



**DISCLAIMER**



THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

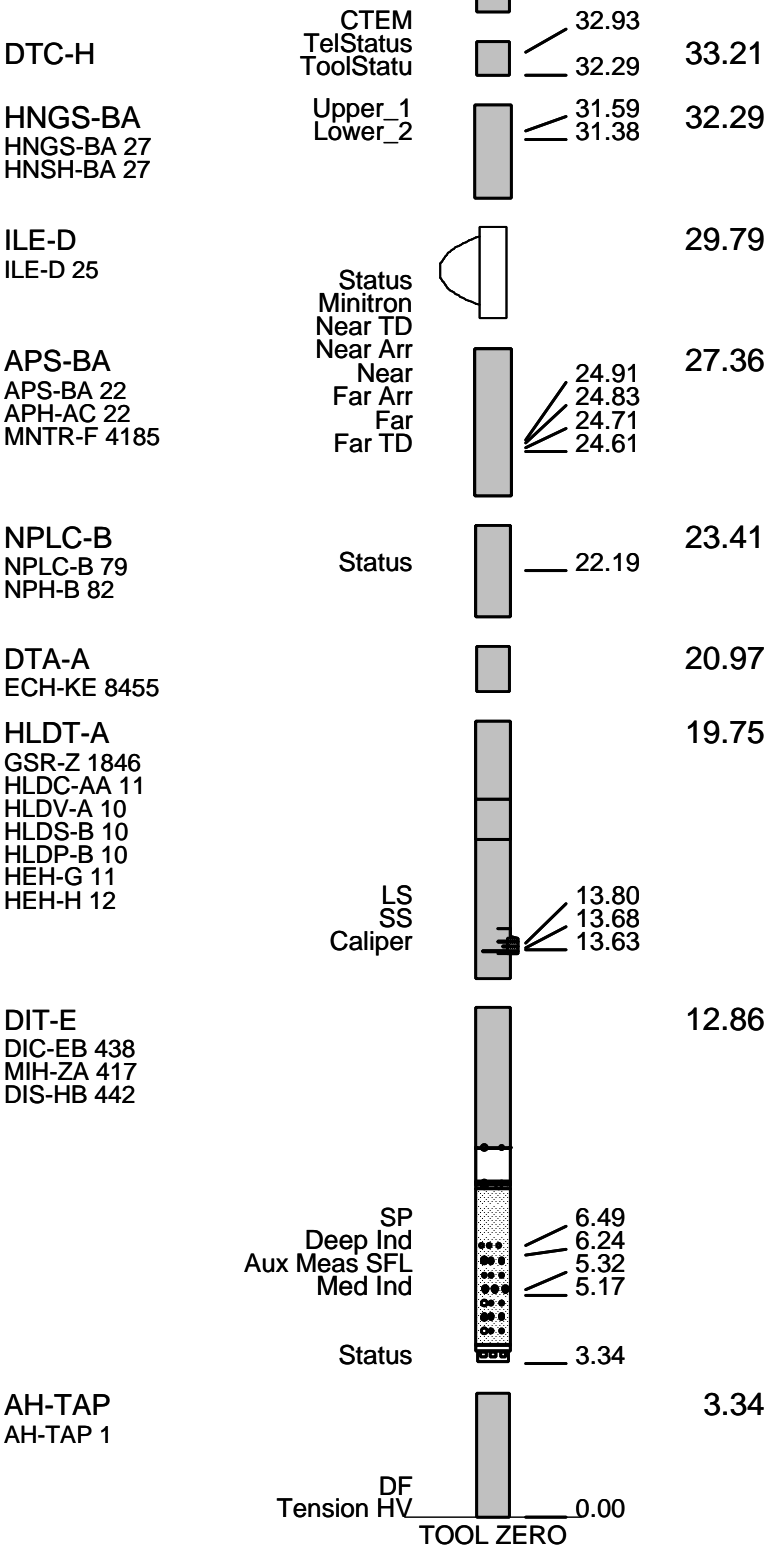
OTHER SERVICES1 OS1: HLDT/APS/HNGS OS2: FMS/DSST OS3: OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
--	---

REMARKS: RUN NUMBER 1 Hole cored with APC/XCB. Log presented in Meters Below Rig Floor (MBRF). Lamont Temperature tool (TAP) was run on Triple Combo, Run 1. Toolstring-TAP/DITE/HLDT/APS/HNGS/MGT Lamont Multi-Sensor Gamma Ray tool (MGT) was run on Triple Combo, Run 1. Wireline Heave Compensator (WHC) was used on all runs. Sepiolite mud was used to displace the hole during the wiper trip after drilling Drillers TD 5114 MBRF, Driller Pipe depth: 4917 MBRF. Schlumberger TD 5112 MBRF. Drill Pipe Schlumberger 4915.5 MBRF.	REMARKS: RUN NUMBER 2
---	-----------------------

RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION:		9C2-303	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

**EQUIPMENT DESCRIPTION**

RUN 1		RUN 2	
<b>SURFACE EQUIPMENT</b>			
SFT-281 24 SFT-178 4722 GSR-U 135 DTM-B			
<b>DOWNHOLE EQUIPMENT</b>			
LEH-QT		39.75	
AH-MGT		38.86	
AH-MGT			



TOOL ZERO

MAXIMUM STRING DIAMETER 3.88 IN  
 MEASUREMENTS RELATIVE TO TOOL ZERO  
 ALL LENGTHS IN METERS

### Output DLIS Files

DEFAULT	PI_LDL_APS_HNGS_008LUP	FN:11	PRODUCER	16-Nov-2001 22:09	5116.1 M	4814.2 M
REDUCED	PI_LDL_APS_HNGS_008LUP	FN:12	PRODUCER	16-Nov-2001 22:09	5116.1 M	4814.3 M

### OP System Version: 9C2-303 MCM

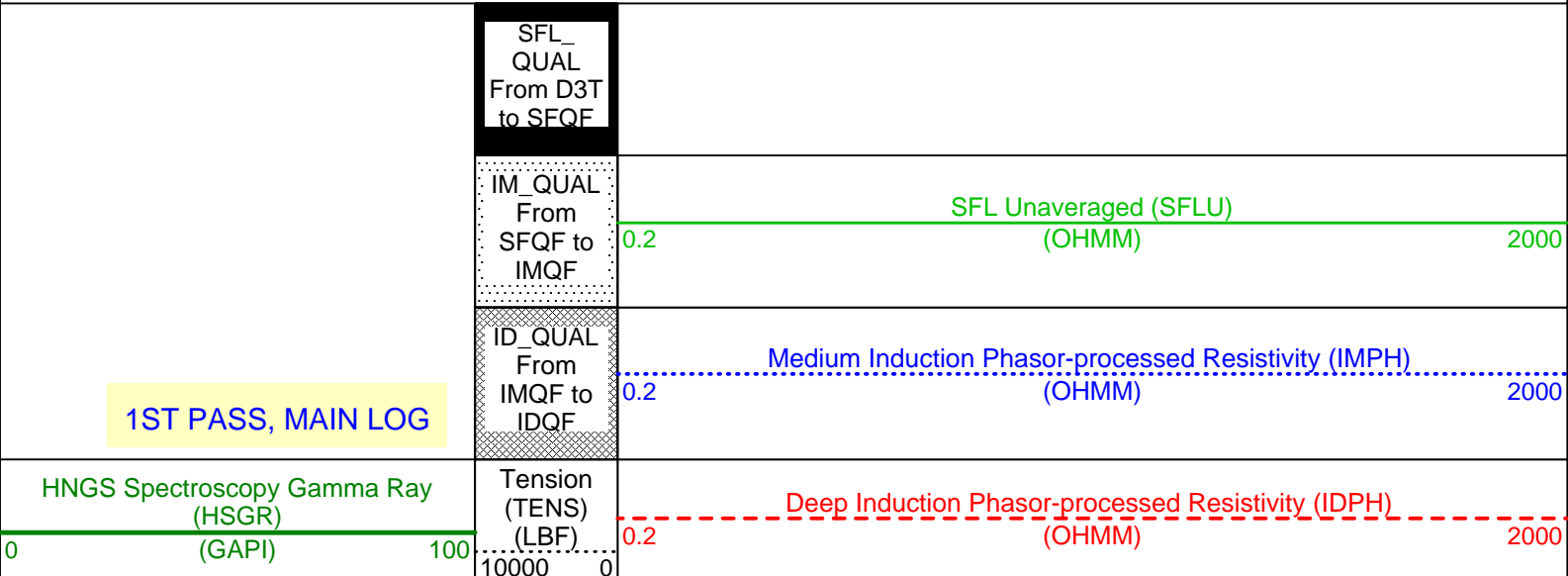
DIT-E	9C2-303	HLDT-A	9C2-303
DTA-A	9C2-303	NPLC-B	9C2-303
APS-BA	9C2-303	HNGS-BA	9C2-303
DTC-H	9C2-303		

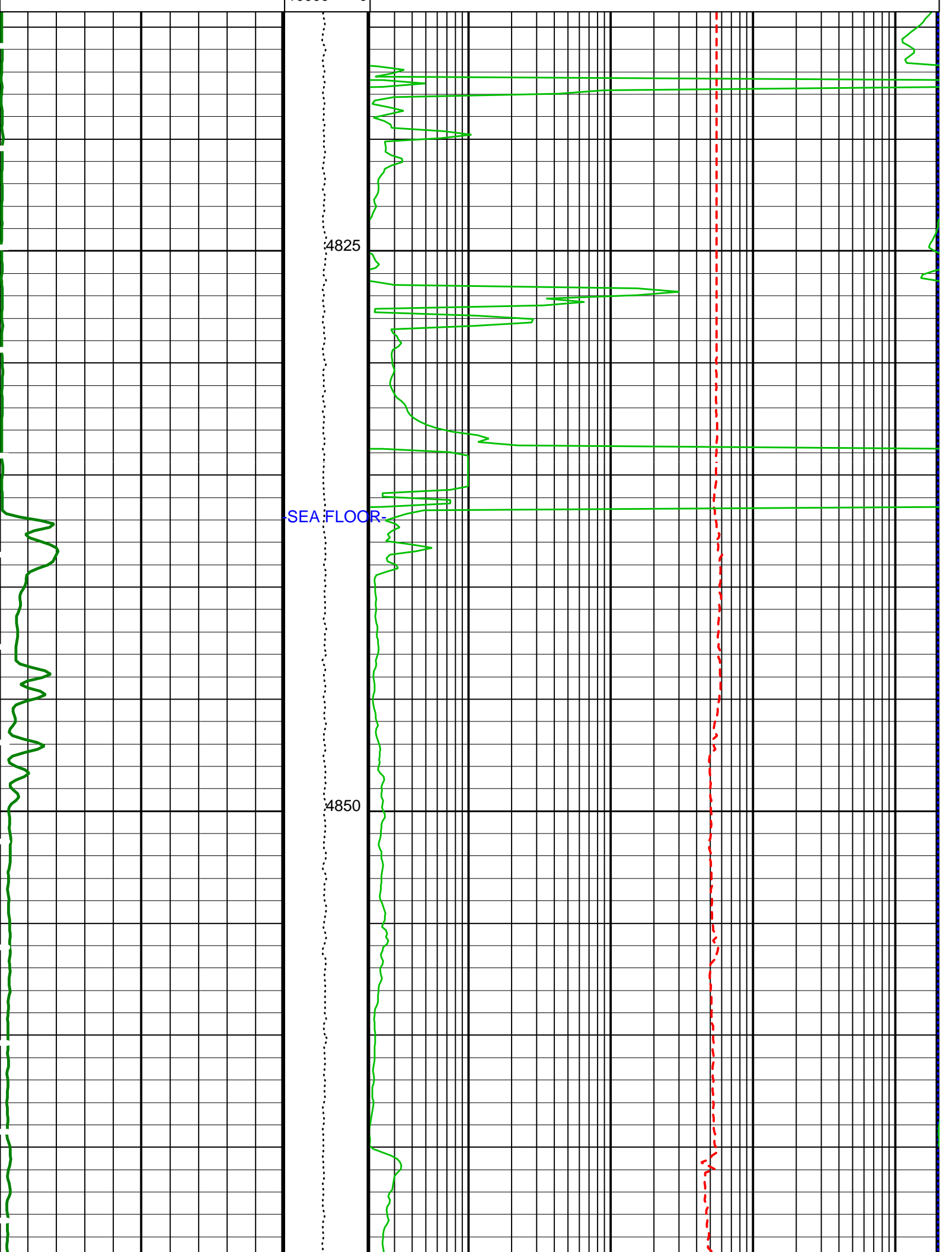
### Changed Parameter Summary

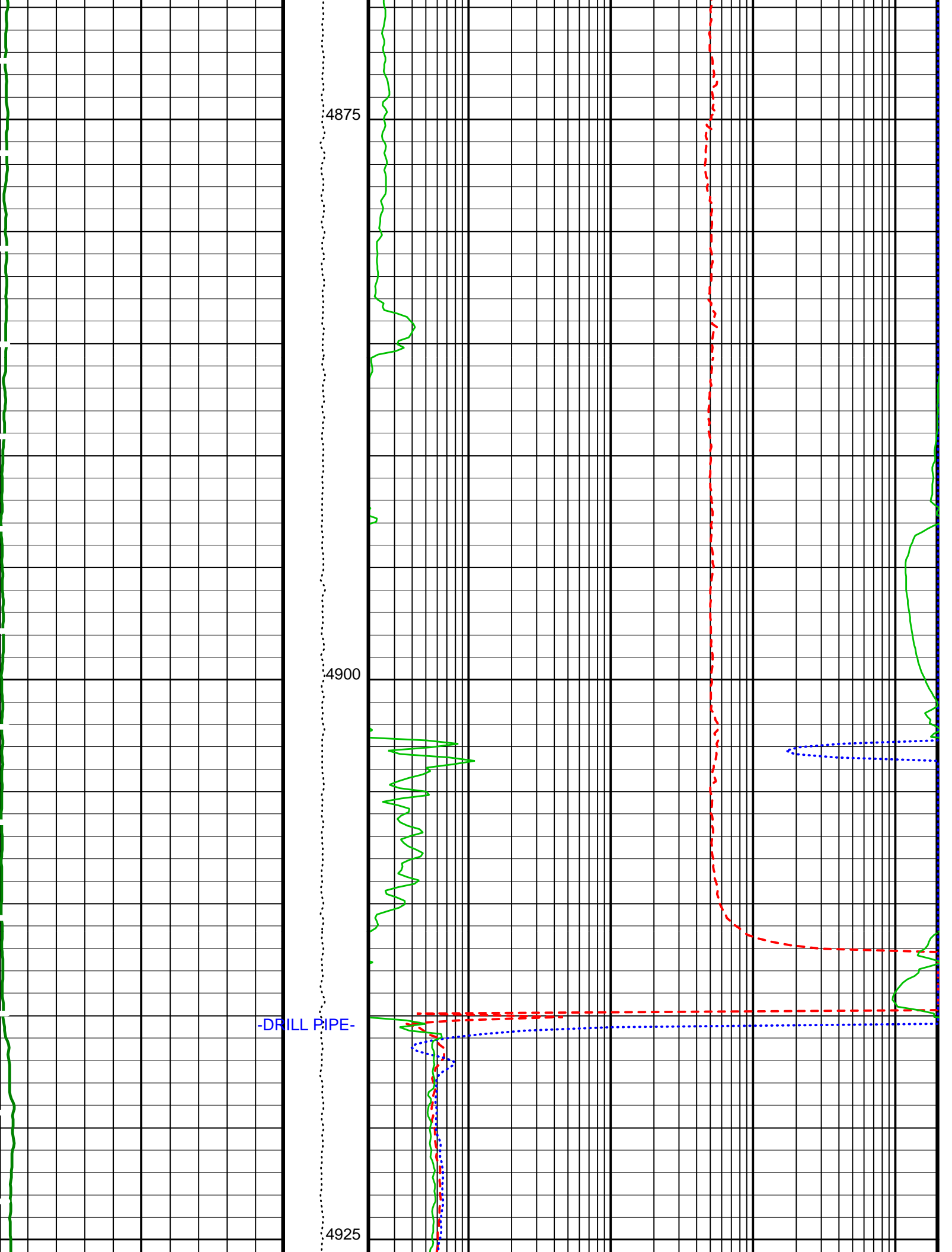
DLIS Name	New Value	Previous Value	Depth & Time
GCSE	CALI	BS	5112.0 22:11:19

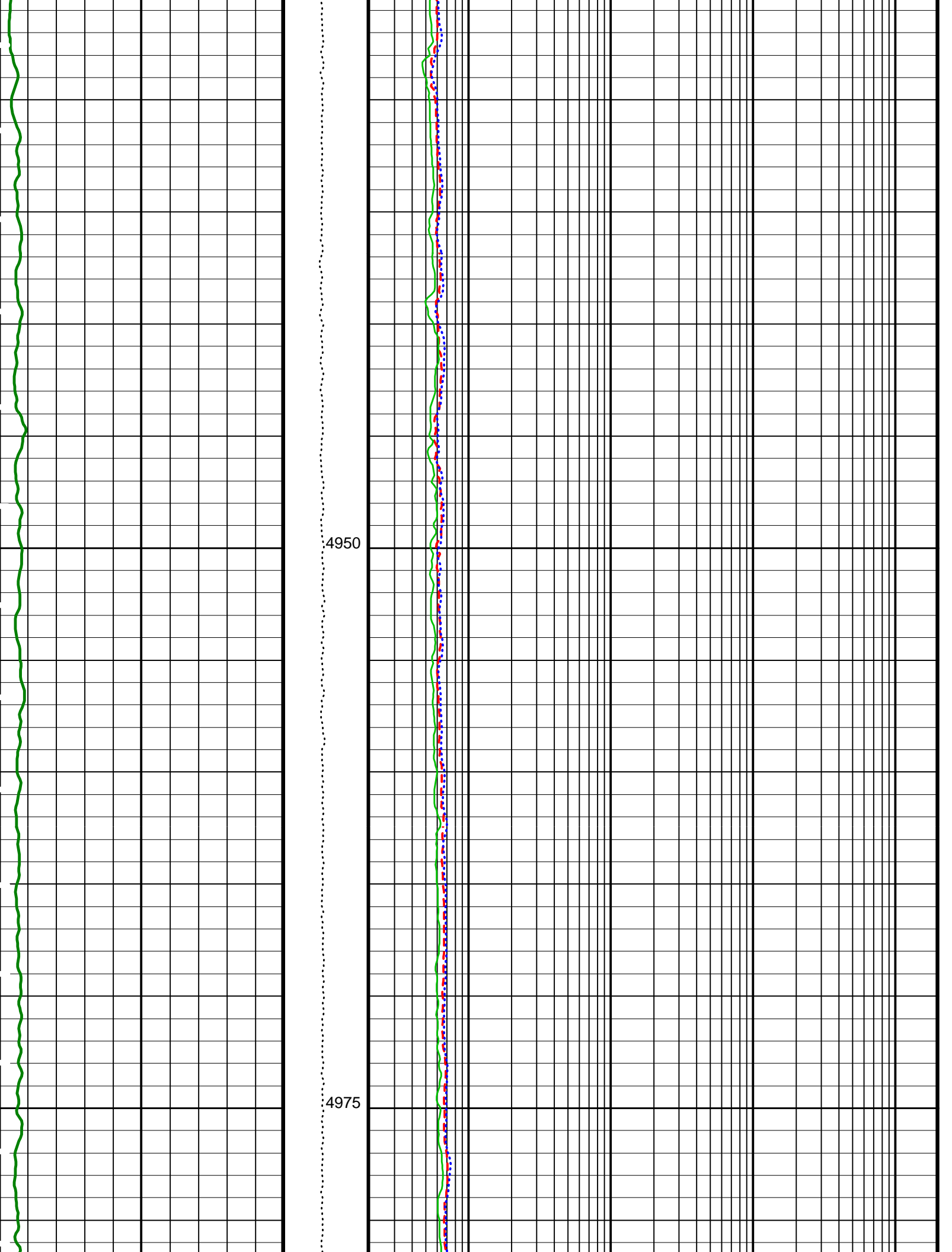
#### PIP SUMMARY

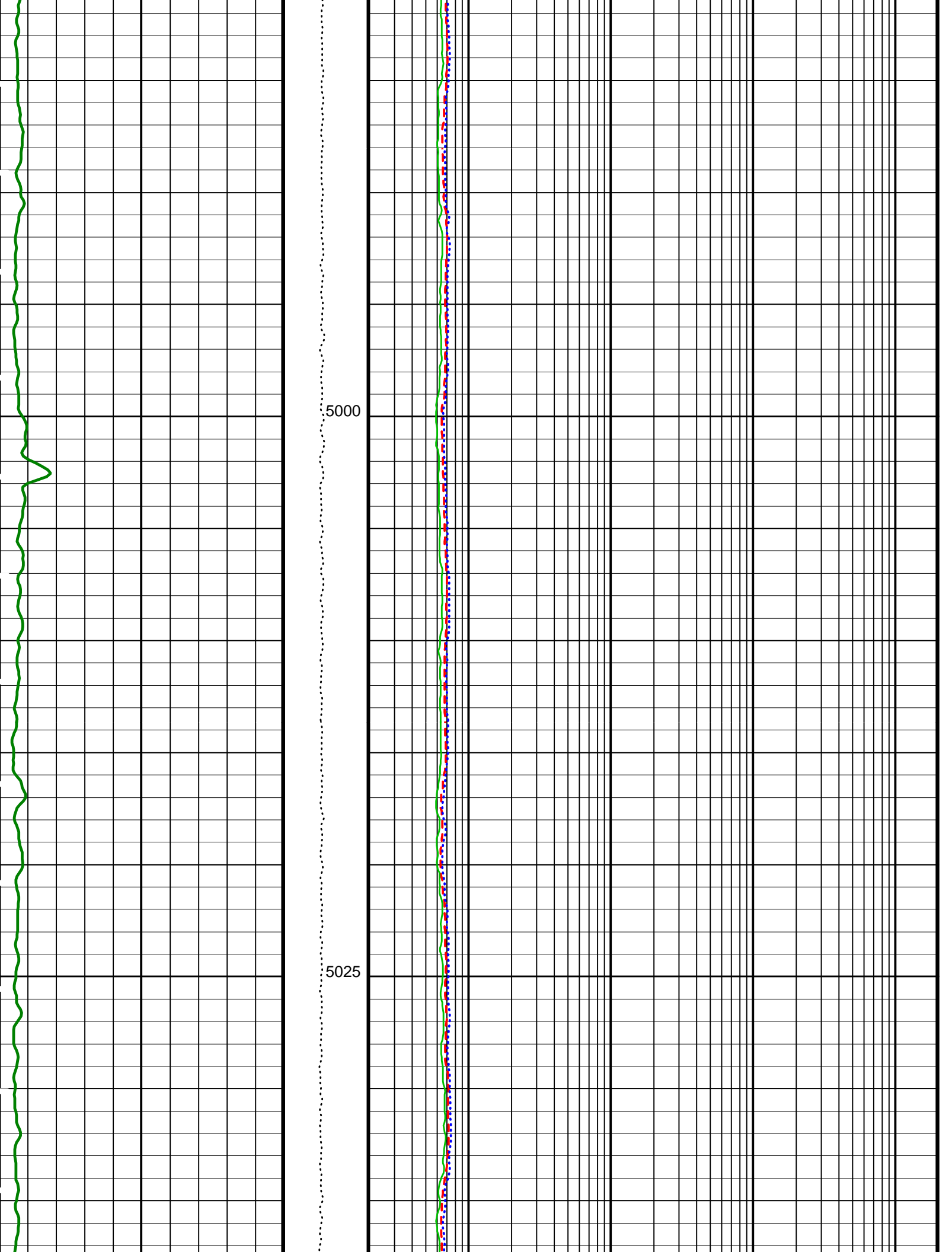
▶ Time Mark Every 60 S



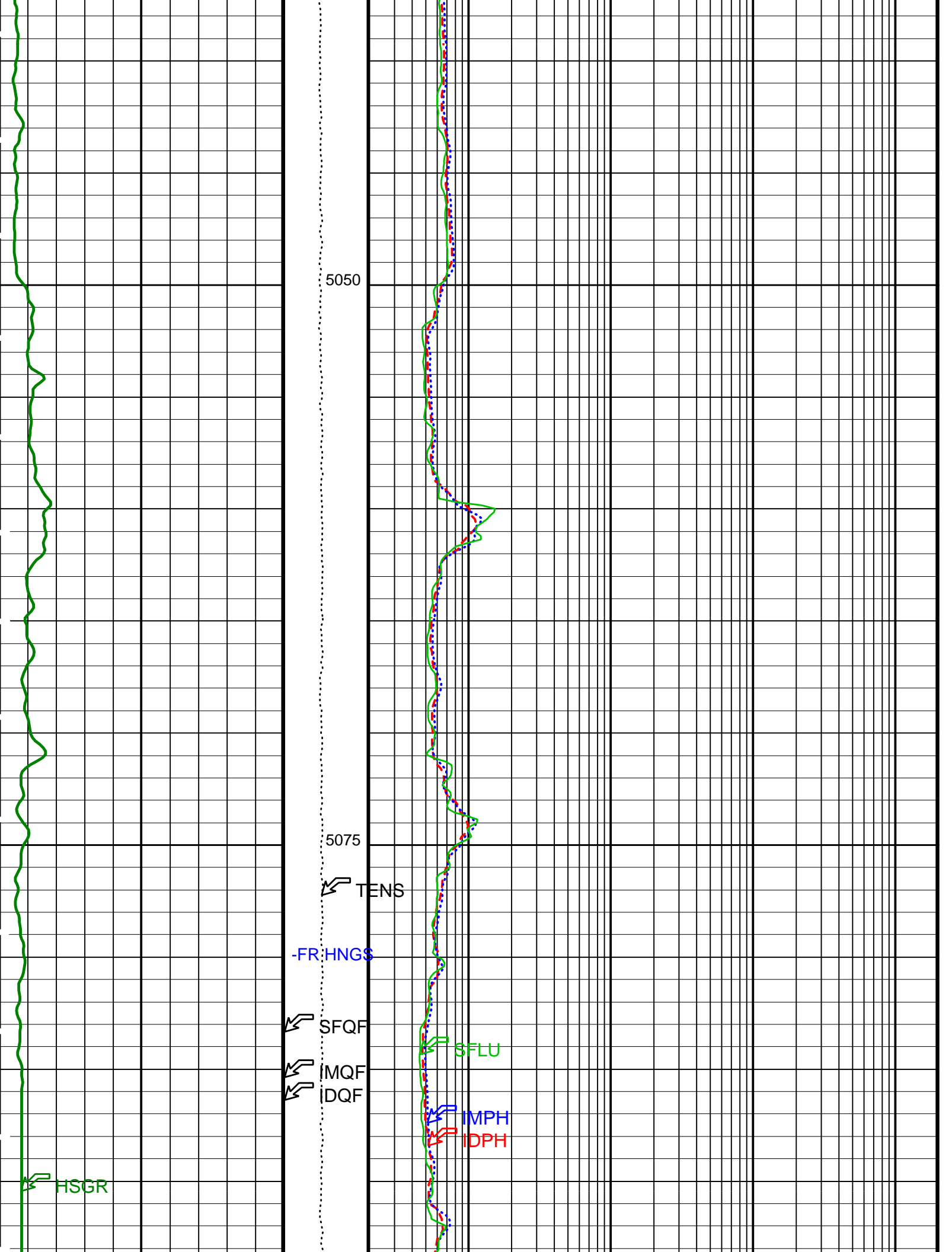












5050

5075

↙ TENS

-FR:HNGS

↙ SFQF

↙ IMQF

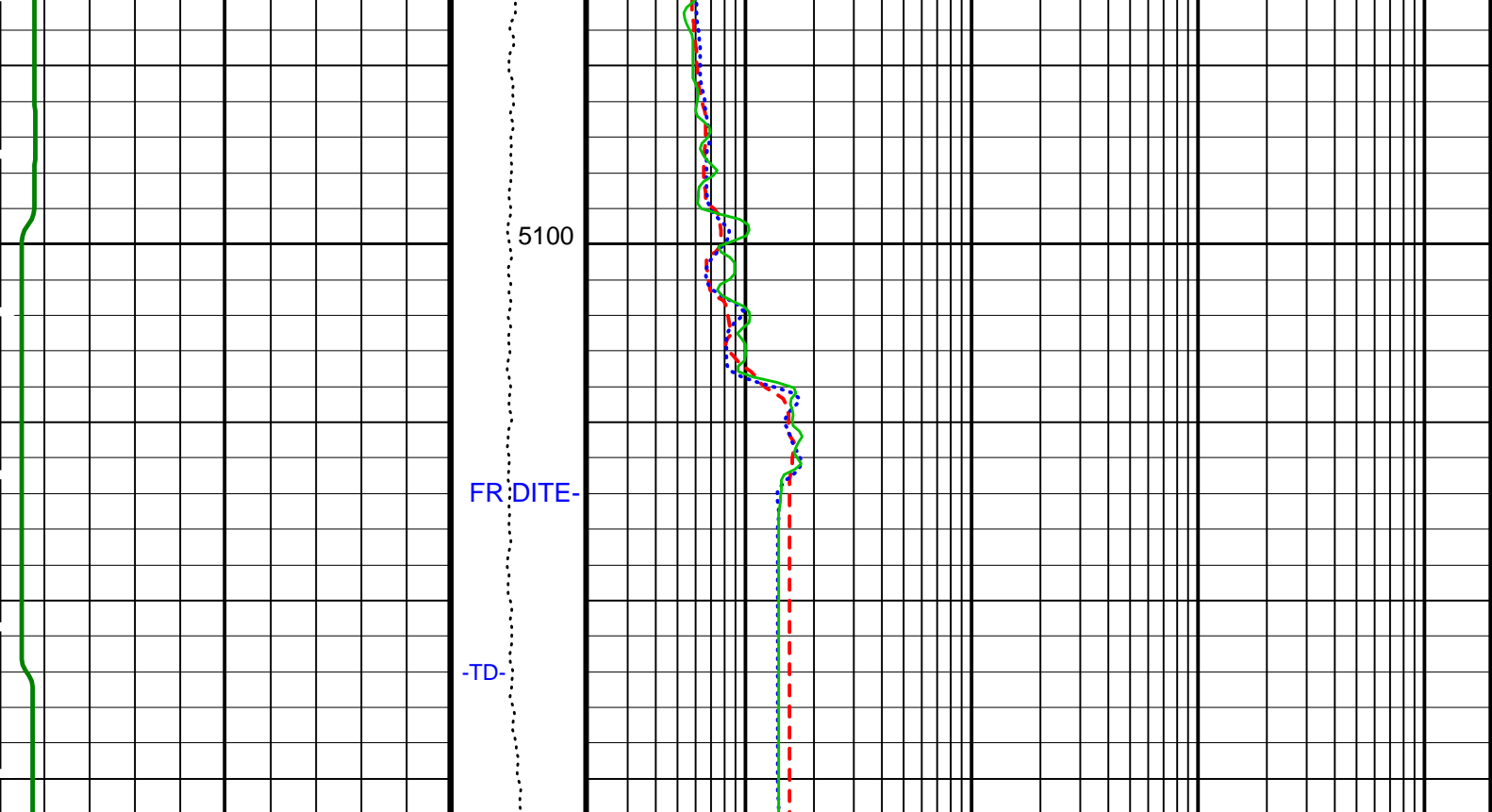
↙ IDQF

↙ SFLU

↙ IMPH

↙ IDPH

↙ HSGR



<p>HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)</p> <p>0 100</p>	<p>Tension (TENS) (LBF)</p> <p>10000 0</p>	<p>Deep Induction Phasor-processed Resistivity (IDPH) (OHMM)</p> <p>0.2 2000</p>
<p>1ST PASS, MAIN LOG</p>	<p>ID_QUAL From IMQF to IDQF</p>	<p>Medium Induction Phasor-processed Resistivity (IMPH) (OHMM)</p> <p>0.2 2000</p>
	<p>IM_QUAL From SFQF to IMQF</p>	<p>SFL Unaveraged (SFLU) (OHMM)</p> <p>0.2 2000</p>
	<p>SFL_QUAL From D3T to SFQF</p>	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
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)	8 DEGC
BKSF	HNGS Borehole Fluid Excluder Sleeve Algorithm Factor	1
BKSH	HNGS Borehole Fluid Excluder Sleeve Algorithm High Channel	245
BKSL	HNGS Borehole Fluid Excluder Sleeve Algorithm Low Channel	17
BS	Bit Size	11.438 IN
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
D1PR	HNGS Detector 1 Calibration Thorium Peak Resolution	7.94455 %
D1TC	HNGS Detector 1 Calibration Temperature	31.7278 DEGC
D1TL	HNGS Detector 1 Calibration Thorium Peak Location	210.396
D2PR	HNGS Detector 2 Calibration Thorium Peak Resolution	7.23028 %

D2TC	HNGS Detector 2 Calibration Thorium Peak Location	30.9207	DEGC
D2TL	HNGS Detector 2 Calibration Thorium Peak Location	209.461	
DBCC	HNGS Barite Constant Correction Flag	NONE	
DFD	Drilling Fluid Density	1.07	G/C3
DGF2	Deep 20 kHz Gain Factor	1.00789	
DPH2	Deep 20 kHz Phase Shift	-0.152394	DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	16.357	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	64.6326	MM/M
GCF1_START	HNGS Detector 1 GCF Constant	1	
GCF2_START	HNGS Detector 2 GCF Constant	1	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
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	-0.0006672	
HALF	HNGS Alpha Filter Length	60	IN
HATIM	HNGS Marquardt Accumulation Time	600	S
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
HSLV	HNGS Borehole Fluid Excluder Sleeve Status	NO	
HSVN	HNGS Spectral Standards Version Number	2.30388e-036	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ITEN	DIT-E Temperature Enable	ENABLE	
MARQ_START	HNGS Marquardt Start-up Mode	INTERNAL	
MGF2	Medium 20 kHz Gain Factor	1.02964	
MPH2	Medium 20 kHz Phase Shift	-0.933067	DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	-1.78642	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	-34.2041	MM/M
RDF1_START	HNGS Detector 1 RDF Constant	0	
RDF2_START	HNGS Detector 2 RDF Constant	0	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S1NA	HNGS Detector 1 Calibration Sodium Count Rate	17.94	CPS
S1NG	HNGS Detector 1 Calibration End-On / Side-On Gain Ratio	0.986623	
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
S2NA	HNGS Detector 2 Calibration Sodium Count Rate	18.0888	CPS
S2NG	HNGS Detector 2 Calibration End-On / Side-On Gain Ratio	0.979243	
SABK	HNGS Statistical Uncertainty in Borehole Potassium Running Average	0.000254351	
SFCR	SFL Channel Ratio	1000	
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TD	Total Depth	-50000	M
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.23148	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.01839	

Format: DITE\_LogPhasor      Vertical Scale: 1:200      Graphics File Created: 16-Nov-2001 22:09

<b>OP System Version: 9C2-303</b>			
MCM			
DIT-E	9C2-303	HLDT-A	9C2-303
DTA-A	9C2-303	NPLC-B	9C2-303
APS-BA	9C2-303	HNGS-BA	9C2-303
DTC-H	9C2-303		

<b>Output DLIS Files</b>					
DEFAULT	PI_LDL_APS_HNGS_008LUP	FN:11	PRODUCER	16-Nov-2001 22:09	
REDUCED	PI_LDL_APS_HNGS_008LUP	FN:12	PRODUCER	16-Nov-2001 22:09	

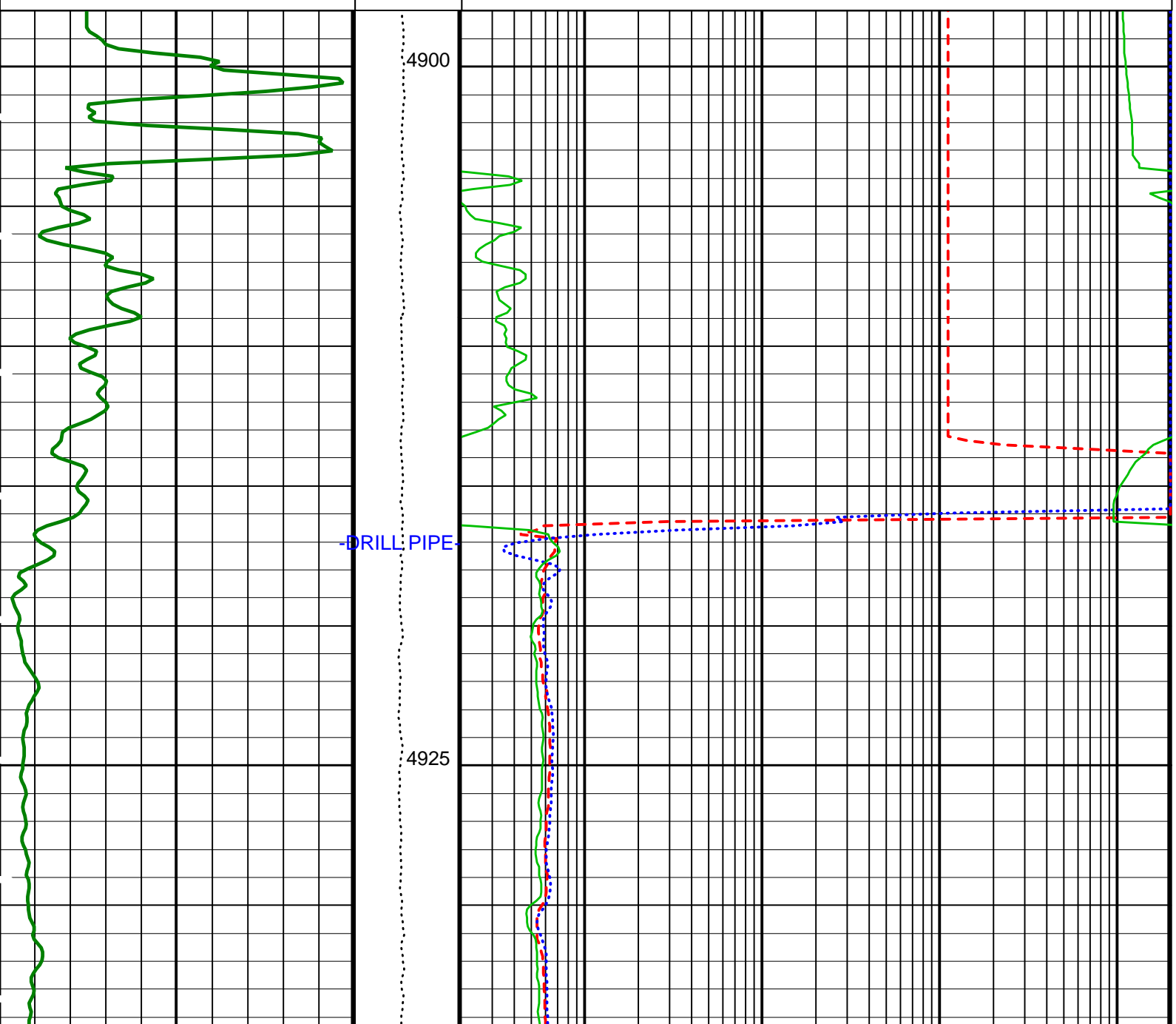
<b>Output DLIS Files</b>					
DEFAULT	PI_LDL_APS_HNGS_009LUP	FN:13	PRODUCER	16-Nov-2001 23:29	5113.8 M
REDUCED	PI_LDL_APS_HNGS_009LUP	FN:14	PRODUCER	16-Nov-2001 23:29	4898.0 M

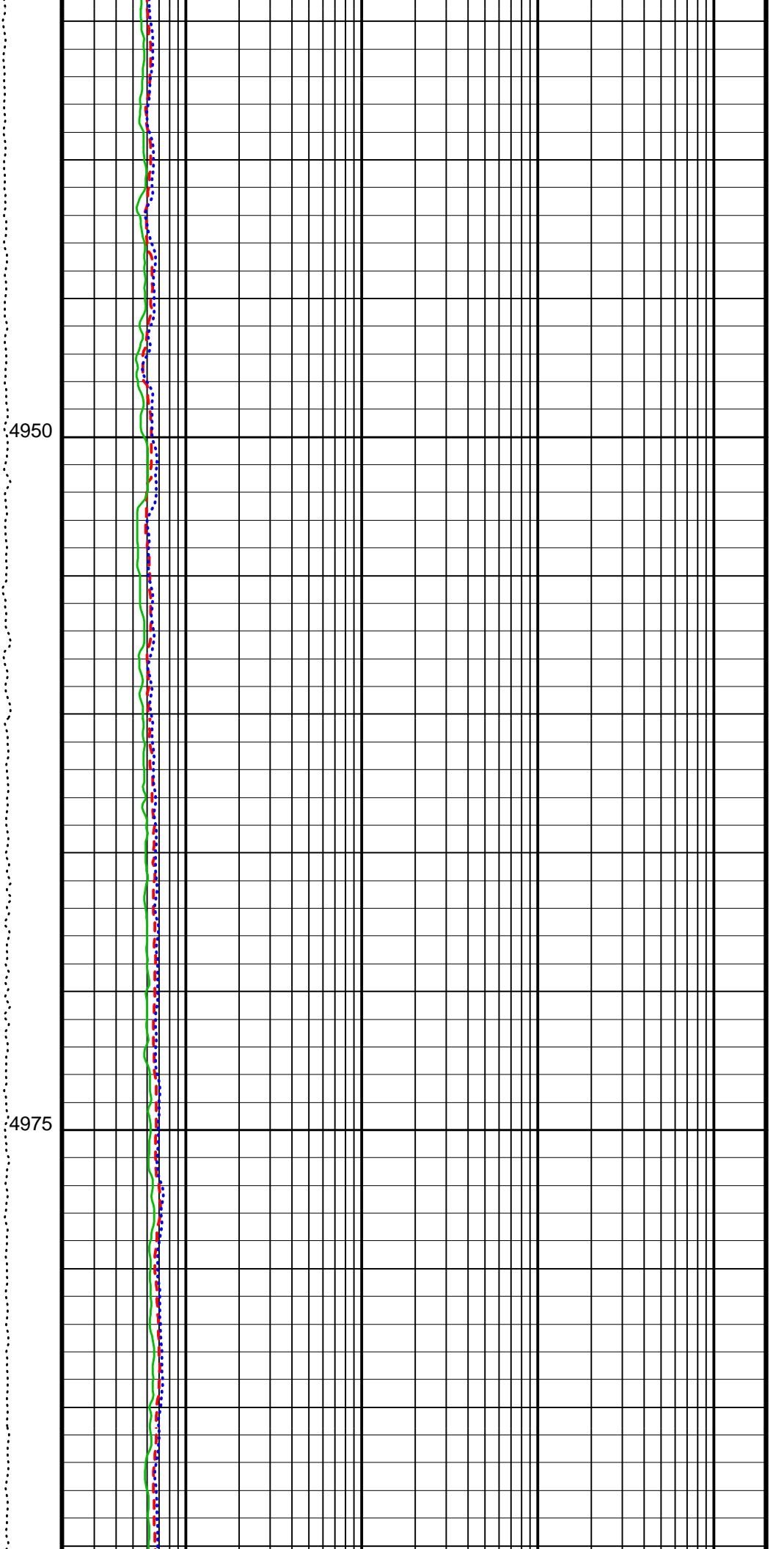
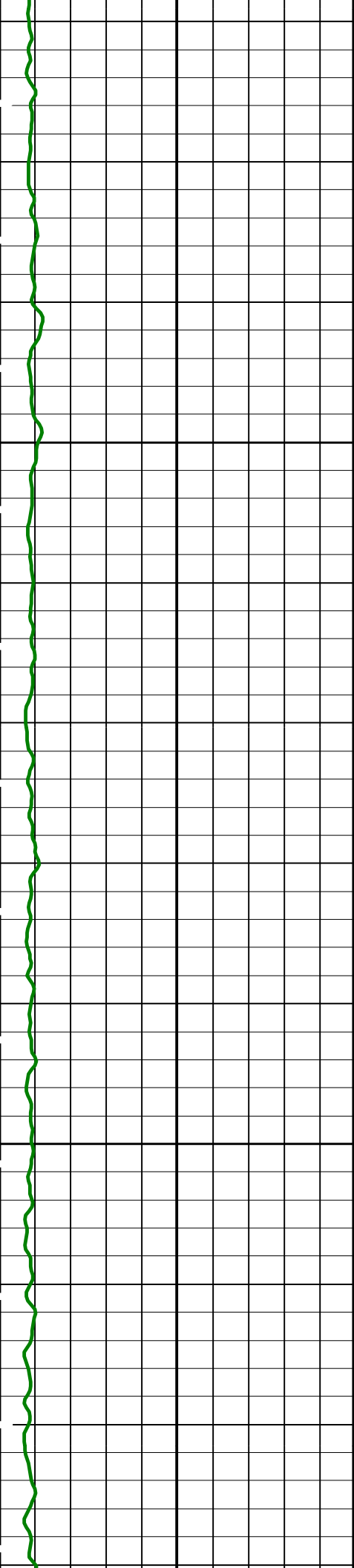
<b>OP System Version: 9C2-303</b>			
MCM			
DIT-E	9C2-303	HLDT-A	9C2-303
DTA-A	9C2-303	NPLC-B	9C2-303

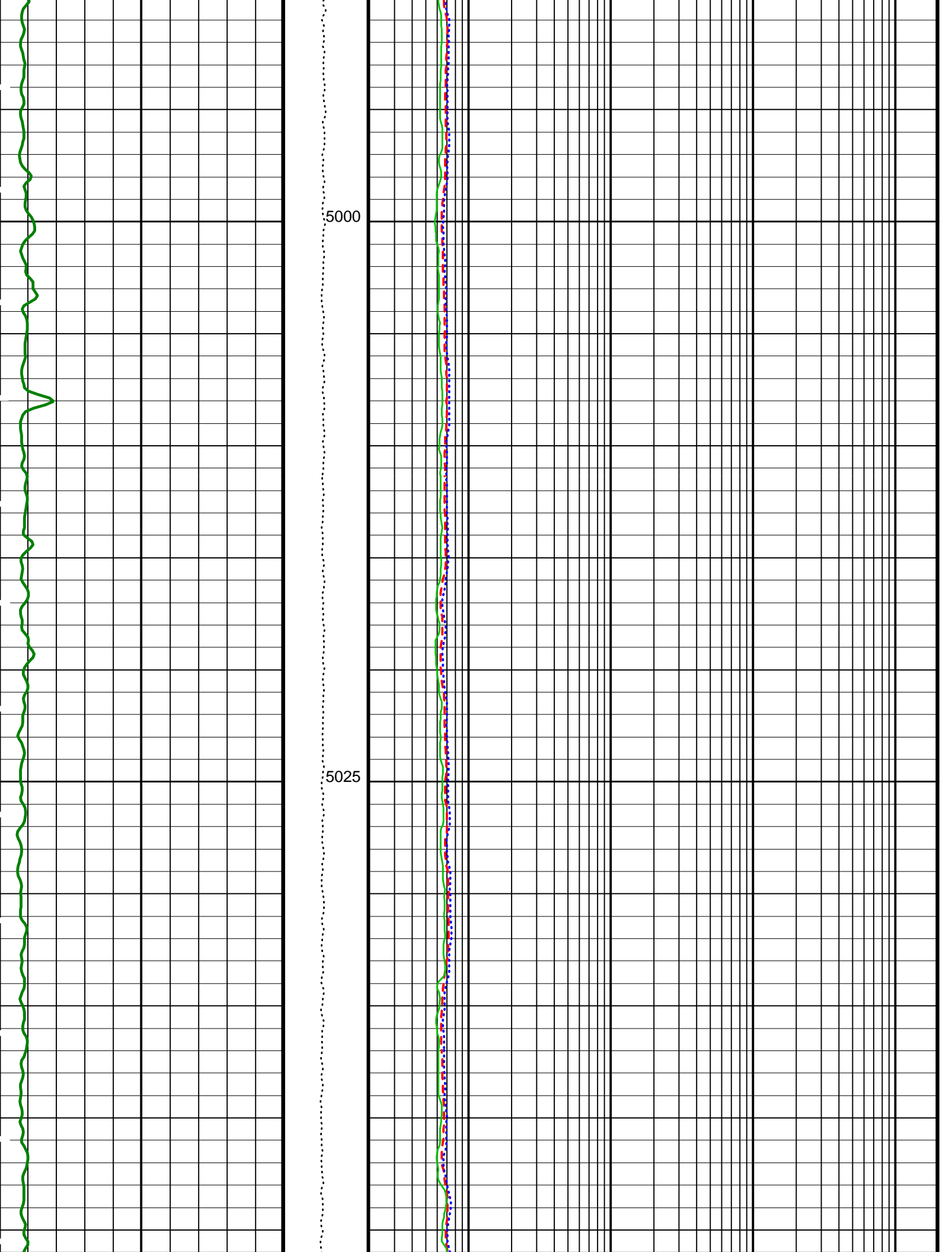
PIP SUMMARY

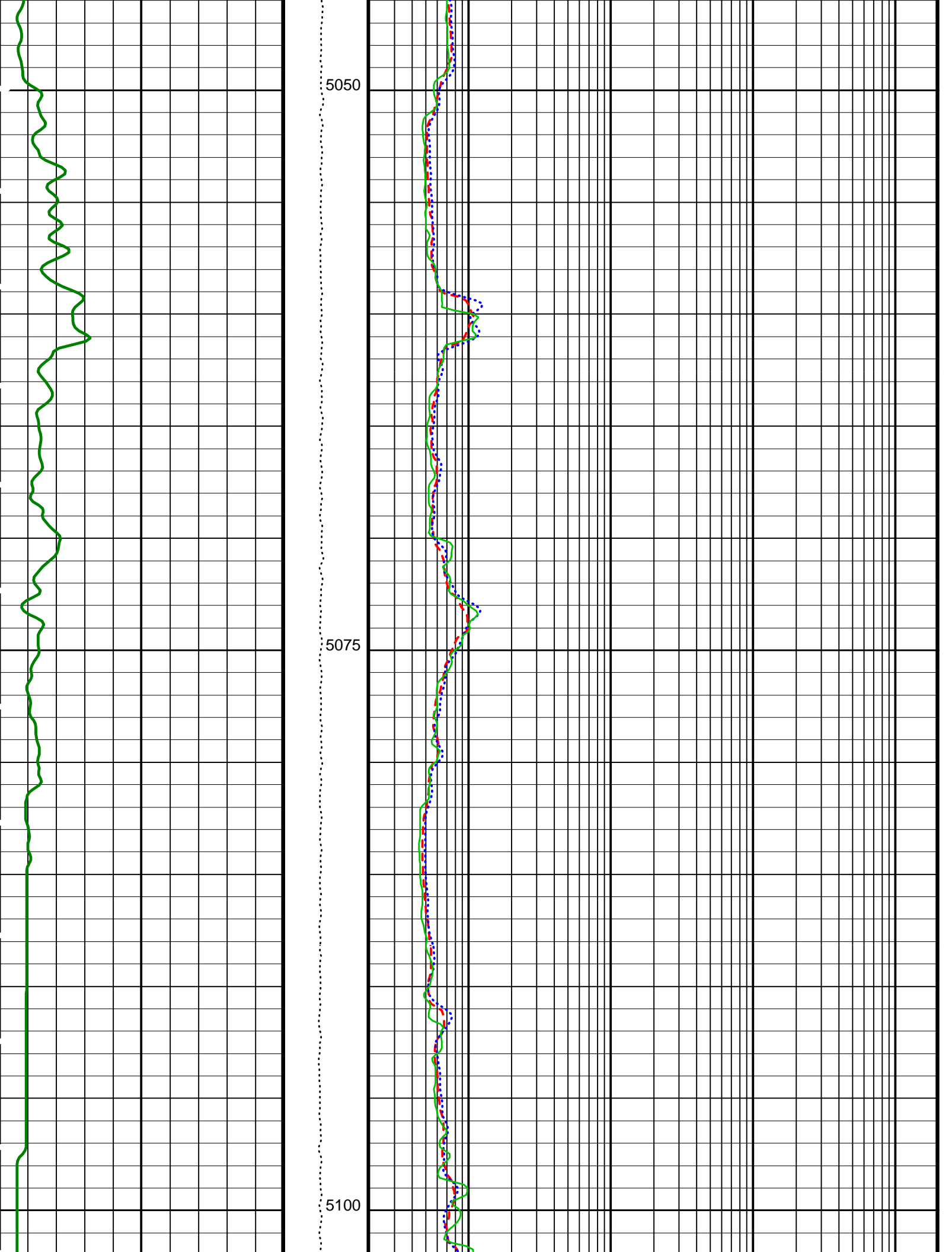
Time Mark Every 60 S

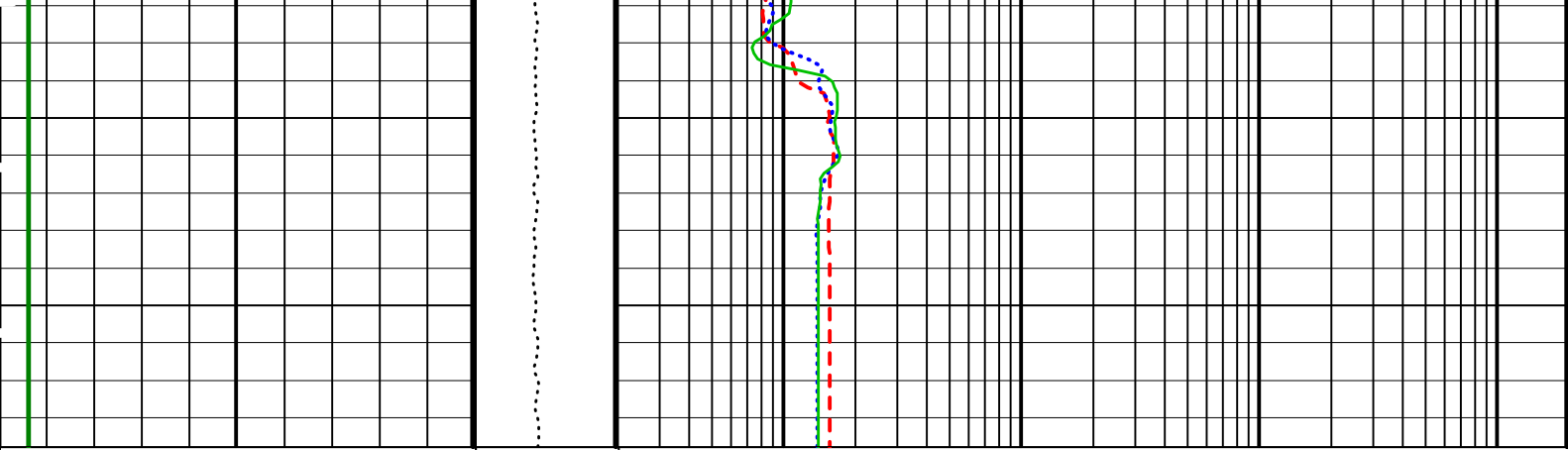
2ND PASS REPEAT SECTION	SFL_QUAL From D3T to SFQF	
	IM_QUAL From SFQF to IMQF	SFL Unaveraged (SFLU) (OHMM) 0.2 2000
	ID_QUAL From IMQF to IDQF	Medium Induction Phasor-processed Resistivity (IMPH) (OHMM) 0.2 2000
HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)	Tension (TENS) (LBF)	Deep Induction Phasor-processed Resistivity (IDPH) (OHMM) 0.2 2000











HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)	Tension (TENS) (LBF)	Deep Induction Phasor-processed Resistivity (IDPH) (OHMM)
2ND PASS	ID_QUAL From IMQF to IDQF	Medium Induction Phasor-processed Resistivity (IMPH) (OHMM)
REPEAT SECTION	IM_QUAL From SFQF to IMQF	SFL Unaveraged (SFLU) (OHMM)
	SFL_ QUAL From D3T to SFQF	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
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)	8 DEGC
BKSF	HNGS Borehole Fluid Excluder Sleeve Algorithm Factor	1
BKSH	HNGS Borehole Fluid Excluder Sleeve Algorithm High Channel	245
BKSL	HNGS Borehole Fluid Excluder Sleeve Algorithm Low Channel	17
BS	Bit Size	11.438 IN
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
D1PR	HNGS Detector 1 Calibration Thorium Peak Resolution	7.94455 %
D1TC	HNGS Detector 1 Calibration Temperature	31.7278 DEGC
D1TL	HNGS Detector 1 Calibration Thorium Peak Location	210.396
D2PR	HNGS Detector 2 Calibration Thorium Peak Resolution	7.23028 %
D2TC	HNGS Detector 2 Calibration Temperature	30.9207 DEGC
D2TL	HNGS Detector 2 Calibration Thorium Peak Location	209.461
DBCC	HNGS Barite Constant Correction Flag	NONE
DFD	Drilling Fluid Density	1.07 G/C3
DGF2	Deep 20 kHz Gain Factor	1.00789
DPH2	Deep 20 kHz Phase Shift	-0.152394 DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	16.357 MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843 MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	64.6326 MM/M
GCF1_START	HNGS Detector 1 GCF Constant	1
GCF2_START	HNGS Detector 2 GCF Constant	1
GCSE	Generalized Caliper Selection	CALI
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
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	-0.00482433	
HALF	HNGS Alpha Filter Length	60	IN
HATIM	HNGS Marquardt Accumulation Time	600	S
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
HSLV	HNGS Borehole Fluid Excluder Sleeve Status	NO	
HSVN	HNGS Spectral Standards Version Number	6.44008e-031	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ITEN	DIT-E Temperature Enable	ENABLE	
MARQ_START	HNGS Marquardt Start-up Mode	INTERNAL	
MGF2	Medium 20 kHz Gain Factor	1.02964	
MPH2	Medium 20 kHz Phase Shift	-0.933067	DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	-1.78642	MM/M
MSR2	Medium Sigma Reference (20 kHz)	3250	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	-34.2041	MM/M
RDF1_START	HNGS Detector 1 RDF Constant	0	
RDF2_START	HNGS Detector 2 RDF Constant	0	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S1NA	HNGS Detector 1 Calibration Sodium Count Rate	17.94	CPS
S1NG	HNGS Detector 1 Calibration End-On / Side-On Gain Ratio	0.986623	
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
S2NA	HNGS Detector 2 Calibration Sodium Count Rate	18.0888	CPS
S2NG	HNGS Detector 2 Calibration End-On / Side-On Gain Ratio	0.979243	
SABK	HNGS Statistical Uncertainty in Borehole Potassium Running Average	0.000416327	
SFCR	SFL Channel Ratio	1000	
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	20	DEGC
TD	Total Depth	5114	M
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.11827	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.973469	

Format: DITE\_LogPhasor      Vertical Scale: 1:200      Graphics File Created: 16-Nov-2001 23:29

## OP System Version: 9C2-303

MCM

DIT-E	9C2-303	HLDT-A	9C2-303
DTA-A	9C2-303	NPLC-B	9C2-303
APS-BA	9C2-303	HNGS-BA	9C2-303
DTC-H	9C2-303		

## Output DLIS Files

DEFAULT	PI_LDL_APS_HNGS_009LUP	FN:13	PRODUCER	16-Nov-2001 23:29
REDUCED	PI_LDL_APS_HNGS_009LUP	FN:14	PRODUCER	16-Nov-2001 23:29

### Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
<b>Hostile Environment Litho Density - A Wellsite Calibration - Background Measurement</b>							
Master: Calibration out of date 15-Aug-2001 7:07 Before: 9-Nov-2001 3:27							
LSW1 Background	100.0	89.07	89.07	N/A	N/A	0.03000	CPS
LSW2 Background	105.0	94.00	91.57	N/A	N/A	0.03000	CPS
LSW3 Background	210.0	182.5	178.1	N/A	N/A	0.03000	CPS
LSW4 Background	290.0	241.3	239.4	N/A	N/A	0.03000	CPS
LSW5 Background	610.0	530.0	528.2	N/A	N/A	0.03000	CPS
SSW1 Background	100.0	86.93	86.14	N/A	N/A	0.03000	CPS
SSW2 Background	200.0	169.9	168.4	N/A	N/A	0.03000	CPS
SSW3 Background	530.0	449.6	448.8	N/A	N/A	0.03000	CPS
SSW4 Background	280.0	236.6	238.4	N/A	N/A	0.03000	CPS
SSW5 Background	205.0	177.0	177.1	N/A	N/A	0.03000	CPS
<b>Hostile Environment Litho Density - A Wellsite Calibration - Tool Quality Control Information High Voltage</b>							
Master: Calibration out of date 15-Aug-2001 7:07 Before: 9-Nov-2001 3:27							
LS Bkg. High Voltage	1134	1134	1131	N/A	N/A	N/A	V
SS Bkg. High Voltage	1180	1180	1178	N/A	N/A	N/A	V
<b>Hostile Environment Litho Density - A Wellsite Calibration - Detectors Resolution From BKG Measurements</b>							
Master: Calibration out of date 15-Aug-2001 7:07 Before: 9-Nov-2001 3:27							
LS Background Resolution	1.000	1.029	1.047	N/A	N/A	N/A	

SS Background Resolution	1.000	0.9496	0.9487	N/A	N/A	N/A	
<b>Hostile Environment Litho Density - A Wellsite Calibration - Caliper Calibration</b>							
Before: 9-Nov-2001 3:19							
Caliper Small Ring	12.00	N/A	15.92	N/A	N/A	N/A	IN
Caliper Large Ring	18.25	N/A	23.86	N/A	N/A	N/A	IN
<b>Hostile Environment Litho Density - A Master Calibration - Aluminum Measurement</b>							
Master: Calibration out of date 15-Aug-2001 7:23							
LSW1 Aluminum	648.4	592.4	--	--	--	--	CPS
LSW2 Aluminum	1018	936.8	--	--	--	--	CPS
LSW3 Aluminum	1105	972.2	--	--	--	--	CPS
LSW4 Aluminum	609.5	537.9	--	--	--	--	CPS
LSW5 Aluminum	533.8	479.4	--	--	--	--	CPS
SSW1 Aluminum	2664	2454	--	--	--	--	CPS
SSW2 Aluminum	7731	7177	--	--	--	--	CPS
SSW3 Aluminum	10380	9660	--	--	--	--	CPS
SSW4 Aluminum	4574	4186	--	--	--	--	CPS
SSW5 Aluminum	745.2	676.8	--	--	--	--	CPS
<b>Hostile Environment Litho Density - A Master Calibration - Tool Quality Control Information: High Voltage</b>							
Master: Calibration out of date 15-Aug-2001 7:23							
LS Alum. High Voltage	1134	1134	--	--	--	--	V
SS Alum. High Voltage	1180	1169	--	--	--	--	V
<b>Hostile Environment Litho Density - A Master Calibration - Detectors Resolution From Aluminum Measurement</b>							
Master: Calibration out of date 15-Aug-2001 7:23							
LS Aluminum Resolution	1.000	1.049	--	--	--	--	
SS Aluminum Resolution	1.000	1.035	--	--	--	--	
<b>Hostile Environment Litho Density - A Master Calibration - Aluminum Measurement (Window Ratios)</b>							
Master: Calibration out of date 15-Aug-2001 7:23							
LSW1/(LSW4 + LSW5) Calc.	0.5400	0.5824	--	--	--	--	
LSW3/(LSW4 + LSW5) Calc.	0.9600	0.9557	--	--	--	--	
SSW1/(SSW4 + SSW5) Calc.	0.4600	0.5047	--	--	--	--	
SSW3/(SSW4 + SSW5) Calc.	1.900	1.987	--	--	--	--	
<b>Hostile Environment Litho Density - A Master Calibration - Litholog Measurement</b>							
Master: Calibration out of date 15-Aug-2001 8:13							
LSW1 Iron	410.0	404.8	--	--	--	--	CPS
LSW2 Iron	870.0	765.5	--	--	--	--	CPS
LSW3 Iron	1030	888.8	--	--	--	--	CPS
LSW4 Iron	590.0	509.7	--	--	--	--	CPS
LSW5 Iron	530.0	449.7	--	--	--	--	CPS
SSW1 Iron	1850	1842	--	--	--	--	CPS
SSW2 Iron	6500	6221	--	--	--	--	CPS
SSW3 Iron	10000	9124	--	--	--	--	CPS
SSW4 Iron	4500	3968	--	--	--	--	CPS
SSW5 Iron	750.0	622.7	--	--	--	--	CPS
<b>Hostile Environment Litho Density - A Master Calibration - Tool Quality Control Information: High Voltage</b>							
Master: Calibration out of date 15-Aug-2001 8:13							
LS Lith High Voltage	1134	1134	--	--	--	--	V
SS Lith High Voltage	1180	1169	--	--	--	--	V
<b>Hostile Environment Litho Density - A Master Calibration - Detectors Resolution From Litholog Measurement</b>							
Master: Calibration out of date 15-Aug-2001 8:13							
LS Lith Resolution	1.000	1.040	--	--	--	--	
SS Lith Resolution	1.000	1.024	--	--	--	--	
<b>Accelerator-Porosity Tool Wellsite Calibration - Detector Background</b>							
Master: Calibration out of date 5-Aug-2001 7:26 Before: 16-Nov-2001 19:13							
Near Det Bkg Cntrate	30.00	31.20	33.51	N/A	N/A	N/A	CPS
Far Det Bkg Cntrate	30.00	34.55	33.45	N/A	N/A	N/A	CPS
Array-1 Det Bkg Cntrate	30.00	30.79	28.66	N/A	N/A	N/A	CPS
Array-2 Det Bkg Cntrate	30.00	29.57	30.31	N/A	N/A	N/A	CPS
Array Therm Det Bkg Cntrate	30.00	31.99	33.69	N/A	N/A	N/A	CPS
<b>Accelerator-Porosity Tool Wellsite Calibration - Calibration Ratios</b>							
Master: Calibration out of date 5-Aug-2001 7:26							
Near/Far Calibration Ratio	0.9250	0.9005	N/A	N/A	N/A	N/A	
Near/Array Calibration Ratio	1.030	1.063	N/A	N/A	N/A	N/A	
<b>Accelerator-Porosity Tool Master Calibration - Tank Check</b>							
Master: Calibration out of date 5-Aug-2001 7:26							
Array-1 Standoff Porosity	10.25	11.51	--	--	--	--	PU
Array-2 Standoff Porosity	10.25	11.32	--	--	--	--	PU
Sigma Formation	27.50	27.95	--	--	--	--	CU
<b>Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check</b>							
Master: 9-Nov-2001 19:27 Before: 9-Nov-2001 19:46							
Nr 511 Backsc	40.00	40.57	40.58	N/A	N/A	1.000	

Na 511 Peak Loc	40.00	40.57	40.58	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.90	17.01	N/A	N/A	2.000	%
High Voltage	1150	1100	1100	N/A	N/A	30.00	V
Na 1785 Peak Loc	142.6	145.1	145.5	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	10.15	10.15	N/A	N/A	2.000	%
Temperature	15.50	31.73	31.73	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	17.94	17.88	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check

Master: 9-Nov-2001 19:27 Before: 9-Nov-2001 19:46

Na 511 Peak Loc	40.00	40.70	40.97	N/A	N/A	1.000	
Na 511 Peak Res	15.50	15.14	15.10	N/A	N/A	2.000	%
High Voltage	1150	1188	1189	N/A	N/A	30.00	V
Na 1785 Peak Loc	142.6	144.5	145.9	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	7.999	7.706	N/A	N/A	2.000	%
Temperature	15.50	30.93	31.02	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	18.09	18.05	N/A	N/A	8.000	CPS

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

Master: 9-Nov-2001 19:27 Before: 9-Nov-2001 19:46

Coincidence Count Rate Ratio	1.000	0.9912	0.9922	N/A	N/A	0.05000	
------------------------------	-------	--------	--------	-----	-----	---------	--

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 1 Calibration

Master: 9-Nov-2001 19:20

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	210.4	--	--	--	--	
Th Peak Res	7.000	7.945	--	--	--	--	%
Background Count Rate	142.5	15.50	--	--	--	--	CPS
Gain Ratio	1.000	0.9866	--	--	--	--	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 2 Calibration

Master: 9-Nov-2001 19:20

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	209.5	--	--	--	--	
Th Peak Res	7.000	7.230	--	--	--	--	%
Background Count Rate	142.5	17.01	--	--	--	--	CPS
Gain Ratio	1.000	0.9792	--	--	--	--	

Accelerator-Porosity Tool - Detector Plateau Settings :

Near Detector Plateau Setting 1748 V  
Far Detector Plateau Setting 2052 V  
Array Detector Plateau Setting 1969 V

Dual Induction - E / Equipment Identification

Primary Equipment:

Dual Induction Sonde DIS - HB 442  
Dual Induction Cartridge DIC - EB 438

Auxiliary Equipment:

Mass Isolated Housing MIH - ZA 417

Dual Induction - E Wellsite Calibration

Induction Electronics (10 kHz)

Phase	ID Elect Real Offset 10 kHz	MM/M	Value	Phase	ID Elect Real Gain 10 kHz	Value	Phase	ID Elect Phase 10 kHz	DEG	Value	
Before			37.21	Before		0.9746	Before			10.83	
	-262.8 (Minimum)	37.15 (Nominal)	337.2 (Maximum)		0.8294 (Minimum)	0.9794 (Nominal)	1.171 (Maximum)		0.6325 (Minimum)	10.63 (Nominal)	20.63 (Maximum)
Phase	ID Elect Quad Offset 10 kHz	MM/M	Value	Phase	ID Elect Quad Gain 10 kHz	Value	Phase	IM Elect Phase 10 kHz	DEG	Value	
Before			22.46	Before		0.9632	Before			13.51	
	-277.5 (Minimum)	22.53 (Nominal)	322.5 (Maximum)		0.8193 (Minimum)	0.9693 (Nominal)	1.157 (Maximum)		3.310 (Minimum)	13.31 (Nominal)	23.31 (Maximum)
Phase	IM Elect Real Offset 10 kHz	MM/M	Value	Phase	IM Elect Real Gain 10 kHz	Value					
Before			95.95	Before		0.9495					
	-453.5 (Minimum)	96.54 (Nominal)	646.5 (Maximum)		0.8074 (Minimum)	0.9574 (Nominal)	1.140 (Maximum)				
Phase	IM Elect Quad Offset 10 kHz	MM/M	Value	Phase	IM Elect Quad Gain 10 kHz	Value					
Before			95.04	Before		0.9473					
	-454.8 (Minimum)	95.18 (Nominal)	645.2 (Maximum)		0.8055 (Minimum)	0.9555 (Nominal)	1.137 (Maximum)				

Before: 9-Nov-2001 0:27

Dual Induction - E Wellsite Calibration												
Induction Electronics (20 kHz)												
Phase	ID Elect Real Offset 20 kHz	MM/M	Value	Phase	ID Elect Real Gain 20 kHz	Value	Phase	ID Elect Phase 20 kHz	DEG	Value		
Before			14.70	Before		1.003	Before			9.263		
	-110.3 (Minimum)	14.68 (Nominal)	139.7 (Maximum)		0.8551 (Minimum)	1.005 (Nominal)	1.207 (Maximum)		-5.718 (Minimum)	9.282 (Nominal)	24.28 (Maximum)	
Phase	ID Elect Quad Offset 20 kHz	MM/M	Value	Phase	ID Elect Quad Gain 20 kHz	Value	Phase	IM Elect Phase 20 kHz	DEG	Value		
Before			9.072	Before		0.9907	Before			12.33		
	-115.9 (Minimum)	9.089 (Nominal)	134.1 (Maximum)		0.8445 (Minimum)	0.9945 (Nominal)	1.192 (Maximum)		-2.653 (Minimum)	12.35 (Nominal)	27.35 (Maximum)	
Phase	IM Elect Real Offset 20 kHz	MM/M	Value	Phase	IM Elect Real Gain 20 kHz	Value						
Before			40.05	Before		1.008						
	-184.7 (Minimum)	40.31 (Nominal)	265.3 (Maximum)		0.8587 (Minimum)	1.009 (Nominal)	1.212 (Maximum)					
Phase	IM Elect Quad Offset 20 kHz	MM/M	Value	Phase	IM Elect Quad Gain 20 kHz	Value						
Before			39.78	Before		1.005						
	-185.2 (Minimum)	39.80 (Nominal)	264.8 (Maximum)		0.8566 (Minimum)	1.007 (Nominal)	1.209 (Maximum)					

Before: 9-Nov-2001 0:29

Dual Induction - E Wellsite Calibration												
Induction Electronics (40 kHz)												
Phase	ID Elect Real Offset 40 kHz	MM/M	Value	Phase	ID Elect Real Gain 40 kHz	Value	Phase	ID Elect Phase 40 kHz	DEG	Value		
Before			9.634	Before		0.9881	Before			28.71		
	-75.43 (Minimum)	9.570 (Nominal)	94.57 (Maximum)		0.8395 (Minimum)	0.9895 (Nominal)	1.185 (Maximum)		9.068 (Minimum)	29.07 (Nominal)	49.07 (Maximum)	
Phase	ID Elect Quad Offset 40 kHz	MM/M	Value	Phase	ID Elect Quad Gain 40 kHz	Value	Phase	IM Elect Phase 40 kHz	DEG	Value		
Before			5.929	Before		0.9752	Before			32.34		
	-79.10 (Minimum)	5.897 (Nominal)	90.90 (Maximum)		0.8281 (Minimum)	0.9781 (Nominal)	1.169 (Maximum)		12.68 (Minimum)	32.68 (Nominal)	52.68 (Maximum)	
Phase	IM Elect Real Offset 40 kHz	MM/M	Value	Phase	IM Elect Real Gain 40 kHz	Value						
Before			26.16	Before		1.023						
	-103.8 (Minimum)	26.19 (Nominal)	156.2 (Maximum)		0.8673 (Minimum)	1.017 (Nominal)	1.224 (Maximum)					
Phase	IM Elect Quad Offset 40 kHz	MM/M	Value	Phase	IM Elect Quad Gain 40 kHz	Value						
Before			26.06	Before		1.020						
	-104.1 (Minimum)	25.92 (Nominal)	155.9 (Maximum)		0.8649 (Minimum)	1.015 (Nominal)	1.221 (Maximum)					

Before: 9-Nov-2001 0:30

Dual Induction - E Wellsite Calibration							
SFL Electronics							
Phase	SFL Voltage Offset MV	Value	Phase	SFL Voltage Gain	Value		
Before		1.273	Before		1.018		
	-15.00 (Minimum)	0 (Nominal)	15.00 (Maximum)		0.8500 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
Phase	SFL Current Offset MA	Value	Phase	SFL Current Gain	Value		
Before		0.004285	Before		0.9957		
	-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)		0.8500 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Before: 9-Nov-2001 0:30

Dual Induction - E Wellsite Calibration												
Electronics Calibration Changes Files/Depth Intervals:												
Phase	ID (R > 27 OHM-M)	MM/M	Value	Phase	ID (R < 27 OHM-M) %	Value	Phase	SFL (R < 1 OHM-M)	OHMM	Value		
After			0	After		0.0001463	After			0.0006160		
	0 (Minimum)	0 (Nominal)	0.7500 (Maximum)		0 (Minimum)	0 (Nominal)	2.000 (Maximum)		0 (Minimum)	0 (Nominal)	0.02000 (Maximum)	
Phase	IM (R > 27 OHM-M)	MM/M	Value	Phase	IM (R < 27 OHM-M) %	Value						
After			0	After		0.0001117						
	0 (Minimum)	0 (Nominal)	0.7500 (Maximum)		0 (Minimum)	0 (Nominal)	2.000 (Maximum)					

Phase	SFL (R > 27 OHM-M)	MM/M	Value	Phase	SFL (R < 27 OHM-M) %	Value	
After			0	After		0.0003675	
	0 (Minimum)	0 (Nominal)	0.7500 (Maximum)		0 (Minimum)	0 (Nominal)	2.000 (Maximum)

After: 17-Nov-2001 0:26

Dual Induction - E Master Calibration											
Test Loop Calibration: Calibration of Internal Reference to Test Loop Standard											
Phase	Deep 10 kHz Gain Factor		Value	Phase	Deep 20 kHz Gain Factor		Value	Phase	Deep 40 kHz Gain Factor		Value
Master			0.9956	Master			1.008	Master			1.026
	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)		0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)		0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)
Phase	Medium 10 kHz Gain Factor		Value	Phase	Medium 20 kHz Gain Factor		Value	Phase	Medium 40 kHz Gain Factor		Value
Master			1.022	Master			1.030	Master			1.061
	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)		0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)		0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)
Phase	Deep 10 kHz Phase Shift		Value	Phase	Deep 20 kHz Phase Shift		Value	Phase	Deep 40 kHz Phase Shift		Value
Master			0.1143	Master			-0.1524	Master			-1.426
	-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)		-2.000 (Minimum)	0 (Nominal)	2.000 (Maximum)		-4.000 (Minimum)	-1.000 (Nominal)	2.000 (Maximum)
Phase	Medium 10 kHz Phase Shift		Value	Phase	Medium 20 kHz Phase Shift		Value	Phase	Medium 40 kHz Phase Shift		Value
Master			-0.2558	Master			-0.9331	Master			-2.461
	-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)		-3.000 (Minimum)	-1.000 (Nominal)	1.000 (Maximum)		-5.000 (Minimum)	-2.000 (Nominal)	1.000 (Maximum)

Master: 5-Oct-2001 19:50

Dual Induction - E Master Calibration											
Sonde Error Corrections: Correction for sonde response in zero conductivity environment. (Normalized to 25C).											
Phase	Real Deep 10 kHz S.E. Corr.		Value	Phase	Real Deep 20 kHz S.E. Corr.		Value	Phase	Real Deep 40 kHz S.E. Corr.		Value
Master			44.95	Master			16.36	Master			4.690
	-50.00 (Minimum)	0 (Nominal)	125.0 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)		-15.00 (Minimum)	0 (Nominal)	15.00 (Maximum)
Phase	Quad Deep 10 kHz S.E. Corr.		Value	Phase	Quad Deep 20 kHz S.E. Corr.		Value	Phase	Quad Deep 40 kHz S.E. Corr.		Value
Master			108.9	Master			64.63	Master			46.10
	-250.0 (Minimum)	0 (Nominal)	350.0 (Maximum)		-125.0 (Minimum)	0 (Nominal)	200.0 (Maximum)		-75.00 (Minimum)	0 (Nominal)	125.0 (Maximum)
Phase	Real Medium 10 kHz S.E. Corr.		Value	Phase	Real Medium 20 kHz S.E. Corr.		Value	Phase	Real Medium 40 kHz S.E. Corr.		Value
Master			20.73	Master			-1.786	Master			-10.46
	-50.00 (Minimum)	0 (Nominal)	140.0 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
Phase	Quad Medium 10 kHz S.E. Corr.		Value	Phase	Quad Medium 20 kHz S.E. Corr.		Value	Phase	Quad Medium 40 kHz S.E. Corr.		Value
Master			-105.8	Master			-34.20	Master			11.45
	-1300 (Minimum)	0 (Nominal)	1300 (Maximum)		-650.0 (Minimum)	0 (Nominal)	650.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)

Master: 5-Oct-2001 20:22

### Hostile Environment Litho Density - A / Equipment Identification

#### Primary Equipment:

HOSTILE ENVIRONMENT LITHO DENSITY HIGH V	HLDV - A	10
HOSTILE ENVIRONMENT LITHO DENSITY CARTRI	HLDC - AA	11
Gamma Source Radioactive	GSR - Z	1846

#### Auxiliary Equipment:

HOSTILE ENVIRONMENT LITHO DENSITY SONDE	HLDS - B	10
HOSTILE ENVIRONMENT ELECTRONICS CARTRIDG	HEH - H	12
HOSTILE ENVIRONMENT ELECTRONICS CARTRIDG	HEH - G	11
HOSTILE ENVIRONMENT LITHO DENSITY PAD	HLDP - B	10

### Nuclear Porosity Lithology Cartridge - B / Equipment Identification

#### Primary Equipment:

NPLC Cartridge	NPLC - B	79
----------------	----------	----

#### Auxiliary Equipment:

Accelerator-Porosity Tool / Equipment Identification

Primary Equipment:

Accelerator-Porosity Sonde	APS - BA	22
APS Minitron	MNTR - F	4185

Auxiliary Equipment:

Accelerator-Porosity Housing	APH - AC	22
APS Calibration Water Tank	SFT - 178	4722
APS Aluminium Calibrator Sleeve	SFT - 281	24

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:

HNGS Sonde	HNGS - BA	27
------------	-----------	----

Auxiliary Equipment:

HNGS Sonde Housing	HNSH - BA	27
Gamma Source Radioactive	GSR - U	135

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		40.57	Master		16.90	Master		1100
Before		40.58	Before		17.01	Before		1100
	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		145.1	Master		10.15	Master		31.73
Before		145.5	Before		10.15	Before		31.73
	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		17.94						
Before		17.88						
	15.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							
Master: 9-Nov-2001 19:27			Before: 9-Nov-2001 19:46					

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		40.70	Master		15.14	Master		1188
Before		40.97	Before		15.10	Before		1189
	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		144.5	Master		7.999	Master		30.93
Before		145.9	Before		7.706	Before		31.02
	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		18.09						
Before		18.05						
	15.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)							
Master: 9-Nov-2001 19:27			Before: 9-Nov-2001 19:46					

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		0.9912
Before		0.9922
	0.9500 (Minimum)      1.000 (Nominal)      1.050 (Maximum)	
Master: 9-Nov-2001 19:27		
Before: 9-Nov-2001 19:46		

Hostile Natural Gamma Ray Sonde Master Calibration								
Detector 1 Calibration								
Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		210.4	Master		7.945
	38.00 (Minimum)      40.00 (Nominal)      42.00 (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	<b>EXCEEDS LIMIT</b>	15.50	Master		0.9866			
	20.00 (Minimum)      142.5 (Nominal)      265.0 (Maximum)			0.9400 (Minimum)      1.000 (Nominal)      1.060 (Maximum)				
Master: 9-Nov-2001 19:20								

Hostile Natural Gamma Ray Sonde Master Calibration								
Detector 2 Calibration								
Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		209.5	Master		7.230
	38.00 (Minimum)      40.00 (Nominal)      42.00 (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	<b>EXCEEDS LIMIT</b>	17.01	Master		0.9792			
	20.00 (Minimum)      142.5 (Nominal)      265.0 (Maximum)			0.9400 (Minimum)      1.000 (Nominal)      1.060 (Maximum)				
Master: 9-Nov-2001 19:20								

\* Low background CPS does not affect Calibration.

COMPANY:	Lamont Doherty	BOTTOM LOG INTERVAL	5105 m
WELL:	ODP Leg 199, Site 1218 A (PAT-8C)	SCHLUMBERGER DEPTH	5112 m
FIELD:		DEPTH DRILLER	5114 m
Ocean:	Pacific	KELLY BUSHING	11.3 m
		DRILL FLOOR	11 m
		GROUND LEVEL	-4837 m

**Schlumberger**

Phasor Induction  
Natural Gamma Ray