

Company: CONOCOPHILLIPS CANADA RESOURCES CORP.

Well: COPRC DODO CANYON E76

Field: DODO CANYON

Province: NORTHWEST TERRITORIES

PLATFORM EXPRESS \*\*\*TVD\*\*\*

COMPENSATED NEUTRON

DUAL LITHOLOGY DENSITY LOG

Province: NORTHWEST TERRITORIES  
Field: DODO CANYON  
Location: UNIT E SECTION 76  
Well: COPRC DODO CANYON E76  
Company: CONOCOPHILLIPS CANADA RESOURCES CO

Location:  
UNIT E SECTION 76  
300E766510126450  
NORTHING: 7219874.66 EASTING: 594010.01  
Permanent Datum: Ground Level  
Log Measured From: Kelly Bushing  
Drilling Measured From: Kelly Bushing  
Elev.: 273.40 m  
K.B. 273.10 m  
G.L. 268.20 m  
D.F. 268.20  
above Perm.Datum

API Serial No. EL470  
Longitude: 126° 59' 58" W  
Latitude: 65° 5' 27" N

Logging Date 14-Jan-2014 \*\*\*TVD\*\*\*

Run Number 1.1

Depth Driller 1908.00 m

Schlumberger Depth 1819.10 m

Bottom Log Interval 1813.63 m

Top Log Interval 0.00 m

Casing Driller Size @ Depth 244.5 mm @ 603.00 m

Casing Schlumberger 603 m

Bit Size 222 mm

Type Fluid In Hole INVERT

Density 1025 kg/m3 75 s

Fluid Loss PH

Source of Sample N/A

RM @ Meas Temp N/A

RMF @ Meas Temp N/A

RMC @ Meas Temp N/A

Source RMF N/A

RM @ BHT N/A

Max Recorded Temperatures 71.5 degC

Circulation Stopped 14-Jan-2014 07:20:00

Logger on Bottom 14-Jan-2014 18:25:00

Unit Number 3139

Recorded By JEFFREY TATLOCK

Witnessed By DAVID LAWRENCE

Disclaimer

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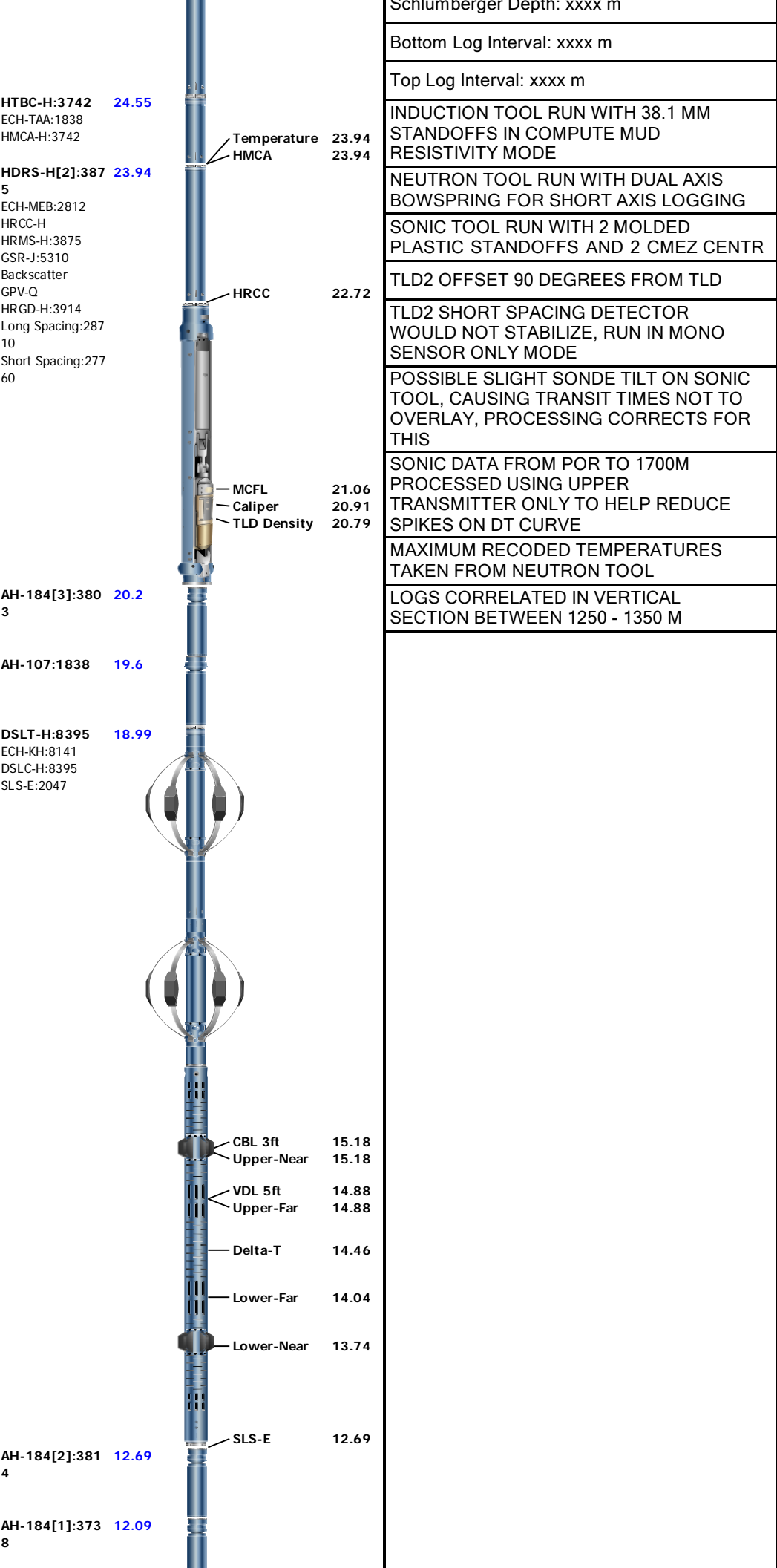
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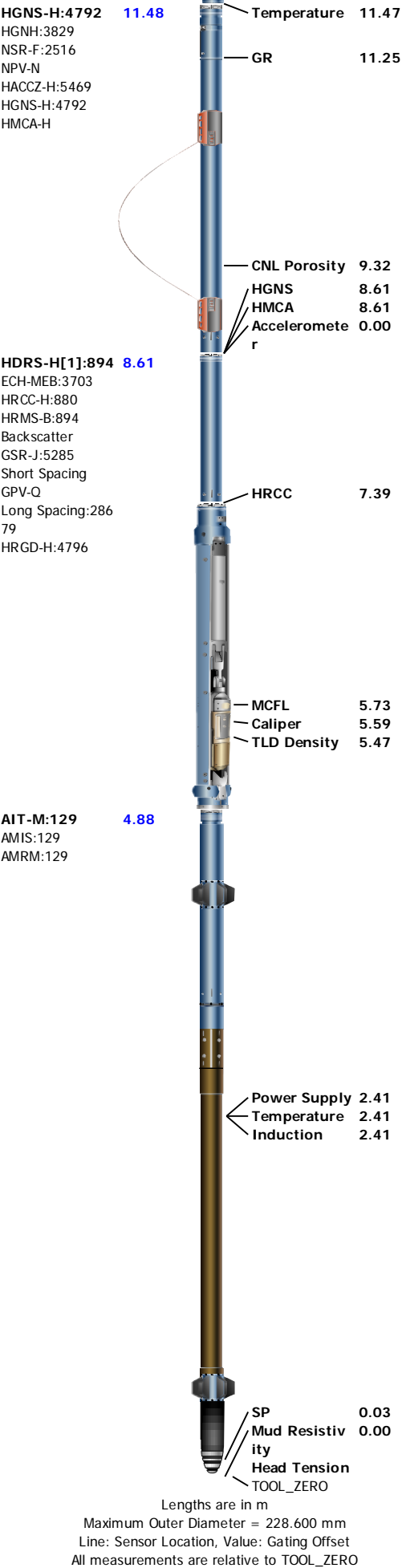
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## 11. Tail

Parameter( unit )	1.1					
Fluid Type	Oil					
Fluid Name	INVERT					
Max Recorded Temperatures ( degC )	71.5					
Source of Sample	N/A					
Salinity ( ppm )	0					
Density ( kg/m3 )	1025					
Funnel Viscosity ( s )	75					
Fluid Loss ( cm3 )						
PH						
Date/Time Circulation Stopped	14-Jan-2014 07:20:00					
Date Logger on Bottom	14-Jan-2014					
Time Logger on Bottom	18:25:00					
Source RMF	N/A					
RMC	N/A					
RM @ Meas Temp ( ohm.m@degC )	N/A					
RMF @ Meas Temp ( ohm.m@degC )	N/A					
RMC @ Meas Temp ( ohm.m@degC )	N/A					
RM @ BHT ( ohm.m@degC )	N/A					
RMF @ BHT ( ohm.m@degC )	N/A					
RMC @ BHT ( ohm.m@degC )	N/A					
Electricity Stability ( V )						
Oil/Water						
Total Solid ( % )						
High Gravity Solids ( % )						

1.1: Toolstring				1.1: Remarks
<b>Equip name</b> <b>LEH-QT:2850</b> LEH-QT:2850	<b>Length</b> <b>28.03</b>	<b>MP name</b>	<b>Offset</b>	ALL INTERVALS AND PRESENTATIONS AS PER CLIENT REQUEST
				RIG: BEAVER 2
				SLB CREW: JASON LEGASSIE
				LOGGER REQUESTED AT: 10:30 14-JAN-2014
<b>DTC-H:9100</b> ECH-KC:10172 DTC-H:9100	<b>27.14</b>	CTEM HV	26.86 0.00	LOGGER ARRIVED AT: 09:30 14-JAN-2014
				LOGGER READY AT: 15:45 14-JAN-2014
<b>SGT-N:10447</b> SGH-K:3210 SGC-TB:10447 SGD-TAA	<b>26.22</b>	ToolStatus TelStatus GR	26.22 26.22 25.94	***TVD***
				Depth Driller: xxxx m
				Depth Driller: xxxxx m





## Depth Summary

1.1

Depth Measuring Device

Depth Measuring Device			
Type	IDW-JA		
Serial Number	6162		
Calibration Date	10-MAY-2010		
Calibrator Serial Number	4		
Calibration Cable Type	7-39 PLXS		
Wheel Correction 1	-3		
Wheel Correction 2	1		

Type	CMTD-B/A		
Serial Number	1293		
Calibration Date	06-SEP-2013		
Calibrator Serial Number	1111		
Number of Calibration Points	10		
Calibration Root Mean Square Error	28		
Calibration Peak Error	54		

Type	7-39P-LXS		
Serial Number			
Length	3100.00 m		
Conveyance Type	Wireline		
Rig Type			

Log Sequence	First Log In the Well	ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED
Rig Up Length At Surface	56.06 m	IDW USED AS PRIMARY DEPTH CONTROL
Rig Up Length At Bottom	56.02 m	Z-CHART USED AS SECONDARY DEPTH CONTROL
Rig Up Length Correction	0.04 m	ALL LOGS CORRELATED TO DOWN LOG IN VERTICAL SECTION BETWEEN 1250 - 1350 M
Stretch Correction	1.27 m	
Tool Zero Check At Surface	0.30 m	

1.1

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	HVCS, FCD	16.24	m3
IHV	Integrated Hole Volume	HVCS	45.03	m3

Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_13075-4.0.9163.3001

Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	4.0.9231.3000	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	4.0.9231.3000	3.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9231.3000	2.0

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
10-1	10-175M	N	742.67	1899.88	11:11:33.14	11:11:33.14	SN	-1.00	X

1.1	Log[5]:Up	Up	543.85 m	1822.88 m	14-Jan-2014 6:48:20 PM	14-Jan-2014 8:17:20 PM	ON	-1.90 m	Yes
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All depths are referenced to toolstring zero

Log	Company:CONOCOPHILLIPS CANADA RESOURCES CORP.	Well:COPRC DODO CANYON E76	1.1: Log[5]:Up:S023
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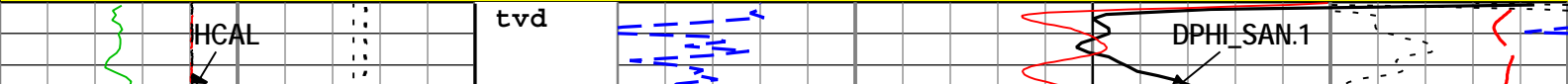
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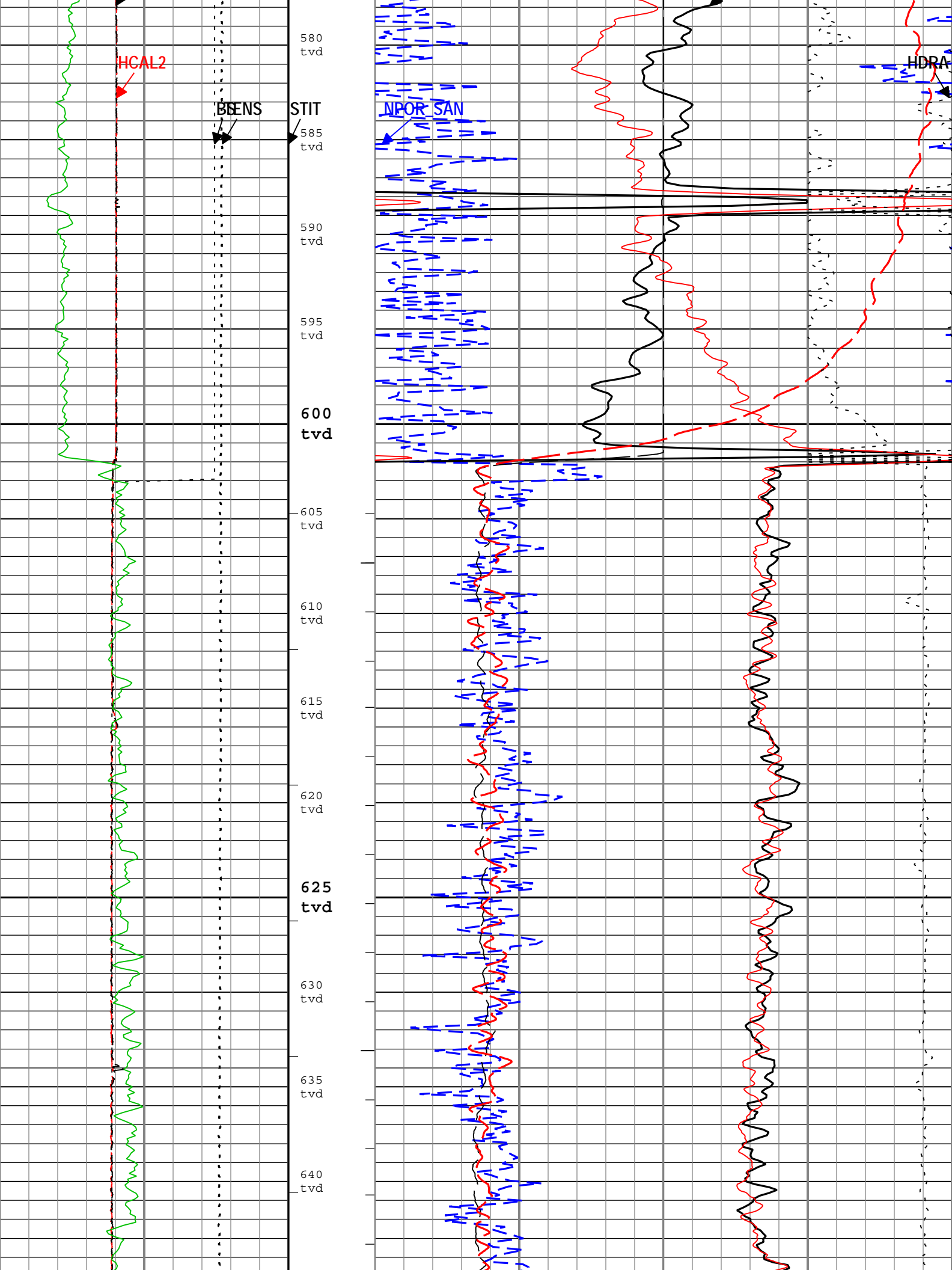
Channel	Source	Sampling
BS	Borehole	6in
CALI.1	HDRS-H[1]:HRCC-H:HRCC-H	1in
CALI.2	HDRS-H[2]:HRCC-H:HRCC-H	1in
DPHI_SAN.1	HDRS-H[1]:HRMS-H:HRGD-H	6in
DPHI_SAN.2	HDRS-H[2]:HRMS-H:HRGD-H	6in
DPHZ	HDRS-H[2]:HRMS-H:HRGD-H	2in
GR_CAL	HGNS-H:HGNS-H:HGNS-H	6in
HDRA	HDRS-H[1]:HRMS-H:HRGD-H	2in
ICV	Borehole	6in
IHV	Borehole	6in
NPOR_SAN	HGNS-H:HGNS-H:HGNS-H	6in
PEFLA	HDRS-H[2]:HRMS-H:HRGD-H	2in
PEFZ	HDRS-H[1]:HRMS-H:HRGD-H	2in
RHLA	HDRS-H[2]:HRMS-H:HRGD-H	2in
STIT	DepthCorrection	6in
TENS	WLWorkflow	1in

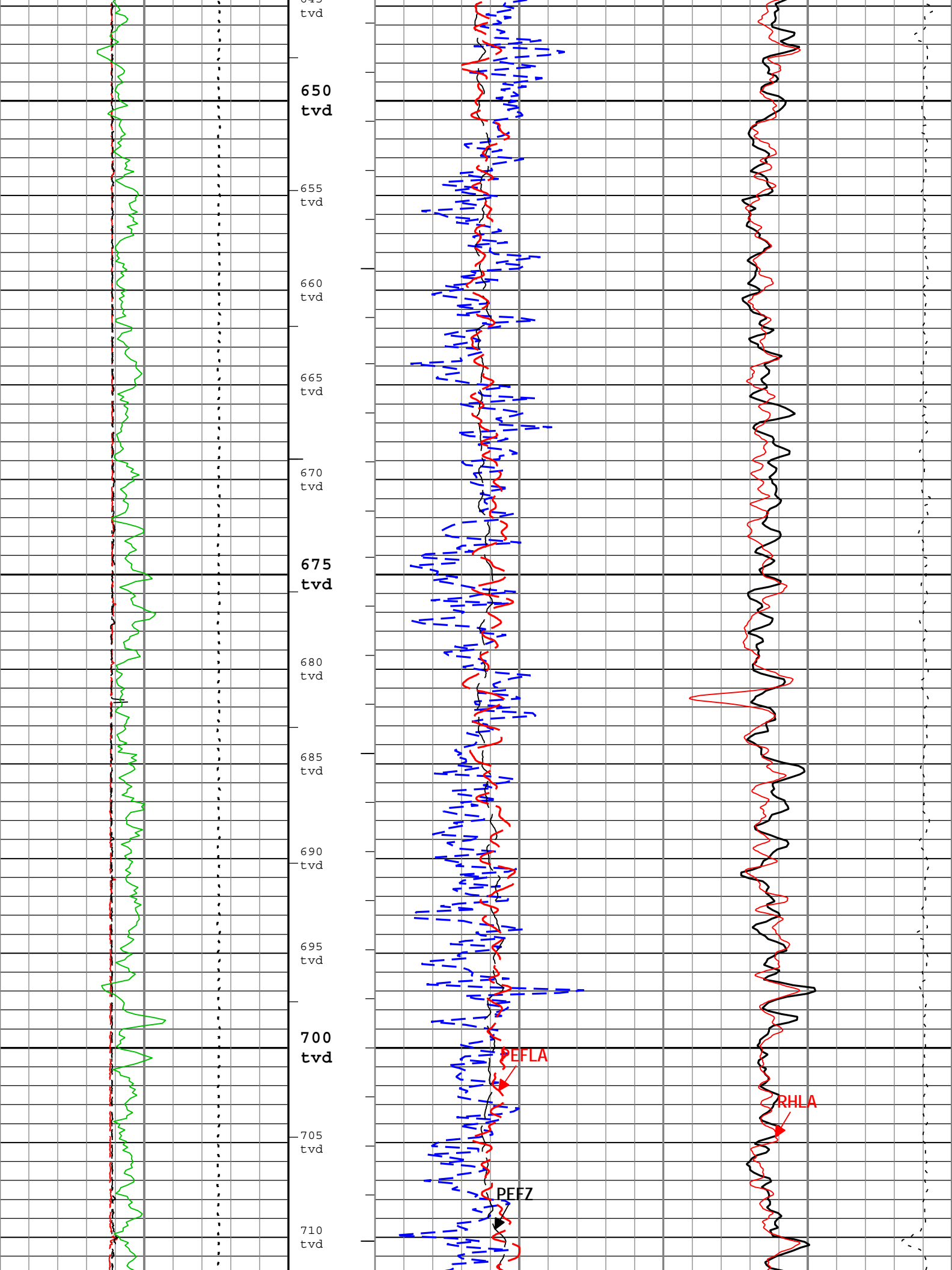
ICV - Integrated Cement Volume every 0.10 (m3)	
IHV - Integrated Hole Volume every 1.00 (m3)	
IHV - Integrated Hole Volume every 0.10 (m3)	
ICV - Integrated Cement Volume every 1.00 (m3)	
Density Standoff Correction (HDRA) HDRS-H[1]	
200	kg/m3 -50

Enhanced Thermal Neutron Porosity (matrix Sandstone) (NPOR_SAN) HGNS-H	
0.45	m3/m3 -0.15
DPHI_SAN2	
0.45	m3/m3 -0.15
Density Porosity (matrix Sandstone) (DPHI_SAN).1 HDRS-H[1]	
0.45	m3/m3 -0.15
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H[1]	
0	20
Standard Resolution Density Porosity (DPHZ) HDRS-H[2]	
0.45	m3/m3 -0.15
Long Spacing Apparent Density (RHLA) HDRS-H[2]	
1900	kg/m3 2900
Formation Photoelectric Factor from Long Spacing Monosensor Inversion (PEFLA) HDRS-H[2]	
0	20

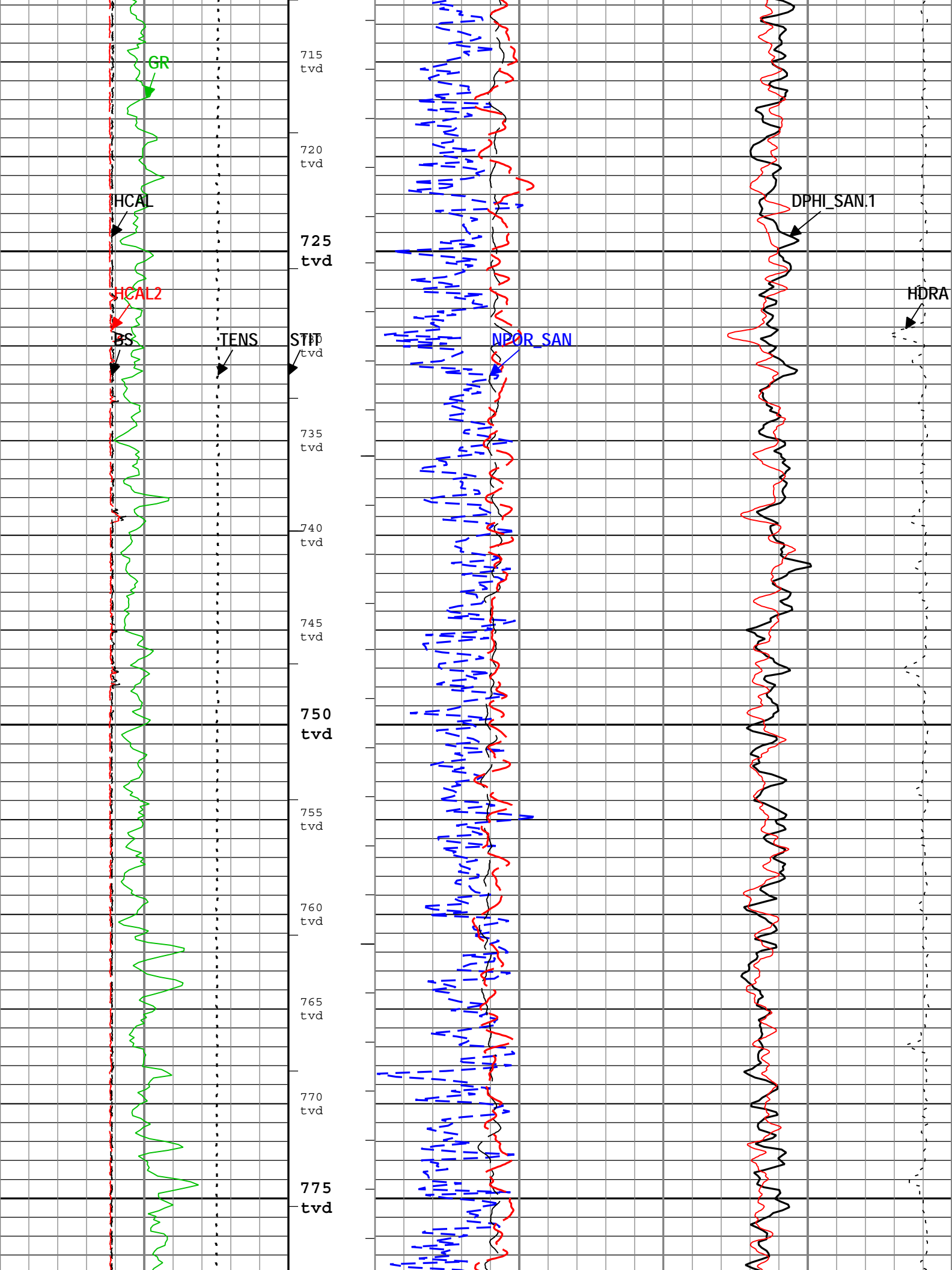
\*\*\*MAIN PASS: PEX-NEUTRON POROSITY LOG - SANDSTONE 2650 KG/M3\*\*\*

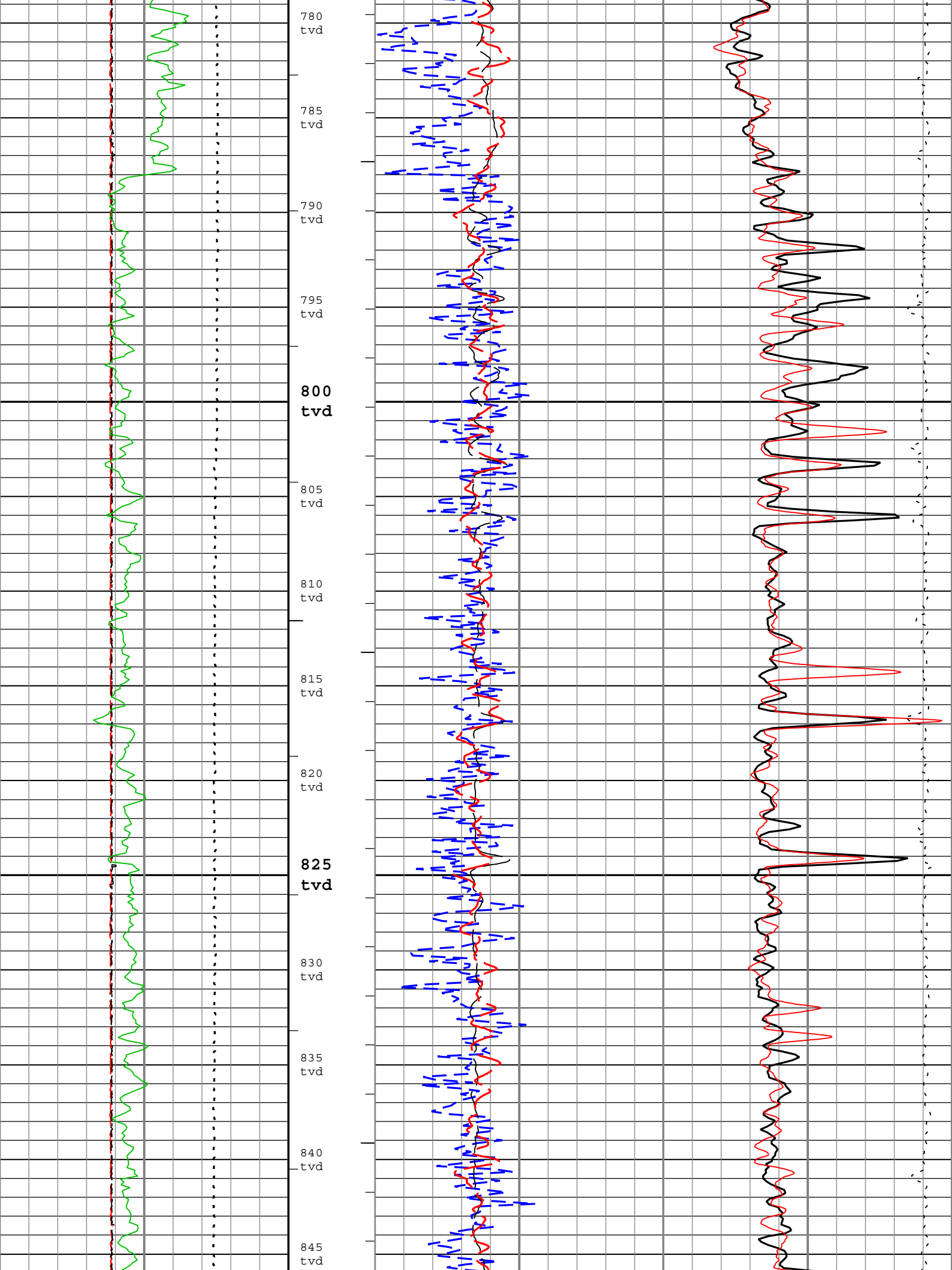


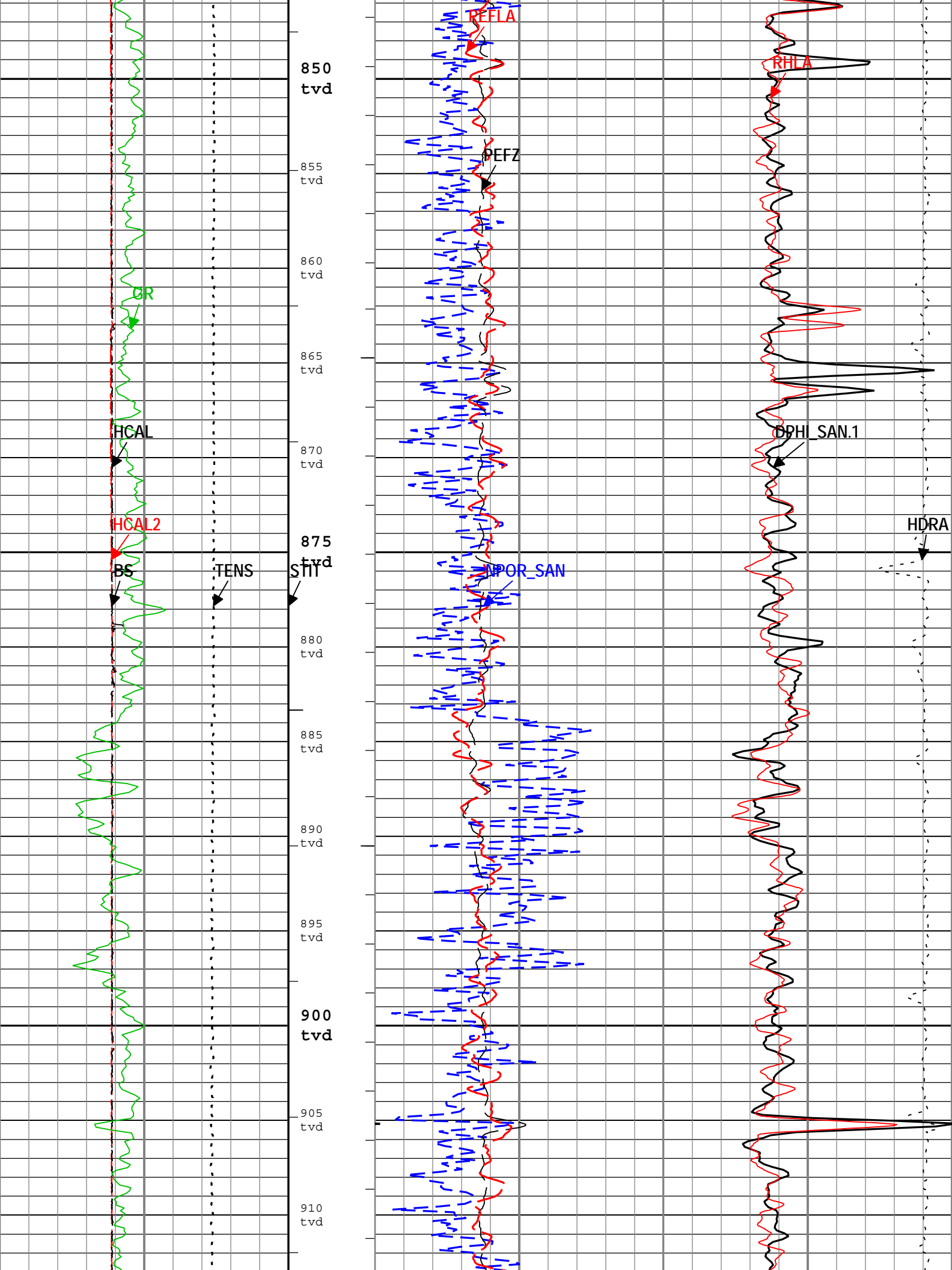


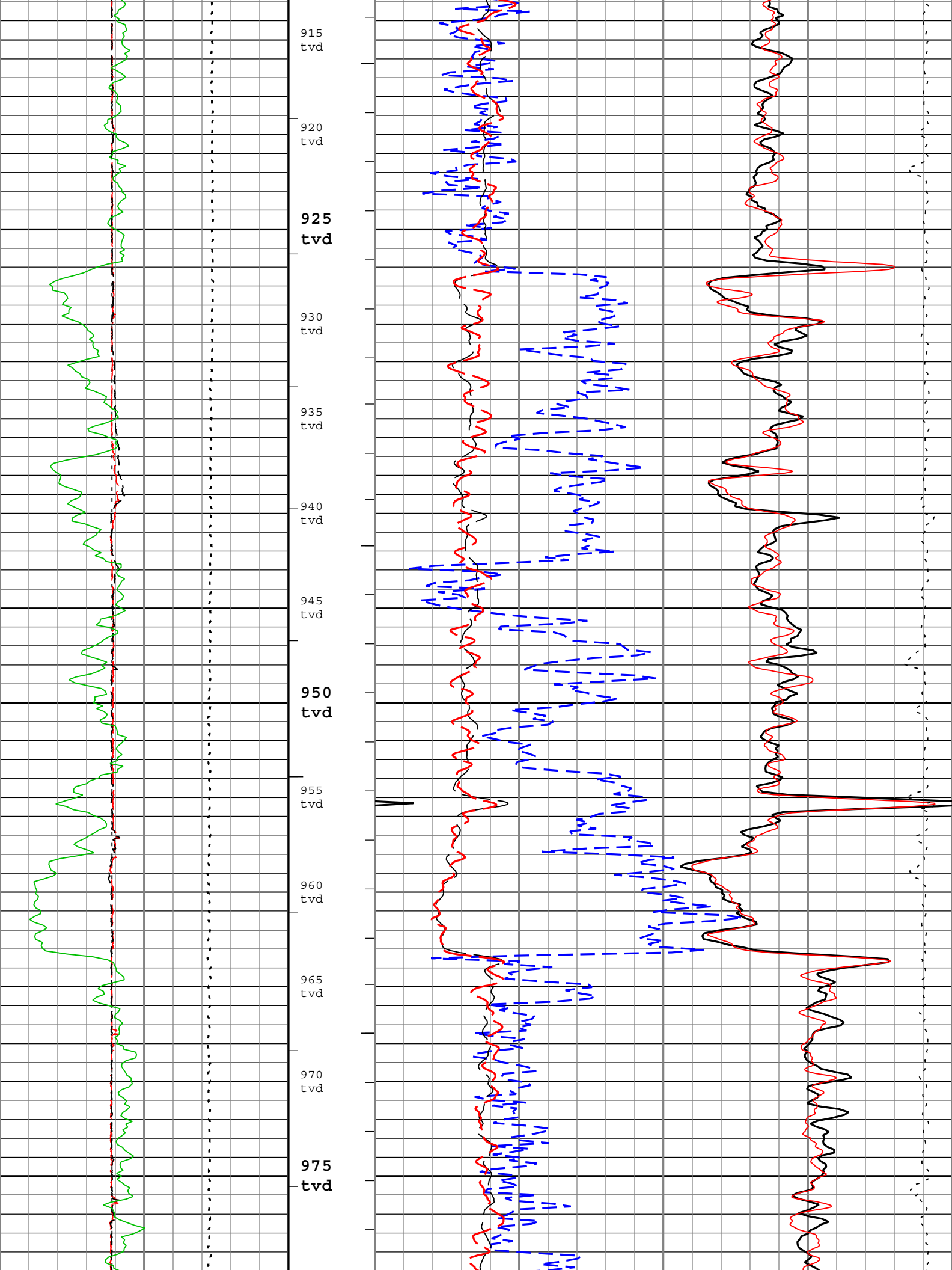


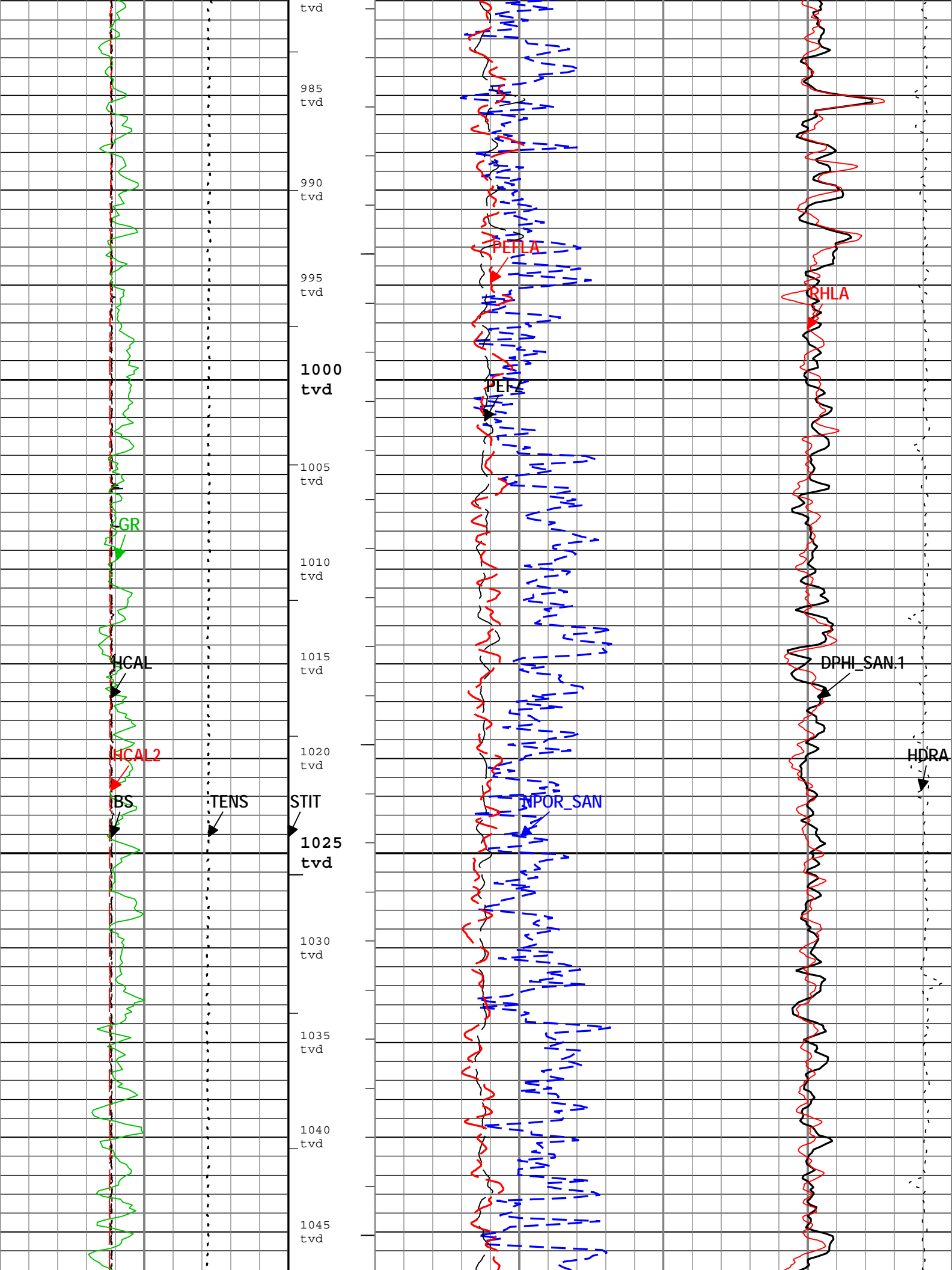


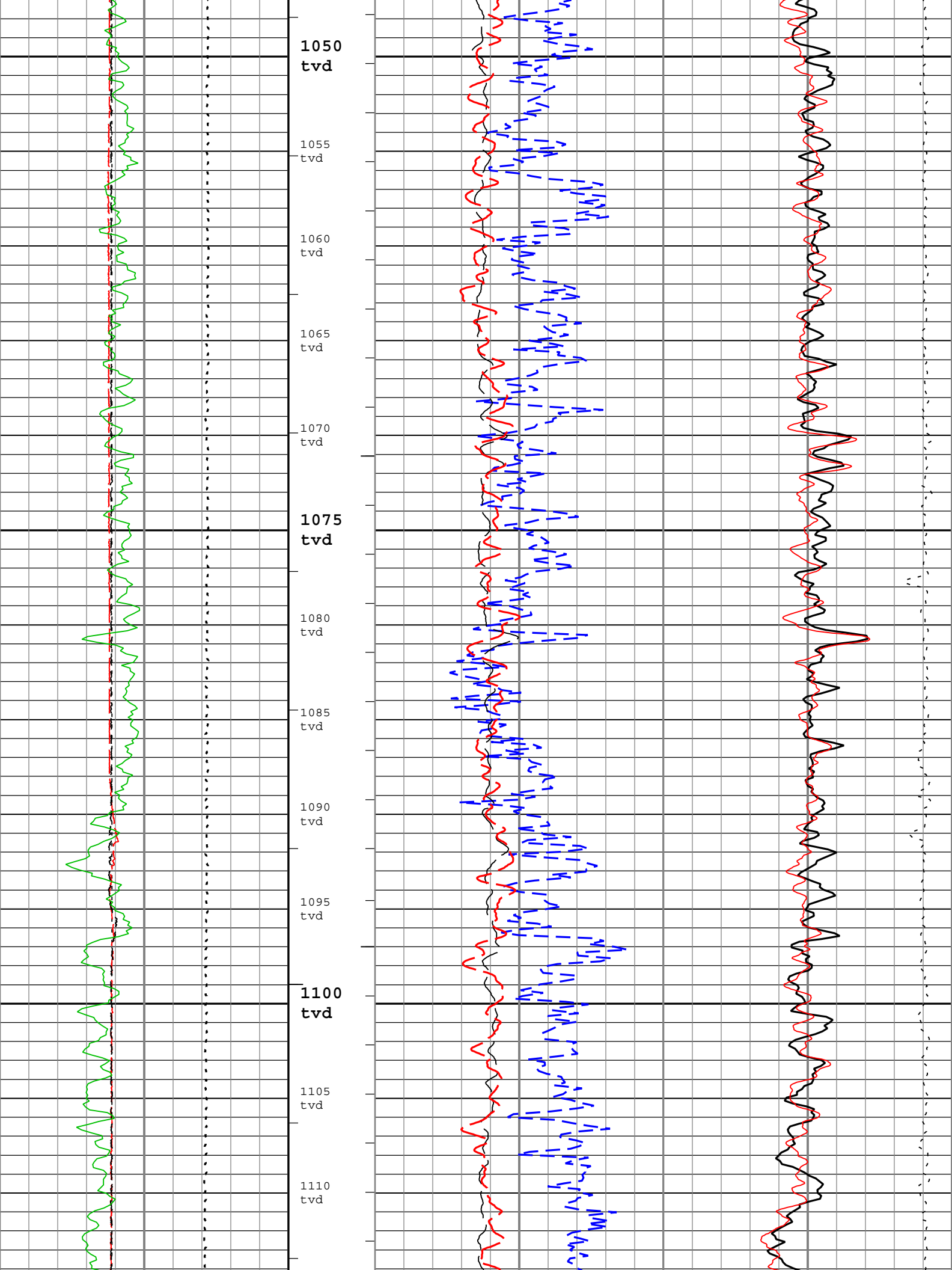


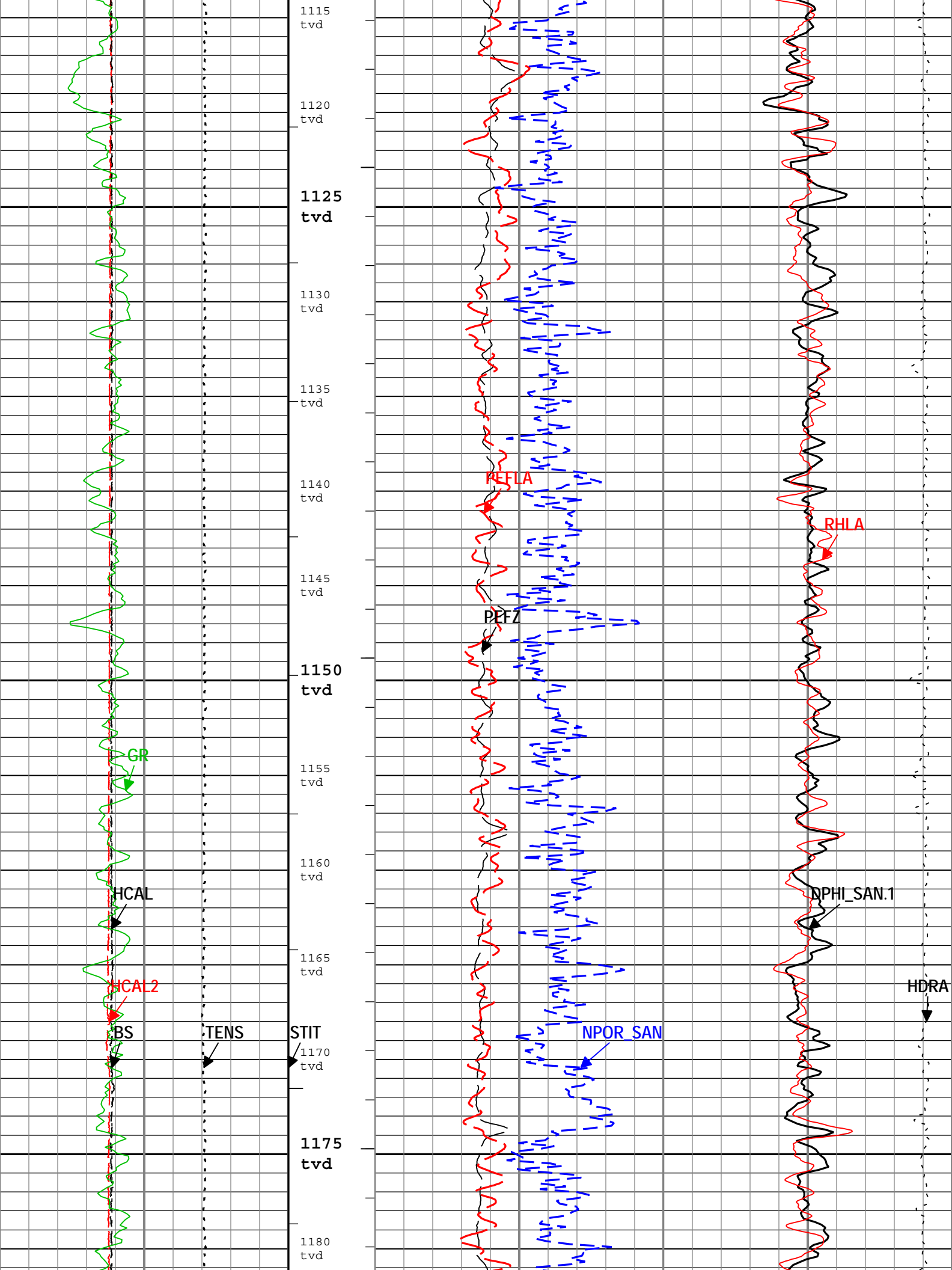


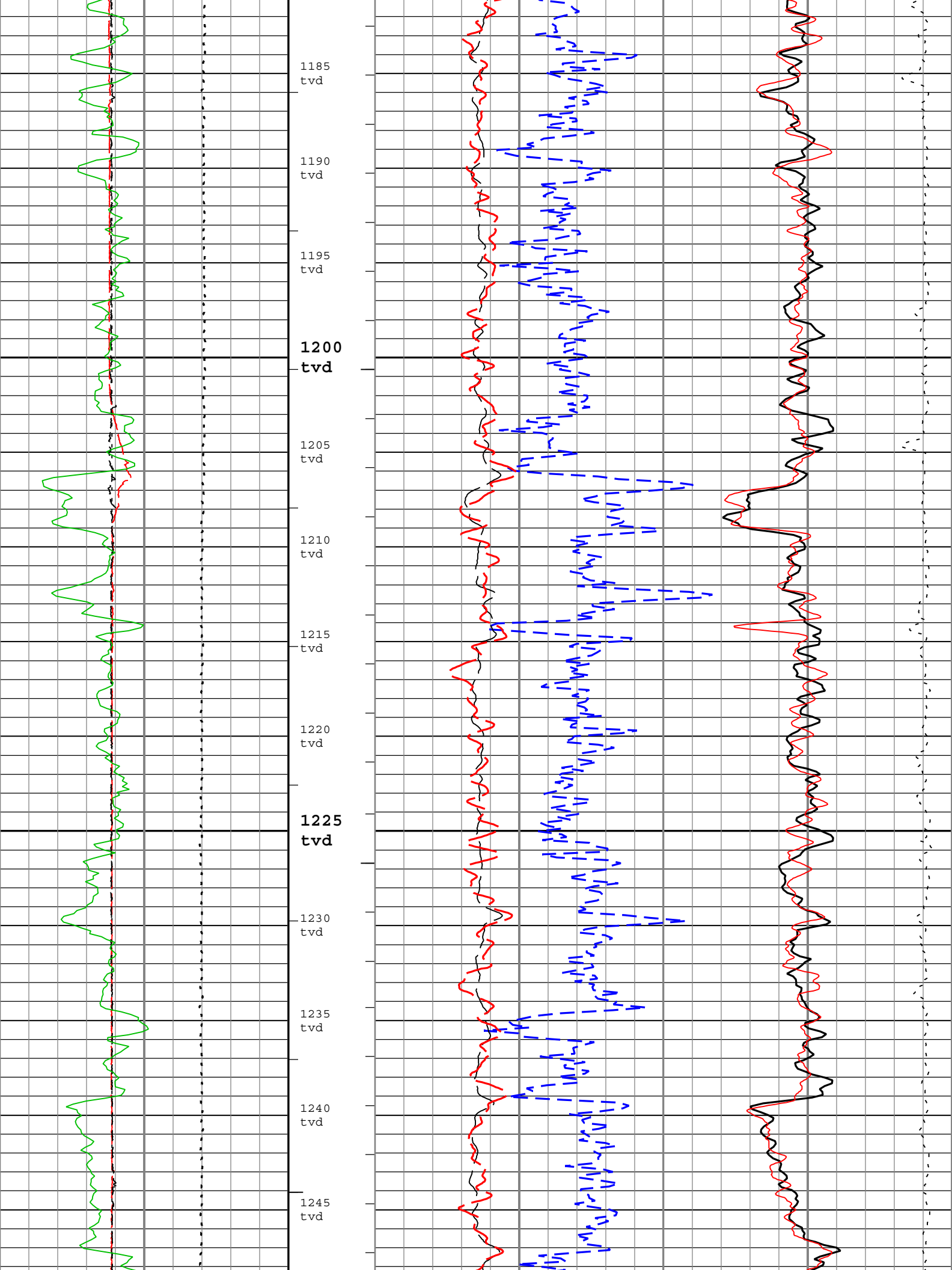




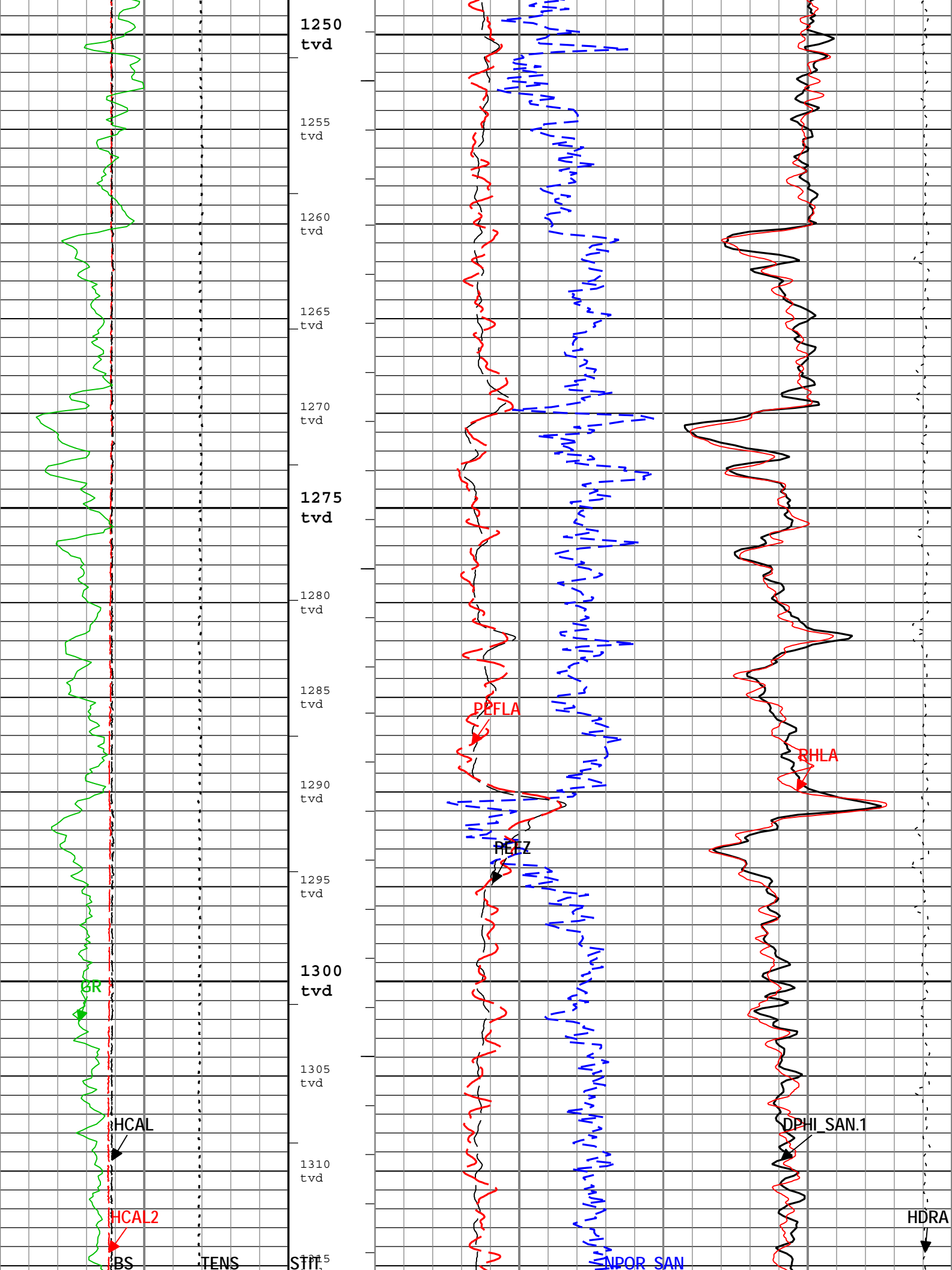


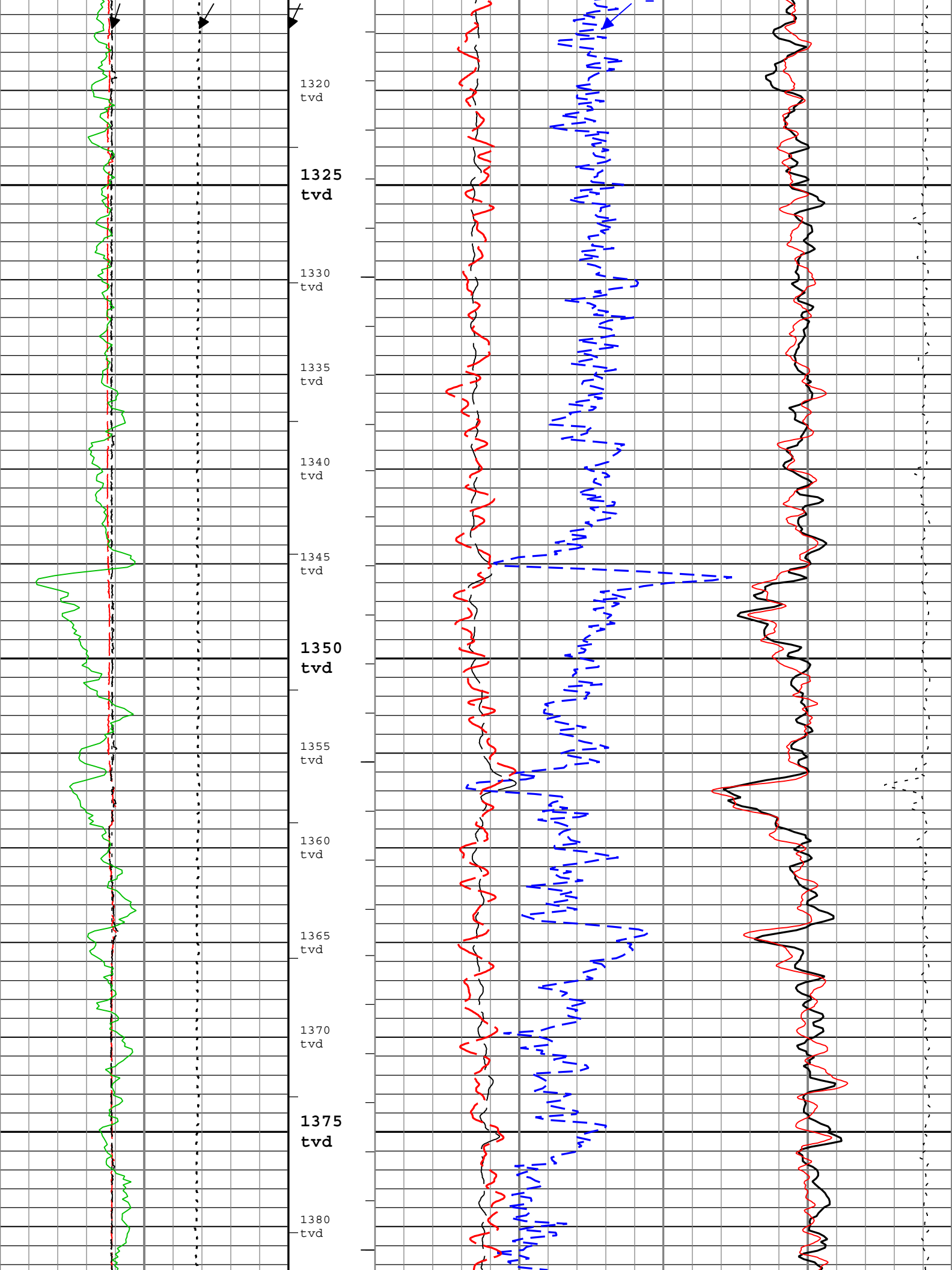


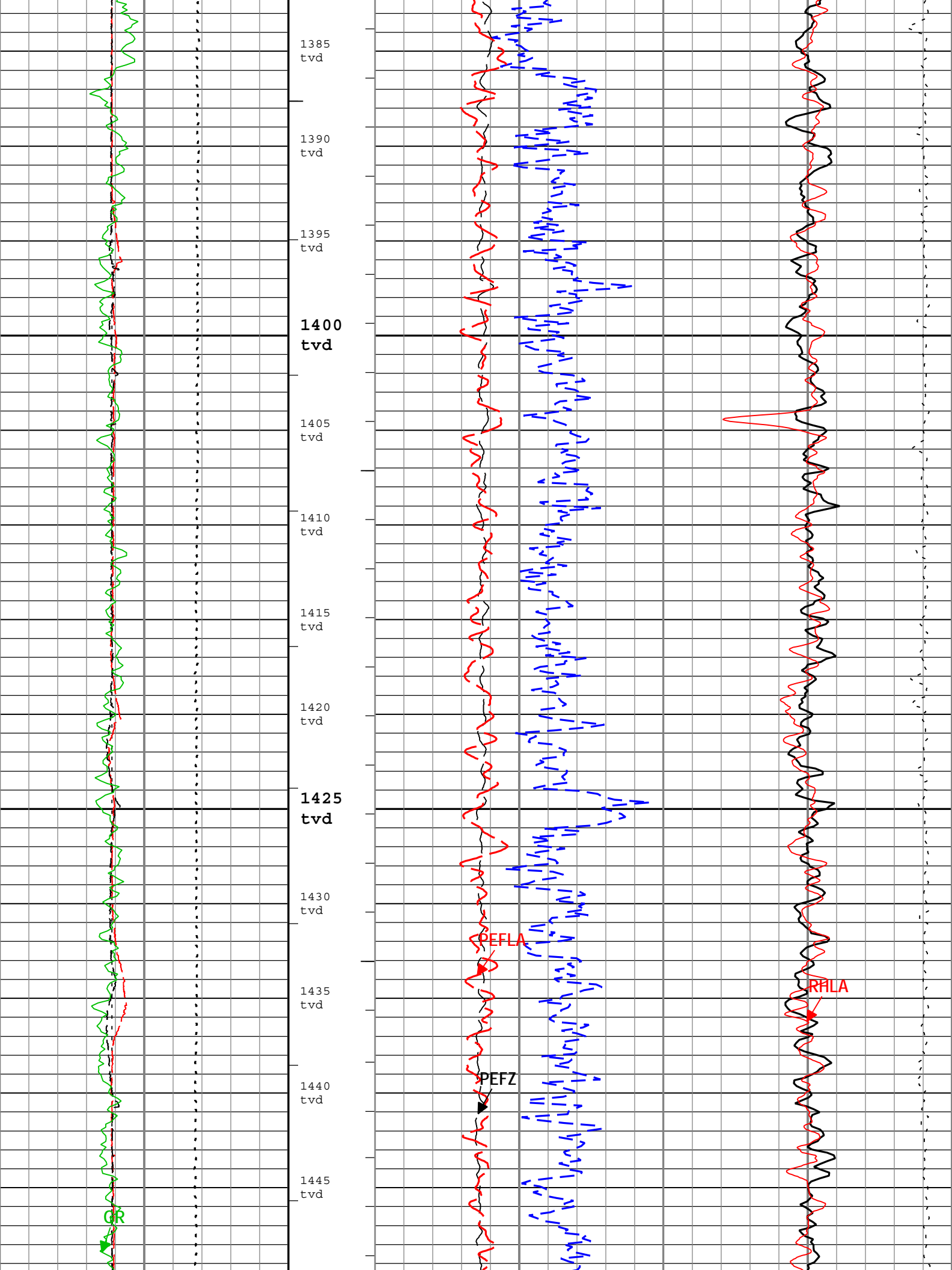


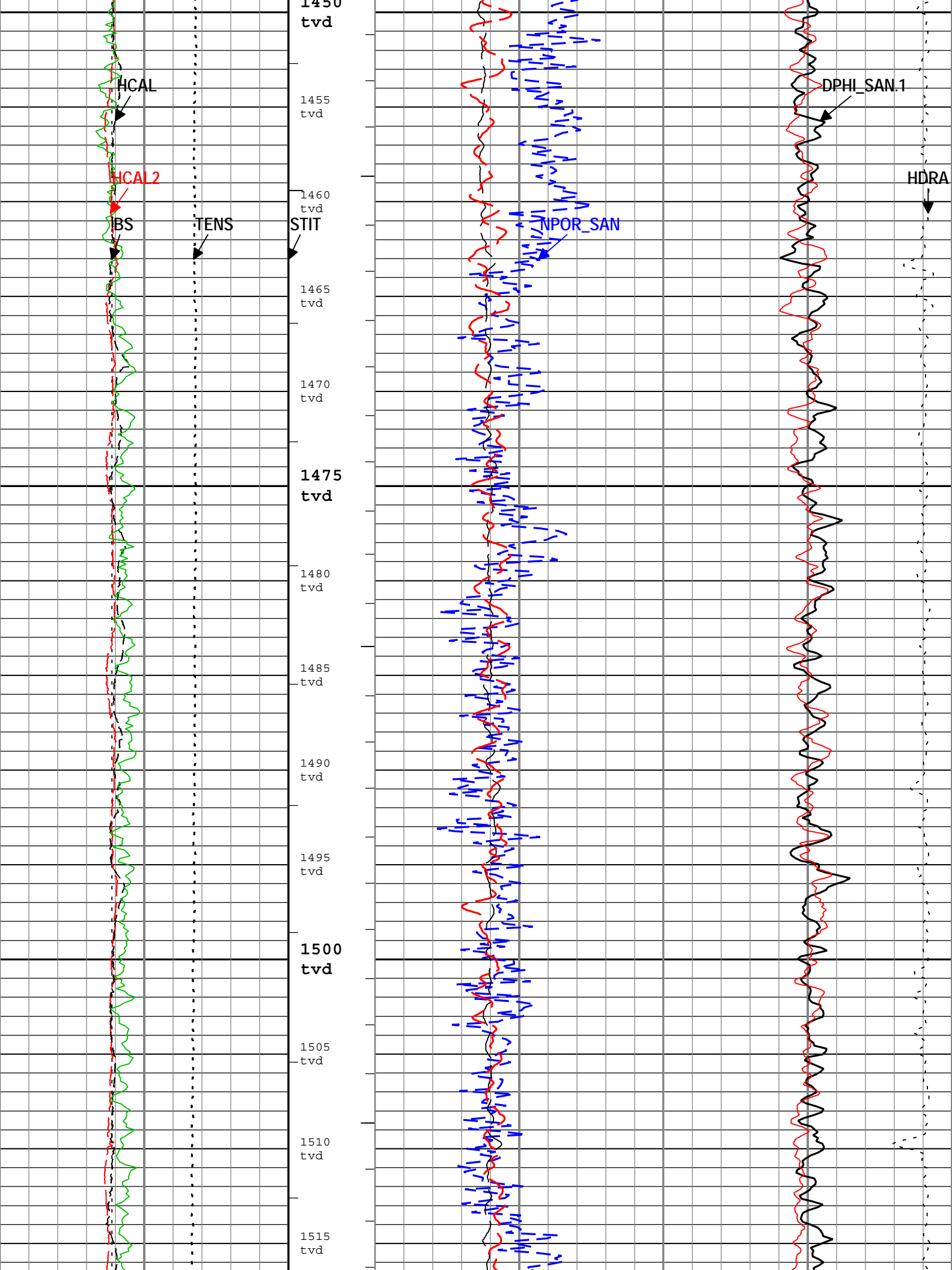


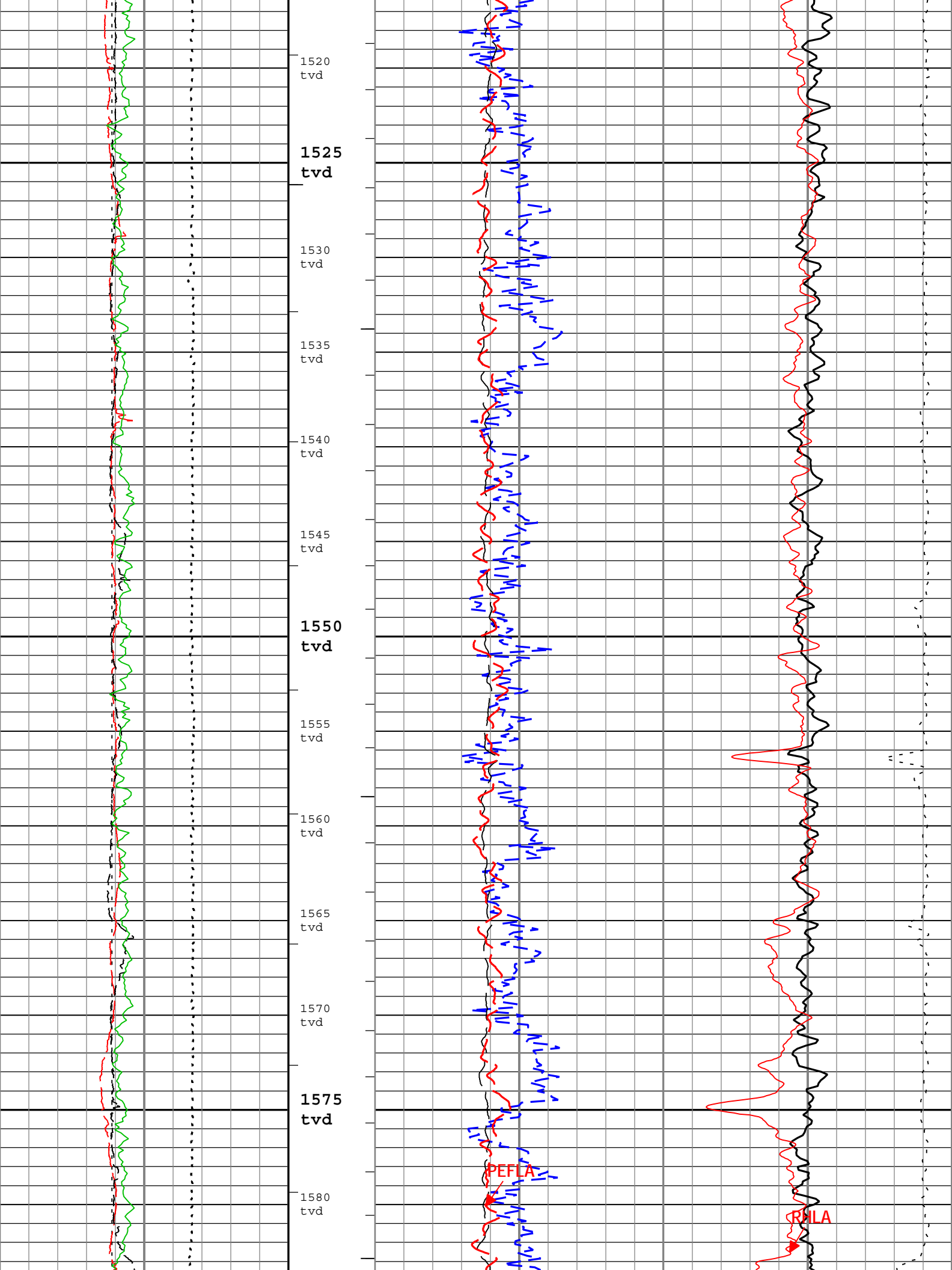


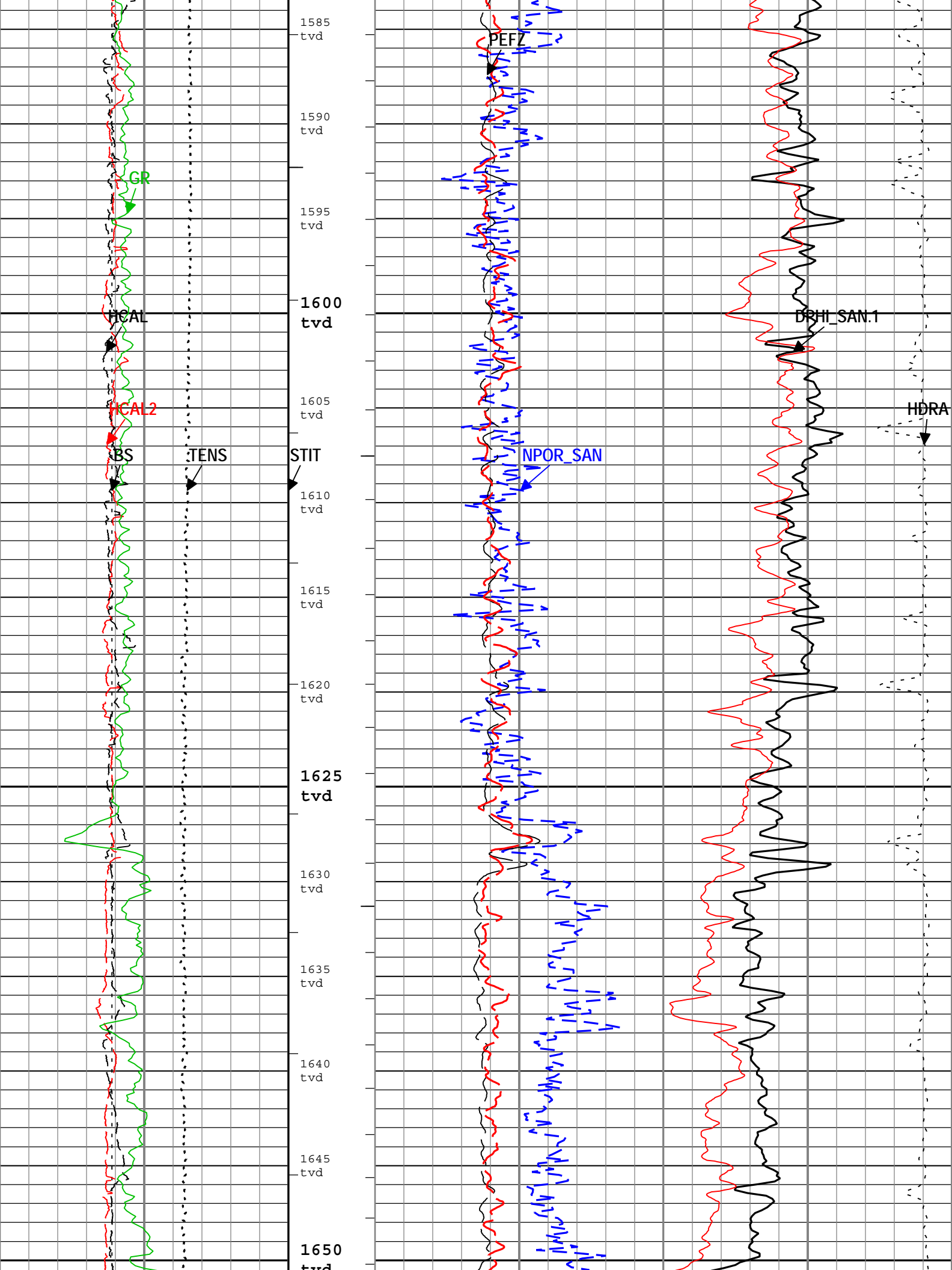


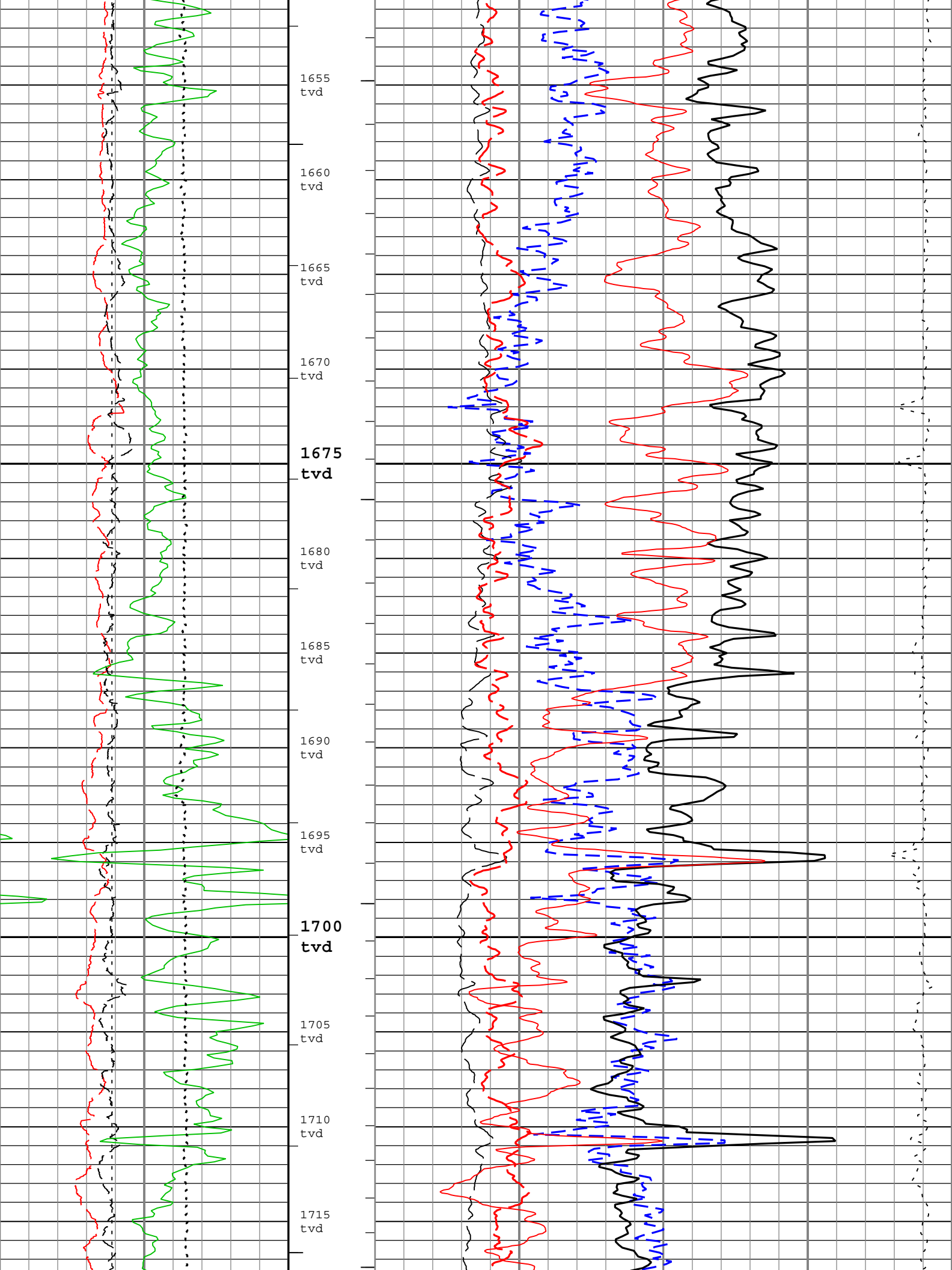


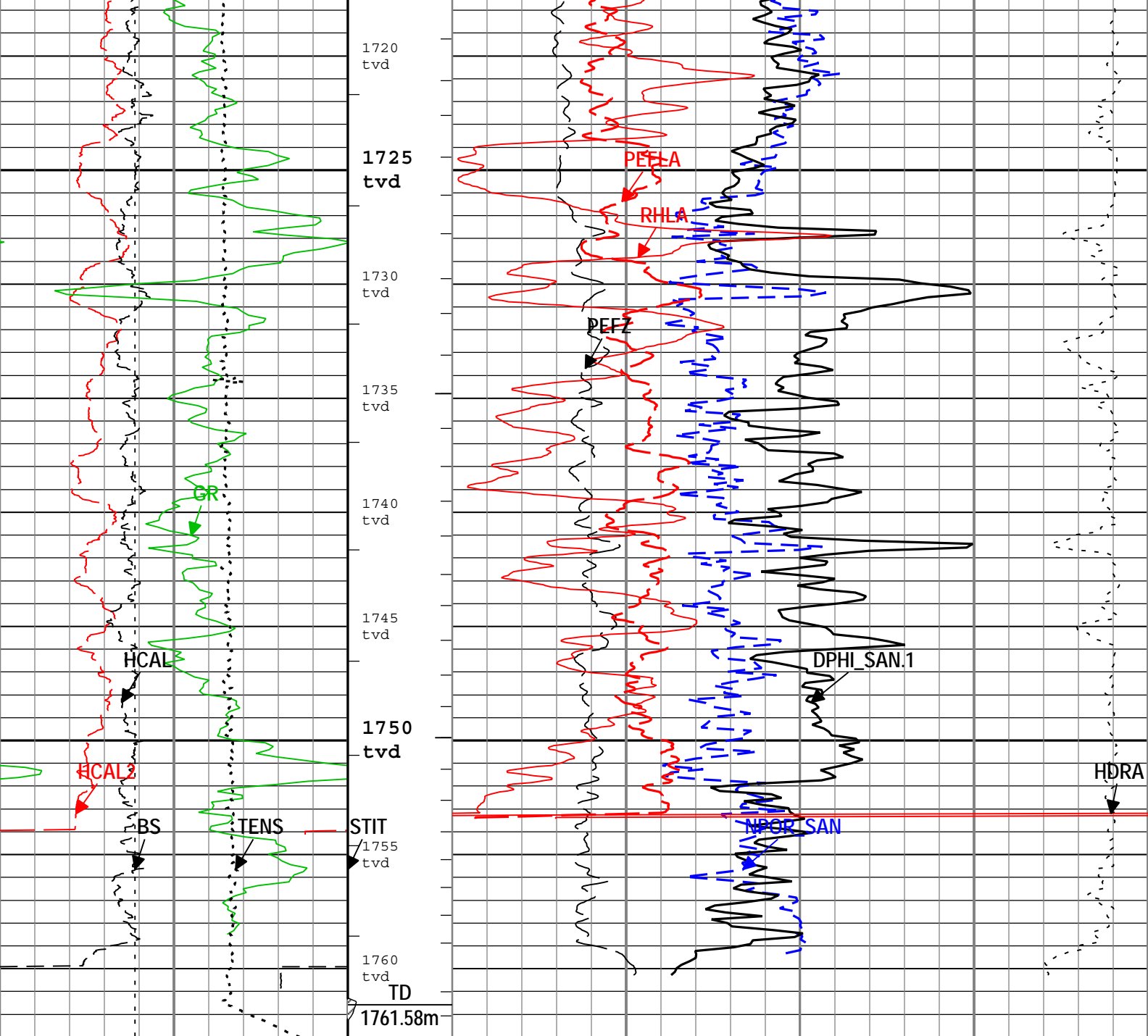












\*\*\*MAIN PASS: PEX-NEUTRON POROSITY LOG - SANDSTONE 2650 KG/M3\*\*\*

Bit Size (BS)		
125	mm	375
HCAL2		
125	mm	375
HCAL		
125	mm	375
GR		
0	gAPI	300
Cable Tension (TENS)		
25000	N	0

Enhanced Thermal Neutron Porosity (matrix Sandstone) (NPOR_SAN) HGNS-H		
0.45	m3/m3	-0.15
DPHI_SAN2		
0.45	m3/m3	-0.15
Density Porosity (matrix Sandstone) (DPHI_SAN).1 HDRS-H[1]		
0.45	m3/m3	-0.15
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H[1]		
0		20
Standard Resolution Density Porosity (DPHZ) HDRS-H[2]		
0.45	m3/m3	-0.15
Long Spacing Apparent Density (RHLA) HDRS-H[2]		
1900	kg/m3	2900
Formation Photoelectric Factor from Long Spacing Monosensor Inversion (PEFLA) HDRS-H[2]		
0		20



			Density Standoff Correction (HDRA) HDRS-H[1]			
			200	kg/m3		
			-50			
└─ ICV - Integrated Cement Volume every 1.00 (m3)						
└─ IHV - Integrated Hole Volume every 0.10 (m3)						
└─ IHV - Integrated Hole Volume every 1.00 (m3)						
└─ ICV - Integrated Cement Volume every 0.10 (m3)						

Description: MCFL processing LQC for Platform Express    Format: Log ( NUC-240 )    Index Scale: 1:240    Index Unit: m    Index Type: TVD    Creation Date: 15-Jan-2014 01:17:28

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Depth Zoned	
BHT	Bottom Hole Temperature	Borehole	71.5	degC
BS	Bit Size	WLSESSION	Depth Zoned	mm
BSAL	Borehole Salinity	Borehole	0	ppm
BSCO	Borehole Salinity Correction Option	HGNS-H	No	
CALI_SHIFT.1	CALI Supplementary Offset	HDRS-H	4.4	mm
CALI_SHIFT.2	CALI Supplementary Offset	HDRS-H	13.5	mm
CBLO	Casing Bottom (Logger)	WLSESSION	603	m
CCCO	Casing & Cement Thickness Correction Option	HGNS-H	Yes	
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	244.5	mm
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	1025	kg/m3
DFT	Drilling Fluid Type	Borehole	Oil	
DHC.1	Density Hole Correction	HDRS-H	Bit Size	
DHC.2	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	177.8	mm
FD	Fluid Density	Borehole	1000	kg/m3
FSAL	Formation Salinity	Borehole	0	ppm
FSCO	Formation Salinity Correction Option	HGNS-H	No	
GCLF.1	Coal-Like Formation	HDRS-H	No	
GCLF.2	Coal-Like Formation	HDRS-H	No	
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	Depth Zoned	
GR_MULTIPLIER	Gamma Ray Multiplier	HGNS-H	1	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	REMS	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
HVCS	Integrated Hole Volume Caliper Selection	Borehole	Compute Area from GHD	
IHVC	Integrated Hole Volume Control	Borehole	Start	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
MCCO	Mud Cake Correction Option	HGNS-H	No	
MDEN	Matrix Density for Density Porosity	Borehole	2650	kg/m3
MWCO	Mud Weight Correction Option	HGNS-H	No	
NAAC.1	Switch for the correction of formation activation by the APS	HDRS-H	Off	
NAAC.2	Switch for the correction of formation activation by the APS	HDRS-H	Off	

NPRM.1	HRDD Nuclear Processing Mode	HDRS-H	High Resolution	
NPRM.2	HRDD Nuclear Processing Mode	HDRS-H	Mono Sensor Only	
NTCO.1	HRDD Nuclear Temperature Correction Option	HDRS-H	On	
NTCO.2	HRDD Nuclear Temperature Correction Option	HDRS-H	On	
PTCO	Pressure Temperature Correction Option	HGNS-H	No	
SOCN	Standoff Distance	HGNS-H	3.175	mm
SOCO	Standoff Correction Option	HGNS-H	Yes	
TD	Total Measured Depth	Borehole	1819.1	m

Depth Zone Parameters				
Parameter	Value	Start ( m )	Stop ( m )	
BHS	Cased	574.97	603.01	
BHS	Open	603.01	1763	
BS	311	574.97	603.01	
BS	222	603.01	1761.6	
GCSE_UP_PASS	BS	574.97	603.01	
GCSE_UP_PASS	CALI	603.01	1763	
All depth are actual.				

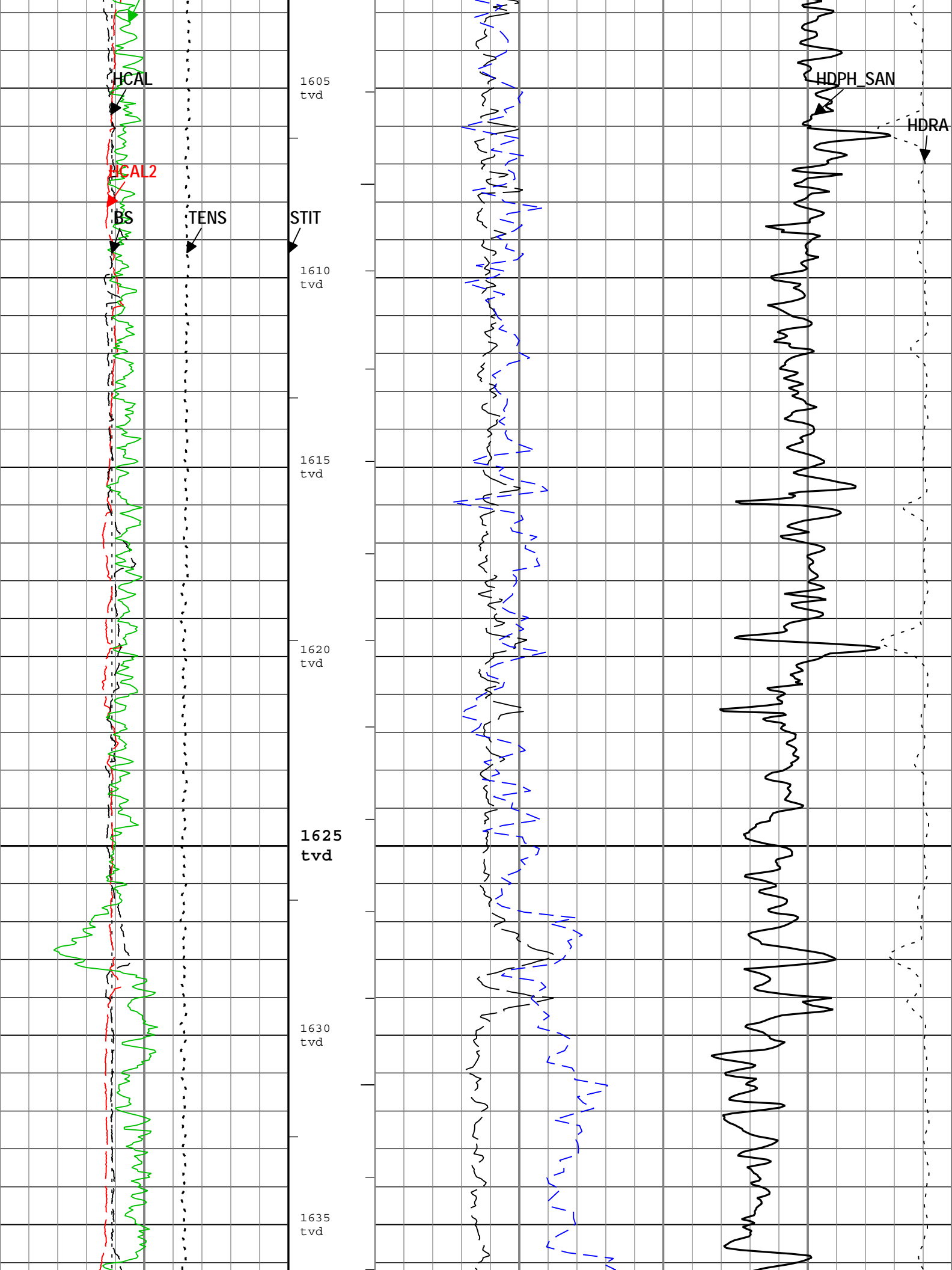
Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BRD_TYPE.1	HRGD Board Type	HDRS-H	WITH_HET	
HRGD_BRD_TYPE.2	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	548.64	m/h
NDTC.1	Nuclear Dead Time Correction	HDRS-H	On	
NDTC.2	Nuclear Dead Time Correction	HDRS-H	On	
NPUC.1	Nuclear Pile-Up Correction	HDRS-H	Off	
NPUC.2	Nuclear Pile-Up Correction	HDRS-H	Off	
STSO_HRDD.1	Temperature Source for the Density Algorithm	HDRS-H	HET data channel	
STSO_HRDD.2	Temperature Source for the Density Algorithm	HDRS-H	HET data channel	

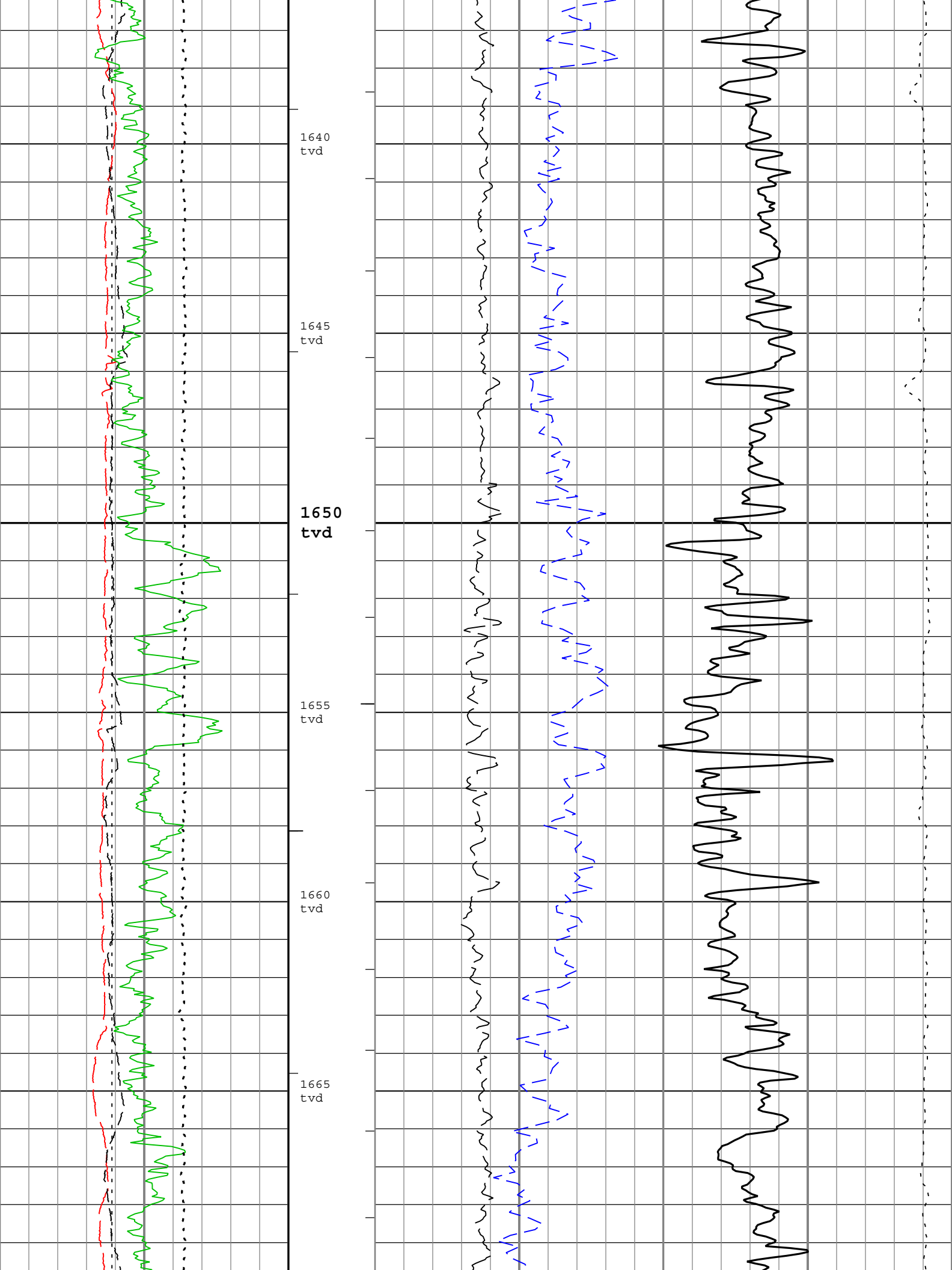
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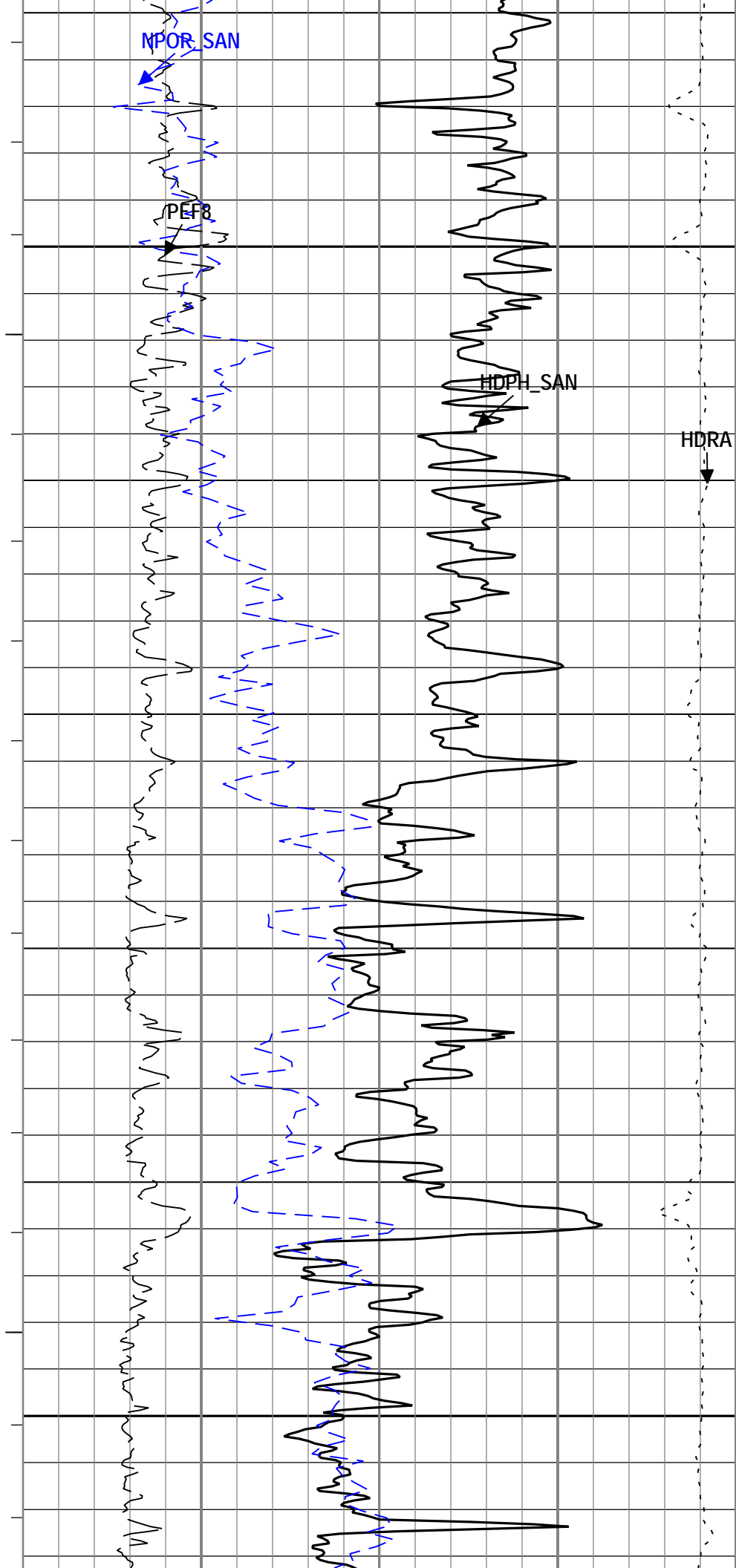
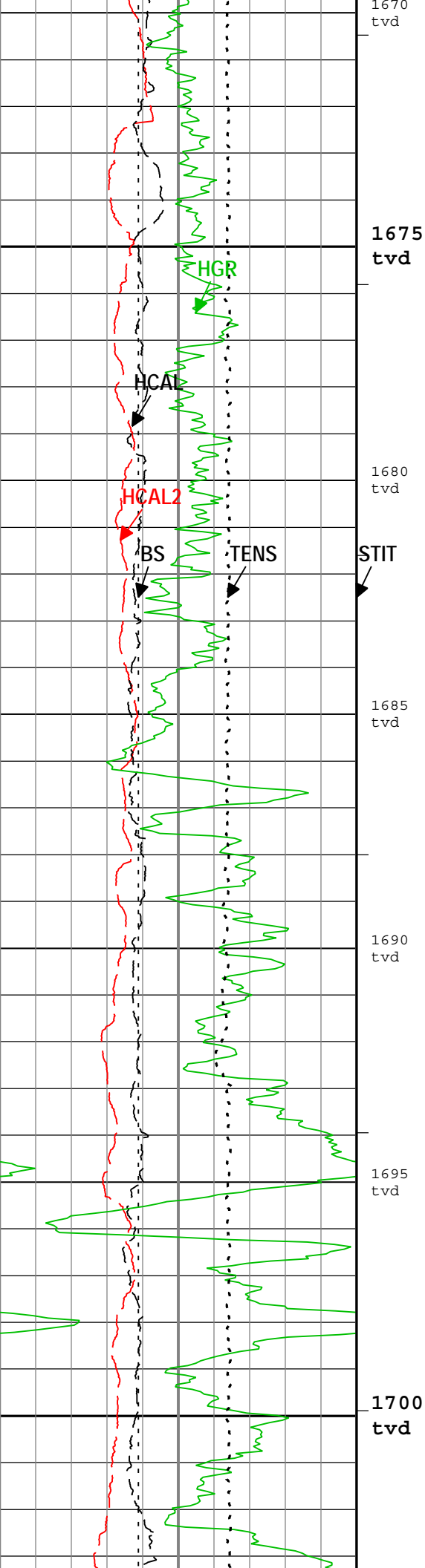
Integration Summary				
Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	HVCS, FCD	2.28	m3
IHV	Integrated Hole Volume	HVCS	6.4	m3

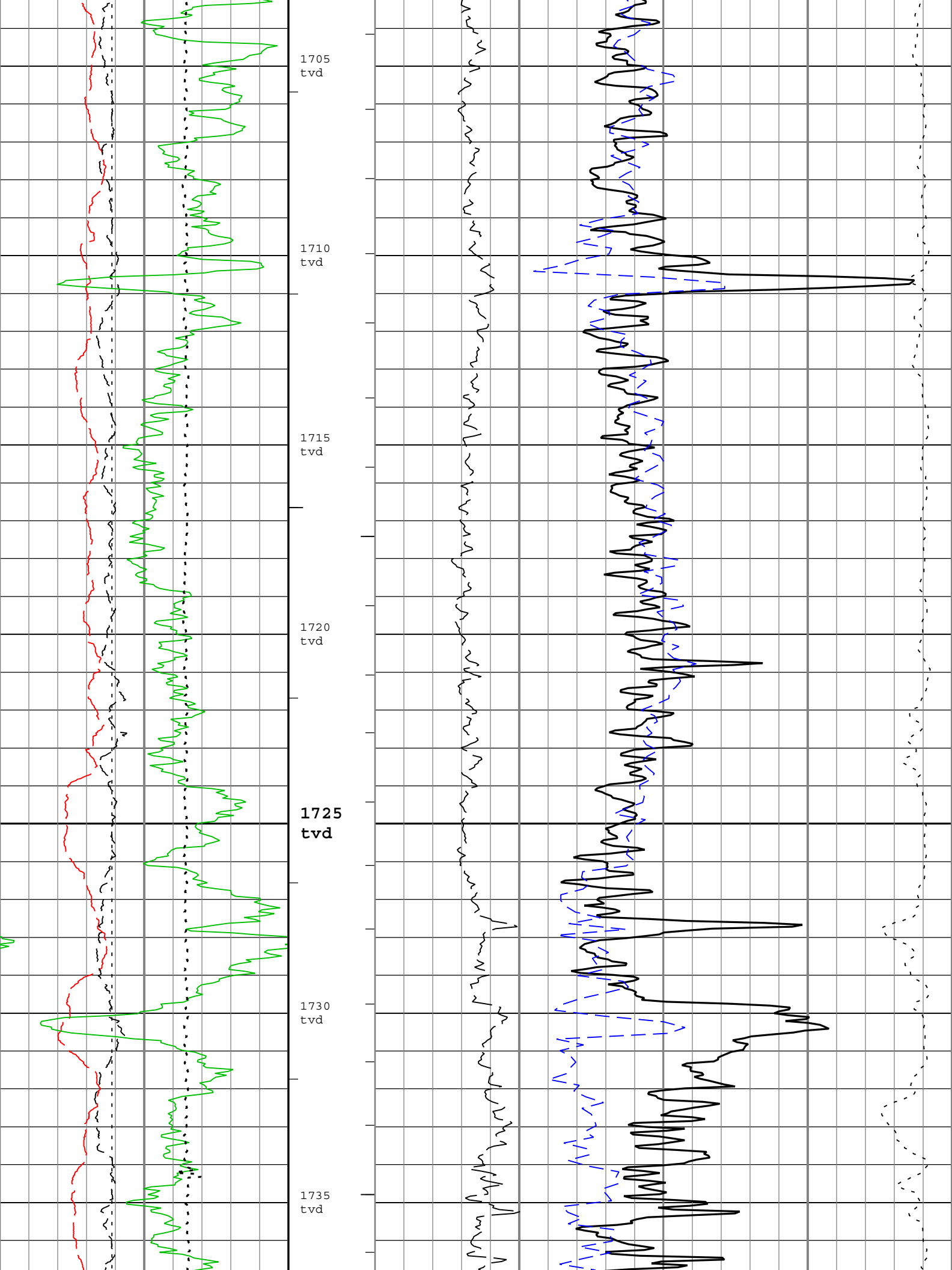
Software Version				
Acquisition System		Version		
MaxWell		4.0.9163.3000		
Application Patch		Patch-SP-10767_13075-4.0.9163.3001		
Computation	Description			Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels			4.0.9213.3000
HENVIR	Computation Ensemble for the HGNS Neutron environmental corrections			4.0.9033.3000
DepthCorrection	DepthCorrection			4.0.9213.3000
Tool Elements	Description	Software Version		Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	4.0.9231.3000		2.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9231.3000		2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	4.0.9231.3000		3.0

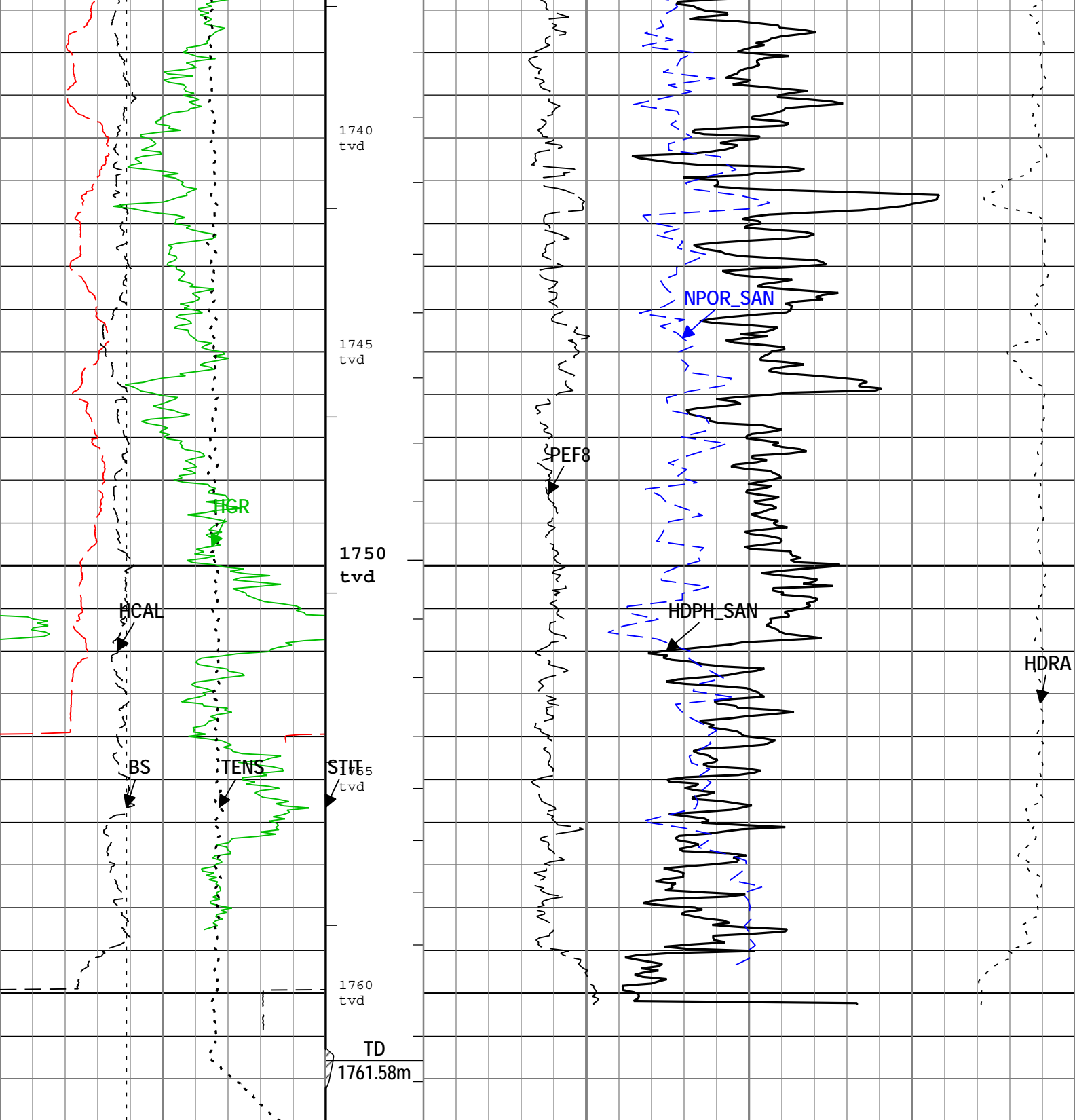












***HIGH RESOLUTION PASS: PEX-NEUTRON POROSITY LOG - SANDSTONE 2650 KG/M3***			
Bit Size (BS)		HDPH_SAN2	
125	mm	0.45	-0.15
HCAL2		HDPH_SAN	
125	mm	0.45	-0.15
HCAL		High Resolution Formation Photoelectric Factor (PEF8) HDRS-H[1]	
125	mm	0	20
HGR		Enhanced Thermal Neutron Porosity (matrix Sandstone) (NPOR_SAN) HGNS-H	
0	gAPI	0.45	-0.15
Cable Tension (TENS)		Density Standoff	



└─ ICV - Integrated Cement Volume every 1.00 (m3)

└─ IHV - Integrated Hole Volume every 0.10 (m3)

└─ IHV - Integrated Hole Volume every 1.00 (m3)

└─ ICV - Integrated Cement Volume every 0.10 (m3)

Description: MCFL processing LQC for Platform Express    Format: Log ( NUC-HIRES )    Index Scale: 1:120    Index Unit: m    Index Type: TVD    Creation Date: 15-Jan-2014 01:17:33

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	71.5	degC
BS	Bit Size	WLSESSION	222	mm
BSAL	Borehole Salinity	Borehole	0	ppm
BSCO	Borehole Salinity Correction Option	HGNS-H	No	
CALI_SHIFT.1	CALI Supplementary Offset	HDRS-H	4.4	mm
CALI_SHIFT.2	CALI Supplementary Offset	HDRS-H	13.5	mm
CBLO	Casing Bottom (Logger)	WLSESSION	603	m
CCCO	Casing & Cement Thickness Correction Option	HGNS-H	Yes	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	1025	kg/m3
DFT	Drilling Fluid Type	Borehole	Oil	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	177.8	mm
FD	Fluid Density	Borehole	1000	kg/m3
FSAL	Formation Salinity	Borehole	0	ppm
FSCO	Formation Salinity Correction Option	HGNS-H	No	
GCLF	Coal-Like Formation	HDRS-H	No	
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	
GR_MULTIPLIER	Gamma Ray Multiplier	HGNS-H	1	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	REMS	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
HVCS	Integrated Hole Volume Caliper Selection	Borehole	Compute Area from GHD	
IHVC	Integrated Hole Volume Control	Borehole	Start	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
MCCO	Mud Cake Correction Option	HGNS-H	No	
MWCO	Mud Weight Correction Option	HGNS-H	No	
NAAC	Switch for the correction of formation activation by the APS	HDRS-H	Off	
NPRM	HRDD Nuclear Processing Mode	HDRS-H	High Resolution	
NTCO	HRDD Nuclear Temperature Correction Option	HDRS-H	On	
PTCO	Pressure Temperature Correction Option	HGNS-H	No	
SOCN	Standoff Distance	HGNS-H	3.175	mm
SOCO	Standoff Correction Option	HGNS-H	Yes	
TD	Total Measured Depth	Borehole	1819.1	m

Tool Control Parameters

## 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	548.64	m/h
NDTC	Nuclear Dead Time Correction	HDRS-H	On	
NPUC	Nuclear Pile-Up Correction	HDRS-H	Off	
STSO_HRDD	Temperature Source for the Density Algorithm	HDRS-H	HET data channel	

## Calibration Report

## AIT-M (Array Induction Tool - M) Calibration - Run 1.1

## Primary Equipment :

File code for AIT-MA Sonde Tool Element

AMIS

129

## Auxiliary Equipment :

AITM Rm/SP Bottom Nose

AMRM

129

## AIT Sonde Calibration - Test Loop Gain

Master (EEPROM): 10:28:12 31-Dec-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.014	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	1.089	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.008	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.684	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.009	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	-0.018	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.004	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	0.042	3.000	
Test Loop Gain - 4		Master	1.000	0.950	0.989	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	0.028	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.980	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.052	3.000	
Test Loop Gain - 6		Master	1.000	0.950	0.987	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	0.343	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.007	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	0.019	3.000	

## AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM): 10:28:12 31-Dec-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-80.037	119.000	
Sonde Error Correction Quad - 0		Master	-----	-2250.000	-45.287	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	162.947	204.000	
Sonde Error Correction Quad - 1		Master	-----	-625.000	140.227	625.000	
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	107.663	156.000	
Sonde Error Correction Quad - 2		Master	-----	-350.000	-65.097	350.000	
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	59.198	89.000	
Sonde Error Correction Quad - 3		Master	-----	-250.000	32.514	250.000	
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	25.111	35.000	
Sonde Error Correction Quad - 4		Master	-----	-63.000	12.558	63.000	
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	11.772	24.000	
Sonde Error Correction Quad - 5		Master	-----	-50.000	12.598	50.000	
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	9.450	15.000	
Sonde Error Correction Quad - 6		Master	-----	-30.000	-1.456	30.000	
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-1.529	5.000	
Sonde Error Correction Quad - 7		Master	-----	-30.000	-9.453	30.000	

## AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM): 10:28:12 31-Dec-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	0.854	1.200	
Fine Gain		Master	1.000	0.800	0.855	1.200	

## AIT Electronics Check - Thru Calibration Check

Master (EEPROM): 10:28:12 31-Dec-2013

Before (Measured):

17:33:23 14-Jan-2014

After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div></div>
Thru Cal Mag - 0	V	Master	----	0.366	0.621	0.854	<div><div></div></div>
		Before	----	0.366	0.621	0.854	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 0	deg	Master	----	137.000	-174.832	-103.000	<div><div></div></div>
		Before	----	137.000	-166.266	-103.000	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	8.566	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 1	V	Master	----	0.762	1.275	1.778	<div><div></div></div>
		Before	----	0.762	1.275	1.778	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 1	deg	Master	----	136.000	-175.928	-104.000	<div><div></div></div>
		Before	----	136.000	-167.360	-104.000	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	8.568	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 2	V	Master	----	0.372	0.632	0.868	<div><div></div></div>
		Before	----	0.372	0.632	0.868	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 2	deg	Master	----	132.000	-179.506	-108.000	<div><div></div></div>
		Before	----	132.000	-170.938	-108.000	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	8.568	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 3	V	Master	----	0.420	0.715	0.980	<div><div></div></div>
		Before	----	0.420	0.715	0.980	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 3	deg	Master	----	131.000	179.717	-109.000	<div><div></div></div>
		Before	----	131.000	-171.711	-109.000	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-351.428	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 4	V	Master	----	0.804	1.338	1.876	<div><div></div></div>
		Before	----	0.804	1.338	1.876	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	0.000	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 4	deg	Master	----	125.000	173.499	-115.000	<div><div></div></div>
		Before	----	125.000	-177.921	-115.000	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-351.420	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 5	V	Master	----	1.176	1.944	2.744	<div><div></div></div>
		Before	----	1.176	1.943	2.744	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.001	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 5	deg	Master	----	122.000	171.861	-118.000	<div><div></div></div>
		Before	----	122.000	-179.552	-118.000	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-351.413	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Mag - 6	V	Master	----	1.176	1.941	2.744	<div><div></div></div>
		Before	----	1.176	1.940	2.744	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	-0.001	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>
Thru Cal Phase - 6	deg	Master	----	121.000	171.902	-119.000	<div><div></div></div>
		Before	----	121.000	-179.512	-119.000	<div><div></div></div>
		After	----	----	----	----	<div><div></div></div>
		Before-Master	----	----	----	----	<div><div></div></div>
		After-Before	----	----	----	----	<div><div></div></div>

		Before	-----	121.000	-179.513	-119.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-351.415	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 7	V	Master	-----	0.846	1.395	1.974	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.846	1.395	1.974	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 7	deg	Master	-----	115.000	171.159	-125.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	115.000	179.812	-125.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	8.653	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
SPA Zero	mV	Master		-50.000	-0.122	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		-50.000	-0.133	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.011	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
SPA Plus	mV	Master		941.000	990.432	1040.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		941.000	990.105	1040.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.327	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Temperature Zero	V	Master		-0.050	0.000	0.050	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		-0.050	0.000	0.050	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Temperature Plus	V	Master		0.870	0.917	0.960	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		0.870	0.917	0.960	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	0.000	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>

## HDRS-H[1] (HILT Density and Rxo Sonde, 150 degC) Calibration - Run 1.1

Primary Equipment :		
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	880
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	4796
Auxiliary Equipment :		
HRDD Backscatter Detector	Backscatter	
HRDD Long Spacing Detector	Long Spacing	28679
HRDD Short Spacing Detector	Short Spacing	
Cesium 137 Gamma-Ray Logging Source	GSR-J	5285
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	880
HRMS, 125 degC, 10 kpsi	HRMS-B	894
Calibration Parameter :		
Small Ring Size (Caliper Calibration Small Ring)	203.2	
Large Ring Size (Caliper Calibration Large Ring)	304.8	

## HDRS Caliper Calibration - Caliper Accumulations

Before (Measured):		06:27:32 14-Jan-2014						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>	
Small Ring	mm	Before	203.2	152.4	199.0	254.0	<div><div></div><div></div><div></div><div></div><div></div></div>	
Large Ring	mm	Before	304.8	228.6	292.0	381.0	<div><div></div><div></div><div></div><div></div><div></div></div>	

## HDRS Density Calibration - Inversion Results

Master (EEPROM):		12:27:24 24-Dec-2013						
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Rho Aluminum	kg/m3	Master	2596	2586	2600	2606		
Rho Magnesium	kg/m3	Master	1686	1676	1690	1696		
Pe Aluminum		Master	2.570	2.470	2.579	2.670		
Pe Magnesium		Master	2.650	2.550	2.603	2.750		

## HDRS Density Calibration - Deviation Summary

Master (EEPROM): 12:27:24 24-Dec-2013							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.2068	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.6397	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3839	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.5922	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.8683	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.7525	3.5000	

## HDRS Density Calibration - Background Summary

Master (EEPROM):		12:27:24 24-Dec-2013		Before (Measured):		06:28:18 14-Jan-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7364		
		Before	0.7364	0.6996	0.7419	0.7732	
		Before-Master	----	----	0.0055	----	
BS Window Sum	1/s	Master	1		26467		
		Before	26467	25143	26655	27790	
		Before-Master	----	----	188	----	
SS Window Ratio		Master	1.0000		0.4815		
		Before	0.4815	0.4574	0.4769	0.5056	
		Before-Master	----	----	-0.0046	----	
SS Window Sum	1/s	Master	1		11894		
		Before	11894	11300	11857	12489	
		Before-Master	----	----	-37	----	
LS Window Ratio		Master	1.0000		0.2994		
		Before	0.2994	0.2844	0.2975	0.3144	
		Before-Master	----	----	-0.0019	----	
LS Window Sum	1/s	Master	1		1353		
		Before	1353	1285	1341	1421	
		Before-Master	----	----	-12	----	

## HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		12:27:24 24-Dec-2013		Before (Measured):		06:28:18 14-Jan-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1339	2400	
		Before		1000	1329	2400	
		Before-Master	-----	-100	-10	100	
SS PM High Voltage	V	Master		1000	1361	2400	
		Before		1000	1398	2400	
		Before-Master	-----	-100	37	100	
LS PM High Voltage	V	Master		1000	1321	2400	
		Before		1000	1343	2400	
		Before-Master	-----	-100	22	100	

## HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		12:27:24 24-Dec-2013		Before (Measured):		06:28:18 14-Jan-2014	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	10.60	25.00	
		Before		5.00	10.44	25.00	
		Before-Master	----	-1.00	-0.16	1.00	
SS Crystal Resolution	%	Master		5.00	9.82	20.00	
		Before		5.00	10.29	20.00	
		Before-Master	----	-1.00	0.47	1.00	
LS Crystal Resolution	%	Master		5.00	8.22	20.00	
		Before		5.00	8.07	20.00	
		Before-Master	----	-1.00	-0.15	1.00	

## HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 06:24:53 14-Jan-2014							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3839	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3808	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3810	4136	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run 1.1

## Primary Equipment :

HILT Gamma-Ray and Neutron Sonde, 150 degC

HGNS-H

4792

## Auxiliary Equipment :

HGNS Accelerometer, 150 degC

HACCZ-H

5469

AmBe Neutron Logging Source

NSR-F

2516

## Calibration Parameter :

Water Temperature

Housing Size

JIG-BKG (Jig minus background reference)

165

## HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 17:31:34 14-Jan-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	m/s2	Before	9.81	9.61	9.81	10.01	

## HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-Sep-2006

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degC	Master		-1.0	25.0	50.0	
Accelerometer Coefficients - 0		Master	----	----	7241.000	----	
Accelerometer Coefficients - 1		Master	----	----	5.473	----	
Accelerometer Coefficients - 2		Master	----	----	-0.012	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.735	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	300.400	----	
Accelerometer Coefficients - 9		Master	----	----	0.984	----	

## HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 09:05:16 31-Dec-2013 Before (Measured): 06:25:14 14-Jan-2014 After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	27.0	40.0	
		Before	0	5.0	27.3	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.1	0.3	4.1	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	26.1	40.0	
		Before	0	5.0	28.5	40.0	
		After	----	----	----	----	
		Before-Master	----	-3.9	2.4	3.9	
		After-Before	----	----	----	----	
Near Plus Measurement	1/s	Master	6031.0	4700.0	5851.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2454.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement	1/s	Master		4700.0	5865.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2454.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

# HGNS Gamma-Ray Accumulations

Before (Measured):		06:27:38 14-Jan-2014		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	33.9	120.0	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	159.9	206.3	
		After	----	----	NOT DONE	----	
		After-Before	----	----	----	----	
GR Calibration Gain		Before	0.89	0.80	1.03	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

## DSLT-H (Digitizing Sonic Logging Tool - H) Calibration - Run 1.1

Primary Equipment :			
Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL		SLS-E	2047

## CBL Normalization - CBL Accumulations

Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Upper Far Amplitude - 0		Master	----	----	----	----	
Upper Near Raw Amplitude - 0	mV	Master	----	----	----	----	
Lower Far Amplitude - 0		Master	----	----	----	----	
Lower Near Raw Amplitude - 0	mV	Master	----	----	----	----	

## CBL Normalization - CBL/VDL Coefficients

Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Correction Factor for UT		Master	3.500	2.700	NOT DONE	4.300	
CBL Correction Factor for LT		Master	2.500	1.700	NOT DONE	4.300	
VDL Ratio between UT and LT for CBLB Mode		Master	1.000		NOT DONE		

## CBL Free Pipe Adjustment - Free Pipe Measurement

Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude - 0	mV	Before	----	----	----	----	
CBL Reference Amplitude (CBRA) - 0	mV	Before	----	----	----	----	
Measurement Depth - 0	m	Before	----	----	----	----	

## CBL Free Pipe Adjustment - CBL Amplitude Coefficient

Before:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before	1.000	0.200	NOT DONE	5.000	
Depth of Before Calibration	ft	Before			NOT DONE		

## HDRS-H[2] (HILT Density and Rxo Sonde, 150 degC) Calibration - Run 1.1

Primary Equipment :			
HILT High-Resolution Control Cartridge, 150 degC		HRCC-H	
HILT Resistivity Gamma-Ray Density Device, 150 degC		HRGD-H	3914
Auxiliary Equipment :			
HRDD Backscatter Detector		Backscatter	
HRDD Long Spacing Detector		Long Spacing	28710
HRDD Short Spacing Detector		Short Spacing	27760
Cesium 137 Gamma-Ray Logging Source		GSR-J	5310
HILT High-Resolution Control Cartridge, 150 degC		HRCC-H	
HILT High-Resolution Mechanical Sonde, 150 degC		HRMS-H	3875
Calibration Parameter :			
Small Ring Size (Caliper Calibration Small Ring)		203.2	
Large Ring Size (Caliper Calibration Large Ring)		304.8	

## HDRS Caliper Calibration - Caliper Accumulations

Before (Measured):		06:29:21 14-Jan-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Small Ring	mm	Before	203.2	152.4	204.6	254.0	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Large Ring	mm	Before	304.8	228.6	313.3	381.0	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
HDRS Density Calibration - Inversion Results							
Master (EEPROM):		10:28:40 24-Dec-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Rho Aluminum	kg/m3	Master	2596	2586	2598	2606	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Rho Magnesium	kg/m3	Master	1686	1676	1690	1696	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Pe Aluminum		Master	2.570	2.470	2.568	2.670	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
Pe Magnesium		Master	2.650	2.550	2.615	2.750	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
HDRS Density Calibration - Deviation Summary							
Master (EEPROM):		10:28:40 24-Dec-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS Average Deviation	%	Master	0	-0.6000	0.2310	0.6000	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS Max Deviation	%	Master	0	-1.6000	0.8128	1.6000	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS Average Deviation	%	Master	0	-1.0000	0.6214	1.0000	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS Max Deviation	%	Master	0	-2.5000	1.9703	2.5000	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Average Deviation	%	Master	0	-1.5000	0.3753	1.5000	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Max Deviation	%	Master	0	-3.5000	1.3653	3.5000	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
HDRS Density Calibration - Background Summary							
Master (EEPROM):		10:28:40 24-Dec-2013		Before (Measured):		14:51:08 09-Jan-2014 Expired by 4 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS Window Ratio		Master	1.0000		0.7406		<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before	0.7406	0.7036	0.7452	0.7776	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	0.0046	----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS Window Sum	1/s	Master	1		23979		<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before	23979	22780	24136	25178	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	157	----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS Window Ratio		Master	1.0000		0.4809		<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before	0.4809	0.4569	0.4768	0.5050	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.0041	----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS Window Sum	1/s	Master	1		10589		<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before	10589	10060	10583	11119	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-6	----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Window Ratio		Master	1.0000		0.3042		<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before	0.3042	0.2890	0.2988	0.3194	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.0054	----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Window Sum	1/s	Master	1		1192		<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before	1192	1132	1180	1251	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-12	----	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
HDRS Density Calibration - Photo-multiplier High Voltages							
Master (EEPROM):		10:28:40 24-Dec-2013		Before (Measured):		14:51:08 09-Jan-2014 Expired by 4 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS PM High Voltage	V	Master		1000	1448	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000	1447	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	-100	-1	100	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS PM High Voltage	V	Master		1000	1477	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000	1506	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	-100	29	100	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS PM High Voltage	V	Master		1000	1289	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000	1286	2400	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	-100	-3	100	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
HDRS Density Calibration - Crystal Quality Resolutions							
Master (EEPROM):		10:28:40 24-Dec-2013		Before (Measured):		14:51:08 09-Jan-2014 Expired by 4 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
BS Crystal Resolution	%	Master		5.00	10.46	25.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	10.41	25.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	-1.00	-0.05	1.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
SS Crystal Resolution	%	Master		5.00	10.04	20.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	10.64	20.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	-1.00	0.60	1.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>
LS Crystal Resolution	%	Master		5.00	8.04	20.00	<div><div></div><div></div><div></div><div></div><div></div><div></div></div>



HDRS MCFL Calibration - MCFL Accumulations							
Before (Measured):		06:25:34 14-Jan-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3906	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3827	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3837	4136	

<b>Primary Equipment :</b>			
	Scintillation Gamma Cartridge	SGC-TB	10447
<b>Calibration Parameter :</b>			
	Plus Reference (Jig minus background reference)	165	

Before (Measured):		06:28:02 14-Jan-2014		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Gain		Before			1.169		
		After	----	----	----	----	
		After-Before	----	----	----	----	

Before (Measured):		06:28:02 14-Jan-2014		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before		0	44.958	120.000	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	141.161	128.328	141.161	153.994	
		After			NOT DONE		
		After-Before	----	----	----	----	

Before (Measured):		14:58:24 09-Jan-2014		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Plus Plateau Measurement	gAPI	Before			173.529		
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Minus Plateau Measurement	gAPI	Before			170.096		
		After	----	----	----	----	
		After-Before	----	----	----	----	

Primary Equipment :			
	Logging Equipment Head - QT, 3-3/8 inch 31 pin HPHT with Tension Sensor	LEH-QT	2850

Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HTEN Shop Gain		Master	1.000	0.800	NOT DONE	4.500	
HTEN Shop Offset	lbf	Master	0	-4448.222	NOT DONE	4448.222	

Before:								
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RHTE Zero Measurement - 0	lbf	Before	----	----	----	----		
RHTE Plus Measurement - 0	lbf	Before	----	----	----	----		
HTEN Gain - 0		Before	----	----	----	----		
HTEN Offset - 0	lbf	Before	----	----	----	----		

## Survey Record

Survey Calculation															
Method :				Minimum Radius of Curvature				DLS Method :				Lubinski			
North Reference :				True North				Total Correction Formula :				Magnetic Dec			
Rig Location															
Latitude :				65° 5' 27" N				Longitude :				126° 59' 58" W			
Tie In Point															
Measured Depth:		0.00 m		Inclination:		0.00 deg		Azimuth:		0.00 deg					
True Vertical Depth:		0.00 m		North Displacement:		0.00 m		East Displacement:		0.00 m					
Survey Quality Index															
9 : Manual				28 : Tie-In Point											
Survey Correction Index															
0 : No correction															
Survey Description Index															
0 : Not Flagged Survey															
Seq	MD (m)	Incl (deg)	Azim (deg)	Course (m)	TVD (m)	V Sec (m)	N/ -S (m)	E/ -W (m)	Closure (m)	at Azim (deg)	DLS deg/30m	Tool Type	QI	CI	DI
1	0.00	0.00	0.00	- - - -	0.00	0.00	0.00	0.00	0.00	90.00	0.00	TIP	28	0	0
2	29.00	0.40	0.00	29.00	29.00	0.10	0.10	0.00	0.10	360.00	0.41	Other	9	0	0
3	62.00	0.50	0.00	33.00	62.00	0.36	0.36	0.00	0.36	360.00	0.09	Other	9	0	0
4	90.00	0.20	0.00	28.00	90.00	0.53	0.53	0.00	0.53	360.00	0.32	Other	9	0	0
5	118.00	0.20	0.00	28.00	118.00	0.63	0.63	0.00	0.63	360.00	0.00	Other	9	0	0
6	146.00	0.10	0.00	28.00	146.00	0.70	0.70	0.00	0.70	360.00	0.11	Other	9	0	0
7	183.00	0.20	0.00	37.00	183.00	0.80	0.80	0.00	0.80	360.00	0.08	Other	9	0	0
8	211.00	0.30	0.00	28.00	211.00	0.92	0.92	0.00	0.92	360.00	0.11	Other	9	0	0
9	240.00	0.50	0.00	29.00	240.00	1.12	1.12	0.00	1.12	360.00	0.21	Other	9	0	0
10	269.00	0.80	0.00	29.00	268.99	1.45	1.45	0.00	1.45	360.00	0.31	Other	9	0	0
11	306.00	1.00	0.00	37.00	305.99	2.03	2.03	0.00	2.03	360.00	0.16	Other	9	0	0
12	348.00	0.90	0.00	42.00	347.98	2.73	2.73	0.00	2.73	360.00	0.07	Other	9	0	0
13	378.00	0.40	0.00	30.00	377.98	3.07	3.07	0.00	3.07	360.00	0.50	Other	9	0	0
14	396.00	0.60	0.00	18.00	395.98	3.23	3.23	0.00	3.23	360.00	0.33	Other	9	0	0
15	433.00	0.60	0.00	37.00	432.98	3.62	3.62	0.00	3.62	360.00	0.00	Other	9	0	0
16	461.00	0.60	0.00	28.00	460.98	3.91	3.91	0.00	3.91	360.00	0.00	Other	9	0	0
17	489.00	0.50	0.00	28.00	488.98	4.18	4.18	0.00	4.18	360.00	0.11	Other	9	0	0
18	508.00	0.70	0.00	19.00	507.98	4.38	4.38	0.00	4.38	360.00	0.32	Other	9	0	0
19	544.00	0.40	0.00	36.00	543.97	4.72	4.72	0.00	4.72	360.00	0.25	Other	9	0	0
20	571.00	0.50	0.00	27.00	570.97	4.93	4.93	0.00	4.93	360.00	0.11	Other	9	0	0
21	627.50	0.31	124.14	56.50	627.47	5.09	5.09	0.13	5.10	1.42	0.38	Other	9	0	0
22	704.50	0.62	137.27	77.00	704.47	4.67	4.67	0.58	4.71	7.10	0.13	Other	9	0	0
23	781.50	0.71	129.47	77.00	781.46	4.06	4.06	1.23	4.25	16.88	0.05	Other	9	0	0
24	818.50	0.71	121.14	37.00	818.46	3.80	3.80	1.61	4.12	22.92	0.08	Other	9	0	0
25	856.50	1.28	112.77	38.00	856.46	3.51	3.51	2.20	4.14	32.05	0.46	Other	9	0	0
26	896.50	1.28	113.56	40.00	896.45	3.16	3.16	3.02	4.37	43.70	0.01	Other	9	0	0
27	932.50	1.19	113.98	36.00	932.44	2.85	2.85	3.73	4.69	52.64	0.08	Other	9	0	0
28	970.50	0.88	151.55	38.00	970.43	2.43	2.43	4.23	4.88	60.11	0.57	Other	9	0	0
29	1008.50	1.02	147.85	38.00	1008.43	1.89	1.89	4.55	4.93	67.46	0.12	Other	9	0	0
30	1046.50	1.19	133.05	38.00	1046.42	1.33	1.33	5.02	5.19	75.13	0.26	Other	9	0	0
31	1084.50	1.50	124.45	38.00	1084.41	0.78	0.78	5.72	5.77	82.21	0.29	Other	9	0	0
32	1122.50	1.10	145.78	38.00	1122.40	0.20	0.20	6.33	6.33	88.20	0.49	Other	9	0	0
33	1160.50	1.19	131.15	38.00	1160.39	-0.36	-0.36	6.83	6.84	93.04	0.24	Other	9	0	0
34	1198.50	2.12	145.56	38.00	1198.38	-1.20	-1.20	7.53	7.62	99.07	0.80	Other	9	0	0
35	1236.50	1.81	176.76	38.00	1236.35	-2.38	-2.38	7.96	8.31	106.65	0.87	Other	9	0	0
36	1274.50	1.41	163.67	38.00	1274.34	-3.43	-3.43	8.12	8.82	112.88	0.43	Other	9	0	0
37	1312.50	1.90	156.64	38.00	1312.32	-4.46	-4.46	8.51	9.60	117.65	0.42	Other	9	0	0
38	1351.50	2.12	141.06	39.00	1351.30	-5.61	-5.61	9.22	10.79	121.33	0.45	Other	9	0	0
39	1389.50	2.90	172.66	38.00	1389.27	-7.11	-7.11	9.78	12.09	126.02	1.23	Other	9	0	0

40	1426.50	2.78	175.74	37.00	1426.22	-8.93	-8.93	9.97	13.38	131.87	0.16	Other	9	0	0
41	1446.00	4.20	204.66	19.50	1445.68	-10.05	-10.05	9.70	13.97	136.02	3.41	Other	9	0	0
42	1464.50	2.70	229.77	18.50	1464.15	-10.95	-10.95	9.09	14.23	140.31	3.40	Other	9	0	0
43	1474.50	4.02	247.44	10.00	1474.13	-11.24	-11.24	8.58	14.14	142.62	4.99	Other	9	0	0
44	1483.50	4.60	257.05	9.00	1483.11	-11.44	-11.44	7.94	13.93	145.23	3.08	Other	9	0	0
45	1493.50	6.32	262.42	10.00	1493.06	-11.60	-11.60	7.01	13.55	148.88	5.38	Other	9	0	0
46	1503.00	7.11	268.46	9.50	1502.50	-11.69	-11.69	5.90	13.09	153.22	3.34	Other	9	0	0
47	1512.50	8.09	268.37	9.50	1511.91	-11.72	-11.72	4.64	12.61	158.39	3.09	Other	9	0	0
48	1522.00	8.62	267.36	9.50	1521.31	-11.77	-11.77	3.26	12.22	164.51	1.74	Other	9	0	0
49	1531.50	9.81	264.58	9.50	1530.69	-11.88	-11.88	1.75	12.01	171.64	4.01	Other	9	0	0
50	1541.00	10.78	267.18	9.50	1540.04	-12.00	-12.00	0.05	12.00	179.74	3.40	Other	9	0	0
51	1550.50	11.62	269.47	9.50	1549.36	-12.06	-12.06	-1.79	12.19	188.45	3.00	Other	9	0	0
52	1560.00	12.59	269.78	9.50	1558.65	-12.07	-12.07	-3.78	12.65	197.40	3.07	Other	9	0	0
53	1569.50	14.41	271.28	9.50	1567.88	-12.05	-12.05	-6.00	13.46	206.48	5.85	Other	9	0	0
54	1580.00	15.60	270.75	10.50	1578.02	-12.00	-12.00	-8.72	14.83	216.00	3.42	Other	9	0	0
55	1599.00	19.40	278.37	19.00	1596.14	-11.51	-11.51	-14.40	18.43	231.37	6.99	Other	9	0	0
56	1608.50	19.31	287.85	9.50	1605.11	-10.79	-10.79	-17.45	20.52	238.27	9.92	Other	9	0	0
57	1617.50	19.80	296.44	9.00	1613.59	-9.66	-9.66	-20.24	22.42	244.48	9.71	Other	9	0	0
58	1627.00	20.19	300.14	9.50	1622.52	-8.12	-8.12	-23.09	24.48	250.63	4.18	Other	9	0	0
59	1636.50	21.21	303.36	9.50	1631.41	-6.35	-6.35	-25.95	26.71	256.25	4.83	Other	9	0	0
60	1645.50	22.80	306.18	9.00	1639.75	-4.43	-4.43	-28.72	29.05	261.24	6.36	Other	9	0	0
61	1655.00	24.48	309.35	9.50	1648.45	-2.09	-2.09	-31.72	31.79	266.23	6.65	Other	9	0	0
62	1664.50	27.22	309.27	9.50	1657.00	0.53	0.53	-34.93	34.93	270.87	8.65	Other	9	0	0
63	1674.00	29.12	310.94	9.50	1665.38	3.42	3.42	-38.36	38.51	275.10	6.50	Other	9	0	0
64	1683.50	31.20	312.66	9.50	1673.59	6.61	6.61	-41.91	42.43	278.96	7.11	Other	9	0	0
65	1693.00	33.41	312.66	9.50	1681.62	10.05	10.05	-45.65	46.74	282.41	6.98	Other	9	0	0
66	1702.50	36.10	310.68	9.50	1689.42	13.64	13.64	-49.69	51.53	285.35	9.21	Other	9	0	0
67	1712.00	38.62	308.96	9.50	1696.98	17.33	17.33	-54.12	56.83	287.76	8.61	Other	9	0	0
68	1721.50	41.71	305.96	9.50	1704.23	21.05	21.05	-58.99	62.63	289.64	11.51	Other	9	0	0
69	1731.00	44.19	306.67	9.50	1711.19	24.89	24.89	-64.20	68.86	291.19	7.98	Other	9	0	0
70	1740.50	47.02	306.67	9.50	1717.83	28.94	28.94	-69.65	75.42	292.56	8.94	Other	9	0	0
71	1750.00	48.61	307.77	9.50	1724.21	33.20	33.20	-75.25	82.25	293.81	5.64	Other	9	0	0
72	1759.50	50.91	309.66	9.50	1730.35	37.74	37.74	-80.91	89.27	295.00	8.57	Other	9	0	0
73	1769.00	52.32	310.15	9.50	1736.25	42.51	42.51	-86.62	96.49	296.14	4.61	Other	9	0	0
74	1778.50	55.50	312.17	9.50	1741.84	47.57	47.57	-92.39	103.92	297.24	11.29	Other	9	0	0
75	1788.00	57.58	311.87	9.50	1747.08	52.87	52.87	-98.28	111.60	298.28	6.62	Other	9	0	0
76	1797.50	60.41	310.28	9.50	1751.97	58.22	58.22	-104.42	119.55	299.14	9.92	Other	9	0	0
77	1807.00	63.10	308.96	9.50	1756.47	63.55	63.55	-110.87	127.79	299.82	9.25	Other	9	0	0
78	1816.50	66.11	308.78	9.50	1760.54	68.94	68.94	-117.55	136.27	300.39	9.52	Other	9	0	0
79	1825.00	69.51	308.34	8.50	1763.75	73.84	73.84	-123.70	144.07	300.84	12.09	Other	9	0	0
80	1835.00	73.49	307.55	10.00	1766.93	79.67	79.67	-131.18	153.48	301.27	12.15	Other	9	0	0
81	1845.00	76.71	307.55	10.00	1769.50	85.56	85.56	-138.84	163.09	301.64	9.66	Other	9	0	0
82	1854.50	79.10	305.56	9.50	1771.49	91.09	91.09	-146.30	172.34	301.91	9.73	Other	9	0	0
83	1864.00	80.20	304.07	9.50	1773.19	96.43	96.43	-153.97	181.68	302.06	5.79	Other	9	0	0
84	1873.50	82.02	303.67	9.50	1774.66	101.66	101.66	-161.77	191.06	302.15	5.88	Other	9	0	0
85	1883.00	84.71	302.88	9.50	1775.76	106.84	106.84	-169.66	200.49	302.20	8.85	Other	9	0	0
86	1889.50	86.61	302.26	6.50	1776.25	110.33	110.33	-175.12	206.97	302.21	9.22	Other	9	0	0



# Schlumberger

Province: NORTHWEST TERRITORIES

# DUAL LITHOLOGY DENSITY LOG