Schlumberger

Company: Lamont Doherty

Well: ODP Leg 201, Site 1230A PRU-4A
Field: Peru Margin
Rig: JOIDES Resolution   Ocean: Pacific

Rig: JOIDES Resolution
Field: Peru Margin
Location: 9 Deg 06.7529' S Latitude
Well: ODP Leg 201, Site 1230A PRU-4
Company: Lamont Doherty

Phasor Induction
Gamma Ray

LOCATION

9 Deg 06.7529' S Latitude
80 Deg 35.01' W Longitude

Elev.: K.B. 11.3 m; G.L. -5097 m; D.F. 11 m

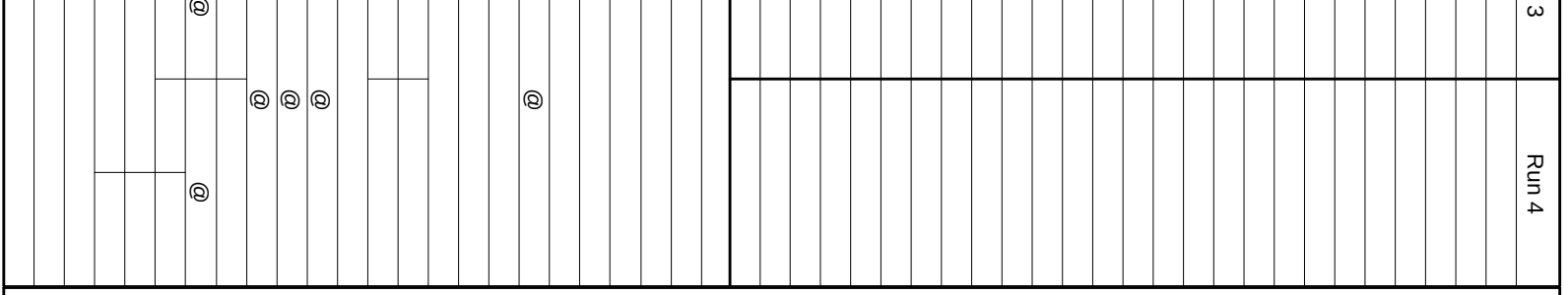
Permanent Datum: MSL   Elev.: 0 m
Log Measured From: RKB   11.3 m above Perm. Datum
Drilling Measured From: RKB

API Serial No.	Max. Hole Devi. 0 deg	Longitude	Latitude

Logging Date	16-Mar-2002		
Run Number	1		
Depth Driller	5375 m		
Schlumberger Depth	5379 m		
Bottom Log Interval	5373 m		
Top Log Interval	5099 m		
Casing Driller Size @ Depth	0.000 in @ 5178 m	@	
Casing Schlumberger	5179 m		
Bit Size	11.438 in		
Type Fluid In Hole	Sepiolite/Saltwater		
MUD Density / Viscosity	1.07 g/cm3		
MUD Fluid Loss / PH			
MUD Source Of Sample	mudpit		
RM @ Measured Temperature	0.235 ohm.m @ 33 degC	@	
RMF @ Measured Temperature	@	@	
RMC @ Measured Temperature	@	@	
Source RMF / RMC	none	none	
RM @ MRT / RMF @ MRT	0.421 @ 9	@ 9	@ / @
Maximum Recorded Temperatures	9 degC		
Circulation Stopped / Time	16-Mar-2002	3:00	
Logger On Bottom / Time	16-Mar-2002	8:45	
Unit Number / Location	99	Houston ODP	
Recorded By	K. Swain		
Witnessed By	Gilles Guerin		

	Run 1	Run 2	Run

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		



DISCLAIMER

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OTHER SERVICES1	OTHER SERVICES2
OS1: Hngs/HLDT/APS	OS1:
OS2: MEST/DSST	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Hole cored with APC, XCB, 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.	
Sepliolite mud was used to displace the hole during the wiper trip.	
Drillers TD 5375 mbrf, Driller pipe depth: 5178 mbrf, Sea Floor: 5097 mbrf.	
Drill Pipe Schlumberger 5179 mbrf.	
Sea Floor Schlumberger 5099 mbrf.	
Software bug shows APS calibration not done for part of master calibration.	
Low background countrate on HNGS master calibration signifies a weak internal	
source used for check of detector and not used in calibration.	

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

SFT-281 24
SFT-178 4722
GSR-U 135
GSR-U/Y
WITM (DTS)-A 2

DOWNHOLE EQUIPMENT

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

SGC-TB 9582

HNGS-BA 31.66
HNGS-BA 77
HNSH-BA 79
Upper_1 30.96
Lower_2 30.75

ILE-D 29.16
ILE-D 25
Status
Minitron
Near TD

APS-BA 26.73
APS-BA 22
APH-AC 22
MNTR-F 4185
Near Arr
Near 24.28
Far Arr 24.20
Far 24.08
Far TD 23.98

NPLC-B 22.78
NPLC-B 79
NPH-B 82
Status 21.56

DTA-A 20.34
ECH-KE 8231

HLDT-A 19.12
GSR-Z 1846
HLDC-AA 11
HLDV-A 10
HLDS-B 10
HLDP-B 10
HEH-G 11
HEH-H 12
LS 13.17
SS 13.05
Caliper 13.00

DIT-E 12.24
DIC-EB 438
MIH-ZA 417
DIS-HB 442
SP 5.86
Deep Ind 5.61
Aux Meas SFL 4.69
Med Ind 4.54
Status 2.71

AH-TAP 2.71
AH-TAP
DF
Tension HV 0.00

TOOL ZERO

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

Input DLIS Files

DEFAULT	PI_LDL_APS_NGS_006LUP	FN:8	PRODUCER	16-Mar-2002 08:47	5383.5 M	5079.3 M

Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_021PUP	FN:32	PRODUCER	17-Mar-2002 13:54	5383.5 M	5084.2 M
TCOM	PI_LDL_APS_NGS_021PUP	FN:33	PRODUCER	17-Mar-2002 13:54	5383.5 M	5084.2 M

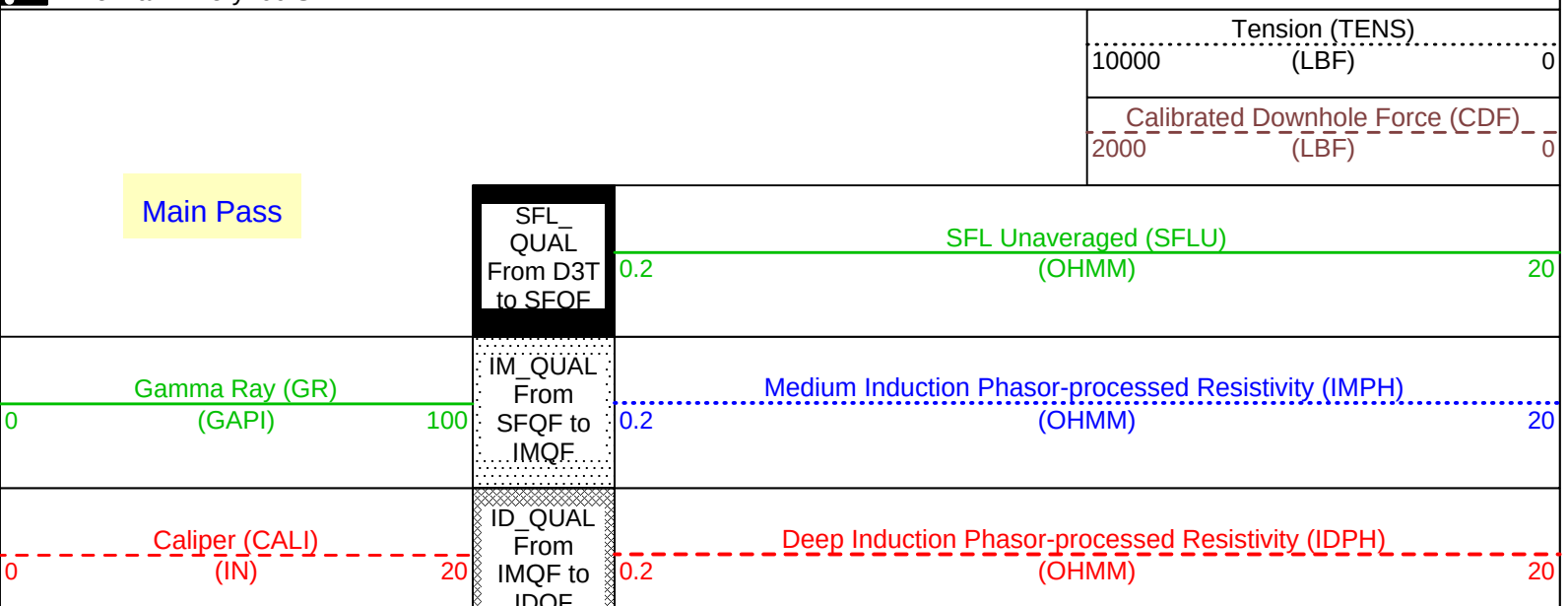
OP System Version: 10C0-306

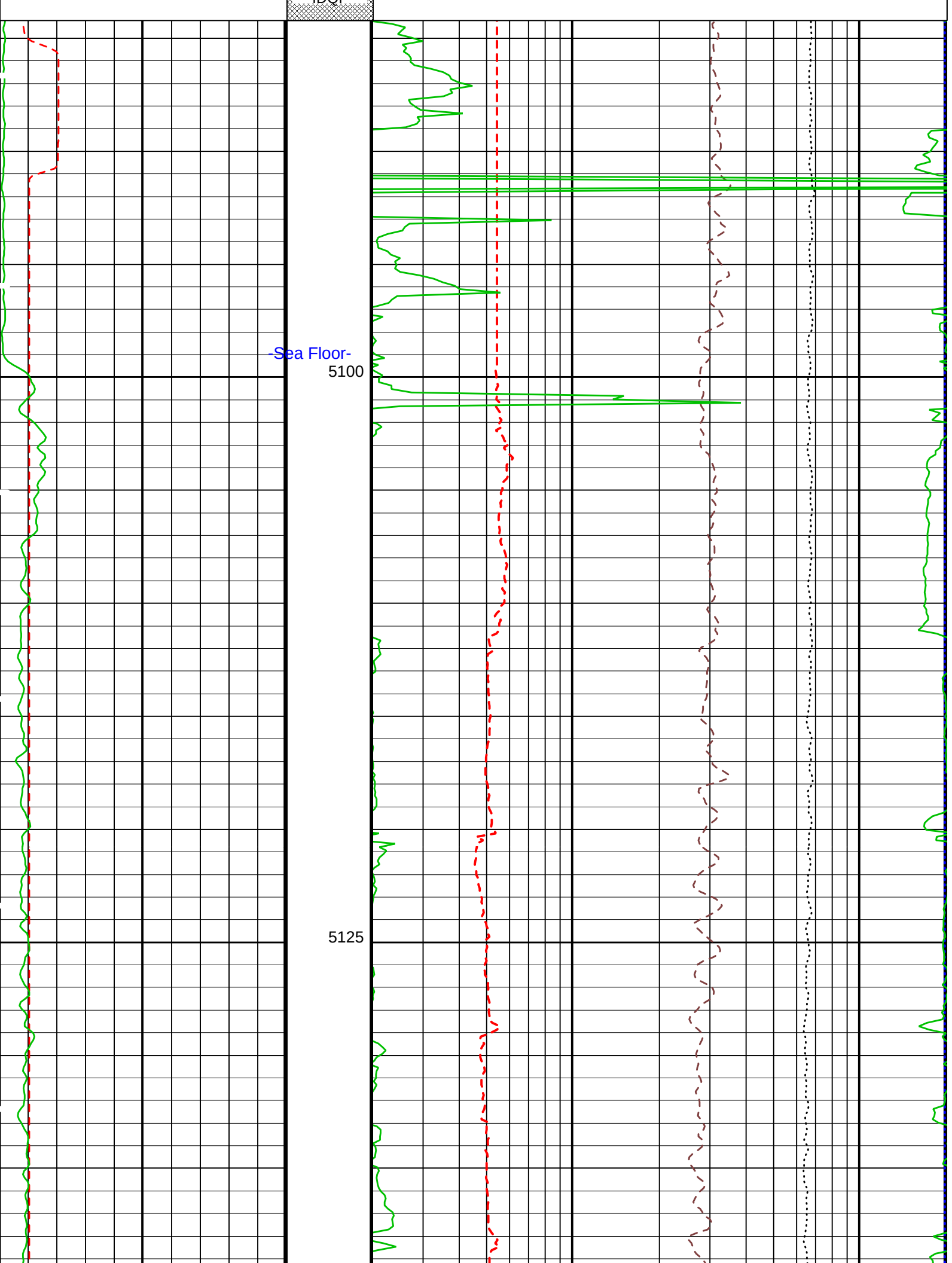
MCM

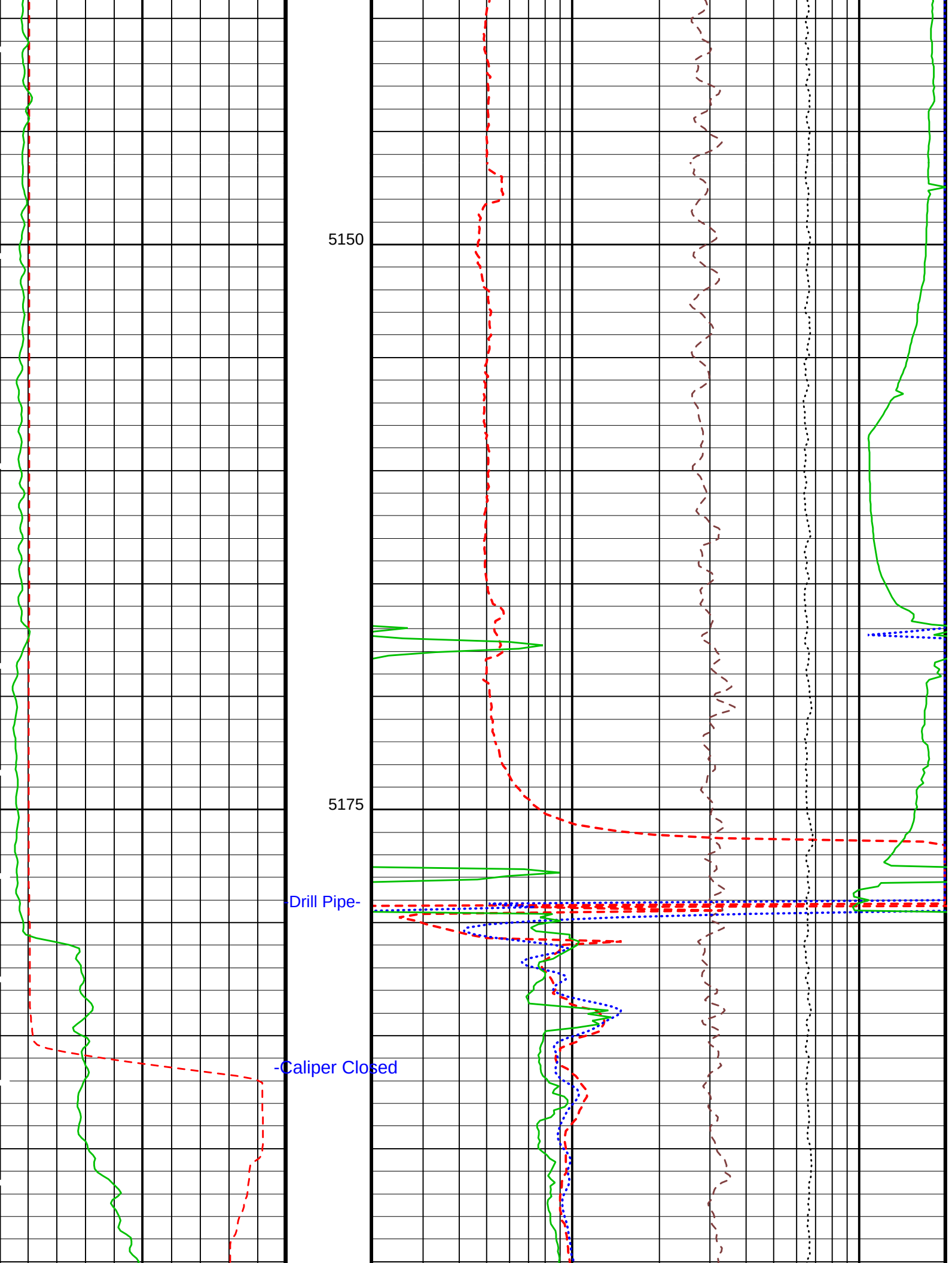
DIT-E	10C0-306	HLDT-A	10C0-306
DTA-A	10C0-306	NPLC-B	10C0-306
APS-BA	10C0-306	HNGS-BA	10C0-306
SGT-N	10C0-306	DTC-H	10C0-306

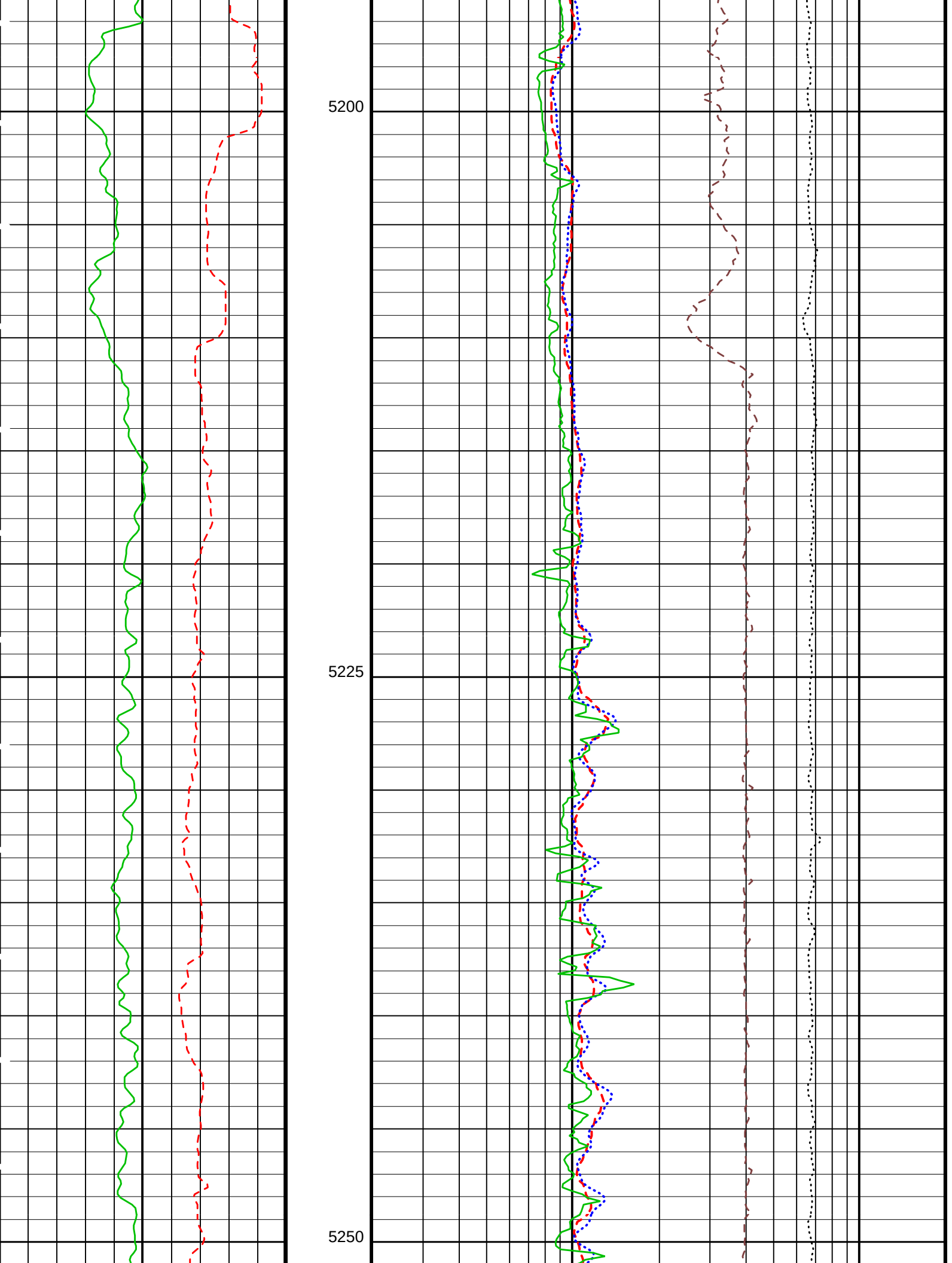
PIP SUMMARY

Time Mark Every 60 S




-Sea Floor-
5100
5125


5150
5175
-Drill Pipe-
-Caliper Closed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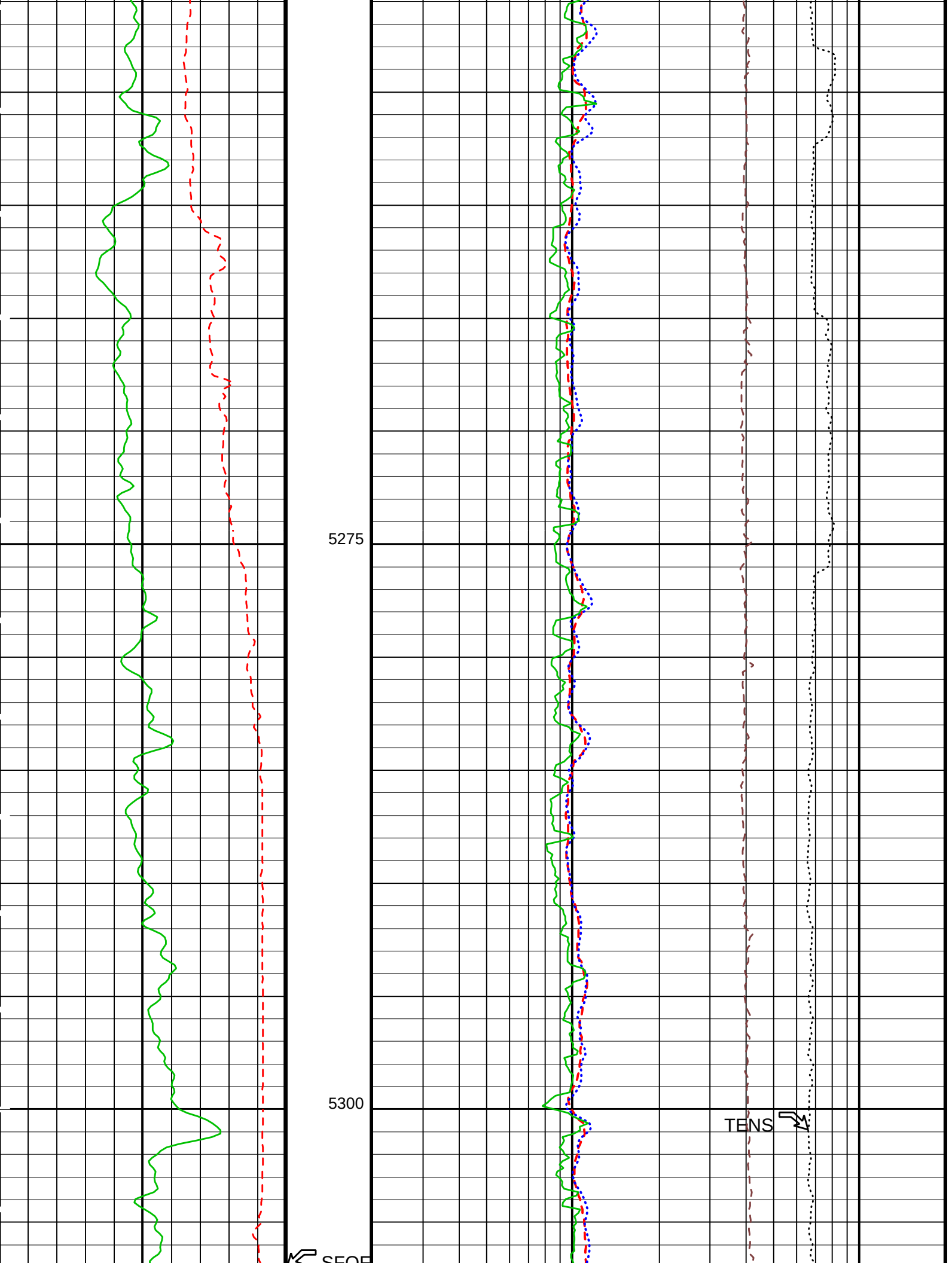
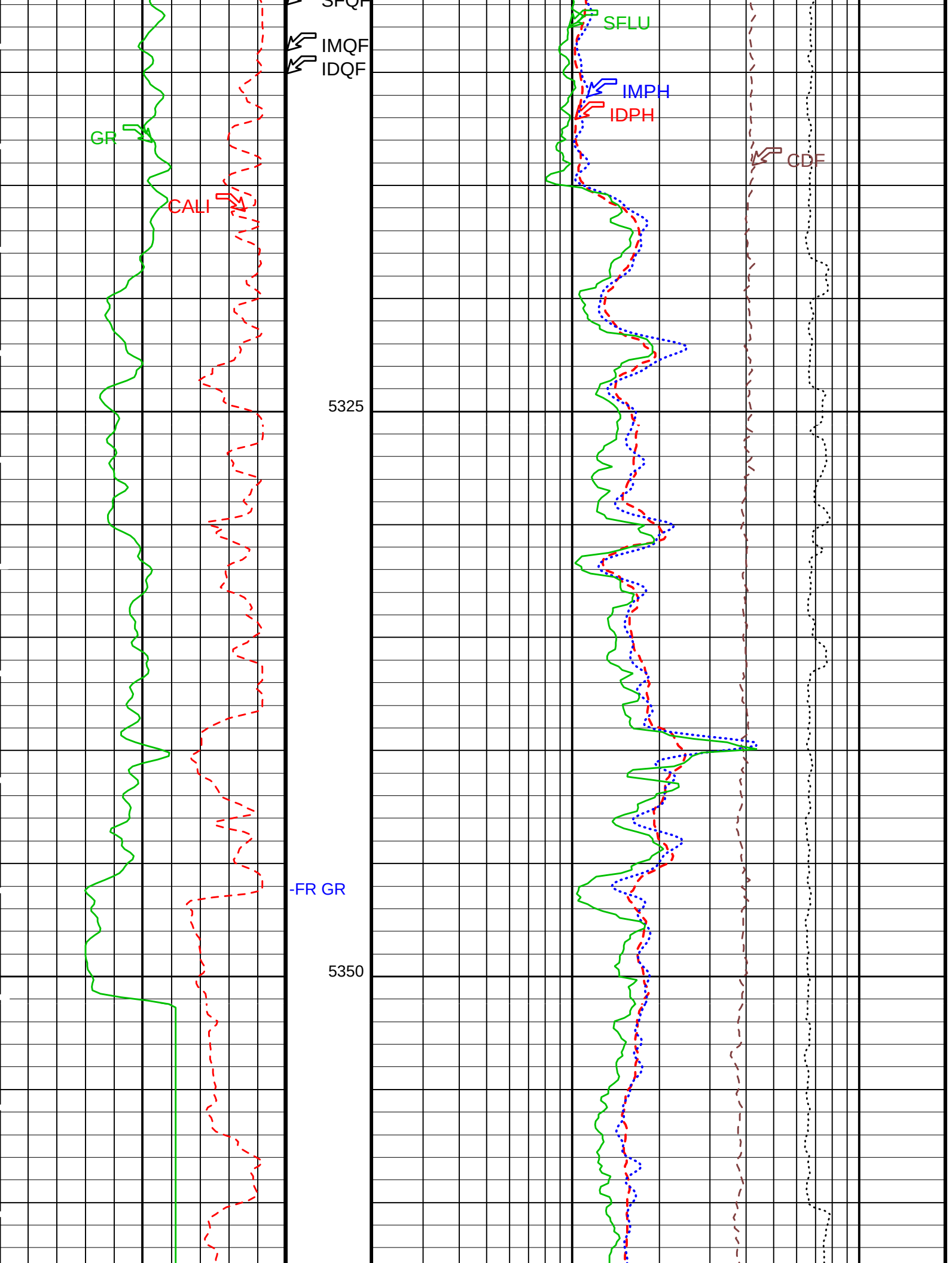
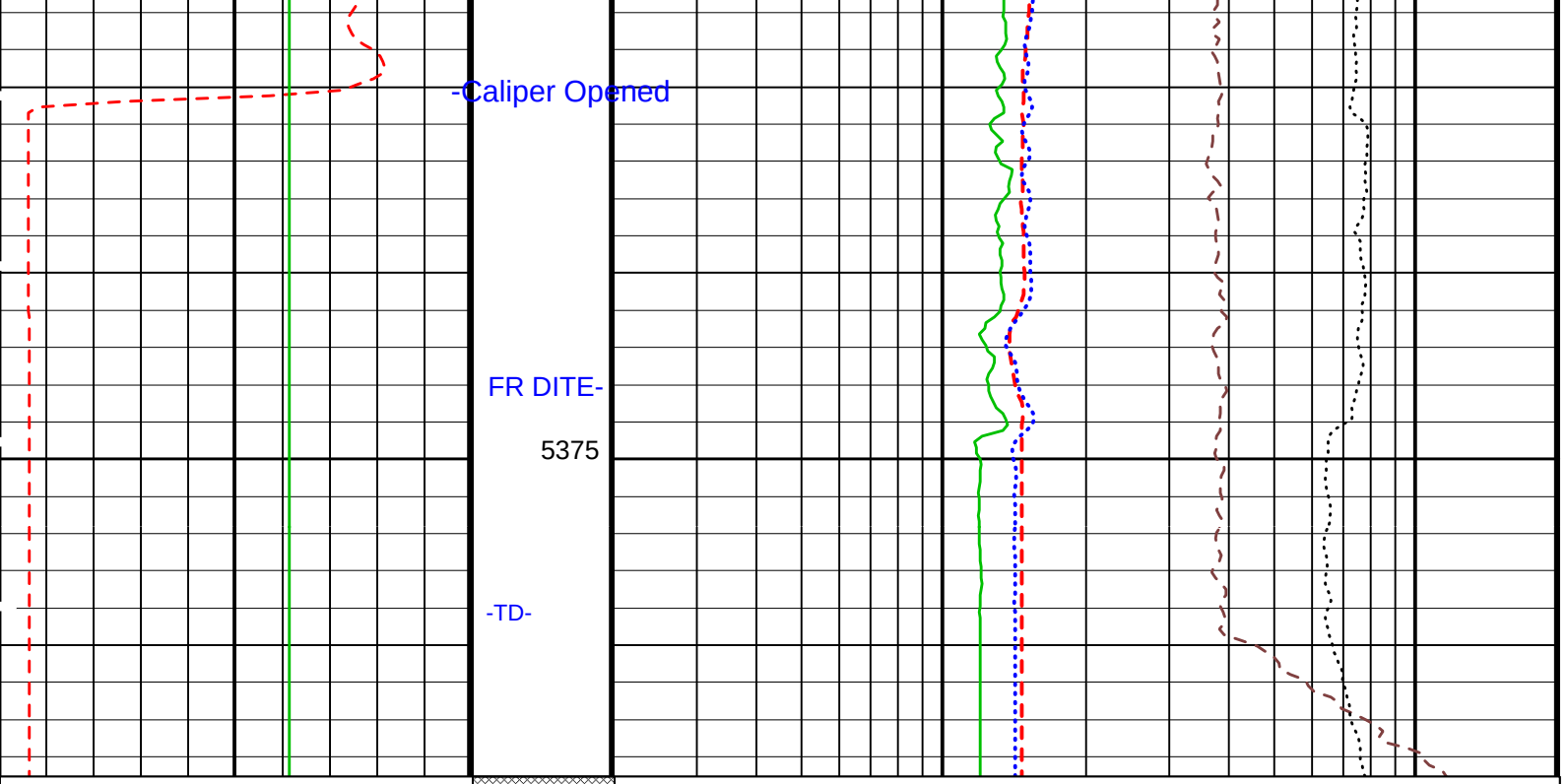
5225
5250


5275
5300
TENS


SFQF
IMQF
IDQF
SFLU
IMPH
IDPH
CDF
GR
CALI
5325
-FR GR
5350



Caliper (CALI)
0 (IN) 20

ID_QUAL From IMQF to IDQF

Deep Induction Phasor-processed Resistivity (IDPH)
0.2 (OHMM) 20

Gamma Ray (GR)
0 (GAPI) 100

IM_QUAL From SFQF to IMQF

Medium Induction Phasor-processed Resistivity (IMPH)
0.2 (OHMM) 20

SFL_ QUAL From D3T to SFQF

SFL Unaveraged (SFLU)
0.2 (OHMM) 20

Main Log

Calibrated Downhole Force (CDF)
2000 (LBF) 0

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

MXE2	Medium Quad 20 kHz Sonde Error Correction	54.2041	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
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	17647.6	FT

Format: DITE_LogPhasor Vertical Scale: 1:200 Graphics File Created: 17-Mar-2002 13:54

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

Input DLIS Files

DEFAULT	PI_LDL_APS_NGS_006LUP	FN:8	PRODUCER	16-Mar-2002 08:47	5383.5 M	5079.3 M

Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_021PUP	FN:32	PRODUCER	17-Mar-2002 13:54		
TCOM	PI_LDL_APS_NGS_021PUP	FN:33	PRODUCER	17-Mar-2002 13:54		

Input DLIS Files

DEFAULT	PI_LDL_APS_NGS_008LUP	FN:11	PRODUCER	16-Mar-2002 09:52	5383.5 M	5202.5 M

Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_023PUP	FN:35	PRODUCER	17-Mar-2002 14:07	5383.5 M	5207.7 M
TCOM	PI_LDL_APS_NGS_023PUP	FN:36	PRODUCER	17-Mar-2002 14:07	5383.5 M	5207.7 M

OP System Version: 10C0-306

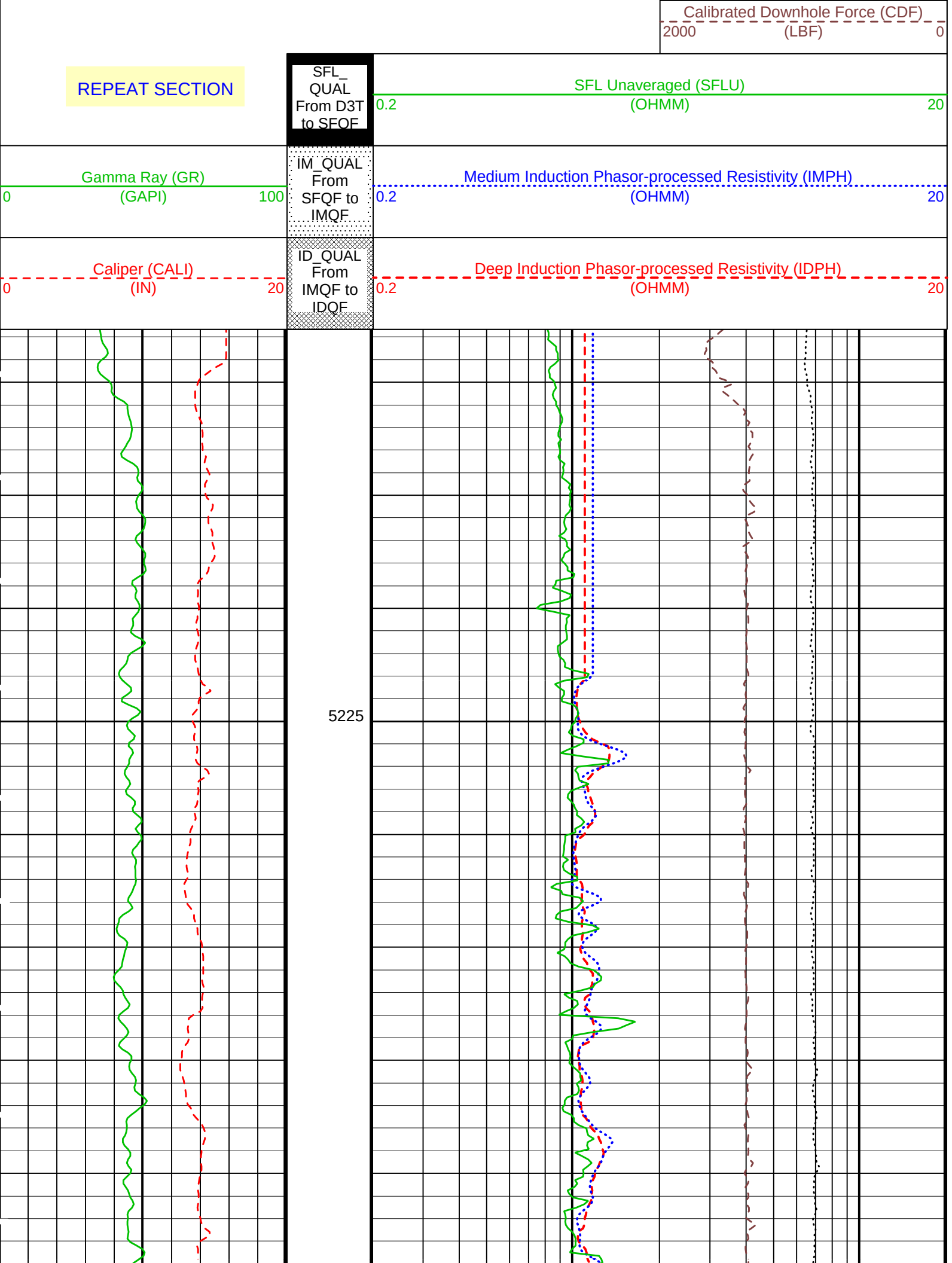
MCM

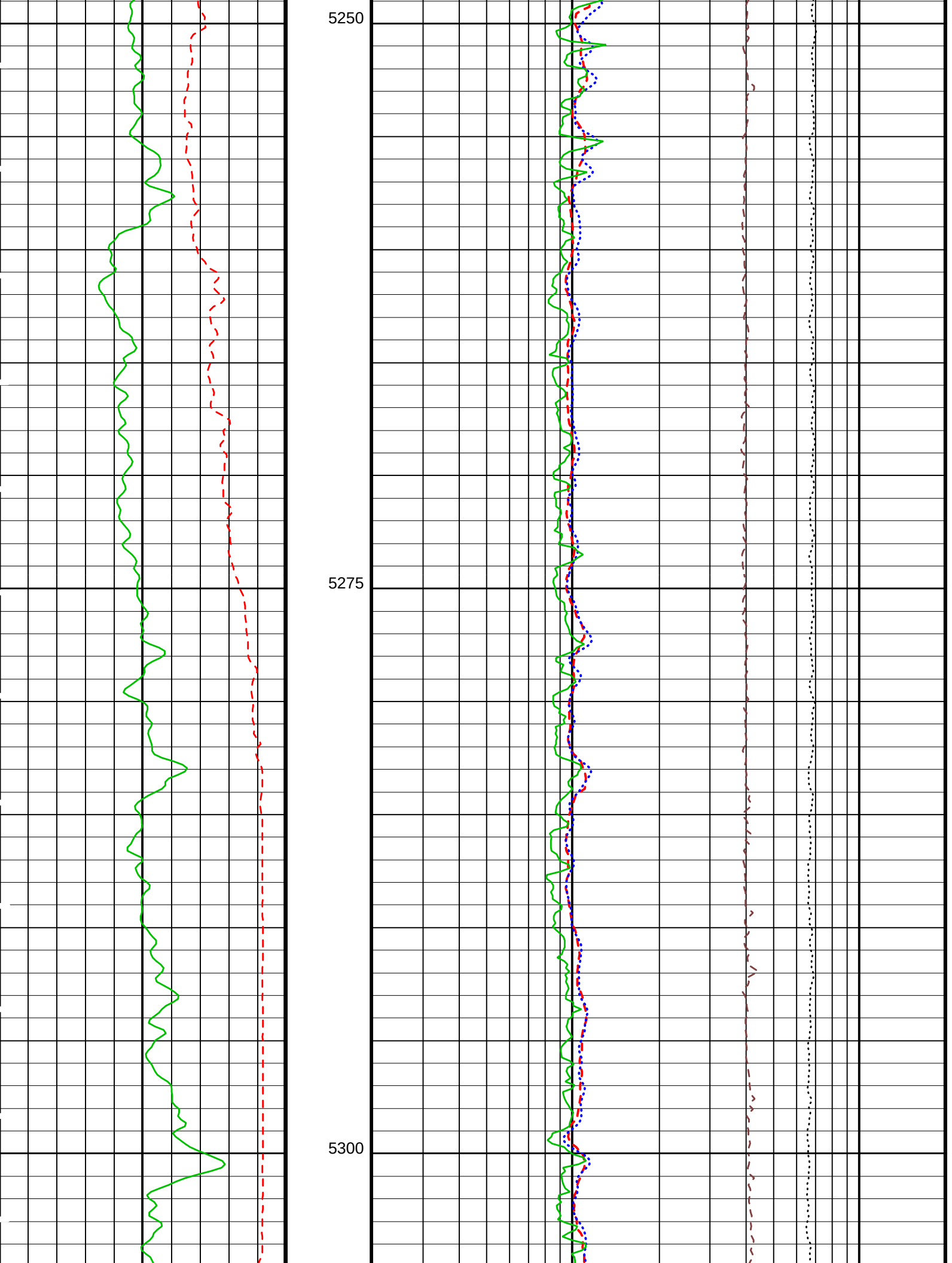
DIT-E	10C0-306	HLDT-A	10C0-306
DTA-A	10C0-306	NPLC-B	10C0-306
APS-BA	10C0-306	HNGS-BA	10C0-306
SGT-N	10C0-306	DTC-H	10C0-306

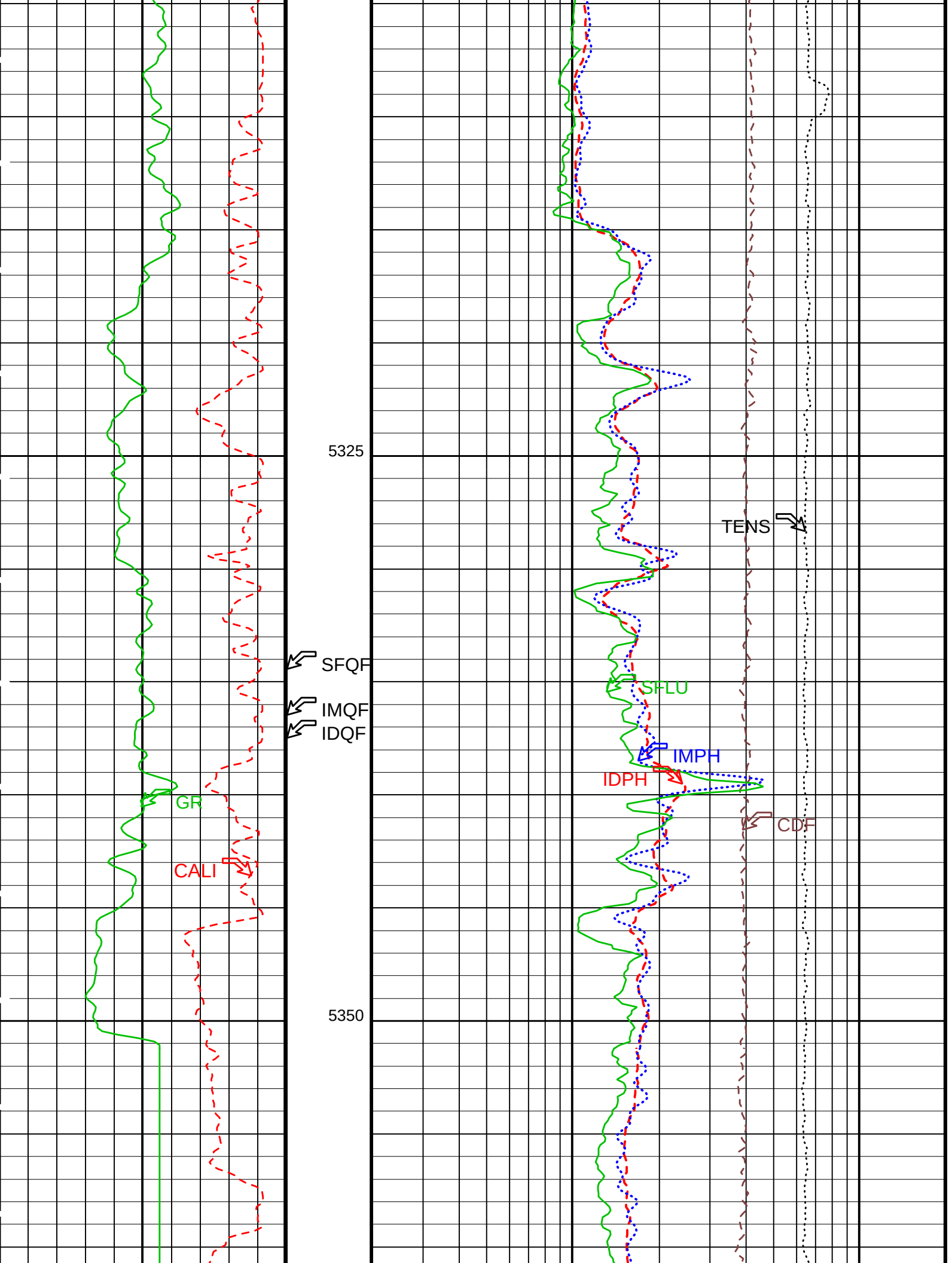
PIP SUMMARY

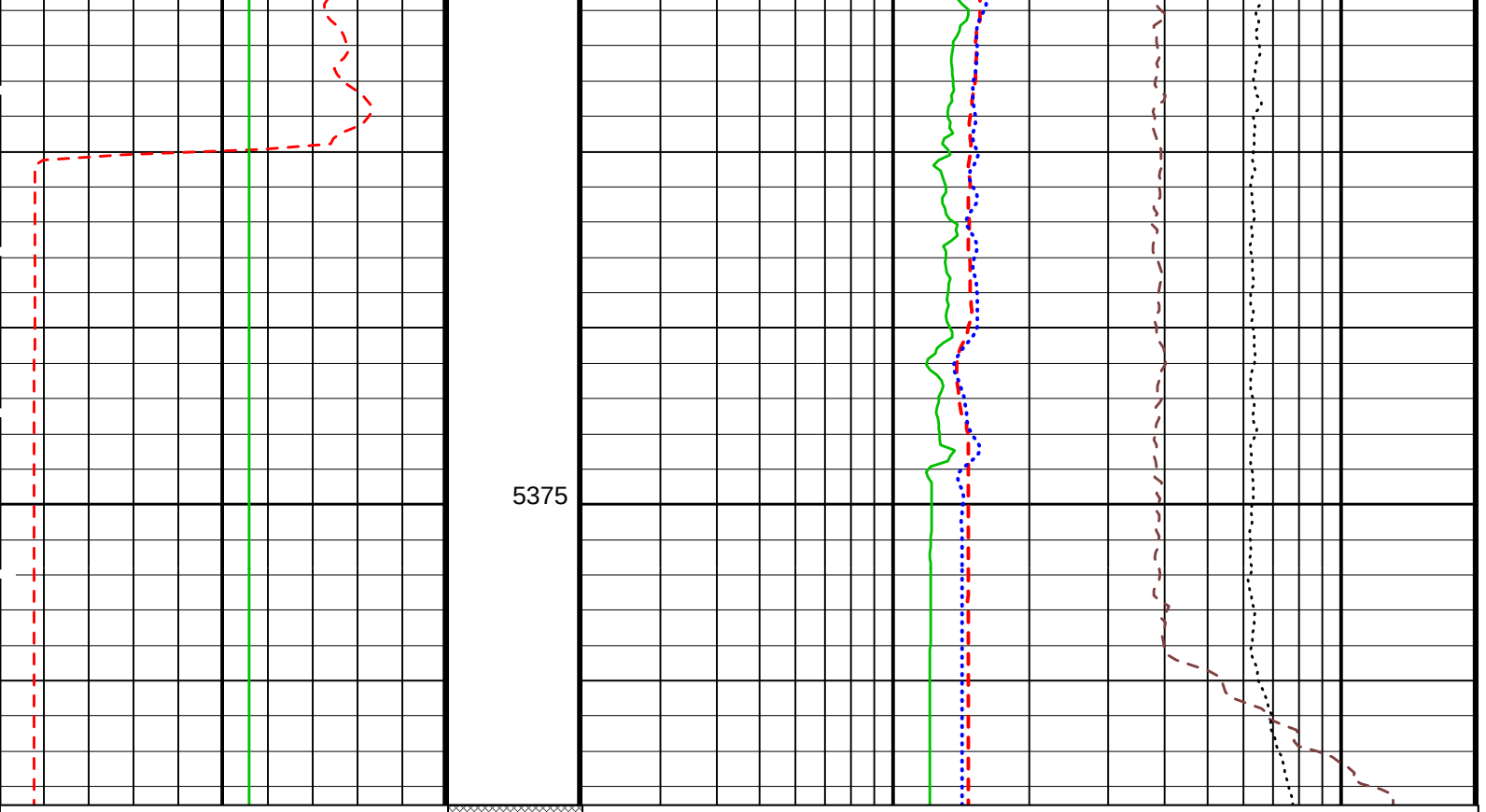
Time Mark Every 60 S

	Tension (TENS)	
10000	(LBF)	0


Calibrated Downhole Force (CDF)
2000
(LBF)
0
REPEAT SECTION
SFL_ QUAL From D3T to SFQF
SFL Unaveraged (SFLU)
0.2
(OHMM)
20
Gamma Ray (GR)
0
(GAPI)
100
IM_QUAL From SFQF to IMQF
Medium Induction Phasor-processed Resistivity (IMPH)
0.2
(OHMM)
20
Caliper (CALI)
0
(IN)
20
ID_QUAL From IMQF to IDQF
Deep Induction Phasor-processed Resistivity (IDPH)
0.2
(OHMM)
20
5225


5250
5275
5300


5325
5350
SFQF
IMQF
IDQF
GR
CALI
TENS
SFLU
IMPH
IDPH
CDF



Caliper (CALI)
0 (IN) 20

ID_QUAL From IMQF to IDQF

Deep Induction Phasor-processed Resistivity (IDPH)
0.2 (OHMM) 20

Gamma Ray (GR)
0 (GAPI) 100

IM_QUAL From SFQF to IMQF

Medium Induction Phasor-processed Resistivity (IMPH)
0.2 (OHMM) 20

REPEAT SECTION

SFL_ QUAL From D3T to SFQF

SFL Unaveraged (SFLU)
0.2 (OHMM) 20

Calibrated Downhole Force (CDF)
2000 (LBF) 0

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
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	17647.6	FT

Format: DITE_LogPhasor Vertical Scale: 1:200 Graphics File Created: 17-Mar-2002 14:07

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

Input DLIS Files

DEFAULT	PI_LDL_APS_NGS_008LUP	FN:11	PRODUCER	16-Mar-2002 09:52	5383.5 M	5202.5 M

Output DLIS Files

DEFAULT	PI_LDL_APS_NGS_023PUP	FN:35	PRODUCER	17-Mar-2002 14:07
TCOM	PI_LDL_APS_NGS_023PUP	FN:36	PRODUCER	17-Mar-2002 14:07

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: 16-Mar-2002 13:35							
LSW1 Background	100.0	89.06	86.19	87.21	1.019	0.03000	CPS
LSW2 Background	105.0	93.23	91.94	91.16	-0.7827	0.03000	CPS
LSW3 Background	210.0	180.0	177.0	178.4	1.486	0.03000	CPS
LSW4 Background	290.0	237.9	235.4	237.0	1.540	0.03000	CPS
LSW5 Background	610.0	529.6	525.7	526.2	0.5357	0.03000	CPS
SSW1 Background	100.0	85.18	85.99	85.89	-0.09821	0.03000	CPS
SSW2 Background	200.0	166.8	165.6	167.1	1.530	0.03000	CPS
SSW3 Background	530.0	446.5	445.9	441.3	-4.582	0.03000	CPS
SSW4 Background	280.0	235.8	234.2	233.3	-0.9212	0.03000	CPS
SSW5 Background	205.0	176.3	175.5	177.7	2.273	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: 16-Mar-2002 13:35							
LS Bkg. High Voltage	1129	1129	1134	1135	0.8025	N/A	V

SS Bkg. High Voltage	1173	1173	1180	1178	-2.820	N/A	V

Hostile Environment Litho Density - A Wellsite Calibration - Detectors Resolution From BKG Measurments
Master: 25-Jan-2002 14:22 Before: 21-Feb-2002 4:36 After: 16-Mar-2002 13:35

LS Background Resolution	1.000	1.042	1.032	1.052	0.01986	N/A	
SS Background Resolution	1.000	0.9530	0.9479	0.9570	0.009117	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: 16-Mar-2002 6:13 After: 16-Mar-2002 11:12

Near Det Bkg Cntrate	30.00	32.90	31.64	32.59	0.9511	N/A	CPS
Far Det Bkg Cntrate	30.00	34.46	32.77	32.64	-0.1335	N/A	CPS
Array-1 Det Bkg Cntrate	30.00	28.56	29.11	29.15	0.03336	N/A	CPS
Array-2 Det Bkg Cntrate	30.00	30.78	28.66	29.48	0.8174	N/A	CPS
Array Therm Det Bkg Cntrate	30.00	32.89	34.90	31.52	-3.376	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: 16-Mar-2002 13:31

Na 511 Peak Loc	40.00	40.51	40.71	40.60	-0.1139	1.000	
Na 511 Peak Res	15.50	15.75	17.24	16.36	-0.8792	2.000	%
High Voltage	1150	1203	1207	1211	4.461	30.00	V
Na 1785 Peak Loc	142.6	144.6	146.2	145.3	-0.8852	7.000	
Na 1785 Peak Res	8.500	9.254	9.073	9.056	-0.01723	2.000	%
Temperature	15.50	21.86	29.34	29.05	-0.2867	N/A	DEGC
Na Count Rate	45.00	39.29	40.56	38.30	-2.263	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: 16-Mar-2002 13:31

Na 511 Peak Loc	40.00	40.54	40.54	40.49	-0.04351	1.000	
Na 511 Peak Res	15.50	16.19	16.67	16.83	0.1667	2.000	%
High Voltage	1150	1233	1236	1241	4.679	30.00	V
Na 1785 Peak Loc	142.6	143.9	144.1	144.7	0.6076	7.000	
Na 1785 Peak Res	8.500	9.453	8.968	9.504	0.5361	2.000	%
Temperature	15.50	21.24	29.04	29.75	0.7097	N/A	DEGC
Na Count Rate	45.00	39.11	40.36	38.11	-2.251	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: 16-Mar-2002 13:31

Coincidence Count Rate Ratio	1.000	1.004	1.005	1.005	-0.0001048	0.05000	

Scintillation Gamma-Ray - N Wellsite Calibration - Detector Calibration
Before: Calibration out of date 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:

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
Before		37.20
-262.8 (Minimum)	37.15 (Nominal)	337.2 (Maximum)

Phase	ID Elect Real Gain 10 kHz	Value
Before		0.9756
0.8294 (Minimum)	0.9794 (Nominal)	1.171 (Maximum)

Phase	ID Elect Phase 10 kHz DEG	Value
Before		10.64
0.6325 (Minimum)	10.63 (Nominal)	20.63 (Maximum)

Phase	ID Elect Quad Offset 10 kHz MM/M	Value
Before		22.47
-277.5 (Minimum)	22.53 (Nominal)	322.5 (Maximum)

Phase	ID Elect Quad Gain 10 kHz	Value
Before		0.9637
0.8193 (Minimum)	0.9693 (Nominal)	1.157 (Maximum)

Phase	IM Elect Phase 10 kHz DEG	Value
Before		13.32
3.310 (Minimum)	13.31 (Nominal)	23.31 (Maximum)

Phase	IM Elect Real Offset 10 kHz MM/M	Value
Before		96.46
-453.5 (Minimum)	96.54 (Nominal)	646.5 (Maximum)

Phase	IM Elect Real Gain 10 kHz	Value
Before		0.9498
0.8074 (Minimum)	0.9574 (Nominal)	1.140 (Maximum)

Phase	IM Elect Quad Offset 10 kHz MM/M	Value
Before		95.06
-454.8 (Minimum)	95.18 (Nominal)	645.2 (Maximum)

Phase	IM Elect Quad Gain 10 kHz	Value
Before		0.9476
0.8055 (Minimum)	0.9555 (Nominal)	1.137 (Maximum)

Before: Calibration out of date 5-Oct-2001 23:57

Dual Induction - E Wellsite Calibration

Induction Electronics (20 kHz)

Phase	ID Elect Real Offset 20 kHz MM/M	Value
Before		14.67
-110.3 (Minimum)	14.68 (Nominal)	139.7 (Maximum)

Phase	ID Elect Real Gain 20 kHz	Value
Before		1.001
0.8551 (Minimum)	1.005 (Nominal)	1.207 (Maximum)

Phase	ID Elect Phase 20 kHz DEG	Value
Before		9.784
-5.718 (Minimum)	9.282 (Nominal)	24.28 (Maximum)

Phase	ID Elect Quad Offset 20 kHz MM/M	Value
Before		9.083
-115.9 (Minimum)	9.089 (Nominal)	134.1 (Maximum)

Phase	ID Elect Quad Gain 20 kHz	Value
Before		0.9891
0.8445 (Minimum)	0.9945 (Nominal)	1.192 (Maximum)

Phase	IM Elect Phase 20 kHz DEG	Value
Before		12.07
-2.653 (Minimum)	12.35 (Nominal)	27.35 (Maximum)

Phase	IM Elect Real Offset 20 kHz MM/M	Value
Before		40.06
-184.7 (Minimum)	40.31 (Nominal)	265.3 (Maximum)

Phase	IM Elect Real Gain 20 kHz	Value
Before		1.011
0.8587 (Minimum)	1.009 (Nominal)	1.212 (Maximum)

Phase	IM Elect Quad Offset 20 kHz MM/M	Value
Before		39.84
-185.2 (Minimum)	39.80 (Nominal)	264.8 (Maximum)

Phase	IM Elect Quad Gain 20 kHz	Value
Before		1.009
0.8566 (Minimum)	1.007 (Nominal)	1.209 (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
Before		9.567
-75.43 (Minimum)	9.570 (Nominal)	94.57 (Maximum)

Phase	ID Elect Real Gain 40 kHz	Value
Before		0.9871
0.8395 (Minimum)	0.9895 (Nominal)	1.185 (Maximum)

Phase	ID Elect Phase 40 kHz DEG	Value
Before		29.04
9.068 (Minimum)	29.07 (Nominal)	49.07 (Maximum)

Phase	ID Elect Quad Offset 40 kHz MM/M	Value
Before		5.882
-79.10 (Minimum)	5.897 (Nominal)	90.90 (Maximum)

Phase	ID Elect Quad Gain 40 kHz	Value
Before		0.9737
0.8281 (Minimum)	0.9781 (Nominal)	1.169 (Maximum)

Phase	IM Elect Phase 40 kHz DEG	Value
Before		32.65
12.68 (Minimum)	32.68 (Nominal)	52.68 (Maximum)

Phase	IM Elect Real Offset 40 kHz MM/M	Value
Before		26.16
-103.8 (Minimum)	26.19 (Nominal)	156.2 (Maximum)

Phase	IM Elect Real Gain 40 kHz	Value
Before		1.020
0.8673 (Minimum)	1.017 (Nominal)	1.224 (Maximum)

Phase	IM Elect Quad Offset 40 kHz MM/M	Value
Before		25.90
-104.1 (Minimum)	25.92 (Nominal)	155.9 (Maximum)

Phase	IM Elect Quad Gain 40 kHz	Value
Before		1.017
0.8649 (Minimum)	1.015 (Nominal)	1.221 (Maximum)

Before: Calibration out of date 6-Oct-2001 0:00

Dual Induction - E Wellsite Calibration

SFL Electronics

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		0.0001467	After		0.0007340
	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		0.0001106			
	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		0.0005488			
	0 (Minimum) 0 (Nominal) 0.7500 (Maximum)			0 (Minimum) 0 (Nominal) 2.000 (Maximum)				

After: 16-Mar-2002 10:45

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 6-Oct-2001 3:50

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 6-Oct-2001 4:22

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: Calibration out of date 7-Feb-2002 1:09

Company:	Lamont Doherty
Well:	ODP Leg 201, Site 1230A PRU-4A
Field:	Peru Margin
Rig:	JOIDES Resolution
Ocean:	Pacific

Schlumberger

Phasor Induction
Gamma Ray