

Schlumberger

Company: Lamont Doherty

Well: Expedition 330 Site U1376A

Field: Louisville Seamounts

Rig: JOIDES Resolution **Ocean:** Pacific

HNGS
Natural Gamma Ray
Spectroscopy

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

LOCATION

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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	Run 1	Run 2	Run
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Logging Date	3-Feb-2011		
Run Number	1		
Depth Driller	183 m		
Schlumberger Depth	182 m		
Bottom Log Interval	150 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

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. MCD centralizers run with DSI to provide centering.

REMARKS: RUN NUMBER 2

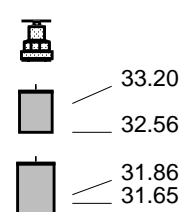
RUN 1
SERVICE ORDER #: 17C0-154
PROGRAM VERSION:
FLUID LEVEL:

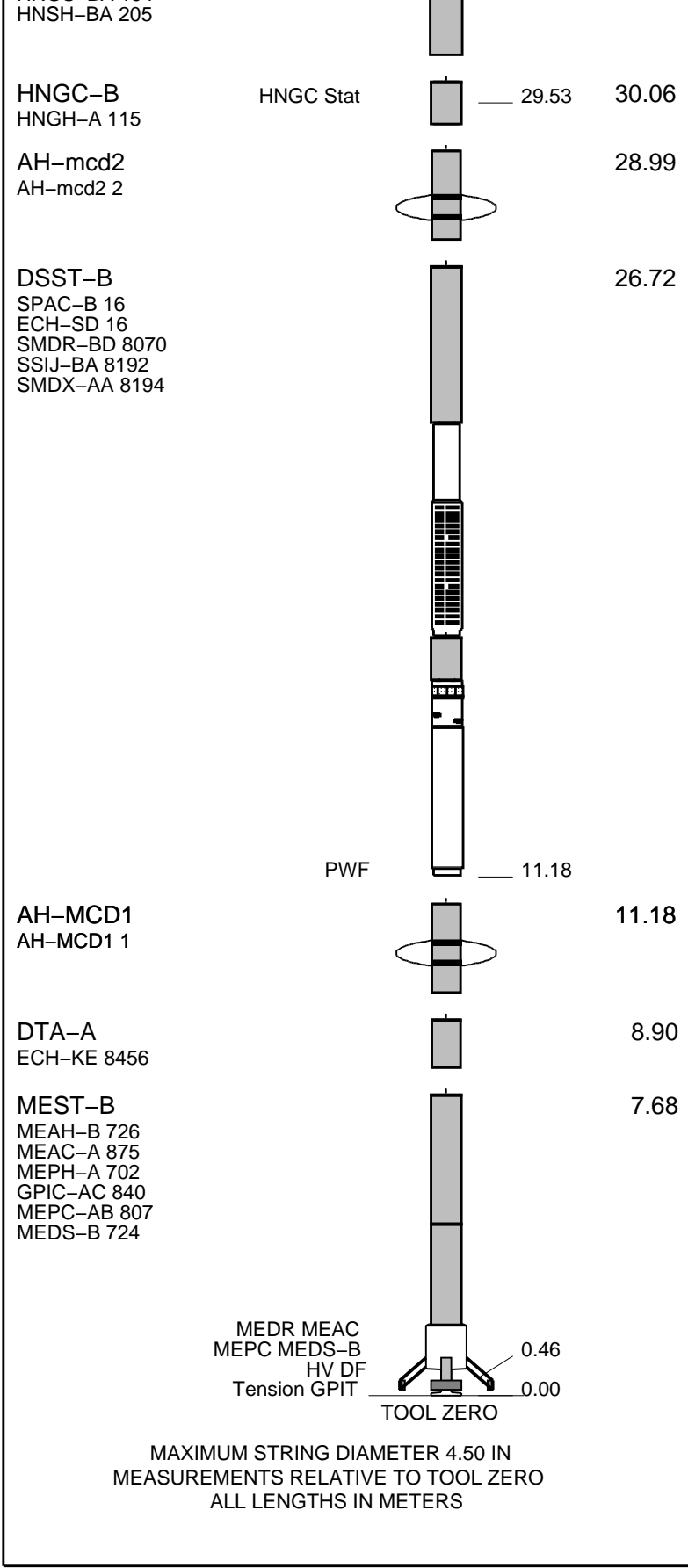
RUN 2
SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1	RUN 2
SURFACE EQUIPMENT GSR-U 616008 WITM (DTS)-A	

RUN 1	RUN 2
DOWNHOLE EQUIPMENT	
LEH-QT LEH-QT 301 DTC-H ECH-KC 1777 HNGS-BA HNGS-BA 194	
CTEM TelStatus ToolStatu Upper_1 Lower_2	
	34.36 33.47 32.56



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

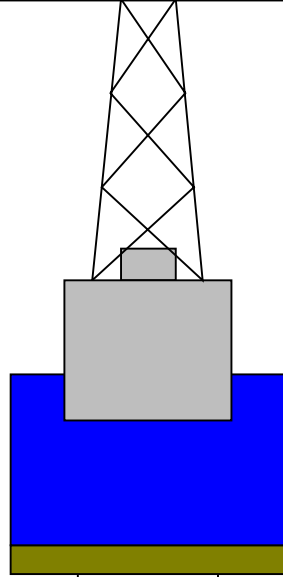
Kelly Bushing Elevation
Derrick Floor Elevation

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	FMS_DSI_NGS_032PUP	FN:48	PRODUCER	03-Feb-2011 08:31	1693.9 M	1478.4 M
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Output DLIS Files

DEFAULT	FMS_DSI_NGS_054PUP	FN:12	PRODUCER	11-Feb-2011 12:31	179.8 M	-35.5 M
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OP System Version: 17C0-154

MEST-B	SRPC-3971-Q1_2010_OP17	DTA-A	17C0-154
DSST-B	17C0-154	HNGC-B	SPC-3961-OP17_NUCL
HNGS-BA	SPC-3961-OP17_NUCL	DTC-H	17C0-154

PIP SUMMARY

Time Mark Every 60 S

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

Area1 From HCGR to HSGR		
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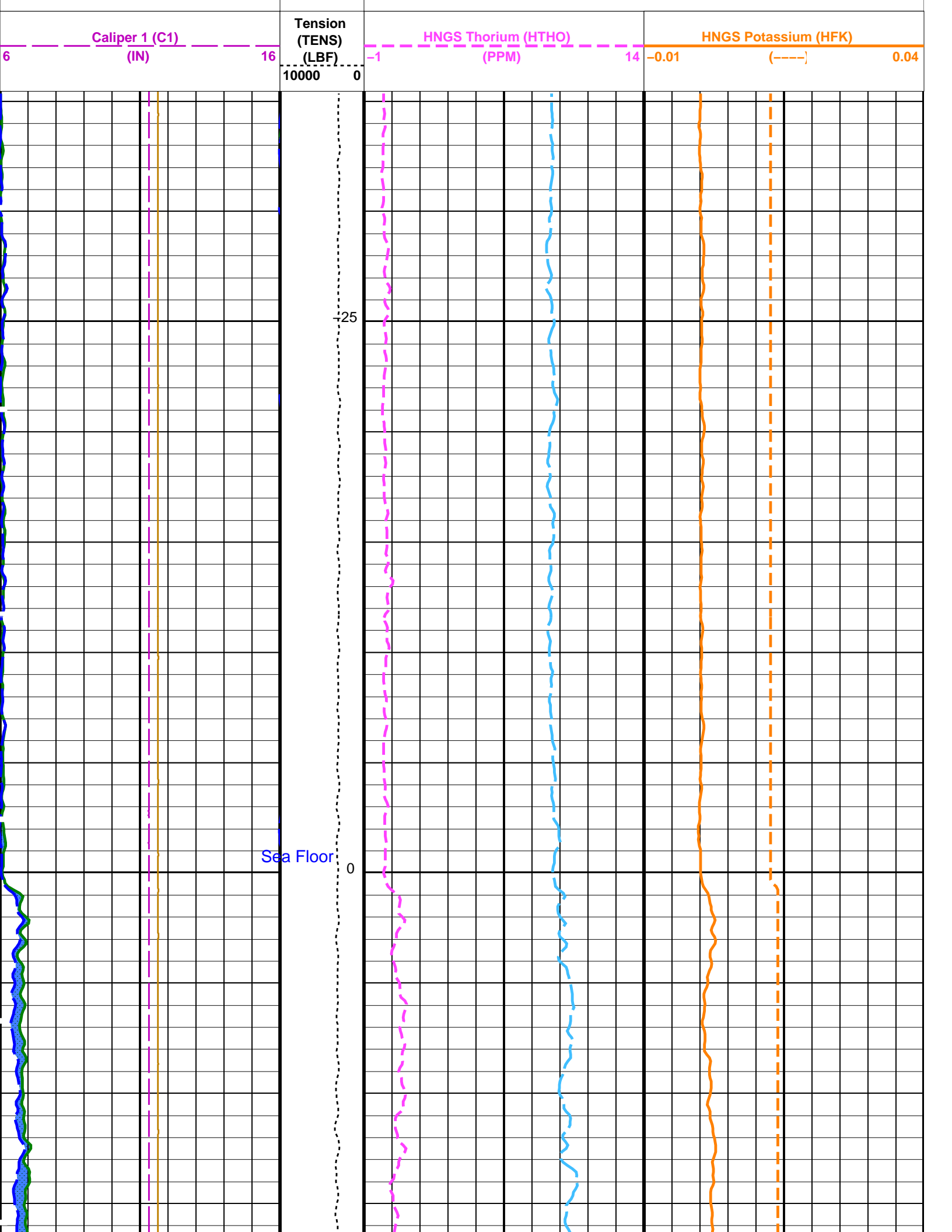
HNGS Computed Gamma Ray (HCGR)		
0	(GAPI)	100

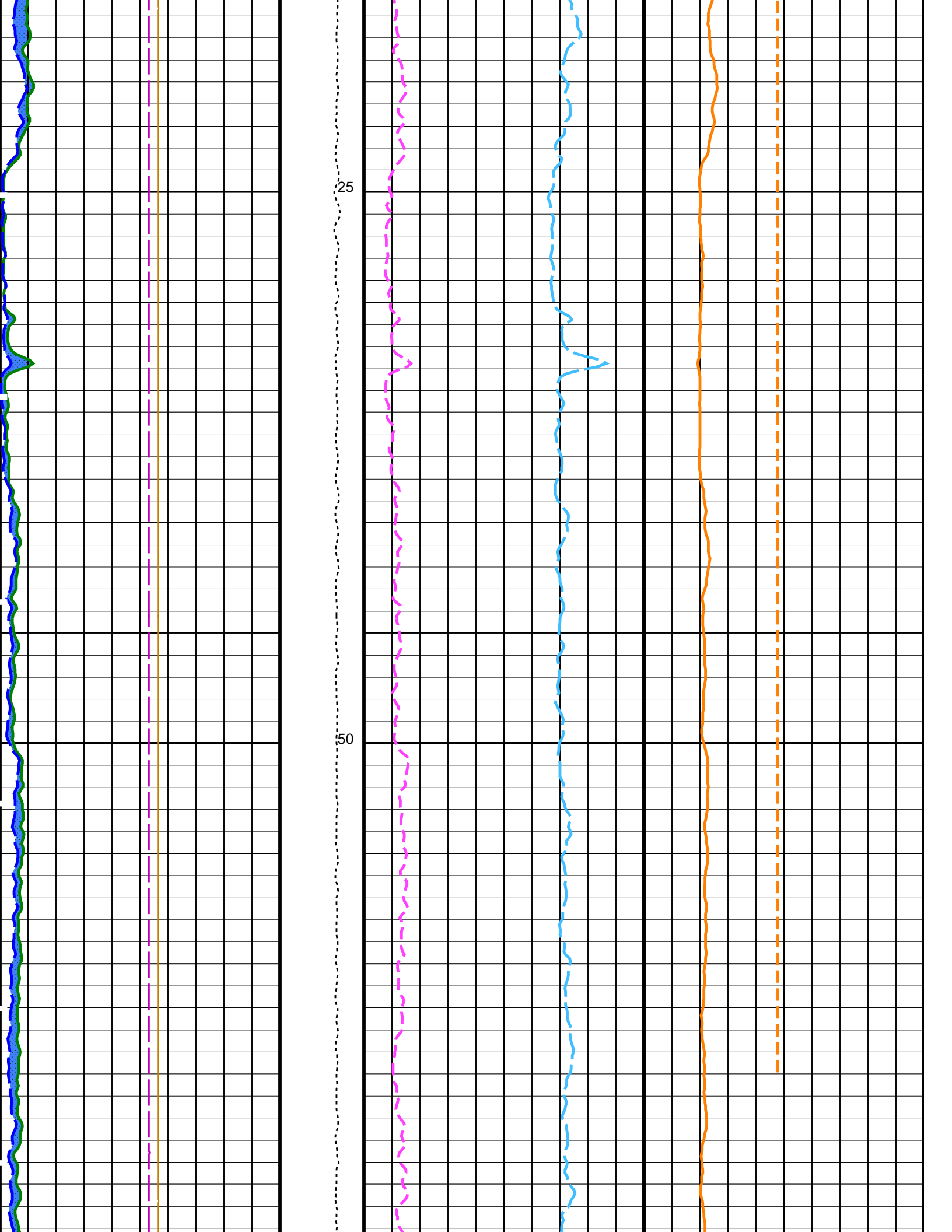
Caliper 2 (C2)		
6	(IN)	16

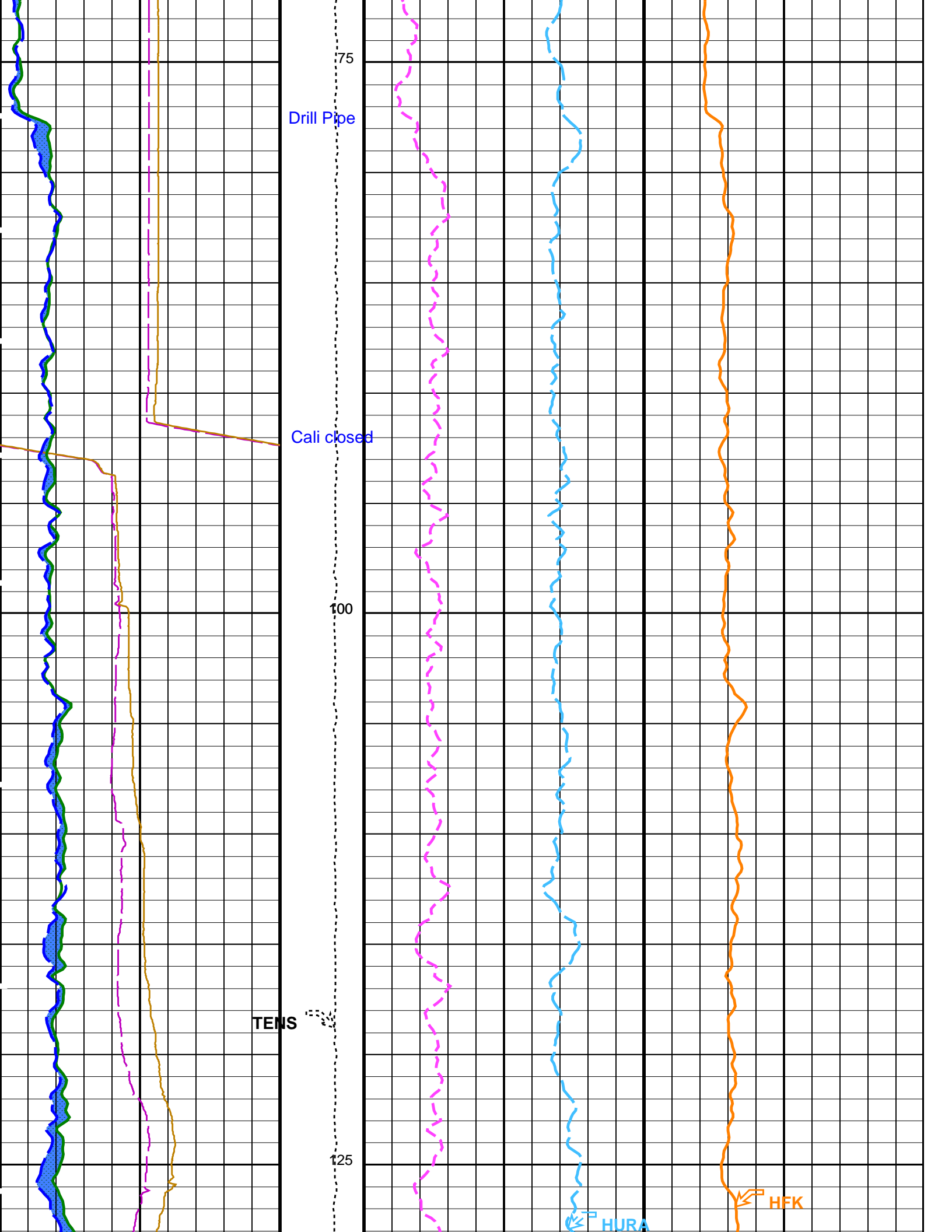
Uplog 2

HNGS Borehole Potassium (HBHK)		
-0.05	(-----)	0.05

HNGS Uranium (HURA)		
-5	(PPM)	10







Drill Pipe

Cali closed

TENS

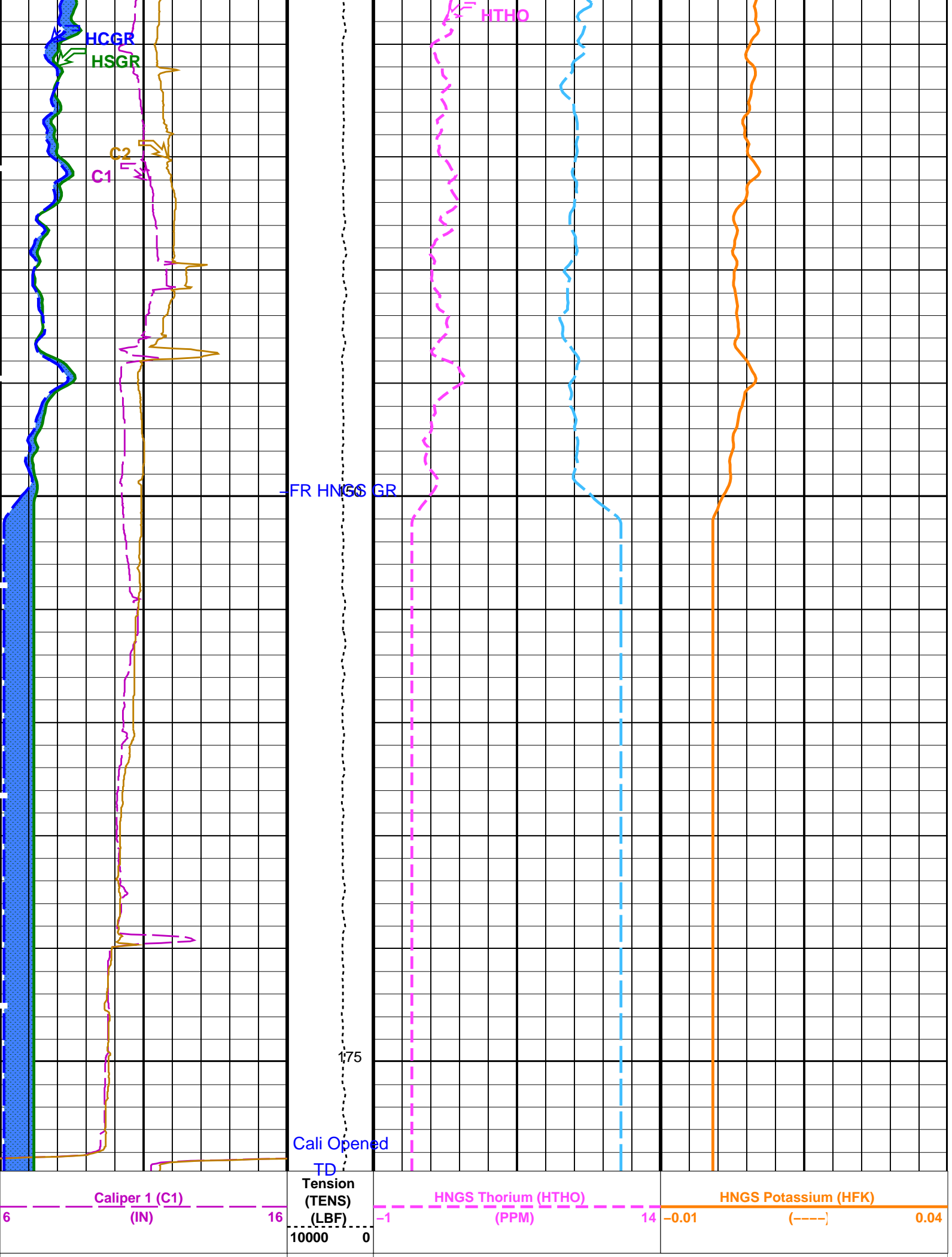
75

100

125

HURA

HFK



Caliper 2 (C2)		
6	(IN)	16
HNGS Computed Gamma Ray (HCGR)		
0	(GAPI)	100
Area1 From HCGR to HSGR		
HNGS Spectroscopy Gamma Ray (HSGR)		
0	(GAPI)	100

HNGS Uranium (HURA)		
-5	(PPM)	10
HNGS Borehole Potassium (HBHK)		
-0.05	(-----)	0.05

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
DSST-B: Dipole Shear Imager - B			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
HNGS-BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00357365	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.971763	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.901806	
System and Miscellaneous			
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.26	G/C3
DO	Depth Offset for Playback	-1514.0	M
PP	Playback Processing	NORMAL	

Format: HNGSYields Vertical Scale: 1:200

Graphics File Created: 11-Feb-2011 12:31

OP System Version: 17C0-154

MEST-B	SRPC-3971-Q1_2010_OP17	DTA-A	17C0-154
DSST-B	17C0-154	HNGC-B	SPC-3961-OP17_NUCL
HNGS-BA	SPC-3961-OP17_NUCL	DTC-H	17C0-154

Input DLIS Files

DEFAULT	FMS_DSI_NGS_032PUP	FN:48	PRODUCER	03-Feb-2011 08:31	1693.9 M	1478.4 M
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Output DLIS Files

DEFAULT	FMS_DSI_NGS_054PUP	FN:12	PRODUCER	11-Feb-2011 12:31
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Input DLIS Files

DEFAULT	FMS_DSI_NGS_031PUP	FN:47	PRODUCER	03-Feb-2011 08:24	1693.9 M	1583.7 M
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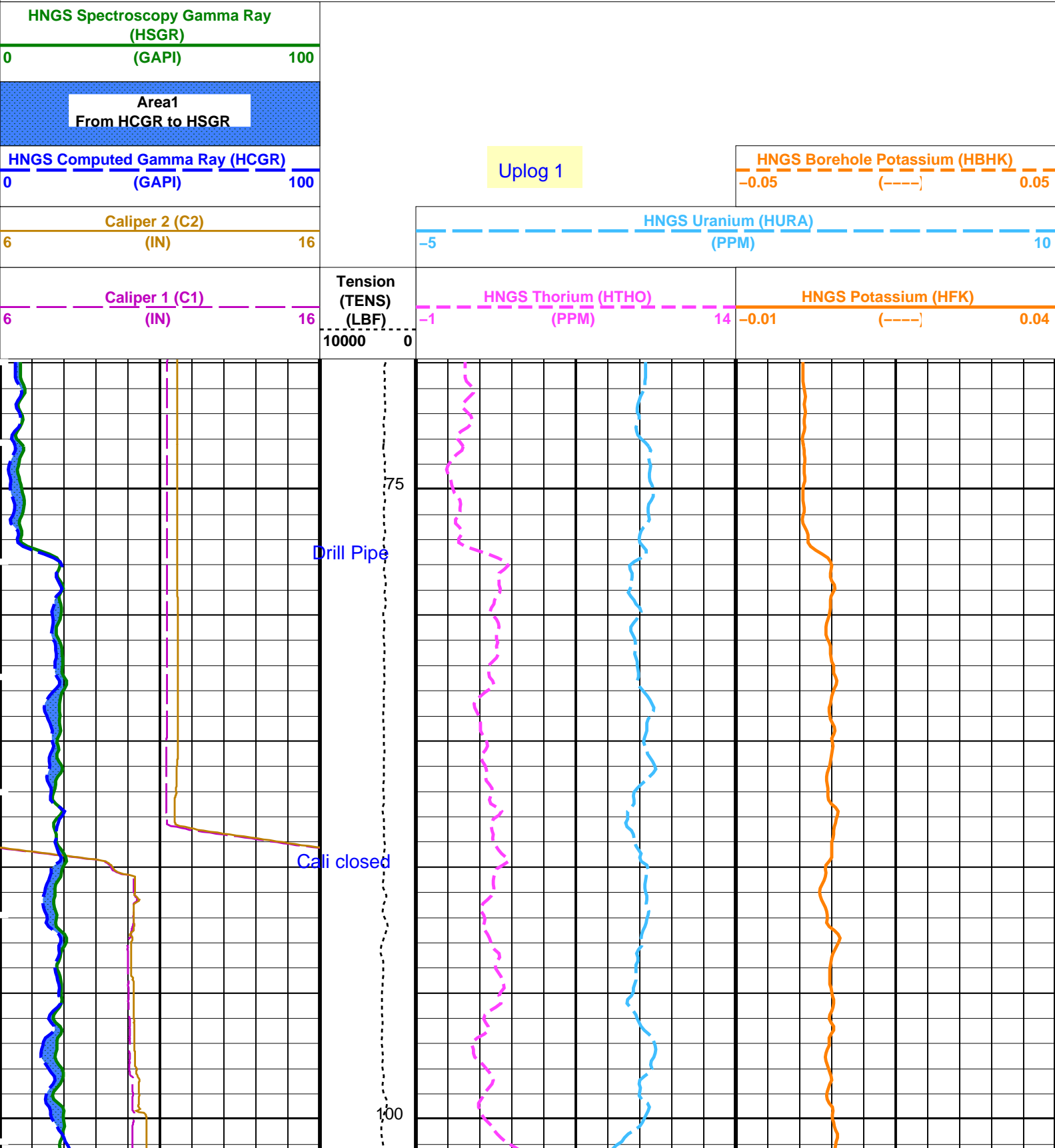
OP System Version: 17C0-154

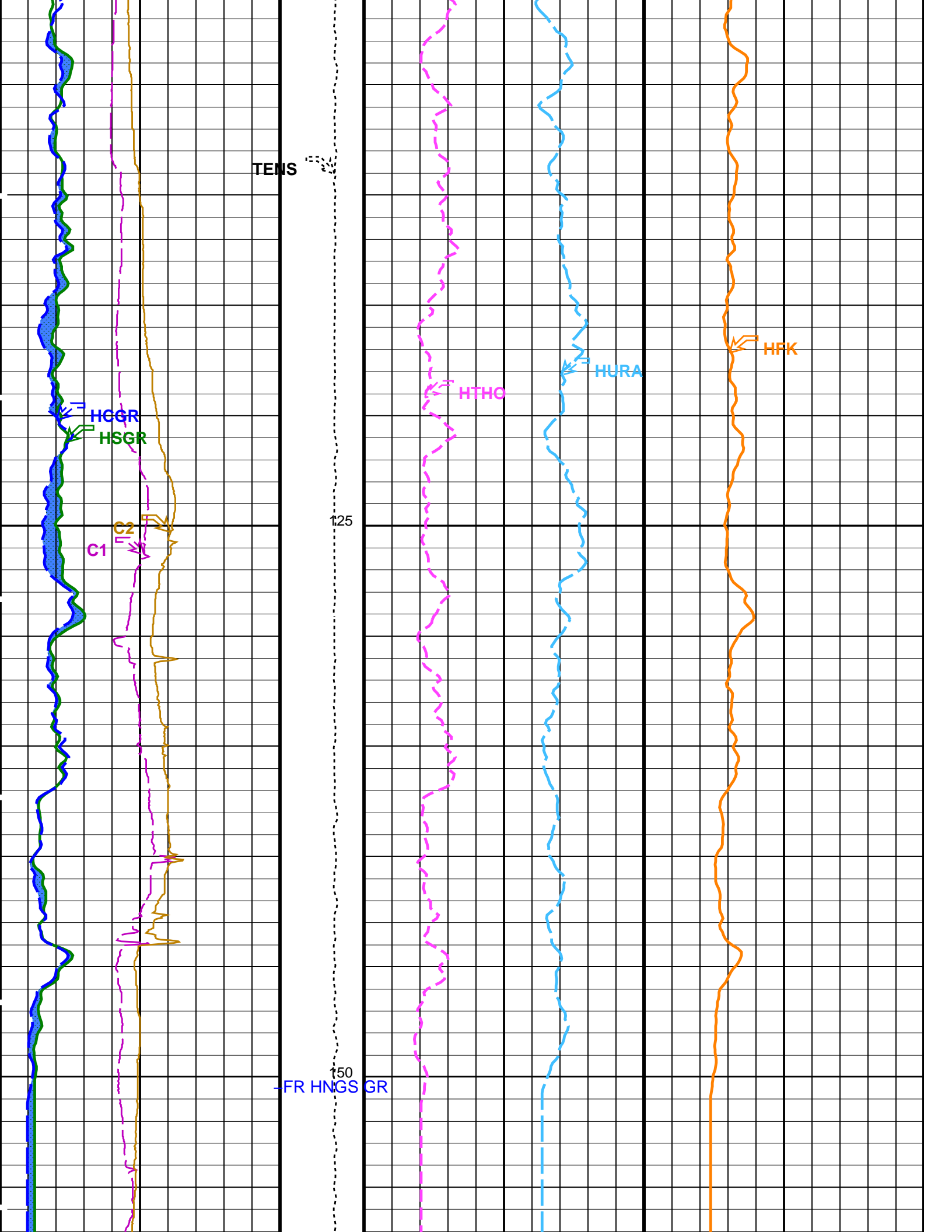
MEST-B SRPC-3971-Q1_2010_OP17
 DSST-B 17C0-154
 HNGS-BA SPC-3961-OP17_NUCL

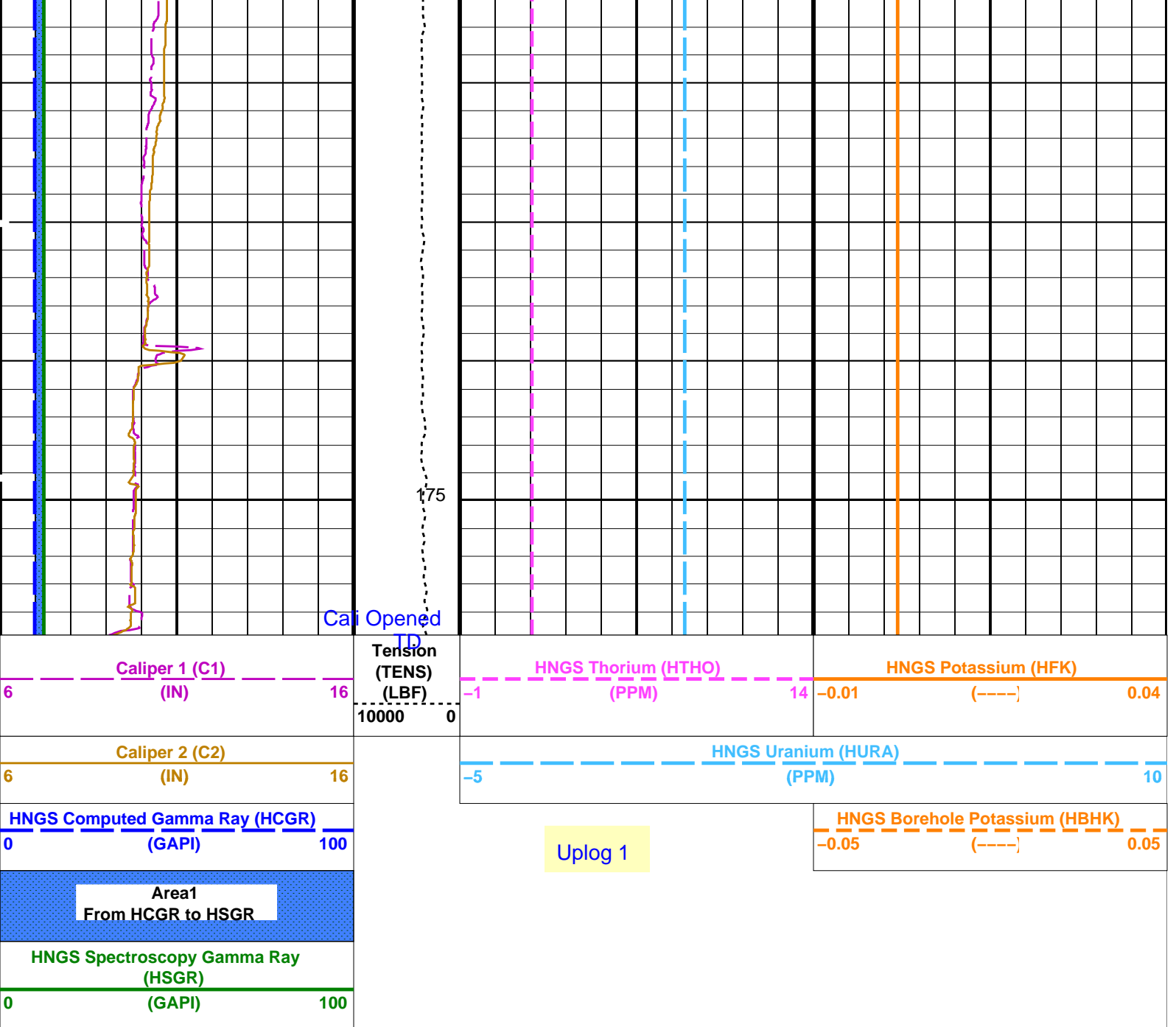
DTA-A 17C0-154
 HNGC-B SPC-3961-OP17_NUCL
 DTC-H 17C0-154

PIP SUMMARY

Time Mark Every 60 S







PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
	DSST-B: Dipole Shear Imager - B	
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
	HNGS-BA: Hostile Natural Gamma Ray Sonde	
BAR1	HNGS Detector 1 Barite Constant	1
BAR2	HNGS Detector 2 Barite Constant	1
BHK	HNGS Borehole Potassium Correction Concentration	0
BHS	Borehole Status	OPEN
CSD1	Inner Casing Outer Diameter	0 IN
CSD2	Outer Casing Outer Diameter	0 IN
CSW1	Inner Casing Weight	0 LB/F
CSW2	Outer Casing Weight	0 LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE
GCSE	Generalized Caliper Selection	BS
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW
HABK	HNGS Borehole Potassium Running Average	-0.00357365
HALF	HNGS Alpha Filter Length	60 IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE
HMWM	Mud Weighting Material	NATU

HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.971763	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.901806	
System and Miscellaneous			
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.26	G/C3
DO	Depth Offset for Playback	-1514.0	M
PP	Playback Processing	NORMAL	

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 11-Feb-2011 12:21

OP System Version: 17C0-154

MEST-B	SRPC-3971-Q1_2010_OP17	DTA-A	17C0-154
DSST-B	17C0-154	HNGC-B	SPC-3961-OP17_NUCL
HNGS-BA	SPC-3961-OP17_NUCL	DTC-H	17C0-154

Input DLIS Files

DEFAULT	FMS_DSI_NGS_031PUP	FN:47	PRODUCER	03-Feb-2011 08:24	1693.9 M	1583.7 M
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Output DLIS Files

DEFAULT	FMS_DSI_NGS_053PUP	FN:11	PRODUCER	11-Feb-2011 12:21		
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Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Micro Electrical Scanner - B (Slim) Wellsite Calibration - Caliper Calibration							
Before: Calibration out of date 26-Dec-2010 21:02							
Caliper 1 Zero Measurement	11.88	N/A	12.76	N/A	N/A	N/A	IN
Caliper 2 Zero Measurement	11.88	N/A	12.45	N/A	N/A	N/A	IN
Caliper 1 Plus Measurement	15.20	N/A	15.83	N/A	N/A	N/A	IN
Caliper 2 Plus Measurement	15.19	N/A	15.60	N/A	N/A	N/A	IN
Micro Electrical Scanner - B (Slim) 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	
Micro Electrical Scanner - B (Slim) 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 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

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

Coincidence Count Rate Ratio	1.000	1.001	0.9966	1.001	0.004621	0.05000
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Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration

Master: 10-Dec-2010 8:35

Na 511 Peak Set Point	40.00	41.00	--	--	--	--
Th Peak Loc	209.6	210.6	--	--	--	--
Th Peak Res	7.000	7.309	--	--	--	%
Background Count Rate	142.5	19.80	--	--	--	CPS
Gain Ratio	1.000	1.011	--	--	--	--

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration

Master: 10-Dec-2010 8:35

Na 511 Peak Set Point	40.00	41.00	--	--	--	--
Th Peak Loc	209.6	208.6	--	--	--	--
Th Peak Res	7.000	6.652	--	--	--	%
Background Count Rate	142.5	20.42	--	--	--	CPS
Gain Ratio	1.000	0.9993	--	--	--	--

Micro Electrical Scanner – B (Slim) / Equipment Identification

Primary Equipment:

MEST Sonde – B	MEDS – B	724
MEST Preamplifier Cartridge – AB	MEPC – AB	807
GPIT Cartridge – AC	GPIC – AC	840
MEST Acquisition Cartridge – A	MEAC – A	875

Auxiliary Equipment:

MEST-B Preamplifier Cartridge Housing	MEPH – A	702
MEST Acquisition Cartridge Housing (Slim)	MEAH – B	726

Hostile Natural Gamma Ray Cartridge – B / Equipment Identification

Primary Equipment:

HNGC Cartridge	HNGC – B	300
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Auxiliary Equipment:

HNGC Housing	HNGH – A	115
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Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:

HNGS Sonde	HNGS – BA	194
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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	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.66	Master		14.96	Master		1187
Before		39.55	Before		16.05	Before		1209
After		39.53	After		15.46	After		1178
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		141.8	Master		8.530	Master		25.35
Before		142.2	Before		9.021	Before		34.71
After		141.9	After		8.136	After		28.92
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	
Phase	Na Count Rate CPS	Value						

Master		27.13
Before		26.60
After		24.90
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)		
Master: 10-Dec-2010 8:35 Before: 25-Dec-2010 5:54 After: 2-Feb-2011 15:09		

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		39.72	Master		15.09	Master		1099
Before		39.62	Before		16.03	Before		1119
After		39.77	After		15.50	After		1109
37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)		
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		142.5	Master		8.852	Master		25.94
Before		141.3	Before		9.212	Before		35.42
After		142.1	After		7.977	After		30.69
135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)		
Phase	Na Count Rate CPS	Value						
Master		27.08						
Before		26.72						
After		24.88						
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)								
Master: 10-Dec-2010 8:35 Before: 25-Dec-2010 5:54 After: 2-Feb-2011 15:09								

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.001
Before		0.9966
After		1.001
0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		
Master: 10-Dec-2010 8:35		
Before: 25-Dec-2010 5:54		
After: 2-Feb-2011 15:09		

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		210.6	Master		7.309
38.00 (Minimum) 40.00 (Nominal) 43.00 (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		19.80	Master		1.011			
10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)					
Master: 10-Dec-2010 8:35								

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		208.6	Master		6.652
38.00 (Minimum) 40.00 (Nominal) 43.00 (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		20.42	Master	0.9993
10.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)	0.9400 (Minimum)	1.000 (Nominal)
				1.060 (Maximum)

Master: 10-Dec-2010 8:35

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
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Company: **Lamont Doherty**

Schlumberger

Well: **Expedition 330 Site U1376A**

Field: **Louisville Seamounts**

Rig: **JOIDES Resolution**

Ocean: **Pacific**

HNGS
Natural Gamma Ray
Spectroscopy