Schlumberger

Company: Lamont Doherty

Well: Expedition 321 Site U1337A
Field: PEAT
Rig: JOIDES Resolution Ocean: Pacific

Rig: JOIDES Resolution
Field: PEAT
Location: Latitude: N 3* 50.009'
Well: Expedition 321 Site U1337A
Company: Lamont Doherty

Hostile Litho
Density Sonde
Natural Gamma Spectroscopy

LOCATION

Latitude: N 3* 50.009'
Longitude: W 123* 12.352'

Elev.: K.B. 11.00 m
G.L. -4461.00 m
D.F. 11.00 m

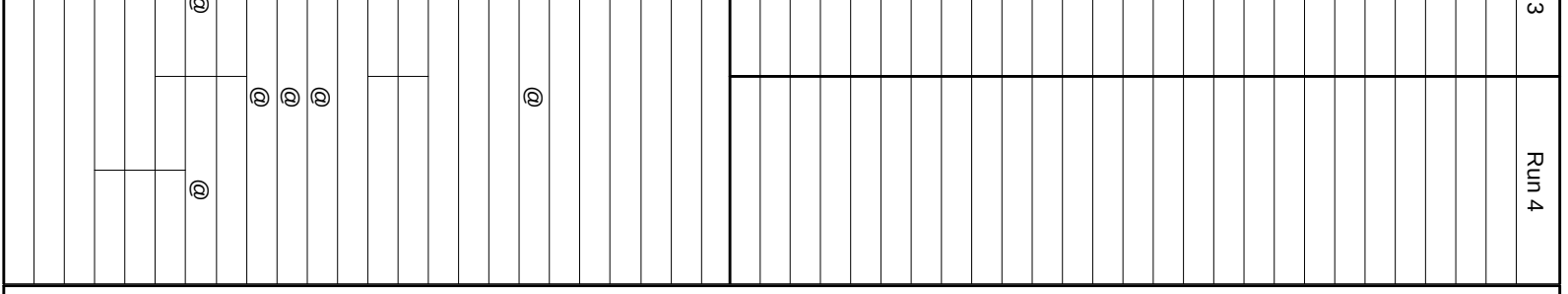
Permanent Datum: Mean Sea Level
Log Measured From: Drill Floor
Drilling Measured From: Drill Floor

Elev.: 0.00 m
11.00 m above Perm. Datum

API Serial No.	N 3* 50.009'	123* 12.352'	

	Run 1	Run 2	Run
Logging Date	23-May-2009		
Run Number	1		
Depth Driller	4922 m		
Schlumberger Depth	4917 m		
Bottom Log Interval	4903 m		
Top Log Interval	4472 m		
Casing Driller Size @ Depth	4.500 in @ 4555 m	@	
Casing Schlumberger	4472 m		
Bit Size	11.438 in		
Type Fluid In Hole	Seawater Gel		
MUD Density / Viscosity	1.258 g/cm3		
MUD Fluid Loss / PH			
MUD Source Of Sample	N/A		
RM @ Measured Temperature	@	@	
RMF @ Measured Temperature	@	@	
RMC @ Measured Temperature	@	@	
Source RMF / RMC	N/A / N/A		
RM @ MRT / RMF @ MRT	@ 7 / @ 7	@ / @	
Maximum Recorded Temperatures	7 degC		
Circulation Stopped / Time	23-May-2009 / 11:00		
Logger On Bottom / Time	23-May-2009 / 17:16		
Unit Number / Location	625003 Houston		
Recorded By	K. Swain		
Witnessed By	Alberto Malinverno, Louise Anderson		

	Run 1	Run 2	Run
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			



DISCLAIMER

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

OTHER SERVICES1	OTHER SERVICES2
OS1: FMS/HNGS	OS1:
OS2: DITE	OS2:
OS3: VSI	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Logging tools deployed inside drillpipe with wireline.	
BHA consisted of LFV and seal bore collar at 3.80" ID.	
HLDS caliper calibration used 12" and 15.19" rings as reference to	
improve large hole size accuracy.	
Depths referenced from drill floor which is 11m above sea level.	
Pipe depth set at 4555 mbrf.	
While descending with Tcombo log, the depth became inaccurate due to	
the close rig up of the winch and the heave compensator causing	
broken safety axles in the depth system. This caused the Tcombo logs to	
be approximately 32m shallow in depth to driller depth and the FMS and VSI logs.	
The Tcombo logs presented here are the original log files that are not depth	
shifted. LDEO has depth shifted the log data and the original depth was used	
in this log to reduce confusion for the original data.	
However the HLDS caliper was recomputed using the 12" and 15.19" calibration	
reference to improve large hole accuracy.	

RUN 1

SERVICE ORDER #:
PROGRAM VERSION: 17C0-154
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR-U 616008
WITM (DTS)-A

DOWNHOLE EQUIPMENT

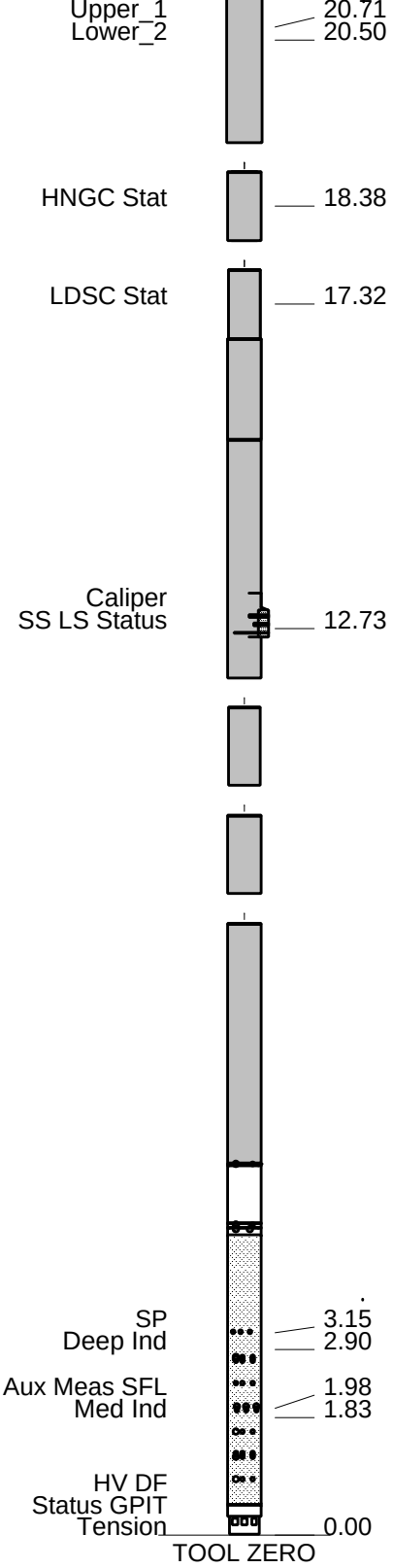
LEH-QT 23.22
LEH-QT 301

DTC-H 22.33
ECH-KC 2304
DTCH0-A 8798

CTEM
TelStatus 22.05
ToolStatu 21.41

HNGS-BA 194 21.41

HNGS-BA 194
HNSH-BA 205



HNGC-B 300 — 18.92
HNGH-A 115
HNGC-B 300

LDSC-B — 17.85
LDSH-A 319
LDSC-B 326

HLDS — 16.78
GSR-Z 2397
HLDV-D 51
HLDS-D 57
HEH-H 53
HLDP-C 61

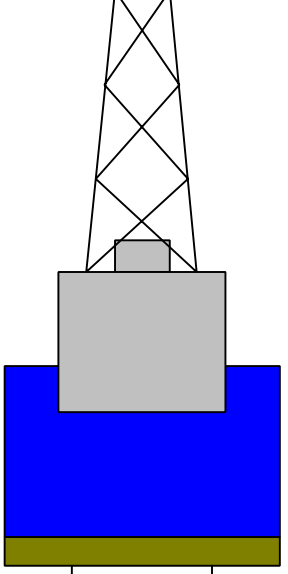
DTA-A — 11.96
ECH-KE 8231
DTA-A 8231

GPIT-A/B — 10.74
GPIC-A 719
GPIH-A 2864

DIT-E — 9.52
DIC-EB 171
MIH-ZA 342
DIS-HB 129

MAXIMUM STRING DIAMETER 3.75 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Production String	(in) OD	(in) ID	(M) MD	Well Schematic	(M) MD	(in) OD	(in) ID	Casing String

Kelly Bushing Elevation		11.0				
Derrick Floor Elevation		11.0				
Mean Sea Level		0.0				
				4472	4.20	Sea Floor
				4472	9.875	Borehole Segment
				4555	3.80	Open Hole
				4922		

Input DLIS Files

DEFAULT	PI_LDL_NGS_033PUP	FN:49	PRODUCER	03-Jun-2009 12:03	4885.2 M	4424.9 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_042PUP	FN:3	PRODUCER	22-Jun-2009 15:28	4885.2 M	4424.9 M

OP System Version: 17C0-154

DIT-E	17C0-154	GPIT-A/B	SRPC-3762-Q1_2009_OP17
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	HNGC-B	17C0-154
HNGS-BA	17C0-154	DTC-H	17C0-154

PIP SUMMARY

Time Mark Every 60 S

Uplog #2

See Remarks for Depth Shift

HLDS HR Bulk Density Correction (HBDC)
-0.25 (G/C3) 0.25

Tension (TENS)
10000 (LBF) 0

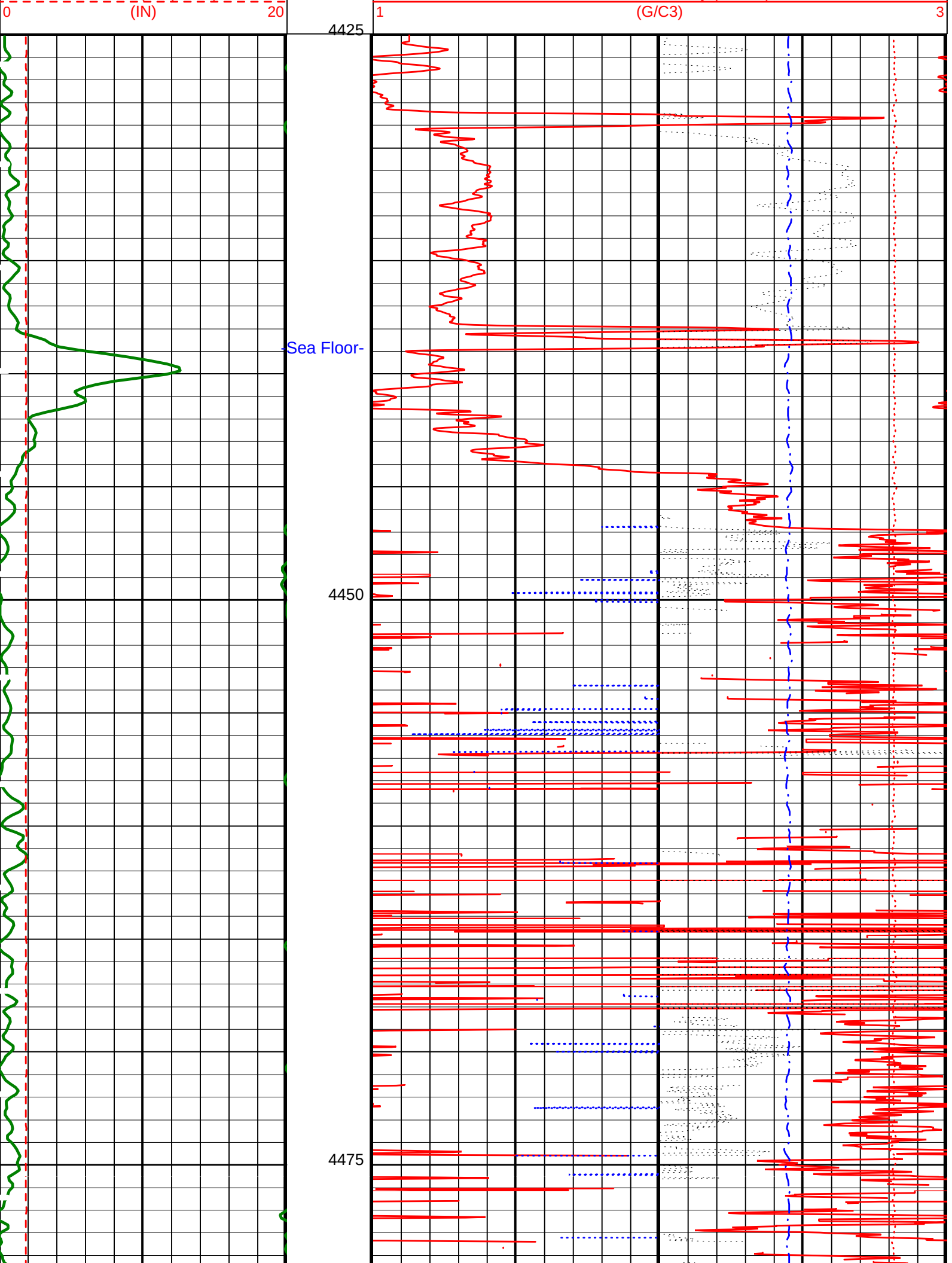
HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 15

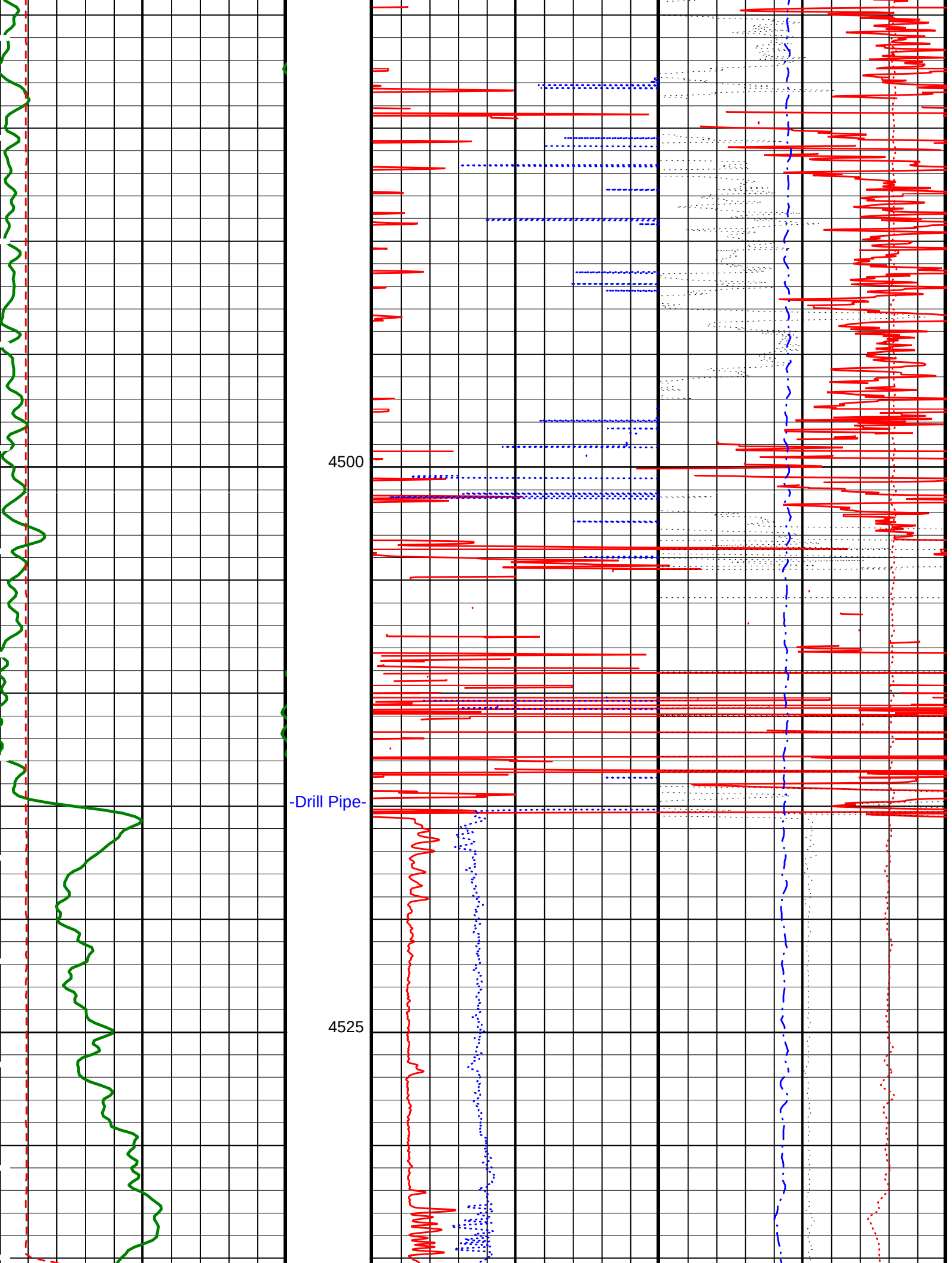
HLDS HR Long Spaced Photoelectric Effect (HLEF)
0 (---) 10

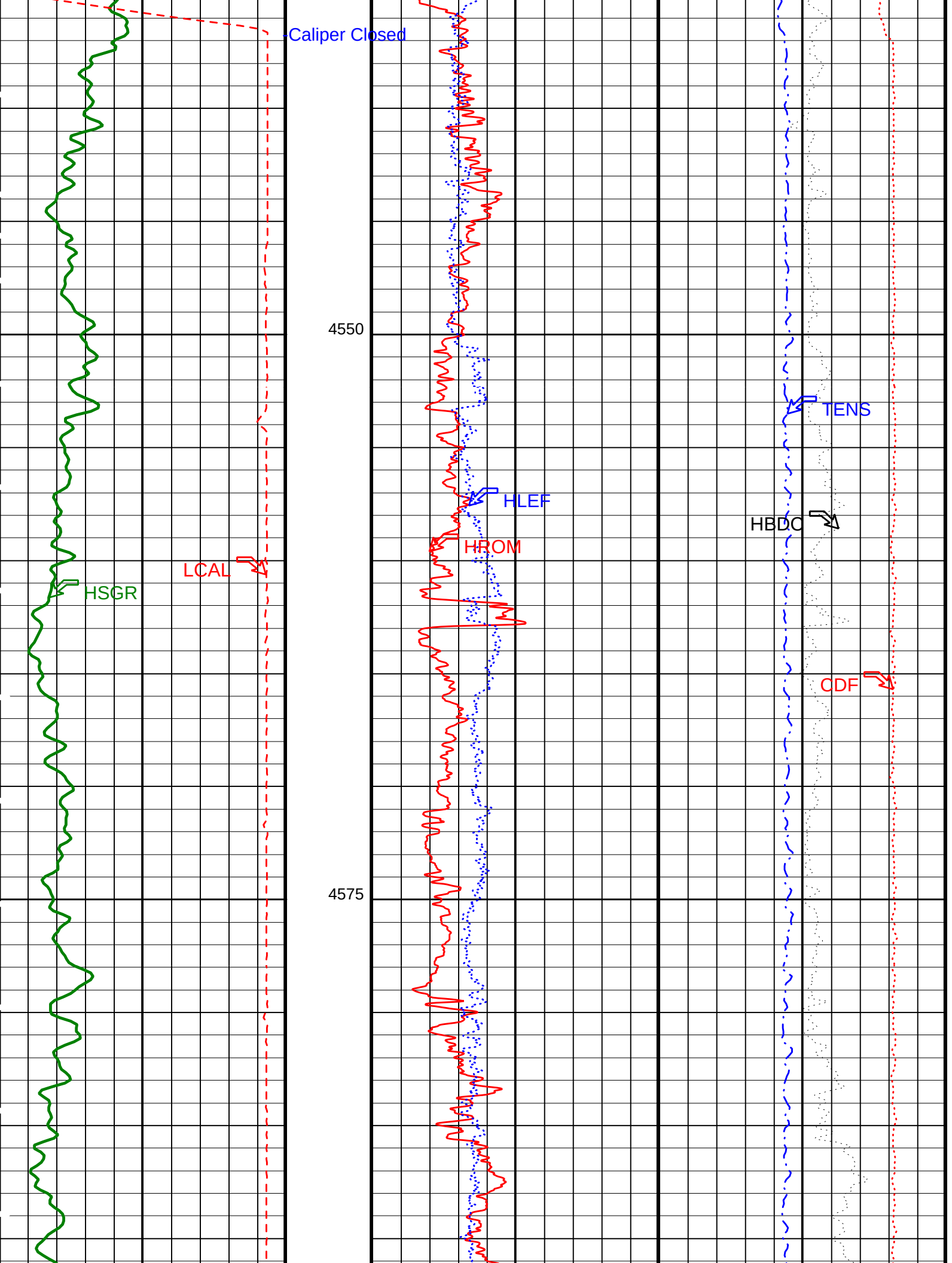
Calibrated Downhole Force (CDF)
5000 (LBF) 0

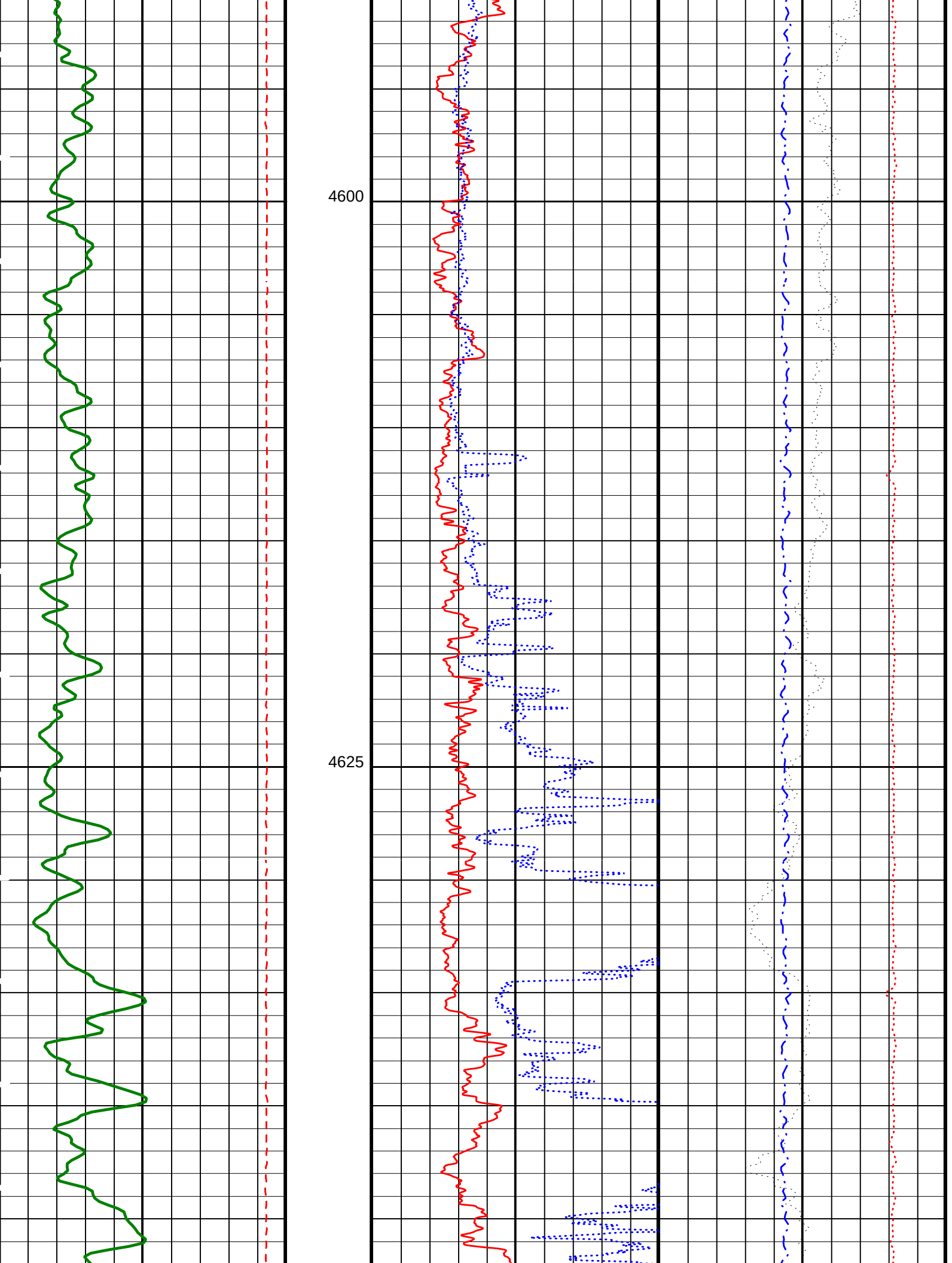
HLDS Caliper (LCAL)

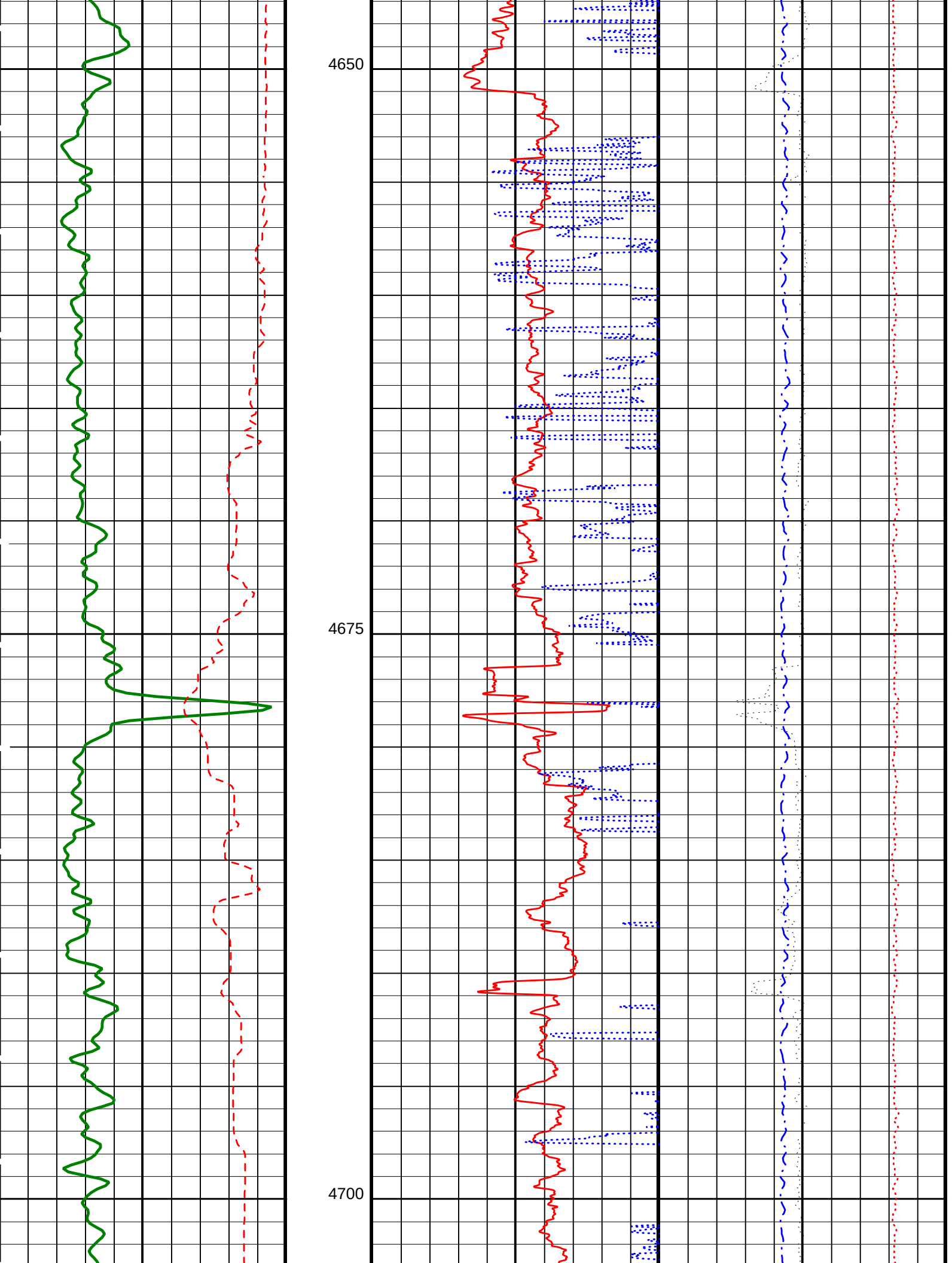
HLDS HR Bulk Density (HROM)

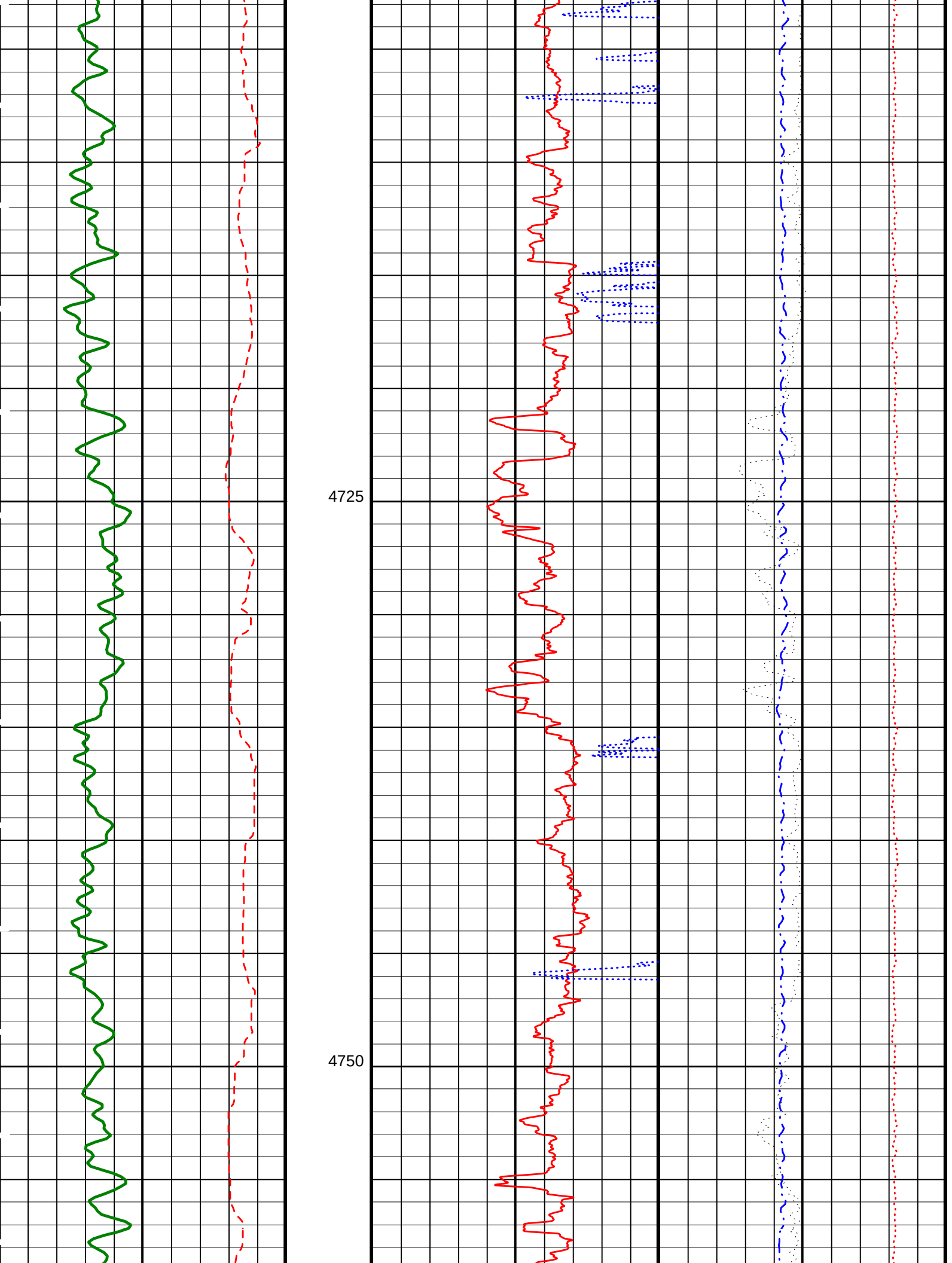

0
(IN)
20
1
(G/C3)
3
4425
-Sea Floor-
4450
4475

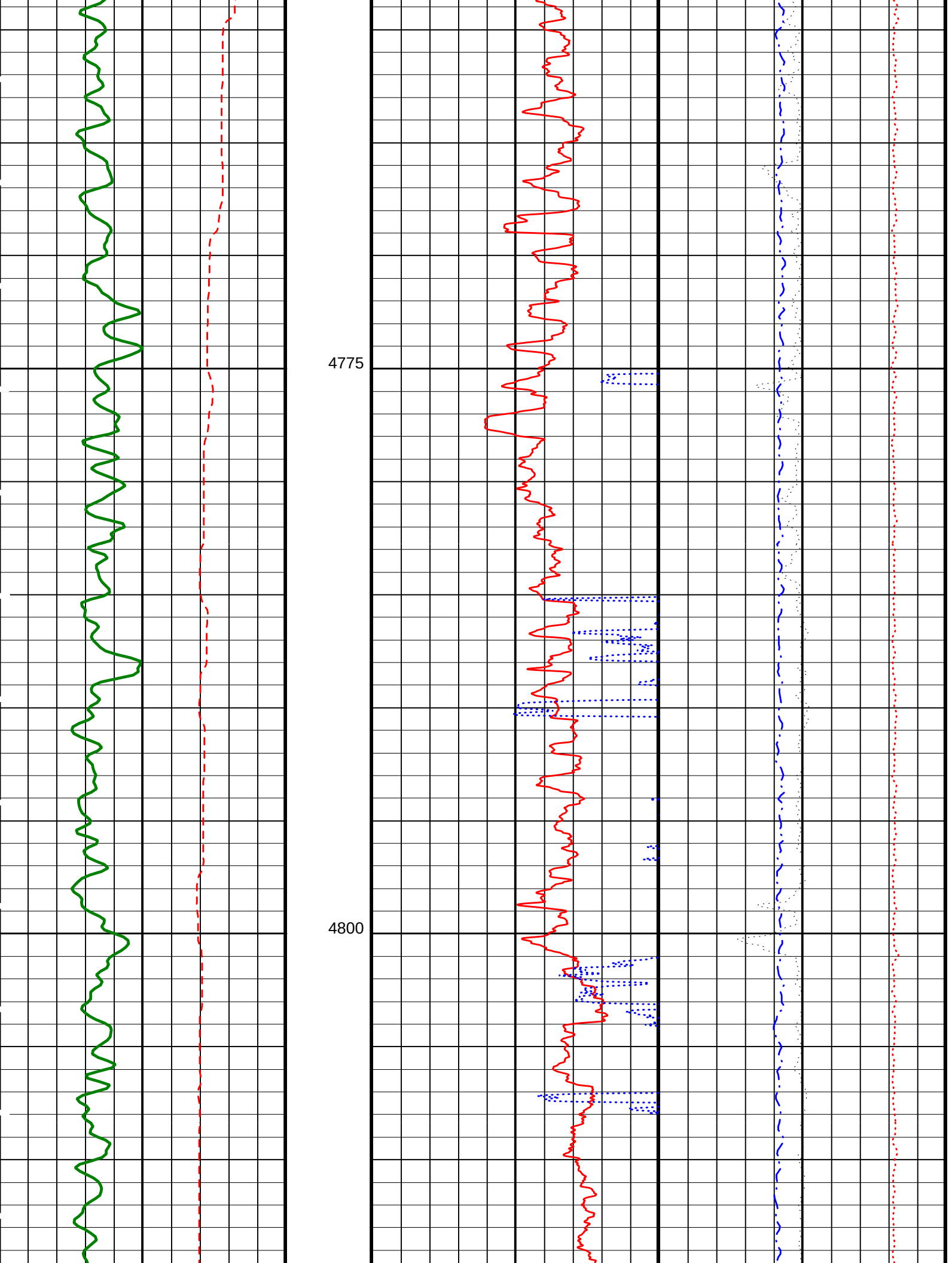

4500
-Drill Pipe-
4525

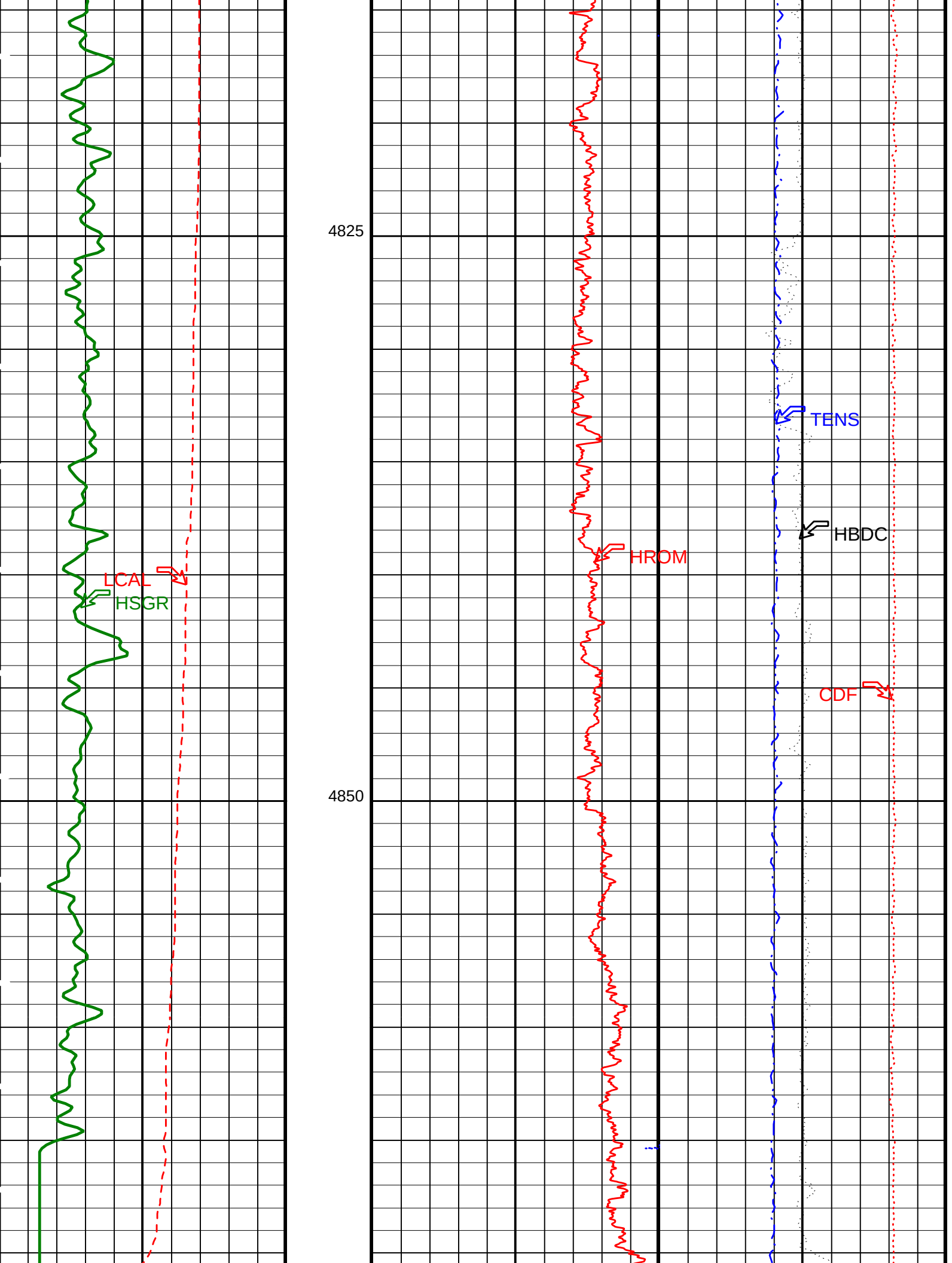

Caliper Closed
4550
TENS
HLEF
HBDC
HROM
LCAL
HSGR
CDF
4575

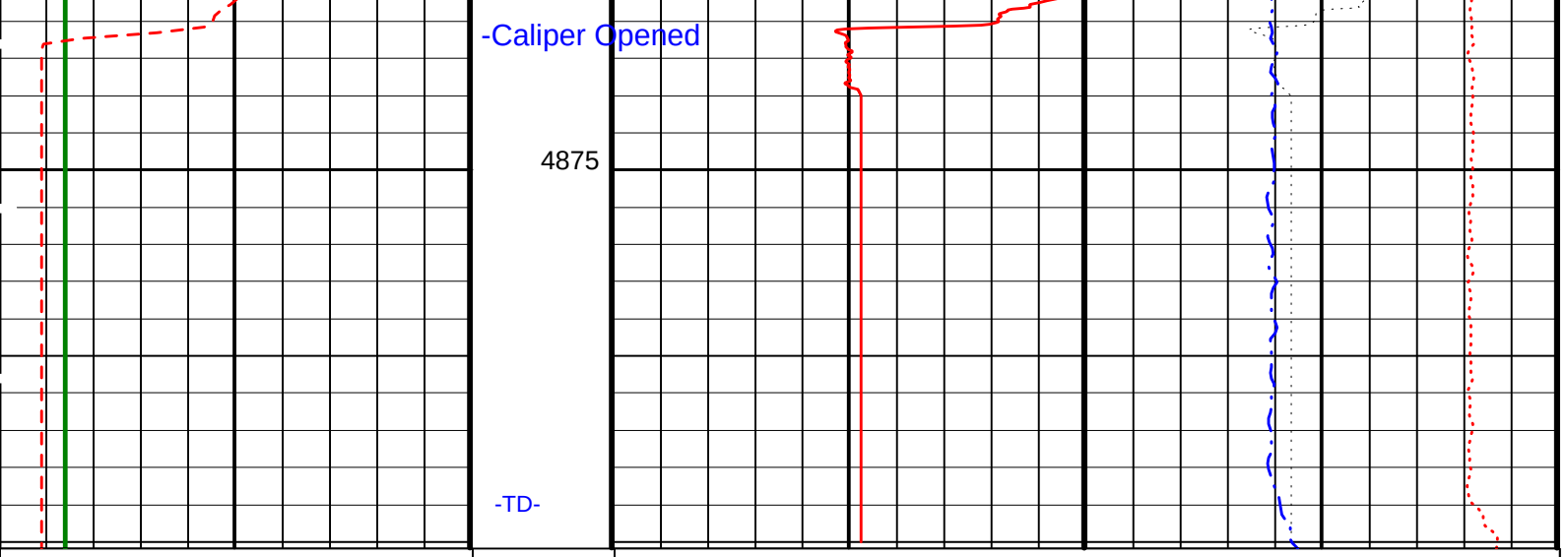

4600
4625


4650
4675
4700


4725
4750


4775
4800


4825
4850
LCAL
HSGR
HROM
TENS
HBDC
CDF



HLDS Caliper (LCAL)
0 (IN) 20

HLDS HR Bulk Density (HROM)
1 (G/C3) 3

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 15

HLDS HR Long Spaced Photoelectric Effect (HLEF)
0 (----) 10

Calibrated Downhole Force (CDF)
5000 (LBF) 0

Tension (TENS)
10000 (LBF) 0

HLDS HR Bulk Density Correction (HBDC)
-0.25 (G/C3) 0.25

Uplog #2

See Remarks for Depth Shift

Log not depth shifted

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	DIT-E: Dual Induction - E		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	17	DEGC
DGF2	Deep 20 kHz Gain Factor	0.979119	
DPH2	Deep 20 kHz Phase Shift	0.0159963	DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	17.0457	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	136.154	MM/M
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ISSBAR	Barite Mud Switch	NOBARITE	
ITEN	DIT-E Temperature Enable	ENABLE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MGF2	Medium 20 kHz Gain Factor	0.974788	
MPH2	Medium 20 kHz Phase Shift	-0.199528	DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	11.3259	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	172.606	MM/M
SBR	Shoulder Bed Resistivity Factor	1	OHMM
SFCR	SFL Channel Ratio	1000	
SFLE	SFL Enable	ENABLE	
SHT	Surface Hole Temperature	20	DEGC
SPAE	DIT-E SPARC Processing Enable	ENABLE	
SPNV	SP Next Value	0	MV
	GPIT-A/B: General Purpose Inclinometer		
ACPP	Accelerometer PROM Presence	PRESENT	
AFMO	Accelerometer Filtering Mode	MOVING_AVERAGE	
ART	Accelerometer Reference Temperature	20	DEGC
GLM	GPIT Logging Mode	DIPM	
ICMO	Inclinometry Computation Mode	AUTOMATIC_SELECTION	
MAPP	Magnetometer PROM Presence	PRESENT	

MDEC	Magnetic Field Declination	9.01564	DEG
MRTE	Magneto Reference Temperature	23	DEGC
TEMS	GPIT Temperature Sensor Used	BOTH	
U-GPOF	Playback OLD VERSION GPIT FILE (BEFORE OP14 + SRPC-3098-FEB_2006_C) ?	NO	
	HLDS: Hostile Litho-Density Sonde		
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
	HNGS-BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	17	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	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
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	-0.00144603	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.15575	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.921105	
	System and Miscellaneous		
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	11.438	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	4.500	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.26	G/C3
DO	Depth Offset for Playback	0.0	M
FLEV	Fluid Level	-50000.00	M
MST	Mud Sample Temperature	-50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	OFF	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	-50000	M
TDD	Total Depth - Driller	4922.00	M
TDL	Total Depth - Logger	4950.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: APSLiquidPorosity_1 Vertical Scale: 1:200 Graphics File Created: 22-Jun-2009 15:28

OP System Version: 17C0-154

DIT-E	17C0-154	GPIT-A/B	SRPC-3762-Q1_2009_OP17
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	HNGC-B	17C0-154

HNGS-BA	17C0-154	DTC-H	17C0-154

Input DLIS Files

DEFAULT	PI_LDL_NGS_033PUP	FN:49	PRODUCER	03-Jun-2009 12:03	4885.2 M	4424.9 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_042PUP	FN:3	PRODUCER	22-Jun-2009 15:28		

Input DLIS Files

DEFAULT	PI_LDL_NGS_032PUP	FN:48	PRODUCER	03-Jun-2009 11:57	4887.5 M	4546.1 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_041PUP	FN:2	PRODUCER	22-Jun-2009 15:21	4887.5 M	4546.1 M

OP System Version: 17C0-154

DIT-E	17C0-154	GPIT-A/B	SRPC-3762-Q1_2009_OP17
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	HNGC-B	17C0-154
HNGS-BA	17C0-154	DTC-H	17C0-154

PIP SUMMARY

Time Mark Every 60 S

Log not depth shifted

See Remarks for Depth Shift

Main Uplog #1

HLDS HR Bulk Density Correction (HBDC)
-0.25 (G/C3) 0.25

Tension (TENS)
10000 (LBF) 0

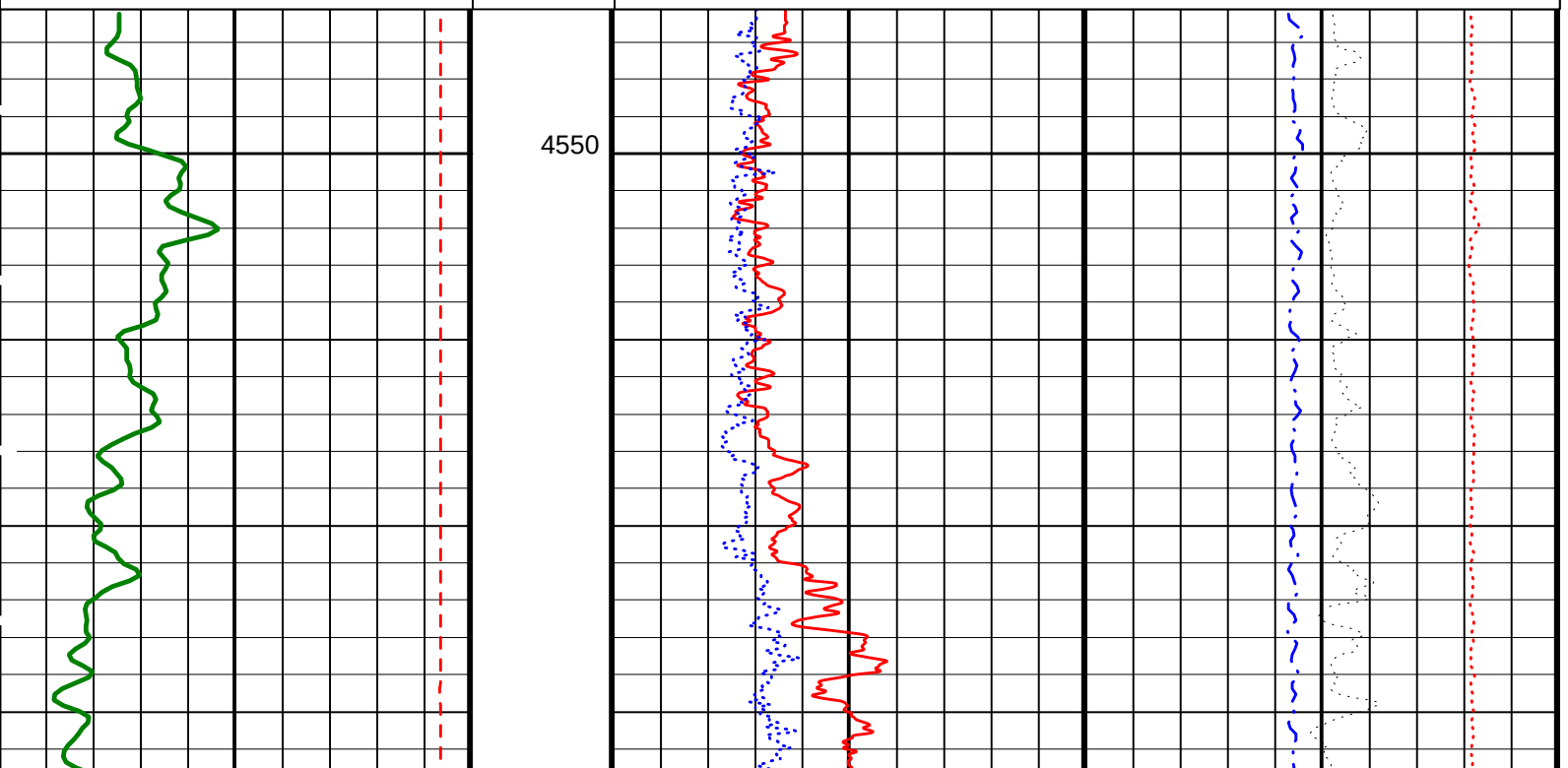
HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 15

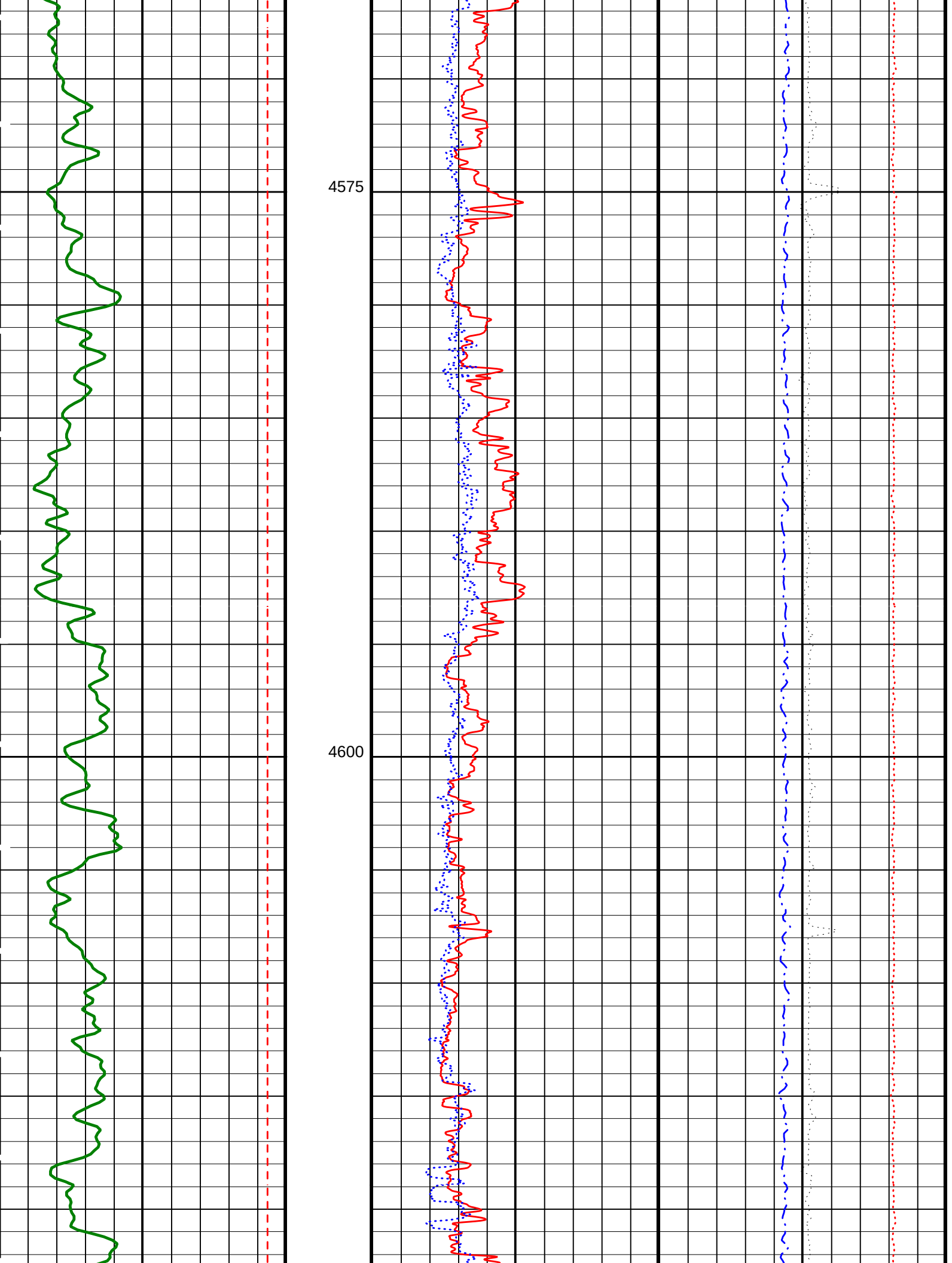
HLDS HR Long Spaced Photoelectric Effect (HLEF)
0 (----) 10

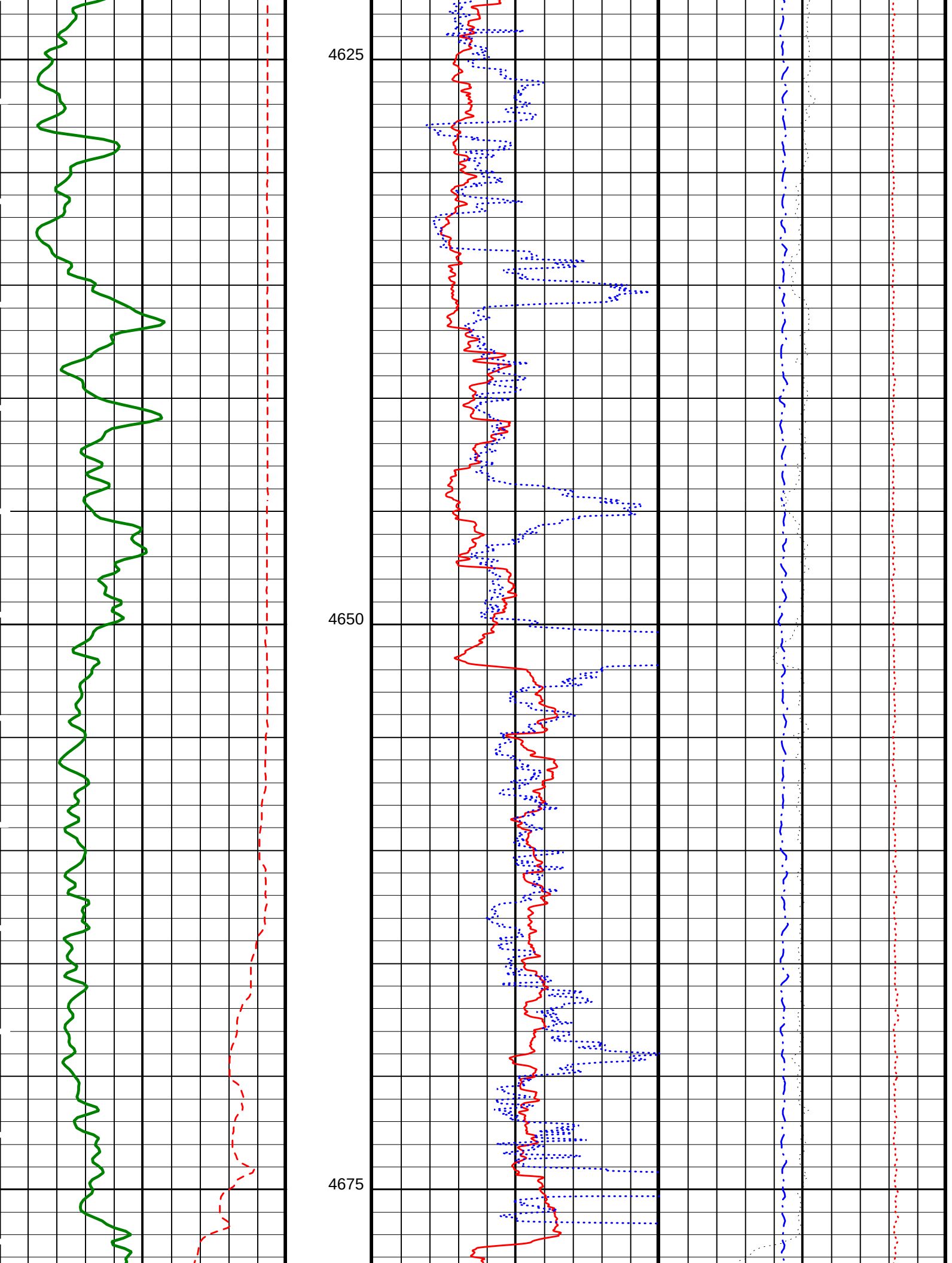
Calibrated Downhole Force (CDF)
5000 (LBF) 0

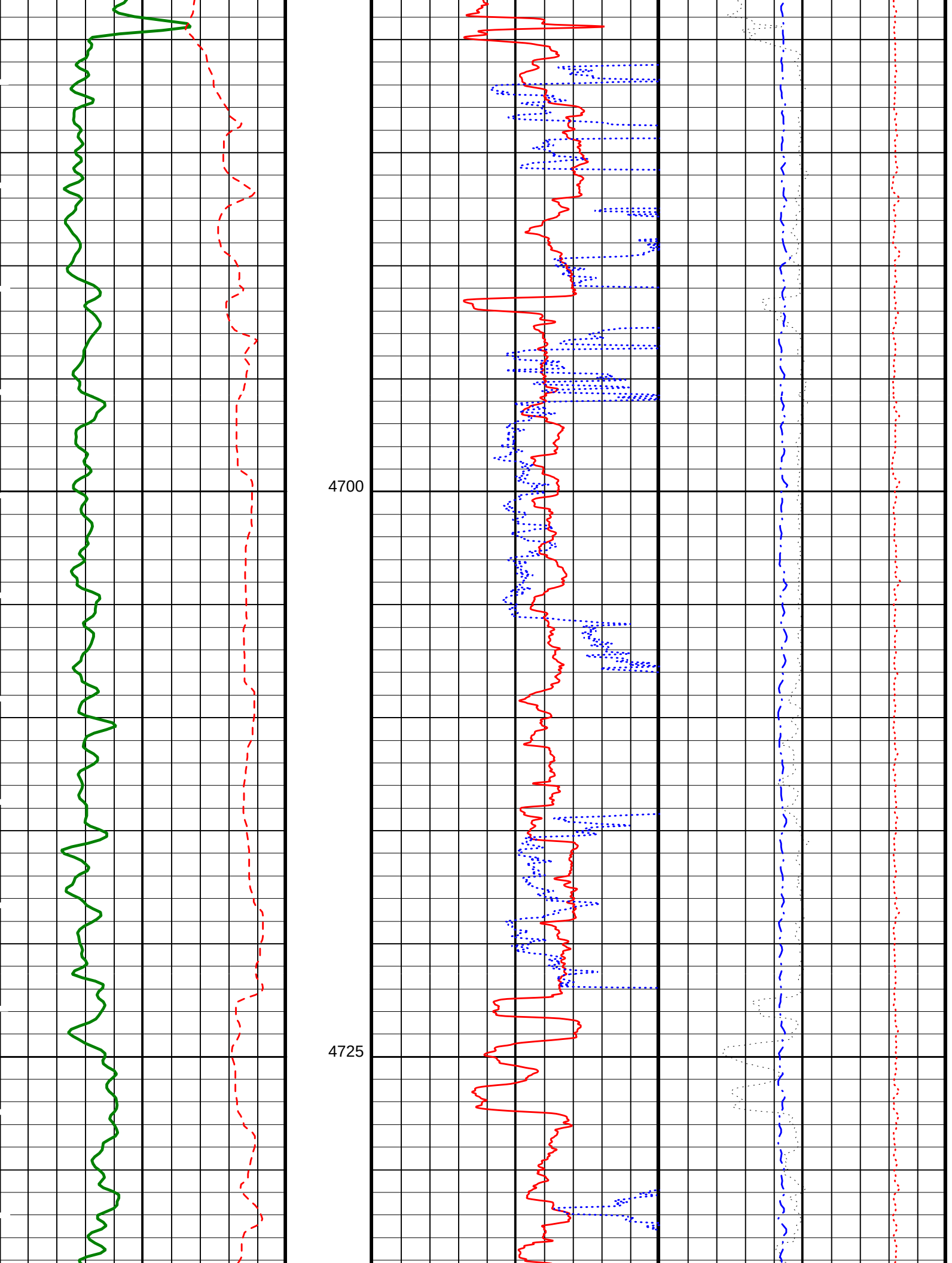
HLDS Caliper (LCAL)
0 (IN) 20

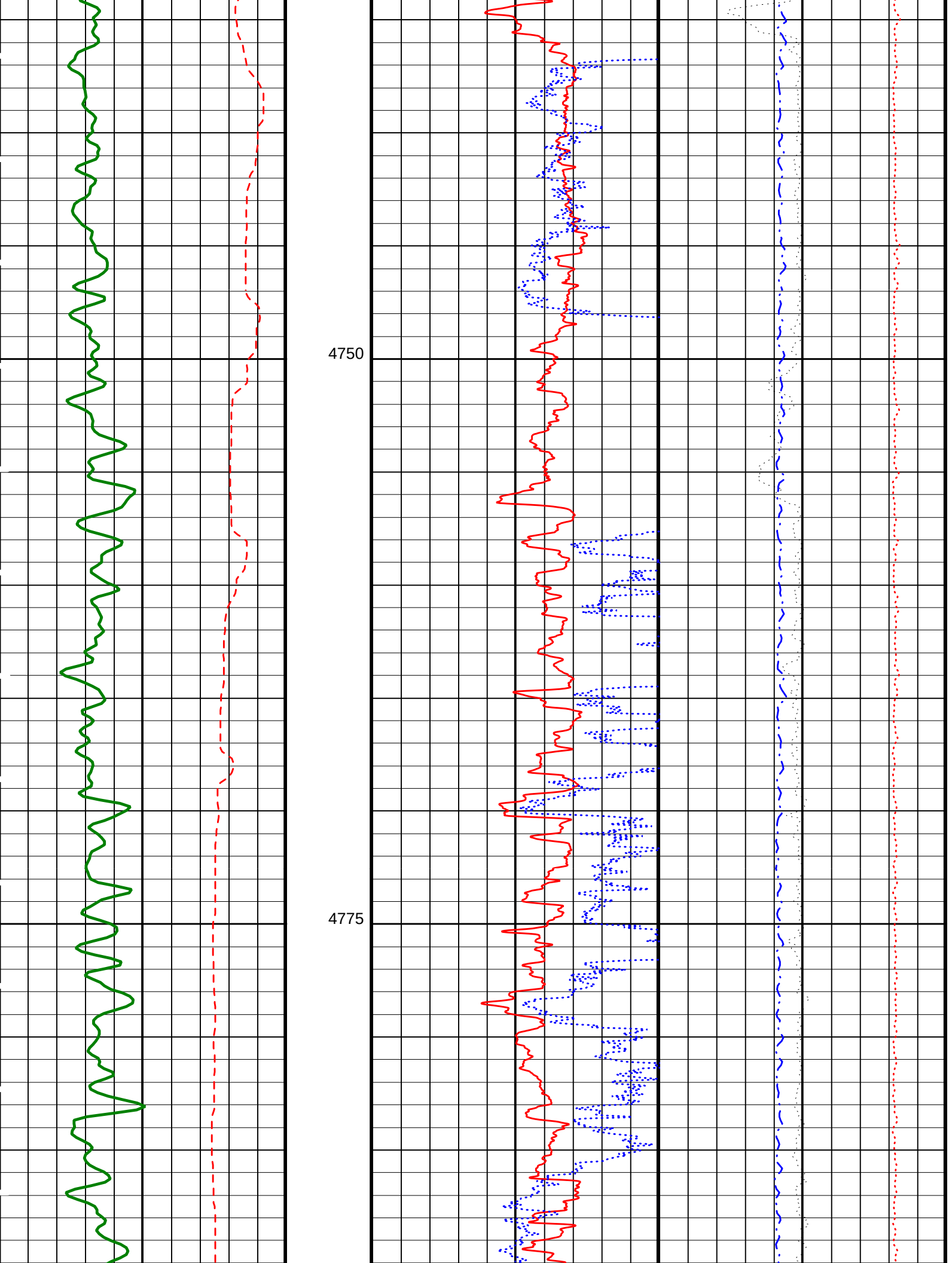
HLDS HR Bulk Density (HROM)
1 (G/C3) 3

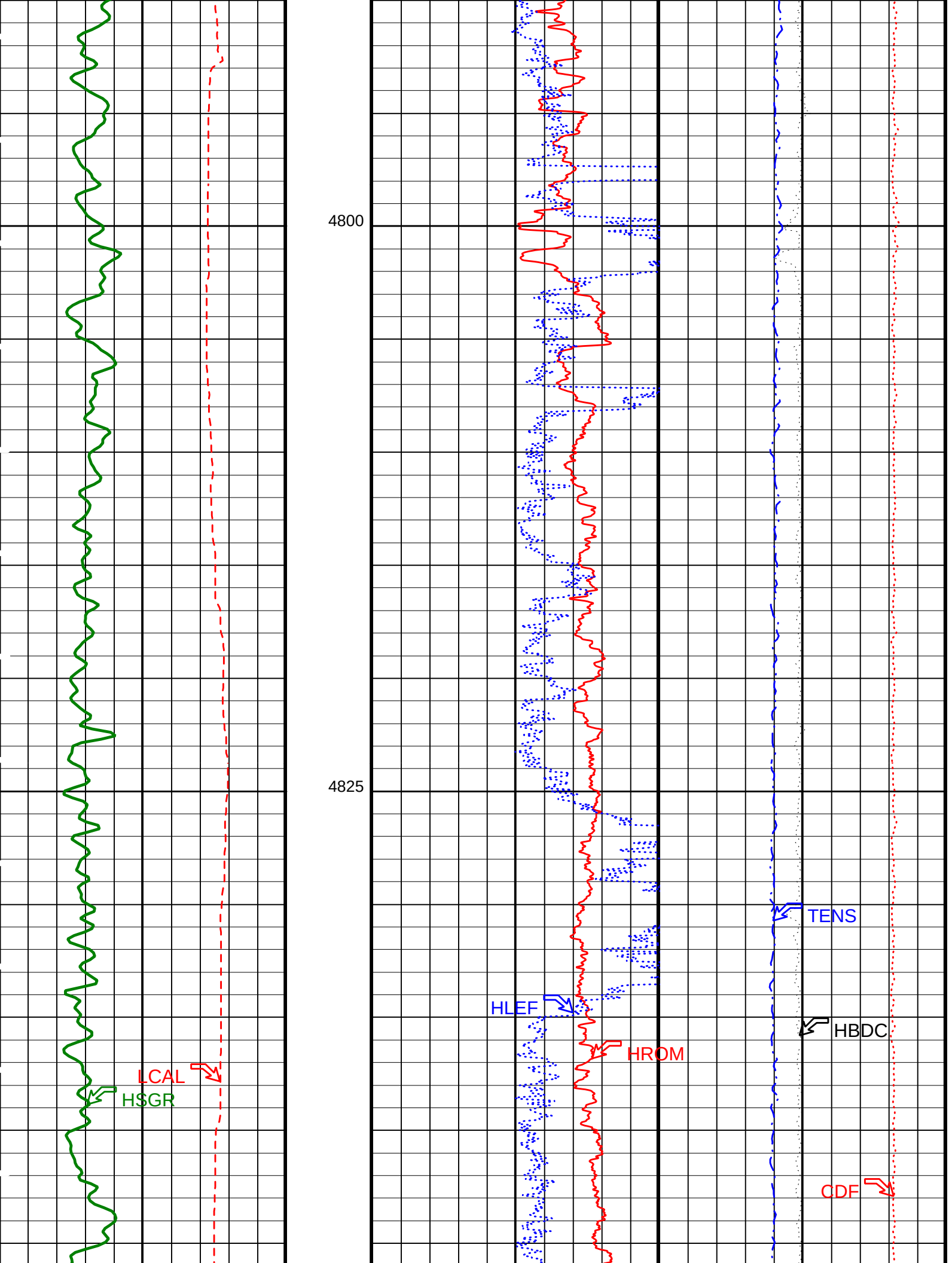


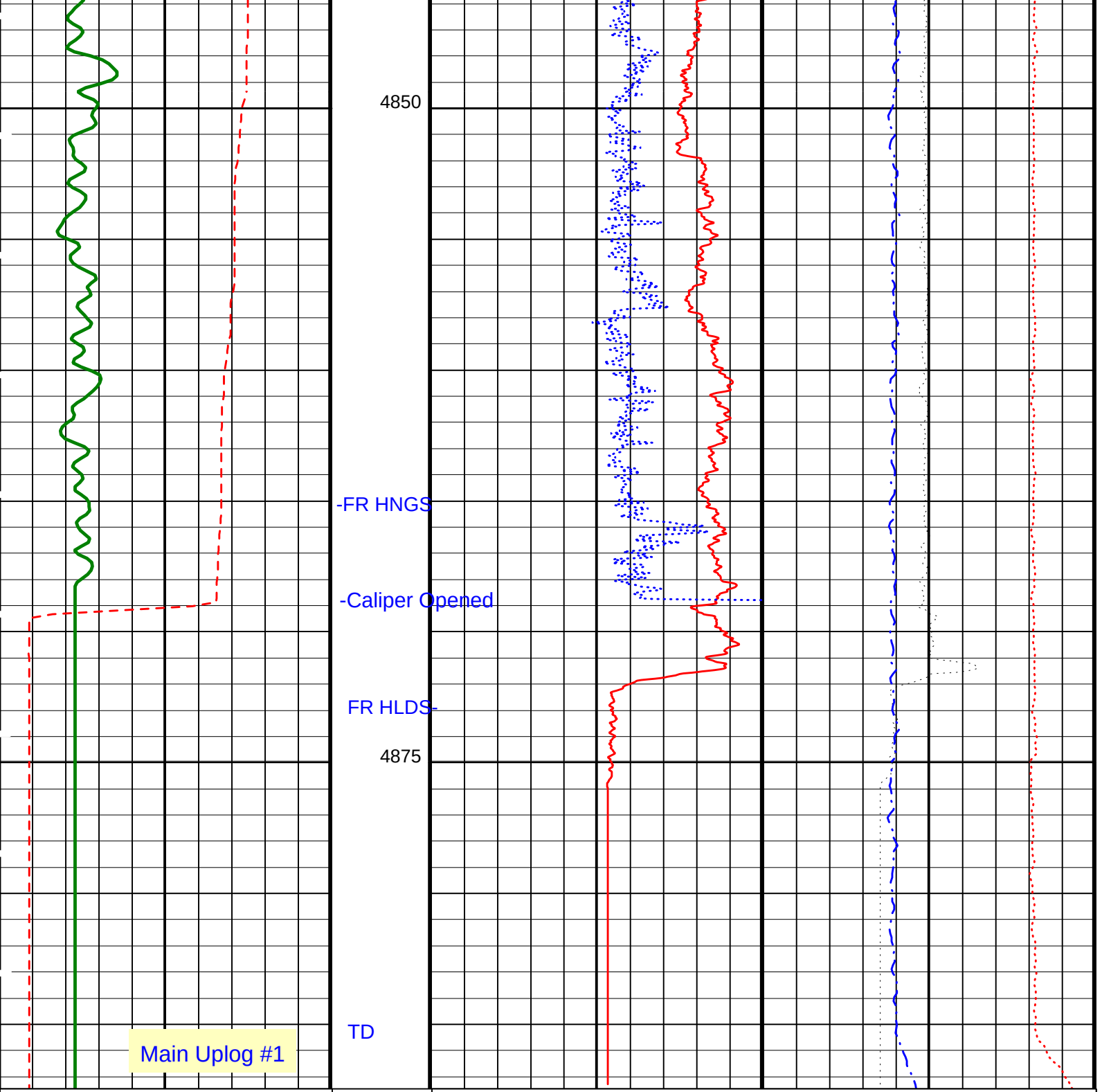

4575
4600


4625
4650
4675


4700
4725


4750
4775


4800
4825
LCAL
HSGR
HLEF
HROM
TENS
HBDC
CDF



HLDS Caliper (LCAL)
0 (IN) 20

HLDS HR Bulk Density (HROM)
1 (G/C3) 3

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 15

HLDS HR Long Spaced Photoelectric Effect (HLEF)
0 (----) 10

Calibrated Downhole Force (CDF)
5000 (LBF) 0

Tension (TENS)
10000 (LBF) 0

HLDS HR Bulk Density Correction (HBDC)
-0.25 (G/C3) 0.25

Log not depth shifted

See Remarks for Depth Shift

PIP SUMMARY

Time Mark Every 60 S

Parameters

Parameters

DLIS Name	Description	Value	
	DIT-E: Dual Induction - E		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	17	DEGC
DGF2	Deep 20 kHz Gain Factor	0.979119	
DPH2	Deep 20 kHz Phase Shift	0.0159963	DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	17.0457	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	136.154	MM/M
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ISSBAR	Barite Mud Switch	NOBARITE	
ITEN	DIT-E Temperature Enable	ENABLE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MGF2	Medium 20 kHz Gain Factor	0.974788	
MPH2	Medium 20 kHz Phase Shift	-0.199528	DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	11.3259	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	172.606	MM/M
SBR	Shoulder Bed Resistivity Factor	1	OHMM
SFCR	SFL Channel Ratio	1000	
SFLE	SFL Enable	ENABLE	
SHT	Surface Hole Temperature	20	DEGC
SPAE	DIT-E SPARC Processing Enable	ENABLE	
SPNV	SP Next Value	0	MV
	GPIT-A/B: General Purpose Inclinometer		
ACPP	Accelerometer PROM Presence	PRESENT	
AFMO	Accelerometer Filtering Mode	MOVING_AVERAGE	
ART	Accelerometer Reference Temperature	20	DEGC
GLM	GPIT Logging Mode	DIPM	
ICMO	Inclinometry Computation Mode	AUTOMATIC_SELECTION	
MAPP	Magnetometer PROM Presence	PRESENT	
MDEC	Magnetic Field Declination	9.01564	DEG
MRTE	Magneto Reference Temperature	23	DEGC
TEMS	GPIT Temperature Sensor Used	BOTH	
U-GPOF	Playback OLD VERSION GPIT FILE (BEFORE OP14 + SRPC-3098-FEB_2006_C) ?	NO	
	HLDS: Hostile Litho-Density Sonde		
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
	HNGS-BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	17	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	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
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	-0.00144603	

HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.15575	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.921105	

System and Miscellaneous

ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	11.438	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	4.500	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.26	G/C3
DO	Depth Offset for Playback	0.0	M
FLEV	Fluid Level	-50000.00	M
MST	Mud Sample Temperature	-50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	OFF	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	-50000	M
TDD	Total Depth - Driller	4922.00	M
TDL	Total Depth - Logger	4950.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: APSLiquidPorosity_1 Vertical Scale: 1:200 Graphics File Created: 22-Jun-2009 15:21

OP System Version: 17C0-154

DIT-E	17C0-154	GPIT-A/B	SRPC-3762-Q1_2009_OP17
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	HNGC-B	17C0-154
HNGS-BA	17C0-154	DTC-H	17C0-154

Input DLIS Files

DEFAULT	PI_LDL_NGS_032PUP	FN:48	PRODUCER	03-Jun-2009 11:57	4887.5 M	4546.1 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_041PUP	FN:2	PRODUCER	22-Jun-2009 15:21

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
General Purpose Inclinometer Wellsite Calibration - CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 16-May-2009 6:55							
TEMPERATURE REFERENCE :	N/A	N/A	20	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	99	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	3	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	743	N/A	N/A	N/A	
General Purpose Inclinometer Wellsite Calibration - CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 16-May-2009 6:56							
TEMPERATURE REFERENCE :	N/A	N/A	23	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	3	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	9	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	507	N/A	N/A	N/A	
Hostile Litho-Density Sonde Wellsite Calibration - Background Measurement							
Master: 22-Apr-2009 13:53 Before: 16-May-2009 7:00 After: 24-May-2009 0:42							
SS Cs Resolution Bkg	9.000	7.759	7.744	7.812	0.06878	1.800	%
LS Cs Resolution Bkg	9.000	8.110	8.072	8.111	0.03907	1.800	%
LSW1 Background	100.0	93.49	92.71	93.03	0.3278	3.000	CPS
LSW2 Background	100.0	85.73	84.14	83.64	-0.5016	3.000	CPS
LSW3 Background	200.0	192.7	191.4	192.8	1.409	6.000	CPS

LSW4 Background	250.0	235.8	233.7	235.8	2.164	7.500	CPS
LSW5 Background	600.0	552.3	550.2	547.0	-3.192	18.00	CPS
SSW1 Background	100.0	90.71	90.74	90.86	0.1250	3.000	CPS
SSW2 Background	200.0	156.2	156.2	156.5	0.2310	6.000	CPS
SSW3 Background	500.0	436.6	432.7	435.4	2.637	15.00	CPS
SSW4 Background	270.0	234.8	232.3	232.1	-0.1494	8.100	CPS
SSW5 Background	200.0	168.2	167.2	166.2	-0.9471	6.000	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Aluminum Measurement
Master: 22-Apr-2009 14:54

LSW1 Aluminum	600.0	576.2	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	831.7	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	999.8	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	502.6	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	456.4	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2571	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	7074	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9869	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	4093	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	501.7	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Lithology Measurement
Master: 22-Apr-2009 14:47

LSW1 Iron	400.0	396.8	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	672.9	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	883.7	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	454.8	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	415.6	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1882	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5884	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8992	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3724	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	443.2	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Caliper Calibration
Before: 16-May-2009 8:51

HLDS Caliper Small Ring	8.000	N/A	10.28	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	12.00	N/A	14.15	N/A	N/A	N/A	IN

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check
Master: 12-Mar-2009 20:35 Before: 16-May-2009 19:11 After: 24-May-2009 0:43

Na 511 Peak Loc	40.00	39.63	39.53	39.69	0.1544	1.000	
Na 511 Peak Res	15.50	14.89	16.37	15.16	-1.211	2.000	%
High Voltage	1150	1168	1179	1182	2.899	N/A	V
Na 1785 Peak Loc	142.6	142.1	141.7	142.3	0.5758	7.000	
Na 1785 Peak Res	8.500	8.613	9.055	8.876	-0.1792	2.000	%
Temperature	15.50	27.34	32.56	31.31	-1.242	N/A	DEGC
Na Count Rate	45.00	41.11	38.79	38.87	0.08134	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check
Master: 12-Mar-2009 20:35 Before: 16-May-2009 19:11 After: 24-May-2009 0:43

Na 511 Peak Loc	40.00	39.72	39.75	39.57	-0.1780	1.000	
Na 511 Peak Res	15.50	15.49	15.15	16.24	1.096	2.000	%
High Voltage	1150	1102	1113	1115	1.885	N/A	V
Na 1785 Peak Loc	142.6	142.7	142.3	142.0	-0.3518	7.000	
Na 1785 Peak Res	8.500	7.944	8.759	8.750	-0.008512	2.000	%
Temperature	15.50	27.88	33.15	33.20	0.05202	N/A	DEGC
Na Count Rate	45.00	41.22	39.43	39.10	-0.3307	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Ratio Of Detector 1 To Detector 2
Master: 12-Mar-2009 20:35 Before: 16-May-2009 19:11 After: 24-May-2009 0:43

Coincidence Count Rate Ratio	1.000	0.9971	0.9835	0.9958	0.01234	0.05000	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 1 Calibration
Master: 12-Mar-2009 20:35

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	211.0	--	--	--	--	
Th Peak Res	7.000	6.897	--	--	--	--	%
Background Count Rate	142.5	19.53	--	--	--	--	CPS
Gain Ratio	1.000	1.013	--	--	--	--	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 2 Calibration
Master: 12-Mar-2009 20:35

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	208.9	--	--	--	--	
Th Peak Res	7.000	7.130	--	--	--	--	%
Background Count Rate	142.5	20.80	--	--	--	--	CPS
Gain Ratio	1.000	1.001	--	--	--	--	

Dual Induction - E / Equipment Identification

Primary Equipment:		
Dual Induction Sonde	DIS - HB	129
Dual Induction Cartridge	DIC - EB	171
Auxiliary Equipment:		
Mass Isolated Housing	MIH - ZA	342

Dual Induction - E Wellsite Calibration

Induction Electronics (10 kHz)

Phase	ID Elect Real Offset 10 kHz MM/M	Value
Before		31.35
	-267.4 (Minimum) 32.65 (Nominal) 332.6 (Maximum)	

Phase	ID Elect Real Gain 10 kHz	Value
Before		0.9356
	0.7960 (Minimum) 0.9460 (Nominal) 1.124 (Maximum)	

Phase	ID Elect Phase 10 kHz DEG	Value
Before		9.361
	-0.5967 (Minimum) 9.403 (Nominal) 19.40 (Maximum)	

Phase	ID Elect Quad Offset 10 kHz MM/M	Value
Before		22.61
	-278.5 (Minimum) 21.47 (Nominal) 321.5 (Maximum)	

Phase	ID Elect Quad Gain 10 kHz	Value
Before		0.9520
	0.8109 (Minimum) 0.9609 (Nominal) 1.145 (Maximum)	

Phase	IM Elect Phase 10 kHz DEG	Value
Before		9.212
	-0.7277 (Minimum) 9.272 (Nominal) 19.27 (Maximum)	

Phase	IM Elect Real Offset 10 kHz MM/M	Value
Before		83.78
	-465.7 (Minimum) 84.34 (Nominal) 634.3 (Maximum)	

Phase	IM Elect Real Gain 10 kHz	Value
Before		0.9448
	0.8034 (Minimum) 0.9534 (Nominal) 1.134 (Maximum)	

Phase	IM Elect Quad Offset 10 kHz MM/M	Value
Before		44.09
	-505.4 (Minimum) 44.57 (Nominal) 594.6 (Maximum)	

Phase	IM Elect Quad Gain 10 kHz	Value
Before		0.9253
	0.7864 (Minimum) 0.9364 (Nominal) 1.110 (Maximum)	

Before: 15-May-2009 5:18

Dual Induction - E Wellsite Calibration

Induction Electronics (20 kHz)

Phase	ID Elect Real Offset 20 kHz MM/M	Value
Before		12.44
	-112.1 (Minimum) 12.92 (Nominal) 137.9 (Maximum)	

Phase	ID Elect Real Gain 20 kHz	Value
Before		0.9636
	0.8195 (Minimum) 0.9695 (Nominal) 1.157 (Maximum)	

Phase	ID Elect Phase 20 kHz DEG	Value
Before		4.652
	-10.06 (Minimum) 4.941 (Nominal) 19.94 (Maximum)	

Phase	ID Elect Quad Offset 20 kHz MM/M	Value
Before		9.195
	-116.3 (Minimum) 8.664 (Nominal) 133.7 (Maximum)	

Phase	ID Elect Quad Gain 20 kHz	Value
Before		0.9834
	0.8375 (Minimum) 0.9875 (Nominal) 1.182 (Maximum)	

Phase	IM Elect Phase 20 kHz DEG	Value
Before		5.049
	-9.662 (Minimum) 5.338 (Nominal) 20.34 (Maximum)	

Phase	IM Elect Real Offset 20 kHz MM/M	Value
Before		34.42
	-190.4 (Minimum) 34.62 (Nominal) 259.6 (Maximum)	

Phase	IM Elect Real Gain 20 kHz	Value
Before		0.9894
	0.8410 (Minimum) 0.9910 (Nominal) 1.187 (Maximum)	

Phase	IM Elect Quad Offset 20 kHz MM/M	Value
Before		18.24
	-206.6 (Minimum) 18.45 (Nominal) 243.4 (Maximum)	

Phase	IM Elect Quad Gain 20 kHz	Value
Before		0.9688
	0.8231 (Minimum) 0.9731 (Nominal) 1.162 (Maximum)	

Before: 15-May-2009 5:19

Dual Induction - E Wellsite Calibration

Induction Electronics (40 kHz)

Phase	ID Elect Real Offset 40 kHz MM/M	Value
Before		8.179
	-76.50 (Minimum) 8.503 (Nominal) 93.50 (Maximum)	

Phase	ID Elect Real Gain 40 kHz	Value
Before		0.9537
	0.8112 (Minimum) 0.9612 (Nominal) 1.145 (Maximum)	

Phase	ID Elect Phase 40 kHz DEG	Value
Before		16.10
	-3.044 (Minimum) 16.96 (Nominal) 36.96 (Maximum)	

Phase	ID Elect Quad Offset 40 kHz MM/M	Value
Before		6.158
	-79.21 (Minimum) 5.786 (Nominal) 90.79 (Maximum)	

Phase	ID Elect Quad Gain 40 kHz	Value
Before		0.9826
	0.8370 (Minimum) 0.9870 (Nominal) 1.182 (Maximum)	

Phase	IM Elect Phase 40 kHz DEG	Value
Before		15.89
	-3.281 (Minimum) 16.72 (Nominal) 36.72 (Maximum)	

Phase	IM Elect Real Offset 40 kHz MM/M	Value
Before		22.32
	-107.6 (Minimum) 22.42 (Nominal) 152.4 (Maximum)	

Phase	IM Elect Real Gain 40 kHz	Value
Before		0.9973
	0.8470 (Minimum) 0.9970 (Nominal) 1.196 (Maximum)	

Phase	IM Elect Quad Offset 40 kHz MM/M	Value

Phase	IM Elect Quad Gain 40 kHz	Value

Before		11.91	Before		0.9762
-118.0 (Minimum)	12.02 (Nominal)	142.0 (Maximum)	0.8285 (Minimum)	0.9785 (Nominal)	1.170 (Maximum)

Before: 15-May-2009 5:20

Dual Induction - E Wellsite Calibration

SFL Electronics

Phase	SFL Voltage Offset MV	Value	Phase	SFL Voltage Gain	Value
Before		0.1774	Before		0.9994
-15.00 (Minimum)	0 (Nominal)	15.00 (Maximum)	0.8500 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Phase	SFL Current Offset MA	Value	Phase	SFL Current Gain	Value
Before		0.03770	Before		1.011
-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	0.8500 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Before: 15-May-2009 5:21

Dual Induction - E Wellsite Calibration

Electronics Calibration Changes Files/Depth Intervals: 8: 3200.4 - 3276.6 10: 4407.4 - 4888.2 11: 4887.5 - 4546.1 12: 4885.2 - 4424.9

Phase	ID (R > 27 OHM-M) MM/M	Value	Phase	ID (R < 27 OHM-M) %	Value	Phase	SFL (R < 1 OHM-M) OHMM	Value
After		0	After		0.0001481	After		0.0005463
0 (Minimum)	0 (Nominal)	0.7500 (Maximum)	0 (Minimum)	0 (Nominal)	2.000 (Maximum)	0 (Minimum)	0 (Nominal)	0.02000 (Maximum)

Phase	IM (R > 27 OHM-M) MM/M	Value	Phase	IM (R < 27 OHM-M) %	Value
After		0	After		0.0001102
0 (Minimum)	0 (Nominal)	0.7500 (Maximum)	0 (Minimum)	0 (Nominal)	2.000 (Maximum)

Phase	SFL (R > 27 OHM-M) MM/M	Value	Phase	SFL (R < 27 OHM-M) %	Value
After		0	After		0.0003222
0 (Minimum)	0 (Nominal)	0.7500 (Maximum)	0 (Minimum)	0 (Nominal)	2.000 (Maximum)

After: 23-May-2009 21:54

Dual Induction - E Master Calibration

Test Loop Calibration: Calibration of Internal Reference to Test Loop Standard

Phase	Deep 10 kHz Gain Factor	Value	Phase	Deep 20 kHz Gain Factor	Value	Phase	Deep 40 kHz Gain Factor	Value
Master		0.9686	Master		0.9791	Master		0.9903
0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)

Phase	Medium 10 kHz Gain Factor	Value	Phase	Medium 20 kHz Gain Factor	Value	Phase	Medium 40 kHz Gain Factor	Value
Master		0.9696	Master		0.9748	Master		0.9998
0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)

Phase	Deep 10 kHz Phase Shift	Value	Phase	Deep 20 kHz Phase Shift	Value	Phase	Deep 40 kHz Phase Shift	Value
Master		0.2636	Master		0.01600	Master		-1.113
-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)	-2.000 (Minimum)	0 (Nominal)	2.000 (Maximum)	-4.000 (Minimum)	-1.000 (Nominal)	2.000 (Maximum)

Phase	Medium 10 kHz Phase Shift	Value	Phase	Medium 20 kHz Phase Shift	Value	Phase	Medium 40 kHz Phase Shift	Value
Master		0.07870	Master		-0.1995	Master		-0.8851
-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)	-3.000 (Minimum)	-1.000 (Nominal)	1.000 (Maximum)	-5.000 (Minimum)	-2.000 (Nominal)	1.000 (Maximum)

Master: Calibration out of date 30-Apr-2008 14:59

Dual Induction - E Master Calibration

Sonde Error Corrections: Correction for sonde response in zero conductivity environment. (Normalized to 25C).

Phase	Real Deep 10 kHz S.E. Corr.	Value	Phase	Real Deep 20 kHz S.E. Corr.	Value	Phase	Real Deep 40 kHz S.E. Corr.	Value
Master		39.58	Master		17.05	Master		5.151
-50.00 (Minimum)	0 (Nominal)	125.0 (Maximum)	-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)	-15.00 (Minimum)	0 (Nominal)	15.00 (Maximum)

Phase	Quad Deep 10 kHz S.E. Corr.	Value	Phase	Quad Deep 20 kHz S.E. Corr.	Value	Phase	Quad Deep 40 kHz S.E. Corr.	Value
Master		245.8	Master		136.2	Master		78.45
-250.0 (Minimum)	0 (Nominal)	350.0 (Maximum)	-125.0 (Minimum)	0 (Nominal)	200.0 (Maximum)	-75.00 (Minimum)	0 (Nominal)	125.0 (Maximum)

Phase	Real Medium 10 kHz S.E. Corr.	Value	Phase	Real Medium 20 kHz S.E. Corr.	Value	Phase	Real Medium 40 kHz S.E. Corr.	Value
Master		31.10	Master		11.33	Master		3.578

Phase	Quad Medium 10 kHz S.E. Corr.	Value
Master		328.1
	-1300 (Minimum) 0 (Nominal) 1300 (Maximum)	

Phase	Quad Medium 20 kHz S.E. Corr.	Value
Master		172.6
	-650.0 (Minimum) 0 (Nominal) 650.0 (Maximum)	

Phase	Quad Medium 40 kHz S.E. Corr.	Value
Master		112.8
	-350.0 (Minimum) 0 (Nominal) 350.0 (Maximum)	

Master: Calibration out of date 30-Apr-2008 15:24

General Purpose Inclinometer / Equipment Identification

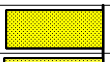
Primary Equipment:		
GPIT Cartridge - A	GPIC - A	719
Auxiliary Equipment:		
GPIT Housing	GPIH - A	2864

Hostile Litho-Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS - D	57
Hostile Litho Density High Voltage	HLDV - D	51
Gamma Source Radioactive	GSR - Z	2397
Auxiliary Equipment:		
Hostile Litho Density Pad	HLDP - C	61
Hostile Litho Density High Voltage Housi	HEH - H	53

Hostile Litho-Density Sonde Wellsite Calibration

Background Measurement

Phase	SS Cs Resolution Bkg %	Value
Master		7.759
Before		7.744
After		7.812
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LS Cs Resolution Bkg %	Value
Master		8.110
Before		8.072
After		8.111
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Phase	LSW1 Background CPS	Value
Master		93.49
Before		92.71
After		93.03
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	LSW2 Background CPS	Value
Master		85.73
Before		84.14
After		83.64
	50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)	

Phase	LSW3 Background CPS	Value
Master		192.7
Before		191.4
After		192.8
	110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)	

Phase	LSW4 Background CPS	Value
Master		235.8
Before		233.7
After		235.8
	140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)	

Phase	LSW5 Background CPS	Value
Master		552.3
Before		550.2
After		547.0
	330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)	

Phase	SSW1 Background CPS	Value
Master		90.71
Before		90.74
After		90.86
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	

Phase	SSW2 Background CPS	Value
Master		156.2
Before		156.2
After		156.5
	100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)	

Phase	SSW3 Background CPS	Value
Master		436.6
Before		432.7
After		435.4
	280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	

Phase	SSW4 Background CPS	Value
Master		234.8
Before		232.3
After		232.1
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)	

Phase	SSW5 Background CPS	Value
Master		168.2
Before		167.2
After		166.2
	110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)	

Master: 22-Apr-2009 13:53 Before: 16-May-2009 7:00 After: 24-May-2009 0:42

Hostile Litho-Density Sonde Master Calibration

Detector Background Measurement

Phase	LSW1 Background CPS	Value
Master		93.49
	55.00 100.0 150.0	

Phase	LSW2 Background CPS	Value
Master		85.73
	50.00 100.0 140.0	

Phase	LSW3 Background CPS	Value
Master		192.7
	110.0 200.0 290.0	

(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)

Phase	LSW4 Background CPS	Value
Master		235.8
140.0 (Minimum)	250.0 (Nominal)	360.0 (Maximum)

Phase	LSW5 Background CPS	Value
Master		552.3
330.0 (Minimum)	600.0 (Nominal)	830.0 (Maximum)

Phase	LS Cs Resolution Bkg %	Value
Master		8.110
7.000 (Minimum)	9.000 (Nominal)	11.00 (Maximum)

Phase	SSW1 Background CPS	Value
Master		90.71
55.00 (Minimum)	100.0 (Nominal)	150.0 (Maximum)

Phase	SSW2 Background CPS	Value
Master		156.2
100.0 (Minimum)	200.0 (Nominal)	260.0 (Maximum)

Phase	SSW3 Background CPS	Value
Master		436.6
280.0 (Minimum)	500.0 (Nominal)	700.0 (Maximum)

Phase	SSW4 Background CPS	Value
Master		234.8
150.0 (Minimum)	270.0 (Nominal)	380.0 (Maximum)

Phase	SSW5 Background CPS	Value
Master		168.2
110.0 (Minimum)	200.0 (Nominal)	270.0 (Maximum)

Phase	SS Cs Resolution Bkg %	Value
Master		7.759
7.000 (Minimum)	9.000 (Nominal)	11.00 (Maximum)

Master: 22-Apr-2009 13:53

Hostile Litho-Density Sonde Master Calibration

Detector Aluminum Measurement (bkgd-subtracted)

Phase	LSW1 Aluminum CPS	Value
Master		576.2
420.0 (Minimum)	600.0 (Nominal)	770.0 (Maximum)

Phase	LSW2 Aluminum CPS	Value
Master		831.7
650.0 (Minimum)	900.0 (Nominal)	1150 (Maximum)

Phase	LSW3 Aluminum CPS	Value
Master		999.8
800.0 (Minimum)	1100 (Nominal)	1450 (Maximum)

Phase	LSW4 Aluminum CPS	Value
Master		502.6
410.0 (Minimum)	580.0 (Nominal)	740.0 (Maximum)

Phase	LSW5 Aluminum CPS	Value
Master		456.4
410.0 (Minimum)	570.0 (Nominal)	740.0 (Maximum)

Phase	SSW1 Aluminum CPS	Value
Master		2571
2000 (Minimum)	2800 (Nominal)	3200 (Maximum)

Phase	SSW2 Aluminum CPS	Value
Master		7074
5800 (Minimum)	8000 (Nominal)	9300 (Maximum)

Phase	SSW3 Aluminum CPS	Value
Master		9869
8300 (Minimum)	11600 (Nominal)	13500 (Maximum)

Phase	SSW4 Aluminum CPS	Value
Master		4093
3500 (Minimum)	5000 (Nominal)	5800 (Maximum)

Phase	SSW5 Aluminum CPS	Value
Master		501.7
470.0 (Minimum)	660.0 (Nominal)	770.0 (Maximum)

Master: 22-Apr-2009 14:54

Hostile Litho-Density Sonde Master Calibration

Detector Litholog Measurement (bkgd-subtracted)

Phase	LSW1 Iron CPS	Value
Master		396.8
290.0 (Minimum)	400.0 (Nominal)	560.0 (Maximum)

Phase	LSW2 Iron CPS	Value
Master		672.9
520.0 (Minimum)	730.0 (Nominal)	950.0 (Maximum)

Phase	LSW3 Iron CPS	Value
Master		883.7
720.0 (Minimum)	1000 (Nominal)	1350 (Maximum)

Phase	LSW4 Iron CPS	Value
Master		454.8
370.0 (Minimum)	520.0 (Nominal)	700.0 (Maximum)

Phase	LSW5 Iron CPS	Value
Master		415.6
340.0 (Minimum)	470.0 (Nominal)	750.0 (Maximum)

Phase	SSW1 Iron CPS	Value
Master		1882
1500 (Minimum)	2100 (Nominal)	2400 (Maximum)

Phase	SSW2 Iron CPS	Value
Master		5884
4900 (Minimum)	6800 (Nominal)	7900 (Maximum)

Phase	SSW3 Iron CPS	Value
Master		8992
7800 (Minimum)	10800 (Nominal)	12600 (Maximum)

Phase	SSW4 Iron CPS	Value
Master		3724
3300 (Minimum)	4600 (Nominal)	5400 (Maximum)

Phase	SSW5 Iron CPS	Value
Master		443.2
420.0 (Minimum)	580.0 (Nominal)	680.0 (Maximum)

Master: 22-Apr-2009 14:47

Hostile Litho-Density Sonde Master Calibration

Quality Ratios

Phase	AL CALIBRATION RATIO 1	Value
Master		1.043
0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)

Phase	AL CALIBRATION RATIO 2	Value
Master		2.148
1.900 (Minimum)	2.100 (Nominal)	2.300 (Maximum)

Phase	AL CALIBRATION RATIO 3	Value
Master		0.6009
0.4500 (Minimum)	0.5500 (Nominal)	0.6500 (Maximum)

Phase	AL CALIBRATION RATIO 4	Value
Master		0.5595
0.4000 (Minimum)	0.5500 (Nominal)	0.6500 (Maximum)

Phase	Pad-Wear SS Ratio	Value
Master		0.9916
0.9800 (Minimum)	0.9880 (Nominal)	0.9960 (Maximum)

Phase	Pad-Wear LS Ratio	Value
Master		0.9807
0.9800 (Minimum)	0.9880 (Nominal)	0.9960 (Maximum)

Phase	Pad-Position SS Ratio	Value
Master		1.001
	0.9900 (Minimum) 0.9940 (Nominal) 1.015 (Maximum)	

Phase	Pad-Position LS Ratio	Value
Master		0.9853
	0.9850 (Minimum) 0.9940 (Nominal) 1.010 (Maximum)	

Master: 22-Apr-2009 14:39

Litho-Density Spectroscopy Cartridge - B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC - B	326
Auxiliary Equipment:		
LDSC Housing	LDSH - A	319

Hostile Natural Gamma Ray Cartridge - B / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC - B	300
Auxiliary Equipment:		
HNGC Housing	HNGH - A	115

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS - BA	194
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH - BA	205
Gamma Source Radioactive	GSR - U	616008

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value
Master		39.63
Before		39.53
After		39.69
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)	

Phase	Na 511 Peak Res %	Value
Master		14.89
Before		16.37
After		15.16
	12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)	

Phase	High Voltage V	Value
Master		1168
Before		1179
After		1182
	900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	

Phase	Na 1785 Peak Loc	Value
Master		142.1
Before		141.7
After		142.3
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)	

Phase	Na 1785 Peak Res %	Value
Master		8.613
Before		9.055
After		8.876
	7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)	

Phase	Temperature DEGC	Value
Master		27.34
Before		32.56
After		31.31
	-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		41.11
Before		38.79
After		38.87
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)	

Master: 12-Mar-2009 20:35 Before: 16-May-2009 19:11 After: 24-May-2009 0:43

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.72
Before		39.75

Phase	Na 511 Peak Res %	Value
Master		15.49
Before		15.15

Phase	High Voltage V	Value
Master		1102
Before		1113

Phase	Value
After	39.57

37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)

Phase	Value
After	16.24

12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)

Phase	Value
After	1115

900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		142.7
Before		142.3
After		142.0

135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		7.944
Before		8.759
After		8.750

7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		27.88
Before		33.15
After		33.20

-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		41.22
Before		39.43
After		39.10

10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)

Master: 12-Mar-2009 20:35 Before: 16-May-2009 19:11 After: 24-May-2009 0:43

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		0.9971
Before		0.9835
After		0.9958

0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)

Master: 12-Mar-2009 20:35
Before: 16-May-2009 19:11
After: 24-May-2009 0:43

Hostile Natural Gamma Ray Sonde Master Calibration

Detector 1 Calibration

Phase	Na 511 Peak Set Point	Value
Master		41.00

38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)

Phase	Th Peak Loc	Value
Master		211.0

201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)

Phase	Th Peak Res %	Value
Master		6.897

5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)

Phase	Background Count Rate CPS	Value
Master		19.53

10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)

Phase	Gain Ratio	Value
Master		1.013

0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)

Master: 12-Mar-2009 20:35

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) 43.00 (Maximum)

Phase	Th Peak Loc	Value
Master		208.9

201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)

Phase	Th Peak Res %	Value
Master		7.130

5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)

Phase	Background Count Rate CPS	Value
Master		20.80

10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)

Phase	Gain Ratio	Value
Master		1.001

0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)

Master: 12-Mar-2009 20:35

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

DTC-H Auxiliary Cartridge	DTCH - A	
DTC-H Telemetry Cartridge	DTCH - A	8798

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing	ECH - KC	2304

Company:	Lamont Doherty
Well:	Expedition 321 Site U1337A
Field:	PEAT
Rig:	JOIDES Resolution
Ocean:	Pacific

Schlumberger

Hostile Litho
Density Sonde
Natural Gamma Spectroscopy