

Triple Combo Log / Platform Express / Resistivity

Company: DCP Midstream LP

Well: Zia AGI D2

Field: AGI Devonian Exploration

County: Lea State: New Mexico

County: Lea		Triple Combo Log	
Field: AGI Devonian Exploration		Platform Express	
Location: 1893' FSL & 950' FWL		Resistivity	
Well: Zia AGI D2		1893' FSL & 950' FWL	
Company: DCP Midstream LP		Section: 19 Township: T 19S Abstract: R32S	
Location:		Permanent Datum:	Elev.: K.B. 3574.00 ft
Log Measured From:		Ground Level	G.L. 3547.00 ft
Drilling Measured From:		Kelly Bushing	D.F. 3573.00 ft
API Serial No. 30-025-42207		Kelly Bushing	27.00 ft above Perm.Datum
Section: 19		Township: T19S	Abstract: R32S

Logging Date		29-Nov-2016		
Run Number		Run 1A		
Depth Driller		13622.00 ft		
Schlumberger Depth		13637.00 ft		
Bottom Log Interval		13637.00 ft		
Top Log Interval		4702.00 ft		
Casing Driller Size @ Depth		9.625 in @ 4696.00 ft		
Casing Schlumberger		4702 ft		
Bit Size		8.75 in		
Type Fluid In Hole		Salt Brine		
MUD	Density	10 lbm/gal	41 s	
	Fluid Loss	PH 9 cm3	10	
Source of Sample		Active Tank		
RM @ Meas Temp		0.08 ohm.m	@ 72 degF	
RMF @ Meas Temp		0.08 ohm.m	@ 72 degF	
RMC @ Meas Temp				
Source RMF	RMC			
RM @ BHT	RMF @ BHT	0.03 @ 174.75	0.03 @ 174.75	
Max Recorded Temperatures		174.75 degF		
Circulation Stopped		29-Nov-2016	00:00:00	
Logger on Bottom		29-Nov-2016	04:30:00	
Unit Number	Location:	9105	Midland, TX	
Recorded By		Danielle Krebs		
Witnessed By		Jared Smith		

Disclaimer

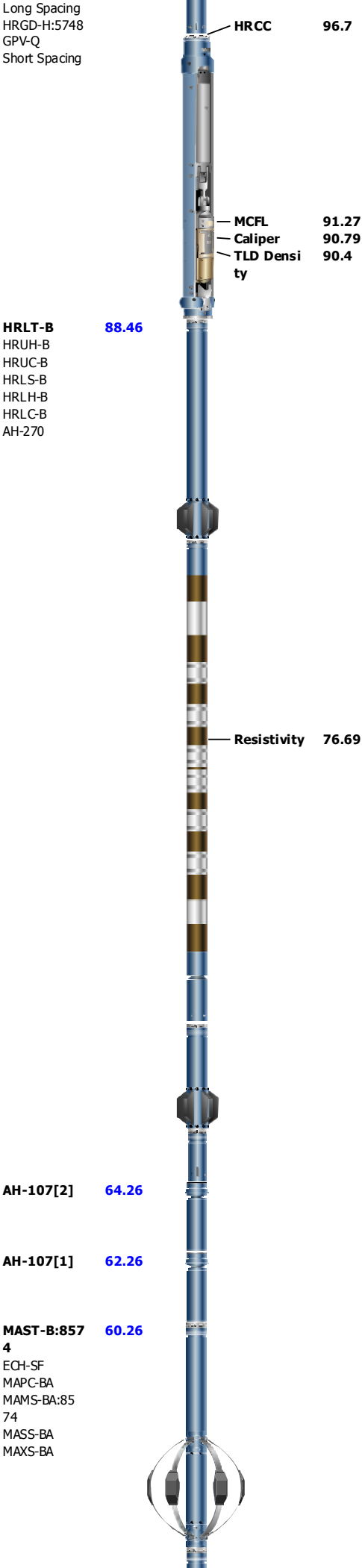
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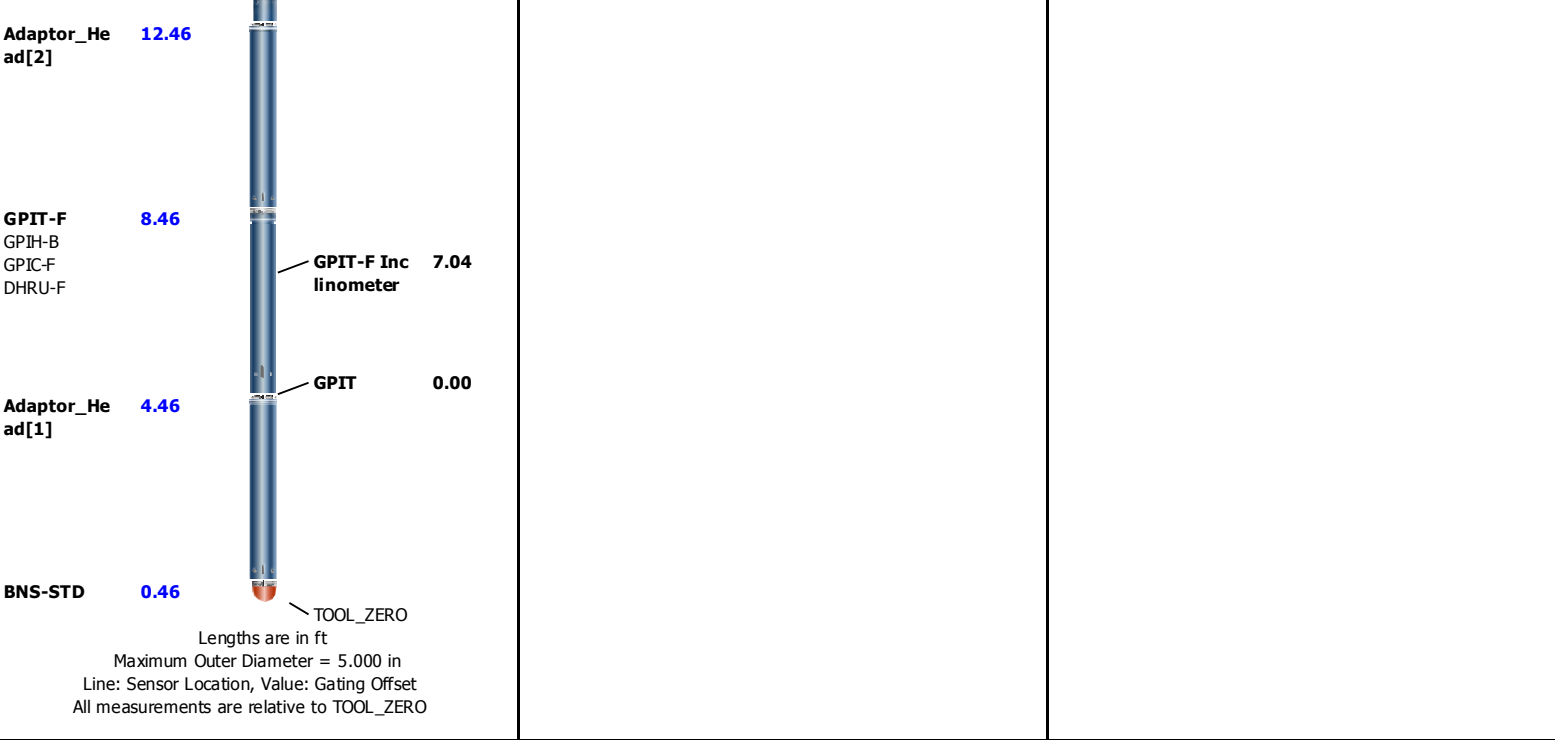
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Remarks and Equipment Summary

Run 1A: Toolstring				Run 1A: Remarks
Equip name LEH-QC	Length 133.69	MP name	Offset	1. Crew: Danielle, Tony, Dago.
				2. Logs done from TD to Casing. Repeat was 200 ft off TD. CNL & Gr to Surface.
AH-369	131.23			3. Chlorides = 55,000 ppm. FD = 1.1 g/cc. Rm = 0.08 ohm.meters @ 72 degF.
EDTC-H EDTH-H EDTC-H	129.8	CTEM	129.05	4. Max temperature from HGNS:CTEM is 174.75 degF.
				5. Density data maybe affected by borehole conditions.
				6. No pills or LCM in the mud as per company man.
				7. Neutron Corrections: HSCO, SOCO.
				8. Sonic Scanner logged in Standard Mode.
				9. As per client request, main and repeat pass correlated to downlog and not previous logs in well.
HNGS-BA:378 HEH-K:1000 HNGS-BA:378	121.8	HV ACCZ Gamma Ray Edtch Status TelStatus	0.00 0.00 123.37 121.8 121.8	
		GR	118.82	
HNGC-B:638 HNGH-A:4121 HNGC-B:638	113.61	Tel Status	111.86	
HGNS-H HGNH NSR-F:5317 NPV-N HACCZ-H:7074 HMCA-H HGNS-H	110.11	Temperature GR	110.08 109.37	
		CNL Porosity HMCA HGNS Accelerometer	103.03 100.7 100.7 0.00	
HDRS-H ECH-MEB HRCC-H HRMS-H Backscatter GSR-J:5437	100.7			





Depth Summary

	Run 1A		
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Depth Measuring Device

Type	IDW-JA		
Serial Number	2747		
Calibration Date	30-Aug-2016		
Calibrator Serial Number			
Calibration Cable Type	7-46 P-XS		
Wheel Correction 1	-2		
Wheel Correction 2	-1		

Tension Device

Type	CMTD-B/A		
Serial Number	8100		
Calibration Date	08-Oct-2016		
Calibrator Serial Number	84755A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	17		
Calibration Peak Error	32		

Logging Cable

Type	7-46P-XS		
Serial Number	U714054		
Length	17700.00 ft		
Conveyance Type	Wireline		
Rig Type	Land		

Run 1A:Depth Control Parameters

Log Sequence	First Log In the Well	Depth Control Remarks
Log Sequence	First Log In the Well	1. All SLB depth policies and procedures followed.
Rig Up Length At Surface	215.70 ft	2. IDW used as primary depth control device.
Rig Up Length At Bottom	215.00 ft	3. Z-Chart used as secondary depth control device.

Standard Resolution

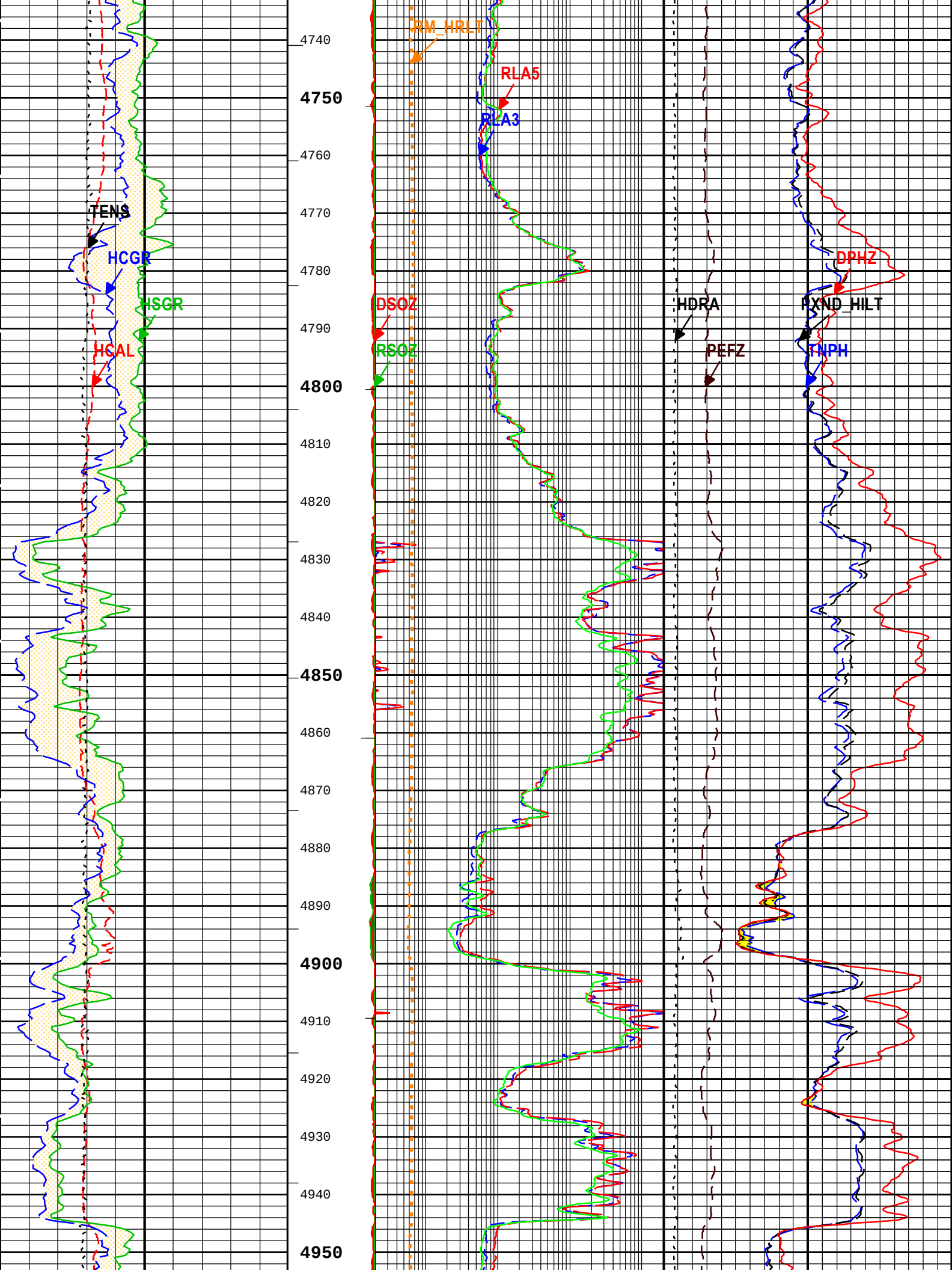
Formation
Photoelectric Factor
(PEFZ) HDRS-H

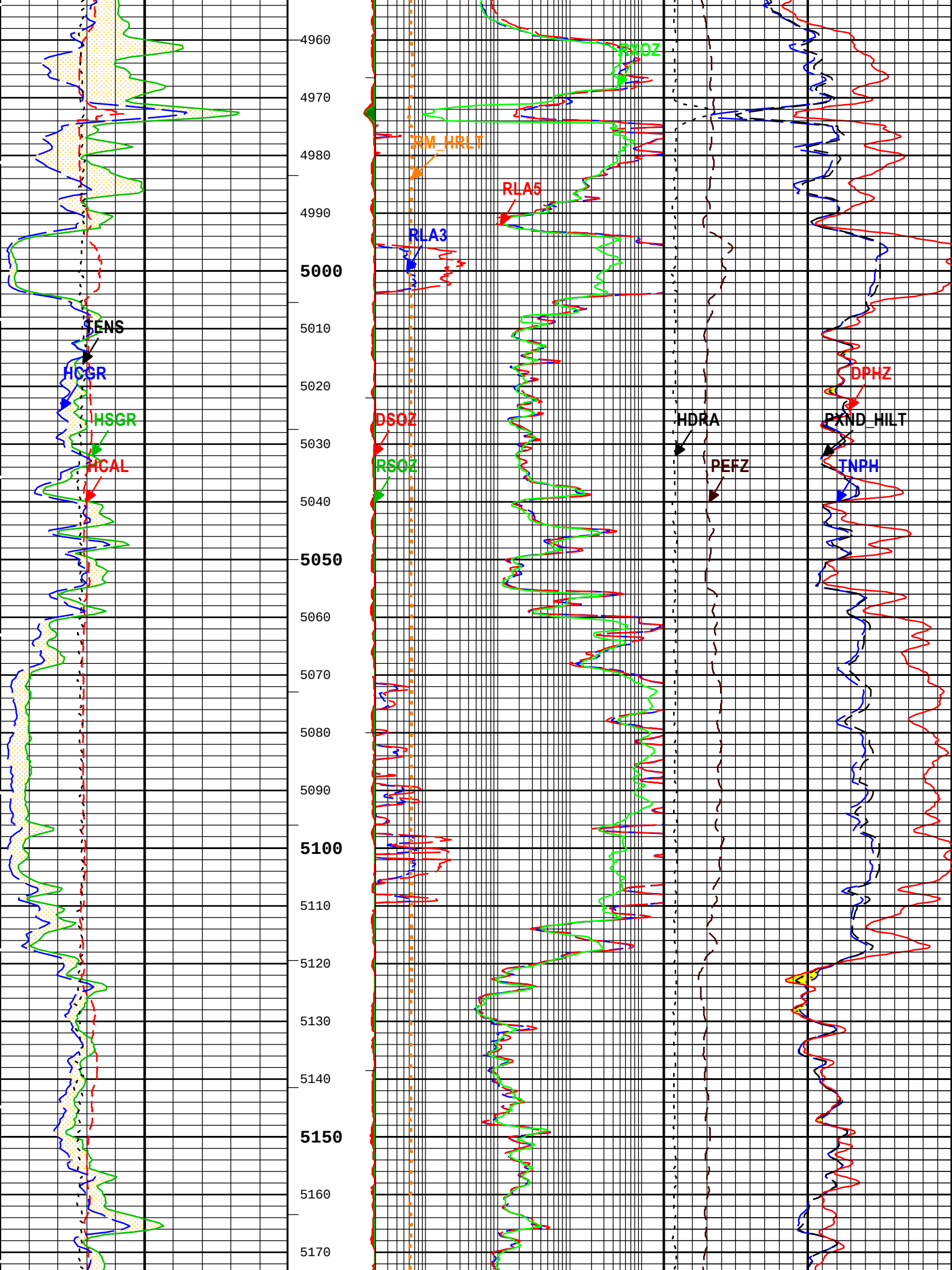
0 10

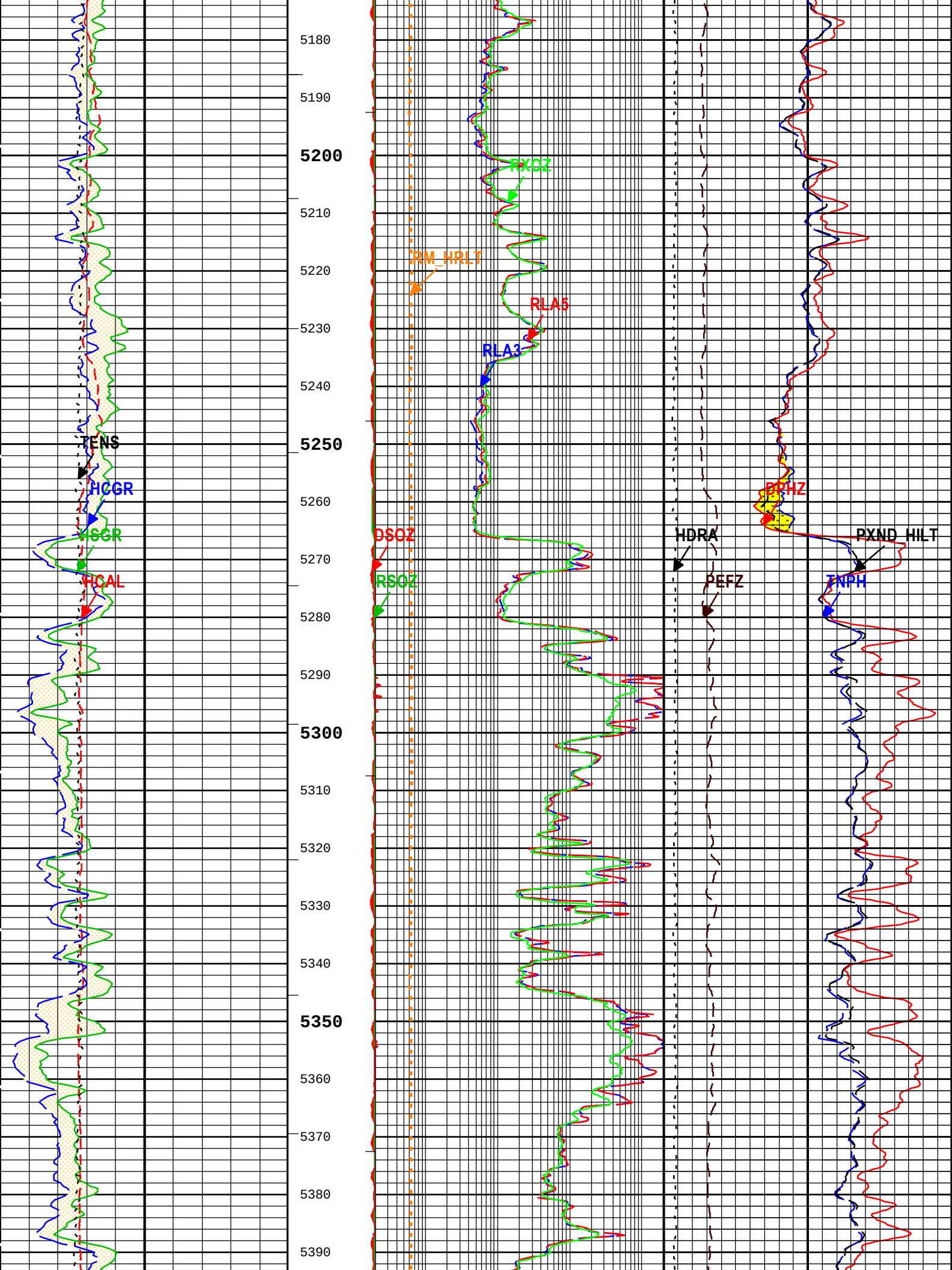
Density Standoff
Correction (HDRA)
HDRS-H

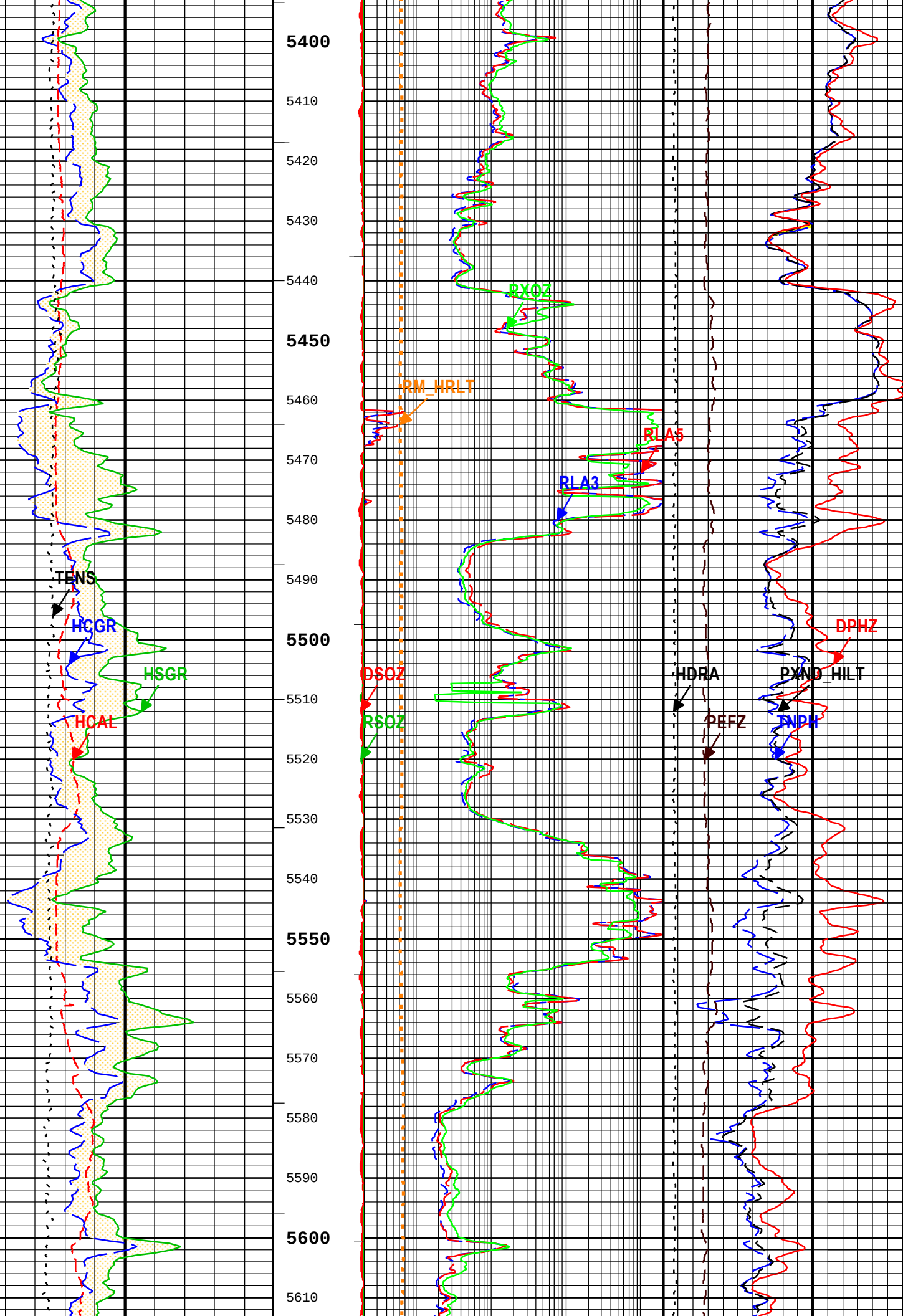
-0.05 g/cm3 0.45

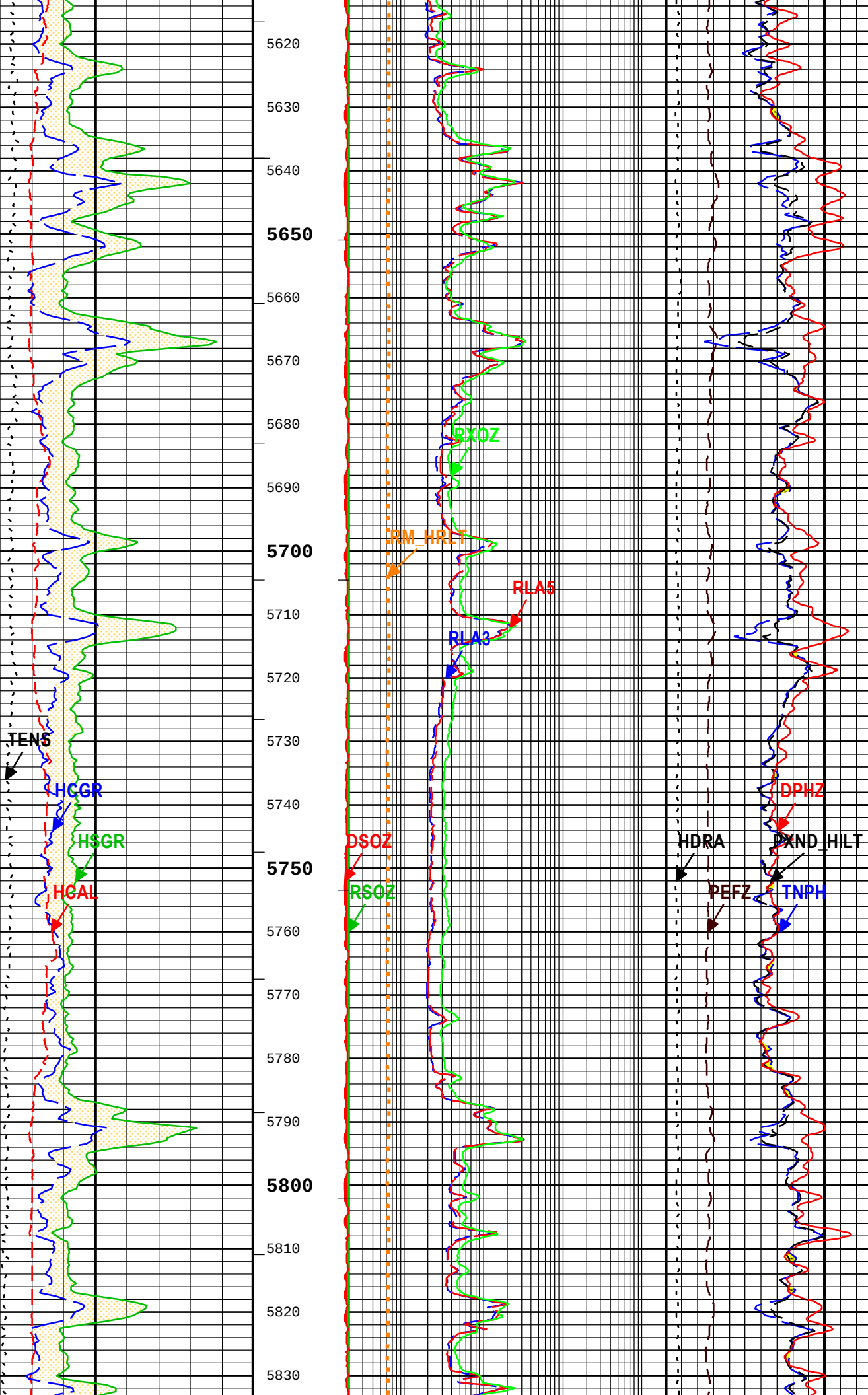
		DSOA	Density Standoff Correction (HDRA) HDRS-H ----- -0.05 g/cm3 0.45	
		RSOA		
Uranium Indicator		Resistivity Standoff Standard Resolution (RSOZ) HDRS-H 2.5 in 0	Apparent Resistivity from Computed Focusing Mode 3 (RLA3) HRLT-B ----- 0.2 ohm.m 2000	
Caliper (HCAL) HDRS-H 6 in 16			Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B ----- 0.2 ohm.m 2000	
Spectroscopy Gamma Ray (HSGR) HNGS-BA 0 gAPI 150			Mud Resistivity (RM_HRLT) HRLT-B ----- 0.02 ohm.m 200	
Gamma Ray Contribution from Thorium and Potassium (HCGR) HNGS-BA 0 gAPI 150			Invaded Formation Resistivity filtered at 18 inches (RXOZ) HDRS-H ----- 0.2 ohm.m 2000	
Cable Tension (TENS) 5000 lbf 0		Standard Resolution Density Standoff (DSOZ) HDRS-H 2.5 in 0	Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H ----- 0.3 ft3/ft3 -0.1	
			Crossplot Porosity for Neutron-Density (PXND_HILT) ----- 0.3 ft3/ft3 -0.1	
			Standard Resolution Density Porosity (DPHZ) HDRS-H ----- 0.3 ft3/ft3 -0.1	

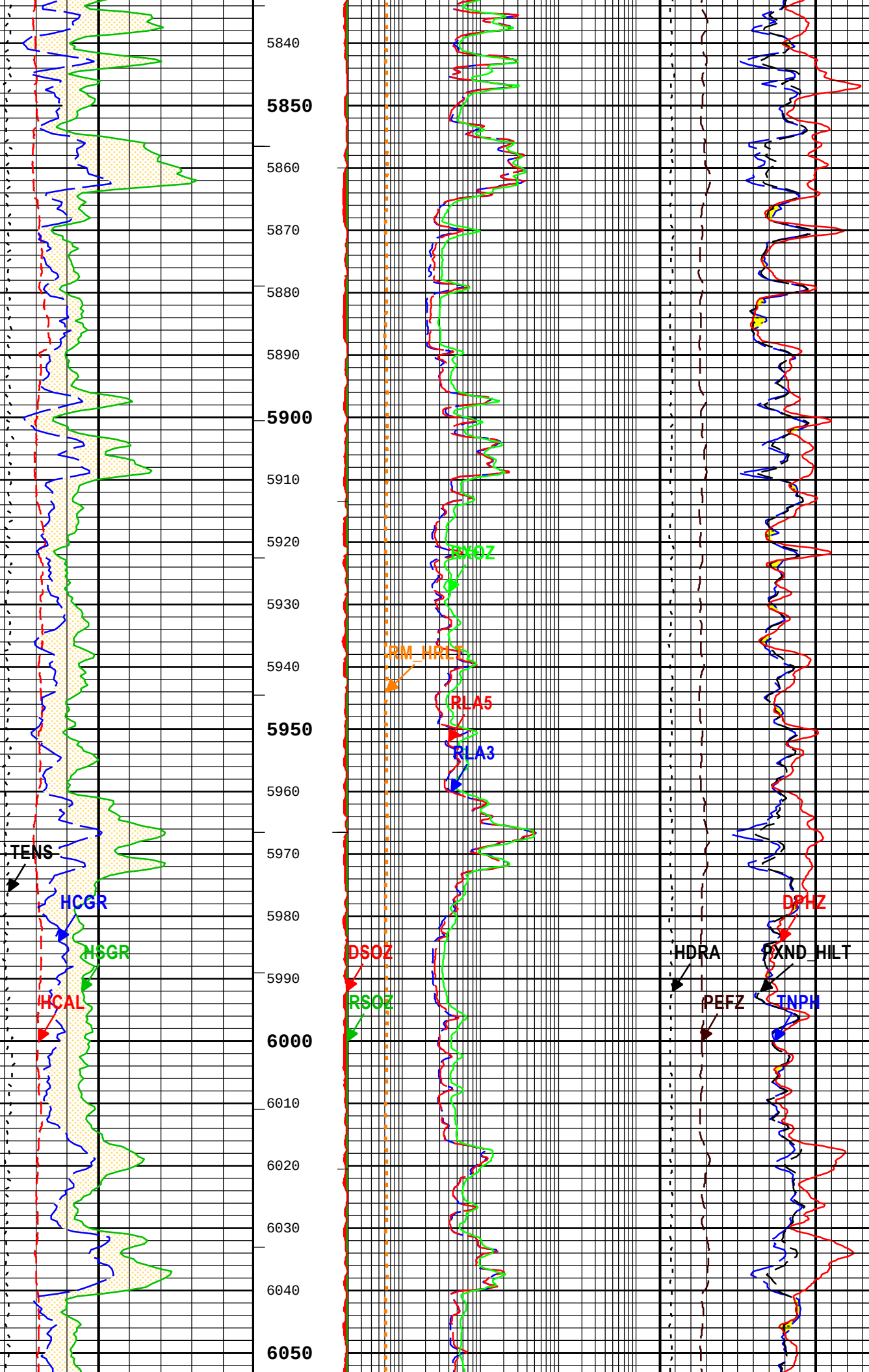


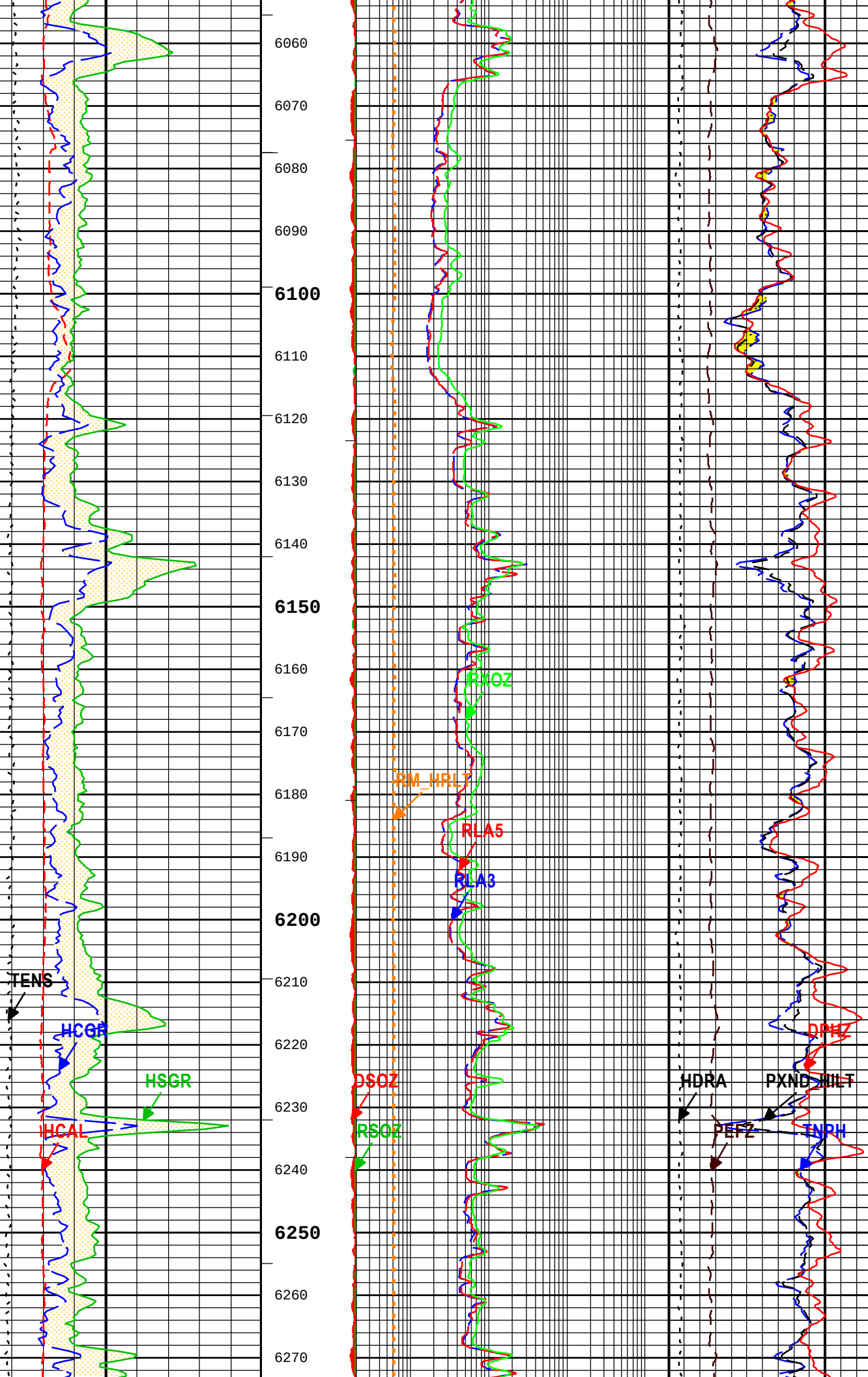


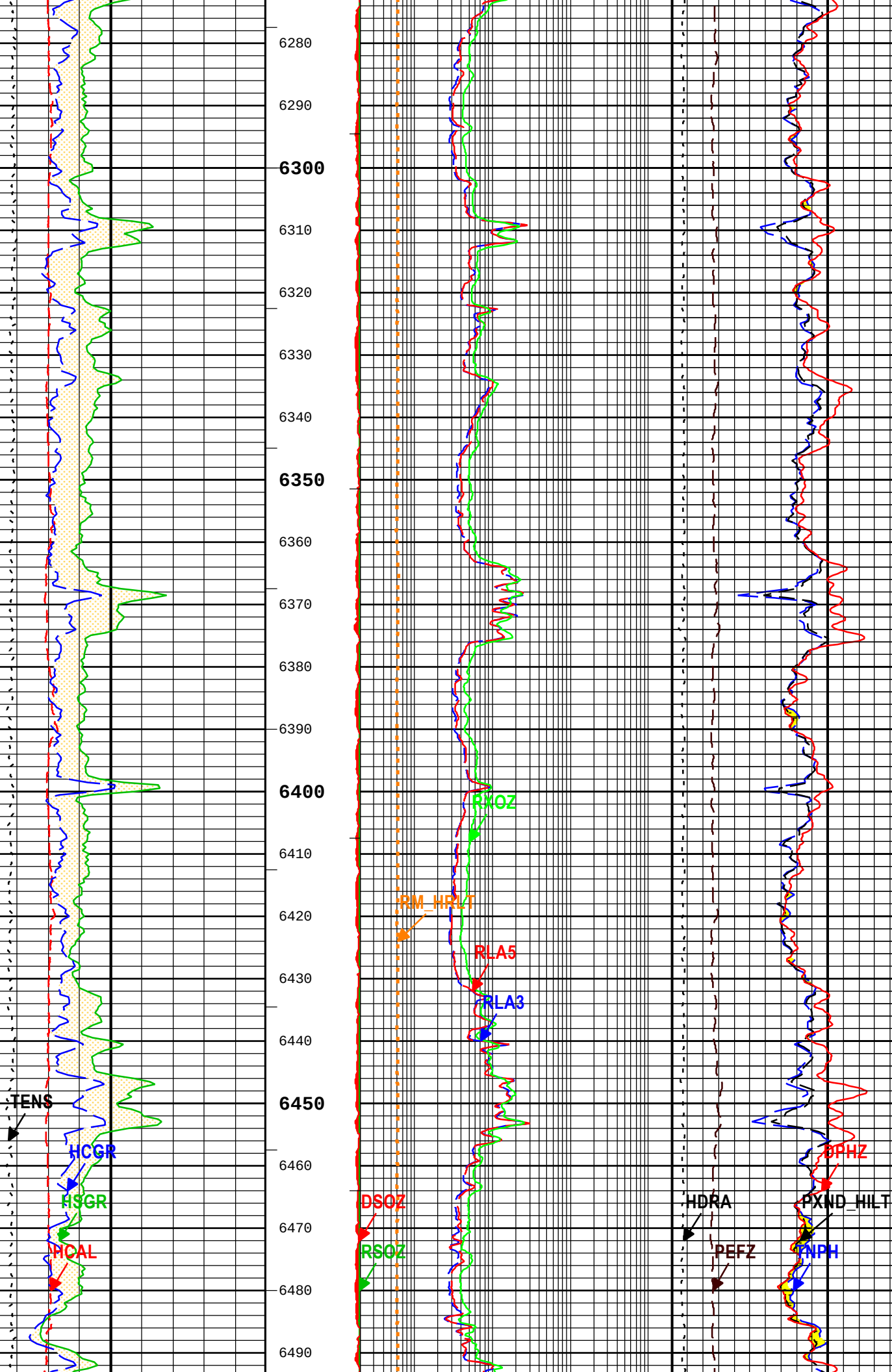


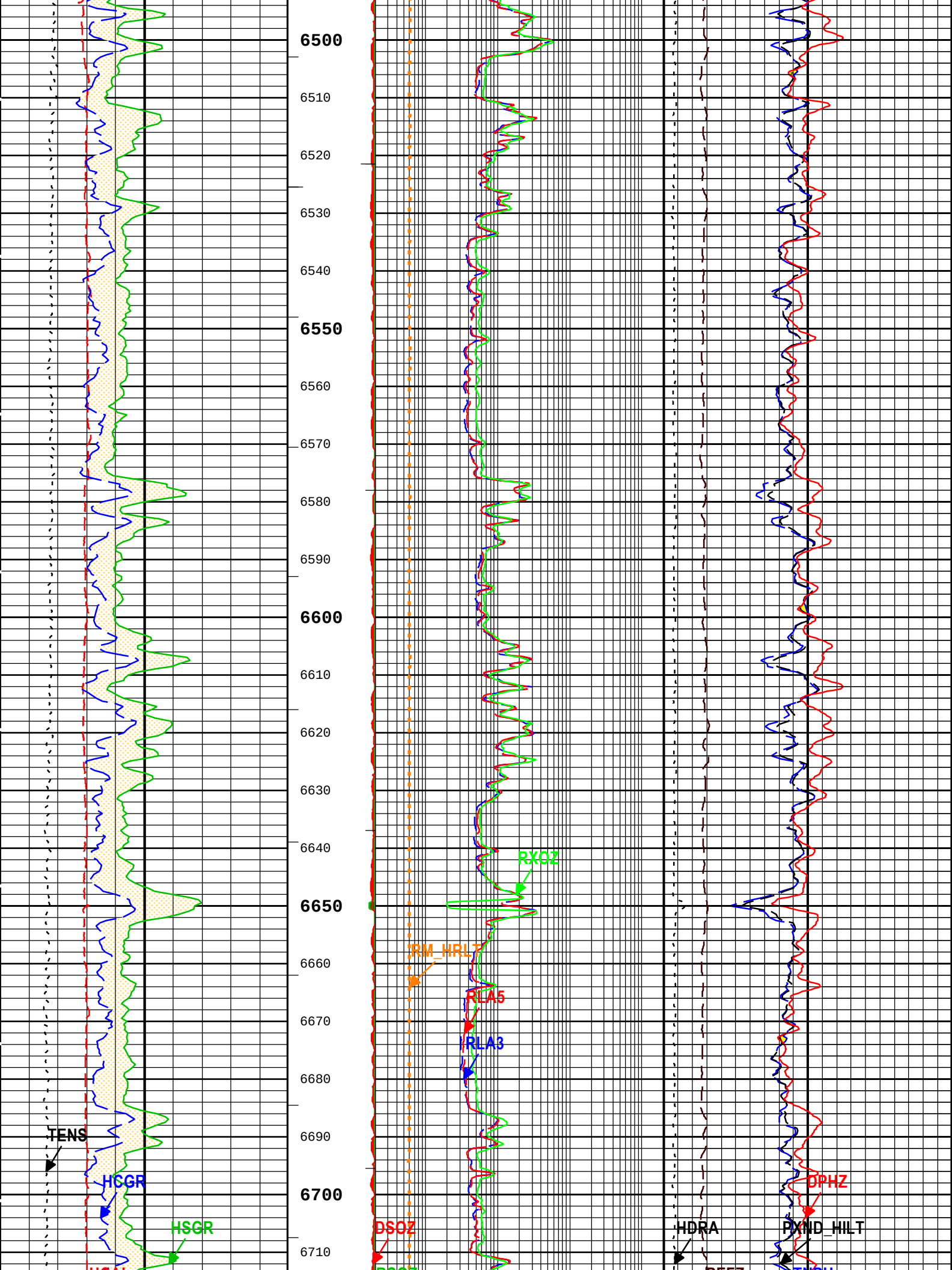


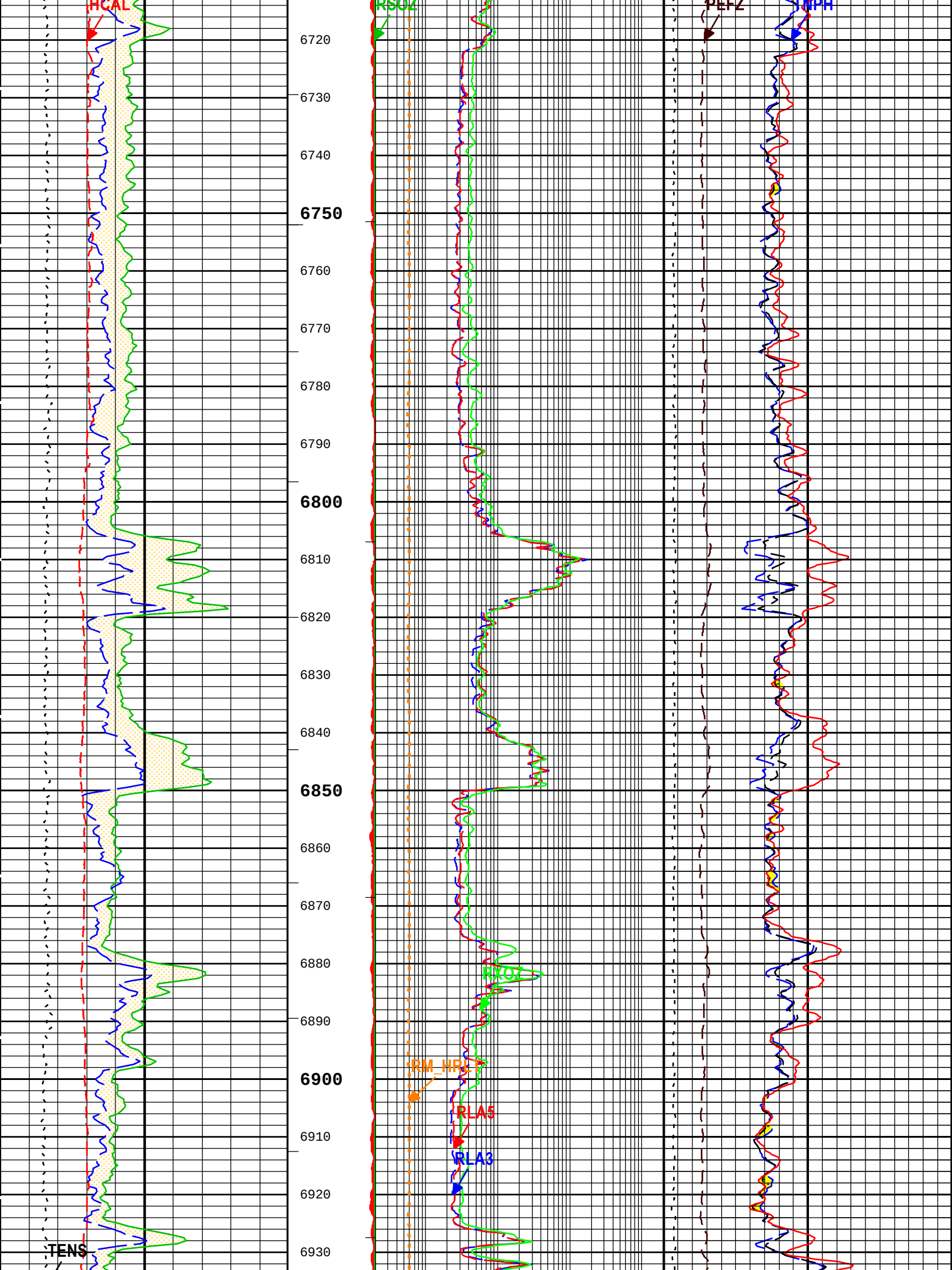


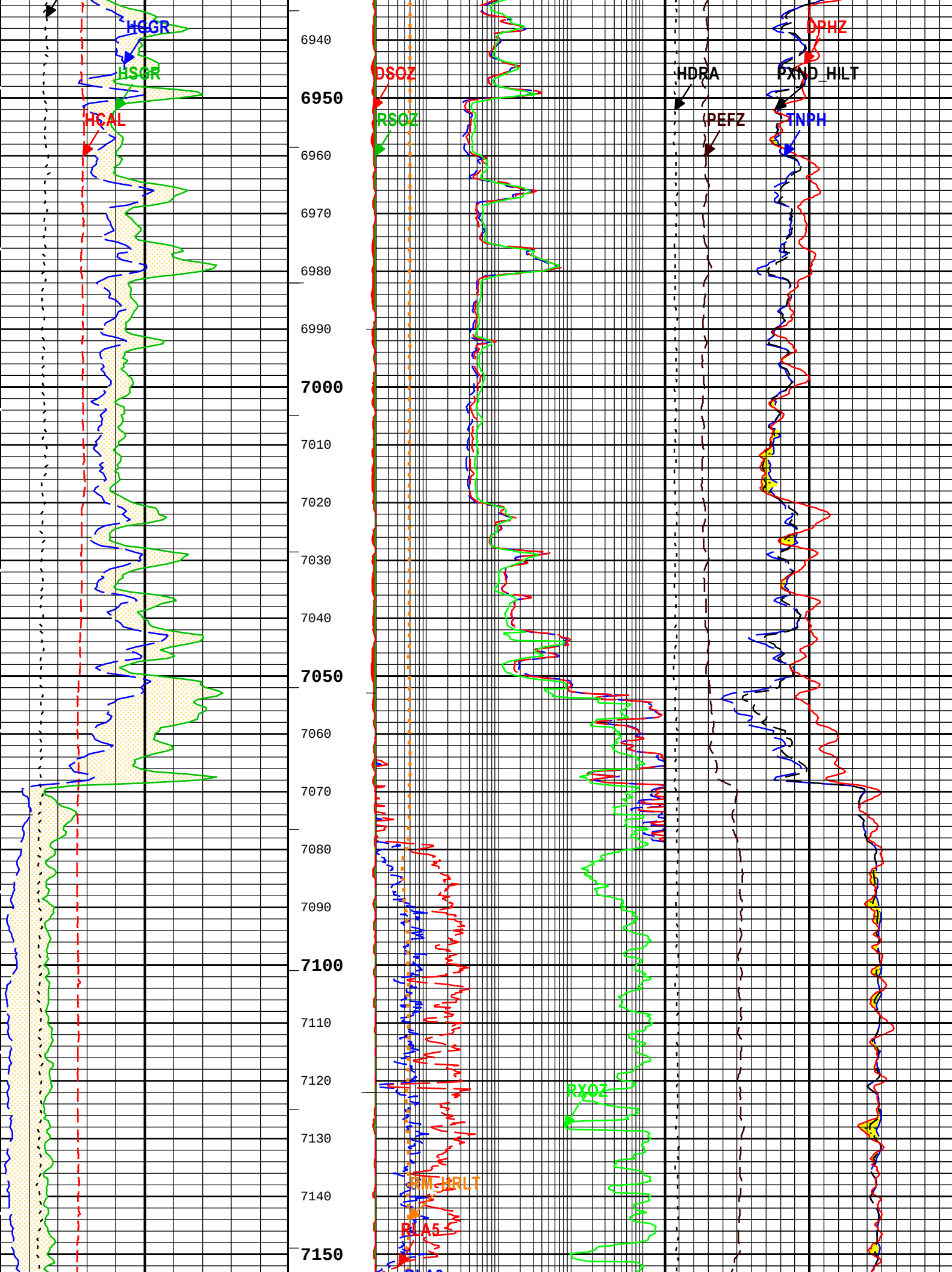


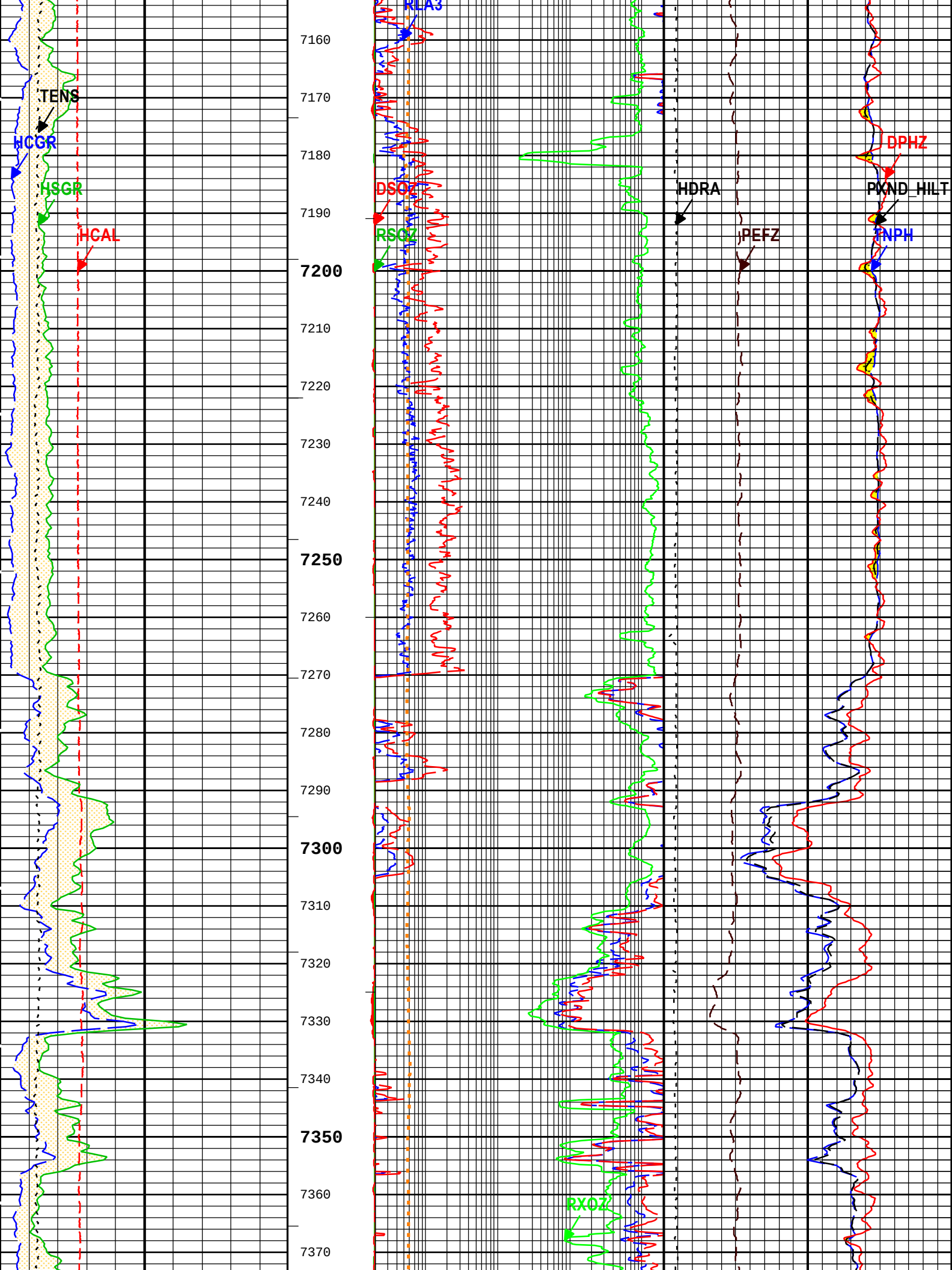


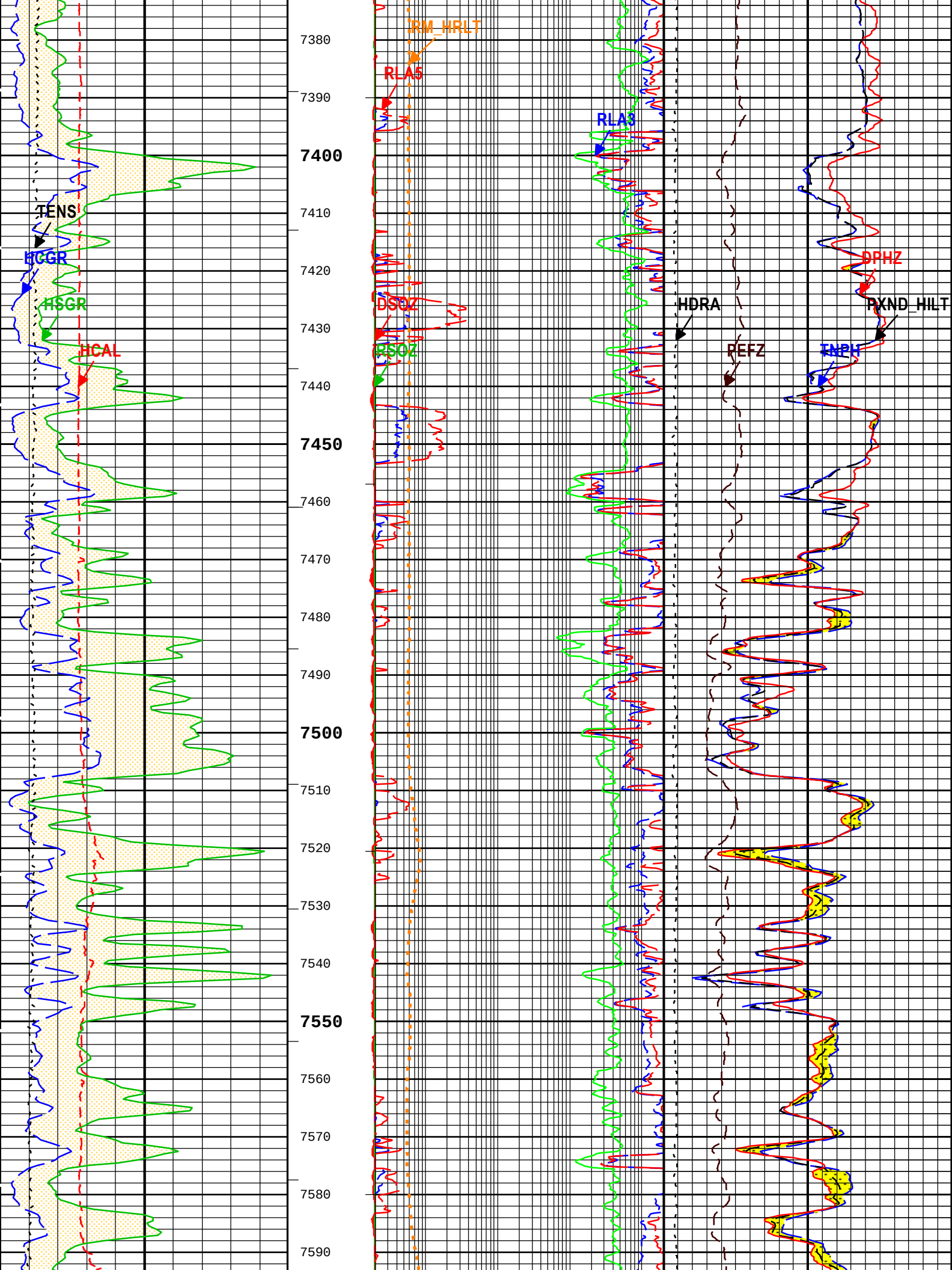


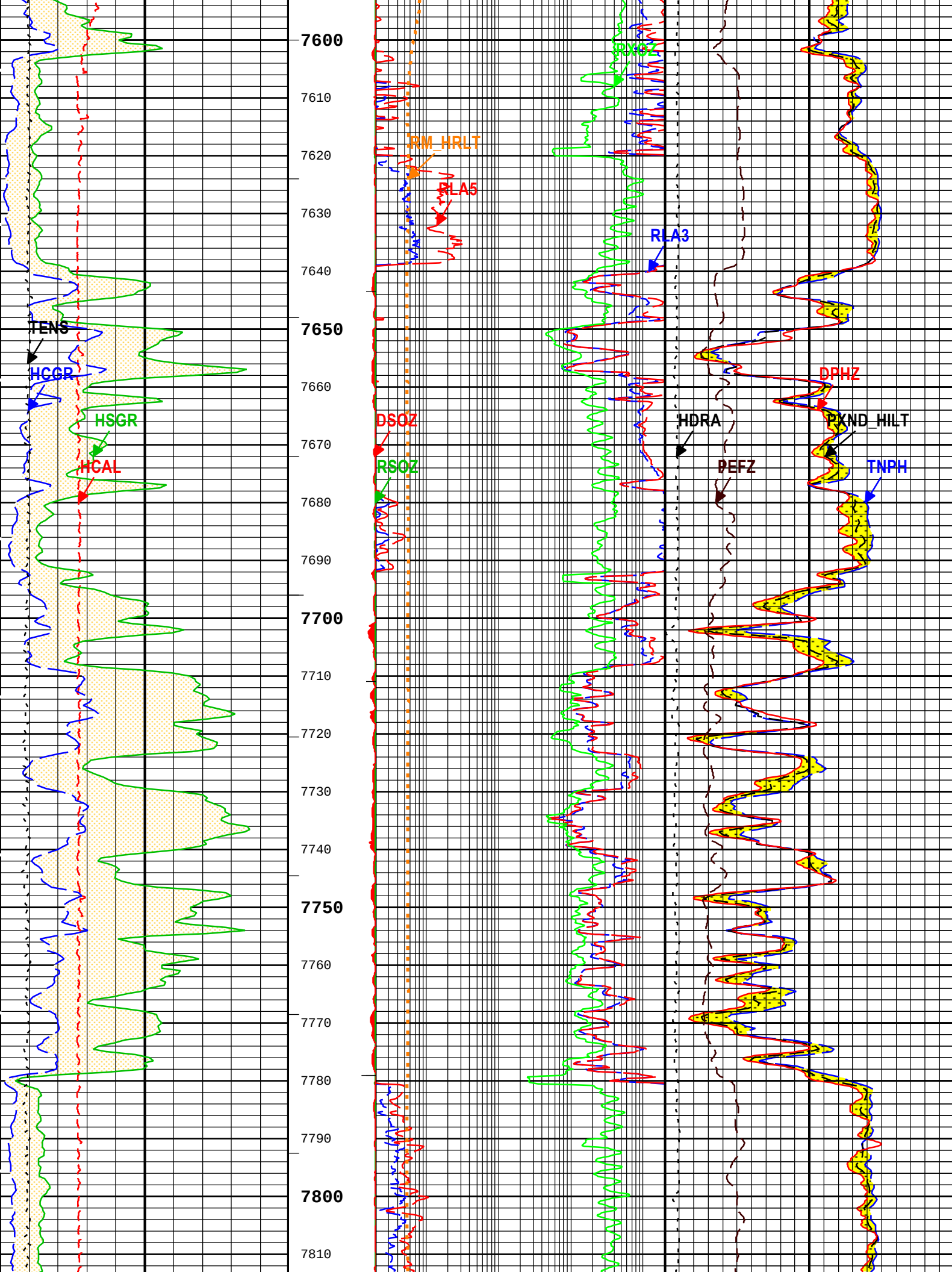


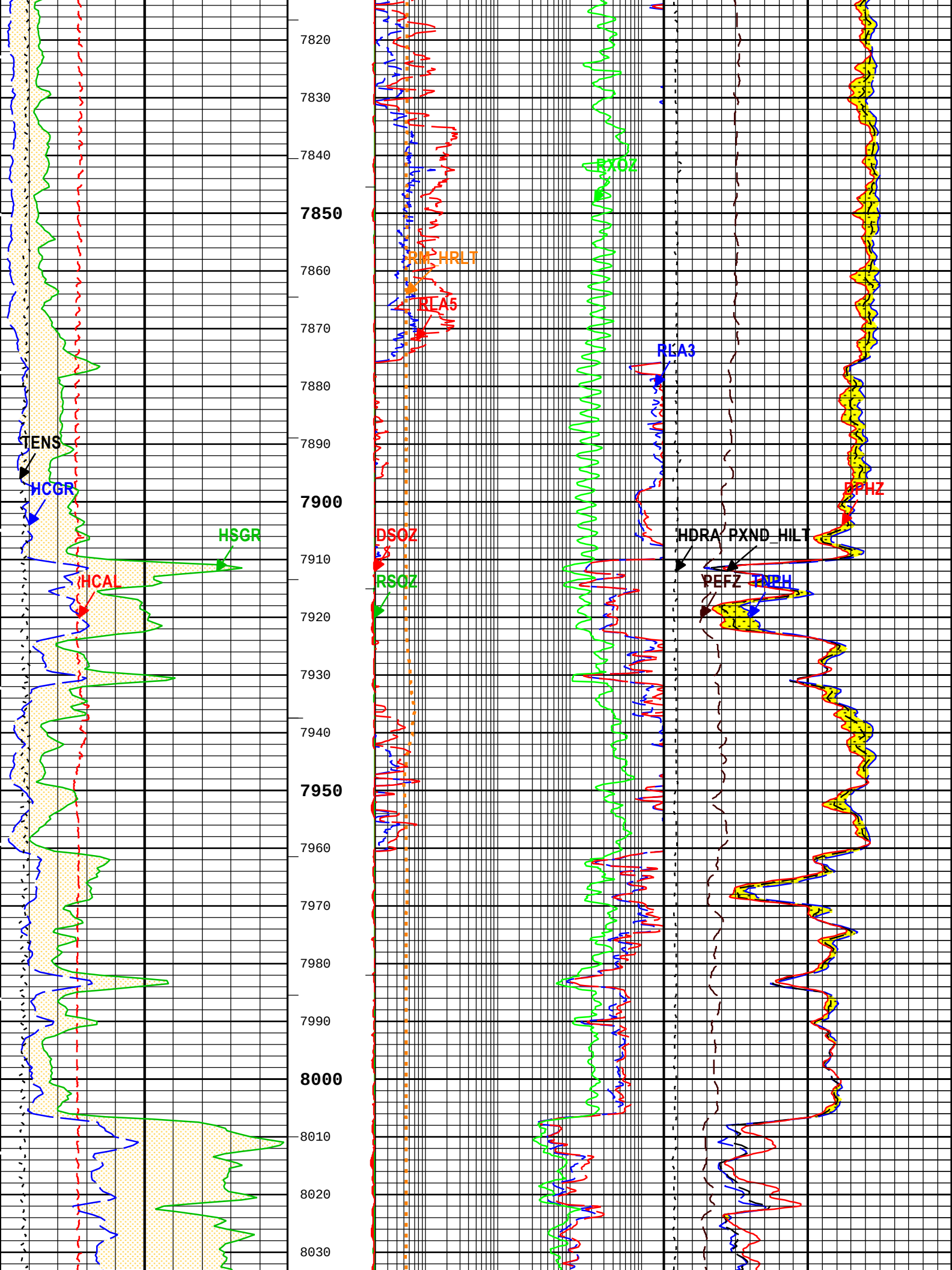


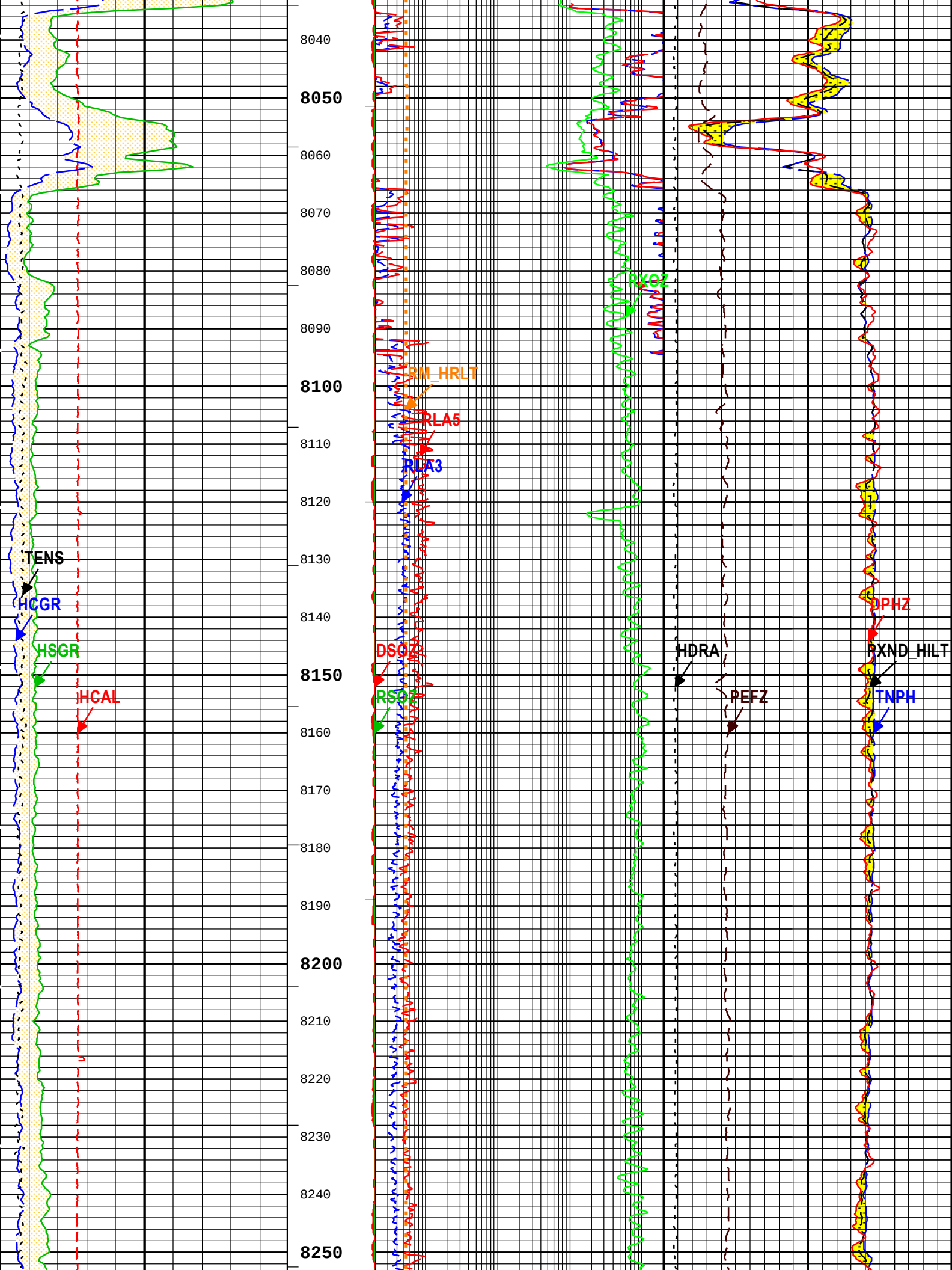


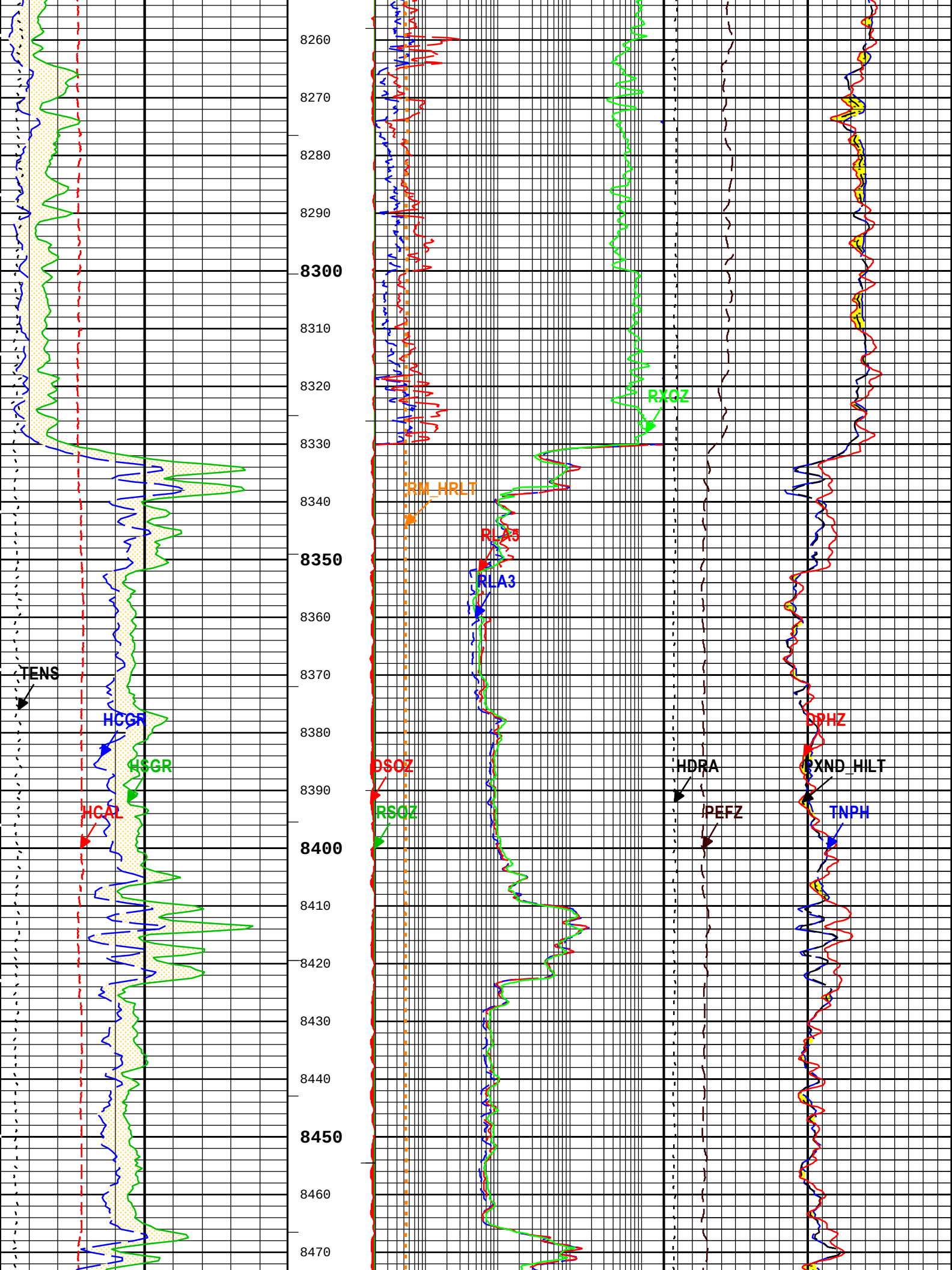


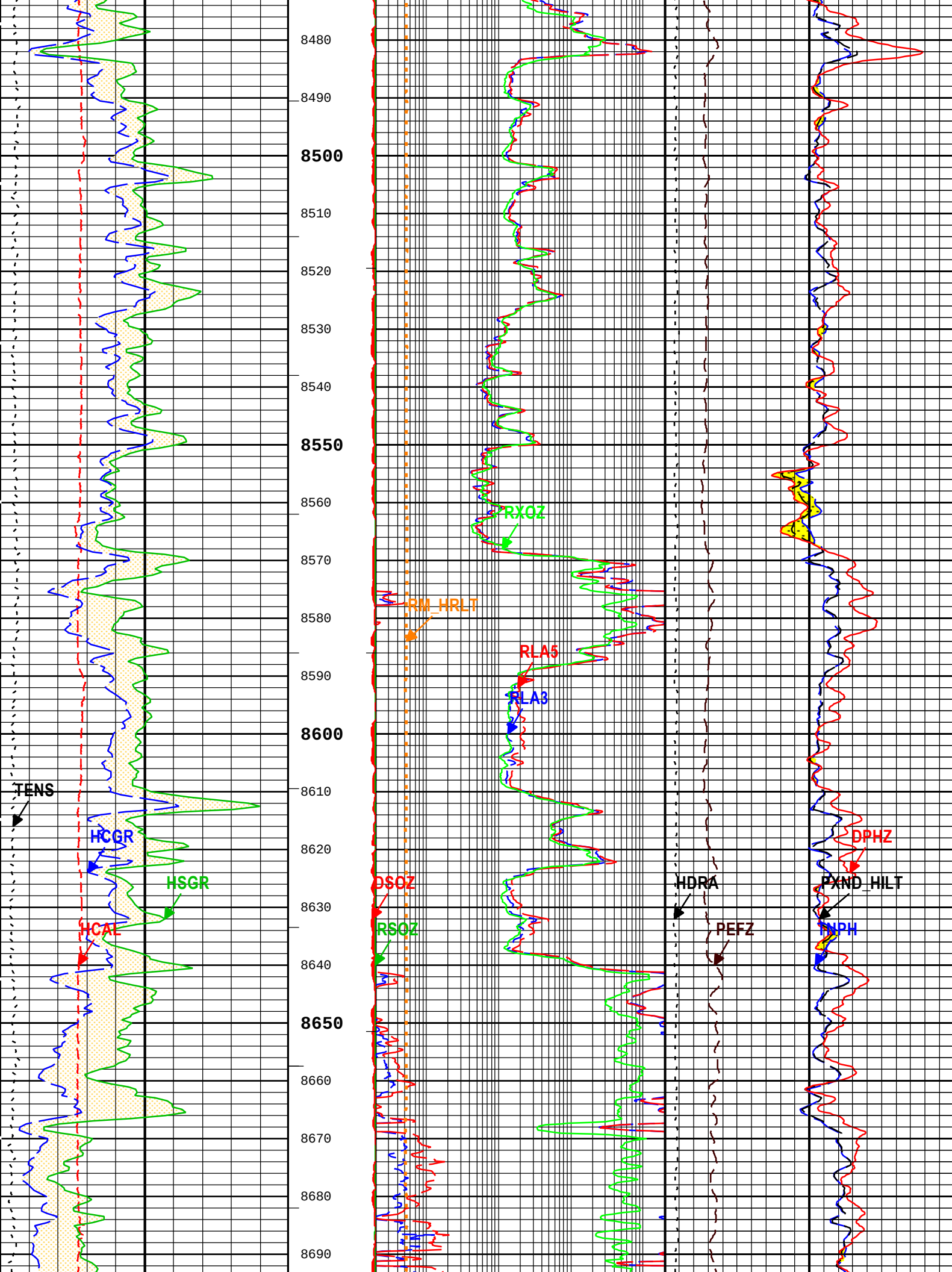


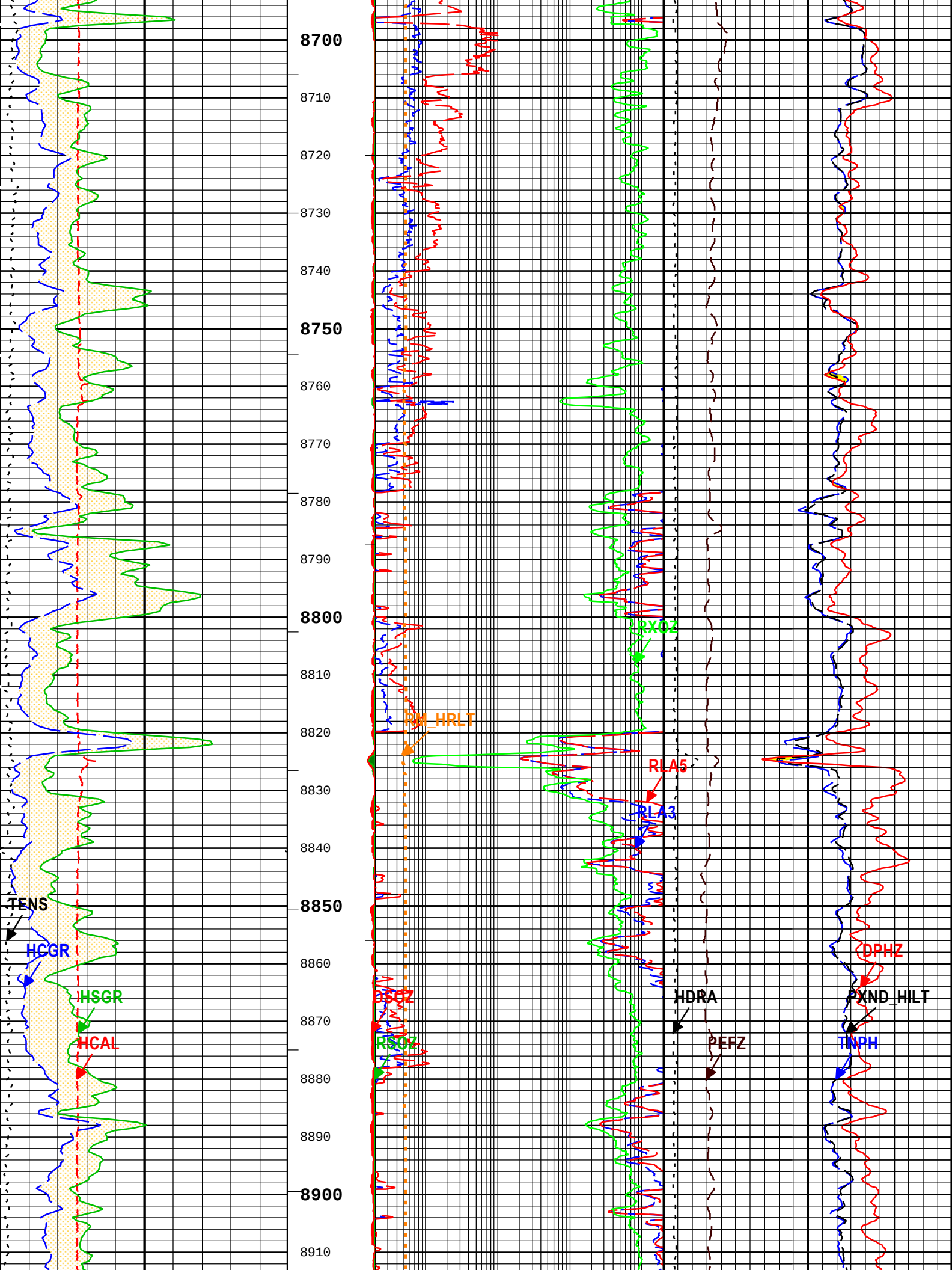


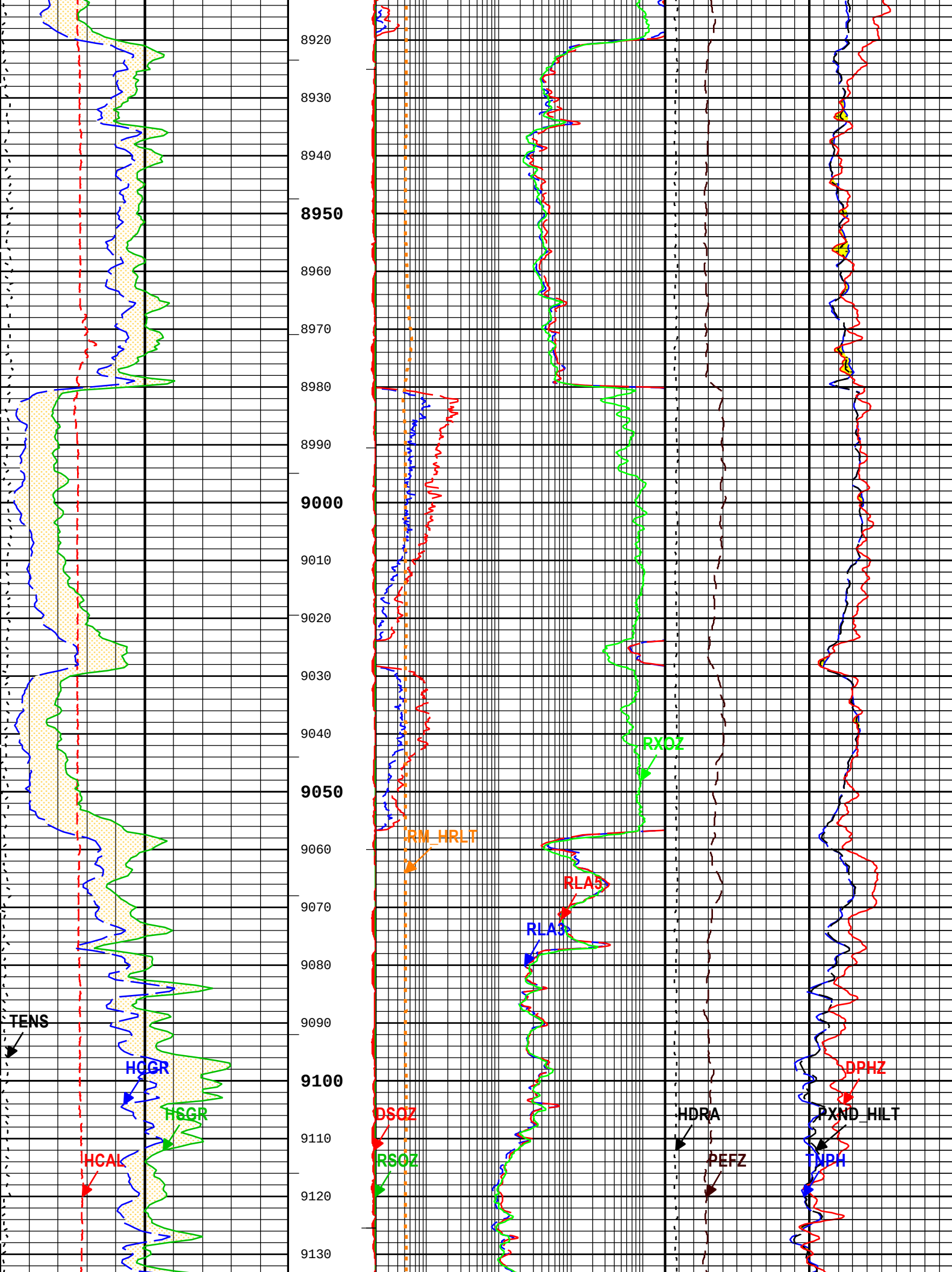


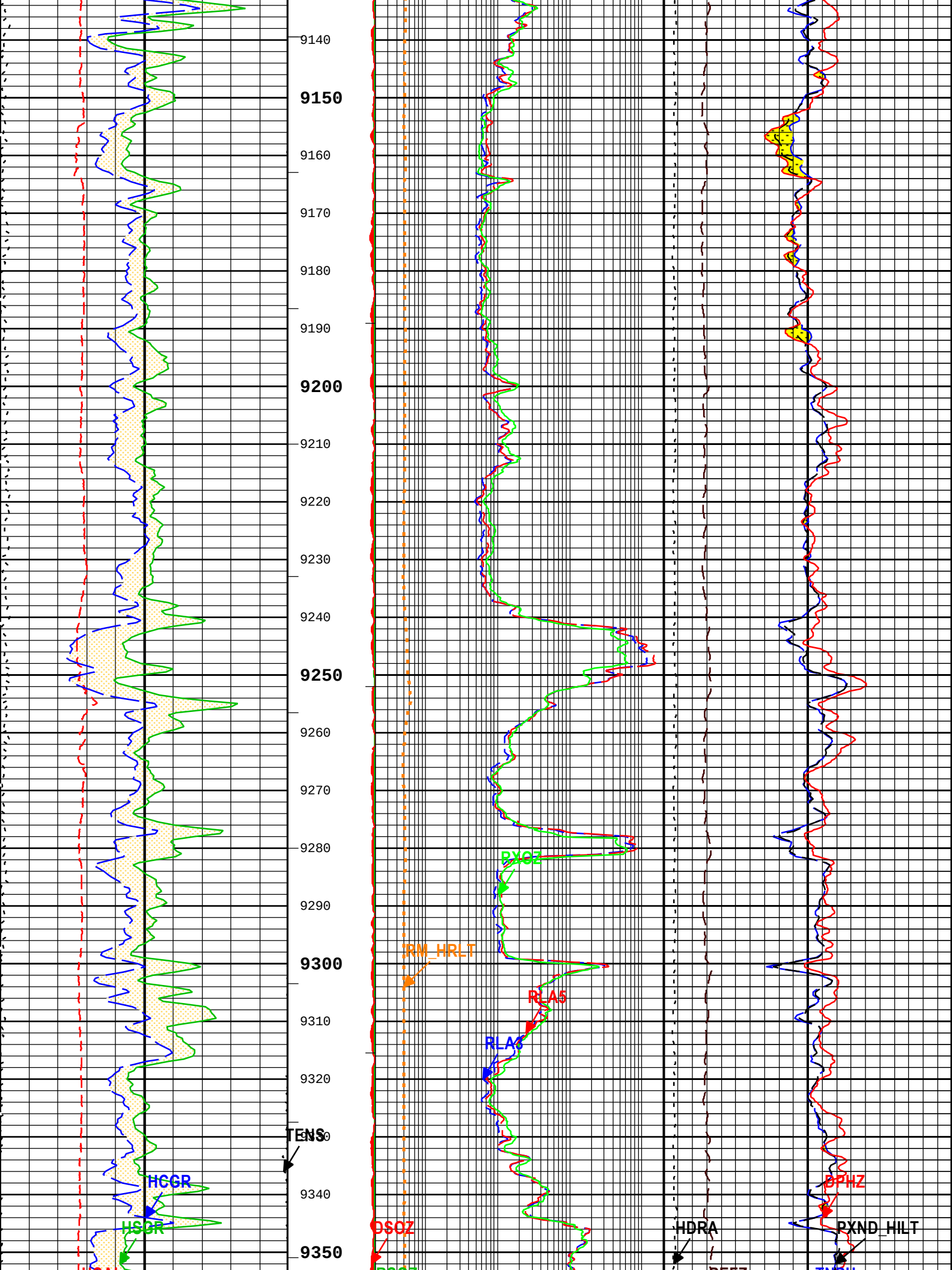


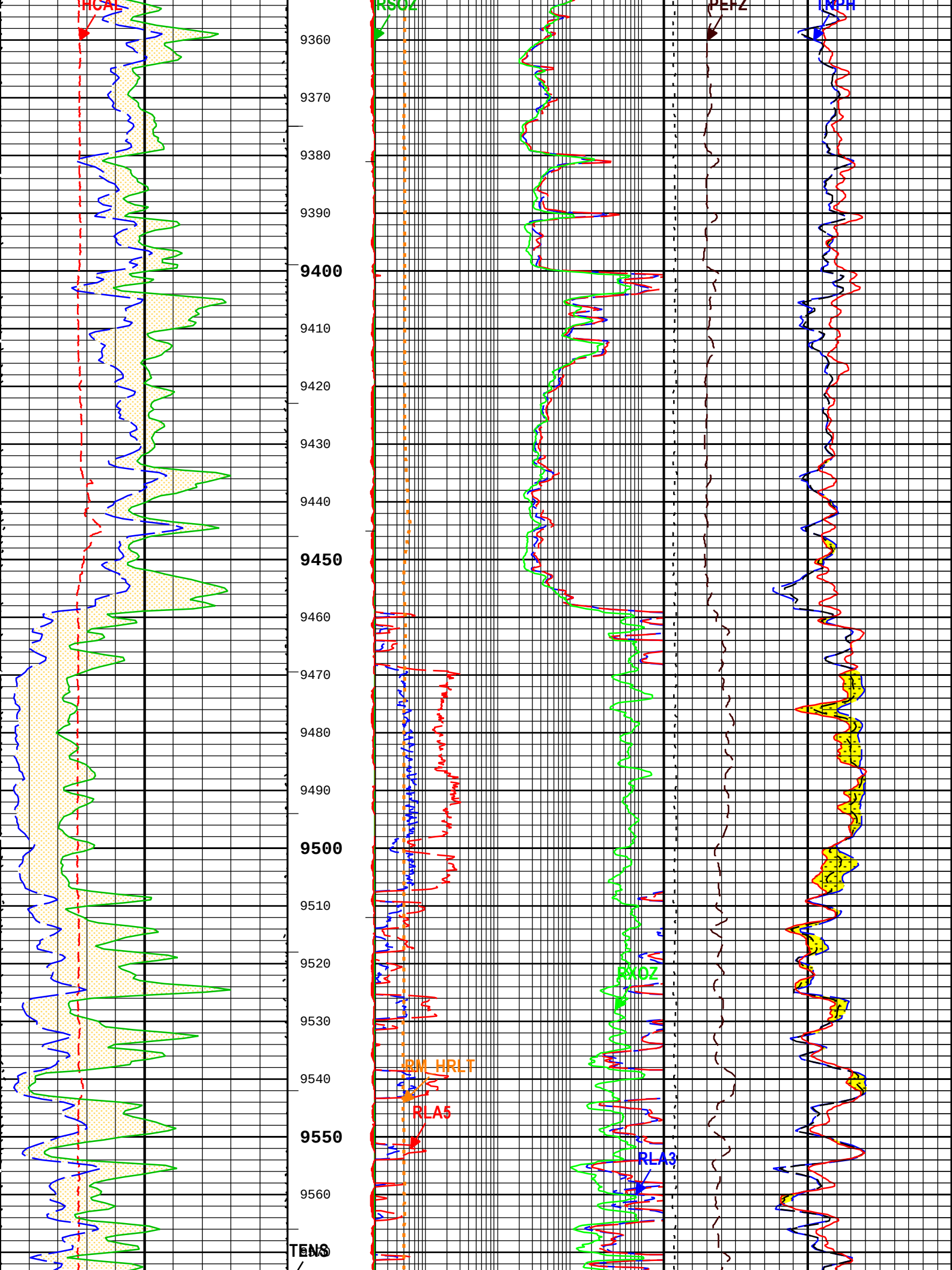


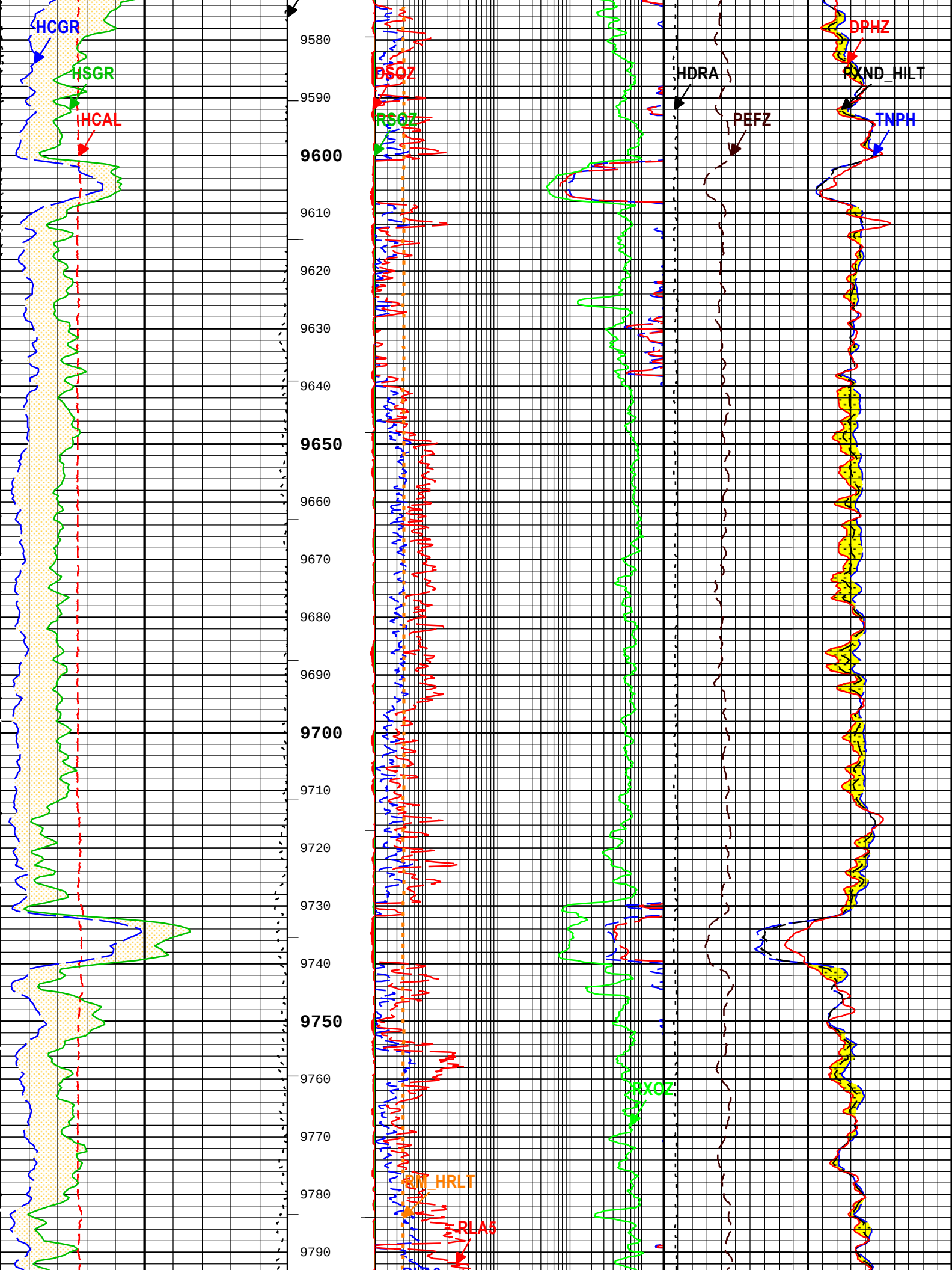


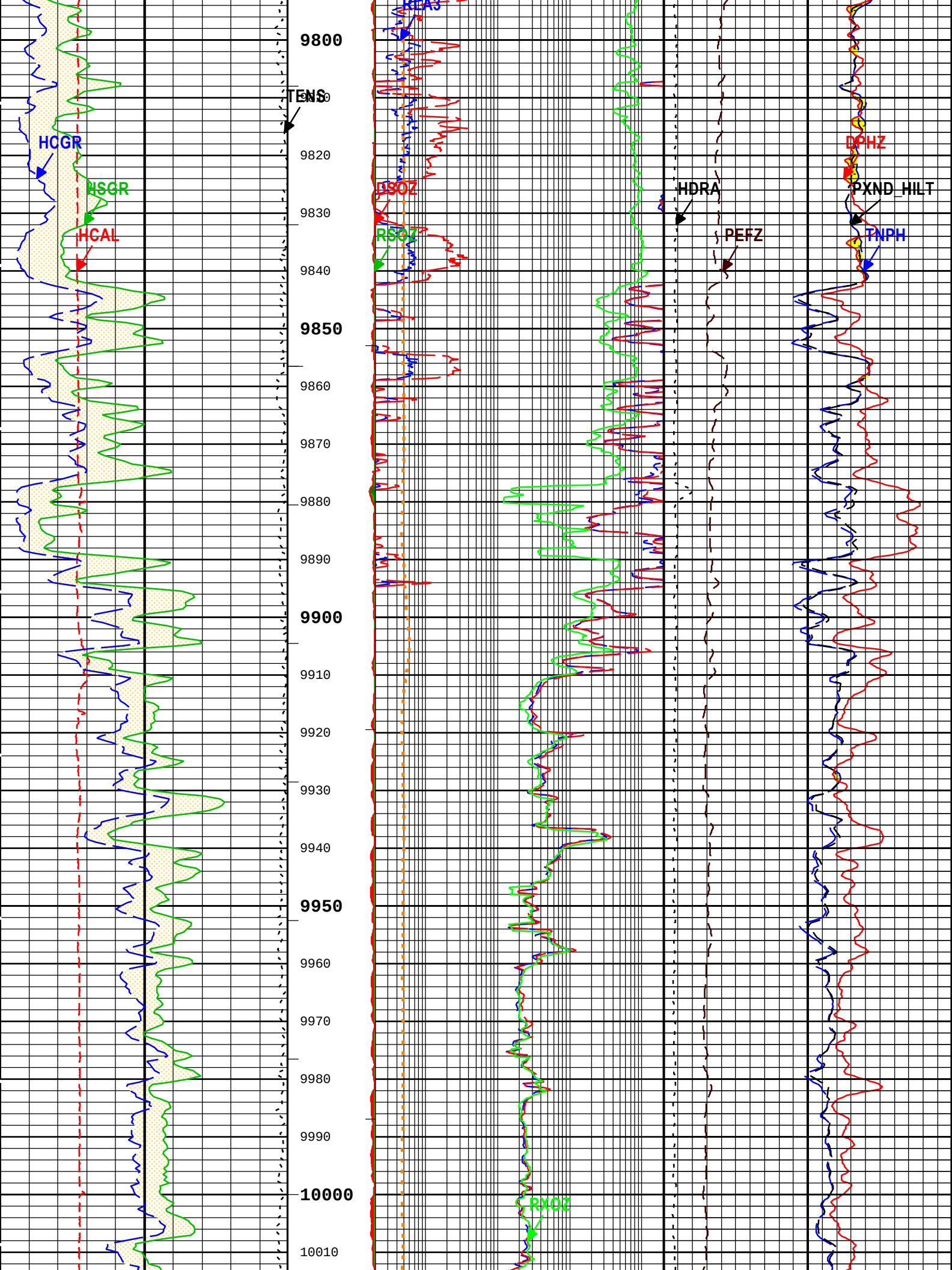


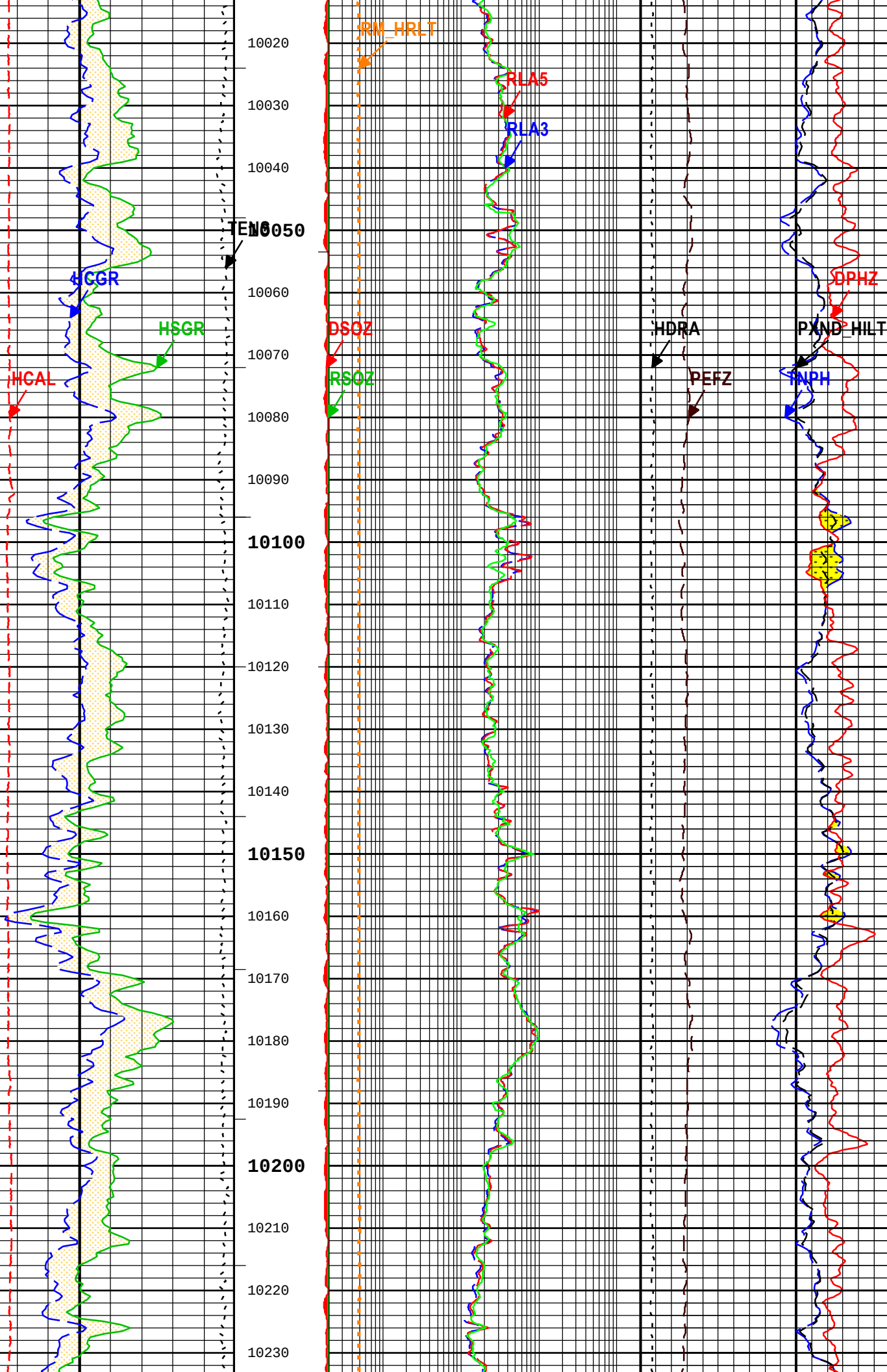


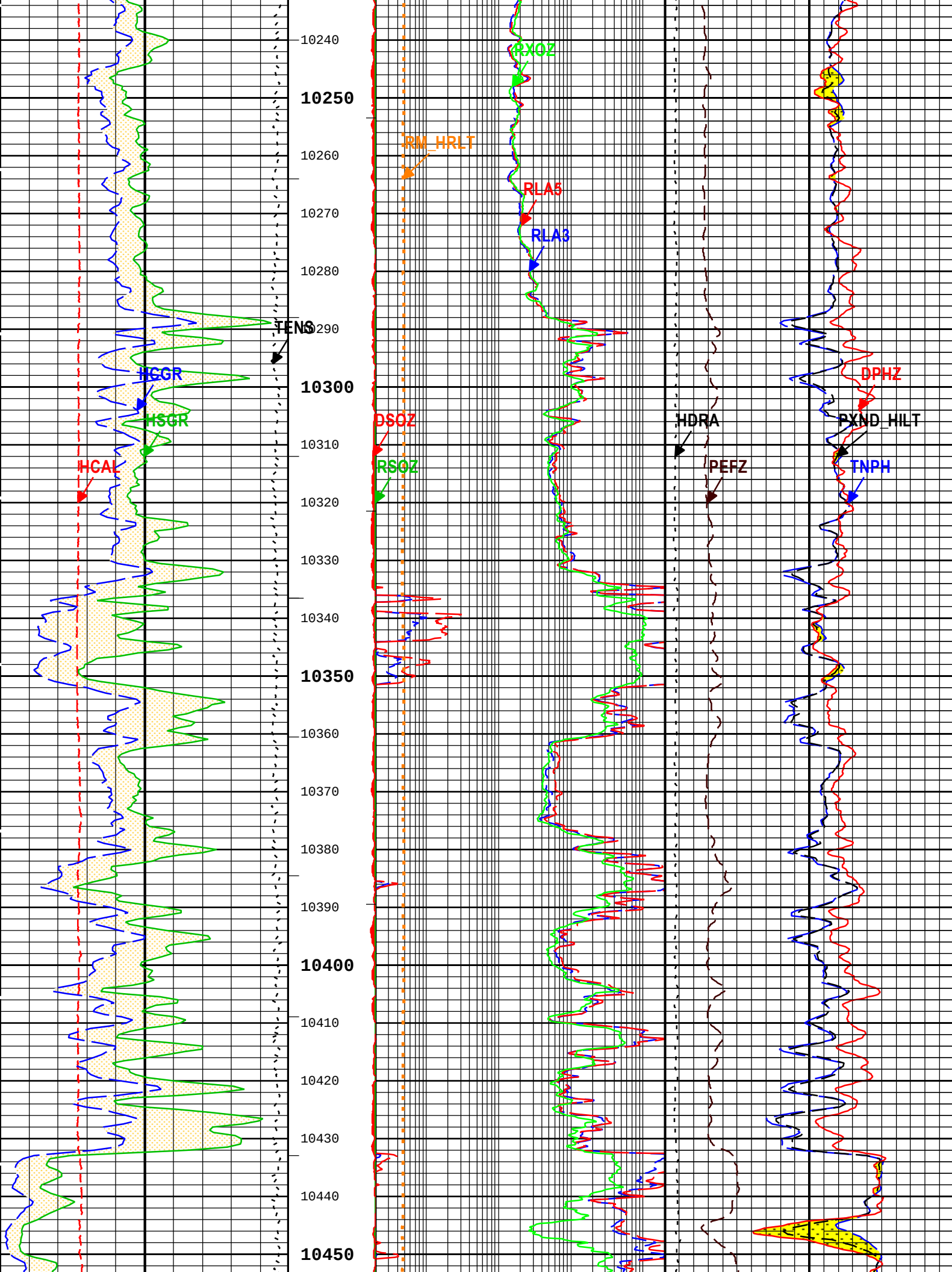


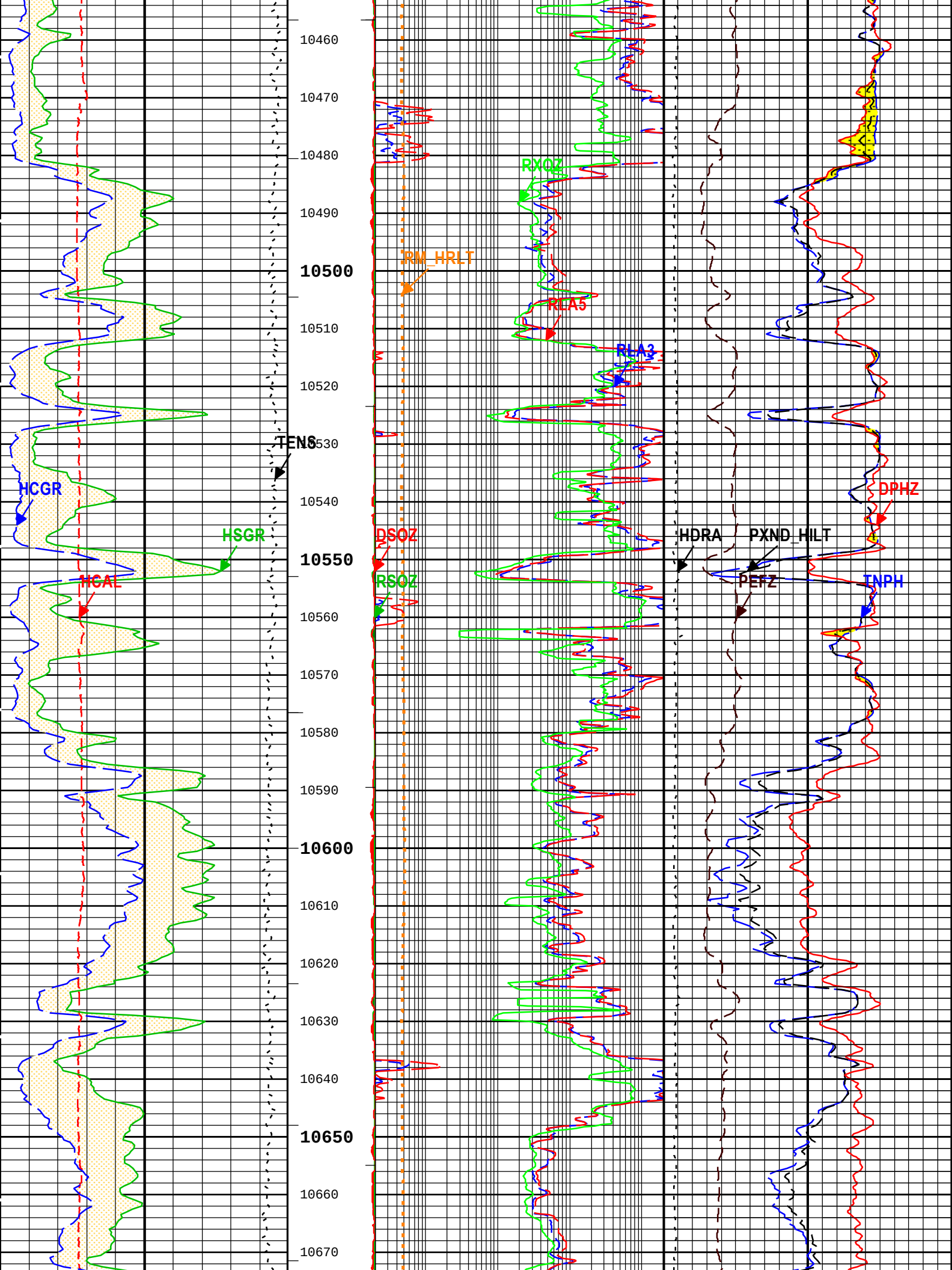


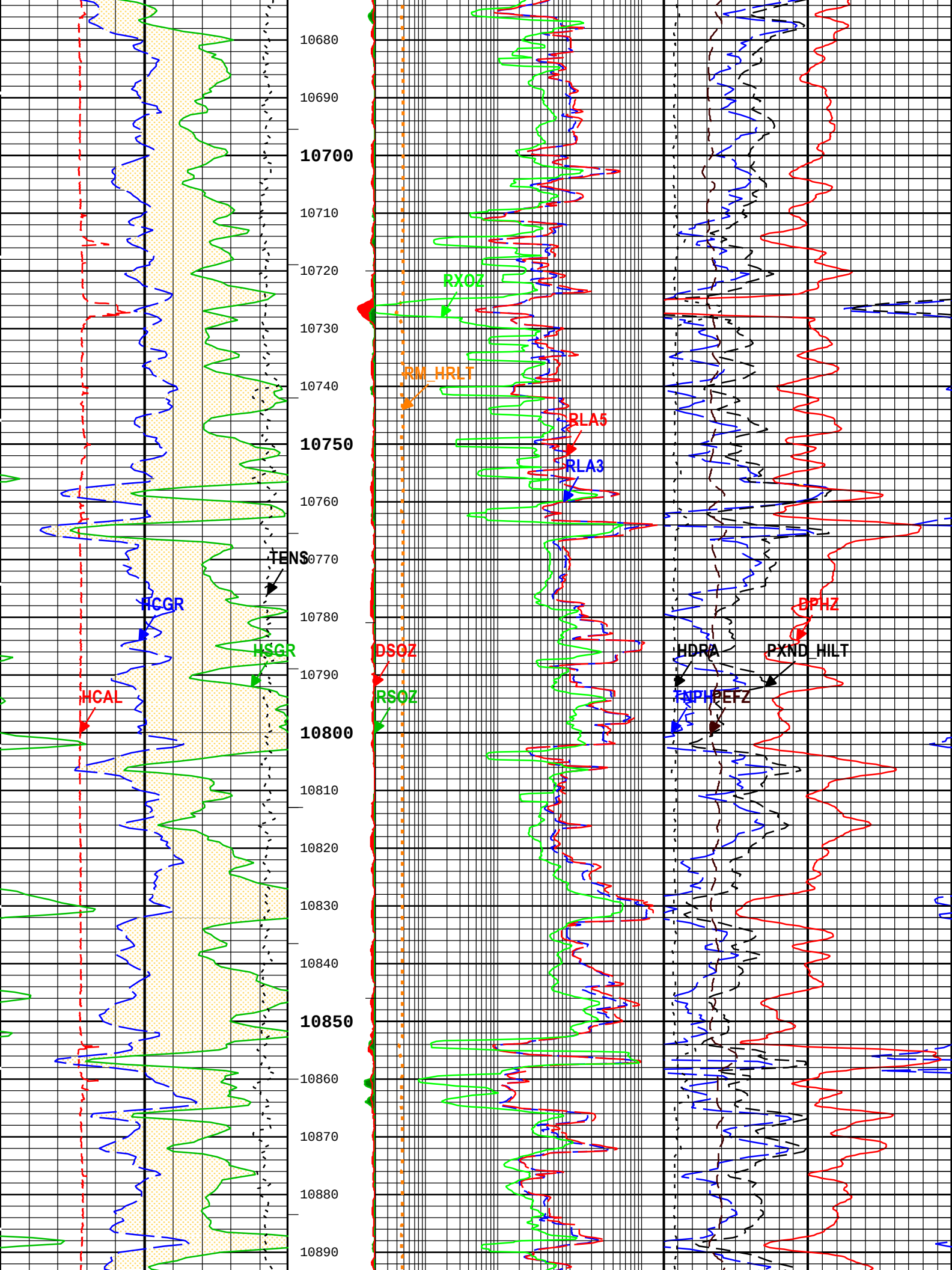


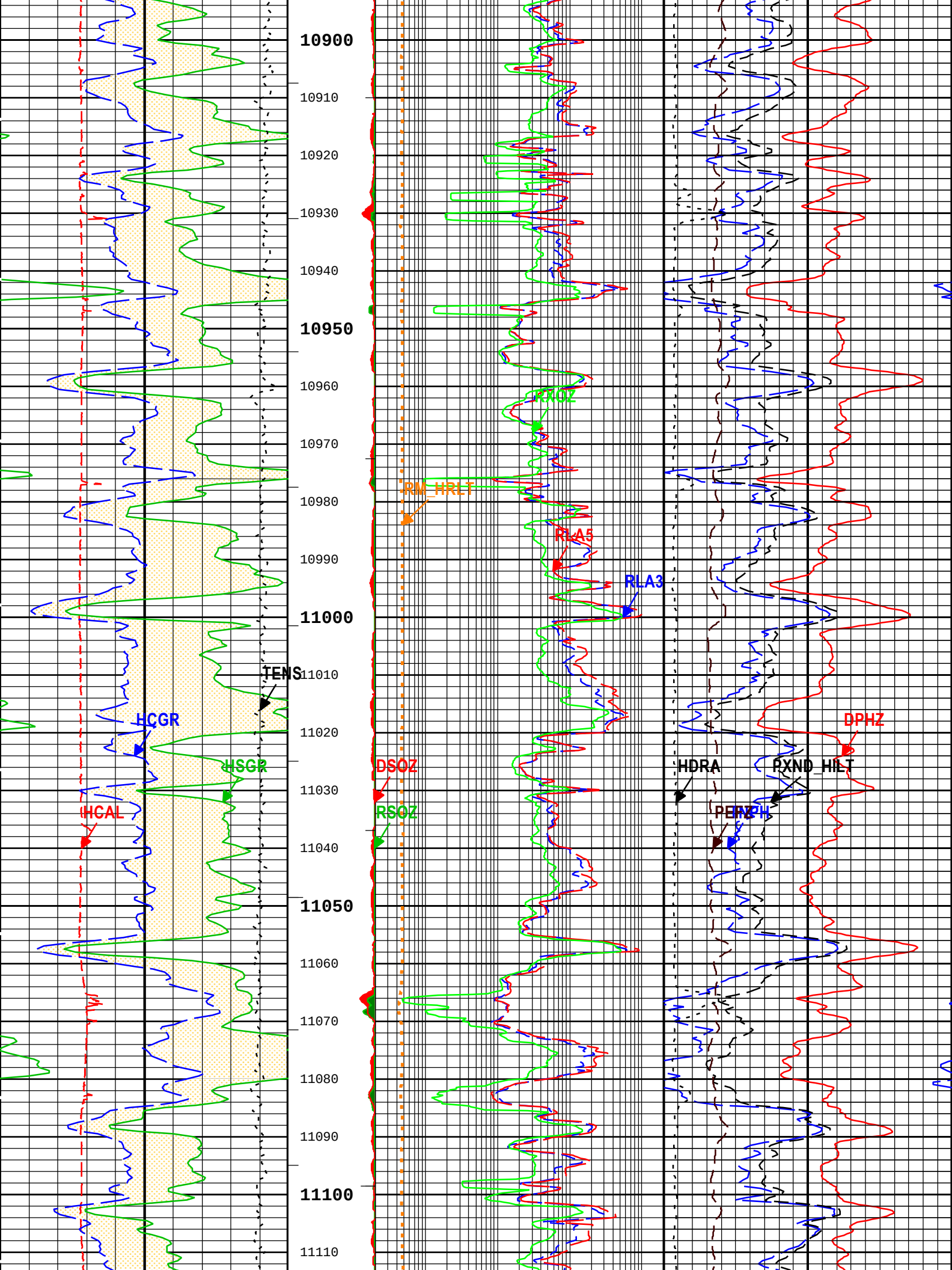


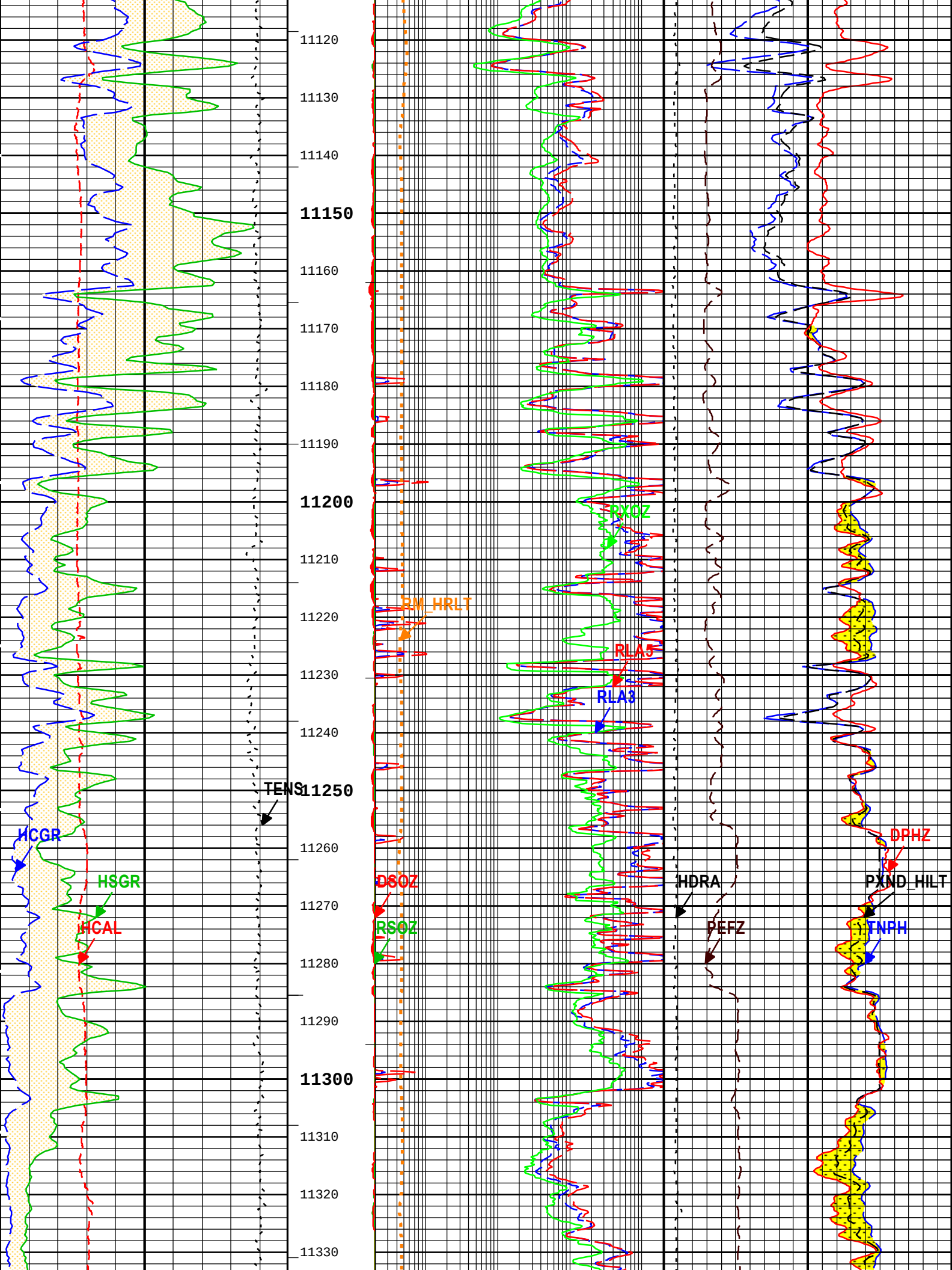


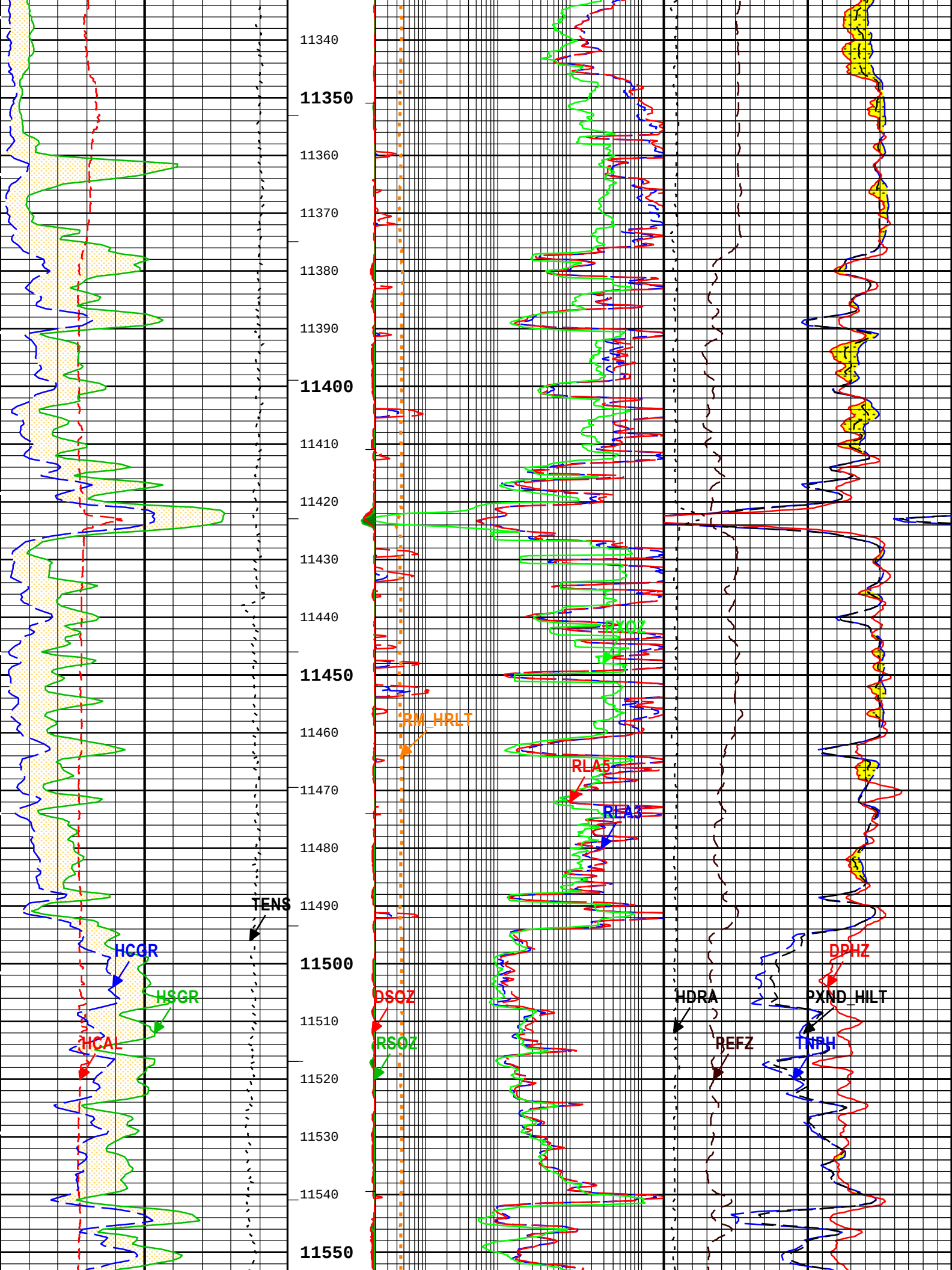


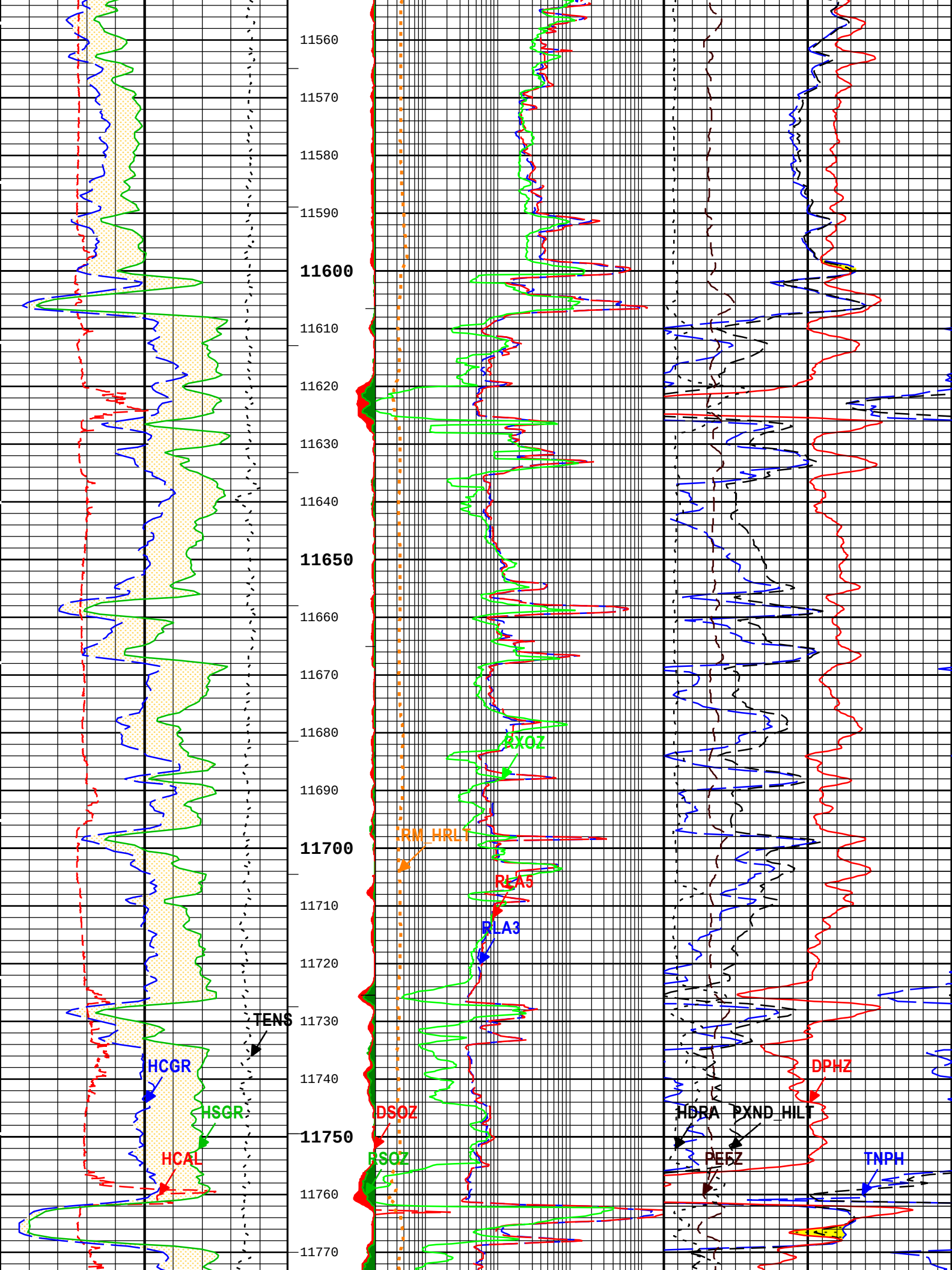


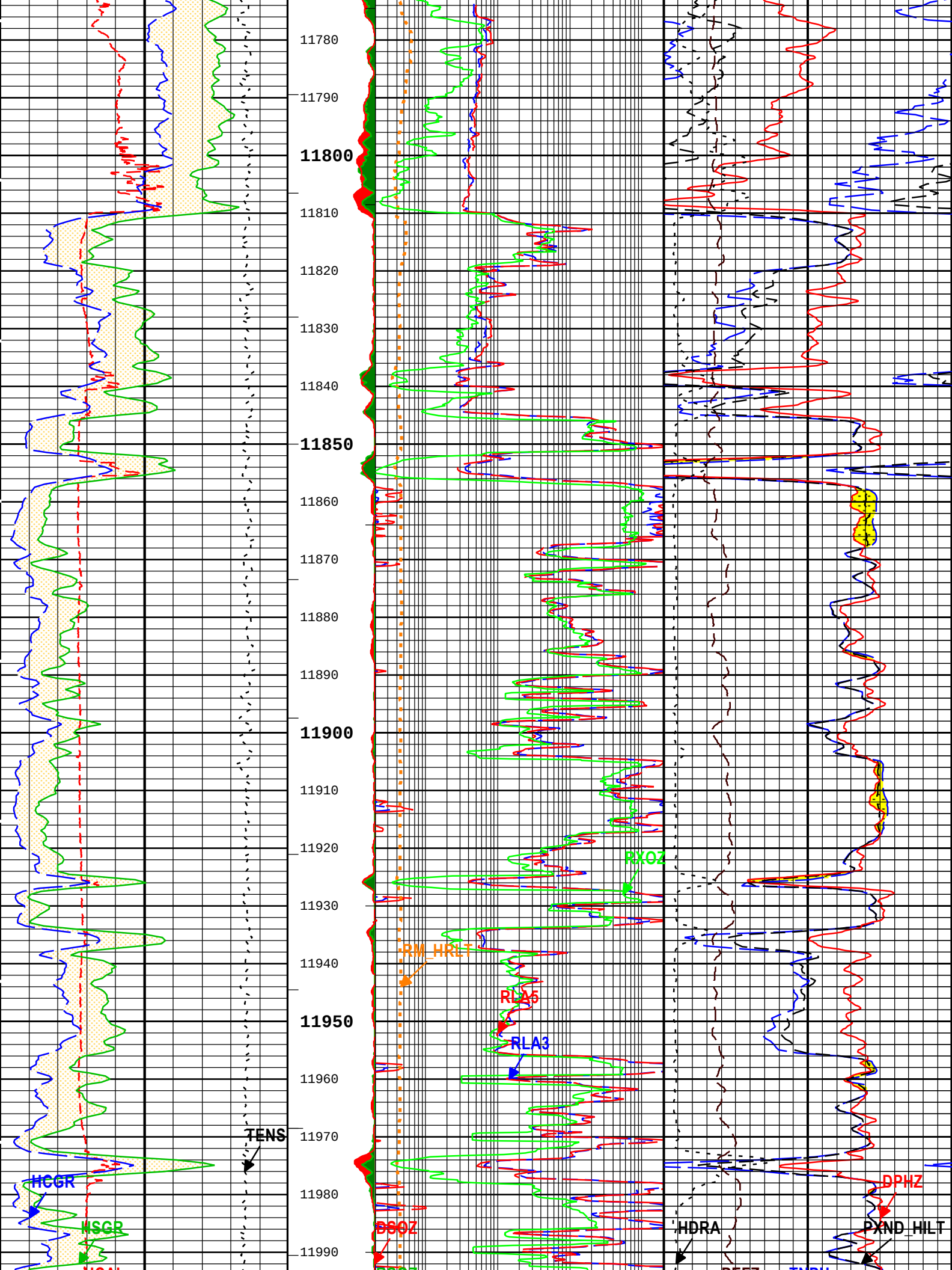


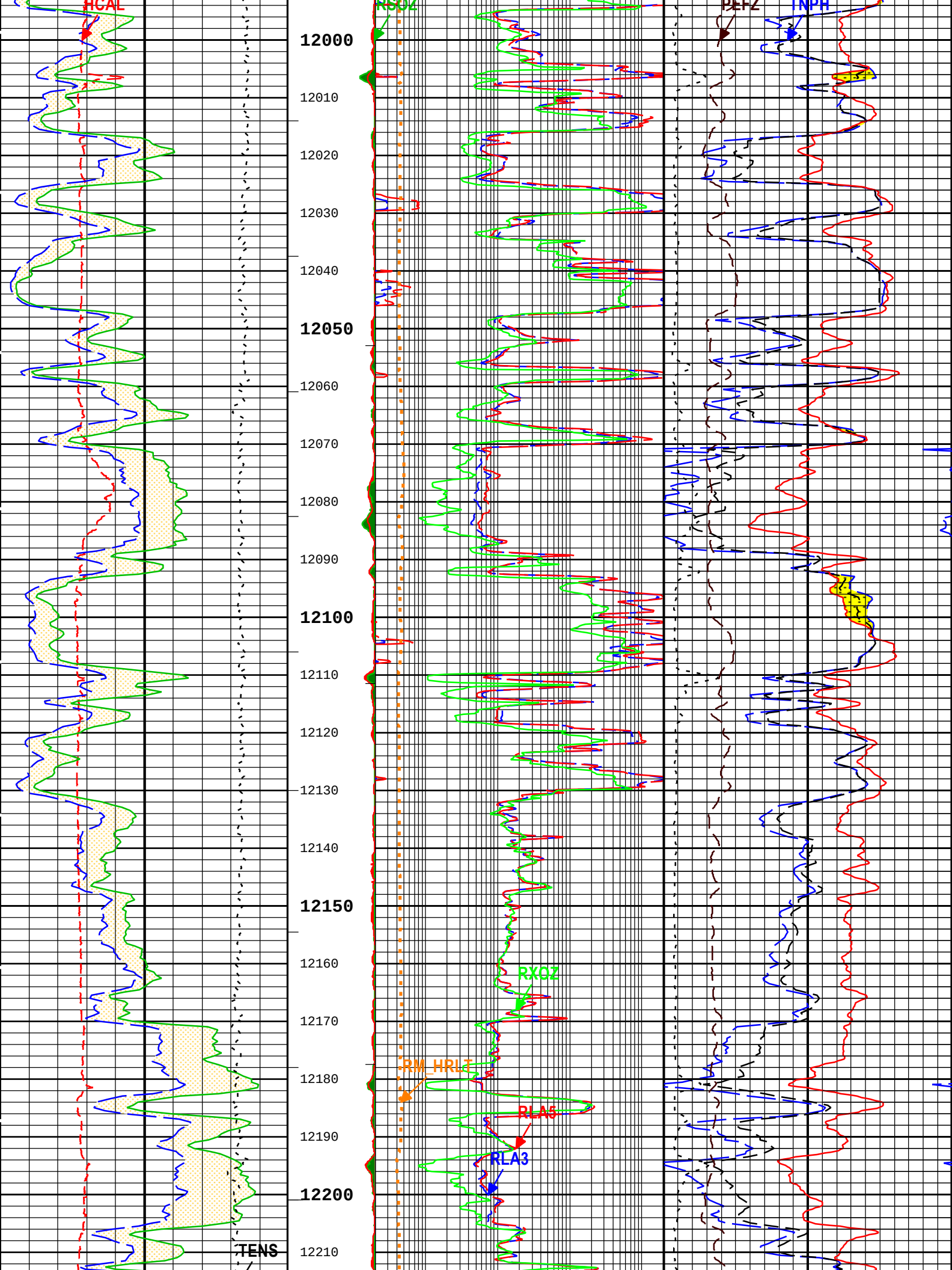


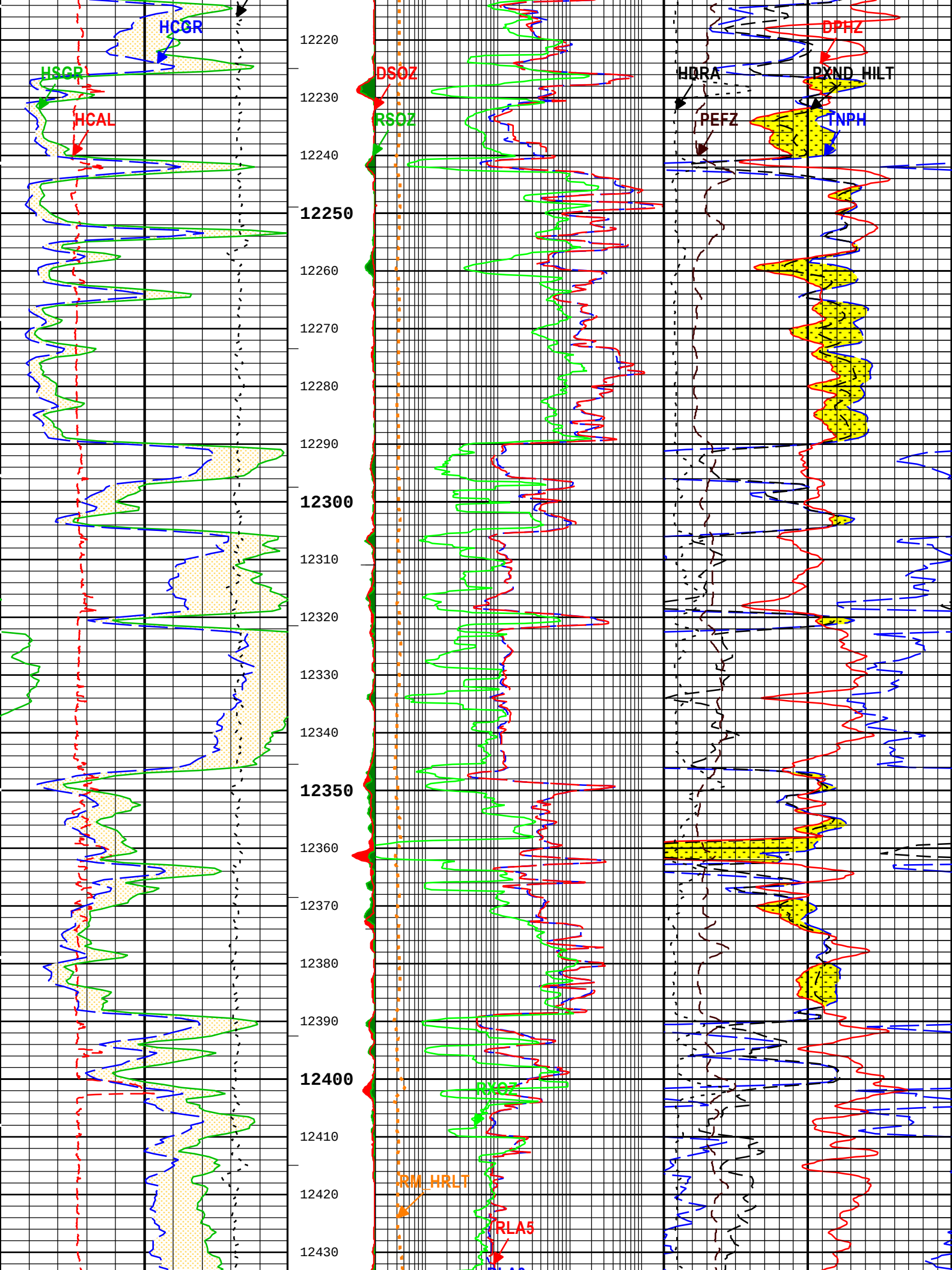


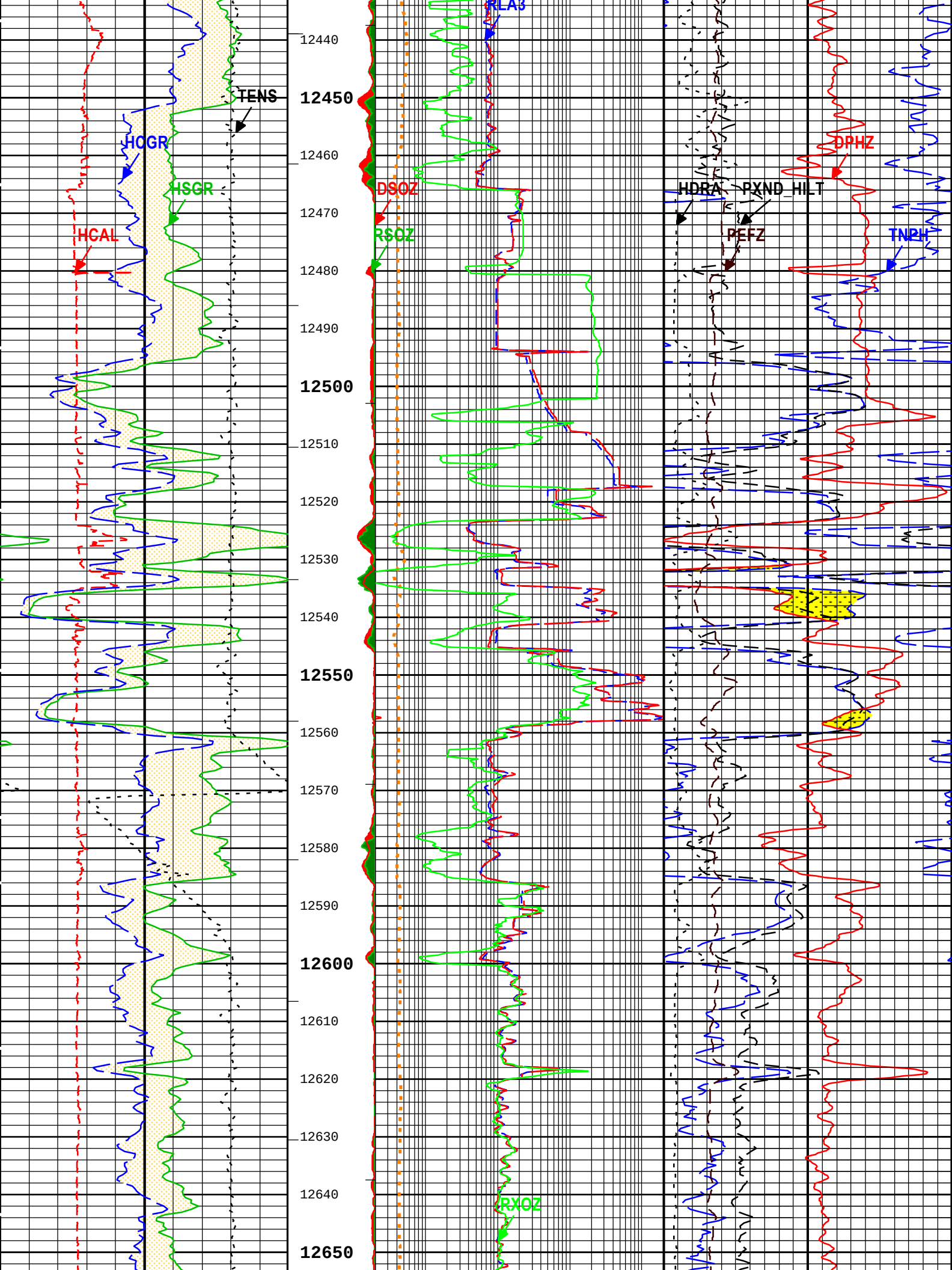


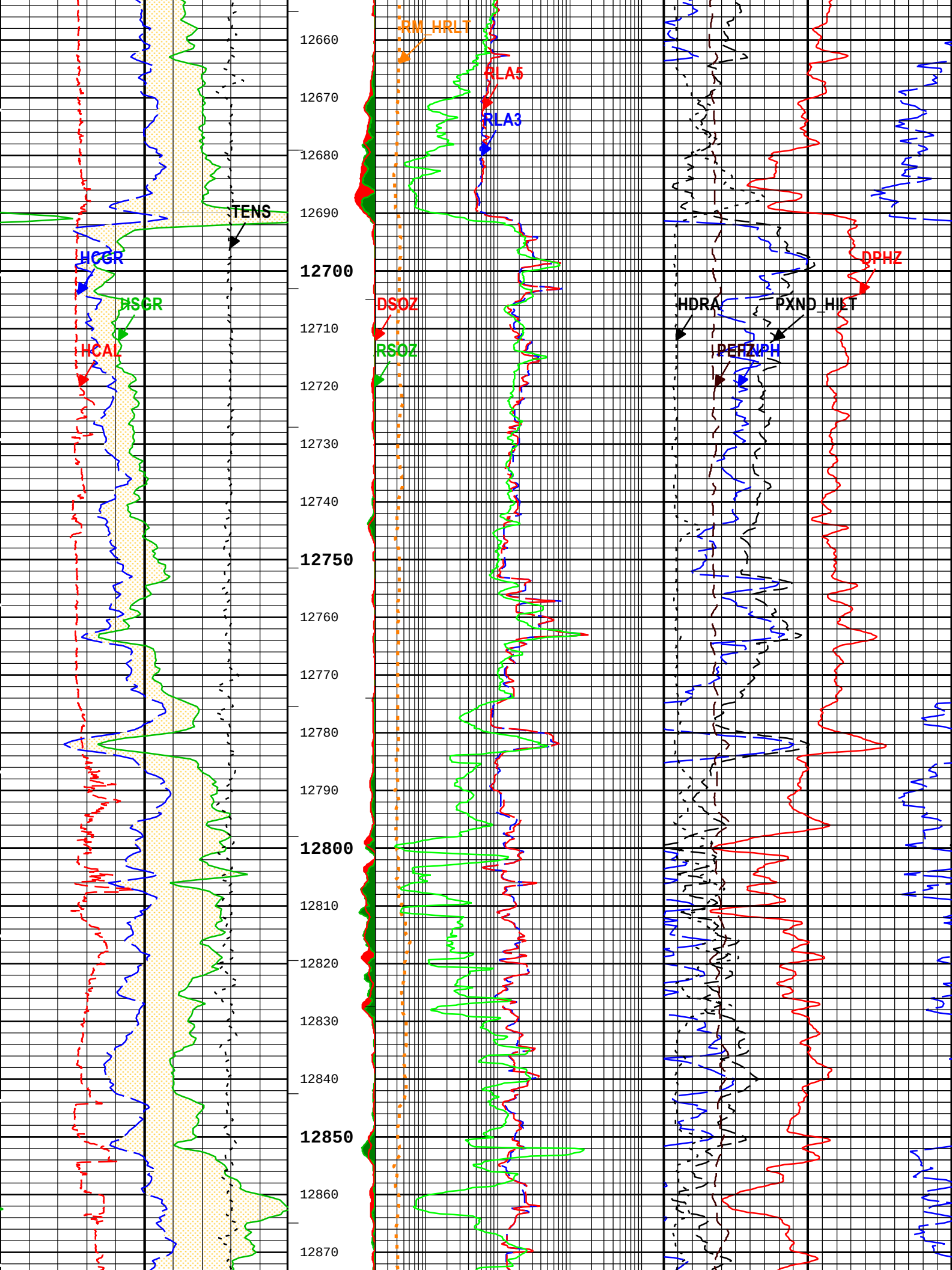


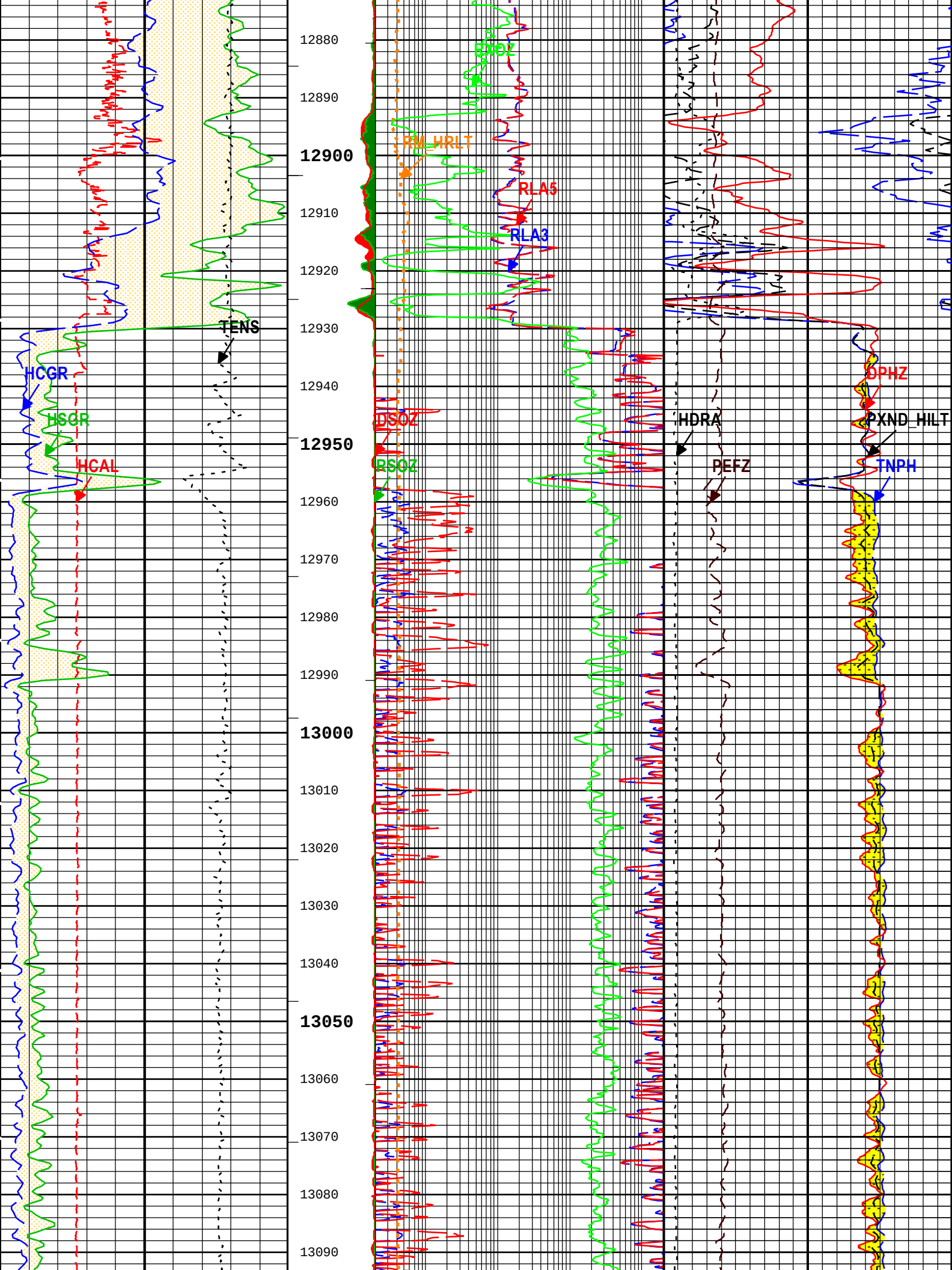


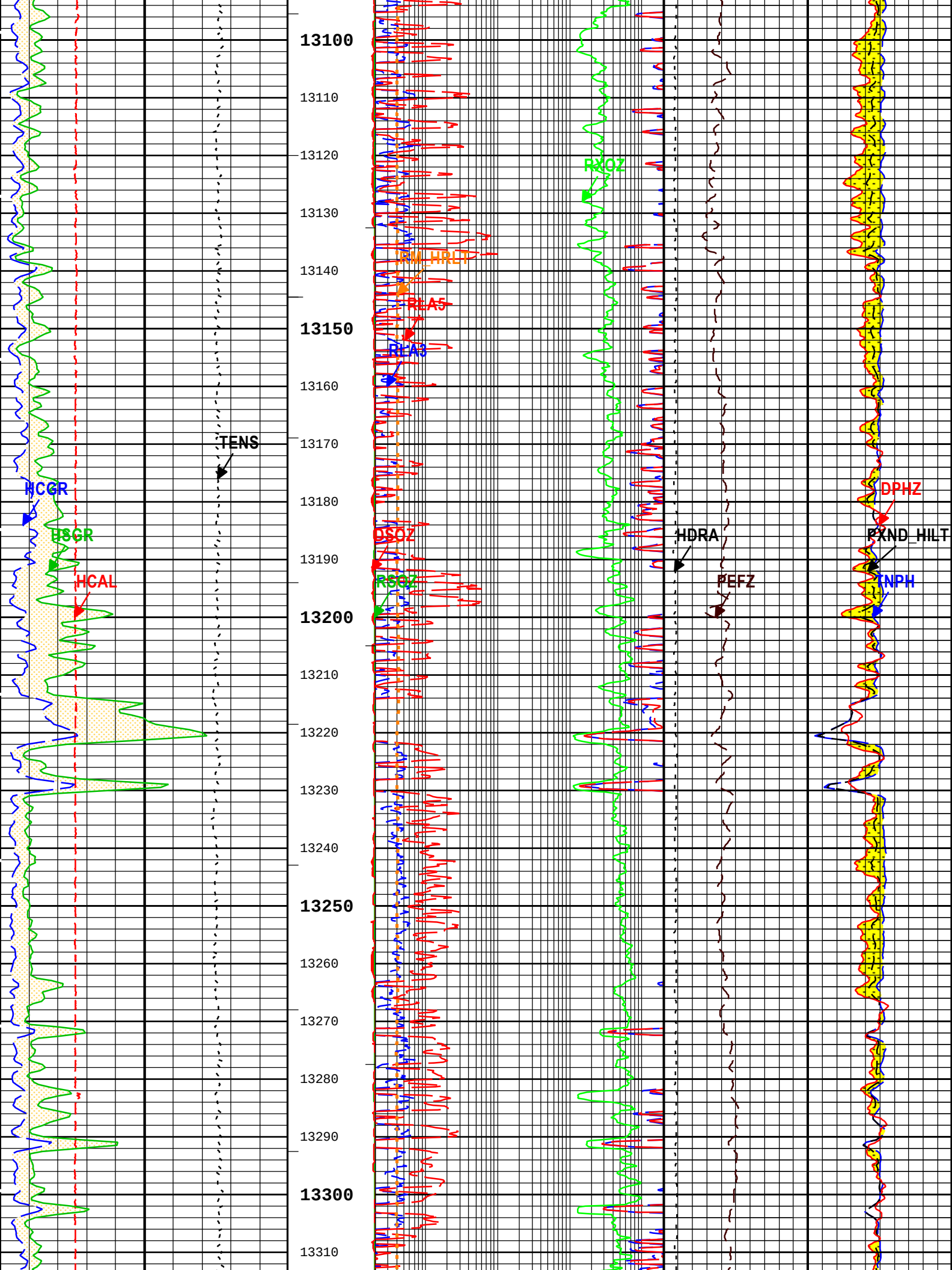


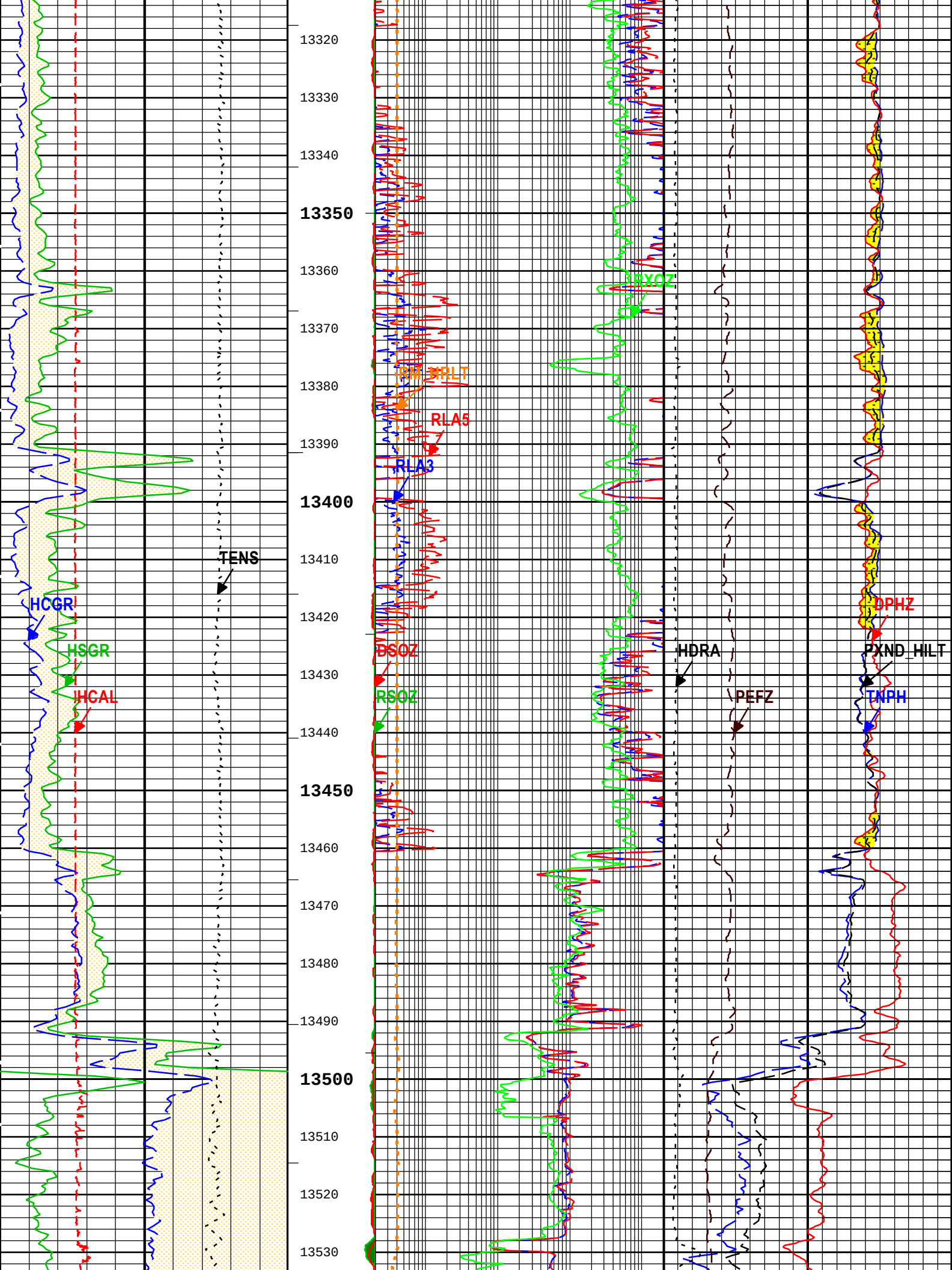


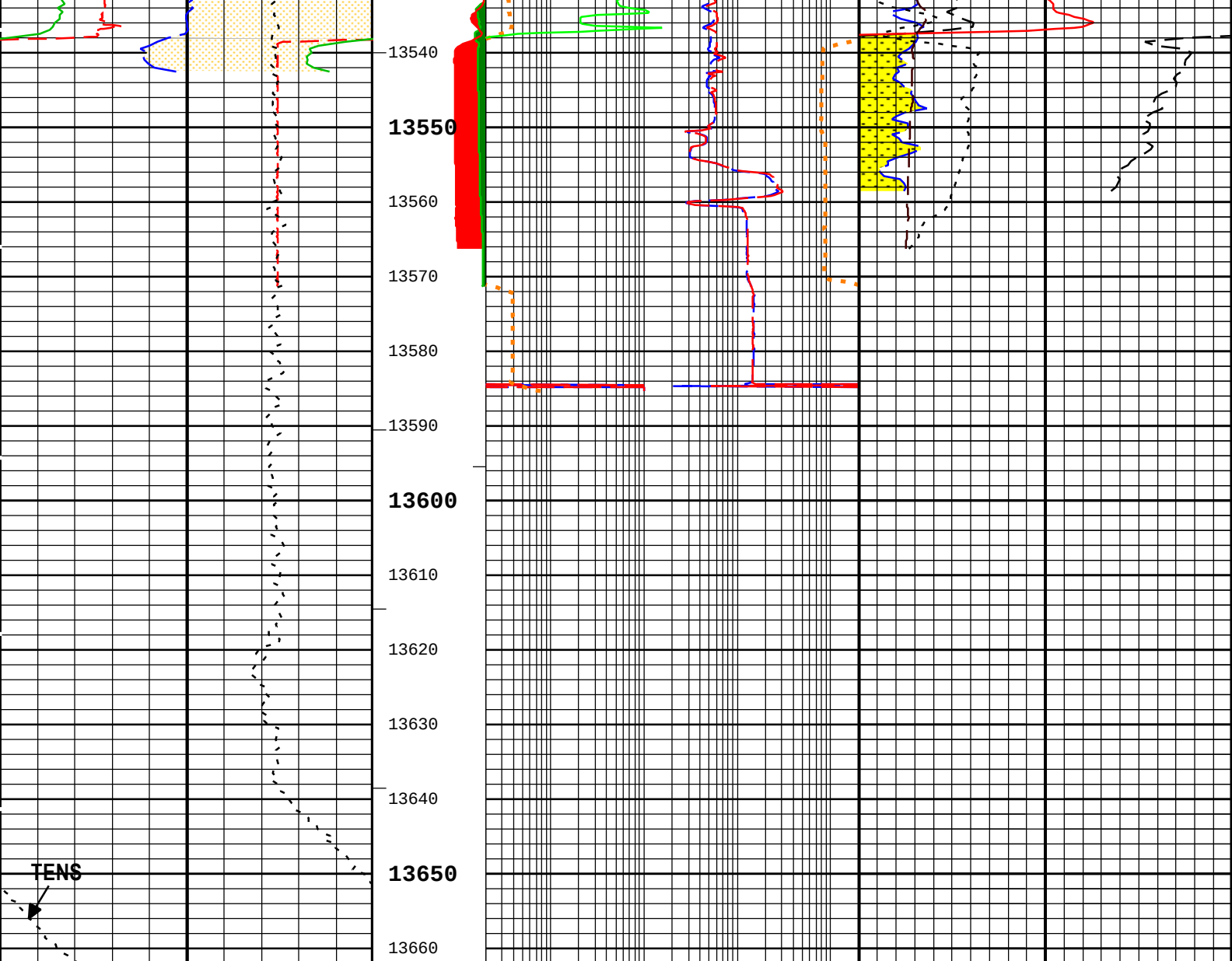












Uranium Indicator	DSOA	Apparent Resistivity from Computed Focusing Mode 3 (RLA3) HRLT-B	Crossover shading
Caliper (HCAL) HDRS-H	RSOA	0.2 ohm.m 2000	Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H
6 in 16			0.3 ft3/ft3 -0.1
Spectroscopy Gamma Ray (HSGR) HNGS-BA	Resistivity Standoff Standard Resolution (RSOZ) HDRS-H	Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B	Crossplot Porosity for Neutron-Density (PXND_HILT)
0 gAPI 150		0.2 ohm.m 2000	0.3 ft3/ft3 -0.1
Gamma Ray Contribution from Thorium and Potassium (HCGR) HNGS-BA		Mud Resistivity (RM_HRLT) HRLT-B	Standard Resolution Density Porosity (DPHZ) HDRS-H
0 gAPI 150	2.5 in 0	0.02 ohm.m 200	0.3 ft3/ft3 -0.1
Cable Tension (TENS)	Standard Resolution Density Standoff (DSOZ) HDRS-H	Invaded Formation Resistivity filtered at 18 inches (RXOZ) HDRS-H	Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H
5000 lbf 0		0.2 ohm.m 2000	0 10
	2.5 in 0		Density Standoff Correction (HDRA) HDRS-H
			-0.05 g/cm3 0.45

TIME_1900 - Time Marked every 60.00 (s)

└─ IHV - Integrated Hole Volume every 10.00 (ft3)

└─ ICV - Integrated Cement Volume every 100.00 (ft3)

└─ ICV - Integrated Cement Volume every 10.00 (ft3)

└─ IHV - Integrated Hole Volume every 100.00 (ft3)

Description: Triple Combo standard resolution template for Platform Express Format: Log (PEX Triple Combo) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 30-Nov-2016 00:52:19

Channel Processing Parameters

Run 1A: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	174.75	degF
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	55000	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.059	in
CBLO	Casing Bottom (Logger)	WLSESSION	4702	ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	Salt Brine	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
FD	Fluid Density	Borehole	1	g/cm3
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	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	MRES	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
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	
MDEN	Matrix Density for Density Porosity	Borehole	2.71	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	72	degF
NPRM	HRDD Nuclear Processing Mode	HDRS-H	High Resolution	
PROCMSO	Mechanical Standoff Size	HRLT-B	1.5	in
PROCSP0	Sonde Position	HRLT-B	Eccentered	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.08	ohm.m
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	
SOCO	Standoff Correction Option	HGNS-H	Yes	

Tool Control Parameters

Run 1A: Parameters

Parameter	Description	Tool	Value	Unit
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HMCA_BOARD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	Time Zoned	ft/h

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
MAX_LOG_SPEED	1695	29-Nov-2016 16:25:05	29-Nov-2016 16:25:10	13662.08	13660.47
MAX_LOG_SPEED	1800	29-Nov-2016 16:25:10	29-Nov-2016 16:31:18	13660.47	13498.77
MAX_LOG_SPEED	1690	29-Nov-2016 16:31:18	29-Nov-2016 16:52:49	13498.77	12933.39
MAX_LOG_SPEED	1800	29-Nov-2016 16:52:49	29-Nov-2016 17:06:06	12933.39	12571.73
MAX_LOG_SPEED	1770	29-Nov-2016 17:06:06	29-Nov-2016 17:09:10	12571.73	12488.53
MAX_LOG_SPEED	1800	29-Nov-2016 17:09:10	29-Nov-2016 17:12:14	12488.53	12400.95
MAX_LOG_SPEED	1753	29-Nov-2016 17:12:14	29-Nov-2016 17:13:15	12400.95	12371.38
MAX_LOG_SPEED	1800	29-Nov-2016 17:13:15	29-Nov-2016 17:16:19	12371.38	12286.82
MAX_LOG_SPEED	1729	29-Nov-2016 17:16:19	29-Nov-2016 17:18:21	12286.82	12231.58
MAX_LOG_SPEED	1800	29-Nov-2016 17:18:21	29-Nov-2016 17:22:26	12231.58	12122.52
MAX_LOG_SPEED	1781	29-Nov-2016 17:22:26	29-Nov-2016 17:23:28	12122.52	12095.38
MAX_LOG_SPEED	1800	29-Nov-2016 17:23:28	29-Nov-2016 17:30:37	12095.38	11897.92
MAX_LOG_SPEED	1692	29-Nov-2016 17:30:37	29-Nov-2016 17:31:39	11897.92	11869.47
MAX_LOG_SPEED	1800	29-Nov-2016 17:31:39	29-Nov-2016 17:40:51	11869.47	11616.36
MAX_LOG_SPEED	1794	29-Nov-2016 17:40:51	29-Nov-2016 17:45:58	11616.36	11474.54
MAX_LOG_SPEED	1651	29-Nov-2016 17:45:58	29-Nov-2016 17:47:00	11474.54	11446.18
MAX_LOG_SPEED	1747	29-Nov-2016 17:47:00	29-Nov-2016 17:49:02	11446.18	11389.42
MAX_LOG_SPEED	1629	29-Nov-2016 17:49:02	29-Nov-2016 17:56:13	11389.42	11190.26
MAX_LOG_SPEED	1747	29-Nov-2016 17:56:13	29-Nov-2016 17:59:17	11190.26	11103.2
MAX_LOG_SPEED	1800	29-Nov-2016 17:59:17	29-Nov-2016 18:14:37	11103.2	10671.4
MAX_LOG_SPEED	1764	29-Nov-2016 18:14:37	29-Nov-2016 18:21:45	10671.4	10469.58
MAX_LOG_SPEED	1663	29-Nov-2016 18:21:45	29-Nov-2016 18:27:54	10469.58	10293.28
MAX_LOG_SPEED	1753	29-Nov-2016 18:27:54	29-Nov-2016 18:43:16	10293.28	9859.61
MAX_LOG_SPEED	1660	29-Nov-2016 18:43:16	29-Nov-2016 19:01:43	9859.61	9334.22
MAX_LOG_SPEED	1756	29-Nov-2016 19:01:43	29-Nov-2016 19:06:50	9334.22	9189.58
MAX_LOG_SPEED	1800	29-Nov-2016 19:06:50	29-Nov-2016 19:09:53	9189.58	9102.28
MAX_LOG_SPEED	1723	29-Nov-2016 19:09:53	29-Nov-2016 19:37:30	9102.28	8327.82
MAX_LOG_SPEED	1626	29-Nov-2016 19:37:30	29-Nov-2016 19:47:43	8327.82	8046.58
MAX_LOG_SPEED	1770	29-Nov-2016 19:47:43	29-Nov-2016 19:50:48	8046.58	7964.6
MAX_LOG_SPEED	1659	29-Nov-2016 19:50:48	29-Nov-2016 19:57:59	7964.6	7768.42
MAX_LOG_SPEED	1768	29-Nov-2016 19:57:59	29-Nov-2016 20:02:05	7768.42	7656.38
MAX_LOG_SPEED	1663	29-Nov-2016 20:02:05	29-Nov-2016 20:07:11	7656.38	7519.44
MAX_LOG_SPEED	1775	29-Nov-2016 20:07:11	29-Nov-2016 20:09:14	7519.44	7463.56
MAX_LOG_SPEED	1654	29-Nov-2016 20:09:14	29-Nov-2016 20:14:22	7463.56	7324
MAX_LOG_SPEED	1757	29-Nov-2016 20:14:22	29-Nov-2016 20:16:25	7324	7267.91
MAX_LOG_SPEED	1607	29-Nov-2016 20:16:25	29-Nov-2016 20:23:35	7267.91	7071.09
MAX_LOG_SPEED	1796	29-Nov-2016 20:23:35	29-Nov-2016 20:28:41	7071.09	6929.06
MAX_LOG_SPEED	1800	29-Nov-2016 20:28:41	29-Nov-2016 21:18:45	6929.06	5563.46
MAX_LOG_SPEED	1789	29-Nov-2016 21:18:45	29-Nov-2016 21:19:46	5563.46	5535.53

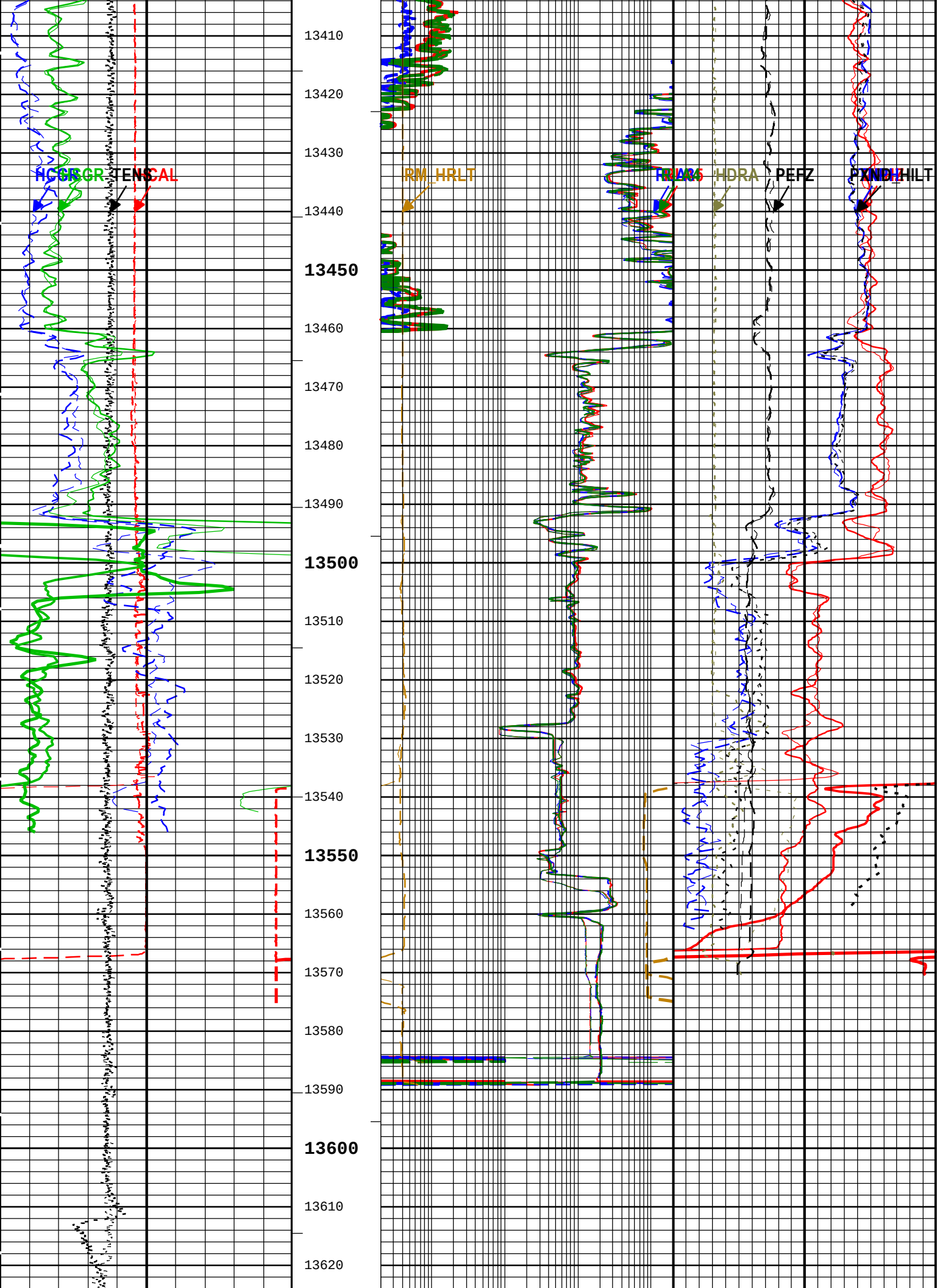
Main To Repeat

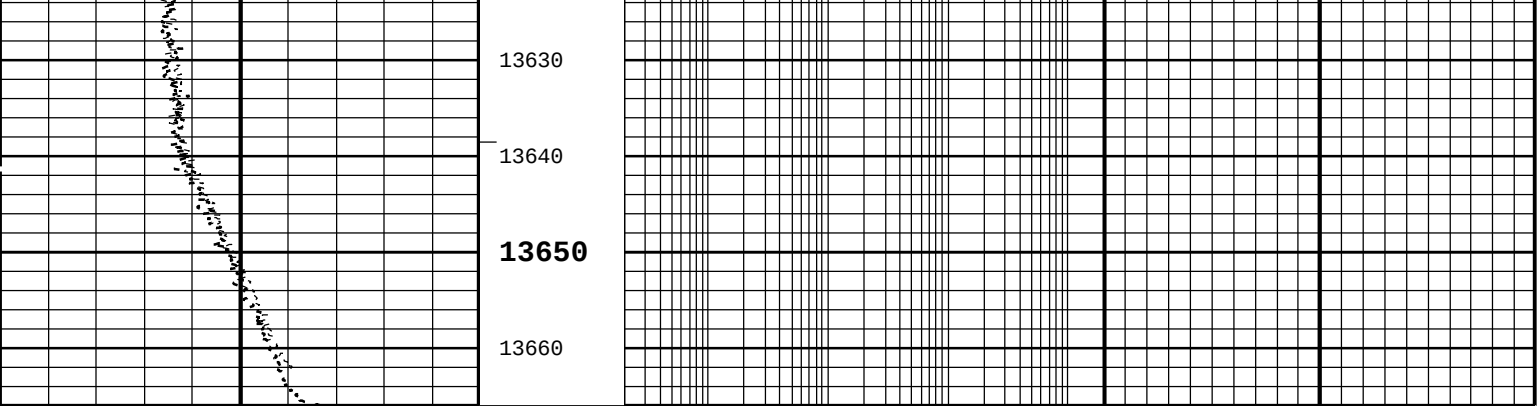
Repeat To Main

Density Standoff
Correction (HDRA)
HDSR-H

-0.05 g/cm3 0.45

Main To Repeat Repeat To Main Caliper (HCAL) HDRS-H 414		Main To Repeat Repeat To Main Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B 0.22000		Main To Repeat Repeat To Main Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H 010	
Main To Repeat Repeat To Main Cable Tension (TENS) 100000		Main To Repeat Repeat To Main Apparent Resistivity from Computed Focusing Mode 3 (RLA3) HRLT-B 0.22000		Main To Repeat Repeat To Main Standard Resolution Density Porosity (DPHZ) HDRS-H 0.3-0.1	
Main To Repeat Repeat To Main Gamma Ray Contribution from Thorium and Potassium (HCGR) HNGS-BA 0150		Main To Repeat Repeat To Main Apparent Resistivity from Computed Focusing Mode 4 (RLA4) HRLT-B 0.22000		Main To Repeat Repeat To Main Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H 0.3-0.1	
Main To Repeat Repeat To Main Spectroscopy Gamma Ray (HSGR) HNGS-BA 0150		Main To Repeat Repeat To Main Mud Resistivity (RM_HRLT) HRLT-B 0.02200		Main To Repeat Repeat To Main Crossplot Porosity for Neutron-Density (PXND_HILT) 0.3-0.1	





Main To Repeat
Repeat To Main
Caliper (HCAL) HDRS-H
4 in 14
Main To Repeat
Repeat To Main
Cable Tension (TENS)
10000 lbf 0
Main To Repeat
Repeat To Main
Gamma Ray Contribution from Thorium and Potassium (HCGR) HNGS-BA
0 gAPI 150
Main To Repeat
Repeat To Main
Spectroscopy Gamma Ray (HSGR) HNGS-BA
0 gAPI 150

Main To Repeat	Main To Repeat
Repeat To Main	Repeat To Main
Apparent Resistivity from Computed Focusing Mode 5 (RLA5) HRLT-B	Standard Resolution Density Porosity (DPHZ) HDRS-H
0.2 ohm.m 2000	0.3 ft3/ft3 -0.1
Main To Repeat	Main To Repeat
Repeat To Main	Repeat To Main
Apparent Resistivity from Computed Focusing Mode 3 (RLA3) HRLT-B	Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H
0.2 ohm.m 2000	0.3 ft3/ft3 -0.1
Main To Repeat	Main To Repeat
Repeat To Main	Repeat To Main
Apparent Resistivity from Computed Focusing Mode 4 (RLA4) HRLT-B	Crossplot Porosity for Neutron-Density (PXND_HILT)
0.2 ohm.m 2000	0.3 ft3/ft3 -0.1
Main To Repeat	Main To Repeat
Repeat To Main	Repeat To Main
Mud Resistivity (RM_HRLT) HRLT-B	Density Standoff Correction (HDRA) HDRS-H
0.02 ohm.m 200	-0.05 g/cm3 0.45
	Main To Repeat
	Repeat To Main
	Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H
	0 10

TIME_1900 - Time Marked every 60.00 (s)

| IHV - Integrated Hole Volume every 100.00 (ft3)

| IHV - Integrated Hole Volume every 10.00 (ft3)

| ICV - Integrated Cement Volume every 100.00 (ft3)

| ICV - Integrated Cement Volume every 10.00 (ft3)

Channel Processing Parameters				
Run 1A: Parameters				
Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	174.75	degF
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	55000	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.059	in
CBLO	Casing Bottom (Logger)	WLSESSION	4702	ft
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	Salt Brine	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FCD	Future Casing (Outer) Diameter	WLSESSION	7	in
FD	Fluid Density	Borehole	1	g/cm3
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	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	MRES	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
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	
MDEN	Matrix Density for Density Porosity	Borehole	2.71	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	72	degF
NPRM	HRDD Nuclear Processing Mode	HDRS-H	High Resolution	
PROCMSO	Mechanical Standoff Size	HRLT-B	1.5	in
PROCSP0	Sonde Position	HRLT-B	Eccentered	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.08	ohm.m
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	
SOCO	Standoff Correction Option	HGNS-H	Yes	

Tool Control Parameters				
Run 1A: Parameters				
Parameter	Description	Tool	Value	Unit
HMCA_BOARD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	Time Zoned	ft/h

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
MAX_LOG_SPEED	1695	29-Nov-2016 16:25:05	29-Nov-2016 16:25:10	13662.08	13660.47

MAX_LOG_SPEED	1800	29-Nov-2016 16:25:10	29-Nov-2016 16:31:18	13660.47	13498.77
MAX_LOG_SPEED	1690	29-Nov-2016 16:31:18	29-Nov-2016 16:52:49	13498.77	12933.39
MAX_LOG_SPEED	1800	29-Nov-2016 16:52:49	29-Nov-2016 17:06:06	12933.39	12571.73
MAX_LOG_SPEED	1770	29-Nov-2016 17:06:06	29-Nov-2016 17:09:10	12571.73	12488.53
MAX_LOG_SPEED	1800	29-Nov-2016 17:09:10	29-Nov-2016 17:12:14	12488.53	12400.95
MAX_LOG_SPEED	1753	29-Nov-2016 17:12:14	29-Nov-2016 17:13:15	12400.95	12371.38
MAX_LOG_SPEED	1800	29-Nov-2016 17:13:15	29-Nov-2016 17:16:19	12371.38	12286.82
MAX_LOG_SPEED	1729	29-Nov-2016 17:16:19	29-Nov-2016 17:18:21	12286.82	12231.58
MAX_LOG_SPEED	1800	29-Nov-2016 17:18:21	29-Nov-2016 17:22:26	12231.58	12122.52
MAX_LOG_SPEED	1781	29-Nov-2016 17:22:26	29-Nov-2016 17:23:28	12122.52	12095.38
MAX_LOG_SPEED	1800	29-Nov-2016 17:23:28	29-Nov-2016 17:30:37	12095.38	11897.92
MAX_LOG_SPEED	1692	29-Nov-2016 17:30:37	29-Nov-2016 17:31:39	11897.92	11869.47
MAX_LOG_SPEED	1800	29-Nov-2016 17:31:39	29-Nov-2016 17:40:51	11869.47	11616.36
MAX_LOG_SPEED	1794	29-Nov-2016 17:40:51	29-Nov-2016 17:45:58	11616.36	11474.54
MAX_LOG_SPEED	1651	29-Nov-2016 17:45:58	29-Nov-2016 17:47:00	11474.54	11446.18
MAX_LOG_SPEED	1747	29-Nov-2016 17:47:00	29-Nov-2016 17:49:02	11446.18	11389.42
MAX_LOG_SPEED	1629	29-Nov-2016 17:49:02	29-Nov-2016 17:56:13	11389.42	11190.26
MAX_LOG_SPEED	1747	29-Nov-2016 17:56:13	29-Nov-2016 17:59:17	11190.26	11103.2
MAX_LOG_SPEED	1800	29-Nov-2016 17:59:17	29-Nov-2016 18:14:37	11103.2	10671.4
MAX_LOG_SPEED	1764	29-Nov-2016 18:14:37	29-Nov-2016 18:21:45	10671.4	10469.58
MAX_LOG_SPEED	1663	29-Nov-2016 18:21:45	29-Nov-2016 18:27:54	10469.58	10293.28
MAX_LOG_SPEED	1753	29-Nov-2016 18:27:54	29-Nov-2016 18:43:16	10293.28	9859.61
MAX_LOG_SPEED	1660	29-Nov-2016 18:43:16	29-Nov-2016 19:01:43	9859.61	9334.22
MAX_LOG_SPEED	1756	29-Nov-2016 19:01:43	29-Nov-2016 19:06:50	9334.22	9189.58
MAX_LOG_SPEED	1800	29-Nov-2016 19:06:50	29-Nov-2016 19:09:53	9189.58	9102.28
MAX_LOG_SPEED	1723	29-Nov-2016 19:09:53	29-Nov-2016 19:37:30	9102.28	8327.82
MAX_LOG_SPEED	1626	29-Nov-2016 19:37:30	29-Nov-2016 19:47:43	8327.82	8046.58
MAX_LOG_SPEED	1770	29-Nov-2016 19:47:43	29-Nov-2016 19:50:48	8046.58	7964.6
MAX_LOG_SPEED	1659	29-Nov-2016 19:50:48	29-Nov-2016 19:57:59	7964.6	7768.42
MAX_LOG_SPEED	1768	29-Nov-2016 19:57:59	29-Nov-2016 20:02:05	7768.42	7656.38
MAX_LOG_SPEED	1663	29-Nov-2016 20:02:05	29-Nov-2016 20:07:11	7656.38	7519.44
MAX_LOG_SPEED	1775	29-Nov-2016 20:07:11	29-Nov-2016 20:09:14	7519.44	7463.56
MAX_LOG_SPEED	1654	29-Nov-2016 20:09:14	29-Nov-2016 20:14:22	7463.56	7324
MAX_LOG_SPEED	1757	29-Nov-2016 20:14:22	29-Nov-2016 20:16:25	7324	7267.91
MAX_LOG_SPEED	1607	29-Nov-2016 20:16:25	29-Nov-2016 20:23:35	7267.91	7071.09
MAX_LOG_SPEED	1796	29-Nov-2016 20:23:35	29-Nov-2016 20:28:41	7071.09	6929.06
MAX_LOG_SPEED	1800	29-Nov-2016 20:28:41	29-Nov-2016 21:18:45	6929.06	5563.46
MAX_LOG_SPEED	1789	29-Nov-2016 21:18:45	29-Nov-2016 21:19:46	5563.46	5535.53
MAX_LOG_SPEED	1800	29-Nov-2016 21:19:46	29-Nov-2016 21:21:49	5535.53	5478.22
MAX_LOG_SPEED	1728	29-Nov-2016 21:21:49	29-Nov-2016 21:22:50	5478.22	5449.62
MAX_LOG_SPEED	1800	29-Nov-2016 21:22:50	29-Nov-2016 21:23:51	5449.62	5421.01
MAX_LOG_SPEED	1748	29-Nov-2016 21:23:51	29-Nov-2016 21:28:59	5421.01	5279.95
MAX_LOG_SPEED	1800	29-Nov-2016 21:28:59	29-Nov-2016 21:34:06	5279.95	5142.02
MAX_LOG_SPEED	1741	29-Nov-2016 21:34:06	29-Nov-2016 21:35:07	5142.02	5114.37

MAX_LOG_SPEED	1600	29-Nov-2016 21:35:07	29-Nov-2016 21:37:09	5114.37	5058.65
MAX_LOG_SPEED	1717	29-Nov-2016 21:37:09	29-Nov-2016 21:42:17	5058.65	4918.42
MAX_LOG_SPEED	1800	29-Nov-2016 21:42:17	29-Nov-2016 21:44:20	4918.42	4862.3
MAX_LOG_SPEED	1631	29-Nov-2016 21:44:20	29-Nov-2016 21:46:22	4862.3	4807.08
MAX_LOG_SPEED	1756	29-Nov-2016 21:46:22	29-Nov-2016 21:50:28	4807.08	4696.12
MAX_LOG_SPEED	1637	29-Nov-2016 21:50:28	29-Nov-2016 22:15:05	4696.12	3217.06
MAX_LOG_SPEED	1778	29-Nov-2016 22:15:05	29-Nov-2016 22:16:07	3217.06	3144.43
MAX_LOG_SPEED	1645	29-Nov-2016 22:16:07	29-Nov-2016 22:53:59	3144.43	305.57
MAX_LOG_SPEED	1728	29-Nov-2016 22:53:59	29-Nov-2016 22:56:13	305.57	213.72

All depth are at tool zero.

Calibration Report

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

Primary Equipment :	
HRLS-B	HRLS-B

HRLT-B Calibration - HRLT M0-M1 Voltage Plus

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M01 - 0	uV	Before	-322.7	-379.6	-320.6	-280.6	
HRLT M01 - 1	uV	Before	-322.7	-379.6	-350.5	-280.6	
HRLT M01 - 2	uV	Before	-322.7	-379.6	-341.7	-280.6	
HRLT M01 - 3	uV	Before	-322.7	-379.6	-331.8	-280.6	
HRLT M01 - 4	uV	Before	-322.7	-379.6	-320.4	-280.6	
HRLT M01 - 5	uV	Before	-322.7	-379.6	-325.7	-280.6	
HRLT M01 - 6	uV	Before	322.7	280.6	337.9	379.6	

HRLT-B Calibration - HRLT M1-M2 Voltage Plus

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M12 - 0	uV	Before	1781.0	1548.7	1766.2	2095.3	
HRLT M12 - 1	uV	Before	1781.0	1548.7	1931.1	2095.3	
HRLT M12 - 2	uV	Before	1781.0	1548.7	1876.7	2095.3	
HRLT M12 - 3	uV	Before	1781.0	1548.7	1822.9	2095.3	
HRLT M12 - 4	uV	Before	1781.0	1548.7	1761.3	2095.3	
HRLT M12 - 5	uV	Before	1781.0	1548.7	1791.6	2095.3	
HRLT M12 - 6	uV	Before	-1781.0	-2095.3	-1870.0	-1548.7	

HRLT-B Calibration - HRLT M2-M3 Voltage Plus

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT M23 - 0	uV	Before	1781.0	1548.7	1752.4	2095.3	
HRLT M23 - 1	uV	Before	1781.0	1548.7	1920.6	2095.3	
HRLT M23 - 2	uV	Before	1781.0	1548.7	1869.6	2095.3	
HRLT M23 - 3	uV	Before	1781.0	1548.7	1821.4	2095.3	
HRLT M23 - 4	uV	Before	1781.0	1548.7	1756.6	2095.3	
HRLT M23 - 5	uV	Before	1781.0	1548.7	1788.9	2095.3	
HRLT M23 - 6	uV	Before	-1781.0	-2095.3	-1846.6	-1548.7	

HRLT-B Calibration - HRLT A3-A4 Voltage Plus

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V34 - 0	uV	Before	70000.0	60869.6	68987.8	82352.9	
HRLT V34 - 1	uV	Before	70000.0	60869.6	75678.4	82352.9	
HRLT V34 - 2	uV	Before	70000.0	60869.6	73955.6	82352.9	
HRLT V34 - 3	uV	Before	70000.0	60869.6	72232.7	82352.9	
HRLT V34 - 4	uV	Before	70000.0	60869.6	69510.4	82352.9	
HRLT V34 - 5	uV	Before	70000.0	60869.6	70768.0	82352.9	
HRLT V34 - 6	uV	Before	-70000.0	-82352.9	-71770.2	-60869.6	

HRLT-B Calibration - HRLT A4-A5 Voltage Plus

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V45 - 0	uV	Before	70000.0	60869.6	69052.8	82352.9	
HRLT V45 - 1	uV	Before	70000.0	60869.6	75583.7	82352.9	
HRLT V45 - 2	uV	Before	70000.0	60869.6	73925.6	82352.9	
HRLT V45 - 3	uV	Before	70000.0	60869.6	72225.9	82352.9	
HRLT V45 - 4	uV	Before	70000.0	60869.6	69559.2	82352.9	
HRLT V45 - 5	uV	Before	70000.0	60869.6	70825.5	82352.9	
HRLT V45 - 6	uV	Before	-70000.0	-82352.9	-71682.1	-60869.6	

HRLT-B Calibration - HRLT A5-A6 Voltage Plus

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT V56 - 0	uV	Before	70000.0	60869.6	69042.9	82352.9	
HRLT V56 - 1	uV	Before	70000.0	60869.6	75501.6	82352.9	
HRLT V56 - 2	uV	Before	70000.0	60869.6	73845.3	82352.9	
HRLT V56 - 3	uV	Before	70000.0	60869.6	72174.2	82352.9	
HRLT V56 - 4	uV	Before	70000.0	60869.6	69538.1	82352.9	
HRLT V56 - 5	uV	Before	70000.0	60869.6	70819.8	82352.9	
HRLT V56 - 6	uV	Before	-70000.0	-82352.9	-71576.0	-60869.6	

HRLT-B Calibration - HRLT Torpedo-M0 Voltage

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VTP - 0	uV	Before	-70000.0	-82352.9	-68596.3	-60869.6	
HRLT VTP - 1	uV	Before	-70000.0	-82352.9	-75869.6	-60869.6	
HRLT VTP - 2	uV	Before	-70000.0	-82352.9	-74099.0	-60869.6	
HRLT VTP - 3	uV	Before	-70000.0	-82352.9	-72341.1	-60869.6	
HRLT VTP - 4	uV	Before	-70000.0	-82352.9	-69598.4	-60869.6	
HRLT VTP - 5	uV	Before	-70000.0	-82352.9	-70833.5	-60869.6	
HRLT VTP - 6	uV	Before	70000.0	60869.6	71918.2	82352.9	

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

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT VBD - 0	uV	Before	-70000.0	-82352.9	-68630.5	-60869.6	
HRLT VBD - 1	uV	Before	-70000.0	-82352.9	-75950.2	-60869.6	
HRLT VBD - 2	uV	Before	-70000.0	-82352.9	-74166.2	-60869.6	
HRLT VBD - 3	uV	Before	-70000.0	-82352.9	-72403.2	-60869.6	
HRLT VBD - 4	uV	Before	-70000.0	-82352.9	-69639.9	-60869.6	
HRLT VBD - 5	uV	Before	-70000.0	-82352.9	-70858.5	-60869.6	
HRLT VBD - 6	uV	Before	70000.0	60869.6	71997.2	82352.9	

HRLT-B Calibration - HRLT Source Current Plus

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT ISO - 0	uA	Before	284.0	247.0	286.0	334.1	
HRLT ISO - 1	uA	Before	281.1	244.4	281.1	330.7	
HRLT ISO - 2	uA	Before	281.1	244.4	281.1	330.7	
HRLT ISO - 3	uA	Before	281.1	244.4	281.1	330.7	
HRLT ISO - 4	uA	Before	281.1	244.4	281.1	330.7	
HRLT ISO - 5	uA	Before	281.1	244.4	281.1	330.7	
HRLT ISO - 6	uA	Before	281.1	244.4	281.1	330.7	

HRLT-B Calibration - HRLT Vertical Voltage PI

Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HRLT MV - 0	uV	Before	-322.7	-379.6	-322.2	-280.6	
HRLT MV - 1	uV	Before	-322.7	-379.6	-343.9	-280.6	
HRLT MV - 2	uV	Before	-322.7	-379.6	-334.0	-280.6	
HRLT MV - 3	uV	Before	-322.7	-379.6	-323.0	-280.6	
HRLT MV - 4	uV	Before	-322.7	-379.6	-309.1	-280.6	

HRLT MV - 5	uV	Before	-322.7	-379.6	-329.4	-280.6	
HRLT MV - 6	uV	Before	322.7	280.6	345.0	379.6	
HRLT-B Calibration - HRLT Calibration Temperature							
Before (Measured):		16:08:01 29-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CTEM_HRLT	degF	Before			161.1		

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run Run 1A			
Primary Equipment :			
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H		
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H		5748
Auxiliary Equipment :			
HRDD Backscatter Detector	Backscatter		
HRDD Long Spacing Detector	Long Spacing		
HRDD Short Spacing Detector	Short Spacing		
Cesium 137 Gamma-Ray Logging Source	GSR-J		5437
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H		
HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H		
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):		13:09:22 28-Nov-2016 Expired by 1 days					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	8.18	10.00	
Large Ring	in	Before	12.00	9.00	12.36	15.00	

HDRS Density Calibration - Inversion Results							
Master (EEPROM):		16:08:16 10-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.599	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.688	1.696	
Pe Aluminum		Master	2.570	2.470	2.564	2.670	
Pe Magnesium		Master	2.650	2.550	2.613	2.750	

HDRS Density Calibration - Deviation Summary							
Master (EEPROM):		16:08:16 10-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.3961	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.8344	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3203	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.5330	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.5582	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.0935	3.5000	

HDRS Density Calibration - Background Summary							
Master (EEPROM):		16:08:16 10-Nov-2016		Before (Measured):		13:01:07 28-Nov-2016 Expired by 1 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7389		
		Before	0.7389	0.7020	0.7397	0.7759	
		Before-Master	-----	-----	0.0008	-----	
BS Window Sum	1/s	Master	1		28405		
		Before	28405	26984	28393	29825	
		Before-Master	-----	-----	-12	-----	
SS Window Ratio		Master	1.0000		0.4824		
		Before	0.4824	0.4582	0.4810	0.5065	
		Before-Master	-----	-----	-0.0014	-----	
SS Window Sum	1/s	Master	1		11783		

LS Window Sum	1/s	Master Before Before-Master	11783 ----- -----	11194 ----- -----	11754 11783 -29	12372 ----- -----	
LS Window Ratio		Master Before Before-Master	1.0000 0.3004 -----	0.2853 ----- -----	0.3004 0.2998 -0.0006	0.3154 ----- -----	
LS Window Sum	1/s	Master Before Before-Master	1 1228 -----	1167 ----- -----	1228 1224 -4	1290 ----- -----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 16:08:16 10-Nov-2016		Before (Measured):		13:01:07 28-Nov-2016 Expired by 1 days			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1495	2400	
		Before		1000	1511	2400	
		Before-Master	-----	-100	16	100	
SS PM High Voltage	V	Master		1000	1528	2400	
		Before		1000	1549	2400	
		Before-Master	-----	-100	21	100	
LS PM High Voltage	V	Master		1000	1302	2400	
		Before		1000	1307	2400	
		Before-Master	-----	-100	5	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 16:08:16 10-Nov-2016		Before (Measured):		13:01:07 28-Nov-2016 Expired by 1 days			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	12.11	25.00	
		Before		5.00	12.11	25.00	
		Before-Master	-----	-1.00	0.00	1.00	
SS Crystal Resolution	%	Master		5.00	10.05	20.00	
		Before		5.00	10.15	20.00	
		Before-Master	-----	-1.00	0.10	1.00	
LS Crystal Resolution	%	Master		5.00	8.69	20.00	
		Before		5.00	8.81	20.00	
		Before-Master	-----	-1.00	0.12	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 16:07:21 29-Nov-2016							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3886	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3817	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3865	4136	

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

Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC		HGNS-H	
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	7074
AmBe Neutron Logging Source		NSR-F	5317
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG			

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 14:44:05 29-Nov-2016							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.1	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-Jun-2007							
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	----	----	96.560	----	
Accelerometer Coefficients - 1		Master	----	----	2.419	----	
Accelerometer Coefficients - 2		Master	----	----	0.006	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.737	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	299.200	----	
Accelerometer Coefficients - 9		Master	----	----	1.010	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM):		16:34:08 11-Oct-2016		Before (Measured):		12:58:58 28-Nov-2016		Expired by 1 days
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Near Zero Measurement	1/s	Master	0	5.0	28.8	40.0		
		Before	0	5.0	28.0	40.0		
		Before-Master	----	-4.3	-0.8	4.3		
Far Zero Measurement	1/s	Master	0	5.0	30.4	40.0		
		Before	0	5.0	28.3	40.0		
		Before-Master	----	-4.6	-2.1	4.6		
Near Plus Measurement	1/s	Master	6031.0	4700.0	5644.0	6900.0		
		Before	----	----	----	----		
		Before-Master	----	----	----	----		
Far Plus Measurement	1/s	Master	2793.0	1900.0	2378.0	2900.0		
		Before	----	----	----	----		
		Before-Master	----	----	----	----		
Near Corrected Plus Measurement	1/s	Master		4700.0	5559.0	6900.0		
		Before	----	----	----	----		
		Before-Master	----	----	----	----		
Far Corrected Plus Measurement	1/s	Master		1900.0	2311.0	2900.0		
		Before	----	----	----	----		
		Before-Master	----	----	----	----		

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before:								
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RGR Zero Measurement - 0	gAPI	Before	----	----		----		
RGR Plus Measurement	gAPI	Before			NOT DONE			
GR Calibration Gain		Before			NOT DONE			

HNGS-BA (Hostile-environment Natural Gamma-ray Sonde) Calibration - Run Run 1A			
Primary Equipment :			
HNGS Sonde Element	HNGS-BA	378	
Auxiliary Equipment :			
Hostile Natural Gamma Ray Cartridge	HNGC-B	638	
HNGS Housing Element	HEH-K	1000	
		0	

Calibration History - Calibration History

Master:								
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
- 0		Master	----	----	----	----		

HNGS Background and Na22 Set Point Determination - Detector 1 Check

Master (EEPROM):		19:20:12 14-Sep-2016		Before (Measured):		13:01:22 28-Nov-2016		
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Na 511 Peak Location		Master	40.000	37.500	38.570	42.500		
		Before	40.000	37.500	39.567	42.500		
		Before-Master	----	----	0.997	----		

Na 511 Peak Resolution	%	Master Before Before-Master	15.500 15.500 -----	12.000 12.000 -----	14.465 13.872 -0.593	19.000 19.000 -----	
High Voltage DAC Value	V	Master Before Before-Master	1150.000 -----	850.000 -----	904.928 927.451 22.523	1600.000 -----	
Na 1785 Peak Location		Master Before Before-Master	142.650 142.650 -----	135.000 135.000 -----	139.928 142.113 2.185	150.300 150.300 -----	
Na 1785 Peak Resolution	%	Master Before Before-Master	8.500 8.500 -----	6.500 6.500 -----	7.951 7.213 -0.738	11.000 11.000 -----	
Temperature - 0	degF	Master Before Before-Master	----- 59.900 -----	----- -20.002 -----	----- 62.636 -----	----- 140.000 -----	
Na Count Rate	CPS	Master Before Before-Master	45.000 45.000 -----	10.000 10.000 -----	17.130 15.576 -1.554	100.000 100.000 -----	

HNGS Background and Na22 Set Point Determination - Detector 2 Check

Master (EEPROM): 19:20:12 14-Sep-2016		Before (Measured): 13:01:22 28-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master Before Before-Master	40.000 40.000 -----	37.500 37.500 -----	39.489 39.707 0.218	42.500 42.500 -----	
Na 511 Peak Resolution	%	Master Before Before-Master	15.500 15.500 -----	12.000 12.000 -----	13.419 14.719 1.300	19.000 19.000 -----	
High Voltage DAC Value	V	Master Before Before-Master	1150.000 -----	850.000 -----	936.462 1033.498 97.036	1600.000 -----	
Na 1785 Peak Location		Master Before Before-Master	142.650 142.650 -----	135.000 135.000 -----	141.908 141.698 -0.210	150.300 150.300 -----	
Na 1785 Peak Resolution	%	Master Before Before-Master	8.500 8.500 -----	6.500 6.500 -----	7.835 8.198 0.363	11.000 11.000 -----	
Temperature - 0	degF	Master Before Before-Master	----- 59.900 -----	----- -20.002 -----	----- 62.557 -----	----- 140.000 -----	
Na Count Rate	CPS	Master Before Before-Master	45.000 45.000 -----	10.000 10.000 -----	17.060 15.563 -1.497	100.000 100.000 -----	

HNGS Background and Na22 Set Point Determination - Ratio of Detector 1 to Detector 2

Master (EEPROM): 19:20:12 14-Sep-2016		Before (Measured): 13:01:22 28-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coincidence Count Rate Ratio		Master Before Before-Master	1.000 -----	0.950 -----	1.000 0.999 -0.001	1.050 -----	

HNGS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM): 19:20:12 14-Sep-2016		Before (Measured): 13:01:22 28-Nov-2016					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location		Master Before Before-Master	209.630 ----- -----	201.000 ----- -----	207.684 ----- -----	218.250 ----- -----	
Th Peak Resolution	%	Master Before Before-Master	7.000 ----- -----	5.000 ----- -----	6.287 ----- -----	9.000 ----- -----	
Background Count Rate	CPS	Master Before Before-Master	142.500 -----	10.000 -----	101.490 89.774 -11.716	265.000 -----	
Gain Ratio		Master Before	1.000 -----	0.940 -----	1.024 -----	1.060 -----	

		Before-Master	----	----	----	----	
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HNCS Background and Na22 Set Point Determination - Detector 2 Calibration							
Master (EEPROM):		19:20:12 14-Sep-2016		Before (Measured):		13:01:22 28-Nov-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location		Master	209.630	201.000	211.067	218.250	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Th Peak Resolution	%	Master	7.000	5.000	5.846	9.000	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Background Count Rate	CPS	Master			103.898		
		Before	142.500	10.000	92.571	265.000	
		Before-Master	----	----	-11.327	----	
Gain Ratio		Master	1.000	0.940	1.017	1.060	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

HNCS Background and Na22 Set Point Determination - Detector 1 Calibration							
Master (EEPROM):		19:20:12 14-Sep-2016		Before (Measured):		13:01:22 28-Nov-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master	40.000	38.000	40.000	43.500	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

HNCS Background and Na22 Set Point Determination - Detector 2 Calibration							
Master (EEPROM):		19:20:12 14-Sep-2016		Before (Measured):		13:01:22 28-Nov-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master	40.000	38.000	41.000	43.500	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	