

# Schlumberger

**Company: Lamont Doherty**

**Well: Expedition 344, Site U1414A**  
**Field: Costa Rica Seismogenesis (CRISP-A2)**  
**Rig: JOIDES Resolution Ocean: Pacific**

**Hostile Natural Gamma Ray Sonde (HNGS)  
 Caliper**

**Rig:** JOIDES Resolution  
**Field:** Costa Rica Seismogenesis (CRISP-A2)  
**Location:** Latitude: N 8° 30.2304'  
**Well:** Expedition 344, Site U1414A  
**Company:** Lamont Doherty

<b>LOCATION</b>	Latitude: N 8° 30.2304'	Elev.: K.B. 11.00 m	
	Longitude: W 84° 13.5298'	G.L. -2458.00 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 W 84.22549	Latitude N 8.50384

Logging Date	9-Dec-2012		
Run Number	1		
Depth Driller	471.6 m		
Schlumberger Depth	416 m		
Bottom Log Interval	416 m		
Top Log Interval	0 m		
Casing Driller Size @ Depth	10.750 in	@	96 m
Casing Schlumberger	94 m		
Bit Size	9.875 in		
Type Fluid In Hole	Seawater Gel		
<b>MUD</b>	Density	Viscosity	1.025 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	@ 27	@ 27
Maximum Recorded Temperatures	27 degC		
Circulation Stopped	Time	9-Dec-2012	15:00
Logger On Bottom	Time	9-Dec-2012	21:00
Unit Number	Location	625003	Houston
Recorded By	K. Swain		
Witnessed By	A. Malinverno, S. Saito		

	Run 1	Run 2	Run 3
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			
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**  
 THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

**OTHER SERVICES1**

OS1: FMS/DSI  
 OS2: HNGS  
 OS3: HLDS  
 OS4: HRLA  
 OS5: UBI

**OTHER SERVICES2**

OS1:  
 OS2:  
 OS3:  
 OS4:  
 OS5:

**REMARKS: RUN NUMBER 1**

Hole was drilled with a 9 7/8" RCB bit to TDD of mbsf.  
 10 bbls of 10.5lb/gal heavy weight mud pumped at TD prior to bit release.

**REMARKS: RUN NUMBER 2**

All logs recorded via wireline thru 5-5.5" drillpipe and RCB coring BHA consisting of a bit release sub, Kinley sub, drill collars. The bit was released at TD prior to logging.




RUN 1		
SERVICE ORDER #:		
PROGRAM VERSION:	19C0-187	
FLUID LEVEL:		
LOGGED INTERVAL	START	STOP

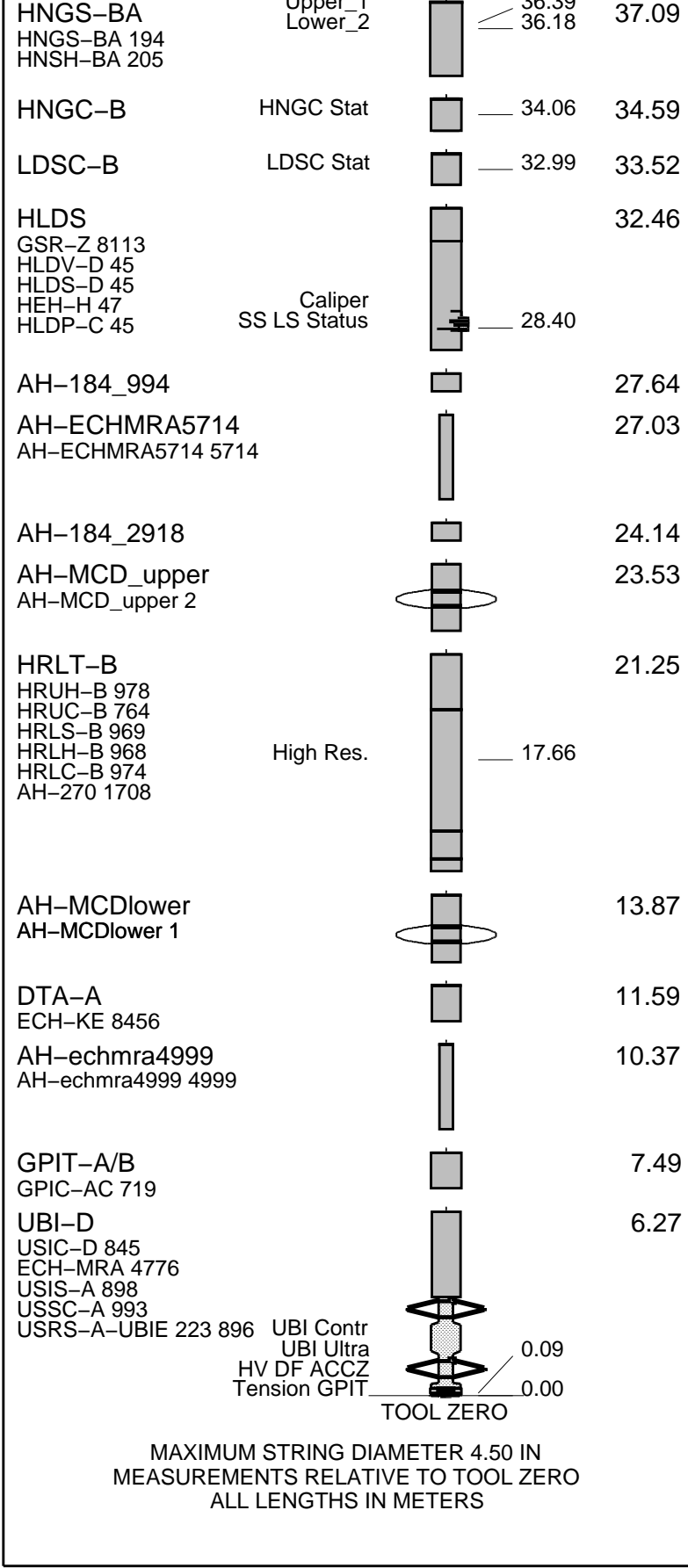
RUN 2		
SERVICE ORDER #:		
PROGRAM VERSION:		
FLUID LEVEL:		
LOGGED INTERVAL	START	STOP

**EQUIPMENT DESCRIPTION**

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

RUN 2	

DOWNHOLE EQUIPMENT			
LEH-MT	MDSB_EDTC		40.46
	Mud Tempe		39.07
	CTEM		38.00
AH-369	Gamma Ray		37.43
EDTC-B	EFTB DIAG		39.07
EDTH-B 8528	TelStatus		
EDTC-B 8529	EDTCB Ele		37.09
	Usoner 1		26.20

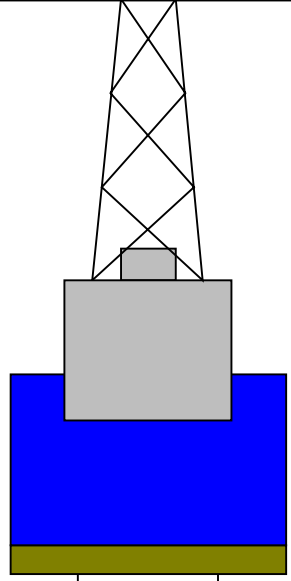


Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	MD	

Kelly Bushing Elevation  
Derrick Floor Elevation

Mean Sea Level

-2469  
-2469  
-2458



0 7.75 4.1

Sea Floor



0 8.25 3.80  
95.8 9.875

Sea Floor  
Open Hole

471.6

Total Depth

### Input DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_027LUP	FN:34	PRODUCER	10-Dec-2012 06:35	2798.1 M	2446.3 M
---------	-------------------------	-------	----------	-------------------	----------	----------

### Output DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_062PUP	FN:81	PRODUCER	11-Dec-2012 04:36	329.2 M	-22.7 M
---------	-------------------------	-------	----------	-------------------	---------	---------

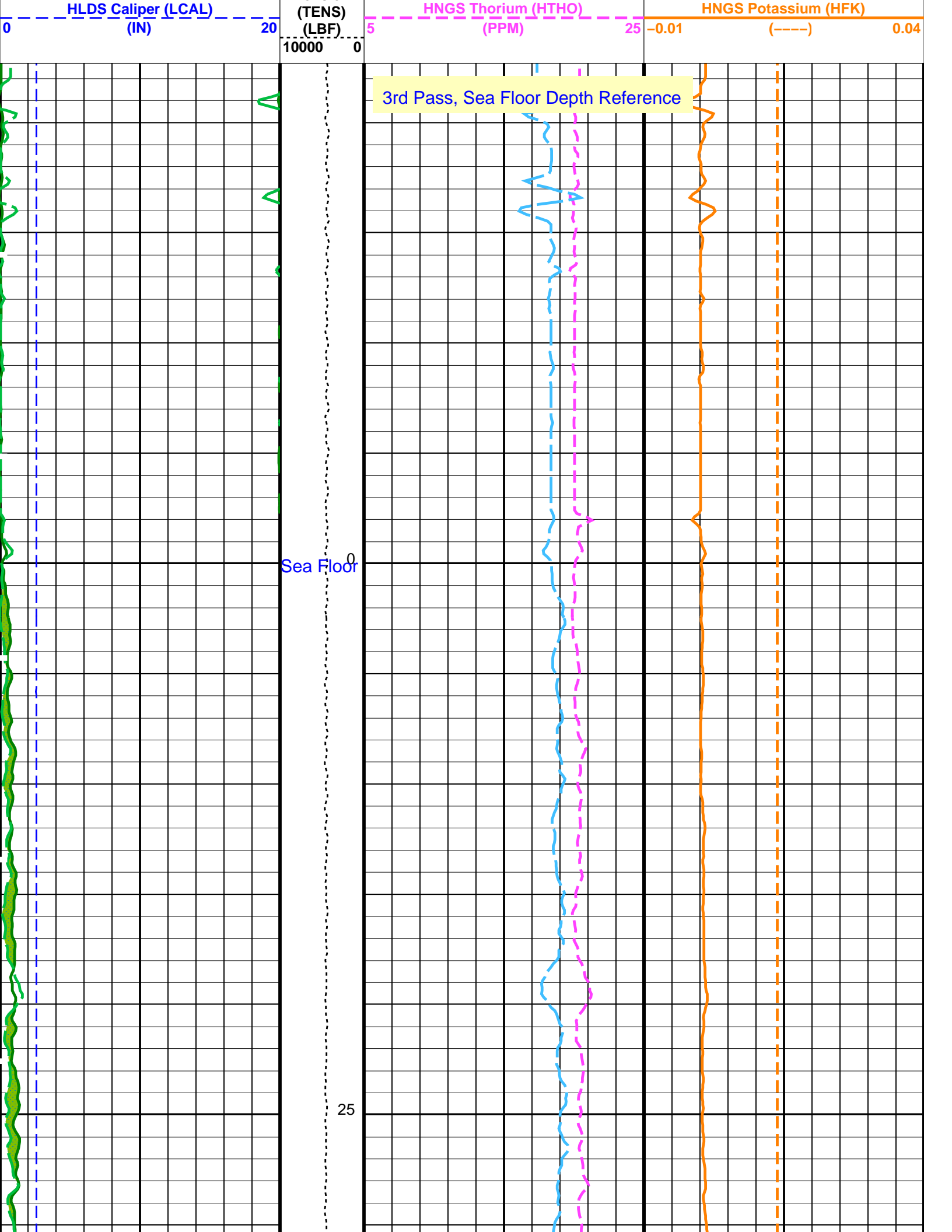
### OP System Version: 19C0-187

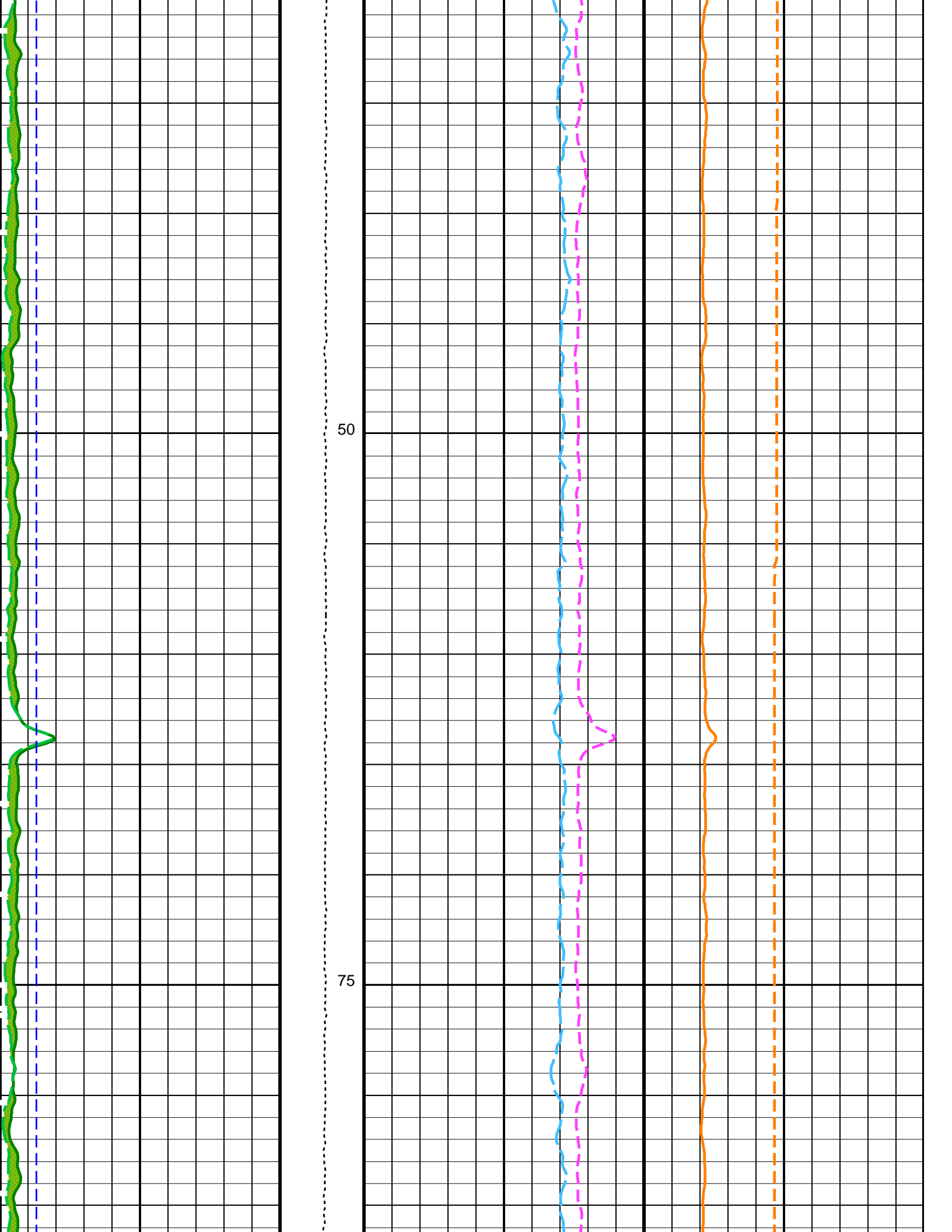
UBI-D	SRPC-5095-H2-2011-OP19	GPIT-A/B	19C0-187
DTA-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

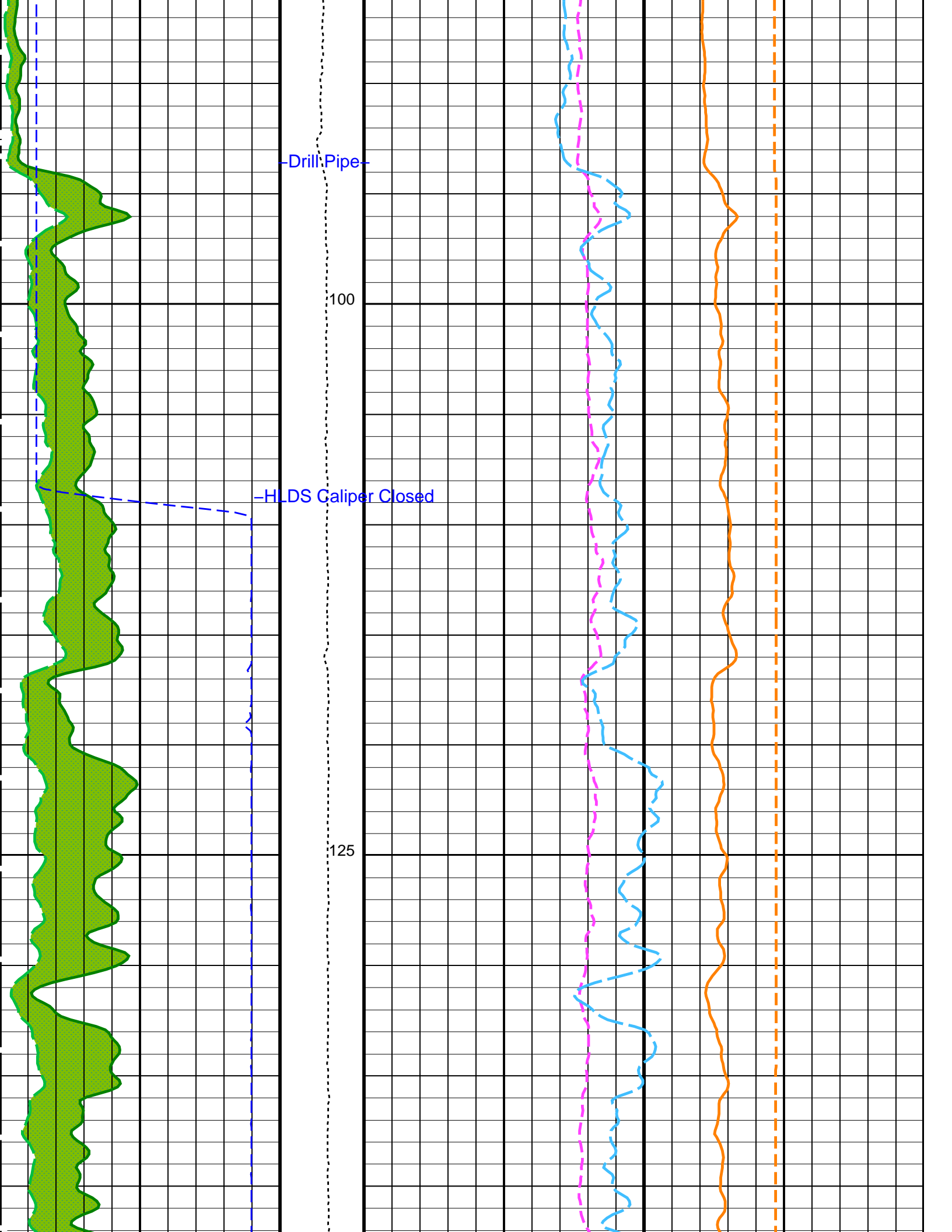
### PIP SUMMARY

Time Mark Every 60 S

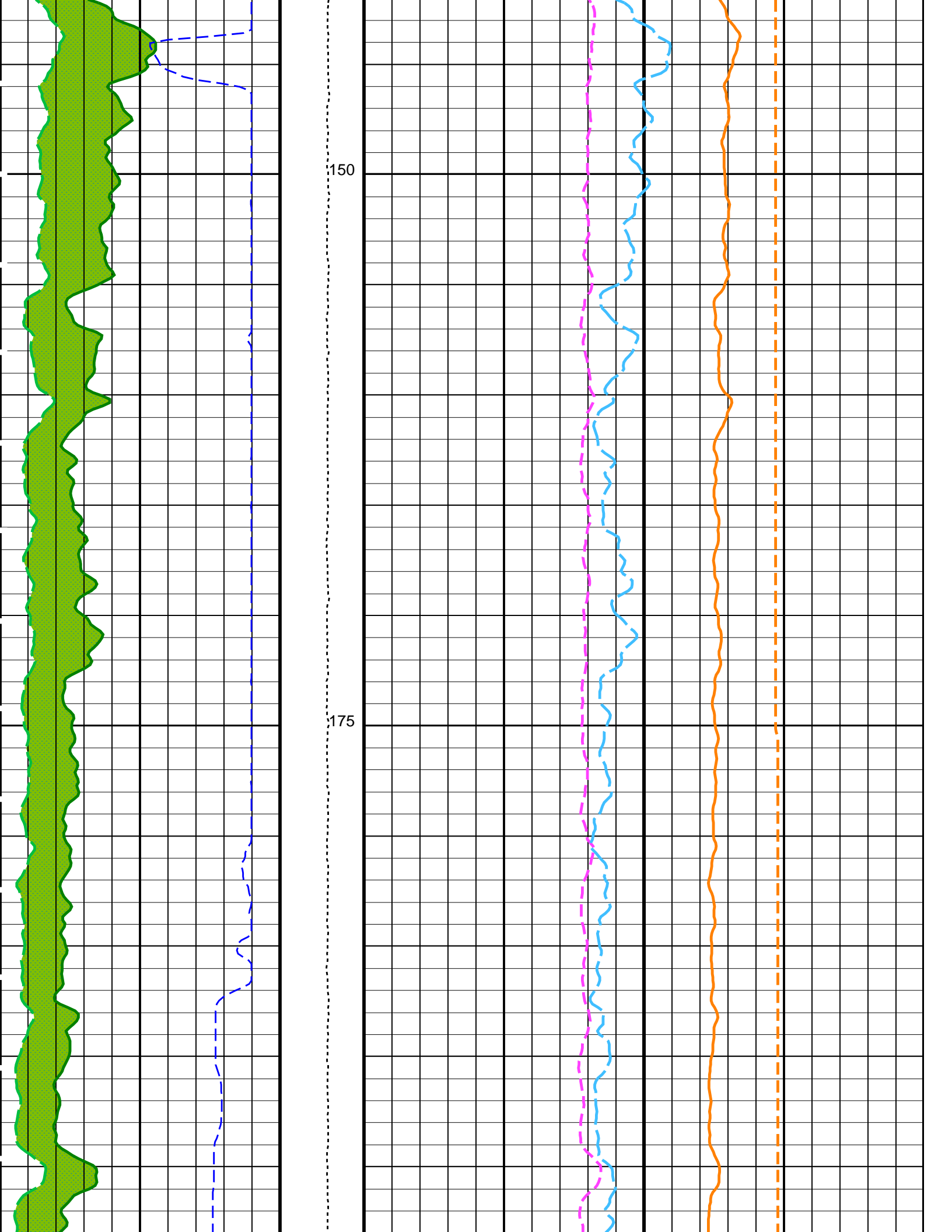


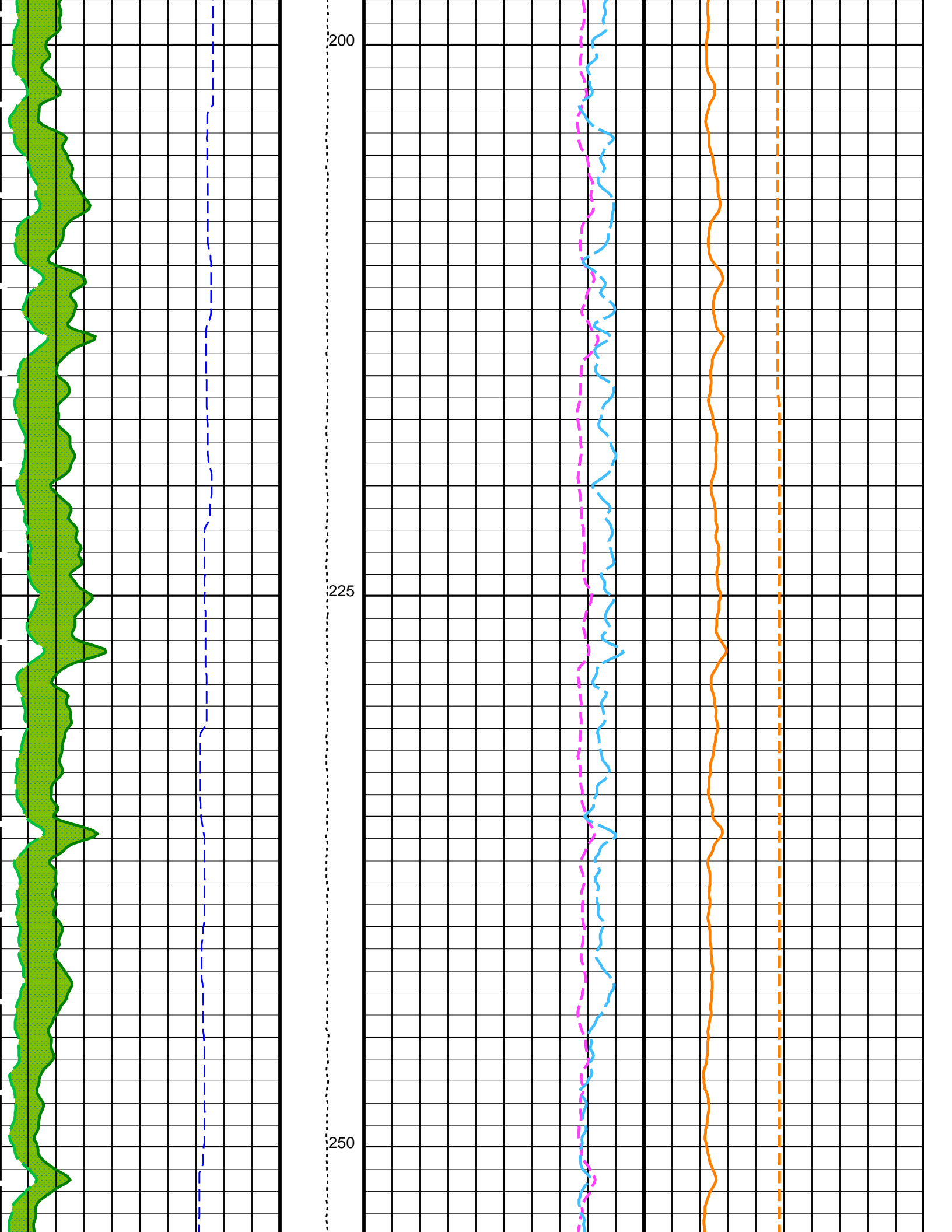


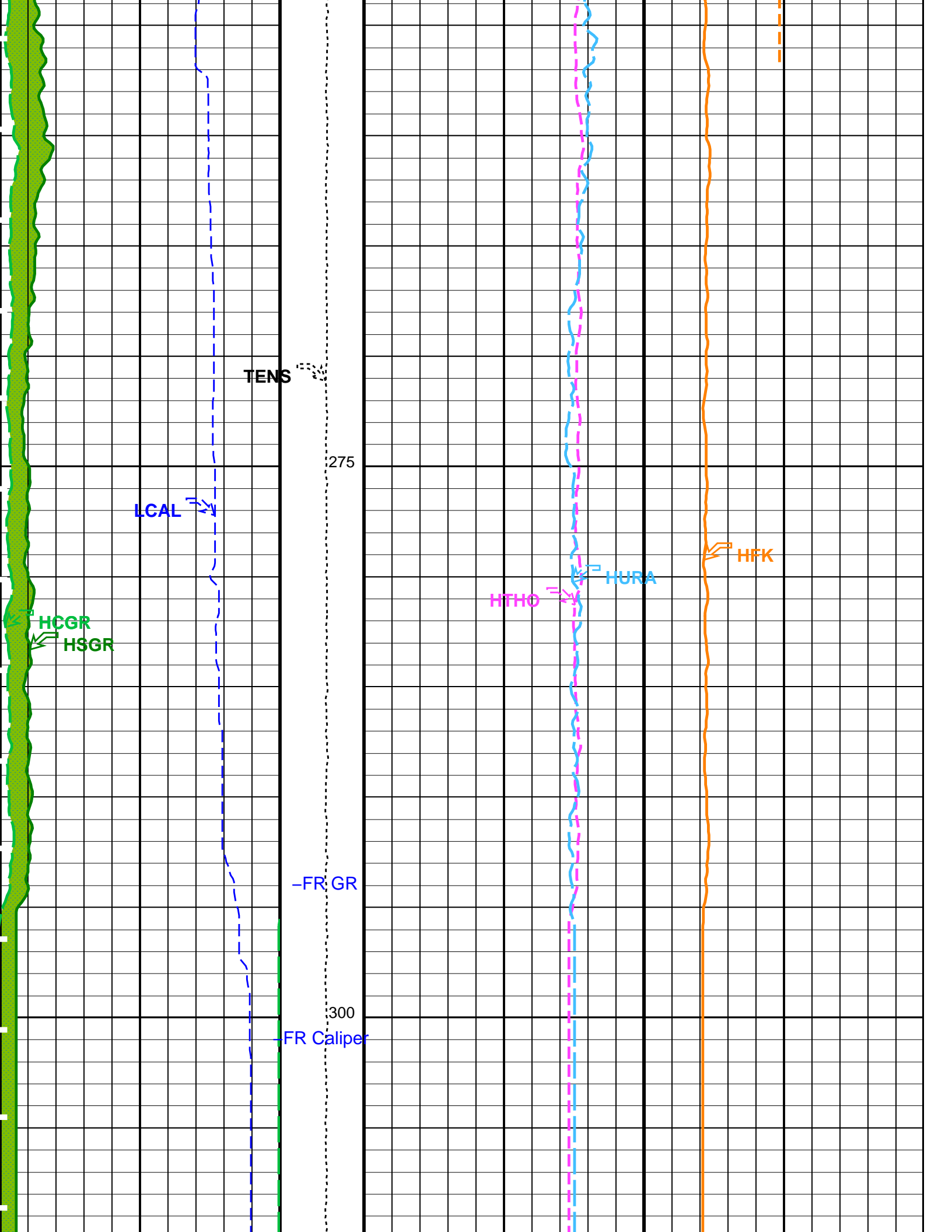


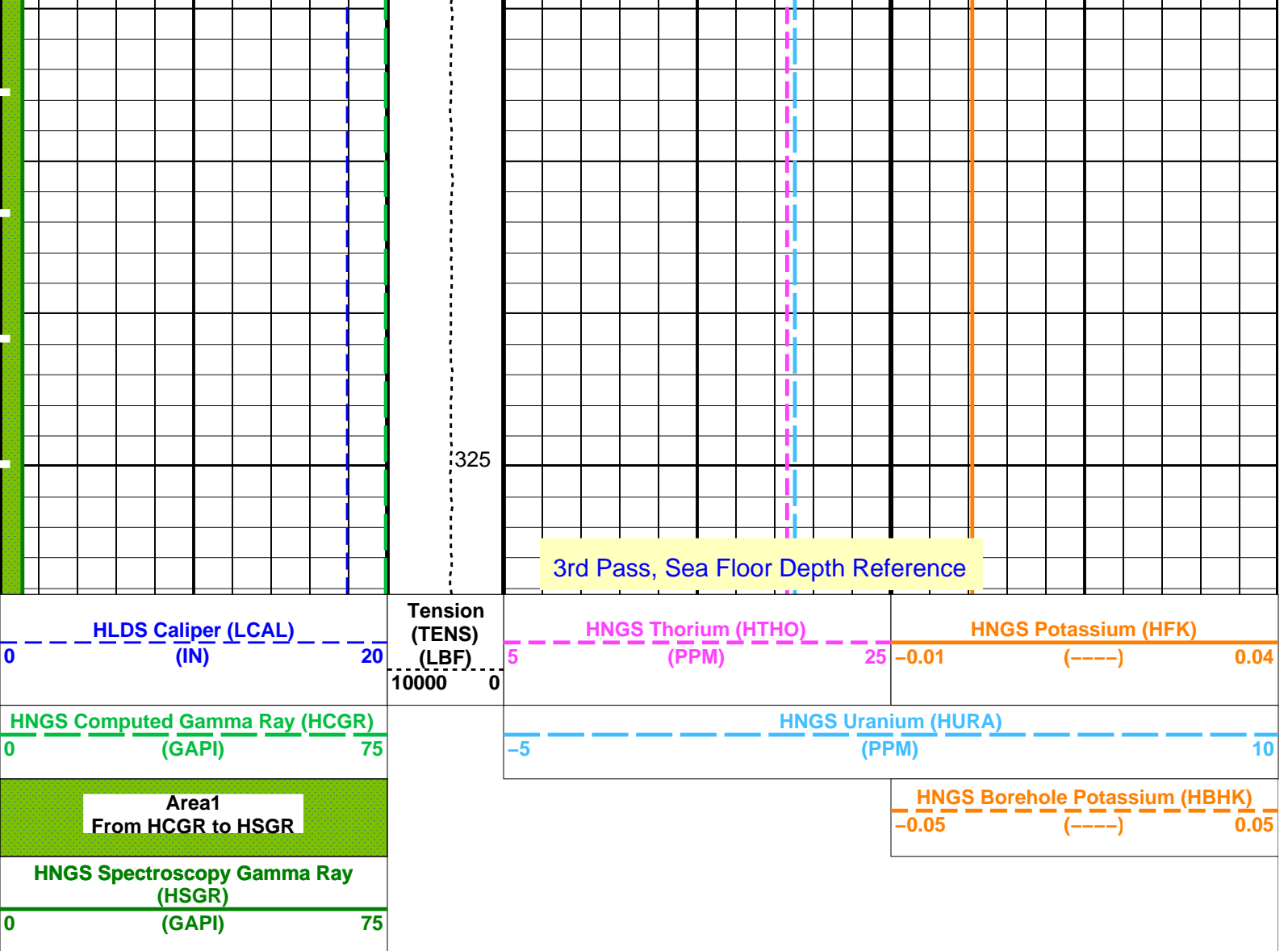












**PIP SUMMARY**

Time Mark Every 60 S

**Parameters**

DLIS Name	Description	Value	
HRLT-B: High Resolution Laterolog Array - 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	-0.00235707	
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	1.05984	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.03642	
EDTC-B: Enhanced DTS Cartridge			
BHS	Borehole Status	OPEN	

BS	Borehole Status	Generalized Caliper Selection	OPEN	BS
GCSE	System and Miscellaneous			
BS	Bit Size		11.500	IN
DFD	Drilling Fluid Density		1.02	G/C3
DO	Depth Offset for Playback		-2469.0	M
PP	Playback Processing		RECOMPUTE	

Format: HNGSYields    Vertical Scale: 1:200    Graphics File Created: 11-Dec-2012 04:36

### OP System Version: 19C0-187

UBI-D	SRPC-5095-H2-2011-OP19	GPIT-A/B	19C0-187
DTA-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

#### Input DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_027LUP	FN:34	PRODUCER	10-Dec-2012 06:35	2798.1 M	2446.3 M
---------	-------------------------	-------	----------	-------------------	----------	----------

#### Output DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_062PUP	FN:81	PRODUCER	11-Dec-2012 04:36		
---------	-------------------------	-------	----------	-------------------	--	--

#### Input DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_025LUP	FN:30	PRODUCER	10-Dec-2012 05:11	2887.2 M	2779.5 M
---------	-------------------------	-------	----------	-------------------	----------	----------

#### Output DLIS Files

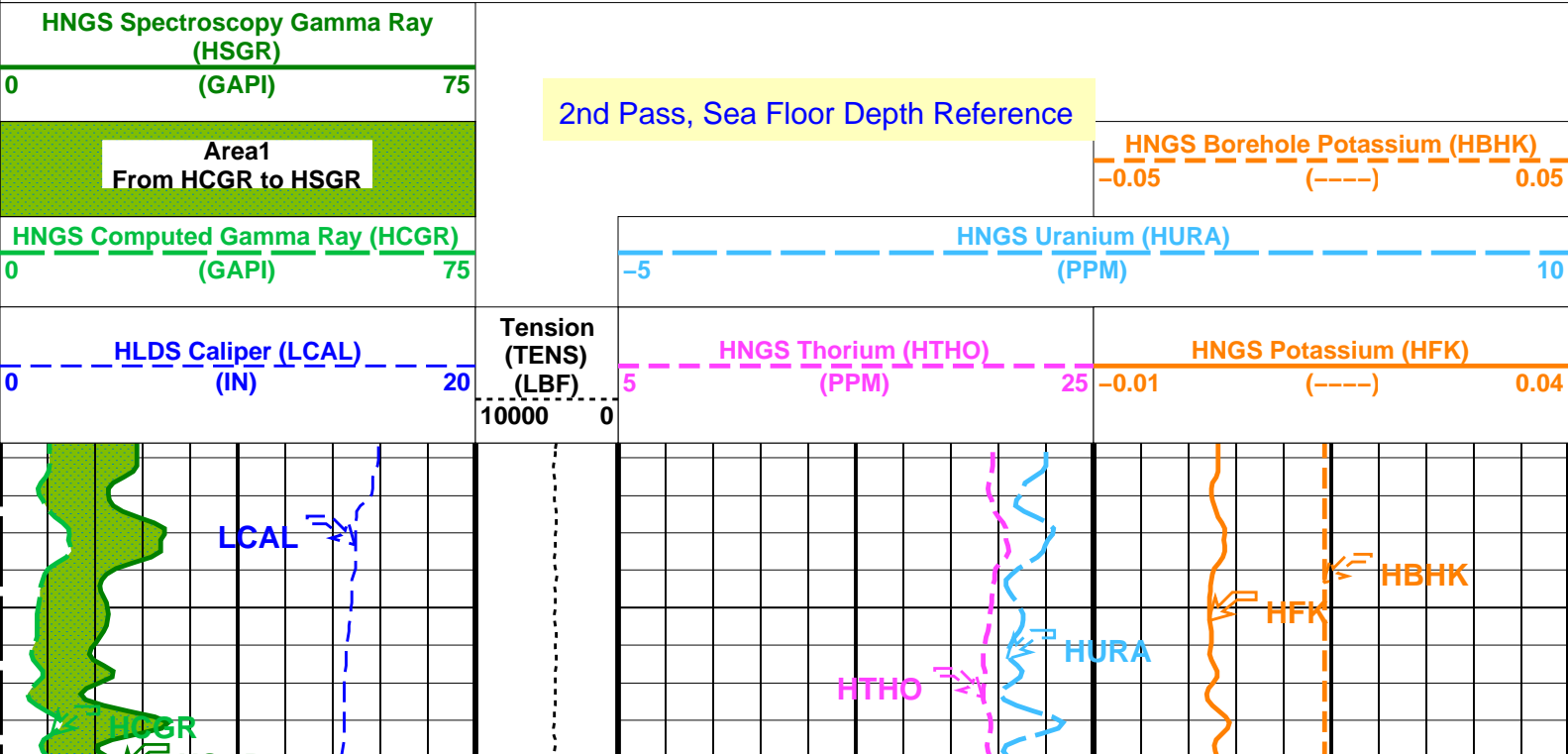
DEFAULT	UBI_HRLA_LDL_NGS_060PUP	FN:79	PRODUCER	11-Dec-2012 04:13	418.3 M	310.6 M
---------	-------------------------	-------	----------	-------------------	---------	---------

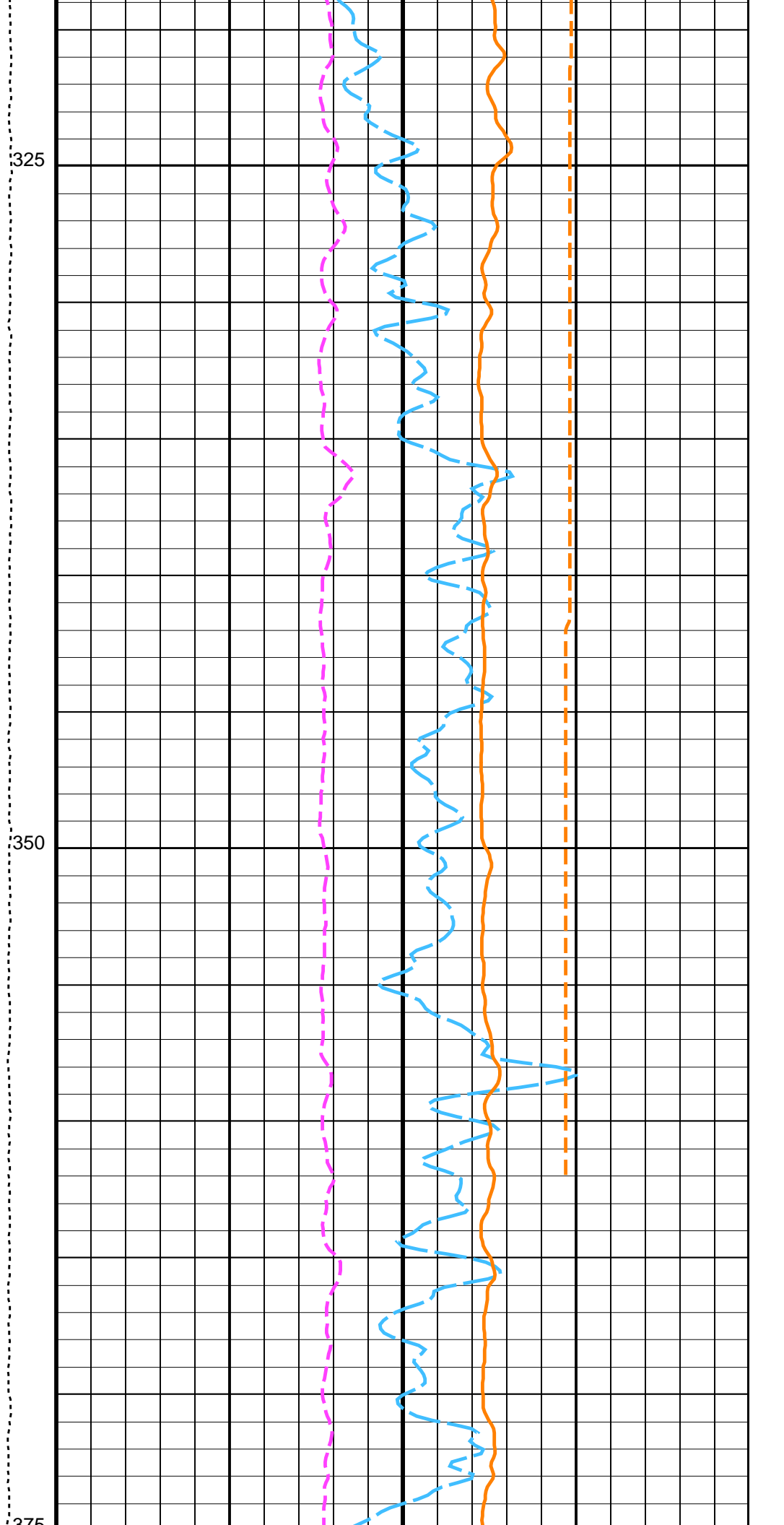
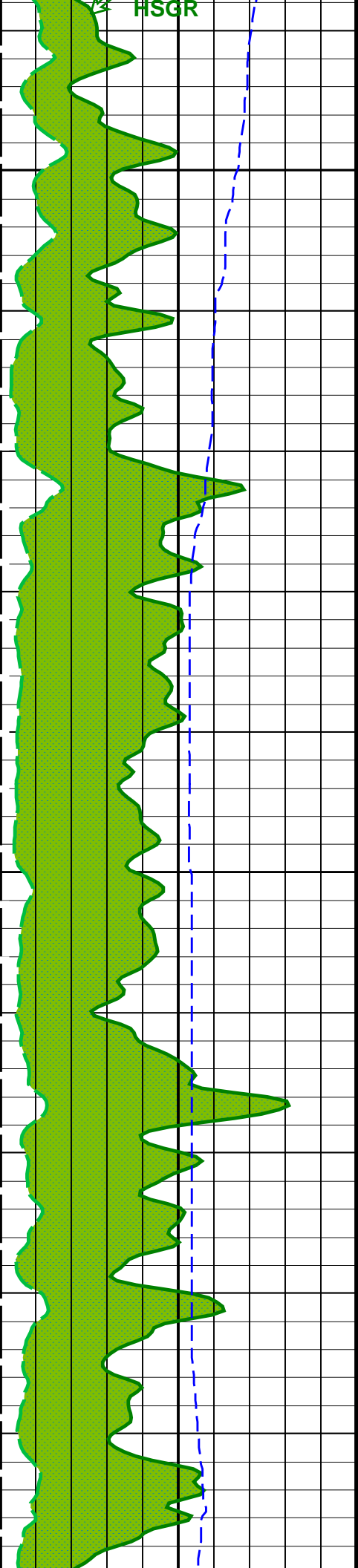
### OP System Version: 19C0-187

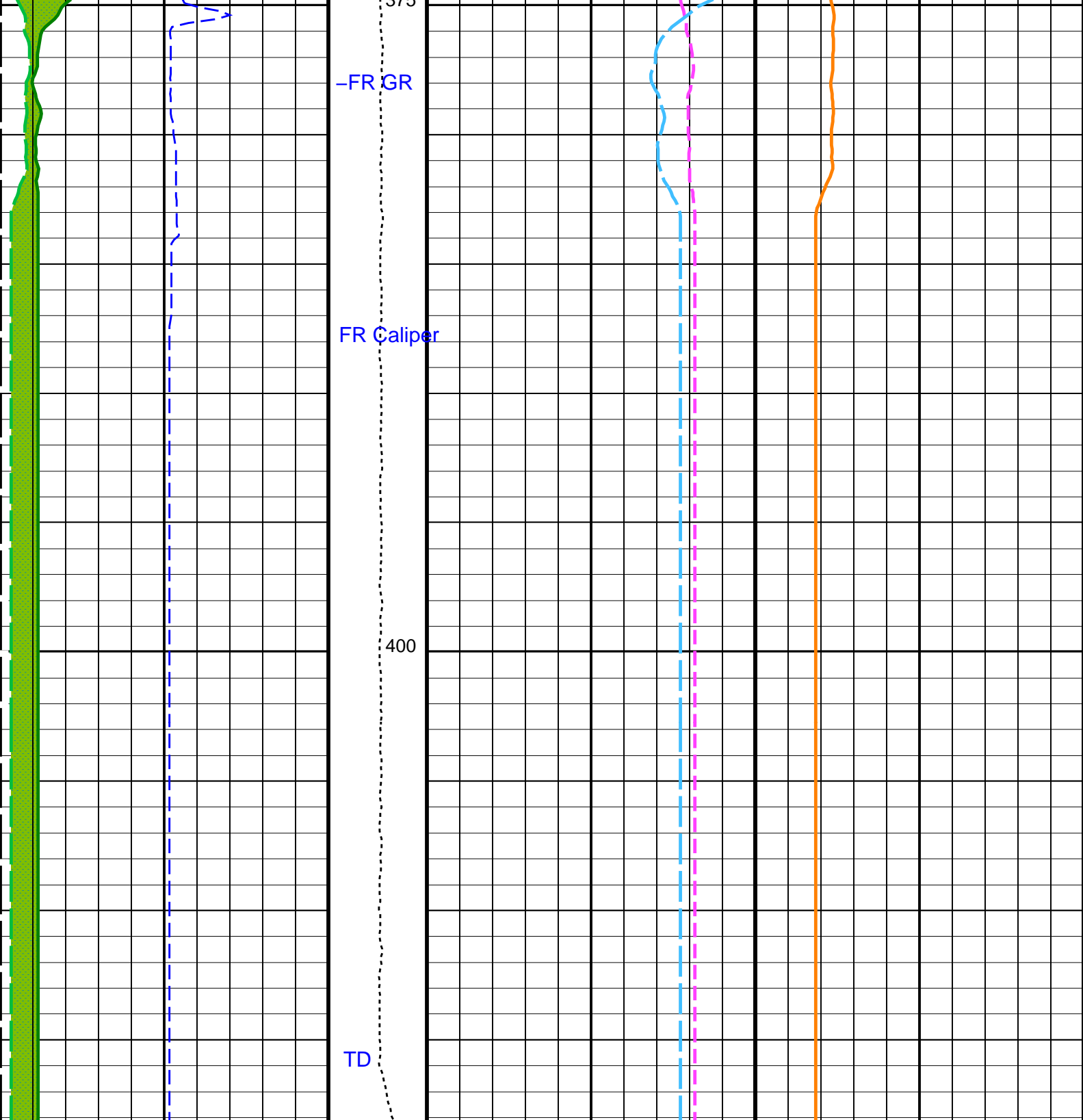
UBI-D	SRPC-5095-H2-2011-OP19	GPIT-A/B	19C0-187
DTA-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

#### PIP SUMMARY

Time Mark Every 60 S







0	HLDS Caliper (LCAL) (IN)	20
0	HNGS Computed Gamma Ray (HCGR) (GAPI)	75
<b>Area1</b> <b>From HCGR to HSGR</b>		
0	HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)	75

10000	Tension (TENS) (LBF)	0
5	HNGS Thorium (HTHO) (PPM)	25
-0.01	HNGS Potassium (HFK) (-----)	0.04
-5	HNGS Uranium (HURA) (PPM)	10
-0.05	HNGS Borehole Potassium (HBHK) (-----)	0.05

2nd Pass, Sea Floor Depth Reference

### Parameters

DLIS Name	Description	Value	
	HRLT-B: High Resolution Laterolog Array - 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	-0.00235707	
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	1.05984	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.03642	
	EDTC-B: Enhanced DTS Cartridge		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
	System and Miscellaneous		
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.02	G/C3
DO	Depth Offset for Playback	-2469.0	M
PP	Playback Processing	RECOMPUTE	

Format: HNGSYields    Vertical Scale: 1:200    Graphics File Created: 11-Dec-2012 04:13

### OP System Version: 19C0-187

UBI-D	SRPC-5095-H2-2011-OP19	GPIT-A/B	19C0-187
DTA-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

### Input DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_025LUP	FN:30	PRODUCER	10-Dec-2012 05:11	2887.2 M	2779.5 M
---------	-------------------------	-------	----------	-------------------	----------	----------

### Output DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_060PUP	FN:79	PRODUCER	11-Dec-2012 04:13		
---------	-------------------------	-------	----------	-------------------	--	--

### Input DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_024LUP	FN:28	PRODUCER	10-Dec-2012 03:45	2884.9 M	2608.6 M
---------	-------------------------	-------	----------	-------------------	----------	----------

### Output DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_059PUP	FN:78	PRODUCER	11-Dec-2012 03:23	416.1 M	139.6 M
---------	-------------------------	-------	----------	-------------------	---------	---------

### OP System Version: 19C0-187

UBI-D	SRPC-5095-H2-2011-OP19	GPIT-A/B	19C0-187
DTA-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187



PIP SUMMARY

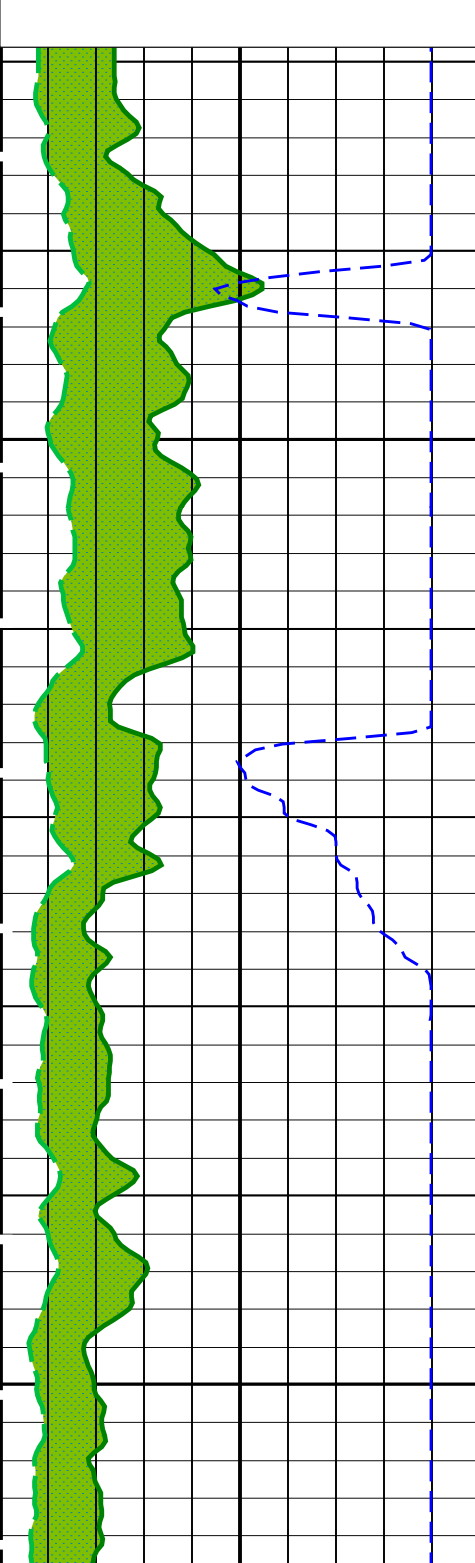
Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray (HSGR)  
(GAPI) 0 75

Area1  
From HCGR to HSGR

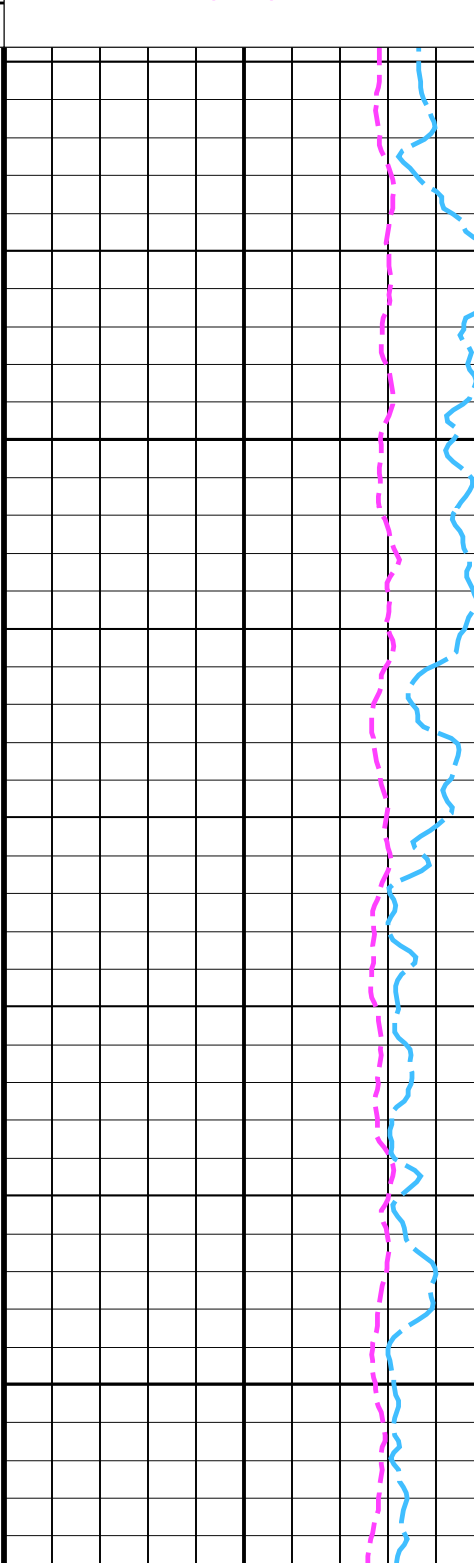
HNGS Computed Gamma Ray (HCGR)  
(GAPI) 0 75

HLDS Caliper (LCAL)  
(IN) 0 20



Tension (TENS)  
(LBF) 10000 0

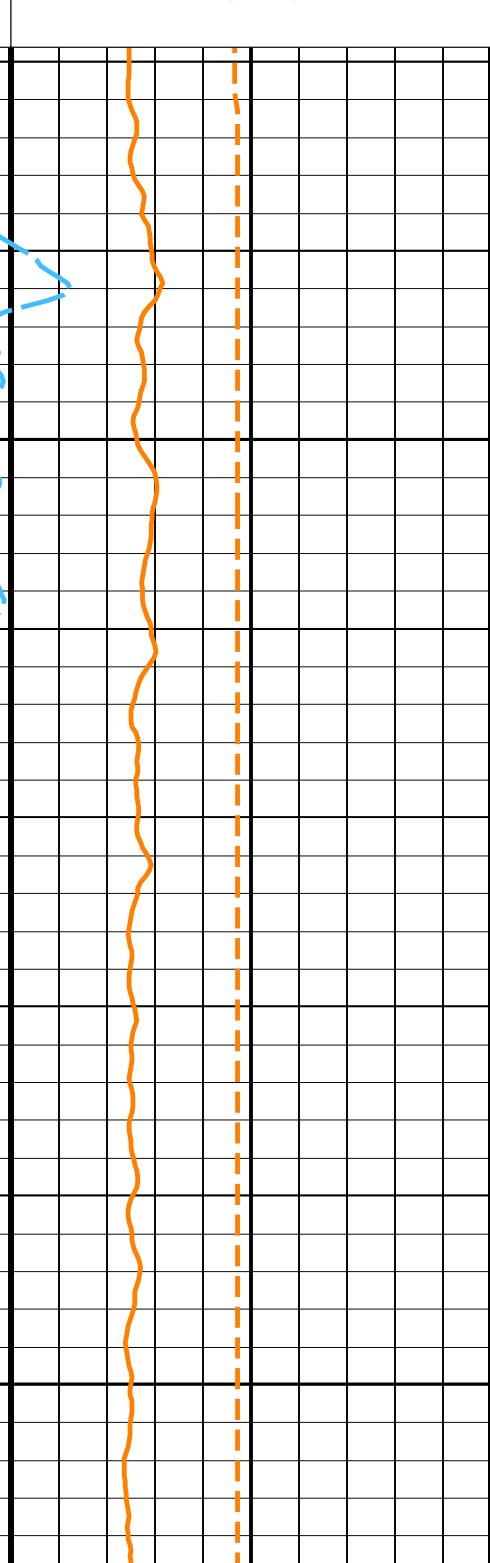
HNGS Thorium (HTHO)  
(PPM) 5 25



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

HNGS Uranium (HURA)  
(PPM) -5 10

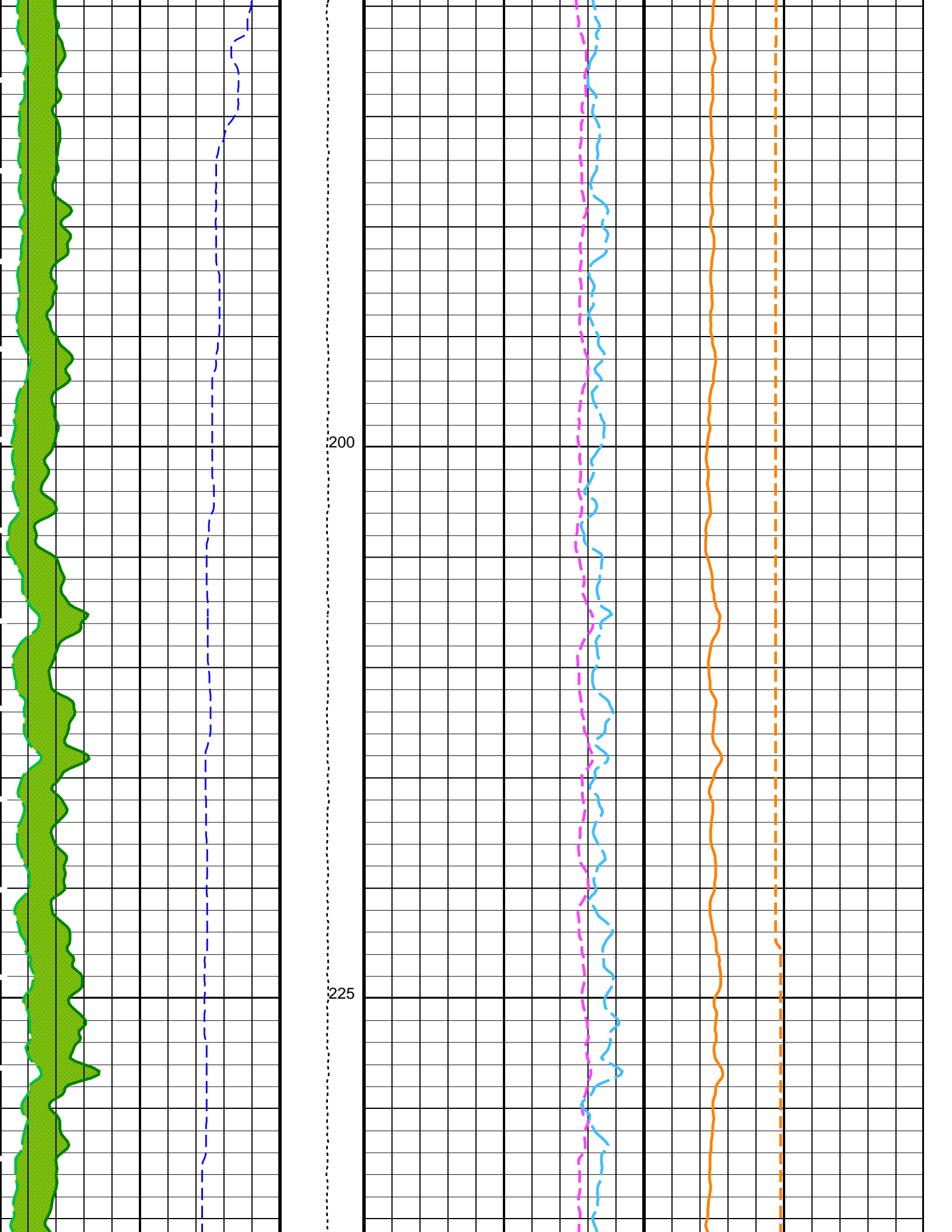
HNGS Potassium (HFK)  
-0.01 (----) 0.04

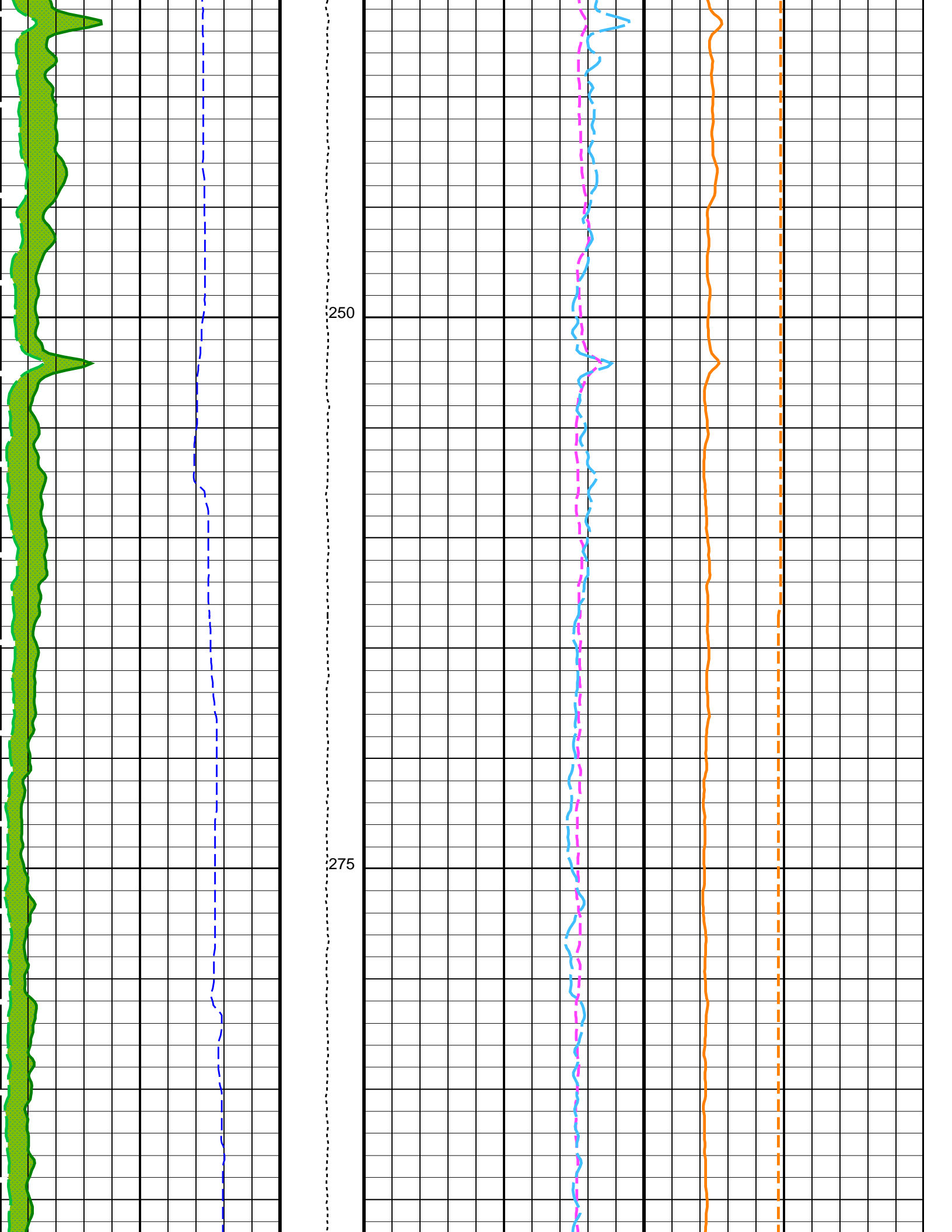


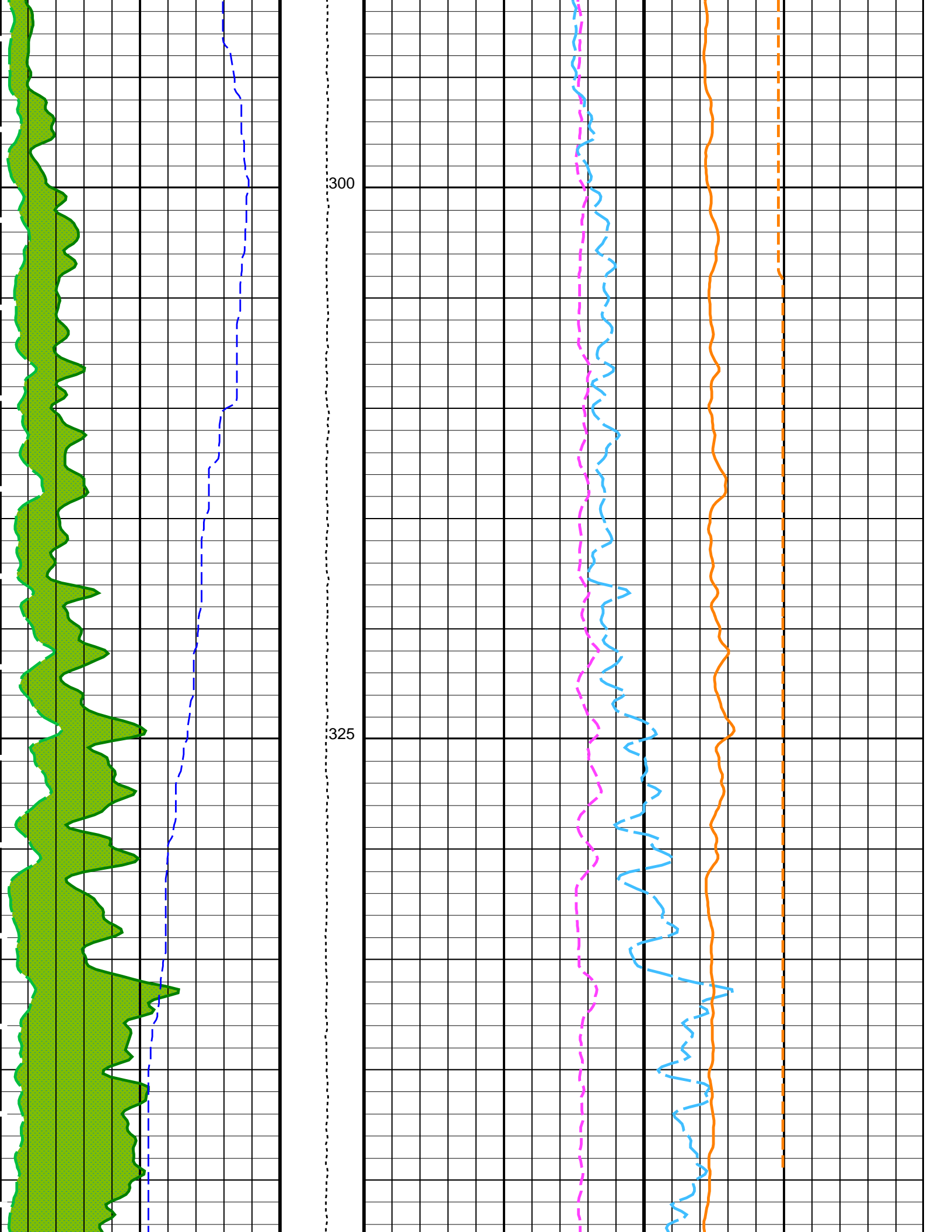
1st Pass, Sea Floor Depth Reference

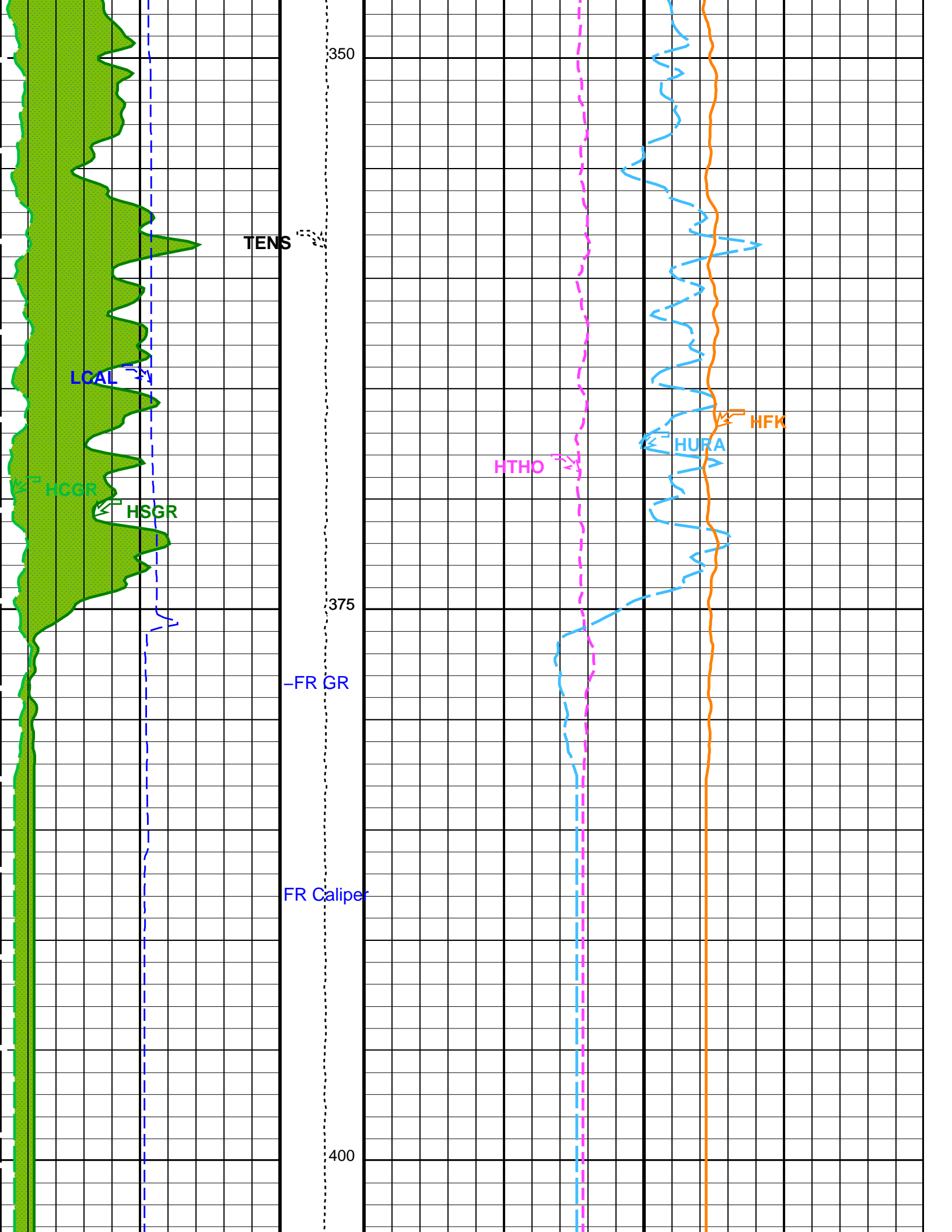
150

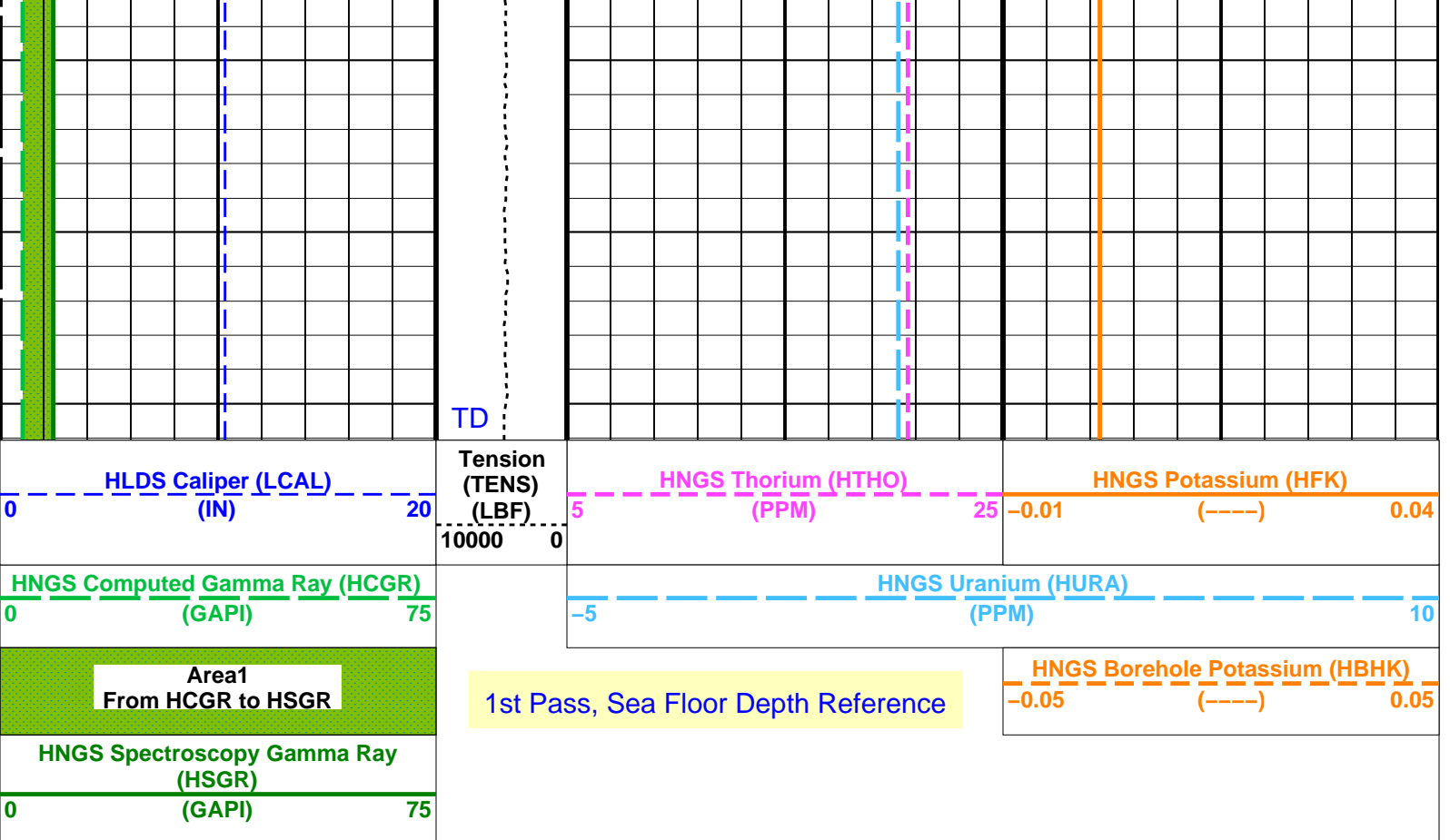
175











PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BHS	HRLT-B: High Resolution Laterolog Array - 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	-0.00235707
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	1.05984
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.03642
	EDTC-B: Enhanced DTS Cartridge	
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
	System and Miscellaneous	
BS	Bit Size	9.875 IN
DFD	Drilling Fluid Density	1.02 G/C3
DO	Depth Offset for Playback	-2469.0 M
PP	Playback Processing	RECOMPUTE

UBI-D	SRPC-5095-H2-2011-OP19	GPIT-A/B	19C0-187
DTA-A	19C0-187	HRLT-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
HNGC-B	19C0-187	HNGS-BA	19C0-187
EDTC-B	SKK-5169-EDTCB		

### Input DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_024LUP	FN:28	PRODUCER	10-Dec-2012 03:45	2884.9 M	2608.6 M
---------	-------------------------	-------	----------	-------------------	----------	----------

### Output DLIS Files

DEFAULT	UBI_HRLA_LDL_NGS_059PUP	FN:78	PRODUCER	11-Dec-2012 03:23
---------	-------------------------	-------	----------	-------------------

### Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
General Purpose Inclinerometer Wellsite Calibration – CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 10-Dec-2012 0:37							
TEMPERATURE REFERENCE :	N/A	N/A	20	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	92	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	10	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	448	N/A	N/A	N/A	

General Purpose Inclinerometer Wellsite Calibration – CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 10-Dec-2012 0:37							
TEMPERATURE REFERENCE :	N/A	N/A	19	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	99	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	12	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	428	N/A	N/A	N/A	

High Resolution Laterolog Array – B Wellsite Calibration – HRLT M01							
Before: 10-Dec-2012 0:38							
HRLT M0-M1 Voltage Plus – 0	0	N/A	-318.8	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 1	0	N/A	-328.0	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 2	0	N/A	-331.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 3	0	N/A	-335.1	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 4	0	N/A	-324.9	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 5	0	N/A	-321.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 6	0	N/A	320.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 7	0	N/A	-322.7	N/A	N/A	9.681	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT M12							
Before: 10-Dec-2012 0:38							
HRLT M1-M2 Voltage Plus – 0	0	N/A	1754	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 1	0	N/A	1803	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 2	0	N/A	1817	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 3	0	N/A	1838	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 4	0	N/A	1783	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 5	0	N/A	1765	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 6	0	N/A	-1768	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT M23							
Before: 10-Dec-2012 0:38							
HRLT M2-M3 Voltage Plus – 0	0	N/A	1739	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus – 1	0	N/A	1801	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus – 2	0	N/A	1815	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus – 3	0	N/A	1840	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus – 4	0	N/A	1779	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus – 5	0	N/A	1762	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus – 6	0	N/A	-1755	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus – 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT V34							
Before: 10-Dec-2012 0:38							
HRLT A3-A4 Voltage Plus – 0	0	N/A	68340	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus – 1	0	N/A	70570	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus – 2	0	N/A	71420	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus – 3	0	N/A	72680	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus – 4	0	N/A	70230	N/A	N/A	2100	UV

HRLT A3-A4 Voltage Plus - 5	0	N/A	69570	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 6	0	N/A	-67830	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V45

Before: 10-Dec-2012 0:38

HRLT A4-A5 Voltage Plus - 0	0	N/A	68610	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 1	0	N/A	70960	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 2	0	N/A	71780	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 3	0	N/A	73000	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 4	0	N/A	70510	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 5	0	N/A	69850	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 6	0	N/A	-68170	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V56

Before: 10-Dec-2012 0:38

HRLT A5-A6 Voltage Plus - 0	0	N/A	68500	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 1	0	N/A	70690	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 2	0	N/A	71540	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 3	0	N/A	72810	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 4	0	N/A	70380	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 5	0	N/A	69730	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 6	0	N/A	-67910	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VTP

Before: 10-Dec-2012 0:38

HRLT Torpedo-M0 Voltage - 0	0	N/A	-68190	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 1	0	N/A	-71000	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 2	0	N/A	-71840	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 3	0	N/A	-73090	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 4	0	N/A	-70580	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 5	0	N/A	-69890	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 6	0	N/A	68170	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VBD

Before: 10-Dec-2012 0:38

HRLT Bridle#9-M0 Voltage - 0	0	N/A	-68190	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 1	0	N/A	-70980	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 2	0	N/A	-71820	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 3	0	N/A	-73070	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 4	0	N/A	-70570	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 5	0	N/A	-69890	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 6	0	N/A	68150	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT ISO

Before: 10-Dec-2012 0:38

HRLT Source Current Plus - 0	0	N/A	284.4	N/A	N/A	8.520	UA
HRLT Source Current Plus - 1	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 2	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 3	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 4	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 5	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 6	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 7	0	N/A	281.1	N/A	N/A	8.520	UA

High Resolution Laterolog Array - B Wellsite Calibration - HRLT MV

Before: 10-Dec-2012 0:38

HRLT Vertical Voltage PI - 0	0	N/A	-321.0	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 1	0	N/A	-322.1	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 2	0	N/A	-324.7	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 3	0	N/A	-326.7	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 4	0	N/A	-314.2	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 5	0	N/A	-325.8	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 6	0	N/A	327.1	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 7	0	N/A	-322.7	N/A	N/A	9.681	UV

Hostile Litho-Density Sonde Wellsite Calibration - Background Measurement

Master: 7-Dec-2012 11:55 Before: 7-Dec-2012 12:33

SS Cs Resolution Bkg	9.000	7.949	7.955	N/A	N/A	1.800	%
LS Cs Resolution Bkg	9.000	8.113	8.160	N/A	N/A	1.800	%
LSW1 Background	100.0	72.58	72.10	N/A	N/A	0.03000	CPS
LSW2 Background	100.0	67.65	66.06	N/A	N/A	0.03000	CPS
LSW3 Background	200.0	147.1	146.7	N/A	N/A	0.03000	CPS
LSW4 Background	250.0	177.6	177.7	N/A	N/A	0.03000	CPS
LSW5 Background	600.0	407.1	409.7	N/A	N/A	0.03000	CPS
SSW1 Background	100.0	80.02	81.32	N/A	N/A	0.03000	CPS
SSW2 Background	200.0	142.3	142.8	N/A	N/A	0.03000	CPS
SSW3 Background	500.0	322.8	322.7	N/A	N/A	0.03000	CPS



SSW3 Background	500.0	388.2	386.7	N/A	N/A	0.03000	CPS
SSW4 Background	270.0	202.4	201.9	N/A	N/A	0.03000	CPS
SSW5 Background	200.0	144.6	145.9	N/A	N/A	0.03000	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Aluminum Measurement

Master: 7-Dec-2012 12:21

LSW1 Aluminum	600.0	507.4	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	724.7	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	879.9	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	444.9	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	403.6	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2408	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6511	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9016	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3596	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	428.8	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Lithology Measurement

Master: 7-Dec-2012 12:16

LSW1 Iron	400.0	347.4	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	585.7	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	778.9	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	401.8	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	371.0	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1752	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5436	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8225	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3288	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	377.3	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Caliper Calibration

Before: 6-Dec-2012 8:57

HLDS Caliper Small Ring	12.00	N/A	15.67	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	19.35	N/A	N/A	N/A	IN

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check

Master: 9-Dec-2012 2:05 Before: 9-Dec-2012 2:13

Na 511 Peak Loc	40.00	39.52	39.56	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.12	15.91	N/A	N/A	2.000	%
High Voltage	1150	1182	1182	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.4	141.8	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	9.181	9.123	N/A	N/A	2.000	%
Temperature	15.50	31.95	31.97	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	16.45	16.74	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check

Master: 9-Dec-2012 2:05 Before: 9-Dec-2012 2:13

Na 511 Peak Loc	40.00	39.48	39.56	N/A	N/A	1.000	
Na 511 Peak Res	15.50	15.87	16.16	N/A	N/A	2.000	%
High Voltage	1150	1114	1115	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.4	141.9	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	9.230	9.385	N/A	N/A	2.000	%
Temperature	15.50	32.68	32.75	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	16.90	17.23	N/A	N/A	8.000	CPS

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

Master: 9-Dec-2012 2:05 Before: 9-Dec-2012 2:13

Coincidence Count Rate Ratio	1.000	0.9742	0.9644	N/A	N/A	0.05000	
------------------------------	-------	--------	--------	-----	-----	---------	--

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration

Master: 9-Dec-2012 1:59

Na 511 Peak Set Point	40.00	41.00	---	---	---	---	
Th Peak Loc	209.6	210.5	---	---	---	---	
Th Peak Res	7.000	7.000	---	---	---	---	%
Background Count Rate	142.5	17.93	---	---	---	---	CPS
Gain Ratio	1.000	1.013	---	---	---	---	

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration

Master: 9-Dec-2012 1:59

Na 511 Peak Set Point	40.00	41.00	---	---	---	---	
Th Peak Loc	209.6	209.2	---	---	---	---	
Th Peak Res	7.000	7.038	---	---	---	---	%
Background Count Rate	142.5	18.43	---	---	---	---	CPS
Gain Ratio	1.000	1.008	---	---	---	---	

Enhanced DTS Cartridge Wellsite Calibration – EDTC Accelerometer Calibration

Before: 10-Dec-2012 0:38

EDTC Z-Axis Acceleration	9.810	N/A	9.816	N/A	N/A	N/A	M/S2
--------------------------	-------	-----	-------	-----	-----	-----	------

Enhanced DTS Cartridge Wellsite Calibration – Detector Calibration

Before: 9-Dec-2012 2:15

Gamma Ray (Jiq – Bka)	162.4	N/A	162.4	N/A	N/A	14.77	GAPI
-----------------------	-------	-----	-------	-----	-----	-------	------



Master		39.52	Master		16.12	Master		1182
Before		39.56	Before		15.91	Before		1182
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		142.4	Master		9.181	Master		31.95
Before		141.8	Before		9.123	Before		31.97
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		16.45						
Before		16.74						
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)								
Master: 9-Dec-2012 2:05				Before: 9-Dec-2012 2:13				

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		39.48	Master		15.87	Master		1114
Before		39.56	Before		16.16	Before		1115
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		142.4	Master		9.230	Master		32.68
Before		141.9	Before		9.385	Before		32.75
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		16.90						
Before		17.23						
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)								
Master: 9-Dec-2012 2:05				Before: 9-Dec-2012 2:13				

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		0.9742
Before		0.9644
0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		
Master: 9-Dec-2012 2:05		
Before: 9-Dec-2012 2:13		

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		210.5	Master		7.000
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		17.93	Master		1.013			
10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)					
Master: 9-Dec-2012 1:59								

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		209.2	Master		7.038
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		18.43	Master		1.008	
	10.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)	0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)

Master: 9-Dec-2012 1:59

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG - A/B	77693
Enhanced DTS Cartridge	EDTC - B	8529
Auxiliary Equipment:		
EDTC Housing	EDTH - B	8528

Enhanced DTS Cartridge Wellsite Calibration			
EDTC Accelerometer Calibration			
Phase	EDTC Z-Axis Acceleration M/S2	Value	
Before		9.816	
	9.610 (Minimum)	9.810 (Nominal)	10.01 (Maximum)

Before: 10-Dec-2012 0:38

Enhanced DTS Cartridge Wellsite Calibration											
Detector Calibration											
Phase	Gamma Ray Background GAPI		Value	Phase	Gamma Ray (Jig - Bkg) GAPI		Value	Phase	Gamma Ray (Calibrated) GAPI		Value
Before			6.074	Before			162.4	Before			164.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)		147.7 (Minimum)	162.4 (Nominal)	177.2 (Maximum)		149.0 (Minimum)	164.0 (Nominal)	179.0 (Maximum)

Before: 9-Dec-2012 2:15

Company: **Lamont Doherty**



Well: **Expedition 344, Site U1414A**  
 Field: **Costa Rica Seismogenesis (CRISP-A2)**  
 Rig: **JOIDES Resolution**  
 Ocean: **Pacific**

Hostile Natural Gamma Ray Sonde (HN GS)  
 Caliper