Schlumberger

Company: **Noble Energy, Inc.**

Well: **DF Ranch 1161−10−13**
Field: **Grover**
County: **Weld** State: **Colorado**

County: Weld
Field: Grover
Location: SWNE Sec. 10, T11N, R61W
Well: DF Ranch 1161−10−13
Company: Noble Energy, Inc.

Platform Express
Triple Combo

LOCATION

SWNE Sec. 10, T11N, R61W
SHL: 1500' FNL X 2050' FEL
Lat/Long: 40.93946 N / 104.18935 W

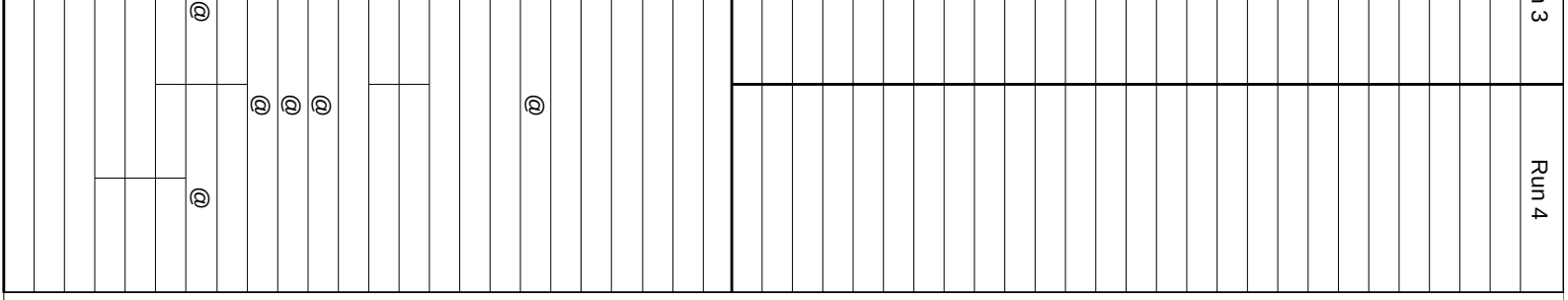
Elev.: K.B. 5305.00 ft
G.L. 5293.00 ft
D.F. 5304.00 ft

Permanent Datum: Ground Level Elev.: 5293.00 ft
Log Measured From: Kelly Bushing 12.00 ft above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No.	Section	Township	Range
05−123−31061−0000	10	11N	61W

	Run 1	Run 2	Run
Logging Date	29−Apr−2010		
Run Number	1		
Depth Driller	7914 ft		
Schlumberger Depth	7923 ft		
Bottom Log Interval	7915 ft		
Top Log Interval	1059 ft		
Casing Driller Size @ Depth	8.875 in @ 1059 ft	@	@
Casing Schlumberger	1059 ft		
Bit Size	7.875 in		
Type Fluid In Hole	Gel and Chemical		
MUD Density / Viscosity	9.3 lbm/gal / 54 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	AIT Sensor		
RM @ Measured Temperature	1.647 ohm.m @ 75 degF	@	@
RMF @ Measured Temperature	1.235 ohm.m @ 75 degF	@	@
RMC @ Measured Temperature	2.470 ohm.m @ 75 degF	@	@
Source RMF / RMC	Calculated / Calculated		
RM @ MRT / RMF @ MRT	0.644 @ 203 / 0.483 @ 203	@ / @	@ / @
Maximum Recorded Temperatures	203 degF		
Circulation Stopped / Time	29−Apr−2010 / 5:30		
Logger On Bottom / Time	29−Apr−2010 / 13:05		
Unit Number / Location	2410 / Ft. Morgan, CO	/	
Recorded By	Tim Hoffman		
Witnessed By	Shane Heard & Mark Scanniello		

	Run 1	Run 2	Run
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time	/		
Logger On Bottom / Time	/		
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 29−APR−2010 13:37:47

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46A XS
Serial Number:	6195	Serial Number:		Serial Number:	707034
Calibration Date:	13−Dec−2009	Calibration Date:	12−Apr−2010	Length:	16000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	83310		
Calibration Cable Type:	7−46P	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−9	Calibration RMS:	31	Rig Type:	LAND
Wheel Correction 2:	−8	Calibration Peak Error:	60		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	4.00 FT
Tool Zero Check At Surface:	

Depth Control Remarks

1. Schlumberger Primary depth control procedures applied.
2. IDW used as primary depth control.
3.
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: MSIP−FMI	OS1:
OS2: HNGS	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
This is the first run in hole	
Toolstring run as per tool sketch	
Matrix changes are as noted on the porosity print	

Rig: Fort Rig 5

Crew: Mark Hoffman, Jay Musgrave

RUN 1		RUN 2	
SERVICE ORDER #:	BBE4−00036	SERVICE ORDER #:	
PROGRAM VERSION:	17C0−154	PROGRAM VERSION:	
FLUID LEVEL:	50 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP

LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

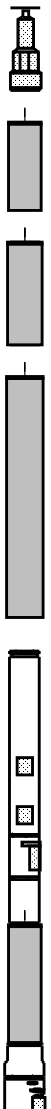
RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y 1079
NCT−B
CNB−AB
NCS−VB

GSR−U 1079
WITM (DTS)−A

DOWNHOLE EQUIPMENT



LEH−QT
LEH−QT — 55.3

DTC−H
ECH−KC
DTCH0−A
DTCH1−A
CTEM — 51.4
TelStatus
ToolStatu — 49.3
52.3

HNGC−B
HNGH−A 186
HNGC−B 292
HNGC Stat — 47.6
49.3

HNGS−BA
HNGS−BA 169
HNSH−BA 186
Upper_1 — 43.6
Lower_2 — 42.9
45.8

HILTB−FTB
HGNSD−B
HMCA
HGNH
NLS−KL
NSR−F 5068
HACCZ 452
HCNT
HGR
HRCC−B
HRMS−B
HRGD−B
GLS−VJ 5416
MCFL Device
HILT Nucl. LS 42767
HILT Nucl. SS 42767
HILT Nucl. BS 42767
NPV−N
HGNS HTEM
HMCA — 37.6
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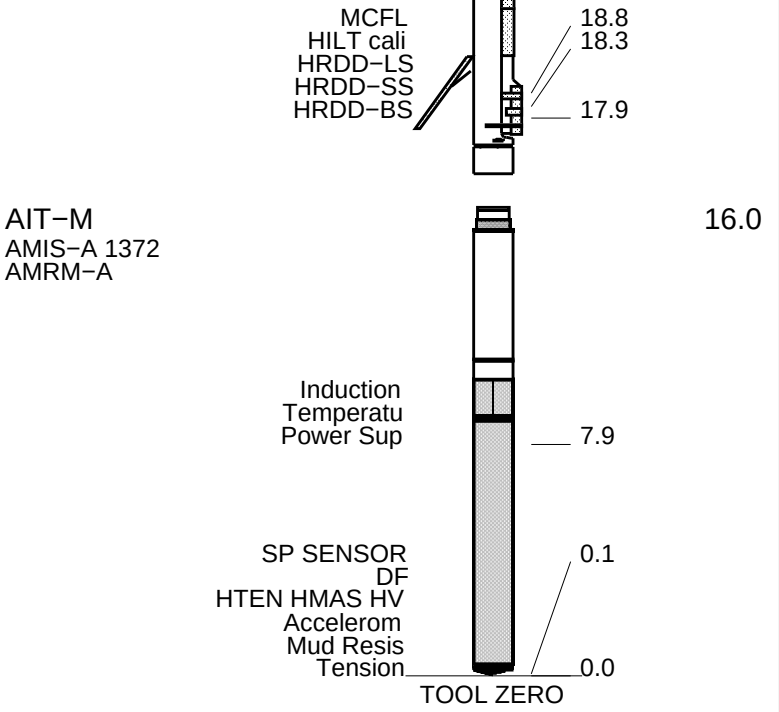
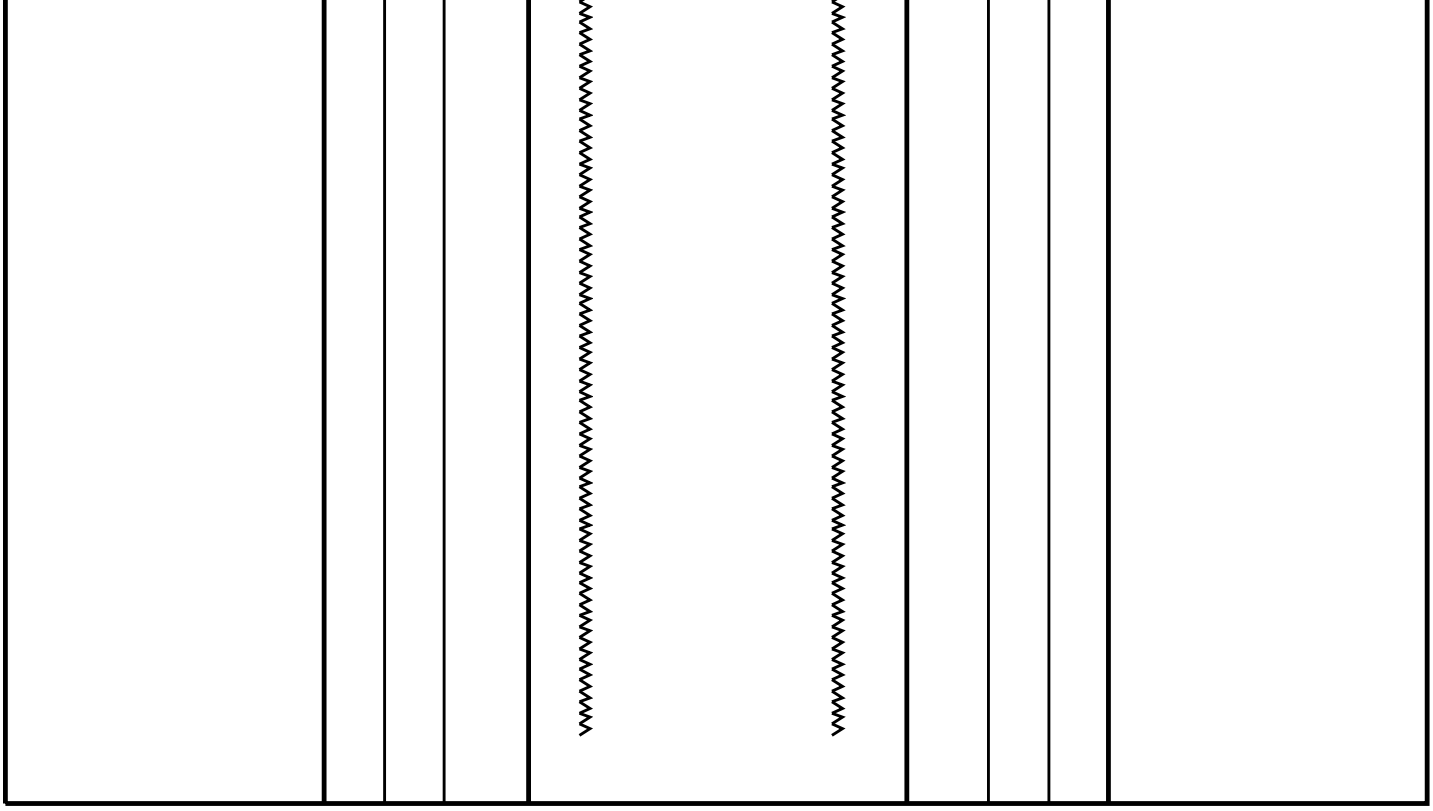
37.6
HGNS Neut — 31.1
HGNS Neut — 30.6
HGNS sens — 28.2
HRCC cart — 24.2



MAXIMUM STRING DIAMETER 4.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	8.875		Casing String
					1059.0	8.875		Casing Shoe
					1059.0	7.875		Borehole Segment



All Depths are Drillers Depths

Schlumberger

COMBO LOG 5" = 100’

MAXIS Field Log

Company: Noble Energy, Inc. **Well: DF Ranch 1161−10−13**

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_018PUP	FN:14	PRODUCER	29−Apr−2010 14:41	7927.5 FT	884.5 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_020PUP	FN:15	PRODUCER	29−Apr−2010 15:12	7927.5 FT	884.5 FT

OP System Version: 17C0−154

AIT−M	17C0−154	HILTB−FTB	SRPC−3870_Q3_2009_OP17_V3_b
HNGS−BA	17C0−154	HNGC−B	17C0−154
DTC−H	17C0−154		

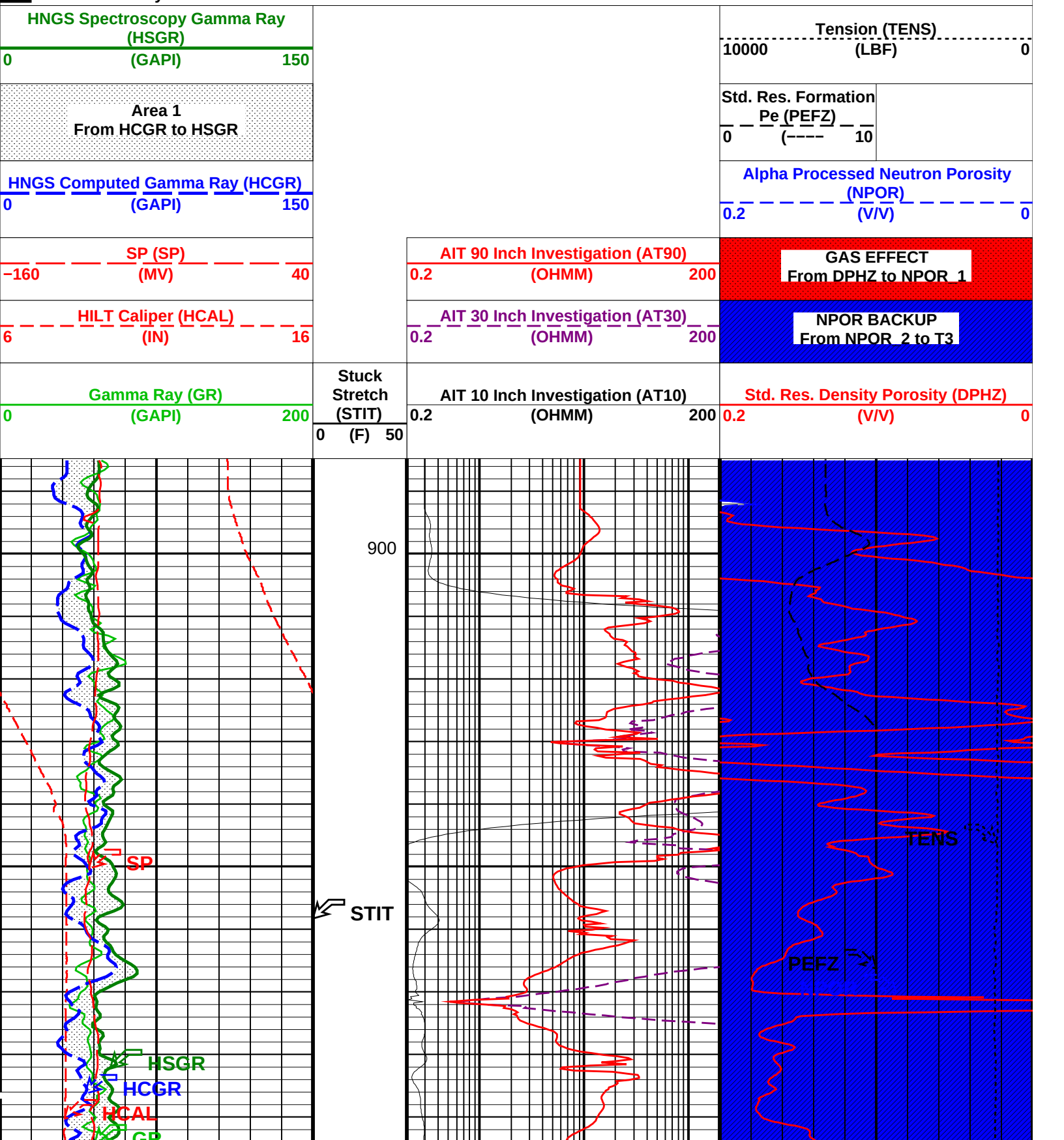
Changed Parameter Summary

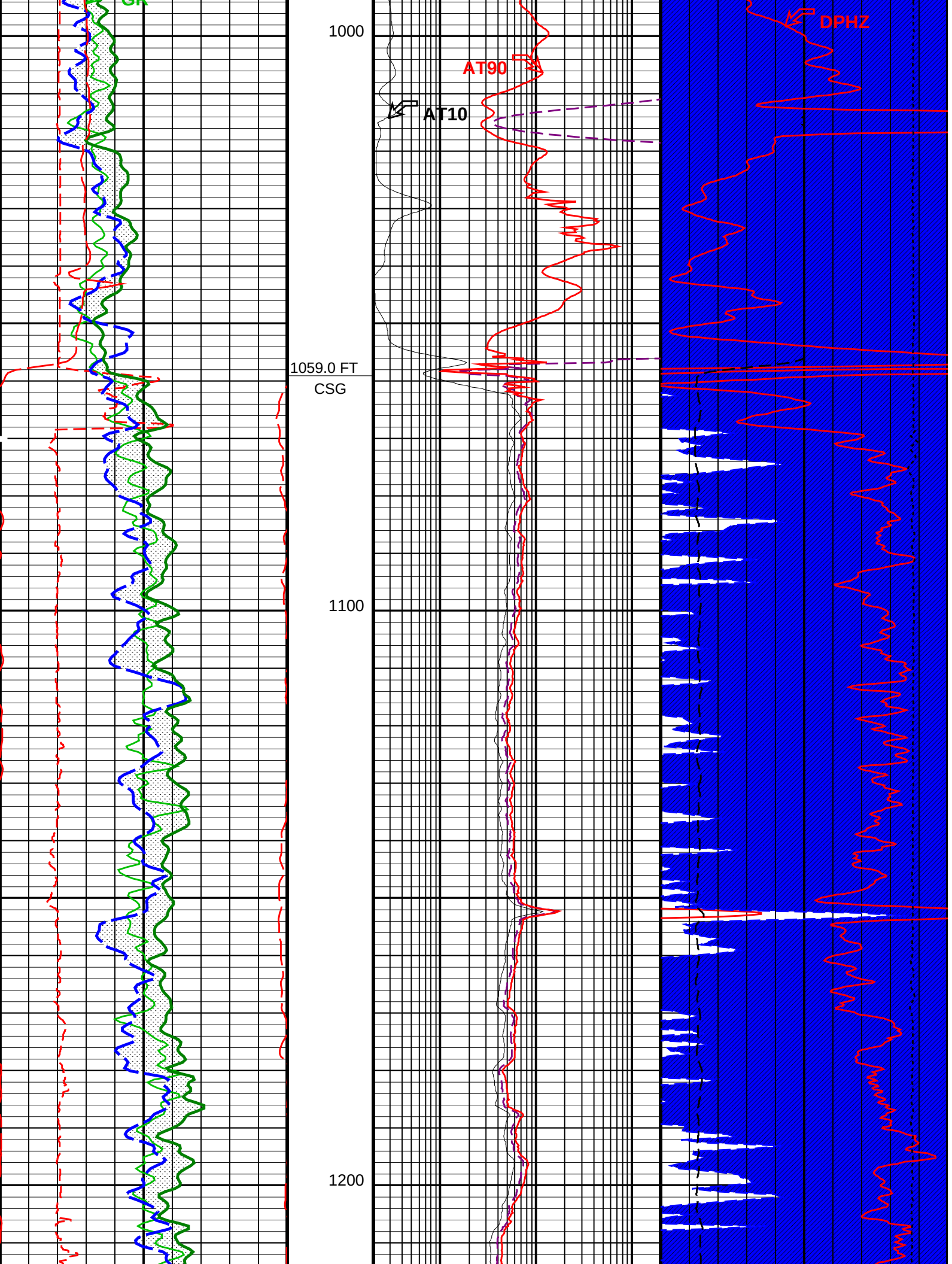
Changed Parameter Summary

DLIS Name	New Value		Previous Value		Depth & Time
MATR	SANDSTONE		SANDSTONE		7927.5 15:13:11
	SANDSTONE		SANDSTONE		7503.0 15:13:24
	LIMESTONE		SANDSTONE		7140.0 15:13:35
	SANDSTONE		LIMESTONE		6550.0 15:13:54
MDEN	2.65	G/C3	2.68	G/C3	7927.5 15:13:11
	2.68	G/C3	2.65	G/C3	7503.0 15:13:24
	2.71	G/C3	2.68	G/C3	7140.0 15:13:35
	2.68	G/C3	2.71	G/C3	6550.0 15:13:54

PIP SUMMARY

Time Mark Every 60 S

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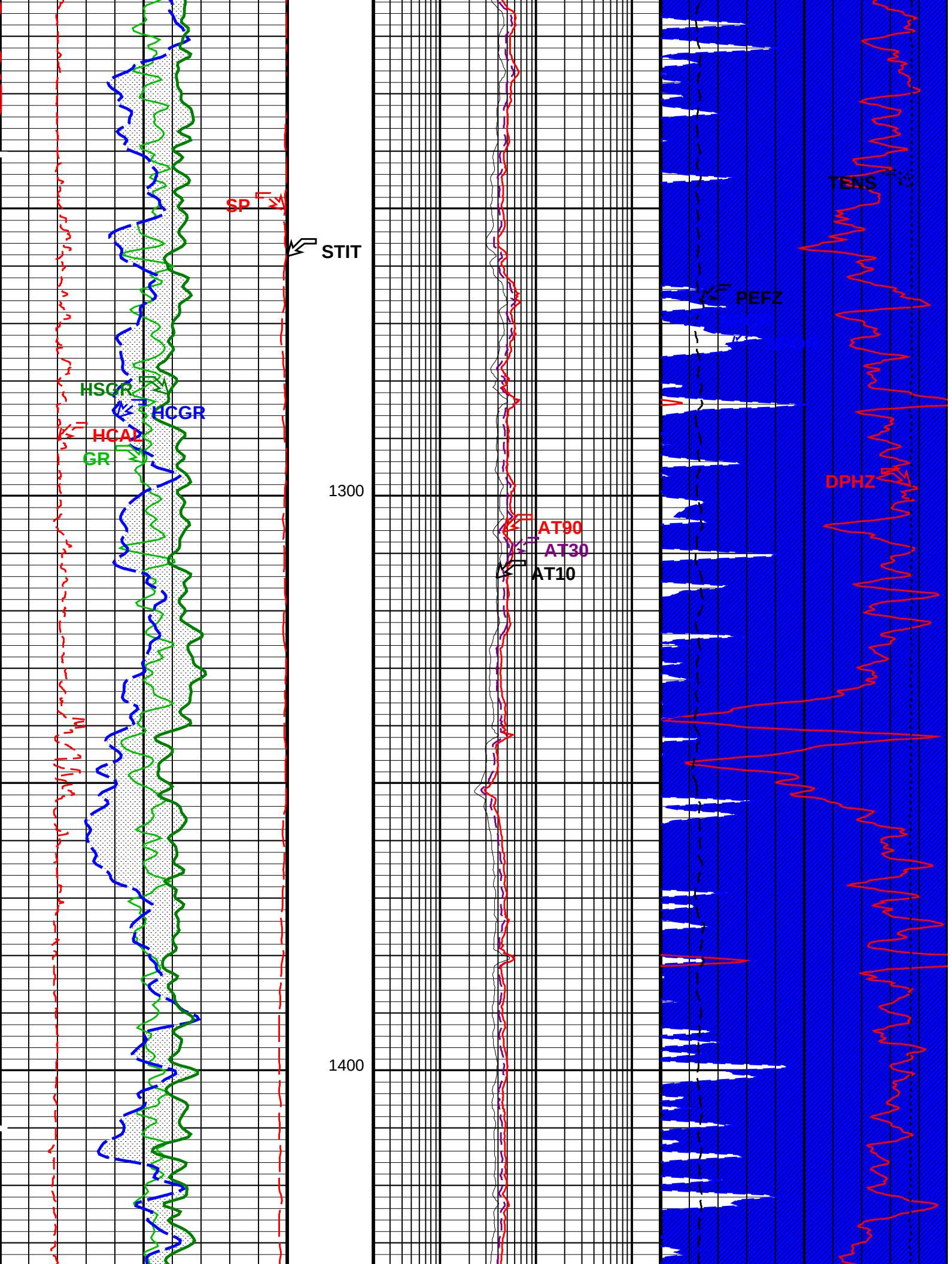
1000
1059.0 FT
CSG
1100
1200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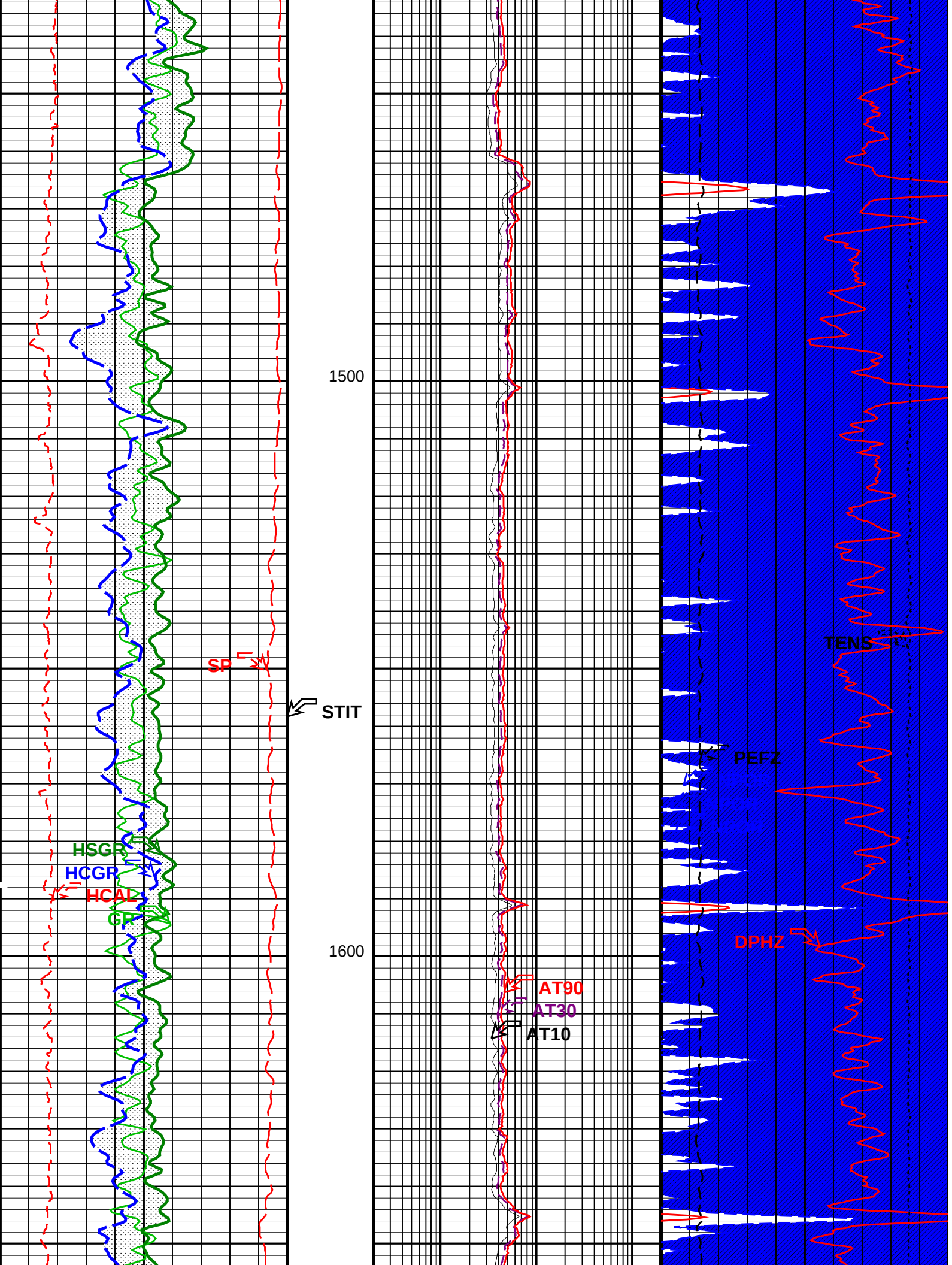
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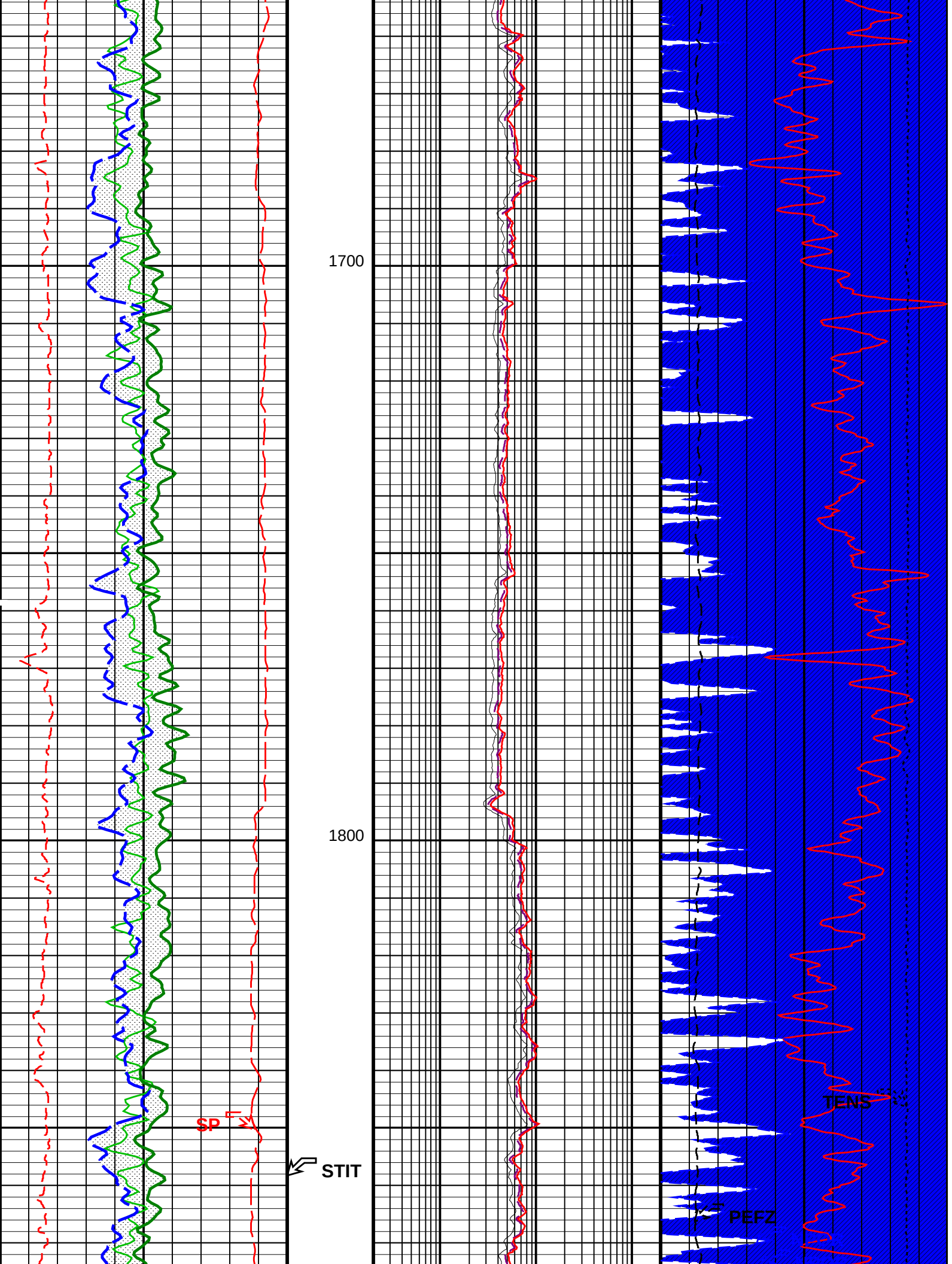
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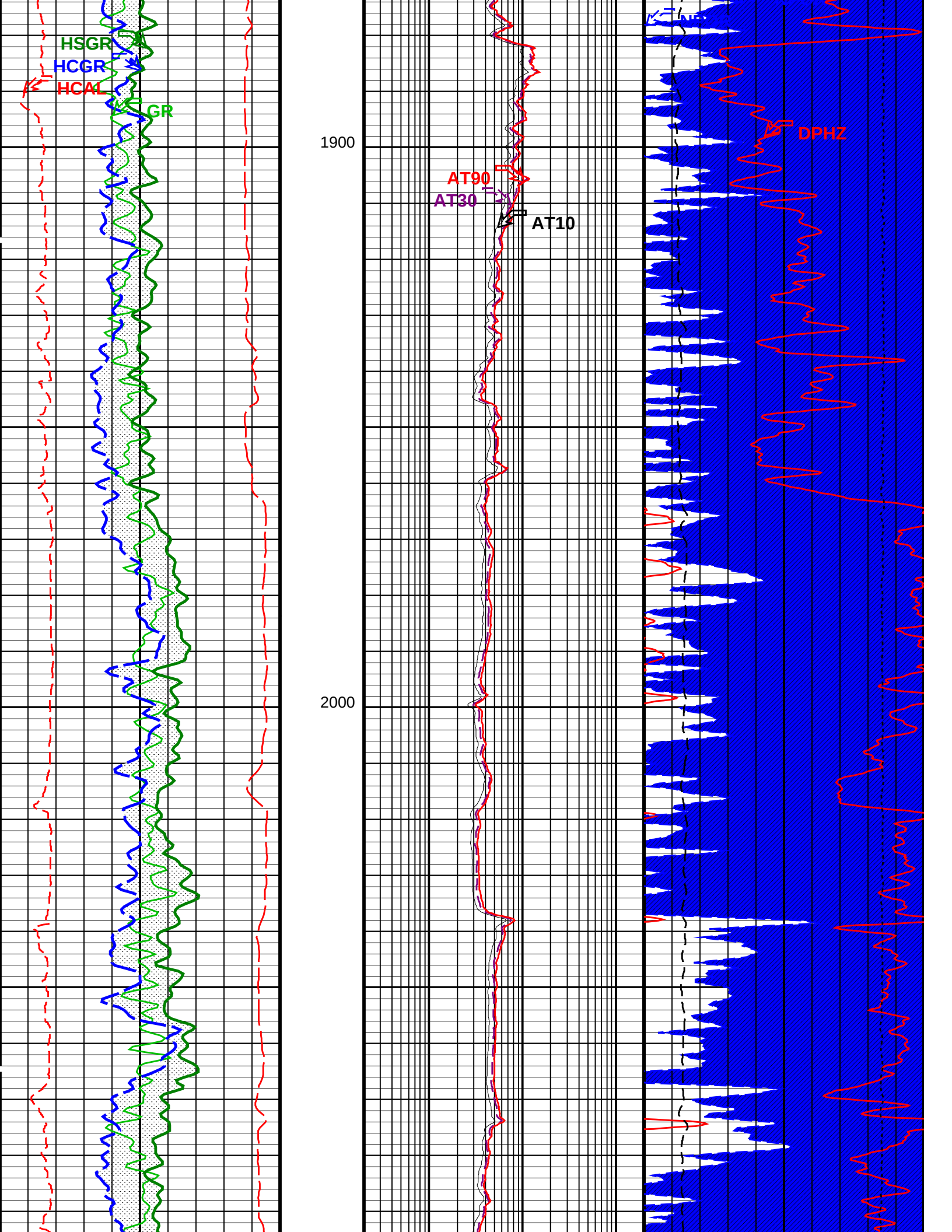
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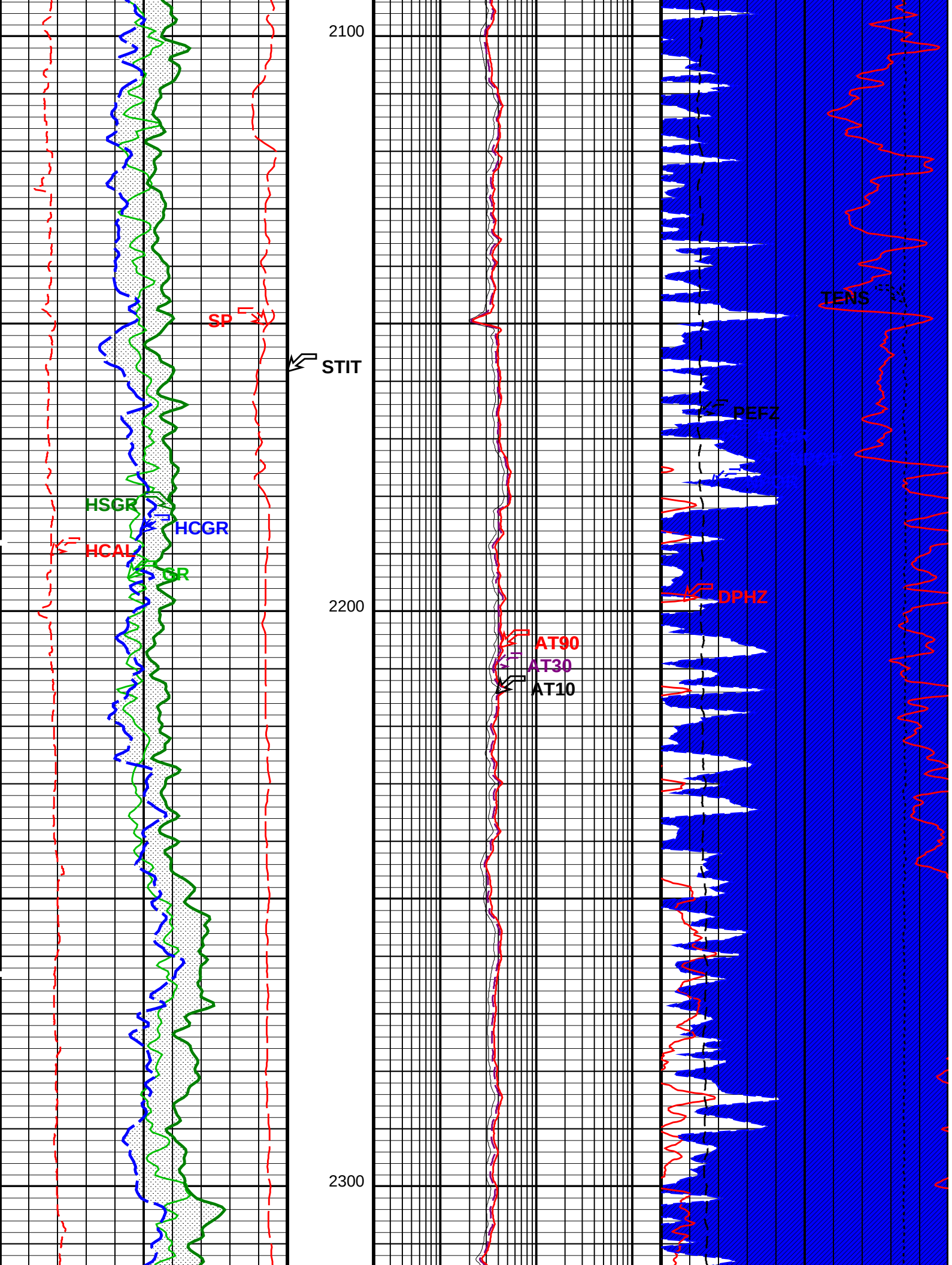
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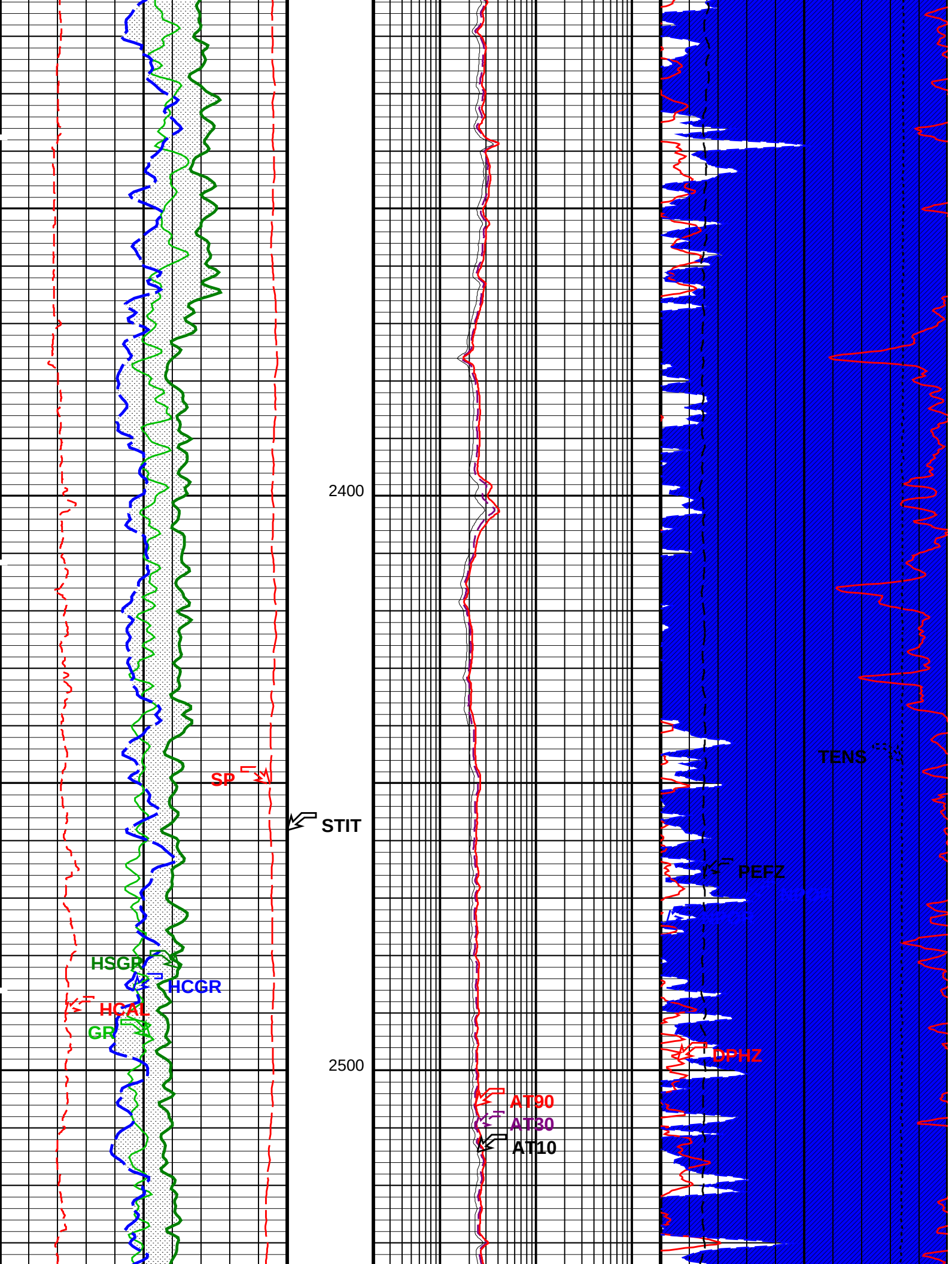
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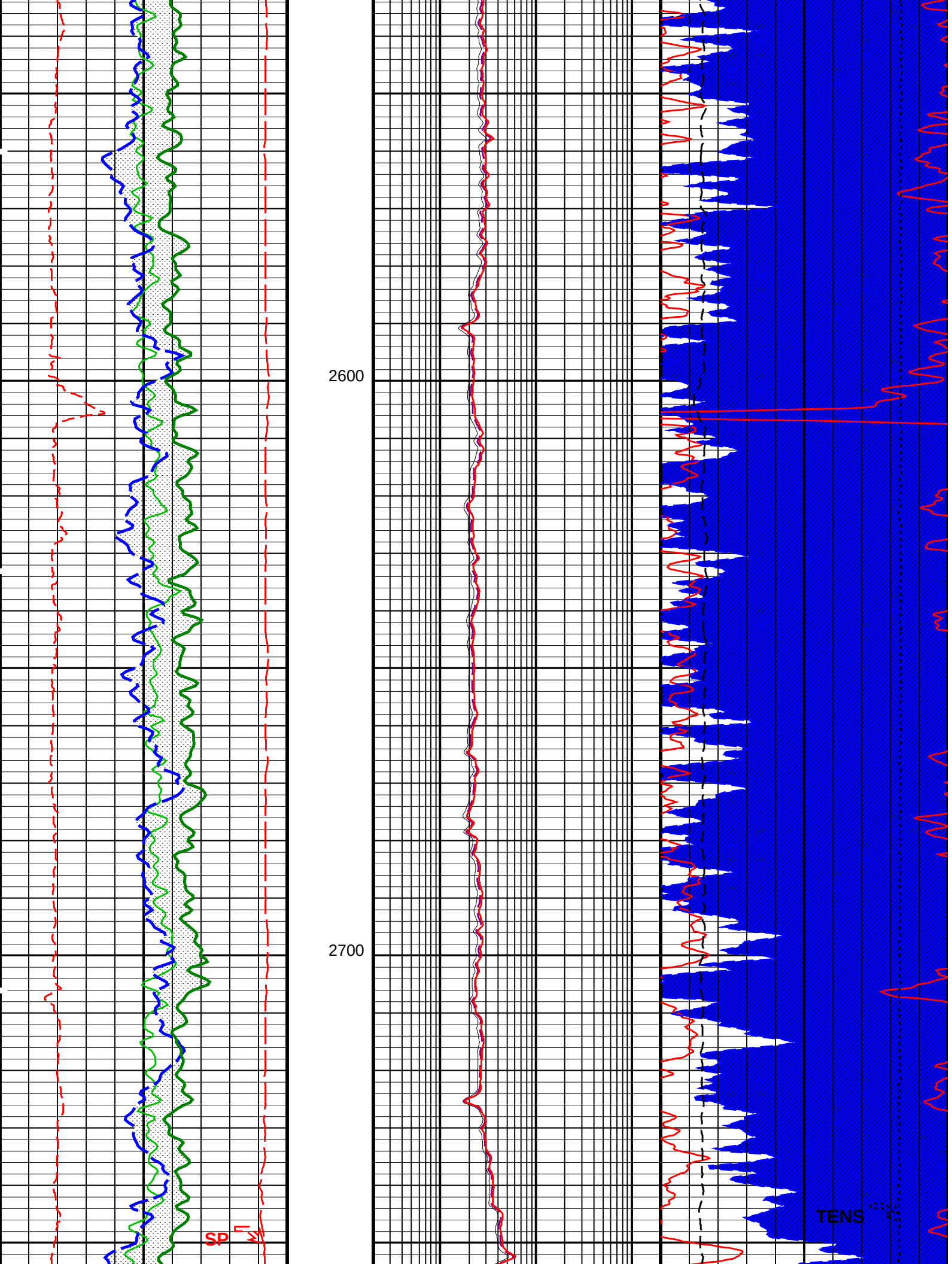
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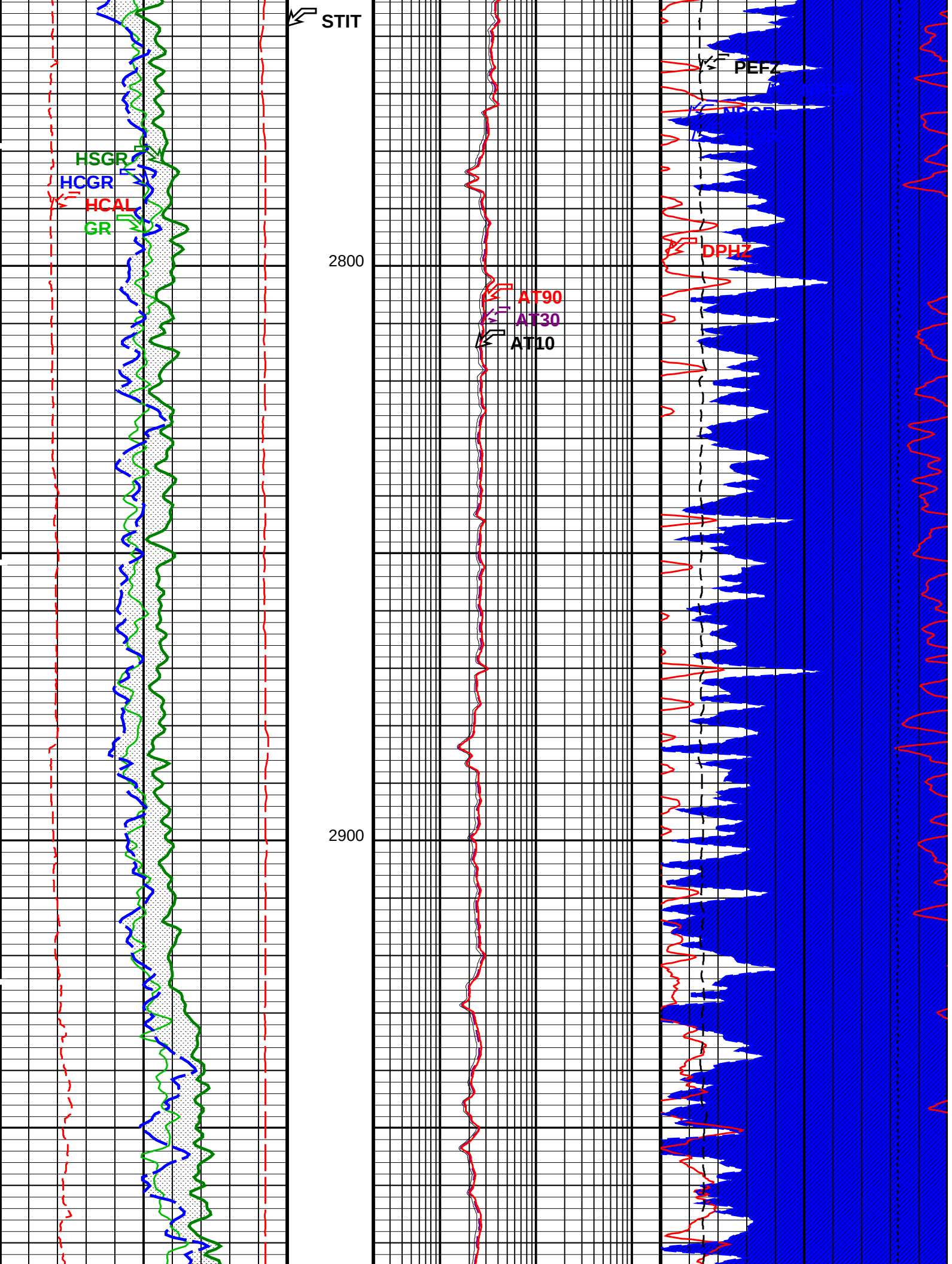
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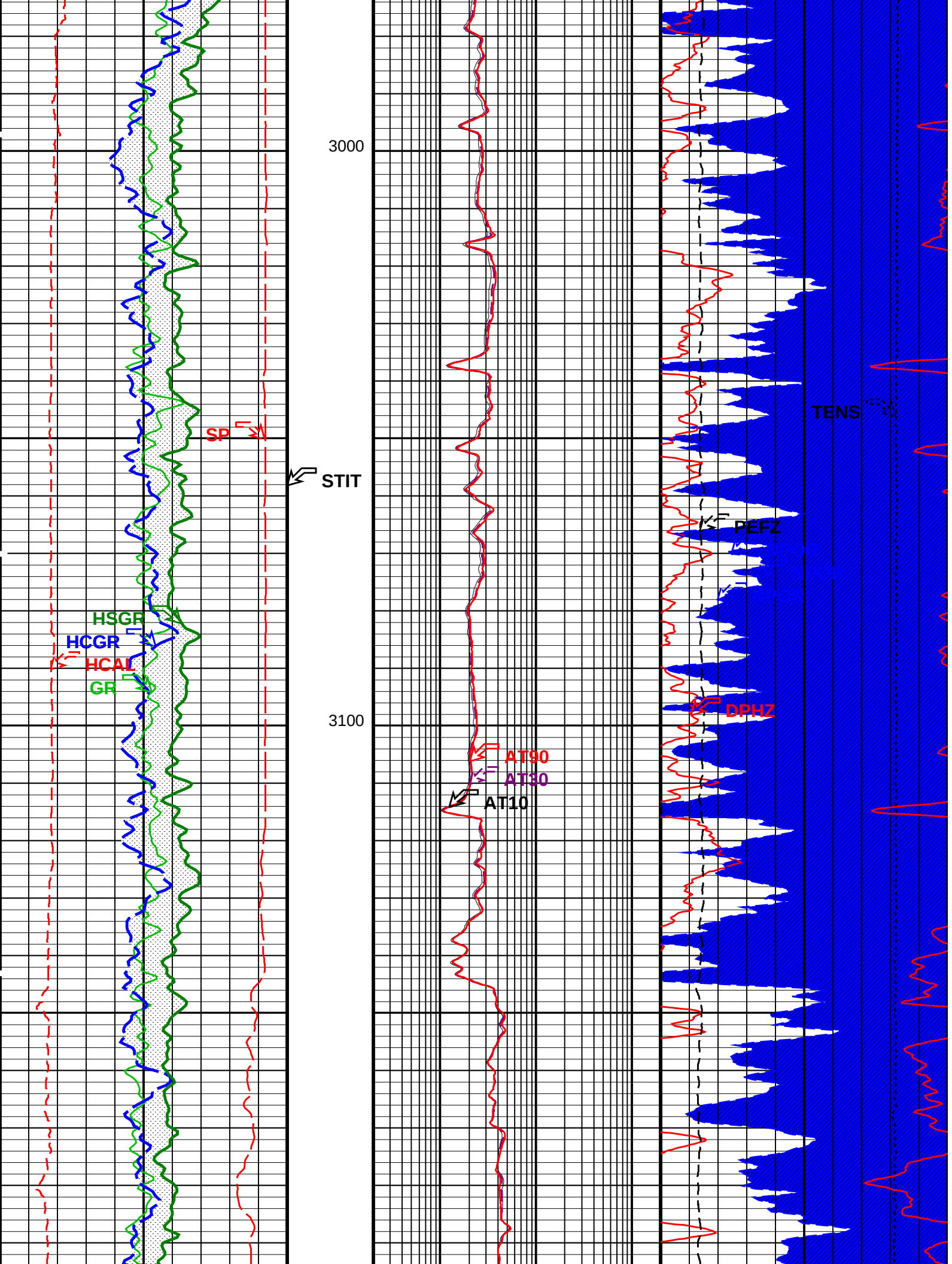
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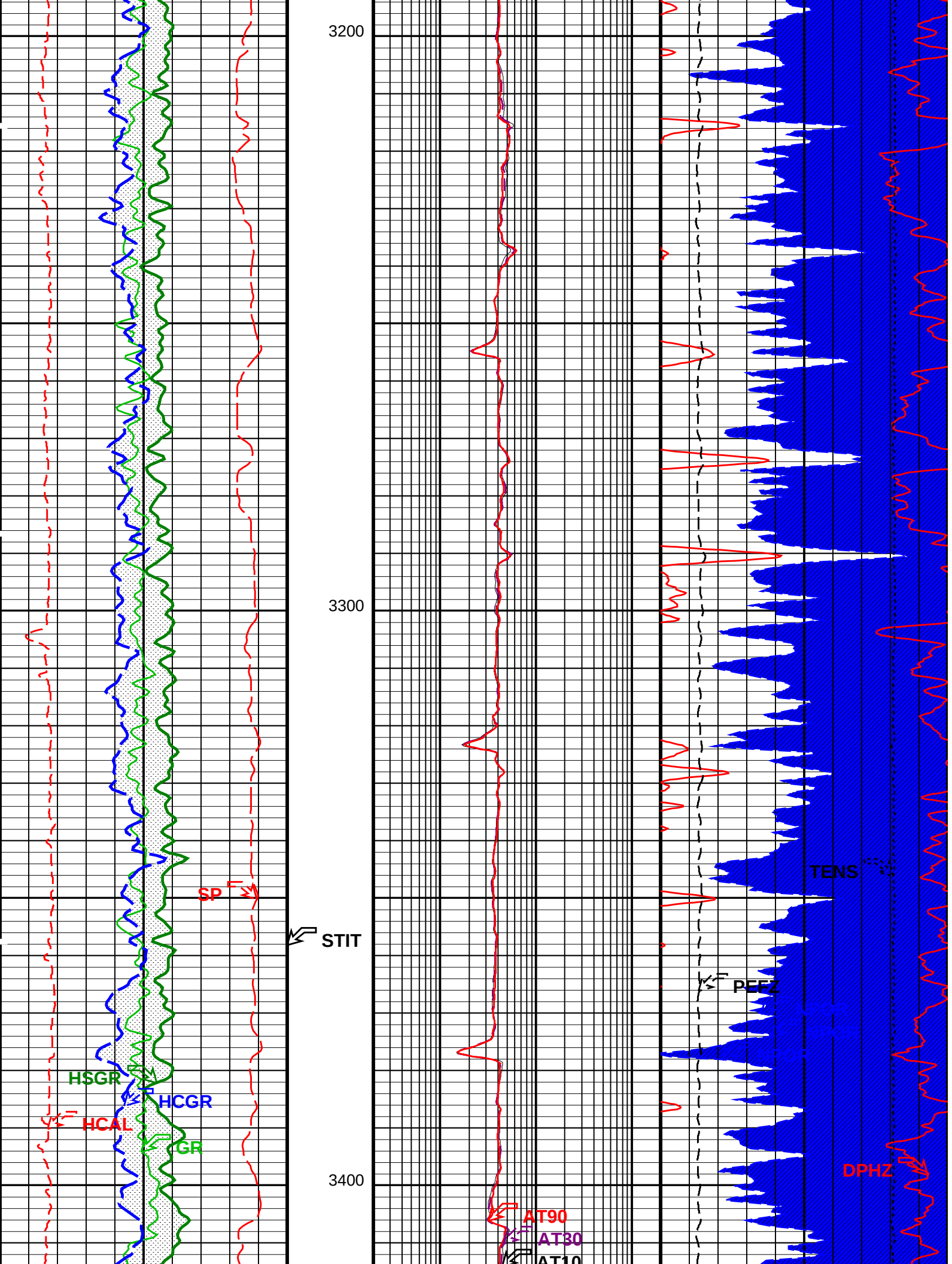
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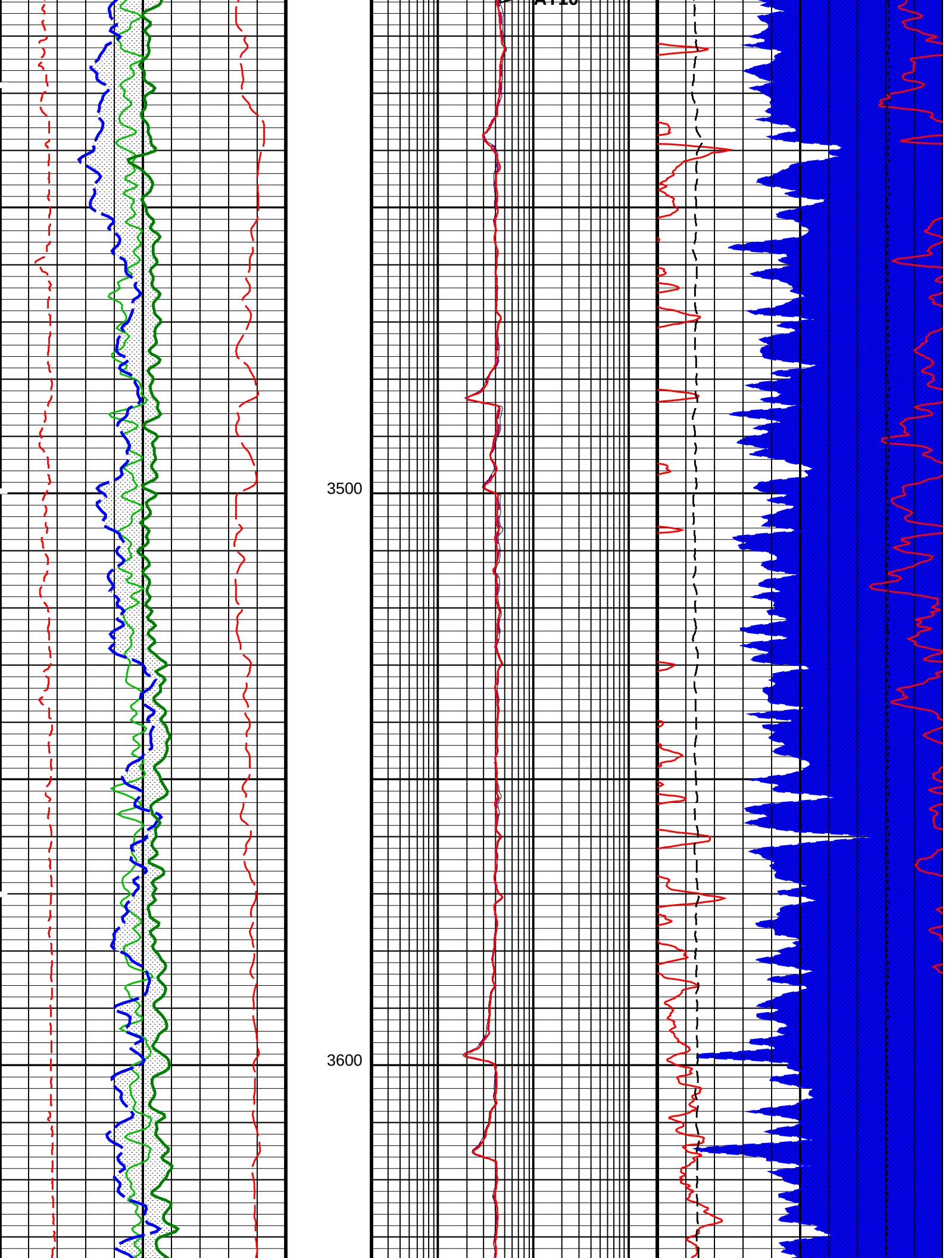
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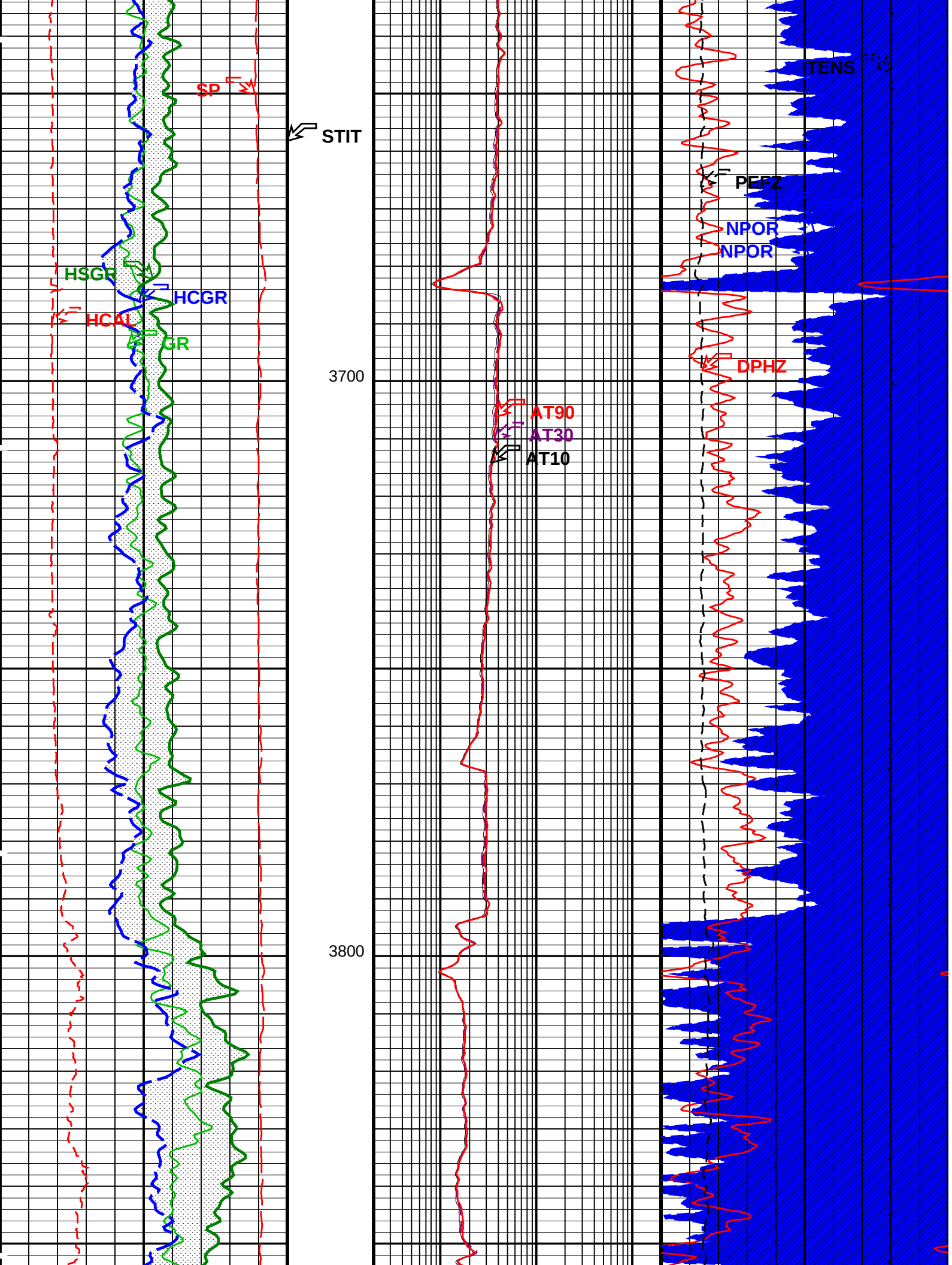
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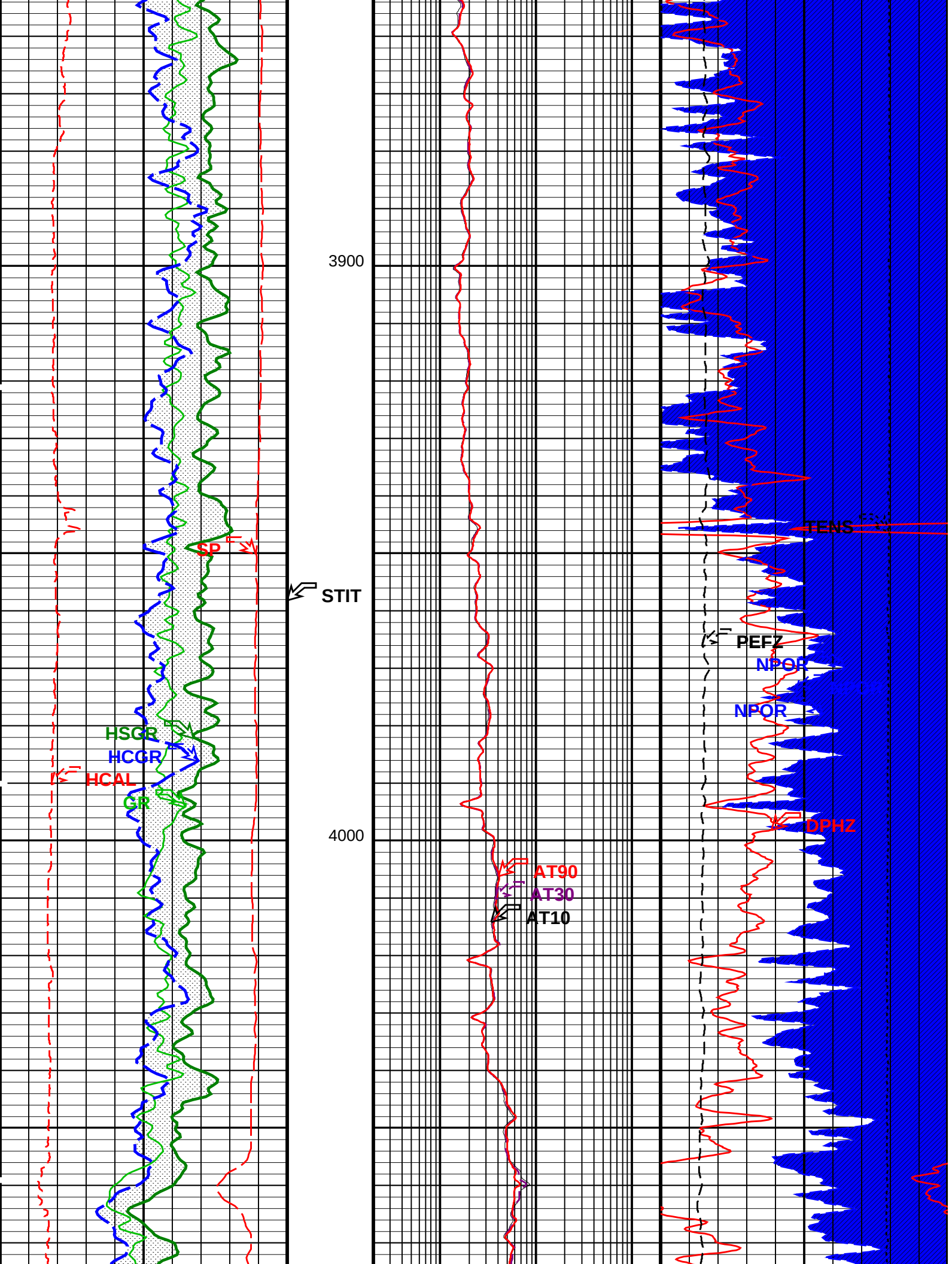
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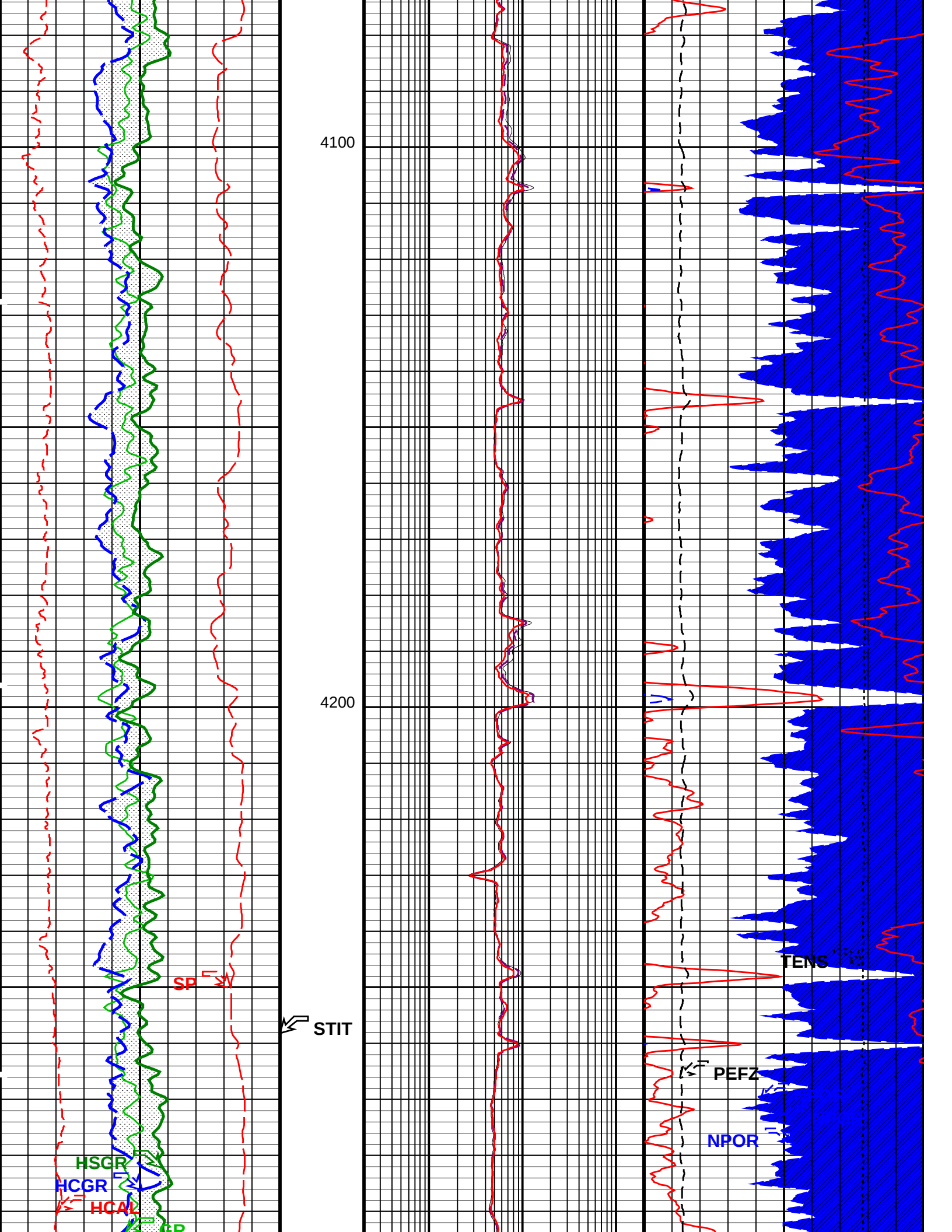
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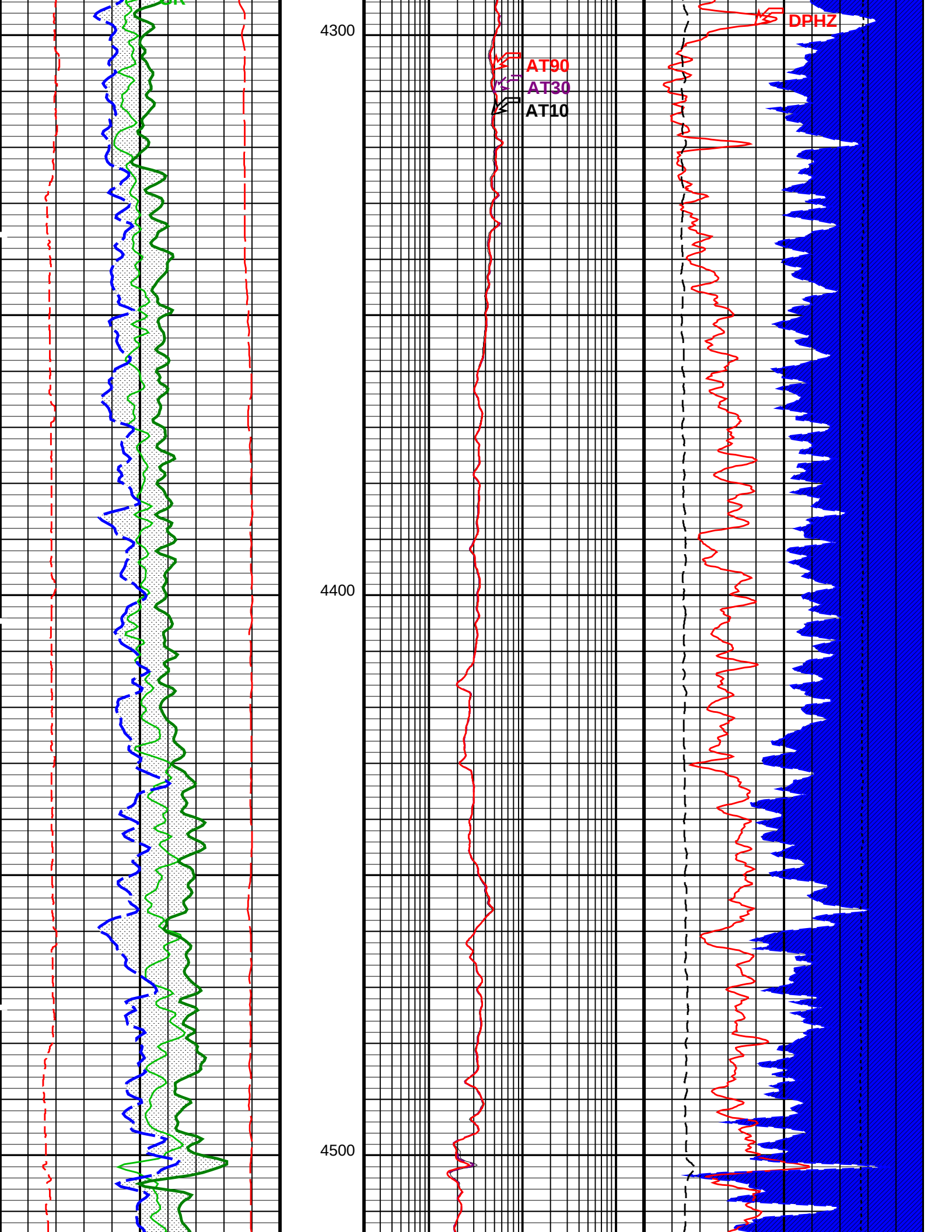
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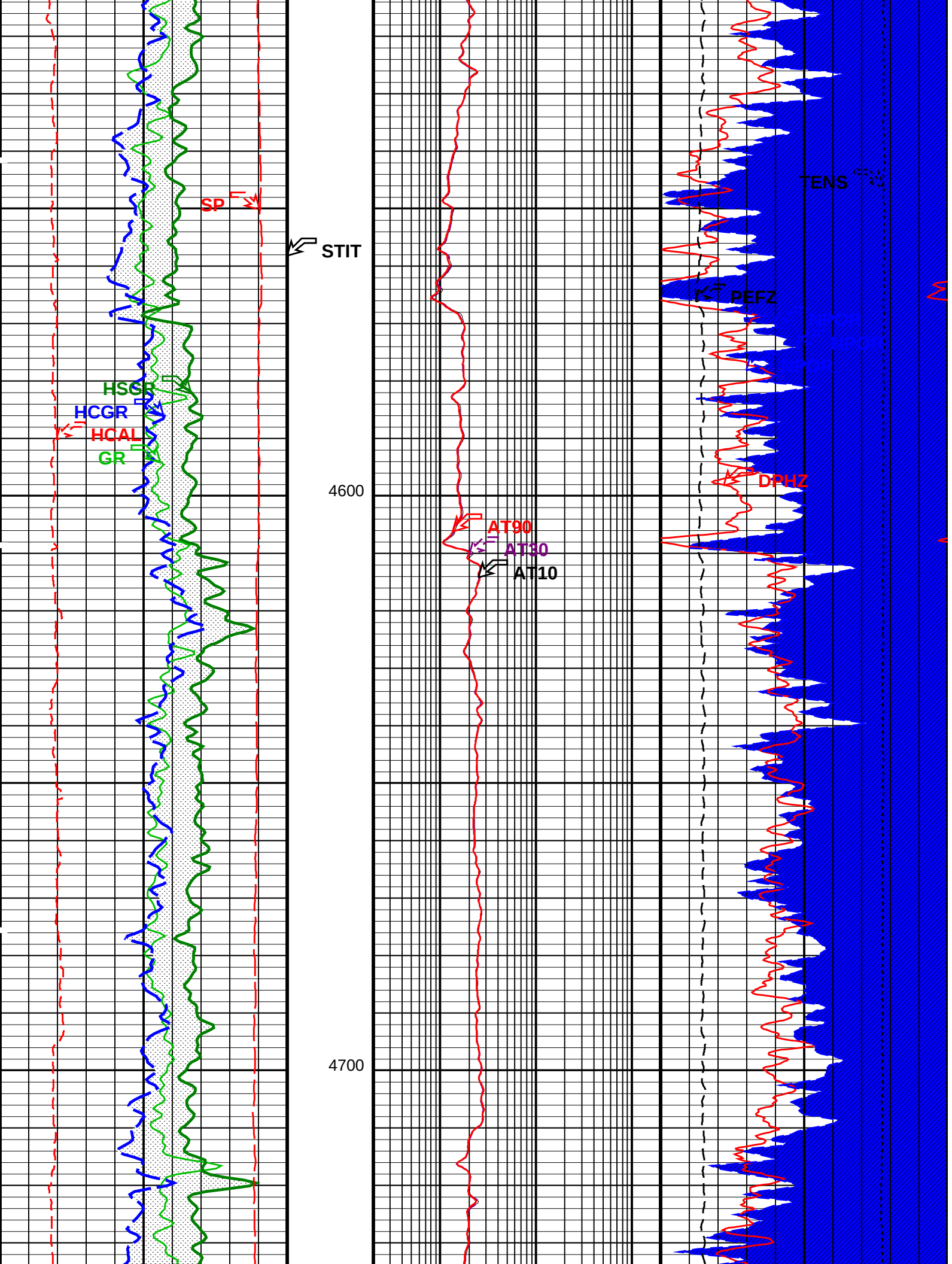
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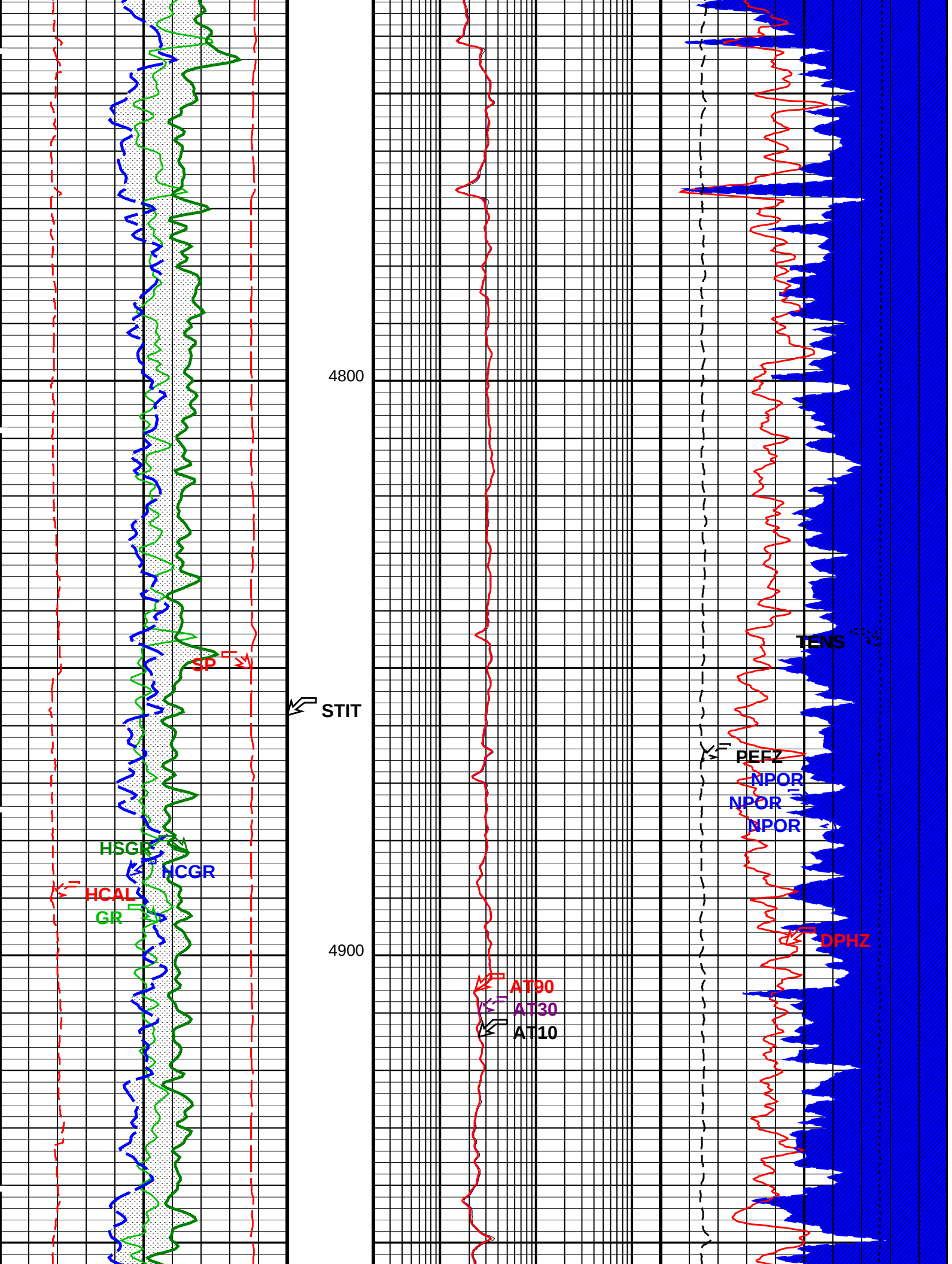
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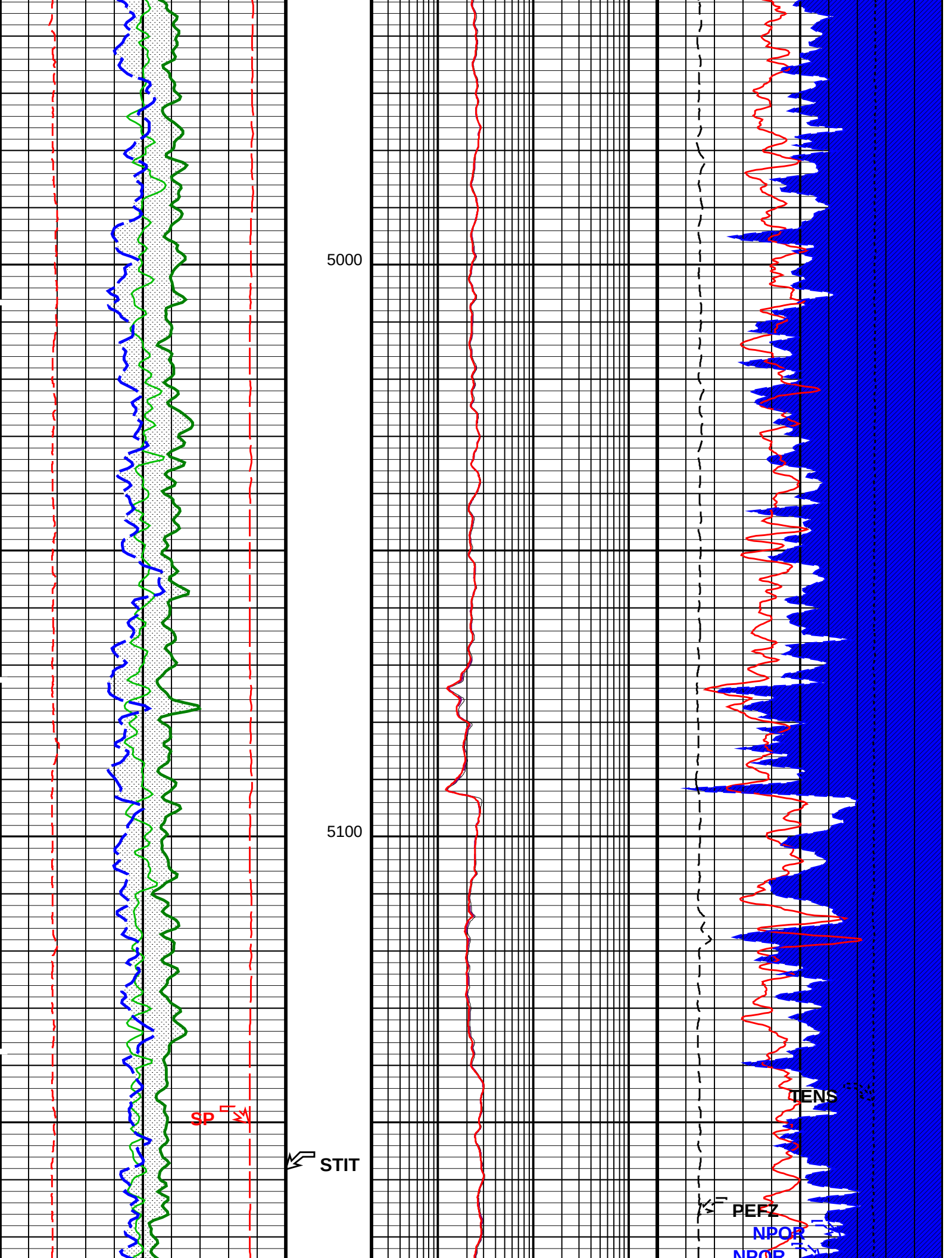
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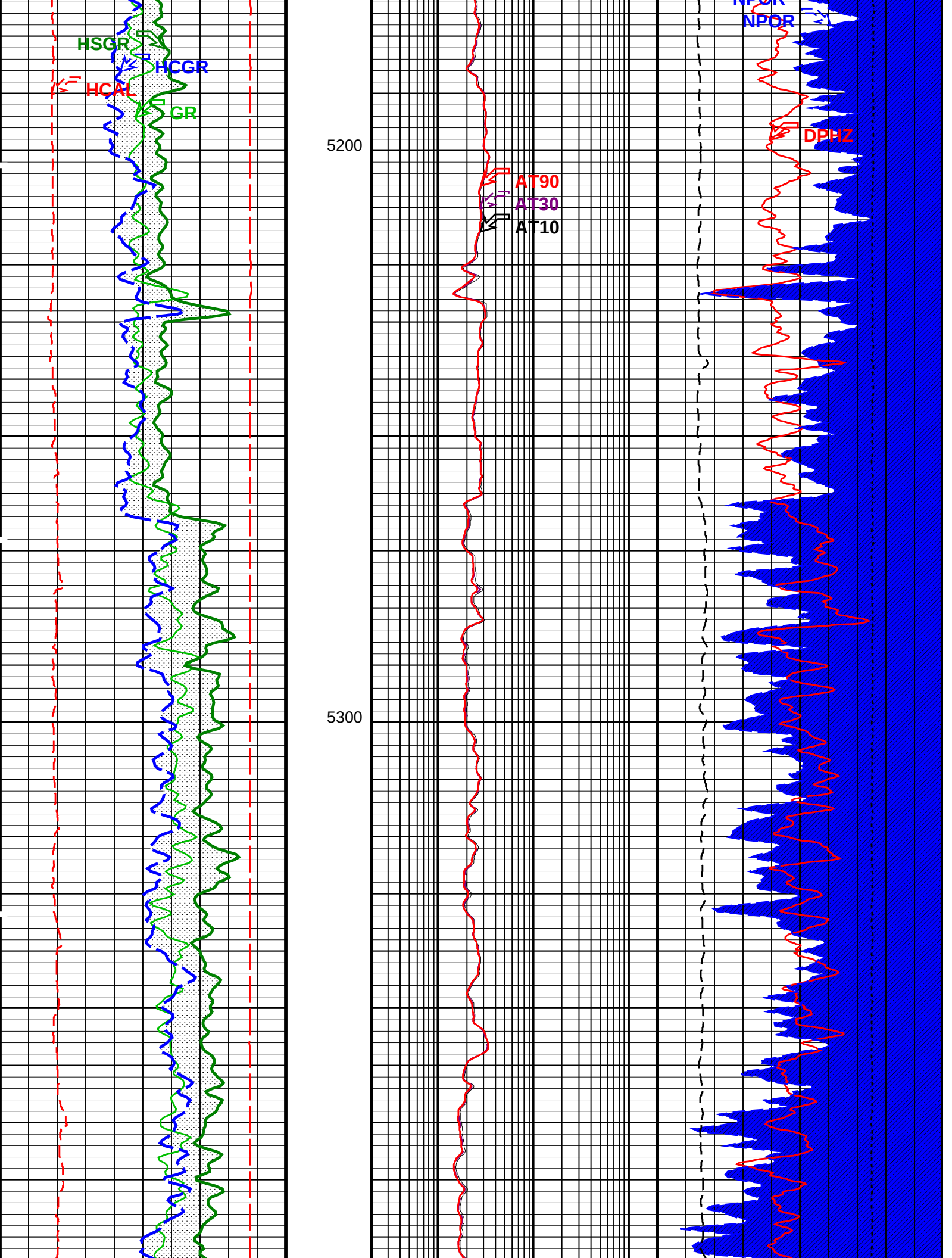
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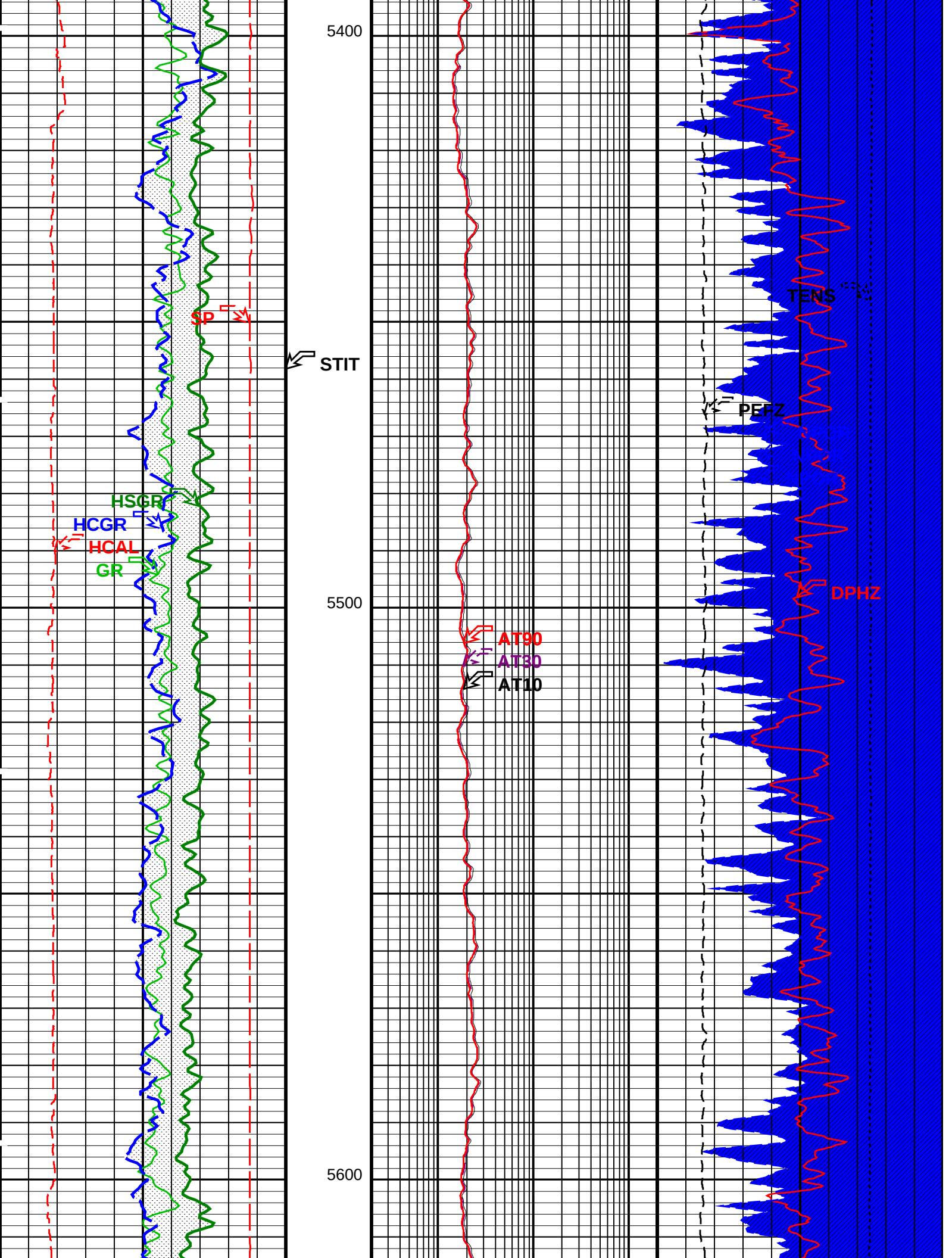
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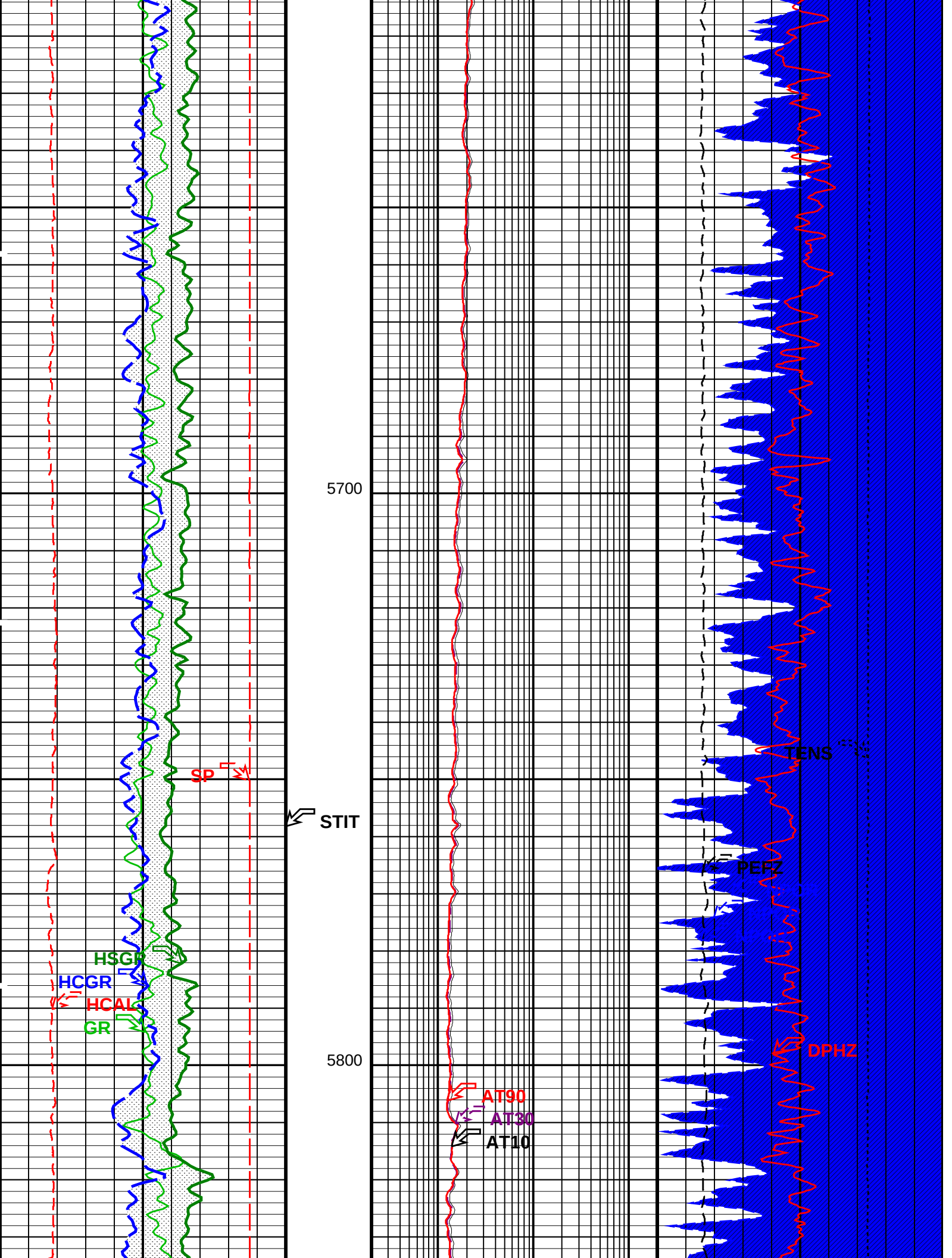
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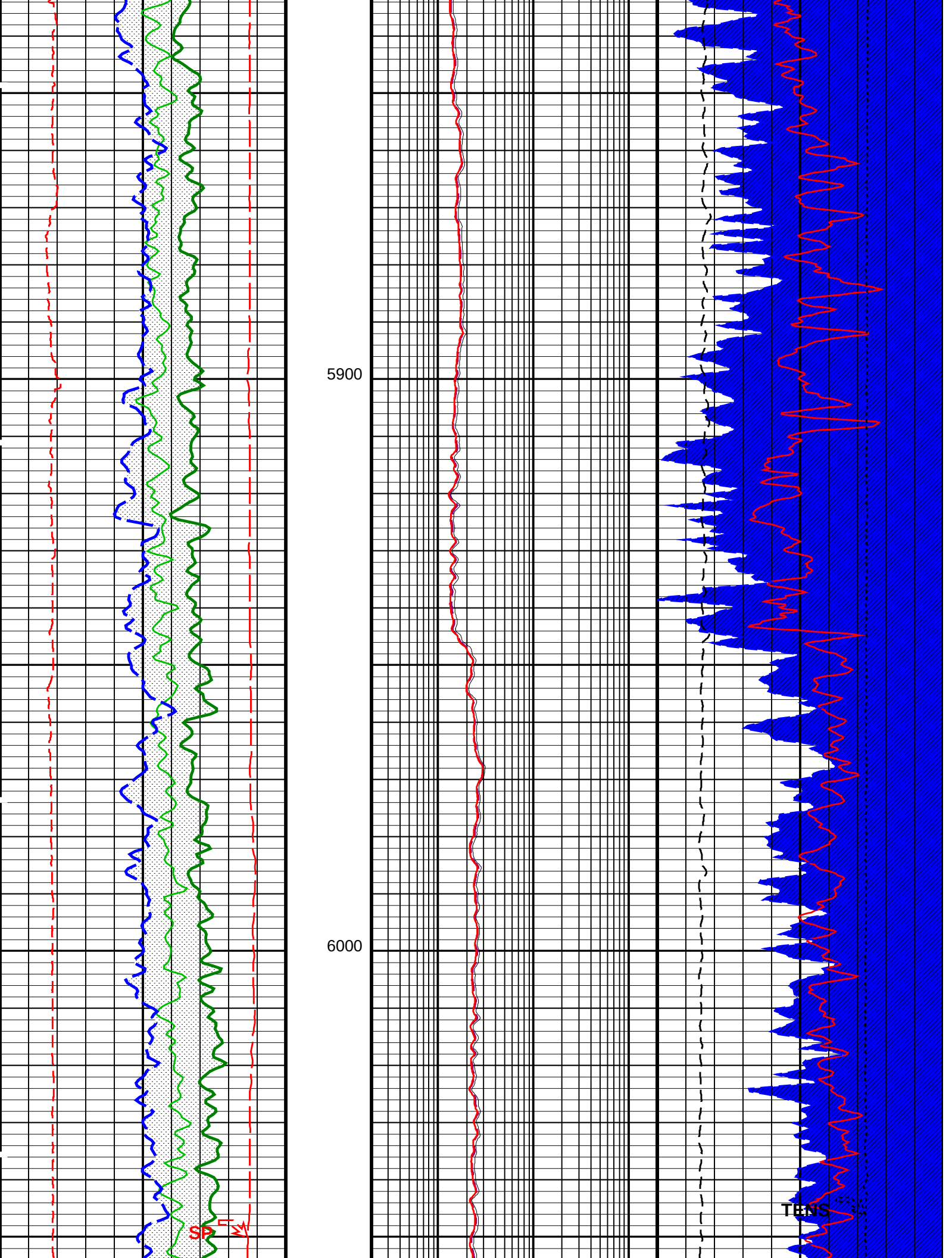
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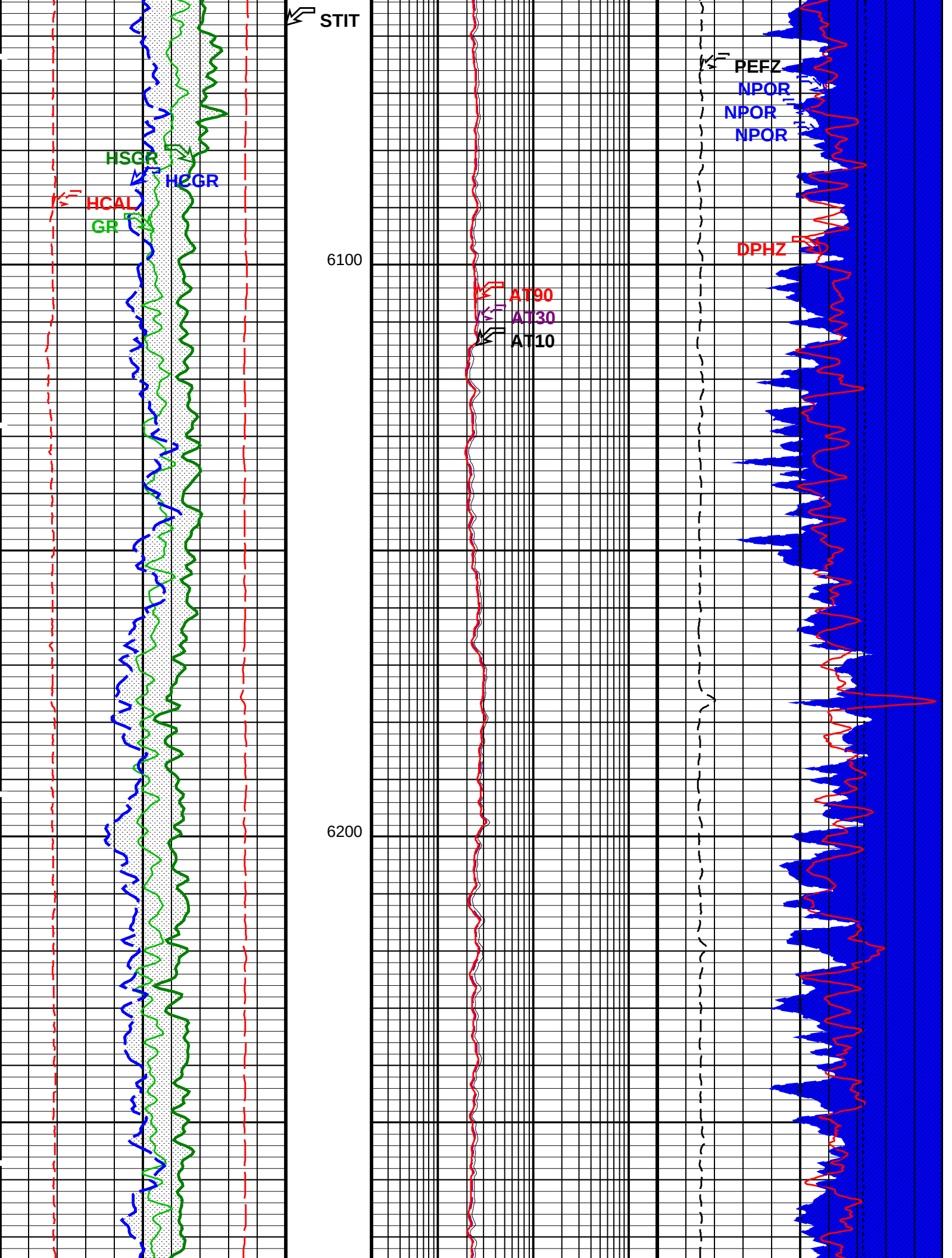
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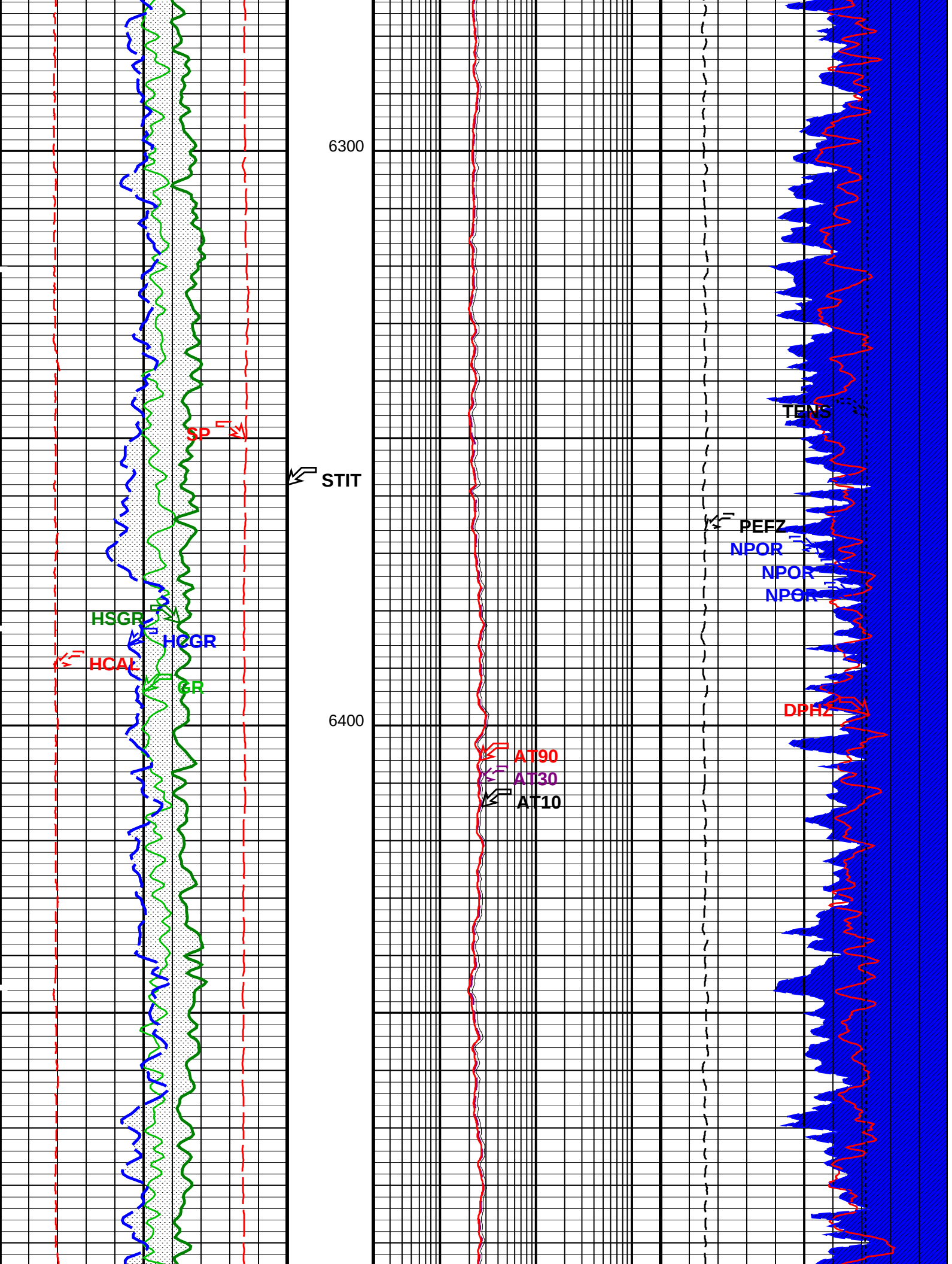
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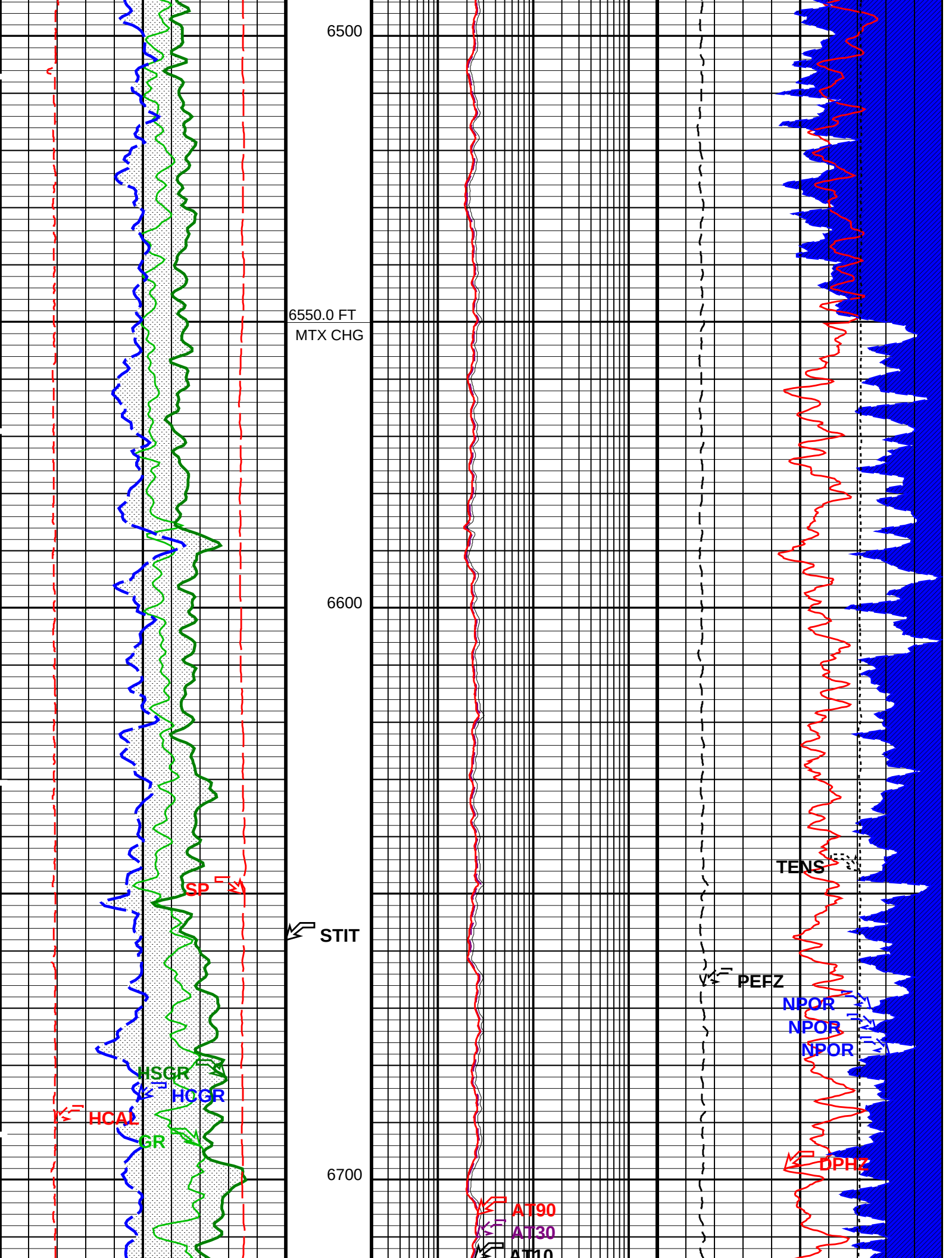
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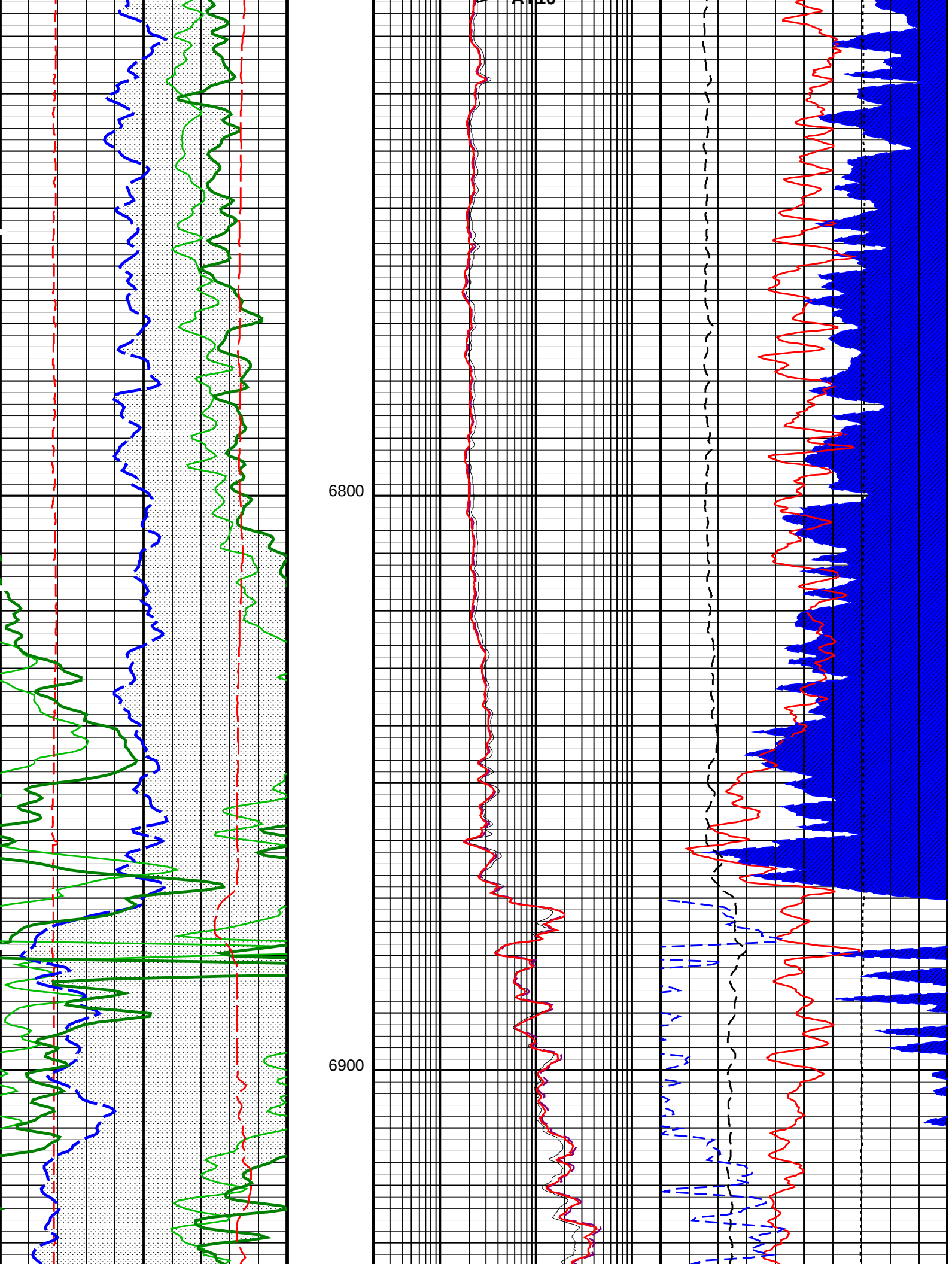
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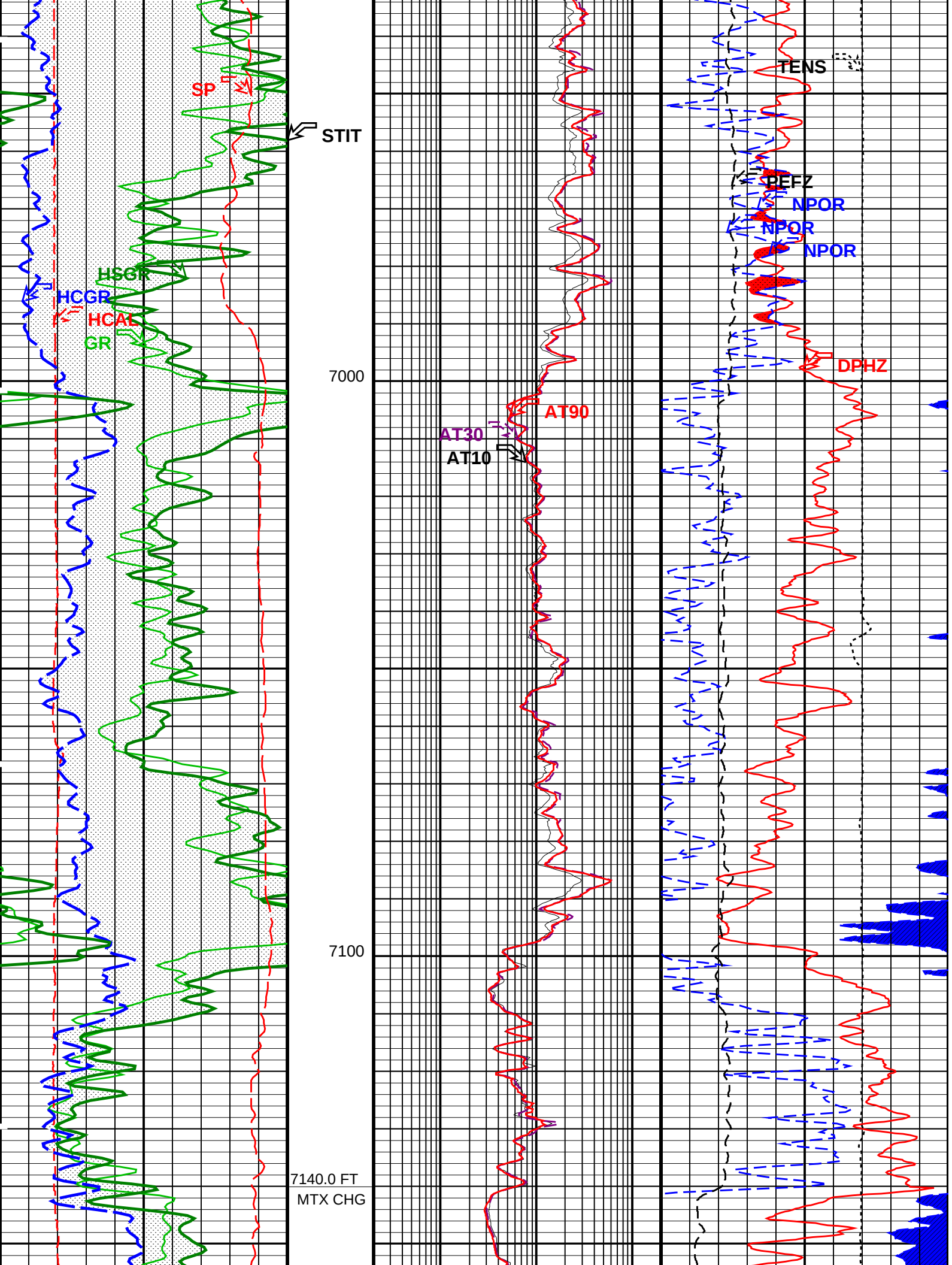
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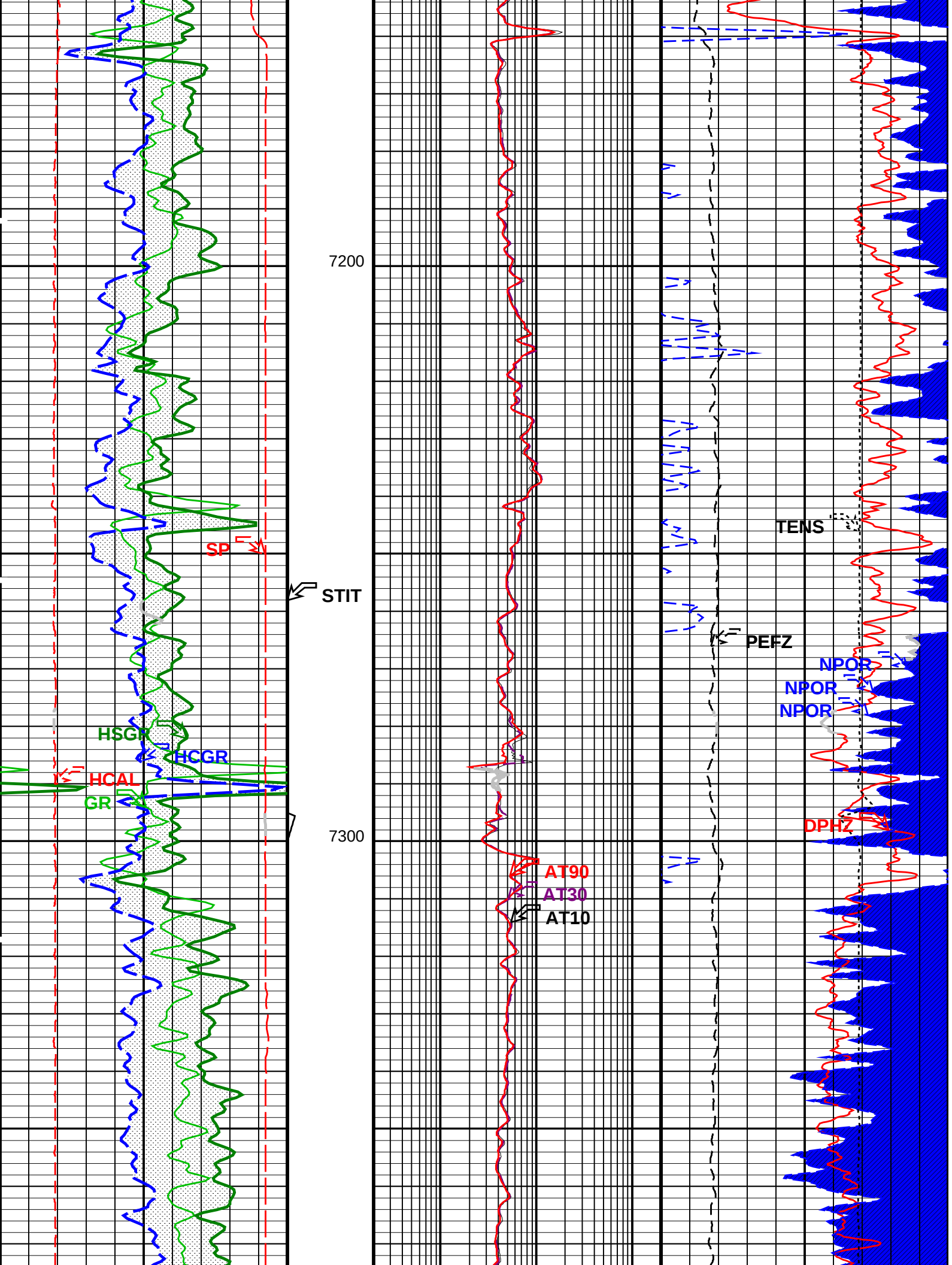
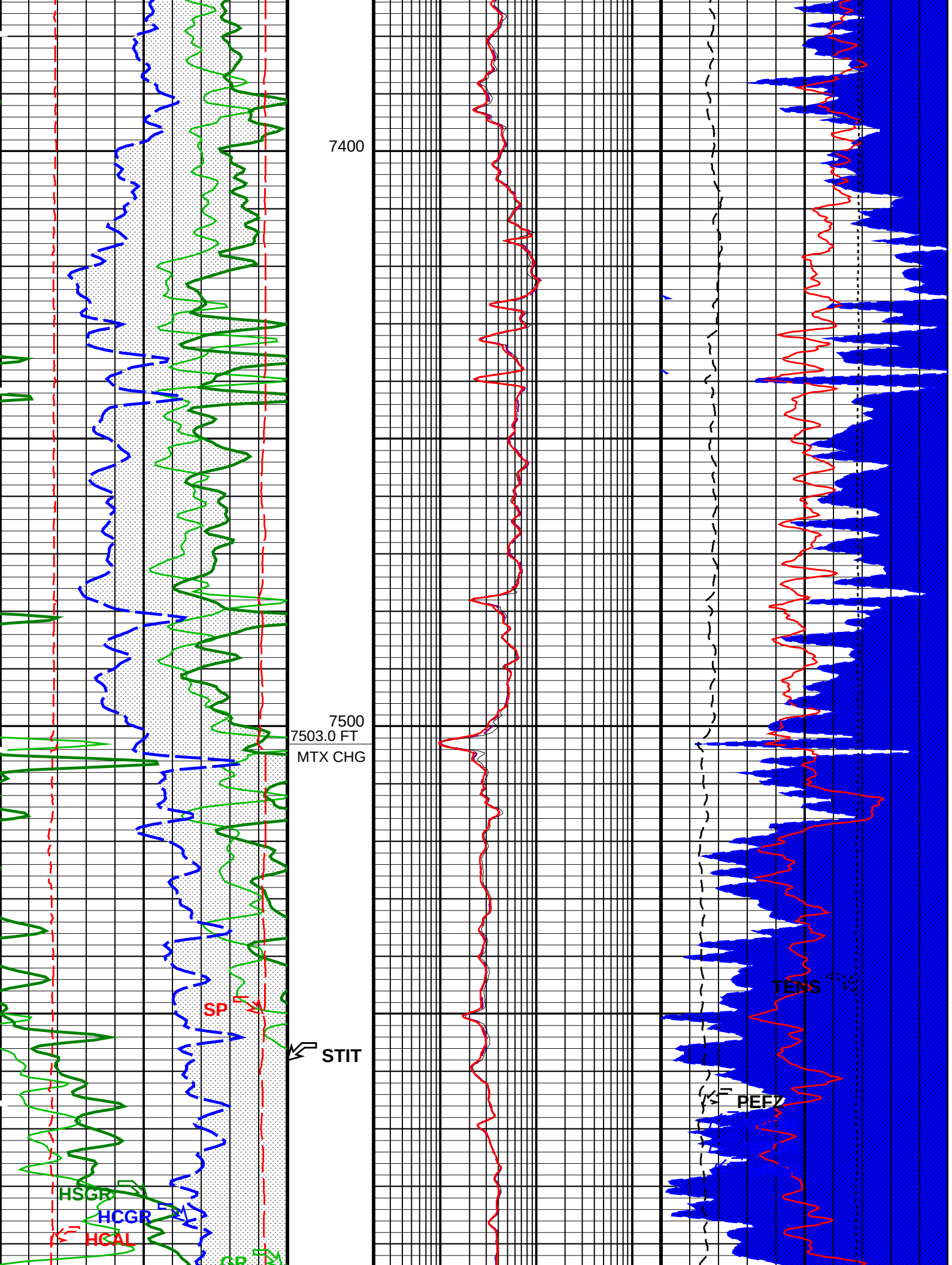
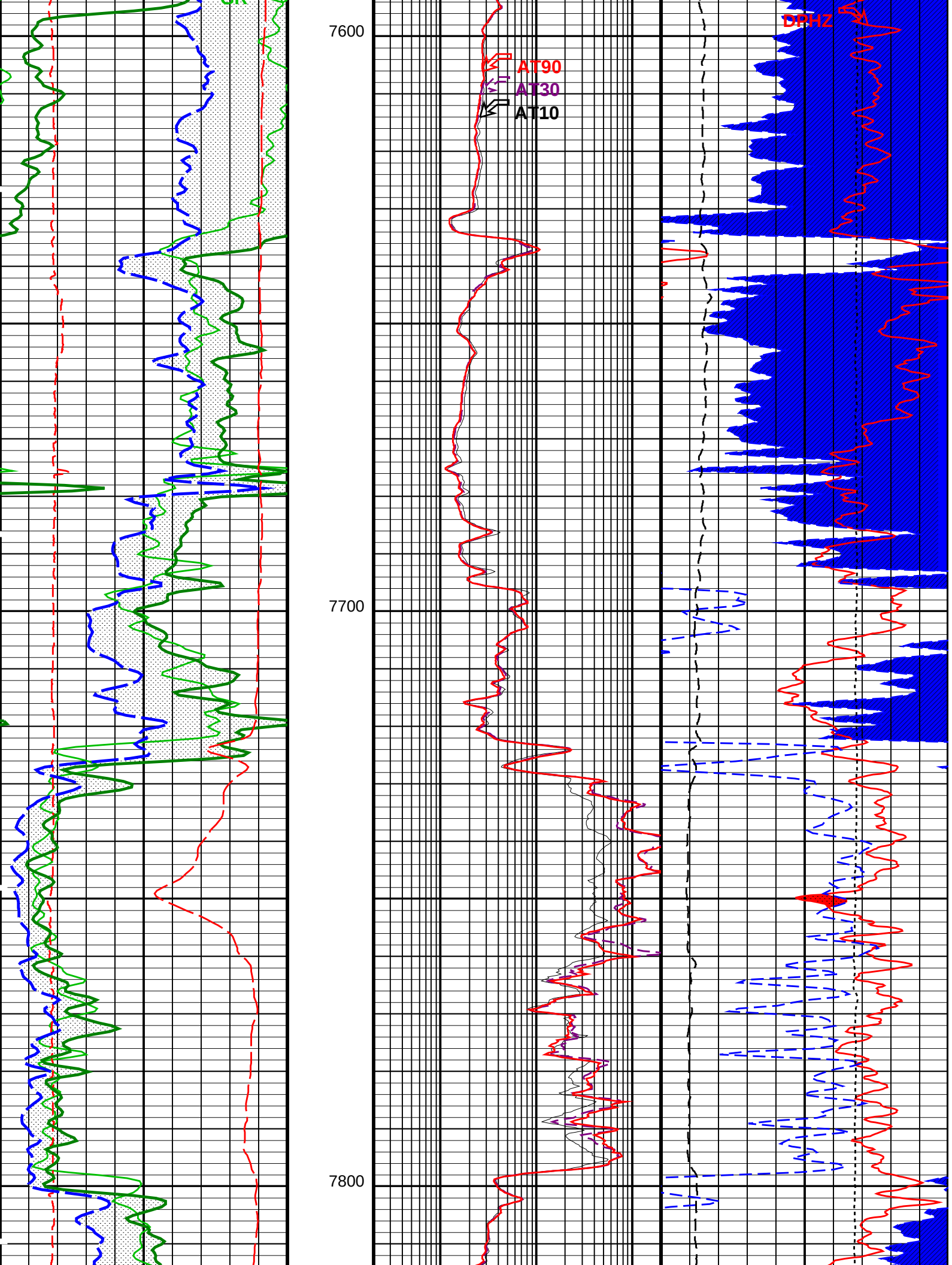
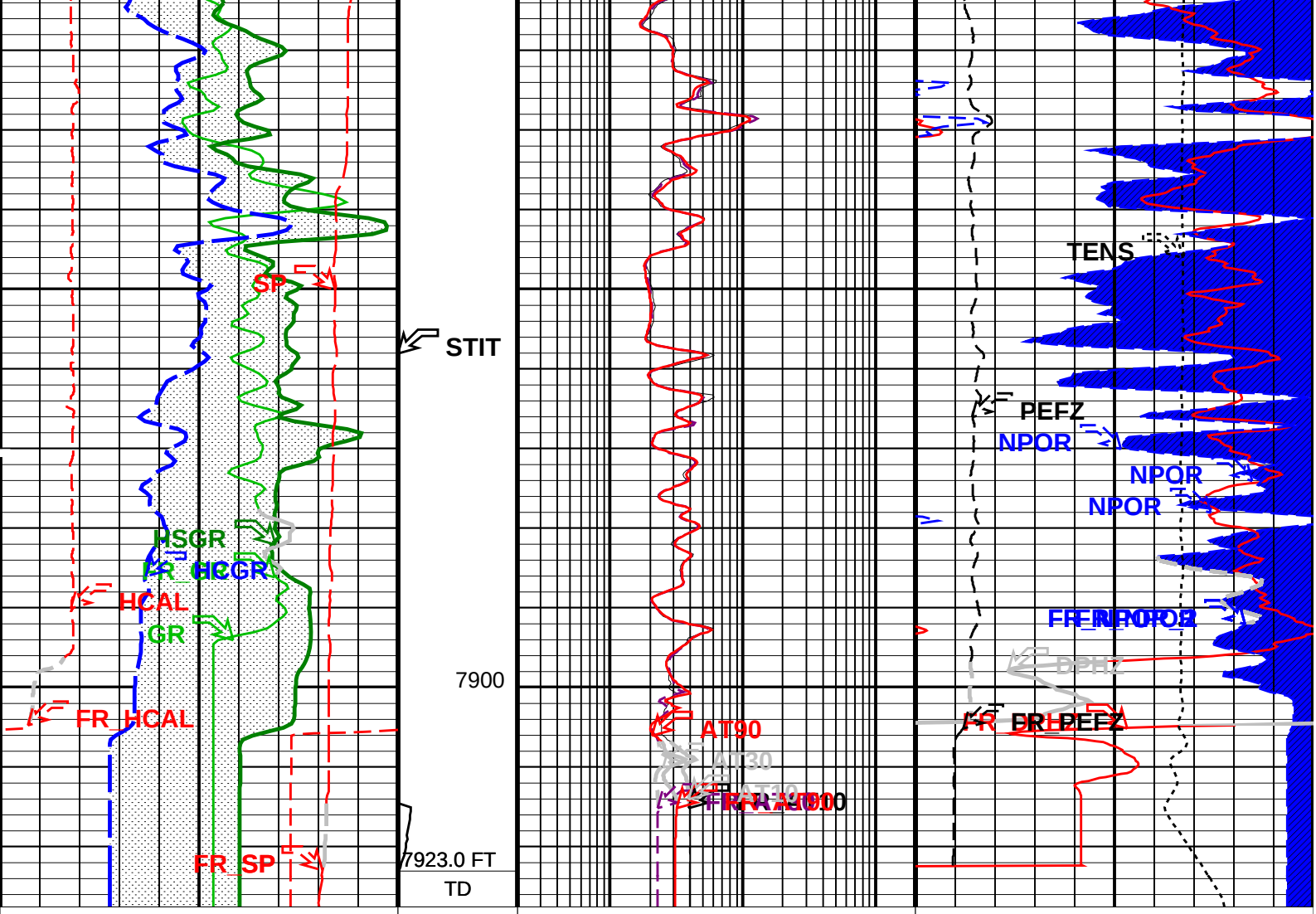
7100
7140.0 FT
MTX CHG


7200
7300
SP
STIT
HSGR
HCGR
HCAL
GR
TENS
PEFZ
NPOR
NPOR
NPOR
DPHZ
AT90
AT30
AT10


7400
7500
7503.0 FT
MTX CHG
SP
STIT
HSGR
HCGR
HCAL
GR
TENS
PEFZ


7600
7700
7800
AT90
AT30
AT10
DPHZ



Gamma Ray (GR)	Stuck Stretch (STIT)	AIT 10 Inch Investigation (AT10)	Std. Res. Density Porosity (DPHZ)
0 (GAPI) 200	0 (F) 50	0.2 (OHMM) 200	0.2 (V/V) 0
HILT Caliper (HCAL)		AIT 30 Inch Investigation (AT30)	NPOR BACKUP From NPOR_2 to T3
6 (IN) 16		0.2 (OHMM) 200	
SP (SP)		AIT 90 Inch Investigation (AT90)	GAS EFFECT From DPHZ to NPOR_1
−160 (MV) 40		0.2 (OHMM) 200	
HNGS Computed Gamma Ray (HCGR)			Alpha Processed Neutron Porosity (NPOR)
0 (GAPI) 150			0.2 (V/V) 0
Area 1 From HCGR to HSGR			Std. Res. Formation Pe (PEFZ)
			0 (---- 10
HNGS Spectroscopy Gamma Ray (HSGR)			Tension (TENS)
0 (GAPI) 150			10000 (LBF) 0

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
	AIT−M: Array Induction Tool − M	
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff
ABHV	Array Induction Borehole Correction Code Version Number	900
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four

ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	No	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−50000	FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AIGS	Array Induction Select Akima Interpolation Gating	On	
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ASTA	Array Induction Tool Standoff	0.125	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	203	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	68	DEGF
SPNV	SP Next Value	0	MV
HILTB−FTB: High resolution Integrated Logging Tool−DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	203	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal−like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.68	G/C3
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	YES	
HNGS−BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	203	DEGF
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	−0.000815611	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	

MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.00196	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.00472	
FEQL: Formation Evaluation Quick Look			
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	203	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	68	DEGF
PERT: Preliminary Evaluation − Real Time			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	203	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	68	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	7914.00	FT
TDL	Total Depth − Logger	7923.00	FT
System and Miscellaneous			
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	8.875	IN
CWEI	Casing Weight	32.00	LB/F
DFD	Drilling Fluid Density	9.30	LB/G
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	50.00	FT
MST	Mud Sample Temperature	75.30	DEGF
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	1.2352	OHMM
TD	Total Depth	7923	FT

Format: COMBO Vertical Scale: 5" per 100' Graphics File Created: 29−Apr−2010 15:12

OP System Version: 17C0−154

AIT−M	17C0−154	HILTB−FTB	SRPC−3870_Q3_2009_OP17_V3_b
HNGS−BA	17C0−154	HNGC−B	17C0−154
DTC−H	17C0−154		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_018PUP	FN:14	PRODUCER	29−Apr−2010 14:41	7927.5 FT	884.5 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_020PUP	FN:15	PRODUCER	29−Apr−2010 15:12

Company: **Noble Energy, Inc.**

Schlumberger

Well: **DF Ranch 1161−10−13**
Field: **Grover**
County: **Weld**
State: **Colorado**

Platform Express

Platform Express
Triple Combo