

Schlumberger

Company: Lamont Doherty

Well: Expedition 339, Site U1390 GC-02B

Field: Mediterranean Outflow (Portugal)

Rig: JOIDES Resolution Ocean: Atlantic

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Rig: JOIDES Resolution Ocean: Atlantic

Rig: JOIDES Resolution Field: Mediterranean Outflow (Portugal) Location: Latitude: N 36° 19.04' Well: Expedition 339, Site U1390 GC- Company: Lamont Doherty							
<h2 style="text-align: center;">High Resolution Laterolog Array</h2> <h3 style="text-align: center;">Hostile Natural Gamma Ray</h3>							
<div style="text-align: center;">LOCATION</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Latitude: N 36° 19.04' Longitude: W 7° 43.08' </td> <td style="width: 50%; vertical-align: top;"> Elev.: K.B. 11.00 m G.L. -994.10 m D.F. 11.00 m </td> </tr> <tr> <td style="vertical-align: top;"> Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____ </td> <td style="vertical-align: top;"> Mean Sea Level _____ Drill Floor _____ Drill Floor _____ </td> </tr> <tr> <td colspan="2" style="text-align: center;"> Elev.: 0.00 m 11.00 m above Perm. Datum </td> </tr> </table>		Latitude: N 36° 19.04' Longitude: W 7° 43.08'	Elev.: K.B. 11.00 m G.L. -994.10 m D.F. 11.00 m	Permanent Datum: _____ Log Measured From: _____ Drilling Measured From: _____	Mean Sea Level _____ Drill Floor _____ Drill Floor _____	Elev.: 0.00 m 11.00 m above Perm. Datum	
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Elev.: 0.00 m 11.00 m above Perm. Datum							
API Serial No.	Max. Hole Devi. 0 deg Longitude W 7.2781* Latitude N 36.42528*						

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Longitude: W 7° 43.08'	G.L. -994.10 m D.F. 11.00 m
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Longitude: W 7° 43.08'	G.L. -994.10 m D.F. 11.00 m
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G.L.	-994.10 m
D.F.	11.00 m

G.L.	-994.10 m
D.F.	11.00 m

G.L.	-994.10 m
D.F.	11.00 m

G.L.	-994.10 m
D.F.	11.00 m

Log Measured From:	<u>Drill Floor</u>	11.00 m	above Perm. Datum
Drilling Measured From:	<u>Drill Floor</u>		

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Drilling Measured From:	<u>Drill Floor</u>		

Log Measured From:	<u>Drill Floor</u>	11.00 m	above Perm. Datum
Drilling Measured From:	<u>Drill Floor</u>		

11.00 m above Perm. Datum

11.00 m above Perm. Datum

11.00 m above Perm. Datum

above Perm. Datum

above Perm. Datum

above Perm. Datum

erm. Datum

erm. Datum

erm. Datum

[illegible]

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				
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				

[illegible]

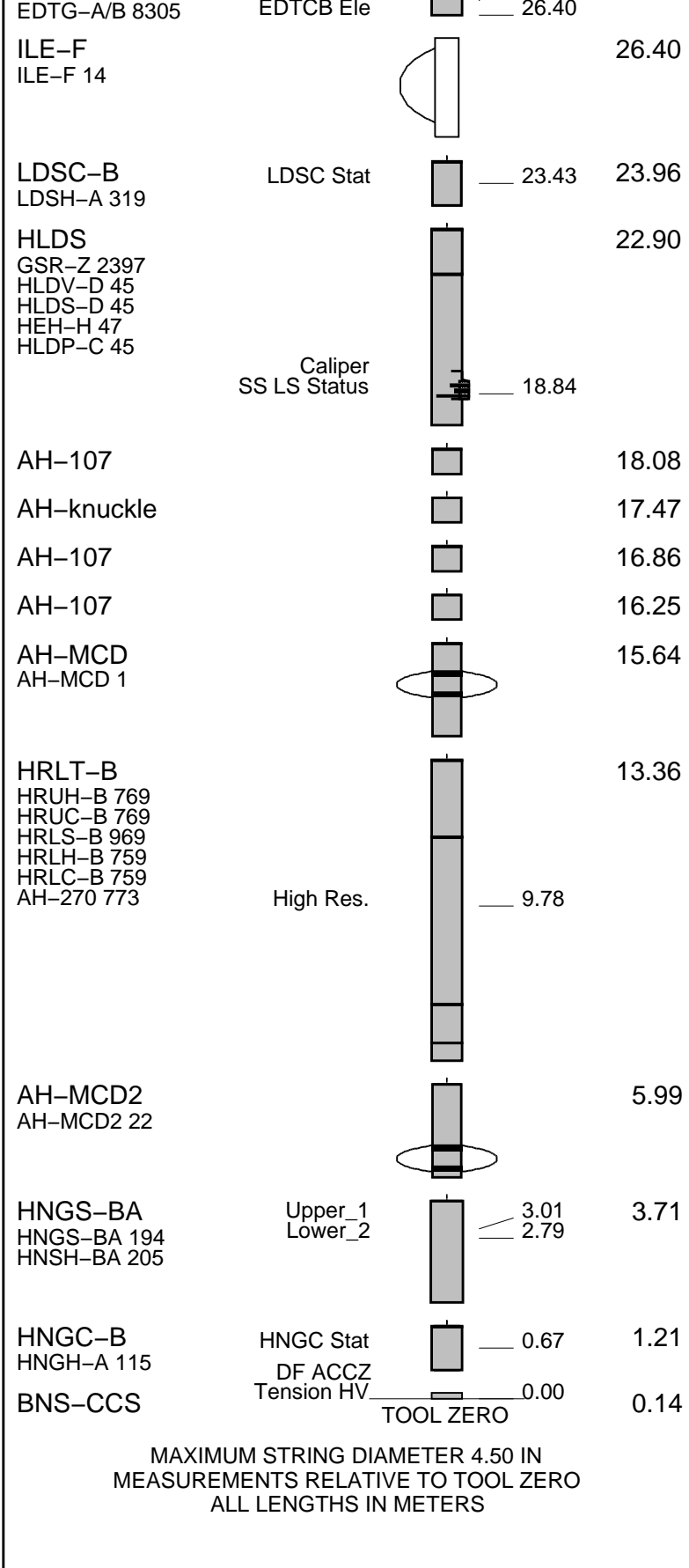
DISCLAIMER

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

OTHER SERVICES1 OS1: DSI OS2: FMS OS3: HLDS OS4: OS5:			OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:		
REMARKS: RUN NUMBER 1			REMARKS: RUN NUMBER 2		
Hole GC-02B Hole A was drilled with a 9 7/8" APC/XCB bit to TDD of 350 mbsf.					
This log originally acquired in measured depth from rig floor and played back for sea floor depth reference.					
HRLA experienced spiking on log curves on uplog near Drill pipe. This is not a formation response as it does not repeat exactly on the downlog.					
Playback of main pass uses barite for corrections of gamma ray.					
Playback of main pass uses caliper as input for borehole corrections.					
All logs recorded via wireline thru 5-5.5" drillpipe and RCB coring BHA consisting of a bit release sub, Kinley sub, drill collars, and lockable flapper valve.					
RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION: 19C0-187			PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

EQUIPMENT DESCRIPTION		RUN 1	RUN 2
SURFACE EQUIPMENT		GSR-U 616008 WITM (EDTS)-A 1	
DOWNHOLE EQUIPMENT			
LEH-QT			29.71
LEH-QT 301			
AH-369	MDSB_EDTC		
	Mud Tempe	28.38	28.82
	CTEM	27.32	
EDTC-B	Gamma Ray	26.75	28.38
EDTH-B 8303	EFTB DIAG		
EDTC-B 8317	TelStatus		



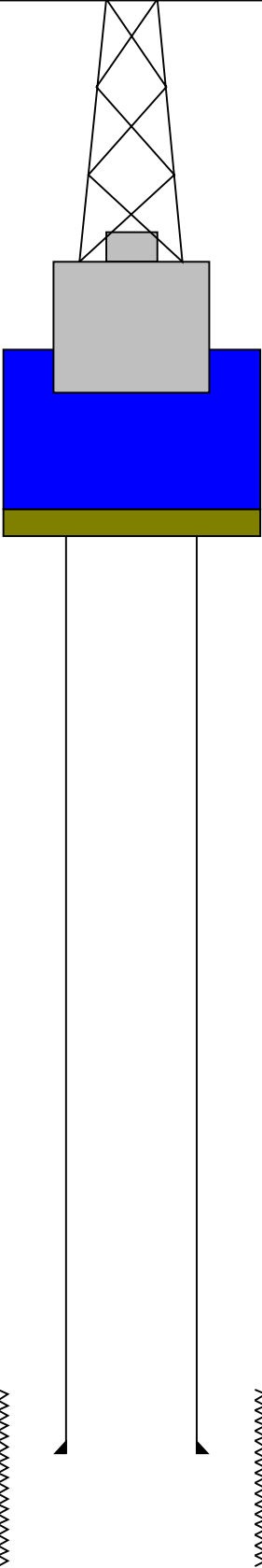
Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	OD	

Kelly Bushing Elevation
Derrick Floor Elevation

Mean Sea Level

-1005.1
-1005.1

-994.1



4.1

0
96

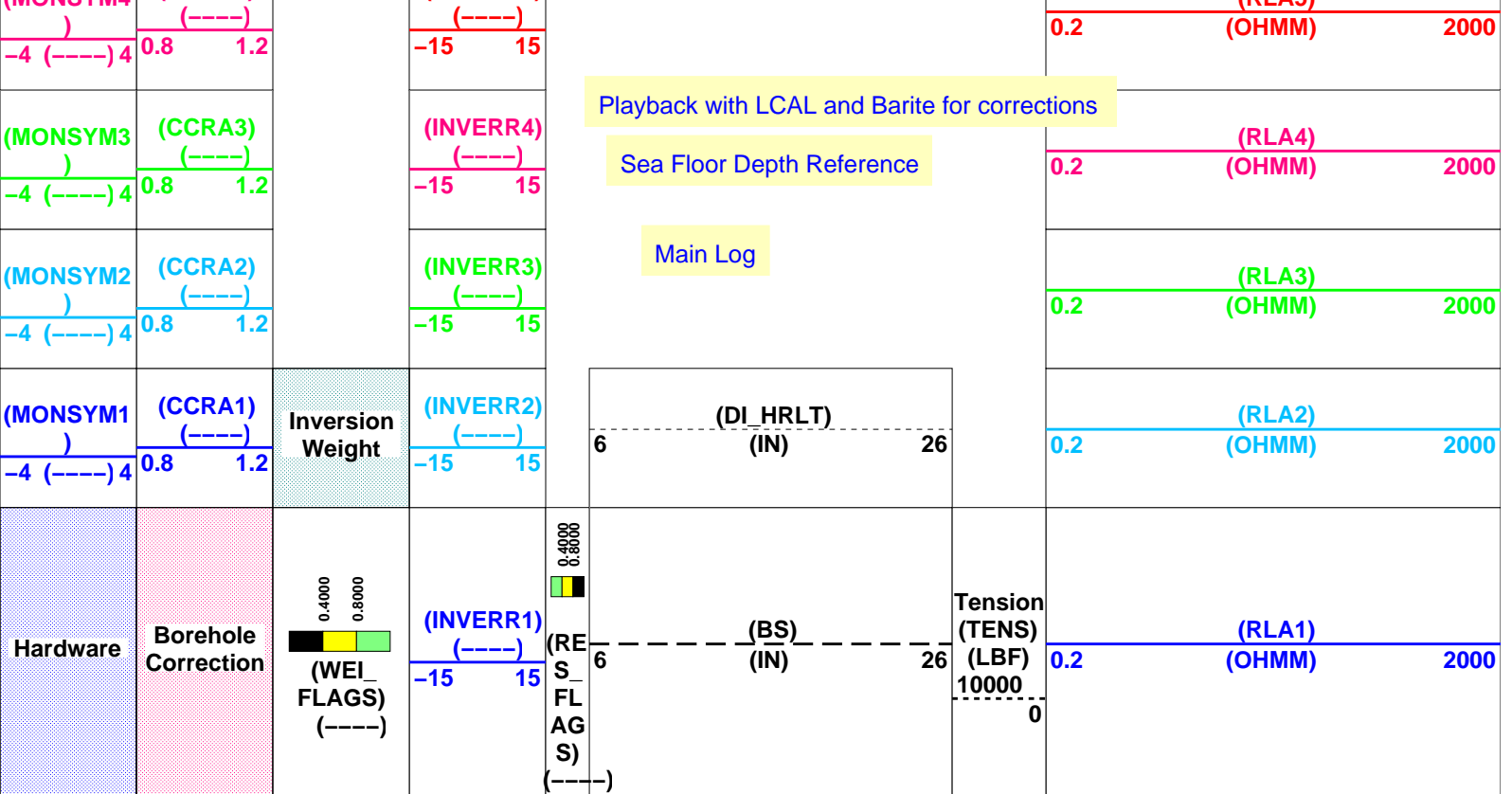
350

3.80
9.875

Sea Floor
Open Hole

Total Depth

Input DLIS Files						
DEFAULT	NGS_HRLA_LDL_014LUP	FN:20	PRODUCER	05-Jan-2012 01:33	1353.3 M	996.5 M
Output DLIS Files						
DEFAULT	NGS_HRLA_LDL_034PUP	FN:46	PRODUCER	06-Jan-2012 09:39	347.5 M	-8.4 M
OP System Version: 19C0-187						
HNGC-B	19C0-187		HNGS-BA	19C0-187		
HRLT-B	19C0-187		HLDS	19C0-187		
LDSC-B	19C0-187		EDTC-B	19C0-187		
PIP SUMMARY						
Time Mark Every 60 S						
					(RT_HRLT)	
					0.2 (OHMM)	2000
					(RM_HRLT)	
					0.02 (OHMM)	200
					(RXO_HRLT)	
					0.2 (OHMM)	2000
					(RLA5)	
(MONSYM5)	(CCRA5)	Inversion				
-4 (-----) 4	0.8 1.2					
(MONSYM4)	(CCRA4)	(INVERR5)				



*** 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 algorithm, and from left to right :

| Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

GREEN = OK

YELLOW = Contribution QUESTIONABLE

BLACK = Contribution UNRELIABLE

TRACK R5_LQC

RESISTIVITY QUALITY INDICATOR

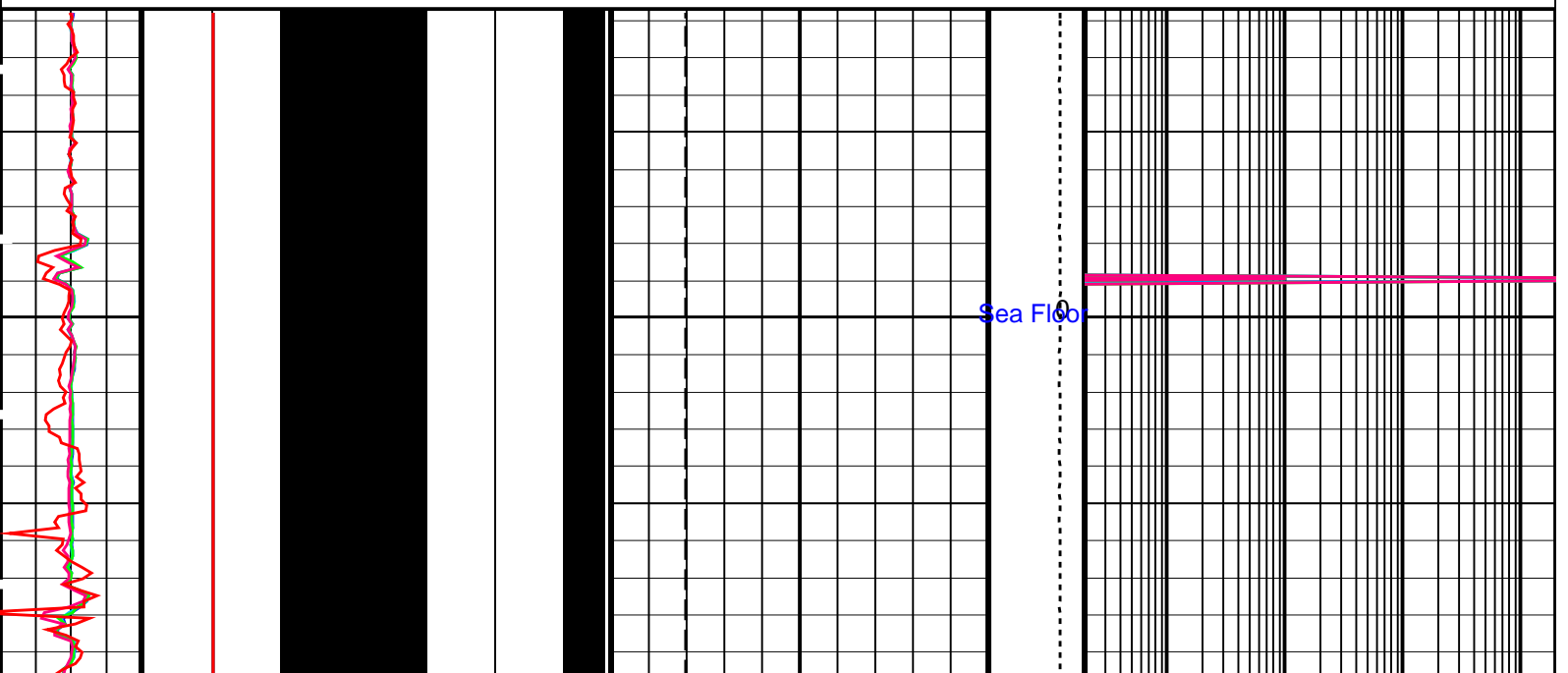
LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

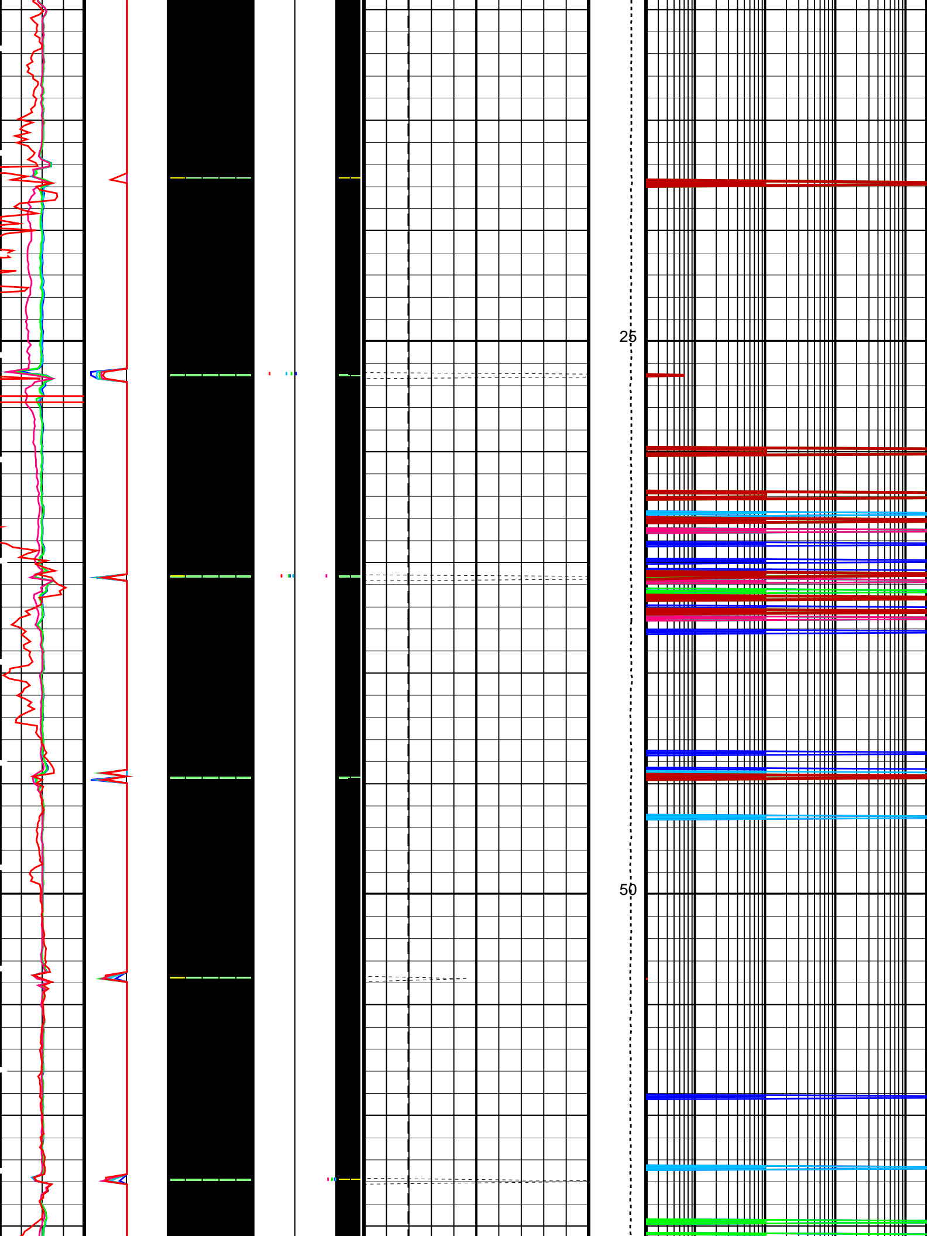
| RxoFlag | RTFlag |

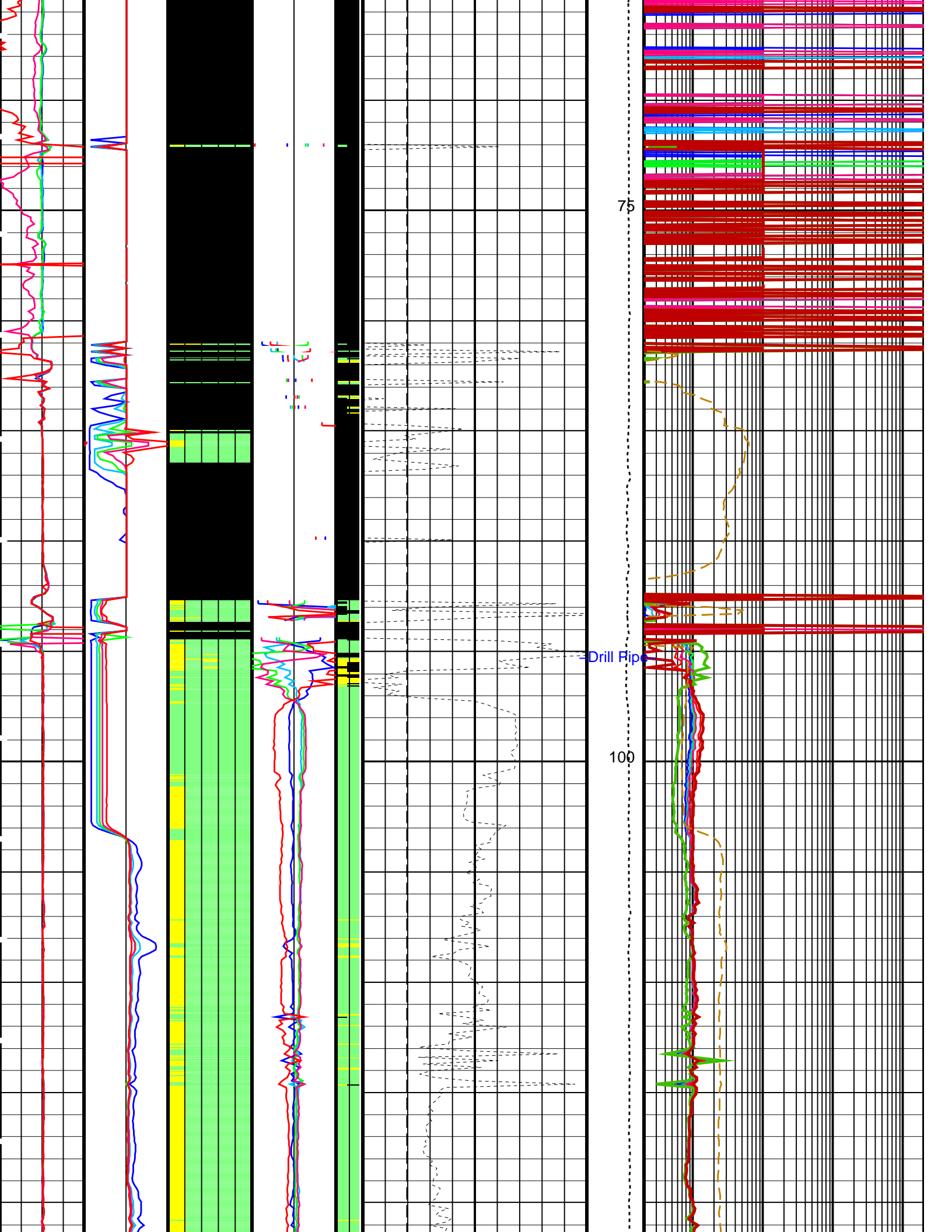
GREEN = OK

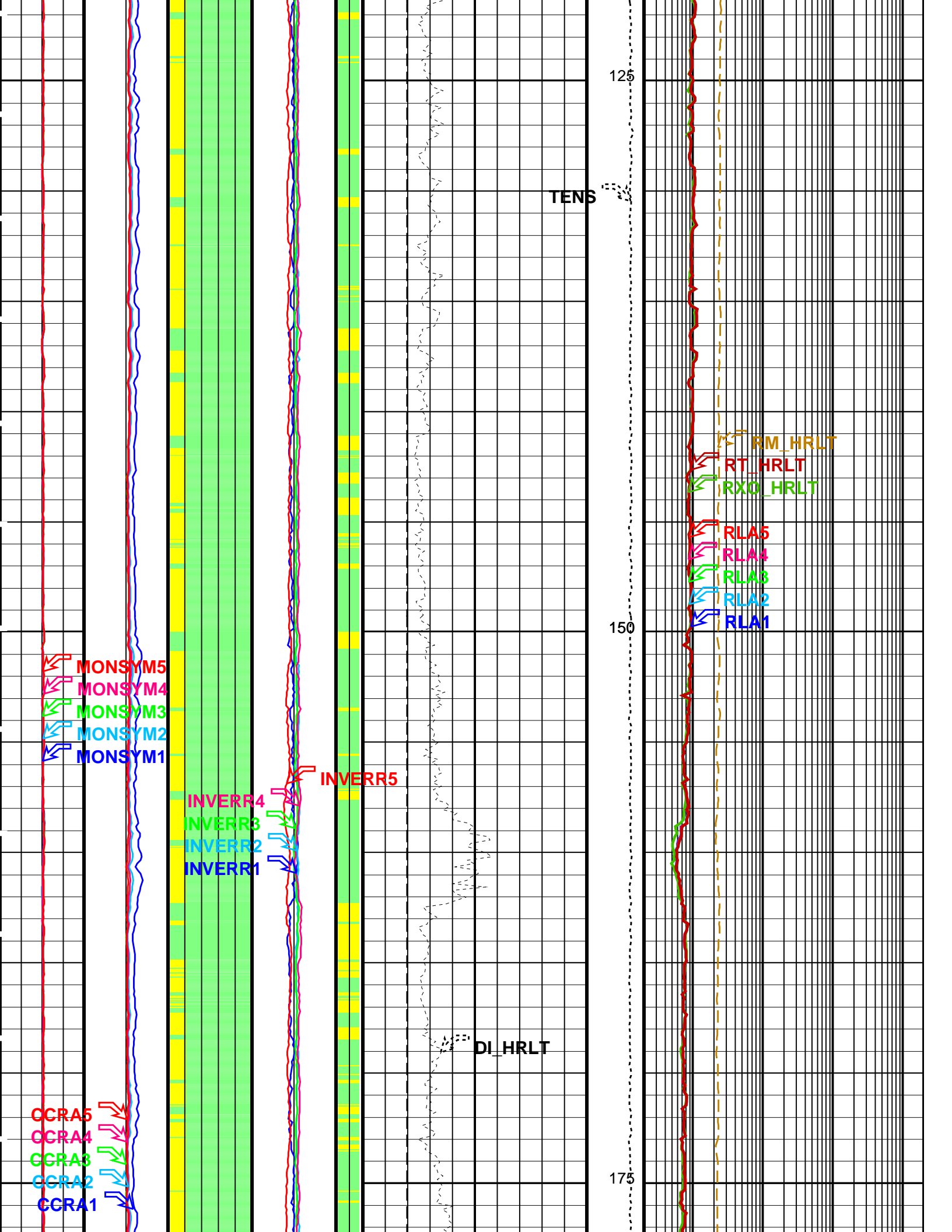
YELLOW = SHOULDER BED EFFECT

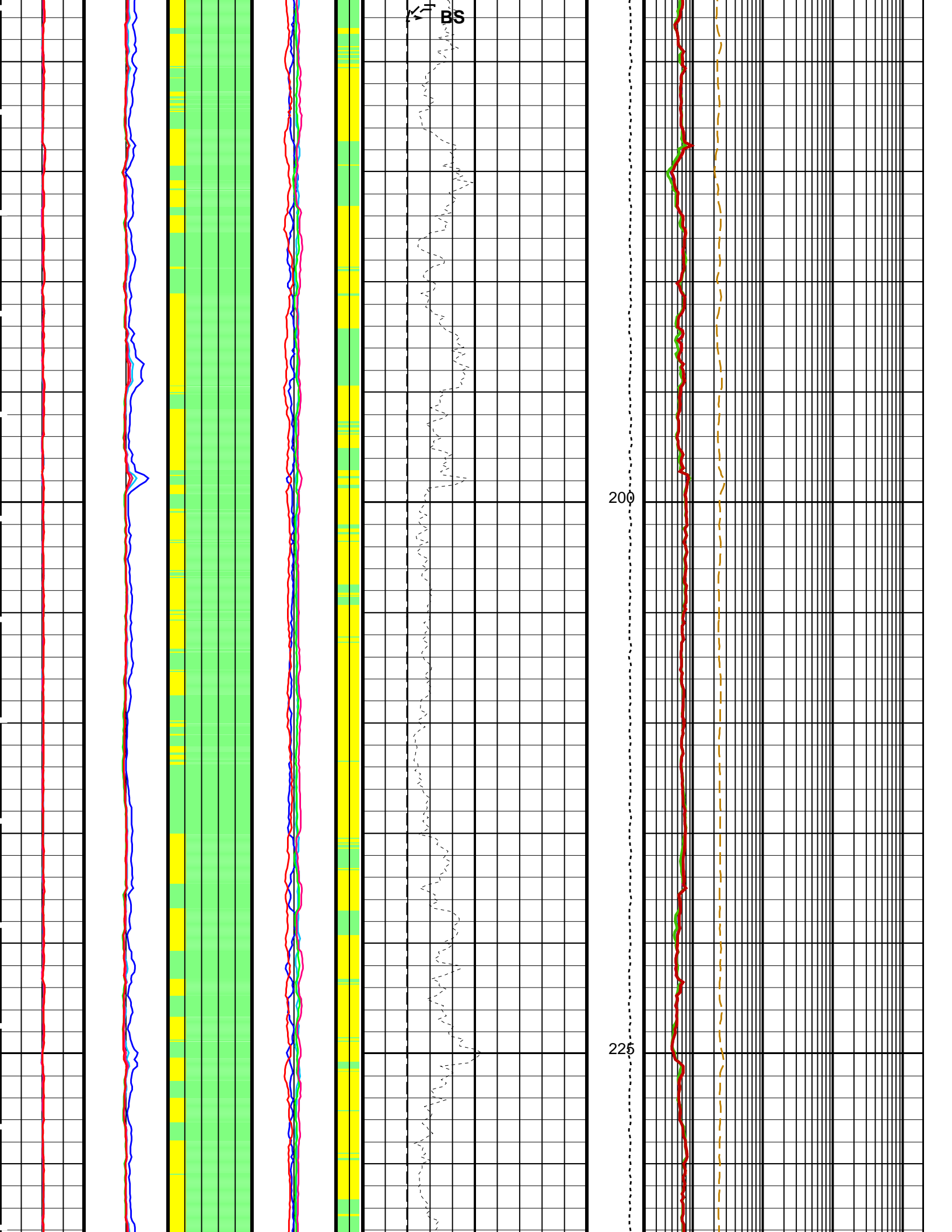
BLACK = NOK

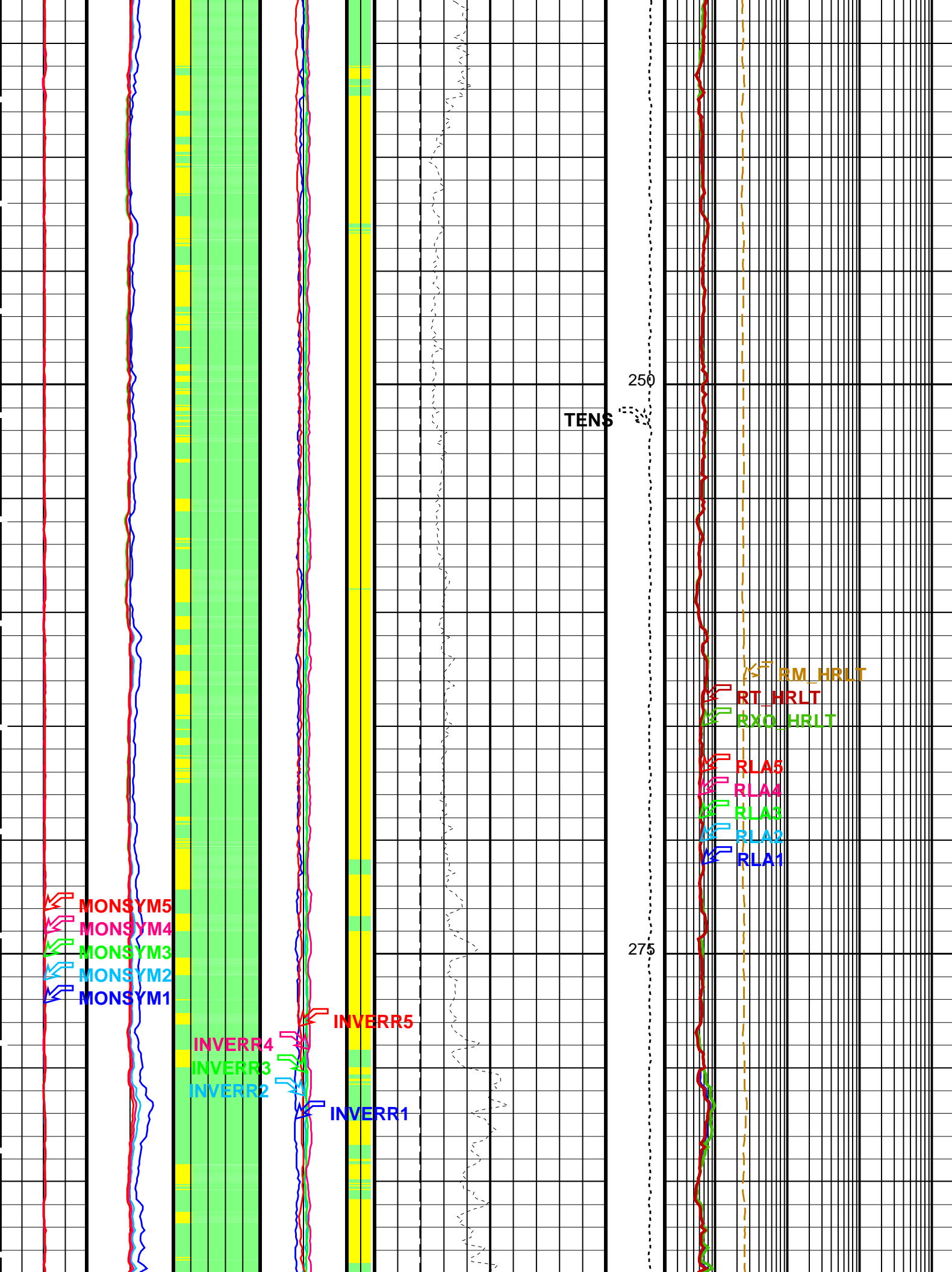


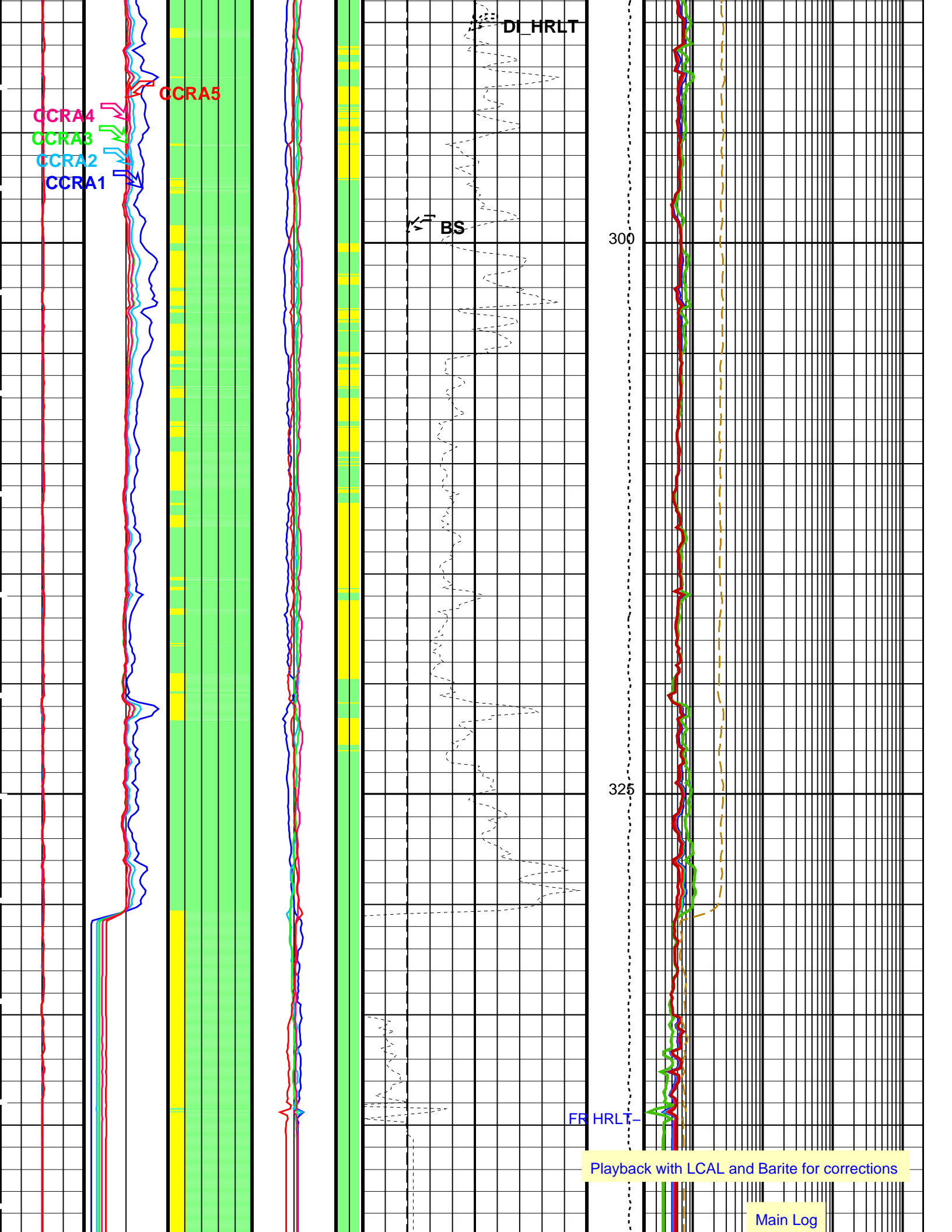












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TRACK R3_LQC

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TRACK R5_LQC

RESISTIVITY QUALITY INDICATOR

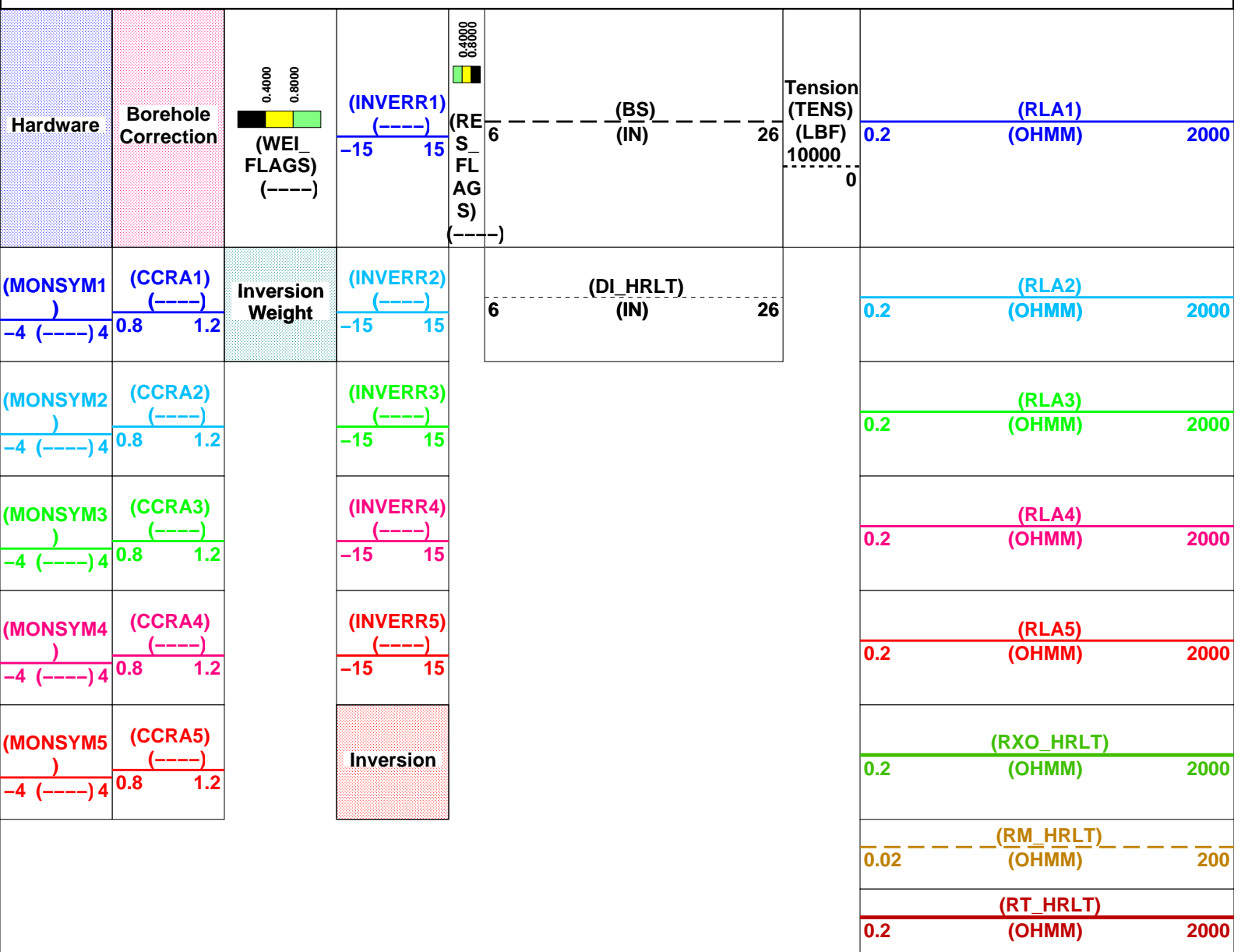
LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

| RxoFlag | RTFlag |

GREEN = OK

YELLOW = SHOULDER BED EFFECT

BLACK = NOK



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name

Description

Value

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)	50	DEGF
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	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
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	-0.00194953	
HALF	HNGS Alpha Filter Length	60	IN
HCRC	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
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	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.968094	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.962571	

HRLT-B: High Resolution Laterolog Array - B			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	23.3869	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	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
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	
PROCSP0	Sonde Position	Centered	
SHT	Surface Hole Temperature	68	DEGF

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	OFF	
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	
EDTC-B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
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	LCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
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	BARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
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			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	10.750	IN
CWEI	Casing Weight	43.00	LB/F
DFD	Drilling Fluid Density	1.25	G/C3
DO	Depth Offset for Playback	-1005.0	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	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	1364.89	M
TDD	Total Depth - Driller	1365.00	M
TDL	Total Depth - Logger	1365.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HRLT_LQC Vertical Scale: 1:200 Graphics File Created: 06-Jan-2012 09:39

OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_014LUP	FN:20	PRODUCER	05-Jan-2012 01:33	1353.3 M	996.5 M
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Output DLIS Files

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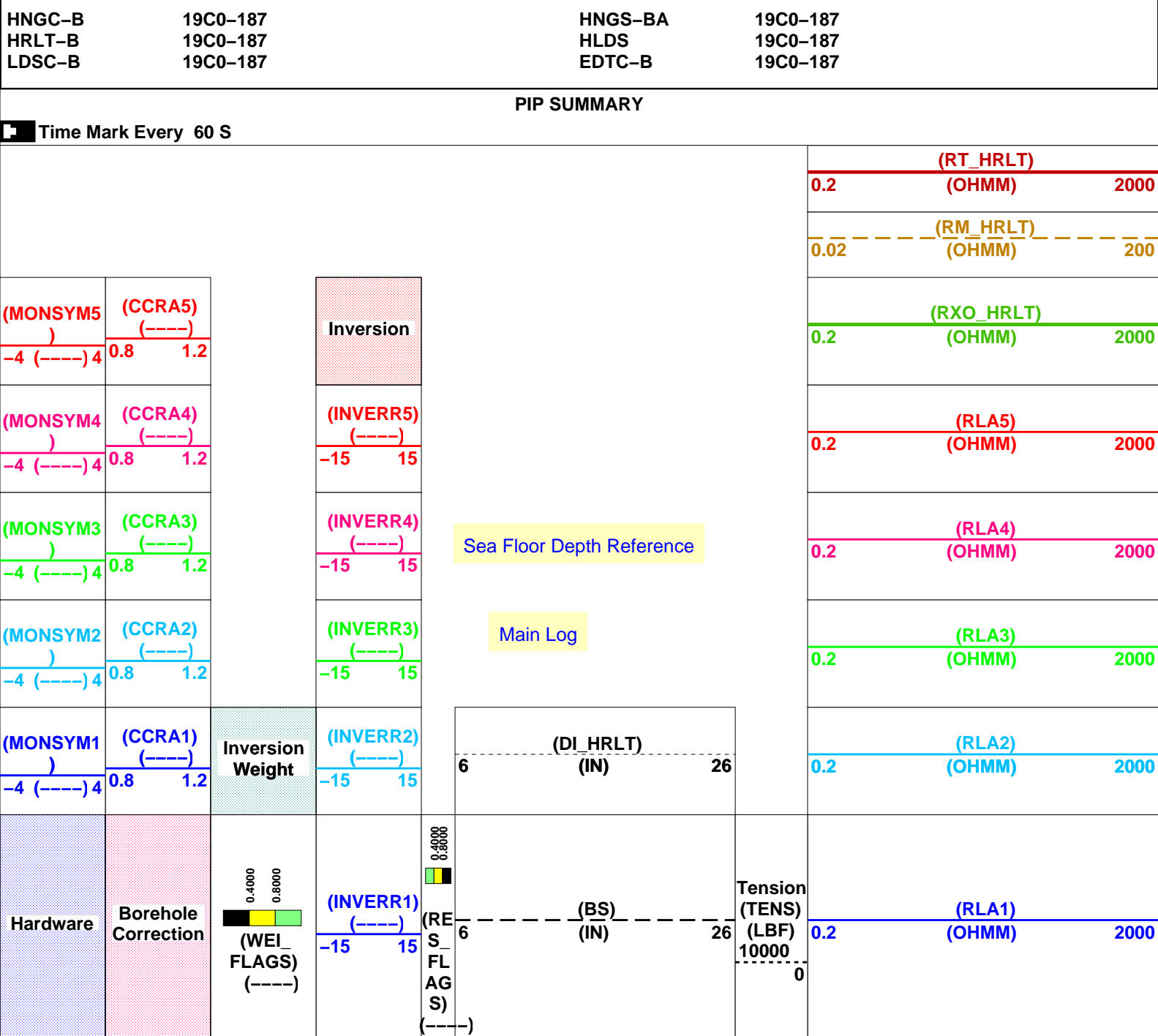
Input DLIS Files

DEFAULT	NGS_HRLA_LDL_014LUP	FN:20	PRODUCER	05-Jan-2012 01:33	1353.3 M	996.5 M
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Output DLIS Files

DEFAULT	NGS_HRLA_LDL_033PUP	FN:45	PRODUCER	06-Jan-2012 09:24	347.5 M	-8.4 M
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OP System Version: 19C0-187



*** 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 alorgythm, and from left to right :

 | Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

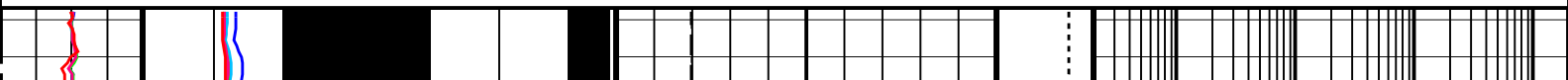
GREEN = OK YELLOW = Contribution QUESTIONABLE BLACK = Contribution UNRELIABLE

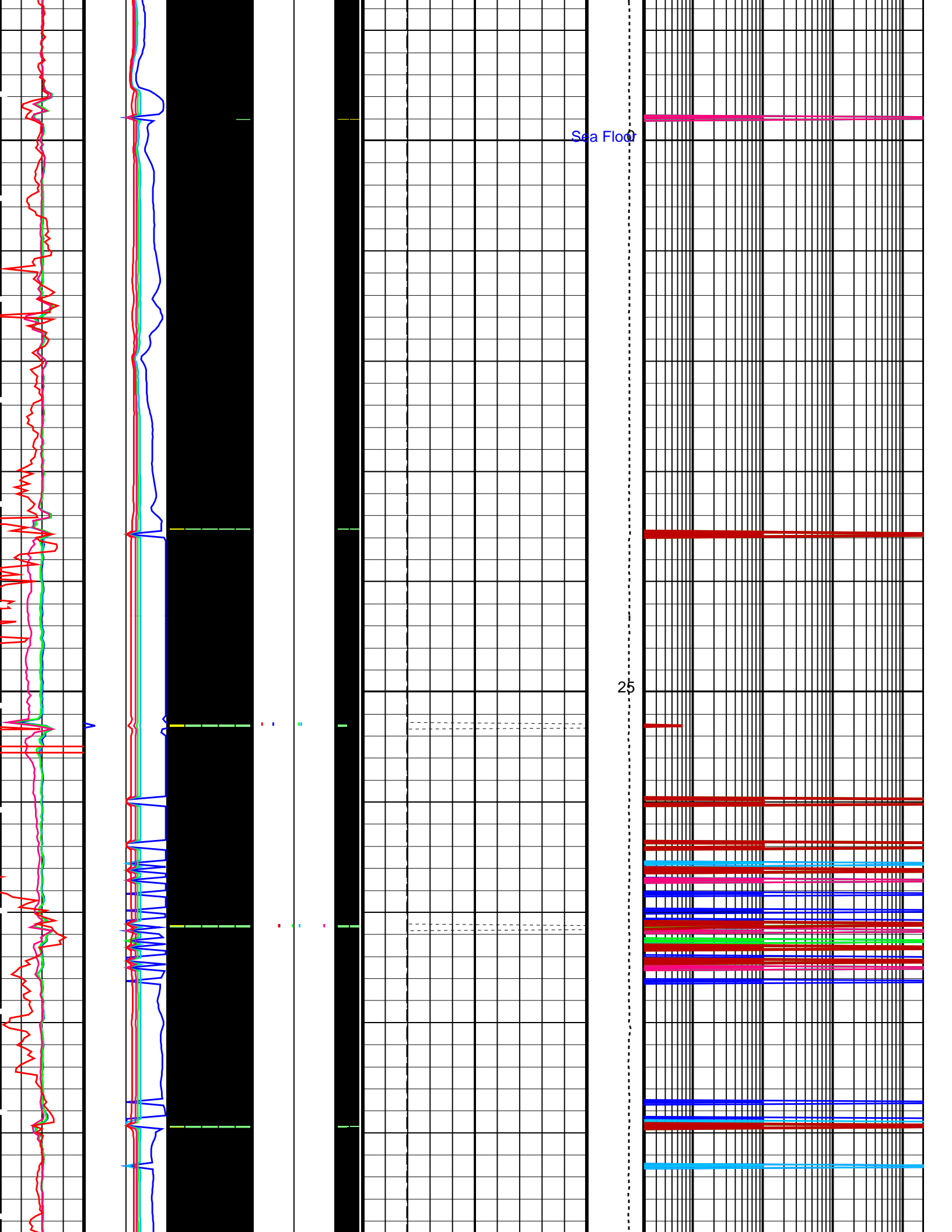
TRACK R5_LQC RESISTIVITY QUALITY INDICATOR

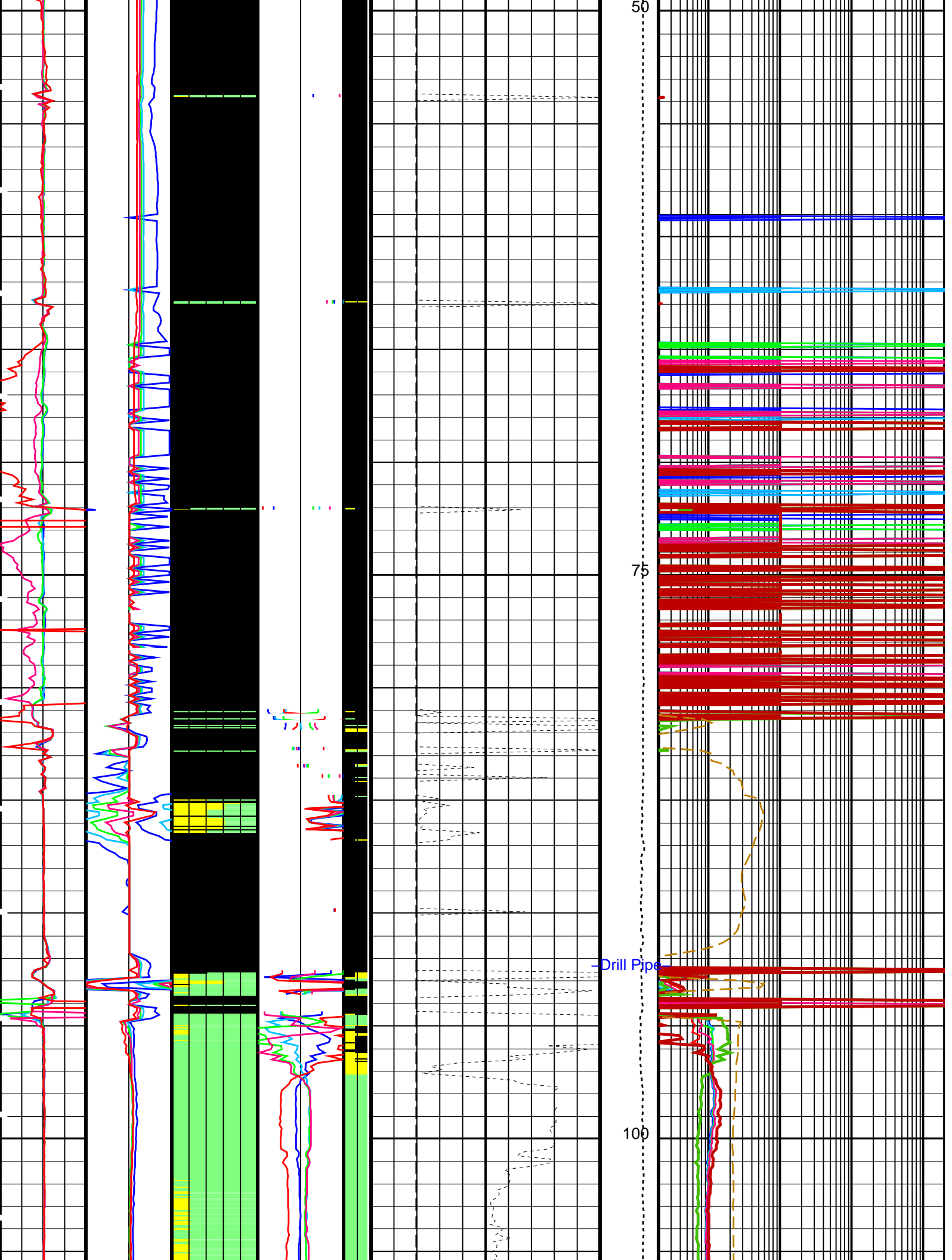
LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

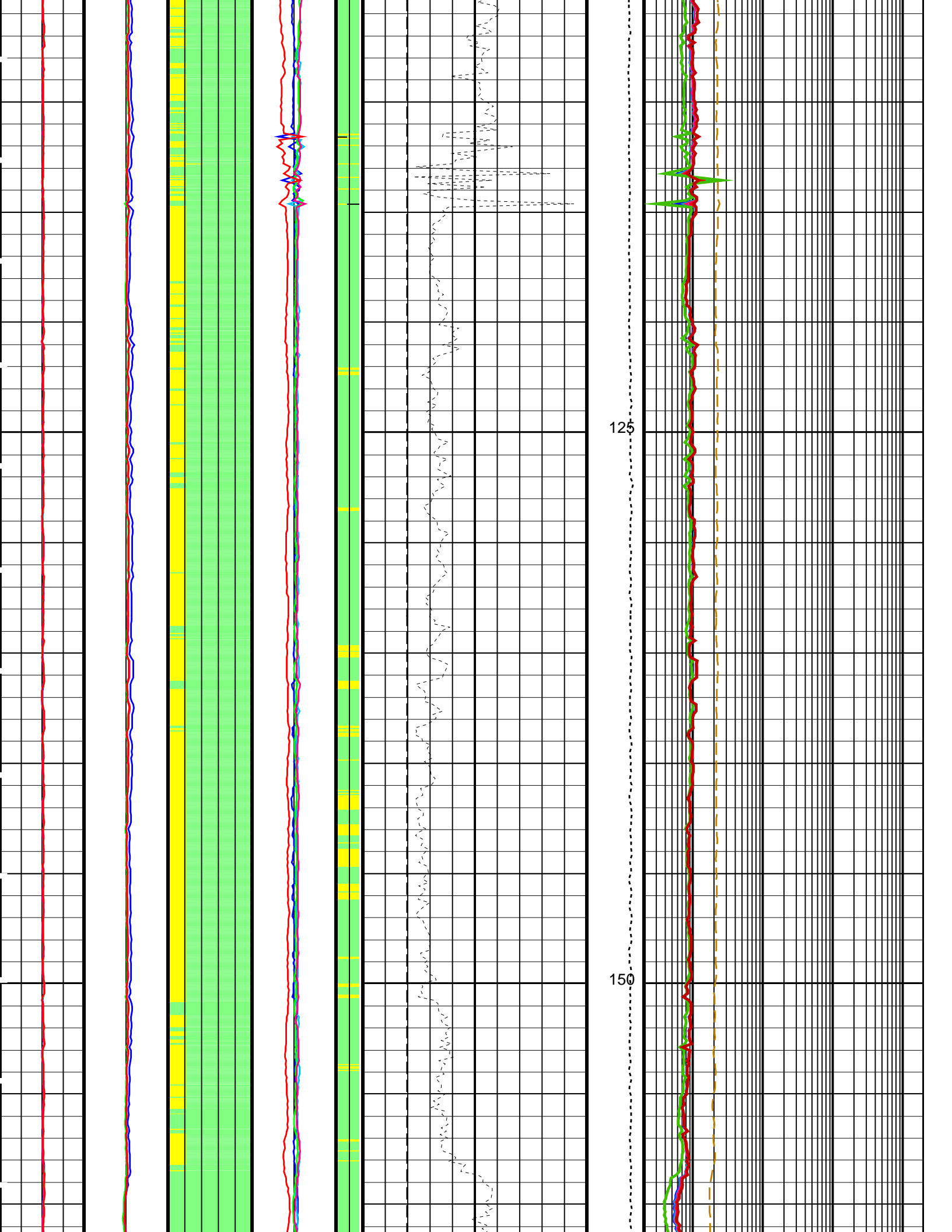
 | RxoFlag | RTFlag |

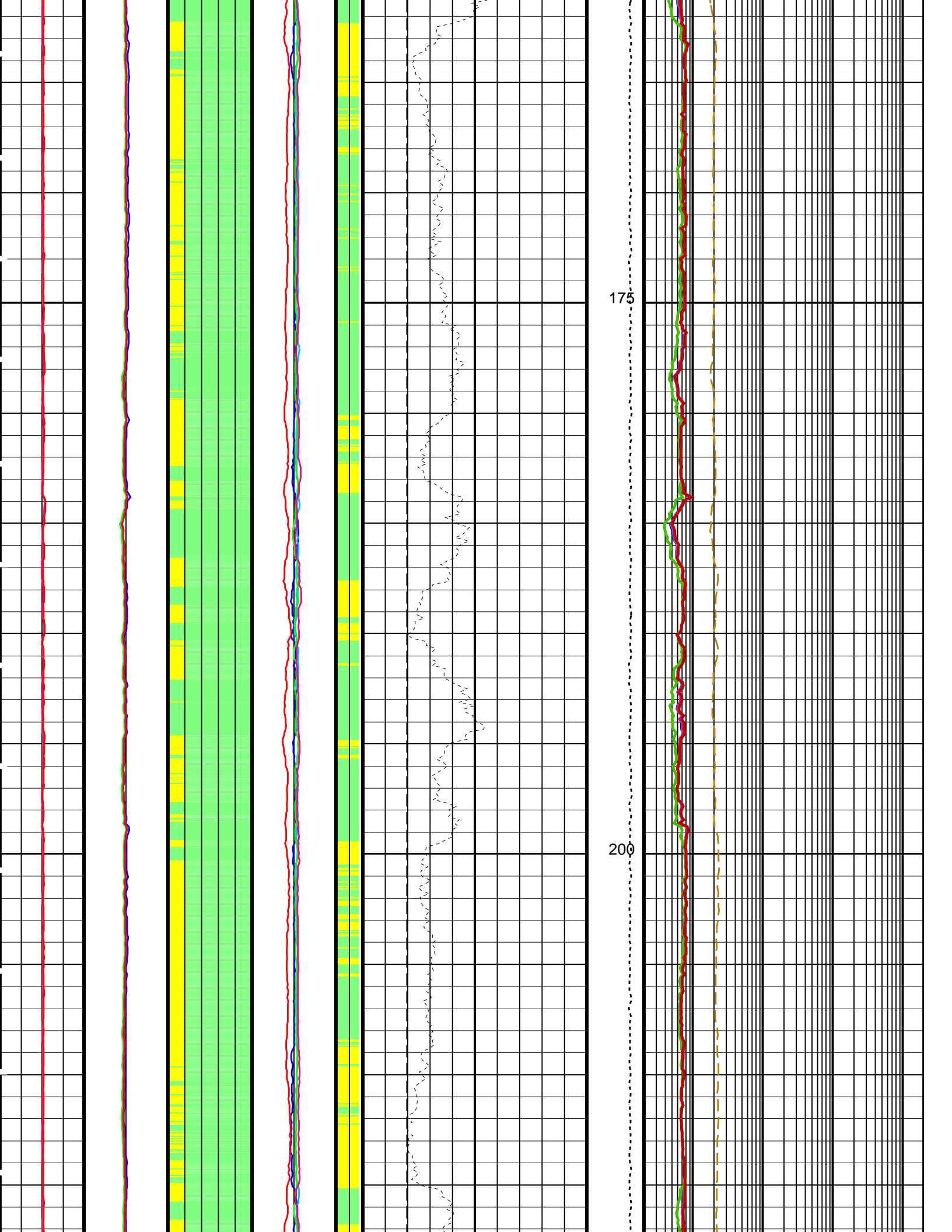
GREEN = OK YELLOW = SHOULDER BED EFFECT BLACK = NOK

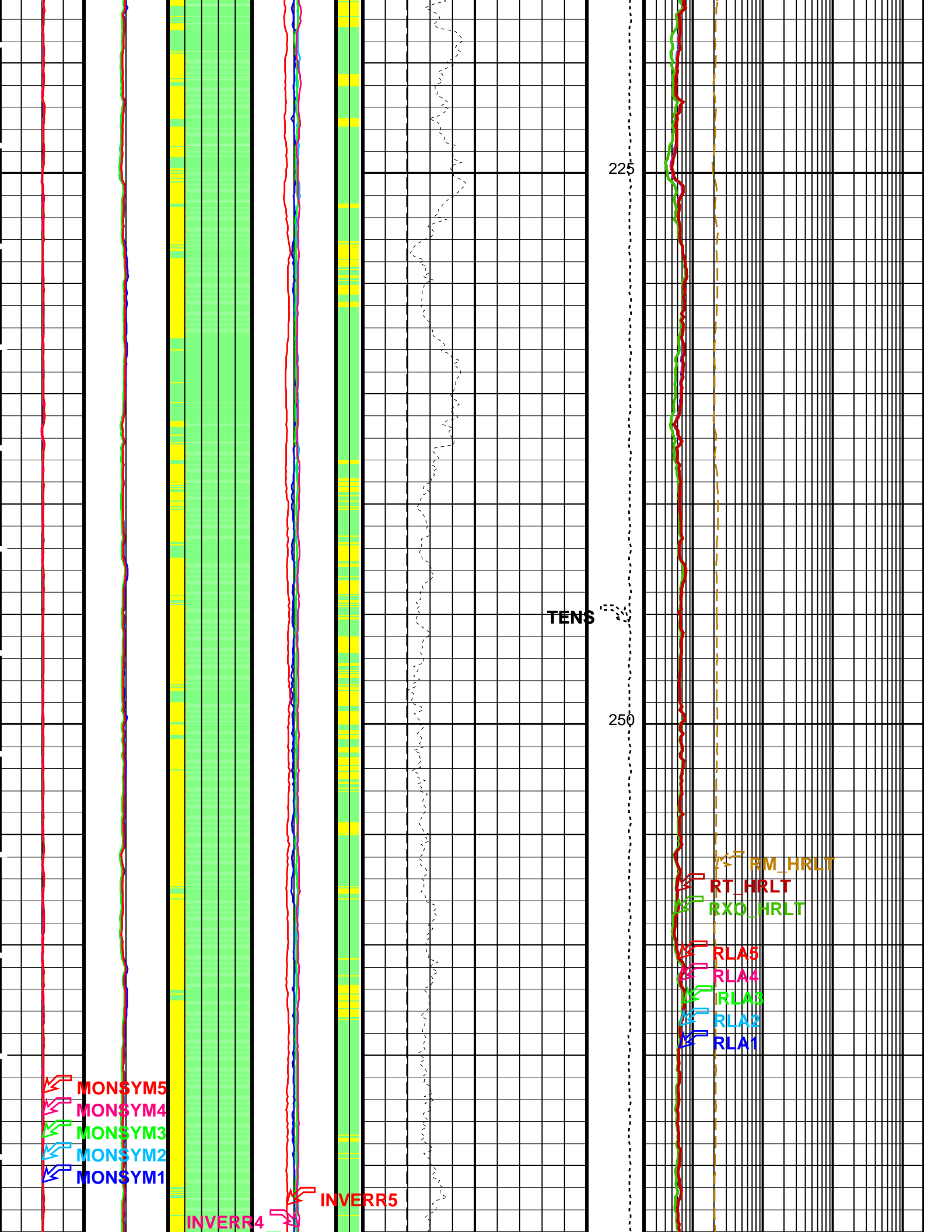


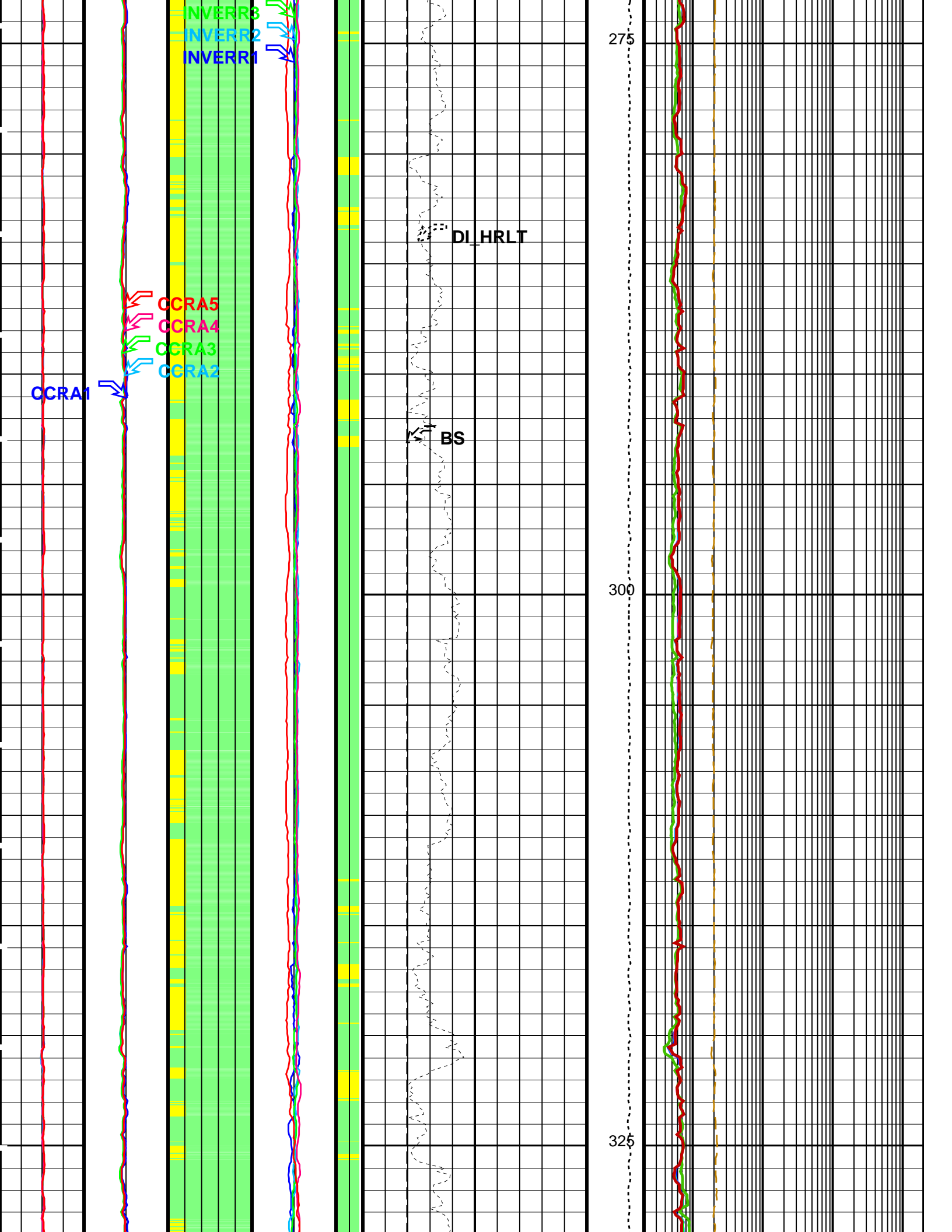


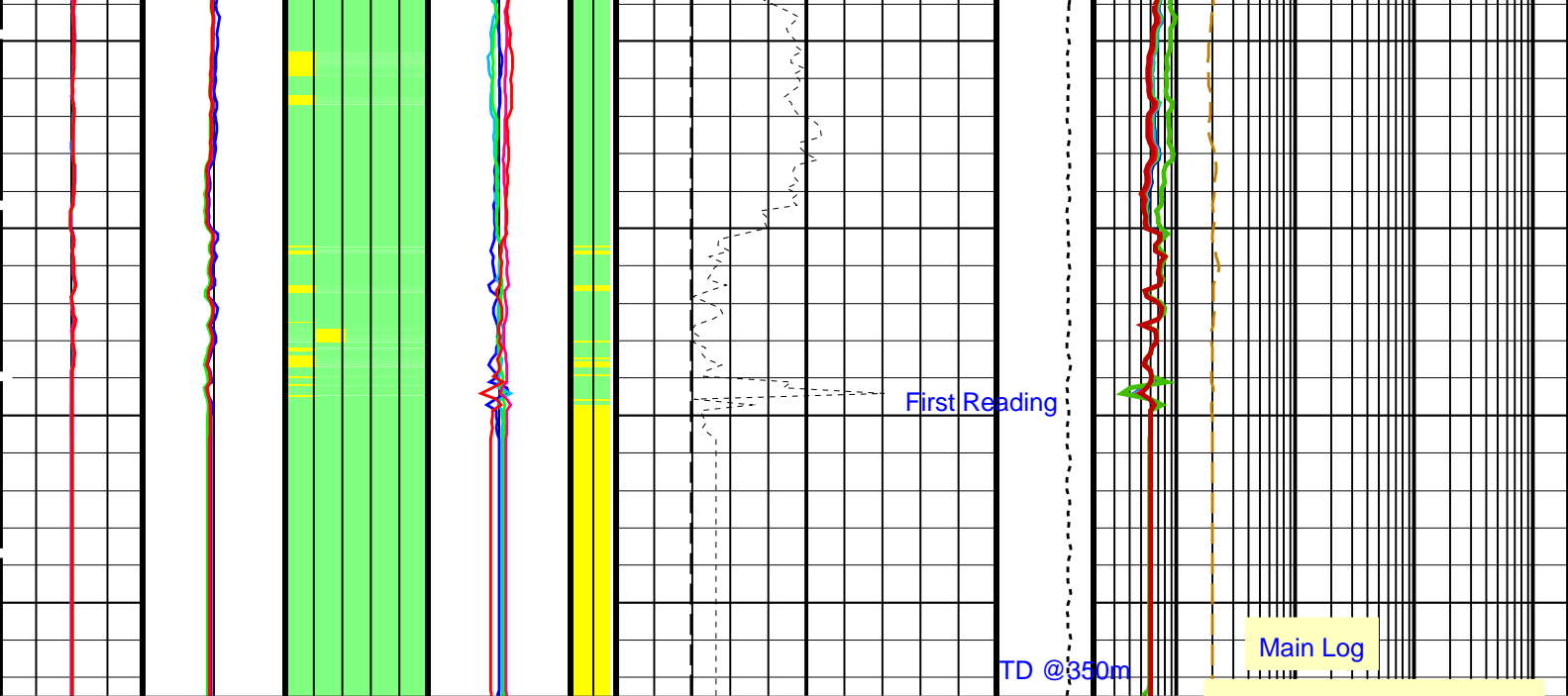












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TRACK R3_LQC

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TRACK R5_LQC

RESISTIVITY QUALITY INDICATOR

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

| RxoFlag | RTFlag |

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YELLOW = SHOULDER BED EFFECT

BLACK = NOK

Hardware	Borehole Correction	<div><div>0.40000.8000</div><div><div></div><div></div><div></div></div><div>(WEI FLAGS) (----)</div></div>	<div><div>(INVERR1) (----)</div><div>-1515</div></div> <div>(RES FL AG S) (----)</div>	<div><div>(BS) (IN)</div><div>626</div></div> <div>Tension (TENS) (LBF) 10000 0</div>	<div><div>(RLA1) (OHMM)</div><div>0.22000</div></div>
(MONSYM1) (----) -4 (----) 4	(CCRA1) (----) 0.81.2	Inversion Weight	<div><div>(INVERR2) (----)</div><div>-1515</div></div>	<div><div>(DI_HRLT) (IN)</div><div>626</div></div>	<div><div>(RLA2) (OHMM)</div><div>0.22000</div></div>
(MONSYM2) (----) -4 (----) 4	(CCRA2) (----) 0.81.2		<div><div>(INVERR3) (----)</div><div>-1515</div></div>		<div><div>(RLA3) (OHMM)</div><div>0.22000</div></div>
(MONSYM3) (----) -4 (----) 4	(CCRA3) (----) 0.81.2		<div><div>(INVERR4) (----)</div><div>-1515</div></div>		<div><div>(RLA4) (OHMM)</div><div>0.22000</div></div>
(MONSYM4) (----)	(CCRA4) (----)		<div><div>(INVERR5) (----)</div></div>		<div><div>(RLA5)</div></div>

(-4 (----) 4	(0.8 1.2	(-15 15	0.2 (OHMM) 2000
(MONSYM5)	(CCRA5) (----)	Inversion	(RXO_HRLT) 0.2 (OHMM) 2000
-4 (----) 4	0.8 1.2		(RM_HRLT) 0.02 (OHMM) 200
			(RT_HRLT) 0.2 (OHMM) 2000

PIP SUMMARY
Time Mark Every 60 S

Parameters			
DLIS Name	Description	Value	
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)	50	DEGF
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	0.01	DF/F
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	-0.00194953	
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	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.968094	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0.962571	
HRLT-B: High Resolution Laterolog Array - B			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	23.3869	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	0.01	DF/F
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	

MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	ON	
PROCINV	Inversion Selection	NO_EXTERNAL_RXO	0	IN
PROCMFL	Inversion Micro-Resistivity Selection	HRLT_Compute	Centered	
PROCMSO	Mechanical Standoff Fin Size		68	DEGF
PROCRM	Processing Mud Resistivity Select			
PROCSPO	Sonde Position			
SHT	Surface Hole Temperature			
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	OFF		
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		
EDTC-B: Enhanced DTS Cartridge				
BHFL	Borehole Fluid Type	WATER		
BHS	Borehole Status	OPEN		
BHT	Bottom Hole Temperature (used in calculations)	50		DEGF
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	0.01		DF/F
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	YES		
PTCO	Pressure/Temperature Correction Option	NO		
SDAT	Standoff Data Source	SOCN		
SHT	Surface Hole Temperature	68		DEGF
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	9.875		IN
BSAL	Borehole Salinity	-50000.00		PPM
CSIZ	Current Casing Size	10.750		IN
CWEI	Casing Weight	43.00		LB/F
DFD	Drilling Fluid Density	1.25		G/C3
DO	Depth Offset for Playback	-1005.0		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	NORMAL		
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000		OHMM
RW	Resistivity of Connate Water	1.0000		OHMM
TD	Total Depth	1364.89		M
TDD	Total Depth - Driller	1365.00		M
TDL	Total Depth - Logger	1365.00		M
TWS	Temperature of Connate Water Sample	37.78		DEGC

Format: HRLT_LQC Vertical Scale: 1:200 Graphics File Created: 06-Jan-2012 09:24

OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

Input DLIS Files

DEFAULT NGS_HRLA_LDL_014LUP FN:20 PRODUCER 05-Jan-2012 01:33 1353.3 M 996.5 M

Output DLIS Files

DEFAULT NGS_HRLA_LDL_033PUP FN:45 PRODUCER 06-Jan-2012 09:24

Input DLIS Files

DEFAULT NGS_HRLA_LDL_012LUP FN:16 PRODUCER 05-Jan-2012 01:09 1353.3 M 1278.0 M

Output DLIS Files

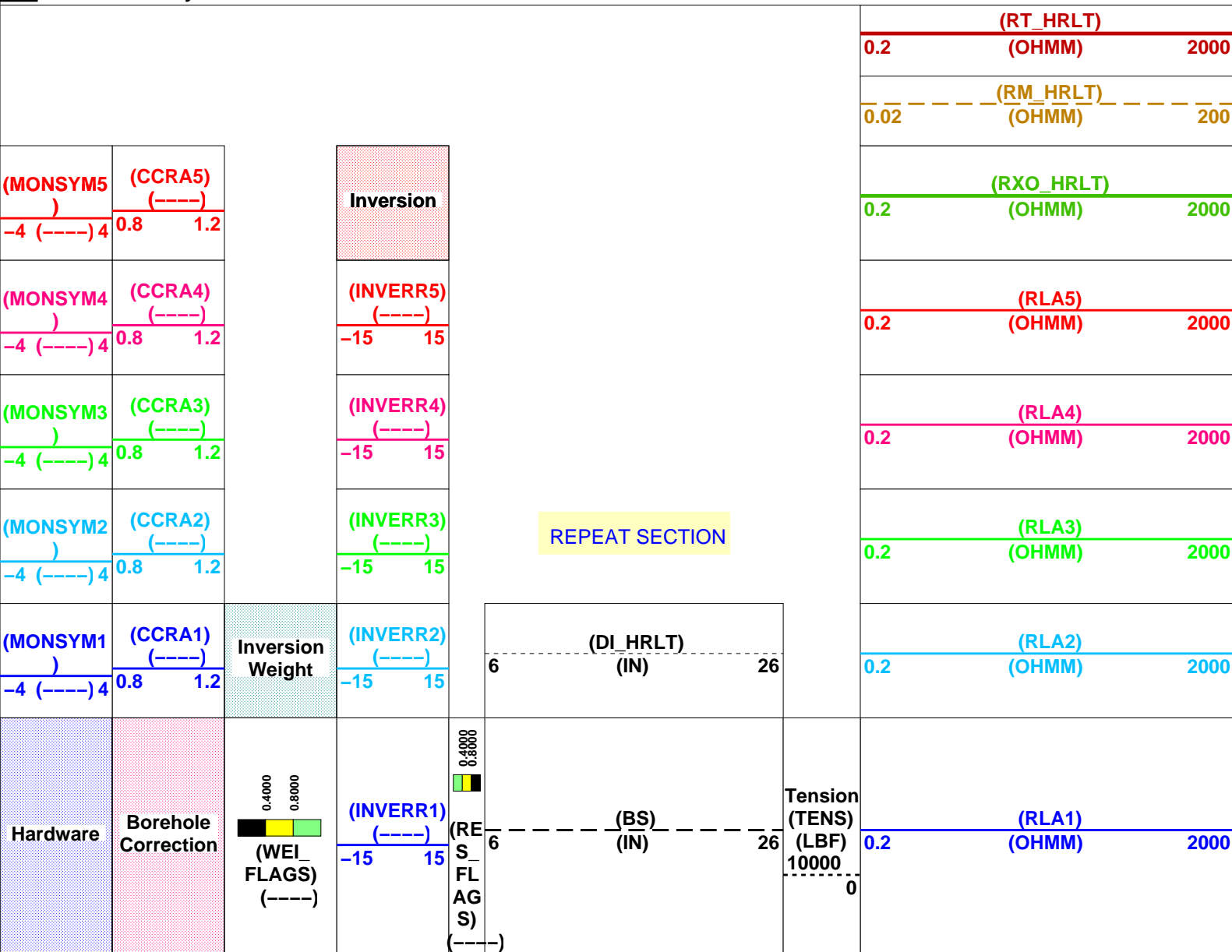
DEFAULT NGS_HRLA_LDL_032PUP FN:44 PRODUCER 06-Jan-2012 09:18 347.5 M 273.1 M

OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

PIP SUMMARY

Time Mark Every 60 S



*** HRLT FLAG TRACKS ***

FLAG areas show that the corresponding error flag is set

BLACK areas show that the corresponding error flag is set.

TRACK R3_LQC

INVERSION WEIGHT

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

| Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

GREEN = OK

YELLOW = Contribution QUESTIONABLE

BLACK = Contribution UNRELIABLE

TRACK R5_LQC

RESISTIVITY QUALITY INDICATOR

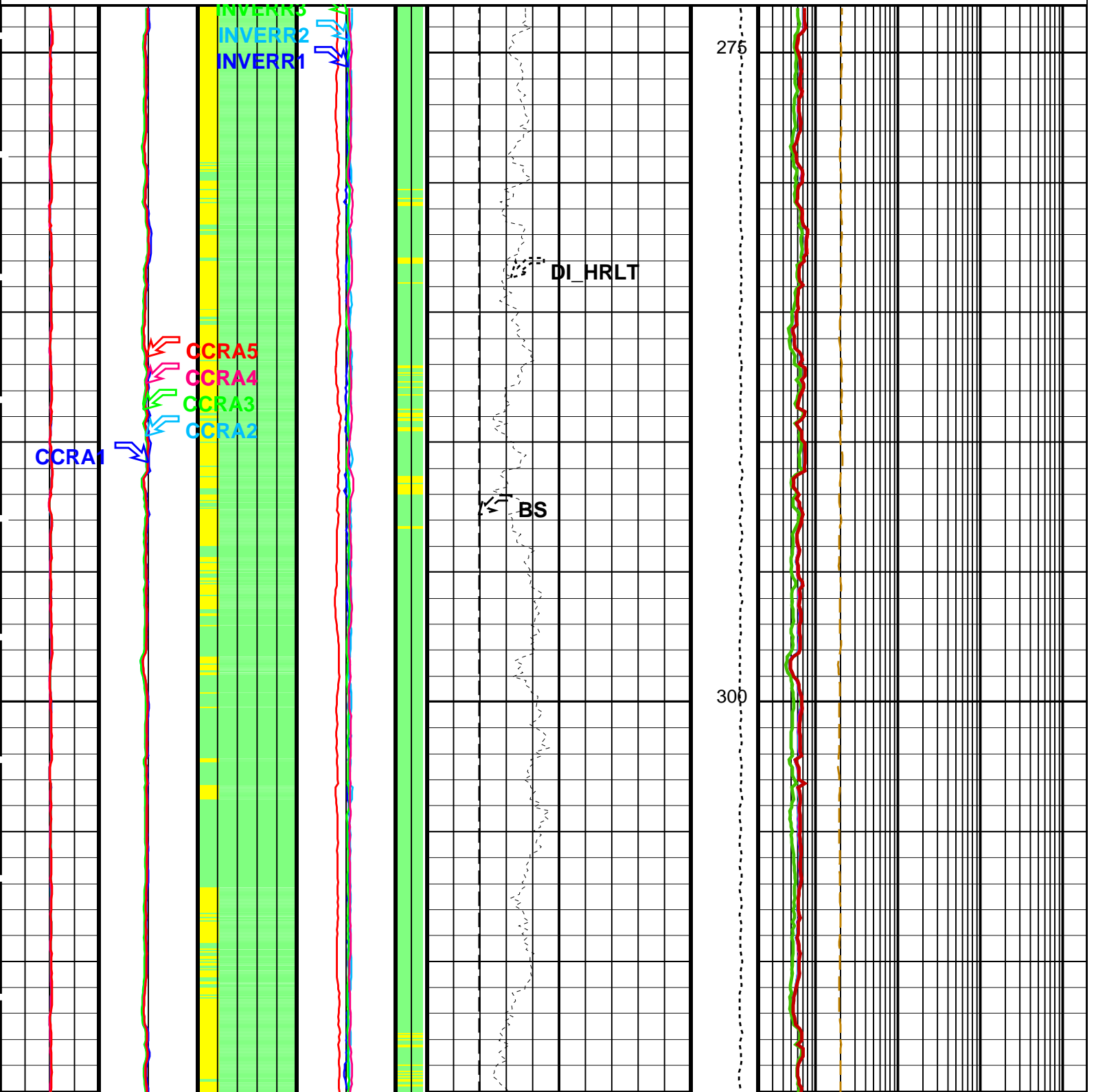
LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

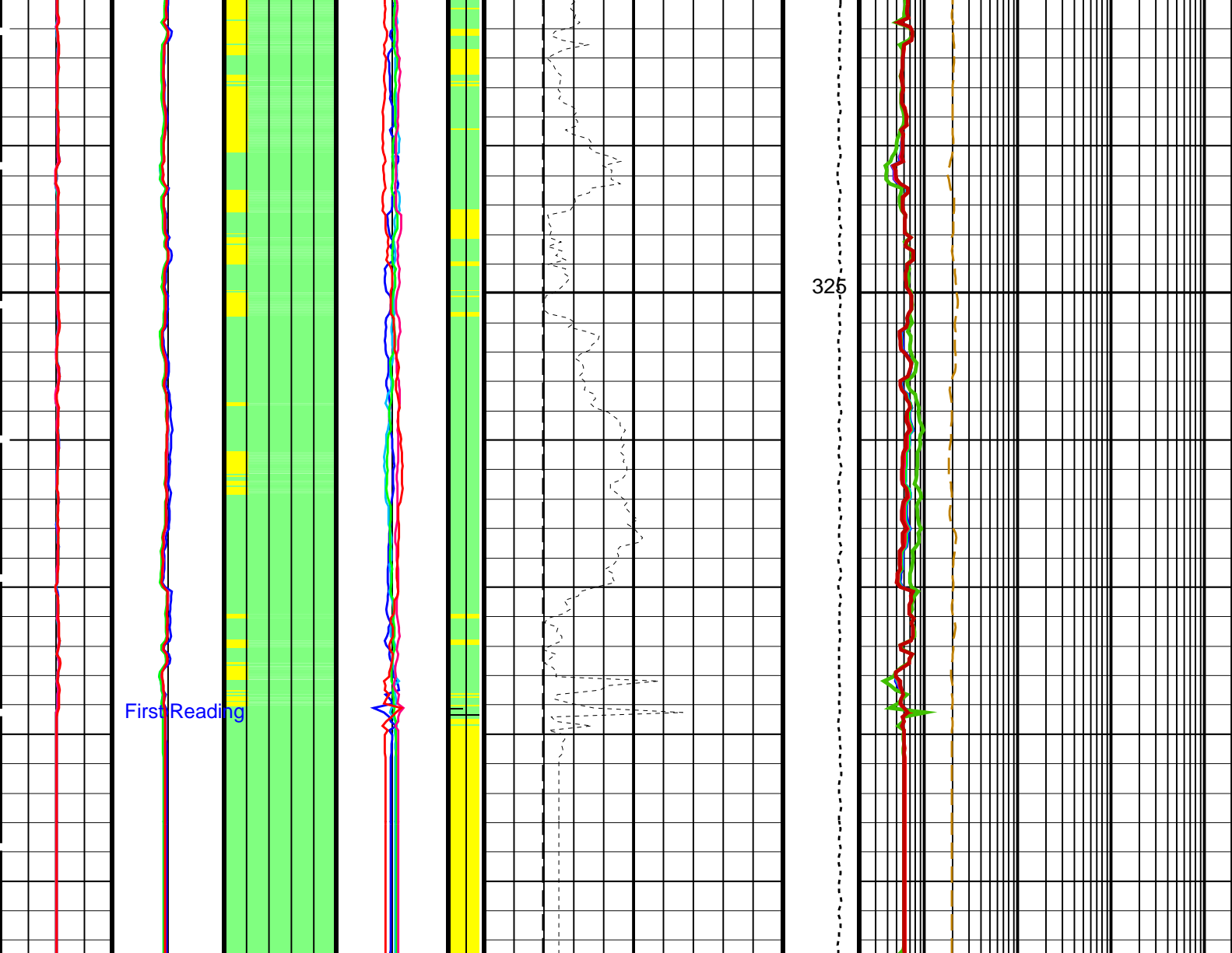
| RxoFlag | RTFlag |

GREEN = OK

YELLOW = SHOULDER BED EFFECT

BLACK = NOK





*** 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 algorithm, and from left to right :

| Wei1 | Wei2 | Wei3 | Wei4 | Wei5 |

GREEN = OK

YELLOW = Contribution QUESTIONABLE

BLACK = Contribution UNRELIABLE

TRACK R5_LQC

RESISTIVITY QUALITY INDICATOR

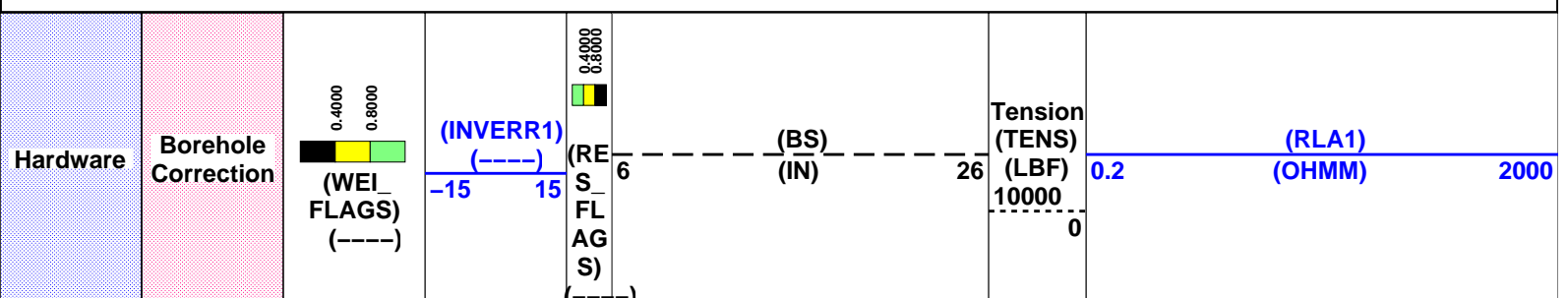
LQC flags on RXO_HRLT & RT_HRLT, and from left to right :

| RxoFlag | RTFlag |

GREEN = OK

YELLOW = SHOULDER BED EFFECT

BLACK = NOK



(MONSYM1) () -4 (-----) 4	(CCRA1) (-----) 0.8 1.2	Inversion Weight	(INVERR2) (-----) -15 15	(DI_HRLT) (IN) 6 26	(RLA2) (OHMM) 0.2 2000
(MONSYM2) () -4 (-----) 4	(CCRA2) (-----) 0.8 1.2		(INVERR3) (-----) -15 15	REPEAT SECTION	(RLA3) (OHMM) 0.2 2000
(MONSYM3) () -4 (-----) 4	(CCRA3) (-----) 0.8 1.2		(INVERR4) (-----) -15 15		(RLA4) (OHMM) 0.2 2000
(MONSYM4) () -4 (-----) 4	(CCRA4) (-----) 0.8 1.2		(INVERR5) (-----) -15 15		(RLA5) (OHMM) 0.2 2000
(MONSYM5) () -4 (-----) 4	(CCRA5) (-----) 0.8 1.2	Inversion			(RXO_HRLT) (OHMM) 0.2 2000
					(RM_HRLT) (OHMM) 0.02 200
					(RT_HRLT) (OHMM) 0.2 2000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
HNGB-B: Hostile Natural Gamma Ray Sonde			
BAR1	HNGB Detector 1 Barite Constant	1	
BAR2	HNGB Detector 2 Barite Constant	1	
BHK	HNGB Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
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	HNGB Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
H1P	HNGB Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGB Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGB Borehole Potassium Running Average	-0.00299249	
HALF	HNGB Alpha Filter Length	60	IN
HCRB	HNGB Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	
HNPE	HNGB Processing Enable	YES	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
S1BI	HNGB Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGB Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGB Standard Gamma-Ray Correction Flag	YES	
SHT	Surface Hole Temperature	68	DEGF
TPOS	Tool Position	ECCE	
VBA1	HNGB Detector 1 Variable Barite Factor Running Average	0.96889	
VBA2	HNGB Detector 2 Variable Barite Factor Running Average	0.965679	
HRLT-B: High Resolution Laterolog Array - B			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	19.969	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	

FREQ1	HRLT Frequency Index for Mode 1	120	
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	0.01	DF/F
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	
PROCSP0	Sonde Position	Centered	
SHT	Surface Hole Temperature	68	DEGF
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	OFF	
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	
EDTC-B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	50	DEGF
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	0.01	DF/F
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	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	68	DEGF
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			
ALTDCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	10.750	IN
CWEI	Casing Weight	43.00	LB/F
DFD	Drilling Fluid Density	1.25	G/C3
DO	Depth Offset for Playback	-1005.0	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	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	1364.89	M
TDD	Total Depth – Driller	1365.00	M
TDL	Total Depth – Logger	1365.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: HRLT_LQC Vertical Scale: 1:200 Graphics File Created: 06-Jan-2012 09:18

OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	HLDS	19C0-187
LDSC-B	19C0-187	EDTC-B	19C0-187

Input DLIS Files

DEFAULT	NGS_HRLA_LDL_012LUP	FN:16	PRODUCER	05-Jan-2012 01:09	1353.3 M	1278.0 M
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Output DLIS Files

DEFAULT	NGS_HRLA_LDL_032PUP	FN:44	PRODUCER	06-Jan-2012 09:18
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Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check							
Master: 17-Nov-2011 7:57 Before: 26-Nov-2011 0:21 After: 8-Dec-2011 1:11							
Na 511 Peak Loc	40.00	39.70	39.69	39.60	-0.09224	1.000	
Na 511 Peak Res	15.50	15.50	15.07	14.85	-0.2178	2.000	%
High Voltage	1150	1176	1168	1164	-3.540	N/A	V
Na 1785 Peak Loc	142.6	142.1	141.8	143.0	1.198	7.000	
Na 1785 Peak Res	8.500	8.309	8.731	7.037	-1.693	2.000	%
Temperature	15.50	29.76	21.55	20.40	-1.158	N/A	DEGC
Na Count Rate	45.00	20.77	21.01	20.72	-0.2956	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check							
Master: 17-Nov-2011 7:57 Before: 26-Nov-2011 0:21 After: 8-Dec-2011 1:11							
Na 511 Peak Loc	40.00	39.60	39.49	39.54	0.04988	1.000	
Na 511 Peak Res	15.50	16.99	15.91	15.93	0.01764	2.000	%
High Voltage	1150	1109	1091	1088	-3.384	N/A	V
Na 1785 Peak Loc	142.6	142.6	142.3	140.3	-1.968	7.000	
Na 1785 Peak Res	8.500	9.914	8.591	8.815	0.2231	2.000	%
Temperature	15.50	29.91	21.84	22.02	0.1821	N/A	DEGC
Na Count Rate	45.00	21.44	20.97	21.04	0.06492	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration – Ratio Of Detector 1 To Detector 2							
Master: 17-Nov-2011 7:57 Before: 26-Nov-2011 0:21 After: 8-Dec-2011 1:11							
Coincidence Count Rate Ratio	1.000	0.9705	1.004	0.9862	-0.01783	0.05000	
High Resolution Laterolog Array – B Wellsite Calibration – HRLT M01							
Before: 5-Jan-2012 1:32							
HRLT M0-M1 Voltage Plus – 0	0	N/A	-318.4	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 1	0	N/A	-333.4	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 2	0	N/A	-334.7	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 3	0	N/A	-337.6	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 4	0	N/A	-325.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 5	0	N/A	-321.3	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 6	0	N/A	324.9	N/A	N/A	9.681	UV
HRLT M0-M1 Voltage Plus – 7	0	N/A	-322.7	N/A	N/A	9.681	UV
High Resolution Laterolog Array – B Wellsite Calibration – HRLT M12							
Before: 5-Jan-2012 1:32							
HRLT M1-M2 Voltage Plus – 0	0	N/A	1755	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 1	0	N/A	1833	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 2	0	N/A	1837	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 3	0	N/A	1854	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 4	0	N/A	1789	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus – 5	0	N/A	1769	N/A	N/A	53.42	UV

HRLT M1-M2 Voltage Plus - 5	0	N/A	1785	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 6	0	N/A	-1794	N/A	N/A	53.42	UV
HRLT M1-M2 Voltage Plus - 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT M23

Before: 5-Jan-2012 1:32

HRLT M2-M3 Voltage Plus - 0	0	N/A	1741	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 1	0	N/A	1831	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 2	0	N/A	1835	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 3	0	N/A	1857	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 4	0	N/A	1785	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 5	0	N/A	1766	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 6	0	N/A	-1780	N/A	N/A	53.42	UV
HRLT M2-M3 Voltage Plus - 7	0	N/A	1781	N/A	N/A	53.42	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V34

Before: 5-Jan-2012 1:32

HRLT A3-A4 Voltage Plus - 0	0	N/A	68450	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 1	0	N/A	71800	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 2	0	N/A	72260	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 3	0	N/A	73360	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 4	0	N/A	70490	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 5	0	N/A	69730	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 6	0	N/A	-68800	N/A	N/A	2100	UV
HRLT A3-A4 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V45

Before: 5-Jan-2012 1:32

HRLT A4-A5 Voltage Plus - 0	0	N/A	68730	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 1	0	N/A	72160	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 2	0	N/A	72610	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 3	0	N/A	73700	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 4	0	N/A	70790	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 5	0	N/A	70010	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 6	0	N/A	-69170	N/A	N/A	2100	UV
HRLT A4-A5 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT V56

Before: 5-Jan-2012 1:32

HRLT A5-A6 Voltage Plus - 0	0	N/A	68630	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 1	0	N/A	71880	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 2	0	N/A	72380	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 3	0	N/A	73490	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 4	0	N/A	70650	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 5	0	N/A	69900	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 6	0	N/A	-68910	N/A	N/A	2100	UV
HRLT A5-A6 Voltage Plus - 7	0	N/A	70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VTP

Before: 5-Jan-2012 1:32

HRLT Torpedo-M0 Voltage - 0	0	N/A	-68290	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 1	0	N/A	-72210	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 2	0	N/A	-72650	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 3	0	N/A	-73770	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 4	0	N/A	-70840	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 5	0	N/A	-70050	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 6	0	N/A	69160	N/A	N/A	2100	UV
HRLT Torpedo-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT VBD

Before: 5-Jan-2012 1:32

HRLT Bridle#9-M0 Voltage - 0	0	N/A	-68290	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 1	0	N/A	-72200	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 2	0	N/A	-72640	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 3	0	N/A	-73760	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 4	0	N/A	-70840	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 5	0	N/A	-70050	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 6	0	N/A	69140	N/A	N/A	2100	UV
HRLT Bridle#9-M0 Voltage - 7	0	N/A	-70000	N/A	N/A	2100	UV

High Resolution Laterolog Array - B Wellsite Calibration - HRLT ISO

Before: 5-Jan-2012 1:32

HRLT Source Current Plus - 0	0	N/A	284.7	N/A	N/A	8.520	UA
HRLT Source Current Plus - 1	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 2	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 3	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 4	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 5	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 6	0	N/A	281.1	N/A	N/A	8.520	UA
HRLT Source Current Plus - 7	0	N/A	281.1	N/A	N/A	8.520	UA

High Resolution Laterolog Array - B Wellsite Calibration - HRLT MV

Before: 5-Jan-2012 1:32

HRLT Vertical Voltage PI - 0	0	N/A	-321.4	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 1	0	N/A	-327.6	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 2	0	N/A	-328.3	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 3	0	N/A	-329.8	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 4	0	N/A	-315.3	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 5	0	N/A	-326.6	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 6	0	N/A	331.9	N/A	N/A	9.681	UV
HRLT Vertical Voltage PI - 7	0	N/A	-322.7	N/A	N/A	9.681	UV

Hostile Litho-Density Sonde Wellsite Calibration - Background Measurement

Master: 17-Nov-2011 16:03 Before: 17-Nov-2011 15:55 After: 17-Dec-2011 8:50

SS Cs Resolution Bkg	9.000	7.741	7.618	7.594	-0.02418	1.800	%
LS Cs Resolution Bkg	9.000	8.089	8.025	8.065	0.04037	1.800	%
LSW1 Background	100.0	87.45	87.45	87.53	0.08757	0.03000	CPS
LSW2 Background	100.0	80.38	80.38	79.58	-0.7984	0.03000	CPS
LSW3 Background	200.0	180.0	180.0	180.4	0.3738	0.03000	CPS
LSW4 Background	250.0	224.8	224.8	226.5	1.701	0.03000	CPS
LSW5 Background	600.0	526.0	526.0	519.3	-6.693	0.03000	CPS
SSW1 Background	100.0	85.28	85.28	84.82	-0.4580	0.03000	CPS
SSW2 Background	200.0	147.3	147.3	146.1	-1.170	0.03000	CPS
SSW3 Background	500.0	409.2	409.2	411.5	2.230	0.03000	CPS
SSW4 Background	270.0	221.7	221.7	221.2	-0.4445	0.03000	CPS
SSW5 Background	200.0	158.7	158.7	157.7	-1.014	0.03000	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Aluminum Measurement

Master: 17-Nov-2011 16:33

LSW1 Aluminum	600.0	560.2	N/A	N/A	N/A	N/A	CPS
LSW2 Aluminum	900.0	815.4	N/A	N/A	N/A	N/A	CPS
LSW3 Aluminum	1100	984.8	N/A	N/A	N/A	N/A	CPS
LSW4 Aluminum	580.0	493.4	N/A	N/A	N/A	N/A	CPS
LSW5 Aluminum	570.0	450.2	N/A	N/A	N/A	N/A	CPS
SSW1 Aluminum	2800	2639	N/A	N/A	N/A	N/A	CPS
SSW2 Aluminum	8000	7196	N/A	N/A	N/A	N/A	CPS
SSW3 Aluminum	11600	10050	N/A	N/A	N/A	N/A	CPS
SSW4 Aluminum	5000	4135	N/A	N/A	N/A	N/A	CPS
SSW5 Aluminum	660.0	504.7	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Lithology Measurement

Master: 17-Nov-2011 16:29

LSW1 Iron	400.0	389.4	N/A	N/A	N/A	N/A	CPS
LSW2 Iron	730.0	674.0	N/A	N/A	N/A	N/A	CPS
LSW3 Iron	1000	897.0	N/A	N/A	N/A	N/A	CPS
LSW4 Iron	520.0	464.0	N/A	N/A	N/A	N/A	CPS
LSW5 Iron	470.0	424.7	N/A	N/A	N/A	N/A	CPS
SSW1 Iron	2100	1967	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	6145	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	9395	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3871	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	460.2	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration - Caliper Calibration

Before: 17-Dec-2011 9:53

HLDS Caliper Small Ring	12.00	N/A	14.33	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	18.10	N/A	N/A	N/A	IN

Enhanced DTS Cartridge Wellsite Calibration - EDTC Accelerometer Calibration

Before: 4-Jan-2012 23:45

EDTC Z-Axis Acceleration	9.810	N/A	9.748	N/A	N/A	N/A	M/S2
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Enhanced DTS Cartridge Wellsite Calibration - Detector Calibration

Before: 27-Dec-2011 9:12 After: Calibration not done

Gamma Ray (Jig - Bkg)	160.1	N/A	160.1	N/A	N/A	0.09091	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

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




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		-318.4	-322.7	-280.7	-379.7
1	Before		-333.4	-322.7	-280.7	-379.7
2	Before		-334.7	-322.7	-280.7	-379.7
3	Before		-337.6	-322.7	-280.7	-379.7
4	Before		-325.3	-322.7	-280.7	-379.7
5	Before		-321.3	-322.7	-280.7	-379.7
6	Before		324.9	322.7	379.7	280.7
7	Before		-322.7	-322.7	-280.7	-379.7
		(Minimum) (Nominal) (Maximum)				
Before: 5–Jan–2012 1:32						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT M12						
Idx	Phase	HRLT M1–M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1755	1781	2095	1549
1	Before		1833	1781	2095	1549
2	Before		1837	1781	2095	1549
3	Before		1854	1781	2095	1549
4	Before		1789	1781	2095	1549
5	Before		1769	1781	2095	1549
6	Before		-1794	-1781	-1549	-2095
7	Before		1781	1781	2095	1549
		(Minimum) (Nominal) (Maximum)				
Before: 5–Jan–2012 1:32						









High Resolution Laterolog Array – B Wellsite Calibration						
HRLT M23						
Idx	Phase	HRLT M2–M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1741	1781	2095	1549
1	Before		1831	1781	2095	1549
2	Before		1835	1781	2095	1549
3	Before		1857	1781	2095	1549
4	Before		1785	1781	2095	1549

5	Before		1766	1781	2095	1549
6	Before		-1780	-1781	-1549	-2095
7	Before		1781	1781	2095	1549
			(Minimum)	(Nominal)	(Maximum)	









Before: 5-Jan-2012 1:32

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT V34						
Idx	Phase	HRLT A3–A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68450	70000	82360	60900
1	Before		71800	70000	82360	60900
2	Before		72260	70000	82360	60900
3	Before		73360	70000	82360	60900
4	Before		70490	70000	82360	60900
5	Before		69730	70000	82360	60900
6	Before		-68800	-70000	-60900	-82360
7	Before		70000	70000	82360	60900
			(Minimum)	(Nominal)	(Maximum)	

Before: 5-Jan-2012 1:32









High Resolution Laterolog Array – B Wellsite Calibration						
HRLT V45						
Idx	Phase	HRLT A4–A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68730	70000	82360	60900
1	Before		72160	70000	82360	60900
2	Before		72610	70000	82360	60900
3	Before		73700	70000	82360	60900
4	Before		70790	70000	82360	60900
5	Before		70010	70000	82360	60900
6	Before		-69170	-70000	-60900	-82360
7	Before		70000	70000	82360	60900
			(Minimum)	(Nominal)	(Maximum)	









Before: 5-Jan-2012 1:32









High Resolution Laterolog Array – B Wellsite Calibration						
HRLT V56						
Idx	Phase	HRLT A5–A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68630	70000	82360	60900
1	Before		71880	70000	82360	60900
2	Before		72380	70000	82360	60900
3	Before		73490	70000	82360	60900
4	Before		70650	70000	82360	60900
5	Before		69900	70000	82360	60900
6	Before		-68910	-70000	-60900	-82360
7	Before		70000	70000	82360	60900
			(Minimum)	(Nominal)	(Maximum)	








Before: 5-Jan-2012 1:32

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT VTP						
Idx	Phase	HRLT A6–A7 Voltage Plus UV	Value	Nominal	Maximum	Minimum

Idx	Phase	HRLT Torpedo-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68290	-70000	-60900	-82360
1	Before		-72210	-70000	-60900	-82360
2	Before		-72650	-70000	-60900	-82360
3	Before		-73770	-70000	-60900	-82360
4	Before		-70840	-70000	-60900	-82360
5	Before		-70050	-70000	-60900	-82360
6	Before		69160	70000	82360	60900
7	Before		-70000	-70000	-60900	-82360
(Minimum) (Nominal) (Maximum)						
Before: 5-Jan-2012 1:32						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT VBD						
Idx	Phase	HRLT Bridle#9-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68290	-70000	-60900	-82360
1	Before		-72200	-70000	-60900	-82360
2	Before		-72640	-70000	-60900	-82360
3	Before		-73760	-70000	-60900	-82360
4	Before		-70840	-70000	-60900	-82360
5	Before		-70050	-70000	-60900	-82360
6	Before		69140	70000	82360	60900
7	Before		-70000	-70000	-60900	-82360
(Minimum) (Nominal) (Maximum)						
Before: 5-Jan-2012 1:32						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT ISO						
Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		284.7	284.0	334.1	247.0
1	Before		281.1	281.1	330.7	244.4
2	Before		281.1	281.1	330.7	244.4
3	Before		281.1	281.1	330.7	244.4
4	Before		281.1	281.1	330.7	244.4
5	Before		281.1	281.1	330.7	244.4
6	Before		281.1	281.1	330.7	244.4
7	Before		281.1	281.1	330.7	244.4
(Minimum) (Nominal) (Maximum)						
Before: 5-Jan-2012 1:32						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT MV						
Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-321.4	-322.7	-280.7	-379.7
1	Before		-327.6	-322.7	-280.7	-379.7
2	Before		-328.3	-322.7	-280.7	-379.7
3	Before		-329.8	-322.7	-280.7	-379.7
4	Before		-315.3	-322.7	-280.7	-379.7
5	Before		-326.6	-322.7	-280.7	-379.7
						

6	Before		331.9	322.7	379.7	280.7
7	Before		-322.7	-322.7	-280.7	-379.7
		(Minimum) (Nominal) (Maximum)				

Before: 5-Jan-2012 1:32

Hostile Litho-Density Sonde / Equipment Identification

Primary Equipment:

Hostile Litho Density Sonde	HLDS - D	45
Hostile Litho Density High Voltage	HLDV - D	45
Gamma Source Radioactive	GSR - Z	2397

Auxiliary Equipment:

Hostile Litho Density Pad	HLDP - C	45
Hostile Litho Density High Voltage Housi	HEH - H	47

Litho-Density Spectroscopy Cartridge - B / Equipment Identification

Primary Equipment:

LDSC Cartridge	LDSC - B	521
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Auxiliary Equipment:

LDSC Housing	LDSH - A	319
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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
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Company: **Lamont Doherty**

Schlumberger

Well: **Expedition 339, Site U1390 GC-02B**

Field: **Mediterranean Outflow (Portugal)**

Rig: **JOIDES Resolution**

Ocean: **Atlantic**

High Resolution Laterolog Array

Hostile Natural Gamma Ray