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**OTHER SERVICES1**  
 OS1:  
 OS2:  
 OS3:  
 OS4:  
 OS5:

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

**REMARKS: RUN NUMBER 1**  
 Exp 376, U1528D: EDTC and HNGC/LDSC are flasked in case of high temperature.  
 Tools conveyed on wireline through drill pipe without sub sea riser.  
 Chemraz and Kalrez seals/o-rings utilized on this toolstring.  
 Wireline run: 7-46M18XS  
 Active Heave Compensator utilized until re-entering drillpipe.  
 13 3/8 inch casing with re-entry cont placed on sea floor by rig down to 60 m.  
 Logging bit used for logging only.  
 Drilled TD was:1598.3 m  
 Drill pipe set at 1289.3m  
 2 passes made in open hole uplogs in addition to a downlog with caliper closed.  
 MT head MTEM maximum reading at 247.47 deg C. / 477.45 deg F  
 Maximum reading thermometers at 237.77 deg C / 460 deg F.  
 Caliper opened on both uplog passes.  
 Caliper closed for downlog.  
 Fluid sample after logging yielded Ph of 2 and presence of H2S.  
 Bulk Density RHOM anomaly noted below 1475m on uplogs due to sudden temperature.  
 Use of RHL or long spaced bulk density is recommended in this area.

**REMARKS: RUN NUMBER 2**

**RUN 1**

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

LOGGED INTERVAL	START	STOP

**RUN 2**

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

LOGGED INTERVAL	START	STOP

**EQUIPMENT DESCRIPTION**


**RUN 1**


**SURFACE EQUIPMENT**

GSR-U 6098  
 WITM (EDTS)-A

**RUN 2**

**DOWNHOLE EQUIPMENT**

LEH-MT  14.91  
 LEH-MT 301

EDTC-B  13.95  
 EDTH-UDFH-KL-Palette 1091

EDTC-B 8317  
EDTG-A/B 8305

MDSB\_EDTC  
Mud Tempe  
CTEM  
Gamma Ray  
EFTB DIAG  
TelStatus  
EDTCB Ele

\_\_\_ 12.69  
\_\_\_ 12.39  
\_\_\_ 11.82  
\_\_\_ 10.71

HNGS-BA  
HNGS-BA 194  
HNSH-BA 204

Upper\_1  
Lower\_2

\_\_\_ 10.01  
\_\_\_ 9.80

10.71

HNCC-B  
UDFH-KLX-Antonetta 1055  
HNGC-B 304  
LDSC-B 521

HNGC Stat  
LDSC Stat

\_\_\_ 7.12  
\_\_\_ 6.05

8.21

HLDS  
GSR-ZA 2945  
HLDV-D 45  
HLDS-D 45  
HEH-H 47  
HLDP-C 45

Caliper  
SS LS Status

\_\_\_ 0.90

4.96

BNS-CCS

DF ACCZ  
Tension HV

TOOL ZERO  
\_\_\_ 0.00

0.14

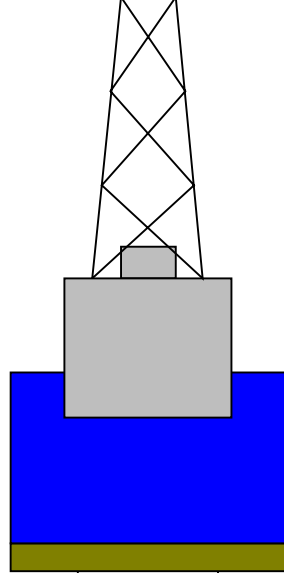
MAXIMUM STRING DIAMETER 3.75 IN  
MEASUREMENTS RELATIVE TO TOOL ZERO  
ALL LENGTHS IN METERS

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

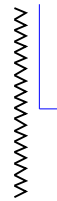
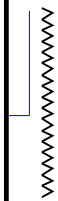
Kelly Bushing Elevation  
Derrick Floor Elevation

Mean Sea Level

0  
0  
11



4.1



1239 4.1  
1289.3 9.875  
1598.3

Sea Floor

Drill Pipe

**13 3/8" Casing**  
**Open Hole 9 7/8"**

Total Depth Driller

### Input DLIS Files

DEFAULT Flip\_LDL\_NGS\_039LUP PRODUCER 10-Jun-2018 16:31 1571.7 M 1211.6 M

### Output DLIS Files

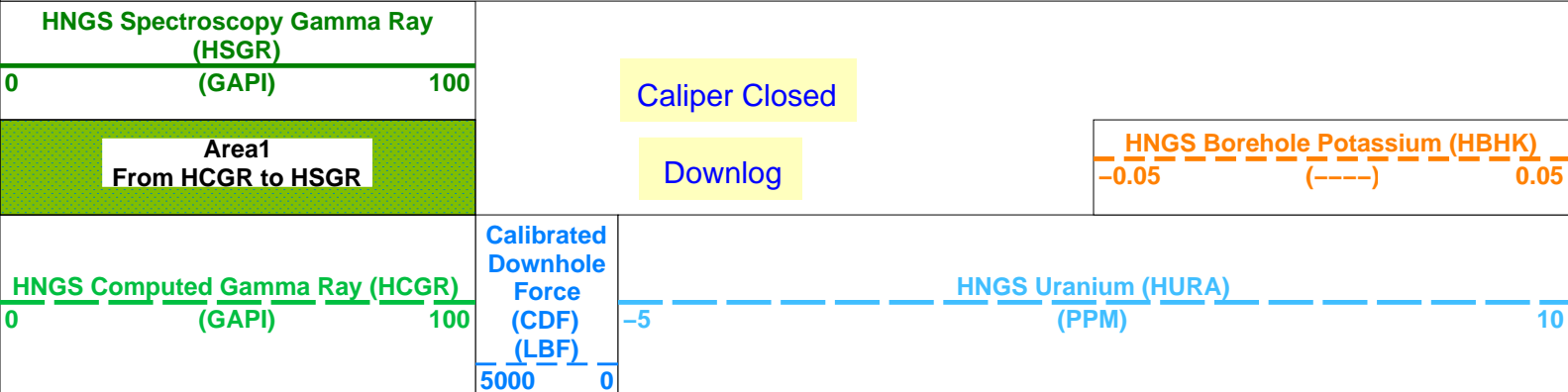
DEFAULT LDL\_NGS\_040PUP FN:47 PRODUCER 10-Jun-2018 16:35 1571.7 M 1211.6 M

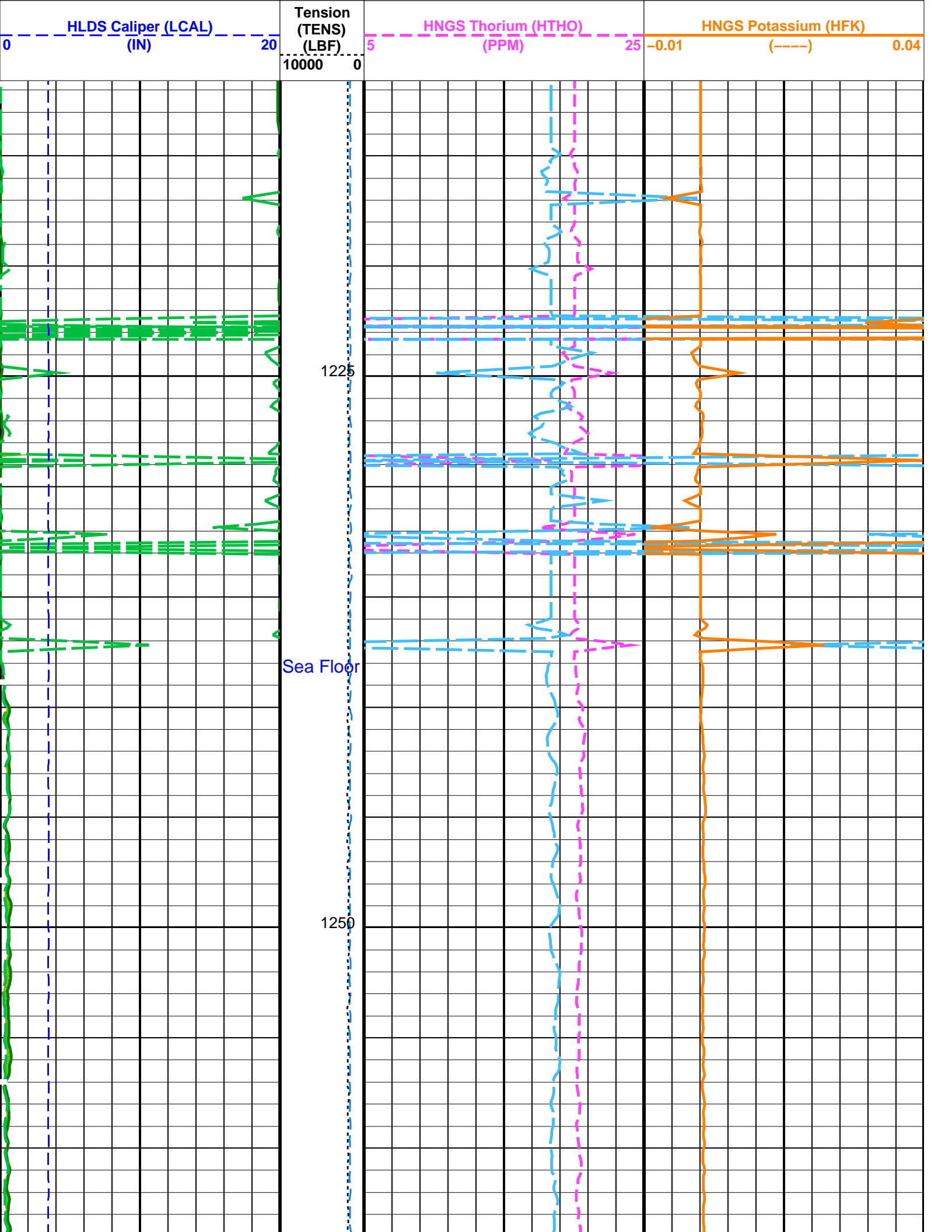
### OP System Version: 19C0-187

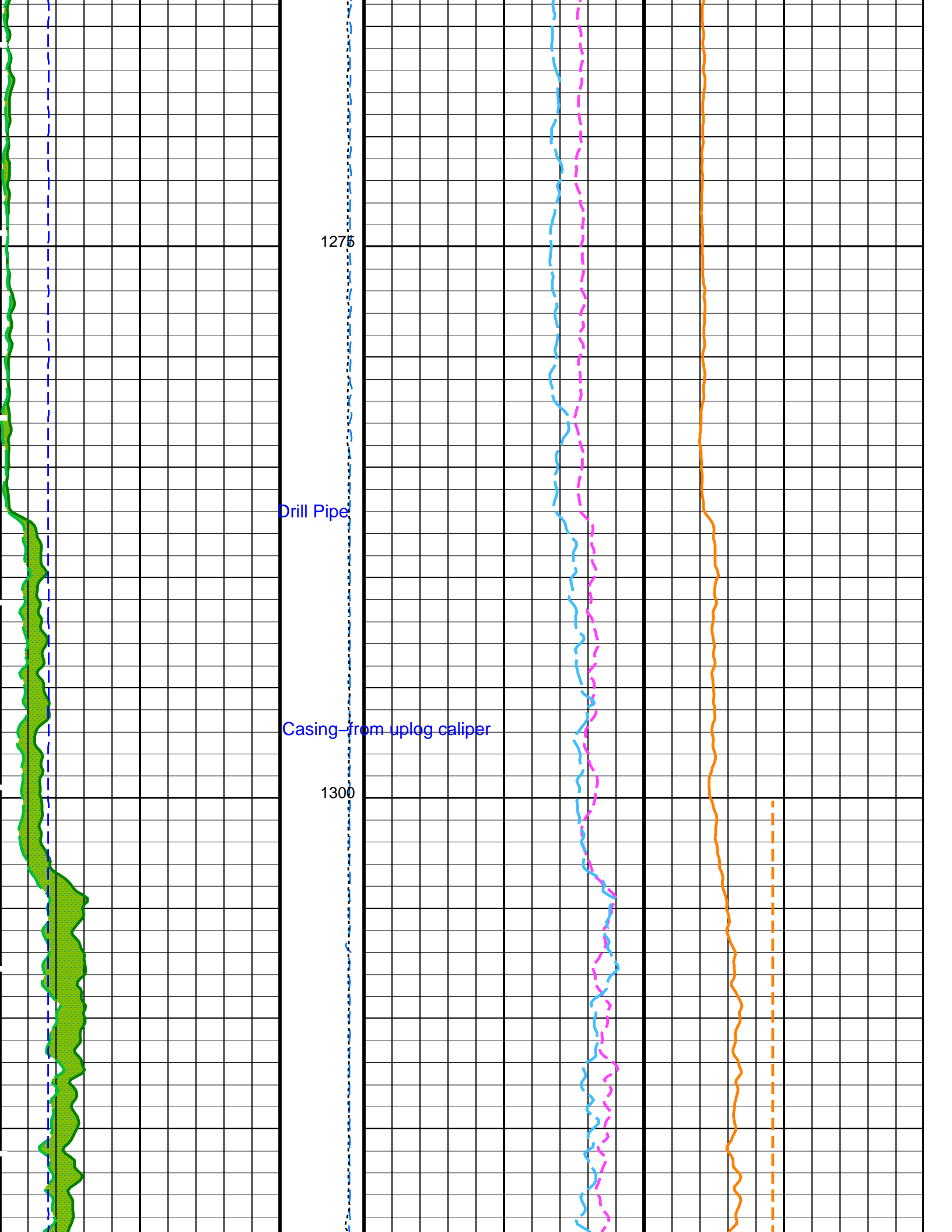
HLDS 19C0-187 HNCC-B 19C0-187  
 HNGS-BA 19C0-187 EDTC-B SKK-5169-EDTCB

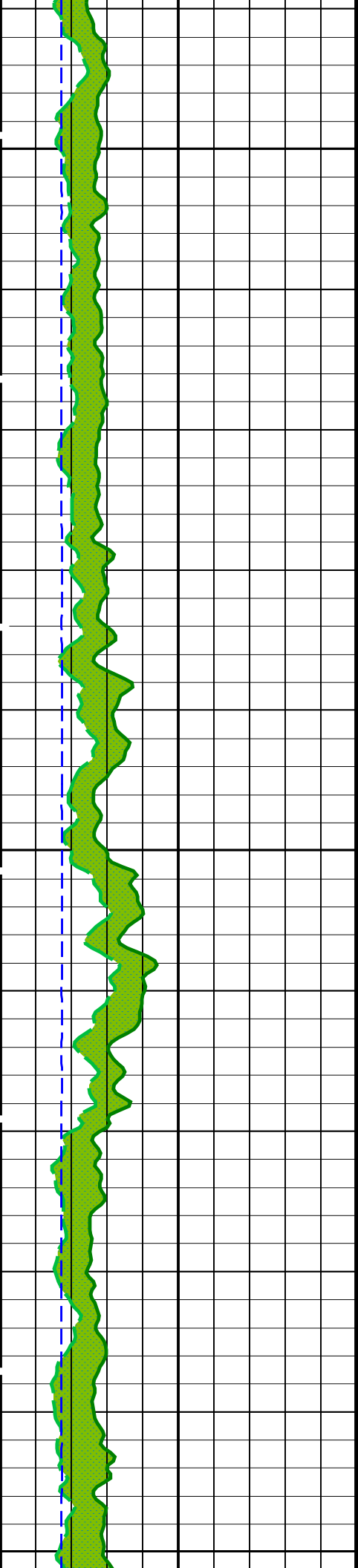
#### PIP SUMMARY

Time Mark Every 60 S

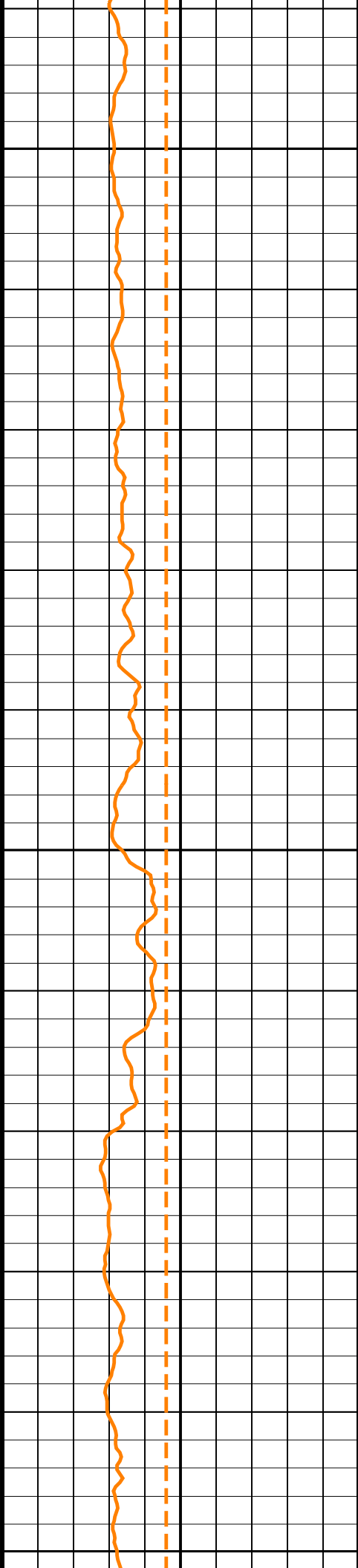
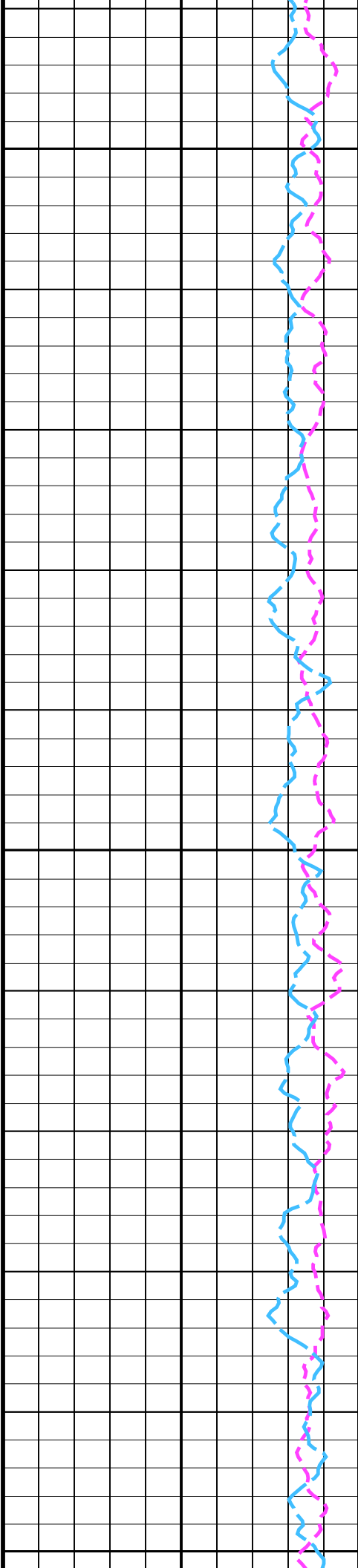




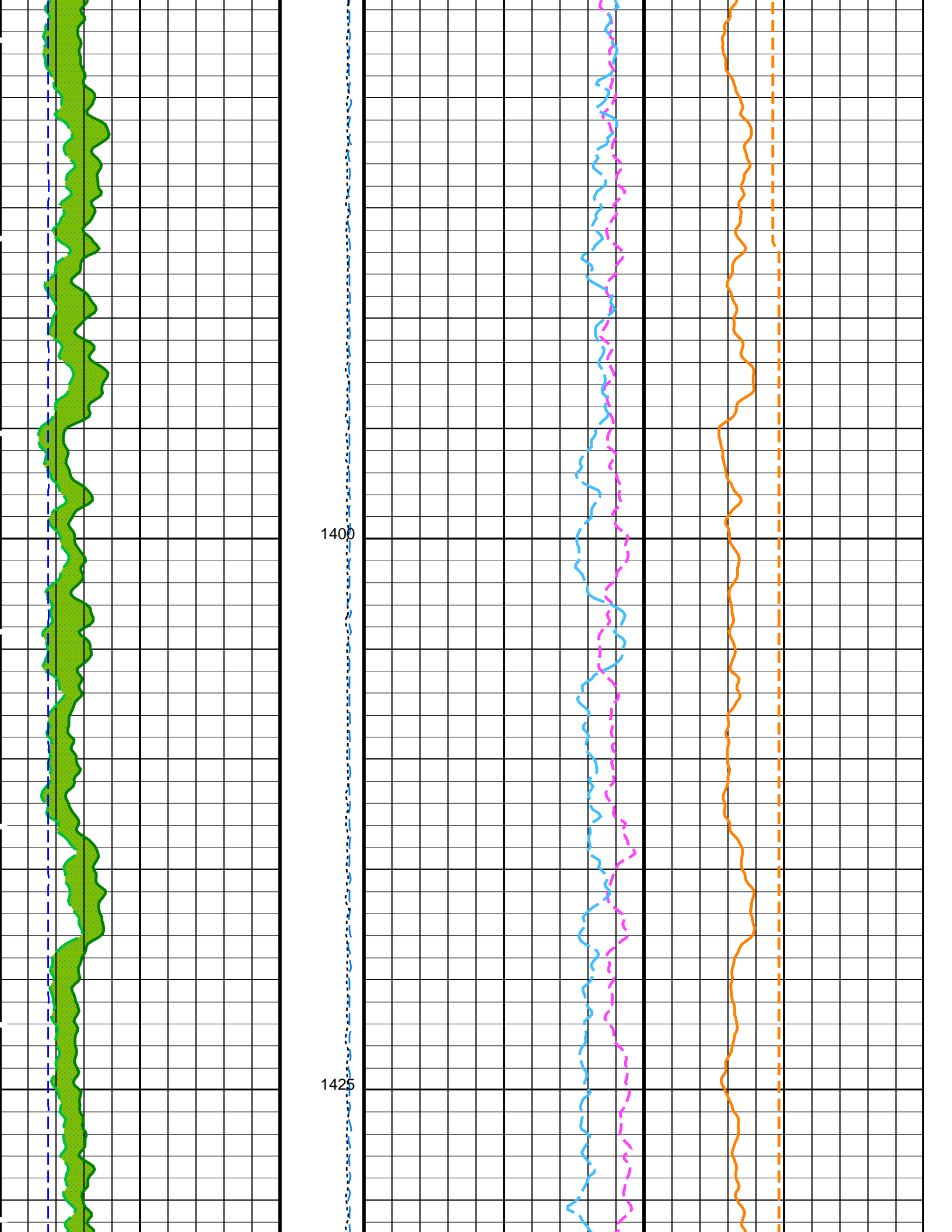


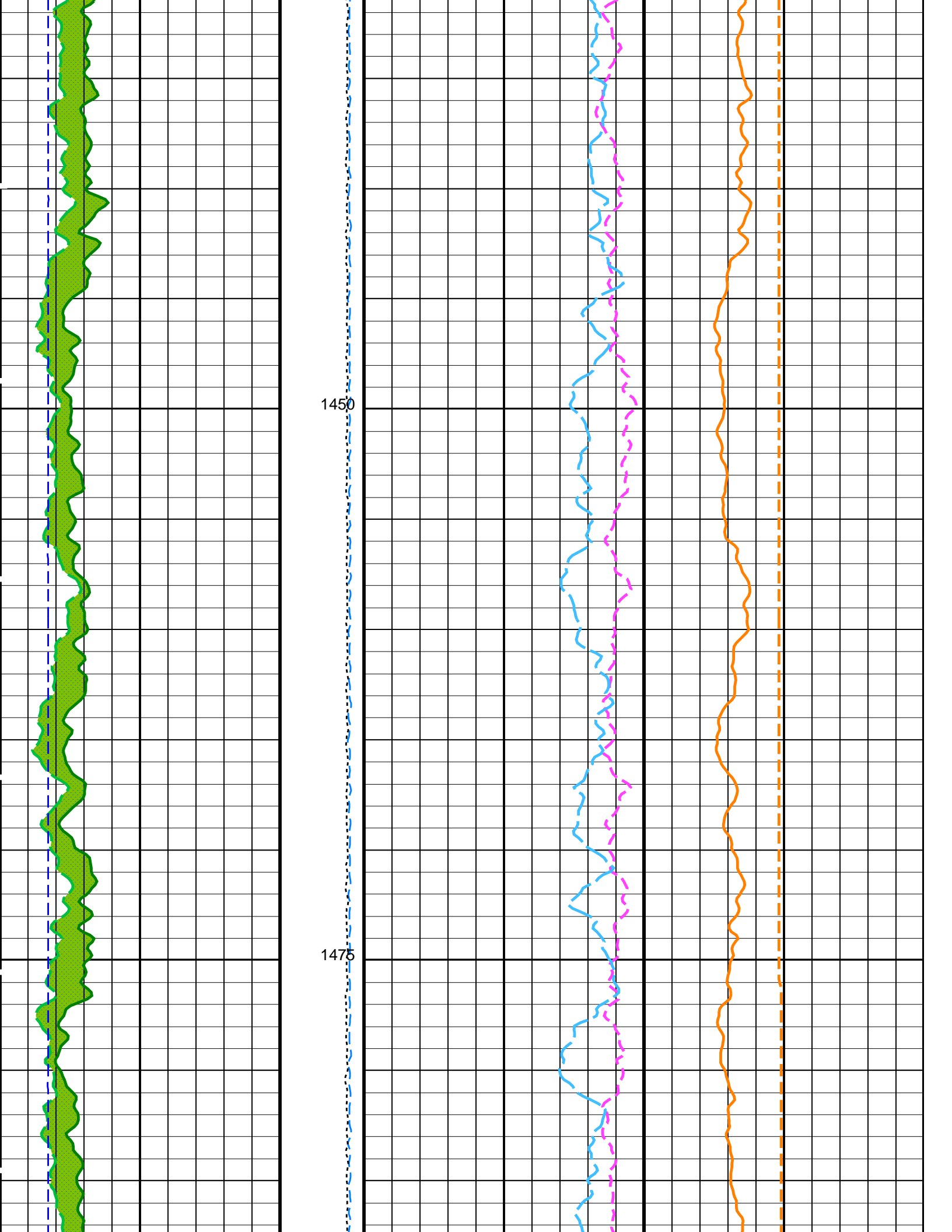


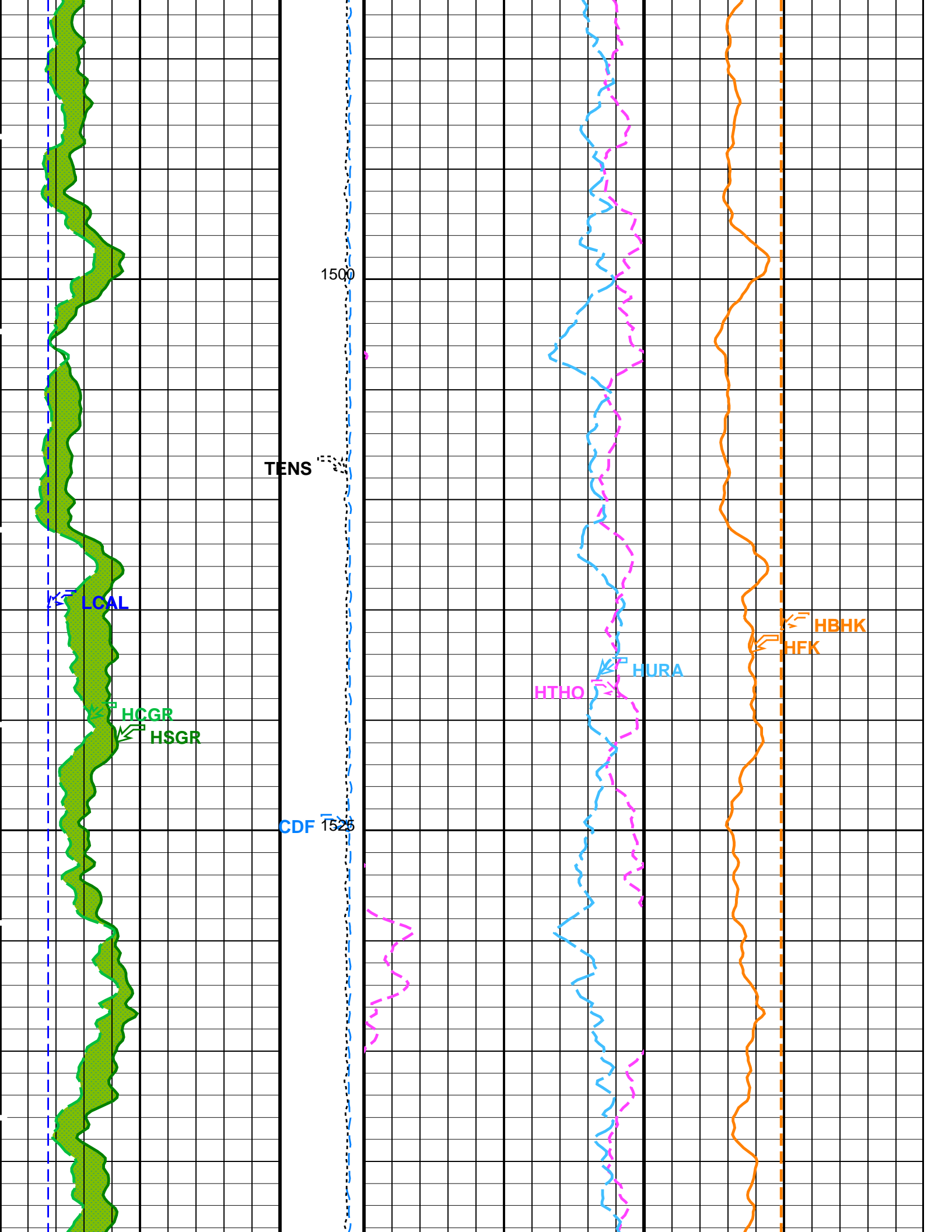
1325  
1350  
1375

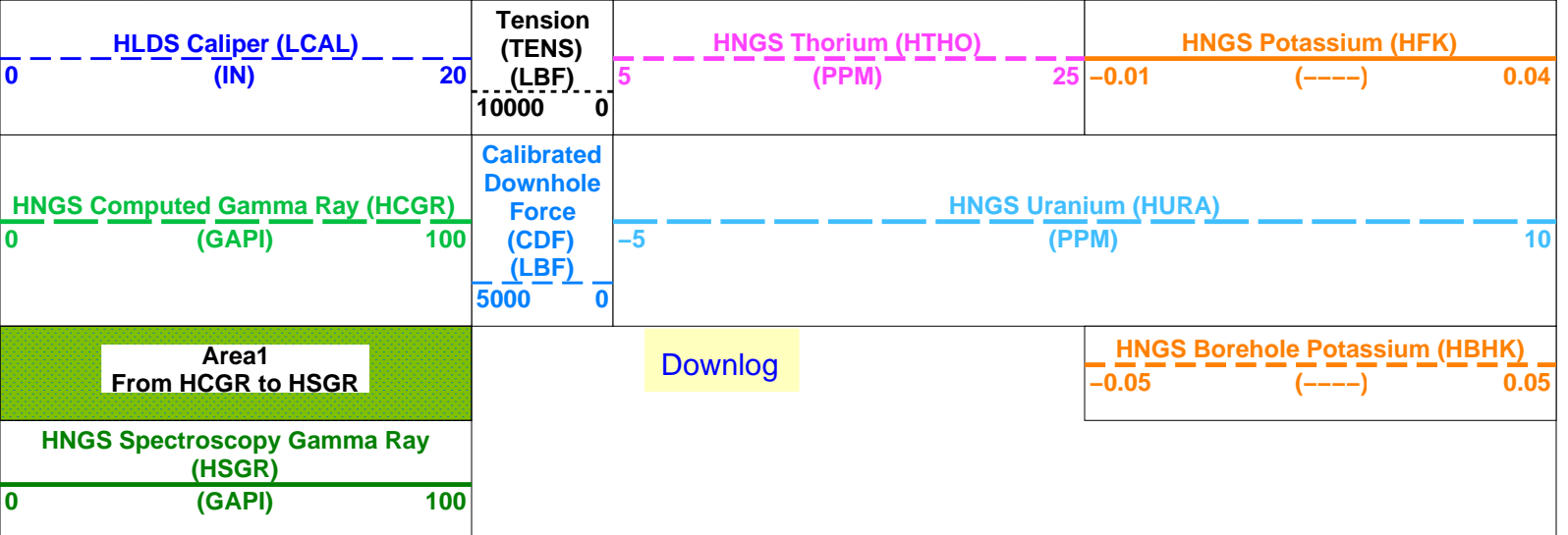
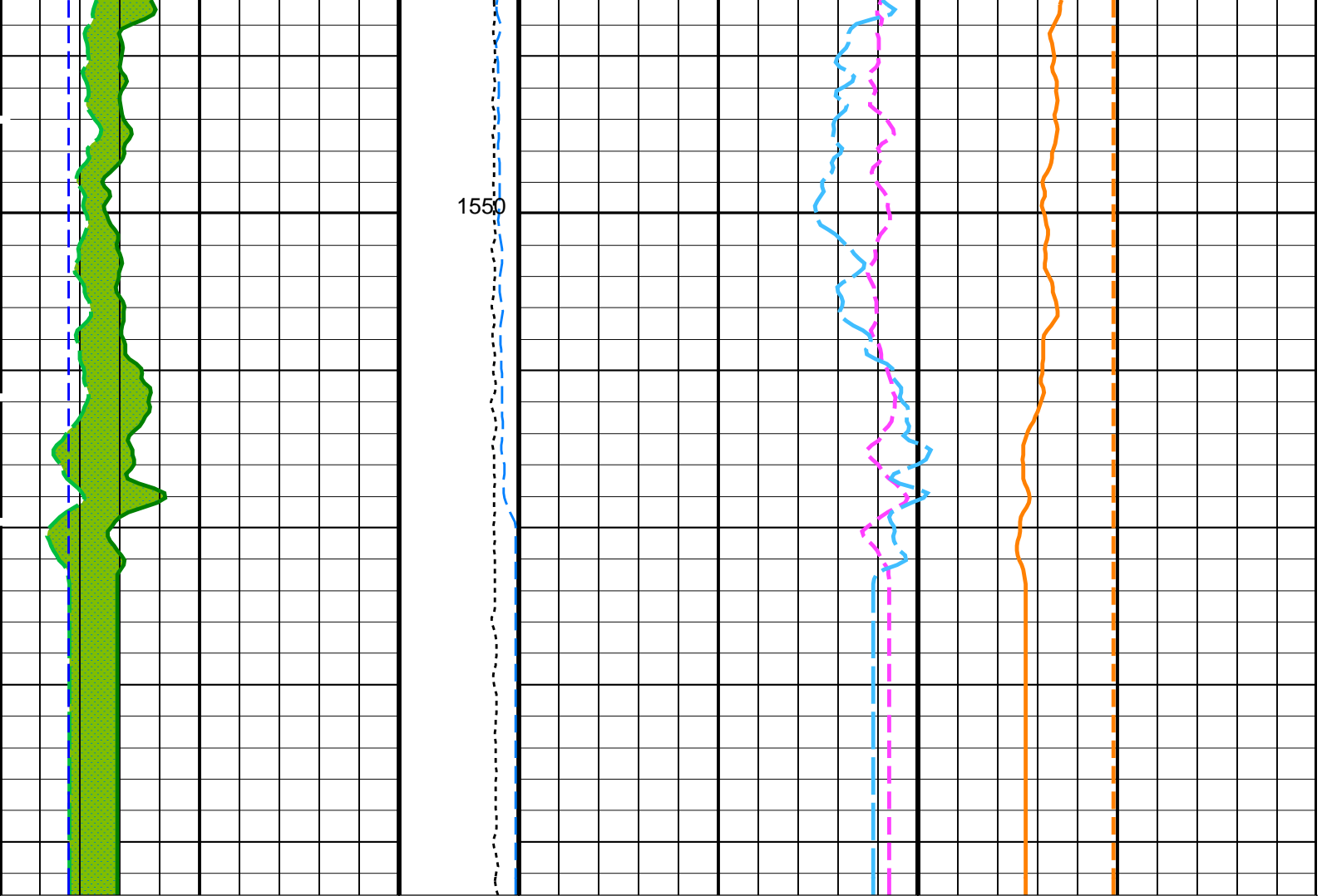












PIP SUMMARY

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	
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	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0	
	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	1.08	G/C3
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	NORMAL	

Format: HNGSYields    Vertical Scale: 1:200    Graphics File Created: 10-Jun-2018 16:35

### OP System Version: 19C0-187

HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

#### Input DLIS Files

DEFAULT	Flip_LDL_NGS_039LUP	PRODUCER	10-Jun-2018 16:31	1571.7 M	1211.6 M
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#### Output DLIS Files

DEFAULT	LDL_NGS_040PUP	FN:47	PRODUCER	10-Jun-2018 16:35
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#### Input DLIS Files

DEFAULT	LDL_NGS_030LUP	FN:33	PRODUCER	09-Jun-2018 00:21	1570.5 M	1225.3 M
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#### Output DLIS Files

DEFAULT	LDL_NGS_033PUP	FN:39	PRODUCER	09-Jun-2018 01:27	1570.5 M	1225.3 M
BACKUP	LDL_NGS_033PUP	FN:40	PRODUCER	09-Jun-2018 01:27	1570.5 M	1225.3 M

### OP System Version: 19C0-187

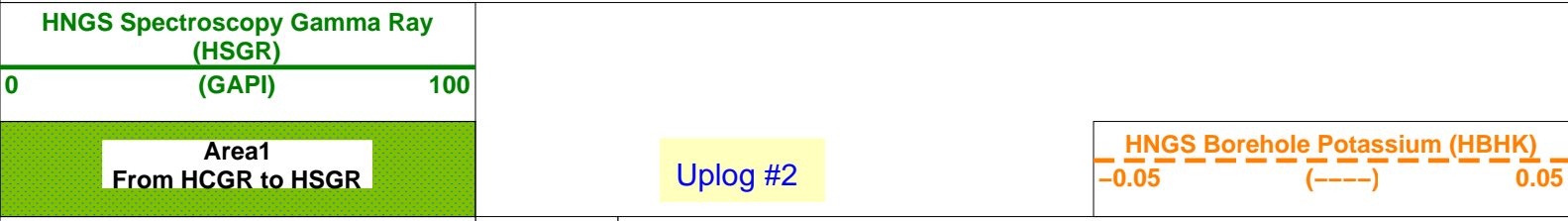
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HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

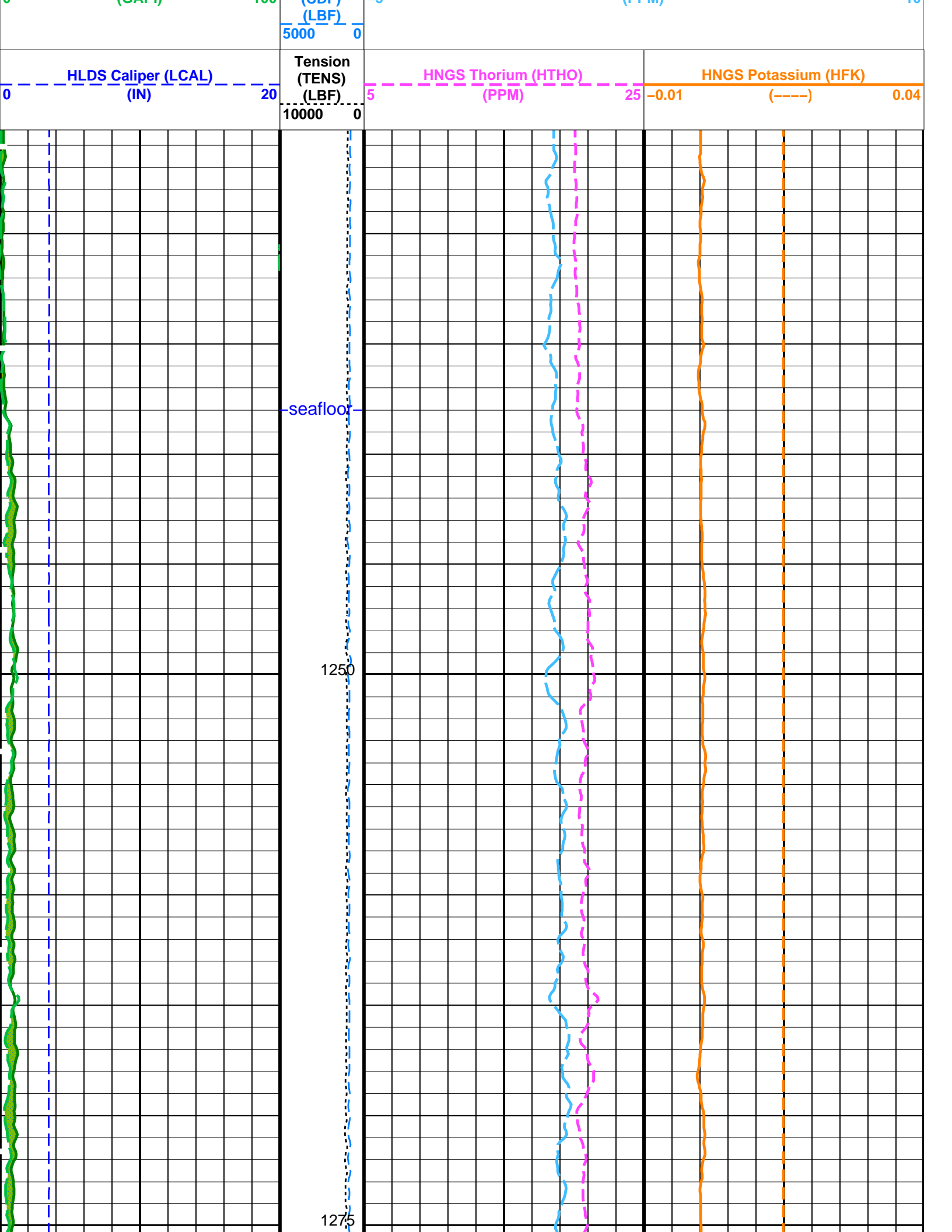
### Changed Parameter Summary

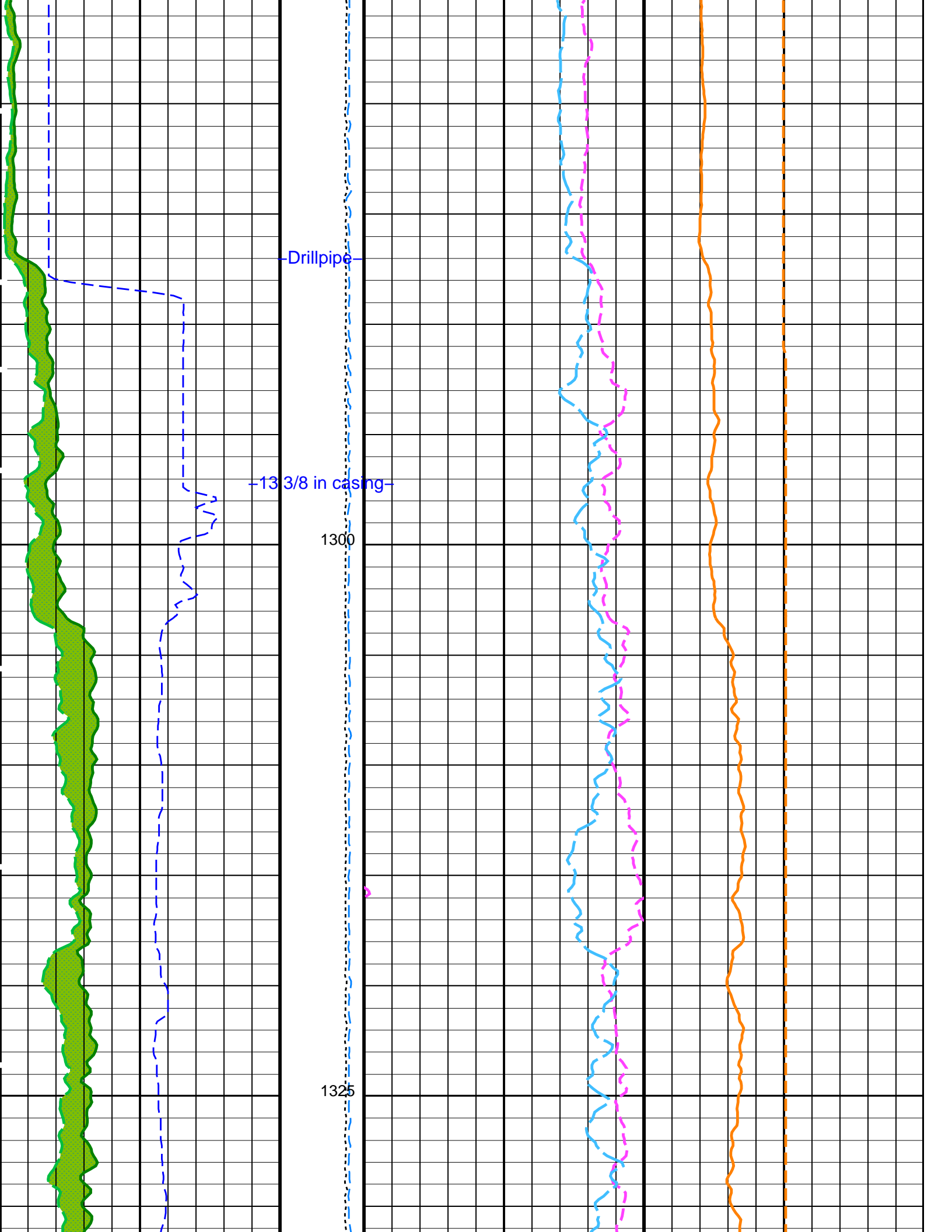
DLIS Name	New Value	Previous Value	Depth & Time
GCSE	BS	LCAL	1293.7 01:27:55

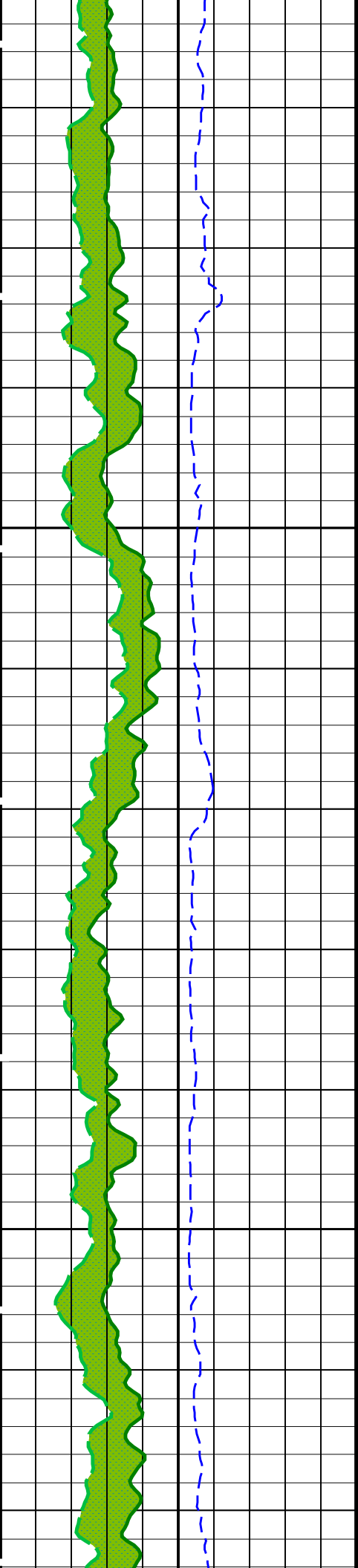
#### PIP SUMMARY

Time Mark Every 60 S



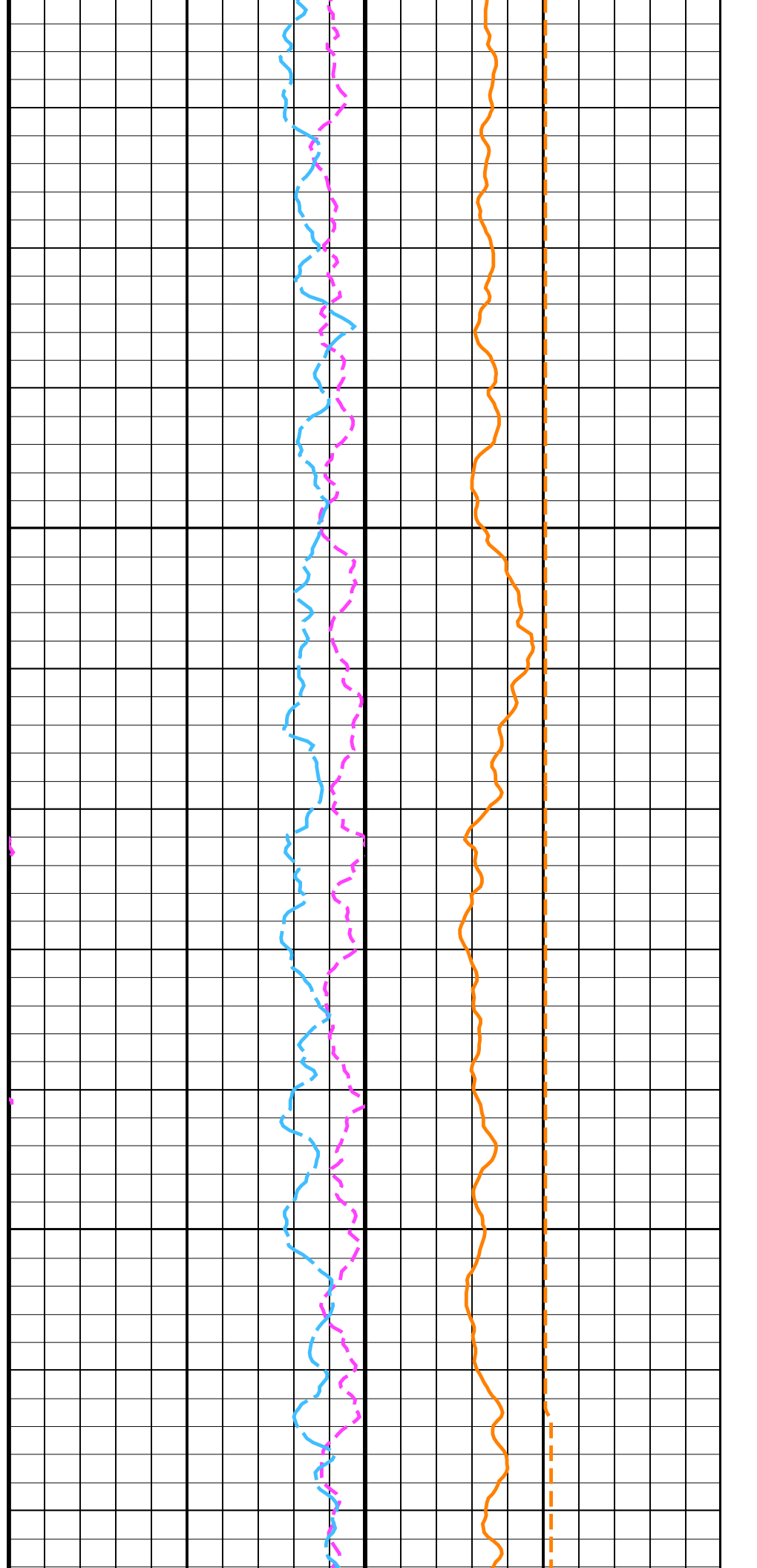




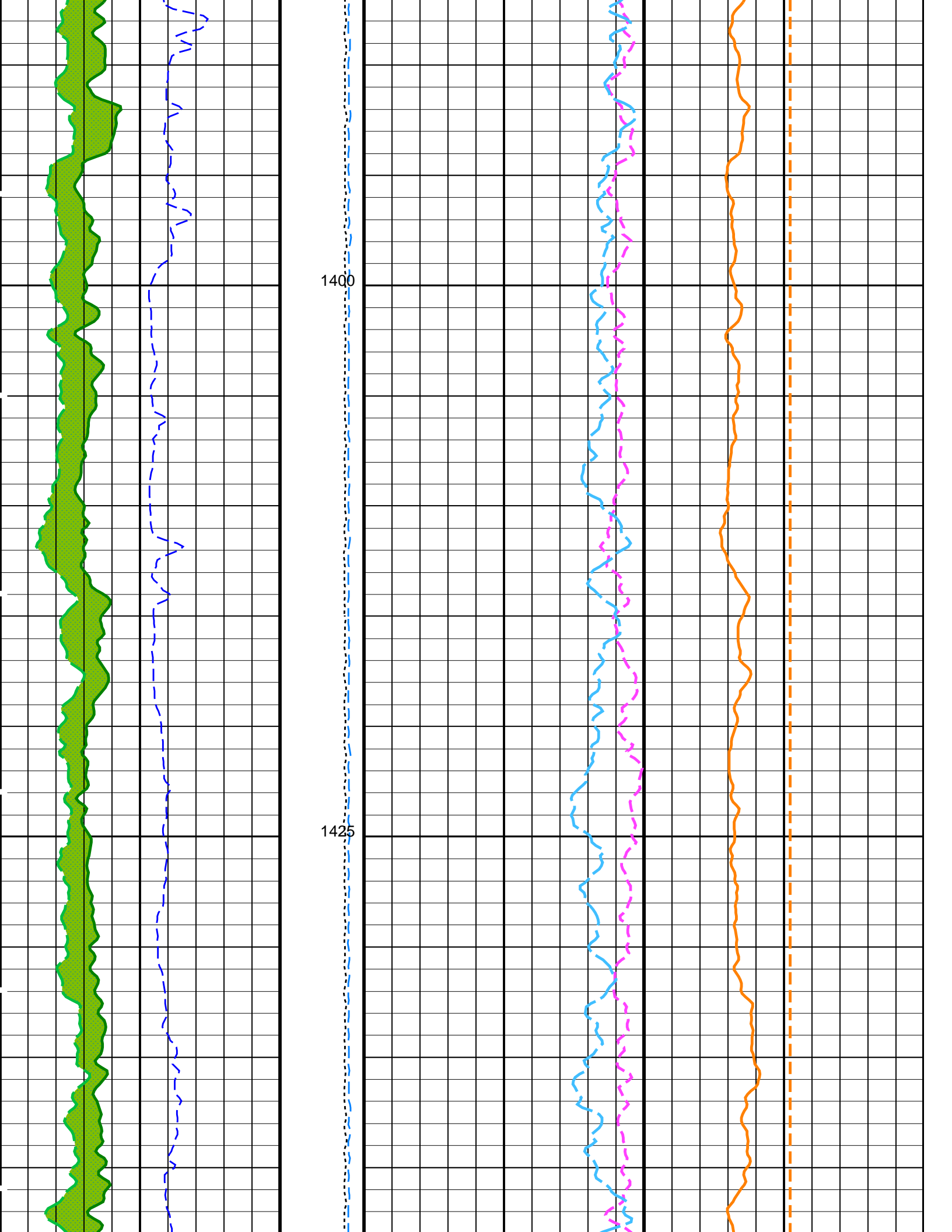


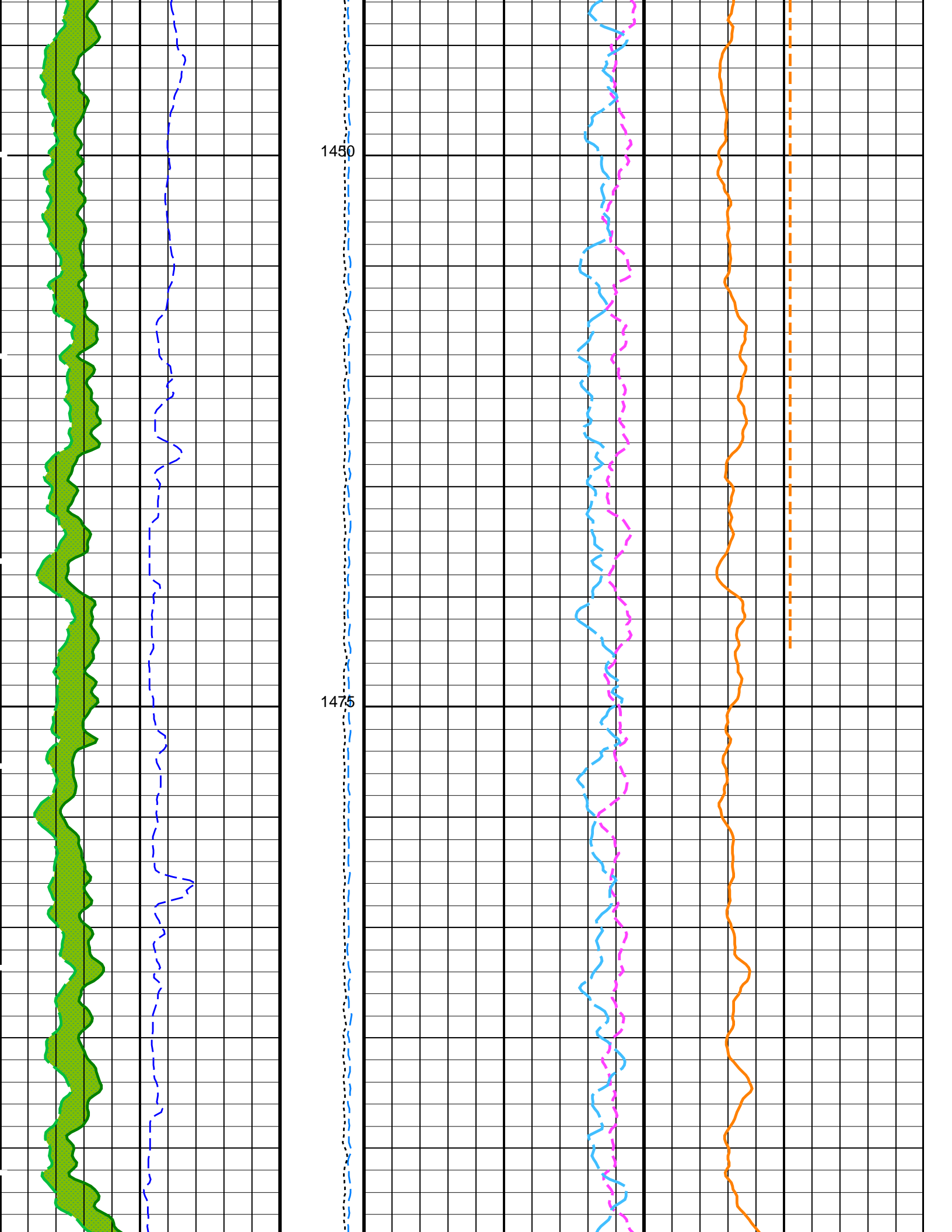
1350

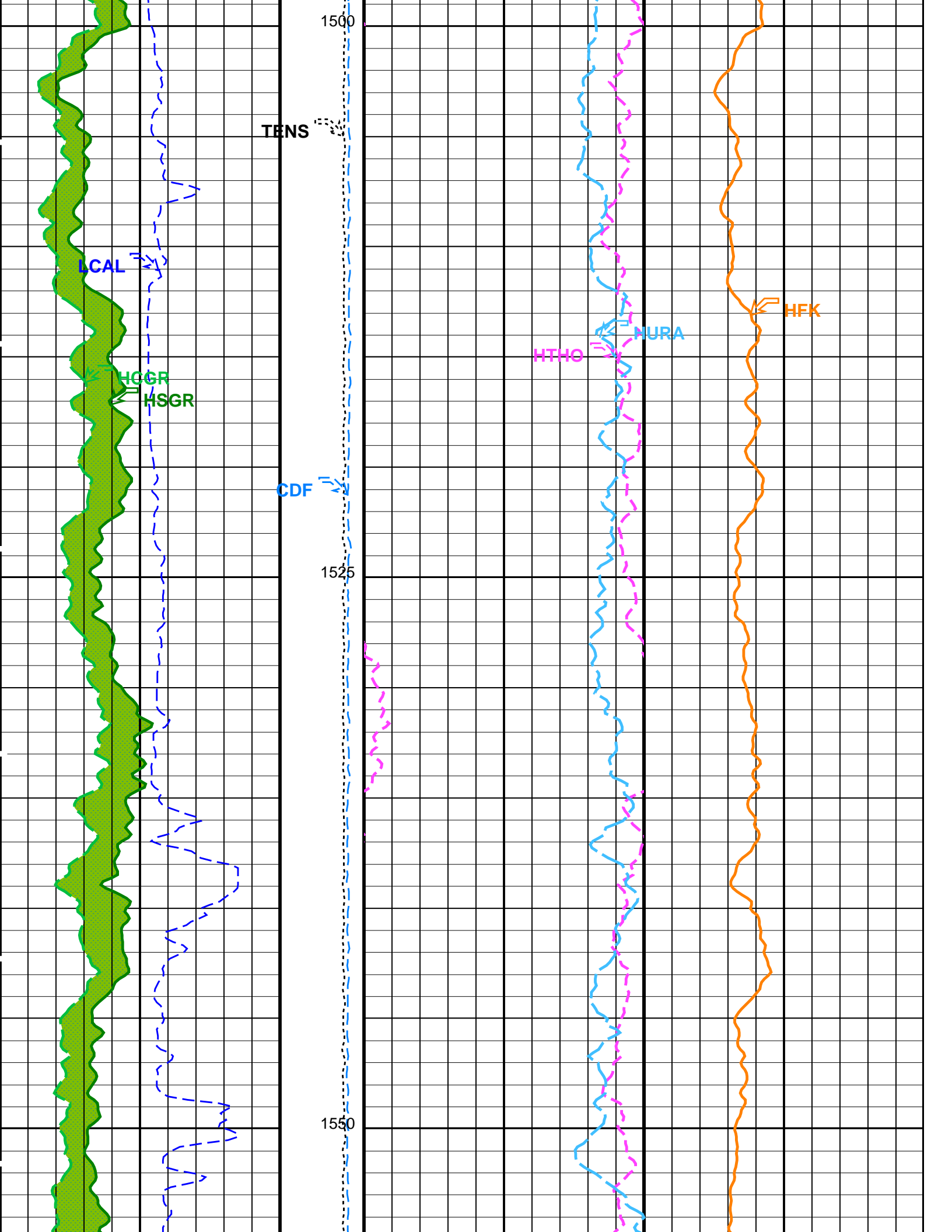
1375













**OP System Version: 19C0-187**

HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

**Input DLIS Files**

DEFAULT	LDL_NGS_030LUP	FN:33	PRODUCER	09-Jun-2018 00:21	1570.5 M	1225.3 M
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**Output DLIS Files**

DEFAULT	LDL_NGS_033PUP	FN:39	PRODUCER	09-Jun-2018 01:27		
BACKUP	LDL_NGS_033PUP	FN:40	PRODUCER	09-Jun-2018 01:27		

**Input DLIS Files**

DEFAULT	LDL_NGS_029LUP	FN:31	PRODUCER	08-Jun-2018 23:37	1570.5 M	1320.7 M
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**Output DLIS Files**

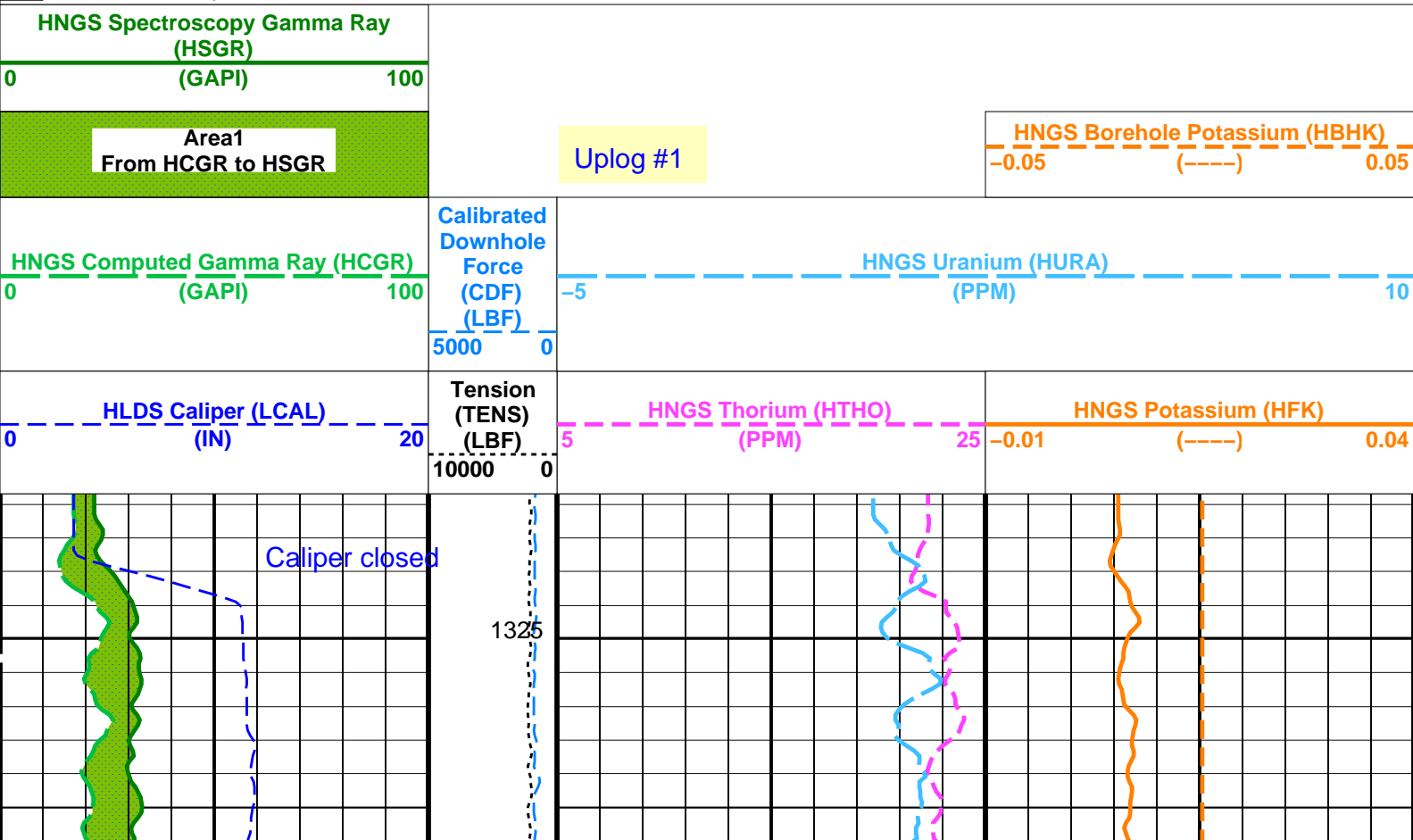
DEFAULT	LDL_NGS_031PUP	FN:35	PRODUCER	09-Jun-2018 01:21	1570.5 M	1320.7 M
BACKUP	LDL_NGS_031PUP	FN:36	PRODUCER	09-Jun-2018 01:21	1570.5 M	1320.7 M

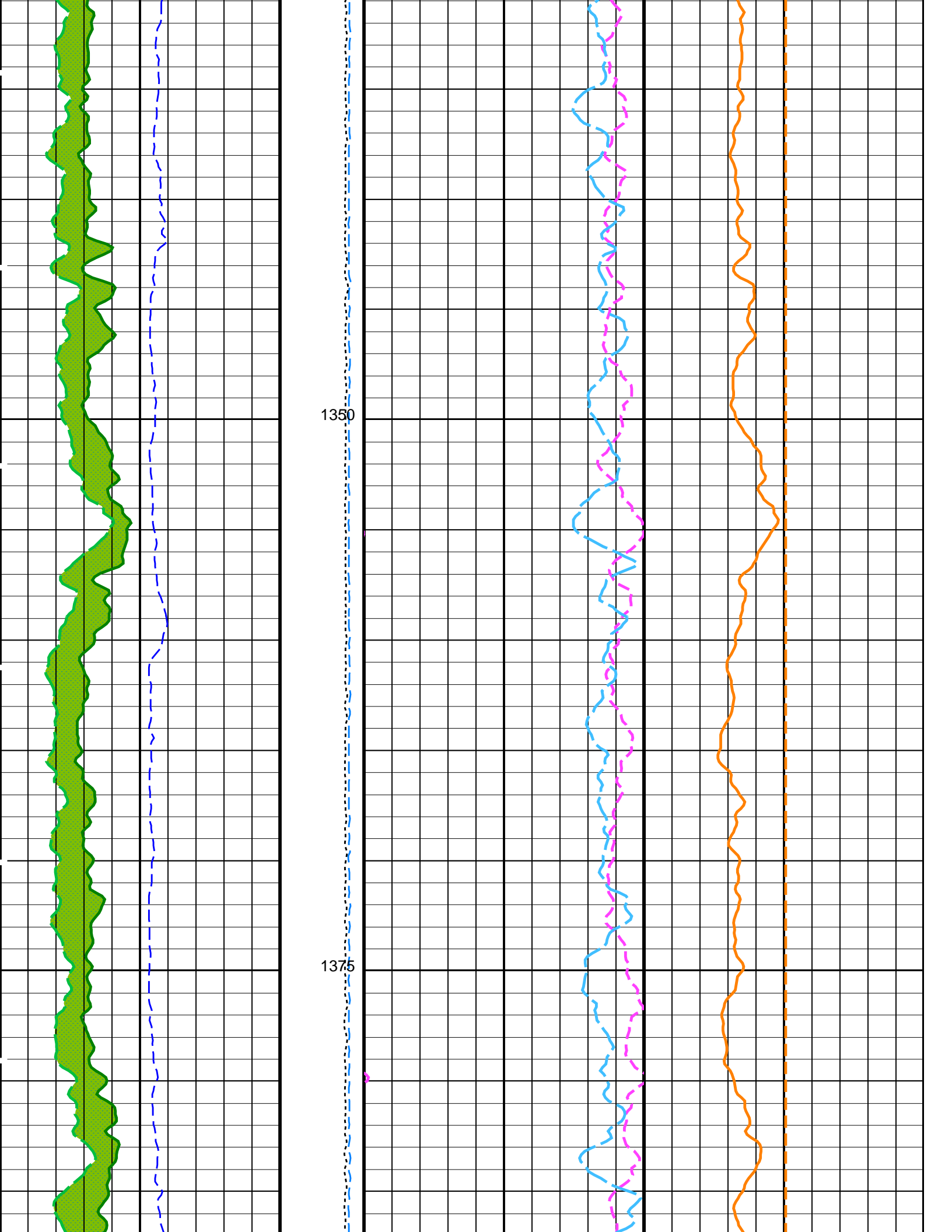
**OP System Version: 19C0-187**

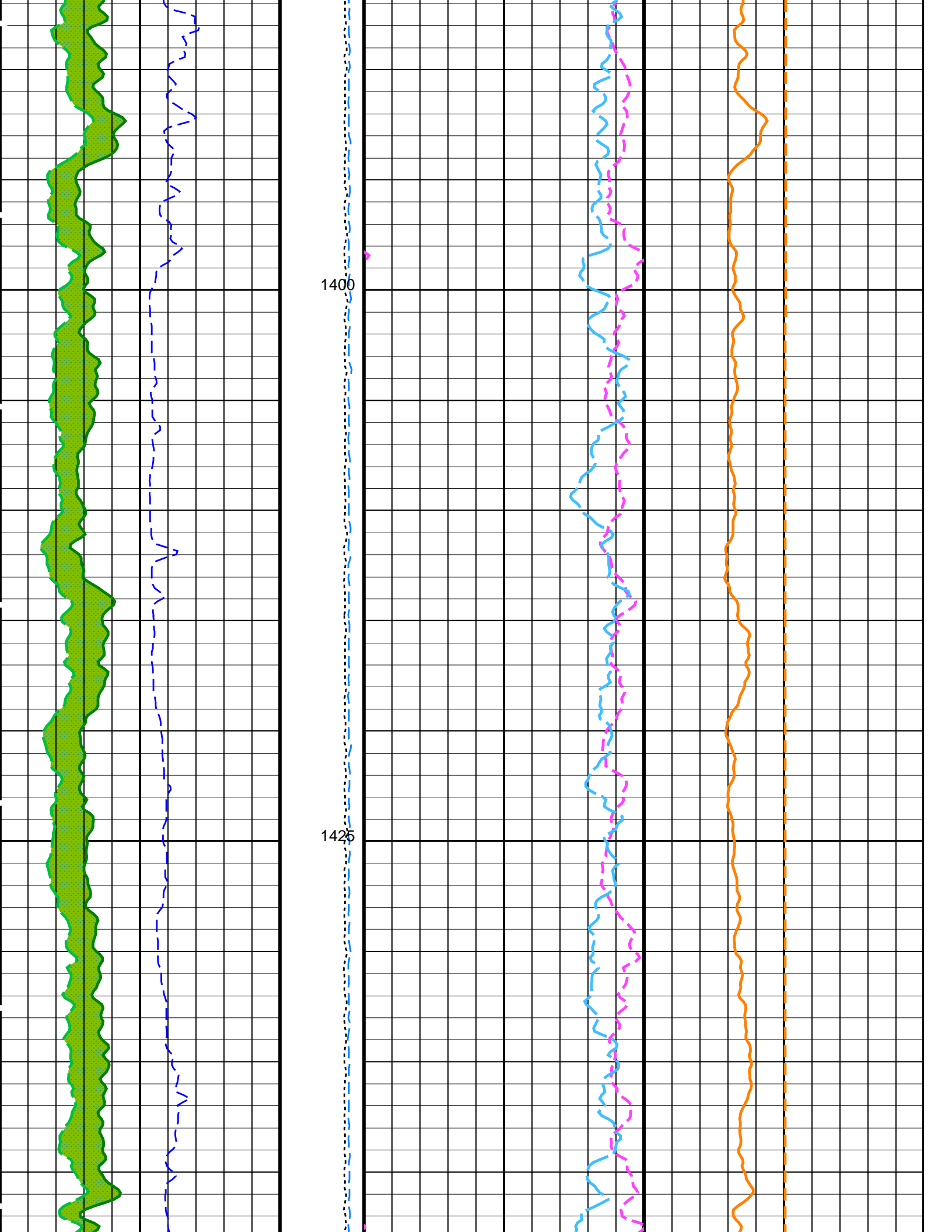
HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

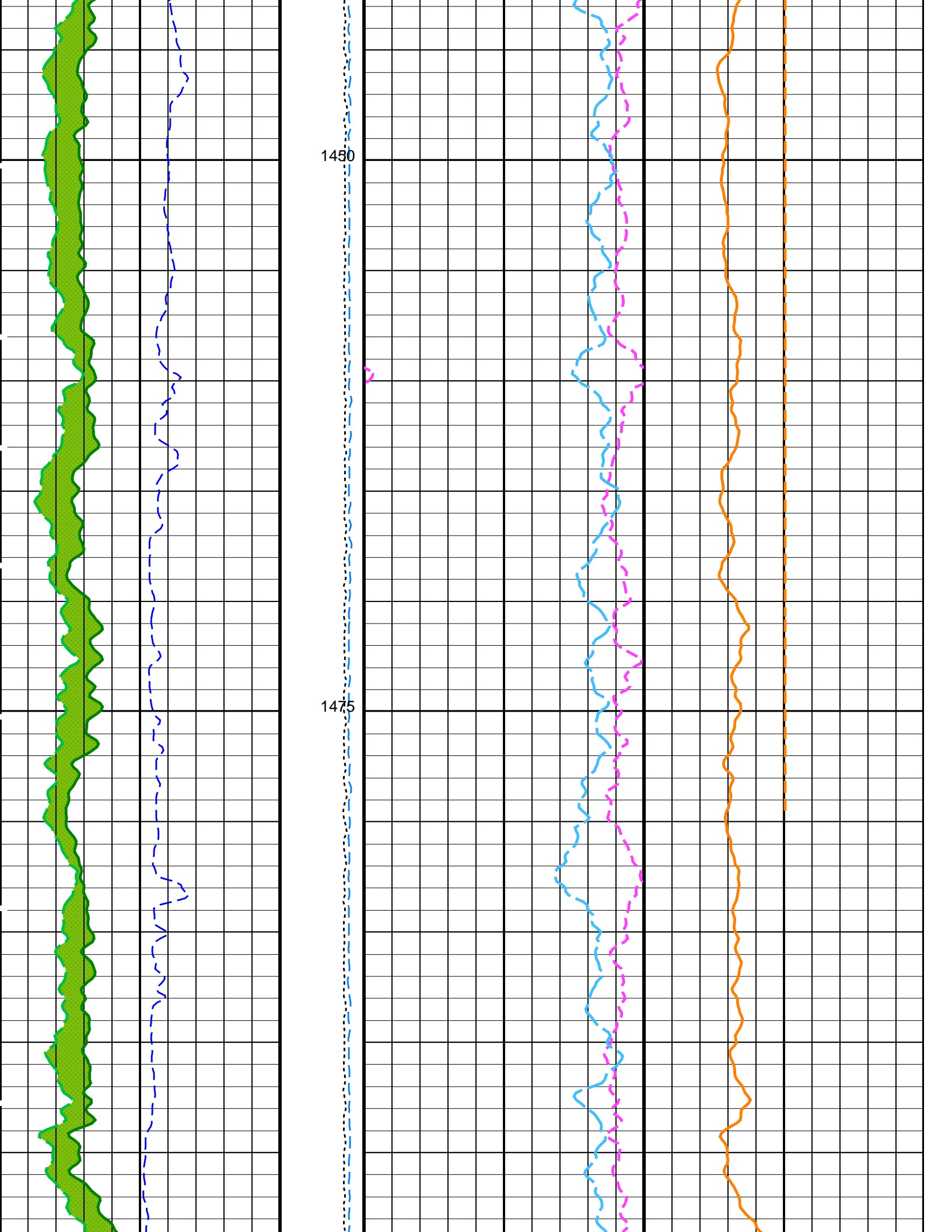
**PIP SUMMARY**

Time Mark Every 60 S

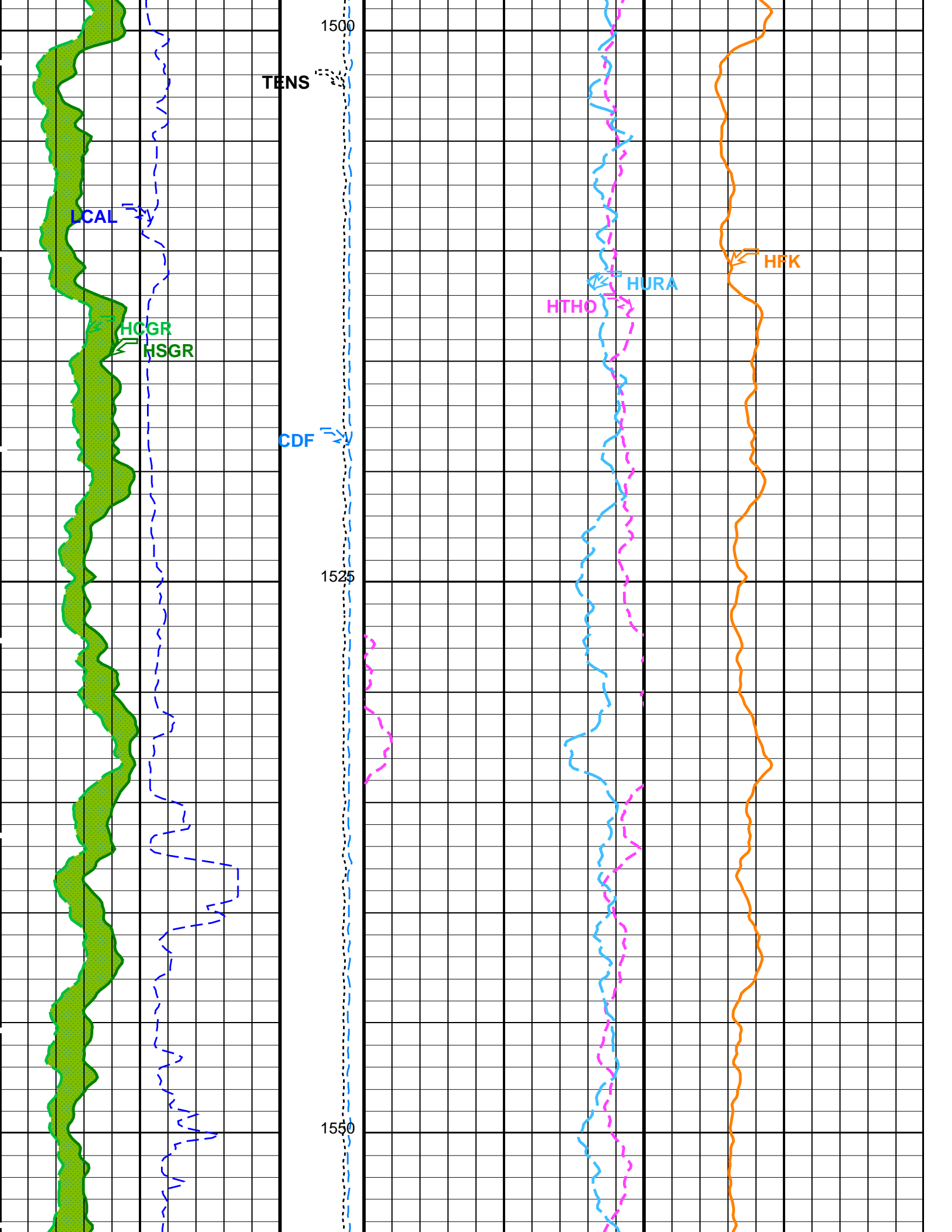


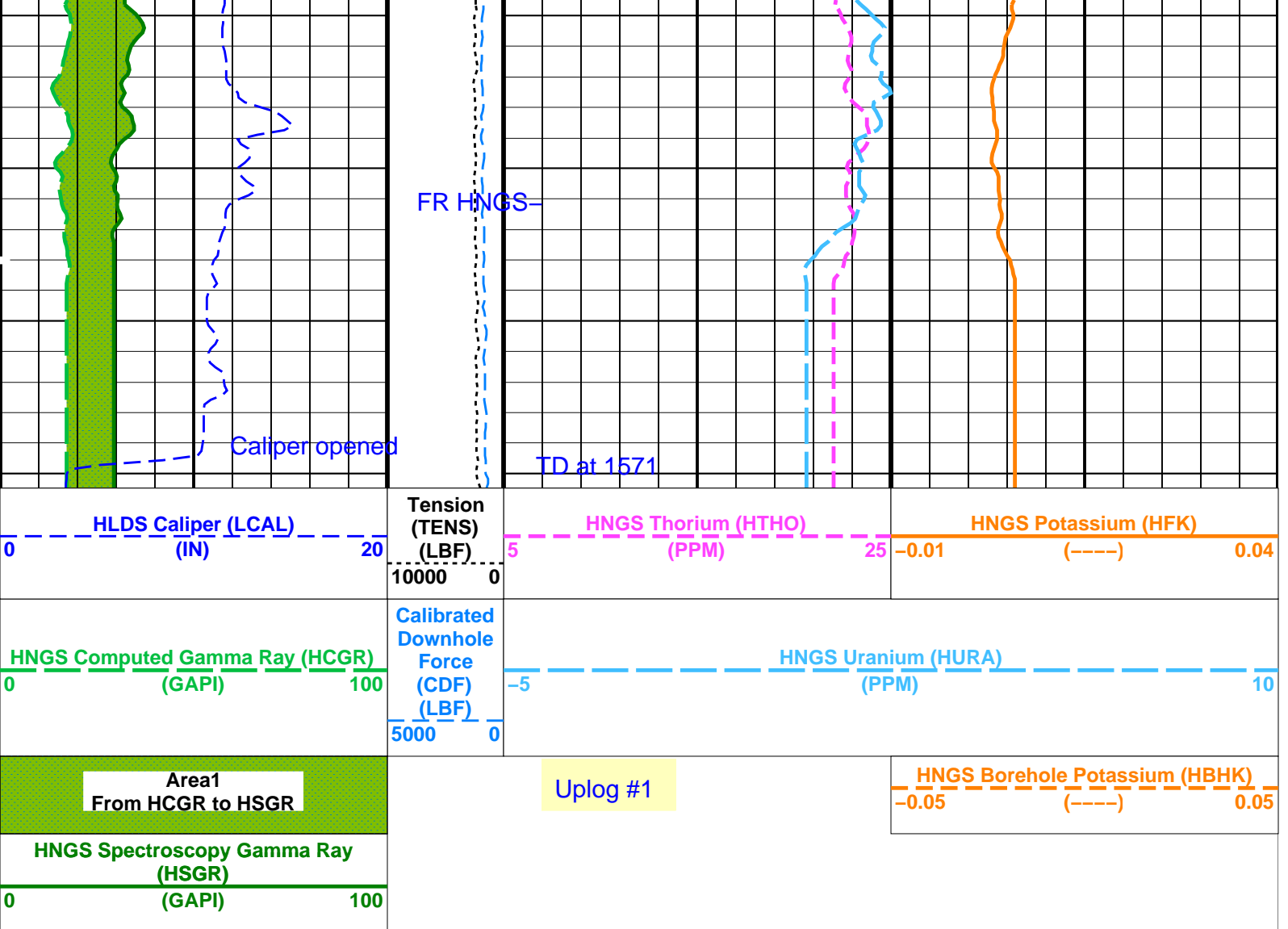












PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
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	0.000619497
HALF	HNGS Alpha Filter Length	60 IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE
HMWM	Mud Weighting Material	NATU
HNPE	HNGS Processing Enable	YES
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3 CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3 CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES
TPOS	Tool Position	ECCE
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.00694
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.0209
EDTC-B: Enhanced DTS Cartridge		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	LCAL
System and Miscellaneous		
BS	Bit Size	9.875 IN
DED	Drilling Fluid Density	1.08 G/C3

### OP System Version: 19C0-187

HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

#### Input DLIS Files

DEFAULT	LDL_NGS_029LUP	FN:31	PRODUCER	08-Jun-2018 23:37	1570.5 M	1320.7 M
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#### Output DLIS Files

DEFAULT	LDL_NGS_031PUP	FN:35	PRODUCER	09-Jun-2018 01:21		
BACKUP	LDL_NGS_031PUP	FN:36	PRODUCER	09-Jun-2018 01:21		

#### Input DLIS Files

DEFAULT	Flip_LDL_NGS_039LUP	PRODUCER	10-Jun-2018 16:31	1571.7 M	1211.6 M
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#### Output DLIS Files

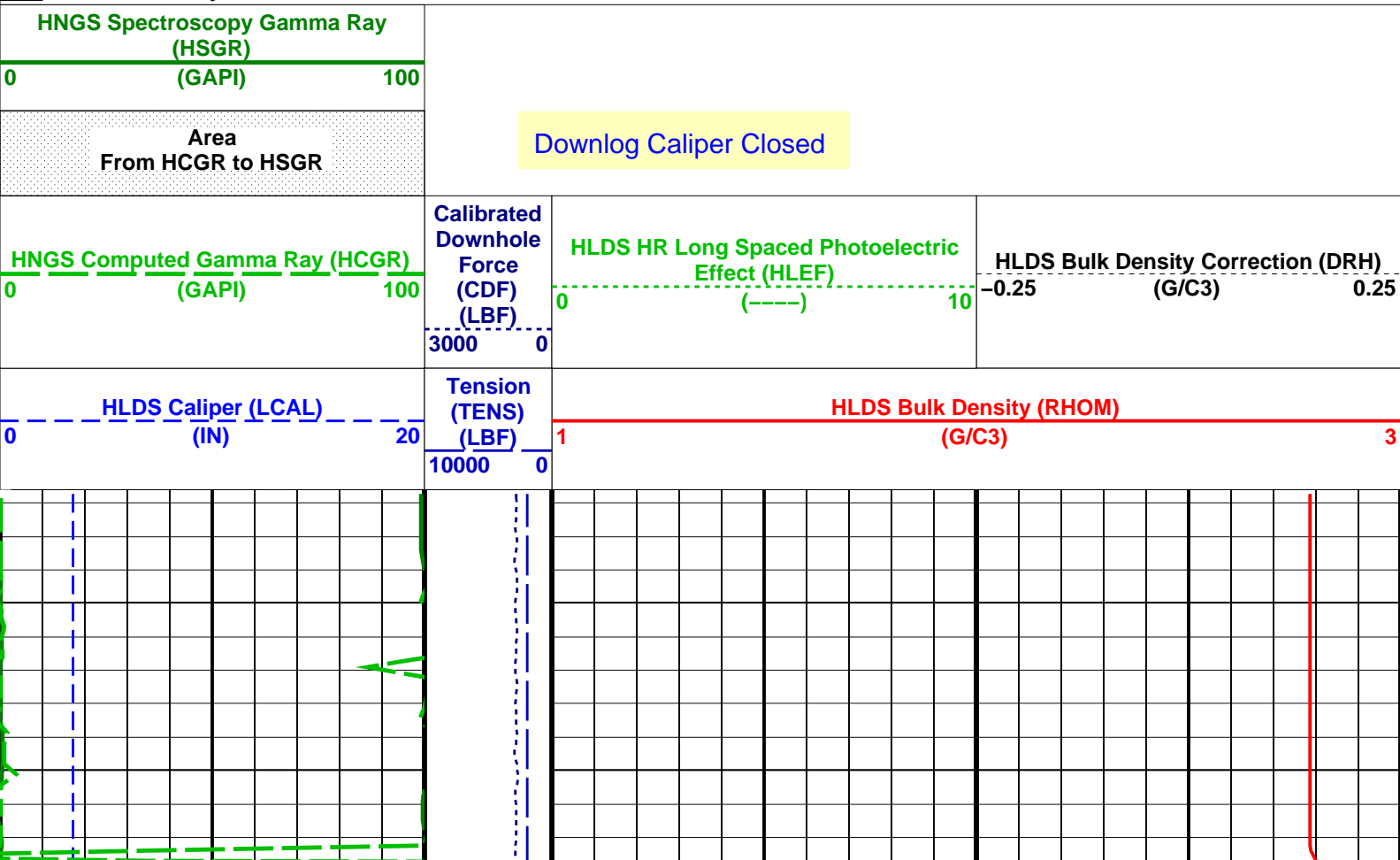
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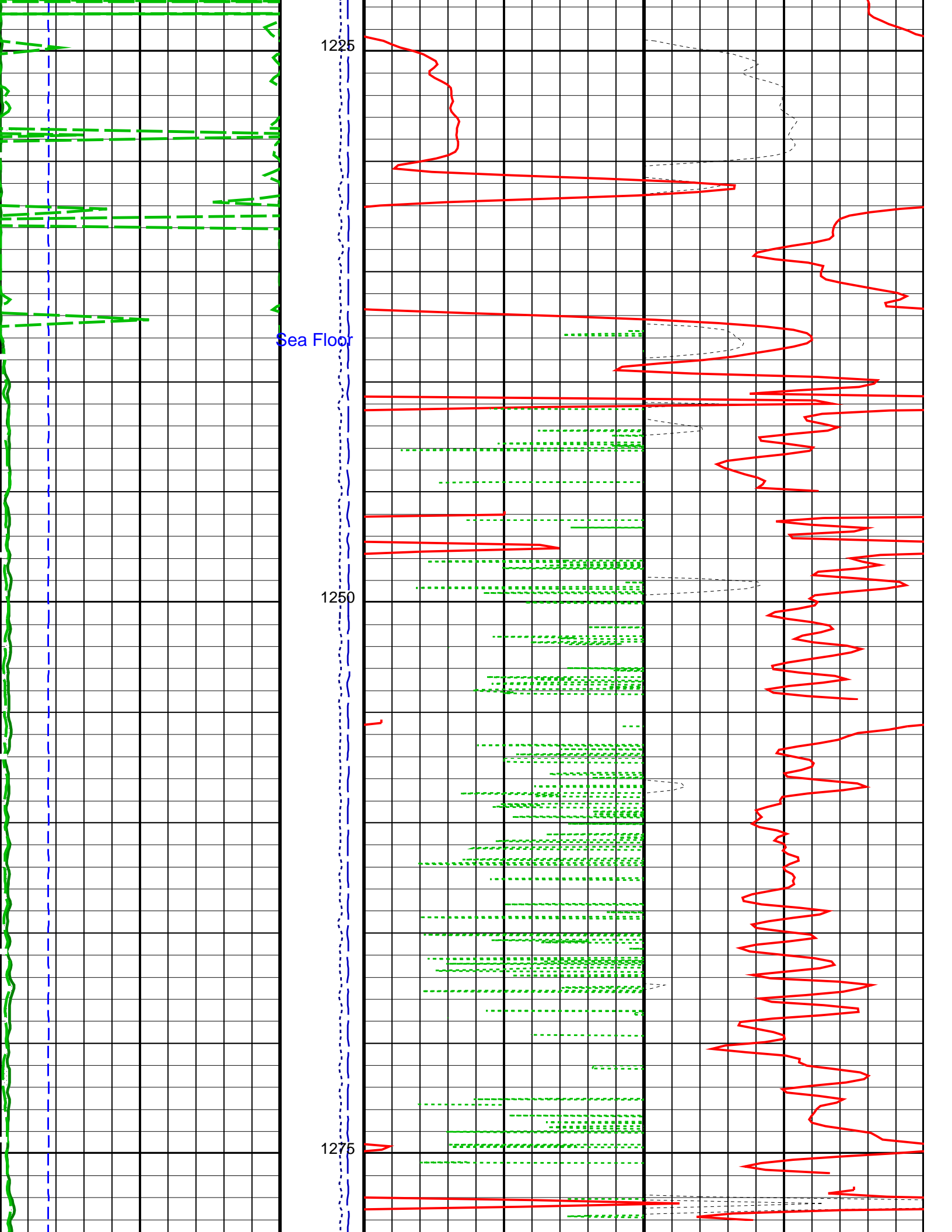
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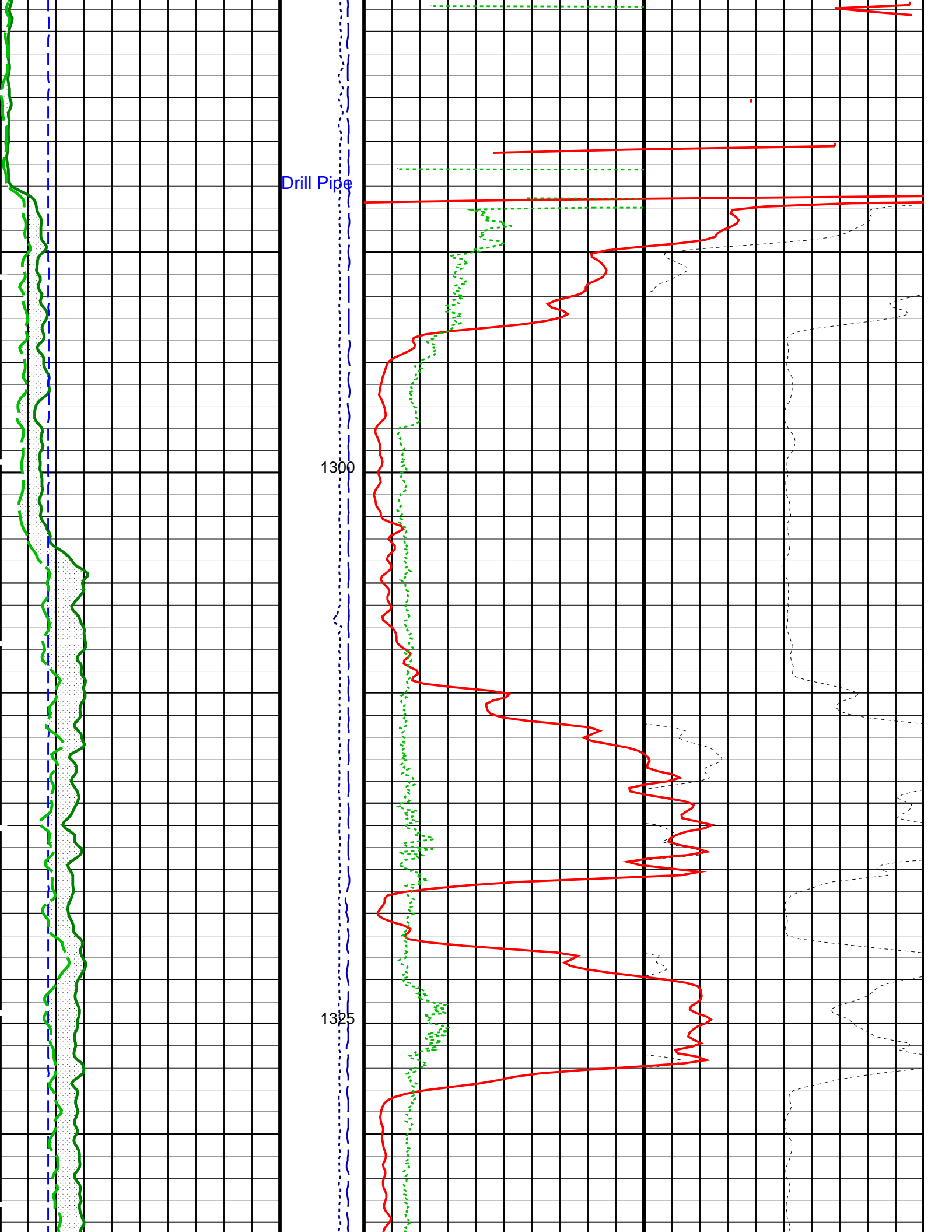
HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

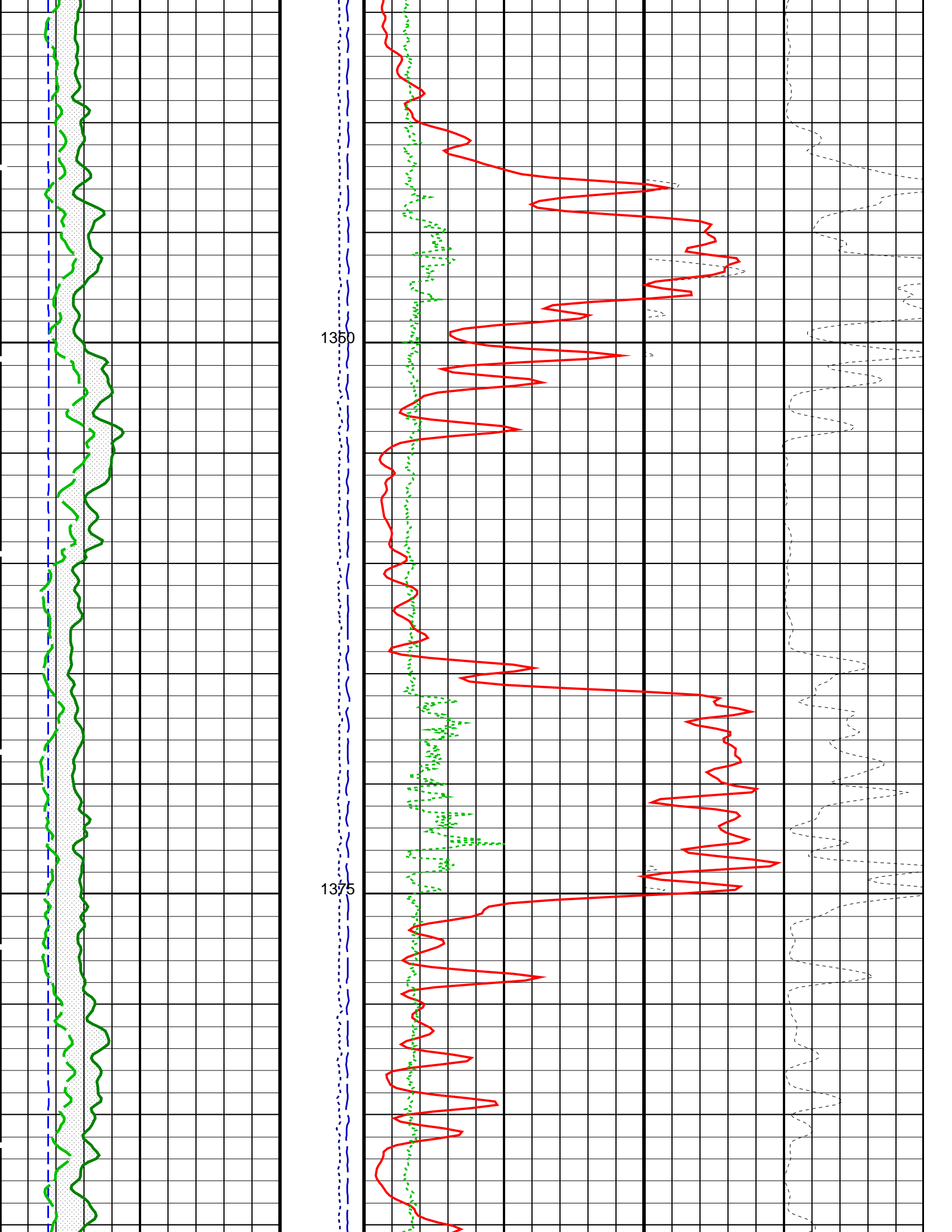
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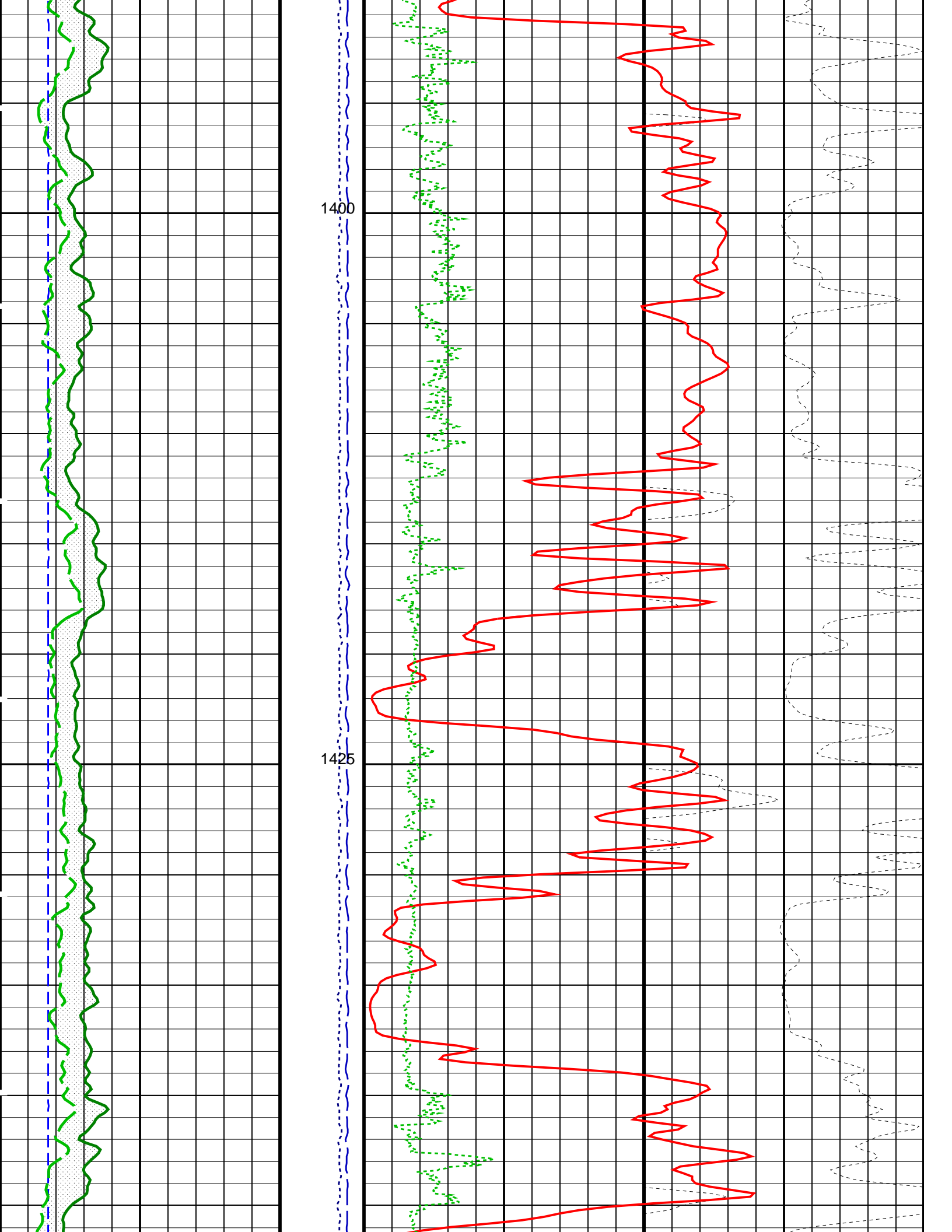
Time Mark Every 60 S

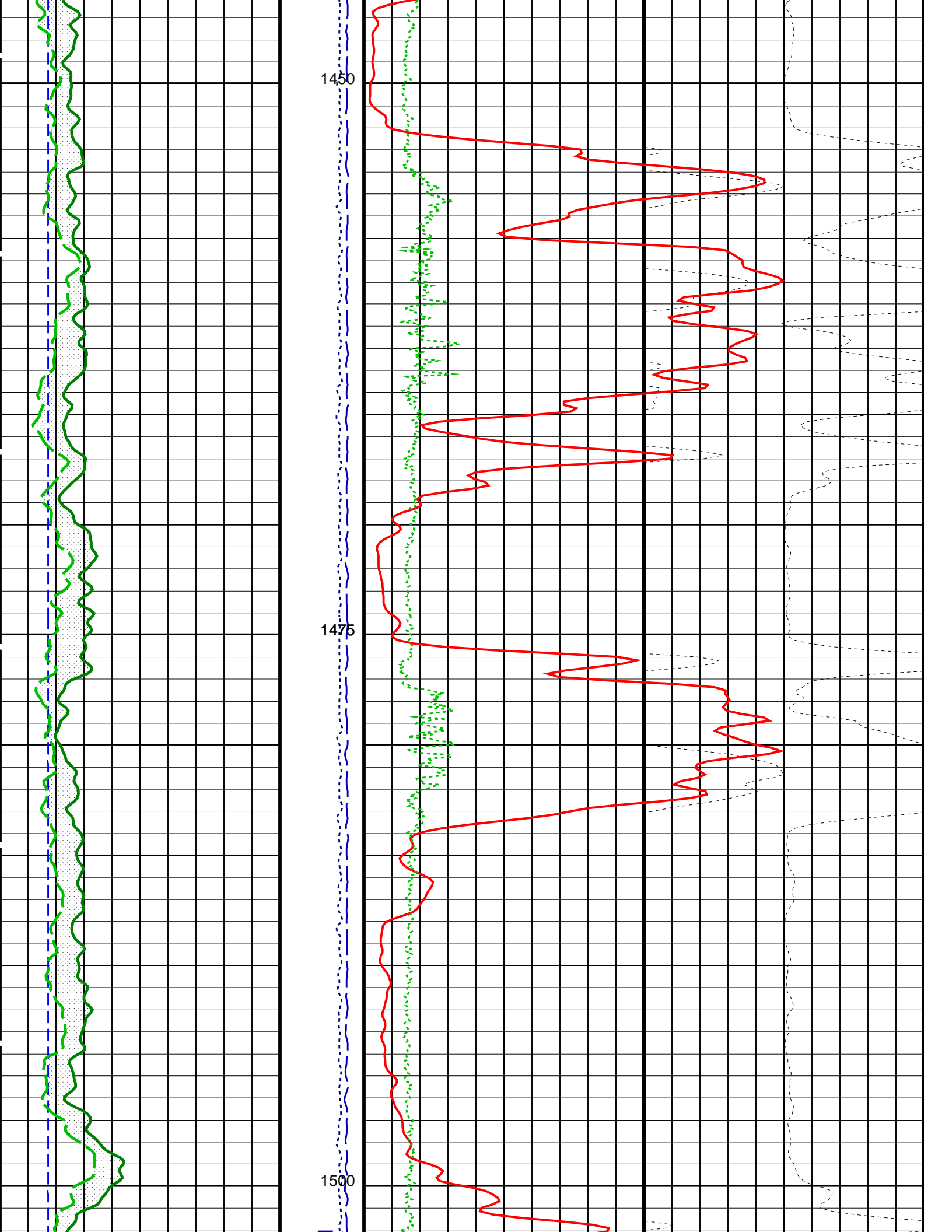




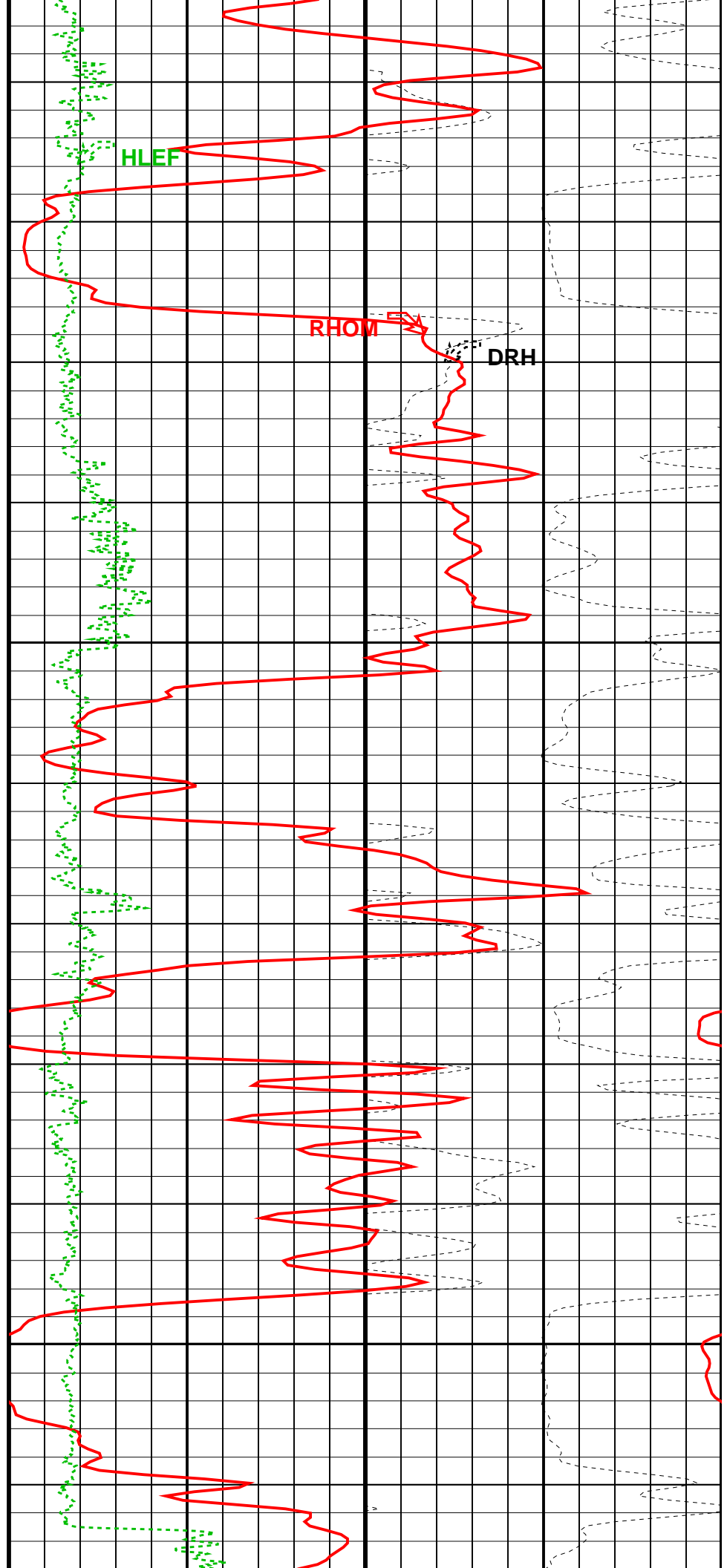
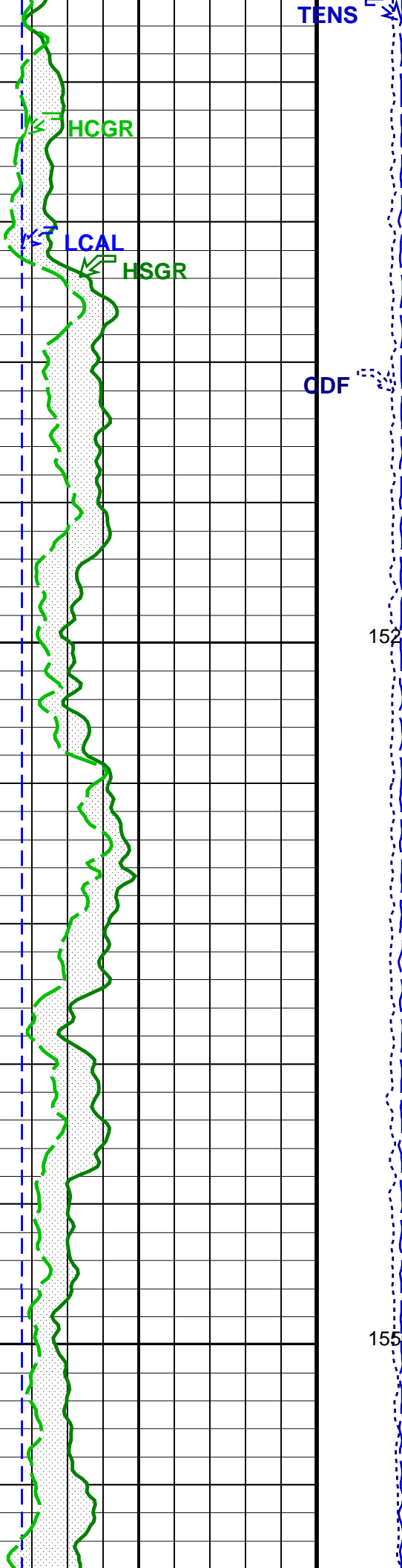


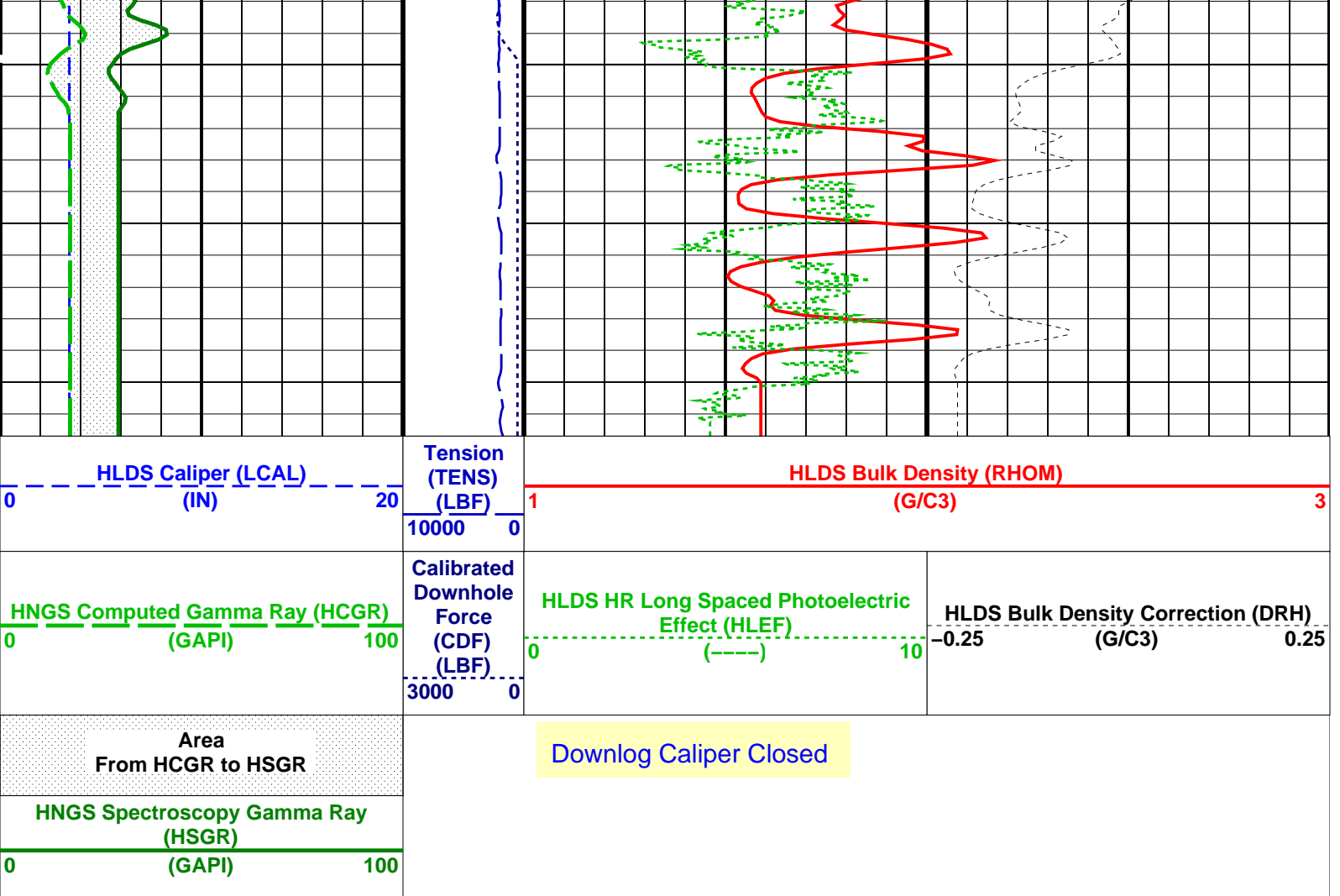












PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
<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>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)	212 DEG F
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	0.01	DF/F
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	
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	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0	
<b>EDTC-B: Enhanced DTS Cartridge</b>			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
SOCN	Standoff Distance	0.5	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U-ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U-TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
<b>System and Miscellaneous</b>			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	13.375	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.08	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	5249.34	FT
TDD	Total Depth - Driller	1598.30	M
TDL	Total Depth - Logger	1571.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: APSLiquidPorosity\_1 Vertical Scale: 1:200 Graphics File Created: 10-Jun-2018 16:35

## OP System Version: 19C0-187

HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

### Input DLIS Files

DEFAULT	Flip_LDL_NGS_039LUP	PRODUCER	10-Jun-2018 16:31	1571.7 M	1211.6 M
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### Output DLIS Files

DEFAULT	LDL_NGS_040PUP	FN:47	PRODUCER	10-Jun-2018 16:35
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### Input DLIS Files

DEFAULT LDL\_NGS\_031PUP FN:35 PRODUCER 09-Jun-2018 01:21 1570.5 M 1320.7 M

### Output DLIS Files

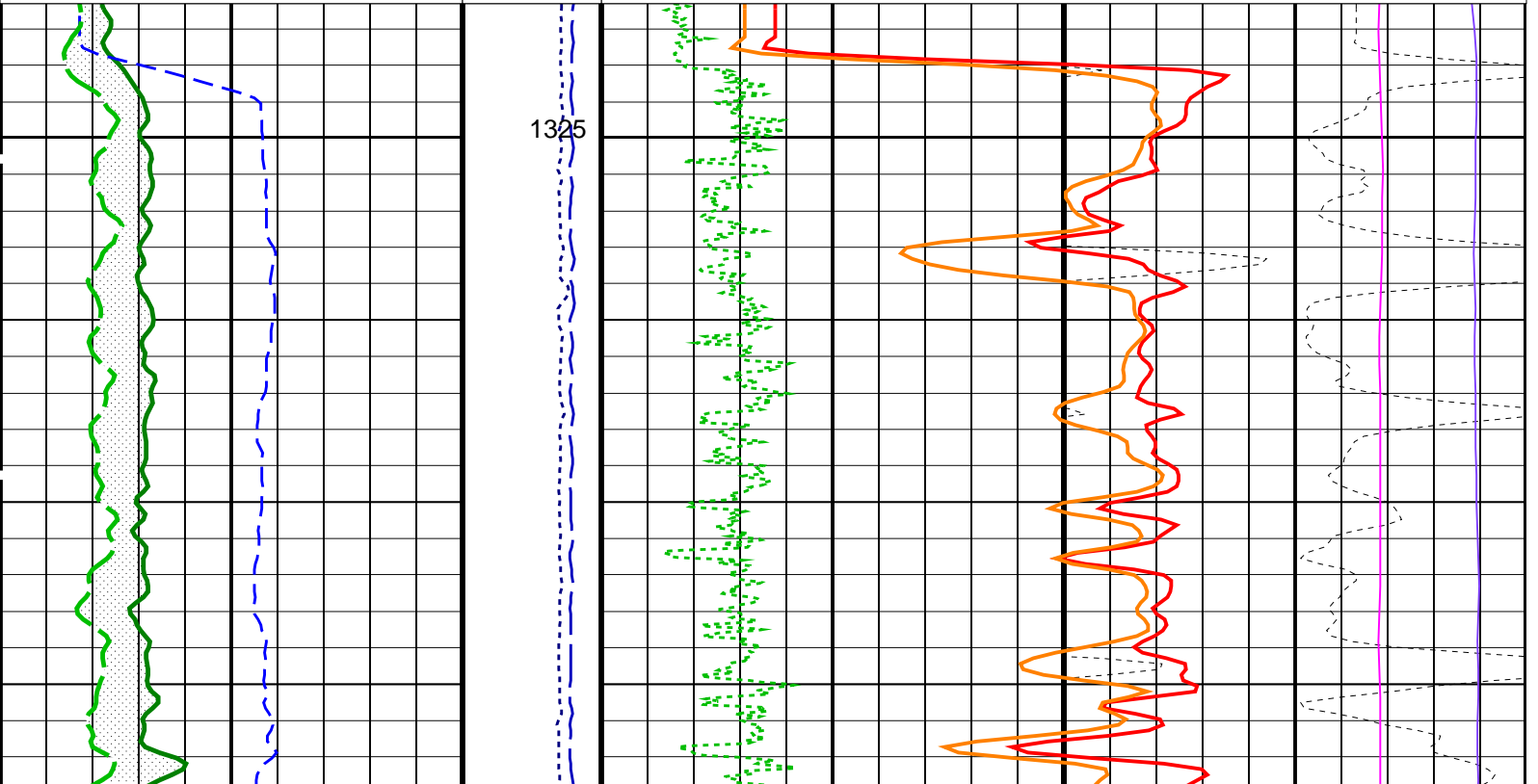
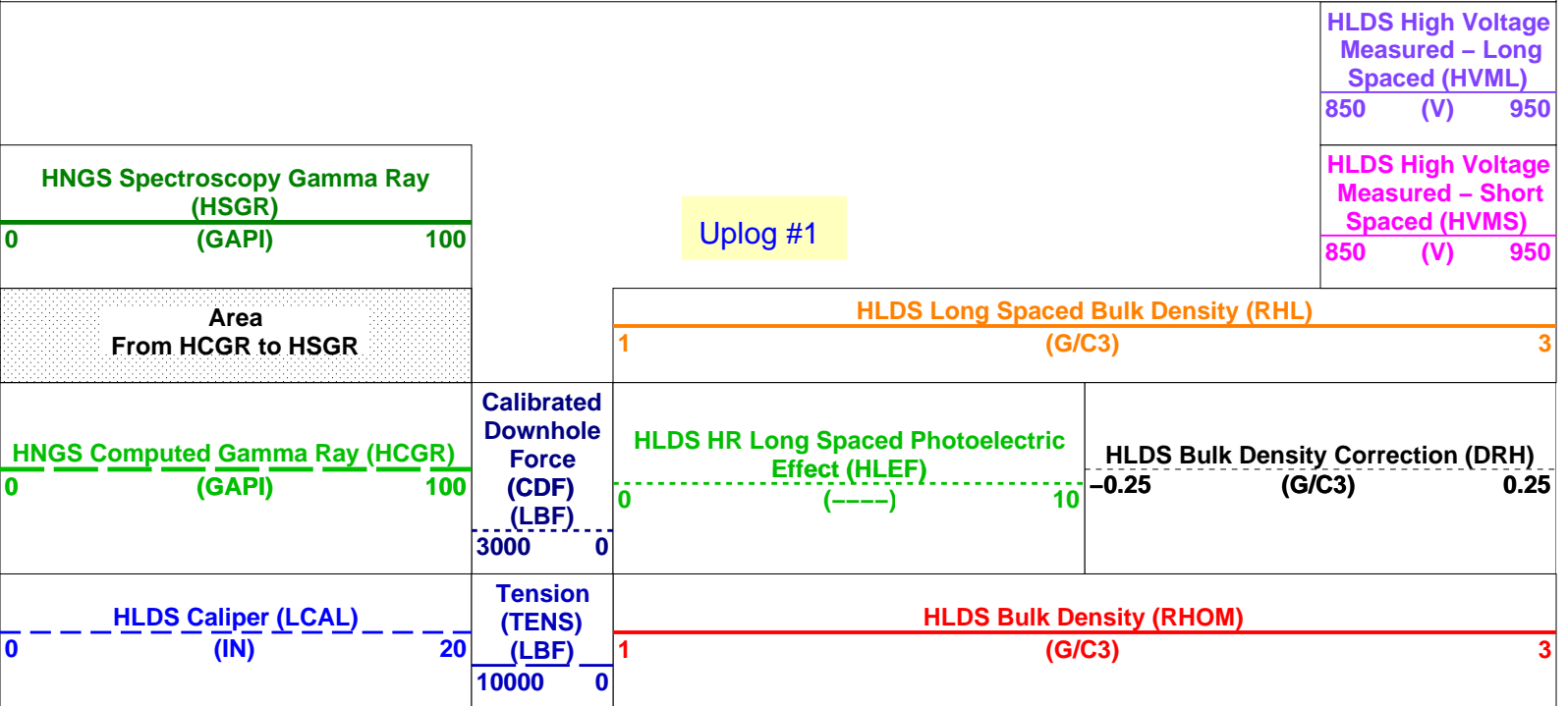
DEFAULT LDL\_NGS\_059PUP FN:63 PRODUCER 16-Jun-2018 15:54 1570.5 M 1320.7 M

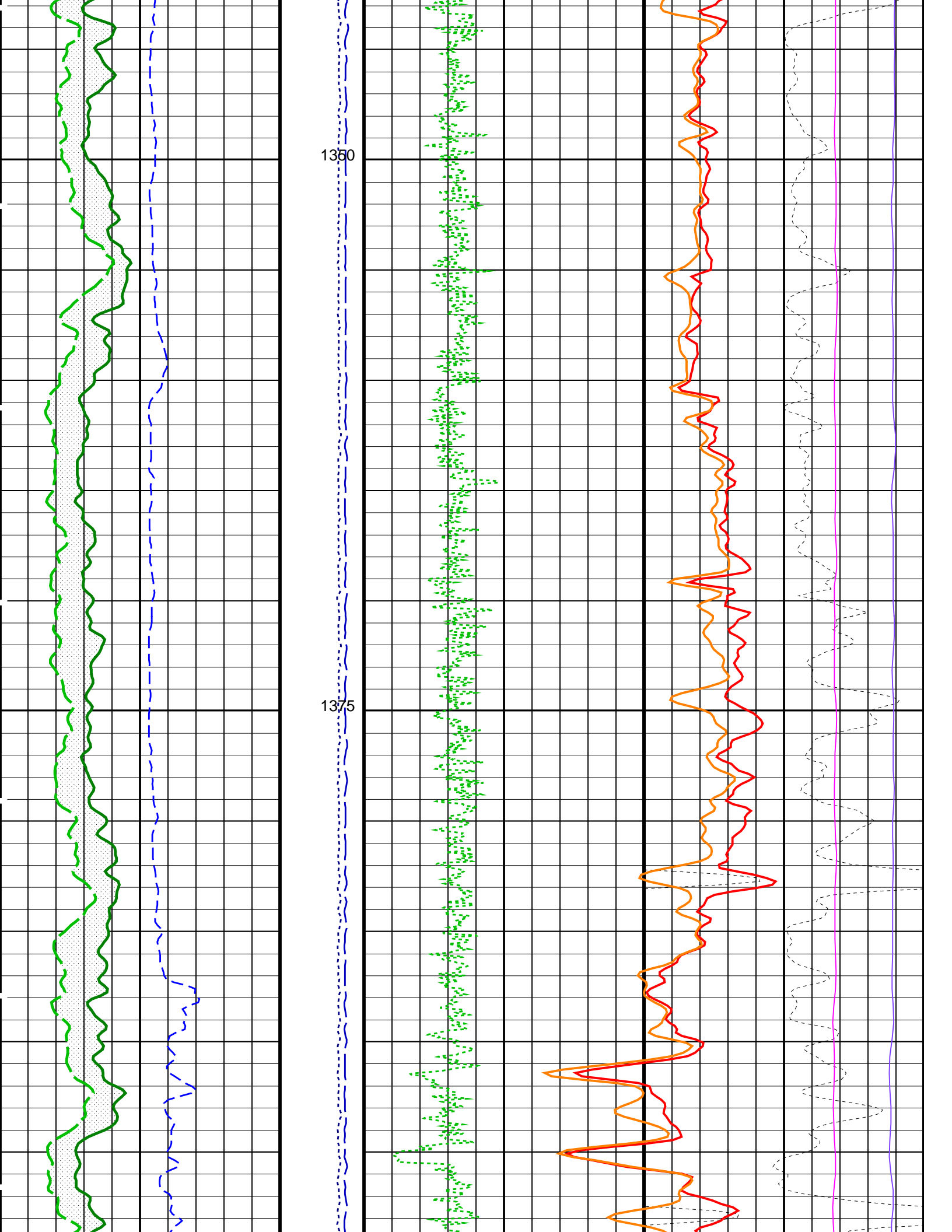
### OP System Version: 19C0-187

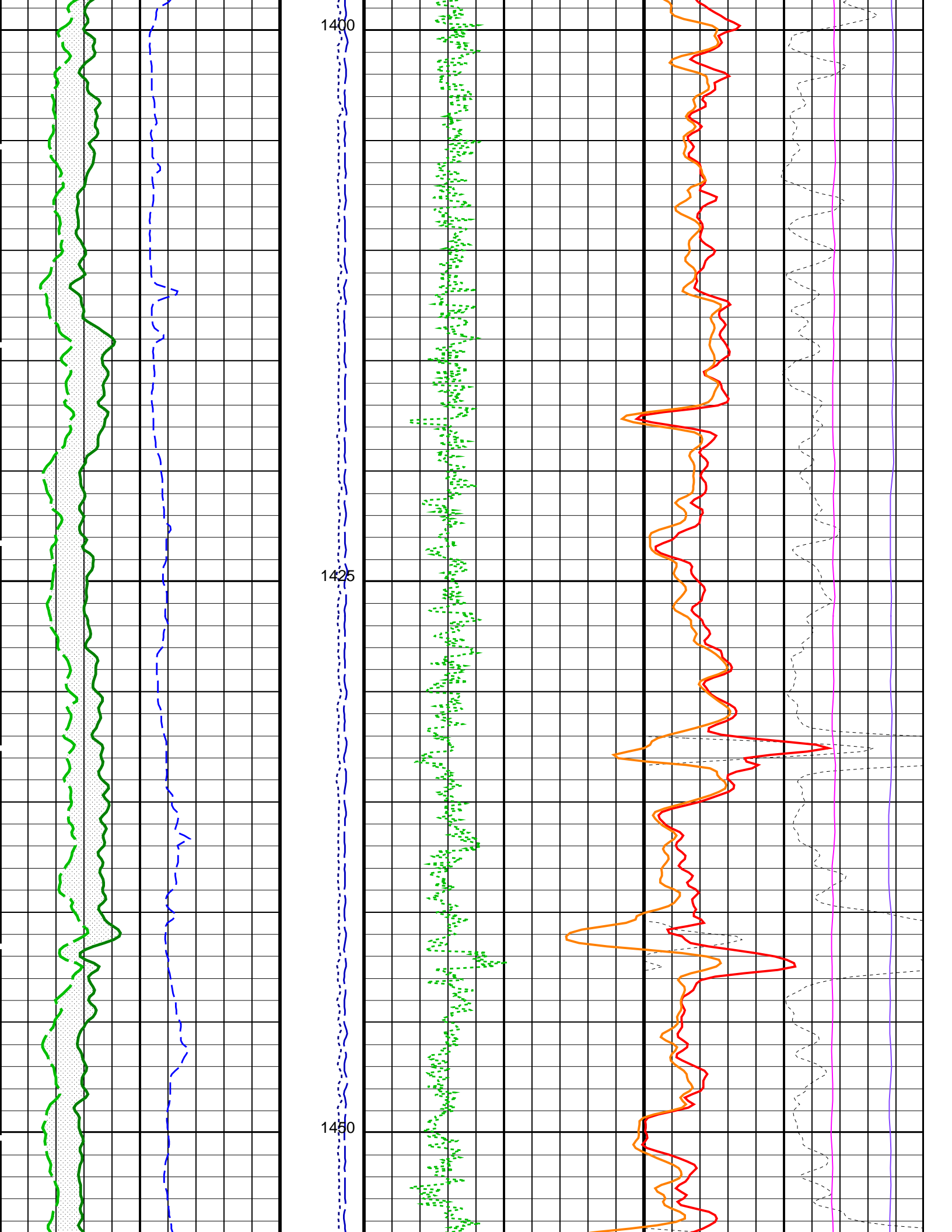
HLDS 19C0-187 HNCC-B 19C0-187  
 HNGS-BA 19C0-187 EDTC-B SKK-5169-EDTCB

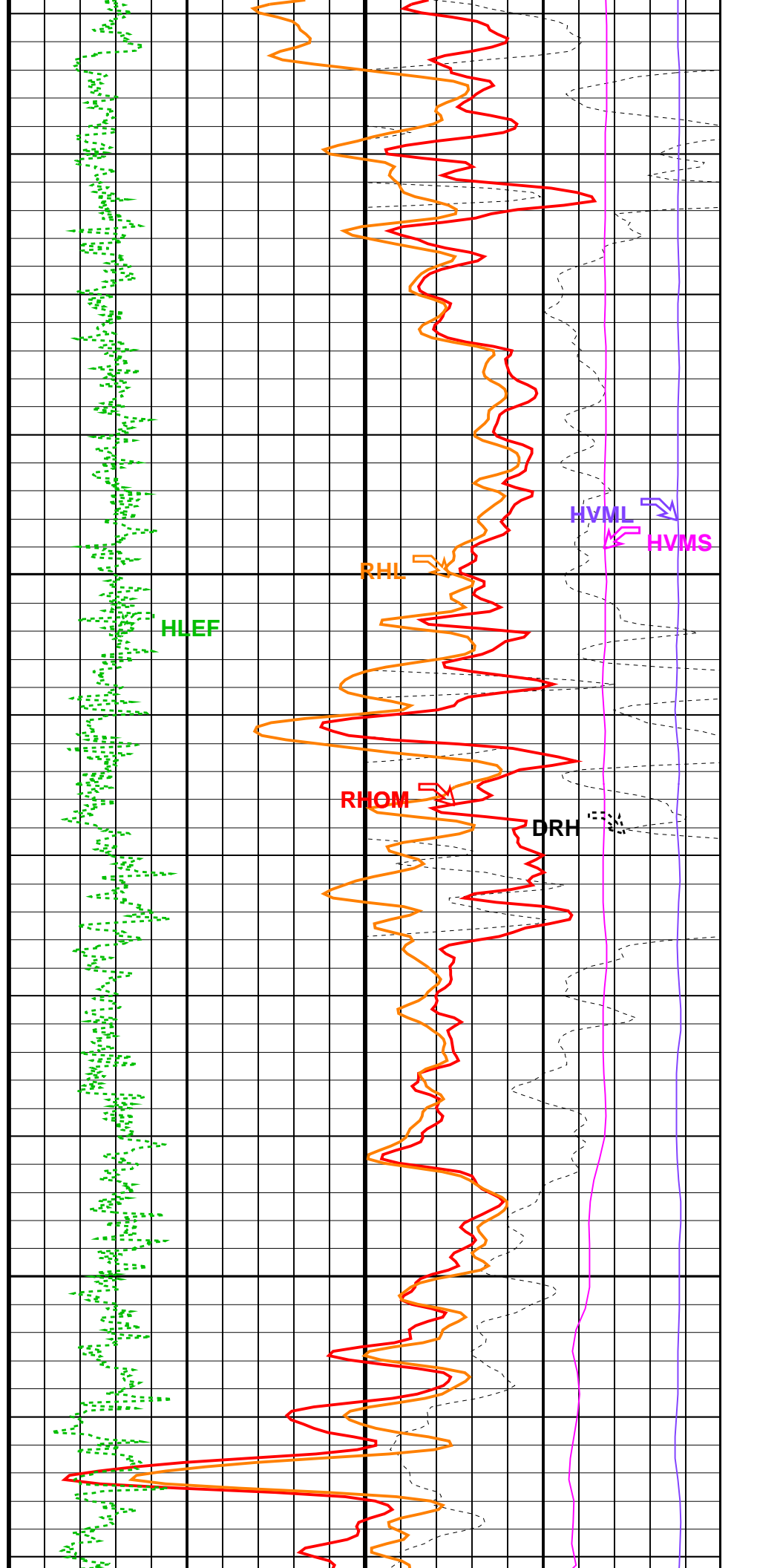
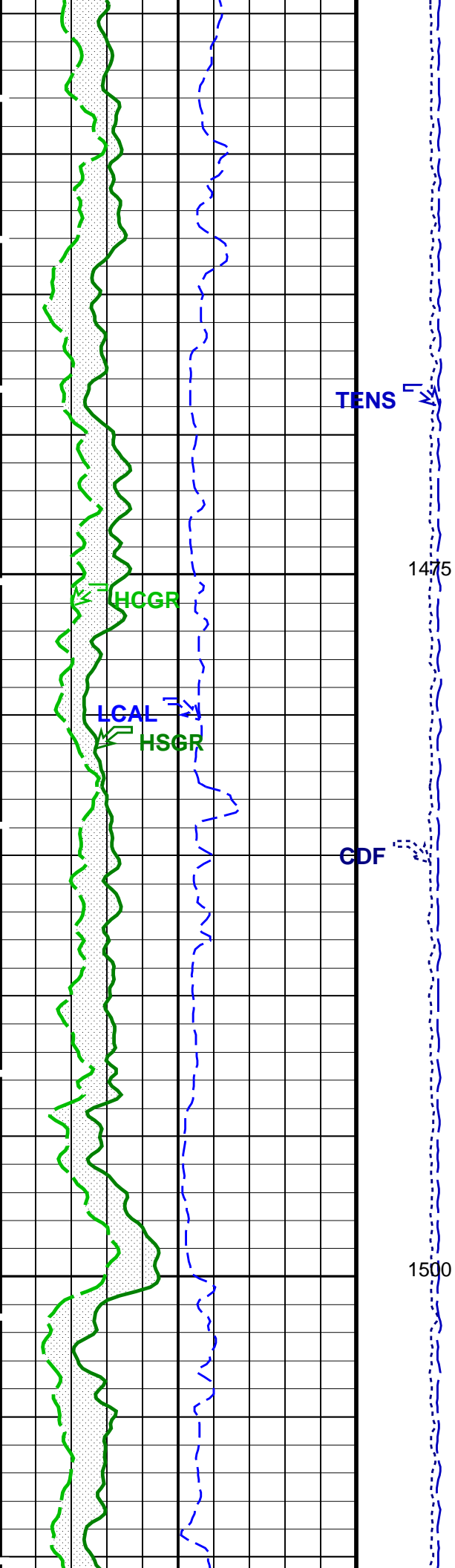
#### PIP SUMMARY

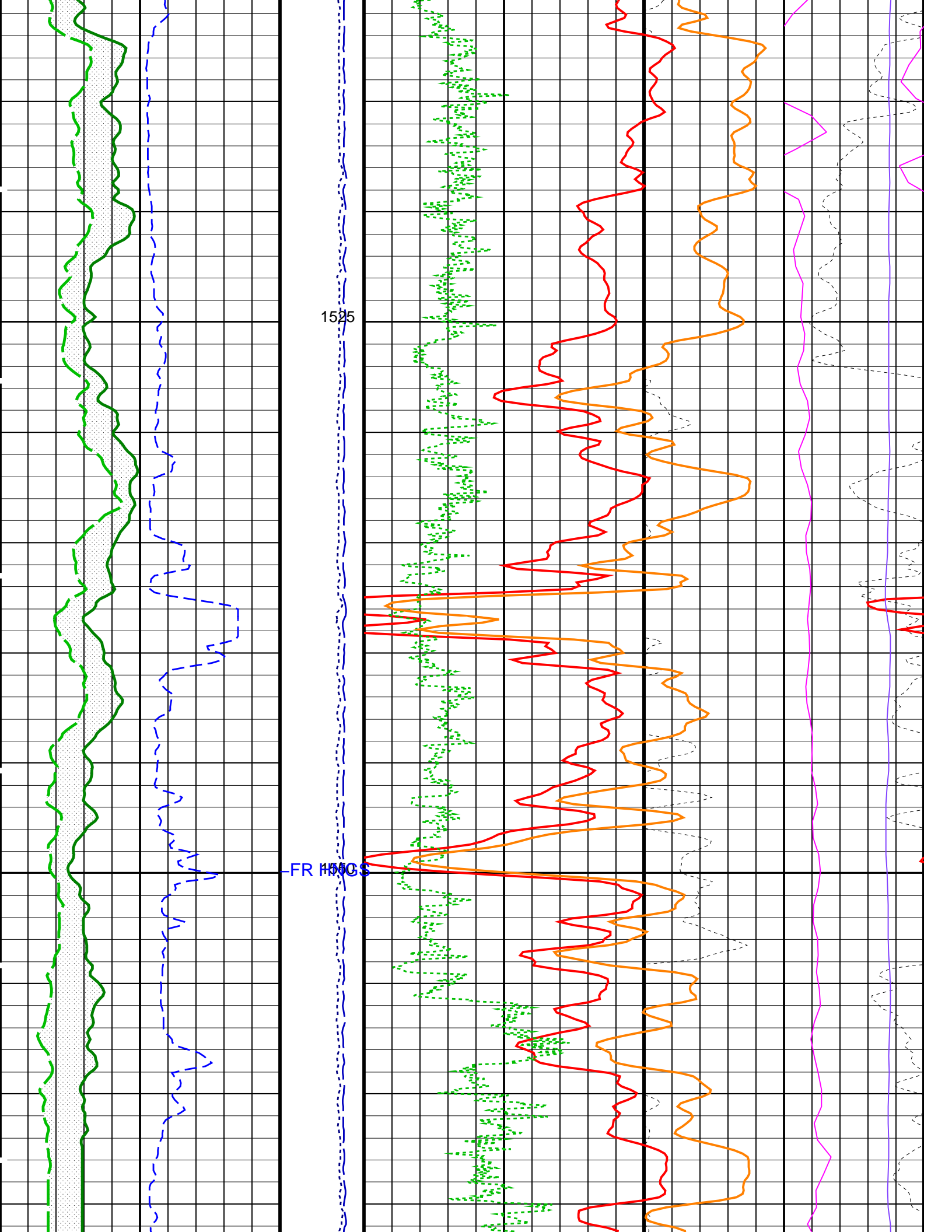
Time Mark Every 60 S



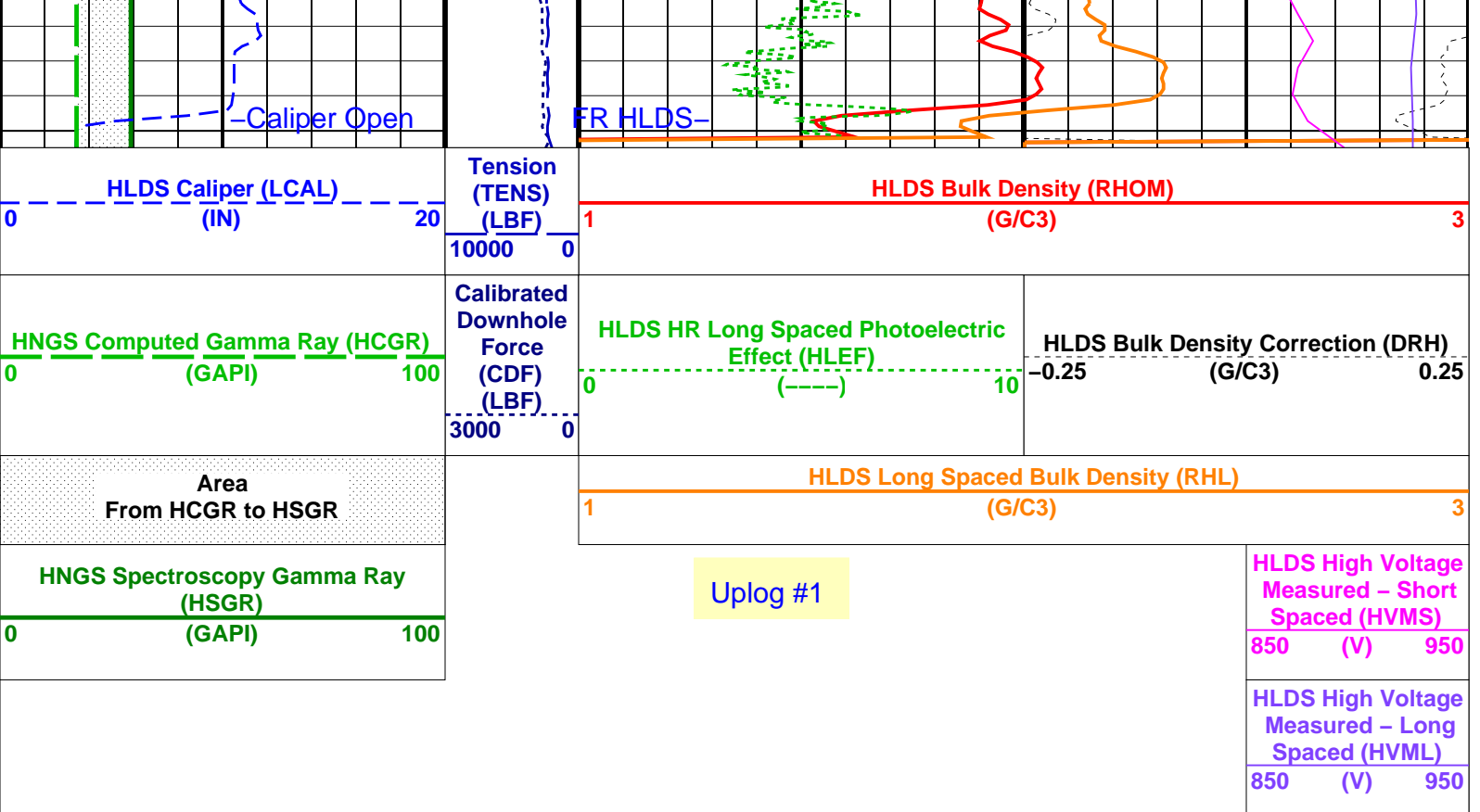












PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
<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>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)	212 DEG F
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
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
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	0.000619497
HALF	HNGS Alpha Filter Length	NONE IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE

HGRD	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	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.00694	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.0209	
<b>EDTC-B: Enhanced DTS Cartridge</b>			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
SOCN	Standoff Distance	0.5	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U-ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U-TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
<b>System and Miscellaneous</b>			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	13.375	IN
CWEI	Casing Weight	0.00	LB/F
DFD	Drilling Fluid Density	1.08	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	5249.34	FT
TDD	Total Depth - Driller	1598.30	M
TDL	Total Depth - Logger	1571.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: APSLiquidPorosity\_1      Vertical Scale: 1:200      Graphics File Created: 16-Jun-2018 15:54

### OP System Version: 19C0-187

HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

#### Input DLIS Files

DEFAULT	LDL_NGS_031PUP	FN:35	PRODUCER	09-Jun-2018 01:21	1570.5 M	1320.7 M
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#### Output DLIS Files

DEFAULT	LDL_NGS_059PUP	FN:63	PRODUCER	16-Jun-2018 15:54		
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#### Input DLIS Files

DEFAULT	LDL_NGS_033PUP	FN:39	PRODUCER	09-Jun-2018 01:27	1570.5 M	1225.3 M
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# Output DLIS Files

DEFAULT    LDL\_NGS\_060PUP    FN:64    PRODUCER    16-Jun-2018 16:30    1570.5 M    1225.3 M

## OP System Version: 19C0-187

HLDS                    19C0-187                                    HNCC-B                    19C0-187  
 HNGS-BA                19C0-187                                    EDTC-B                    SKK-5169-EDTCB

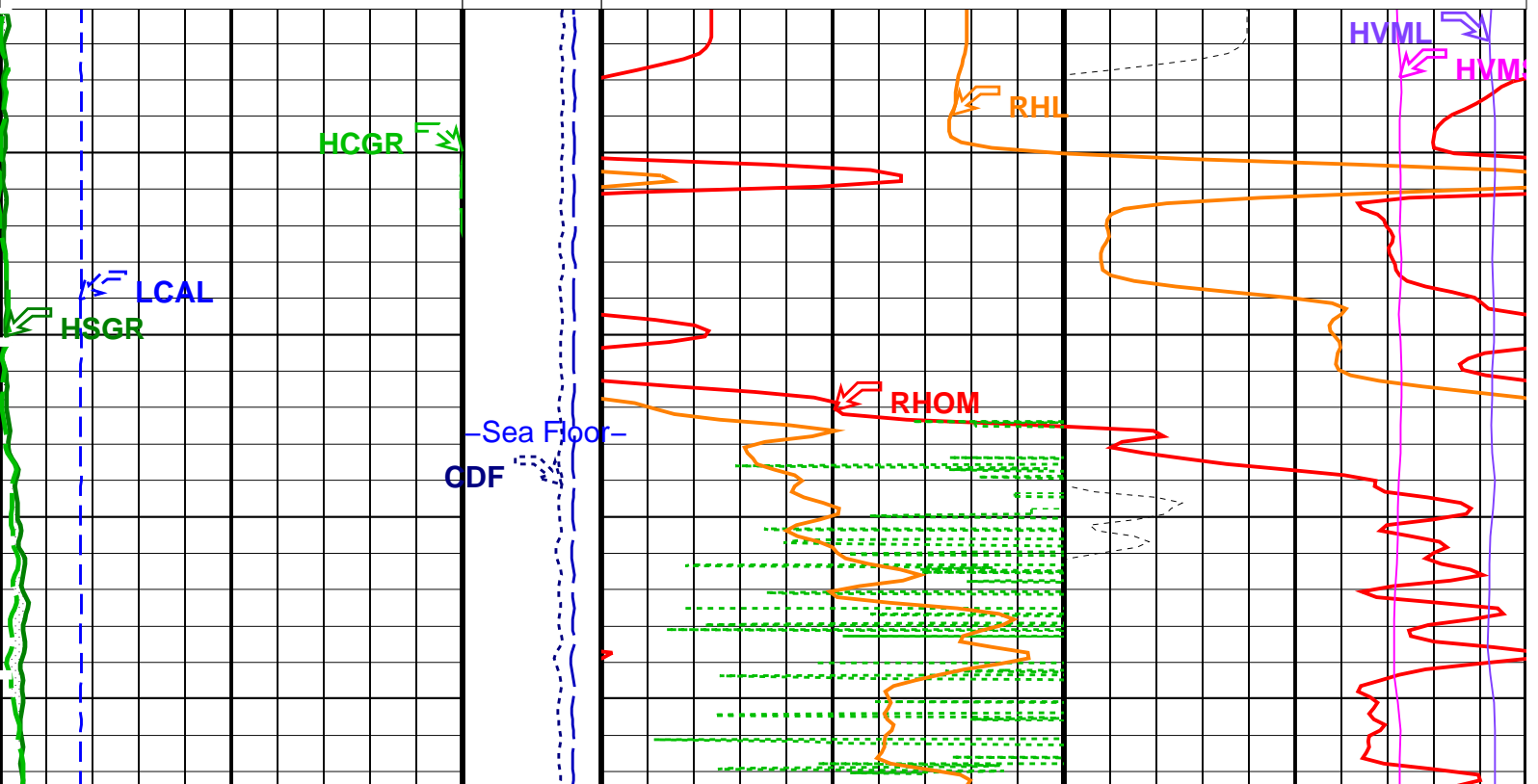
### Changed Parameter Summary

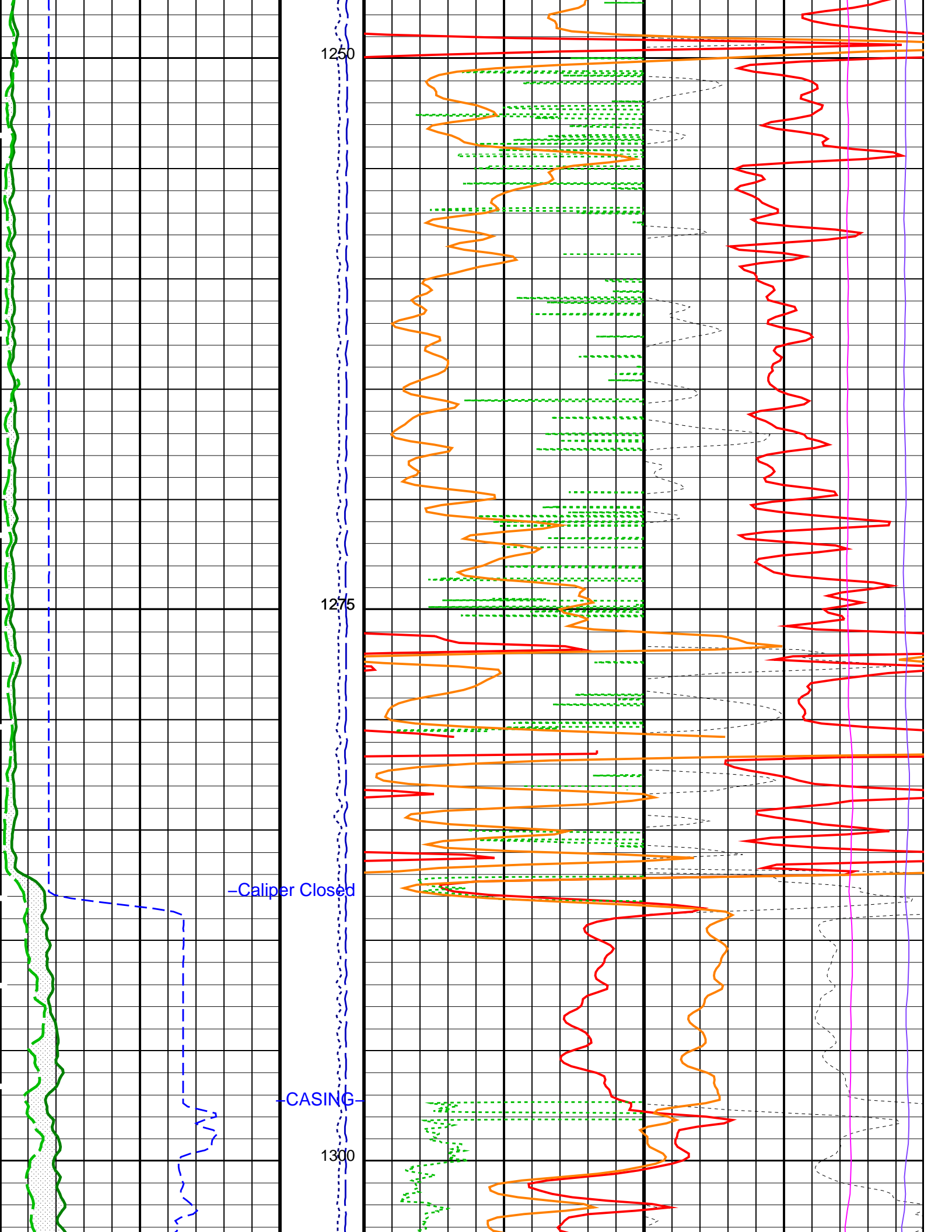
DLIS Name	New Value	Previous Value	Depth & Time
BHS	CASED	OPEN	1301.6 16:41:20
GCSE	BS	LCAL	1301.6 16:41:24

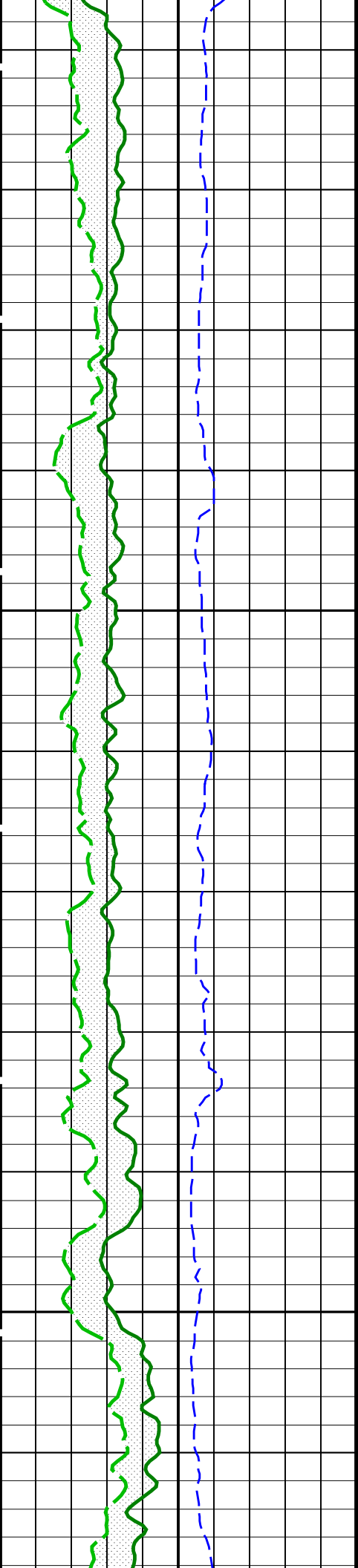
#### PIP SUMMARY

Time Mark Every 60 S

<p>HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)    0    100</p>		<p>Uplog #2</p>	<p>HLDS High Voltage Measured - Long Spaced (HVML) 850 (V) 950</p>	
<p>Area From HCGR to HSGR</p>			<p>HLDS High Voltage Measured - Short Spaced (HVMS) 850 (V) 950</p>	
<p>HNGS Computed Gamma Ray (HCGR) (GAPI)    0    100</p>		<p>Calibrated Downhole Force (CDF) (LBF) 3000    0</p>	<p>HLDS HR Long Spaced Photoelectric Effect (HLEF) (----)    0    10</p>	<p>HLDS Bulk Density Correction (DRH) (G/C3)    -0.25    0.25</p>
<p>HLDS Caliper (LCAL) (IN)    0    20</p>		<p>Tension (TENS) (LBF) 10000    0</p>	<p>HLDS Long Spaced Bulk Density (RHL) (G/C3)    1    3</p>	
			<p>HLDS Bulk Density (RHOM) (G/C3)    1    3</p>	

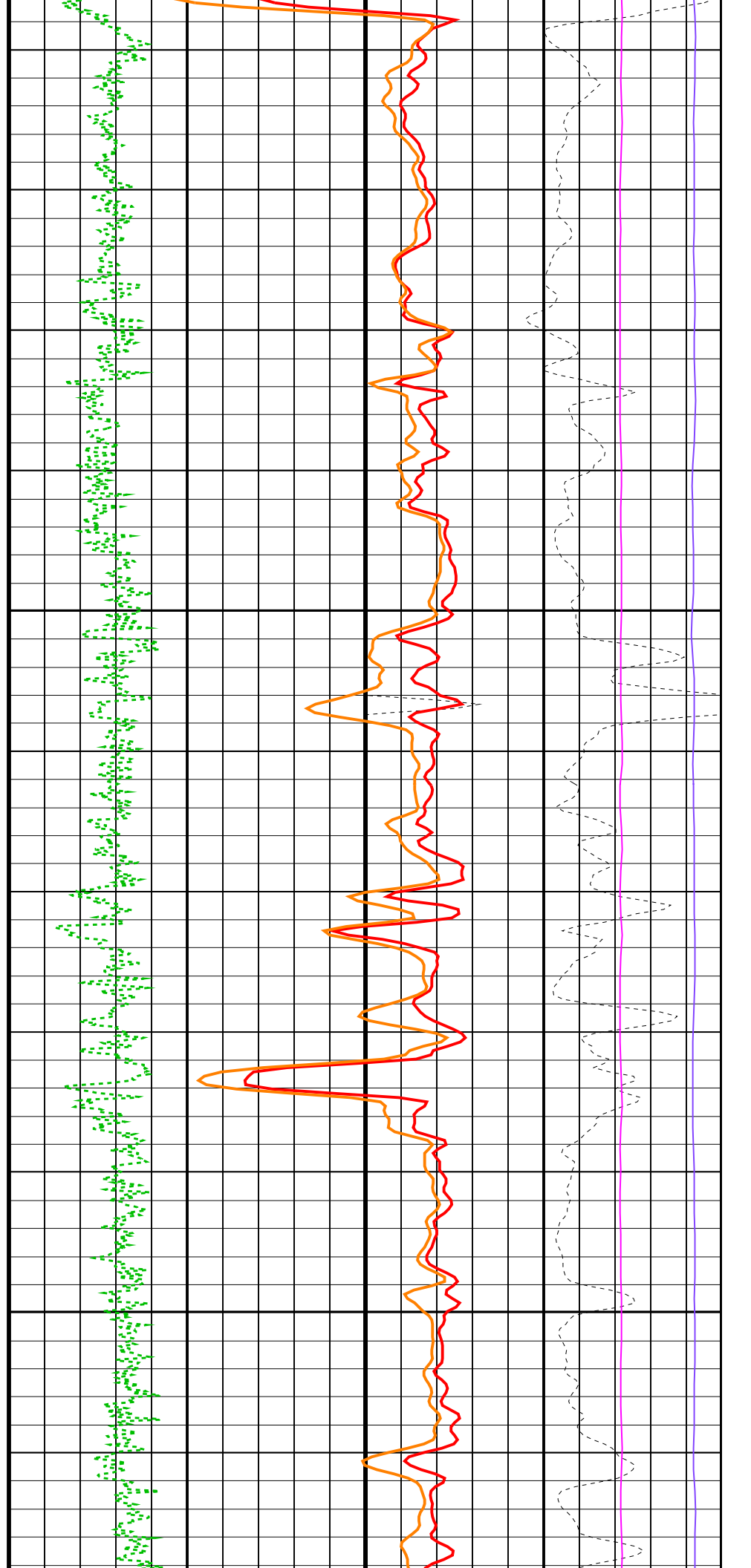


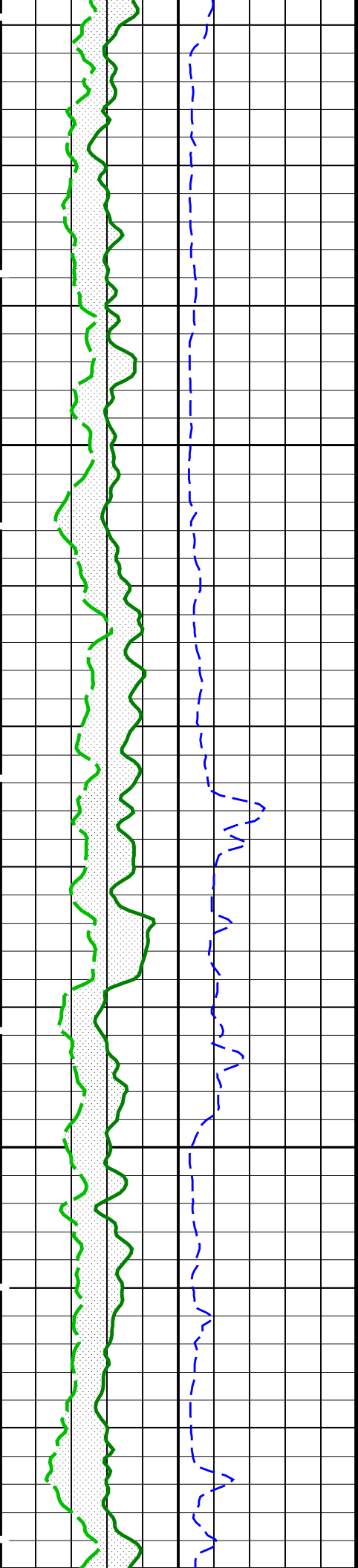




1325

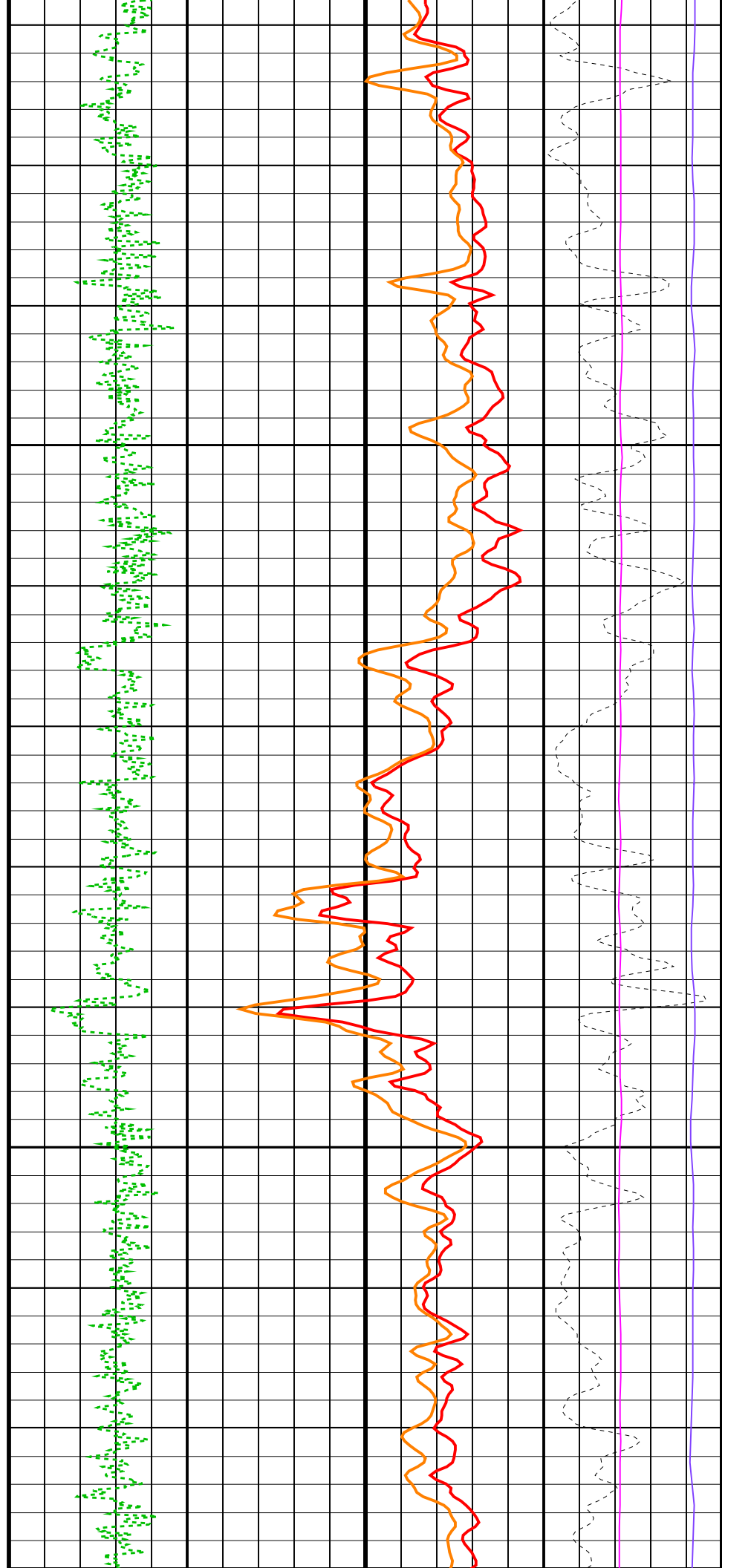
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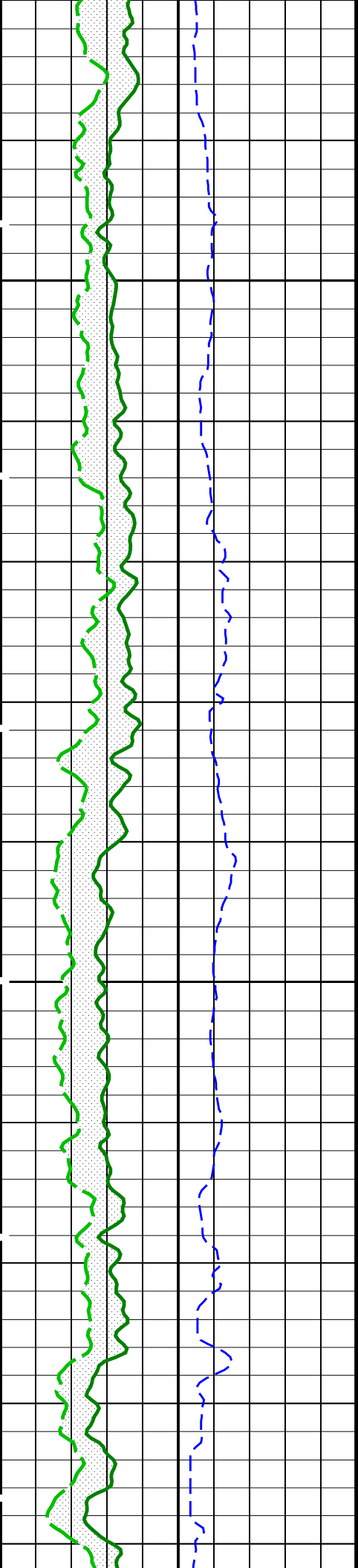




1375

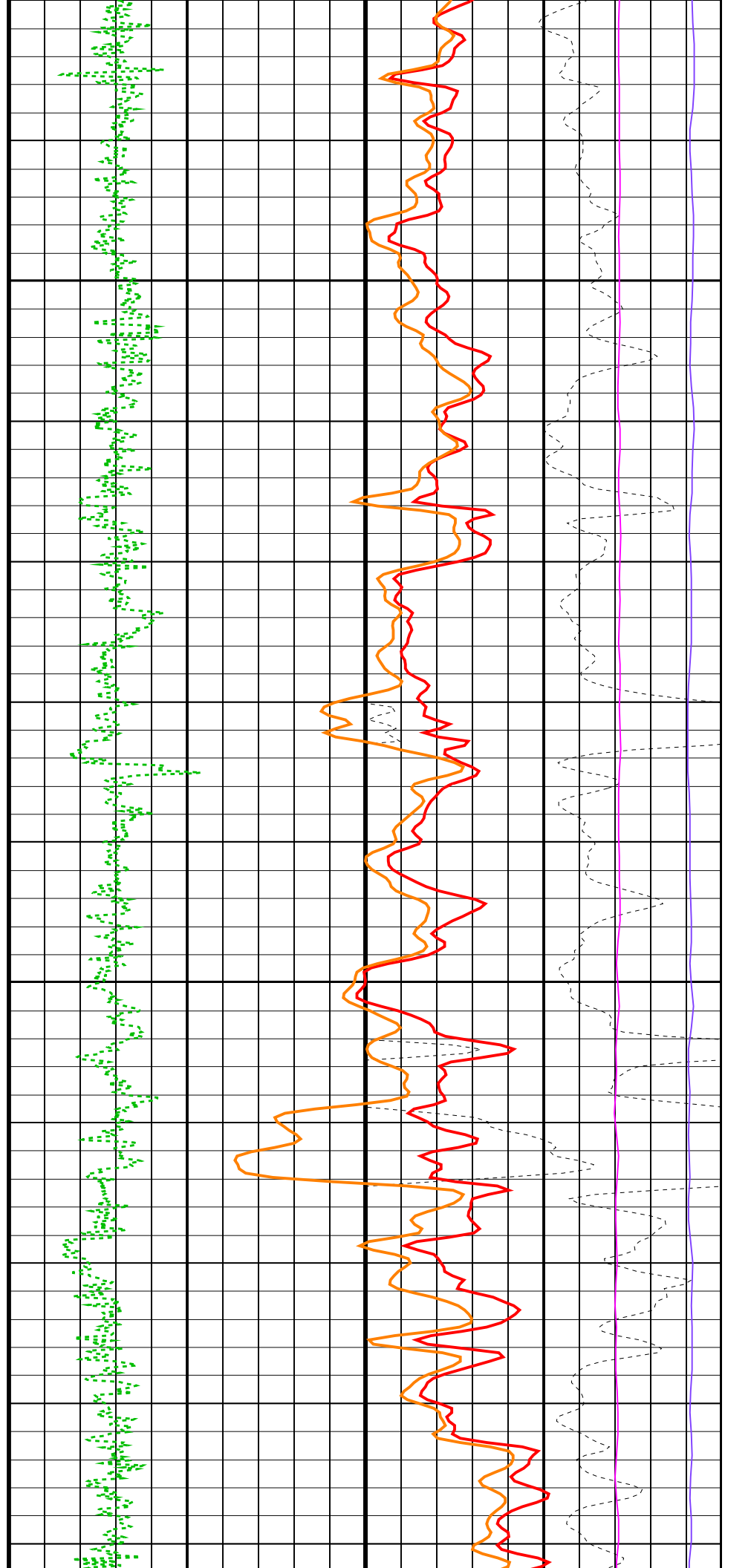
1400

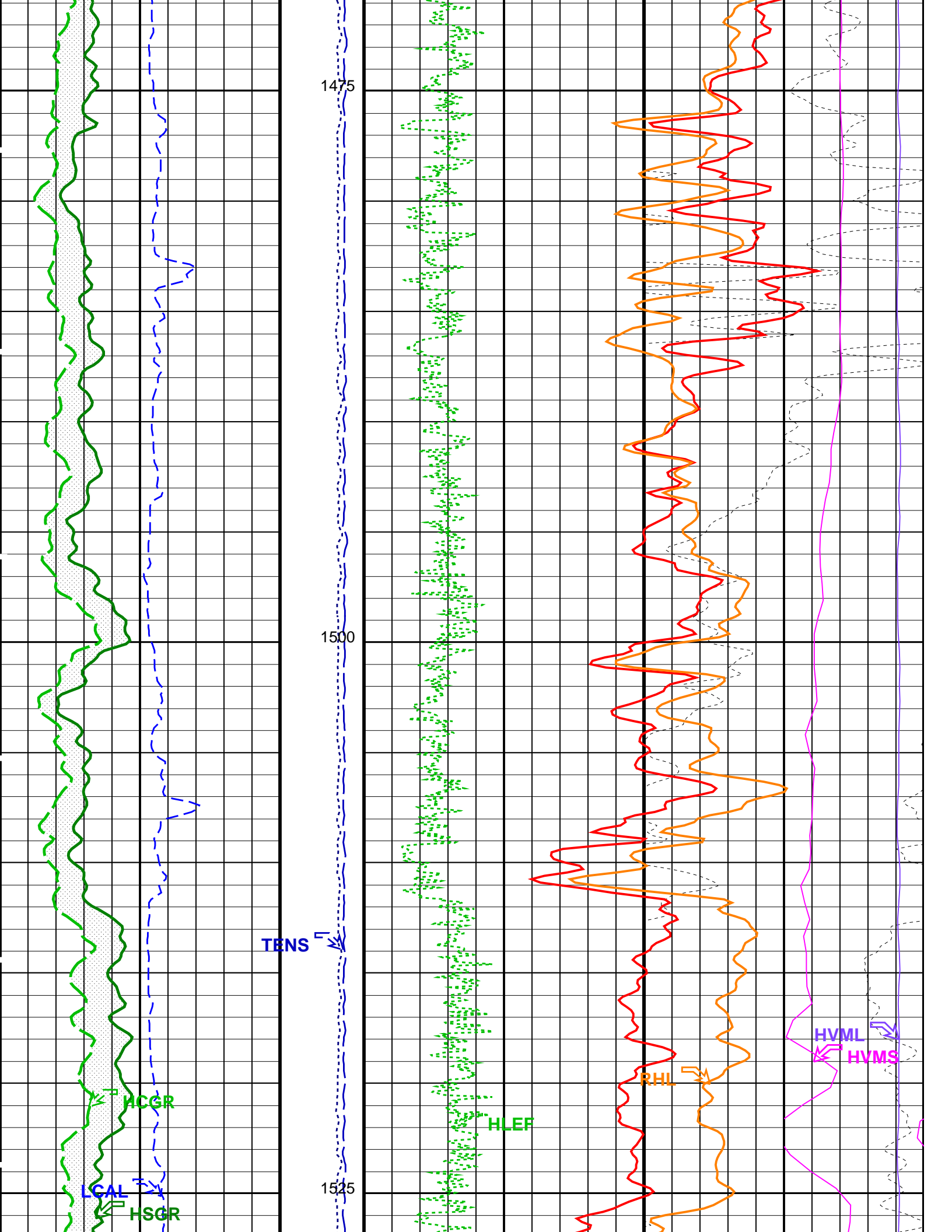




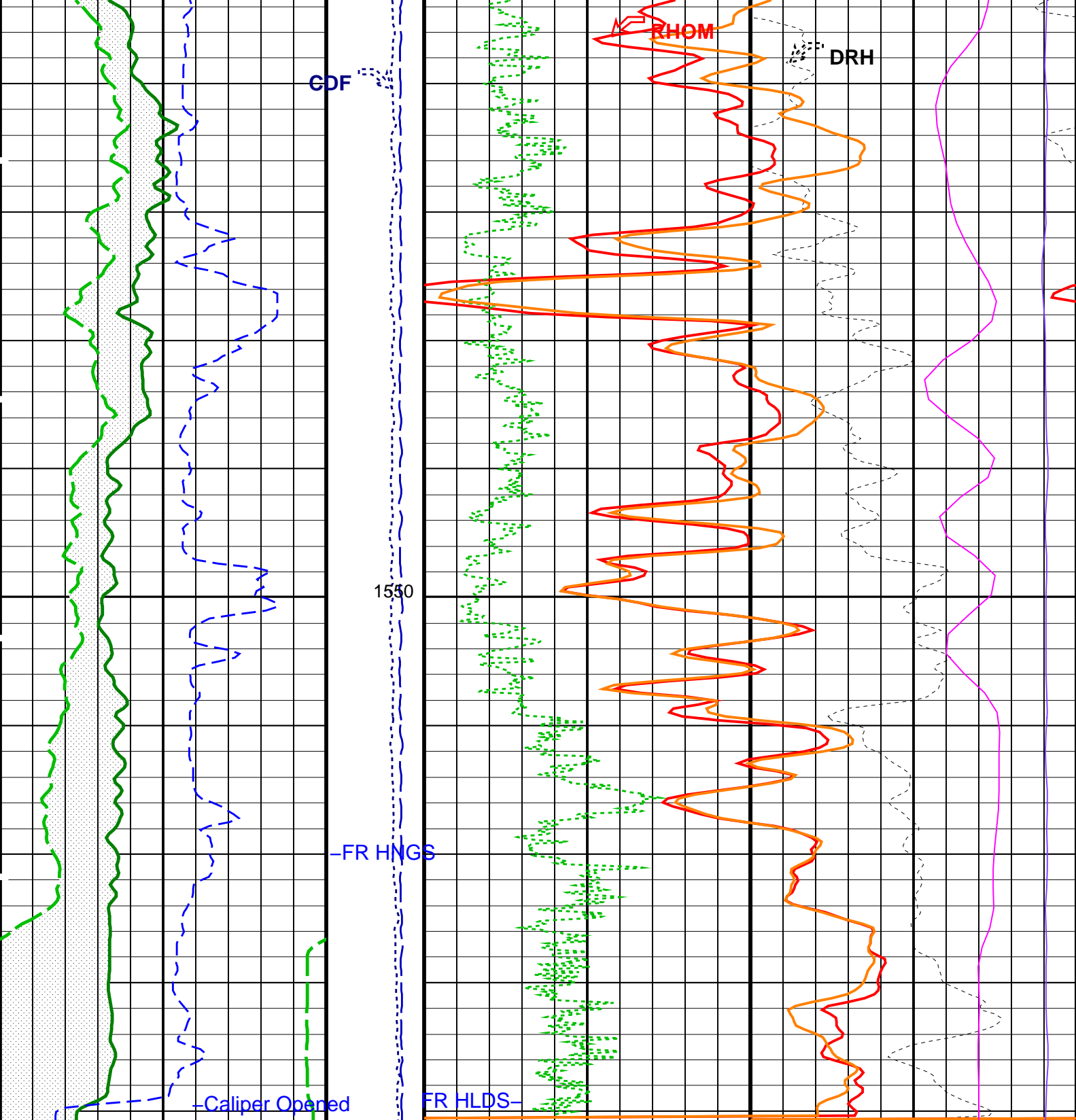
1425

1450









<p>HLDS Caliper (LCAL) (IN)</p> <p>0 20</p>	<p>Tension (TENS) (LBF)</p> <p>10000 0</p>	<p>HLDS Bulk Density (RHOM) (G/C3)</p> <p>1 3</p>	
<p>HNGS Computed Gamma Ray (HCGR) (GAPI)</p> <p>0 100</p>	<p>Calibrated Downhole Force (CDF) (LBF)</p> <p>3000 0</p>	<p>HLDS HR Long Spaced Photoelectric Effect (HLEF) (----)</p> <p>0 10</p>	<p>HLDS Bulk Density Correction (DRH) (G/C3)</p> <p>-0.25 0.25</p>
<p>Area From HCGR to HSGR</p>		<p>HLDS Long Spaced Bulk Density (RHL) (G/C3)</p> <p>1 3</p>	

HNGS Spectrometry Gamma Ray HLDS High Voltage

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
<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>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)	212	DEGF
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	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
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	0.000619497	
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	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.00694	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.0209	
<b>EDTC-B: Enhanced DTS Cartridge</b>			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	

GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	YES	
HSCO	Hole Size Correction Option		NOBARITE	
ISSBAR	Barite Mud Switch		NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type		LIMESTONE	
MATR	Rock Matrix for Neutron Porosity Corrections		NO	
MCCO	Mud Cake Correction Option		NATU	
MCOR	Mud Correction		NO	
MWCO	Mud Weight Correction Option		NO	
PTCO	Pressure/Temperature Correction Option		NO	
SDAT	Standoff Data Source		SOCN	
SHT	Surface Hole Temperature		68	DEGF
SOCN	Standoff Distance		0.5	IN
SOCO	Standoff Correction Option		NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered		Eccentered	
U-ETELM_EDTS	Telemetry Mode for eWAFE		Standard_EDTS	
U-TELM_EDTS	Telemetry Mode for WAFE		Standard_EDTS	
<b>System and Miscellaneous</b>				
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth		
BS	Bit Size	9.875		IN
BSAL	Borehole Salinity	-50000.00		PPM
CSIZ	Current Casing Size	13.375		IN
CWEI	Casing Weight	0.00		LB/F
DFD	Drilling Fluid Density	1.08		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	5249.34		FT
TDD	Total Depth - Driller	1598.30		M
TDL	Total Depth - Logger	1571.00		M
TWS	Temperature of Connate Water Sample	37.78		DEGC

Format: APSLiquidPorosity\_1      Vertical Scale: 1:200      Graphics File Created: 16-Jun-2018 16:30

### OP System Version: 19C0-187

HLDS	19C0-187	HNCC-B	19C0-187
HNGS-BA	19C0-187	EDTC-B	SKK-5169-EDTCB

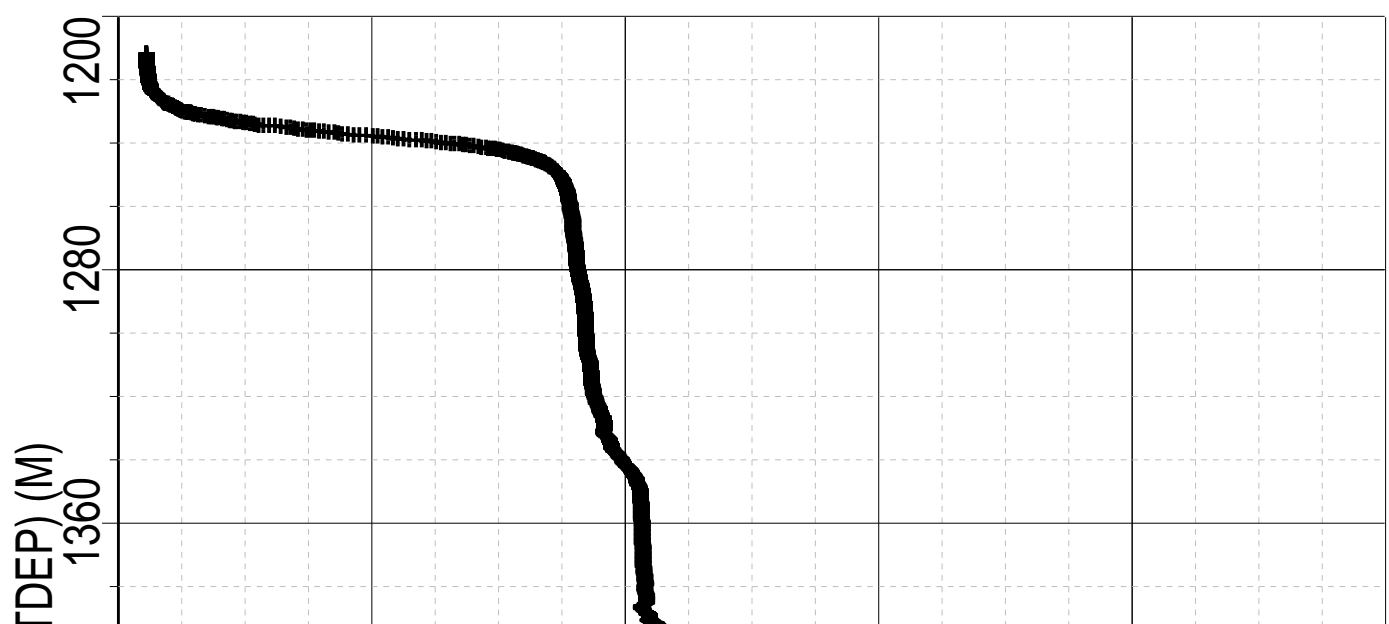
#### Input DLIS Files

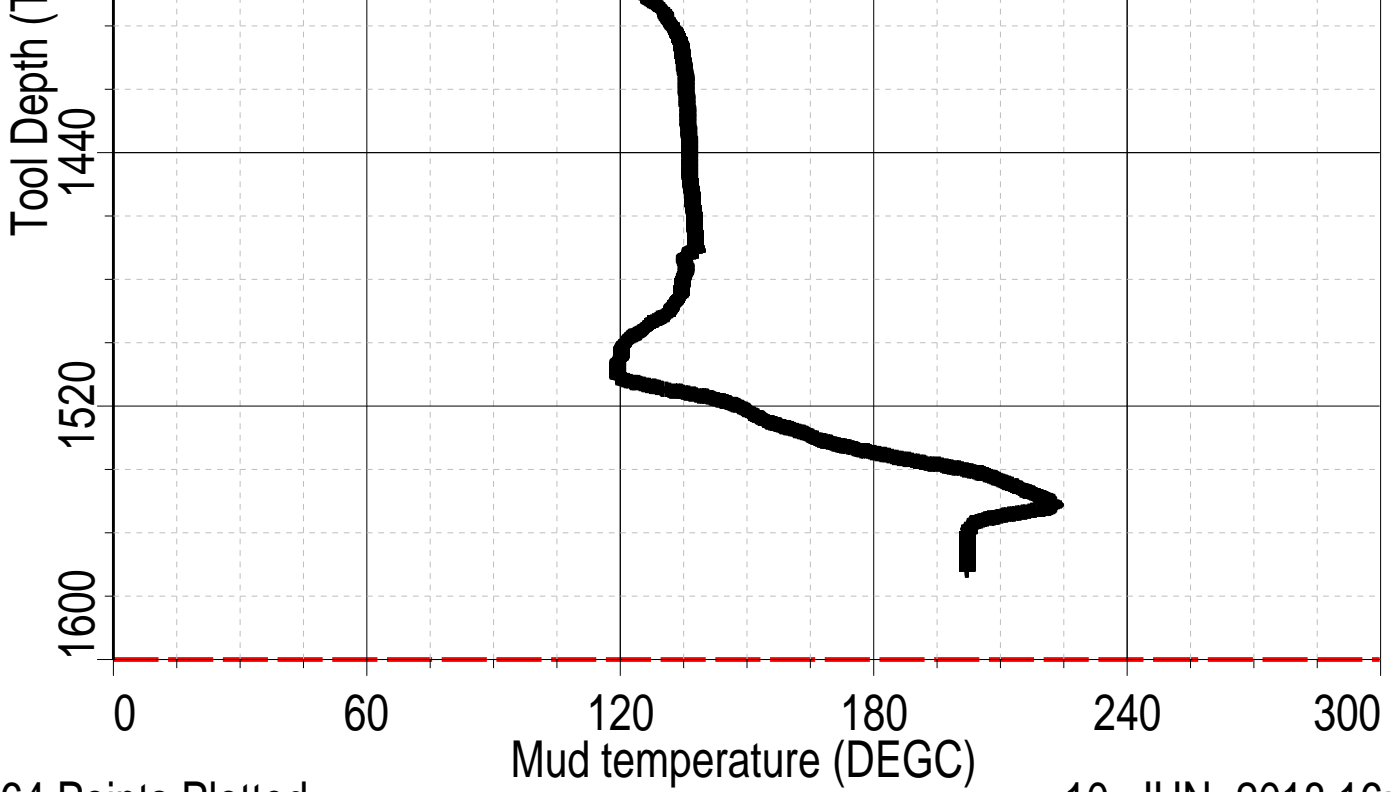
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#### Output DLIS Files

DEFAULT	LDL_NGS_060PUP	FN:64	PRODUCER	16-Jun-2018 16:30
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Index: 1571.7 - 1211.6 M [Downlog Mud Temperature](#)



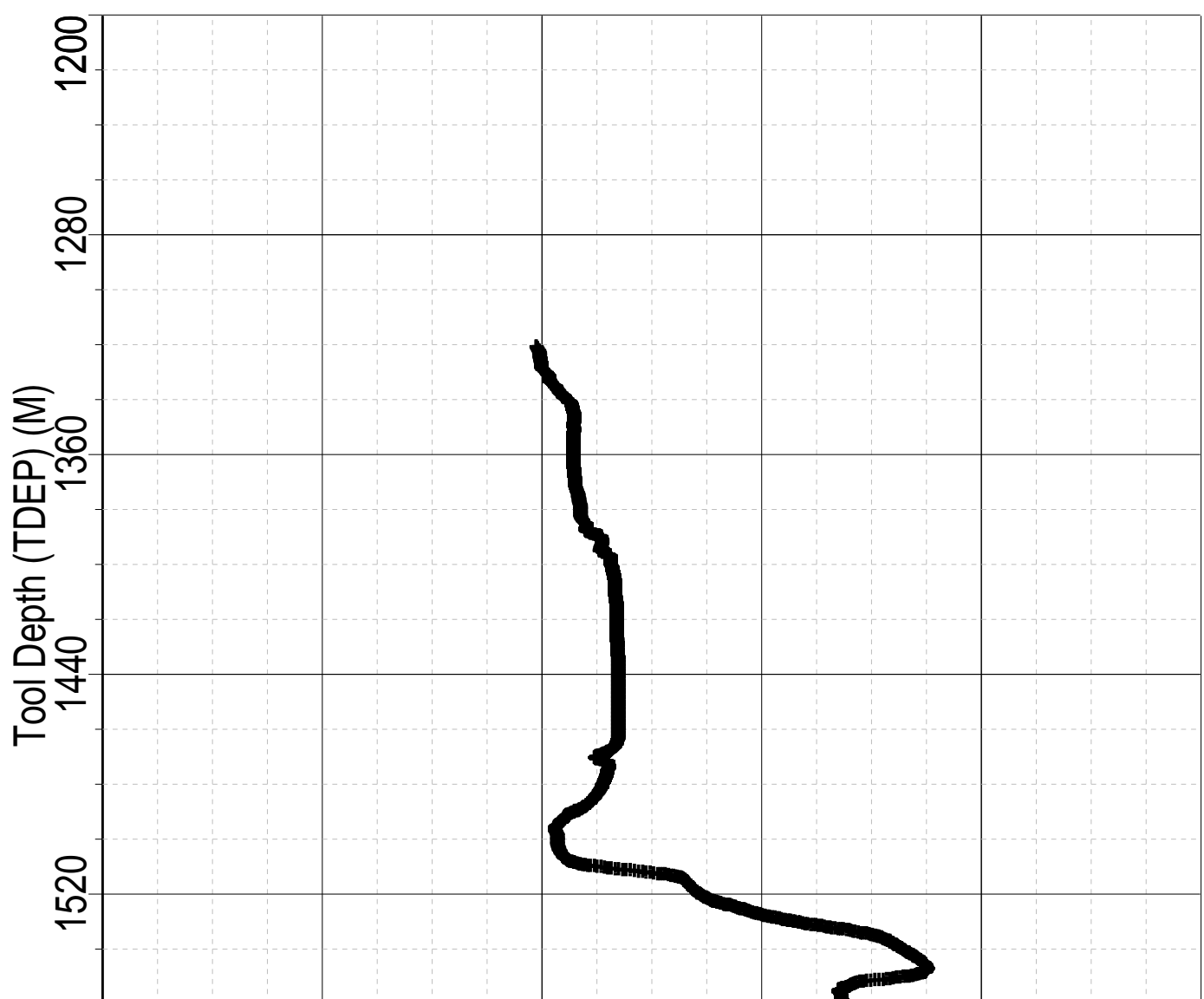


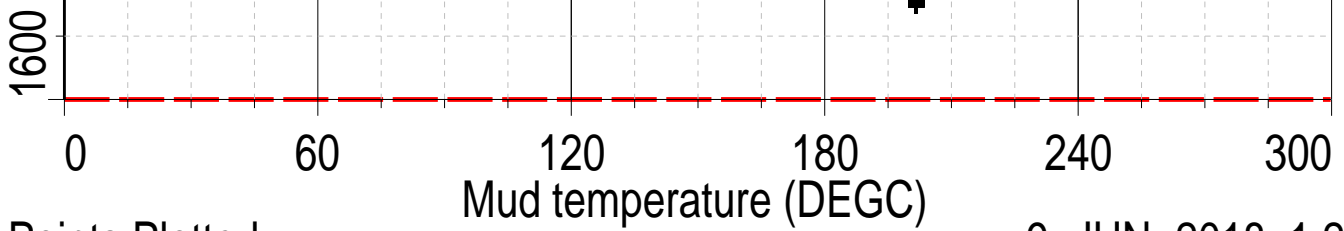
2364 Points Plotted

10-JUN-2018 16:36

Index: 1570.5 - 1320.7 M

Uplog 1



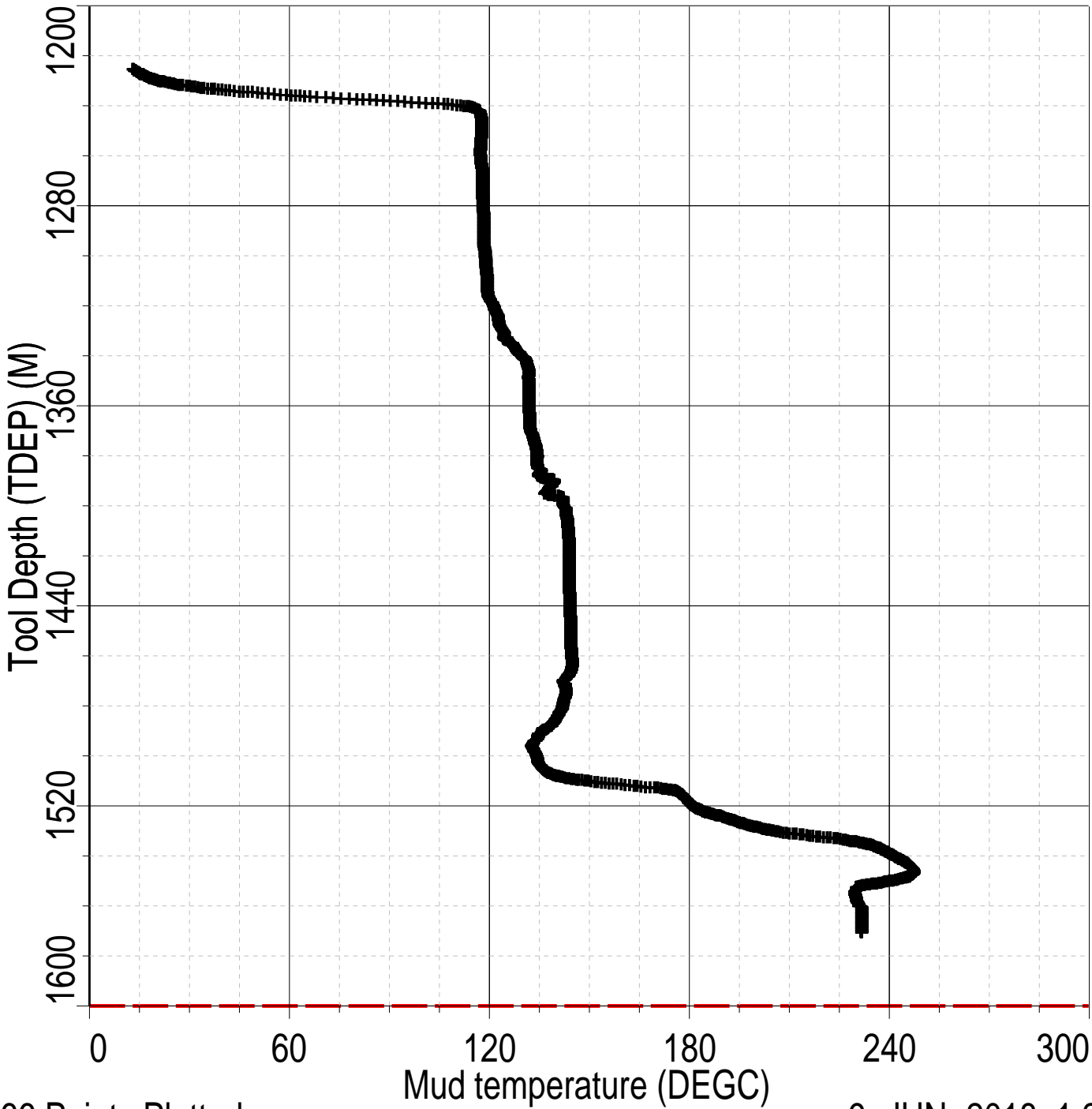


1640 Points Plotted

9-JUN-2018 1:21

Index: 1570.5 – 1225.3 M

Uplog 2



2266 Points Plotted

9-JUN-2018 1:28

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
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Hostile Litho-Density Sonde Wellsite Calibration - Background Measurement

Master: 5-May-2018 1:57	Before: 11-May-2018 17:03	After: 4-May-2018 16:34						
SS Cs Resolution Bkg	9.000	7.995	7.964	7.904	-0.06078	1.800	%	
LS Cs Resolution Bkg	9.000	8.145	8.019	8.147	0.1277	1.800	%	
LSW1 Background	100.0	62.36	62.69	63.35	0.6611	3.000	CPS	
LSW2 Background	100.0	59.63	57.29	58.50	1.206	3.000	CPS	
LSW3 Background	200.0	130.2	128.7	126.7	-1.952	6.000	CPS	
LSW4 Background	250.0	157.8	157.6	156.4	-1.187	7.500	CPS	
LSW5 Background	600.0	363.9	362.1	361.5	-0.5684	18.00	CPS	
SSW1 Background	100.0	71.74	71.69	71.90	0.2106	3.000	CPS	
SSW2 Background	200.0	127.9	127.9	128.3	0.4138	6.000	CPS	
SSW3 Background	500.0	341.2	339.8	344.3	4.499	15.00	CPS	
SSW4 Background	270.0	177.8	178.4	178.6	0.2922	8.100	CPS	
SSW5 Background	200.0	129.6	130.1	129.1	-1.014	6.000	CPS	

Hostile Litho-Density Sonde Wellsite Calibration - Aluminum Measurement

Master: 5-May-2018 1:57								
LSW1 Aluminum	600.0	502.4	N/A	N/A	N/A	N/A	CPS	
LSW2 Aluminum	900.0	717.7	N/A	N/A	N/A	N/A	CPS	
LSW3 Aluminum	1100	867.3	N/A	N/A	N/A	N/A	CPS	
LSW4 Aluminum	580.0	435.7	N/A	N/A	N/A	N/A	CPS	
LSW5 Aluminum	570.0	394.7	N/A	N/A	N/A	N/A	CPS	
SSW1 Aluminum	2800	2326	N/A	N/A	N/A	N/A	CPS	
SSW2 Aluminum	8000	6279	N/A	N/A	N/A	N/A	CPS	
SSW3 Aluminum	11600	8732	N/A	N/A	N/A	N/A	CPS	
SSW4 Aluminum	5000	3540	N/A	N/A	N/A	N/A	CPS	
SSW5 Aluminum	660.0	427.2	N/A	N/A	N/A	N/A	CPS	

Hostile Litho-Density Sonde Wellsite Calibration - Lithology Measurement

Master: 5-May-2018 1:57								
LSW1 Iron	400.0	344.2	N/A	N/A	N/A	N/A	CPS	
LSW2 Iron	730.0	577.4	N/A	N/A	N/A	N/A	CPS	
LSW3 Iron	1000	765.7	N/A	N/A	N/A	N/A	CPS	
LSW4 Iron	520.0	394.1	N/A	N/A	N/A	N/A	CPS	
LSW5 Iron	470.0	358.1	N/A	N/A	N/A	N/A	CPS	
SSW1 Iron	2100	1704	N/A	N/A	N/A	N/A	CPS	
SSW2 Iron	6800	5274	N/A	N/A	N/A	N/A	CPS	
SSW3 Iron	10800	7989	N/A	N/A	N/A	N/A	CPS	
SSW4 Iron	4600	3261	N/A	N/A	N/A	N/A	CPS	
SSW5 Iron	580.0	382.5	N/A	N/A	N/A	N/A	CPS	

Hostile Litho-Density Sonde Wellsite Calibration - Caliper Calibration

Before: 11-May-2018 17:31								
HLDS Caliper Small Ring	12.00	N/A	16.08	N/A	N/A	N/A	IN	
HLDS Caliper Large Ring	15.19	N/A	20.19	N/A	N/A	N/A	IN	

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check

Master: 4-May-2018 18:57	Before: 4-May-2018 19:04	After: 4-May-2018 19:12						
Na 511 Peak Loc	40.00	39.68	39.72	39.69	-0.02587	1.000		
Na 511 Peak Res	15.50	15.27	15.49	15.09	-0.3976	2.000	%	
High Voltage	1150	1165	1166	1166	0.2809	N/A	V	
Na 1785 Peak Loc	142.6	142.9	142.8	142.4	-0.4349	7.000		
Na 1785 Peak Res	8.500	8.674	9.570	8.338	-1.232	2.000	%	
Temperature	15.50	22.14	22.25	22.19	-0.06487	N/A	DEGC	
Na Count Rate	45.00	23.78	23.66	23.99	0.3282	8.000	CPS	

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check

Master: 4-May-2018 18:57	Before: 4-May-2018 19:04	After: 4-May-2018 19:12						
Na 511 Peak Loc	40.00	39.57	39.63	39.66	0.02540	1.000		
Na 511 Peak Res	15.50	16.25	16.48	16.35	-0.1248	2.000	%	
High Voltage	1150	1095	1096	1096	0.4656	N/A	V	
Na 1785 Peak Loc	142.6	141.5	142.2	142.7	0.5689	7.000		
Na 1785 Peak Res	8.500	9.639	8.210	7.709	-0.5009	2.000	%	
Temperature	15.50	22.88	22.87	22.95	0.08433	N/A	DEGC	
Na Count Rate	45.00	23.51	23.31	23.91	0.6045	8.000	CPS	

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

Master: 4-May-2018 18:57	Before: 4-May-2018 19:04	After: 4-May-2018 19:12					
Coincidence Count Rate Ratio	1.000	1.012	1.013	1.010	-0.003558	0.05000	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 1 Calibration

Master: 4-May-2018 18:52								
Na 511 Peak Set Point	40.00	41.00	--	--	--	--		
Th Peak Loc	209.6	210.1	--	--	--	--		
Th Peak Res	7.000	7.011	--	--	--	--	%	
Background Count Rate	142.5	31.23	--	--	--	--	CPS	
Gain Ratio	1.000	1.007	--	--	--	--		

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 2 Calibration

Master: 4-May-2018 18:52							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	207.2	--	--	--	--	

Th Peak Res	7.000	7.009	--	--	--	--	%
Background Count Rate	142.5	25.28	--	--	--	--	CPS
Gain Ratio	1.000	0.9963	--	--	--	--	

Enhanced DTS Cartridge Wellsite Calibration – EDTC Accelerometer Calibration

Before: 8-Jun-2018 22:07

EDTC Z-Axis Acceleration	9.810	N/A	9.735	N/A	N/A	N/A	M/S2
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Enhanced DTS Cartridge Wellsite Calibration – Detector Calibration

Before: 11-May-2018 17:07 After: Calibration out of date 4-May-2018 19:09

Gamma Ray (Jig – Bkg)	130.7	N/A	130.7	135.9	5.204	11.88	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	170.5	6.532	15.00	GAPI

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 – ZA	2945

Auxiliary Equipment:

Hostile Litho Density Pad	HLDP – C	45
Hostile Litho Density High Voltage Housi	HEH – H	47

Hostile Litho-Density Sonde Wellsite Calibration

Background Measurement

Phase	SS Cs Resolution Bkg %	Value	Phase	LS Cs Resolution Bkg %	Value	Phase	LSW1 Background CPS	Value
Master		7.995	Master		8.145	Master		62.36
Before		7.964	Before		8.019	Before		62.69
After		7.904	After		8.147	After		63.35
7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)		
Phase	LSW2 Background CPS	Value	Phase	LSW3 Background CPS	Value	Phase	LSW4 Background CPS	Value
Master		59.63	Master		130.2	Master		157.8
Before		57.29	Before		128.7	Before		157.6
After		58.50	After		126.7	After		156.4
50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)			140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)		
Phase	LSW5 Background CPS	Value	Phase	SSW1 Background CPS	Value	Phase	SSW2 Background CPS	Value
Master		363.9	Master		71.74	Master		127.9
Before		362.1	Before		71.69	Before		127.9
After		361.5	After		71.90	After		128.3
330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)		
Phase	SSW3 Background CPS	Value	Phase	SSW4 Background CPS	Value	Phase	SSW5 Background CPS	Value
Master		341.2	Master		177.8	Master		129.6
Before		339.8	Before		178.4	Before		130.1
After		344.3	After		178.6	After		129.1
280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)			150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)		
Master: 5-May-2018 1:57			Before: 11-May-2018 17:03			After: 4-May-2018 16:34		

Hostile Litho-Density Sonde Master Calibration

Detector Background Measurement

Phase	LSW1 Background CPS	Value	Phase	LSW2 Background CPS	Value	Phase	LSW3 Background CPS	Value
Master		62.36	Master		59.63	Master		130.2
55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)		
Phase	LSW4 Background CPS	Value	Phase	LSW5 Background CPS	Value	Phase	LS Cs Resolution Bkg %	Value
Master		157.8	Master		363.9	Master		8.145
140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)			330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)		

Phase	SSW1 Background CPS	Value	Phase	SSW2 Background CPS	Value	Phase	SSW3 Background CPS	Value
Master		71.74	Master		127.9	Master		341.2
	55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)			280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)	
Phase	SSW4 Background CPS	Value	Phase	SSW5 Background CPS	Value	Phase	SS Cs Resolution Bkg %	Value
Master		177.8	Master		129.6	Master		7.995
	150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.00 (Maximum)	

Master: 5-May-2018 1:57

Hostile Litho-Density Sonde Master Calibration								
Detector Aluminum Measurement (bkgd-subtracted)								
Phase	LSW1 Aluminum CPS	Value	Phase	LSW2 Aluminum CPS	Value	Phase	LSW3 Aluminum CPS	Value
Master		502.4	Master		717.7	Master		867.3
	420.0 (Minimum) 600.0 (Nominal) 770.0 (Maximum)			650.0 (Minimum) 900.0 (Nominal) 1150 (Maximum)			800.0 (Minimum) 1100 (Nominal) 1450 (Maximum)	
Phase	LSW4 Aluminum CPS	Value	Phase	LSW5 Aluminum CPS	Value	Phase	SSW1 Aluminum CPS	Value
Master		435.7	Master	<b>EXCEEDS LIMIT</b>	394.7	Master		2326
	410.0 (Minimum) 580.0 (Nominal) 740.0 (Maximum)			410.0 (Minimum) 570.0 (Nominal) 740.0 (Maximum)			2000 (Minimum) 2800 (Nominal) 3200 (Maximum)	
Phase	SSW2 Aluminum CPS	Value	Phase	SSW3 Aluminum CPS	Value	Phase	SSW4 Aluminum CPS	Value
Master		6279	Master		8732	Master		3540
	5800 (Minimum) 8000 (Nominal) 9300 (Maximum)			8300 (Minimum) 11600 (Nominal) 13500 (Maximum)			3500 (Minimum) 5000 (Nominal) 5800 (Maximum)	
Phase	SSW5 Aluminum CPS	Value	<p>Low count rates due to older source (in red) Does not effect density in low mud weights.</p>					
Master	<b>EXCEEDS LIMIT</b>	427.2						
	430.0 (Minimum) 660.0 (Nominal) 770.0 (Maximum)							

Master: 5-May-2018 1:57

Hostile Litho-Density Sonde Master Calibration								
Detector Litholog Measurement (bkgd-subtracted)								
Phase	LSW1 Iron CPS	Value	Phase	LSW2 Iron CPS	Value	Phase	LSW3 Iron CPS	Value
Master		344.2	Master		577.4	Master		765.7
	290.0 (Minimum) 400.0 (Nominal) 560.0 (Maximum)			520.0 (Minimum) 730.0 (Nominal) 950.0 (Maximum)			720.0 (Minimum) 1000 (Nominal) 1350 (Maximum)	
Phase	LSW4 Iron CPS	Value	Phase	LSW5 Iron CPS	Value	Phase	SSW1 Iron CPS	Value
Master		394.1	Master		358.1	Master		1704
	370.0 (Minimum) 520.0 (Nominal) 700.0 (Maximum)			340.0 (Minimum) 470.0 (Nominal) 750.0 (Maximum)			1500 (Minimum) 2100 (Nominal) 2400 (Maximum)	
Phase	SSW2 Iron CPS	Value	Phase	SSW3 Iron CPS	Value	Phase	SSW4 Iron CPS	Value
Master		5274	Master		7989	Master	<b>EXCEEDS LIMIT</b>	3261
	4900 (Minimum) 6800 (Nominal) 7900 (Maximum)			7800 (Minimum) 10800 (Nominal) 12600 (Maximum)			3300 (Minimum) 4600 (Nominal) 5400 (Maximum)	
Phase	SSW5 Iron CPS	Value	<p>Low count rates due to older source (in red) Does not effect density in low mud weights.</p>					
Master	<b>EXCEEDS LIMIT</b>	382.5						
	420.0 (Minimum) 580.0 (Nominal) 680.0 (Maximum)							

Master: 5-May-2018 1:57

Hostile Litho-Density Sonde Master Calibration								
Quality Ratios								
Phase	AL CALIBRATION RATIO 1	Value	Phase	AL CALIBRATION RATIO 2	Value	Phase	AL CALIBRATION RATIO 3	Value
Master		1.044	Master		2.201	Master		0.6050
	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)			1.900 (Minimum) 2.100 (Nominal) 2.300 (Maximum)			0.4500 (Minimum) 0.5500 (Nominal) 0.6500 (Maximum)	
Phase	AL CALIBRATION RATIO 4	Value	Phase	Pad-Wear SS Ratio	Value	Phase	Pad-Wear LS Ratio	Value
Master		0.5864	Master		0.9864	Master		0.9846
	0.4000 (Minimum) 0.5500 (Nominal) 0.6500 (Maximum)			0.9800 (Minimum) 0.9880 (Nominal) 0.9960 (Maximum)			0.9800 (Minimum) 0.9880 (Nominal) 0.9960 (Maximum)	
Phase	Pad-Position SS Ratio	Value	Phase	Pad-Position LS Ratio	Value			
Master		1.009	Master		0.9870			
	0.9900 (Minimum) 0.9940 (Nominal) 1.015 (Maximum)			0.9850 (Minimum) 0.9940 (Nominal) 1.010 (Maximum)				

Master: 5-May-2018 1:57



Hostile Nuclear Combined Cartridge – B / Equipment Identification

Primary Equipment:			
LDSC Cartridge	LDSC – B	521	
HNGC Cartridge	HNGC – B	304	
Auxiliary Equipment:			
UDFH Housing	UDFH – KLX	1055	

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:			
HNGS Sonde	HNGS – BA	194	
Auxiliary Equipment:			
HNGS Sonde Housing	HNSH – BA	204	
Gamma Source Radioactive	GSR – U	6098	

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		39.68	Master		15.27	Master		1165
Before		39.72	Before		15.49	Before		1166
After		39.69	After		15.09	After		1166
	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		142.9	Master		8.674	Master		22.14
Before		142.8	Before		9.570	Before		22.25
After		142.4	After		8.338	After		22.19
	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		23.78						
Before		23.66						
After		23.99						
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							

Master: 4-May-2018 18:57

Before: 4-May-2018 19:04

After: 4-May-2018 19:12

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		39.57	Master		16.25	Master		1095
Before		39.63	Before		16.48	Before		1096
After		39.66	After		16.35	After		1096
	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		141.5	Master		9.639	Master		22.88
Before		142.2	Before		8.210	Before		22.87
After		142.7	After		7.709	After		22.95
	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		23.51						
Before		23.31						

Before		23.91
After		23.91
10.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)

Master: 4-May-2018 18:57      Before: 4-May-2018 19:04      After: 4-May-2018 19:12

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.012
Before		1.013
After		1.010
0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)

Master: 4-May-2018 18:57  
Before: 4-May-2018 19:04  
After: 4-May-2018 19:12

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		210.1	Master		7.011
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		31.23	Master		1.007			
10.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)	0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)			

Master: 4-May-2018 18:52

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		207.2	Master		7.009
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		25.28	Master		0.9963			
10.00 (Minimum)	142.5 (Nominal)	265.0 (Maximum)	0.9400 (Minimum)	1.000 (Nominal)	1.060 (Maximum)			

Master: 4-May-2018 18:52

Enhanced DTS Cartridge / Equipment Identification			
Primary Equipment:			
EDTC Gamma Ray Detector	EDTG - A/B	8305	
Enhanced DTS Cartridge	EDTC - B	8317	
Auxiliary Equipment:			
EDTC 30KPSI Housing	EDTH - UDF	1091	

Enhanced DTS Cartridge Wellsite Calibration		
EDTC Accelerometer Calibration		
Phase	EDTC Z-Axis Acceleration M/S2	Value
Before		9.735
9.610 (Minimum)	9.810 (Nominal)	10.01 (Maximum)

Before: 8-Jun-2018 22:07

Enhanced DTS Cartridge Wellsite Calibration								
Detector Calibration								
Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		8.040	Before		130.7	Before		164.0

After		10.28	After		135.9	After		170.5
0	30.00	120.0	118.8	130.7	142.5	149.0	164.0	179.0
(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)
Before: 11-May-2018 17:07			After: Calibration out of date 4-May-2018 19:09					

Company: **International Ocean Discovery Program**

**Schlumberger**

Well: **Expedition 376, Site U1528D**

Field: **Bothers Arc Flux**

Rig: **JOIDES Resolution**

Ocean: **Pacific**

Hostile Natural Gamma Spectroscopy –HNGS

Hostile Litho Density Sonde – HLDS

Mud Temperature (LEH–MT)