

Company: SAVIA PERU S.A.

Well: LO16-31D

Field: LOBITOS

Rig Name: PEPESA 44 Country: PERU

RESISTIVITY LOGARITHMIC LOG

SP-HRLT-TLD-HGNS

SCALE 2"/100'

Rig Name:	PEPESA 44				
Field:	LOBITOS				
Location:	BLOCK - Z2B				
Well:	LO16-31D				
Company:	SAVIA PERU S.A.				
		Location:			
		BLOCK - Z2B	Elev.:	K.B.	
		9505993.11		G.L.	-309.00 ft
		4594448.91		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:	Max.Hole Deviation	Longitude:	Latitude:
		PIURA	45.97 deg	81° 21' 55.85" W	4° 28' 9.17" S

Logging Date 28-Apr-2014

Run Number 1

Depth Driller 8865.00 ft

Schlumberger Depth 6590.00 ft

Bottom Log Interval 6590.00 ft

Top Log Interval 5450.00 ft

Casing Driller Size @ Depth 9.625 in @ 5556.00 ft

Casing Schlumberger 5533 ft

Bit Size 8.5 in

Type Fluid In Hole KLA-SHIELD

Density 11.6 lbm/gal 59 s

Fluid Loss PH 5 cm3 10.4

Source of Sample Active Tank

RM @ Meas Temp 0.29 ohm.m @ 73.2 degF

RMF @ Meas Temp 0.2 ohm.m @ 74.1 degF

RMC @ Meas Temp 0.91 ohm.m @ 73.8 degF

Source RMF RMC Pressed

RM @ BHT RMC @ BHT 0.15 @ 150 0.1 @ 150

Max Recorded Temperatures 150 degF

Circulation Stopped 27-Apr-2014 20:00:31

Logger on Bottom 28-Apr-2014 15:39:43

Unit Number 826 PETA

Recorded By Naseem Mansoor

Witnessed By Jose Coronado

Disclaimer

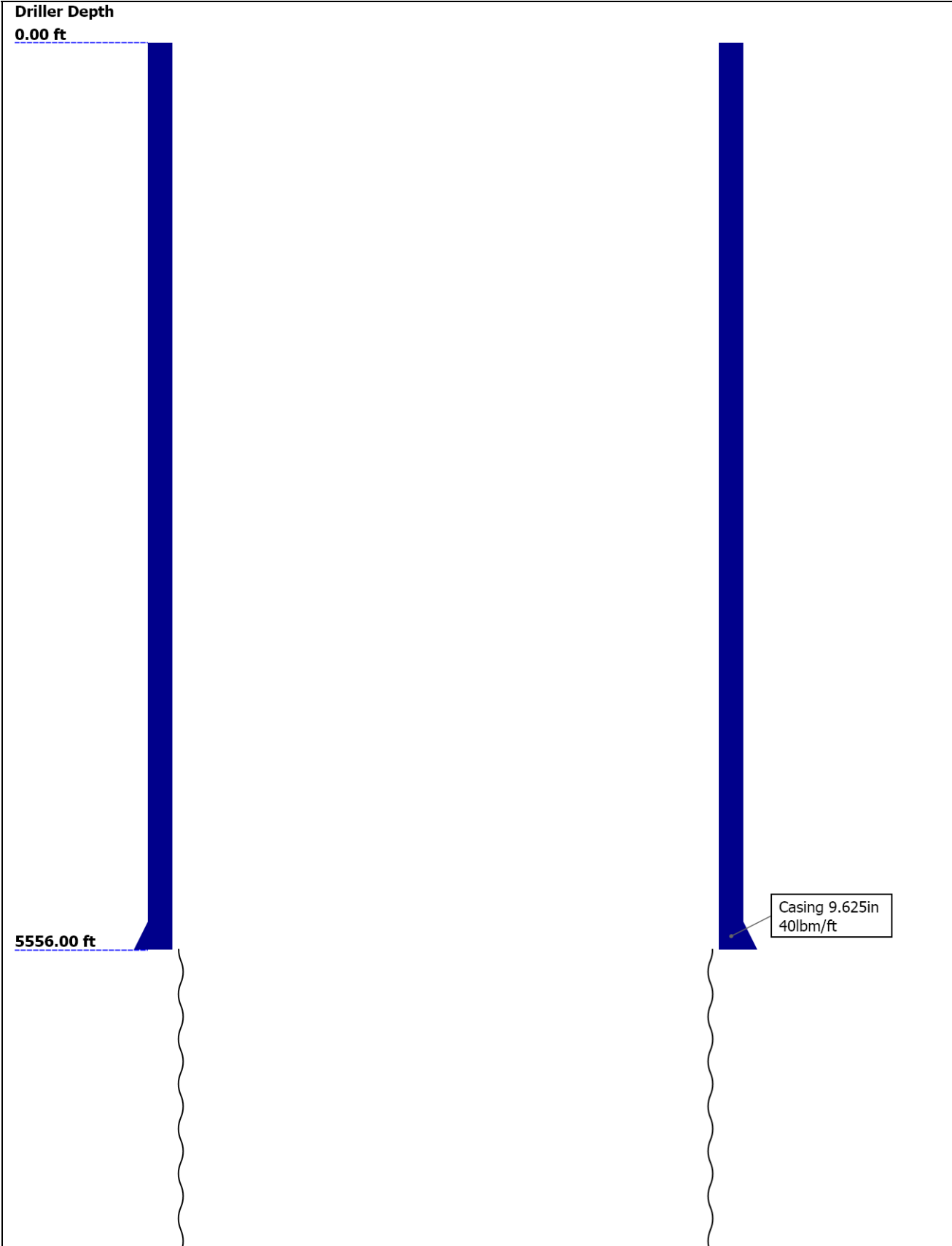
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Well Sketch



8865.00 ft

Open Hole 8.5in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	8.5					
Top Driller (ft)	5556					
Top Logger (ft)	5533					
Bottom Driller (ft)	8865					
Bottom Logger (ft)	6590					
Casing						
Size (in)	9.625					
Weight (lbm/ft)	40					
Inner Diameter (in)	8.835					
Grade	N/A					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	5556					
Bottom Logger (ft)	5533					

Operational Run Summary

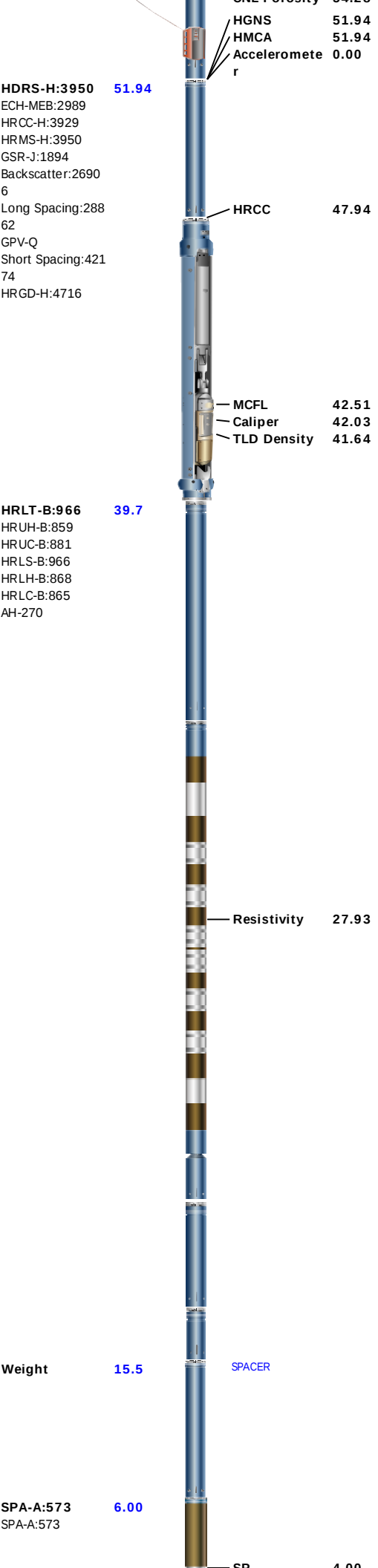
Parameter (unit)	1					
Date Log Started	28-Apr-2014					
Time Log Started	12:14:06					
Date Log Finished	28-Apr-2014					
Time Log Finished	16:49:28					
Top Log Interval (ft)	5450.00					
Bottom Log Interval (ft)	6590.00					
Total Depth (ft)	8867.00					
Max Hole Deviation (deg)	45.97					
Azimuth of Max Deviation (deg)	287.78					
Bit Size (in)	8.500					
Logging Unit Number	826					
Logging Unit Location	PETA					
Recorded By	Naseem Mansoor					
Witnessed By	Jose Coronado					

[illegible]

Parameter(unit)	1					
Fluid Type	Water					
Fluid Name	DFT_WATER_K LA - DFT_WATER_K LA_SHIELD					
Max Recorded Temperatures (degF)	150					
Source of Sample	Active Tank					
Salinity (ppm)	0					
Density (lbm/gal)	11.6					
Funnel Viscosity (s)	59					
Fluid Loss (cm3)	5					
PH	10.4					
Date/Time Circulation Stopped	27-Apr-2014 20:00:31					
Date Logger on Bottom	28-Apr-2014					
Time Logger on Bottom	15:39:43					
Source RMF	Pressed					
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	0.29 @ 73.2					
RMF @ Meas Temp (ohm.m@degF)	0.2 @ 74.1					
RMC @ Meas Temp (ohm.m@degF)	0.91 @ 73.8					
RM @ BHT (ohm.m@degF)	0.15 @ 150					
RMF @ BHT (ohm.m@degF)	0.1 @ 150					
RMC @ BHT (ohm.m@degF)	0.47 @ 150					
Total Solid (%)	14					
High Gravity Solids (%)						

Remarks and Equipment Summary	
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1: Toolstring				1: Remarks
Equip name LEH-QT:2708 LEH-QT:2708	Length 68.69	MP name	Offset	Logging objective: formation resistivity, nuclear and caliper evaluation.
				Toolstring ran as per toolsketch.
				Matrix was set to Limestone with density 2.71 g/cc, as per client request.
AH-369:938	65.78			Neutron corrections: Hole Size, mud weight, mud cake, pressure and temperature.
DTC-H:8280 ECH-KC:9357 DTC-H:8280	64.35	CTEM HV	63.45 0.00	Main log correlated to downlog.
		TelStatus ToolStatus Temperature	61.35 61.35 61.32	TD wasn't tagged. Maximum depth reached 6590 ft. Casing Shoe found @ 5533 ft.
HGNS-H:4740 HGNH:2750 NPV-N NSR-F:2254 HMCA-H HACCZ-H:4651 HGNS-H:4740	61.35	GR	60.61	Tool String run with 1.5: Standoffs
				Repeat section was made close to casing shoe to avoid going down to the sticky zones.
		CNL Porosity	54.28	

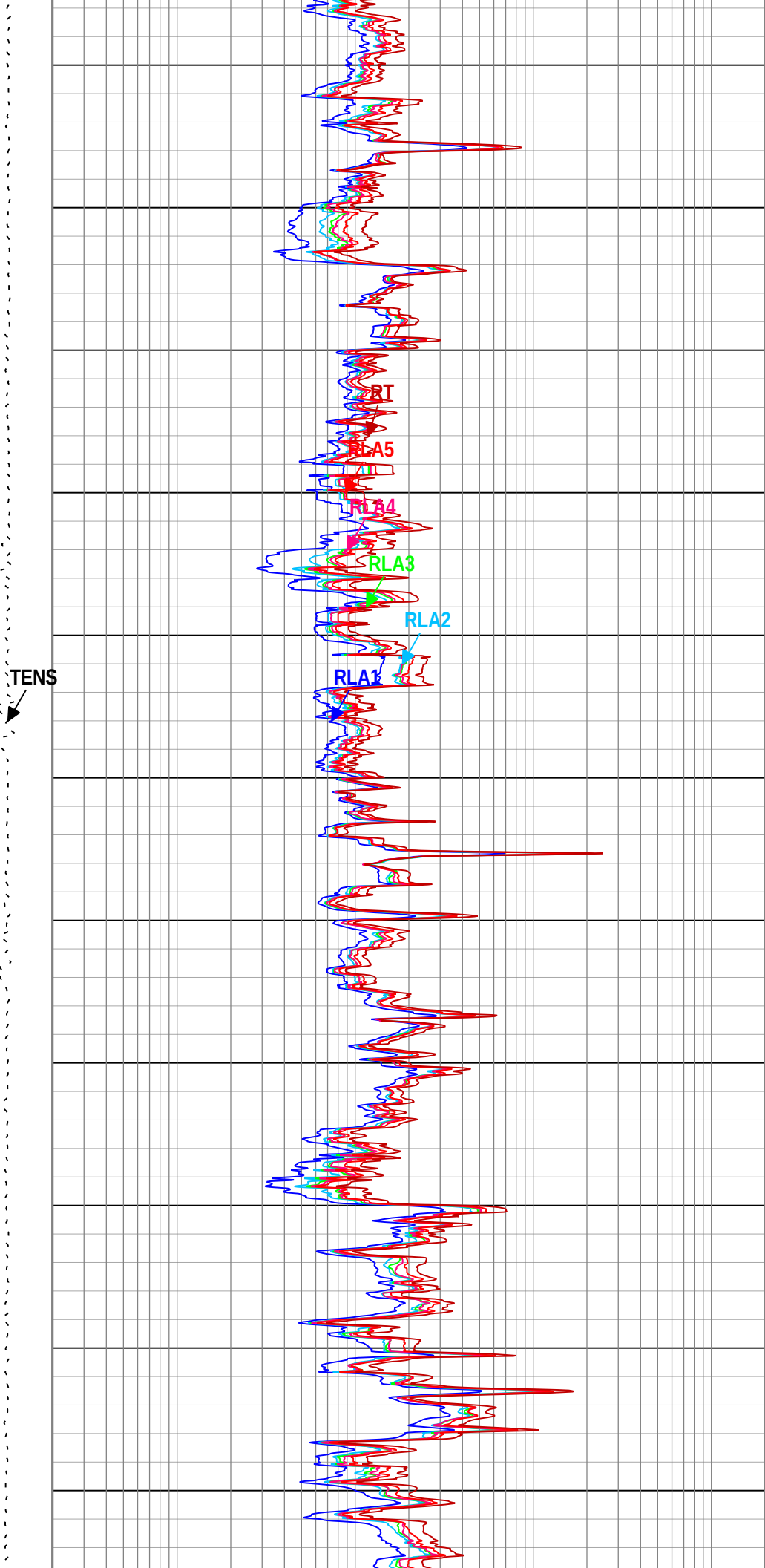
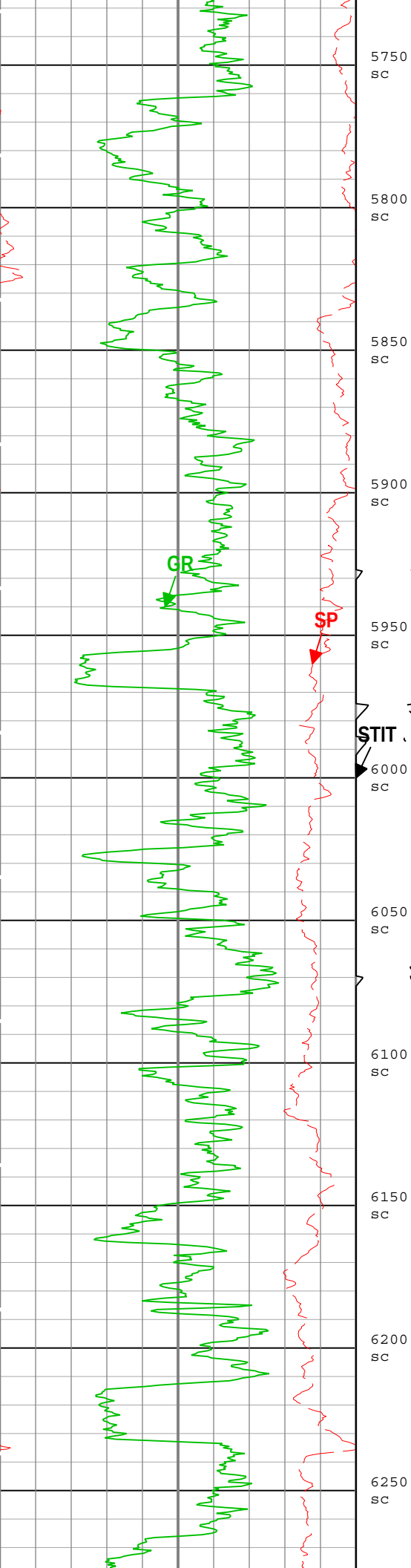


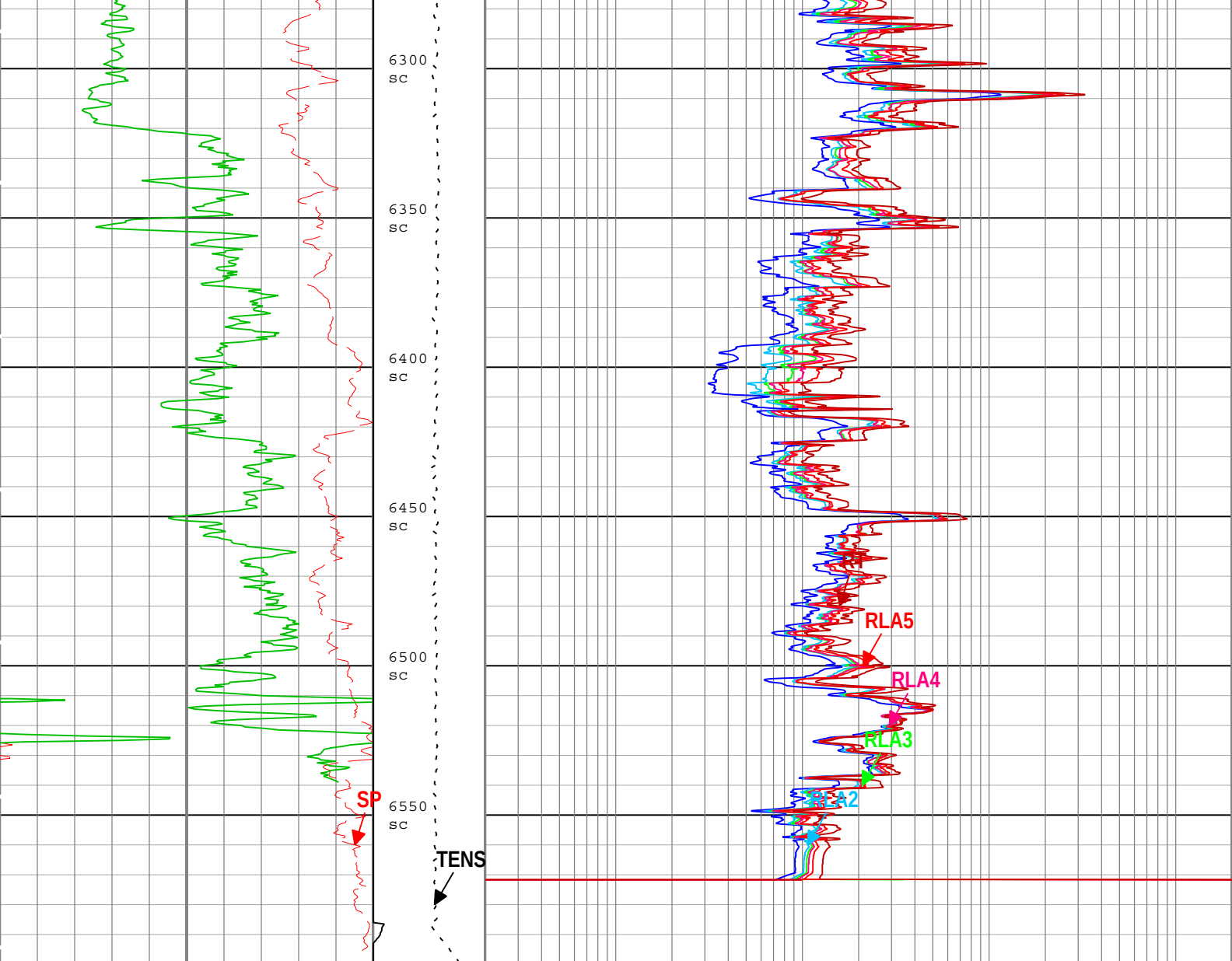
SP 4.00 BNS-NG 2.00 Lengths are in ft Maximum Outer Diameter = 4.700 in Line: Sensor Location, Value: Gating Offset All measurements are relative to TOOL_ZERO		
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Depth Summary			
	1		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	7029		
Calibration Date	24-SEP-2013		
Calibrator Serial Number	3421		
Calibration Cable Type	7-46P-XS		
Wheel Correction 1	-7		
Wheel Correction 2	-6		
Tension Device			
Type	CMTD-B/A		
Serial Number	2924		
Calibration Date	25-APR-2014		
Calibrator Serial Number	921		
Number of Calibration Points	10		
Calibration Root Mean Square Error	11		
Calibration Peak Error	24		
Logging Cable			
Type	7-46P-XS		
Serial Number	U713055		
Length	30000.00 ft		
Conveyance Type	Wireline		
Rig Type	OFFSHORE		
1:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	IDW used as primary depth reference	
Rig Up Length At Surface	191.60 ft	Z-Chart used as secondary depth reference	
Rig Up Length At Bottom	190.30 ft	All Schlumberger depth control policies were followed	
Rig Up Length Correction	1.30 ft		
Stretch Correction	2.00 ft		
Tool Zero Check At Surface	2.00 ft		
1			

MAIN LOG

Software Version			
Acquisition System		Version	
MaxWell		4.0.9163.3000	
Application Patch		Patch-SP-10767_13393-4.0.9163.3001	
Computation	Description	Version	
DepthCorrection	DepthCorrection	4.0.9213.3000	
Tool Elements	Description	Software Version	Firmware Version
SPA-A	SP Adaptor	4.0.9033.3000	
HRLS-B	HRLT-B Sonde	4.0.9033.3000	DSP: 2.1 HOST: 0.a
HGNS-H	HLL T Gamma-Ray and Neutron Sonde, 150 degC	4.0.9231.3000	2.0





Spontaneous Potential (SP) SPA-A			Stuck Tool Indicator, Total (STIT)	Apparent Resistivity from Computed Focusing Mode 1 (RLA1) HRLT-B		
-80	mV	20		0.2	ohm.m	2000
Gamma Ray (GR) HGNS-H			0 ft 50	Apparent Resistivity from Computed Focusing Mode 2 (RLA2) HRLT-B		
0	gAPI	150		0.2	ohm.m	2000
			Cable Tension (TENS) ----- 8000 lbf 0	Apparent Resistivity from Computed Focusing Mode 3 (RLA3) HRLT-B		
				0.2	ohm.m	2000
				Apparent Resistivity from Computed Focusing Mode 4 (RLA4) HRLT-B		
				0.2	ohm.m	2000
				Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B		
				0.2	ohm.m	2000
				True Resistivity (RT) HRLT-B		
				0.2	ohm.m	2000

TIME_1900 - Time Marked every 60.00 (s)

Description: HRLT BASIC LOG Format: Log (HRLT Basic Log) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 28-Apr-2014 22:36:57

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	

BHT	Bottom Hole Temperature	Borehole	150	degF
BS	Bit Size	WLSESSION	8.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	5533	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Post-processed Depth	
DFD	Drilling Fluid Density	Borehole	11.6	lbm/gal
EDF	Elevation of Derrick Floor Above Permanent Datum	WLSESSION	50	ft
EPD	Elevation of Permanent Datum (PDAT) above Mean Sea Level	WLSESSION	0	ft
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	
GGRD	Geothermal Gradient	Borehole	1	0.01 degF/ft
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	REMS	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	GTEM_LINEST	
HRLT_PROCRM	Mud Resistivity Select	HRLT-B	HRLT Compute	
HRLT_RXOSE	Inversion Micro-Resistivity Selection	HRLT-B	HRLT Compute	
KFAC_HRLT	HRLT Geometrical Factor Option	HRLT-B	Sonde	
MST	Mud Sample Temperature	Borehole	73.2	degF
PDAT	Permanent Datum	WLSESSION	MSL	
PROCINV	Resistivity Inversion Selection	HRLT-B	On	
PROCMSO	Mechanical Standoff Size	HRLT-B	1.5	in
PROCSP0	Sonde Position	HRLT-B	Eccentered	
RMS	Resistivity of Mud Sample	Borehole	0.29	ohm.m
SHT	Surface Hole Temperature	Borehole	85	degF
SPDR	SP Drift Per Foot	SPA-A	0	mV/ft
TD	Total Measured Depth	Borehole	8867	ft
WDMS	Water Depth to Mean Sea Level	WLSESSION	309	ft

Tool Control Parameters	
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Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

1

REPEAT SECTION

Software Version	
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Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_13393-4.0.9163.3001

Computation	Description		Version
DepthCorrection	DepthCorrection		4.0.9213.3000
Tool Elements	Description	Software Version	Firmware Version
SPA-A	SP Adaptor	4.0.9033.3000	
HRLS-B	HRLT-B Sonde	4.0.9033.3000	DSP: 2.1 HOST: 0.a
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9231.3000	2.0

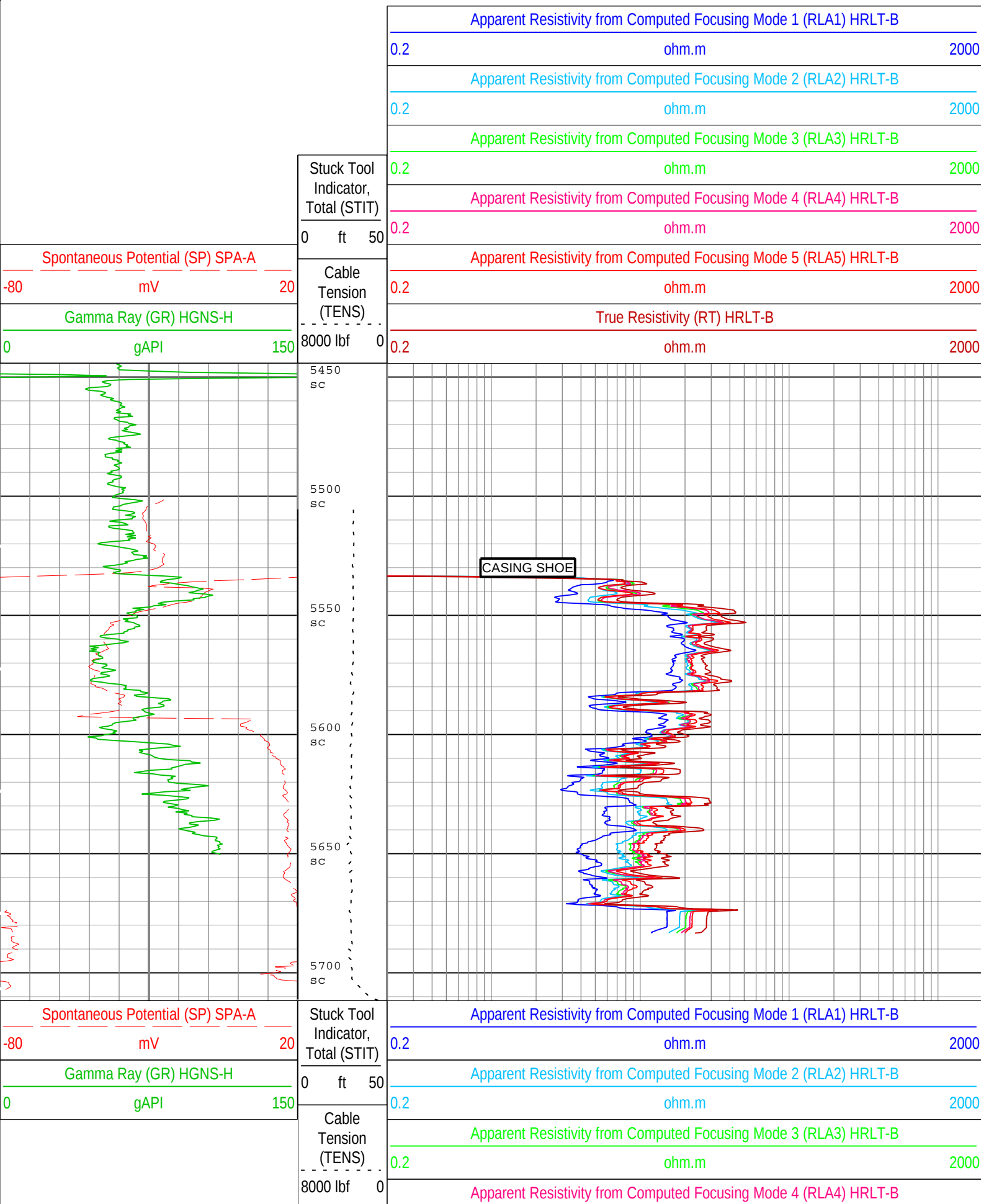
Pass Summary	
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Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1	Log[9]:Up	Up	5505.00 ft	5711.43 ft	28-Apr-2014 3:32:10 PM	28-Apr-2014 3:37:28 PM	ON	3.00 ft	No

All depths are referenced to toolstring zero

Description: HRLT BASIC LOG Format: Log (HRLT Basic Log) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 28-Apr-2014 22:36:58

TIME_1900 - Time Marked every 60.00 (s)



	0.2	ohm.m	2000
	Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B		
	0.2	ohm.m	2000
	True Resistivity (RT) HRLT-B		
	0.2	ohm.m	2000

TIME_1900 - Time Marked every 60.00 (s)

Description: HRLT BASIC LOG Format: Log (HRLT Basic Log) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 28-Apr-2014 22:36:58

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	150	degF
BS	Bit Size	WLSESSION	8.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	5533	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Post-processed Depth	
DFD	Drilling Fluid Density	Borehole	11.6	lbm/gal
EDF	Elevation of Derrick Floor Above Permanent Datum	WLSESSION	50	ft
EPD	Elevation of Permanent Datum (PDAT) above Mean Sea Level	WLSESSION	0	ft
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	
GGRD	Geothermal Gradient	Borehole	1	0.01 degF/ft
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	REMS	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	GTEM_LINEST	
HRLT_PROCRM	Mud Resistivity Select	HRLT-B	HRLT Compute	
HRLT_RXOSE	Inversion Micro-Resistivity Selection	HRLT-B	HRLT Compute	
KFAC_HRLT	HRLT Geometrical Factor Option	HRLT-B	Sonde	
MST	Mud Sample Temperature	Borehole	73.2	degF
PDAT	Permanent Datum	WLSESSION	MSL	
PROCINV	Resistivity Inversion Selection	HRLT-B	On	
PROCMSO	Mechanical Standoff Size	HRLT-B	1.5	in
PROCSPO	Sonde Position	HRLT-B	Eccentered	
RMS	Resistivity of Mud Sample	Borehole	0.29	ohm.m
SHT	Surface Hole Temperature	Borehole	85	degF
SPDR	SP Drift Per Foot	SPA-A	0	mV/ft
TD	Total Measured Depth	Borehole	8867	ft
WDMS	Water Depth to Mean Sea Level	WLSESSION	309	ft

Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

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):	12:22:37 28-Apr-2014	After (Measured):	16:48:19 28-Apr-2014

Measurement	Unit	Phase	Before	After	Delta	%Diff	
HRLT M01 - 0	uV	Before	-322.7	-379.6	-316.1	-280.6	
		After	-322.7	-379.6	-315.2	-280.6	
		After-Before	-----	-9.7	0.9	9.7	
HRLT M01 - 1	uV	Before	-322.7	-379.6	-315.5	-280.6	
		After	-322.7	-379.6	-313.4	-280.6	
		After-Before	-----	-9.7	2.1	9.7	
HRLT M01 - 2	uV	Before	-322.7	-379.6	-317.7	-280.6	
		After	-322.7	-379.6	-315.4	-280.6	
		After-Before	-----	-9.7	2.3	9.7	
HRLT M01 - 3	uV	Before	-322.7	-379.6	-316.2	-280.6	
		After	-322.7	-379.6	-315.0	-280.6	
		After-Before	-----	-9.7	1.2	9.7	
HRLT M01 - 4	uV	Before	-322.7	-379.6	-312.7	-280.6	
		After	-322.7	-379.6	-311.6	-280.6	
		After-Before	-----	-9.7	1.1	9.7	
HRLT M01 - 5	uV	Before	-322.7	-379.6	-317.0	-280.6	
		After	-322.7	-379.6	-316.1	-280.6	
		After-Before	-----	-9.7	0.9	9.7	
HRLT M01 - 6	uV	Before	322.7	280.6	314.6	379.6	
		After	322.7	280.6	313.5	379.6	
		After-Before	-----	-9.7	-1.1	9.7	

		After-Before
HBI T-B Calibration - HBI T M1-M2 Voltage Plus		

Before (Measured):		12:22:37 28-Apr-2014		After (Measured):		16:48:19 28-Apr-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M12 - 0	uV	Before	1781.0	1548.7	1732.4	2095.3	
		After	1781.0	1548.7	1727.8	2095.3	
		After-Before	-----	-53.4	-4.6	53.4	
HRLT M12 - 1	uV	Before	1781.0	1548.7	1736.0	2095.3	
		After	1781.0	1548.7	1724.8	2095.3	
		After-Before	-----	-53.4	-11.2	53.4	
HRLT M12 - 2	uV	Before	1781.0	1548.7	1740.9	2095.3	
		After	1781.0	1548.7	1729.2	2095.3	
		After-Before	-----	-53.4	-11.7	53.4	
HRLT M12 - 3	uV	Before	1781.0	1548.7	1732.1	2095.3	
		After	1781.0	1548.7	1725.4	2095.3	
		After-Before	-----	-53.4	-6.7	53.4	
HRLT M12 - 4	uV	Before	1781.0	1548.7	1711.3	2095.3	
		After	1781.0	1548.7	1705.7	2095.3	
		After-Before	-----	-53.4	-5.6	53.4	
HRLT M12 - 5	uV	Before	1781.0	1548.7	1735.4	2095.3	
		After	1781.0	1548.7	1731.2	2095.3	
		After-Before	-----	-53.4	-4.2	53.4	
HRLT M12 - 6	uV	Before	-1781.0	-2095.3	-1739.4	-1548.7	
		After	-1781.0	-2095.3	-1734.2	-1548.7	
		After-Before	-----	53.4	5.2	53.4	

		After-Before
HBI T-B Calibration - HBI T M2-M3 Voltage Plus		

Before (Measured):		12:22:37 28-Apr-2014		After (Measured):		16:48:19 28-Apr-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M23 - 0	uV	Before	1781.0	1548.7	1732.3	2095.3	
		After	1781.0	1548.7	1726.5	2095.3	
		After-Before	-----	-53.4	-5.8	53.4	
HRLT M23 - 1	uV	Before	1781.0	1548.7	1739.0	2095.3	
		After	1781.0	1548.7	1726.8	2095.3	
		After-Before	-----	-53.4	-12.2	53.4	
HRLT M23 - 2	uV	Before	1781.0	1548.7	1747.6	2095.3	
		After	1781.0	1548.7	1735.3	2095.3	
		After-Before	-----	-53.4	-12.3	53.4	
HRLT M23 - 3	uV	Before	1781.0	1548.7	1744.1	2095.3	
		After	1781.0	1548.7	1736.6	2095.3	
		After-Before	-----	-53.4	-7.5	53.4	
HRLT M23 - 4	uV	Before	1781.0	1548.7	1720.2	2095.3	
		After	1781.0	1548.7	1713.5	2095.3	
		After-Before	-----	-53.4	-6.7	53.4	
HRLT M23 - 5	uV	Before	1781.0	1548.7	1746.6	2095.3	
		After	1781.0	1548.7	1741.2	2095.3	
		After-Before	-----	-53.4	-5.4	53.4	

		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-8.5	0.0	8.5	
HRLT ISO - 2	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-8.5	0.0	8.5	
HRLT ISO - 3	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-8.5	0.0	8.5	
HRLT ISO - 4	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-8.5	0.0	8.5	
HRLT ISO - 5	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-8.5	0.0	8.5	
HRLT ISO - 6	uA	Before	281.1	244.4	281.1	330.7	
		After	281.1	244.4	281.1	330.7	
		After-Before	-----	-8.5	0.0	8.5	

HRLT-B Calibration - HRLT Vertical Voltage PI

Before (Measured):		12:22:37 28-Apr-2014		After (Measured):		16:48:19 28-Apr-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT MV - 0	uV	Before	-322.7	-379.6	-317.7	-280.6	
		After	-322.7	-379.6	-317.0	-280.6	
		After-Before	-----	-9.7	0.7	9.7	
HRLT MV - 1	uV	Before	-322.7	-379.6	-311.8	-280.6	
		After	-322.7	-379.6	-310.0	-280.6	
		After-Before	-----	-9.7	1.8	9.7	
HRLT MV - 2	uV	Before	-322.7	-379.6	-312.1	-280.6	
		After	-322.7	-379.6	-310.3	-280.6	
		After-Before	-----	-9.7	1.8	9.7	
HRLT MV - 3	uV	Before	-322.7	-379.6	-308.8	-280.6	
		After	-322.7	-379.6	-307.9	-280.6	
		After-Before	-----	-9.7	0.9	9.7	
HRLT MV - 4	uV	Before	-322.7	-379.6	-302.1	-280.6	
		After	-322.7	-379.6	-301.3	-280.6	
		After-Before	-----	-9.7	0.8	9.7	
HRLT MV - 5	uV	Before	-322.7	-379.6	-320.9	-280.6	
		After	-322.7	-379.6	-320.3	-280.6	
		After-Before	-----	-9.7	0.6	9.7	
HRLT MV - 6	uV	Before	322.7	280.6	323.9	379.6	
		After	322.7	280.6	323.1	379.6	
		After-Before	-----	-9.7	-0.8	9.7	

HRLT-B Calibration - HRLT Calibration Temperature

Before (Measured):		12:22:37 28-Apr-2014		After (Measured):		16:48:19 28-Apr-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CTEM_HRLT	degF	Before			90.8		
		After			95.0		
		After-Before	-----	-----	4.2	-----	

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	1894
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	3929
HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	3950
Calibration Parameter :		
Small Ring Size (Caliper Calibration Small Ring)	8.00	

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 12:27:24 28-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.80	10.00	
Large Ring	in	Before	12.00	9.00	11.86	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM): 18:14:00 25-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.597	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.688	1.696	
Pe Aluminum		Master	2.570	2.470	2.509	2.670	
Pe Magnesium		Master	2.650	2.550	2.651	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM): 18:14:00 25-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.2156	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.3916	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.7811	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.3717	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.5557	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.3841	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM): 18:14:00 25-Apr-2014

Before (Measured):

12:33:11 28-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7403		
		Before	0.7403	0.7033	0.7402	0.7773	
		Before-Master	-----	-----	-0.0001	-----	
BS Window Sum	1/s	Master	1		23468		
		Before	23468	22295	23941	24642	
		Before-Master	-----	-----	473	-----	
SS Window Ratio		Master	1.0000		0.4770		
		Before	0.4770	0.4531	0.4784	0.5008	
		Before-Master	-----	-----	0.0014	-----	
SS Window Sum	1/s	Master	1		11122		
		Before	11122	10566	11110	11678	
		Before-Master	-----	-----	-12	-----	
LS Window Ratio		Master	1.0000		0.2991		
		Before	0.2991	0.2842	0.3007	0.3141	
		Before-Master	-----	-----	0.0016	-----	
LS Window Sum	1/s	Master	1		1277		
		Before	1277	1213	1269	1341	
		Before-Master	-----	-----	-8	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 18:14:00 25-Apr-2014

Before (Measured):

12:33:11 28-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1511	2400	
		Before		1000	1501	2400	
		Before-Master	-----	-100	-10	100	
SS PM High Voltage	V	Master		1000	1582	2400	
		Before		1000	1586	2400	
		Before-Master	-----	-100	4	100	
LS PM High Voltage	V	Master		1000	1361	2400	
		Before		1000	1362	2400	
		Before-Master	-----	-100	1	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 18:14:00 25-Apr-2014

Before (Measured):

12:33:11 28-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	10.80	25.00	
		Before		5.00	10.74	25.00	
		Before-Master	-----	-1.00	-0.06	1.00	
SS Crystal Resolution	%	Master		5.00	9.42	20.00	
		Before		5.00	9.53	20.00	
		Before-Master	-----	-1.00	-0.11	1.00	

		Before	-----	5.00	9.33	20.00	
LS Crystal Resolution	%	Master		5.00	8.85	20.00	
		Before		5.00	8.98	20.00	
		Before-Master	-----	-1.00	0.13	1.00	

HDRS MCFL Calibration - MCFL Accumulations							
Before (Measured):		12:33:30 28-Apr-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3860	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3815	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3826	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	4740	
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC	HACCZ-H	4651	
AmBe Neutron Logging Source	NSR-F	2254	
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)	160		

HGNS Accelerometer Calibration - Accelerometer Accumulations							
Before (Measured):		12:19:06 28-Apr-2014					
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-Dec-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	-----	-----	-6900.000	-----	
Accelerometer Coefficients - 1		Master	-----	-----	26.920	-----	
Accelerometer Coefficients - 2		Master	-----	-----	0.006	-----	
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 4		Master	-----	-----	2.733	-----	
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 7		Master	-----	-----	0.000	-----	
Accelerometer Coefficients - 8		Master	-----	-----	298.600	-----	
Accelerometer Coefficients - 9		Master	-----	-----	0.998	-----	

HGNS Neutron Calibration - HGNS Neutron Accumulations								
Master (EEPROM):		20:34:56 25-Apr-2014	Before (Measured):		12:35:51 28-Apr-2014	After (Measured):		16:45:12 28-Apr-2014
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Near Zero Measurement	1/s	Master	0	5.0	27.8	40.0		
		Before	0	5.0	28.0	40.0		
		After	0	5.0	27.7	40.0		
		Before-Master	----	-4.2	0.2	4.2		
		After-Before	----	-4.2	-0.3	4.2		
Far Zero Measurement	1/s	Master	0	5.0	27.4	40.0		
		Before	0	5.0	29.0	40.0		
		After	0	5.0	31.3	40.0		
		Before-Master	----	-4.1	1.6	4.1		
		After-Before	----	-4.4	2.3	4.4		
Near Plus Measurement	1/s	Master	6031.0	4700.0	5842.0	6900.0		
		Before	----	----	----	----		
		After	----	----	----	----		
		Before-Master	----	----	----	----		
		After-Before	----	----	----	----		

Company:	SAVIA PERU S.A.	Schlumberger
Well:	LO16-31D	
Field:	LOBITOS	
Rig Name:	PEPESA 44	
Country:	PERU	

RESISTIVITY LOGARITHMIC LOG
SP-HRLT-TLD-HGNS
SCALE 2"/100'