Schlumberger

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

Well: **DAYBREAK FEDERAL 19−6BB**
Field: **PARACHUTE**
County: **GARFIELD** State: **COLORADO**

County: GARFIELD
Field: PARACHUTE
Location: 2047FT FSL 2340FT FEL
Well: DAYBREAK FEDERAL 19−6BB
Company: ENCANA OIL & GAS (USA) INC.

PLATFORM EXPRESS
LITHO DENSITY / COMPENSATED NEUTRON
ARRAY INDUCTION TOOL / GR / SP

LOCATION: 2047FT FSL 2340FT FEL

Elev.: K.B. 5449.00 ft
G.L. 5427.00 ft
D.F. 5427.00 ft

Permanent Datum: GROUND LEVEL Elev.: 5427.00 ft
Log Measured From: KELLY BUSHING 22.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
05−045−19892−00	19	7S	95W

	Run 1	Run 2	Run 3
Logging Date	24−Jul−2011		
Run Number	1		
Depth Driller	6270 ft		
Schlumberger Depth	4086 ft		
Bottom Log Interval	4078 ft		
Top Log Interval	1111 ft		
Casing Driller Size @ Depth	9.625 in @ 1114 ft	@	@
Casing Schlumberger	1111 ft		
Bit Size	8.750 in		
Type Fluid In Hole	WATER BASED MUD		
MUD Density / Viscosity	9.7 lbm/gal / 45 s		
MUD Fluid Loss / PH	6 cm3 / 9.6		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	1.100 ohm.m @ 80 degF	@	@
RMF @ Measured Temperature	1.080 ohm.m @ 75 degF	@	@
RMC @ Measured Temperature	1.101 ohm.m @ 75 degF	@	@
Source RMF / RMC	CALCULATED / CALCULATED		
RM @ MRT / RMF @ MRT	0.673 @ 135 / 0.623 @ 135	@ / @	@ / @
Maximum Recorded Temperatures	135 degF		
Circulation Stopped Time	23−Jul−2011 18:00		
Logger On Bottom Time	24−Jul−2011 2:00		
Unit Number / Location	2379 VERNAL	/	/
Recorded By	JAMIE UNDERWOOD/JEREMY WILLIAMS		
Witnessed By	RICHARD MICHELL		

	Run 4	Run 5	Run 6
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped Time			
Logger On Bottom Time			
Unit Number / Location	/		
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING

Date Created: 24−JUL−2011 4:52:25

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46P
Serial Number:	6122	Serial Number:	8093	Serial Number:	709025
Calibration Date:	22−APR−2011	Calibration Date:	8−JUN−2011	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	1159		
Calibration Cable Type:	7−46P	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−6	Calibration RMS:	33	Rig Type:	LAND
Wheel Correction 2:	−7	Calibration Peak Error:	85		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	2.50 FT
Tool Zero Check At Surface:	0.20 FT

Depth Control Remarks

1. SCHLUMBERGER DEPTH CONTROL POLICY FOLLOWED
2. IDW USED AS PRIMARY DEPTH CONTROL, Z−CHART USED AS SECONDARY DEPTH CONTROL
3. LOG CORRELATED FROM 3700 TO TOTAL DEPTH
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: CALIPER	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
TOOL RUN AS PER TOOL SKETCH	
TOOL STRING RUN WITHOUT BOWSPRING OR STANDOFFS AS PER CLIENT REQUEST	
NUETRON CORRECTED FOR HOLE SIZE ONLY	
MATRIX, DENSITY: SANDSTONE, 2.68g/cc	
GAMMA RAY REPEATABILITY 7% AT 1800ft/hr	

BRIDGED AT 4086ft, LOG UP FROM 4086ft

DRILLER TD: 6270ft

OPERATORS:

BRAD SLAGOWSKI, ROGER ISER

RUN 1		RUN 2	
SERVICE ORDER #:	BPSA−00009	SERVICE ORDER #:	
PROGRAM VERSION:	18C0−147	PROGRAM VERSION:	
FLUID LEVEL:	0 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

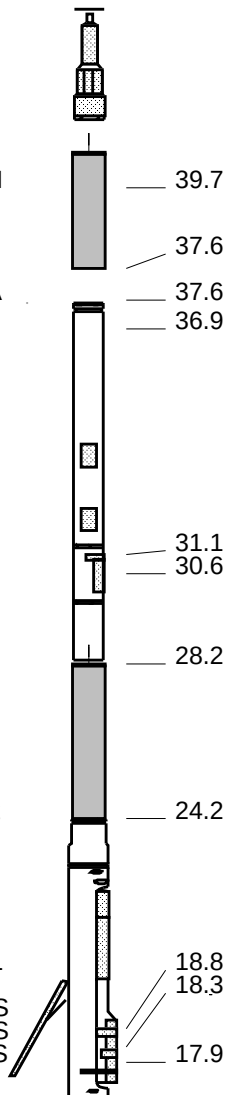
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y 1474
NCT−B
CNB−AB
NCS−VB
WITM (DTS)−A

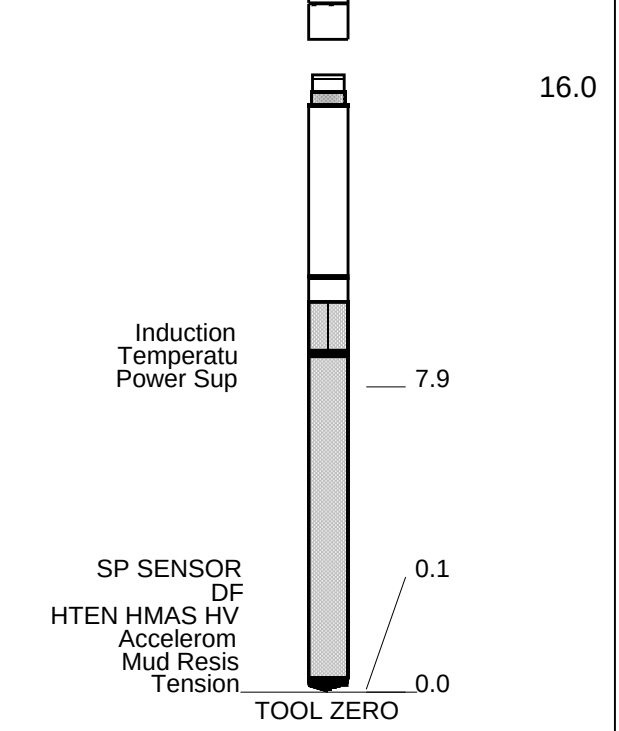
DOWNHOLE EQUIPMENT



LEH−QT
LEH−QT

DTC−H
ECH−KC 10334
DTCH0−A
DTCH1−A

HILTH−FTB
HGNSD−H 3799
HMCA−H
HGNH 2795
NLS−KL
NSR−F 5138
HACCZ−H 3577
HCNT−H
HGR
HRCC−H 4863
HRMS−H 3969
HRGD−H 3995
GLS−VJ 5234
MCFL Device−H
HILT Nucl. LS−H 28805
HILT Nucl. SS−H 42767
HILT Nucl. BS−H 26447
NPV−N

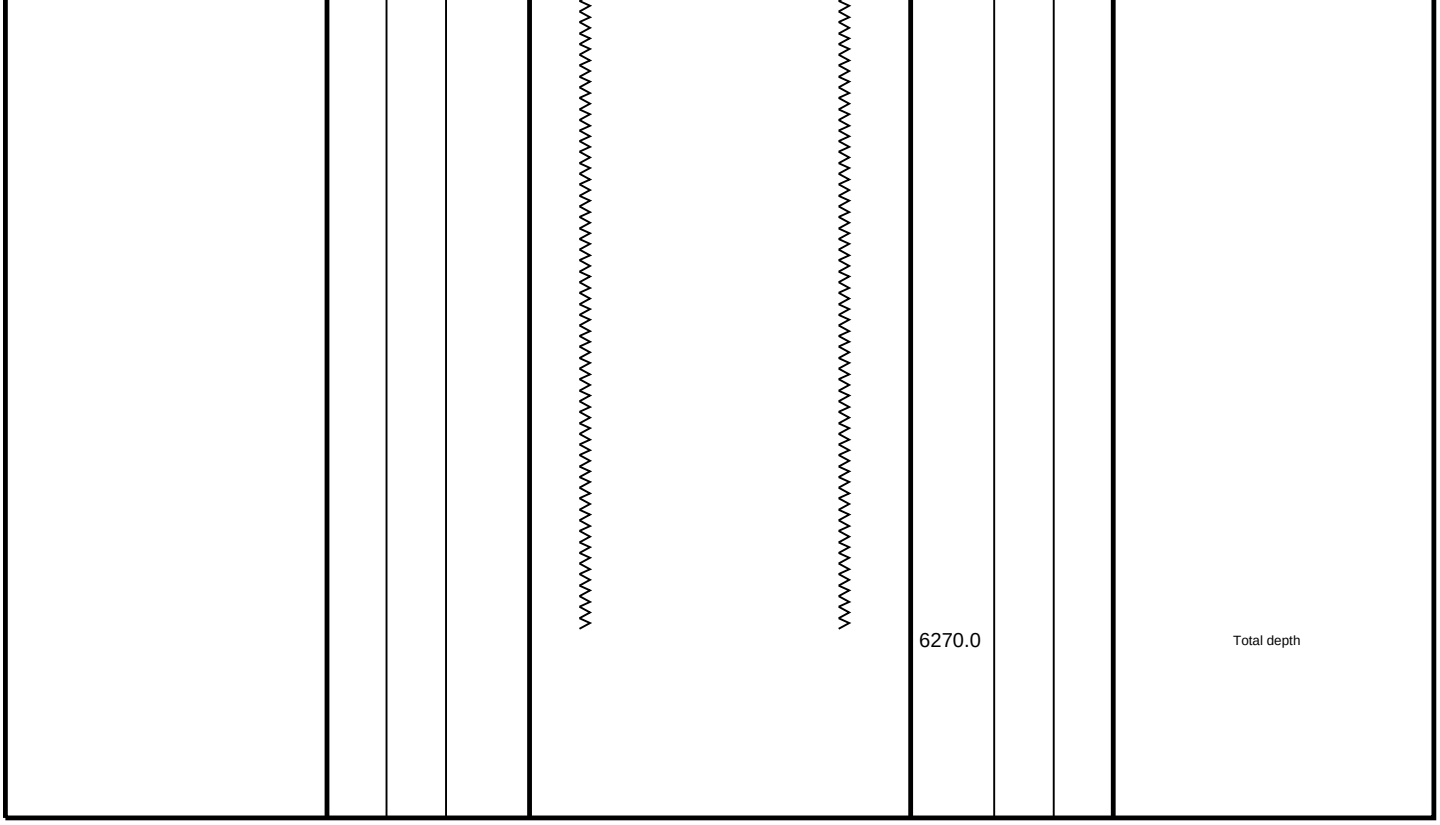


MAXIMUM STRING DIAMETER 4.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Client: ENCANA OIL & GAS (USA) INC.
Well: DAYBREAK FEDERAL 19−6BB
Field: PARACHUTE
State: COLORADO
Country: USA

Drawing Date: 7/24/2011
API #: 05−045−19892−00
Rig Name: M−15
Reference Datum: GROUND LEVEL
Elevation: 5427.0 ft

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	9.625		Casing String
					1114.0	9.625		Casing Shoe
					1114.0	8.750		Borehole Segment



ALL DEPTHS ARE DRILLERS DEPTHS

Schlumberger

MAIN PASS
BRIDGED AT 4086FT

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. **Well: DAYBREAK FEDERAL 19−6BE**

Input DLIS Files

	AIT_TLD_MCFL_CNL_015LUP	FN:21		24−Jul−2011 16:18	4098.0 FT	1040.0 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_002PUP	FN:1	PRODUCER	24−Jul−2011 04:29	4101.0 FT	1070.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 2015.10 F3

Cement Volume = 1686.48 F3 (assuming 4.50 IN casing O.D.)

Computed from 4086.0 FT to 1111.0 FT using data channel(s) HCAL

OP System Version: 18C0−147

AIT−M	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

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

GAMMA RAY < 90 From GR to SpareConstant

GR Backup From LHT1 to GR_1

HILT Caliper (HCAL): 6 (IN) 16

Gamma Ray (GR): 0 (GAPI) 150

SPAR (SP): −200 (MV) 400

Tension (TENS) (LBF): 7500 0

Std. Res. Invaded Zone Resistivity (RXOZ): 2 (OHMM) 2000

AIT 90 Inch Investigation (AF90): 2 (OHMM) 2000

AIT 60 Inch Investigation (AF60): 2 (OHMM) 2000

AIT 30 Inch Investigation (AF30): 2 (OHMM) 2000

AIT 20 Inch Investigation (AF20): 2 (OHMM) 2000

AIT 10 Inch Investigation (AF10): 2 (OHMM) 2000

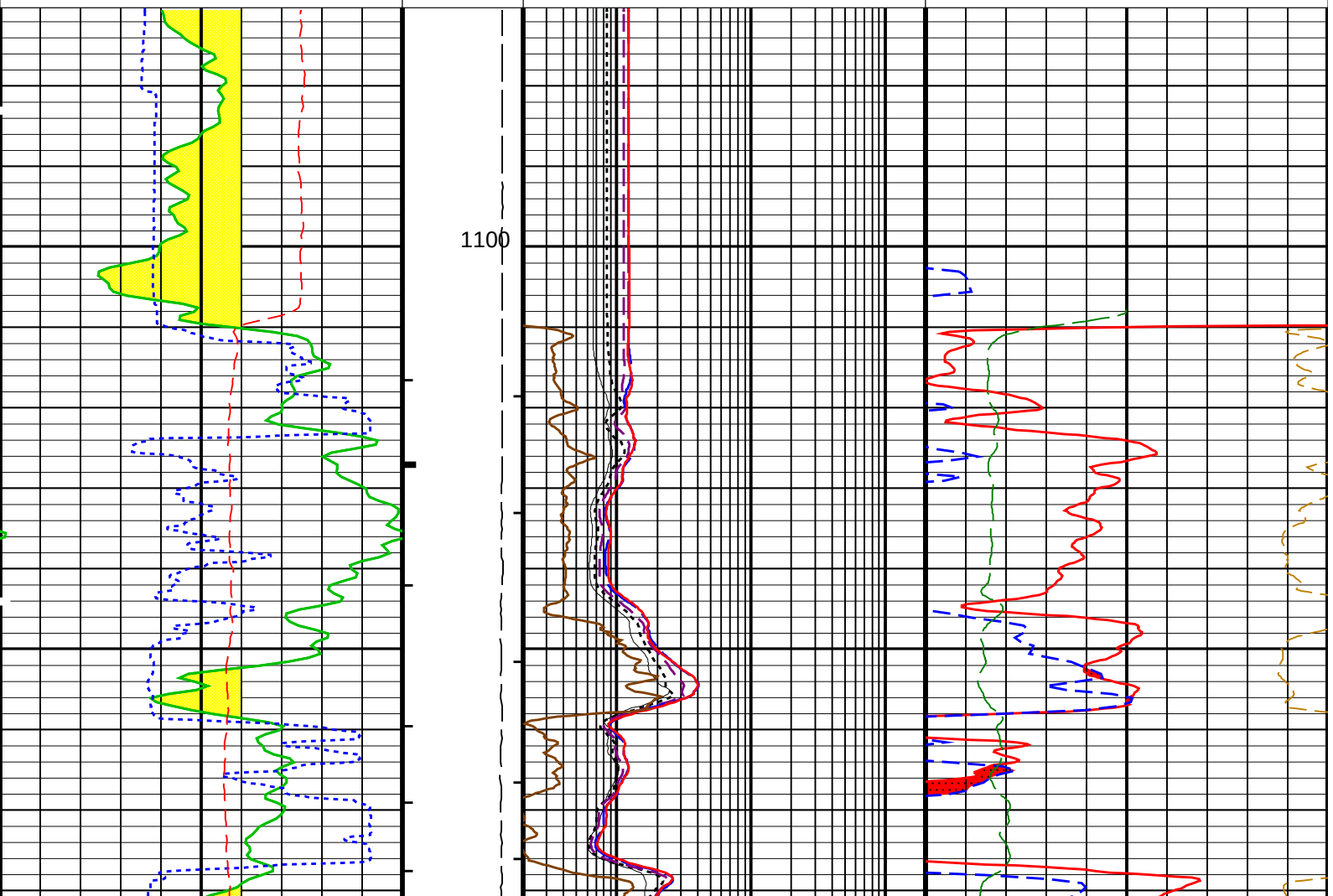
Alpha Processed Neutron Porosity (NPOR): 0.3 (V/V) −0.1

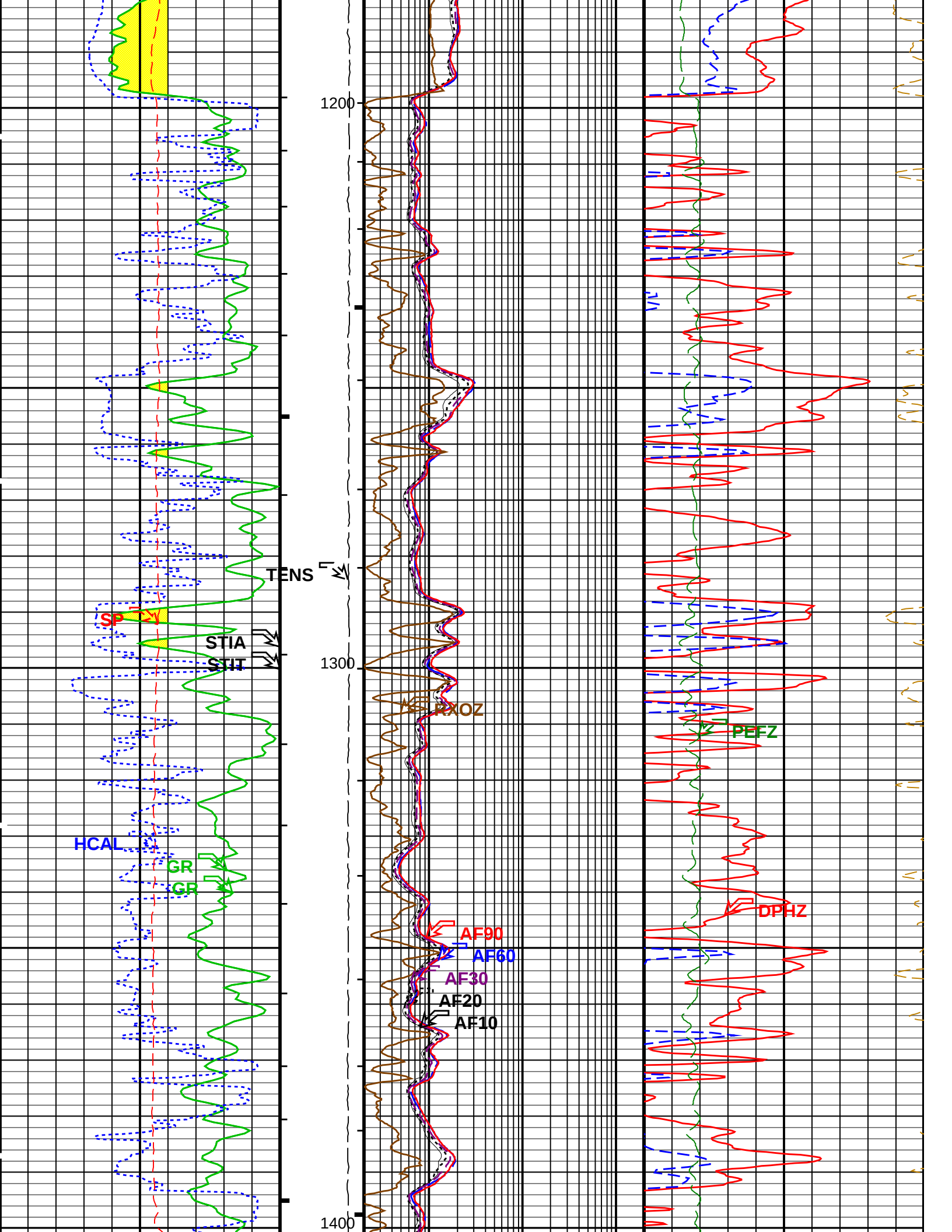
Std. Res. Formation Pe (PEFZ): 0 (−−−−) 10

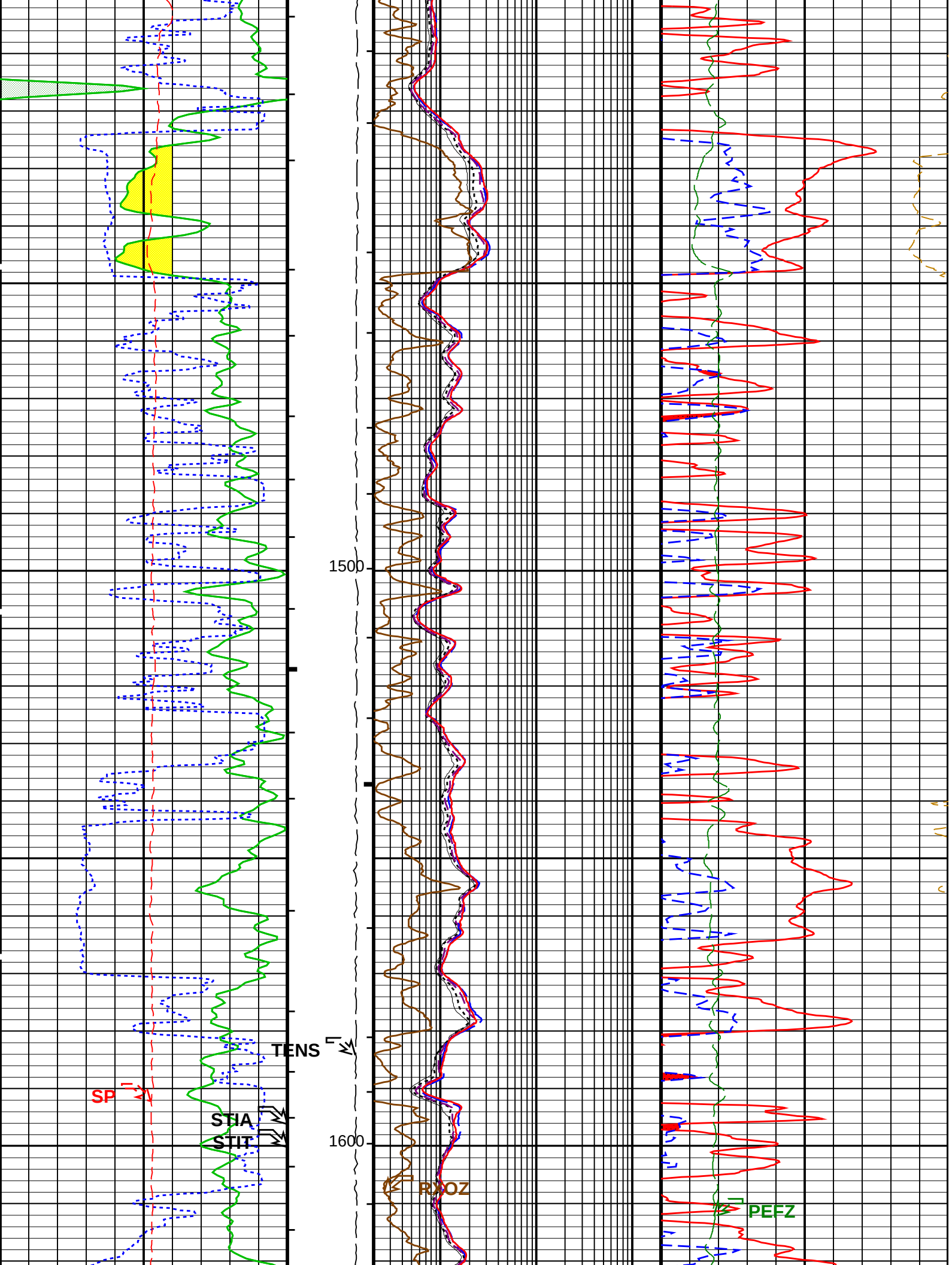
Density Correction (HDRA): −0.2 (G/C3) 0.05

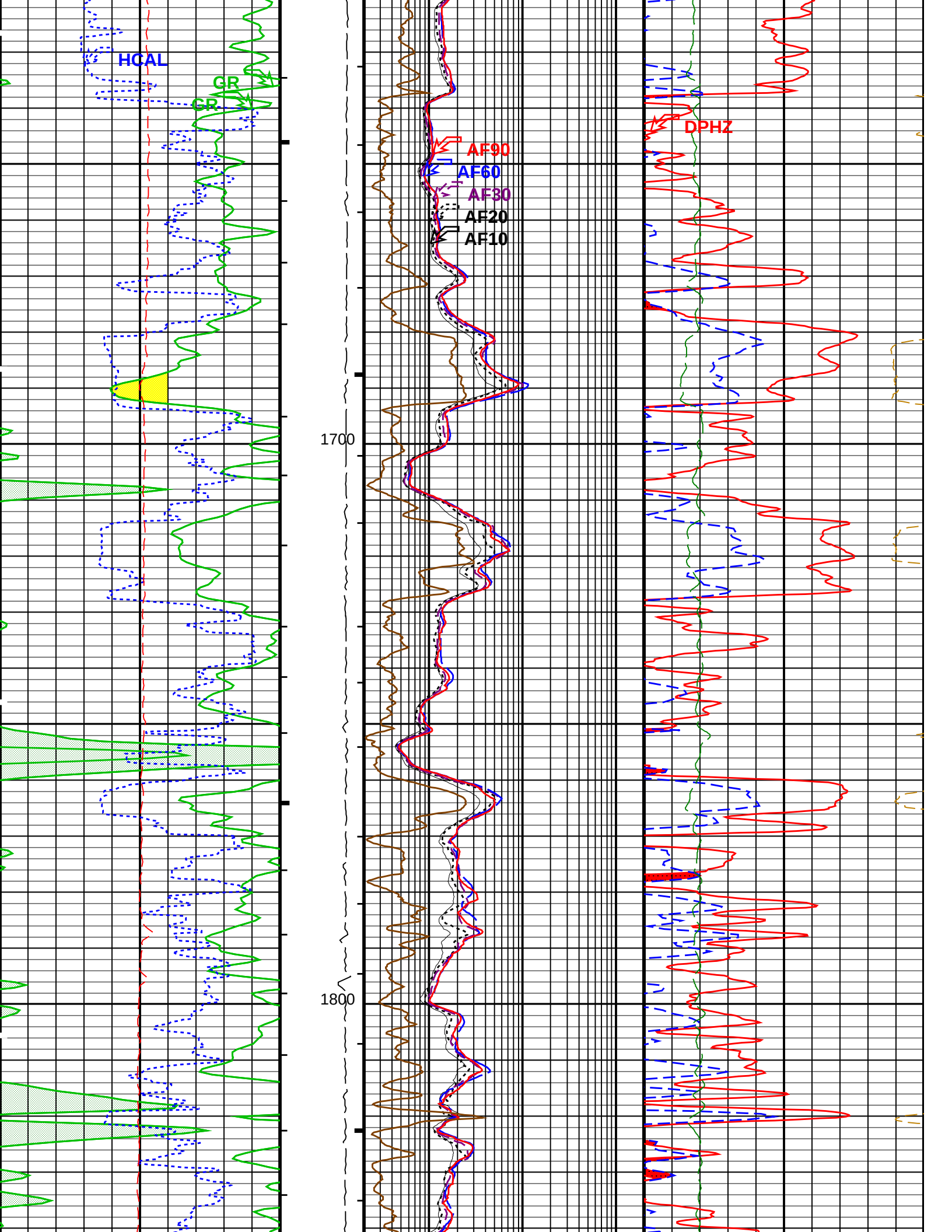
Gas From DPHZ to NPOR

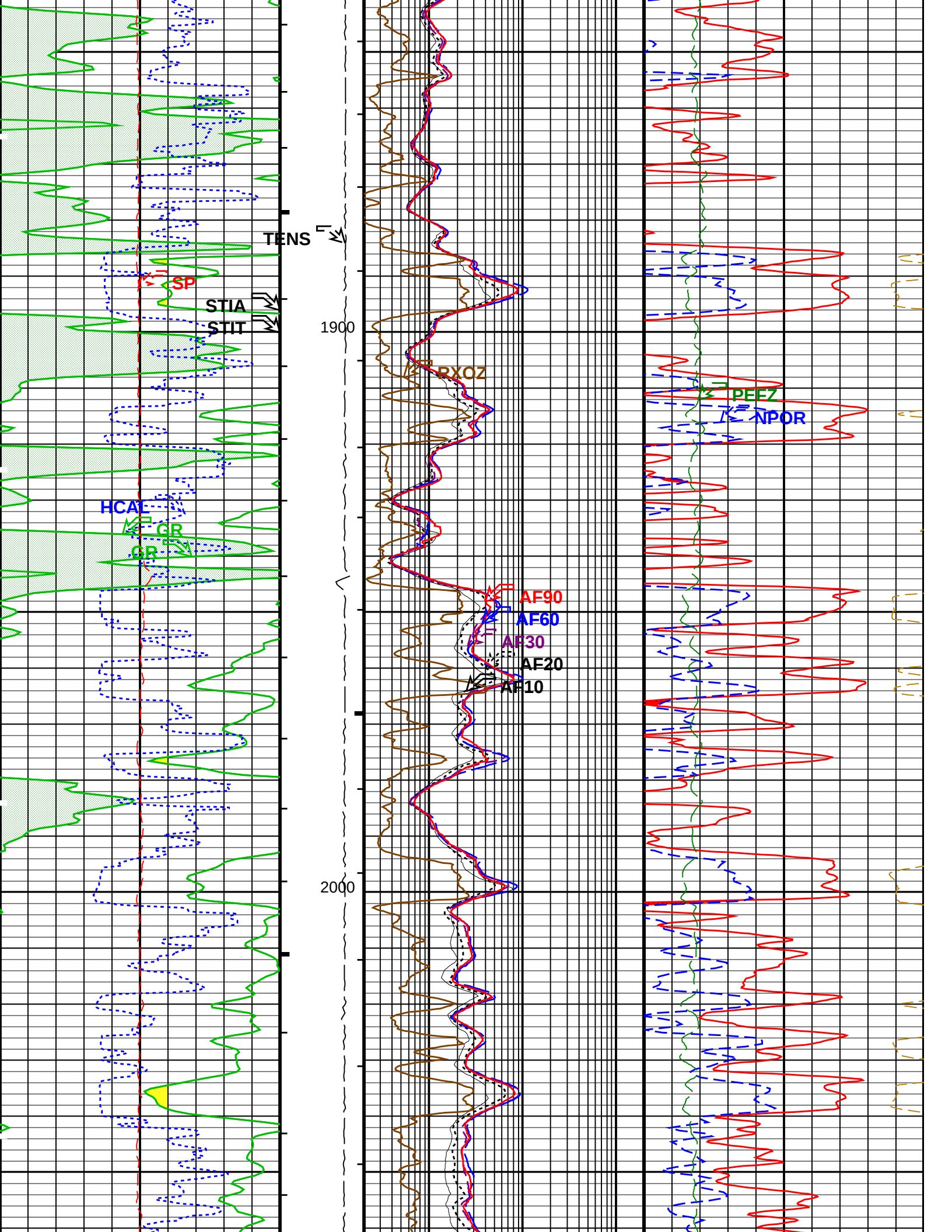
Std. Res. Density Porosity (DPHZ): 0.3 (V/V) −0.1

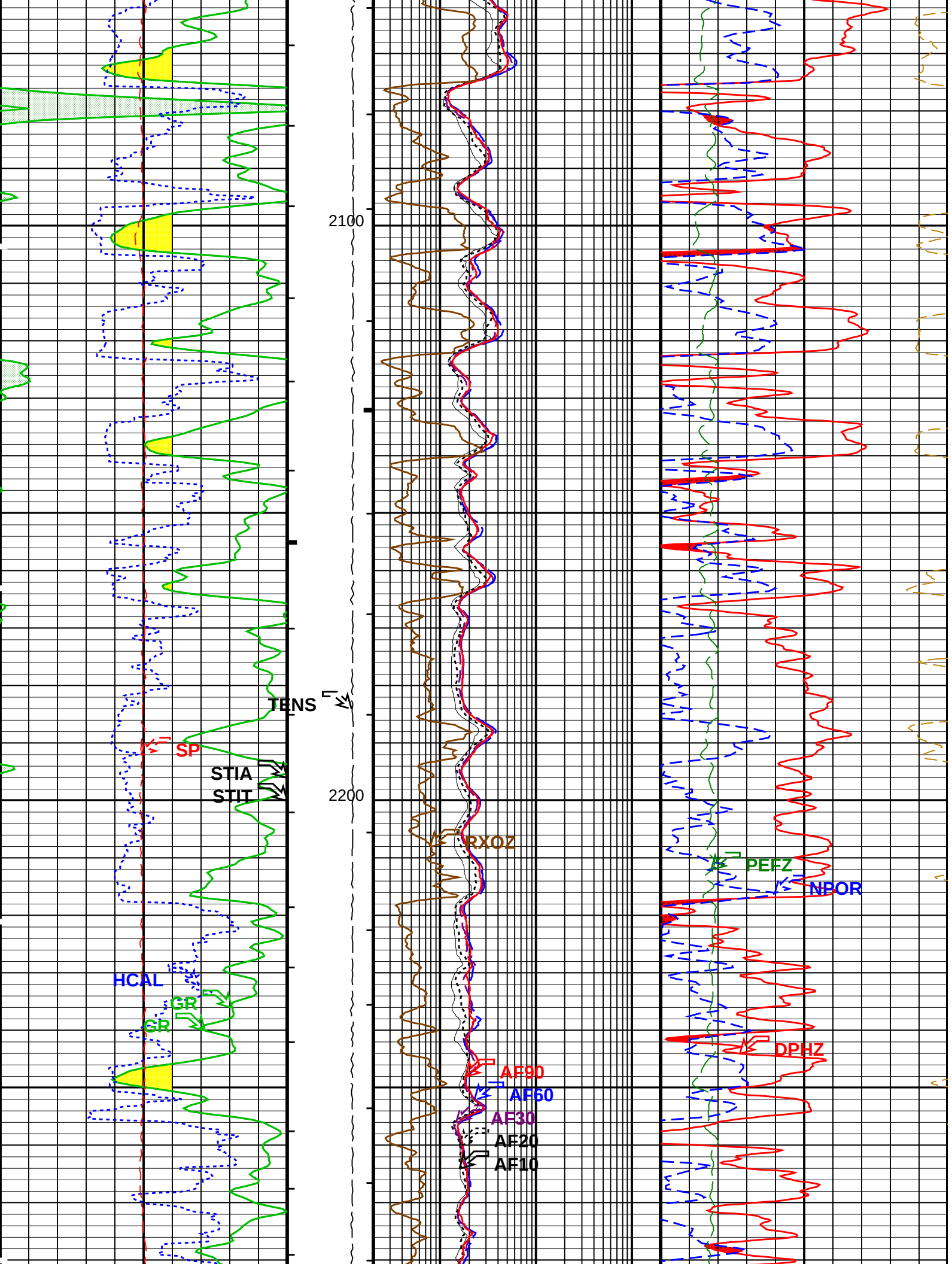


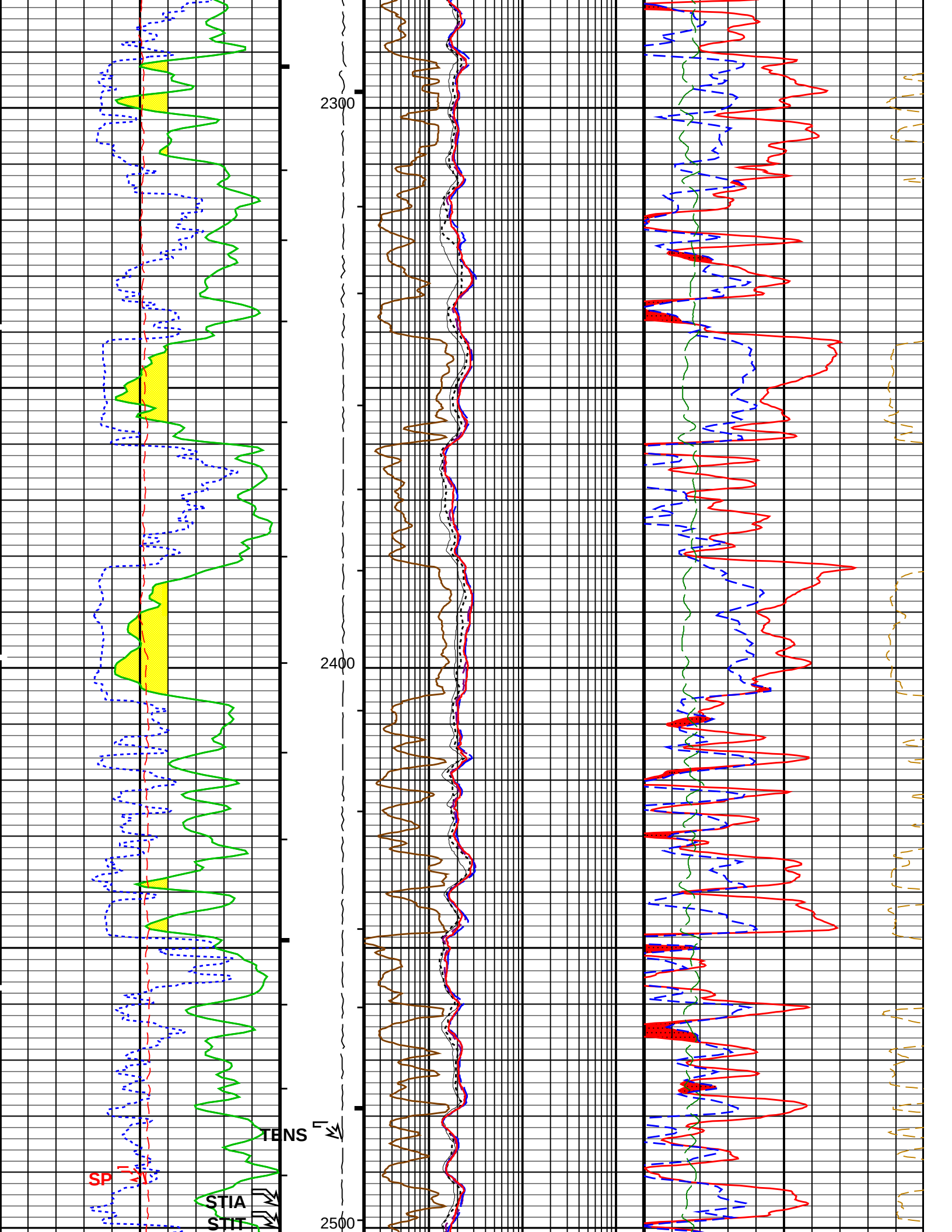

1200
1300
1400
TENS
SP
STIA
STIT
HCAL
GR
GR
RXOZ
PEFZ
DPHZ
AF90
AF60
AF30
AF20
AF10

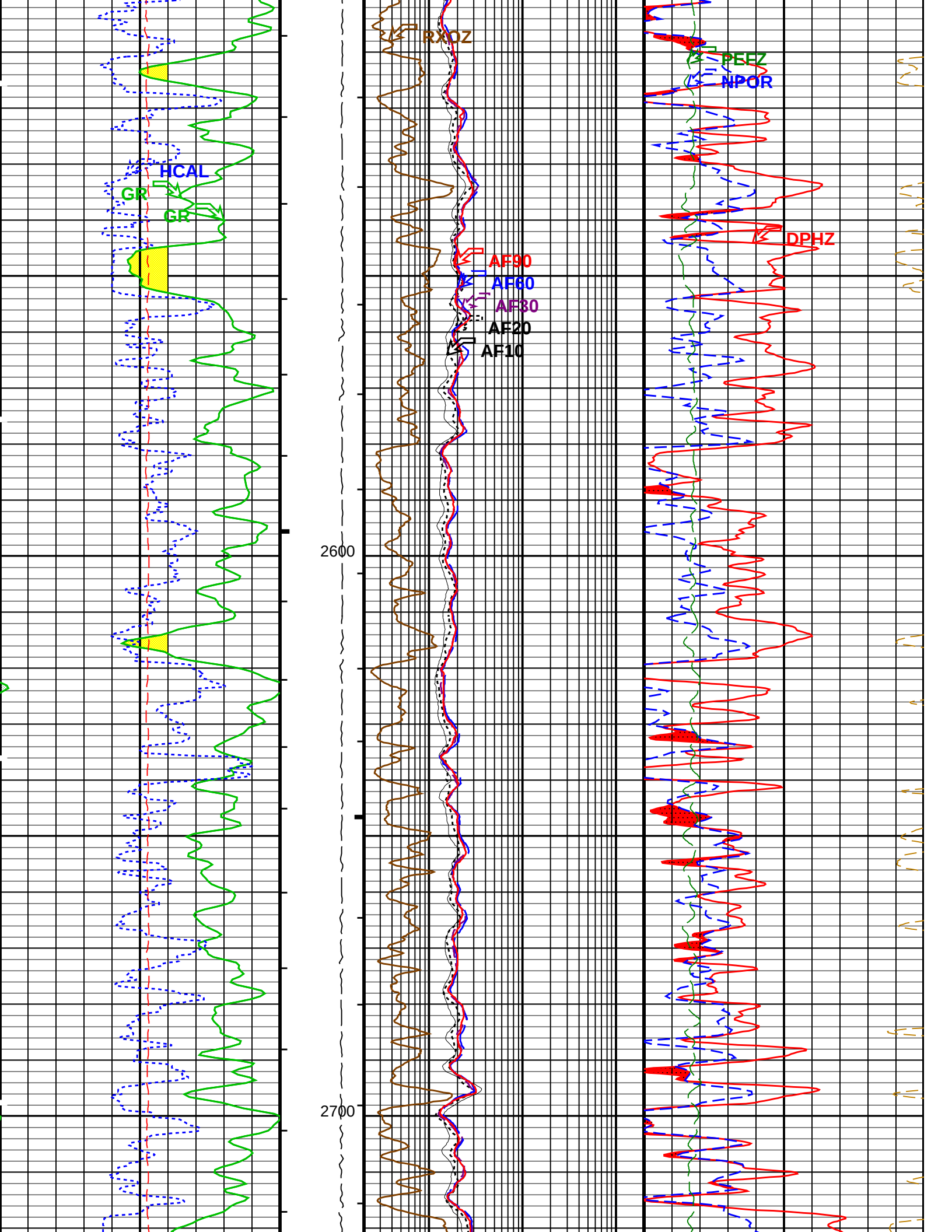

1500
1600
TENS
SP
STIA
STIT
RXOZ
PEFZ

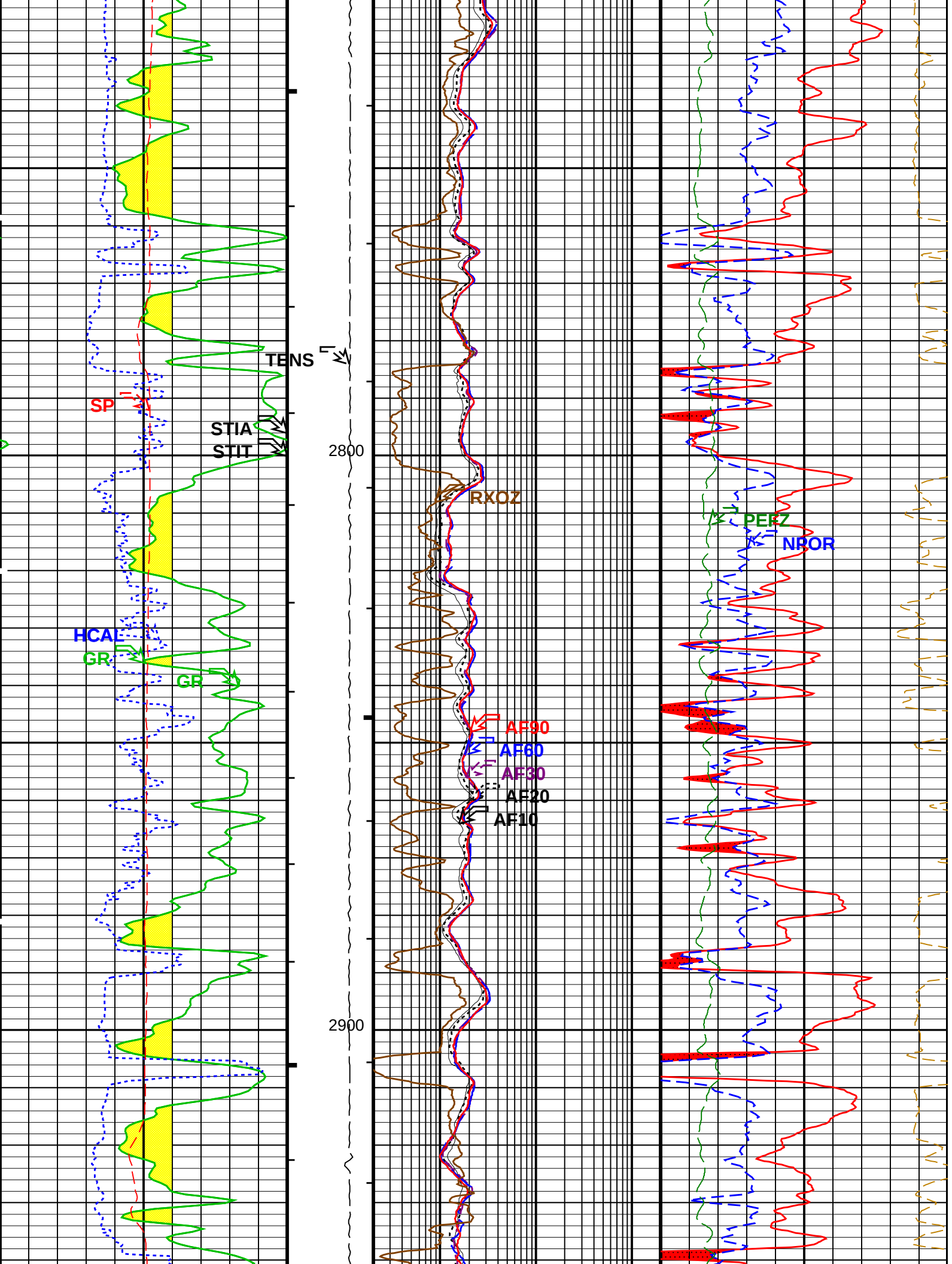

HCAL
GR
GR
AF90
AF60
AF30
AF20
AF10
DPHZ
1700
1800

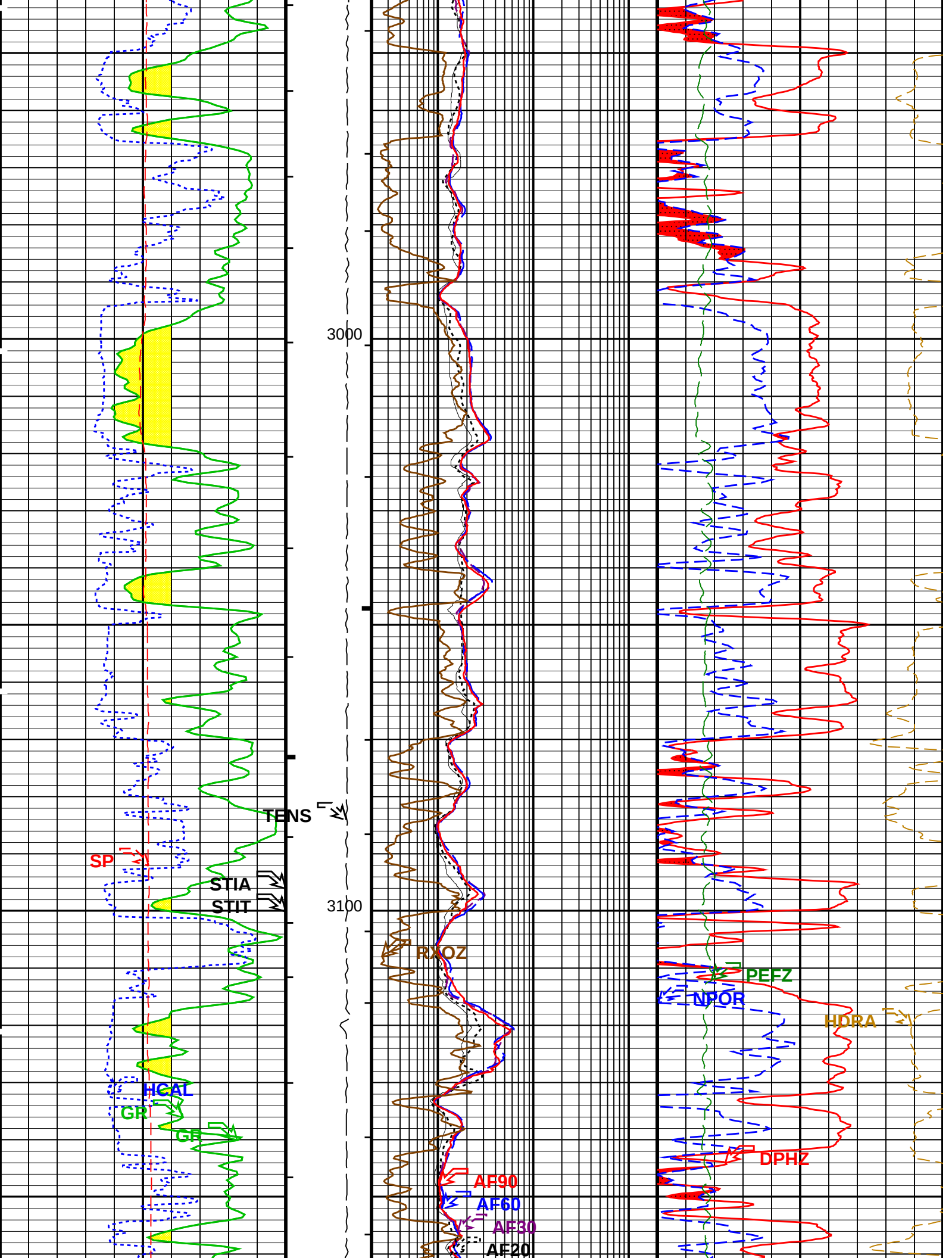

TENS
SP
STIA
STIT
1900
RXOZ
PEFZ
NPOR
HCAL
GR
GR
AF90
AF60
AF30
AF20
AF10
2000

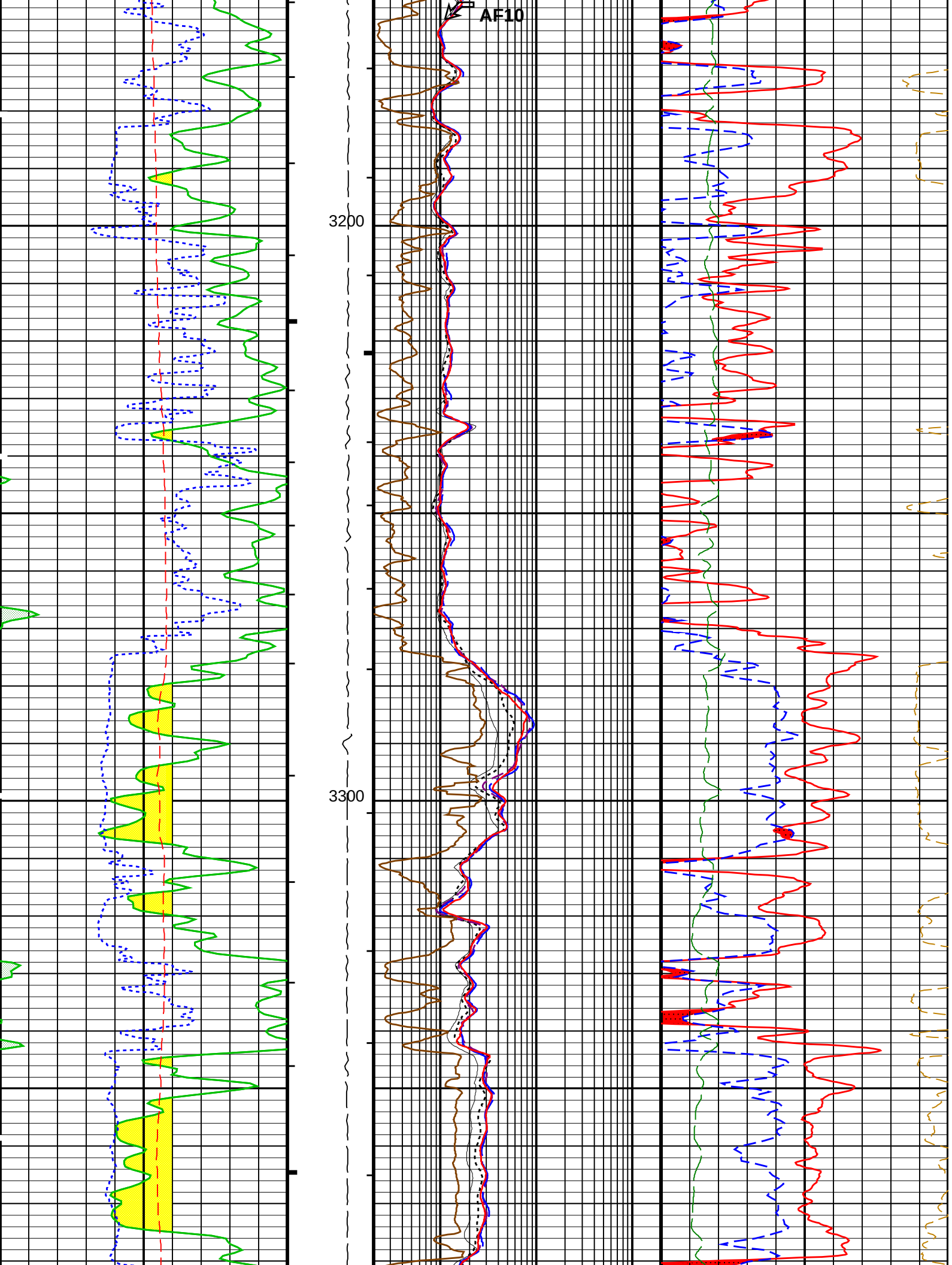

2100
2200
TENS
SP
STIA
STIT
RXOZ
PEFZ
NPOR
HCAL
GR
GR
DPHZ
AF90
AF60
AF30
AF20
AF10

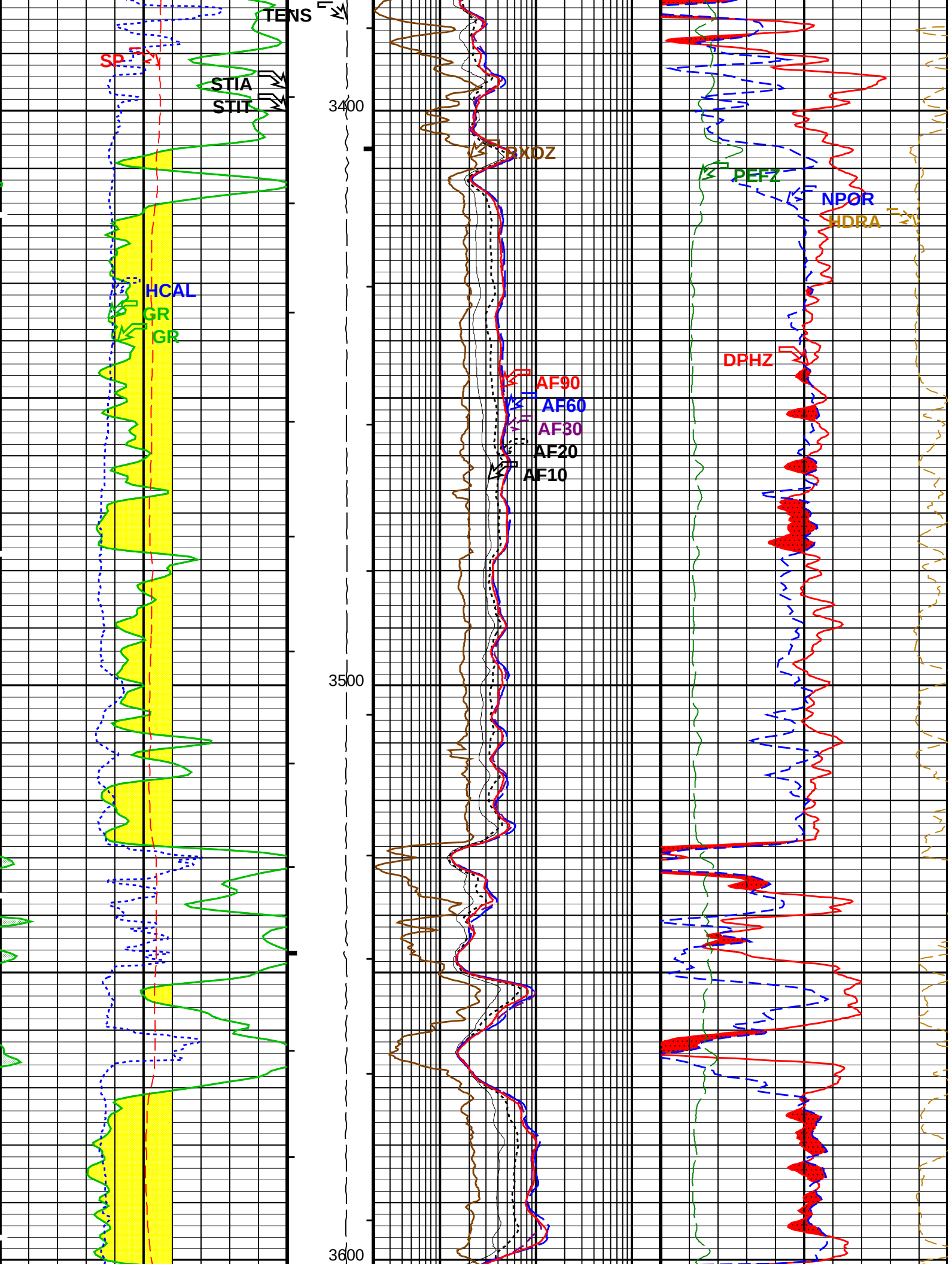

2300
2400
2500
TENS
SP
STIA
STIT

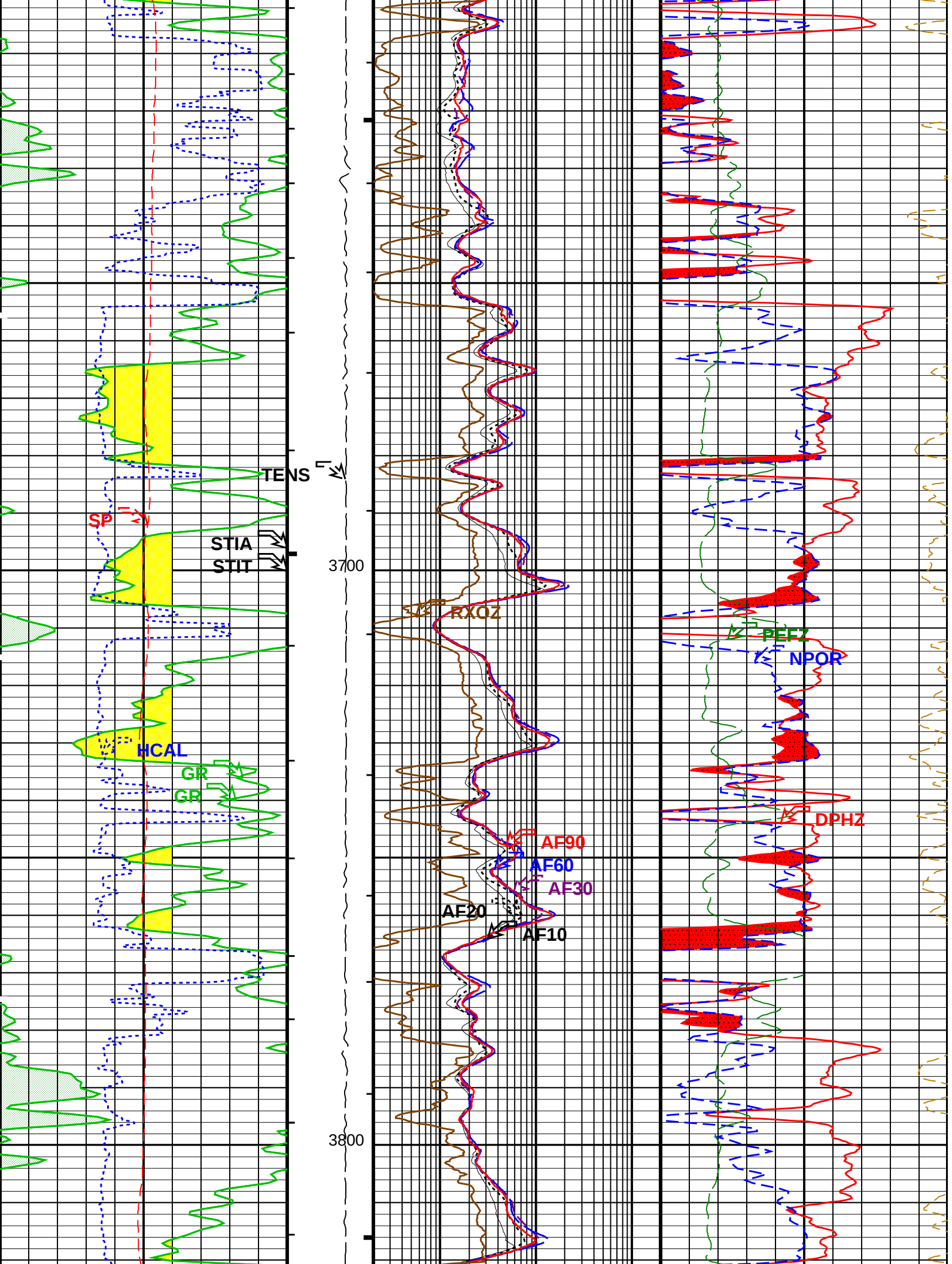

RXOZ
PEFZ
NPOR
HCAL
GR
GR
DPHZ
AF90
AF60
AF30
AF20
AF10
2600
2700

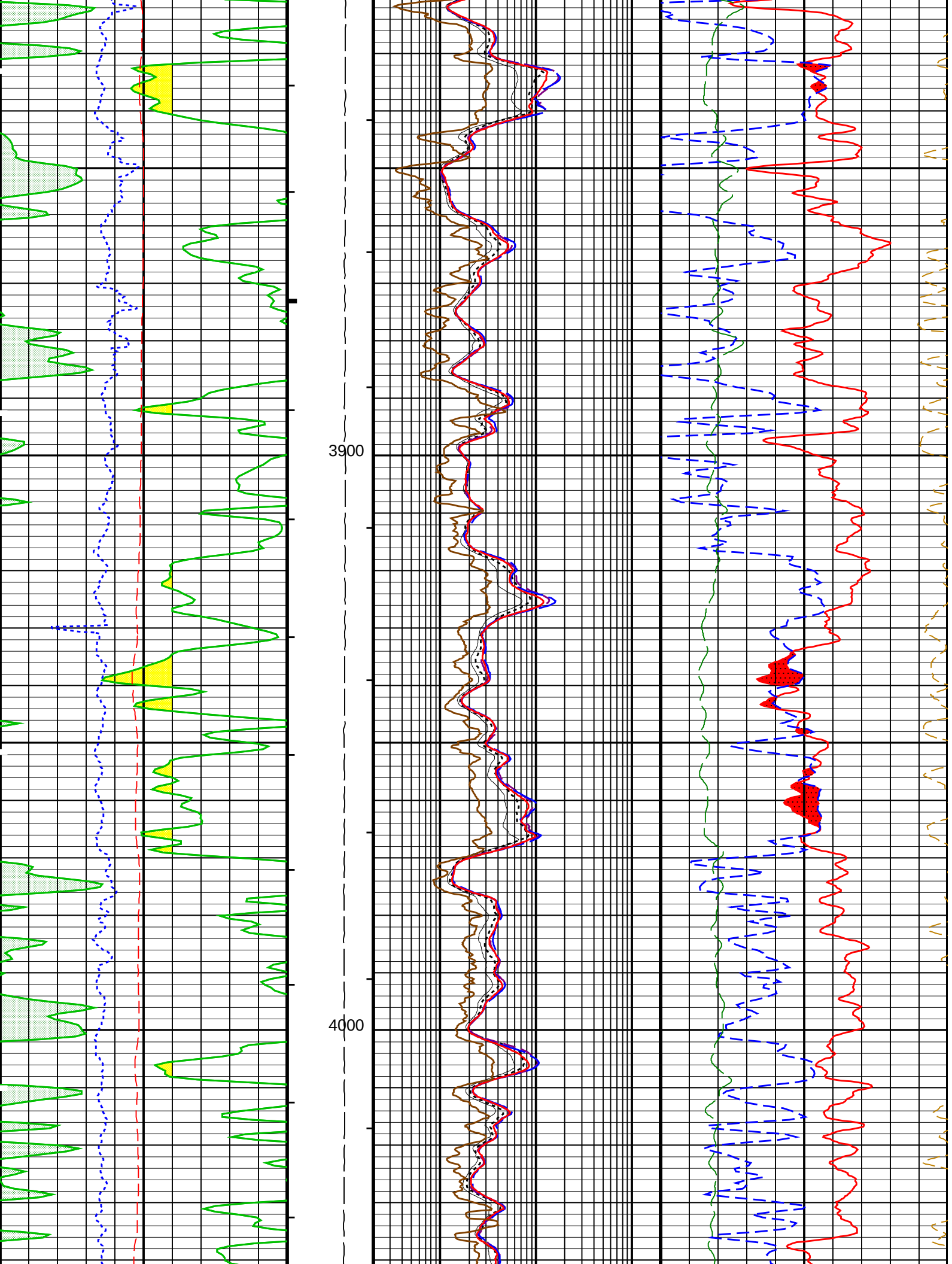

TENS
SP
STIA
STIT
2800
RXOZ
PEFZ
NPOR
HCAL
GR
GR
AF90
AF60
AF30
AF20
AF10
2900

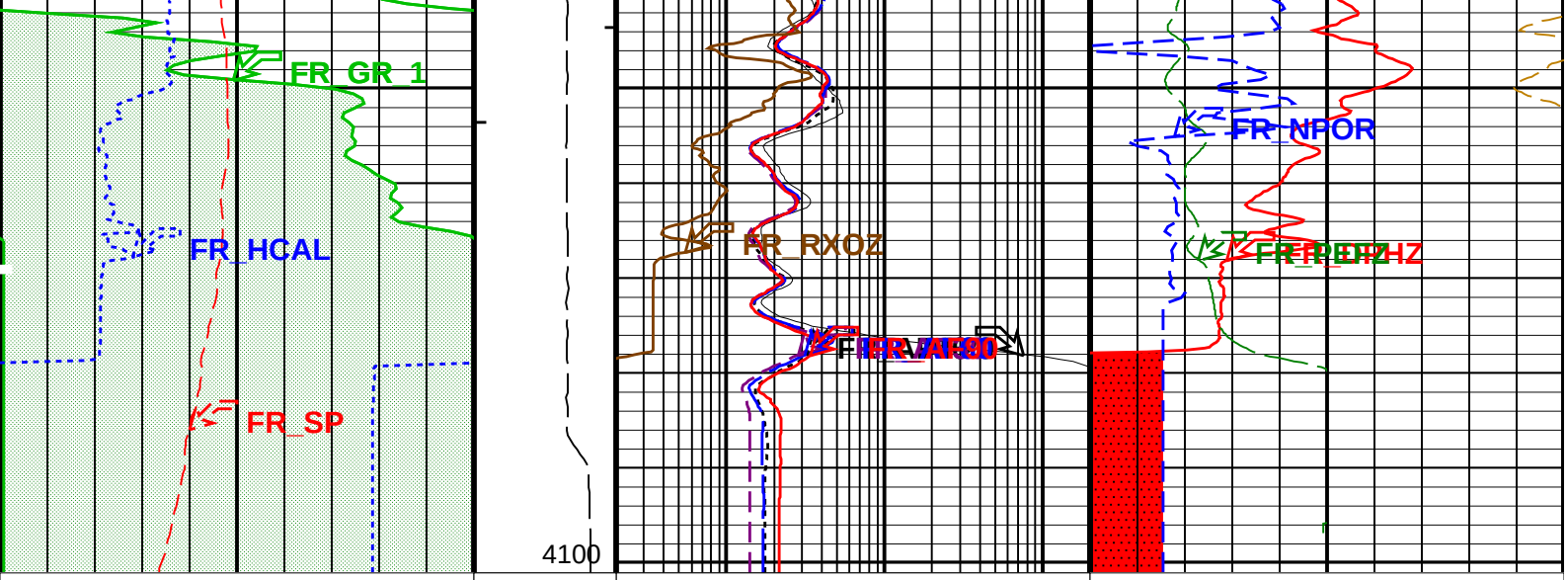

3000
3100
TENS
SP
STIA
STIT
HCAL
GR
GR
RXOZ
AF90
AF60
AF30
AF20
PEFZ
NPOR
HDRA
DPHZ


AF10
3200
3300


TENS
SP
STIA
STIT
HCAL
GR
GR
3400
RXOZ
PEFZ
NPOR
HDRA
DPHZ
AF90
AF60
AF30
AF20
AF10
3500
3600


TENS
SP
STIA
STIT
3700
RXOZ
PEFZ
NPOR
HCAL
GR
GR
DPHZ
AF90
AF60
AF30
AF20
AF10
3800


3900
4000



SPAR (SP)
−200 (MV) 400

Tension (TENS) (LBF)
7500 0

AIT 10 Inch Investigation (AF10)
2 (OHMM) 2000

Std. Res. Density Porosity (DPHZ)
0.3 (V/V) −0.1

Gamma Ray (GR)
0 (GAPI) 150

AIT 20 Inch Investigation (AF20)
2 (OHMM) 2000

Gas
From DPHZ to NPOR

HILT Caliper (HCAL)
6 (IN) 16

AIT 30 Inch Investigation (AF30)
2 (OHMM) 2000

Std. Res. Formation Pe (PEFZ)
0 (−−−−) 10

Density Correction (HDRA)
−0.2 (G/C3) 0.05

GR Backup
From LHT1 to GR_1

AIT 60 Inch Investigation (AF60)
2 (OHMM) 2000

Alpha Processed Neutron Porosity (NPOR)
0.3 (V/V) −0.1

GAMMA RAY < 90
From GR to SpareConstant

AIT 90 Inch Investigation (AF90)
2 (OHMM) 2000

Std. Res. Invaded Zone Resistivity (RXOZ)
2 (OHMM) 2000

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 10 F3
Integrated Hole Volume Major Pip Every 100 F3
Integrated Cement Volume Minor Pip Every 10 F3
Integrated Cement Volume Major Pip Every 100 F3
Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−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	0.1	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	

AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	135	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	71	DEGF
SPNV	SP Next Value	0	MV
HILTH−FTB: High resolution Integrated Logging Tool−DTS			
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	135	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal−like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.68	G/C3
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	71	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	NO	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	135	DEGF
FCD	Future Casing (Outer) Diameter	4.5	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	AUTOMATIC	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	71	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	5	FT
TDD	Total Depth − Driller	6270.00	FT
TDL	Total Depth − Logger	4086.00	FT
System and Miscellaneous			
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	800.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	36.00	LB/F
DFD	Drilling Fluid Density	9.70	LB/G
DO	Depth Offset for Playback	2.5	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	80.00	DEGF
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	1.0800	OHMM
TD	Total Depth	4086	FT

Format: TCOMBO_AIT **Vertical Scale: 5" per 100'** **Graphics File Created: 24−Jul−2011 04:29**

OP System Version: 18C0−147

AIT−M	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

Input DLIS Files

	AIT_TLD_MCFL_CNL_015LUP	FN:21		24−Jul−2011 16:18	4098.0 FT	1040.0 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_002PUP	FN:1	PRODUCER	24−Jul−2011 04:29		

Schlumberger

REPEAT PASS

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: DAYBREAK FEDERAL 19−6BE

Input DLIS Files

	AIT_TLD_MCFL_CNL_016LUP	FN:23		24−Jul−2011 16:19	1504.5 FT	1101.7 FT
DEFAULT	AIT_TLD_MCFL_CNL_002PUP	FN:1	PRODUCER	24−Jul−2011 04:29	4101.0 FT	1070.0 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_003PUP	FN:2	PRODUCER	24−Jul−2011 04:32	1507.5 FT	1300.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 149.51 F3

Cement Volume = 126.59 F3 (assuming 4.50 IN casing O.D.)

Computed from 1507.5 FT to 1300.5 FT using data channel(s) HCAL

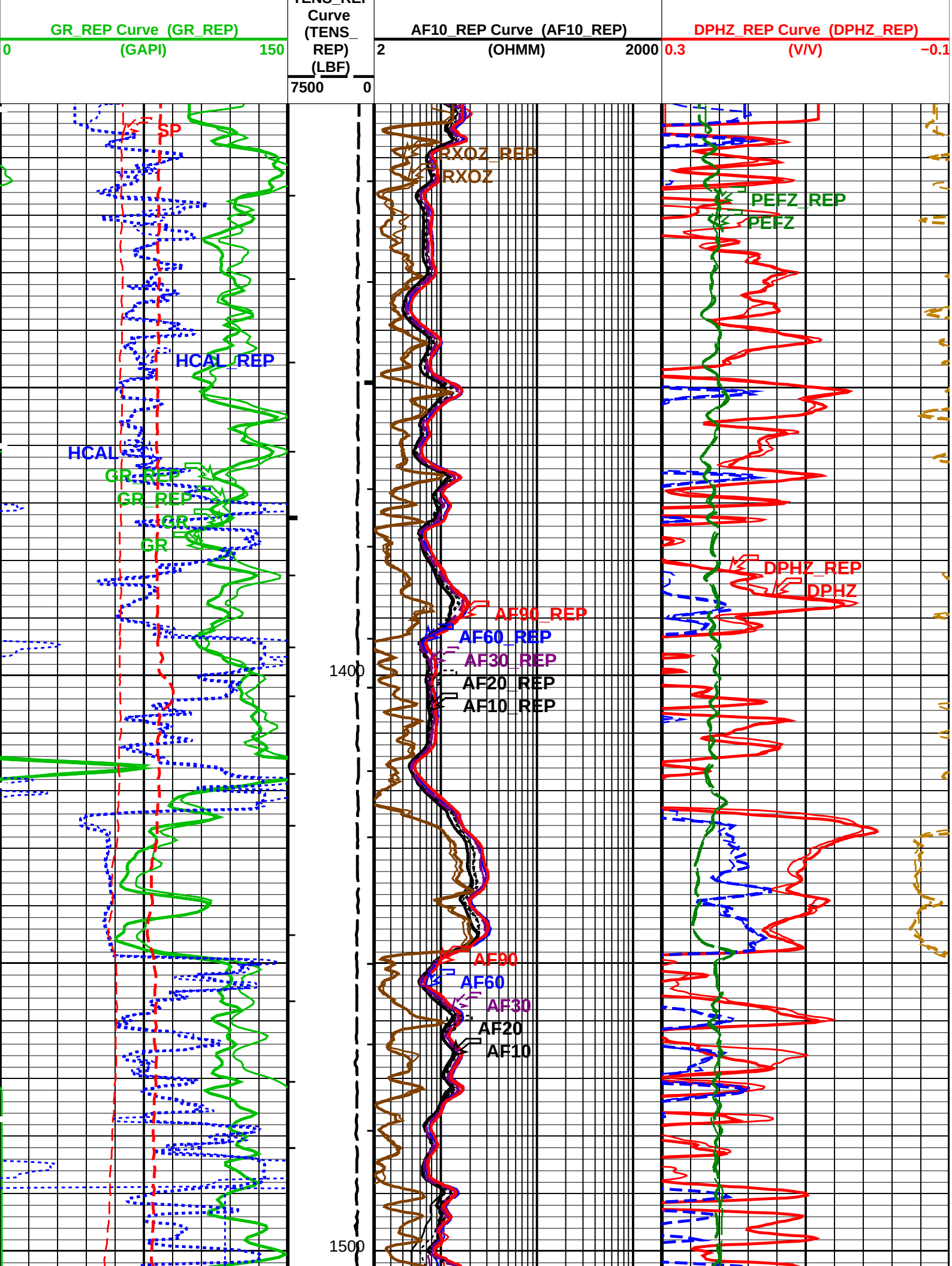
OP System Version: 18C0−147

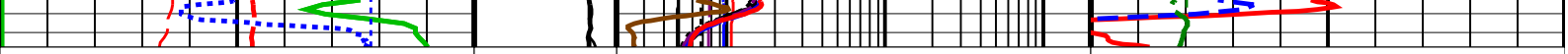
AIT−M	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

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

	RXOZ_REP Curve (RXOZ_REP) 2 (OHMM) 2000		
	AF90_REP Curve (AF90_REP) 2 (OHMM) 2000		
SP_REP Curve (SP_REP) −200 (MV) 400	AF60_REP Curve (AF60_REP) 2 (OHMM) 2000		
HCAL_REP Curve (HCAL_REP) 6 (IN) 16	AF30_REP Curve (AF30_REP) 2 (OHMM) 2000	PEFZ_REP Curve (PEFZ_REP) 0 (−−−−) 10	HDRA_REP Curve (HDRA_REP) −0.2 (G/C3) 0.05
GR_1_REP Curve (GR_REP) 150 (GAPI) 300	AF20_REP Curve (AF20_REP) 2 (OHMM) 2000	NPOR_REP Curve (NPOR_REP) 0.3 (V/V) −0.1	
TENS_REP			


GR_REP Curve (GR_REP)
0
(GAPI)
150
TENS_REP Curve (TENS_REP) (LBF)
7500
0
AF10_REP Curve (AF10_REP)
2
(OHMM)
2000
DPHZ_REP Curve (DPHZ_REP)
0.3
(V/V)
−0.1
SP
HCAL_REP
HCAL
GR_REP
GR_REP
GR
GR
RXOZ_REP
RXOZ
PEFZ_REP
PEFZ
DPHZ_REP
DPHZ
AF90_REP
AF60_REP
AF30_REP
AF20_REP
AF10_REP
1400
AF90
AF60
AF30
AF20
AF10
1500



GR_REP Curve (GR_REP)	TENS_REP Curve (TENS_REP) (LBF)	AF10_REP Curve (AF10_REP)	DPHZ_REP Curve (DPHZ_REP)
0 (GAPI) 150	7500 0	2 (OHMM) 2000	0.3 (V/V) −0.1
GR_1_REP Curve (GR_REP)		**AF20_REP Curve (AF20_REP)**	**NPOR_REP Curve (NPOR_REP)**
150 (GAPI) 300		2 (OHMM) 2000	0.3 (V/V) −0.1
HCAL_REP Curve (HCAL_REP)		**AF30_REP Curve (AF30_REP)**	**PEFZ_REP Curve (PEFZ_REP)** / **HDRA_REP Curve (HDRA_REP)**
6 (IN) 16		2 (OHMM) 2000	0 (----) 10 / −0.2 (G/C3) 0.05
SP_REP Curve (SP_REP)		**AF60_REP Curve (AF60_REP)**	
−200 (MV) 400		2 (OHMM) 2000	
		AF90_REP Curve (AF90_REP)	
		2 (OHMM) 2000	
		RXOZ_REP Curve (RXOZ_REP)	
		2 (OHMM) 2000	

PIP SUMMARY

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

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−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	0.1	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	135	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	71	DEGF
SPNV	SP Next Value	0	MV
	HILTH−FTB: High resolution Integrated Logging Tool−DTS		
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	135	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	

FNUM	Form Factor Numerator	1	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal−like Formation Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Matrix Density	2.68	G/C3
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	71	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	NO	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	135	DEGF
FCD	Future Casing (Outer) Diameter	4.5	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	20	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
HVCS	Integrated Hole Volume Caliper Selection	AUTOMATIC	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	71	DEGF
STI: Stuck Tool Indicator			
TDL	Total Depth − Logger	4086.00	FT
System and Miscellaneous			
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	800.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	36.00	LB/F
DFD	Drilling Fluid Density	9.70	LB/G
DO	Depth Offset for Playback	2.5	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	80.00	DEGF
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	1.0800	OHMM
TD	Total Depth	4086	FT

Format: TCOMBO_AIT_REP Vertical Scale: 5" per 100' Graphics File Created: 24−Jul−2011 04:33

OP System Version: 18C0−147

AIT−M	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

Input DLIS Files

	AIT_TLD_MCFL_CNL_016LUP	FN:23		24−Jul−2011 16:19	1504.5 FT	1101.7 FT
DEFAULT	AIT_TLD_MCFL_CNL_002PUP	FN:1	PRODUCER	24−Jul−2011 04:29	4101.0 FT	1070.0 FT

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_003PUP	FN:2	PRODUCER	24−Jul−2011 04:32

Schlumberger

CALIBRATIONS

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: 10−Jun−2011 12:28 Before: 20−Jul−2011 14:59							
Thru Cal Magnitude − 0	0	0.6137	0.6138	N/A	N/A	N/A	V
Thru Cal Magnitude − 1	0	1.259	1.259	N/A	N/A	N/A	V
Thru Cal Magnitude − 2	0	0.6235	0.6238	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.7055	0.7057	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.316	1.317	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.914	1.914	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.915	1.916	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.376	1.377	N/A	N/A	N/A	V
Thru Cal Phase − 0	0	194.8	194.7	N/A	N/A	N/A	DEG
Thru Cal Phase − 1	0	193.6	193.5	N/A	N/A	N/A	DEG
Thru Cal Phase − 2	0	190.0	189.9	N/A	N/A	N/A	DEG
Thru Cal Phase − 3	0	189.3	189.1	N/A	N/A	N/A	DEG
Thru Cal Phase − 4	0	183.0	182.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 5	0	181.3	181.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 6	0	181.3	181.1	N/A	N/A	N/A	DEG
Thru Cal Phase − 7	0	180.7	180.5	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Auxiliary							
Master: 10−Jun−2011 12:28 Before: 20−Jul−2011 14:59							
Array Induction SPA Plus	991.0	991.9	992.0	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.3646	0.3602	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9193	0.9193	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0003578	0.0003596	N/A	N/A	N/A	V
Array Induction Tool − M Wellsite Calibration − Test Loop Gain Correction							
Master: 10−Jun−2011 12:28							
Test Loop Gain Correctio − 0	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 3	0	1.007	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 4	0	0.9957	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 5	0	0.9879	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 6	0	0.9973	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 7	0	1.002	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.5567	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 1	0	0.8161	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 2	0	−0.3277	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 3	0	−0.03665	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 4	0	−0.2165	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 5	0	−0.2176	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 6	0	0.1276	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 7	0	−0.1224	N/A	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Sonde Error Correction							
Master: 10−Jun−2011 12:28							
R Sonde Error Correction − 0	0	−32.91	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	176.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	110.0	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 3	0	62.08	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	21.96	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	14.99	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	10.33	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−1.527	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	250.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	44.04	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	−84.37	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	−33.34	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 4	0	2.683	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	−1.196	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	−3.437	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	6.226	N/A	N/A	N/A	N/A	MM/M
Array Induction Tool − M Wellsite Calibration − Mud Gain Correction							
Master: 10−Jun−2011 12:28							
Coarse − Mag, Real, Imag − 0	0	1.042	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	1.042	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	1.042	N/A	N/A	N/A	N/A	

Fine − Mag, Real, Imag − 0	0	1.064	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	1.064	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	1.064	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 20−Jul−2011 15:38

BS Window Ratio	0.7376	N/A	0.7384	N/A	N/A	N/A	
BS Window Sum	27040	N/A	26840	N/A	N/A	N/A	CPS
SS Window Ratio	0.4743	N/A	0.4724	N/A	N/A	N/A	
SS Window Sum	11710	N/A	11690	N/A	N/A	N/A	CPS
LS Window Ratio	0.2985	N/A	0.3013	N/A	N/A	N/A	
LS Window Sum	1332	N/A	1327	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 20−Jul−2011 15:38

BS PM High Voltage (Command)	1454	N/A	1442	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1371	N/A	1369	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1483	N/A	1466	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 20−Jul−2011 15:38

BS Crystal Resolution	11.57	N/A	11.49	N/A	N/A	N/A	%
SS Crystal Resolution	9.659	N/A	9.631	N/A	N/A	N/A	%
LS Crystal Resolution	7.878	N/A	7.932	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 20−Jul−2011 15:00

Raw B0 Resistivity	3875	N/A	3875	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3808	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3822	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 20−Jul−2011 14:58

HILT Caliper Zero Measurement	8.000	N/A	6.836	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	10.40	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 20−Jul−2011 15:11

Gamma Ray Background	30.00	N/A	53.37	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	160.2	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 30−May−2011 15:29 Before: 20−Jul−2011 15:29

CNTC Background	27.98	27.98	27.28	N/A	N/A	4.197	CPS
CFTC Background	29.12	29.12	27.91	N/A	N/A	4.368	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement
Master: 30−May−2011 15:29

Thermal Near Corr. (Tank)	5800	5225	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2166	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.412	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 24−Jul−2011 0:59

Z−Axis Acceleration	32.19	N/A	32.11	N/A	N/A	N/A	F/S2

High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results
Master: 5−Jul−2011 0:26

Rho Aluminum	2.596	2.599	−−	−−	−−	−−	G/C3
Rho Magnesium	1.686	1.691	−−	−−	−−	−−	G/C3
Pe Aluminum	2.570	2.495	−−	−−	−−	−−	
Pe Magnesium	2.650	2.633	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary
Master: 5−Jul−2011 0:26

BS Average Deviation	0	0.1852	−−	−−	−−	−−	%
BS Max Deviation	0	0.4671	−−	−−	−−	−−	%
SS Average Deviation	0	0.3413	−−	−−	−−	−−	%
SS Max Deviation	0	1.053	−−	−−	−−	−−	%
LS Average Deviation	0	0.8554	−−	−−	−−	−−	%
LS Max Deviation	0	2.334	−−	−−	−−	−−	%

The GLS−VJ source activity is acceptable.

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

NCT−B Water Temperature 64.4 DEGF.
Thermal Housing Size 3.375 IN

Thermal Housing Size	3.375 IN.
NSR−F serial number	5138

Array Induction Tool − M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM − A	
Array Induction Sonde	AMIS − A	1250

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	0.6137		0.6100	194.8		197.0
	Before	0.6138			194.7		
1	Master	1.259		1.270	193.6		196.0
	Before	1.259			193.5		
2	Master	0.6235		0.6200	190.0		192.0
	Before	0.6238			189.9		
3	Master	0.7055		0.7000	189.3		191.0
	Before	0.7057			189.1		
4	Master	1.316		1.340	183.0		185.0
	Before	1.317			182.8		
5	Master	1.914		1.960	181.3		182.0
	Before	1.914			181.2		
6	Master	1.915		1.960	181.3		181.0
	Before	1.916			181.1		
7	Master	1.376		1.410	180.7		175.0
	Before	1.377			180.5		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 10−Jun−2011 12:28 Before: 20−Jul−2011 14:59

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		991.9	Master		0.3646
Before		992.0	Before		0.3602
	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		0.9193	Master		0.0003578
Before		0.9193	Before		0.0003596
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)			−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 10−Jun−2011 12:28 Before: 20−Jul−2011 14:59

Array Induction Tool − M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.015		0.5567	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.013		0.8161	

	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
2	1.013				−0.3277			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
3	1.007				−0.03665			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
4	0.9957				−0.2165			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
5	0.9879				−0.2176			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
6	0.9973				0.1276			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
7	1.002				−0.1224			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	

Master: 10−Jun−2011 12:28

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	−32.91				250.1			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	176.7				44.04			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.0				−84.37			
		66.00 **(Minimum)**	111.0 **(Nominal)**	156.0 **(Maximum)**		−350.0 **(Minimum)**	0 **(Nominal)**	350.0 **(Maximum)**
3	62.08				−33.34			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	21.96				2.683			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.99				−1.196			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	10.33				−3.437			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.527				6.226			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

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Array Induction Tool − M Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	1.042				1.064			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.042				1.064			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.042				1.064			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

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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	0.6137		0.6100	194.8		197.0
1	Master	1.259		1.270	193.6		196.0
2	Master	0.6235		0.6200	190.0		192.0
3	Master	0.7055		0.7000	189.3		191.0
4	Master	1.316		1.340	183.0		185.0
5	Master	1.914		1.960	181.3		182.0
6	Master	1.915		1.960	181.3		181.0
7	Master	1.376		1.410	180.7		175.0
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

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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		991.9	Master		0.3646
	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		0.9193	Master		0.0003578
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)			−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 10−Jun−2011 12:28

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	1.015		0.5567	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.013		0.8161	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.013		−0.3277	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.007		−0.03665	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	0.9957		−0.2165	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9879		−0.2176	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	0.9973		0.1276	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.002		−0.1224	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 10−Jun−2011 12:28

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	−32.91		250.1	
		−231.0 (Minimum) −56.00 (Nominal) 119.0 (Maximum)		−2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	176.7		44.04	

	114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)	−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.0			−84.37		
	66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)	−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	62.08			−33.34		
	39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)	−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	21.96			2.683		
	15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)	−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.99			−1.196		
	4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)	−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	10.33			−3.437		
	5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)	−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.527			6.226		
	−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)	−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 10−Jun−2011 12:28

Array Induction Tool − M Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	1.042				1.064			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.042				1.064			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.042				1.064			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 10−Jun−2011 12:28

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT high−Resolution Mechanical Sonde	HRMS − H	3969
HILT Rxo Gamma−ray Device	HRGD − H	3995
HILT Micro Cylindrically Focused Log Dev	MCFL − H	
GR Logging Source	GLS − VJ	5234
HILT High Res. Control Cartridge	HRCC − H	4863
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − H	3799
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT − H	
Auxiliary Equipment:		
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U/Y	1474
HGNS Housing	HGNH −	2795

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				0.7384	Before				0.4724	Before				0.3013
	0.7008 (Minimum)	0.7376 (Nominal)	0.7745 (Maximum)			0.4505 (Minimum)	0.4743 (Nominal)	0.4980 (Maximum)			0.2836 (Minimum)	0.2985 (Nominal)	0.3135 (Maximum)	
Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value	Phase	LS Window Sum CPS			Value
Before				26840	Before				11690	Before				1327
	25690 (Minimum)	27040 (Nominal)	28390 (Maximum)			11130 (Minimum)	11710 (Nominal)	12300 (Maximum)			1265 (Minimum)	1332 (Nominal)	1399 (Maximum)	

Before: 20−Jul−2011 15:38

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		1442	Before		1369	Before		1466
	1354 (Minimum) 1454 (Nominal) 1554 (Maximum)			1271 (Minimum) 1371 (Nominal) 1471 (Maximum)			1383 (Minimum) 1483 (Nominal) 1583 (Maximum)	

Before: 20−Jul−2011 15:38

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		11.49	Before		9.631	Before		7.932
	10.57 (Minimum) 11.57 (Nominal) 12.57 (Maximum)			8.659 (Minimum) 9.659 (Nominal) 10.66 (Maximum)			6.878 (Minimum) 7.878 (Nominal) 8.878 (Maximum)	

Before: 20−Jul−2011 15:38

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		3875	Before		3808	Before		3822
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

Before: 20−Jul−2011 15:00

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		6.836	Before		10.40
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)			9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

Before: 20−Jul−2011 14:58

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		53.37	Before		160.2
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	

Before: 20−Jul−2011 15:11

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.98	Master		29.12
Before		27.28	Before		27.91
	5.000 (Minimum) 27.98 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 29.12 (Nominal) 40.00 (Maximum)	

Master: 30−May−2011 15:29 Before: 20−Jul−2011 15:29

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		5225	Master		2166	Master		2.412
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 30−May−2011 15:29

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.11
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	

Before: 24−Jul−2011 0:59

High resolution Integrated Logging Tool−DTS Master Calibration

High resolution Integrated Logging Tool−DTS Master Calibration

Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master		2.599	Master		1.691
	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		2.495	Master		2.633
	2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum)			2.550 (Minimum) 2.650 (Nominal) 2.750 (Maximum)	

Master: 5−Jul−2011 0:26

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		0.1852	Master		0.3413	Master		0.8554
	−0.6000 (Minimum) 0 (Nominal) 0.6000 (Maximum)			−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			−1.500 (Minimum) 0 (Nominal) 1.500 (Maximum)	

Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		0.4671	Master		1.053	Master		2.334
	−1.600 (Minimum) 0 (Nominal) 1.600 (Maximum)			−2.500 (Minimum) 0 (Nominal) 2.500 (Maximum)			−3.500 (Minimum) 0 (Nominal) 3.500 (Maximum)	

Master: 5−Jul−2011 0:26

High resolution Integrated Logging Tool−DTS Master Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.98	Master		29.12
	5.000 (Minimum) 27.98 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 29.12 (Nominal) 40.00 (Maximum)	

Master: 30−May−2011 15:29

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		5225	Master		2166	Master		2.412
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 30−May−2011 15:29

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	10334

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

Schlumberger

Well: **DAYBREAK FEDERAL 19−6BB**

Field: **PARACHUTE**

County: **GARFIELD**

State: **COLORADO**

State:	**COLORADO**
	PLATFORM EXPRESS LITHO DENSITY / COMPENSATED NEUTRON ARRAY INDUCTION TOOL / GR / SP