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Company: **Manzano LLC.**

Well: **Cougar #1**

Field: **Oakdale**

County: **Huerfano**

State: **Colorado**

Platform Express Array Induction Tool

LOCATION		1218' FNL & 1472' FWL		Elev.: K.B. 8043.00 ft G.L. 8031.00 ft D.F. 8042.00 ft	
Permanent Datum:	GROUND LEVEL	Elev.: 8031.00 ft			
Log Measured From:	Kelly Bushing	12.00 ft above Perm. Datum			
Drilling Measured From:	Kelly Bushing				
API Serial No.	05-055-06301-0C	Section	9	Township	29S
Logging Date	25-Oct-2008	Range	69W		

Run Number	1				
Depth Driller	6691 ft				
Schlumberger Depth	6700 ft				
Bottom Log Interval	6690 ft				
Top Log Interval	1209 ft				
Casing Driller Size @ Depth	9.625 in @ 1222 ft				
Using Schlumberger	1209 ft				
Bit Size	8.750 in				
Type Fluid In Hole	Oil Based Mud				
Density	8 lbm/gal	55 s			
Fluid Loss	PH				
Source Of Sample	Flowline				
RM @ Measured Temperature	39.180 ohm.m @ 72 degF				
RMF @ Measured Temperature	29.390 ohm.m @ 72 degF				
RMC @ Measured Temperature	58.770 ohm.m @ 72 degF				
Source RMF	Calculated	Calculated			
RM @ MRT	15.684 @ 190	11.765 @ 190			
Maximum Recorded Temperatures	190 degF				
Circulation Stopped	24-Oct-2008	12:15			
Logger On Bottom	25-Oct-2008	1:36			
Unit Number	7029	Farmingington			
Recorded By	Jake Newhouse				
Witnessed By	Mr. John Worrall/ Mike Hanagan				

MUD	Run 1	Run 2	Run 3
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth			
Using Schlumberger			
Bit Size			
Type Fluid In Hole			
Density			
Fluid Loss			
Source Of Sample			
RM @ Measured Temperature			
RMF @ Measured Temperature			
RMC @ Measured Temperature			
Source RMF			
RM @ MRT			
Maximum Recorded Temperatures			
Circulation Stopped			
Logger On Bottom			
Unit Number			
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING

Date Created: 25-OCT-2008 3:19:59

Depth System Equipment

Depth Measuring Device	Tension Device	Logging Cable
Type: IDW-B Serial Number: 8344 Calibration Date: Calibrator Serial Number: 1 Calibration Cable Type: 7-39P LXS Wheel Correction 1: -1 Wheel Correction 2: -6	Type: CMTD-B/A Serial Number: 2558 Calibration Date: 3-Oct-2008 Calibrator Serial Number: 1098 Number of Calibration Points: 9 Calibration RMS: 16 Calibration Peak Error: 30	Type: 7-39P LXS Serial Number: 7005 Length: 14000 FT <hr/> Conveyance Method: Wireline Rig Type: LAND

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	152.00 FT
Rig Up Length At Bottom:	150.00 FT
Rig Up Length Correction:	2.00 FT
Stretch Correction:	7.00 FT
Tool Zero Check At Surface:	0.30 FT

Depth Control Remarks

1. Schlumberger Depth Policies Followed
- 2.
- 3.
- 4.
- 5.
- 6.

DISCLAIMER






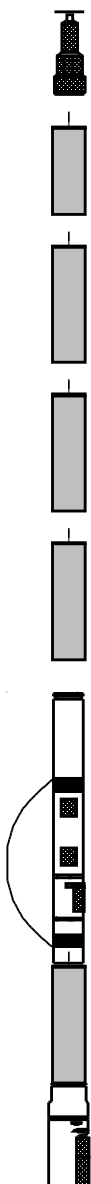
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

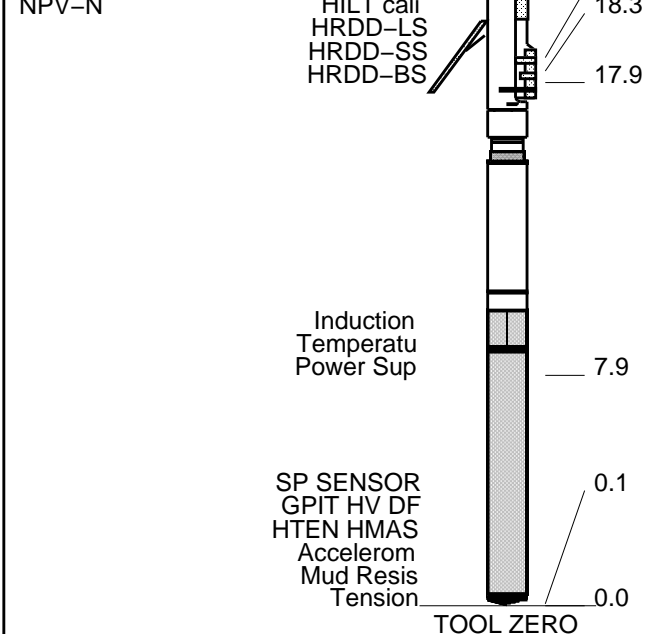
OTHER SERVICES1 OS1: Cores OS2: OBMI OS3: XPT OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
------------------------------------------------------------------------	---------------------------------------------------------

REMARKS: RUN NUMBER 1 ToolString Ran as per Toolsketch Log Processed on Sandstone Matrix with 2.65 Matrix Density Cement Volume Calculated with a 7" Future Casing Standoff Correction Used For Neutron	REMARKS: RUN NUMBER 2
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------

RUN 1			RUN 2		
SERVICE ORDER #:		AQF5-00047	SERVICE ORDER #:		
PROGRAM VERSION:		16C0-147	PROGRAM VERSION:		
FLUID LEVEL:		0 ft	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1		RUN 2	
SURFACE EQUIPMENT			
WITM (DTS)-A			
GSR-U/Y NCT-B CNB-AB NCS-VB			
DOWNHOLE EQUIPMENT			
LEH-QT LEH-QT			55.6
DTC-H ECH-KC DTCH0-A DTCH1-A	CTEM TelStatus ToolStatu		51.7 52.6 49.6
AH-XXX AH-XXX			49.6
GPIT-C GPIC-C GPIH-B			45.6
AH-XXX AH-XXX			41.6
HILTB-FTB HGNSD-B HMCA HGNS NLS-KL NSR-F 5070 HACCZ 209 HCNT HGR HRCC-B HRMS-B HRGD-B GLS-VJ 1923 MCFL Device HILT Nucl. LS 42767 HILT Nucl. SS 42767 HILT Nucl. BS 42767 AIT-H AHIS-BA 159 AHRM-A BOW-SPR	HGNS HTEM HMCA HGNS Gamm HGNS Neut HGNS Neut HGNS sens HRCC cart MCFL		37.6 36.9 37.6 31.1 30.6 28.2 24.2 18.8



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



Main Pass 2" = 100'

MAXIS Field Log

Company: Manzano LLC. Well: Cougar #1

Input DLIS Files

DEFAULT SPLICE_AIT_TLD_MCFL_016 FN:1 PRODUCER 25-Oct-2008 03:35 6720.0 FT 56.7 FT

Output DLIS Files

DEFAULT AIT_TLD_MCFL_CNL_017PUP FN:15 PRODUCER 25-Oct-2008 03:39

OP System Version: 16C0-147
MCM

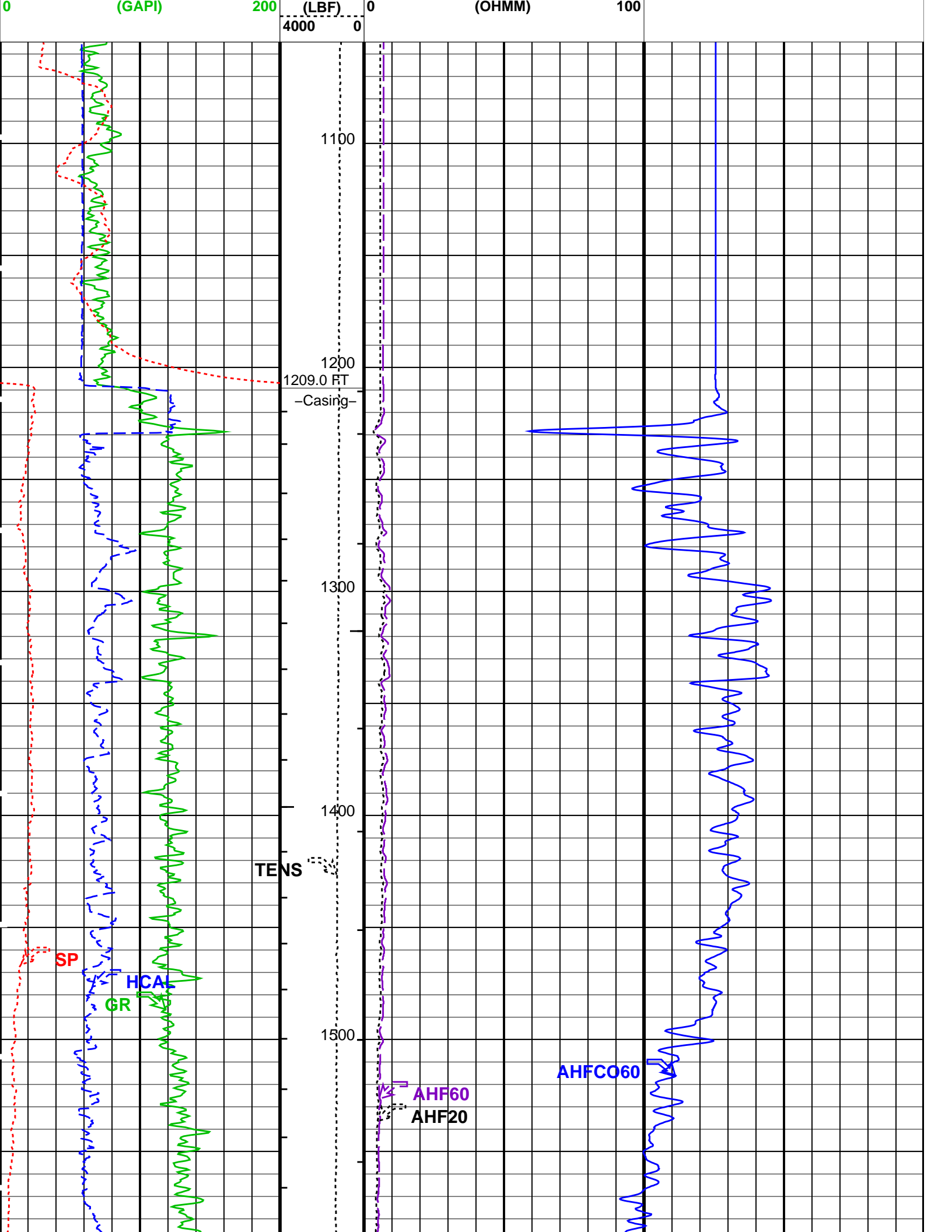
HILTB-FTB SRPC-3624-Q2_2008_OP16 GPIT-C SRPC-3624-Q2_2008_OP16
DTC-H 16C0-147

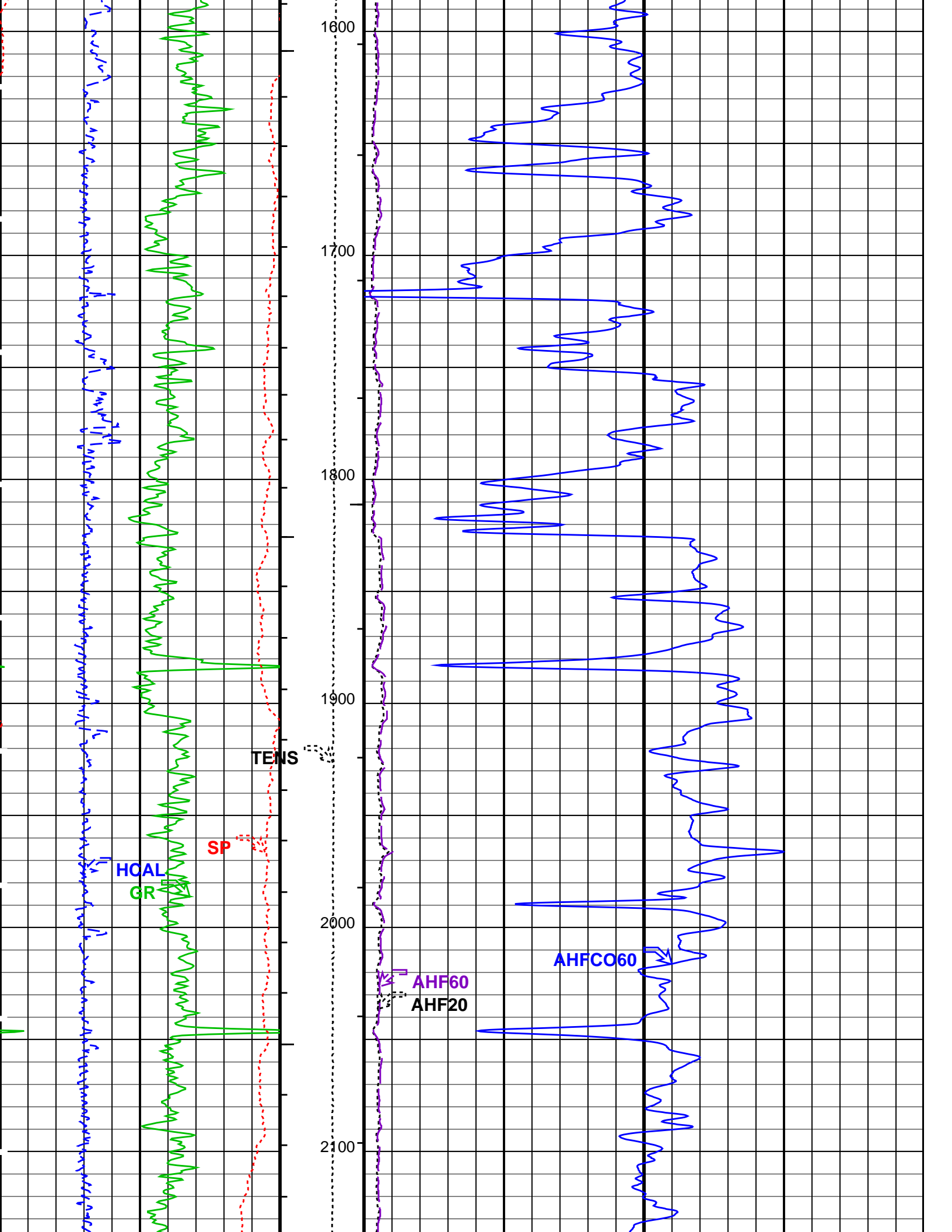
PIP SUMMARY

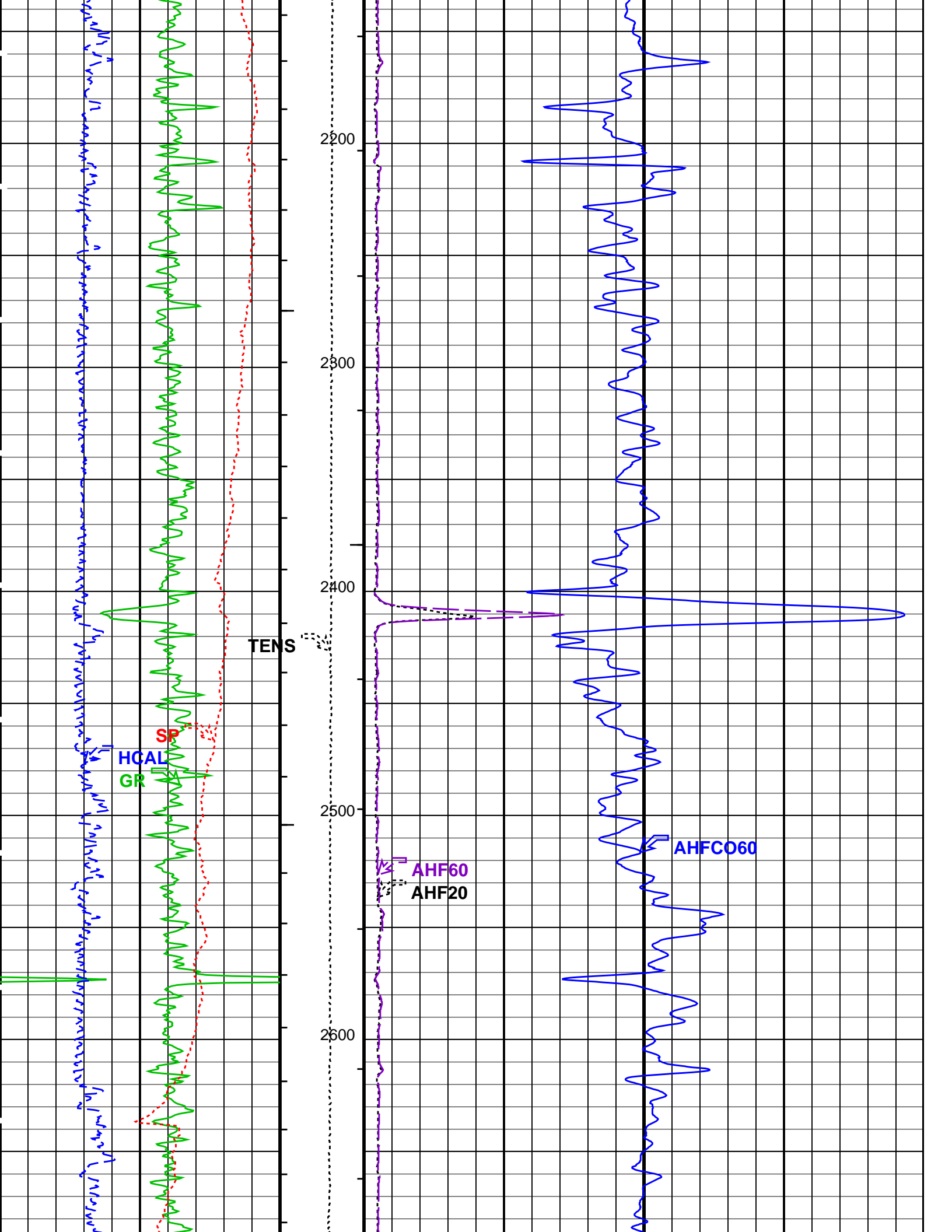
- ┆ Integrated Hole Volume Minor Pip Every 10 F3
- ┆ Integrated Hole Volume Major Pip Every 100 F3
 - ┆ Integrated Cement Volume Minor Pip Every 10 F3
 - ┆ Integrated Cement Volume Major Pip Every 100 F3

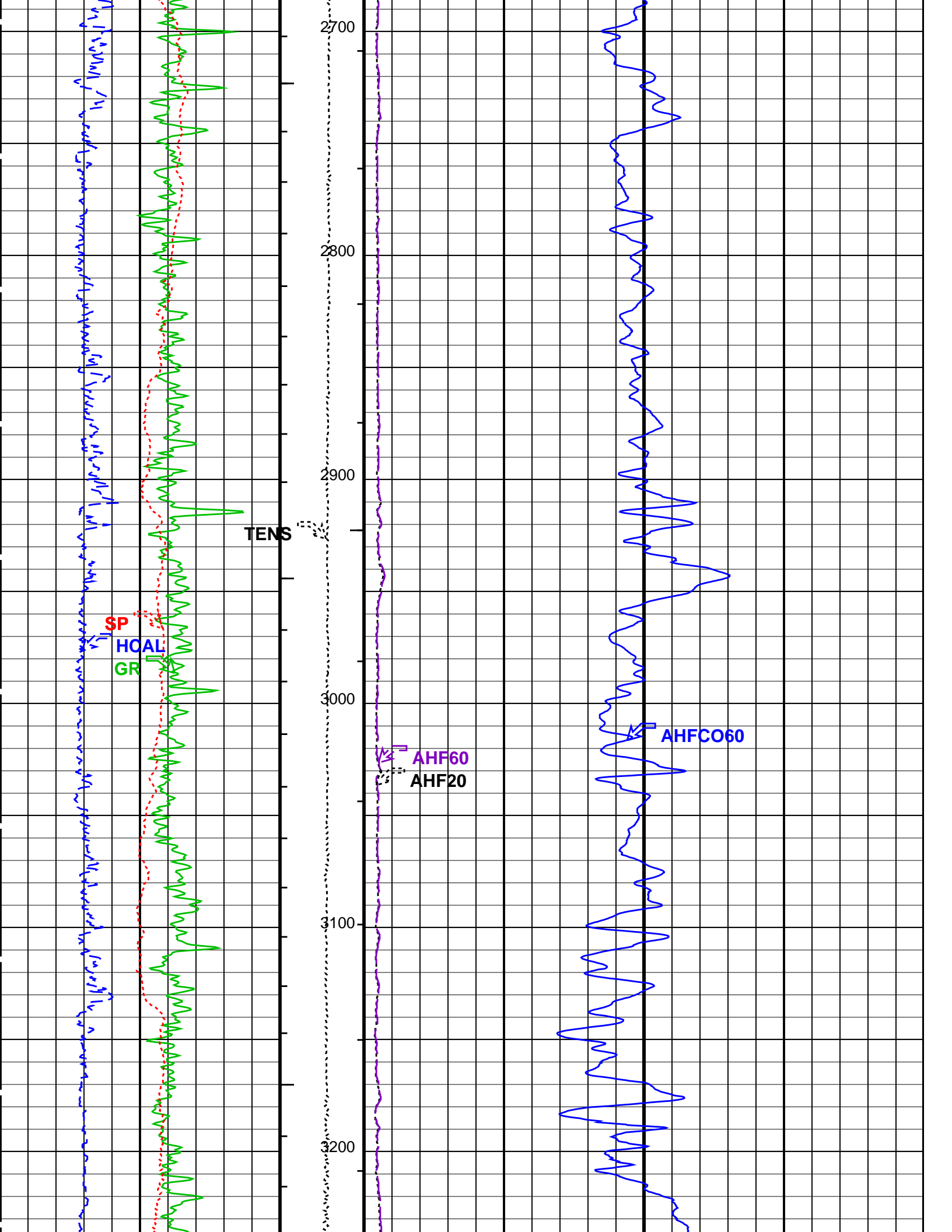
Time Mark Every 60 S

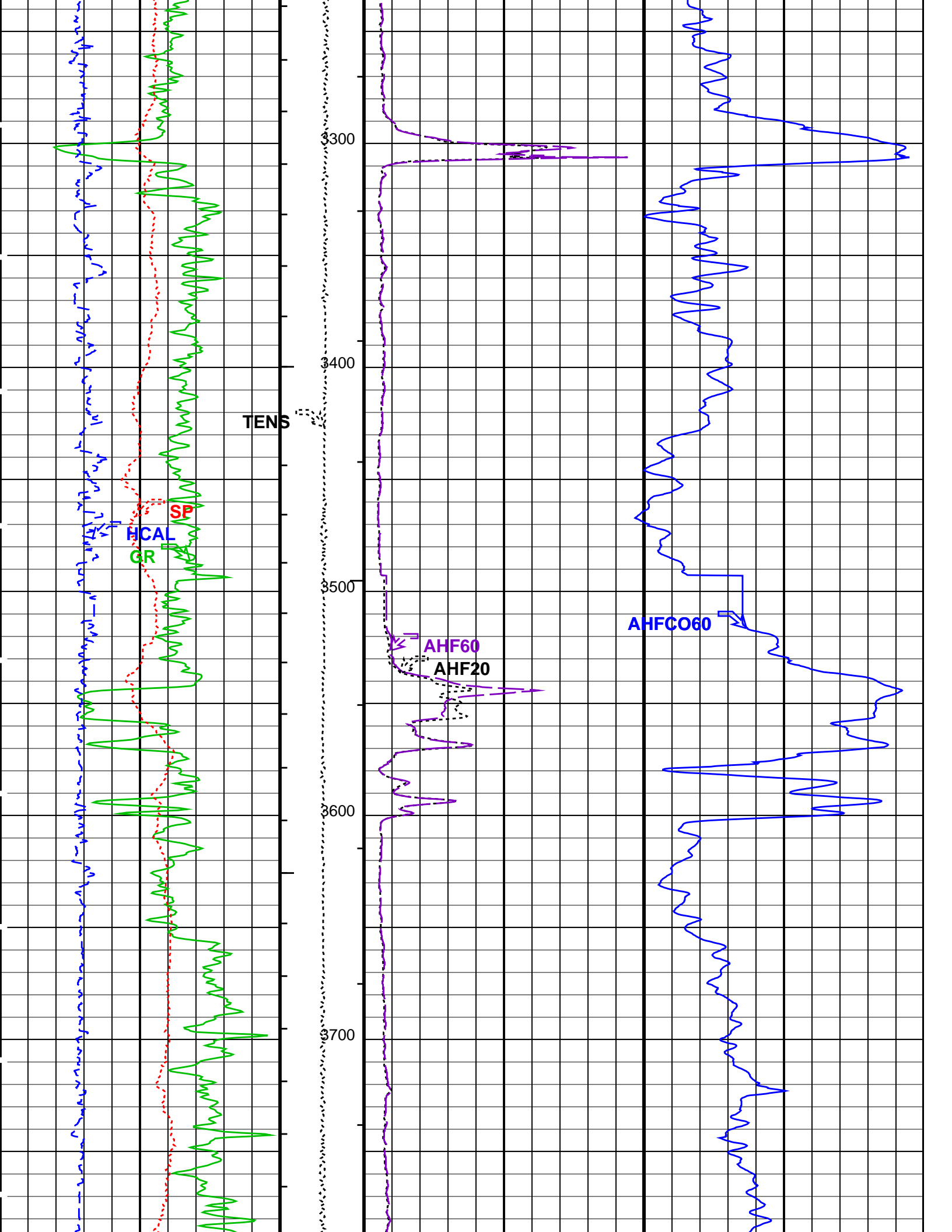
SP (SP) (MV)	40	AIT-H 60 Inch Investigation Conductivity (AHFCO60)	0
-160	400	(MM/M)	0
HILT Caliper (HCAL) (IN)	16	AIT-H 60 Inch Investigation (AHF60)	100
6	0	(OHMM)	100
Gamma Ray (GR)	Tension (TENS)	AIT-H 20 Inch Investigation (AHF20)	

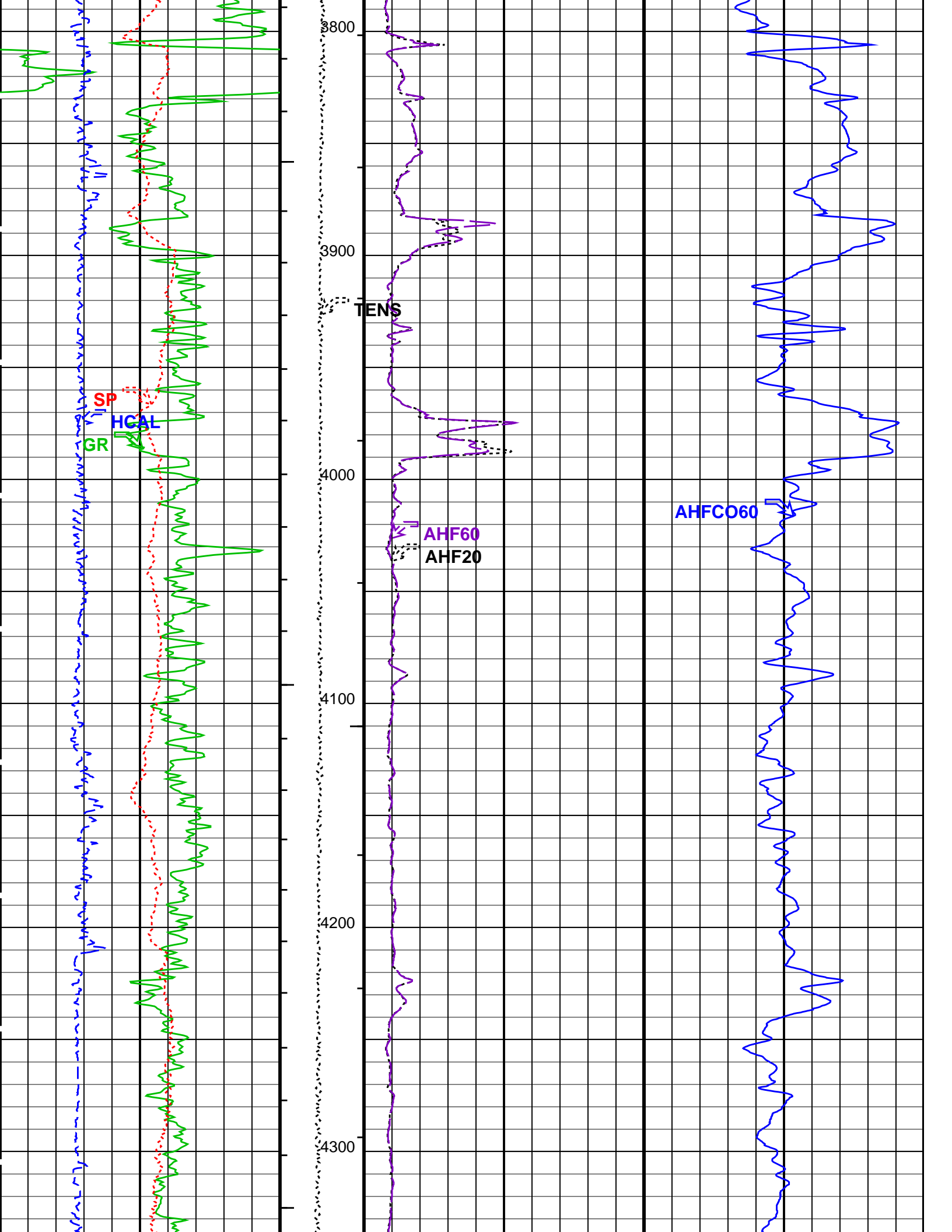


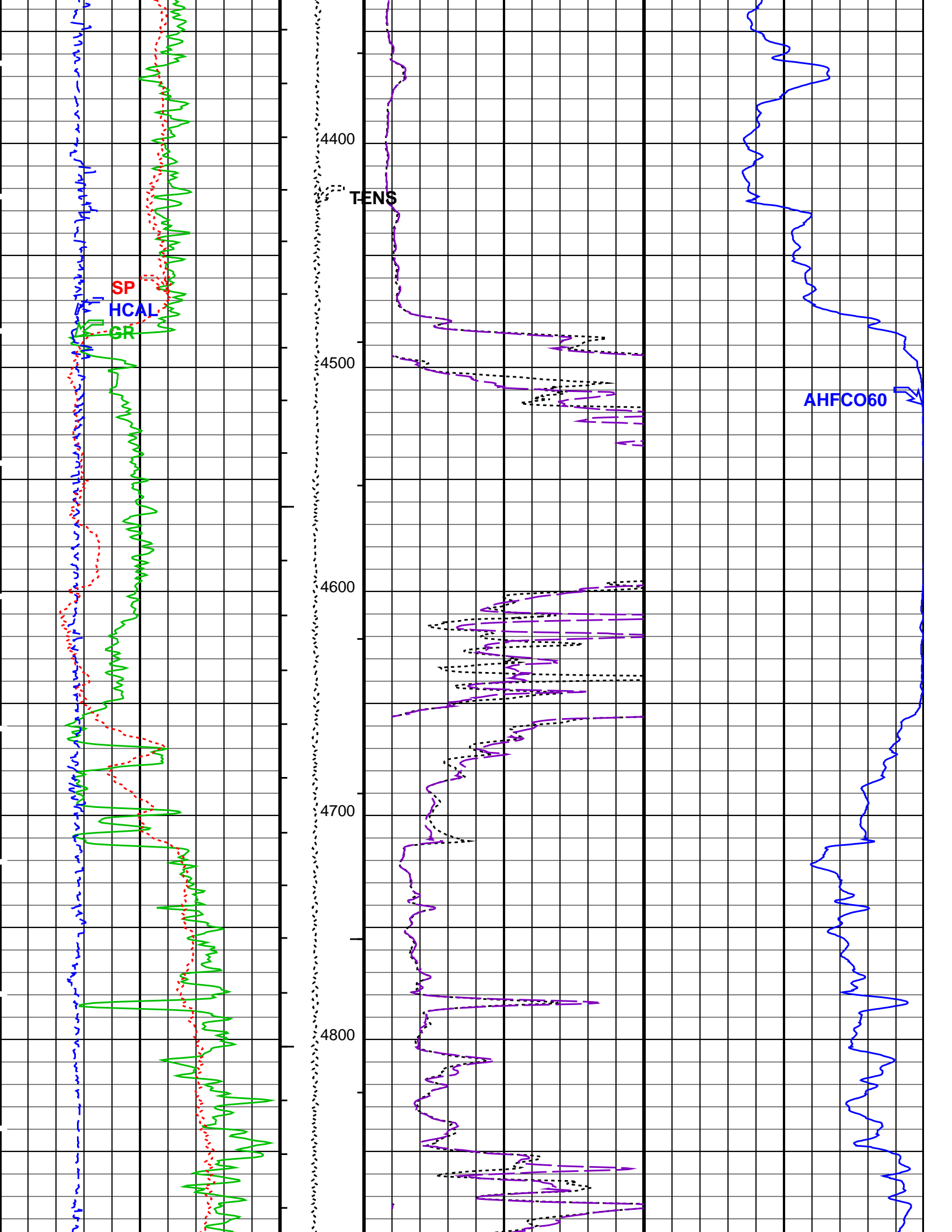


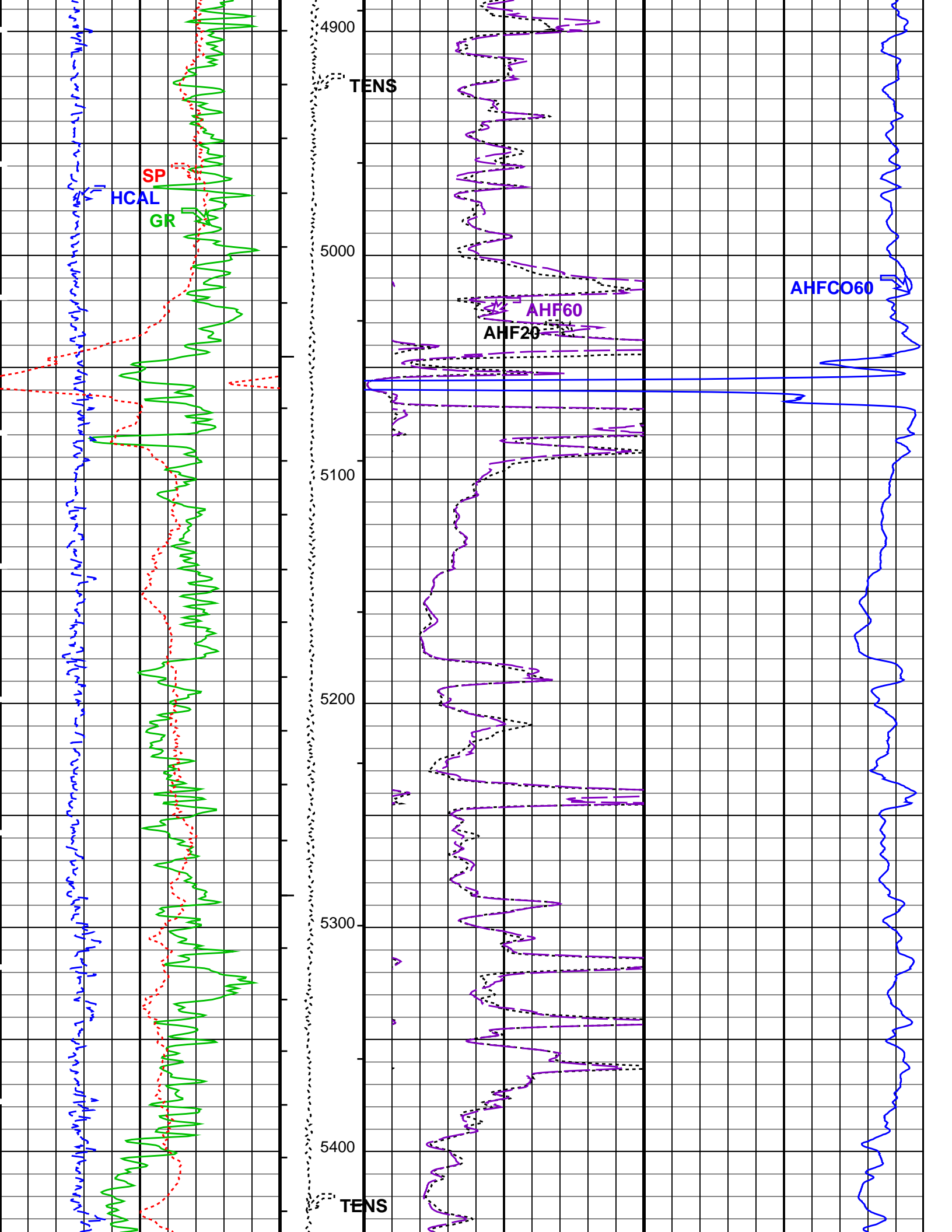


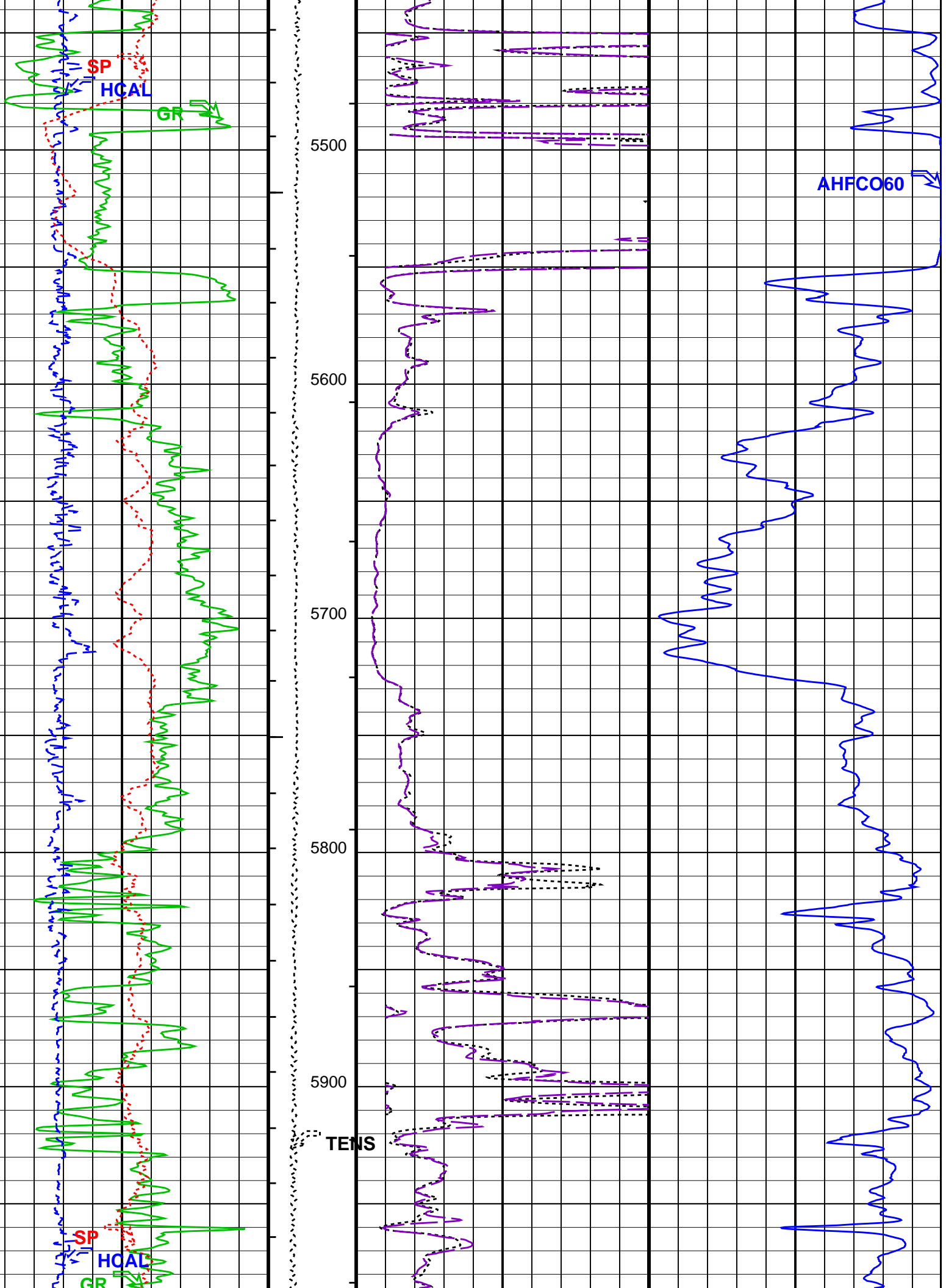


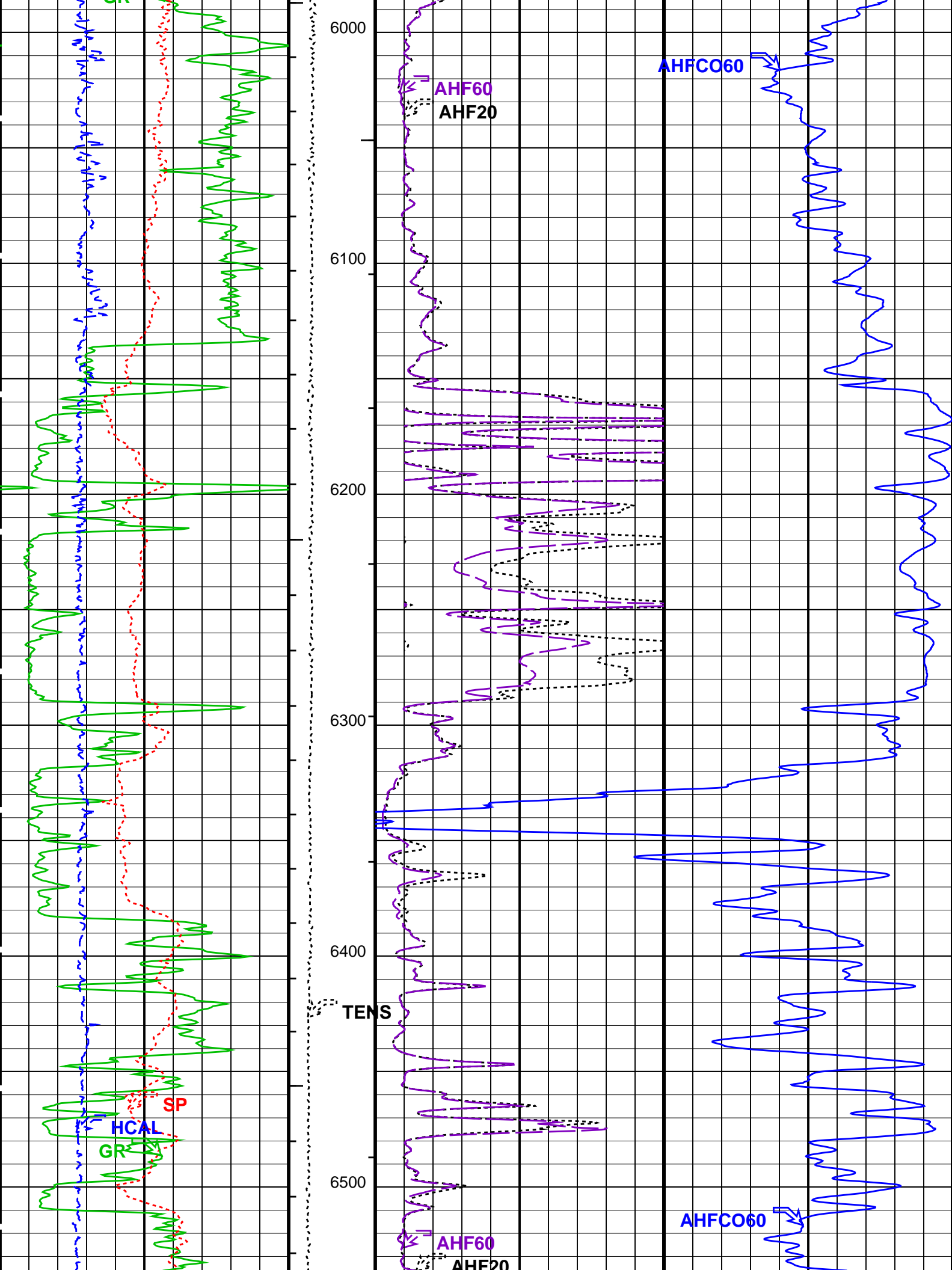


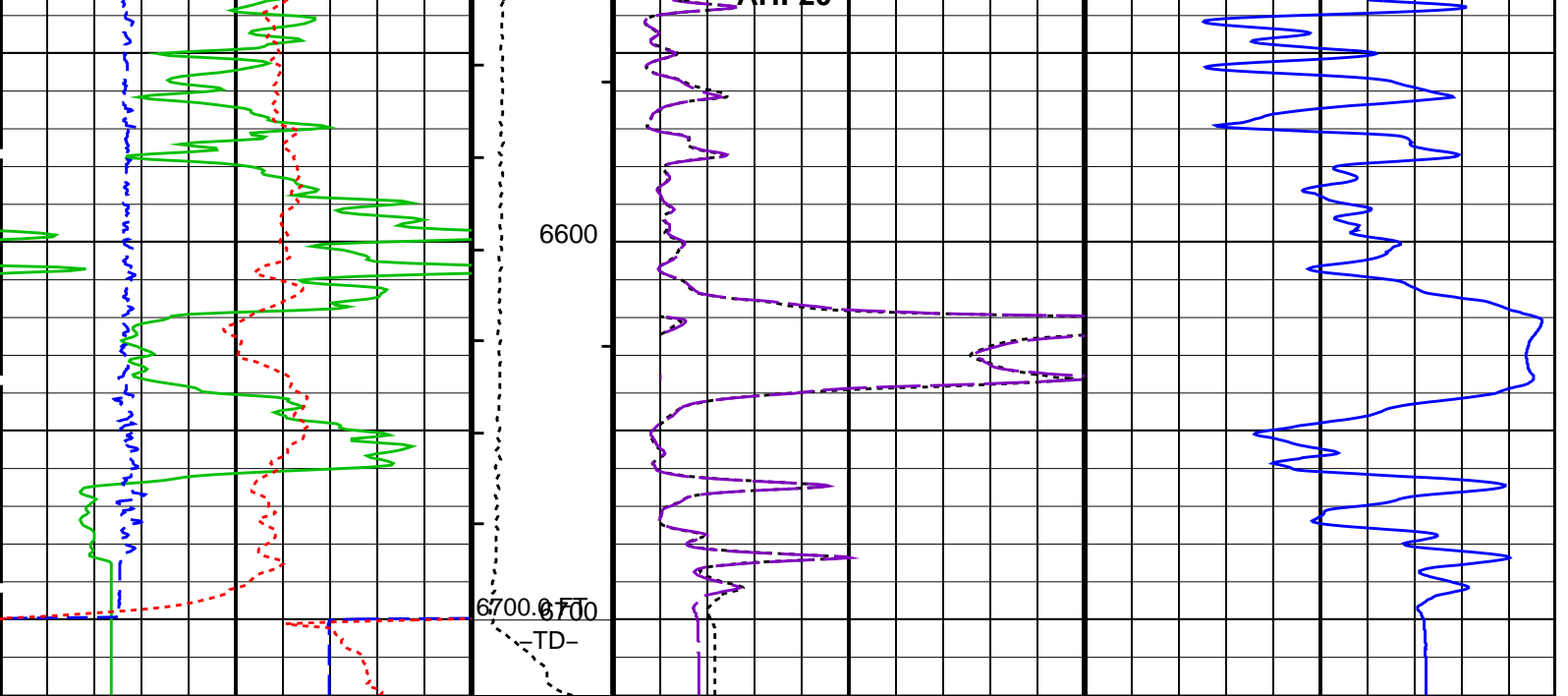












Gamma Ray (GR) (GAPI)	Tension (TENS) (LBF)	AIT-H 20 Inch Investigation (AHF20) (OHMM)
0 200	4000 0	0 100
HILT Caliper (HCAL) (IN)		AIT-H 60 Inch Investigation (AHF60) (OHMM)
6 16		0 100
SP (SP) (MV)		AIT-H 60 Inch Investigation Conductivity (AHFCO60) (MM/M)
-160 40		400 0

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

AIT-H Answer Product Processing Summary. Data taken with Tool # 159 (AHTNO)
 ...Acquired data from HILT/HAIT

***** Borehole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)
 Tool is run in ECCENTERED mode with a tool stand-off of 0.50 IN. Bit Size is 8.75 IN.

***** Input Selections to AIT-H Answer Product Processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): HTEM Porosity (FPHI): DPHZ

***** Other Parameters used by AIT-H Answer Product Processing *****

Form Factor Exponent (FEXP) 2.000 Form Factor Numerator (FNUM) 1.000
 Mud Filtrate Sample Resistivity (RMFS) 29.390 OHMM Mud Filtrate Sample Temperature (MFST) 72.000 DEGF
 Resistivity Connate Water (RW) 1.000 OHMM

***** AIT-H Answer Product Processing Control Parameters *****

Playback Mode: NORMAL

Parameters

DLIS Name	Description	Value
	HILTB-FTB: High resolution Integrated Logging Tool-DTS	
AHAPL	Array Induction Answer Product Level(Depth Log/View only)	2_BholeCorr_BasicLogs
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff
AHBHV	Array Induction Borehole Correction Code Version Number	900
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four
AHBLV	Array Induction Basic Logs Code Version Number	223

AHCDE	Array Induction Casing Detection Enable	Yes	
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
AHDITM	Array Induction Desired Tool Mode	0x00_Log_000	
AHEBC	Array Induction Enable Borehole Correction	Yes	
AHEBL	Array Induction Enable Basic Logs	Yes	
AHERP	Array Induction Enable Radial Processing	Yes	
AHETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AHIGS	Array Induction Select Akima Interpolation Gating	On	
AHLNV	Array Induction Log Not Valid Flag	Log_Valid-No_Default_Parameters	
AHMRD	Array Induction Mud Resistivity Calibration Depth	0	FT
AHMRF	Array Induction Mud Resistivity Factor	1	
AHORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
AHRFV	Array Induction Radial Profiling Code Version Number	701	
AHRPM	Array Induction Radial Processing Mode	1_Two	
AHRPV	Array Induction Radial Parametrization Code Version Number	232	
AHSTA	Array Induction Tool Standoff	0.5	IN
AHTNO	Array Induction Tool Serial Number	159	
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
AHTSE	Array Induction Temperature Selection (Sonde Error Correction)	Internal	
AHTTY	Array Induction Tool Type (of acquired data)	HAIT	
AHULV	Array Induction User Level Control	Normal	
ARTS	AIT Rt Selection (for ALLRES computation)	AITH_TwoResA90	
BHFL	Borehole Fluid Type	OIL	
BHFL_TLD	HILT Nuclear Mud Base	OIL	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	195	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	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HACPP	Accelerometer PROM Presence	PRESENT_DOWNHOLE	
HART	Accelerometer Reference Temperature	68	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	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.71	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	YES	
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	
RTCO	RTCO - Rt Invasion Correction	YES	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	72	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	YES	
SPNV	SP Next Value	0	MV
	GPIT-C: General Purpose Inclinator		
ACPP	Accelerometer PROM Presence	PRESENT	

AFMO	Accelerometer Filtering Mode	MOVING_AVERAGE	
ART	Accelerometer Reference Temperature	68	DEGF
GLM	GPIT Logging Mode	DIPM	
ICMO	Inclinometry Computation Mode	AUTOMATIC_SELECTION	
MAPP	Magnetometer PROM Presence	PRESENT	
MDEC	Magnetic Field Declination	9.17852	DEG
MRTE	Magneto Reference Temperature	69.8	DEGF
TEMS	GPIT Temperature Sensor Used	BOTH	
U-GPOF	Playback OLD VERSION GPIT FILE (BEFORE OP14 + SRPC-3098-FEB_2006_C) ?	NO	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
FCD	Future Casing (Outer) Diameter	7	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	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	72	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth - Driller	6691.00	FT
TDL	Total Depth - Logger	6700.00	FT
System and Miscellaneous			
ALTDCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	10000.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	36.00	LB/F
DFD	Drilling Fluid Density	8.00	LB/G
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	72.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	29.3900	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	6700	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: AIT_2 Vertical Scale: 2" per 100' Graphics File Created: 25-Oct-2008 03:39

OP System Version: 16C0-147
MCM

HILTB-FTB	SRPC-3624-Q2_2008_OP16	GPIT-C	SRPC-3624-Q2_2008_OP16
DTC-H	16C0-147		

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_016	FN:1	PRODUCER	25-Oct-2008 03:35	6720.0 FT	56.7 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_017PUP	FN:15	PRODUCER	25-Oct-2008 03:39		
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Main Pass 5" = 100'

MAXIS Field Log

Output DLIS Files

OP System Version: 16C0-147

MCM

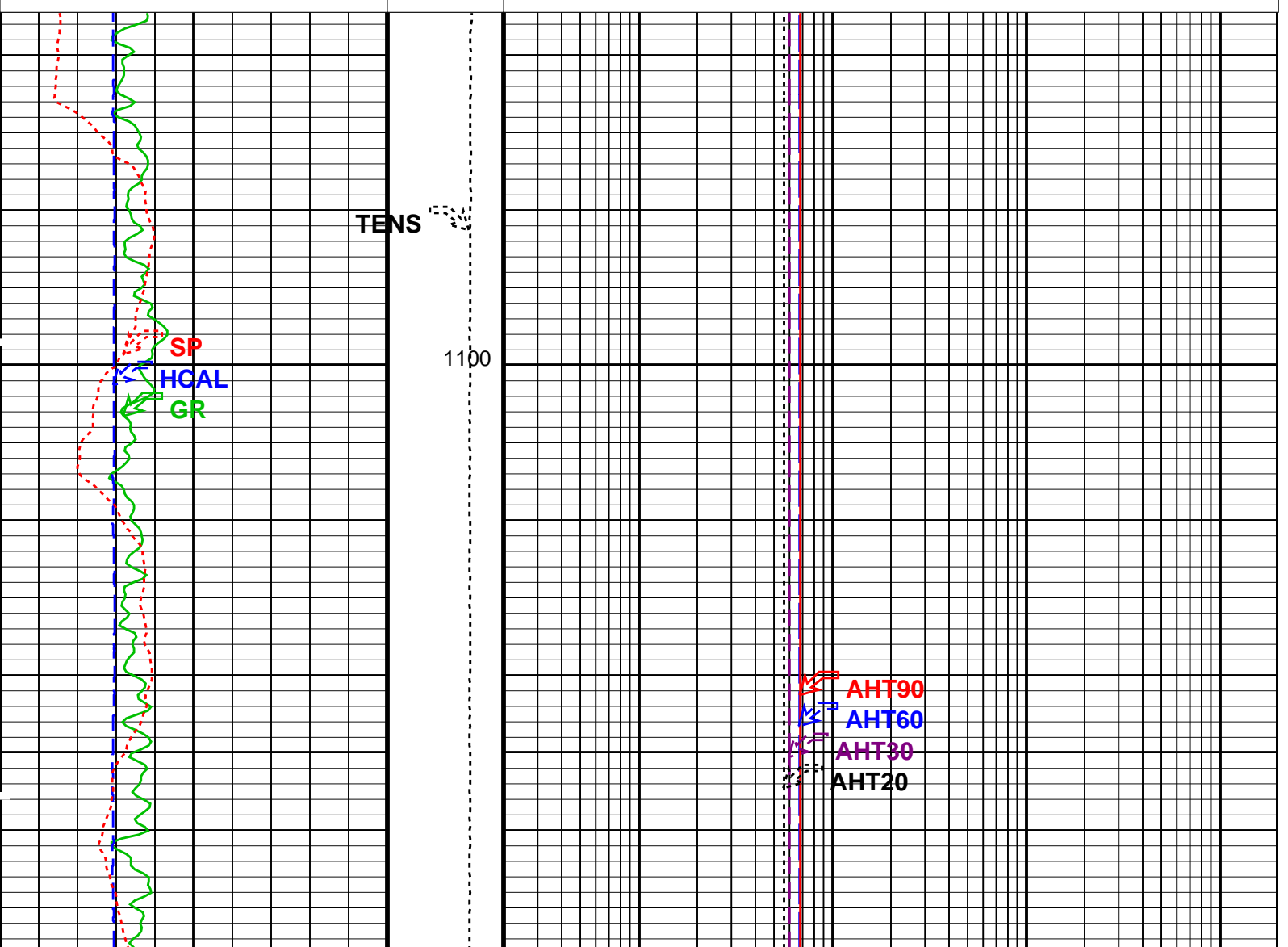
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 DTC-H 16C0-147

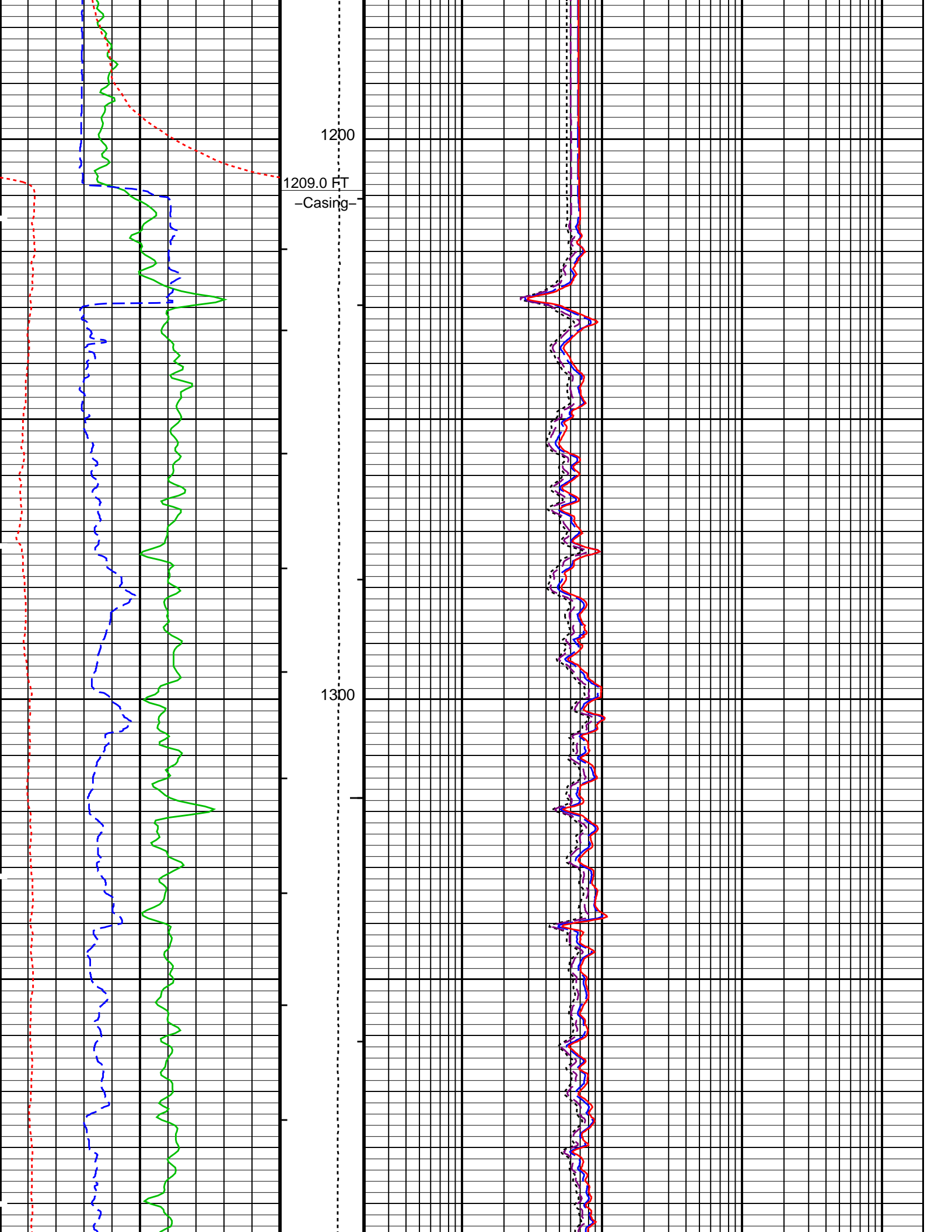
PIP SUMMARY

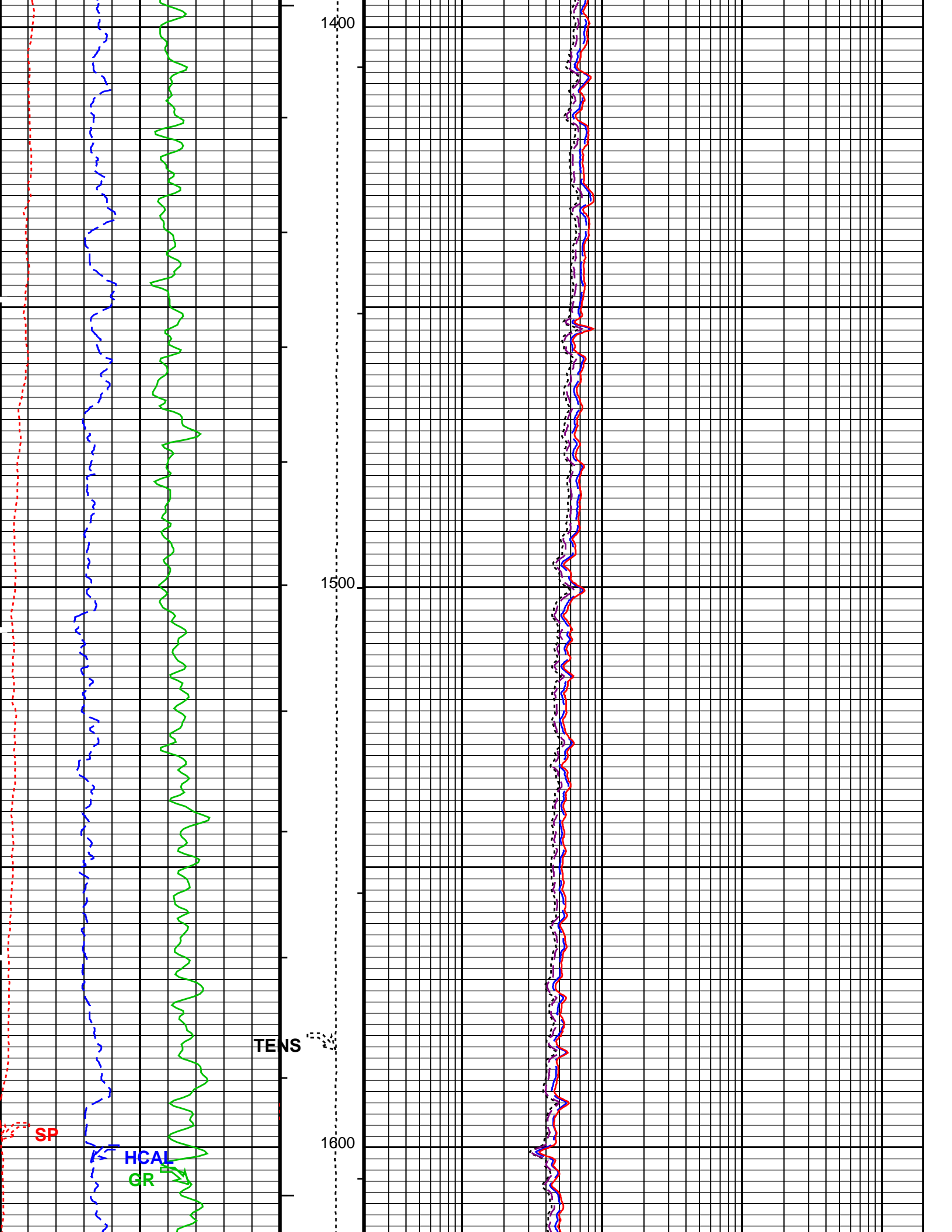
- ┆ Integrated Hole Volume Minor Pip Every 10 F3
- ┆ Integrated Hole Volume Major Pip Every 100 F3
 - ┆ Integrated Cement Volume Minor Pip Every 10 F3
 - ┆ Integrated Cement Volume Major Pip Every 100 F3

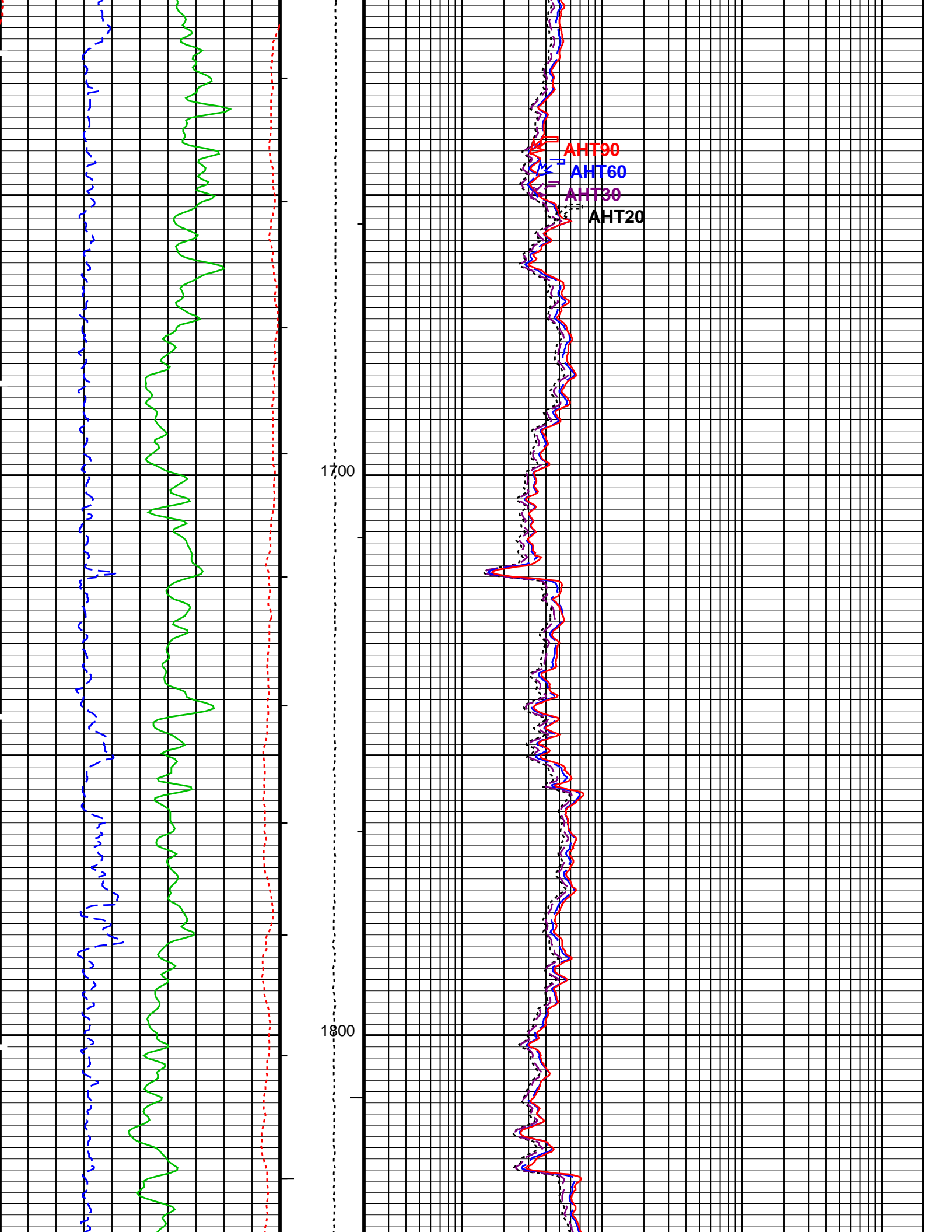
Time Mark Every 60 S

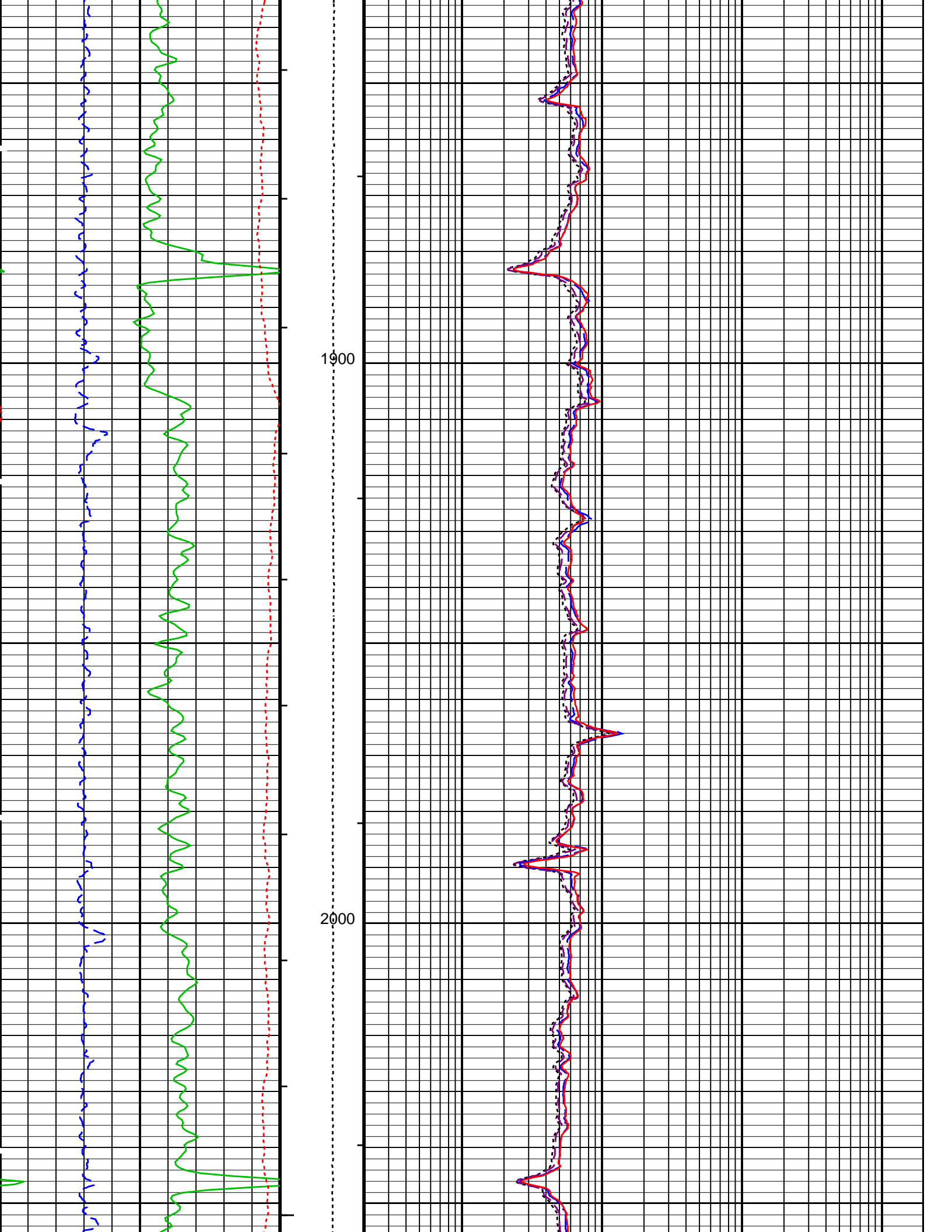
		AIT-H 90 Inch Investigation (AHT90) 0.2 (OHMM) 2000
SP (SP) (MV) -160 40		AIT-H 60 Inch Investigation (AHT60) 0.2 (OHMM) 2000
HILT Caliper (HCAL) (IN) 6 16		AIT-H 30 Inch Investigation (AHT30) 0.2 (OHMM) 2000
Gamma Ray (GR) (GAPI) 0 200	Tension (TENS) (LBF) 4000 0	AIT-H 20 Inch Investigation (AHT20) 0.2 (OHMM) 2000

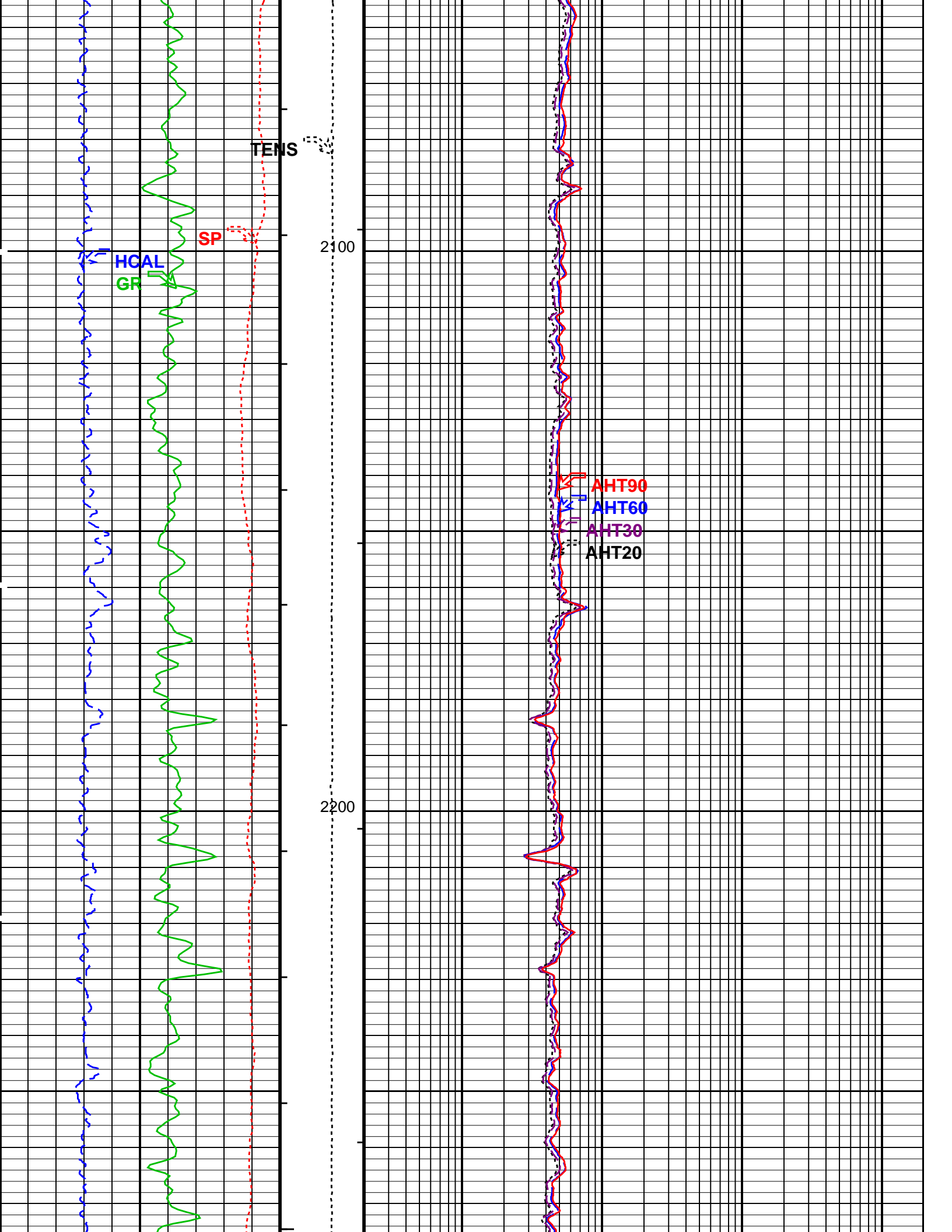


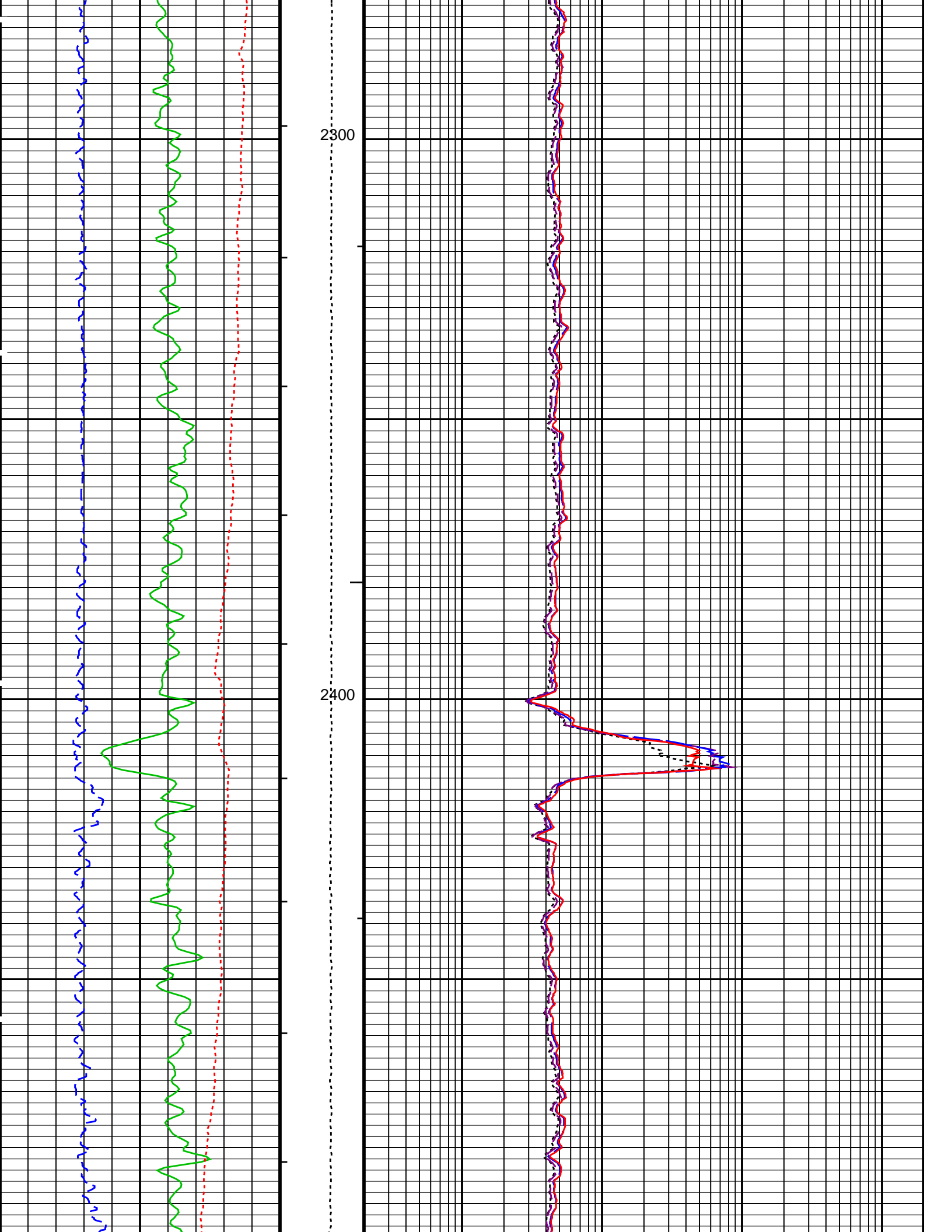


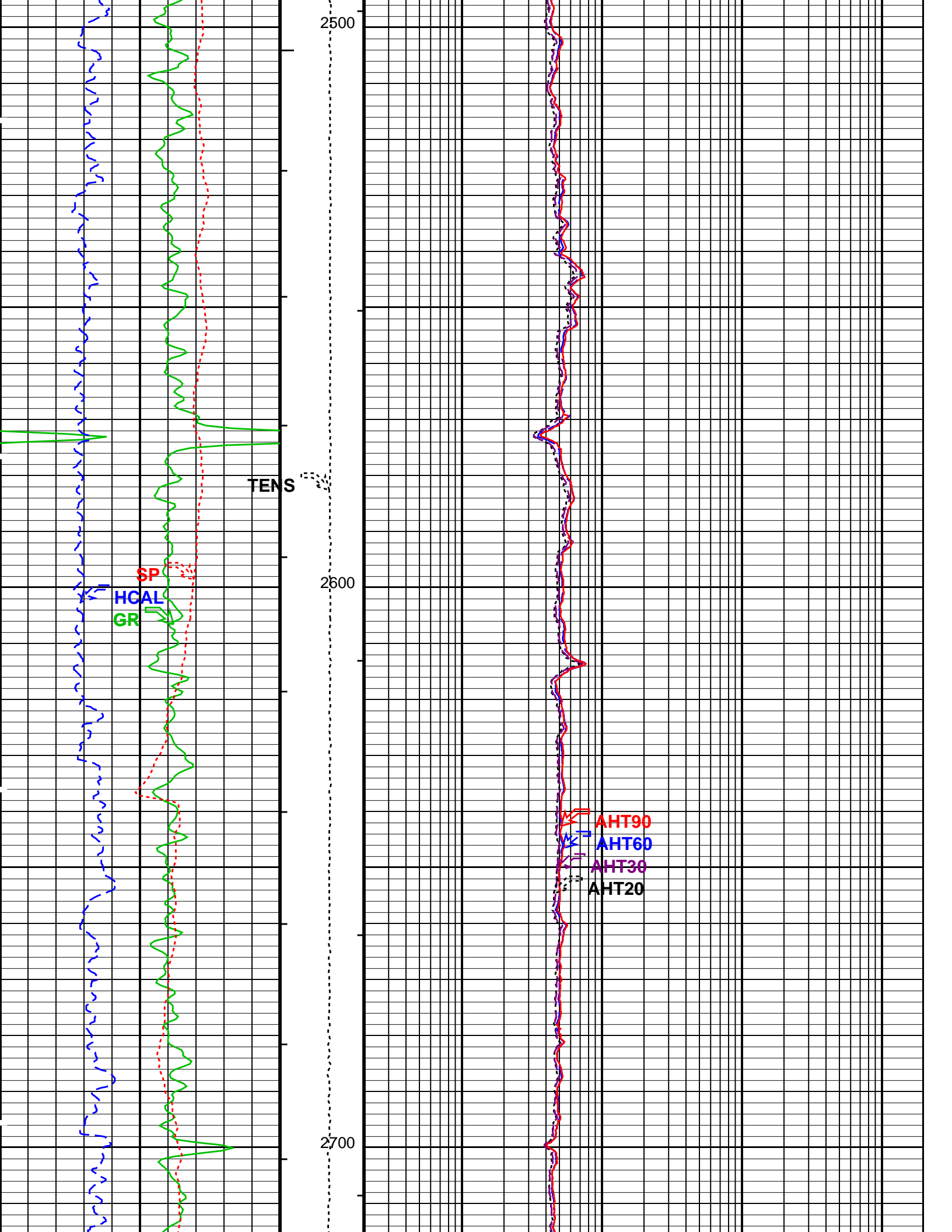


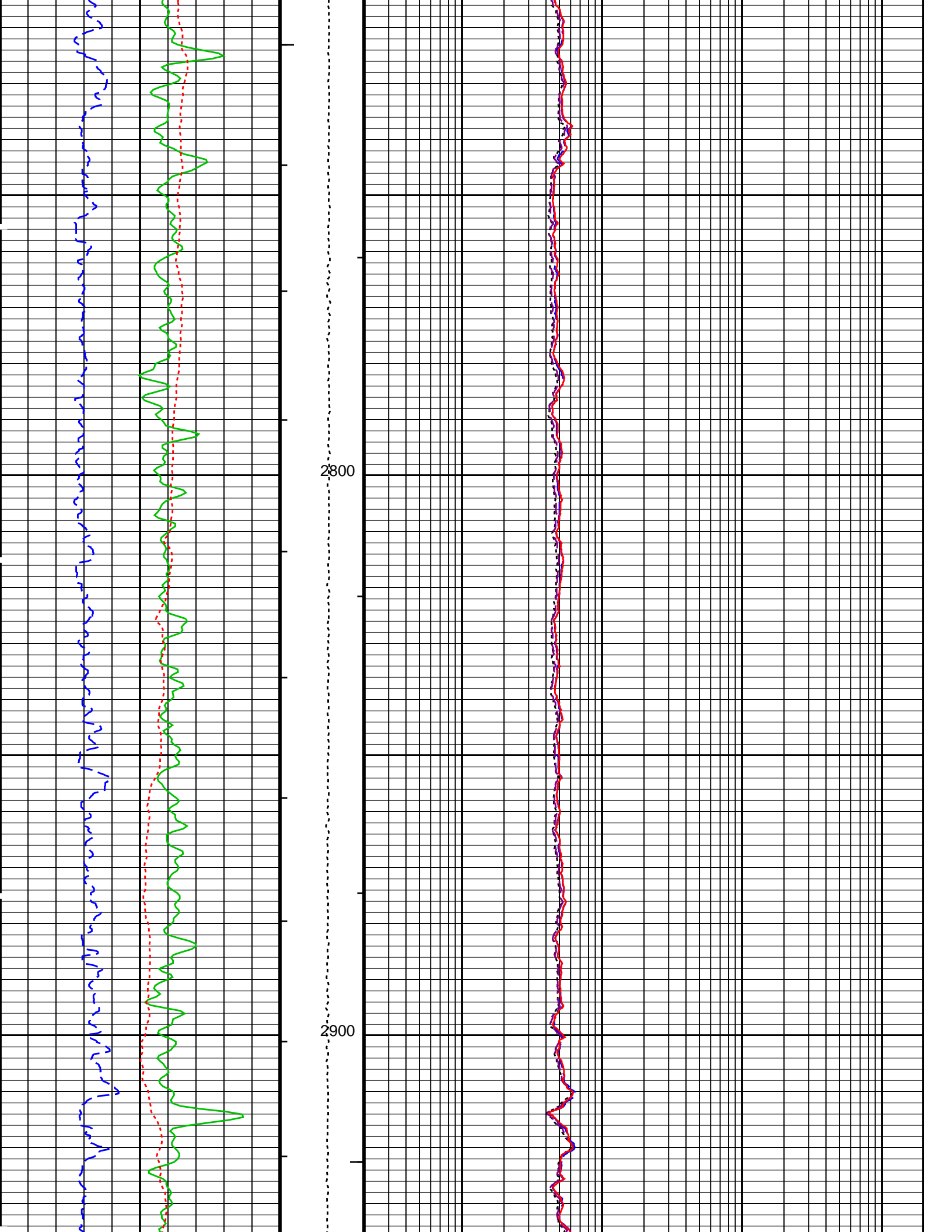


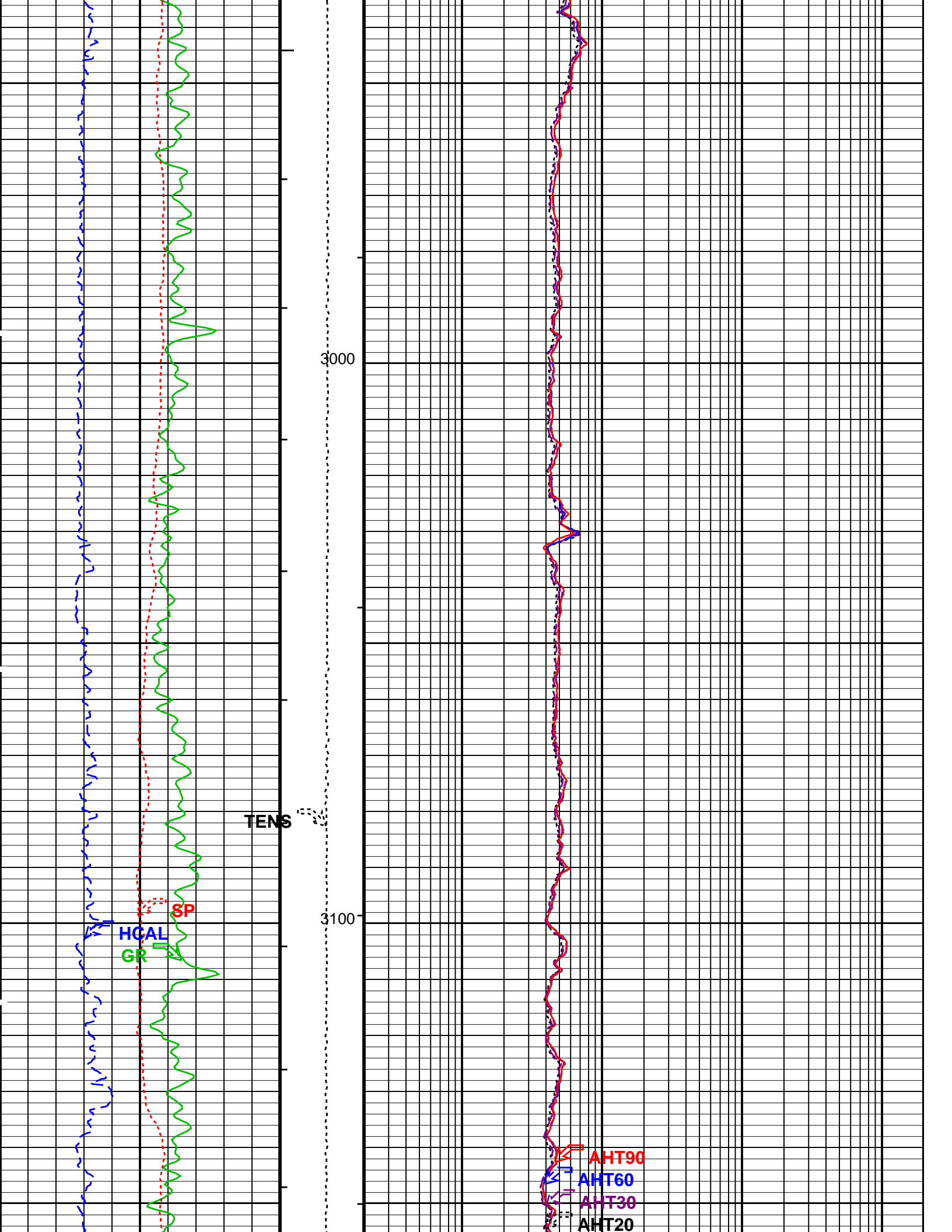


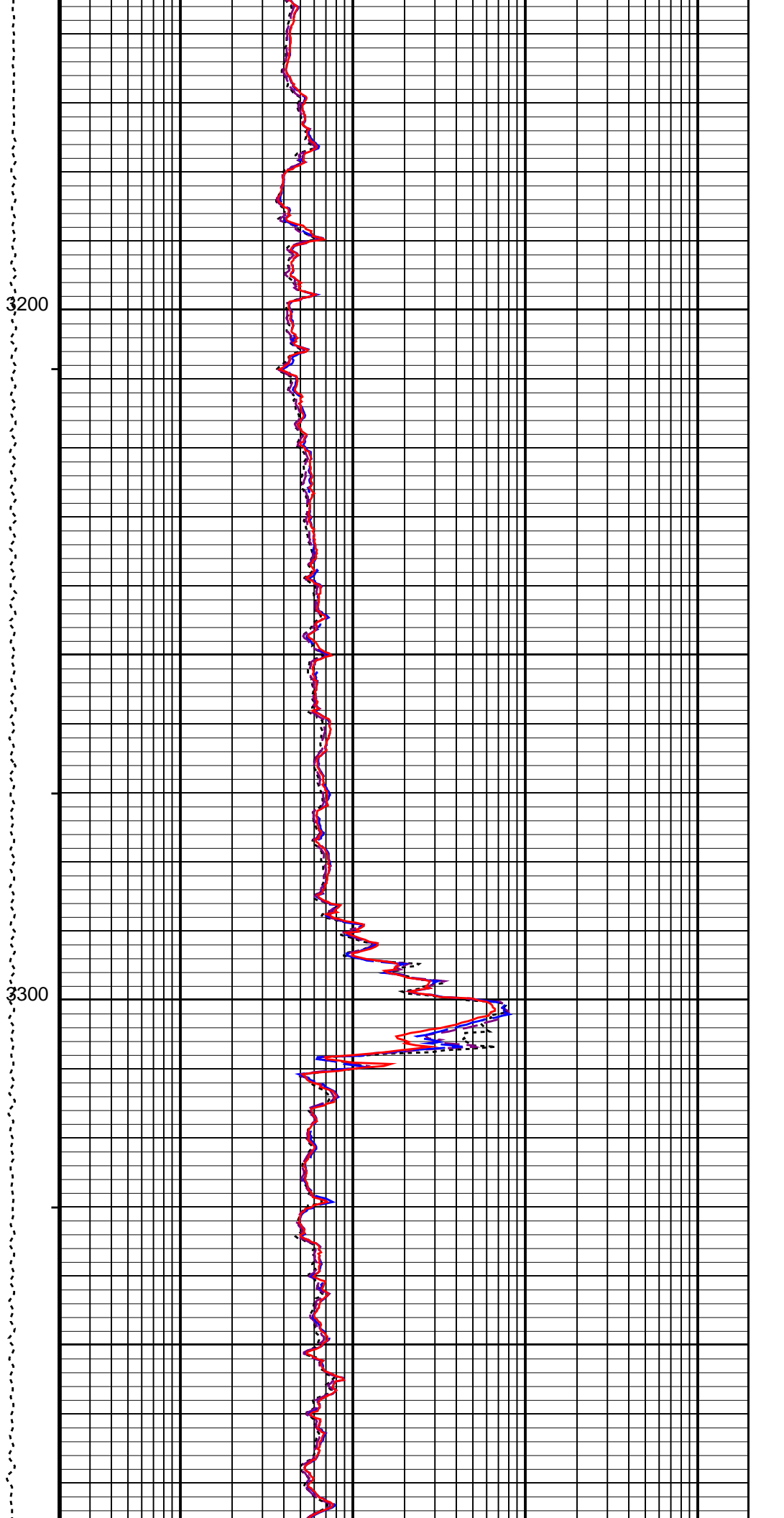
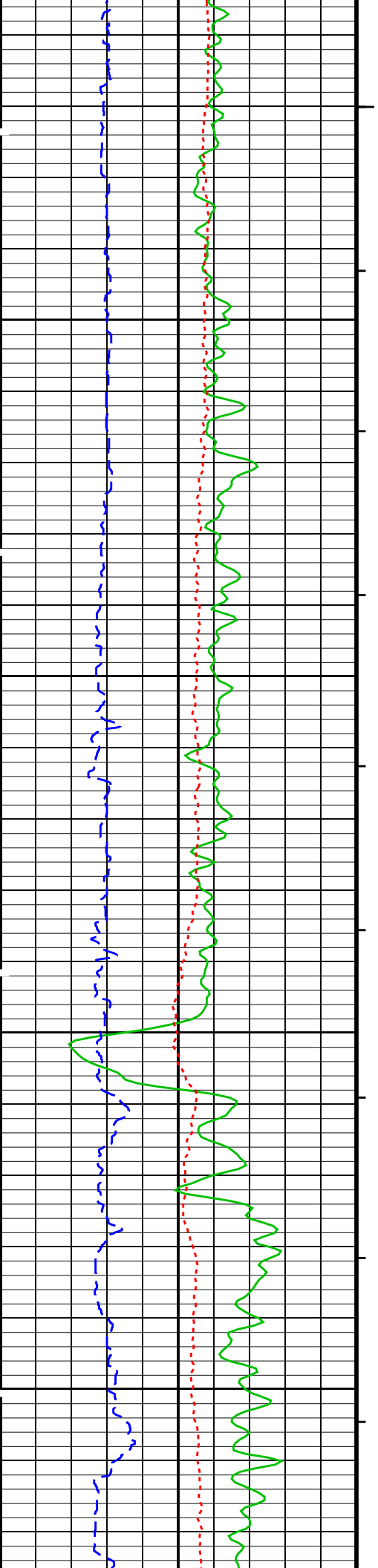


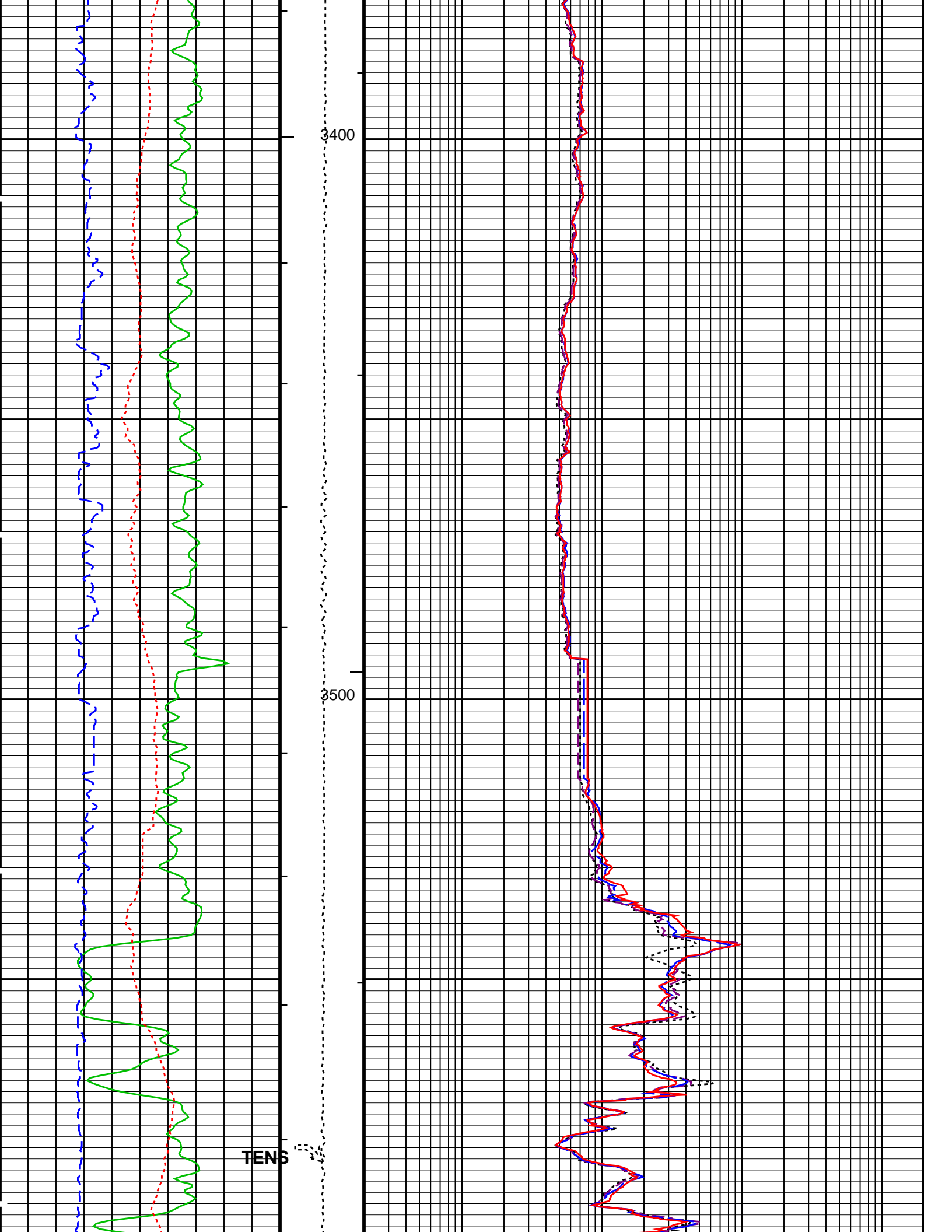


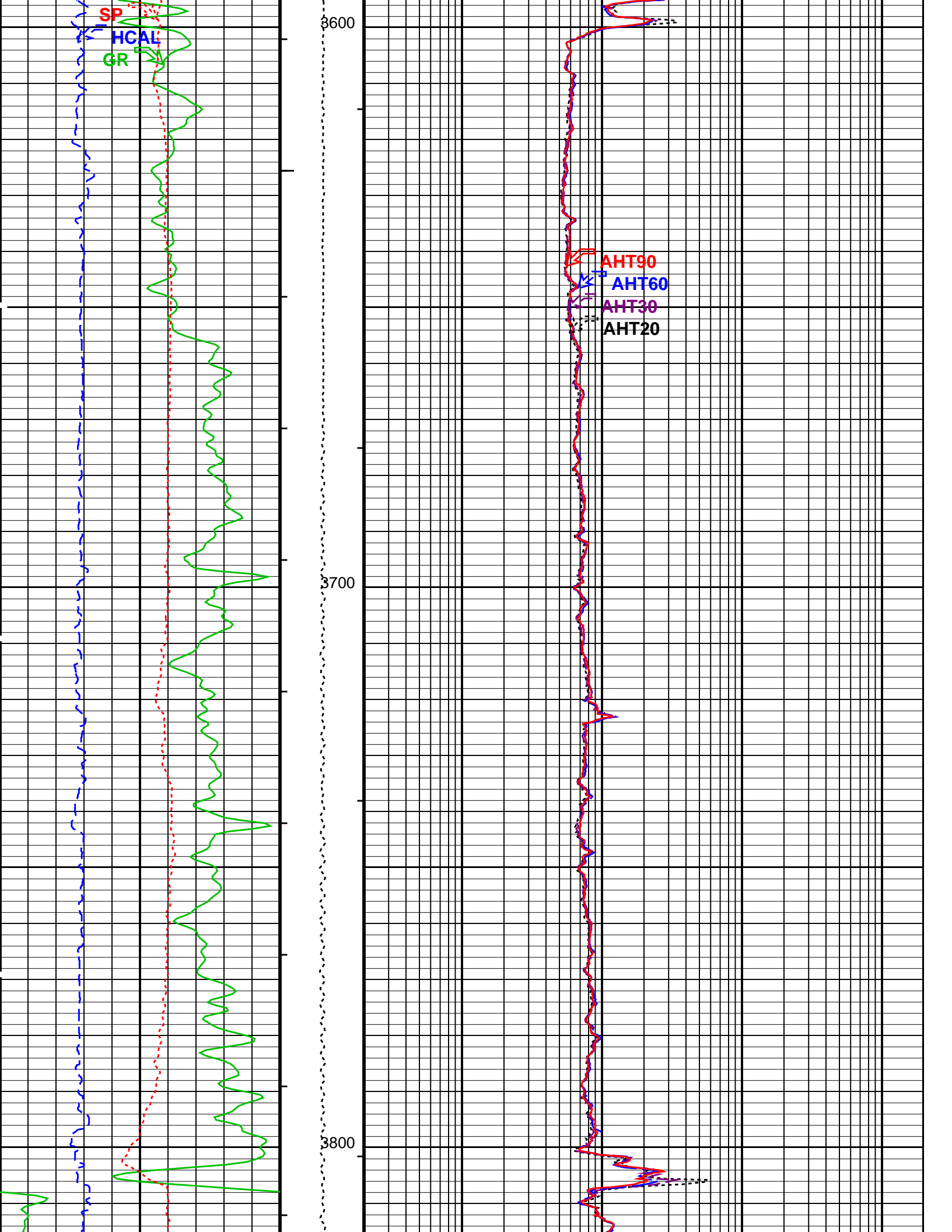


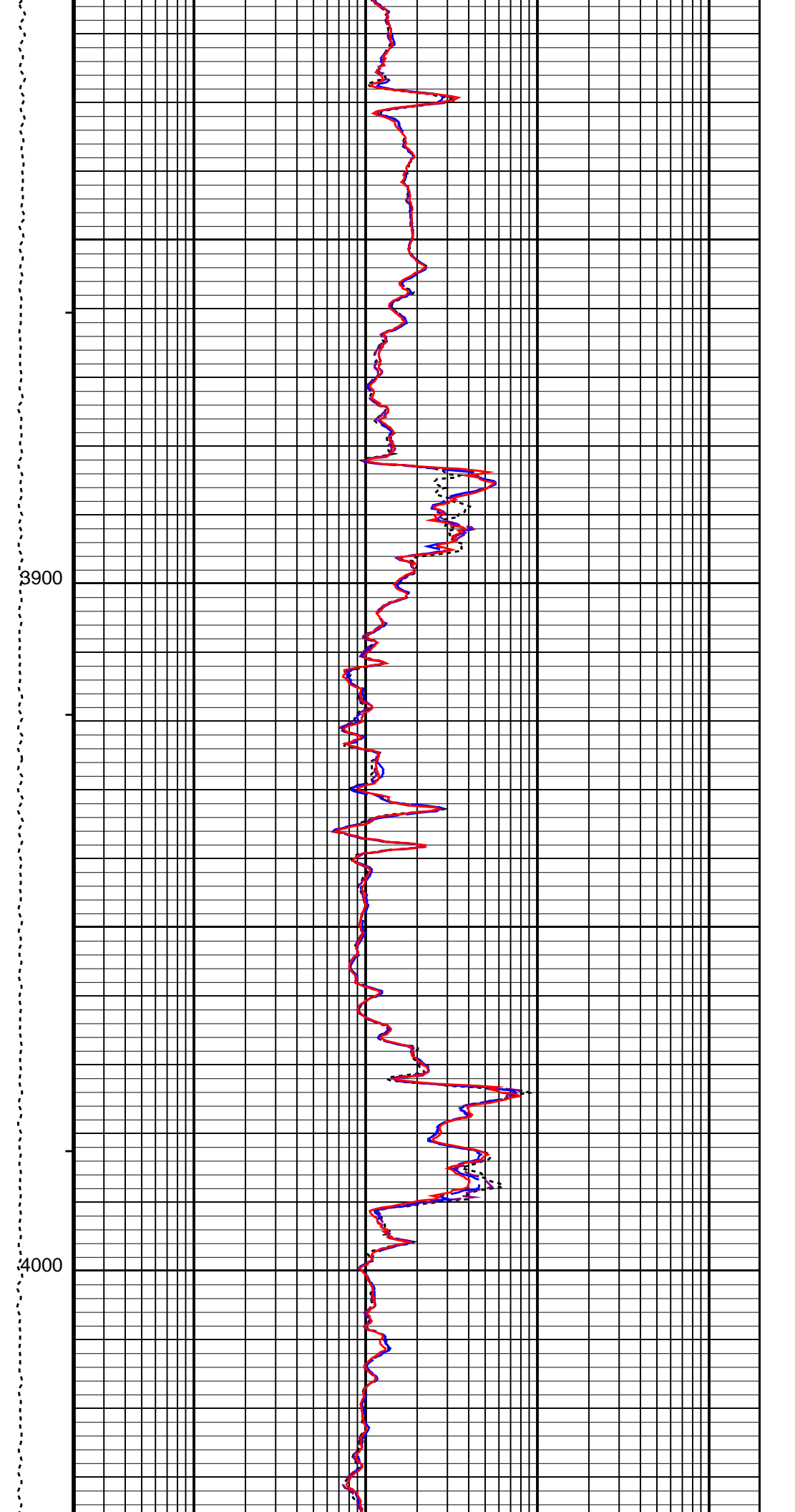
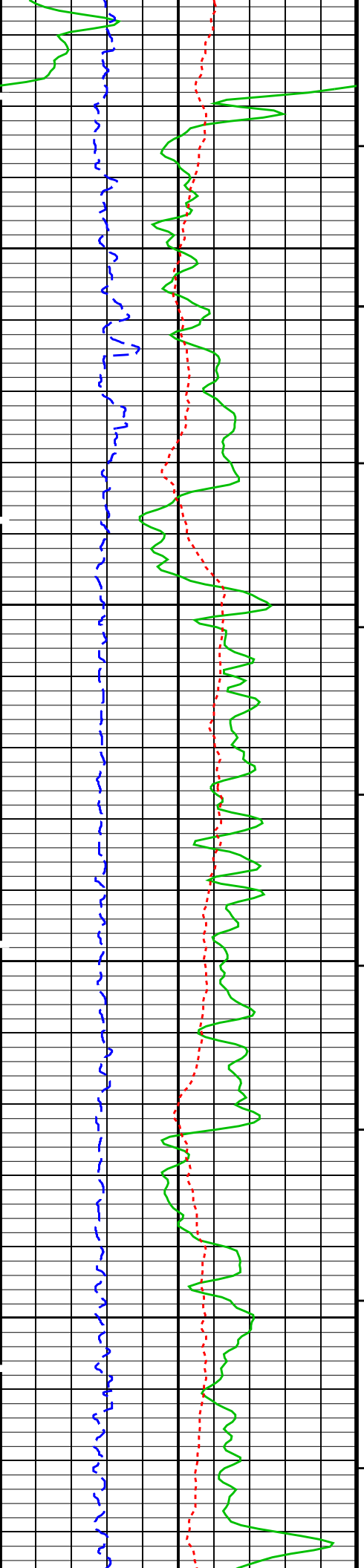


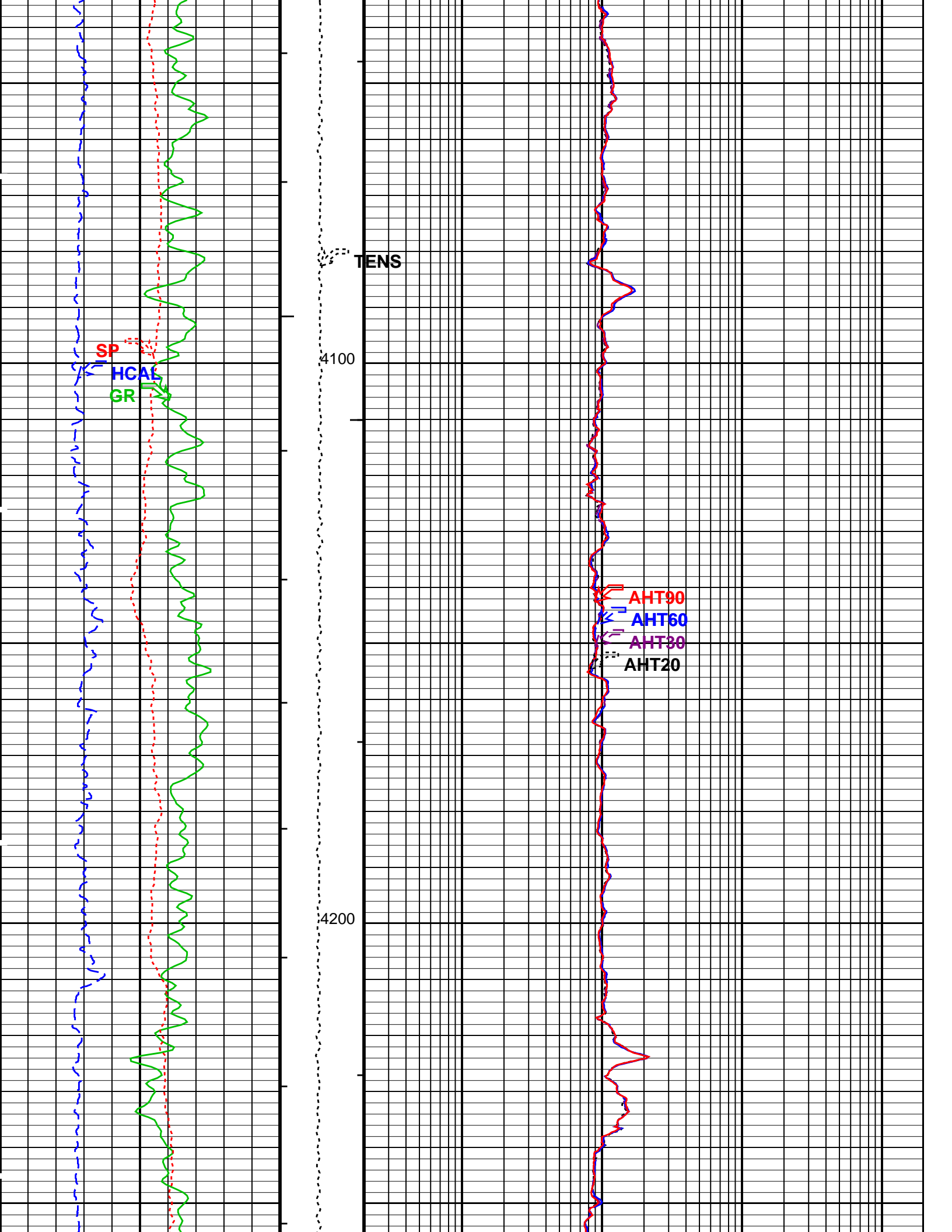


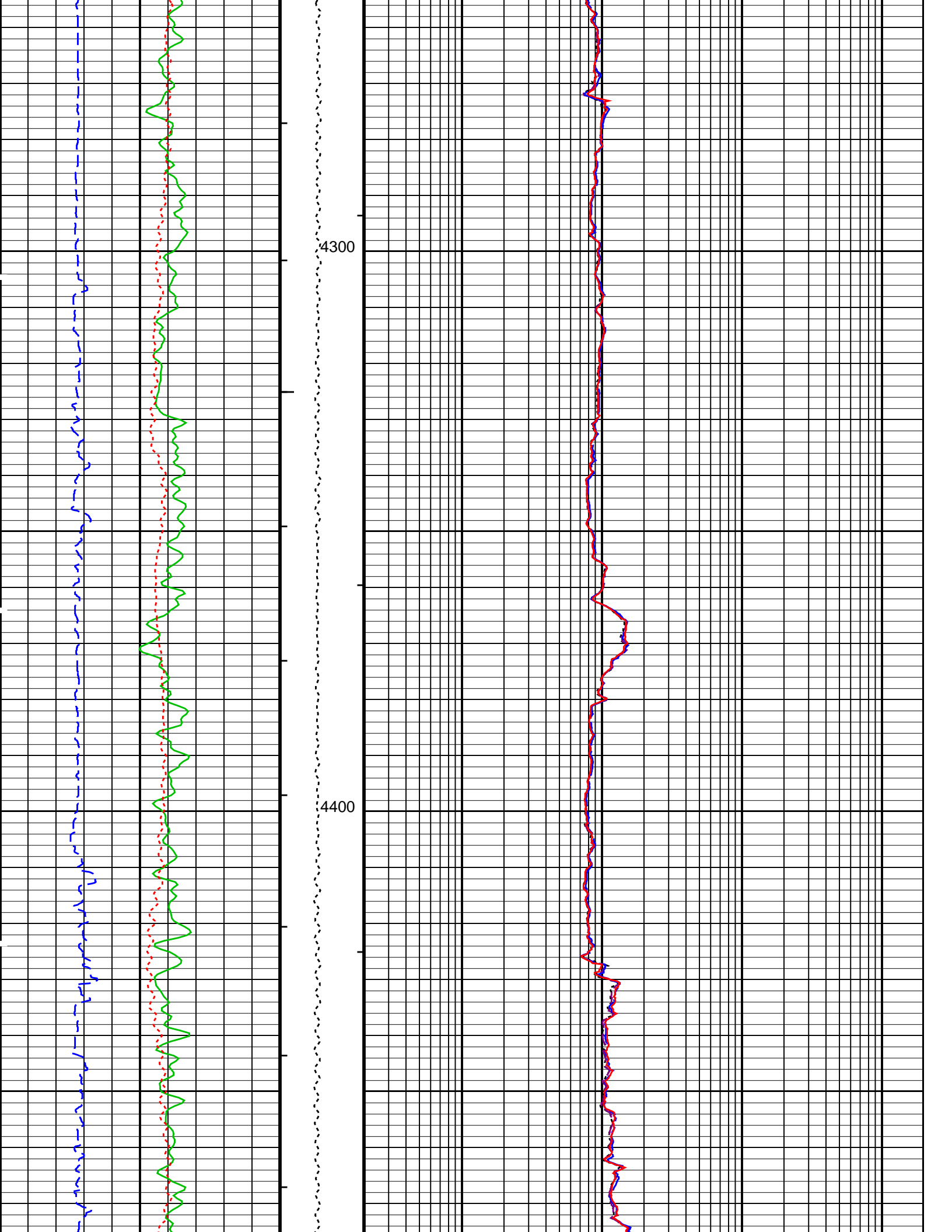


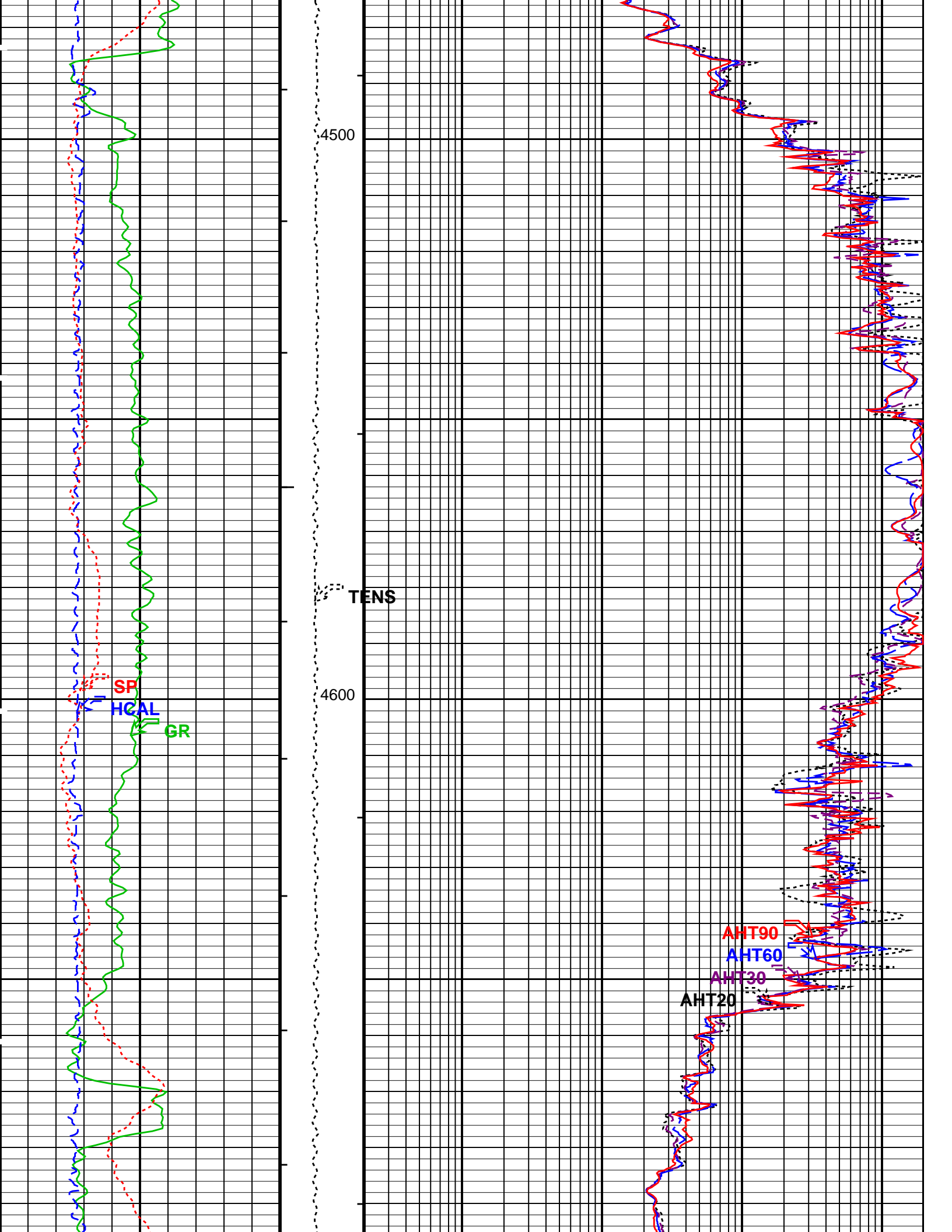


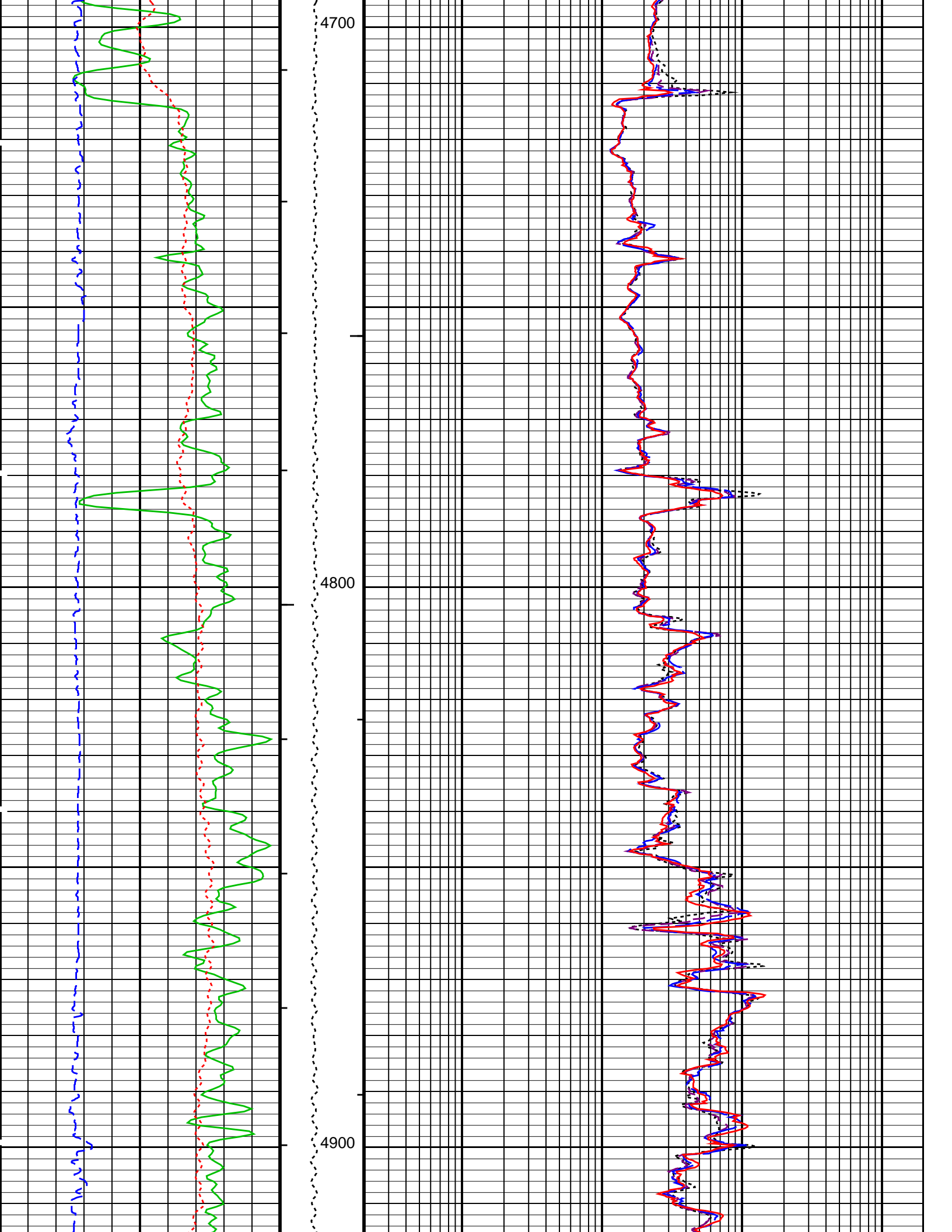


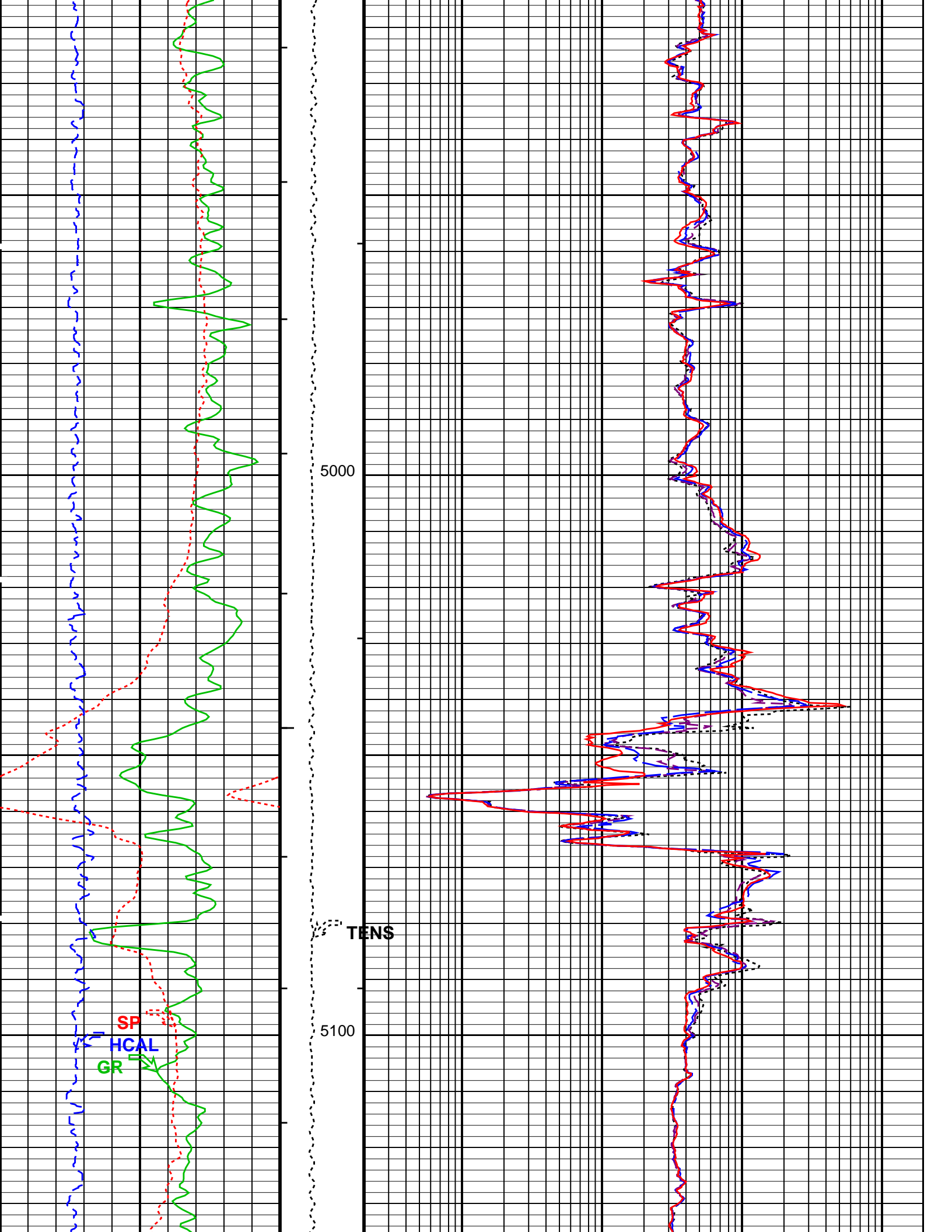


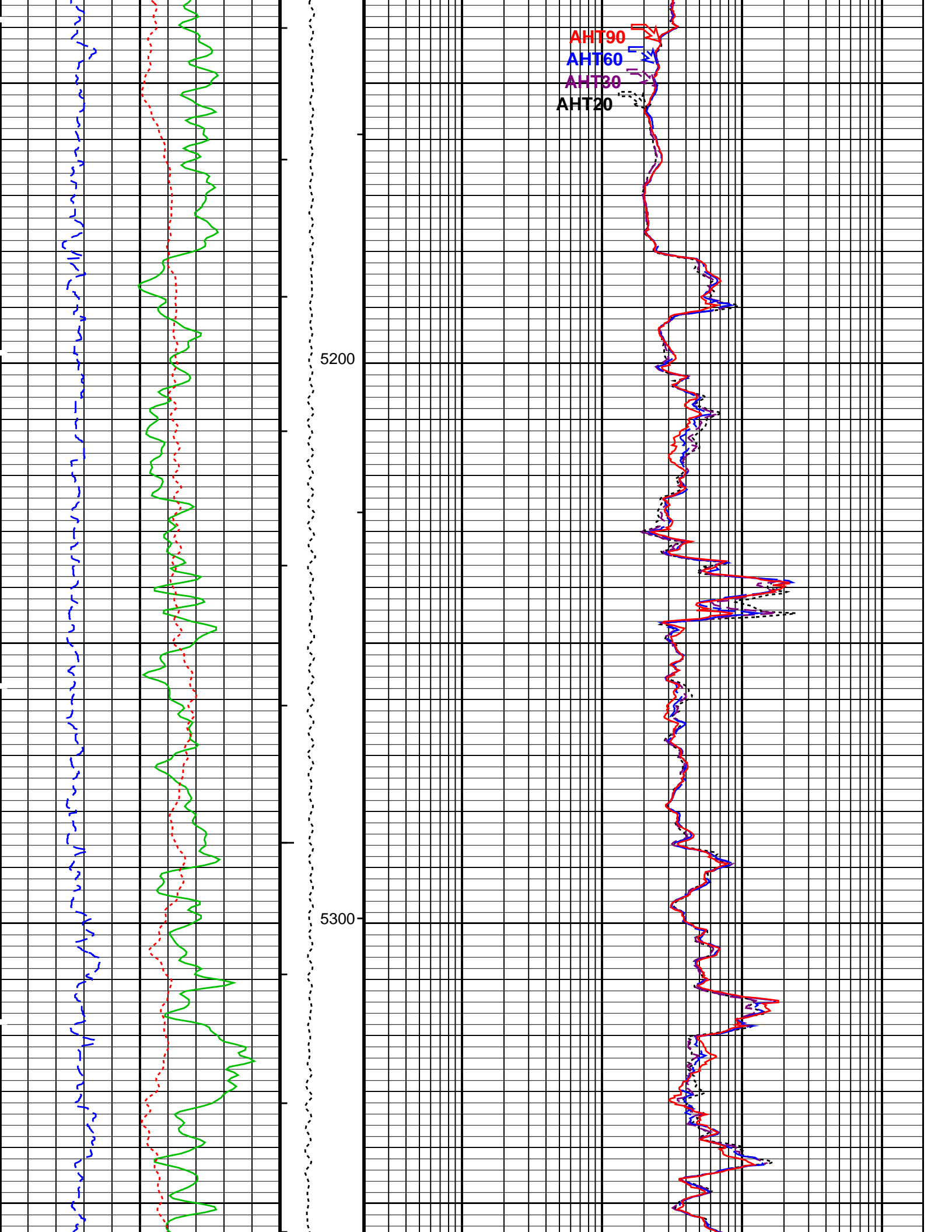


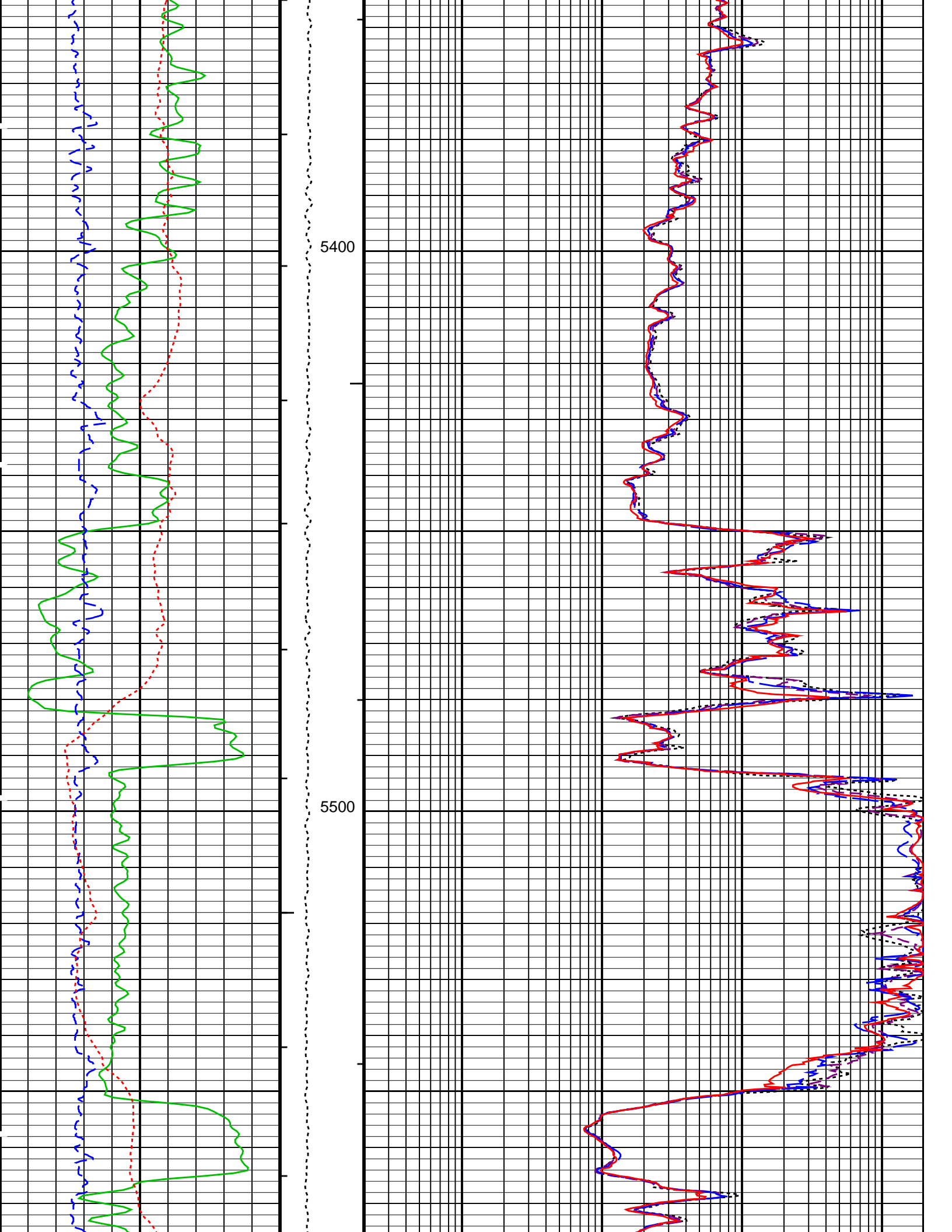












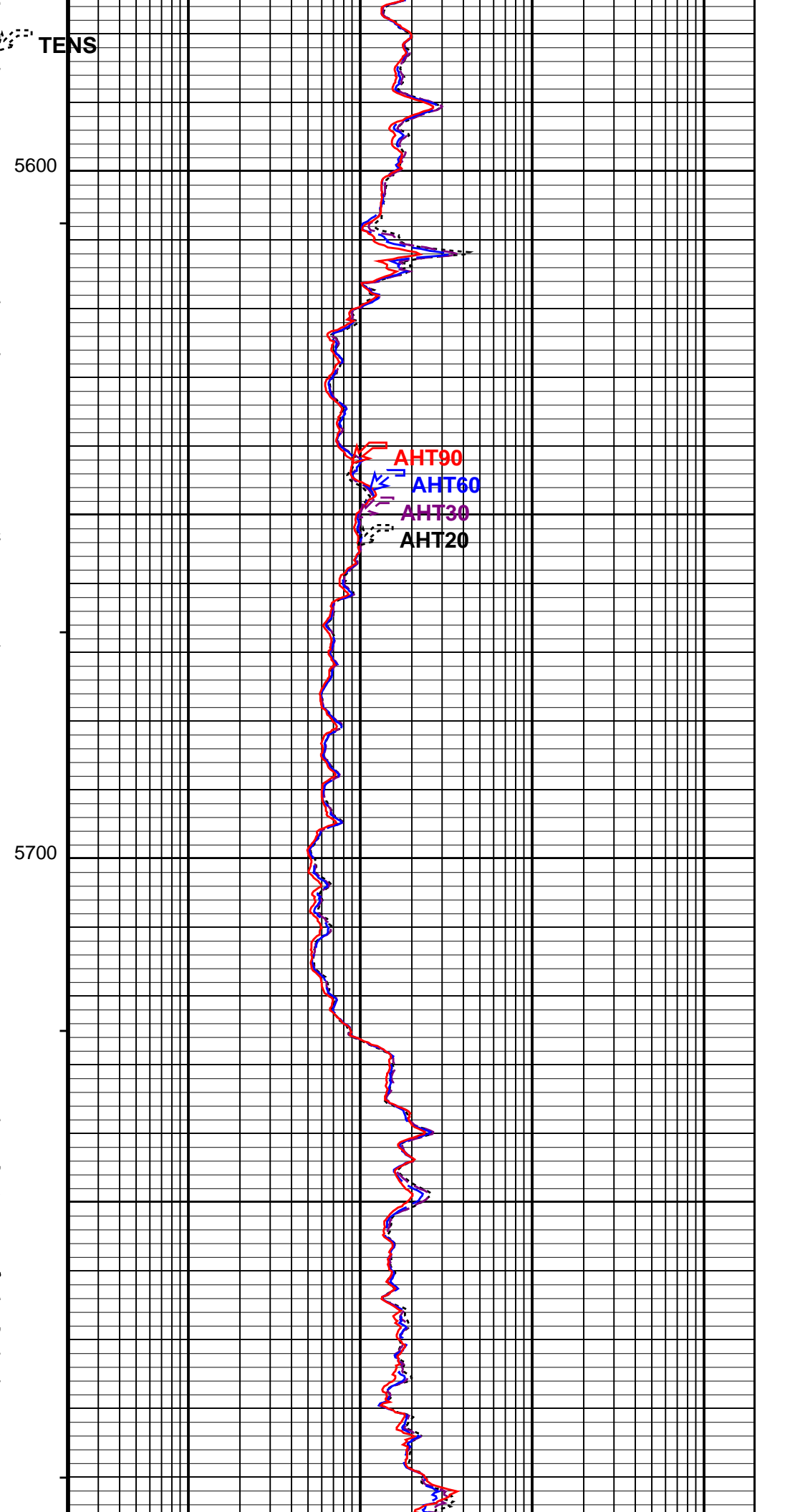
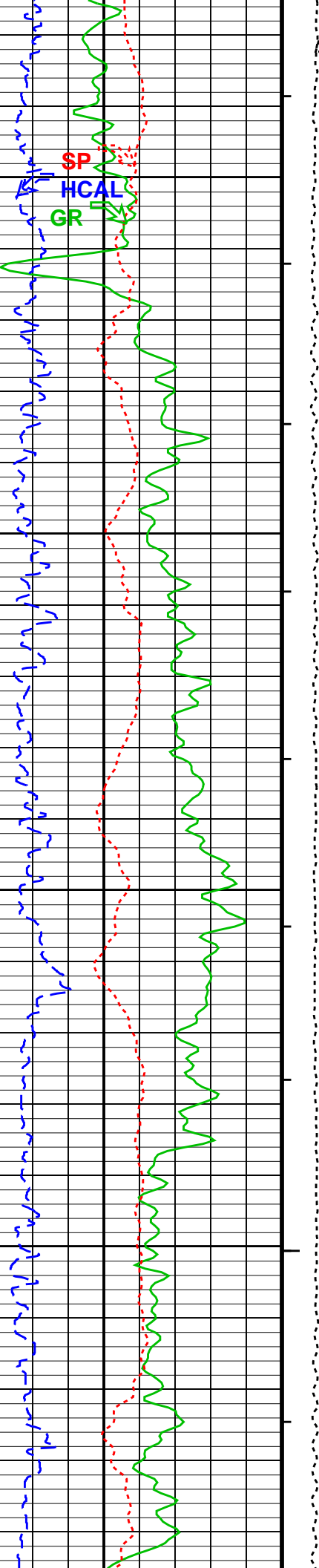
TENS

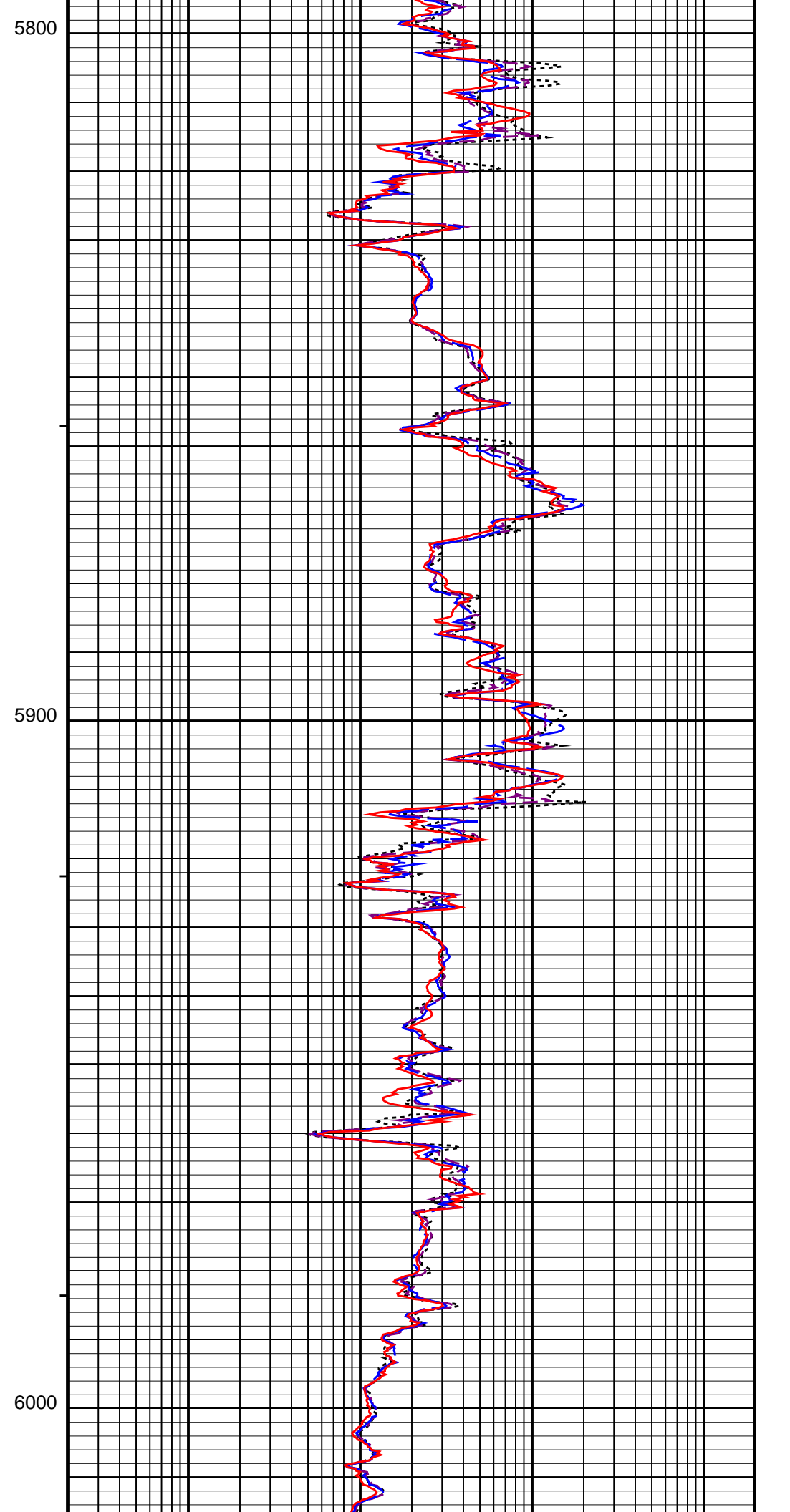
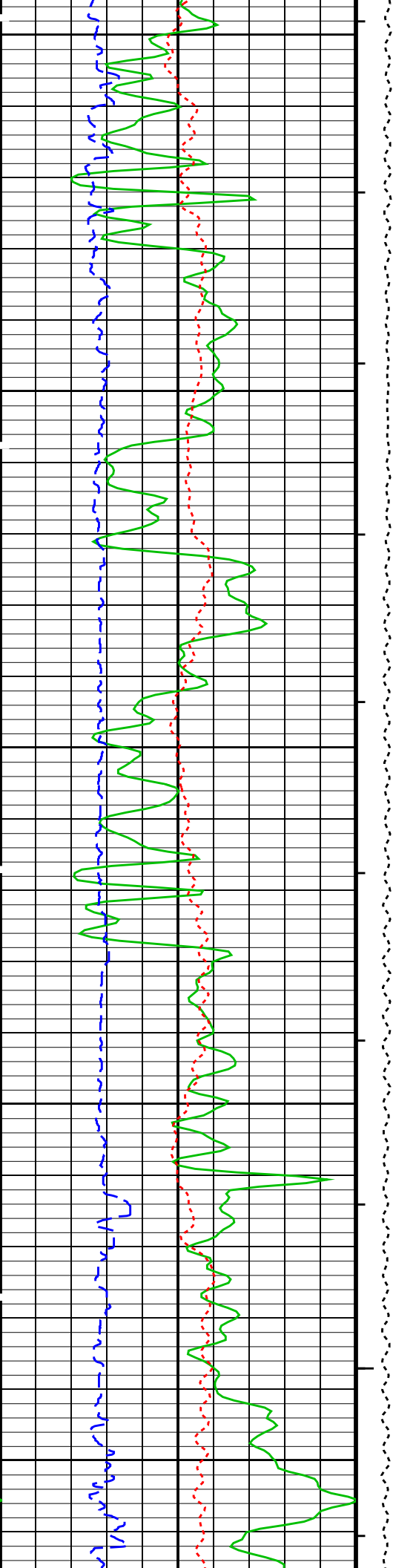
5600

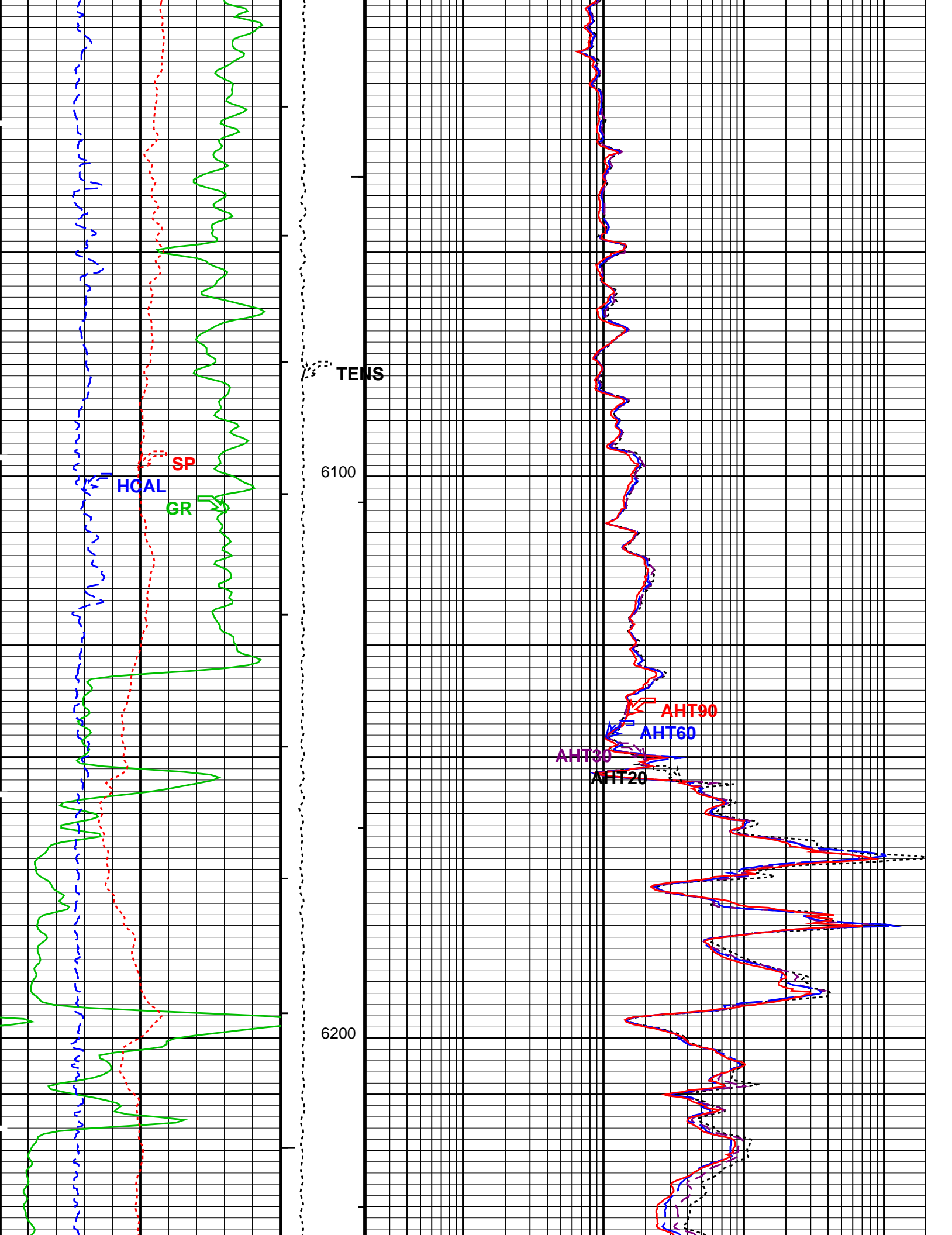
SP
HCAL
GR

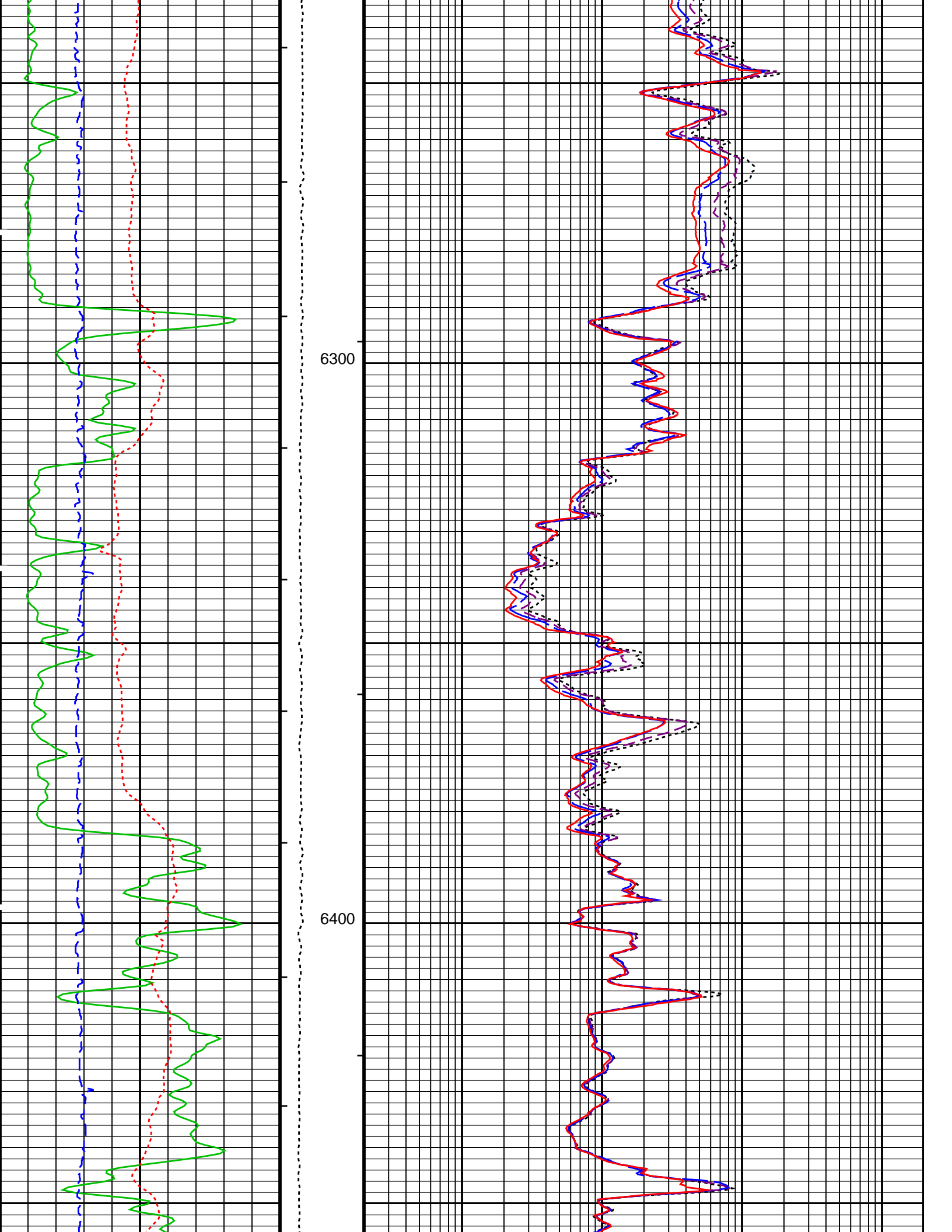
5700

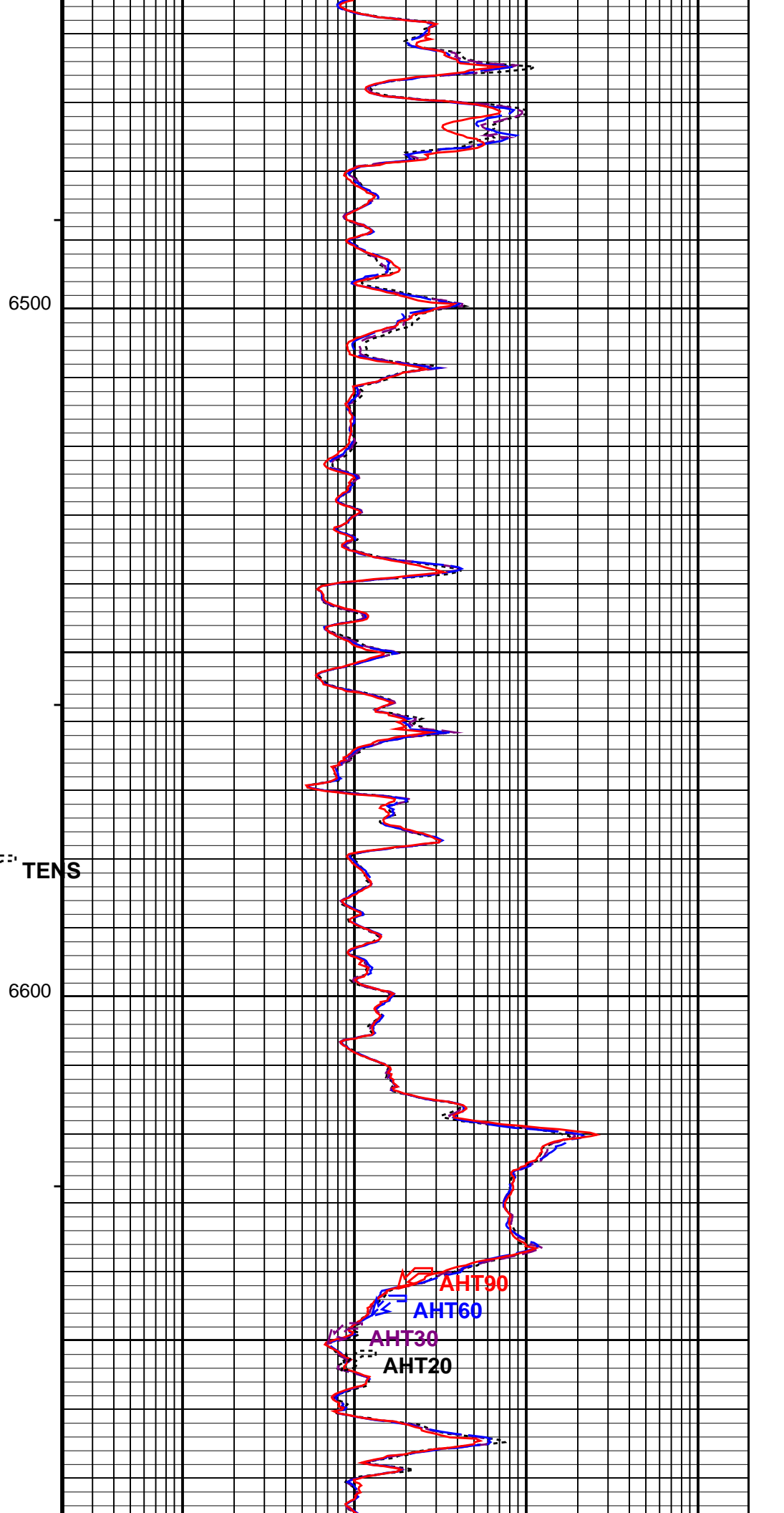
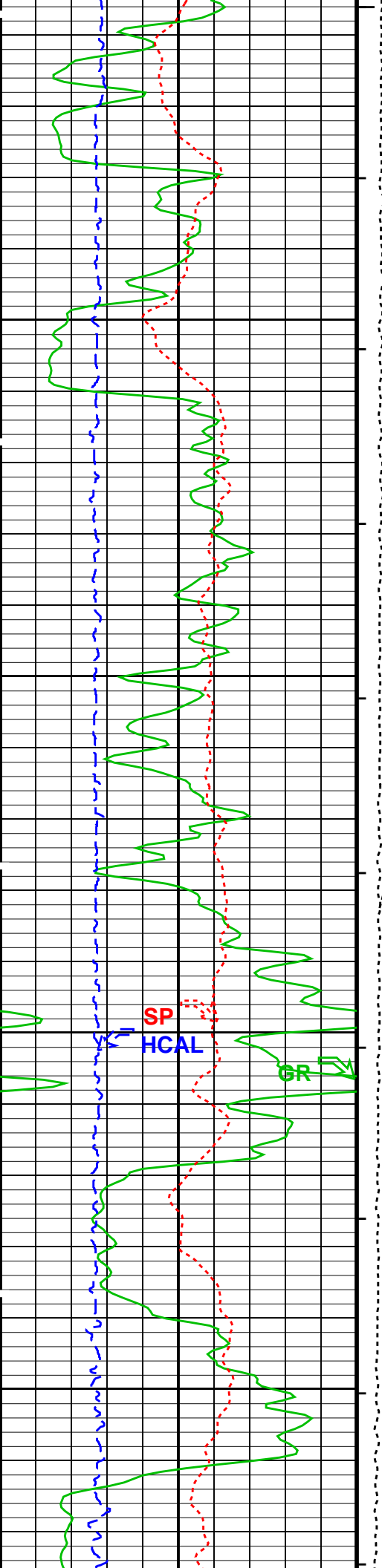
AHT90
AHT60
AHT30
AHT20











BHT	Bottom Hole Temperature (used in calculations)	195	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	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	72	DEGF
SPNV	SP Next Value	0	MV
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
FCD	Future Casing (Outer) Diameter	7	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	AITH_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
SHT	Surface Hole Temperature	72	DEGF
System and Miscellaneous			
BS	Bit Size	8.750	IN
DFD	Drilling Fluid Density	8.00	LB/G
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	72.00	DEGF
PP	Playback Processing	NORMAL	
TD	Total Depth	6700	FT

Format: AIT_5 Vertical Scale: 5" per 100' Graphics File Created: 25-Oct-2008 03:39

OP System Version: 16C0-147
MCM

HILTB-FTB	SRPC-3624-Q2_2008_OP16	GPIT-C	SRPC-3624-Q2_2008_OP16
DTC-H	16C0-147		

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_016	FN:1	PRODUCER	25-Oct-2008 03:35	6720.0 FT	56.7 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_017PUP	FN:15	PRODUCER	25-Oct-2008 03:39		
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Repeat Analysis

MAXIS Field Log

Company: Manzano LLC. Well: Cougar #1

Input DLIS Files

HILTD .012	FN:11	25-Oct-2008 01:31	6721.0 FT	6372.3 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_013LUP	FN:12	PRODUCER	25-Oct-2008 01:33		
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OP System Version: 16C0-147
MCM

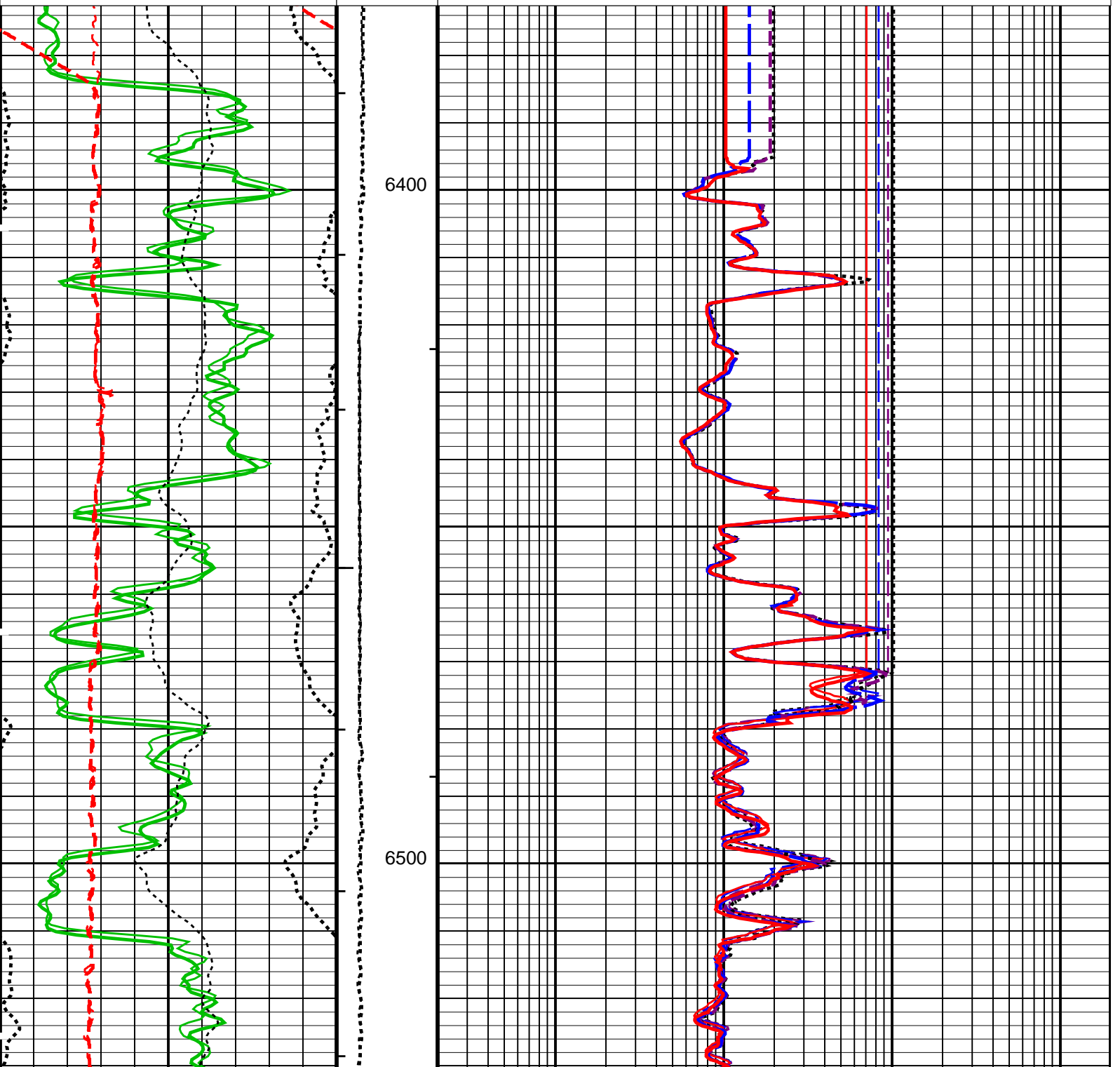
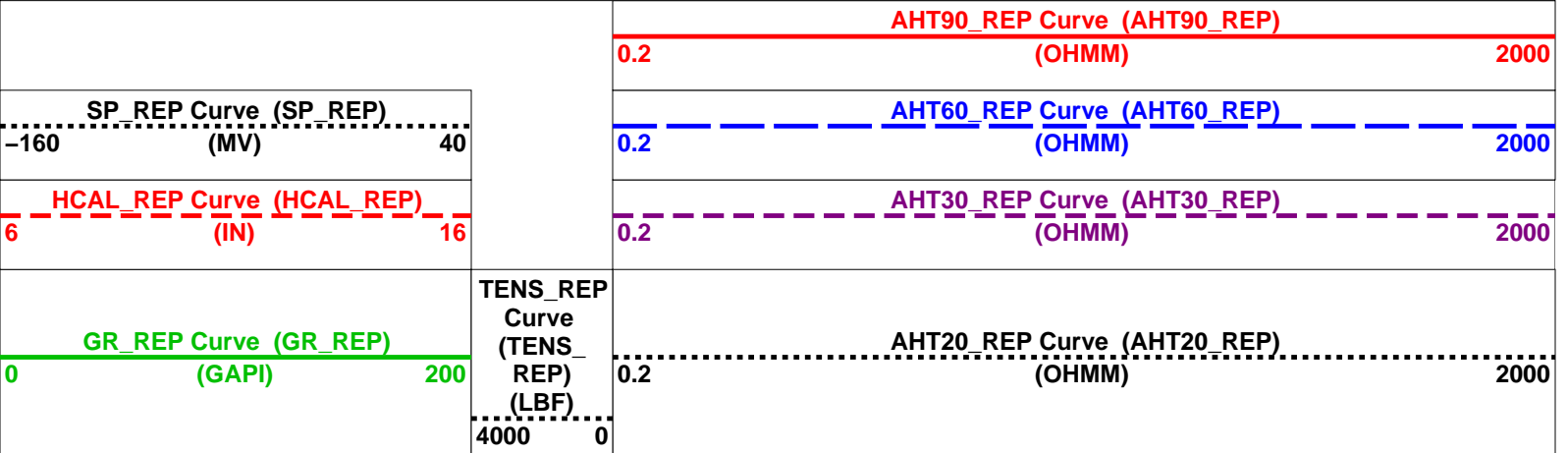
HILTB-FTB	SRPC-3624-Q2_2008_OP16	GPIT-C	SRPC-3624-Q2_2008_OP16
DTC-H	16C0-147		

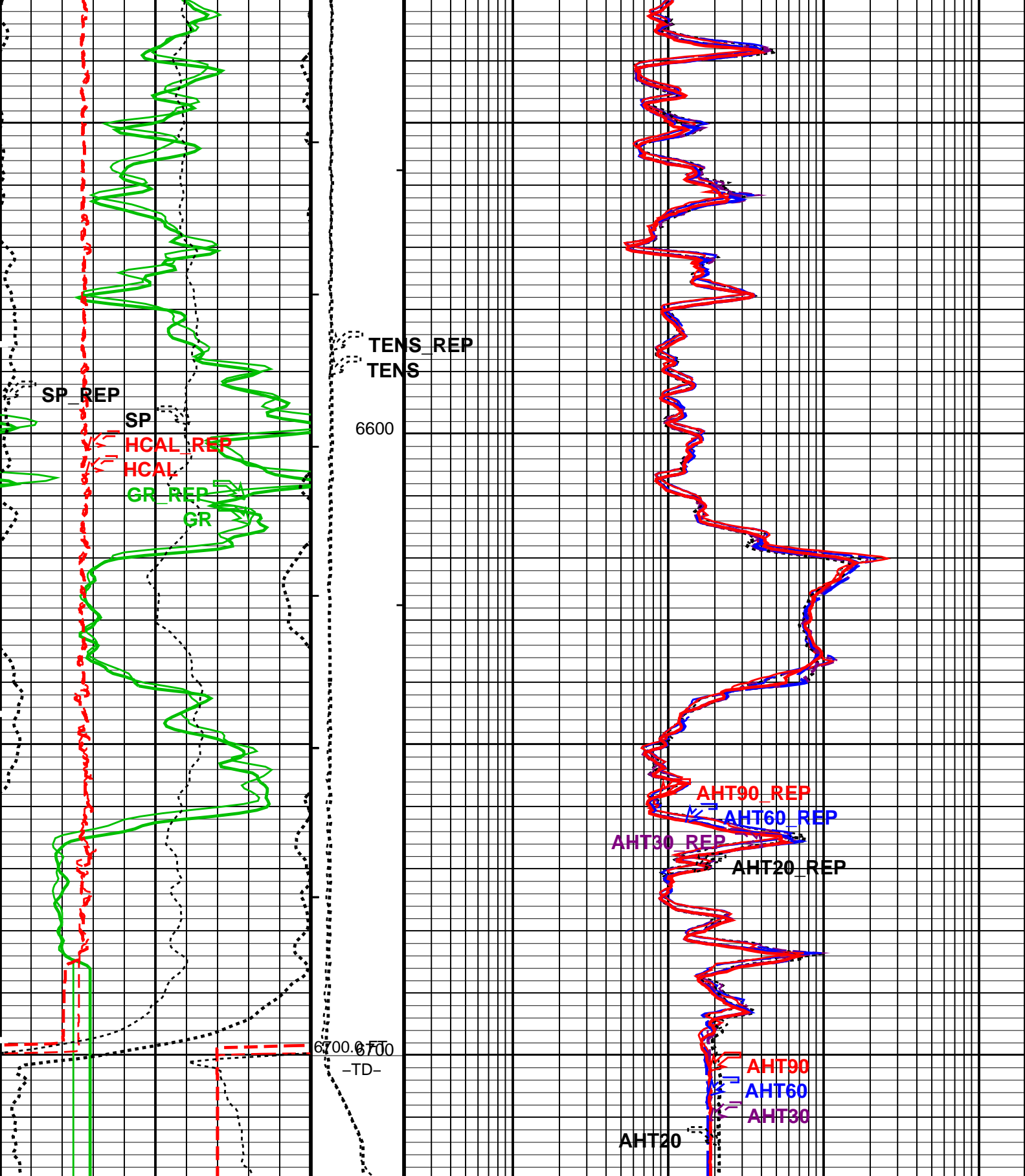
PIP SUMMARY

H Integrated Hole Volume Minor Pin Every 10 F3

← Integrated Hole Volume Minor Pip Every 10 F3
 ← Integrated Cement Volume Major Pip Every 100 F3
 ← Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S





GR_REP Curve (GR_REP)
(GAPI) 0 200

TENS_REP
Curve
(TENS
REP)
(LBF)
4000 0

AHT20_REP Curve (AHT20_REP)
(OHMM) 0.2 2000

HCAL_REP Curve (HCAL_REP)
(IN) 6 16

AHT30_REP Curve (AHT30_REP)
(OHMM) 0.2 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

AIT-H Answer Product Processing Summary. Data taken with Tool # 159 (AHTNO)
 ...Acquired data from HILT/HAIT

***** Borehole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)
 Tool is run in ECCENTERED mode with a tool stand-off of 0.50 IN. Bit Size is 8.75 IN.

***** Input Selections to AIT-H Answer Product Processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): HTEM Porosity (FPHI): DPHZ

***** Other Parameters used by AIT-H Answer Product Processing *****

Form Factor Exponent (FEXP) 2.000 Form Factor Numerator (FNUM) 1.000
 Mud Filtrate Sample Resistivity (RMFS) 29.390 OHMM Mud Filtrate Sample Temperature (MFST) 72.000 DEGF
 Resistivity Connate Water (RW) 1.000 OHMM

***** AIT-H Answer Product Processing Control Parameters *****

Playback Mode: NORMAL

Parameters

DLIS Name	Description	Value
HILTB-FTB: High resolution Integrated Logging Tool-DTS		
AHBHM	Array Induction Borehole Correction Mode	2_ComputeStandoff
AHBHV	Array Induction Borehole Correction Code Version Number	900
AHBLM	Array Induction Basic Logs Mode	6_One_Two_and_Four
AHBLV	Array Induction Basic Logs Code Version Number	223
AHCDE	Array Induction Casing Detection Enable	Yes
AHCEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered
AHFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20
AHMRF	Array Induction Mud Resistivity Factor	1
AHORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20
AHRFV	Array Induction Radial Profiling Code Version Number	701
AHRPV	Array Induction Radial Parametrization Code Version Number	232
AHSTA	Array Induction Tool Standoff	0.5 IN
AHTRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20
BHT	Bottom Hole Temperature (used in calculations)	195 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	AITH_RESIST
GTSE	Generalized Temperature Selection	HSTS_HTEM
SHT	Surface Hole Temperature	72 DEGF
SPNV	SP Next Value	0 MV
HOLEV: Integrated Hole/Cement Volume		
BHT	Bottom Hole Temperature (used in calculations)	195 DEGF
FCD	Future Casing (Outer) Diameter	7 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	AITH_RESIST
GTSE	Generalized Temperature Selection	HSTS_HTEM
HVCS	Integrated Hole Volume Caliper Selection	HCAL
SHT	Surface Hole Temperature	72 DEGF
System and Miscellaneous		
BS	Bit Size	8.750 IN
DFD	Drilling Fluid Density	8.00 LB/G
DORL	Depth Offset for Repeat Analysis	0.0 FT
FLEV	Fluid Level	0.00 FT
MST	Mud Sample Temperature	72.00 DEGF
TD	Total Depth	6700 FT

OP System Version: 16C0-147

MCM

HILTB-FTB DTC-H	SRPC-3624-Q2_2008_OP16 16C0-147	GPIT-C	SRPC-3624-Q2_2008_OP16
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Input DLIS Files

HILTD .012	FN:11	25-Oct-2008 01:31	6721.0 FT	6372.3 FT
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Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_013LUP	FN:12	PRODUCER	25-Oct-2008 01:33
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Calibrations

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Electronics Calibration Check – Thru Cal Mag. & Phase							
Master: 16-Oct-2008 12:44 Before: 24-Oct-2008 14:53							
Thru Cal Magnitude – 0	0	0.6237	0.6276	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.282	1.290	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6340	0.6381	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7181	0.7226	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.344	1.352	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.950	1.962	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.951	1.964	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.394	1.402	N/A	N/A	N/A	V
Phase – 0	0	56.20	55.90	N/A	N/A	N/A	DEG
Phase – 1	0	55.09	54.78	N/A	N/A	N/A	DEG
Phase – 2	0	51.35	51.03	N/A	N/A	N/A	DEG
Phase – 3	0	50.55	50.24	N/A	N/A	N/A	DEG
Phase – 4	0	44.22	43.89	N/A	N/A	N/A	DEG
Phase – 5	0	42.26	41.92	N/A	N/A	N/A	DEG
Phase – 6	0	42.23	41.89	N/A	N/A	N/A	DEG
Phase – 7	0	38.26	37.85	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Electronics Calibration Check – Auxilliary							
Master: 16-Oct-2008 12:44 Before: 24-Oct-2008 14:53							
Array Induction SPA Plus	990.5	993.7	993.6	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	-0.2916	-0.3043	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9150	0.9206	0.9205	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	-0.0002946	-0.0003001	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Test Loop Gain Correction							
Master: 16-Oct-2008 12:44							
Test Loop Gain Magnitude – 0	0	1.009	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 1	0	1.009	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 2	0	1.010	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 3	0	1.008	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 4	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 5	0	0.9844	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 6	0	0.9939	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude – 7	0	1.003	N/A	N/A	N/A	N/A	V
Phase – 0	0	0.1281	N/A	N/A	N/A	N/A	DEG
Phase – 1	0	0.6843	N/A	N/A	N/A	N/A	DEG
Phase – 2	0	0.07216	N/A	N/A	N/A	N/A	DEG

Phase - 3	0	0.02622	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	-0.003229	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	-0.1930	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	0.1945	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	-0.2913	N/A	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Sonde Error Correction

Master: 16-Oct-2008 12:44

R Sonde Error Correction - 0	0	-108.0	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	162.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	112.3	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	64.95	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	29.10	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	11.91	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	9.717	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-2.818	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	51.34	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	-34.97	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	-116.0	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	-45.05	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	-35.56	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	1.613	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 6	0	5.644	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	6.081	N/A	N/A	N/A	N/A	MM/M

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Mud Gain Correction

Master: 16-Oct-2008 12:44

Coarse - Mag, Real, Imag - 0	0	1.140	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 1	0	1.140	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 2	0	1.140	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 0	0	1.140	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 1	0	1.140	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 2	0	1.140	N/A	N/A	N/A	N/A	

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

Before: 24-Oct-2008 14:52

BS Window Ratio	0.7386	N/A	0.7385	N/A	N/A	N/A	
BS Window Sum	10530	N/A	10530	N/A	N/A	N/A	CPS
SS Window Ratio	0.4913	N/A	0.4927	N/A	N/A	N/A	
SS Window Sum	9427	N/A	9444	N/A	N/A	N/A	CPS
LS Window Ratio	0.2969	N/A	0.3025	N/A	N/A	N/A	
LS Window Sum	1047	N/A	1048	N/A	N/A	N/A	CPS

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

Before: 24-Oct-2008 14:52

BS PM High Voltage (Command)	1727	N/A	1742	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1360	N/A	1370	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1743	N/A	1746	N/A	N/A	N/A	V

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

Before: 24-Oct-2008 14:52

BS Crystal Resolution	11.43	N/A	11.43	N/A	N/A	N/A	%
SS Crystal Resolution	8.414	N/A	8.501	N/A	N/A	N/A	%
LS Crystal Resolution	9.013	N/A	8.915	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-DTS Wellsite Calibration - MCFL Calibration

Before: 24-Oct-2008 14:53

Raw B0 Resistivity	3875	N/A	3870	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3826	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3831	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-DTS Wellsite Calibration - HILT Caliper Calibration

Before: 24-Oct-2008 14:55

HILT Caliper Zero Measurement	8.000	N/A	8.288	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.43	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Detector Calibration

Before: 24-Oct-2008 14:51

Gamma Ray Background	30.00	N/A	47.49	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	165.9	N/A	165.9	N/A	N/A	15.08	GAPI
Gamma Ray (Calibrated)	160.0	N/A	160.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Zero Measurement

Master: 12-Aug-2008 15:47 Before: 24-Oct-2008 14:52

CNTC Background	26.01	26.01	25.72	N/A	N/A	3.902	CPS
CFTC Background	28.65	28.65	30.47	N/A	N/A	4.298	CPS

High resolution Integrated Logging Tool-DTS Wellsite Calibration - Ratio Measurement

Master: 12-Aug-2008 15:47

Thermal Near Corr. (Tank)	5800	5256	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2234	N/A	N/A	N/A	N/A	CPS

CNTC/CFIC (Tank)	2.159	2.353	N/A	N/A	N/A	N/A	N/A
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration							
Before: 25–Oct–2008 0:34							
Z–Axis Acceleration	32.19	N/A	32.39	N/A	N/A	N/A	F/S2
General Purpose Inclinerometer Wellsite Calibration – CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 25–Oct–2008 0:33							
TEMPERATURE REFERENCE :	N/A	N/A	68	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	97	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	5	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	612	N/A	N/A	N/A	
General Purpose Inclinerometer Wellsite Calibration – CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 25–Oct–2008 0:33							
TEMPERATURE REFERENCE :	N/A	N/A	70	N/A	N/A	N/A	DEGF
YEAR OF CALIBRATION :	N/A	N/A	7	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	9	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	788	N/A	N/A	N/A	

Density Master Calibration is obsolete !

The GLS–VJ source activity is acceptable.

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

NCT–B Water Temperature 75.0 DEGF.
 Thermal Housing Size 3.375 IN.
 NSR–F serial number 5070

High resolution Integrated Logging Tool–DTS / Equipment Identification			
Primary Equipment:			
Array Induction Tool – H		AIT – H	
Rm/SP Bottom Nose		AHRM – A	
Array Induction Sonde		AHIS – BA	159
HILT high–Resolution Mechanical Sonde		HRMS – B	1914
HILT Rxo Gamma–ray Device		HRGD – B	930
HILT Micro Cylindrically Focused Log Dev		MCFL –	
GR Logging Source		GLS – VJ	1923
HILT High Res. Control Cartridge		HRCC – B	830
Auxiliary Equipment:			

High resolution Integrated Logging Tool–DTS Wellsite Calibration							
Electronics Calibration Check – Thru Cal Mag. & Phase							
Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6237		0.6050	56.20		71.00
	Before	0.6276			55.90		
1	Master	1.282		1.270	55.09		70.00
	Before	1.290			54.78		
2	Master	0.6340		0.6230	51.35		66.00
	Before	0.6381			51.03		
3	Master	0.7181		0.7040	50.55		65.00
	Before	0.7226			50.24		
4	Master	1.344		1.337	44.22		59.00
	Before	1.352			43.89		
5	Master	1.950		1.955	42.26		57.00
	Before	1.962			41.92		
6	Master	1.951		1.955	42.23		57.00
	Before	1.964			41.89		
	Master	1.394			38.26		

7	Before	1.402		1.415		37.85		53.00
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)		Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 16-Oct-2008 12:44				Before: 24-Oct-2008 14:53				

High resolution Integrated Logging Tool-DTS Wellsite Calibration						
Electronics Calibration Check - Auxilliary						
Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value	
Master		993.7	Master		-0.2916	
Before		993.6	Before		-0.3043	
	941.0 (Minimum)	990.5 (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		0.9206	Master		-0.0002946	
Before		0.9205	Before		-0.0003001	
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)	-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 16-Oct-2008 12:44				Before: 24-Oct-2008 14:53		

High resolution Integrated Logging Tool-DTS Wellsite Calibration							
Test Loop Gain Correction							
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG	
0	1.009				0.1281		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.009				0.6843		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.010				0.07216		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.008				0.02622		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	1.014				-0.003229		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9844				-0.1930		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9939				0.1945		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.003				-0.2913		
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
Master: 16-Oct-2008 12:44							

High resolution Integrated Logging Tool-DTS Wellsite Calibration							
Sonde Error Correction							
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M	
0	-108.0				51.34		
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)	-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	162.8				-34.97		
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)	-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	112.3				-116.0		
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)	-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	64.95				-45.05		
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)	-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	29.10				-35.56		

		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	11.91					1.613		
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.717					5.644		
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-2.818					6.081		
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

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High resolution Integrated Logging Tool-DTS Wellsite Calibration								
Mud Gain Correction								
Idx	Value	Coarse - Mag, Real, Imag			Value	Fine - Mag, Real, Imag		
0	1.140				1.140			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.140				1.140			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.140				1.140			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

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High resolution Integrated Logging Tool-DTS Wellsite Calibration														
Stab Measurement Summary														
Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
Before				0.7385	Before				0.4927	Before				0.3025
	0.7017 (Minimum)	0.7386 (Nominal)	0.7756 (Maximum)			0.4668 (Minimum)	0.4913 (Nominal)	0.5159 (Maximum)			0.2821 (Minimum)	0.2969 (Nominal)	0.3118 (Maximum)	
Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value	Phase	LS Window Sum CPS			Value
Before				10530	Before				9444	Before				1048
	10000 (Minimum)	10530 (Nominal)	11050 (Maximum)			8955 (Minimum)	9427 (Nominal)	9898 (Maximum)			994.4 (Minimum)	1047 (Nominal)	1099 (Maximum)	

Before: 24-Oct-2008 14:52

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	Phase	LS PM High Voltage (Command) V			Value
Before				1742	Before				1370	Before				1746
	1627 (Minimum)	1727 (Nominal)	1827 (Maximum)			1260 (Minimum)	1360 (Nominal)	1460 (Maximum)			1643 (Minimum)	1743 (Nominal)	1843 (Maximum)	

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High resolution Integrated Logging Tool-DTS Wellsite Calibration														
Crystal Quality Resolutions Calibration														
Phase	BS Crystal Resolution %			Value	Phase	SS Crystal Resolution %			Value	Phase	LS Crystal Resolution %			Value
Before				11.43	Before				8.501	Before				8.915
	10.43 (Minimum)	11.43 (Nominal)	12.43 (Maximum)			7.414 (Minimum)	8.414 (Nominal)	9.414 (Maximum)			8.013 (Minimum)	9.013 (Nominal)	10.01 (Maximum)	

Before: 24-Oct-2008 14:52

High resolution Integrated Logging Tool-DTS Wellsite Calibration														
MCFL Calibration														
Phase	Raw B0 Resistivity OHMM			Value	Phase	Raw B1 Resistivity OHMM			Value	Phase	Raw B2 Resistivity OHMM			Value
Before				3870	Before				3826	Before				3831
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	

Before: 24-Oct-2008 14:53

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				3870	Before				3826
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		8.288	Before		12.43
	6.000 (Minimum)			9.000 (Minimum)	
	8.000 (Nominal)			12.00 (Nominal)	
	10.00 (Maximum)			15.00 (Maximum)	

Before: 24-Oct-2008 14:55

High resolution Integrated Logging Tool-DTS Wellsite Calibration														
Detector Calibration														
Phase	Gamma Ray Background GAPI			Value	Phase	Gamma Ray (Jig - Bkg) GAPI			Value	Phase	Gamma Ray (Calibrated) GAPI			Value
Before				47.49	Before				165.9	Before				160.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)			150.8 (Minimum)	165.9 (Nominal)	181.0 (Maximum)			145.0 (Minimum)	160.0 (Nominal)	175.0 (Maximum)	

Before: 24-Oct-2008 14:51

High resolution Integrated Logging Tool-DTS Wellsite Calibration							
Zero Measurement							
Phase	CNTC Background CPS		Value	Phase	CFTC Background CPS		Value
Master			26.01	Master			28.65
Before			25.72	Before			30.47
	5.000 (Minimum)	26.01 (Nominal)	40.00 (Maximum)		5.000 (Minimum)	28.65 (Nominal)	40.00 (Maximum)

Master: 12-Aug-2008 15:47 Before: 24-Oct-2008 14:52

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				5256	Master				2234	Master				2.353
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)			1900 (Minimum)	2400 (Nominal)	2900 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	

Master: 12-Aug-2008 15:47

High resolution Integrated Logging Tool-DTS Wellsite Calibration			
Accelerometer Calibration			
Phase	Z-Axis Acceleration F/S2		Value
Before			32.39
	31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: 25-Oct-2008 0:34

General Purpose Inclinometer / Equipment Identification	
Primary Equipment: GPIT Cartridge - C	GPIC - C
Auxiliary Equipment: GPIT Housing	GPIH - B

DTS Telemetry Tool / Equipment Identification	
Primary Equipment: DTC-H Auxiliary Cartridge DTC-H Telemetry Cartridge	DTCH - A DTCH - A
Auxiliary Equipment: DTCH Telemetry Cartridge Housing	ECH - KC

Company: **Manzano LLC.**

Schlumberger

Well: **Cougar #1**

Field: **Oakdale**

County: **Huerfano**

State: **Colorado**

Platform Express
Array Induction Tool