Schlumberger

Company: Lamont Doherty

Well: Expedition 320, Site U1331A
Field: PEAT
Rig: JOIDES Resolution Country: USA

Rig: JOIDES Resolution
Field: PEAT
Location: Pacific Ocean
Well: Expedition 320, Site U1331A
Company: Lamont Doherty

Lamont Doherty

Natural Gamma Ray Spectroscopy

Uplog

LOCATION

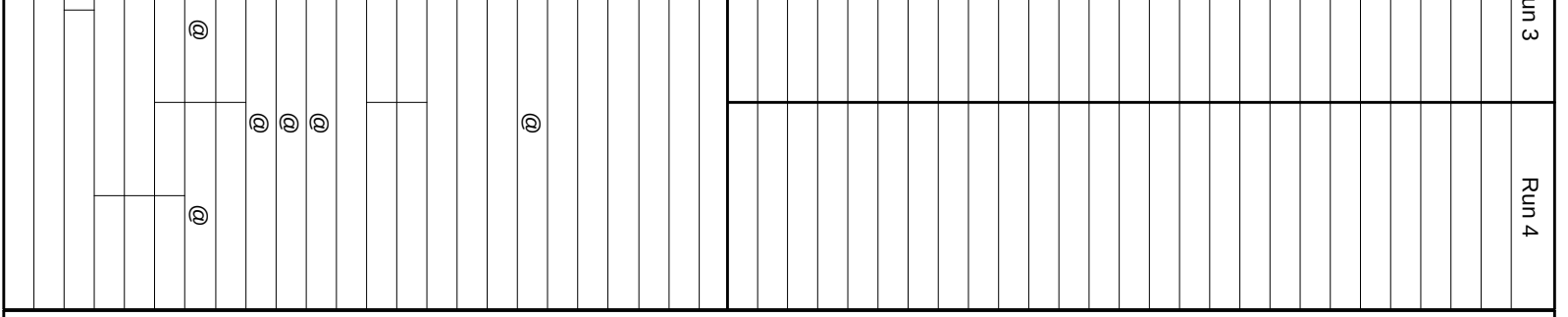
Pacific Ocean SE of Hawaii	Elev.: K.B.	11.10 m
	G.L.	-5116.20 m
	D.F.	11.10 m

Permanent Datum:	MEAN SEA LEVEL	Elev.:	0.00 m
Log Measured From:	DRILL FLOOR	11.10 m	above Perm. Datum
Drilling Measured From:	DRILL FLOOR		

Ocean:	Max. Well Deviation	Longitude	Latitude
Pacific	0 deg	142* 09.695' W	12* 04.086' N

	Run 1	Run 2	Run 3
Logging Date	17-Mar-2009		
Run Number	1		
Depth Driller	5318 m		
Schlumberger Depth	5318 m		
Bottom Log Interval	5315 m		
Top Log Interval	5206.3 m		
Casing Driller Size @ Depth	5.875 in @ 5206.3 m	@	@
Casing Schlumberger	5206.3 m		
Bit Size	9.875 in		
Type Fluid In Hole	WBM		
MUD Density / Viscosity	1.1 g/cm3		
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	17-Mar-2009 23:00		
Unit Number / Location	625003 Houston		
Recorded By	C. Furman		
Witnessed By	H. Evans, T. Williams		

	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			



DISCLAIMER

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OTHER SERVICES1

OS1: Litho-Density
Magnetic Susceptibility

OS2:

REMARKS: RUN NUMBER 1

Tools run as per tool sketch with MSS eccentered using inline bowspring devices.
Logging objective was to verify statigraphic data in comparison to cores collected immediately
prior to logging on Well A of Site U1331 and analyze lithology below cherts prior to next drilling.
Logs run through drill pipe; GR recorded from TD to above sea floor for depth tie-in to sea bed.
Depths shown are wireline depths below drill floor, in meters (MWRF) plus 7.0m due to offset created by AHC.
(i.e. a depth of 5107m as shown on the is the equivalent of 5100m true depth, referenced to drill floor.)
Logs were run without wave motion compensation and have been put on depth with driller's depths.
Repeat Pass not conducted as per client instructions; depth presented as per client instructions.
Uplog recorded with HLDS caliper open from TD into drill pipe.

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

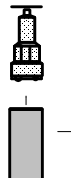
EQUIPMENT DESCRIPTION

RUN 1

SURFACE EQUIPMENT

GSR-U 1154
WITM (DTS)-A

DOWNHOLE EQUIPMENT



LEH-QT 18.75
LEH-QT 1726

DTC-H CTEM 17.58 17.86
ECH-KC 1777 TelStatus
DTCH0-A 8798 ToolStatu 16.95

RUN 2

HNGS-BA 16.95
HNGS-BA 27
HNSH-BA 27
Upper_1 16.25
Lower_2 16.03

HNGC-B 14.45
HNGH-A 30
HNGC-B 202
HNGC Stat 13.91

LDSC-B 13.38
LDSH-A 126
LDSC-B 521
LDSC Stat 12.85

HLDS 12.31
GSR-Z 2326
HLDV-D 35
HLDS-D 35
HEH-H 35
HLDP-C 35
Caliper
SS LS Status 8.26

AH-230 7.50

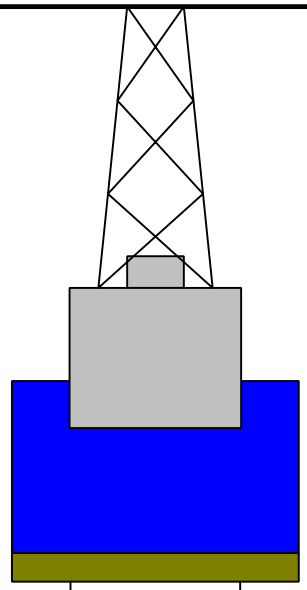
AH-ELIC 7.10
AH-ELIC 1

MSS_LDEO-A 5.88
MSS_LDEO-A 1
Hi-Res 3.36
Dual Coil 0.39
DF
Tension HV 0.00

TOOL ZERO

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

Derrick Floor Elevation			11.1					
Mean Sea Level			0.0					
					0.0	5.875		Drill Pipe
					5127.3	9.875		Sea Bed
All depths are in meters below drill floor.					5206.3	5.875		Bottom of Pipe
					5317.9	9.875		Total Depth

Company: Lamont Doherty | Well: Expedition 320, Site U1331A

Input DLIS Files

DEFAULT	MSS_LDEO_LDL_NGS_015LUP	FN:17	PRODUCER	18-Mar-2009 03:14	5326.4 M	5089.1 M

Output DLIS Files

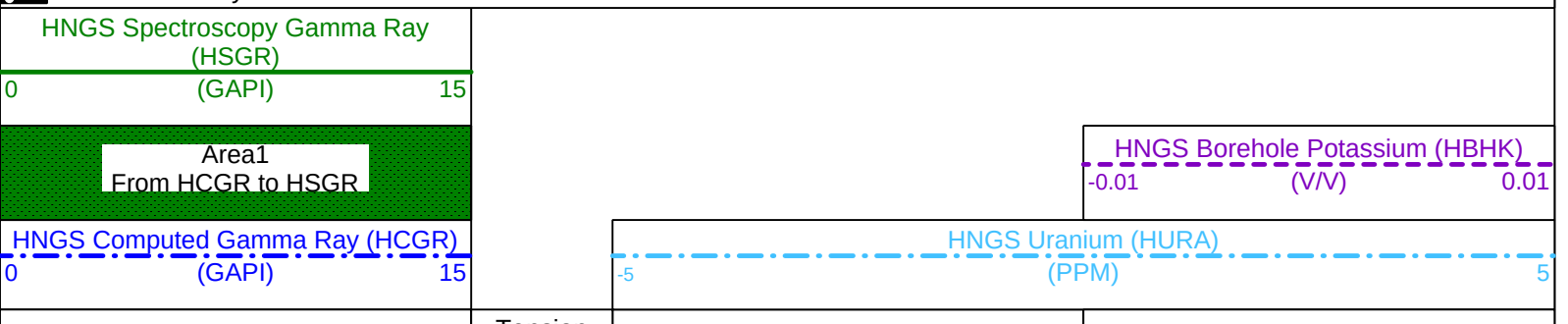
DEFAULT	MSS_LDEO_LDL_NGS_035PUP	FN:38	PRODUCER	20-Mar-2009 16:41	5326.4 M	5089.4 M

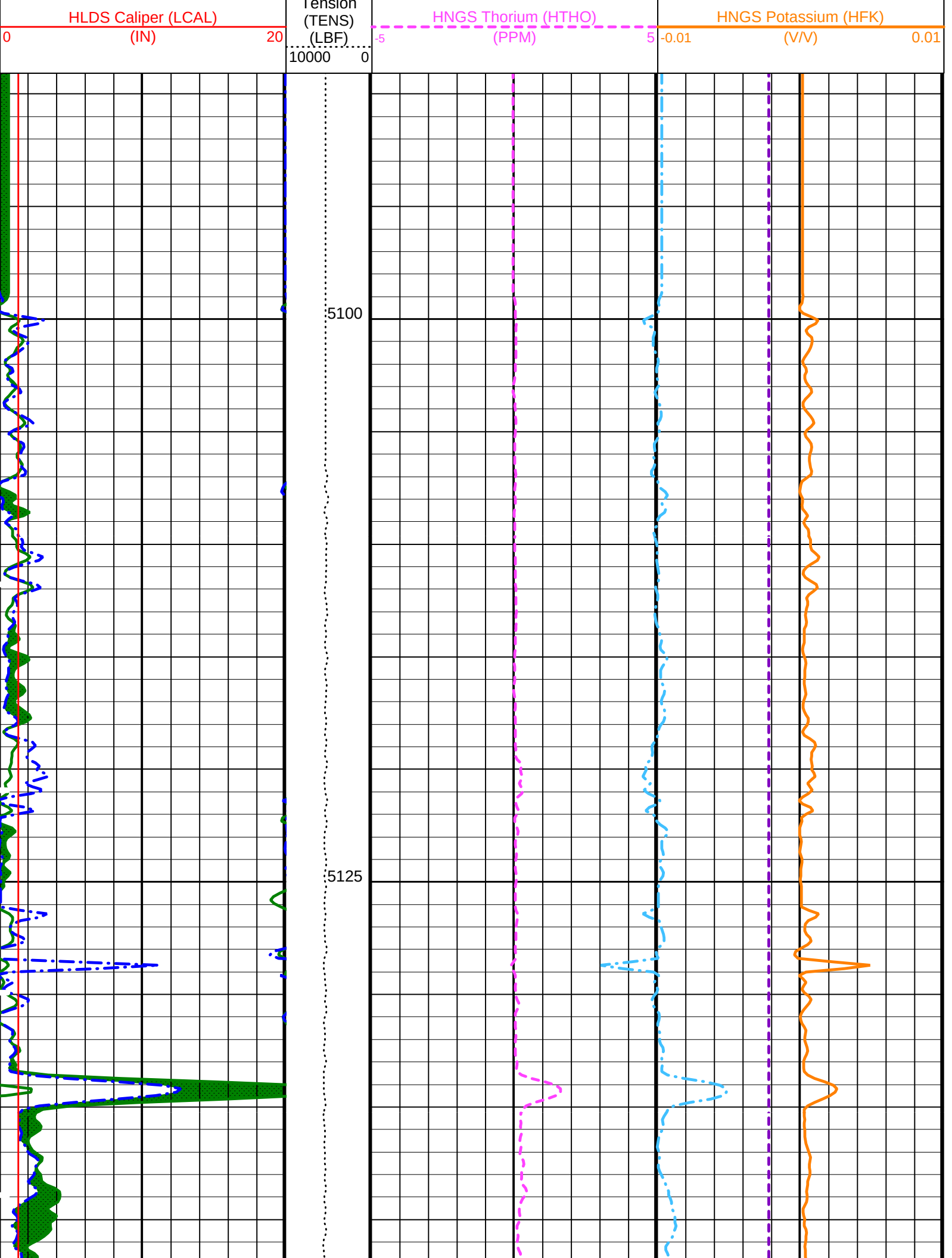
OP System Version: 17C0-154

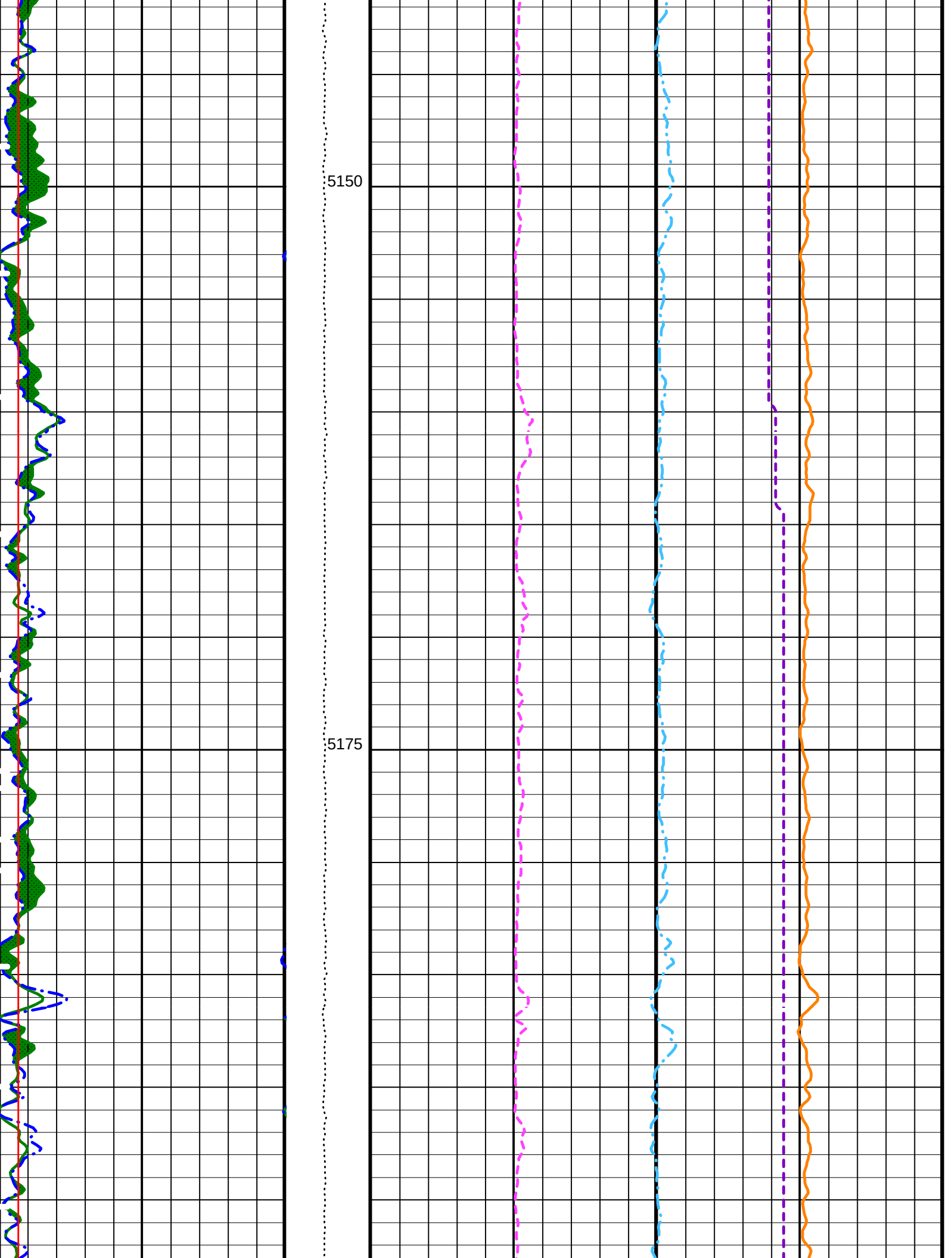
MSS_LDEO-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	HNGC-B	17C0-154
HNGS-BA	17C0-154	DTC-H	17C0-154

PIP SUMMARY

Time Mark Every 60 S




HLDS Caliper (LCAL)
0
(IN)
20
Tension
(TENS)
(LBF)
10000
0
HNGS Thorium (HTHO)
-5
(PPM)
5
HNGS Potassium (HFK)
-0.01
(V/V)
0.01
5100
5125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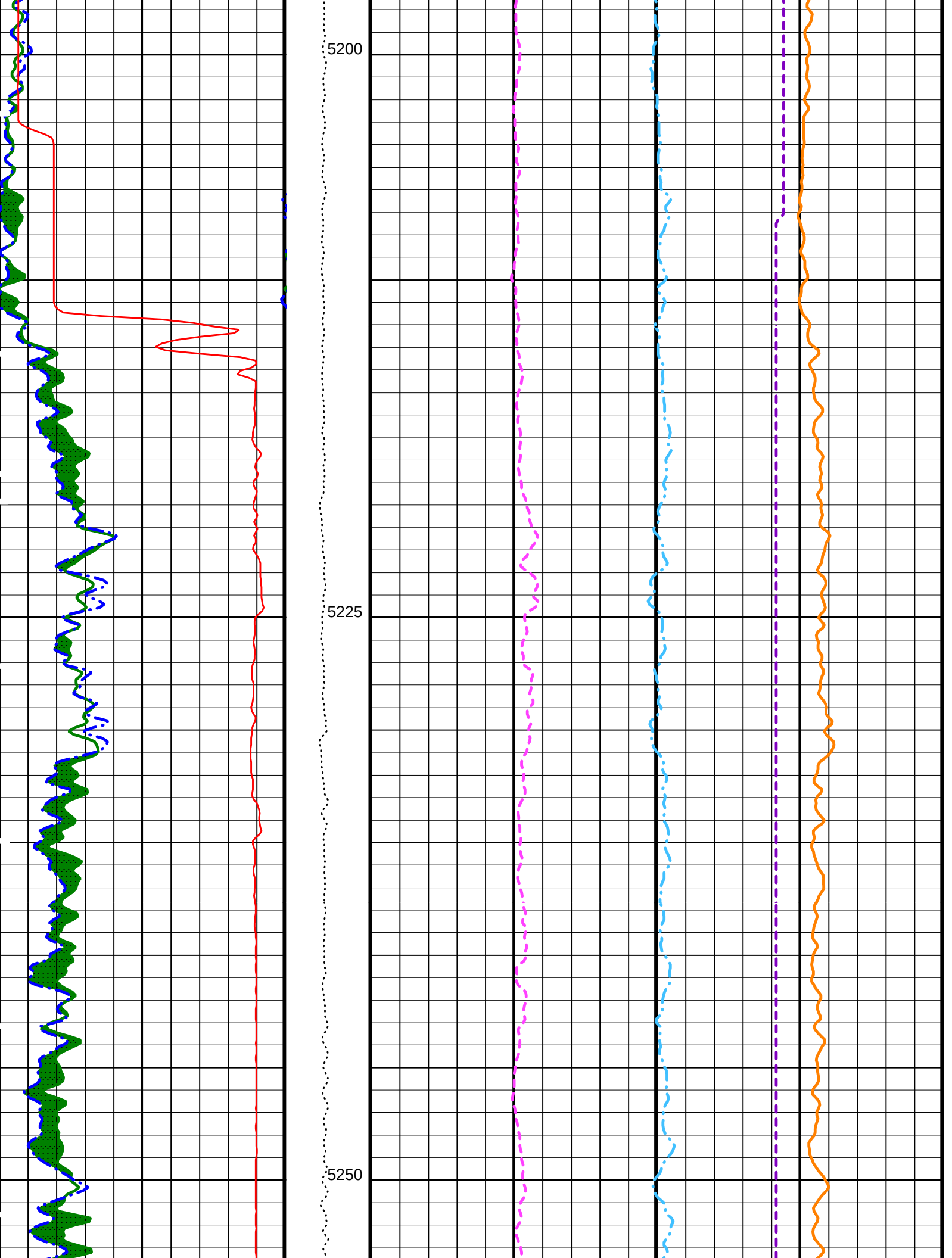
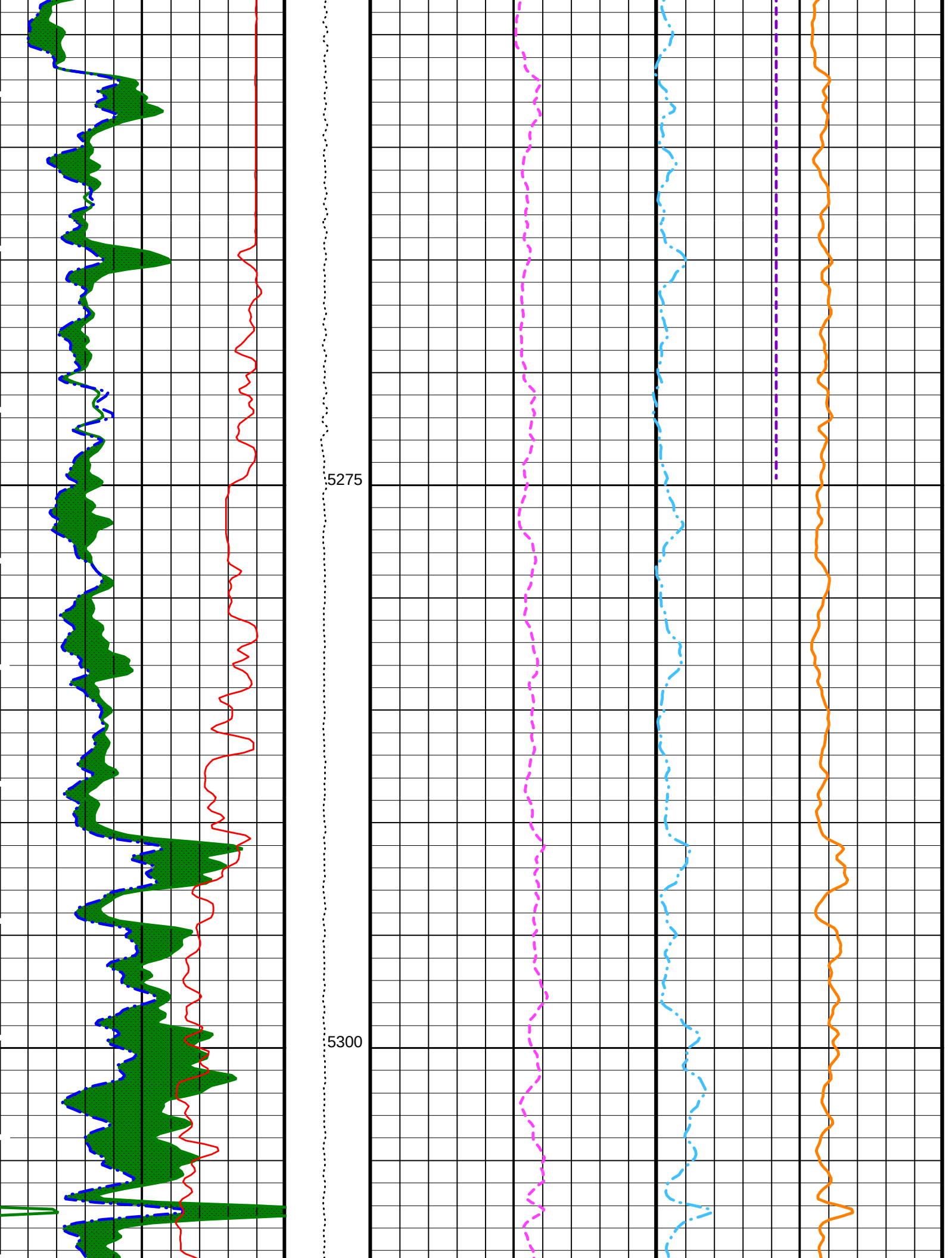

5200
5225
5250


5275
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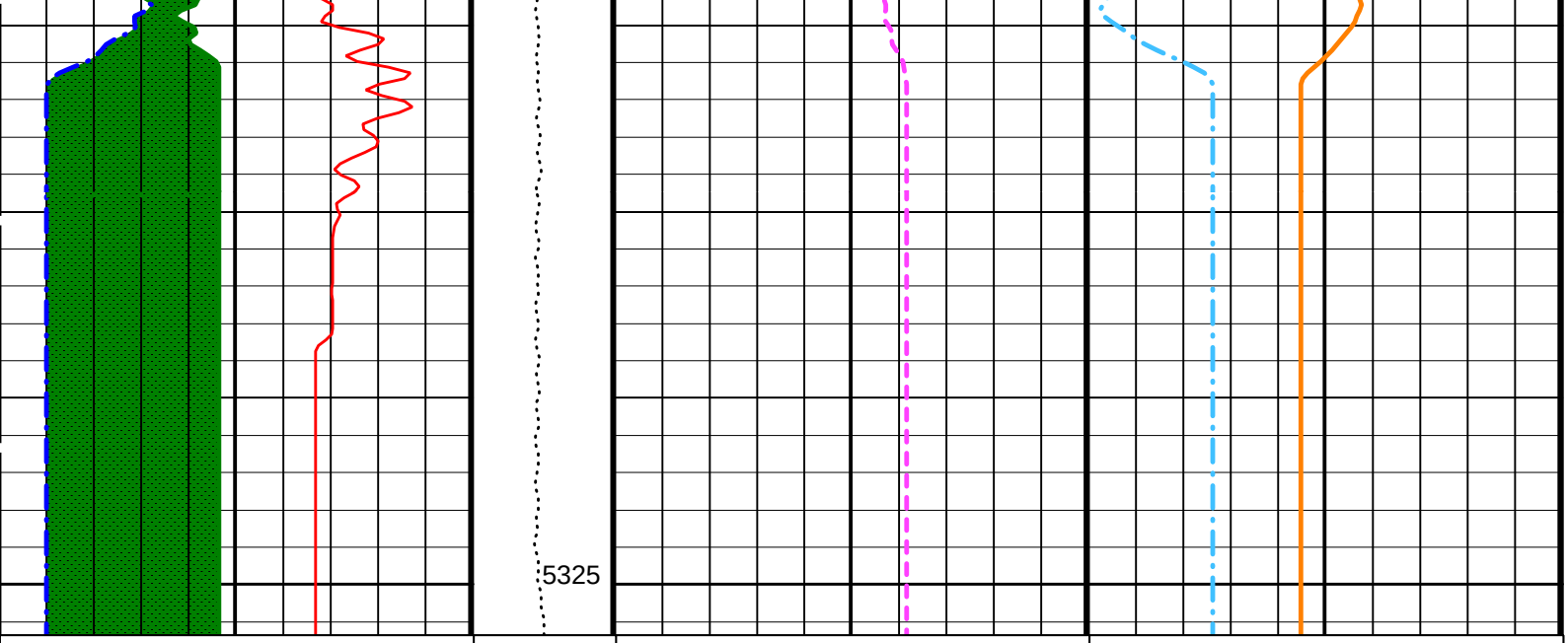

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	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	
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	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00178051	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
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	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.37788	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.974941	
	System and Miscellaneous		
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.10	G/C3
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	NORMAL	

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 20-Mar-2009 16:41

QP System Version: 17C0-154

OP System Version: 17C0-154

MSS_LDEO-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	MSS_LDEO_LDL_NGS_015LUP	FN:17	PRODUCER	18-Mar-2009 03:14	5326.4 M	5089.1 M

Output DLIS Files

DEFAULT	MSS_LDEO_LDL_NGS_035PUP	FN:38	PRODUCER	20-Mar-2009 16:41

Schlumberger

Calibrations

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Hostile Litho-Density Sonde Wellsite Calibration - Background Measurement							
Master: 14-Mar-2009 14:36 Before: 17-Mar-2009 23:00 After: 18-Mar-2009 7:06							
SS Cs Resolution Bkg	9.000	8.424	8.461	8.468	0.006294	1.800	%
LS Cs Resolution Bkg	9.000	8.594	8.555	8.573	0.01742	1.800	%
LSW1 Background	100.0	77.03	75.31	76.00	0.6888	3.000	CPS
LSW2 Background	100.0	70.24	69.77	69.92	0.1473	3.000	CPS
LSW3 Background	200.0	155.8	156.5	156.7	0.2904	6.000	CPS
LSW4 Background	250.0	188.9	190.3	191.7	1.400	7.500	CPS
LSW5 Background	600.0	429.9	429.9	430.3	0.4689	18.00	CPS
SSW1 Background	100.0	74.59	73.68	74.64	0.9512	3.000	CPS
SSW2 Background	200.0	129.3	128.3	130.9	2.612	6.000	CPS
SSW3 Background	500.0	345.3	345.6	344.1	-1.505	15.00	CPS
SSW4 Background	270.0	183.6	185.8	184.8	-1.033	8.100	CPS
SSW5 Background	200.0	132.5	132.4	131.9	-0.5316	6.000	CPS
Hostile Litho-Density Sonde Wellsite Calibration - Aluminum Measurement							
Master: 14-Mar-2009 14:36							
LSW1 Aluminum	600.0	527.6	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	782.6	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	950.7	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	479.2	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	439.7	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2254	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6469	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9378	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3975	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	536.6	N/A	N/A	N/A	N/A	CPS
Hostile Litho-Density Sonde Wellsite Calibration - Lithology Measurement							
Master: 14-Mar-2009 14:36							
LSW1 Iron	400.0	352.8	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	621.4	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	829.5	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	430.9	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	399.5	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1671	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5373	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8503	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3601	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	469.3	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Caliper Calibration
Before: 17-Mar-2009 23:15

HLDS Caliper Small Ring	8.000	N/A	10.74	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	12.00	N/A	14.75	N/A	N/A	N/A	IN

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check
Master: 12-Mar-2009 19:24 Before: 17-Mar-2009 23:02 After: 18-Mar-2009 7:07

Na 511 Peak Loc	40.00	40.60	40.49	40.68	0.1877	1.000	
Na 511 Peak Res	15.50	16.66	17.64	16.96	-0.6820	2.000	%
High Voltage	1150	1174	1183	1181	-2.068	N/A	V
Na 1785 Peak Loc	142.6	145.7	145.1	145.0	-0.1555	7.000	
Na 1785 Peak Res	8.500	9.231	9.840	10.03	0.1904	2.000	%
Temperature	15.50	27.43	30.64	28.97	-1.675	N/A	DEGC
Na Count Rate	45.00	37.76	38.10	37.68	-0.4226	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check
Master: 12-Mar-2009 19:24 Before: 17-Mar-2009 23:02 After: 18-Mar-2009 7:07

Na 511 Peak Loc	40.00	40.61	40.64	40.59	-0.05334	1.000	
Na 511 Peak Res	15.50	14.67	16.20	15.98	-0.2151	2.000	%
High Voltage	1150	1250	1271	1257	-14.30	N/A	V
Na 1785 Peak Loc	142.6	143.6	144.4	144.8	0.4219	7.000	
Na 1785 Peak Res	8.500	8.251	8.655	7.947	-0.7082	2.000	%
Temperature	15.50	26.37	29.83	29.30	-0.5365	N/A	DEGC
Na Count Rate	45.00	38.49	38.60	37.85	-0.7454	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Ratio Of Detector 1 To Detector 2
Master: 12-Mar-2009 19:24 Before: 17-Mar-2009 23:02 After: 18-Mar-2009 7:07

Coincidence Count Rate Ratio	1.000	0.9811	0.9865	0.9954	0.008901	0.05000	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 1 Calibration
Master: 12-Mar-2009 19:24

Na 511 Peak Set Point	40.00	42.00	--	--	--	--	
Th Peak Loc	209.6	210.1	--	--	--	--	
Th Peak Res	7.000	8.224	--	--	--	--	%
Background Count Rate	142.5	20.31	--	--	--	--	CPS
Gain Ratio	1.000	0.9844	--	--	--	--	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 2 Calibration
Master: 12-Mar-2009 19:24

Na 511 Peak Set Point	40.00	42.00	--	--	--	--	
Th Peak Loc	209.6	207.9	--	--	--	--	
Th Peak Res	7.000	7.336	--	--	--	--	%
Background Count Rate	142.5	22.05	--	--	--	--	CPS
Gain Ratio	1.000	0.9744	--	--	--	--	

Hostile Litho-Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS - D	35
Hostile Litho Density High Voltage	HLDV - D	35
Gamma Source Radioactive	GSR - Z	2326
Auxiliary Equipment:		
Hostile Litho Density Pad	HLDP - C	35
Hostile Litho Density High Voltage Housi	HEH - H	35

Hostile Litho-Density Sonde Wellsite Calibration
Background Measurement

Phase	SS Cs Resolution Bkg %	Value
Master		8.424
Before		8.461
After		8.468

7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)

Phase	LS Cs Resolution Bkg %	Value
Master		8.594
Before		8.555
After		8.573

7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)

Phase	LSW1 Background CPS	Value
Master		77.03
Before		75.31
After		76.00

55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)

Phase	LSW2 Background CPS	Value
Master		70.24
Before		69.77
After		69.92

50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)

Phase	LSW3 Background CPS	Value
Master		155.8
Before		156.5
After		156.7

110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)

Phase	LSW4 Background CPS	Value
Master		188.9
Before		190.3
After		191.7

140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)

Phase	LSW5 Background CPS	Value
Master		429.9
Before		429.9
After		430.3
330.0 (Minimum)	600.0 (Nominal)	830.0 (Maximum)

Phase	SSW1 Background CPS	Value
Master		74.59
Before		73.68
After		74.64
55.00 (Minimum)	100.0 (Nominal)	150.0 (Maximum)

Phase	SSW2 Background CPS	Value
Master		129.3
Before		128.3
After		130.9
100.0 (Minimum)	200.0 (Nominal)	260.0 (Maximum)

Phase	SSW3 Background CPS	Value
Master		345.3
Before		345.6
After		344.1
280.0 (Minimum)	500.0 (Nominal)	700.0 (Maximum)

Phase	SSW4 Background CPS	Value
Master		183.6
Before		185.8
After		184.8
150.0 (Minimum)	270.0 (Nominal)	380.0 (Maximum)

Phase	SSW5 Background CPS	Value
Master		132.5
Before		132.4
After		131.9
110.0 (Minimum)	200.0 (Nominal)	270.0 (Maximum)

Master: 14-Mar-2009 14:36 Before: 17-Mar-2009 23:00 After: 18-Mar-2009 7:06

Hostile Litho-Density Sonde Master Calibration

Detector Background Measurement

Phase	LSW1 Background CPS	Value
Master		77.03
55.00 (Minimum)	100.0 (Nominal)	150.0 (Maximum)

Phase	LSW2 Background CPS	Value
Master		70.24
50.00 (Minimum)	100.0 (Nominal)	140.0 (Maximum)

Phase	LSW3 Background CPS	Value
Master		155.8
110.0 (Minimum)	200.0 (Nominal)	290.0 (Maximum)

Phase	LSW4 Background CPS	Value
Master		188.9
140.0 (Minimum)	250.0 (Nominal)	360.0 (Maximum)

Phase	LSW5 Background CPS	Value
Master		429.9
330.0 (Minimum)	600.0 (Nominal)	830.0 (Maximum)

Phase	LS Cs Resolution Bkg %	Value
Master		8.594
7.000 (Minimum)	9.000 (Nominal)	11.00 (Maximum)

Phase	SSW1 Background CPS	Value
Master		74.59
55.00 (Minimum)	100.0 (Nominal)	150.0 (Maximum)

Phase	SSW2 Background CPS	Value
Master		129.3
100.0 (Minimum)	200.0 (Nominal)	260.0 (Maximum)

Phase	SSW3 Background CPS	Value
Master		345.3
280.0 (Minimum)	500.0 (Nominal)	700.0 (Maximum)

Phase	SSW4 Background CPS	Value
Master		183.6
150.0 (Minimum)	270.0 (Nominal)	380.0 (Maximum)

Phase	SSW5 Background CPS	Value
Master		132.5
110.0 (Minimum)	200.0 (Nominal)	270.0 (Maximum)

Phase	SS Cs Resolution Bkg %	Value
Master		8.424
7.000 (Minimum)	9.000 (Nominal)	11.00 (Maximum)

Master: 14-Mar-2009 14:36

Hostile Litho-Density Sonde Master Calibration

Detector Aluminum Measurement (bkgd-subtracted)

Phase	LSW1 Aluminum CPS	Value
Master		527.6
420.0 (Minimum)	600.0 (Nominal)	770.0 (Maximum)

Phase	LSW2 Aluminum CPS	Value
Master		782.6
650.0 (Minimum)	900.0 (Nominal)	1150 (Maximum)

Phase	LSW3 Aluminum CPS	Value
Master		950.7
800.0 (Minimum)	1100 (Nominal)	1450 (Maximum)

Phase	LSW4 Aluminum CPS	Value
Master		479.2
410.0 (Minimum)	580.0 (Nominal)	740.0 (Maximum)

Phase	LSW5 Aluminum CPS	Value
Master		439.7
410.0 (Minimum)	570.0 (Nominal)	740.0 (Maximum)

Phase	SSW1 Aluminum CPS	Value
Master		2254
2000 (Minimum)	2800 (Nominal)	3200 (Maximum)

Phase	SSW2 Aluminum CPS	Value
Master		6469
5800 (Minimum)	8000 (Nominal)	9300 (Maximum)

Phase	SSW3 Aluminum CPS	Value
Master		9378
8300 (Minimum)	11600 (Nominal)	13500 (Maximum)

Phase	SSW4 Aluminum CPS	Value
Master		3975
3500 (Minimum)	5000 (Nominal)	5800 (Maximum)

Phase	SSW5 Aluminum CPS	Value
Master		536.6
470.0 (Minimum)	660.0 (Nominal)	770.0 (Maximum)

Master: 14-Mar-2009 14:36

Hostile Litho-Density Sonde Master Calibration

Detector Litholog Measurement (bkgd-subtracted)

Phase	LSW1 Iron CPS	Value
Master		352.8
290.0 (Minimum)	400.0 (Nominal)	560.0 (Maximum)

Phase	LSW2 Iron CPS	Value
Master		621.4
520.0 (Minimum)	730.0 (Nominal)	950.0 (Maximum)

Phase	LSW3 Iron CPS	Value
Master		829.5
720.0 (Minimum)	1000 (Nominal)	1350 (Maximum)

Phase	LSW4 Iron CPS	Value
Master		430.9

Phase	LSW5 Iron CPS	Value
Master		399.5

Phase	SSW1 Iron CPS	Value
Master		1671

	370.0 (Minimum)	520.0 (Nominal)	700.0 (Maximum)		340.0 (Minimum)	470.0 (Nominal)	750.0 (Maximum)		1500 (Minimum)	2100 (Nominal)	2400 (Maximum)
Phase	SSW2 Iron CPS		Value	Phase	SSW3 Iron CPS		Value	Phase	SSW4 Iron CPS		Value
Master			5373	Master			8503	Master			3601
	4900 (Minimum)	6800 (Nominal)	7900 (Maximum)		7800 (Minimum)	10800 (Nominal)	12600 (Maximum)		3300 (Minimum)	4600 (Nominal)	5400 (Maximum)
Phase	SSW5 Iron CPS		Value								
Master			469.3								
	420.0 (Minimum)	580.0 (Nominal)	680.0 (Maximum)								

Master: 14-Mar-2009 14:36

Hostile Litho-Density Sonde Master Calibration

Quality Ratios

	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)		1.900 (Minimum)	2.100 (Nominal)	2.300 (Maximum)		0.4500 (Minimum)	0.5500 (Nominal)	0.6500 (Maximum)
Phase	AL CALIBRATION RATIO 1		Value	Phase	AL CALIBRATION RATIO 2		Value	Phase	AL CALIBRATION RATIO 3		Value
Master			1.035	Master			2.079	Master			0.5742
Phase	AL CALIBRATION RATIO 4		Value	Phase	Pad-Wear SS Ratio		Value	Phase	Pad-Wear LS Ratio		Value
Master			0.4997	Master			0.9930	Master			0.9925
	0.4000 (Minimum)	0.5500 (Nominal)	0.6500 (Maximum)		0.9800 (Minimum)	0.9880 (Nominal)	0.9960 (Maximum)		0.9800 (Minimum)	0.9880 (Nominal)	0.9960 (Maximum)
Phase	Pad-Position SS Ratio		Value	Phase	Pad-Position LS Ratio		Value				
Master			1.006	Master			0.9851				
	0.9900 (Minimum)	0.9940 (Nominal)	1.015 (Maximum)		0.9850 (Minimum)	0.9940 (Nominal)	1.010 (Maximum)				

Master: 14-Mar-2009 14:36

Litho-Density Spectroscopy Cartridge - B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC - B	521
Auxiliary Equipment:		
LDSC Housing	LDSH - A	126

Hostile Natural Gamma Ray Cartridge - B / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC - B	202
Auxiliary Equipment:		
HNGC Housing	HNGH - A	30

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS - BA	27
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH - BA	27
Gamma Source Radioactive	GSR - U	1154

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

	37.50 (Minimum)	40.00 (Nominal)	43.50 (Maximum)		12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)		900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)
Phase	Na 511 Peak Loc		Value	Phase	Na 511 Peak Res %		Value	Phase	High Voltage V		Value
Master			40.60	Master			16.66	Master			1174
Before			40.49	Before			17.64	Before			1183
After			40.68	After			16.96	After			1181
Phase	Na 1785 Peak Loc		Value	Phase	Na 1785 Peak Res %		Value	Phase	Temperature DEGC		Value

Phase	Value
Master	145.7
Before	145.1
After	145.0

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

Phase	Value
Master	9.231
Before	9.840
After	10.03

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

Phase	Value
Master	27.43
Before	30.64
After	28.97

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

Phase	Na Count Rate CPS	Value
Master		37.76
Before		38.10
After		37.68

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

Master: 12-Mar-2009 19:24 Before: 17-Mar-2009 23:02 After: 18-Mar-2009 7:07

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		40.61
Before		40.64
After		40.59

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

Phase	Na 511 Peak Res %	Value
Master		14.67
Before		16.20
After		15.98

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

Phase	High Voltage V	Value
Master		1250
Before		1271
After		1257

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

Phase	Na 1785 Peak Loc	Value
Master		143.6
Before		144.4
After		144.8

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

Phase	Na 1785 Peak Res %	Value
Master		8.251
Before		8.655
After		7.947

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

Phase	Temperature DEGC	Value
Master		26.37
Before		29.83
After		29.30

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

Phase	Na Count Rate CPS	Value
Master		38.49
Before		38.60
After		37.85

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

Master: 12-Mar-2009 19:24 Before: 17-Mar-2009 23:02 After: 18-Mar-2009 7:07

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		0.9811
Before		0.9865
After		0.9954

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

Master: 12-Mar-2009 19:24
Before: 17-Mar-2009 23:02
After: 18-Mar-2009 7:07

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) 43.00 (Maximum)

Phase	Th Peak Loc	Value
Master		210.1

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

Phase	Th Peak Res %	Value
Master		8.224

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

Phase	Background Count Rate CPS	Value
Master		20.31

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

Phase	Gain Ratio	Value
Master		0.9844

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

Master: 12-Mar-2009 19:24

Hostile Natural Gamma Ray Sonde Master Calibration

Hostile Natural Gamma Ray Sonde Master Calibration

Detector 2 Calibration

Phase	Na 511 Peak Set Point	Value
Master		42.00
	38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)	

Phase	Th Peak Loc	Value
Master		207.9
	201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)	

Phase	Th Peak Res %	Value
Master		7.336
	5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)	

Phase	Background Count Rate CPS	Value
Master		22.05
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)	

Phase	Gain Ratio	Value
Master		0.9744
	0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)	

Master: 12-Mar-2009 19:24

DTS Telemetry Tool / Equipment Identification

Primary Equipment:		
DTC-H Auxiliary Cartridge	DTCH - A	8789
DTC-H Telemetry Cartridge	DTCH - A	8798
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH - KC	1777

Company: Lamont Doherty

Schlumberger

Well: Expedition 320, Site U1331A
Field: PEAT
Rig: JOIDES Resolution
Country: USA

Lamont Doherty
Natural Gamma Ray Spectroscopy
Uplog