

Company: SAVIA PERU S.A.

Well: LOG6-27D

Field: LOBITOS

Rig Name: PEPESA-40 Country: PERU

NUCLEAR LOG			
SP-PPC-HRLT-TLD-HGNS-GR			
SCALE 2":100'			
Location:		Elev.	K.B.
LOBITOS			50.00 ft
N: 9508655.23		G.L.	-335.00 ft
E: 459043.07		D.F.	50.00 ft
Permanent Datum:	Mean Sea Level	Elev.:	0.00 ft
Log Measured From:	Drill Floor	50.00 ft	above Perm. Datum
Drilling Measured From:	Drill Floor		
State: PIURA	Max. Hole Deviation 49.2 deg	Longitude: 81° 22' 9.012" W	Latitude: 4° 26' 42.606" S
Logging Date	10-Feb-2013		

Run Number	1	
Depth Driller	8114.00 ft	
Schlumberger Depth	8008.00 ft	
Bottom Log Interval	8008.00 ft	
Top Log Interval	3614.00 ft	
Casing Driller Size @ Depth	9.625 in @ 3614.00 ft	
Casing Schlumberger	3614 ft	
Bit Size	8.5 in	
Type Fluid In Hole	Water	
Density	11.2 lbm/gal	46 s
Fluid Loss	PH 4 cm3	9.5
Source of Sample	Mud Pit	
RM @ Meas Temp	2.6 ohm.m @ 88.3 degF	
RMF @ Meas Temp	2.48 ohm.m @ 91 degF	
RMC @ Meas Temp	6.04 ohm.m @ 83.8 degF	
Source RMF	RMC Pressed	
RM @ BHT	1.13 @ 212 1.11 @ 212	
Max Recorded Temperatures	114 degF	
Circulation Stopped	10-Feb-2013 18:59:00	
Logger on Bottom	10-Feb-2013 14:17:00	
Unit Number	Location: 826	PETA
Recorded By	S. Roman / G. Tejada	
Witnessed By	Jose Coronado	

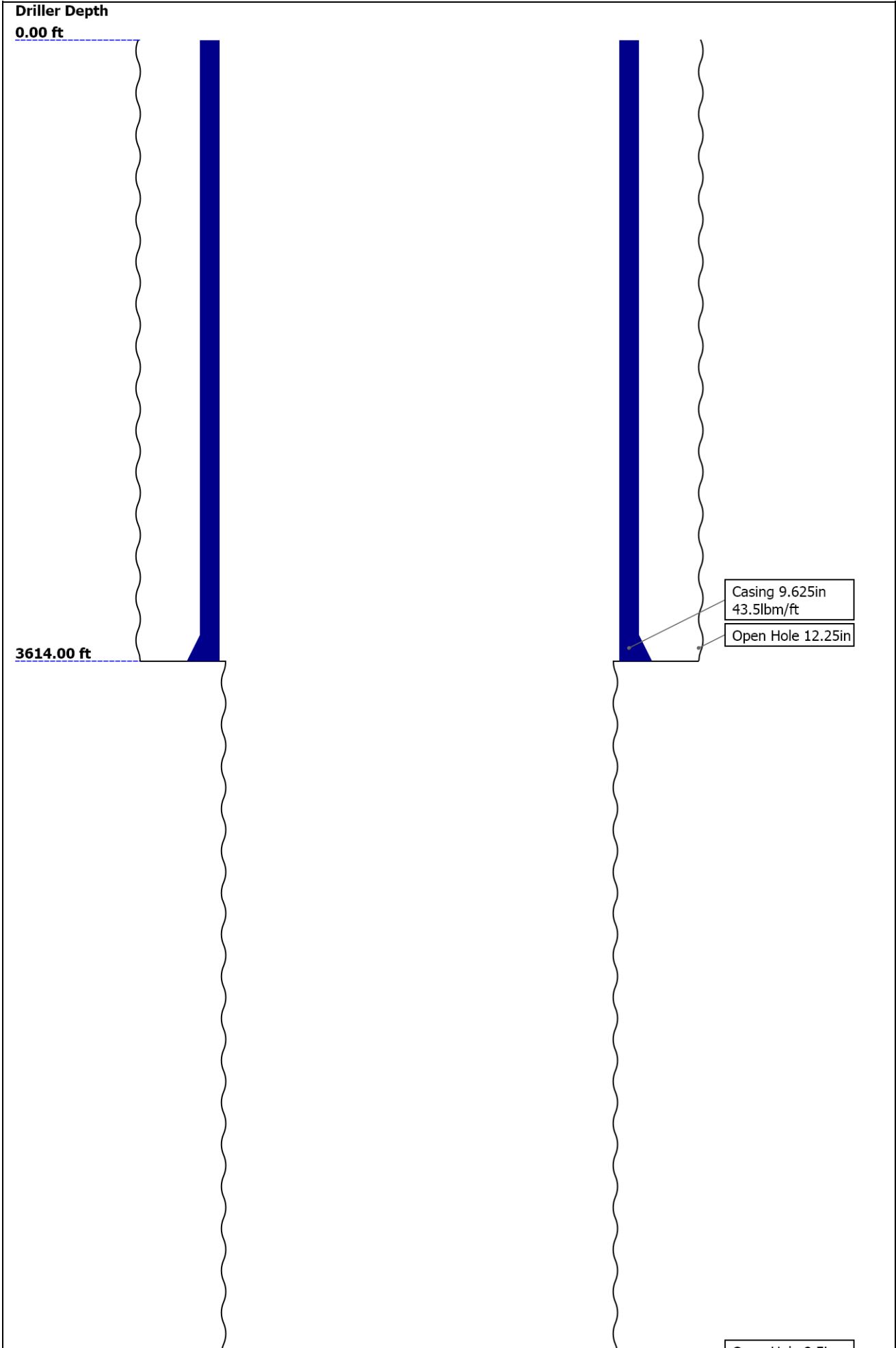
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Well Sketch



8114.00 ft

Open Hole 8.5in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	12.25	8.5				
Top Driller (ft)	0	3614				
Top Logger (ft)	0	3614				
Bottom Driller (ft)	3614	8114				
Bottom Logger (ft)	3614	8008				
Casing						
Size (in)	9.625					
Weight (lbm/ft)	43.5					
Inner Diameter (in)	8.758					
Grade	N80					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	3614					
Bottom Logger (ft)	3614					

Operational Run Summary

Parameter (unit)	1					
Date Log Started	10-Feb-2013					
Time Log Started	09:42:30					
Date Log Finished	10-Feb-2013					
Time Log Finished	17:43:49					
Top Log Interval (ft)	3614.00					
Bottom Log Interval (ft)	8008.00					
Total Depth (ft)	8008.00					
Max Hole Deviation (deg)	49.20					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.500					
Logging Unit Number	826					
Logging Unit Location	PETA					
Recorded By	S. Roman / G. Tejada					
Witnessed By	Jose Coronado					
Service Order Number	BYWR-34					

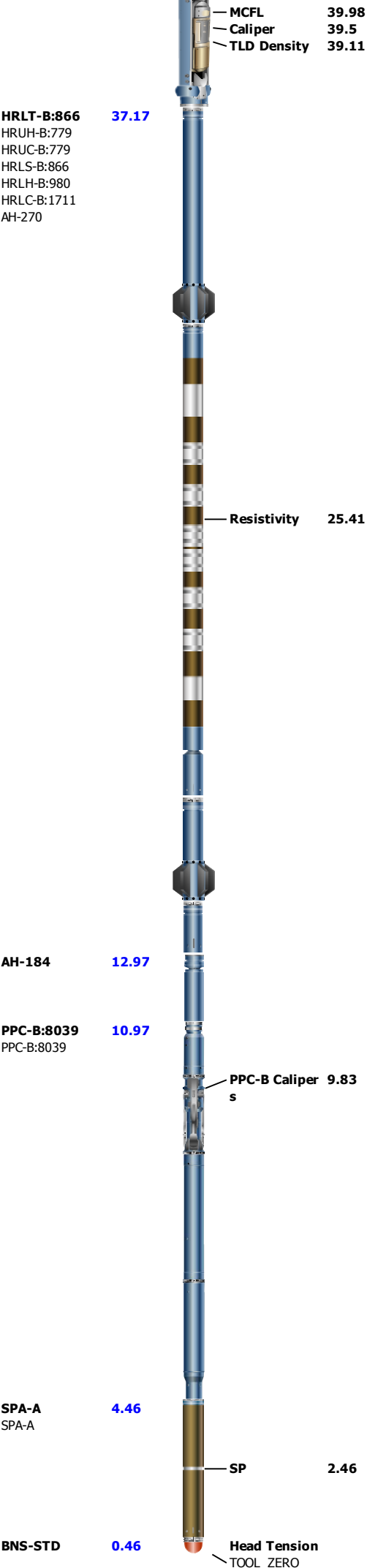
Borehole Fluids

Parameter(unit)	1					
Fluid Type	Water					
Max Recorded Temperatures (degF)	114					
Source of Sample	Mud Pit					
Salinity (ppm)	663					
Density (lbm/gal)	11.2					

Funnel Viscosity (s)	46					
Fluid Loss (cm3)	4					
PH	9.5					
Date/Time Circulation Stopped	10-Feb-2013 18:59:00					
Date Logger on Bottom	10-Feb-2013					
Time Logger on Bottom	14:17:00					
Source RMF	Pressed					
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	2.6 @ 88.3					
RMF @ Meas Temp (ohm.m@degF)	2.48 @ 91					
RMC @ Meas Temp (ohm.m@degF)	6.04 @ 83.8					
RM @ BHT (ohm.m@degF)	1.13 @ 212					
RMF @ BHT (ohm.m@degF)	1.11 @ 212					
RMC @ BHT (ohm.m@degF)	2.5 @ 212					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

1: Toolstring				1: Remarks
Equip name LEH-QT LEH-QT	Length 69.04	MP name	Offset	1. Log objective: Nuclear, resistivity and sonic evaluation of 8.5" OH section.
				2. Tool ran as per tool sketch.
				3. Bowspring used to eccentralize HGNS.
AH-369:719 AH-369:719	66.12			4. Four 1.5"standoffs used to eccentralize HRLA.
DTC-H:8280 ECH-KC DTC-H:8280	64.7	CTEM HV	63.8 0.00	5. Matrix = Limestone, Densty = 2.71 gr/cc as per client request.
		TelStatus ToolStatus	61.7 61.7	6. Neutron corrections: Hole size, mud cake, mud weight, borehole salinity and pressure & temperature.
SAH-E:918 SAH-E:918	61.7			7. Maximum depth reached: 8008 ft.
				8. Maximum temperature recorded: 114 degF taken from termometers from the logging hea
				9. Repeat Section from: 3850-3650 ft
HGNS-H:4750 HGNH:3842 NPV-N NSR-F:5167 HMCA-H HGNS-H:4750 HACCZ-H:5287	58.83	Temperature GR	58.8 58.08	10. Barite Corrections were applied.
		CNL Porosity HGNS HMCA Acceleromete r	51.75 49.42 49.42 0.00	
HDRS-H:3990 ECH-MEB:2935 HRCC-H:3964 HRMS-H:3990 Long Spacing:287 83 HRGD-H:3976 Backscatter:4115 1 GSR-J:2933 Short Spacing:278 61 GPV-Q	49.42	HRCC	45.42	



Lengths are in ft
Maximum Outer Diameter = 5.000 in
Line: Sensor Location, Value: Gating Offset

1

MAIN PASS

Integration Summary

Pass Summary

Log

1: Log[2]:Up

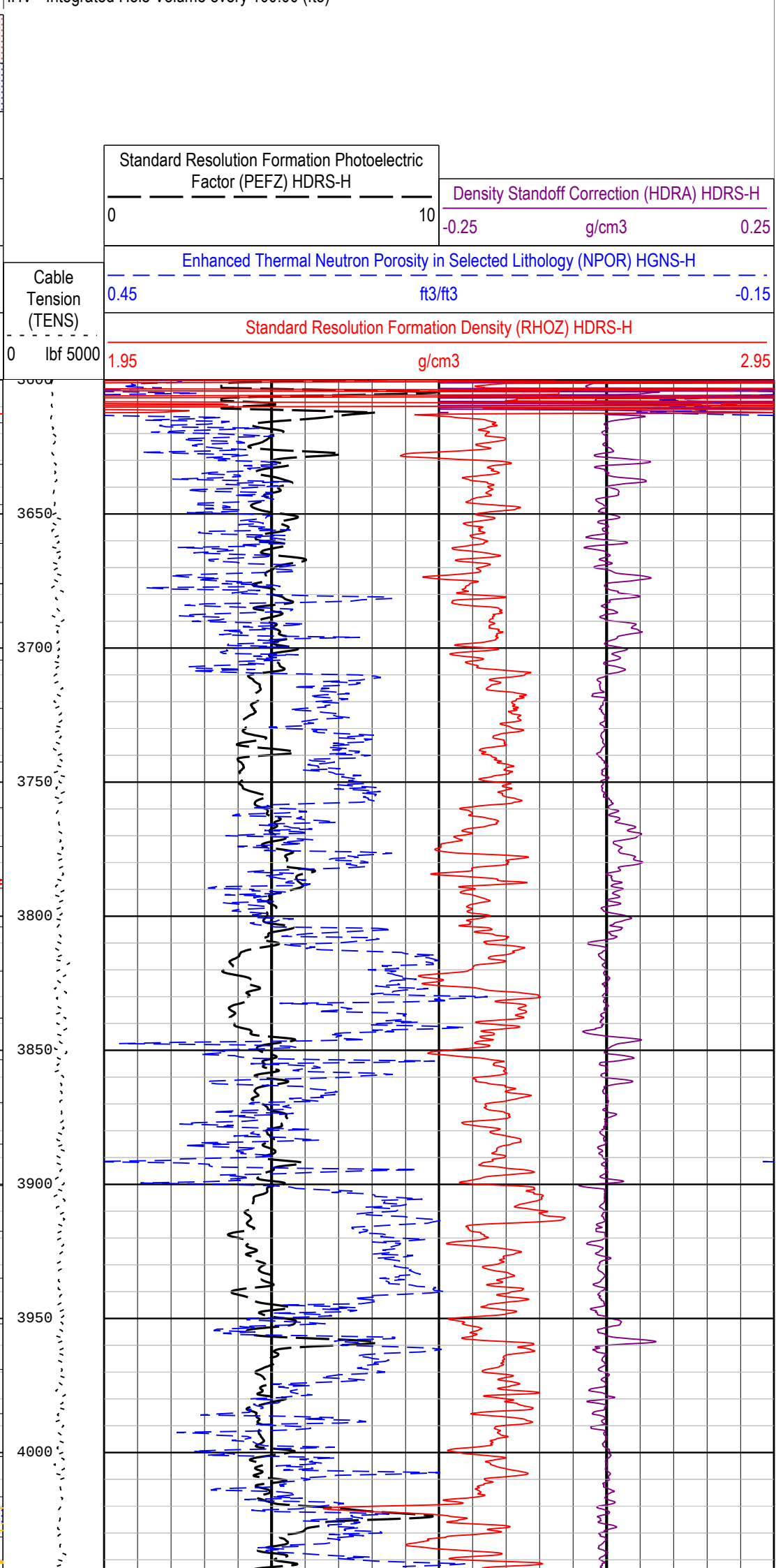
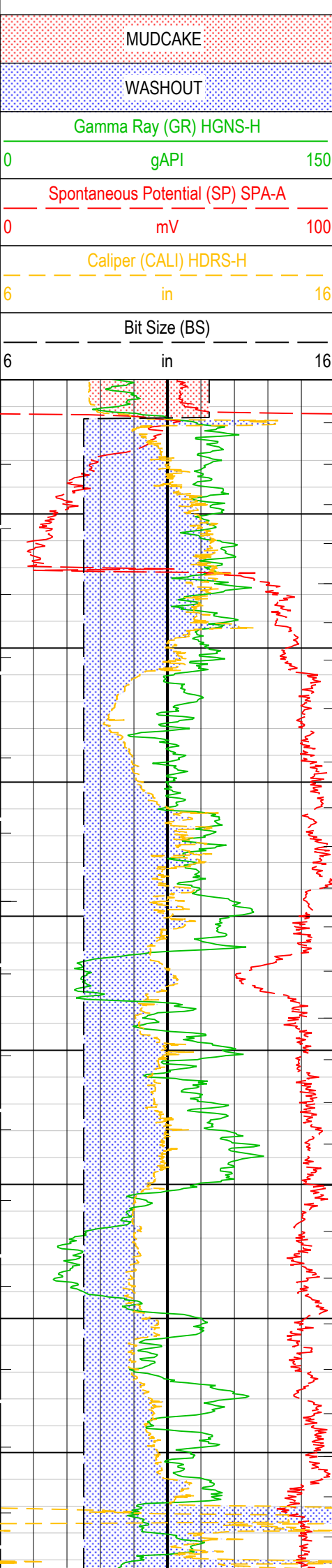
— ICV - Integrated Cement Volume every 10.00 (ft3)

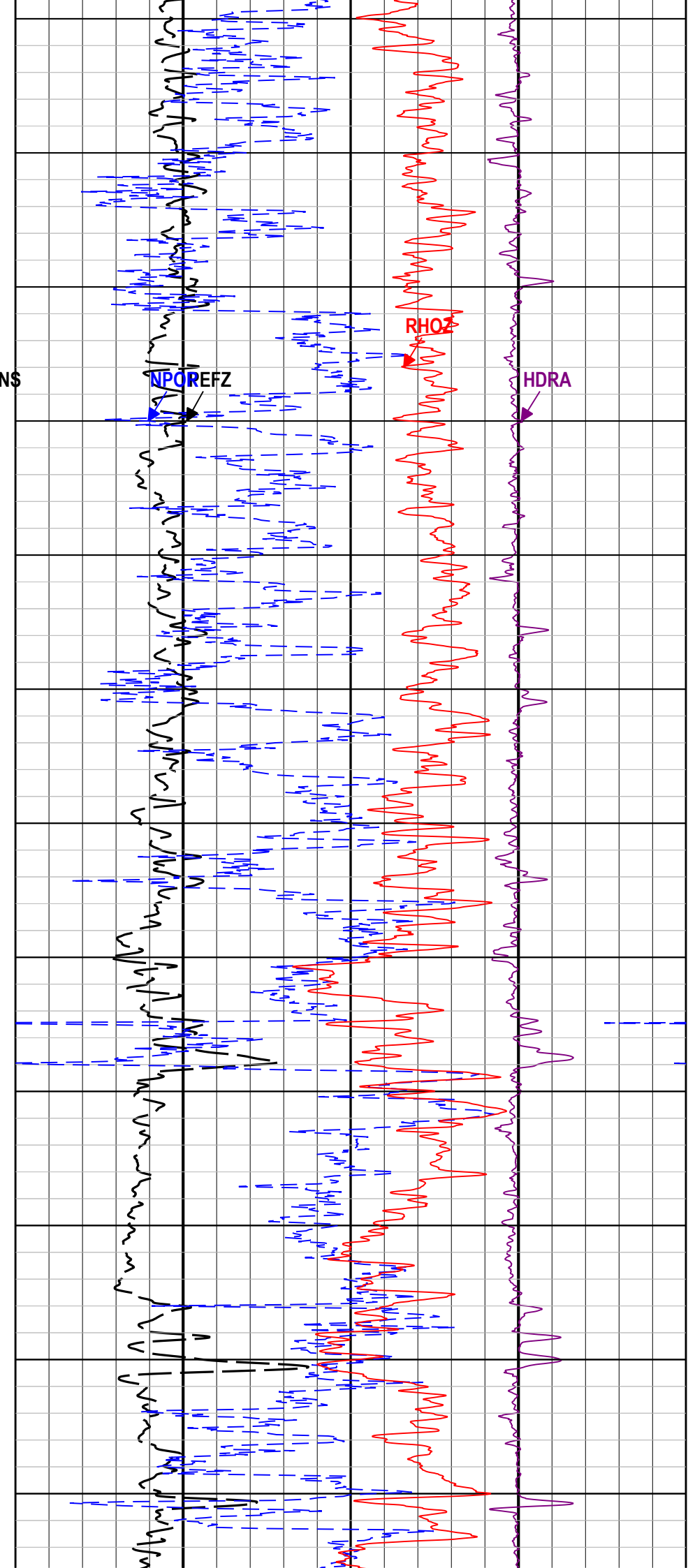
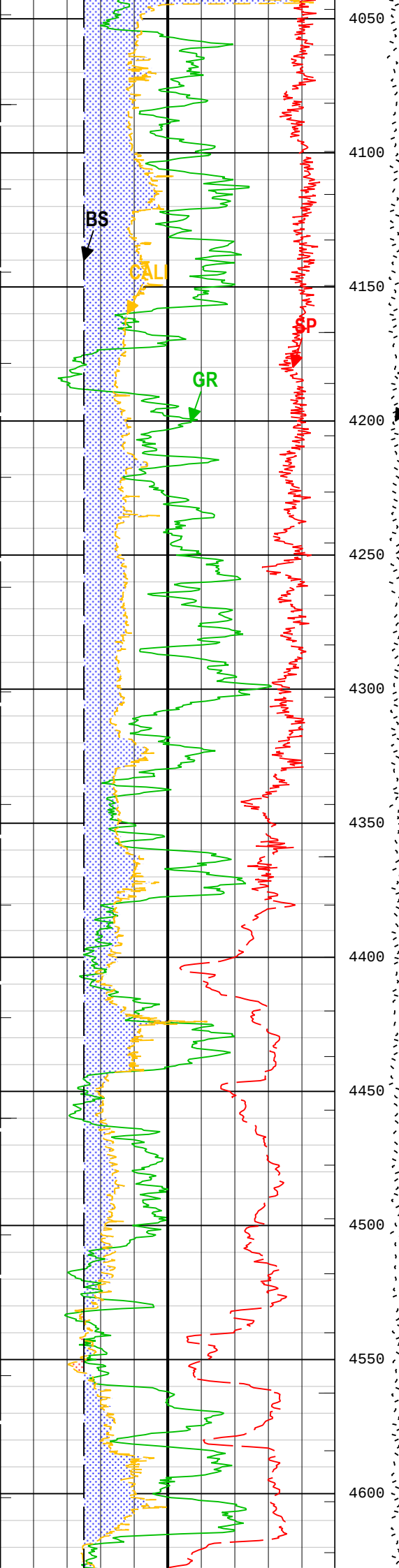
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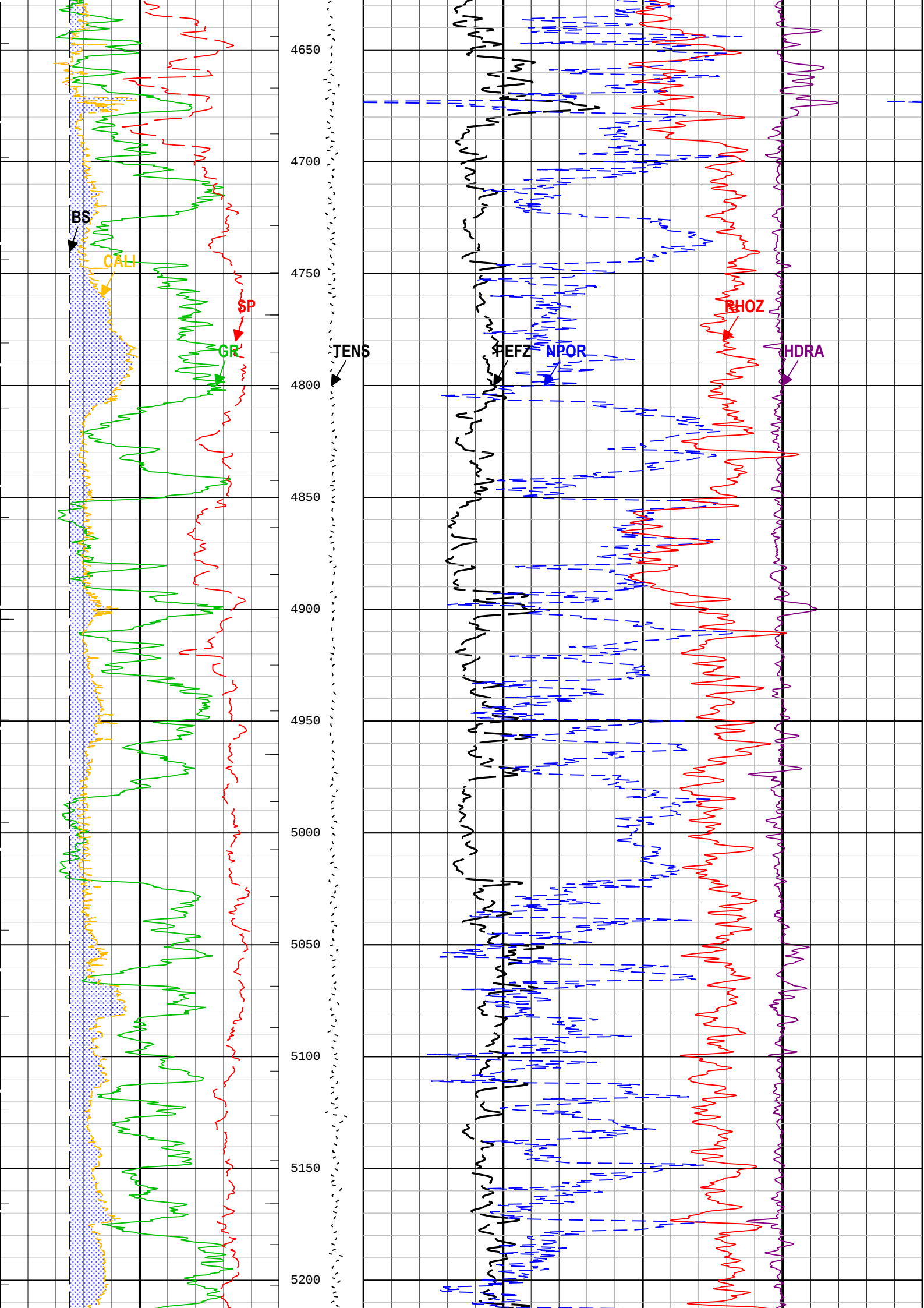
— ICV - Integrated Cement Volume every 100.00 (ft3)

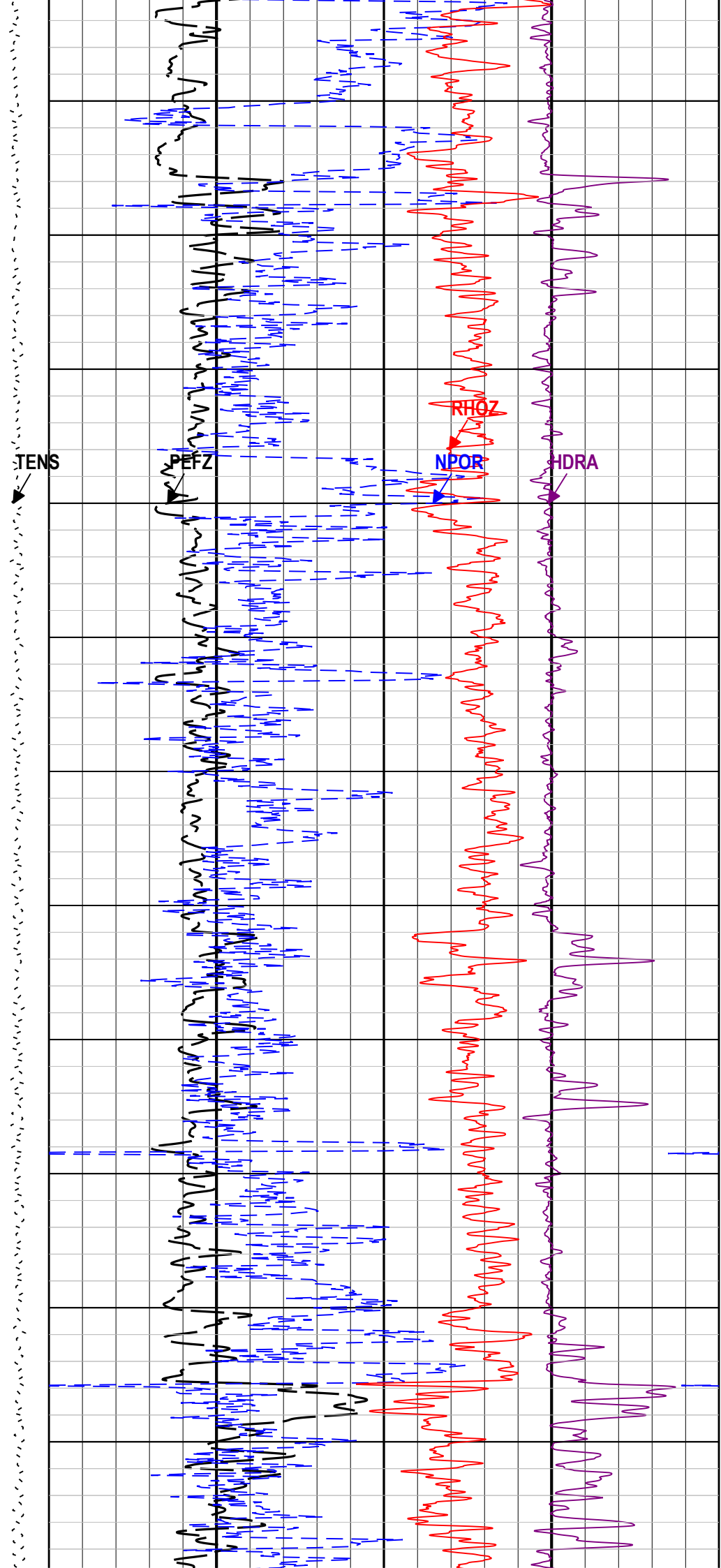
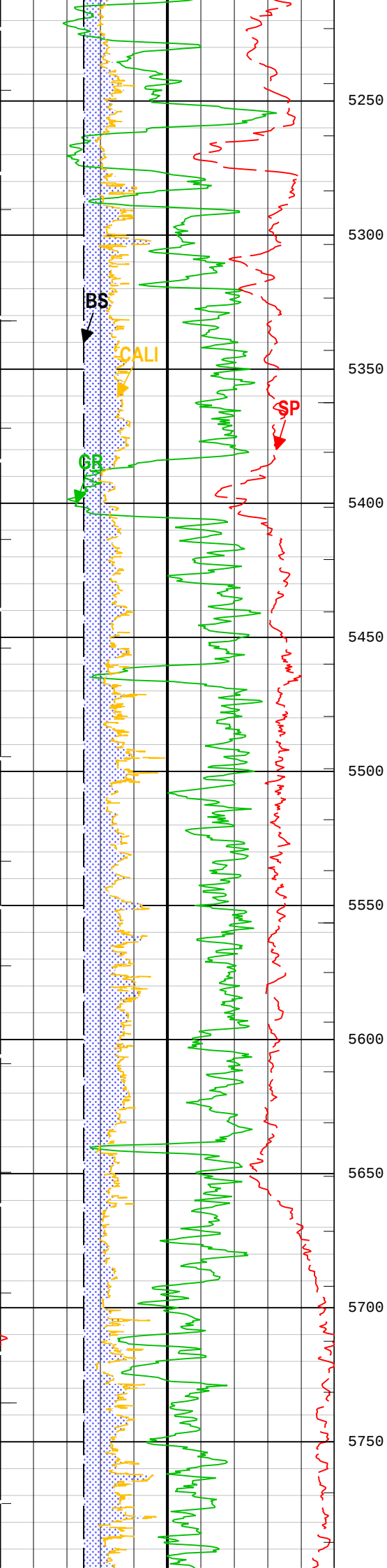
TIME_1900 - Time Marked every 60.00 (s)

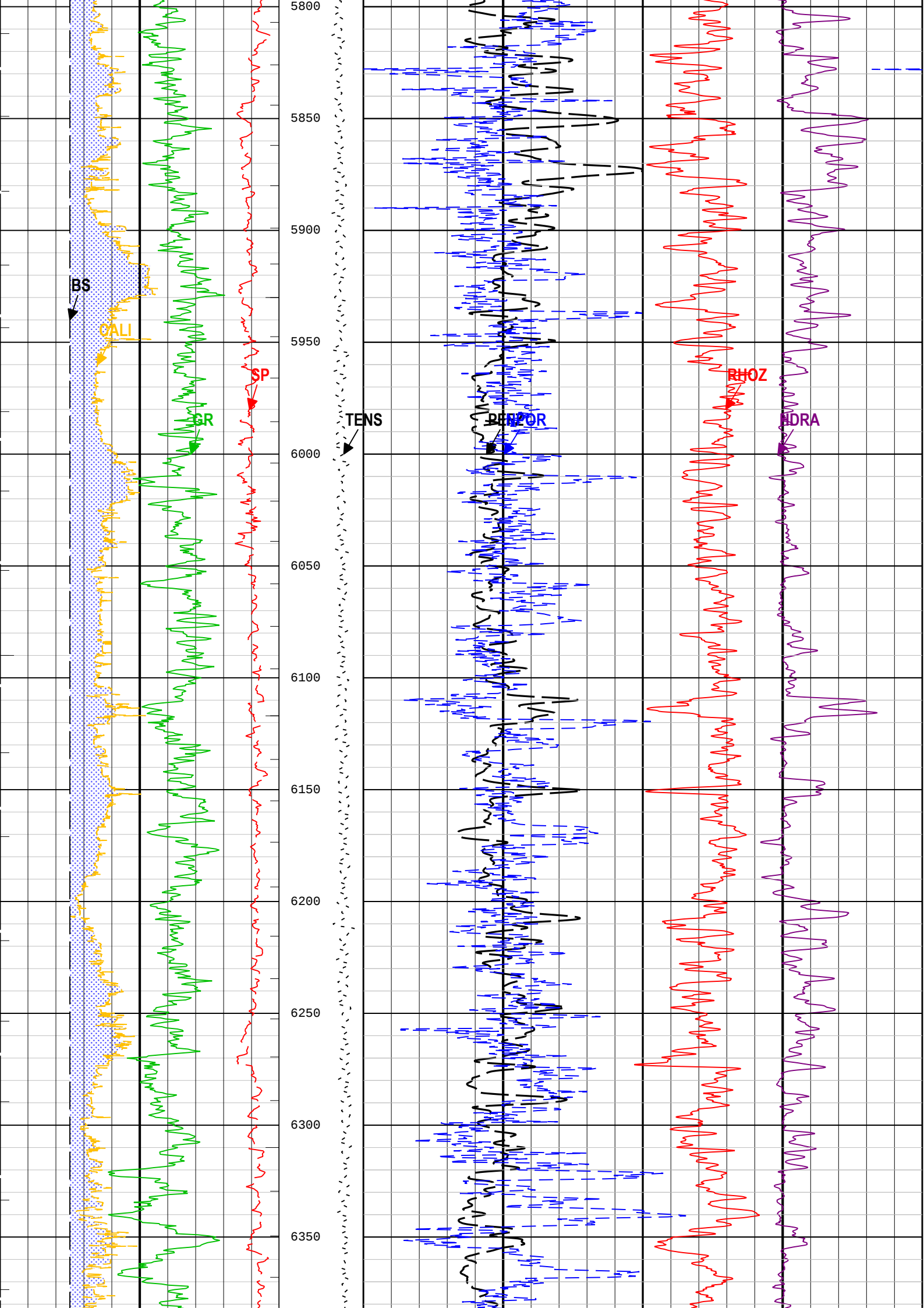
— IHV - Integrated Hole Volume every 100.00 (ft3)

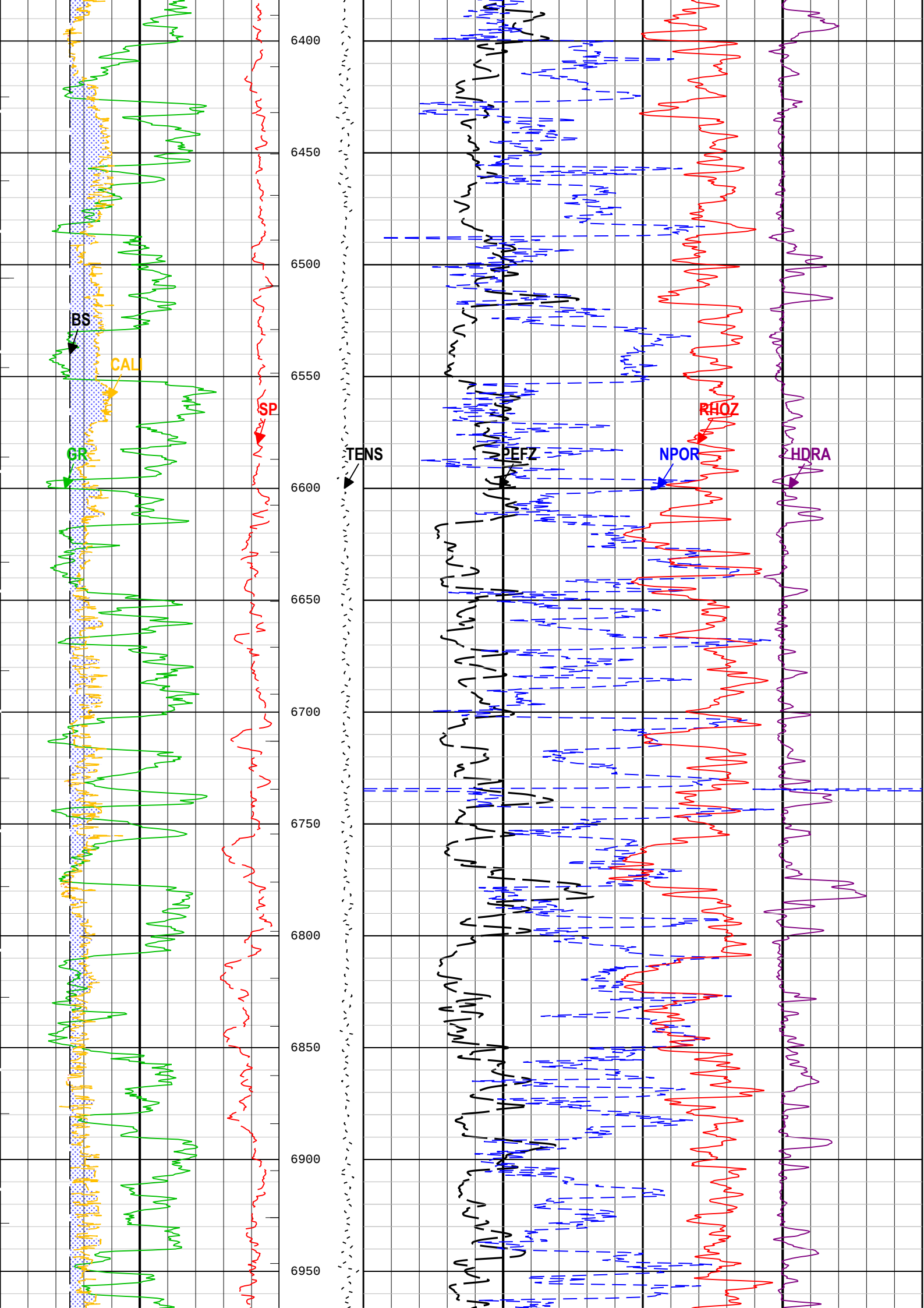


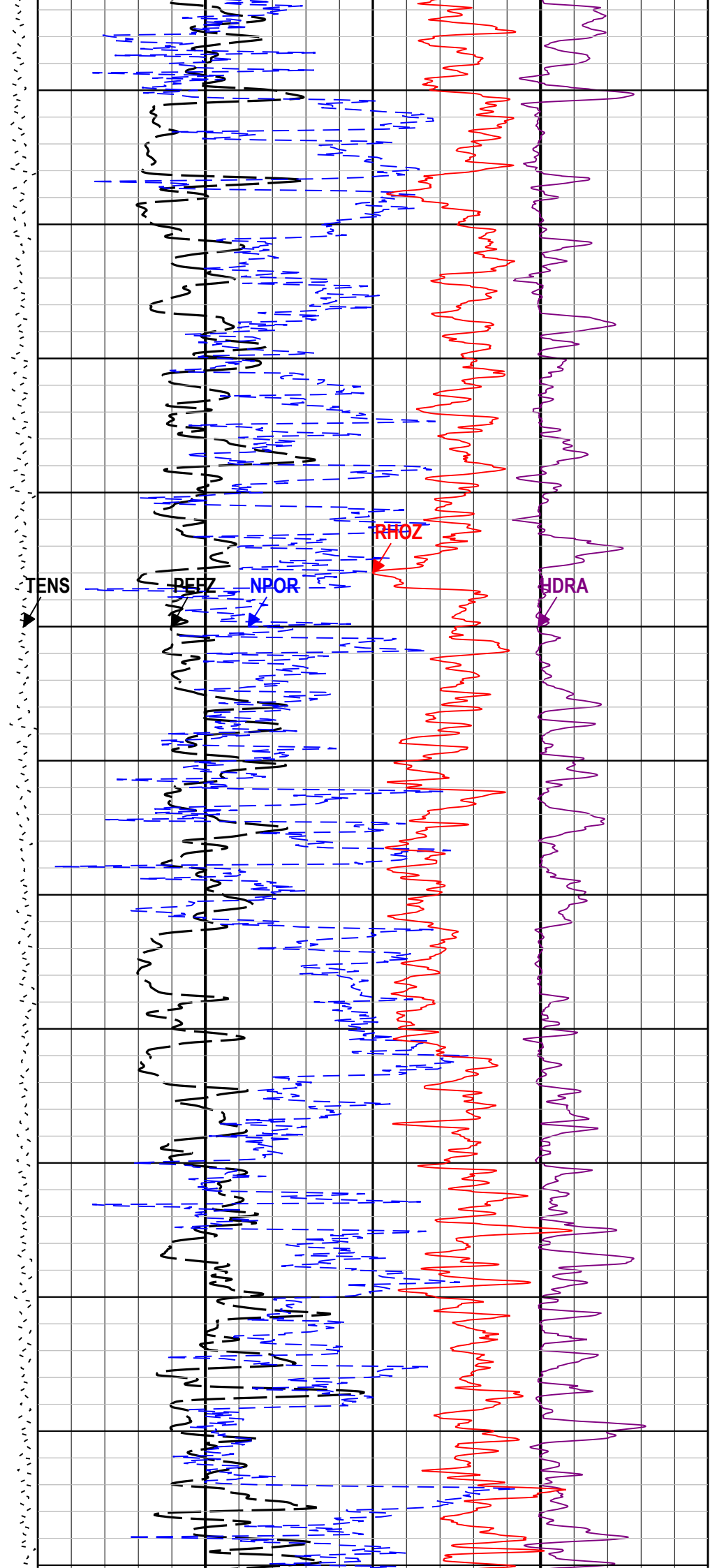
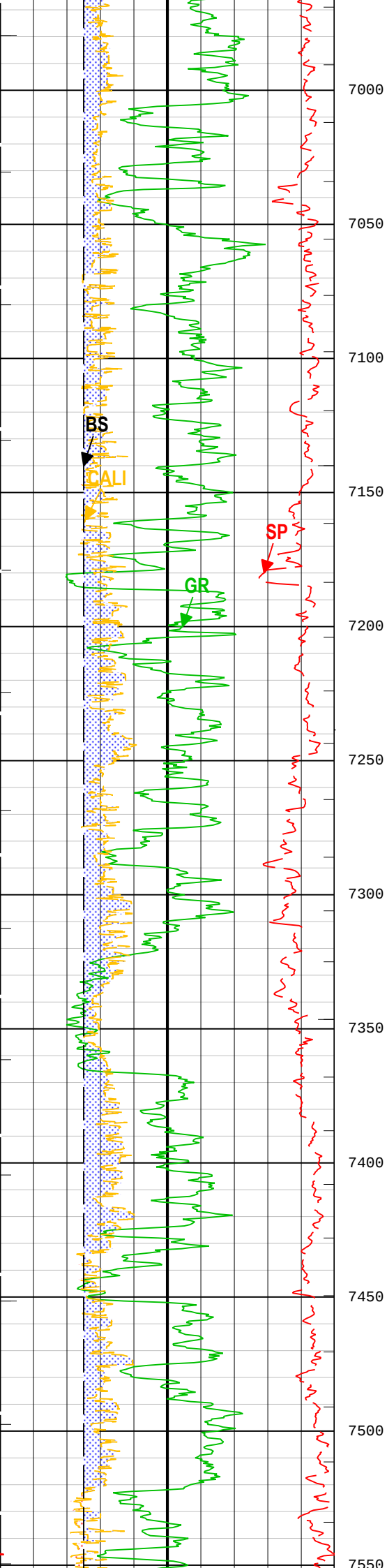


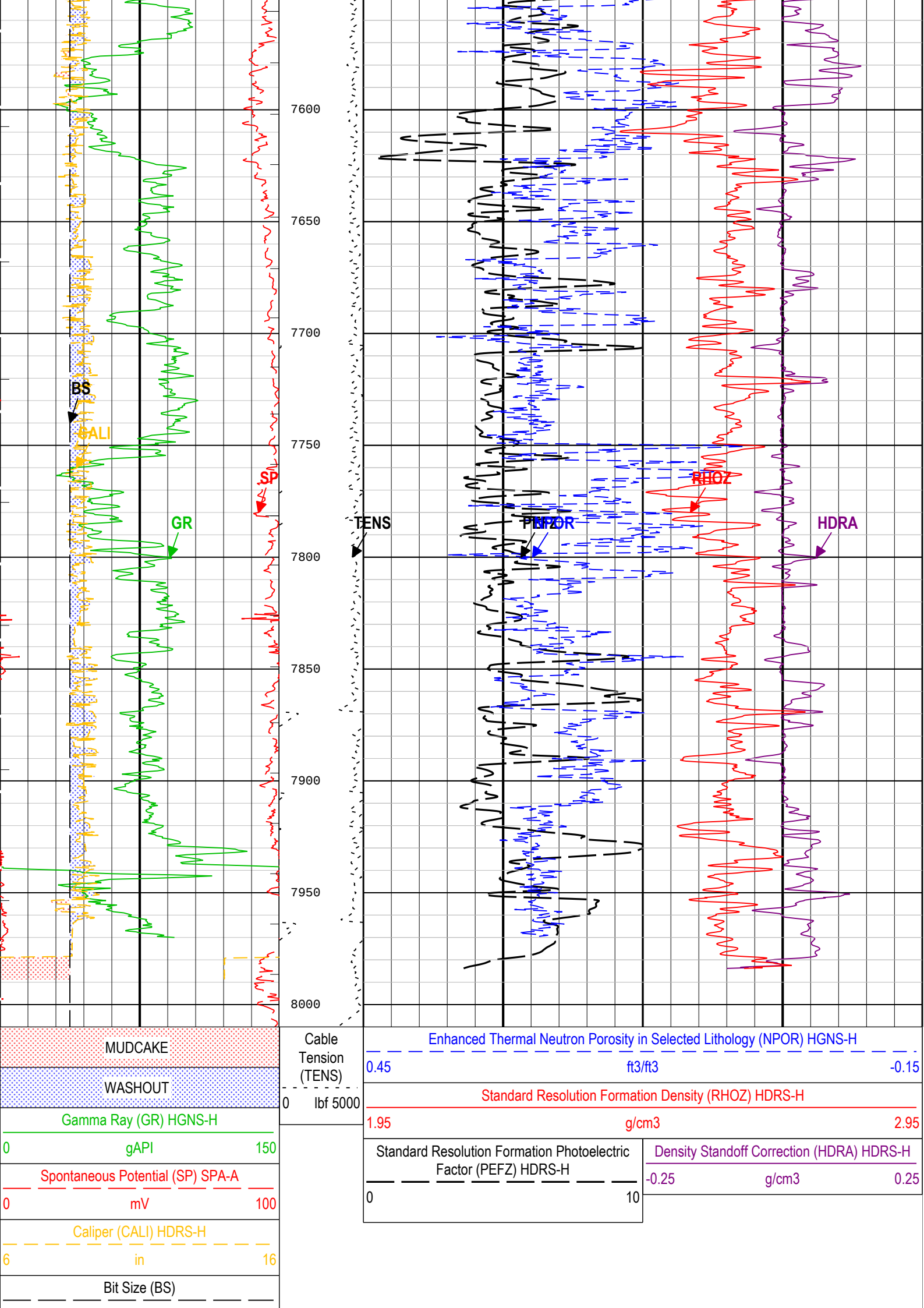












0	in	16
		IHV - Integrated Hole Volume every 100.00 (ft3)
TIME_1900	- Time Marked every 60.00 (s)	
	ICV - Integrated Cement Volume every 100.00 (ft3)	
		IHV - Integrated Hole Volume every 10.00 (ft3)
	ICV - Integrated Cement Volume every 10.00 (ft3)	
Description: Format: Log (NUCLEAR) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Apr-2013 16:25:54		

Channel Processing 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
BSAL	Borehole Salinity	Borehole	663	ppm
BSCO	Borehole Salinity Correction Option	HGNS-H	Yes	
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	3614	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	11.2	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
FSAL	Formation Salinity	Borehole	0	ppm
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	HD1	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	MRES	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HRLT_PROCRM	Mud Resistivity Select	HRLT-B	HRLT Compute	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
KFAC_HRLT	HRLT Geometrical Factor Option	HRLT-B	Sonde	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	LIMESTONE	
MCCO	Mud Cake Correction Option	HGNS-H	Yes	
MFST	Mud Filtrate Sample Temperature	Borehole	91	degF
MWCO	Mud Weight Correction Option	HGNS-H	Yes	
PROCMSO	Mechanical Standoff Size	HRLT-B	1.5	in
PROCSP0	Sonde Position	HRLT-B	Eccentered	
PTCO	Pressure Temperature Correction Option	HGNS-H	Yes	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	2.48	ohm.m
SOCN	Standoff Distance	HGNS-H	0	in
SPDR	SP Drift Per Foot	SPA-A	0	mV/ft

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	3600	3614
BS	8.5	3614	8010
All depth are actual.			

Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

REPEAT ANALYSIS

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Log[2]:Up	Up	3497.48 ft	8028.33 ft	10-Feb-2013 2:17:27 PM	10-Feb-2013 3:47:58 PM	16.41 ft	false
1	Log[3]:Up	Up	3555.23 ft	3925.97 ft	10-Feb-2013 3:54:33 PM	10-Feb-2013 4:02:35 PM	16.41 ft	false

All depths are referenced to toolstring zero

Log

1: Log[2]:Up

Description: Format: Log (NUCLEAR RA) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Apr-2013 16:25:59

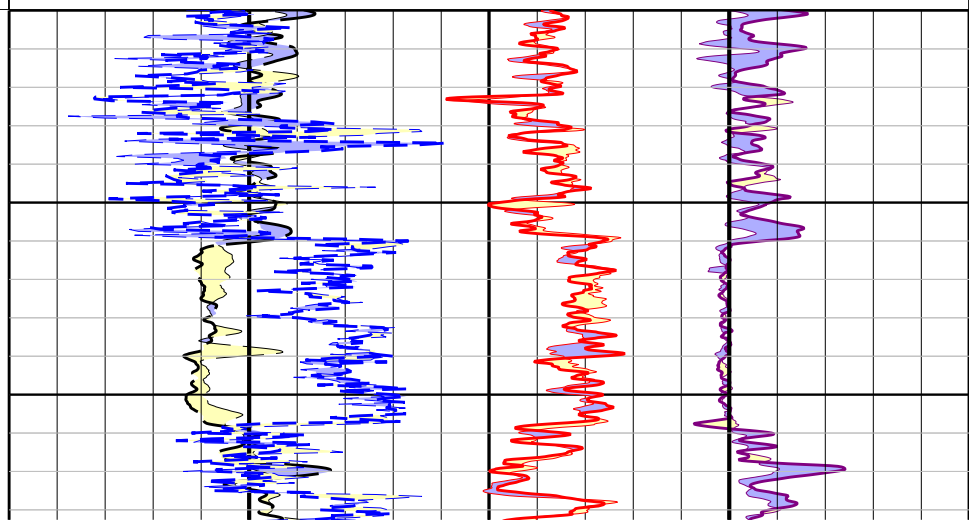
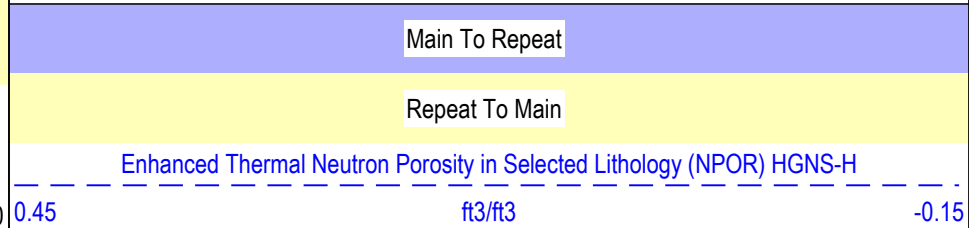
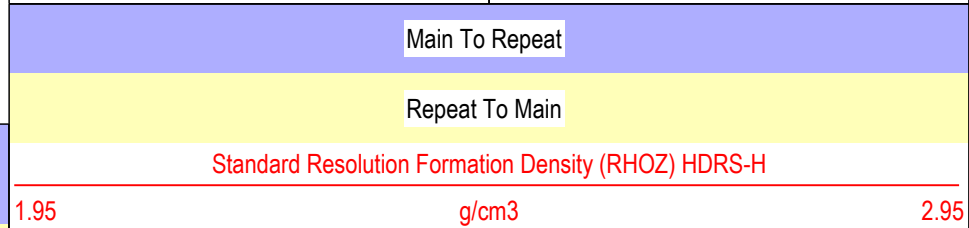
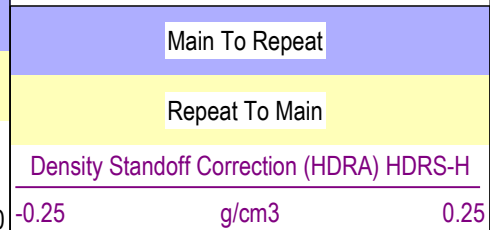
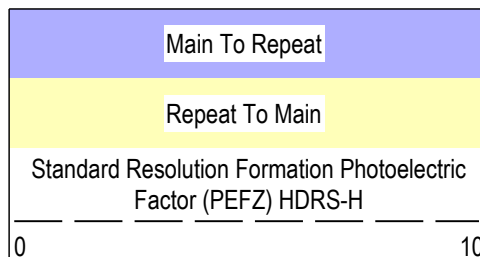
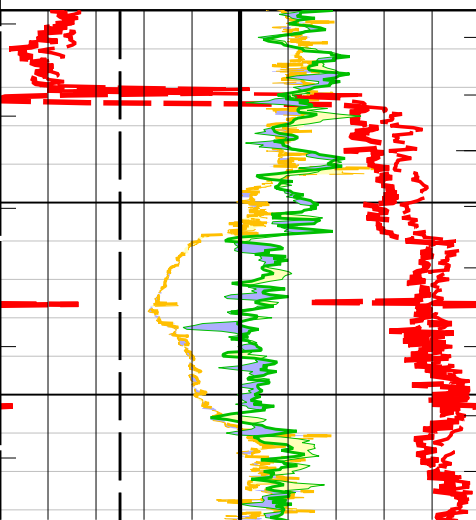
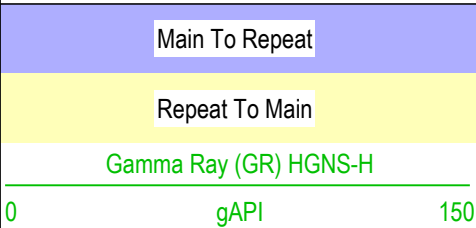
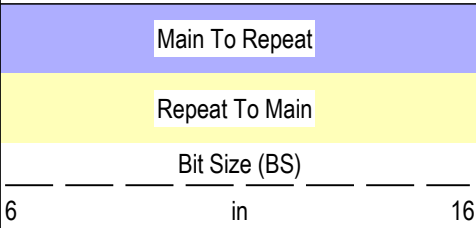
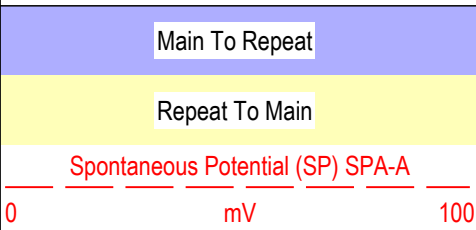
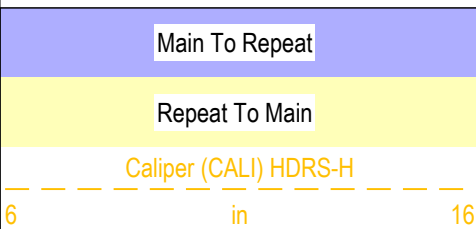
ICV - Integrated Cement Volume every 10.00 (ft3)

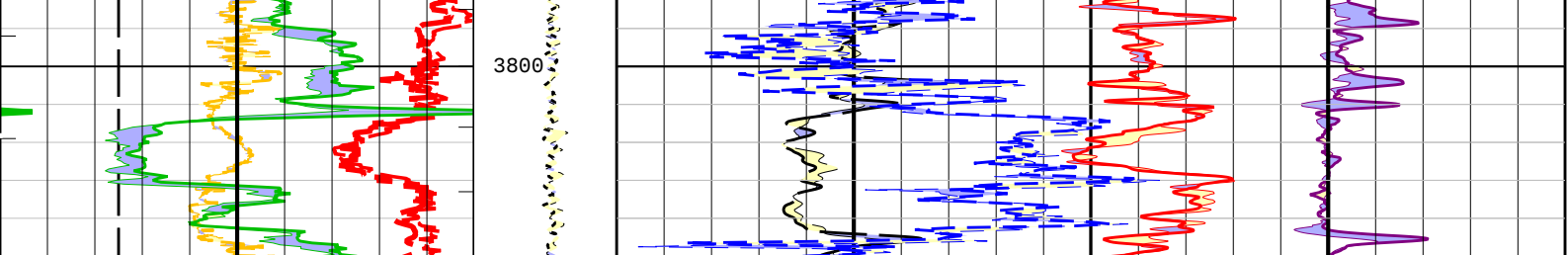
IHV - Integrated Hole Volume every 10.00 (ft3)

ICV - Integrated Cement Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)





Main To Repeat		Main To Repeat	Main To Repeat		
Repeat To Main			Repeat To Main		
Caliper (CALI) HDRS-H		Repeat To Main	Standard Resolution Formation Density (RHOZ) HDRS-H		
6 in 16			1.95 g/cm3 2.95		
Main To Repeat		Cable Tension (TENS)	Main To Repeat		
Repeat To Main			Repeat To Main		
Spontaneous Potential (SP) SPA-A		0 lbf 5000	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		
0 mV 100			0.45 ft3/ft3 -0.15		
Main To Repeat			Main To Repeat	Main To Repeat	
Repeat To Main			Repeat To Main	Repeat To Main	
Bit Size (BS)			Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H	Density Standoff Correction (HDRA) HDRS-H	
6 in 16			0 10	-0.25 g/cm3 0.25	
Main To Repeat					
Repeat To Main					
Gamma Ray (GR) HGNS-H					
0 gAPI 150					

TIME_1900 - Time Marked every 60.00 (s)

— IHV - Integrated Hole Volume every 100.00 (ft3)

— ICV - Integrated Cement Volume every 100.00 (ft3)

— IHV - Integrated Hole Volume every 10.00 (ft3)

— ICV - Integrated Cement Volume every 10.00 (ft3)

Description: Format: Log (NUCLEAR RA) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Apr-2013 16:25:59

Calibration Report

PPC-B (Powered Positioning device and Caliper.) Calibration - Run 1

Primary Equipment :			
PPC-B Element is used for usual logging at wellsite and check/diagnostics.		PPC-B	8039
Calibration Parameter :			
ZERO_REF (Small Size Ring)		3.500	
PLUS_REF (Large Size Ring)		8.000	
Equipment Properties :			
Caliper Arm Equipment Type for PPC		PPC_CAL_STD	

PPC Check - Downhole Electronics Test

Before (Measured):		09:55:29 10-Feb-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Positive Analog Voltage	V	Before		7	8.67832	9	
Minus Analog Voltage	V	Before		-9	-8.68711	-7	
Digital Voltage	V	Before		3.15	3.37619	3.45	
Digital Voltage for Analog Digital Converter	V	Before		4.5	5.0209	5.5	
Status Word of Analog Digital Converter Offset		Before		-8	0.888889	8	

PPC Check - Cartridge Temperature Test

Before (Measured): 09:55:29 10-Feb-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Cartridge Temperature	degF	Before		-58	88.3281	482	
PPC Check - Power Control LVDT Test							
Before (Measured):		09:55:29 10-Feb-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
LVDT5 Caliper Open Position	in	Before			-1.30066		
LVDT5 Full Power Position	in	Before			1.31287		
PPC Diagnostics - Arm Close Position Test							
Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Caliper-arm 1, radius raw - 0	in	Master	----	----	----	----	
Caliper-arm 2, radius raw - 0	in	Master	----	----	----	----	
Caliper-arm 3, radius raw - 0	in	Master	----	----	----	----	
Caliper-arm 4, radius raw - 0	in	Master	----	----	----	----	
Power Control LVDT - 0	in	Master	----	----	----	----	
LVDT excitation - 0	V	Master	----	----	----	----	
PPC Diagnostics - Downhole Electronics Test							
Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Positive Analog Voltage - 0	V	Master	----	----	----	----	
Minus Analog Voltage - 0	V	Master	----	----	----	----	
Digital Voltage - 0	V	Master	----	----	----	----	
Digital Voltage for Analog Digital Converter - 0	V	Master	----	----	----	----	
Status Word of Analog Digital Converter Offset - 0		Master	----	----	----	----	
PPC Diagnostics - RBS Test							
Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Relative Bearing - 0	deg	Master	----	----	----	----	
Potentiometer Excitation - 0	V	Master	----	----	----	----	
PPC Diagnostics - Cartridge Temperature Test							
Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Cartridge Temperature - 0	degF	Master	----	----	----	----	
PPC Diagnostics - Power Control LVDT Test							
Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
LVDT5 Caliper Open Position - 0	in	Master	----	----	----	----	
LVDT5 Full Power Position - 0	in	Master	----	----	----	----	
PPC LVDT5 Master Calibration - PPC CaliCoefficients							
Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CCS	in	Master	-1.51		NOT DONE		
COP	in	Master	-1.31		NOT DONE		
CPW	in	Master	1.41		NOT DONE		
PPC Caliper Calibration - PPC CaliCoefficients							
Before (Measured):		10:06:35 10-Feb-2013			After (Measured):		
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RD1_GAIN		Before	1	0.85	1.08525	1.15	
		After	1	0.85	1.09037	1.15	
		After-Before	----	----	0.00512	----	
RD2_GAIN		Before	1	0.85	1.03371	1.15	
		After	1	0.85	1.03529	1.15	
		After-Before	----	----	0.00158	----	
RD3_GAIN		Before	1	0.85	1.01131	1.15	
		After	1	0.85	1.02337	1.15	
		After-Before	----	----	0.01206	----	
RD4_GAIN		Before	1	0.85	1.07386	1.15	
		After	1	0.85	1.0694	1.15	
		After-Before	----	----	-0.00446	----	
RD1_OFFSET	in	Before	0	-2.2	-1.73363	2.6	
		After	0	-2.2	-1.7913	2.6	
		After-Before	----	----	-0.05767	----	
RD2_OFFSET	in	Before	0	-2.2	-0.126655	2.6	
		After	0	-2.2	-0.100008	2.6	

HRLT M12 - 1	uV	Before After After-Before	1781.0 1781.0 -----	1548.7 1548.7 -----	1684.8 1685.8 1.0	2095.3 2095.3 -----	
HRLT M12 - 2	uV	Before After After-Before	1781.0 1781.0 -----	1548.7 1548.7 -----	1663.5 1664.8 1.3	2095.3 2095.3 -----	
HRLT M12 - 3	uV	Before After After-Before	1781.0 1781.0 -----	1548.7 1548.7 -----	1698.9 1701.8 2.9	2095.3 2095.3 -----	
HRLT M12 - 4	uV	Before After After-Before	1781.0 1781.0 -----	1548.7 1548.7 -----	1695.9 1696.3 0.4	2095.3 2095.3 -----	
HRLT M12 - 5	uV	Before After After-Before	1781.0 1781.0 -----	1548.7 1548.7 -----	1735.5 1736.1 0.6	2095.3 2095.3 -----	
HRLT M12 - 6	uV	Before After After-Before	-1781.0 -1781.0 -----	-2095.3 -2095.3 -----	-1611.7 -1613.9 -2.2	-1548.7 -1548.7 -----	

HRLT-B Calibration - HRLT M2-M3 Voltage Plus

Before (Measured):		09:54:29 10-Feb-2013		After (Measured):		17:20:58 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M23 - 0	uV	Before	1781.0	1548.7	1720.5	2095.3	
		After	1781.0	1548.7	1720.5	2095.3	
		After-Before	-----	-----	0.0	-----	
HRLT M23 - 1	uV	Before	1781.0	1548.7	1685.4	2095.3	
		After	1781.0	1548.7	1686.1	2095.3	
		After-Before	-----	-----	0.7	-----	
HRLT M23 - 2	uV	Before	1781.0	1548.7	1664.6	2095.3	
		After	1781.0	1548.7	1665.8	2095.3	
		After-Before	-----	-----	1.2	-----	
HRLT M23 - 3	uV	Before	1781.0	1548.7	1703.2	2095.3	
		After	1781.0	1548.7	1705.7	2095.3	
		After-Before	-----	-----	2.5	-----	
HRLT M23 - 4	uV	Before	1781.0	1548.7	1693.8	2095.3	
		After	1781.0	1548.7	1694.2	2095.3	
		After-Before	-----	-----	0.4	-----	
HRLT M23 - 5	uV	Before	1781.0	1548.7	1734.6	2095.3	
		After	1781.0	1548.7	1735.1	2095.3	
		After-Before	-----	-----	0.5	-----	
HRLT M23 - 6	uV	Before	-1781.0	-2095.3	-1601.4	-1548.7	
		After	-1781.0	-2095.3	-1603.6	-1548.7	
		After-Before	-----	-----	-2.2	-----	

HRLT-B Calibration - HRLT A3-A4 Voltage Plus

Before (Measured):		09:54:29 10-Feb-2013		After (Measured):		17:20:58 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V34 - 0	uV	Before	70000.0	60869.6	67638.9	82352.9	
		After	70000.0	60869.6	67627.8	82352.9	
		After-Before	-----	-----	-11.1	-----	
HRLT V34 - 1	uV	Before	70000.0	60869.6	66039.8	82352.9	
		After	70000.0	60869.6	66080.0	82352.9	
		After-Before	-----	-----	40.2	-----	
HRLT V34 - 2	uV	Before	70000.0	60869.6	65514.8	82352.9	
		After	70000.0	60869.6	65598.3	82352.9	
		After-Before	-----	-----	83.5	-----	
HRLT V34 - 3	uV	Before	70000.0	60869.6	67301.8	82352.9	
		After	70000.0	60869.6	67403.7	82352.9	
		After-Before	-----	-----	101.9	-----	
HRLT V34 - 4	uV	Before	70000.0	60869.6	66902.6	82352.9	
		After	70000.0	60869.6	66930.3	82352.9	
		After-Before	-----	-----	27.7	-----	
HRLT V34 - 5	uV	Before	70000.0	60869.6	68537.7	82352.9	
		After	70000.0	60869.6	68561.3	82352.9	
		After-Before	-----	-----	23.6	-----	
HRLT V34 - 6	uV	Before	-70000.0	-82352.9	-61805.3	-60869.6	
		After	-70000.0	-82352.9	-61893.8	-60869.6	
		After-Before	-----	-----	-88.5	-----	

HRLT-B Calibration - HRLT A4-A5 Voltage Plus

Before (Measured):		09:54:29 10-Feb-2013		After (Measured):		17:20:58 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HPLT V45 - 0	uV	Before	70000.0	60869.6	67721.9	82352.9	

HRLT V45 - 0	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	67721.9 67708.9 -13.0	82352.9 82352.9 -----	
HRLT V45 - 1	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	66559.1 66599.3 40.2	82352.9 82352.9 -----	
HRLT V45 - 2	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	65930.7 65981.0 50.3	82352.9 82352.9 -----	
HRLT V45 - 3	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	67602.9 67716.0 113.1	82352.9 82352.9 -----	
HRLT V45 - 4	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	67035.8 67075.4 39.6	82352.9 82352.9 -----	
HRLT V45 - 5	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	68626.5 68641.8 15.3	82352.9 82352.9 -----	
HRLT V45 - 6	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-62329.2 -62420.7 -91.5	-60869.6 -60869.6 -----	

HRLT-B Calibration - HRLT A5-A6 Voltage Plus

Before (Measured): 09:54:29 10-Feb-2013		After (Measured): 17:20:58 10-Feb-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V56 - 0	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	67655.7 67655.7 0.0	82352.9 82352.9 -----	
HRLT V56 - 1	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	66424.2 66462.1 37.9	82352.9 82352.9 -----	
HRLT V56 - 2	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	65807.5 65883.7 76.2	82352.9 82352.9 -----	
HRLT V56 - 3	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	67517.5 67628.4 110.9	82352.9 82352.9 -----	
HRLT V56 - 4	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	66983.7 67020.0 36.3	82352.9 82352.9 -----	
HRLT V56 - 5	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	68588.1 68604.1 16.0	82352.9 82352.9 -----	
HRLT V56 - 6	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-62197.5 -62282.1 -84.6	-60869.6 -60869.6 -----	

HRLT-B Calibration - HRLT Torpedo-M0 Voltage

Before (Measured): 09:54:29 10-Feb-2013		After (Measured): 17:20:58 10-Feb-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VTP - 0	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-67367.2 -67354.8 12.4	-60869.6 -60869.6 -----	
HRLT VTP - 1	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-66262.1 -66298.5 -36.4	-60869.6 -60869.6 -----	
HRLT VTP - 2	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-65694.3 -65775.3 -81.0	-60869.6 -60869.6 -----	
HRLT VTP - 3	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-67487.3 -67594.3 -107.0	-60869.6 -60869.6 -----	
HRLT VTP - 4	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-67057.4 -67072.5 -15.1	-60869.6 -60869.6 -----	
HRLT VTP - 5	uV	Before After After-Before	-70000.0 -70000.0 -----	-82352.9 -82352.9 -----	-68664.1 -68687.9 -23.8	-60869.6 -60869.6 -----	
HRLT VTP - 6	uV	Before After After-Before	70000.0 70000.0 -----	60869.6 60869.6 -----	61988.7 62081.5 92.8	82352.9 82352.9 -----	

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

Before (Measured):		09:54:29 10-Feb-2013		After (Measured):		17:20:58 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VBD - 0	uV	Before	-70000.0	-82352.9	-67366.6	-60869.6	
		After	-70000.0	-82352.9	-67352.5	-60869.6	
		After-Before	-----	-----	14.1	-----	
HRLT VBD - 1	uV	Before	-70000.0	-82352.9	-66295.5	-60869.6	
		After	-70000.0	-82352.9	-66332.4	-60869.6	
		After-Before	-----	-----	-36.9	-----	
HRLT VBD - 2	uV	Before	-70000.0	-82352.9	-65745.2	-60869.6	
		After	-70000.0	-82352.9	-65799.3	-60869.6	
		After-Before	-----	-----	-54.1	-----	
HRLT VBD - 3	uV	Before	-70000.0	-82352.9	-67505.8	-60869.6	
		After	-70000.0	-82352.9	-67613.6	-60869.6	
		After-Before	-----	-----	-107.8	-----	
HRLT VBD - 4	uV	Before	-70000.0	-82352.9	-67065.6	-60869.6	
		After	-70000.0	-82352.9	-67081.3	-60869.6	
		After-Before	-----	-----	-15.7	-----	
HRLT VBD - 5	uV	Before	-70000.0	-82352.9	-68666.0	-60869.6	
		After	-70000.0	-82352.9	-68689.8	-60869.6	
		After-Before	-----	-----	-23.8	-----	
HRLT VBD - 6	uV	Before	70000.0	60869.6	62025.7	82352.9	
		After	70000.0	60869.6	62117.7	82352.9	
		After-Before	-----	-----	92.0	-----	

HRLT-B Calibration - HRLT Source Current Plus

Before (Measured):		09:54:29 10-Feb-2013		After (Measured):		17:20:58 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT ISO - 0	uA	Before	284.0	247.0	281.5	334.1	
		After	284.0	247.0	281.6	334.1	
		After-Before	-----	-----	0.1	-----	
HRLT ISO - 1	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-----	0.0	-----	
HRLT ISO - 2	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-----	0.0	-----	
HRLT ISO - 3	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-----	0.0	-----	
HRLT ISO - 4	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-----	0.0	-----	
HRLT ISO - 5	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-----	0.0	-----	
HRLT ISO - 6	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-----	0.0	-----	

HRLT-B Calibration - HRLT Vertical Voltage PI

Before (Measured):		09:54:29 10-Feb-2013		After (Measured):		17:20:58 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT MV - 0	uV	Before	-322.7	-379.6	-317.6	-280.6	
		After	-322.7	-379.6	-317.7	-280.6	
		After-Before	-----	-----	-0.1	-----	
HRLT MV - 1	uV	Before	-322.7	-379.6	-302.4	-280.6	
		After	-322.7	-379.6	-302.6	-280.6	
		After-Before	-----	-----	-0.2	-----	
HRLT MV - 2	uV	Before	-322.7	-379.6	-298.4	-280.6	
		After	-322.7	-379.6	-298.5	-280.6	
		After-Before	-----	-----	-0.1	-----	
HRLT MV - 3	uV	Before	-322.7	-379.6	-302.7	-280.6	
		After	-322.7	-379.6	-303.3	-280.6	
		After-Before	-----	-----	-0.6	-----	
HRLT MV - 4	uV	Before	-322.7	-379.6	-299.2	-280.6	
		After	-322.7	-379.6	-299.3	-280.6	
		After-Before	-----	-----	-0.1	-----	
HRLT MV - 5	uV	Before	-322.7	-379.6	-320.6	-280.6	
		After	-322.7	-379.6	-320.6	-280.6	
		After-Before	-----	-----	0.0	-----	
HRLT MV - 6	uV	Before	322.7	280.6	300.2	379.6	
		After	322.7	280.6	300.7	379.6	
		After-Before	-----	-----	0.5	-----	

		After-Before	-----		0.5	-----	
HRLT-B Calibration - HRLT Calibration Temperature							
Before (Measured):		09:54:29 10-Feb-2013		After (Measured):		17:20:58 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CTEM_HRLT	degF	Before			91.7		
		After			95.2		
		After-Before	-----	-----	3.5	-----	

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

Primary Equipment :			
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3964
	HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	3976
Auxiliary Equipment :			
	HRDD Backscatter Detector	Backscatter	41151
	HRDD Long Spacing Detector	Long Spacing	28783
	HRDD Short Spacing Detector	Short Spacing	27861
	Cesium 137 Gamma-Ray Logging Source	GSR-J	2933
	HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3964
	HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	3990
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):		09:48:01 10-Feb-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.20	10.00	
Large Ring	in	Before	12.00	9.00	11.69	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM):		10:22:24 23-Jan-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.600	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.689	1.696	
Pe Aluminum		Master	2.570	2.470	2.535	2.670	
Pe Magnesium		Master	2.650	2.550	2.607	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM):		10:22:24 23-Jan-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.2315	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.8792	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3454	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.5908	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.6396	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.2645	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM):		10:22:24 23-Jan-2013		Before (Measured):		09:58:54 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7408		
		Before	0.7408	0.7037	0.7410	0.7778	
		Before-Master	-----	-----	0.0002	-----	
BS Window Sum	1/s	Master	1		27216		
		Before	27216	25855	27188	28577	
		Before-Master	-----	-----	-28	-----	
SS Window Ratio		Master	1.0000		0.4814		
		Before	0.4814	0.4573	0.4796	0.5055	
		Before-Master	-----	-----	-0.0018	-----	
SS Window Sum	1/s	Master	1		10945		
		Before	10945	10398	10927	11493	
		Before-Master	-----	-----	-18	-----	
LS Window Ratio		Master	1.0000		0.3061		
		Before	0.3061	0.2908	0.3009	0.3214	
		Before-Master	-----	-----	-0.0052	-----	
LS Window Sum	1/s	Master	1		1258		
		Before	1258	1105	1248	1320	
		Before-Master	-----	-----	-110	-----	

		Before	1238	1195	1248	1320	
		Before-Master	-----	-----	-10	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		10:22:24 23-Jan-2013		Before (Measured):		09:58:54 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1403	2400	
		Before		1000	1403	2400	
		Before-Master	-----	-100	0	100	
SS PM High Voltage	V	Master		1000	1620	2400	
		Before		1000	1633	2400	
		Before-Master	-----	-100	13	100	
LS PM High Voltage	V	Master		1000	1294	2400	
		Before		1000	1297	2400	
		Before-Master	-----	-100	3	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		10:22:24 23-Jan-2013		Before (Measured):		09:58:54 10-Feb-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	11.45	25.00	
		Before		5.00	11.45	25.00	
		Before-Master	-----	-1.00	0.00	1.00	
SS Crystal Resolution	%	Master		5.00	9.66	20.00	
		Before		5.00	9.73	20.00	
		Before-Master	-----	-1.00	0.07	1.00	
LS Crystal Resolution	%	Master		5.00	8.02	20.00	
		Before		5.00	7.91	20.00	
		Before-Master	-----	-1.00	-0.11	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		09:55:14 10-Feb-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3889	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3836	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3842	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	4750
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	5287
AmBe Neutron Logging Source		NSR-F	5167
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)		165	

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured):		09:54:53 10-Feb-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):		19:00:00 14-Aug-2006					
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	-----	-----	-1434.000	-----	
Accelerometer Coefficients - 1		Master	-----	-----	-44.490	-----	
Accelerometer Coefficients - 2		Master	-----	-----	0.028	-----	
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 4		Master	-----	-----	2.761	-----	
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 7		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 8		Master	-----	-----	298.300	-----	
Accelerometer Coefficients - 9		Master	-----	-----	0.996	-----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 16:21:08 08-Feb-2013		Before (Measured): 10:10:14 10-Feb-2013		After (Measured): 17:29:51 10-Feb-2013			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	27.3	40.0	
		Before	0	5.0	26.7	40.0	
		After	0	5.0	27.6	40.0	
		Before-Master	-----	-4.1	-0.6	4.1	
		After-Before	-----	-4.0	0.9	4.0	
Far Zero Measurement	1/s	Master	0	5.0	26.8	40.0	
		Before	0	5.0	27.2	40.0	
		After	0	5.0	28.4	40.0	
		Before-Master	-----	-4.0	0.4	4.0	
		After-Before	-----	-4.1	1.2	4.1	
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5343.0	6900.0	
		Before	-----	-----	-----	-----	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
		After-Before	-----	-----	-----	-----	
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2260.0	2900.0	
		Before	-----	-----	-----	-----	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
		After-Before	-----	-----	-----	-----	
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	5239.0	6900.0	
		Before	-----	-----	-----	-----	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
		After-Before	-----	-----	-----	-----	
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2182.0	2900.0	
		Before	-----	-----	-----	-----	
		After	-----	-----	-----	-----	
		Before-Master	-----	-----	-----	-----	
		After-Before	-----	-----	-----	-----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured): 10:14:59 10-Feb-2013		After (Measured): 17:41:16 10-Feb-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	4.3	120.0	
		After	30.0	0	7.2	120.0	
		After-Before	-----	-----	2.9	-----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	170.0	206.3	
		After	179.8	152.4	166.5	200.0	
		After-Before	-----	-----	-3.5	-----	
GR Calibration Gain		Before	0.89	0.80	0.97	1.05	
		After	-----	-----	-----	-----	
		After-Before	-----	-----	-----	-----	

Company: SAVIA PERU S.A.

Schlumberger

Well: LO6-27D

Field: LOBITOS

Rig Name: PEPESA-40

Country: PERU

NUCLEAR LOG

SP-PPC-HRLT-TLD-HGNS-GR

SCALE 2":100'