-----	125.000	175.192	-115.000
		Before	-----	125.000	175.144	-115.000
		Before-Master	-----	-----	-0.048	-----
Thru Cal Mag - 5	V	Master	-----	1.176	1.939	2.744
		Before	-----	1.176	1.939	2.744
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 5	deg	Master	-----	122.000	173.604	-118.000
		Before	-----	122.000	173.556	-118.000
		Before-Master	-----	-----	-0.048	-----
Thru Cal Mag - 6	V	Master	-----	1.176	1.933	2.744
		Before	-----	1.176	1.934	2.744
		Before-Master	-----	-----	0.001	-----
Thru Cal Phase - 6	deg	Master	-----	121.000	173.670	-119.000
		Before	-----	121.000	173.624	-119.000
		Before-Master	-----	-----	-0.046	-----
Thru Cal Mag - 7	V	Master	-----	0.846	1.390	1.974
		Before	-----	0.846	1.390	1.974
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 7	deg	Master	-----	115.000	172.818	-125.000
		Before	-----	115.000	172.792	-125.000
		Before-Master	-----	-----	-0.026	-----
SPA Zero	mV	Master		-50.000	-0.075	50.000
		Before		-50.000	-0.093	50.000
		Before-Master	-----	-----	-0.018	-----
SPA Plus	mV	Master		941.000	984.924	1040.000
		Before		941.000	984.742	1040.000
		Before-Master	-----	-----	-0.182	-----
Temperature Zero	V	Master		-0.050	0.000	0.050
		Before		-0.050	0.000	0.050
		Before-Master	-----	-----	0.000	-----
Temperature Plus	V	Master		0.870	0.913	0.960
		Before		0.870	0.912	0.960
		Before-Master	-----	-----	-0.001	-----

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run 2

Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	3933

Auxiliary Equipment :

HRDD Backscatter Detector	Backscatter	
HRDD Long Spacing Detector	Long Spacing	28736
HRDD Short Spacing Detector	Short Spacing	
Cesium 137 Gamma-Ray Logging Source	GSR-J	5094
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	
HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	

HILT High-Resolution Mechanical Sonde, 150 degC HRMS-H

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)	8.00
Large Ring Size (Caliper Calibration Large Ring)	12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 06:08:25 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Small Ring	in	Before	8.00	6.00	7.65	10.00
Large Ring	in	Before	12.00	9.00	11.91	15.00

HDRS Density Calibration - Inversion Results

Master (EEPROM): 12:42:32 13-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Rho Aluminum	g/cm3	Master	2.596	2.586	2.594	2.606
Rho Magnesium	g/cm3	Master	1.686	1.676	1.689	1.696
Pe Aluminum		Master	2.570	2.470	2.578	2.670
Pe Magnesium		Master	2.650	2.550	2.588	2.750

HDRS Density Calibration - Deviation Summary

Master (EEPROM): 12:42:32 13-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
BS Average Deviation	%	Master	0	-0.6000	0.2472	0.6000
BS Max Deviation	%	Master	0	-1.6000	0.6318	1.6000
SS Average Deviation	%	Master	0	-1.0000	0.3490	1.0000
SS Max Deviation	%	Master	0	-2.5000	0.8701	2.5000
LS Average Deviation	%	Master	0	-1.5000	0.8126	1.5000
LS Max Deviation	%	Master	0	-3.5000	2.9844	3.5000

HDRS Density Calibration - Background Summary

Master (EEPROM): 12:42:32 13-Mar-2015 Before (Measured): 06:11:19 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
BS Window Ratio		Master	1.0000		0.7484	
		Before	0.7484	0.7110	0.7512	0.7858
		Before-Master	-----	-----	0.0028	-----
BS Window Sum	1/s	Master	1		23153	
		Before	23153	21995	23158	24310
		Before-Master	-----	-----	5	-----
SS Window Ratio		Master	1.0000		0.4876	
		Before	0.4876	0.4633	0.4846	0.5120
		Before-Master	-----	-----	-0.0030	-----
SS Window Sum	1/s	Master	1		10830	
		Before	10830	10289	10795	11372
		Before-Master	-----	-----	-35	-----
LS Window Ratio		Master	1.0000		0.2980	
		Before	0.2980	0.2831	0.3025	0.3128
		Before-Master	-----	-----	0.0045	-----
LS Window Sum	1/s	Master	1		1183	
		Before	1183	1124	1179	1242
		Before-Master	-----	-----	-4	-----

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 12:42:32 13-Mar-2015 Before (Measured): 06:11:19 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
BS PM High Voltage	V	Master		1000	1623	2400
		Before		1000	1604	2400
		Before-Master	-----	-100	-19	100
SS PM High Voltage	V	Master		1000	1480	2400
		Before		1000	1504	2400
		Before-Master	-----	-100	24	100
LS PM High Voltage	V	Master		1000	1288	2400
		Before		1000	1296	2400
		Before-Master	-----	-100	8	100

HDRS Density Calibration - Crystal Quality Resolutions

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 12:42:32 13-Mar-2015 Before (Measured): 06:11:19 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
BS Crystal Resolution	%	Master		5.00	11.01	25.00
		Before		5.00	10.77	25.00
		Before-Master	-----	-1.00	-0.24	1.00
SS Crystal Resolution	%	Master		5.00	9.78	20.00
		Before		5.00	10.21	20.00
		Before-Master	-----	-1.00	0.43	1.00
LS Crystal Resolution	%	Master		5.00	8.12	20.00
		Before		5.00	8.29	20.00
		Before-Master	-----	-1.00	0.17	1.00

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 06:07:54 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Main Resistivity	ohm.m	Before	3875	3565	3869	4185
Deep Resistivity	ohm.m	Before	3830	3524	3812	4136
Shallow Resistivity	ohm.m	Before	3830	3524	3816	4136

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run 2

Primary Equipment :

HILT Gamma-Ray and Neutron Sonde, 150 degC	HGNS-H	

Auxiliary Equipment :

HGNS Accelerometer, 150 degC	HACCZ-H	5118
AmBe Neutron Logging Source	NSR-F	5069

Calibration Parameter :

Water Temperature	
Housing Size	
JIG-BKG (Jig minus background reference)	165

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 15:10:33 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.0	32.8

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-May-2006

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Accelerometer Manufacturer		Master			QAT_160	
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0
Accelerometer Coefficients - 0		Master	-----	-----	2900.000	-----
Accelerometer Coefficients - 1		Master	-----	-----	19.000	-----
Accelerometer Coefficients - 2		Master	-----	-----	0.002	-----
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 4		Master	-----	-----	2.747	-----
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 7		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 8		Master	-----	-----	299.100	-----
Accelerometer Coefficients - 9		Master	-----	-----	0.993	-----

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 19:10:48 01-Mar-2015 Before (Measured): 06:08:11 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Near Zero Measurement	1/s	Master	0	5.0	27.5	40.0
		Before	0	5.0	26.8	40.0
		Before-Master	-----	-4.1	-0.7	4.1
Far Zero Measurement	1/s	Master	0	5.0	29.3	40.0
		Before	0	5.0	27.8	40.0

		Before	0	5.0	27.8	40.0	
		Before-Master	-----	-4.4	-1.5	4.4	
Near Plus Measurement	1/s	Master	6031.0	4700.0	4886.0	6900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2048.0	2900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Near Corrected Plus Measurement	1/s	Master		4700.0	4973.0	6900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2092.0	2900.0	
		Before	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured): 06:14:25 31-Mar-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	87.2	120.0	
RGR Plus Measurement	gAPI	Before	185.4	157.1	164.8	206.3	
GR Calibration Gain		Before	0.89	0.80	1.00	1.05	

Company:	NGL Water Solutions DJ LLC
Well:	NGL C10
Field:	Eaton
County:	Weld
State:	Colorado

Schlumberger

Platform Express
Triple Combo