

DISCLAIMER

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OTHER SERVICES1

OS1: DITE
OS2: HLDS
OS3:
OS4: FMS/DSI
OS5:

OTHER SERVICES2

OS1:
OS2:
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 1

Logging tools deployed inside drillpipe with wireline.
BHA consisted of RCB Drilling Bit and collars with mechanical bit release.
HLDS caliper calibration used 12 inch and 15.19" diameter rings as reference to improve large hole size accuracy.
Depths referenced from drill floor which is 11m above sea level.

Ship heave averaged 1.75m peak to peak on average (estimate)

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

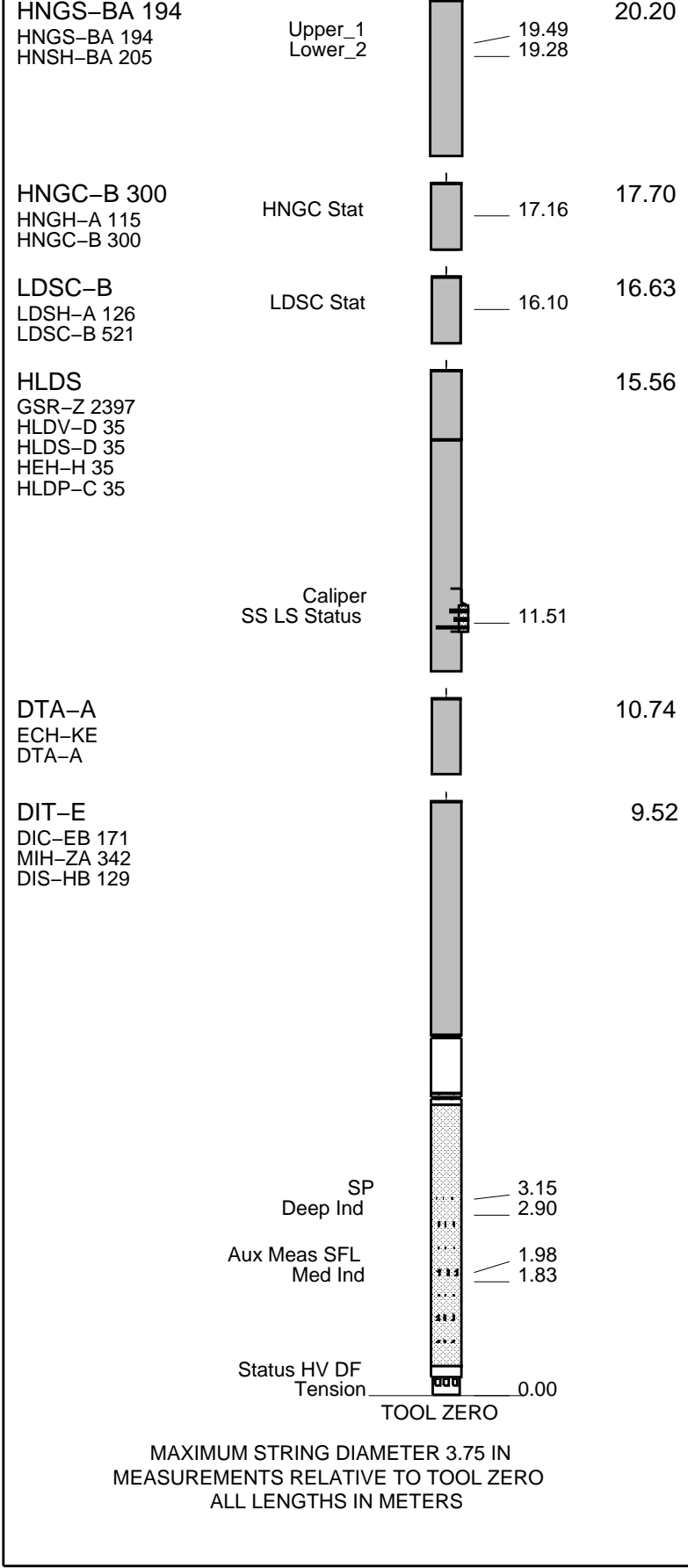
GSR-U 616008
WITM (DTS)-A

RUN 2

DOWNHOLE EQUIPMENT

LEH-QT  22.00
LEH-QT 301

DTC-H  21.11
ECH-KC CTEM _____ 20.83
DTCH0-A TelStatus _____ 20.20
ToolStatu _____



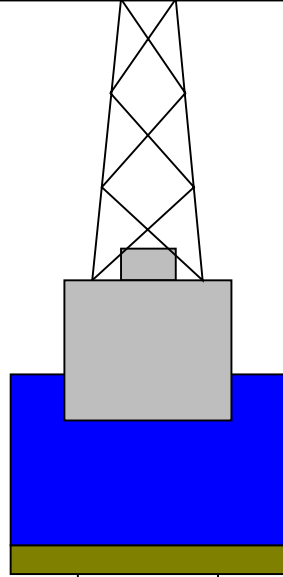
Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	MD	

Kelly Bushing Elevation
Derrick Floor Elevation

11.0
11.0

Mean Sea Level

0.0



3138 4.20

Sea Floor



3138 9.875

3257 3.80

Borehole Segment

Open Hole

3388

Output DLIS Files

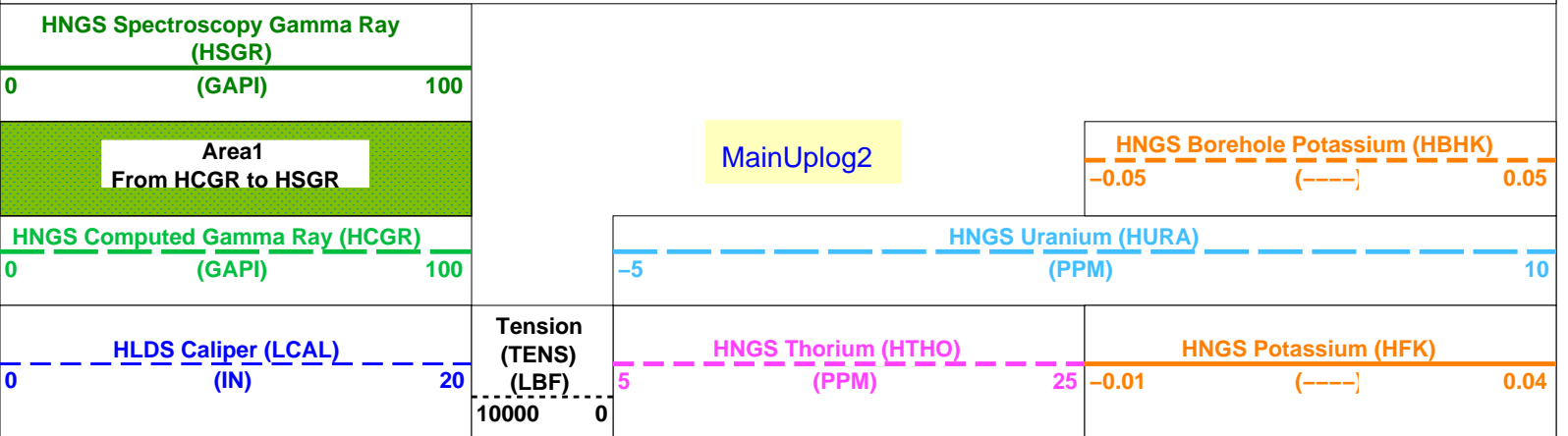
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DLISBACKUP	PI_LDL_NGS_009LUP	FN:14	PRODUCER	11-Oct-2009 15:35	3383.3 M	3103.3 M

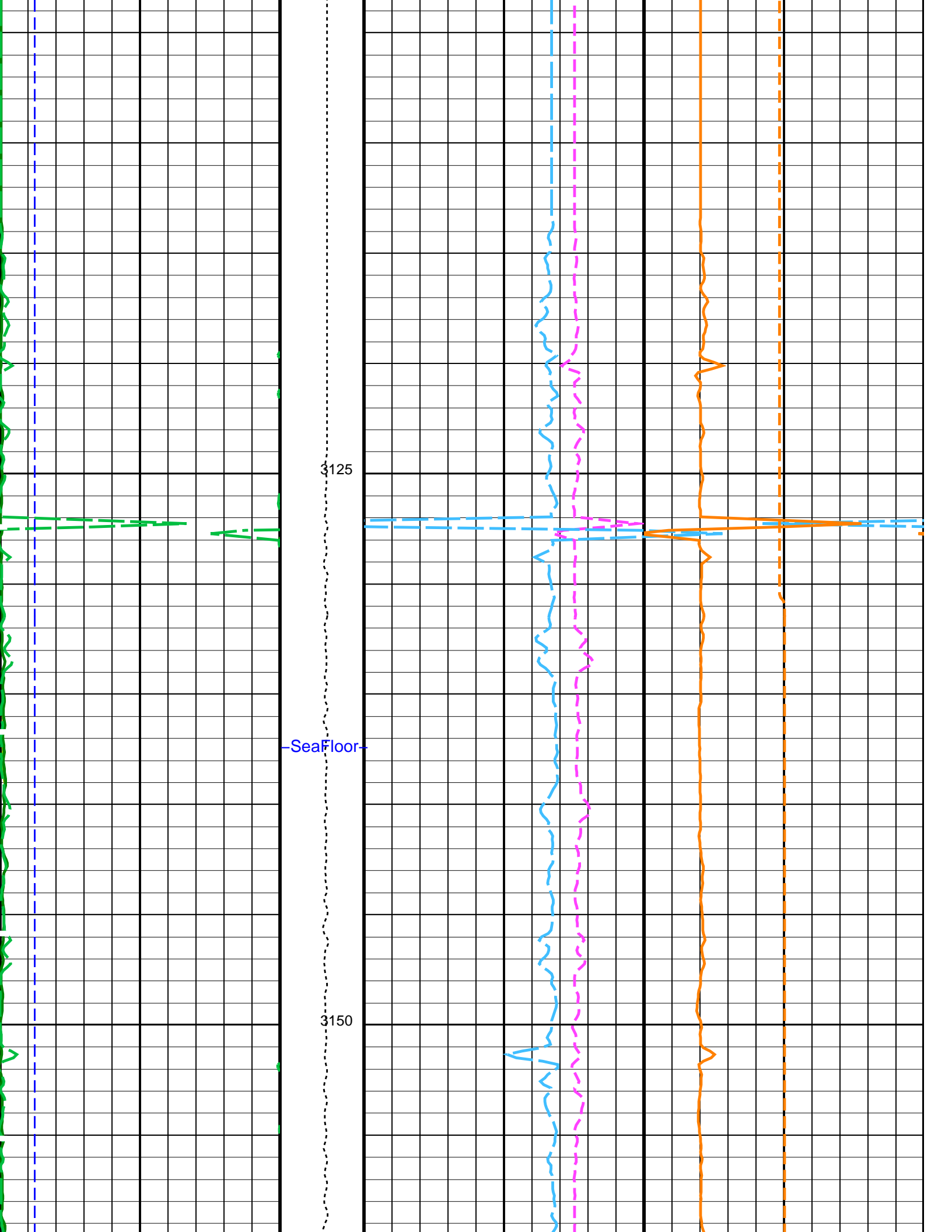
OP System Version: 17C0-154

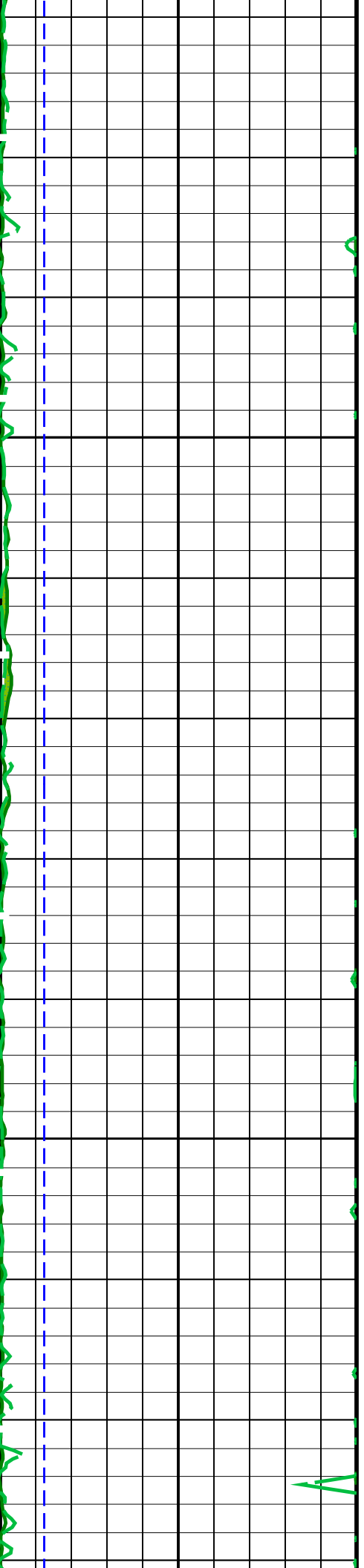
DIT-E	17C0-154	DTA-A	17C0-154
HLDS	17C0-154	LDSC-B	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

PIP SUMMARY

Time Mark Every 60 S



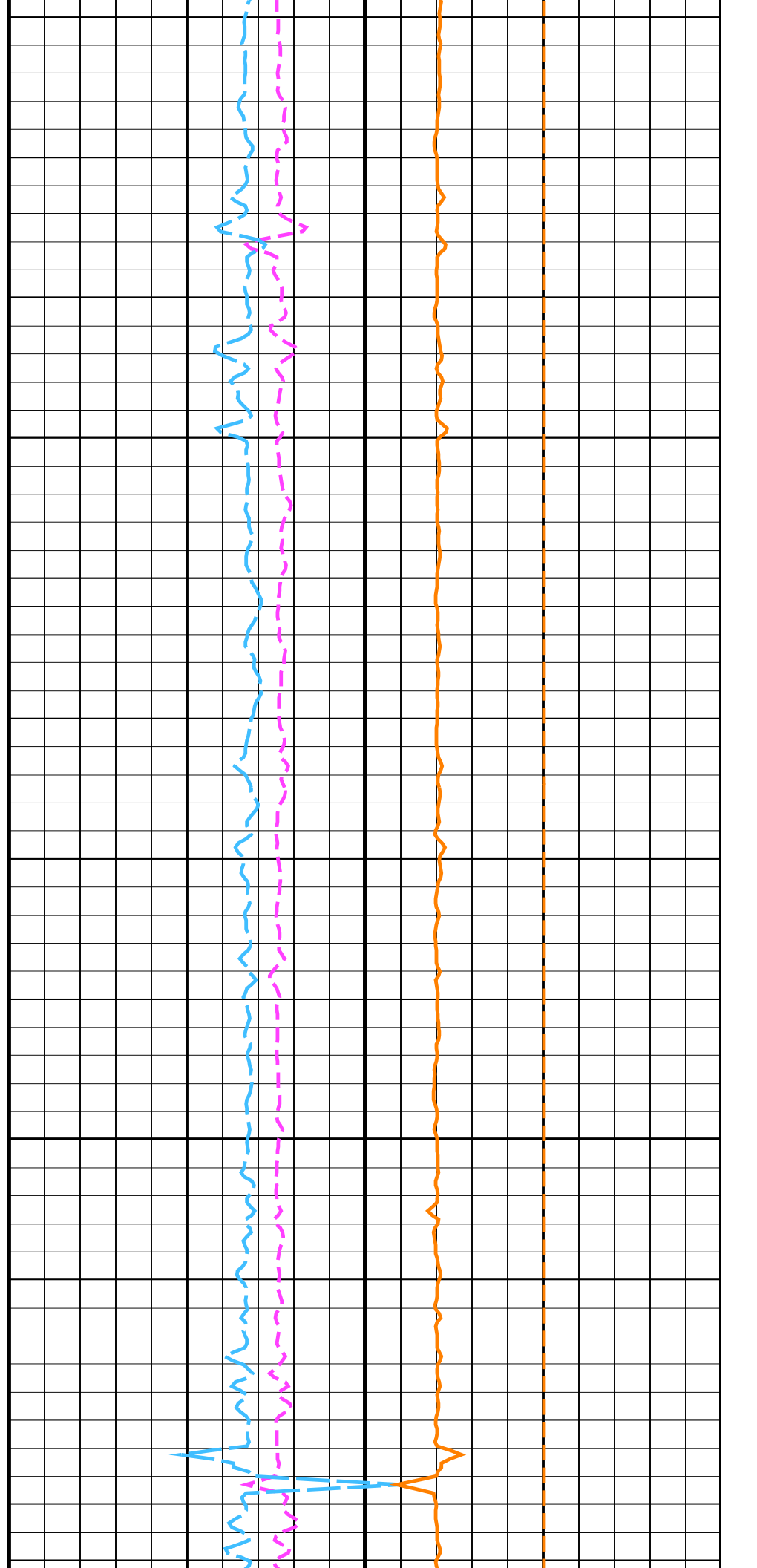


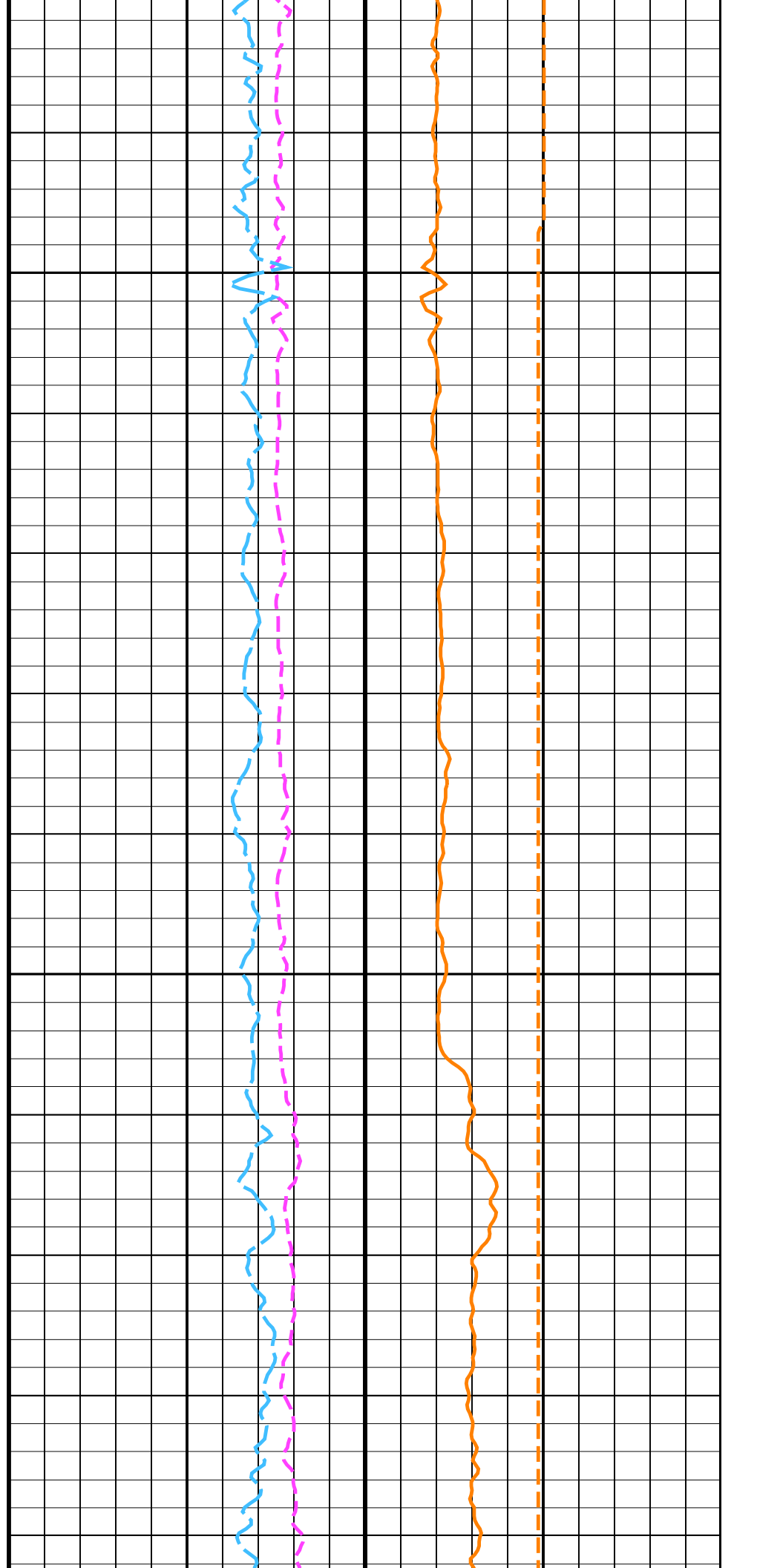
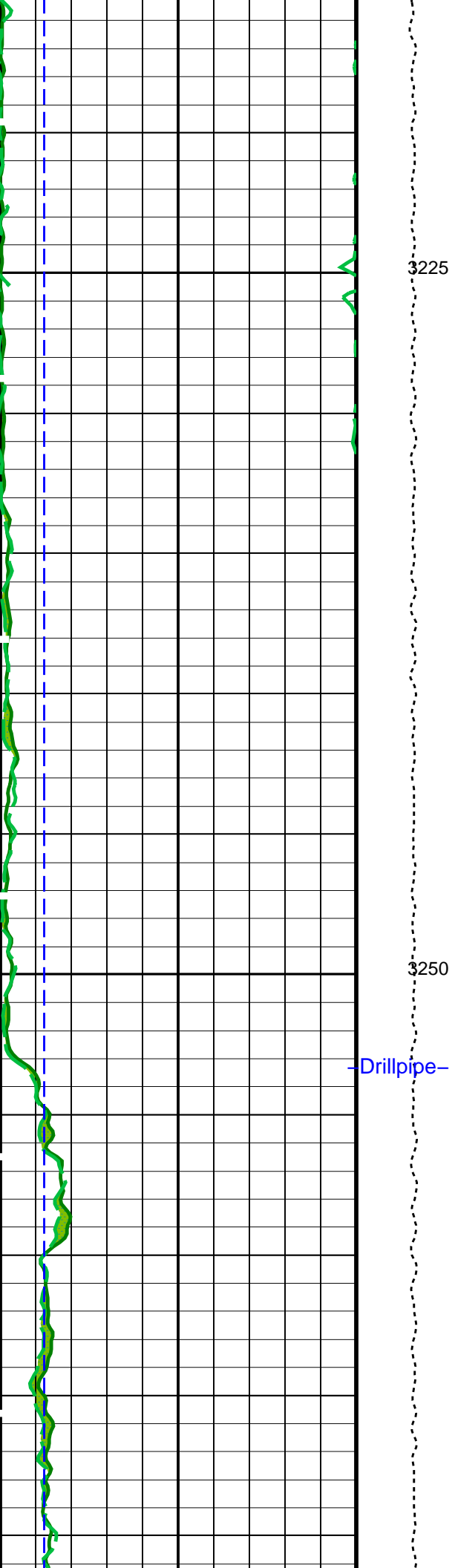


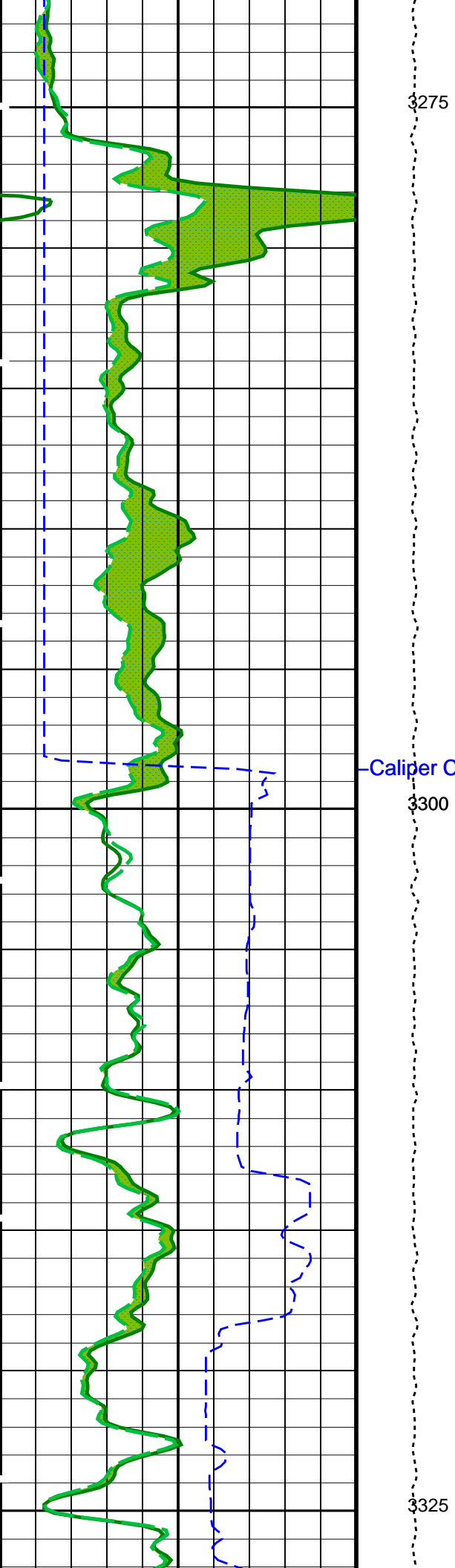
3175

3200

A





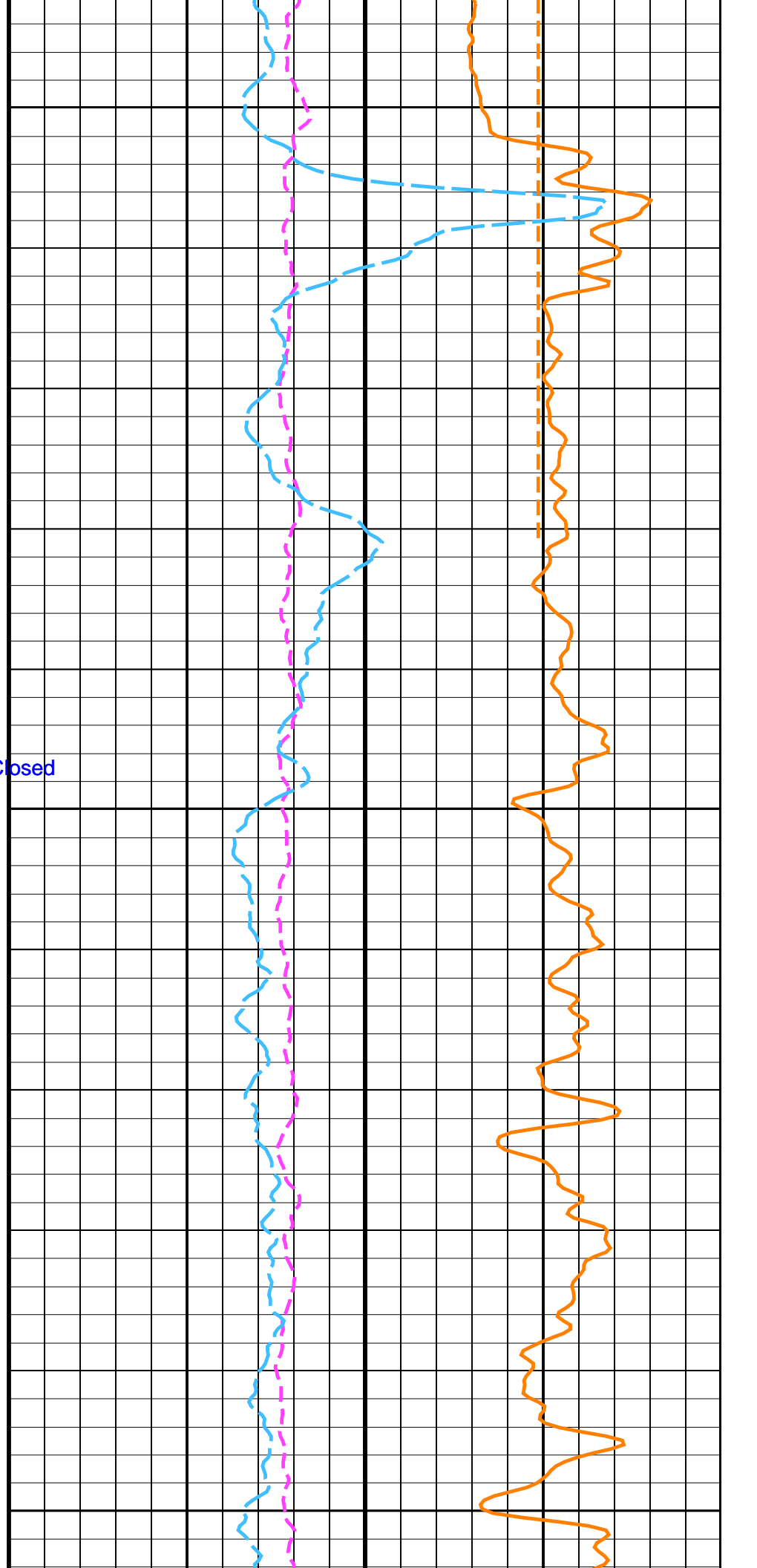


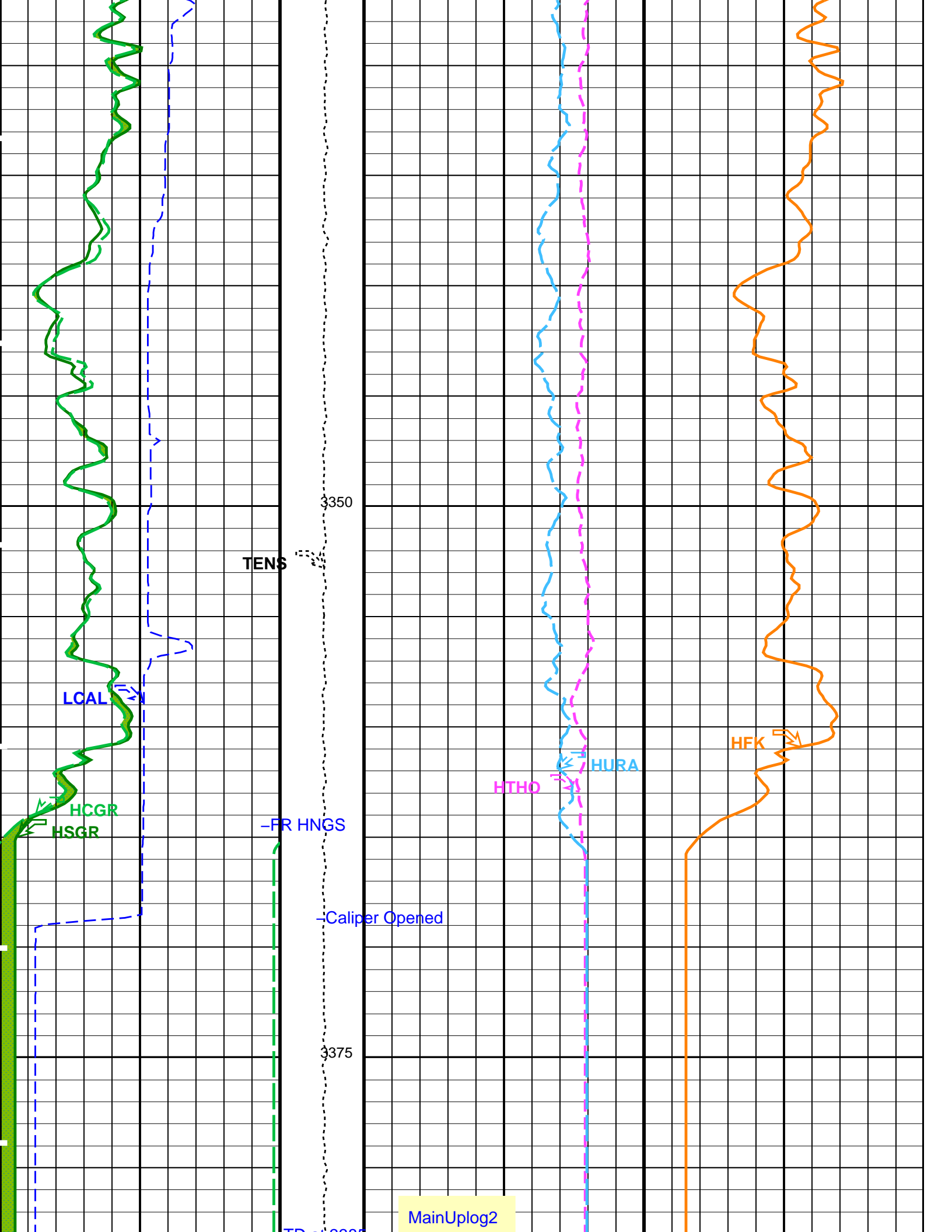
3275

Caliper Closed

3300

3325





0	HLDS Caliper (LCAL) (IN)	20	Tension (TENS) (LBF)	5	HNGS Thorium (HTHO) (PPM)	25	-0.01	HNGS Potassium (HFK) (-----)	0.04
0	HNGS Computed Gamma Ray (HCGR) (GAPI)	100	10000	0	HNGS Uranium (HURA) (PPM)				
0	Area1 From HCGR to HSGR							HNGS Borehole Potassium (HBHK) (-----)	0.05
0	HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)	100							

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)	100	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
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 Selector	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
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
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	
CLSC	Density Hole Correction	BS	

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	
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	
BHT	Bottom Hole Temperature (used in calculations)	100	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	-0.0017655	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
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	0.973357	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.976784	
System and Miscellaneous			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	4.500	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.26	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	3390	M
TDD	Total Depth - Driller	3388.00	M
TDL	Total Depth - Logger	3388.00	M
TWS	Temperature of Connate Water Sample	7.00	DEGC

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 12-Oct-2009 00:34

OP System Version: 17C0-154

DIT-E	17C0-154	DTA-A	17C0-154
HLDS	17C0-154	LDSC-B	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

Output DLIS Files

DEFAULT	PI_LDL_NGS_009LUP	FN:13	PRODUCER	12-Oct-2009 00:34
DLISBACKUP	PI_LDL_NGS_009LUP	FN:14	PRODUCER	11-Oct-2009 15:35

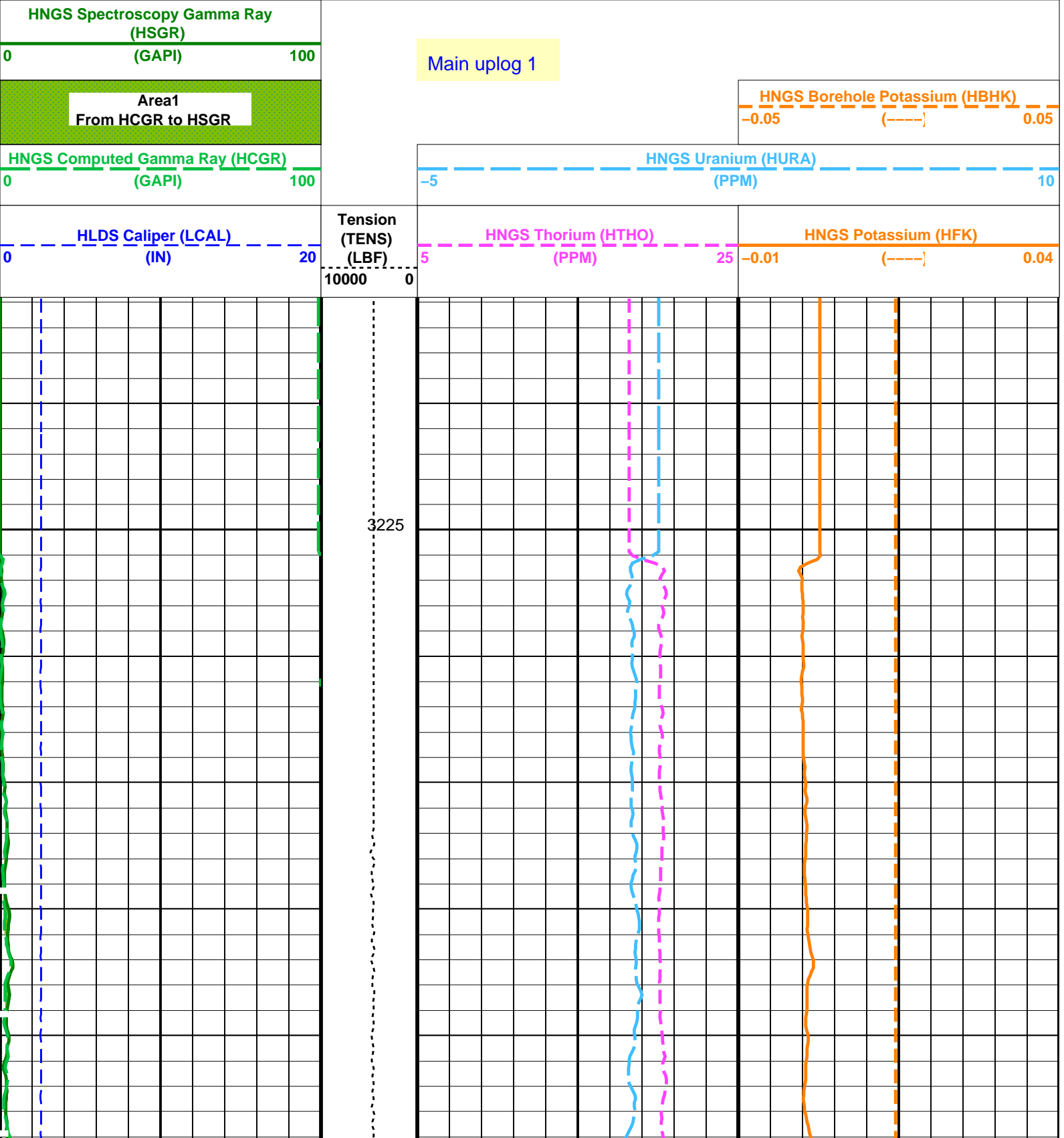
Output DLIS Files

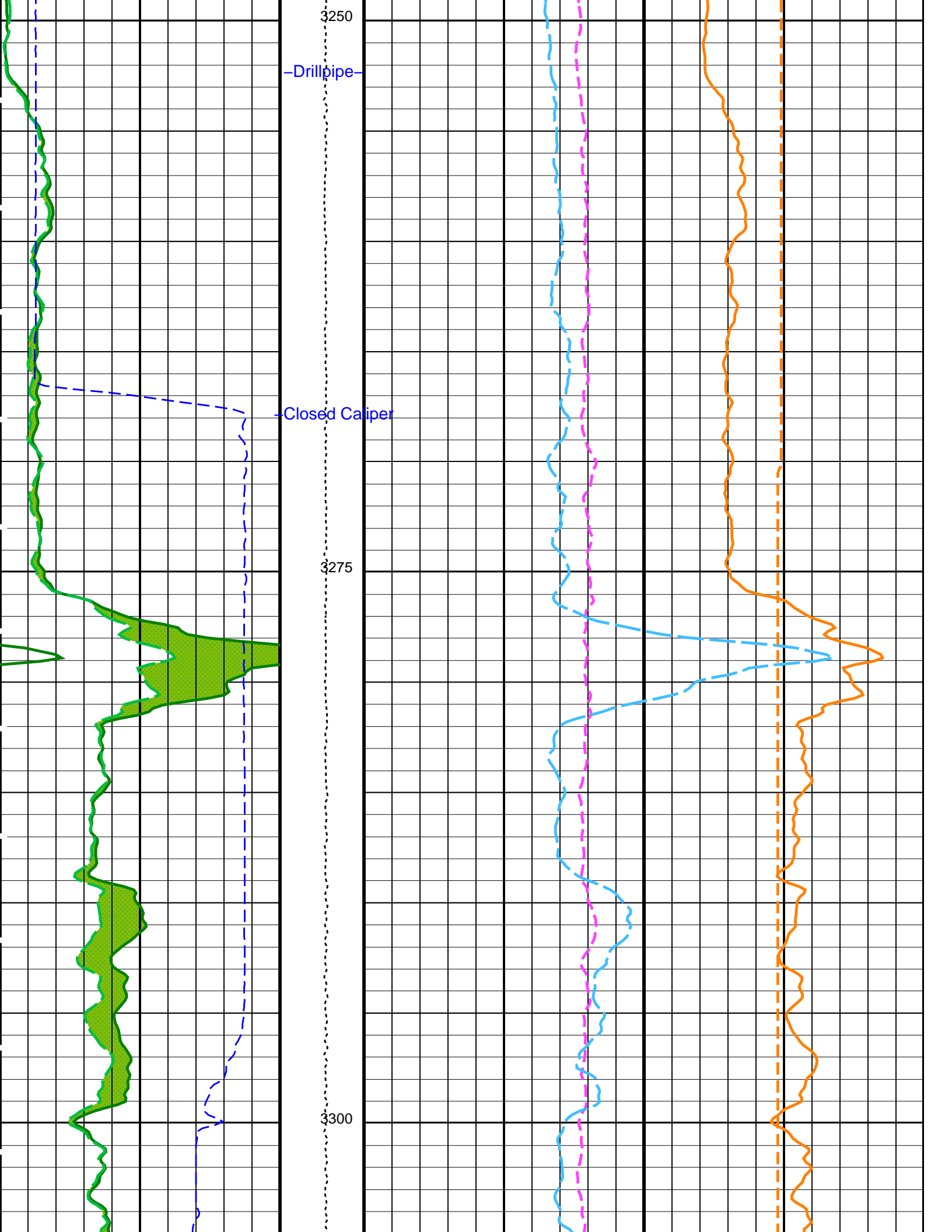
OP System Version: 17C0-154

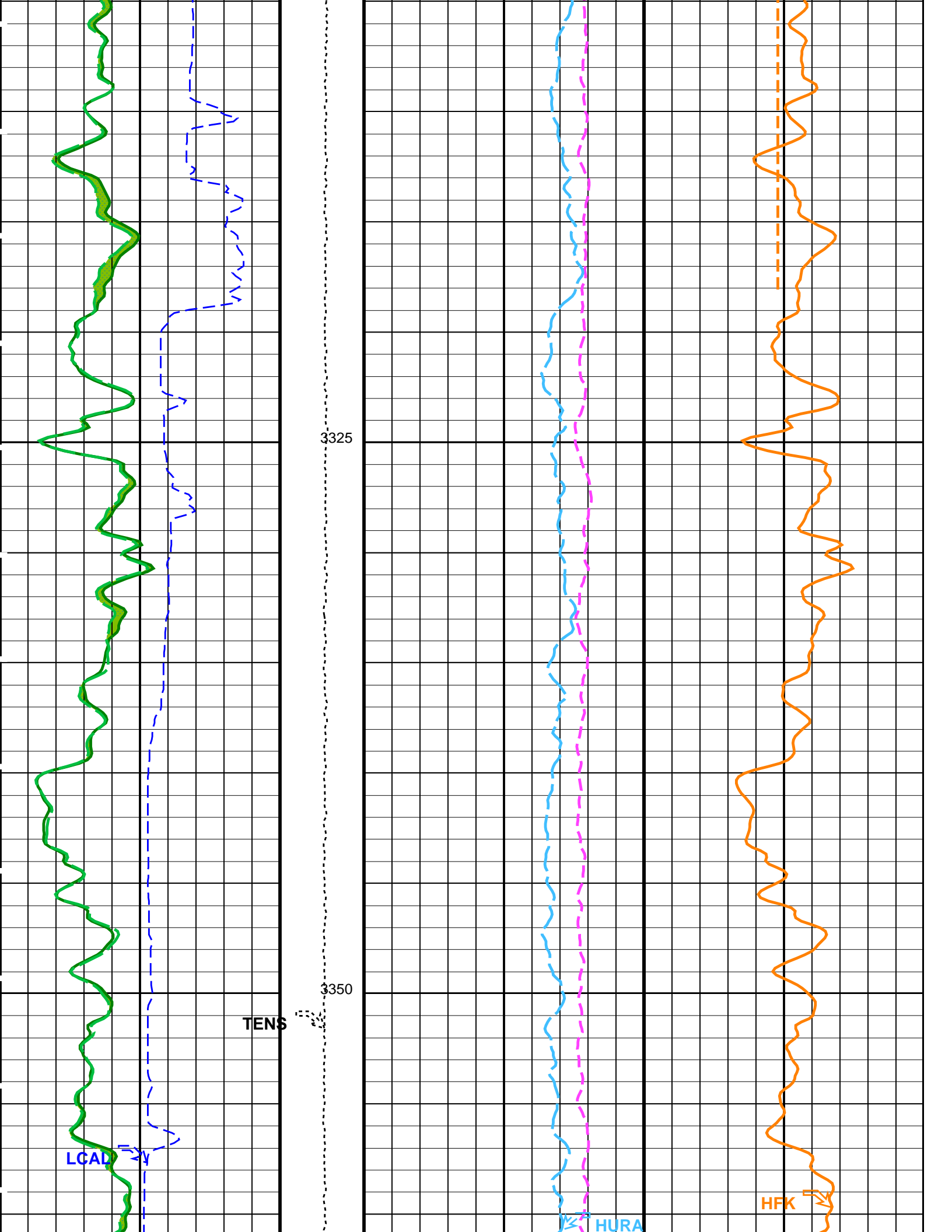
DIT-E	17C0-154	DTA-A	17C0-154
HLDS	17C0-154	LDSC-B	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

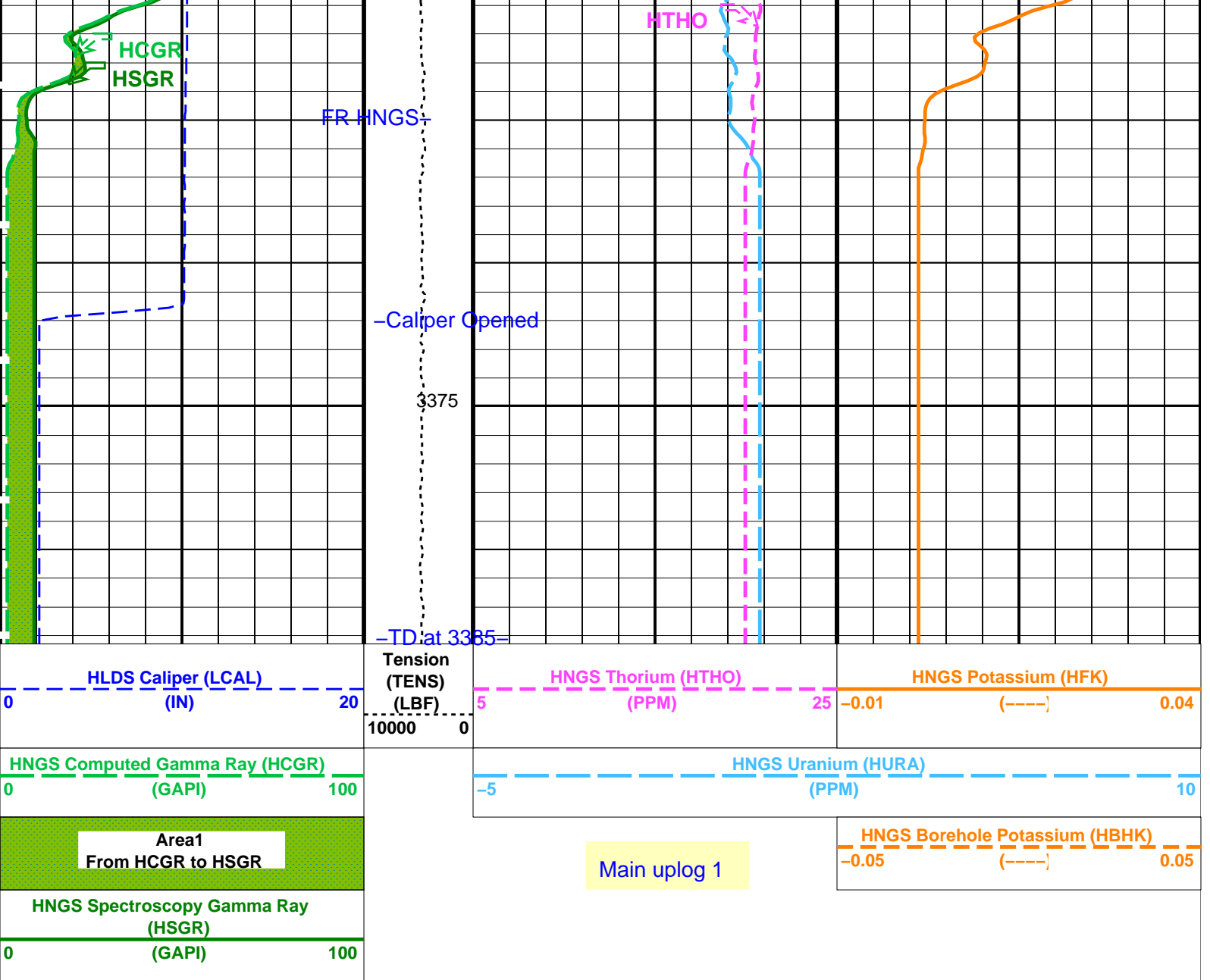
PIP SUMMARY

Time Mark Every 60 S









PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
DIT-E: Dual Induction - E			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	100	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
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection		

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
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

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	

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	
BHT	Bottom Hole Temperature (used in calculations)	100	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
GRD	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	-0.000789315	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
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	2.97515	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	2.1951	

System and Miscellaneous

ALTDPCAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CS1Z	Current Casing Size	4.500	IN

CWEI	Current Casing Size	4.500	IN
DFD	Casing Weight	0.00	LB/F
FLEV	Drilling Fluid Density	1.26	G/C3
MST	Fluid Level	-50000.00	M
PBVSADP	Mud Sample Temperature	-50000.00	DEGC
RMFS	Use alternate depth channel for playback	NO	
RW	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
TD	Resistivity of Connate Water	1.0000	OHMM
TDD	Total Depth	3390	M
TDL	Total Depth - Driller	3388.00	M
TWS	Total Depth - Logger	3388.00	M
	Temperature of Connate Water Sample	7.00	DEGC

Format: HNGSYields Vertical Scale: 1:200 Graphics File Created: 11-Oct-2009 23:45

OP System Version: 17C0-154

DIT-E	17C0-154	DTA-A	17C0-154
HLDS	17C0-154	LDSC-B	17C0-154
HNGC-B	17C0-154	HNGS-BA	17C0-154
DTC-H	17C0-154		

Output DLIS Files

DEFAULT	PI_LDL_NGS_006LUP	FN:7	PRODUCER	11-Oct-2009 23:45
DLISBACKUP	PI_LDL_NGS_006LUP	FN:8	PRODUCER	11-Oct-2009 14:46

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Hostile Litho-Density Sonde Wellsite Calibration - Background Measurement							
Master: 18-Sep-2009 2:55 Before: 18-Sep-2009 5:19 After: 6-Oct-2009 5:12							
SS Cs Resolution Bkg	9.000	8.452	8.363	8.426	0.06246	1.800	%
LS Cs Resolution Bkg	9.000	8.580	8.651	8.599	-0.05205	1.800	%
LSW1 Background	100.0	76.04	75.16	74.56	-0.5994	0.03000	CPS
LSW2 Background	100.0	69.08	67.85	68.84	0.9836	0.03000	CPS
LSW3 Background	200.0	155.5	152.7	154.5	1.819	0.03000	CPS
LSW4 Background	250.0	187.6	187.4	187.2	-0.1870	0.03000	CPS
LSW5 Background	600.0	426.9	426.3	426.5	0.2204	0.03000	CPS
SSW1 Background	100.0	74.38	73.61	74.87	1.256	0.03000	CPS
SSW2 Background	200.0	130.0	127.5	128.7	1.249	0.03000	CPS
SSW3 Background	500.0	340.0	341.3	343.6	2.380	0.03000	CPS
SSW4 Background	270.0	181.2	184.1	184.1	-0.01787	0.03000	CPS
SSW5 Background	200.0	132.4	130.8	132.1	1.332	0.03000	CPS
Hostile Litho-Density Sonde Wellsite Calibration - Aluminum Measurement							
Master: 18-Sep-2009 4:05							
LSW1 Aluminum	600.0	539.9	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	806.6	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	986.0	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	501.1	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	458.2	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2369	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6795	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9808	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	4129	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	554.7	N/A	N/A	N/A	N/A	CPS
Hostile Litho-Density Sonde Wellsite Calibration - Lithology Measurement							
Master: 18-Sep-2009 3:57							
LSW1 Iron	400.0	366.5	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	642.8	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	862.0	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	447.6	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	414.9	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1749	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5618	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8869	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3733	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	484.8	N/A	N/A	N/A	N/A	CPS
Hostile Litho-Density Sonde Wellsite Calibration - Caliper Calibration							
Before: 18-Sep-2009 5:08							
HLDS Caliper Small Ring	12.00	N/A	14.59	N/A	N/A	N/A	IN

HLDS Caliper Large Ring	15.19	N/A	18.14	N/A	N/A	N/A	IN
Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check							
Master: 9–Oct–2009 4:43 Before: 8–Oct–2009 23:44 After: 12–Oct–2009 2:55							
Na 511 Peak Loc	40.00	39.53	39.52	39.54	0.02031	1.000	
Na 511 Peak Res	15.50	16.11	15.73	16.00	0.2734	2.000	%
High Voltage	1150	1193	1186	1167	–19.27	N/A	V
Na 1785 Peak Loc	142.6	142.3	142.4	142.7	0.2921	7.000	
Na 1785 Peak Res	8.500	8.575	7.584	7.915	0.3304	2.000	%
Temperature	15.50	26.63	26.50	24.57	–1.930	N/A	DEGC
Na Count Rate	45.00	35.40	35.94	34.92	–1.018	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check							
Master: 9–Oct–2009 4:43 Before: 8–Oct–2009 23:44 After: 12–Oct–2009 2:55							
Na 511 Peak Loc	40.00	39.67	39.54	39.70	0.1535	1.000	
Na 511 Peak Res	15.50	15.41	16.53	15.27	–1.261	2.000	%
High Voltage	1150	1107	1102	1101	–0.5918	N/A	V
Na 1785 Peak Loc	142.6	141.8	141.6	142.2	0.5570	7.000	
Na 1785 Peak Res	8.500	8.703	8.533	7.984	–0.5492	2.000	%
Temperature	15.50	27.96	26.63	26.04	–0.5934	N/A	DEGC
Na Count Rate	45.00	35.24	35.85	34.42	–1.429	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Ratio Of Detector 1 To Detector 2							
Master: 9–Oct–2009 4:43 Before: 8–Oct–2009 23:44 After: 12–Oct–2009 2:55							
Coincidence Count Rate Ratio	1.000	1.005	1.001	1.014	0.01270	0.05000	

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration							
Master: 9–Oct–2009 3:42							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	209.5	--	--	--	--	
Th Peak Res	7.000	6.995	--	--	--	--	%
Background Count Rate	142.5	19.73	--	--	--	--	CPS
Gain Ratio	1.000	1.008	--	--	--	--	

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration							
Master: 9–Oct–2009 3:42							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	208.0	--	--	--	--	
Th Peak Res	7.000	6.910	--	--	--	--	%
Background Count Rate	142.5	19.88	--	--	--	--	CPS
Gain Ratio	1.000	0.9976	--	--	--	--	

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

Hostile Litho–Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS – D	35
Hostile Litho Density High Voltage	HLDV – D	35
Gamma Source Radioactive	GSR – Z	2397
Auxiliary Equipment:		
Hostile Litho Density Pad	HLDP – C	35
Hostile Litho Density High Voltage Housi	HEH – H	35

Litho–Density Spectroscopy Cartridge – B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC – B	521
Auxiliary Equipment:		
LDSC Housing	LDSH – A	126

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




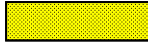

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.53	Master		16.11	Master		1193
Before		39.52	Before		15.73	Before		1186
After		39.54	After		16.00	After		1167
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		142.3	Master		8.575	Master		26.63
Before		142.4	Before		7.584	Before		26.50
After		142.7	After		7.915	After		24.57
	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		35.40						
Before		35.94						
After		34.92						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							
Master: 9–Oct–2009 4:43			Before: 8–Oct–2009 23:44			After: 12–Oct–2009 2:55		




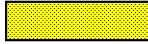

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.67	Master		15.41	Master		1107
Before		39.54	Before		16.53	Before		1102
After		39.70	After		15.27	After		1101
	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		8.703	Master		27.96
Before		141.6	Before		8.533	Before		26.63
After		142.2	After		7.984	After		26.04
	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		35.24						
Before		35.85						
After		34.42						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.005
Before		1.001
After		1.014
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	
Master: 9-Oct-2009 4:43		
Before: 8-Oct-2009 23:44		
After: 12-Oct-2009 2:55		

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		209.5	Master		6.995
	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		19.73	Master		1.008			
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)				
Master: 9-Oct-2009 3:42								

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		208.0	Master		6.910
	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		19.88	Master		0.9976			
	10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)				
Master: 9-Oct-2009 3:42								


DTS Telemetry Tool / Equipment Identification	
Primary Equipment:	
DTC-H Auxiliary Cartridge	DTCH - A
DTC-H Telemetry Cartridge	DTCH - A
Auxiliary Equipment:	
DTCH Telemetry Cartridge Housing	ECH - KC

Company: **Lamont Doherty**

Well: **Expedition 324 Site U1349A**

Field: **Shatsky Rise**

Rig: **JOIDES Resolution**



Ocean: **Pacific**

Natural Gamma
Spectroscopy
(HNGS)