

Company: Apollo Operating LLC

Well: Rodwell 14-31

Field: Wildcat

County: Washington Country: USA

Platform Express

Microlog

County:	Washington			
Field:	Wildcat			
Location:	SWSW Sec. 31, T4S, R51W	Elev.:	K.B.	4832.00 ft
Well:	Rodwell 14-31	600 FSL, 600 FWL	G.L.	4814.00 ft
Company:	Apollo Operating LLC	Lat: 39.656390 / Long: -103.139620	D.F.	4831.00 ft
Location:		Permanent Datum:	Ground Level	Elev.:
		Log Measured From:	Kelly Bushing	18.00 ft
		Drilling Measured From:	Kelly Bushing	above Perm.Datum
API Serial No.		Max.Hole Deviation	0 deg	Longitude:
05-121-11052				-103.13962 degrees
				Latitude:
				39.656390 degrees

Logging Date 13-Aug-2017

Run Number One

Depth Driller 7630.00 ft

Schlumberger Depth 7629.00 ft

Bottom Log Interval 7629.00 ft

Top Log Interval 515.00 ft

Casing Driller Size @ Depth 9.625 in @ 519.00 ft

Casing Schlumberger 519 ft

Bit Size 7.875 in

Type Fluid In Hole Water

Density 9.3 lbm/gal 84 s

Fluid Loss PH 6.6 cm3 10

MUD Source of Sample Active Tank

RM @ Meas Temp 0.04 ohm.m @ 75 degF

RMF @ Meas Temp 0.03 ohm.m @ 75 degF

RMC @ Meas Temp 0.07 ohm.m @ 75 degF

Source RMF RMC Calculated

RM @ BHT RMF @ BHT 0.02 @ 175 0.01 @ 175

Max Recorded Temperatures 175 degF

Circulation Stopped 13-Aug-2017 09:40:00

Logger on Bottom Time 13-Aug-2017 23:25:00

Unit Number Location: 9108 Fort Morgan

Recorded By Brandon Makinson

Witnessed By Randy Say

Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

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12. Tail

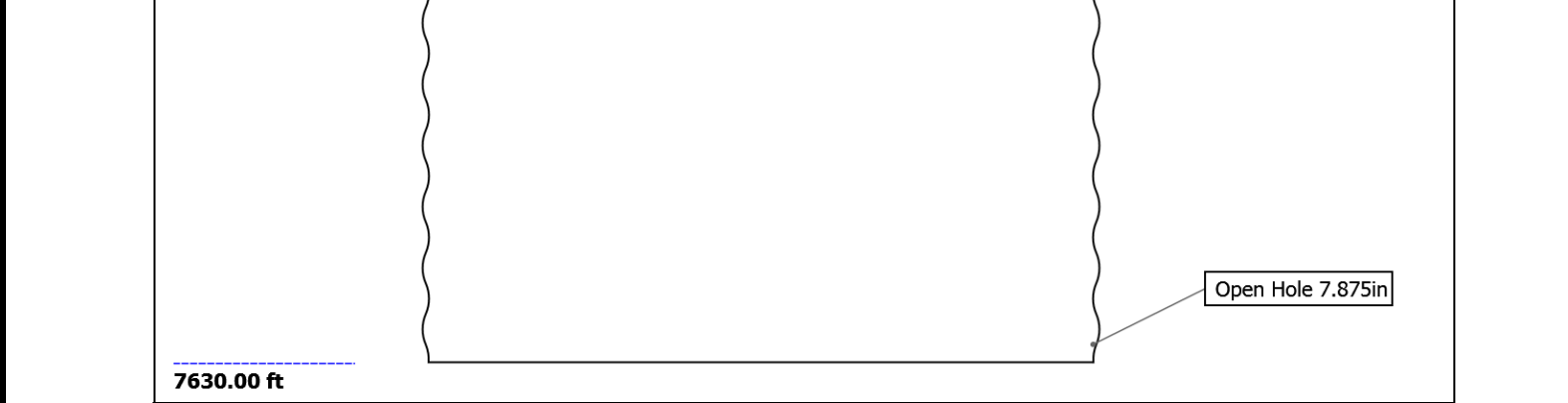
Well Sketch

Driller Depth

0.00 ft

519.00 ft

Casing 9.625in
36lbm/ft



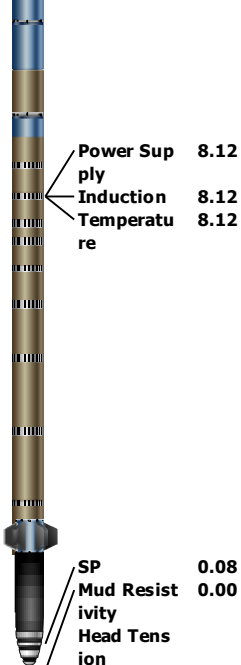
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	7.875					
Top Driller (ft)	519					
Top Logger (ft)	519					
Bottom Driller (ft)	7630					
Bottom Logger (ft)	7629					
Casing						
Size (in)	9.625					
Weight (lbm/ft)	36					
Inner Diameter (in)	8.921					
Grade	J55					
Top Driller (ft)	0					
Top Logger (ft)	0					
Bottom Driller (ft)	519					
Bottom Logger (ft)	519					

Operational Run Summary

Parameter (unit)	One					
Date Log Started	13-Aug-2017					
Time Log Started	22:31:49					
Date Log Finished	14-Aug-2017					
Time Log Finished	01:41:12					
Top Log Interval (ft)	515.00					
Bottom Log Interval (ft)	7629.00					
Total Depth (ft)	7629.00					
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	7.875					
Logging Unit Number	9108					
Logging Unit Location	Fort Morgan					
Recorded By	Brandon Makinson					



 <p>Power Supply 8.12 Induction 8.12 Temperature 8.12 SP 0.08 Mud Resistivity 0.00 Head Tension TOOL_ZERO</p> <p>Lengths are in ft Maximum Outer Diameter = 5.000 in Line: Sensor Location, Value: Gating Offset All measurements are relative to TOOL_ZERO</p>		
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Depth Summary			
	One		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	6433		
Calibration Date	14-Sep-2016		
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	-1		
Wheel Correction 2	-1.99		
Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date	05-Jun-2017		
Calibrator Serial Number			
Number of Calibration Points	10		
Calibration Root Mean Square Error	12		
Calibration Peak Error	23		
Logging Cable			
Type	7-39AI-XS		
Serial Number			
Length	22000.00 ft		
Conveyance Type	Wireline		
Rig Type	Triple		
One:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	All Schlumberger depth control procedures followed. IDW used as primary depth control.	
Rig Up Length At Surface			

Z-Chart used as secondary depth control.

Integration Summary

Software Version

Pass Summary

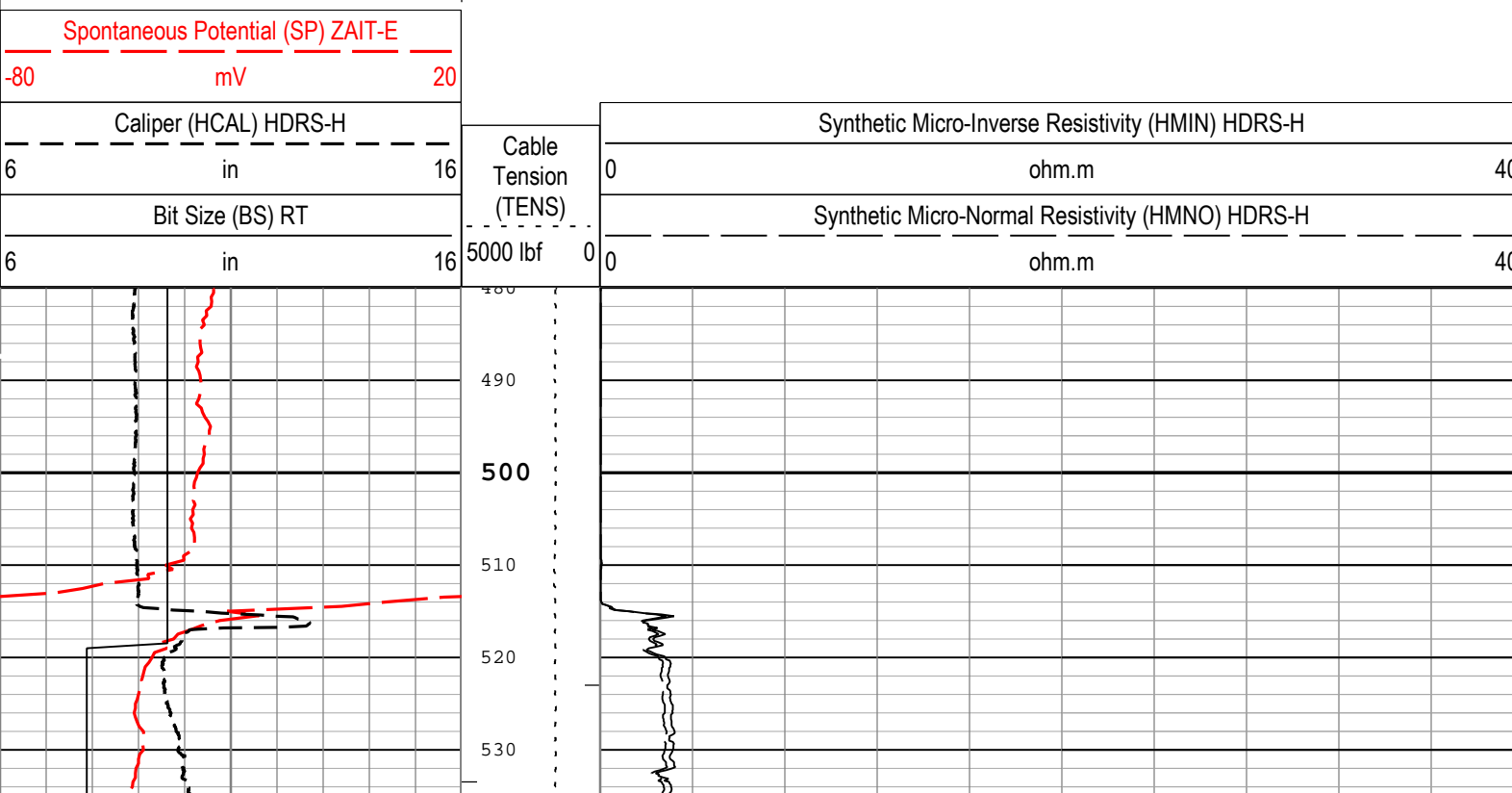
All depths are referenced to toolstring zero

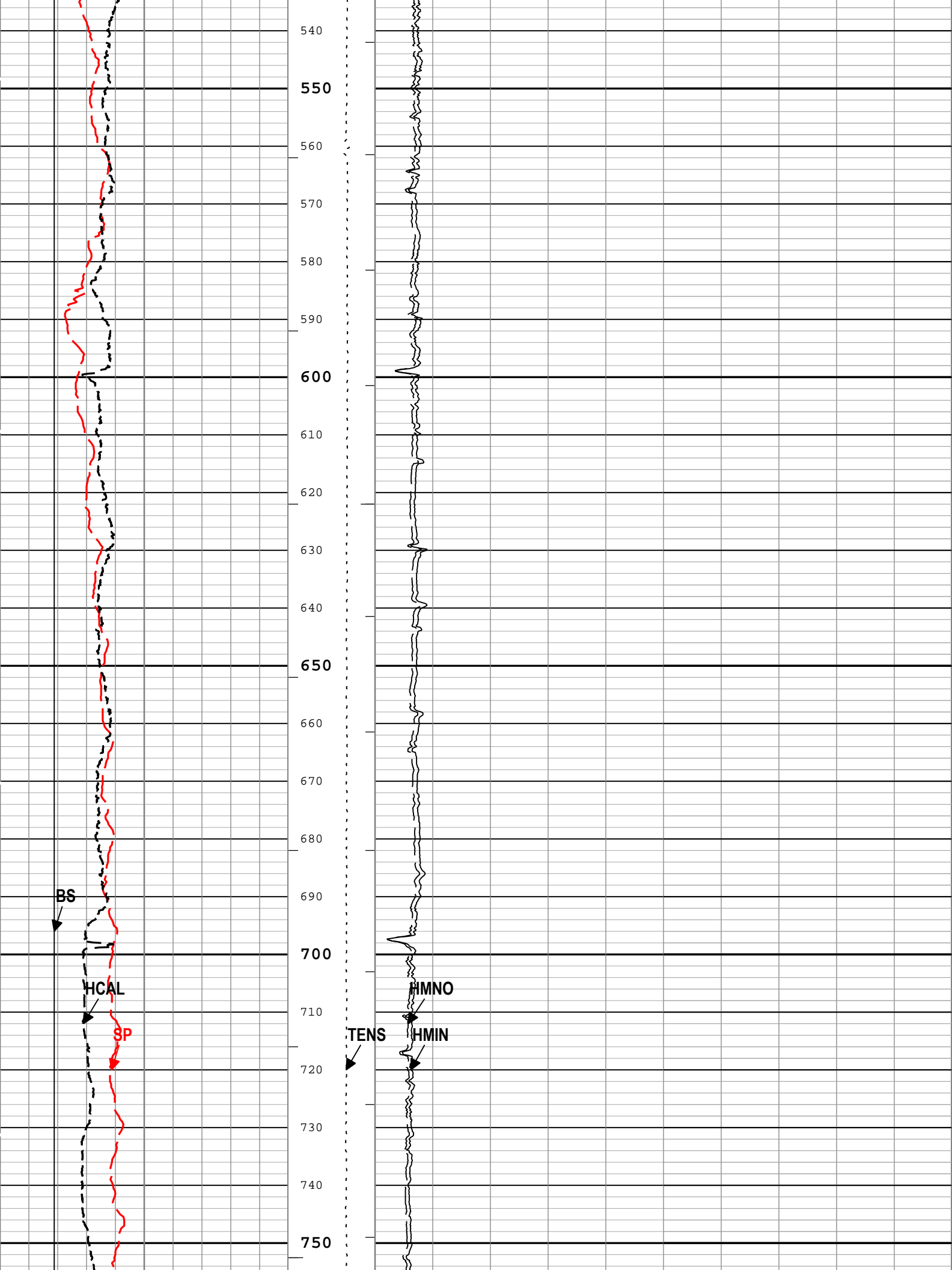
One: Log[3]:Up:S009

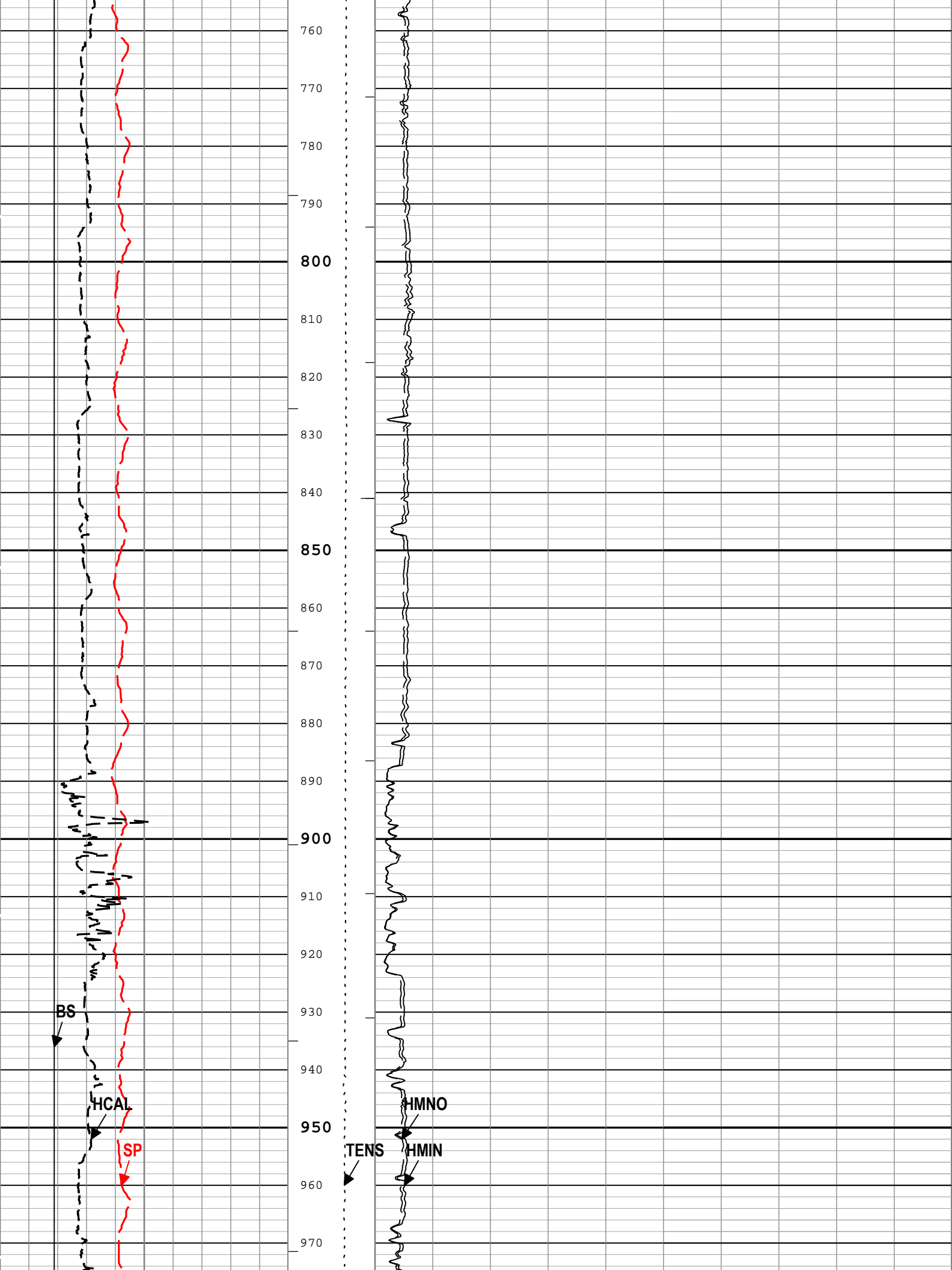
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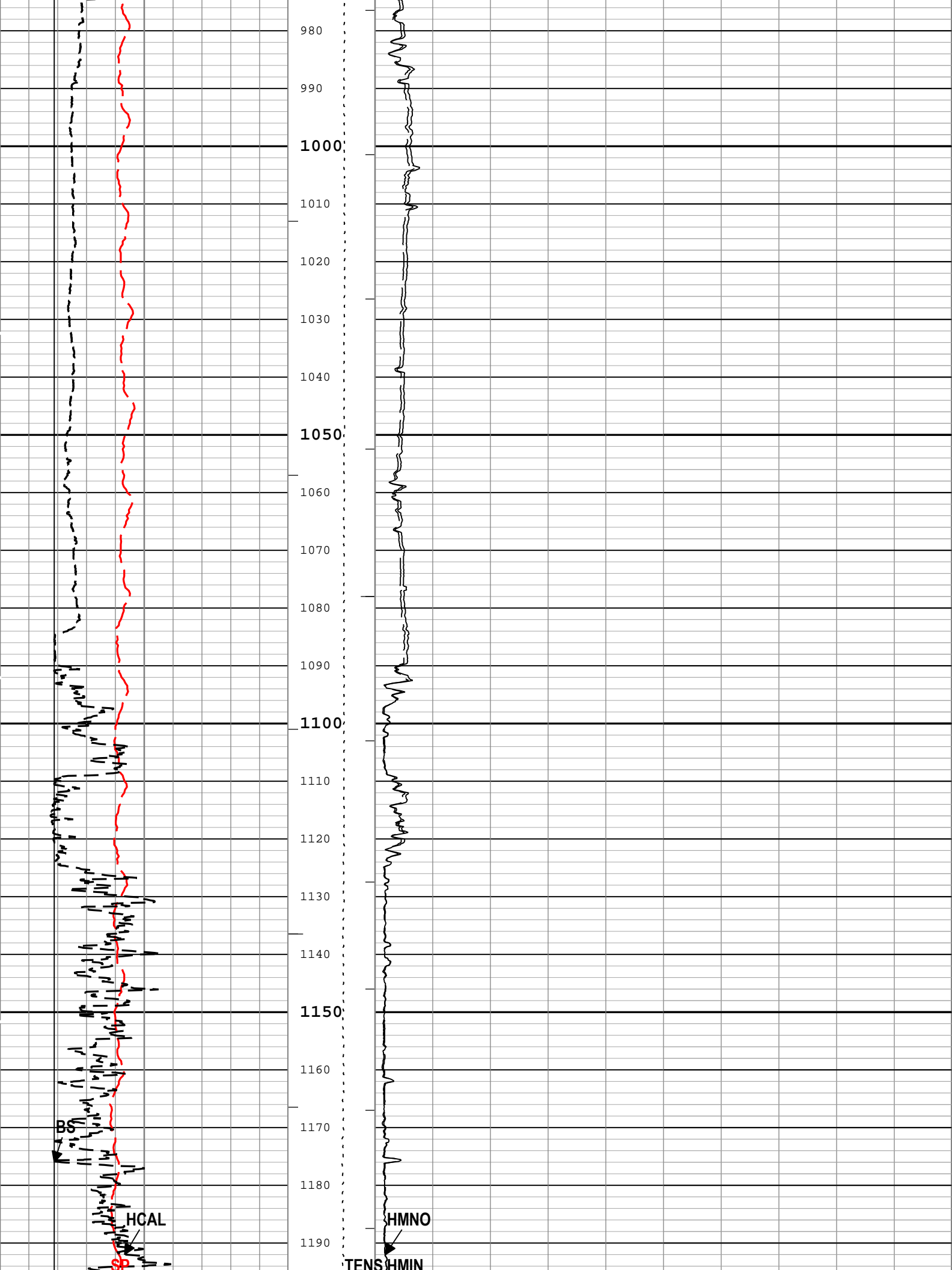
└ ICV - Integrated Cement Volume every 10.00 (ft3)

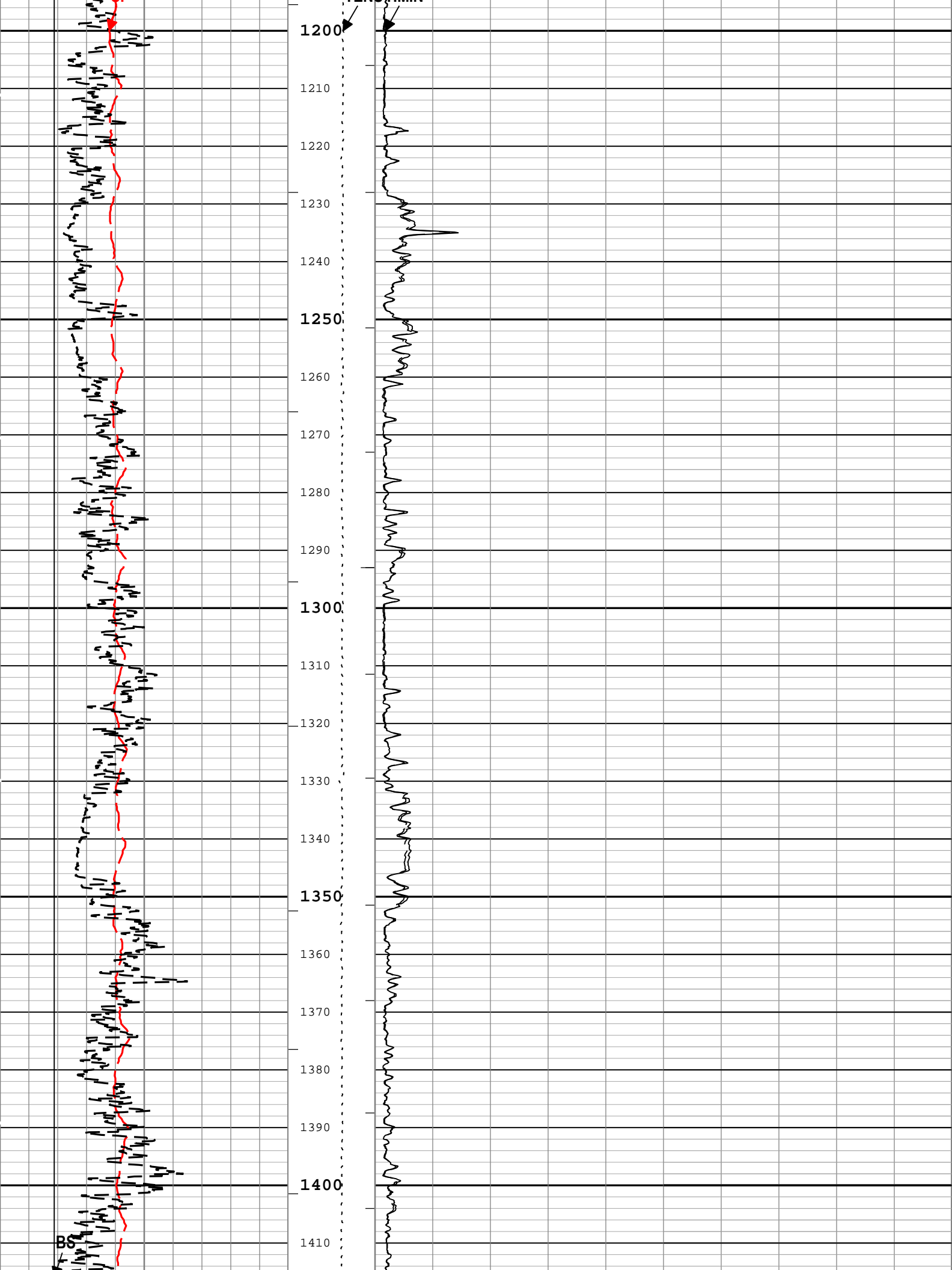
— ICV - Integrated Cement Volume every 100.00 (ft3)

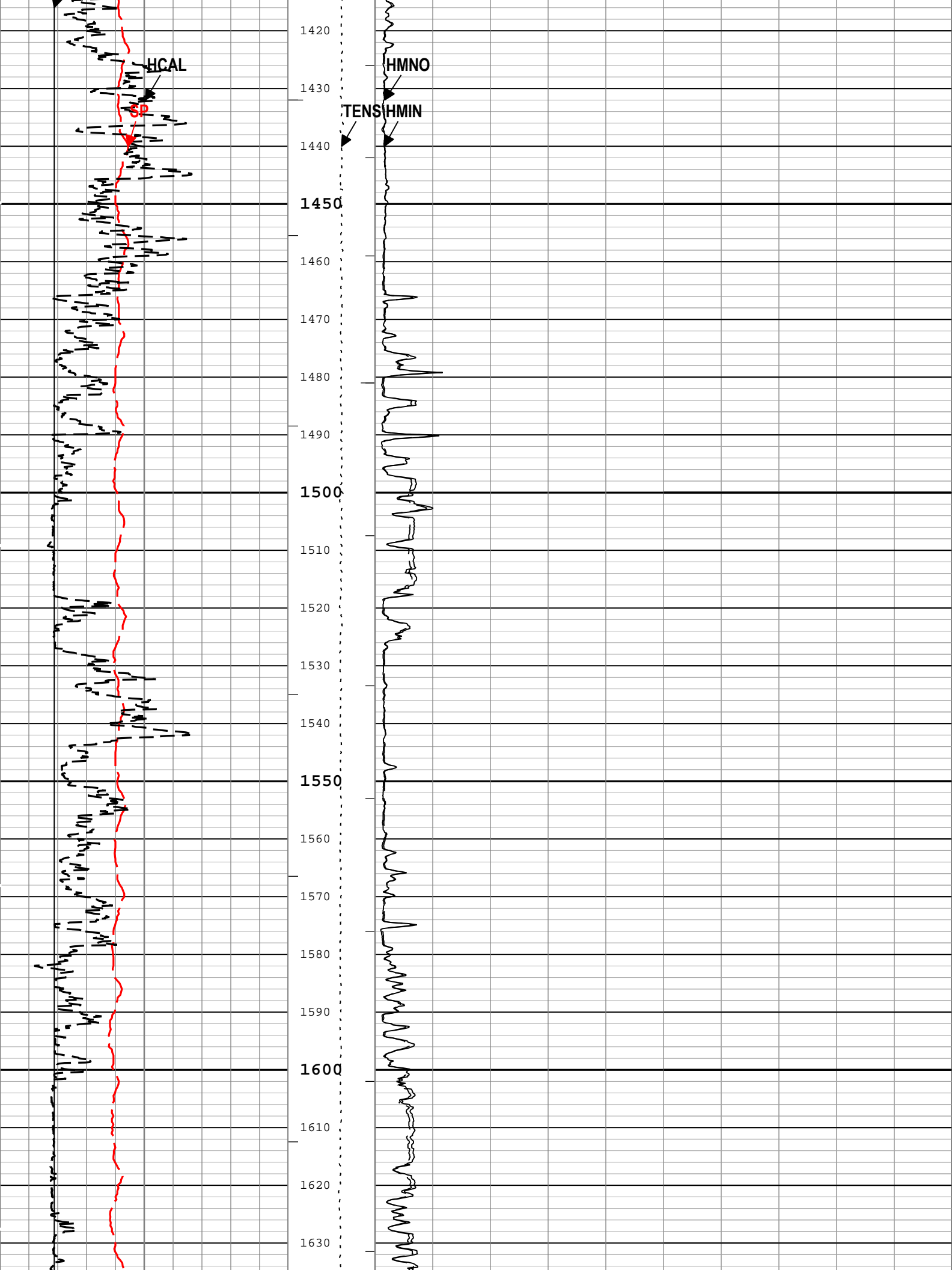


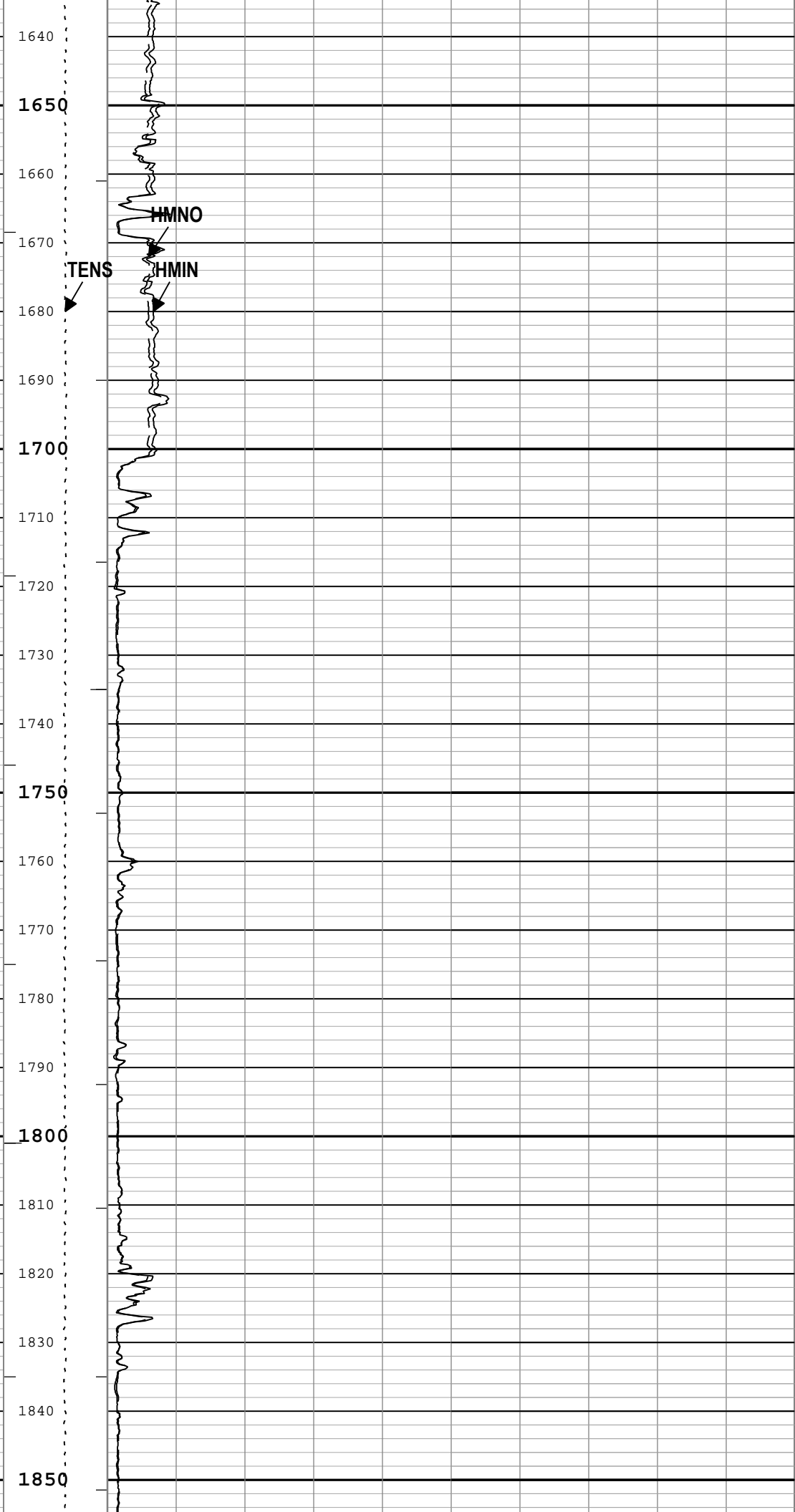
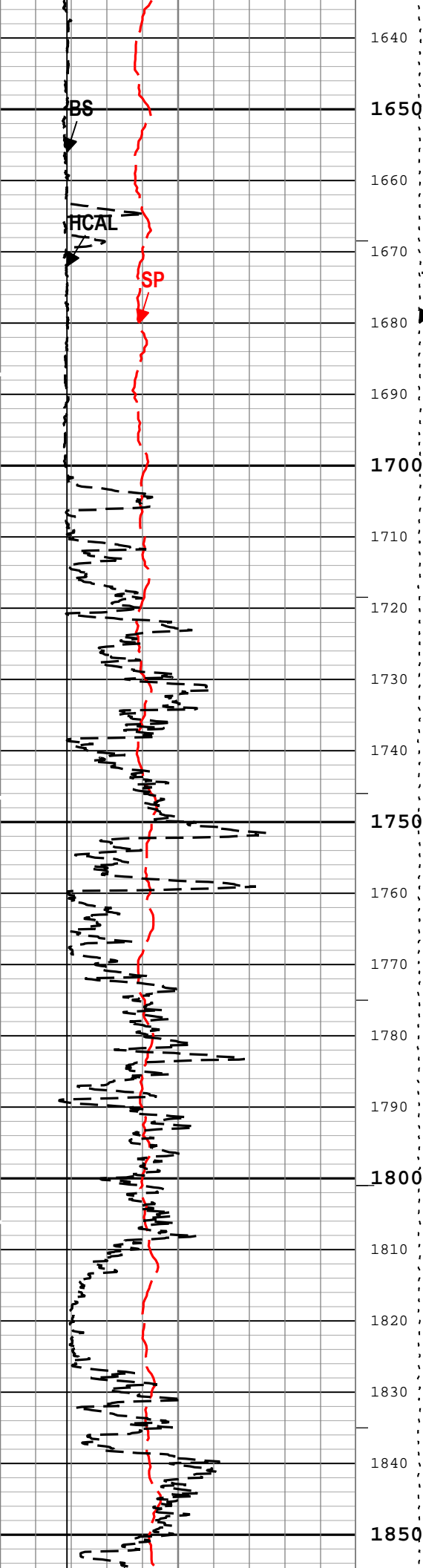


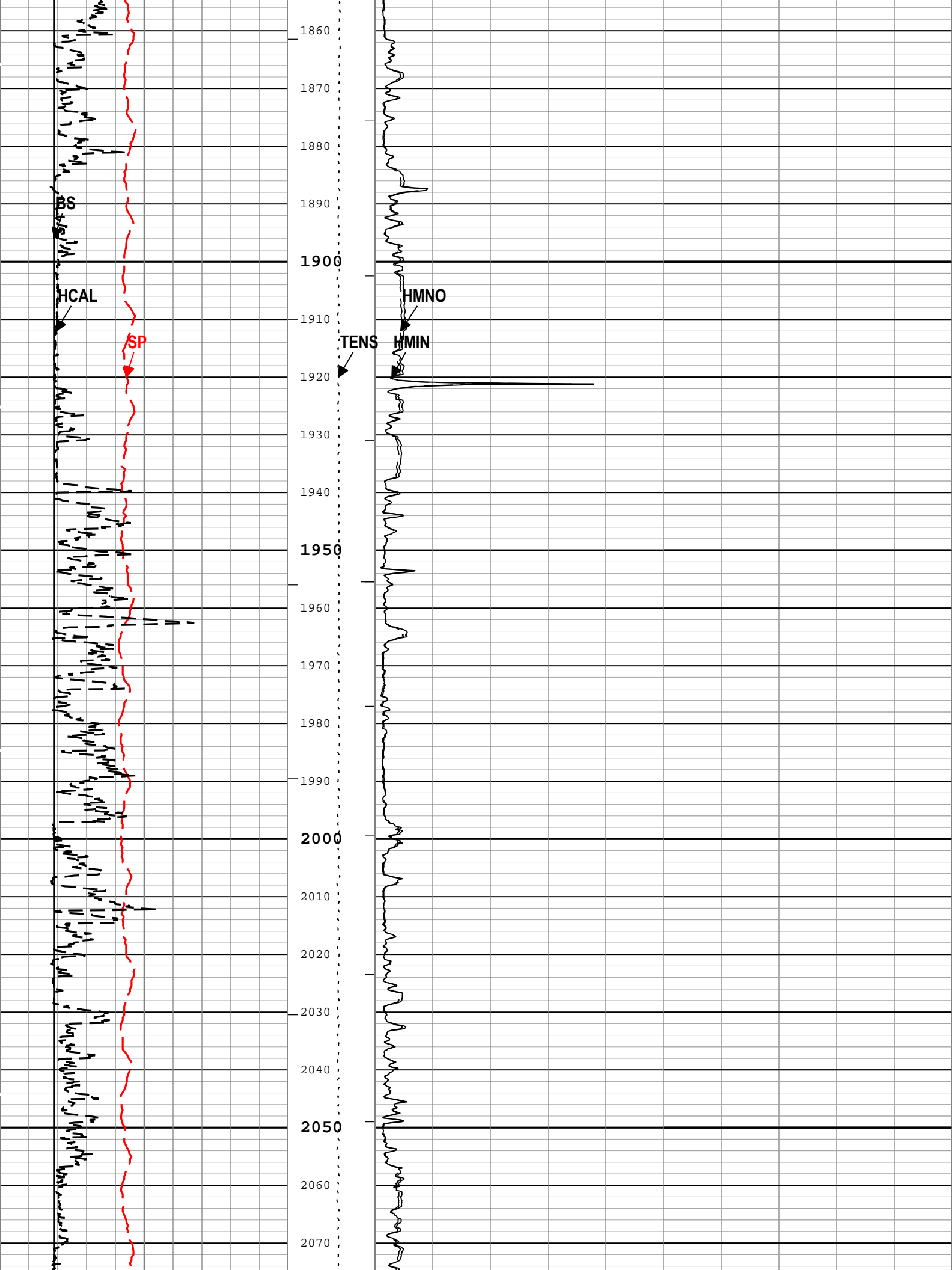


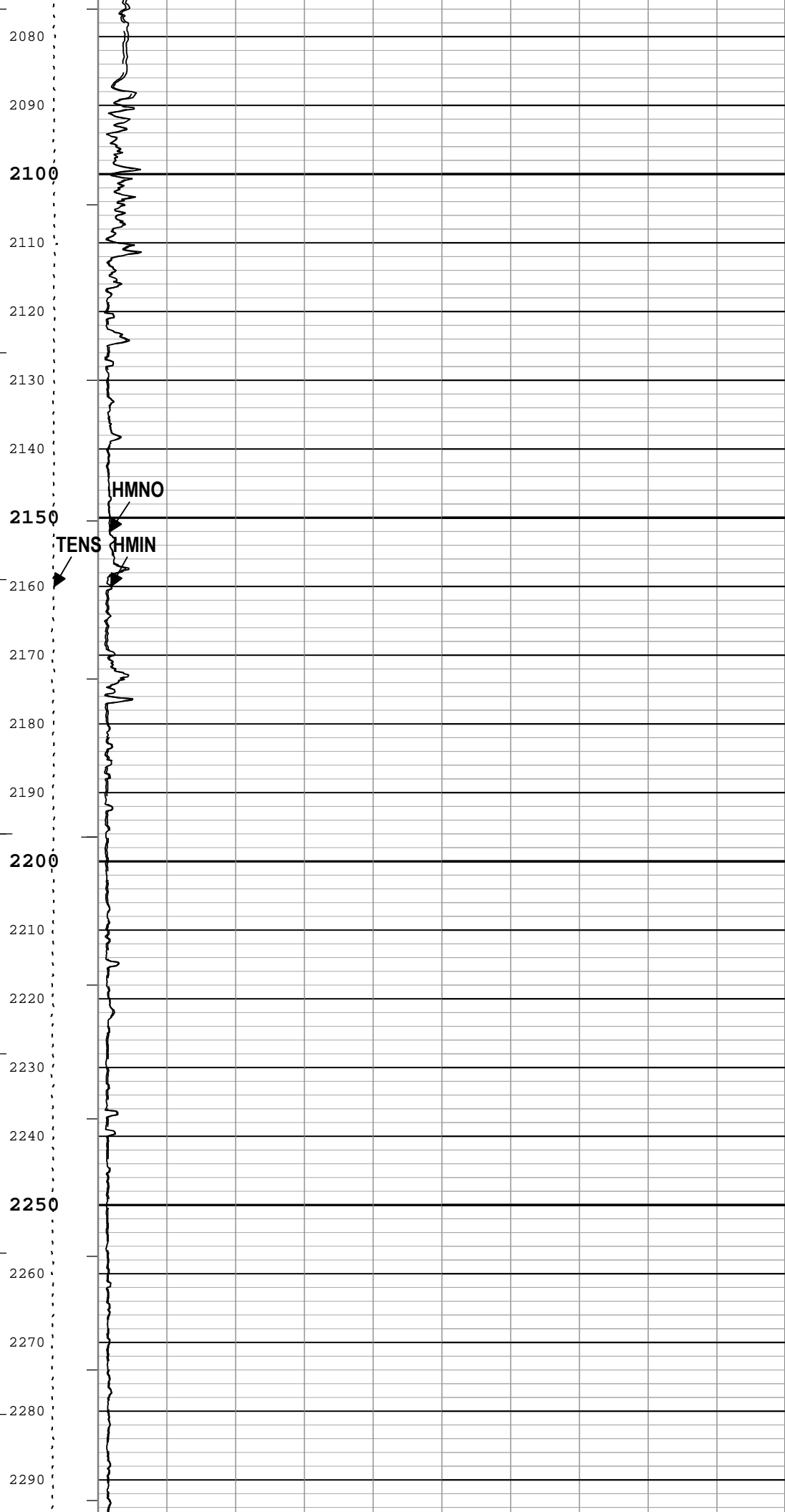
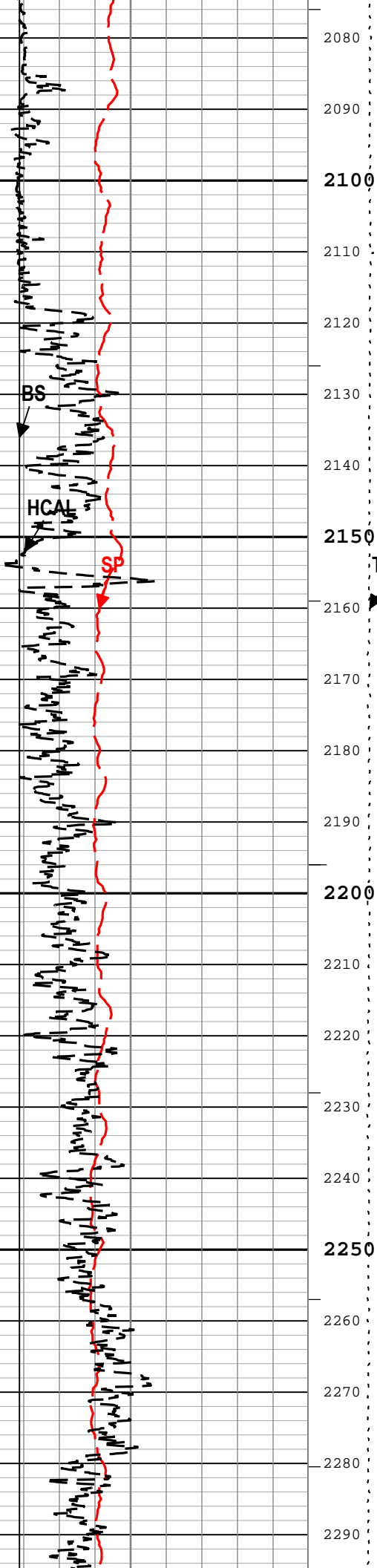


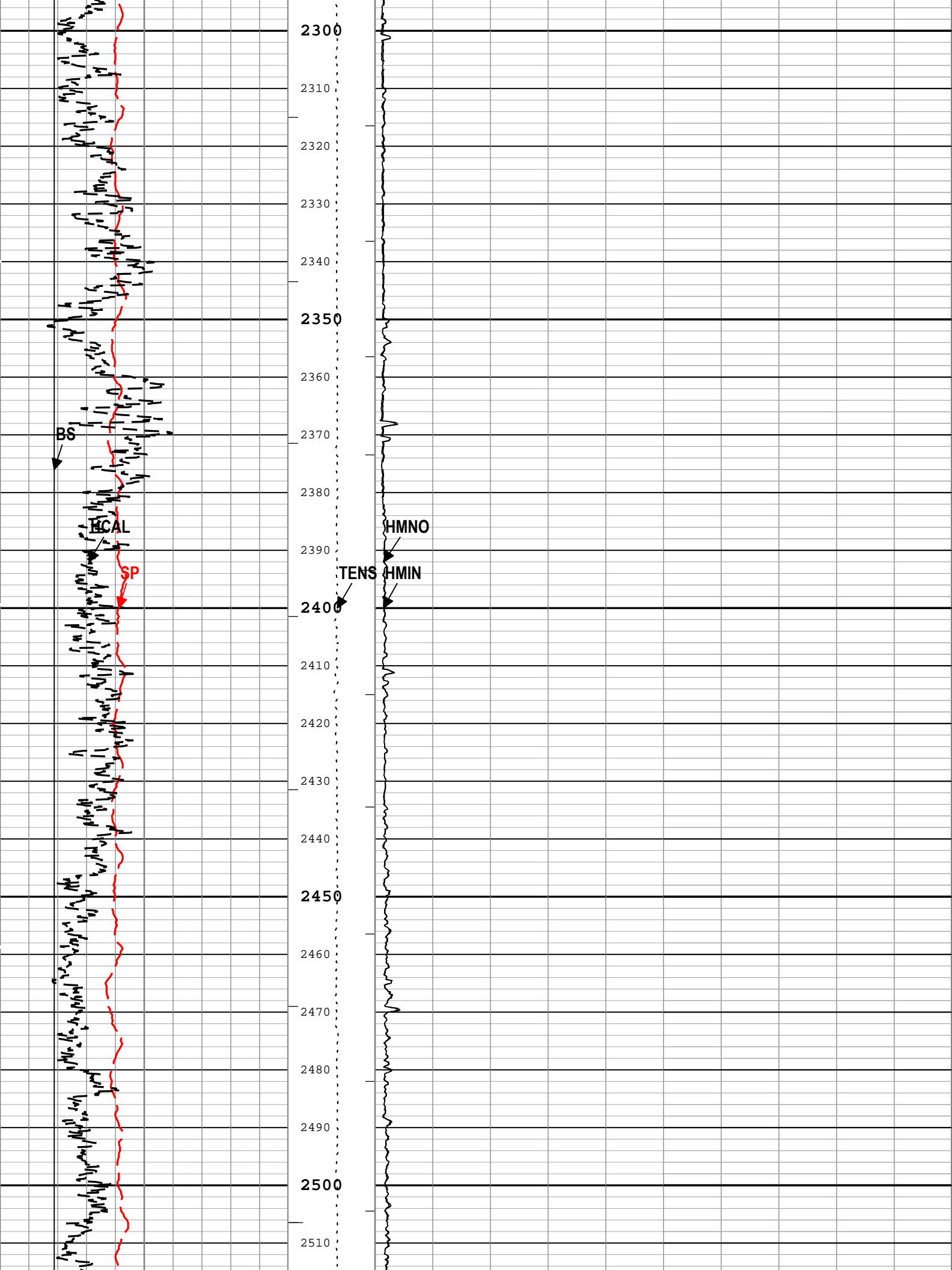


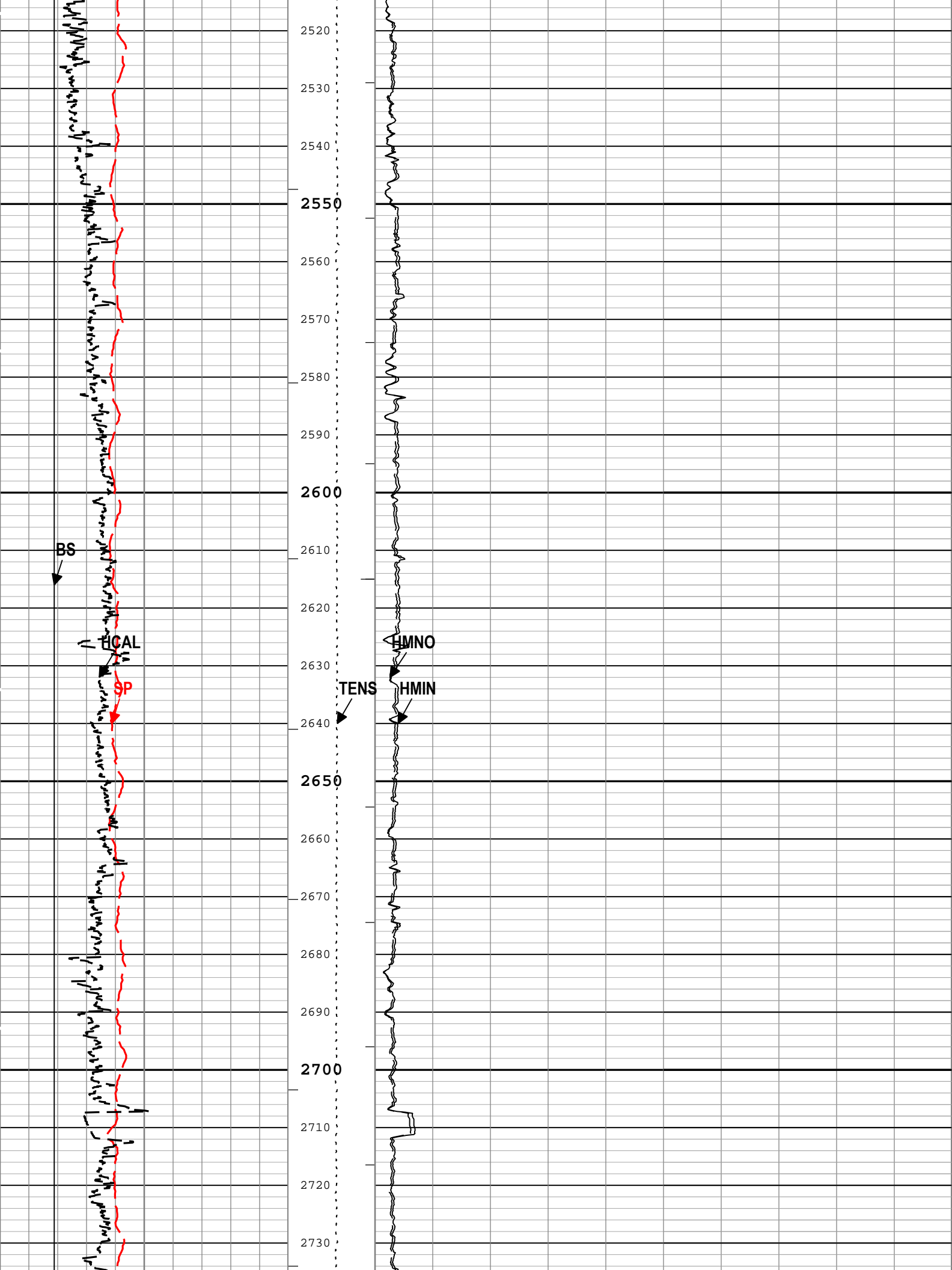


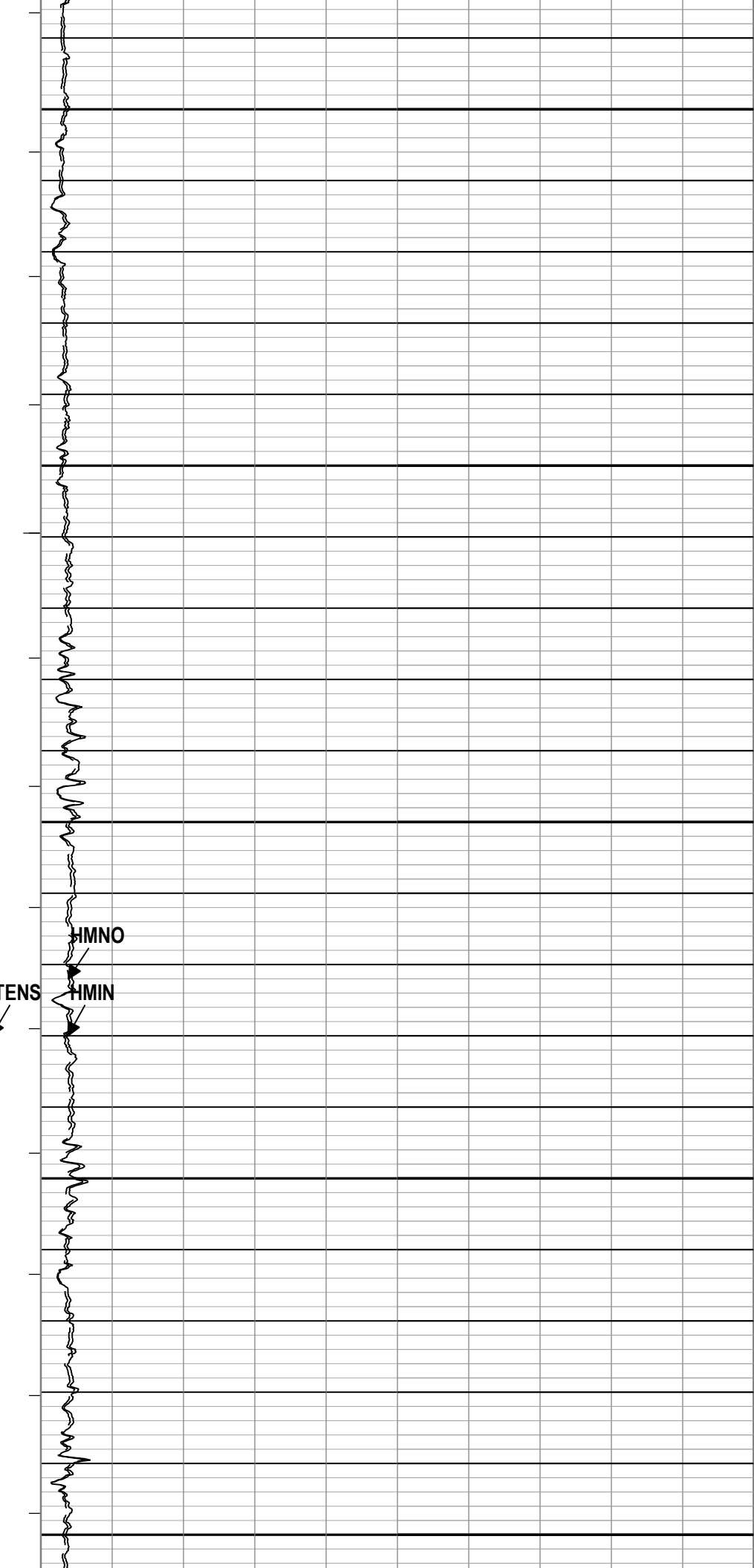
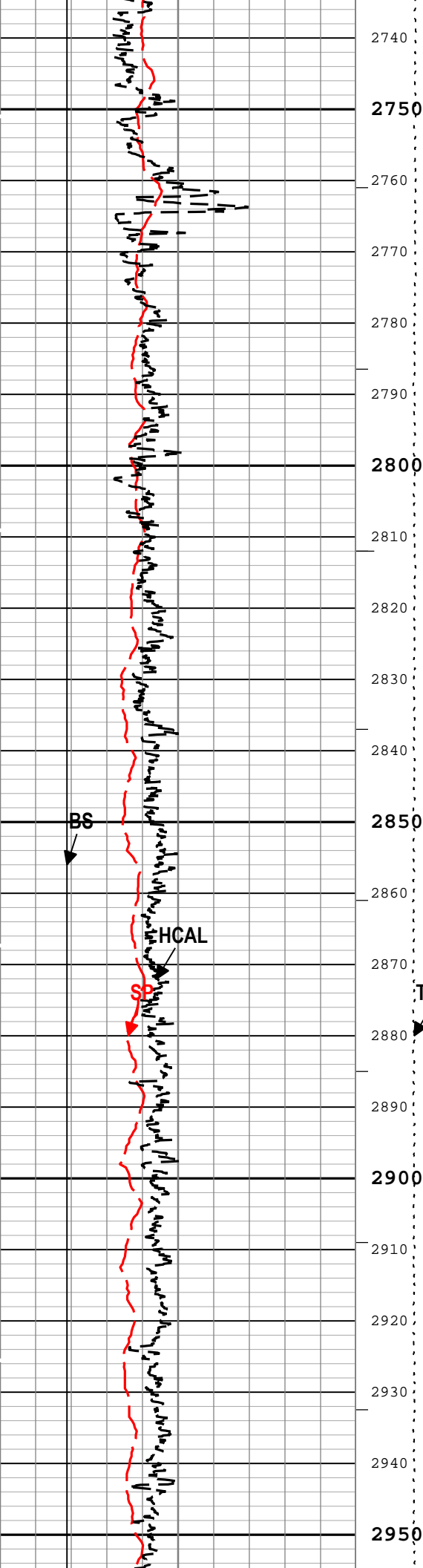


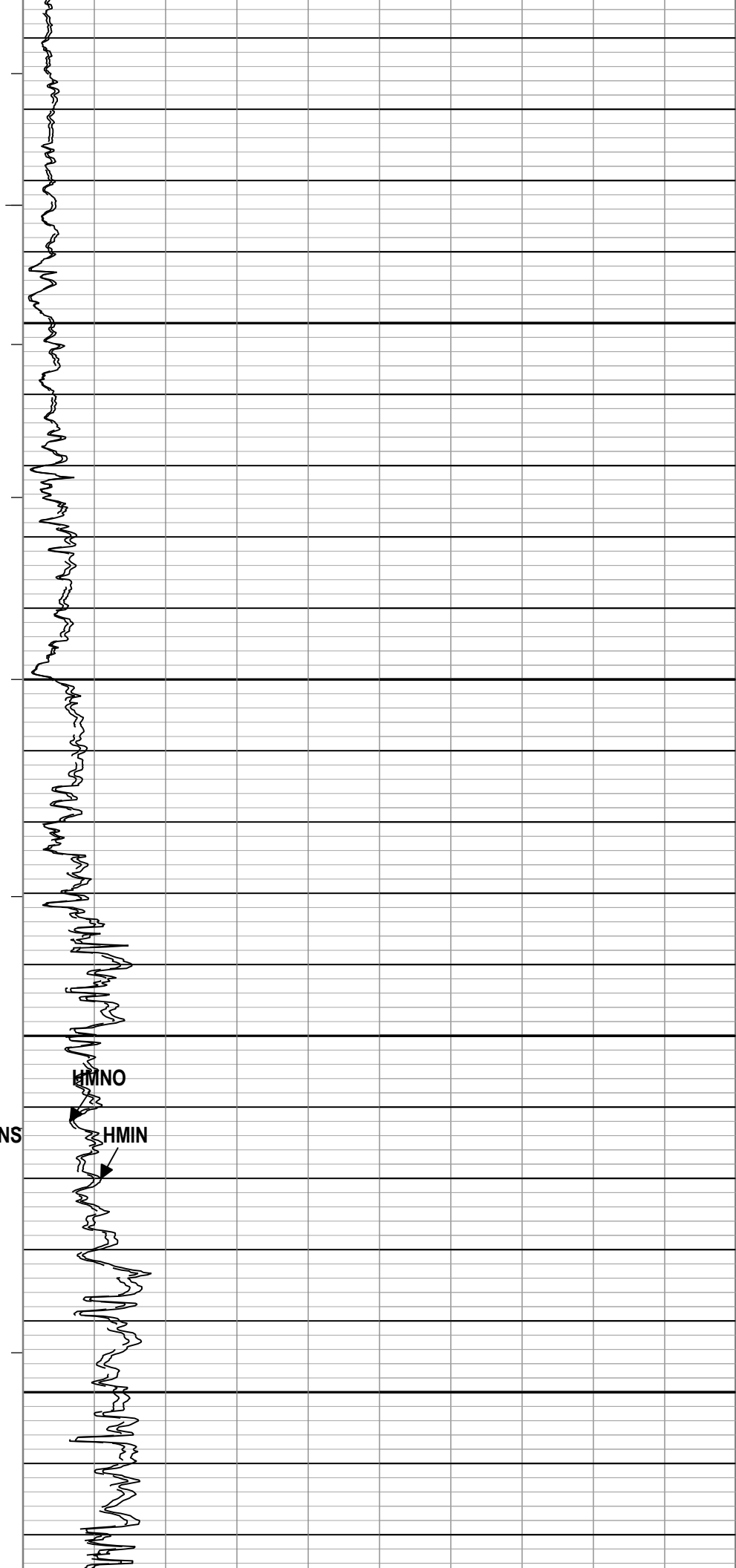
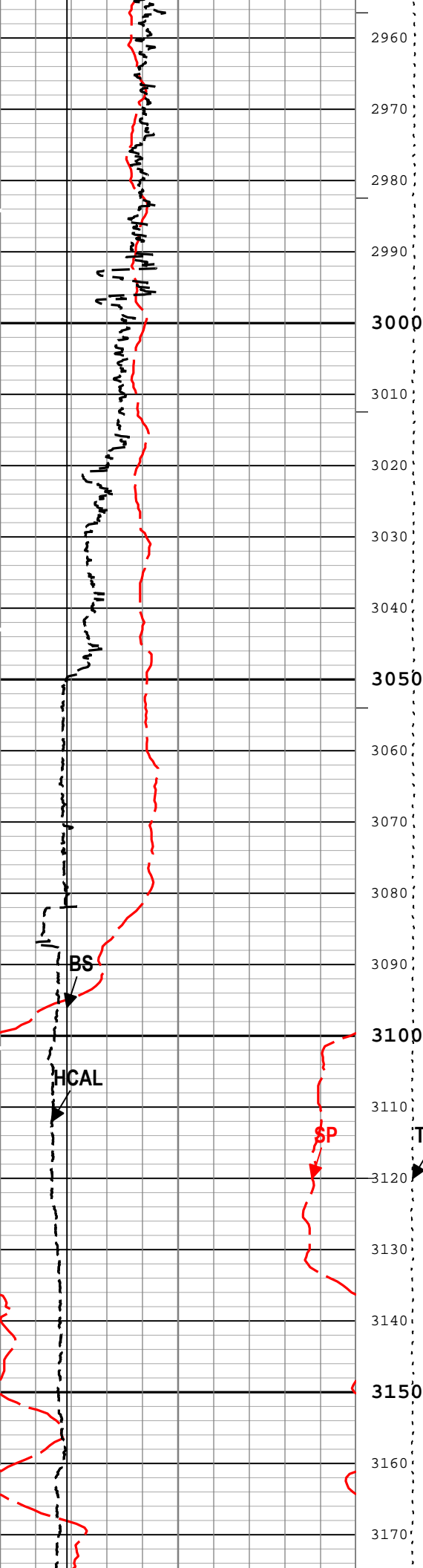


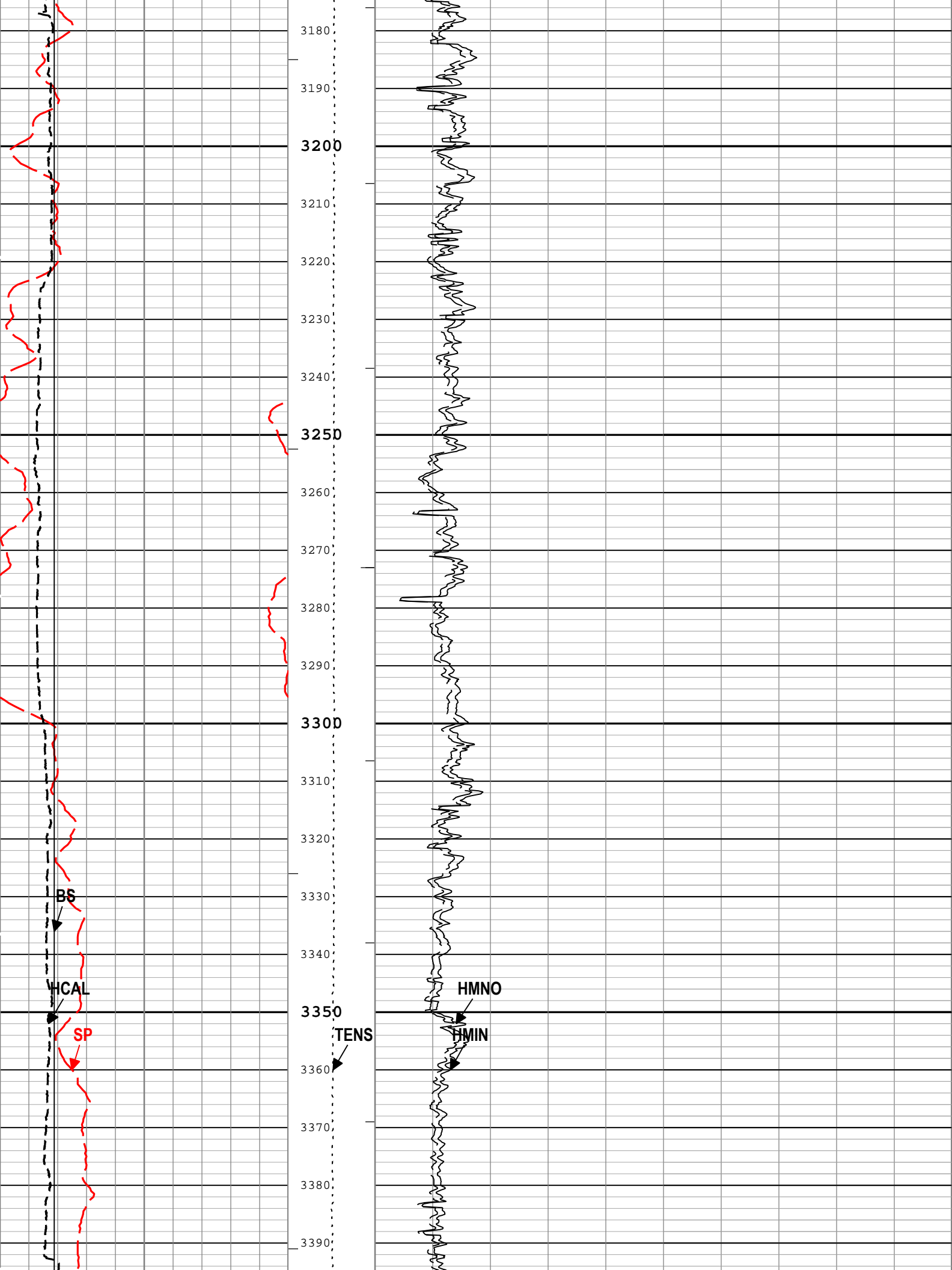


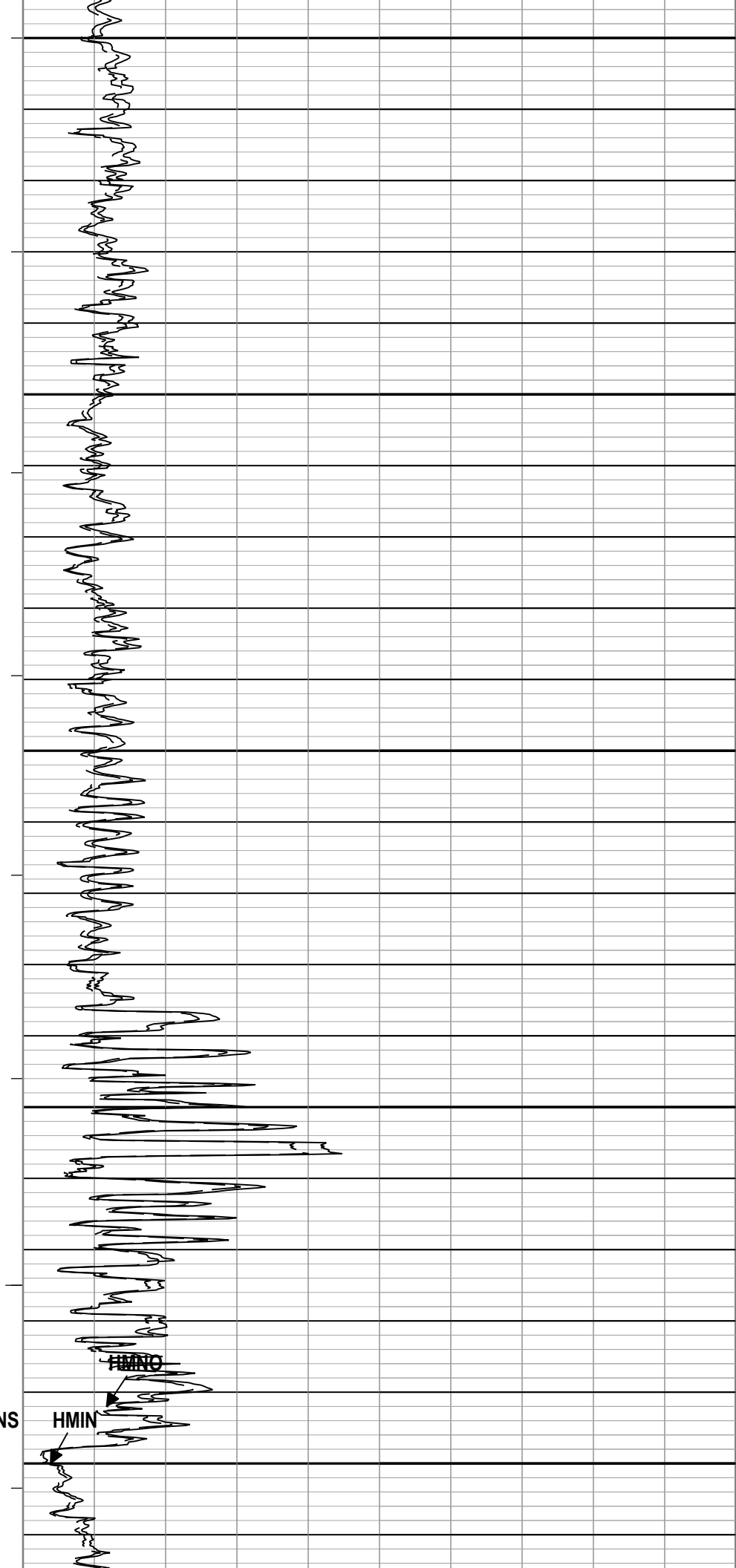
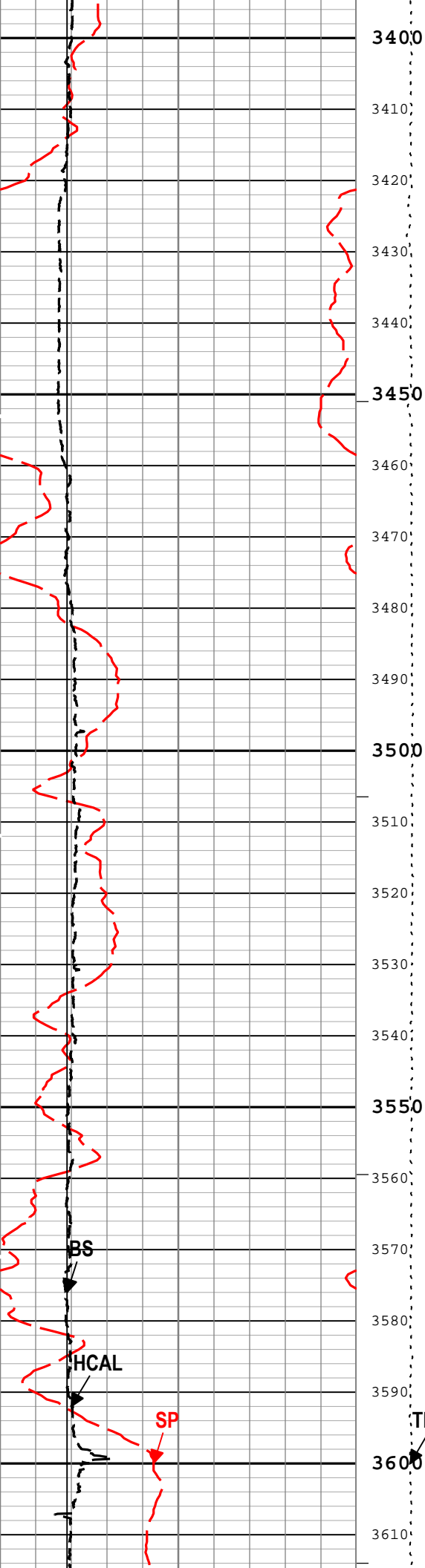


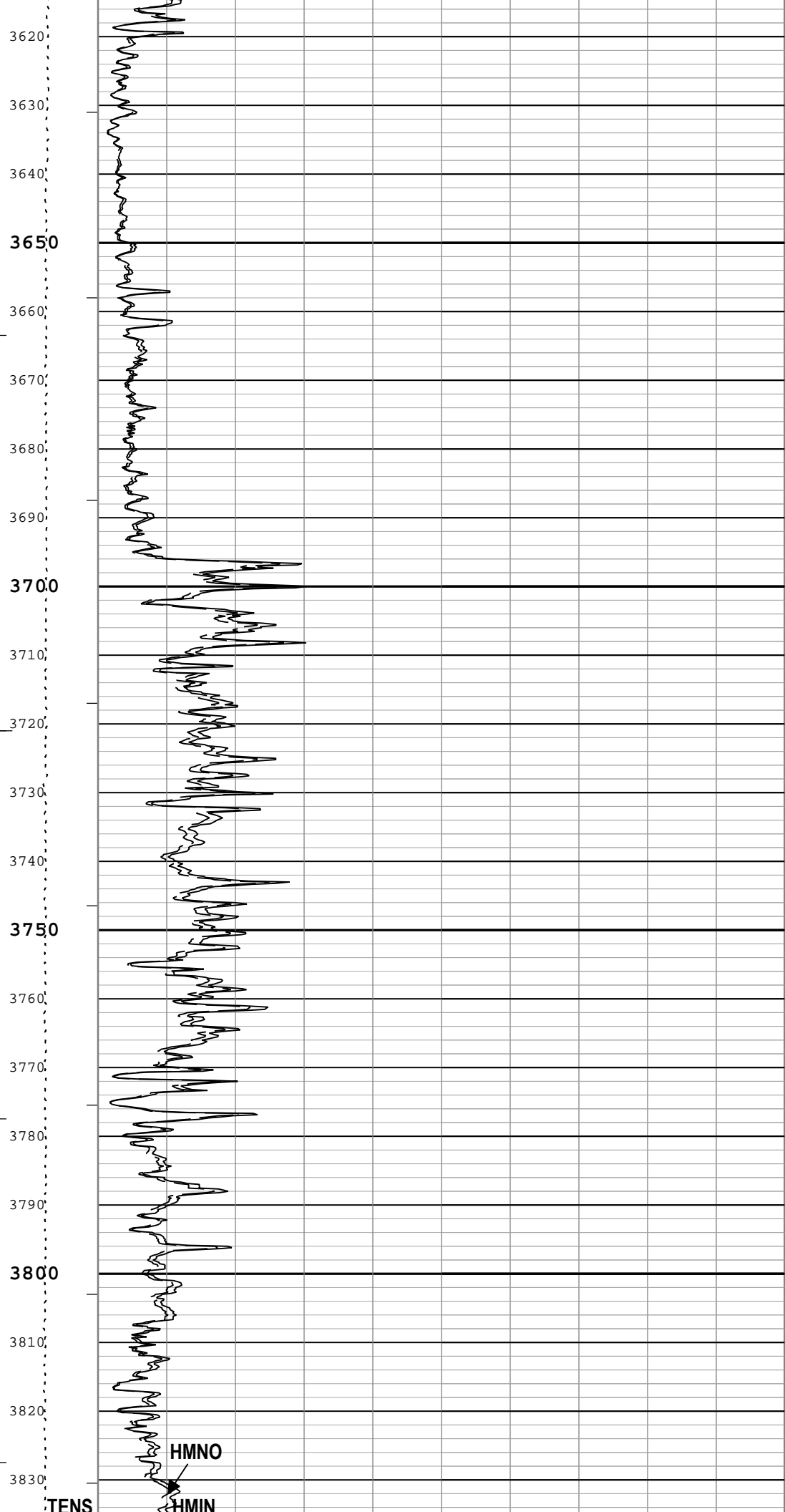
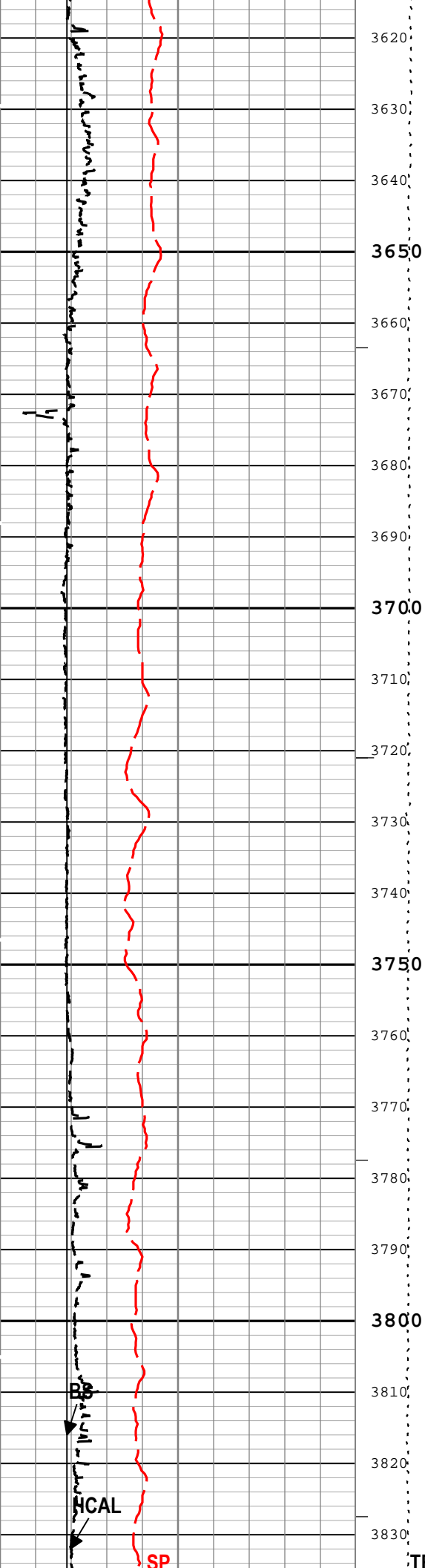


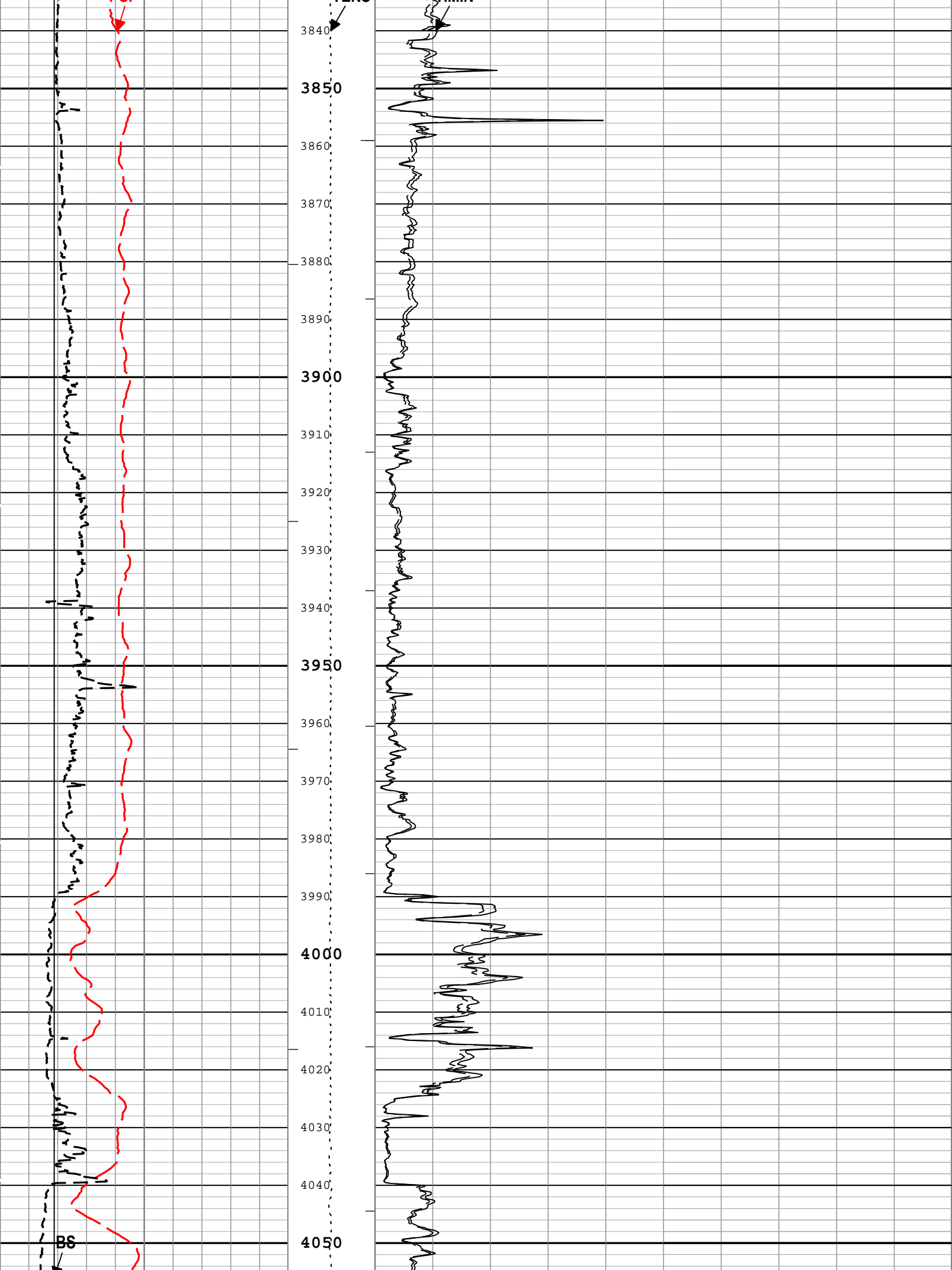


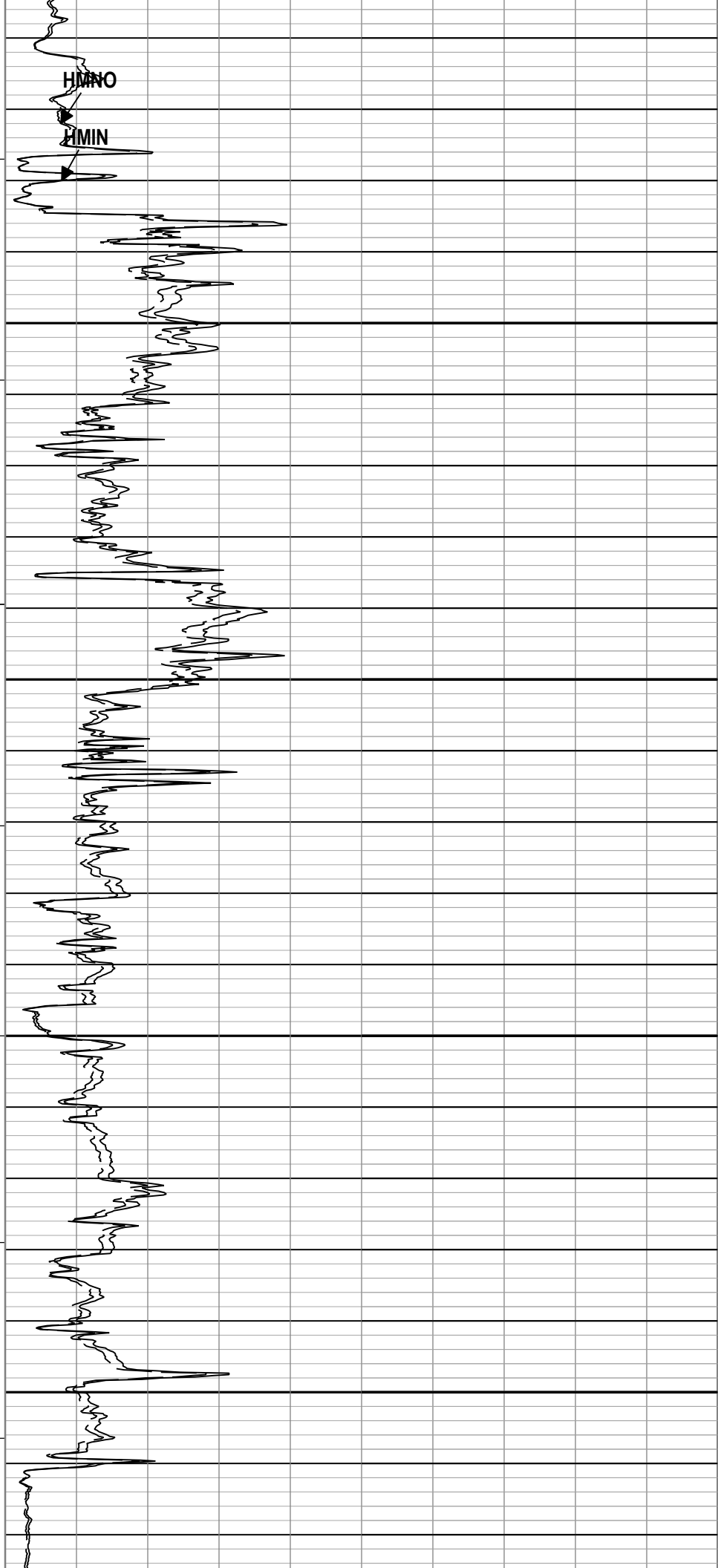
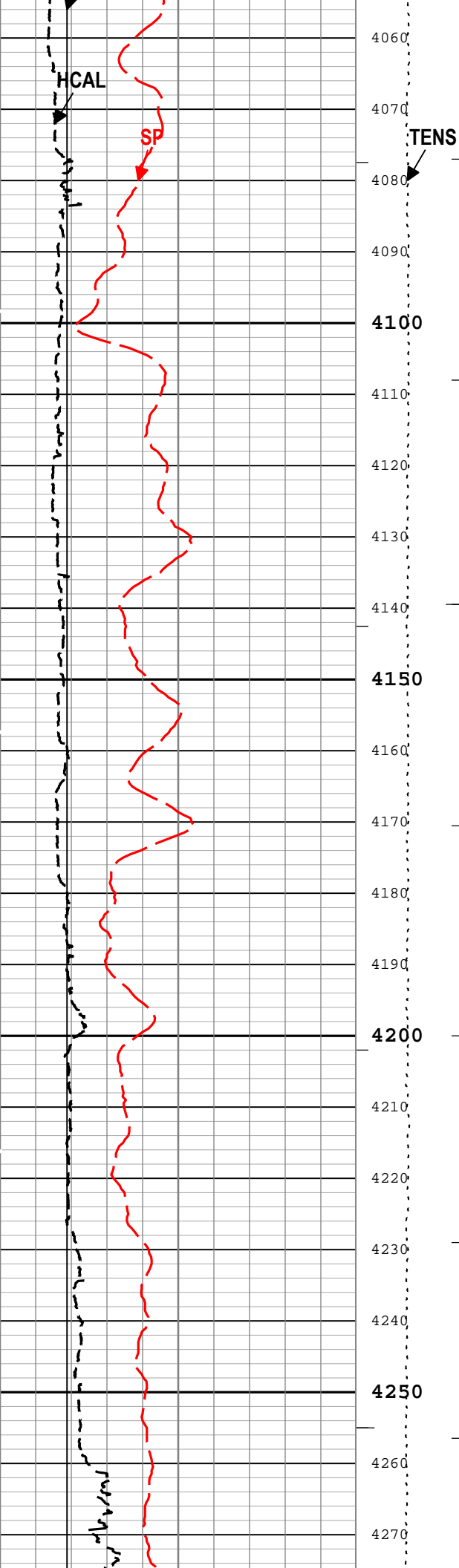


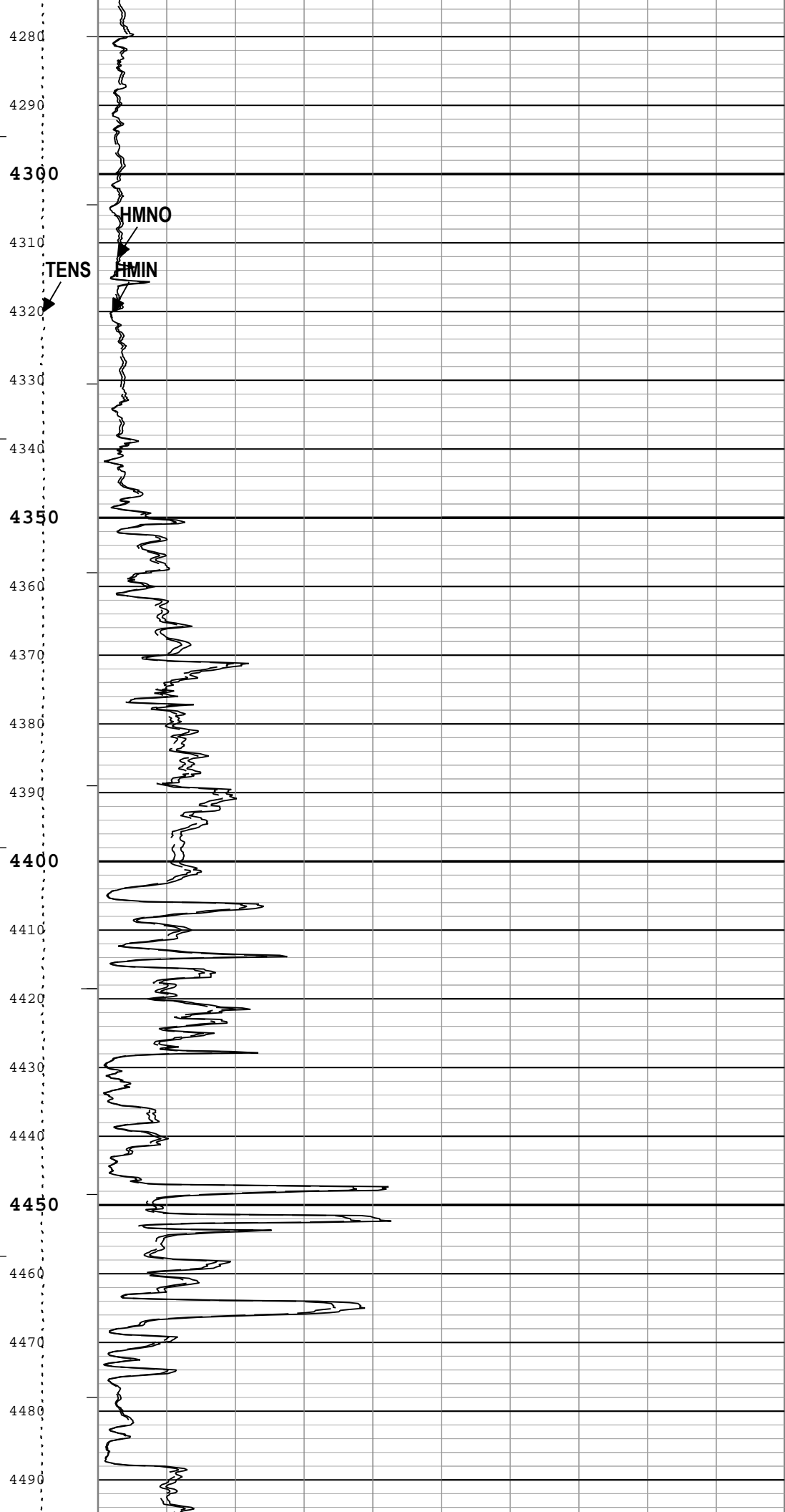
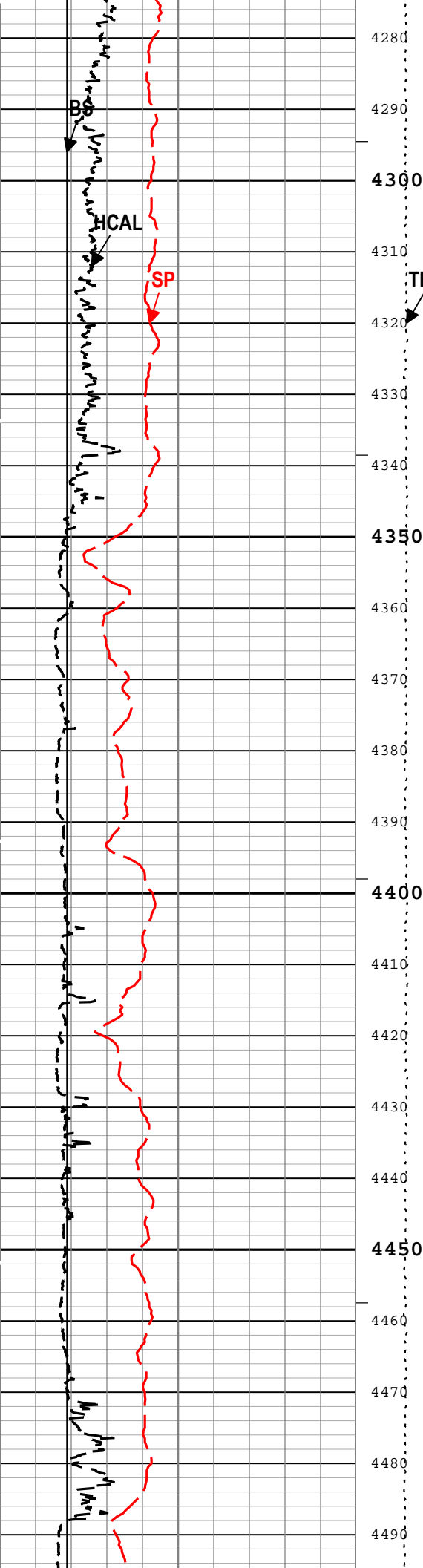


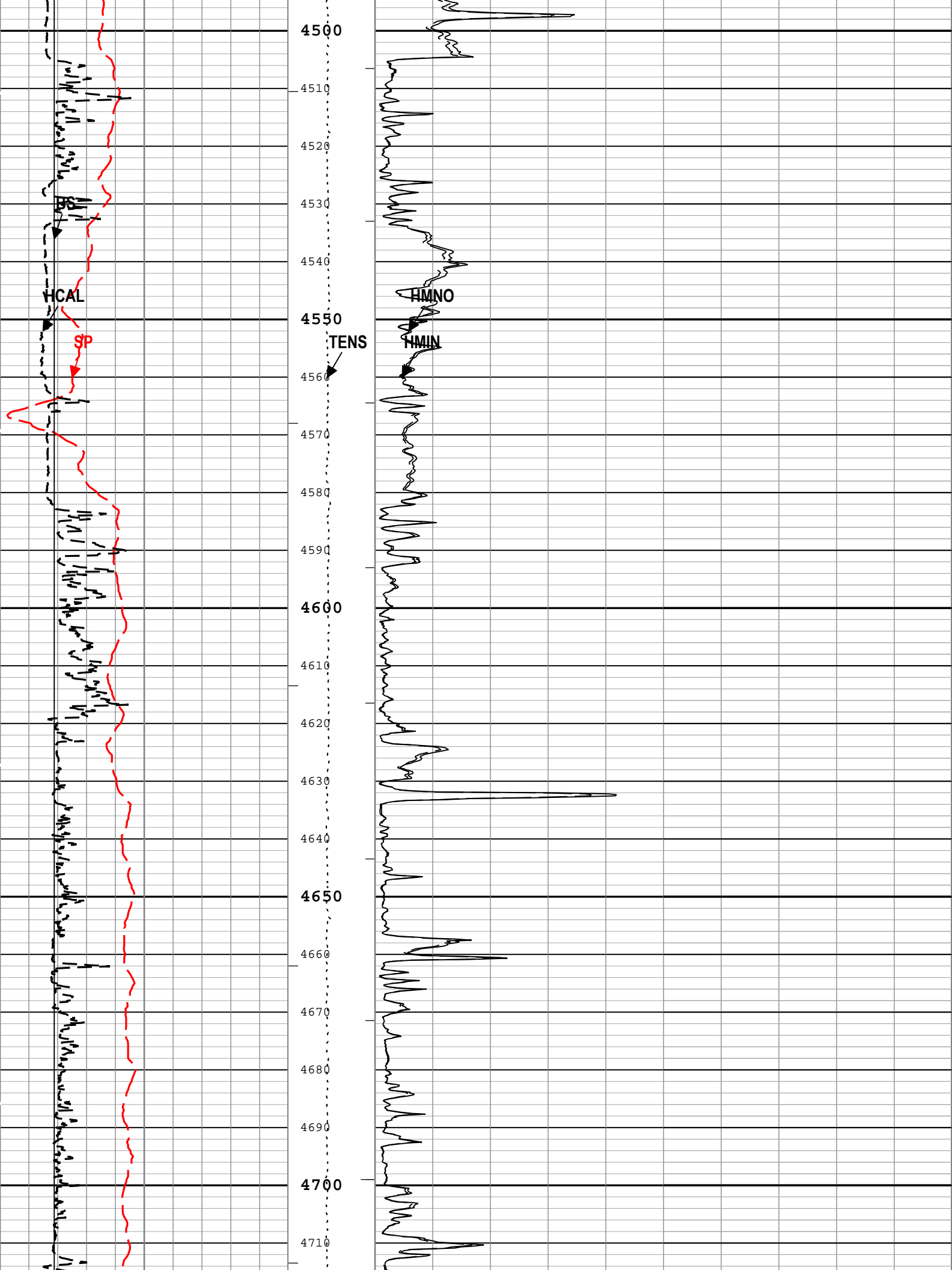


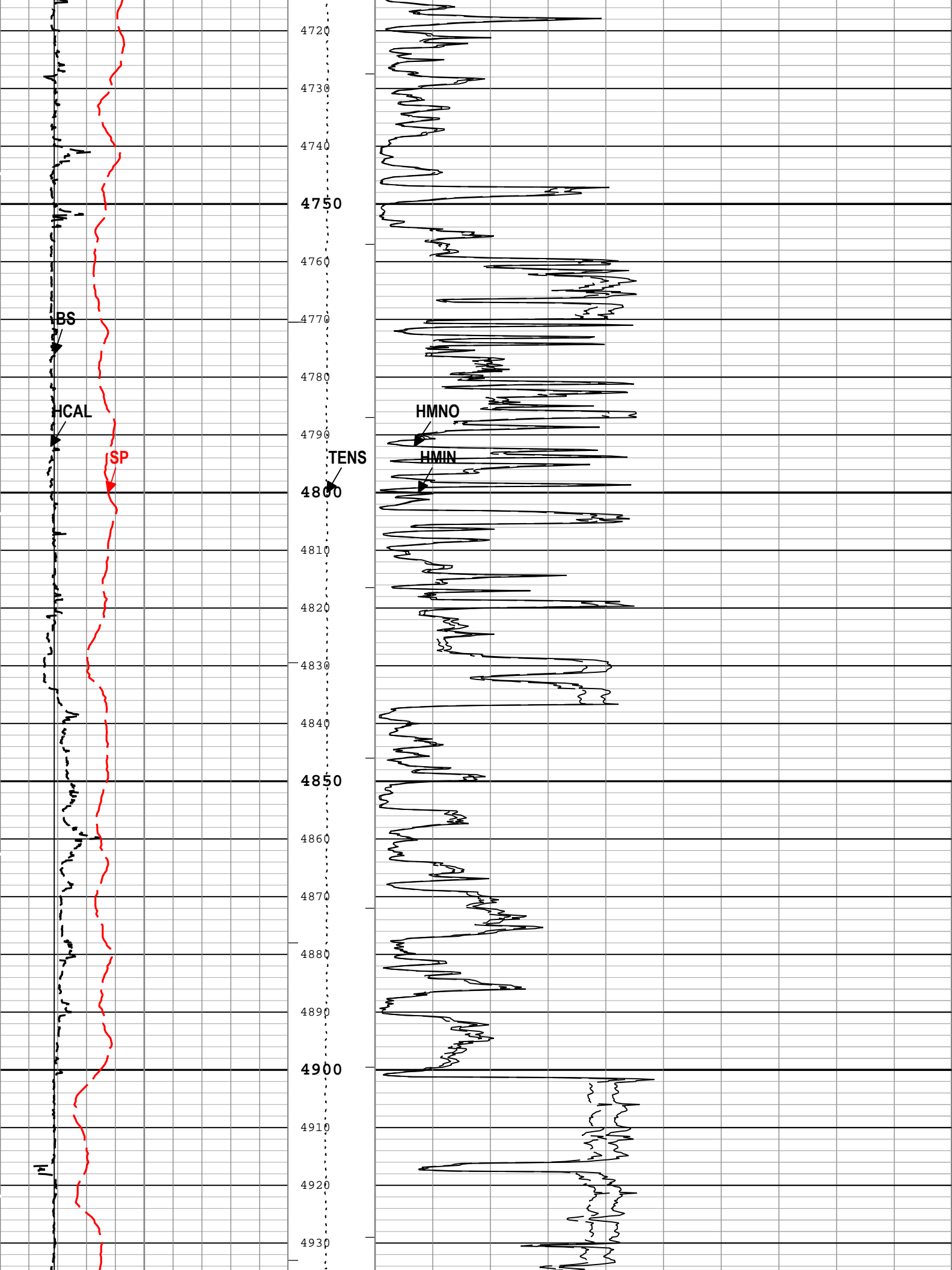


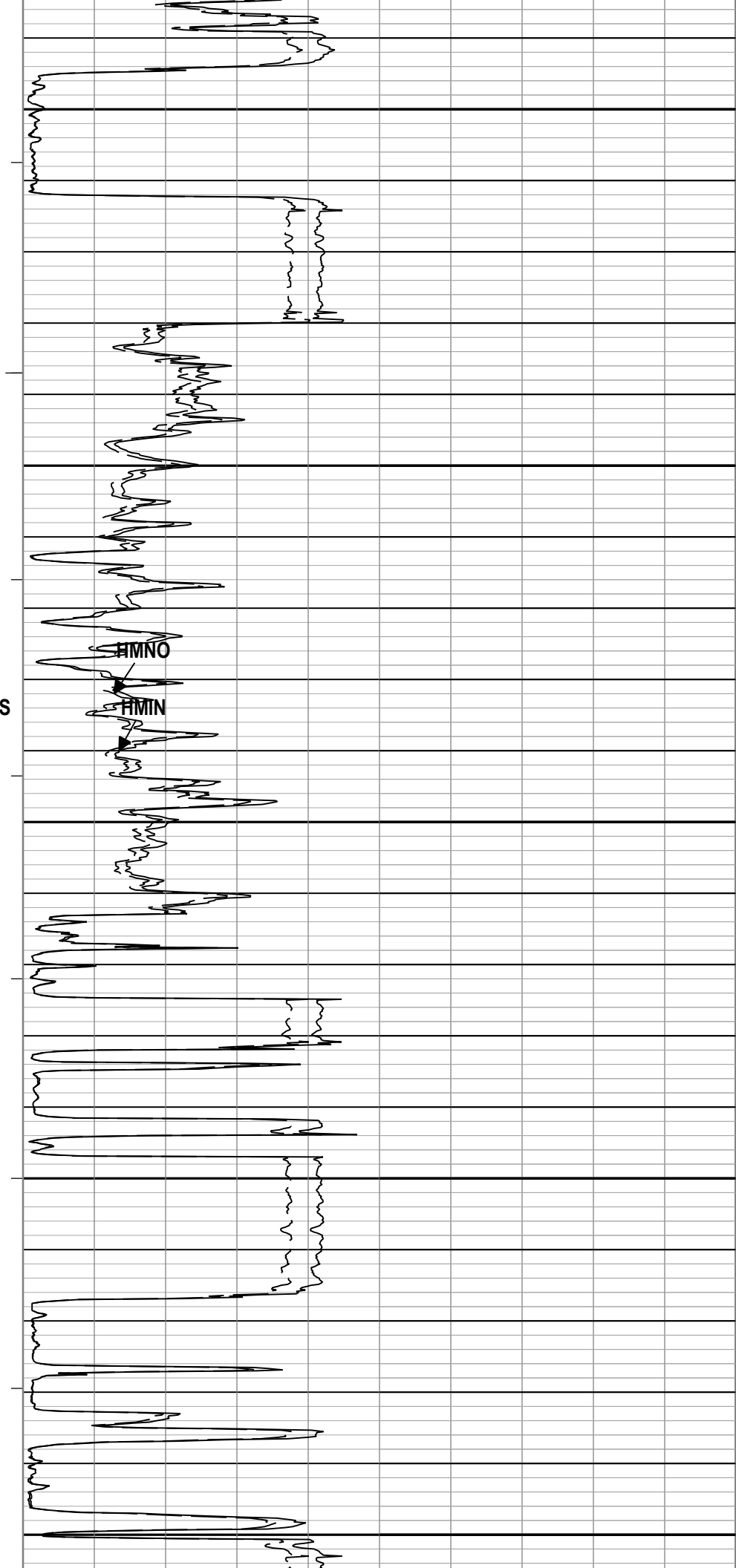
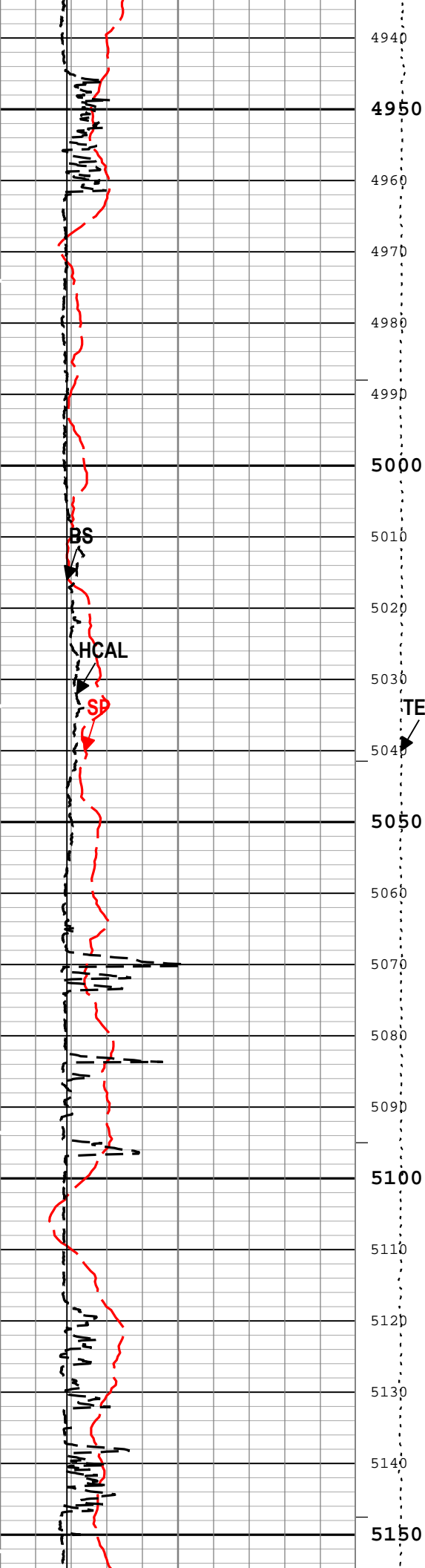


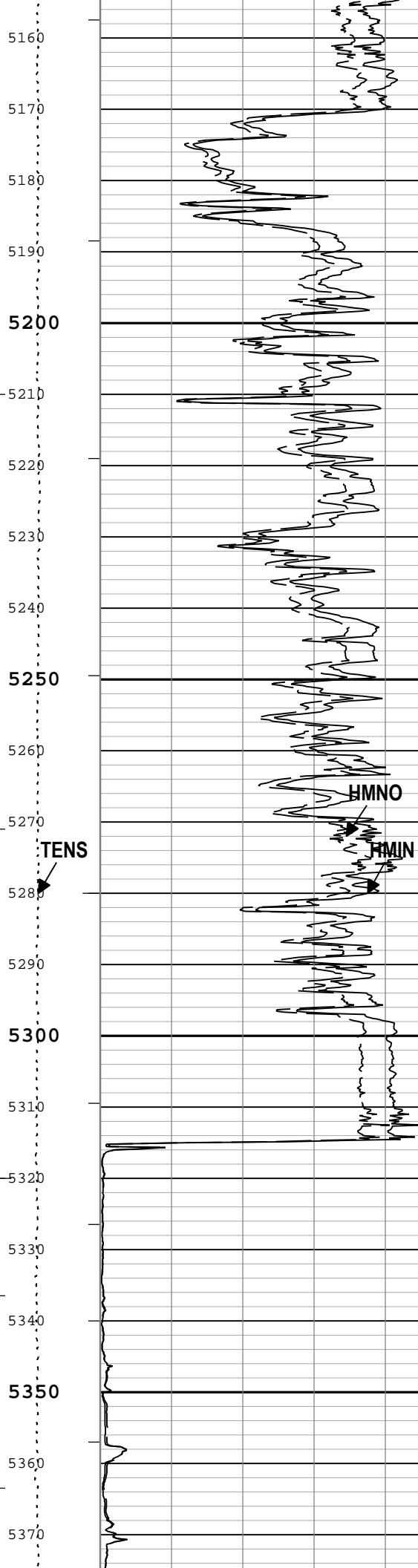
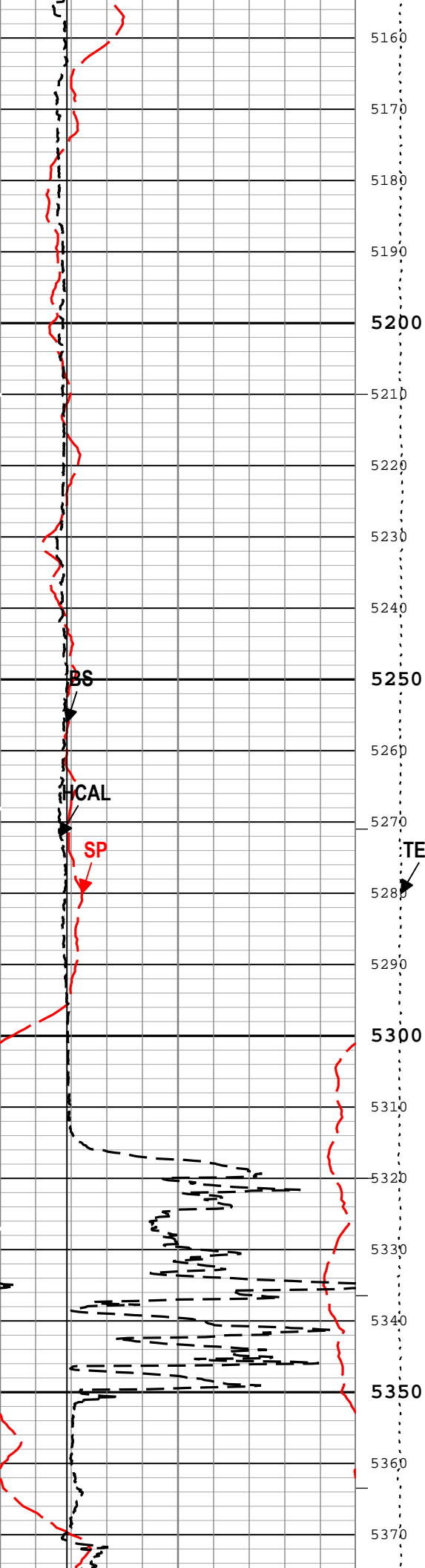


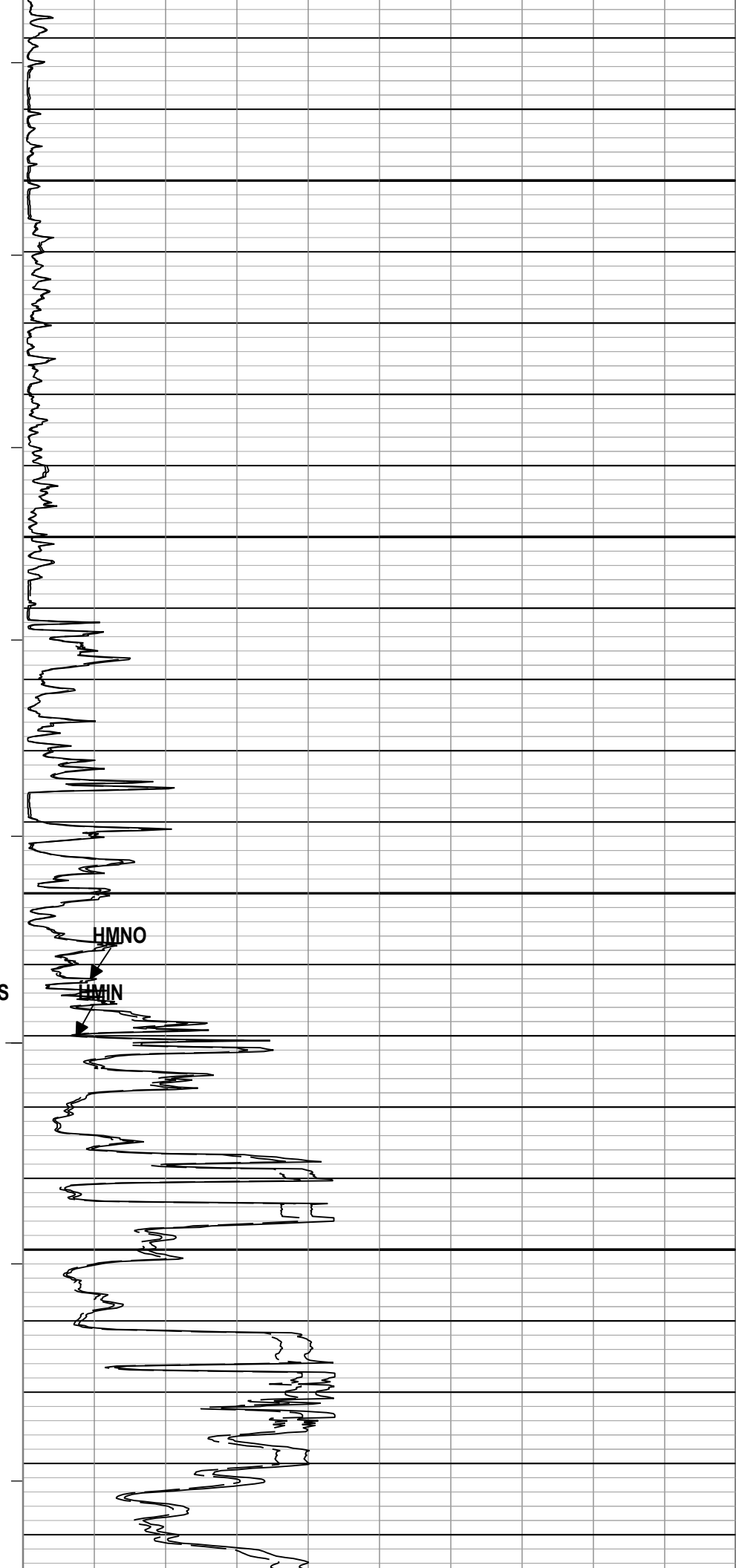
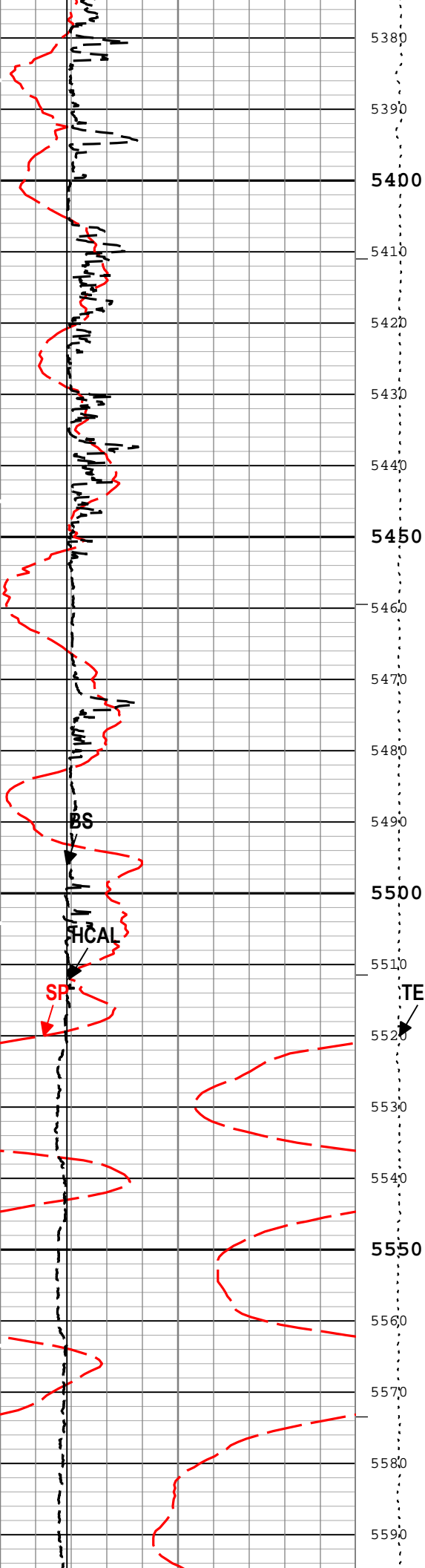


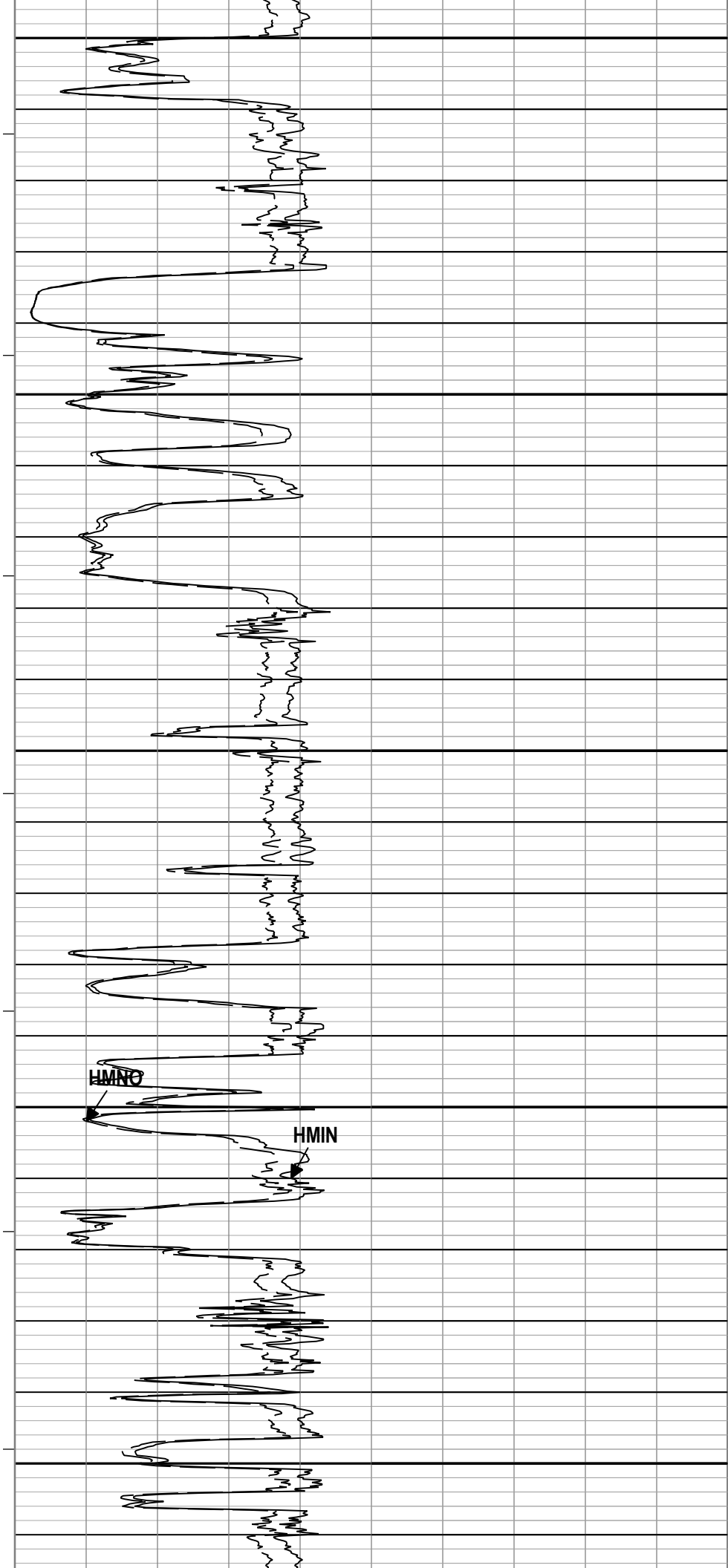
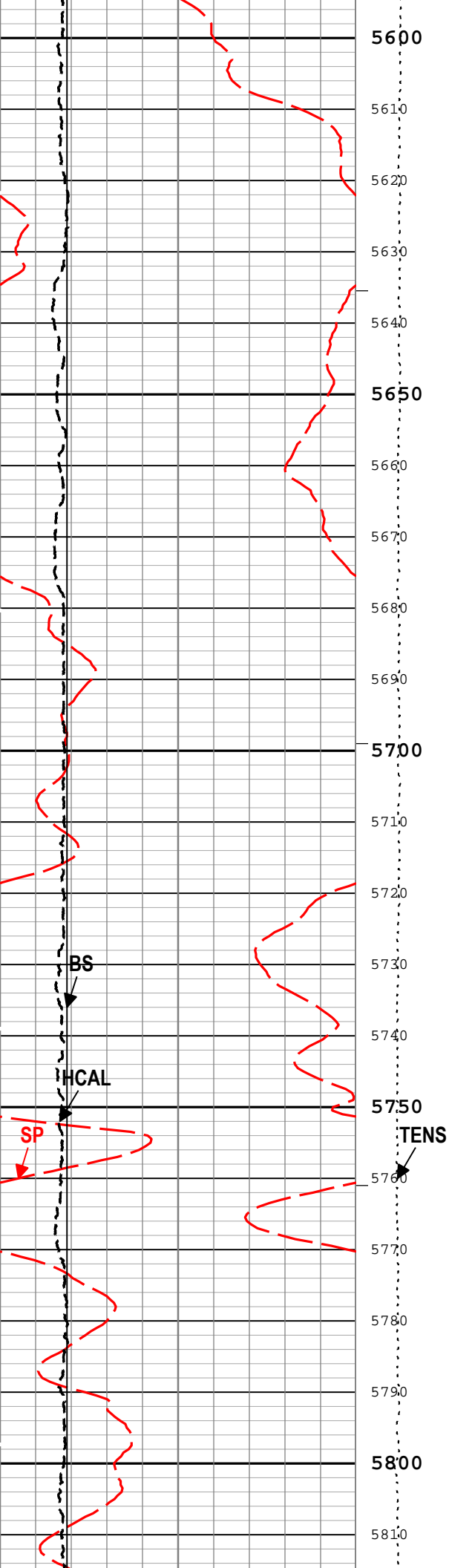


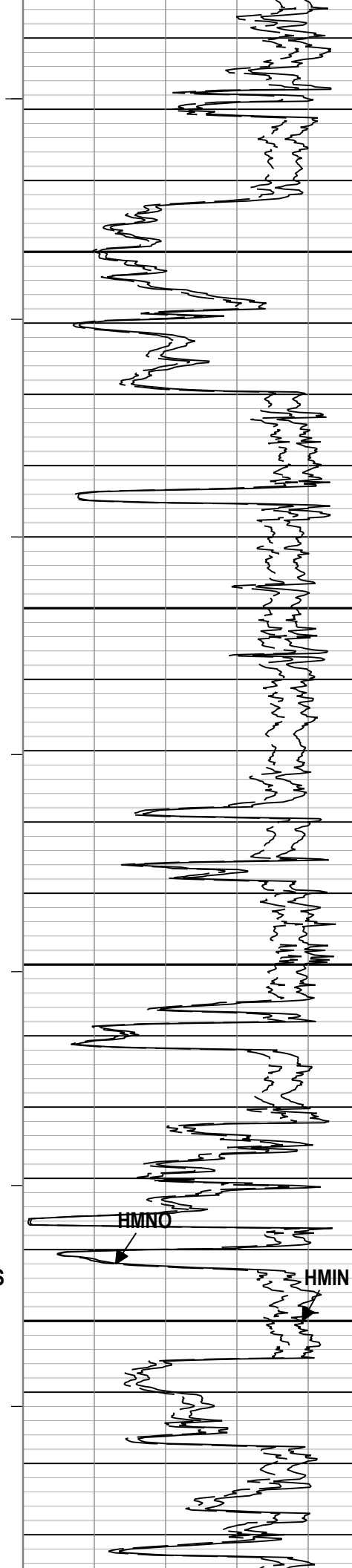
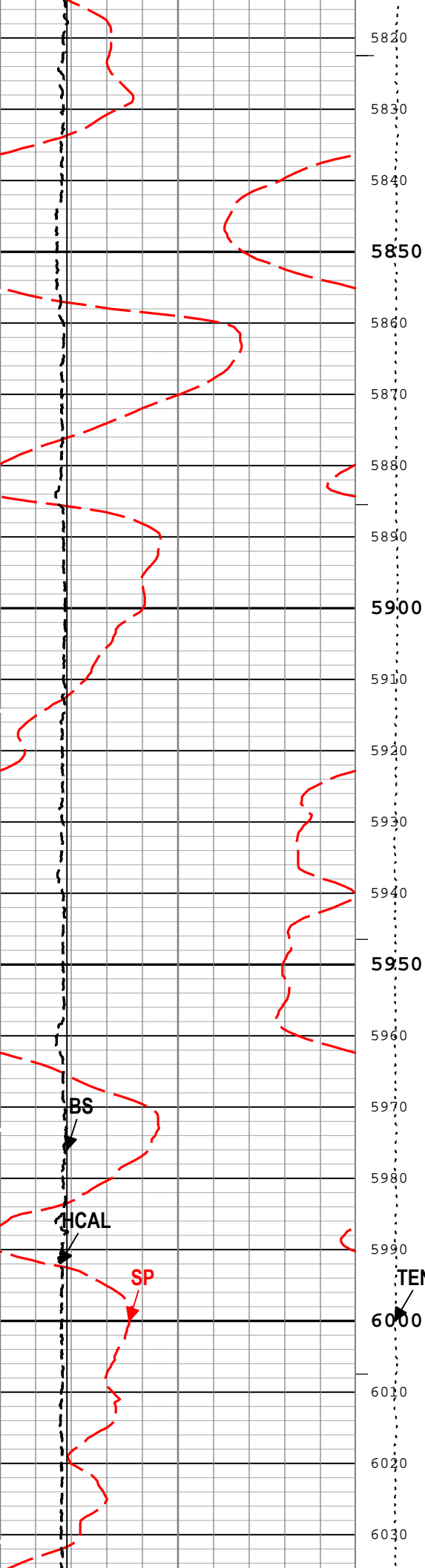


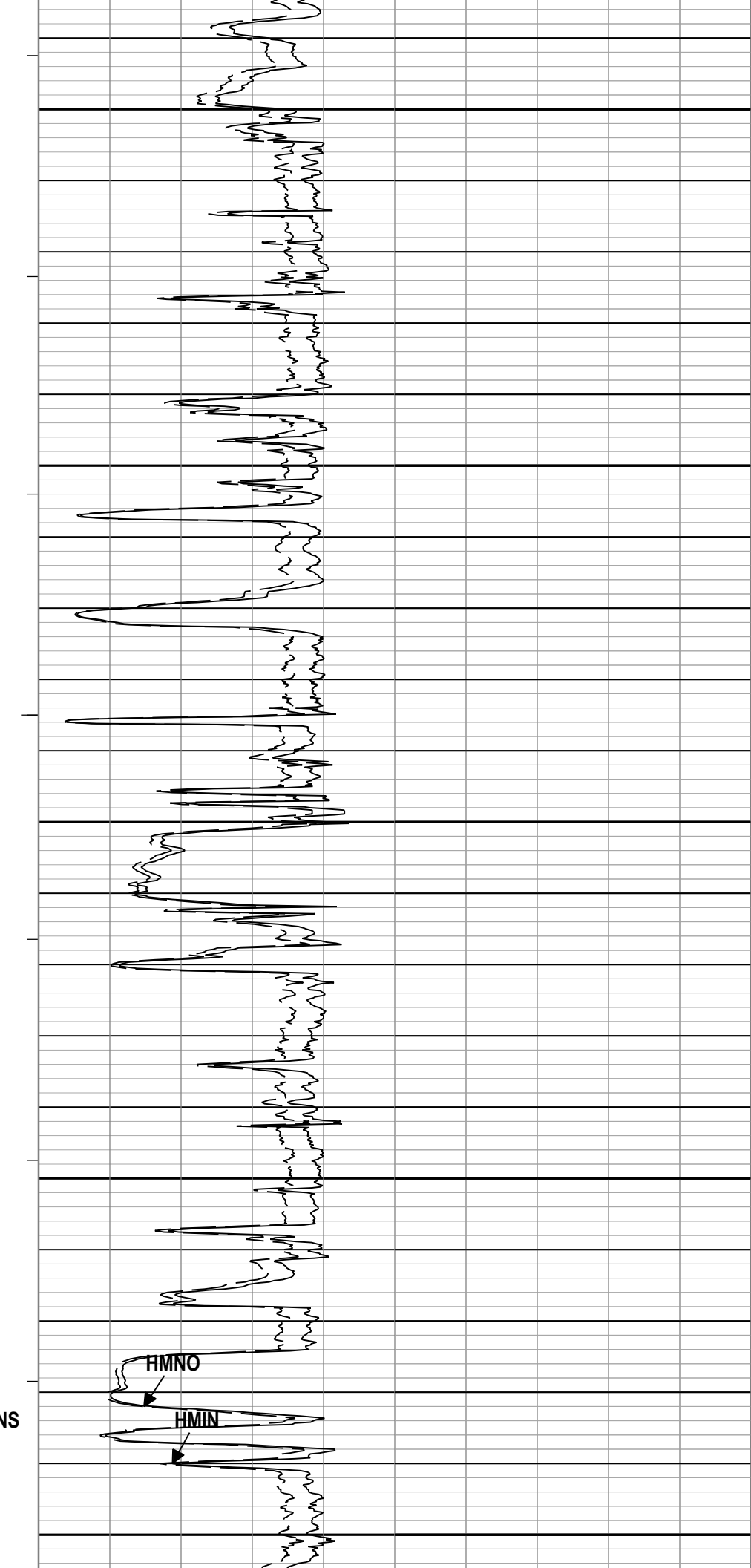
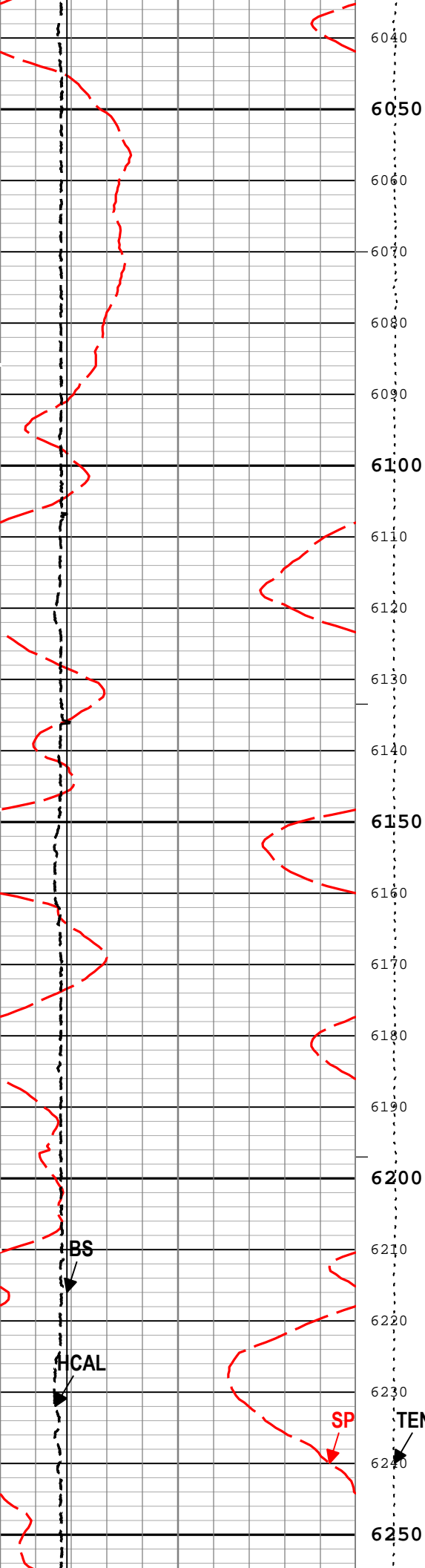


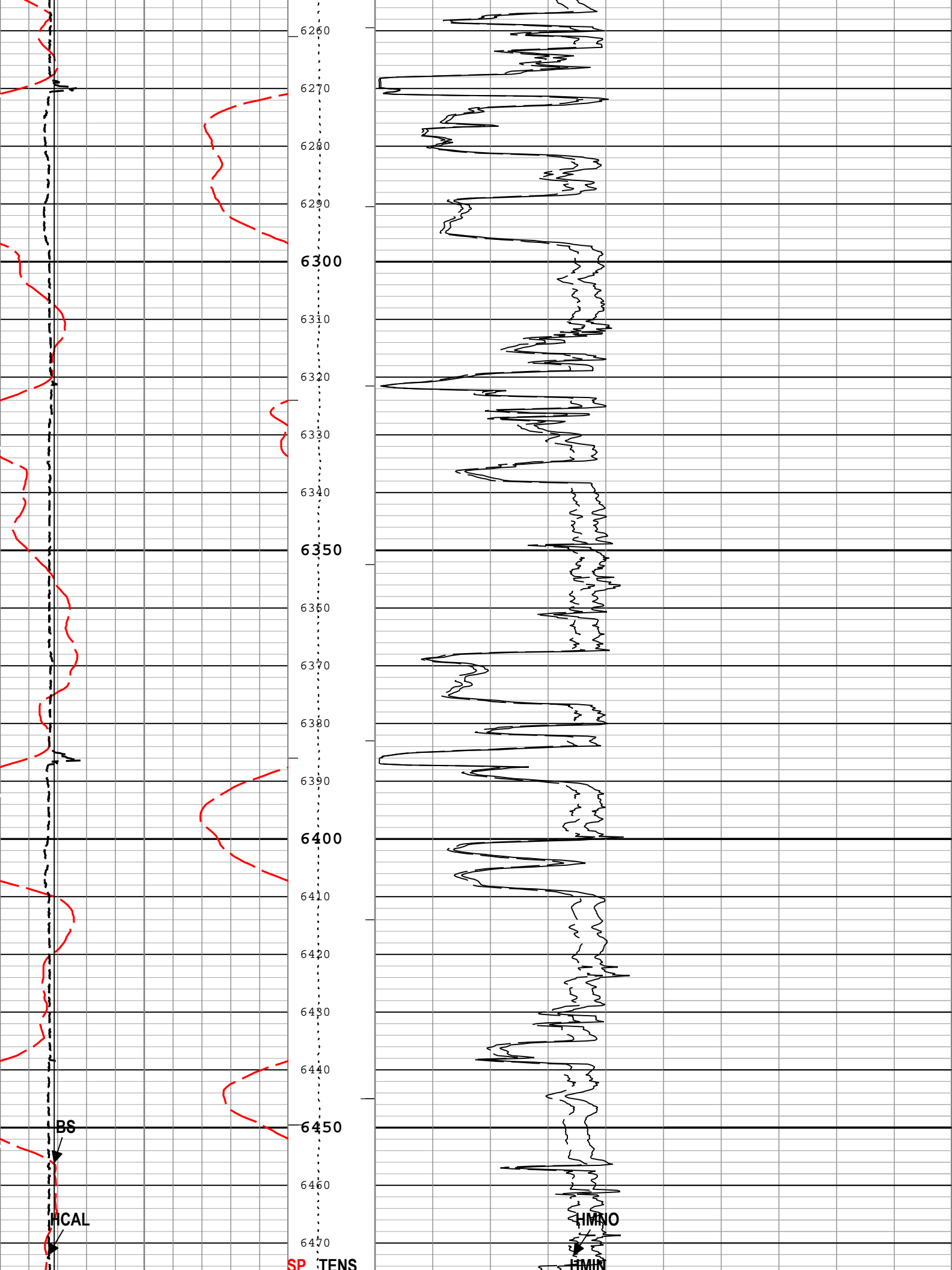


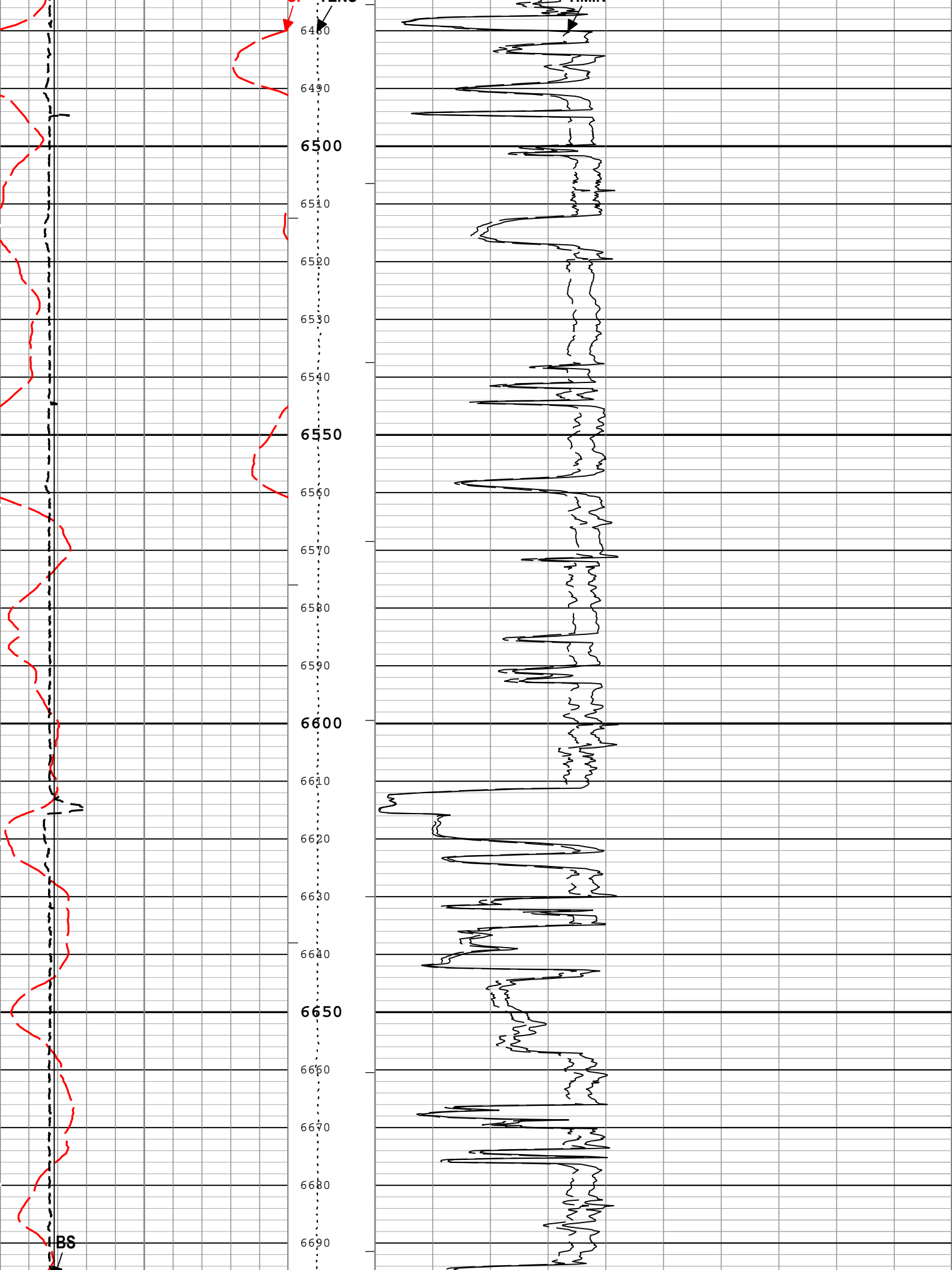


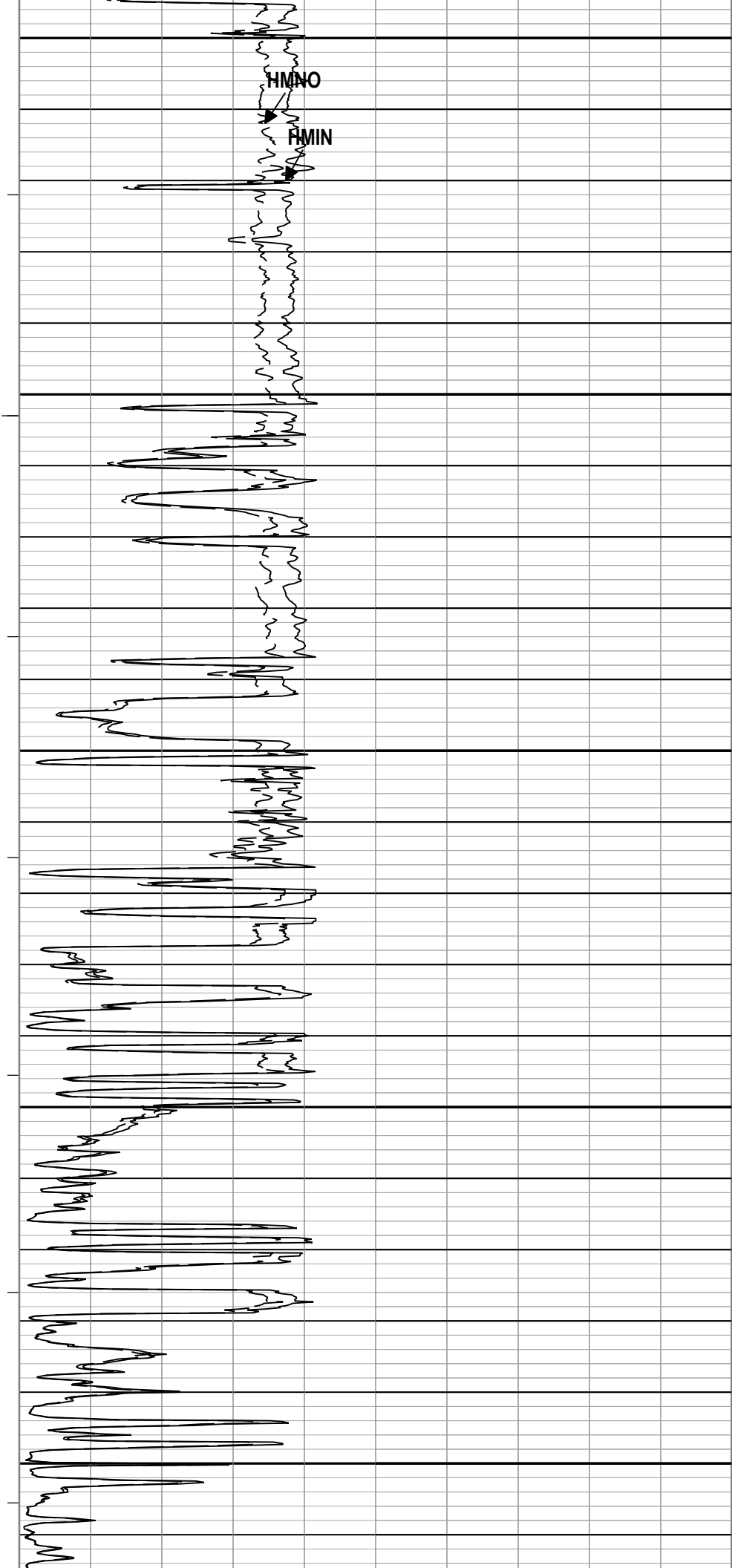
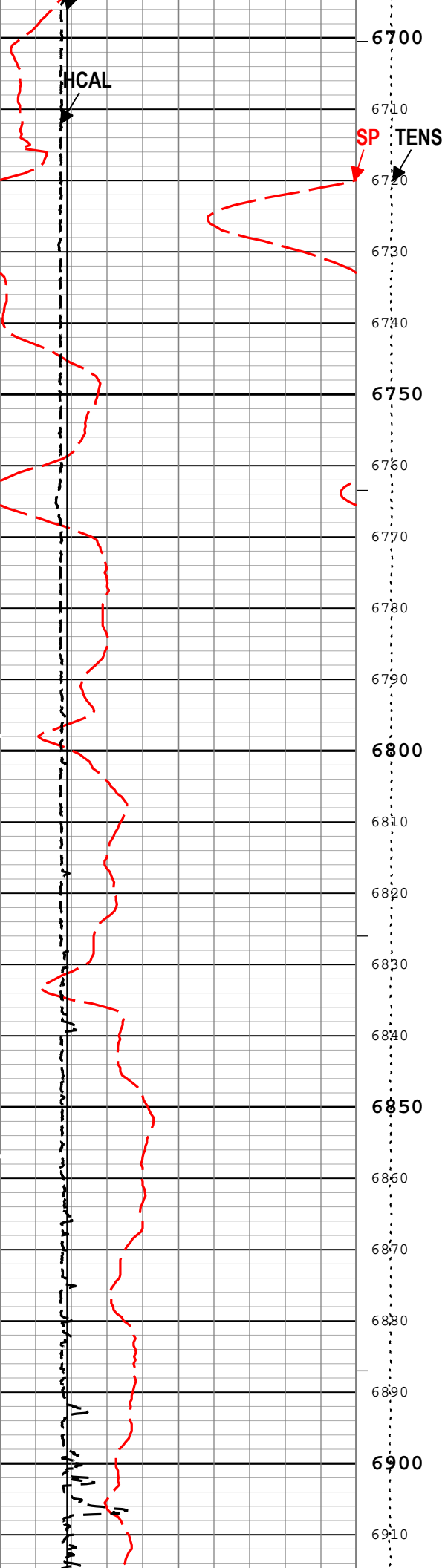


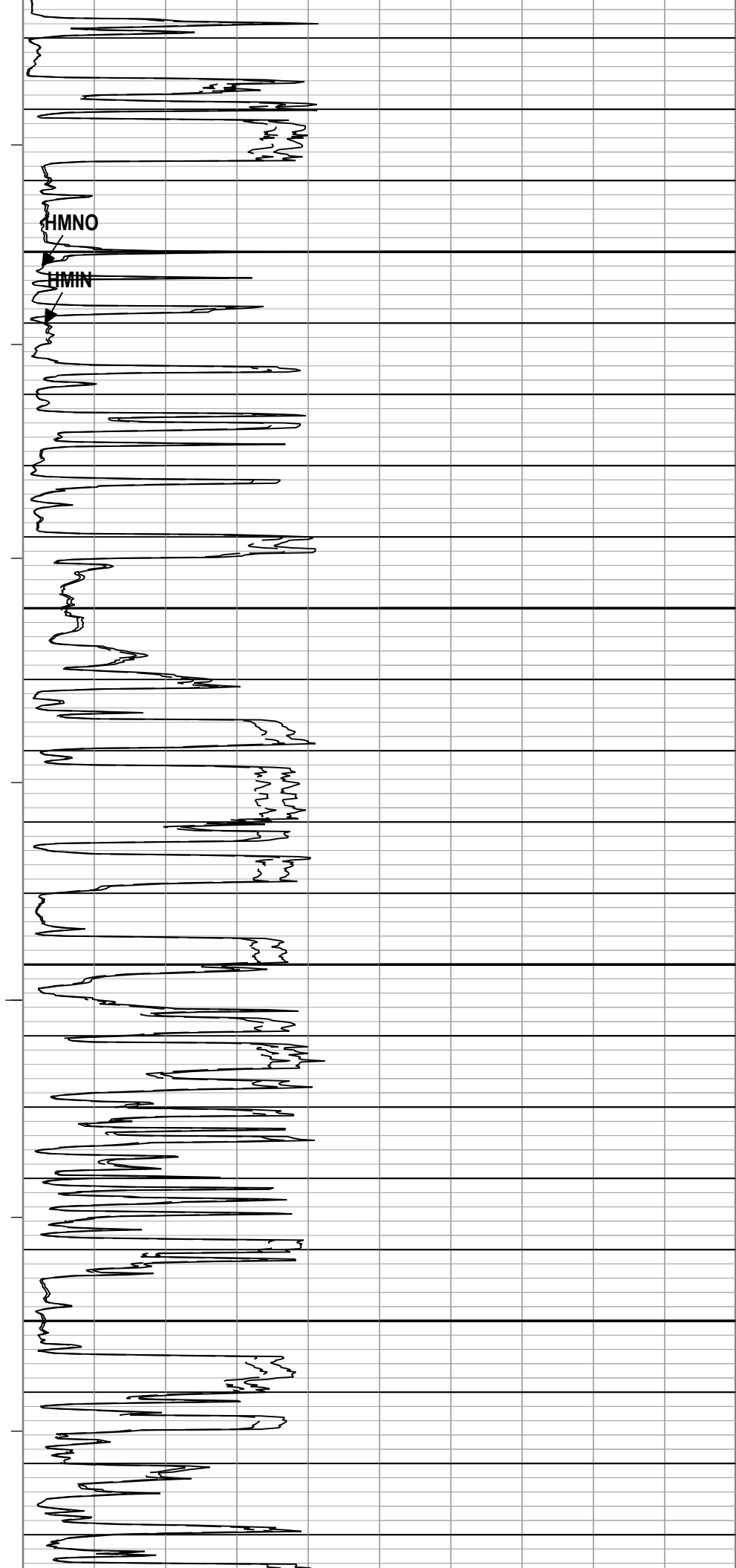
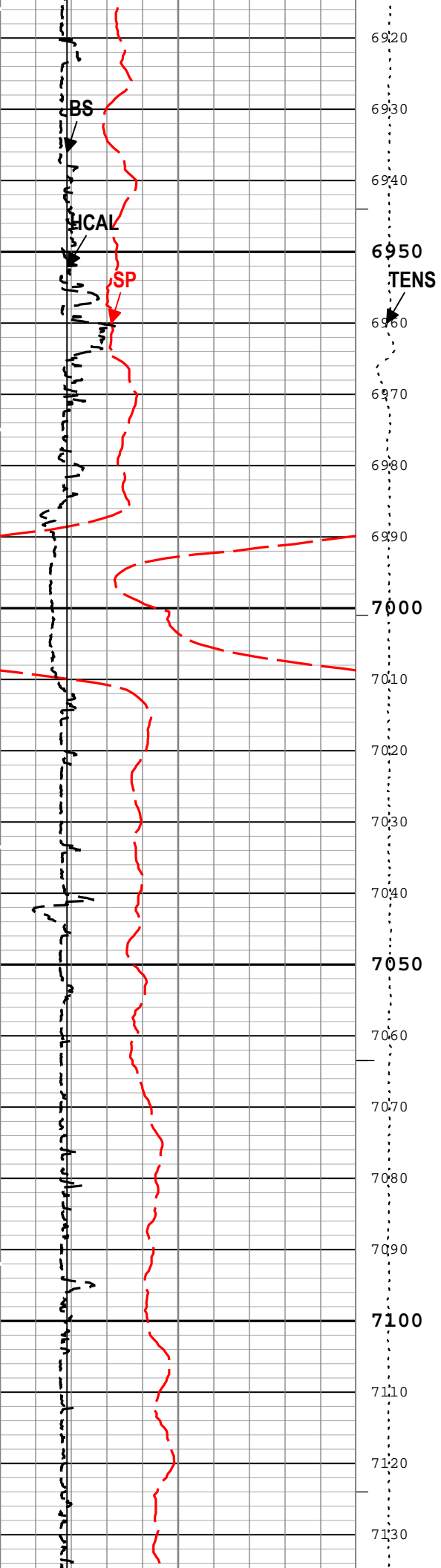


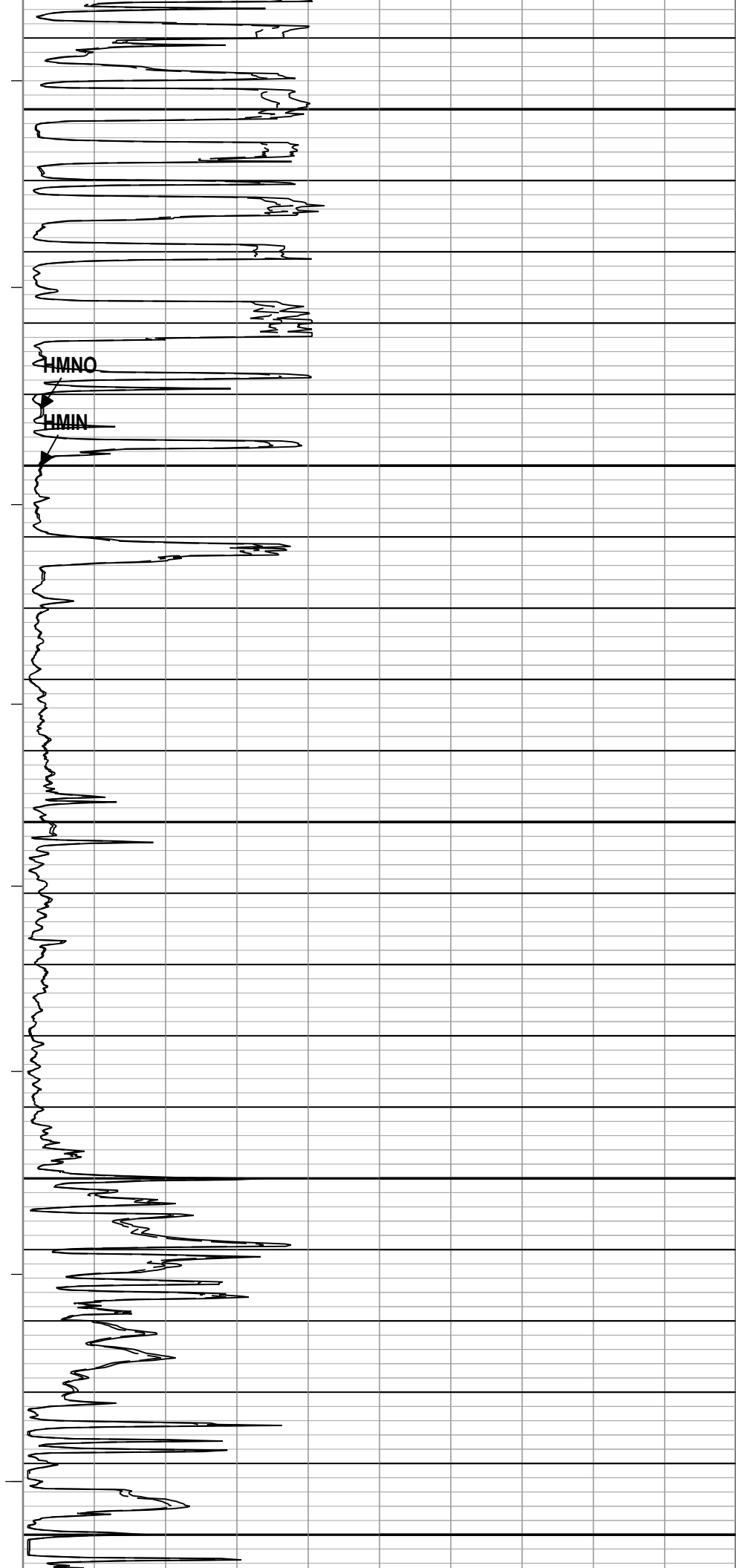
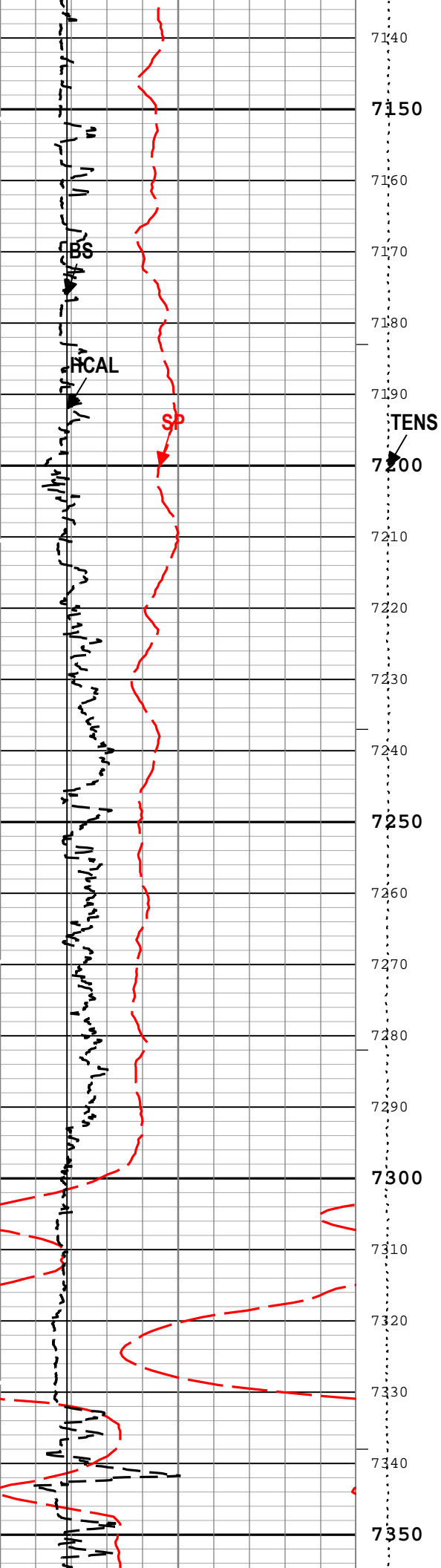


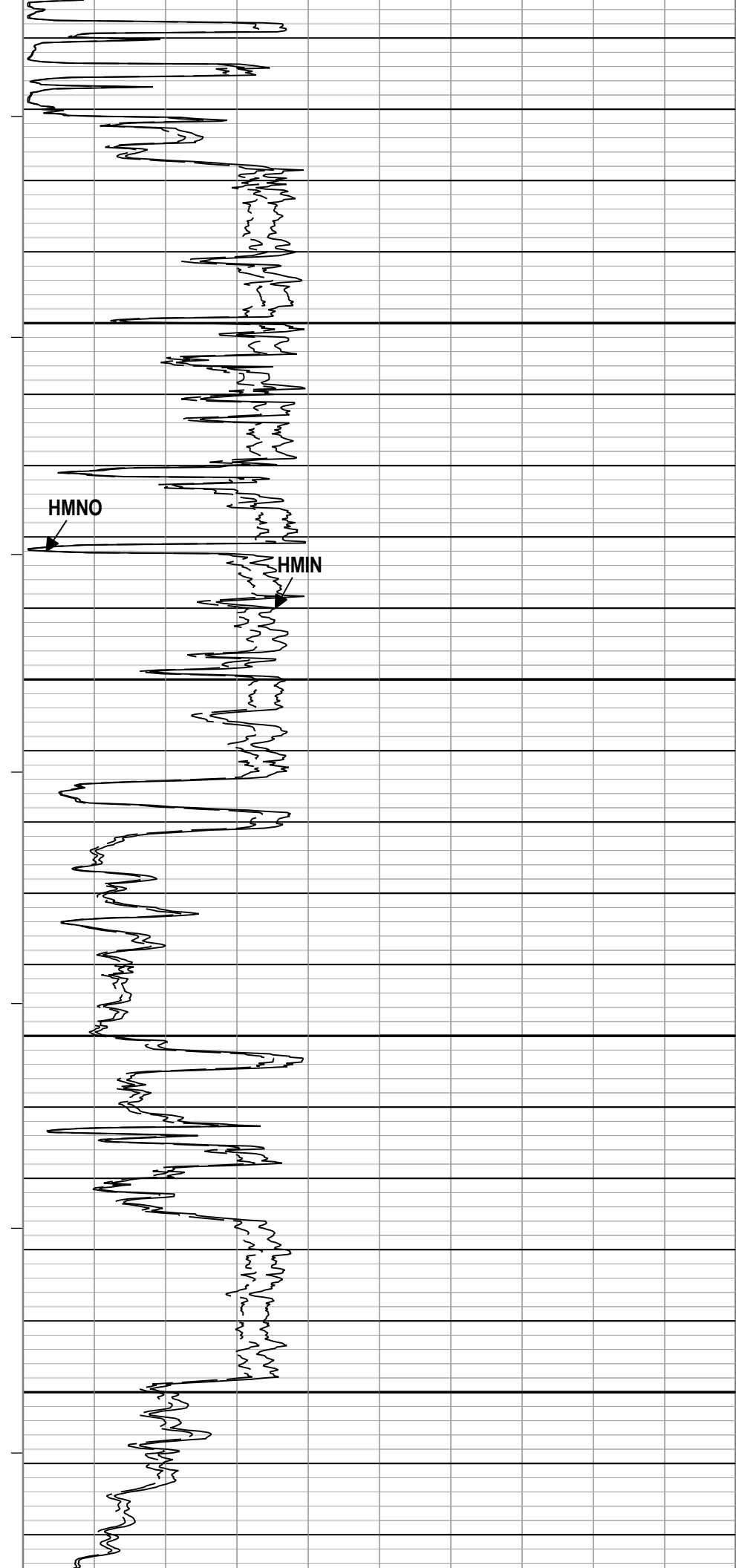
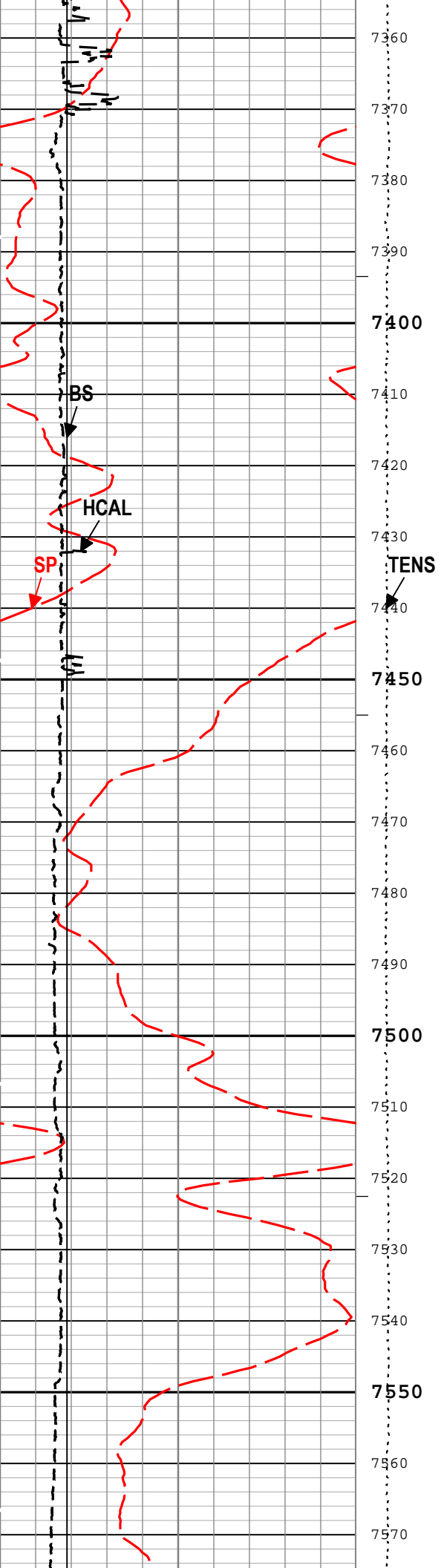


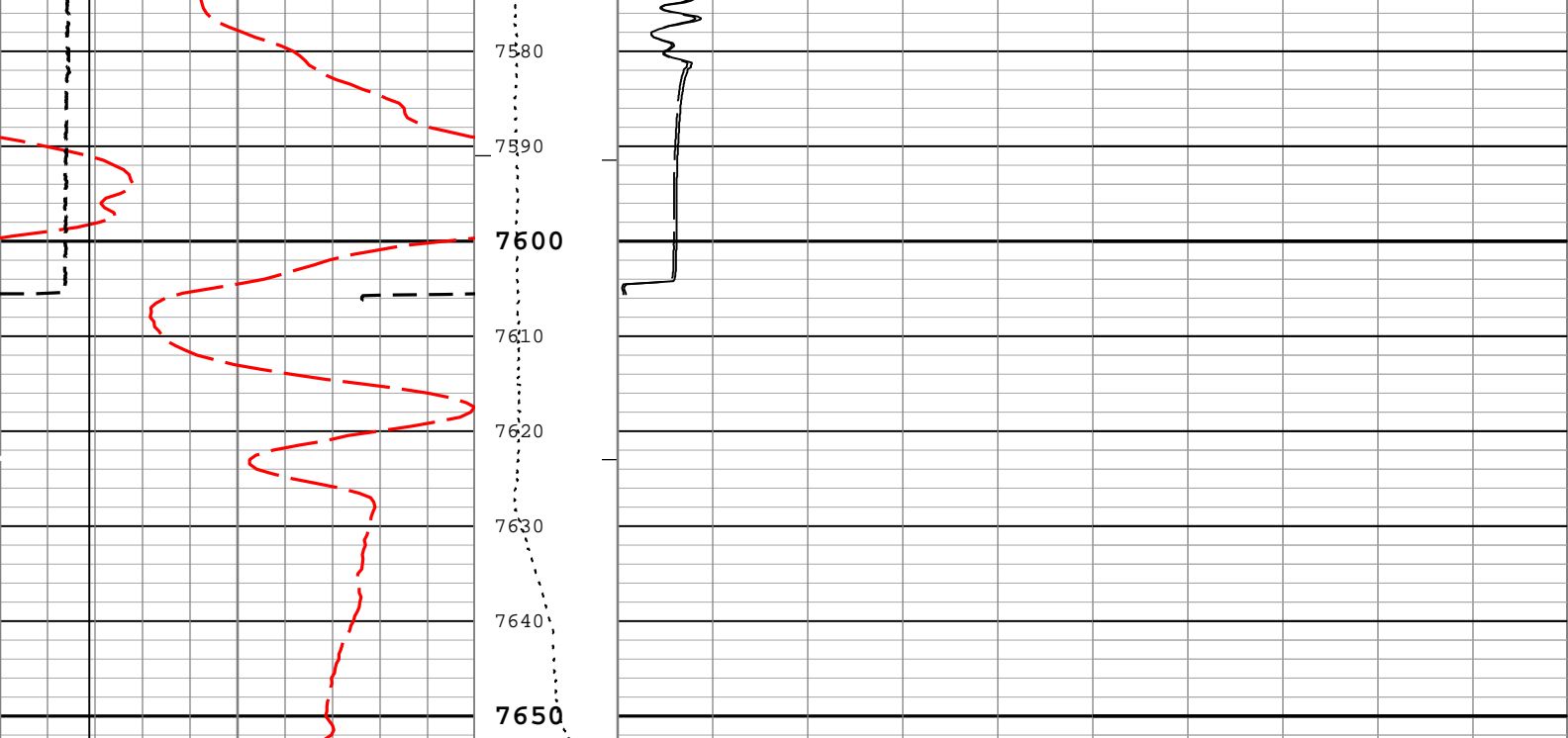












Spontaneous Potential (SP) ZAIT-E	Cable Tension (TENS)	Synthetic Micro-Inverse Resistivity (HMIN) HDRS-H
-80 mV 20	5000 lbf 0	0 ohm.m 40
Caliper (HCAL) HDRS-H		Synthetic Micro-Normal Resistivity (HMNO) HDRS-H
6 in 16		0 ohm.m 40
Bit Size (BS) RT		
6 in 16		

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

Description: AIT Log Format: Log (Microlog) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 14-Aug-2017 02:22:37

Channel Processing Parameters

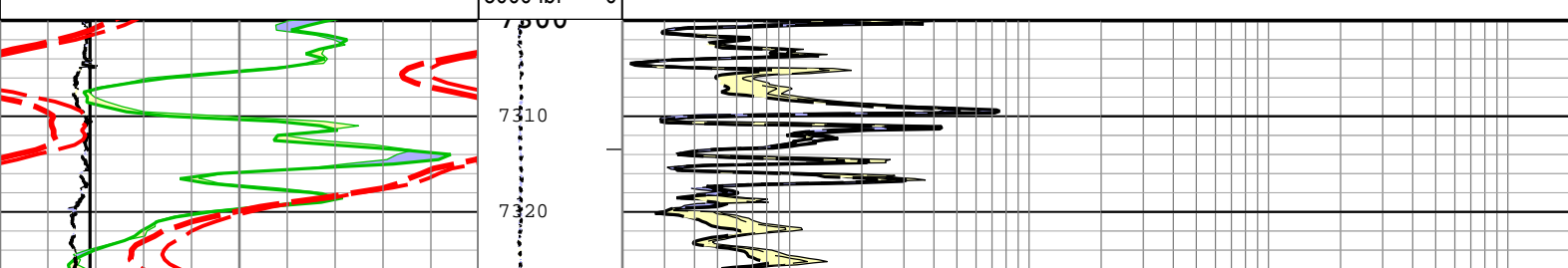
One: Parameters

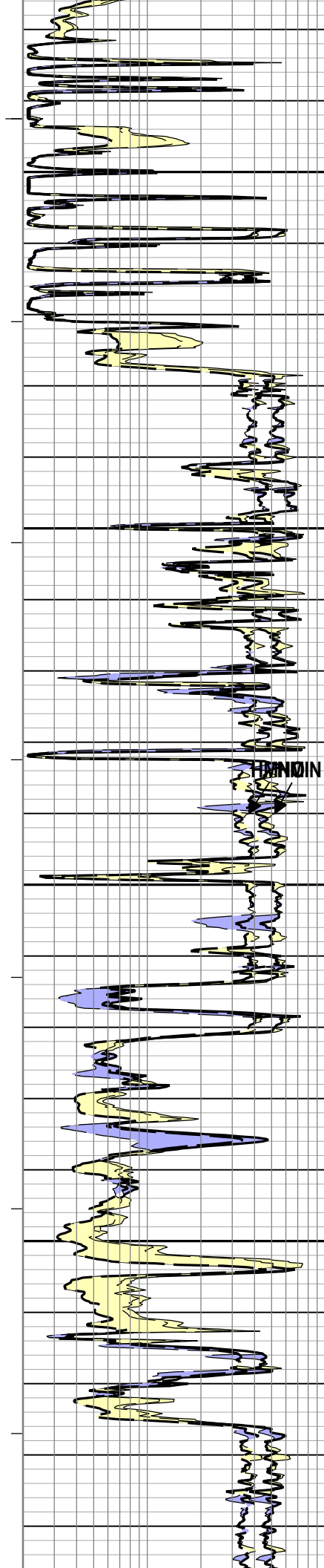
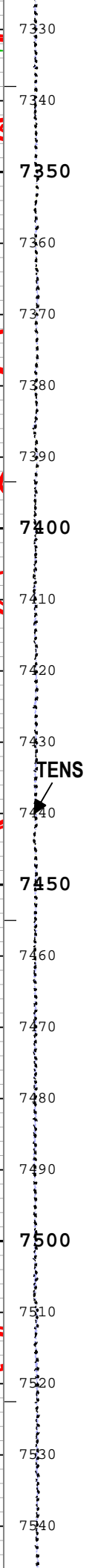
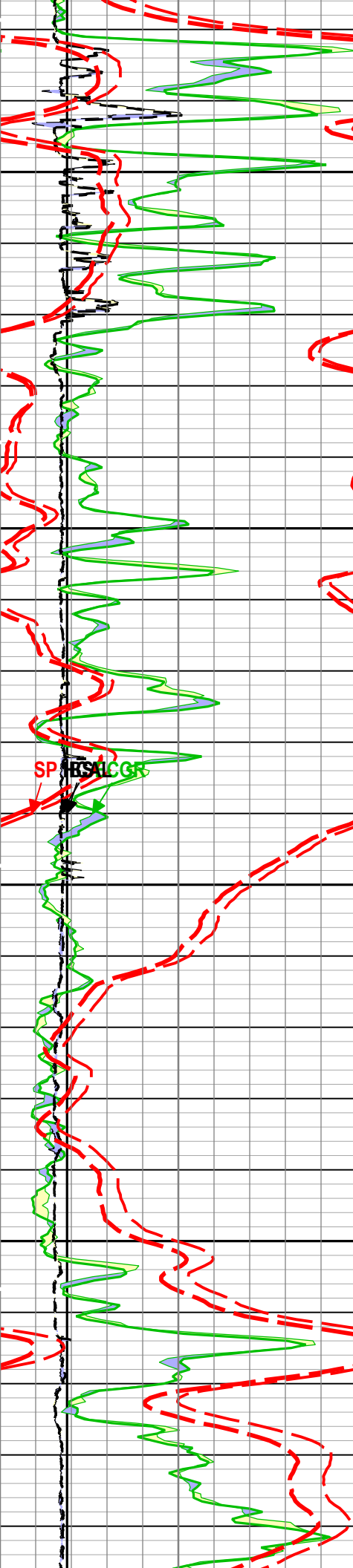
Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	7.875	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.4	in
CBLO	Casing Bottom (Logger)	WLSESSION	519	ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
FCD	Future Casing (Outer) Diameter	WLSESSION	5.5	in
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
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	AMF	
SPDR	SP Drift Per Foot	ZAITE	0	mV/ft

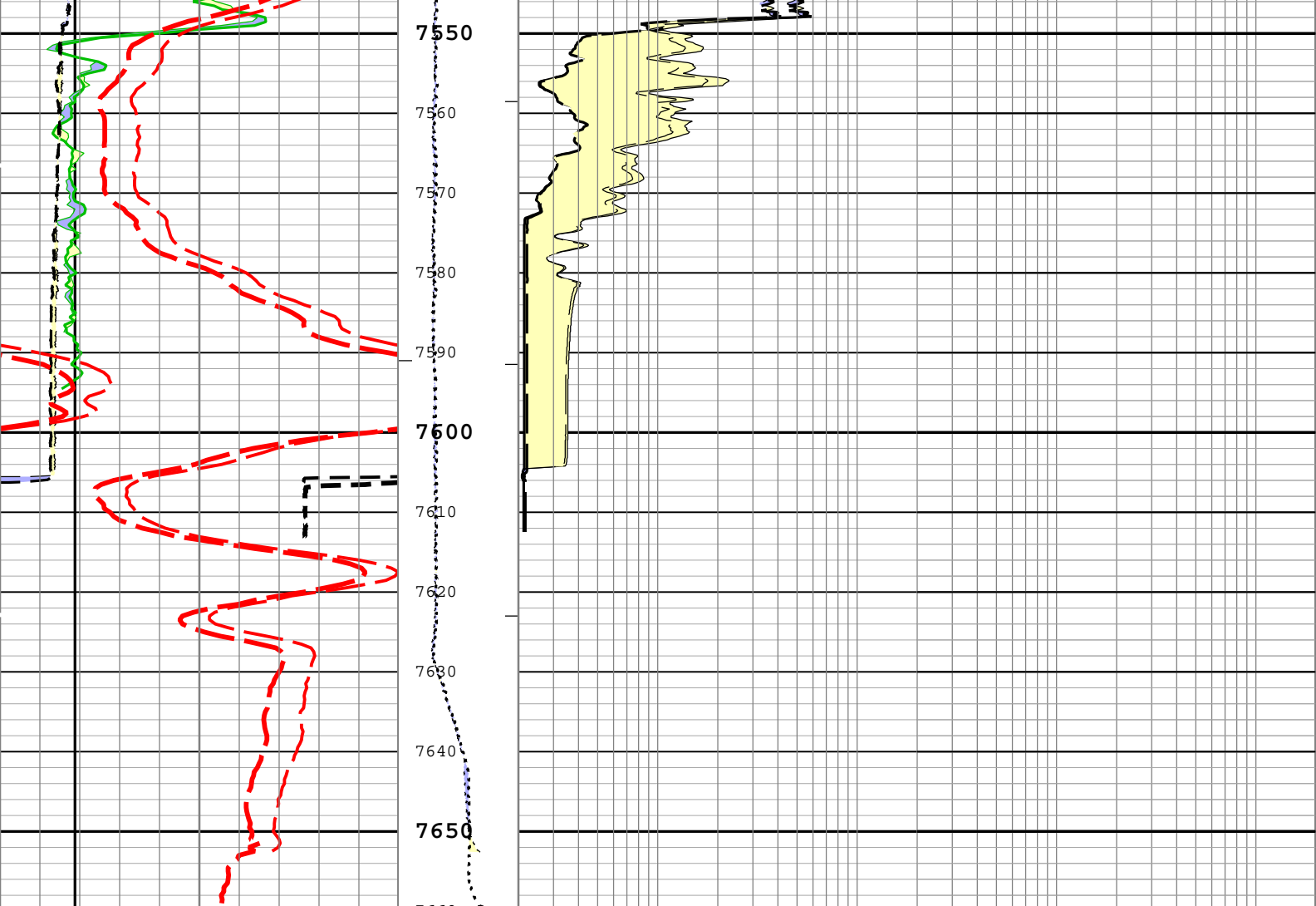
Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
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Main To Repeat		
Repeat To Main		
Bit Size (BS) RT		
6	in	16
Main To Repeat		
Repeat To Main		
Gamma Ray (ECGR) HGNS-H		
0	gAPI	150
Main To Repeat		
Repeat To Main		
Caliper (HCAL) HDRS-H		
6	in	16
Main To Repeat		
Repeat To Main		
Spontaneous Potential (SP) ZAIT-E		
-80	mV	20

Main To Repeat
Repeat To Main
Cable Tension (TENS)
5000 lbf

Main To Repeat		
Repeat To Main		
Synthetic Micro-Inverse Resistivity (HMIN) HDRS-H		
0	ohm.m	40
Main To Repeat		
Repeat To Main		
Synthetic Micro-Normal Resistivity (HMNO) HDRS-H		
0	ohm.m	40

ICV - Integrated Cement Volume every 100.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)		— ICV - Integrated Cement Volume every 10.00 (ft3)
		— IHV - Integrated Hole Volume every 100.00 (ft3)
		— IHV - Integrated Hole Volume every 10.00 (ft3)
Description: AIT Log Format: Log (Microlog RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 14-Aug-2017 02:22:41		

Company:	Apollo Operating LLC	Schlumberger
Well:	Rodwell 14-31	
Field:	Wildcat	
County:	Washington	
Country:	USA	

Platform Express
Microlog