

# Schlumberger

Company: **Lamont Doherty**

Well: **Expedition 339, Site U1390 GC-02B**

Field: **Mediterranean Outflow (Portugal)**

Rig: **JOIDES Resolution Ocean: Atlantic**

**Hostile Natural Gamma Ray**

Rig: JOIDES Resolution  
 Field: Mediterranean Outflow (Portugal)  
 Location: Latitude: N 36° 19.04'  
 Well: Expedition 339, Site U1390 GC-02B  
 Company: Lamont Doherty

LOCATION		Elev.:	K.B.	11.00 m
Latitude: N 36° 19.04'		G.L. -994.10 m		
Longitude: W 7° 43.08'		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.	Longitude	Latitude	
5-Jan-2012	0 deg	W 7.2781*	N 36.42528*	

Logging Date	5-Jan-2012		
Run Number	1		
Depth Driller	350 m		
Schlumberger Depth	350 m		
Bottom Log Interval	350 m		
Top Log Interval	0 m		
Casing Driller Size @ Depth	10.750 in @ 96 m		
Casing Schlumberger	95 m		
Bit Size	9.875 in		
Type Fluid In Hole	Seawater Gel		
Density	1.25 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	@ 21	@ 21
Maximum Recorded Temperatures	21 degC		
Circulation Stopped	Time	4-Jan-2012	21:00
Logger On Bottom	Time	5-Jan-2012	07:20
Unit Number	Location	625003	Houston
Recorded By		K. Swain	
Witnessed By		T. Williams, J. Lofi	

	Run 1	Run 2	Run
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			
Fluid Loss			
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: DSI  
 OS2: FMS  
 OS3: HLDS  
 OS4: HRLA  
 OS5:

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

**REMARKS: RUN NUMBER 1**

**REMARKS: RUN NUMBER 2**

Hole GC-02B Hole A was drilled with a 9 7/8" APC/XCB bit to TDD of 350 mbsf.

This log originally acquired in measured depth from rig floor and played back for sea floor depth reference.

Playback of main pass uses barite for corrections of gamma ray.

Playback of main pass uses caliper as input for borehole corrections.

All logs recorded via wireline thru 5-5.5" drillpipe and RCB coring BHA consisting of a bit release sub, Kinley sub, drill collars, and lockable flapper valve.

**RUN 1**

**RUN 2**

SERVICE ORDER #:  
 PROGRAM VERSION: 19C0-187  
 FLUID LEVEL:

SERVICE ORDER #:  
 PROGRAM VERSION:  
 FLUID LEVEL:

LOGGED INTERVAL	START	STOP

LOGGED INTERVAL	START	STOP

## EQUIPMENT DESCRIPTION




**RUN 1**

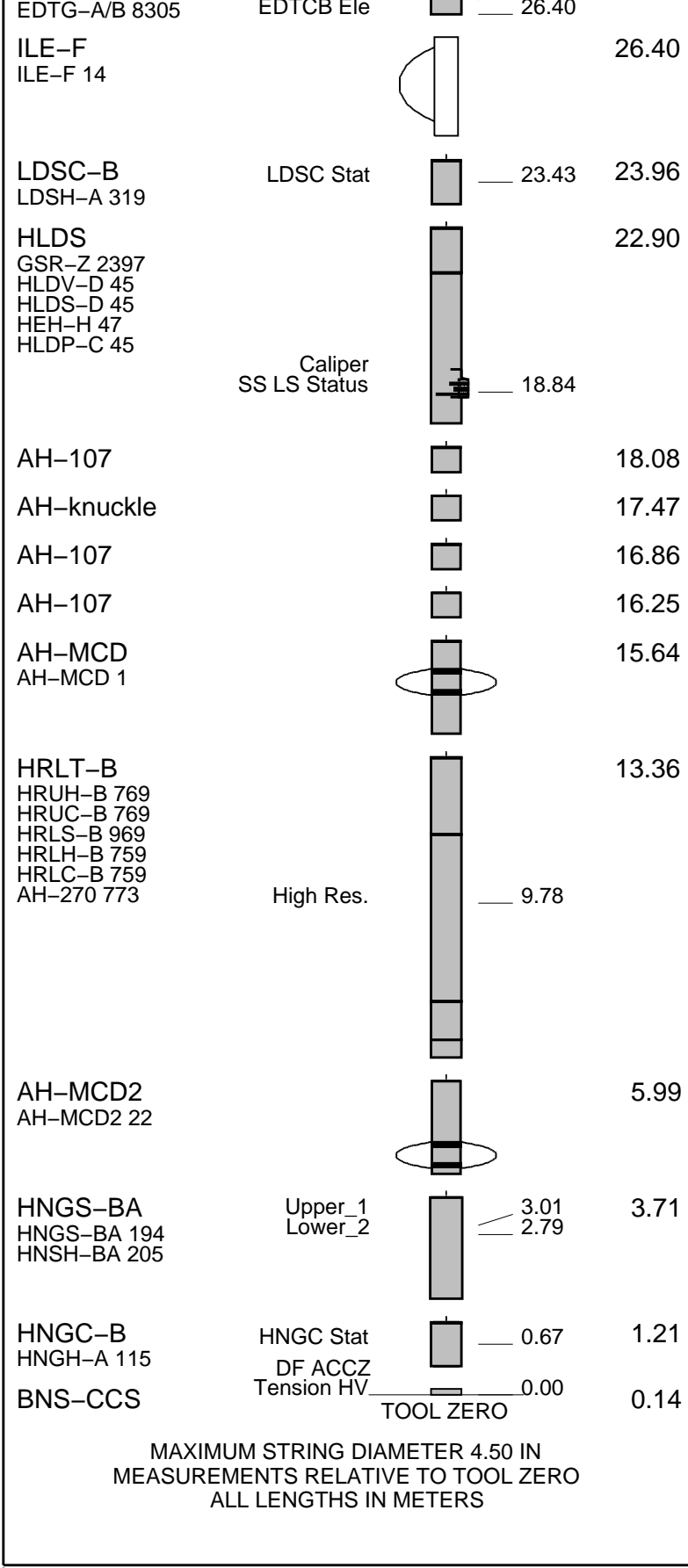
**RUN 2**

**SURFACE EQUIPMENT**

GSR-U 616008  
 WITM (EDTS)-A 1

**DOWNHOLE EQUIPMENT**

LEH-QT			29.71
LEH-QT 301			
AH-369	MDSB_EDTC		28.38
	Mud Tempe		28.82
	CTEM		27.32
EDTC-B	Gamma Ray		26.75
EDTH-B 8303	EFTB DIAG		28.38
EDTC-B 8317	TelStatus		



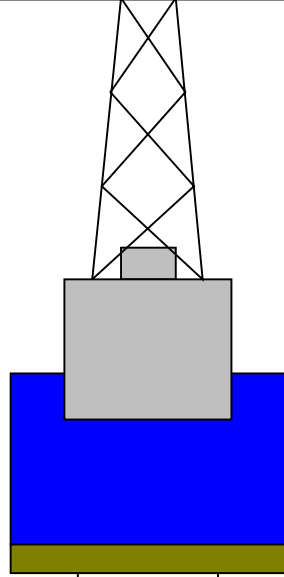
Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	MD	

Kelly Bushing Elevation  
Derrick Floor Elevation

Mean Sea Level

-1005.1  
-1005.1

-994.1



4.1



0

3.80

Sea Floor

96

9.875

Open Hole

350

Total Depth

### Input DLIS Files

DEFAULT      NGS\_HRLA\_LDL\_014LUP      FN:20    PRODUCER    05-Jan-2012 01:33    1353.3 M      996.5 M

### Output DLIS Files

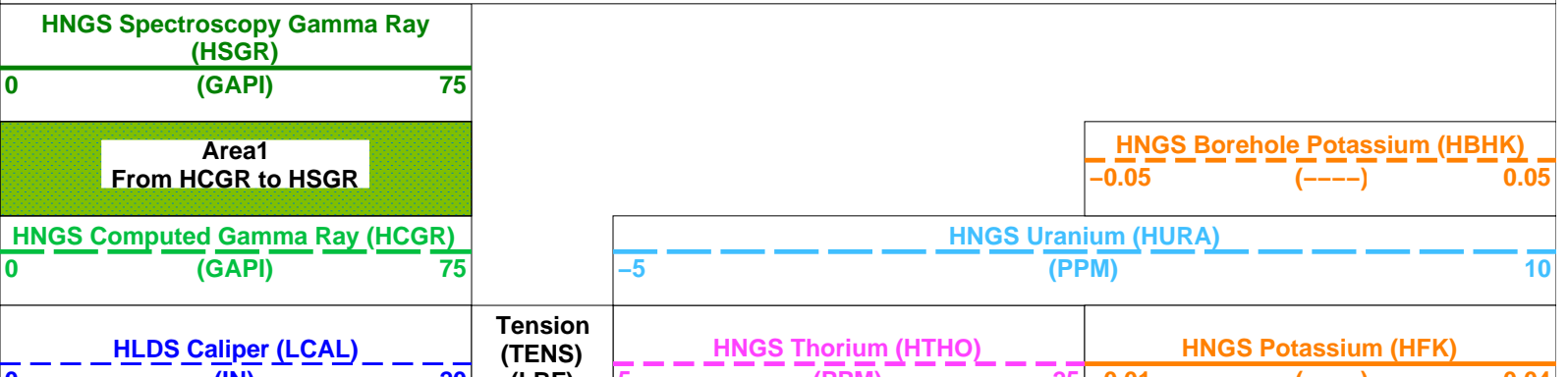
DEFAULT      NGS\_HRLA\_LDL\_034PUP      FN:46    PRODUCER    06-Jan-2012 09:39    347.5 M      -8.4 M

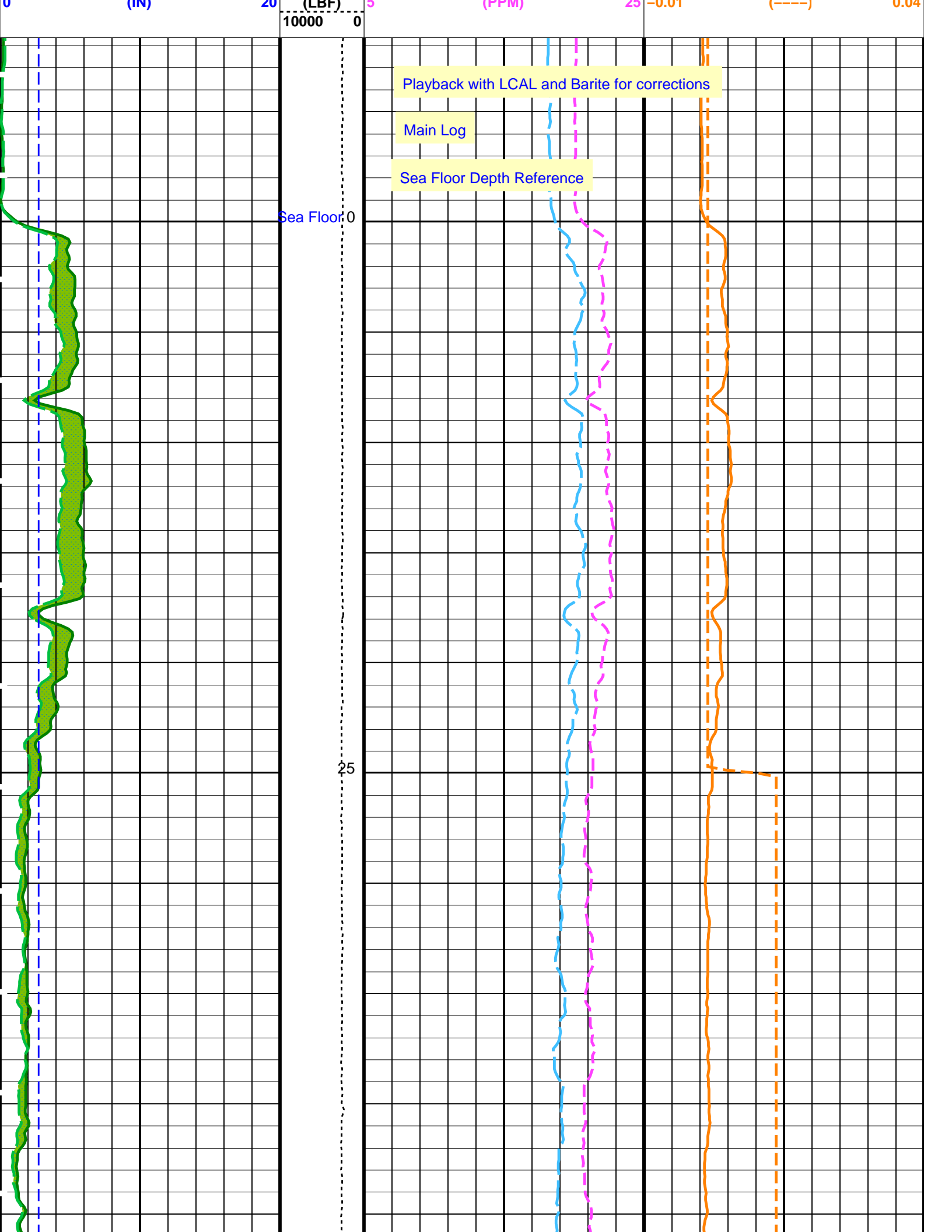
### OP System Version: 19C0-187

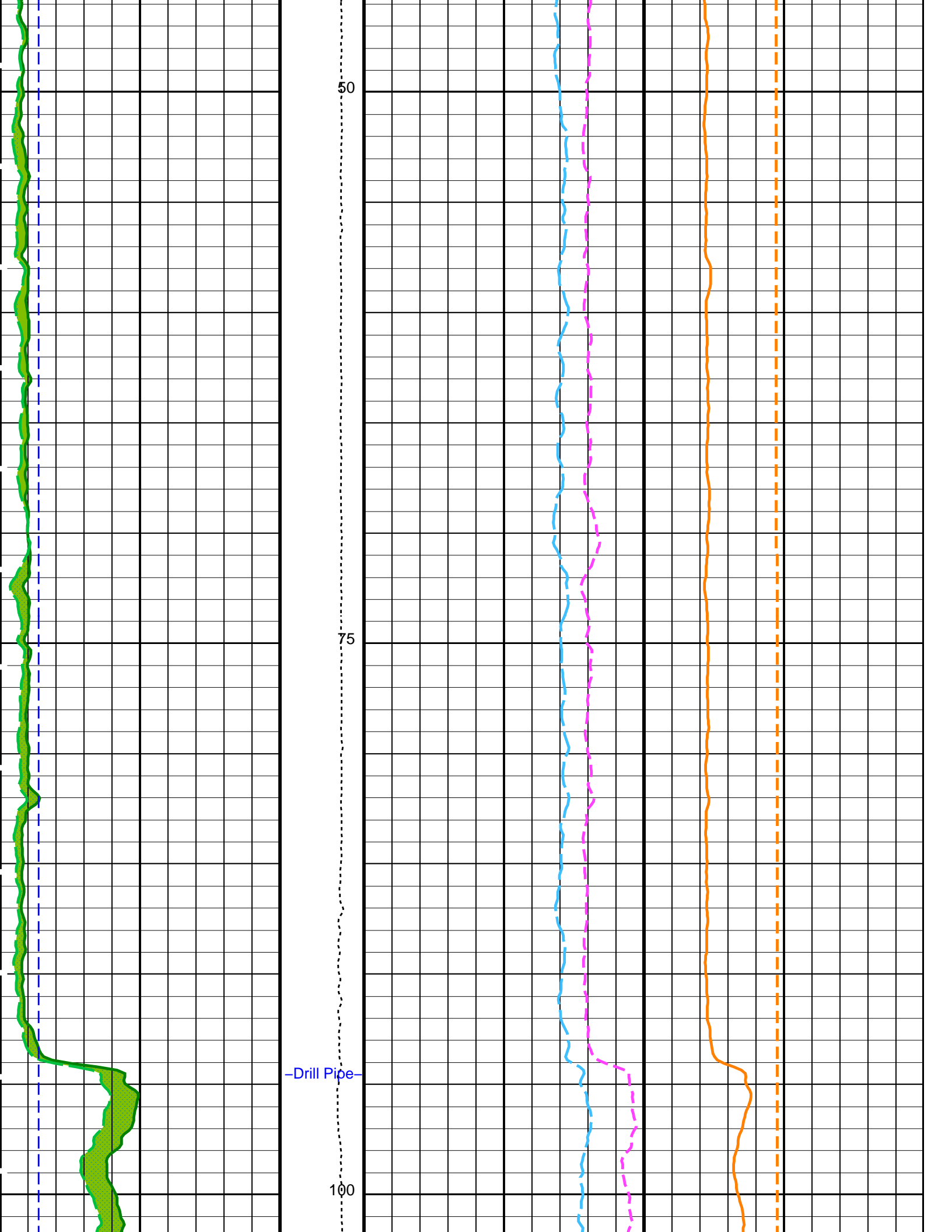
HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

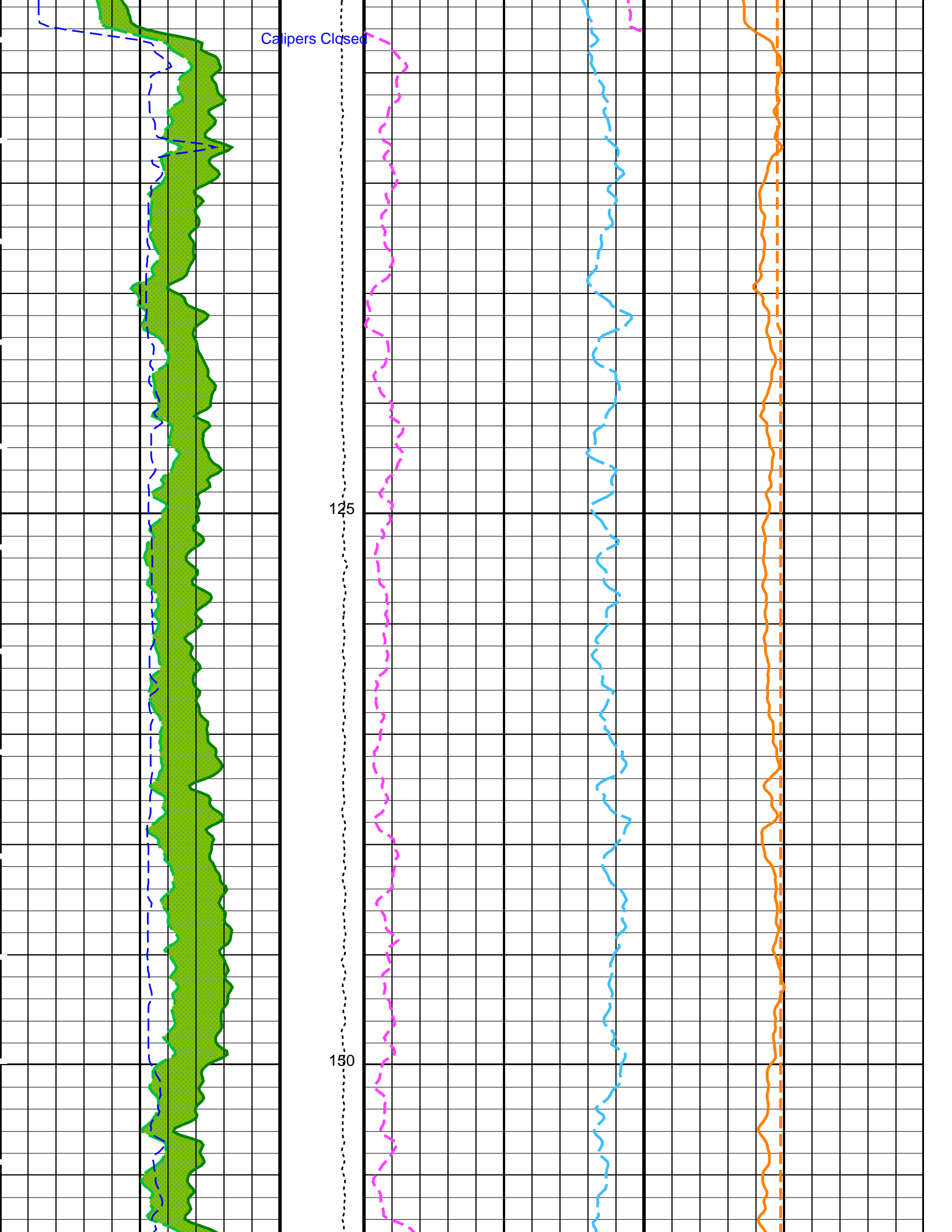
### PIP SUMMARY

Time Mark Every 60 S

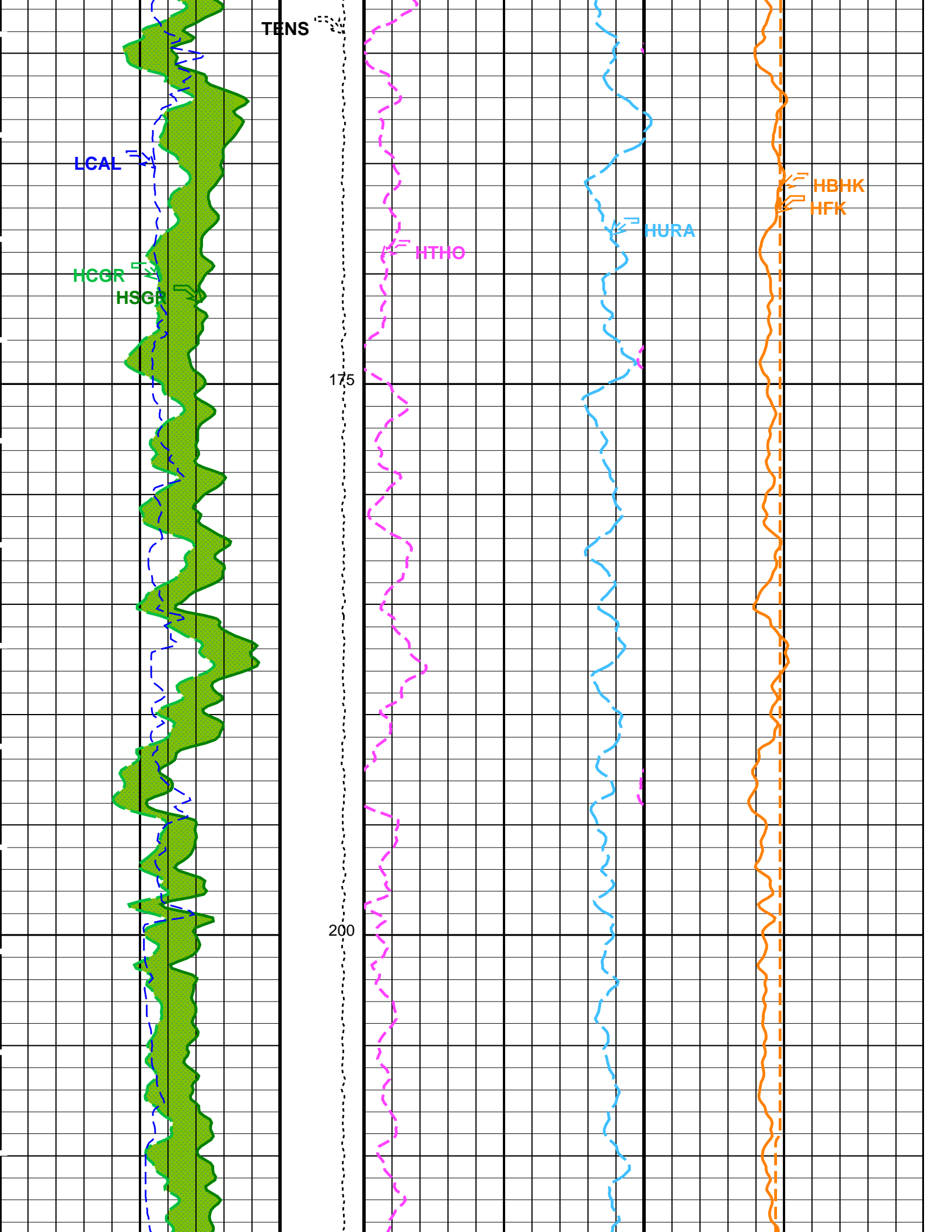


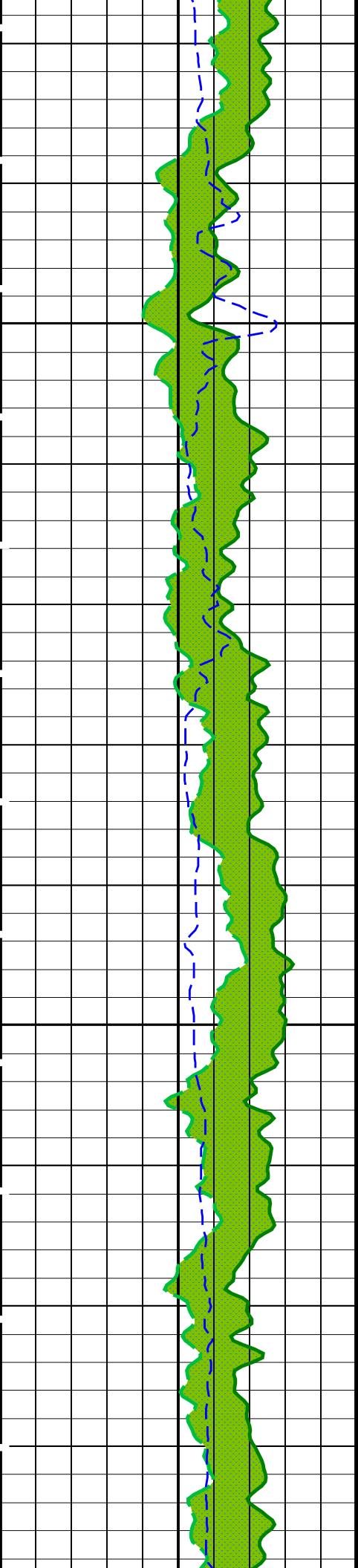






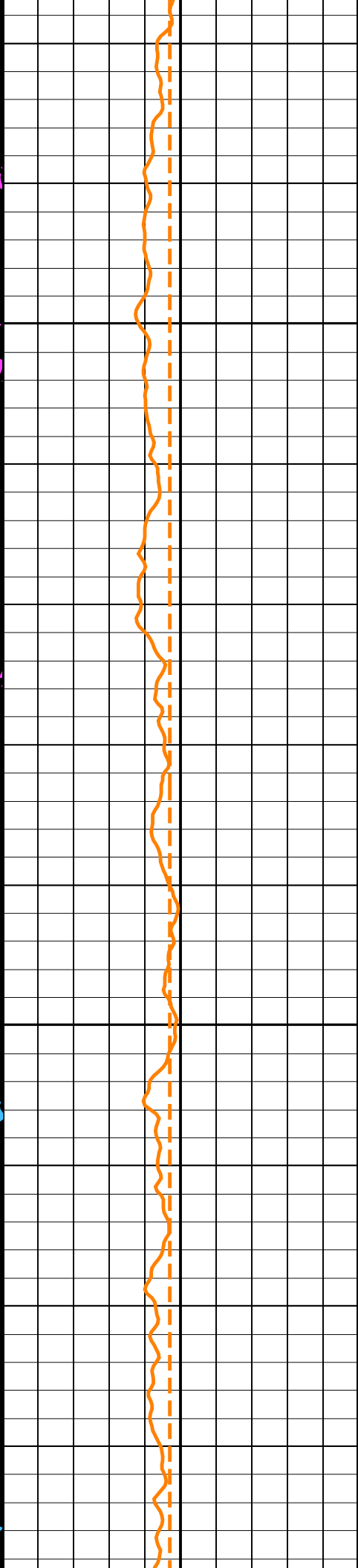
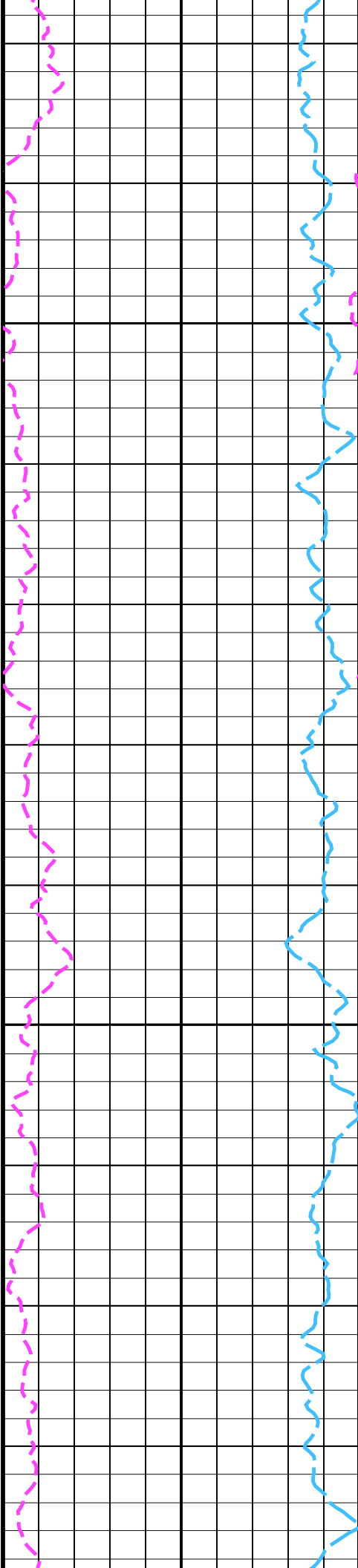


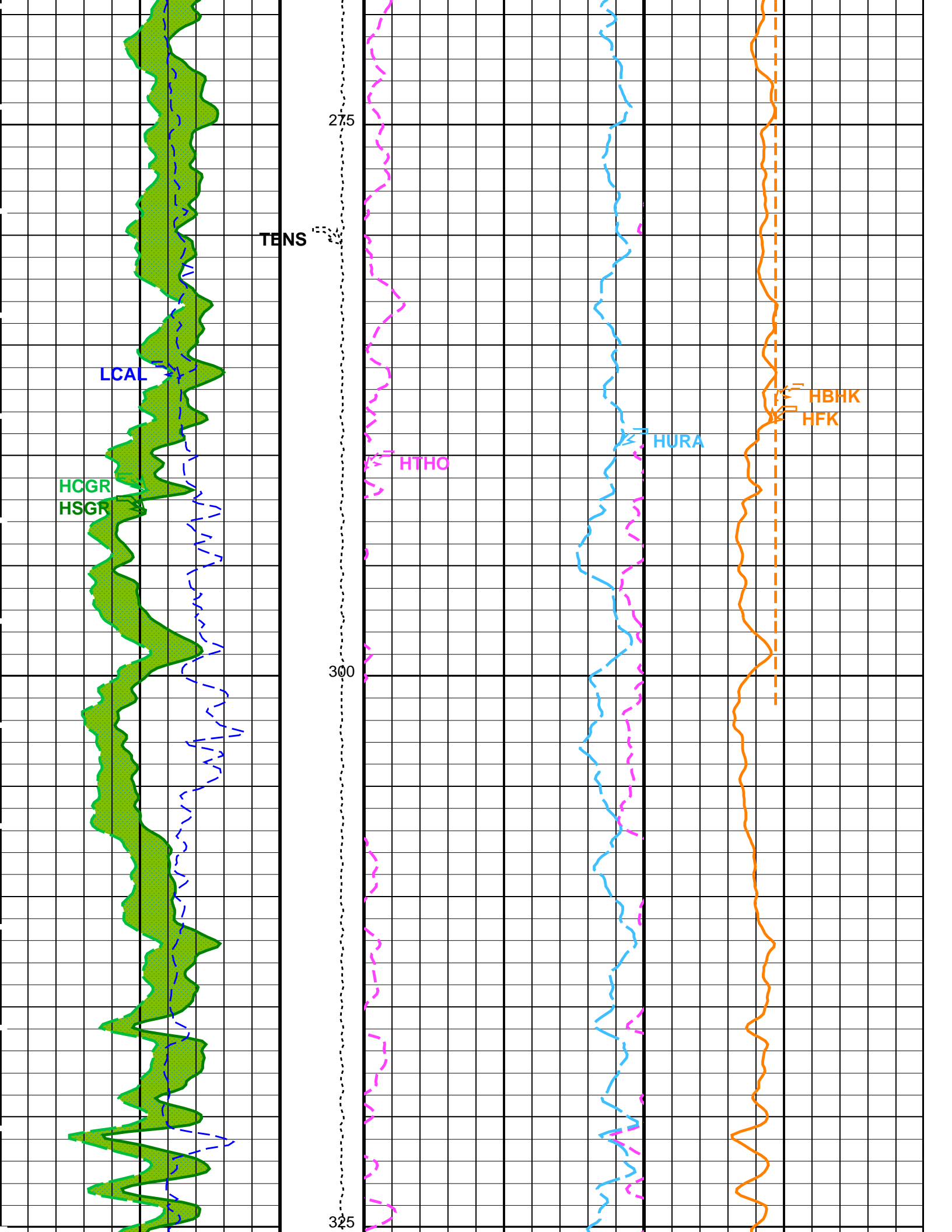


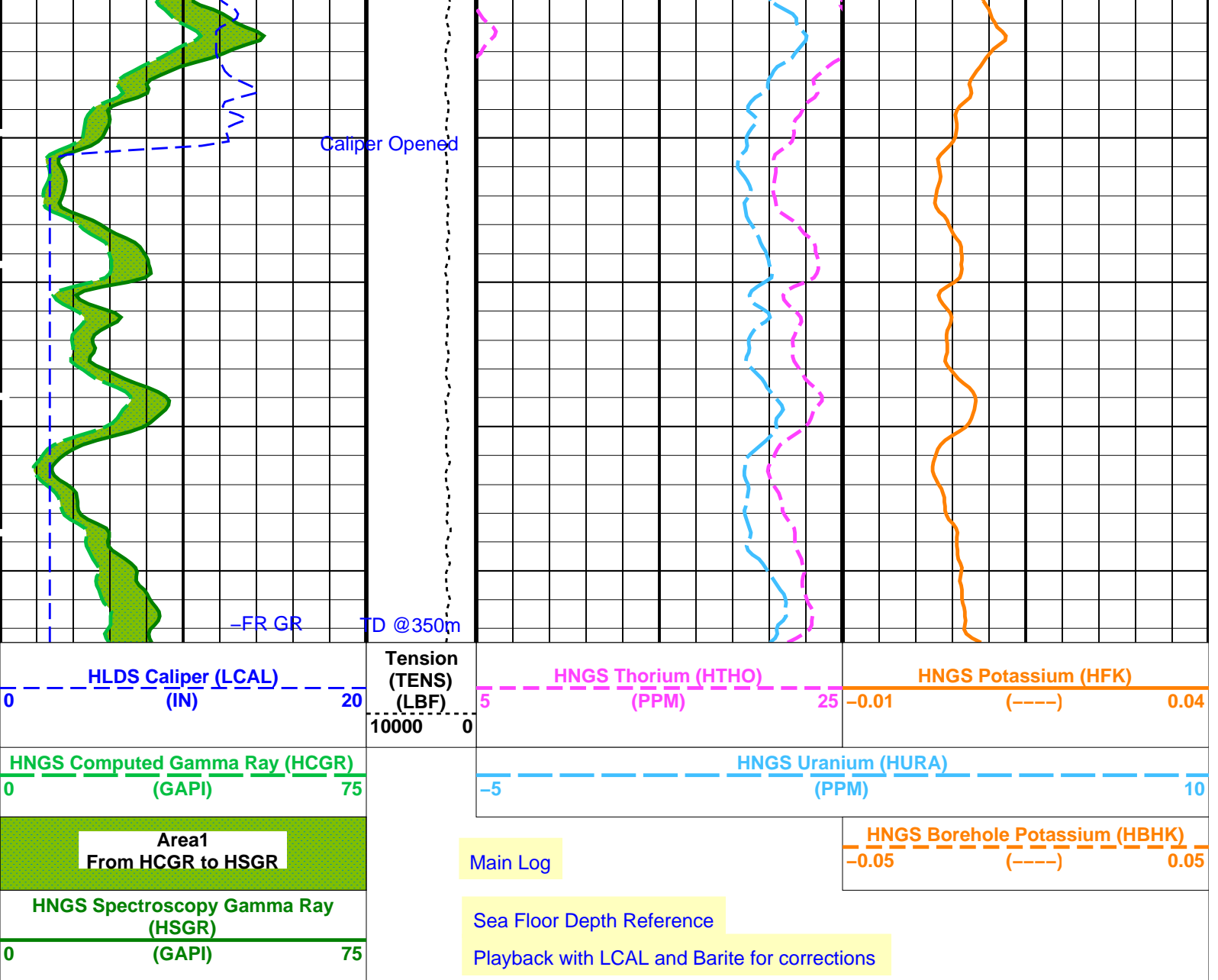


225

250







Time Mark Every 60 S

### Parameters

DLIS Name	Description	Value
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	LCAL
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW
HABK	HNGS Borehole Potassium Running Average	-0.00194953
HALF	HNGS Alpha Filter Length	60 IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE
HMWM	Mud Weighting Material	BARI
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	0.968094
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.962571

BHS	HRLT-B: High Resolution Laterolog Array - B	Borehole Status	OPEN	
GCSE		Generalized Caliper Selection	LCAL	
	EDTC-B: Enhanced DTS Cartridge			
BHS		Borehole Status	OPEN	
GCSE		Generalized Caliper Selection	LCAL	
	System and Miscellaneous			
BS		Bit Size	9.875	IN
DFD		Drilling Fluid Density	1.25	G/C3
DO		Depth Offset for Playback	-1005.0	M
PP		Playback Processing	RECOMPUTE	

Format: HNGSYields    Vertical Scale: 1:200    Graphics File Created: 06-Jan-2012 09:39

### OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

#### Input DLIS Files

DEFAULT	NGS_HRLA_LDL_014LUP	FN:20	PRODUCER	05-Jan-2012 01:33	1353.3 M	996.5 M
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#### Output DLIS Files

DEFAULT	NGS_HRLA_LDL_034PUP	FN:46	PRODUCER	06-Jan-2012 09:39		
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#### Input DLIS Files

DEFAULT	NGS_HRLA_LDL_014LUP	FN:20	PRODUCER	05-Jan-2012 01:33	1353.3 M	996.5 M
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#### Output DLIS Files

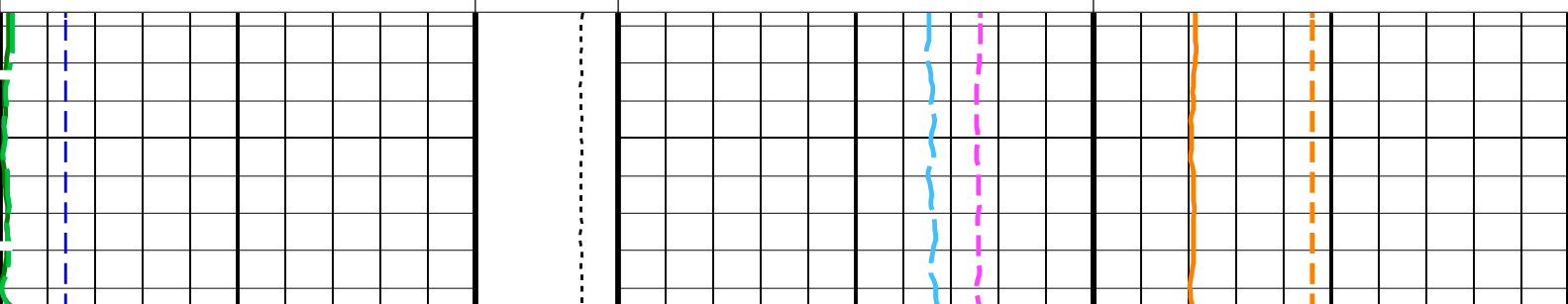
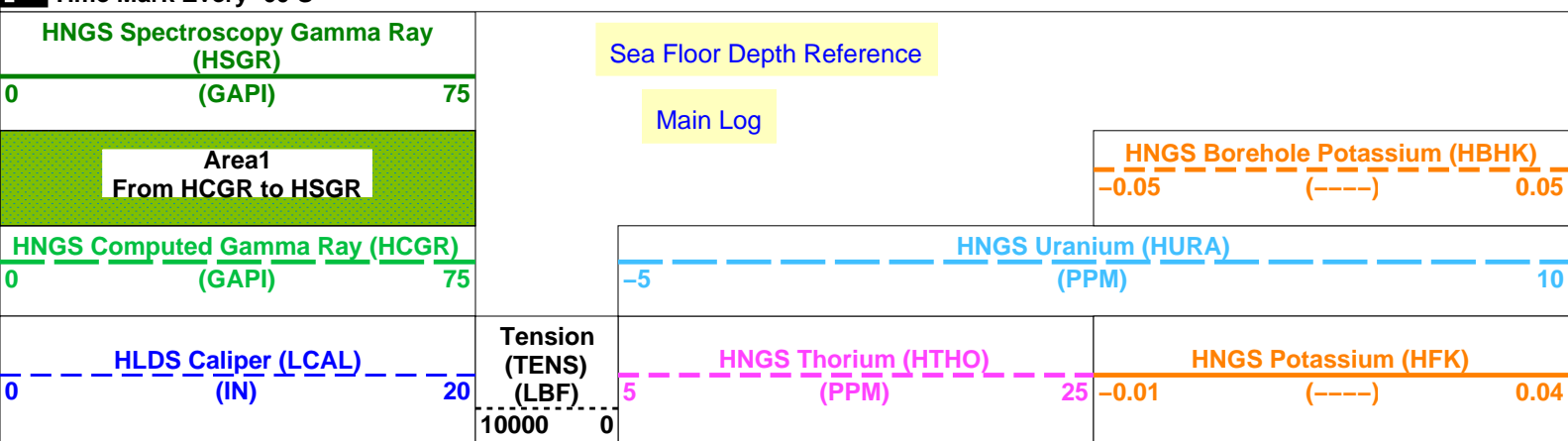
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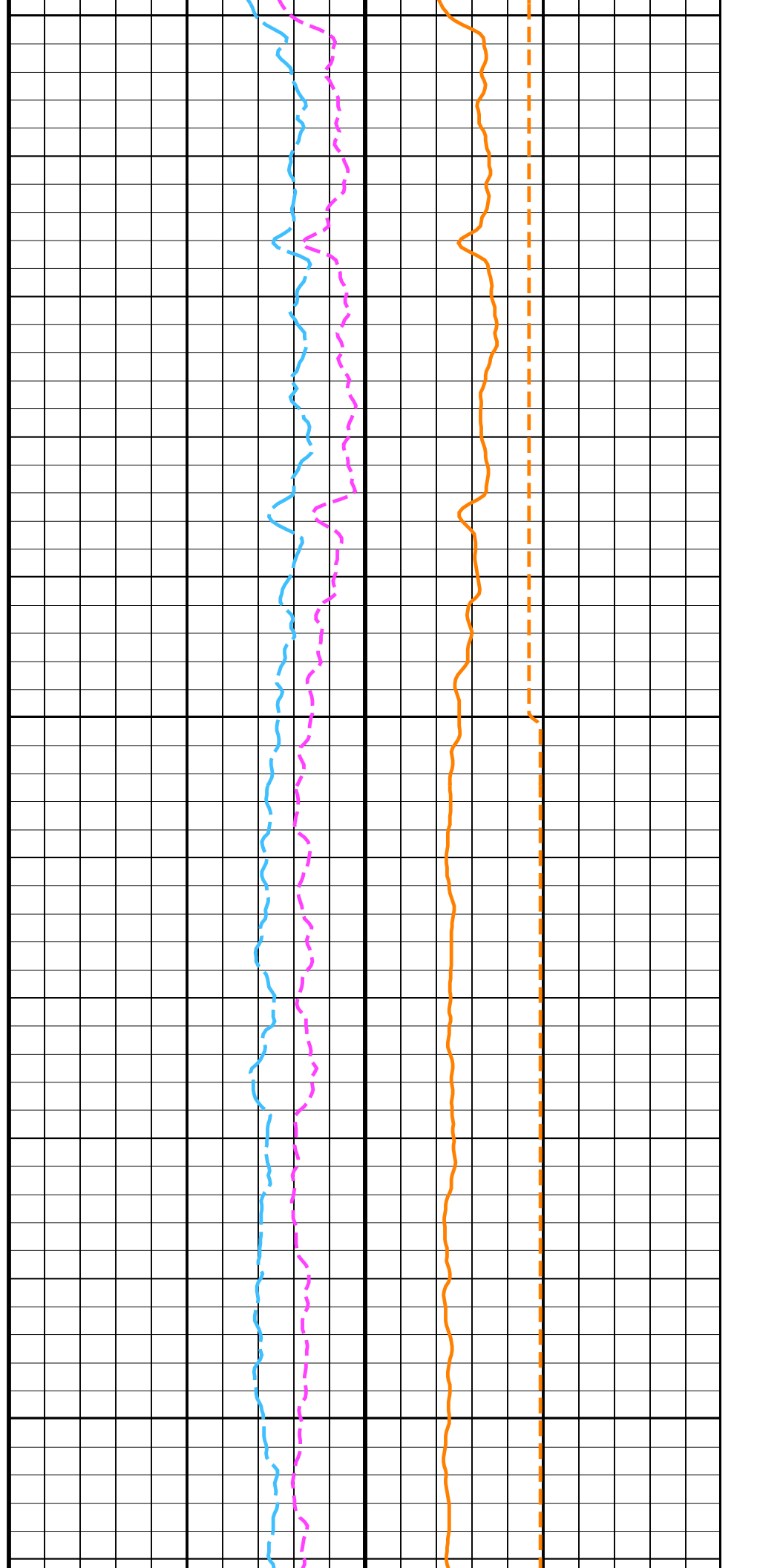
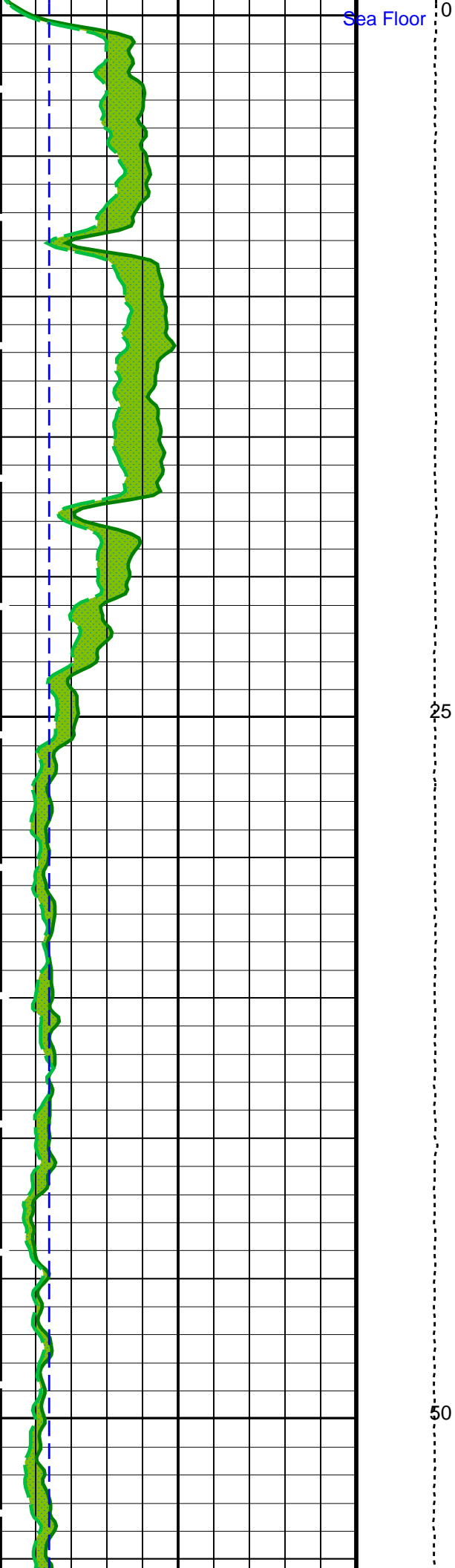
### OP System Version: 19C0-187

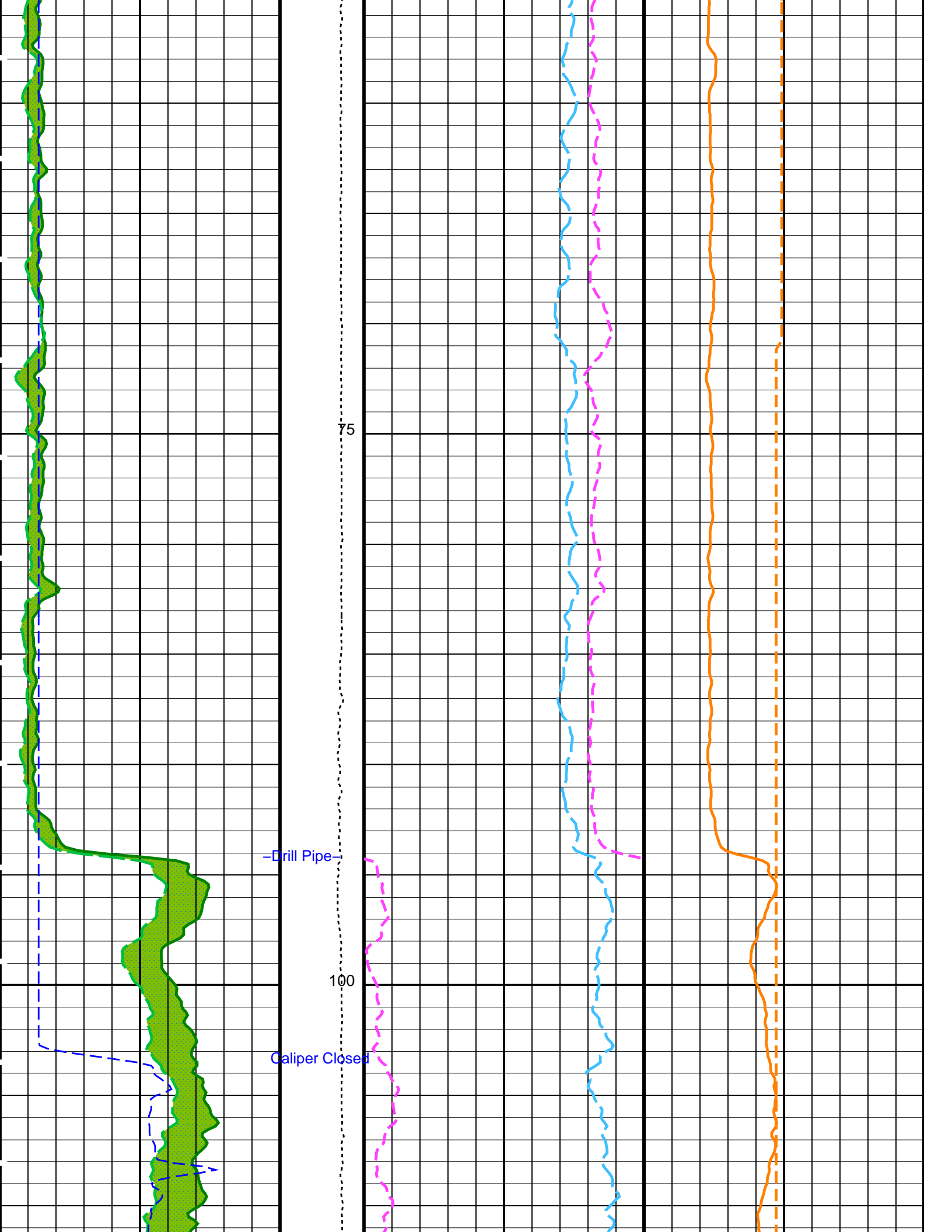
HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

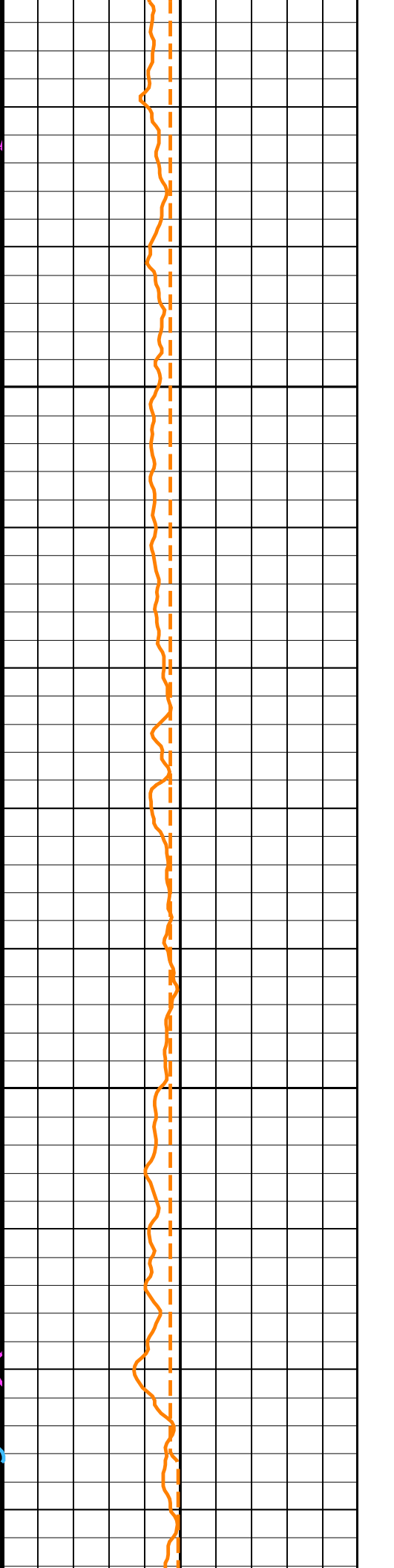
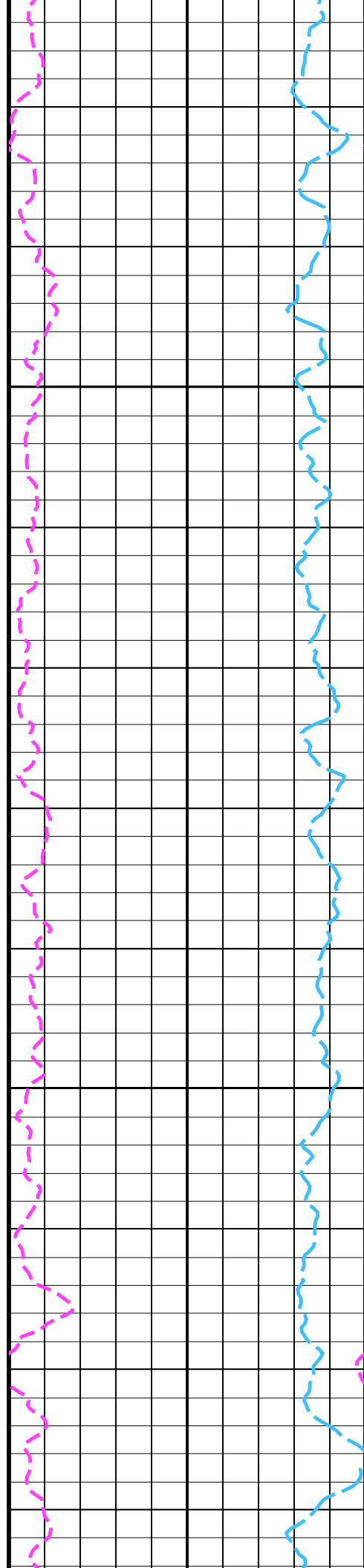
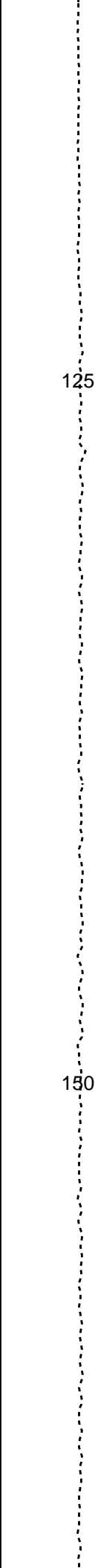
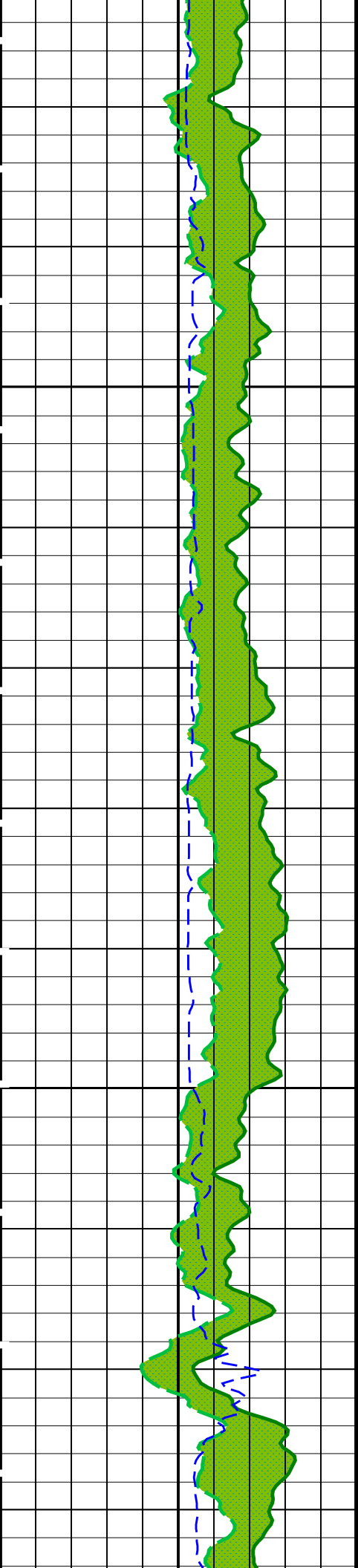
#### PIP SUMMARY

Time Mark Every 60 S

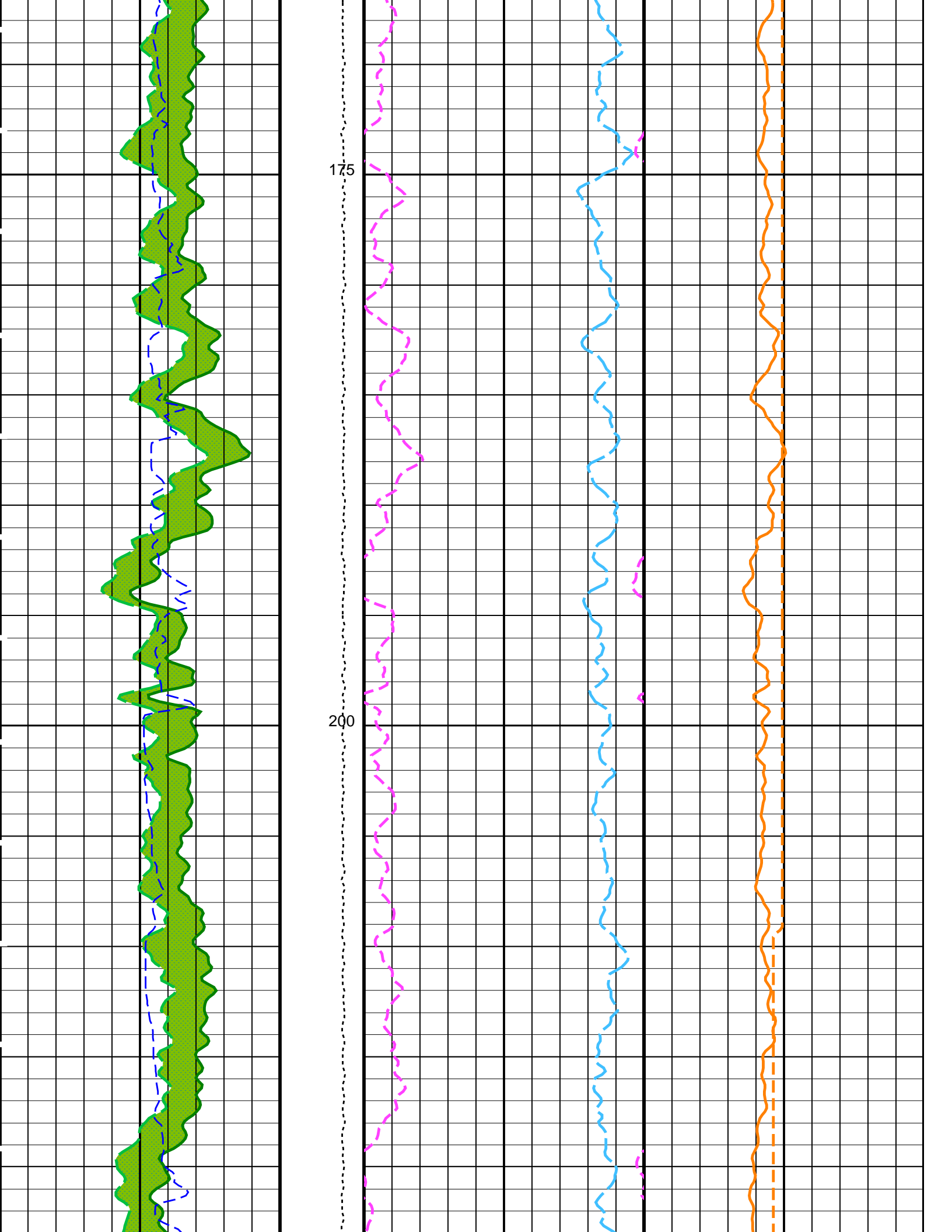


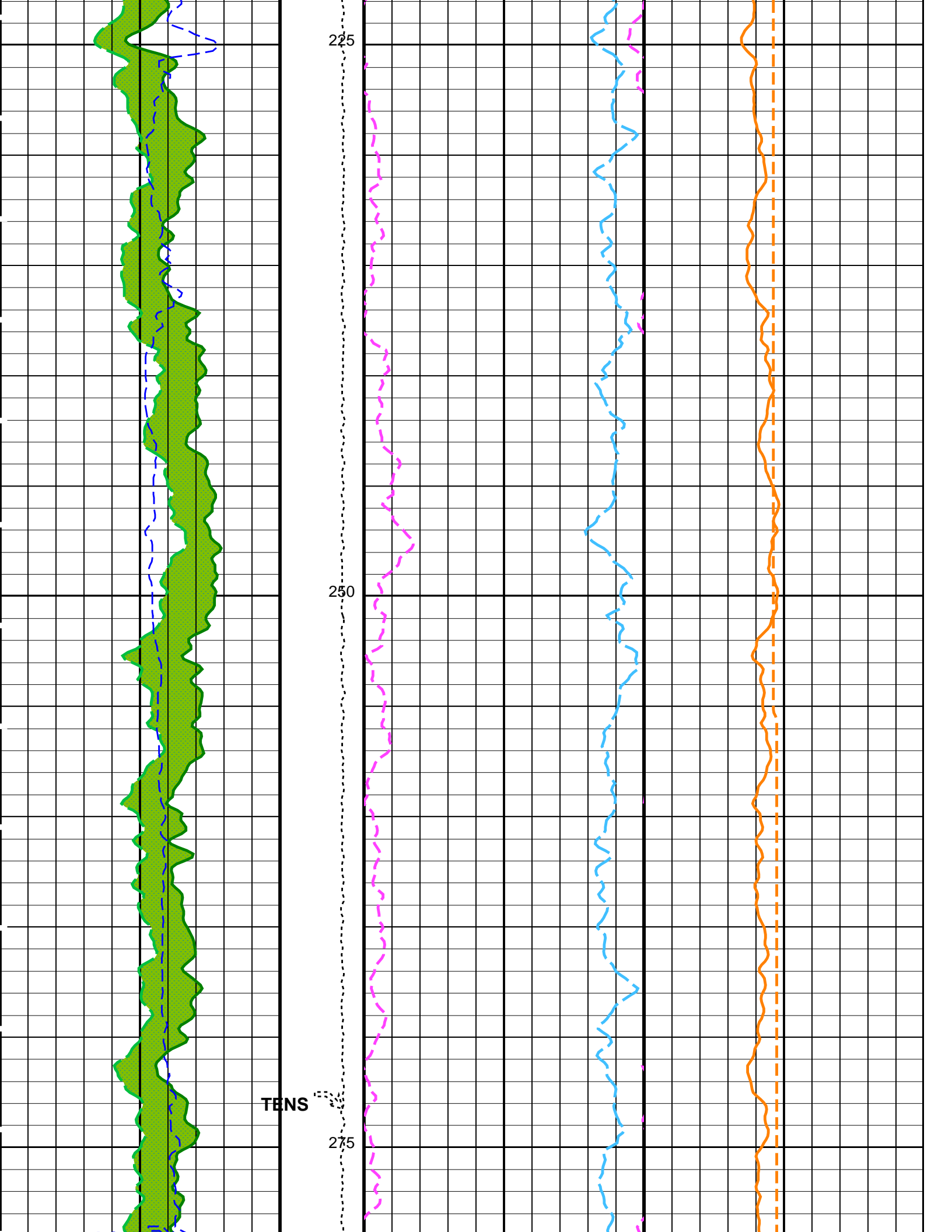


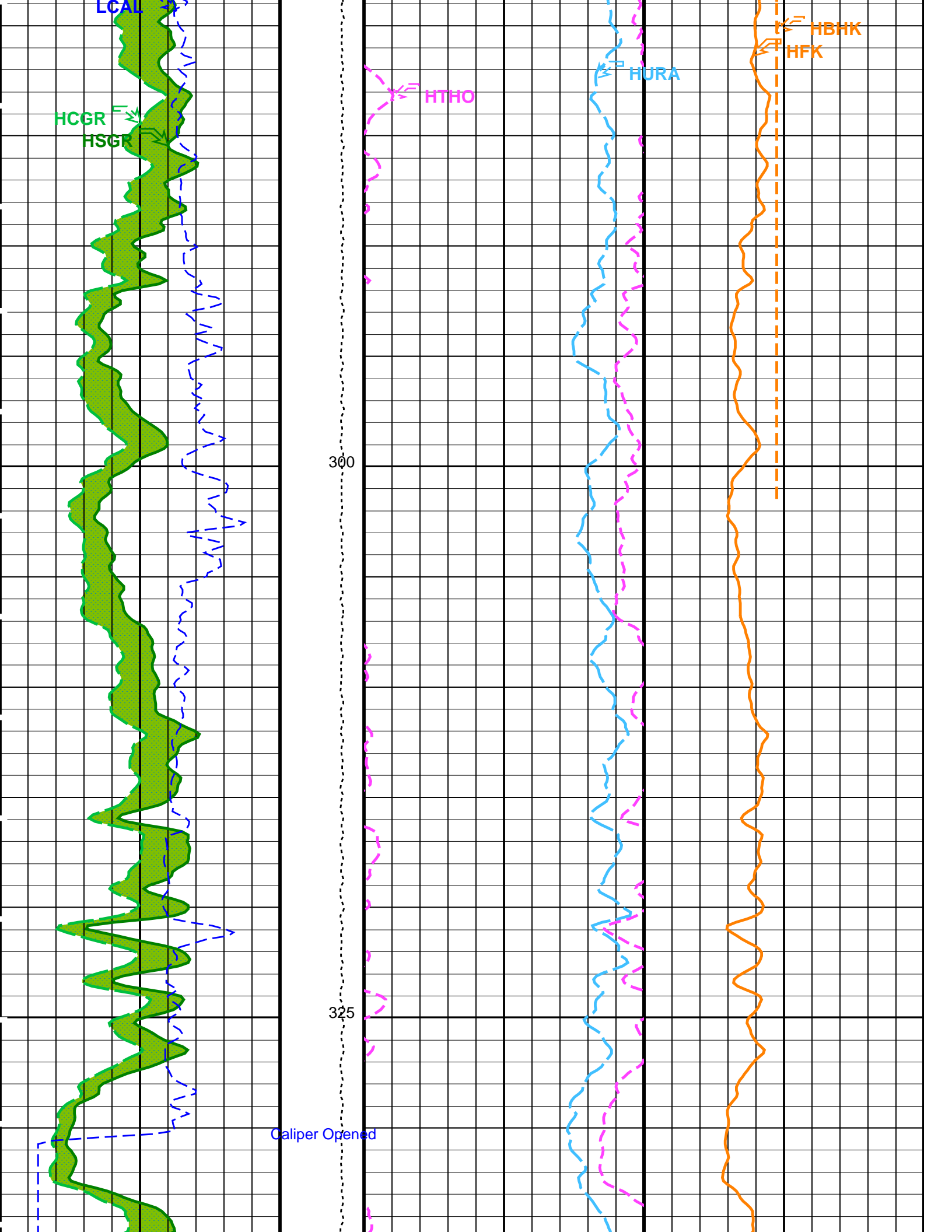


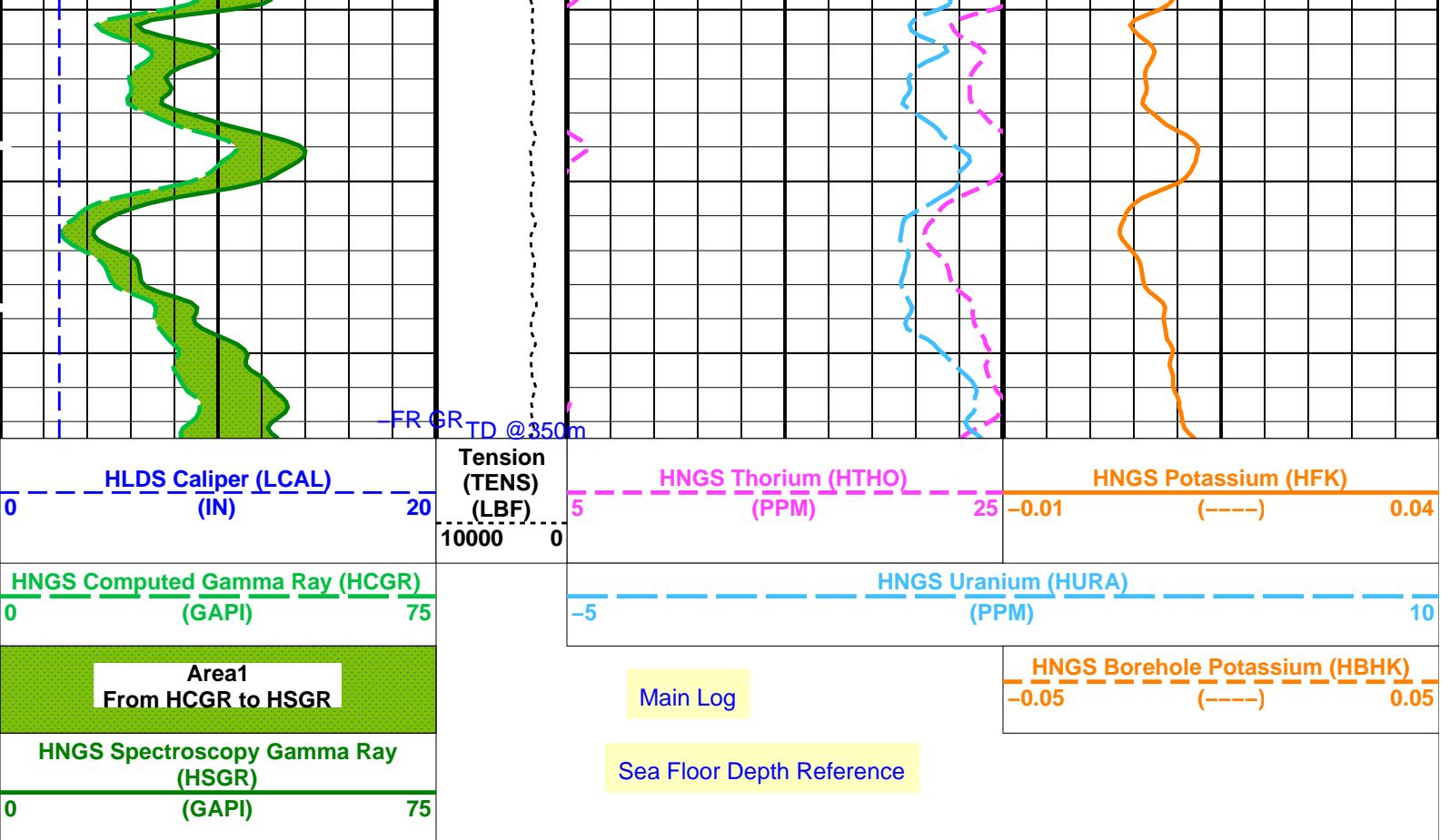












PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
<b>HNGS-BA: Hostile Natural Gamma Ray Sonde</b>		
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	-0.00194953
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	0.968094
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.962571
<b>HRLT-B: High Resolution Laterolog Array - B</b>		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
<b>EDTC-B: Enhanced DTS Cartridge</b>		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
<b>System and Miscellaneous</b>		
BS	Bit Size	9.875 IN
DFD	Drilling Fluid Density	1.25 G/C3
DO	Depth Offset for Playback	-1005.0 M
PP	Playback Processing	NORMAL

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

### Input DLIS Files

DEFAULT	NGS_HRLA_LDL_014LUP	FN:20	PRODUCER	05-Jan-2012 01:33	1353.3 M	996.5 M
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### Output DLIS Files

DEFAULT	NGS_HRLA_LDL_033PUP	FN:45	PRODUCER	06-Jan-2012 09:24
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### Input DLIS Files

DEFAULT	NGS_HRLA_LDL_012LUP	FN:16	PRODUCER	05-Jan-2012 01:09	1353.3 M	1278.0 M
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### Output DLIS Files

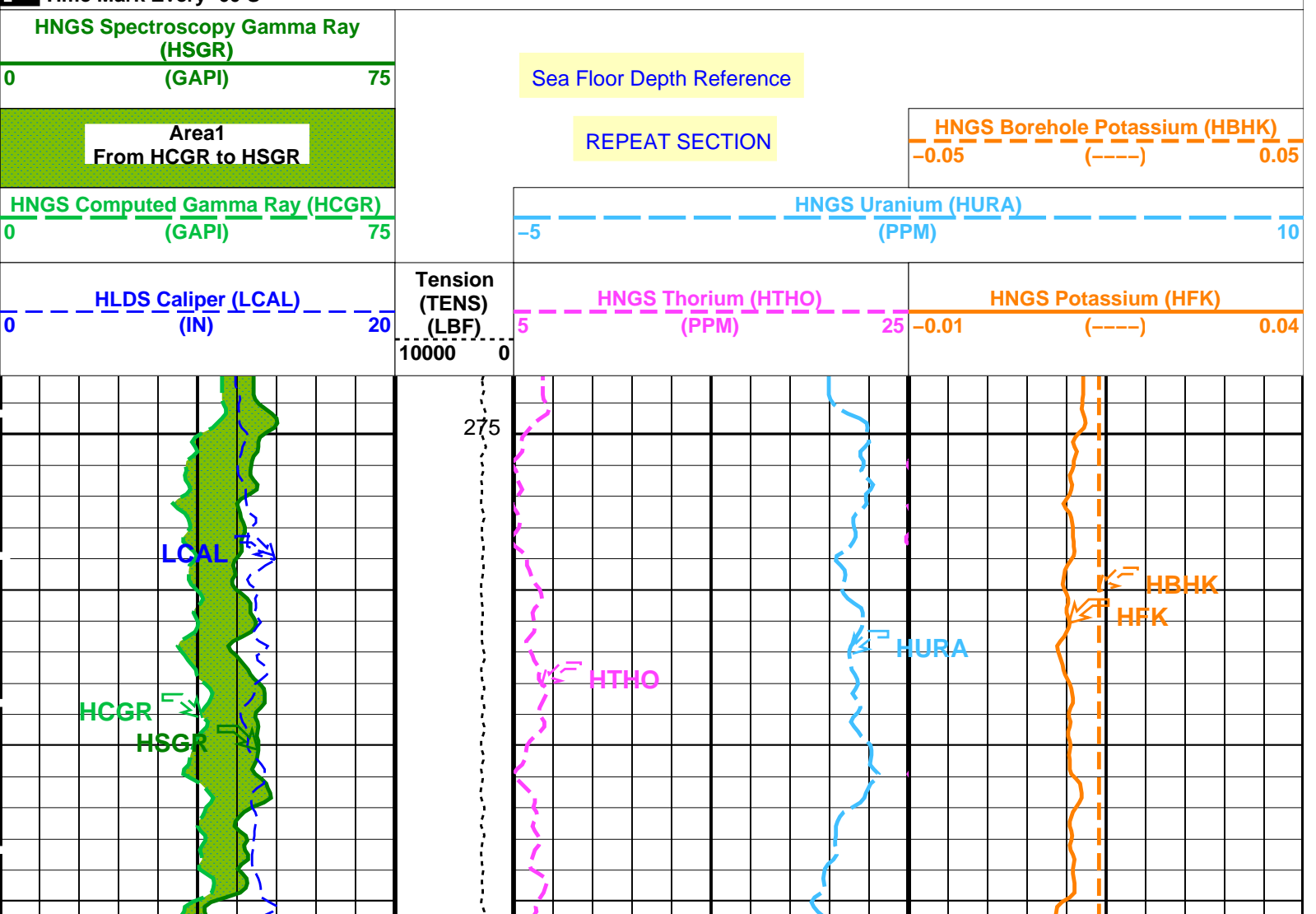
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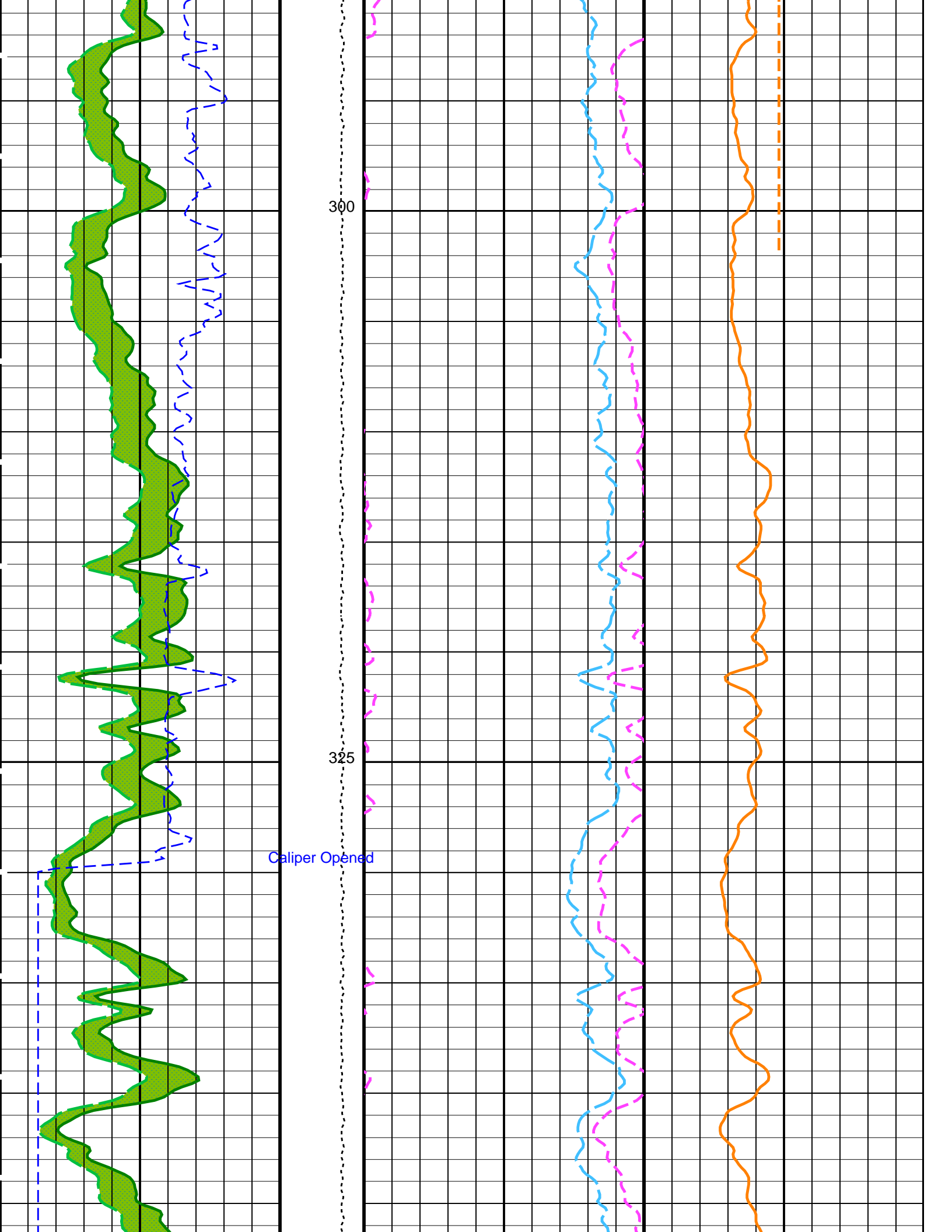
## OP System Version: 19C0-187

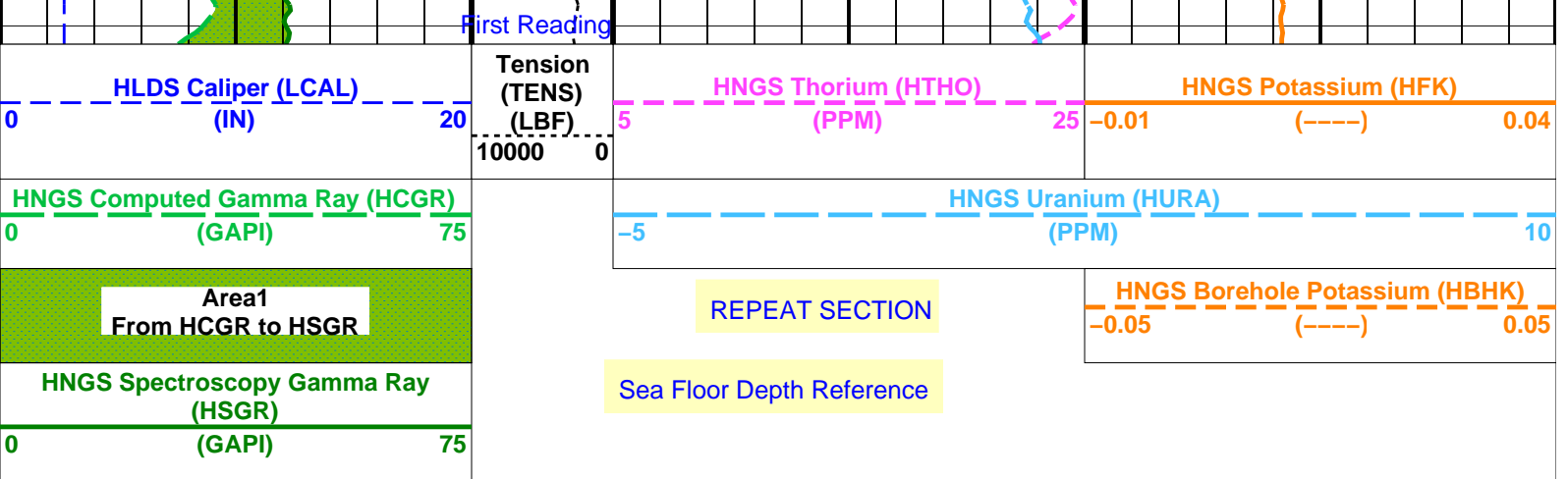
HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

### PIP SUMMARY

Time Mark Every 60 S







PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
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	-0.00299249
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	0.96889
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.965679
HRLT-B: High Resolution Laterolog Array - B		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
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	1.25 G/C3
DO	Depth Offset for Playback	-1005.0 M
PP	Playback Processing	NORMAL

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 06-Jan-2012 09:18

OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_012LUP	FN:16	PRODUCER	05-Jan-2012 01:09	1353.3 M	1278.0 M
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Output DLIS Files

DEFAULT	NGS_HRLA_LDL_032PUP	FN:44	PRODUCER	06-Jan-2012 09:18
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Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
<b>Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check</b>							
Master: 17–Nov–2011 7:57 Before: 26–Nov–2011 0:21							
Na 511 Peak Loc	40.00	39.70	39.69	N/A	N/A	1.000	
Na 511 Peak Res	15.50	15.50	15.07	N/A	N/A	2.000	%
High Voltage	1150	1176	1168	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.1	141.8	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.309	8.731	N/A	N/A	2.000	%
Temperature	15.50	29.76	21.55	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	20.77	21.01	N/A	N/A	8.000	CPS
<b>Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check</b>							
Master: 17–Nov–2011 7:57 Before: 26–Nov–2011 0:21							
Na 511 Peak Loc	40.00	39.60	39.49	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.99	15.91	N/A	N/A	2.000	%
High Voltage	1150	1109	1091	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.6	142.3	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	9.914	8.591	N/A	N/A	2.000	%
Temperature	15.50	29.91	21.84	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	21.44	20.97	N/A	N/A	8.000	CPS
<b>Hostile Natural Gamma Ray Sonde Wellsite Calibration – Ratio Of Detector 1 To Detector 2</b>							
Master: 17–Nov–2011 7:57 Before: 26–Nov–2011 0:21							
Coincidence Count Rate Ratio	1.000	0.9705	1.004	N/A	N/A	0.05000	
<b>Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration</b>							
Master: 17–Nov–2011 7:52							
Na 511 Peak Set Point	40.00	41.00	---	---	---	---	
Th Peak Loc	209.6	210.8	---	---	---	---	
Th Peak Res	7.000	6.865	---	---	---	---	%
Background Count Rate	142.5	24.91	---	---	---	---	CPS
Gain Ratio	1.000	1.010	---	---	---	---	
<b>Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration</b>							
Master: 17–Nov–2011 7:52							
Na 511 Peak Set Point	40.00	41.00	---	---	---	---	
Th Peak Loc	209.6	208.5	---	---	---	---	
Th Peak Res	7.000	6.879	---	---	---	---	%
Background Count Rate	142.5	24.15	---	---	---	---	CPS
Gain Ratio	1.000	1.001	---	---	---	---	
<b>High Resolution Laterolog Array – B Wellsite Calibration – HRLT M01</b>							
Before: 5–Jan–2012 1:32 After: 17–Dec–2011 8:15							
HRLT M0–M1 Voltage Plus – 0	0	N/A	-318.4	-318.5	-0.07446	9.681	UV
HRLT M0–M1 Voltage Plus – 1	0	N/A	-333.4	-331.6	1.766	9.681	UV
HRLT M0–M1 Voltage Plus – 2	0	N/A	-334.7	-333.4	1.249	9.681	UV
HRLT M0–M1 Voltage Plus – 3	0	N/A	-337.6	-336.7	0.9512	9.681	UV
HRLT M0–M1 Voltage Plus – 4	0	N/A	-325.3	-325.3	0.08939	9.681	UV
HRLT M0–M1 Voltage Plus – 5	0	N/A	-321.3	-321.5	-0.1943	9.681	UV
HRLT M0–M1 Voltage Plus – 6	0	N/A	324.9	322.6	-2.245	9.681	UV
HRLT M0–M1 Voltage Plus – 7	0	N/A	-322.7	-322.7	0	9.681	UV
<b>High Resolution Laterolog Array – B Wellsite Calibration – HRLT M12</b>							
Before: 5–Jan–2012 1:32 After: 17–Dec–2011 8:15							
HRLT M1–M2 Voltage Plus – 0	0	N/A	1755	1752	-3.190	53.42	UV
HRLT M1–M2 Voltage Plus – 1	0	N/A	1833	1822	-11.07	53.42	UV
HRLT M1–M2 Voltage Plus – 2	0	N/A	1837	1828	-8.567	53.42	UV
HRLT M1–M2 Voltage Plus – 3	0	N/A	1854	1846	-7.798	53.42	UV
HRLT M1–M2 Voltage Plus – 4	0	N/A	1789	1785	-3.934	53.42	UV
HRLT M1–M2 Voltage Plus – 5	0	N/A	1769	1767	-2.267	53.42	UV
HRLT M1–M2 Voltage Plus – 6	0	N/A	-1794	-1781	13.16	53.42	UV
HRLT M1–M2 Voltage Plus – 7	0	N/A	1781	1781	0	53.42	UV
<b>High Resolution Laterolog Array – B Wellsite Calibration – HRLT M23</b>							
Before: 5–Jan–2012 1:32 After: 17–Dec–2011 8:15							
HRLT M2–M3 Voltage Plus – 0	0	N/A	1741	1739	-1.981	53.42	UV
HRLT M2–M3 Voltage Plus – 1	0	N/A	1831	1822	-8.854	53.42	UV
HRLT M2–M3 Voltage Plus – 2	0	N/A	1835	1829	-6.292	53.42	UV
HRLT M2–M3 Voltage Plus – 3	0	N/A	1857	1850	-6.814	53.42	UV
HRLT M2–M3 Voltage Plus – 4	0	N/A	1785	1782	-2.233	53.42	UV
HRLT M2–M3 Voltage Plus – 5	0	N/A	1766	1765	-0.6766	53.42	UV
HRLT M2–M3 Voltage Plus – 6	0	N/A	-1780	-1769	11.43	53.42	UV
HRLT M2–M3 Voltage Plus – 7	0	N/A	1781	1781	0	53.42	UV



High Resolution Laterolog Array – B Wellsite Calibration – HRLT V34

Before: 5-Jan-2012 1:32 After: 17-Dec-2011 8:15

HRLT A3-A4 Voltage Plus – 0	0	N/A	68450	68310	-138.0	2100	UV
HRLT A3-A4 Voltage Plus – 1	0	N/A	71800	71360	-442.5	2100	UV
HRLT A3-A4 Voltage Plus – 2	0	N/A	72260	71940	-316.3	2100	UV
HRLT A3-A4 Voltage Plus – 3	0	N/A	73360	73030	-324.9	2100	UV
HRLT A3-A4 Voltage Plus – 4	0	N/A	70490	70340	-149.7	2100	UV
HRLT A3-A4 Voltage Plus – 5	0	N/A	69730	69660	-76.38	2100	UV
HRLT A3-A4 Voltage Plus – 6	0	N/A	-68800	-68290	509.7	2100	UV
HRLT A3-A4 Voltage Plus – 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT V45

Before: 5-Jan-2012 1:32 After: 17-Dec-2011 8:15

HRLT A4-A5 Voltage Plus – 0	0	N/A	68730	68590	-136.7	2100	UV
HRLT A4-A5 Voltage Plus – 1	0	N/A	72160	71730	-430.7	2100	UV
HRLT A4-A5 Voltage Plus – 2	0	N/A	72610	72290	-320.4	2100	UV
HRLT A4-A5 Voltage Plus – 3	0	N/A	73700	73380	-321.1	2100	UV
HRLT A4-A5 Voltage Plus – 4	0	N/A	70790	70640	-141.7	2100	UV
HRLT A4-A5 Voltage Plus – 5	0	N/A	70010	69930	-82.84	2100	UV
HRLT A4-A5 Voltage Plus – 6	0	N/A	-69170	-68660	516.6	2100	UV
HRLT A4-A5 Voltage Plus – 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT V56

Before: 5-Jan-2012 1:32 After: 17-Dec-2011 8:15

HRLT A5-A6 Voltage Plus – 0	0	N/A	68630	68490	-134.9	2100	UV
HRLT A5-A6 Voltage Plus – 1	0	N/A	71880	71460	-424.3	2100	UV
HRLT A5-A6 Voltage Plus – 2	0	N/A	72380	72050	-322.9	2100	UV
HRLT A5-A6 Voltage Plus – 3	0	N/A	73490	73190	-304.4	2100	UV
HRLT A5-A6 Voltage Plus – 4	0	N/A	70650	70490	-151.1	2100	UV
HRLT A5-A6 Voltage Plus – 5	0	N/A	69900	69800	-97.09	2100	UV
HRLT A5-A6 Voltage Plus – 6	0	N/A	-68910	-68390	517.5	2100	UV
HRLT A5-A6 Voltage Plus – 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT VTP

Before: 5-Jan-2012 1:32 After: 17-Dec-2011 8:15

HRLT Torpedo-M0 Voltage – 0	0	N/A	-68290	-68170	116.2	2100	UV
HRLT Torpedo-M0 Voltage – 1	0	N/A	-72210	-71790	419.9	2100	UV
HRLT Torpedo-M0 Voltage – 2	0	N/A	-72650	-72360	292.5	2100	UV
HRLT Torpedo-M0 Voltage – 3	0	N/A	-73770	-73480	295.8	2100	UV
HRLT Torpedo-M0 Voltage – 4	0	N/A	-70840	-70700	140.4	2100	UV
HRLT Torpedo-M0 Voltage – 5	0	N/A	-70050	-69970	83.45	2100	UV
HRLT Torpedo-M0 Voltage – 6	0	N/A	69160	68650	-511.2	2100	UV
HRLT Torpedo-M0 Voltage – 7	0	N/A	-70000	-70000	0	2100	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT VBD

Before: 5-Jan-2012 1:32 After: 17-Dec-2011 8:15

HRLT Bridle#9-M0 Voltage – 0	0	N/A	-68290	-68160	129.4	2100	UV
HRLT Bridle#9-M0 Voltage – 1	0	N/A	-72200	-71760	434.6	2100	UV
HRLT Bridle#9-M0 Voltage – 2	0	N/A	-72640	-72320	317.5	2100	UV
HRLT Bridle#9-M0 Voltage – 3	0	N/A	-73760	-73450	306.0	2100	UV
HRLT Bridle#9-M0 Voltage – 4	0	N/A	-70840	-70690	148.1	2100	UV
HRLT Bridle#9-M0 Voltage – 5	0	N/A	-70050	-69960	87.17	2100	UV
HRLT Bridle#9-M0 Voltage – 6	0	N/A	69140	68640	-505.5	2100	UV
HRLT Bridle#9-M0 Voltage – 7	0	N/A	-70000	-70000	0	2100	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT ISO

Before: 5-Jan-2012 1:32 After: 17-Dec-2011 8:15

HRLT Source Current Plus – 0	0	N/A	284.7	284.2	-0.5040	8.520	UA
HRLT Source Current Plus – 1	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus – 2	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus – 3	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus – 4	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus – 5	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus – 6	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus – 7	0	N/A	281.1	281.1	0	8.520	UA

High Resolution Laterolog Array – B Wellsite Calibration – HRLT MV

Before: 5-Jan-2012 1:32 After: 17-Dec-2011 8:15

HRLT Vertical Voltage PI – 0	0	N/A	-321.4	-321.1	0.2661	9.681	UV
HRLT Vertical Voltage PI – 1	0	N/A	-327.6	-326.0	1.651	9.681	UV
HRLT Vertical Voltage PI – 2	0	N/A	-328.3	-327.2	1.146	9.681	UV
HRLT Vertical Voltage PI – 3	0	N/A	-329.8	-328.7	1.121	9.681	UV
HRLT Vertical Voltage PI – 4	0	N/A	-315.3	-315.0	0.3300	9.681	UV
HRLT Vertical Voltage PI – 5	0	N/A	-326.6	-326.5	0.04214	9.681	UV
HRLT Vertical Voltage PI – 6	0	N/A	331.9	329.9	-1.991	9.681	UV
HRLT Vertical Voltage PI – 7	0	N/A	-322.7	-322.7	0	9.681	UV

Hostile Litho-Density Sonde Wellsite Calibration – Background Measurement

Master: 17-Nov-2011 16:03 Before: 17-Nov-2011 15:55 After: 17-Dec-2011 8:50

SS Cs Resolution Bkg	9.000	7.741	7.618	7.594	-0.02418	1.800	%
LS Cs Resolution Bkg	9.000	8.089	8.025	8.065	0.04037	1.800	%

LSW1 Background	100.0	87.45	87.45	87.53	0.08757	0.03000	CPS
LSW2 Background	100.0	80.38	80.38	79.58	-0.7984	0.03000	CPS
LSW3 Background	200.0	180.0	180.0	180.4	0.3738	0.03000	CPS
LSW4 Background	250.0	224.8	224.8	226.5	1.701	0.03000	CPS
LSW5 Background	600.0	526.0	526.0	519.3	-6.693	0.03000	CPS
SSW1 Background	100.0	85.28	85.28	84.82	-0.4580	0.03000	CPS
SSW2 Background	200.0	147.3	147.3	146.1	-1.170	0.03000	CPS
SSW3 Background	500.0	409.2	409.2	411.5	2.230	0.03000	CPS
SSW4 Background	270.0	221.7	221.7	221.2	-0.4445	0.03000	CPS
SSW5 Background	200.0	158.7	158.7	157.7	-1.014	0.03000	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Aluminum Measurement

Master: 17-Nov-2011 16:33

LSW1 Aluminum	600.0	560.2	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	815.4	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	984.8	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	493.4	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	450.2	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2639	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	7196	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	10050	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	4135	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	504.7	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Lithology Measurement

Master: 17-Nov-2011 16:29

LSW1 Iron	400.0	389.4	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	674.0	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	897.0	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	464.0	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	424.7	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1967	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	6145	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	9395	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3871	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	460.2	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Caliper Calibration

Before: 17-Dec-2011 9:53

HLDS Caliper Small Ring	12.00	N/A	14.33	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	18.10	N/A	N/A	N/A	IN

Enhanced DTS Cartridge Wellsite Calibration – EDTC Accelerometer Calibration

Before: 4-Jan-2012 23:45

EDTC Z-Axis Acceleration	9.810	N/A	9.748	N/A	N/A	N/A	M/S2
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Enhanced DTS Cartridge Wellsite Calibration – Detector Calibration

Before: 27-Dec-2011 9:12 After: Calibration not done

Gamma Ray (Jig – Bkg)	160.1	N/A	160.1	N/A	N/A	0.09091	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

Hostile Natural Gamma Ray Cartridge – B / Equipment Identification

Primary Equipment:							
HNGC Cartridge			HNGC – B		300		
Auxiliary Equipment:							
HNGC Housing			HNGH – A		115		

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:							
HNGS Sonde			HNGS – BA		194		
Auxiliary Equipment:							
HNGS Sonde Housing			HNSH – BA		205		
Gamma Source Radioactive			GSR – U		616008		

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.70	Master		15.50	Master		1176

Before		39.69	Before		15.07	Before		1168
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		142.1	Master		8.309	Master		29.76
Before		141.8	Before		8.731	Before		21.55
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		20.77						
Before		21.01						
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)						
Master: 17-Nov-2011 7:57			Before: 26-Nov-2011 0:21					

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		39.60	Master		16.99	Master		1109
Before		39.49	Before		15.91	Before		1091
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		142.6	Master		9.914	Master		29.91
Before		142.3	Before		8.591	Before		21.84
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		21.44						
Before		20.97						
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)						
Master: 17-Nov-2011 7:57			Before: 26-Nov-2011 0:21					

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		0.9705
Before		1.004
0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)
Master: 17-Nov-2011 7:57		
Before: 26-Nov-2011 0:21		

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		210.8	Master		6.865
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		24.91	Master		1.010			
10.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)	0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)			
Master: 17-Nov-2011 7:52								

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		208.5	Master		6.879
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			24.15	Master		1.001
	10.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)		0.9400 (Minimum)	1.000 (Nominal)
						1.060 (Maximum)

Master: 17-Nov-2011 7:52

High Resolution Laterolog Array – B / Equipment Identification

Primary Equipment:			
HRLT Sonde	HRLS – B		969
Auxiliary Equipment:			
HRLT lower Housing	HRLH – B		759
HRLT Lower Cartridge	HRLC – B		759
HRLT upper Housing	HRUH – B		769
HRLT Upper Cartridge	HRUC – B		769

Hostile Litho–Density Sonde / Equipment Identification

Primary Equipment:			
Hostile Litho Density Sonde	HLDS – D		45
Hostile Litho Density High Voltage	HLDV – D		45
Gamma Source Radioactive	GSR – Z		2397
Auxiliary Equipment:			
Hostile Litho Density Pad	HLDP – C		45
Hostile Litho Density High Voltage Housi	HEH – H		47

Litho–Density Spectroscopy Cartridge – B / Equipment Identification

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

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:			
EDTC Gamma Ray Detector	EDTG – A/B		8305
Enhanced DTS Cartridge	EDTC – B		8317
Auxiliary Equipment:			
EDTC Housing	EDTH – B		8303

Company: **Lamont Doherty**

**Schlumberger**

Well: **Expedition 339, Site U1390 GC–02B**

Field: **Mediterranean Outflow (Portugal)**

Rig: **JOIDES Resolution**

Ocean: **Atlantic**

Hostile Natural Gamma Ray

