Schlumberger

Company: **Lamont Doherty**

Well: **Expedition 324 Site U1346A**
Field: **Shatsky Rise**
Rig: **JOIDES Resolution** Ocean: **Pacific**

Rig: JOIDES Resolution
Field: Shatsky Rise
Location: Latitude: N 38* 00.42'
Well: Expedition 324 Site U1346A
Company: Lamont Doherty

Phasor Induction
Natural Gamma Ray
Spectroscopy

LOCATION

Latitude: N 38* 00.42'
Longitude: E 162* 38.75'

Elev.: K.B. 11.00 m
G.L. −3630.00 m
D.F. 11.00 m

Permanent Datum: Mean Sea Level — Elev.: 0.00 m
Log Measured From: Drill Floor — 11.00 m above Perm. Datum
Drilling Measured From: Drill Floor

API Serial No.	Max. Hole Devi. 0 deg	Longitude	Latitude

	Run 1	Run 2	R
Logging Date	18−Sep−2009		
Run Number	1		
Depth Driller	3822 m		
Schlumberger Depth	3811 m		
Bottom Log Interval	3807 m		
Top Log Interval	3632 m		
Casing Driller Size @ Depth	4.500 in @ 3754 m	@	
Casing Schlumberger	3750 m		
Bit Size	9.875 in		
Type Fluid In Hole	Seawater Gel		
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	@ 4 / @ 4	@ / @	
Maximum Recorded Temperatures	4 degC		
Circulation Stopped / Time	18−Sep−2009 / 18:00		
Logger On Bottom / Time	19−Sep−2009 / 2:13		
Unit Number / Location	625003 / Houston		
Recorded By	K. Swain		
Witnessed By	Gerardo Iturrino, Helen Evans		

	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			

Run 3

Run 4

DISCLAIMER

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OTHER SERVICES1	OTHER SERVICES2
OS1: DITE	OS1:
OS2: GPIT	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Logging tools deployed inside drillpipe with wireline.	
BHA consisted of RCB Drilling Bit and collars with mechanical bit release.	
HLDS caliper calibration used 12 inch and 15.19" diameter rings as reference to	
improve large hole size accuracy.	
Depths referenced from drill floor which is 11m above sea level.	
Pipe depth set at 3750 mbsf approximately for duration of logging.	
Ship heave averaged +2m to −2 m on average (estimate) with occasional	
peaks to +/−3m (6mpeak to peak).	
APS not run per client request.	

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
LEH−QT 301

23.22

DTC−H
ECH−mca 1777
DTCH0−A 8798

CTEM
TelStatus
ToolStatu

22.05
21.41

22.33

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 840
GPIH−A 2864

10.74

DIT−E
DIC−EB 171
MIH−ZA 342
DIS−HB 129

9.52

SP 3.15
Deep Ind 2.90

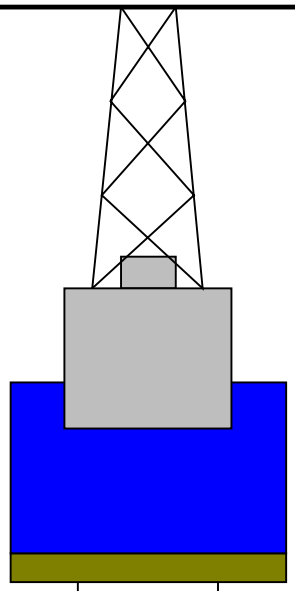
Aux Meas SFL 1.98
Med Ind 1.83

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			11.0					
Derrick Floor Elevation			11.0					
Mean Sea Level			0.0					
					3630	4.20		Sea Floor
					3630	9.875		Borehole Segment
					3753	3.80		Open Hole
					4922			

Input DLIS Files

DEFAULT	PI_LDL_NGS_010LUP	FN:13	PRODUCER	19−Sep−2009 02:29	3808.5 M	3619.8 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_022PUP	FN:31	PRODUCER	20−Sep−2009 05:33	3808.5 M	3619.8 M

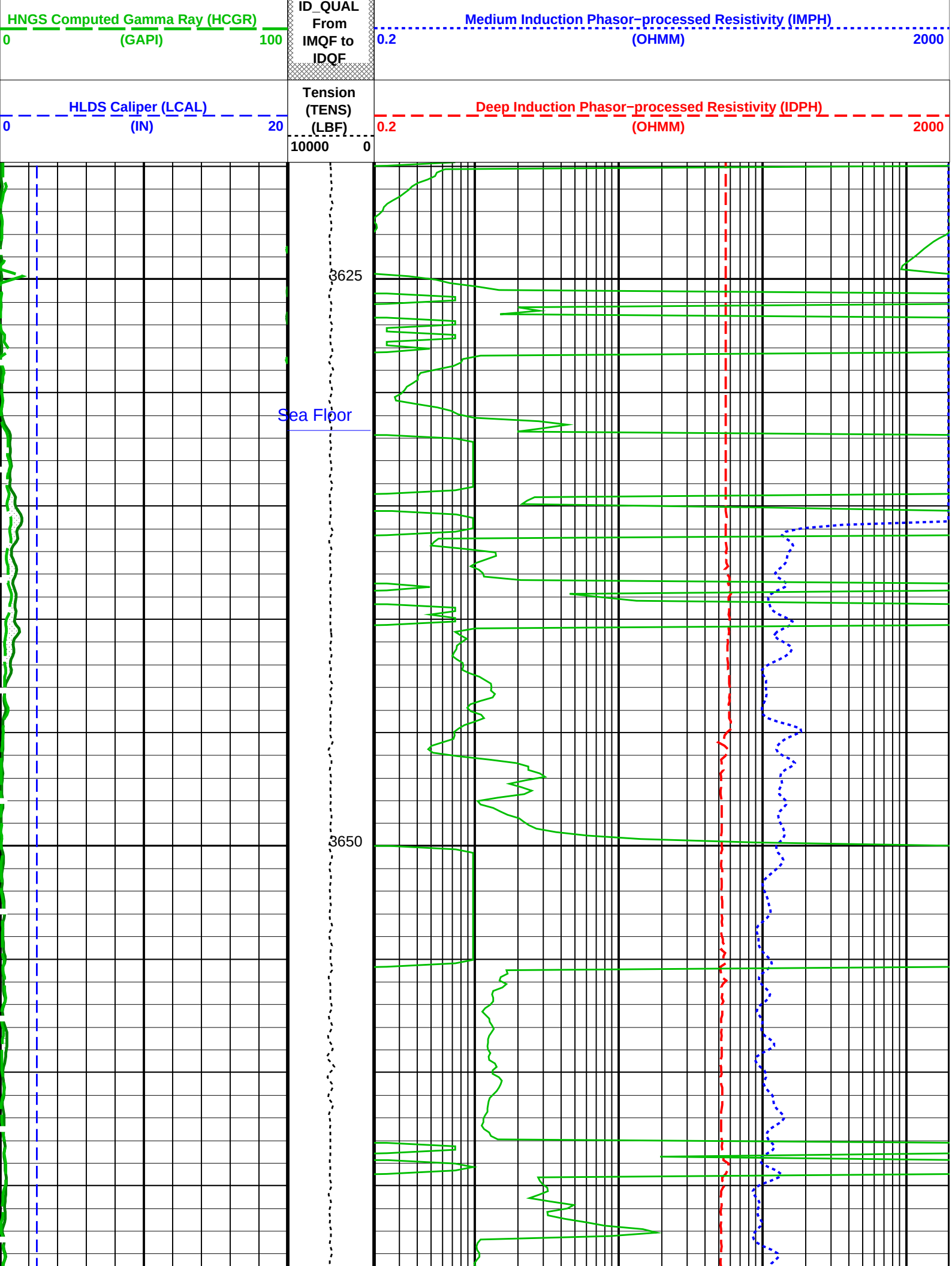
OP System Version: 17C0−154

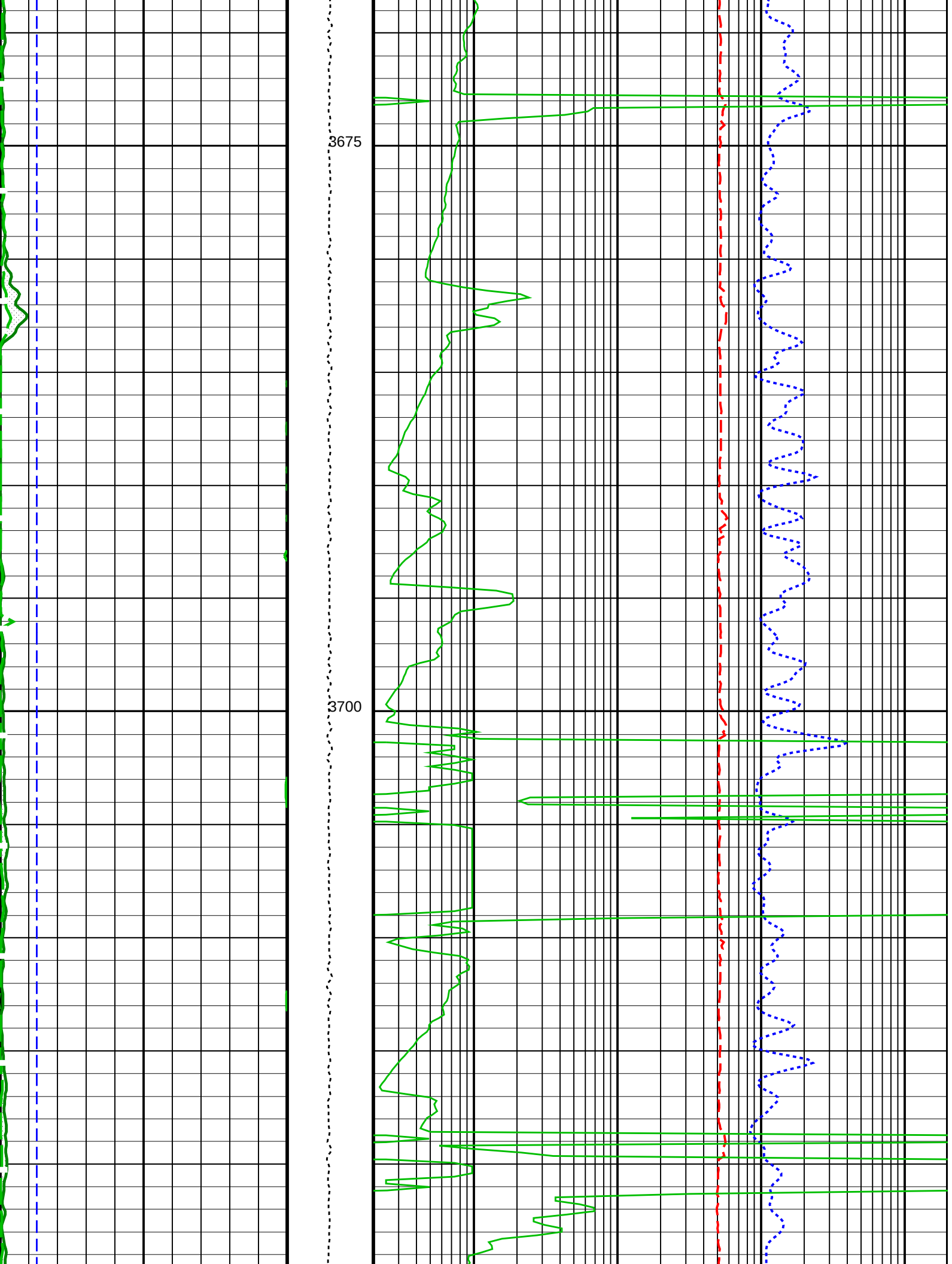
DIT−E	17C0−154	GPIT−A/B	SRPC−3762−Q1_2009_OP17
DTA−A	17C0−154	HLDS	17C0−154
LDSC−B	17C0−154	HNGC−B	17C0−154
HNGS−BA	17C0−154	DTC−H	17C0−154

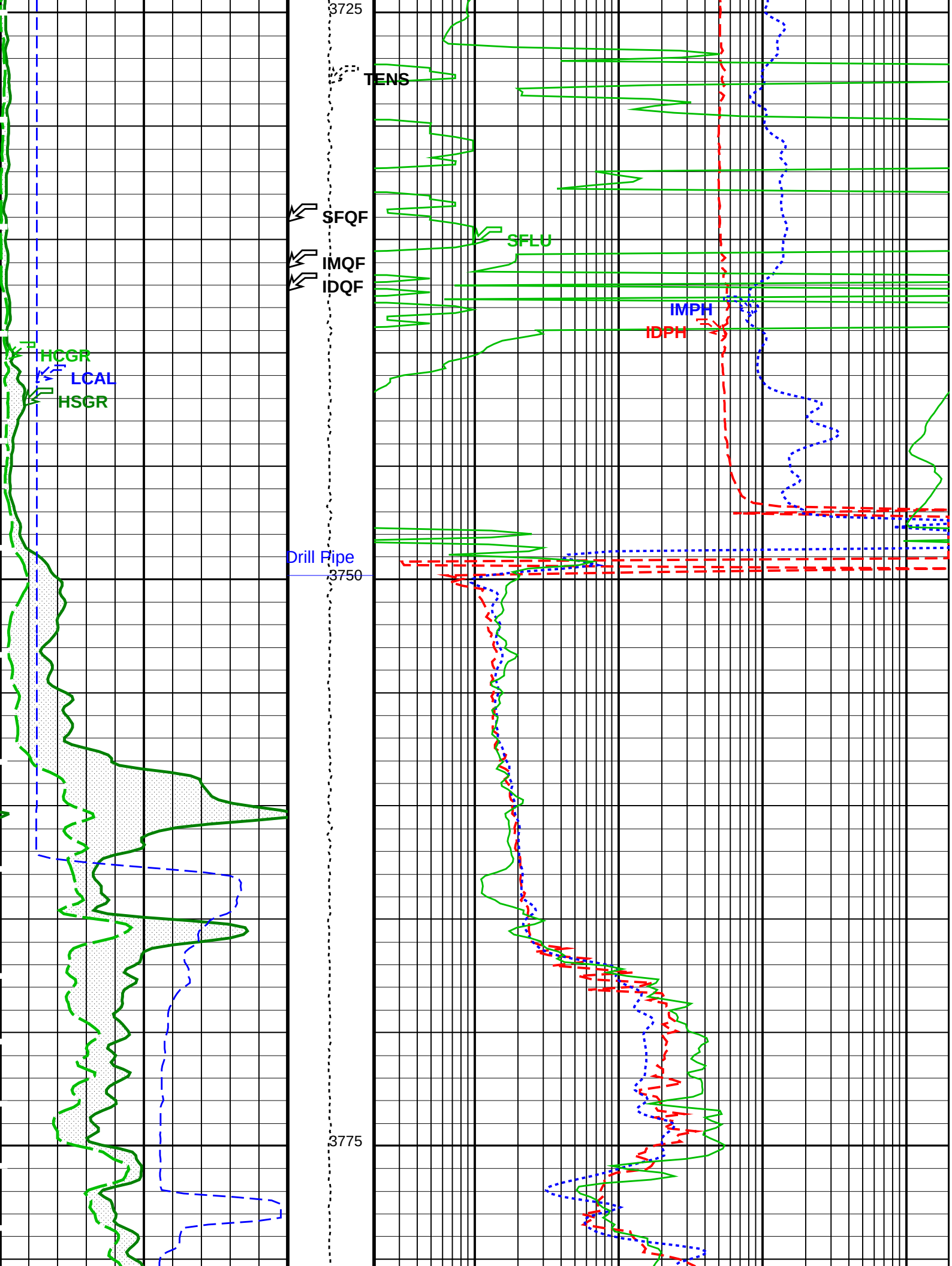
PIP SUMMARY

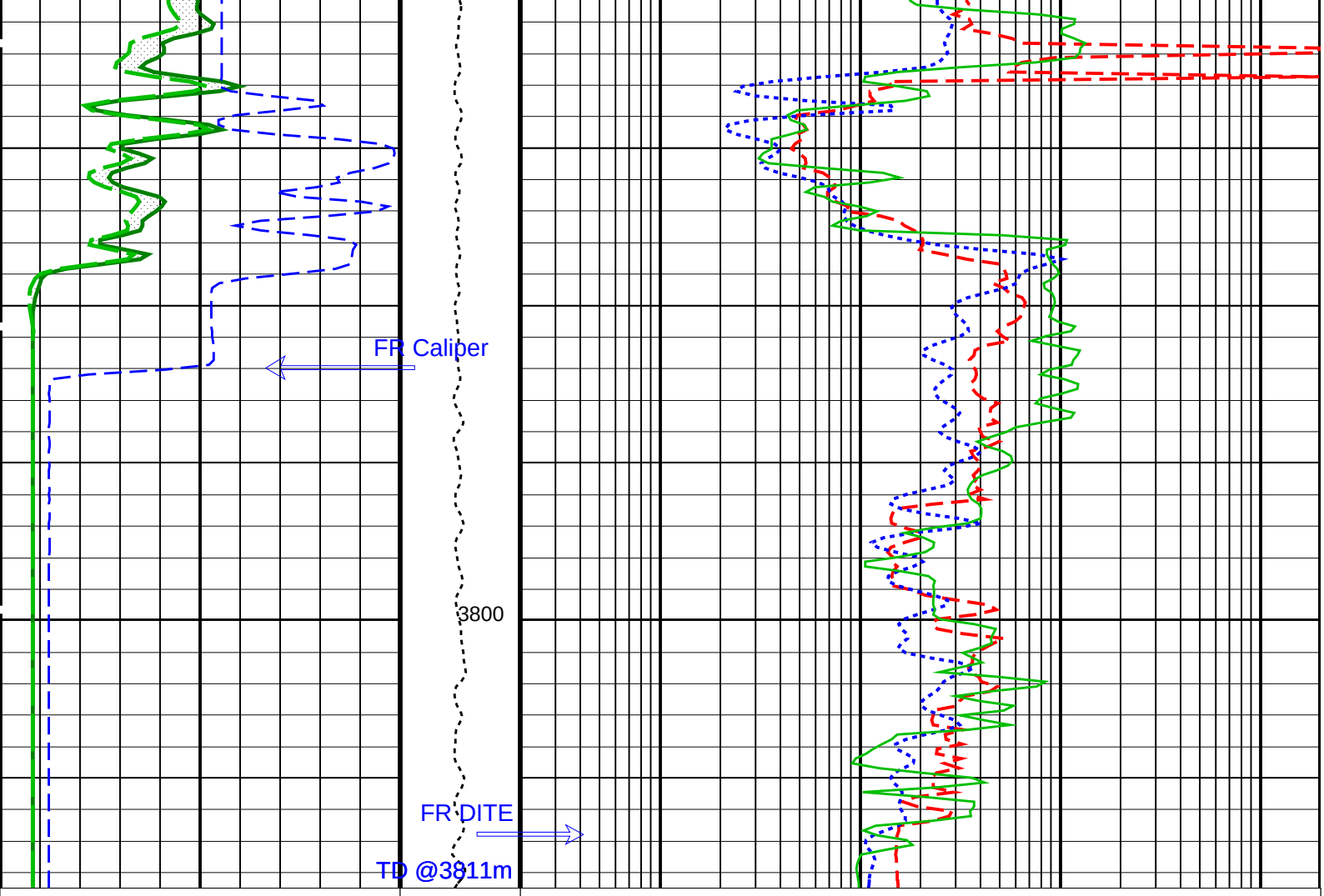
Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray (HSGR) 0 (GAPI) 100	SFL_ QUAL From D3T to SFQF	Uplog 2, Caliper Opened
Area From HCGR to HSGR	IM_QUAL From SFQF to IMQF	SFL Unaveraged (SFLU) 0.2 (OHMM) 2000


HNGS Computed Gamma Ray (HCGR)
0
(GAPI)
100
ID_QUAL From IMQF to IDQF
Medium Induction Phasor−processed Resistivity (IMPH)
0.2
(OHMM)
2000
HLDS Caliper (LCAL)
0
(IN)
20
Tension (TENS) (LBF)
10000
0
Deep Induction Phasor−processed Resistivity (IDPH)
0.2
(OHMM)
2000
3625
Sea Floor
3650


3675
3700


3725
TENS
SFQF
SFLU
IMQF
IDQF
IMPH
IDPH
HCGR
LCAL
HSGR
Drill Pipe
3750
3775



HLDS Caliper (LCAL) 0 (IN) 20	Tension (TENS) (LBF) 10000 0	Deep Induction Phasor−processed Resistivity (IDPH) 0.2 (OHMM) 2000
HNGS Computed Gamma Ray (HCGR) 0 (GAPI) 100	ID_QUAL From IMQF to IDQF	Medium Induction Phasor−processed Resistivity (IMPH) 0.2 (OHMM) 2000
Area From HCGR to HSGR	IM_QUAL From SFQF to IMQF	SFL Unaveraged (SFLU) 0.2 (OHMM) 2000
HNGS Spectroscopy Gamma Ray (HSGR) 0 (GAPI) 100	SFL_ QUAL From D3T to SFQF	Uplog 2, Caliper Opened

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)	45	DEGF
DGF1	Deep 10 kHz Gain Factor	0.968645	
DGF2	Deep 20 kHz Gain Factor	0.979119	
DGF4	Deep 40 kHz Gain Factor	0.990252	
DPH1	Deep 10 kHz Phase Shift	0.26358	DEG
DPH2	Deep 20 kHz Phase Shift	0.0159963	DEG
DPH4	Deep 40 kHz Phase Shift	−1.11256	DEG

DRE1	Deep Real 10 kHz Sonde Error Correction	39.5751	MM/M
DRE2	Deep Real 20 kHz Sonde Error Correction	17.0457	MM/M
DRE4	Deep Real 40 kHz Sonde Error Correction	5.15121	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	245.841	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	136.154	MM/M
DXE4	Deep Quad 40 kHz Sonde Error Correction	78.4516	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	0.969585	
MGF2	Medium 20 kHz Gain Factor	0.974788	
MGF4	Medium 40 kHz Gain Factor	0.999842	
MPH1	Medium 10 kHz Phase Shift	0.0787021	DEG
MPH2	Medium 20 kHz Phase Shift	−0.199528	DEG
MPH4	Medium 40 kHz Phase Shift	−0.885081	DEG
MRE1	Medium Real 10 kHz Sonde Error Correction	31.1041	MM/M
MRE2	Medium Real 20 kHz Sonde Error Correction	11.3259	MM/M
MRE4	Medium Real 40 kHz Sonde Error Correction	3.5782	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	328.09	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	172.606	MM/M
MXE4	Medium Quad 40 kHz Sonde Error Correction	112.808	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	−0.985422	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)	45	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	−0.00339825	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
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	1.17069	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.17319	

System and Miscellaneous

ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	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	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	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TDD	Total Depth − Driller	4626.00	M
TDL	Total Depth − Logger	4622.00	M
TWS	Temperature of Connate Water Sample	7.00	DEGC

Format: DITE_LogPhasor Vertical Scale: 1:200 Graphics File Created: 20−Sep−2009 05:33

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_010LUP	FN:13	PRODUCER	19−Sep−2009 02:29	3808.5 M	3619.8 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_022PUP	FN:31	PRODUCER	20−Sep−2009 05:33		

Input DLIS Files

DEFAULT	PI_LDL_NGS_009LUP	FN:11	PRODUCER	19−Sep−2009 02:13	3810.8 M	3783.3 M

Output DLIS Files

DEFAULT	PI_LDL_NGS_053PUP	FN:58	PRODUCER	28−Sep−2009 02:50	3810.8 M	3781.2 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

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

SFL_QUAL From D3T to SFQF

Uplog 1, Caliper Closed

Area From HCGR to HSGR

IM_QUAL From SFQF to IMQF

SFL Unaveraged (SFLU)
0.2 (OHMM) 2000

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

ID_QUAL From IMQF to IDQF

Medium Induction Phasor-processed Resistivity (IMPH)
0.2 (OHMM) 2000

HLDS Caliper (LCAL)
0 (IN) 20

Tension (TENS) (LBF)
10000 0

Deep Induction Phasor-processed Resistivity (IDPH)
0.2 (OHMM) 2000

FR HNGS

3800

FR DITE

TD @ 3811m

HLDS Caliper (LCAL)
0 (IN) 20

Tension (TENS) (LBF)
10000 0

Deep Induction Phasor-processed Resistivity (IDPH)
0.2 (OHMM) 2000

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

ID_QUAL From IMQF to IDQF

Medium Induction Phasor-processed Resistivity (IMPH)
0.2 (OHMM) 2000

IM_QUAL

Area From HCGR to HSGR

From SFQF to IMQF

SFL Unaveraged (SFLU)

0.2 (OHMM) 2000

HNGS Spectroscopy Gamma Ray (HSGR)

0 (GAPI) 100

SFL_ QUAL From D3T to SFQF

Uplog 1, Caliper Closed

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)	45	DEGF
DGF1	Deep 10 kHz Gain Factor	0.968645	
DGF2	Deep 20 kHz Gain Factor	0.979119	
DGF4	Deep 40 kHz Gain Factor	0.990252	
DPH1	Deep 10 kHz Phase Shift	0.26358	DEG
DPH2	Deep 20 kHz Phase Shift	0.0159963	DEG
DPH4	Deep 40 kHz Phase Shift	−1.11256	DEG
DRE1	Deep Real 10 kHz Sonde Error Correction	39.5751	MM/M
DRE2	Deep Real 20 kHz Sonde Error Correction	17.0457	MM/M
DRE4	Deep Real 40 kHz Sonde Error Correction	5.15121	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	245.841	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	136.154	MM/M
DXE4	Deep Quad 40 kHz Sonde Error Correction	78.4516	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	0.969585	
MGF2	Medium 20 kHz Gain Factor	0.974788	
MGF4	Medium 40 kHz Gain Factor	0.999842	
MPH1	Medium 10 kHz Phase Shift	0.0787021	DEG
MPH2	Medium 20 kHz Phase Shift	−0.199528	DEG
MPH4	Medium 40 kHz Phase Shift	−0.885081	DEG
MRE1	Medium Real 10 kHz Sonde Error Correction	31.1041	MM/M
MRE2	Medium Real 20 kHz Sonde Error Correction	11.3259	MM/M
MRE4	Medium Real 40 kHz Sonde Error Correction	3.5782	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	328.09	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	172.606	MM/M
MXE4	Medium Quad 40 kHz Sonde Error Correction	112.808	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	−0.985422	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	

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)	45	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	−0.00193941	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
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	−1.91726	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	4.30391	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	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	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	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TDD	Total Depth − Driller	4626.00	M
TDL	Total Depth − Logger	4622.00	M
TWS	Temperature of Connate Water Sample	7.00	DEGC

Format: DITE_LogPhasor **Vertical Scale: 1:200** **Graphics File Created: 28−Sep−2009 02:50**

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_009LUP	FN:11	PRODUCER	19−Sep−2009 02:13	3810.8 M	3783.3 M

Output DLIS Files

DEFAULT **PI_LDL_NGS_053PUP** **FN:58** **PRODUCER** **28−Sep−2009 02:50**

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: 18−Sep−2009 21:20							
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: 18−Sep−2009 21:20							
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: 4−Sep−2009 13:44 Before: 15−Sep−2009 4:01 After: 19−Sep−2009 7:13							
SS Cs Resolution Bkg	9.000	7.746	7.720	7.808	0.08810	1.800	%
LS Cs Resolution Bkg	9.000	8.108	8.047	8.047	0.0004940	1.800	%
LSW1 Background	100.0	93.25	91.52	92.09	0.5726	0.03000	CPS
LSW2 Background	100.0	84.64	83.44	83.57	0.1255	0.03000	CPS
LSW3 Background	200.0	190.6	189.6	188.0	−1.665	0.03000	CPS
LSW4 Background	250.0	236.5	232.3	233.8	1.489	0.03000	CPS
LSW5 Background	600.0	546.1	545.7	545.1	−0.5746	0.03000	CPS
SSW1 Background	100.0	89.81	88.53	89.55	1.016	0.03000	CPS
SSW2 Background	200.0	154.2	154.5	153.8	−0.6774	0.03000	CPS
SSW3 Background	500.0	432.1	432.8	430.1	−2.693	0.03000	CPS
SSW4 Background	270.0	230.2	231.1	230.0	−1.071	0.03000	CPS
SSW5 Background	200.0	165.4	163.7	164.8	1.107	0.03000	CPS
Hostile Litho−Density Sonde Wellsite Calibration − Aluminum Measurement							
Master: 4−Sep−2009 13:44							
LSW1 Aluminum	600.0	568.4	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	819.4	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	984.2	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	494.1	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	443.7	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2508	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6914	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9741	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	4018	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	488.9	N/A	N/A	N/A	N/A	CPS
Hostile Litho−Density Sonde Wellsite Calibration − Lithology Measurement							
Master: 4−Sep−2009 13:44							
LSW1 Iron	400.0	385.8	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	661.4	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	866.7	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	449.0	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	412.3	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1845	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5800	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8931	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3699	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	435.7	N/A	N/A	N/A	N/A	CPS
Hostile Litho−Density Sonde Wellsite Calibration − Caliper Calibration							
Before: 15−Sep−2009 4:22							
HLDS Caliper Small Ring	12.00	N/A	13.31	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	16.73	N/A	N/A	N/A	IN
Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check							
Master: 5−Sep−2009 7:01 Before: 13−Sep−2009 22:15 After: 19−Sep−2009 7:15							
Na 511 Peak Loc	40.00	39.55	39.60	39.55	−0.04275	1.000	
Na 511 Peak Res	15.50	15.65	16.19	16.06	−0.1322	2.000	%
High Voltage	1150	1146	1180	1173	−6.414	N/A	V
Na 1785 Peak Loc	142.6	142.8	142.7	142.5	−0.1574	7.000	
Na 1785 Peak Res	8.500	7.849	8.372	8.440	0.06862	2.000	%

Na 1785 Peak Res	8.500	7.849	8.372	8.440	0.06862	2.000	%
Temperature	15.50	14.91	32.53	27.36	−5.170	N/A	DEGC
Na Count Rate	45.00	36.92	35.51	35.68	0.1647	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check
Master: 5−Sep−2009 7:01 Before: 13−Sep−2009 22:15 After: 19−Sep−2009 7:15

Na 511 Peak Loc	40.00	39.62	39.55	39.53	−0.02555	1.000	
Na 511 Peak Res	15.50	15.06	16.55	16.25	−0.3064	2.000	%
High Voltage	1150	1080	1113	1107	−6.389	N/A	V
Na 1785 Peak Loc	142.6	141.3	142.3	142.0	−0.3132	7.000	
Na 1785 Peak Res	8.500	8.437	9.484	8.444	−1.040	2.000	%
Temperature	15.50	15.08	32.86	29.06	−3.793	N/A	DEGC
Na Count Rate	45.00	36.97	36.00	35.55	−0.4538	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Ratio Of Detector 1 To Detector 2
Master: 5−Sep−2009 7:01 Before: 13−Sep−2009 22:15 After: 19−Sep−2009 7:15

Coincidence Count Rate Ratio	1.000	0.9992	0.9853	1.003	0.01759	0.05000	

Hostile Natural Gamma Ray Sonde Master Calibration − Detector 1 Calibration
Master: 5−Sep−2009 7:01

Na 511 Peak Set Point	40.00	41.00	−−	−−	−−	−−	
Th Peak Loc	209.6	210.4	−−	−−	−−	−−	
Th Peak Res	7.000	6.417	−−	−−	−−	−−	%
Background Count Rate	142.5	18.75	−−	−−	−−	−−	CPS
Gain Ratio	1.000	1.012	−−	−−	−−	−−	

Hostile Natural Gamma Ray Sonde Master Calibration − Detector 2 Calibration
Master: 5−Sep−2009 7:01

Na 511 Peak Set Point	40.00	41.00	−−	−−	−−	−−	
Th Peak Loc	209.6	209.5	−−	−−	−−	−−	
Th Peak Res	7.000	7.001	−−	−−	−−	−−	%
Background Count Rate	142.5	18.87	−−	−−	−−	−−	CPS
Gain Ratio	1.000	1.006	−−	−−	−−	−−	

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	Phase	ID Elect Real Gain 10 kHz	Value	Phase	ID Elect Phase 10 kHz DEG	Value
Before		31.39	Before		0.9358	Before		9.281
−267.4 (Minimum)	32.65 (Nominal) 332.6 (Maximum)		0.7960 (Minimum)	0.9460 (Nominal) 1.124 (Maximum)		−0.5967 (Minimum)	9.403 (Nominal) 19.40 (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		23.30	Before		0.9522	Before		9.135
−278.5 (Minimum)	21.47 (Nominal) 321.5 (Maximum)		0.8109 (Minimum)	0.9609 (Nominal) 1.145 (Maximum)		−0.7277 (Minimum)	9.272 (Nominal) 19.27 (Maximum)	

Phase	IM Elect Real Offset 10 kHz MM/M	Value	Phase	IM Elect Real Gain 10 kHz	Value
Before		83.78	Before		0.9447
−465.7 (Minimum)	84.34 (Nominal) 634.3 (Maximum)		0.8034 (Minimum)	0.9534 (Nominal) 1.134 (Maximum)	

Phase	IM Elect Quad Offset 10 kHz MM/M	Value	Phase	IM Elect Quad Gain 10 kHz	Value
Before		44.07	Before		0.9251
−505.4 (Minimum)	44.57 (Nominal) 594.6 (Maximum)		0.7864 (Minimum)	0.9364 (Nominal) 1.110 (Maximum)	

Before: 15−Sep−2009 3:59

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		12.45	Before		0.9640	Before		4.602
−112.1 (Minimum)	12.92 (Nominal) 137.9 (Maximum)		0.8195 (Minimum)	0.9695 (Nominal) 1.157 (Maximum)		−10.06 (Minimum)	4.941 (Nominal) 19.94 (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

Phase	IM Elect Real Offset 20 kHz MM/M			Value	Phase	IM Elect Real Gain 20 kHz			Value			
Before				9.460	Before				0.9837	Before		4.998
−116.3 (Minimum)	8.664 (Nominal)	133.7 (Maximum)			0.8375 (Minimum)	0.9875 (Nominal)	1.182 (Maximum)			−9.662 (Minimum)	5.338 (Nominal)	20.34 (Maximum)
Phase	IM Elect Real Offset 20 kHz MM/M			Value	Phase	IM Elect Real Gain 20 kHz			Value			
Before				34.42	Before				0.9893			
−190.4 (Minimum)	34.62 (Nominal)	259.6 (Maximum)			0.8410 (Minimum)	0.9910 (Nominal)	1.187 (Maximum)					
Phase	IM Elect Quad Offset 20 kHz MM/M			Value	Phase	IM Elect Quad Gain 20 kHz			Value			
Before				18.25	Before				0.9688			
−206.6 (Minimum)	18.45 (Nominal)	243.4 (Maximum)			0.8231 (Minimum)	0.9731 (Nominal)	1.162 (Maximum)					

Before: 15−Sep−2009 4:00

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				8.186	Before				0.9540	Before				15.99
−76.50 (Minimum)	8.503 (Nominal)	93.50 (Maximum)			0.8112 (Minimum)	0.9612 (Nominal)	1.145 (Maximum)			−3.044 (Minimum)	16.96 (Nominal)	36.96 (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				6.345	Before				0.9827	Before				15.77
−79.21 (Minimum)	5.786 (Nominal)	90.79 (Maximum)			0.8370 (Minimum)	0.9870 (Nominal)	1.182 (Maximum)			−3.281 (Minimum)	16.72 (Nominal)	36.72 (Maximum)		
Phase	IM Elect Real Offset 40 kHz MM/M			Value	Phase	IM Elect Real Gain 40 kHz			Value					
Before				22.30	Before				0.9962					
−107.6 (Minimum)	22.42 (Nominal)	152.4 (Maximum)			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				11.89	Before				0.9751					
−118.0 (Minimum)	12.02 (Nominal)	142.0 (Maximum)			0.8285 (Minimum)	0.9785 (Nominal)	1.170 (Maximum)							

Before: 15−Sep−2009 4:01

Dual Induction − E Wellsite Calibration

SFL Electronics

Phase	SFL Voltage Offset MV			Value	Phase	SFL Voltage Gain			Value
Before				0.1773	Before				0.9992
−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				0.03796	Before				1.011
−0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)			0.8500 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		

Before: 15−Sep−2009 4:02

Dual Induction − E Wellsite Calibration

Electronics Calibration Changes Files/Depth Intervals:

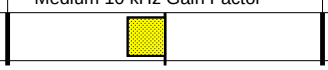
Phase	ID (R > 27 OHM−M) MM/M			Value	Phase	ID (R < 27 OHM−M) %			Value	Phase	SFL (R < 1 OHM−M) OHMM			Value
After				0.03440	After				0.0006034	After				0
0 (Minimum)	0 (Nominal)	0.7500 (Maximum)			0 (Minimum)	0 (Nominal)	2.000 (Maximum)			0 (Minimum)	0 (Nominal)	0.02000 (Maximum)		
Phase	IM (R > 27 OHM−M) MM/M			Value	Phase	IM (R < 27 OHM−M) %			Value					
After				0.04052	After				0.0006374					
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				0.003260	After				0.0001940					
0 (Minimum)	0 (Nominal)	0.7500 (Maximum)			0 (Minimum)	0 (Nominal)	2.000 (Maximum)							

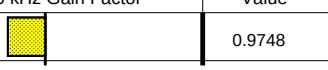
After: 19−Sep−2009 3:08

Dual Induction − E Master Calibration

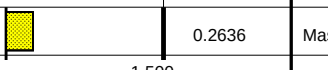
Test Loop Calibration: Calibration of Internal Reference to Test Loop Standard

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

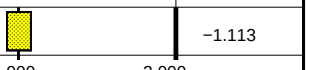
Phase	Medium 10 kHz Gain Factor	Value
Master		0.9696
0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)

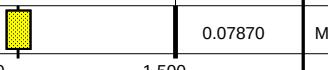
Phase	Medium 20 kHz Gain Factor	Value
Master		0.9748
0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)

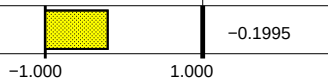
Phase	Medium 40 kHz Gain Factor	Value
Master		0.9998
0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)

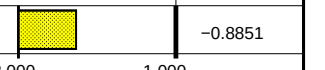
Phase	Deep 10 kHz Phase Shift	Value
Master		0.2636
−1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)

Phase	Deep 20 kHz Phase Shift	Value
Master		0.01600
−2.000 (Minimum)	0 (Nominal)	2.000 (Maximum)

Phase	Deep 40 kHz Phase Shift	Value
Master		−1.113
−4.000 (Minimum)	−1.000 (Nominal)	2.000 (Maximum)

Phase	Medium 10 kHz Phase Shift	Value
Master		0.07870
−1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)

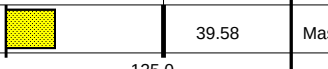
Phase	Medium 20 kHz Phase Shift	Value
Master		−0.1995
−3.000 (Minimum)	−1.000 (Nominal)	1.000 (Maximum)

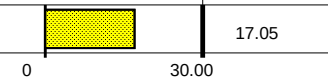
Phase	Medium 40 kHz Phase Shift	Value
Master		−0.8851
−5.000 (Minimum)	−2.000 (Nominal)	1.000 (Maximum)

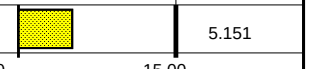
Master: Calibration out of date 30−Apr−2008 14:59

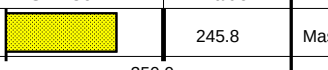
Dual Induction − E Master Calibration

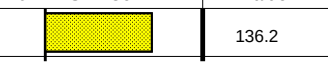
Sonde Error Corrections: Correction for sonde response in zero conductivity environment. (Normalized to 25C).

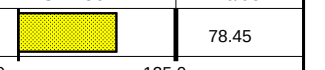
Phase	Real Deep 10 kHz S.E. Corr.	Value
Master		39.58
−50.00 (Minimum)	0 (Nominal)	125.0 (Maximum)

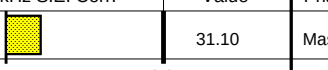
Phase	Real Deep 20 kHz S.E. Corr.	Value
Master		17.05
−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

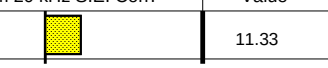
Phase	Real Deep 40 kHz S.E. Corr.	Value
Master		5.151
−15.00 (Minimum)	0 (Nominal)	15.00 (Maximum)

Phase	Quad Deep 10 kHz S.E. Corr.	Value
Master		245.8
−250.0 (Minimum)	0 (Nominal)	350.0 (Maximum)

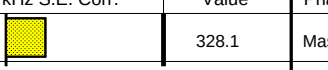
Phase	Quad Deep 20 kHz S.E. Corr.	Value
Master		136.2
−125.0 (Minimum)	0 (Nominal)	200.0 (Maximum)

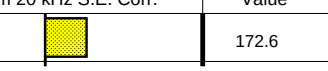
Phase	Quad Deep 40 kHz S.E. Corr.	Value
Master		78.45
−75.00 (Minimum)	0 (Nominal)	125.0 (Maximum)

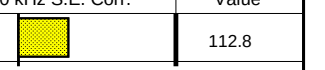
Phase	Real Medium 10 kHz S.E. Corr.	Value
Master		31.10
−50.00 (Minimum)	0 (Nominal)	140.0 (Maximum)

Phase	Real Medium 20 kHz S.E. Corr.	Value
Master		11.33
−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)

Phase	Real Medium 40 kHz S.E. Corr.	Value
Master		3.578
−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

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	840
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

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		39.55
Before		39.60
After		39.55
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)	

Phase	Na 511 Peak Res %	Value
Master		15.65
Before		16.19
After		16.06
	12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)	

Phase	High Voltage V	Value
Master		1146
Before		1180
After		1173
	900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	

Phase	Na 1785 Peak Loc	Value
Master		142.8
Before		142.7
After		142.5
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)	

Phase	Na 1785 Peak Res %	Value
Master		7.849
Before		8.372
After		8.440
	7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)	

Phase	Temperature DEGC	Value
Master		14.91
Before		32.53
After		27.36
	−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		36.92
Before		35.51
After		35.68
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)	

Master: 5−Sep−2009 7:01 Before: 13−Sep−2009 22:15 After: 19−Sep−2009 7:15

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.62
Before		39.55
After		39.53
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)	

Phase	Na 511 Peak Res %	Value
Master		15.06
Before		16.55
After		16.25
	12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)	

Phase	High Voltage V	Value
Master		1080
Before		1113
After		1107
	900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	

Phase	Na 1785 Peak Loc	Value
Master		141.3
Before		142.3
After		142.0
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)	

Phase	Na 1785 Peak Res %	Value
Master		8.437
Before		9.484
After		8.444
	7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)	

Phase	Temperature DEGC	Value
Master		15.08
Before		32.86
After		29.06
	−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		36.97
Before		36.00
After		35.55

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

Master: 5−Sep−2009 7:01 Before: 13−Sep−2009 22:15 After: 19−Sep−2009 7:15

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		0.9992
Before		0.9853
After		1.003

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

Master: 5−Sep−2009 7:01

Before: 13−Sep−2009 22:15

After: 19−Sep−2009 7:15

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		210.4

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

Phase	Th Peak Res %	Value
Master		6.417

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

Phase	Background Count Rate CPS	Value
Master		18.75

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

Phase	Gain Ratio	Value
Master		1.012

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

Master: 5−Sep−2009 7:01

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		209.5

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

Phase	Th Peak Res %	Value
Master		7.001

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

Phase	Background Count Rate CPS	Value
Master		18.87

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

Phase	Gain Ratio	Value
Master		1.006

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

Master: 5−Sep−2009 7:01

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

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

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing	ECH − mca	1777

Company: **Lamont Doherty**

Schlumberger

Well: **Expedition 324 Site U1346A**

Field: **Shatsky Rise**

Rig: **JOIDES Resolution**

Ocean:	**Pacific**
	Phasor Induction Natural Gamma Ray Spectroscopy