

**Company:** Lamont Doherty

**Well:** ODP Leg 201, Site 1228A PRU-2A

**Field:** Peru Margin

**Rig:** JOIDES Resolution Ocean: Pacific

<b>Rig:</b> JOIDES Resolution <b>Field:</b> Peru Margin <b>Location:</b> 11 Deg 53.900' S Latitude <b>Well:</b> ODP Leg 201, Site 1228A PRU-2 <b>Company:</b> Lamont Doherty		<b>Phasor Induction Gamma Ray</b>	
<b>LOCATION</b> 11 Deg 53.900' S Latitude 78 Deg 4.670' W Longitude		Elev.: K.B. 11.3 m G.L. -273 m D.F. 11 m	
Permanent Datum: _____ MSL _____ Log Measured From: _____ RKB _____ Drilling Measured From: _____ RKB _____	Elev.: 0 m _____ 11.3 m above Perm. Datum		
API Serial No. _____	Max. Hole Devi. 0 deg	Longitude _____	Latitude _____

Logging Date	5-Mar-2002		
Run Number	1		
Depth Driller	474 m		
Schlumberger Depth	475 m		
Bottom Log Interval	469 m		
Top Log Interval	277 m		
Casing Driller Size @ Depth	0.000 in @ 342 m		
Casing Schlumberger	345 m		
Bit Size	11.438 in		
Type Fluid In Hole	Sepiclrite/Saltwater		
Density	Viscosity		
Fluid Loss	PH		
Source Of Sample	mudpit		
RM @ Measured Temperature	0.235 ohm.m	@	33 degC
RMF @ Measured Temperature		@	
RMC @ Measured Temperature		@	
Source RMF	RMC		
RM @ MRT	0.294 @ 22	none	@ 22
Maximum Recorded Temperatures	24.5 degC		
Circulation Stopped	5-Mar-2002	Time	16:00
Logger On Bottom	5-Mar-2002	Time	20:24
Unit Number	99	Location	Houston ODP
Recorded By	K. Swain		
Witnessed By	Gilles Guerin		

			Run 1	Run 2	Run
Logging Date	5-Mar-2002				
Run Number	1				
Depth Driller	474 m				
Schlumberger Depth	475 m				
Bottom Log Interval	469 m				
Top Log Interval	277 m				
Casing Driller Size @ Depth	0.000 in @ 342 m				
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Bit Size	11.438 in				
Type Fluid In Hole	Sepiclrite/Saltwater				
Density	Viscosity				
Fluid Loss	PH				
Source Of Sample	mudpit				
RM @ Measured Temperature	0.235 ohm.m	@			
RMF @ Measured Temperature		@			
RMC @ Measured Temperature		@			
Source RMF	RMC				
RM @ MRT	0.294 @ 22	none	@		
Maximum Recorded Temperatures	24.5 degC				
Circulation Stopped	5-Mar-2002	Time	16:00		
Logger On Bottom	5-Mar-2002	Time	20:24		
Unit Number	99	Location	Houston ODP		
Recorded By	K. Swain				
Witnessed By	Gilles Guerin				

**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: Hngs  
 OS2: HLDT/APS  
 OS3:  
 OS4:  
 OS5:

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

**REMARKS: RUN NUMBER 1**  
 Hole cored with APC, PCS.  
 Log presented in meters below rig floor.  
 Lamont Temperature tool (TAP) was run on Triple Combo.  
 Wireline Heave Compensator (WHC) was used on all descents.  
 Sepiolite mud was used to displace the hole during the wiper trip.  
 Drillers TD 474 mbrf, Driller pipe depth: 352 mbrf, Sea Floor: 273 mbrf.  
 Software bug shows APS calibration not done for part of calibration.  
 Low background countrate on HNGS master calibration signifies a weak internal source used for check of detector and does not affect calibration or LQC

**REMARKS: RUN NUMBER 2**  
 internal

**RUN 1**

SERVICE ORDER #: \_\_\_\_\_  
 PROGRAM VERSION: 10C0-306  
 FLUID LEVEL: \_\_\_\_\_

LOGGED INTERVAL	START	STOP

**RUN 2**

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

LOGGED INTERVAL	START	STOP






**EQUIPMENT DESCRIPTION**

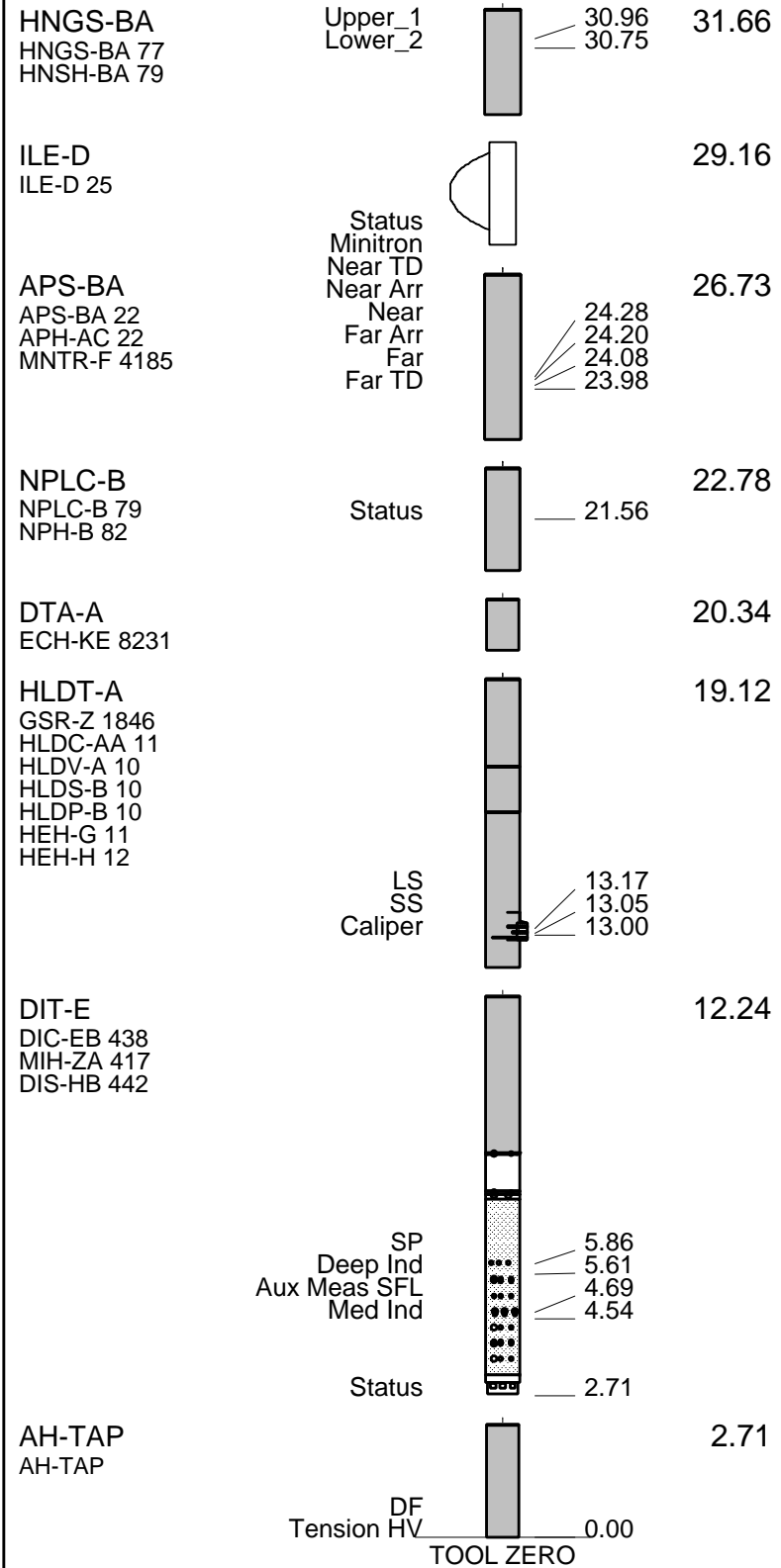
**RUN 1**

**SURFACE EQUIPMENT**  
 WITM (DTS)-A  
 SFT-281 24  
 SFT-178 4722  
 GSR-U 135  
 GSR-U/Y

**RUN 2**

**DOWNHOLE EQUIPMENT**

LEH-QT			35.14
LEH-QT 1726			
DTC-H	CTEM		33.98
ECH-KC 9343	TelStatus		34.25
SGT-N	ToolStatu		33.34
SGH-K 2448	Gamma Ray		33.06
OCG TD 2500			



TOOL ZERO

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

## Output DLIS Files

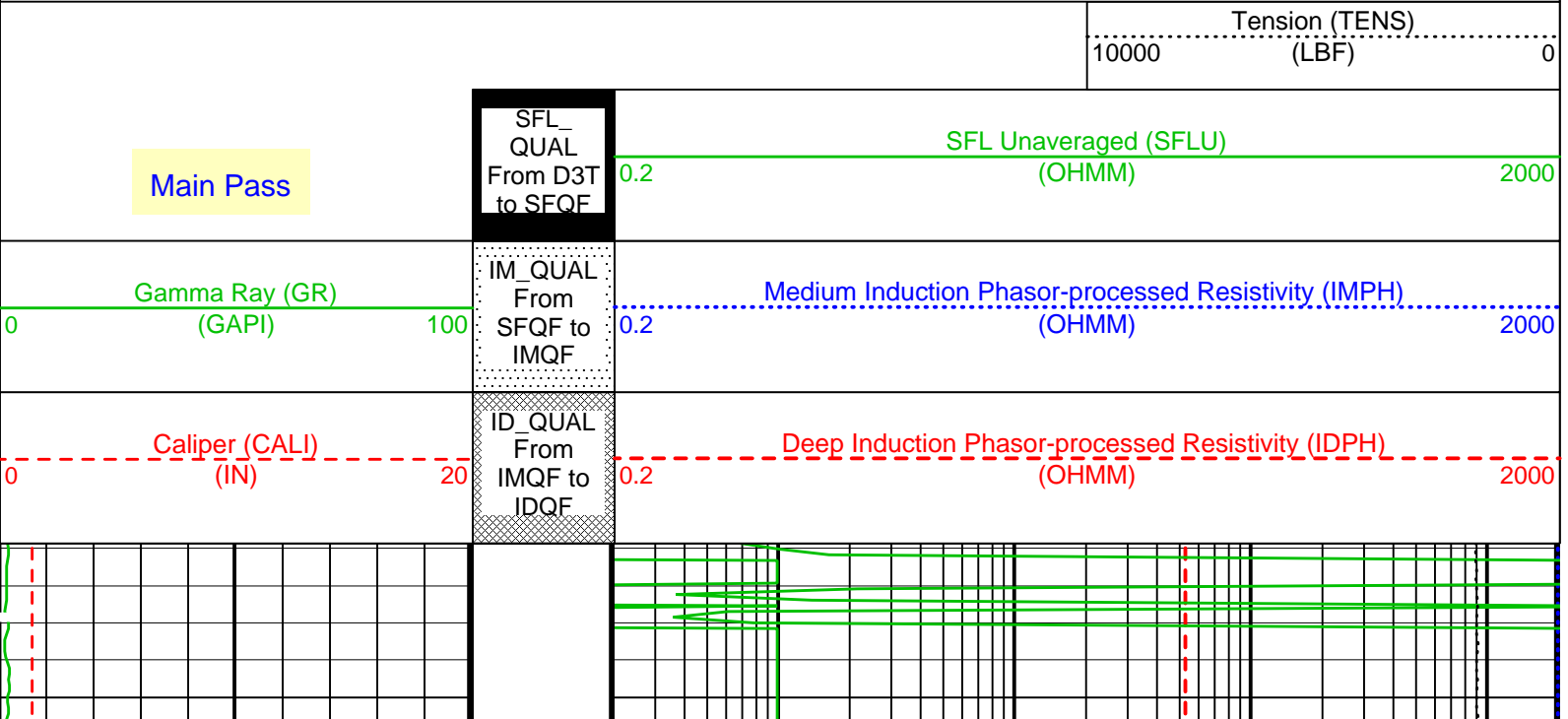
DEFAULT	PI_LDL_APS_NGS_005LUP	FN:6	PRODUCER	05-Mar-2002 20:24	475.5 M	255.9 M
REDUCE	PI_LDL_APS_NGS_005LUP	FN:7	PRODUCER	05-Mar-2002 20:24	475.5 M	255.9 M

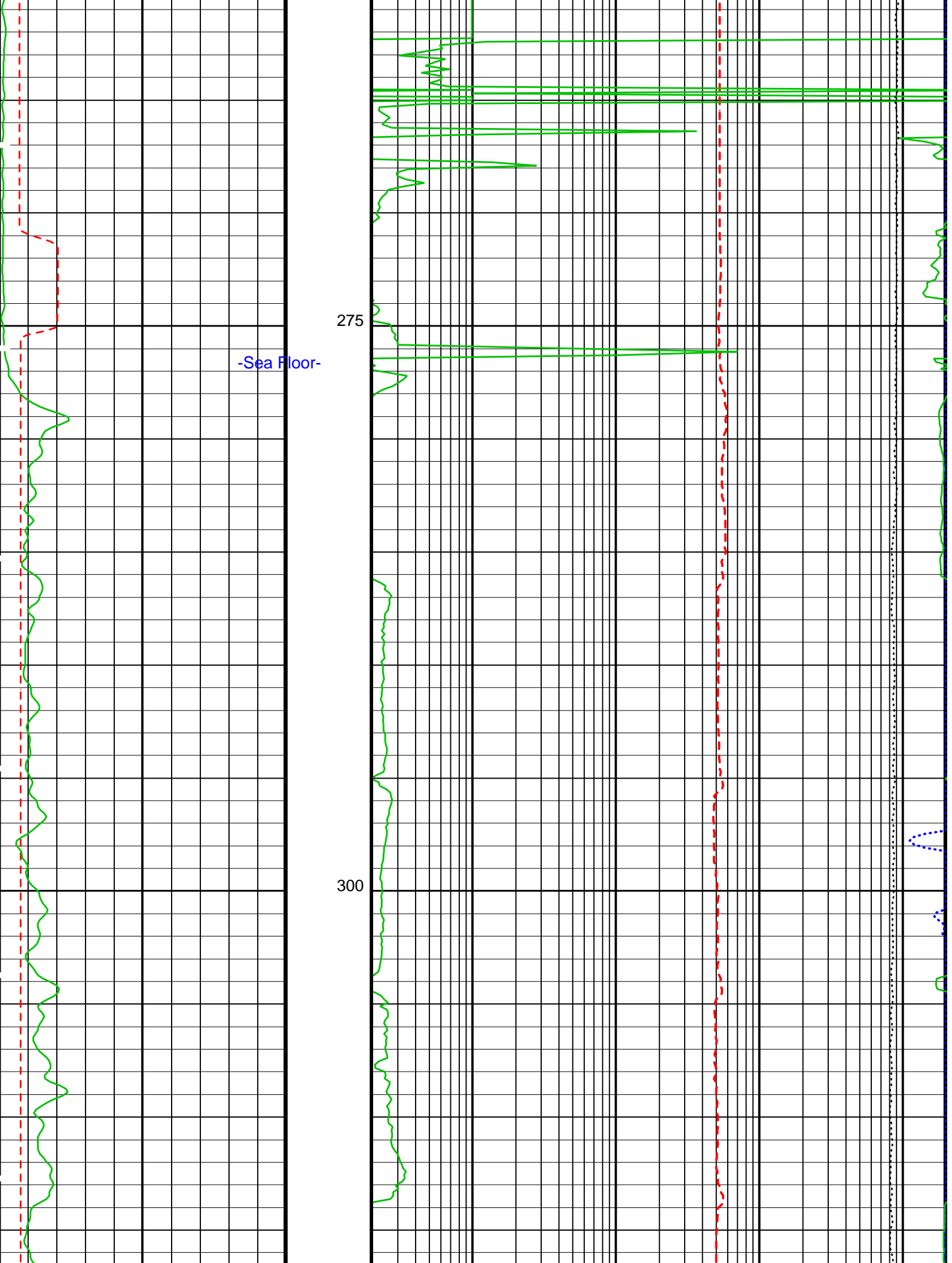
## OP System Version: 10C0-306 MCM

DIT-E	10C0-306	HLDT-A	10C0-306
DTA-A	10C0-306	NPLC-B	10C0-306
APS-BA	10C0-306	HNGS-BA	10C0-306
SGT-N	10C0-306	DTC-H	10C0-306

### PIP SUMMARY

Time Mark Every 60 S

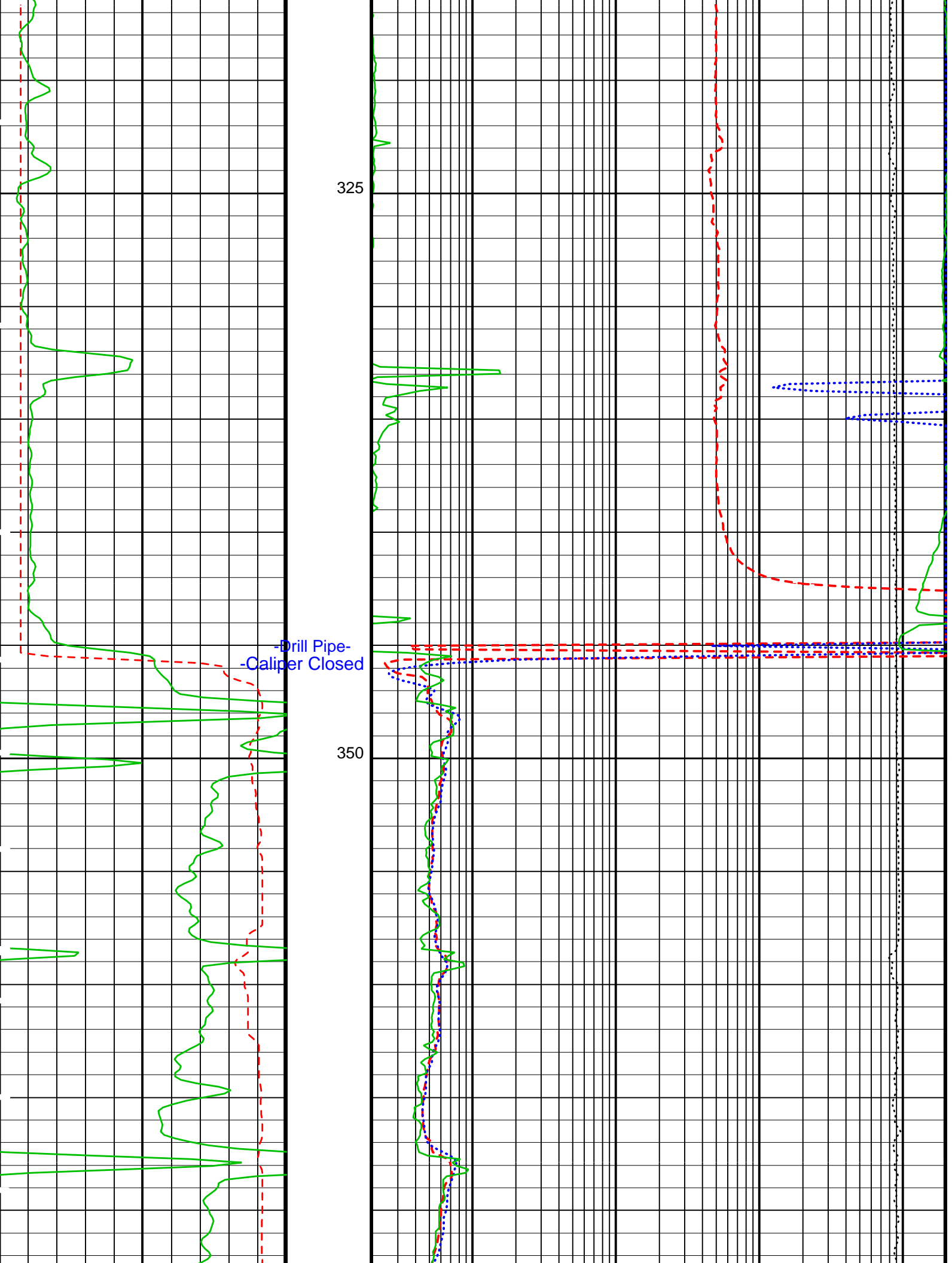


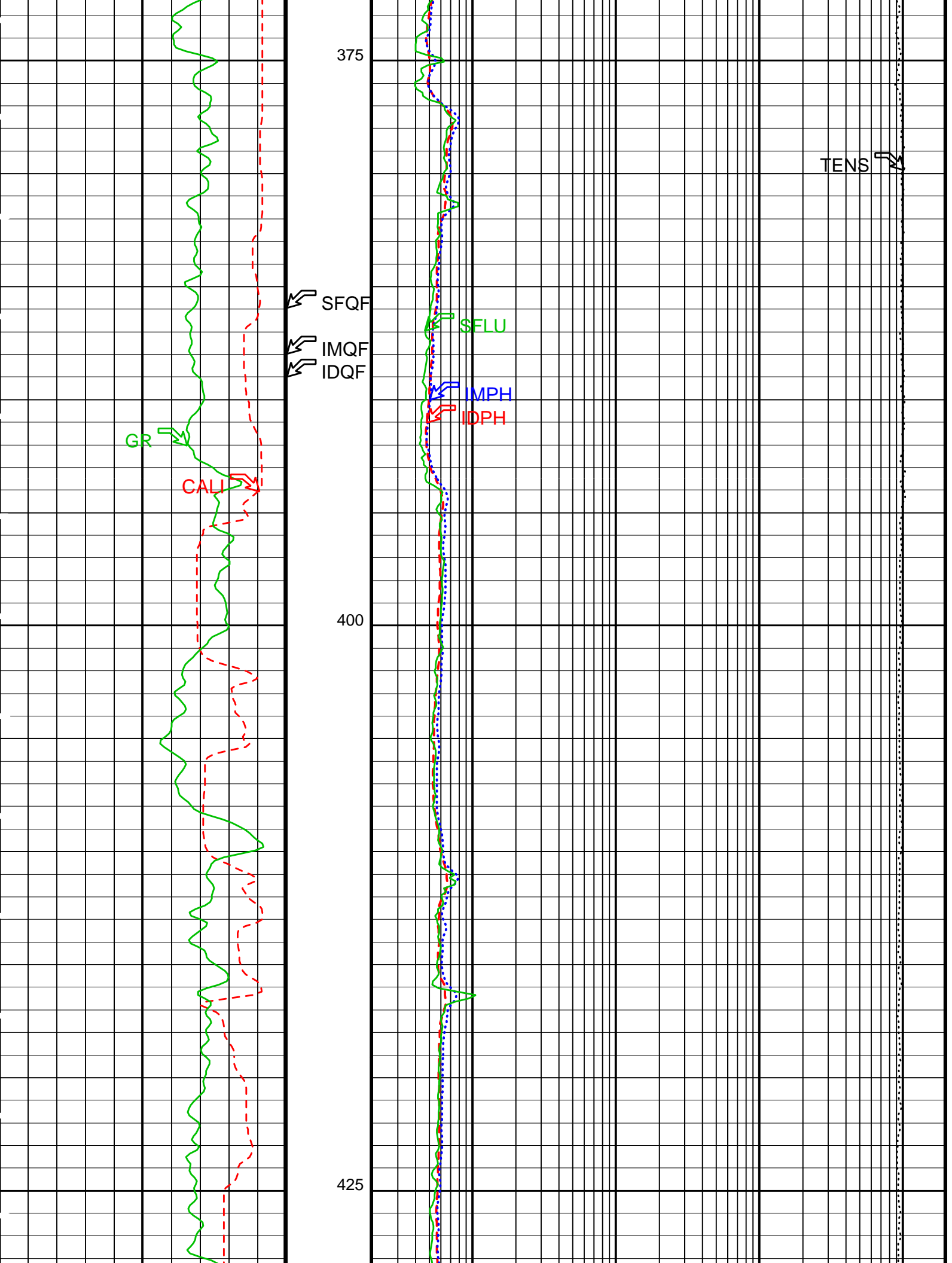


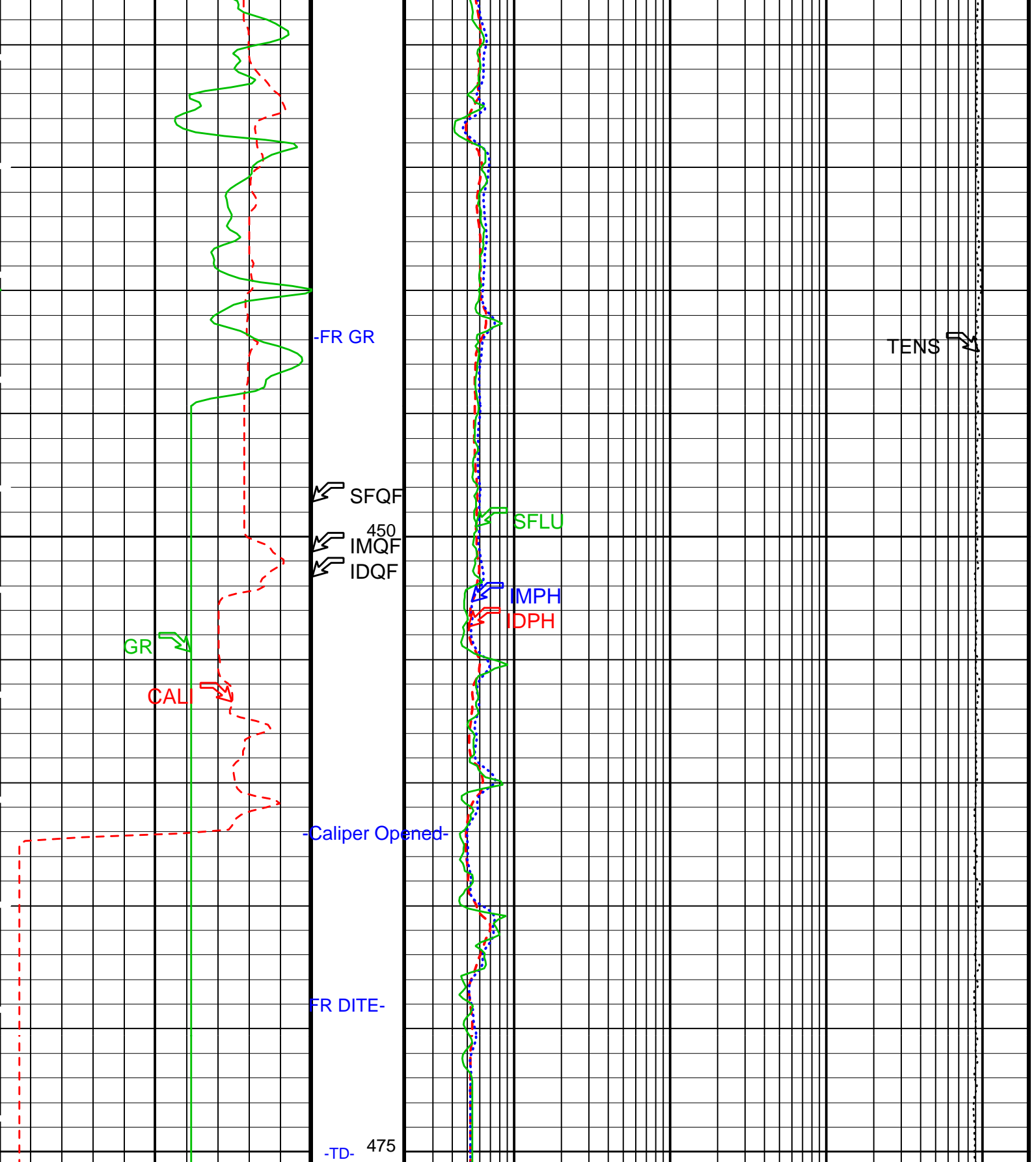
-Sea Floor-

275

300









SFL\_ QUAL  
From D3T  
to SFOF

0.2

SFL Unaveraged (SFLU)  
(OHMM)

2000

Main Pass

Tension (TENS)  
10000 (LBF) 0

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
DIT-E: Dual Induction - E			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
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
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ITEN	DIT-E Temperature Enable	ENABLE	
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
SFCR	SFL Channel Ratio	1000	
SHT	Surface Hole Temperature	68	DEGF
APS-BA: Accelerator-Porosity Tool			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
HNGS-BA: Hostile Natural Gamma Ray Sonde			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
SGT-N: Scintillation Gamma-Ray - N			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
System and Miscellaneous			
DFD	Drilling Fluid Density	1.07	G/C3
TD	Total Depth	-50000	FT

Format: DITE\_LogPhasor Vertical Scale: 1:200 Graphics File Created: 05-Mar-2002 20:24

OP System Version: 10C0-306  
MCM

DIT-E	10C0-306	HLDT-A	10C0-306
DTA-A	10C0-306	NPLC-B	10C0-306
APS-BA	10C0-306	HNGS-BA	10C0-306
SGT-N	10C0-306	DTC-H	10C0-306

Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_005LUP	FN:6	PRODUCER	05-Mar-2002 20:24
REDUCE	PI_LDL_APS_NGS_005LUP	FN:7	PRODUCER	05-Mar-2002 20:24

# Output DLIS Files

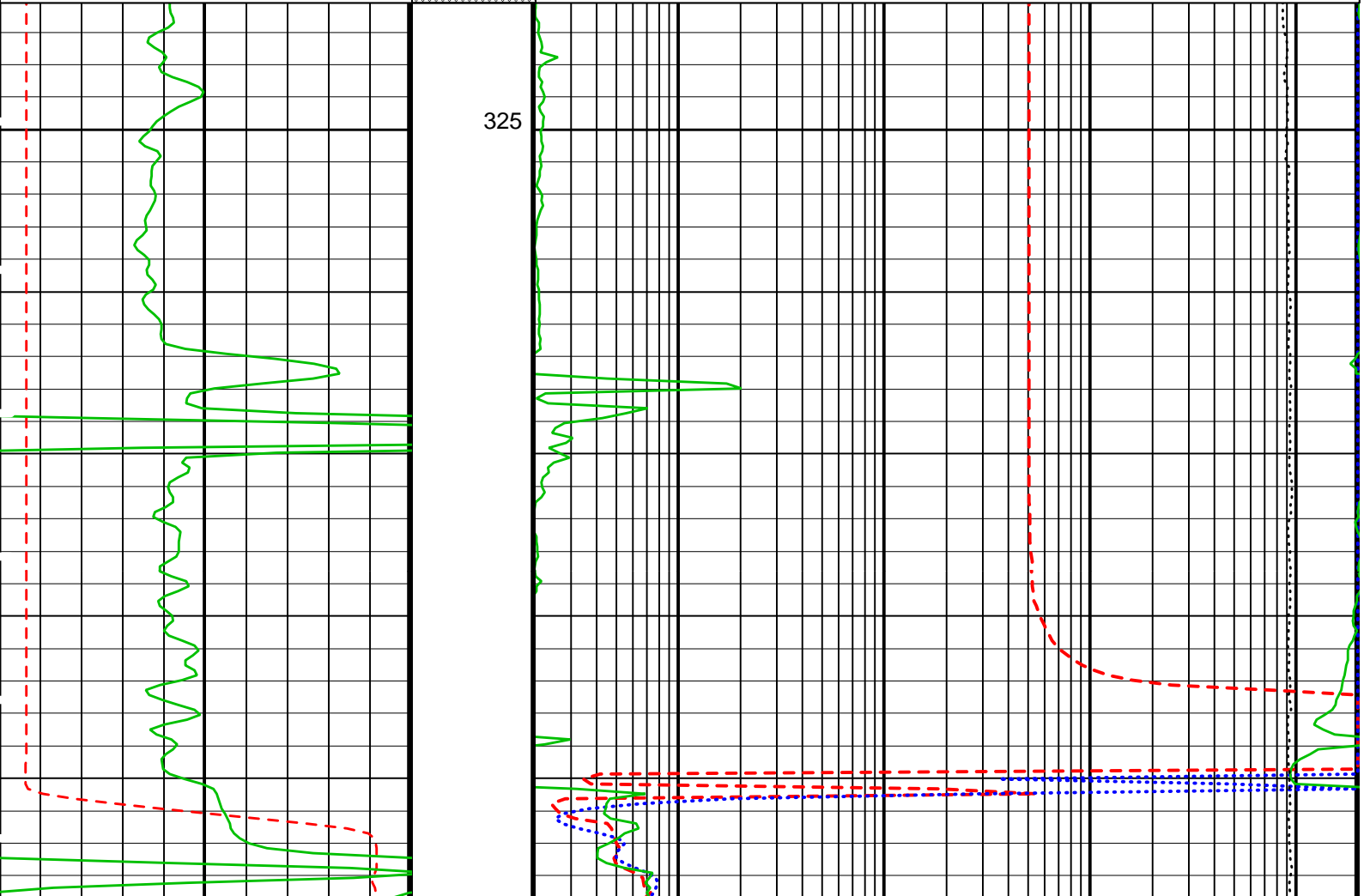
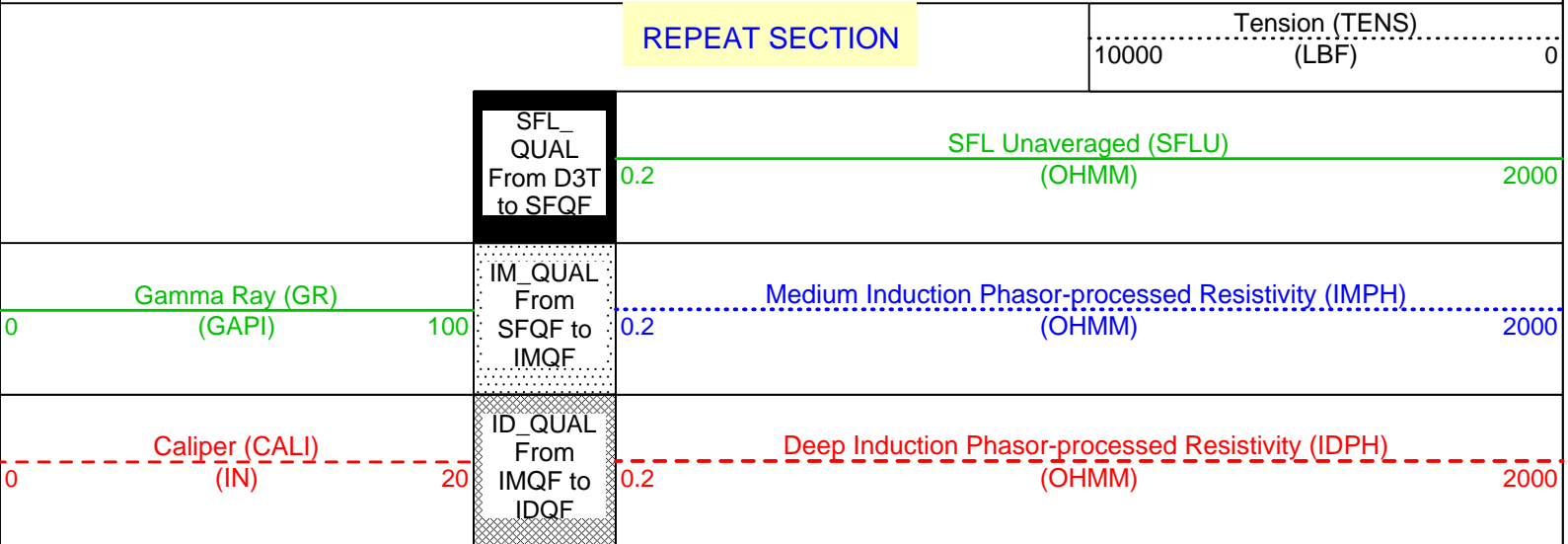
DEFAULT	PI_LDL_APS_NGS_006LUP	FN:8	PRODUCER	05-Mar-2002 21:13	475.5 M	321.1 M
REDUCE	PI_LDL_APS_NGS_006LUP	FN:9	PRODUCER	05-Mar-2002 21:13	475.5 M	321.1 M

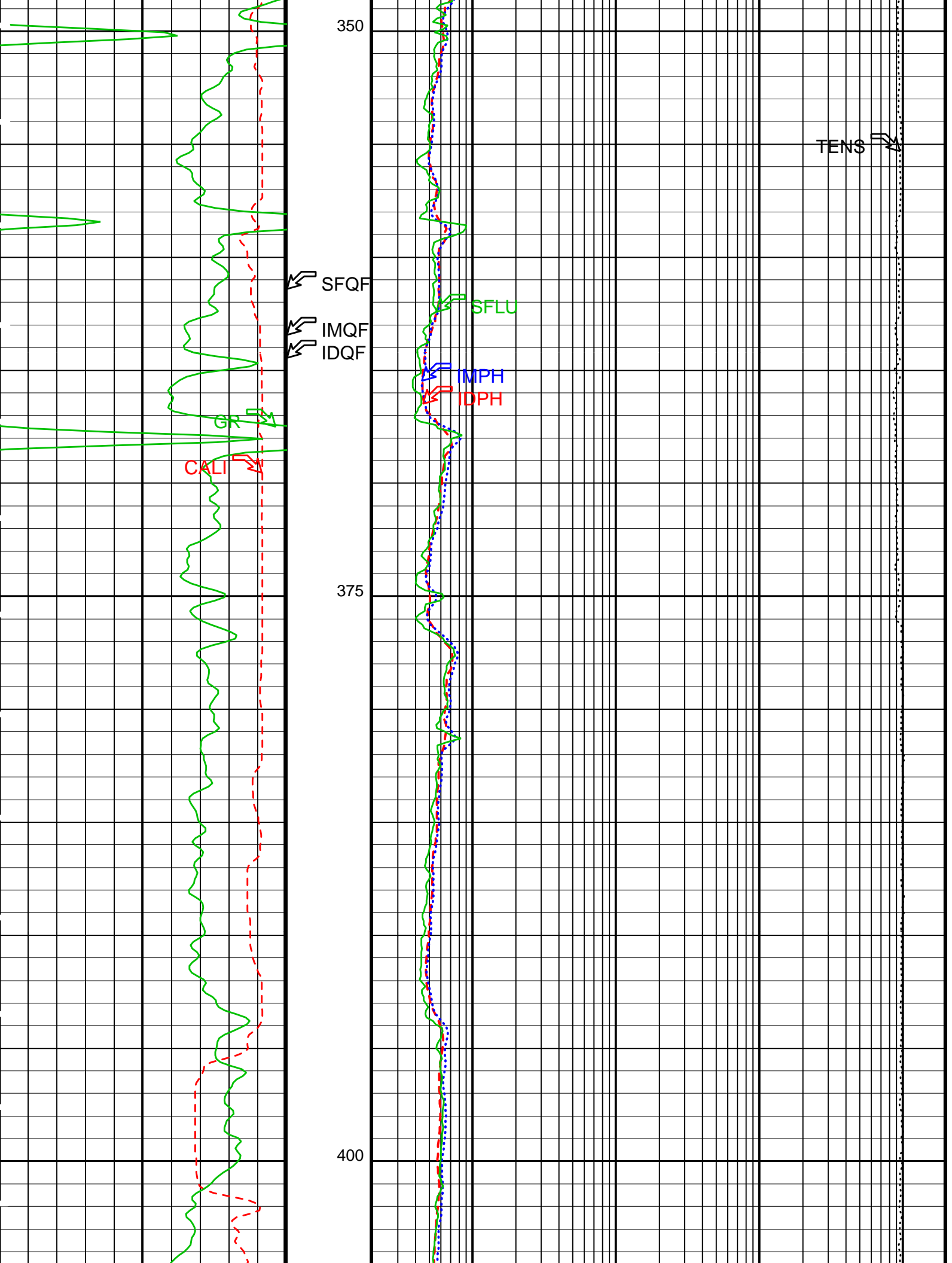
## OP System Version: 10C0-306 MCM

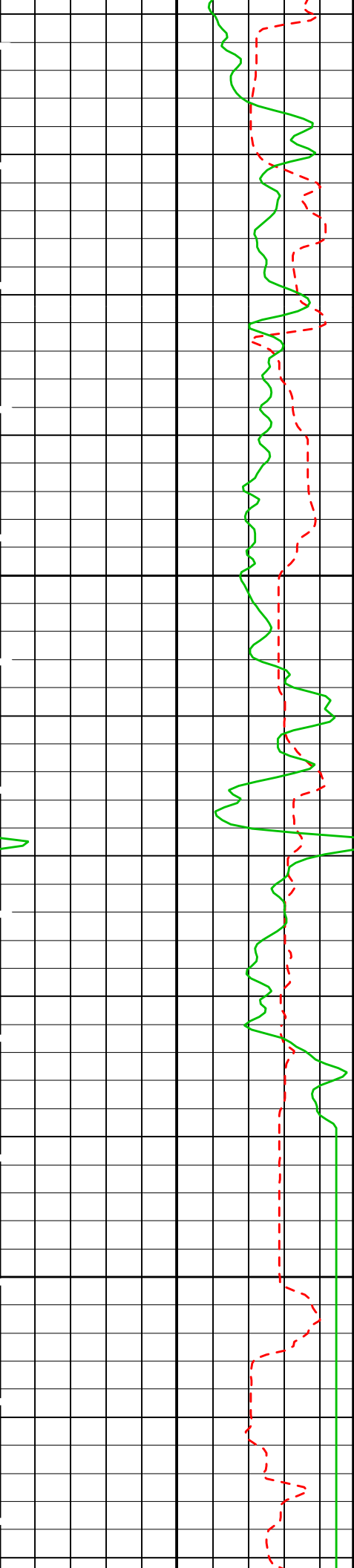
DIT-E	10C0-306	HLDT-A	10C0-306
DTA-A	10C0-306	NPLC-B	10C0-306
APS-BA	10C0-306	HNGS-BA	10C0-306
SGT-N	10C0-306	DTC-H	10C0-306

### PIP SUMMARY

Time Mark Every 60 S

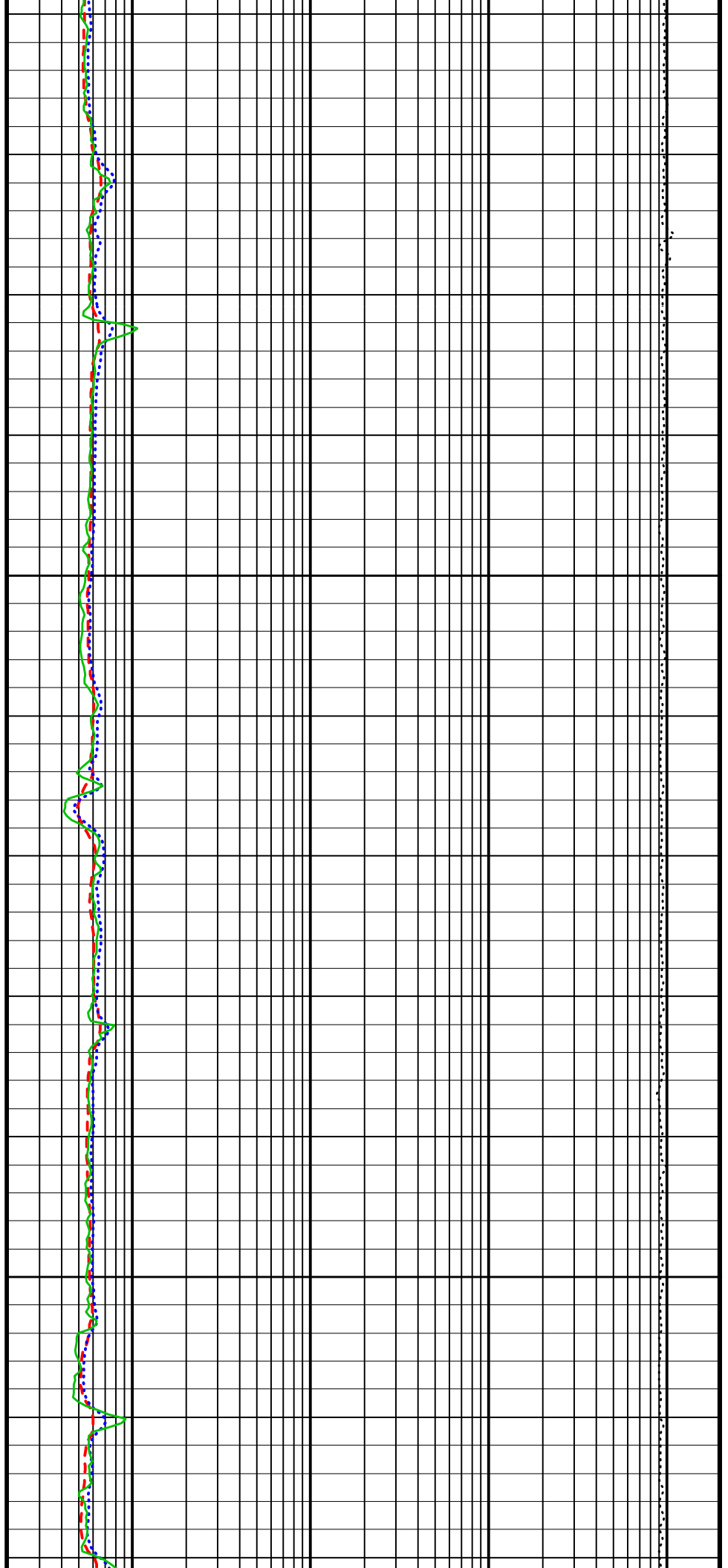


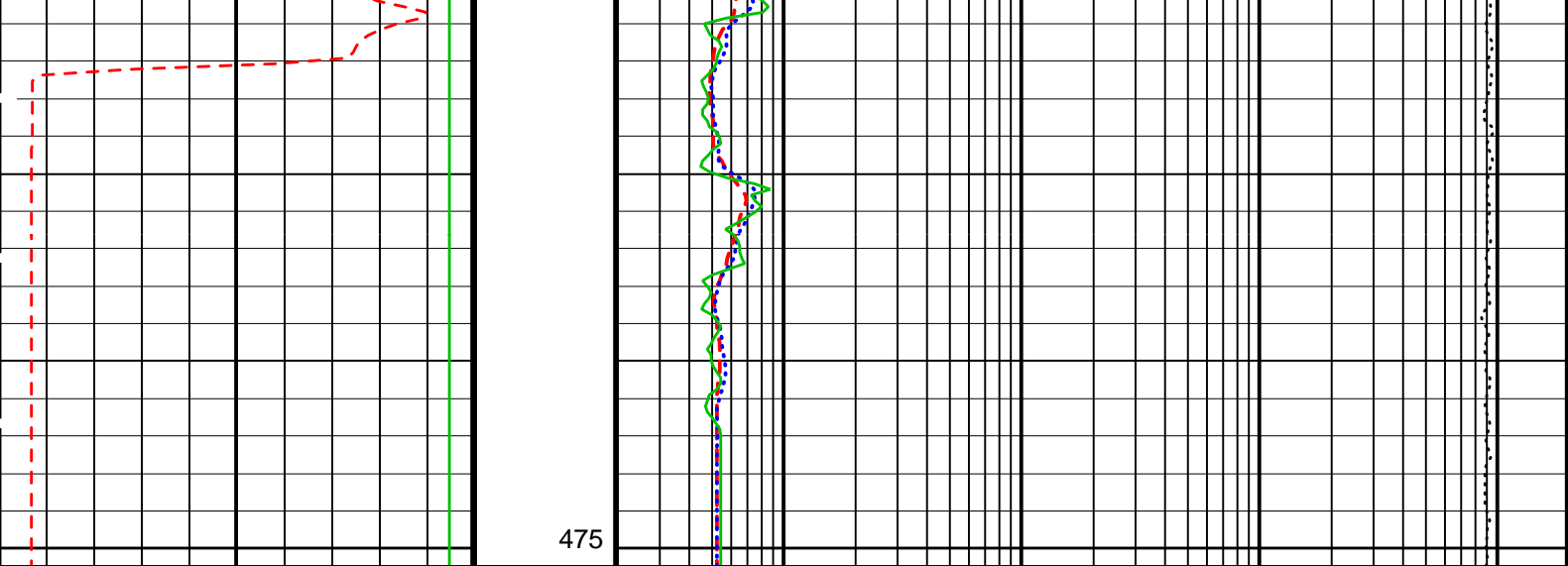




425

450





Caliper (CALI) (IN)	ID_QUAL From IMQF to IDQF	Deep Induction Phasor-processed Resistivity (IDPH) (OHMM)
Gamma Ray (GR) (GAPI)	IM_QUAL From SFQF to IMQF	Medium Induction Phasor-processed Resistivity (IMPH) (OHMM)
<b>REPEAT SECTION</b>	SFL_QUAL From D3T to SFQF	SFL Unaveraged (SFLU) (OHMM)
		Tension (TENS) (LBF)

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
DIT-E: Dual Induction - E			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
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DRE2	Deep Real 20 kHz Sonde Error Correction	16.357	MM/M
DSR2	Deep Sigma Reference (20 kHz)	1843	MM/M
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GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
IFRS	DIT-E Induction Frequency Selector	20	
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ITEN	DIT-E Temperature Enable	ENABLE	
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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
SFCR	SFL Channel Ratio	1000	
SHT	Surface Hole Temperature	68	DEGF
APS-BA: Accelerator-Porosity Tool			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
HNCS-BA: Hostile Natural Gamma Ray Sonde			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F

GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
SGT-N: Scintillation Gamma-Ray - N			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	40	DEGF
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	68	DEGF
System and Miscellaneous			
DFD	Drilling Fluid Density	1.07	G/C3
TD	Total Depth	-50000	FT

Format: DITE\_LogPhasor      Vertical Scale: 1:200      Graphics File Created: 05-Mar-2002 21:13

## OP System Version: 10C0-306

MCM

DIT-E	10C0-306	HLDT-A	10C0-306
DTA-A	10C0-306	NPLC-B	10C0-306
APS-BA	10C0-306	HNGS-BA	10C0-306
SGT-N	10C0-306	DTC-H	10C0-306

## Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_006LUP	FN:8	PRODUCER	05-Mar-2002 21:13
REDUCE	PI_LDL_APS_NGS_006LUP	FN:9	PRODUCER	05-Mar-2002 21:13

### Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Hostile Environment Litho Density - A Wellsite Calibration - Background Measurement							
Master: 25-Jan-2002 14:22    Before: 21-Feb-2002 4:36    After: 5-Mar-2002 22:52							
LSW1 Background	100.0	89.06	86.19	87.32	1.128	0.03000	CPS
LSW2 Background	105.0	93.23	91.94	90.71	-1.232	0.03000	CPS
LSW3 Background	210.0	180.0	177.0	178.4	1.437	0.03000	CPS
LSW4 Background	290.0	237.9	235.4	238.9	3.481	0.03000	CPS
LSW5 Background	610.0	529.6	525.7	522.6	-3.155	0.03000	CPS
SSW1 Background	100.0	85.18	85.99	84.17	-1.819	0.03000	CPS
SSW2 Background	200.0	166.8	165.6	166.6	1.022	0.03000	CPS
SSW3 Background	530.0	446.5	445.9	443.9	-1.961	0.03000	CPS
SSW4 Background	280.0	235.8	234.2	234.2	-0.04904	0.03000	CPS
SSW5 Background	205.0	176.3	175.5	177.2	1.732	0.03000	CPS
Hostile Environment Litho Density - A Wellsite Calibration - Tool Quality Control Information High Voltage							
Master: 25-Jan-2002 14:22    Before: 21-Feb-2002 4:36    After: 5-Mar-2002 22:52							
LS Bkg. High Voltage	1129	1129	1134	1134	0.3507	N/A	V
SS Bkg. High Voltage	1173	1173	1180	1176	-4.078	N/A	V
Hostile Environment Litho Density - A Wellsite Calibration - Detectors Resolution From BKG Measurements							
Master: 25-Jan-2002 14:22    Before: 21-Feb-2002 4:36    After: 5-Mar-2002 22:52							
LS Background Resolution	1.000	1.042	1.032	1.021	-0.01052	N/A	
SS Background Resolution	1.000	0.9530	0.9479	0.9514	0.003475	N/A	
Hostile Environment Litho Density - A Wellsite Calibration - Caliper Calibration							
Before: 7-Feb-2002 1:47							
Caliper Small Ring	12.00	N/A	16.99	N/A	N/A	N/A	IN
Caliper Large Ring	18.25	N/A	23.87	N/A	N/A	N/A	IN
Accelerator-Porosity Tool Wellsite Calibration - Detector Background							
Master: 25-Jan-2002 18:34    Before: 5-Mar-2002 19:53    After: 5-Mar-2002 22:19							
Near Det Bkg Cntrate	30.00	32.90	32.48	32.32	-0.1662	N/A	CPS
Far Det Bkg Cntrate	30.00	34.46	31.71	32.11	0.3989	N/A	CPS
Array-1 Det Bkg Cntrate	30.00	28.56	29.28	28.74	-0.5316	N/A	CPS
Array-2 Det Bkg Cntrate	30.00	30.78	31.29	30.35	-0.9304	N/A	CPS
Array Therm Det Bkg Cntrate	30.00	32.89	32.92	31.26	-1.660	N/A	CPS
Accelerator-Porosity Tool Wellsite Calibration - Calibration Ratios							
Master: 25-Jan-2002 18:35							

Near/Far Calibration Ratio	0.9250	0.9022	N/A	N/A	N/A	N/A
Near/Array Calibration Ratio	1.030	1.063	N/A	N/A	N/A	N/A
Near/Array Cal Ratio Up/Down	1.000	1.007	N/A	N/A	N/A	N/A

Accelerator-Porosity Tool Wellsite Calibration - Tank Check

Master: Calibration not done

Array-1 Standoff Porosity	11.10	11.94	N/A	N/A	N/A	N/A	PU
Array-2 Standoff Porosity	11.10	11.71	N/A	N/A	N/A	N/A	PU
Average Slowing Down Time	6.000	N/A	N/A	N/A	N/A	N/A	US
Array-1 SDT Ratio Up/Down	1.000	N/A	N/A	N/A	N/A	N/A	
Array-1 SDT Ratio Up/Down	1.000	N/A	N/A	N/A	N/A	N/A	
Sigma Formation	27.50	27.64	N/A	N/A	N/A	N/A	CU

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check

Master: 23-Jan-2002 11:37 Before: 7-Feb-2002 1:13 After: 5-Mar-2002 22:53

Na 511 Peak Loc	40.00	40.51	40.71	40.51	-0.2026	1.000	
Na 511 Peak Res	15.50	15.75	17.24	16.07	-1.169	2.000	%
High Voltage	1150	1203	1207	1210	3.297	30.00	V
Na 1785 Peak Loc	142.6	144.6	146.2	145.4	-0.7214	7.000	
Na 1785 Peak Res	8.500	9.254	9.073	8.952	-0.1212	2.000	%
Temperature	15.50	21.86	29.34	28.14	-1.196	N/A	DEGC
Na Count Rate	45.00	39.29	40.56	39.01	-1.546	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check

Master: 23-Jan-2002 11:37 Before: 7-Feb-2002 1:13 After: 5-Mar-2002 22:53

Na 511 Peak Loc	40.00	40.54	40.54	40.62	0.07781	1.000	
Na 511 Peak Res	15.50	16.19	16.67	16.15	-0.5155	2.000	%
High Voltage	1150	1233	1236	1241	4.828	30.00	V
Na 1785 Peak Loc	142.6	143.9	144.1	145.5	1.374	7.000	
Na 1785 Peak Res	8.500	9.453	8.968	8.528	-0.4398	2.000	%
Temperature	15.50	21.24	29.04	28.42	-0.6178	N/A	DEGC
Na Count Rate	45.00	39.11	40.36	38.66	-1.698	8.000	CPS

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

Master: 23-Jan-2002 11:37 Before: 7-Feb-2002 1:13 After: 5-Mar-2002 22:53

Coincidence Count Rate Ratio	1.000	1.004	1.005	1.006	0.001129	0.05000	
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Scintillation Gamma-Ray - N Wellsite Calibration - Detector Calibration

Before: 7-Feb-2002 1:09

Gamma Ray (Jig - Bkg)	167.5	N/A	167.5	N/A	N/A	15.23	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

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		37.20	Before		0.9756	Before		10.64
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		22.47	Before		0.9637	Before		13.32
Phase	IM Elect Real Offset 10 kHz MM/M	Value	Phase	IM Elect Real Gain 10 kHz	Value	10khz not used		
Before		96.46	Before		0.9498			

Phase	IM Elect Quad Offset 10 kHz MM/M	Value	Phase	IM Elect Quad Gain 10 kHz	Value
Before		95.06	Before		0.9476
	-550.0 (Minimum) 0 (Nominal) 550.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	

Before: Calibration out of date 5-Oct-2001 18:57

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		14.67	Before		1.001	Before		9.784	
	-125.0 (Minimum) 0 (Nominal) 125.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			-15.00 (Minimum) 0 (Nominal) 15.00 (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		9.083	Before		0.9891	Before		12.07	
	-125.0 (Minimum) 0 (Nominal) 125.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			-15.00 (Minimum) 0 (Nominal) 15.00 (Maximum)		
Phase	IM Elect Real Offset 20 kHz MM/M	Value	Phase	IM Elect Real Gain 20 kHz	Value				
Before		40.06	Before		1.011				
	-225.0 (Minimum) 0 (Nominal) 225.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)					
Phase	IM Elect Quad Offset 20 kHz MM/M	Value	Phase	IM Elect Quad Gain 20 kHz	Value				
Before		39.84	Before		1.009				
	-225.0 (Minimum) 0 (Nominal) 225.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)					

Before: 7-Feb-2002 1:10

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		9.567	Before		0.9871	Before		29.04	
	-85.00 (Minimum) 0 (Nominal) 85.00 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			-20.00 (Minimum) 0 (Nominal) 20.00 (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		5.882	Before		0.9737	Before		32.65	
	-85.00 (Minimum) 0 (Nominal) 85.00 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			-20.00 (Minimum) 0 (Nominal) 20.00 (Maximum)		
Phase	IM Elect Real Offset 40 kHz MM/M	Value	Phase	IM Elect Real Gain 40 kHz	Value				
Before		26.16	Before		1.020				
	-130.0 (Minimum) 0 (Nominal) 130.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)					
Phase	IM Elect Quad Offset 40 kHz MM/M	Value	Phase	IM Elect Quad Gain 40 kHz	Value				
Before		25.90	Before		1.017				
	-130.0 (Minimum) 0 (Nominal) 130.0 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)					

40kHz not used

Before: Calibration out of date 5-Oct-2001 19:00

Dual Induction - E Wellsite Calibration					
SFL Electronics					
Phase	SFL Voltage Offset MV	Value	Phase	SFL Voltage Gain	Value
Before		1.280	Before		1.019
	-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		0.002773	Before		0.9960
	-0.6000 (Minimum) 0 (Nominal) 0.6000 (Maximum)			0.8500 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	

Before: 7-Feb-2002 1:14

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		0.0001548	After		0.0005046	
	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		0.0001321
	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		0.0001971
	0 (Minimum) 0 (Nominal) 0.7500 (Maximum)			0 (Minimum) 0 (Nominal) 2.000 (Maximum)	

After: 5-Mar-2002 22:05

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: Calibration out of date 5-Oct-2001 22:50

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: Calibration out of date 5-Oct-2001 23:22

### 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:		
NPLC Housing	NPH - B	82

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	77
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH - BA	79
Gamma Source Radioactive	GSR - U	135

Scintillation Gamma-Ray - N / Equipment Identification

Primary Equipment:		
Scintillation Gamma Cartridge	SGC - TB	9582
Scintillation Gamma Detector	SGD - TAA	
Auxiliary Equipment:		
Scintillation Gamma Housing	SGH - K	2448
Gamma Source Radioactive	GSR - U/Y	

Scintillation Gamma-Ray - N Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		4.502	Before		167.5	Before		165.0
	0 (Minimum)      30.00 (Nominal)      120.0 (Maximum)			152.3 (Minimum)      167.5 (Nominal)      182.7 (Maximum)			150.0 (Minimum)      165.0 (Nominal)      180.0 (Maximum)	

Before: 7-Feb-2002 1:09

Company: Lamont Doherty

**Schlumberger**

Well: ODP Leg 201, Site 1228A PRU-2A

Field: Peru Margin

Rig: JOIDES Resolution

Ocean: Pacific

Phasor Induction

Gamma Ray

Gaithria Nay