Schlumberger

Company: **Essential Petroleum Resources Limited**

Well: **Findra−1**
Field: **PEP 159**
Rig: **Hunt Rig #2** Country: **Australia**

HALS−BHC−PEX−HNG
Nuclear−Density Print
Scale 1:200

Company: Essential Petroleum Resources L
Well: Findra−1
Location: Otway Basin PEP 159
Field: PEP 159

LOCATION

Otway Basin PEP 159
602241.4 E
5768896.5 N

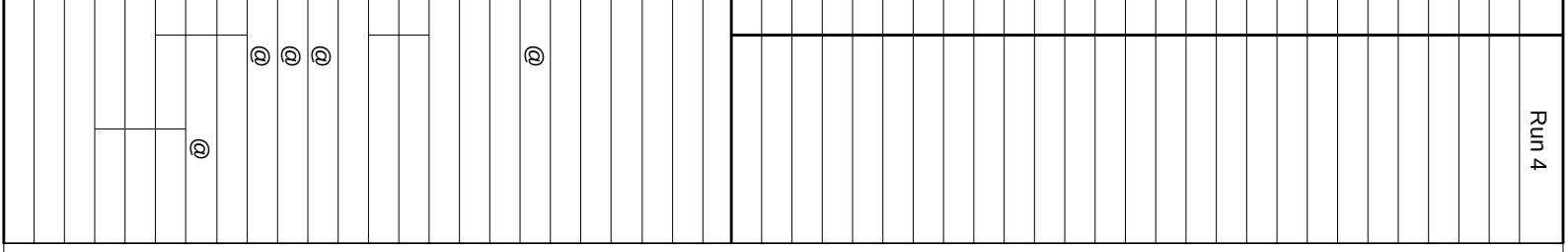
Elev.: K.B. 60.95 m
G.L. 57 m
D.F. 60.95 m

Permanent Datum: MEAN SEA LEVEL Elev.: 0 m
Log Measured From: DRILL FLOOR 61.0 m above Perm. Datum
Drilling Measured From: DRILL FLOOR

State: Victoria	Max. Well Deviation 2 deg	Longitude 142* 10' 04.90" E	Latitude 38* 13' 19.58" S

Logging Date		30−Jun−2004							
Run Number		1							
Depth Driller		889 m							
Schlumberger Depth		879 m							
Bottom Log Interval		876.71 m							
Top Log Interval		150 m							
Casing Driller Size @ Depth		9.625 in @ 150 m				@			
Casing Schlumberger		150 m							
Bit Size		8.500 in							
Type Fluid In Hole		KCl−Polymer−PHPA							
Density	Viscosity	1.1 g/cm3	39 s						
Fluid Loss	PH	6.8 cm3	8.8						
Source Of Sample		PIT							
RM @ Measured Temperature		0.254 ohm.m @ 12 degC				@			
RMF @ Measured Temperature		0.205 ohm.m @ 12 degC				@			
RMC @ Measured Temperature		0.281 ohm.m @ 12 degC				@			
Source RMF	RMC	PRESS	PRESS						
RM @ MRT	RMF @ MRT	0.123 @ 48	0.099 @ 48			@		@	
Maximum Recorded Temperatures		48 degC	48	48					
Circulation Stopped	Time	30−Jun−2004	6:00						
Logger On Bottom	Time	30−Jun−2004	17:50						
Unit Number	Location	3170	QEA						
Recorded By		Herdy Nizar / G. Jonsson							
Witnessed By		G. Wakelin−King							

	Run 1	Run 2	Run 3
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: 30−JUN−2004 20:20:16

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−42V−XS
Serial Number:	−999	Serial Number:	2268	Serial Number:	78197
Calibration Date:	dd−Mmm−yyyy	Calibration Date:	13−Feb−2004	Length:	4500.07 M
Calibrator Serial Number:	−999	Calibrator Serial Number:	1050	Conveyance Method:	Wireline
Calibration Cable Type:	7−46P	Calibration Gain:	0.89	Rig Type:	LAND
Wheel Correction 1:	−2	Calibration Offset:	56.00		
Wheel Correction 2:	−2				

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	60.39 M
Rig Up Length At Bottom:	60.32 M
Rig Up Length Correction:	0.07 M
Stretch Correction:	0.20 M
Tool Zero Check At Surface:	0.50 M

Depth Control Remarks

1. Thid is first run in hole
2. Schlumberger depth control procedures were followed
3. IDW is the primary depth control
4. Z chart is the secondary depth control
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: MDT−GR	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1

This is first run in hole. Full SLB cepth control procedure followed.

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

CNL, TDL, HALS and MCFL loffed to casing shoe.

GR logged to surface

HNGS and Hi−Res data logged to 450m as per client request

Neutron corrected for borehole salinity, hole size, mud weight and mud cake

Density corrected for bit size and mud weight

Maximum recorded temperature of 48 degC from thermometers in LEH−QT

Caliper check in casing reads 8.83 from ASCII and 8.834 expected.

Additional mud information:

Chloride: 19000 mg/L, Calicium: 40mg/L, Potassium: 21,076 mg/L, KCL: 3.9%

Barite present in mud

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

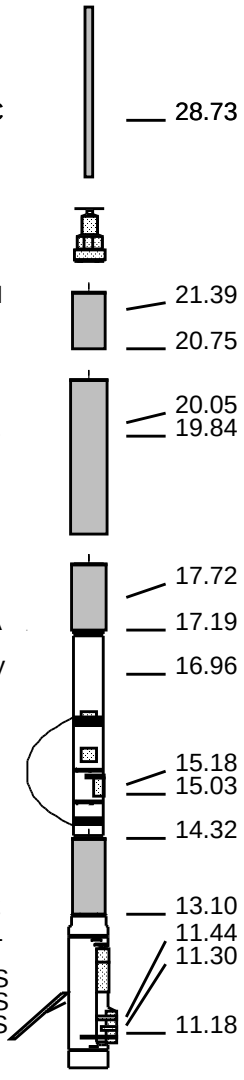
EQUIPMENT DESCRIPTION

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

LEH−QT 1570
LEH−QT 1570
22.56

DTC−H
ECH−KC
21.67

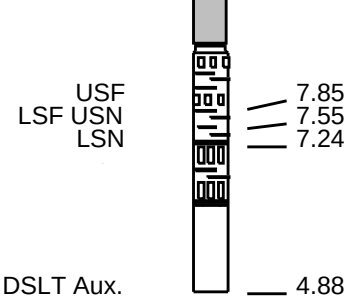
HNGS−BA
HNGS−BA 129
HNSH−BA 3
20.75

HNGC−A
HNGH−A
HNGC−A 10
18.25

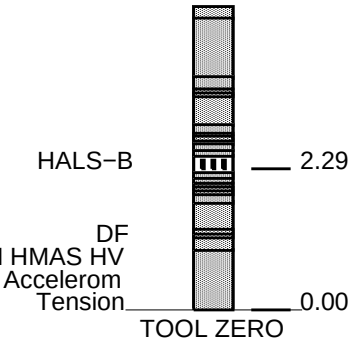
HILTB−FTB
HGNSD−B 1751
HMCA
HGNS−H 1775
NLS−KL
NSR−F 2111
HACCZ
HCNT
HGR
HRCC−B 1769
HRMS−B 1765
HRGD−B 1760
GLS−VJ 3739
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
BOW−SPR
17.19

DSLT−H
DSLC−HA 8223
10.59

ECH−KH 8273
SLS−C 299



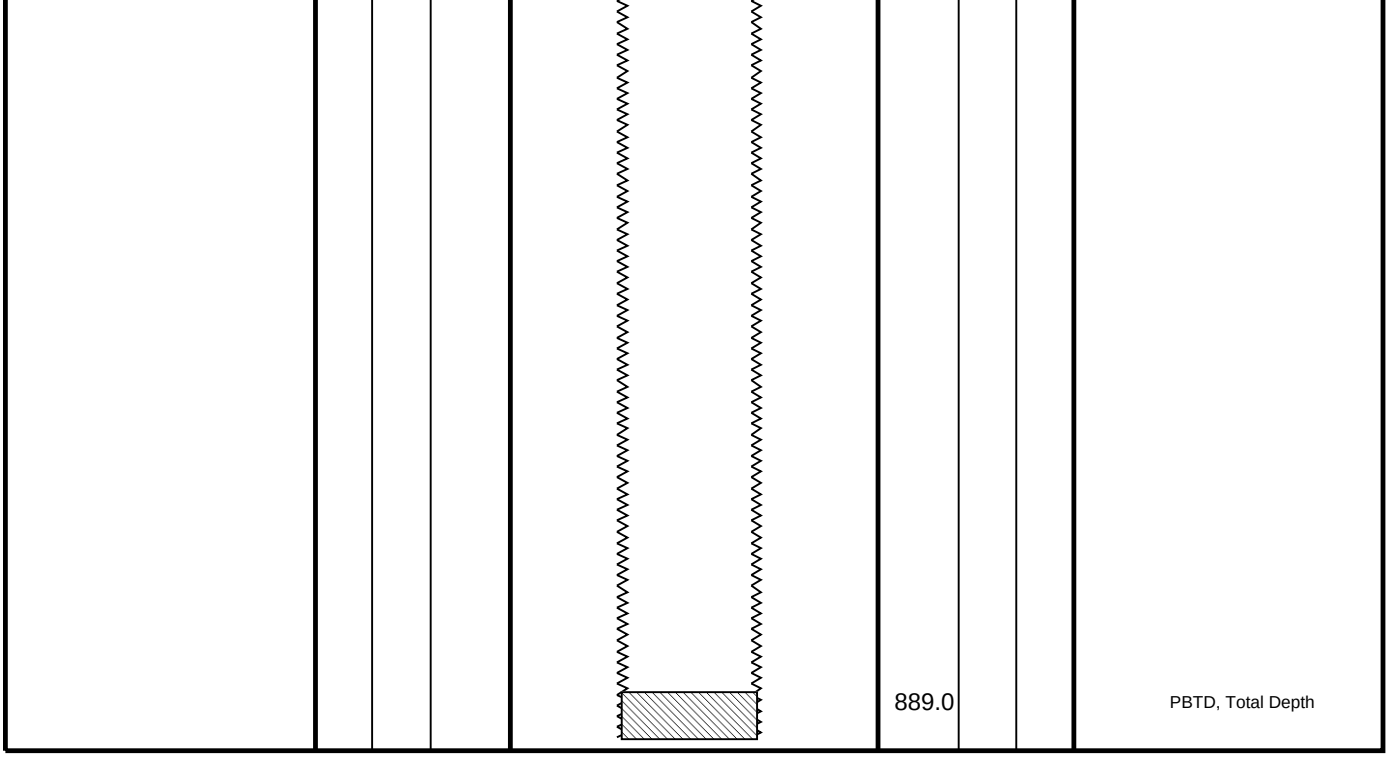
HALS−B 4.88
HALS−B 769



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

Client: Essential Petroleum Resources Limited
Well: Findra−1
Field: PRP 159
Rig Name: Hunt Rig # 2
State: Victoria
Country:Australia
Elevation: 61.0 m

Production String (in) OD	ID	(m) MD	Well Schematic	(m) MD	(in) OD	ID	Casing String
				0.0	17.500		Borehole Segment
				61.0	13.375		Casing Shoe
				150.0	9.625		Casing Shoe



Schlumberger

Neutron−Density
1:200 Scale

MAXIS Field Log

Company: Essential Petroleum Resources Limited **Well: Findra−1**

Input DLIS Files

DEFAULT	**HALS_SONIC_TLD_MCFL_007LUP**	**FN:11**	**PRODUCER**	**30−Jun−2004 17:55**	**880.1 M**	**28.4 M**

Output DLIS Files

DEFAULT	**HALS_SONIC_TLD_MCFL_010PUP**	**FN:15**	**PRODUCER**	**30−Jun−2004 20:05**	**880.3 M**	**34.4 M**

Integrated Hole/Cement Volume Summary

Hole Volume = 26.15 M3

Cement Volume = 8.02 M3 (assuming 7.00 IN casing O.D.)

Computed from 880.3 M to 150.4 M using data channel(s) HCAL

OP System Version: 12C0−301

MCM

HALS−B	12C0−301	DSLT−H	12C0−301
HILTB−FTB	12C0−301	HNGC−A	12C0−301
HNGS−BA	12C0−301	DTC−H	12C0−301
BSP	12C0−301		

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

Mudcake From HCAL to BS

Washout From BS to HCAL

HILT Caliper (HCAL)
6 (IN) 16

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

Crossover From RHOZ to TNPH

Env.Corr.Thermal Neutron Porosity (TNPH)
0.45 (V/V) −0.15

Gamma Ray (GR)
0 (GAPI) 150

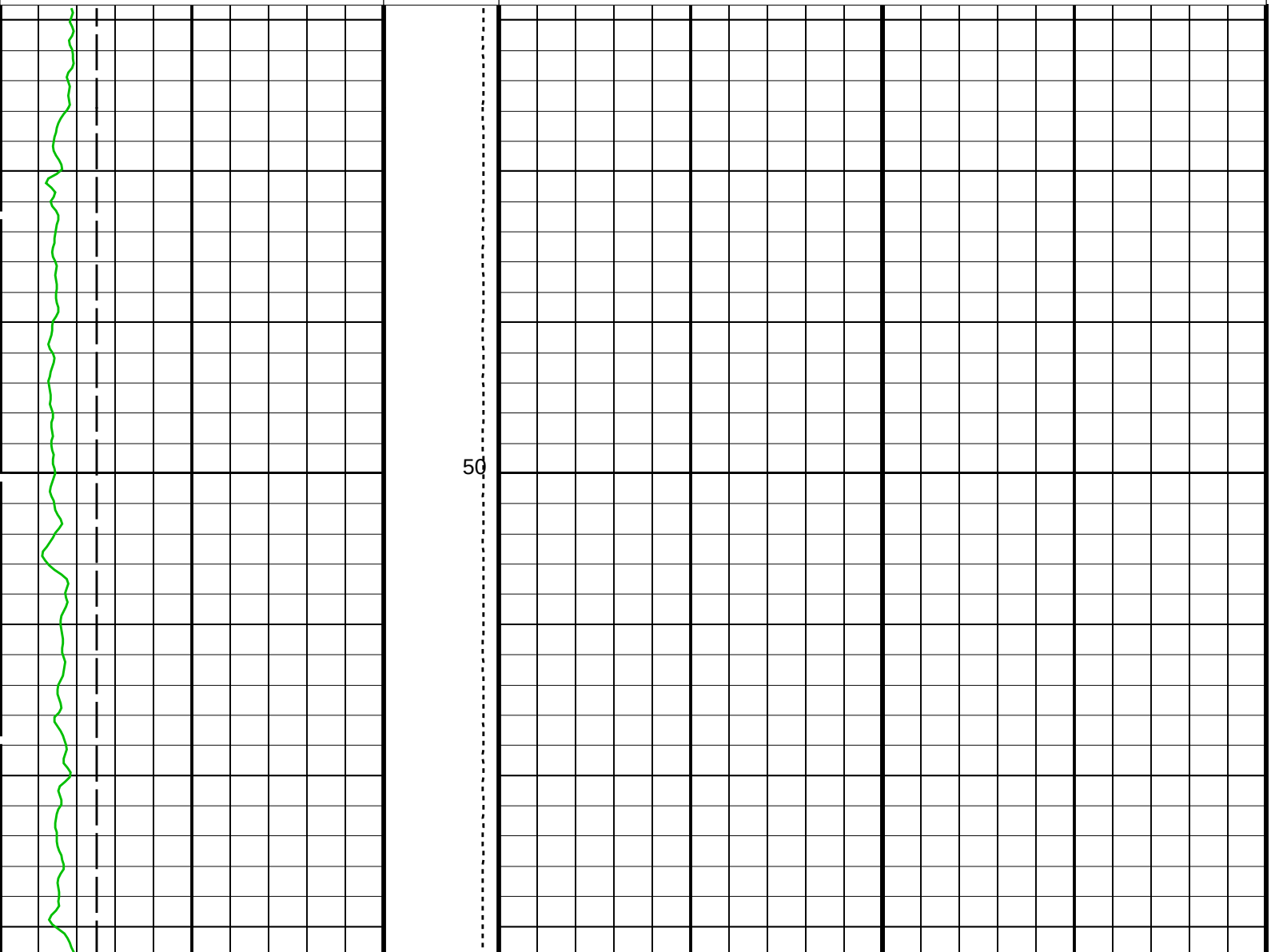
Std. Res. Density Standoff (DSOZ)
65 (MM) 0

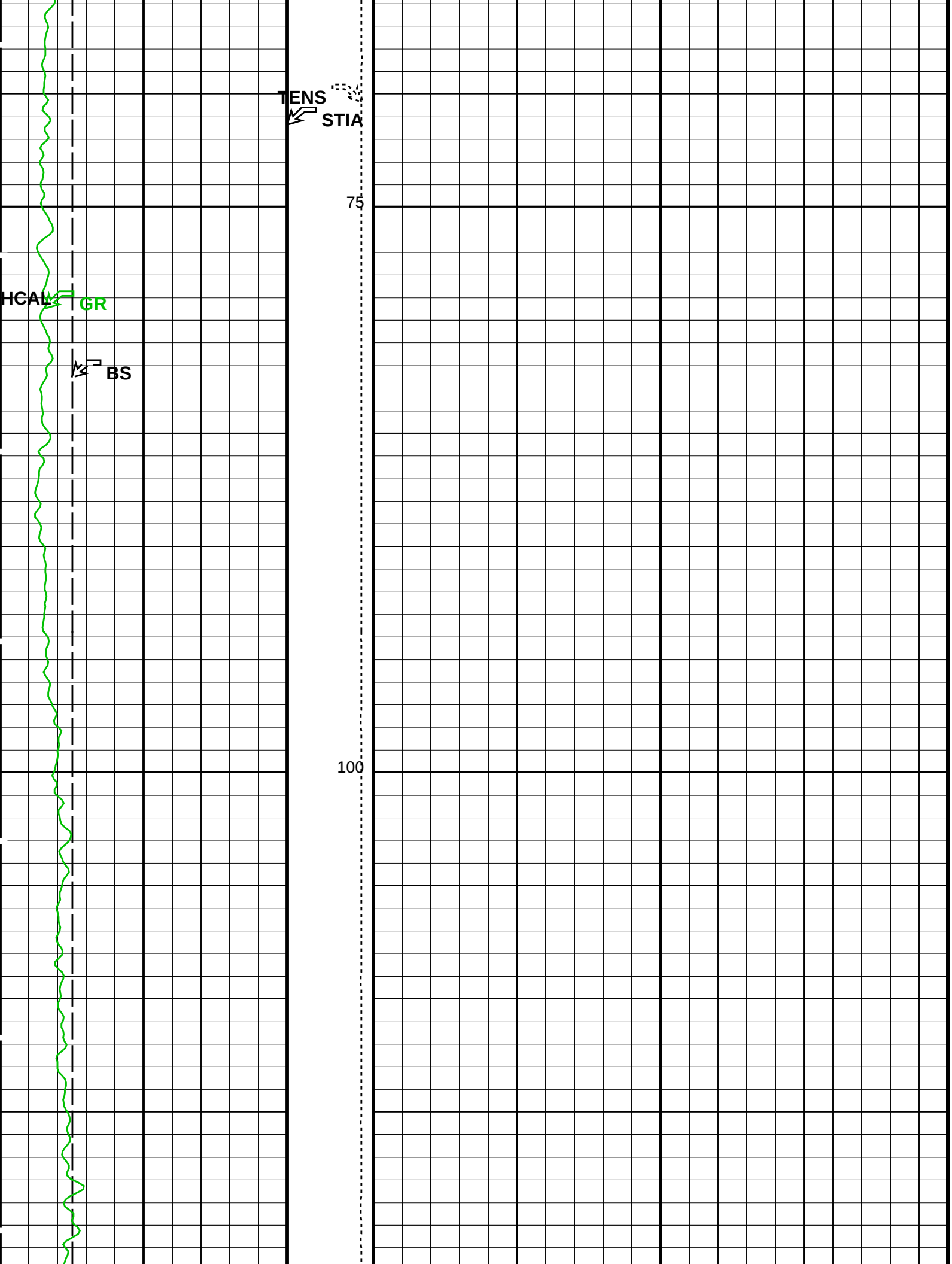
Std. Res. Formation Density (RHOZ)
1.95 (G/C3) 2.95

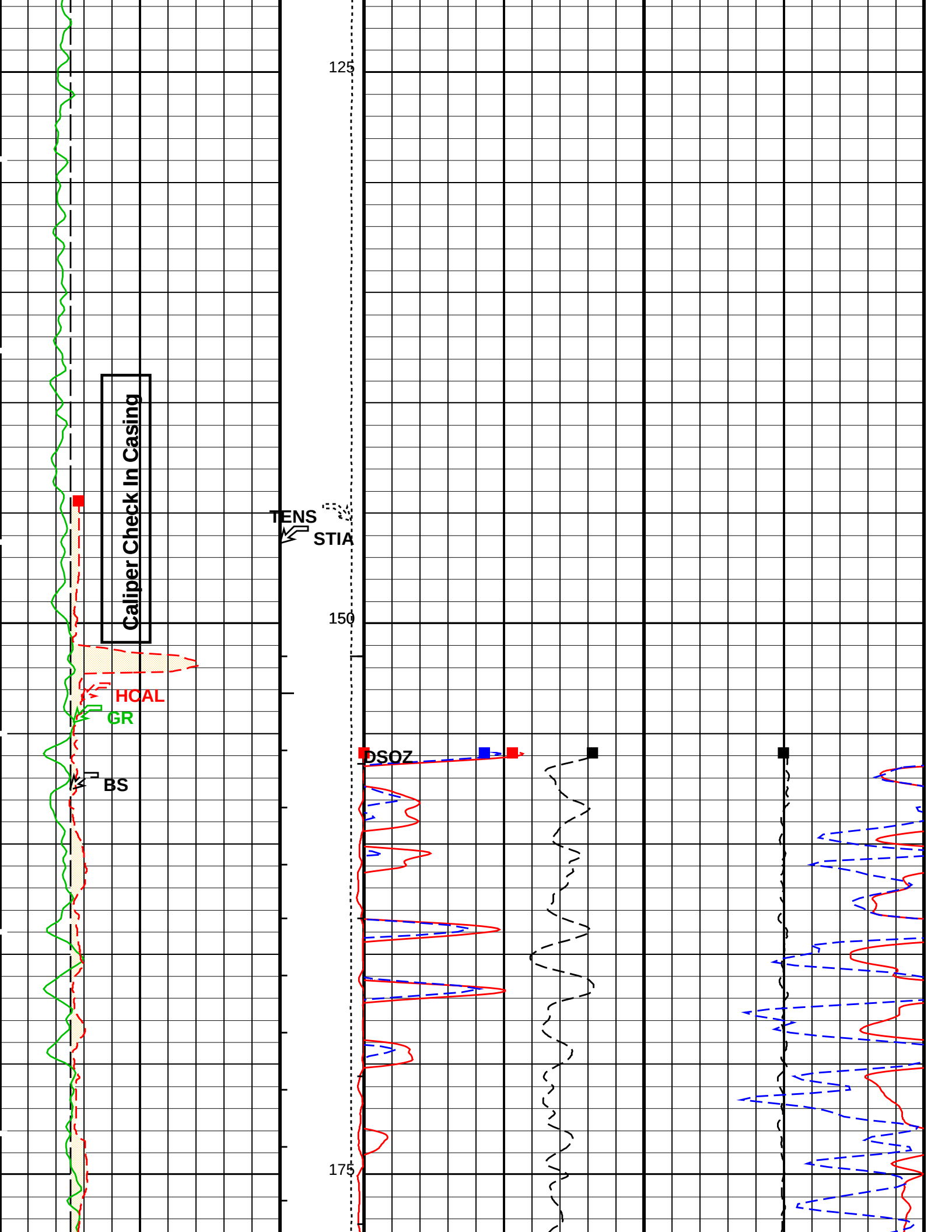
Bit Size (BS)
6 (IN) 16

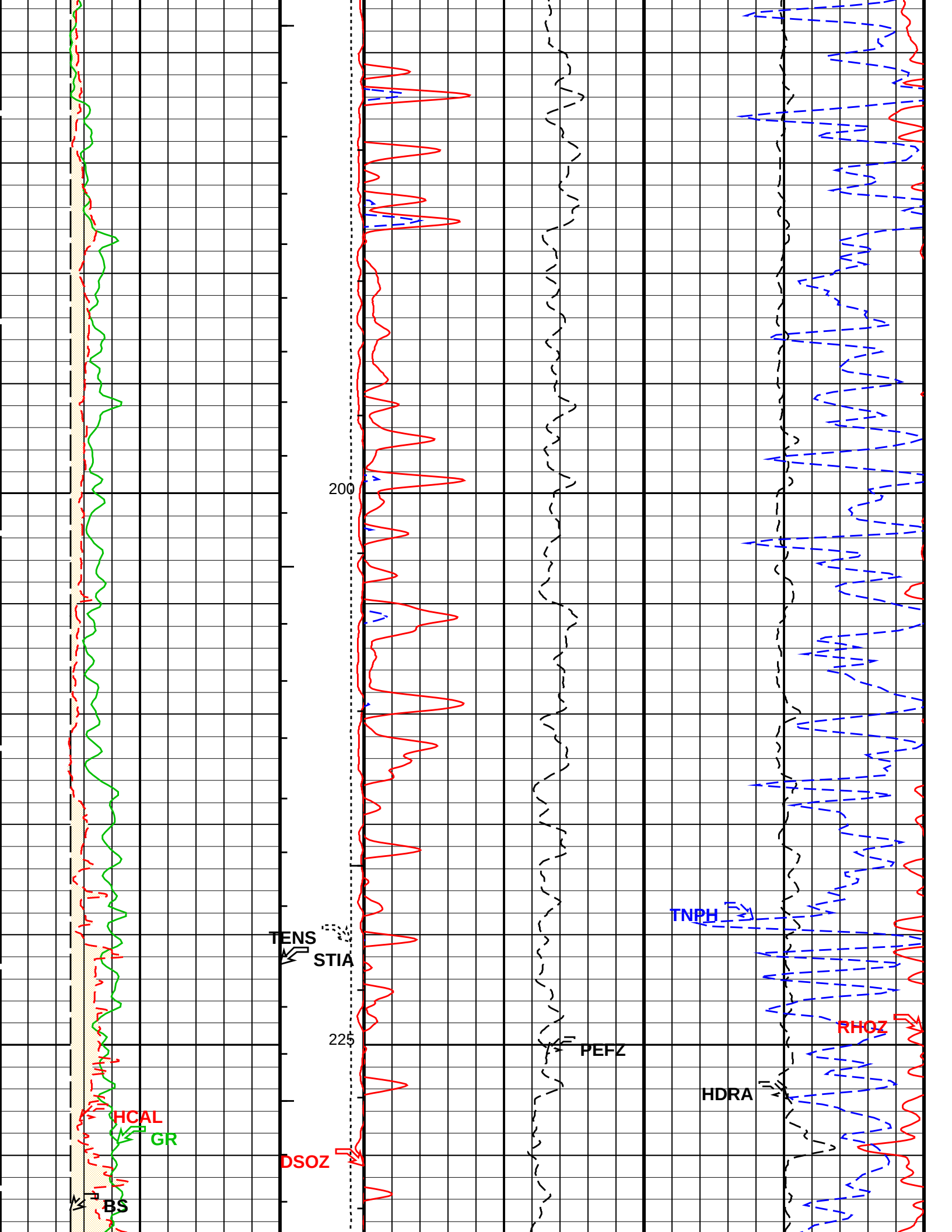
Tension (TENS)
(LBF)
10000 0

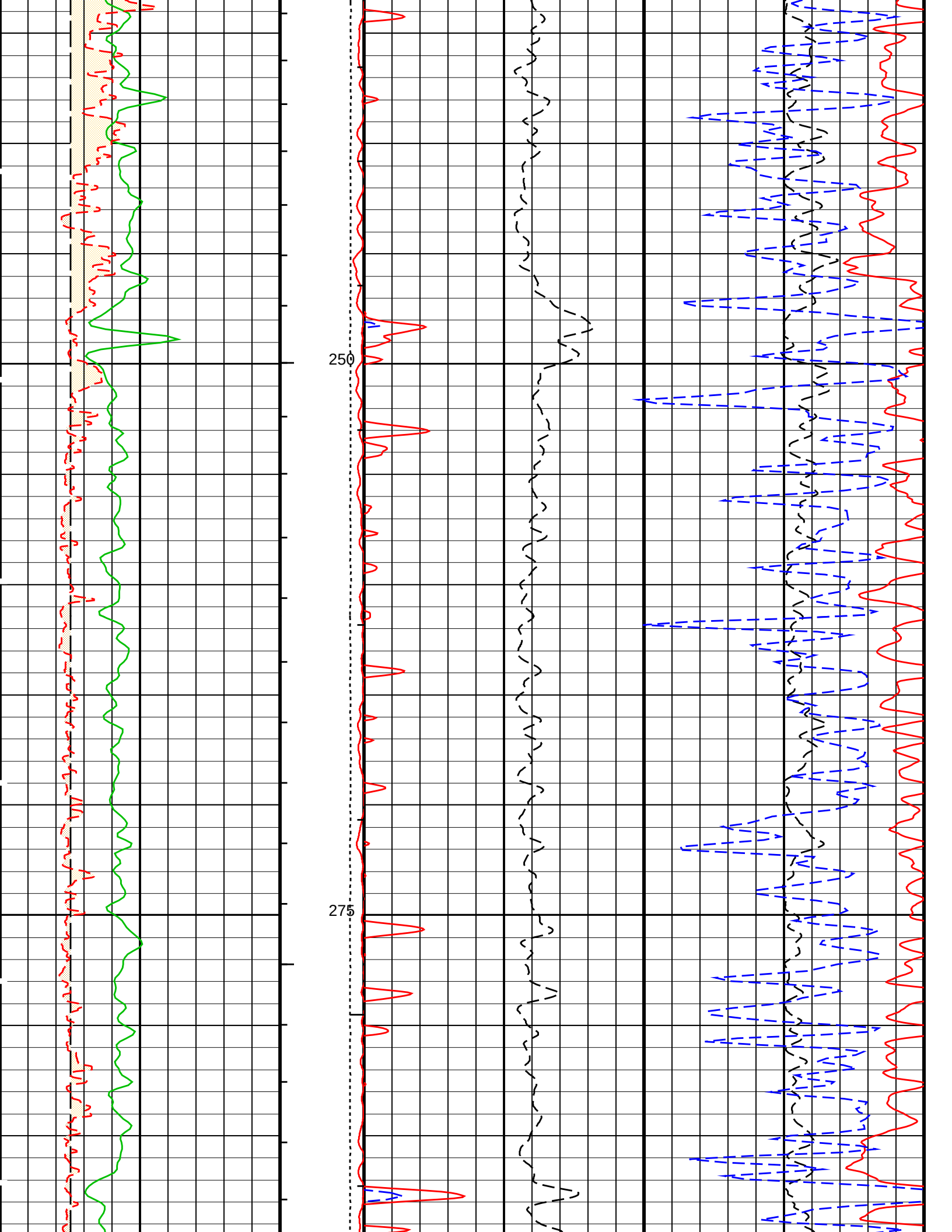
Std. Res. Formation Pe (PEFZ)
0 (−−−− 10

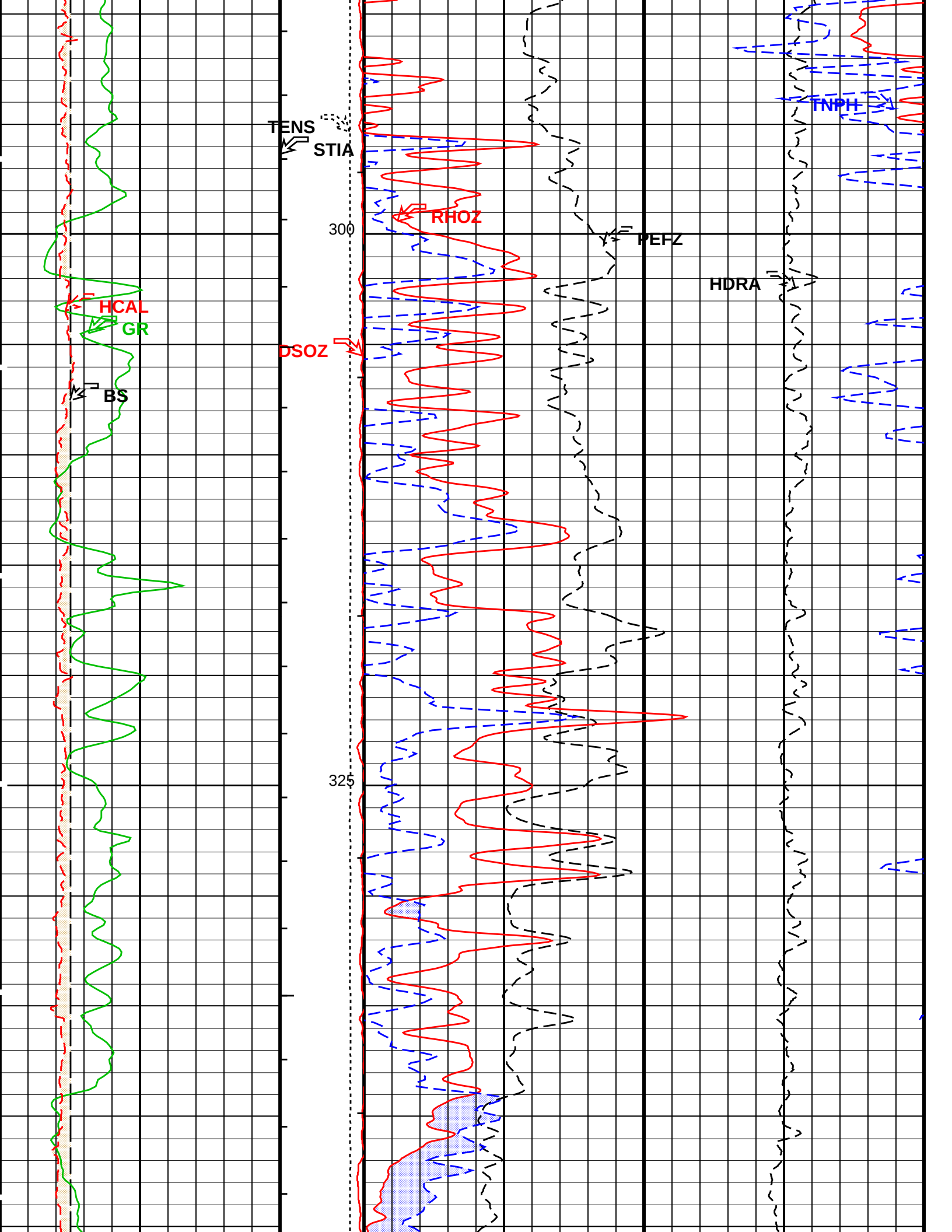


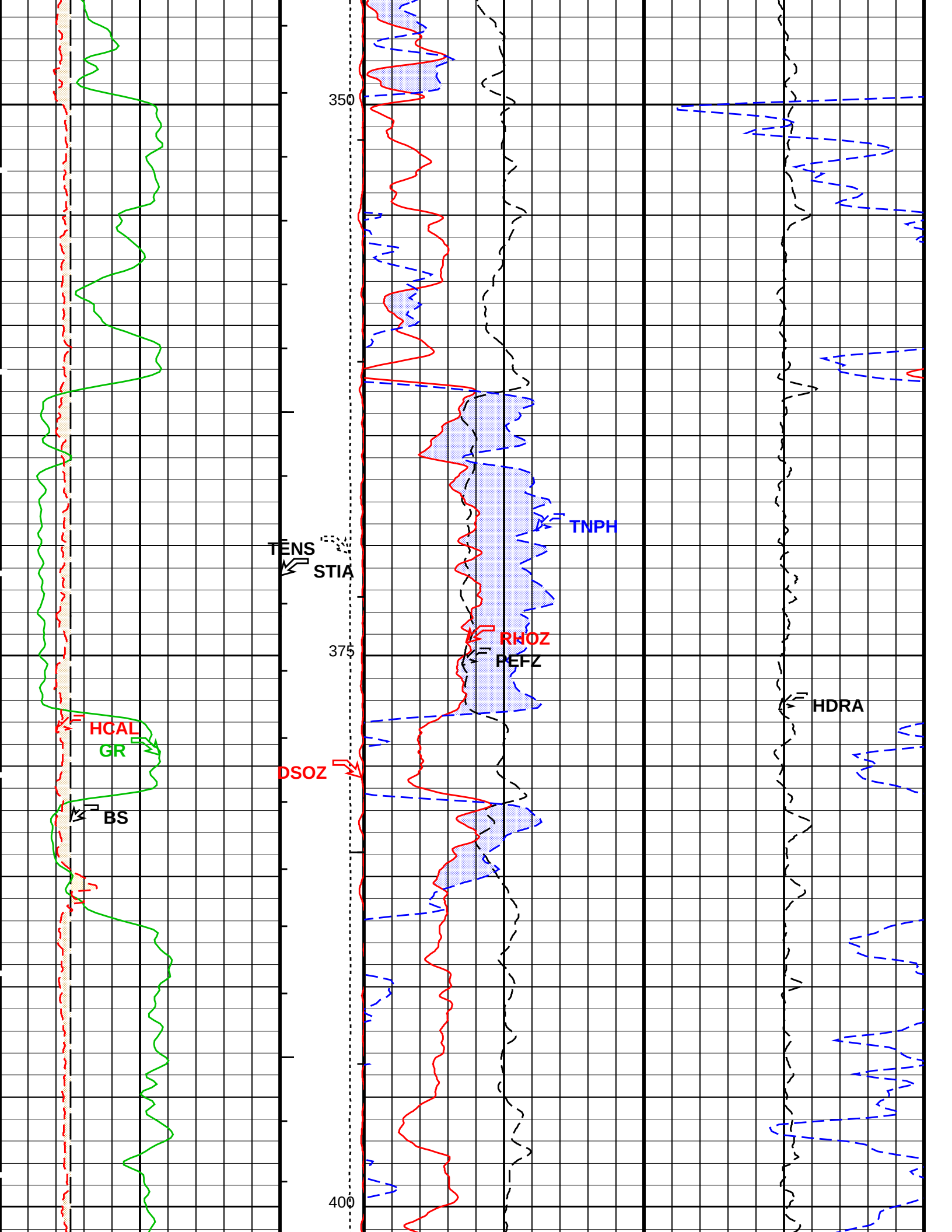

TENS
STIA
75
HCAL
GR
BS
100

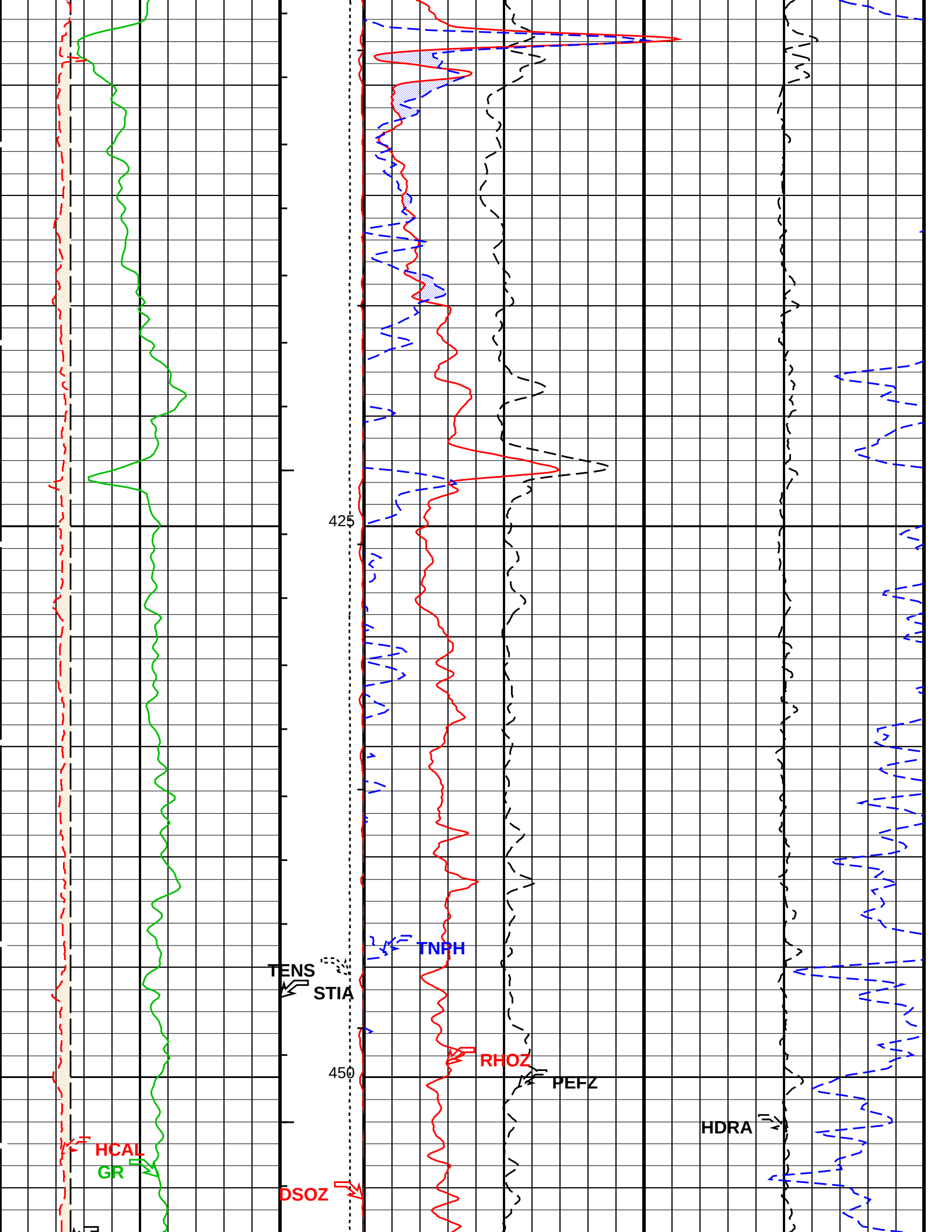

125
150
175
Caliper Check In Casing
TENS
STIA
HCAL
GR
BS
DSOZ

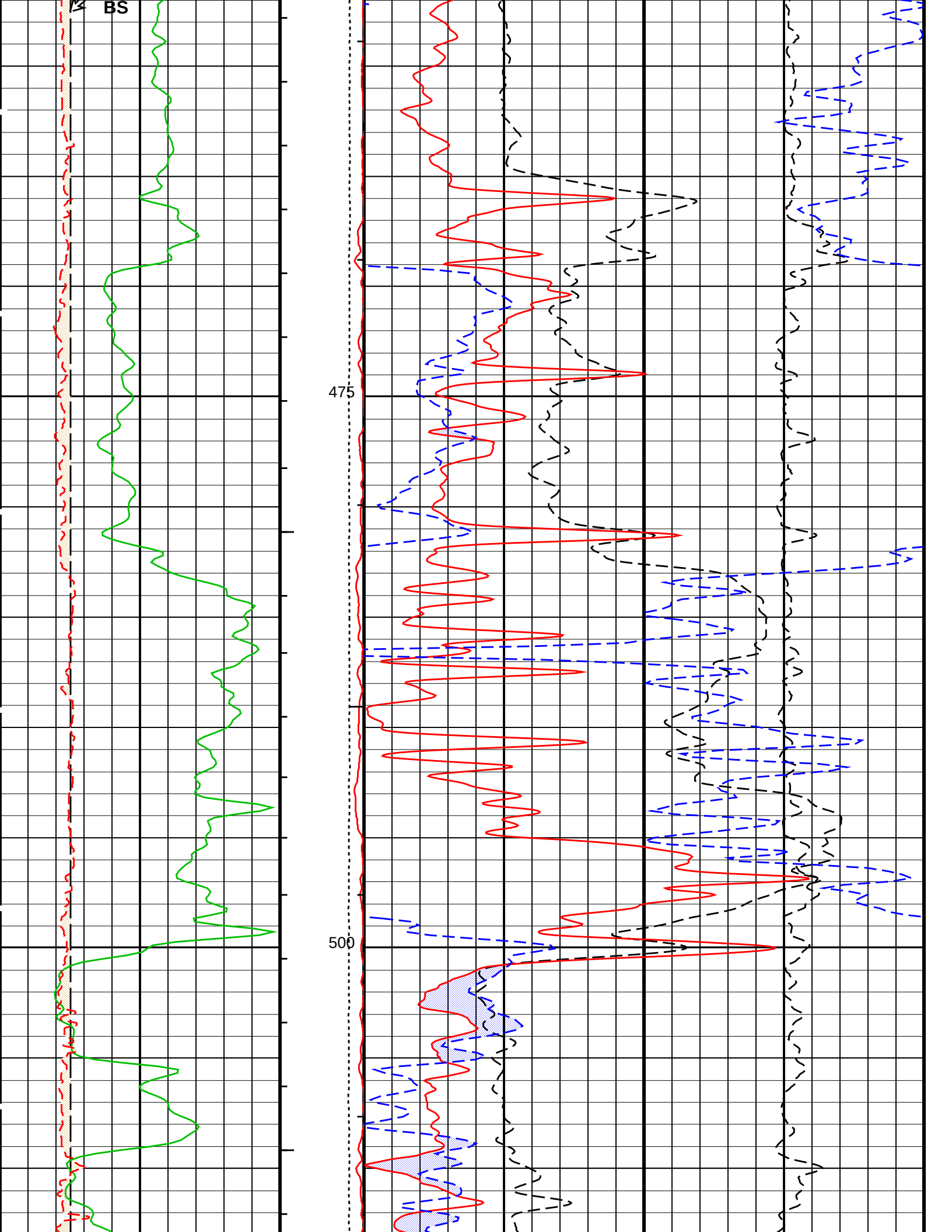

200
225
TENS
STIA
TNPH
RHOZ
PEFZ
HDRA
HCAL
GR
DSOZ
BS

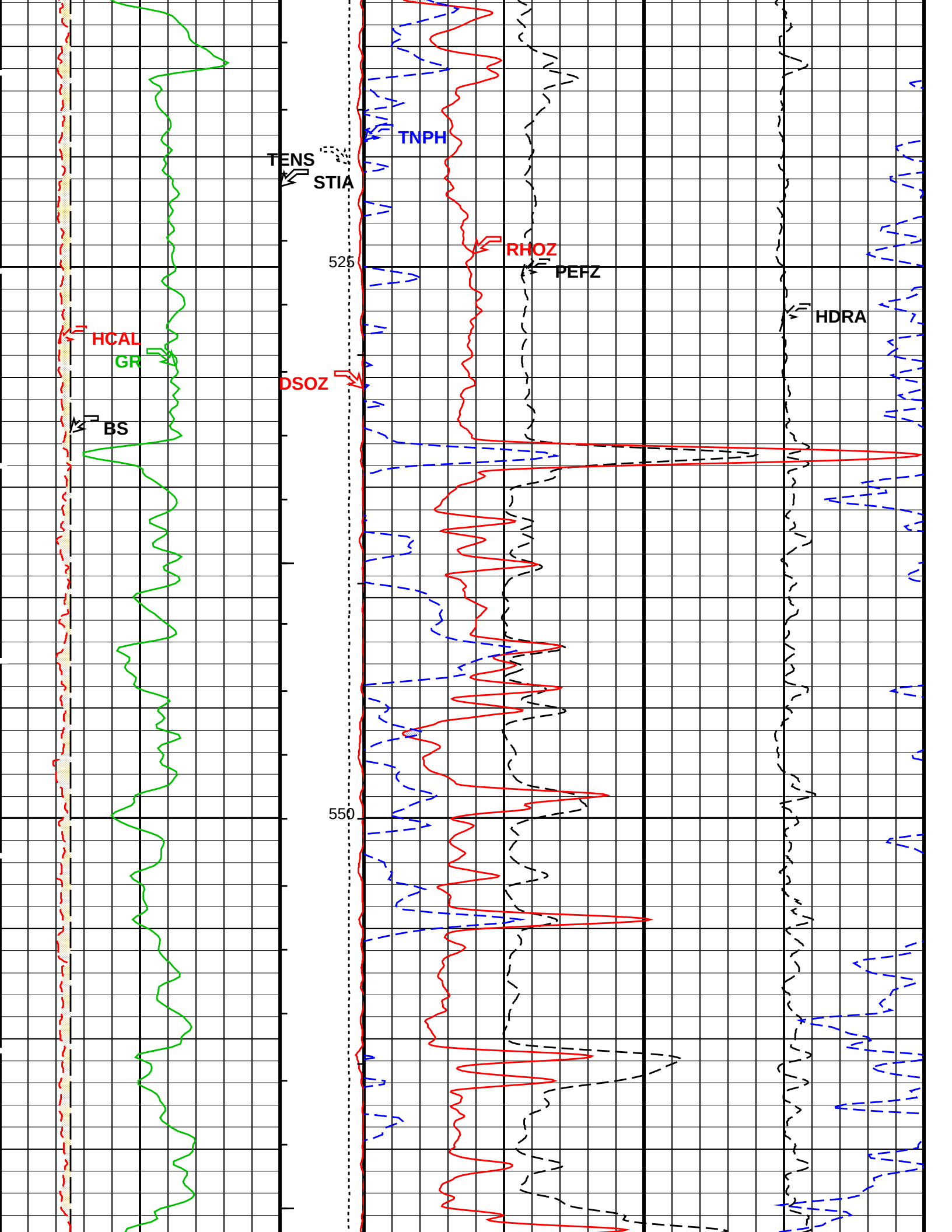

250
275

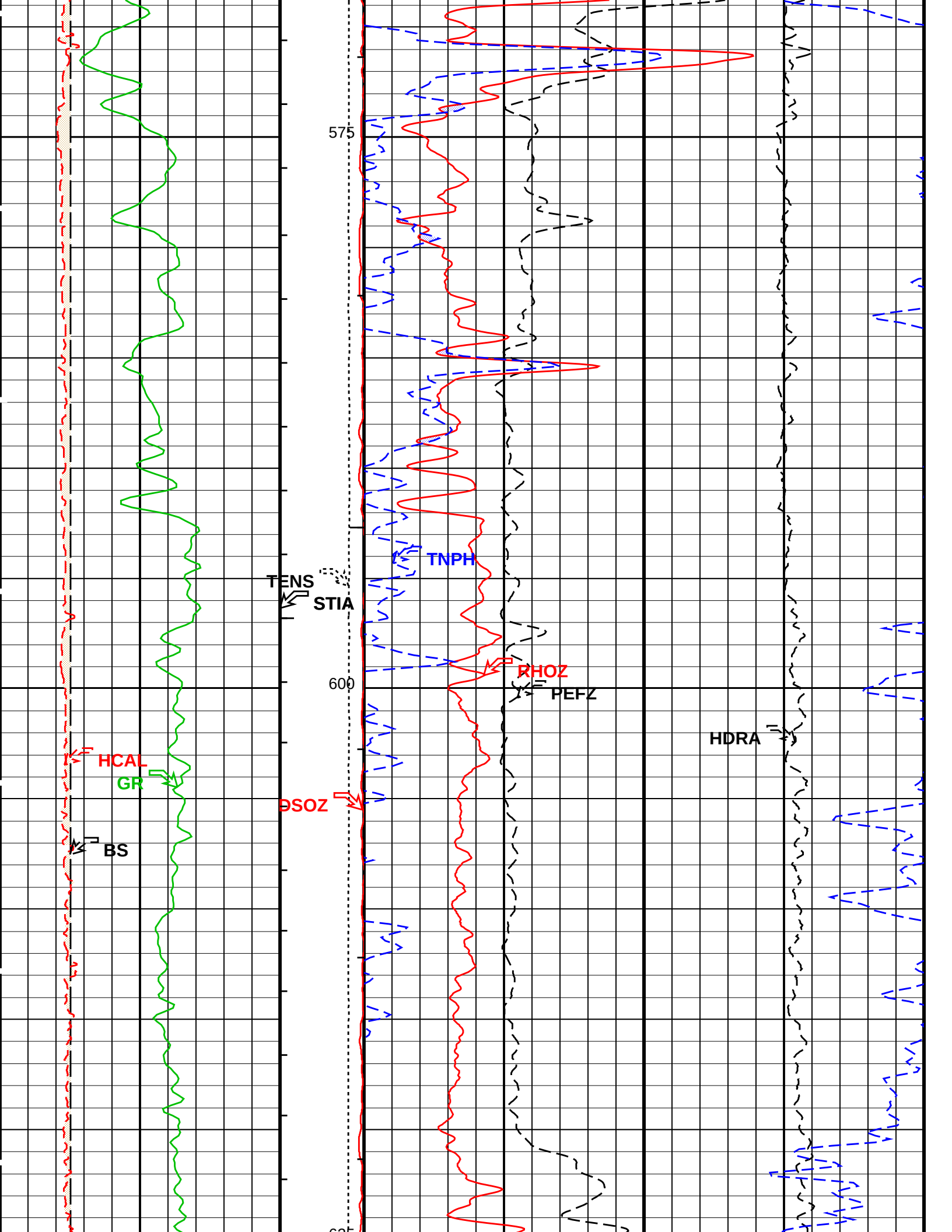

TENS
STIA
RHOZ
TNPH
300
PEFZ
HDRA
HCAL
GR
DSOZ
BS
325

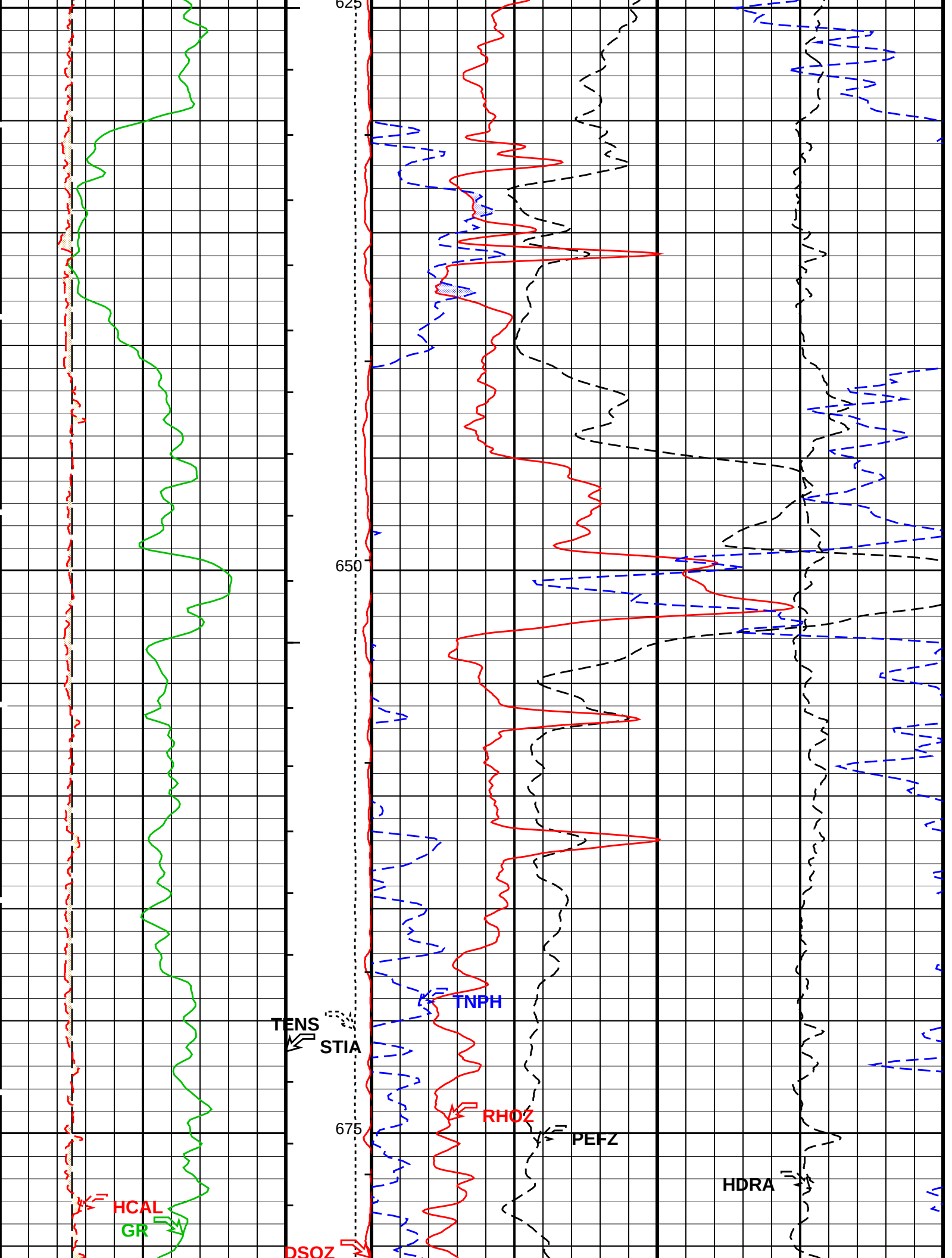

350
375
400
TENS
STIA
TNPH
RHOZ
PEFZ
HDRA
HCAL
GR
DSOZ
BS

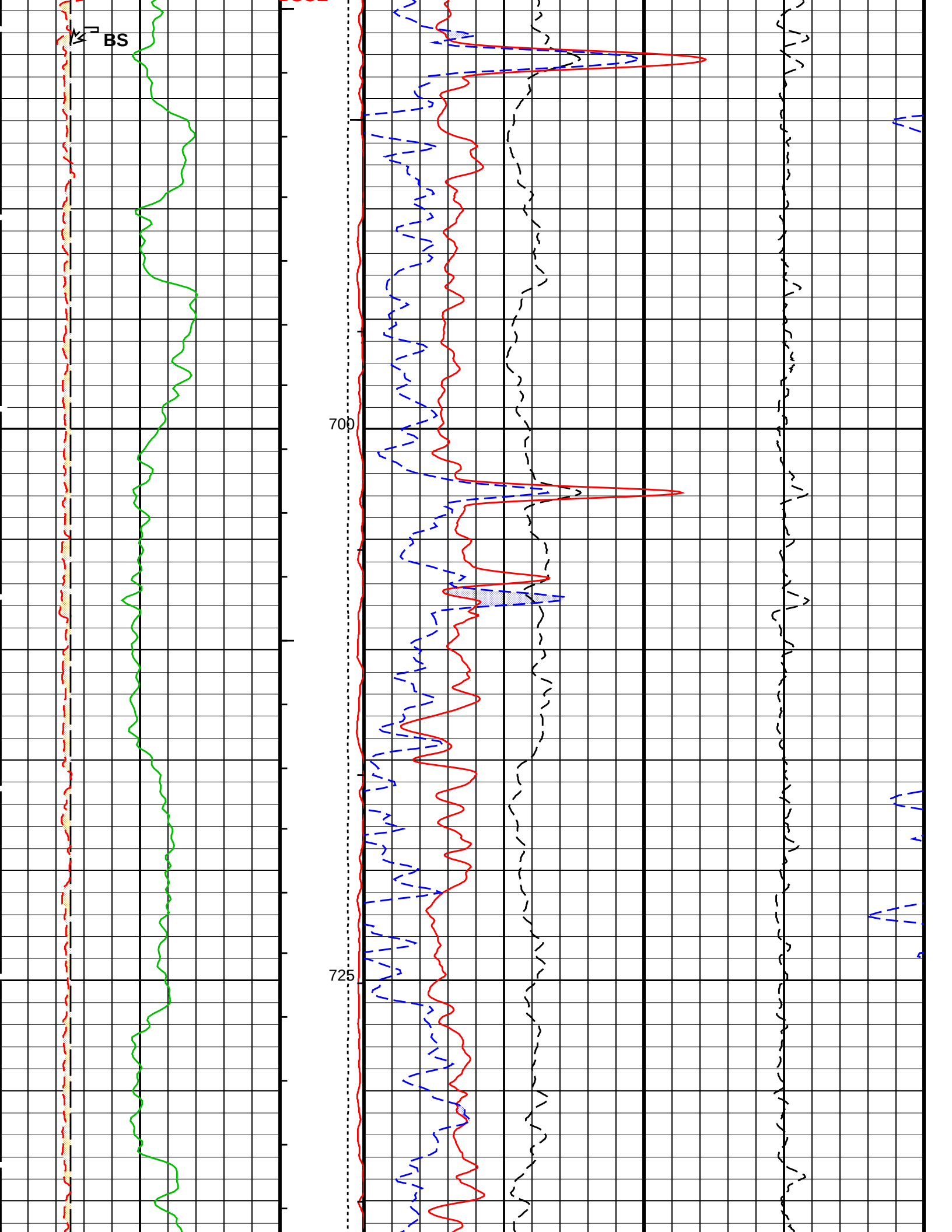

425
450
TENS
STIA
TNPH
RHOZ
PEFZ
HDRA
HCAL
GR
DSOZ

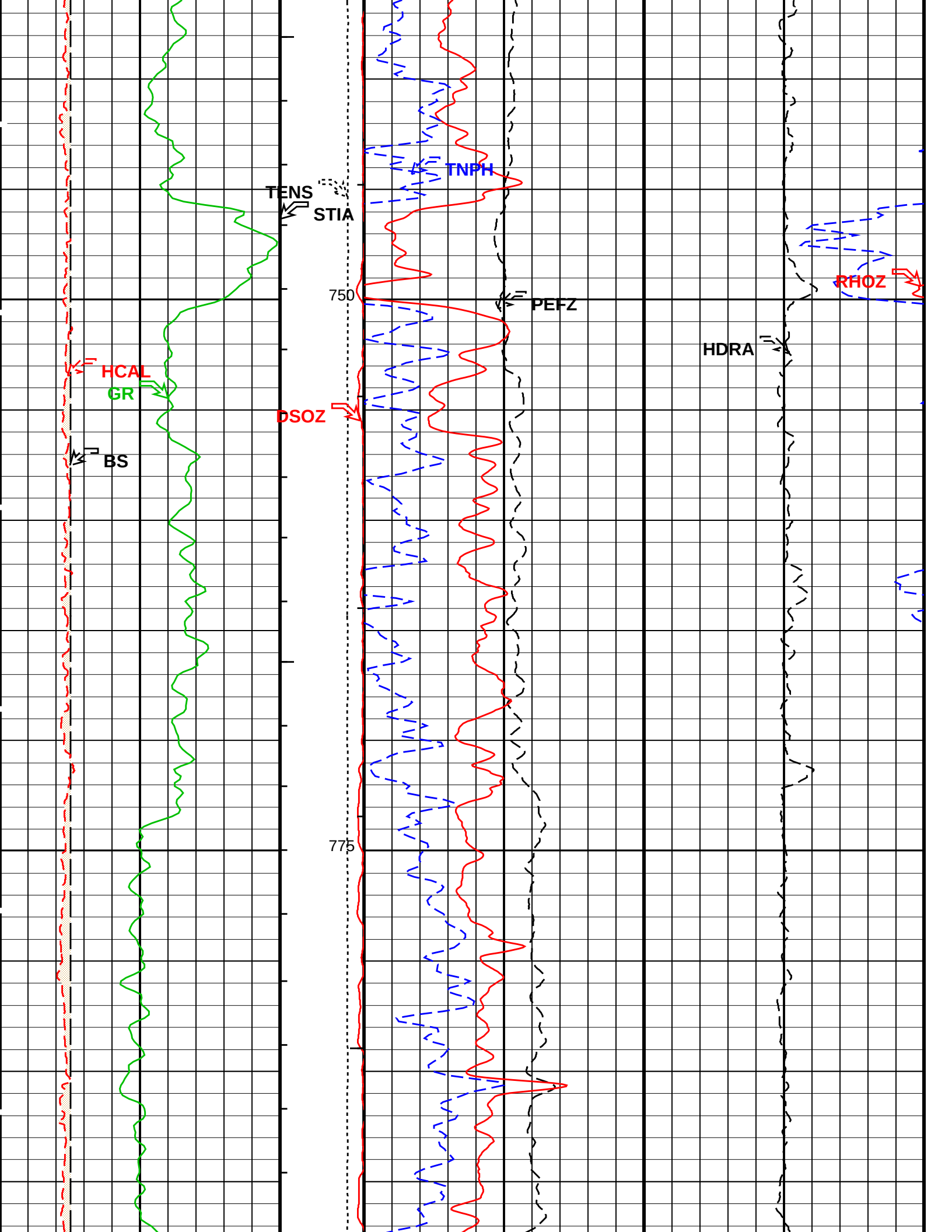

BS
475
500

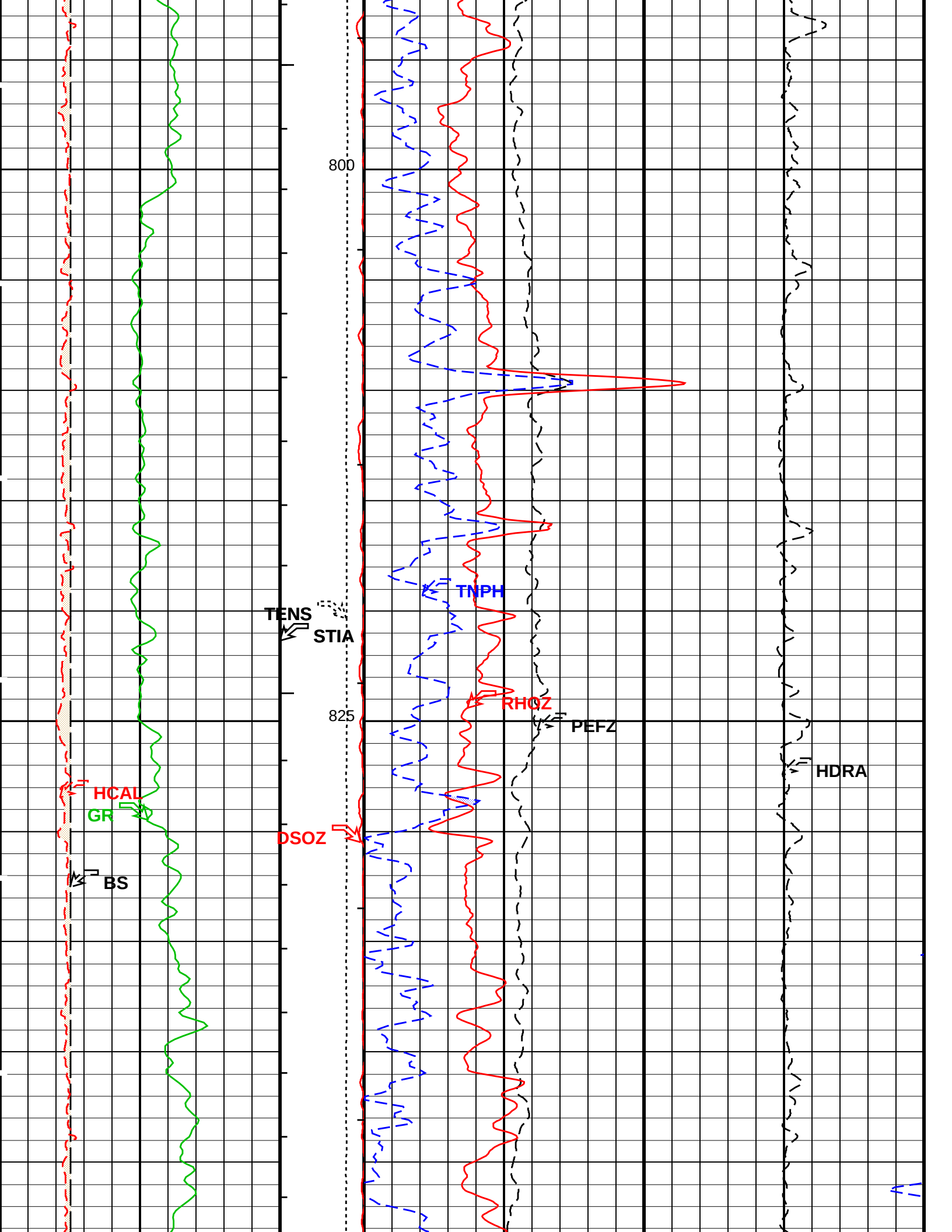

TNPH
TENS
STIA
RHOZ
525
PEFZ
HDRA
HCAL
GR
DSOZ
BS
550

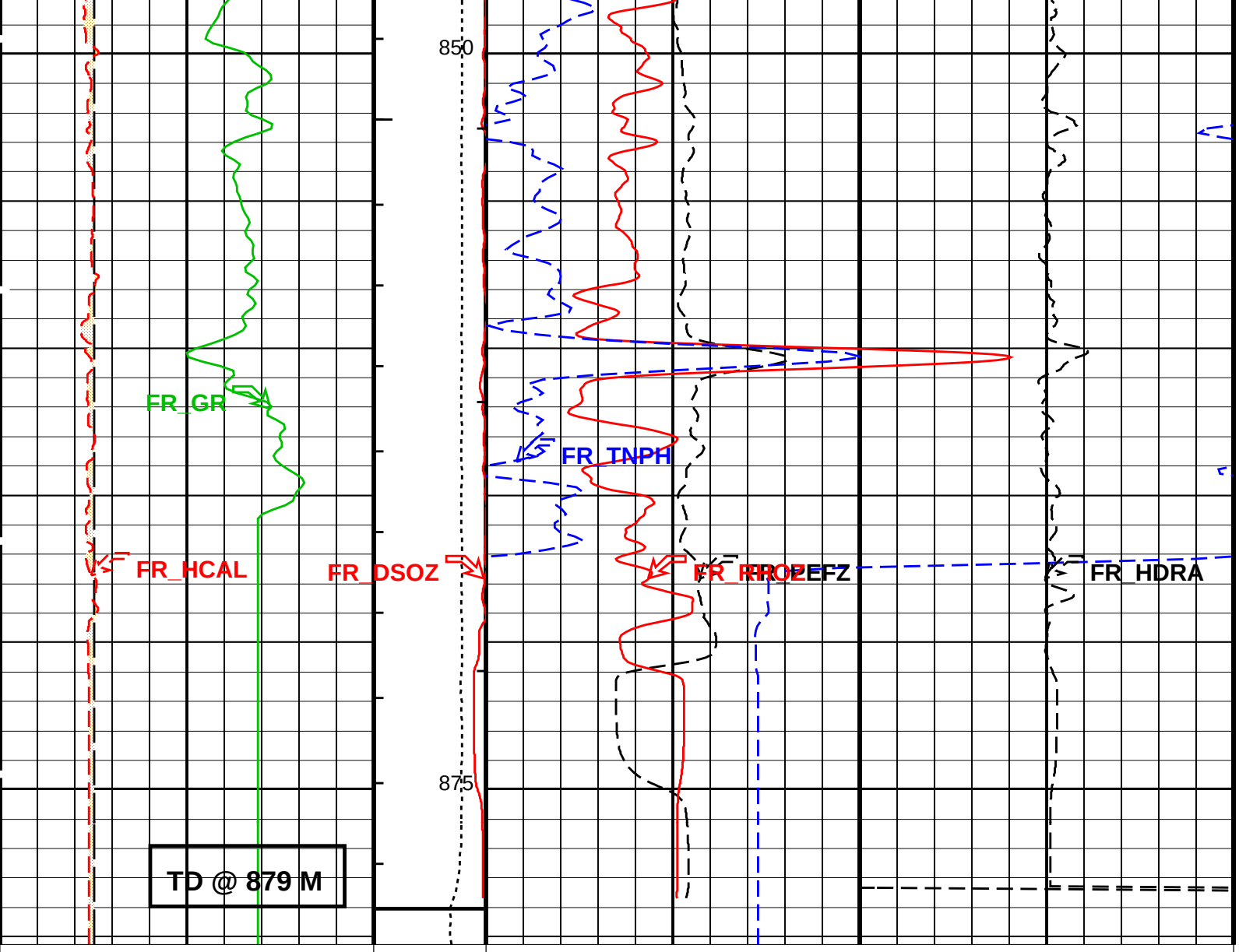

575
600
TENS
STIA
TNPH
RHOZ
PEFZ
HDRA
HCAL
GR
DSOZ
BS


625
650
675
TENS
STIA
TNPH
RHOZ
PEFZ
HDRA
HCAL
GR
DSOZ


BS
700
725


TENS
STIA
TNPH
750
PEFZ
RHOZ
HDRA
HCAL
GR
DSOZ
BS
775


800
825
TENS
STIA
TNPH
RHOZ
PEFZ
HDRA
HCAL
GR
DSOZ
BS



Bit Size (BS) 6 (IN) 16	Tension (TENS) (LBF) 10000 0	Std. Res. Formation Pe (PEFZ) 0 (---- 10
Gamma Ray (GR) 0 (GAPI) 150	Std. Res. Density Standoff (DSOZ) 65 (MM) 0	Std. Res. Formation Density (RHOZ) 1.95 (G/C3) 2.95
HILT Caliper (HCAL) 6 (IN) 16		Env.Corr.Thermal Neutron Porosity (TNPH) 0.45 (V/V) −0.15
Washout From BS to HCAL		Crossover From RHOZ to TNPH
Mudcake From HCAL to BS		Density Correction (HDRA) −0.25 (G/C3) 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

DLIS Name	Description	Value	
	HALS−B: HILT Azimuthal Laterolog Sonde B		
	HALS Type of Image	Conductivities	
A2EX	HALS−B A2 Extended (Groningen effect)	OFF	
AGOS	HALS−GPIT OFFSET	−90	IN
ARIP_LTS	HALS Long Tool String Correction	OFF	
ARIP_SHOULDER	HALS Shoulder Correction	OFF	
BHCC	HALS Borehole Correction	ON	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	48	DEGC
DHOP	Diameter & Eccentering used in HALS Borehole Corrections	Caliper_Eccentered	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	1	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRCC	HALS Groningen Correction	OFF	
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HLAC	HALS−B Loop A Coefficient	LOW	
HLMO	HALS Logging Mode	HIRES	
HMSO	HALS Mechanical Standoff	1.5	IN
HRUN	HALS−B Record Uncalibrated Channels	NO	
IMOS	HALS Image Orientation	OFF	
LIMP	HALS Left Image Processing	DeepRaw	
LOP1	HALS−B Mode 1 Loop Mode	OFF	
LOP2	HALS−B Mode 2 Loop Mode	OFF	
LOP3	HALS−B Mode 3 Loop Mode	OFF	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
RIMP	HALS Right Image Processing	ShallowRaw	
RTCOMP	HALS Rt Computation	Hals_Highres	
RTRE	HALS Resistivity Threshold	100000	OHMM
SHT	Surface Hole Temperature	15	DEGC
SPCO	HALS−B Special Power Connection	OFF	
TCOR	HALS TLC Correction	OFF	
UNSPK	HALS Despiking Filter Option	OFF	
UNSPK_THOLD	HALS Despiking Filter Threshold (in %)	20	%
UNSPK_WINDOW	HALS Despiking Filter Window (inches)	6	IN
	DSLT−H: Digitizing Sonic Logging Tool		
	Telemetry Mode	DSLC_FTB	
	DSLT Firing Mode	SDDB	
AGC	Automatic Gain Control Status	ON	
AMSG	Auxiliary Minimum Sliding Gate	140	US
BILI	Bond Index Level for Zone Isolation	0.8	
CBAF	CBL Adjustment Factor	1	
CBCF	CBL Correction Factor	4	
CBLG	CBL Gate Width	45	US
CDTS	C−Delta−T Shale	100	US/F
CSTR	Compressive Strength of Cement	0	KPAA
DDEL	Digitizing Delay	0	US
DETE	Delta−T Detection	E2	
DFAD	Digital First Arrival Detection Switch	HOST	
DIVL	DSLT Depth Sampling Interval	20	
DRCS	DSLT DLIS Recording Size	180	
DSIN	Digitizing Sample Interval	10	
DTCM	Delta−T Computation Mode	FULL	
DTF	Delta−T Fluid	189	US/F
DTFS	DSLC Telemetry Frame Size	396	
DTM	Delta−T Matrix	56	US/F
DWCO	Digitizing Word Count	180	
FCF	CBL Fluid Compensation Factor	1	
GAI	Manual Gain	40	
GOBO	Good Bond	2	MV
ITTS	Integrated Transit Time Source	DT	
MAHTR	Manual High Threshold Reference	120	
MCI	Minimum Cemented Interval for Isolation	4.51523	M
MGAI	Maximum Gain	60	
MIGA	Minimum Gain	1	
MNHTR	Minimum High Threshold Reference	100	
MODE	Sonic Firing Mode	SDDB	
MSA	Minimum Sonic Amplitude	15.924	MV
NMSG	Near Minimum Sliding Gate	140	US
NMXG	Near Maximum Sliding Gate	970	US
NUMP	Number of Detection Passes	2	
RATE	Firing Rate	R15	
RDFA	Reset DFAD	OFF	
SDTH	Switch Down Threshold	20000	
SFAF	Sonic Formation Attenuation Factor	10	DB/M
SGAD	Sliding Gate Status	ON	
SGAI	Selectable Acquisition Gain	AUTO	
SGCL	Sliding Gate Closing Delta−T	140	US/F
SGCW	Sliding Gate Closing Width	25	US
SGDT	Sliding Gate Delta−T	40	US/F
SGW	Sliding Gate Width	110	US
SLEV	Signal Level for AGC	5000	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	

SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DT	
SUTH	Switch Up Threshold	1000	
VDLG	VDL Manual Gain	40	
WAGC	Waveform AGC Allow/Disallow	OFF	
WGAI	Waveform Manual Gain	20	
WGDT	Waveform Gain Delta−T	240	US/F
WGIN	Waveform Gain Interval	2540	US
WMOD	Waveform Firing Mode	FULL	
HILTB−FTB: High resolution Integrated Logging Tool−DTS			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	48	DEGC
BSCO	Borehole Salinity Correction Option	YES	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	1	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HACPP	Accelerometer PROM Presence	PRESENT_DOWNHOLE	
HART	Accelerometer Reference Temperature	20	DEGC
HDCOD	HILT Density Coal detection	2	G/C3
HDSAD	HILT Density Salt detection	2.1	G/C3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	G/C3
HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	45	PU
HNSAD	HILT Neutron Salt detection	5	PU
HPHIECUT	HILT effective Porosity Cutoff	5	PU
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	YES	
MCOR	Mud Correction	BARI	
MDEN	Matrix Density	2.71	G/C3
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e−005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e−005	OHMS
MHCC	MCFL High Contrast Correction Switch	NO	
MPOF	MCFL Processing Operation Mode	ON	
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
PHIMAX	HILT max porosity	35	PU
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	15	DEGC
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	NO	
HNGS−BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	0.949873	
BAR2	HNGS Detector 2 Barite Constant	0.954316	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	48	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	USER	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	1	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	0.00208055	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	

MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	−999.25	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	−999.25	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
SHT	Surface Hole Temperature	15	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.982575	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.994701	
BSP: Bridle SP			
SPNV	SP Next Value	0	MV
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	48	DEGC
FCD	Future Casing (Outer) Diameter	7	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	1	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	15	DEGC
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	0.762	M
TDD	Total Depth − Driller	889.00	M
TDL	Total Depth − Logger	879.00	M
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
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	1.10	G/C3
DO	Depth Offset for Playback	0.2	M
MST	Mud Sample Temperature	12.20	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.2050	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	889	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: Nuclear **Vertical Scale: 1:200** **Graphics File Created: 30−Jun−2004 20:05**

OP System Version: 12C0−301

MCM

HALS−B	12C0−301	DSLT−H	12C0−301
HILTB−FTB	12C0−301	HNGC−A	12C0−301
HNGS−BA	12C0−301	DTC−H	12C0−301
BSP	12C0−301		

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_007LUP	FN:11	PRODUCER	30−Jun−2004 17:55	880.1 M	28.4 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_010PUP	FN:15	PRODUCER	30−Jun−2004 20:05

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Neutron−Density Hi−Resolution 1:200 Scale

MAXIS Field Log

Company: Essential Petroleum Resources Limited **Well: Findra−1**

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_007LUP FN:11	PRODUCER	30−Jun−2004 17:55	880.1 M	28.4 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_008PUP FN:13	PRODUCER	30−Jun−2004 19:55	880.3 M	454.6 M

Integrated Hole/Cement Volume Summary

Hole Volume = 14.91 M3

Cement Volume = 4.34 M3 (assuming 7.00 IN casing O.D.)

Computed from 880.3 M to 454.8 M using data channel(s) HCAL

OP System Version: 12C0−301

MCM

HALS−B	12C0−301	DSLT−H	12C0−301
HILTB−FTB	12C0−301	HNGC−A	12C0−301
HNGS−BA	12C0−301	DTC−H	12C0−301
BSP	12C0−301		

PIP SUMMARY

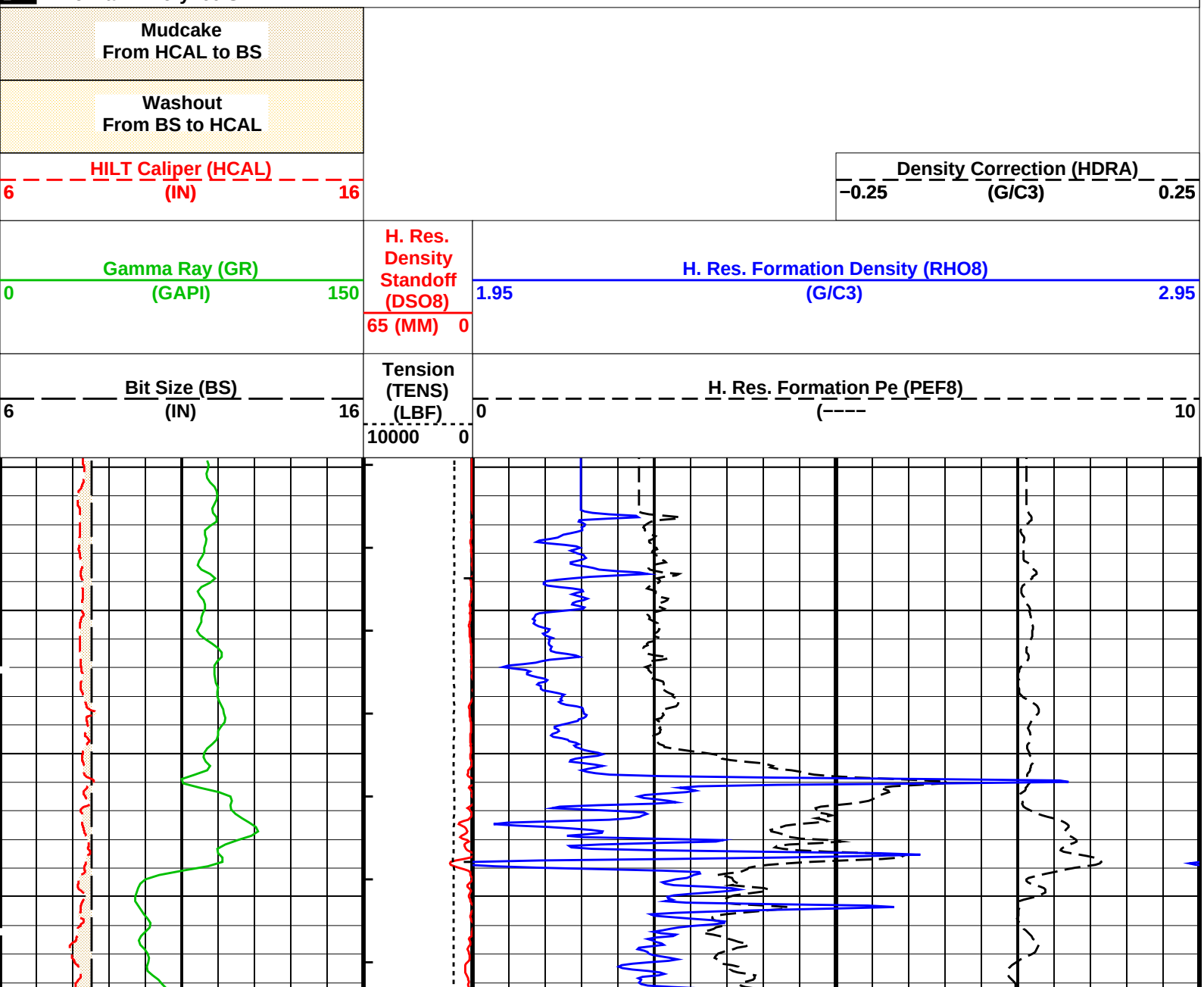
Integrated Hole Volume Minor Pip Every 0.1 M3

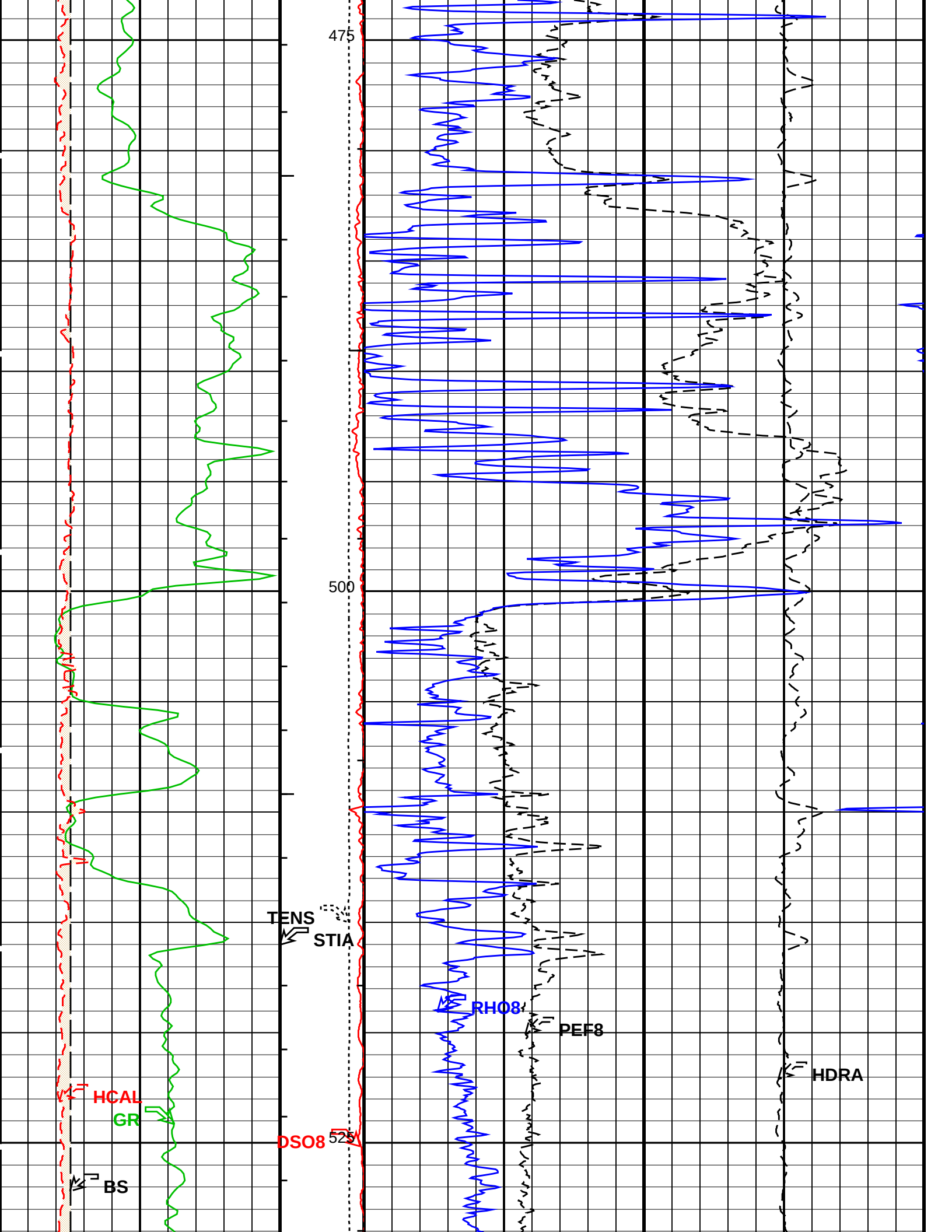
Integrated Hole Volume Major Pip Every 1 M3

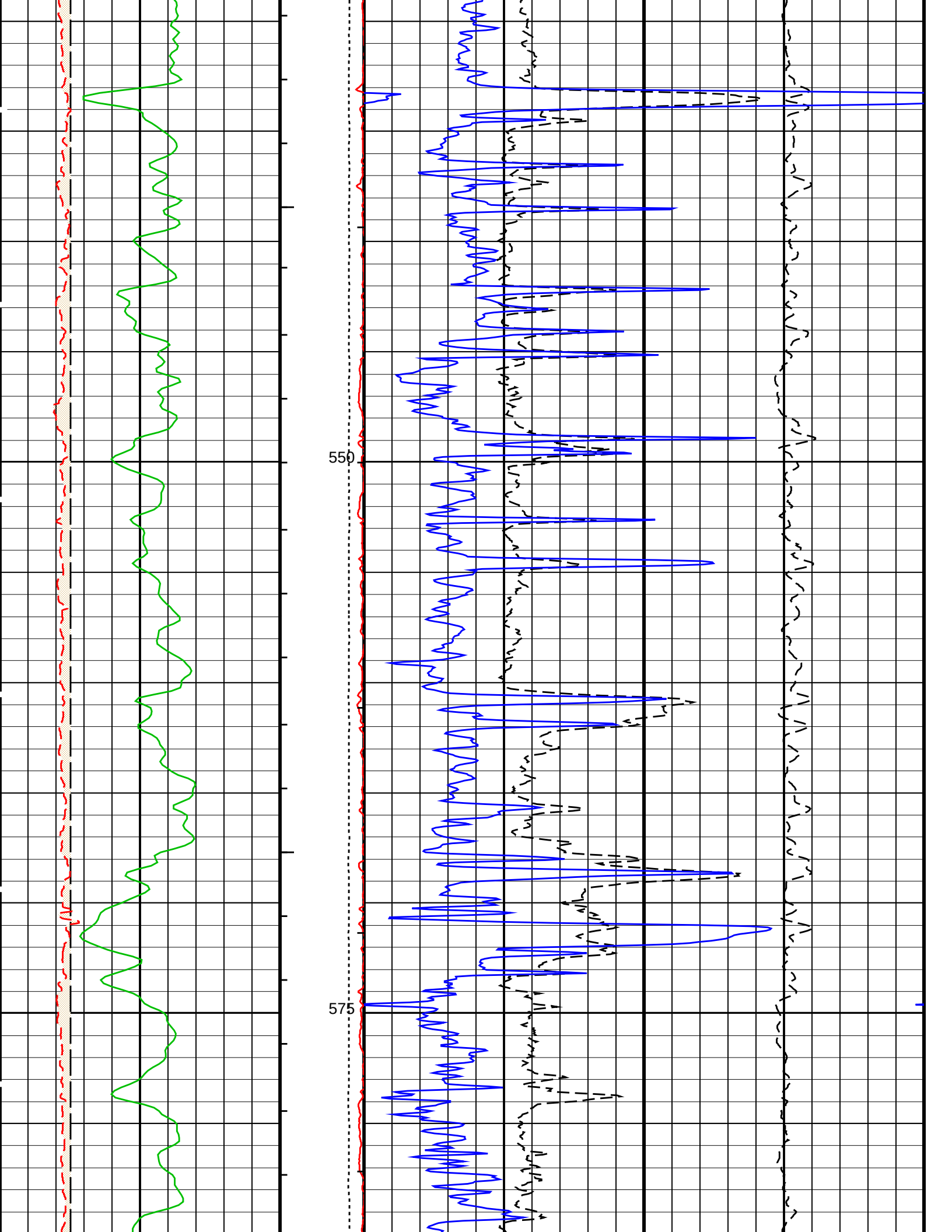
Integrated Cement Volume Minor Pip Every 0.1 M3

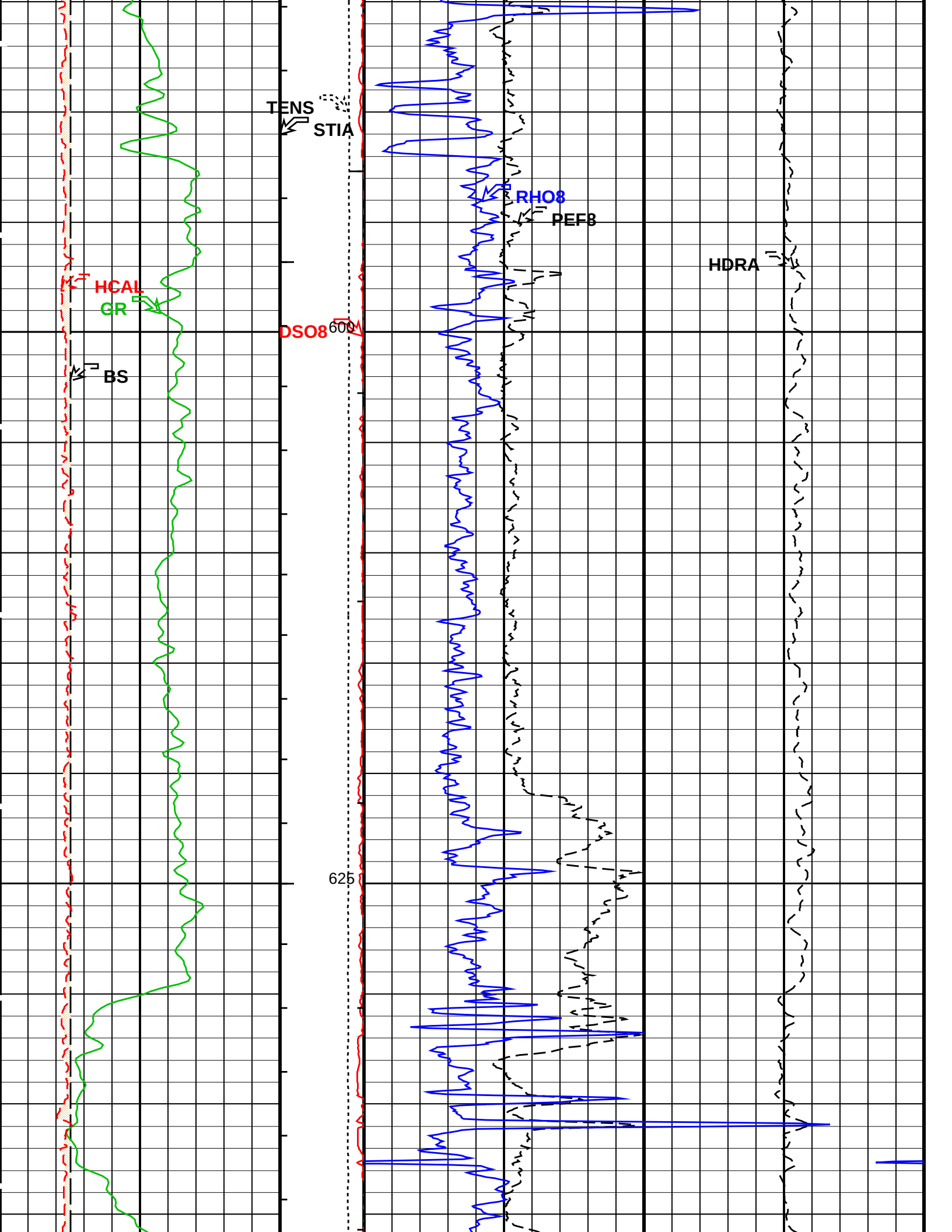
Integrated Cement Volume Major Pip Every 1 M3

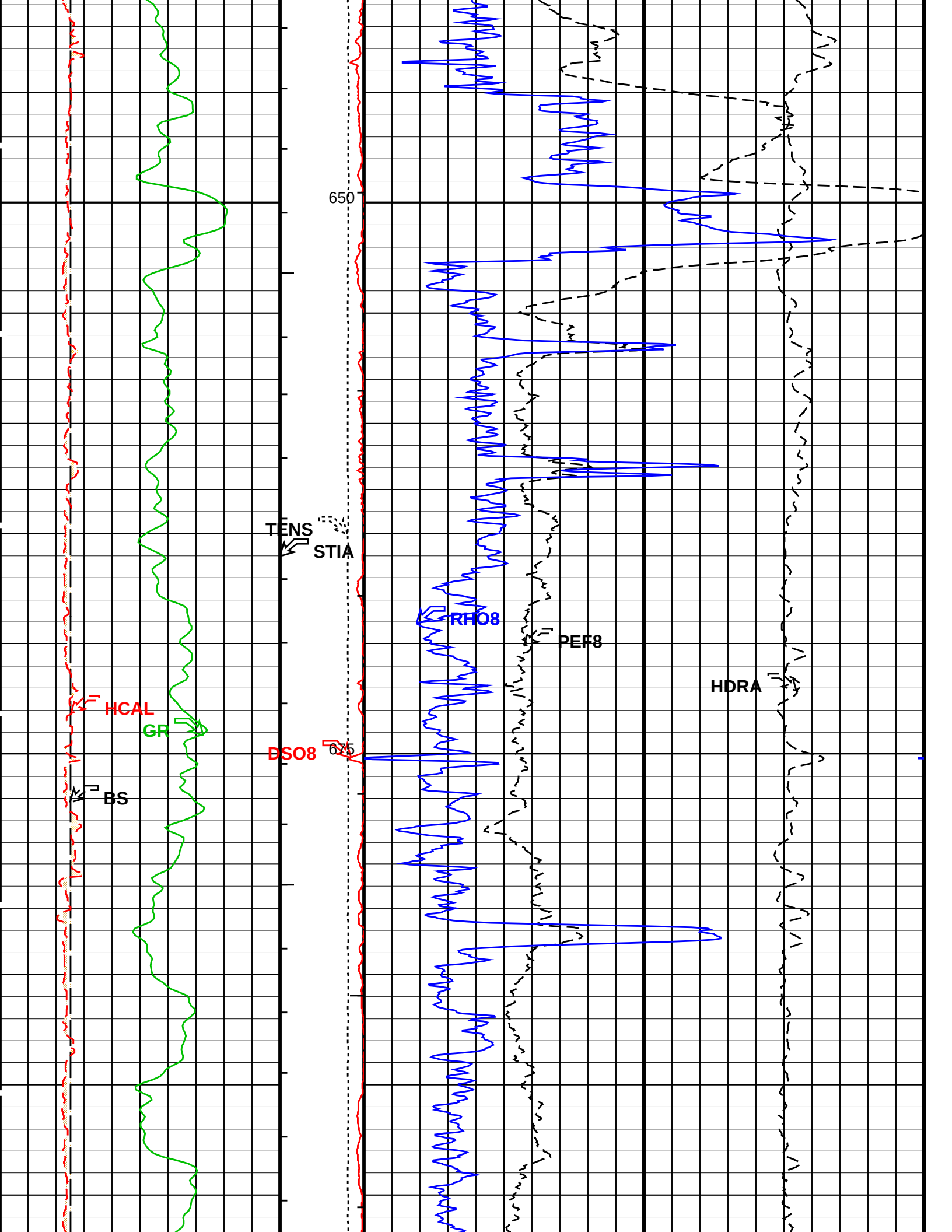
Time Mark Every 60 S

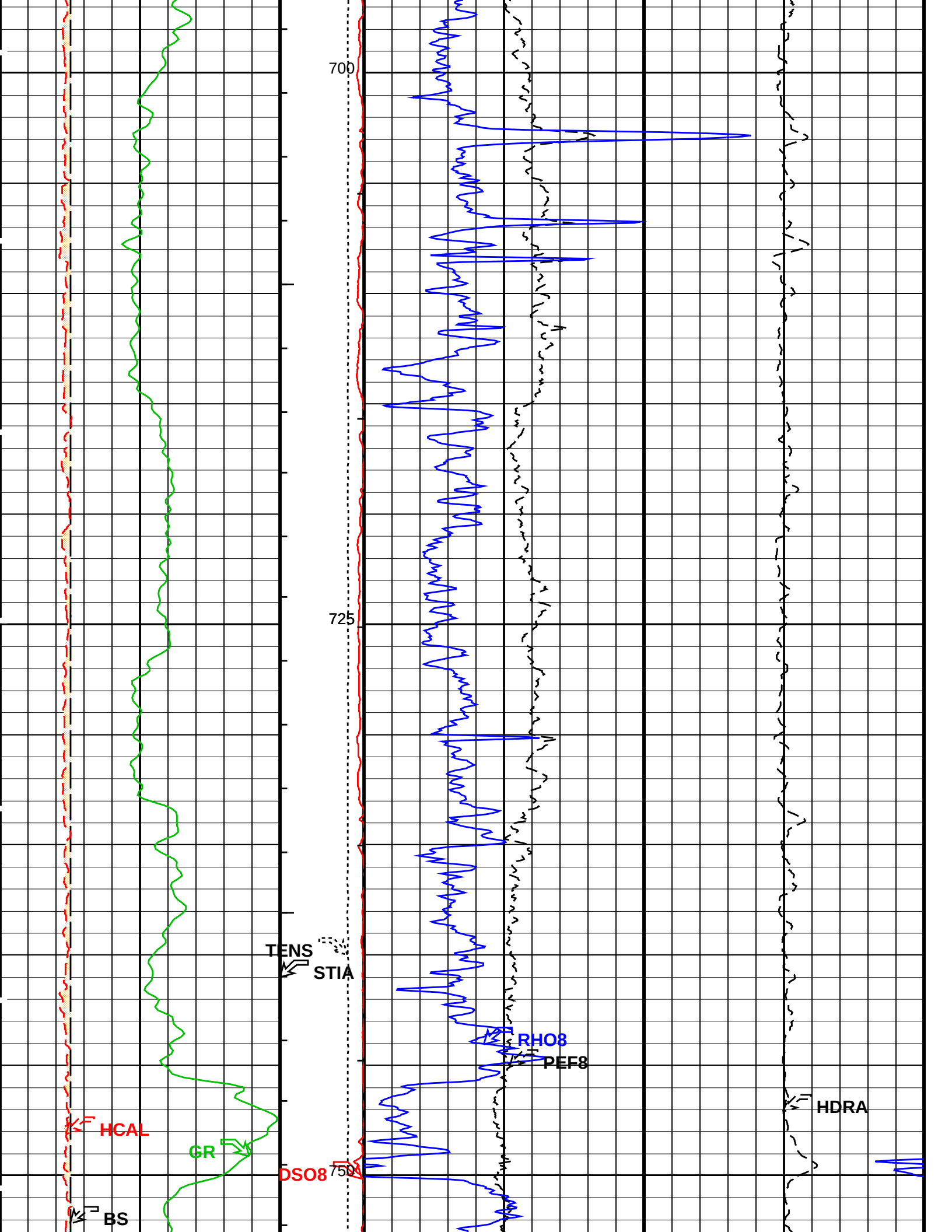


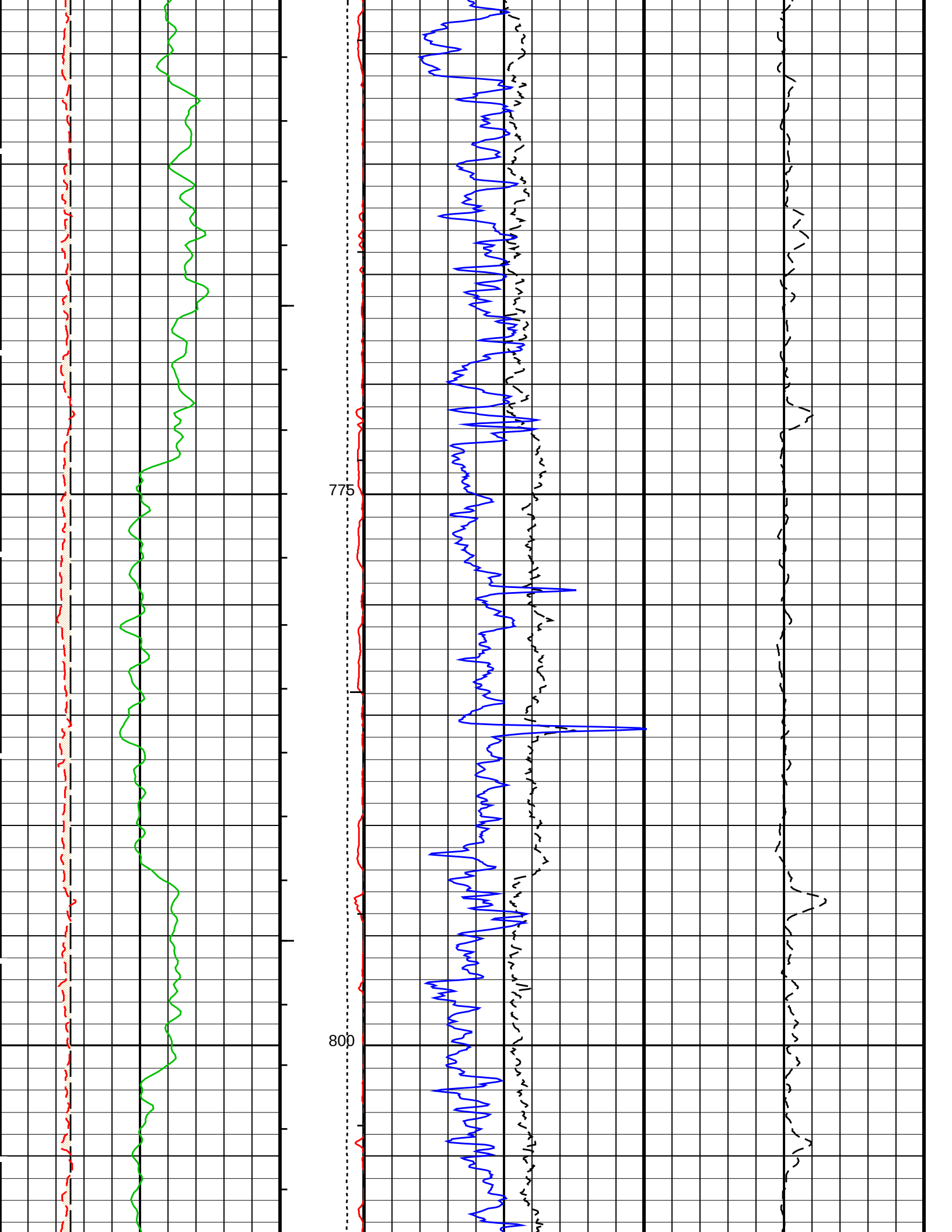

475
500
525
TENS
STIA
RHO8
PEF8
HDRA
HCAL
GR
DSO8
BS

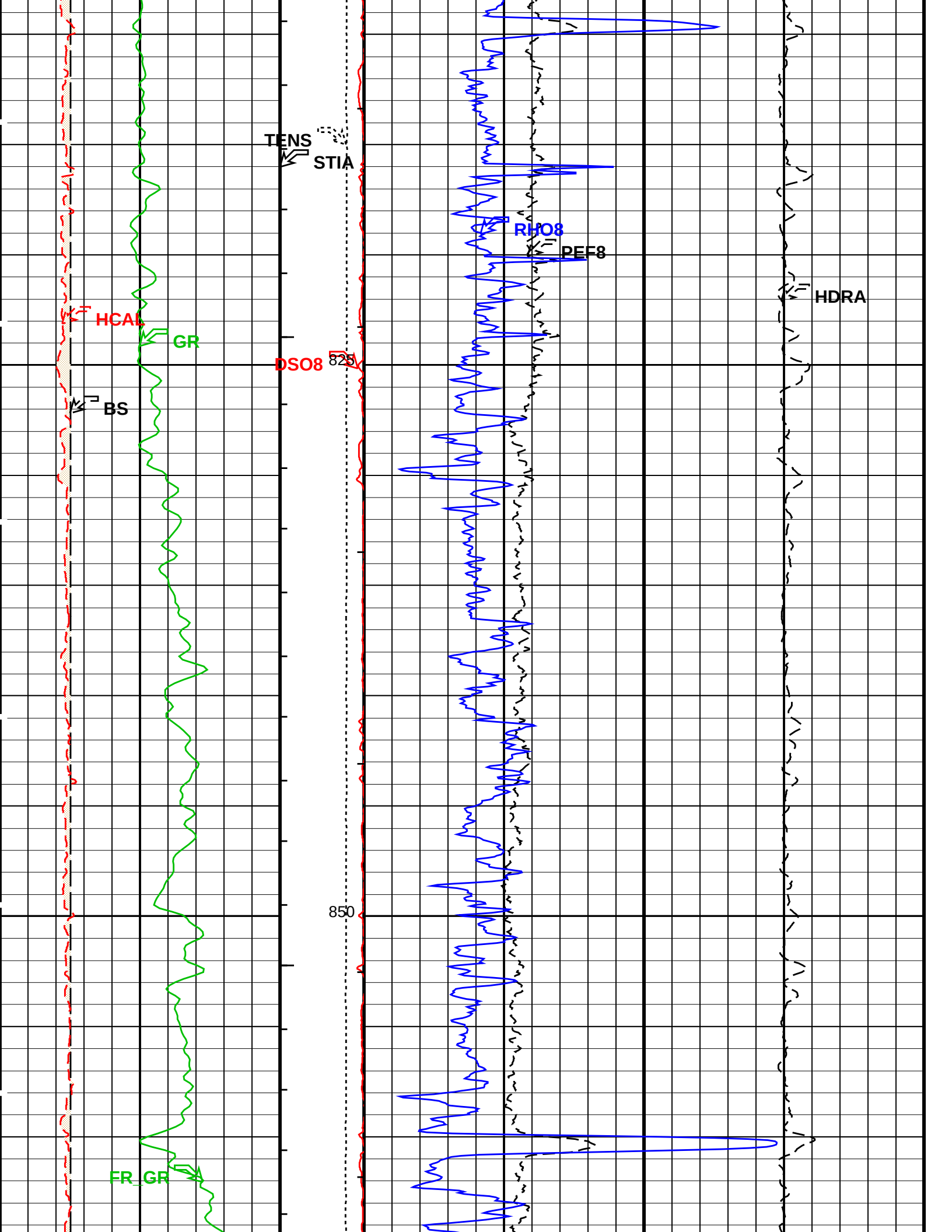

550
575

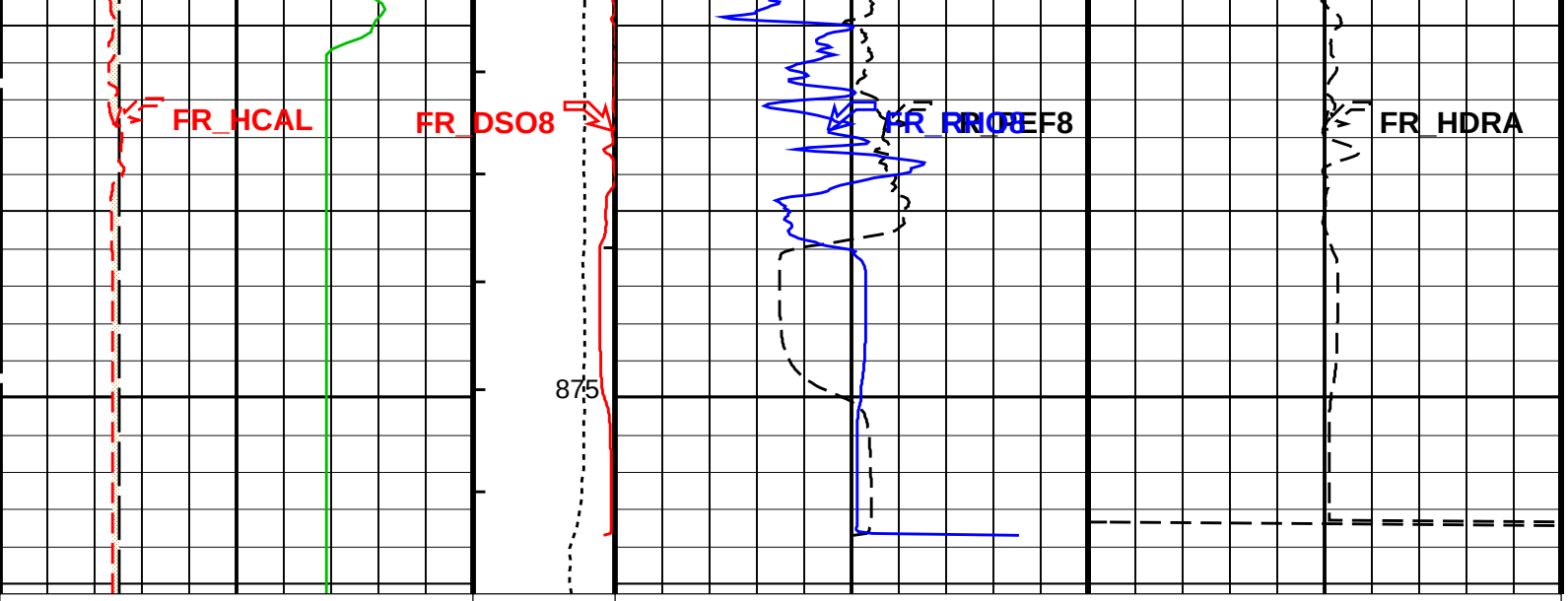

TENS
STIA
RHO8
PEF8
HDRA
HCAL
GR
DSO8
600
BS
625


650
TENS
STIA
RHO8
PEF8
HDRA
HCAL
GR
DSO8
675
BS


700
725
750
TENS
STIA
RHO8
PEF8
HDRA
HCAL
GR
DSO8
BS


775
800


TENS
STIA
RHO8
PEF8
HDRA
HCAL
GR
DSO8
825
BS
850
FR_GR



Bit Size (BS)	Tension (TENS)	H. Res. Formation Pe (PEF8)
6 (IN) 16	10000 (LBF) 0	0 (---- 10

Gamma Ray (GR)	H. Res. Density Standoff (DSO8)	H. Res. Formation Density (RHO8)
0 (GAPI) 150	65 (MM) 0	1.95 (G/C3) 2.95

HILT Caliper (HCAL)	Density Correction (HDRA)
6 (IN) 16	−0.25 (G/C3) 0.25

Washout
From BS to HCAL

Mudcake
From HCAL to BS

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	
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
DHC	Density Hole Correction	BS	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	BARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	1	IN
	HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	7	IN
HVCS	Integrated Hole Volume Caliper Selection	HCAL	
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	0.762	M
TDD	Total Depth − Driller	889.00	M
TDL	Total Depth − Logger	879.00	M
	System and Miscellaneous		
BS	Bit Size	8.500	IN
DO	Depth Offset for Playback	0.2	M
DORL	Depth Offset for Repeat Analysis	0.1	M
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	889	M

Format: Nuclear_HR Vertical Scale: 1:200 Graphics File Created: 30−Jun−2004 19:55

QP System Version: 12C0-201

OP System Version: 12C0−301

MCM

HALS−B	12C0−301	DSLT−H	12C0−301
HILTB−FTB	12C0−301	HNGC−A	12C0−301
HNGS−BA	12C0−301	DTC−H	12C0−301
BSP	12C0−301		

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_007LUP	FN:11	PRODUCER	30−Jun−2004 17:55	880.1 M	28.4 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_008PUP	FN:13	PRODUCER	30−Jun−2004 19:55

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Repeat Analysis

MAXIS Field Log

Company: Essential Petroleum Resources Limited **Well: Findra−1**

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_006LUP	FN:9	PRODUCER	30−Jun−2004 17:21	745.2 M	597.3 M
DEFAULT	HALS_SONIC_TLD_MCFL_007LUP	FN:11	PRODUCER	30−Jun−2004 17:55	880.1 M	28.4 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_008PUP	FN:13	PRODUCER	30−Jun−2004 19:55

OP System Version: 12C0−301

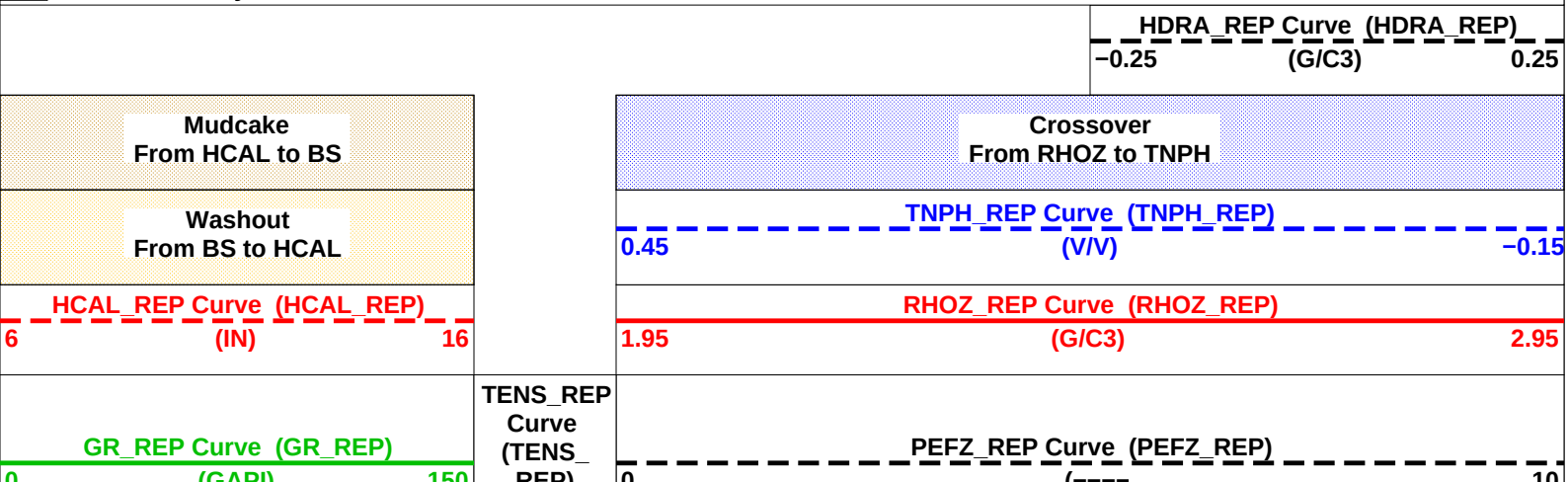
MCM

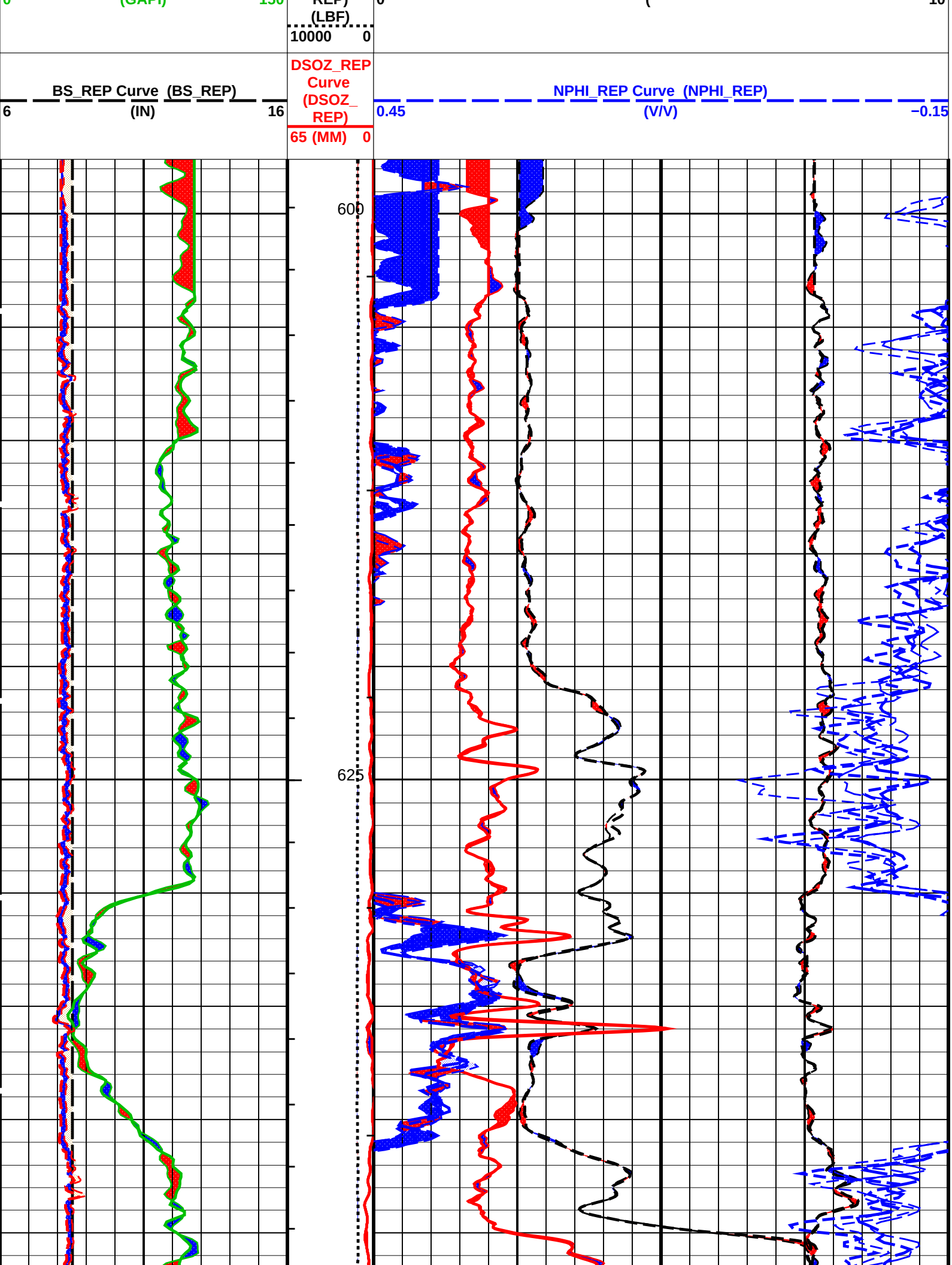
HALS−B	12C0−301	DSLT−H	12C0−301
HILTB−FTB	12C0−301	HNGC−A	12C0−301
HNGS−BA	12C0−301	DTC−H	12C0−301
BSP	12C0−301		

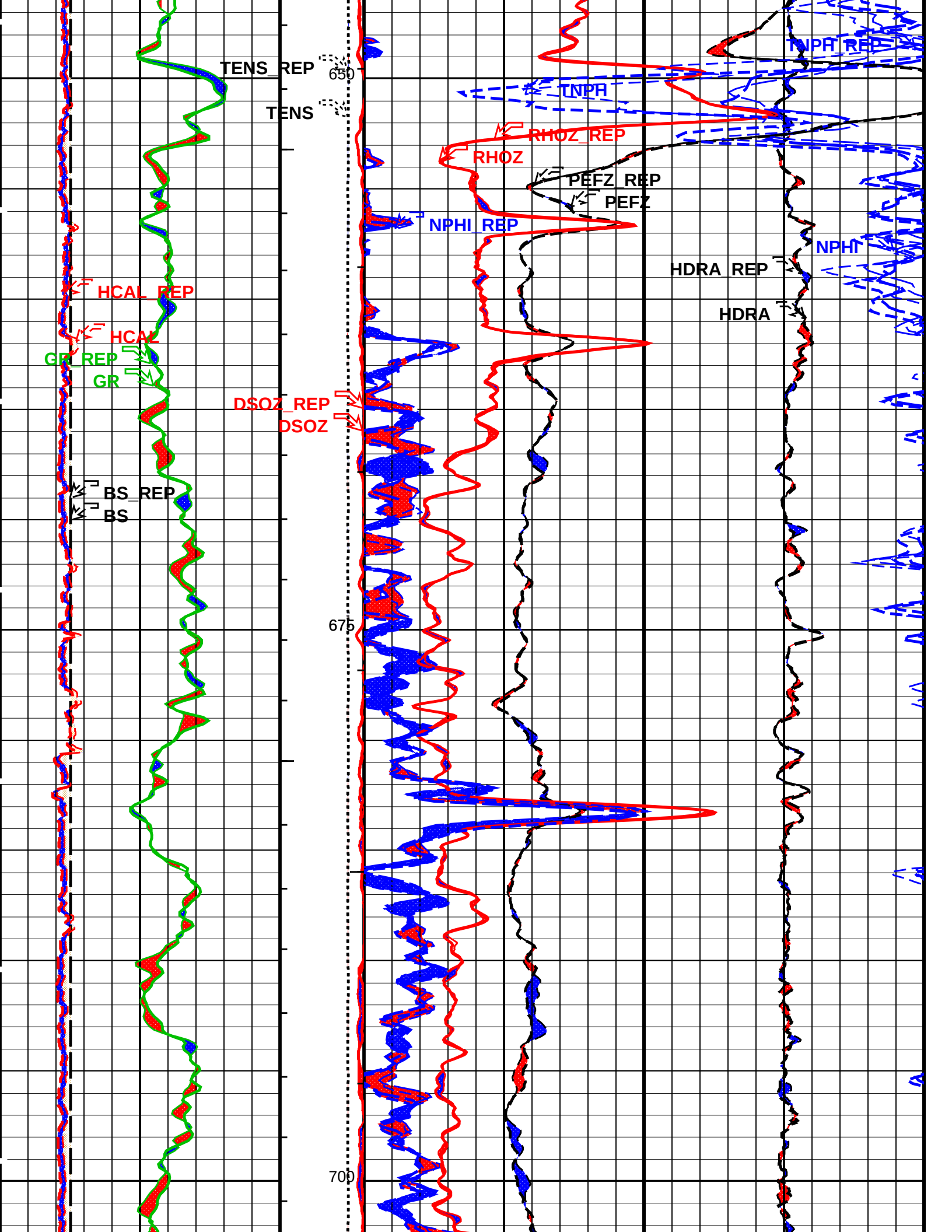
PIP SUMMARY

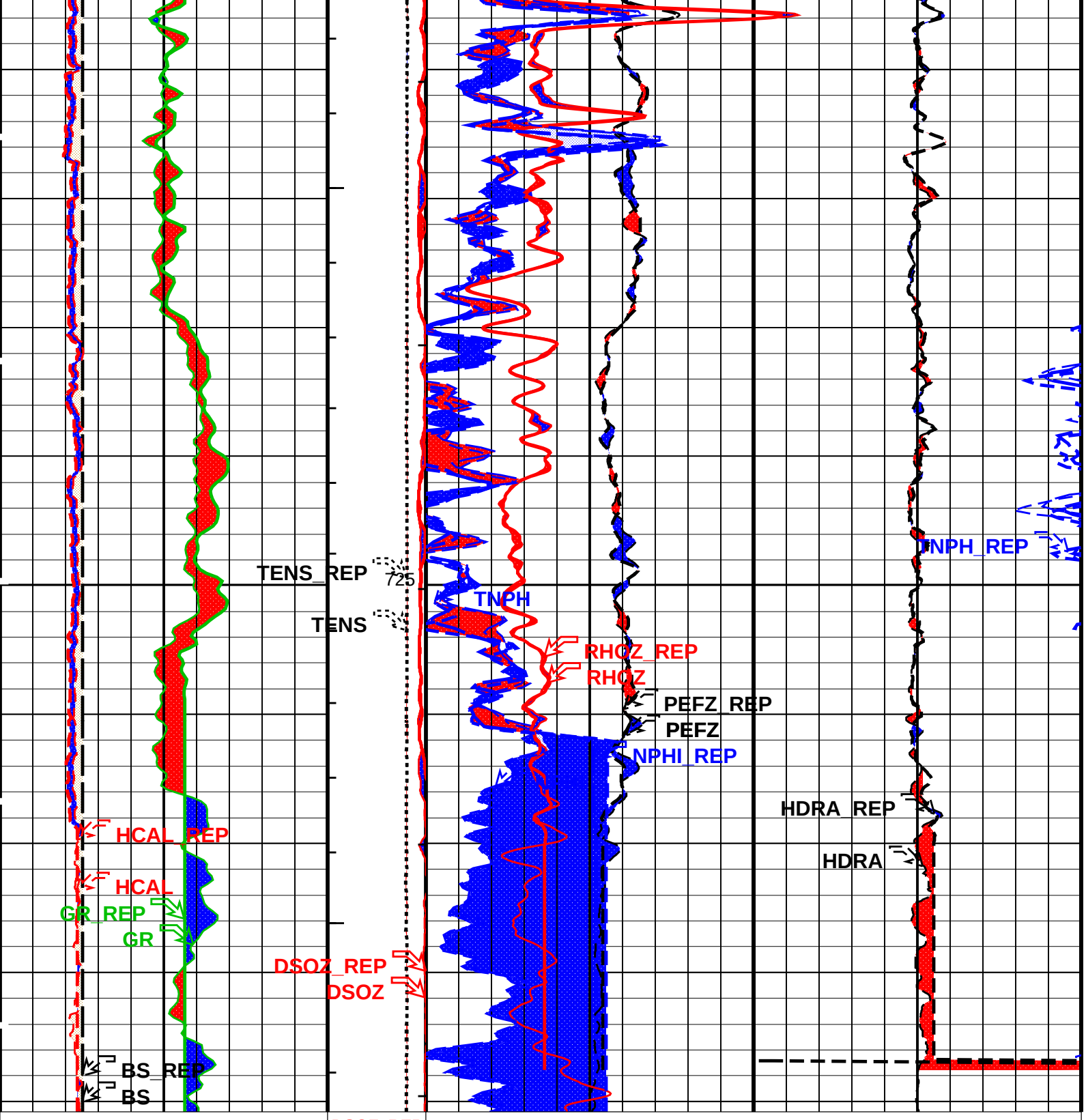
- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S




(GAPI) 150
REP) (LBF)
10000 0
0 10
BS_REP Curve (BS_REP)
6 (IN) 16
DSOZ_REP Curve (DSOZ_ REP)
65 (MM) 0
NPHI_REP Curve (NPHI_REP)
0.45 (V/V) −0.15
600
625


TENS_REP
TENS
650
TNPH_REP
TNPH
RHOZ_REP
RHOZ
PEFZ_REP
PEFZ
NPHI_REP
NPHI
HDRA_REP
HDRA
HCAL_REP
HCAL
GR_REP
GR
DSOZ_REP
DSOZ
BS_REP
BS
675
700



BS_REP Curve (BS_REP)
6 (IN) 16

DSOZ_REP Curve (DSOZ_REP)
65 (MM) 0

NPHI_REP Curve (NPHI_REP)
0.45 (V/V) −0.15

GR_REP Curve (GR_REP)
0 (GAPI) 150

TENS_REP Curve (TENS_REP) (LBF)
10000 0

PEFZ_REP Curve (PEFZ_REP)
0 (−−−− 10

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

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

Washout From BS to HCAL	TNPH_REP Curve (TNPH_REP) 0.45 (V/V) −0.15
Mudcake From HCAL to BS	Crossover From RHOZ to TNPH
	HDRA_REP Curve (HDRA_REP) −0.25 (G/C3) 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

Format: Nuclear_REP **Vertical Scale: 1:200** **Graphics File Created: 30−Jun−2004 19:55**

OP System Version: 12C0−301

MCM

HALS−B	12C0−301	DSLT−H	12C0−301
HILTB−FTB	12C0−301	HNGC−A	12C0−301
HNGS−BA	12C0−301	DTC−H	12C0−301
BSP	12C0−301		

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_006LUP	FN:9	PRODUCER	30−Jun−2004 17:21	745.2 M	597.3 M
DEFAULT	HALS_SONIC_TLD_MCFL_007LUP	FN:11	PRODUCER	30−Jun−2004 17:55	880.1 M	28.4 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_008PUP	FN:13	PRODUCER	30−Jun−2004 19:55

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Calibrations

MAXIS Field Log

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: 30−Jun−2004 16:22							
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: 30−Jun−2004 16:22							
Iaux 1 Gain	1.000	N/A	0.994	N/A	N/A	0.035	MA
Iaux 1 Phase	0.000	N/A	−0.123	N/A	N/A	1.900	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Aux current mode 2							
Before: 30−Jun−2004 16:22							
Iaux 2 Gain	1.000	N/A	0.974	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: 30−Jun−2004 16:22							
I0 3A Gain	1.000	N/A	0.983	N/A	N/A	0.036	UA

I0 3A Gain	1.000	N/A	0.983	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: 30−Jun−2004 16:22

I0 3B Gain	1.000	N/A	0.980	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: 30−Jun−2004 16:22

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: 30−Jun−2004 16:22

Zvt 1 Phase	0.000	N/A	−0.102	N/A	N/A	2.300	DEG
Zvt 2 Phase	0.000	N/A	0.006	N/A	N/A	0.800	DEG
Zvt 3 Phase	0.000	N/A	−0.172	N/A	N/A	0.500	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Upper Bridle Voltage mode 1
Before: 30−Jun−2004 16:22

Zvb 1 Gain	1.000	N/A	0.994	N/A	N/A	0.025	MV
Zvb 1 Phase	0.000	N/A	−0.132	N/A	N/A	2.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB M1−M2 Voltage gains
Before: 30−Jun−2004 16:22

ZVM 1 Gain	1.000	N/A	0.996	N/A	N/A	0.039	UV
ZVM 2 Gain	1.000	N/A	0.993	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: 30−Jun−2004 16:22

ZVM 1 Phase	0.000	N/A	0.224	N/A	N/A	3.800	DEG
ZVM 2 Phase	0.000	N/A	1.871	N/A	N/A	1.300	DEG
ZVM 3 Phase	0.000	N/A	1.002	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB M1−A0* Voltage gains
Before: 30−Jun−2004 16:22

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: 30−Jun−2004 16:22

ZVH 1 Phase	0.000	N/A	0.109	N/A	N/A	3.800	DEG
ZVH 2 Phase	0.000	N/A	1.992	N/A	N/A	1.300	DEG
ZVH 3 Phase	0.000	N/A	0.993	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Aux Voltage gains
Before: 30−Jun−2004 16:22

ZVA 1 Gain	1.000	N/A	1.070	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	1.013	N/A	N/A	0.045	MV

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Aux Voltage Phases
Before: 30−Jun−2004 16:22

ZVA 1 Phase	0.000	N/A	1.005	N/A	N/A	2.300	DEG
ZVA 2 Phase	0.000	N/A	0.153	N/A	N/A	0.800	DEG
ZVA 3 Phase	0.000	N/A	0.162	N/A	N/A	0.500	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 1
Before: 30−Jun−2004 16:22

ZVD 1 Gain	1.000	N/A	0.997	N/A	N/A	0.047	UV
ZVD 1 Phase	0.000	N/A	0.096	N/A	N/A	3.800	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 2
Before: 30−Jun−2004 16:22

ZVD 2 Gain	1.000	N/A	0.982	N/A	N/A	0.056	UV
ZVD 2 Phase	0.000	N/A	1.287	N/A	N/A	1.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 3A
Before: 30−Jun−2004 16:22

ZVD 3A Gain	1.000	N/A	0.988	N/A	N/A	0.056	UV
ZVD 3A Phase	0.000	N/A	0.566	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 3B
Before: 30−Jun−2004 16:22

ZVD 3B Gain	1.000	N/A	1.000	N/A	N/A	0.054	UV
ZVD 3B Phase	0.000	N/A	−0.039	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB vertical Voltage mode 1

Before: 30−Jun−2004 16:22

ZVV 1 Gain	1.000	N/A	0.997	N/A	N/A	0.022	UV
ZVV 1 Phase	0.000	N/A	0.163	N/A	N/A	2.800	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB vertical Voltage mode 2

Before: 30−Jun−2004 16:22

ZVV 2 Gain	1.000	N/A	0.985	N/A	N/A	0.036	UV
ZVV 2 Phase	0.000	N/A	2.626	N/A	N/A	1.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Azimuthal Voltages mode 1

Before: 30−Jun−2004 16:22

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	0.999	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	0.998	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	0.996	N/A	N/A	0.047	UV
AZ 1 Phase − 0	0.000	N/A	−0.001	N/A	N/A	3.800	DEG
AZ 1 Phase − 1	0.000	N/A	0.135	N/A	N/A	3.800	DEG
AZ 1 Phase − 2	0.000	N/A	0.098	N/A	N/A	3.800	DEG
AZ 1 Phase − 3	0.000	N/A	0.102	N/A	N/A	3.800	DEG
AZ 1 Phase − 4	0.000	N/A	0.211	N/A	N/A	3.800	DEG
AZ 1 Phase − 5	0.000	N/A	0.094	N/A	N/A	3.800	DEG
AZ 1 Phase − 6	0.000	N/A	0.065	N/A	N/A	3.800	DEG
AZ 1 Phase − 7	0.000	N/A	0.015	N/A	N/A	3.800	DEG
AZ 1 Phase − 8	0.000	N/A	0.129	N/A	N/A	3.800	DEG
AZ 1 Phase − 9	0.000	N/A	0.021	N/A	N/A	3.800	DEG
AZ 1 Phase − 10	0.000	N/A	0.126	N/A	N/A	3.800	DEG
AZ 1 Phase − 11	0.000	N/A	0.106	N/A	N/A	3.800	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Azimuthal Voltages mode 2

Before: 30−Jun−2004 16:22

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	0.983	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	0.981	N/A	N/A	0.056	UV
Az 2 Phase − 0	0.000	N/A	1.350	N/A	N/A	1.300	DEG
Az 2 Phase − 1	0.000	N/A	1.308	N/A	N/A	1.300	DEG
Az 2 Phase − 2	0.000	N/A	1.317	N/A	N/A	1.300	DEG
Az 2 Phase − 3	0.000	N/A	1.304	N/A	N/A	1.300	DEG
Az 2 Phase − 4	0.000	N/A	1.333	N/A	N/A	1.300	DEG
Az 2 Phase − 5	0.000	N/A	1.344	N/A	N/A	1.300	DEG
Az 2 Phase − 6	0.000	N/A	1.368	N/A	N/A	1.300	DEG
Az 2 Phase − 7	0.000	N/A	1.363	N/A	N/A	1.300	DEG
Az 2 Phase − 8	0.000	N/A	1.382	N/A	N/A	1.300	DEG
Az 2 Phase − 9	0.000	N/A	1.336	N/A	N/A	1.300	DEG
Az 2 Phase − 10	0.000	N/A	1.398	N/A	N/A	1.300	DEG
Az 2 Phase − 11	0.000	N/A	1.280	N/A	N/A	1.300	DEG

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

Before: 30−Jun−2004 16:22

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	0.990	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	0.989	N/A	N/A	0.056	UV
Az 3A Gain − 8	1.000	N/A	0.988	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	0.992	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	0.602	N/A	N/A	1.000	DEG
Az 3A Phase − 1	0.000	N/A	0.598	N/A	N/A	1.000	DEG
Az 3A Phase − 2	0.000	N/A	0.599	N/A	N/A	1.000	DEG
Az 3A Phase − 3	0.000	N/A	0.585	N/A	N/A	1.000	DEG
Az 3A Phase − 4	0.000	N/A	0.613	N/A	N/A	1.000	DEG

Az 3A Phase − 4	0.000	N/A	0.613	N/A	N/A	1.000	DEG
Az 3A Phase − 5	0.000	N/A	0.599	N/A	N/A	1.000	DEG
Az 3A Phase − 6	0.000	N/A	0.609	N/A	N/A	1.000	DEG
Az 3A Phase − 7	0.000	N/A	0.610	N/A	N/A	1.000	DEG
Az 3A Phase − 8	0.000	N/A	0.647	N/A	N/A	1.000	DEG
Az 3A Phase − 9	0.000	N/A	0.595	N/A	N/A	1.000	DEG
Az 3A Phase − 10	0.000	N/A	0.639	N/A	N/A	1.000	DEG
Az 3A Phase − 11	0.000	N/A	0.565	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Azimuthal Voltages mode 3B
Before: 30−Jun−2004 16:22

Az 3B Gain − 0	1.000	N/A	1.007	N/A	N/A	0.054	UV
Az 3B Gain − 1	1.000	N/A	1.002	N/A	N/A	0.054	UV
Az 3B Gain − 2	1.000	N/A	1.006	N/A	N/A	0.054	UV
Az 3B Gain − 3	1.000	N/A	0.999	N/A	N/A	0.054	UV
Az 3B Gain − 4	1.000	N/A	1.006	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	1.006	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	0.232	N/A	N/A	1.000	DEG
Az 3B Phase − 1	0.000	N/A	0.167	N/A	N/A	1.000	DEG
Az 3B Phase − 2	0.000	N/A	0.106	N/A	N/A	1.000	DEG
Az 3B Phase − 3	0.000	N/A	0.121	N/A	N/A	1.000	DEG
Az 3B Phase − 4	0.000	N/A	0.061	N/A	N/A	1.000	DEG
Az 3B Phase − 5	0.000	N/A	0.181	N/A	N/A	1.000	DEG
Az 3B Phase − 6	0.000	N/A	0.111	N/A	N/A	1.000	DEG
Az 3B Phase − 7	0.000	N/A	0.192	N/A	N/A	1.000	DEG
Az 3B Phase − 8	0.000	N/A	0.136	N/A	N/A	1.000	DEG
Az 3B Phase − 9	0.000	N/A	0.131	N/A	N/A	1.000	DEG
Az 3B Phase − 10	0.000	N/A	0.190	N/A	N/A	1.000	DEG
Az 3B Phase − 11	0.000	N/A	−0.014	N/A	N/A	1.000	DEG

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 30−Jun−2004 16:18

BS Window Ratio	1.011	N/A	1.012	N/A	N/A	N/A	
BS Window Sum	16100	N/A	16060	N/A	N/A	N/A	CPS
SS Window Ratio	0.4808	N/A	0.4806	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	0.2944	N/A	N/A	N/A	
LS Window Sum	1160	N/A	1164	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 30−Jun−2004 16:18

BS PM High Voltage (Command)	1495	N/A	1468	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1944	N/A	1923	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1839	N/A	1832	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 30−Jun−2004 16:18

BS Crystal Resolution	12.17	N/A	12.12	N/A	N/A	N/A	%
SS Crystal Resolution	11.48	N/A	11.55	N/A	N/A	N/A	%
LS Crystal Resolution	9.283	N/A	9.483	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 30−Jun−2004 16:19

Raw B0 Resistivity	3875	N/A	3799	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3768	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3798	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 30−Jun−2004 16:15

HILT Caliper Zero Measurement	8.000	N/A	8.215	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.39	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 30−Jun−2004 16:14

Gamma Ray Background	30.00	N/A	26.47	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkg)	174.8	N/A	174.8	N/A	N/A	15.89	GAPI
Gamma Ray (Calibrated)	160.0	N/A	160.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 15−Jun−2004 17:21 Before: 30−Jun−2004 16:15

CNTC Background	32.30	32.30	30.57	N/A	N/A	4.845	CPS
CFTC Background	29.13	29.13	29.39	N/A	N/A	4.370	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 30−Jun−2004 16:17

Z−Axis Acceleration	9.810	N/A	9.802	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: 30−Jun−2004 16:27

Na 511 Peak Loc	40.00	40.64	39.64	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.25	15.10	N/A	N/A	2.000	%
High Voltage	1150	1159	1163	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	145.9	143.2	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.737	8.315	N/A	N/A	2.000	%
Temperature	15.50	13.72	16.29	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	42.07	43.16	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check
Master: 17−Jun−2004 21:58 Before: 30−Jun−2004 16:27

Na 511 Peak Loc	40.00	39.68	39.72	N/A	N/A	1.000	
Na 511 Peak Res	15.50	14.94	14.70	N/A	N/A	2.000	%
High Voltage	1150	1080	1085	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	143.0	141.9	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.683	8.147	N/A	N/A	2.000	%
Temperature	15.50	14.40	15.55	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	41.97	42.72	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: 30−Jun−2004 16:27

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 (Minimum) 1.000 (Nominal) 1.081 (Maximum)		−0.100 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

Before: 30−Jun−2004 16:22

HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Aux current mode 1

Iaux 1 Gain MA	Value	Iaux 1 Phase DEG	Value
	0.994		−0.123
0.854 (Minimum) 1.000 (Nominal) 1.180 (Maximum)		−4.600 (Minimum) 0.000 (Nominal) 4.600 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Aux current mode 2

Iaux 2 Gain MA	Value	Iaux 2 Phase DEG	Value
	0.974		0.000
0.816 (Minimum) 1.000 (Nominal) 1.232 (Maximum)		−1.000 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

Before: 30−Jun−2004 16:22

HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0 current mode 3A

I0 3A Gain UA	Value	I0 3A Phase DEG	Value
	0.983		−0.000
0.893 (Minimum) 1.000 (Nominal) 1.114 (Maximum)		−1.000 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

Before: 30−Jun−2004 16:22

HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0 current mode 3B

I0 3B Gain UA	Value	I0 3B Phase DEG	Value
	0.980		−0.000
0.893 (Minimum) 1.000 (Nominal) 1.114 (Maximum)		−1.000 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

Before: 30−Jun−2004 16:22

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)	

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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
	−0.102		0.006		−0.172
−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)	

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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		−0.132
0.925 (Minimum) 1.000 (Nominal) 1.078 (Maximum)		−4.400 (Minimum) 0.000 (Nominal) 4.400 (Maximum)	

Before: 30−Jun−2004 16:22

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		0.993		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)	

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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
	0.224		1.871		1.002
−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)	

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Before: 30−Jun−2004 16:22

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)	

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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
	0.109		1.992		0.993
−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)	

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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
	1.070		1.063		1.013
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)	

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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
	1.005		0.153		0.162
−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)	

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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		0.096
0.874 (Minimum) 1.000 (Nominal) 1.147 (Maximum)		−6.300 (Minimum) 0.000 (Nominal) 6.300 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0*−A0*' Diff. Voltage mode 2

ZVD 2 Gain UV	Value	ZVD 2 Phase DEG	Value
	0.982		1.287
0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)		−3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0*−A0*' Diff. Voltage mode 3A

ZVD 3A Gain UV	Value	ZVD 3A Phase DEG	Value
	0.988		0.566
0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)		−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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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		−0.039
0.845 (Minimum) 1.000 (Nominal) 1.183 (Maximum)		−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB vertical Voltage mode 1

ZVV 1 Gain UV	Value	ZVV 1 Phase DEG	Value
	0.997		0.163
0.936 (Minimum) 1.000 (Nominal) 1.065 (Maximum)		−4.600 (Minimum) 0.000 (Nominal) 4.600 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB vertical Voltage mode 2

ZVV 2 Gain UV	Value	ZVV 2 Phase DEG	Value
	0.985		2.626
0.895 (Minimum) 1.000 (Nominal) 1.112 (Maximum)		−2.800 (Minimum) 0.000 (Nominal) 2.800 (Maximum)	

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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		−0.001
1		0.998	1		0.135
2		0.999	2		0.098
3		0.994	3		0.102
4		0.999	4		0.211
5		0.999	5		0.094

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		1.350
1		0.983	1		1.308
2		0.984	2		1.317
3		0.979	3		1.304
4		0.985	4		1.333
5		0.984	5		1.344

6		0.997	6		0.065
7		0.998	7		0.015
8		0.997	8		0.129
9		0.997	9		0.021
10		1.001	10		0.126
11		0.996	11		0.106
	0.874 (Minimum) 1.000 (Nominal) 1.147 (Maximum)			−6.300 (Minimum) 0.000 (Nominal) 6.300 (Maximum)	

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5		0.984	5		1.344
6		0.982	6		1.368
7		0.983	7		1.363
8		0.983	8		1.382
9		0.982	9		1.336
10		0.987	10		1.398
11		0.981	11		1.280
	0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)			−3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)	

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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		0.602
1		0.988	1		0.598
2		0.990	2		0.599
3		0.984	3		0.585
4		0.990	4		0.613
5		0.989	5		0.599
6		0.987	6		0.609
7		0.989	7		0.610
8		0.988	8		0.647
9		0.987	9		0.595
10		0.992	10		0.639
11		**0.987**	**11**		**0.565**
	0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)			−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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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		1.007	0		0.232
1		1.002	1		0.167
2		1.006	2		0.106
3		0.999	3		0.121
4		1.006	4		0.061
5		1.006	5		0.181
6		1.005	6		0.111
7		1.006	7		0.192
8		1.006	8		0.136
9		1.003	9		0.131
10		1.010	10		0.190
11		**0.997**	**11**		**−0.014**
	0.845 (Minimum) 1.000 (Nominal) 1.183 (Maximum)			−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:

HILT high−Resolution Mechanical Sonde	HRMS − B	1765
HILT Rxo Gamma−ray Device	HRGD − B	1760
HILT Nuclear Back−Scatter Detector	HILT −	
HILT Nuclear Short−Spacing Detector	HILT −	
HILT Nuclear Long−Spacing Detector	HILT −	
Micro Cylindrically Focused Log Device	MCFL −	
GR Logging Source	GLS − VJ	3739
HILT High Res. Control Cartridge	HRCC − B	1769

Auxiliary Equipment:

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		1.012	Before		0.4806	Before		0.2944
	0.9600 (Minimum) 1.011 (Nominal) 1.061 (Maximum)			0.4567 (Minimum) 0.4808 (Nominal) 0.5048 (Maximum)			0.2808 (Minimum) 0.2955 (Nominal) 0.3103 (Maximum)	
Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		16060	Before		10980	Before		1164
	15290 (Minimum) 16100 (Nominal) 16900 (Maximum)			10420 (Minimum) 10970 (Nominal) 11520 (Maximum)			1102 (Minimum) 1160 (Nominal) 1218 (Maximum)	

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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		1468	Before		1923	Before		1832
	1395 (Minimum) 1495 (Nominal) 1595 (Maximum)			1844 (Minimum) 1944 (Nominal) 2044 (Maximum)			1739 (Minimum) 1839 (Nominal) 1939 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		12.12	Before		11.55	Before		9.483
	11.17 (Minimum) 12.17 (Nominal) 13.17 (Maximum)			10.48 (Minimum) 11.48 (Nominal) 12.48 (Maximum)			8.283 (Minimum) 9.283 (Nominal) 10.28 (Maximum)	

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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		3799	Before		3768	Before		3798
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		8.215	Before		12.39
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)			9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

Before: 30−Jun−2004 16:15

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		26.47	Before		174.8	Before		160.0
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			158.9 (Minimum) 174.8 (Nominal) 190.7 (Maximum)			145.0 (Minimum) 160.0 (Nominal) 175.0 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		32.30	Master		29.13
Before		30.57	Before		29.39
	5.000 (Minimum) 32.30 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 29.13 (Nominal) 40.00 (Maximum)	

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High resolution Integrated Logging Tool−DTS

Wellsite Calibration

Accelerometer Calibration

Phase	Z−Axis Acceleration M/S2	Value
Before		9.802
	9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum)	

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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		1.688
	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		2.561	Master		2.615
	2.470	2.570	2.670	2.550	2.650 2.750

2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)	2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)

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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		0.4141	Master		0.2442	Master		0.4543
−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		0.9721	Master		1.285	Master		0.9733
−1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	−2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	−3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)

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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		5825	Master		2452	Master		2.376
5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

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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		5825	Master		2452	Master		2.376
5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

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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	HNSH − BA	3
Gamma Source Radioactive	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		39.64	Before		15.10	Before		1163
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		143.2	Before		8.315	Before		16.29
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

Phase	Na 511 Peak Loc	Value
Master		39.68
Before		43.16
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)

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Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.68
Before		39.72
37.50 (Minimum)	40.00 (Nominal)	42.50 (Maximum)

Phase	Na 511 Peak Res %	Value
Master		14.94
Before		14.70
12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)

Phase	High Voltage V	Value
Master		1080
Before		1085
900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		143.0
Before		141.9
135.0 (Minimum)	142.6 (Nominal)	150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		8.683
Before		8.147
7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		14.40
Before		15.55
−28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		41.97
Before		42.72
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)

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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)

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Hostile Natural Gamma Ray Sonde Master Calibration

Detector 1 Calibration

Phase	Na 511 Peak Set Point	Value
Master		42.00
38.00 (Minimum)	40.00 (Nominal)	42.00 (Maximum)

Phase	Th Peak Loc	Value
Master		211.5
201.0 (Minimum)	209.6 (Nominal)	218.3 (Maximum)

Phase	Th Peak Res %	Value
Master		7.826
5.000 (Minimum)	7.000 (Nominal)	9.000 (Maximum)

Phase	Background Count Rate CPS	Value
Master		140.0
20.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)

Phase	Gain Ratio	Value
Master		0.9901
0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)

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Hostile Natural Gamma Ray Sonde Master Calibration

Detector 2 Calibration

Phase	Na 511 Peak Set Point	Value
Master		41.00
38.00 (Minimum)	40.00 (Nominal)	42.00 (Maximum)

Phase	Th Peak Loc	Value
Master		207.7
201.0 (Minimum)	209.6 (Nominal)	218.3 (Maximum)

Phase	Th Peak Res %	Value
Master		7.127
5.000 (Minimum)	7.000 (Nominal)	9.000 (Maximum)

Phase	Background Count Rate CPS	Value
Master		133.6
20.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)

Phase	Gain Ratio	Value
Master		0.9954
0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)

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Company:	**Essential Petroleum Resources Limited**
Well:	**Findra−1**
Field:	**PEP 159**
Rig:	**Hunt Rig #2**
Country:	**Australia**

Schlumberger

HALS−BHC−PEX−HNG
Nuclear−Density Print
Scale 1:200