Schlumberger

Company: **Essential Petroleum Resources Limited**

Well: **Killarney EPRL 1**
Field: **PEP 152**
Rig: **Hunt Rig #2** Country: **Australia**

HALS−BHC−PEX−HNG
Spectral Gamma Ray Print
Scale 1:200

Rig: Hunt Rig #2 | Field: PEP 152 | Location: Datum GDA94 MGA94 Zone 54 | Well: Killarney EPRL 1 | Company: Essential Petroleum Resources L

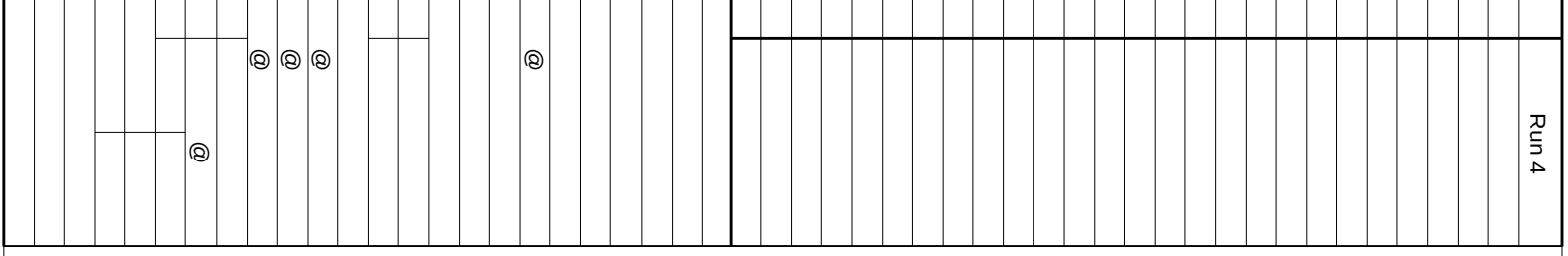
LOCATION

Datum GDA94 MGA94 Zone 54	Elev.: K.B.	5.49 m
Easting 609803.3	G.L.	1.6 m
Northing 5753917.2	D.F.	5.49 m
Permanent Datum: AHD	Elev.:	0 m
Log Measured From: ROTARY TABLE	5.5 m	above Perm. Datum
Drilling Measured From: ROTARY TABLE		

State:	Max. Well Deviation	Longitude	Latitude
Victoria	2 deg	142* 15' 24.22" E	38* 21' 22.24" S

	Run 1	Run 2	Run 3
Logging Date	18−Jun−2004		
Run Number	1		
Depth Driller	1640 m		
Schlumberger Depth	1634.8 m		
Bottom Log Interval	1632.4 m		
Top Log Interval	255.5 m		
Casing Driller Size @ Depth	9.625 in @ 255.8 m	@	
Casing Schlumberger	255.5 m		
Bit Size	8.500 in		
Type Fluid In Hole	4% KCl−PHPA		
MUD Density / Viscosity	1.128 g/cm3 / 43 s		
MUD Fluid Loss / PH	6 cm3 / 8.5		
MUD Source Of Sample	PIT		
RM @ Measured Temperature	0.231 ohm.m @ 13 degC	@	
RMF @ Measured Temperature	0.201 ohm.m @ 12 degC	@	
RMC @ Measured Temperature	0.243 ohm.m @ 13 degC	@	
Source RMF / RMC	PRESS / PRESS		
RM @ MRT / RMF @ MRT	0.093 @ 63 / 0.080 @ 63	@ / @	
Maximum Recorded Temperatures	63 degC		
Circulation Stopped Time	18−Jun−2004 0:00		
Logger On Bottom Time	18−Jun−2004 16:30		
Unit Number / Location	3170 / QEA		
Recorded By	G. Jonsson		
Witnessed By	G. Wakelin−King		

	Run 1	Run 2	Run 3
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity			
MUD Fluid Loss / PH			
MUD 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			



DEPTH SUMMARY LISTING

Date Created: 22−JUN−2004 12:26:46

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−42V
Serial Number:	−999	Serial Number:	2268	Serial Number:	78197
Calibration Date:	dd−Mmm−yyyy	Calibration Date:	13−Feb−2004	Length:	3699.97 M
Calibrator Serial Number:	−999	Calibrator Serial Number:	1050		
Calibration Cable Type:	7−42V	Calibration Gain:	0.89	Conveyance Method:	Wireline
Wheel Correction 1:	−2	Calibration Offset:	56.00	Rig Type:	LAND
Wheel Correction 2:	−2				

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 M
Rig Up Length At Bottom:	0.00 M
Rig Up Length Correction:	0.00 M
Stretch Correction:	0.80 M
Tool Zero Check At Surface:	0.35 M

Depth Control Remarks

1. Depth correlated to downlog.
2. Cable stretch and rig up changes accounted for.
3. IDW wheel corrections set to −2
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: CSAT−GR	OS1:
OS2: MDT	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
This is the first run in hole. Full SLB depth control used.	
Tool run with 1.5 inch standoffs as per tool sketch. HGNS eccentralised using bowspring	
CNL, TLD, HALS and MCFL logged to casing shoe.	
GR logged to surface	
HNGS and Hi−resolution data logged to 1250m.	
Maximum recorded temperature of 63degC from thermometers in LEH−QT	
HNGS corrected for borehole potassium and barite concentrations using tool computed running average	
Corrections applied: BAR1= 0.953764, BAR2= 0.972514, BHK= 0.02	

Caliper Check in casing reads 8.5364 inch. 8.834 expected. Corrected for in final (this) log.

Additional Mud information:

Chloride: 21500 mg/L, Calcium: 320 mg/L, Sulphite: 80mg/L, KCl: 4.1%

Barite Present in mud

Elevation Rotary Table= 3.89m above Ground Level (GL= 1.6m AHD)

RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION:		10C0−306	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

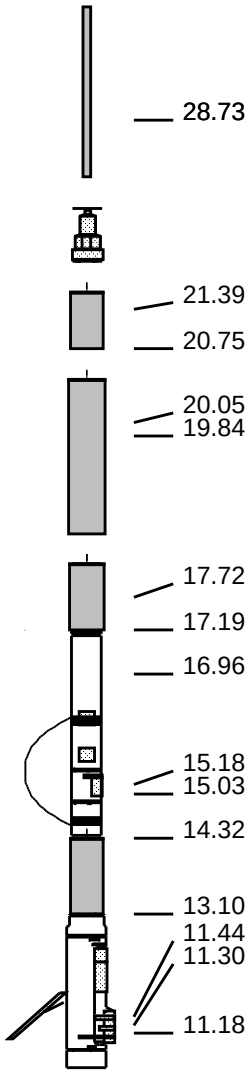
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

LCM−AA 2747
GSR−U/Y
NCT−B
CNB−AB
NCS−VB
GSR−U
WITM (DTS)−A

DOWNHOLE EQUIPMENT



BSP
BRT−S 22
40.84

LEH−QT 1570
LEH−QT 1570
22.56

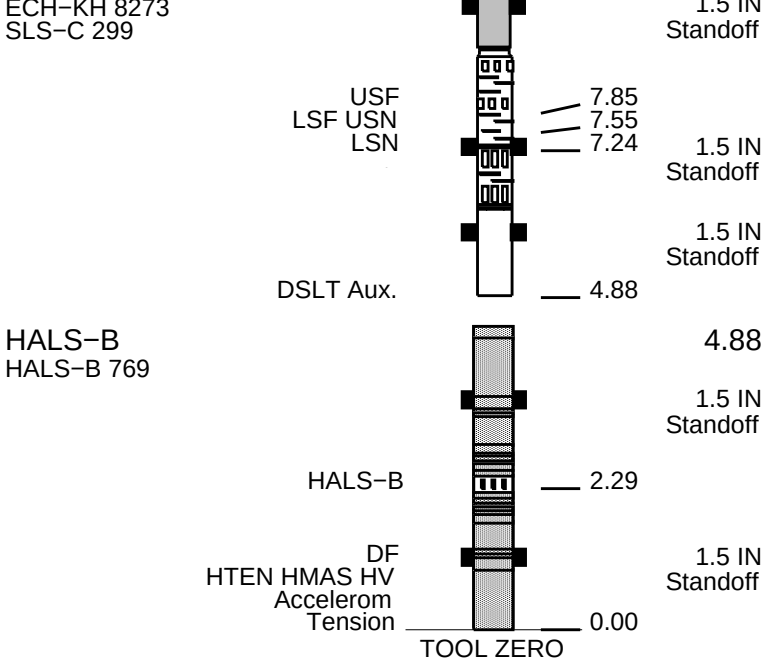
DTC−H
ECH−KC
21.67

HNGS−BA
HNGS−BA 129
HNSH−BA 3
20.75

HNGC−A
HNGH−A
HNGC−A 10
18.25

HILTB−FTB
HGNSD−B 1751
HMCA
HGNS−H 1775
NLS−KL
NSR−F 2111
HACCZ
HCNT
HGR
HRCC−B 1769
HRMS−B 1765
HRGD−B 1760
GLS−VJ 3739
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
BOW−SPR
17.19

DSLT−H
DSLC−HA 8223
10.59



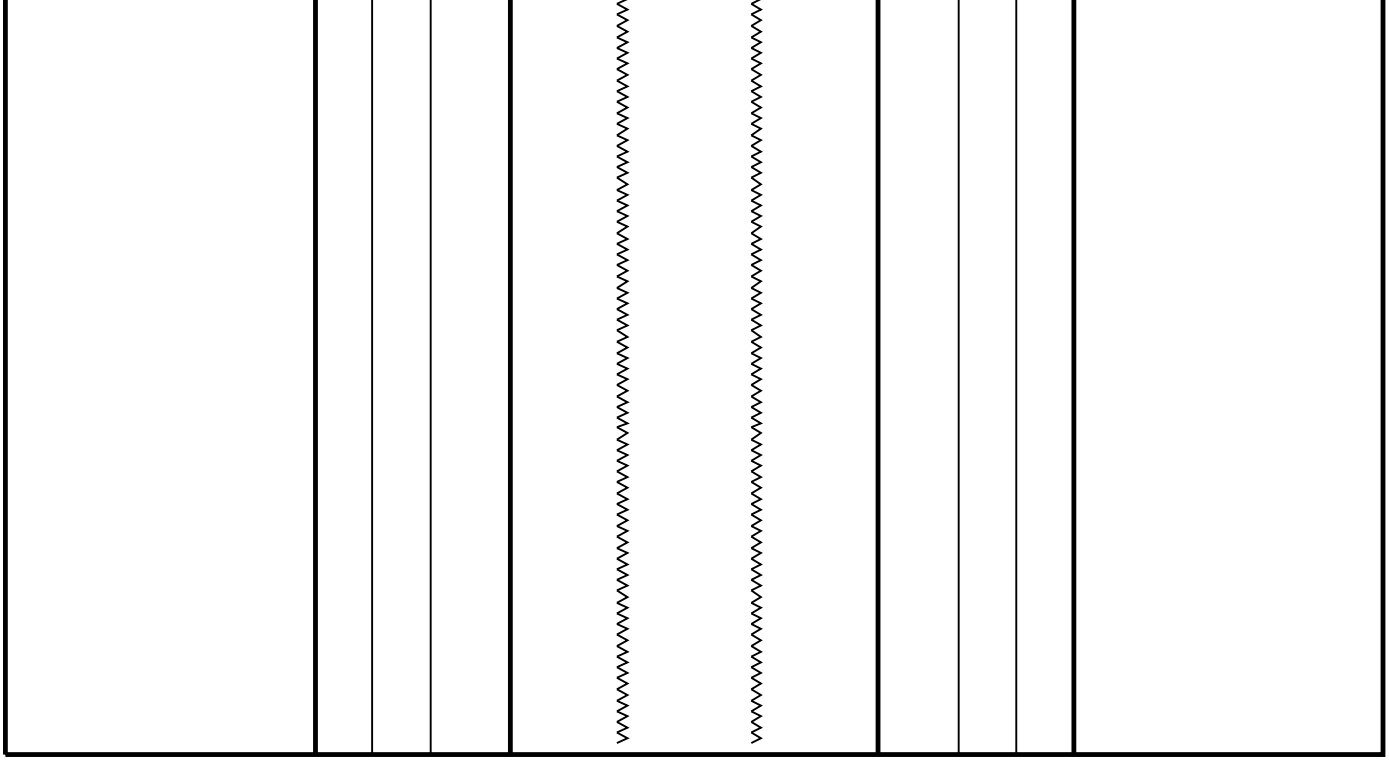
MAXIMUM STRING DIAMETER 6.63 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Client: Essential
Well: Kilarney−1
Field: Wildcat
State: Victoria
Country:Australia

Drawing Date: 6/18/2004
API #:

Rig Name: Hunt Rig 2
Reference Datum: KB
Elevation: 6.9 m

Production String	(in) OD	(in) ID	(m) MD	Well Schematic	(m) MD	(in) OD	(in) ID	Casing String
					0.0	17.500		Borehole Segment
					0.0	13.375		Casing String
					45.6	13.375		Casing Shoe
					45.9	12.250		Borehole Segment
					0.0	9.625		Casing String
					255.8	9.625		Casing Shoe
					258.0	8.500		Borehole Segment



Schlumberger

HNGS− NGT
1:200 Scale

MAXIS Field Log

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	24−Jun−2004 16:48	1636.8 M	20.8 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_019PUP	FN:81	PRODUCER	28−Jun−2004 11:56	1636.8 M	1253.3 M

OP System Version: 10C0−306

MCM

HALS−B	OP10−KP1	DSLT−H	OP10−KP1
HILTB−FTB	OP10−KP1	HNGC−A	OP10−KP1
HNGS−BA	OP10−KP1	DTC−H	10C0−306
BSP	10C0−306		

PIP SUMMARY

Time Mark Every 60 S

ToolTot

Tool/Tot. Drag From D3T to STIA

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 150

Cable Drag From STIA to STIT

HNGS Borehole Potassium (HBHK)
−0.05 (−−−− 0.05

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 150

Stuck Stretch (STIT)
0 (M) 20

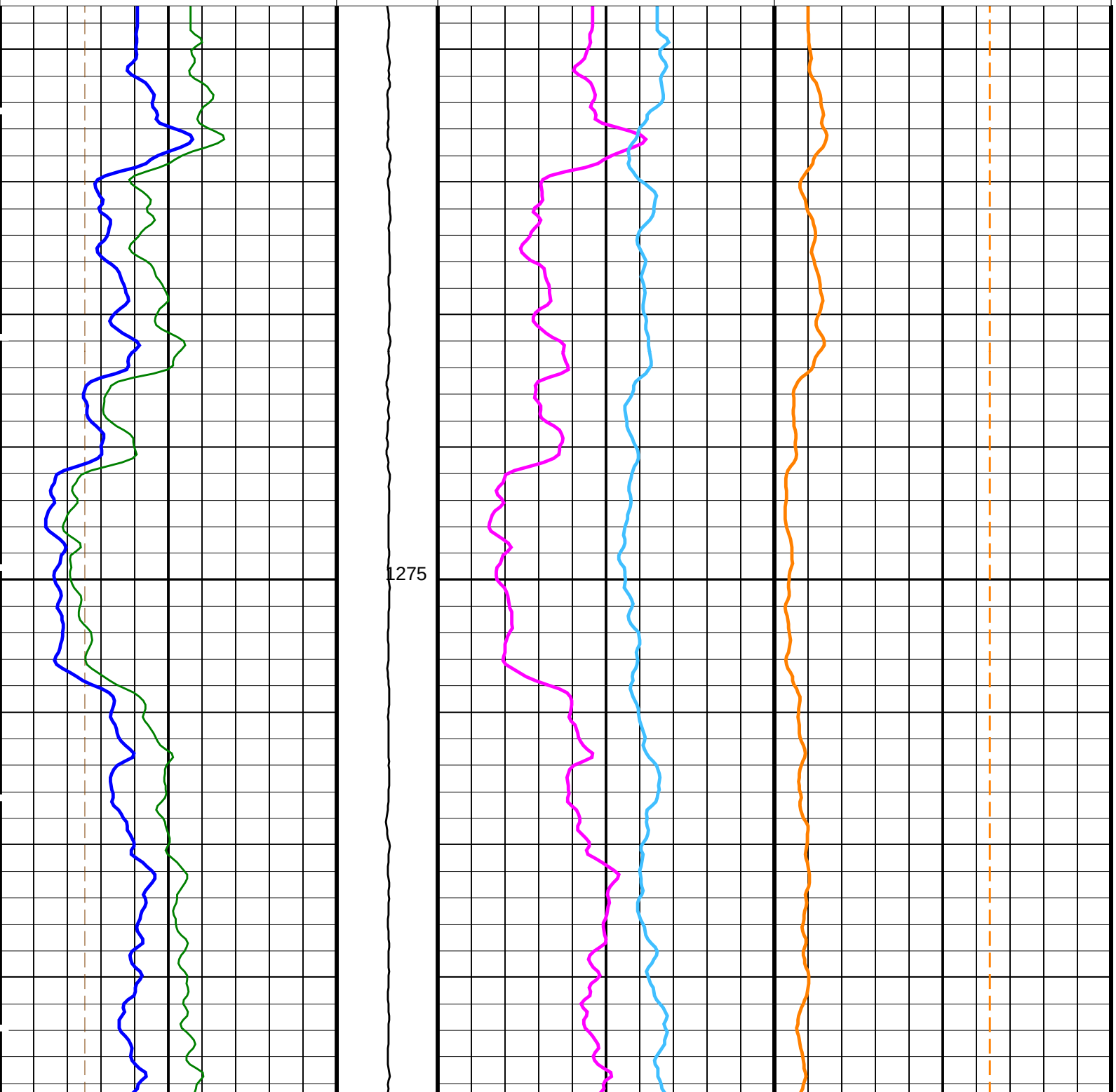
HNGS Uranium (HURA)
−10 (PPM) 30

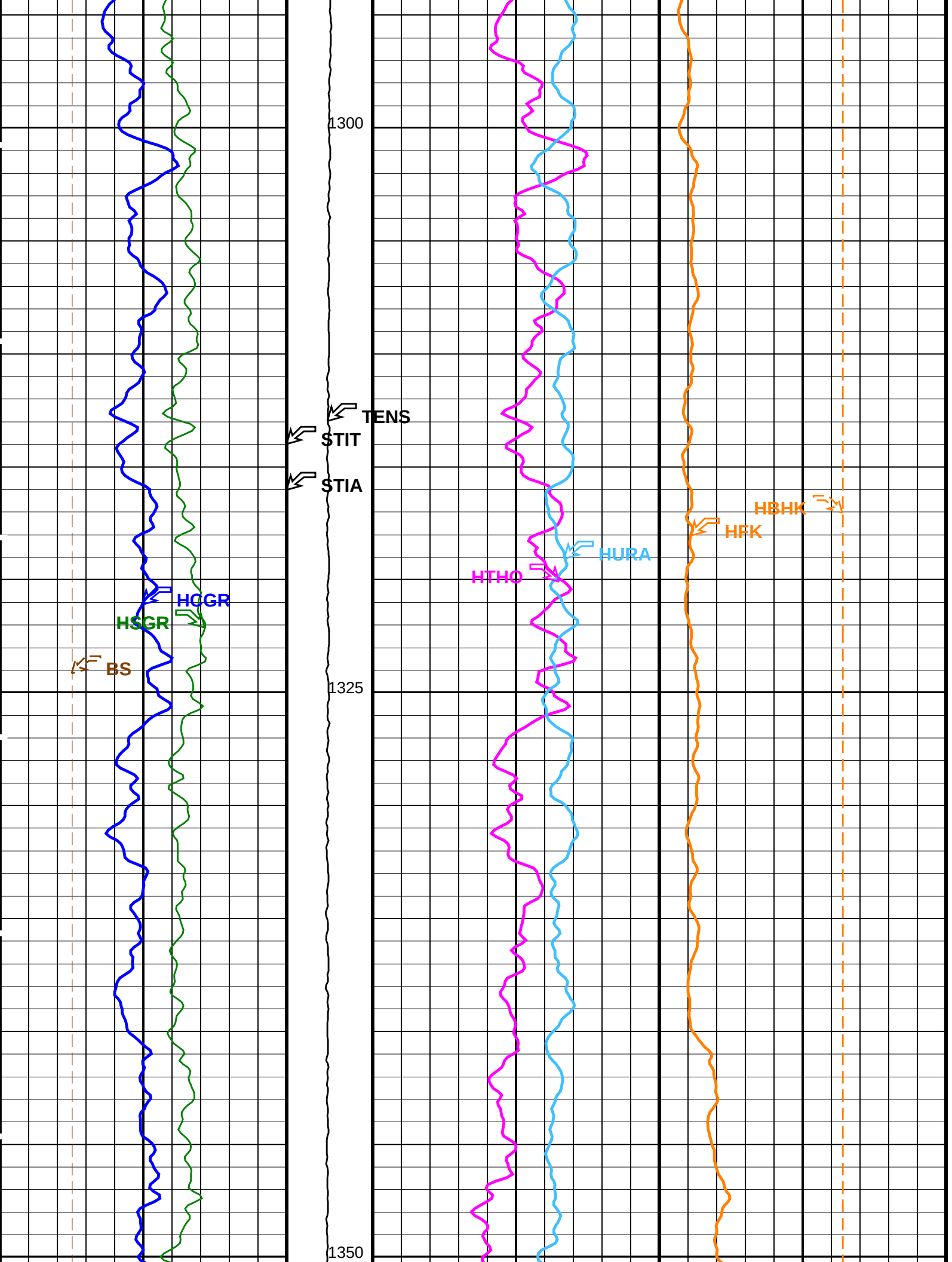
Bit Size (BS)
6 (IN) 16

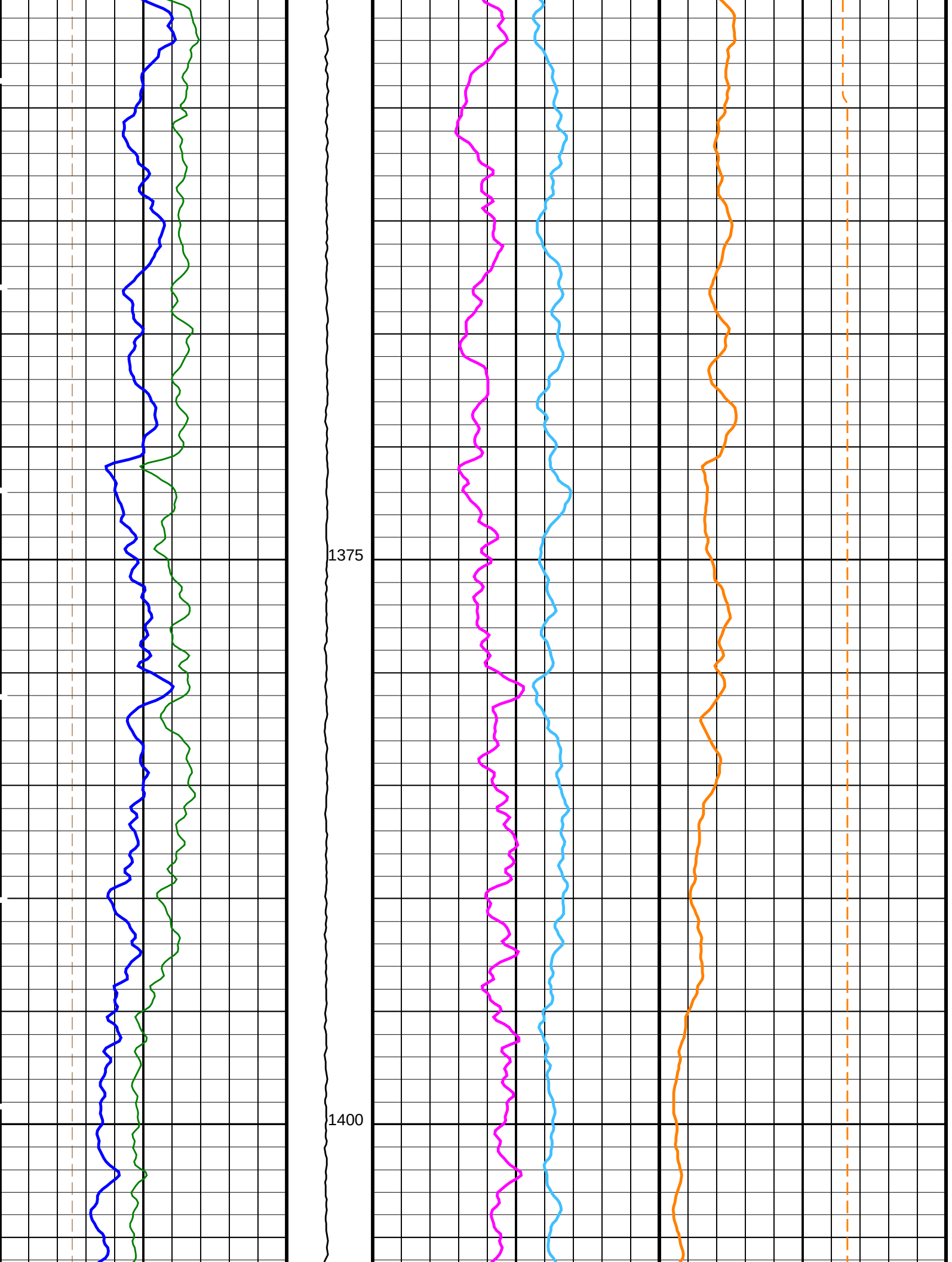
Tension (TENS) (LBF)
5000 0

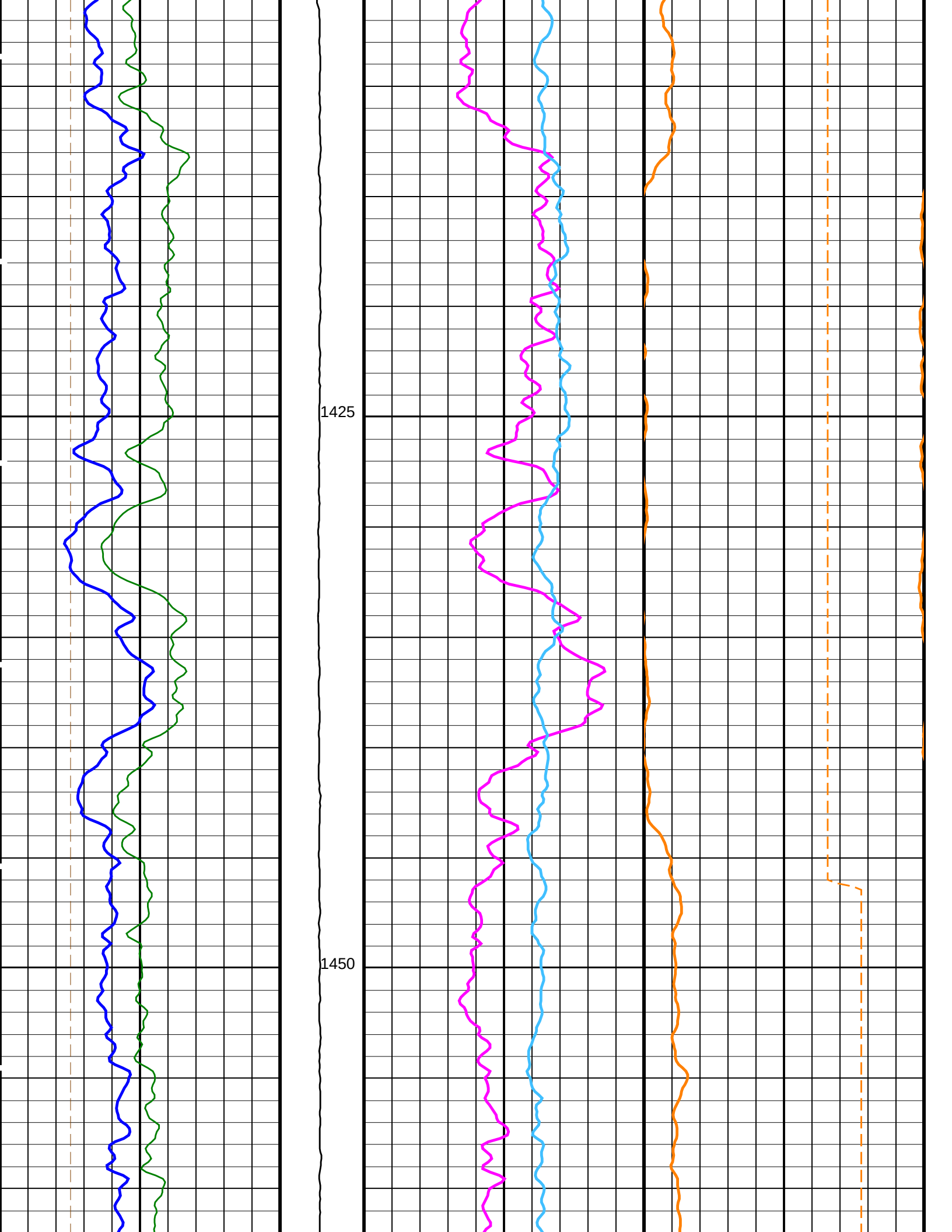
HNGS Thorium (HTHO)
0 (PPM) 30

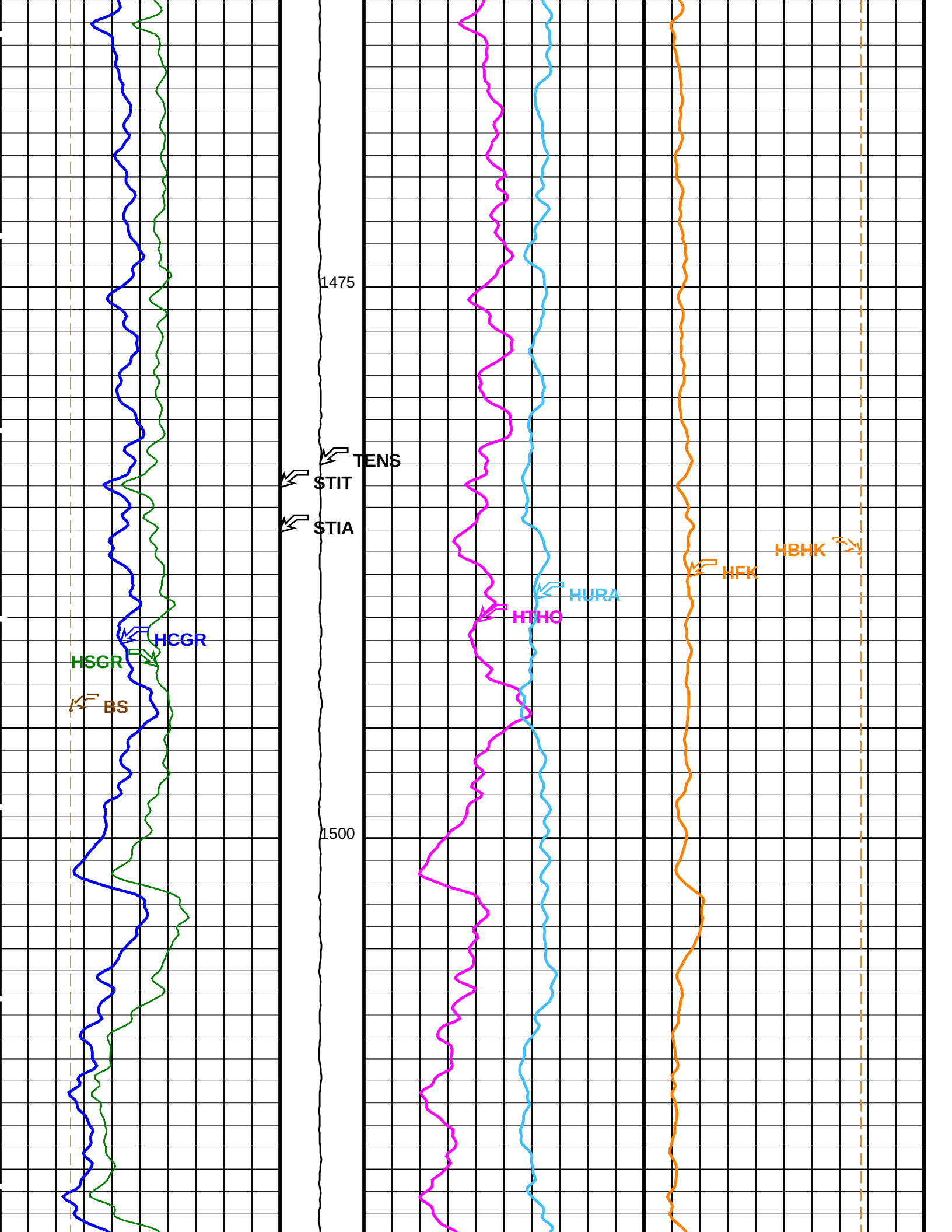
HNGS Potassium (HFK)
0 (−−−− 0.1

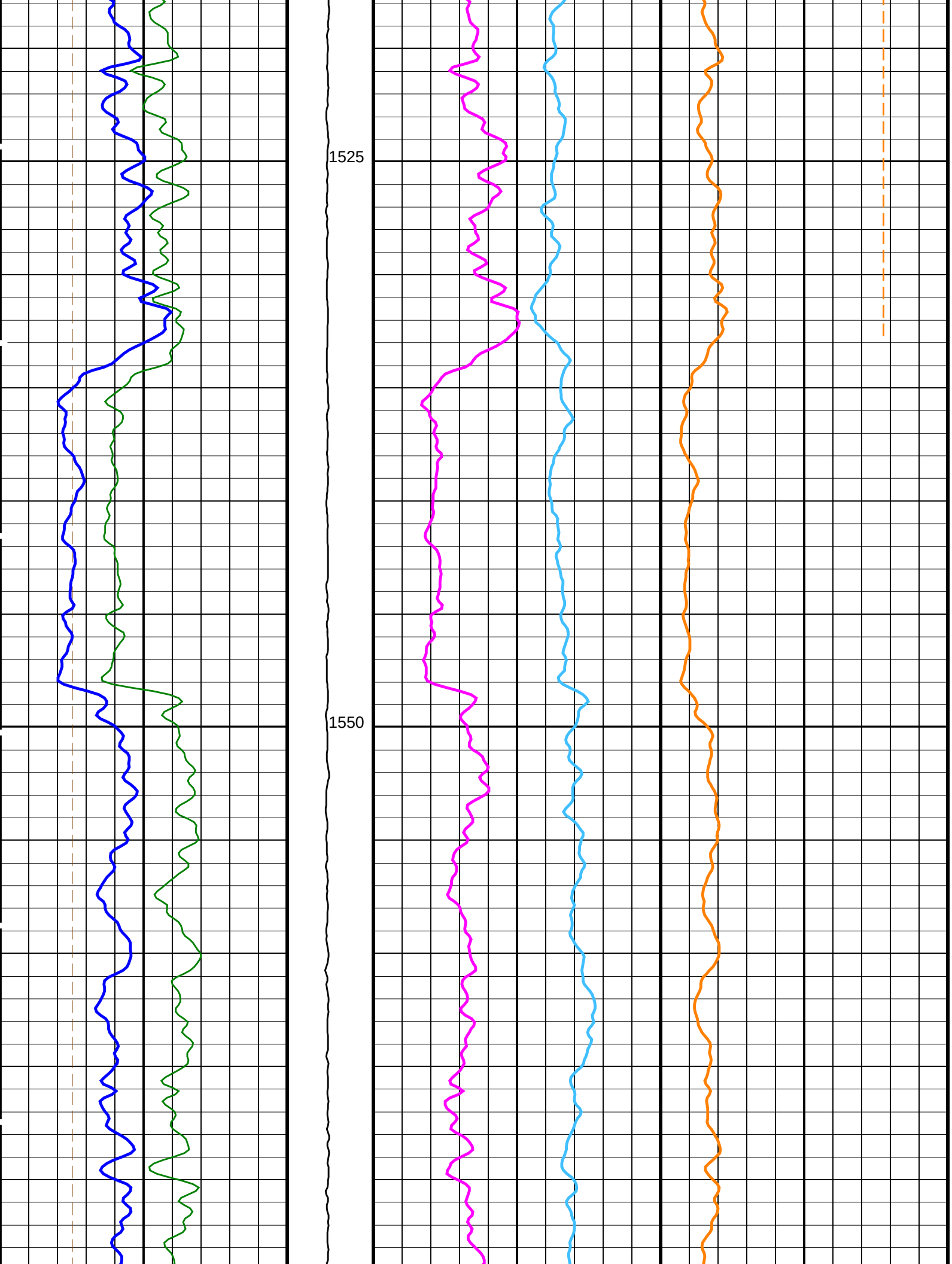


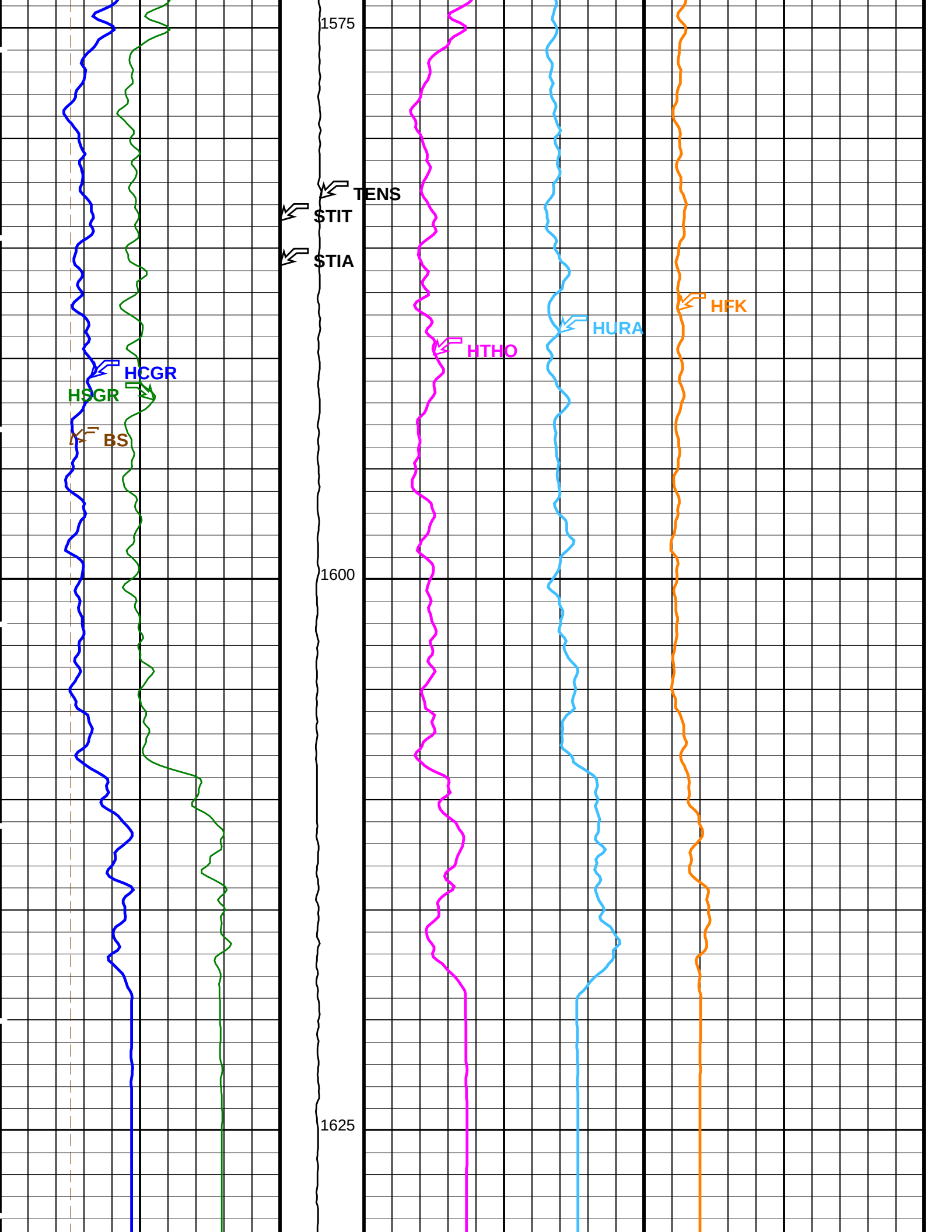

1300
TENS
STIT
STIA
HBHK
HFK
HURA
HTHO
HCGR
HSGR
BS
1325
1350


1375
1400


1425
1450


1475
TENS
STIT
STIA
HCGR
HSGR
BS
HTHO
HURA
HFK
HBHK
1500


1525
1550


1575
TENS
STIT
STIA
HFK
HURA
HTHO
HCGR
HSGR
BS
1600
1625

Bit Size (BS)	Tension (TENS)	HNGS Thorium (HTHO)	HNGS Potassium (HFK)
6 (IN) 16	5000 (LBF) 0	0 (PPM) 30	0 (---- 0.1

HNGS Computed Gamma Ray (HCGR)	Stuck Stretch (STIT)	HNGS Uranium (HURA)
0 (GAPI) 150	0 (M) 20	−10 (PPM) 30

HNGS Spectroscopy Gamma Ray (HSGR)	Cable Drag From STIA to STIT	HNGS Borehole Potassium (HBHK)
0 (GAPI) 150		−0.05 (---- 0.05

Tool/Tot. Drag From D3T to STIA

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HALS−B: HILT Azimuthal Laterolog Sonde B		
	HALS Type of Image	Conductivities	
A2EX	HALS−B A2 Extended (Groningen effect)	OFF	
AGOS	HALS−GPIT OFFSET	−90	IN
ARIP_LTS	HALS Long Tool String Correction	OFF	
ARIP_SHOULDER	HALS Shoulder Correction	OFF	
BHCC	HALS Borehole Correction	ON	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	63.3334	DEGC
DHOP	Diameter & Eccentering used in HALS Borehole Corrections	Caliper_Eccentered	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRCC	HALS Groningen Correction	OFF	
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HLAC	HALS−B Loop A Coefficient	LOW	
HLMO	HALS Logging Mode	HIRES	
HMSO	HALS Mechanical Standoff	1.5	IN
HRUN	HALS−B Record Uncalibrated Channels	NO	
IMOS	HALS Image Orientation	OFF	
LIMP	HALS Left Image Processing	DeepRaw	
LOP1	HALS−B Mode 1 Loop Mode	OFF	
LOP2	HALS−B Mode 2 Loop Mode	OFF	
LOP3	HALS−B Mode 3 Loop Mode	OFF	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
RIMP	HALS Right Image Processing	ShallowRaw	
RTCOMP	HALS Rt Computation	Hals_Highres	
RTRE	HALS Resistivity Threshold	100000	OHMM
SHT	Surface Hole Temperature	20	DEGC
SPCO	HALS−B Special Power Connection	OFF	
TCOR	HALS TLC Correction	OFF	
UNSPK	HALS Despiking Filter Option	OFF	
UNSPK_THOLD	HALS Despiking Filter Threshold (in %)	20	%
UNSPK_WINDOW	HALS Despiking Filter Window (inches)	6	IN
	DSLT−H: Digitizing Sonic Logging Tool		
	Telemetry Mode	DSLC_FTB	
	DSLT Firing Mode	SDDB	
AGC	Automatic Gain Control Status	ON	
AMSG	Auxiliary Minimum Sliding Gate	140	US

BILI	Bond Index Level for Zone Isolation	0.8	
CBAF	CBL Adjustment Factor	1	
CBCF	CBL Correction Factor	4	
CBLG	CBL Gate Width	45	US
CDTS	C−Delta−T Shale	100	US/F
CSTR	Compressive Strength of Cement	0	KPAA
DDEL	Digitizing Delay	0	US
DETE	Delta−T Detection	E2	
DFAD	Digital First Arrival Detection Switch	HOST	
DFAD_TYPE	DFAD type	DFAD2	
DIVL	DSLT Depth Sampling Interval	20	
DRCS	DSLT DLIS Recording Size	140	
DSIN	Digitizing Sample Interval	10	
DTCM	Delta−T Computation Mode	FULL	
DTF	Delta−T Fluid	189	US/F
DTFS	DSLC Telemetry Frame Size	316	
DTM	Delta−T Matrix	56	US/F
DWCO	Digitizing Word Count	140	
FCF	CBL Fluid Compensation Factor	1	
GAI	Manual Gain	40	
GOBO	Good Bond	2	MV
ITTS	Integrated Transit Time Source	DT	
MAHTR	Manual High Threshold Reference	120	
MCI	Minimum Cemented Interval for Isolation	4.51523	M
MGAI	Maximum Gain	60	
MIGA	Minimum Gain	1	
MNHTR	Minimum High Threshold Reference	100	
MODE	Sonic Firing Mode	SDDB	
MSA	Minimum Sonic Amplitude	15.924	MV
NMSG	Near Minimum Sliding Gate	140	US
NMXG	Near Maximum Sliding Gate	850	US
NUMP	Number of Detection Passes	2	
RATE	Firing Rate	R15	
RDFA	Reset DFAD	OFF	
SDTH	Switch Down Threshold	20000	
SFAF	Sonic Formation Attenuation Factor	7	DB/M
SGAD	Sliding Gate Status	ON	
SGAI	Selectable Acquisition Gain	AUTO	
SGCL	Sliding Gate Closing Delta−T	100	US/F
SGCW	Sliding Gate Closing Width	55	US
SGDT	Sliding Gate Delta−T	60	US/F
SGW	Sliding Gate Width	100	US
SLEV	Signal Level for AGC	2003	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DT	
SUTH	Switch Up Threshold	1000	
VDLG	VDL Manual Gain	40	
WAGC	Waveform AGC Allow/Disallow	OFF	
WGAI	Waveform Manual Gain	20	
WGDT	Waveform Gain Delta−T	240	US/F
WGIN	Waveform Gain Interval	2540	US
WMOD	Waveform Firing Mode	FULL	
HILTB−FTB: High resolution Integrated Logging Tool−DTS			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	63.3334	DEGC
BSCO	Borehole Salinity Correction Option	YES	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
EXSICL	External Shale Indicator Clean Value	20	
EXSISH	External Shale Indicator Shale Value	150	
FD	Fluid Density	1	G/C3
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FPHI	Form Factor Porosity Source	DPHZ	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HACPP	Accelerometer PROM Presence	PRESENT_FILE	
HART	Accelerometer Reference Temperature	20	DEGC
HDCOD	HILT Density Coal detection	2	G/C3
HDSAD	HILT Density Salt detection	2.1	G/C3
HILT_GAS_DENSITY	HILT Gas Downhole Density	0	G/C3
HILT_GAS_OPTION	HILT Gas Computation Option	OFF	
HNCOD	HILT Neutron Coal detection	45	PU
HNSAD	HILT Neutron Salt detection	5	PU
HPHIECUT	HILT effective Porosity Cutoff	5	PU
HSCO	Hole Size Correction Option	YES	
HSIS	HILT Shale Indicator Selection	GR	
HSWCUT	HILT Water Saturation from AITH cutoff	50	%

MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	YES	
MCOR	Mud Correction	BARI	
MDEN	Matrix Density	2.71	G/C3
MHC0	MCFL B0 Contrast Correction Coefficient	2.2e−005	OHMS
MHC1	MCFL B1 Contrast Correction Coefficient	3.2e−005	OHMS
MHCC	MCFL High Contrast Correction Switch	YES	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	YES	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	BARITE	
NPRM	HRDD Processing Mode	HiRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PHIMAX	HILT max porosity	35	PU
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SEXP_HILT	HILT Saturation Exponent	2	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	NO	
HNGS−BA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGS Detector 1 Barite Constant	0.953764	
BAR2	HNGS Detector 2 Barite Constant	0.972514	
BHK	HNGS Borehole Potassium Correction Concentration	0.02	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	63.3334	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	USER	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
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	0.0176326	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	USER	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	−999.25	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	−999.25	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	0.952492	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.968086	
BSP: Bridle SP			
SPNV	SP Next Value	0	MV
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	63.3334	DEGC
FCD	Future Casing (Outer) Diameter	5.5	IN
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	HALS_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVCS	Integrated Hole Volume Caliper Selection	LCAL	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	20	DEGC
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	0.762	M
TDD	Total Depth − Driller	1640.00	M
TDL	Total Depth − Logger	1634.80	M
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	41000.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	40.00	LB/F
DFD	Drilling Fluid Density	1.13	G/C3
DO	Depth Offset for Playback	0.0	M
MST	Mud Sample Temperature	12.50	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.2010	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	1634.8	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HNGSNGT Vertical Scale: 1:200 Graphics File Created: 28-Jun-2004 11:56

OP System Version: 10C0-306

MCM

HALS-B	OP10-KP1	DSLT-H	OP10-KP1
HILTB-FTB	OP10-KP1	HNGC-A	OP10-KP1
HNGS-BA	OP10-KP1	DTC-H	10C0-306
BSP	10C0-306		

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	24-Jun-2004 16:48	1636.8 M	20.8 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_019PUP	FN:81	PRODUCER	28-Jun-2004 11:56		

Schlumberger

HNGS Ratios
1:200 Scale

MAXIS Field Log

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	24-Jun-2004 16:48	1636.8 M	20.8 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_019PUP	FN:81	PRODUCER	28-Jun-2004 11:56	1636.8 M	1253.3 M

OP System Version: 10C0-306

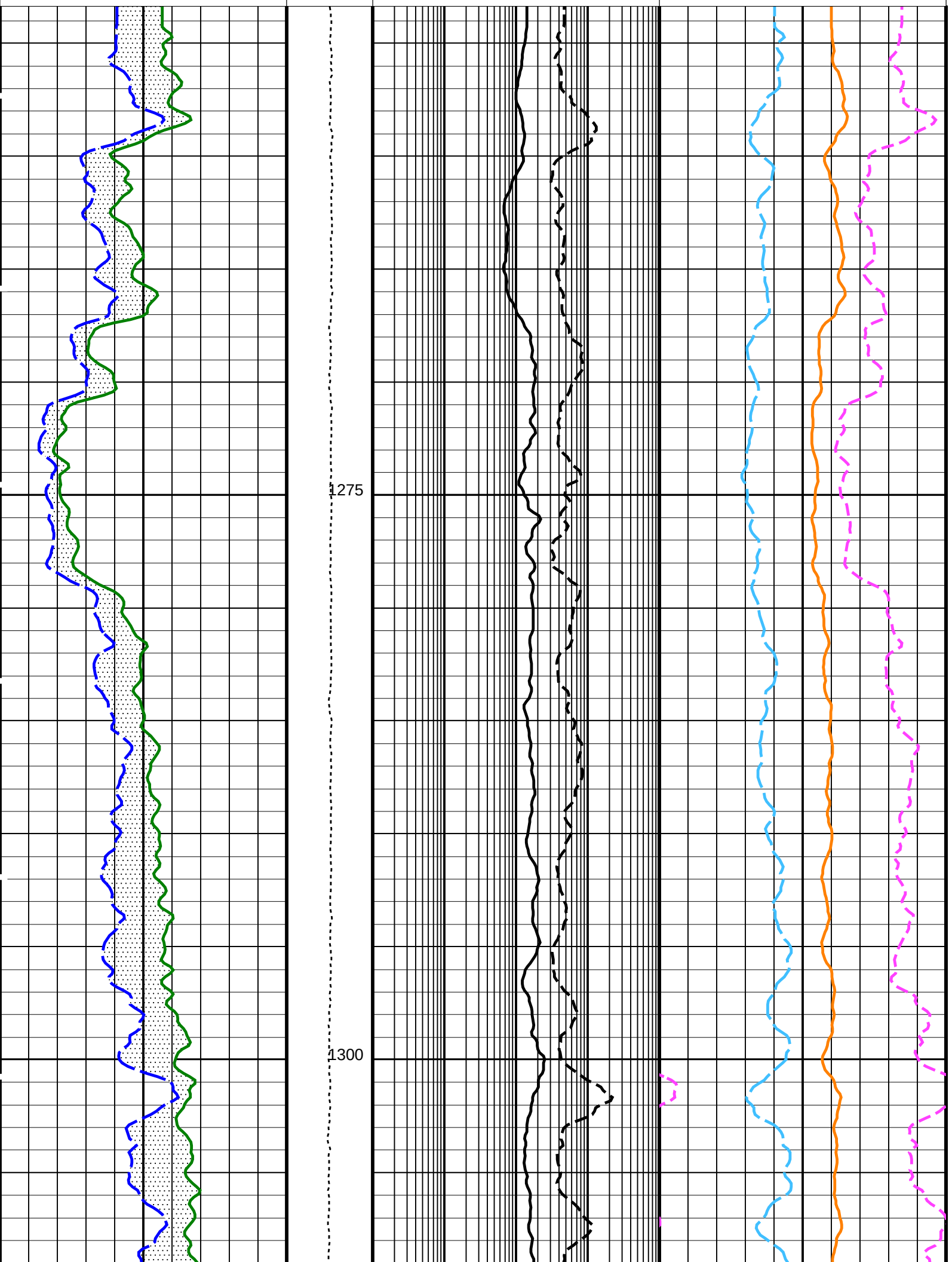
MCM

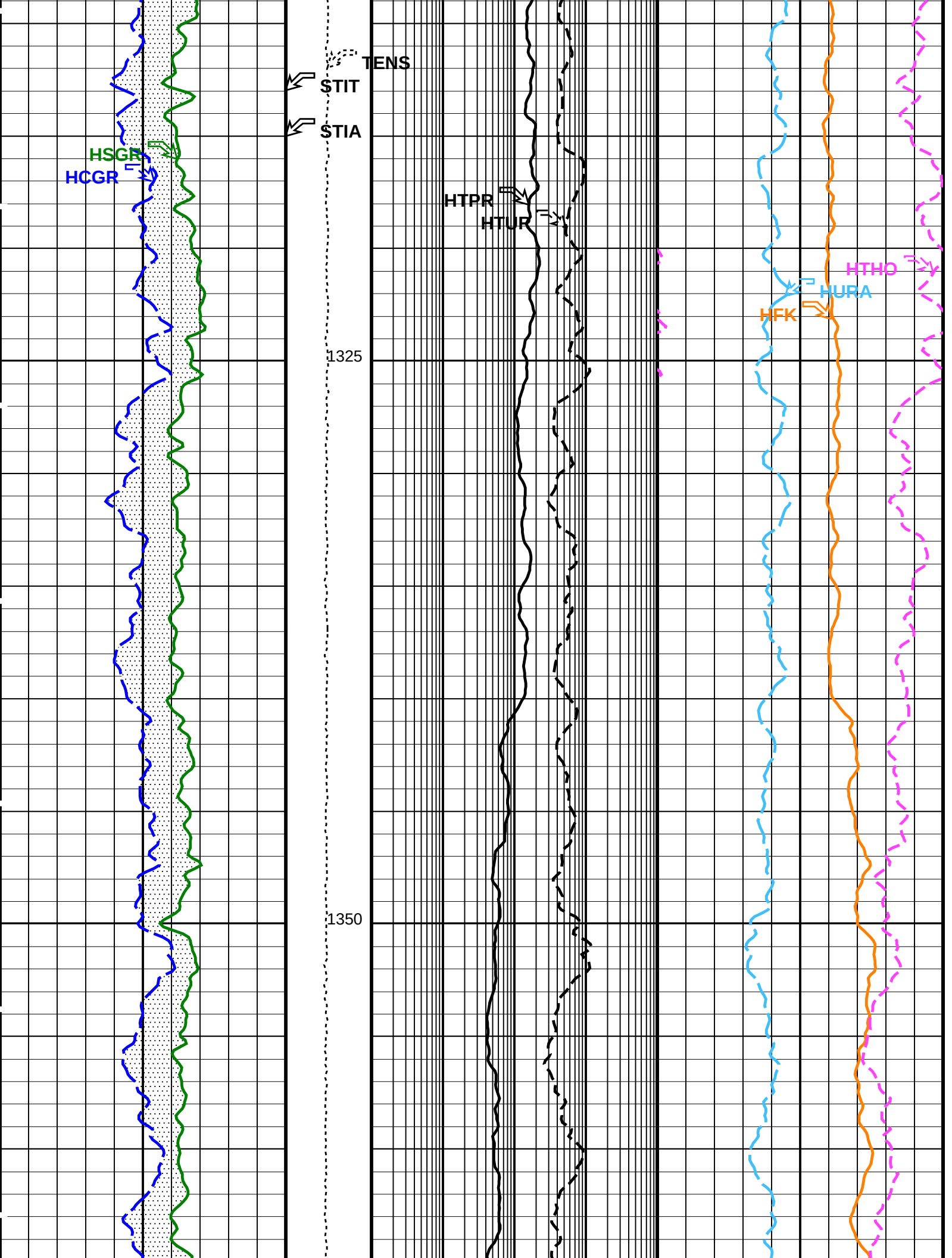
HALS-B	OP10-KP1	DSLT-H	OP10-KP1
HILTB-FTB	OP10-KP1	HNGC-A	OP10-KP1
HNGS-BA	OP10-KP1	DTC-H	10C0-306
BSP	10C0-306		

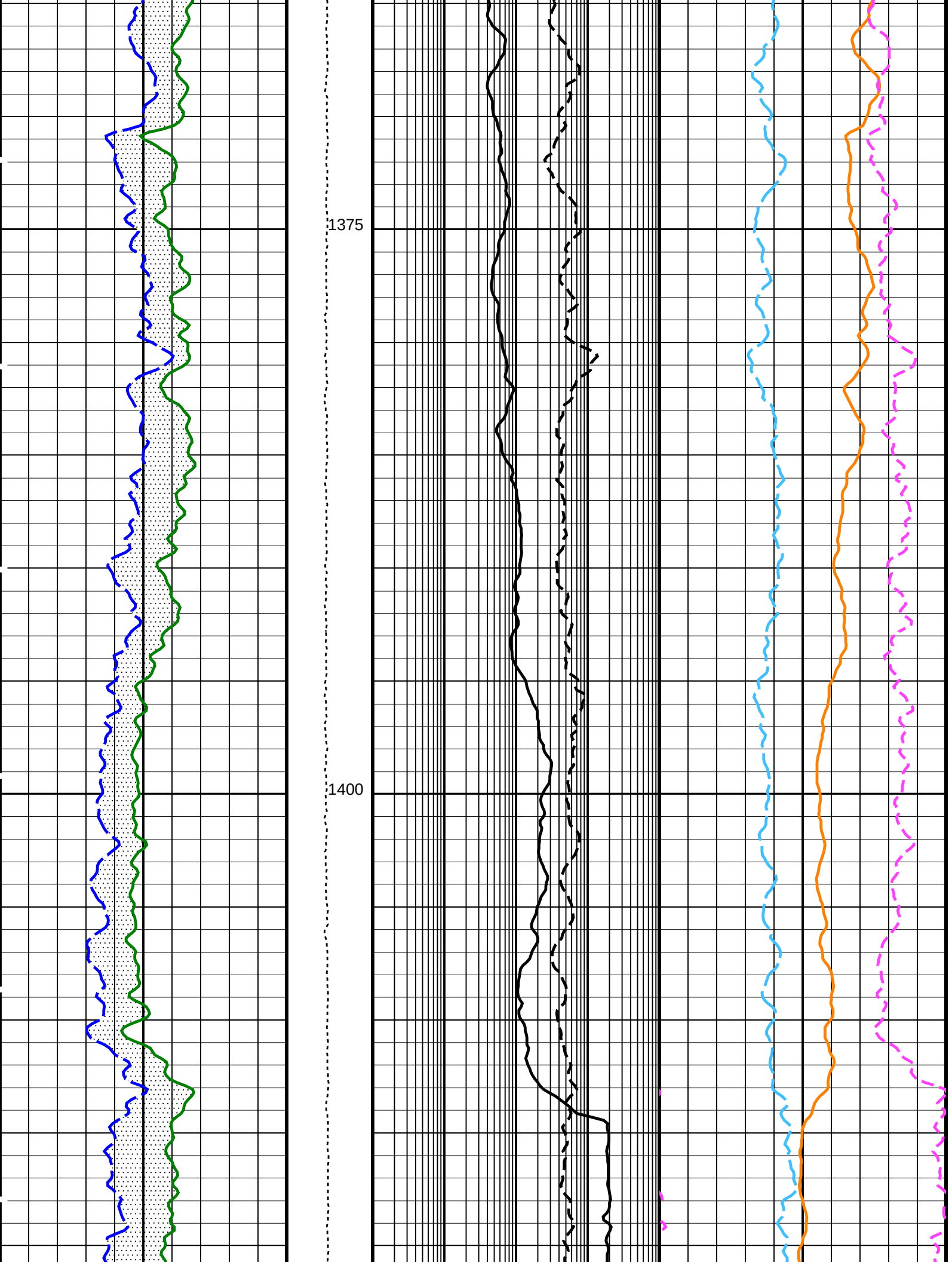
PIP SUMMARY

Time Mark Every 60 S

	Tool/Tot. Drag From D3T to STIA		Area2 From HTHO to HFK
HNGS Spectroscopy Gamma Ray (HSGR) 0 (GAPI) 150	Cable Drag From STIA to STIT		HNGS Thorium (HTHO) −20 (PPM) 20
Area1 From HCGR to HSGR	Stuck Stretch (STIT) 0 (M) 20	HNGS Thorium / Potassium Ratio (HTPR) 0.1 (−−−− 1000	HNGS Uranium (HURA) −5 (PPM) 15
HNGS Computed Gamma Ray (HCGR) 0 (GAPI) 150	Tension (TENS) (LBF) 5000 0	HNGS Thorium / Uranium Ratio (HTUR) 0.01 (−−−− 100	HNGS Potassium (HFK) −0.05 (−−−− 0.05


1275
1300


TENS
STIT
STIA
HSGR
HCGR
HTPR
HTUR
HTHO
HURA
HFK
1325
1350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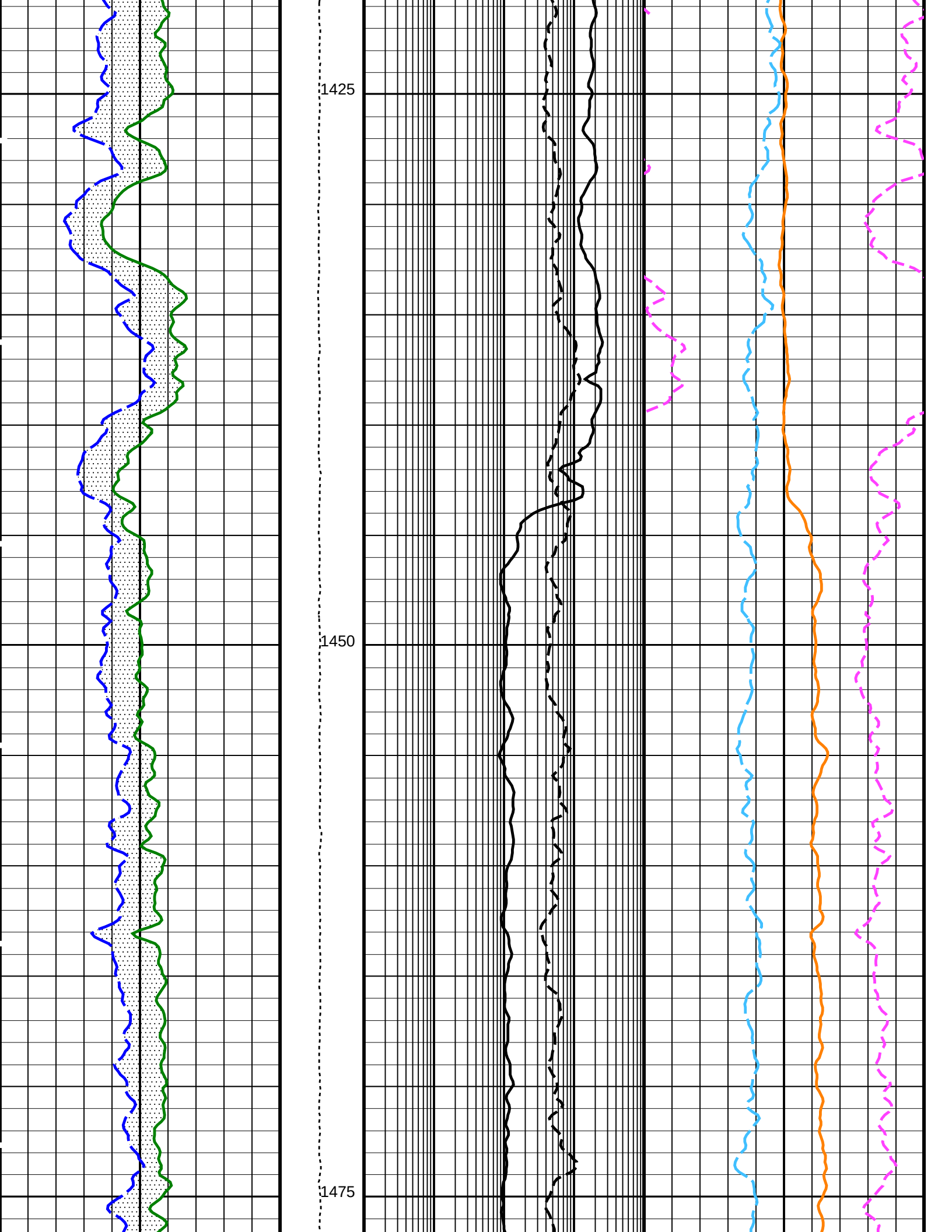
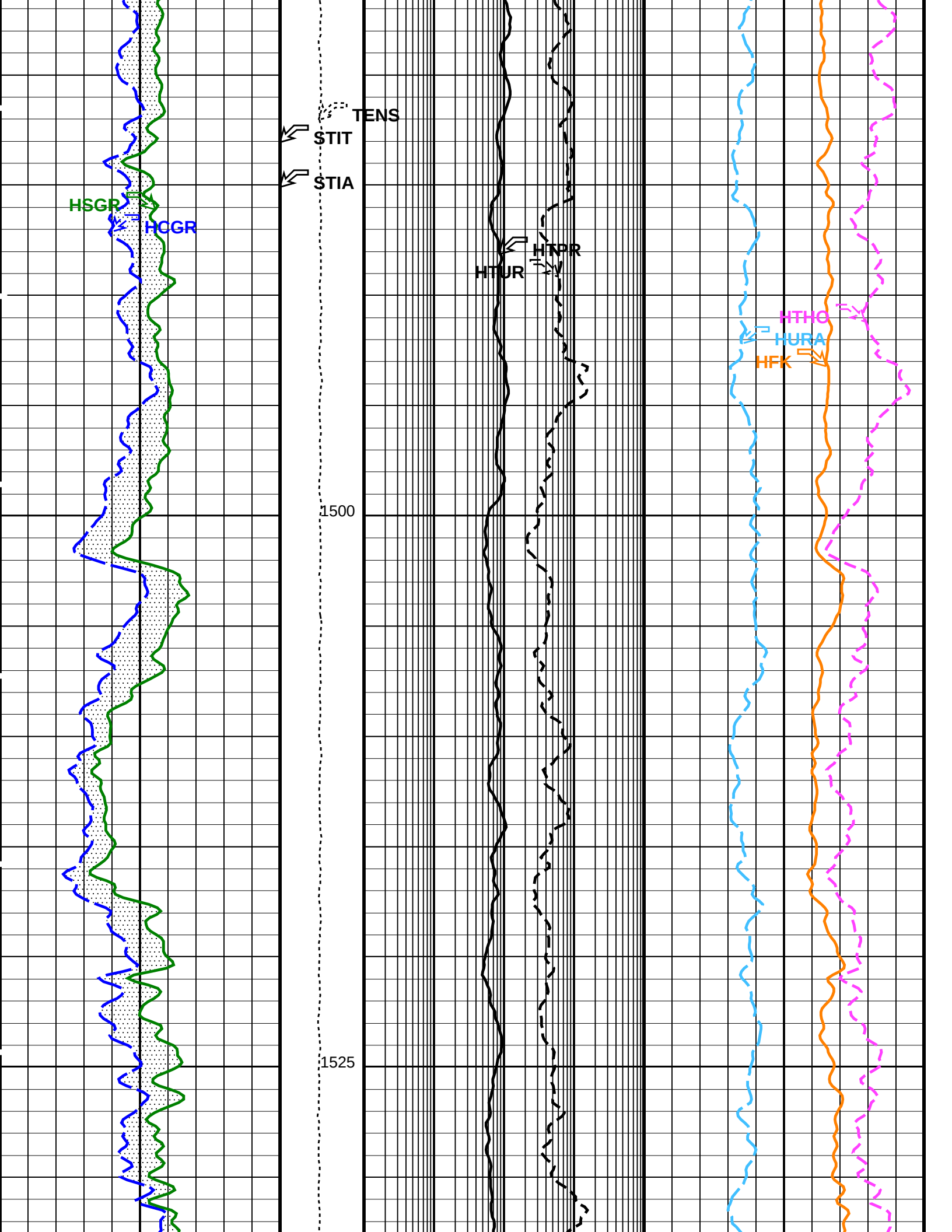
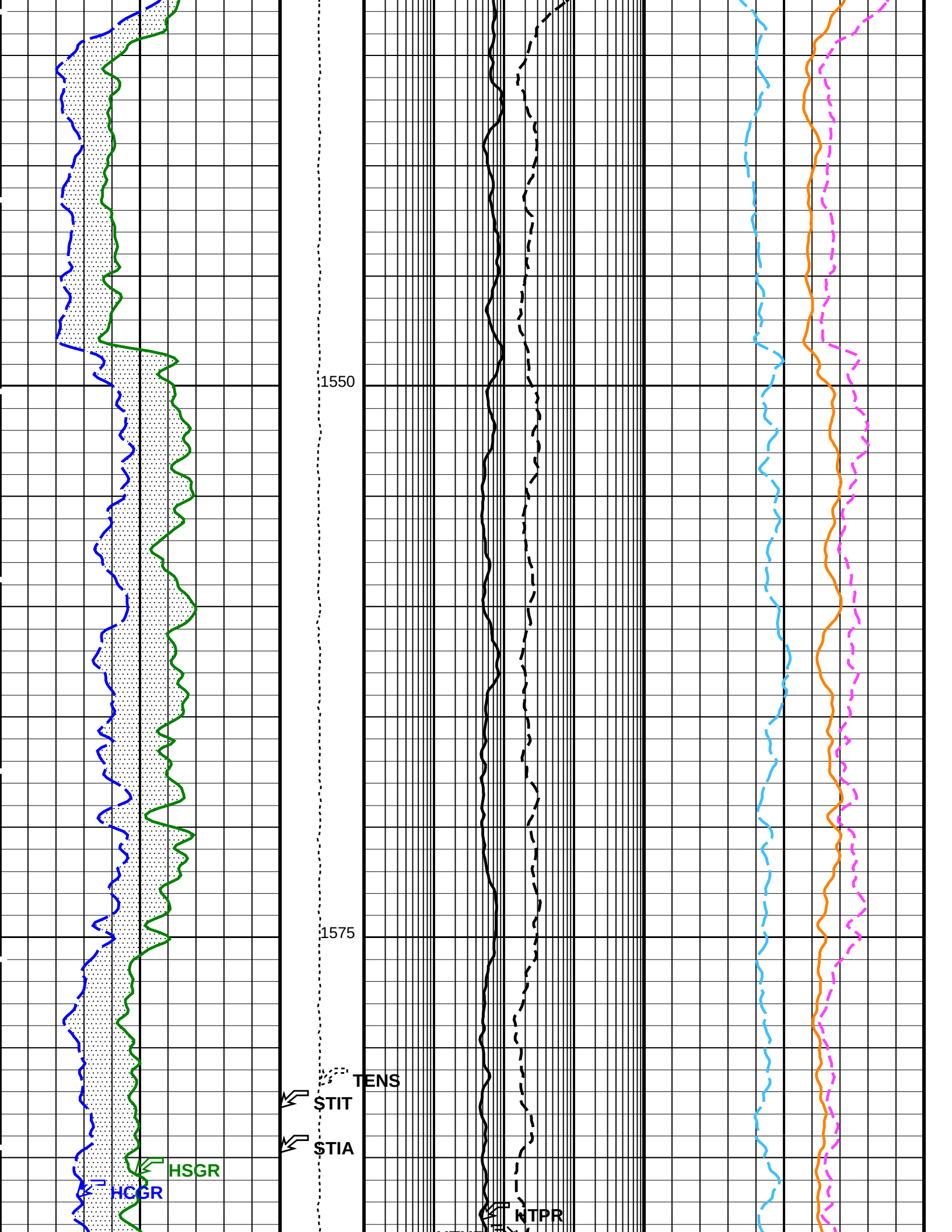
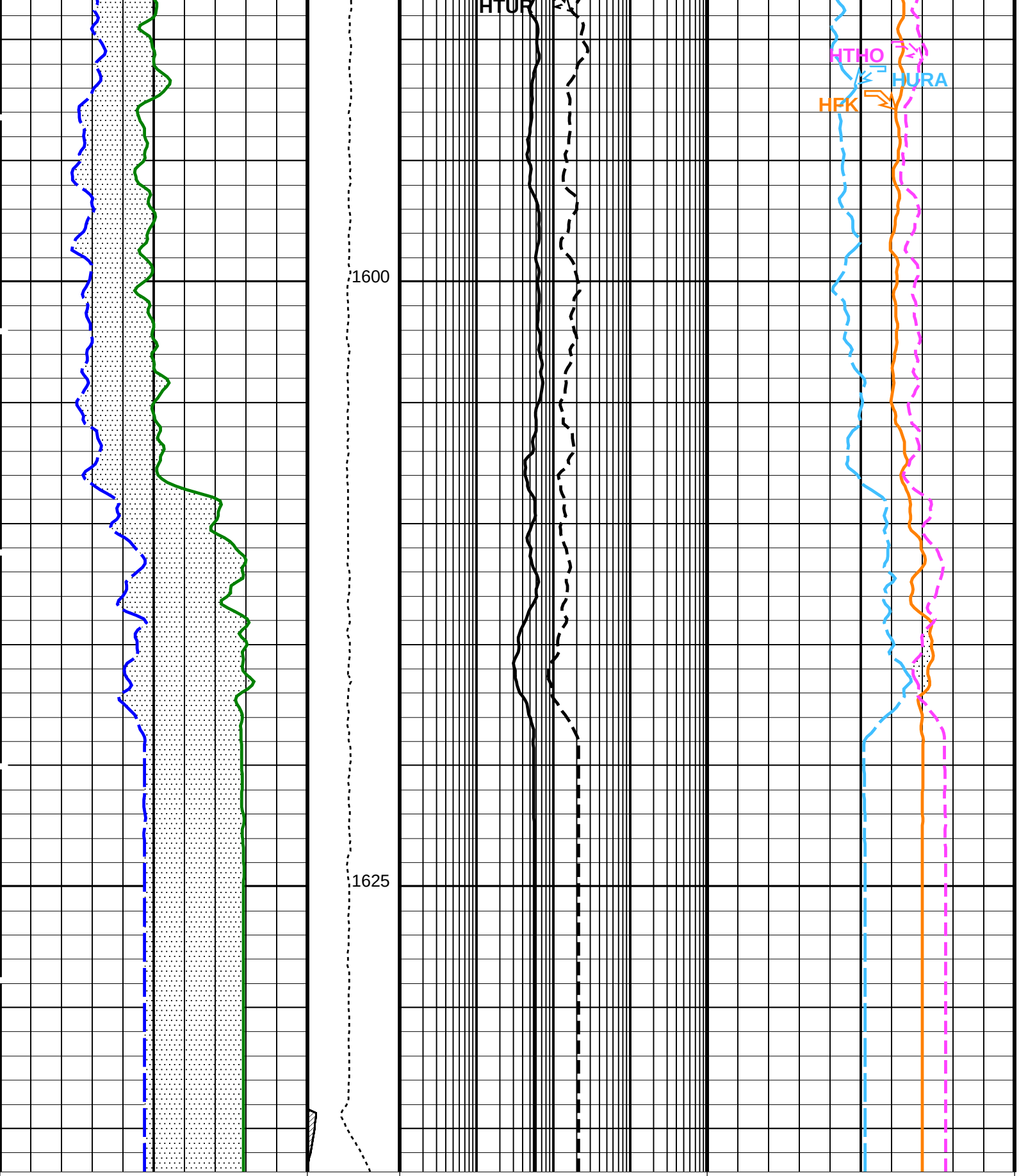
1400


1425
1450
1475


TENS
STIT
STIA
HSGR
HCGR
HTPR
HTUR
HTHO
HURA
HFK
1500
1525


1550
1575
TENS
STIT
STIA
HSGR
HCGR
NTPR



HNGS Computed Gamma Ray (HCGR)	Tension (TENS) (LBF)	HNGS Thorium / Uranium Ratio (HTUR)	HNGS Potassium (HFK)
0 (GAPI) 150	5000 0	0.01 (–––– 100	−0.05 (–––– 0.05
Area1 From HCGR to HSGR	Stuck Stretch (STIT)	HNGS Thorium / Potassium Ratio (HTPR)	HNGS Uranium (HURA)
	0 (M) 20	0.1 (–––– 1000	−5 (PPM) 15

HNGS Spectroscopy Gamma Ray (HSGR)	Cable Drag From STIA to STIT		HNGS Thorium (HTHO)
0 (GAPI) 150			−20 (PPM) 20
	Tool/Tot. Drag From D3T to STIA		Area2 From HTHO to HFK

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HALS−B: HILT Azimuthal Laterolog Sonde B		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	0.953764	
BAR2	HNGS Detector 2 Barite Constant	0.972514	
BHK	HNGS Borehole Potassium Correction Concentration	0.02	
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	USER	
GCSE	Generalized Caliper Selection	HCAL	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	0.0176326	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	USER	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	−999.25	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	−999.25	CPS
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.952492	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.968086	
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	0.762	M
TDD	Total Depth − Driller	1640.00	M
TDL	Total Depth − Logger	1634.80	M
	System and Miscellaneous		
BS	Bit Size	8.500	IN
DFD	Drilling Fluid Density	1.13	G/C3
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	RECOMPUTE	

Format: HNGSRatios Vertical Scale: 1:200 Graphics File Created: 28−Jun−2004 11:56

OP System Version: 10C0−306

MCM

HALS−B	OP10−KP1	DSLT−H	OP10−KP1
HILTB−FTB	OP10−KP1	HNGC−A	OP10−KP1
HNGS−BA	OP10−KP1	DTC−H	10C0−306
BSP	10C0−306		

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	24−Jun−2004 16:48	1636.8 M	20.8 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_019PUP	FN:81	PRODUCER	28−Jun−2004 11:56

Schlumberger

HNGS−Yields
1:200 Scale

MAXIS Field Log

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	24−Jun−2004 16:48	1636.8 M	20.8 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_019PUP	FN:81	PRODUCER	28−Jun−2004 11:56	1636.8 M	1253.3 M

OP System Version: 10C0−306

MCM

HALS−B	OP10−KP1	DSLT−H	OP10−KP1
HILTB−FTB	OP10−KP1	HNGC−A	OP10−KP1
HNGS−BA	OP10−KP1	DTC−H	10C0−306
BSP	10C0−306		

PIP SUMMARY

Time Mark Every 60 S

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 150

HNGS Det.2 Resolution Degradation Factor (RDF2)
0 (−−−− 10

HNGS Det.1 Resolution Degradation Factor (RDF1)
0 (−−−− 10

HNGS Det.2 Gain Correction Factor (GCF2)
0.9 (−−−− 1.1

HNGS Det.1 Gain Correction Factor (GCF1)
0.9 (−−−− 1.1

Area1
From HCGR to HSGR

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 150

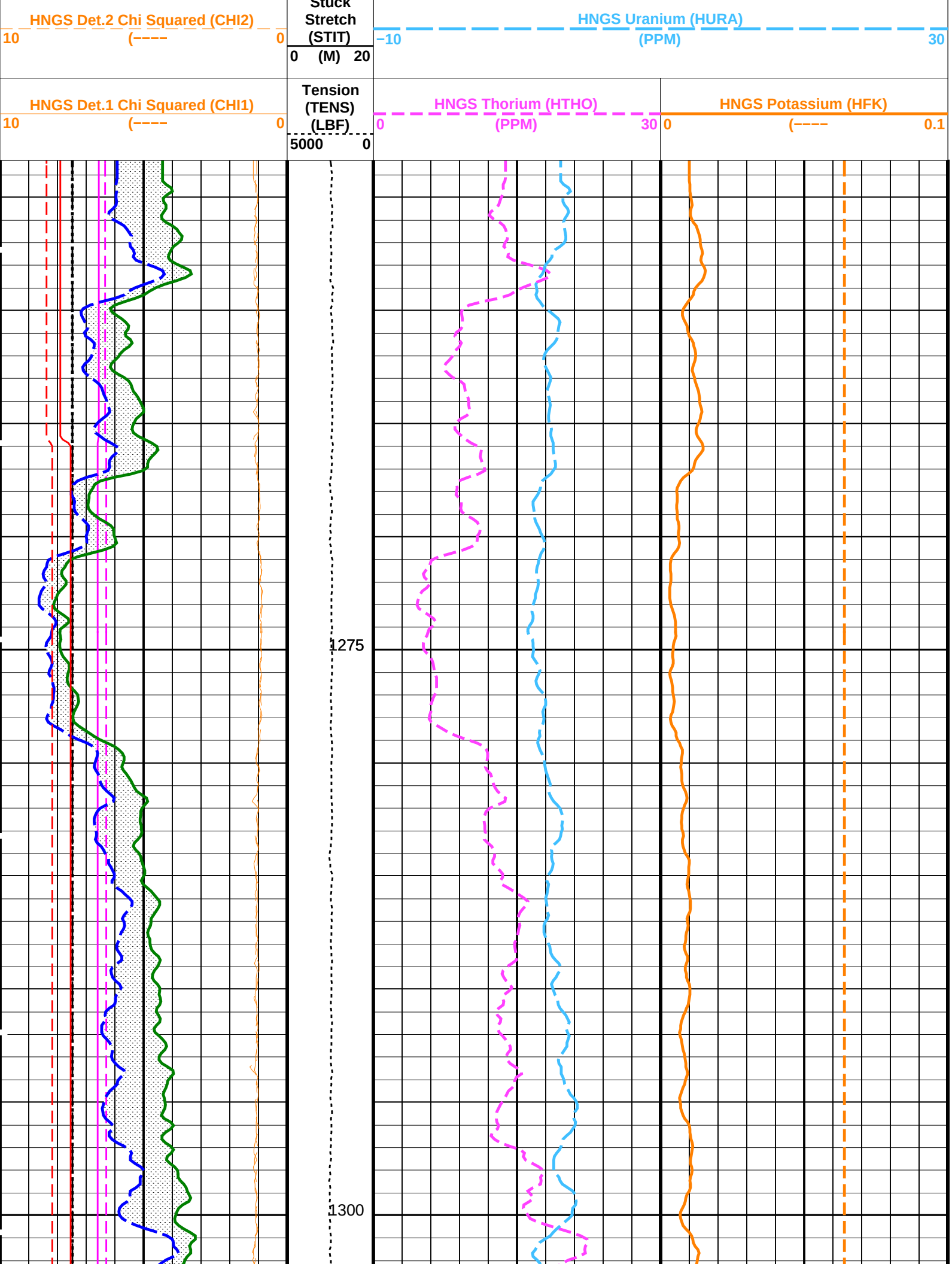
Caliper (BS)
6 (IN) 16

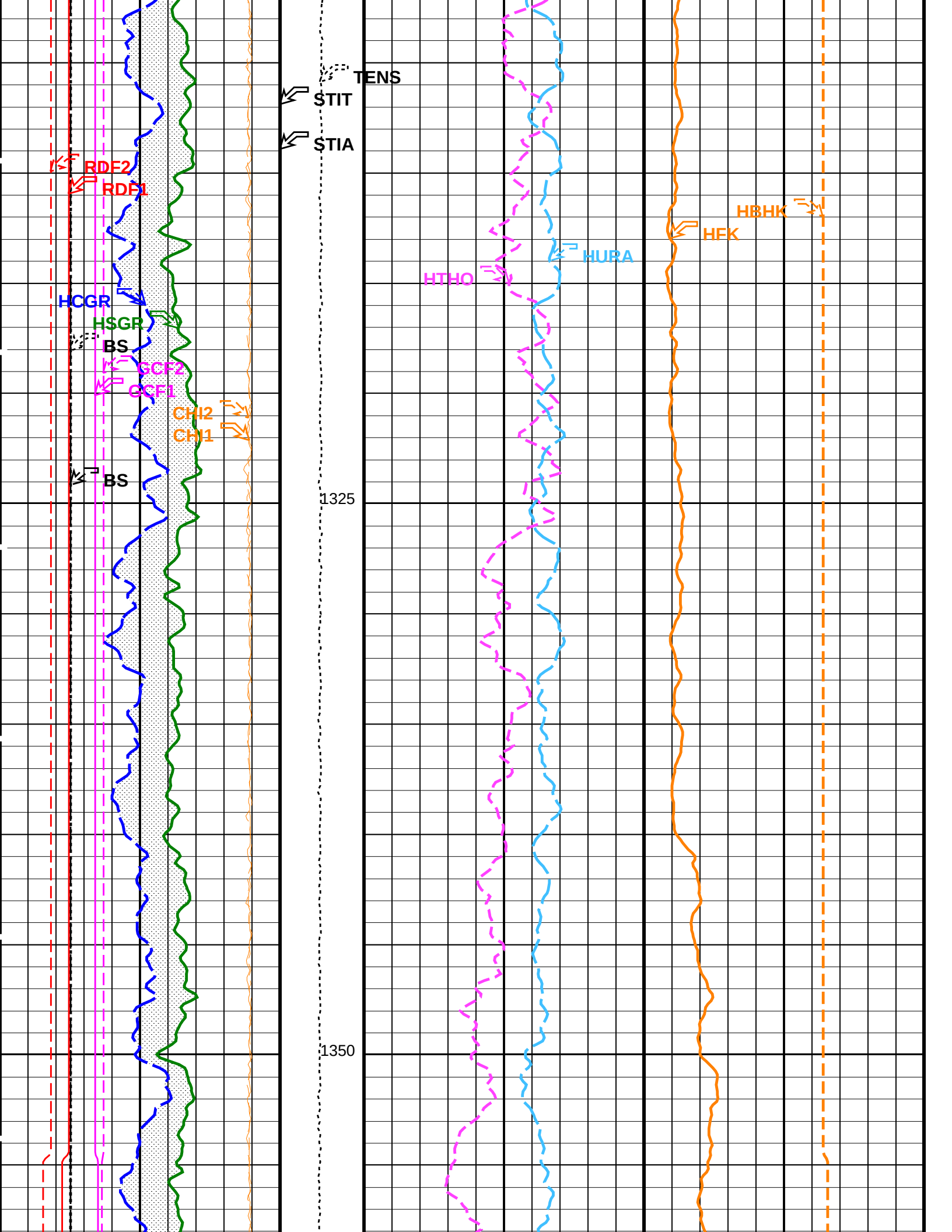
Tool/Tot. Drag From D3T to STIA

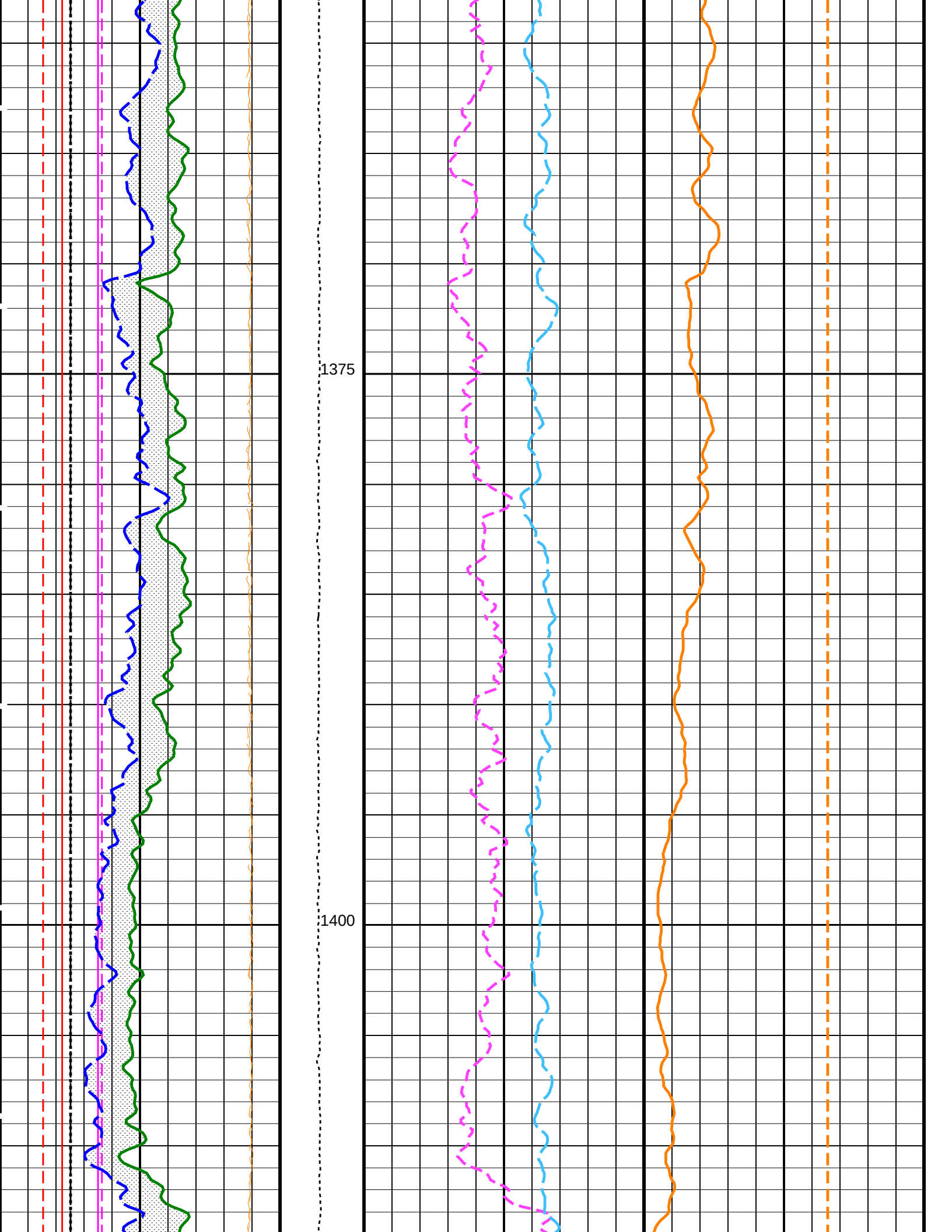
Bit Size (BS)
6 (IN) 16

Cable Drag From STIA to STIT

HNGS Borehole Potassium (HBHK)
−0.05 (−−−− 0.05


HNGS Det.2 Chi Squared (CHI2)
10
(----
0
Stuck Stretch (STIT)
0 (M) 20
HNGS Uranium (HURA)
−10
(PPM)
30
HNGS Det.1 Chi Squared (CHI1)
10
(----
0
Tension (TENS) (LBF)
5000 0
HNGS Thorium (HTHO)
0
(PPM)
30
HNGS Potassium (HFK)
0
(----
0.1
1275
1300


TENS
STIT
STIA
RDF2
RDF1
HCGR
HSGR
BS
GCF2
GCF1
CHI2
CHI1
BS
HTHO
HURA
HFK
HBHK
1325
1350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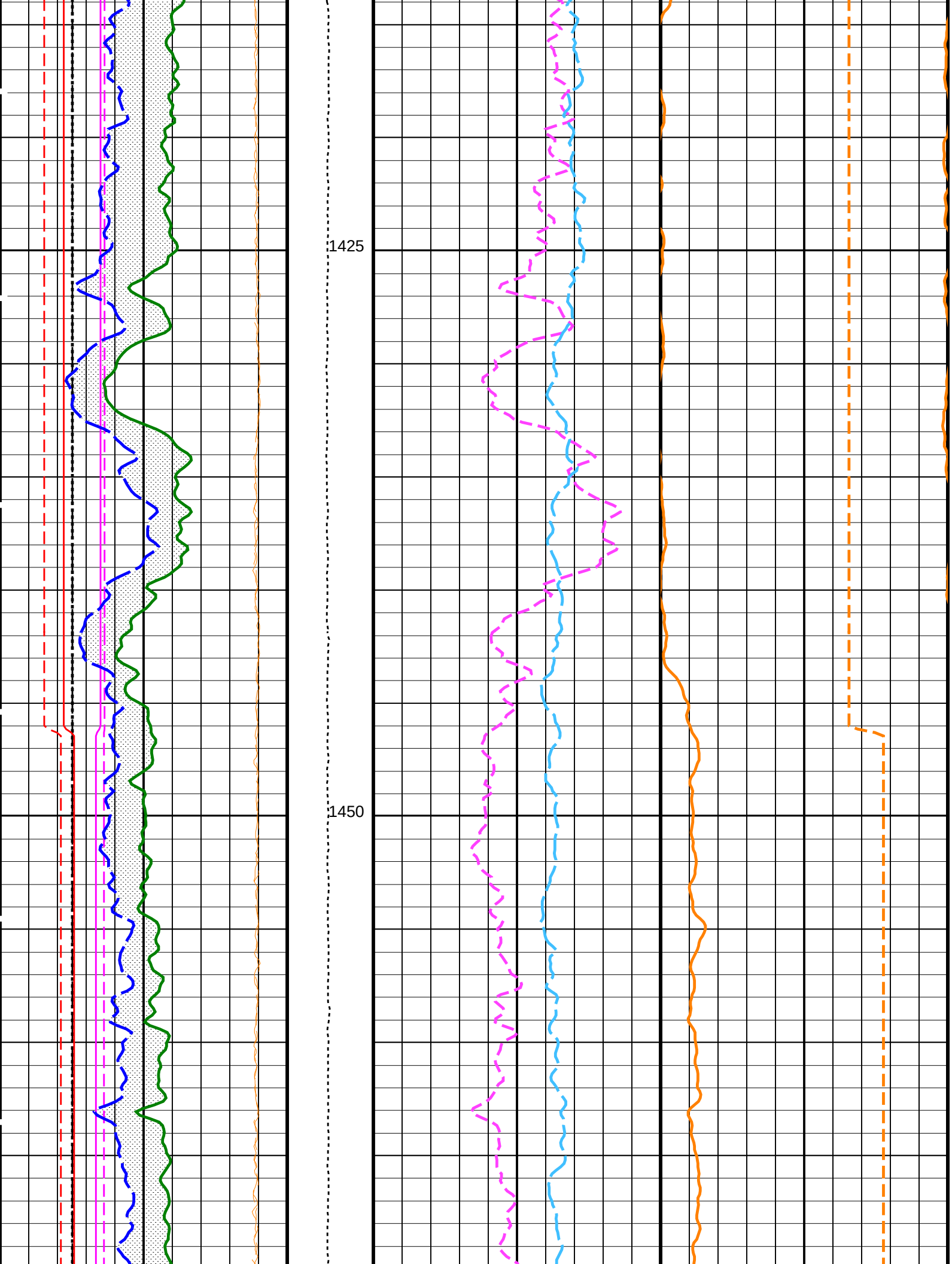
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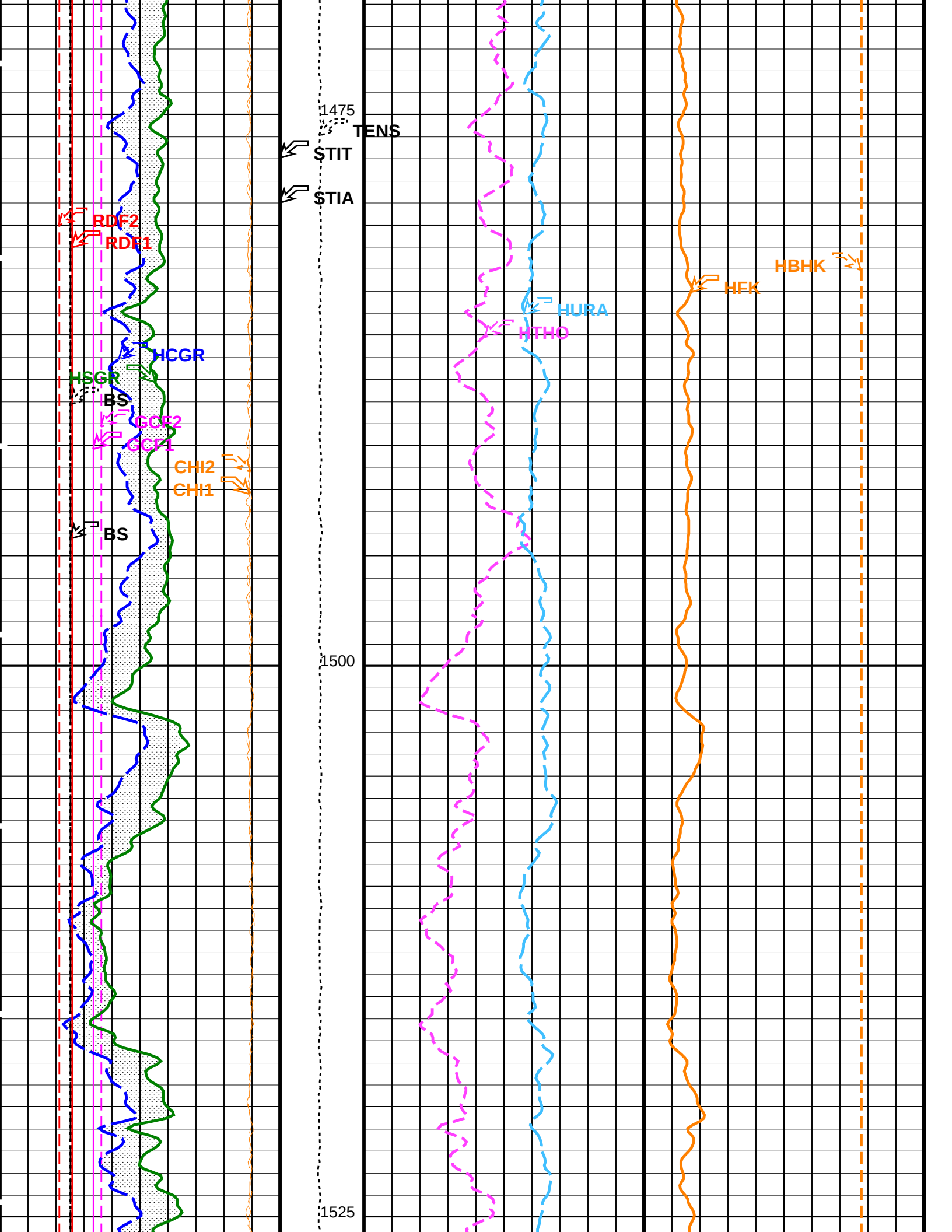
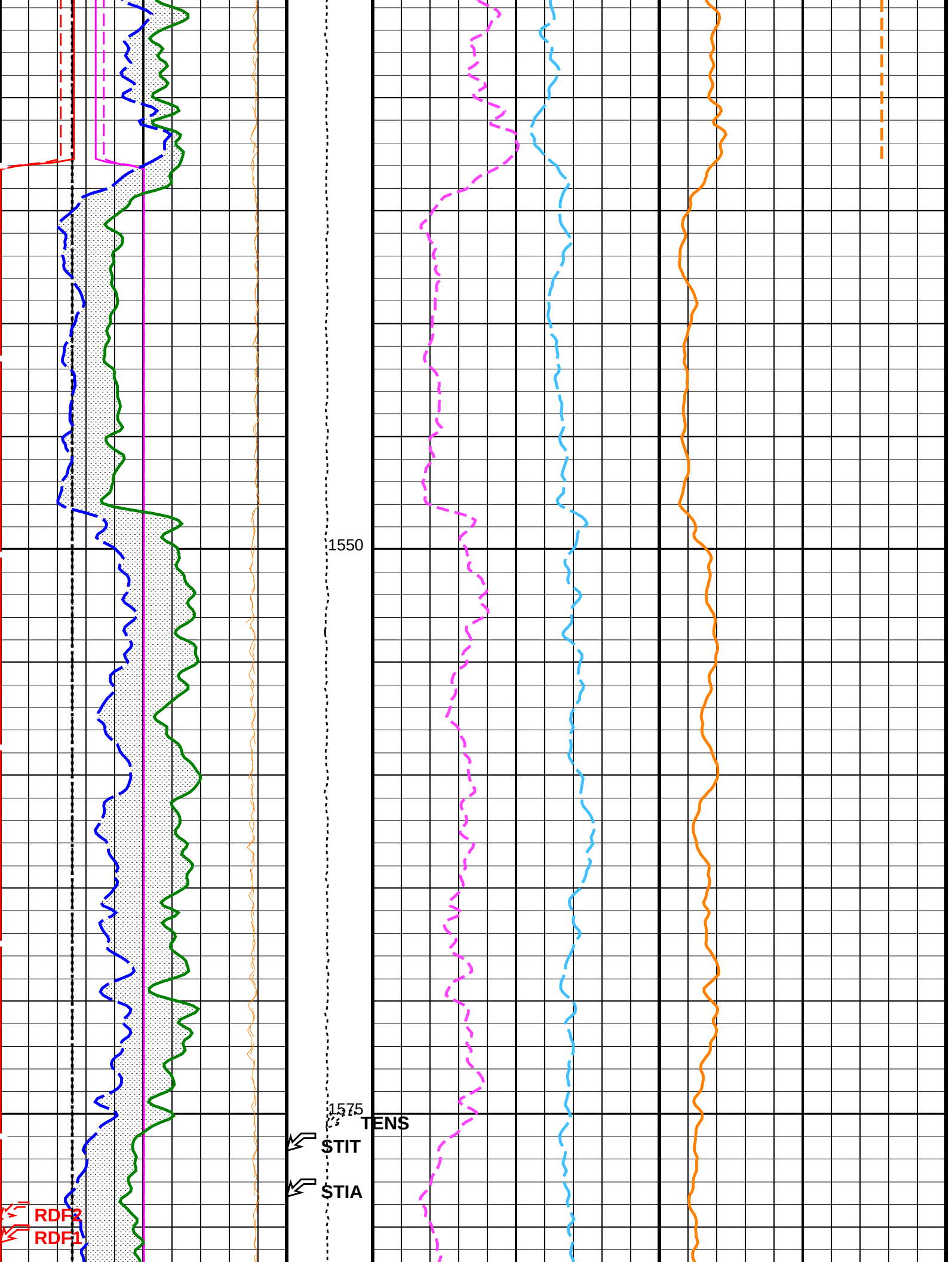
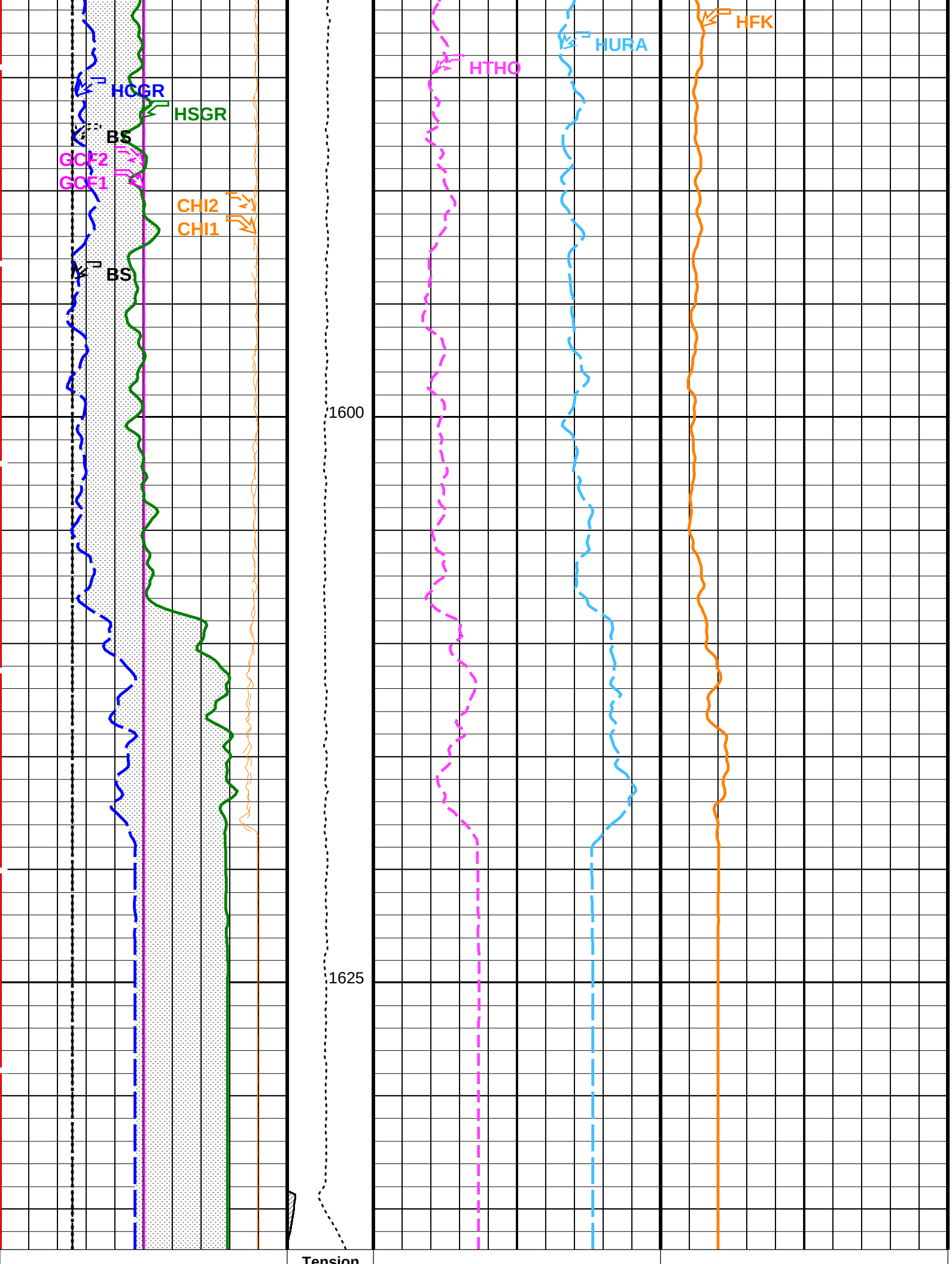
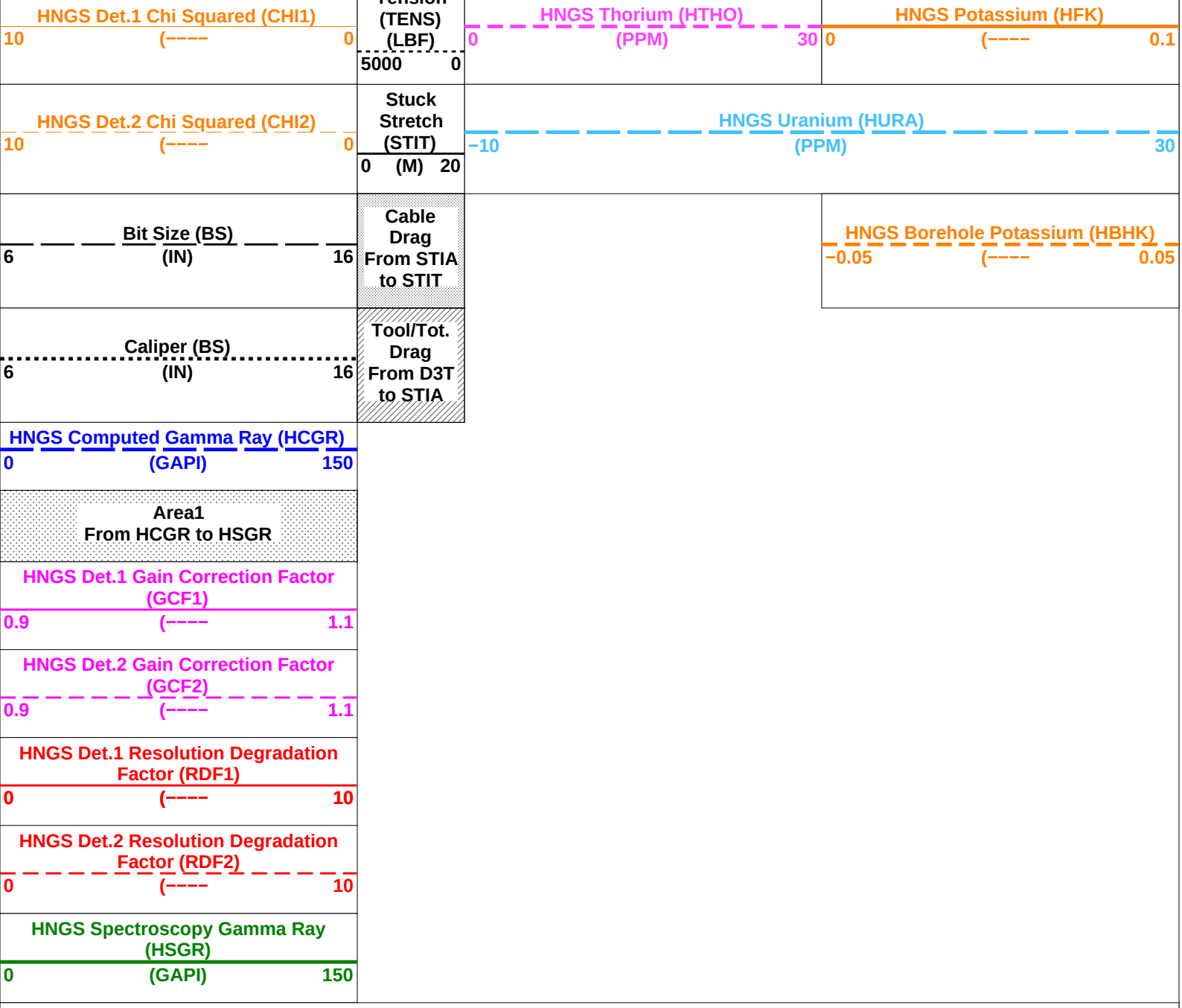
1450


1475
TENS
STIT
STIA
RDF2
RDF1
HCGR
HSGR
BS
GCF2
GCF1
CHI2
CHI1
BS
HBHK
HFK
HURA
HTHO
1500
1525


1550
1575
TENS
STIT
STIA
RDF2
RDF1


HCGR
HSGR
BS
GCF2
GCF1
CHI2
CHI1
BS
HTHO
HURA
HFK
1600
1625
Tension



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HALS−B: HILT Azimuthal Laterolog Sonde B		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
	HNGS−BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	0.953764	
BAR2	HNGS Detector 2 Barite Constant	0.972514	
BHK	HNGS Borehole Potassium Correction Concentration	0.02	
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	USER	
GCSE	Generalized Caliper Selection	HCAL	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	0.0176326	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	USER	

HMWM	Mud Weighting Material	BARI		
HNPE	HNGS Processing Enable	YES		
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	−999.25	CPS	
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	−999.25	CPS	
SGRC	HNGS Standard Gamma−Ray Correction Flag	YES		
TPOS	Tool Position	ECCE		
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.952492		
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.968086		
	HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN		
GCSE	Generalized Caliper Selection	HCAL		
	STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL		
STKT	STI Stuck Threshold	0.762	M	
TDD	Total Depth − Driller	1640.00	M	
TDL	Total Depth − Logger	1634.80	M	
	System and Miscellaneous			
BS	Bit Size	8.500	IN	
DFD	Drilling Fluid Density	1.13	G/C3	
DO	Depth Offset for Playback	0.0	M	
PP	Playback Processing	RECOMPUTE		

Format: HNGSYields **Vertical Scale: 1:200** **Graphics File Created: 28−Jun−2004 11:56**

OP System Version: 10C0−306

MCM

HALS−B	OP10−KP1	DSLT−H	OP10−KP1
HILTB−FTB	OP10−KP1	HNGC−A	OP10−KP1
HNGS−BA	OP10−KP1	DTC−H	10C0−306
BSP	10C0−306		

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_017LUP	FN:16	PRODUCER	24−Jun−2004 16:48	1636.8 M	20.8 M

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCFL_019PUP	FN:81	PRODUCER	28−Jun−2004 11:56

Schlumberger

Calibrations

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Total current mode 1							
Before: 18−Jun−2004 13:50							
Itot 1 Gain	1.000	N/A	0.998	N/A	N/A	0.026	MA
Itot 1 Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Aux current mode 1							
Before: 18−Jun−2004 13:50							
Iaux 1 Gain	1.000	N/A	0.994	N/A	N/A	0.035	MA
Iaux 1 Phase	0.000	N/A	−0.144	N/A	N/A	1.900	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Aux current mode 2							
Before: 18−Jun−2004 13:50							
Iaux 2 Gain	1.000	N/A	0.975	N/A	N/A	0.048	MA
Iaux 2 Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0 current mode 3A							

Before: 18−Jun−2004 13:50

I0 3A Gain	1.000	N/A	0.984	N/A	N/A	0.036	UA
I0 3A Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0 current mode 3B
Before: 18−Jun−2004 13:50

I0 3B Gain	1.000	N/A	0.979	N/A	N/A	0.036	UA
I0 3B Phase	0.000	N/A	−0.000	N/A	N/A	0.100	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Torpedo Voltage gains
Before: 18−Jun−2004 13:50

Zvt 1 Gain	1.000	N/A	0.994	N/A	N/A	0.025	MV
Zvt 2 Gain	1.000	N/A	0.997	N/A	N/A	0.045	MV
Zvt 3 Gain	1.000	N/A	1.004	N/A	N/A	0.045	MV

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Torpedo Voltage Phases
Before: 18−Jun−2004 13:50

Zvt 1 Phase	0.000	N/A	−0.098	N/A	N/A	2.300	DEG
Zvt 2 Phase	0.000	N/A	−0.000	N/A	N/A	0.800	DEG
Zvt 3 Phase	0.000	N/A	−0.128	N/A	N/A	0.500	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Upper Bridle Voltage mode 1
Before: 18−Jun−2004 13:50

Zvb 1 Gain	1.000	N/A	0.994	N/A	N/A	0.025	MV
Zvb 1 Phase	0.000	N/A	−0.125	N/A	N/A	2.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB M1−M2 Voltage gains
Before: 18−Jun−2004 13:50

ZVM 1 Gain	1.000	N/A	0.996	N/A	N/A	0.039	UV
ZVM 2 Gain	1.000	N/A	0.992	N/A	N/A	0.019	UV
ZVM 3 Gain	1.000	N/A	0.991	N/A	N/A	0.019	UV

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB M1−M2 Voltage Phases
Before: 18−Jun−2004 13:50

ZVM 1 Phase	0.000	N/A	0.229	N/A	N/A	3.800	DEG
ZVM 2 Phase	0.000	N/A	1.869	N/A	N/A	1.300	DEG
ZVM 3 Phase	0.000	N/A	1.017	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB M1−A0* Voltage gains
Before: 18−Jun−2004 13:50

ZVH 1 Gain	1.000	N/A	0.997	N/A	N/A	0.013	UV
ZVH 2 Gain	1.000	N/A	0.990	N/A	N/A	0.046	UV
ZVH 3 Gain	1.000	N/A	0.990	N/A	N/A	0.046	UV

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB M1−A0* Voltage Phases
Before: 18−Jun−2004 13:50

ZVH 1 Phase	0.000	N/A	0.111	N/A	N/A	3.800	DEG
ZVH 2 Phase	0.000	N/A	2.000	N/A	N/A	1.300	DEG
ZVH 3 Phase	0.000	N/A	1.019	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Aux Voltage gains
Before: 18−Jun−2004 13:50

ZVA 1 Gain	1.000	N/A	1.086	N/A	N/A	0.032	MV
ZVA 2 Gain	1.000	N/A	1.063	N/A	N/A	0.045	MV
ZVA 3 Gain	1.000	N/A	1.015	N/A	N/A	0.045	MV

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Aux Voltage Phases
Before: 18−Jun−2004 13:50

ZVA 1 Phase	0.000	N/A	0.572	N/A	N/A	2.300	DEG
ZVA 2 Phase	0.000	N/A	0.026	N/A	N/A	0.800	DEG
ZVA 3 Phase	0.000	N/A	0.128	N/A	N/A	0.500	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 1
Before: 18−Jun−2004 13:50

ZVD 1 Gain	1.000	N/A	0.997	N/A	N/A	0.047	UV
ZVD 1 Phase	0.000	N/A	0.093	N/A	N/A	3.800	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 2
Before: 18−Jun−2004 13:50

ZVD 2 Gain	1.000	N/A	0.983	N/A	N/A	0.056	UV
ZVD 2 Phase	0.000	N/A	1.294	N/A	N/A	1.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 3A
Before: 18−Jun−2004 13:50

ZVD 3A Gain	1.000	N/A	0.987	N/A	N/A	0.056	UV
ZVD 3A Phase	0.000	N/A	0.601	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB A0*−A0*' Diff. Voltage mode 3B
Before: 18−Jun−2004 13:50

ZVD 3B Gain	1.000	N/A	1.000	N/A	N/A	0.054	UV
ZVD 3B Phase	0.000	N/A	−0.028	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB vertical Voltage mode 1
Before: 18−Jun−2004 13:50

ZVV 1 Gain	1.000	N/A	0.997	N/A	N/A	0.022	UV
ZVV 1 Phase	0.000	N/A	0.164	N/A	N/A	2.800	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB vertical Voltage mode 2
Before: 18−Jun−2004 13:50

ZVV 2 Gain	1.000	N/A	0.983	N/A	N/A	0.036	UV
ZVV 2 Phase	0.000	N/A	2.642	N/A	N/A	1.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Azimuthal Voltages mode 1
Before: 18−Jun−2004 13:50

Az 1 Gain − 0	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain − 1	1.000	N/A	0.998	N/A	N/A	0.047	UV
Az 1 Gain − 2	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain − 3	1.000	N/A	0.994	N/A	N/A	0.047	UV
Az 1 Gain − 4	1.000	N/A	1.000	N/A	N/A	0.047	UV
Az 1 Gain − 5	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain − 6	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain − 7	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain − 8	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain − 9	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain − 10	1.000	N/A	1.001	N/A	N/A	0.047	UV
Az 1 Gain − 11	1.000	N/A	0.997	N/A	N/A	0.047	UV
AZ 1 Phase − 0	0.000	N/A	−0.004	N/A	N/A	3.800	DEG
AZ 1 Phase − 1	0.000	N/A	0.129	N/A	N/A	3.800	DEG
AZ 1 Phase − 2	0.000	N/A	0.100	N/A	N/A	3.800	DEG
AZ 1 Phase − 3	0.000	N/A	0.103	N/A	N/A	3.800	DEG
AZ 1 Phase − 4	0.000	N/A	0.205	N/A	N/A	3.800	DEG
AZ 1 Phase − 5	0.000	N/A	0.089	N/A	N/A	3.800	DEG
AZ 1 Phase − 6	0.000	N/A	0.067	N/A	N/A	3.800	DEG
AZ 1 Phase − 7	0.000	N/A	0.008	N/A	N/A	3.800	DEG
AZ 1 Phase − 8	0.000	N/A	0.122	N/A	N/A	3.800	DEG
AZ 1 Phase − 9	0.000	N/A	0.012	N/A	N/A	3.800	DEG
AZ 1 Phase − 10	0.000	N/A	0.123	N/A	N/A	3.800	DEG
AZ 1 Phase − 11	0.000	N/A	0.102	N/A	N/A	3.800	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Azimuthal Voltages mode 2
Before: 18−Jun−2004 13:50

Az 2 Gain − 0	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain − 1	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain − 2	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain − 3	1.000	N/A	0.979	N/A	N/A	0.056	UV
Az 2 Gain − 4	1.000	N/A	0.985	N/A	N/A	0.056	UV
Az 2 Gain − 5	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain − 6	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain − 7	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain − 8	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain − 9	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain − 10	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain − 11	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Phase − 0	0.000	N/A	1.369	N/A	N/A	1.300	DEG
Az 2 Phase − 1	0.000	N/A	1.320	N/A	N/A	1.300	DEG
Az 2 Phase − 2	0.000	N/A	1.339	N/A	N/A	1.300	DEG
Az 2 Phase − 3	0.000	N/A	1.323	N/A	N/A	1.300	DEG
Az 2 Phase − 4	0.000	N/A	1.353	N/A	N/A	1.300	DEG
Az 2 Phase − 5	0.000	N/A	1.370	N/A	N/A	1.300	DEG
Az 2 Phase − 6	0.000	N/A	1.385	N/A	N/A	1.300	DEG
Az 2 Phase − 7	0.000	N/A	1.386	N/A	N/A	1.300	DEG
Az 2 Phase − 8	0.000	N/A	1.402	N/A	N/A	1.300	DEG
Az 2 Phase − 9	0.000	N/A	1.364	N/A	N/A	1.300	DEG
Az 2 Phase − 10	0.000	N/A	1.409	N/A	N/A	1.300	DEG
Az 2 Phase − 11	0.000	N/A	1.285	N/A	N/A	1.300	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Azimuthal Voltages mode 3A
Before: 18−Jun−2004 13:50

Az 3A Gain − 0	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Gain − 1	1.000	N/A	0.988	N/A	N/A	0.056	UV
Az 3A Gain − 2	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Gain − 3	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 3A Gain − 4	1.000	N/A	0.990	N/A	N/A	0.056	UV
Az 3A Gain − 5	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Gain − 6	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain − 7	1.000	N/A	0.988	N/A	N/A	0.056	UV
Az 3A Gain − 8	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain − 9	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain − 10	1.000	N/A	0.991	N/A	N/A	0.056	UV
Az 3A Gain − 11	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Phase − 0	0.000	N/A	0.617	N/A	N/A	1.000	DEG
Az 3A Phase − 1	0.000	N/A	0.607	N/A	N/A	1.000	DEG
Az 3A Phase − 2	0.000	N/A	0.611	N/A	N/A	1.000	DEG

Az 3A Phase − 3	0.000	N/A	0.607	N/A	N/A	1.000	DEG
Az 3A Phase − 4	0.000	N/A	0.640	N/A	N/A	1.000	DEG
Az 3A Phase − 5	0.000	N/A	0.631	N/A	N/A	1.000	DEG
Az 3A Phase − 6	0.000	N/A	0.631	N/A	N/A	1.000	DEG
Az 3A Phase − 7	0.000	N/A	0.623	N/A	N/A	1.000	DEG
Az 3A Phase − 8	0.000	N/A	0.639	N/A	N/A	1.000	DEG
Az 3A Phase − 9	0.000	N/A	0.597	N/A	N/A	1.000	DEG
Az 3A Phase − 10	0.000	N/A	0.650	N/A	N/A	1.000	DEG
Az 3A Phase − 11	0.000	N/A	0.588	N/A	N/A	1.000	DEG

HILT Azimuthal Laterolog Sonde B Wellsite Calibration − HALSB Azimuthal Voltages mode 3B
Before: 18−Jun−2004 13:50

Az 3B Gain − 0	1.000	N/A	1.008	N/A	N/A	0.054	UV
Az 3B Gain − 1	1.000	N/A	1.003	N/A	N/A	0.054	UV
Az 3B Gain − 2	1.000	N/A	1.005	N/A	N/A	0.054	UV
Az 3B Gain − 3	1.000	N/A	0.998	N/A	N/A	0.054	UV
Az 3B Gain − 4	1.000	N/A	1.005	N/A	N/A	0.054	UV
Az 3B Gain − 5	1.000	N/A	1.006	N/A	N/A	0.054	UV
Az 3B Gain − 6	1.000	N/A	1.005	N/A	N/A	0.054	UV
Az 3B Gain − 7	1.000	N/A	1.007	N/A	N/A	0.054	UV
Az 3B Gain − 8	1.000	N/A	1.006	N/A	N/A	0.054	UV
Az 3B Gain − 9	1.000	N/A	1.003	N/A	N/A	0.054	UV
Az 3B Gain − 10	1.000	N/A	1.010	N/A	N/A	0.054	UV
Az 3B Gain − 11	1.000	N/A	0.997	N/A	N/A	0.054	UV
Az 3B Phase − 0	0.000	N/A	0.204	N/A	N/A	1.000	DEG
Az 3B Phase − 1	0.000	N/A	0.090	N/A	N/A	1.000	DEG
Az 3B Phase − 2	0.000	N/A	0.036	N/A	N/A	1.000	DEG
Az 3B Phase − 3	0.000	N/A	0.098	N/A	N/A	1.000	DEG
Az 3B Phase − 4	0.000	N/A	0.050	N/A	N/A	1.000	DEG
Az 3B Phase − 5	0.000	N/A	0.185	N/A	N/A	1.000	DEG
Az 3B Phase − 6	0.000	N/A	0.127	N/A	N/A	1.000	DEG
Az 3B Phase − 7	0.000	N/A	0.255	N/A	N/A	1.000	DEG
Az 3B Phase − 8	0.000	N/A	0.175	N/A	N/A	1.000	DEG
Az 3B Phase − 9	0.000	N/A	0.198	N/A	N/A	1.000	DEG
Az 3B Phase − 10	0.000	N/A	0.193	N/A	N/A	1.000	DEG
Az 3B Phase − 11	0.000	N/A	−0.017	N/A	N/A	1.000	DEG

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 17−Jun−2004 22:47

BS Window Ratio	1.011	N/A	1.012	N/A	N/A	N/A	
BS Window Sum	16100	N/A	16100	N/A	N/A	N/A	CPS
SS Window Ratio	0.4808	N/A	0.4798	N/A	N/A	N/A	
SS Window Sum	10970	N/A	10980	N/A	N/A	N/A	CPS
LS Window Ratio	0.2955	N/A	0.2968	N/A	N/A	N/A	
LS Window Sum	1160	N/A	1161	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 17−Jun−2004 22:47

BS PM High Voltage (Command)	1495	N/A	1502	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1944	N/A	1945	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1839	N/A	1850	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 17−Jun−2004 22:47

BS Crystal Resolution	12.17	N/A	12.16	N/A	N/A	N/A	%
SS Crystal Resolution	11.48	N/A	11.68	N/A	N/A	N/A	%
LS Crystal Resolution	9.283	N/A	9.321	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 17−Jun−2004 22:27

Raw B0 Resistivity	3875	N/A	3800	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3774	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3790	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 17−Jun−2004 22:30

HILT Caliper Zero Measurement	8.000	N/A	8.227	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.35	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 17−Jun−2004 22:26

Gamma Ray Background	30.00	N/A	37.15	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkg)	177.4	N/A	177.4	N/A	N/A	16.12	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 15−Jun−2004 17:21 Before: 17−Jun−2004 22:26

CNTC Background	32.30	32.30	31.19	N/A	N/A	4.845	CPS
CFTC Background	29.13	29.13	28.55	N/A	N/A	4.370	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 18−Jun−2004 13:50

Z−Axis Acceleration	9.810	N/A	9.803	N/A	N/A	N/A	M/S2

High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results
Master: 15−Jun−2004 11:26

Rho Aluminum	2.596	2.599	−−	−−	−−	−−	G/C3
Rho Magnesium	1.686	1.688	−−	−−	−−	−−	G/C3
Pe Aluminum	2.570	2.561	−−	−−	−−	−−	
Pe Magnesium	2.650	2.615	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary
Master: 15−Jun−2004 11:26

BS Average Deviation	0	0.4141	−−	−−	−−	−−	%
BS Max Deviation	0	0.9721	−−	−−	−−	−−	%
SS Average Deviation	0	0.2442	−−	−−	−−	−−	%
SS Max Deviation	0	1.285	−−	−−	−−	−−	%
LS Average Deviation	0	0.4543	−−	−−	−−	−−	%
LS Max Deviation	0	0.9733	−−	−−	−−	−−	%

High resolution Integrated Logging Tool−DTS Master Calibration − Tank Measurement
Master: 15−Jun−2004 17:21

Thermal Near Corr. (Tank)	6031	5825	−−	−−	−−	−−	CPS
Thermal Far Corr. (Tank)	2793	2452	−−	−−	−−	−−	CPS
CNTC/CFTC (Tank)	2.159	2.376	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Tank Measurement
Master: 15−Jun−2004 17:21

Thermal Near Corr. (Tank)	6031	5825	−−	−−	−−	−−	CPS
Thermal Far Corr. (Tank)	2793	2452	−−	−−	−−	−−	CPS
CNTC/CFTC (Tank)	2.159	2.376	−−	−−	−−	−−	

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check
Master: 17−Jun−2004 21:58 Before: 18−Jun−2004 13:56

Na 511 Peak Loc	40.00	40.64	39.66	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.25	15.12	N/A	N/A	2.000	%
High Voltage	1150	1159	1153	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	145.9	141.9	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.737	8.471	N/A	N/A	2.000	%
Temperature	15.50	13.72	13.30	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	42.07	43.20	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check
Master: 17−Jun−2004 21:58 Before: 18−Jun−2004 13:56

Na 511 Peak Loc	40.00	39.68	39.55	N/A	N/A	1.000	
Na 511 Peak Res	15.50	14.94	15.66	N/A	N/A	2.000	%
High Voltage	1150	1080	1081	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	143.0	142.3	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	8.683	7.777	N/A	N/A	2.000	%
Temperature	15.50	14.40	13.68	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	41.97	42.79	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Ratio Of Detector 1 To Detector 2
Master: 17−Jun−2004 21:58 Before: 18−Jun−2004 13:56

Coincidence Count Rate Ratio	1.000	1.006	1.012	N/A	N/A	0.05000	

Hostile Natural Gamma Ray Sonde Master Calibration − Detector 1 Calibration
Master: 17−Jun−2004 21:53

Na 511 Peak Set Point	40.00	42.00	−−	−−	−−	−−	
Th Peak Loc	209.6	211.5	−−	−−	−−	−−	
Th Peak Res	7.000	7.826	−−	−−	−−	−−	%
Background Count Rate	142.5	140.0	−−	−−	−−	−−	CPS
Gain Ratio	1.000	0.9901	−−	−−	−−	−−	

Hostile Natural Gamma Ray Sonde Master Calibration − Detector 2 Calibration
Master: 17−Jun−2004 21:53

Na 511 Peak Set Point	40.00	41.00	−−	−−	−−	−−	
Th Peak Loc	209.6	207.7	−−	−−	−−	−−	
Th Peak Res	7.000	7.127	−−	−−	−−	−−	%
Background Count Rate	142.5	133.6	−−	−−	−−	−−	CPS
Gain Ratio	1.000	0.9954	−−	−−	−−	−−	

The GLS−VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature 11.1 DEGC.
Thermal Housing Size 3.369 IN.

HILT Azimuthal Laterolog Sonde B / Equipment Identification

Primary Equipment:

Auxiliary Equipment:

Laterolog Control Module	LCM − AA	2747

HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Total current mode 1

Itot 1 Gain MA	Value	Itot 1 Phase DEG	Value
	0.998		0.000
0.926 (Minimum) 1.000 (Nominal) 1.081 (Maximum)		−0.100 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Aux current mode 1

Iaux 1 Gain MA	Value	Iaux 1 Phase DEG	Value
	0.994		−0.144
0.854 (Minimum) 1.000 (Nominal) 1.180 (Maximum)		−4.600 (Minimum) 0.000 (Nominal) 4.600 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Aux current mode 2

Iaux 2 Gain MA	Value	Iaux 2 Phase DEG	Value
	0.975		0.000
0.816 (Minimum) 1.000 (Nominal) 1.232 (Maximum)		−1.000 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0 current mode 3A

I0 3A Gain UA	Value	I0 3A Phase DEG	Value
	0.984		0.000
0.893 (Minimum) 1.000 (Nominal) 1.114 (Maximum)		−1.000 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

Before: 18−Jun−2004 13:50

HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0 current mode 3B

I0 3B Gain UA	Value	I0 3B Phase DEG	Value
	0.979		−0.000
0.893 (Minimum) 1.000 (Nominal) 1.114 (Maximum)		−1.000 (Minimum) 0.000 (Nominal) 0.100 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Torpedo Voltage gains

Zvt 1 Gain MV	Value	Zvt 2 Gain MV	Value	Zvt 3 Gain MV	Value
	0.994		0.997		1.004
0.925 (Minimum) 1.000 (Nominal) 1.078 (Maximum)		0.865 (Minimum) 1.000 (Nominal) 1.153 (Maximum)		0.865 (Minimum) 1.000 (Nominal) 1.153 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Torpedo Voltage Phases

Zvt 1 Phase DEG	Value	Zvt 2 Phase DEG	Value	Zvt 3 Phase DEG	Value
	−0.098		−0.000		−0.128
−4.400 (Minimum) 0.000 (Nominal) 4.400 (Maximum)		−2.800 (Minimum) 0.000 (Nominal) 2.800 (Maximum)		−1.400 (Minimum) 0.000 (Nominal) 1.400 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Upper Bridle Voltage mode 1

Zvb 1 Gain MV	Value	Zvb 1 Phase DEG	Value
	0.994		−0.125
0.925 (Minimum) 1.000 (Nominal) 1.078 (Maximum)		−4.400 (Minimum) 0.000 (Nominal) 4.400 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB M1−M2 Voltage gains

ZVM 1 Gain UV	Value	ZVM 2 Gain UV	Value	ZVM 3 Gain UV	Value
	0.996		0.992		0.991
0.895 (Minimum) 1.000 (Nominal) 1.117 (Maximum)		0.943 (Minimum) 1.000 (Nominal) 1.056 (Maximum)		0.943 (Minimum) 1.000 (Nominal) 1.056 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB M1−M2 Voltage Phases

ZVM 1 Phase DEG	Value	ZVM 2 Phase DEG	Value	ZVM 3 Phase DEG	Value
	0.229		1.869		1.017
−6.500 (Minimum) 0.000 (Nominal) 6.500 (Maximum)		−3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)		−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB M1−A0* Voltage gains

ZVH 1 Gain UV	Value	ZVH 2 Gain UV	Value	ZVH 3 Gain UV	Value
	0.997		0.990		0.990
0.962 (Minimum) 1.000 (Nominal) 1.039 (Maximum)		0.864 (Minimum) 1.000 (Nominal) 1.154 (Maximum)		0.864 (Minimum) 1.000 (Nominal) 1.154 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB M1−A0* Voltage Phases

ZVH 1 Phase DEG	Value	ZVH 2 Phase DEG	Value	ZVH 3 Phase DEG	Value
	0.111		2.000		1.019
−6.500 (Minimum) 0.000 (Nominal) 6.500 (Maximum)		−3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)		−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Aux Voltage gains

ZVA 1 Gain MV	Value	ZVA 2 Gain MV	Value	ZVA 3 Gain MV	Value
	1.086		1.063		1.015
0.905 (Minimum) 1.000 (Nominal) 1.103 (Maximum)		0.866 (Minimum) 1.000 (Nominal) 1.151 (Maximum)		0.866 (Minimum) 1.000 (Nominal) 1.151 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Aux Voltage Phases

ZVA 1 Phase DEG	Value	ZVA 2 Phase DEG	Value	ZVA 3 Phase DEG	Value
	0.572		0.026		0.128
−4.100 (Minimum) 0.000 (Nominal) 4.100 (Maximum)		−2.300 (Minimum) 0.000 (Nominal) 2.300 (Maximum)		−1.000 (Minimum) 0.000 (Nominal) 1.000 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0*−A0*' Diff. Voltage mode 1

ZVD 1 Gain UV	Value	ZVD 1 Phase DEG	Value
	0.997		0.093
0.874 (Minimum) 1.000 (Nominal) 1.147 (Maximum)		−6.300 (Minimum) 0.000 (Nominal) 6.300 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0*−A0*' Diff. Voltage mode 2

ZVD 2 Gain UV	Value	ZVD 2 Phase DEG	Value
	0.983		1.294
0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)		−3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0*−A0*' Diff. Voltage mode 3A

ZVD 3A Gain UV	Value	ZVD 3A Phase DEG	Value
	0.987		0.601
0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)		−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB A0*−A0*' Diff. Voltage mode 3B

ZVD 3B Gain UV	Value	ZVD 3B Phase DEG	Value
	1.000		−0.028
0.845 (Minimum) 1.000 (Nominal) 1.183 (Maximum)		−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB vertical Voltage mode 1

ZVV 1 Gain UV	Value	ZVV 1 Phase DEG	Value
	0.997		0.164
0.936 (Minimum) 1.000 (Nominal) 1.065 (Maximum)		−4.600 (Minimum) 0.000 (Nominal) 4.600 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB vertical Voltage mode 2

ZVV 2 Gain UV	Value	ZVV 2 Phase DEG	Value
	0.983		2.642
0.895 (Minimum) 1.000 (Nominal) 1.112 (Maximum)		−2.800 (Minimum) 0.000 (Nominal) 2.800 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Azimuthal Voltages mode 1

Idx	Az 1 Gain UV	Value	Idx	AZ 1 Phase DEG	Value
0		0.999	0		−0.004
1		0.998	1		0.129
2		0.999	2		0.100
3		0.994	3		0.103
4		1.000	4		0.205

HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Azimuthal Voltages mode 2

Idx	Az 2 Gain UV	Value	Idx	Az 2 Phase DEG	Value
0		0.984	0		1.369
1		0.983	1		1.320
2		0.984	2		1.339
3		0.979	3		1.323
4		0.985	4		1.353

Idx		Value	Idx		Value
5		0.999	5		0.089
6		0.997	6		0.067
7		0.999	7		0.008
8		0.997	8		0.122
9		0.997	9		0.012
10		1.001	10		0.123
11		0.997	11		0.102
	0.874 (Minimum) 1.000 (Nominal) 1.147 (Maximum)			−6.300 (Minimum) 0.000 (Nominal) 6.300 (Maximum)	

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Idx		Value	Idx		Value
5		0.984	5		1.370
6		0.982	6		1.385
7		0.984	7		1.386
8		0.983	8		1.402
9		0.982	9		1.364
10		0.987	10		1.409
11		0.982	11		1.285
	0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)			−3.300 (Minimum) 0.000 (Nominal) 3.300 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Azimuthal Voltages mode 3A

Idx	Az 3A Gain UV	Value	Idx	Az 3A Phase DEG	Value
0		0.989	0		0.617
1		0.988	1		0.607
2		0.989	2		0.611
3		0.984	3		0.607
4		0.990	4		0.640
5		0.989	5		0.631
6		0.987	6		0.631
7		0.988	7		0.623
8		0.987	8		0.639
9		0.987	9		0.597
10		0.991	10		0.650
11		0.987	11		0.588
	0.842 (Minimum) 1.000 (Nominal) 1.187 (Maximum)			−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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HILT Azimuthal Laterolog Sonde B Wellsite Calibration

HALSB Azimuthal Voltages mode 3B

Idx	Az 3B Gain UV	Value	Idx	Az 3B Phase DEG	Value
0		1.008	0		0.204
1		1.003	1		0.090
2		1.005	2		0.036
3		0.998	3		0.098
4		1.005	4		0.050
5		1.006	5		0.185
6		1.005	6		0.127
7		1.007	7		0.255
8		1.006	8		0.175
9		1.003	9		0.198
10		1.010	10		0.193
11		0.997	11		−0.017
	0.845 (Minimum) 1.000 (Nominal) 1.183 (Maximum)			−2.000 (Minimum) 0.000 (Nominal) 2.000 (Maximum)	

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High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:

HILT high−Resolution Mechanical Sonde	HRMS − B	1765
HILT Rxo Gamma−ray Device	HRGD − B	1760
HILT Nuclear Back−Scatter Detector	HILT −	
HILT Nuclear Short−Spacing Detector	HILT −	
HILT Nuclear Long−Spacing Detector	HILT −	
Micro Cylindrically Focused Log Device	MCFL −	
GR Logging Source	GLS − VJ	3739
HILT High Res. Control Cartridge	HRCC − B	1769

Auxiliary Equipment:

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		1.012	Before		0.4798	Before		0.2968
	0.9600 (Minimum) 1.011 (Nominal) 1.061 (Maximum)			0.4567 (Minimum) 0.4808 (Nominal) 0.5048 (Maximum)			0.2808 (Minimum) 0.2955 (Nominal) 0.3103 (Maximum)	

Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		16100	Before		10980	Before		1161
	15290 (Minimum) 16100 (Nominal) 16900 (Maximum)			10420 (Minimum) 10970 (Nominal) 11520 (Maximum)			1102 (Minimum) 1160 (Nominal) 1218 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

Photo−multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1502	Before		1945	Before		1850
	1395 (Minimum) 1495 (Nominal) 1595 (Maximum)			1844 (Minimum) 1944 (Nominal) 2044 (Maximum)			1739 (Minimum) 1839 (Nominal) 1939 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		12.16	Before		11.68	Before		9.321
	11.17 (Minimum) 12.17 (Nominal) 13.17 (Maximum)			10.48 (Minimum) 11.48 (Nominal) 12.48 (Maximum)			8.283 (Minimum) 9.283 (Nominal) 10.28 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3800	Before		3774	Before		3790
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		8.227	Before		12.35
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)			9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		37.15	Before		177.4	Before		165.0
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			161.2 (Minimum) 177.4 (Nominal) 193.5 (Maximum)			150.0 (Minimum) 165.0 (Nominal) 180.0 (Maximum)	

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High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		32.30	Master		29.13
Before		31.19	Before		28.55
	5.000 (Minimum) 32.30 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 29.13 (Nominal) 40.00 (Maximum)	

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High resolution Integrated Logging Tool−DTS
Wellsite Calibration

Accelerometer Calibration

Phase	Z−Axis Acceleration M/S2	Value
Before		9.803
	9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum)	

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High resolution Integrated Logging Tool−DTS Master Calibration

Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master		2.599	Master		1.688
	2.586 (Minimum) 2.596 (Nominal) 2.606 (Maximum)			1.676 (Minimum) 1.686 (Nominal) 1.696 (Maximum)	
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		2.561	Master		2.615

Master		2.5701		Master		2.6501		
2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)		2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)		

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High resolution Integrated Logging Tool−DTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.4141	Master		0.2442	Master		0.4543
−0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	−1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	−1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)
Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		0.9721	Master		1.285	Master		0.9733
−1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	−2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	−3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)

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High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5825	Master		2452	Master		2.376
5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

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High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5825	Master		2452	Master		2.376
5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

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Hostile Natural Gamma Ray Cartridge − A / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC − A	10
Auxiliary Equipment:		
HNGC Housing	HNGH − A	

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS − BA	129
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH − BA	3
Gamma Source Radioactive	GSR − U	

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		40.64	Master		16.25	Master		1159
Before		39.66	Before		15.12	Before		1153
37.50 (Minimum)	40.00 (Nominal)	42.50 (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		145.9	Master		8.737	Master		13.72
Before		141.9	Before		8.471	Before		13.30
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						

Phase	Value
Master	42.07
Before	43.20

10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)

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Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		39.68
Before		39.55

37.50 (Minimum) 40.00 (Nominal) 42.50 (Maximum)

Phase	Na 511 Peak Res %	Value
Master		14.94
Before		15.66

12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)

Phase	High Voltage V	Value
Master		1080
Before		1081

900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		143.0
Before		142.3

135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		8.683
Before		7.777

7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		14.40
Before		13.68

−28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		41.97
Before		42.79

10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)

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Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		1.006
Before		1.012

0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)

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Hostile Natural Gamma Ray Sonde Master Calibration

Detector 1 Calibration

Phase	Na 511 Peak Set Point	Value
Master		42.00

38.00 (Minimum) 40.00 (Nominal) 42.00 (Maximum)

Phase	Th Peak Loc	Value
Master		211.5

201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)

Phase	Th Peak Res %	Value
Master		7.826

5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)

Phase	Background Count Rate CPS	Value
Master		140.0

20.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)

Phase	Gain Ratio	Value
Master		0.9901

0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)

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Hostile Natural Gamma Ray Sonde Master Calibration

Detector 2 Calibration

Phase	Na 511 Peak Set Point	Value
Master		41.00

38.00 (Minimum) 40.00 (Nominal) 42.00 (Maximum)

Phase	Th Peak Loc	Value
Master		207.7

201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)

Phase	Th Peak Res %	Value
Master		7.127

5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)

Phase	Background Count Rate CPS	Value
Master		133.6

20.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)

Phase	Gain Ratio	Value
Master		0.9954

0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)

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Company:	**Essential Petroleum Resources Limited**
Well:	**Killarney EPRL 1**
Field:	**PEP 152**
Rig:	**Hunt Rig #2**
Country:	**Australia**

Schlumberger

HALS−BHC−PEX−HNG
Spectral Gamma Ray Print
Scale 1:200