Schlumberger

Company: Lamont Doherty

Well: ODP Leg 201, Site 1228A PRU-2A
Field: Peru Margin
Rig: JOIDES Resolution Ocean: Pacific

Rig: JOIDES Resolution
Field: Peru Margin
Location: 11 Deg 53.900' S Latitude
Well: ODP Leg 201, Site 1228A PRU-2
Company: Lamont Doherty

Natural Gamma Ray
Spectroscopy (HNGS)

LOCATION

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

	Run 1	Run 2	Run
Logging Date	5-Mar-2002		
Run Number	1		
Depth Driller	474 m		
Schlumberger Depth	475 m		
Bottom Log Interval	444 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	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	0.294 @ 22 / @ 22	@ / @	
Maximum Recorded Temperatures	24.5 degC		
Circulation Stopped / Time	5-Mar-2002 / 16:00		
Logger On Bottom / Time	5-Mar-2002 / 20:24		
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			

| | | |

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
Near Arr
Near
Far Arr
Far
Far TD

APS-BA 26.73
APS-BA 22
APH-AC 22
MNTR-F 4185

24.28
24.20
24.08
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

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

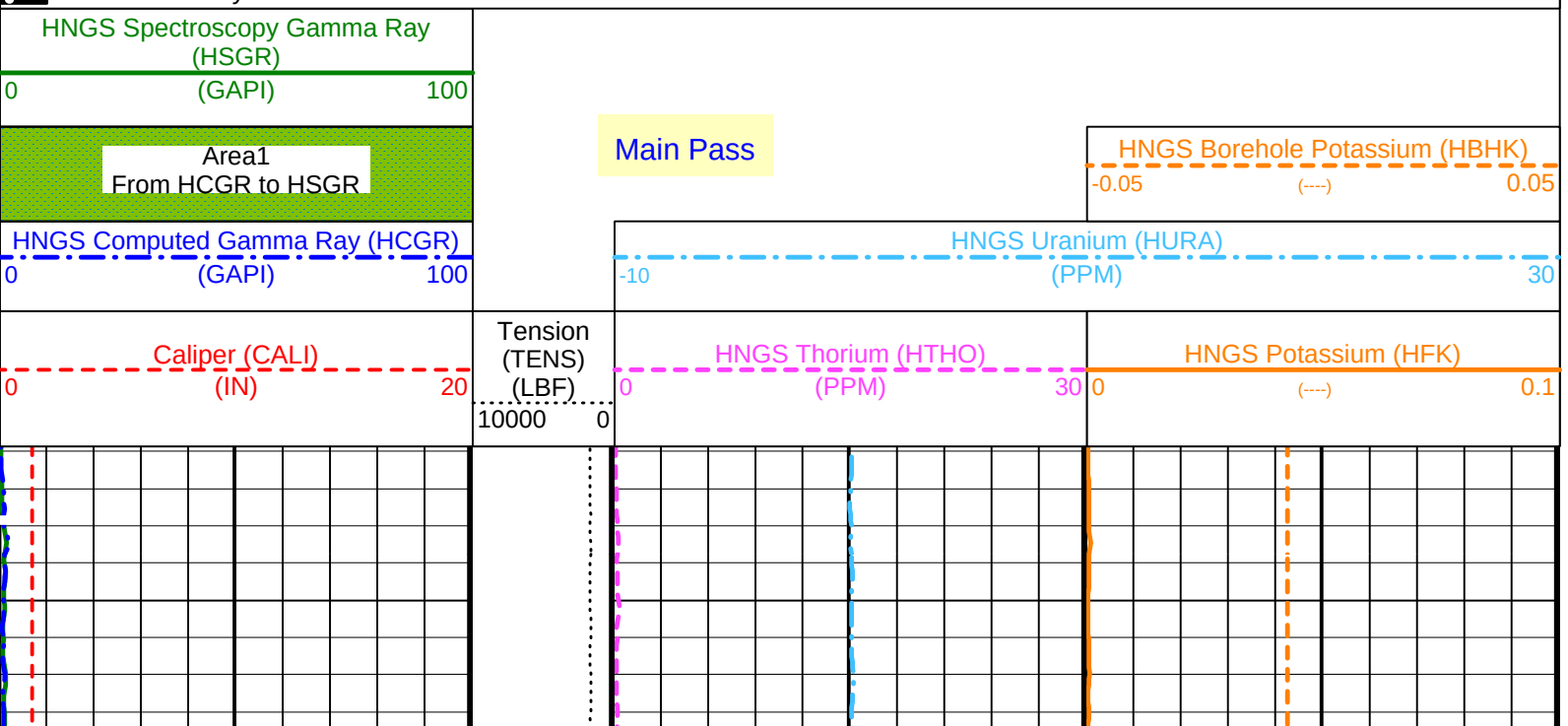
OP System Version: 10C0-306

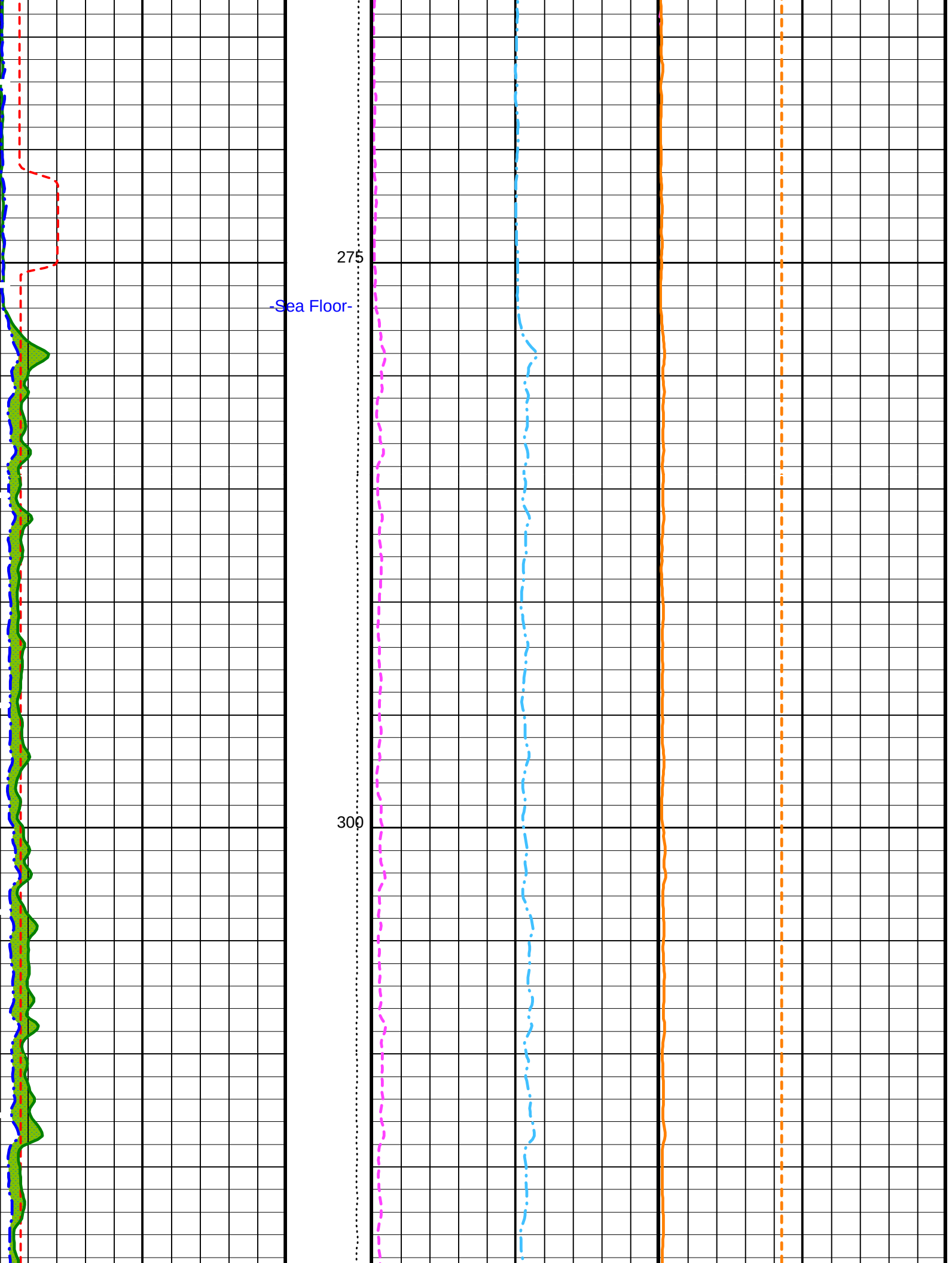
MCM

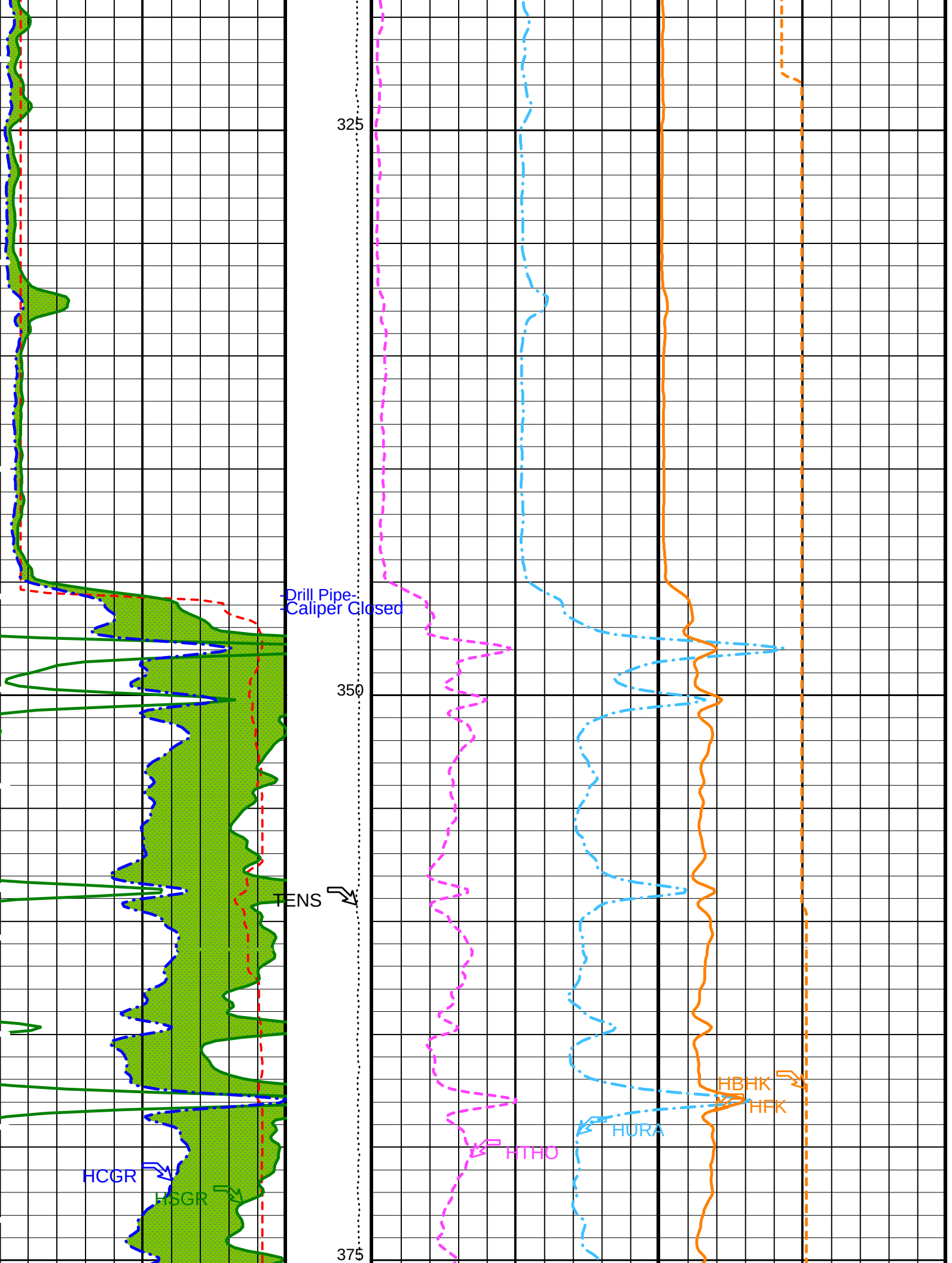
DIT-E	10C0-306	HLDT-A	10C0-306
DTA-A	10C0-306	NPLC-B	10C0-306
APS-BA	10C0-306	HNGS-BA	10C0-306
SGT-N	10C0-306	DTC-H	10C0-306

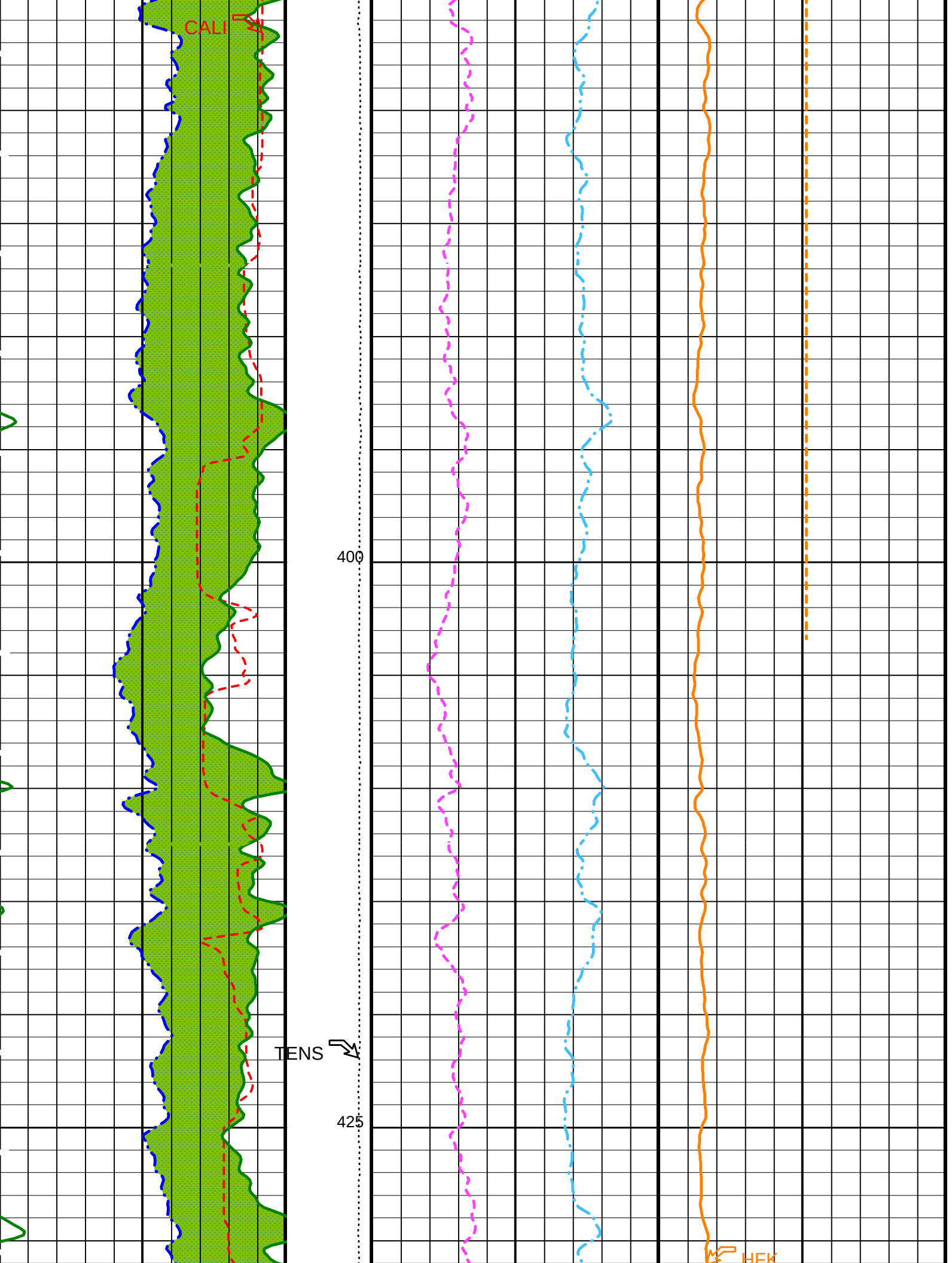
PIP SUMMARY

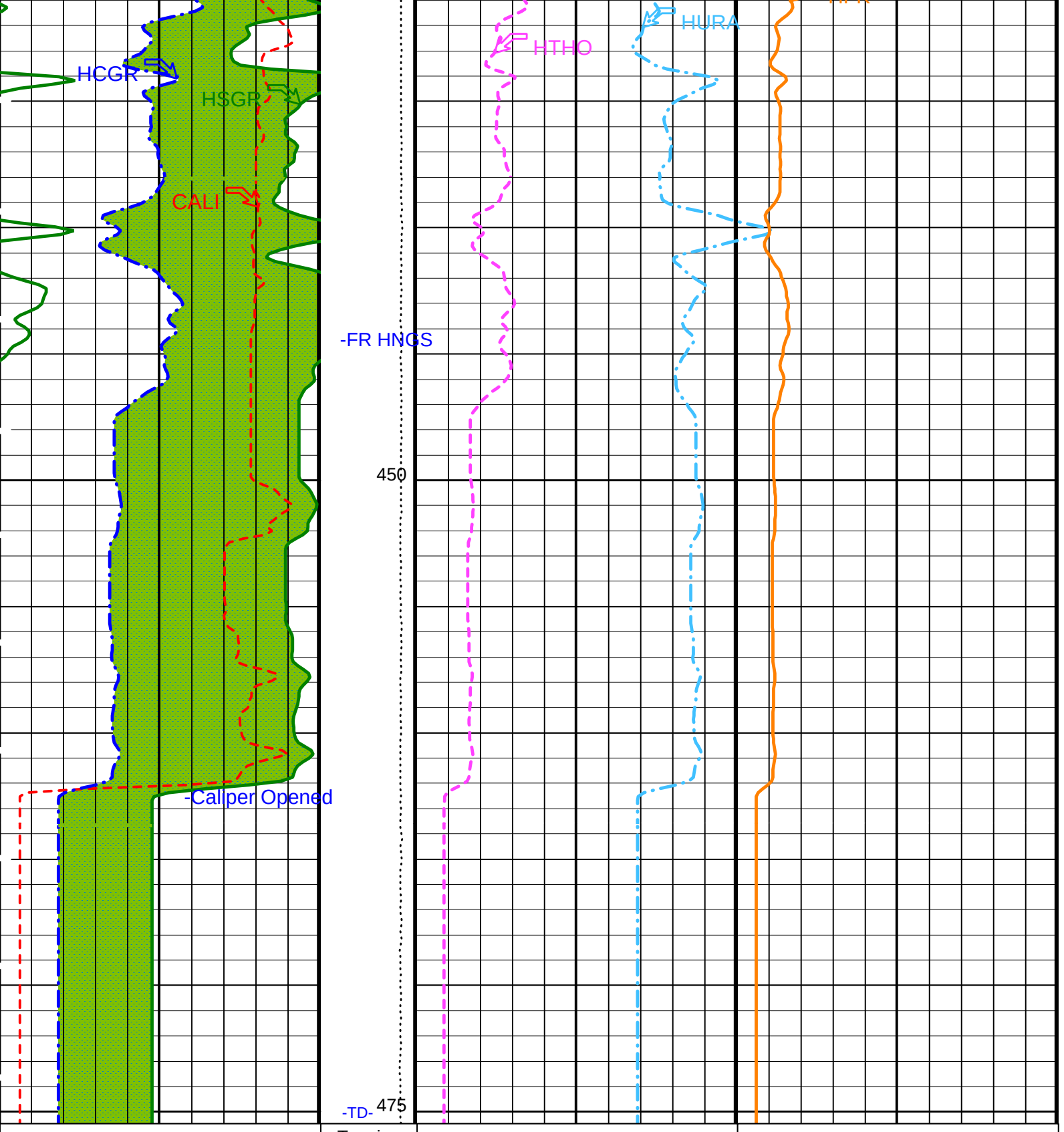
Time Mark Every 60 S




275
-Sea Floor-
300


325
350
375
-Drill Pipe-
-Caliper Closed
TENS
HCGR
HSGR
HTHO
HURA
HBHK
HFK


CALI
400
TENS
425
HFK


HCGR
HSGR
CALI
HTHO
HURA
-FR HNGS
450
-Caliper Opened
-TD-
475
Caliper (CALI)
0
(IN)
20
Tension
(TENS)
(LBF)
10000
0
HNGS Thorium (HTHO)
0
(PPM)
30
HNGS Potassium (HFK)
0
(---)
0.1
HNGS Computed Gamma Ray (HCGR)
0
(GAPI)
100
HNGS Uranium (HURA)
-10
(PPM)
30
Area1
From HCGR to HSGR
Main Pass
HNGS Borehole Potassium (HBHK)
-0.05
(---)
0.05
HNGS Spectroscopy Gamma Ray
(HSGR)
0
(GAPI)
100

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	DIT-E: Dual Induction - E		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	APS-BA: Accelerator-Porosity Tool		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	HNGS-BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	CALI	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00491096	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.77628	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.814463	
	SGT-N: Scintillation Gamma-Ray - N		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	System and Miscellaneous		
BS	Bit Size	11.438	IN
DFD	Drilling Fluid Density	1.07	G/C3

Format: HNGSYields 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

HNGS Spectroscopy Gamma Ray (HSGR)
0 (GAPI) 100

Area1
From HCGR to HSGR

HNGS Computed Gamma Ray (HCGR)
0 (GAPI) 100

Caliper (CALI)
0 (IN) 20

Tension (TENS) (LBF)
10000 0

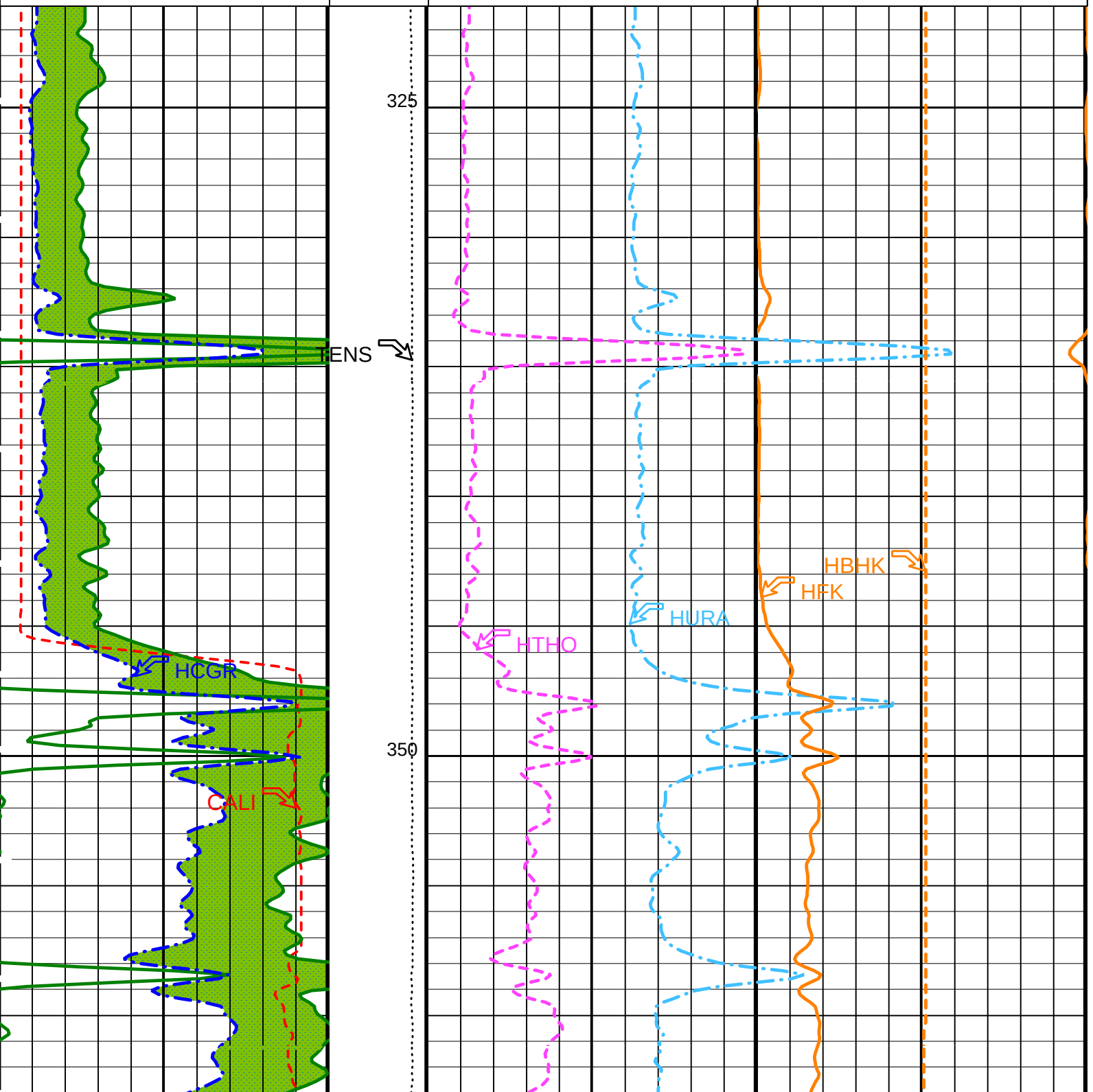
REPEAT SECTION

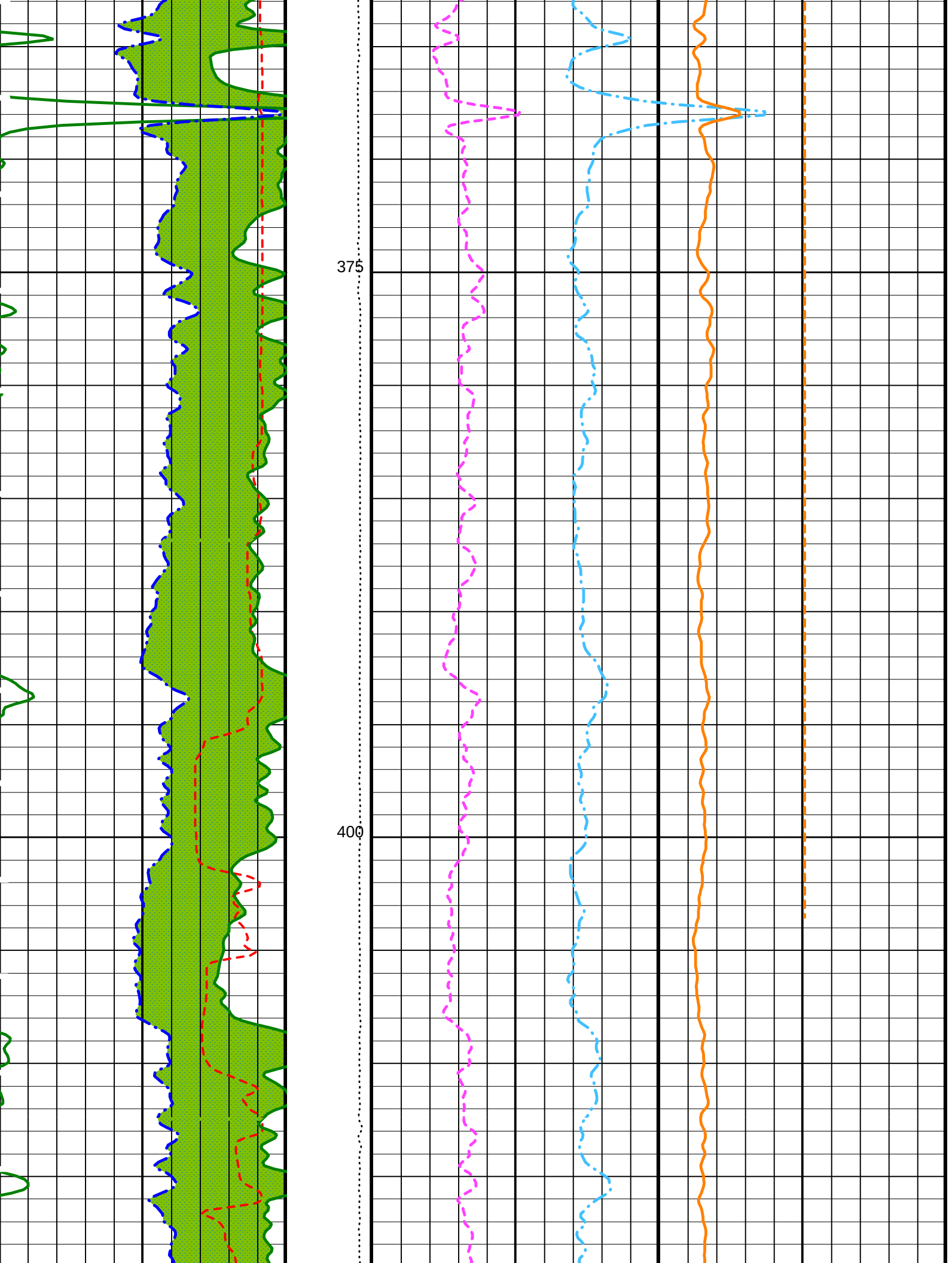
HNGS Borehole Potassium (HBHK)
-0.05 (----) 0.05

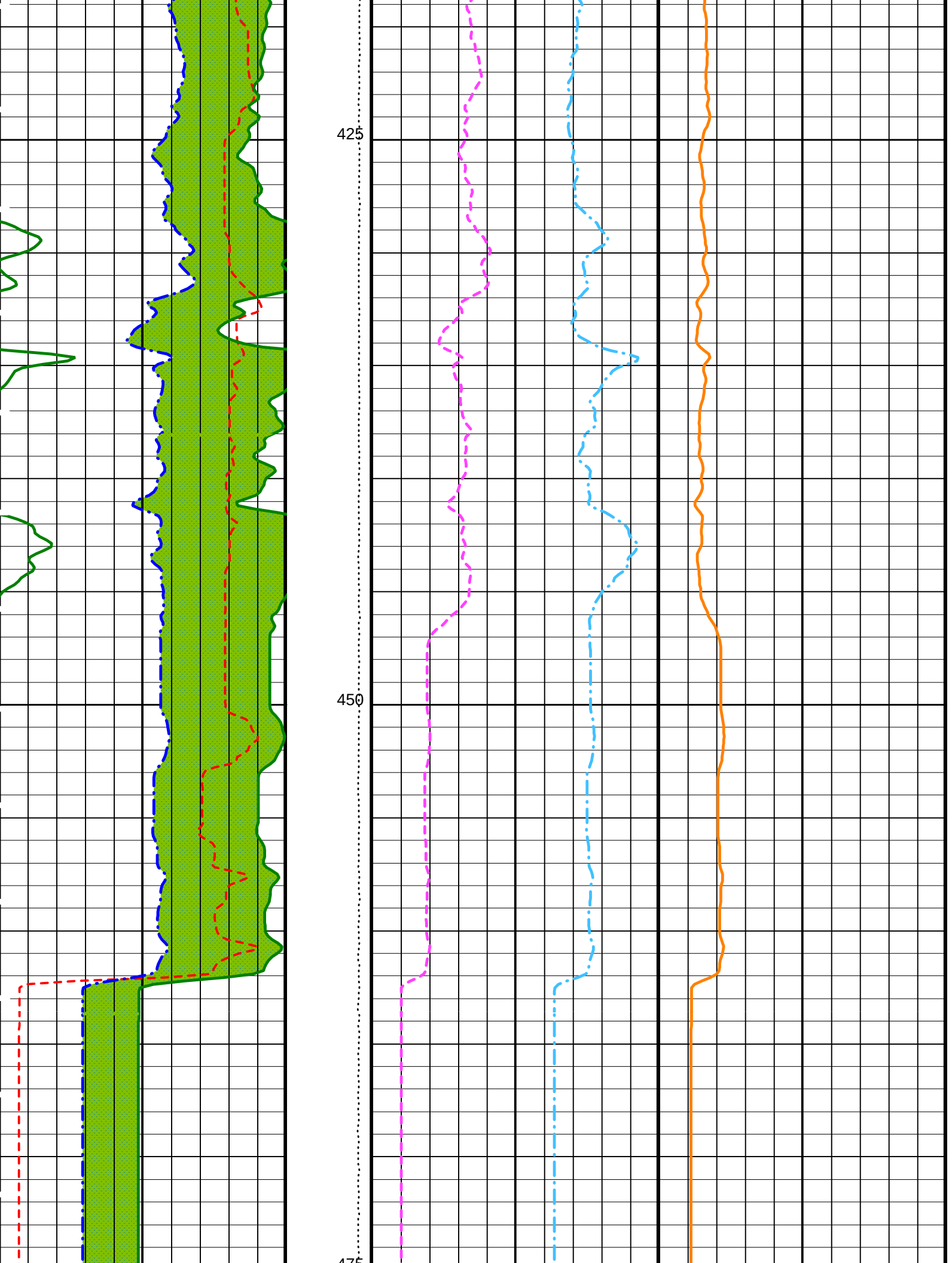
HNGS Uranium (HURA)
-10 (PPM) 30

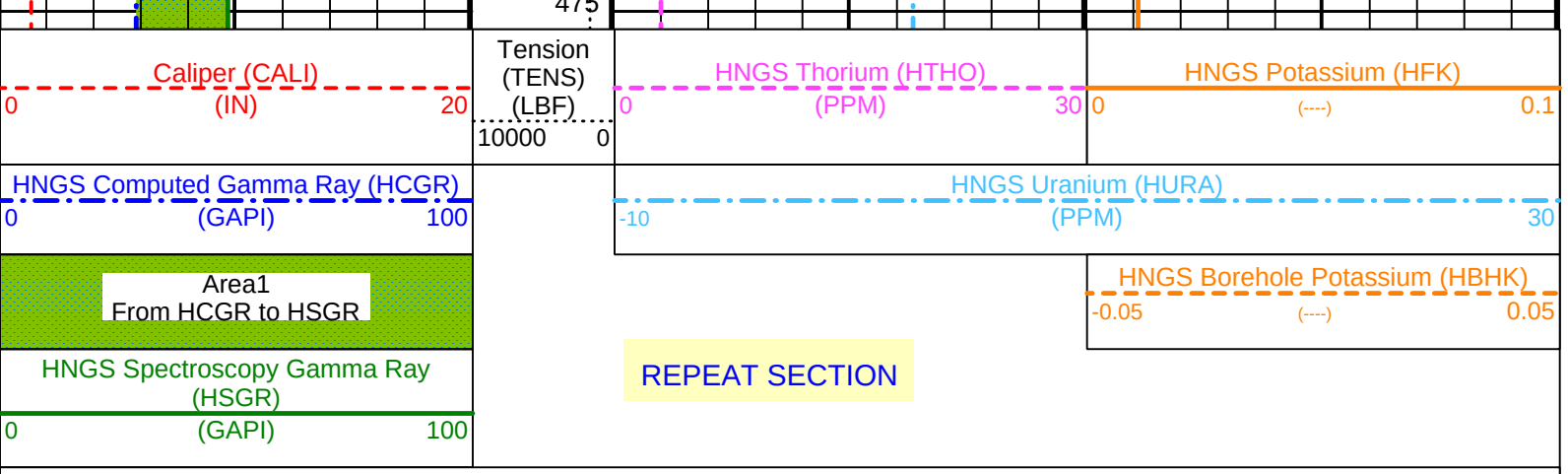
HNGS Thorium (HTHO)
0 (PPM) 30

HNGS Potassium (HFK)
0 (----) 0.1




375
400


425
450
475



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	DIT-E: Dual Induction - E		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	APS-BA: Accelerator-Porosity Tool		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	HNGS-BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	CALI	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	-0.00262782	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.963907	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.979587	
	SGT-N: Scintillation Gamma-Ray - N		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	CALI	
	System and Miscellaneous		
BS	Bit Size	11.438	IN
DFD	Drilling Fluid Density	1.07	G/C3

Format: HNGSYields 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 Measurments							
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							

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	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 1 Calibration
Master: 23-Jan-2002 11:31

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	209.7	--	--	--	--	
Th Peak Res	7.000	7.364	--	--	--	--	%
Background Count Rate	142.5	19.66	--	--	--	--	CPS
Gain Ratio	1.000	0.9848	--	--	--	--	

Hostile Natural Gamma Ray Sonde Master Calibration - Detector 2 Calibration
Master: 23-Jan-2002 11:31

Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	208.7	--	--	--	--	
Th Peak Res	7.000	7.834	--	--	--	--	%
Background Count Rate	142.5	17.61	--	--	--	--	CPS
Gain Ratio	1.000	0.9795	--	--	--	--	

Scintillation Gamma-Ray - N Wellsite Calibration - Detector Calibration
Before: 7-Feb-2002 1:09 After: Calibration not done

Gamma Ray (Jig - Bkg)	167.5	N/A	167.5	N/A	N/A	0.09091	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

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:		

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

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value
Master		40.51
Before		40.71
After		40.51
37.50 (Minimum)	40.00 (Nominal)	42.50 (Maximum)

Phase	Na 511 Peak Res %	Value
Master		15.75
Before		17.24
After		16.07
12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)

Phase	High Voltage V	Value
Master		1203
Before		1207
After		1210
900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		144.6
Before		146.2
After		145.4
135.0 (Minimum)	142.6 (Nominal)	150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		9.254
Before		9.073
After		8.952
7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		21.86
Before		29.34
After		28.14
-28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		39.29
Before		40.56
After		39.01
15.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)

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

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value
Master		40.54
Before		40.54
After		40.62
37.50 (Minimum)	40.00 (Nominal)	42.50 (Maximum)

Phase	Na 511 Peak Res %	Value
Master		16.19
Before		16.67
After		16.15
12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)

Phase	High Voltage V	Value
Master		1233
Before		1236
After		1241
900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)

Phase	Na 1785 Peak Loc	Value
Master		143.9
Before		144.1
After		145.5
135.0 (Minimum)	142.6 (Nominal)	150.3 (Maximum)

Phase	Na 1785 Peak Res %	Value
Master		9.453
Before		8.968
After		8.528
7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)

Phase	Temperature DEGC	Value
Master		21.24
Before		29.04
After		28.42
-28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)

Phase	Na Count Rate CPS	Value
Master		39.11
Before		40.36
After		38.66
15.00 (Minimum)	45.00 (Nominal)	100.0 (Maximum)

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

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Ratio Of Detector 1 To Detector 2

Phase	Coincidence Count Rate Ratio	Value
Master		1.004
Before		1.005
After		1.006
	0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)	

Master: 23-Jan-2002 11:37

Before: 7-Feb-2002 1:13

After: 5-Mar-2002 22:53

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		209.7	Master		7.364
	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	EXCEEDS LIMIT	19.66	Master		0.9848
	20.00 (Minimum) / 142.5 (Nominal) / 265.0 (Maximum)			0.9400 (Minimum) / 1.000 (Nominal) / 1.060 (Maximum)	

Master: 23-Jan-2002 11:31

See Remarks

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		208.7	Master		7.834
	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	EXCEEDS LIMIT	17.61	Master		0.9795
	20.00 (Minimum) / 142.5 (Nominal) / 265.0 (Maximum)			0.9400 (Minimum) / 1.000 (Nominal) / 1.060 (Maximum)	

Master: 23-Jan-2002 11:31

See Remarks

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	

Company: Lamont Doherty

Schlumberger

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

Field: Peru Margin

Rig: JOIDES Resolution

Ocean: Pacific

Natural Gamma Ray

Spectroscopy (HNGS)