

Company: SAVIA PERU S.A.
Well: LO6-27D
Field: LOBITOS
Rig Name: PEPESA-40 Country: PERU

RESISTIVITY LOGARITHMIC LOG
SP-BHC-HRLT-TLD-HGNS-GR
SCALE 5"/100'

Location:
LOBITOS
N: 9508655.23
E: 459043.07
Permanent Datum:
Log Measured From:
Drilling Measured From:

Elev.:
K.B.
G.L.
D.F.

50.00 ft
-335.00 ft
50.00 ft

Mean Sea Level
Drill Floor
Drill Floor

50.00 ft
above Perm. Datum

State:
PIURA

Max. Hole Deviation
49.5 deg

Longitude:
81° 22' 9.012" W

Latitude:
4° 26' 42.606" S

Log Name: PEPESA-40
Field: LOBITOS
Location: LOBITOS
Well: LO6-27D
Company: SAVIA PERU S.A.

Logging Date	05-Mar-2013		
Run Number	1		
Depth Driller	11094.00 ft		
Schlumberger Depth	11094.00 ft		
Bottom Log Interval	9780.00 ft		
Top Log Interval	7918.25 ft		
Casing Driller Size @ Depth	7 in @ 7921.00 ft		
Casing Schlumberger	7918.25 ft		
Bit Size	6.125 in		
Type Fluid In Hole	BARADRL-N		
Density	Viscosity	64 s	
Fluid Loss	PH	5 cm3	9.8
Source of Sample	Flowline		
RM @ Meas Temp	0.6 ohm.m @ 73.5 degF		
RMF @ Meas Temp	0.44 ohm.m @ 73.5 degF		
RMC @ Meas Temp	0.85 ohm.m @ 71.9 degF		
Source RMF	RMC	Pressed	Pressed
RM @ BHT	RMF @ BHT	0.35 @ 132.97	0.25 @ 132.97
Max Recorded Temperatures			
Circulation Stopped		Time	04-Mar-2013 04:30:00
Logger on Bottom		Time	05-Mar-2013 20:16:36
Unit Number	Location:	826	PETA
Recorded By	S. Roman / C. Hidalgo		
Witnessed By	Augusto Ortega		

Disclaimer

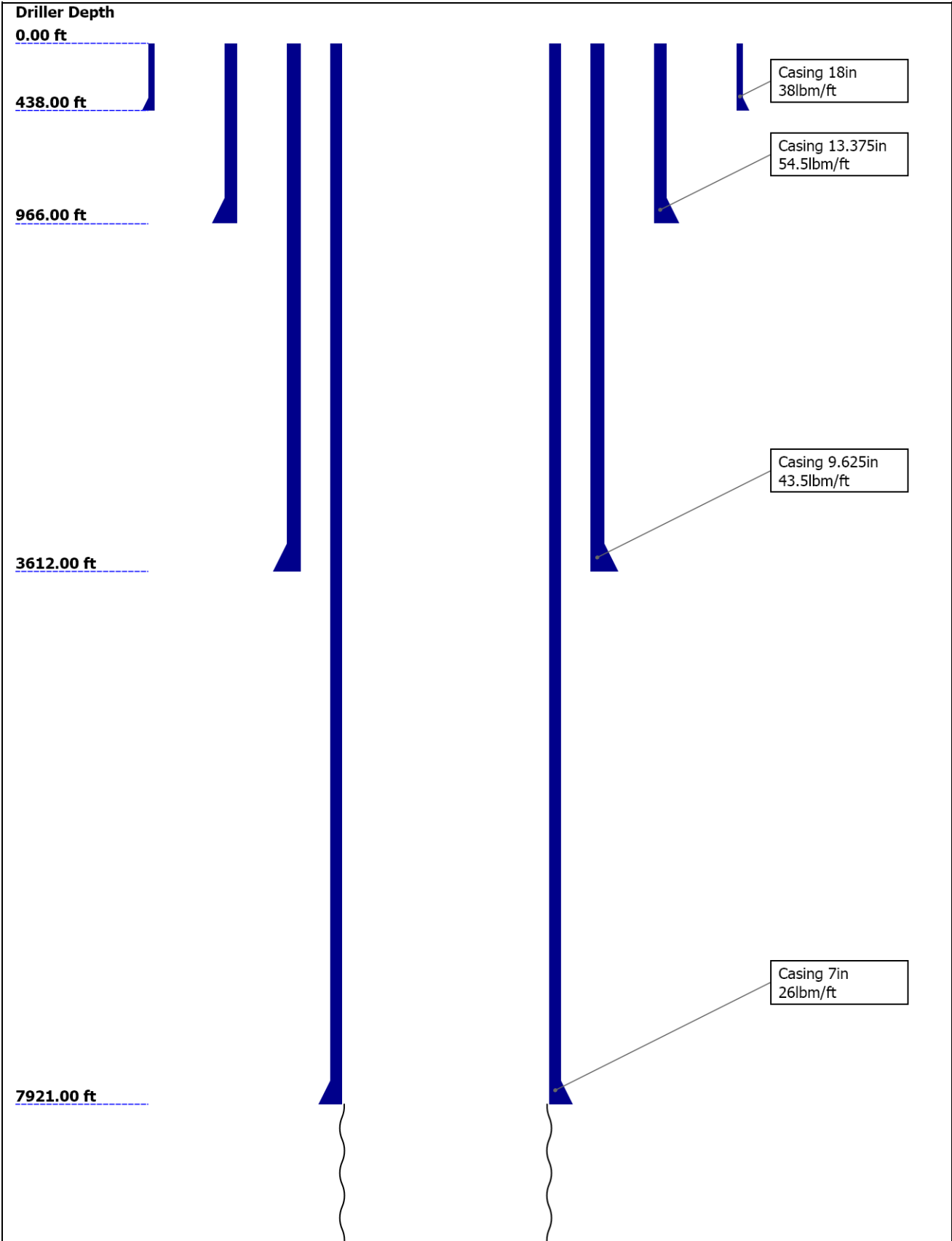
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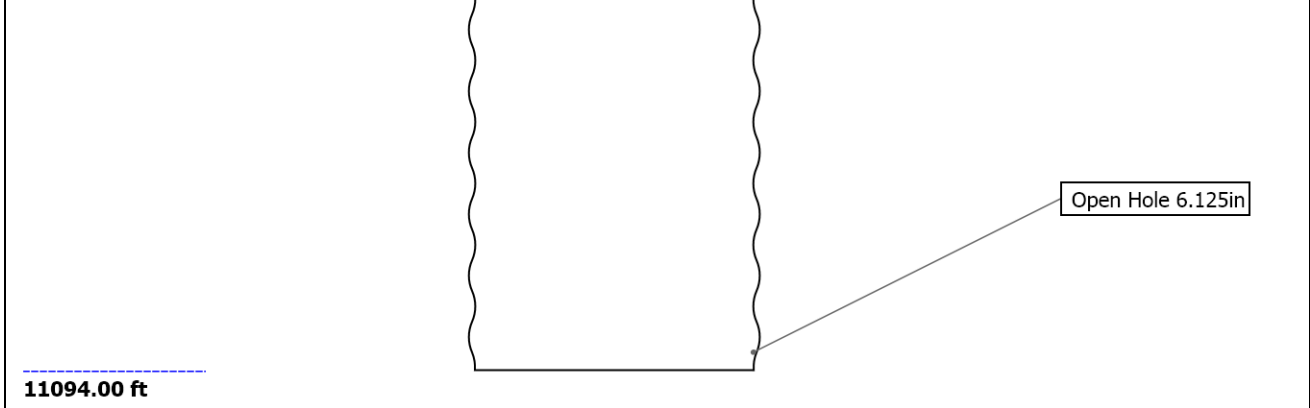
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Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	6.125					
Top Driller (ft)	7921					
Top Logger (ft)	7921					
Bottom Driller (ft)	11094					
Bottom Logger (ft)	11094					
Casing						
Size (in)	18	13.375	9.625	7		
Weight (lbm/ft)	38	54.5	43.5	26		
Inner Diameter (in)	17.609	12.607	8.758	6.283		
Grade	J55	K55	N80	N80		
Top Driller (ft)	0	0	0	0		
Top Logger (ft)	0	0	0	0		
Bottom Driller (ft)	438	966	3612	7921		
Bottom Logger (ft)	438	966	3612	7918.25		

Operational Run Summary

Parameter (unit)	1					
Date Log Started	05-Mar-2013					
Time Log Started	15:34:17					
Date Log Finished	05-Mar-2013					
Time Log Finished	23:06:55					
Top Log Interval (ft)	7918.25					
Bottom Log Interval (ft)	9780.00					
Total Depth (ft)	9541.52					
Max Hole Deviation (deg)	49.50					
Azimuth of Max Deviation (deg)	NaN					
Bit Size (in)	6.125					
Logging Unit Number	826					
Logging Unit Location	PETA					
Recorded By	S. Roman / C. Hidalgo					
Witnessed By	Augusto Ortega					

Service Order Number	C3PZ-00033					
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Borehole Fluids

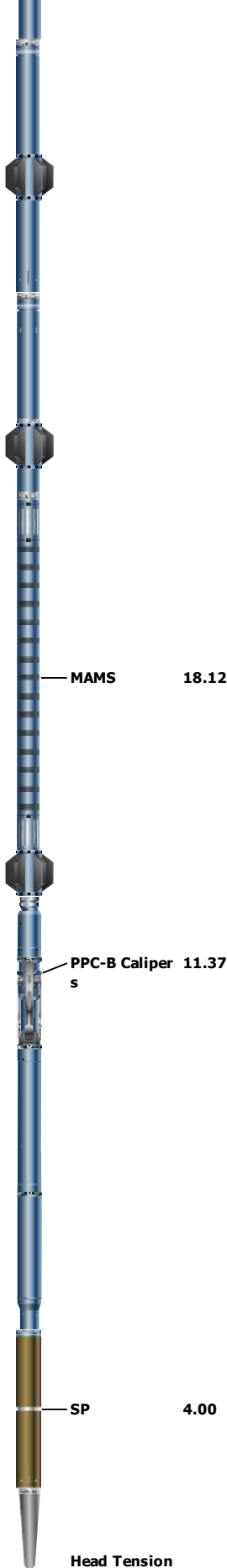
Parameter(unit)	1					
Fluid Type	Water					
Fluid Name	DFT_WATER_B ARADRIL - DFT_WATER_B ARADRIL_N					
Max Recorded Temperatures (degF)	132.97					
Source of Sample	Flowline					
Salinity (ppm)	1307					
Density (lbm/gal)	11.9					
Funnel Viscosity (s)	64					
Fluid Loss (cm3)	5					
PH	9.8					
Date/Time Circulation Stopped	04-Mar-2013 04:30:00					
Date Logger on Bottom	05-Mar-2013					
Time Logger on Bottom	20:16:36					
Source RMF	Pressed					
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	0.6 @ 73.5					
RMF @ Meas Temp (ohm.m@degF)	0.44 @ 73.5					
RMC @ Meas Temp (ohm.m@degF)	0.85 @ 71.9					
RM @ BHT (ohm.m@degF)	0.35 @ 132.97					
RMF @ BHT (ohm.m@degF)	0.25 @ 132.97					
RMC @ BHT (ohm.m@degF)	0.48 @ 132.97					
Total Solid (%)	19.8					
High Gravity Solids (%)						

Remarks and Equipment Summary

1: Toolstring				1: Remarks	
Equip name LEH-QT LEH-QT	Length 93.62		MP name	Offset	Log objective: Nuclear, resistivity and sonic evaluation of 6.125" OH section.
					Open hole section started with a large washout below the 7in Casing shoe. Average diameter = 10.5 in until 8115 ft.
AH-369:938	90.71				Tool ran as per tool sketch. 4 x 0.5"standoffs used to eccentricize HRLA. HGNS without bowspring in agreement with client.
DTC-H:8280 ECH-KC:9357 DTC-H:8280	89.28		CTEM HV	88.38 0.00	Matrix = Limestone, Densty = 2.71 gr/cc as per client request.
SAH-E:918	86.28		TelStatus	86.28	Neutron environmental corrections: Hole size, mud cake, mud weight, borehole salinity and pressure & temperature.
			ToolStatus	86.28	Maximum depth reached: 9780 ft. CSG Shoe found at 7918.25 ft. Max recorded temperature 132.97 degF (from HGNS sensor).
AH-184[2]:572 6	83.41				Repeat section taken from 7950 ft to 8150 ft.
					Drillers TD was not reached, due to operational difficulties.
					Tool sticks @ 9780, 9236, 9168, 8822, and 8720 ft, due to tough logging conditions.
HGNS-H:3969 HGNH:3719 NSR-F:331 NPV-N	81.41		Temperature	81.38	
		GR	80.67	While POOH a consolidated piece of rock came out attached to the toolhead.	

SP data was affected by external factors.

MAST-B:8260 33.56
ECH-SF:8345
MAPC-BA:8356
MAMS-BA:8260



Lengths are in ft
Maximum Outer Diameter = 5.000 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters	1		
Conveyance Type	Wireline		

Log Sequence	Subsequent Trip in Hole		
Rig Up Length at Surface (ft)	213.28		
Rig Up Length at Bottom (ft)	213.32		
Reference Log Date	10-Feb-2013		
Reference Log Name	SP-PPC-HRLT-TLD-HGNS-GR		
Reference Log Run Number	1		
Depth Remark Parameters	1		
Depth Remark 1	All Schlumberger depth control procedures followed.		
Depth Remark 2	IDW used as primary depth control; Z-Chart used as secondary.		
Depth Measuring Device	1		
Type	IDW-JA		
Serial Number	4889		
Calibration Date	04-FEB-2013		
Calibrator Serial Number	10		
Calibration Cable Type	7-46ZVXS		
Wheel Correction 1	3.8		
Wheel Correction 2	-3.14		
Tension Device	1		
Type	CMTD-B/A		
Serial Number	2087		
Calibration Date	27-FEB-2013		
Calibrator Serial Number	1002		
Calibration Points	10		
Calibration RMS	22		
Calibration Peak Error	34		
Logging Cable	1		
Type	7-46ZV-XS		
Serial Number	U712148		
Logging Cable Length (ft)	24000.00		

Composite 1

Main Pass

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1, FCD	0	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS, GCSE_DOWN_PASS:1	583.86	ft3

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Log[4]:Up	Up	9525.96 ft	9835.83 ft	05-Mar-2013 7:59:41 PM	05-Mar-2013 8:12:24 PM	28.91 ft	false
1	Log[5]:Up	Up	7900.54 ft	9571.45 ft	05-Mar-2013 8:16:36 PM	05-Mar-2013 9:03:45 PM	29.93 ft	false

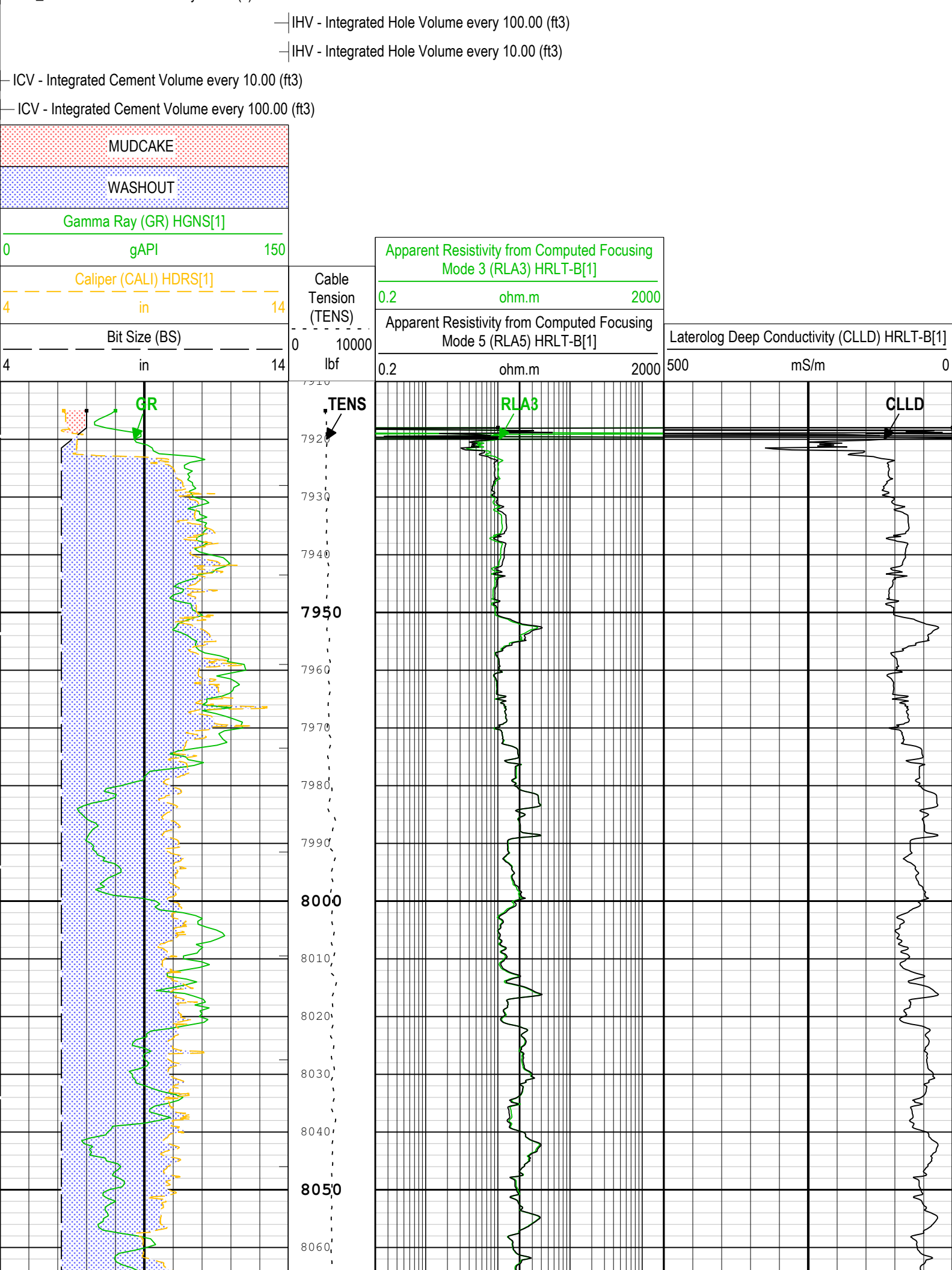
All depths are referenced to toolstring zero

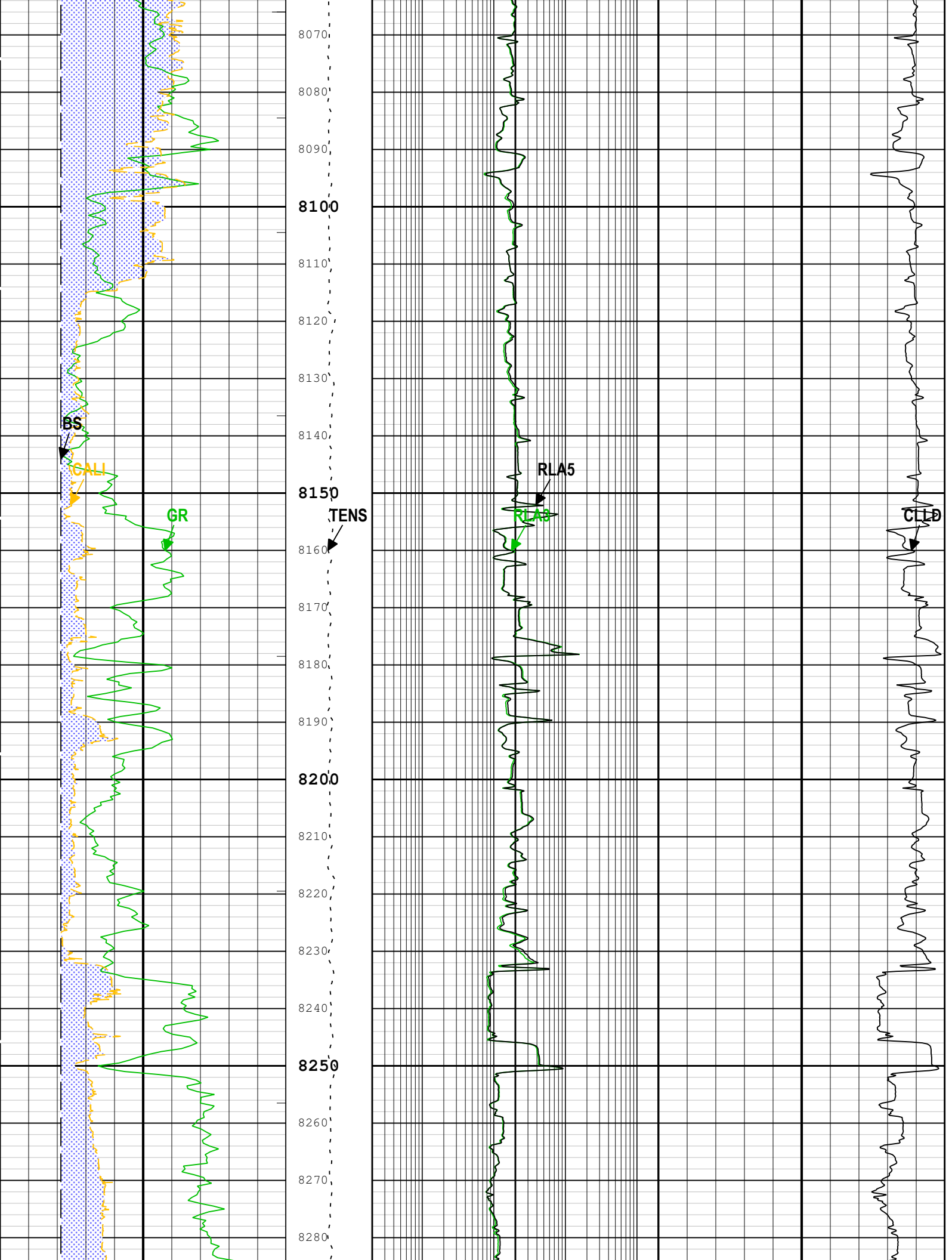
Log

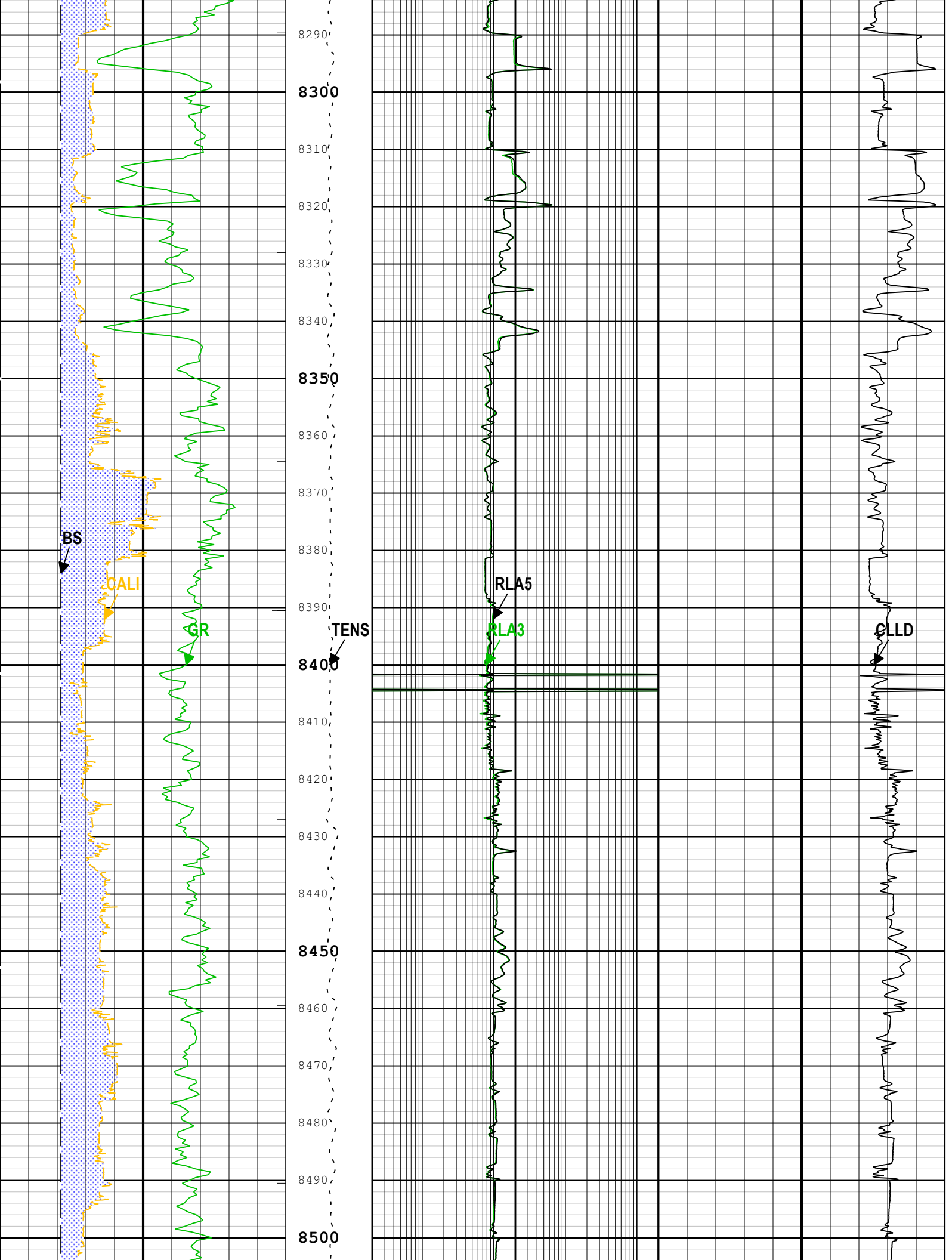
Composite 1

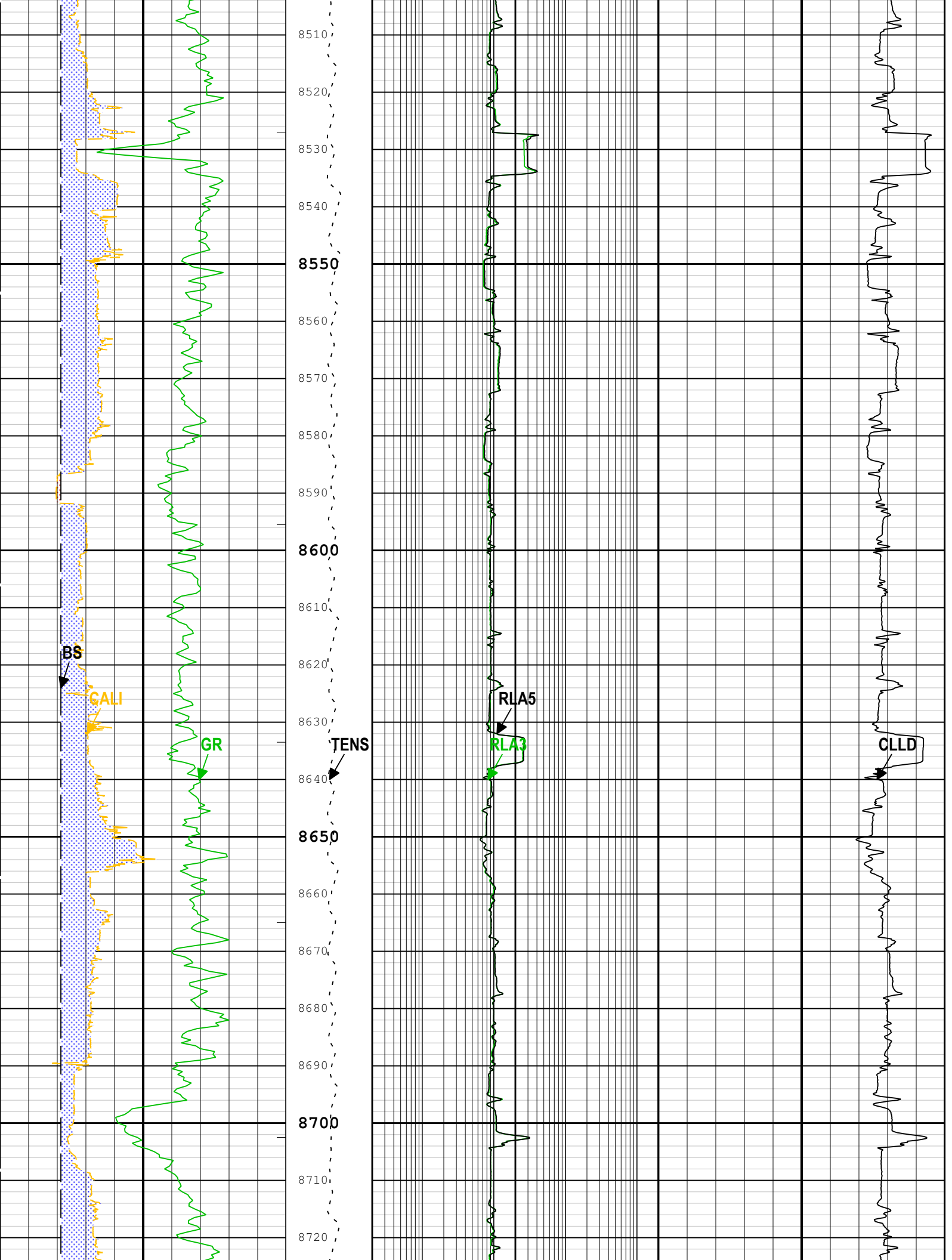
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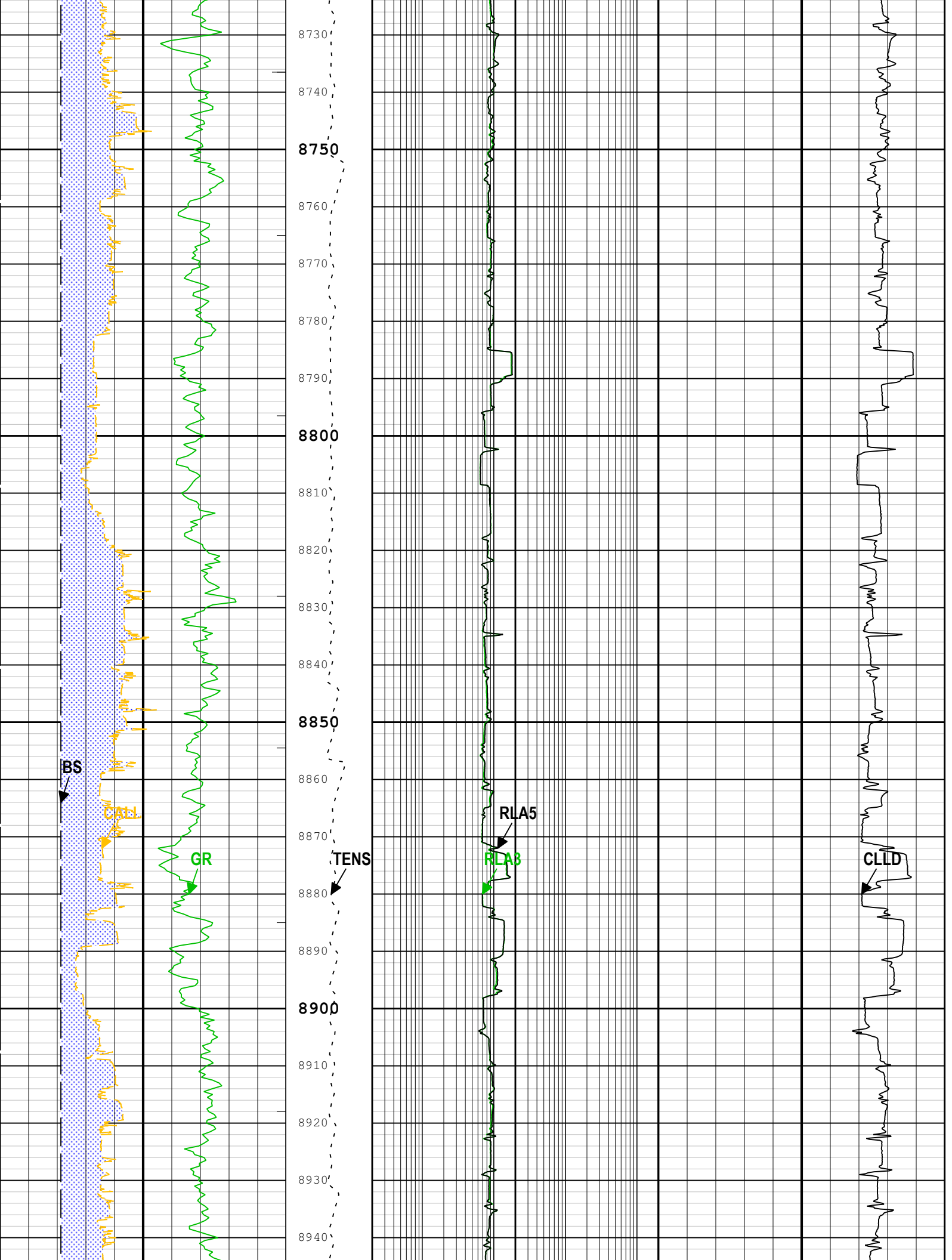
TIME 1900 - Time Marked every 60.00 (s)

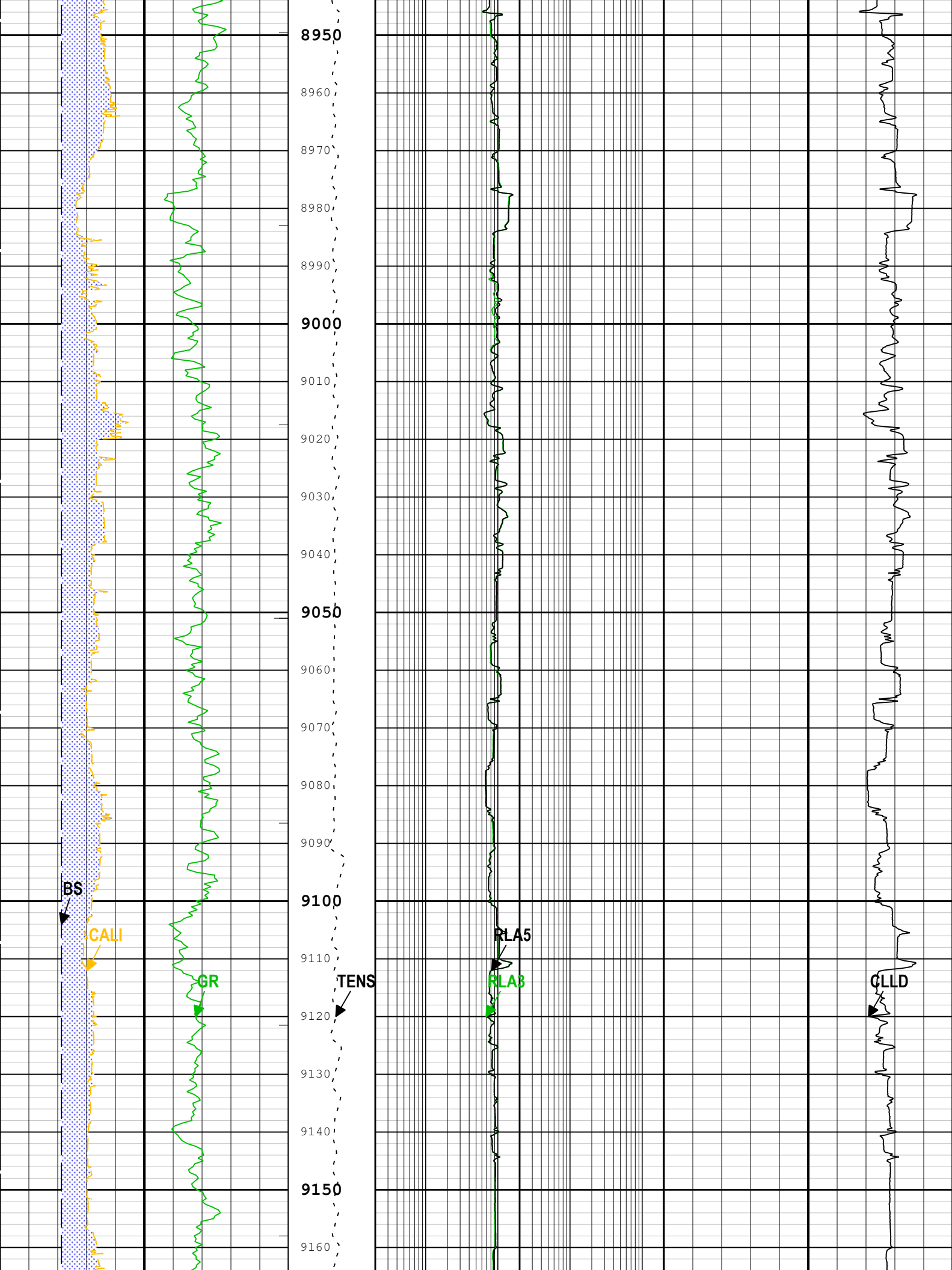


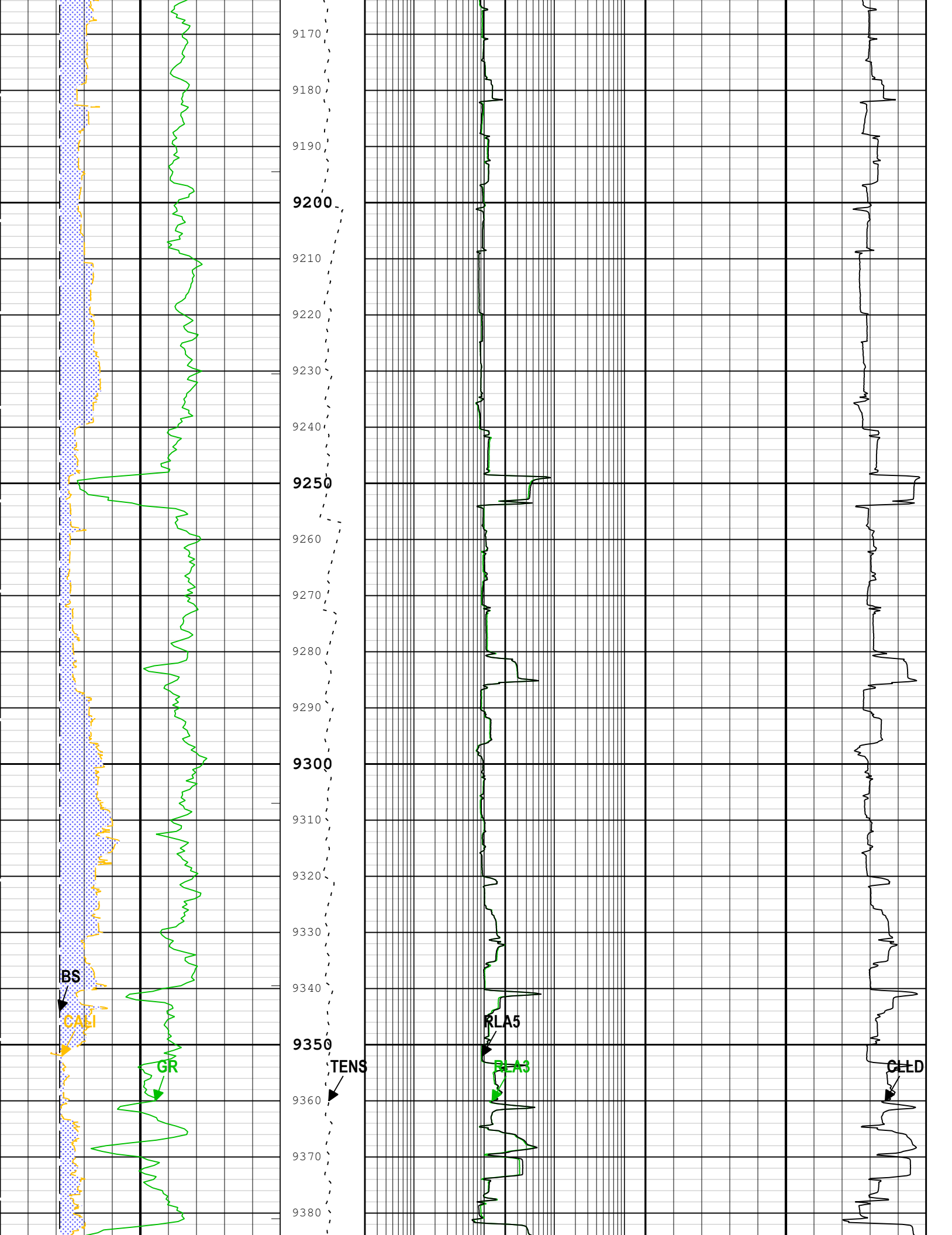


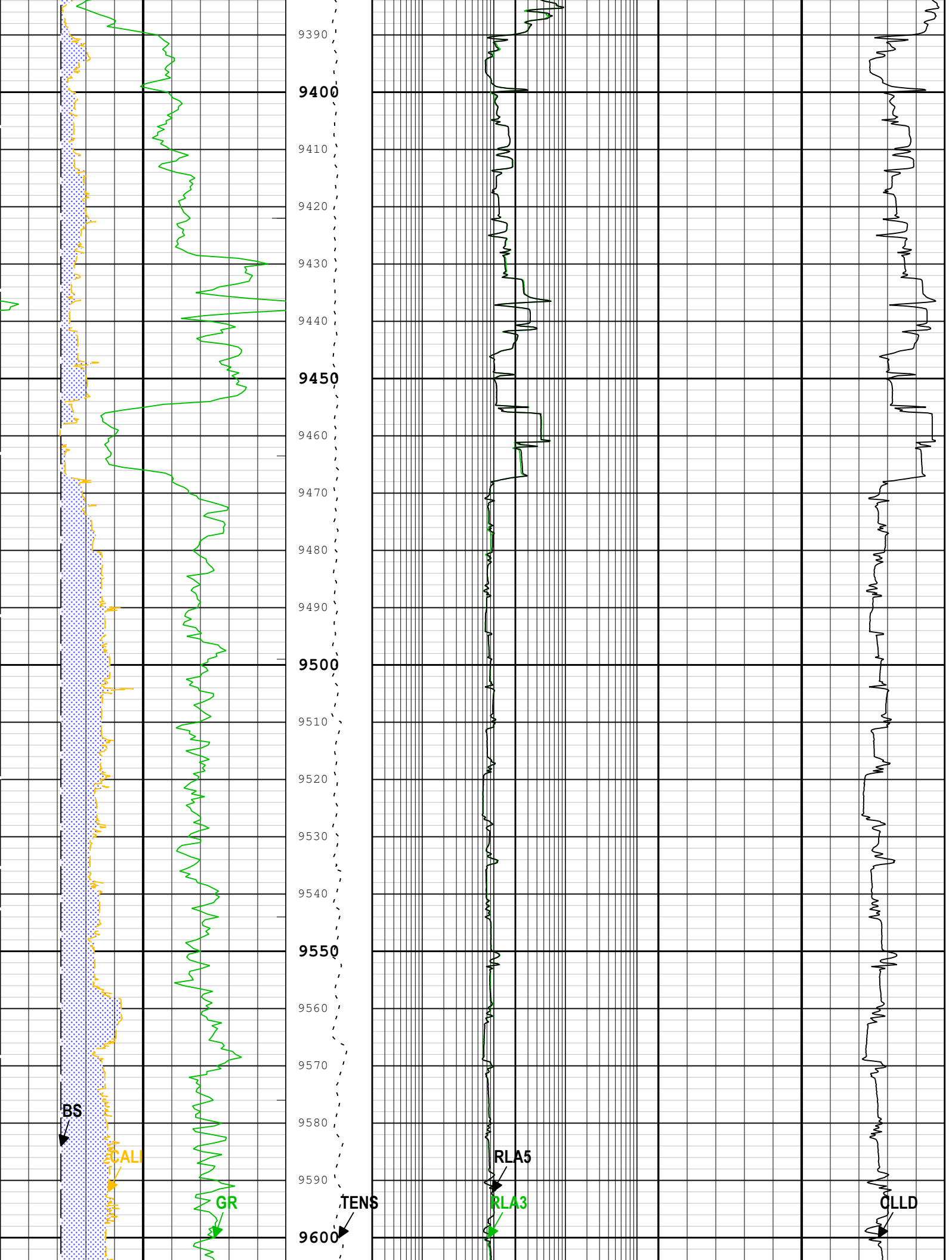


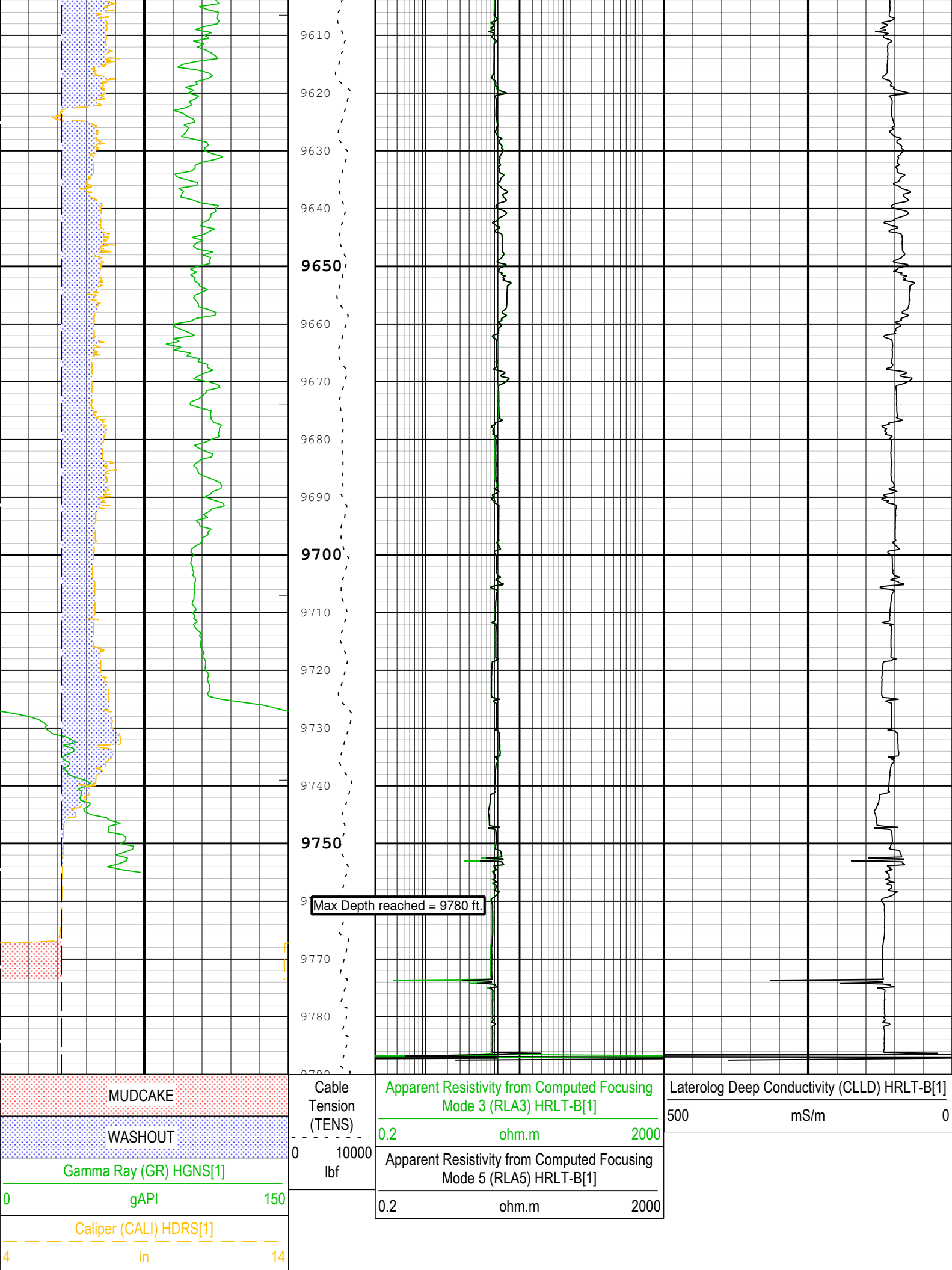












Bit Size (BS)

4in14

ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

Description: Format: Log (Resistivity logarithmic) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Apr-2013 02:40:52

Channel Processing Parameters

1: Parameters

Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	7918.25	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	7	in
DFD	Drilling Fluid Density	Borehole	11.9	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	MRES	
HRLT_PROCRM	Mud Resistivity Select	HRLT-B	HRLT Compute	
KFAC_HRLT	HRLT Geometrical Factor Option	HRLT-B	Sonde	
PROCMSO	Mechanical Standoff Size	HRLT-B	0.5	in
PROCSP0	Sonde Position	HRLT-B	Eccentered	
SOCN	Standoff Distance	HGNS-H	0	in

1Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	0	7910	7921
BS	6.125	7921	9790

All depth are actual.

Tool Control Parameters

1: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3590	ft/h

1

Repeat Analysis

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Log[5]:Up	Up	7900.54 ft	9571.45 ft	05-Mar-2013 8:16:36 PM	05-Mar-2013 9:03:45 PM	29.93 ft	false
1	Log[6]:Up	Up	7502.78 ft	8289.62 ft	05-Mar-2013 9:09:50 PM	05-Mar-2013 9:25:44 PM	29.96 ft	false

All depths are referenced to toolstring zero

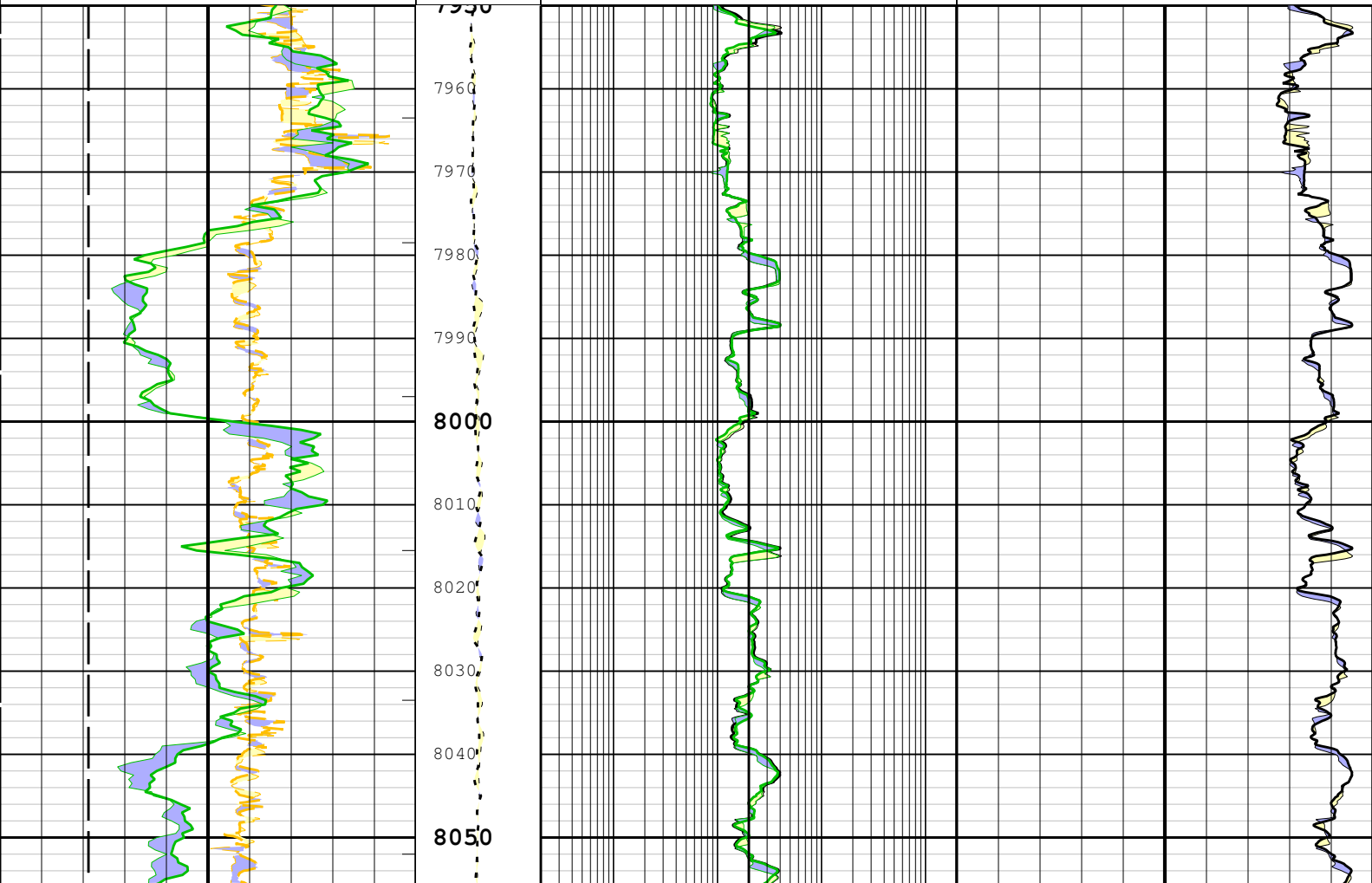
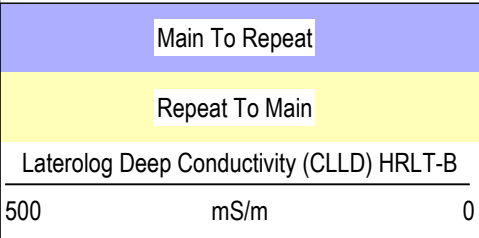
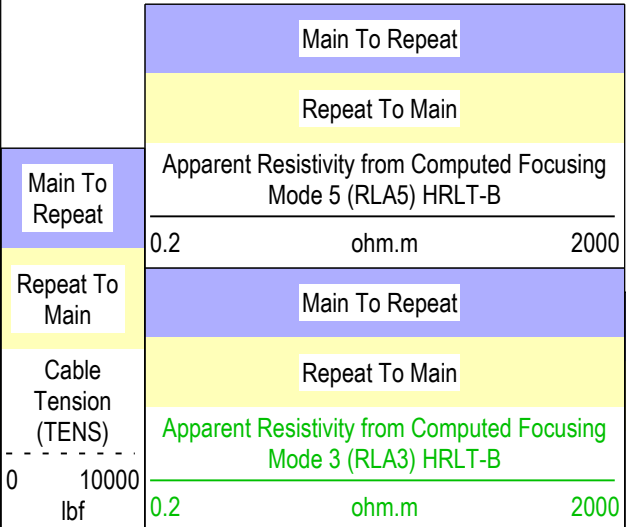
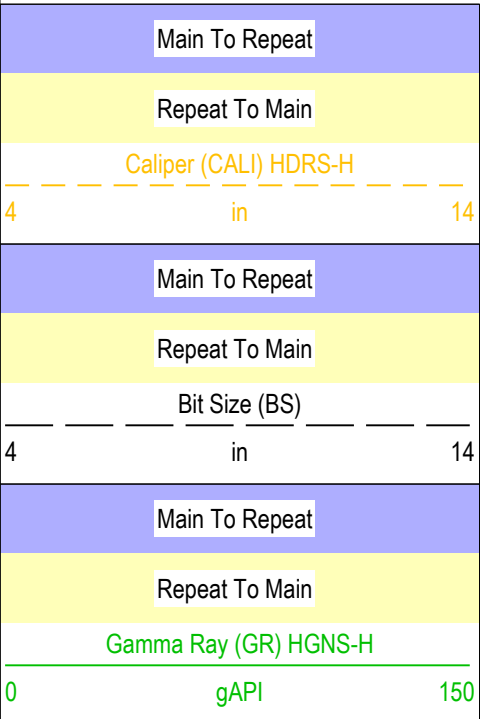
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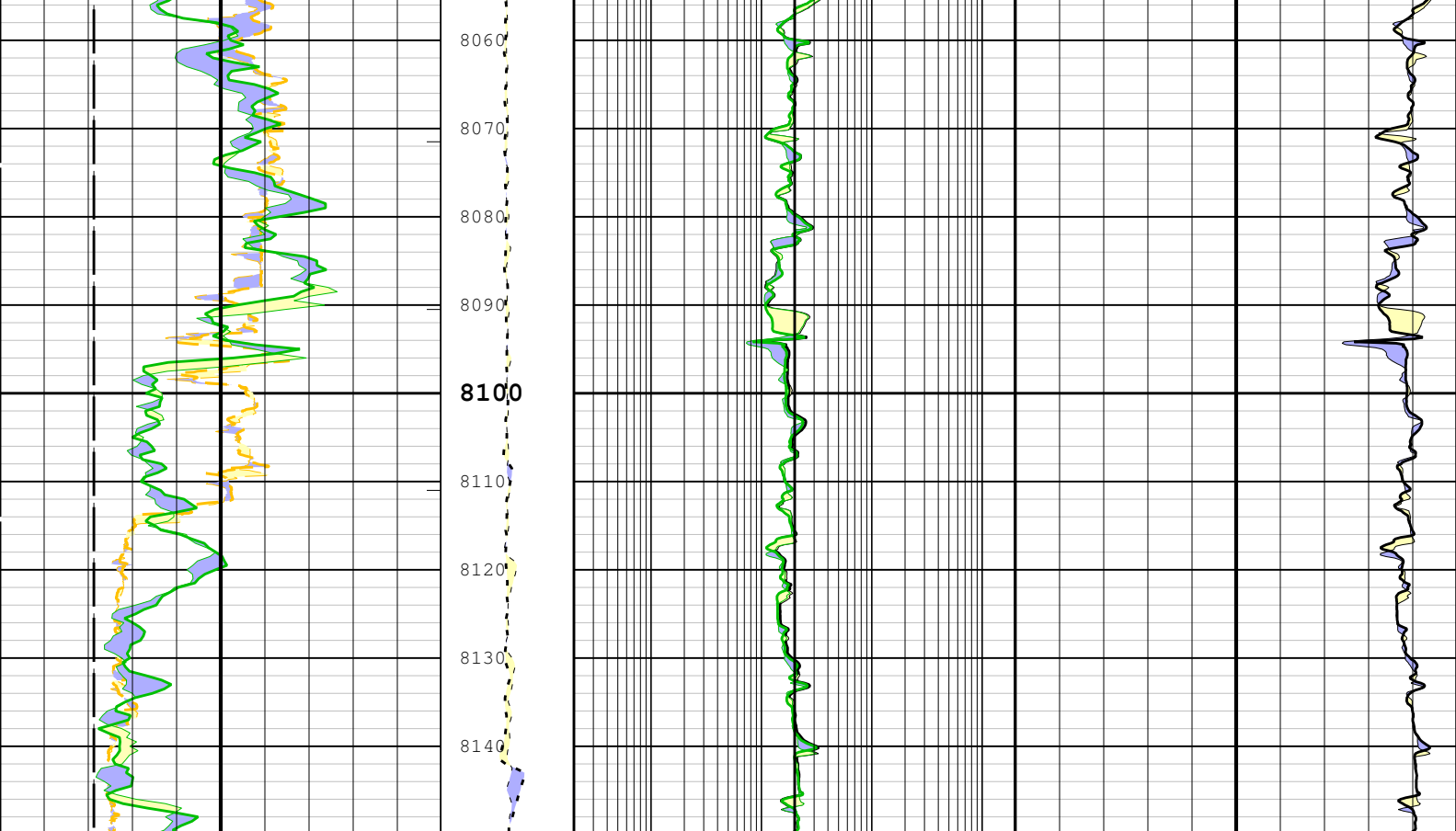
— IHV - Integrated Hole Volume every 100.00 (ft3)
— IHV - Integrated Hole Volume every 10.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

— ICV - Integrated Cement Volume every 10.00 (ft3)

— ICV - Integrated Cement Volume every 100.00 (ft3)





Main To Repeat	Main To Repeat	Main To Repeat	Main To Repeat
Repeat To Main	Repeat To Main	Repeat To Main	Repeat To Main
Caliper (CALI) HDRS-H	Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B	Laterolog Deep Conductivity (CLLD) HRLT-B	
4 in 14	0.2 ohm.m 2000	500 mS/m 0	
Main To Repeat	Main To Repeat		
Repeat To Main	Repeat To Main		
Bit Size (BS)	Apparent Resistivity from Computed Focusing Mode 3 (RLA3) HRLT-B		
4 in 14	0.2 ohm.m 2000		
Main To Repeat			
Repeat To Main			
Gamma Ray (GR) HGNS-H			
0 gAPI 150			

— ICV - Integrated Cement Volume every 100.00 (ft3)
— ICV - Integrated Cement Volume every 10.00 (ft3)
TIME_1900 - Time Marked every 60.00 (s)
— IHV - Integrated Hole Volume every 10.00 (ft3)
— IHV - Integrated Hole Volume every 100.00 (ft3)

Description: Format: Log (Resistivity logarithmic RA_1) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Apr-2013 02:40:54

Calibration Report

HRLT-B (High Resolution Laterolog Array) Calibration - Run 1

Primary Equipment : HRLT-B Sonde HRLS-B 966

HRLT-B Calibration - HRLT M0-M1 Voltage Plus

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M01 - 0	uV	Before	-322.7	-379.6	-316.1	-280.6	
		After	-322.7	-379.6	-315.4	-280.6	
		After-Before	-----	-----	0.7	-----	
HRLT M01 - 1	uV	Before	-322.7	-379.6	-318.1	-280.6	
		After	-322.7	-379.6	-313.7	-280.6	
		After-Before	-----	-----	4.4	-----	
HRLT M01 - 2	uV	Before	-322.7	-379.6	-319.0	-280.6	
		After	-322.7	-379.6	-316.4	-280.6	
		After-Before	-----	-----	2.6	-----	
HRLT M01 - 3	uV	Before	-322.7	-379.6	-318.0	-280.6	
		After	-322.7	-379.6	-315.4	-280.6	
		After-Before	-----	-----	2.6	-----	
HRLT M01 - 4	uV	Before	-322.7	-379.6	-313.4	-280.6	
		After	-322.7	-379.6	-311.9	-280.6	
		After-Before	-----	-----	1.5	-----	
HRLT M01 - 5	uV	Before	-322.7	-379.6	-317.5	-280.6	
		After	-322.7	-379.6	-316.4	-280.6	
		After-Before	-----	-----	1.1	-----	
HRLT M01 - 6	uV	Before	322.7	280.6	318.0	379.6	
		After	322.7	280.6	316.1	379.6	
		After-Before	-----	-----	-1.9	-----	

HRLT-B Calibration - HRLT M1-M2 Voltage Plus

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M12 - 0	uV	Before	1781.0	1548.7	1734.6	2095.3	
		After	1781.0	1548.7	1729.2	2095.3	
		After-Before	-----	-----	-5.4	-----	
HRLT M12 - 1	uV	Before	1781.0	1548.7	1753.2	2095.3	
		After	1781.0	1548.7	1726.8	2095.3	
		After-Before	-----	-----	-26.4	-----	
HRLT M12 - 2	uV	Before	1781.0	1548.7	1750.6	2095.3	
		After	1781.0	1548.7	1734.8	2095.3	
		After-Before	-----	-----	-15.8	-----	
HRLT M12 - 3	uV	Before	1781.0	1548.7	1744.0	2095.3	
		After	1781.0	1548.7	1727.4	2095.3	
		After-Before	-----	-----	-16.6	-----	
HRLT M12 - 4	uV	Before	1781.0	1548.7	1717.3	2095.3	
		After	1781.0	1548.7	1706.7	2095.3	
		After-Before	-----	-----	-10.6	-----	
HRLT M12 - 5	uV	Before	1781.0	1548.7	1740.1	2095.3	
		After	1781.0	1548.7	1731.9	2095.3	
		After-Before	-----	-----	-8.2	-----	
HRLT M12 - 6	uV	Before	-1781.0	-2095.3	-1760.9	-1548.7	
		After	-1781.0	-2095.3	-1748.6	-1548.7	
		After-Before	-----	-----	12.3	-----	

HRLT-B Calibration - HRLT M2-M3 Voltage Plus

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M23 - 0	uV	Before	1781.0	1548.7	1731.7	2095.3	
		After	1781.0	1548.7	1727.9	2095.3	
		After-Before	-----	-----	-3.8	-----	
HRLT M23 - 1	uV	Before	1781.0	1548.7	1754.1	2095.3	
		After	1781.0	1548.7	1729.1	2095.3	
		After-Before	-----	-----	-25.0	-----	
HRLT M23 - 2	uV	Before	1781.0	1548.7	1755.2	2095.3	
		After	1781.0	1548.7	1740.6	2095.3	
		After-Before	-----	-----	-14.6	-----	
HRLT M23 - 3	uV	Before	1781.0	1548.7	1753.8	2095.3	
		After	1781.0	1548.7	1739.0	2095.3	
		After-Before	-----	-----	-14.8	-----	
HRLT M23 - 4	uV	Before	1781.0	1548.7	1723.8	2095.3	
		After	1781.0	1548.7	1714.7	2095.3	

		After-Before	-----	-----	-9.1	-----	
HRLT M23 - 5	uV	Before	1781.0	1548.7	1748.8	2095.3	
		After	1781.0	1548.7	1742.0	2095.3	
		After-Before	-----	-----	-6.8	-----	
HRLT M23 - 6	uV	Before	-1781.0	-2095.3	-1750.1	-1548.7	
		After	-1781.0	-2095.3	-1738.9	-1548.7	
		After-Before	-----	-----	11.2	-----	

HRLT-B Calibration - HRLT A3-A4 Voltage Plus

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V34 - 0	uV	Before	70000.0	60869.6	67710.7	82352.9	
		After	70000.0	60869.6	67591.3	82352.9	
		After-Before	-----	-----	-119.4	-----	
HRLT V34 - 1	uV	Before	70000.0	60869.6	68537.4	82352.9	
		After	70000.0	60869.6	67604.9	82352.9	
		After-Before	-----	-----	-932.5	-----	
HRLT V34 - 2	uV	Before	70000.0	60869.6	68883.5	82352.9	
		After	70000.0	60869.6	68345.2	82352.9	
		After-Before	-----	-----	-538.3	-----	
HRLT V34 - 3	uV	Before	70000.0	60869.6	69021.6	82352.9	
		After	70000.0	60869.6	68459.1	82352.9	
		After-Before	-----	-----	-562.5	-----	
HRLT V34 - 4	uV	Before	70000.0	60869.6	67735.1	82352.9	
		After	70000.0	60869.6	67413.8	82352.9	
		After-Before	-----	-----	-321.3	-----	
HRLT V34 - 5	uV	Before	70000.0	60869.6	68699.9	82352.9	
		After	70000.0	60869.6	68468.7	82352.9	
		After-Before	-----	-----	-231.2	-----	
HRLT V34 - 6	uV	Before	-70000.0	-82352.9	-67433.3	-60869.6	
		After	-70000.0	-82352.9	-67025.3	-60869.6	
		After-Before	-----	-----	408.0	-----	

HRLT-B Calibration - HRLT A4-A5 Voltage Plus

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V45 - 0	uV	Before	70000.0	60869.6	67795.6	82352.9	
		After	70000.0	60869.6	67679.2	82352.9	
		After-Before	-----	-----	-116.4	-----	
HRLT V45 - 1	uV	Before	70000.0	60869.6	68829.8	82352.9	
		After	70000.0	60869.6	67904.9	82352.9	
		After-Before	-----	-----	-924.9	-----	
HRLT V45 - 2	uV	Before	70000.0	60869.6	69124.3	82352.9	
		After	70000.0	60869.6	68583.5	82352.9	
		After-Before	-----	-----	-540.8	-----	
HRLT V45 - 3	uV	Before	70000.0	60869.6	69223.8	82352.9	
		After	70000.0	60869.6	68653.1	82352.9	
		After-Before	-----	-----	-570.7	-----	
HRLT V45 - 4	uV	Before	70000.0	60869.6	67851.2	82352.9	
		After	70000.0	60869.6	67533.2	82352.9	
		After-Before	-----	-----	-318.0	-----	
HRLT V45 - 5	uV	Before	70000.0	60869.6	68791.9	82352.9	
		After	70000.0	60869.6	68556.8	82352.9	
		After-Before	-----	-----	-235.1	-----	
HRLT V45 - 6	uV	Before	-70000.0	-82352.9	-67733.6	-60869.6	
		After	-70000.0	-82352.9	-67341.0	-60869.6	
		After-Before	-----	-----	392.6	-----	

HRLT-B Calibration - HRLT A5-A6 Voltage Plus

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V56 - 0	uV	Before	70000.0	60869.6	67746.0	82352.9	
		After	70000.0	60869.6	67626.6	82352.9	
		After-Before	-----	-----	-119.4	-----	
HRLT V56 - 1	uV	Before	70000.0	60869.6	68801.4	82352.9	
		After	70000.0	60869.6	67880.1	82352.9	
		After-Before	-----	-----	-921.3	-----	
HRLT V56 - 2	uV	Before	70000.0	60869.6	69085.4	82352.9	

		After	70000.0	60869.6	68577.8	82352.9	
		After-Before	-----	-----	-507.6	-----	
HRLT V56 - 3	uV	Before	70000.0	60869.6	69171.4	82352.9	
		After	70000.0	60869.6	68603.6	82352.9	
		After-Before	-----	-----	-567.8	-----	
HRLT V56 - 4	uV	Before	70000.0	60869.6	67797.1	82352.9	
		After	70000.0	60869.6	67479.8	82352.9	
		After-Before	-----	-----	-317.3	-----	
HRLT V56 - 5	uV	Before	70000.0	60869.6	68737.0	82352.9	
		After	70000.0	60869.6	68507.7	82352.9	
		After-Before	-----	-----	-229.3	-----	
HRLT V56 - 6	uV	Before	-70000.0	-82352.9	-67701.1	-60869.6	
		After	-70000.0	-82352.9	-67305.9	-60869.6	
		After-Before	-----	-----	395.2	-----	

HRLT-B Calibration - HRLT Torpedo-M0 Voltage

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VTP - 0	uV	Before	-70000.0	-82352.9	-67620.8	-60869.6	
		After	-70000.0	-82352.9	-67516.8	-60869.6	
		After-Before	-----	-----	104.0	-----	
HRLT VTP - 1	uV	Before	-70000.0	-82352.9	-69116.6	-60869.6	
		After	-70000.0	-82352.9	-68206.4	-60869.6	
		After-Before	-----	-----	910.2	-----	
HRLT VTP - 2	uV	Before	-70000.0	-82352.9	-69395.8	-60869.6	
		After	-70000.0	-82352.9	-68863.2	-60869.6	
		After-Before	-----	-----	532.6	-----	
HRLT VTP - 3	uV	Before	-70000.0	-82352.9	-69497.3	-60869.6	
		After	-70000.0	-82352.9	-68946.3	-60869.6	
		After-Before	-----	-----	551.0	-----	
HRLT VTP - 4	uV	Before	-70000.0	-82352.9	-68122.5	-60869.6	
		After	-70000.0	-82352.9	-67810.7	-60869.6	
		After-Before	-----	-----	311.8	-----	
HRLT VTP - 5	uV	Before	-70000.0	-82352.9	-69053.3	-60869.6	
		After	-70000.0	-82352.9	-68825.8	-60869.6	
		After-Before	-----	-----	227.5	-----	
HRLT VTP - 6	uV	Before	70000.0	60869.6	67971.6	82352.9	
		After	70000.0	60869.6	67559.1	82352.9	
		After-Before	-----	-----	-412.5	-----	

HRLT-B Calibration - HRLT Bridle#9-M0 Voltage

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VBD - 0	uV	Before	-70000.0	-82352.9	-67585.4	-60869.6	
		After	-70000.0	-82352.9	-67479.0	-60869.6	
		After-Before	-----	-----	106.4	-----	
HRLT VBD - 1	uV	Before	-70000.0	-82352.9	-69035.1	-60869.6	
		After	-70000.0	-82352.9	-68088.9	-60869.6	
		After-Before	-----	-----	946.2	-----	
HRLT VBD - 2	uV	Before	-70000.0	-82352.9	-69287.0	-60869.6	
		After	-70000.0	-82352.9	-68781.4	-60869.6	
		After-Before	-----	-----	505.6	-----	
HRLT VBD - 3	uV	Before	-70000.0	-82352.9	-69423.1	-60869.6	
		After	-70000.0	-82352.9	-68844.9	-60869.6	
		After-Before	-----	-----	578.2	-----	
HRLT VBD - 4	uV	Before	-70000.0	-82352.9	-68073.4	-60869.6	
		After	-70000.0	-82352.9	-67757.2	-60869.6	
		After-Before	-----	-----	316.2	-----	
HRLT VBD - 5	uV	Before	-70000.0	-82352.9	-69024.7	-60869.6	
		After	-70000.0	-82352.9	-68781.9	-60869.6	
		After-Before	-----	-----	242.8	-----	
HRLT VBD - 6	uV	Before	70000.0	60869.6	67865.0	82352.9	
		After	70000.0	60869.6	67471.2	82352.9	
		After-Before	-----	-----	-393.8	-----	

HRLT-B Calibration - HRLT Source Current Plus

Before (Measured):		15:42:50 05-Mar-2013		After (Measured):		22:43:13 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT ISO - 0	uA	Before	284.0	247.0	282.4	334.1	

HRLT ISO - 0	uA	Before After After-Before	284.0 284.0 -----	247.0 247.0 -----	282.4 281.9 -0.5	334.1 334.1 -----	
HRLT ISO - 1	uA	Before After After-Before	281.1 281.1 -----	244.4 244.4 -----	281.1 281.1 0.0	330.7 330.7 -----	
HRLT ISO - 2	uA	Before After After-Before	281.1 281.1 -----	244.4 244.4 -----	281.1 281.1 0.0	330.7 330.7 -----	
HRLT ISO - 3	uA	Before After After-Before	281.1 281.1 -----	244.4 244.4 -----	281.1 281.1 0.0	330.7 330.7 -----	
HRLT ISO - 4	uA	Before After After-Before	281.1 281.1 -----	244.4 244.4 -----	281.1 281.1 0.0	330.7 330.7 -----	
HRLT ISO - 5	uA	Before After After-Before	281.1 281.1 -----	244.4 244.4 -----	281.1 281.1 0.0	330.7 330.7 -----	
HRLT ISO - 6	uA	Before After After-Before	281.1 281.1 -----	244.4 244.4 -----	281.1 281.1 0.0	330.7 330.7 -----	

HRLT-B Calibration - HRLT Vertical Voltage PI

Before (Measured): 15:42:50 05-Mar-2013		After (Measured): 22:43:13 05-Mar-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT MV - 0	uV	Before	-322.7	-379.6	-317.8	-280.6	
		After	-322.7	-379.6	-317.2	-280.6	
		After-Before	-----	-----	0.6	-----	
HRLT MV - 1	uV	Before	-322.7	-379.6	-314.6	-280.6	
		After	-322.7	-379.6	-310.4	-280.6	
		After-Before	-----	-----	4.2	-----	
HRLT MV - 2	uV	Before	-322.7	-379.6	-313.6	-280.6	
		After	-322.7	-379.6	-311.2	-280.6	
		After-Before	-----	-----	2.4	-----	
HRLT MV - 3	uV	Before	-322.7	-379.6	-310.7	-280.6	
		After	-322.7	-379.6	-308.1	-280.6	
		After-Before	-----	-----	2.6	-----	
HRLT MV - 4	uV	Before	-322.7	-379.6	-302.9	-280.6	
		After	-322.7	-379.6	-301.4	-280.6	
		After-Before	-----	-----	1.5	-----	
HRLT MV - 5	uV	Before	-322.7	-379.6	-321.4	-280.6	
		After	-322.7	-379.6	-320.4	-280.6	
		After-Before	-----	-----	1.0	-----	
HRLT MV - 6	uV	Before	322.7	280.6	327.3	379.6	
		After	322.7	280.6	325.6	379.6	
		After-Before	-----	-----	-1.7	-----	

HRLT-B Calibration - HRLT Calibration Temperature

Before (Measured): 15:42:50 05-Mar-2013		After (Measured): 22:43:13 05-Mar-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CTEM_HRLT	degF	Before			104.9		
		After			98.4		
		After-Before	-----	-----	-6.5	-----	

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run 1

Primary Equipment :		
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3929
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	4716
Auxiliary Equipment :		
HRDD Backscatter Detector	Backscatter	26906
HRDD Long Spacing Detector	Long Spacing	28862
HRDD Short Spacing Detector	Short Spacing	42174
Cesium 137 Gamma-Ray Logging Source	GSR-J	3761
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3929
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	4716

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)

8.00

Large Ring Size (Caliper Calibration Large Ring)

12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 07:43:40 05-Mar-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.71	10.00	
Large Ring	in	Before	12.00	9.00	11.65	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM): 19:06:40 12-Feb-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.601	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.685	1.696	
Pe Aluminum		Master	2.570	2.470	2.537	2.670	
Pe Magnesium		Master	2.650	2.550	2.652	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM): 19:06:40 12-Feb-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.1605	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.4988	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3565	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.3729	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.4916	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.1809	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM): 19:06:40 12-Feb-2013

Before (Measured):

15:45:15 05-Mar-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7424		
		Before	0.7424	0.7052	0.7394	0.7795	
		Before-Master	-----	-----	-0.0030	-----	
BS Window Sum	1/s	Master	1		24269		
		Before	24269	23056	23862	25483	
		Before-Master	-----	-----	-407	-----	
SS Window Ratio		Master	1.0000		0.4796		
		Before	0.4796	0.4557	0.4766	0.5036	
		Before-Master	-----	-----	-0.0030	-----	
SS Window Sum	1/s	Master	1		11439		
		Before	11439	10867	11406	12011	
		Before-Master	-----	-----	-33	-----	
LS Window Ratio		Master	1.0000		0.3031		
		Before	0.3031	0.2879	0.3011	0.3182	
		Before-Master	-----	-----	-0.0020	-----	
LS Window Sum	1/s	Master	1		1318		
		Before	1318	1252	1306	1384	
		Before-Master	-----	-----	-12	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 19:06:40 12-Feb-2013

Before (Measured):

15:45:15 05-Mar-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1475	2400	
		Before		1000	1491	2400	
		Before-Master	-----	-100	16	100	
SS PM High Voltage	V	Master		1000	1551	2400	
		Before		1000	1560	2400	
		Before-Master	-----	-100	9	100	
LS PM High Voltage	V	Master		1000	1357	2400	
		Before		1000	1350	2400	
		Before-Master	-----	-100	-7	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 19:06:40 12-Feb-2013

Before (Measured):

15:45:15 05-Mar-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crvstal Resolution	%	Master		5.00	10.72	25.00	

		Before		5.00	10.85	25.00	
		Before-Master	-----	-1.00	0.13	1.00	
SS Crystal Resolution	%	Master		5.00	9.29	20.00	
		Before		5.00	9.27	20.00	
		Before-Master	-----	-1.00	-0.02	1.00	
LS Crystal Resolution	%	Master		5.00	8.84	20.00	
		Before		5.00	8.80	20.00	
		Before-Master	-----	-1.00	-0.04	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 15:45:34 05-Mar-2013							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3862	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3815	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3827	4136	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run 1

Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC	HGNS-H	3969	
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC	HACCZ-H	4171	
AmBe Neutron Logging Source	NSR-F	331	
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)	165		

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 15:40:49 05-Mar-2013							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.0	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-Jul-2005							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	-----	-----	13743.000	-----	
Accelerometer Coefficients - 1		Master	-----	-----	1.783	-----	
Accelerometer Coefficients - 2		Master	-----	-----	-0.001	-----	
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 4		Master	-----	-----	2.720	-----	
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 7		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 8		Master	-----	-----	298.400	-----	
Accelerometer Coefficients - 9		Master	-----	-----	0.989	-----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 20:37:24 11-Feb-2013		Before (Measured): 15:43:30 05-Mar-2013		After (Measured): 22:57:07 05-Mar-2013			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	26.3	40.0	
		Before	0	5.0	26.6	40.0	
		After	0	5.0	27.2	40.0	
		Before-Master	----	-3.9	0.3	3.9	
		After-Before	----	-4.0	0.6	4.0	
Far Zero Measurement	1/s	Master	0	5.0	28.1	40.0	
		Before	0	5.0	28.3	40.0	
		After	0	5.0	29.8	40.0	
		Before-Master	----	-4.2	0.2	4.2	
		After-Before	----	-4.2	1.5	4.2	
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5052.0	6900.0	

		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2167.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	4936.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2079.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations							
Before (Measured):		15:46:36 05-Mar-2013		After (Measured):		22:51:07 05-Mar-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	5.2	120.0	
		After	30.0	0	22.5	120.0	
		After-Before	----	----	17.3	----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	168.0	206.3	
		After	185.4	157.1	164.5	206.3	
		After-Before	----	----	-3.5	----	
GR Calibration Gain		Before	0.89	0.80	0.98	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

Company:	SAVIA PERU S.A.	Schlumberger
Well:	LO6-27D	
Field:	LOBITOS	
Rig Name:	PEPESA-40	
Country:	PERU	

RESISTIVITY LOGARITHMIC LOG
SP-BHC-HRLT-TLD-HGNS-GR
SCALE 5"/100'