

Schlumberger

Company: **ENCANA OIL & GAS (USA) INC.**

Well: **SHIDELER 19-14D (O19EB)**

Field: **MAMM CREEK**

County: **GARFIELD**

State: **COLORADO**

Well: SHIDELER 19-14D (O19EB)
Field: MAMM CREEK
County: GARFIELD State: COLORADO

State: **COLORADO**

SHL: 596' FSL & 1638' FEL	Elev.:	K.B.	6531.00 ft
SW/SE SEC. 19, TOWN. 7 S., RANGE 92 W.		G.L.	6509.00 ft
LATI: 39.426202 N., LONG: 107.705154 W.		D.F.	6530.00 ft

API Serial No. 05-045-21832-0C	Section 19	Township 7 SOUTH	Range 92 WEST
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API Serial No.	Section	Township	Range
05-045-21832-0C	19	7 SOUTH	92 WEST

[illegible]

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					
Density	Viscosity				
Fluid Loss	PH				
MUD					
Source Of Sample					
RM @ Measured Temperature					
RMF @ Measured Temperature					
RMC @ Measured Temperature					
Source RMF					
RM @ MRT	RMF @ MRT	@		@	
Maximum Recorded Temperatures					
Circulation Stopped					
Logger On Bottom	Time				
Unit Number	Location				
Recorded By					
Witnessed By					

11-12 COVERED SIZE - 100% 1/2" - 100% COVERED SIZE - 100%	
YOUR CREW TODAY: T. TOMPKINS, J. WILLIAMS, & M. MCMAHON	
THANK YOU FOR LOGGING WITH SCHLUMBERGER WIRELINE	

[illegible]

SURFACE EQUIPMENT
WITM (DTS)-A

DOWNHOLE EQUIPMENT

LEH-QT
LEH-QT 2456

DTC-H
ECH-KC 9667
DTCH0-A 8588
DTCH1-A 8588

HILTH-FTB
HGNSD-H 4748
HMCA-H
HGNH 3846
NLS-KL
NSR-F 1260
HACCZ-H 4665
HCNT-H
HGR
HRCC-H 3889
HRMS-H 3867
HRGD-H 3912
GLS-VJ 5415
MCFL Device-H
HILT Nucl. LS-H
HILT Nucl. SS-H
HILT Nucl. BS-H
BOW-SPR
NPV-N

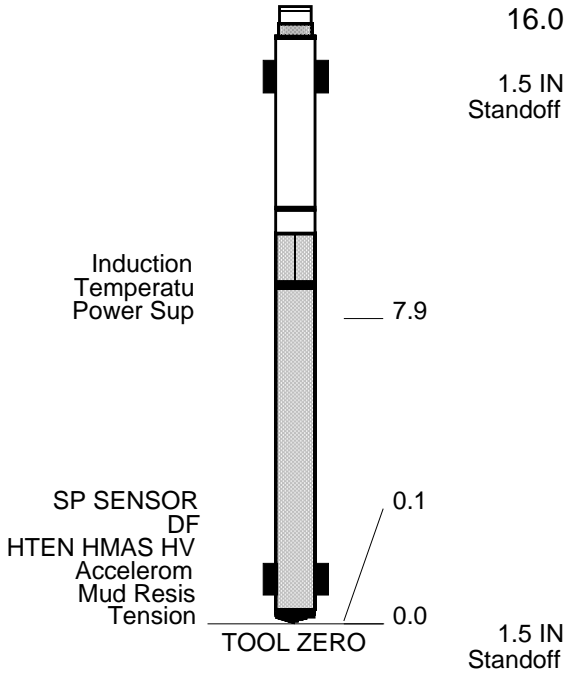
HGNS Neut
HGNS Neut

HGNS sens

HRCC cart

MCFL
HILT cali
HRDD-LS
HRDD-SS
HRDD-BS

AIT-M
AMIS-A 155
AMRM-A



MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET



MAIN PASS
5" = 100'

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: SHIDELER 19-14D (O19EB)

Input DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_011LUP	FN:16	PRODUCER	05-Mar-2013 09:54	8901.0 FT	83.5 FT
Output DLIS Files						
DEFAULT	AIT_TLD_MCFL_CNL_024PUP	FN:40	PRODUCER	05-Mar-2013 12:38	8901.0 FT	43.5 FT
RTB	AIT_TLD_MCFL_CNL_024PUP	FN:41	PRODUCER	05-Mar-2013 12:38	8901.0 FT	43.5 FT

Integrated Hole/Cement Volume Summary

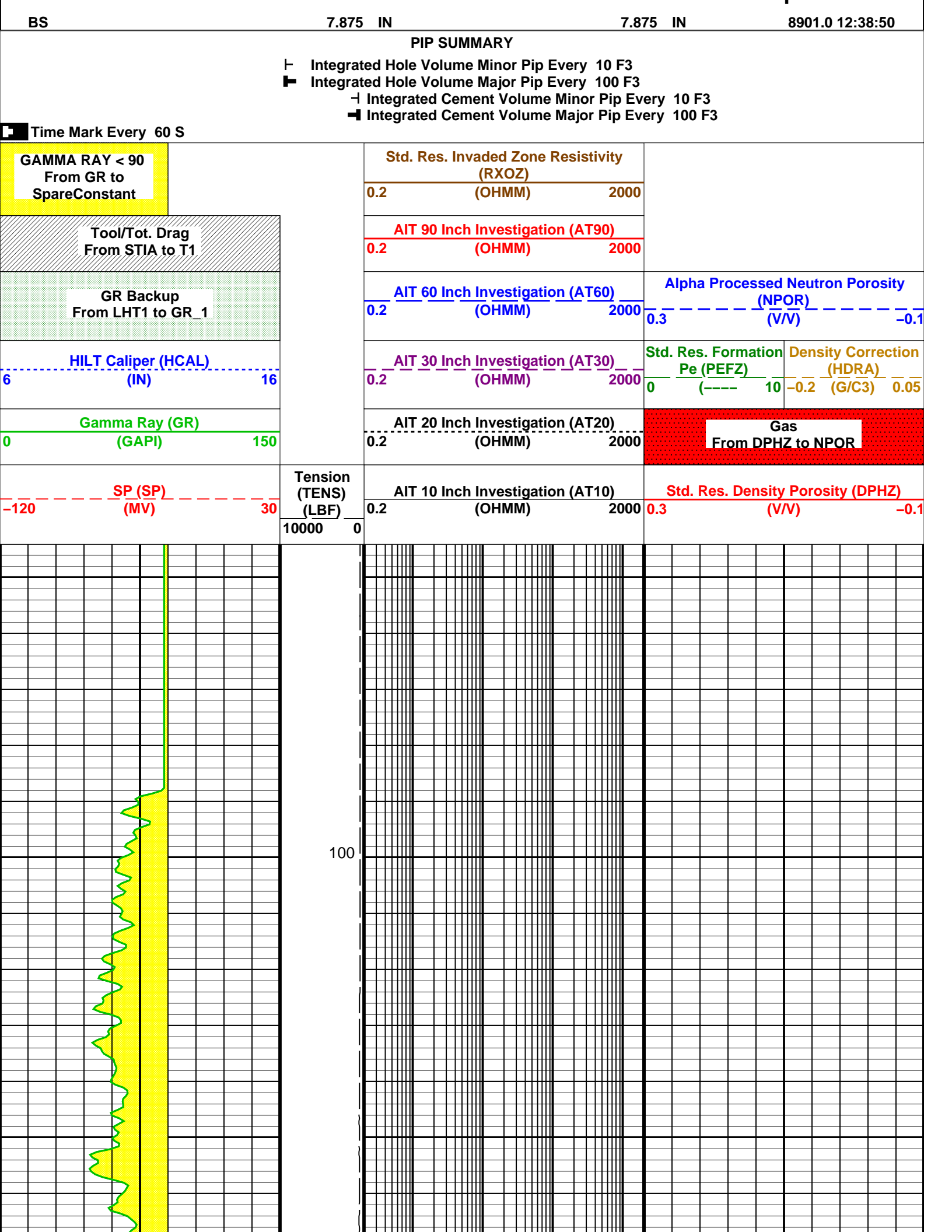
Hole Volume = 3111.03 F3
Cement Volume = 2297.47 F3 (assuming 4.50 IN casing O.D.)
Computed from 8880.0 FT to 1514.0 FT using data channel(s) HCAL

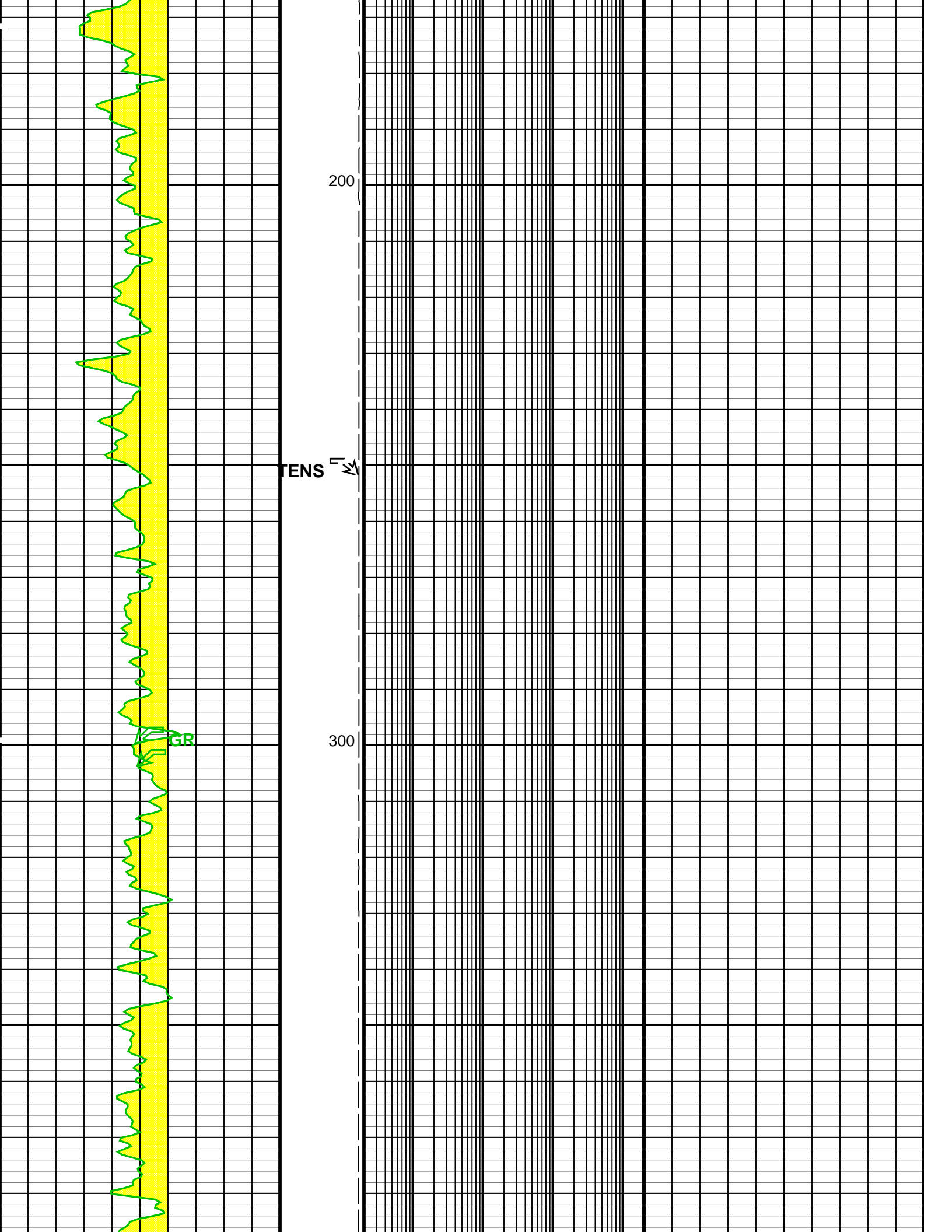
OP System Version: 19C1-222

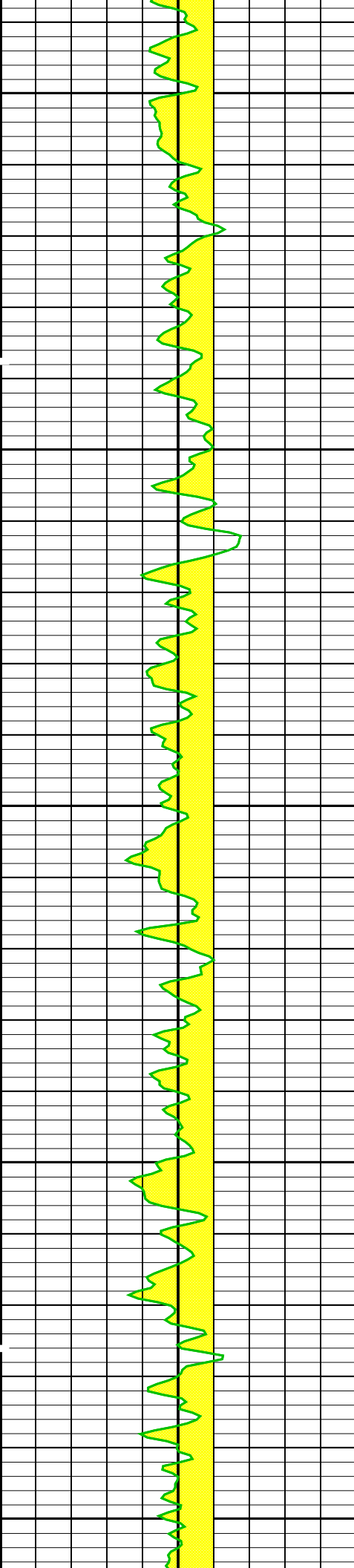
AIT-M	19C1-222	HILTH-FTB	19C1-222
DTC-H	19C1-222		

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
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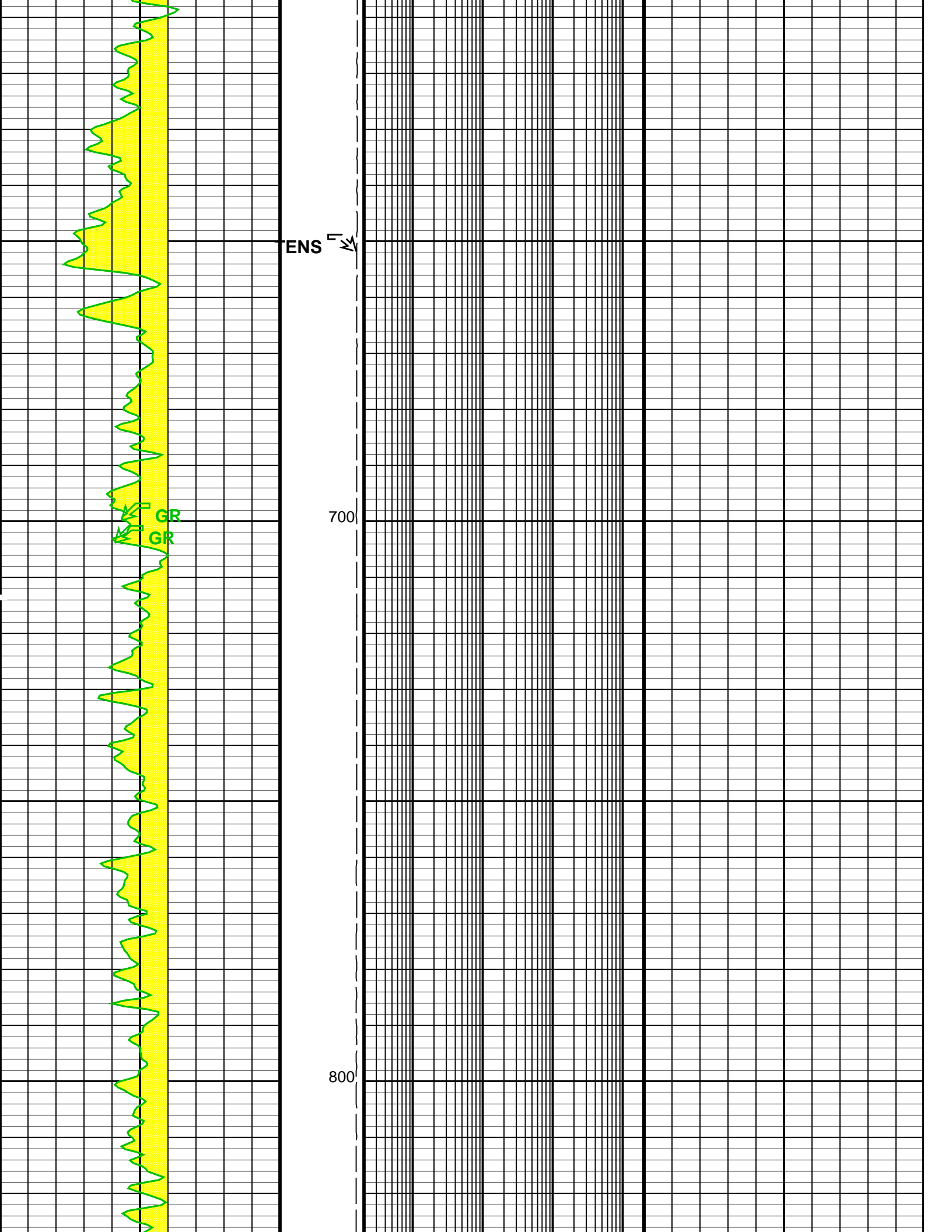


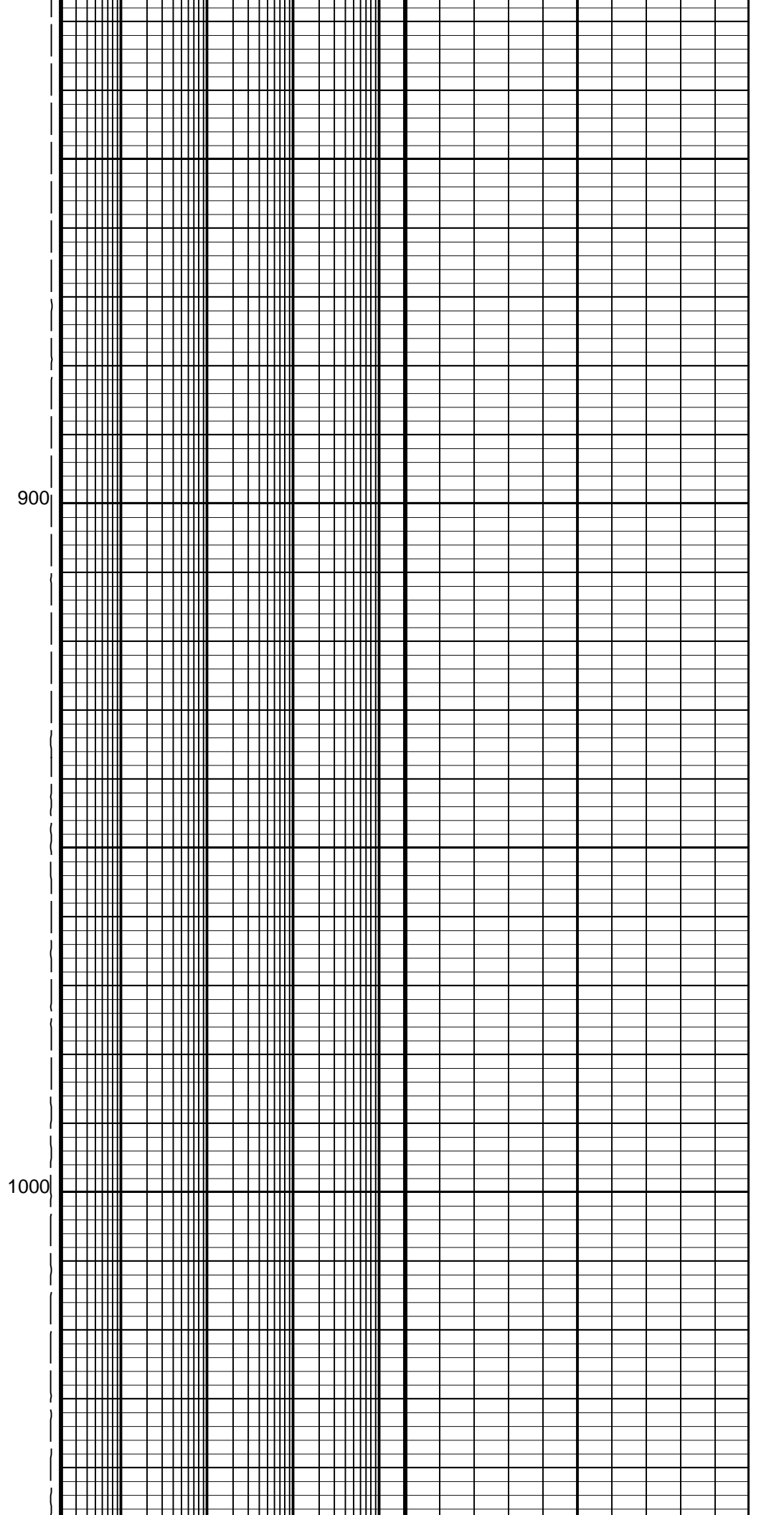
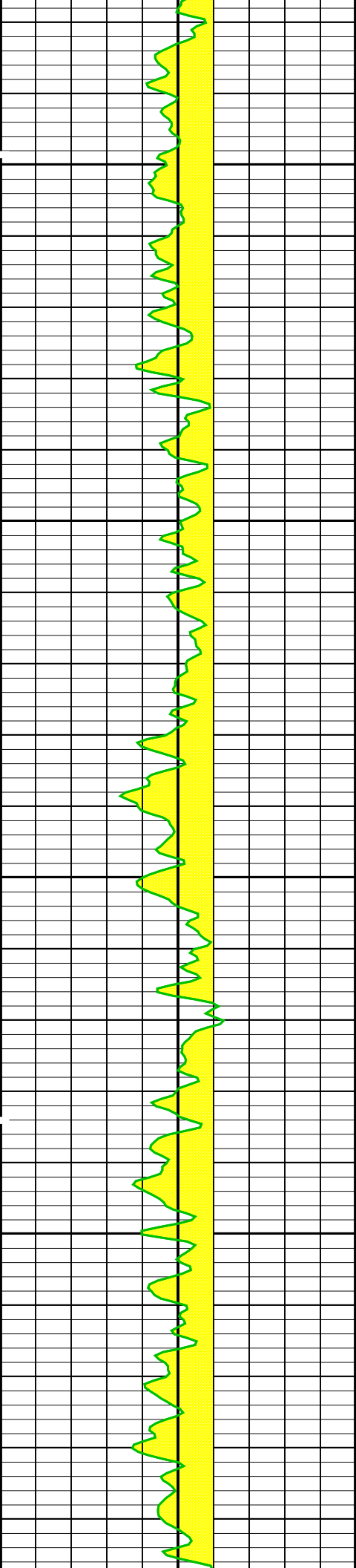


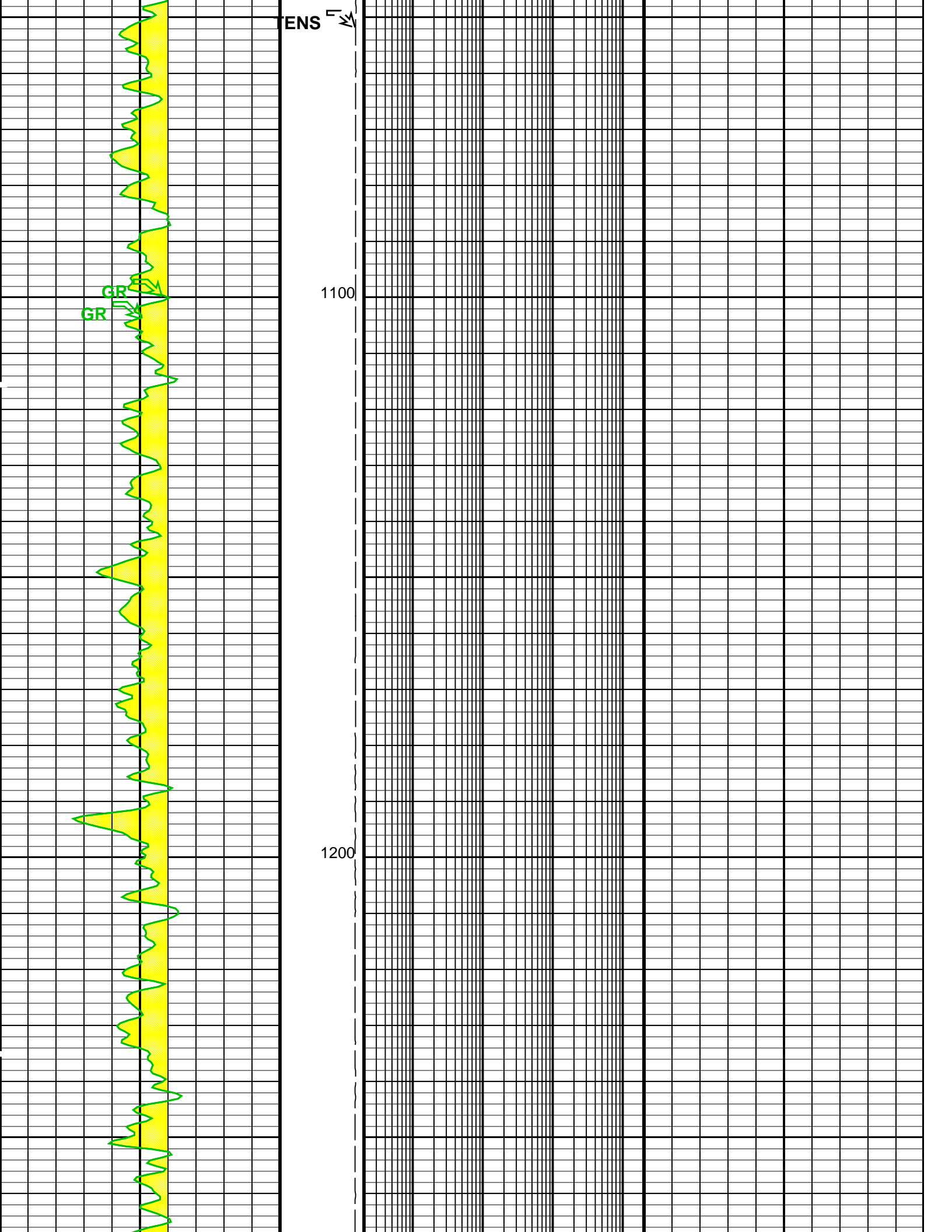
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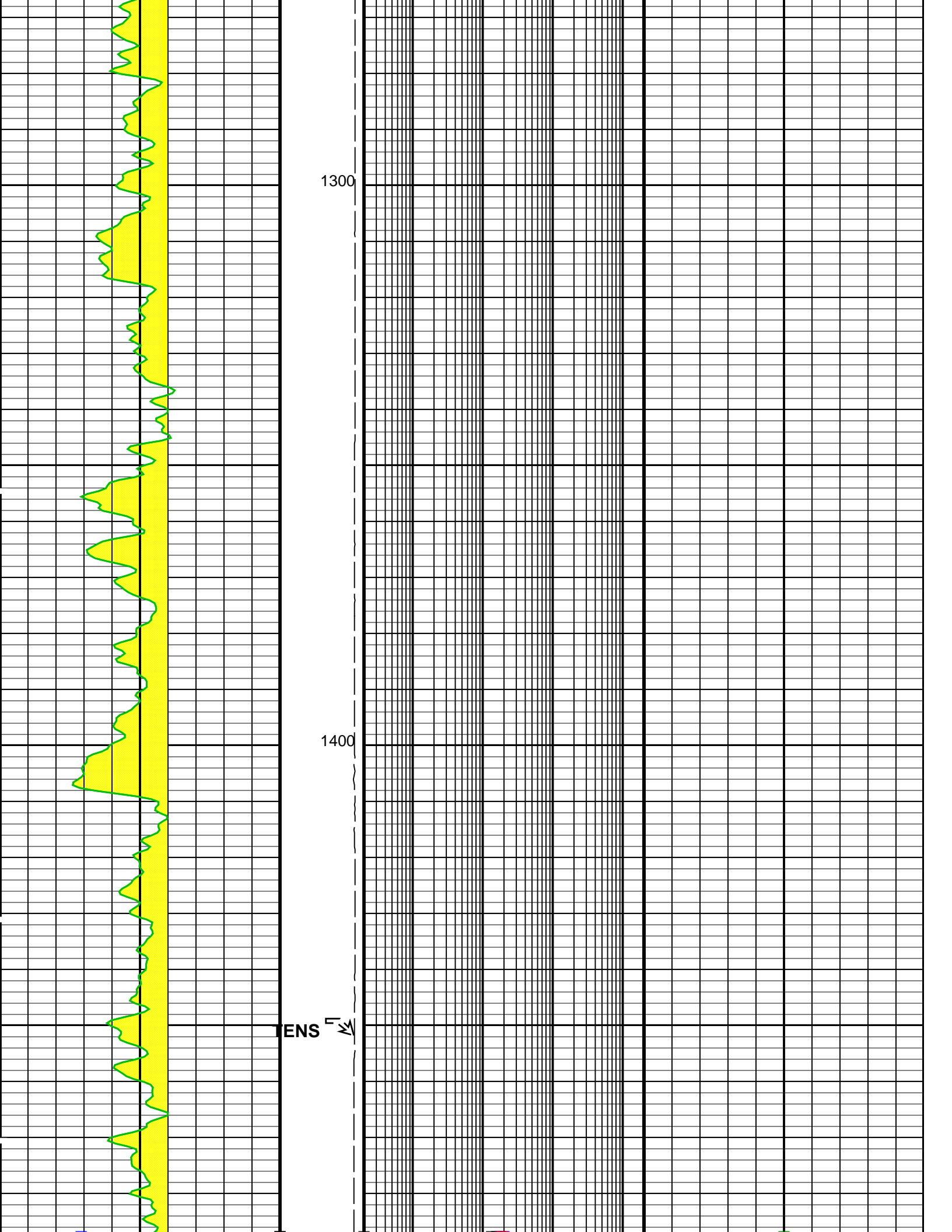
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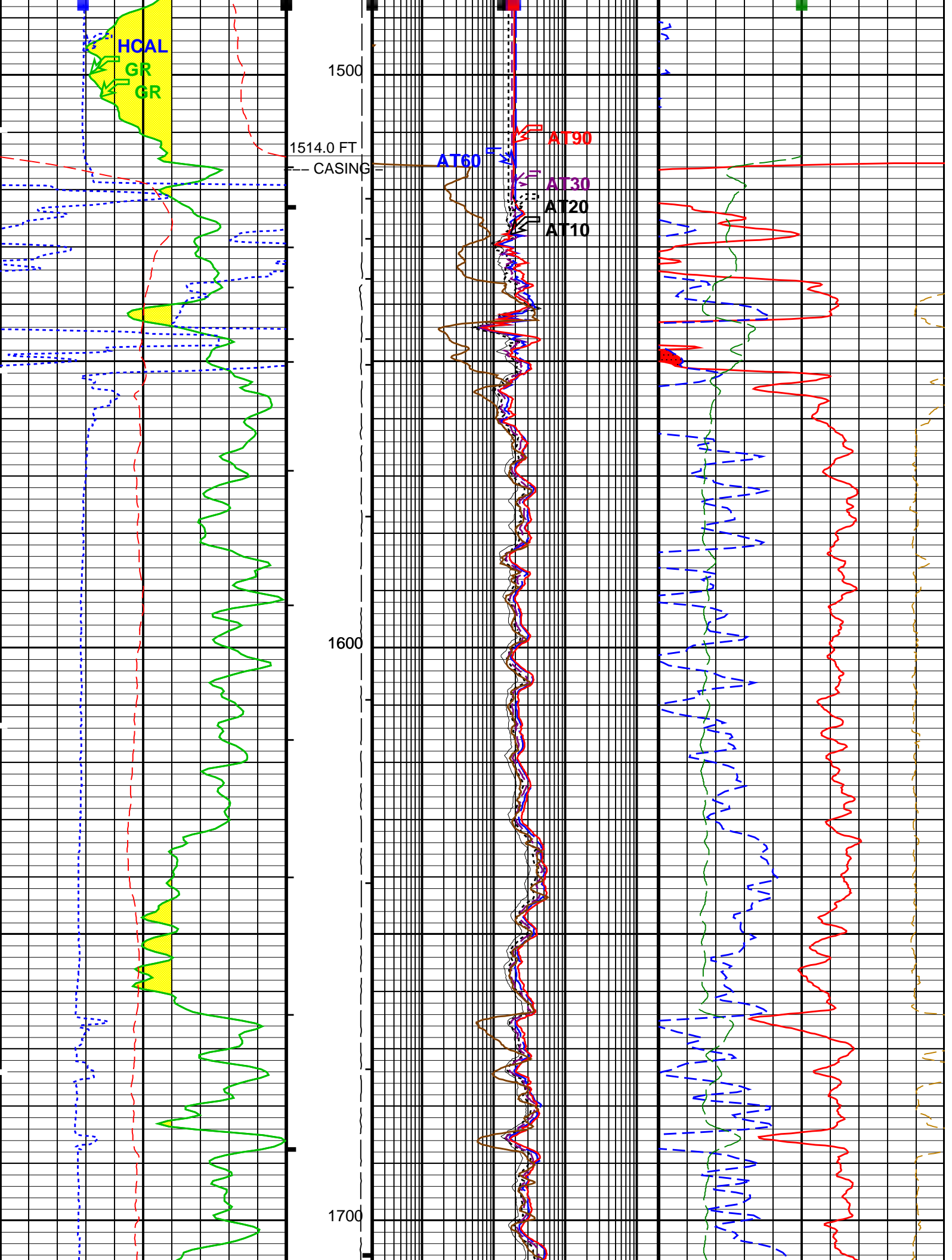
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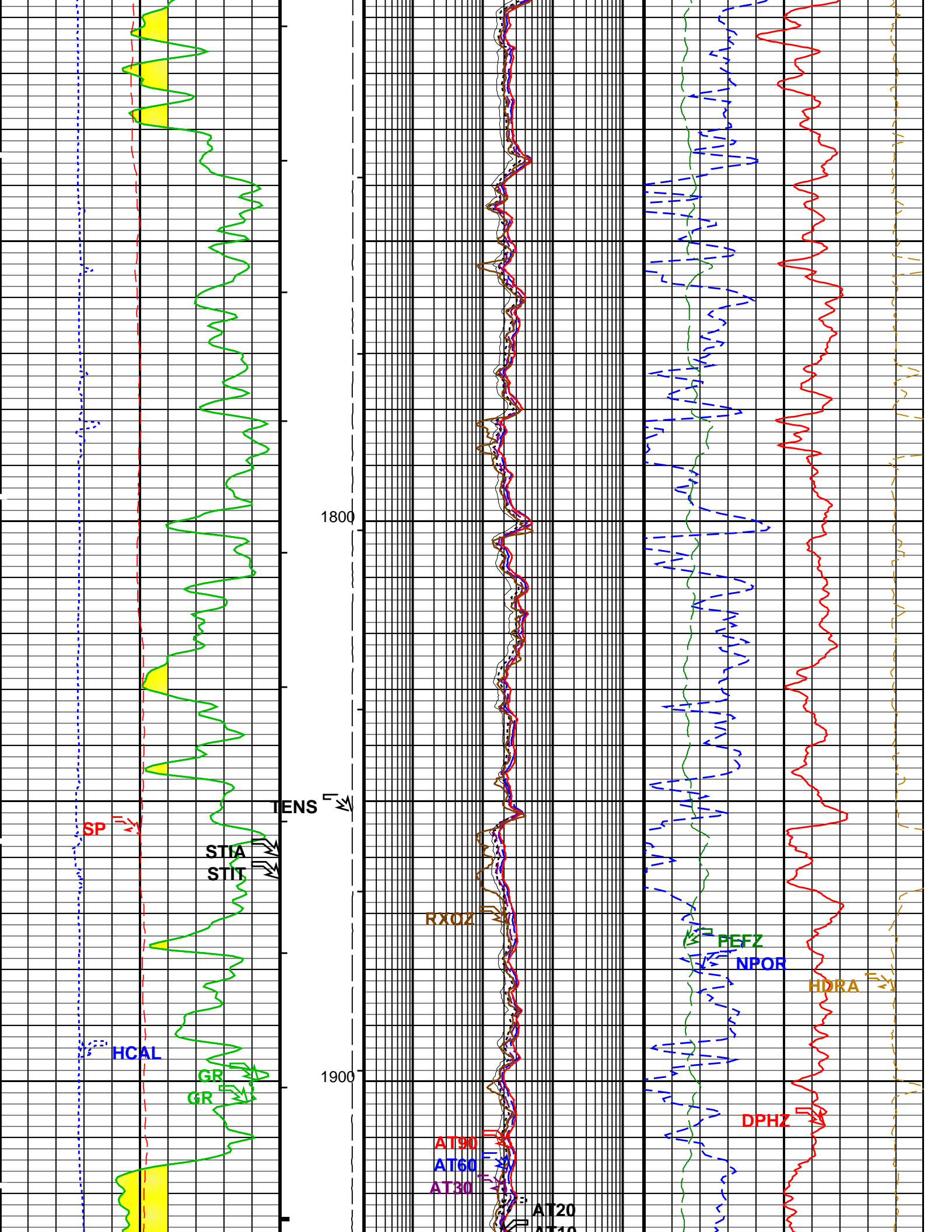


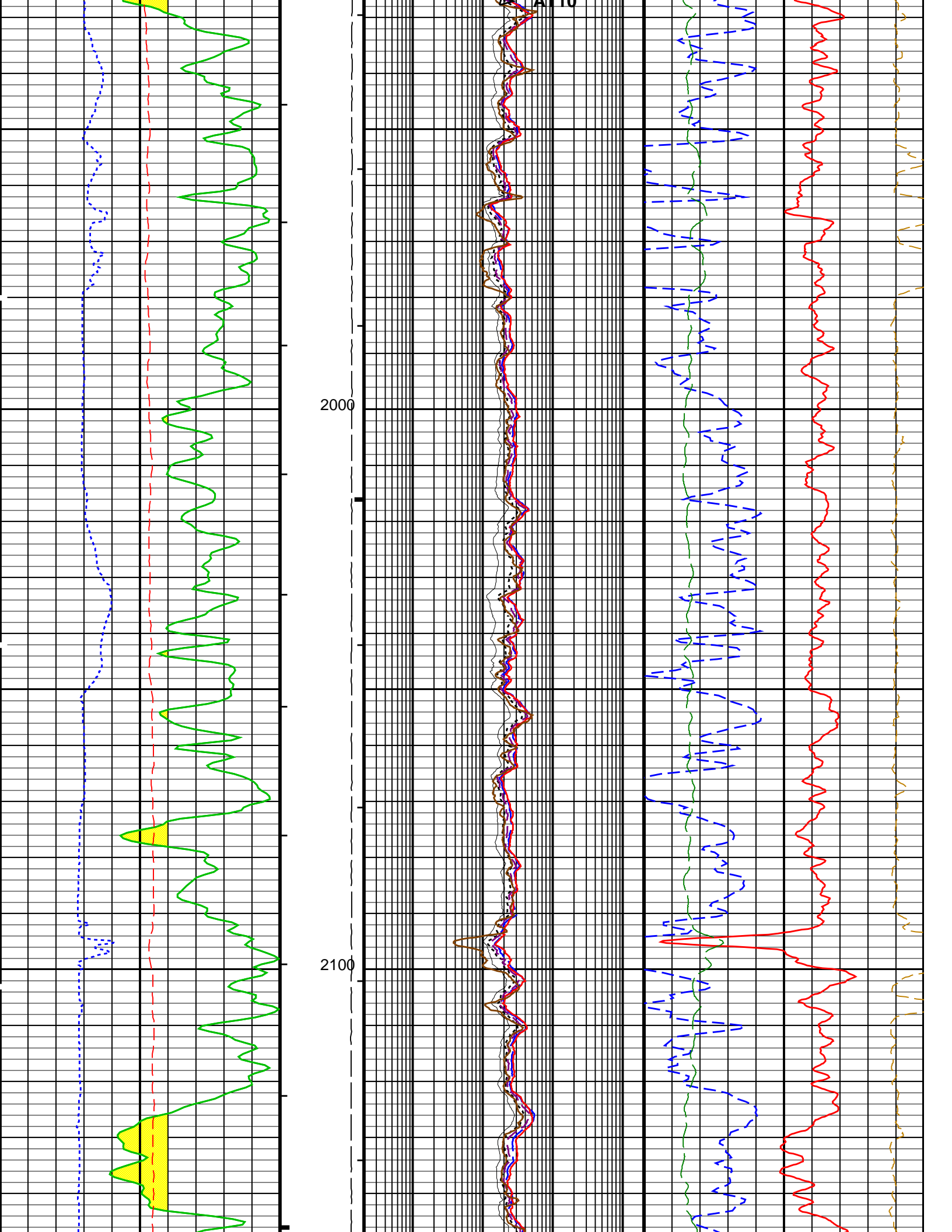


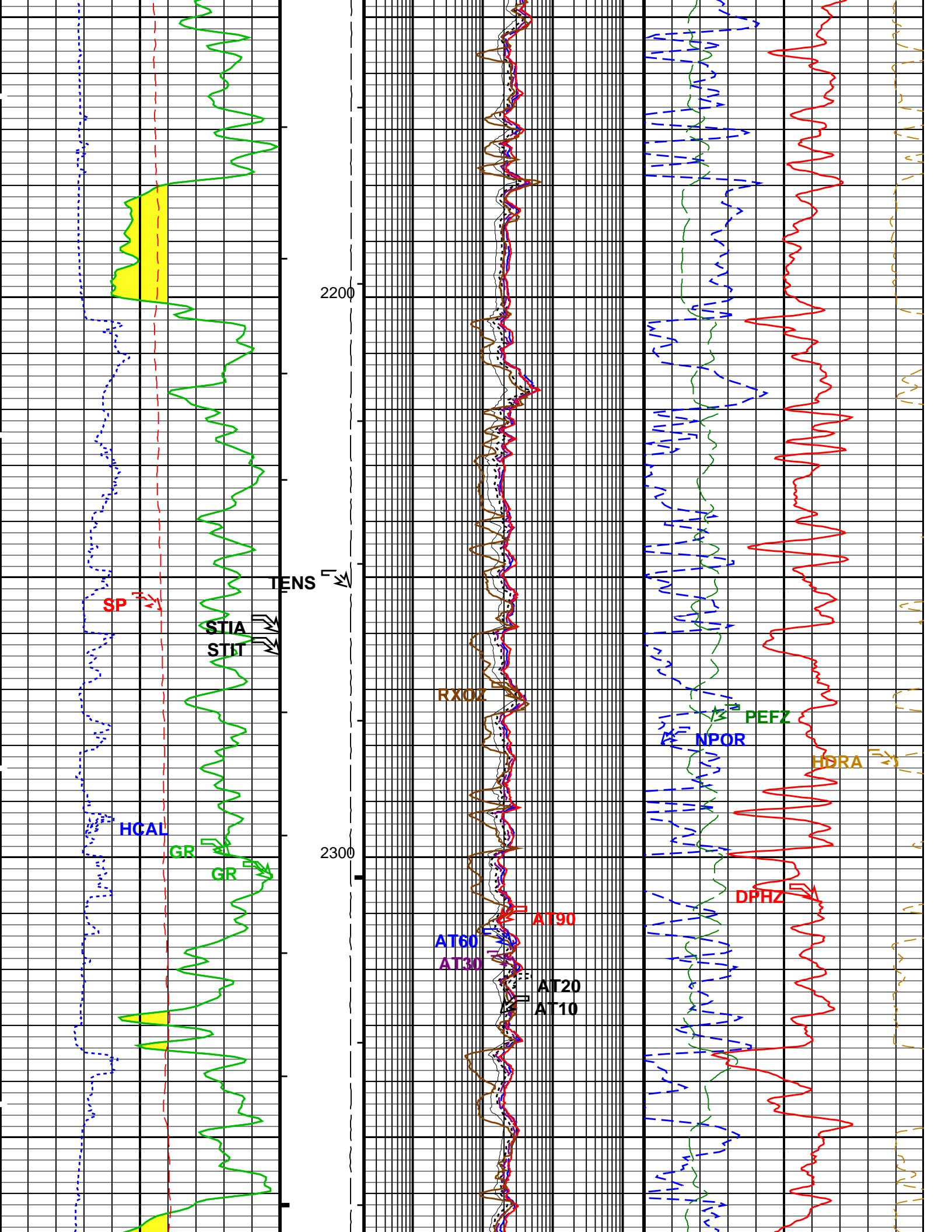


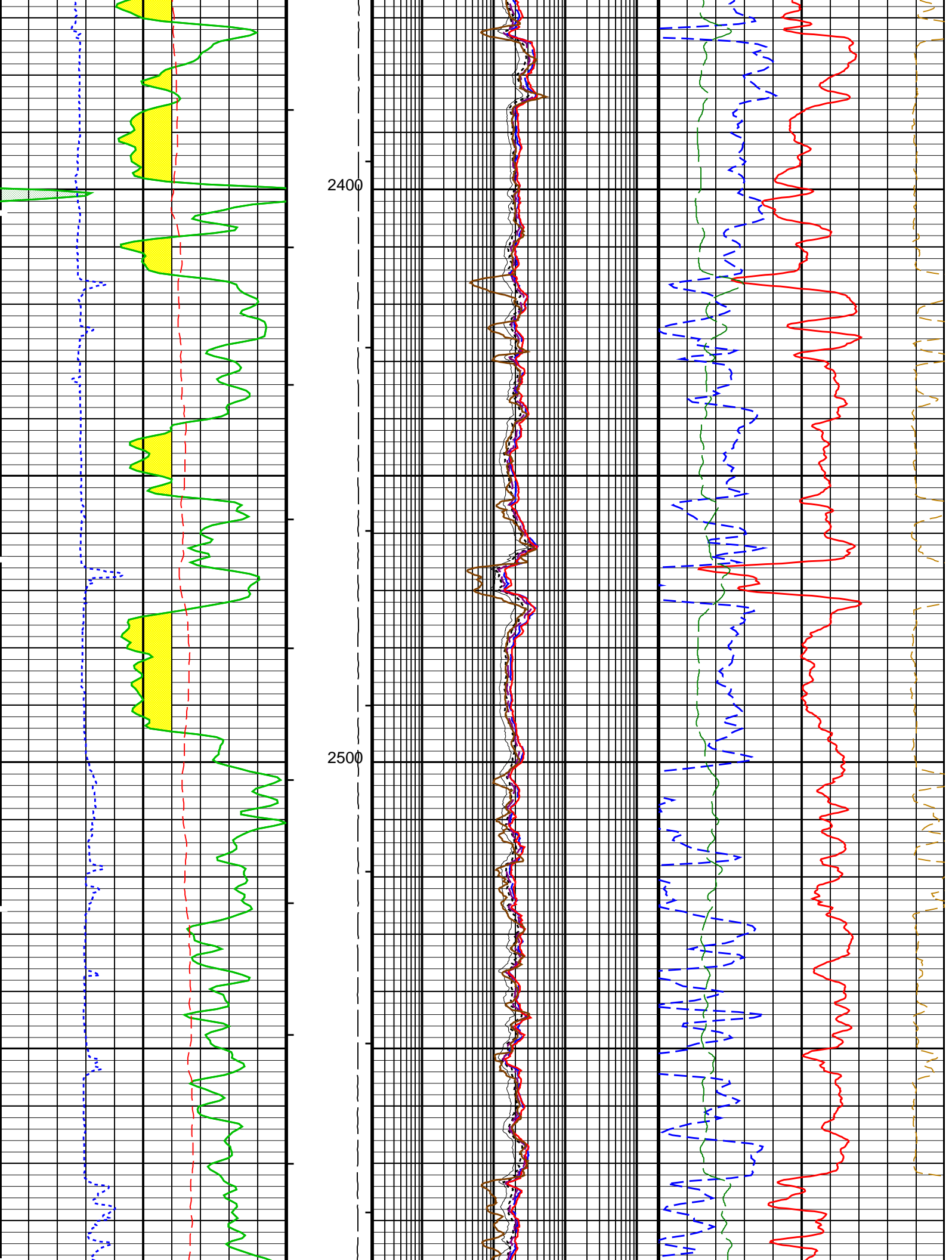


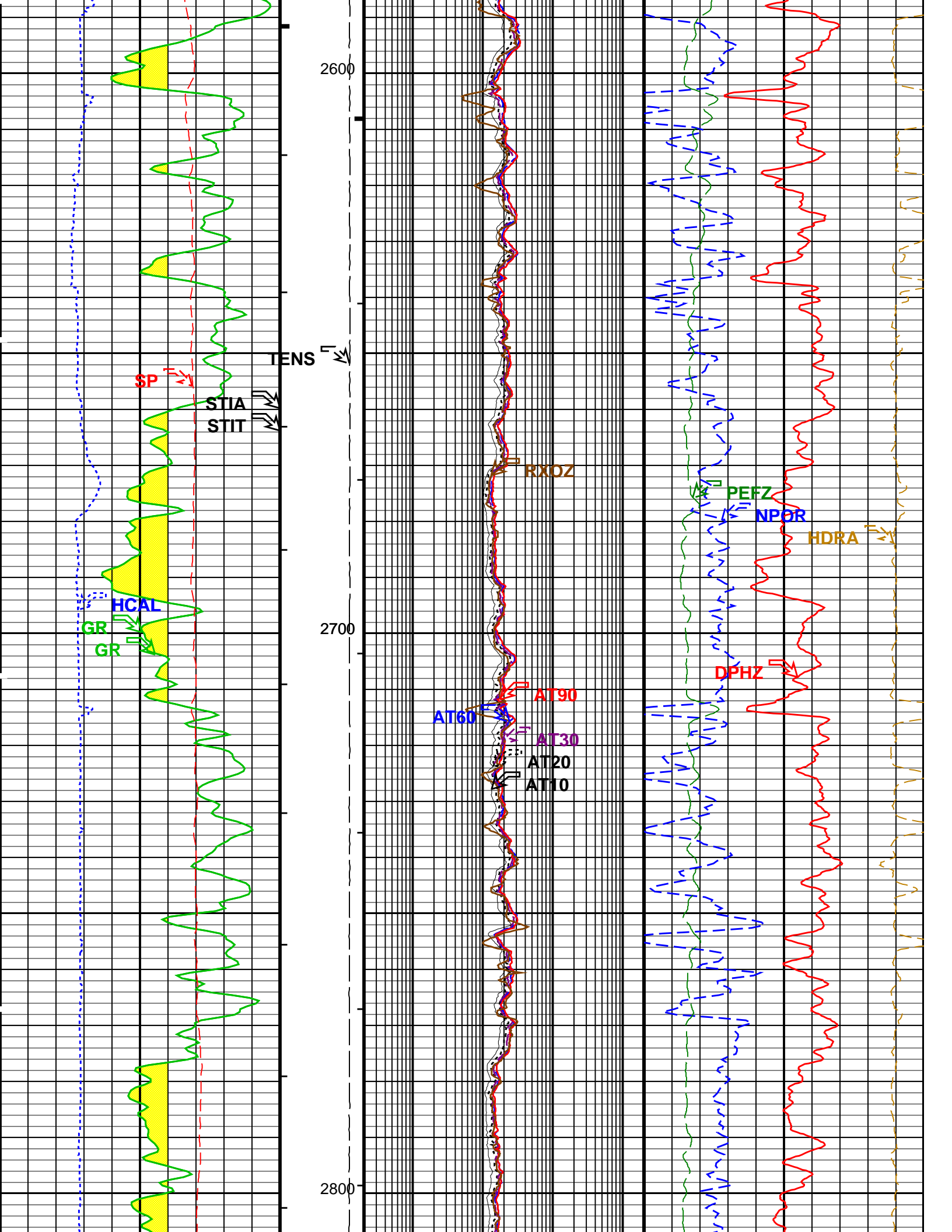


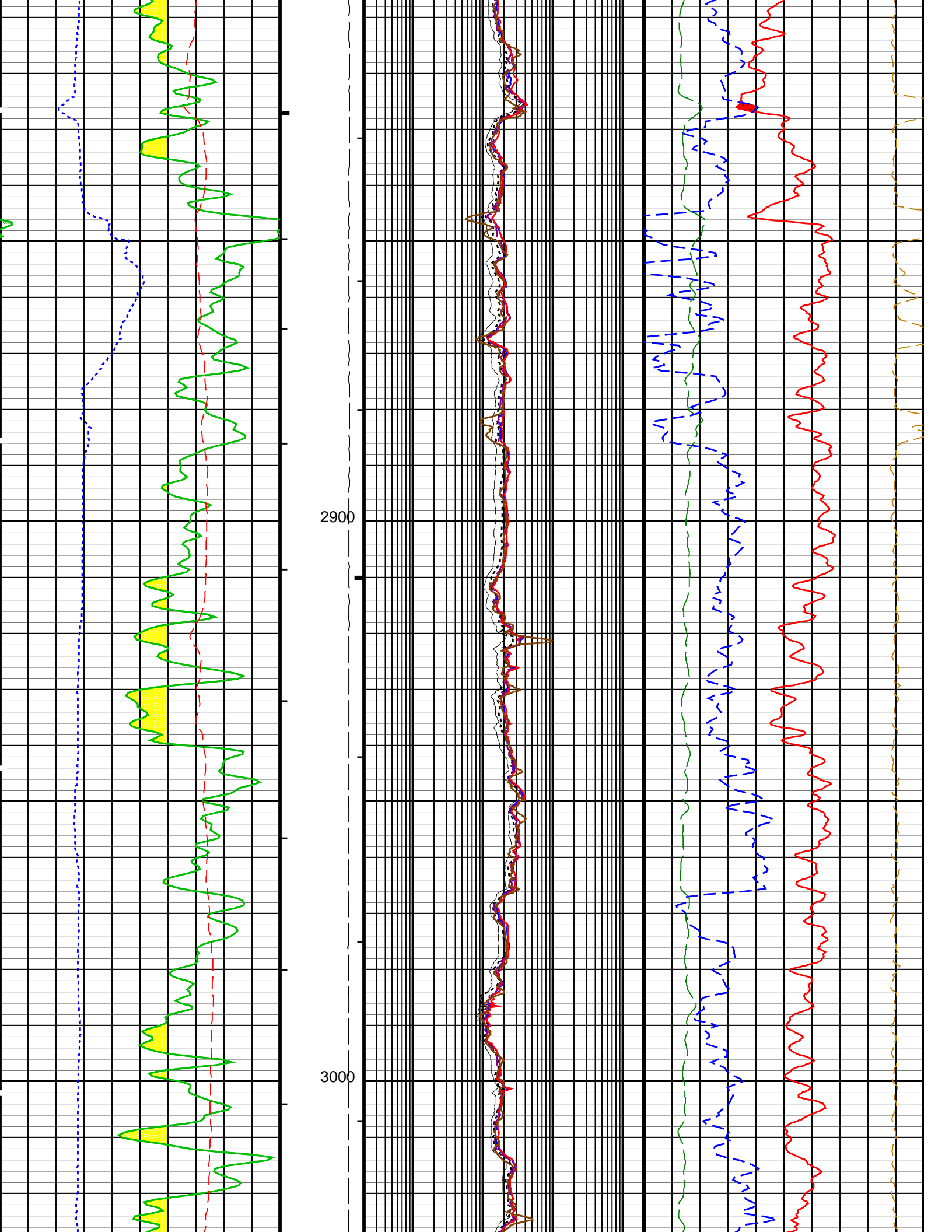


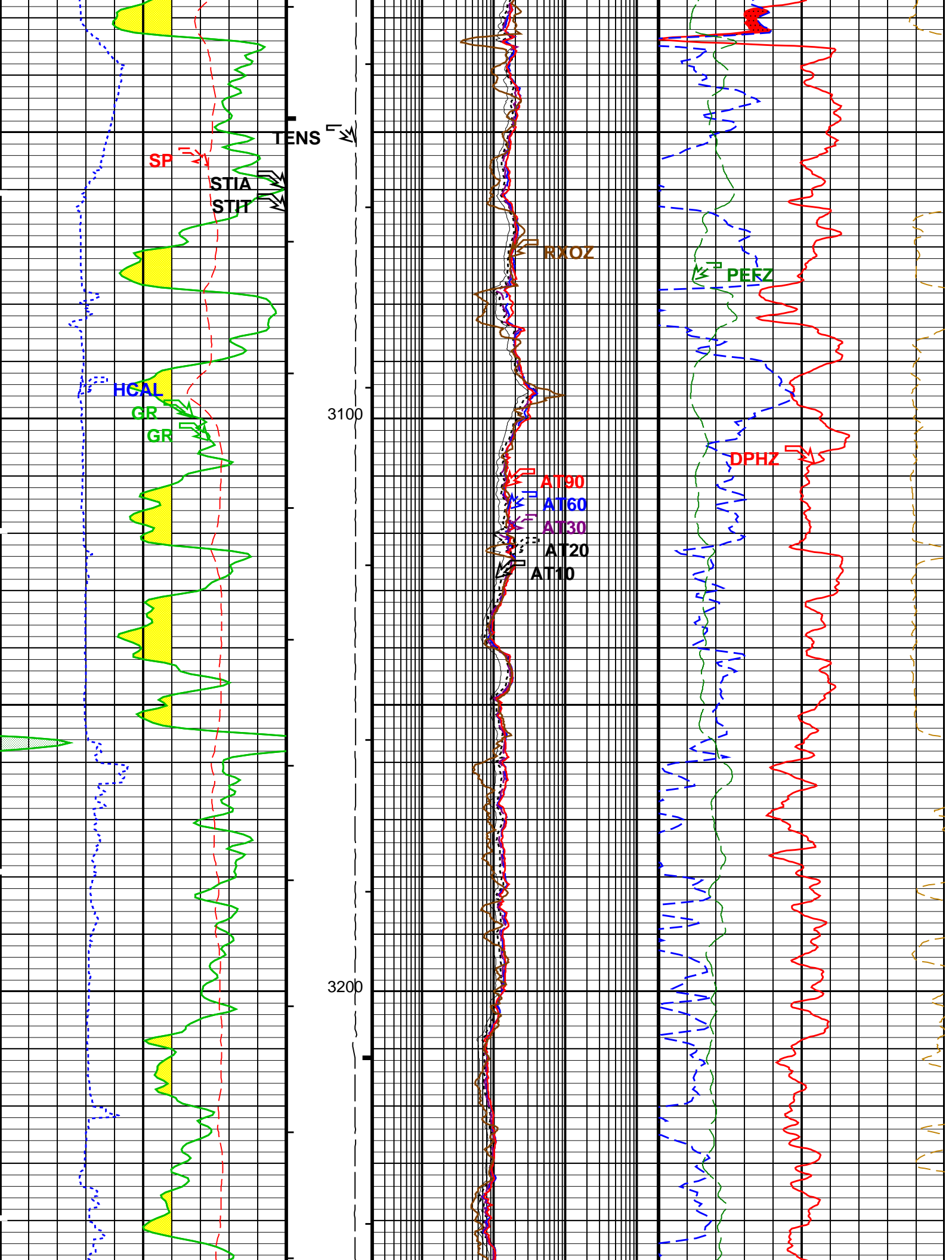


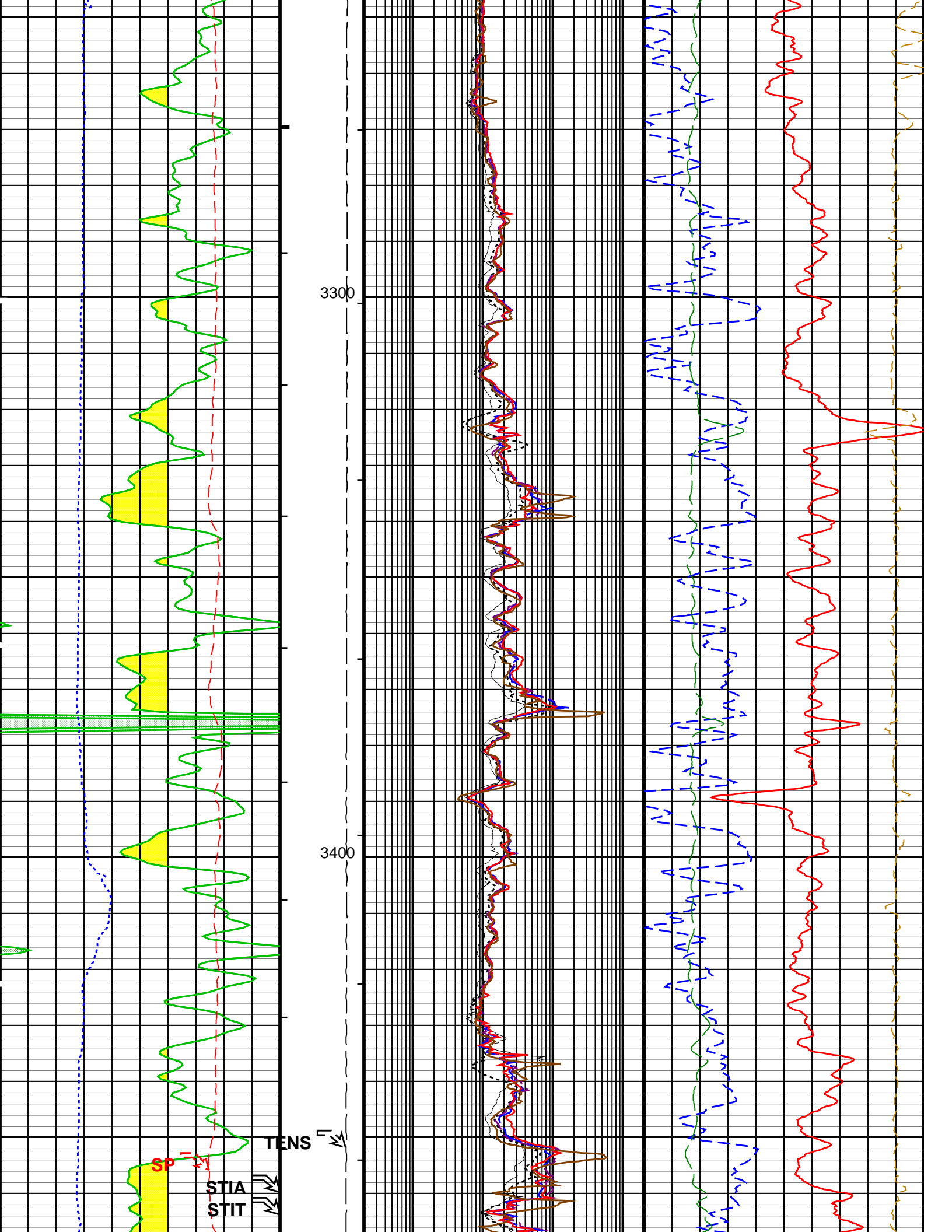


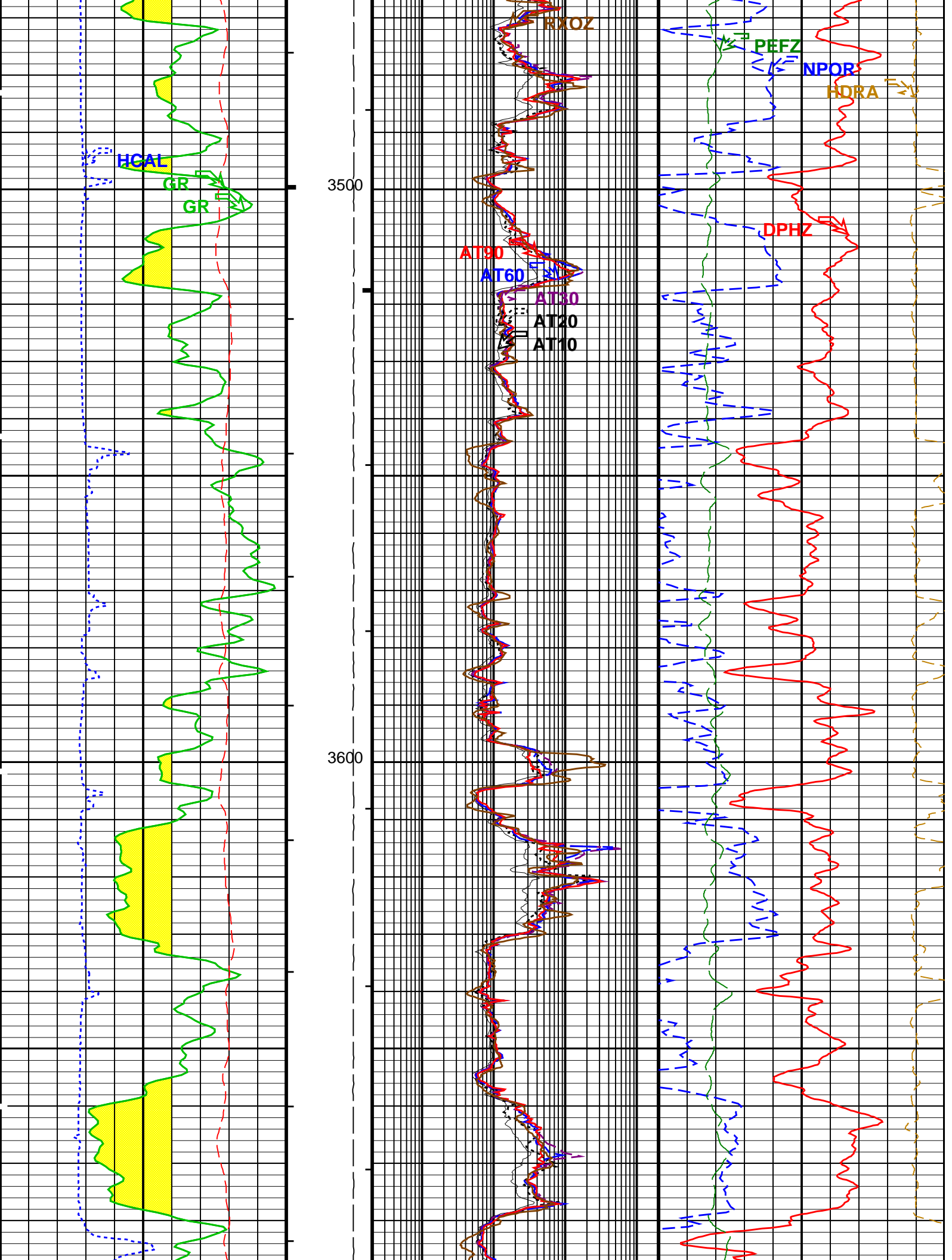


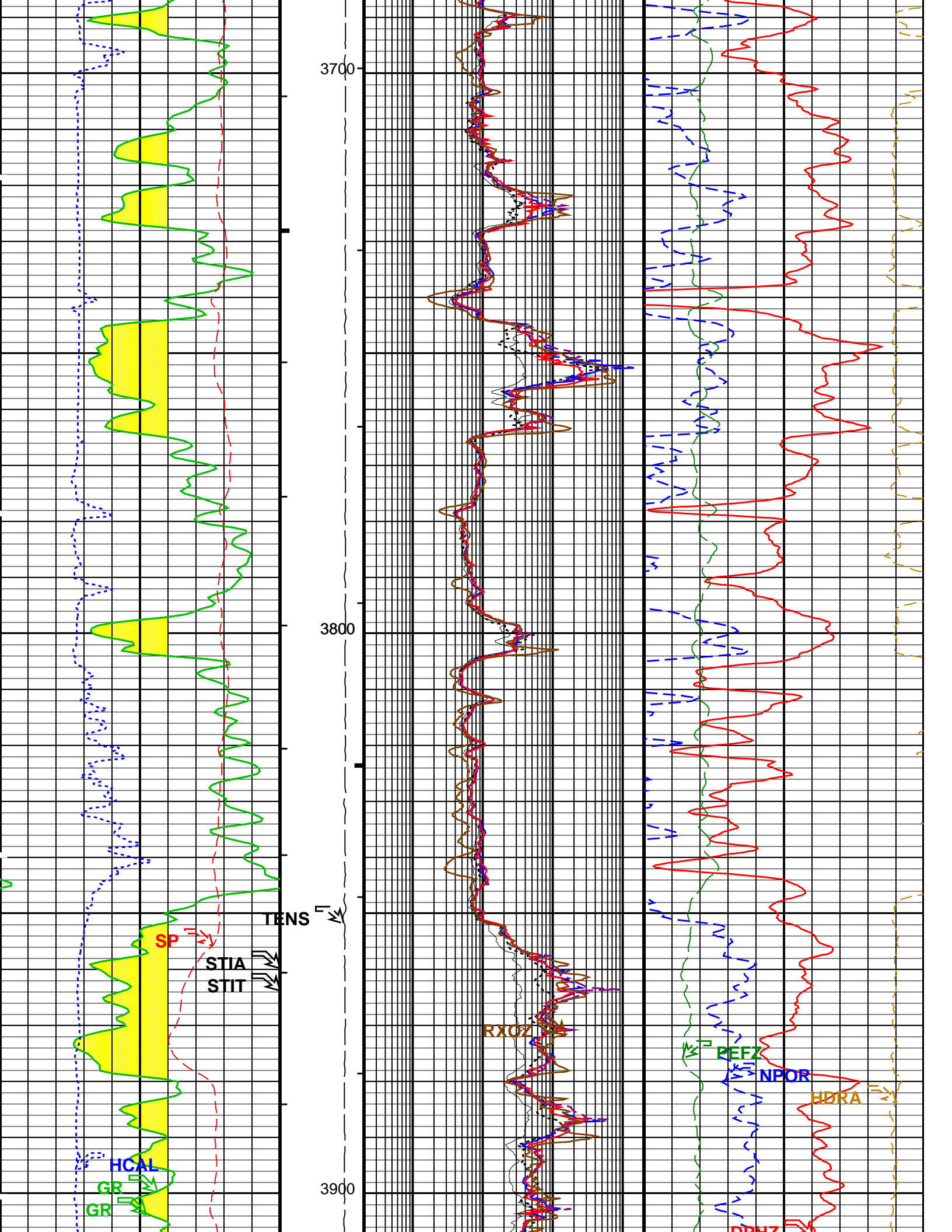


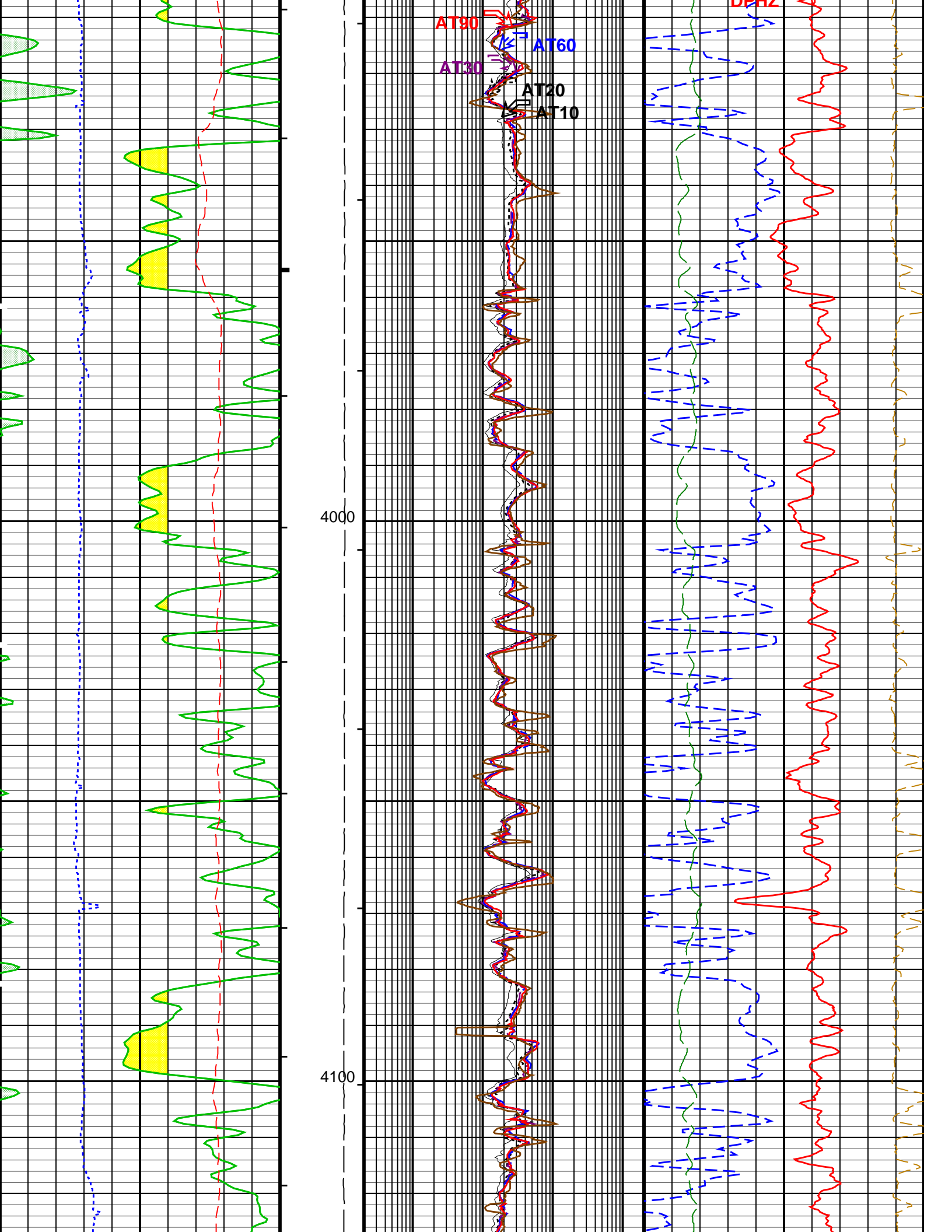


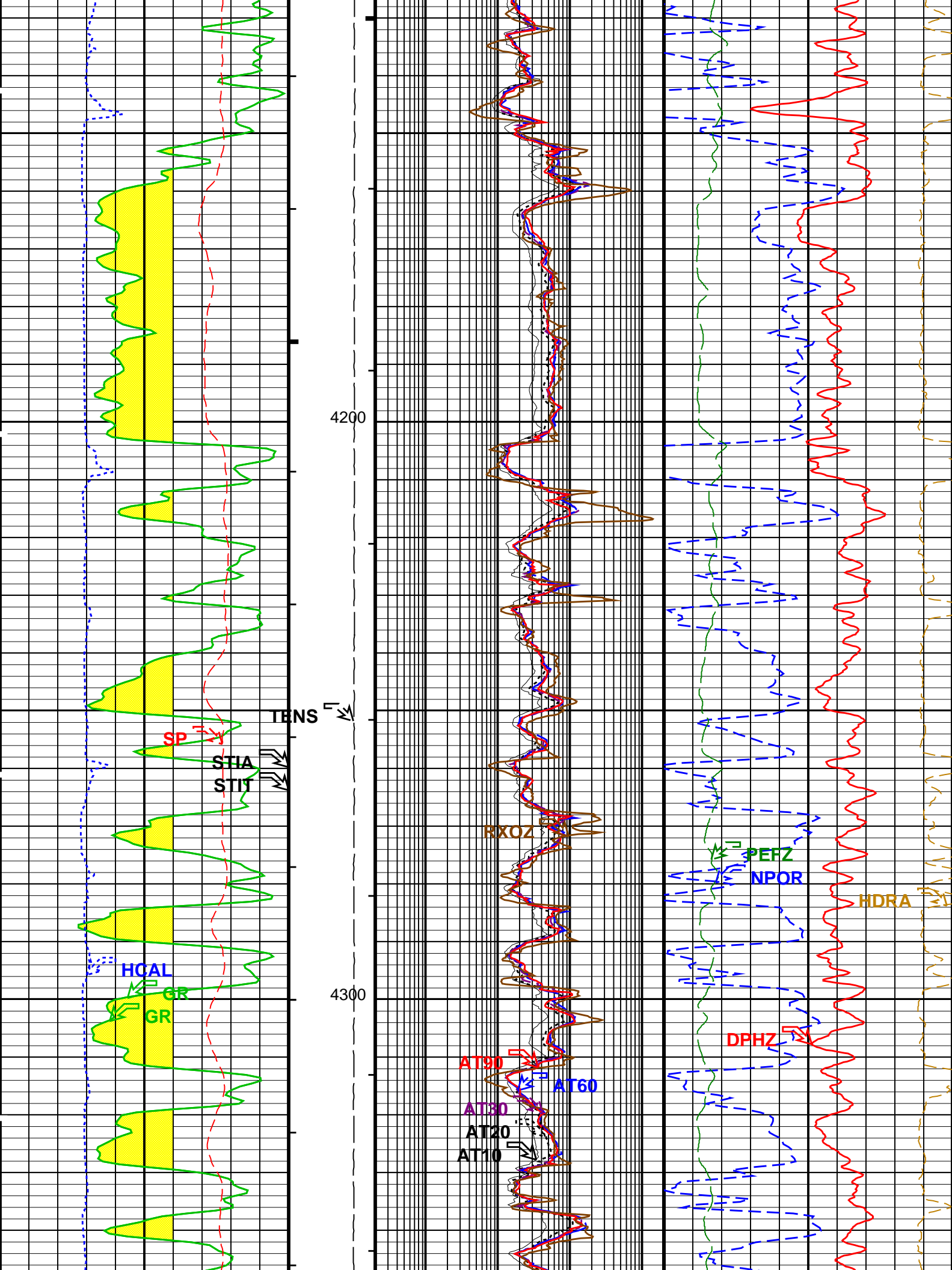


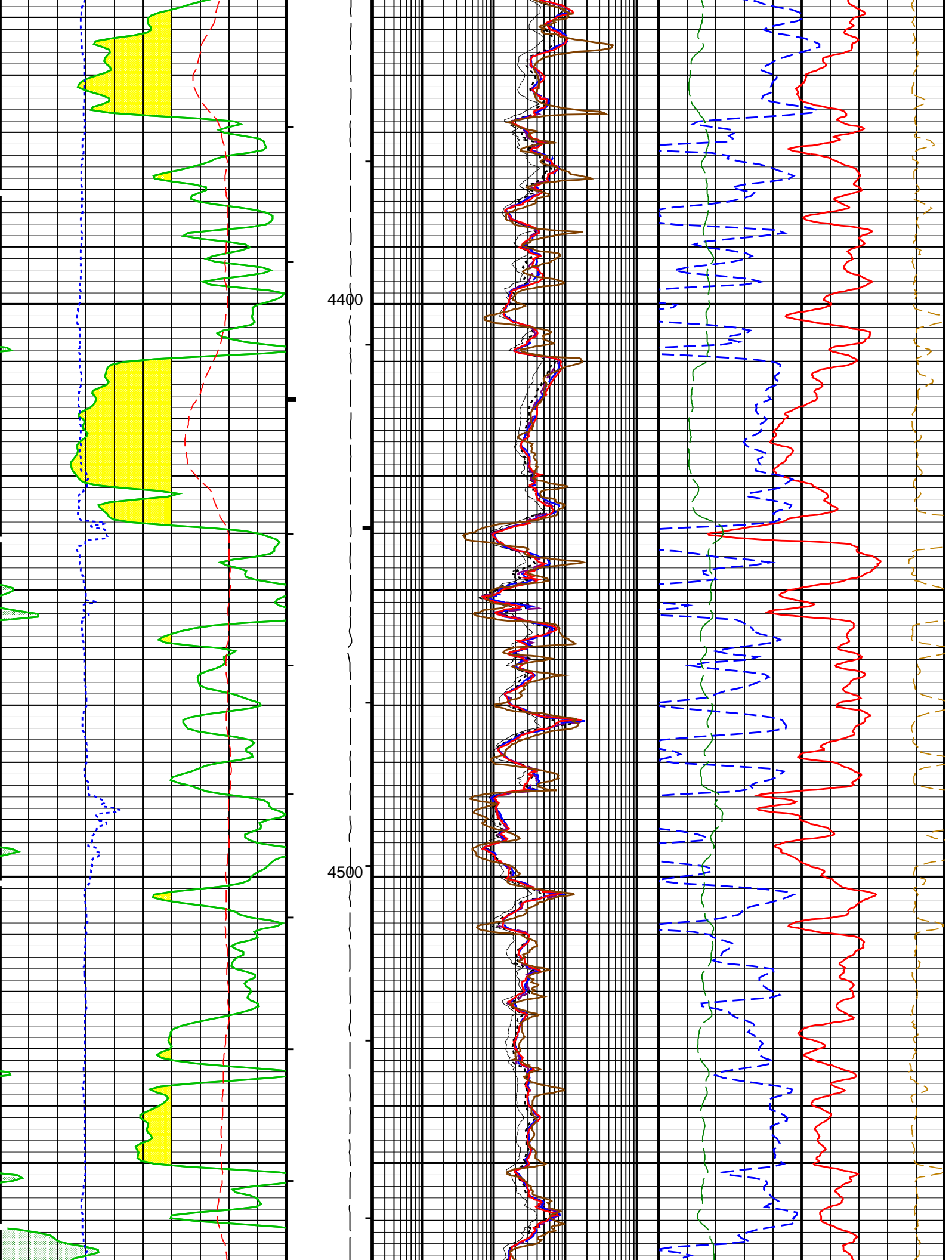


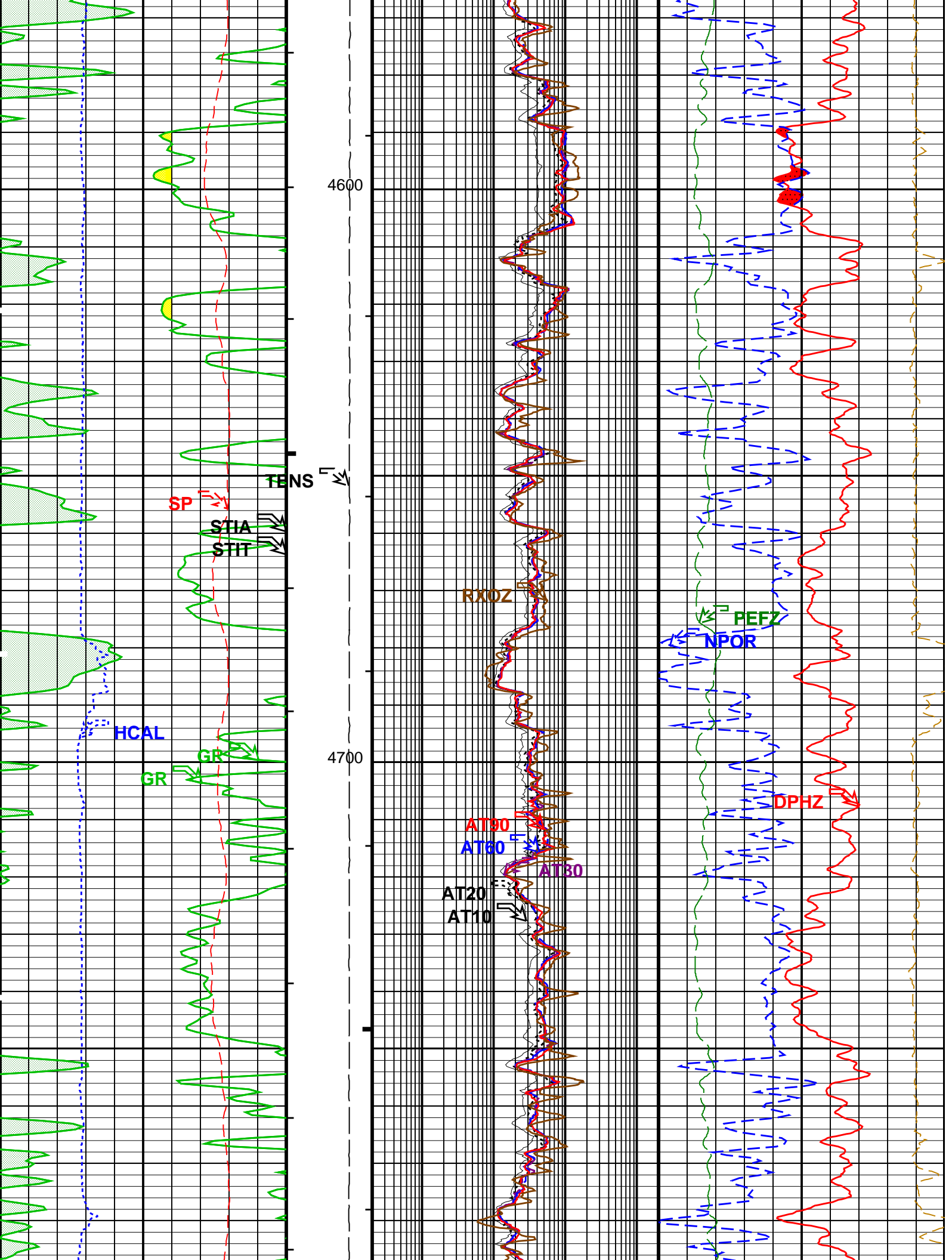


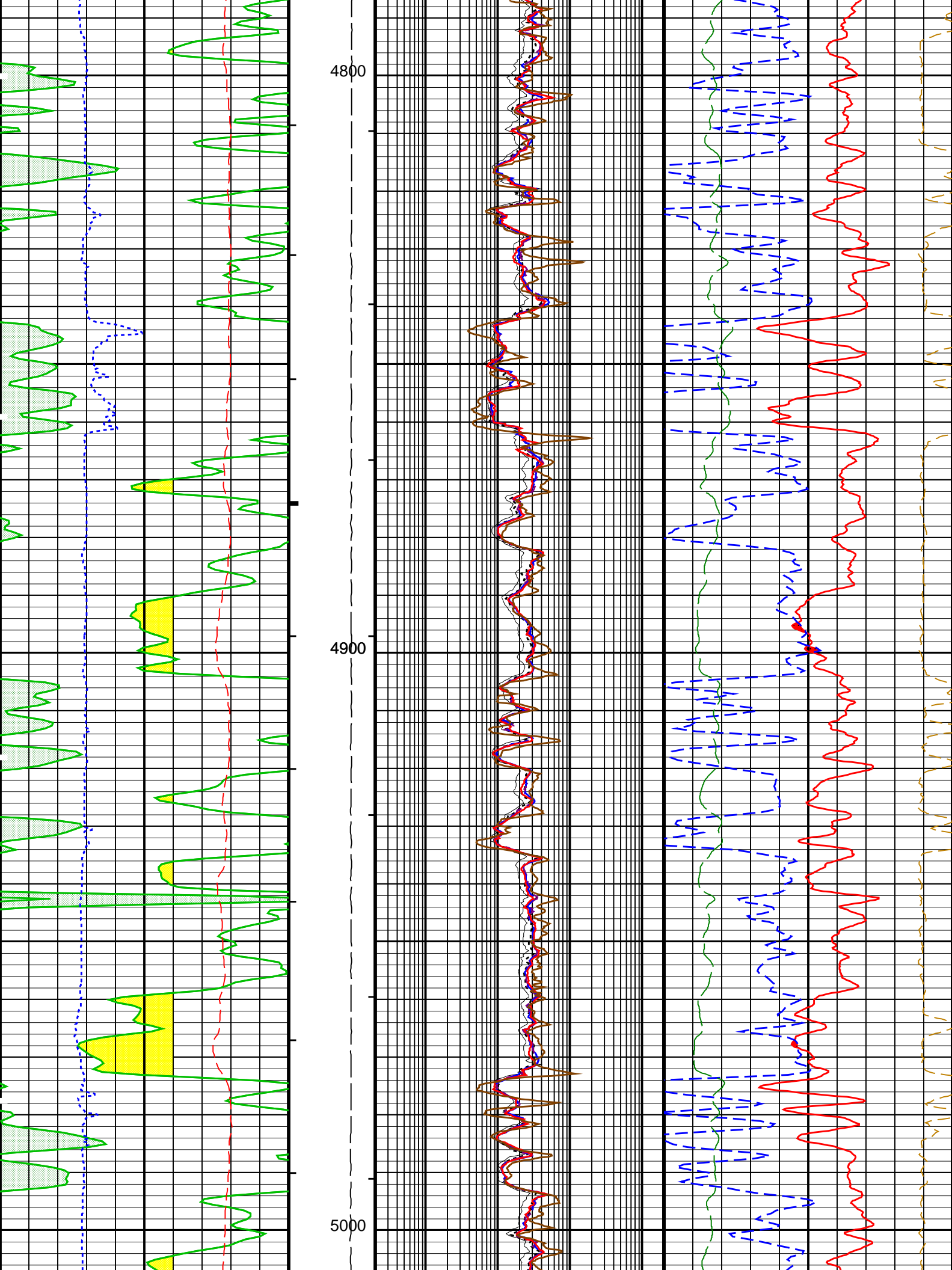


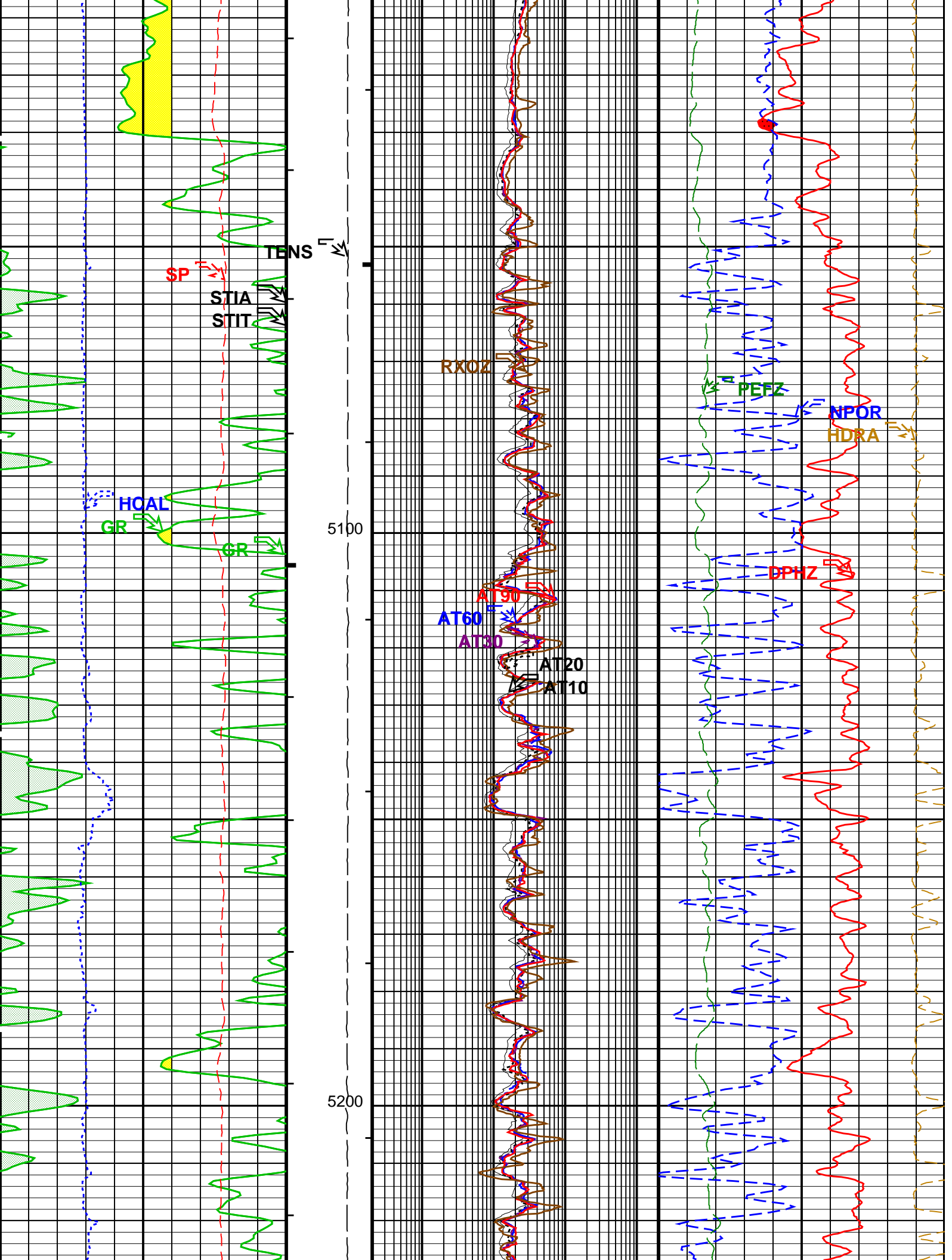


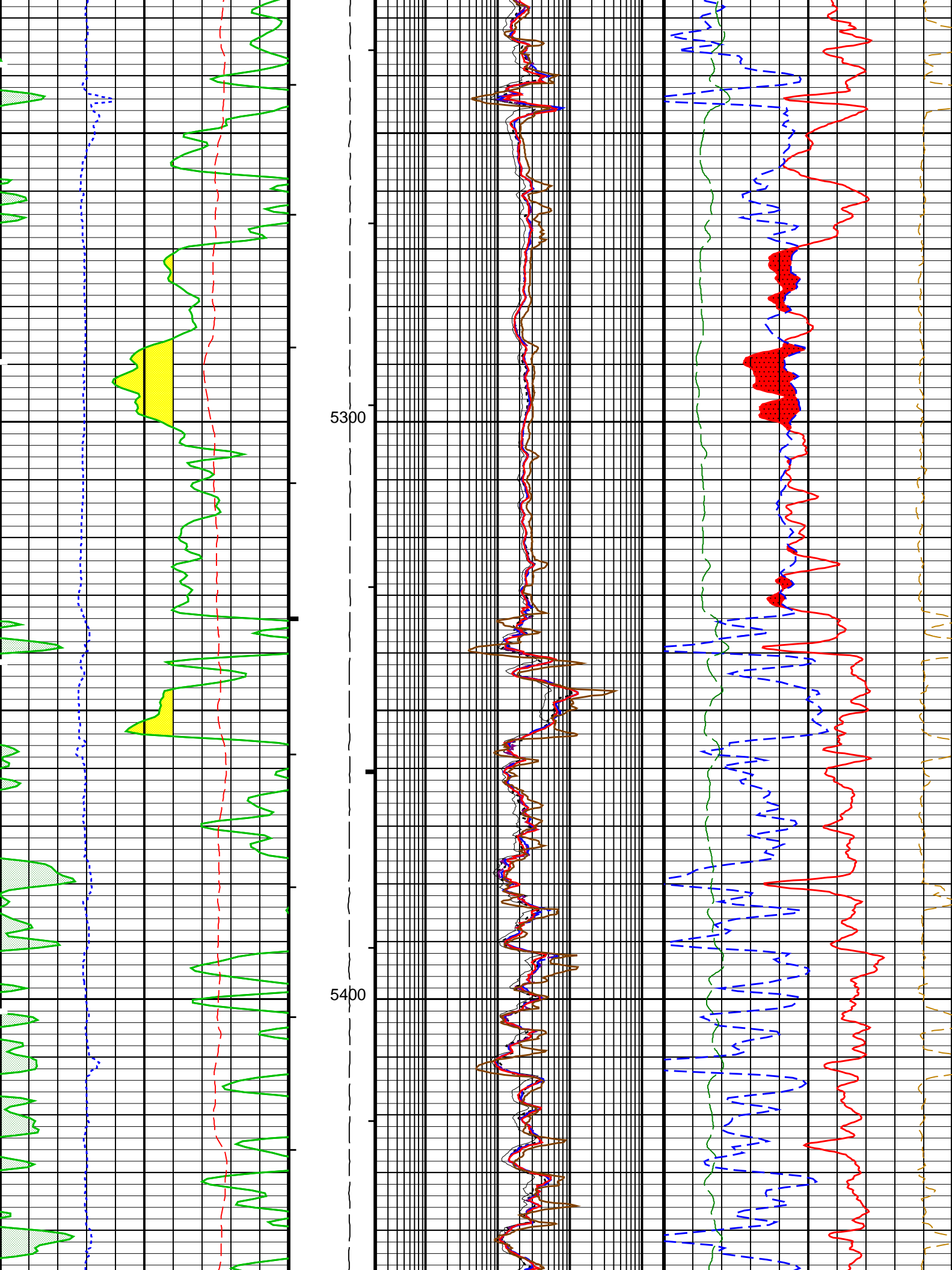


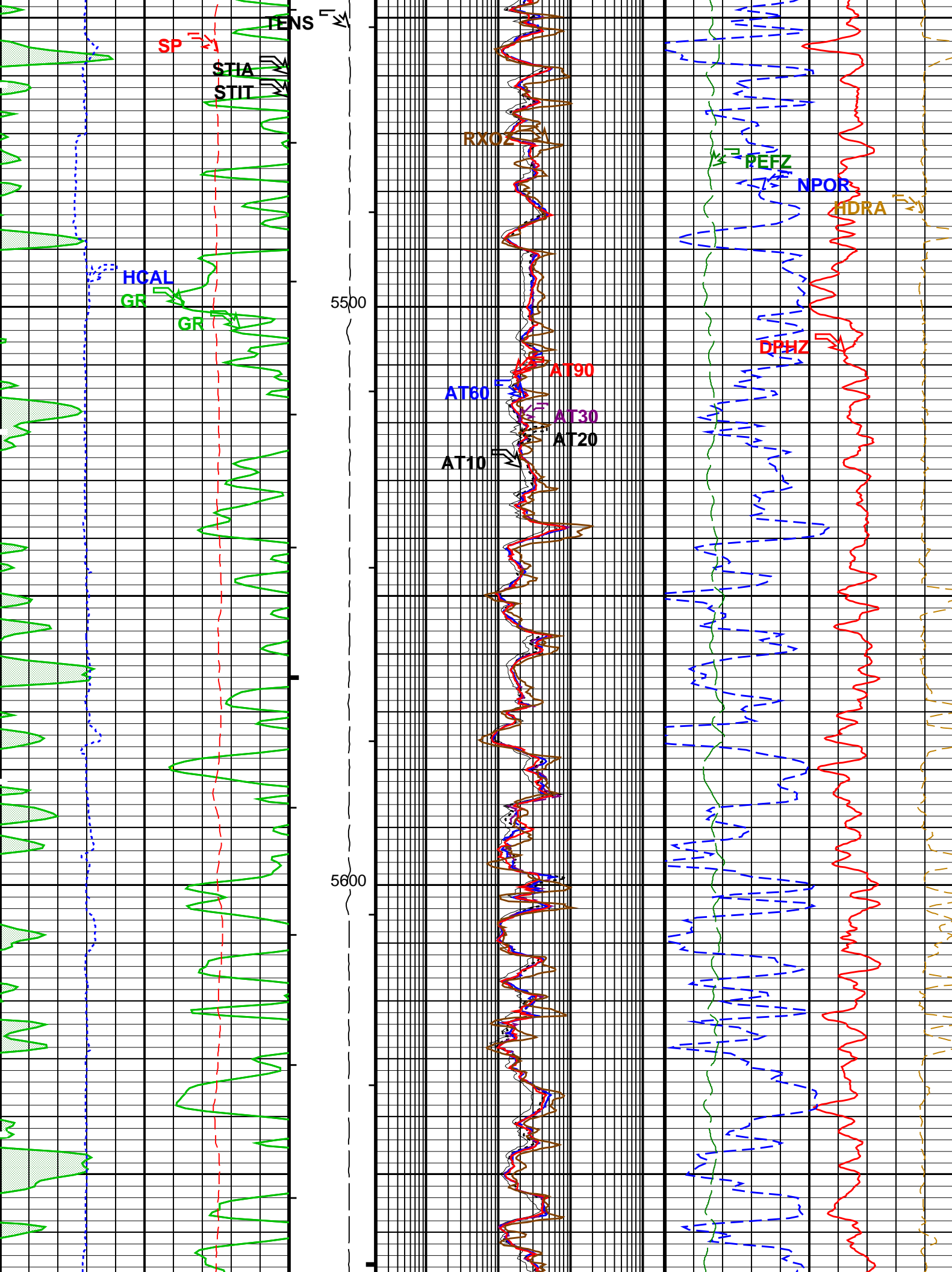


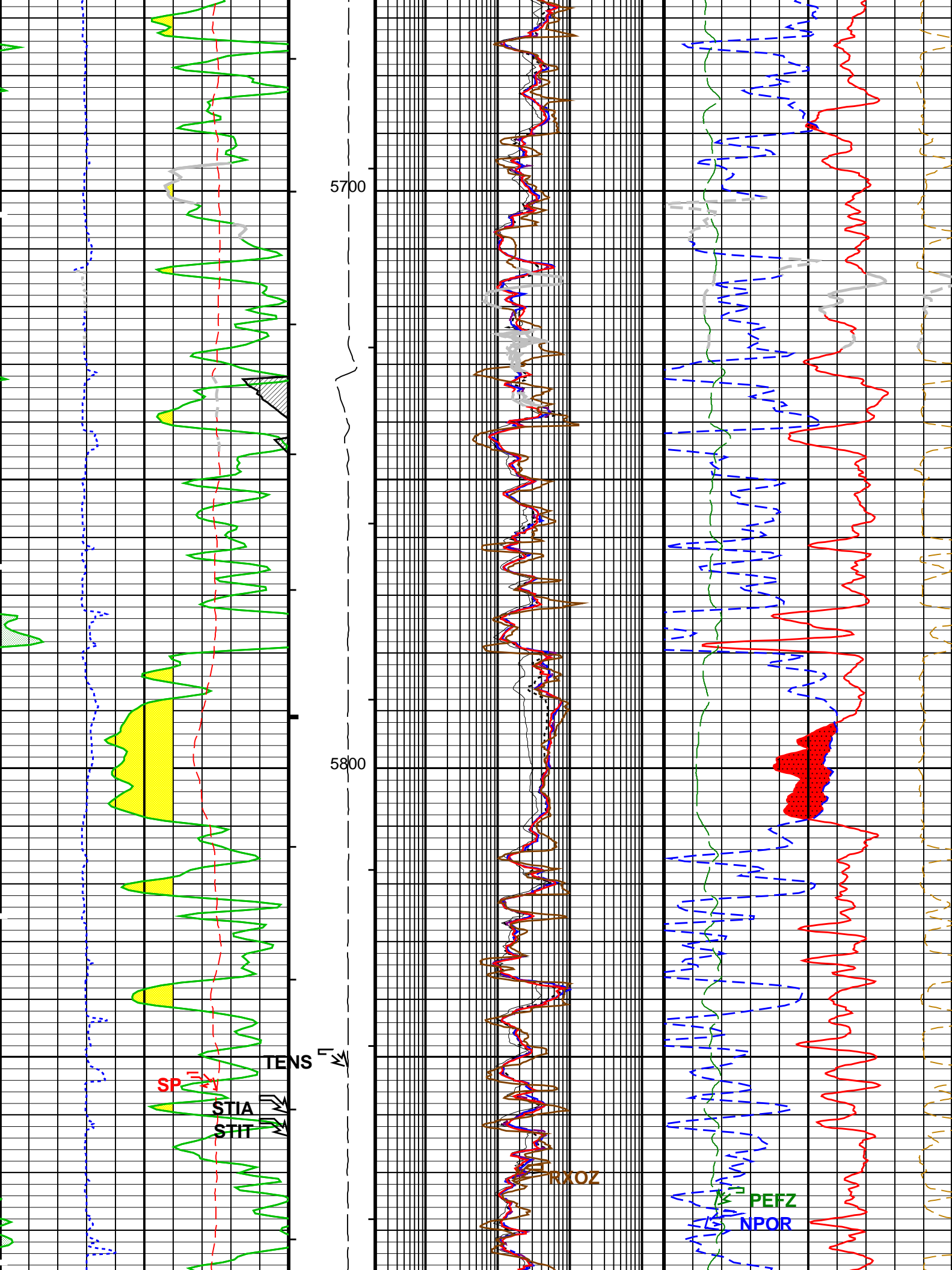


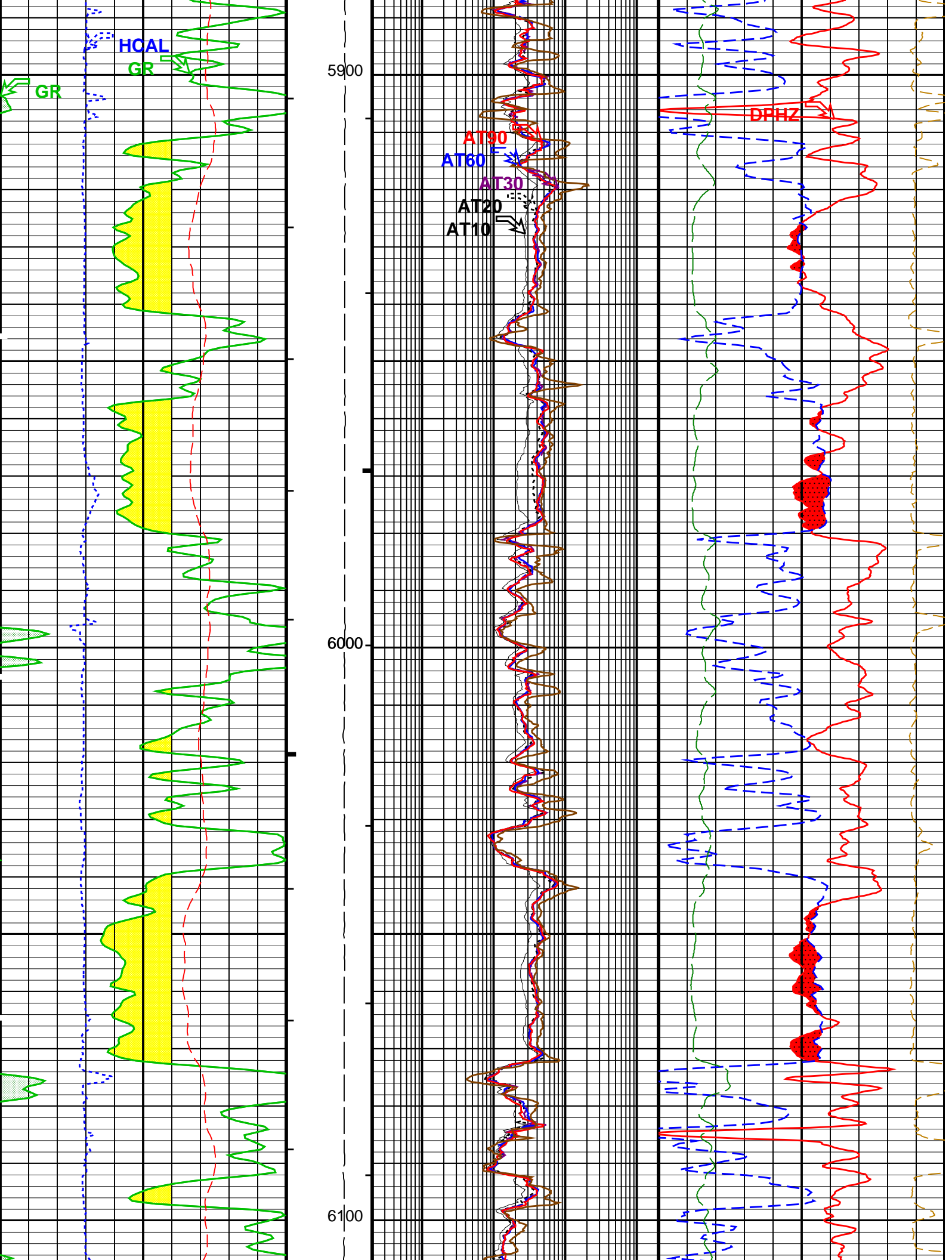


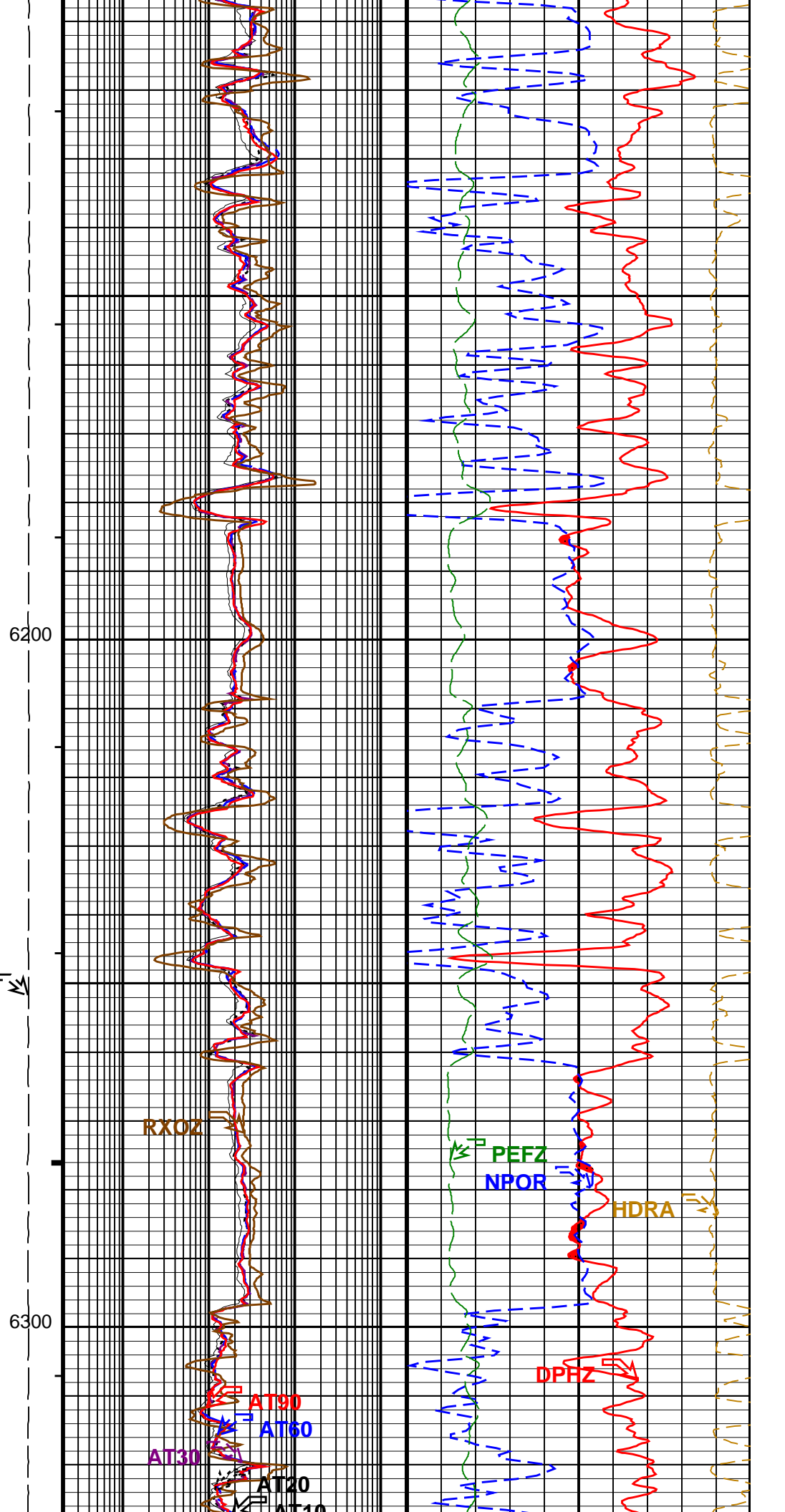
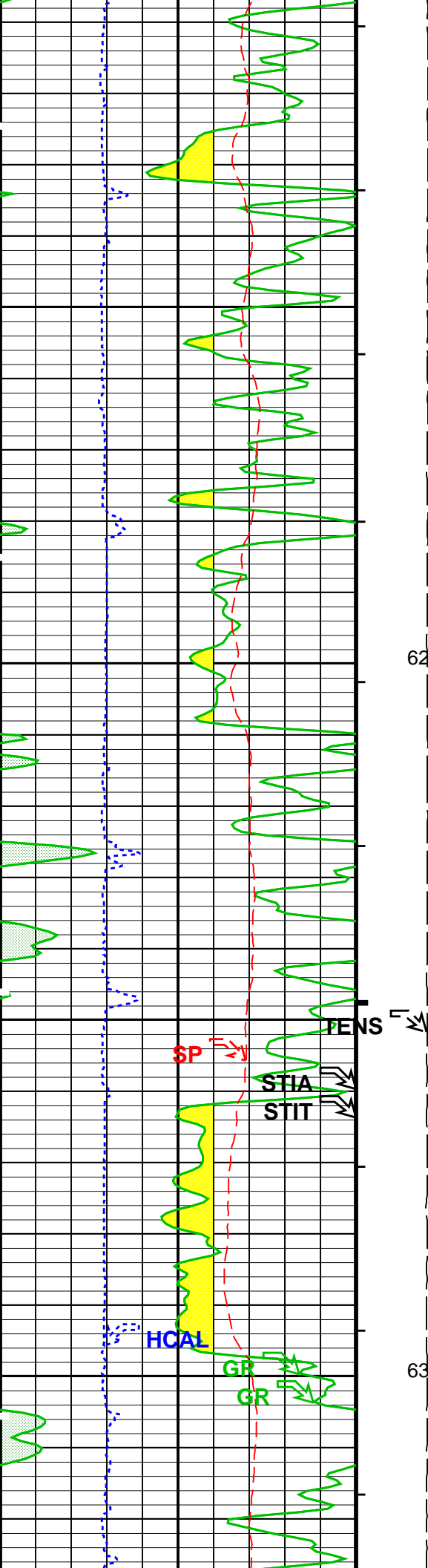


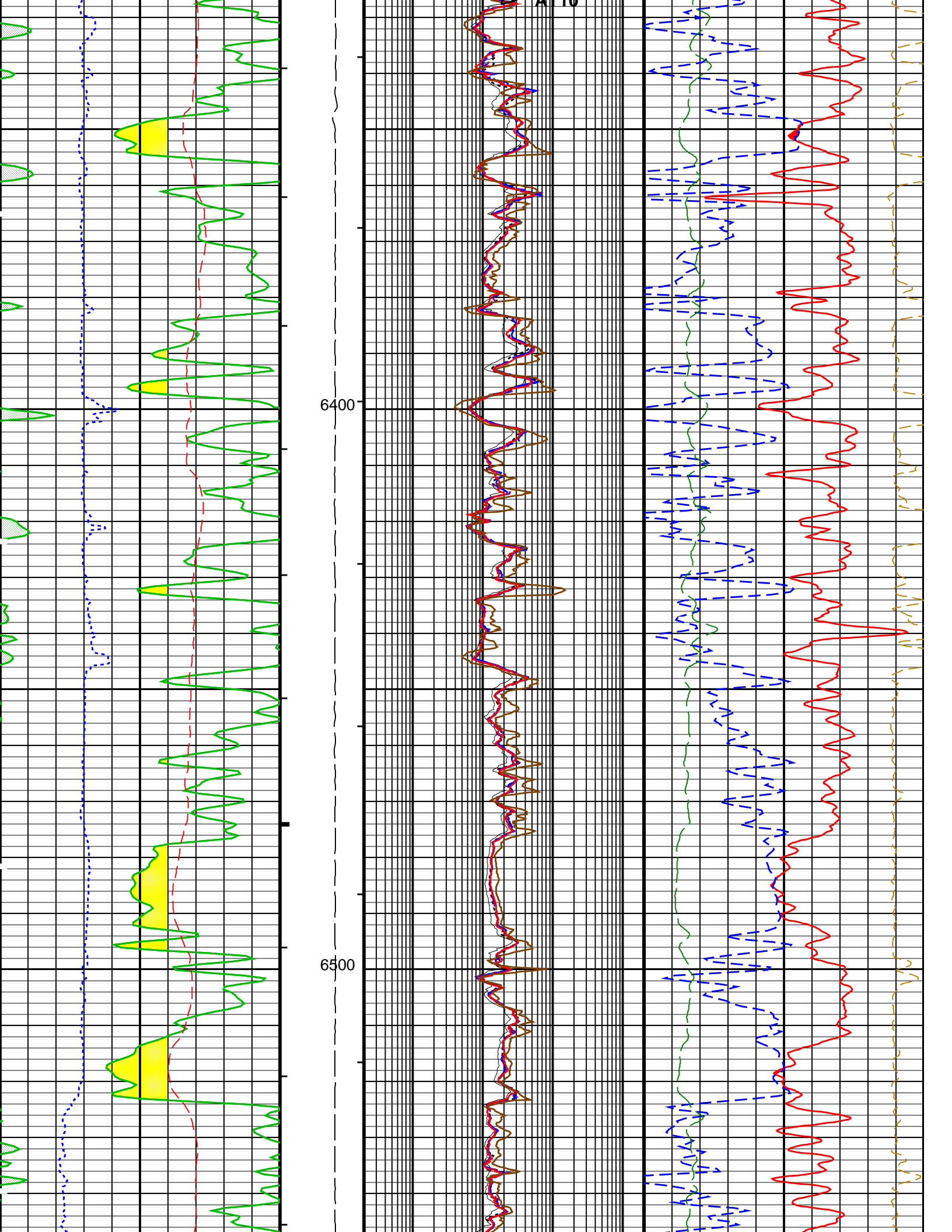


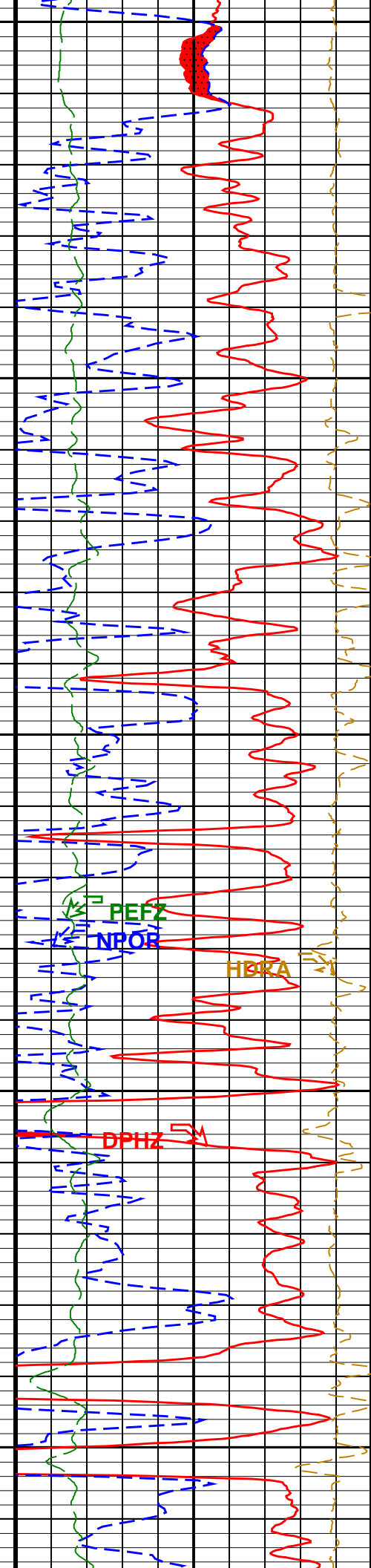
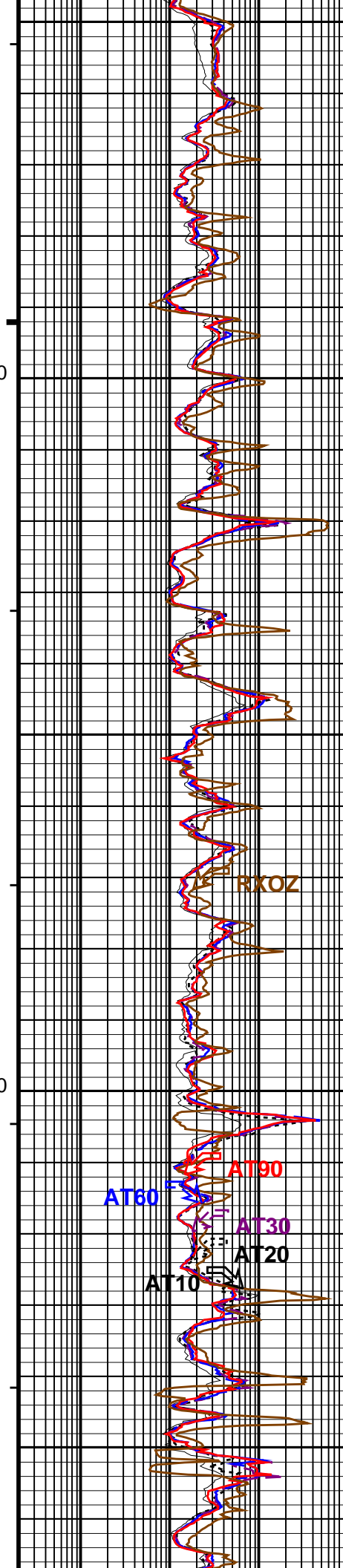
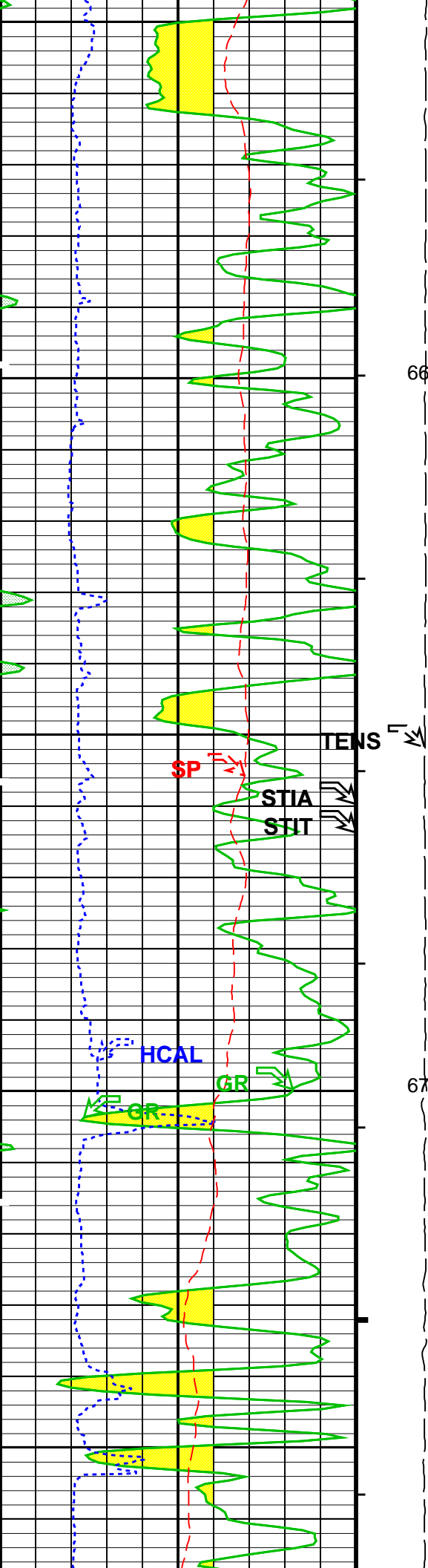


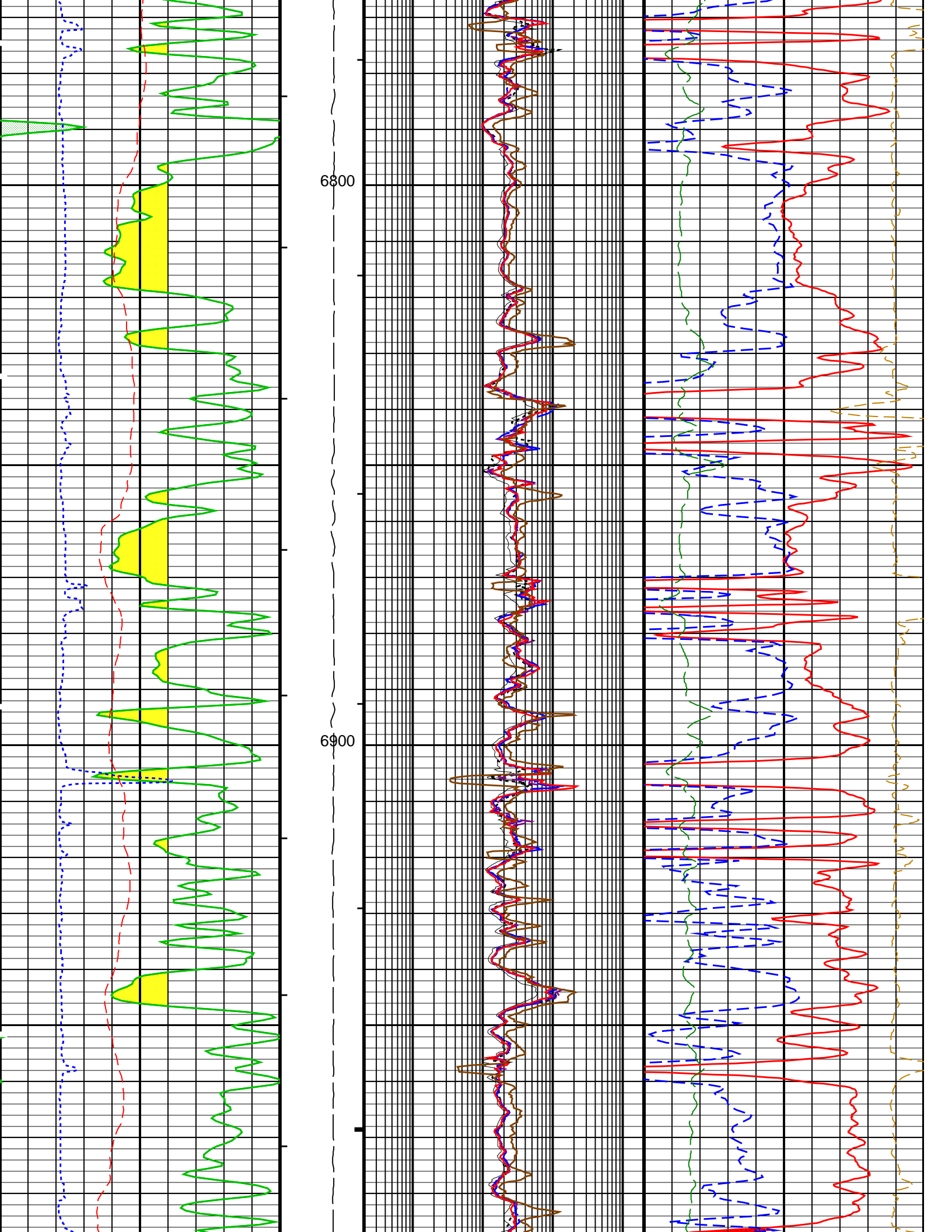


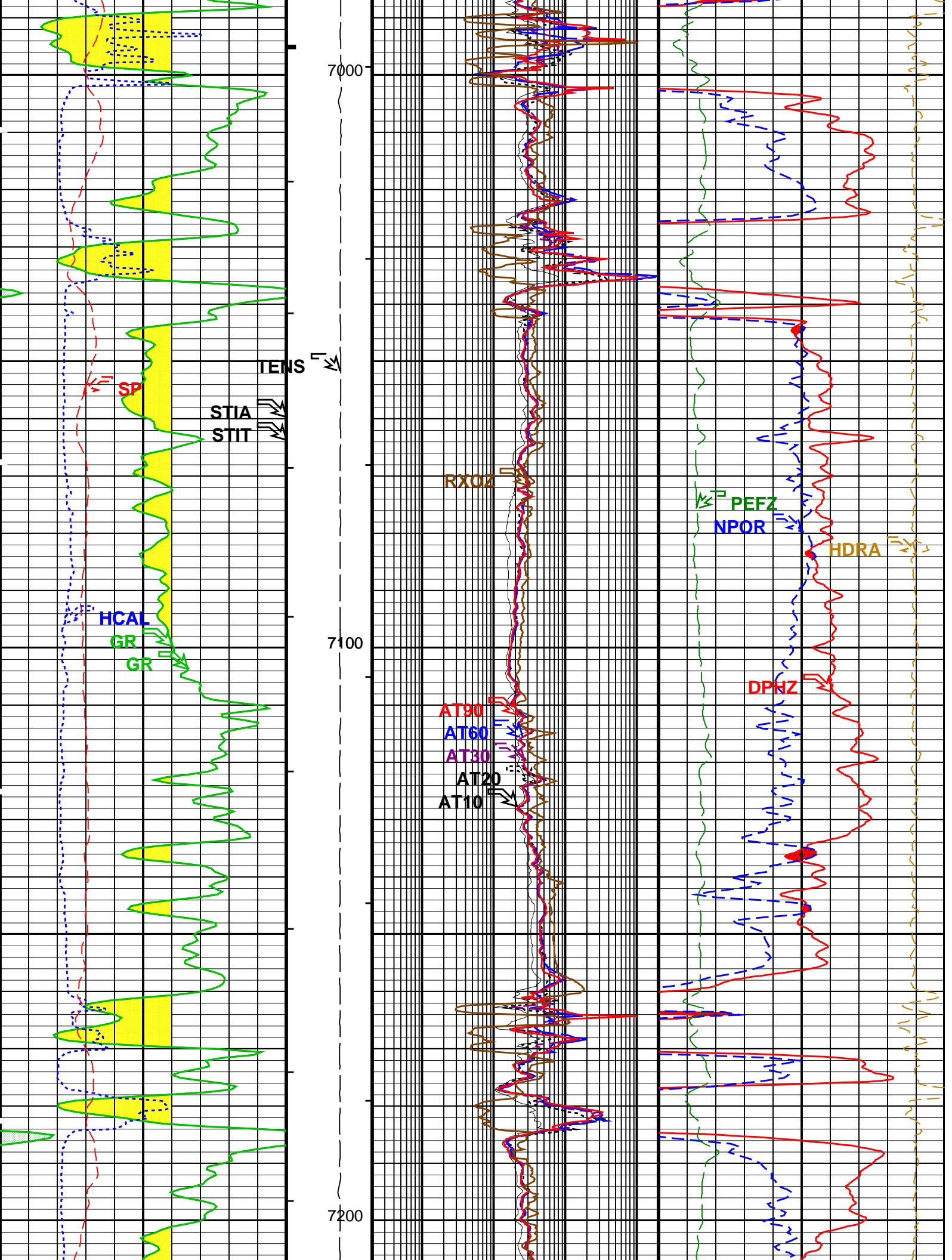


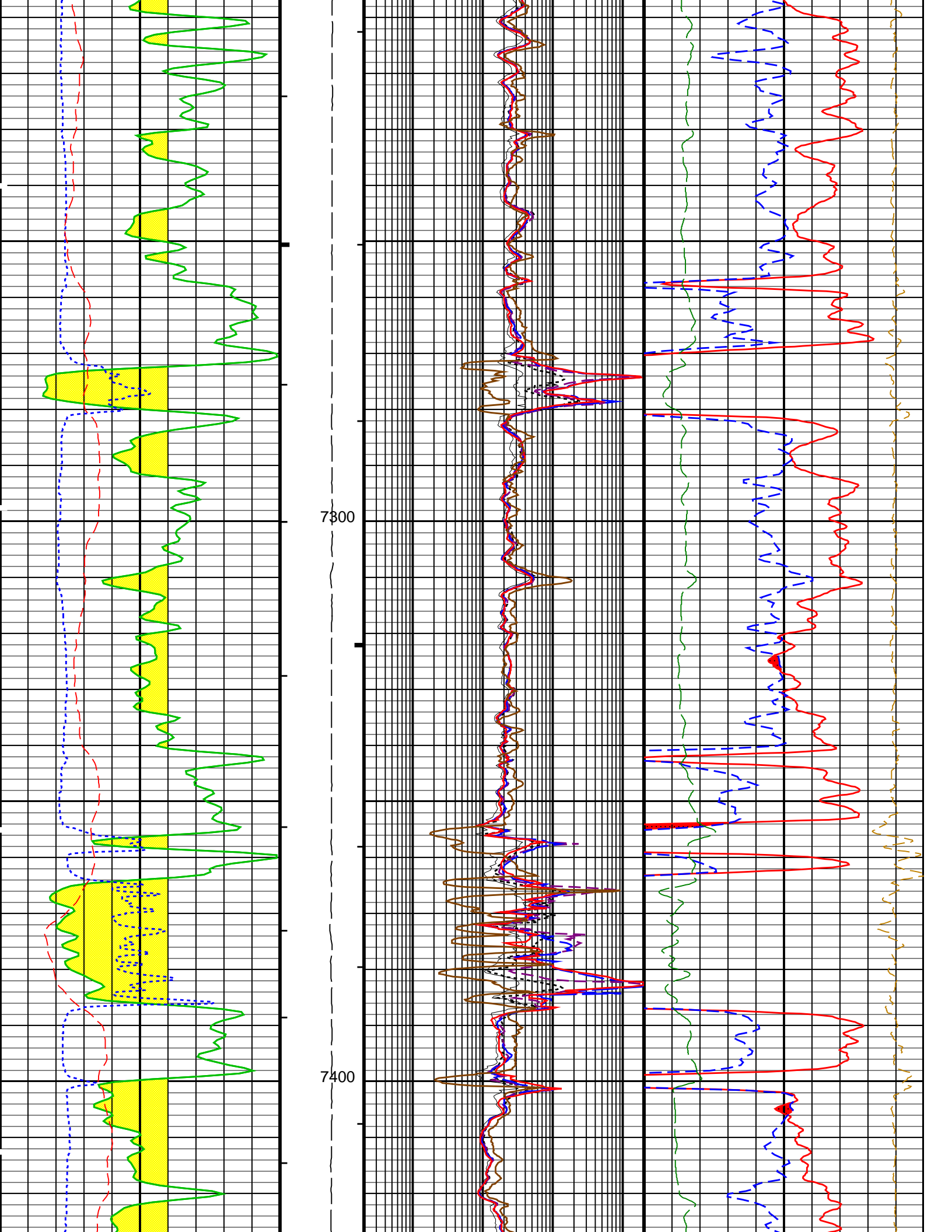


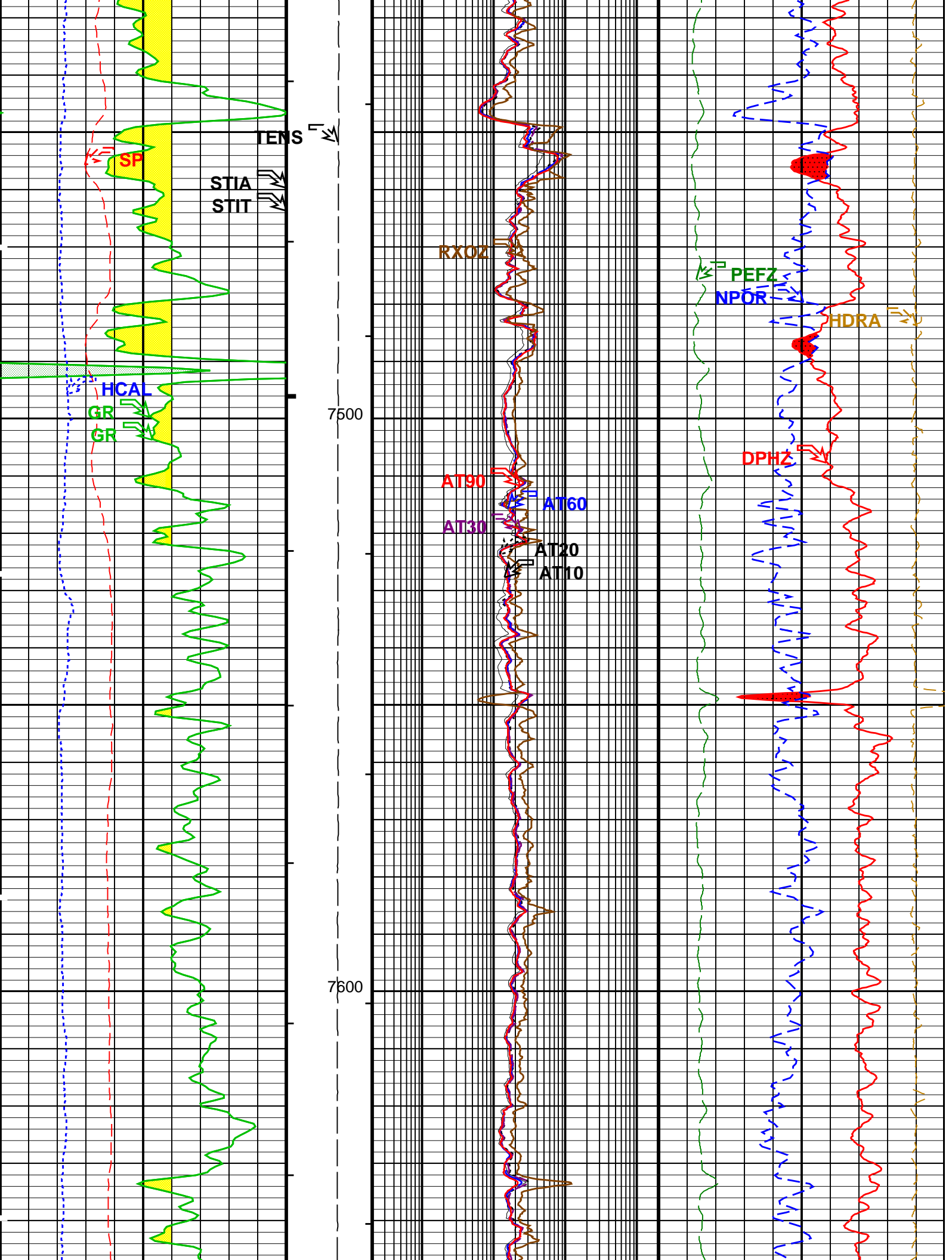


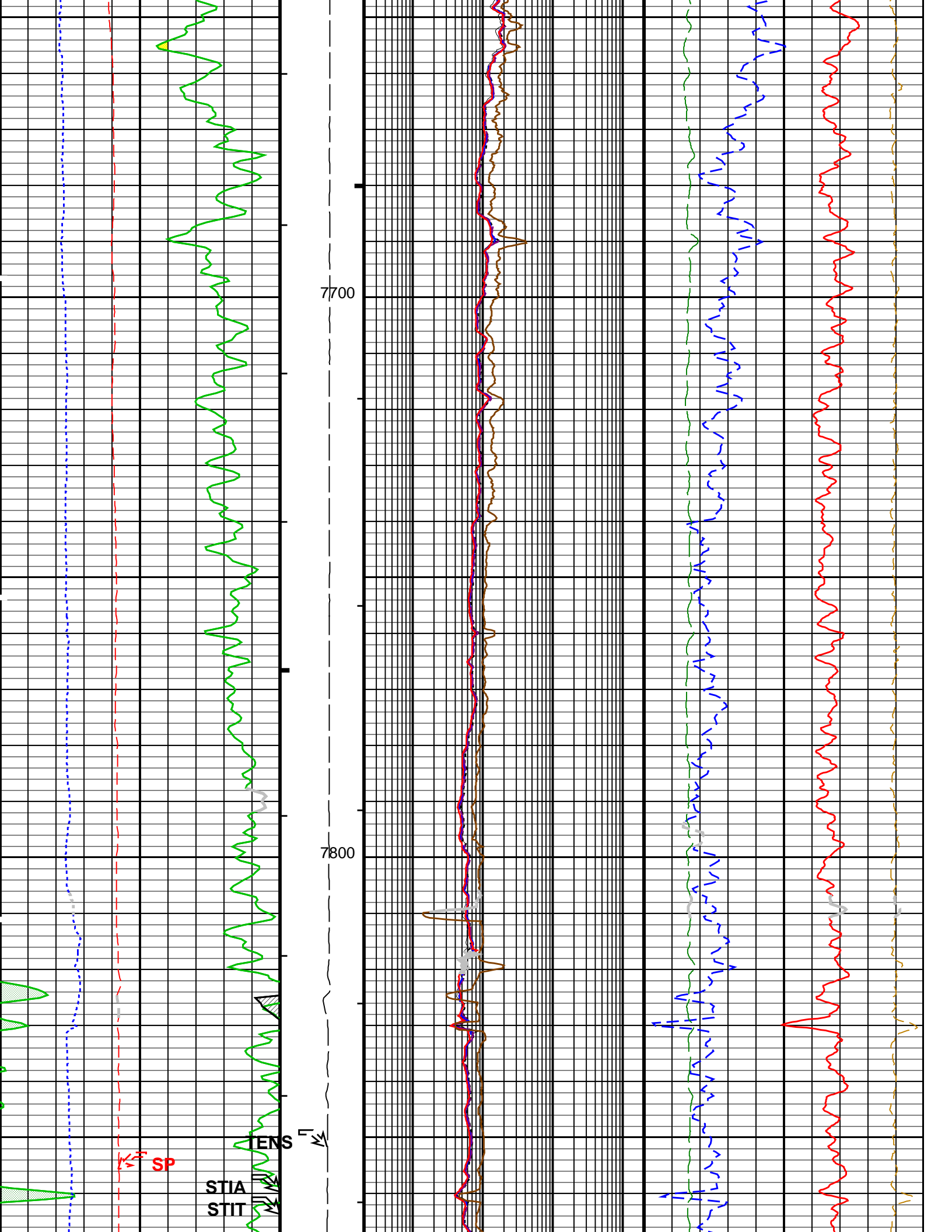


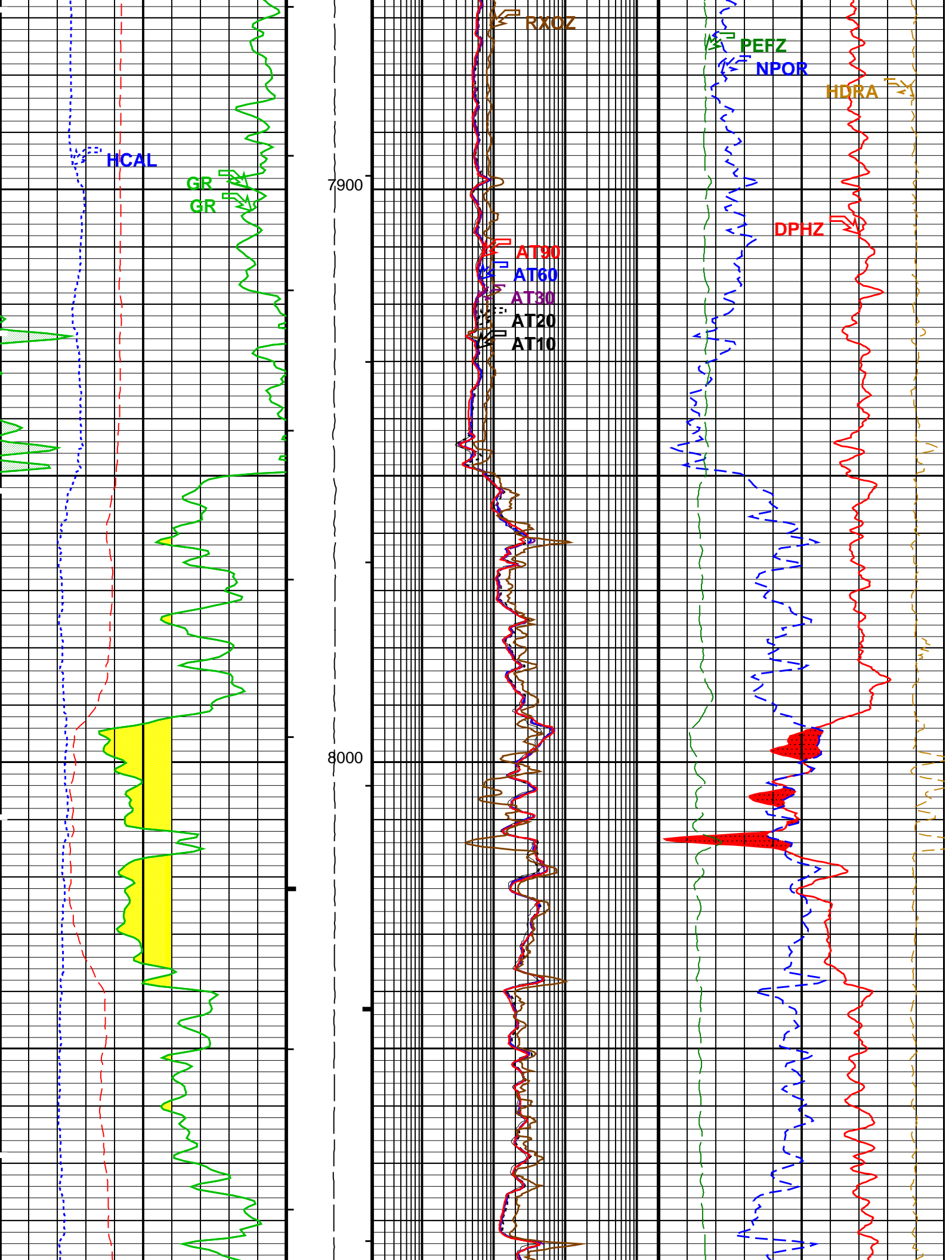


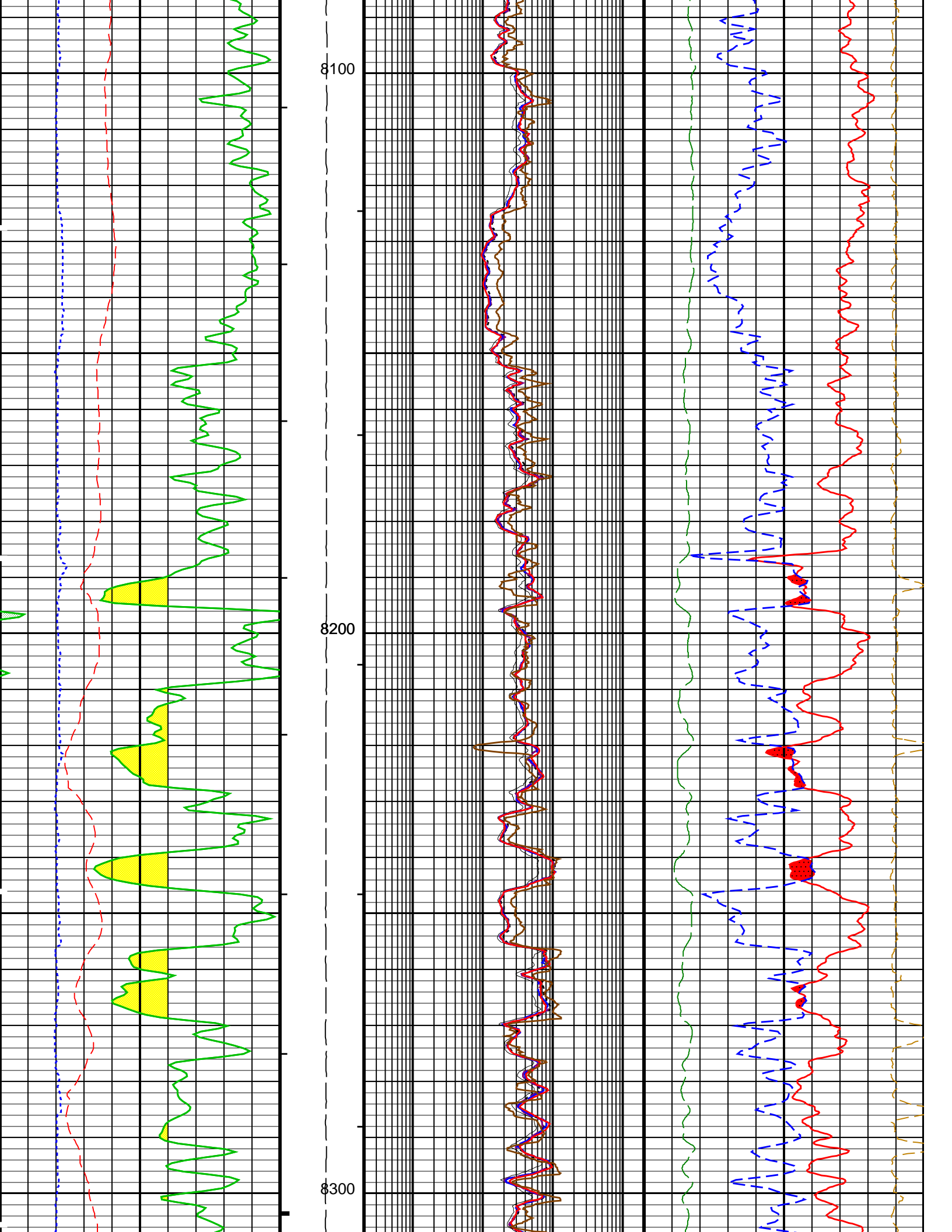


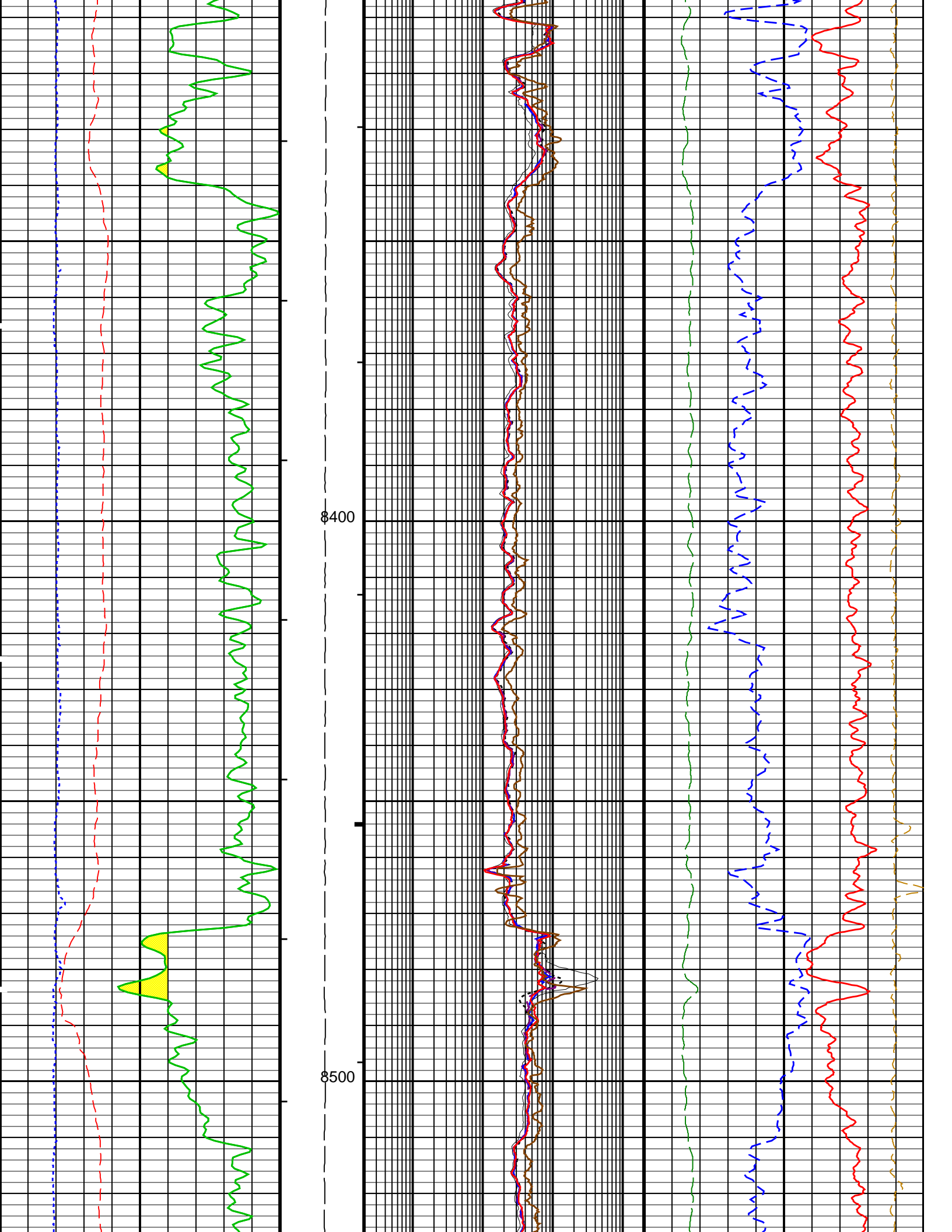


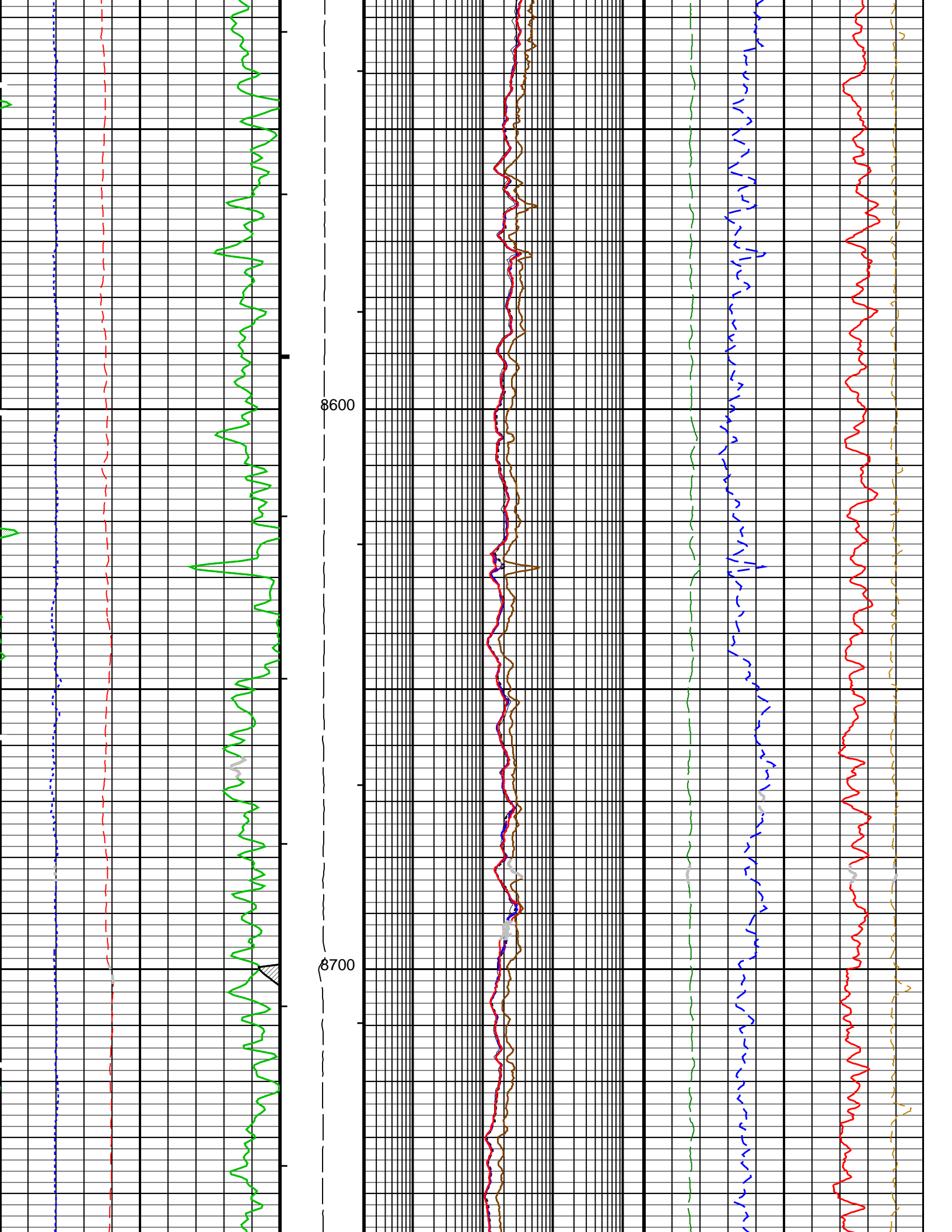


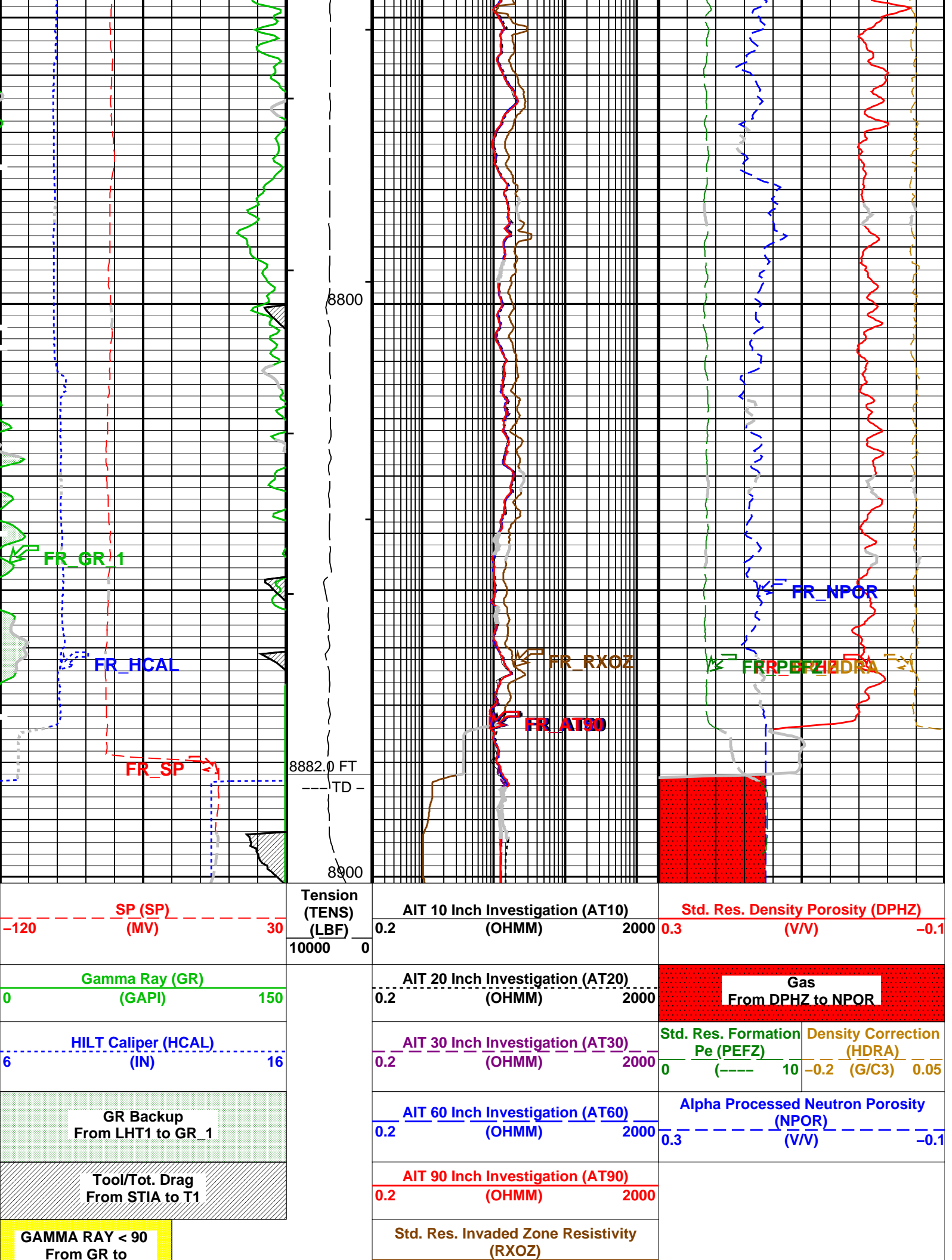












SpareConstant	0.2	(OHMM)	2000
PIP SUMMARY			
└ Integrated Hole Volume Minor Pip Every 10 F3			
└ Integrated Hole Volume Major Pip Every 100 F3			
└ Integrated Cement Volume Minor Pip Every 10 F3			
└ Integrated Cement Volume Major Pip Every 100 F3			
Time Mark Every 60 S			

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	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	1516	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	1.125	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)	218.1	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	-160	MV
HILTH-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)	218.1	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
MPOF	MCFL Processing Operation Mode	ON	
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	NO	
RWA: Apparent Water Resistivity			
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)	218.1	DEGF
FCD	Future Casing (Outer) Diameter	4.5	IN
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	
HVCS	Integrated Hole Volume Caliper Selection	AUTOMATIC	
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	8880.00	FT
TDL	Total Depth – Logger	8882.00	FT
System and Miscellaneous			
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	500.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	36.00	LB/F
DO	Depth Offset for Playback	0.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	49.93	DEGF
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.8138	OHMM
TD	Total Depth	8880	FT

Format: TCOMBO_AIT Vertical Scale: 5" per 100' Graphics File Created: 05-Mar-2013 12:38

OP System Version: 19C1-222

AIT-M	19C1-222	HILTH-FTB	19C1-222
DTC-H	19C1-222		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_011LUP	FN:16	PRODUCER	05-Mar-2013 09:54	8901.0 FT	83.5 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_024PUP	FN:40	PRODUCER	05-Mar-2013 12:38
RTB	AIT_TLD_MCFL_CNL_024PUP	FN:41	PRODUCER	05-Mar-2013 12:38

Parameter Insert Created: 5-MAR-2013 12:38

Parameters

DLIS Name	Description	Value
AIT-M: Array Induction Tool – M		
AAPL	Array Induction Answer Product Level(Depth Log/View only)	
	3_BholeCorr_BasicLogs_RadialProcessing	
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	Yes
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered
ACSED	Array Induction Casing Shoe Estimated Depth	1516 FT
ADITM	Array Induction Desired Tool Mode	0x00_Log_000
AIBC	Array Induction Enable Borehole Correction	Yes
AEBL	Array Induction Enable Basic Logs	Yes
AERP	Array Induction Enable Radial Processing	Yes
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20
AFVN	Array Induction Firmware Code Version Number	1
AIGS	Array Induction Select Akima Interpolation Gating	On
ALNV	Array Induction Log Not Valid Flag	Log_Valid-No_Default_Parameters
AMRD	Array Induction Mud Resistivity Calibration Depth	0 FT
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
ARPM	Array Induction Radial Processing Mode	6_One_Two_and_Four
ARPV	Array Induction Radial Parametrization Code Version Number	232
ARTS	AIT Rt Selection (for ALLRES computation)	AITM_TwoResA90

ASTA	Array Induction Tool Standoff	1.125	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
ATTY	Array Induction Tool Type (of acquired data)	AITM	
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)	218.1	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
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	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
RTCO	RTCO – Rt Invasion Correction	YES	
SHT	Surface Hole Temperature	68	DEGF
SPNV	SP Next Value	-160	MV
HILTH-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)	218.1	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
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	
HACPP	Accelerometer PROM Presence	PRESENT_DOWNHOLE	
HART	Accelerometer Reference Temperature	77	DEGF
HDCOD	HILT Density Coal detection	2	G/C3
HDSAD	HILT Density Salt detection	2.1	G/C3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	G/C3
HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	45	PU
HNSAD	HILT Neutron Salt detection	5	PU
HPHIECUT	HILT effective Porosity Cutoff	5	PU
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSSO	HRDD Nuclear Source Strength Option	NORMAL	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%
ISSBAR	Barite Mud Switch	NOBARITE	
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
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e-005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e-005	OHMS
MHCC	MCFL High Contrast Correction Switch	NO	
MPOF	MCFL Processing Operation Mode	ON	
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
PEA_FILTER	PEA Filter	NO_FILTER	
PEFC_FILTER	PEFC Filter	NO_FILTER	
PHIMAX	HILT max porosity	35	PU
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	68	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	NO	
RWA: Apparent Water Resistivity			
ARTS	AIT Rt Selection (for ALLRES computation)	AITM_TwoResA90	
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	

RTCO	RTCO – Rt Invasion Correction	YES	
ALLRES:	Basic Resistivity Transforms		
ARTS	AIT Rt Selection (for ALLRES computation)	AITM_TwoResA90	
RTCO	RTCO – Rt Invasion Correction	YES	
HOLEV:	Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	218.1	DEGF
FCD	Future Casing (Outer) Diameter	4.5	IN
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	
HVCS	Integrated Hole Volume Caliper Selection	AUTOMATIC	
ISSBAR	Barite Mud Switch	NOBARITE	
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	8880.00	FT
TDL	Total Depth – Logger	8882.00	FT
System and Miscellaneous			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	500.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	36.00	LB/F
DFD	Drilling Fluid Density	10.30	LB/G
DO	Depth Offset for Playback	0.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	49.93	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.8138	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	8880	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

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REPEAT PASS

5" = 100'

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: SHIDELER 19–14D (O19EB)

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_010PUP	FN:14	PRODUCER	05–Mar–2013 09:51	8920.5 FT	8312.0 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_020PUP	FN:32	PRODUCER	05–Mar–2013 12:32	8920.5 FT	8272.0 FT
RTB	AIT_TLD_MCFL_CNL_020PUP	FN:33	PRODUCER	05–Mar–2013 12:32	8920.5 FT	8272.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 199.81 F3

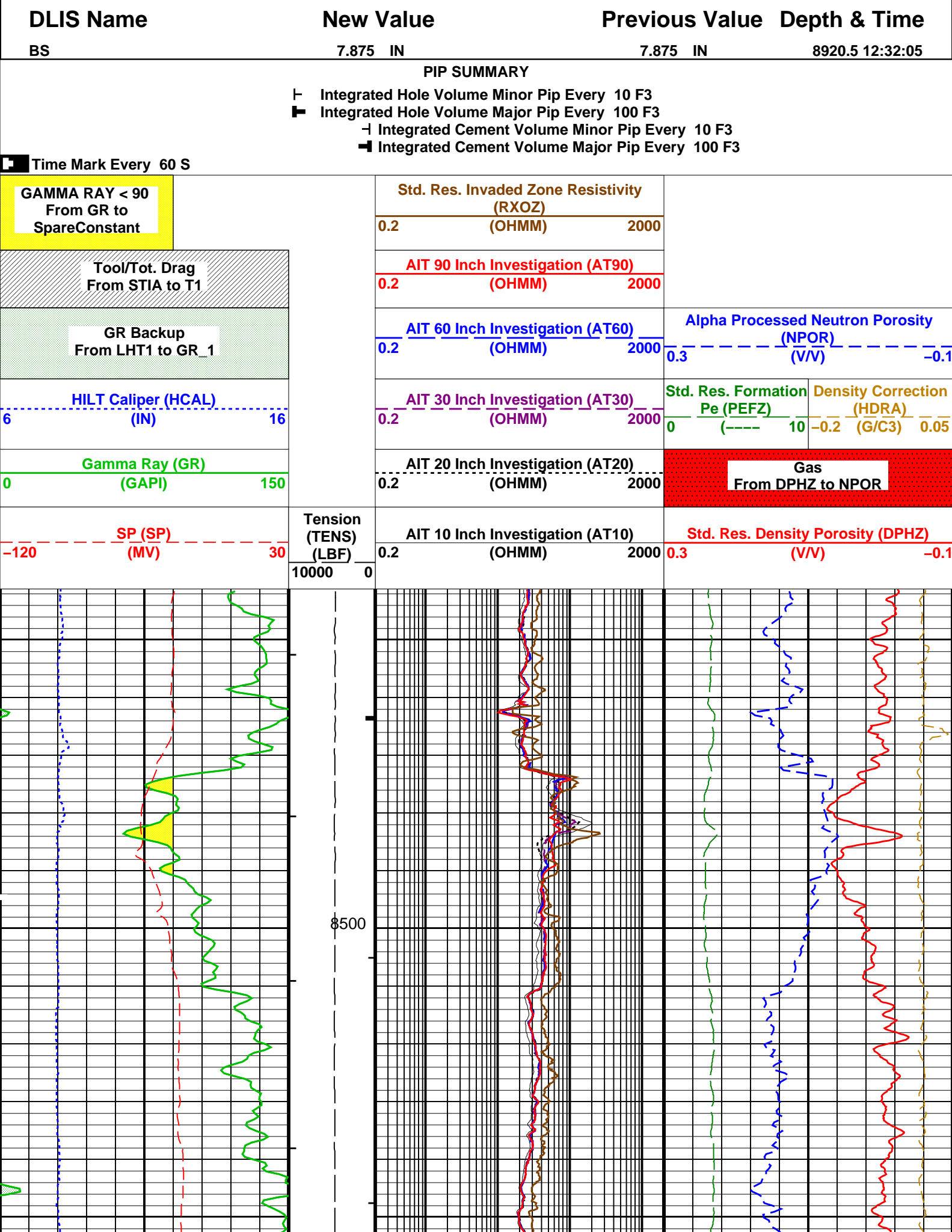
Cement Volume = 137.13 F3 (assuming 4.50 IN casing O.D.)

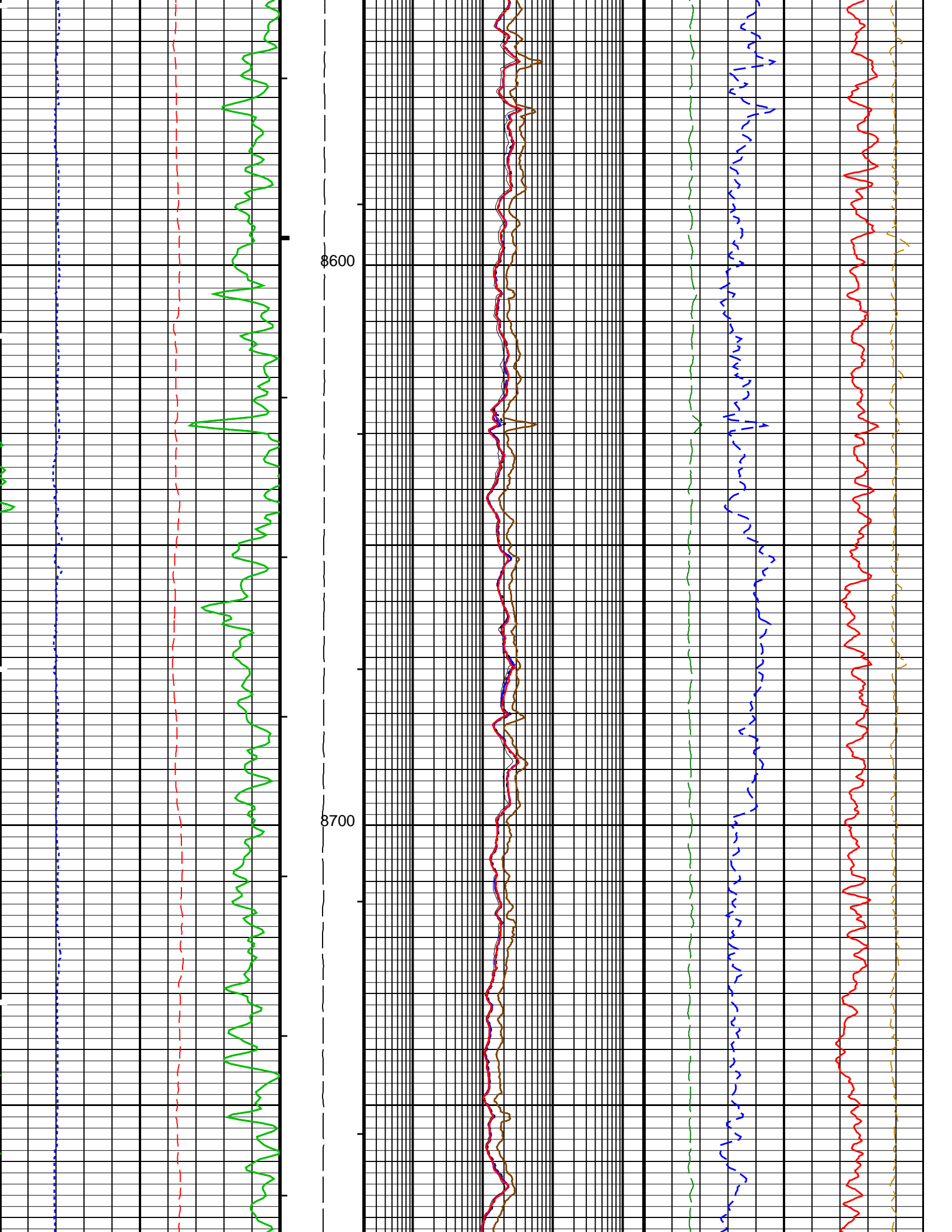
Computed from 8880.0 FT to 8313.0 FT using data channel(s) HCAL

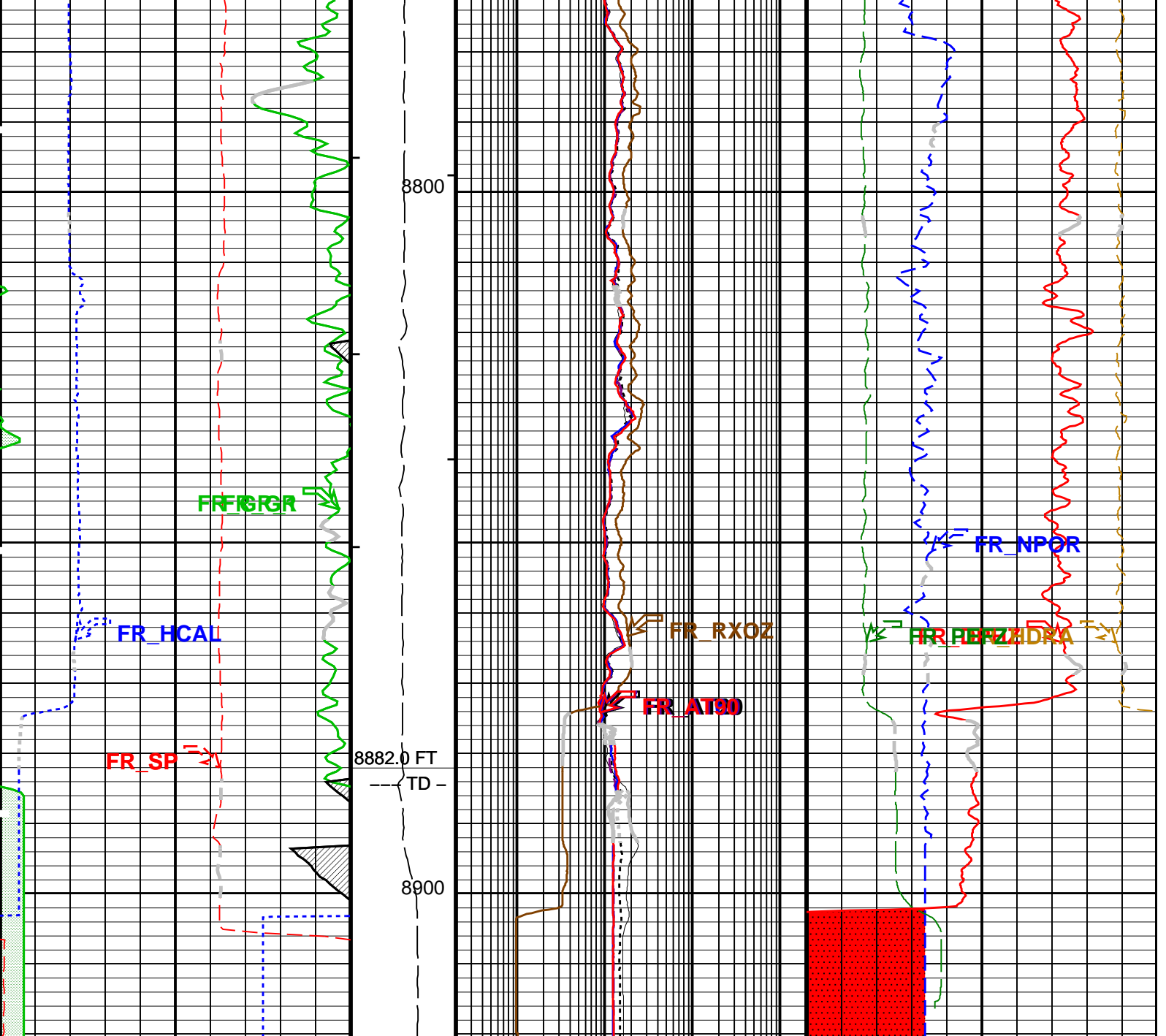
OP System Version: 19C1–222

AIT–M	19C1–222	HILTH–FTB	19C1–222
DTC–H	19C1–222		

Changed Parameter Summary







<div><div>SP (SP) (MV)</div><div>Gamma Ray (GR) (GAPI)</div><div>HILT Caliper (HCAL) (IN)</div><div>GR Backup From LHT1 to GR_1</div><div>Tool/Tot. Drag From STIA to T1</div><div>GAMMA RAY < 90 From GR to SpareConstant</div></div>	<div>Tension (TENS) (LBF)</div> <div>100000</div> <div>0</div>	<div>AIT 10 Inch Investigation (AT10) (OHMM)</div> <div>0.2</div> <div>2000</div>	<div>Std. Res. Density Porosity (DPHZ) (V/V)</div> <div>0.3</div> <div>-0.1</div>
		<div>AIT 20 Inch Investigation (AT20) (OHMM)</div> <div>0.2</div> <div>2000</div>	<div>Gas From DPHZ to NPOR</div>
		<div>AIT 30 Inch Investigation (AT30) (OHMM)</div> <div>0.2</div> <div>2000</div>	<div>Std. Res. Formation Pe (PEFZ) (-----)</div> <div>0</div> <div>10</div> <div>Density Correction (HDRA) (G/C3)</div> <div>-0.2</div> <div>0.05</div>
		<div>AIT 60 Inch Investigation (AT60) (OHMM)</div> <div>0.2</div> <div>2000</div>	<div>Alpha Processed Neutron Porosity (NPOR) (V/V)</div> <div>0.3</div> <div>-0.1</div>
		<div>AIT 90 Inch Investigation (AT90) (OHMM)</div> <div>0.2</div> <div>2000</div>	
		<div>Std. Res. Invaded Zone Resistivity (RXOZ) (OHMM)</div> <div>0.2</div> <div>2000</div>	

PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

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	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	1516	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	1.125	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)	218.1	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	-120	MV
HILTH-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)	218.1	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
MPOF	MCFL Processing Operation Mode	ON	
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	NO	
RWA: Apparent Water Resistivity			
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	

BHS	Borehole Status	OPEN	DEGF
BHT	Bottom Hole Temperature (used in calculations)	218.1	IN
FCD	Future Casing (Outer) Diameter	4.5	IN
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	
HVCS	Integrated Hole Volume Caliper Selection	AUTOMATIC	
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	8880.00	FT
TDL	Total Depth – Logger	8882.00	FT
System and Miscellaneous			
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	500.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	36.00	LB/F
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	49.93	DEGF
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.8138	OHMM
TD	Total Depth	8880	FT

Format: TCOMBO_AIT Vertical Scale: 5" per 100' Graphics File Created: 05-Mar-2013 12:32

OP System Version: 19C1-222

AIT-M	19C1-222	HILTH-FTB	19C1-222
DTC-H	19C1-222		

Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_010PUP	FN:14	PRODUCER	05-Mar-2013 09:51	8920.5 FT	8312.0 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_020PUP	FN:32	PRODUCER	05-Mar-2013 12:32
RTB	AIT_TLD_MCFL_CNL_020PUP	FN:33	PRODUCER	05-Mar-2013 12:32

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CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool – M Wellsite Calibration – Electronics Calibration Check – Thru Cal Mag. & Phase							
Master: 27-Jan-2013 15:17 Before: 4-Mar-2013 17:06							
Thru Cal Magnitude – 0	0	0.6155	0.6157	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.262	1.262	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6247	0.6248	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7063	0.7064	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.321	1.321	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.924	1.925	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.923	1.923	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.379	1.379	N/A	N/A	N/A	V
Thru Cal Phase – 0	0	193.1	192.7	N/A	N/A	N/A	DEG
Thru Cal Phase – 1	0	192.0	191.6	N/A	N/A	N/A	DEG

Thru Cal Phase – 2	0	188.4	188.0	N/A	N/A	N/A	DEG
Thru Cal Phase – 3	0	187.6	187.2	N/A	N/A	N/A	DEG
Thru Cal Phase – 4	0	181.4	180.9	N/A	N/A	N/A	DEG
Thru Cal Phase – 5	0	179.7	179.3	N/A	N/A	N/A	DEG
Thru Cal Phase – 6	0	179.7	179.3	N/A	N/A	N/A	DEG
Thru Cal Phase – 7	0	179.1	178.6	N/A	N/A	N/A	DEG

Array Induction Tool – M Wellsite Calibration – Electronics Calibration Check – Auxiliary

Master: 27-Jan-2013 15:17 Before: 4-Mar-2013 17:06

Array Induction SPA Plus	991.0	991.7	991.7	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	-0.1182	-0.1176	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9170	0.9187	0.9186	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	-0.0001262	-0.0001207	N/A	N/A	N/A	V

Array Induction Tool – M Wellsite Calibration – Test Loop Gain Correction

Master: 27-Jan-2013 15:17

Test Loop Gain Correctio – 0	0	1.022	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 1	0	1.021	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 2	0	1.021	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 3	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 4	0	1.001	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 5	0	0.9915	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 6	0	1.005	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 7	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 0	0	0.6285	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 1	0	0.6961	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 2	0	0.07253	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 3	0	0.1167	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 4	0	0.06253	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 5	0	-0.1463	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 6	0	0.2253	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 7	0	-0.1300	N/A	N/A	N/A	N/A	DEG

Array Induction Tool – M Wellsite Calibration – Sonde Error Correction

Master: 27-Jan-2013 15:17

R Sonde Error Correction – 0	0	-18.53	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	147.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	109.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	62.46	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	24.83	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	15.00	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	9.889	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	-2.202	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	291.3	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	279.7	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	-60.21	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	-1.576	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	-13.10	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	-3.715	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	-6.498	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	-4.038	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool – M Wellsite Calibration – Mud Gain Correction

Master: 27-Jan-2013 15:17

Coarse – Mag, Real, Imag – 0	0	0.9616	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 1	0	0.9617	N/A	N/A	N/A	N/A
Coarse – Mag, Real, Imag – 2	0	0.9617	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 0	0	0.9640	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 1	0	0.9641	N/A	N/A	N/A	N/A
Fine – Mag, Real, Imag – 2	0	0.9641	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Stab Measurement Summary

Before: 4-Mar-2013 17:11

BS Window Ratio	0.7487	N/A	0.7488	N/A	N/A	N/A	
BS Window Sum	24460	N/A	24110	N/A	N/A	N/A	CPS
SS Window Ratio	0.4797	N/A	0.4779	N/A	N/A	N/A	
SS Window Sum	11380	N/A	11330	N/A	N/A	N/A	CPS
LS Window Ratio	0.3009	N/A	0.3023	N/A	N/A	N/A	
LS Window Sum	1233	N/A	1220	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Photo-multiplier High Voltages Calibrations

Before: 4-Mar-2013 17:11

BS PM High Voltage (Command)	1939	N/A	1985	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1870	N/A	1904	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1590	N/A	1608	N/A	N/A	N/A	V

High resolution Integrated Logging Tool–DTS Wellsite Calibration – Crystal Quality Resolutions Calibration

Before: 4-Mar-2013 17:11

BS Crystal Resolution	11.07	N/A	11.20	N/A	N/A	N/A	%
SS Crystal Resolution	10.000	N/A	10.17	N/A	N/A	N/A	%
LS Crystal Resolution	8.878	N/A	8.722	N/A	N/A	N/A	%

High resolution Integrated Logging Tool–DTS Wellsite Calibration – MCFL Calibration							
Before: 4–Mar–2013 17:11							
Raw B0 Resistivity	3875	N/A	3869	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3791	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3810	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool–DTS Wellsite Calibration – HILT Caliper Calibration							
Before: 4–Mar–2013 17:07							
HILT Caliper Zero Measurement	8.000	N/A	8.523	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.71	N/A	N/A	N/A	IN
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Detector Calibration							
Before: 4–Mar–2013 17:05							
Gamma Ray Background	30.00	N/A	31.75	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkgd)	165.0	N/A	167.6	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Zero Measurement							
Master: 5–Jan–2013 17:44 Before: 4–Mar–2013 17:06							
CNTC Background	26.85	26.85	27.87	N/A	N/A	4.028	CPS
CFTC Background	29.82	29.82	28.90	N/A	N/A	4.473	CPS
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Ratio Measurement							
Master: 5–Jan–2013 17:44							
Thermal Near Corr. (Tank)	5800	5491	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2261	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.429	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration							
Before: 5–Mar–2013 8:28							
Z–Axis Acceleration	32.19	N/A	32.02	N/A	N/A	N/A	F/S2
High resolution Integrated Logging Tool–DTS Master Calibration – Inversion results							
Master: 4–Mar–2013 16:08							
Rho Aluminum	2.596	2.601	--	--	--	--	G/C3
Rho Magnesium	1.686	1.686	--	--	--	--	G/C3
Pe Aluminum	2.570	2.616	--	--	--	--	
Pe Magnesium	2.650	2.583	--	--	--	--	
High resolution Integrated Logging Tool–DTS Master Calibration – Deviation Summary							
Master: 4–Mar–2013 16:08							
BS Average Deviation	0	0.2912	--	--	--	--	%
BS Max Deviation	0	0.6675	--	--	--	--	%
SS Average Deviation	0	0.5681	--	--	--	--	%
SS Max Deviation	0	1.360	--	--	--	--	%
LS Average Deviation	0	0.7227	--	--	--	--	%
LS Max Deviation	0	2.250	--	--	--	--	%

The GLS–VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT–B Water Temperature 76.0 DEGF.
Thermal Housing Size 3.375 IN.
NSR–F serial number 0

Array Induction Tool – M / Equipment Identification

Primary Equipment:
Rm/SP Bottom Nose AMRM – A
Array Induction Sonde AMIS – A 155

















Auxiliary Equipment:

Array Induction Tool – M Wellsite Calibration							
Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6155	<div><div></div></div>	0.6100	193.1	<div><div></div></div>	197.0
	Before	0.6157	<div><div></div></div>		192.7	<div><div></div></div>	
	Master	1.262	<div><div></div></div>		192.0	<div><div></div></div>	







1	Before	1.262		1.270	191.6		196.0
2	Master	0.6247		0.6200	188.4		192.0
	Before	0.6248			188.0		
3	Master	0.7063		0.7000	187.6		191.0
	Before	0.7064			187.2		
4	Master	1.321		1.340	181.4		185.0
	Before	1.321			180.9		
5	Master	1.924		1.960	179.7		182.0
	Before	1.925			179.3		
6	Master	1.923		1.960	179.7		181.0
	Before	1.923			179.3		
7	Master	1.379		1.410	179.1		175.0
	Before	1.379			178.6		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 27-Jan-2013 15:17				Before: 4-Mar-2013 17:06			

Array Induction Tool – M Wellsite Calibration							
Electronics Calibration Check – Auxiliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			991.7	Master			-0.1182
Before			991.7	Before			-0.1176
	941.0 (Minimum)	991.0 (Nominal)	1040 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
Phase	Array Induction Temperature Plus V		Value	Phase	Array Induction Temperature Zero V		Value
Master			0.9187	Master			-0.0001262
Before			0.9186	Before			-0.0001207
	0.8710 (Minimum)	0.9170 (Nominal)	0.9630 (Maximum)		-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 27-Jan-2013 15:17				Before: 4-Mar-2013 17:06			

















Array Induction Tool – M Wellsite Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Correction Magnitude V			Value	Test Loop Gain Correction Phase DEG	
0	1.022				0.6285		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.021				0.6961		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.021				0.07253		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.015				0.1167		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	1.001				0.06253		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9915				-0.1463		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.005				0.2253		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.013				-0.1300		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Array Induction Tool – M Wellsite Calibration							
Sonde Error Correction							
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M	
0	-18.53				291.3		
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal) 2250 (Maximum)
1	147.8				279.7		
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal) 625.0 (Maximum)
2	109.8				-60.21		
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal) 350.0 (Maximum)
3	62.46				-1.576		
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		-250.0 (Minimum)	0 (Nominal) 250.0 (Maximum)
4	24.83				-13.10		
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal) 63.00 (Maximum)
5	15.00				-3.715		
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal) 50.00 (Maximum)
6	9.889				-6.498		
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal) 30.00 (Maximum)
7	-2.202				-4.038		
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal) 30.00 (Maximum)

Master: 27-Jan-2013 15:17





Array Induction Tool – M Wellsite Calibration							
Mud Gain Correction							
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag	
0	0.9616				0.9640		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal) 1.200 (Maximum)
1	0.9617				0.9641		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal) 1.200 (Maximum)
2	0.9617				0.9641		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal) 1.200 (Maximum)

Master: 27-Jan-2013 15:17

















Array Induction Tool – M Master Calibration									
Electronics Calibration Check – Thru Cal Mag. & Phase									
Idx	Phase	Value	Thru Cal Magnitude V		Nominal	Value	Thru Cal Phase DEG		Nominal
0	Master	0.6155			0.6100	193.1			197.0
1	Master	1.262			1.270	192.0			196.0
2	Master	0.6247			0.6200	188.4			192.0
3	Master	0.7063			0.7000	187.6			191.0
4	Master	1.321			1.340	181.4			185.0
5	Master	1.924			1.960	179.7			182.0
6	Master	1.923			1.960	179.7			181.0
7	Master	1.379			1.410	179.1			175.0
		60.00 % (Minimum)	(Nominal)		140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)		Nom + 60.00 (Maximum)

Master: 27-Jan-2013 15:17















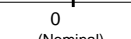

Array Induction Tool – M Master Calibration					
Electronics Calibration Check – Auxiliary					
Phase	Array Induction SDA Plus MV	Value	Phase	Array Induction SDA Zero MV	Value







Phase	Array Induction SPA Plus mV			Value	Phase	Array Induction SPA Zero mV			Value
Master				991.7	Master				-0.1182
	941.0 (Minimum)	991.0 (Nominal)	1040 (Maximum)			-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)	
Phase Array Induction Temperature Plus V				Value	Phase Array Induction Temperature Zero V				Value
Master				0.9187	Master				-0.0001262
	0.8710 (Minimum)	0.9170 (Nominal)	0.9630 (Maximum)			-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)	

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Array Induction Tool – M Master Calibration									
Test Loop Gain Correction									
Idx	Value	Test Loop Gain Correction Magnitude V			Value	Test Loop Gain Correction Phase DEG			
0	1.022				0.6285				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
1	1.021				0.6961				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
2	1.021				0.07253				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
3	1.015				0.1167				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
4	1.001				0.06253				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
5	0.9915				-0.1463				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
6	1.005				0.2253				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
7	1.013				-0.1300				
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	

Master: 27-Jan-2013 15:17

Array Induction Tool – M Master Calibration									
Sonde Error Correction									
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M			
0	-18.53				291.3				
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)	
1	147.8				279.7				
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)	
2	109.8				-60.21				
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)	
3	62.46				-1.576				
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)	
4	24.83				-13.10				
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)	
5	15.00				-3.715				
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)	
6	9.889				-6.498				
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)	
7	-2.202				-4.038				
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)	

Array Induction Tool – M Master Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	0.9616				0.9640			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9617				0.9641			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9617				0.9641			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 27-Jan-2013 15:17

Master: 27-Jan-2013 15:17

High resolution Integrated Logging Tool–DTS / Equipment Identification

Primary Equipment:







HILT high-Resolution Mechanical Sonde
HILT Rxo Gamma-ray Device
HILT Micro Cylindrically Focused Log Dev
GR Logging Source
HILT High Res. Control Cartridge
HILT Gamma-Ray Neutron Sonde–DTS
HGNS Gamma-Ray Device
HGNS Neutron Detector with Alpha Source

HRMS – H
HRGD – H
MCFL – H
GLS – VJ
HRCC – H
HGNS – H
HGR –
HCNT – H





Auxiliary Equipment:

Neutron Calibration Tank
Gamma Source Radioactive
HGNS Housing





NCT – B
GSR – U/Y
HGNH –

High resolution Integrated Logging Tool–DTS Wellsite Calibration									
Stab Measurement Summary									
Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value
Before				0.7488	Before				0.4779
	0.7113 (Minimum)	0.7487 (Nominal)	0.7862 (Maximum)			0.4557 (Minimum)	0.4797 (Nominal)	0.5037 (Maximum)	
Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value
Before				24110	Before				11330
	23240 (Minimum)	24460 (Nominal)	25690 (Maximum)			10810 (Minimum)	11380 (Nominal)	11950 (Maximum)	
Phase	LS Window Ratio			Value	Phase	LS Window Sum CPS			Value
Before				0.3023	Before				1220
	0.2858 (Minimum)	0.3009 (Nominal)	0.3159 (Maximum)			1172 (Minimum)	1233 (Nominal)	1295 (Maximum)	





Before: 4-Mar-2013 17:11

High resolution Integrated Logging Tool–DTS Wellsite Calibration									
Photo-multiplier High Voltages Calibrations									
Phase	BS PM High Voltage (Command) V			Value	Phase	SS PM High Voltage (Command) V			Value
Before				1985	Before				1904
	1839 (Minimum)	1939 (Nominal)	2039 (Maximum)			1770 (Minimum)	1870 (Nominal)	1970 (Maximum)	
Phase	LS PM High Voltage (Command) V			Value	Phase	LS PM High Voltage (Command) V			Value
Before				1608	Before				1608
	1490 (Minimum)	1590 (Nominal)	1690 (Maximum)			1490 (Minimum)	1590 (Nominal)	1690 (Maximum)	



Before: 4-Mar-2013 17:11



High resolution Integrated Logging Tool–DTS Wellsite Calibration									
Crystal Quality Resolutions Calibration									
Phase	BS Crystal Resolution %			Value	Phase	SS Crystal Resolution %			Value
Before				11.20	Before				10.17
	10.07 (Minimum)	11.07 (Nominal)	12.07 (Maximum)			9.000 (Minimum)	10.000 (Nominal)	11.00 (Maximum)	
Phase	LS Crystal Resolution %			Value	Phase	LS Crystal Resolution %			Value
Before				8.722	Before				8.722
	7.878 (Minimum)	8.878 (Nominal)	9.878 (Maximum)			7.878 (Minimum)	8.878 (Nominal)	9.878 (Maximum)	





Before: 4-Mar-2013 17:11




High resolution Integrated Logging Tool–DTS Wellsite Calibration									
MCFL Calibration									
Phase	Raw B0 Resistivity OHMM			Value	Phase	Raw B1 Resistivity OHMM			Value
Before				3869	Before				3791
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	
Phase	Raw B2 Resistivity OHMM			Value	Phase	Raw B2 Resistivity OHMM			Value
Before				3810	Before				3810
	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	


(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)
Before: 4-Mar-2013 17:11								



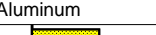

High resolution Integrated Logging Tool-DTS Wellsite Calibration							
HILT Caliper Calibration							
Phase	HILT Caliper Zero Measurement IN		Value	Phase	HILT Caliper Plus Measurement IN		Value
Before			8.523	Before			12.71
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)		9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)
Before: 4-Mar-2013 17:07							

High resolution Integrated Logging Tool-DTS Wellsite Calibration							
Detector Calibration							
Phase	Gamma Ray Background GAPI		Value	Phase	Gamma Ray (Jig – Bkgd) GAPI		Value
Before			31.75	Before			167.6
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)		157.1 (Minimum)	165.0 (Nominal)	206.3 (Maximum)
Before: 4–Mar–2013 17:05							



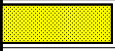




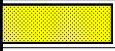
High resolution Integrated Logging Tool–DTS Wellsite Calibration							
Zero Measurement							
Phase	CNTC Background CPS		Value	Phase	CFTC Background CPS		Value
Master			26.85	Master			29.82
Before			27.87	Before			28.90
5.000 (Minimum)			26.85 (Nominal)	40.00 (Maximum)			
5.000 (Minimum)			29.82 (Nominal)	40.00 (Maximum)			
Master: 5-Jan-2013 17:44				Before: 4-Mar-2013 17:06			

High resolution Integrated Logging Tool-DTS Wellsite Calibration									
Ratio Measurement									
Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value	
Master		5491	Master		2261	Master		2.429	
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)
Master: 5-Jan-2013 17:44									

High resolution Integrated Logging Tool-DTS Wellsite Calibration		
Accelerometer Calibration		
Phase	Z-Axis Acceleration F/S2	Value
Before		32.02
	31.53 (Minimum)	32.19 (Nominal)
		32.84 (Maximum)
Before: 5-Mar-2013 8:28		

High resolution Integrated Logging Tool-DTS Master Calibration							
Inversion results							
Phase	Rho Aluminum G/C3		Value	Phase	Rho Magnesium G/C3		Value
Master			2.601	Master			1.686
	2.586 (Minimum)	2.596 (Nominal)	2.606 (Maximum)		1.676 (Minimum)	1.686 (Nominal)	1.696 (Maximum)
Phase	Pe Aluminum		Value	Phase	Pe Magnesium		Value
Master			2.616	Master			2.583
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)		2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)
Master: 4-Mar-2013 16:08							

High resolution Integrated Logging Tool—DTS Master Calibration											
Deviation Summary											
Phase	BS Average Deviation %		Value	Phase	SS Average Deviation %		Value	Phase	LS Average Deviation %		Value
Master	<div><div></div></div>		0.2912	Master	<div><div></div></div>		0.5681	Master	<div><div></div></div>		0.7227
-0.6000 0 0.6000 (Minimum) (Nominal) (Maximum)				-1.000 0 1.000 (Minimum) (Nominal) (Maximum)				-1.500 0 1.500 (Minimum) (Nominal) (Maximum)			
Phase	BS Max Deviation %		Value	Phase	SS Max Deviation %		Value	Phase	LS Max Deviation %		Value
Master	<div><div></div></div>		0.6675	Master	<div><div></div></div>		1.360	Master	<div><div></div></div>		2.250

Master: 			Master: 			Master: 					
-1.600 (Minimum) 0 (Nominal) 1.600 (Maximum)			-2.500 (Minimum) 0 (Nominal) 2.500 (Maximum)			-3.500 (Minimum) 0 (Nominal) 3.500 (Maximum)					
Master: 4-Mar-2013 16:08											
High resolution Integrated Logging Tool-DTS Master Calibration											
Zero Measurement											
Phase	CNTC Background CPS		Value	Phase	CFTC Background CPS		Value				
Master			26.85	Master			29.82				
	5.000 (Minimum)	26.85 (Nominal)	40.00 (Maximum)		5.000 (Minimum)	29.82 (Nominal)	40.00 (Maximum)				
Master: 5-Jan-2013 17:44											
High resolution Integrated Logging Tool-DTS Master Calibration											
Tank Measurement											
Phase	Thermal Near Corr. (Tank) CPS		Value	Phase	Thermal Far Corr. (Tank) CPS		Value	Phase	CNTC/CFTC (Tank)		Value
Master			5491	Master			2261	Master			2.429
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)		1900 (Minimum)	2400 (Nominal)	2900 (Maximum)		2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)
Master: 5-Jan-2013 17:44											
DTS Telemetry Tool / Equipment Identification											
Primary Equipment:											
DTC-H Auxiliary Cartridge						DTCH - A					
DTC-H Telemetry Cartridge						DTCH - A					
Auxiliary Equipment:											
DTCH Telemetry Cartridge Housing						ECH - KC					

Company:	ENCANA OIL & GAS (USA) INC.	Schlumberger
Well:	SHIDELER 19-14D (O19EB)	
Field:	MAMM CREEK	
County:	GARFIELD	
State:	COLORADO	
*** PLATFORM EXPRESS *** COMPENSATED NEUTRON, LITHOLOGY, DENSITY ARRAY INDUCTION, GAMMA RAY, SF		