

# Schlumberger

Company: **Lamont Doherty**

Well: **Expedition 330 Site U1376A**

Field: **Louisville Seamounts**

Rig: **JOIDES Resolution**      Ocean: **Pacific**

	Run 1	Run 2	Run
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Rig: JOIDES Resolution  
 Field: Louisville Seamounts  
 Location: Latitude: S 32.2165 Deg  
 Well: Expedition 330 Site U1376A  
 Company: Lamont Doherty

HLDS Density  
 APS Porosity  
 Natural Gamma Ray

Latitude: S 32.2165 Deg	Elev.: K.B. -1514.00 m
Longitude: W 171.88067 Deg	G.L. 0.00 m
	D.F. -1514.00 m

Permanent Datum: Sea Floor	Elev.: 0.00 m
Log Measured From: Sea Floor	-1514.00 m above Perm. Datum
Drilling Measured From: Sea Floor	

API Serial No.	Max. Hole Devi. 0 deg	Longitude W 171.88*	Latitude S 32.21 *
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Logging Date	3-Feb-2011		
Run Number	1		
Depth Driller	183 m		
Schlumberger Depth	182 m		
Bottom Log Interval	170 m		
Top Log Interval	0 m		
Casing Driller Size @ Depth	4.500 in @ 80 m @		
Casing Schlumberger	80 m		
Bit Size	9.875 in		
Type Fluid In Hole	Seawater		
MUD Density	Viscosity	1.258 g/cm3	
Fluid Loss	PH		
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	@ 6	@ 6 @ @
Maximum Recorded Temperatures	6 degC		
Circulation Stopped	Time	1-Feb-2011	0:00
Logger On Bottom	Time	3-Feb-2011	1:34
Unit Number	Location	625003	Houston
Recorded By	K. Swain		
Witnessed By	L. Anderson, S. Ehmann		

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		
Fluid Loss	PH		
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: DITE/HLDS  
 OS2: FMS/DSI  
 OS3: HNGS  
 OS4: GBM  
 OS5:

**OTHER SERVICES2**  
 OS1:  
 OS2:  
 OS3:  
 OS4:  
 OS5:

**REMARKS: RUN NUMBER 1**

**REMARKS: RUN NUMBER 2**

Depths originally recorded from drill floor as main depth reference. Log files were played back with offset of -1514m to force sea floor as the new reference. This log references seafloor at 0m. Td of hole at 183m (driller), 181m (log). Tools run inside drill pipe and drill collars 9 7/8" bs. Bit released prior to logging. Active Heave Compensator used on all logs. ILE inline eccentralizer run for APS to eccentralize it against borehole. Gpit run with tool for AHC testing.

**RUN 1**

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





**RUN 2**

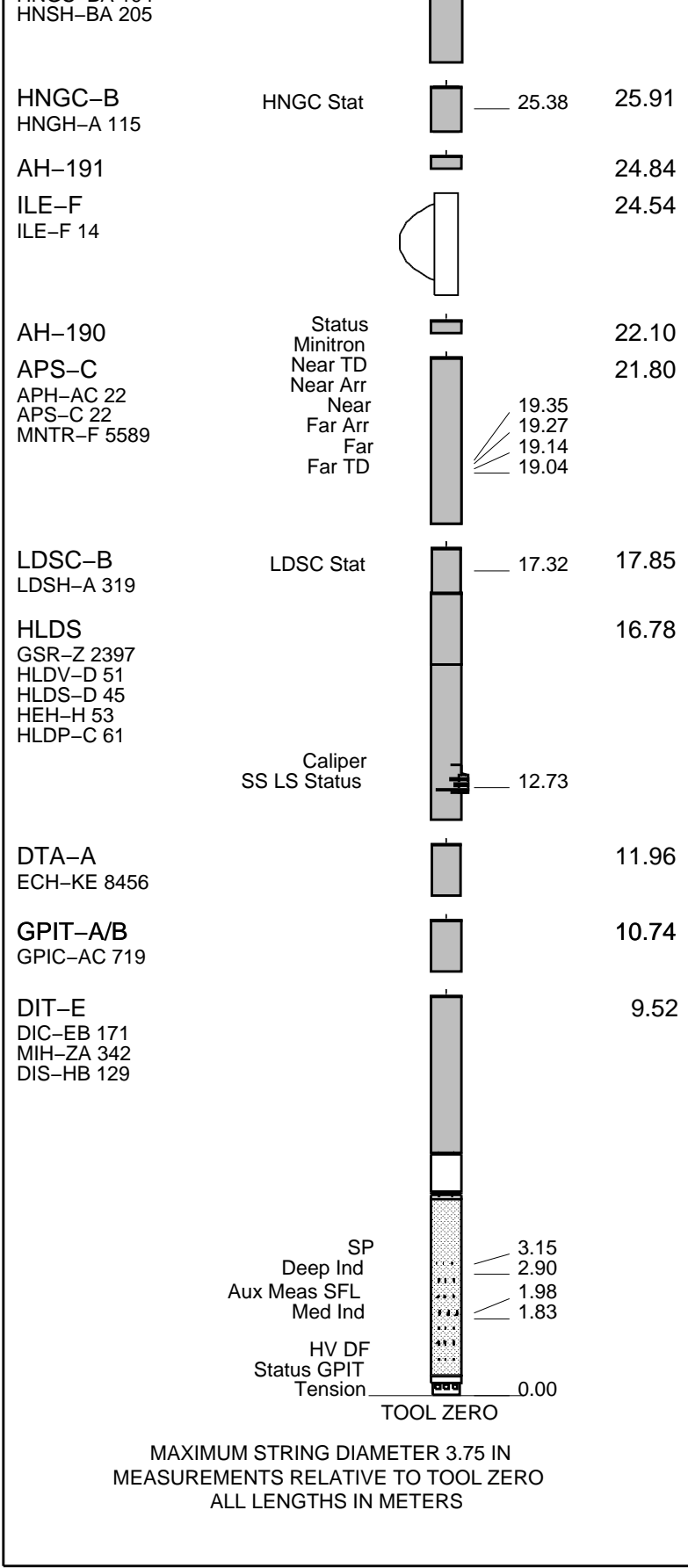
SERVICE ORDER #:  
 PROGRAM VERSION:  
 FLUID LEVEL:

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

## EQUIPMENT DESCRIPTION

<b>RUN 1</b>	<b>RUN 2</b>
<b>SURFACE EQUIPMENT</b>	
SFT-281 1 SFT-178 1 GSR-U 616008 WITM (DTS)-A	

<b>RUN 1</b>	
<b>DOWNHOLE EQUIPMENT</b>	
LEH-QT  30.21 LEH-QT 301 DTC-H  29.32 ECH-KC 1777  28.41 HNGS-BA  28.41 HNGS-BA 194	CTEM 29.04 TelStatus 28.41 ToolStatu Upper_1 27.71 Lower_2 27.50



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

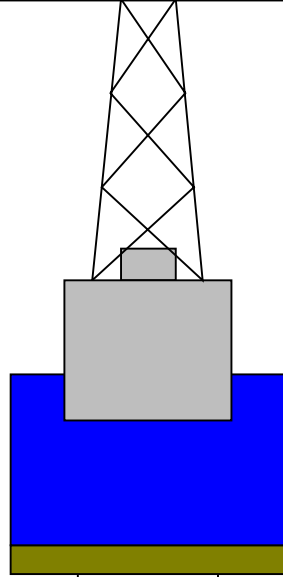
Kelly Bushing Elevation  
Derrick Floor Elevation

Mean Sea Level

-1514

-1514

-1508



4.1



0

4.1

Sea Floor

80

9.875

Open Hole

182

Total Depth

### Input DLIS Files

DEFAULT	PI_LDL_APS_NGS_035PUP	FN:51	PRODUCER	03-Feb-2011 08:57	1696.2 M	1584.8 M
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### Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_045PUP	FN:3	PRODUCER	11-Feb-2011 11:04	182.9 M	70.9 M
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### OP System Version: 17C0-154

DIT-E	17C0-154	GPIT-A/B	SRPC-3971-Q1_2010_OP17
DTA-A	17C0-154	HLDS	SPC-3961-OP17_NUCL
LDSC-B	SPC-3961-OP17_NUCL	APS-C	SPC-3961-OP17_NUCL
HNGC-B	SPC-3961-OP17_NUCL	HNGS-BA	SPC-3961-OP17_NUCL
DTC-H	17C0-154		

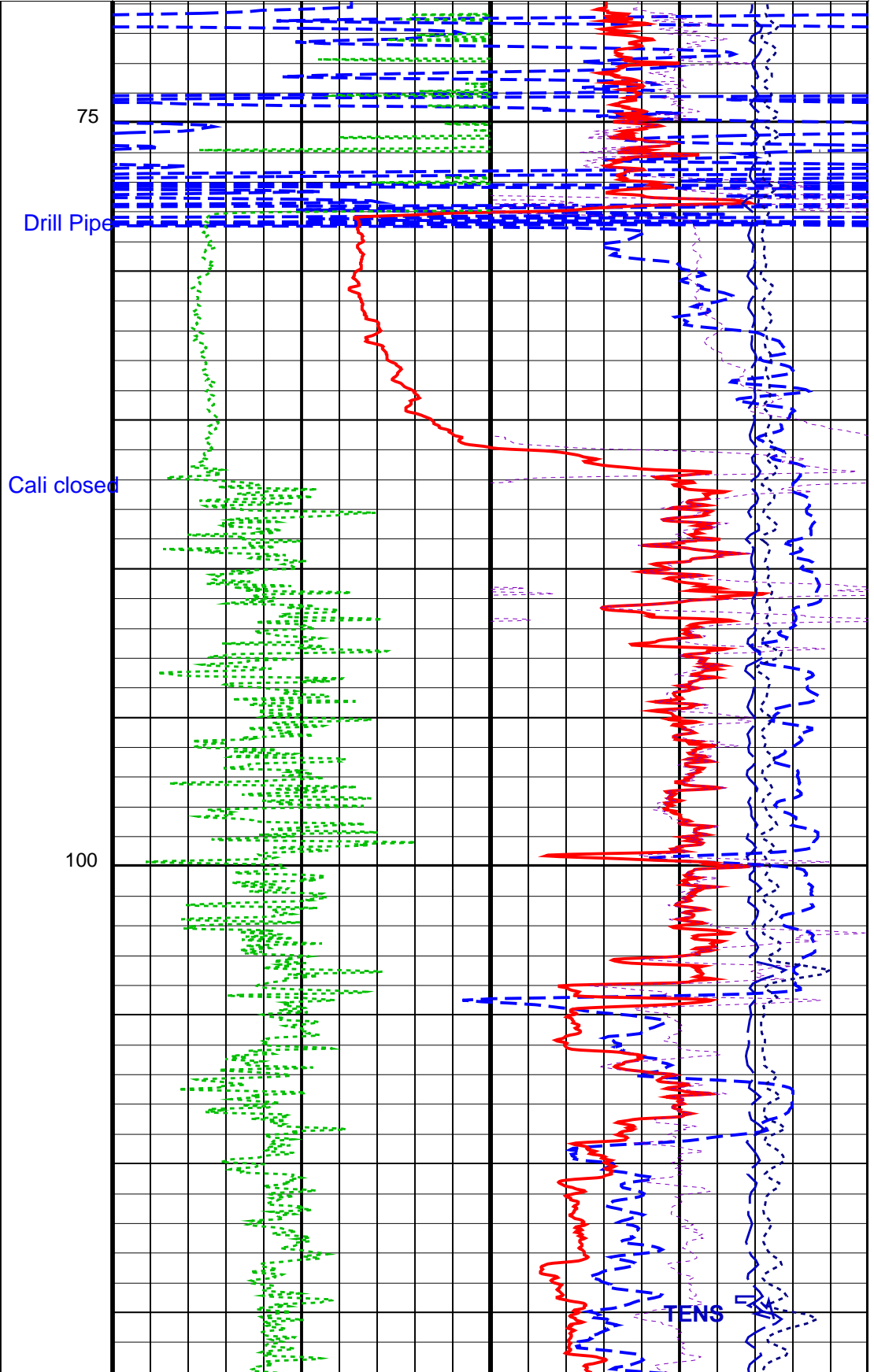
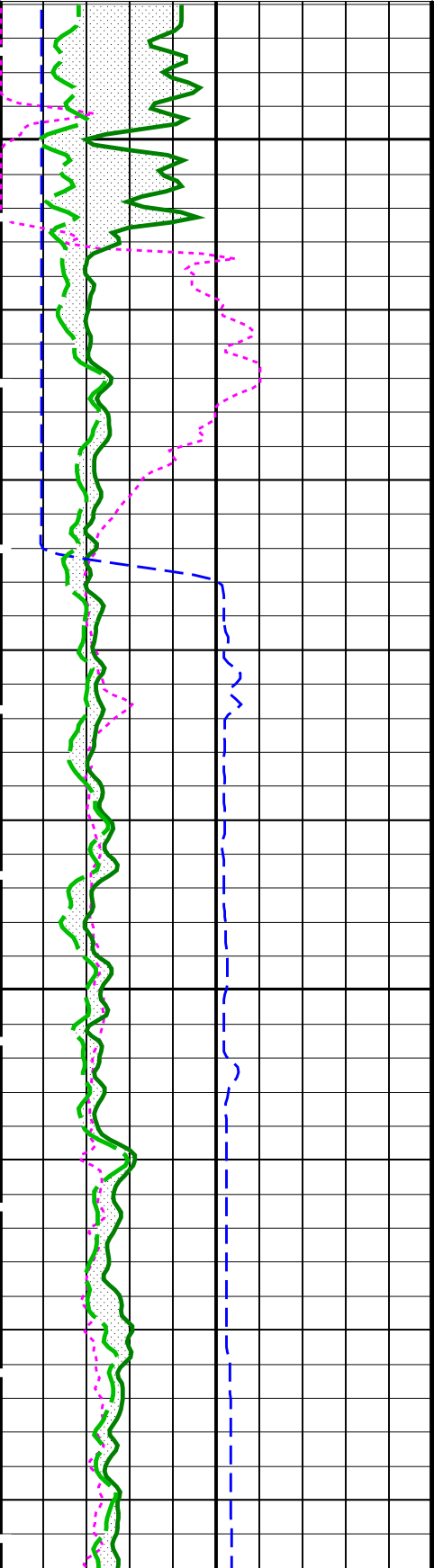
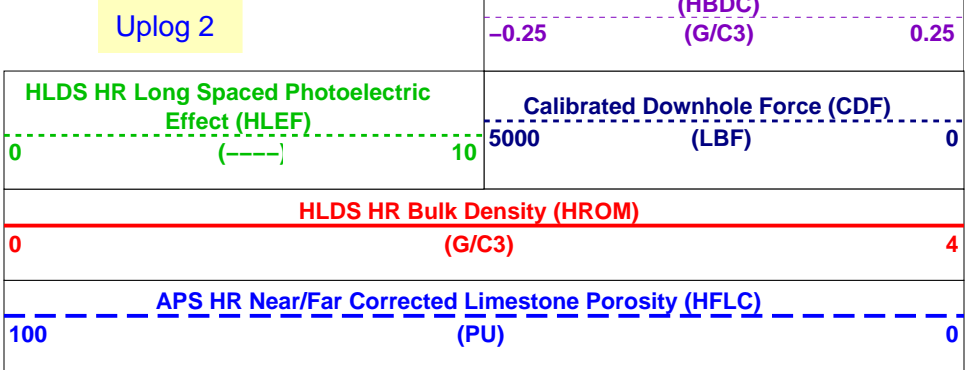
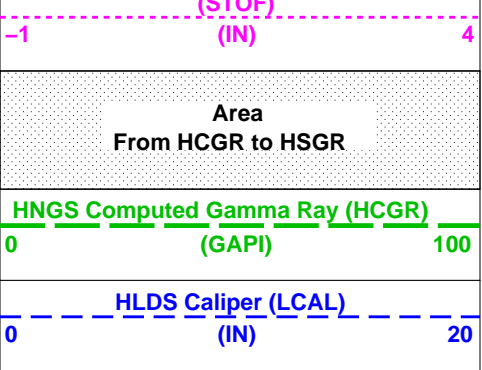
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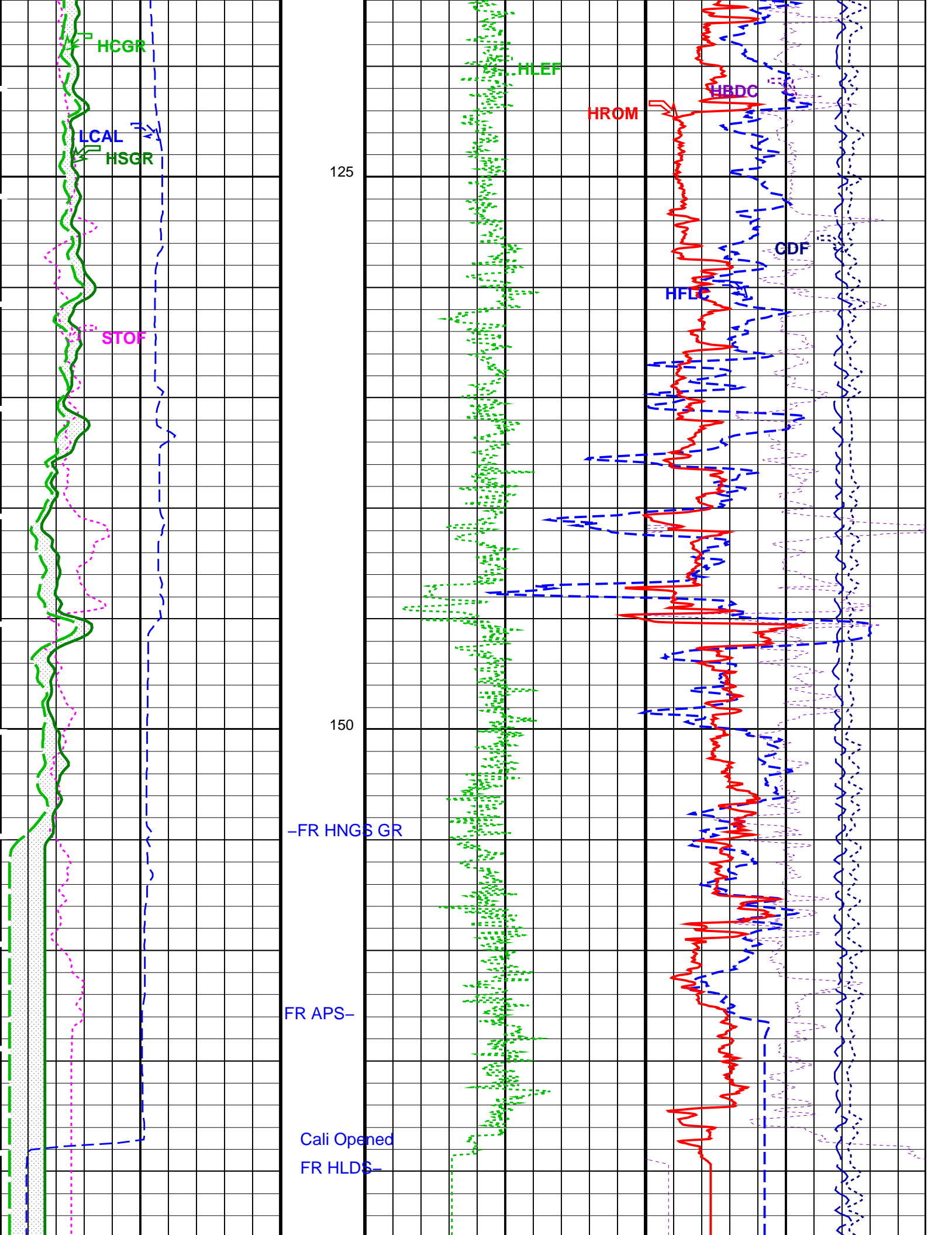
DLIS Name	New Value	Previous Value	Depth & Time
ICMO	CASED_HOLE	AUTOMATIC_SELECTION	89.8 11:04:44

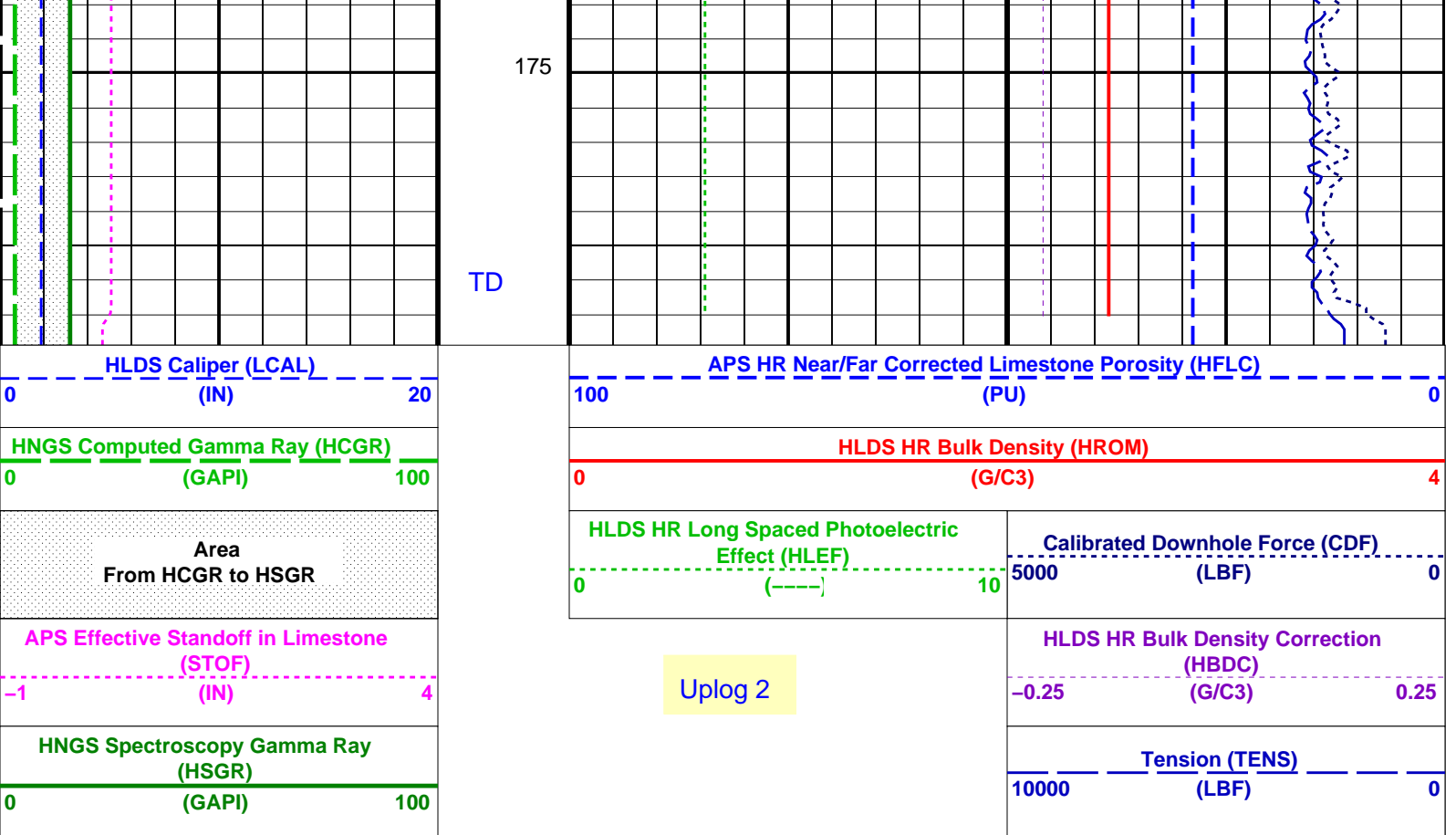
#### PIP SUMMARY

Time Mark Every 60 S

<b>HNGS Spectroscopy Gamma Ray (HSGR)</b> (GAPI) 0 100		<b>Tension (TENS)</b> (LBF) 10000 0	
<b>APS Effective Standoff in Limestone (STOF)</b>		<b>HLDS HR Bulk Density Correction (HRDC)</b>	







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)	43	DEGF
DGF1	Deep 10 kHz Gain Factor	0.981463	
DGF2	Deep 20 kHz Gain Factor	0.992515	
DGF4	Deep 40 kHz Gain Factor	1.00423	
DPH1	Deep 10 kHz Phase Shift	0.032855	DEG
DPH2	Deep 20 kHz Phase Shift	-0.0620342	DEG
DPH4	Deep 40 kHz Phase Shift	-1.20308	DEG
DRE1	Deep Real 10 kHz Sonde Error Correction	42.3121	MM/M
DRE2	Deep Real 20 kHz Sonde Error Correction	17.1426	MM/M
DRE4	Deep Real 40 kHz Sonde Error Correction	4.87662	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	251.392	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	137.206	MM/M
DXE4	Deep Quad 40 kHz Sonde Error Correction	77.8842	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	BARITE	
ITEN	DIT-E Temperature Enable	ENABLE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MGF1	Medium 10 kHz Gain Factor	0.99033	
MGF2	Medium 20 kHz Gain Factor	0.995142	
MGF4	Medium 40 kHz Gain Factor	1.01918	
MPH1	Medium 10 kHz Phase Shift	-0.27707	DEG
MPH2	Medium 20 kHz Phase Shift	-0.890816	DEG
MPH4	Medium 40 kHz Phase Shift	-2.23551	DEG
MRE1	Medium Real 10 kHz Sonde Error Correction	32.7618	MM/M
MRE2	Medium Real 20 kHz Sonde Error Correction	10.896	MM/M



MRE4	Medium Real 40 kHz Sonde Error Correction	1.11433	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	336.356	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	177.452	MM/M
MXE4	Medium Quad 40 kHz Sonde Error Correction	115.531	MM/M
SBR	Shoulder Bed Resistivity Factor	1	OHMM
SFCR	SFL Channel Ratio	1000	
SFLE	SFL Enable	ENABLE	
SHT	Surface Hole Temperature	68	DEGF
SPAЕ	DIT-E SPARC Processing Enable	ENABLE	
SPNV	SP Next Value	0	MV

GPIT-A/B: General Purpose Inclinator

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	17.9362	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	

APS-C: Accelerator-Porosity Tool

	APS Software Version	0	
AASD	APS Thermal and Array Detectors High Voltage Setting	1968.14	V
ADSO	APS Array Detectors Data Source Switch	Both	
AFSD	APS Far Detector High Voltage Setting	2080.2	V
AHCS	APS Holesize Correction Source	BS	
AHSS	APS Holesize Correction Switch	ON	
AMTY	APS Environmental Corrections Mud Type	WaterBaseBarite	
ANSD	APS Near Detector High Voltage Setting	1733.87	V
ASOS	APS Standoff Correction Switch	ON	
ATSS	APS Temperature-Pressure-Salinity Correction Switch	ON	
BHFL_APS	APS TNPH Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	43	DEGF
BSCO_APS	APS TNPH Borehole Salinity Correction Option	YES	
DPPM	Density Porosity Processing Mode	HIRS	
DSCO_APS	APS TNPH Density Source Correction Option	COMPUTED	
FSAL	Formation Salinity	-50000	PPM
FSCO_APS	APS TNPH Formation Salinity Correction Option	NO	
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	
HSCO_APS	APS TNPH Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	BARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO_APS	APS TNPH Mud Cake Correction Option	YES	
MCOR_APS	APS TNPH Mud Correction	NATU	
MWCO_APS	APS TNPH Mud Weight Correction Option	YES	
NARC	APS Near/Array Calibration Ratio	1.06008	
NFRC	APS Near/Far Calibration Ratio	0.890428	
PTCO_APS	APS TNPH Pressure/Temperature Correction Option	YES	
SHT	Surface Hole Temperature	68	DEGF
TNCO_APS	APS TNPH Computation Option	YES	

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)	43	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	-0.00533577	
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	BARITE	
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	0.615824	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.20133	

**System and Miscellaneous**

ALTDPCCHAN	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	1.26	G/C3
DO	Depth Offset for Playback	-1514.0	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	600	FT
TDD	Total Depth - Driller	183.00	M
TDL	Total Depth - Logger	182.00	M
TWS	Temperature of Connate Water Sample	15.00	DEGC

Format: APSLiquidPorosity\_1 Vertical Scale: 1:200 Graphics File Created: 11-Feb-2011 11:04

**OP System Version: 17C0-154**

DIT-E	17C0-154	GPIT-A/B	SRPC-3971-Q1_2010_OP17
DTA-A	17C0-154	HLDS	SPC-3961-OP17_NUCL
LDSC-B	SPC-3961-OP17_NUCL	APS-C	SPC-3961-OP17_NUCL
HNGC-B	SPC-3961-OP17_NUCL	HNGS-BA	SPC-3961-OP17_NUCL
DTC-H	17C0-154		

**Input DLIS Files**

DEFAULT	PI_LDL_APS_NGS_035PUP	FN:51	PRODUCER	03-Feb-2011 08:57	1696.2 M	1584.8 M
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**Output DLIS Files**

DEFAULT	PI_LDL_APS_NGS_045PUP	FN:3	PRODUCER	11-Feb-2011 11:04		
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**Input DLIS Files**

DEFAULT	PI_LDL_APS_NGS_034PUP	FN:50	PRODUCER	03-Feb-2011 08:52	1696.2 M	1502.5 M
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**Output DLIS Files**

DEFAULT	PI_LDL_APS_NGS_044PUP	FN:2	PRODUCER	11-Feb-2011 10:53	182.9 M	-11.4 M
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**OP System Version: 17C0-154**

DIT-E	17C0-154	GPIT-A/B	SRPC-3971-Q1_2010_OP17
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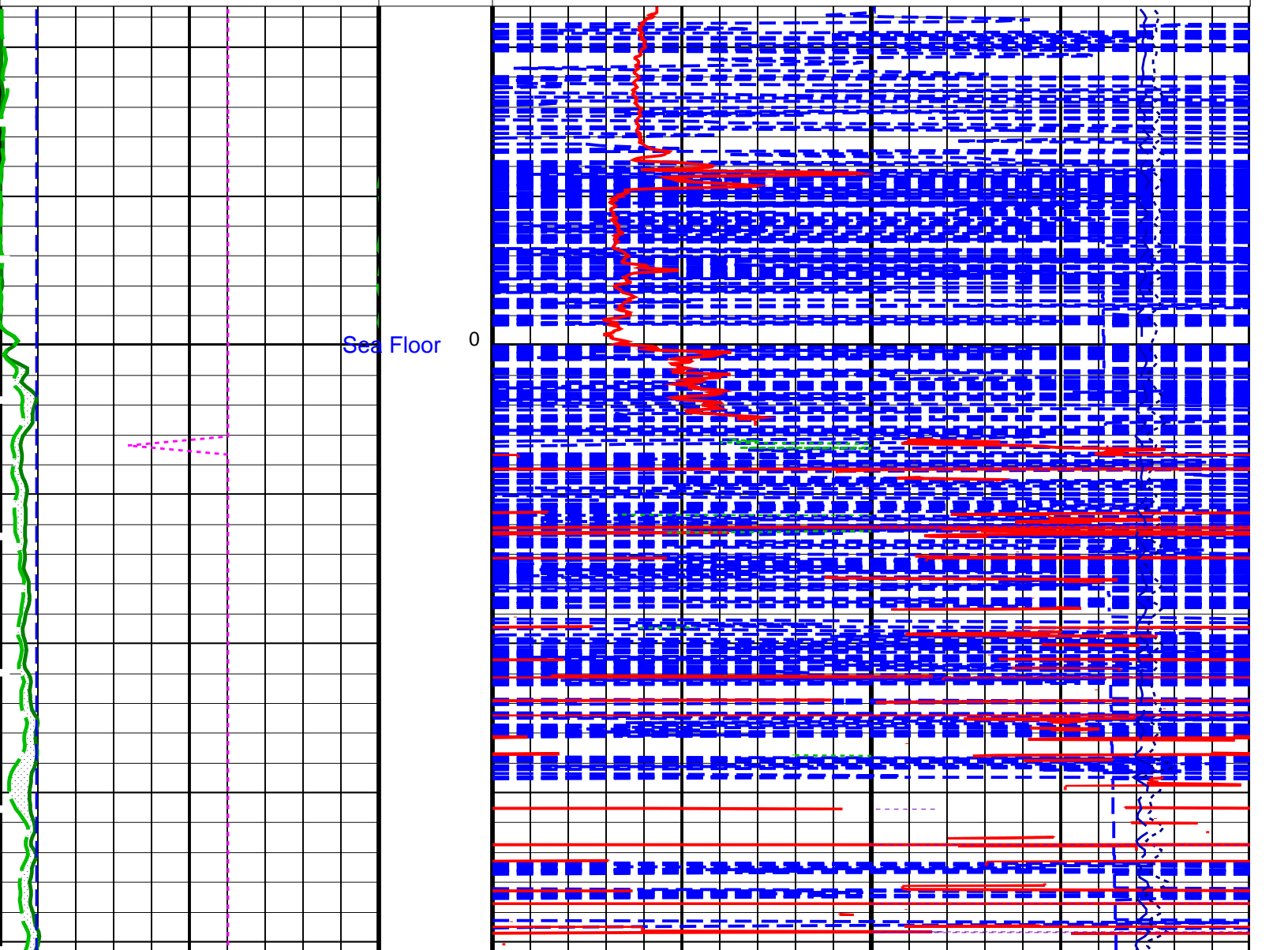
### Changed Parameter Summary

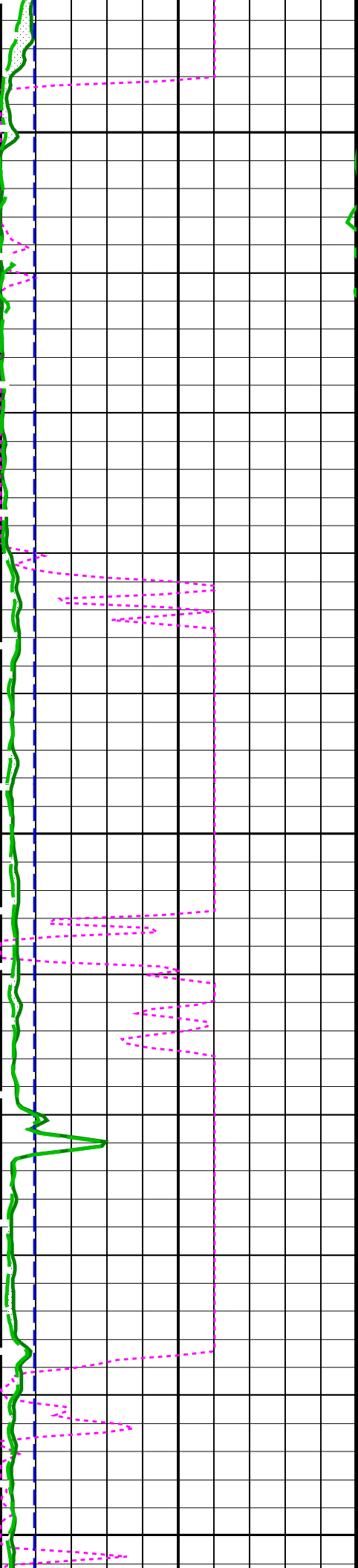
DLIS Name	New Value	Previous Value	Depth & Time
ICMO	CASED_HOLE	AUTOMATIC_SELECTION	89.8 10:54:10

#### PIP SUMMARY

Time Mark Every 60 S

<p><b>HNGS Spectroscopy Gamma Ray (HSGR)</b> (GAPI) 0 100</p> <hr style="border: 1px solid green;"/> <p><b>APS Effective Standoff in Limestone (STOF)</b> (IN) -1 4</p> <hr style="border: 1px dashed magenta;"/> <p style="text-align: center; background-color: #e0e0e0;">Area From HCGR to HSGR</p> <hr style="border: 1px solid green;"/> <p><b>HNGS Computed Gamma Ray (HCGR)</b> (GAPI) 0 100</p> <hr style="border: 1px solid blue;"/> <p><b>HLDS Caliper (LCAL)</b> (IN) 0 20</p>	<p style="background-color: yellow; padding: 5px;">Main Log</p> <hr style="border: 1px solid green;"/> <p><b>HLDS HR Long Spaced Photoelectric Effect (HLEF)</b> (----) 0 10</p> <hr style="border: 1px solid red;"/> <p><b>HLDS HR Bulk Density (HROM)</b> (G/C3) 0 4</p> <hr style="border: 1px dashed blue;"/> <p><b>APS HR Near/Far Corrected Limestone Porosity (HFLC)</b> (PU) 100 0</p>	<p style="text-align: center;"><b>Tension (TENS)</b> (LBF) 10000 0</p> <hr style="border: 1px solid purple;"/> <p style="text-align: center;"><b>HLDS HR Bulk Density Correction (HBDC)</b> (G/C3) -0.25 0.25</p> <hr style="border: 1px dashed black;"/> <p style="text-align: center;"><b>Calibrated Downhole Force (CDF)</b> (LBF) 5000 0</p>
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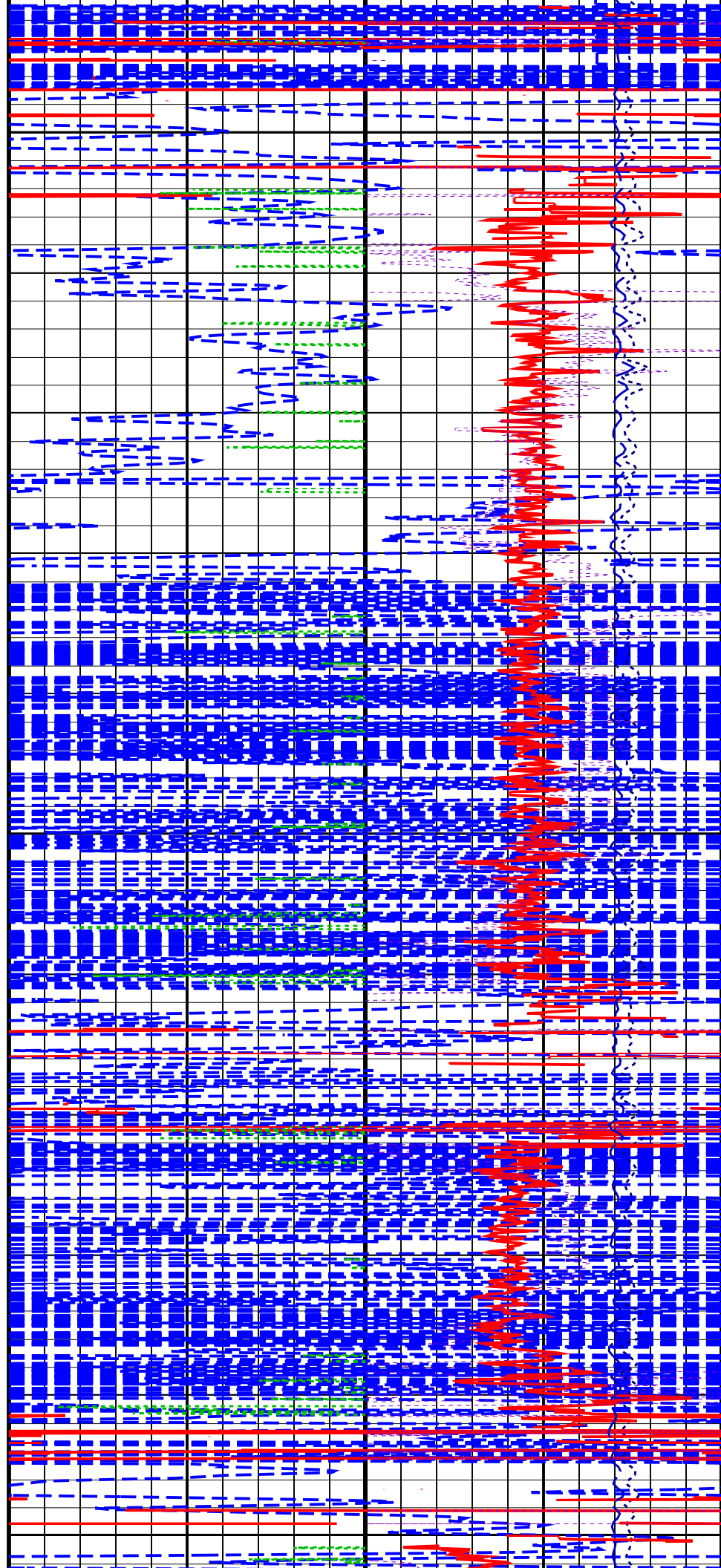


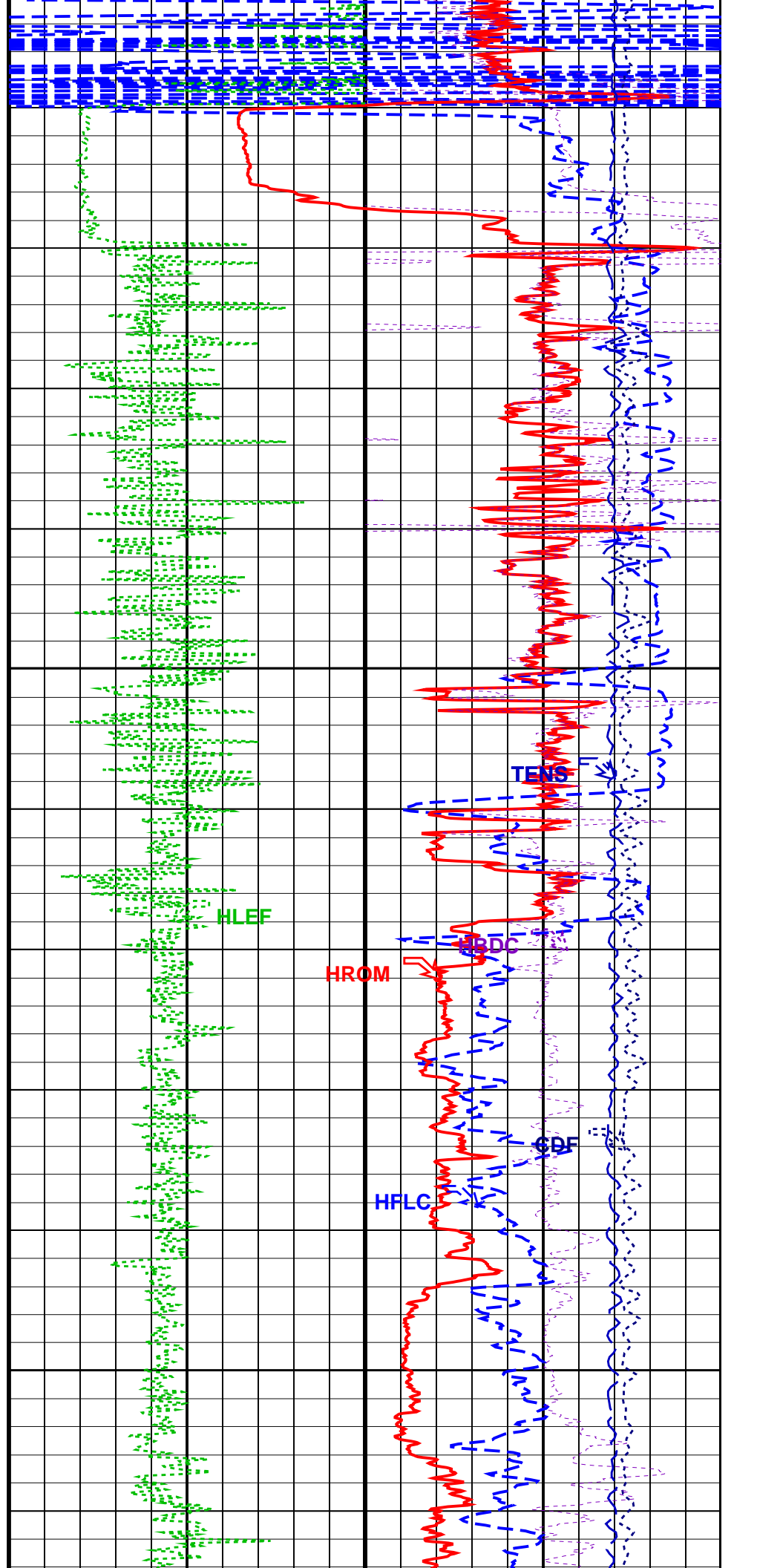
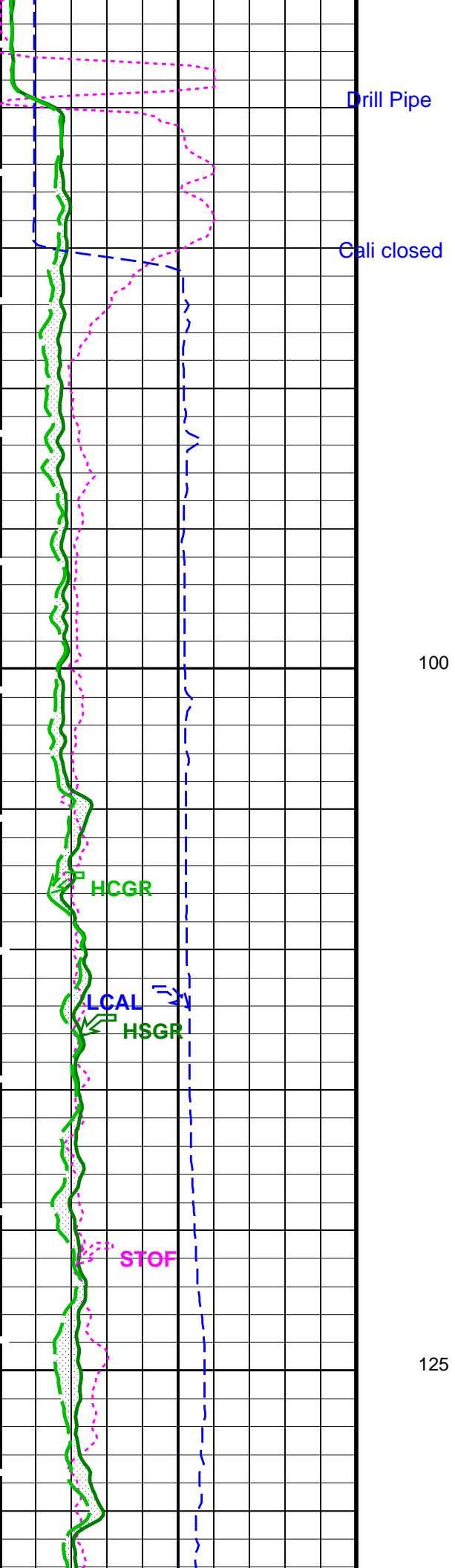


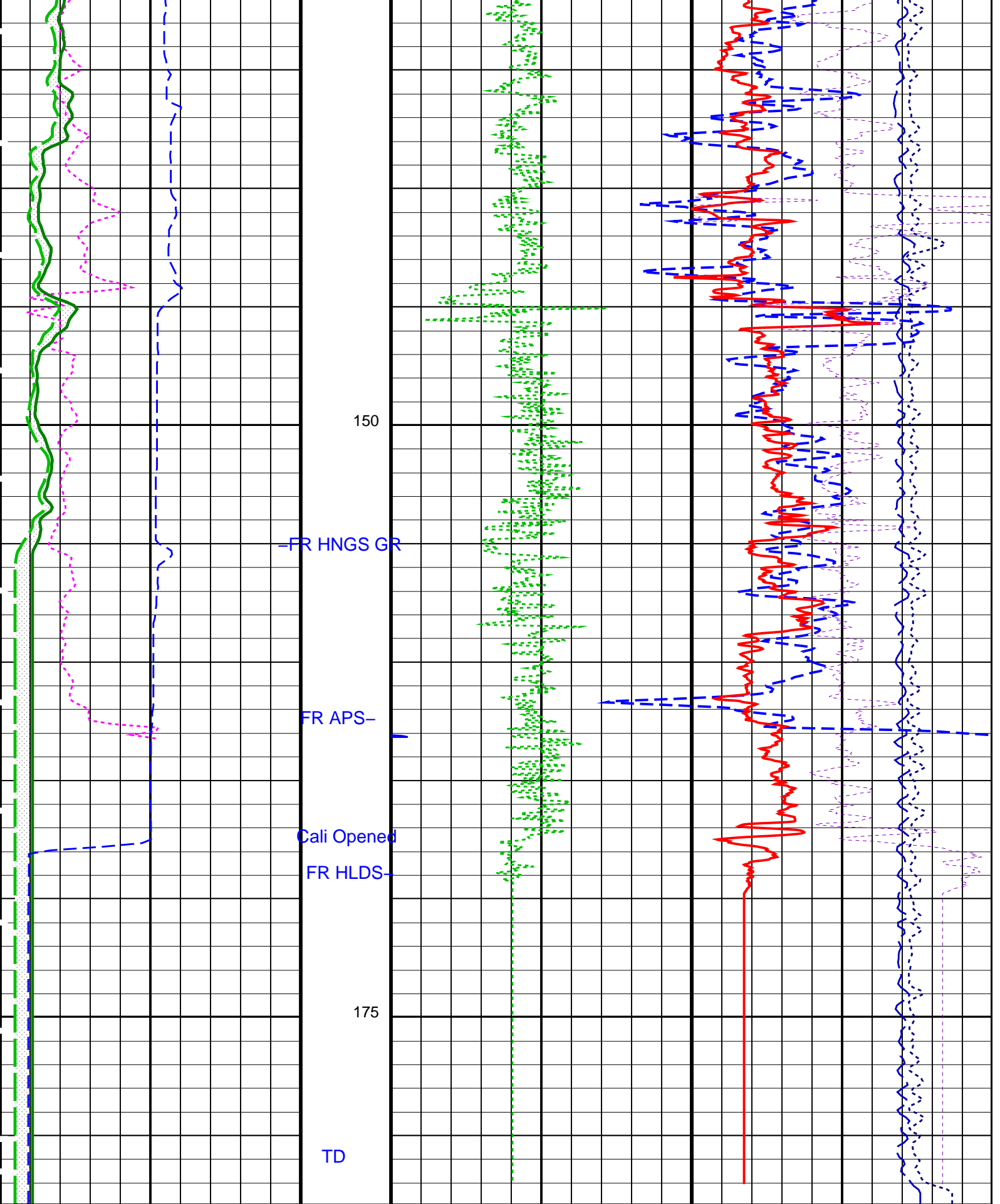
25

50

75







-FR HNGS GR

FR APS-

Cali Opened

FR HLDS-

TD

HLDS Caliper (LCAL)  
(IN) 0 20

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

APS HR Near/Far Corrected Limestone Porosity (HFLC)  
(PU) 100 0

HLDS HR Bulk Density (HROM)  
(G/C3) 0 4

Area From HCGR to HSGR	HLDS HR Long Spaced Photoelectric Effect (HLEF)	Calibrated Downhole Force (CDF)
	0 (----) 10	5000 (LBF) 0
APS Effective Standoff in Limestone (STOF)	Main Log	HLDS HR Bulk Density Correction (HBDC)
-1 (IN) 4		-0.25 (G/C3) 0.25
HNGS Spectroscopy Gamma Ray (HSGR)		Tension (TENS)
0 (GAPI) 100		10000 (LBF) 0

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)	43 DEG
DGF1	Deep 10 kHz Gain Factor	0.981463
DGF2	Deep 20 kHz Gain Factor	0.992515
DGF4	Deep 40 kHz Gain Factor	1.00423
DPH1	Deep 10 kHz Phase Shift	0.032855 DEG
DPH2	Deep 20 kHz Phase Shift	-0.0620342 DEG
DPH4	Deep 40 kHz Phase Shift	-1.20308 DEG
DRE1	Deep Real 10 kHz Sonde Error Correction	42.3121 MM/M
DRE2	Deep Real 20 kHz Sonde Error Correction	17.1426 MM/M
DRE4	Deep Real 40 kHz Sonde Error Correction	4.87662 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	251.392 MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	137.206 MM/M
DXE4	Deep Quad 40 kHz Sonde Error Correction	77.8842 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	BARITE
ITEN	DIT-E Temperature Enable	ENABLE
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE
MGF1	Medium 10 kHz Gain Factor	0.99033
MGF2	Medium 20 kHz Gain Factor	0.995142
MGF4	Medium 40 kHz Gain Factor	1.01918
MPH1	Medium 10 kHz Phase Shift	-0.27707 DEG
MPH2	Medium 20 kHz Phase Shift	-0.890816 DEG
MPH4	Medium 40 kHz Phase Shift	-2.23551 DEG
MRE1	Medium Real 10 kHz Sonde Error Correction	32.7618 MM/M
MRE2	Medium Real 20 kHz Sonde Error Correction	10.896 MM/M
MRE4	Medium Real 40 kHz Sonde Error Correction	1.11433 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	336.356 MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	177.452 MM/M
MXE4	Medium Quad 40 kHz Sonde Error Correction	115.531 MM/M
SBR	Shoulder Bed Resistivity Factor	1 OHMM
SFCR	SFL Channel Ratio	1000
SFLE	SFL Enable	ENABLE
SHT	Surface Hole Temperature	68 DEG
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 DEG
GLM	GPIT Logging Mode	DIPM
ICMO	Inclinometry Computation Mode	AUTOMATIC_SELECTION
MAPP	Magnetometer PROM Presence	PRESENT
MDEC	Magnetic Field Declination	17.9362 DEG
MRTE	Magneto Reference Temperature	23 DEG
TEMS	GPIT Temperature Sensor Used	BOTH

## 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	

## APS-C: Accelerator-Porosity Tool

	APS Software Version	0	
AASD	APS Thermal and Array Detectors High Voltage Setting	1968.14	V
ADSO	APS Array Detectors Data Source Switch	Both	
AFSD	APS Far Detector High Voltage Setting	2080.2	V
AHCS	APS Holesize Correction Source	BS	
AHSS	APS Holesize Correction Switch	ON	
AMTY	APS Environmental Corrections Mud Type	WaterBaseBarite	
ANSD	APS Near Detector High Voltage Setting	1733.87	V
ASOS	APS Standoff Correction Switch	ON	
ATSS	APS Temperature-Pressure-Salinity Correction Switch	ON	
BHFL_APS	APS TNPH Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	43	DEGF
BSCO_APS	APS TNPH Borehole Salinity Correction Option	YES	
DPPM	Density Porosity Processing Mode	HIRS	
DSCO_APS	APS TNPH Density Source Correction Option	COMPUTED	
FSAL	Formation Salinity	-50000	PPM
FSCO_APS	APS TNPH Formation Salinity Correction Option	NO	
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	
HSCO_APS	APS TNPH Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	BARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO_APS	APS TNPH Mud Cake Correction Option	YES	
MCOR_APS	APS TNPH Mud Correction	NATU	
MWCO_APS	APS TNPH Mud Weight Correction Option	YES	
NARC	APS Near/Array Calibration Ratio	1.06008	
NFRC	APS Near/Far Calibration Ratio	0.890428	
PTCO_APS	APS TNPH Pressure/Temperature Correction Option	YES	
SHT	Surface Hole Temperature	68	DEGF
TNCO_APS	APS TNPH Computation Option	YES	

## HNCS-BA: Hostile Natural Gamma Ray Sonde

BAR1	HNCS Detector 1 Barite Constant	1	
BAR2	HNCS Detector 2 Barite Constant	1	
BHK	HNCS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	43	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	HNCS 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	HNCS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNCS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNCS Borehole Potassium Running Average	-0.00533577	
HALF	HNCS Alpha Filter Length	60	IN
HCRB	HNCS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNCS Processing Enable	YES	
ISSBAR	Barite Mud Switch	BARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNCS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNCS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGPC	HNCS Standard Gamma Ray Correction Flag	YES	



SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	DEGF
SHT	Surface Hole Temperature	68	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.615824	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.20133	
<b>System and Miscellaneous</b>			
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	1.26	G/C3
DO	Depth Offset for Playback	-1514.0	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	600	FT
TDD	Total Depth - Driller	183.00	M
TDL	Total Depth - Logger	182.00	M
TWS	Temperature of Connate Water Sample	15.00	DEGC

Format: APSLiquidPorosity\_1 Vertical Scale: 1:200 Graphics File Created: 11-Feb-2011 10:53

### OP System Version: 17C0-154

DIT-E	17C0-154	GPIT-A/B	SRPC-3971-Q1_2010_OP17
DTA-A	17C0-154	HLDS	SPC-3961-OP17_NUCL
LDSC-B	SPC-3961-OP17_NUCL	APS-C	SPC-3961-OP17_NUCL
HNGC-B	SPC-3961-OP17_NUCL	HNGS-BA	SPC-3961-OP17_NUCL
DTC-H	17C0-154		

### Input DLIS Files

DEFAULT	PI_LDL_APS_NGS_034PUP	FN:50	PRODUCER	03-Feb-2011 08:52	1696.2 M	1502.5 M
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### Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_044PUP	FN:2	PRODUCER	11-Feb-2011 10:53
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### Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
General Purpose Inclinator Wellsite Calibration - CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 3-Feb-2011 0:31							
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 Inclinator Wellsite Calibration - CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 3-Feb-2011 0:31							
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: 11-Dec-2010 5:21 Before: 25-Dec-2010 6:05 After: 2-Feb-2011 15:05							
SS Cs Resolution Bkg	9.000	8.370	8.517	8.404	-0.1129	1.800	%
LS Cs Resolution Bkg	9.000	8.635	8.619	8.560	-0.05935	1.800	%
LSW1 Background	100.0	72.88	72.56	71.75	-0.8128	3.000	CPS
LSW2 Background	100.0	66.98	66.25	66.82	0.5712	3.000	CPS
LSW3 Background	200.0	151.3	148.8	149.9	1.100	6.000	CPS
LSW4 Background	250.0	184.5	182.4	181.1	-1.232	7.500	CPS
LSW5 Background	600.0	415.6	412.8	413.4	0.5532	18.00	CPS
SSW1 Background	100.0	72.08	71.78	70.44	-1.344	3.000	CPS
SSW2 Background	200.0	125.4	126.6	123.6	-2.988	6.000	CPS
SSW3 Background	500.0	334.7	333.8	332.4	-1.364	15.00	CPS
SSW4 Background	270.0	178.2	178.2	177.3	-0.8834	8.100	CPS
SSW5 Background	200.0	127.8	127.9	127.9	0.03127	6.000	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Aluminum Measurement

Master: 11-Dec-2010 5:21

LSW1 Aluminum	600.0	532.4	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	783.1	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	957.6	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	481.5	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	443.6	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2267	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6468	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9431	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3976	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	532.8	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Lithology Measurement

Master: 11-Dec-2010 5:21

LSW1 Iron	400.0	362.4	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	636.5	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	851.8	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	439.8	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	412.4	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1712	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5497	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8763	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3715	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	488.7	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Caliper Calibration

Before: 25-Dec-2010 5:54

HLDS Caliper Small Ring	11.88	N/A	13.51	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	17.01	N/A	N/A	N/A	IN

Accelerator-Porosity Tool Wellsite Calibration – Detector Background

Master: 11-Dec-2010 9:00 Before: 20-Jan-2011 17:41 After: 2-Feb-2011 15:08

Near Det Bkg Cntrate	30.00	32.95	32.44	31.02	-1.418	N/A	CPS
Far Det Bkg Cntrate	30.00	32.12	33.19	32.77	-0.4173	N/A	CPS
Array-1 Det Bkg Cntrate	30.00	29.56	29.36	28.36	-1.001	N/A	CPS
Array-2 Det Bkg Cntrate	30.00	29.68	29.66	29.28	-0.3837	N/A	CPS
Array Therm Det Bkg Cntrate	30.00	31.39	34.13	31.14	-2.992	N/A	CPS

Accelerator-Porosity Tool Wellsite Calibration – Calibration Ratios

Master: 11-Dec-2010 9:00

Near/Far Calibration Ratio	0.9250	0.8904	N/A	N/A	N/A	N/A	
Near/Array Calibration Ratio	1.030	1.060	N/A	N/A	N/A	N/A	
Near/Array Cal Ratio Up/Down	1.000	0.9962	N/A	N/A	N/A	N/A	

Accelerator-Porosity Tool Wellsite Calibration – Tank Check

Master: 11-Dec-2010 9:00

Array-1 Standoff Porosity	11.75	12.03	N/A	N/A	N/A	N/A	PU
Array-2 Standoff Porosity	11.75	11.87	N/A	N/A	N/A	N/A	PU
Average Slowing Down Time	6.000	5.811	N/A	N/A	N/A	N/A	US
Array-1 SDT Ratio Up/Down	1.000	1.003	N/A	N/A	N/A	N/A	
Array-2 SDT Ratio Up/Down	1.000	0.9944	N/A	N/A	N/A	N/A	
Sigma Formation	27.50	28.18	N/A	N/A	N/A	N/A	CU

Accelerator-Porosity Tool Wellsite Calibration – CCR7 signal boxes

Master: 11-Dec-2010 8:15

Near Detector Plateau Setting	1650	1734	N/A	N/A	N/A	N/A	V
Far Detector Plateau Setting	2000	2080	N/A	N/A	N/A	N/A	V
Array Detector Plateau Setting	2000	1968	N/A	N/A	N/A	N/A	V

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check

Master: 10-Dec-2010 8:35 Before: 25-Dec-2010 5:54 After: 2-Feb-2011 15:09

Na 511 Peak Loc	40.00	39.66	39.55	39.53	-0.02015	1.000	
Na 511 Peak Res	15.50	14.96	16.05	15.46	-0.5849	2.000	%
High Voltage	1150	1187	1209	1178	-31.17	N/A	V
Na 1785 Peak Loc	142.6	141.8	142.2	141.9	-0.2488	7.000	
Na 1785 Peak Res	8.500	8.530	9.021	8.136	-0.8855	2.000	%
Temperature	15.50	25.35	34.71	28.92	-5.789	N/A	DEGC
Na Count Rate	45.00	27.13	26.60	24.90	-1.701	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check

Master: 10-Dec-2010 8:35 Before: 25-Dec-2010 5:54 After: 2-Feb-2011 15:09

Na 511 Peak Loc	40.00	39.72	39.62	39.77	0.1445	1.000	
Na 511 Peak Res	15.50	15.09	16.03	15.50	-0.5293	2.000	%
High Voltage	1150	1099	1119	1109	-9.944	N/A	V
Na 1785 Peak Loc	142.6	142.5	141.3	142.1	0.8279	7.000	
Na 1785 Peak Res	8.500	8.852	9.212	7.977	-1.235	2.000	%
Temperature	15.50	25.94	35.42	30.69	-4.729	N/A	DEGC
Na Count Rate	45.00	27.08	26.72	24.88	-1.836	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Ratio Of Detector 1 To Detector 2

Accelerator-Porosity Tool - Detector Plateau Settings :

Near Detector Plateau Setting 1734 V  
 Far Detector Plateau Setting 2080 V  
 Array Detector Plateau Setting 1968 V

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

General Purpose Inclinator / Equipment Identification

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

Hostile Litho-Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS - D	45
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		8.370	Master		8.635	Master		72.88
Before		8.517	Before		8.619	Before		72.56
After		8.404	After		8.560	After		71.75
7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.000 (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		66.98	Master		151.3	Master		184.5
Before		66.25	Before		148.8	Before		182.4
After		66.82	After		149.9	After		181.1
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		415.6	Master		72.08	Master		125.4
Before		412.8	Before		71.78	Before		126.6
After		413.4	After		70.44	After		123.6
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	Phase	SSW4 Background CPS	Value	Phase	SSW5 Background CPS	Value
Master		334.7	Master		178.2	Master		127.8

Before		333.8	Before		178.2	Before		127.9
After		332.4	After		177.3	After		127.9
280.0 (Minimum) 500.0 (Nominal)		700.0 (Maximum)	150.0 (Minimum) 270.0 (Nominal)		380.0 (Maximum)	110.0 (Minimum) 200.0 (Nominal)		270.0 (Maximum)

Master: 11-Dec-2010 5:21 Before: 25-Dec-2010 6:05 After: 2-Feb-2011 15:05

Hostile Litho-Density Sonde Master Calibration											
Detector Background Measurement											
Phase	LSW1 Background CPS		Value	Phase	LSW2 Background CPS		Value	Phase	LSW3 Background CPS		Value
Master			72.88	Master			66.98	Master			151.3
55.00 (Minimum) 100.0 (Nominal)			150.0 (Maximum)	50.00 (Minimum) 100.0 (Nominal)			140.0 (Maximum)	110.0 (Minimum) 200.0 (Nominal)			290.0 (Maximum)
Phase	LSW4 Background CPS		Value	Phase	LSW5 Background CPS		Value	Phase	LS Cs Resolution Bkg %		Value
Master			184.5	Master			415.6	Master			8.635
140.0 (Minimum) 250.0 (Nominal)			360.0 (Maximum)	330.0 (Minimum) 600.0 (Nominal)			830.0 (Maximum)	7.000 (Minimum) 9.000 (Nominal)			11.00 (Maximum)
Phase	SSW1 Background CPS		Value	Phase	SSW2 Background CPS		Value	Phase	SSW3 Background CPS		Value
Master			72.08	Master			125.4	Master			334.7
55.00 (Minimum) 100.0 (Nominal)			150.0 (Maximum)	100.0 (Minimum) 200.0 (Nominal)			260.0 (Maximum)	280.0 (Minimum) 500.0 (Nominal)			700.0 (Maximum)
Phase	SSW4 Background CPS		Value	Phase	SSW5 Background CPS		Value	Phase	SS Cs Resolution Bkg %		Value
Master			178.2	Master			127.8	Master			8.370
150.0 (Minimum) 270.0 (Nominal)			380.0 (Maximum)	110.0 (Minimum) 200.0 (Nominal)			270.0 (Maximum)	7.000 (Minimum) 9.000 (Nominal)			11.00 (Maximum)

Master: 11-Dec-2010 5:21

Hostile Litho-Density Sonde Master Calibration											
Detector Aluminum Measurement (bkqd-subtracted)											
Phase	LSW1 Aluminum CPS		Value	Phase	LSW2 Aluminum CPS		Value	Phase	LSW3 Aluminum CPS		Value
Master			532.4	Master			783.1	Master			957.6
420.0 (Minimum) 600.0 (Nominal)			770.0 (Maximum)	650.0 (Minimum) 900.0 (Nominal)			1150 (Maximum)	800.0 (Minimum) 1100 (Nominal)			1450 (Maximum)
Phase	LSW4 Aluminum CPS		Value	Phase	LSW5 Aluminum CPS		Value	Phase	SSW1 Aluminum CPS		Value
Master			481.5	Master			443.6	Master			2267
410.0 (Minimum) 580.0 (Nominal)			740.0 (Maximum)	410.0 (Minimum) 570.0 (Nominal)			740.0 (Maximum)	2000 (Minimum) 2800 (Nominal)			3200 (Maximum)
Phase	SSW2 Aluminum CPS		Value	Phase	SSW3 Aluminum CPS		Value	Phase	SSW4 Aluminum CPS		Value
Master			6468	Master			9431	Master			3976
5800 (Minimum) 8000 (Nominal)			9300 (Maximum)	8300 (Minimum) 11600 (Nominal)			13500 (Maximum)	3500 (Minimum) 5000 (Nominal)			5800 (Maximum)
Phase	SSW5 Aluminum CPS		Value								
Master			532.8								
470.0 (Minimum) 660.0 (Nominal)			770.0 (Maximum)								

Master: 11-Dec-2010 5:21

Hostile Litho-Density Sonde Master Calibration											
Detector Litholog Measurement (bkqd-subtracted)											
Phase	LSW1 Iron CPS		Value	Phase	LSW2 Iron CPS		Value	Phase	LSW3 Iron CPS		Value
Master			362.4	Master			636.5	Master			851.8
290.0 (Minimum) 400.0 (Nominal)			560.0 (Maximum)	520.0 (Minimum) 730.0 (Nominal)			950.0 (Maximum)	720.0 (Minimum) 1000 (Nominal)			1350 (Maximum)
Phase	LSW4 Iron CPS		Value	Phase	LSW5 Iron CPS		Value	Phase	SSW1 Iron CPS		Value
Master			439.8	Master			412.4	Master			1712
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			5497	Master			8763	Master			3715
4900 (Minimum) 6800 (Nominal)			7900 (Maximum)	7800 (Minimum) 10800 (Nominal)			12600 (Maximum)	3300 (Minimum) 4600 (Nominal)			5400 (Maximum)
Phase	SSW5 Iron CPS		Value								
Master			488.7								
420.0 (Minimum) 580.0 (Nominal)			680.0 (Maximum)								

Hostile Litho-Density Sonde Master Calibration											
Quality Ratios											
Phase	AL CALIBRATION RATIO 1		Value	Phase	AL CALIBRATION RATIO 2		Value	Phase	AL CALIBRATION RATIO 3		Value
Master			1.035	Master			2.092	Master			0.5755
	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 4		Value	Phase	Pad-Wear SS Ratio		Value	Phase	Pad-Wear LS Ratio		Value
Master			0.5028	Master			0.9860	Master			0.9868
	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			1.004	Master	<b>EXCEEDS LIMIT</b>		0.9813				
	0.9900 (Minimum)	0.9940 (Nominal)	1.015 (Maximum)		0.9850 (Minimum)	0.9940 (Nominal)	1.010 (Maximum)				

Litho-Density Spectroscopy Cartridge - B / Equipment Identification

Primary Equipment:			
LDSC Cartridge	LDSC - B	521	
Auxiliary Equipment:			
LDSC Housing	LDSH - A	319	

Accelerator-Porosity Tool / Equipment Identification

Primary Equipment:			
Accelerator-Porosity Sonde	APS - C	22	
APS Minitron	MNTR - F	5589	
Auxiliary Equipment:			
Accelerator-Porosity Housing	APH - AC	22	
APS Calibration Water Tank	SFT - 178	1	
APS Aluminum Calibrator Sleeve	SFT - 281	1	

Accelerator-Porosity Tool Wellsite Calibration

Accelerator-Porosity Tool Wellsite Calibration											
Detector Background											
Phase	Near Det Bkg Cntrate CPS		Value	Phase	Far Det Bkg Cntrate CPS		Value	Phase	Array-1 Det Bkg Cntrate CPS		Value
Master			32.95	Master			32.12	Master			29.56
Before			32.44	Before			33.19	Before			29.36
After			31.02	After			32.77	After			28.36
	1.000 (Minimum)	30.00 (Nominal)	50.00 (Maximum)		1.000 (Minimum)	30.00 (Nominal)	50.00 (Maximum)		1.000 (Minimum)	30.00 (Nominal)	50.00 (Maximum)
Phase	Array-2 Det Bkg Cntrate CPS		Value	Phase	Array Therm Det Bkg Cntrate CPS		Value				
Master			29.68	Master			31.39				
Before			29.66	Before			34.13				
After			29.28	After			31.14				
	1.000 (Minimum)	30.00 (Nominal)	50.00 (Maximum)		1.000 (Minimum)	30.00 (Nominal)	50.00 (Maximum)				

Accelerator-Porosity Tool Wellsite Calibration

Accelerator-Porosity Tool Wellsite Calibration											
Calibration Ratios											
Phase	Near/Far Calibration Ratio		Value	Phase	Near/Array Calibration Ratio		Value	Phase	Near/Array Cal Ratio Up/Down		Value
Master			0.8904	Master			1.060	Master			0.9962
	0.8000 (Minimum)	0.9250 (Nominal)	1.050 (Maximum)		0.9000 (Minimum)	1.030 (Nominal)	1.170 (Maximum)		0.9700 (Minimum)	1.000 (Nominal)	1.030 (Maximum)

Accelerator-Porosity Tool Wellsite Calibration

**Tank Check**

Phase	Array-1 Standoff Porosity PU	Value	Phase	Array-2 Standoff Porosity PU	Value	Phase	Average Slowing Down Time US	Value	
Master		12.03	Master		11.87	Master		5.811	
	9.900 (Minimum)	11.75 (Nominal)	13.60 (Maximum)	9.900 (Minimum)	11.75 (Nominal)	13.60 (Maximum)	5.500 (Minimum)	6.000 (Nominal)	6.250 (Maximum)
Phase	Array-1 SDT Ratio Up/Down	Value	Phase	Array-2 SDT Ratio Up/Down	Value	Phase	Sigma Formation CU	Value	
Master		1.003	Master		0.9944	Master		28.18	
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	20.00 (Minimum)	27.50 (Nominal)	35.00 (Maximum)

Master: 11-Dec-2010 9:00

**Accelerator-Porosity Tool Master Calibration**

**Detector Calibration**

Phase	Near/Far Calibration Ratio	Value	Phase	Near/Array Calibration Ratio	Value	Phase	Near/Array Cal Ratio Up/Down	Value	
Master		0.8904	Master		1.060	Master		0.9962	
	0.8000 (Minimum)	0.9250 (Nominal)	1.050 (Maximum)	0.9000 (Minimum)	1.030 (Nominal)	1.170 (Maximum)	0.9700 (Minimum)	1.000 (Nominal)	1.030 (Maximum)

Master: 11-Dec-2010 9:00

**Accelerator-Porosity Tool Master Calibration**

**Tank Check**

Phase	Array-1 Standoff Porosity PU	Value	Phase	Array-2 Standoff Porosity PU	Value	Phase	Average Slowing Down Time US	Value	
Master		12.03	Master		11.87	Master		5.811	
	9.900 (Minimum)	11.75 (Nominal)	13.60 (Maximum)	9.900 (Minimum)	11.75 (Nominal)	13.60 (Maximum)	5.500 (Minimum)	6.000 (Nominal)	6.250 (Maximum)
Phase	Array-1 SDT Ratio Up/Down	Value	Phase	Array-2 SDT Ratio Up/Down	Value	Phase	Sigma Formation CU	Value	
Master		1.003	Master		0.9944	Master		28.18	
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)	20.00 (Minimum)	27.50 (Nominal)	35.00 (Maximum)

Master: 11-Dec-2010 9:00

**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

**DTS Telemetry Tool / Equipment Identification**

Primary Equipment:		
DTC-H Auxiliary Cartridge	DTCH - A	8799
DTC-H Telemetry Cartridge	DTCH - A	8798
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH - KC	1777

Company: **Lamont Doherty**

**Schlumberger**

Well: **Expedition 330 Site U1376A**

Field: **Louisville Seamounts**

Rig: **JOIDES Resolution**

Ocean: **Pacific**

HLDS Density

APS Porosity

Natural Gamma Ray