



**Company: Kerr McGee Oil and Gas Onshore, LP**

# State: Colorado

Platform Express			
Array Induction			
with Linear Correlation			
NENW Sec. 19, T 1N, R 68W	Elev.:	K.B.	5056.00 ft
SHL: 1259' FNL / 1331' FWL NENW		G.L.	5041.00 ft
BHL: 1900' FNL / 1995' FWL SENW (est)		D.F.	5055.00 ft
Permanent Datum:	Ground Level	Elev.:	5041.00 ft
Log Measured From:	Kelly Bushing	15.00 ft	above Perm. Datum
Drilling Measured From:	Kelly Bushing		
API Serial No.	Section	Township	Range
05-123-29922-000C	19	1N	68W

[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	
Source Of Sample		
RM @ Measured Temperature	@	
RMF @ Measured Temperature	@	
RMF @ Measured Temperature	@	
Source RMF	RMC	
RM @ MRT	RMF @ MRT	@
Maximum Recorded Temperatures		@
Circulation Stopped	Time	
Logger On Bottom	Time	
Unit Number	Location	
Recorded By		
Witnessed By		

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

Run 4

Date Created: 12-NOV-2009 21:40:41

## Depth Measuring Device

## Tension Device

## Logging Cable

Type:	7-39P LXS
Serial Number:	708273
Length:	15060 FT
<hr/>	
Conveyance Method:	Wireline
Rig Type:	LAND

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	9.00 FT
Tool Zero Check At Surface:	0.00 FT

1. All Schlumberger depth policy procedures applied
2. This is the primary depth reference
- 3.
- 4.
- 5.
- 6.

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 SERVICES2

OS1:  
OS2:  
OS3:  
OS4:  
OS5:

## REMARKS: RUN NUMBER 2

1. This is the first run in hole.
2. Tool run as per tool sketch.
3. Matrix changes are as noted on the porosity scale.

Rig: Xtreme 11	
Crew: Tim Ludgate	

RUN 1			RUN 2		
SERVICE ORDER #:		AXB6-00071	SERVICE ORDER #:		
PROGRAM VERSION:		17C0-154	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		

SURFACE EQUIPMENT

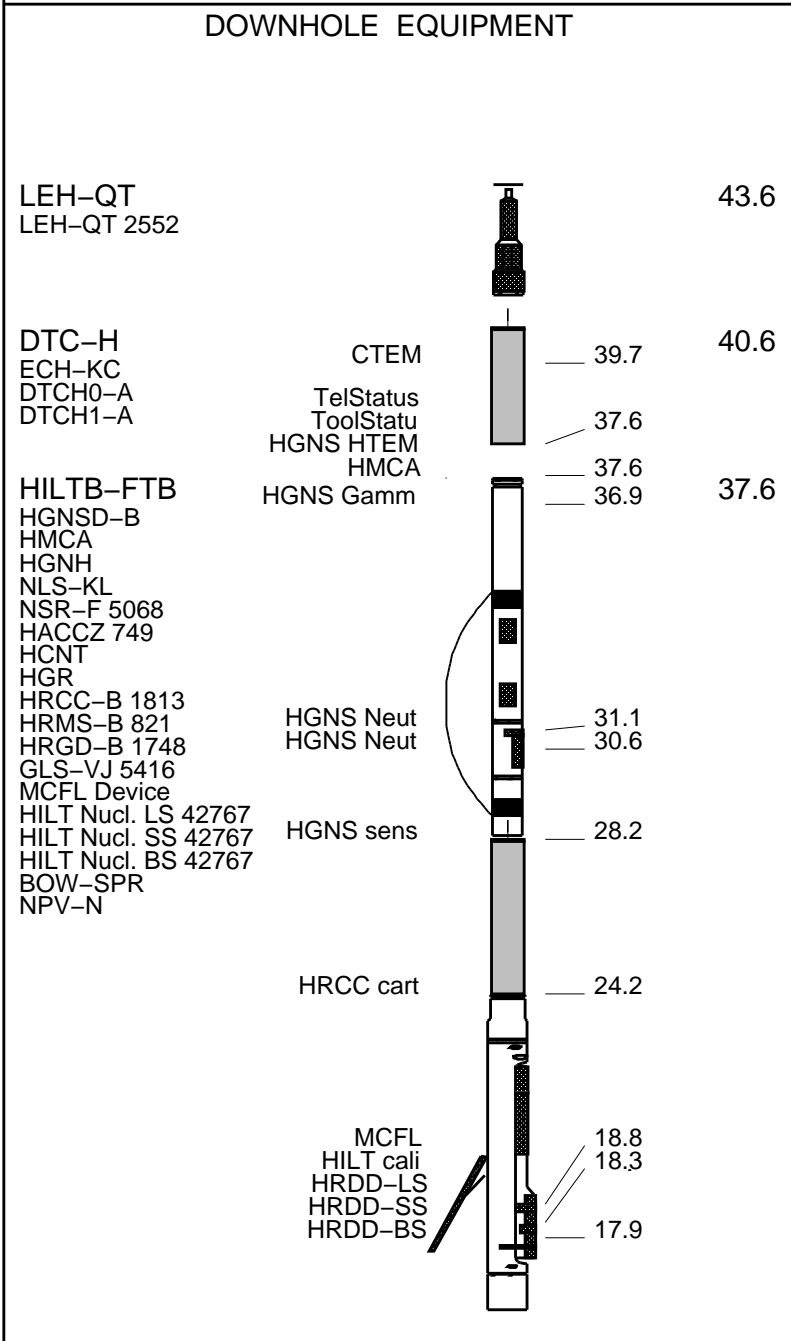
WITM (DTS)-A

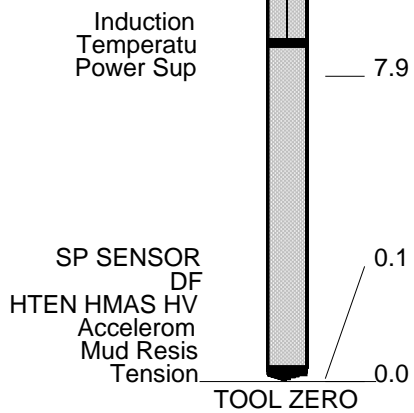
GSR-U/Y

NCT-B

CNB-AB

NCS-VB

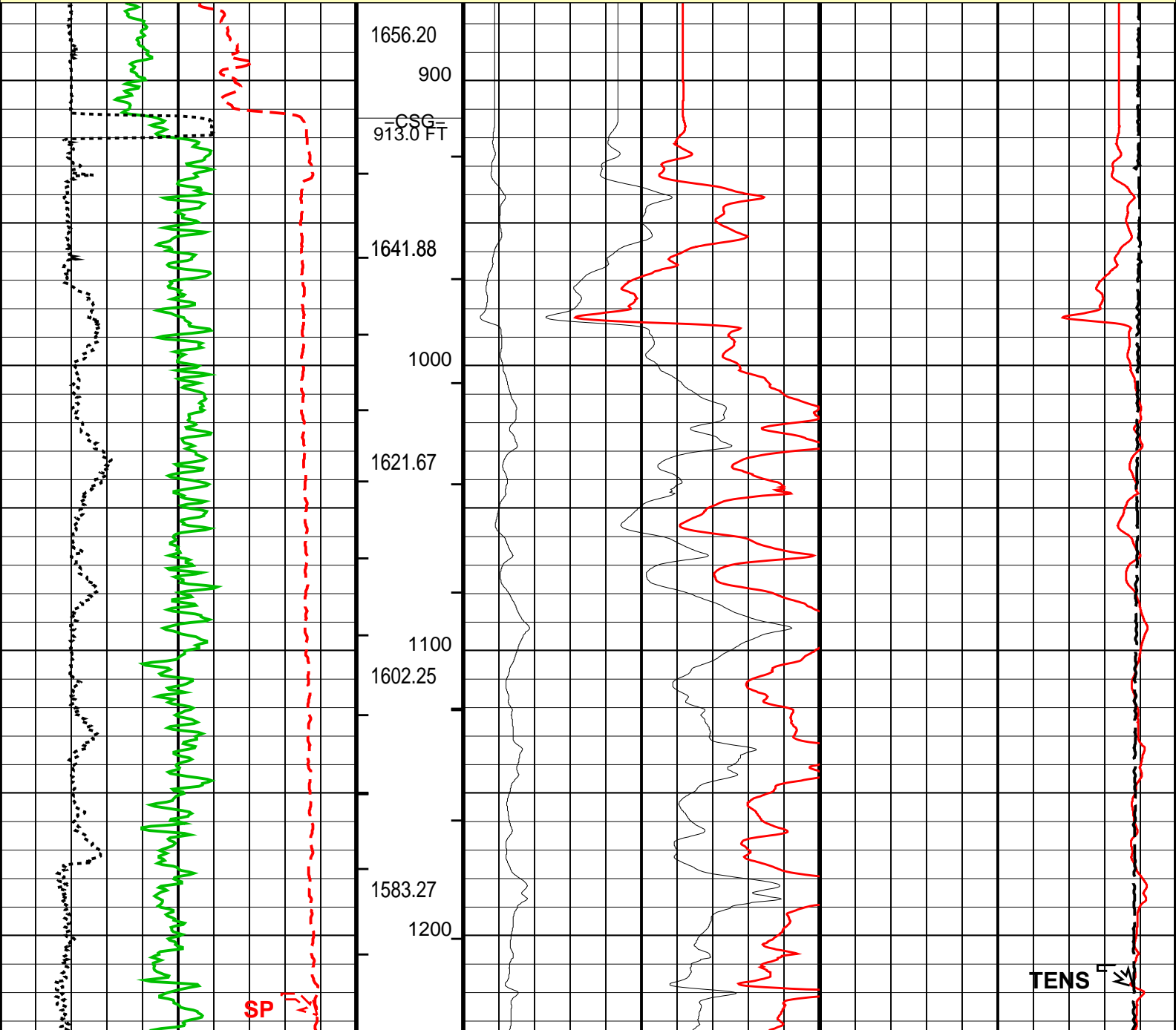


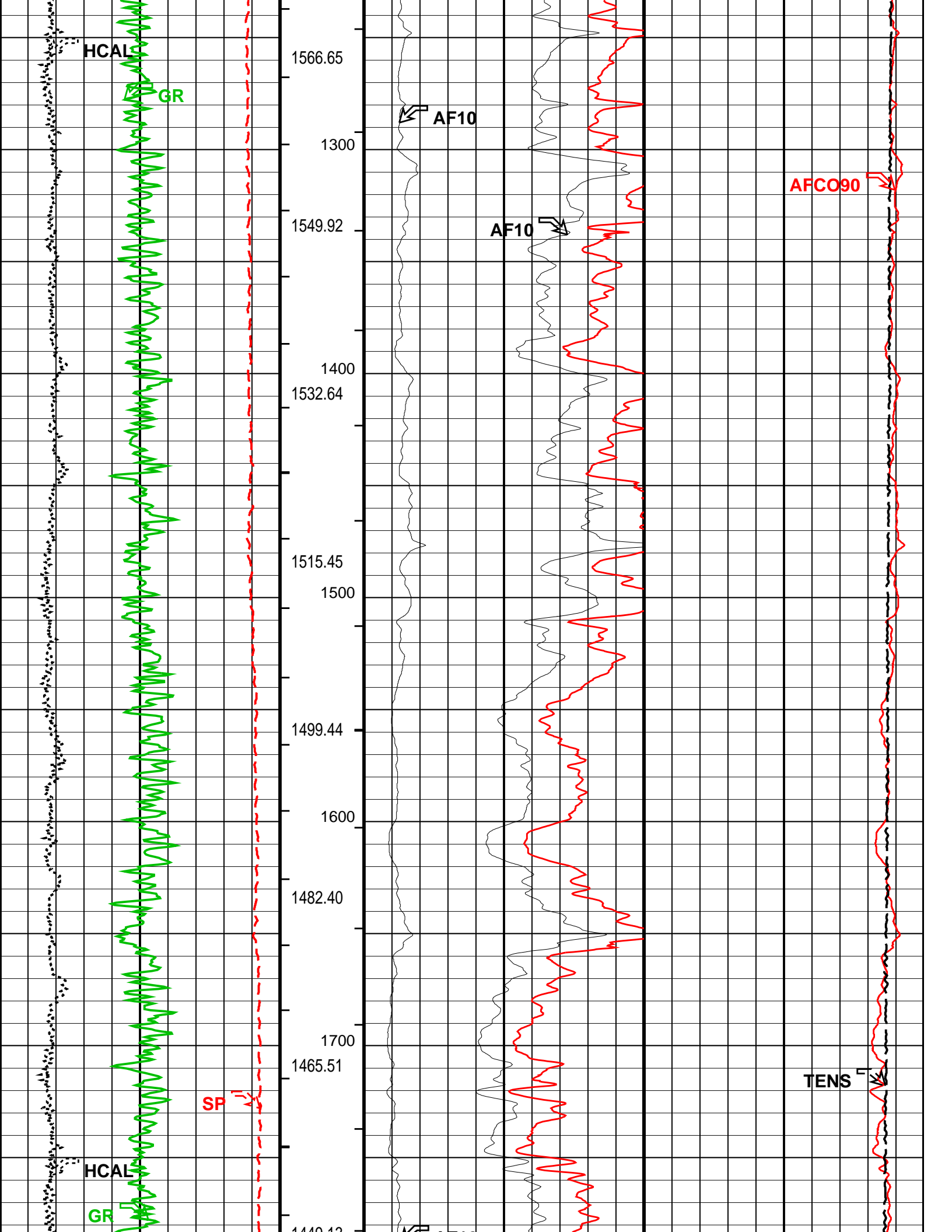


MAXIMUM STRING DIAMETER 4.63 IN  
MEASUREMENTS RELATIVE TO TOOL ZERO  
ALL LENGTHS IN FEET

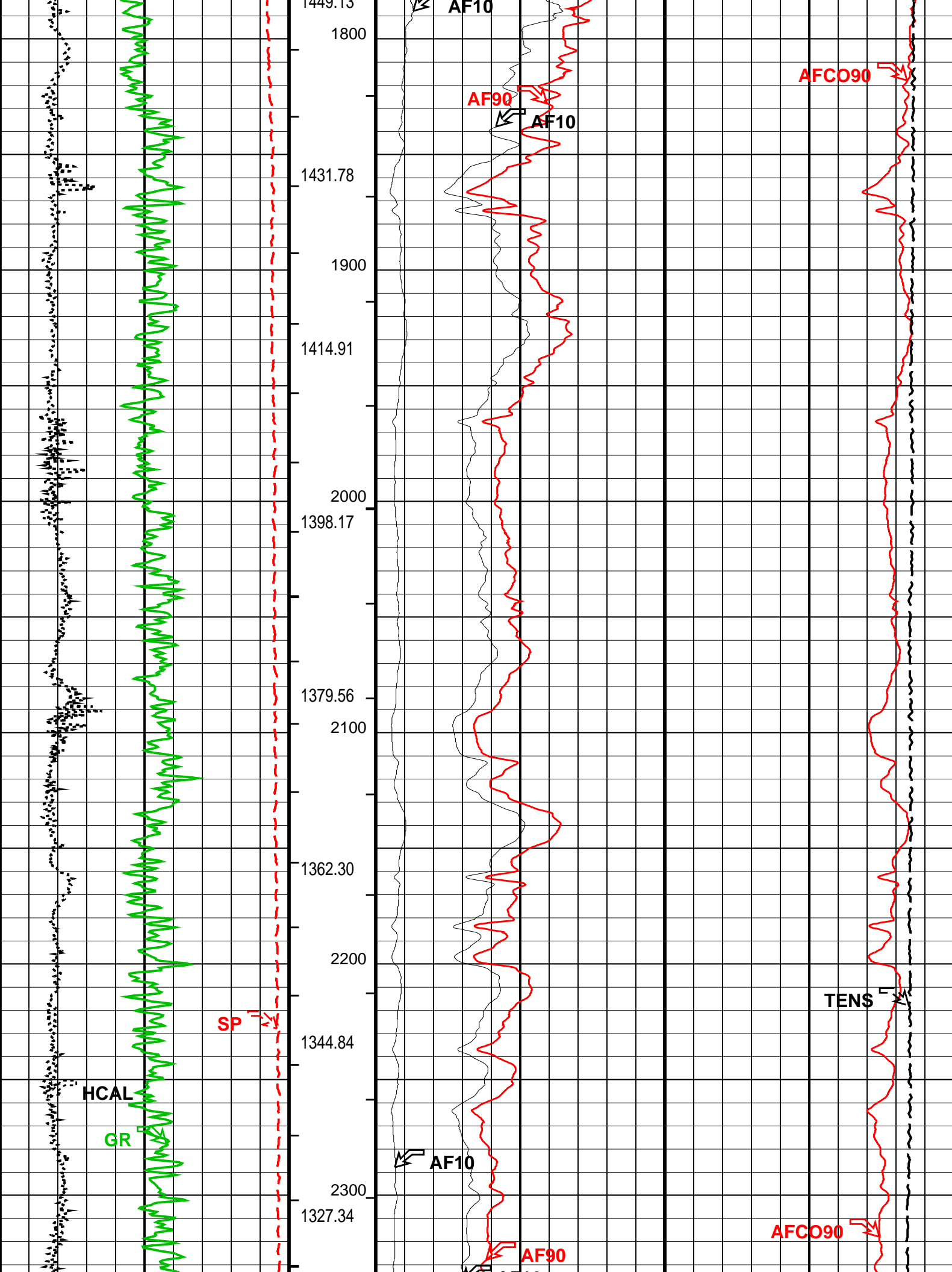
Production String	(in)		(ft)	Well Schematic	(ft)	(in)		Casing String
	OD	ID	MD		MD	OD	ID	
					0.0	8.625		Casing String
					912.0 912.0	8.625 7.875		Casing Shoe Borehole Segment

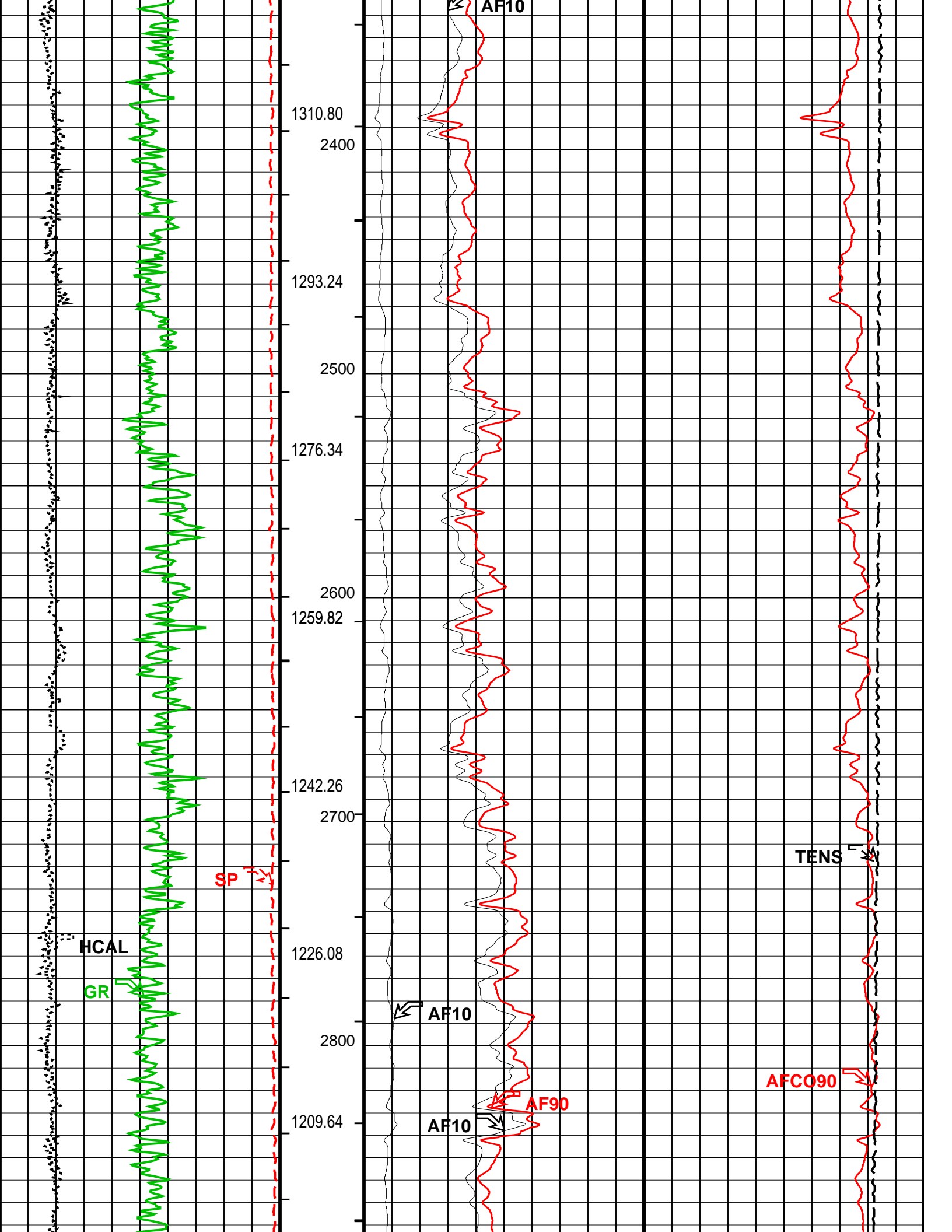


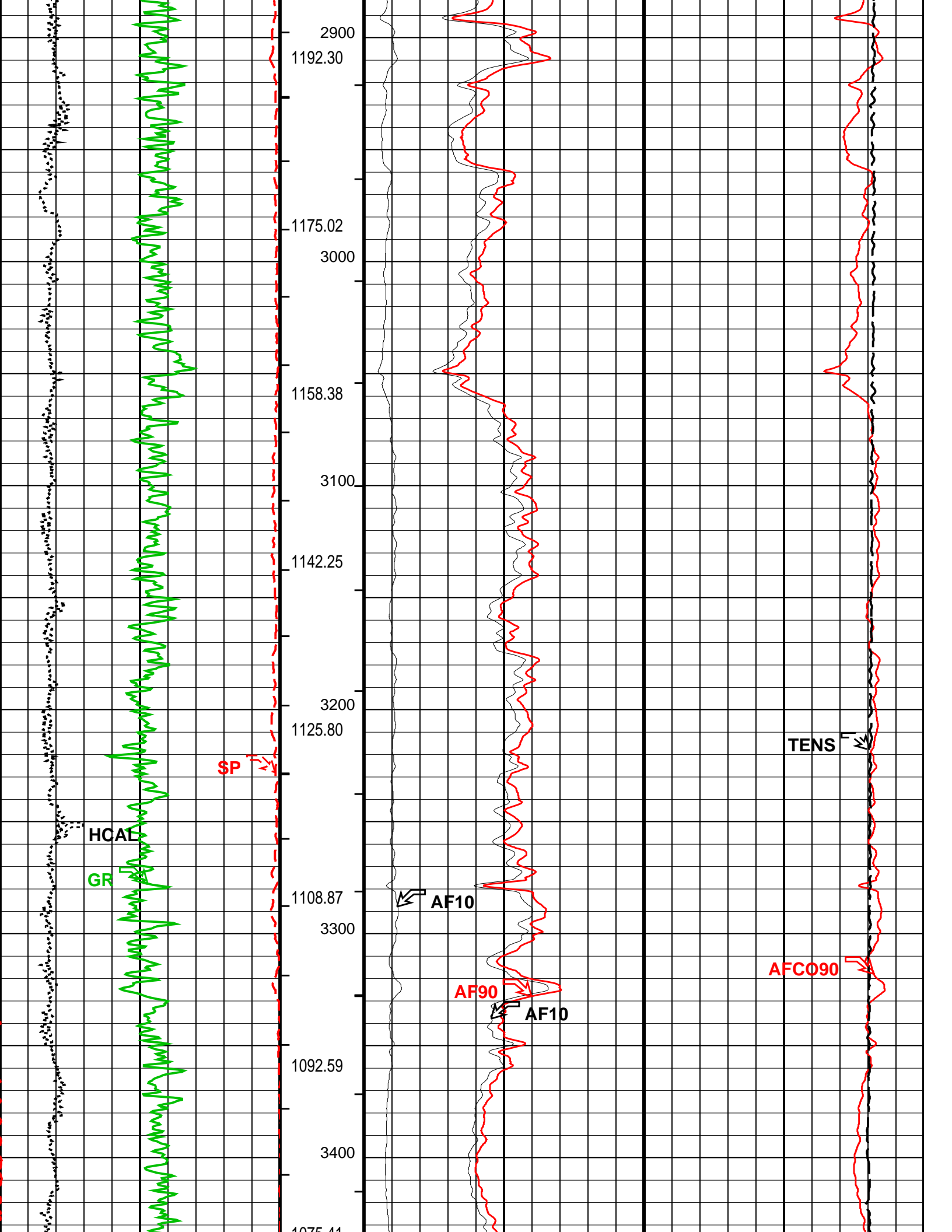


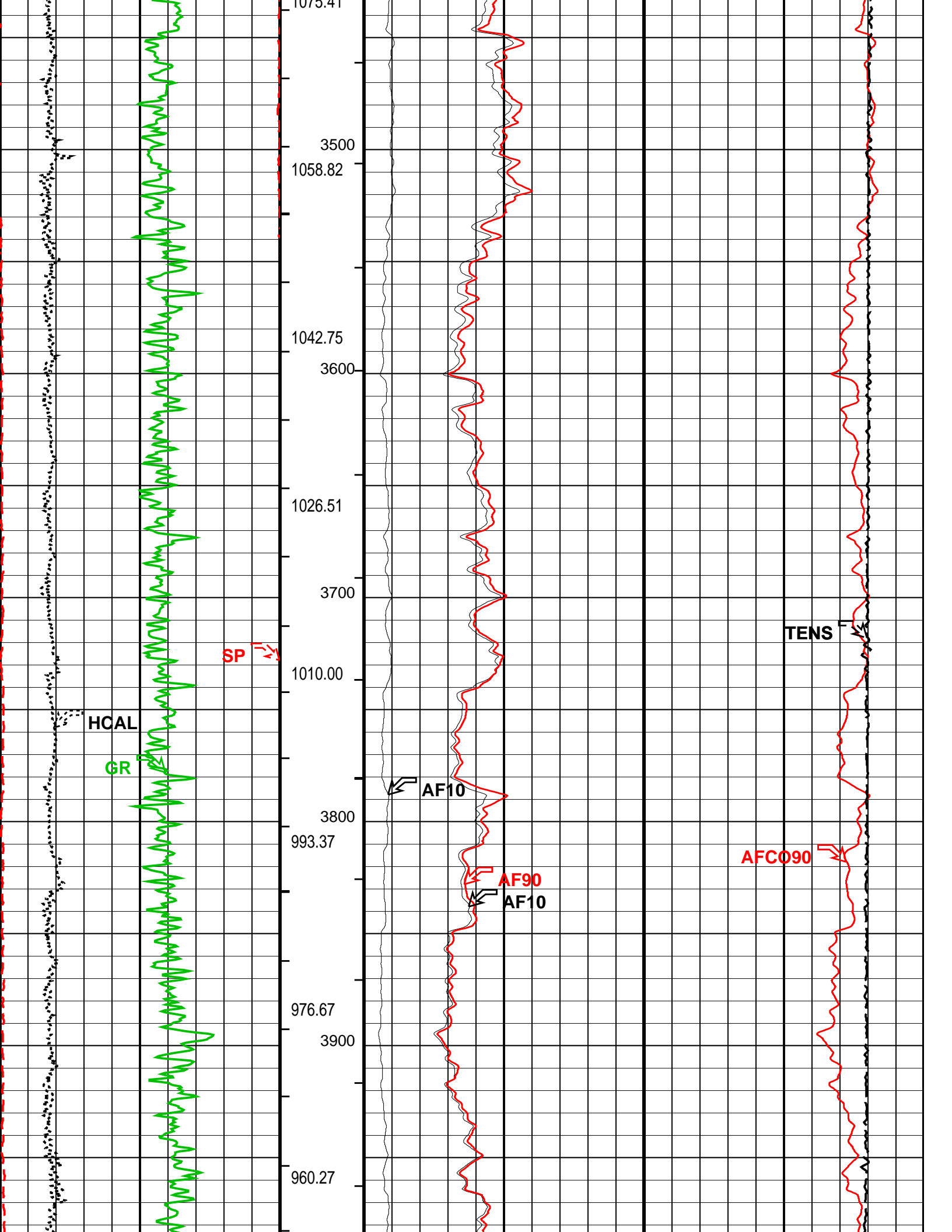


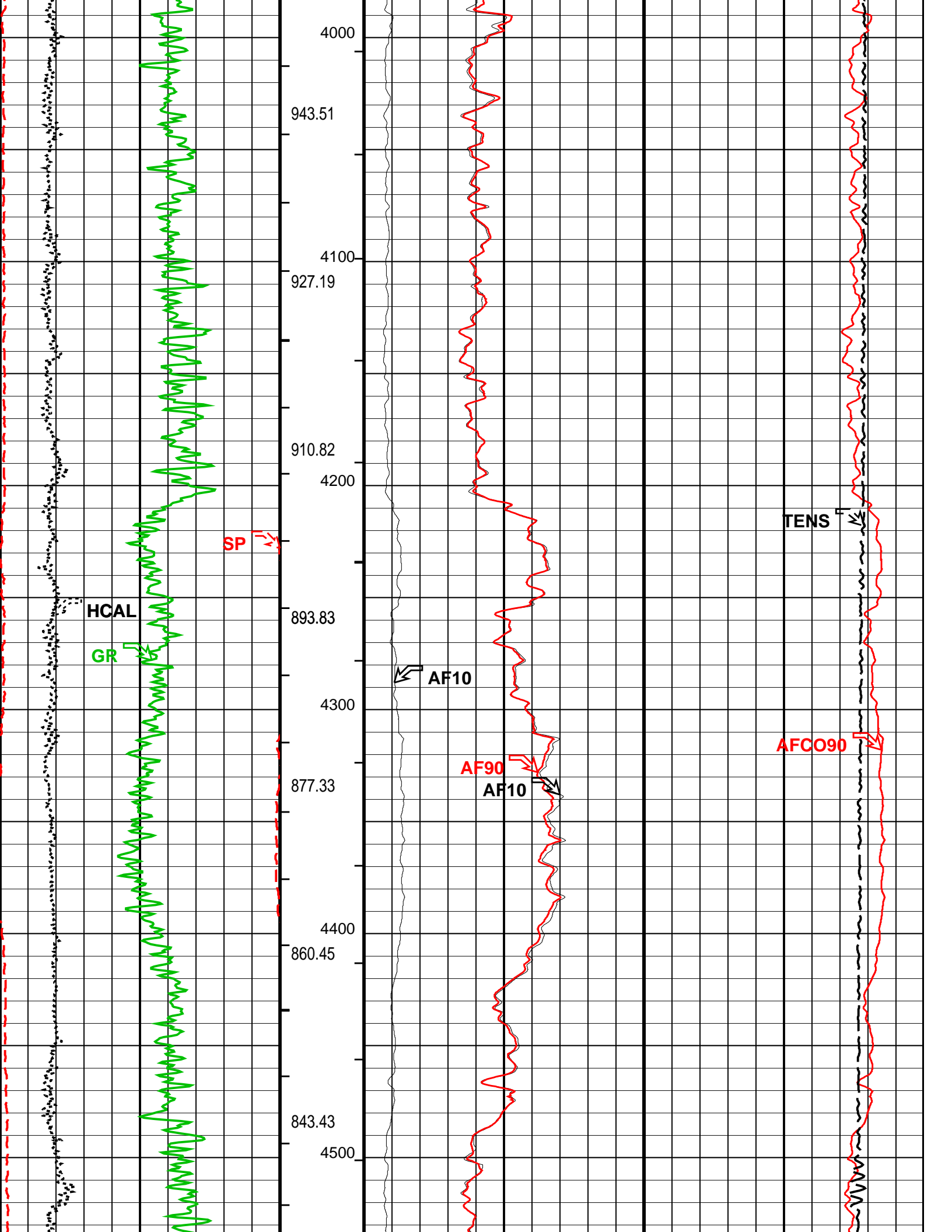


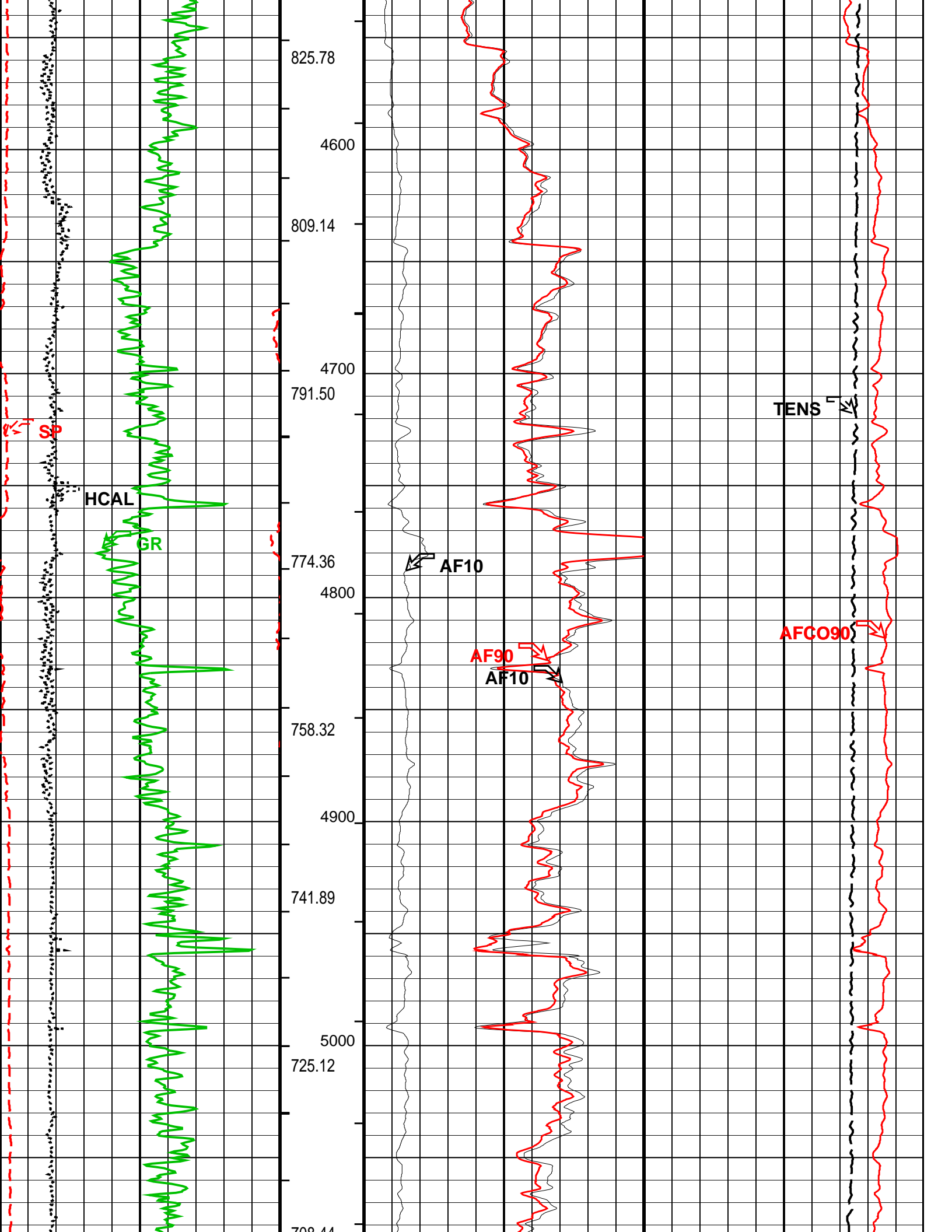


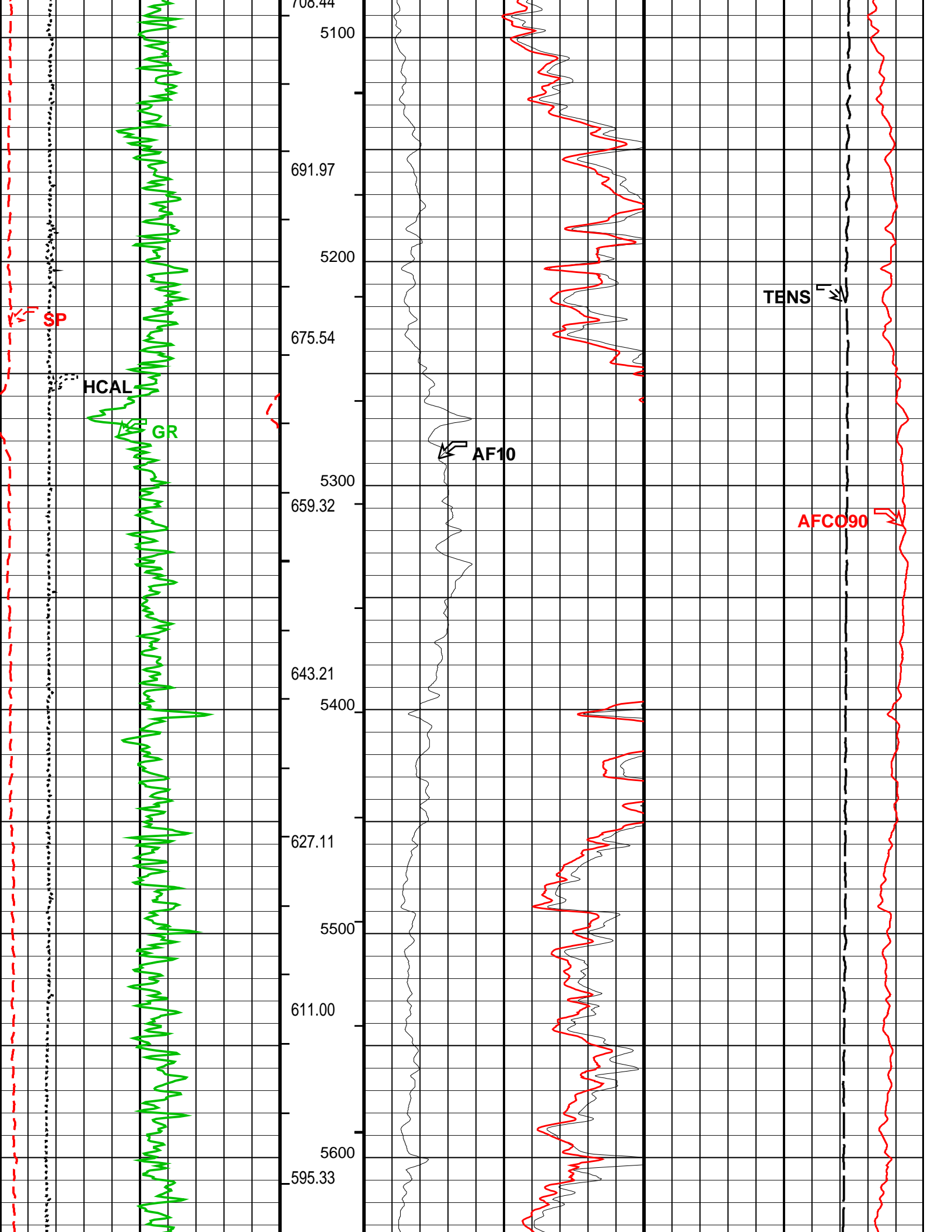


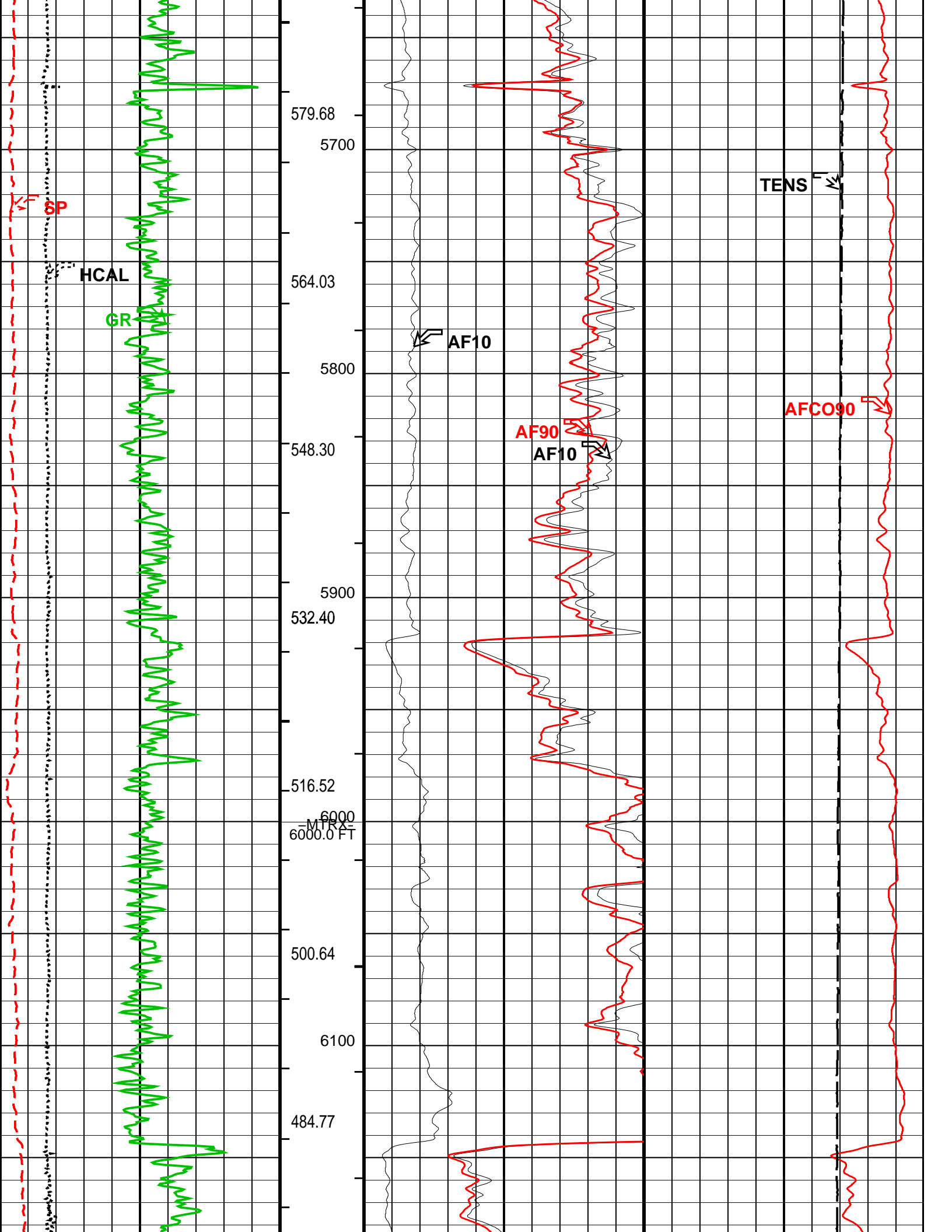




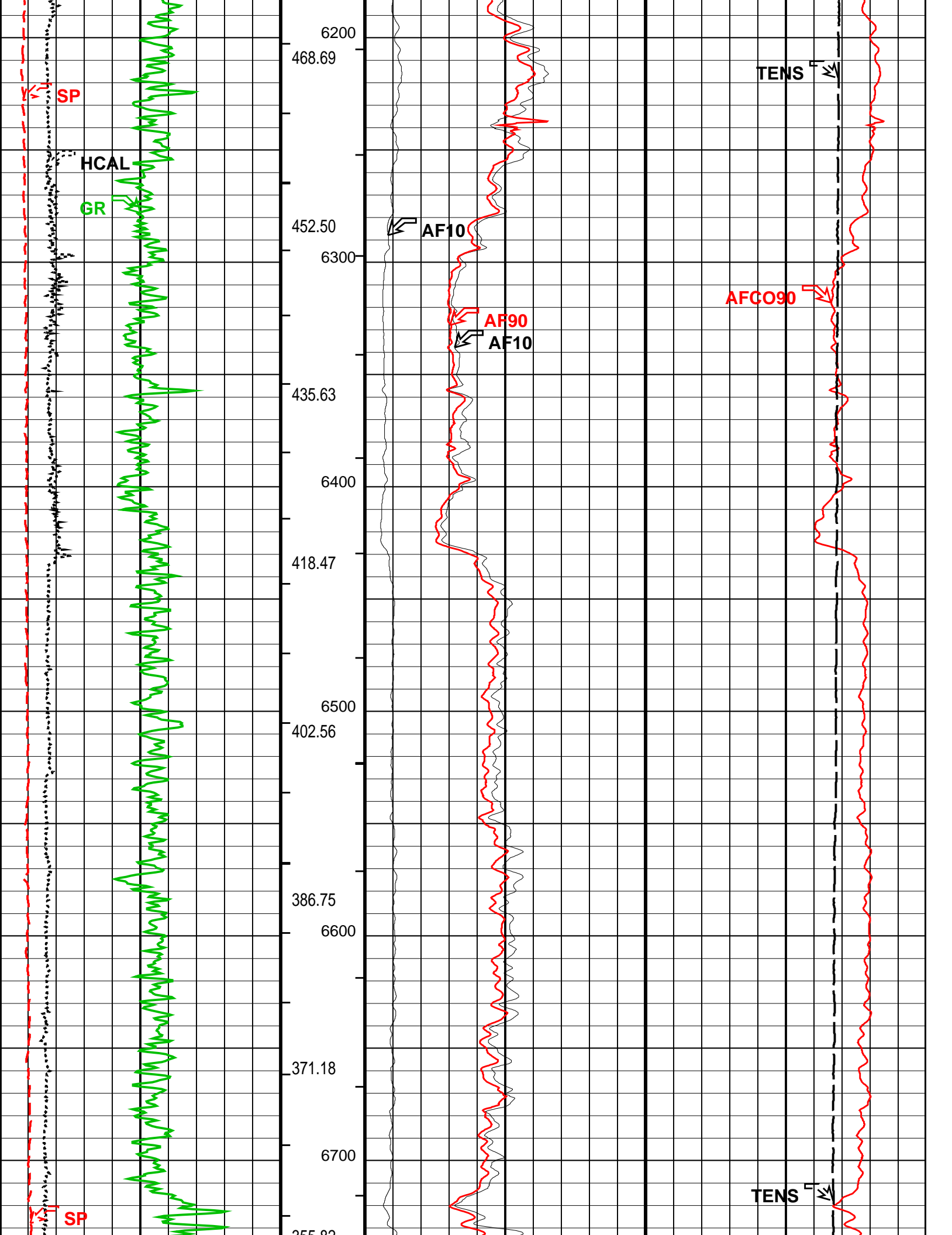


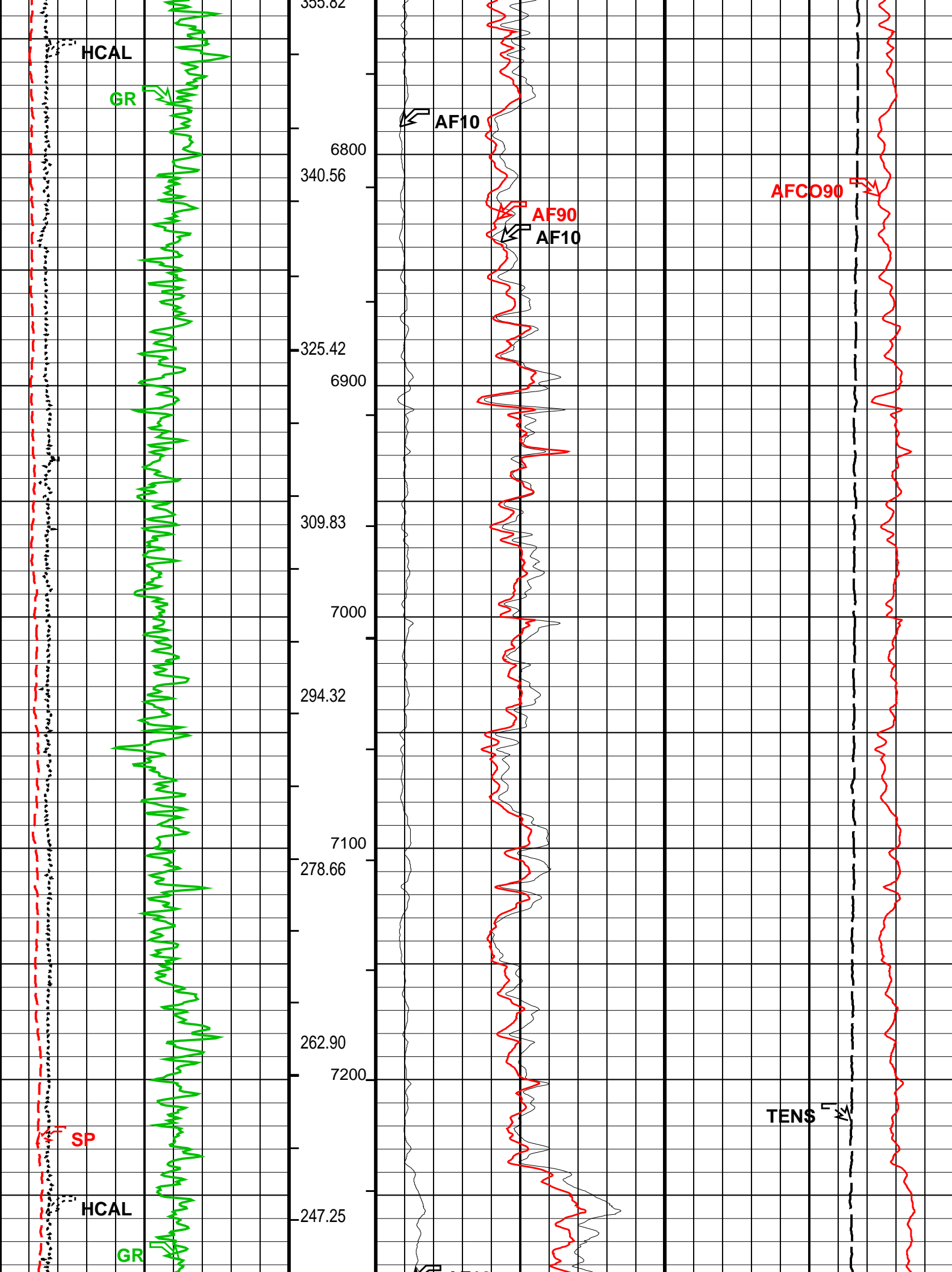


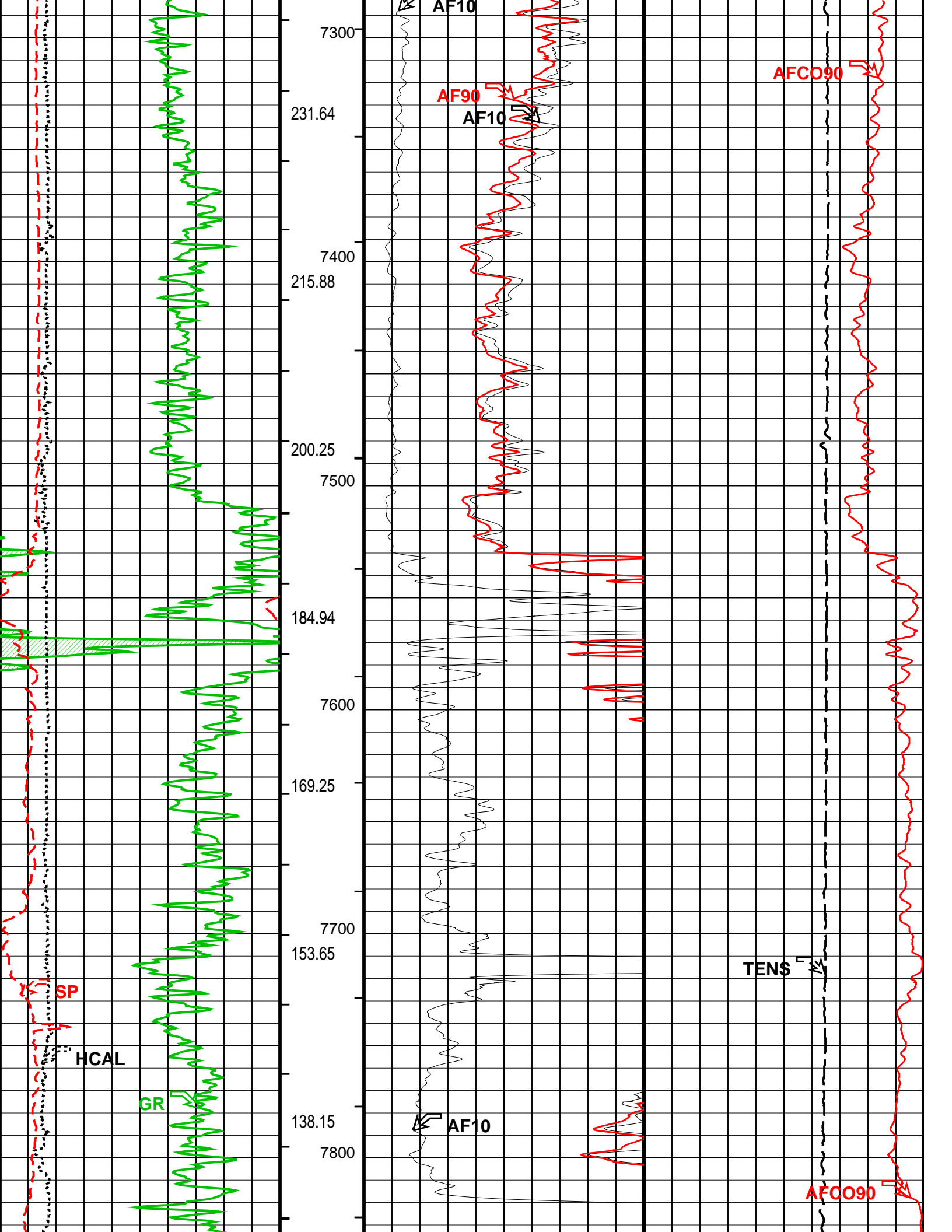


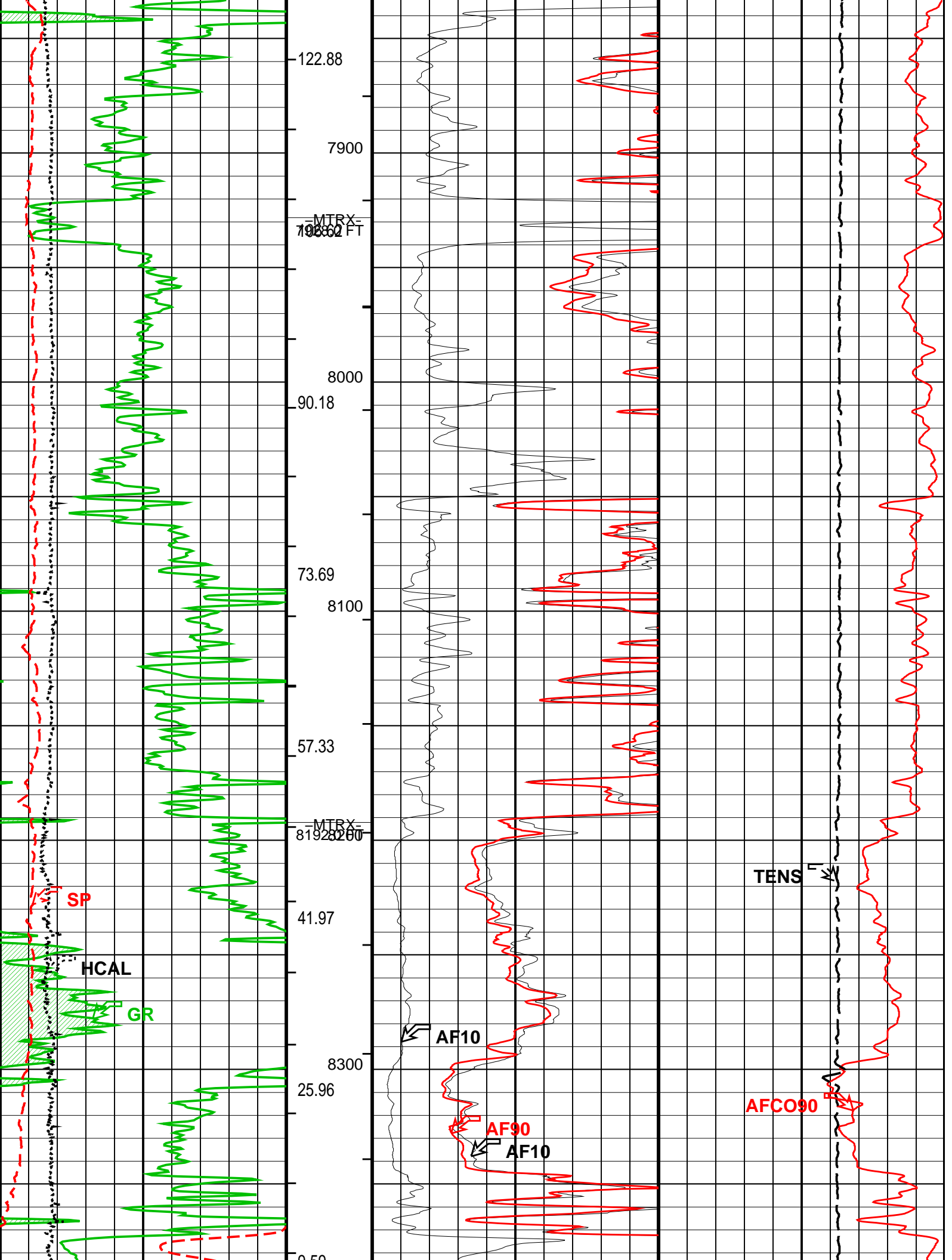


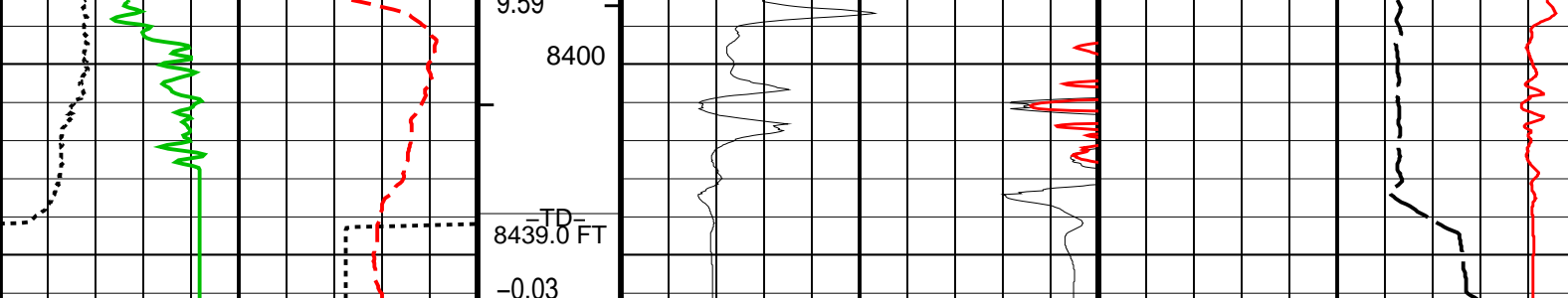












### MAIN PASS: \*\*\* PLATFORM EXPRESS – ARRAY INDUCTION \*\*\*

Gamma Ray Backup	Cement Volume (ICV) (F3)	AIT 10 Inch Investigation (AF10)		AIT 90 Inch Investigation Conductivity (AFCO90)	
		0	10	1000	0
Gamma Ray (GR)		AIT 90 Inch Investigation (AF90)		Tension (TENS)	
(GAPI)		0	10	10000	0
Caliper (HCAL)		AIT 10 Inch Investigation (AF10)			
6		0	50		
SP (SP)					
-160					
(MV)					
40					

### PIP SUMMARY

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

## Parameters

DLIS Name	Description	Value
<b>AIT-M: Array Induction Tool – M</b>		
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	-50000 FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20
AIGS	Array Induction Select Akima Interpolation Gating	On
AMRF	Array Induction Mud Resistivity Factor	1
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20
ARFV	Array Induction Radial Profiling Code Version Number	701
ARPV	Array Induction Radial Parametrization Code Version Number	232
ASTA	Array Induction Tool Standoff	0.25 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
BHT	Bottom Hole Temperature (used in calculations)	198 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
SHT	Surface Hole Temperature	68 DEGF
SPNV	SP Next Value	0 MV
<b>HILTB-FTB: High resolution Integrated Logging Tool-DTS</b>		
BHT	Bottom Hole Temperature (used in calculations)	198 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
SHT	Surface Hole Temperature	68 DEGF
<b>FEQL: Formation Evaluation Quick Look</b>		
FEXP	Form Factor Exponent	2

TEXT	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
	HOLEV: Integrated Hole/Cement Volume		
BHT	Bottom Hole Temperature (used in calculations)	198	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	HCAL	
SHT	Surface Hole Temperature	68	DEGF
	PERT: Preliminary Evaluation – Real Time		
BHT	Bottom Hole Temperature (used in calculations)	198	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	
SHT	Surface Hole Temperature	68	DEGF
	System and Miscellaneous		
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	9.30	LB/G
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	-50000.00	FT
MST	Mud Sample Temperature	75.00	DEGF
TD	Total Depth	8512	FT

Format: ERES\_S2    Vertical Scale: 2" per 100'    Graphics File Created: 12-Nov-2009 21:44

## OP System Version: 17C0-154

AIT-M	17C0-154	HILTB-FTB	17C0-154
DTC-H	17C0-154		

## Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_008LUP	FN:7	PRODUCER	12-Nov-2009 21:44
---------	-------------------------	------	----------	-------------------

**Schlumberger**

**UPPER RESISTIVITY LOG 5" = 100'**

MAXIS Field Log

## Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_008LUP	FN:7	PRODUCER	12-Nov-2009 21:44	8461.5 FT	0.0 FT
---------	-------------------------	------	----------	-------------------	-----------	--------

## Integrated Hole/Cement Volume Summary

Hole Volume = 501.22 ft<sup>3</sup>  
Cement Volume = 335.03 ft<sup>3</sup> (assuming 4.50 in casing O.D.)  
Computed from 5299.5 ft to 3795.5 ft

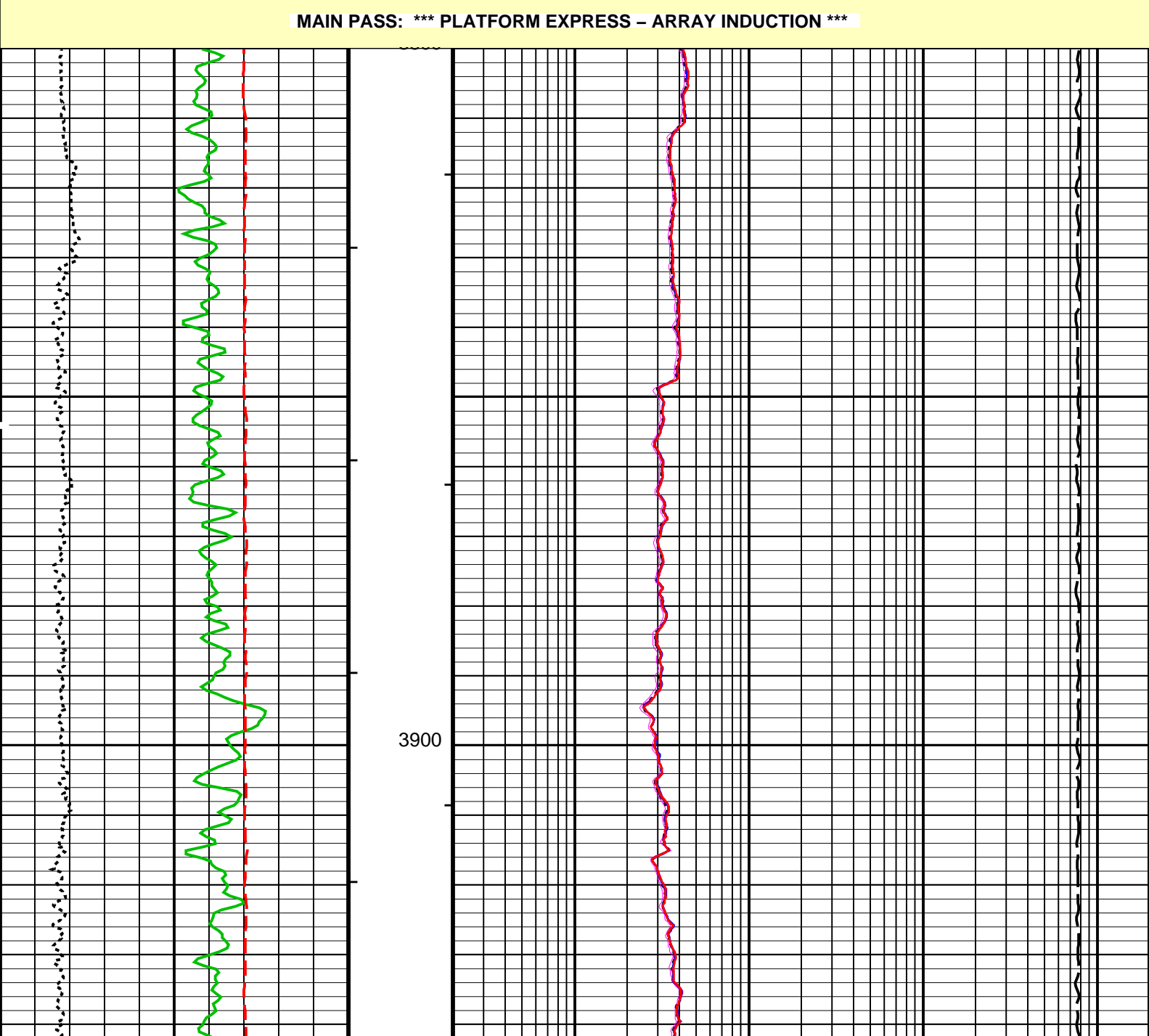
## OP System Version: 17C0-154

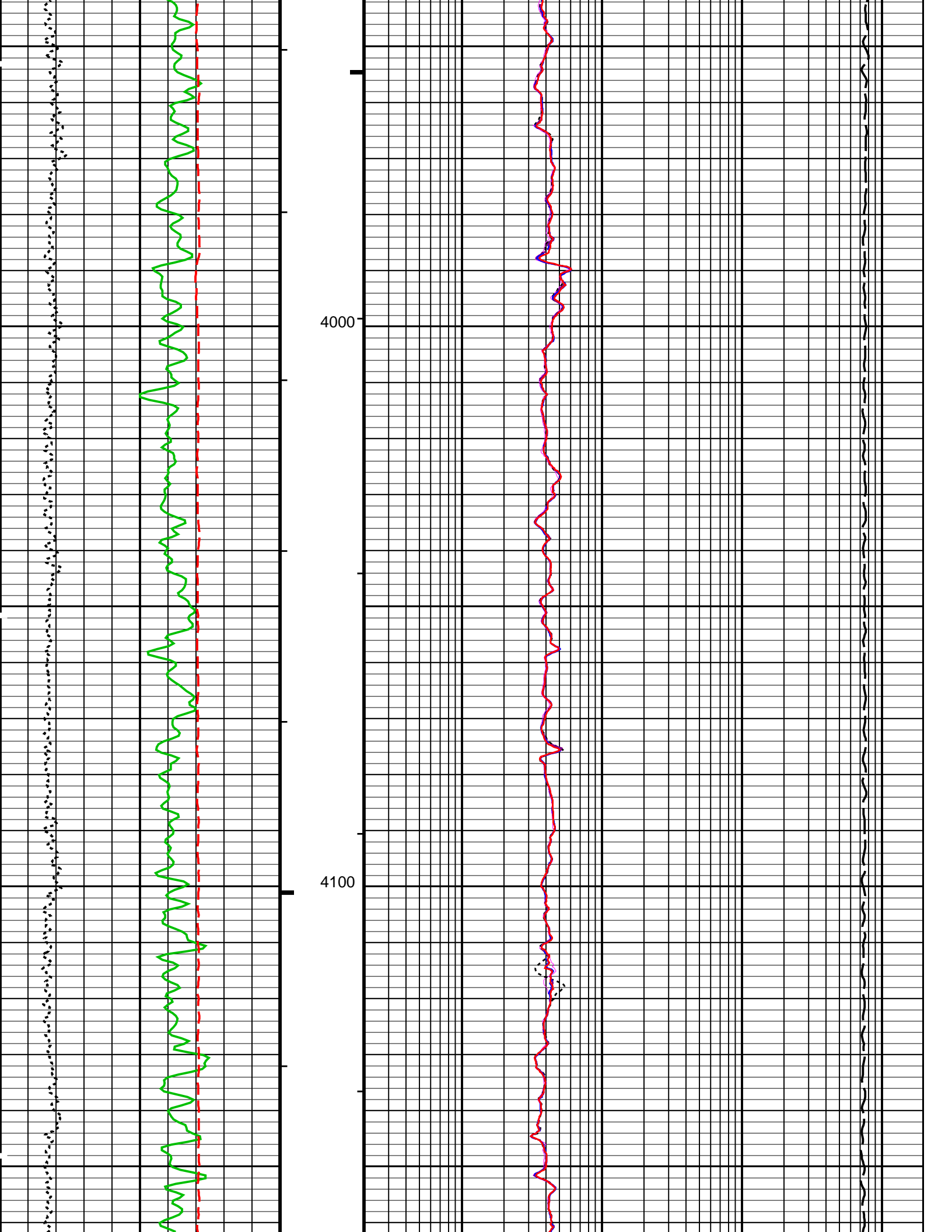
AITM	17C0-154	HILTD	17C0-154
DTCH	17C0-154		

## PIP SUMMARY

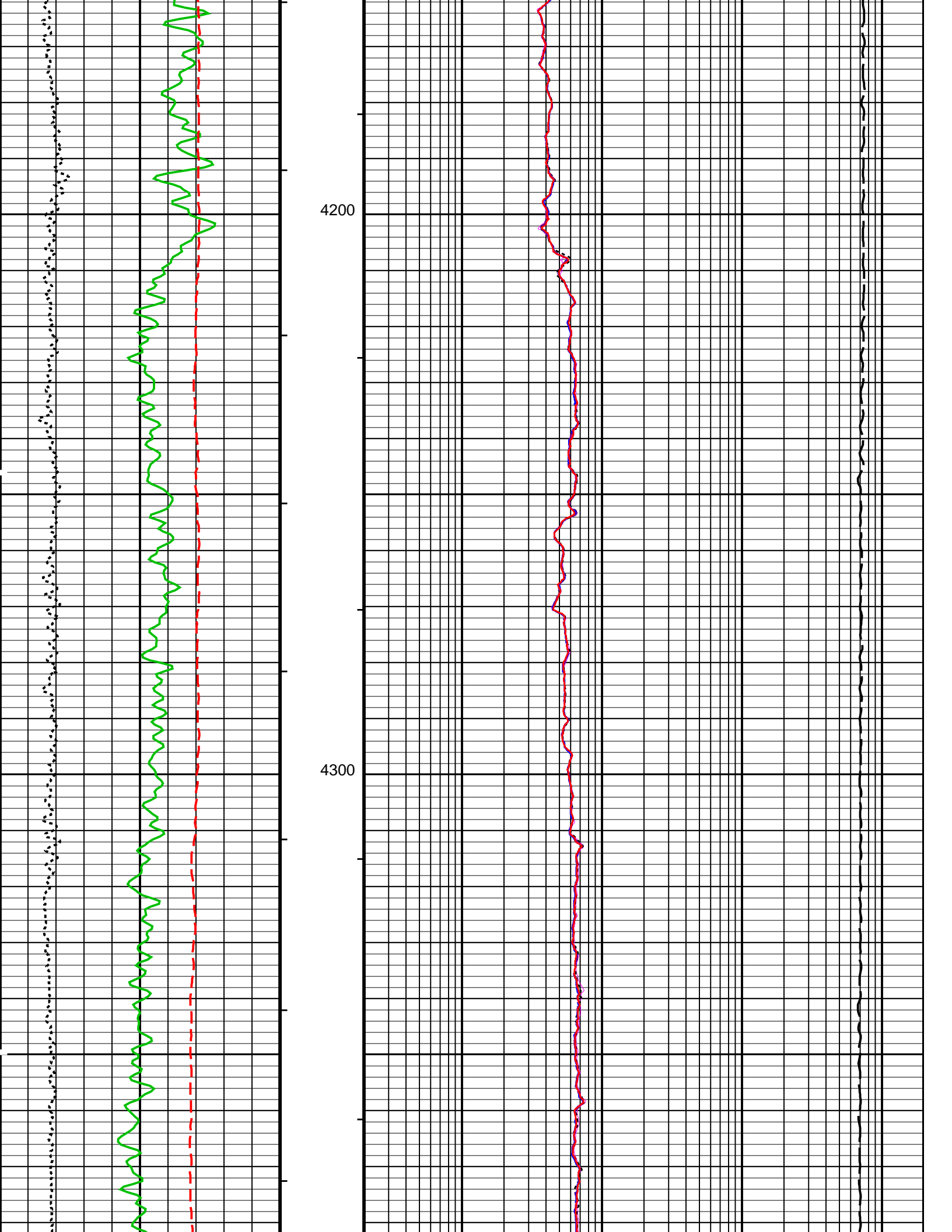
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
- └ Integrated Cement Volume Minor Pip Every 10 F3

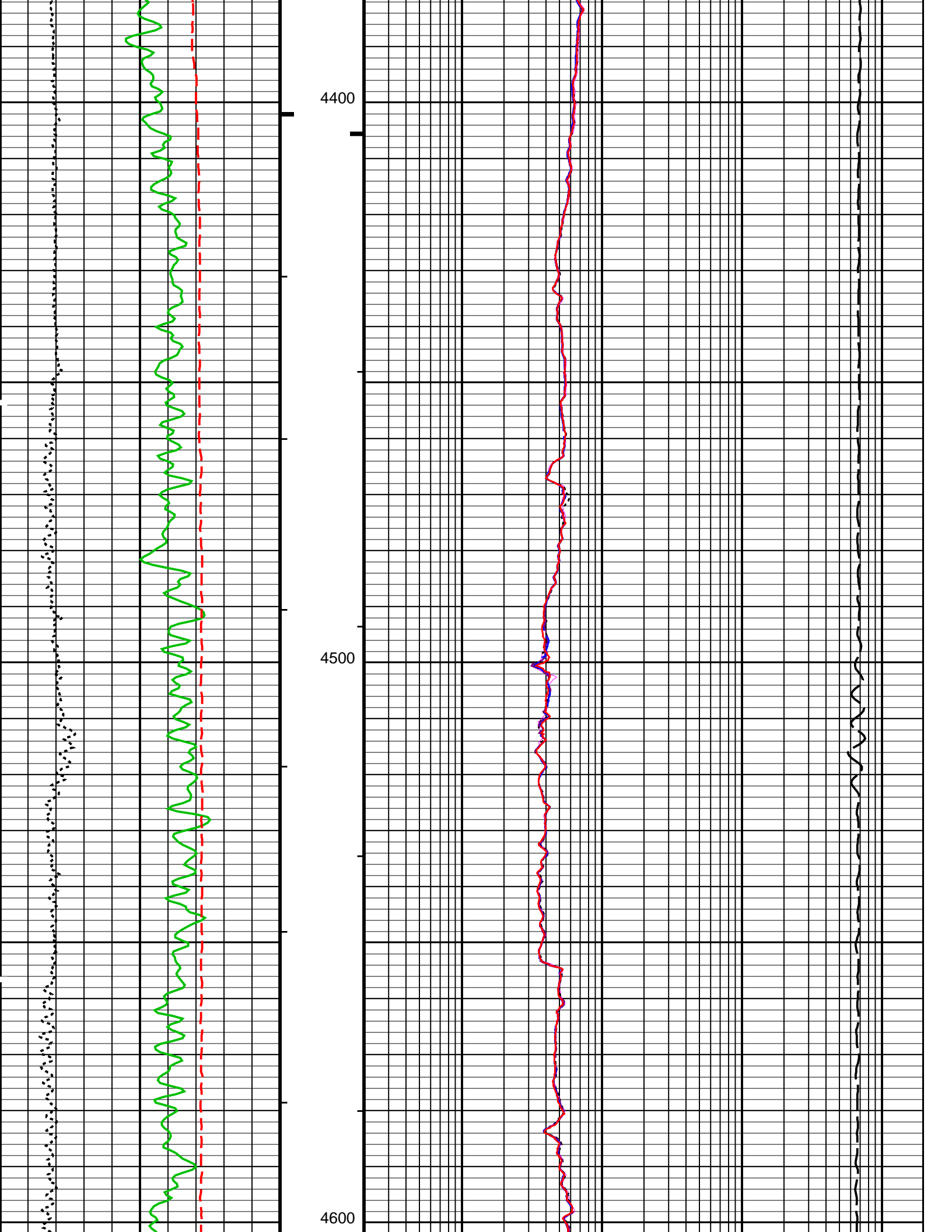
Time Mark Every 60 S		Integrated Cement Volume Minor Pip Every 10 F3		Integrated Cement Volume Major Pip Every 100 F3	
				Tension (TENS) 10000 (LBF) 0	
				AIT 90 Inch Investigation (AT90) 0.2 (OHMM) 2000	
SP (SP) -160 (MV) 40				AIT 60 Inch Investigation (AT60) 0.2 (OHMM) 2000	
Caliper (HCAL) 6 (IN) 16		Stuck Stretch (STIT) 0 (F) 50		AIT 30 Inch Investigation (AT30) 0.2 (OHMM) 2000	
Gamma Ray (GR) 0 (GAPI) 200		Tool/Tot. Drag		AIT 20 Inch Investigation (AT20) 0.2 (OHMM) 2000	
Gamma Ray Backup		Cable Drag		AIT 10 Inch Investigation (AT10) 0.2 (OHMM) 2000	

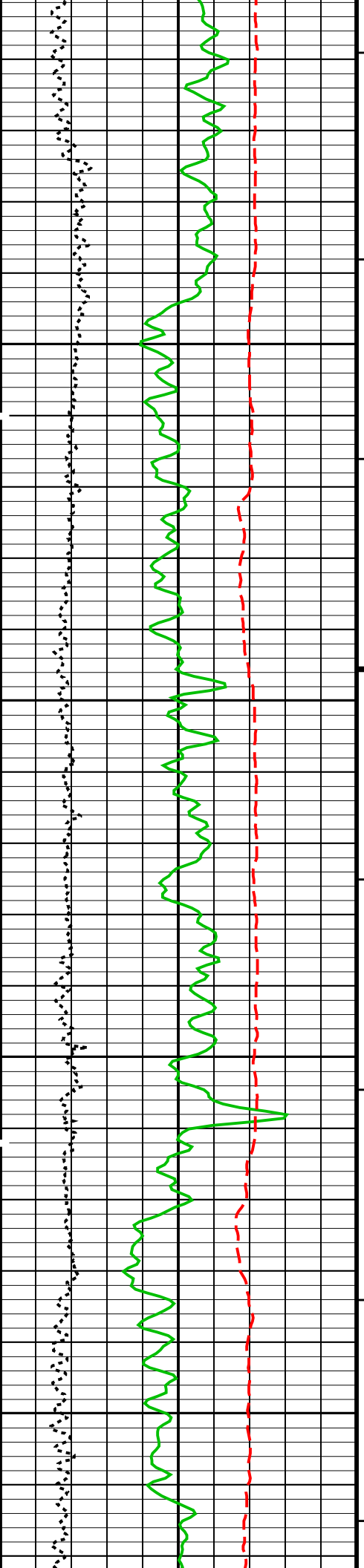






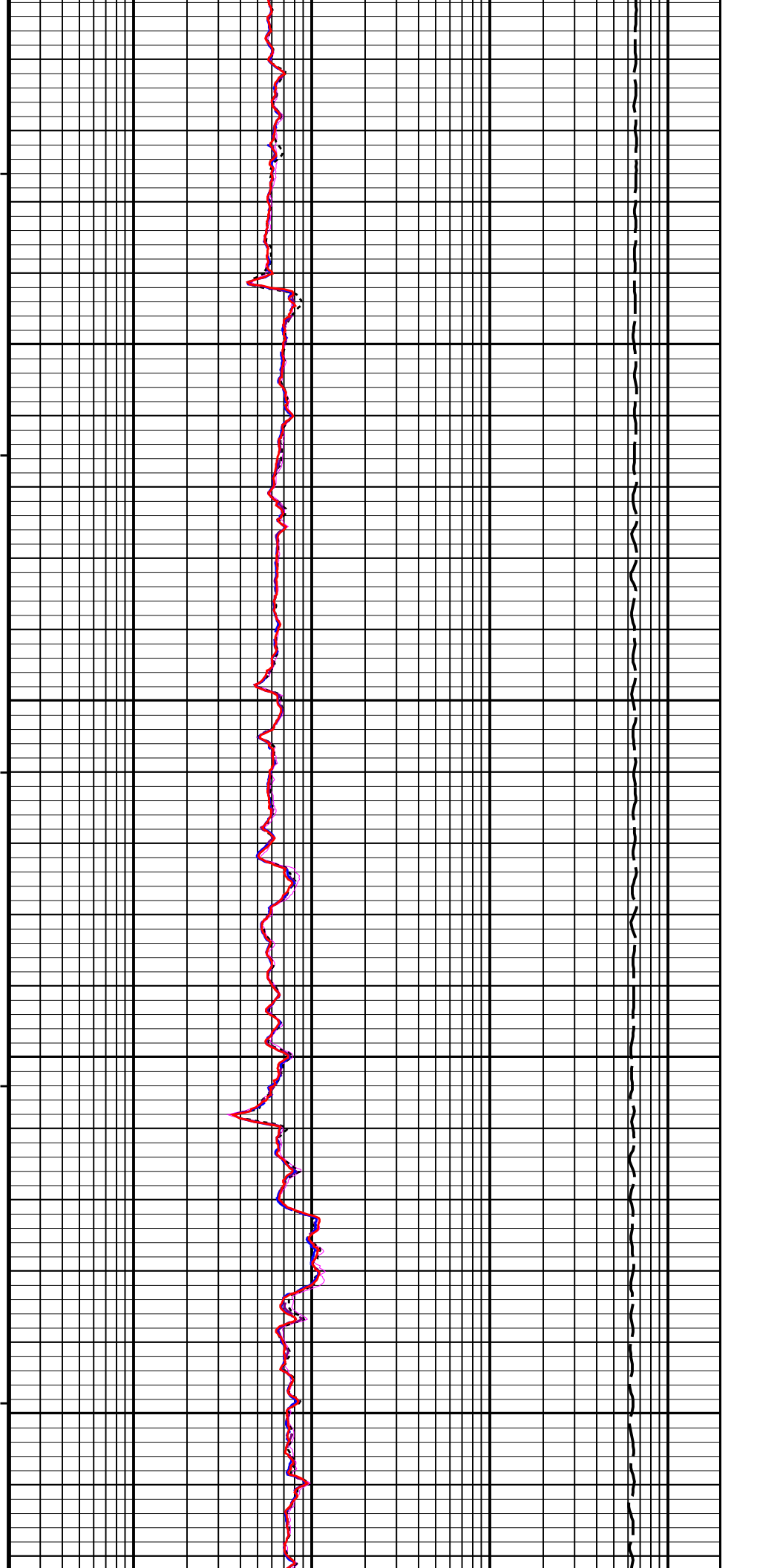


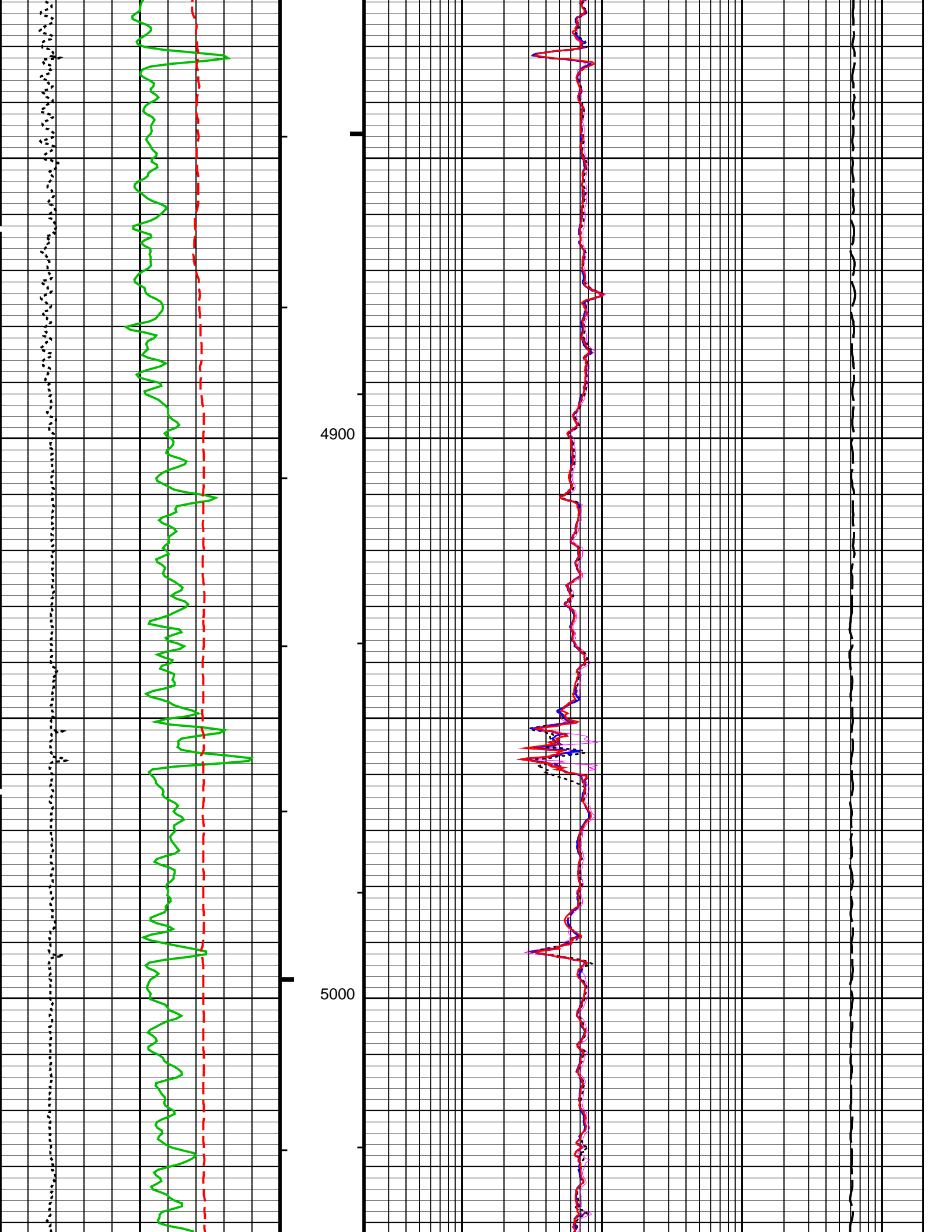


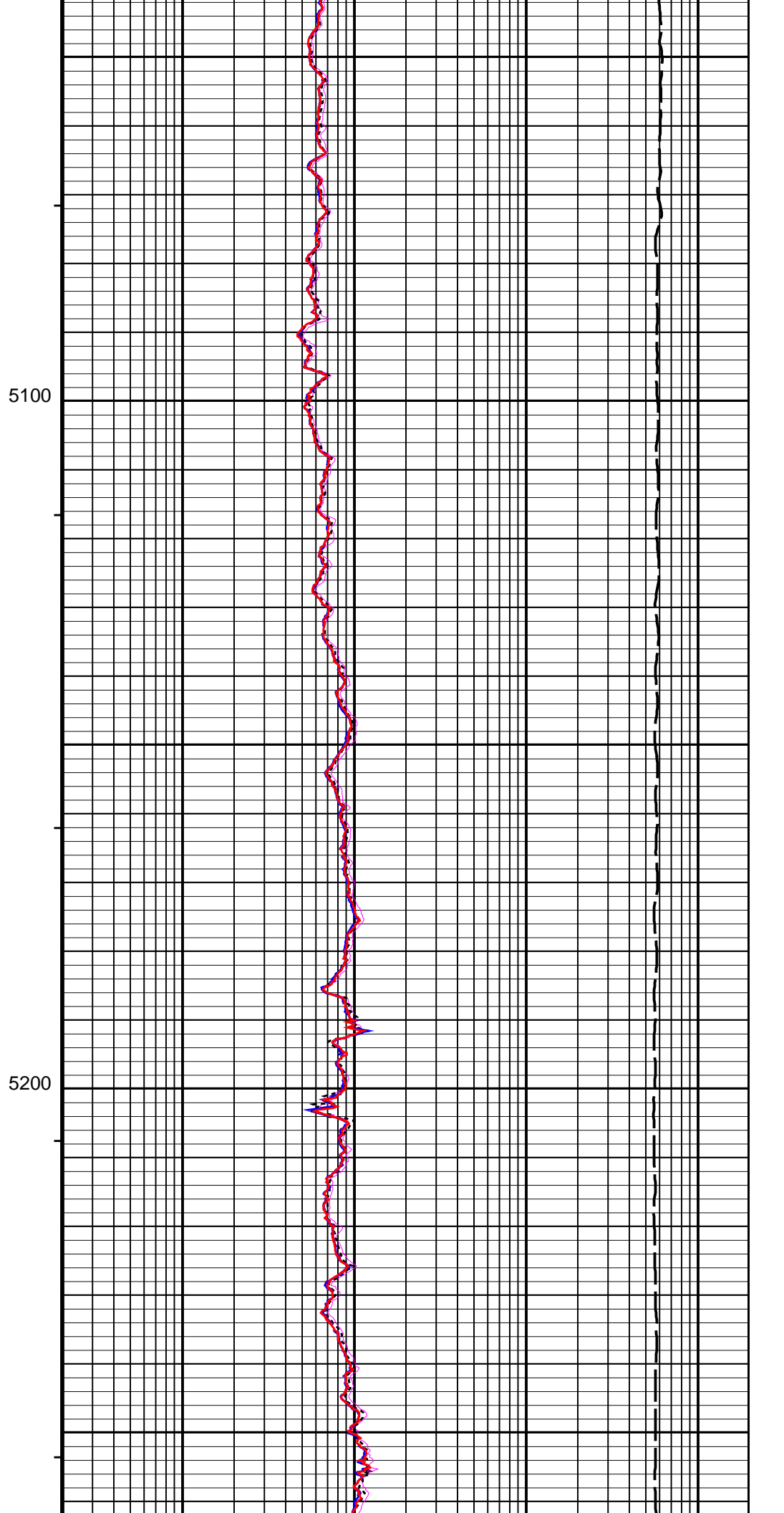
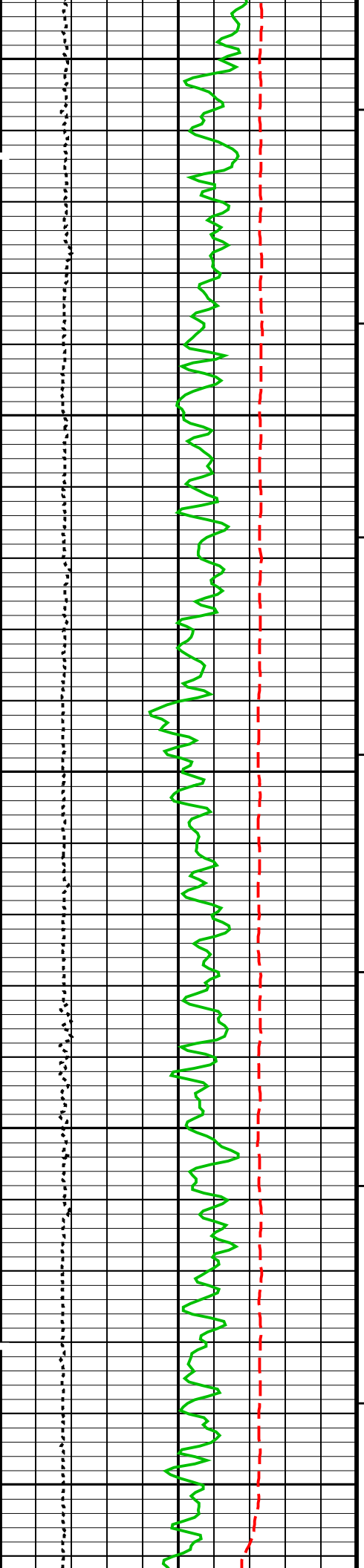


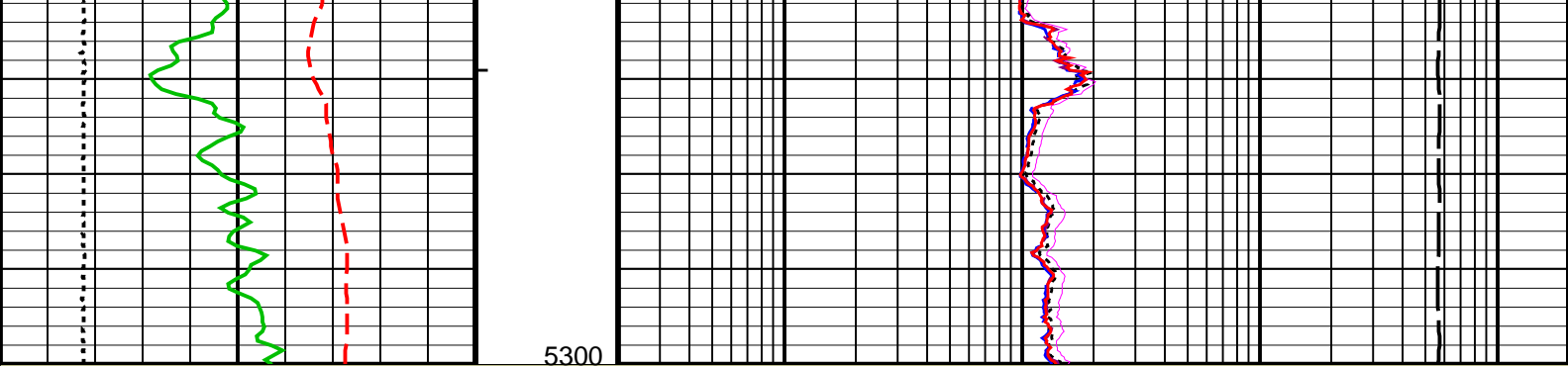
4700

4800









MAIN PASS: \*\*\* PLATFORM EXPRESS – ARRAY INDUCTION \*\*\*

Gamma Ray Backup	Cable Drag	AIT 10 Inch Investigation (AT10) (OHMM)	2000
Gamma Ray (GR) (GAPI)	Tool/Tot. Drag	AIT 20 Inch Investigation (AT20) (OHMM)	2000
Caliper (HCAL) (IN)	Stuck Stretch (STIT) (F)	AIT 30 Inch Investigation (AT30) (OHMM)	2000
SP (SP) (MV)		AIT 60 Inch Investigation (AT60) (OHMM)	2000
		AIT 90 Inch Investigation (AT90) (OHMM)	2000
		Tension (TENS) (LBF)	10000 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

#### 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	
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	1.000	
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	
ASAP	Array Induction Suspend Answer Product Processing	0_NOSUSPENSION	
ASTA	Array Induction Tool Standoff	0.250	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	
BHT	Bottom Hole Temperature (used in calculations)	198.0	degF
FEXP	Form Factor Exponent	2.000	
FNUM	Form Factor Numerator	1.000	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
GRSE	Generalized Mud Resistivity Selection	AMF_AITM	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
GHT	Surface Hole Temperature	68.000	degF

SHT	Surface Hole Temperature	68.000	degF
SPDR	SP Drift	0.000	mV/ft
SPNV	SP Next Value	0.000	mV
HILTB-FTB: High resolution Integrated Logging Tool-DTS			
BHT	Bottom Hole Temperature (used in calculations)	198.0	degF
FEXP	Form Factor Exponent	2.000	
FNUM	Form Factor Numerator	1.000	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
GRSE	Generalized Mud Resistivity Selection	AMF_AITM	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	68.000	degF
FEQL: Formation Evaluation Quick Look			
FEXP	Form Factor Exponent	2.000	
FNUM	Form Factor Numerator	1.000	
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	198.0	degF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
GRSE	Generalized Mud Resistivity Selection	AMF_AITM	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	68.000	degF
PERT: Preliminary Evaluation - Real Time			
BHT	Bottom Hole Temperature (used in calculations)	198.0	degF
FEXP	Form Factor Exponent	2.000	
FNUM	Form Factor Numerator	1.000	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GGRD	Geothermal Gradient	0.010	degF/ft
GRSE	Generalized Mud Resistivity Selection	AMF_AITM	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	68.000	degF
STI: Stuck Tool Indicator			
STKT	STI Stuck Threshold	2.500	ft
TDD	Total Depth - Driller	8512.0	ft
TDL	Total Depth - Logger	8512.0	ft
System and Miscellaneous			
ACSED	Array Induction Casing Shoe Estimated Depth		
BS	Bit Size	7.875	in
DFD	Drilling Fluid Density	9.300	lbm/gal
FLEV	Fluid Level		
MST	Mud Sample Temperature	75.000	degF
TD	Total Depth	8512.0	ft

Format: UPPER\_GRES    Vertical Scale: 5" per 100'    Graphics File Created: 12-Nov-2009 22:15

## OP System Version: 17C0-154

AITM	17C0-154	HILTD	17C0-154
DTCH	17C0-154		

## Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_008LUP	FN:7	PRODUCER	12-Nov-2009 21:44	8461.5 FT	0.0 FT
---------	-------------------------	------	----------	-------------------	-----------	--------

**Schlumberger**

**LOWER RESISTIVITY LOG 5" = 100'**

MAXIS Field Log

## Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_008LUP	FN:7	PRODUCER	12-Nov-2009 21:44
---------	-------------------------	------	----------	-------------------

OP System Version: 17C0-154

Changed Parameter Summary				
DLIS Name	New Value		Previous Value	Depth & Time
BHT	205	DEGF	198	DEGF
TD	8439	FT	8512	FT
TDL	8439.00	FT	8512.00	FT
				8434.0 21:46:32
				8079.8 21:51:15
				8079.8 21:51:15

PIP SUMMARY

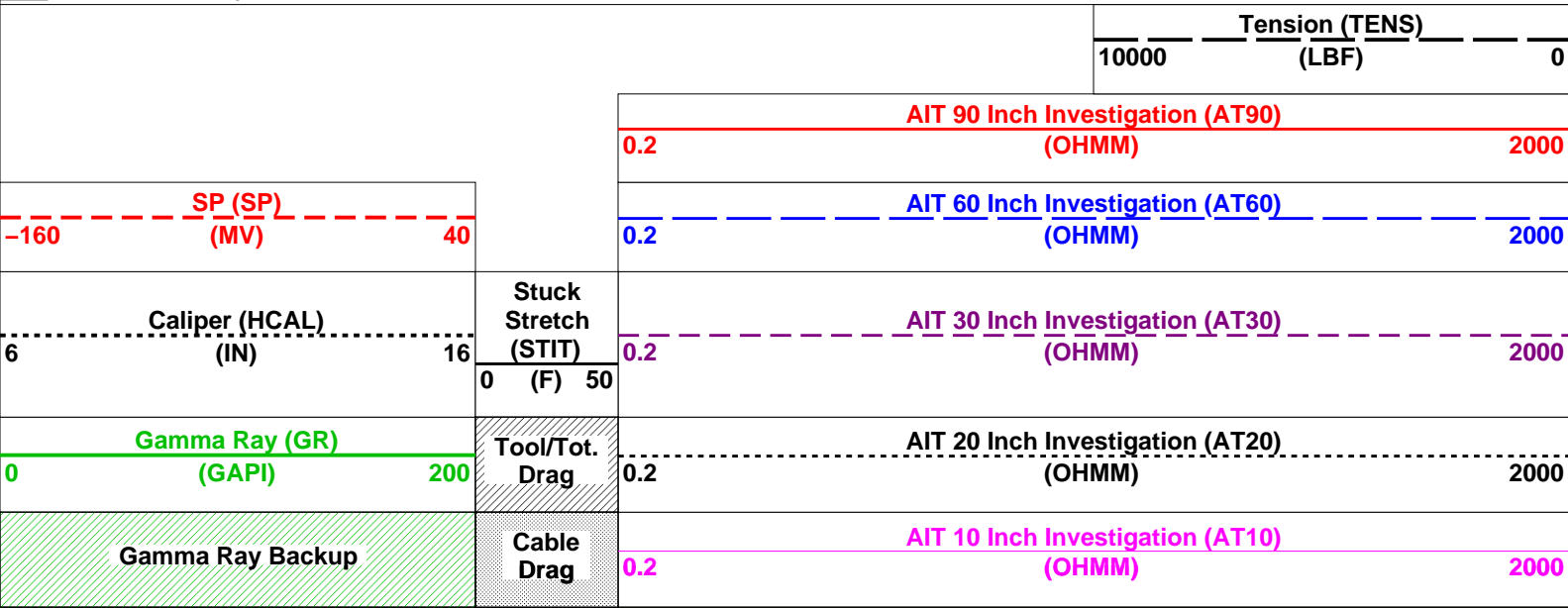
└ Integrated Hole Volume Minor Pip Every 10 F3

└ Integrated Hole Volume Major Pip Every 100 F3

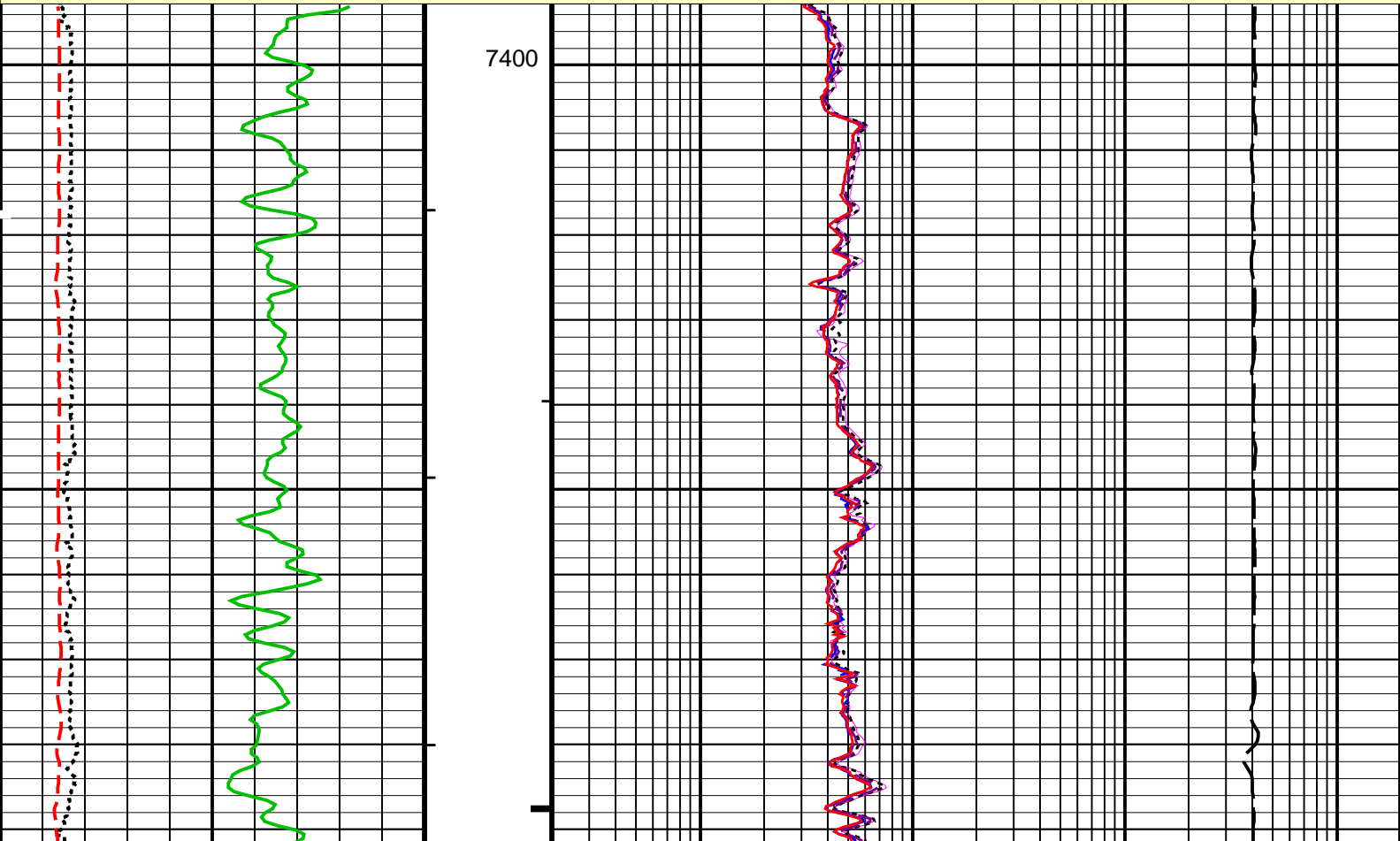
└ Integrated Cement Volume Minor Pip Every 10 F3

└ Integrated Cement Volume Major Pip Every 100 F3

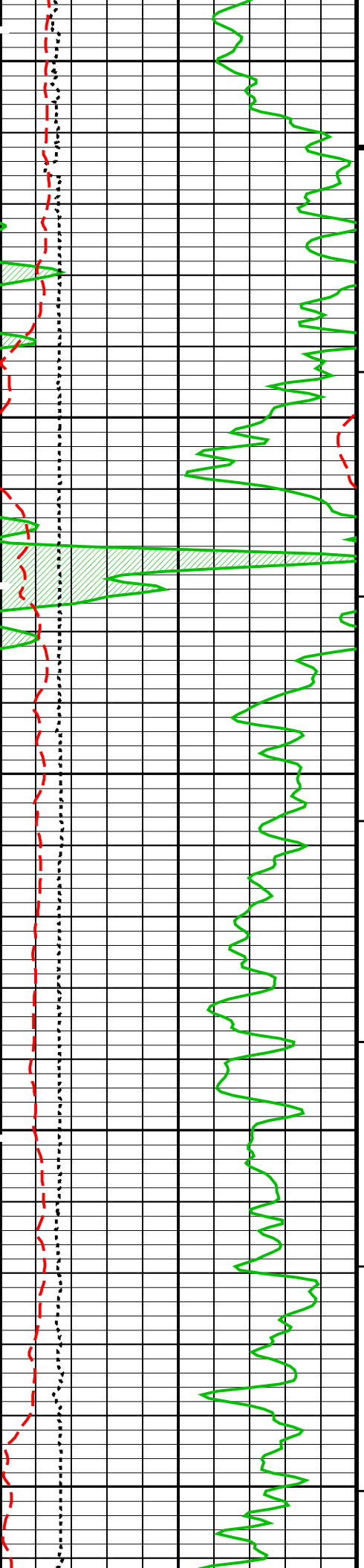
Time Mark Every 60 S



MAIN PASS: \*\*\* PLATFORM EXPRESS – ARRAY INDUCTION \*\*\*



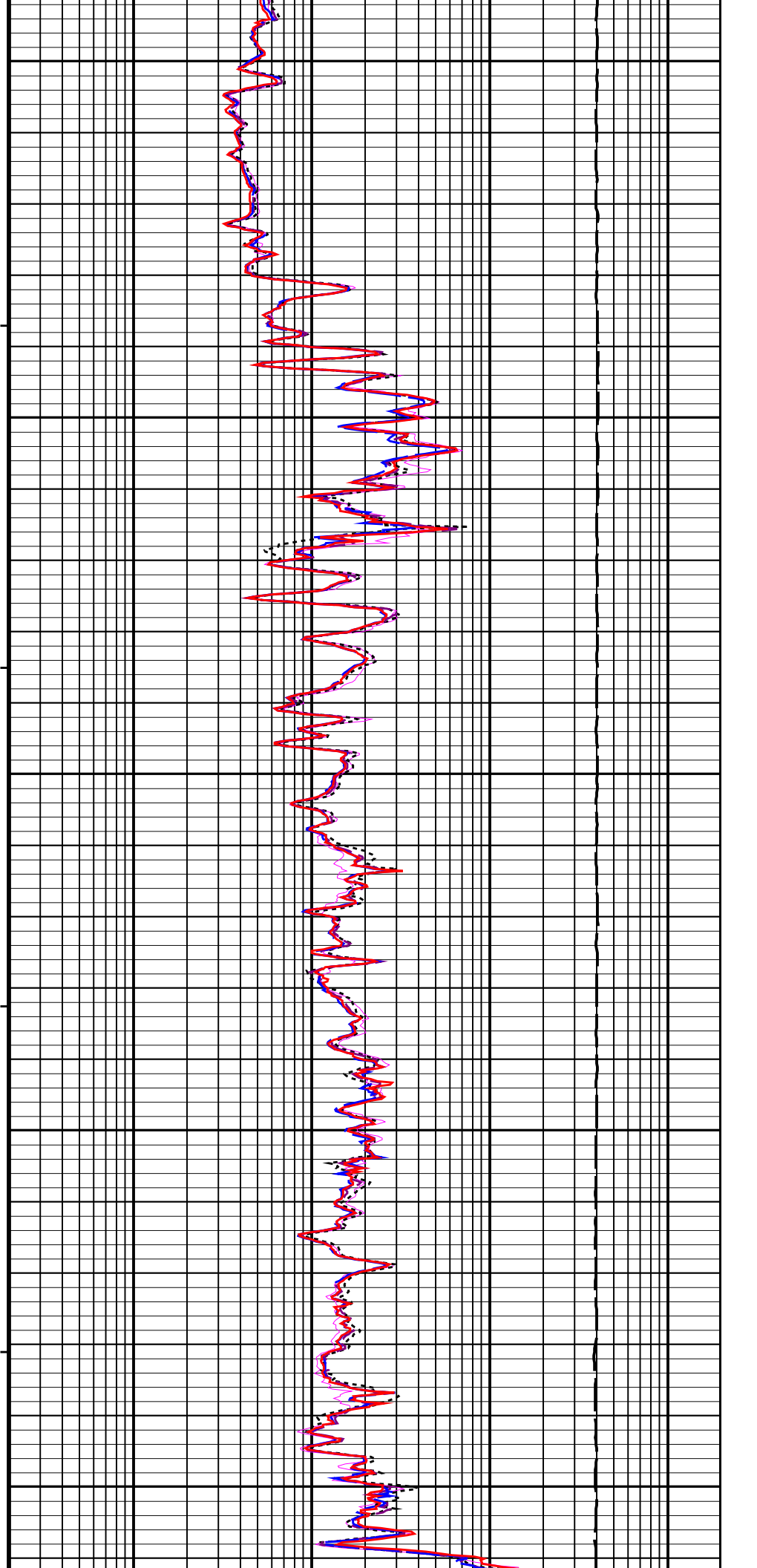


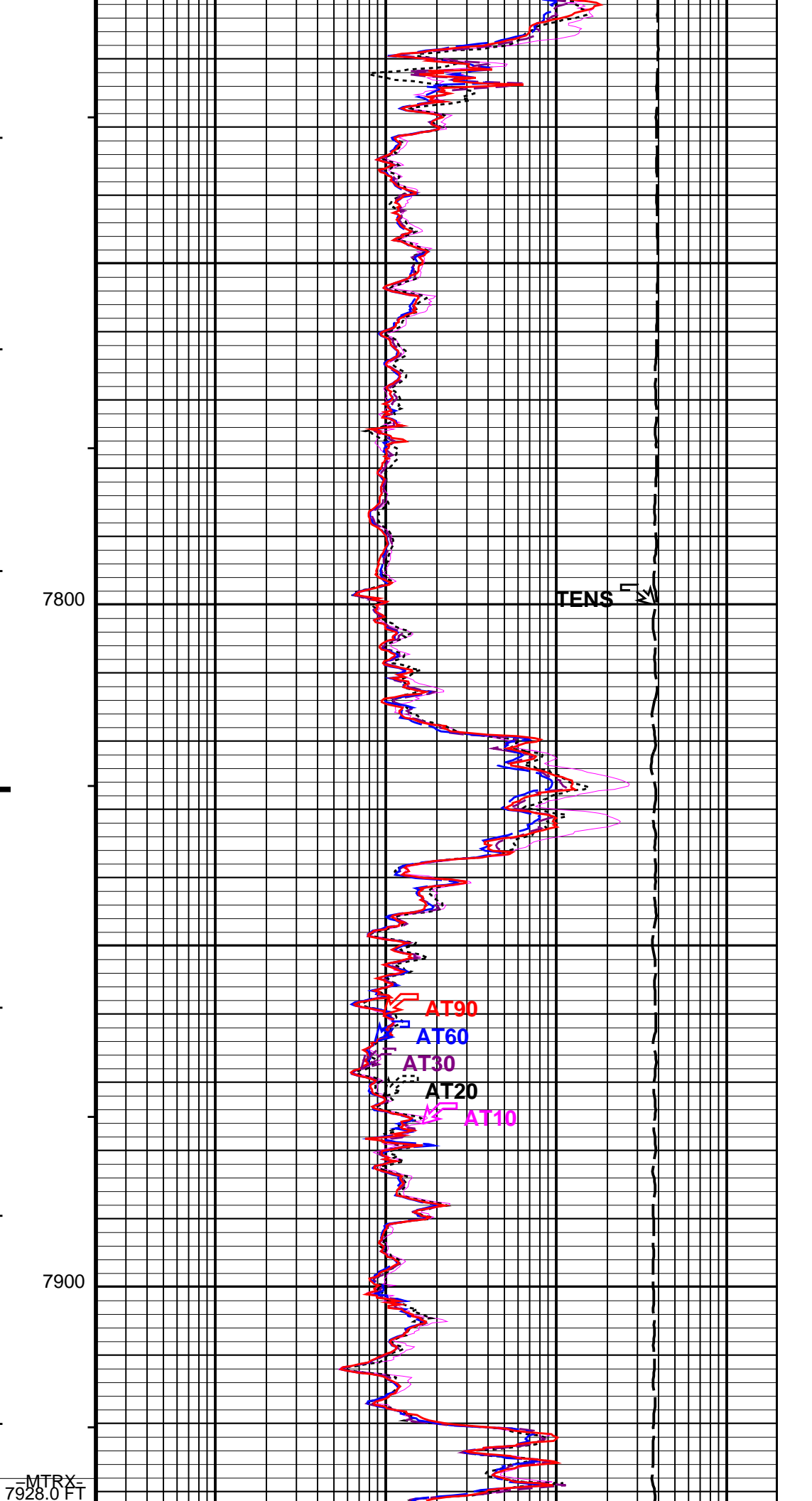
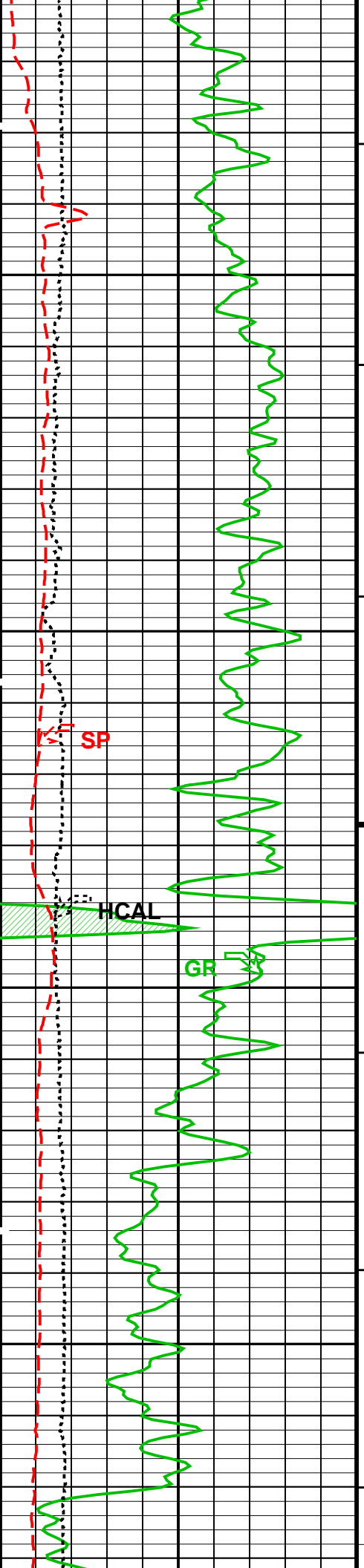


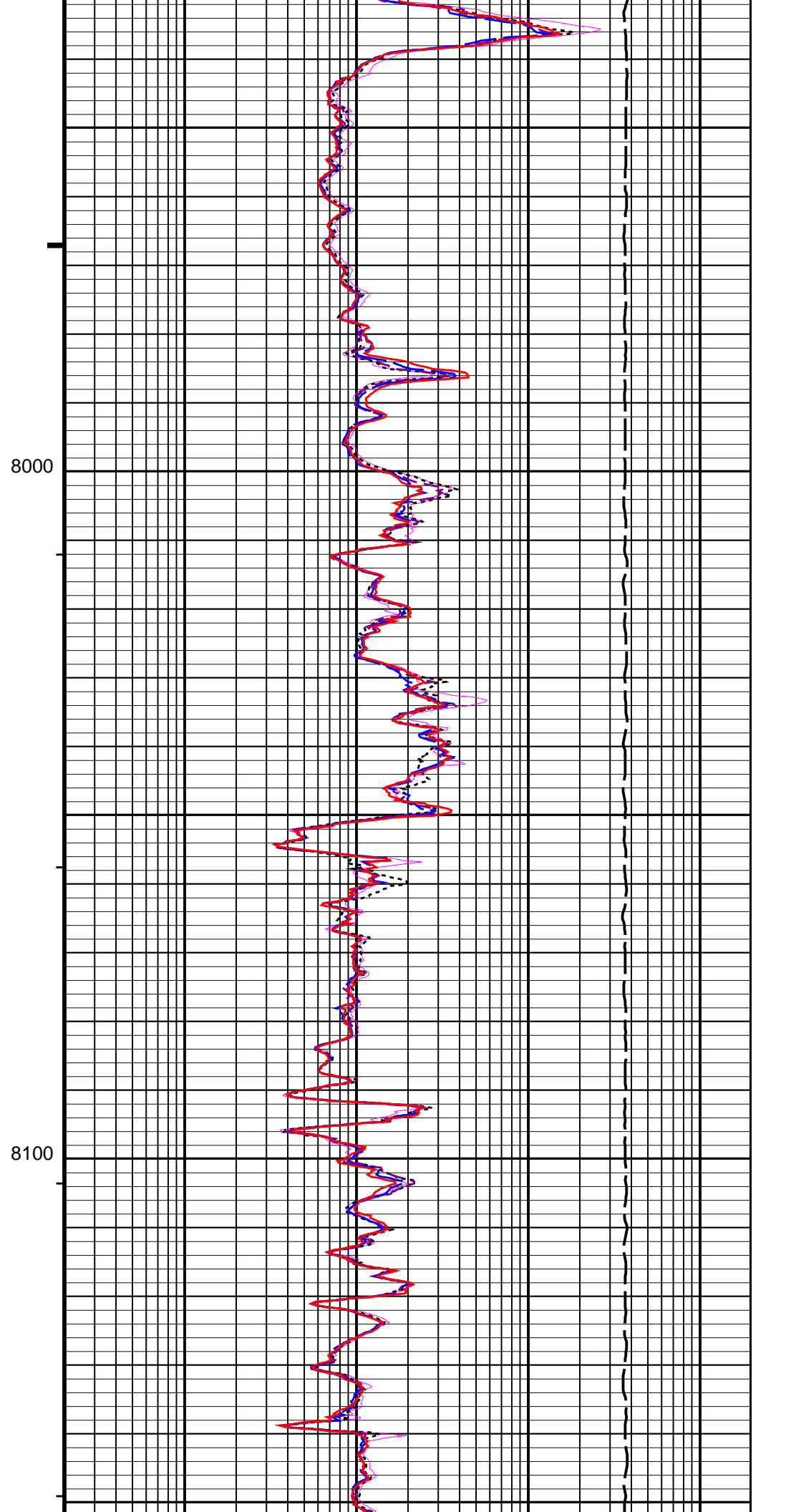
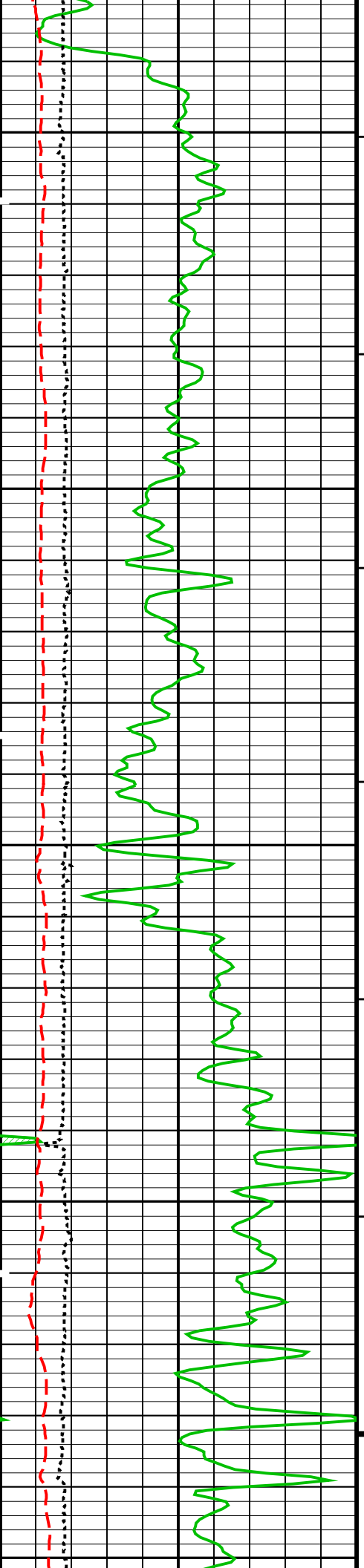
7500

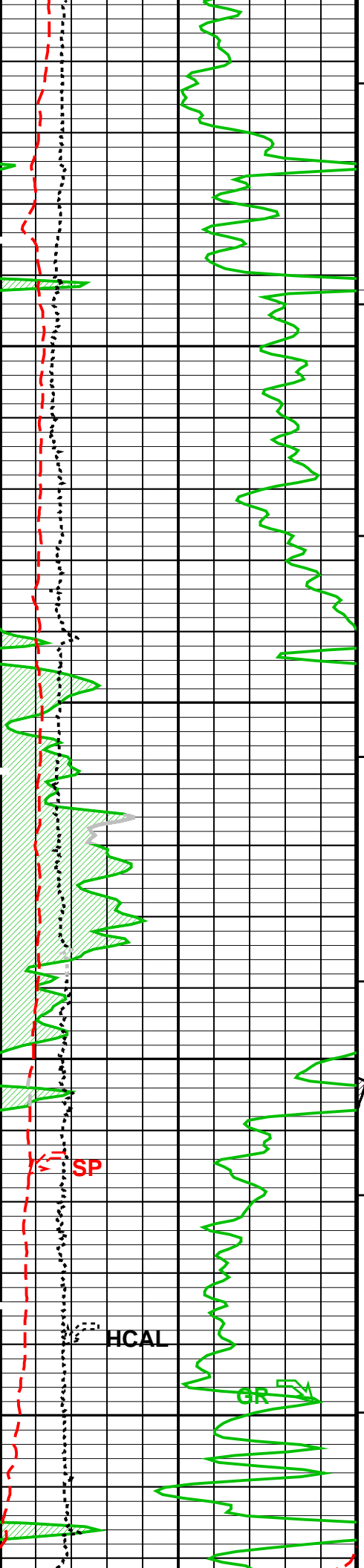
7600

7700





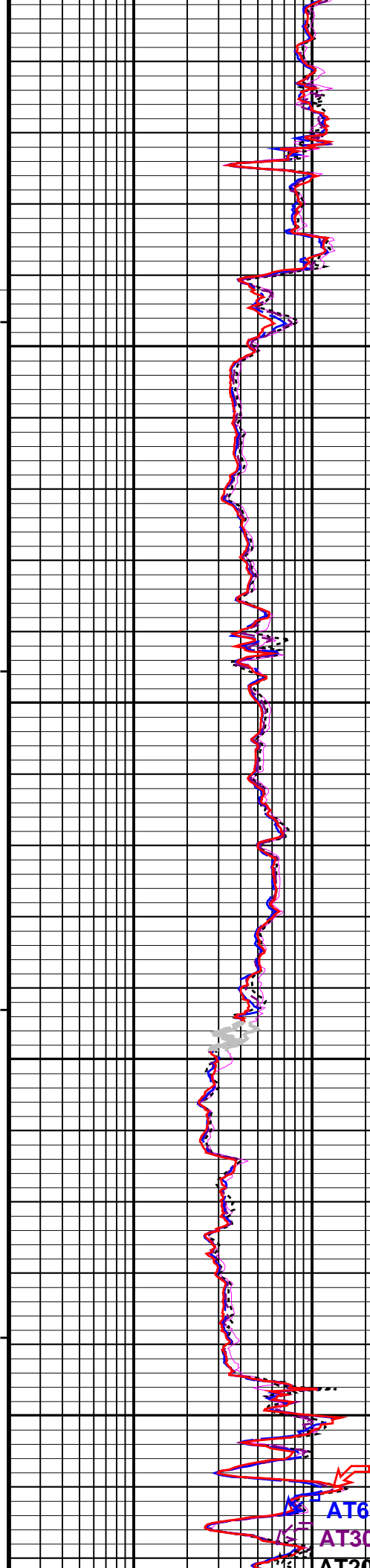




-MTRX=  
8192.0 FT  
8200

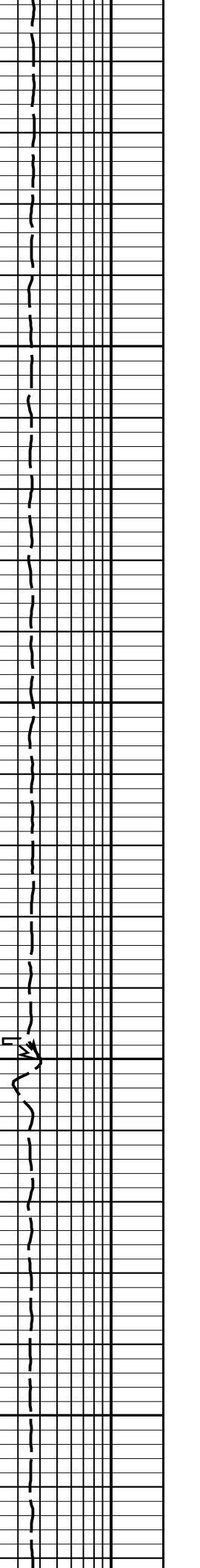
8300

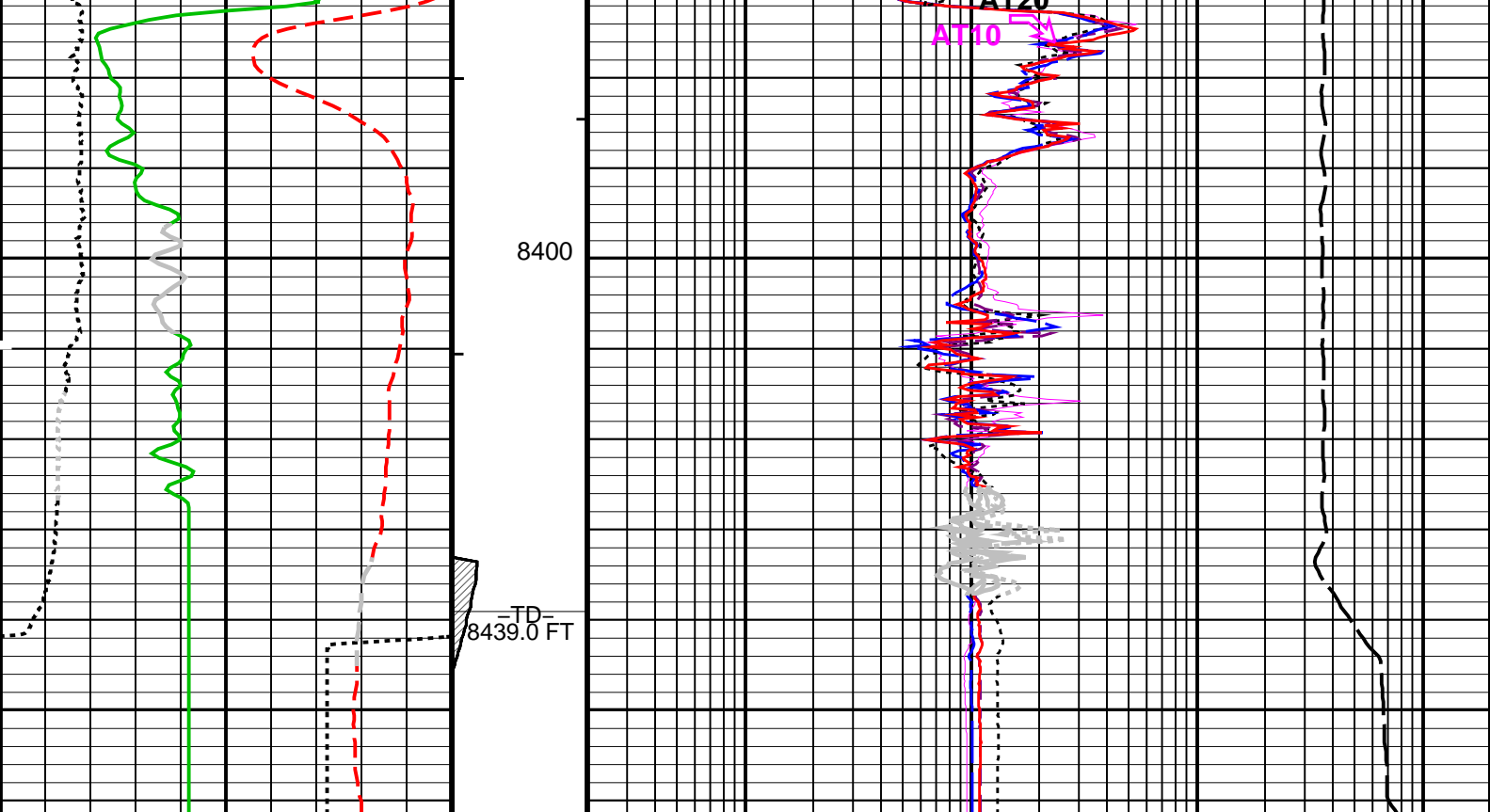
SP  
HCAL



AT90  
AT60  
AT30  
AT20

TENS





MAIN PASS: \*\*\* PLATFORM EXPRESS – ARRAY INDUCTION \*\*\*

Gamma Ray Backup	Cable Drag	0.2	AIT 10 Inch Investigation (AT10) (OHMM)	2000
Gamma Ray (GR) (GAPI)	Tool/Tot. Drag	0.2	AIT 20 Inch Investigation (AT20) (OHMM)	2000
Caliper (HCAL) (IN)	Stuck Stretch (STIT) (F)	0.2	AIT 30 Inch Investigation (AT30) (OHMM)	2000
SP (SP) (MV)		0.2	AIT 60 Inch Investigation (AT60) (OHMM)	2000
		0.2	AIT 90 Inch Investigation (AT90) (OHMM)	2000
			Tension (TENS) (LBF)	10000 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

#### 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	-50000 FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes
AERSV	Array Induction Response Set Version for Four ft Resolution	41_70_24_20

APRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	On	
AIGS	Array Induction Select Akima Interpolation Gating		1	
AMRF	Array Induction Mud Resistivity Factor		1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20		
ARFV	Array Induction Radial Profiling Code Version Number	701		
ARPV	Array Induction Radial Parametrization Code Version Number	232		
ASTA	Array Induction Tool Standoff	0.25		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		
BHT	Bottom Hole Temperature (used in calculations)	198		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		
SHT	Surface Hole Temperature	68		DEGF
SPNV	SP Next Value	0		MV
HILTB-FTB: High resolution Integrated Logging Tool-DTS				
BHT	Bottom Hole Temperature (used in calculations)	198		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		
SHT	Surface Hole Temperature	68		DEGF
FEQL: Formation Evaluation Quick Look				
FEXP	Form Factor Exponent	2		
FNUM	Form Factor Numerator	1		
HOLEV: Integrated Hole/Cement Volume				
BHT	Bottom Hole Temperature (used in calculations)	198		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	HCAL		
SHT	Surface Hole Temperature	68		DEGF
PERT: Preliminary Evaluation - Real Time				
BHT	Bottom Hole Temperature (used in calculations)	198		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		
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	8512.00		FT
TDL	Total Depth - Logger	8512.00		FT
System and Miscellaneous				
BS	Bit Size	7.875		IN
DFD	Drilling Fluid Density	9.30		LB/G
DORL	Depth Offset for Repeat Analysis	0.0		FT
FLEV	Fluid Level	-50000.00		FT
MST	Mud Sample Temperature	75.00		DEGF
TD	Total Depth	8512		FT

Format: LOWER\_GRES    Vertical Scale: 5" per 100'    Graphics File Created: 12-Nov-2009 21:44

## OP System Version: 17C0-154

AIT-M	17C0-154	HILTB-FTB	17C0-154
DTC-H	17C0-154		

## Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_008LUP	FN:7	PRODUCER	12-Nov-2009 21:44
---------	-------------------------	------	----------	-------------------

## Input DLIS Files

DEFAULT	AIT TLD MCFL CNL 007PUP	FN:6	PRODUCER	12-Nov-2009 21:43	8469.0 FT	7874.5 FT
---------	-------------------------	------	----------	-------------------	-----------	-----------

## Output DLIS Files

DEFAULT      AIT TLD MCFL CNL 008LUP      FN:7      PRODUCER      12-Nov-2009 21:44

**OP System Version: 17C0-154**

AIT-M	17C0-154	HILTB-FTB	17C0-154
DTC-H	17C0-154		

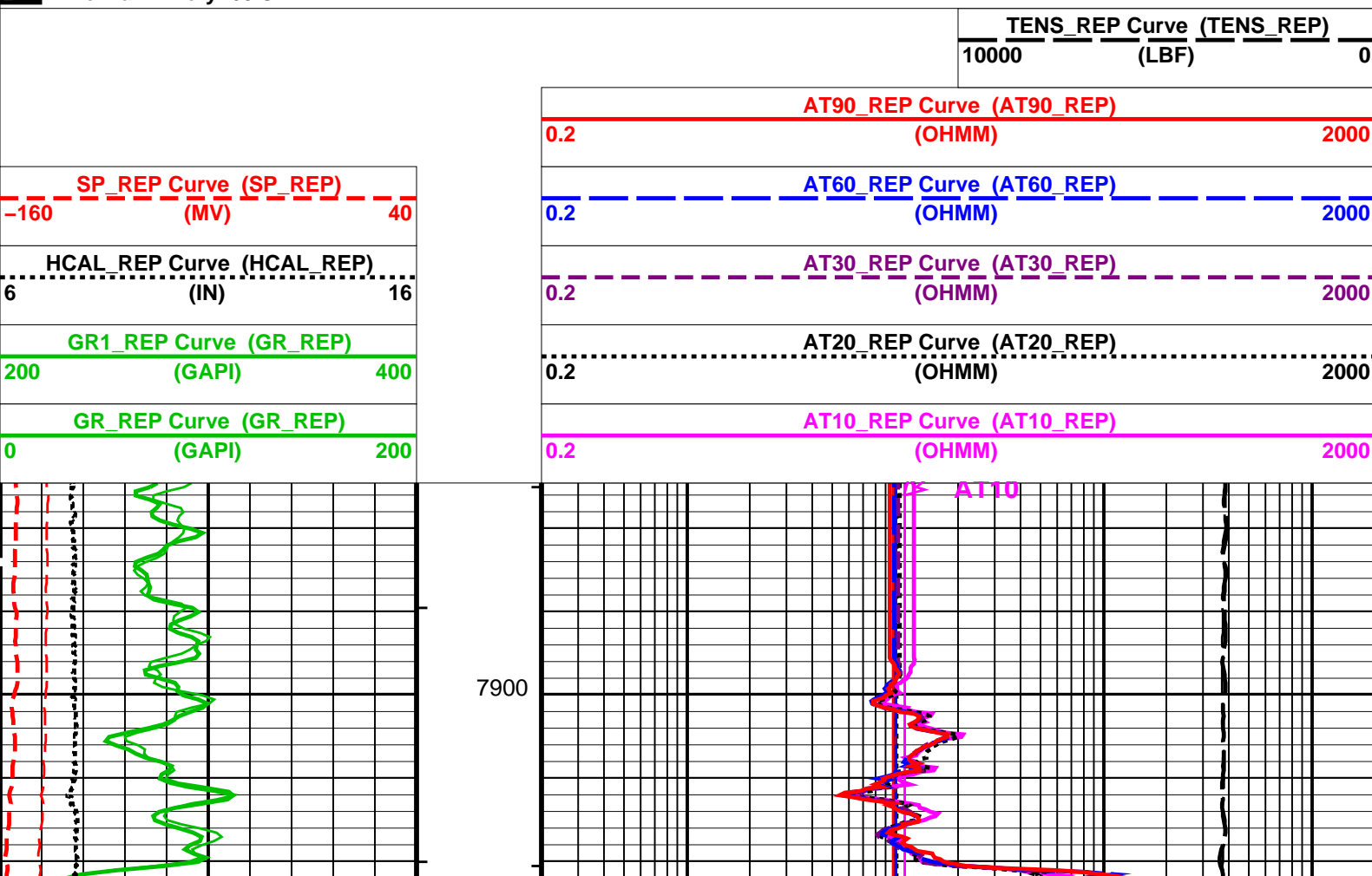
## Changed Parameter Summary

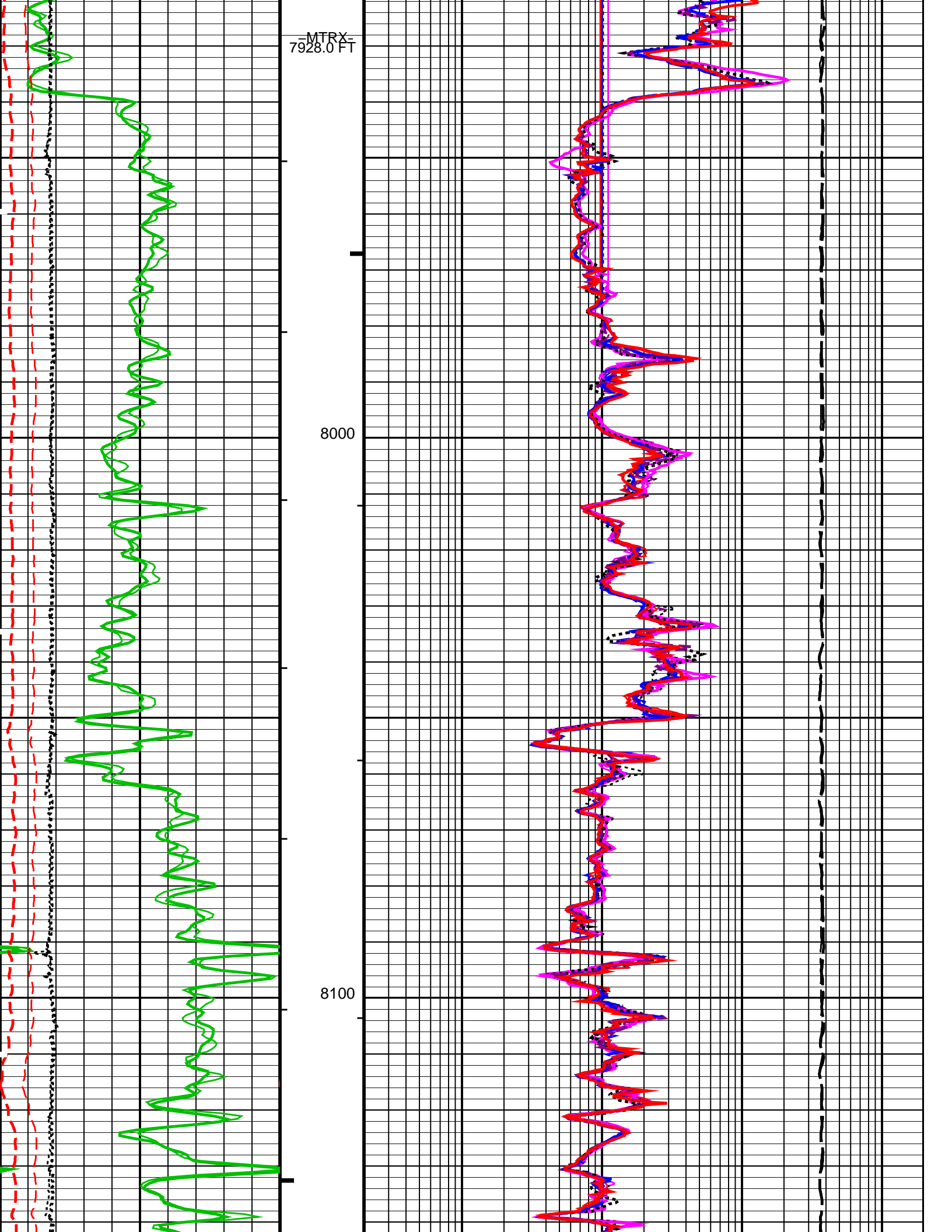
DLIS Name	New Value	Previous Value	Depth & Time
BHT	205 DEGF	198 DEGF	8434.0 21:46:32
TD	8439 FT	8512 FT	8079.8 21:51:15

## PIP SUMMARY

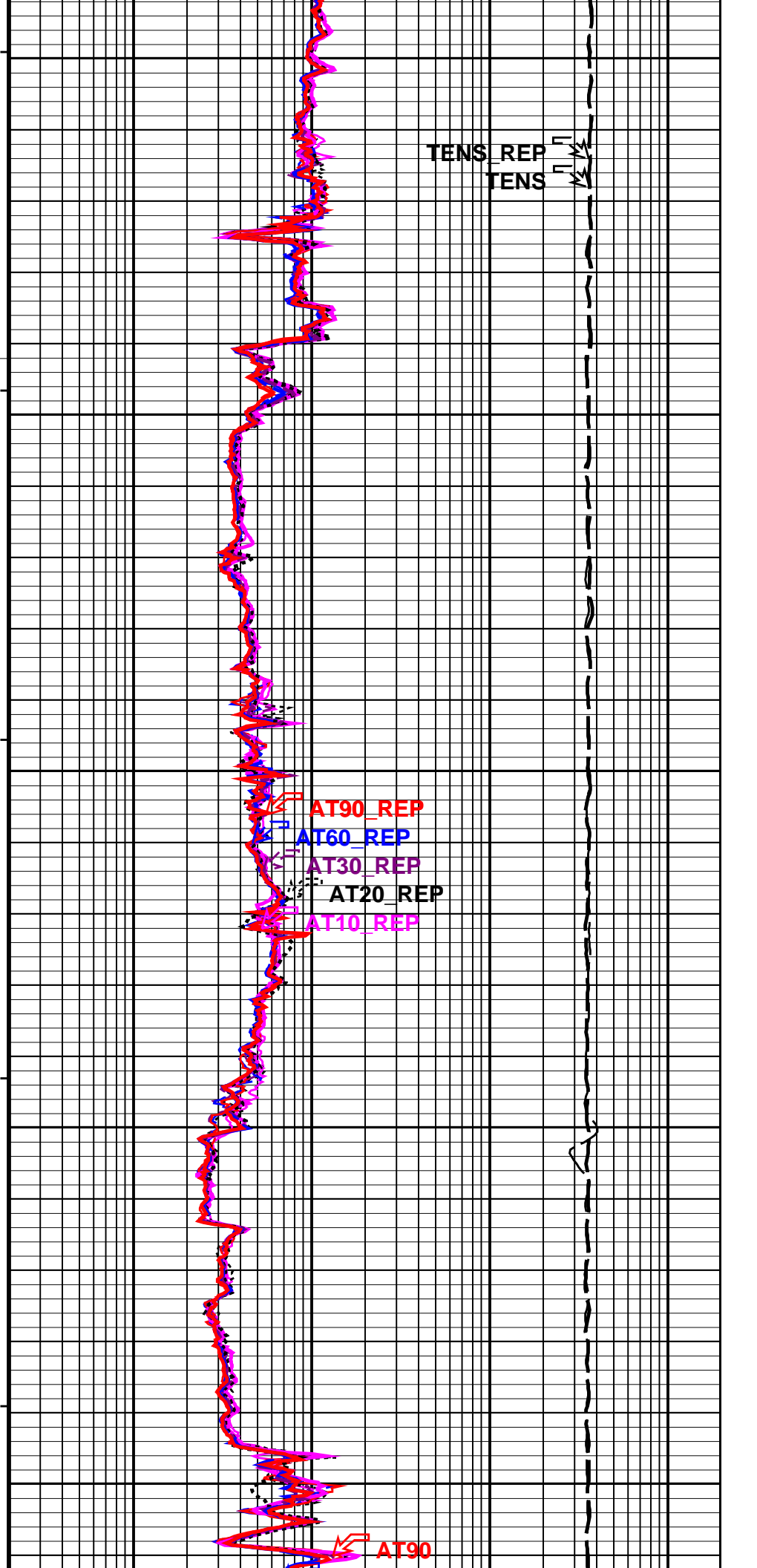
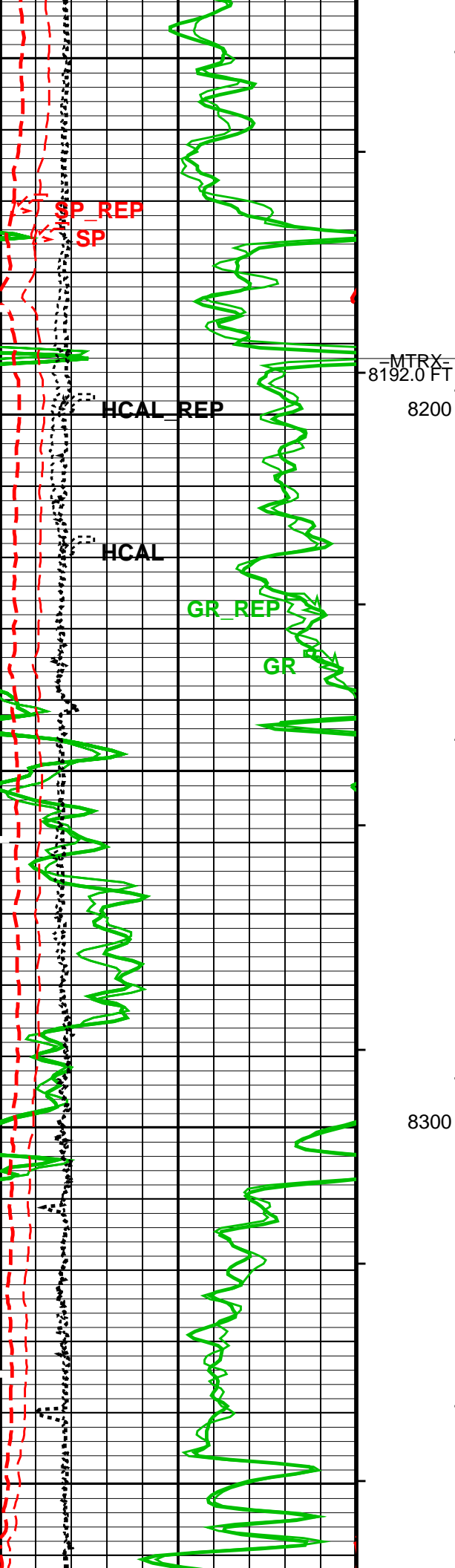
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
  - └ Integrated Cement Volume Minor Pip Every 10 F3
  - └ Integrated Cement Volume Major Pip Every 100 F3

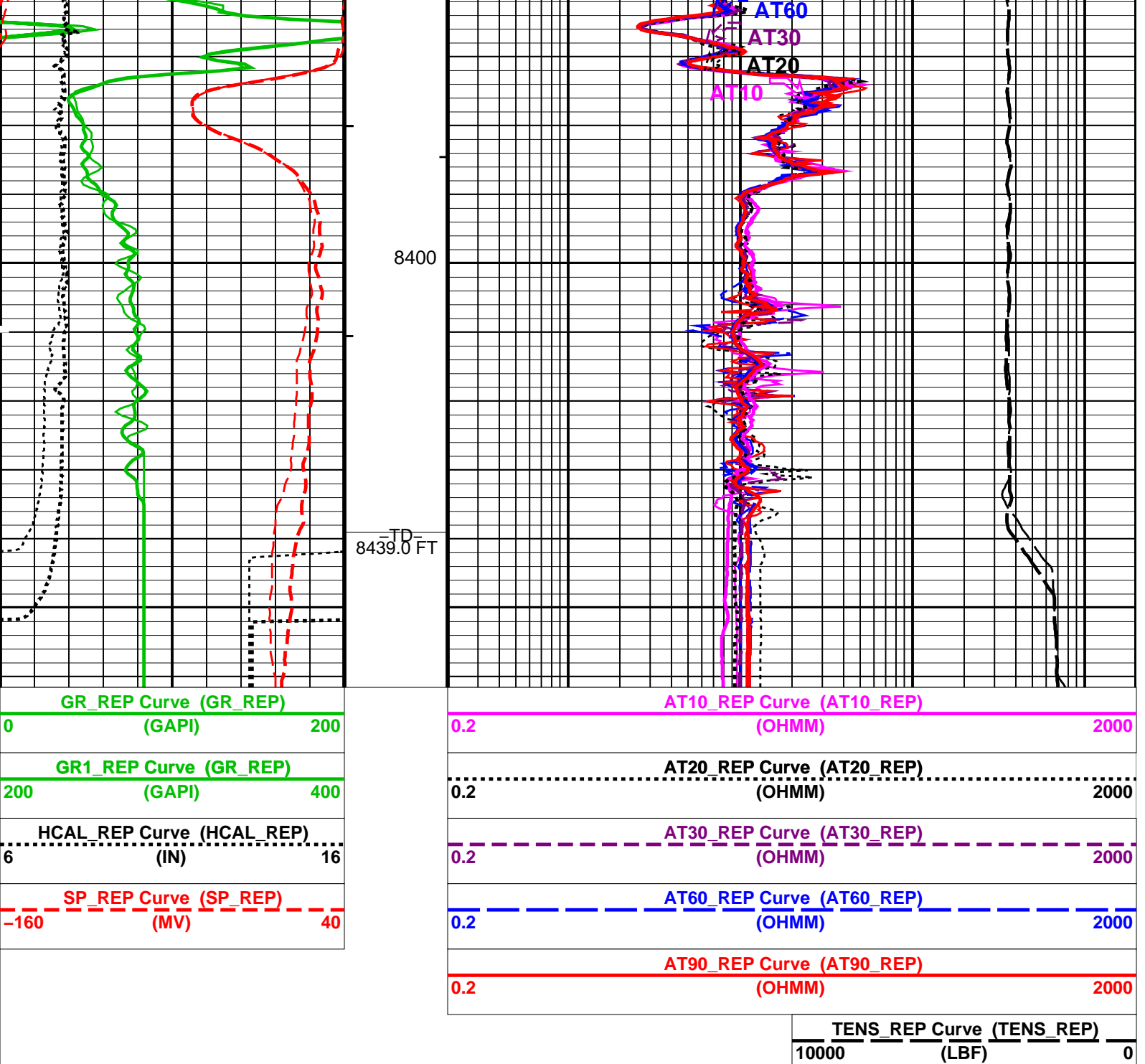
**Time Mark Every 60 S**











#### 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	-50000 FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20
AIGS	Array Induction Select Akima Interpolation Gating	On

AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ASTA	Array Induction Tool Standoff	0.25	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	
BHT	Bottom Hole Temperature (used in calculations)	198	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	
SHT	Surface Hole Temperature	68	DEGF
SPNV	SP Next Value	0	MV
<b>HILTB-FTB: High resolution Integrated Logging Tool-DTS</b>			
BHT	Bottom Hole Temperature (used in calculations)	198	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	
SHT	Surface Hole Temperature	68	DEGF
<b>FEQL: Formation Evaluation Quick Look</b>			
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
<b>HOLEV: Integrated Hole/Cement Volume</b>			
BHT	Bottom Hole Temperature (used in calculations)	198	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	HCAL	
SHT	Surface Hole Temperature	68	DEGF
<b>PERT: Preliminary Evaluation - Real Time</b>			
BHT	Bottom Hole Temperature (used in calculations)	198	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	
SHT	Surface Hole Temperature	68	DEGF
<b>System and Miscellaneous</b>			
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	9.30	LB/G
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	-50000.00	FT
MST	Mud Sample Temperature	75.00	DEGF
TD	Total Depth	8512	FT

Format: GRES\_REP    Vertical Scale: 5" per 100'    Graphics File Created: 12-Nov-2009 21:44

## OP System Version: 17C0-154

AIT-M	17C0-154	HILTB-FTB	17C0-154
DTC-H	17C0-154		

### Input DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_007PUP	FN:6	PRODUCER	12-Nov-2009 21:43	8469.0 FT	7874.5 FT
---------	-------------------------	------	----------	-------------------	-----------	-----------

### Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_008LUP	FN:7	PRODUCER	12-Nov-2009 21:44
---------	-------------------------	------	----------	-------------------

# 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: 14-Oct-2009 17:03 Before: 12-Nov-2009 9:30

Thru Cal Magnitude – 0	0	0.6205	0.6204	N/A	N/A	N/A	V
Thru Cal Magnitude – 1	0	1.271	1.271	N/A	N/A	N/A	V
Thru Cal Magnitude – 2	0	0.6318	0.6317	N/A	N/A	N/A	V
Thru Cal Magnitude – 3	0	0.7131	0.7130	N/A	N/A	N/A	V
Thru Cal Magnitude – 4	0	1.334	1.334	N/A	N/A	N/A	V
Thru Cal Magnitude – 5	0	1.953	1.953	N/A	N/A	N/A	V
Thru Cal Magnitude – 6	0	1.949	1.949	N/A	N/A	N/A	V
Thru Cal Magnitude – 7	0	1.419	1.419	N/A	N/A	N/A	V
Thru Cal Phase – 0	0	180.2	180.2	N/A	N/A	N/A	DEG
Thru Cal Phase – 1	0	179.2	179.1	N/A	N/A	N/A	DEG
Thru Cal Phase – 2	0	175.6	175.6	N/A	N/A	N/A	DEG
Thru Cal Phase – 3	0	174.9	174.8	N/A	N/A	N/A	DEG
Thru Cal Phase – 4	0	168.7	168.7	N/A	N/A	N/A	DEG
Thru Cal Phase – 5	0	167.0	167.0	N/A	N/A	N/A	DEG
Thru Cal Phase – 6	0	167.0	167.0	N/A	N/A	N/A	DEG
Thru Cal Phase – 7	0	166.2	166.2	N/A	N/A	N/A	DEG

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

Master: 14-Oct-2009 17:03 Before: 12-Nov-2009 9:30

Array Induction SPA Plus	991.0	992.7	992.7	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.6638	0.6669	N/A	N/A	N/A	MV
Array Induction Temperature PI	0.9170	0.9196	0.9196	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0006632	0.0006657	N/A	N/A	N/A	V

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

Master: 14-Oct-2009 17:03

Test Loop Gain Correctio – 0	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 1	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 2	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 3	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 4	0	0.9935	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 5	0	0.9888	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 6	0	0.9937	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 7	0	1.007	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio – 0	0	0.7201	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 1	0	0.7620	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 2	0	0.2948	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 3	0	0.2209	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 4	0	0.1146	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 5	0	-0.009143	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 6	0	0.2984	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio – 7	0	-0.05307	N/A	N/A	N/A	N/A	DEG

### Array Induction Tool – M Wellsite Calibration – Sonde Error Correction

Master: 14-Oct-2009 17:03

R Sonde Error Correction – 0	0	-69.04	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 1	0	172.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 2	0	116.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 3	0	64.65	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 4	0	26.78	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 5	0	12.75	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 6	0	11.98	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction – 7	0	-2.480	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 0	0	-259.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 1	0	103.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 2	0	63.05	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 3	0	-22.90	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 4	0	21.47	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 5	0	-15.50	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 6	0	-4.060	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction – 7	0	-4.950	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool – M Wellsite Calibration – Mud Gain Correction							
Master: 14–Oct–2009 17:03							
Coarse – Mag, Real, Imag – 0	0	0.8551	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 1	0	0.8551	N/A	N/A	N/A	N/A	
Coarse – Mag, Real, Imag – 2	0	0.8551	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 0	0	0.8573	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 1	0	0.8573	N/A	N/A	N/A	N/A	
Fine – Mag, Real, Imag – 2	0	0.8573	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Stab Measurement Summary							
Before: 12–Nov–2009 9:38							
BS Window Ratio	0.7301	N/A	0.7291	N/A	N/A	N/A	
BS Window Sum	9938	N/A	9932	N/A	N/A	N/A	CPS
SS Window Ratio	0.4794	N/A	0.4790	N/A	N/A	N/A	
SS Window Sum	9818	N/A	9810	N/A	N/A	N/A	CPS
LS Window Ratio	0.2953	N/A	0.2948	N/A	N/A	N/A	
LS Window Sum	1055	N/A	1050	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Photo–multiplier High Voltages Calibrations							
Before: 12–Nov–2009 9:38							
BS PM High Voltage (Command)	1641	N/A	1636	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1395	N/A	1393	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1245	N/A	1241	N/A	N/A	N/A	V
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Crystal Quality Resolutions Calibration							
Before: 12–Nov–2009 9:38							
BS Crystal Resolution	11.32	N/A	11.32	N/A	N/A	N/A	%
SS Crystal Resolution	10.13	N/A	10.08	N/A	N/A	N/A	%
LS Crystal Resolution	8.695	N/A	9.015	N/A	N/A	N/A	%
High resolution Integrated Logging Tool–DTS Wellsite Calibration – MCFL Calibration							
Before: 12–Nov–2009 9:30							
Raw B0 Resistivity	3875	N/A	3844	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3807	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3816	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool–DTS Wellsite Calibration – HILT Caliper Calibration							
Before: 12–Nov–2009 9:28							
HILT Caliper Zero Measurement	8.000	N/A	7.789	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	11.81	N/A	N/A	N/A	IN
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Detector Calibration							
Before: 12–Nov–2009 9:28							
Gamma Ray Background	30.00	N/A	75.73	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkg)	180.9	N/A	180.9	N/A	N/A	16.44	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Zero Measurement							
Master: 8–Oct–2009 13:16 Before: 12–Nov–2009 9:29							
CNTC Background	26.34	26.34	26.27	N/A	N/A	3.951	CPS
CFTC Background	27.85	27.85	27.85	N/A	N/A	4.178	CPS
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Ratio Measurement							
Master: 8–Oct–2009 13:16							
Thermal Near Corr. (Tank)	5800	5423	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2272	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.387	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool–DTS Wellsite Calibration – Accelerometer Calibration							
Before: 12–Nov–2009 21:04							
Z–Axis Acceleration	32.19	N/A	32.07	N/A	N/A	N/A	F/S2
High resolution Integrated Logging Tool–DTS Master Calibration – Inversion results							
Master: 26–Oct–2009 12:49							
Rho Aluminum	2.596	2.603	--	--	--	--	G/C3
Rho Magnesium	1.686	1.687	--	--	--	--	G/C3
Pe Aluminum	2.570	2.544	--	--	--	--	
Pe Magnesium	2.650	2.619	--	--	--	--	
High resolution Integrated Logging Tool–DTS Master Calibration – Deviation Summary							
Master: 26–Oct–2009 12:49							
BS Average Deviation	0	0.3805	--	--	--	--	%
BS Max Deviation	0	0.6569	--	--	--	--	%
SS Average Deviation	0	0.4353	--	--	--	--	%
SS Max Deviation	0	1.873	--	--	--	--	%
LS Average Deviation	0	0.8605	--	--	--	--	%
LS Max Deviation	0	2.157	--	--	--	--	%

The GLS-VJ source activity is acceptable.

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

NCT-B Water Temperature    57.0    DEGF.  
Thermal Housing Size        3.365    IN.  
NSR-F serial number        5068

Array Induction Tool – M / Equipment Identification









Primary Equipment:  
Rm/SP Bottom Nose  
Array Induction Sonde

AMRM – A  
AMIS – A

















1372

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	0.6205		0.6100	180.2		197.0
	Before	0.6204			180.2		
1	Master	1.271		1.270	179.2		196.0
	Before	1.271			179.1		
2	Master	0.6318		0.6200	175.6		192.0
	Before	0.6317			175.6		
3	Master	0.7131		0.7000	174.9		191.0
	Before	0.7130			174.8		
4	Master	1.334		1.340	168.7		185.0
	Before	1.334			168.7		
5	Master	1.953		1.960	167.0		182.0
	Before	1.953			167.0		
6	Master	1.949		1.960	167.0		181.0
	Before	1.949			167.0		
7	Master	1.419		1.410	166.2		175.0
	Before	1.419			166.2		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)
Master: 14-Oct-2009 17:03				Before: 12-Nov-2009 9:30			

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			992.7	Master			0.6638		
Before			992.7	Before			0.6669		
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				0.9196	Master				0.0006632
Before				0.9196	Before				0.0006657
0.8710 (Minimum)			0.9170 (Nominal)	0.9630 (Maximum)	-0.05000 (Minimum)			0 (Nominal)	0.05000 (Maximum)
Master: 14-Oct-2009 17:03					Before: 12-Nov-2009 9:30				



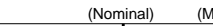
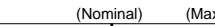
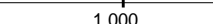
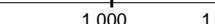
Array Induction Tool – M Wellsite Calibration					
Test Loop Gain Correction					
Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG	

Test Loop Gain Correction magnitude				Test Loop Gain Correction Phase DEG			
Value				Value			
0	1.017			0.7201			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
1	1.014			0.7620			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
2	1.015			0.2948			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
3	1.011			0.2209			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
4	0.9935			0.1146			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
5	0.9888			-0.009143			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
6	0.9937			0.2984			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
7	1.007			-0.05307			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	

Master: 14-Oct-2009 17:03

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	-69.04				-259.4		
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)
1	172.8				103.1		
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)
2	116.8				63.05		
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)
3	64.65				-22.90		
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		-250.0 (Minimum)	0 (Nominal)
4	26.78				21.47		
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)
5	12.75				-15.50		
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)
6	11.98				-4.060		
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)
7	-2.480				-4.950		
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)

Master: 14-Oct-2009 17:03

Array Induction Tool – M Wellsite Calibration								
Mud Gain Correction								
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag		
0	0.8551				0.8573			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.8551				0.8573			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.8551				0.8573			

	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Master: 14-Oct-2009 17:03						

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	0.6205		0.6100	180.2		197.0
1	Master	1.271		1.270	179.2		196.0
2	Master	0.6318		0.6200	175.6		192.0
3	Master	0.7131		0.7000	174.9		191.0
4	Master	1.334		1.340	168.7		185.0
5	Master	1.953		1.960	167.0		182.0
6	Master	1.949		1.960	167.0		181.0
7	Master	1.419		1.410	166.2		175.0
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 14-Oct-2009 17:03

Array Induction Tool – M Master Calibration							
Electronics Calibration Check – Auxiliary							
Phase	Array Induction SPA Plus MV		Value	Phase	Array Induction SPA Zero MV		Value
Master			992.7	Master			0.6638
	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			0.9196	Master			0.0006632
	0.8710 (Minimum)	0.9170 (Nominal)	0.9630 (Maximum)		−0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)
Master: 14–Oct–2009 17:03							

Master: 14-Oct-2009 17:03

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	1.017				0.7201			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.014				0.7620			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.015				0.2948			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.011				0.2209			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9935				0.1146			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9888				-0.009143			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9937				0.2984			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.007				-0.05307			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)







Master: 14-Oct-2009 17:03

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	-69.04				-259.4			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	172.8				103.1			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	116.8				63.05			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	64.65				-22.90			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	26.78				21.47			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	12.75				-15.50			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	11.98				-4.060			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-2.480				-4.950			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 14-Oct-2009 17:03

Array Induction Tool – M Master Calibration							
Mud Gain Correction							
Idx	Value	Coarse – Mag, Real, Imag			Value	Fine – Mag, Real, Imag	
0	0.8551				0.8573		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal) 1.200 (Maximum)
1	0.8551				0.8573		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal) 1.200 (Maximum)
2	0.8551				0.8573		
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal) 1.200 (Maximum)

Master: 14-Oct-2009 17:03

### 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 – B 821  
HRGD – B 1748  
MCFL –  
GLS – VJ 5416  
HRCC – B 1813  
HGNS – B  
HGR –  
HCNT –

#### 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				0.7291	Before				0.4790
	0.6936 (Minimum)	0.7301 (Nominal)	0.7666 (Maximum)			0.4555 (Minimum)	0.4794 (Nominal)	0.5034 (Maximum)	
Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value
Before				9932	Before				9810
Phase	LS Window Ratio			Value	Phase	LS Window Sum CPS			Value
Before				0.2948	Before				1050
	0.2805 (Minimum)	0.2953 (Nominal)	0.3101 (Maximum)						

9441 (Minimum)	9938 (Nominal)	10430 (Maximum)	9327 (Minimum)	9818 (Nominal)	10310 (Maximum)	1002 (Minimum)	1055 (Nominal)	1108 (Maximum)
-------------------	-------------------	--------------------	-------------------	-------------------	--------------------	-------------------	-------------------	-------------------




Before: 12-Nov-2009 9:38

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				1636	Before				1393	Before				1241
	1541 (Minimum)	1641 (Nominal)	1741 (Maximum)		1295 (Minimum)	1395 (Nominal)	1495 (Maximum)			1145 (Minimum)	1245 (Nominal)	1345 (Maximum)		
Before: 12–Nov–2009 9:38														



Before: 12-Nov-2009 9:38

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			11.32	Before			10.08	Before			9.015
	10.32 (Minimum)	11.32 (Nominal)	12.32 (Maximum)		9.133 (Minimum)	10.13 (Nominal)	11.13 (Maximum)		7.695 (Minimum)	8.695 (Nominal)	9.695 (Maximum)
Before: 12–Nov–2009 9:38											




Before: 12-Nov-2009 9:38

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				3844	Before				3807	Before				3816
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)			
Before: 12–Nov–2009 9:30														





Before: 12-Nov-2009 9:30

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			7.789	Before			11.81
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)		9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)
Before: 12-Nov-2009 9:28							

Before: 12-Nov-2009 9:28




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				75.73	Before				180.9	Before				165.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)		164.4 (Minimum)	180.9 (Nominal)	197.3 (Maximum)			150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)		
Before: 12–Nov–2009 9:28														

Before: 12-Nov-2009 9:28


High resolution Integrated Logging Tool–DTS Wellsite Calibration									
Zero Measurement									
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master				26.34	Master				27.85
Before				26.27	Before				27.85
5.000 (Minimum)26.34 (Nominal)40.00 (Maximum)					5.000 (Minimum)27.85 (Nominal)40.00 (Maximum)				
Master: 8–Oct–2009 13:16					Before: 12–Nov–2009 9:29				


Master: 8-Oct-2009 13:16





Before: 12-Nov-2009 9:29







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				5423	Master				2272	Master				2.387
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)		1900 (Minimum)	2400 (Nominal)	2900 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)		
Master: 8–Oct–2009 13:16														



Master: 8-Oct-2009 13:16




High resolution Integrated Logging Tool-DTS Wellsite Calibration		
Accelerometer Calibration		
Phase	Z-Axis Acceleration F/S2	Value
Before		

Before		32.07
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)
Before: 12–Nov–2009 21:04		

High resolution Integrated Logging Tool–DTS Master Calibration							
Inversion results							
Phase	Rho Aluminum G/C3		Value	Phase	Rho Magnesium G/C3		Value
Master			2.603	Master			1.687
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			2.544	Master			2.619
2.470 (Minimum)		2.570 (Nominal)	2.670 (Maximum)	2.550 (Minimum)		2.650 (Nominal)	2.750 (Maximum)
Master: 26–Oct–2009 12:49							

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			0.3805	Master			0.4353	Master			0.8605
–0.6000 (Minimum)			0 (Nominal)	–1.000 (Minimum)			0 (Nominal)	–1.500 (Minimum)			1.500 (Maximum)
Phase	BS Max Deviation %		Value	Phase	SS Max Deviation %		Value	Phase	LS Max Deviation %		Value
Master			0.6569	Master			1.873	Master			2.157
–1.600 (Minimum)			0 (Nominal)	–2.500 (Minimum)			0 (Nominal)	–3.500 (Minimum)			3.500 (Maximum)
Master: 26–Oct–2009 12:49											

High resolution Integrated Logging Tool–DTS Master Calibration									
Zero Measurement									
Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master				26.34	Master				27.85
5.000 (Minimum)		26.34 (Nominal)		40.00 (Maximum)	5.000 (Minimum)		27.85 (Nominal)		40.00 (Maximum)
Master: 8–Oct–2009 13:16									

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			5423	Master			2272	Master			2.387			
4700 (Minimum)			5800 (Nominal)	6900 (Maximum)	1900 (Minimum)			2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)			2.159 (Nominal)	2.540 (Maximum)
Master: 8–Oct–2009 13:16														

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

Well: Commons 6–19  
Field: Wattenberg  
County: Weld  
State: Colorado

Platform Express  
Array Induction  
with Linear Correlation