

# Schlumberger

Company: **Lamont Doherty**

Well: **Expedition 318 Site U1361A**

Field: **Wilkes Land**

Rig: **JOIDES Resolution**      Country: **Antarctica**

**Natural Gamma  
Spectroscopy  
(HNCS)**

Rig: JOIDES Resolution  
 Field: Wilkes Land  
 Location: Latitude: S 64.4095 Deg  
 Well: Expedition 318 Site U1361A  
 Company: Lamont Doherty

LOCATION			
Latitude: S 64.4095 Deg		Elev.:	K.B.    11.00 m
Longitude: E 143.0033 Deg		G.L.:	3454.00 m
Permanent Datum:	Mean Sea Level _____	D.F.:	11.00 m
Log Measured From:	Drill Floor _____	Elev.:	0.00 m
Drilling Measured From:	Drill Floor _____	11.00 m	above Perm. Datum
API Serial No. _____			

Logging Date	1-Mar-2010	
Run Number	1	
Depth Driller	3853.5 m	
Schlumberger Depth	3861 m	
Bottom Log Interval	3833 m	
Top Log Interval	3435 m	
Casing Driller Size @ Depth	0.000 in	@    3568.7 m
Casing Schlumberger	3571 m	
Bit Size	11.438 in	
Type Fluid In Hole	Septolite Sea Water Gel + Barite	
MUD		
Density	1.22 g/cm3	
Fluid Loss		
Source Of Sample		
RM @ Measured Temperature	@	@
RMF @ Measured Temperature	@	@
RMC @ Measured Temperature	@	@
Source RMF	RMC	
RM @ MRT	RMF @ MRT	
Maximum Recorded Temperatures	9 degC	@    9
Circulation Stopped	Time	
Logger On Bottom	1-Mar-2010	11:30
Unit Number	625003	Webster
Recorded By	K. Swain	
Witnessed By	T. Williams, A. Fehr	

Logging Date				Run 1		Run 2		
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								
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: APS/HLDS/DITE  
 OS2: FMS/DSI  
 OS3:  
 OS4:  
 OS5:

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

**REMARKS: RUN NUMBER 1**  
 Depths referenced from rig floor in meters below rig floor (MBRF).  
 Tools run slick without stand offs as per normal operation to fit inside pipe.  
 Logging is performed through drill pipe for open hole logging.  
 Go-devil run on bottom of toolstring to actuate flapper in bottom hole assembly of the drill pipe for APC/XCB. Rig can elect to pump go devil before logging but this was not done and the go devil instead was attached to end of tool string to do the same.  
 This may result in additional pumping required to drop below or to get inside drill pipe. Difficulty was seen dropping out of pipe and required pump pressure at surface with success.

**REMARKS: RUN NUMBER 2**

**RUN 1**

SERVICE ORDER #: \_\_\_\_\_  
 PROGRAM VERSION: 17C0-154  
 FLUID LEVEL: \_\_\_\_\_

LOGGED INTERVAL	START	STOP

**RUN 2**

SERVICE ORDER #: \_\_\_\_\_  
 PROGRAM VERSION: \_\_\_\_\_  
 FLUID LEVEL: \_\_\_\_\_

LOGGED INTERVAL	START	STOP




## EQUIPMENT DESCRIPTION

**RUN 1**

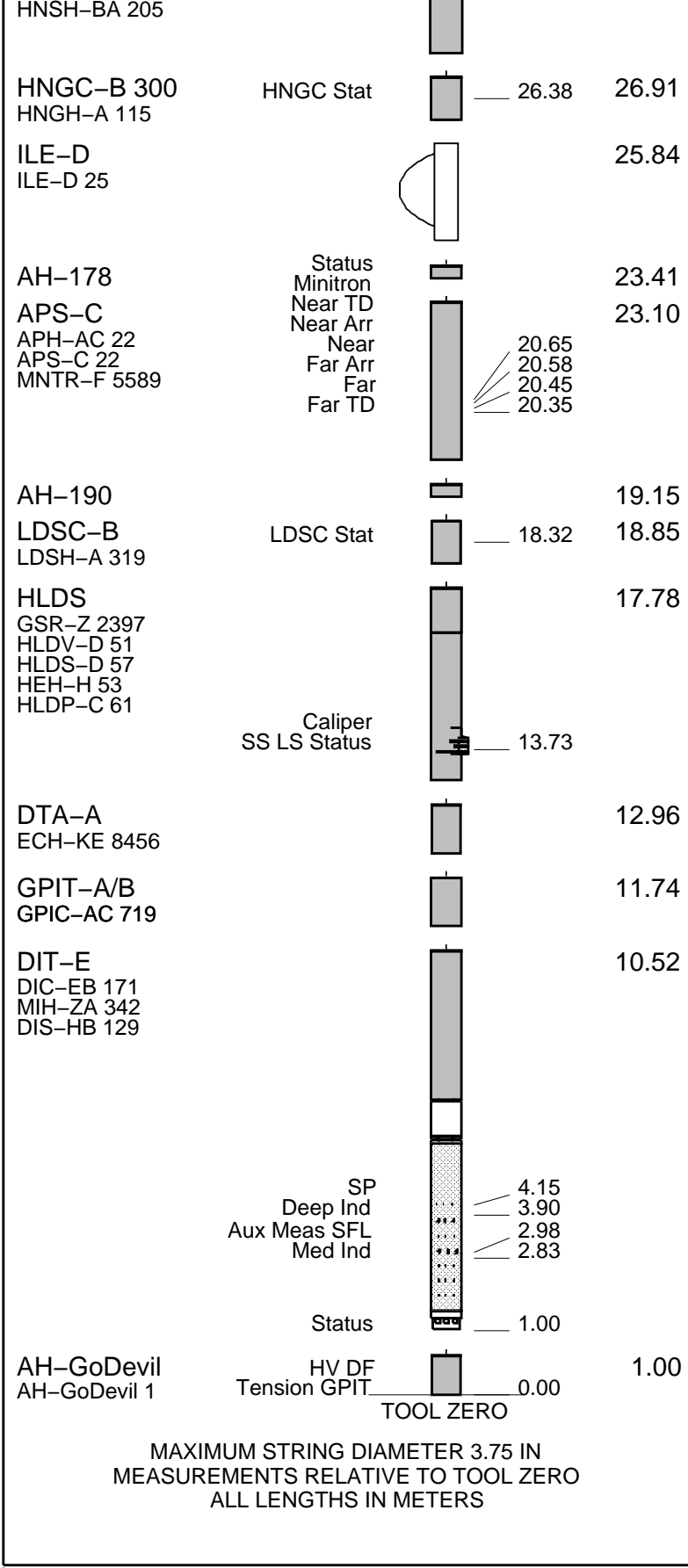
**SURFACE EQUIPMENT**

SFT-281 2  
 SFT-178 2  
 GSR-U 616008  
 WITM (DTS)-A

**DOWNHOLE EQUIPMENT**

LEH-QT				31.21
LEH-QT 1750				
DTC-H	CTEM		30.04	30.32
ECH-KC 9842	TelStatus		29.41	
	ToolStatu			
HNGS-BA 194	Upper_1		28.71	29.41
HNGS-BA 194	Lower_2		28.50	

**RUN 2**

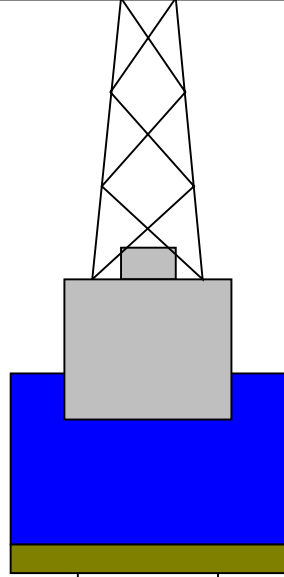


Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	MD	

Kelly Bushing Elevation  
Derrick Floor Elevation

Mean Sea Level

11.0  
11.0  
0.0



3465.520

Sea Floor



3465.5 3.80

3568.7 11.4375

3853.5

Borehole Segment

Open Hole

### Output DLIS Files

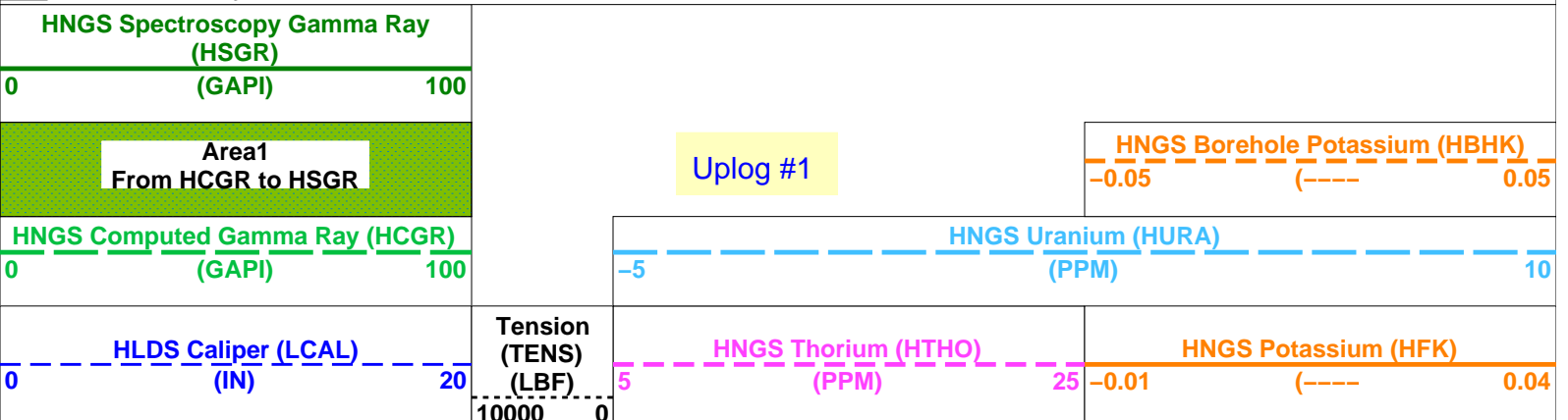
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BACKUP	PI_LDL_APS_NGS_009LUP	FN:13	PRODUCER	01-Mar-2010 13:29

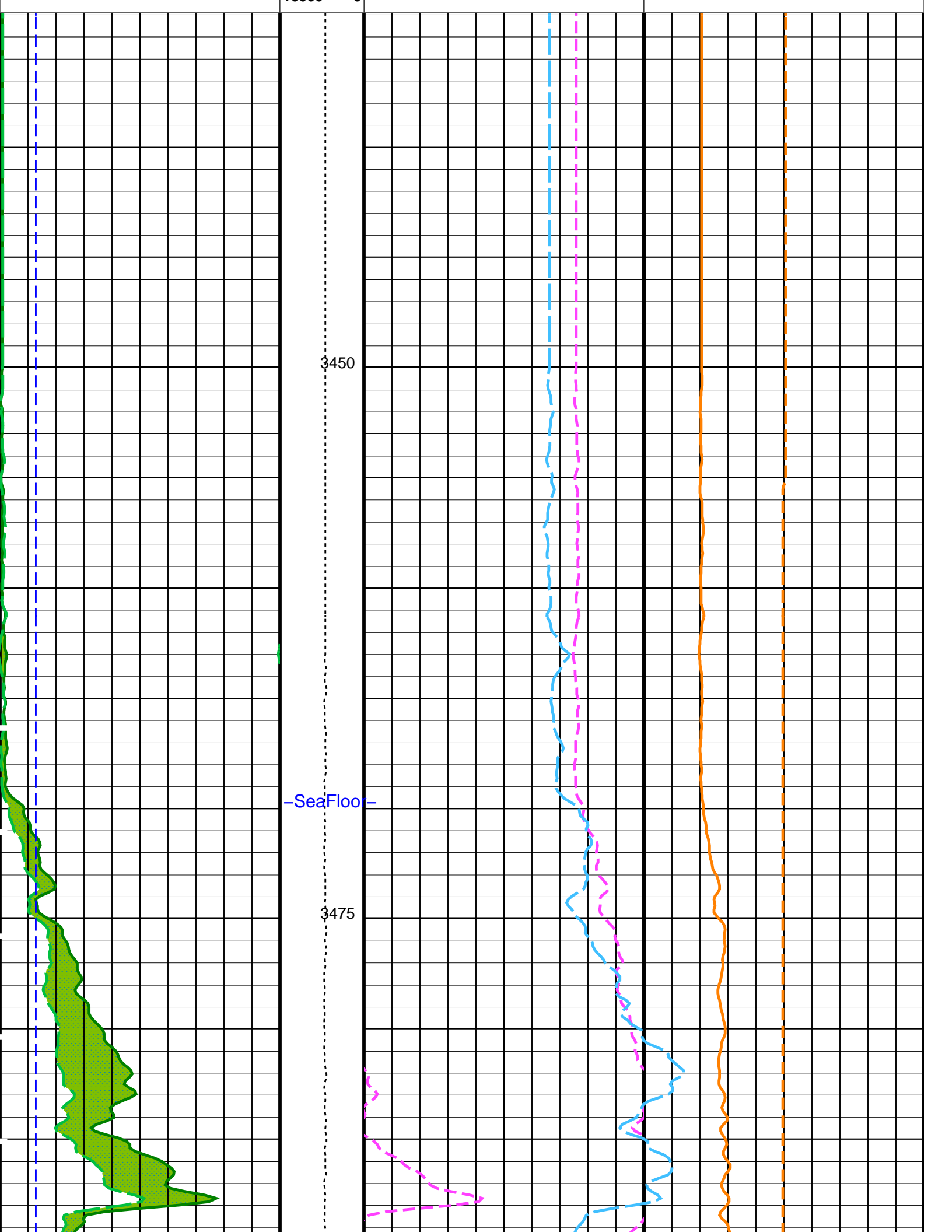
### OP System Version: 17C0-154

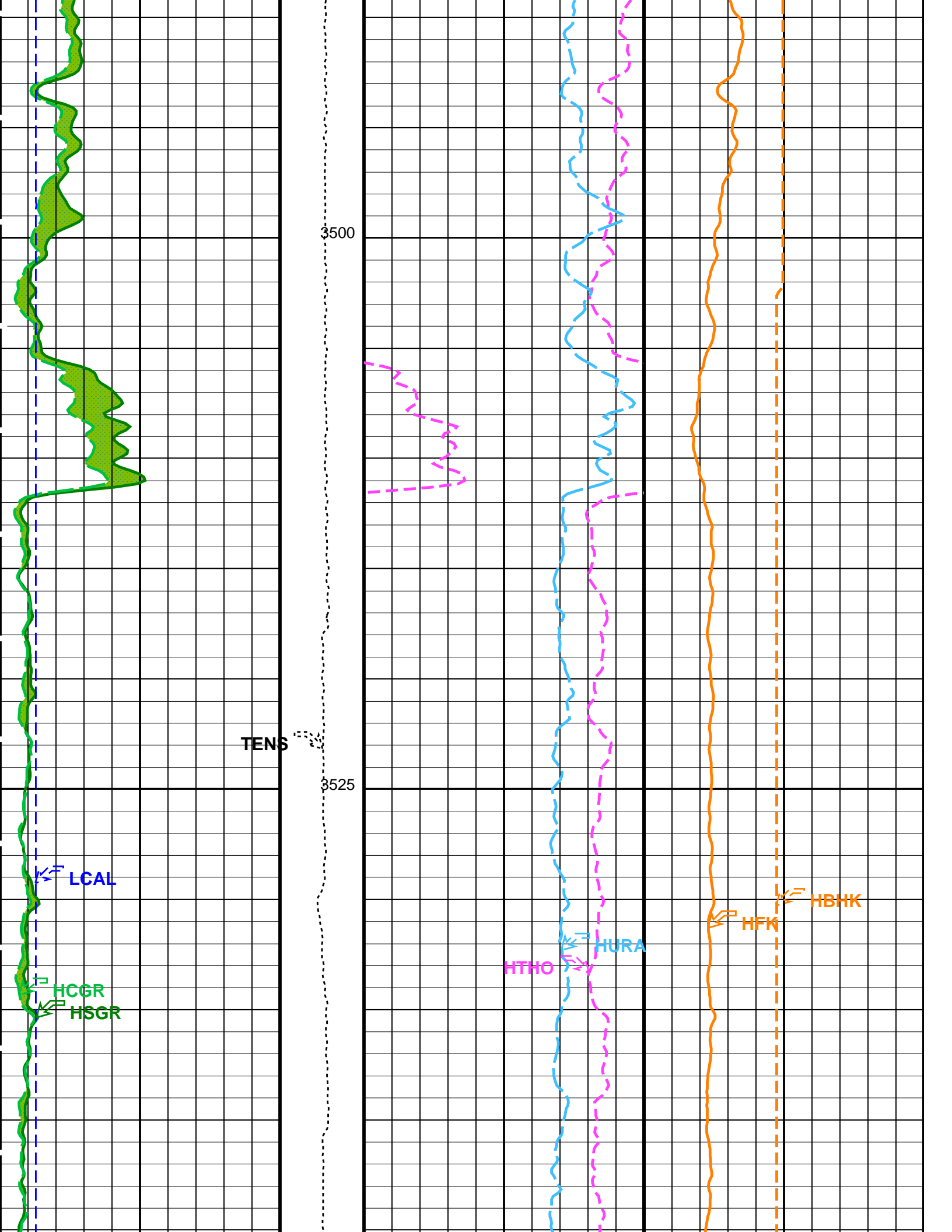
DIT-E	17C0-154	GPIT-A/B	SRPC-3870_Q3_2009_OP17_V3_b
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	APS-C	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

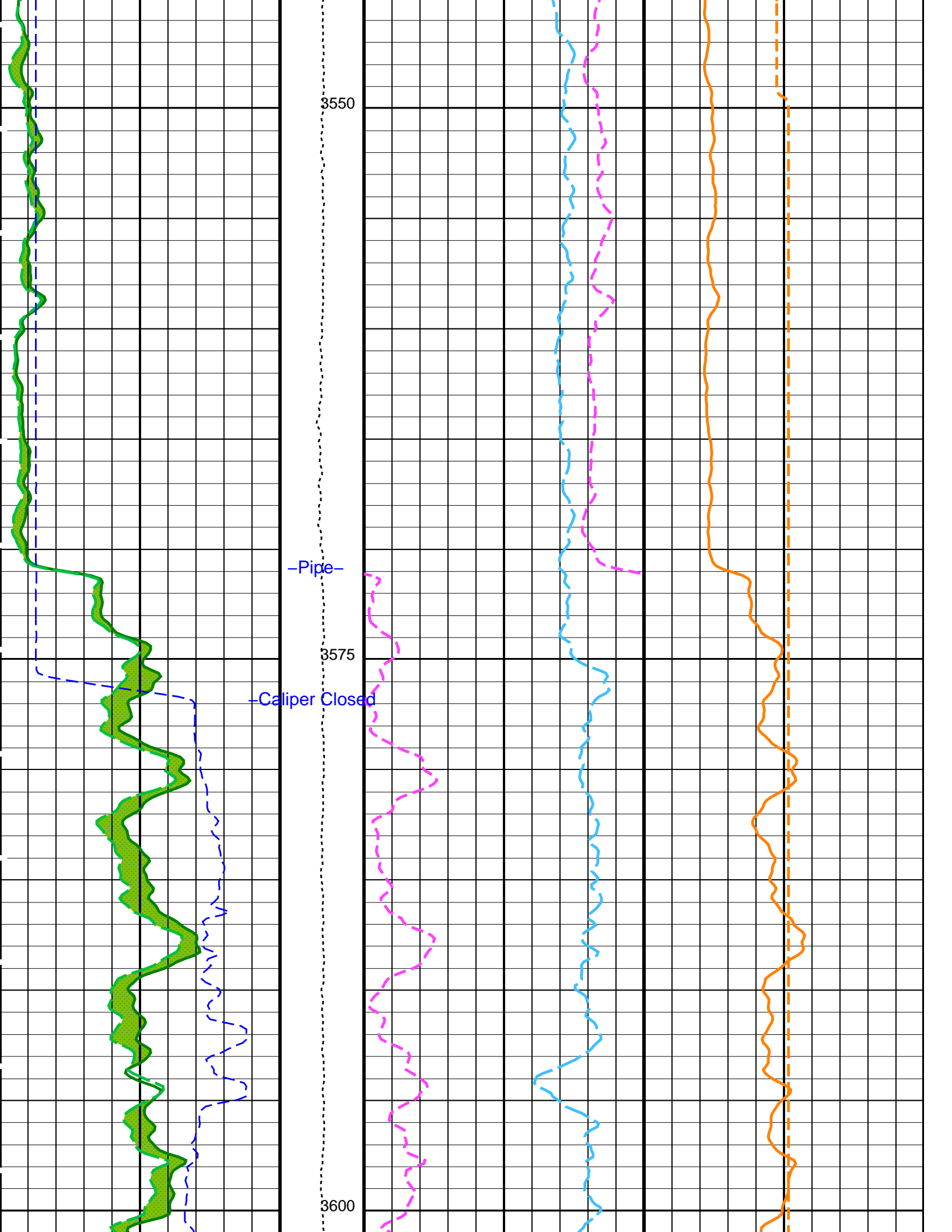
#### PIP SUMMARY

Time Mark Every 60 S

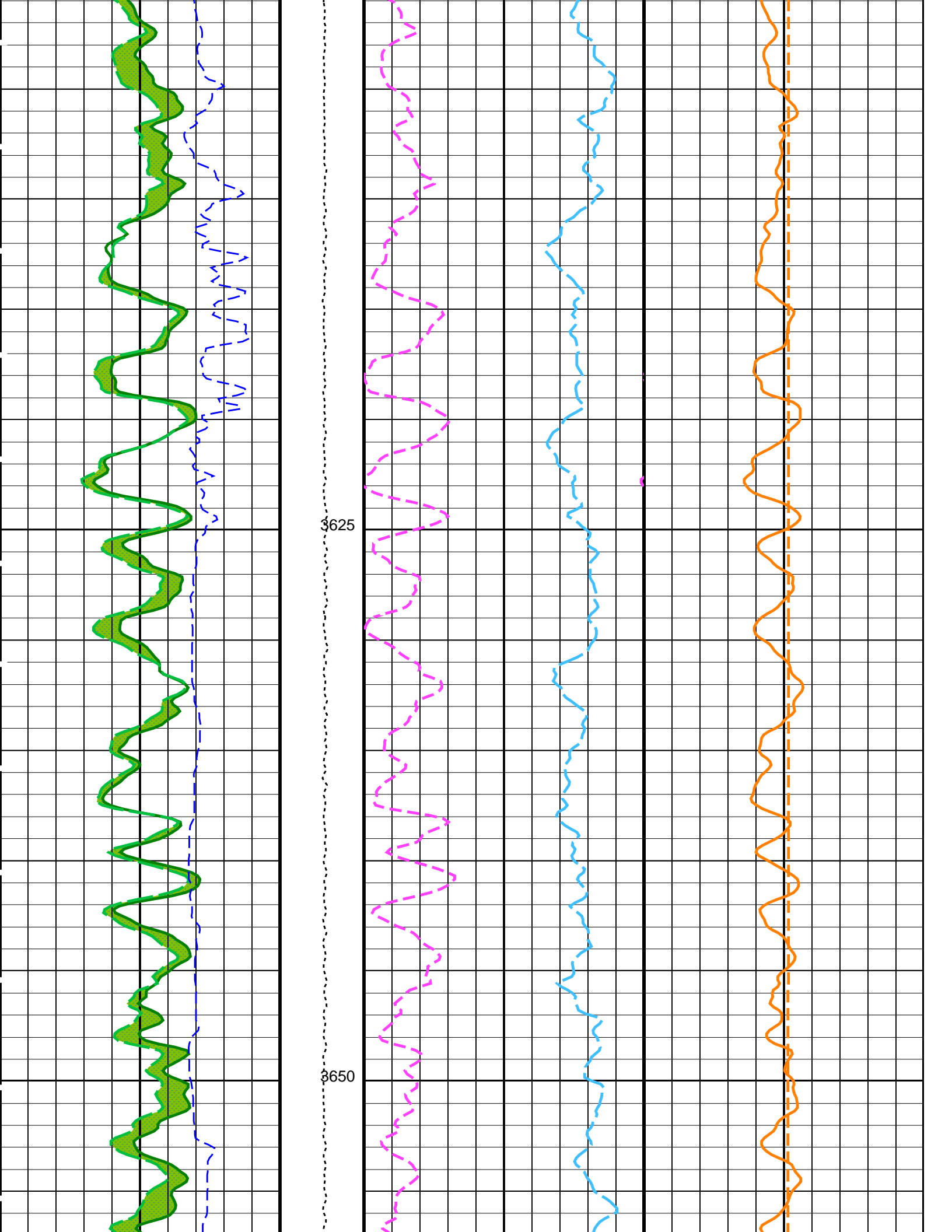


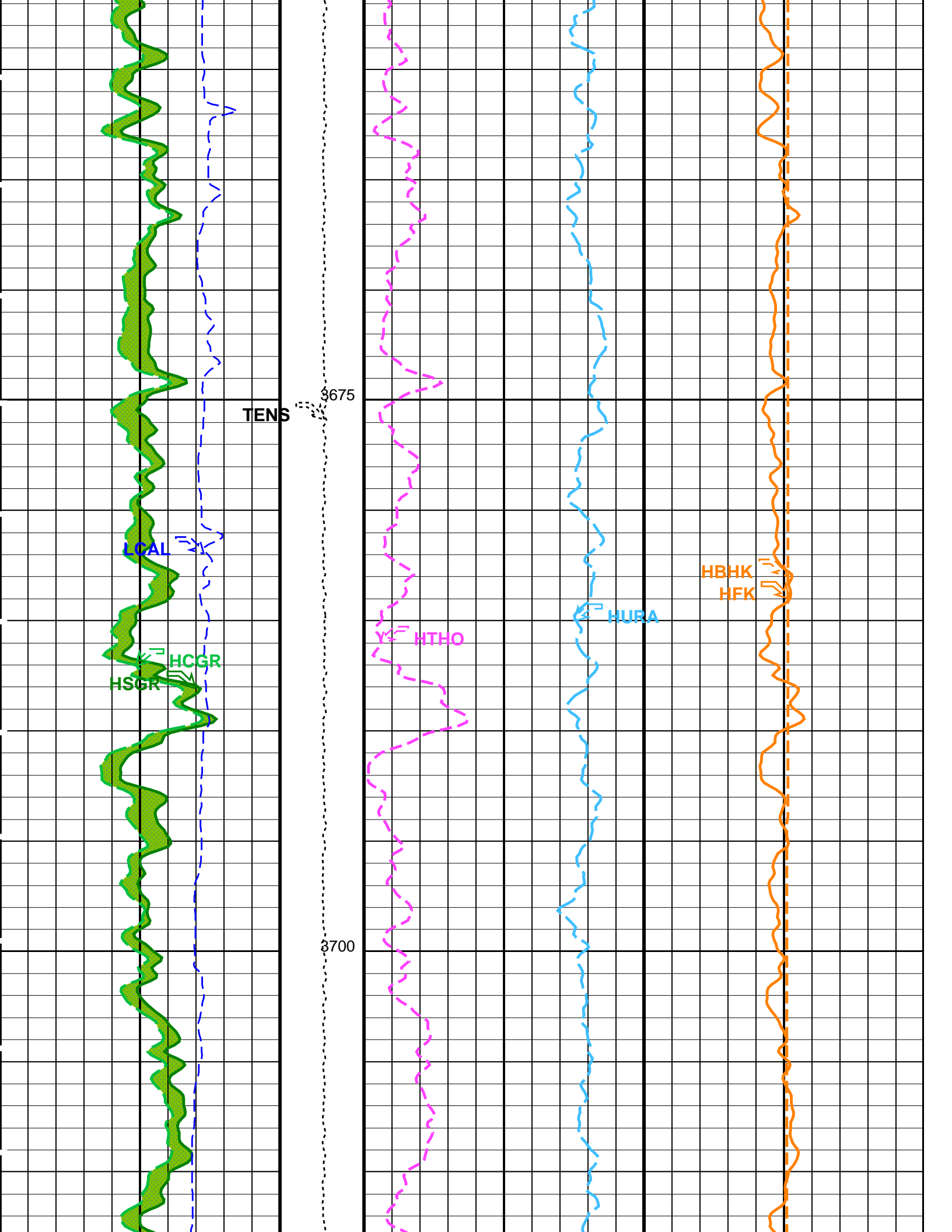


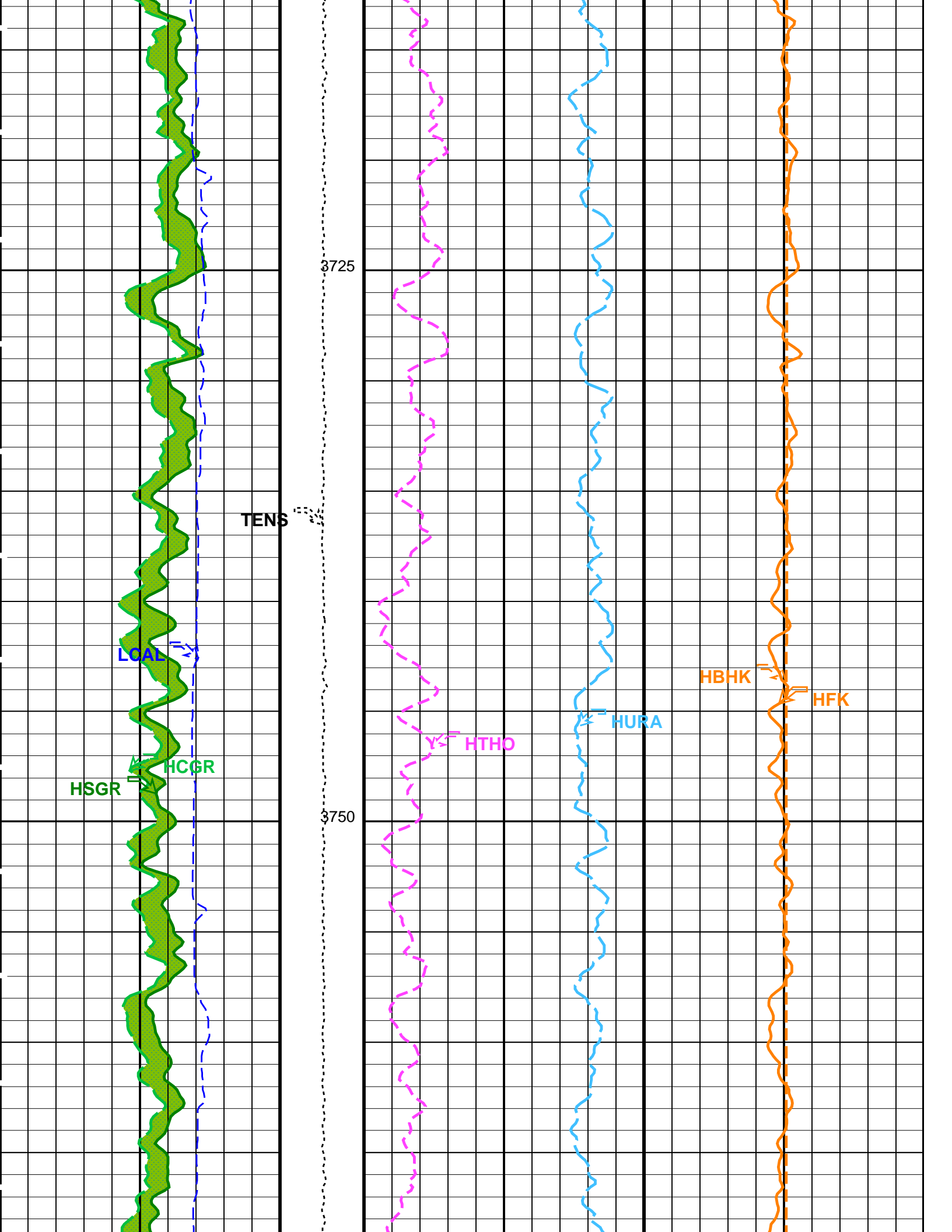


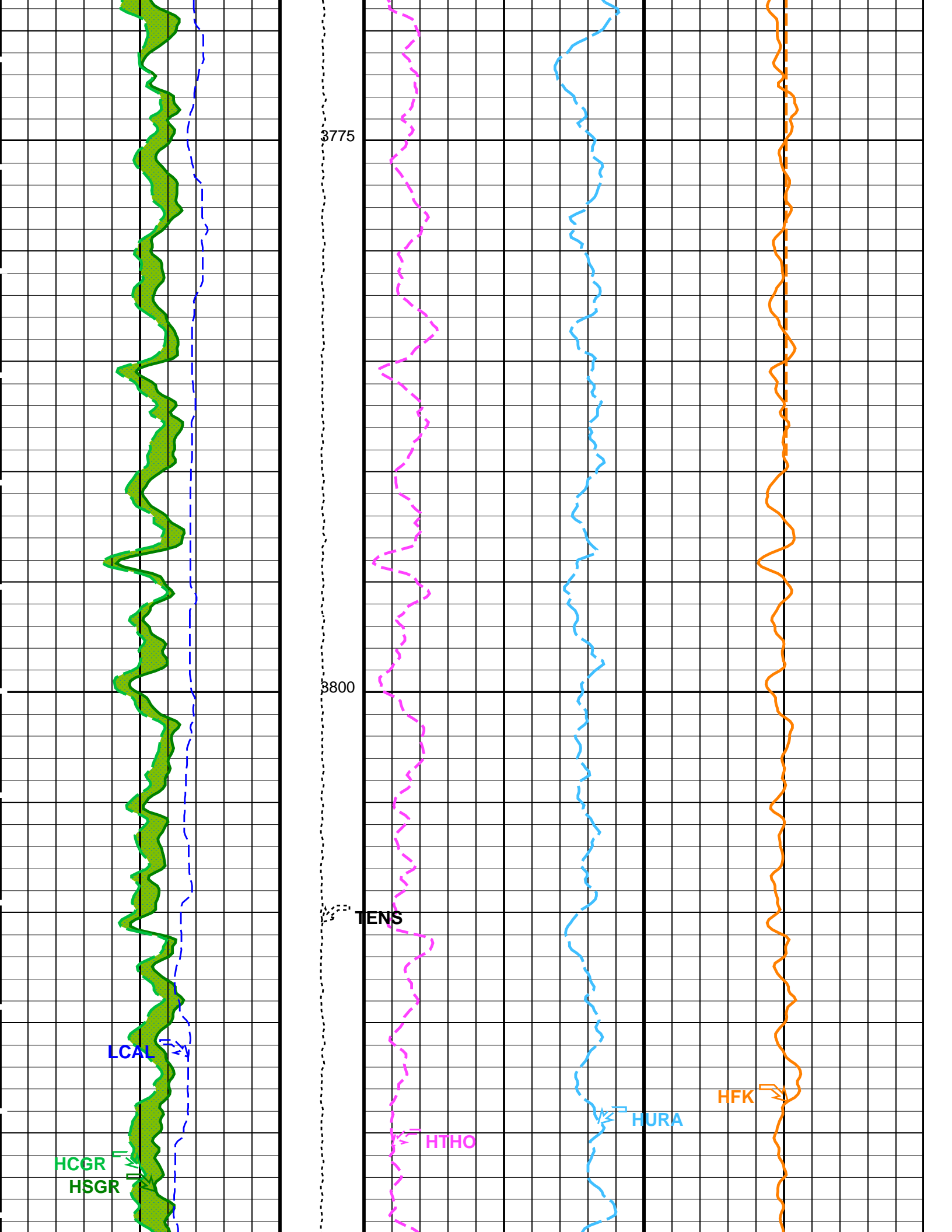


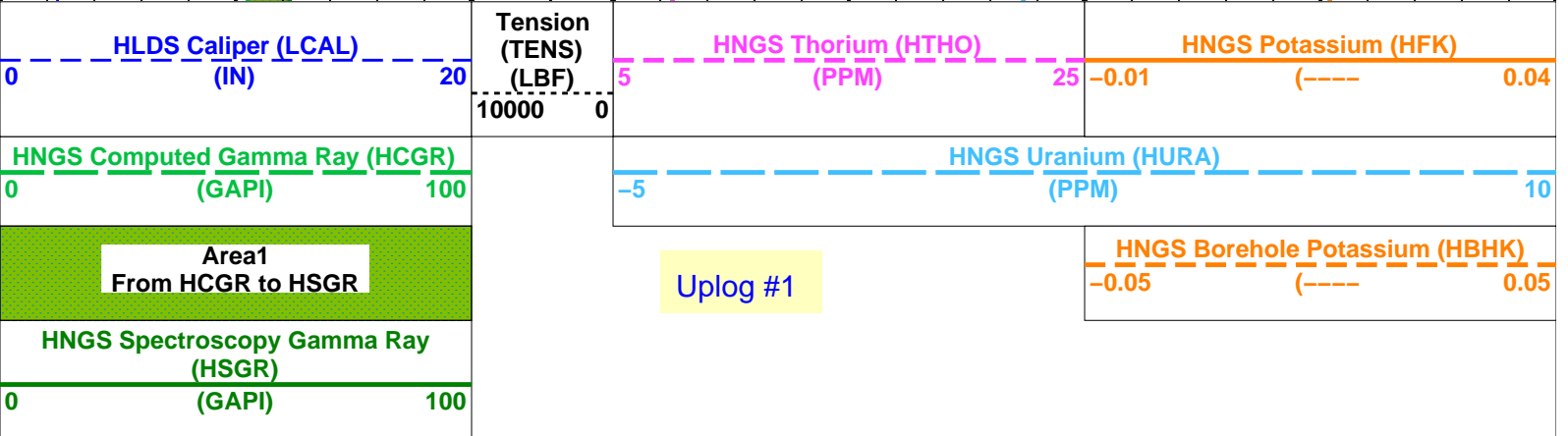
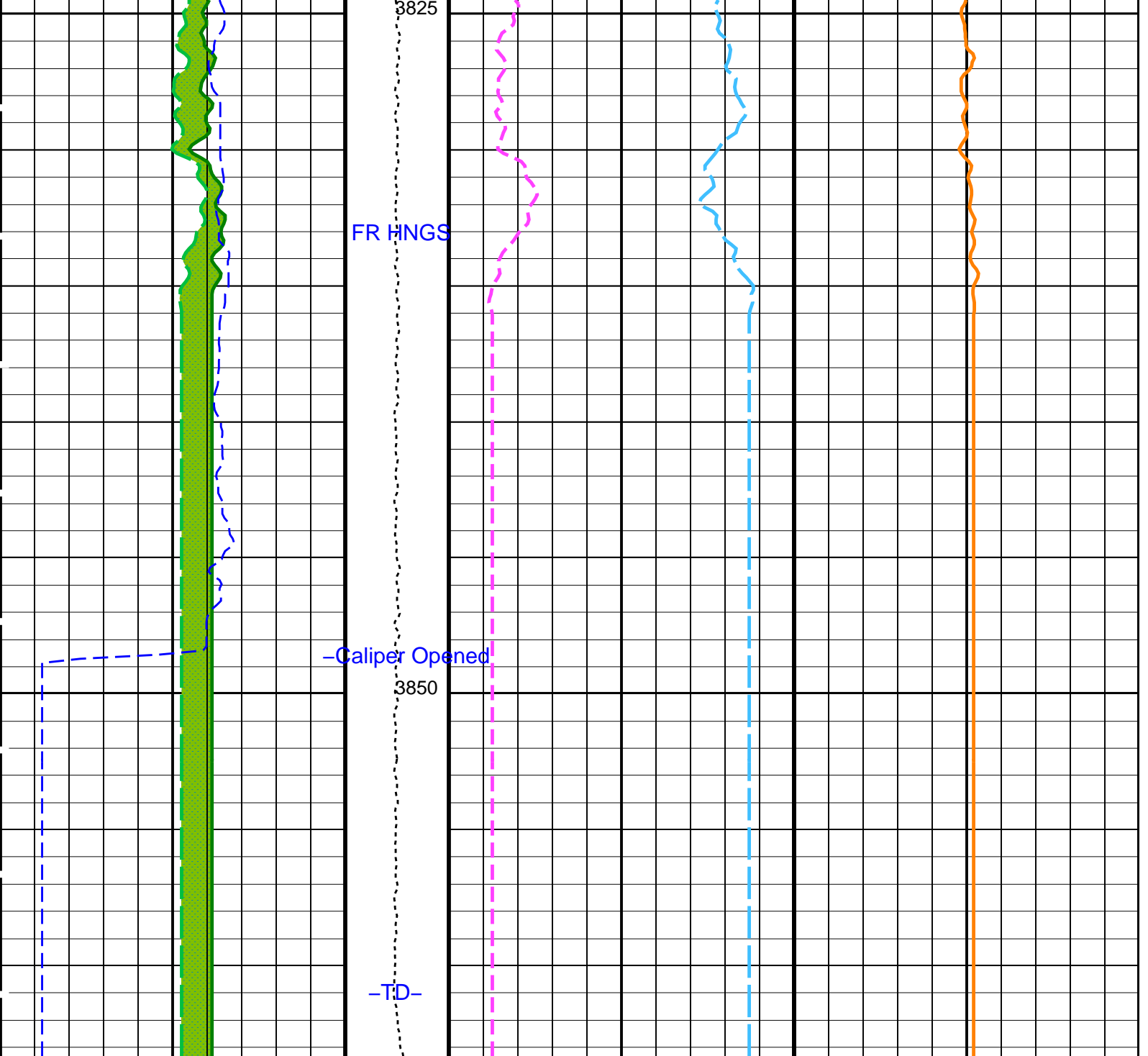












PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
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<b>DIT-E: Dual Induction - E</b>			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	15.5556	DEGC
DGF2	Deep 20 kHz Gain Factor	0.979119	
DPH2	Deep 20 kHz Phase Shift	0.0159963	DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	17.0457	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	136.154	MM/M
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ISSBAR	Barite Mud Switch	NOBARITE	
ITEN	DIT-E Temperature Enable	ENABLE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MGF2	Medium 20 kHz Gain Factor	0.974788	
MPH2	Medium 20 kHz Phase Shift	-0.199528	DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	11.3259	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	172.606	MM/M
SBR	Shoulder Bed Resistivity Factor	1	OHMM
SFCR	SFL Channel Ratio	1000	
SFLE	SFL Enable	ENABLE	
SHT	Surface Hole Temperature	20	DEGC
SPAE	DIT-E SPARC Processing Enable	ENABLE	
SPNV	SP Next Value	0	MV
<b>GPIT-A/B: General Purpose Inclinerometer</b>			
ACPP	Accelerometer PROM Presence	PRESENT	
AFMO	Accelerometer Filtering Mode	MOVING_AVERAGE	
ART	Accelerometer Reference Temperature	20	DEGC
GLM	GPIT Logging Mode	DIPM	
ICMO	Inclinometry Computation Mode	AUTOMATIC_SELECTION	
MAPP	Magnetometer PROM Presence	PRESENT	
MDEC	Magnetic Field Declination	71.8638	DEG
MRTE	Magneto Reference Temperature	19	DEGC
TEMS	GPIT Temperature Sensor Used	BOTH	
U-GPOF	Playback OLD VERSION GPIT FILE (BEFORE OP14 + SRPC-3098-FEB_2006_C) ?	NO	
<b>HLDS: Hostile Litho-Density Sonde</b>			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
<b>APS-C: Accelerator-Porosity Tool</b>			
	APS Software Version	5	
AASD	APS Thermal and Array Detectors High Voltage Setting	1967.87	V
ADSO	APS Array Detectors Data Source Switch	Both	
AFSD	APS Far Detector High Voltage Setting	2098.2	V
AHCS	APS Holesize Correction Source	BS	
AHSS	APS Holesize Correction Switch	ON	
AMTY	APS Environmental Corrections Mud Type	WaterBaseBarite	
ANSD	APS Near Detector High Voltage Setting	1738.17	V
ASOS	APS Standoff Correction Switch	ON	
ATSS	APS Temperature-Pressure-Salinity Correction Switch	ON	
BHFL_APS	APS TNPH Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	15.5556	DEGC
BSCO_APS	APS TNPH Borehole Salinity Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
DSCO_APS	APS TNPH Density Source	COMPUTED	
FSAL	Formation Salinity	-50000	PPM
FSCO_APS	APS TNPH Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M

GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO_APS	APS TNPH Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO_APS	APS TNPH Mud Cake Correction Option	NO	
MCOR_APS	APS TNPH Mud Correction	NATU	
MWCO_APS	APS TNPH Mud Weight Correction Option	YES	
NARC	APS Near/Array Calibration Ratio	1.06031	
NFRC	APS Near/Far Calibration Ratio	0.890147	
PTCO_APS	APS TNPH Pressure/Temperature Correction Option	YES	
SHT	Surface Hole Temperature	20	DEGC
TNCO_APS	APS TNPH Computation Option	NO	
<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	
BHT	Bottom Hole Temperature (used in calculations)	15.5556	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00113835	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	4.30116	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.93825	
<b>System and Miscellaneous</b>			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	11.438	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	0.000	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.22	G/C3
FLEV	Fluid Level	-50000.00	M
MST	Mud Sample Temperature	-50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2750.9	M
TDD	Total Depth - Driller	3860.00	M
TDL	Total Depth - Logger	3860.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HNGSYields    Vertical Scale: 1:200    Graphics File Created: 01-Mar-2010 11:30

### OP System Version: 17C0-154

DIT-E	17C0-154	GPIT-A/B	SRPC-3870_Q3_2009_OP17_V3_b
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	APS-C	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

### Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_009LUP	FN:12	PRODUCER	01-Mar-2010 11:30
BACKUP	PI_LDL_APS_NGS_009LUP	FN:13	PRODUCER	01-Mar-2010 13:29

### Input DLIS Files

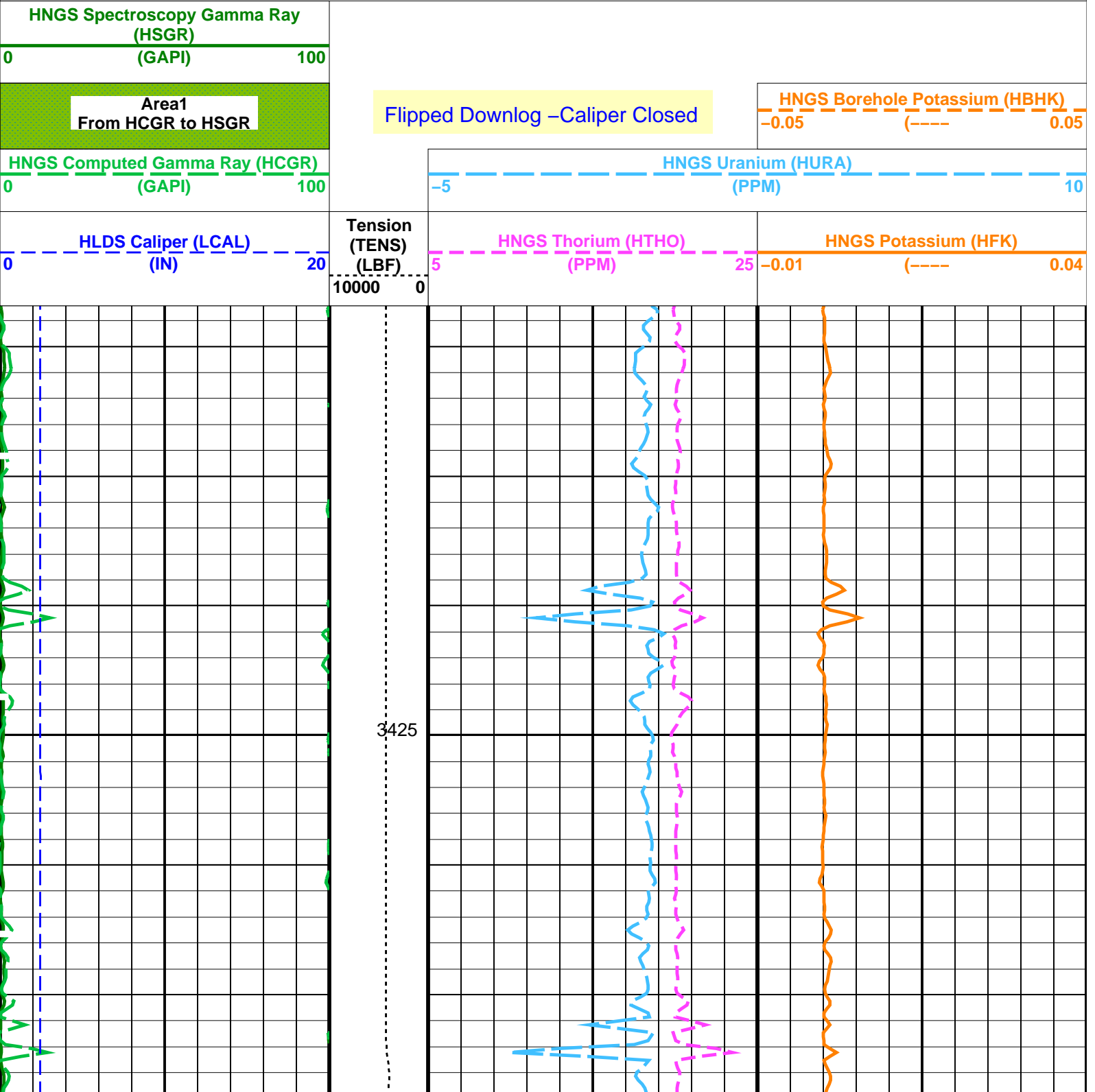
## Output DLIS Files

### OP System Version: 17C0-154

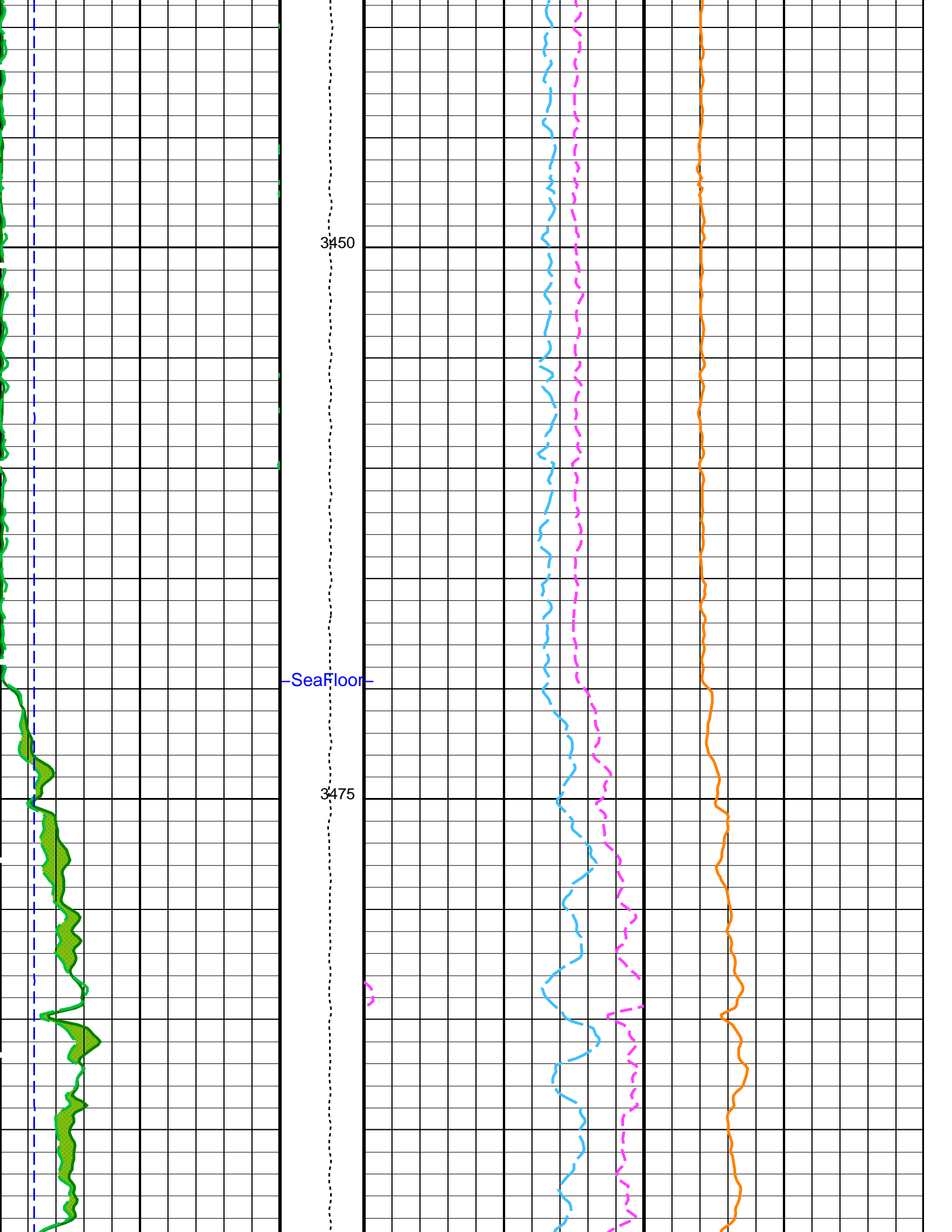
DIT-E	17C0-154	GPIT-A/B	SRPC-3870_Q3_2009_OP17_V3_b
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	APS-C	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

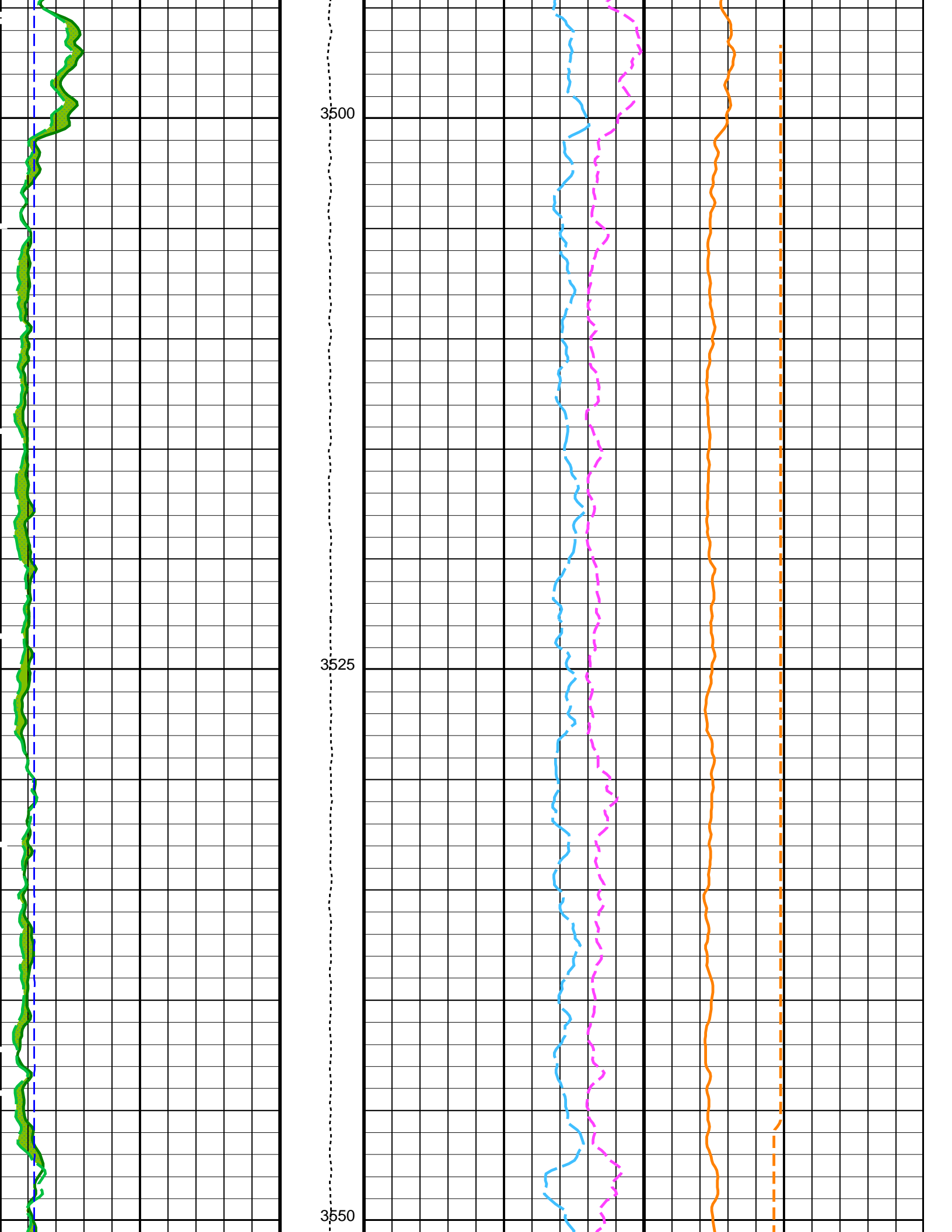
#### PIP SUMMARY

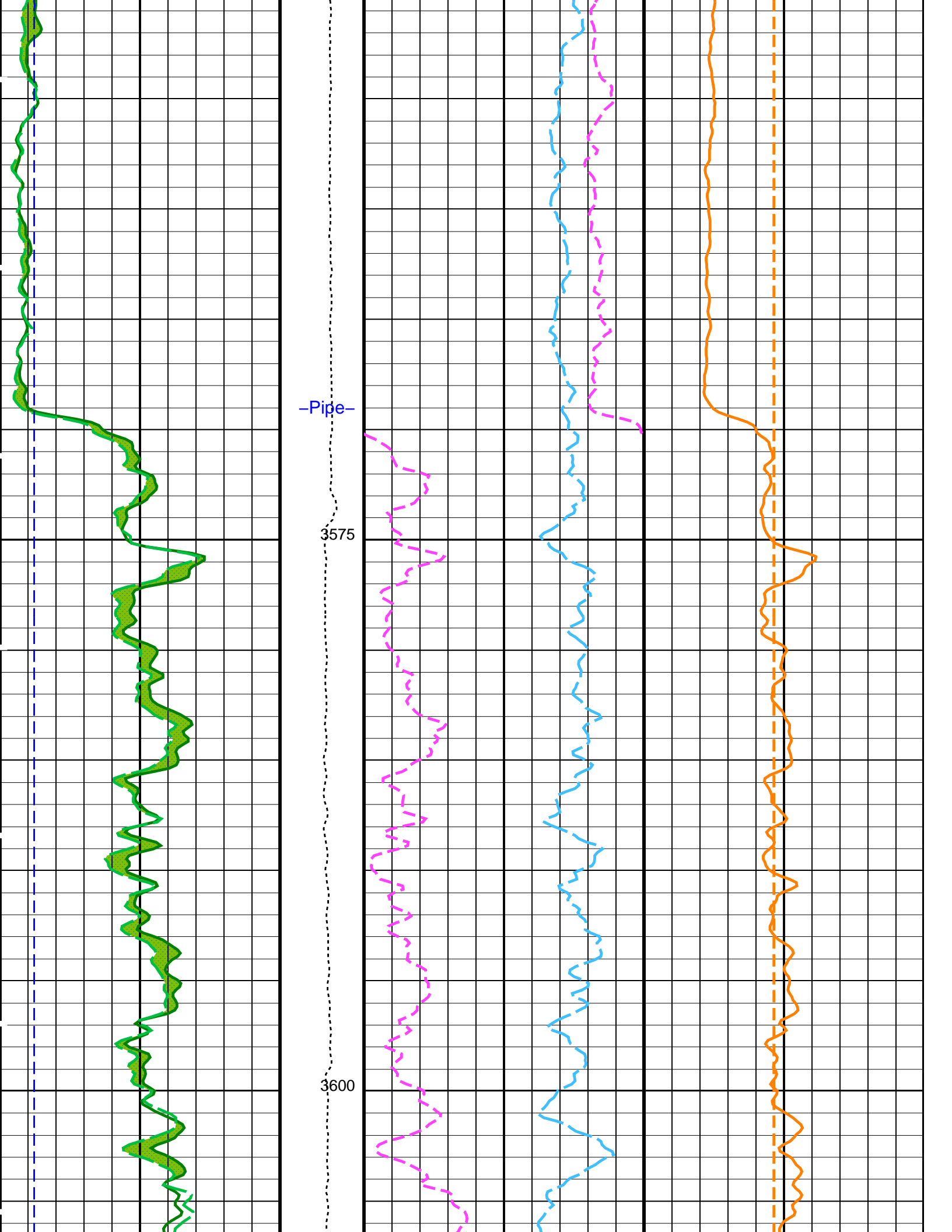
Time Mark Every 60 S

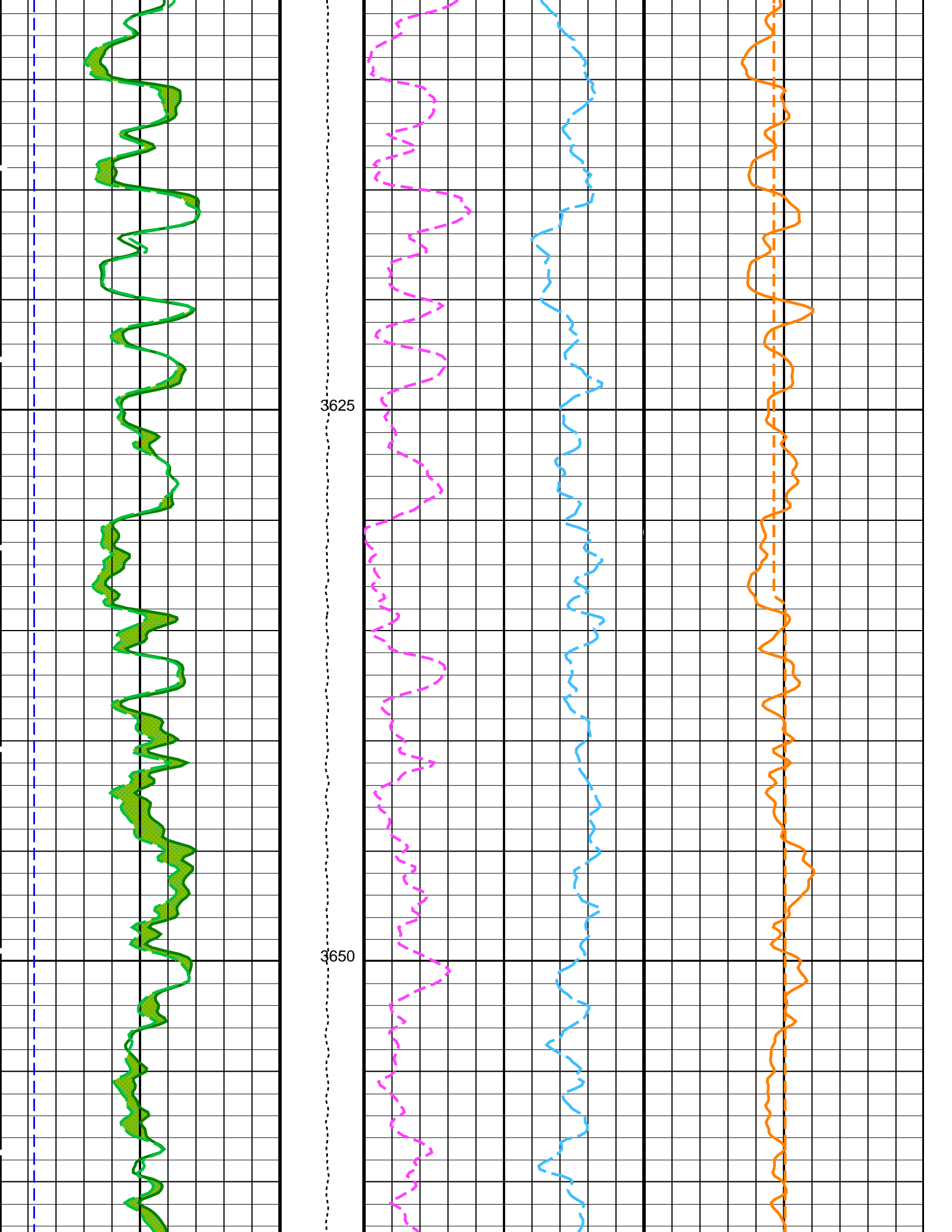


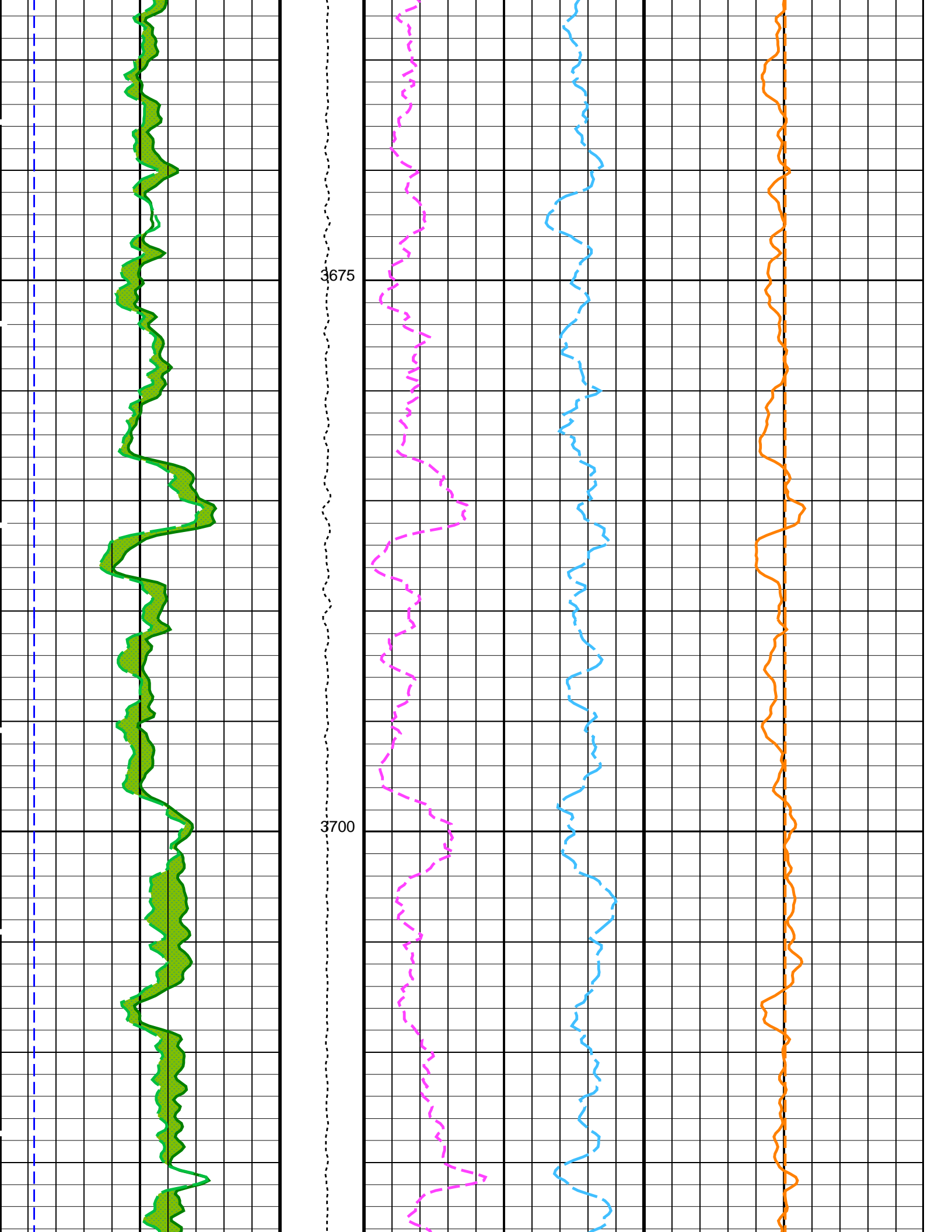


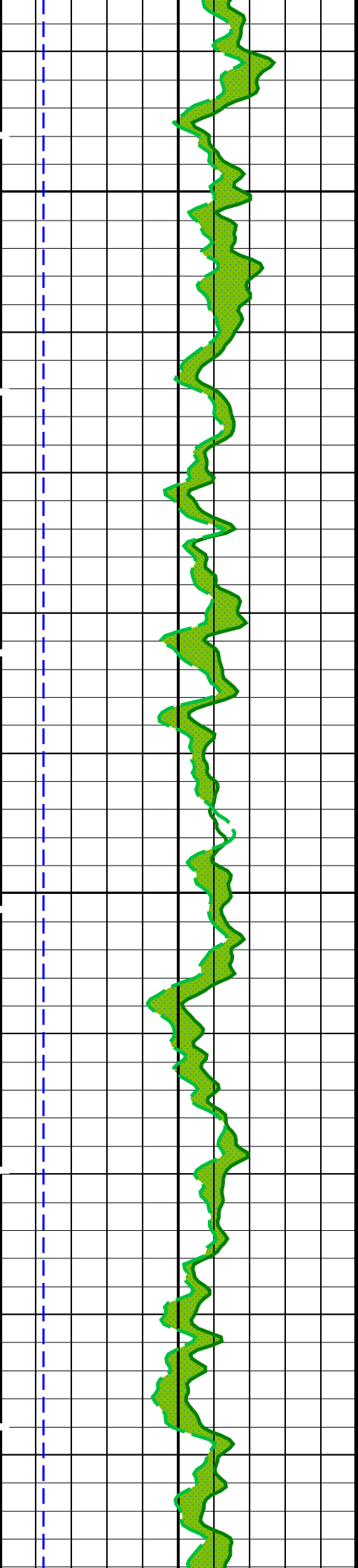






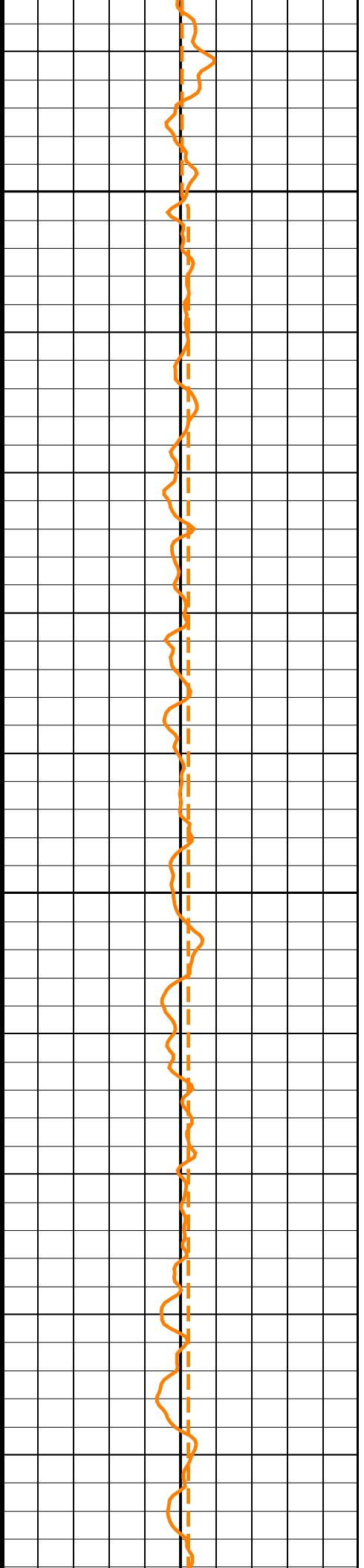
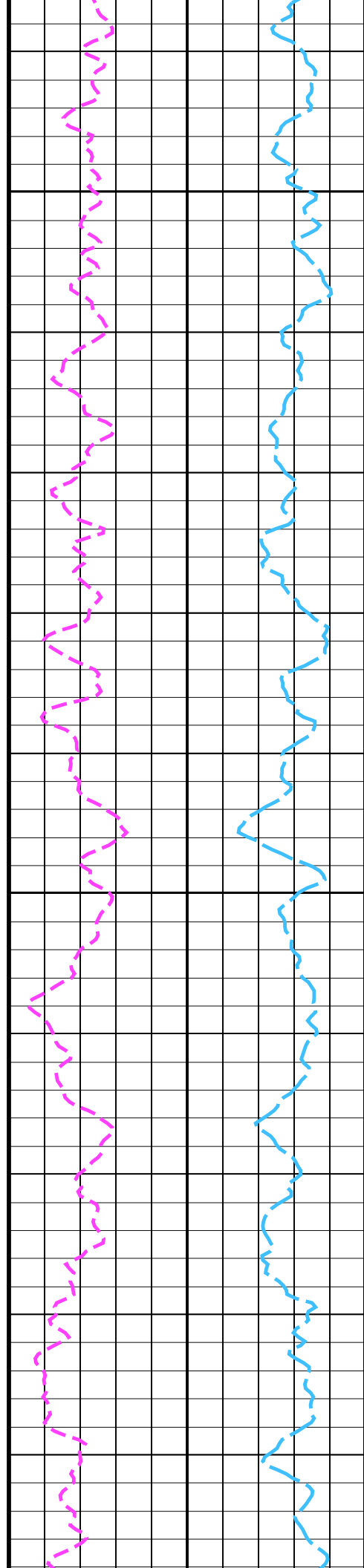


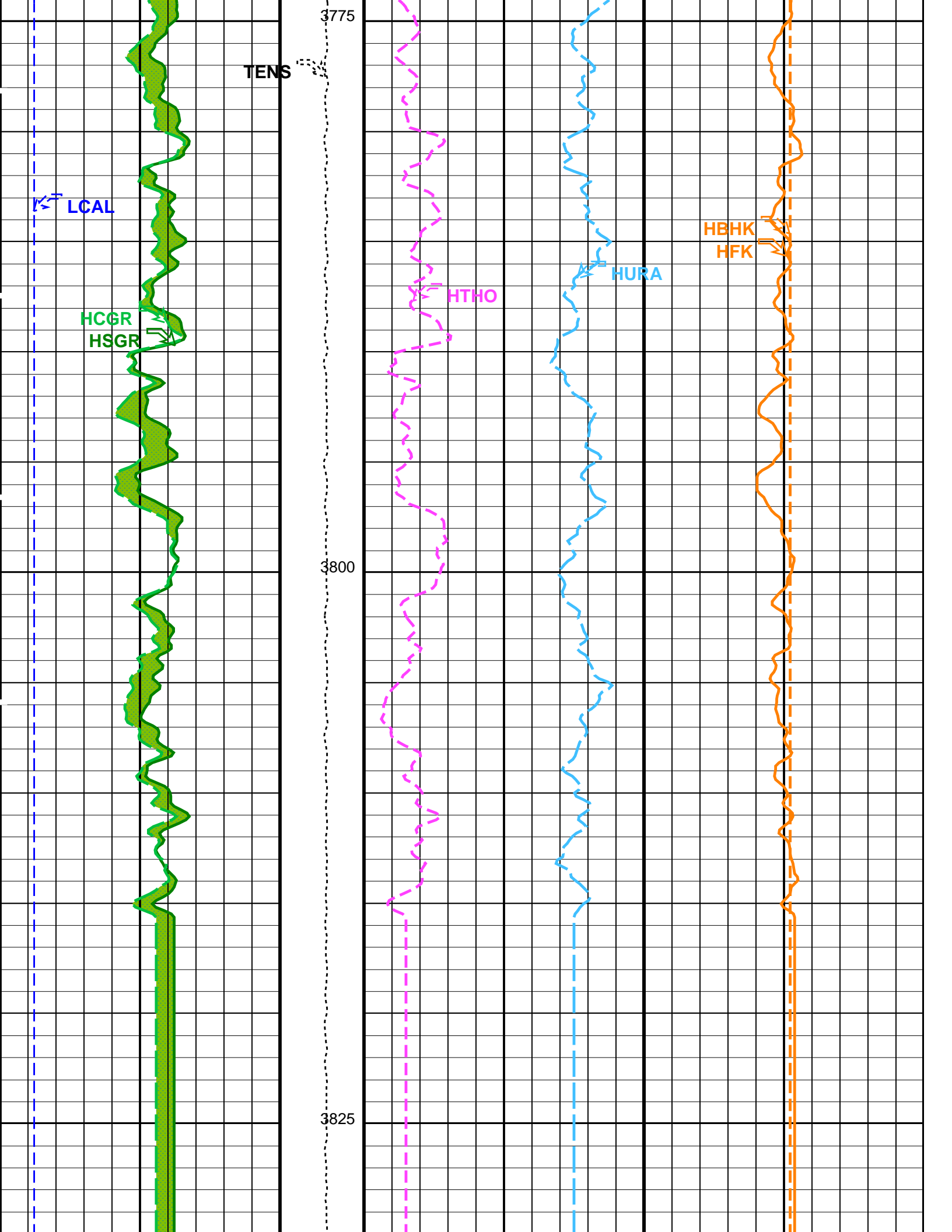


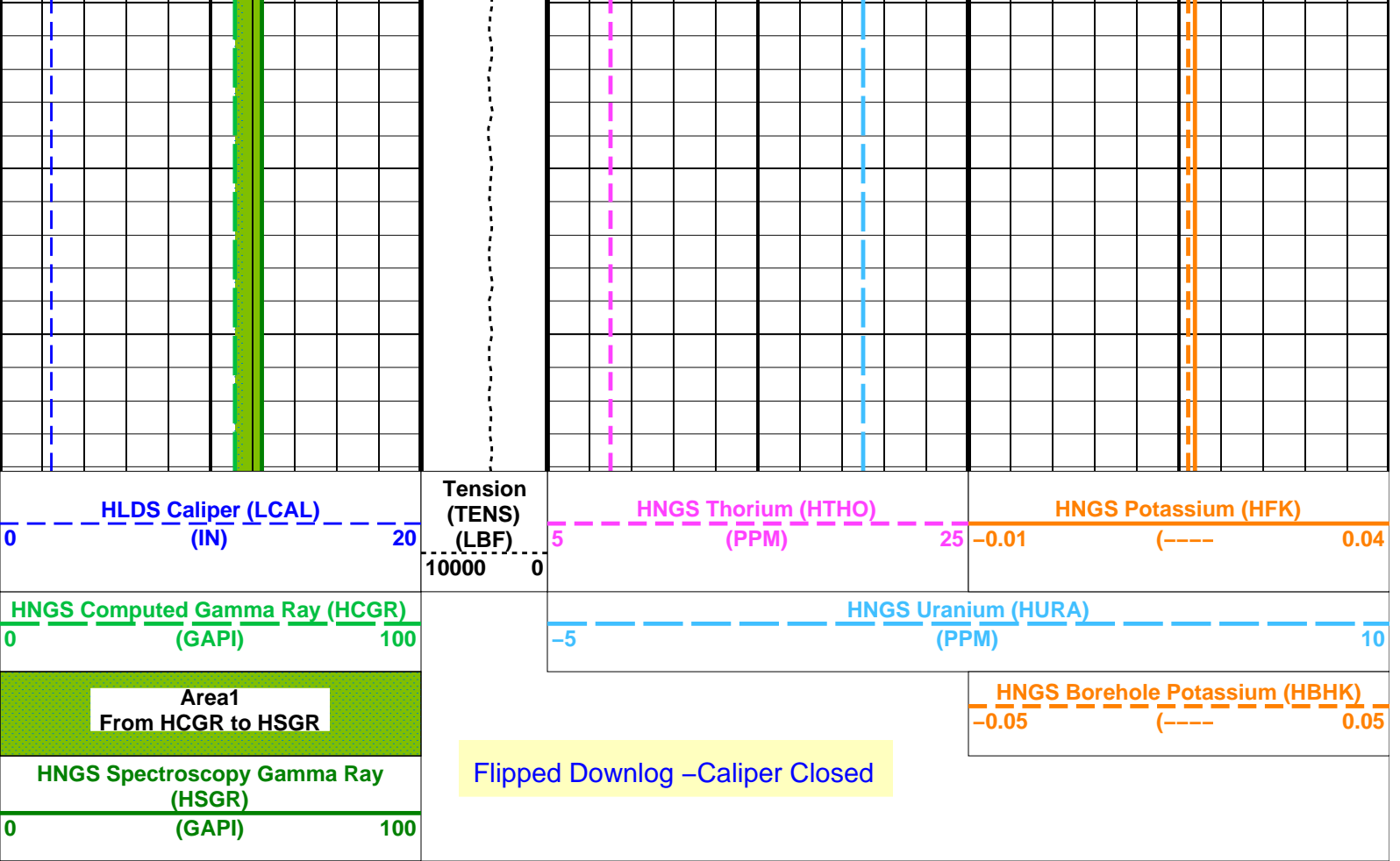


3725

3750







PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
DIT-E: Dual Induction - E			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	9.16	DEGC
DGF1	Deep 10 kHz Gain Factor	0.968645	
DGF2	Deep 20 kHz Gain Factor	0.979119	
DGF4	Deep 40 kHz Gain Factor	0.990252	
DPH1	Deep 10 kHz Phase Shift	0.26358	DEG
DPH2	Deep 20 kHz Phase Shift	0.0159963	DEG
DPH4	Deep 40 kHz Phase Shift	-1.11256	DEG
DRE1	Deep Real 10 kHz Sonde Error Correction	39.5751	MM/M
DRE2	Deep Real 20 kHz Sonde Error Correction	17.0457	MM/M
DRE4	Deep Real 40 kHz Sonde Error Correction	5.15121	MM/M
DRIM	DIT-E Radial Invasion Mode	Rxo>Rt	
DSR1	Deep Sigma Reference (10 kHz)	7637	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
DSR4	Deep Sigma Reference (40 kHz)	405	MM/M
DSTA	DIT-E Transversal Standoff	0	IN
DXE1	Deep Quad 10 kHz Sonde Error Correction	245.841	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	136.154	MM/M
DXE4	Deep Quad 40 kHz Sonde Error Correction	78.4516	MM/M
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GRGD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ISSBAR	Barite Mud Switch	NOBARITE	
ITEN	DIT-E Temperature Enable	ENABLE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MGF1	Medium 10 kHz Gain Factor	0.969585	
MGF2	Medium 20 kHz Gain Factor	0.974788	
MGF4	Medium 40 kHz Gain Factor	0.999842	
MPH1	Medium 10 kHz Phase Shift	0.0787021	DEG
MPH2	Medium 20 kHz Phase Shift	-0.199528	DEG
MPH4	Medium 40 kHz Phase Shift	0.885081	DEG



MPH4	Medium 40 kHz Phase Shift	-0.863061	DEG
MRE1	Medium Real 10 kHz Sonde Error Correction	31.1041	MM/M
MRE2	Medium Real 20 kHz Sonde Error Correction	11.3259	MM/M
MRE4	Medium Real 40 kHz Sonde Error Correction	3.5782	MM/M
MSR1	Medium Sigma Reference (10 kHz)	13520	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MSR4	Medium Sigma Reference (40 kHz)	685	MM/M
MXE1	Medium Quad 10 kHz Sonde Error Correction	328.09	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	172.606	MM/M
MXE4	Medium Quad 40 kHz Sonde Error Correction	112.808	MM/M
SBR	Shoulder Bed Resistivity Factor	1	OHMM
SFCR	SFL Channel Ratio	1000	
SFLE	SFL Enable	ENABLE	
SHT	Surface Hole Temperature	20	DEGC
SPAE	DIT-E SPARC Processing Enable	ENABLE	
SPNV	SP Next Value	0	MV

GPIT-A/B: General Purpose Inclinometer

ACPP	Accelerometer PROM Presence	PRESENT	
AFMO	Accelerometer Filtering Mode	MOVING_AVERAGE	
ART	Accelerometer Reference Temperature	20	DEGC
GLM	GPIT Logging Mode	DIPM	
ICMO	Inclinometry Computation Mode	AUTOMATIC_SELECTION	
MAPP	Magnetometer PROM Presence	PRESENT	
MDEC	Magnetic Field Declination	71.8638	DEG
MRTE	Magneto Reference Temperature	19	DEGC
TEMS	GPIT Temperature Sensor Used	BOTH	
U-GPOF	Playback OLD VERSION GPIT FILE (BEFORE OP14 + SRPC-3098-FEB_2006_C) ?	NO	

HLDS: Hostile Litho-Density Sonde

CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	

APS-C: Accelerator-Porosity Tool

AASD	APS Software Version	0	
ADSO	APS Thermal and Array Detectors High Voltage Setting	1967.87	V
AFSD	APS Array Detectors Data Source Switch	Both	
AHCS	APS Far Detector High Voltage Setting	2098.2	V
AHSS	APS Holesize Correction Source	BS	
AMTY	APS Holesize Correction Switch	ON	
ANSD	APS Environmental Corrections Mud Type	WaterBaseBarite	
ASOS	APS Near Detector High Voltage Setting	1738.17	V
ATSS	APS Standoff Correction Switch	ON	
BHFL_APS	APS Temperature-Pressure-Salinity Correction Switch	ON	
BHS	APS TNPH Borehole Fluid Type	WATER	
BHT	Borehole Status	OPEN	
BSCO_APS	Bottom Hole Temperature (used in calculations)	9.16	DEGC
DPPM	APS TNPH Borehole Salinity Correction Option	NO	
DSCO_APS	Density Porosity Processing Mode	HIRS	
FSAL	APS TNPH Density Source	COMPUTED	
FSCO_APS	Formation Salinity	-50000	PPM
GCSE	APS TNPH Formation Salinity Correction Option	NO	
GDEV	Generalized Caliper Selection	BS	
GGRD	Average Angular Deviation of Borehole from Normal	0	DEG
GRSE	Geothermal Gradient	0.018227	DC/M
GTSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
HSCO_APS	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	APS TNPH Hole Size Correction Option	YES	
MATR	Barite Mud Switch	NOBARITE	
MCCO_APS	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCOR_APS	APS TNPH Mud Cake Correction Option	NO	
MWCO_APS	APS TNPH Mud Correction	NATU	
NARC	APS TNPH Mud Weight Correction Option	YES	
NFRC	APS Near/Array Calibration Ratio	1.06031	
PTCO_APS	APS Near/Far Calibration Ratio	0.890147	
SHT	APS TNPH Pressure/Temperature Correction Option	YES	
TNCO_APS	Surface Hole Temperature	20	DEGC
	APS TNPH Computation Option	NO	

HNGS-BA: Hostile Natural Gamma Ray Sonde

BAR1	HNGS Detector 1 Barite Constant	1	
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BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	9.16	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN 9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00113835	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	4.30116	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.93825	

**System and Miscellaneous**

ALTDCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	11.438	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	0.000	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.22	G/C3
DO	Depth Offset for Playback	0.0	M
FLEV	Fluid Level	-50000.00	M
MST	Mud Sample Temperature	-50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	3861	M
TDD	Total Depth - Driller	3853.50	M
TDL	Total Depth - Logger	3861.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HNGSYields    Vertical Scale: 1:200    Graphics File Created: 06-Mar-2010 16:34

**OP System Version: 17C0-154**

DIT-E	17C0-154	GPIT-A/B	SRPC-3870_Q3_2009_OP17_V3_b
DTA-A	17C0-154	HLDS	17C0-154
LDSC-B	17C0-154	APS-C	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

**Input DLIS Files**

DEFAULT	FLIP_PI_LDL_APS_NGS_031L	PRODUCER	06-Mar-2010 16:32	3844.1 M	3408.4 M
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**Output DLIS Files**

DEFAULT	PI_LDL_APS_NGS_032PUP	FN:39	PRODUCER	06-Mar-2010 16:34
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**Calibration and Check Summary**

Measurement	Nominal	Master	Before	After	Change	Limit	Units
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General Purpose Inclinometer Wellsite Calibration - CROUZET ACCELEROMETER    PROM HAS BEEN READ CORRECTLY

Before: 1-Mar-2010 6:50

TEMPERATURE REFERENCE :	N/A	N/A	20	N/A	N/A	N/A	DEGC
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YEAR OF CALIBRATION :	N/A	N/A	92	N/A	N/A	N/A	
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MONTH OF CALIBRATION :	N/A	N/A	36	N/A	N/A	N/A	
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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 Inclinator Wellsite Calibration – CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY

Before: 1–Mar–2010 6:50

TEMPERATURE REFERENCE : N/A N/A 19 N/A N/A N/A N/A DEGC  
 YEAR OF CALIBRATION : N/A N/A 99 N/A N/A N/A N/A  
 MONTH OF CALIBRATION : N/A N/A 12 N/A N/A N/A N/A  
 SERIAL NUMBER : N/A N/A 428 N/A N/A N/A N/A

Hostile Litho–Density Sonde Wellsite Calibration – Background Measurement

Master: 1–Jan–2010 22:54 Before: 17–Jan–2010 0:16

SS Cs Resolution Bkg 9.000 7.783 7.716 N/A N/A 1.800 %  
 LS Cs Resolution Bkg 9.000 8.079 8.019 N/A N/A 1.800 %  
 LSW1 Background 100.0 91.64 91.89 N/A N/A 0.03000 CPS  
 LSW2 Background 100.0 82.70 82.51 N/A N/A 0.03000 CPS  
 LSW3 Background 200.0 187.7 186.7 N/A N/A 0.03000 CPS  
 LSW4 Background 250.0 231.1 233.3 N/A N/A 0.03000 CPS  
 LSW5 Background 600.0 541.2 543.9 N/A N/A 0.03000 CPS  
 SSW1 Background 100.0 90.66 89.76 N/A N/A 0.03000 CPS  
 SSW2 Background 200.0 151.1 152.5 N/A N/A 0.03000 CPS  
 SSW3 Background 500.0 428.0 428.1 N/A N/A 0.03000 CPS  
 SSW4 Background 270.0 227.6 230.6 N/A N/A 0.03000 CPS  
 SSW5 Background 200.0 164.5 164.7 N/A N/A 0.03000 CPS

Hostile Litho–Density Sonde Wellsite Calibration – Aluminum Measurement

Master: 1–Jan–2010 22:54

LSW1 Aluminum 600.0 567.9 N/A N/A N/A N/A CPS  
 LSW2 Aluminum 900.0 809.6 N/A N/A N/A N/A CPS  
 LSW3 Aluminum 1100 970.5 N/A N/A N/A N/A CPS  
 LSW4 Aluminum 580.0 493.5 N/A N/A N/A N/A CPS  
 LSW5 Aluminum 570.0 444.3 N/A N/A N/A N/A CPS  
 SSW1 Aluminum 2800 2502 N/A N/A N/A N/A CPS  
 SSW2 Aluminum 8000 6870 N/A N/A N/A N/A CPS  
 SSW3 Aluminum 11600 9624 N/A N/A N/A N/A CPS  
 SSW4 Aluminum 5000 3962 N/A N/A N/A N/A CPS  
 SSW5 Aluminum 660.0 476.3 N/A N/A N/A N/A CPS

Hostile Litho–Density Sonde Wellsite Calibration – Lithology Measurement

Master: 1–Jan–2010 22:54

LSW1 Iron 400.0 389.4 N/A N/A N/A N/A CPS  
 LSW2 Iron 730.0 659.2 N/A N/A N/A N/A CPS  
 LSW3 Iron 1000 867.1 N/A N/A N/A N/A CPS  
 LSW4 Iron 520.0 449.5 N/A N/A N/A N/A CPS  
 LSW5 Iron 470.0 410.2 N/A N/A N/A N/A CPS  
 SSW1 Iron 2100 1833 N/A N/A N/A N/A CPS  
 SSW2 Iron 6800 5740 N/A N/A N/A N/A CPS  
 SSW3 Iron 10800 8814 N/A N/A N/A N/A CPS  
 SSW4 Iron 4600 3635 N/A N/A N/A N/A CPS  
 SSW5 Iron 580.0 422.7 N/A N/A N/A N/A CPS

Hostile Litho–Density Sonde Wellsite Calibration – Caliper Calibration

Before: 16–Jan–2010 19:05

HLDS Caliper Small Ring 12.00 N/A 14.54 N/A N/A N/A IN  
 HLDS Caliper Large Ring 15.19 N/A 18.04 N/A N/A N/A IN

Accelerator–Porosity Tool Wellsite Calibration – Detector Background

Master: 1–Jan–2010 22:21 Before: 1–Mar–2010 8:49

Near Det Bkg Cntrate 30.00 33.05 30.48 N/A N/A N/A CPS  
 Far Det Bkg Cntrate 30.00 32.94 33.09 N/A N/A N/A CPS  
 Array–1 Det Bkg Cntrate 30.00 29.80 29.00 N/A N/A N/A CPS  
 Array–2 Det Bkg Cntrate 30.00 29.33 31.07 N/A N/A N/A CPS  
 Array Therm Det Bkg Cntrate 30.00 32.63 31.74 N/A N/A N/A CPS

Accelerator–Porosity Tool Wellsite Calibration – Calibration Ratios

Master: 1–Jan–2010 22:21

Near/Far Calibration Ratio 0.9250 0.8901 N/A N/A N/A N/A  
 Near/Array Calibration Ratio 1.030 1.060 N/A N/A N/A N/A  
 Near/Array Cal Ratio Up/Down 1.000 1.006 N/A N/A N/A N/A

Accelerator–Porosity Tool Wellsite Calibration – Tank Check

Master: 1–Jan–2010 22:21

Array–1 Standoff Porosity 11.75 11.67 N/A N/A N/A N/A PU  
 Array–2 Standoff Porosity 11.75 11.50 N/A N/A N/A N/A PU  
 Average Slowing Down Time 6.000 5.851 N/A N/A N/A N/A US  
 Array–1 SDT Ratio Up/Down 1.000 0.9891 N/A N/A N/A N/A  
 Array–2 SDT Ratio Up/Down 1.000 0.9855 N/A N/A N/A N/A  
 Sigma Formation 27.50 27.54 N/A N/A N/A N/A CU

Accelerator–Porosity Tool Wellsite Calibration – CCR7 signal boxes

Master: 1–Jan–2010 22:21

Near Detector Plateau Setting 1650 1738 N/A N/A N/A N/A V

Far Detector Plateau Setting	2000	2098	N/A	N/A	N/A	N/A	V
Array Detector Plateau Setting	2000	1968	N/A	N/A	N/A	N/A	V

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check

Master: 1–Jan–2010 19:23 Before: 16–Jan–2010 20:44

Na 511 Peak Loc	40.00	39.63	39.63	N/A	N/A	1.000	
Na 511 Peak Res	15.50	15.18	14.78	N/A	N/A	2.000	%
High Voltage	1150	1161	1177	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.1	142.4	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.816	10.01	N/A	N/A	2.000	%
Temperature	15.50	22.69	14.92	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	33.90	33.64	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check

Master: 1–Jan–2010 19:23 Before: 16–Jan–2010 20:44

Na 511 Peak Loc	40.00	39.69	39.65	N/A	N/A	1.000	
Na 511 Peak Res	15.50	15.48	14.73	N/A	N/A	2.000	%
High Voltage	1150	1095	1081	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	142.2	141.8	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.546	8.949	N/A	N/A	2.000	%
Temperature	15.50	23.40	15.62	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	33.69	33.51	N/A	N/A	8.000	CPS

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

Master: 1–Jan–2010 19:23 Before: 16–Jan–2010 20:44

Coincidence Count Rate Ratio	1.000	1.006	1.005	N/A	N/A	0.05000	
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Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration

Master: 1–Jan–2010 19:02

Na 511 Peak Set Point	40.00	41.00	---	---	---	---	
Th Peak Loc	209.6	210.4	---	---	---	---	
Th Peak Res	7.000	6.564	---	---	---	---	%
Background Count Rate	142.5	18.85	---	---	---	---	CPS
Gain Ratio	1.000	1.010	---	---	---	---	

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration

Master: 1–Jan–2010 19:02

Na 511 Peak Set Point	40.00	41.00	---	---	---	---	
Th Peak Loc	209.6	209.1	---	---	---	---	
Th Peak Res	7.000	6.559	---	---	---	---	%
Background Count Rate	142.5	18.64	---	---	---	---	CPS
Gain Ratio	1.000	1.002	---	---	---	---	

Accelerator–Porosity Tool – Detector Plateau Settings :

Near Detector Plateau Setting	1738 V
Far Detector Plateau Setting	2098 V
Array Detector Plateau Setting	1968 V

Dual Induction – E / Equipment Identification

Primary Equipment:		
Dual Induction Sonde	DIS – HB	129
Dual Induction Cartridge	DIC – EB	171
Auxiliary Equipment:		
Mass Isolated Housing	MIH – ZA	342

General Purpose Inclinator / Equipment Identification

Primary Equipment:		
GPIT Cartridge – AC	GPIC – AC	719
Auxiliary Equipment:		
GPIT Housing	GPIH – A	2864

Hostile Litho–Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS – D	57

Hostile Litho Density Sonde	HLDS - D	57
Hostile Litho Density High Voltage	HLDV - D	51
Gamma Source Radioactive	GSR - Z	2397
Auxiliary Equipment:		
Hostile Litho Density Pad	HLDP - C	61
Hostile Litho Density High Voltage Housi	HEH - H	53

Litho-Density Spectroscopy Cartridge - B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC - B	326
Auxiliary Equipment:		
LDSC Housing	LDSH - A	319

Accelerator-Porosity Tool / Equipment Identification

Primary Equipment:		
Accelerator-Porosity Sonde	APS - C	22
APS Minitron	MNTR - F	5589
Auxiliary Equipment:		
Accelerator-Porosity Housing	APH - AC	22
APS Calibration Water Tank	SFT - 178	2
APS Aluminum Calibrator Sleeve	SFT - 281	2

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		39.63	Master		15.18	Master		1161
Before		39.63	Before		14.78	Before		1177
	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		8.816	Master		22.69
Before		142.4	Before		10.01	Before		14.92
	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		33.90						
Before		33.64						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							

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		39.69	Master		15.48	Master		1095
Before		39.65	Before		14.73	Before		1081
	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		142.2	Master		8.546	Master		23.40
Before		141.8	Before		8.949	Before		15.62
	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		33.69						
Before		33.51						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							
Master: 1-Jan-2010 19:23			Before: 16-Jan-2010 20:44					

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.006
Before		1.005
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	
Master: 1-Jan-2010 19:23		
Before: 16-Jan-2010 20:44		

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		210.4	Master		6.564
	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		18.85	Master		1.010			
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)				
Master: 1-Jan-2010 19:02								

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		209.1	Master		6.559
	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		18.64	Master		1.002			
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)				
Master: 1-Jan-2010 19:02								

DTS Telemetry Tool / Equipment Identification

Primary Equipment:

DTC-H Auxiliary Cartridge  
DTC-H Telemetry Cartridge

DTCH - A 8799  
DTCH - A 8799

Auxiliary Equipment:

DTCH Telemetry Cartridge Housing

ECH - KC 9842

Company: **Lamont Doherty**

**Schlumberger**

Well: **Expedition 318 Site U1361A**

Field: **Wilkes Land**

Rig: **JOIDES Resolution**

Country: **Antarctica**

Natural Gamma  
Spectroscopy  
(HNGS)