Schlumberger

Company: **Lamont Doherty**

Well: **Expedition 317 Site U1352C**
Field: **Canterbury Basin**
Rig: **JOIDES Resolution** Ocean: **Pacific**

Rig: JOIDES Resolution
Field: Canterbury Basin
Location: Latitude: S 44* 56.244'
Well: Expedition 317 Site U1352C
Company: Lamont Doherty

Natural Gamma Spectroscopy

LOCATION

Latitude: S 44* 56.244'
Longitude: E 172* 01.362'

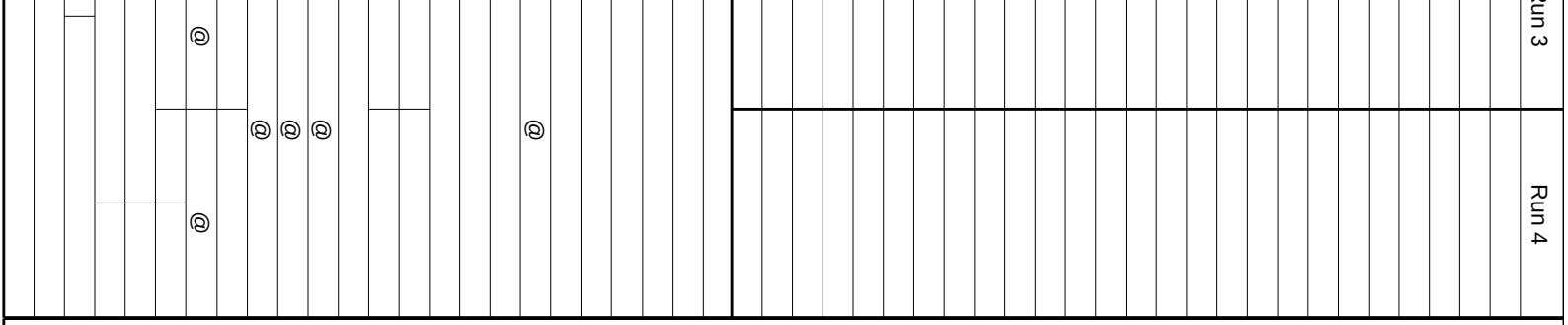
Elev.: K.B. −355.00 m
G.L. 0.00 m
D.F. −355.00 m

Permanent Datum: Sea Floor — Elev.: 0.00 m
Log Measured From: Drill Floor — 0.00 m above Perm. Datum
Drilling Measured From: Drill Floor

API Serial No.	Max. Hole Devi. 0 deg	Longitude S 44* 56.244'	Latitude E 172* 01.362'

	Run 1	Run 2	R
Logging Date	20−Dec−2009		
Run Number	1		
Depth Driller	1927 m		
Schlumberger Depth	207 m		
Bottom Log Interval	187 m		
Top Log Interval	0 m		
Casing Driller Size @ Depth	4.500 in @ 103 m	@	
Casing Schlumberger	102 m		
Bit Size	11.438 in		
Type Fluid In Hole	Seawater		
MUD Density / Viscosity	1.02 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	@ 15 / @ 15	@ / @	
Maximum Recorded Temperatures	15 degC	/ /	
Circulation Stopped / Time	4−Dec−2009 / 23:00	/	
Logger On Bottom / Time	20−Dec−2009 / 17:15	/	
Unit Number / Location	625003 / Houston	/	
Recorded By	C. Furman		
Witnessed By	A. Slagle, G. Guerin		

	Run 1	Run 2	R
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			



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OTHER SERVICES1

OS1: DIT

REMARKS: RUN NUMBER 1

Logs run in third hole ("C" hole) of drilling site U1352 to aid in depth correlation of
core data collected in surface labs.
Average heave during the run was 0.4m; Active Heave Compensator used below 500mbrf.
TD was not reached − obstruction at 562mbrf − with the pipe (bit) at 458mBRF. Sea Bed given as 354.6mBRF.
Hole Size input taken from HLDS Caliper.
Tools run slick in order to fit through drill pipe, as is standard practice on this project.
HLDS Caliper closed at approximately 487mbrf to facilitate entry into pipe.
Nuclear sources not run due to known risk of hole collapse.
HLDS run for caliper data only.

Depth "Zero" reference adjusted to Sea Bed picked by client.
Depths shown are measured depth below sea floor, as per client request.

RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION:		17C0−154	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	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
HNGS−BA 194
HNSH−BA 205

Upper_1 20.71
Lower_2 20.50

21.41

HNGC−B 300
HNGH−A 115
HNGC−B 300

HNGC Stat 18.38

18.92

LDSC−B
LDSH−A 319
LDSC−B 326

LDSC Stat 17.32

17.85

HLDS
GSR−Z 2397
HLDV−D 51
HLDS−D 57
HEH−H 53
HLDP−C 61

16.78

Caliper
SS LS Status 12.73

DTA−A
ECH−KE 8231
DTA−A 8231

11.96

GPIT−A/B
GPIC−A 719
GPIH−A 2864

10.74

DIT−E
DIC−EB 438
MIH−ZA 342
DIS−HB 442

9.52

SP 3.15
Deep Ind 2.90

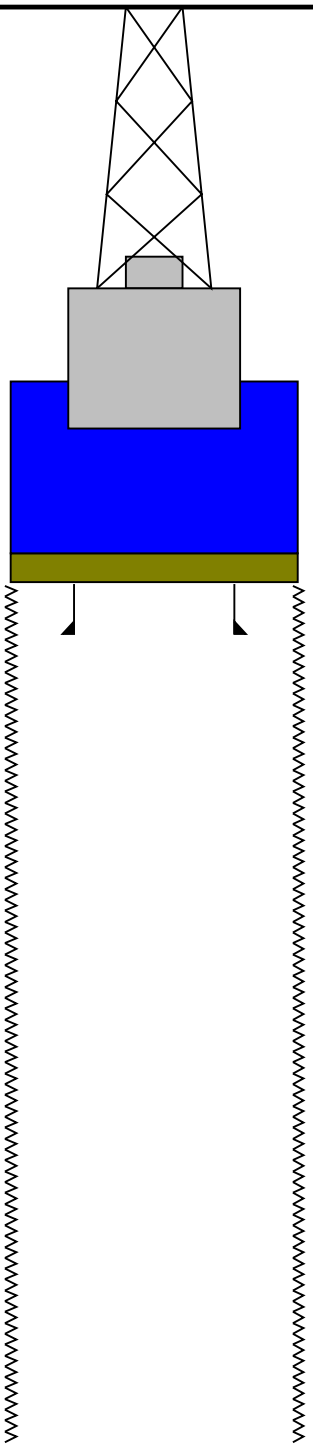
Aux Meas SFL 1.98
Med Ind 1.83

HV DF
Status GPIT
Tension 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

	OD	ID	MD		MD	OD	ID	
Kelly Bushing Elevation			0.0					
Derrick Floor Elevation			0.0					
Mean Sea Level			11.0					
					354.6	9.875		Sea Bed
					458.0	5.500		Pipe Tip (Open)
					2282.0	9.875		Total Depth – Driller

Schlumberger

Main Pass

MAXIS Field Log

Input DLIS Files

DEFAULT	PI_LDL_NGS_009LUP	FN:8	PRODUCER	20−Dec−2009 19:35	560.1 M	324.0 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_019PUP	FN:18	PRODUCER	31−Dec−2009 23:34	205.0 M	−30.9 M

OP System Version: 17C0−154

DIT−E	17C0−154	GPIT−A/B	SRPC−3870_Q3_2009_OP17_V3_b
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

PIP SUMMARY

Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 100

Area1
From HCGR to HSGR

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 100

HNGS Borehole Potassium (HBHK)
−0.05 (−−−− 0.05

HNGS Uranium (HURA)
−5 (PPM) 10

HLDS Caliper (LCAL)
0 (IN) 20

Tension (TENS) (LBF)
10000 0

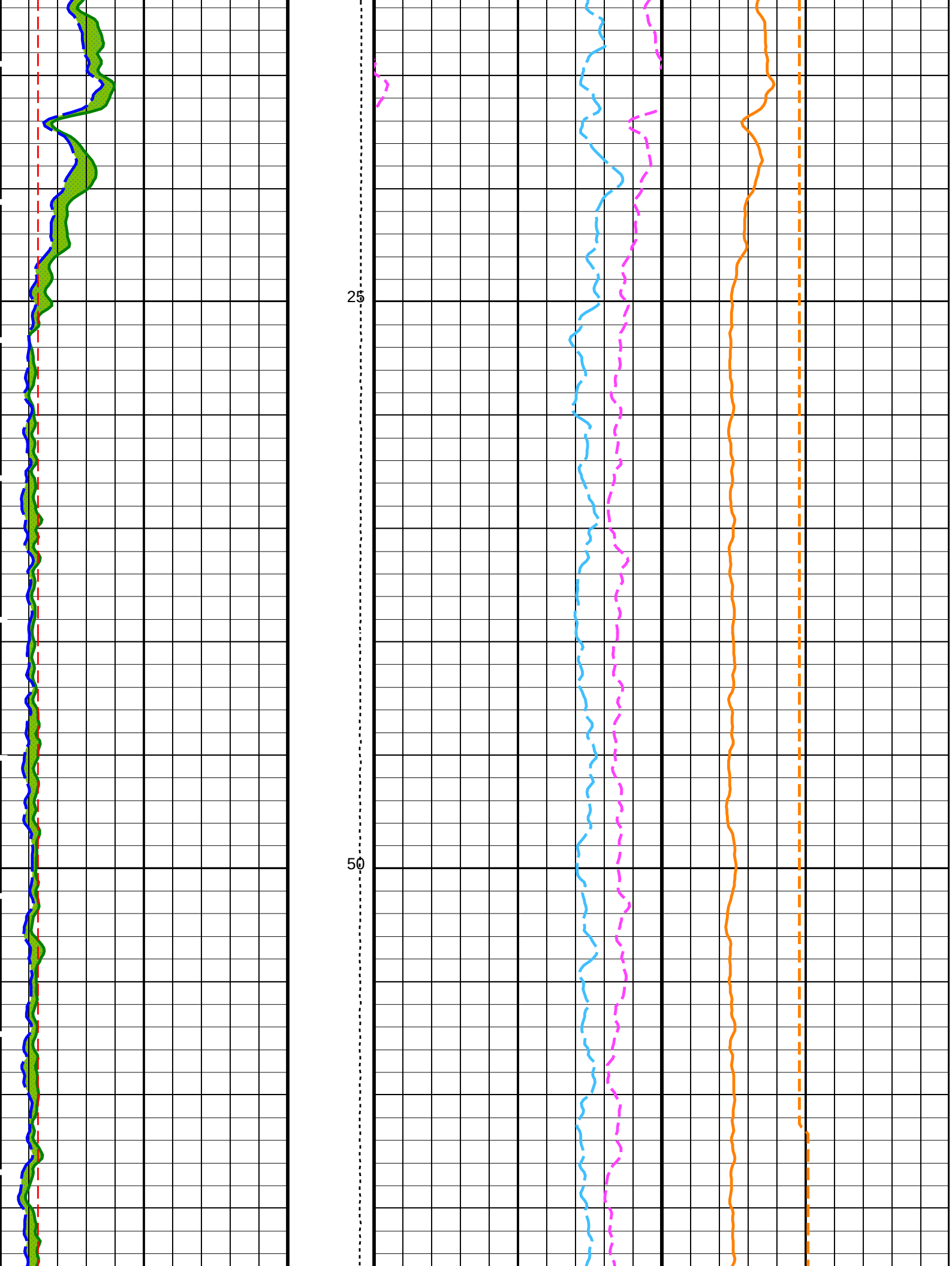
HNGS Thorium (HTHO)
5 (PPM) 25

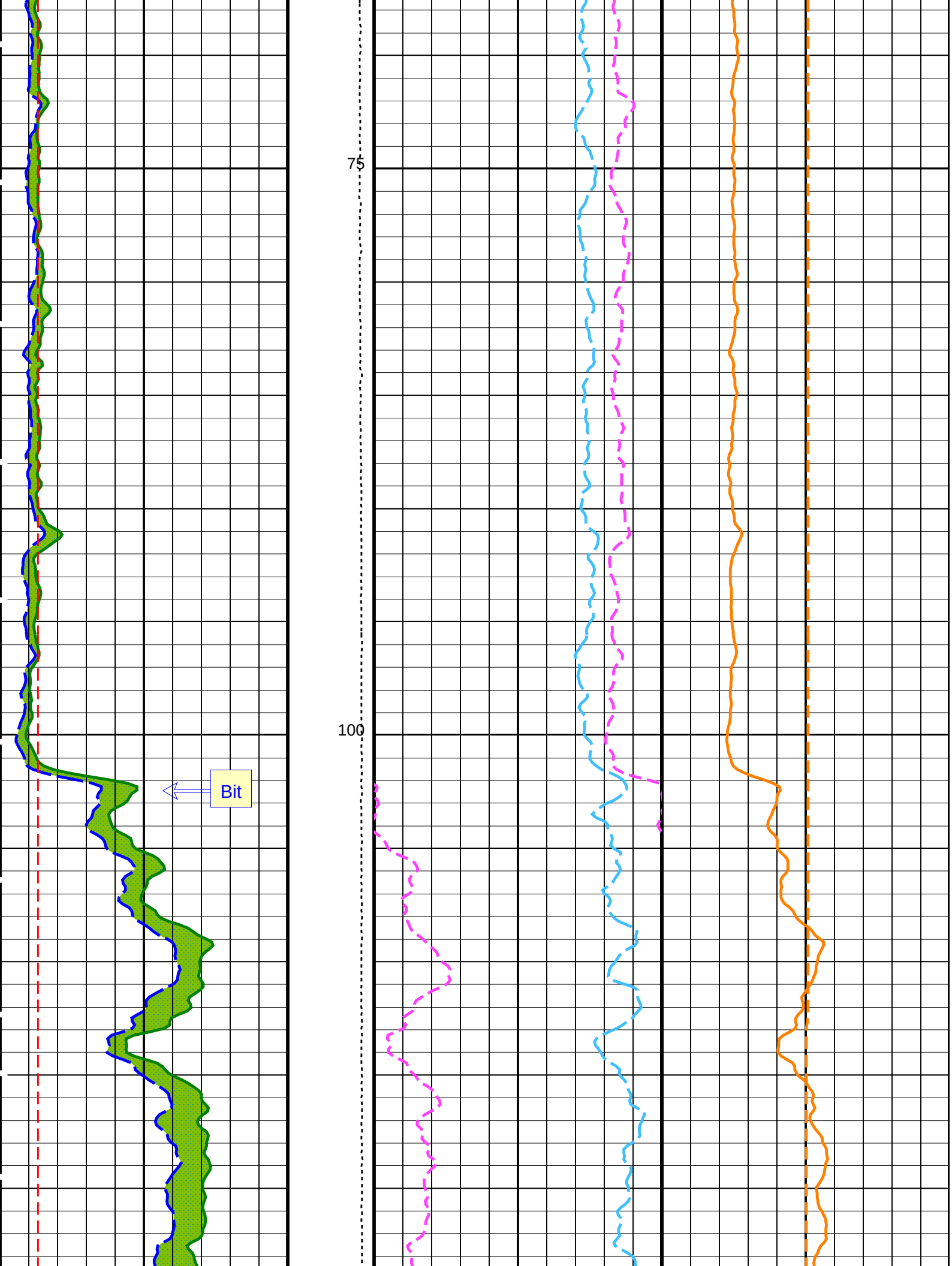
HNGS Potassium (HFK)
−0.01 (−−−− 0.04

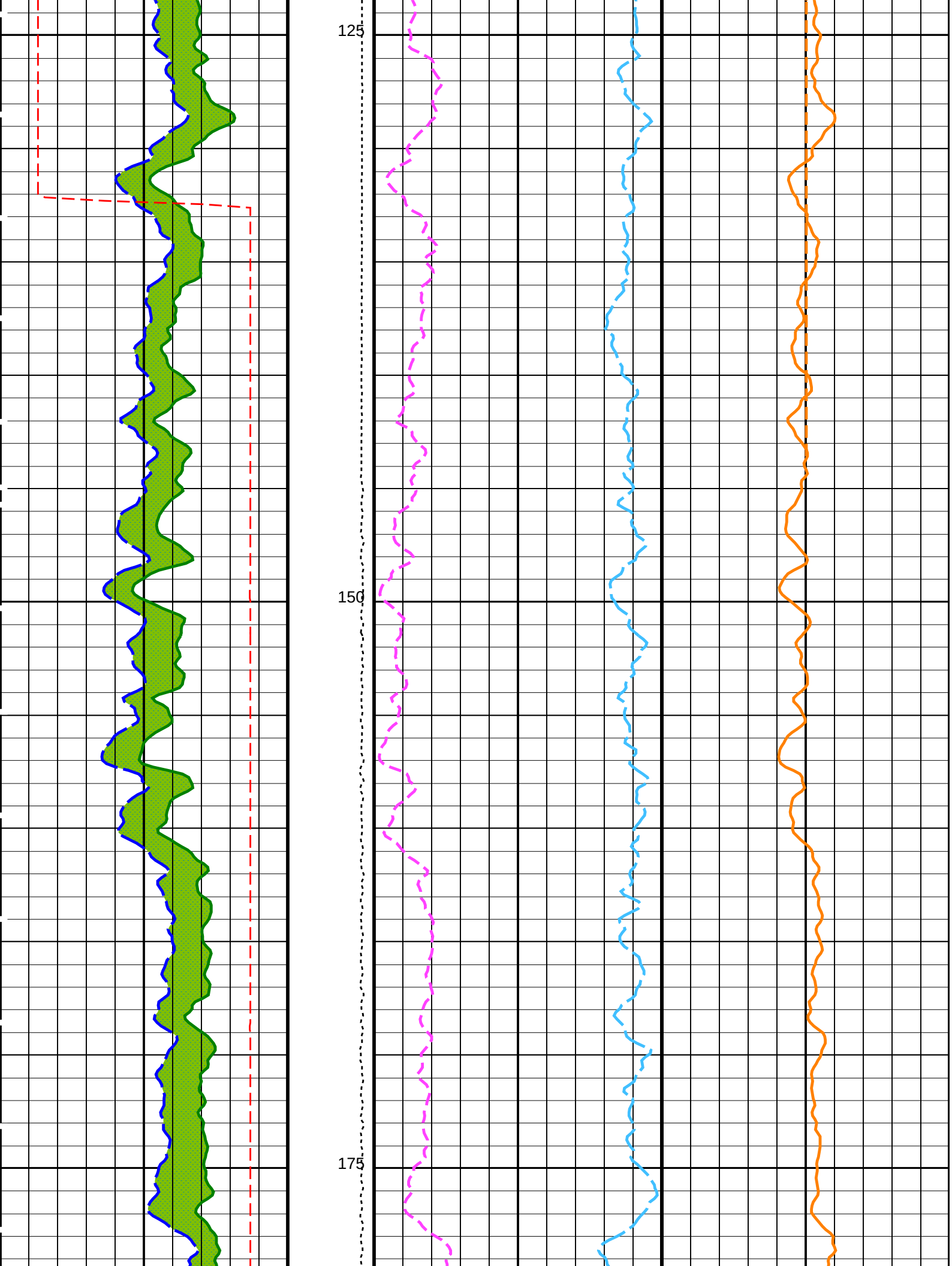
−25

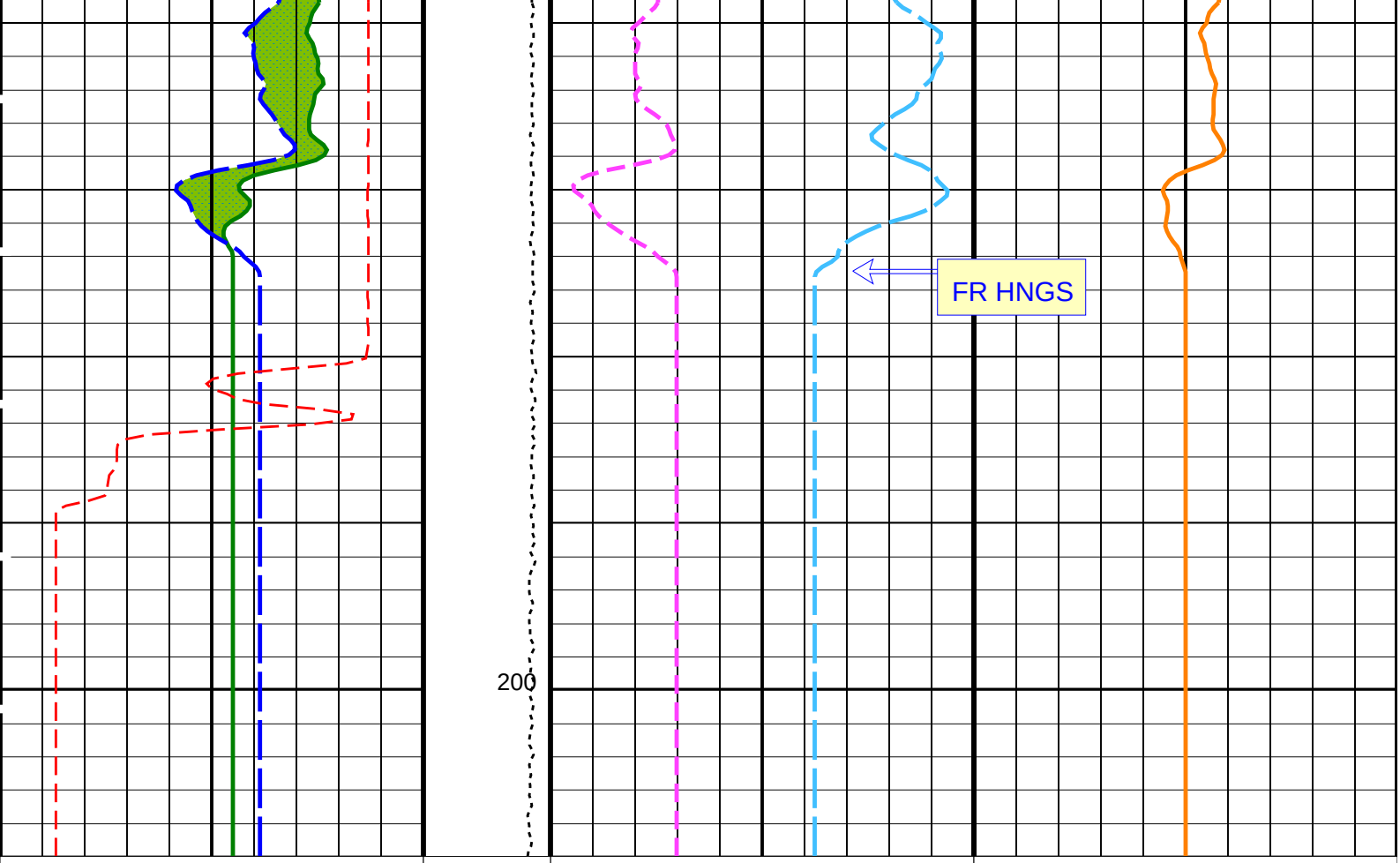
0

Sea Bed


25
50


75
100
Bit


125
150
175



HLDS Caliper (LCAL)
0 (IN) 20

Tension (TENS) (LBF)
10000 0

HNGS Thorium (HTHO)
5 (PPM) 25

HNGS Potassium (HFK)
−0.01 (−−−− 0.04

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 100

HNGS Uranium (HURA)
−5 (PPM) 10

Area1
From HCGR to HSGR

HNGS Borehole Potassium (HBHK)
−0.05 (−−−− 0.05

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 100

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)	60	DEGF
DGF1	Deep 10 kHz Gain Factor	0.968036	
DGF2	Deep 20 kHz Gain Factor	0.981641	
DGF4	Deep 40 kHz Gain Factor	1.00354	
DPH1	Deep 10 kHz Phase Shift	0.519505	DEG
DPH2	Deep 20 kHz Phase Shift	0.58231	DEG
DPH4	Deep 40 kHz Phase Shift	−0.0231022	DEG
DRE1	Deep Real 10 kHz Sonde Error Correction	47.0269	MM/M
DRE2	Deep Real 20 kHz Sonde Error Correction	16.7871	MM/M
DRE4	Deep Real 40 kHz Sonde Error Correction	5.70109	MM/M
DRIM	DIT−E Radial Invasion Mode	Rxo>Rt	
DSR1	Deep Sigma Reference (10 kHz)	7637	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
DSR4	Deep Sigma Reference (40 kHz)	405	MM/M
DSTA	DIT−E Transversal Standoff	0	IN
DXE1	Deep Quad 10 kHz Sonde Error Correction	100.491	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	62.191	MM/M

DXE4	Deep Quad 40 kHz Sonde Error Correction	44.6702	MM/M
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
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	
MGF1	Medium 10 kHz Gain Factor	1.00192	
MGF2	Medium 20 kHz Gain Factor	1.01122	
MGF4	Medium 40 kHz Gain Factor	1.04786	
MPH1	Medium 10 kHz Phase Shift	0.190245	DEG
MPH2	Medium 20 kHz Phase Shift	−0.139176	DEG
MPH4	Medium 40 kHz Phase Shift	−1.01614	DEG
MRE1	Medium Real 10 kHz Sonde Error Correction	17.1122	MM/M
MRE2	Medium Real 20 kHz Sonde Error Correction	−2.07993	MM/M
MRE4	Medium Real 40 kHz Sonde Error Correction	−9.895	MM/M
MSR1	Medium Sigma Reference (10 kHz)	13520	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MSR4	Medium Sigma Reference (40 kHz)	685	MM/M
MXE1	Medium Quad 10 kHz Sonde Error Correction	−94.7355	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	−32.0861	MM/M
MXE4	Medium Quad 40 kHz Sonde Error Correction	12.9006	MM/M
SBR	Shoulder Bed Resistivity Factor	1	OHMM
SFCR	SFL Channel Ratio	1000	
SFLE	SFL Enable	ENABLE	
SHT	Surface Hole Temperature	68	DEGF
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	24.4723	DEG
MRTE	Magneto Reference Temperature	19	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	OFF	
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)	60	DEGF
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	0.01	DF/F
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	−0.00124032	
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	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.959039	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.956348	
DIR: Directional Survey Computation			
SPED	East Departure of Starting Point	0	M
SPND	North Departure of Starting Point	0	M
SPVD	TVD of Starting Point	0	M
TAZI	Vertical Section Azimuth	0	DEG
TIED	East Departure of Tie−in Point	0	M
TIMD	Along−hole depth of Tie−in Point	0	M
TIND	North Departure of Tie−in Point	0	M
TIVD	TVD of Tie−in Point	0	M
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	1.02	G/C3
DO	Depth Offset for Playback	−355.0	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	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2750.9	M
TDD	Total Depth − Driller	1927.00	M
TDL	Total Depth − Logger	207.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HNGSYields **Vertical Scale: 1:200** **Graphics File Created: 31−Dec−2009 23:34**

OP System Version: 17C0−154

DIT−E	17C0−154	GPIT−A/B	SRPC−3870_Q3_2009_OP17_V3_b
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_009LUP	FN:8	PRODUCER	20−Dec−2009 19:35	560.1 M	324.0 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_019PUP	FN:18	PRODUCER	31−Dec−2009 23:34

Schlumberger

Calibrations

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units

Measurement	Nominal	Master	Before	After	Change	Limit	Units
General Purpose Inclinometer Wellsite Calibration − CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 20−Dec−2009 16:12							
TEMPERATURE REFERENCE :	N/A	N/A	20	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	92	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	10	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	448	N/A	N/A	N/A	
General Purpose Inclinometer Wellsite Calibration − CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 20−Dec−2009 16:12							
TEMPERATURE REFERENCE :	N/A	N/A	19	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	12	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	428	N/A	N/A	N/A	
Hostile Litho−Density Sonde Wellsite Calibration − Background Measurement							
Master: 4−Nov−2009 17:36 Before: 20−Dec−2009 16:16 After: 20−Dec−2009 18:25							
SS Cs Resolution Bkg	9.000	7.756	7.764	7.749	−0.01499	1.800	%
LS Cs Resolution Bkg	9.000	8.165	8.041	8.140	0.09894	1.800	%
LSW1 Background	100.0	92.48	93.19	92.29	−0.8938	3.000	CPS
LSW2 Background	100.0	84.63	82.13	82.42	0.2946	3.000	CPS
LSW3 Background	200.0	191.1	189.6	188.9	−0.6516	6.000	CPS
LSW4 Background	250.0	233.7	232.5	233.1	0.5877	7.500	CPS
LSW5 Background	600.0	544.1	543.5	544.0	0.5118	18.00	CPS
SSW1 Background	100.0	90.17	87.73	88.95	1.219	3.000	CPS
SSW2 Background	200.0	152.5	154.4	151.4	−3.026	6.000	CPS
SSW3 Background	500.0	429.0	429.7	428.4	−1.348	15.00	CPS
SSW4 Background	270.0	231.1	230.0	228.1	−1.885	8.100	CPS
SSW5 Background	200.0	164.3	165.5	164.7	−0.7769	6.000	CPS
Hostile Litho−Density Sonde Wellsite Calibration − Aluminum Measurement							
Master: 4−Nov−2009 17:36							
LSW1 Aluminum	600.0	567.1	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	807.6	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	967.1	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	490.9	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	441.4	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2502	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6869	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9623	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3958	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	476.5	N/A	N/A	N/A	N/A	CPS
Hostile Litho−Density Sonde Wellsite Calibration − Lithology Measurement							
Master: 4−Nov−2009 17:36							
LSW1 Iron	400.0	388.6	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	657.3	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	863.8	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	446.9	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	407.2	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1834	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5739	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8813	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3631	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	422.9	N/A	N/A	N/A	N/A	CPS
Hostile Litho−Density Sonde Wellsite Calibration − Caliper Calibration							
Before: 30−Nov−2009 21:30							
HLDS Caliper Small Ring	12.00	N/A	14.52	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.14	N/A	18.13	N/A	N/A	N/A	IN
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check							
Master: 31−Oct−2009 23:09 Before: 20−Dec−2009 16:17 After: 20−Dec−2009 18:26							
Na 511 Peak Loc	40.00	39.48	39.77	39.71	−0.06119	1.000	
Na 511 Peak Res	15.50	16.07	14.68	15.38	0.6973	2.000	%
High Voltage	1150	1200	1146	1151	4.788	N/A	V
Na 1785 Peak Loc	142.6	142.5	142.9	142.2	−0.7232	7.000	
Na 1785 Peak Res	8.500	8.076	8.164	8.700	0.5361	2.000	%
Temperature	15.50	36.12	16.32	16.47	0.1496	N/A	DEGC
Na Count Rate	45.00	34.81	32.94	32.51	−0.4315	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check							
Master: 31−Oct−2009 23:09 Before: 20−Dec−2009 16:17 After: 20−Dec−2009 18:26							
Na 511 Peak Loc	40.00	39.63	39.50	39.55	0.04865	1.000	
Na 511 Peak Res	15.50	15.54	15.67	15.97	0.3001	2.000	%
High Voltage	1150	1123	1082	1084	1.927	N/A	V
Na 1785 Peak Loc	142.6	142.2	141.8	142.3	0.5298	7.000	
Na 1785 Peak Res	8.500	8.652	8.586	8.897	0.3108	2.000	%
Temperature	15.50	36.37	16.50	17.33	0.8226	N/A	DEGC
Na Count Rate	45.00	35.36	32.94	32.52	−0.4253	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Ratio Of Detector 1 To Detector 2
Master: 31−Oct−2009 23:09 Before: 20−Dec−2009 16:17 After: 20−Dec−2009 18:26

Coincidence Count Rate Ratio	1.000	0.9839	1.003	0.9997	−0.003030	0.05000

Dual Induction − E / Equipment Identification

Primary Equipment:		
Dual Induction Sonde	DIS − HB	442
Dual Induction Cartridge	DIC − EB	438
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	Phase	ID Elect Real Gain 10 kHz	Value	Phase	ID Elect Phase 10 kHz DEG	Value
Before		31.05	Before		0.9385	Before		9.060
	−300.0 (Minimum) 0 (Nominal) 300.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			−10.00 (Minimum) 0 (Nominal) 10.00 (Maximum)	
Phase	ID Elect Quad Offset 10 kHz MM/M	Value	Phase	ID Elect Quad Gain 10 kHz	Value	Phase	IM Elect Phase 10 kHz DEG	Value
Before		23.92	Before		0.9546	Before		8.901
	−300.0 (Minimum) 0 (Nominal) 300.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			−10.00 (Minimum) 0 (Nominal) 10.00 (Maximum)	
Phase	IM Elect Real Offset 10 kHz MM/M	Value	Phase	IM Elect Real Gain 10 kHz	Value			
Before		83.66	Before		0.9473			
	−550.0 (Minimum) 0 (Nominal) 550.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)				
Phase	IM Elect Quad Offset 10 kHz MM/M	Value	Phase	IM Elect Quad Gain 10 kHz	Value			
Before		43.93	Before		0.9278			
	−550.0 (Minimum) 0 (Nominal) 550.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)				

Before: 24−Nov−2009 13:24

Dual Induction − E Wellsite Calibration

Induction Electronics (20 kHz)

Phase	ID Elect Real Offset 20 kHz MM/M	Value	Phase	ID Elect Real Gain 20 kHz	Value	Phase	ID Elect Phase 20 kHz DEG	Value
Before		12.28	Before		0.9665	Before		4.391
	−125.0 (Minimum) 0 (Nominal) 125.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			−15.00 (Minimum) 0 (Nominal) 15.00 (Maximum)	
Phase	ID Elect Quad Offset 20 kHz MM/M	Value	Phase	ID Elect Quad Gain 20 kHz	Value	Phase	IM Elect Phase 20 kHz DEG	Value
Before		9.659	Before		0.9858	Before		4.791
	−125.0 (Minimum) 0 (Nominal) 125.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			−15.00 (Minimum) 0 (Nominal) 15.00 (Maximum)	
Phase	IM Elect Real Offset 20 kHz MM/M	Value	Phase	IM Elect Real Gain 20 kHz	Value			
Before		34.35	Before		0.9917			
	−225.0 (Minimum) 0 (Nominal) 225.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)				
Phase	IM Elect Quad Offset 20 kHz MM/M	Value	Phase	IM Elect Quad Gain 20 kHz	Value			
Before		18.19	Before		0.9711			
	−225.0 (Minimum) 0 (Nominal) 225.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)				

Before: 24−Nov−2009 13:25

Dual Induction − E Wellsite Calibration

Induction Electronics (40 kHz)

Phase	ID Elect Real Offset 40 kHz MM/M	Value	Phase	ID Elect Real Gain 40 kHz	Value	Phase	ID Elect Phase 40 kHz DEG	Value
Before		8.040	Before		0.9520	Before		15.63
	−85.00 (Minimum) 0 (Nominal) 85.00 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			−20.00 (Minimum) 0 (Nominal) 20.00 (Maximum)	
Phase	ID Elect Quad Offset 40 kHz MM/M	Value	Phase	ID Elect Quad Gain 40 kHz	Value	Phase	IM Elect Phase 40 kHz DEG	Value
Before		6.450	Before		0.9803	Before		15.42
	−85.00 (Minimum) 0 (Nominal) 85.00 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			−20.00 (Minimum) 0 (Nominal) 20.00 (Maximum)	

Phase	IM Elect Real Offset 40 kHz MM/M	Value	Phase	IM Elect Real Gain 40 kHz	Value
Before		22.15	Before		0.9943
	−130.0 (Minimum) 0 (Nominal) 130.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	
Phase	IM Elect Quad Offset 40 kHz MM/M	Value	Phase	IM Elect Quad Gain 40 kHz	Value
Before		11.81	Before		0.9732
	−130.0 (Minimum) 0 (Nominal) 130.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	

Before: 24−Nov−2009 13:26

Dual Induction − E Wellsite Calibration

SFL Electronics

Phase	SFL Voltage Offset MV	Value	Phase	SFL Voltage Gain	Value
Before		0.1613	Before		0.9984
	−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		0.03676	Before		1.010
	−0.6000 (Minimum) 0 (Nominal) 0.6000 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	

Before: 24−Nov−2009 13:26

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	Phase	LS Cs Resolution Bkg %	Value	Phase	LSW1 Background CPS	Value
Master		7.756	Master		8.165	Master		92.48
Before		7.764	Before		8.041	Before		93.19
After		7.749	After		8.140	After		92.29
	7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)	
Phase	LSW2 Background CPS	Value	Phase	LSW3 Background CPS	Value	Phase	LSW4 Background CPS	Value
Master		84.63	Master		191.1	Master		233.7
Before		82.13	Before		189.6	Before		232.5
After		82.42	After		188.9	After		233.1
	50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)			140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)	
Phase	LSW5 Background CPS	Value	Phase	SSW1 Background CPS	Value	Phase	SSW2 Background CPS	Value
Master		544.1	Master		90.17	Master		152.5
Before		543.5	Before		87.73	Before		154.4
After		544.0	After		88.95	After		151.4
	330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)	

Phase	SSW3 Background CPS	Value
Master		429.0
Before		429.7
After		428.4
	280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	

Phase	SSW4 Background CPS	Value
Master		231.1
Before		230.0
After		228.1
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)	

Phase	SSW5 Background CPS	Value
Master		164.3
Before		165.5
After		164.7
	110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)	

Master: 4−Nov−2009 17:36 Before: 20−Dec−2009 16:16 After: 20−Dec−2009 18:25

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		39.48
Before		39.77
After		39.71
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)	

Phase	Na 511 Peak Res %	Value
Master		16.07
Before		14.68
After		15.38
	12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)	

Phase	High Voltage V	Value
Master		1200
Before		1146
After		1151
	900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	

Phase	Na 1785 Peak Loc	Value
Master		142.5
Before		142.9
After		142.2
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)	

Phase	Na 1785 Peak Res %	Value
Master		8.076
Before		8.164
After		8.700
	7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)	

Phase	Temperature DEGC	Value
Master		36.12
Before		16.32
After		16.47
	−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		34.81
Before		32.94
After		32.51
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)	

Master: 31−Oct−2009 23:09 Before: 20−Dec−2009 16:17 After: 20−Dec−2009 18:26

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.63

Phase	Na 511 Peak Res %	Value
Master		15.54

Phase	High Voltage V	Value
Master		1123

Phase	Value
Before	39.50
After	39.55

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

Phase	Value
Before	15.67
After	15.97

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

Phase	Value
Before	1082
After	1084

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

Phase	Na 1785 Peak Loc	Value
Master		142.2
Before		141.8
After		142.3

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

Phase	Na 1785 Peak Res %	Value
Master		8.652
Before		8.586
After		8.897

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

Phase	Temperature DEGC	Value
Master		36.37
Before		16.50
After		17.33

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

Phase	Na Count Rate CPS	Value
Master		35.36
Before		32.94
After		32.52

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

Master: 31−Oct−2009 23:09 Before: 20−Dec−2009 16:17 After: 20−Dec−2009 18:26

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		0.9839
Before		1.003
After		0.9997

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

Master: 31−Oct−2009 23:09
Before: 20−Dec−2009 16:17
After: 20−Dec−2009 18:26

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**

Schlumberger

Well: **Expedition 317 Site U1352C**
Field: **Canterbury Basin**
Rig: **JOIDES Resolution**
Ocean: **Pacific**

Natural Gamma Spectroscopy