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OTHER SERVICES1 OS1: HLDS OS2: DSST OS3: FMS OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
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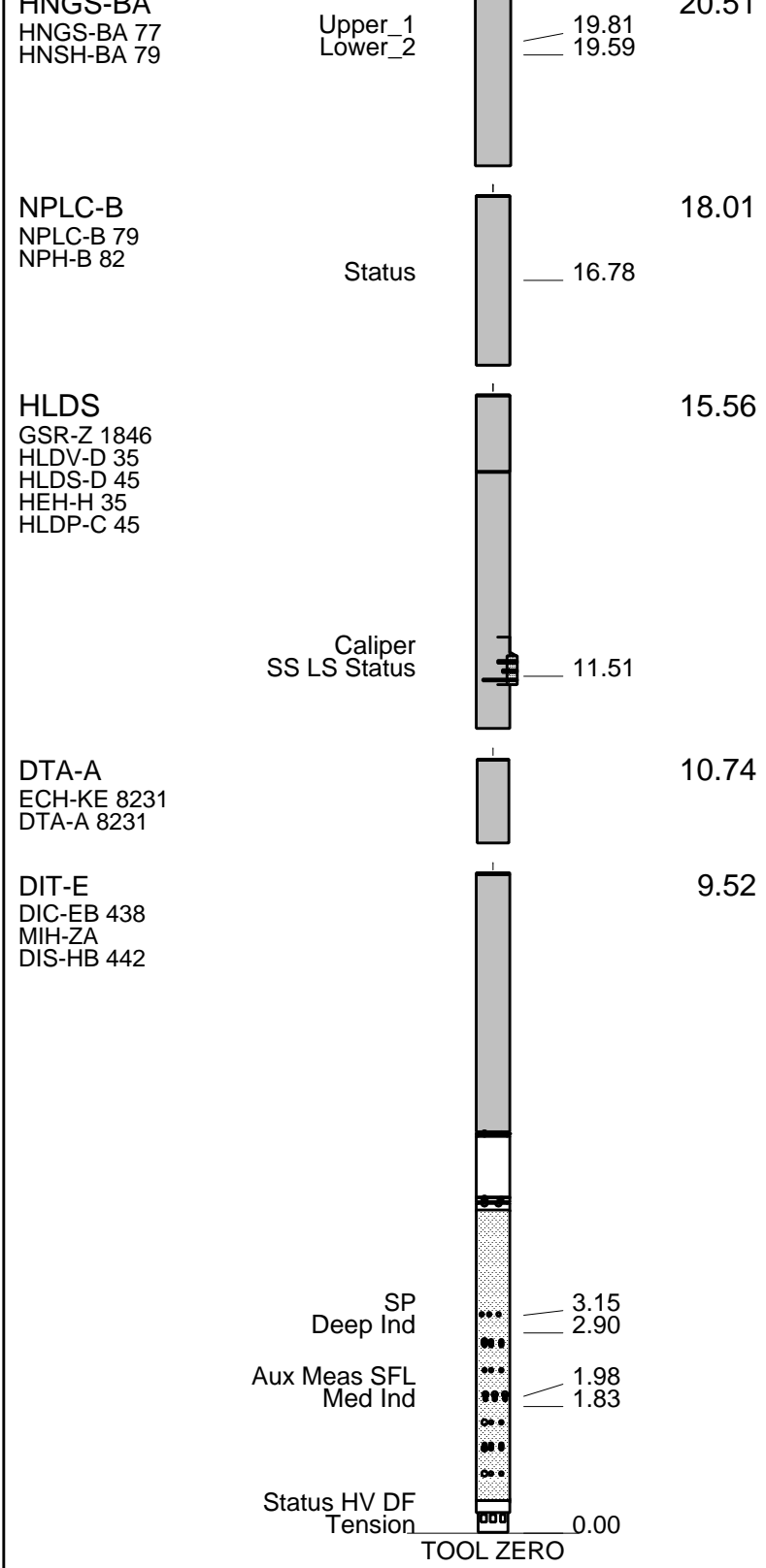
REMARKS: RUN NUMBER 1 Hole cored with RCB 9 7/8" bit. All depths in Meters Below Rig Floor (MBRF). Sepiolite mud was used. WHC was run. See logging report for more information.	REMARKS: RUN NUMBER 2
Low background countrate for HNGS does not affect measurement...indication of weak background sources only.	

RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION:	10C0-306		PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1		RUN 2	
SURFACE EQUIPMENT			
GSR-U 135 WITM (DTS)-A			

DOWNHOLE EQUIPMENT			
LEH-QT		22.31	
LEH-QT			
DTC-H	CTEM TelStatus ToolStatu	21.14	21.42
ECH-KC 9343 DTCH0-A		20.51	
HNGS DA		20.51	



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

### Output DLIS Files

DEFAULT	PI_LDL_NGS_006LUP	FN:6	PRODUCER	11-Jun-2003 18:23	2695.2 M	2550.1 M
REDUCED	PI_LDL_NGS_006LUP	FN:7	PRODUCER	11-Jun-2003 18:23	2695.2 M	2550.1 M

### OP System Version: 10C0-306 MCM

DIT-E	10C0-306	DTA-A	10C0-306
HLDS	SPC-2277-NUCL_b	NPLC-B	OP10-KP1
HNGS-BA	SPC-2277-NUCL_b	DTC-H	10C0-306

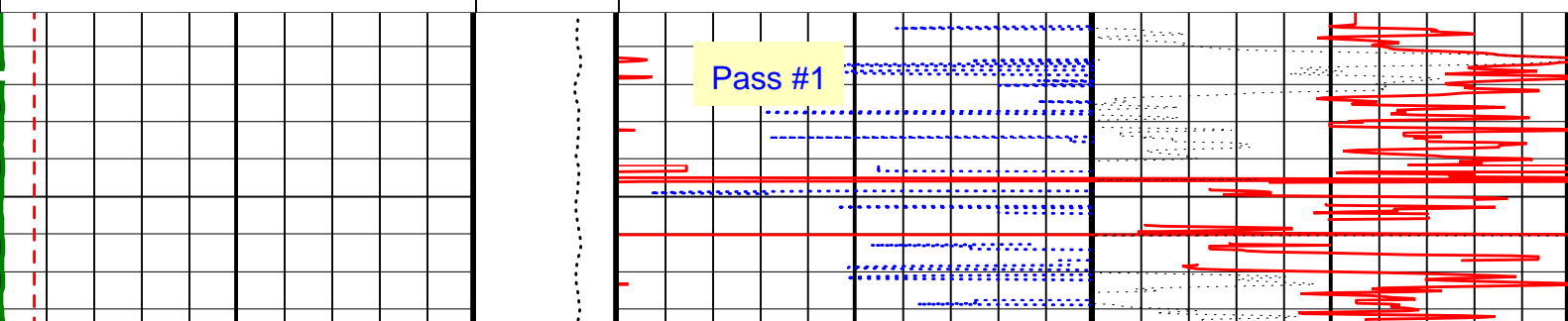
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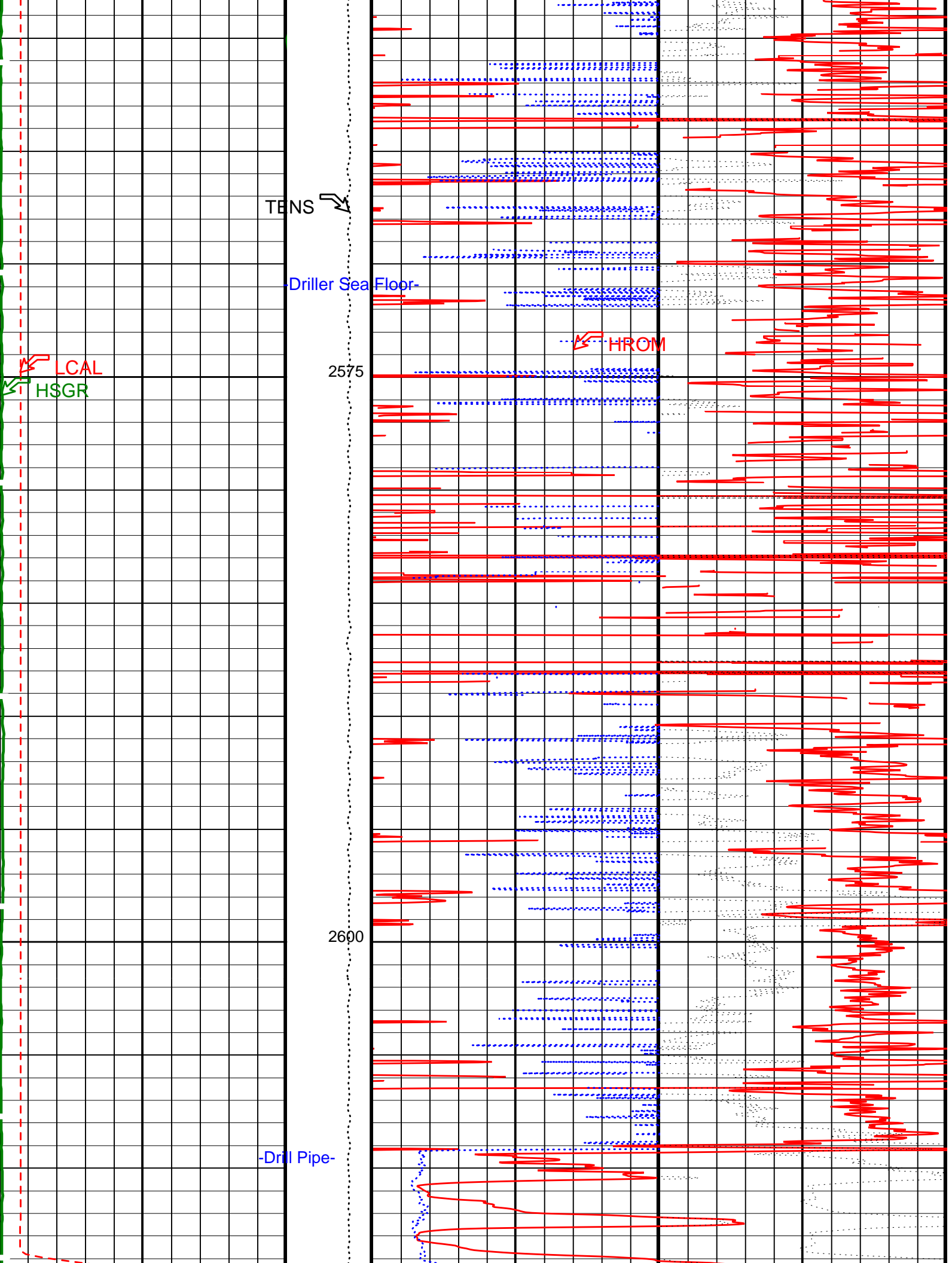
DLIS Name	New Value	Previous Value	Depth & Time
GCSE	BS LCAL	BS BS	2692.0 18:25:08 2691.1 18:25:18

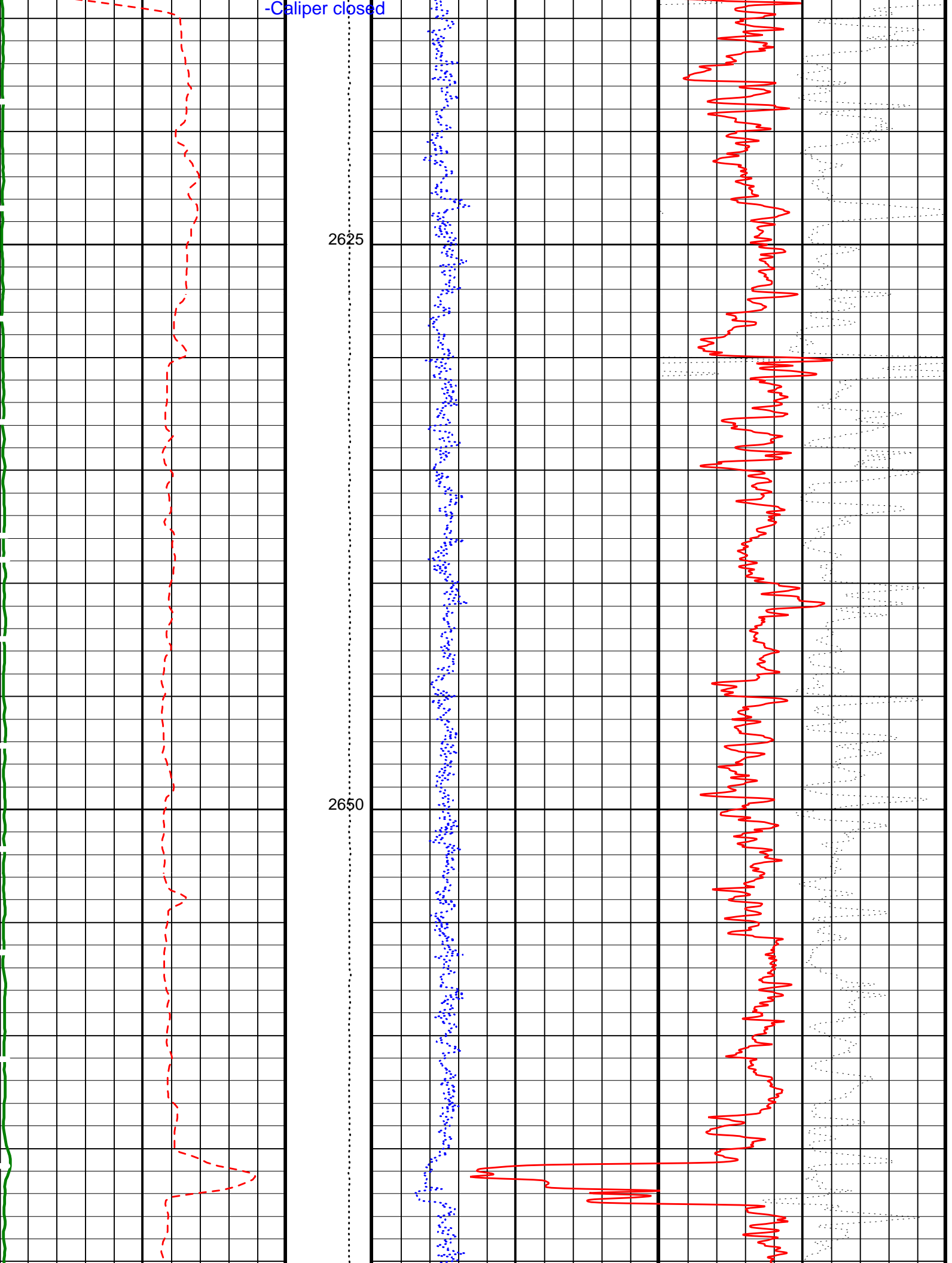
#### PIP SUMMARY

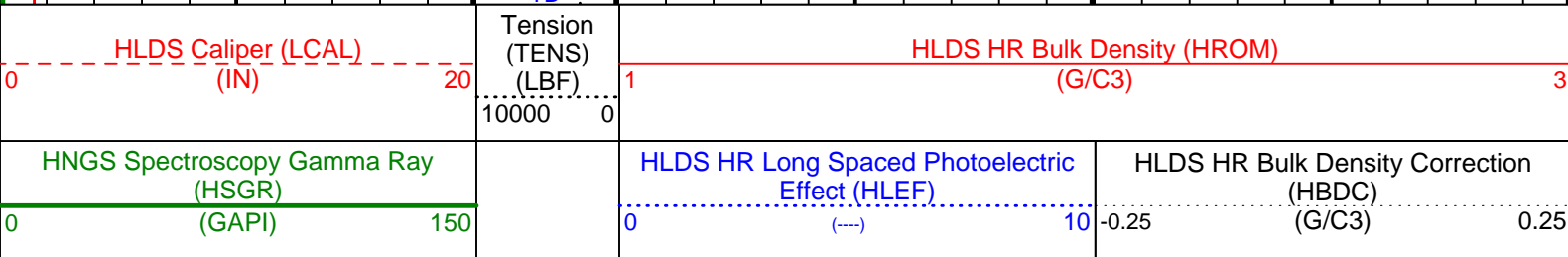
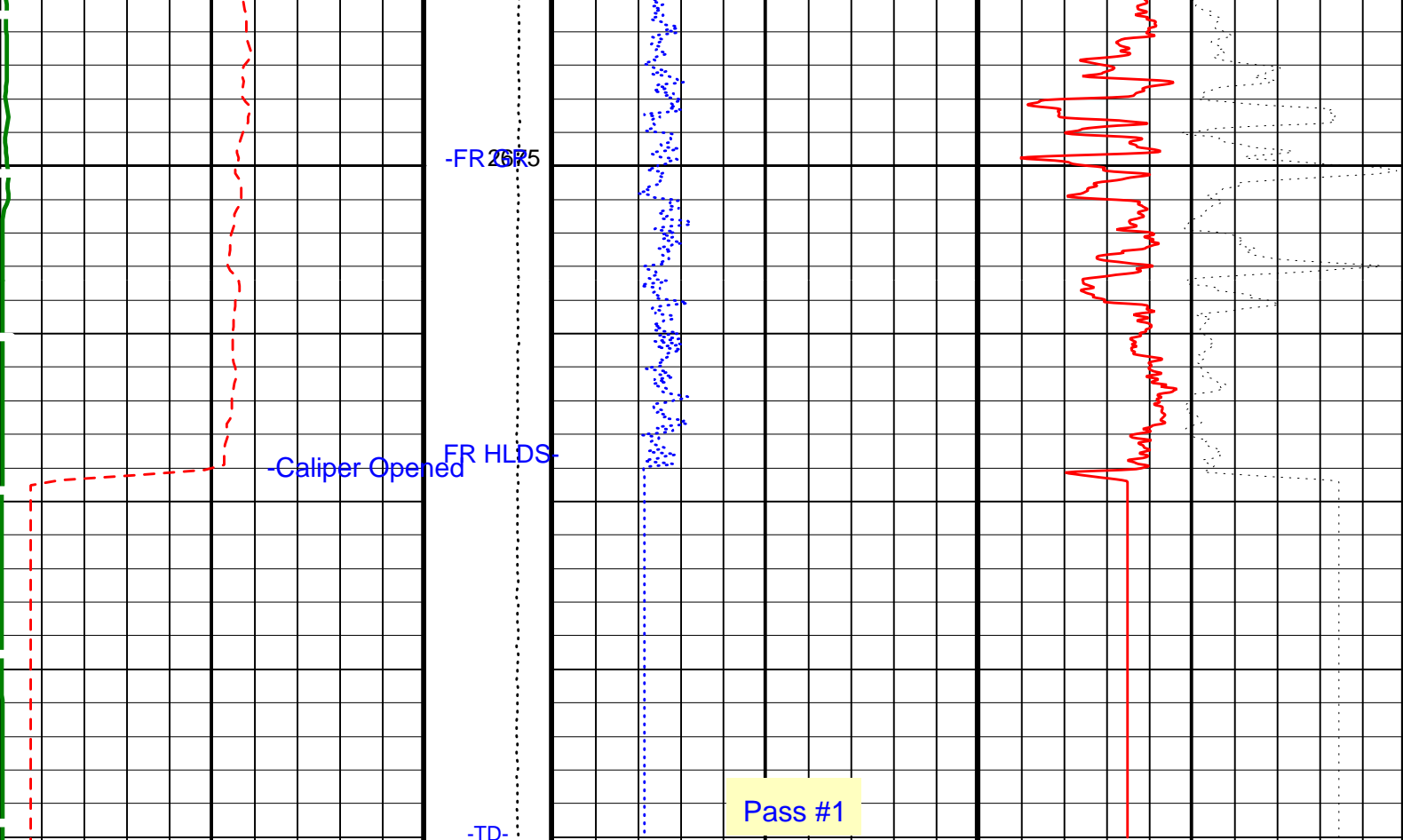
Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray (HSGR) (GAPI) 150	HLDS HR Long Spaced Photoelectric Effect (HLEF) (---) 10	HLDS HR Bulk Density Correction (HBDC) (G/C3) 0.25
HLDS Caliper (LCAL) (IN) 20	Tension (TENS) (LBF) 10000 0	HLDS HR Bulk Density (HROM) (G/C3) 3









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)	15	DEGC
DGF2	Deep 20 kHz Gain Factor	1.00789	
DPH2	Deep 20 kHz Phase Shift	-0.152394	DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	16.357	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	64.6326	MM/M
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ITEN	DIT-E Temperature Enable	ENABLE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MGF2	Medium 20 kHz Gain Factor	1.02964	
MPH2	Medium 20 kHz Phase Shift	-0.933067	DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	-1.78642	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	-34.2041	MM/M
SBR	Shoulder Bed Resistivity Factor	1	OHMM
SFCR	SFL Channel Ratio	1000	
SFLE	SFL Enable	ENABLE	
SHT	Surface Hole Temperature	20	DEGC
SPTAE	DIT-E SPARC Processing Enable	ENABLE	

SPAE	DIT-E SPARC Processing Enable	ENABLE	
SPNV	SP Next Value	0	MV
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	1.1	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	16000	
PSDS	HLDS SS Pulse Shape Compensation DAC	16000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
NPLC-B: Nuclear Porosity Lithology Cartridge - B			
NOTS	NPLC Old Temperature Sensor	NO	
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)	15	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00262528	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.4421	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	3.72744	
System and Miscellaneous			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	35000.00	PPM
CSIZ	Current Casing Size	0.000	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.07	G/C3
MST	Mud Sample Temperature	23.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2710	M
TDD	Total Depth - Driller	2710.00	M
TDL	Total Depth - Logger	12979.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: APSLiquidPorosity\_1 Vertical Scale: 1:200 Graphics File Created: 11-Jun-2003 18:23

## OP System Version: 10C0-306

MCM

DIT-E	10C0-306	DTA-A	10C0-306
HLDS	SPC-2277-NUCL_b	NPLC-B	OP10-KP1
HNGS-BA	SPC-2277-NUCL_b	DTC-H	10C0-306

## Output DLIS Files

DEFAULT	PI_LDL_NGS_006LUP	FN:6	PRODUCER	11-Jun-2003 18:23
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### Output DLIS Files

DEFAULT	PI_LDL_NGS_007LUP	FN:8	PRODUCER	11-Jun-2003 18:51	2695.2 M	2592.3 M
REDUCED	PI_LDL_NGS_007LUP	FN:9	PRODUCER	11-Jun-2003 18:51	2695.2 M	2591.0 M

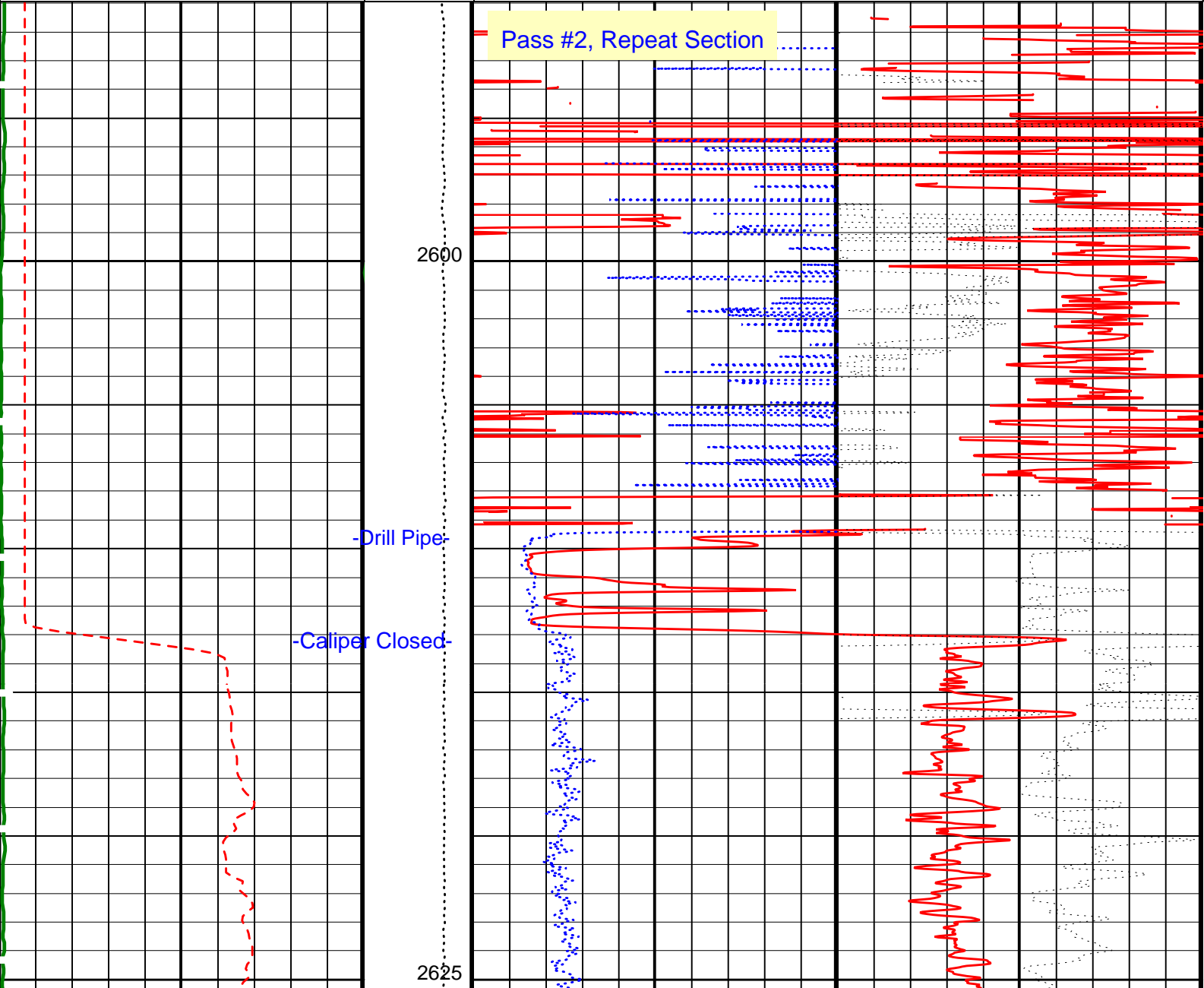
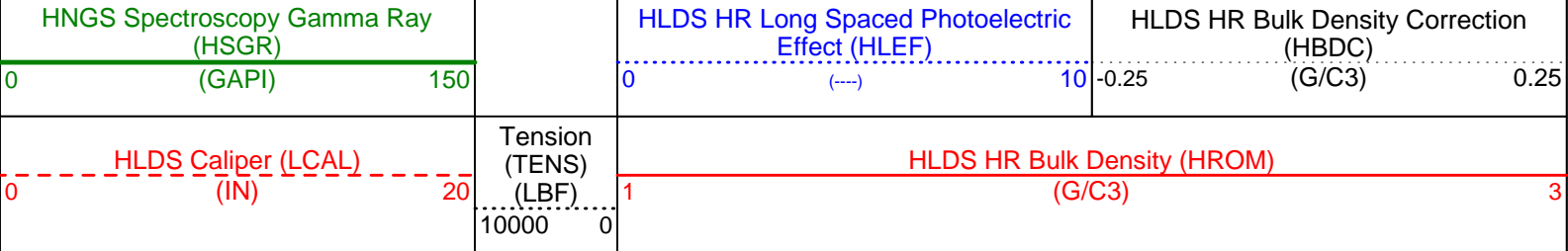
### OP System Version: 10C0-306

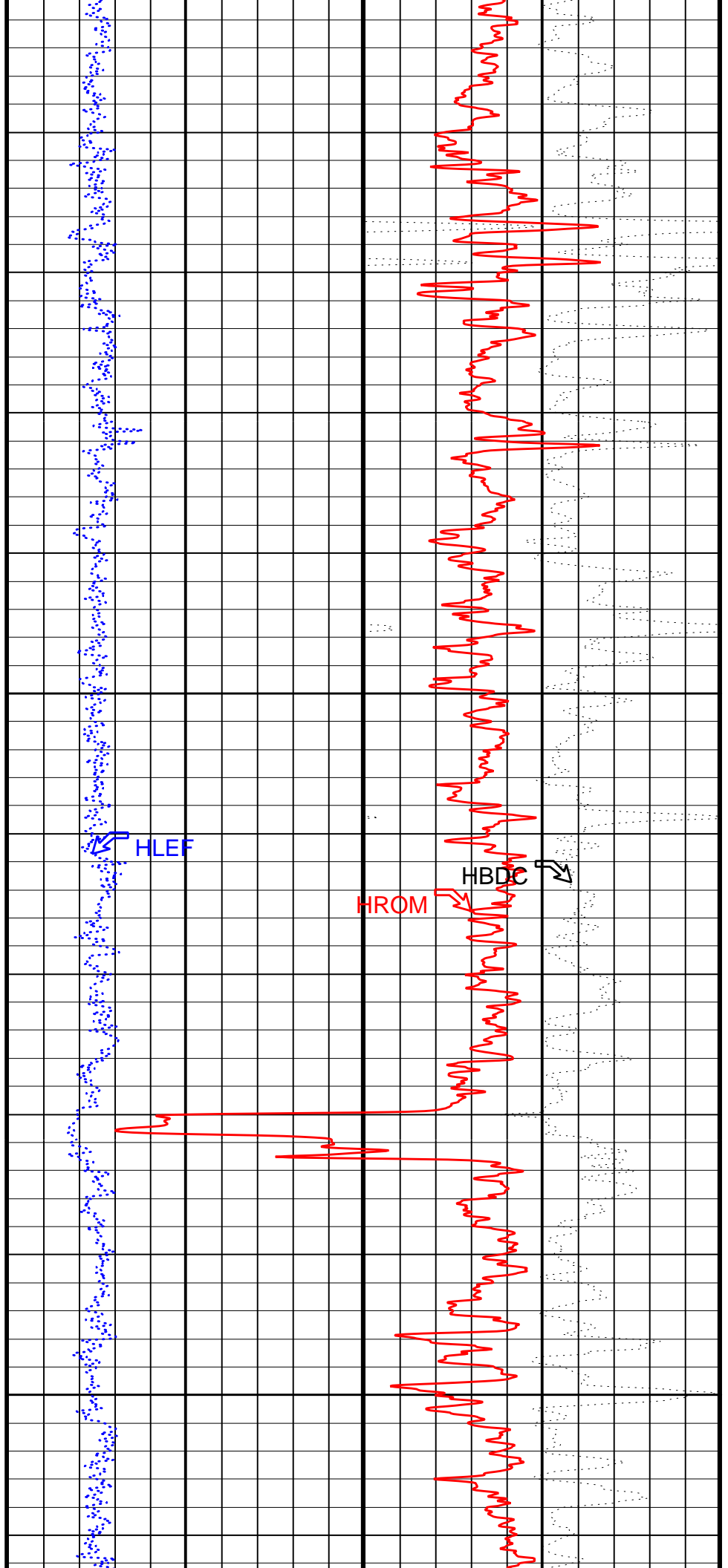
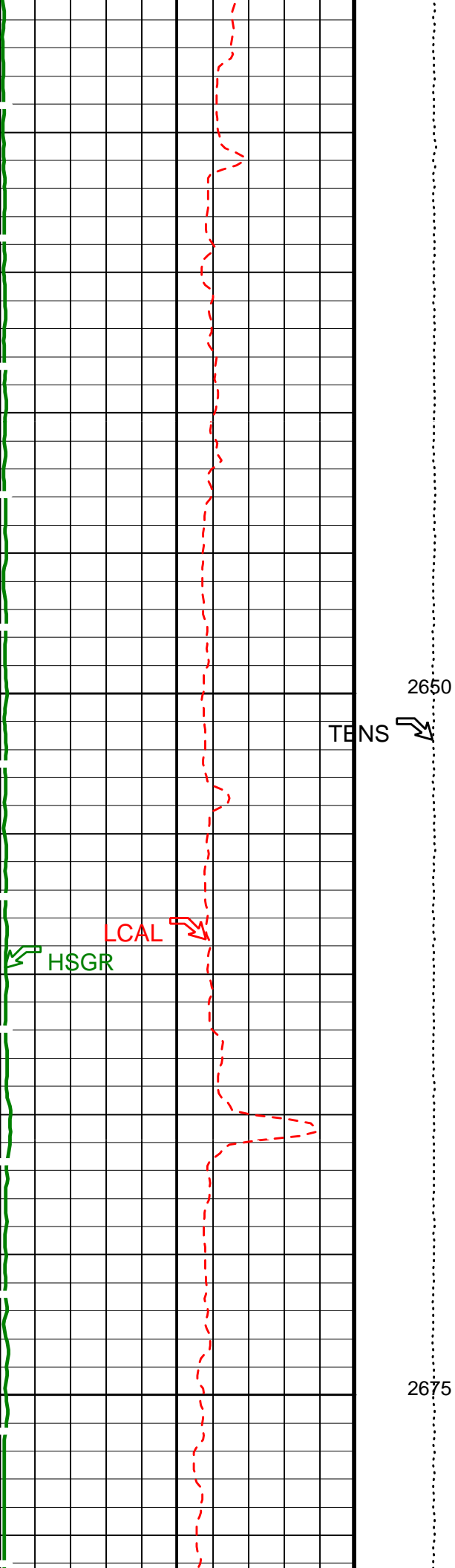
MCM

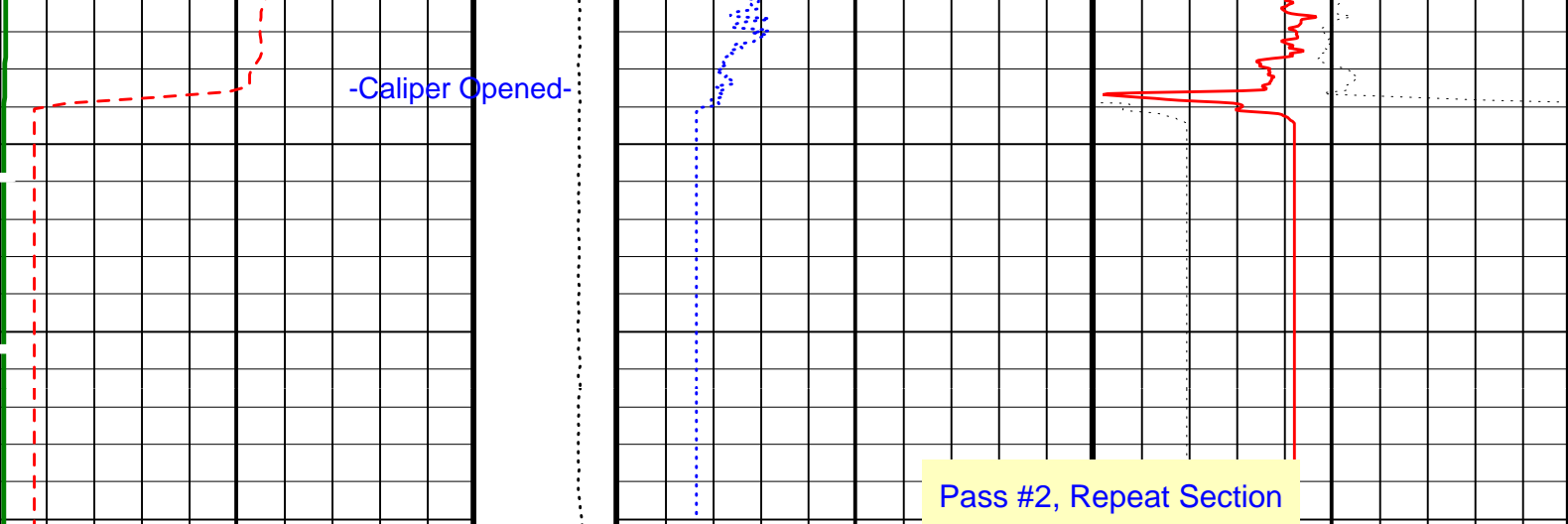
DIT-E	10C0-306	DTA-A	10C0-306
HLDS	SPC-2277-NUCL_b	NPLC-B	OP10-KP1
HNGS-BA	SPC-2277-NUCL_b	DTC-H	10C0-306

### PIP SUMMARY

▶ Time Mark Every 60 S







0	HLDS Caliper (LCAL) (IN)	20	Tension (TENS) (LBF)	1	HLDS HR Bulk Density (HROM) (G/C3)	3
0	HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)	150	10000	0	HLDS HR Long Spaced Photoelectric Effect (HLEF) (---)	10
-0.25					HLDS HR Bulk Density Correction (HBDC) (G/C3)	0.25

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)	15 DEGC
DGF2	Deep 20 kHz Gain Factor	1.00789
DPH2	Deep 20 kHz Phase Shift	-0.152394 DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	16.357 MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843 MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	64.6326 MM/M
GCSE	Generalized Caliper Selection	LCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
IFRS	DIT-E Induction Frequency Selector	20
IPHA	DIT-E Phasor Processing Mode	ALL
IPRO	DIT-E Induction Processing Selector	PHASOR
ITEN	DIT-E Temperature Enable	ENABLE
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE
MGF2	Medium 20 kHz Gain Factor	1.02964
MPH2	Medium 20 kHz Phase Shift	-0.933067 DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	-1.78642 MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250 MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	-34.2041 MM/M
SBR	Shoulder Bed Resistivity Factor	1 OHMM
SFCR	SFL Channel Ratio	1000
SFLE	SFL Enable	ENABLE
SHT	Surface Hole Temperature	20 DEGC
SPAE	DIT-E SPARC Processing Enable	ENABLE
SPNV	SP Next Value	0 MV
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	1.1 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
PLVC	HLDS Long Spacing High Voltage Control	1000 V

PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	16000	
PSDS	HLDS SS Pulse Shape Compensation DAC	16000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
NPLC-B: Nuclear Porosity Lithology Cartridge - B			
NOTS	NPLC Old Temperature Sensor	NO	
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)	15	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00443434	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.09098	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.38912	
System and Miscellaneous			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	35000.00	PPM
CSIZ	Current Casing Size	0.000	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.07	G/C3
MST	Mud Sample Temperature	23.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2710	M
TDD	Total Depth - Driller	2710.00	M
TDL	Total Depth - Logger	12979.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: APSLiquidPorosity\_1 Vertical Scale: 1:200 Graphics File Created: 11-Jun-2003 18:51

## OP System Version: 10C0-306

MCM

DIT-E	10C0-306	DTA-A	10C0-306
HLDS	SPC-2277-NUCL_b	NPLC-B	OP10-KP1
HNGS-BA	SPC-2277-NUCL_b	DTC-H	10C0-306

## Output DLIS Files

DEFAULT	PI_LDL_NGS_007LUP	FN:8	PRODUCER	11-Jun-2003 18:51
REDUCED	PI_LDL_NGS_007LUP	FN:9	PRODUCER	11-Jun-2003 18:51

### Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Hostile Litho-Density Sonde Wellsite Calibration - Background Measurement							
Master: 23-Apr-2003 17:32 Before: 18-May-2003 20:52 After: 11-Jun-2003 21:44							
SS Cs Resolution Bkg	9.000	8.094	8.097	8.005	-0.09238	1.800	%
LS Cs Resolution Bkg	9.000	8.143	8.212	8.247	0.03477	1.800	%
LSW1 Background	100.0	86.47	86.14	86.02	-0.1230	3.000	CPS

LSW1 Background	100.0	80.63	80.44	80.53	0.09354	3.000	CPS
LSW2 Background	200.0	177.7	178.3	177.1	-1.207	6.000	CPS
LSW3 Background	250.0	218.9	217.1	218.1	0.9930	7.500	CPS
LSW4 Background	600.0	499.0	499.9	499.6	-0.3034	18.00	CPS
SSW1 Background	100.0	97.29	95.44	95.90	0.4648	3.000	CPS
SSW2 Background	200.0	175.4	174.0	174.0	-0.01474	6.000	CPS
SSW3 Background	500.0	475.0	475.2	472.2	-3.004	15.00	CPS
SSW4 Background	270.0	242.4	242.8	241.6	-1.130	8.100	CPS
SSW5 Background	200.0	176.0	175.7	174.9	-0.7180	6.000	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Aluminum Measurement

Master: 23-Apr-2003 18:33

LSW1 Aluminum	600.0	604.1	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	860.3	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	1017	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	498.2	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	473.1	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2618	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	7129	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9926	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	4181	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	547.6	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Lithology Measurement

Master: 23-Apr-2003 18:29

LSW1 Iron	400.0	418.2	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	721.5	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	941.8	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	481.5	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	449.9	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1956	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	6092	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	9264	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3922	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	501.5	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Caliper Calibration

Before: 18-May-2003 20:24

HLDS Caliper Small Ring	12.00	N/A	14.48	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.00	N/A	17.56	N/A	N/A	N/A	IN

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check

Master: 10-Jun-2003 9:13 Before: 8-Apr-2003 2:33 After: 11-Jun-2003 21:45

Na 511 Peak Loc	40.00	40.65	40.63	40.56	-0.07085	1.000	
Na 511 Peak Res	15.50	16.98	16.69	16.31	-0.3779	2.000	%
High Voltage	1150	1208	1207	1208	0.6575	30.00	V
Na 1785 Peak Loc	142.6	145.2	145.2	144.9	-0.2784	7.000	
Na 1785 Peak Res	8.500	8.982	9.496	9.778	0.2824	2.000	%
Temperature	15.50	33.02	27.12	31.28	4.158	N/A	DEGC
Na Count Rate	45.00	40.11	41.75	39.73	-2.015	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check

Master: 10-Jun-2003 9:13 Before: 8-Apr-2003 2:33 After: 11-Jun-2003 21:45

Na 511 Peak Loc	40.00	40.56	40.51	40.64	0.1261	1.000	
Na 511 Peak Res	15.50	17.13	16.55	16.78	0.2294	2.000	%
High Voltage	1150	1234	1235	1234	-0.9994	30.00	V
Na 1785 Peak Loc	142.6	144.4	144.2	144.7	0.5310	7.000	
Na 1785 Peak Res	8.500	9.188	9.586	9.068	-0.5173	2.000	%
Temperature	15.50	32.54	26.30	31.70	5.397	N/A	DEGC
Na Count Rate	45.00	40.04	41.81	39.37	-2.441	8.000	CPS

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

Master: 10-Jun-2003 9:13 Before: 8-Apr-2003 2:33 After: 11-Jun-2003 21:45

Coincidence Count Rate Ratio	1.000	1.001	0.9991	1.008	0.009050	0.05000	
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Hostile Natural Gamma Ray Sonde Master Calibration - Detector 1 Calibration

Master: 10-Jun-2003 8:55

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	209.0	--	--	--	--	
Th Peak Res	7.000	8.425	--	--	--	--	%
Background Count Rate	142.5	19.30	--	--	--	--	CPS
Gain Ratio	1.000	0.9783	--	--	--	--	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 2 Calibration

Master: 10-Jun-2003 8:55

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	209.4	--	--	--	--	
Th Peak Res	7.000	8.230	--	--	--	--	%
Background Count Rate	142.5	18.75	--	--	--	--	CPS
Gain Ratio	1.000	0.9823	--	--	--	--	

**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	
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**Hostile Litho-Density Sonde / Equipment Identification**

**Primary Equipment:**

Hostile Litho Density Sonde	HLDS - D	45
Hostile Litho Density High Voltage	HLDV - D	35
Gamma Source Radioactive	GSR - Z	1846

**Auxiliary Equipment:**

Hostile Litho Density Pad	HLDP - C	45
Hostile Litho Density High Voltage Housi	HEH - H	35

**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		8.094	Master		8.143	Master		86.47
Before		8.097	Before		8.212	Before		86.14
After		8.005	After		8.247	After		86.02
	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		80.63	Master		177.7	Master		218.9
Before		80.44	Before		178.3	Before		217.1
After		80.53	After		177.1	After		218.1
	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		499.0	Master		97.29	Master		175.4
Before		499.9	Before		95.44	Before		174.0
After		499.6	After		95.90	After		174.0
	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		475.0	Master		242.4	Master		176.0
Before		475.2	Before		242.8	Before		175.7
After		472.2	After		241.6	After		174.9
	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: 23-Apr-2003 17:32			Before: 18-May-2003 20:52			After: 11-Jun-2003 21:44		

**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		86.47	Master		80.63	Master		177.7
	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		218.9	Master		499.0	Master		8.143
	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		97.29	Master		175.4	Master		475.0
	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		242.4	Master		176.0	Master		8.094
	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: 23-Apr-2003 17:32

Hostile Litho-Density Sonde Master Calibration								
Detector Aluminum Measurement (bkgd-subtracted)								
Phase	LSW1 Aluminum CPS	Value	Phase	LSW2 Aluminum CPS	Value	Phase	LSW3 Aluminum CPS	Value
Master		604.1	Master		860.3	Master		1017
	420.0 (Minimum) 600.0 (Nominal) 700.0 (Maximum)			650.0 (Minimum) 900.0 (Nominal) 1050 (Maximum)			800.0 (Minimum) 1100 (Nominal) 1300 (Maximum)	
Phase	LSW4 Aluminum CPS	Value	Phase	LSW5 Aluminum CPS	Value	Phase	SSW1 Aluminum CPS	Value
Master		498.2	Master		473.1	Master		2618
	410.0 (Minimum) 580.0 (Nominal) 670.0 (Maximum)			410.0 (Minimum) 570.0 (Nominal) 660.0 (Maximum)			2000 (Minimum) 2800 (Nominal) 3200 (Maximum)	
Phase	SSW2 Aluminum CPS	Value	Phase	SSW3 Aluminum CPS	Value	Phase	SSW4 Aluminum CPS	Value
Master		7129	Master		9926	Master		4181
	5800 (Minimum) 8000 (Nominal) 9300 (Maximum)			8300 (Minimum) 11600 (Nominal) 13500 (Maximum)			3500 (Minimum) 5000 (Nominal) 5800 (Maximum)	
Phase	SSW5 Aluminum CPS	Value						
Master		547.6						
	470.0 (Minimum) 660.0 (Nominal) 770.0 (Maximum)							

Master: 23-Apr-2003 18:33

Hostile Litho-Density Sonde Master Calibration								
Detector Litholog Measurement (bkgd-subtracted)								
Phase	LSW1 Iron CPS	Value	Phase	LSW2 Iron CPS	Value	Phase	LSW3 Iron CPS	Value
Master		418.2	Master		721.5	Master		941.8
	290.0 (Minimum) 400.0 (Nominal) 470.0 (Maximum)			520.0 (Minimum) 730.0 (Nominal) 850.0 (Maximum)			720.0 (Minimum) 1000 (Nominal) 1160 (Maximum)	
Phase	LSW4 Iron CPS	Value	Phase	LSW5 Iron CPS	Value	Phase	SSW1 Iron CPS	Value
Master		481.5	Master		449.9	Master		1956
	370.0 (Minimum) 520.0 (Nominal) 600.0 (Maximum)			340.0 (Minimum) 470.0 (Nominal) 550.0 (Maximum)			1500 (Minimum) 2100 (Nominal) 2400 (Maximum)	
Phase	SSW2 Iron CPS	Value	Phase	SSW3 Iron CPS	Value	Phase	SSW4 Iron CPS	Value
Master		6092	Master		9264	Master		3922
	4900 (Minimum) 6800 (Nominal) 7900 (Maximum)			7800 (Minimum) 10800 (Nominal) 12600 (Maximum)			3300 (Minimum) 4600 (Nominal) 5400 (Maximum)	
Phase	SSW5 Iron CPS	Value						
Master		501.5						
	420.0 (Minimum) 580.0 (Nominal) 680.0 (Maximum)							

Master: 23-Apr-2003 18:29

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		1.047	Master		2.099	Master		0.6220
	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)			1.800 (Minimum) 2.000 (Nominal) 2.200 (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		0.5537	Master		0.9818	Master	<b>EXCEEDS LIMIT</b>	0.9718
	0.4000 (Minimum) 0.5000 (Nominal) 0.6000 (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		1.012	Master	<b>EXCEEDS LIMIT</b>	0.9513			
	0.9900 (Minimum) 0.9940 (Nominal) 1.015 (Maximum)			0.9850 (Minimum) 0.9940 (Nominal) 1.010 (Maximum)				

Master: 23-Apr-2003 18:24

Nuclear Porosity Lithology Cartridge - B / Equipment Identification

Primary Equipment:  
NPLC Cartridge

NPLC - B 79

Auxiliary Equipment:  
NPLC Housing

NPH - B 82

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:  
HNGS Sonde

HNGS - BA 77

Auxiliary Equipment:  
HNGS Sonde Housing  
Gamma Source Radioactive

HNSH - BA 79  
GSR - U 135

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		40.65	Master		16.98	Master		1208
Before		40.63	Before		16.69	Before		1207
After		40.56	After		16.31	After		1208
	37.50 (Minimum) 40.00 (Nominal) 42.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		145.2	Master		8.982	Master		33.02
Before		145.2	Before		9.496	Before		27.12
After		144.9	After		9.778	After		31.28
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.000 (Maximum)			-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	
Phase	Na Count Rate CPS	Value						
Master		40.11						
Before		41.75						
After		39.73						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							
Master: 10-Jun-2003 9:13			Before: 8-Apr-2003 2:33			After: 11-Jun-2003 21:45		

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		40.56	Master		17.13	Master		1234
Before		40.51	Before		16.55	Before		1235
After		40.64	After		16.78	After		1234
	37.50 (Minimum) 40.00 (Nominal) 42.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		144.4	Master		9.188	Master		32.54
Before		144.2	Before		9.586	Before		26.30
After		144.7	After		9.068	After		31.70
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.000 (Maximum)			-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	
Phase	Na Count Rate CPS	Value						
Master		40.04						
Before		41.81						
After		39.37						



10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)
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Master: 10-Jun-2003 9:13

Before: 8-Apr-2003 2:33

After: 11-Jun-2003 21:45

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.001
Before		0.9991
After		1.008
	0.9500 (Minimum)      1.000 (Nominal)      1.050 (Maximum)	
Master: 10-Jun-2003 9:13		
Before: 8-Apr-2003 2:33		
After: 11-Jun-2003 21:45		

Hostile Natural Gamma Ray Sonde Master Calibration								
Detector 1 Calibration								
Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		209.0	Master		8.425
	38.00 (Minimum)      40.00 (Nominal)      42.00 (Maximum)			201.0 (Minimum)      209.6 (Nominal)      218.3 (Maximum)			5.000 (Minimum)      7.000 (Nominal)      9.000 (Maximum)	
Phase	Background Count Rate CPS	Value	Phase	Gain Ratio	Value			
Master	<b>EXCEEDS LIMIT</b>	19.30	Master		0.9783			
	20.00 (Minimum)      142.5 (Nominal)      265.0 (Maximum)			0.9400 (Minimum)      1.000 (Nominal)      1.060 (Maximum)				
Master: 10-Jun-2003 8:55								

Hostile Natural Gamma Ray Sonde Master Calibration								
Detector 2 Calibration								
Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		209.4	Master		8.230
	38.00 (Minimum)      40.00 (Nominal)      42.00 (Maximum)			201.0 (Minimum)      209.6 (Nominal)      218.3 (Maximum)			5.000 (Minimum)      7.000 (Nominal)      9.000 (Maximum)	
Phase	Background Count Rate CPS	Value	Phase	Gain Ratio	Value			
Master	<b>EXCEEDS LIMIT</b>	18.75	Master		0.9823			
	20.00 (Minimum)      142.5 (Nominal)      265.0 (Maximum)			0.9400 (Minimum)      1.000 (Nominal)      1.060 (Maximum)				
Master: 10-Jun-2003 8:55								

Company: Lamont Doherty	<b>Schlumberger</b>
Well: ODP Leg 209, Site 1272A	
Field: Mid Atlantic Ridge	
Country:	
Ocean: Atlantic	
HLDS Density Natural Gamma Ray	