

## Schlumberger

**Company: Essential Petroleum Resources Limited**

**Well: Killarney EPRL 1**

Field: **PEP 152**

## Rig: Hunt Rig #2

Country: **Australia**

HALS-BHC-PEX-HNG.			
Nuclear Print			
Scale 1:500			
LOCATION			
Datum GDA94 MGA94 Zone 54		Elev.: K.B. 5.49 m	
Easting 609803.3		G.L. 1.6 m	
Northing 5753917.2		D.F. 5.49 m	
Permanent Datum:	AHD	Elev.: 0 m	
Log Measured From:	ROTARY TABLE	5.5 m above Perm. Datum	
Drilling Measured From:	ROTARY TABLE		
State: Victoria	Max. Well Deviation 2 deg	Longitude 142° 15' 24.22" E	Latitude 38° 21' 22.24" S

[illegible]

Logging Date	18-Jun-2004					
Run Number	1					
Depth Driller	1640 m					
Schlumberger Depth	1634.8 m					
Bottom Log Interval	1632.4 m					
Top Log Interval	255.5 m					
Casing Driller Size @ Depth	9.625 in @ 255.8 m					
Casing Schlumberger	255.5 m					
Bit Size	8.500 in					
Type Fluid In Hole	4% KCl-PHPA					
Density	1.128 g/cm <sup>3</sup>				43 s	
Fluid Loss	PH				8.5	
Source Of Sample	PIT					
RM @ Measured Temperature	0.231 ohm.m				@	13 degC
RMF @ Measured Temperature	0.201 ohm.m				@	12 degC
RMC @ Measured Temperature	0.243 ohm.m				@	13 degC
Source RMF	PRESS				PRESS	
RM @ MRT	RMF @ MRT		0.093 @ 63		0.080 @ 63	@ @
Maximum Recorded Temperatures	63 degC					
Circulation Stopped	Time		18-Jun-2004		0:00	
Logger On Bottom	Time		18-Jun-2004		16:30	
Unit Number	Location		3170		QEA	
Recorded By	G. Jonsson					
Witnessed By	G. Wakelin-King					

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				
Fluid Loss	PH			
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				

②	②	②	②						②
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Date Created: 22-JUN-2004 12:26:46

## Depth Measuring Device

Type: IDW-B  
Serial Number: -999  
Calibration Date: dd-Mmm-yyyy  
Calibrator Serial Number: -999  
Calibration Cable Type: 7-42V  
Wheel Correction 1: -2  
Wheel Correction 2: -2

Type:	CMTD-B/A
Serial Number:	2268
Calibration Date:	13-Feb-2004
Calibrator Serial Number:	1050
Calibration Gain:	0.89
Calibration Offset:	56.00

Type:	7-42V
Serial Number:	78197
Length:	3699.97 M
Conveyance Method:	Wireline
Rig Type:	LAND

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 M
Rig Up Length At Bottom:	0.00 M
Rig Up Length Correction:	0.00 M
Stretch Correction:	0.80 M
Tool Zero Check At Surface:	0.35 M

1. Depth correlated to downlog.
2. Cable stretch and rig up changes accounted for.
3. IDW wheel corrections set to  $-2$
- 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.

OS1: CSAT-GR  
OS2: MDT  
OS3:  
OS4:  
OS5:

OS1:  
OS2:  
OS3:  
OS4:  
OS5:

## REMARKS: RUN NUMBER 2

This is the first run in hole. Full SLB depth control used.

Tool run with 1.5 inch standoffs as per tool sketch. HGNS eccentricised using bowspring

CNL, TLD, HALS and MCFL logged to casing shoe.

GR logged to surface

HNGS and Hi-resolution data logged to 1250m.

Neutron corrected for Borehole Salinity, Hole Size, Mud Weight and Mud Cake.

Density corrected for bit size and mud weight.

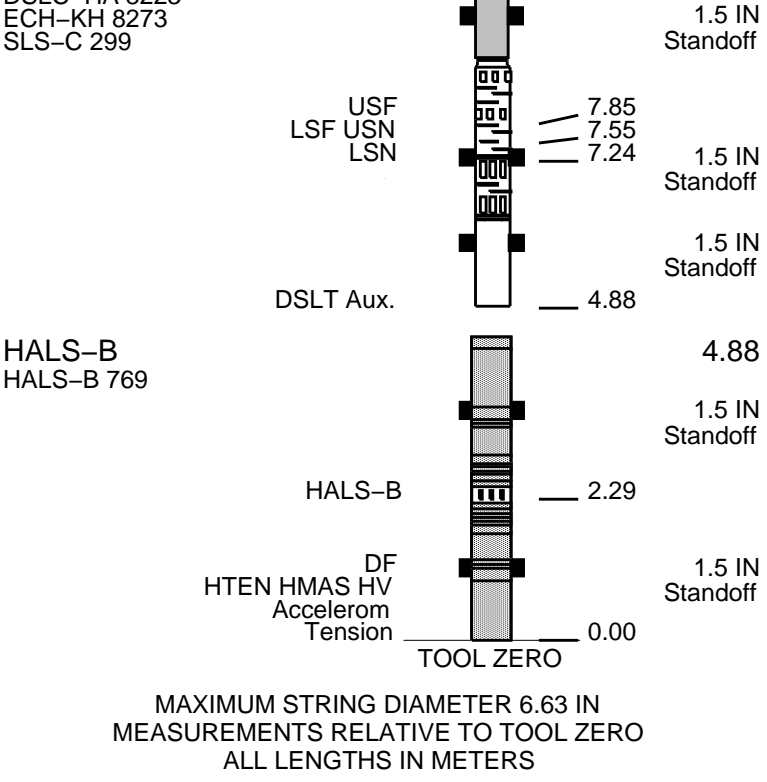
Maximum recorded temperature of 63degC from thermometers in LEH-QT  
Caliper Check in casing reads 8.5364 inch. 8.834 expected. Corrected for in final (this) log.

Additional Mud information:  
Chloride: 21500 mg/L, Calcium: 320 mg/L, Sulphite: 80mg/L, KCl: 4.1%  
Barite present in mud  
Elevation Rotary Table= 3.89m above Ground Level (GL= 1.6m AHD)

RUN 1			RUN 2		
SERVICE ORDER #: PROGRAM VERSION: 10C0-306 FLUID LEVEL:			SERVICE ORDER #: PROGRAM VERSION: FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1		RUN 2	
SURFACE EQUIPMENT			
LCM-AA 2747 GSR-U/Y NCT-B CNB-AB	NCS-VB GSR-U WITM (DTS)-A		
DOWNHOLE EQUIPMENT			
BSP BRT-S 22			40.84
SP SPARC			28.73
LEH-QT 1570 LEH-QT 1570			22.56
DTC-H ECH-KC	CTEM TelStatus ToolStatu	21.39 20.75	21.67
HNGS-BA HNGS-BA 129 HNSH-BA 3	Upper_1 Lower_2	20.05 19.84	20.75
HNGC-A HNGH-A HNGC-A 10	HNGC Stat HGNS HTEM HMCA	17.72 17.19	18.25
HILTB-FTB HGNSD-B 1751 HMCA HGNS-H 1775 NLS-KL NSR-F 2111 HACCZ HCNT HGR HRCC-B 1769 HRMS-B 1765 HRGD-B 1760 GLS-VJ 3739 MCFL Device HILT Nucl. LS HILT Nucl. SS HILT Nucl. BS BOW-SPR	Gamma-Ray  Neutron F Neutron N  HGNS sens  HRCC cart MCFL HILT cali HRDD-LS HRDD-SS HRDD-BS	16.96  15.18 15.03  14.32  13.10 11.44 11.30 11.18	17.19
DSLT-H DSL C-HA 8223			10.59



Client: Essential

Well: Kilarney-1

Field: Wildcat

State: Victoria

Country: Australia

Drawing Date: 6/18/2004

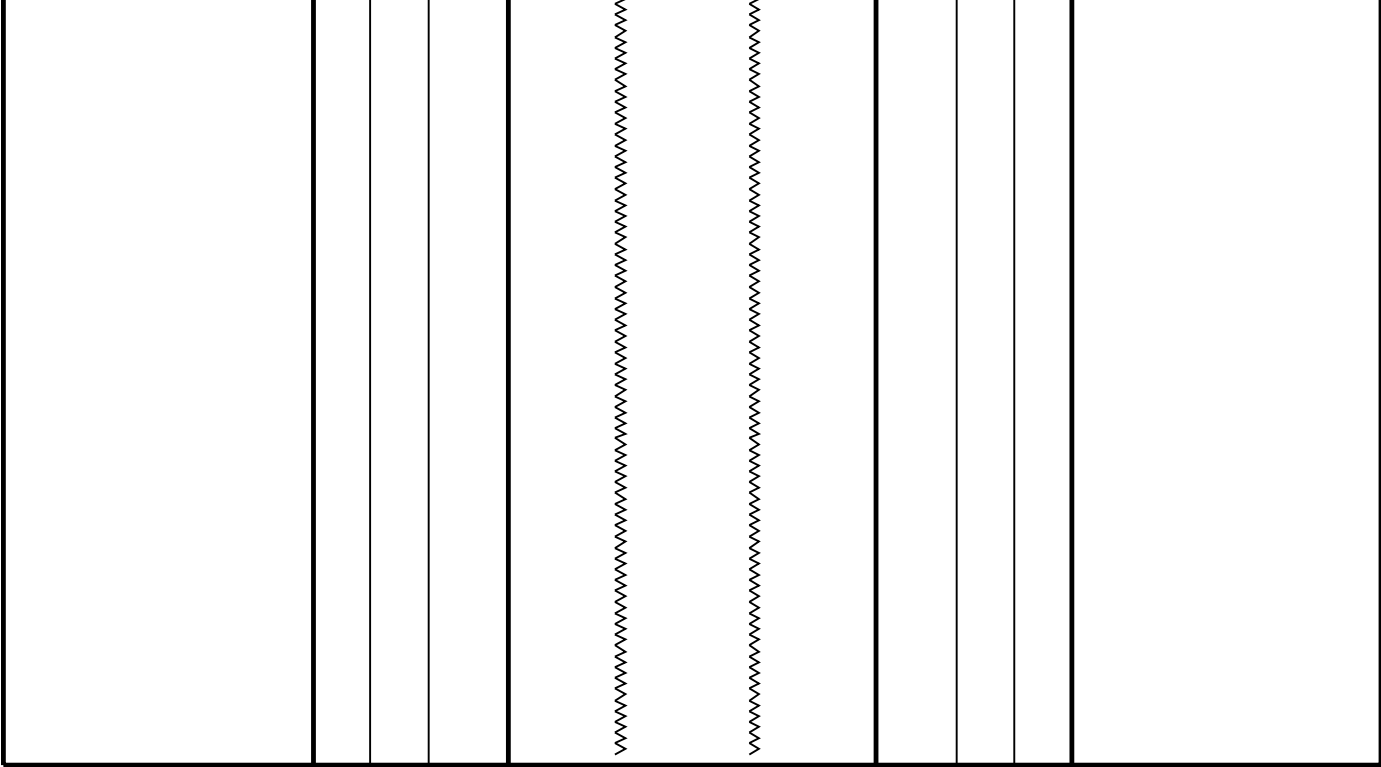
API #:

Rig Name: Hunt Rig 2

Reference Datum: KB

Elevation: 6.9 m

Production String	(in)		(m)	Well Schematic	(m)	(in)		Casing String
	OD	ID	MD		MD	OD	ID	
					0.0	17.500	Borehole Segment Casing String Casing Shoe Borehole Segment Casing String	
					0.0	13.375		
					45.6	13.375		
					45.9	12.250		
					0.0	9.625		
					255.8	9.625	Casing Shoe Borehole Segment	
					258.0	8.500		



**Schlumberger**

**Neutron-Density  
1:500 Scale**

MAXIS Field Log

**Input DLIS Files**

DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	21-Jun-2004 14:42	1636.8 M	20.8 M
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**Output DLIS Files**

DEFAULT	HALS_SONIC_TLD_MCFL_101PUP	FN:100	PRODUCER	22-Jun-2004 10:45	1636.8 M	210.2 M
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**Integrated Hole/Cement Volume Summary**

Hole Volume = 61.21 M3  
Cement Volume = 40.07 M3 (assuming 5.50 IN casing O.D.)  
Computed from 1634.8 M to 255.6 M using data channel(s) HCAL

**OP System Version: 10C0-306**  
MCM

OP10-KP1  
OP10-KP1  
10C0-306

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

**Density Correction (HDRA)**  
-0.25 (G/C3) 0.25

## Crossover From RHOZ to TNPH

Env.Corr.Thermal Neutron Porosity (TNPH)  
(V/V)

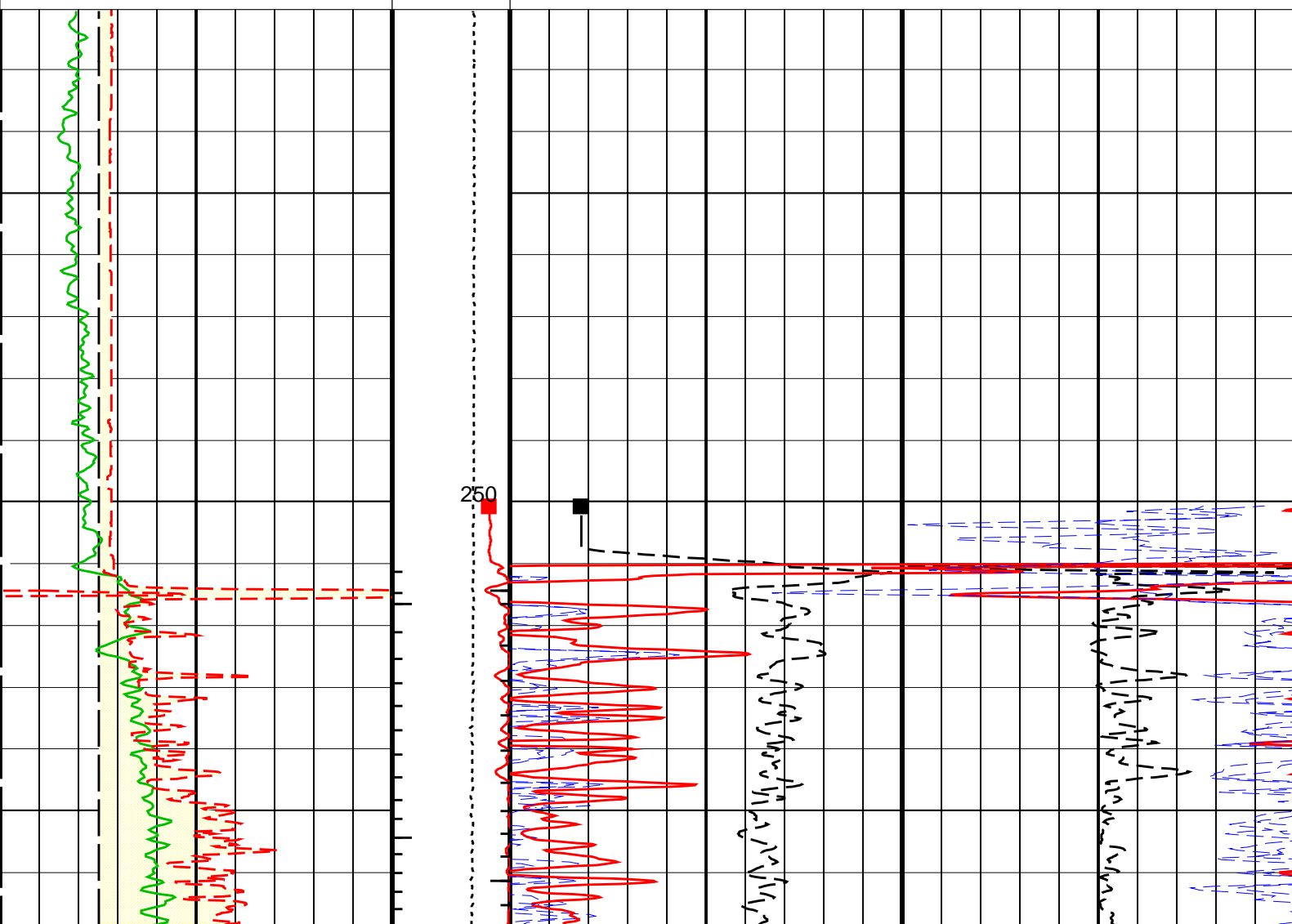
**Std. Res. Formation Density (RHOZ)**  
**(G/C3)**

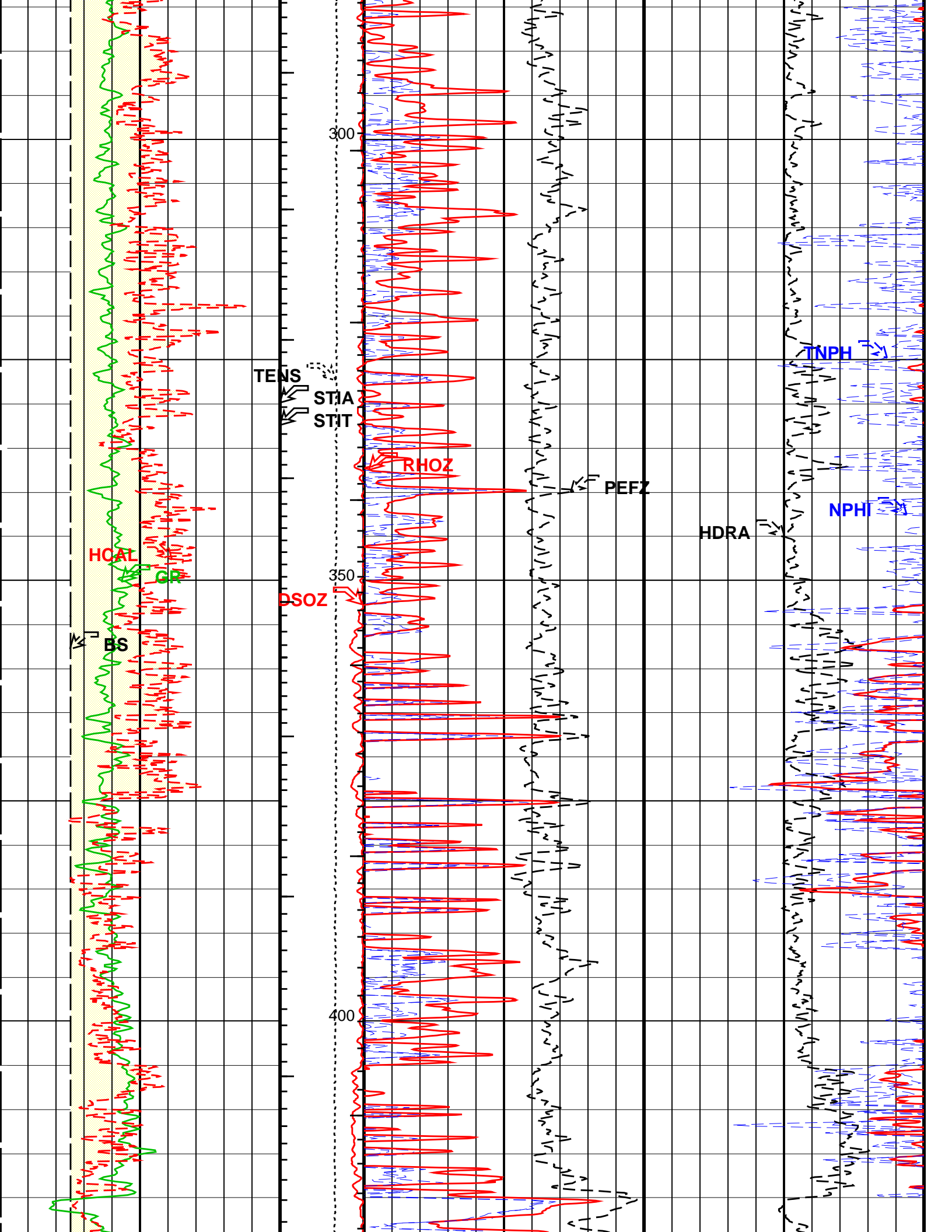
**Std. Res. Formation Pe (PEFZ)**  
(----

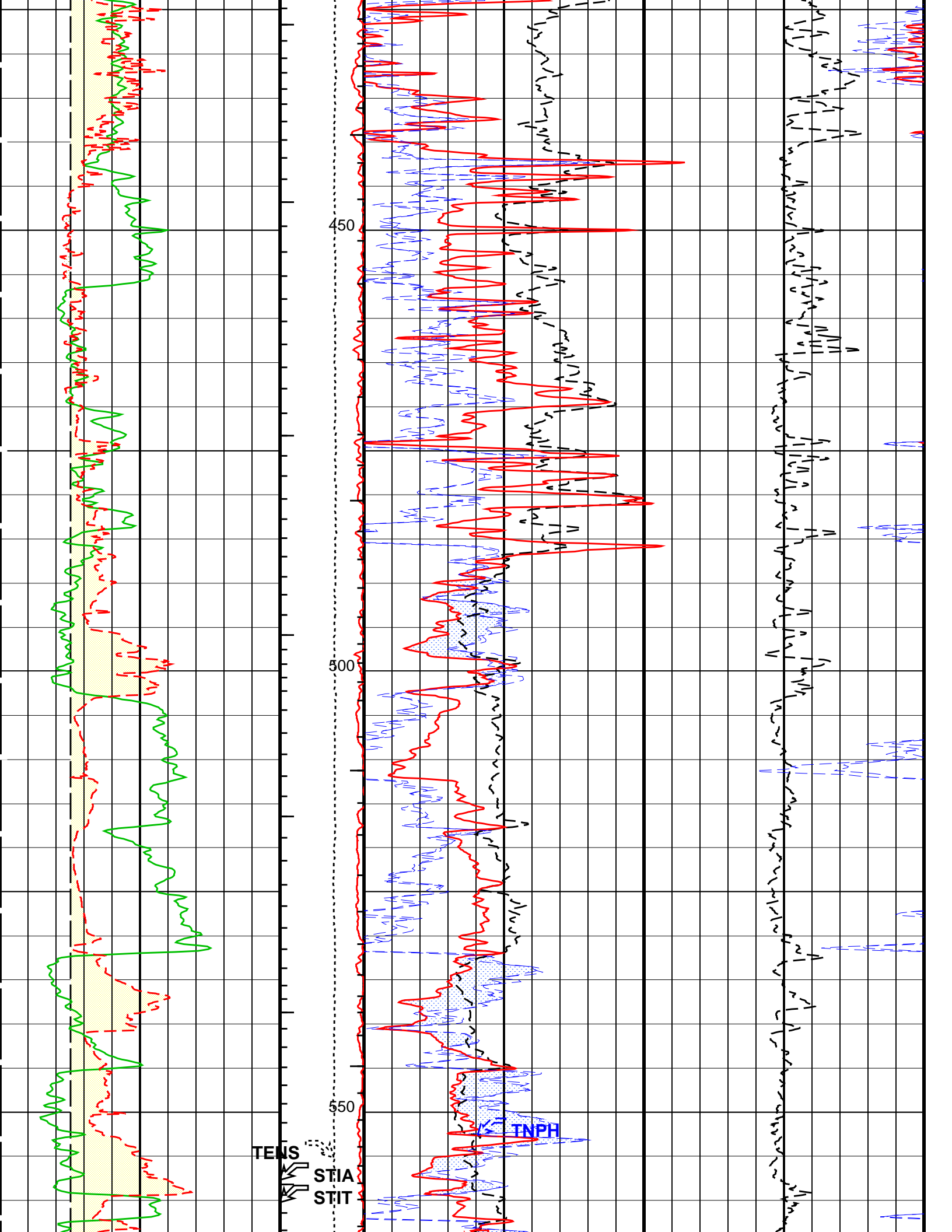
1

Tension  
(TENS)  
(LBF)

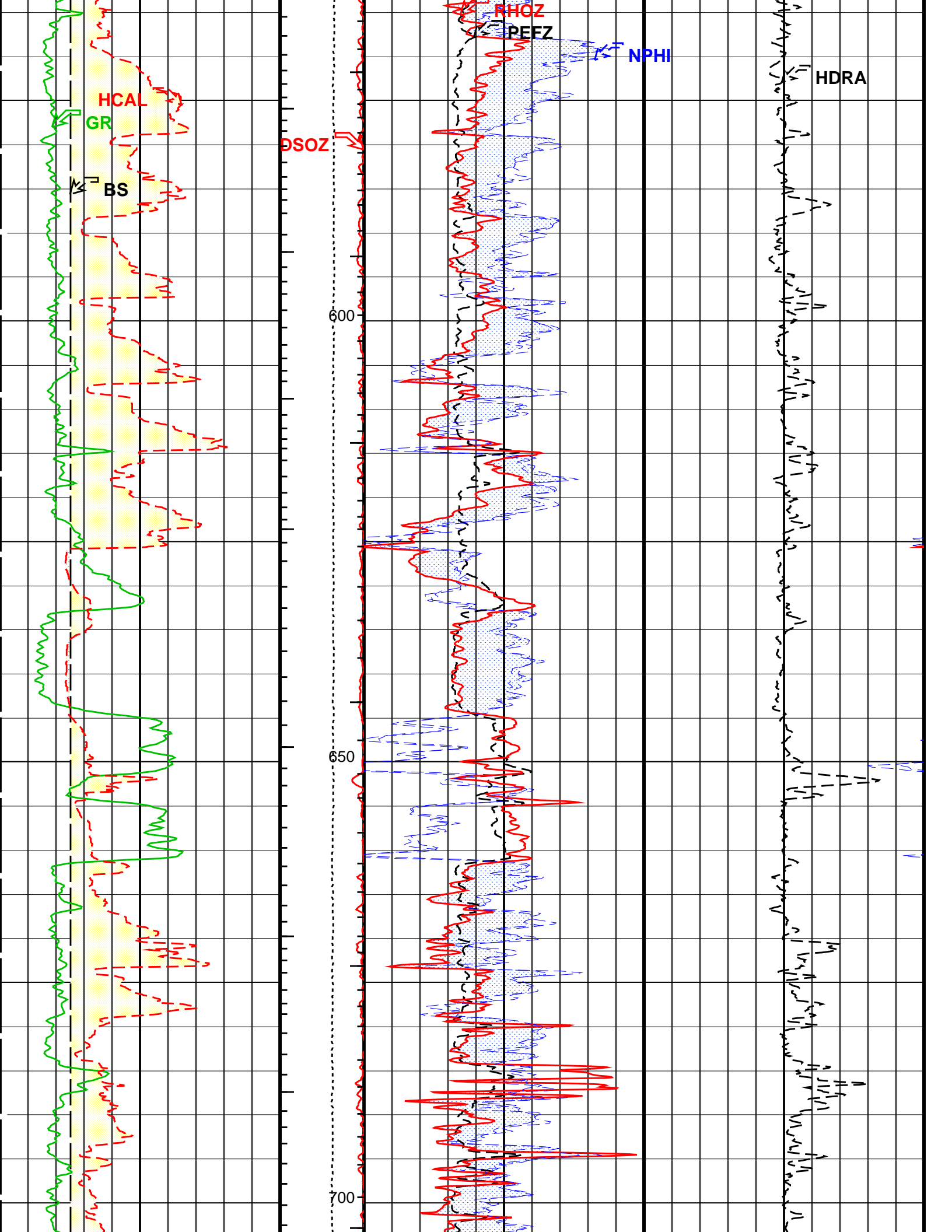
Neutron Porosity (NPHI)  
(V/V)

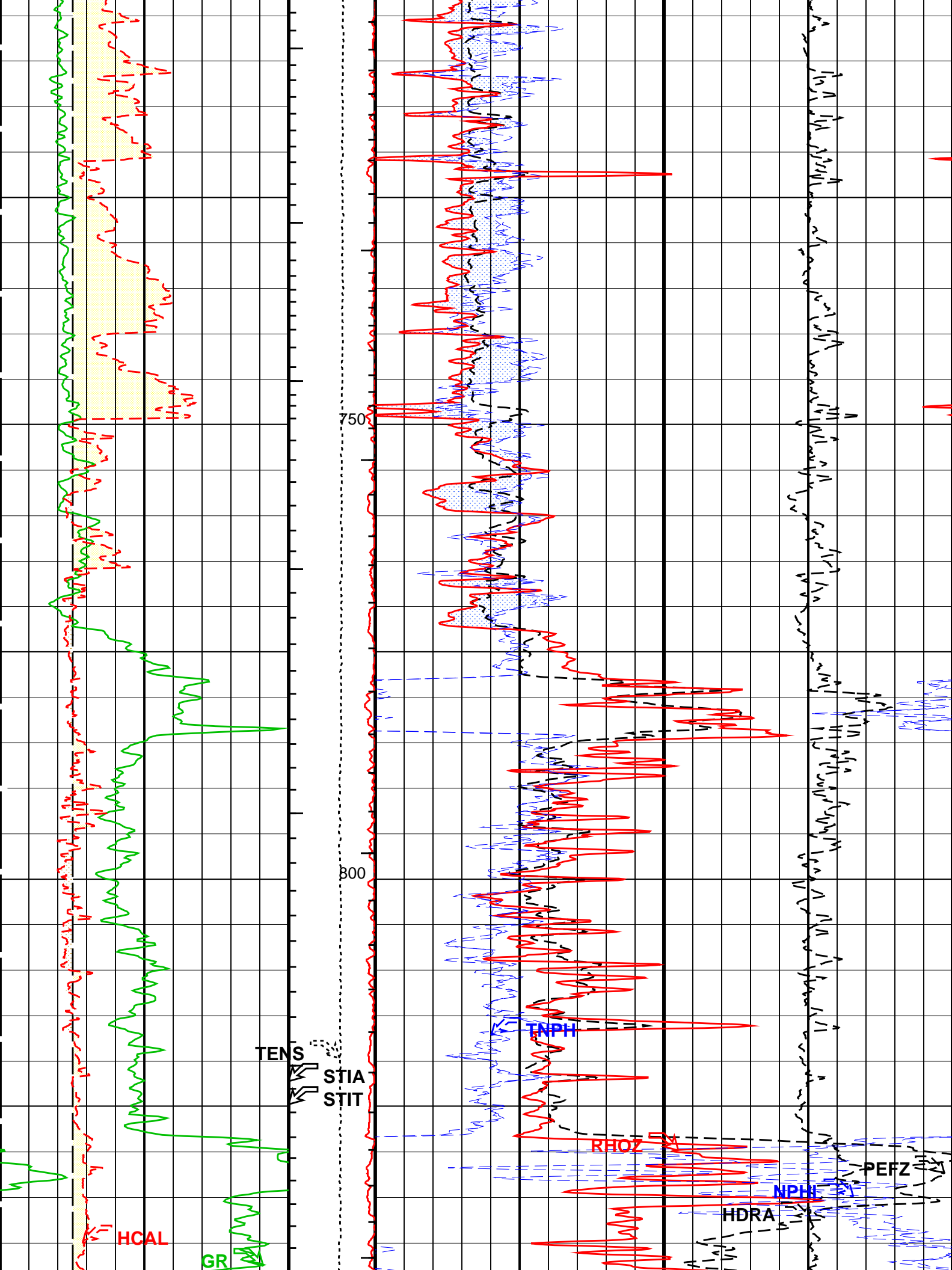


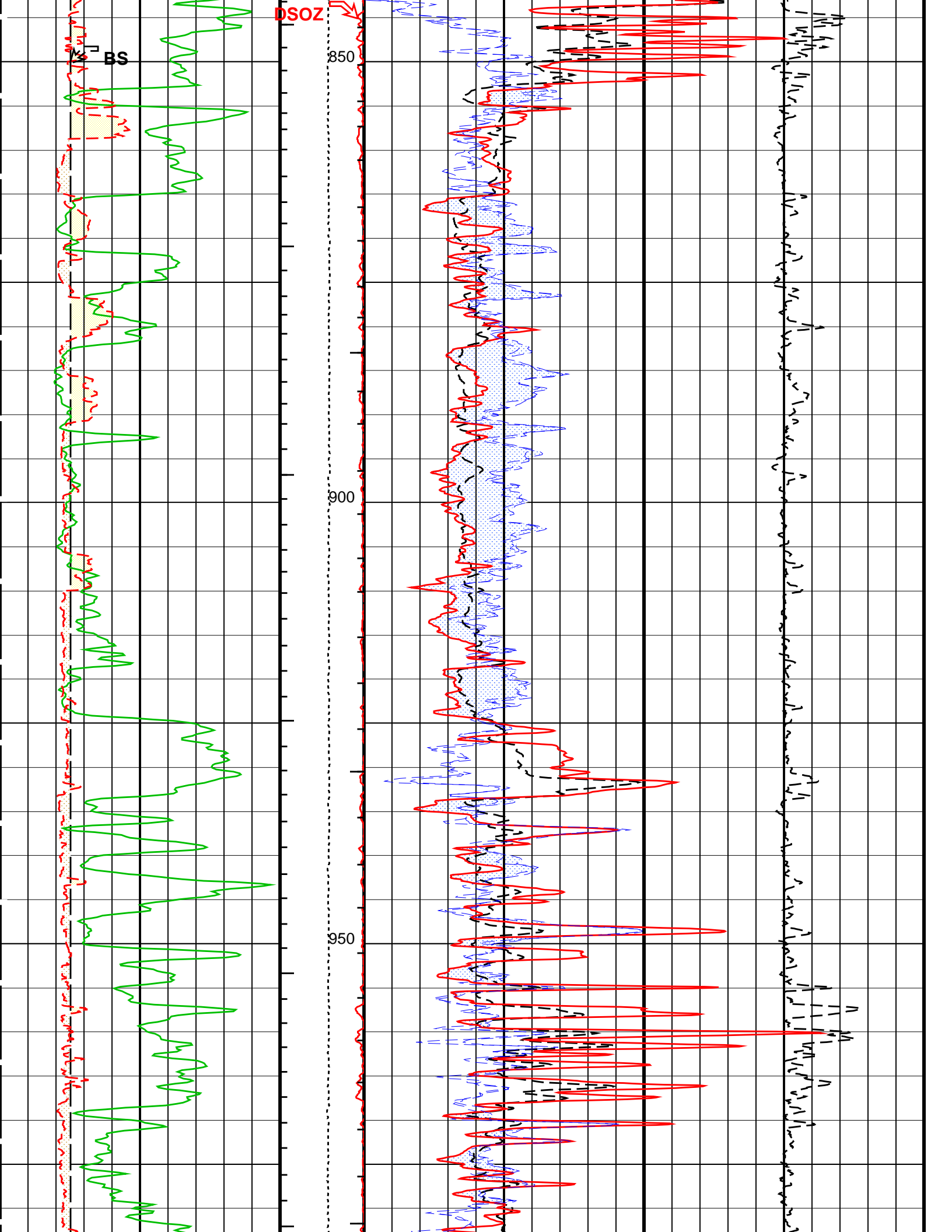


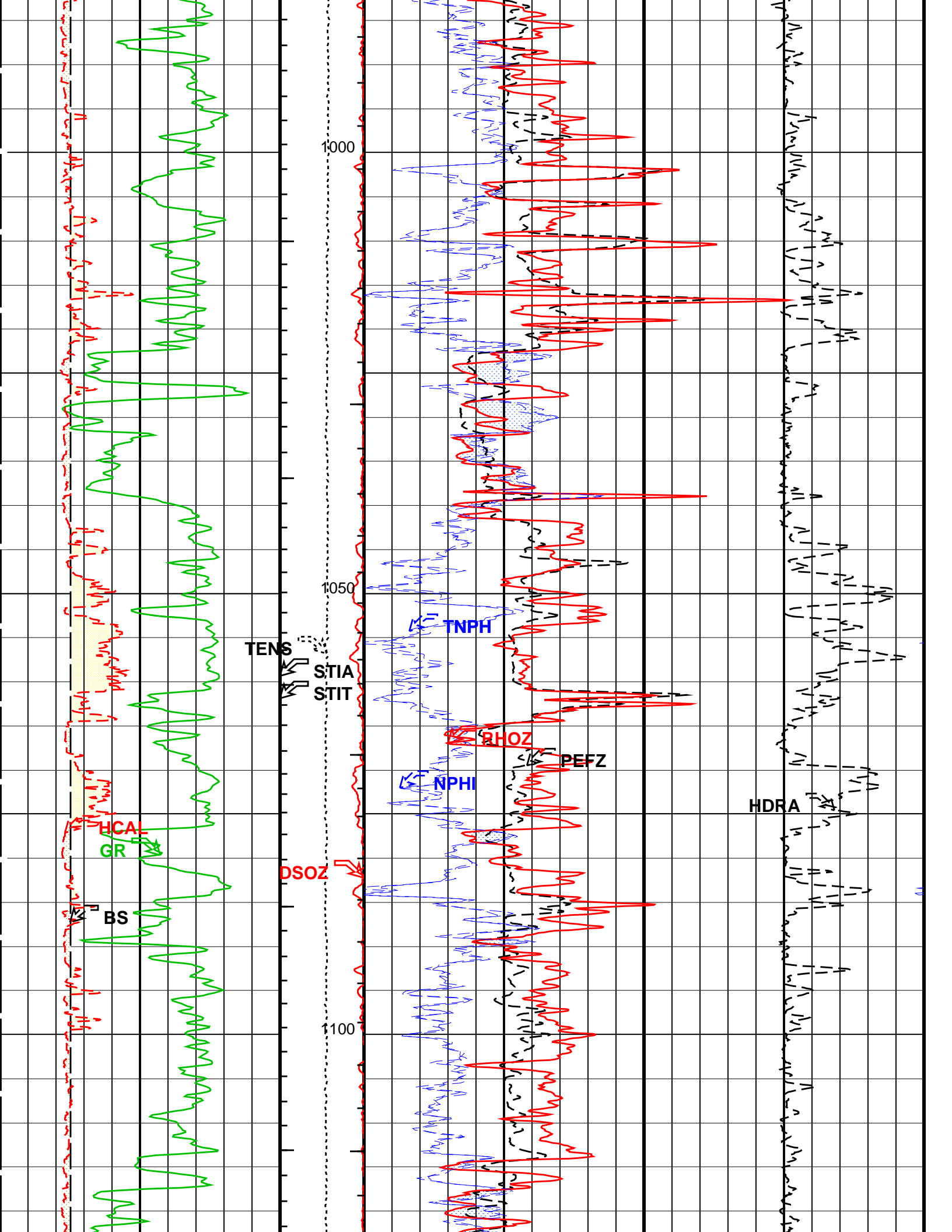


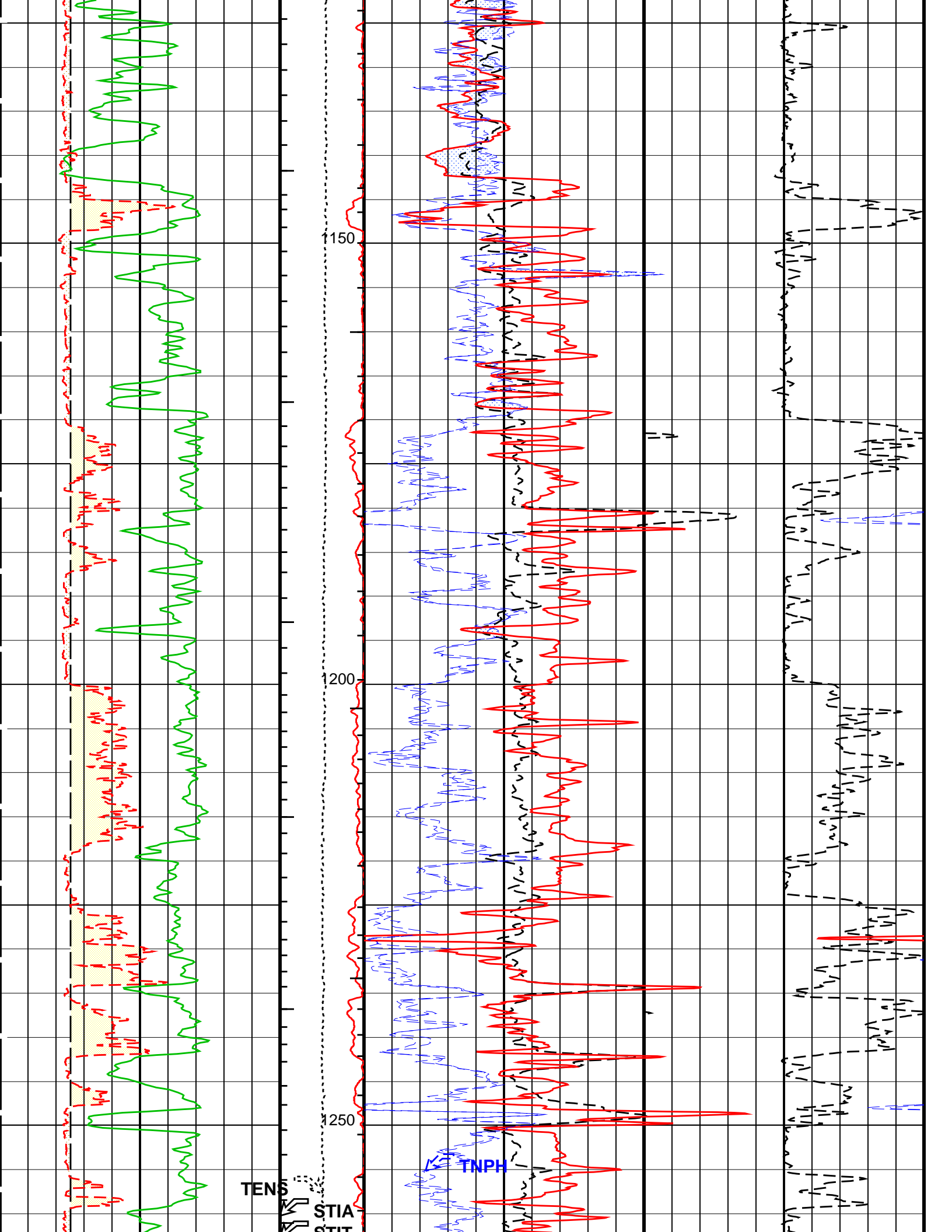


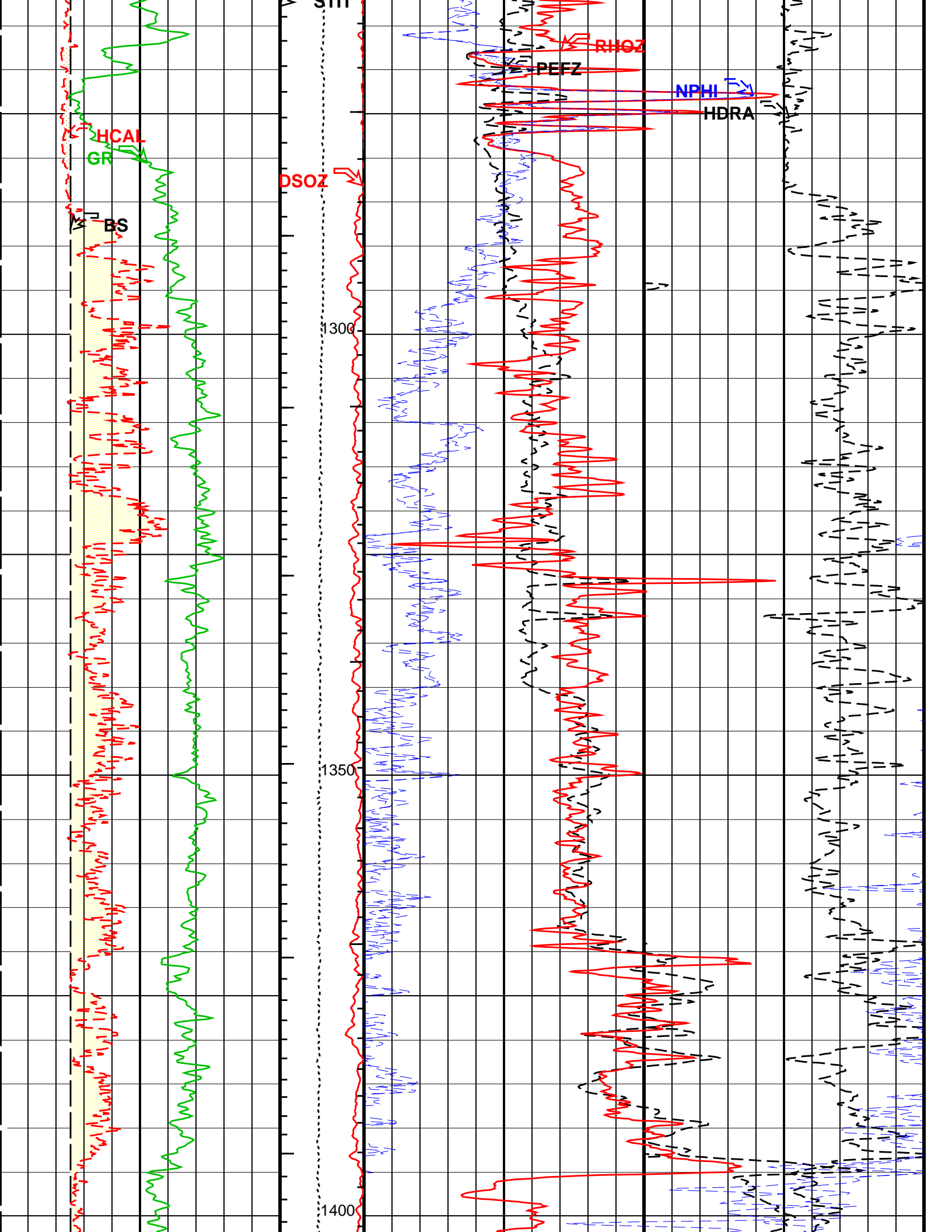




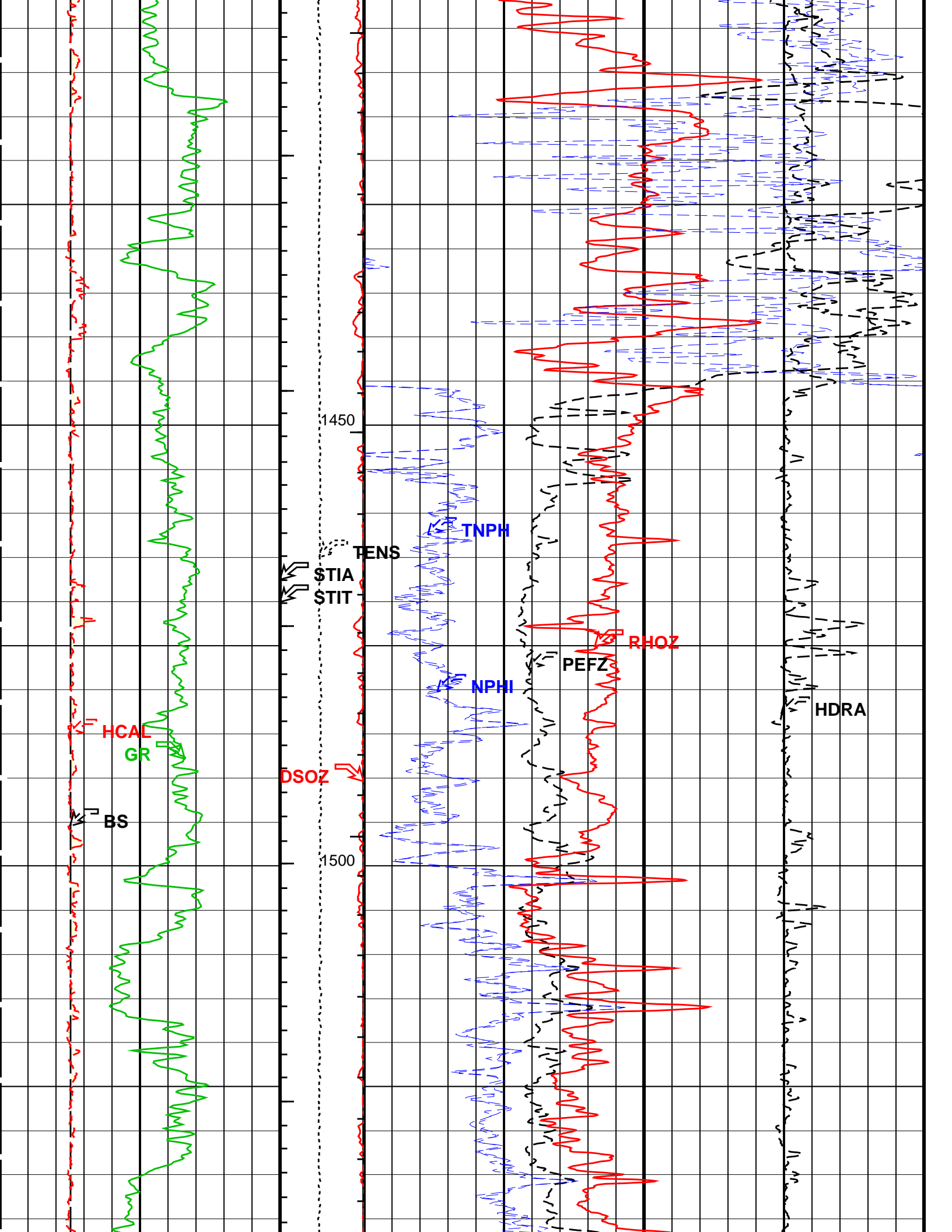


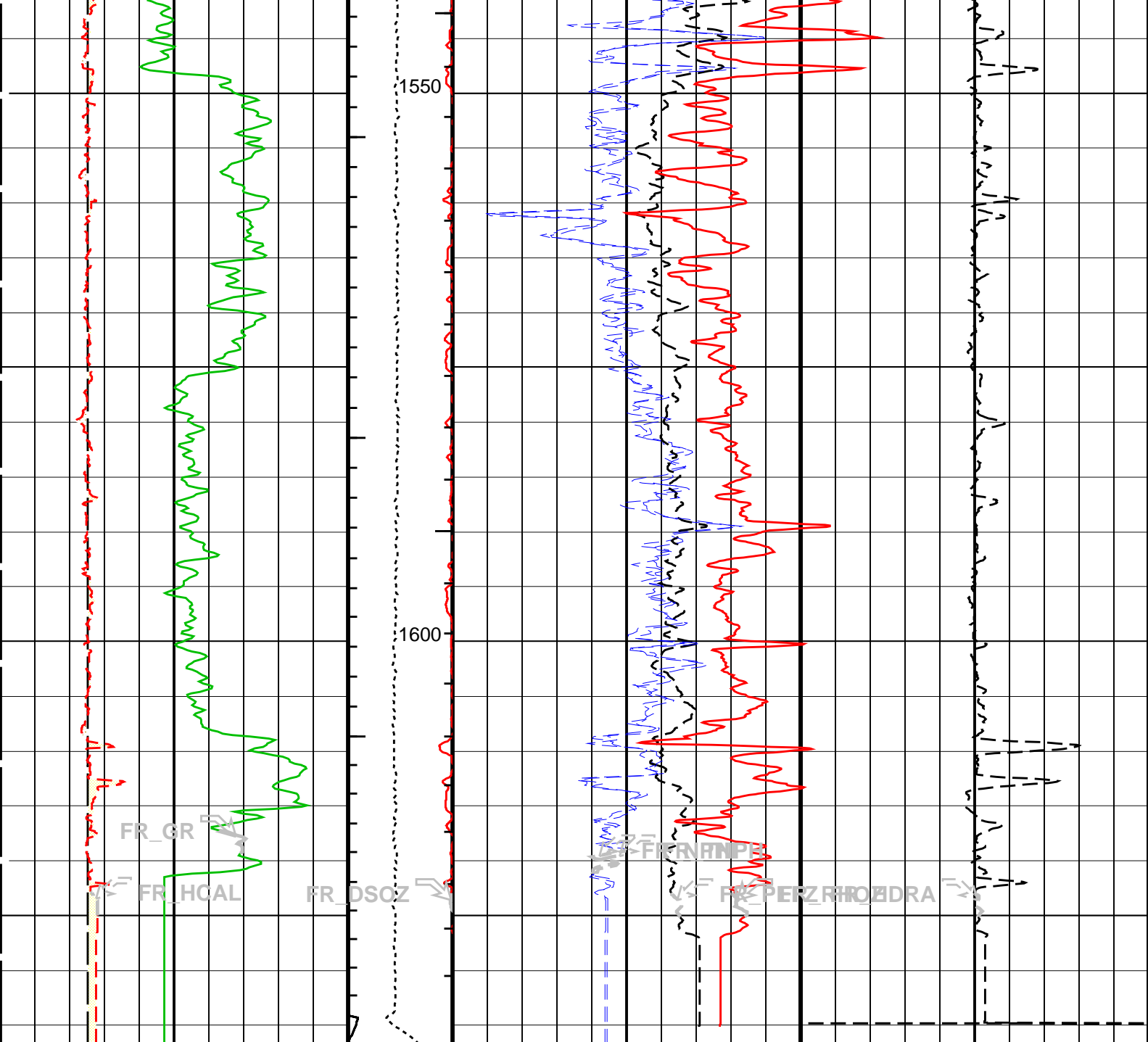












Bit Size (BS) (IN)		Tension (TENS) (LBF)		Neutron Porosity (NPHI) (V/V)	
6 16		5000 0		0.45 -0.15	
Gamma Ray (GR) (GAPI)		Std. Res. Density Standoff (DSOZ) 65 (MM)		Std. Res. Formation Pe (PEFZ) (----	
0 150		0 0		0 10	
HILT Caliper (HCAL) (IN)				Std. Res. Formation Density (RHOZ) (G/C3)	
6 16				1.95 2.95	
Washout From BS to HCAL				Env. Corr. Thermal Neutron Porosity (TNPH) (V/V)	
				0.45 -0.15	
Mudcake From HCAL to BS				Crossover From RHOZ to TNPH	

Density Correction (HDRA) (G/C3)	
-0.25	0.25



# PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

## Parameters

DLIS Name	Description	Value	
HALS-B: HILT Azimuthal Laterolog Sonde B			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	20	DEGC
HILTB-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	YES	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	YES	
MCOR	Mud Correction	BARI	
MWCO	Mud Weight Correction Option	YES	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	BARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	NO	
HNGB-B: Hostile Natural Gamma Ray Sonde			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	20	DEGC
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
FCD	Future Casing (Outer) Diameter	5.5	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HVCS	Integrated Hole Volume Caliper Selection	LCAL	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	20	DEGC
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	0.762	M
TDD	Total Depth - Driller	1640.00	M
TDL	Total Depth - Logger	1634.80	M
System and Miscellaneous			
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	41000.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	40.00	LB/F
DFD	Drilling Fluid Density	1.13	G/C3
DO	Depth Offset for Playback	0.0	M
MST	Mud Sample Temperature	12.50	DEGC
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.2010	OHMM
TD	Total Depth	1634.8	M

Format: Nuclear\_500 Vertical Scale: 1:500

Graphics File Created: 22-Jun-2004 10:46

OP System Version: 10C0-306

MCM

HALS-B OP10-KP1 DSI T-H OP10-KP1

OP10-KP1  
10C0-306

## Output DLIS Files

DEFAULT      HALS SONIC TLD MCFL 101PUP FN:100      PRODUCER      22-Jun-2004 10:45



MAXIS Field Log

DEFAULT	HALS_SONIC_TLD_MCFL_016LUP FN:15	PRODUCER	21-Jun-2004 14:41	1636.8 M	1500.8 M
DEFAULT	HALS_SONIC_TLD_MCFL_017LUP FN:16	PRODUCER	21-Jun-2004 14:42	1636.8 M	20.8 M

## Output DLIS Files

DEFAULT	HALS SONIC TLD MCFL 106PUP FN:105	PRODUCER	22-Jun-2004 11:55	1637.5 M	1506.6 M
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Computed from 1634.8 M to 1506.8 M using data channel(s) HCAL

## MCM

HALS-B	OP10-KP1	DSLT-H	OP10-KP1
HILTB-FTB	OP10-KP1	HNGC-A	OP10-KP1
HNGS-BA	OP10-KP1	DTC-H	10C0-306
BSP	10C0-306		

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
  - └ Integrated Cement Volume Minor Pip Every 0.1 M3
  - └ Integrated Cement Volume Major Pip Every 1 M3

**Time Mark Every 60 S**

HDRA\_REP Curve (HDRA\_REP)

## Mudcake

### From HCAL to BS

## Washout

### From BS to HCAL

## Crossover

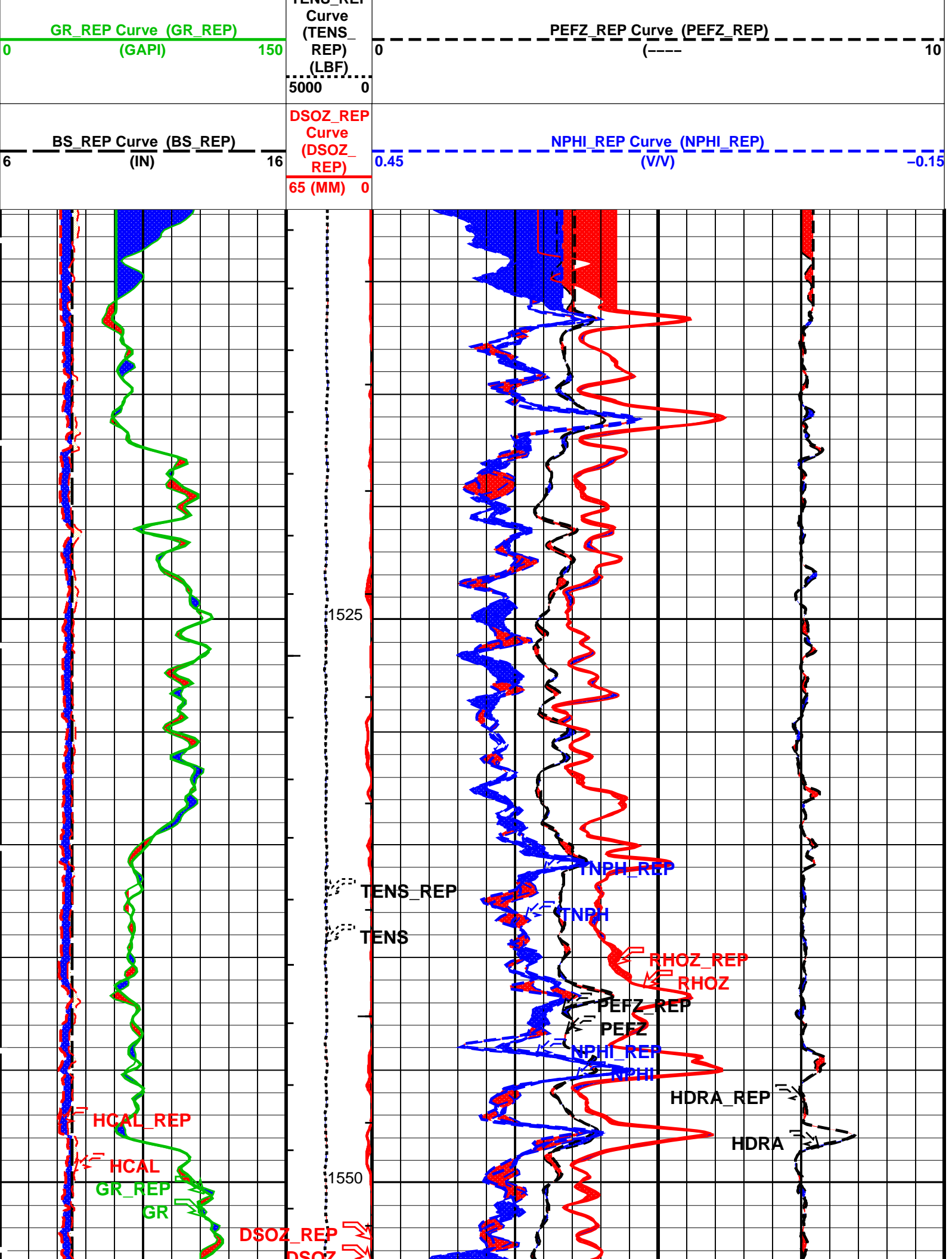
### From RHOZ to TNPH

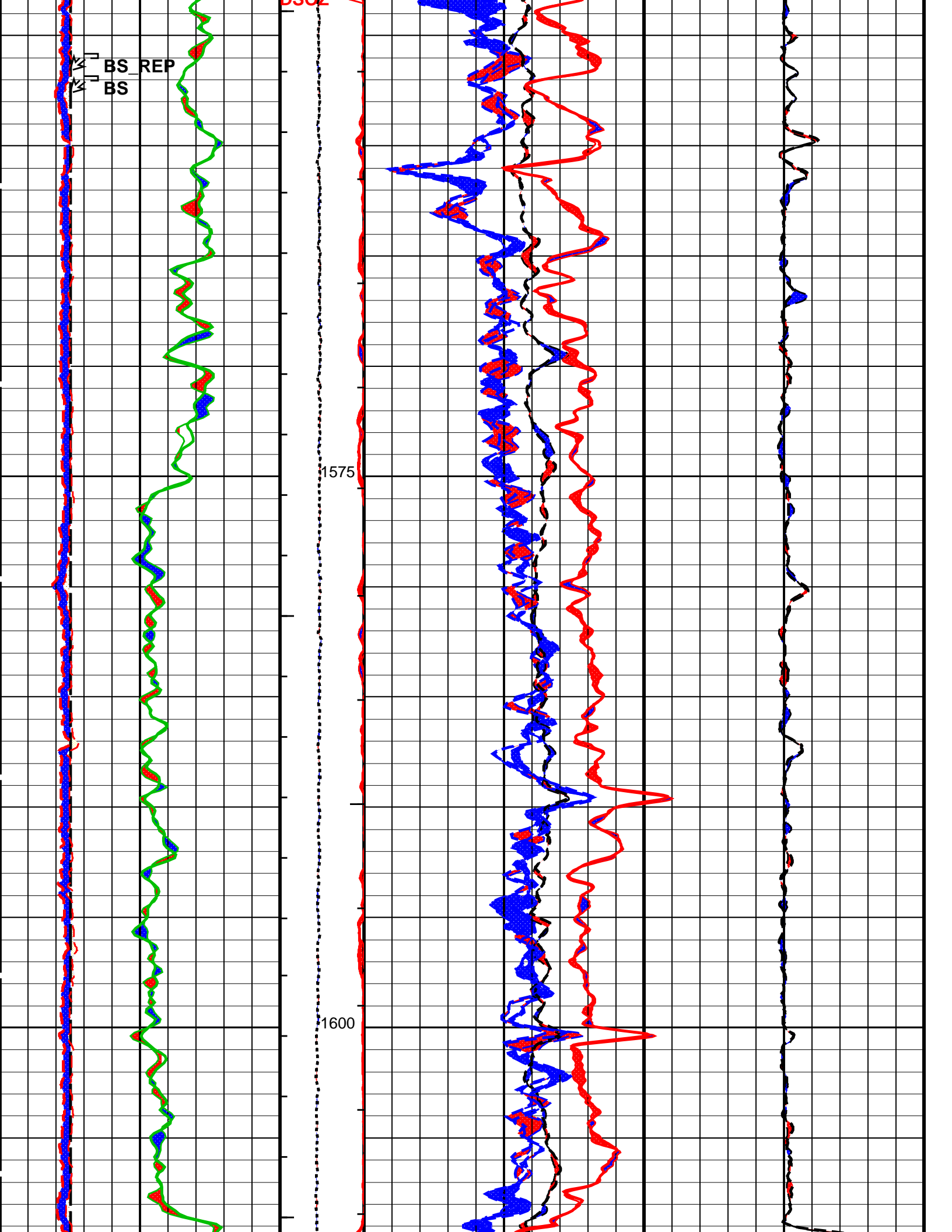
TNPH\_REP Curve (TNPH\_REP)  
(V/V)

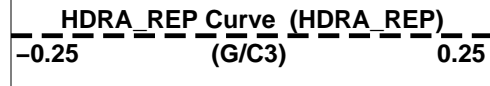
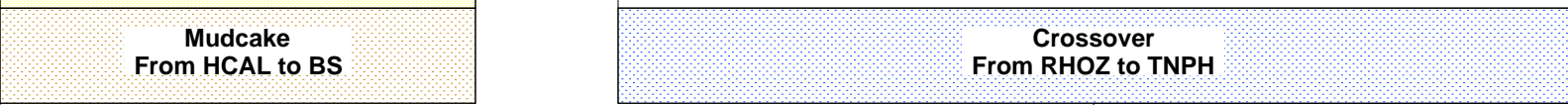
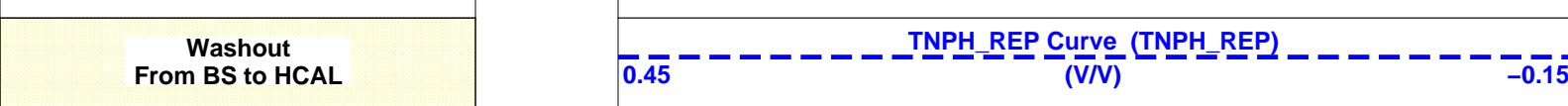
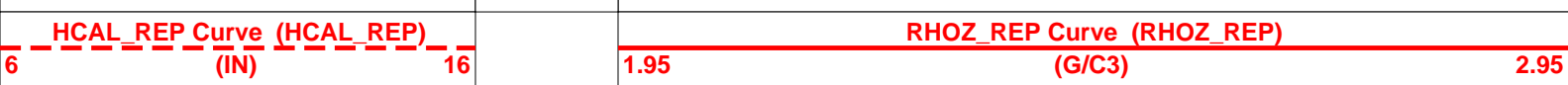
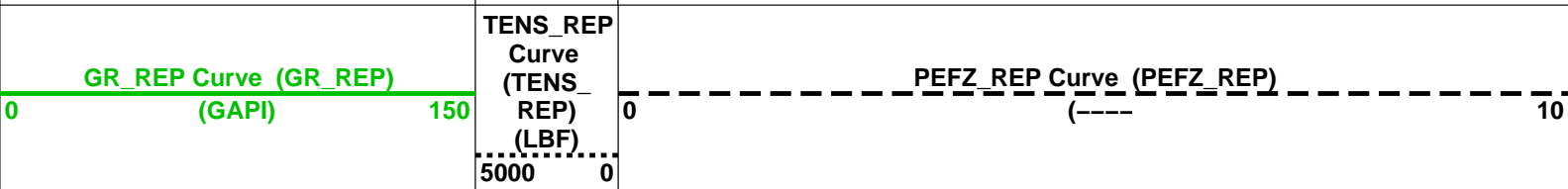
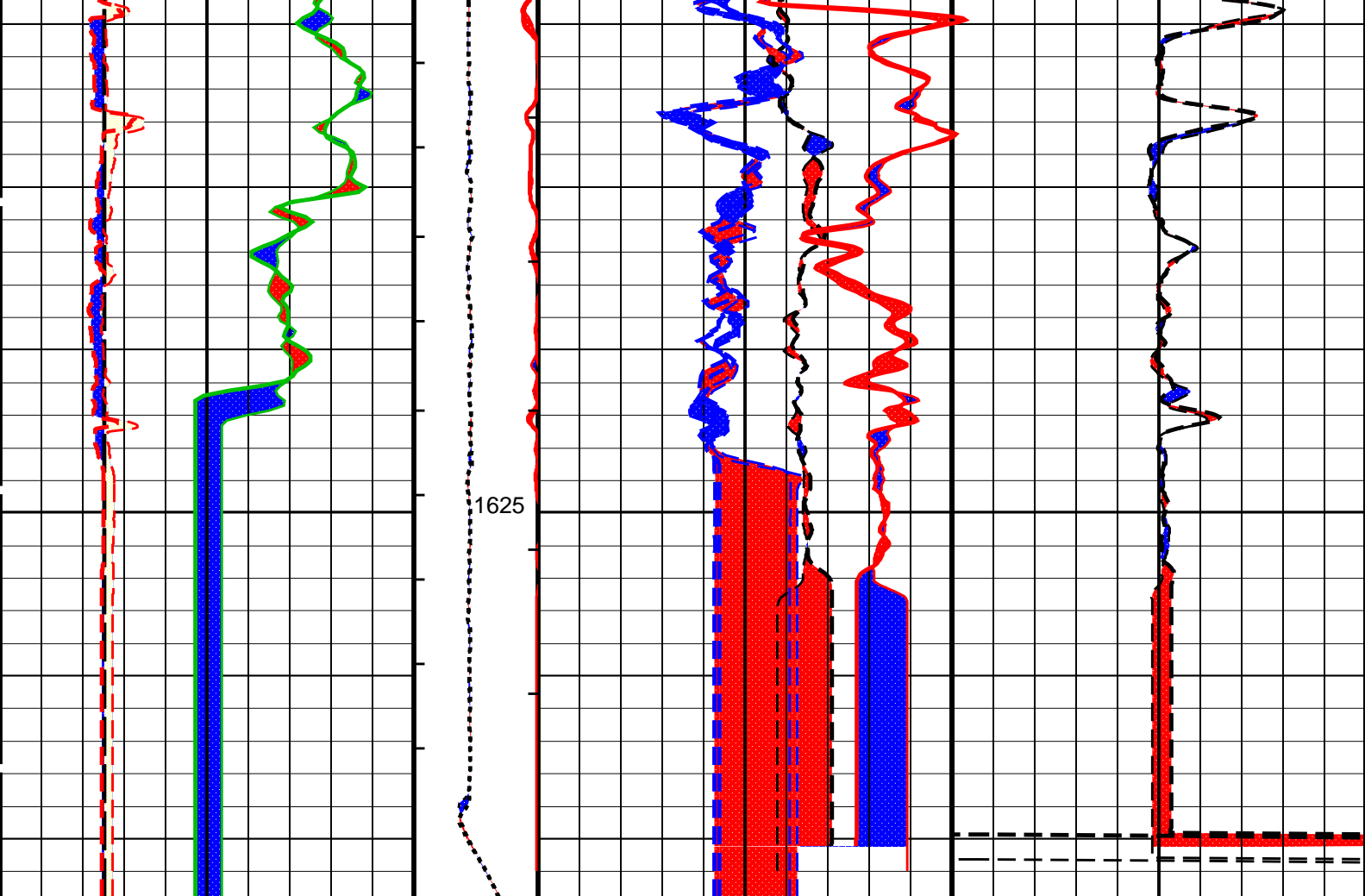
HCAL\_REP Curve (HCAL\_REP)

RHOZ_REP Curve (RHOZ_REP)		
1.95	(G/C3)	2.95

TENS REP







PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
- └ Integrated Cement Volume Minor Pip Every 0.1 M3
- └ Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

Parameters		
DLIS Name	Description	Value

HALS-B: HILT Azimuthal Laterolog Sonde B			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	20	DEGC
HILTB-FTB: High resolution Integrated Logging Tool-DTS			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	YES	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	YES	
MCOR	Mud Correction	BARI	
MWCO	Mud Weight Correction Option	YES	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	BARITE	
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	20	DEGC
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	NO	
HNGBS-BA: Hostile Natural Gamma Ray Sonde			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	20	DEGC
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
FCD	Future Casing (Outer) Diameter	5.5	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	20	DEGC
STI: Stuck Tool Indicator			
TDL	Total Depth - Logger	1634.80	M
System and Miscellaneous			
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	41000.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	40.00	LB/F
DFD	Drilling Fluid Density	1.13	G/C3
DO	Depth Offset for Playback	0.8	M
DORL	Depth Offset for Repeat Analysis	0.0	M
MST	Mud Sample Temperature	12.50	DEGC
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.2010	OHMM
TD	Total Depth	1634.8	M

Format: Nuclear\_200\_REP      Vertical Scale: 1:200      Graphics File Created: 22-Jun-2004 11:55

## OP System Version: 10C0-306

MCM

HALS-B	OP10-KP1	DSLT-H	OP10-KP1
HILTB-FTB	OP10-KP1	HNGC-A	OP10-KP1
HNGBS-BA	OP10-KP1	DTC-H	10C0-306
BSP	10C0-306		

## Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_016LUP	FN:15	PRODUCER	21-Jun-2004 14:41	1636.8 M	1500.8 M
DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	21-Jun-2004 14:42	1636.8 M	20.8 M

## Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_106PUP	FN:105	PRODUCER	22-Jun-2004 11:55
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### Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Total current mode 1							
Before: 18-Jun-2004 13:50							
Itot 1 Gain	1.000	N/A	0.998	N/A	N/A	0.026	MA
Itot 1 Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux current mode 1							
Before: 18-Jun-2004 13:50							
Iaux 1 Gain	1.000	N/A	0.994	N/A	N/A	0.035	MA
Iaux 1 Phase	0.000	N/A	-0.144	N/A	N/A	1.900	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux current mode 2							
Before: 18-Jun-2004 13:50							
Iaux 2 Gain	1.000	N/A	0.975	N/A	N/A	0.048	MA
Iaux 2 Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0 current mode 3A							
Before: 18-Jun-2004 13:50							
I0 3A Gain	1.000	N/A	0.984	N/A	N/A	0.036	UA
I0 3A Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0 current mode 3B							
Before: 18-Jun-2004 13:50							
I0 3B Gain	1.000	N/A	0.979	N/A	N/A	0.036	UA
I0 3B Phase	0.000	N/A	-0.000	N/A	N/A	0.100	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Torpedo Voltage gains							
Before: 18-Jun-2004 13:50							
Zvt 1 Gain	1.000	N/A	0.994	N/A	N/A	0.025	MV
Zvt 2 Gain	1.000	N/A	0.997	N/A	N/A	0.045	MV
Zvt 3 Gain	1.000	N/A	1.004	N/A	N/A	0.045	MV
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Torpedo Voltage Phases							
Before: 18-Jun-2004 13:50							
Zvt 1 Phase	0.000	N/A	-0.098	N/A	N/A	2.300	DEG
Zvt 2 Phase	0.000	N/A	-0.000	N/A	N/A	0.800	DEG
Zvt 3 Phase	0.000	N/A	-0.128	N/A	N/A	0.500	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Upper Bridle Voltage mode 1							
Before: 18-Jun-2004 13:50							
Zvb 1 Gain	1.000	N/A	0.994	N/A	N/A	0.025	MV
Zvb 1 Phase	0.000	N/A	-0.125	N/A	N/A	2.300	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1-M2 Voltage gains							
Before: 18-Jun-2004 13:50							
ZVM 1 Gain	1.000	N/A	0.996	N/A	N/A	0.039	UV
ZVM 2 Gain	1.000	N/A	0.992	N/A	N/A	0.019	UV
ZVM 3 Gain	1.000	N/A	0.991	N/A	N/A	0.019	UV
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1-M2 Voltage Phases							
Before: 18-Jun-2004 13:50							
ZVM 1 Phase	0.000	N/A	0.229	N/A	N/A	3.800	DEG
ZVM 2 Phase	0.000	N/A	1.869	N/A	N/A	1.300	DEG
ZVM 3 Phase	0.000	N/A	1.017	N/A	N/A	1.000	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1-A0* Voltage gains							
Before: 18-Jun-2004 13:50							
ZVM 1 Gain	1.000	N/A	0.997	N/A	N/A	0.013	UV

ZVH 1 Gain	1.000	N/A	0.997	N/A	N/A	0.013	UV
ZVH 2 Gain	1.000	N/A	0.990	N/A	N/A	0.046	UV
ZVH 3 Gain	1.000	N/A	0.990	N/A	N/A	0.046	UV
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB M1–A0* Voltage Phases							
Before: 18–Jun–2004 13:50							
ZVH 1 Phase	0.000	N/A	0.111	N/A	N/A	3.800	DEG
ZVH 2 Phase	0.000	N/A	2.000	N/A	N/A	1.300	DEG
ZVH 3 Phase	0.000	N/A	1.019	N/A	N/A	1.000	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux Voltage gains							
Before: 18–Jun–2004 13:50							
ZVA 1 Gain	1.000	N/A	1.086	N/A	N/A	0.032	MV
ZVA 2 Gain	1.000	N/A	1.063	N/A	N/A	0.045	MV
ZVA 3 Gain	1.000	N/A	1.015	N/A	N/A	0.045	MV
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Aux Voltage Phases							
Before: 18–Jun–2004 13:50							
ZVA 1 Phase	0.000	N/A	0.572	N/A	N/A	2.300	DEG
ZVA 2 Phase	0.000	N/A	0.026	N/A	N/A	0.800	DEG
ZVA 3 Phase	0.000	N/A	0.128	N/A	N/A	0.500	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*–A0** Diff. Voltage mode 1							
Before: 18–Jun–2004 13:50							
ZVD 1 Gain	1.000	N/A	0.997	N/A	N/A	0.047	UV
ZVD 1 Phase	0.000	N/A	0.093	N/A	N/A	3.800	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*–A0** Diff. Voltage mode 2							
Before: 18–Jun–2004 13:50							
ZVD 2 Gain	1.000	N/A	0.983	N/A	N/A	0.056	UV
ZVD 2 Phase	0.000	N/A	1.294	N/A	N/A	1.300	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*–A0** Diff. Voltage mode 3A							
Before: 18–Jun–2004 13:50							
ZVD 3A Gain	1.000	N/A	0.987	N/A	N/A	0.056	UV
ZVD 3A Phase	0.000	N/A	0.601	N/A	N/A	1.000	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB A0*–A0** Diff. Voltage mode 3B							
Before: 18–Jun–2004 13:50							
ZVD 3B Gain	1.000	N/A	1.000	N/A	N/A	0.054	UV
ZVD 3B Phase	0.000	N/A	–0.028	N/A	N/A	1.000	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB vertical Voltage mode 1							
Before: 18–Jun–2004 13:50							
ZVV 1 Gain	1.000	N/A	0.997	N/A	N/A	0.022	UV
ZVV 1 Phase	0.000	N/A	0.164	N/A	N/A	2.800	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB vertical Voltage mode 2							
Before: 18–Jun–2004 13:50							
ZVV 2 Gain	1.000	N/A	0.983	N/A	N/A	0.036	UV
ZVV 2 Phase	0.000	N/A	2.642	N/A	N/A	1.300	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 1							
Before: 18–Jun–2004 13:50							
Az 1 Gain – 0	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain – 1	1.000	N/A	0.998	N/A	N/A	0.047	UV
Az 1 Gain – 2	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain – 3	1.000	N/A	0.994	N/A	N/A	0.047	UV
Az 1 Gain – 4	1.000	N/A	1.000	N/A	N/A	0.047	UV
Az 1 Gain – 5	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain – 6	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain – 7	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain – 8	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain – 9	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain – 10	1.000	N/A	1.001	N/A	N/A	0.047	UV
Az 1 Gain – 11	1.000	N/A	0.997	N/A	N/A	0.047	UV
AZ 1 Phase – 0	0.000	N/A	–0.004	N/A	N/A	3.800	DEG
AZ 1 Phase – 1	0.000	N/A	0.129	N/A	N/A	3.800	DEG
AZ 1 Phase – 2	0.000	N/A	0.100	N/A	N/A	3.800	DEG
AZ 1 Phase – 3	0.000	N/A	0.103	N/A	N/A	3.800	DEG
AZ 1 Phase – 4	0.000	N/A	0.205	N/A	N/A	3.800	DEG
AZ 1 Phase – 5	0.000	N/A	0.089	N/A	N/A	3.800	DEG
AZ 1 Phase – 6	0.000	N/A	0.067	N/A	N/A	3.800	DEG
AZ 1 Phase – 7	0.000	N/A	0.008	N/A	N/A	3.800	DEG
AZ 1 Phase – 8	0.000	N/A	0.122	N/A	N/A	3.800	DEG
AZ 1 Phase – 9	0.000	N/A	0.012	N/A	N/A	3.800	DEG
AZ 1 Phase – 10	0.000	N/A	0.123	N/A	N/A	3.800	DEG
AZ 1 Phase – 11	0.000	N/A	0.102	N/A	N/A	3.800	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 2							
Before: 18–Jun–2004 13:50							
Az 2 Gain – 0	1.000	N/A	0.984	N/A	N/A	0.056	UV



Az 2 Gain – 1	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain – 2	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain – 3	1.000	N/A	0.979	N/A	N/A	0.056	UV
Az 2 Gain – 4	1.000	N/A	0.985	N/A	N/A	0.056	UV
Az 2 Gain – 5	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain – 6	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain – 7	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain – 8	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain – 9	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain – 10	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain – 11	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Phase – 0	0.000	N/A	1.369	N/A	N/A	1.300	DEG
Az 2 Phase – 1	0.000	N/A	1.320	N/A	N/A	1.300	DEG
Az 2 Phase – 2	0.000	N/A	1.339	N/A	N/A	1.300	DEG
Az 2 Phase – 3	0.000	N/A	1.323	N/A	N/A	1.300	DEG
Az 2 Phase – 4	0.000	N/A	1.353	N/A	N/A	1.300	DEG
Az 2 Phase – 5	0.000	N/A	1.370	N/A	N/A	1.300	DEG
Az 2 Phase – 6	0.000	N/A	1.385	N/A	N/A	1.300	DEG
Az 2 Phase – 7	0.000	N/A	1.386	N/A	N/A	1.300	DEG
Az 2 Phase – 8	0.000	N/A	1.402	N/A	N/A	1.300	DEG
Az 2 Phase – 9	0.000	N/A	1.364	N/A	N/A	1.300	DEG
Az 2 Phase – 10	0.000	N/A	1.409	N/A	N/A	1.300	DEG
Az 2 Phase – 11	0.000	N/A	1.285	N/A	N/A	1.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 3A

Before: 18–Jun–2004 13:50

Az 3A Gain – 0	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Gain – 1	1.000	N/A	0.988	N/A	N/A	0.056	UV
Az 3A Gain – 2	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Gain – 3	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 3A Gain – 4	1.000	N/A	0.990	N/A	N/A	0.056	UV
Az 3A Gain – 5	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Gain – 6	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain – 7	1.000	N/A	0.988	N/A	N/A	0.056	UV
Az 3A Gain – 8	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain – 9	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain – 10	1.000	N/A	0.991	N/A	N/A	0.056	UV
Az 3A Gain – 11	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Phase – 0	0.000	N/A	0.617	N/A	N/A	1.000	DEG
Az 3A Phase – 1	0.000	N/A	0.607	N/A	N/A	1.000	DEG
Az 3A Phase – 2	0.000	N/A	0.611	N/A	N/A	1.000	DEG
Az 3A Phase – 3	0.000	N/A	0.607	N/A	N/A	1.000	DEG
Az 3A Phase – 4	0.000	N/A	0.640	N/A	N/A	1.000	DEG
Az 3A Phase – 5	0.000	N/A	0.631	N/A	N/A	1.000	DEG
Az 3A Phase – 6	0.000	N/A	0.631	N/A	N/A	1.000	DEG
Az 3A Phase – 7	0.000	N/A	0.623	N/A	N/A	1.000	DEG
Az 3A Phase – 8	0.000	N/A	0.639	N/A	N/A	1.000	DEG
Az 3A Phase – 9	0.000	N/A	0.597	N/A	N/A	1.000	DEG
Az 3A Phase – 10	0.000	N/A	0.650	N/A	N/A	1.000	DEG
Az 3A Phase – 11	0.000	N/A	0.588	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration – HALSB Azimuthal Voltages mode 3B

Before: 18–Jun–2004 13:50

Az 3B Gain – 0	1.000	N/A	1.008	N/A	N/A	0.054	UV
Az 3B Gain – 1	1.000	N/A	1.003	N/A	N/A	0.054	UV
Az 3B Gain – 2	1.000	N/A	1.005	N/A	N/A	0.054	UV
Az 3B Gain – 3	1.000	N/A	0.998	N/A	N/A	0.054	UV
Az 3B Gain – 4	1.000	N/A	1.005	N/A	N/A	0.054	UV
Az 3B Gain – 5	1.000	N/A	1.006	N/A	N/A	0.054	UV
Az 3B Gain – 6	1.000	N/A	1.005	N/A	N/A	0.054	UV
Az 3B Gain – 7	1.000	N/A	1.007	N/A	N/A	0.054	UV
Az 3B Gain – 8	1.000	N/A	1.006	N/A	N/A	0.054	UV
Az 3B Gain – 9	1.000	N/A	1.003	N/A	N/A	0.054	UV
Az 3B Gain – 10	1.000	N/A	1.010	N/A	N/A	0.054	UV
Az 3B Gain – 11	1.000	N/A	0.997	N/A	N/A	0.054	UV
Az 3B Phase – 0	0.000	N/A	0.204	N/A	N/A	1.000	DEG
Az 3B Phase – 1	0.000	N/A	0.090	N/A	N/A	1.000	DEG
Az 3B Phase – 2	0.000	N/A	0.036	N/A	N/A	1.000	DEG
Az 3B Phase – 3	0.000	N/A	0.098	N/A	N/A	1.000	DEG
Az 3B Phase – 4	0.000	N/A	0.050	N/A	N/A	1.000	DEG
Az 3B Phase – 5	0.000	N/A	0.185	N/A	N/A	1.000	DEG
Az 3B Phase – 6	0.000	N/A	0.127	N/A	N/A	1.000	DEG
Az 3B Phase – 7	0.000	N/A	0.255	N/A	N/A	1.000	DEG
Az 3B Phase – 8	0.000	N/A	0.175	N/A	N/A	1.000	DEG
Az 3B Phase – 9	0.000	N/A	0.198	N/A	N/A	1.000	DEG
Az 3B Phase – 10	0.000	N/A	0.193	N/A	N/A	1.000	DEG
Az 3B Phase – 11	0.000	N/A	–0.017	N/A	N/A	1.000	DEG

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



Before: 17–Jun–2004 22:47



BS Window Ratio	1.011	N/A	1.012	N/A	N/A	N/A	
BS Window Sum	16100	N/A	16100	N/A	N/A	N/A	CPS



SS Window Sum	18100	N/A	18100	N/A	N/A	N/A	CPS
SS Window Ratio	0.4808	N/A	0.4798	N/A	N/A	N/A	
SS Window Sum	10970	N/A	10980	N/A	N/A	N/A	CPS
LS Window Ratio	0.2955	N/A	0.2968	N/A	N/A	N/A	
LS Window Sum	1160	N/A	1161	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Photo-multiplier High Voltages Calibrations							
Before: 17-Jun-2004 22:47							
BS PM High Voltage (Command)	1495	N/A	1502	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1944	N/A	1945	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1839	N/A	1850	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Crystal Quality Resolutions Calibration							
Before: 17-Jun-2004 22:47							
BS Crystal Resolution	12.17	N/A	12.16	N/A	N/A	N/A	%
SS Crystal Resolution	11.48	N/A	11.68	N/A	N/A	N/A	%
LS Crystal Resolution	9.283	N/A	9.321	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-DTS Wellsite Calibration – MCFL Calibration							
Before: 17-Jun-2004 22:27							
Raw B0 Resistivity	3875	N/A	3800	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3774	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3790	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool-DTS Wellsite Calibration – HILT Caliper Calibration							
Before: 17-Jun-2004 22:30							
HILT Caliper Zero Measurement	8.000	N/A	8.227	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.35	N/A	N/A	N/A	IN
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Detector Calibration							
Before: 17-Jun-2004 22:26							
Gamma Ray Background	30.00	N/A	37.15	N/A	N/A	N/A	GAPI
Gamma Ray (Jig – Bkg)	177.4	N/A	177.4	N/A	N/A	16.12	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: 15-Jun-2004 17:21 Before: 17-Jun-2004 22:26							
CNTC Background	32.30	32.30	31.19	N/A	N/A	4.845	CPS
CFTC Background	29.13	29.13	28.55	N/A	N/A	4.370	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration – Accelerometer Calibration							
Before: 18-Jun-2004 13:50							
Z-Axis Acceleration	9.810	N/A	9.803	N/A	N/A	N/A	M/S2
High resolution Integrated Logging Tool-DTS Master Calibration – Inversion results							
Master: 15-Jun-2004 11:26							
Rho Aluminum	2.596	2.599	--	--	--	--	G/C3
Rho Magnesium	1.686	1.688	--	--	--	--	G/C3
Pe Aluminum	2.570	2.561	--	--	--	--	
Pe Magnesium	2.650	2.615	--	--	--	--	
High resolution Integrated Logging Tool-DTS Master Calibration – Deviation Summary							
Master: 15-Jun-2004 11:26							
BS Average Deviation	0	0.4141	--	--	--	--	%
BS Max Deviation	0	0.9721	--	--	--	--	%
SS Average Deviation	0	0.2442	--	--	--	--	%
SS Max Deviation	0	1.285	--	--	--	--	%
LS Average Deviation	0	0.4543	--	--	--	--	%
LS Max Deviation	0	0.9733	--	--	--	--	%
High resolution Integrated Logging Tool-DTS Master Calibration – Tank Measurement							
Master: 15-Jun-2004 17:21							
Thermal Near Corr. (Tank)	6031	5825	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2793	2452	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.376	--	--	--	--	
High resolution Integrated Logging Tool-DTS Master Calibration – Tank Measurement							
Master: 15-Jun-2004 17:21							
Thermal Near Corr. (Tank)	6031	5825	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2793	2452	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.376	--	--	--	--	
Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check							
Master: 17-Jun-2004 21:58 Before: 18-Jun-2004 13:56							
Na 511 Peak Loc	40.00	40.64	39.66	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.25	15.12	N/A	N/A	2.000	%
High Voltage	1150	1159	1153	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	145.9	141.9	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.737	8.471	N/A	N/A	2.000	%
Temperature	15.50	13.72	13.30	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	42.07	43.20	N/A	N/A	8.000	CPS



Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check							
Master: 17–Jun–2004 21:58 Before: 18–Jun–2004 13:56							
Na 511 Peak Loc	40.00	39.68	39.55	N/A	N/A	1.000	
Na 511 Peak Res	15.50	14.94	15.66	N/A	N/A	2.000	%
High Voltage	1150	1080	1081	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	143.0	142.3	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.683	7.777	N/A	N/A	2.000	%
Temperature	15.50	14.40	13.68	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	41.97	42.79	N/A	N/A	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration – Ratio Of Detector 1 To Detector 2							
Master: 17–Jun–2004 21:58 Before: 18–Jun–2004 13:56							
Coincidence Count Rate Ratio	1.000	1.006	1.012	N/A	N/A	0.05000	
Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration							
Master: 17–Jun–2004 21:53							
Na 511 Peak Set Point	40.00	42.00	--	--	--	--	
Th Peak Loc	209.6	211.5	--	--	--	--	
Th Peak Res	7.000	7.826	--	--	--	--	%
Background Count Rate	142.5	140.0	--	--	--	--	CPS
Gain Ratio	1.000	0.9901	--	--	--	--	
Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration							
Master: 17–Jun–2004 21:53							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	207.7	--	--	--	--	
Th Peak Res	7.000	7.127	--	--	--	--	%
Background Count Rate	142.5	133.6	--	--	--	--	CPS
Gain Ratio	1.000	0.9954	--	--	--	--	
The GLS–VJ source activity is acceptable.							
The HGNS Neutron Master Calibration was done with the following parameters :							
NCT–B Water Temperature 11.1 DEGC.							
Thermal Housing Size 3.369 IN.							



HILT Azimuthal Laterolog Sonde B / Equipment Identification		
Primary Equipment:		
Auxiliary Equipment:		
Laterolog Control Module	LCM – AA	2747

HILT Azimuthal Laterolog Sonde B Wellsite Calibration			
HALSB Total current mode 1			
Itot 1 Gain MA	Value	Itot 1 Phase DEG	Value
	0.998		0.000
0.926 1.000 1.081		-0.100 0.000 0.100	
(Minimum) (Nominal) (Maximum)		(Minimum) (Nominal) (Maximum)	
Before: 18–Jun–2004 13:50			




HILT Azimuthal Laterolog Sonde B Wellsite Calibration			
HALSB Aux current mode 1			
Iaux 1 Gain MA	Value	Iaux 1 Phase DEG	Value
	0.994		-0.144
0.854 1.000 1.180		-4.600 0.000 4.600	
(Minimum) (Nominal) (Maximum)		(Minimum) (Nominal) (Maximum)	
Before: 18–Jun–2004 13:50			




HILT Azimuthal Laterolog Sonde B Wellsite Calibration			
HALSB Aux current mode 2			
Iaux 2 Gain MA	Value	Iaux 2 Phase DEG	Value
	0.975		0.000
0.816 1.000 1.232		-1.000 0.000 0.100	
(Minimum) (Nominal) (Maximum)		(Minimum) (Nominal) (Maximum)	
Before: 18–Jun–2004 13:50			



HILT Azimuthal Laterolog Sonde B Wellsite Calibration			
HALSB A0 current mode 3A			
I0 3A Gain UA	Value	I0 3A Phase DEG	Value
	0.984		0.000
0.893 1.000 1.114		-1.000 0.000 0.100	
(Minimum) (Nominal) (Maximum)		(Minimum) (Nominal) (Maximum)	
Before: 18–Jun–2004 13:50			




HILT Azimuthal Laterolog Sonde B Wellsite Calibration			
HALSB A0 current mode 3B			
I0 3B Gain UA	Value	I0 3B Phase DEG	Value
	0.979		-0.000
0.893 1.000 1.114		-1.000 0.000 0.100	
(Minimum) (Nominal) (Maximum)		(Minimum) (Nominal) (Maximum)	
Before: 18–Jun–2004 13:50			




HILT Azimuthal Laterolog Sonde B Wellsite Calibration	
HALSB Torpedo Voltage gains	




Zvt 1 Gain MV	Value	Zvt 2 Gain MV	Value	Zvt 3 Gain MV	Value
	0.994		0.997		1.004
0.925 (Minimum) 1.000 (Nominal) 1.078 (Maximum)		0.865 (Minimum) 1.000 (Nominal) 1.153 (Maximum)		0.865 (Minimum) 1.000 (Nominal) 1.153 (Maximum)	
Before: 18-Jun-2004 13:50					




HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Torpedo Voltage Phases					
Zvt 1 Phase DEG	Value	Zvt 2 Phase DEG	Value	Zvt 3 Phase DEG	Value
	-0.098		-0.000		-0.128
-4.400 (Minimum) 0.000 (Nominal) 4.400 (Maximum)		-2.800 (Minimum) 0.000 (Nominal) 2.800 (Maximum)		-1.400 (Minimum) 0.000 (Nominal) 1.400 (Maximum)	
Before: 18-Jun-2004 13:50					




HILT Azimuthal Laterolog Sonde B Wellsite Calibration			
HALSB Upper Bridle Voltage mode 1			
Zvb 1 Gain MV	Value	Zvb 1 Phase DEG	Value
	0.994		-0.125
0.925 (Minimum) 1.000 (Nominal) 1.078 (Maximum)		-4.400 (Minimum) 0.000 (Nominal) 4.400 (Maximum)	
Before: 18-Jun-2004 13:50			




HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB M1-M2 Voltage gains					
ZVM 1 Gain UV	Value	ZVM 2 Gain UV	Value	ZVM 3 Gain UV	Value
	0.996		0.992		0.991
0.895 (Minimum) 1.000 (Nominal) 1.117 (Maximum)		0.943 (Minimum) 1.000 (Nominal) 1.056 (Maximum)		0.943 (Minimum) 1.000 (Nominal) 1.056 (Maximum)	
Before: 18-Jun-2004 13:50					



HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB M1-M2 Voltage Phases					
ZVM 1 Phase DEG	Value	ZVM 2 Phase DEG	Value	ZVM 3 Phase DEG	Value
	0.229		1.869		1.017
-6.500 (Minimum) 0.000 (Nominal) 6.500 (Maximum)		-3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)		-2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	
Before: 18-Jun-2004 13:50					



HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB M1-A0* Voltage gains					
ZVH 1 Gain UV	Value	ZVH 2 Gain UV	Value	ZVH 3 Gain UV	Value
	0.997		0.990		0.990
0.962 (Minimum) 1.000 (Nominal) 1.039 (Maximum)		0.864 (Minimum) 1.000 (Nominal) 1.154 (Maximum)		0.864 (Minimum) 1.000 (Nominal) 1.154 (Maximum)	
Before: 18-Jun-2004 13:50					



HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB M1-A0* Voltage Phases					
ZVH 1 Phase DEG	Value	ZVH 2 Phase DEG	Value	ZVH 3 Phase DEG	Value
	0.111		2.000		1.019
-6.500 (Minimum) 0.000 (Nominal) 6.500 (Maximum)		-3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)		-2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	
Before: 18-Jun-2004 13:50					

























HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Aux Voltage gains					
ZVA 1 Gain MV	Value	ZVA 2 Gain MV	Value	ZVA 3 Gain MV	Value
	1.086		1.063		1.015
0.905 (Minimum) 1.000 (Nominal) 1.103 (Maximum)		0.866 (Minimum) 1.000 (Nominal) 1.151 (Maximum)		0.866 (Minimum) 1.000 (Nominal) 1.151 (Maximum)	
Before: 18-Jun-2004 13:50					




















HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Aux Voltage Phases					
ZVA 1 Phase DEG	Value	ZVA 2 Phase DEG	Value	ZVA 3 Phase DEG	Value
	0.572		0.026		0.128
-4.100 (Minimum) 0.000 (Nominal) 4.100 (Maximum)		-2.300 (Minimum) 0.000 (Nominal) 2.300 (Maximum)		-1.000 (Minimum) 0.000 (Nominal) 1.000 (Maximum)	
Before: 18-Jun-2004 13:50					



HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB A0*-A0** Diff. Voltage mode 1					
ZVD 1 Gain UV		Value	ZVD 1 Phase DEG		Value
		0.997			0.093
0.874 (Minimum)	1.000 (Nominal)	1.147 (Maximum)	-6.300 (Minimum)	0.000 (Nominal)	6.300 (Maximum)
Before: 18-Jun-2004 13:50					



HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB A0*-A0** Diff. Voltage mode 3A					
ZVD 3A Gain UV		Value	ZVD 3A Phase DEG		Value
		0.987			0.601
0.842 (Minimum)	1.000 (Nominal)	1.187 (Maximum)	-2.000 (Minimum)	0.000 (Nominal)	2.000 (Maximum)
Before: 18-Jun-2004 13:50					



HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB vertical Voltage mode 1					
ZVV 1 Gain UV		Value	ZVV 1 Phase DEG		Value
		0.997			0.164
0.936 (Minimum)	1.000 (Nominal)	1.065 (Maximum)	-4.600 (Minimum)	0.000 (Nominal)	4.600 (Maximum)
Before: 18-Jun-2004 13:50					

























HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Azimuthal Voltages mode 1					
Idx	Az 1 Gain UV	Value	Idx	AZ 1 Phase DEG	Value
0		0.999	0		-0.004
1		0.998	1		0.129
2		0.999	2		0.100
3		0.994	3		0.103
4		1.000	4		0.205
5		0.999	5		0.089
6		0.997	6		0.067
7		0.999	7		0.008
8		0.997	8		0.122
9		0.997	9		0.012
10		1.001	10		0.123
11		0.997	11		0.102
0.874 (Minimum)	1.000 (Nominal)	1.147 (Maximum)	-6.300 (Minimum)	0.000 (Nominal)	6.300 (Maximum)
Before: 18-Jun-2004 13:50					





















HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Azimuthal Voltages mode 3A					
Idx	Az 3A Gain UV	Value	Idx	Az 3A Phase DEG	Value
0		0.989	0		0.617
1		0.988	1		0.607
2		0.989	2		0.611
3		0.984	3		0.607
4		0.990	4		0.640
5		0.989	5		0.631
6		0.987	6		0.631
7		0.988	7		0.623
8		0.987	8		0.639
9		0.987	9		0.597
10		0.991	10		0.650
11		0.991	11		0.650





HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB A0*-A0** Diff. Voltage mode 2					
ZVD 2 Gain UV		Value	ZVD 2 Phase DEG		Value
		0.983			1.294
0.842 (Minimum)	1.000 (Nominal)	1.187 (Maximum)	-3.300 (Minimum)	0.000 (Nominal)	3.300 (Maximum)
Before: 18-Jun-2004 13:50					

HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB A0*-A0** Diff. Voltage mode 3B					
ZVD 3B Gain UV		Value	ZVD 3B Phase DEG		Value
		1.000			-0.028
0.845 (Minimum)	1.000 (Nominal)	1.183 (Maximum)	-2.000 (Minimum)	0.000 (Nominal)	2.000 (Maximum)
Before: 18-Jun-2004 13:50					

HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB vertical Voltage mode 2					
ZVV 2 Gain UV		Value	ZVV 2 Phase DEG		Value
		0.983			2.642
0.895 (Minimum)	1.000 (Nominal)	1.112 (Maximum)	-2.800 (Minimum)	0.000 (Nominal)	2.800 (Maximum)
Before: 18-Jun-2004 13:50					



HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Azimuthal Voltages mode 2					
Idx	Az 2 Gain UV	Value	Idx	Az 2 Phase DEG	Value
0		0.984	0		1.369
1		0.983	1		1.320
2		0.984	2		1.339
3		0.979	3		1.323
4		0.985	4		1.353
5		0.984	5		1.370
6		0.982	6		1.385
7		0.984	7		1.386
8		0.983	8		1.402
9		0.982	9		1.364
10		0.987	10		1.409
11		0.982	11		1.285
0.842 (Minimum)	1.000 (Nominal)	1.187 (Maximum)	-3.300 (Minimum)	0.000 (Nominal)	3.300 (Maximum)
Before: 18-Jun-2004 13:50					

HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Azimuthal Voltages mode 3B					
Idx	Az 3B Gain UV	Value	Idx	Az 3B Phase DEG	Value
0		1.008	0		0.204
1		1.003	1		0.090
2		1.005	2		0.036
3		0.998	3		0.098
4		1.005	4		0.050
5		1.006	5		0.185
6		1.005	6		0.127
7		1.007	7		0.255
8		1.006	8		0.175
9		1.003	9		0.198
10		1.003	10		0.250
11		1.003	11		0.250

10		1.010	10		0.193
11		0.997	11		-0.017
0.845 (Minimum)    1.000 (Nominal)    1.183 (Maximum)			-2.000 (Minimum)    0.000 (Nominal)    2.000 (Maximum)		

Before: 18-Jun-2004 13:50

Auxiliary Equipment:

High resolution Integrated Logging Tool-DTS Wellsite Calibration						
HILT Caliper Calibration						
Phase	HILT Caliper Zero Measurement IN		Value	Phase	HILT Caliper Plus Measurement IN	
Before			8.227	Before		
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)		9.000 (Minimum)	12.00 (Nominal)
Before: 17-Jun-2004 22:30						

High resolution Integrated Logging Tool–DTS Wellsite Calibration

## Detector Calibration

Before: 17-Jun-2004 22:26Master: 15-Jun-2004 17:21 Before: 17-Jun-2004 22:26Before: 18-Jun-2004 13:50Master: 15-Jun-2004 11:26Master: 15-Jun-2004 11:26Master: 15-Jun-2004 17:21Master: 15-Jun-2004 17:21

# Hostile Natural Gamma Ray Cartridge – A / Equipment Identification

Primary Equipment:  
HNGC Cartridge

HNGC – A 10

Auxiliary Equipment:  
HNGC Housing

HNGH – A

# Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:  
HNGS Sonde















HNGS – BA 129

Auxiliary Equipment:  
HNGS Sonde Housing  
Gamma Source Radioactive

HNSH – BA 3  
GSR – U

## Hostile Natural Gamma Ray Sonde Wellsite Calibration

### Detector 1 Check











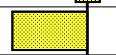



Phase	Na 511 Peak Loc		Value	Phase	Na 511 Peak Res %		Value	Phase	High Voltage V		Value	
Master			40.64	Master			16.25	Master			1159	
Before			39.66	Before			15.12	Before			1153	
37.50 (Minimum)			40.00 (Nominal)	42.50 (Maximum)				12.00 (Minimum)			15.50 (Nominal)	19.00 (Maximum)
900.0 (Minimum)			1150 (Nominal)	1600 (Maximum)								
Phase	Na 1785 Peak Loc		Value	Phase	Na 1785 Peak Res %		Value	Phase	Temperature DEGC		Value	
Master			145.9	Master			8.737	Master			13.72	
Before			141.9	Before			8.471	Before			13.30	
135.0 (Minimum)			142.6 (Nominal)	150.3 (Maximum)				7.000 (Minimum)			8.500 (Nominal)	11.00 (Maximum)
-28.89 (Minimum)			15.50 (Nominal)	60.00 (Maximum)								
Phase	Na Count Rate CPS		Value									
Master			42.07									
Before			43.20									
10.00 (Minimum)			45.00 (Nominal)									

Master: 17-Jun-2004 21:58

Before: 18-Jun-2004 13:56



## Hostile Natural Gamma Ray Sonde Wellsite Calibration

### Detector 2 Check

Na 511 Peak Loc			Value	Na 511 Peak Res %			Value	High Voltage V			Value			
Master			39.68	Master			14.94	Master			1080			
Before			39.55	Before			15.66	Before			1081			
37.50 (Minimum)			40.00 (Nominal)	42.50 (Maximum)			12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)		900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)	
Na 1785 Peak Loc			Value	Na 1785 Peak Res %			Value	Temperature DEGC			Value			
Master			143.0	Master			8.683	Master			14.40			
Before			142.3	Before			7.777	Before			13.68			
135.0 (Minimum)			142.6 (Nominal)	150.3 (Maximum)			7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)		-28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)	
Na Count Rate CPS			Value											
Master			41.97											
Before			42.79											
10.00 (Minimum)			45.00 (Nominal)									100.0 (Maximum)		






Master: 17-Jun-2004 21:58






Before: 18-Jun-2004 13:56

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.006
Before		1.012



0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)
Master: 17-Jun-2004 21:58		
Before: 18-Jun-2004 13:56		

Hostile Natural Gamma Ray Sonde Master Calibration														
Detector 1 Calibration														
Phase	Na 511 Peak Set Point			Value	Phase	Th Peak Loc			Value	Phase	Th Peak Res %			Value
Master				42.00	Master				211.5	Master				7.826
	38.00 (Minimum)	40.00 (Nominal)	42.00 (Maximum)		201.0 (Minimum)	209.6 (Nominal)	218.3 (Maximum)			5.000 (Minimum)	7.000 (Nominal)	9.000 (Maximum)		
Phase	Background Count Rate CPS			Value	Phase	Gain Ratio			Value					
Master				140.0	Master				0.9901					
	20.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)		0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)							
Master: 17-Jun-2004 21:53														

Hostile Natural Gamma Ray Sonde Master Calibration														
Detector 2 Calibration														
Phase	Na 511 Peak Set Point			Value	Phase	Th Peak Loc			Value	Phase	Th Peak Res %			Value
Master				41.00	Master				207.7	Master				7.127
	38.00 (Minimum)	40.00 (Nominal)	42.00 (Maximum)		201.0 (Minimum)	209.6 (Nominal)	218.3 (Maximum)			5.000 (Minimum)	7.000 (Nominal)	9.000 (Maximum)		
Phase	Background Count Rate CPS			Value	Phase	Gain Ratio			Value					
Master				133.6	Master				0.9954					
	20.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)		0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)							
Master: 17-Jun-2004 21:53														

Company: **Essential Petroleum Resources Limited**

**Schlumberger**

Well: **Killarney EPRL 1**

Field: **PEP 152**

Rig: **Hunt Rig #2**

Country: **Australia**

HALS-BHC-PEX-HNG

Nuclear Print

Scale 1:500