Schlumberger

Company: **Lamont Doherty Earth Observatory**

Well: **Expedition 340, Site U1397B**
Field: **Lesser Antilles Volcanism and Landslides**
Rig: **JOIDES Resolution** Ocean: **Caribbean**

High Resolution Laterolog Array (HRLA)
Log Quality Control

Rig: JOIDES Resolution
Field: Lesser Antilles Volcanism and La
Location: Latitude: N 14* 54.41'
Well: Expedition 340, Site U1397B
Company: Lamont Doherty Earth Observato

LOCATION

Latitude: N 14* 54.41'
Longitude: W 61* 25.35'

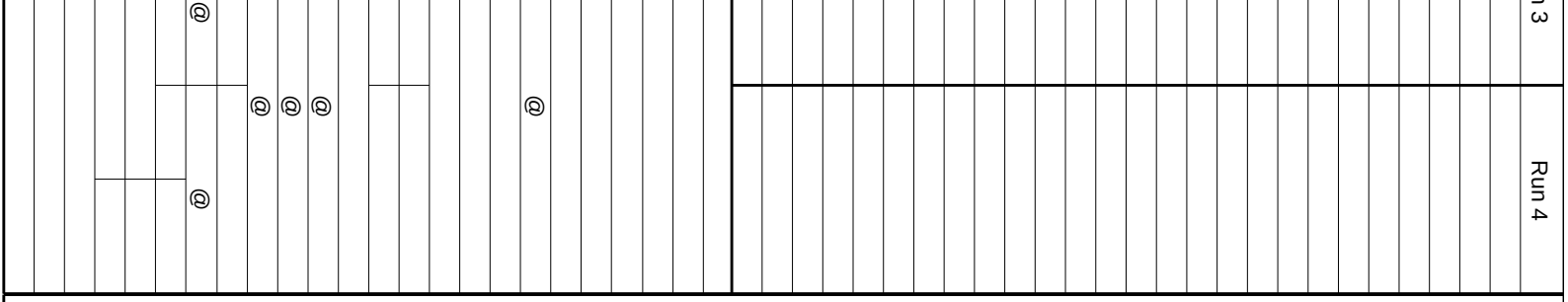
Elev.: K.B. −2492.90 m
G.L. 0.00 m
D.F. −2492.90 m

Permanent Datum: Sea Floor — Elev.: 0.00 m
Log Measured From: Sea Floor — 0.00 m above Perm. Datum
Drilling Measured From: Sea Floor

API Serial No.	Max. Hole Devi. 0 deg	Longitude W 61* 25.35	Latitude N 14* 54.41'

			Run 1	Run 2	Run
Logging Date		23−Mar−2012			
Run Number		1			
Depth Driller		253 m			
Schlumberger Depth		223 m			
Bottom Log Interval		223 m			
Top Log Interval		0 m			
Casing Driller Size @ Depth		13.375 in @ 81 m	@	@	
Casing Schlumberger		80 m			
Bit Size		11.438 in			
Type Fluid In Hole		Seawater			
MUD	Density	1.078 g/cm3			
	Viscosity				
	Fluid Loss				
	PH				
	Source Of Sample	N/A			
RM @ Measured Temperature		@	@	@	
RMF @ Measured Temperature		@	@	@	
RMC @ Measured Temperature		@	@	@	
Source RMF	RMC	N/A	N/A		
RM @ MRT	RMF @ MRT	@ 21	@ 21	@	@
Maximum Recorded Temperatures		21 degC			
Circulation Stopped	Time	23−Mar−2012	3:00		
Logger On Bottom	Time	23−Mar−2012	8:18		
Unit Number	Location	625003 Houston			
Recorded By		K. Swain			
Witnessed By		A. Slagle, S. Morgan			

			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			
	Fluid Loss	PH			
	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					



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OTHER SERVICES1	OTHER SERVICES2
OS1: FMS	OS1:
OS2: DSI	OS2:
OS3: MSS	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Hole drilled with APC/XCB coring bit and bottom hole assembly (BHA). 11 7/16" BS	
Lamont Magnetic Susceptability (MSS) tool run in combination with HRLA/HLDS/HNGS	
4 knuckle joints decouple the eccentered HLDS and HNGS from the centered HRLA	
and MSS.	
HLDS density data not valid as gamma source was not installed due to	
the assumed high risk of losing the tools in this hole based on	
drilling experience expressed by the drilling team.	
Two MCD centralizer tools centralize the MSS and HRLA.	
Large holesize will affect the HRLA response with the shallow arrays	
(RLA0−RLA5) being affected the most. Actual holesize is not known as the	
caliper was reading mostly at the maximum reach of the tool.	

RUN 1

SERVICE ORDER #:
PROGRAM VERSION: 19C0−187
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

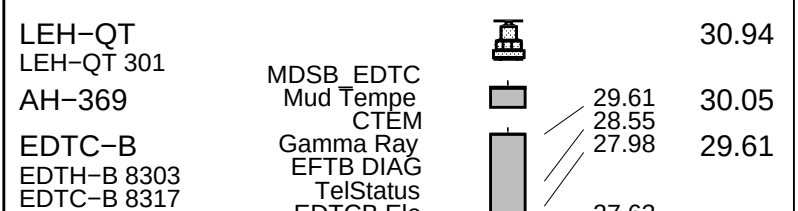
EQUIPMENT DESCRIPTION

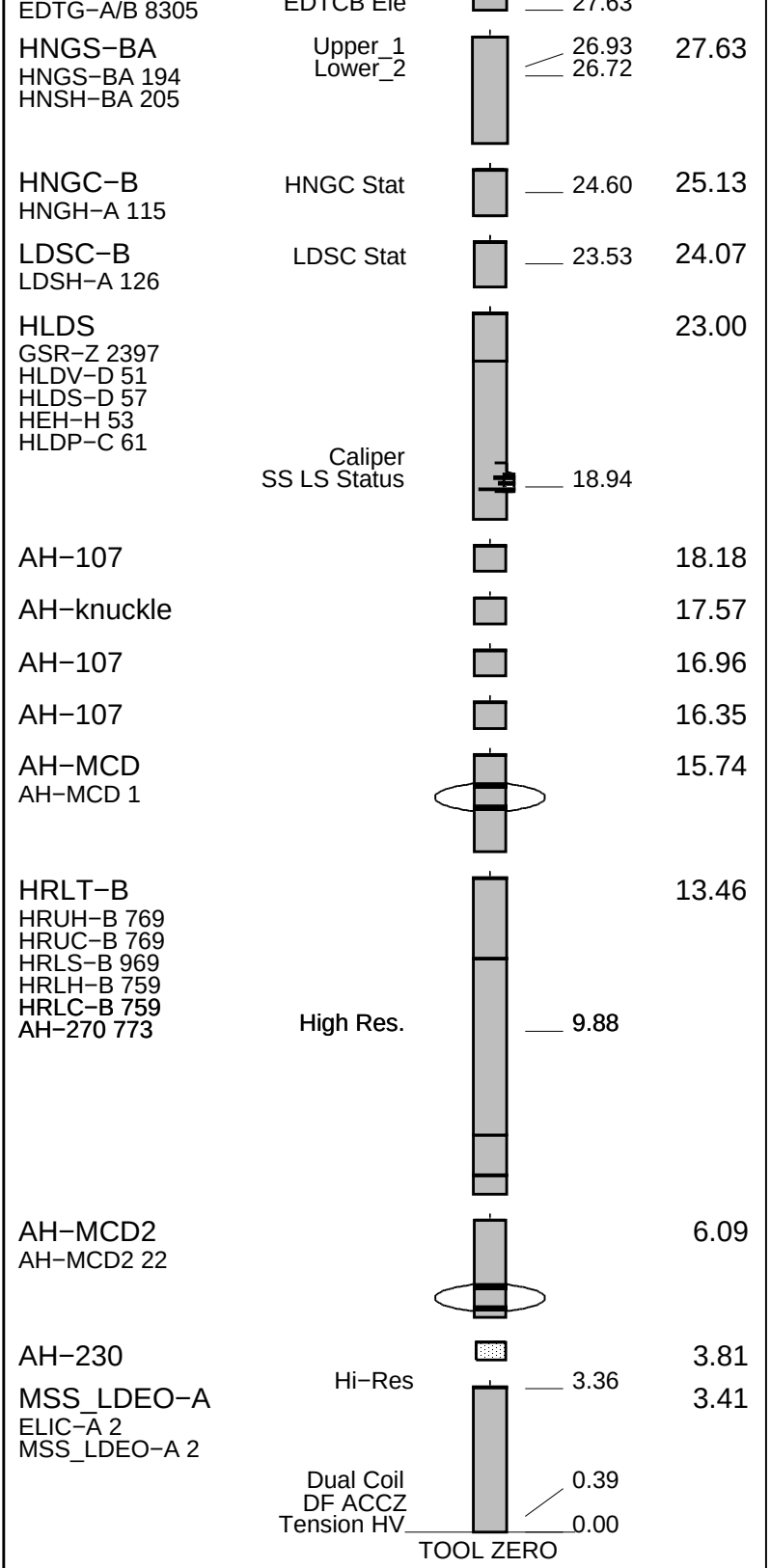
RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U 616008
WITM (EDTS)−A 1

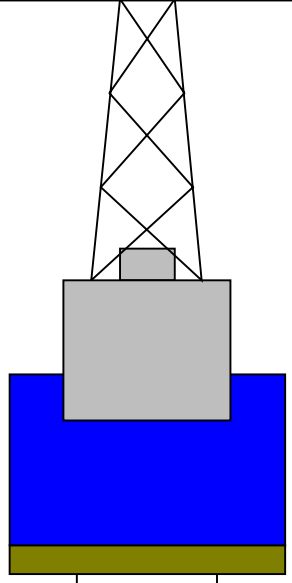
DOWNHOLE EQUIPMENT





MAXIMUM STRING DIAMETER 4.50 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Production String	(in) OD	(in) ID	(M) MD	Well Schematic	(M) MD	(in) OD	(in) ID	Casing String

Kelly Bushing Elevation	2492.9				
Derrick Floor Elevation	2492.9				
Mean Sea Level	2481.9				
				4.1	
			0	3.80	Sea Floor
			81	11.43	Open Hole
			253		Total Depth

Input DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_040PUP	FN:57	PRODUCER	24−Mar−2012 20:37	2713.5 M	2478.6 M

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_042PUP	FN:59	PRODUCER	24−Mar−2012 20:46	224.0 M	−11.4 M

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
HNGC−B	19C0−187	HNGS−BA	19C0−187
EDTC−B	SKK−5169−EDTCB		

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
GCSE	BS	BS	224.0 20:46:17

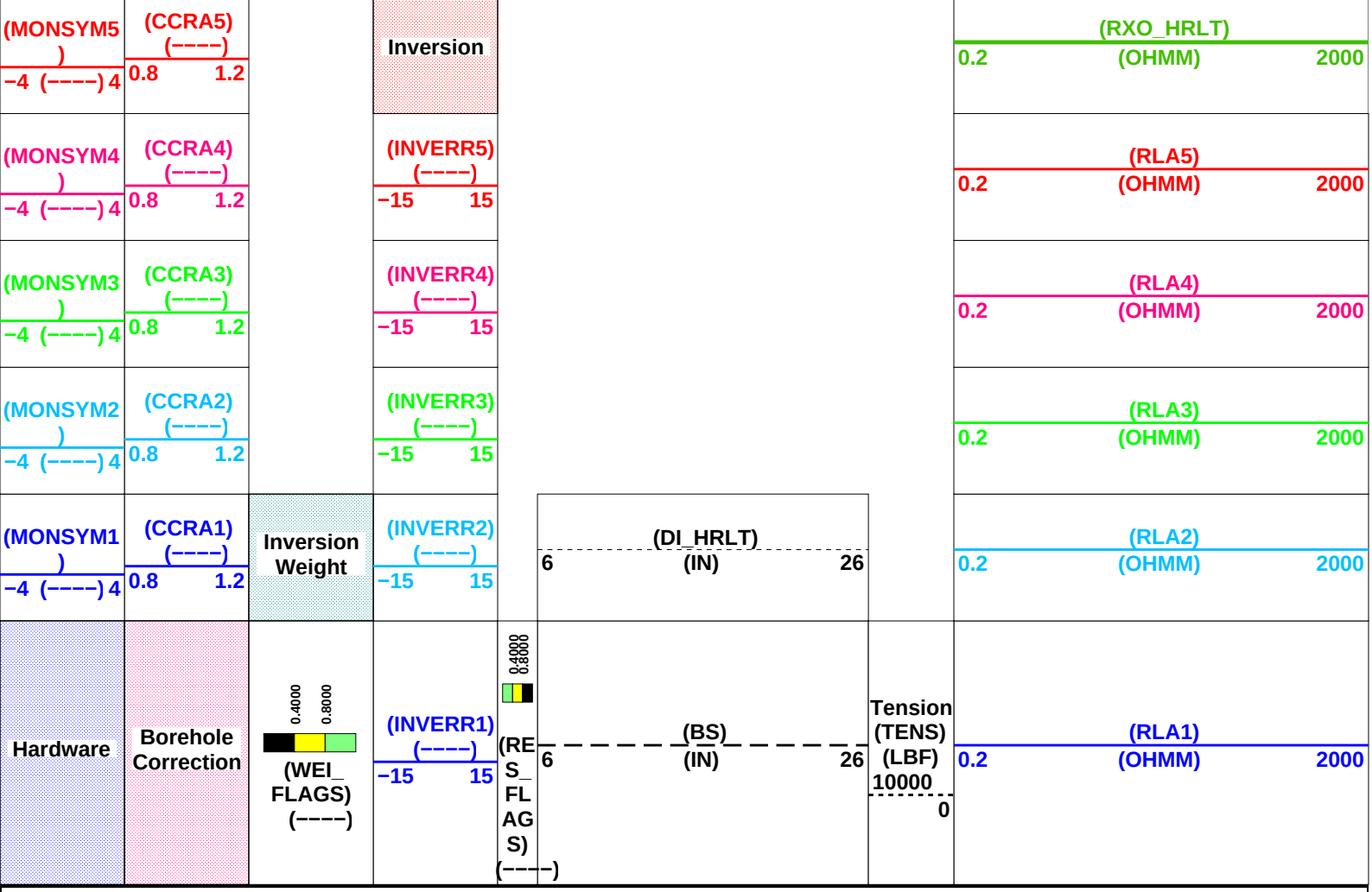
PIP SUMMARY

Time Mark Every 60 S

(RT_HRLT)
0.2 (OHMM) 2000

(RM_HRLT)
0.02 (OHMM) 200

2nd Pass, Sea Floor Depth Reference



***** HRLT FLAG TRACKS *****

BLACK areas show that the corresponding error flag is set.

TRACK R3_LQC INVERSION WEIGHT

Contribution from each hrlt channel in Inversion algorythm, and from left to right :

| Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

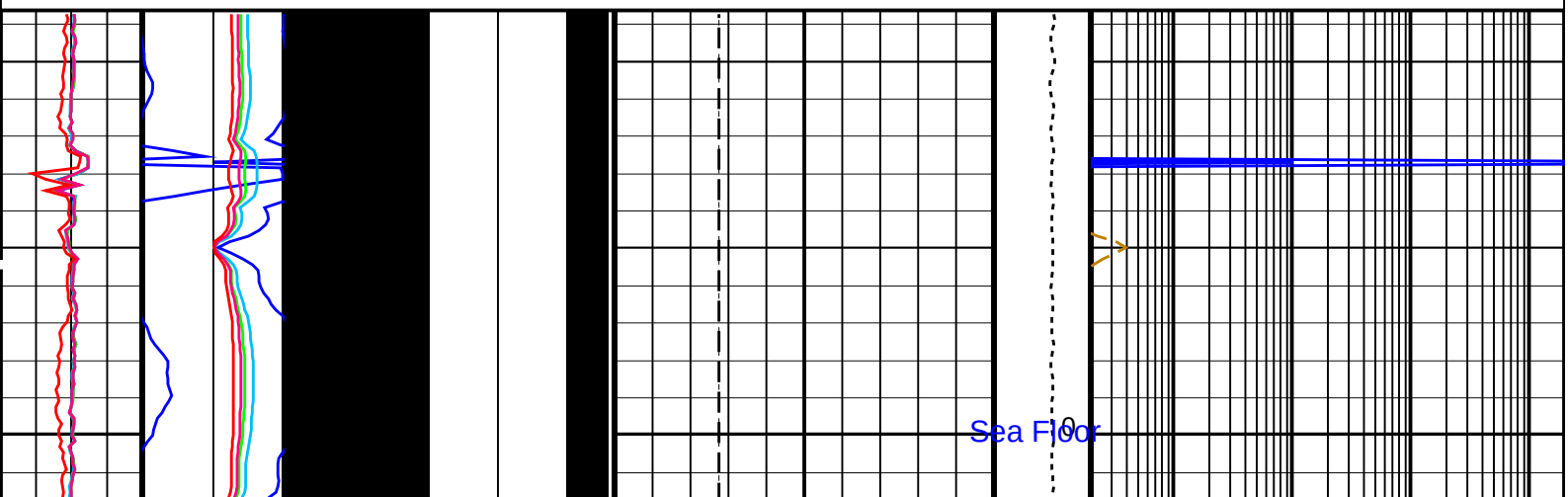
GREEN = OK YELLOW = Contribution QUESTIONABLE BLACK = Contribution UNRELIABLE

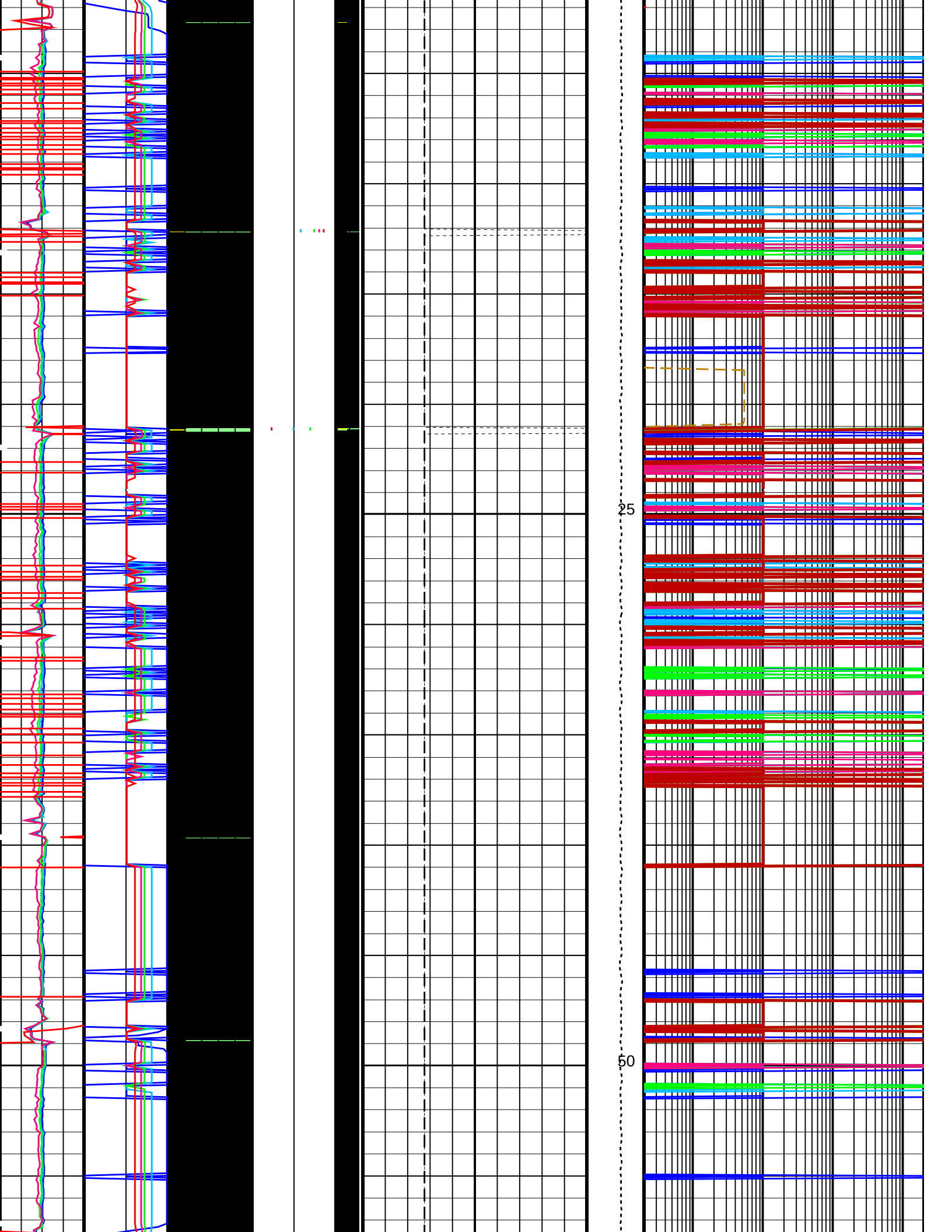
TRACK R5_LQC RESISTIVITY QUALITY INDICATOR

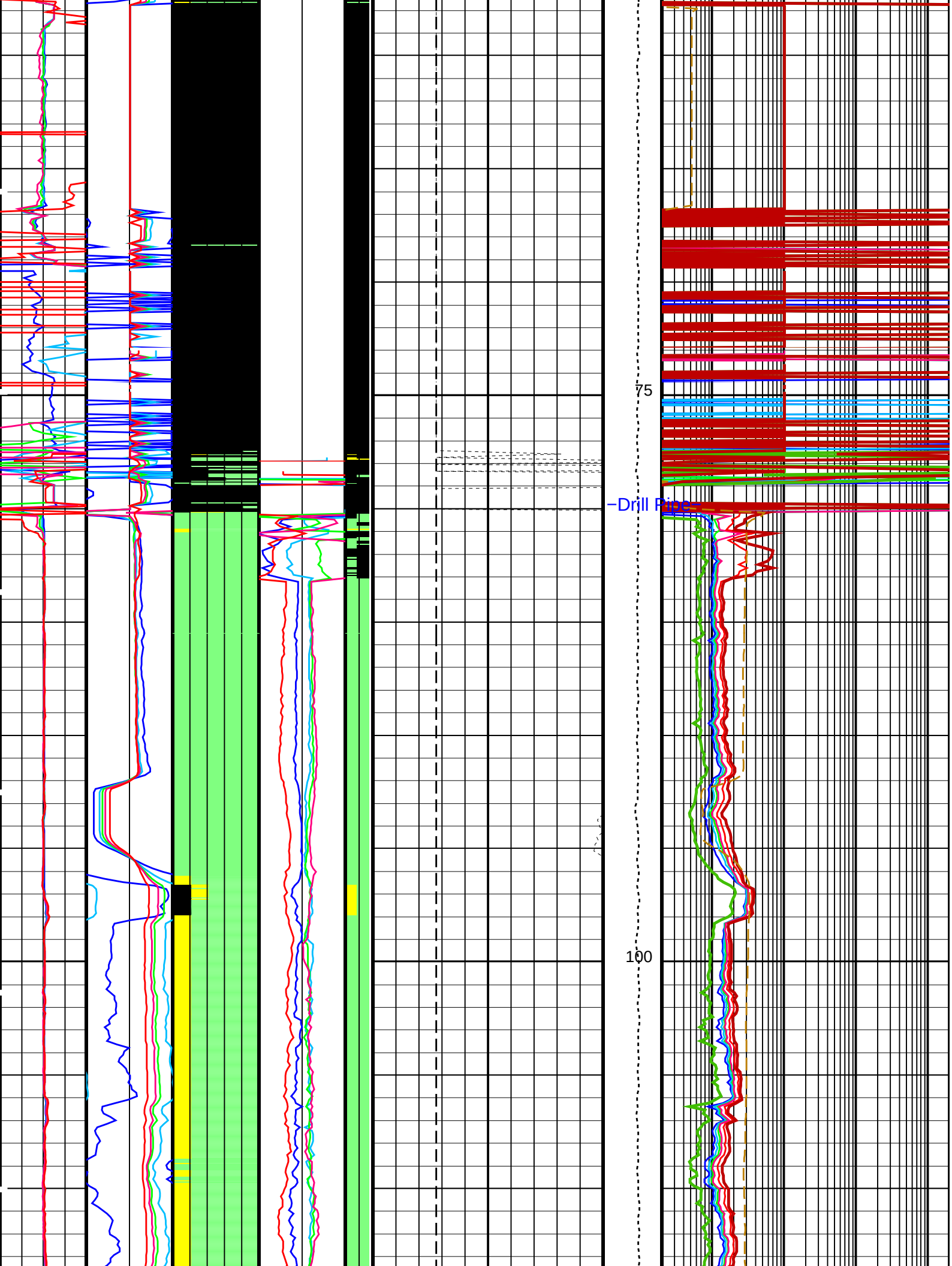
LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

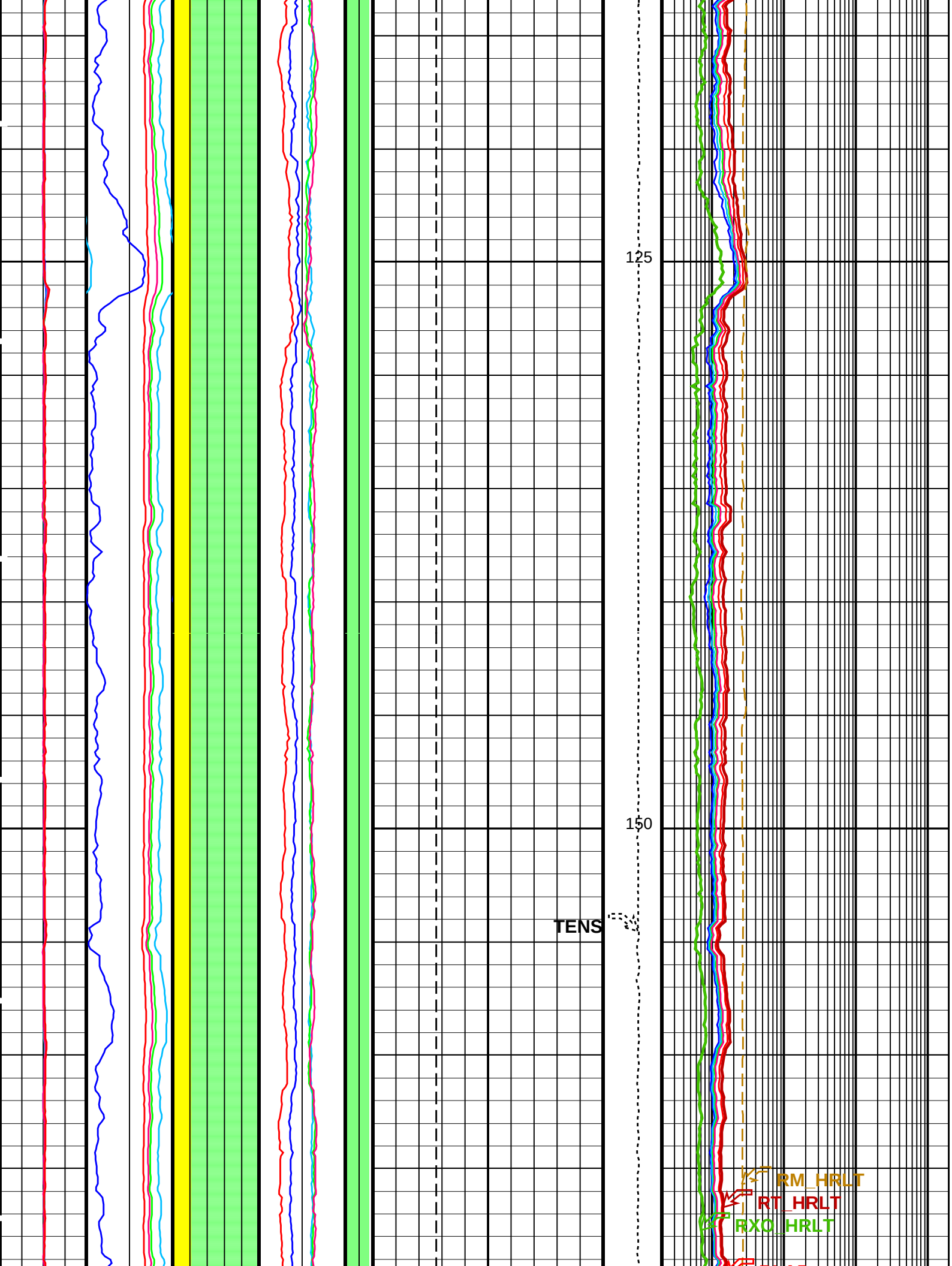
| RxoFlag | RTFlag |

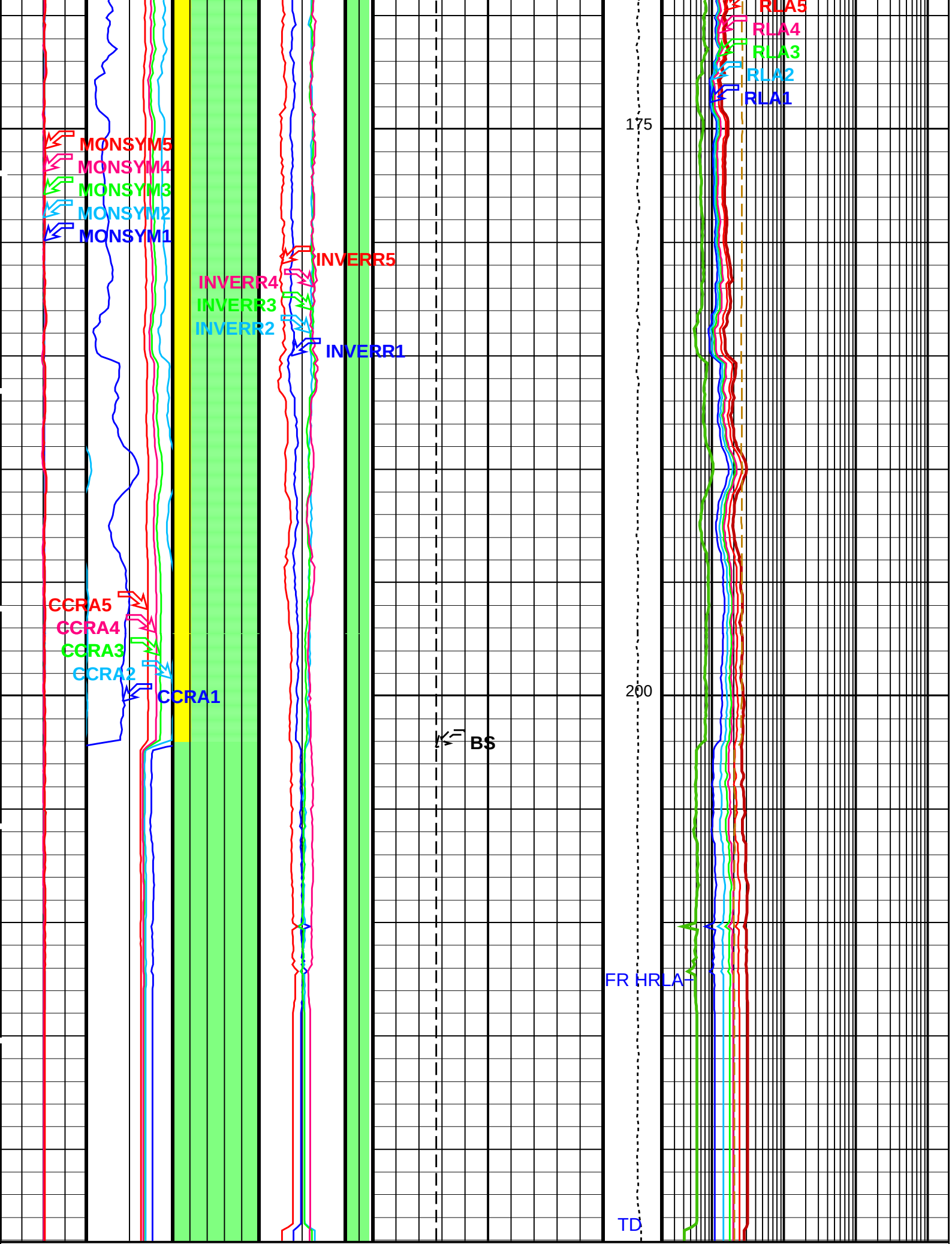
GREEN = OK YELLOW = SHOULDER BED EFFECT BLACK = NOK




25
50


75
Drill Pipe
100


125
150
TENS
RM_HRLT
RT_HRLT
RXO_HRLT


RLA5
RLA4
RLA3
RLA2
RLA1
175
MONSYM5
MONSYM4
MONSYM3
MONSYM2
MONSYM1
INVERR5
INVERR4
INVERR3
INVERR2
INVERR1
CCRA5
CCRA4
CCRA3
CCRA2
CCRA1
200
BS
FR HRLA
TD
*** HRLT FLAG TRACKS ***

BLACK areas show that the corresponding error flag is set.

TRACK R3_LQC INVERSION WEIGHT

Contribution from each hrlt channel in Inversion algorythm, and from left to right :

| Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

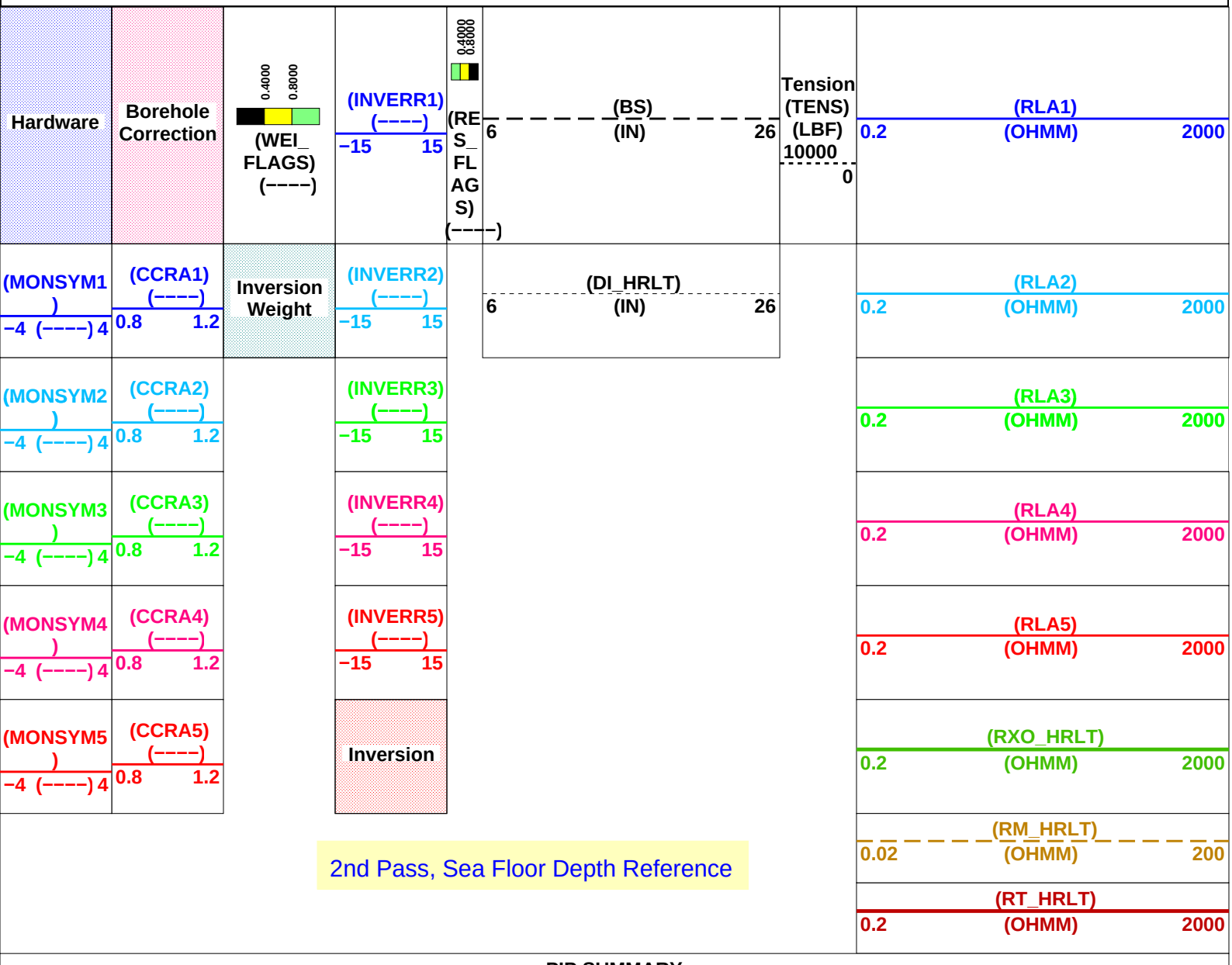
GREEN = OK YELLOW = Contribution QUESTIONABLE BLACK = Contribution UNRELIABLE

TRACK R5_LQC RESISTIVITY QUALITY INDICATOR

LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

| RxoFlag | RTFlag |

GREEN = OK YELLOW = SHOULDER BED EFFECT BLACK = NOK



2nd Pass, Sea Floor Depth Reference

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	27.7815	DEGC

FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	20	DEGC
HLDS: Hostile Litho−Density Sonde			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
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	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
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	−0.00196772	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
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	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.01997	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.01506	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGC

BHT	Bottom Hole Temperature (used in calculations)	100	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	11.438	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	13.375	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.08	G/C3
DO	Depth Offset for Playback	−2490.0	M
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	−50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	OFF	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2720	M
TDD	Total Depth − Driller	3300.00	M
TDL	Total Depth − Logger	2760.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HRLT_LQC Vertical Scale: 1:200 Graphics File Created: 24−Mar−2012 20:46

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
HNGC−B	19C0−187	HNGS−BA	19C0−187
EDTC−B	SKK−5169−EDTCB		

Input DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_040PUP	FN:57	PRODUCER	24−Mar−2012 20:37	2713.5 M	2478.6 M

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_042PUP	FN:59	PRODUCER	24−Mar−2012 20:46		

Input DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_039PUP	FN:56	PRODUCER	24−Mar−2012 20:33	2713.5 M	2606.2 M

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_041PUP	FN:58	PRODUCER	24−Mar−2012 20:44	224.0 M	116.1 M

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
HNGC−B	19C0−187	HNGS−BA	19C0−187

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
GCSE	BS	BS	224.0 20:44:28

PIP SUMMARY

Time Mark Every 60 S

1st Pass, Sea Floor Depth Reference

(RT_HRLT) 0.2 (OHMM) 2000

(RM_HRLT) 0.02 (OHMM) 200

(RXO_HRLT) 0.2 (OHMM) 2000

(RLA5) 0.2 (OHMM) 2000

(RLA4) 0.2 (OHMM) 2000

(RLA3) 0.2 (OHMM) 2000

(RLA2) 0.2 (OHMM) 2000

(RLA1) 0.2 (OHMM) 2000

(MONSYM5) -4 (----) 4

(CCRA5) (----) 0.8 1.2

Inversion

(MONSYM4) -4 (----) 4

(CCRA4) (----) 0.8 1.2

(INVERR5) (----) -15 15

(MONSYM3) -4 (----) 4

(CCRA3) (----) 0.8 1.2

(INVERR4) (----) -15 15

(MONSYM2) -4 (----) 4

(CCRA2) (----) 0.8 1.2

(INVERR3) (----) -15 15

(MONSYM1) -4 (----) 4

(CCRA1) (----) 0.8 1.2

Inversion Weight

(INVERR2) (----) -15 15

(DI_HRLT) 6 (IN) 26

Hardware

Borehole Correction

0.4000 0.8000 (WEI_FLAGS) (----)

(INVERR1) (----) -15 15

0.4000 0.8000 (RES_FLAGS) (----)

(BS) 6 (IN) 26

Tension (TENS) (LBF) 10000 0

*** HRLT FLAG TRACKS ***

BLACK areas show that the corresponding error flag is set.

TRACK R3_LQC INVERSION WEIGHT

Contribution from each hrlt channel in Inversion algorythm, and from left to right :

| Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

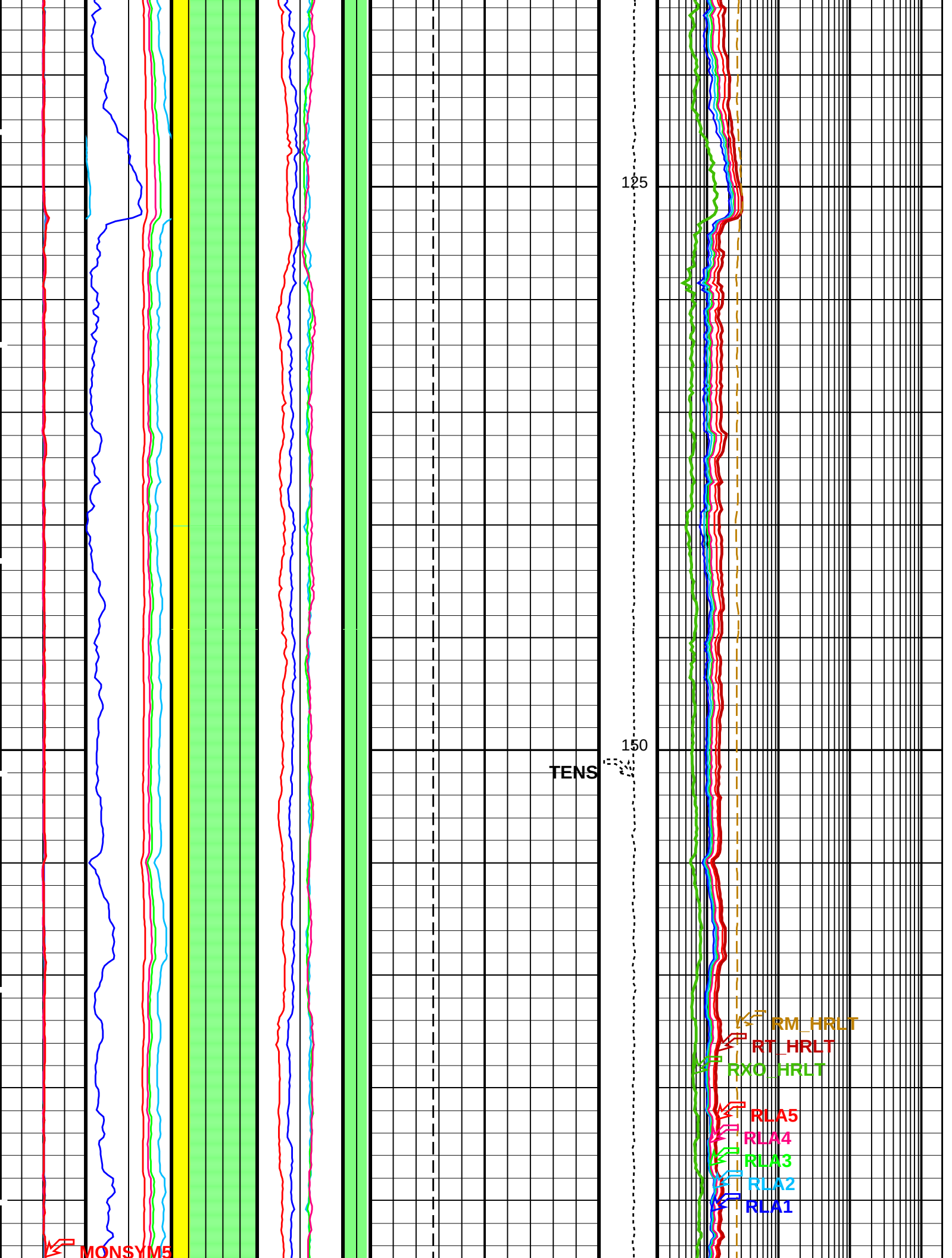
GREEN = OK YELLOW = Contribution QUESTIONABLE BLACK = Contribution UNRELIABLE

TRACK R5_LQC RESISTIVITY QUALITY INDICATOR

LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

| RxoFlag | RTFlag |

GREEN = OK YELLOW = SHOULDER BED EFFECT BLACK = NOK


125
150
TENS
RM_HRLT
RT_HRLT
RXO_HRLT
RLA5
RLA4
RLA3
RLA2
RLA1
MONSYM5

***** HRLT FLAG TRACKS *****

BLACK areas show that the corresponding error flag is set.

TRACK R3_LQC **INVERSION WEIGHT**

Contribution from each hrlt channel in Inversion algorythm, and from left to right :

| Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

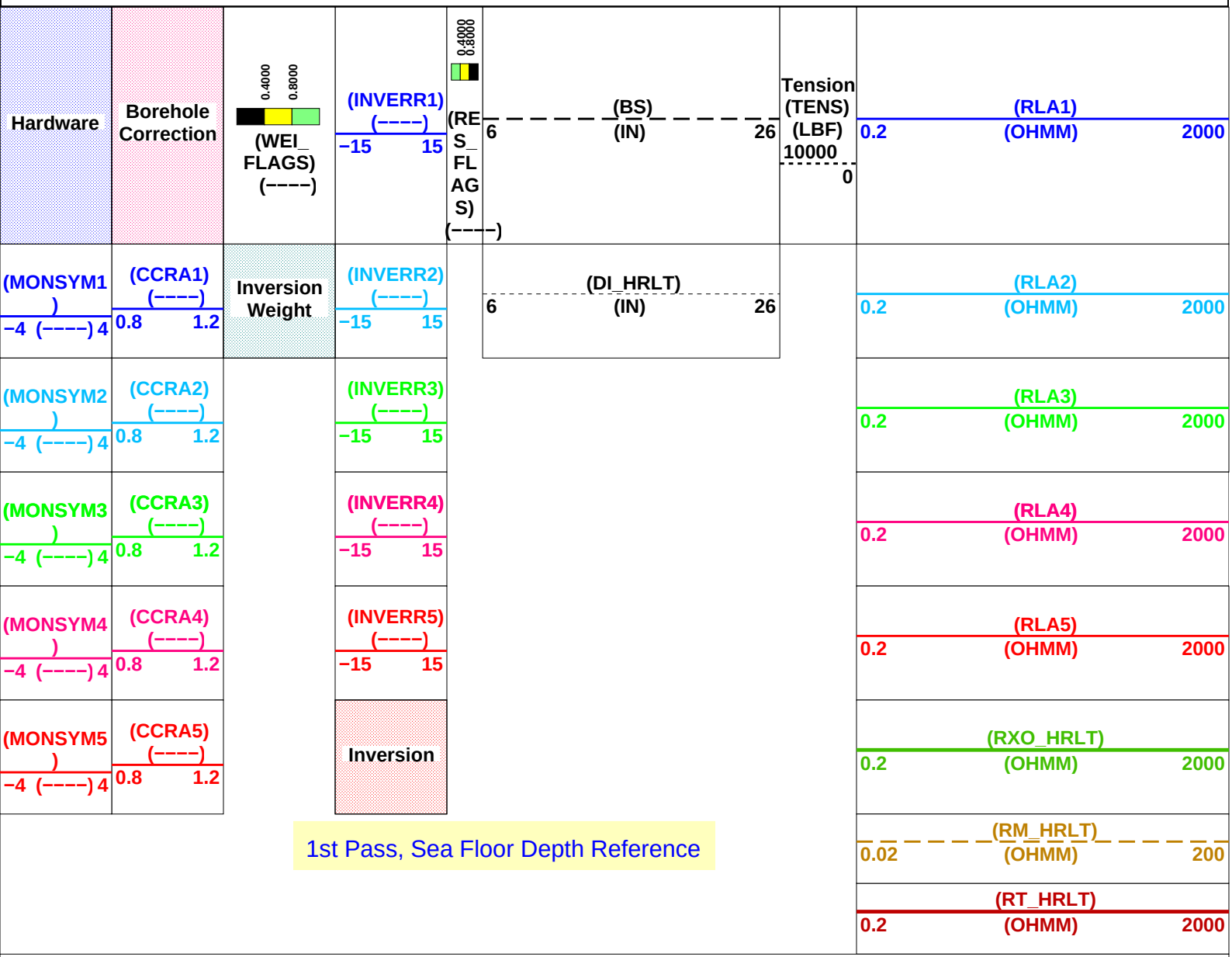
GREEN = OK YELLOW = Contribution QUESTIONABLE BLACK = Contribution UNRELIABLE

TRACK R5_LQC RESISTIVITY QUALITY INDICATOR

LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

| RxoFlag | RTFlag |

GREEN = OK YELLOW = SHOULDER BED EFFECT BLACK = NOK



1st Pass, Sea Floor Depth Reference

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HRLT−B: High Resolution Laterolog Array − B		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGC
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	27.7815	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	

FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROCINV	Inversion Selection	ON	
PROCMFL	Inversion Micro−Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	20	DEGC
HLDS: Hostile Litho−Density Sonde			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	ON	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.71	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
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	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGC
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
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	−0.00196772	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGS Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
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	
SHT	Surface Hole Temperature	20	DEGC
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	1.01997	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.01506	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	100	DEGC
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	

FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
ISSBAR_EDTC	Nuclear Mud Type	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	0	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U−ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U−TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	11.438	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	13.375	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.08	G/C3
DO	Depth Offset for Playback	−2490.0	M
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	−50000.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	OFF	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	2720	M
TDD	Total Depth − Driller	3300.00	M
TDL	Total Depth − Logger	2760.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HRLT_LQC **Vertical Scale: 1:200** **Graphics File Created: 24−Mar−2012 20:44**

OP System Version: 19C0−187

MSS_LDEO−A	19C0−187	HRLT−B	19C0−187
HLDS	19C0−187	LDSC−B	19C0−187
HNGC−B	19C0−187	HNGS−BA	19C0−187
EDTC−B	SKK−5169−EDTCB		

Input DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_039PUP	FN:56	PRODUCER	24−Mar−2012 20:33	2713.5 M	2606.2 M

Output DLIS Files

DEFAULT	MSS_LDEO_HRLA_LDL_041PUP	FN:58	PRODUCER	24−Mar−2012 20:44

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M01							
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12							
HRLT M0−M1 Voltage Plus − 0	0	N/A	−318.5	−318.7	−0.1793	9.681	UV
HRLT M0−M1 Voltage Plus − 1	0	N/A	−325.9	−328.3	−2.351	9.681	UV
HRLT M0−M1 Voltage Plus − 2	0	N/A	−328.8	−330.6	−1.802	9.681	UV
HRLT M0−M1 Voltage Plus − 3	0	N/A	−334.0	−335.2	−1.195	9.681	UV
HRLT M0−M1 Voltage Plus − 4	0	N/A	−324.3	−324.8	−0.4844	9.681	UV
HRLT M0−M1 Voltage Plus − 5	0	N/A	−320.8	−321.2	−0.3915	9.681	UV
HRLT M0−M1 Voltage Plus − 6	0	N/A	317.1	320.5	3.338	9.681	UV
HRLT M0−M1 Voltage Plus − 7	0	N/A	−322.7	−322.7	0	9.681	UV
High Resolution Laterolog Array − B Wellsite Calibration − HRLT M12							
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12							
HRLT M1−M2 Voltage Plus − 0	0	N/A	1752	1752	0.01233	53.42	UV

HRLT M1−M2 Voltage Plus − 1	0	N/A	1791	1803	12.27	53.42	UV
HRLT M1−M2 Voltage Plus − 2	0	N/A	1802	1811	9.416	53.42	UV
HRLT M1−M2 Voltage Plus − 3	0	N/A	1831	1837	6.161	53.42	UV
HRLT M1−M2 Voltage Plus − 4	0	N/A	1780	1782	1.948	53.42	UV
HRLT M1−M2 Voltage Plus − 5	0	N/A	1762	1764	1.738	53.42	UV
HRLT M1−M2 Voltage Plus − 6	0	N/A	−1750	−1768	−17.94	53.42	UV
HRLT M1−M2 Voltage Plus − 7	0	N/A	1781	1781	0	53.42	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT M23
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT M2−M3 Voltage Plus − 0	0	N/A	1738	1737	−1.184	53.42	UV
HRLT M2−M3 Voltage Plus − 1	0	N/A	1790	1800	10.38	53.42	UV
HRLT M2−M3 Voltage Plus − 2	0	N/A	1802	1810	7.970	53.42	UV
HRLT M2−M3 Voltage Plus − 3	0	N/A	1835	1840	5.106	53.42	UV
HRLT M2−M3 Voltage Plus − 4	0	N/A	1777	1777	0.7261	53.42	UV
HRLT M2−M3 Voltage Plus − 5	0	N/A	1759	1760	0.7565	53.42	UV
HRLT M2−M3 Voltage Plus − 6	0	N/A	−1739	−1754	−15.87	53.42	UV
HRLT M2−M3 Voltage Plus − 7	0	N/A	1781	1781	0	53.42	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V34
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT A3−A4 Voltage Plus − 0	0	N/A	68270	68310	40.15	2100	UV
HRLT A3−A4 Voltage Plus − 1	0	N/A	70080	70600	523.0	2100	UV
HRLT A3−A4 Voltage Plus − 2	0	N/A	70860	71260	396.0	2100	UV
HRLT A3−A4 Voltage Plus − 3	0	N/A	72410	72690	279.3	2100	UV
HRLT A3−A4 Voltage Plus − 4	0	N/A	70090	70200	111.0	2100	UV
HRLT A3−A4 Voltage Plus − 5	0	N/A	69420	69530	111.3	2100	UV
HRLT A3−A4 Voltage Plus − 6	0	N/A	−67110	−67810	−698.6	2100	UV
HRLT A3−A4 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V45
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT A4−A5 Voltage Plus − 0	0	N/A	68530	68580	53.32	2100	UV
HRLT A4−A5 Voltage Plus − 1	0	N/A	70490	70980	491.0	2100	UV
HRLT A4−A5 Voltage Plus − 2	0	N/A	71230	71610	383.7	2100	UV
HRLT A4−A5 Voltage Plus − 3	0	N/A	72750	73030	280.1	2100	UV
HRLT A4−A5 Voltage Plus − 4	0	N/A	70390	70500	114.3	2100	UV
HRLT A4−A5 Voltage Plus − 5	0	N/A	69700	69810	103.5	2100	UV
HRLT A4−A5 Voltage Plus − 6	0	N/A	−67480	−68190	−715.1	2100	UV
HRLT A4−A5 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT V56
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT A5−A6 Voltage Plus − 0	0	N/A	68430	68480	52.69	2100	UV
HRLT A5−A6 Voltage Plus − 1	0	N/A	70190	70700	514.8	2100	UV
HRLT A5−A6 Voltage Plus − 2	0	N/A	70980	71390	408.3	2100	UV
HRLT A5−A6 Voltage Plus − 3	0	N/A	72550	72840	289.2	2100	UV
HRLT A5−A6 Voltage Plus − 4	0	N/A	70240	70380	134.4	2100	UV
HRLT A5−A6 Voltage Plus − 5	0	N/A	69600	69700	104.2	2100	UV
HRLT A5−A6 Voltage Plus − 6	0	N/A	−67210	−67920	−710.8	2100	UV
HRLT A5−A6 Voltage Plus − 7	0	N/A	70000	70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VTP
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT Torpedo−M0 Voltage − 0	0	N/A	−68140	−68160	−23.36	2100	UV
HRLT Torpedo−M0 Voltage − 1	0	N/A	−70540	−71040	−498.1	2100	UV
HRLT Torpedo−M0 Voltage − 2	0	N/A	−71290	−71680	−385.6	2100	UV
HRLT Torpedo−M0 Voltage − 3	0	N/A	−72870	−73120	−252.4	2100	UV
HRLT Torpedo−M0 Voltage − 4	0	N/A	−70470	−70560	−99.58	2100	UV
HRLT Torpedo−M0 Voltage − 5	0	N/A	−69760	−69850	−87.16	2100	UV
HRLT Torpedo−M0 Voltage − 6	0	N/A	67500	68180	676.2	2100	UV
HRLT Torpedo−M0 Voltage − 7	0	N/A	−70000	−70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT VBD
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT Bridle#9−M0 Voltage − 0	0	N/A	−68140	−68150	−10.78	2100	UV
HRLT Bridle#9−M0 Voltage − 1	0	N/A	−70510	−71010	−499.8	2100	UV
HRLT Bridle#9−M0 Voltage − 2	0	N/A	−71270	−71660	−391.8	2100	UV
HRLT Bridle#9−M0 Voltage − 3	0	N/A	−72850	−73110	−258.2	2100	UV
HRLT Bridle#9−M0 Voltage − 4	0	N/A	−70460	−70560	−100.8	2100	UV
HRLT Bridle#9−M0 Voltage − 5	0	N/A	−69750	−69840	−87.17	2100	UV
HRLT Bridle#9−M0 Voltage − 6	0	N/A	67480	68160	675.3	2100	UV
HRLT Bridle#9−M0 Voltage − 7	0	N/A	−70000	−70000	0	2100	UV

High Resolution Laterolog Array − B Wellsite Calibration − HRLT ISO
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT Source Current Plus − 0	0	N/A	284.1	284.2	0.1523	8.520	UA
HRLT Source Current Plus − 1	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 2	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 3	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 4	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 5	0	N/A	281.1	281.1	0	8.520	UA

HRLT Source Current Plus − 6	0	N/A	281.1	281.1	0	8.520	UA
HRLT Source Current Plus − 7	0	N/A	281.1	281.1	0	8.520	UA

High Resolution Laterolog Array − B Wellsite Calibration − HRLT MV
Before: 23−Mar−2012 6:19 After: 23−Mar−2012 10:12

HRLT Vertical Voltage Pl − 0	0	N/A	−321.0	−320.8	0.2527	9.681	UV
HRLT Vertical Voltage Pl − 1	0	N/A	−320.2	−322.3	−2.091	9.681	UV
HRLT Vertical Voltage Pl − 2	0	N/A	−322.4	−323.7	−1.374	9.681	UV
HRLT Vertical Voltage Pl − 3	0	N/A	−325.9	−326.8	−0.8481	9.681	UV
HRLT Vertical Voltage Pl − 4	0	N/A	−313.8	−314.1	−0.2372	9.681	UV
HRLT Vertical Voltage Pl − 5	0	N/A	−325.5	−325.6	−0.1370	9.681	UV
HRLT Vertical Voltage Pl − 6	0	N/A	324.1	327.3	3.177	9.681	UV
HRLT Vertical Voltage Pl − 7	0	N/A	−322.7	−322.7	0	9.681	UV

Hostile Litho−Density Sonde Wellsite Calibration − Background Measurement
Master: 28−Feb−2012 2:19 Before: 28−Feb−2012 2:36 After: 12−Mar−2012 10:07

SS Cs Resolution Bkg	9.000	8.563	8.511	8.514	0.003472	1.800	%
LS Cs Resolution Bkg	9.000	8.637	8.632	8.675	0.04277	1.800	%
LSW1 Background	100.0	71.69	71.37	71.75	0.3806	0.03000	CPS
LSW2 Background	100.0	65.72	64.67	64.93	0.2653	0.03000	CPS
LSW3 Background	200.0	147.7	146.0	146.2	0.1911	0.03000	CPS
LSW4 Background	250.0	178.3	178.0	178.2	0.1540	0.03000	CPS
LSW5 Background	600.0	402.3	401.7	403.3	1.578	0.03000	CPS
SSW1 Background	100.0	68.69	69.17	70.04	0.8604	0.03000	CPS
SSW2 Background	200.0	121.6	122.1	122.8	0.6243	0.03000	CPS
SSW3 Background	500.0	321.9	321.7	322.9	1.276	0.03000	CPS
SSW4 Background	270.0	172.2	173.0	171.5	−1.459	0.03000	CPS
SSW5 Background	200.0	123.5	123.8	123.7	−0.1024	0.03000	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Aluminum Measurement
Master: 28−Feb−2012 2:19

LSW1 Aluminum	600.0	521.9	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	758.2	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	921.8	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	463.1	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	428.2	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2229	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	6354	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	9261	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	3871	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	518.3	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Lithology Measurement
Master: 28−Feb−2012 2:19

LSW1 Iron	400.0	352.2	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	613.7	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	811.4	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	425.3	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	389.1	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1664	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5327	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8450	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3532	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	458.1	N/A	N/A	N/A	N/A	CPS

Hostile Litho−Density Sonde Wellsite Calibration − Caliper Calibration
Before: 28−Feb−2012 2:41

HLDS Caliper Small Ring	12.00	N/A	13.84	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	17.47	N/A	N/A	N/A	IN

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 1 Check
Master: 26−Feb−2012 20:15 Before: 6−Mar−2012 18:49 After: 7−Jan−2012 4:55

Na 511 Peak Loc	40.00	39.64	39.54	39.67	0.1356	1.000	
Na 511 Peak Res	15.50	14.75	15.72	14.52	−1.200	2.000	%
High Voltage	1150	1169	1182	1165	−16.88	N/A	V
Na 1785 Peak Loc	142.6	141.6	141.5	142.4	0.9280	7.000	
Na 1785 Peak Res	8.500	8.869	8.671	9.127	0.4562	2.000	%
Temperature	15.50	26.03	31.35	20.87	−10.48	N/A	DEGC
Na Count Rate	45.00	19.34	19.64	21.17	1.535	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration − Detector 2 Check
Master: 26−Feb−2012 20:15 Before: 6−Mar−2012 18:49 After: 7−Jan−2012 4:55

Na 511 Peak Loc	40.00	39.65	39.61	39.47	−0.1442	1.000	
Na 511 Peak Res	15.50	16.96	15.84	15.81	−0.03564	2.000	%
High Voltage	1150	1100	1109	1089	−19.85	N/A	V
Na 1785 Peak Loc	142.6	142.2	141.4	141.6	0.2126	7.000	
Na 1785 Peak Res	8.500	7.801	8.832	8.025	−0.8067	2.000	%
Temperature	15.50	26.16	31.73	21.06	−10.66	N/A	DEGC
Na Count Rate	45.00	19.53	20.28	20.79	0.5101	8.000	CPS

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

Master: 26−Feb−2012 20:15 Before: 6−Mar−2012 18:49 After: 7−Jan−2012 4:55							
Coincidence Count Rate Ratio	1.000	0.9899	0.9701	1.019	0.04846	0.05000	
Enhanced DTS Cartridge Wellsite Calibration − EDTC Accelerometer Calibration							
Before: 23−Mar−2012 6:19							
EDTC Z−Axis Acceleration	9.810	N/A	9.742	N/A	N/A	N/A	M/S2
Enhanced DTS Cartridge Wellsite Calibration − Detector Calibration							
Before: 4−Mar−2012 17:35							
Gamma Ray (Jig − Bkg)	159.9	N/A	159.9	N/A	N/A	14.53	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

High Resolution Laterolog Array − B / Equipment Identification

Primary Equipment:		
HRLT Sonde	HRLS − B	969
Auxiliary Equipment:		
HRLT lower Housing	HRLH − B	759
HRLT Lower Cartridge	HRLC − B	759
HRLT upper Housing	HRUH − B	769
HRLT Upper Cartridge	HRUC − B	769

High Resolution Laterolog Array − B Wellsite Calibration

HRLT M01

Idx	Phase	HRLT M0−M1 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−318.5	−322.7	−280.7	−379.7
	After		−318.7			
1	Before		−325.9	−322.7	−280.7	−379.7
	After		−328.3			
2	Before		−328.8	−322.7	−280.7	−379.7
	After		−330.6			
3	Before		−334.0	−322.7	−280.7	−379.7
	After		−335.2			
4	Before		−324.3	−322.7	−280.7	−379.7
	After		−324.8			
5	Before		−320.8	−322.7	−280.7	−379.7
	After		−321.2			
6	Before		317.1	322.7	379.7	280.7
	After		320.5			
7	Before		−322.7	−322.7	−280.7	−379.7
	After		−322.7			
		(Minimum) (Nominal) (Maximum)				

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High Resolution Laterolog Array − B Wellsite Calibration

HRLT M12

Idx	Phase	HRLT M1−M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1752	1781	2095	1549
	After		1752			
1	Before		1791	1781	2095	1549
	After		1803			
2	Before		1802	1781	2095	1549
	After		1811			

3	Before	1831	1781	2095	1549
	After	1837			
4	Before	1780	1781	2095	1549
	After	1782			
5	Before	1762	1781	2095	1549
	After	1764			
6	Before	−1750	−1781	−1549	−2095
	After	−1768			
7	Before	1781	1781	2095	1549
	After	1781			
	(Minimum) (Nominal) (Maximum)				

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High Resolution Laterolog Array − B Wellsite Calibration

HRLT M23

Idx	Phase	HRLT M2−M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1738	1781	2095	1549
	After		1737			
1	Before		1790	1781	2095	1549
	After		1800			
2	Before		1802	1781	2095	1549
	After		1810			
3	Before		1835	1781	2095	1549
	After		1840			
4	Before		1777	1781	2095	1549
	After		1777			
5	Before		1759	1781	2095	1549
	After		1760			
6	Before		−1739	−1781	−1549	−2095
	After		−1754			
7	Before		1781	1781	2095	1549
	After		1781			
	(Minimum) (Nominal) (Maximum)					

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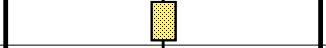
High Resolution Laterolog Array − B Wellsite Calibration

HRLT V34

Idx	Phase	HRLT A3−A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68270	70000	82360	60900
	After		68310			
1	Before		70080	70000	82360	60900
	After		70600			
2	Before		70860	70000	82360	60900
	After		71260			
3	Before		72410	70000	82360	60900
	After		72690			

4	Before		70090	70000	82360	60900
	After		70200			
5	Before		69420	70000	82360	60900
	After		69530			
6	Before		−67110	−70000	−60900	−82360
	After		−67810			
7	Before		70000	70000	82360	60900
	After		70000			
	(Minimum) (Nominal) (Maximum)					

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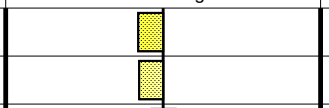
High Resolution Laterolog Array − B Wellsite Calibration

HRLT V45

Idx	Phase	HRLT A4−A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68530	70000	82360	60900
	After		68580			
1	Before		70490	70000	82360	60900
	After		70980			
2	Before		71230	70000	82360	60900
	After		71610			
3	Before		72750	70000	82360	60900
	After		73030			
4	Before		70390	70000	82360	60900
	After		70500			
5	Before		69700	70000	82360	60900
	After		69810			
6	Before		−67480	−70000	−60900	−82360
	After		−68190			
7	Before		70000	70000	82360	60900
	After		70000			
	(Minimum) (Nominal) (Maximum)					

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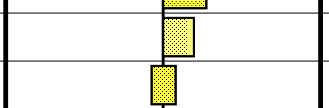
High Resolution Laterolog Array − B Wellsite Calibration

HRLT V56

Idx	Phase	HRLT A5−A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68430	70000	82360	60900
	After		68480			
1	Before		70190	70000	82360	60900
	After		70700			
2	Before		70980	70000	82360	60900
	After		71390			
3	Before		72550	70000	82360	60900
	After		72840			
4	Before		70240	70000	82360	60900
	After		70380			

5	Before	69600	70000	82360	60900
	After	69700			
6	Before	−67210	−70000	−60900	−82360
	After	−67920			
7	Before	70000	70000	82360	60900
	After	70000			
	(Minimum) (Nominal) (Maximum)				

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High Resolution Laterolog Array − B Wellsite Calibration

HRLT VTP

Idx	Phase	HRLT Torpedo−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68140	−70000	−60900	−82360
	After		−68160			
1	Before		−70540	−70000	−60900	−82360
	After		−71040			
2	Before		−71290	−70000	−60900	−82360
	After		−71680			
3	Before		−72870	−70000	−60900	−82360
	After		−73120			
4	Before		−70470	−70000	−60900	−82360
	After		−70560			
5	Before		−69760	−70000	−60900	−82360
	After		−69850			
6	Before		67500	70000	82360	60900
	After		68180			
7	Before		−70000	−70000	−60900	−82360
	After		−70000			
	(Minimum) (Nominal) (Maximum)					

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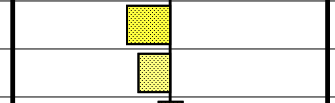
High Resolution Laterolog Array − B Wellsite Calibration

HRLT VBD

Idx	Phase	HRLT Bridle#9−M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−68140	−70000	−60900	−82360
	After		−68150			
1	Before		−70510	−70000	−60900	−82360
	After		−71010			
2	Before		−71270	−70000	−60900	−82360
	After		−71660			
3	Before		−72850	−70000	−60900	−82360
	After		−73110			
4	Before		−70460	−70000	−60900	−82360
	After		−70560			
5	Before		−69750	−70000	−60900	−82360
	After		−69840			

6	Before		67480	70000	82360	60900
	After		68160			
7	Before		−70000	−70000	−60900	−82360
	After		−70000			
	(Minimum) (Nominal) (Maximum)					

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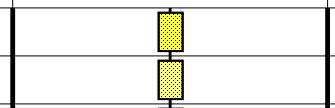
High Resolution Laterolog Array − B Wellsite Calibration

HRLT ISO

Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		284.1	284.0	334.1	247.0
	After		284.2			
1	Before		281.1	281.1	330.7	244.4
	After		281.1			
2	Before		281.1	281.1	330.7	244.4
	After		281.1			
3	Before		281.1	281.1	330.7	244.4
	After		281.1			
4	Before		281.1	281.1	330.7	244.4
	After		281.1			
5	Before		281.1	281.1	330.7	244.4
	After		281.1			
6	Before		281.1	281.1	330.7	244.4
	After		281.1			
7	Before		281.1	281.1	330.7	244.4
	After		281.1			
	(Minimum) (Nominal) (Maximum)					

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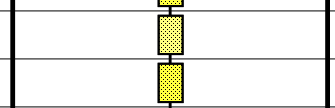
High Resolution Laterolog Array − B Wellsite Calibration

HRLT MV

Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		−321.0	−322.7	−280.7	−379.7
	After		−320.8			
1	Before		−320.2	−322.7	−280.7	−379.7
	After		−322.3			
2	Before		−322.4	−322.7	−280.7	−379.7
	After		−323.7			
3	Before		−325.9	−322.7	−280.7	−379.7
	After		−326.8			
4	Before		−313.8	−322.7	−280.7	−379.7
	After		−314.1			
5	Before		−325.5	−322.7	−280.7	−379.7
	After		−325.6			
6	Before		324.1	322.7	379.7	280.7
	After		327.3			

7	Before		−322.7	−322.7	−280.7	−379.7
	After		−322.7			
	(Minimum)	(Nominal)	(Maximum)			

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Hostile Litho−Density Sonde / Equipment Identification

Primary Equipment:		
Hostile Litho Density Sonde	HLDS − D	57
Hostile Litho Density High Voltage	HLDV − D	51
Gamma Source Radioactive	GSR − Z	2397
Auxiliary Equipment:		
Hostile Litho Density Pad	HLDP − C	61
Hostile Litho Density High Voltage Housi	HEH − H	53

Litho−Density Spectroscopy Cartridge − B / Equipment Identification

Primary Equipment:		
LDSC Cartridge	LDSC − B	366
Auxiliary Equipment:		
LDSC Housing	LDSH − A	126

Hostile Natural Gamma Ray Cartridge − B / Equipment Identification

Primary Equipment:		
HNGC Cartridge	HNGC − B	300
Auxiliary Equipment:		
HNGC Housing	HNGH − A	115

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:		
HNGS Sonde	HNGS − BA	194
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH − BA	205
Gamma Source Radioactive	GSR − U	616008

Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:		
EDTC Gamma Ray Detector	EDTG − A/B	8305
Enhanced DTS Cartridge	EDTC − B	8317
Auxiliary Equipment:		
EDTC Housing	EDTH − B	8303

Enhanced DTS Cartridge Wellsite Calibration

EDTC Accelerometer Calibration

Phase	EDTC Z−Axis Acceleration M/S2			Value
Before				9.742
	9.610 (Minimum)	9.810 (Nominal)	10.01 (Maximum)	

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Enhanced DTS Cartridge Wellsite Calibration

Detector Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value
Before		7.622

0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)

Phase	Gamma Ray (Jig − Bkg) GAPI	Value
Before		159.9

145.3 (Minimum) 159.9 (Nominal) 174.4 (Maximum)

Phase	Gamma Ray (Calibrated) GAPI	Value
Before		164.0

149.0 (Minimum) 164.0 (Nominal) 179.0 (Maximum)

Before: 4−Mar−2012 17:35

Company: **Lamont Doherty Earth Observatory**

Schlumberger

Well: **Expedition 340, Site U1397B**
Field: **Lesser Antilles Volcanism and Landslides**
Rig: **JOIDES Resolution**
Ocean: **Caribbean**

High Resolution Laterolog Array (HRLA)
Log Quality Control