

# Schlumberger

**Company: Lamont Doherty**

**Well: Expedition 330 Site U1374A**

**Field: Louisville Seamounds**

**Rig: JOIDES Resolution Ocean: Pacific**

**HNGS  
Hostile Natural Gamma  
Spectroscopy**

Latitude: S 28° 35.75'	Elev.: K.B. -1570.00 m
Longitude: W 173° 22.83'	G.L. 0.00 m
	D.F. -1570.00 m

Permanent Datum: Sea Floor	Elev.: 0.00 m
Log Measured From: Sea Floor	-1570.00 m above Perm. Datum
Drilling Measured From: Sea Floor	

API Serial No.	Max. Hole Devi. 0 deg	Longitude W 123° 9.6433'	Latitude S 27° 55.0021'
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JOIDES Resolution  
 Louisville Seamounds  
 Location: S 28° 35.75'  
 Well: Expedition 330 Site U1374A  
 Company: Lamont Doherty

LOCATION

Logging Date	22-Jan-2011		
Run Number	1		
Depth Driller	522 m		
Schlumberger Depth	520 m		
Bottom Log Interval	487 m		
Top Log Interval	0 m		
Casing Driller Size @ Depth	4.500 in	@	128 m
Casing Schlumberger	130 m		
Bit Size	9.875 in		
Type Fluid In Hole	Seawater		
MUD	Density	Viscosity	1.078 g/cm3
	Fluid Loss	PH	
	Source Of Sample		
RM @ Measured Temperature		@	@
RMF @ Measured Temperature		@	@
RMC @ Measured Temperature		@	@
Source RMF	RMC	N/A	N/A
RM @ MRT	RMF @ MRT	@ 15	@ 15
Maximum Recorded Temperatures			
Circulation Stopped	Time	18-Jan-2011	0:00
Logger On Bottom	Time	22-Jan-2011	3:00
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			

Run 1

Run 2

R

DISCLAIMER

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OTHER SERVICES1  
OS1: FMS  
OS2: UBI  
OS3: DITE  
OS4: HLDS/APS  
OS5: GBM

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 1570m to force sea floor as the new reference. This log references sea floor at 0 m. TD of hole at 522m (driller), 520 m (log)  
Active Heave Compensation on for all logs.  
Tools run inside drill pipe and drill collars thru bit release and BHA. 9 7/8" bit released prior to logging. ID of pipe at minimum is 4.1" diameter.  
MCD centralizers run to centralize Dipole Sonic.  
GPIT run with tool for Active Heave Compensator testing (AHC).  
GR spike at 75m possibly related to APS neutron activation by correcting wrap on cable drum requiring toolstring to descend in order to repair.  
Repeat section shows GR at slightly higher level due to Neutron activation of the borehole.  
  
Multiple attempts at logging this hole were made, with last attempt being successful after full wiper trip and drilling through obstructions.

REMARKS: RUN NUMBER 2

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

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

LOGGED INTERVAL	START	STOP

LOGGED INTERVAL	START	STOP

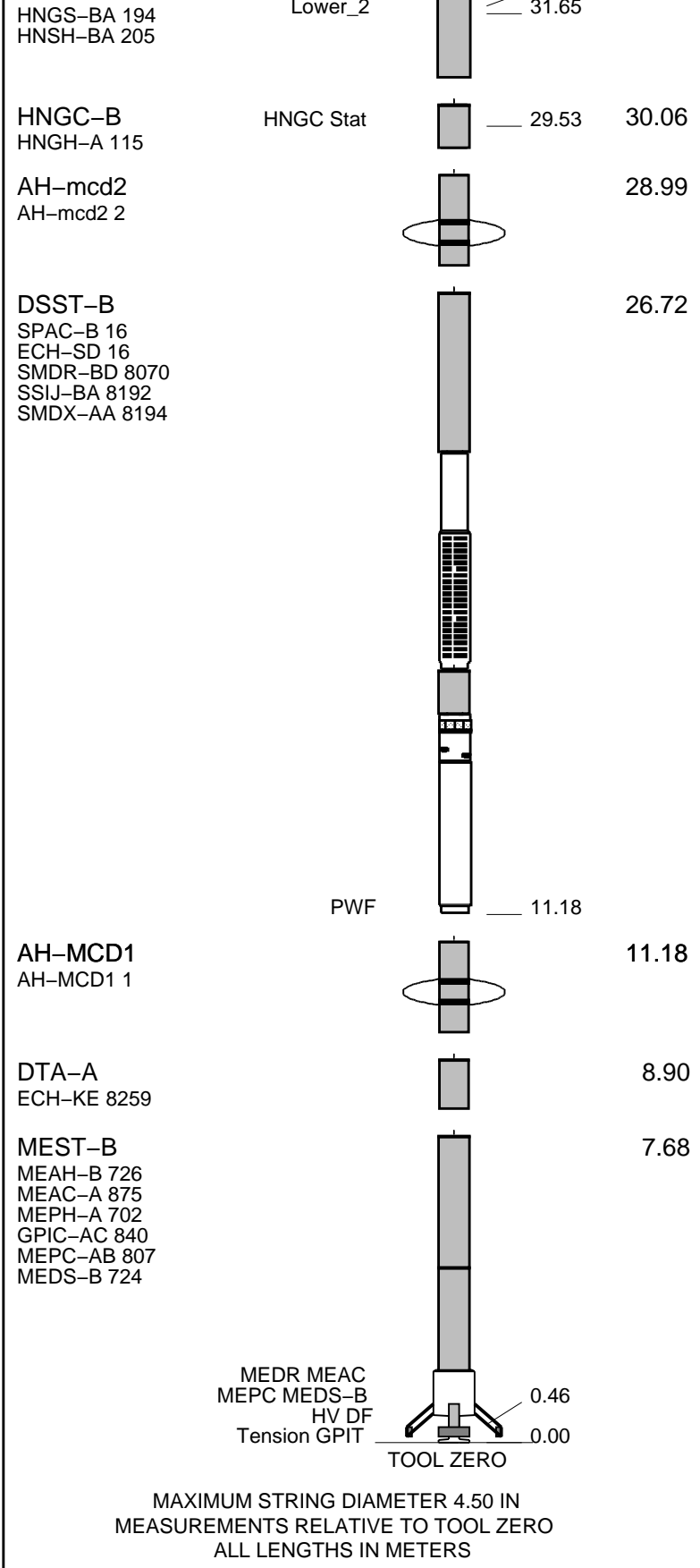
EQUIPMENT DESCRIPTION

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

RUN 2

DOWNHOLE EQUIPMENT  
  
LEH-QT 34.36  
LEH-QT 301  
CTEM 33.20  
DTC-H 33.47  
TelStatus  
ECH-KC 1777 ToolStatu 32.56  
HNGS-BA Upper\_1 31.86 32.56

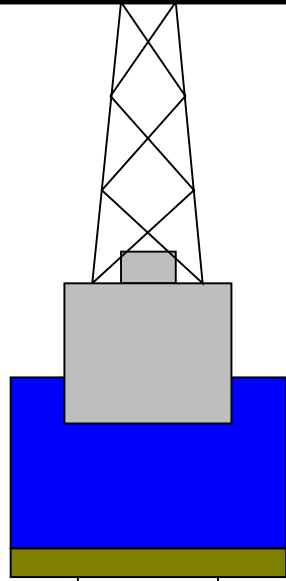




Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	MD	

Kelly Bushing Elevation  
 Derrick Floor Elevation  
 Mean Sea Level

-1570  
 -1570  
 -1559



4.1



0

4.1

128

9.875

Sea Floor

Open Hole

522

Total Depth

### Input DLIS Files

DEFAULT	FMS_DSI_NGS_042LUP	FN:75	PRODUCER	21-Jan-2011 15:02	2089.4 M	1562.1 M
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### Output DLIS Files

DEFAULT	FMS_DSI_NGS_121PUP	FN:11	PRODUCER	11-Feb-2011 09:03	518.9 M	-7.9 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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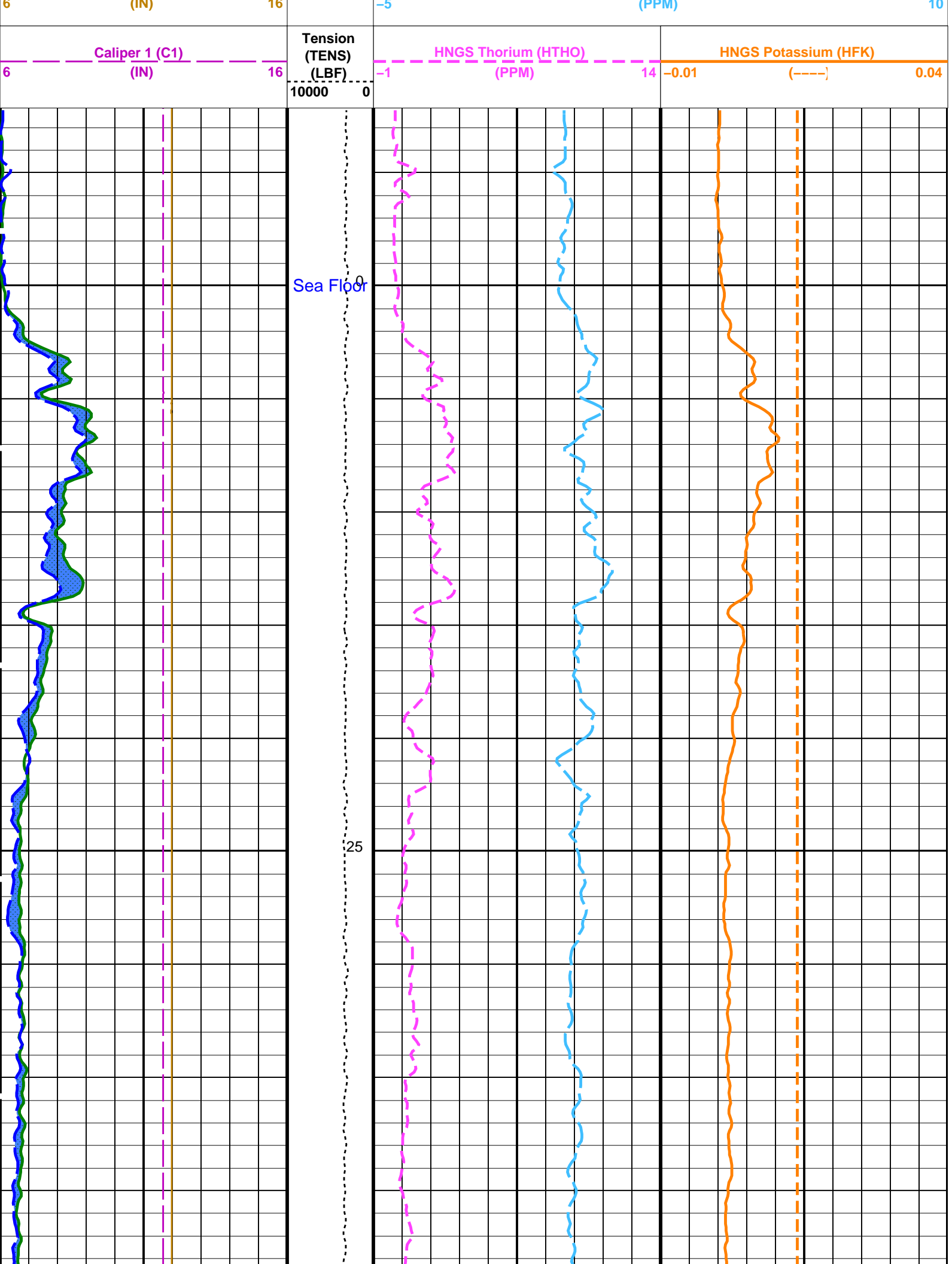
HNGS Computed Gamma Ray (HCGR)		
0	(GAPI)	100

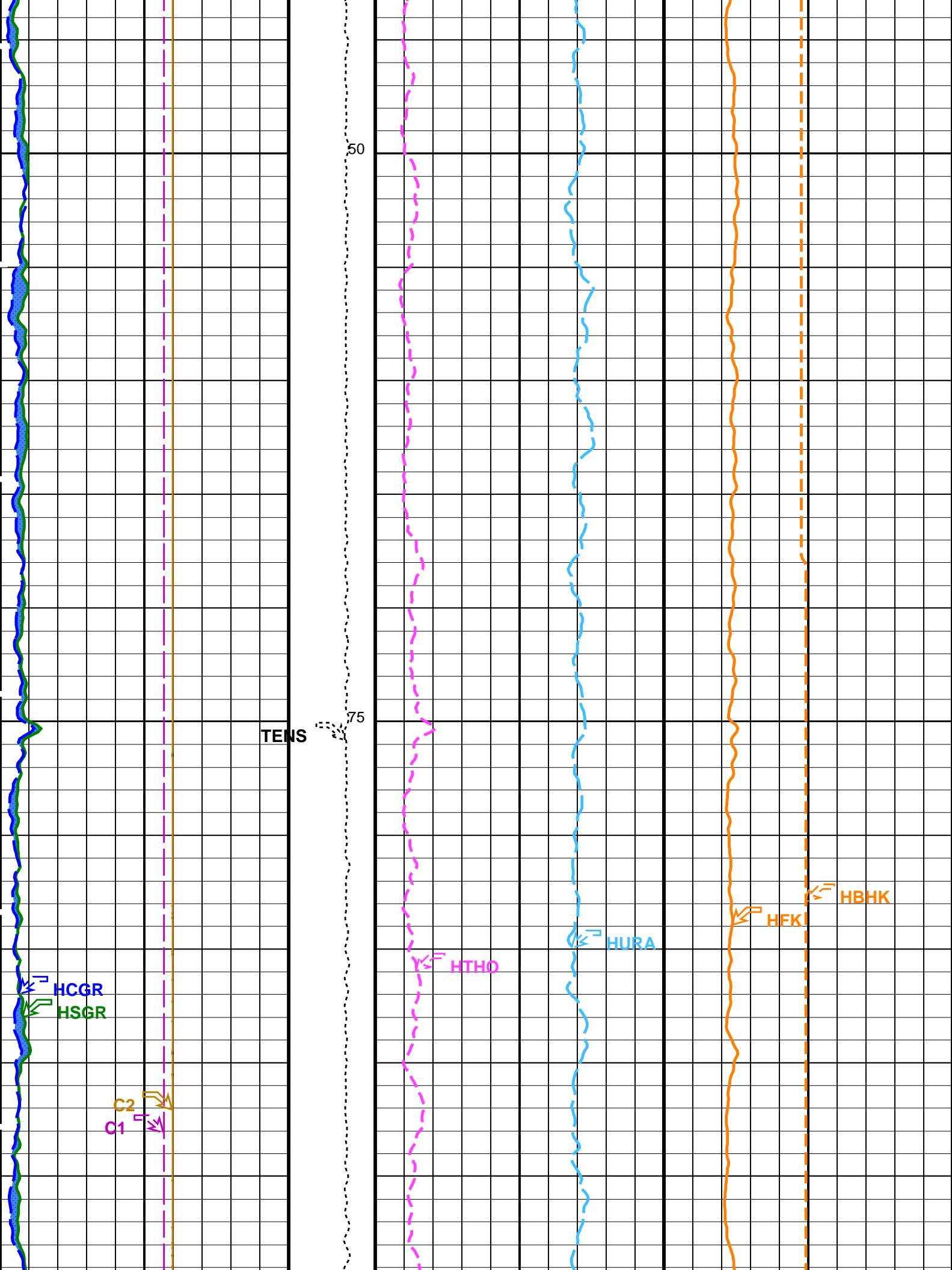
Caliper 2 (C2)		
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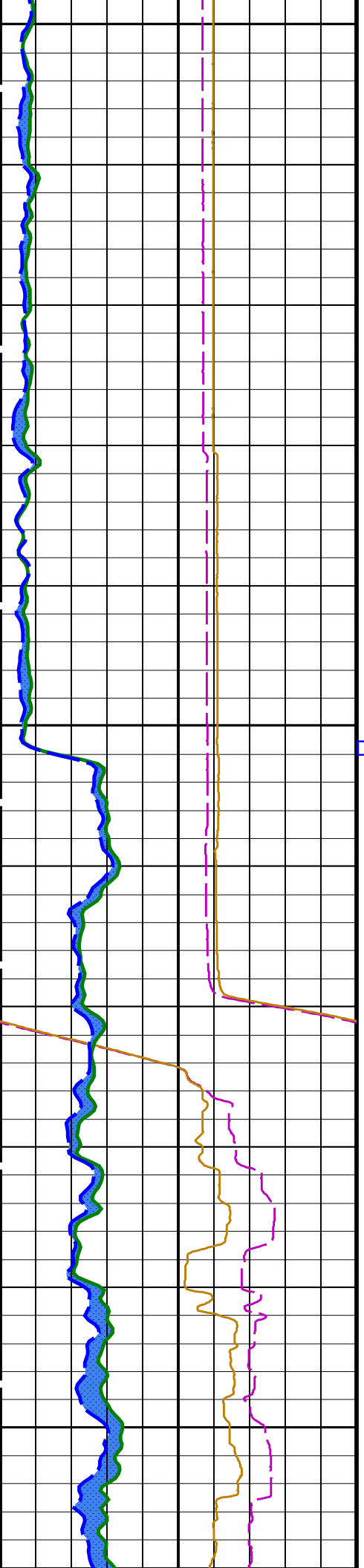
Uplong 2

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

HNGS Uranium (HURA)		
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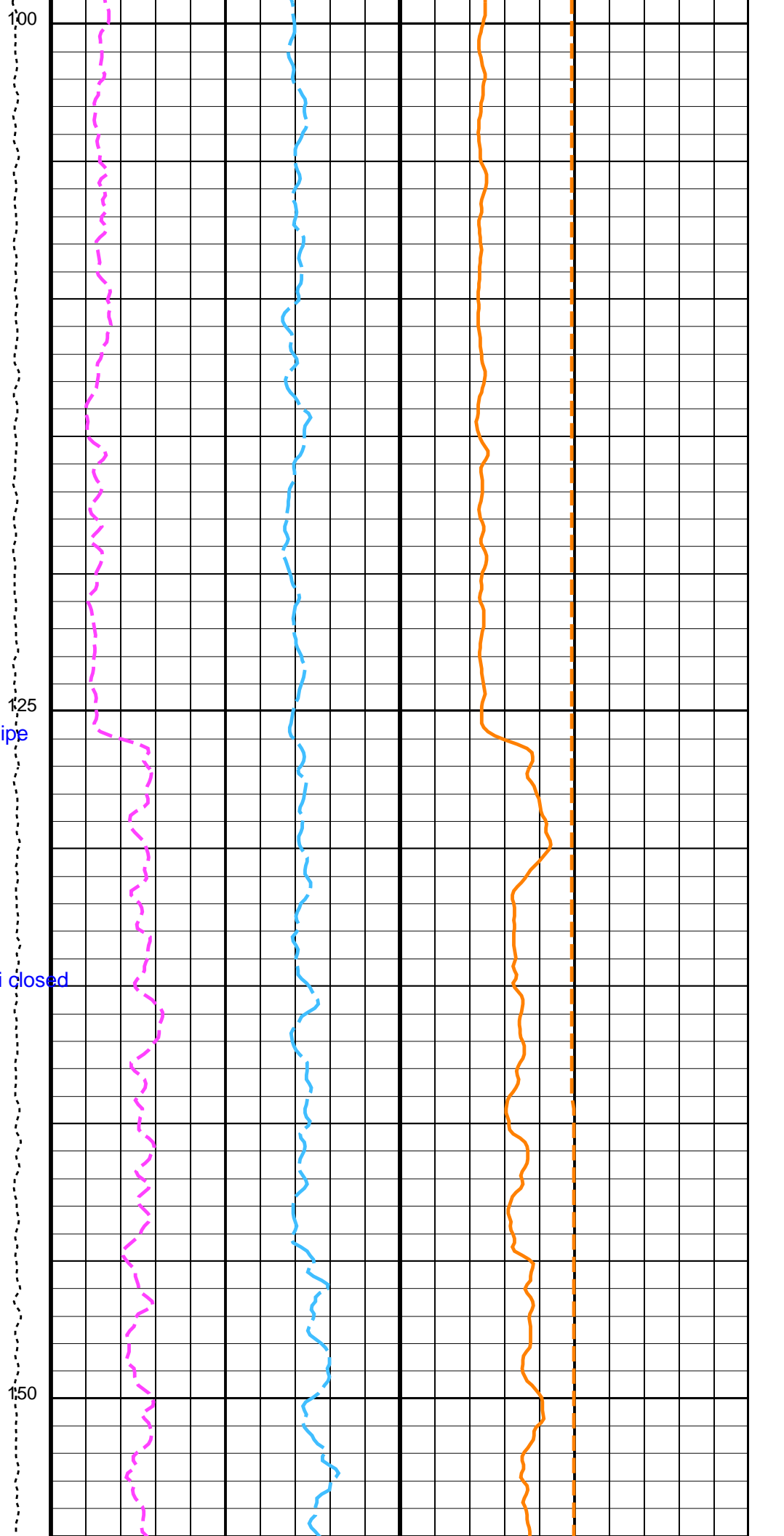






Drill Pipe

Cali closed

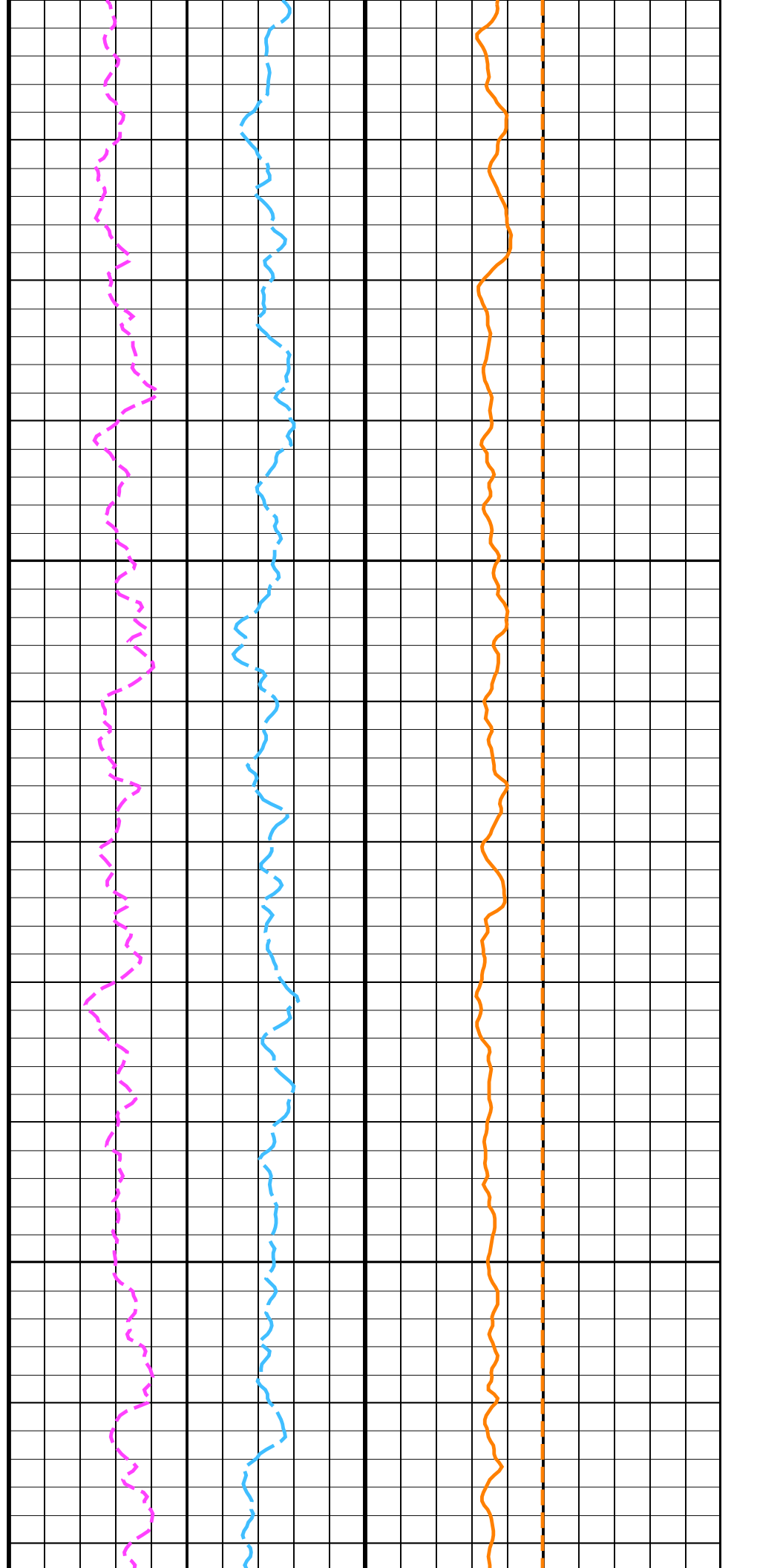
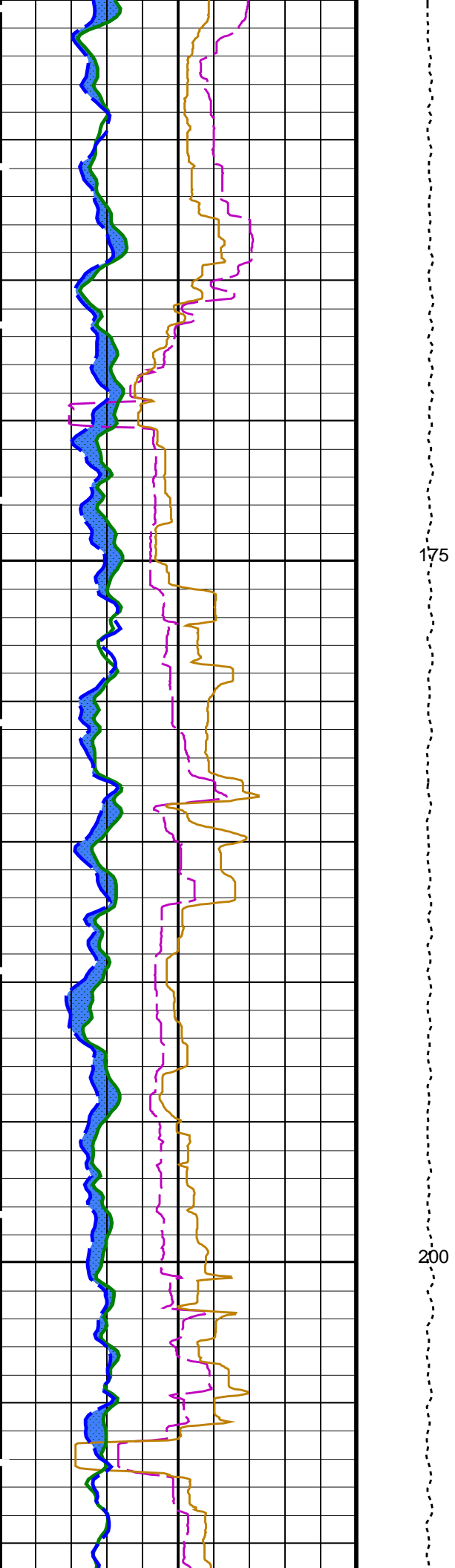


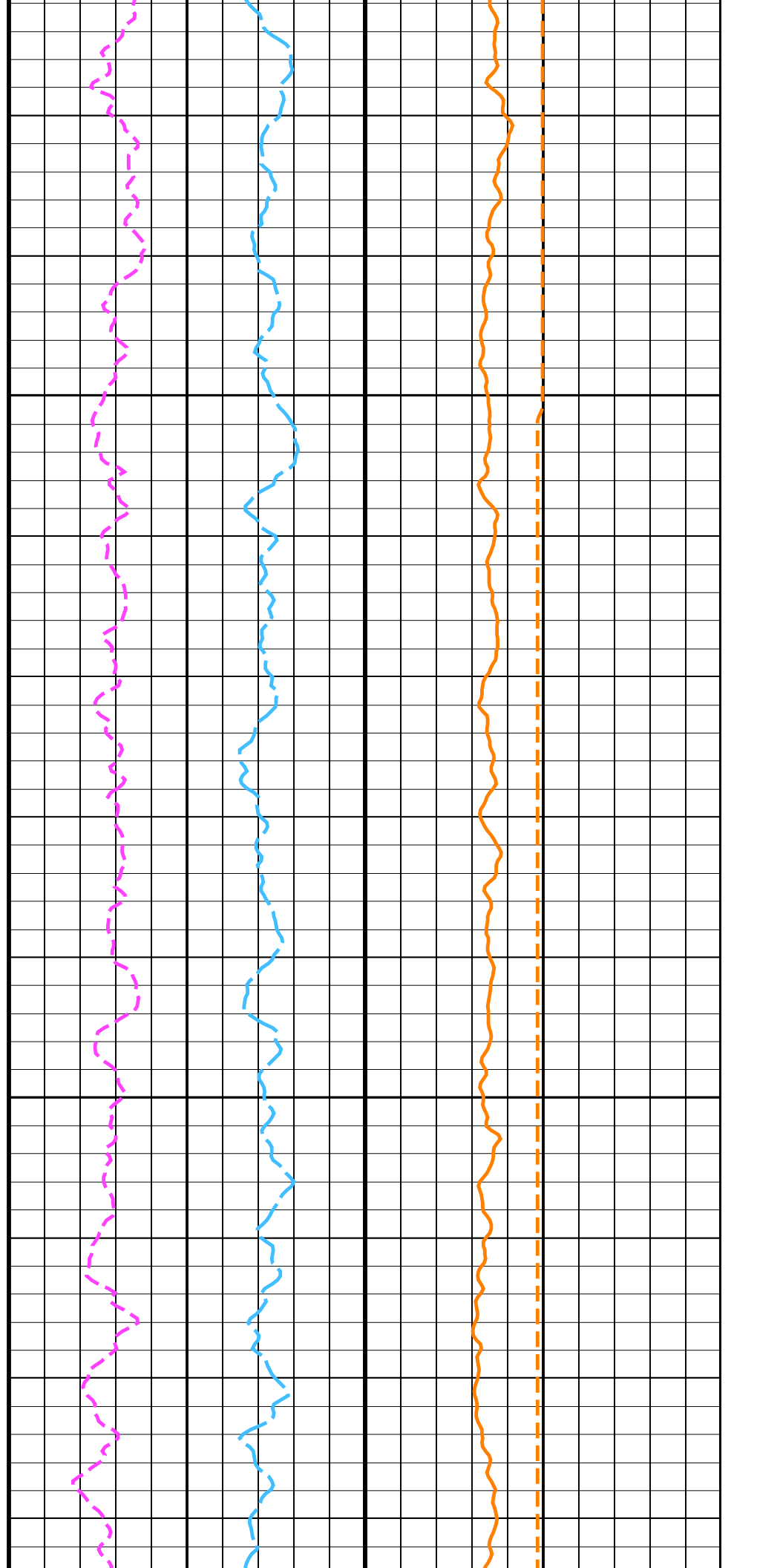
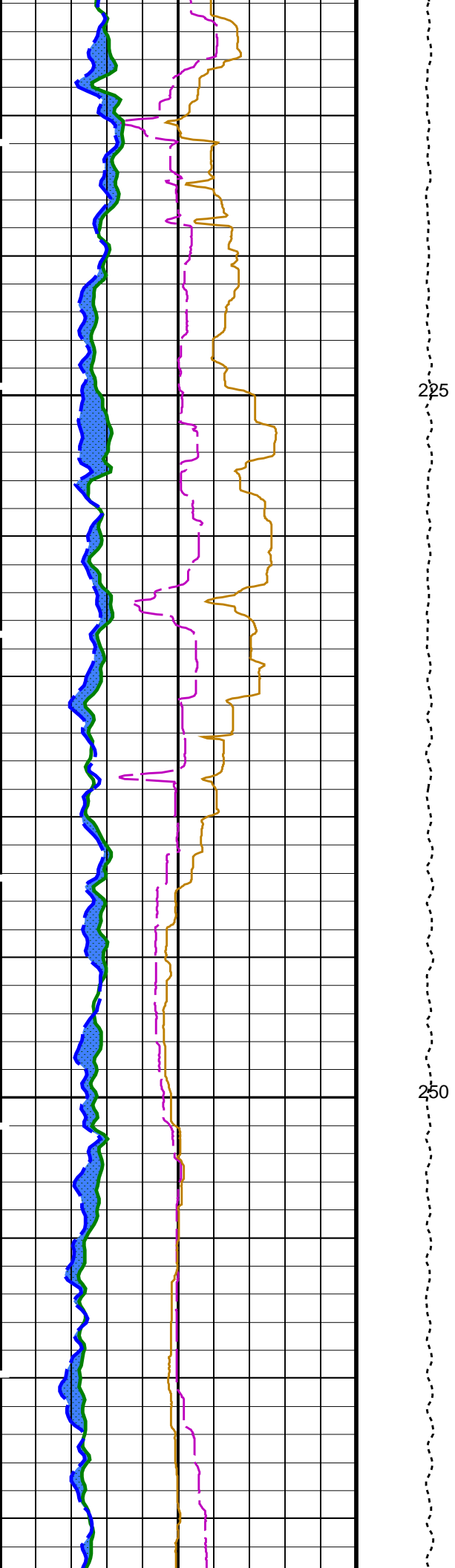
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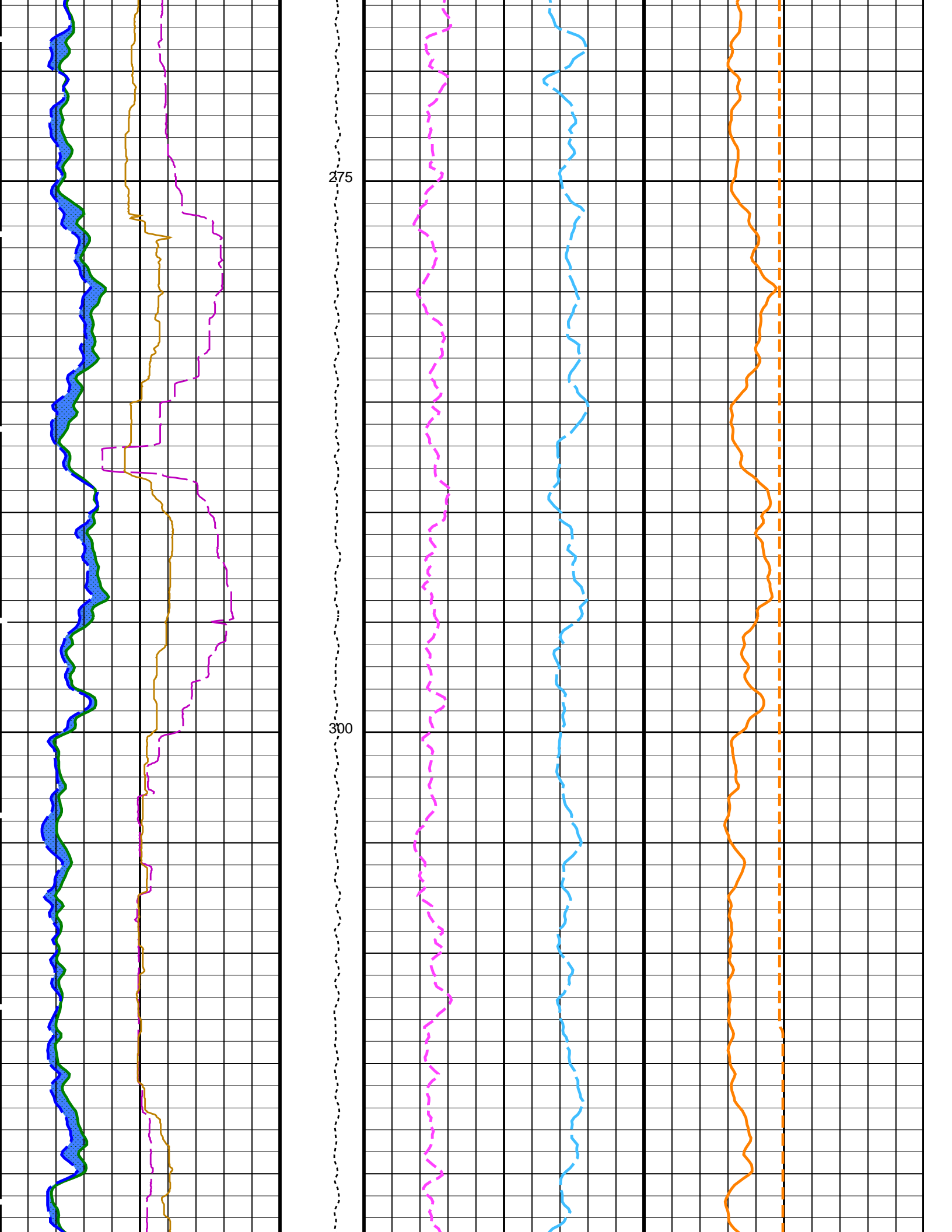
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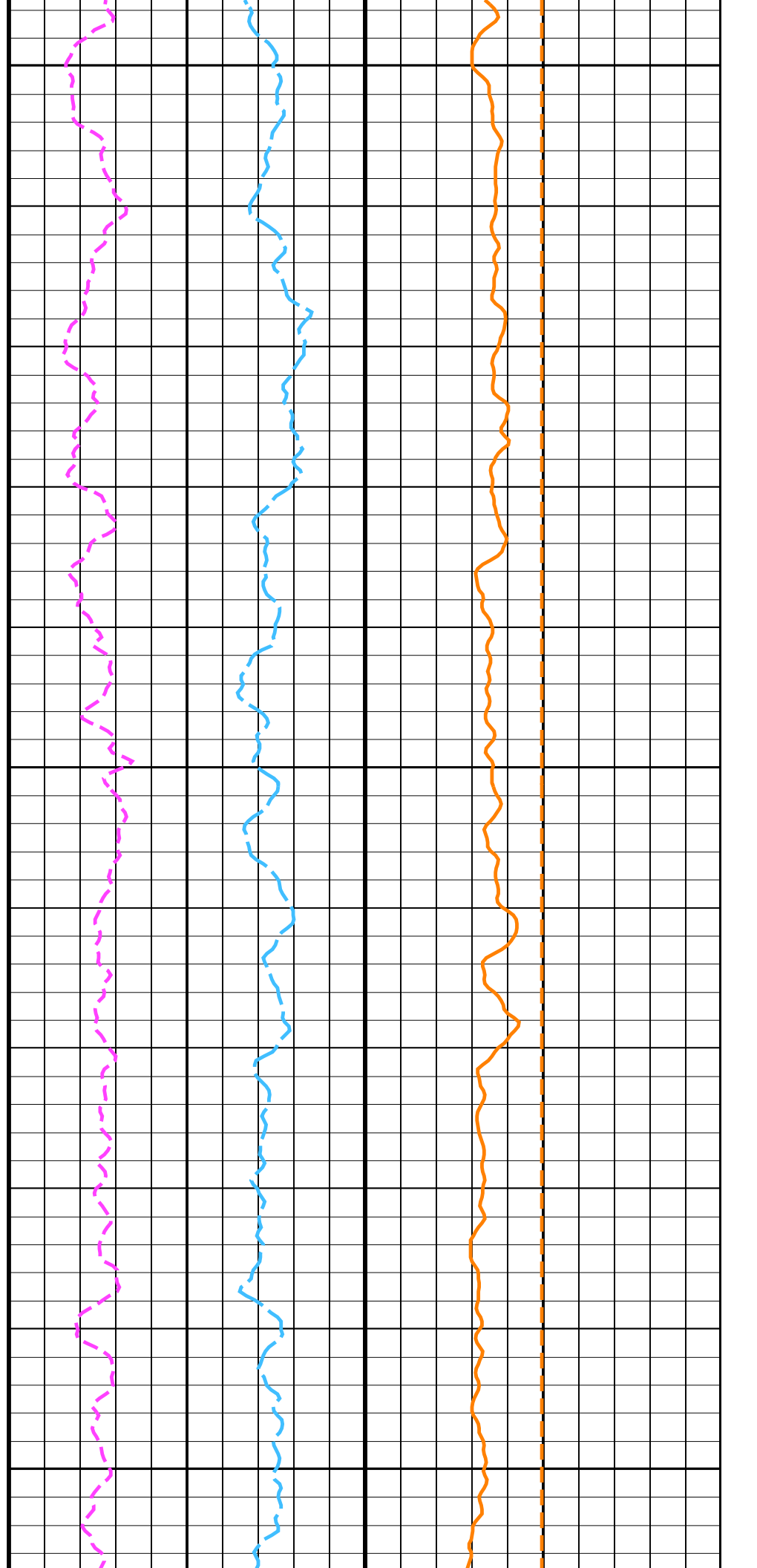
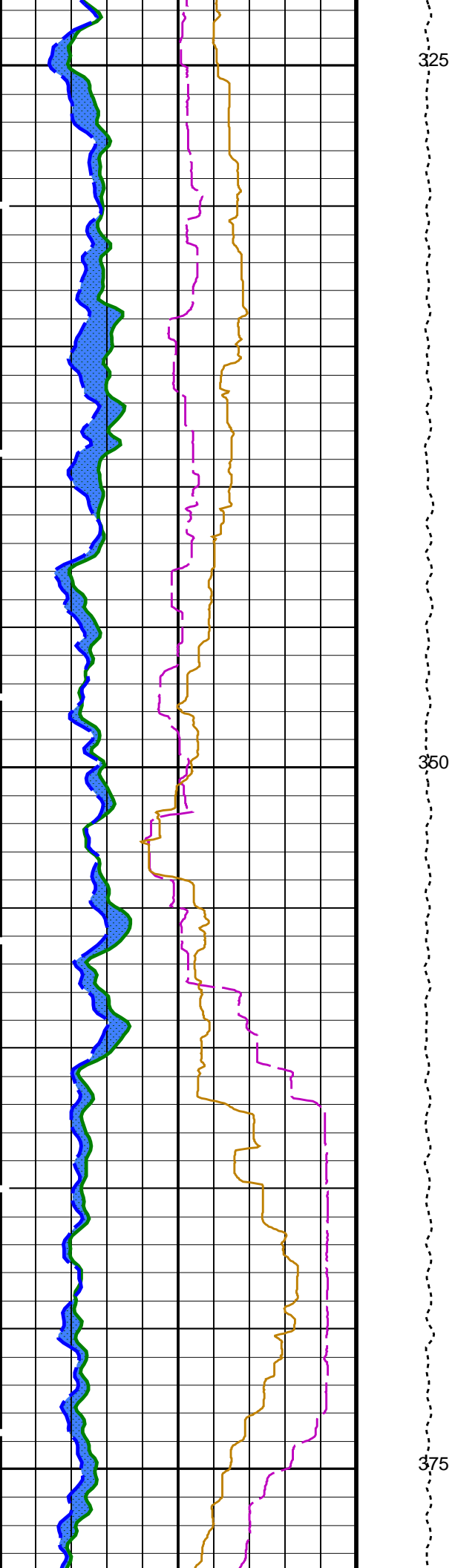
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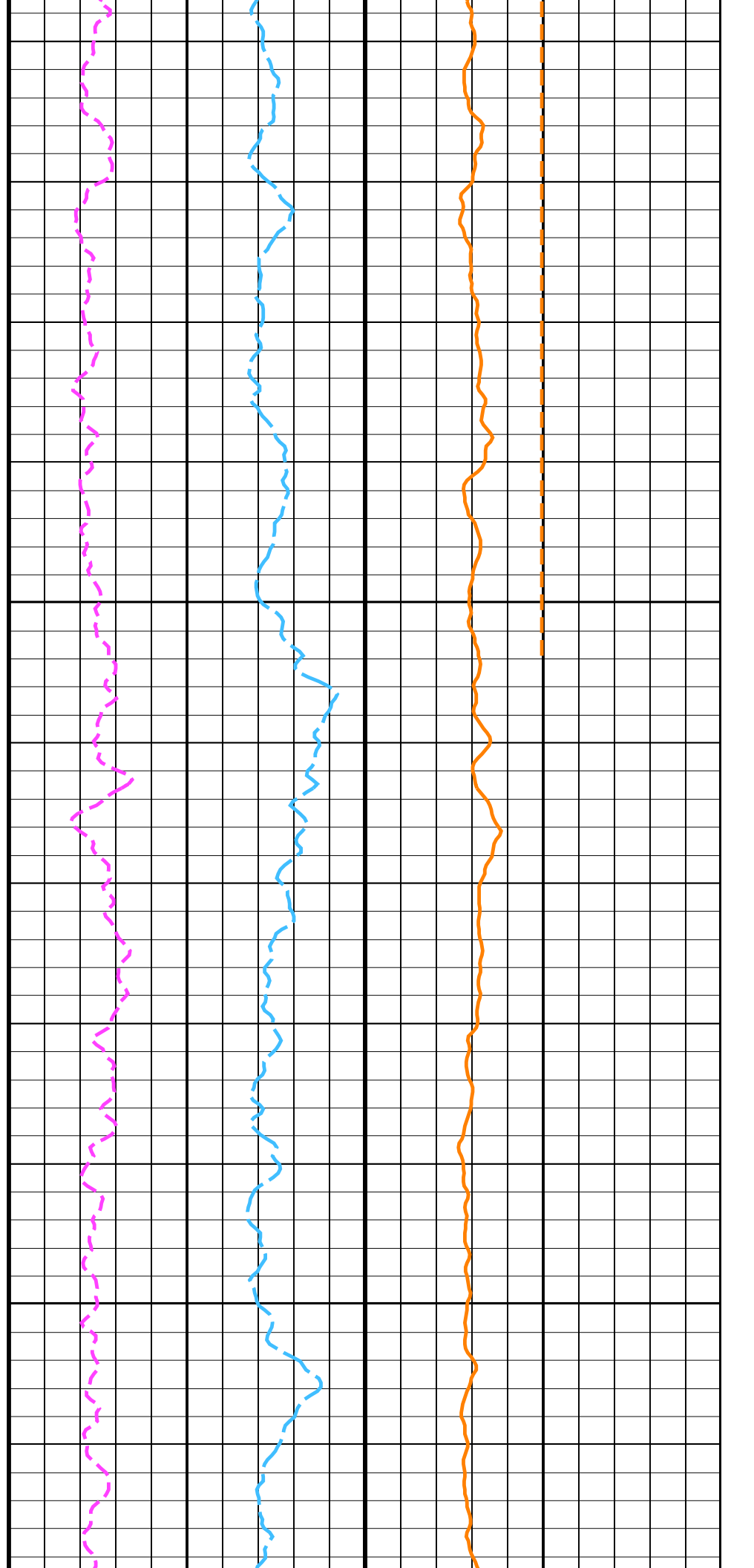
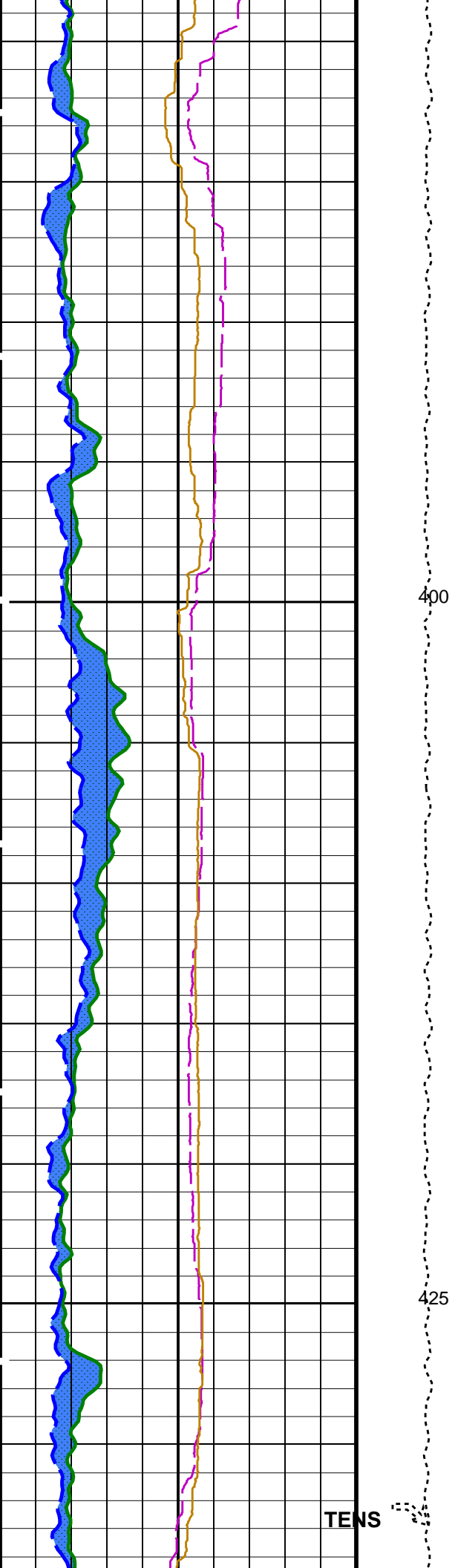




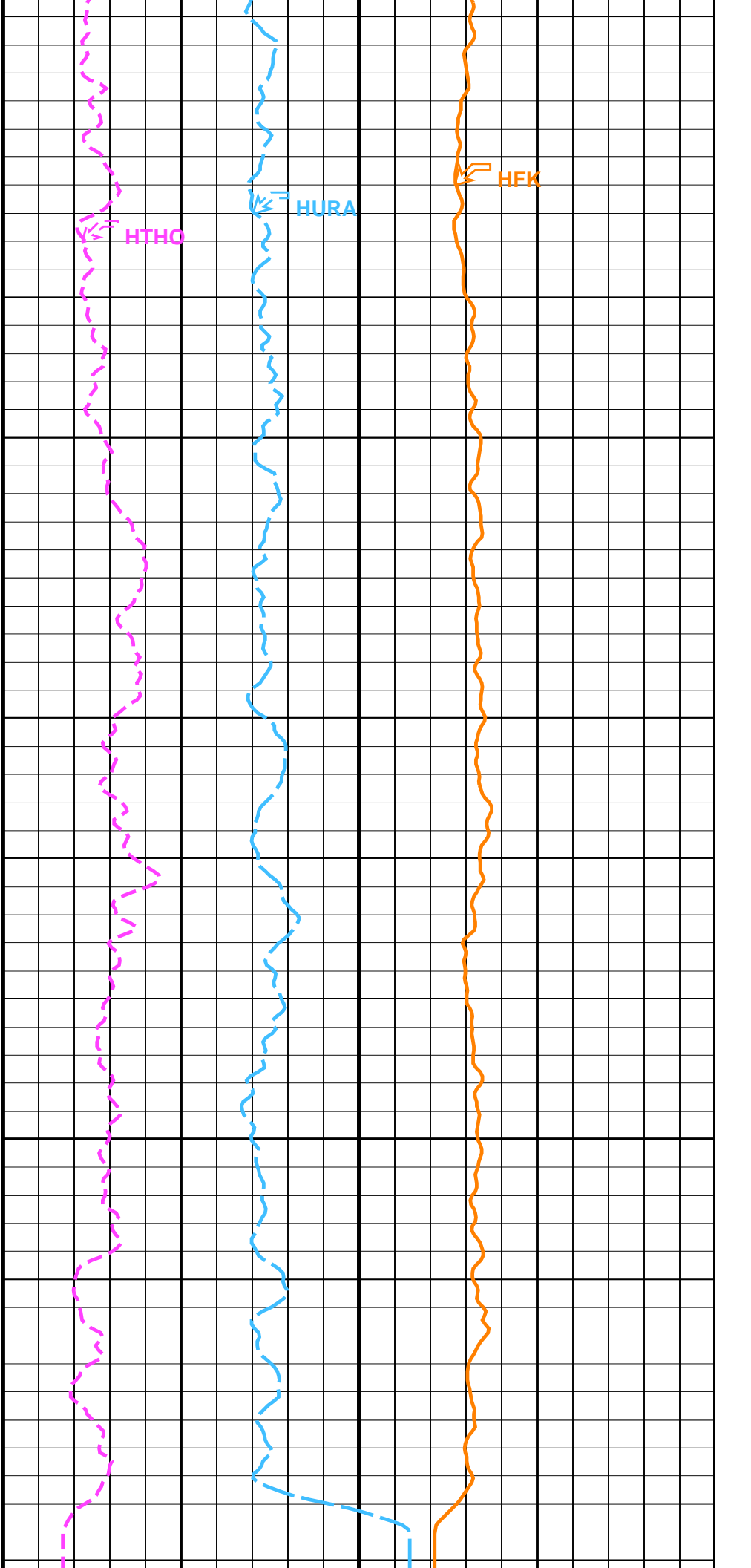
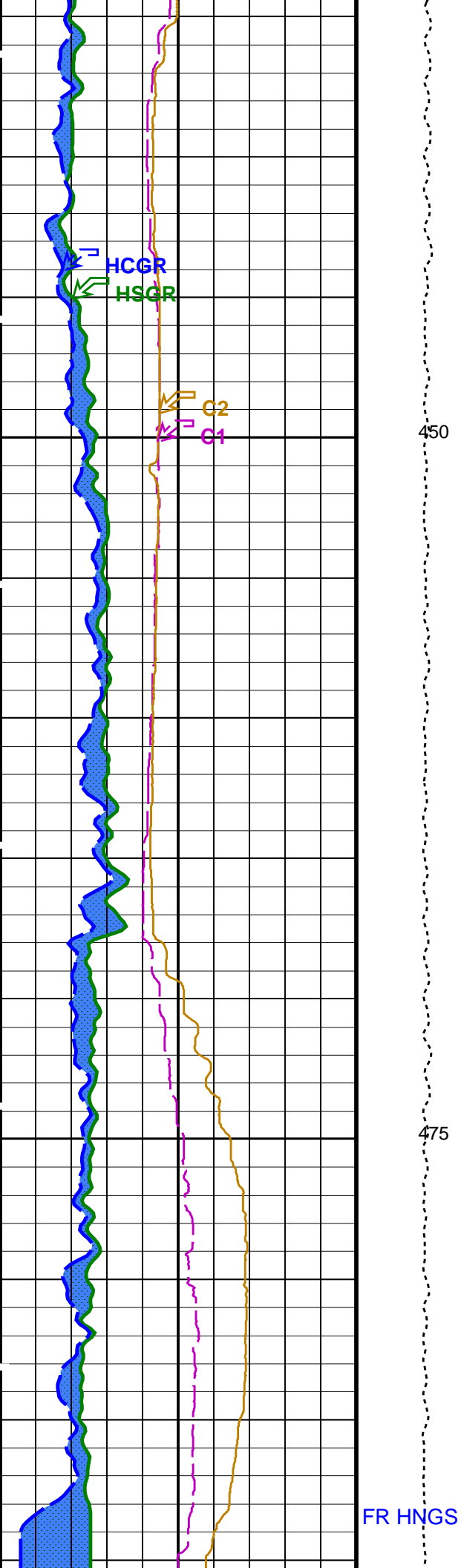


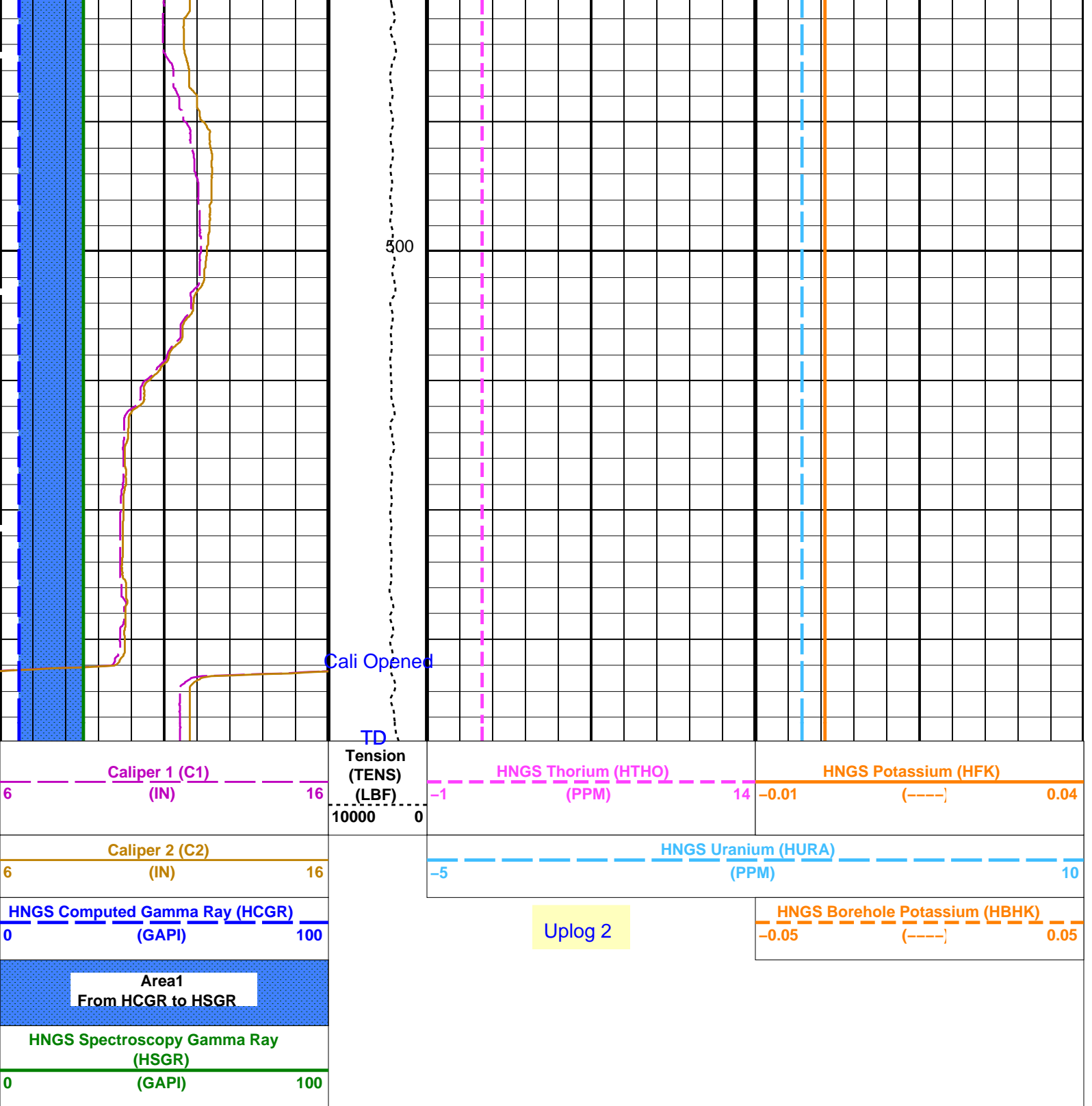






TENS





PIP SUMMARY

Parameters

DLIS Name	Description	Value
BHS	DSST-B: Dipole Shear Imager - B	
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
BHS	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	-0.00121143	
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	CENT	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.969639	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.959793	
<b>System and Miscellaneous</b>			
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.03	G/C3
DO	Depth Offset for Playback	-1570.0	M
PP	Playback Processing	NORMAL	

Format: HNGSYields      Vertical Scale: 1:200      Graphics File Created: 11-Feb-2011 09:03

### 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_042LUP	FN:75	PRODUCER	21-Jan-2011 15:02	2089.4 M	1562.1 M
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#### Output DLIS Files

DEFAULT	FMS_DSI_NGS_121PUP	FN:11	PRODUCER	11-Feb-2011 09:03		
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#### Input DLIS Files

DEFAULT	FMS_DSI_NGS_038LUP	FN:67	PRODUCER	21-Jan-2011 14:05	2089.4 M	1754.9 M
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#### Output DLIS Files

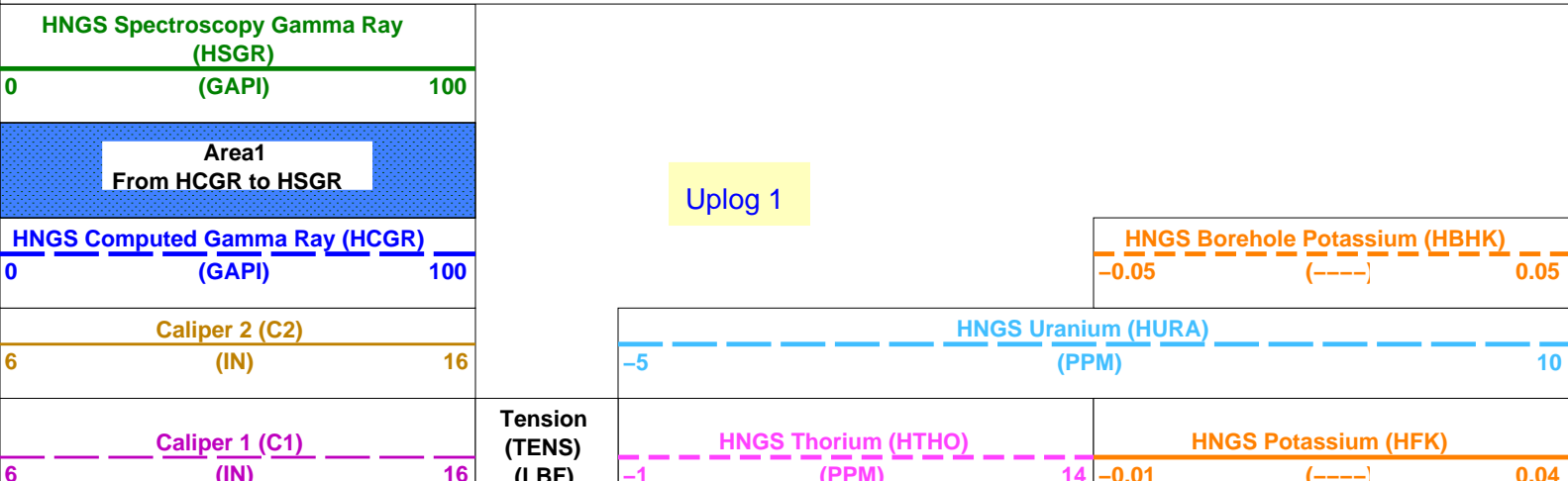
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### OP System Version: 17C0-154

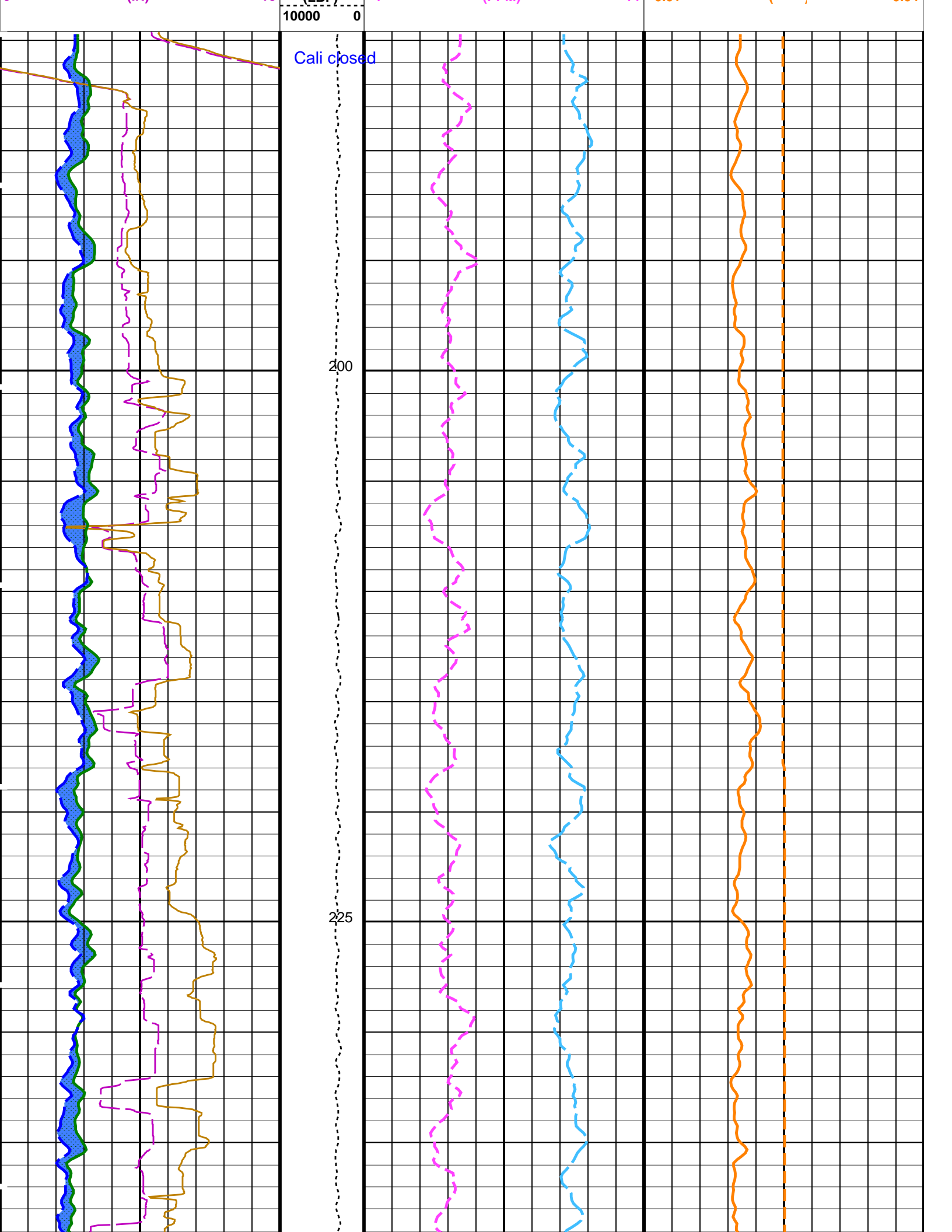
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DSST-B	17C0-154	HNGC-B	SPC-3961-OP17_NUCL
HNGS-BA	SPC-3961-OP17_NUCL	DTC-H	17C0-154

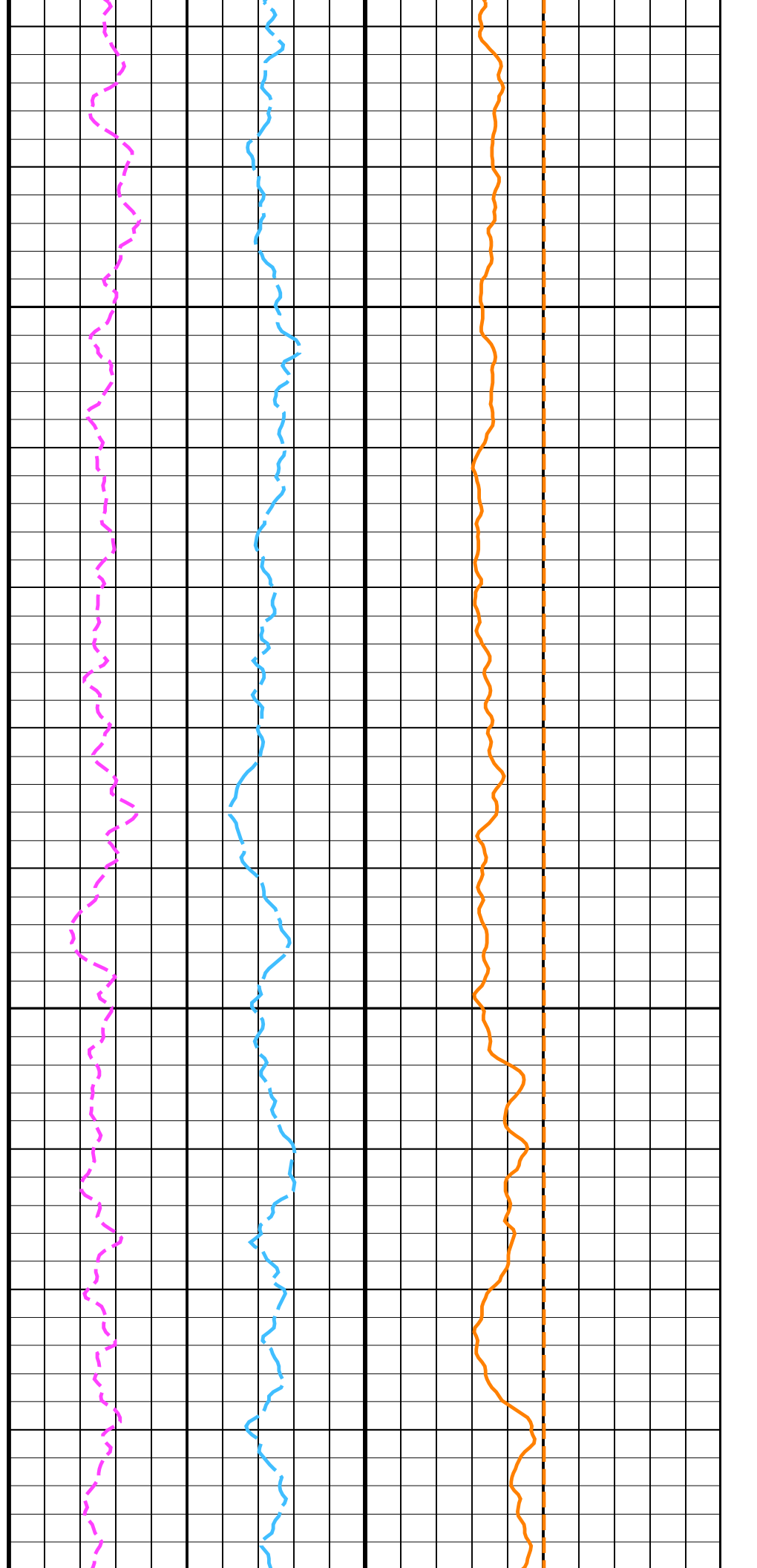
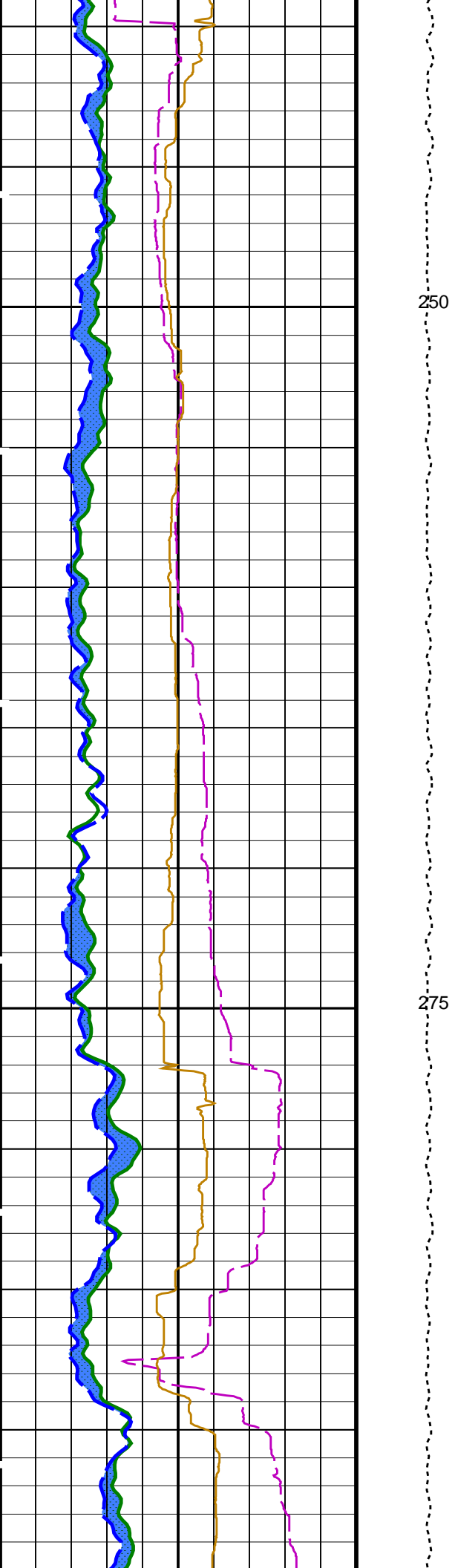
#### PIP SUMMARY

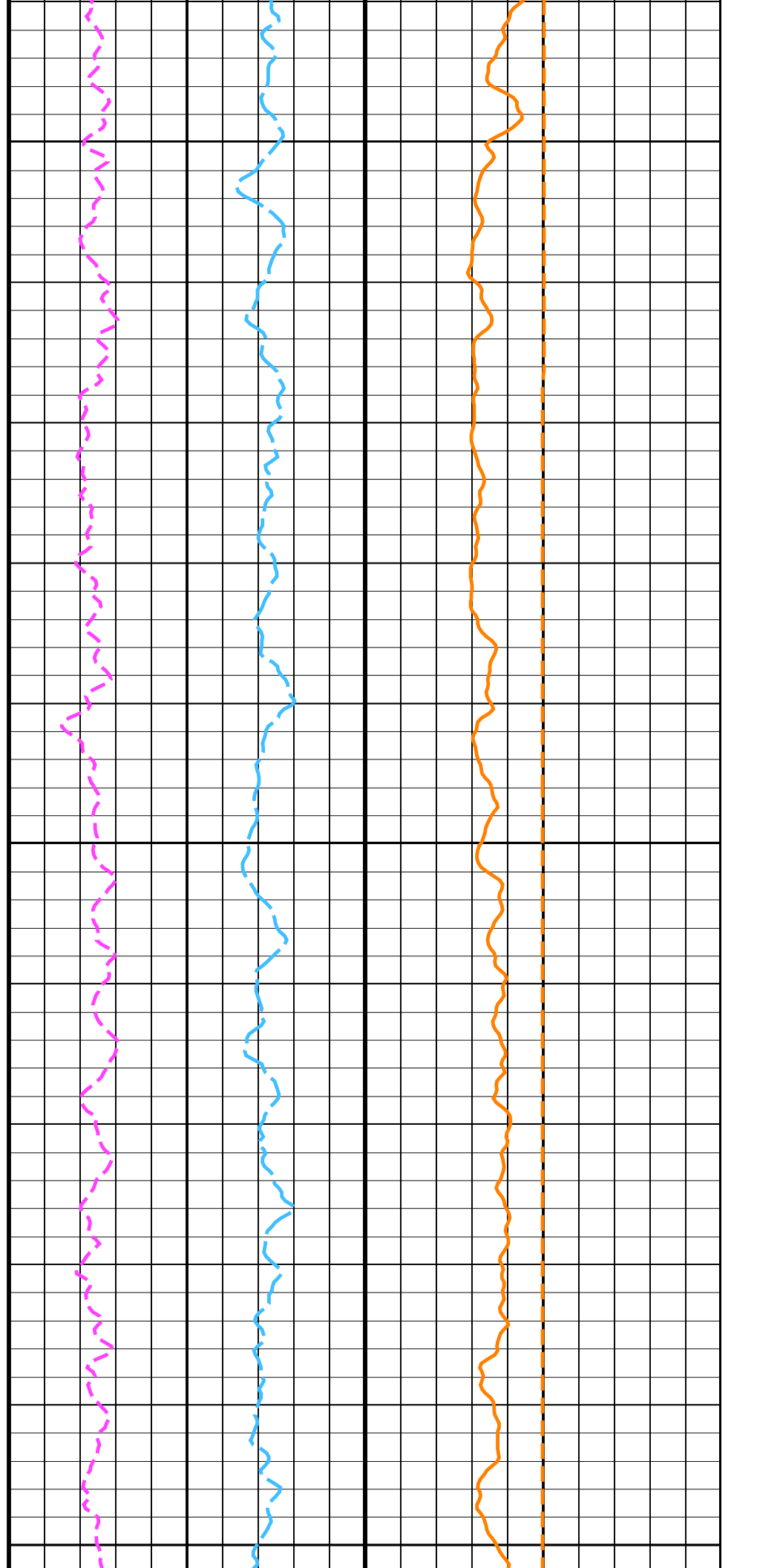
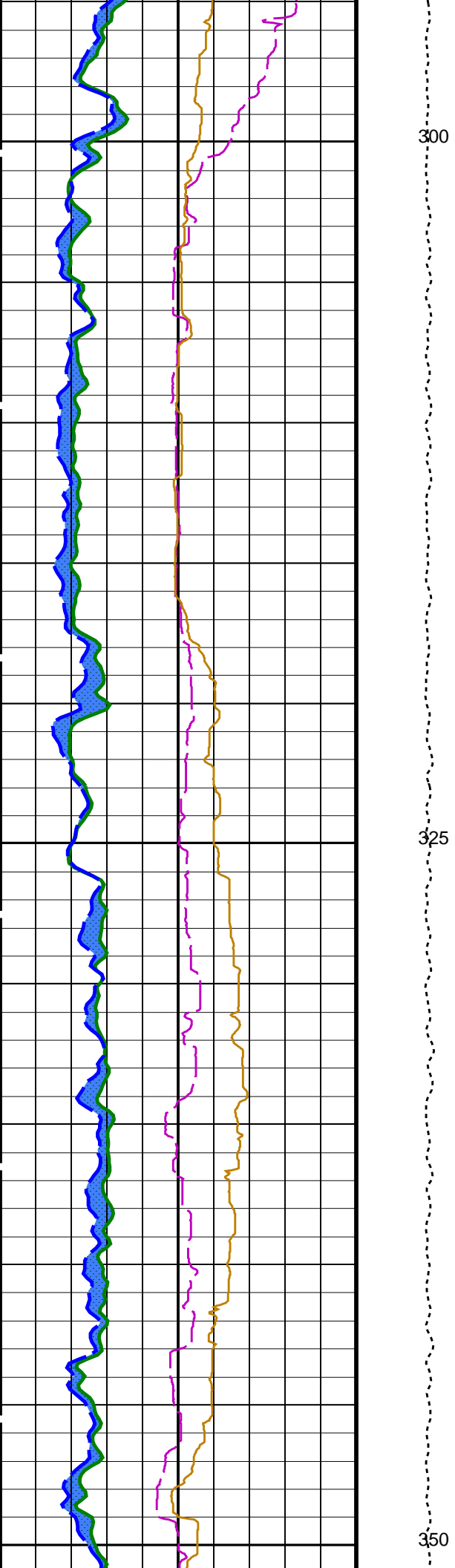
Time Mark Every 60 S

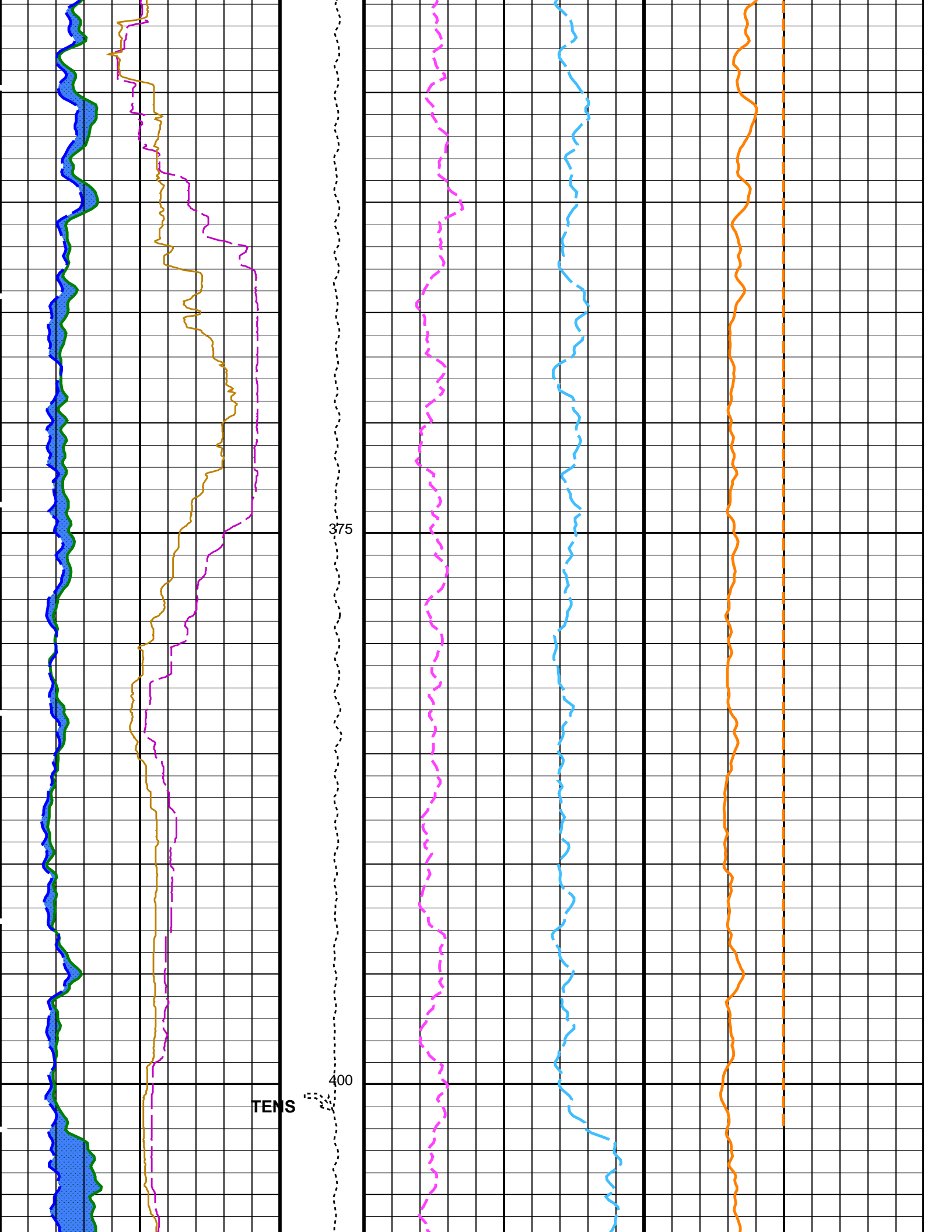


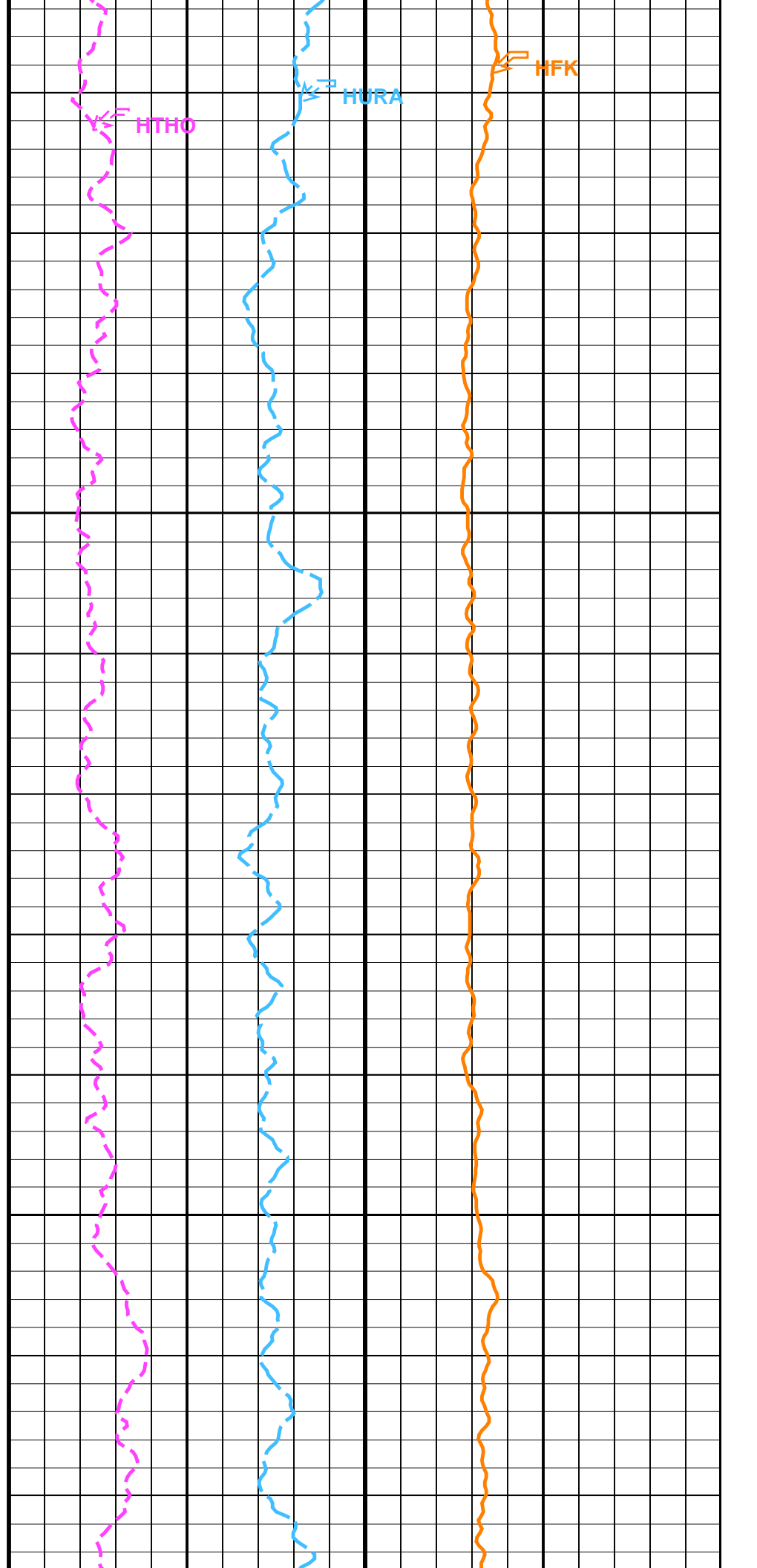
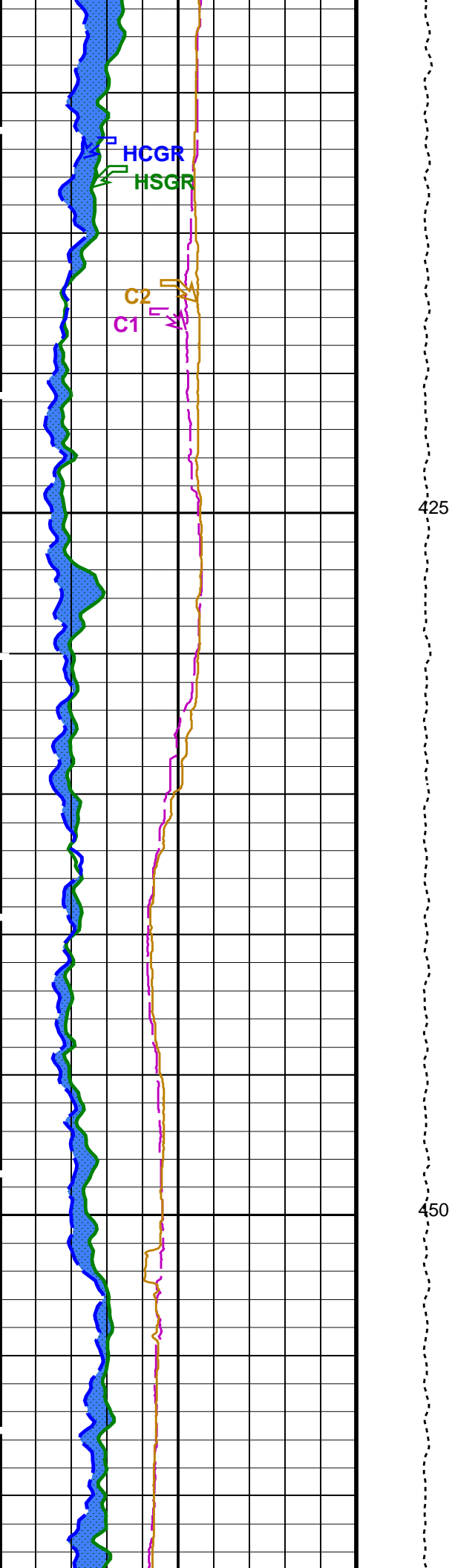


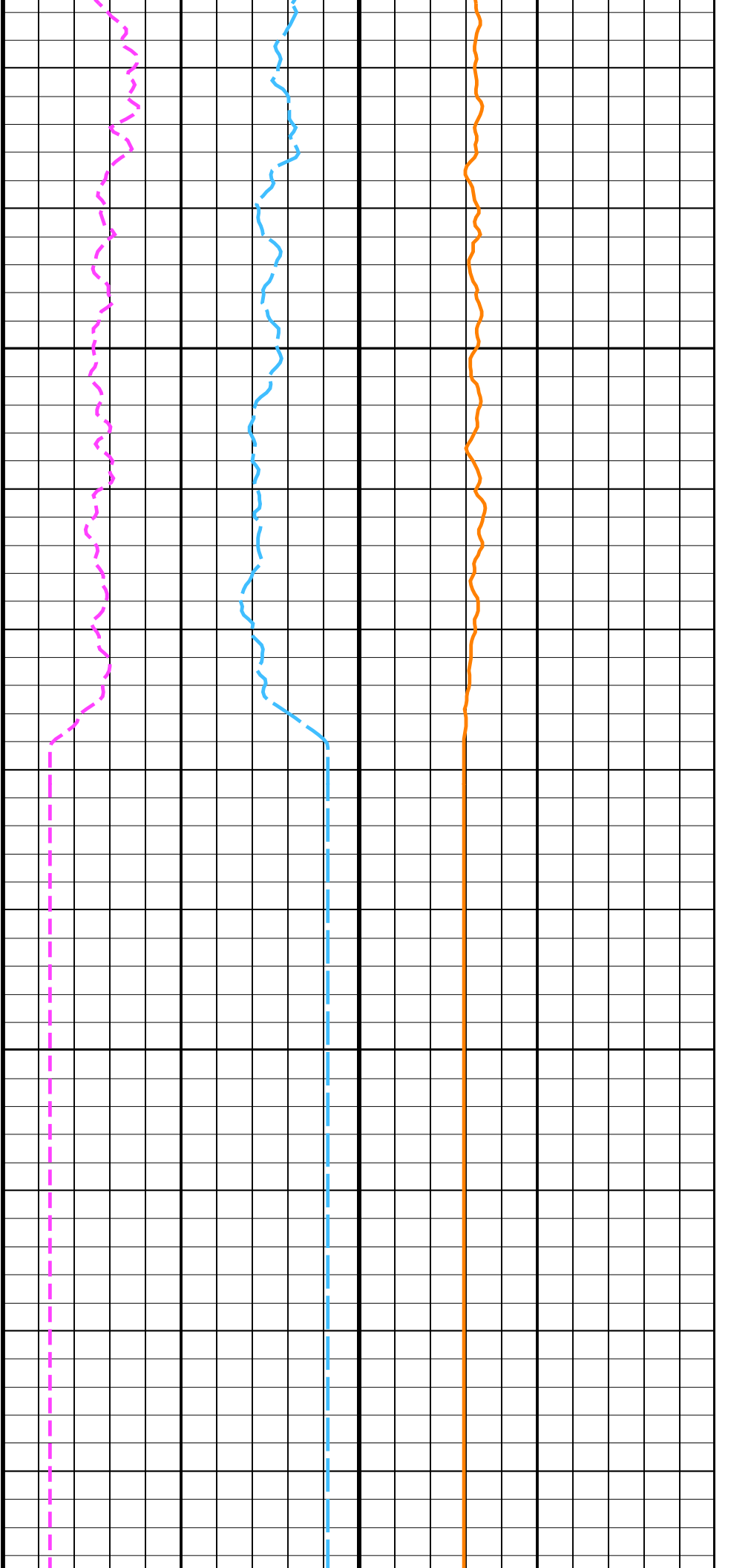
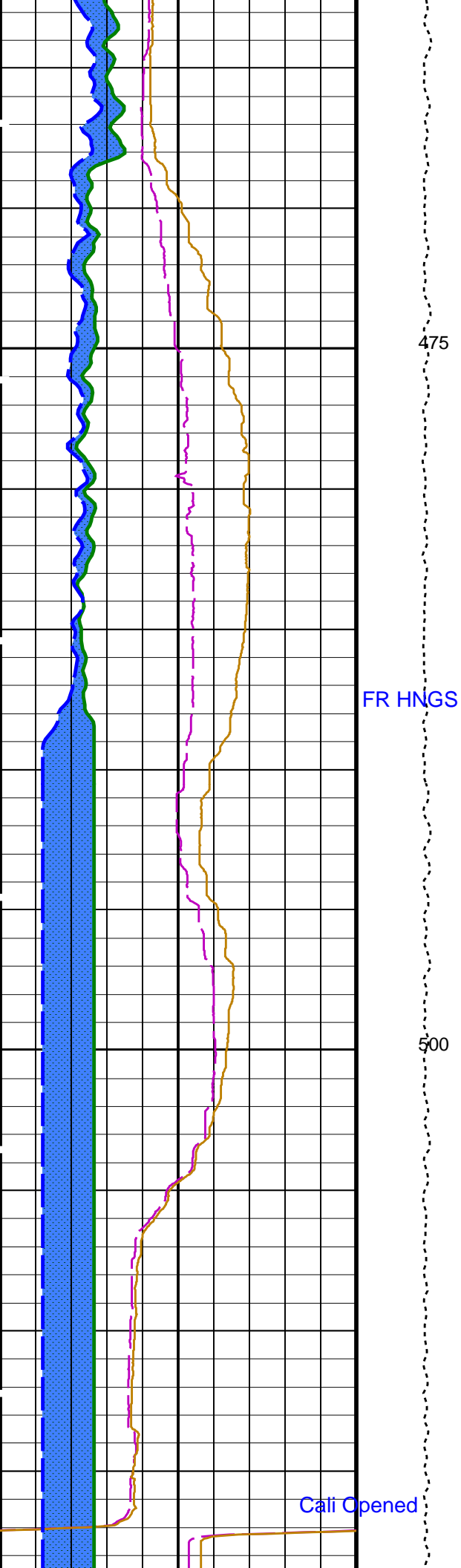






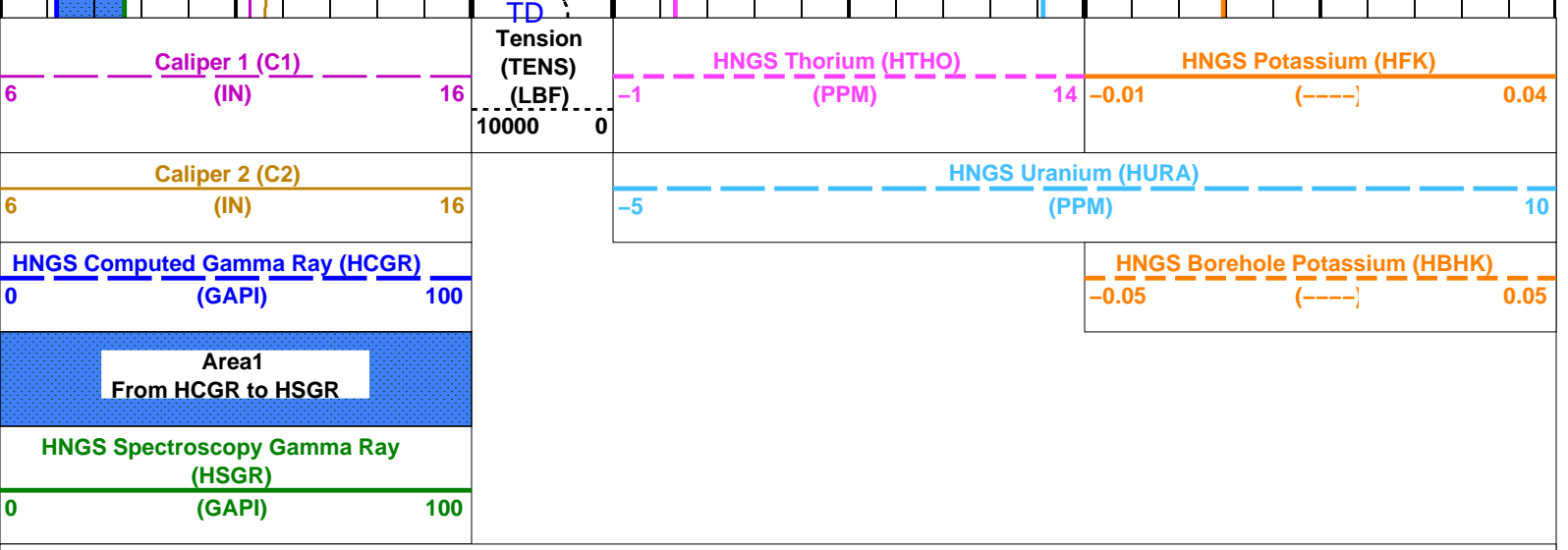






FR HNGS

Cali Opened



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	-0.00121143
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	CENT
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.969639
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.959793
System and Miscellaneous		
BS	Bit Size	9.875 IN
DFD	Drilling Fluid Density	1.03 G/C3
DO	Depth Offset for Playback	-1570.0 M
PP	Playback Processing	NORMAL

Format: HNGSYields Vertical Scale: 1:200

Graphics File Created: 11-Feb-2011 08:57

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_038LUP	FN:67	PRODUCER	21-Jan-2011 14:05	2089.4 M	1754.9 M
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Output DLIS Files

DEFAULT	FMS_DSI_NGS_120PUP	FN:10	PRODUCER	11-Feb-2011 08:57
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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: 21-Jan-2011 12:24							
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: 21-Jan-2011 12:24							
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: 10-Dec-2010 8:46							
Na 511 Peak Loc	40.00	39.66	39.55	39.55	0.006760	1.000	
Na 511 Peak Res	15.50	14.96	16.05	16.40	0.3514	2.000	%
High Voltage	1150	1187	1209	1187	-21.93	N/A	V
Na 1785 Peak Loc	142.6	141.8	142.2	142.1	-0.06566	7.000	
Na 1785 Peak Res	8.500	8.530	9.021	8.905	-0.1158	2.000	%
Temperature	15.50	25.35	34.71	25.35	-9.358	N/A	DEGC
Na Count Rate	45.00	27.13	26.60	26.51	-0.08984	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: 10-Dec-2010 8:46							
Na 511 Peak Loc	40.00	39.72	39.62	39.54	-0.08164	1.000	
Na 511 Peak Res	15.50	15.09	16.03	16.39	0.3631	2.000	%
High Voltage	1150	1099	1119	1099	-19.61	N/A	V
Na 1785 Peak Loc	142.6	142.5	141.3	142.2	0.9137	7.000	
Na 1785 Peak Res	8.500	8.852	9.212	8.451	-0.7609	2.000	%
Temperature	15.50	25.94	35.42	25.83	-9.594	N/A	DEGC
Na Count Rate	45.00	27.08	26.72	26.38	-0.3330	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: 10-Dec-2010 8:46							
Coincidence Count Rate Ratio	1.000	1.001	0.9966	1.000	0.003789	0.05000	
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:



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 Gamma Source Radioactive	HNSH - BA GSR - U	205 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		39.55	After		16.40	After		1187
	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		142.1	After		8.905	After		25.35
	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		26.51						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							
Master: 10-Dec-2010 8:35			Before: 25-Dec-2010 5:44			After: 10-Dec-2010 8:46		

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		39.54	After		16.39	After		1099
	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		142.2	After		8.451	After		25.83
	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		27.00						
Before		26.00						
After		26.00						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							

Master		27.08
Before		26.72
After		26.38
	10.00 (Minimum)      45.00 (Nominal)      100.0 (Maximum)	
Master: 10-Dec-2010 8:35		Before: 25-Dec-2010 5:54
		After: 10-Dec-2010 8:46

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		1.000
	0.9500 (Minimum)      1.000 (Nominal)      1.050 (Maximum)	
Master: 10-Dec-2010 8:35		
Before: 25-Dec-2010 5:54		
After: 10-Dec-2010 8:46		

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

Well: Expedition 330 Site U1374A  
Field: Louisville Seamounts  
Rig: JOIDES Resolution  
Ocean: Pacific

HNGS  
Hostile Natural Gamma  
Spectroscopy