

Company: TUG HILL OPERATING, LLC

Well: DONOVAN 1-SWD

Field: WILDCAT

County: BARBER State: KANSAS

POROSITY LOG

COMPENSATED NEUTRON/LITHOLOGY DENSITY/SONIC
PLATFORM EXPRESS

County:	BARBER	State:	KANSAS
Well:	DONOVAN 1-SWD		
Field:	WILDCAT		
Location:	291' FNL 732' FEL		
Well:	DONOVAN 1-SWD		
Company:	TUG HILL OPERATING, LLC		
Logging Date	29-Oct-2012	API Serial No.	15-007-23909
	ONE		Section:
Run Number	ONE	Township:	34S
Depth Driller	5530.00 ft	Range:	13W
Schlumberger Depth	5495.00 ft		
Bottom Log Interval	5495.00 ft		
Top Log Interval	817.00 ft		
Casing Driller Size @ Depth	9.625 in @ 850.00 ft		
Casing Schlumberger	817 ft		
Bit Size	8.75 in		
Type Fluid In Hole	Fresh WBM		
MUD	Density	9 lbm/gal	61 s
	Viscosity	4.2 cm ³	9.7
	PH	Active Tank	
Source of Sample	Active Tank		
RM @ Meas Temp	0.71 ohm.m	@	77 degF
RMF @ Meas Temp	0.6 ohm.m	@	77 degF
RMC @ Meas Temp	1 ohm.m	@	77 degF
Source RMF	Calculated	Calculated	
RM @ BHT	0.46 @ 123.91	0.39 @	123.91
Max Recorded Temperatures	123.91 degF	123.91	123.91
Circulation Stopped	29-Oct-2012	00:00:00	
Logger on Bottom	29-Oct-2012	11:00:00	
Unit Number	2281	ELK CITY, OK	
Recorded By	MATT CRAMER/BRIAN FRALEIGH		
Witnessed By	JOE TRAVINO		

Location: 291' FNL 732' FEL

Permanent Datum:

Log Measured From:

Drilling Measured From:

API Serial No.

15-007-23909

Section:

10

Township:

34S

Range:

13W

Elev.:

23.00 ft

K.B.

1681.00 ft

G.L.

1658.00 ft

D.F.

1680.00 ft

above Perm. Datum

Disclaimer

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Contents

1. Header
2. Disclaimer
3. Contents
4. Remarks and Equipment Summary
5. Depth Summary
6. ONE Main Pass Porosity 5" = 100'
 - 6.1 Integration Summary
 - 6.2 Software Version
 - 6.3 Composite Summary
 - 6.4 Log (Porosity 5 inch)
 - 6.5 Parameter Listing
7. ONE Repeat Pass Porosity 5" = 100'
 - 7.1 Integration Summary
 - 7.2 Software Version
 - 7.3 Composite Summary
 - 7.4 Log (Porosity 5 inch)
 - 7.5 Parameter Listing
- 9.4 Log (Bulk Density_5 Inch)
- 9.5 Parameter Listing
10. Calibration Report
11. Tail

- 8. ONE Repeat Analysis
 - 8.1 Composite Summary
 - 8.2 Log (Porosity 5 inch RA_1)
- 9. ONE Main Pass Density 5" = 100'
 - 9.1 Integration Summary
 - 9.2 Software Version
 - 9.3 Composite Summary

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks
Equip name LEH-QT:2519 LEH-QT:2519	Length 128.18	MP name	Offset	Tools ran per tool sketch.
				All logs and formats as per client's request.
DTC-H:8497 ECH-KC:9614 DTC-H:8497	125.27	CTEM HV	124.37 0.00	Logs computed on Limestone matrix (MDEN = 2,71 g/cc, DTM = 47.6 us/ft).
		TelStatus ToolStatus	122.27 122.27	Main pass recorded from TD to CSG as per client's request.
MLT-B:11 MLT-B:11	122.27			Repeat Pass pulled from 1100 FT to 850 FT as per client request.
		Microlog Pad	118.85	Hole-Cement Volume computed given a future casing size of 7.0 inches.
		Microlog Station	114.68	Per client's request, HGNS ran without a bowspring. MLT used for eccentralization.
A daptor_Head :3718	114.68			Maximum recorded temperature as recorded by the HGNS temperature sensor = 123.91 degF.
				AIT FR = 5487 FT; DSI FR = 5446 FT; Density FR = 5409 FT; MCFL FR = 5408 FT; CALI FR = 5409 FT.
GPIT-F:845 GPIH-B:1786 GPIC-F:845 DHRU-F	109.68	GPIT-F Incliniometer	108.27	Porosity FR = 5396 FT; GPIT FR = 5387 FT; MLT FR = 5376 FT.
				Thank you for choosing Schlumberger of Elk City, OK 580-225-4300.
				Your crew today was: Mike, Leon, Brian, and Matt.
HGNS-H:3964 HGNH:3715 NSR-F:5075 NPV-N:5075 HGNS-H:3964 HMCA-H HACCZ-H:4166	105.68	GPIT Temperature GR	0.00 105.66 104.94	
		CNL Porosity HMCA HGNS Accelerometer	98.61 96.28 96.28 0.00	
HDRS-H:3964 ECH-MEB:3747 HRCC-H:4709 HRMS-H:3964 Backscatter:2683 2 GSR-J:5370 GPV-Q:5370 HRGD-H:4700 Short Spacing:27 727 Long Spacing:286 42	96.27	HRCC	92.28	
		MCFL Caliper TLD Density	86.84 86.36 85.97	
AH-184[2]:3951	84.03			
AH-184[1]:1955	82.03			
PPC-B[2]:8227 PPC-B:8227	80.03			

PPC-B Calipers 78.89

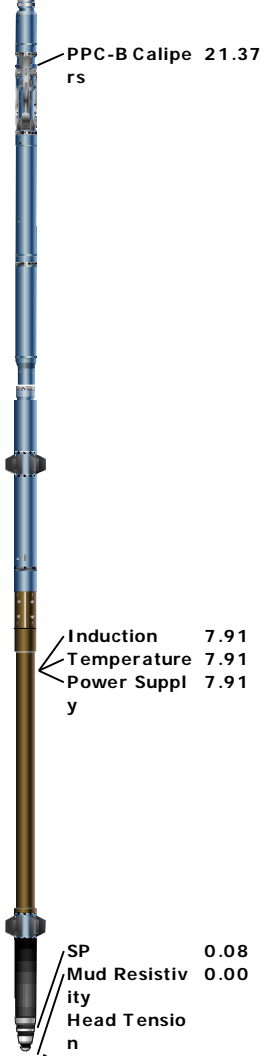


DSST-B:8192 73.52
ECH-SD:8180
SPAC-B:8192
SMDR-BD:8271
SSIJ-BA:8190
SMDX-AA:8311

DT 48.52

PWF 22.52

PPC-B[1]:8333 22.52
 PPC-B:8333



Lengths are in ft
 Maximum Outer Diameter = 9.000 in
 Line: Sensor Location, Value: Gating Offset
 All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters	ONE		
Conveyance Type	Wireline		
Log Sequence	First trip to wellsite.		
Rig Up Length at Surface (ft)	175.60		
Rig Up Length at Bottom (ft)	175.30		
Rig Up Length Correction (ft)	0.30		
Stretch Correction (ft)	3.49		
Tool Zero Reference Check at Surface (ft)	0.30		
Rig Type	LAND		
Depth Remark Parameters	ONE		
Depth Remark 1	All Schlumberger depth control policies and procedures were followed		
Depth Remark 2	IDW used as primary depth control		
Depth Remark 3	Z-Chart used as secondary depth control		
Depth Remark 4	First trip to wellsite. Main Pass correlated to Down Log.		
Depth Measuring Device	ONE		
Type	IDW-B		
Serial Number	1887		
Calibration Date	15-May-2012		

BMNO	MLT-B:MLT-B:MLT-B	2in
BS	Borehole	6in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in
GR	HGNS-H:HGNS-H:HGNS-H	6in
HDRA	HDRS-H:HRMS-H:HRGD-H	2in
ICV	Borehole	6in
IHV	Borehole	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
SP	AIT-M:AMIS:AMIS	6in
SPHI	DSST-B:SPAC-B:SPAC-B	6in
TENS	WLWorkflow	1in
TNPH	HGNS-H:HGNS-H:HGNS-H	6in

—|ICV - Integrated Cement Volume every 10.00 (ft3)
 —|IHV - Integrated Hole Volume every 100.00 (ft3)
 —|IHV - Integrated Hole Volume every 10.00 (ft3)
 —|ICV - Integrated Cement Volume every 100.00 (ft3)

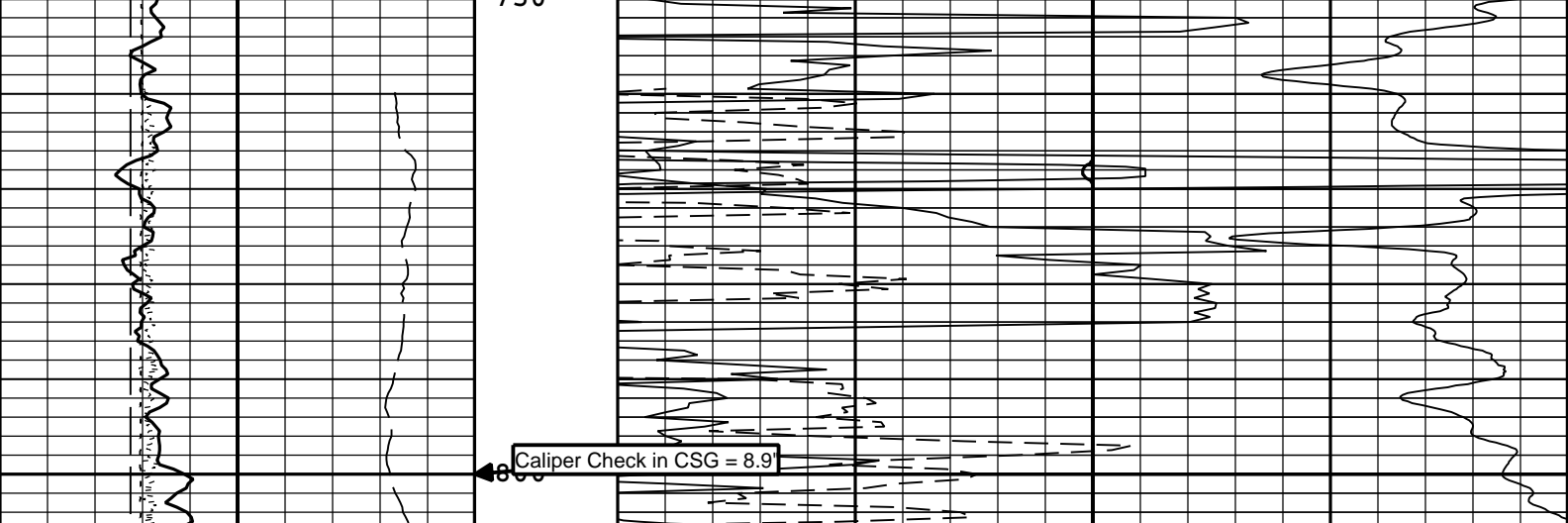
TIME_1900 - Time Marked every 60.00 (s)

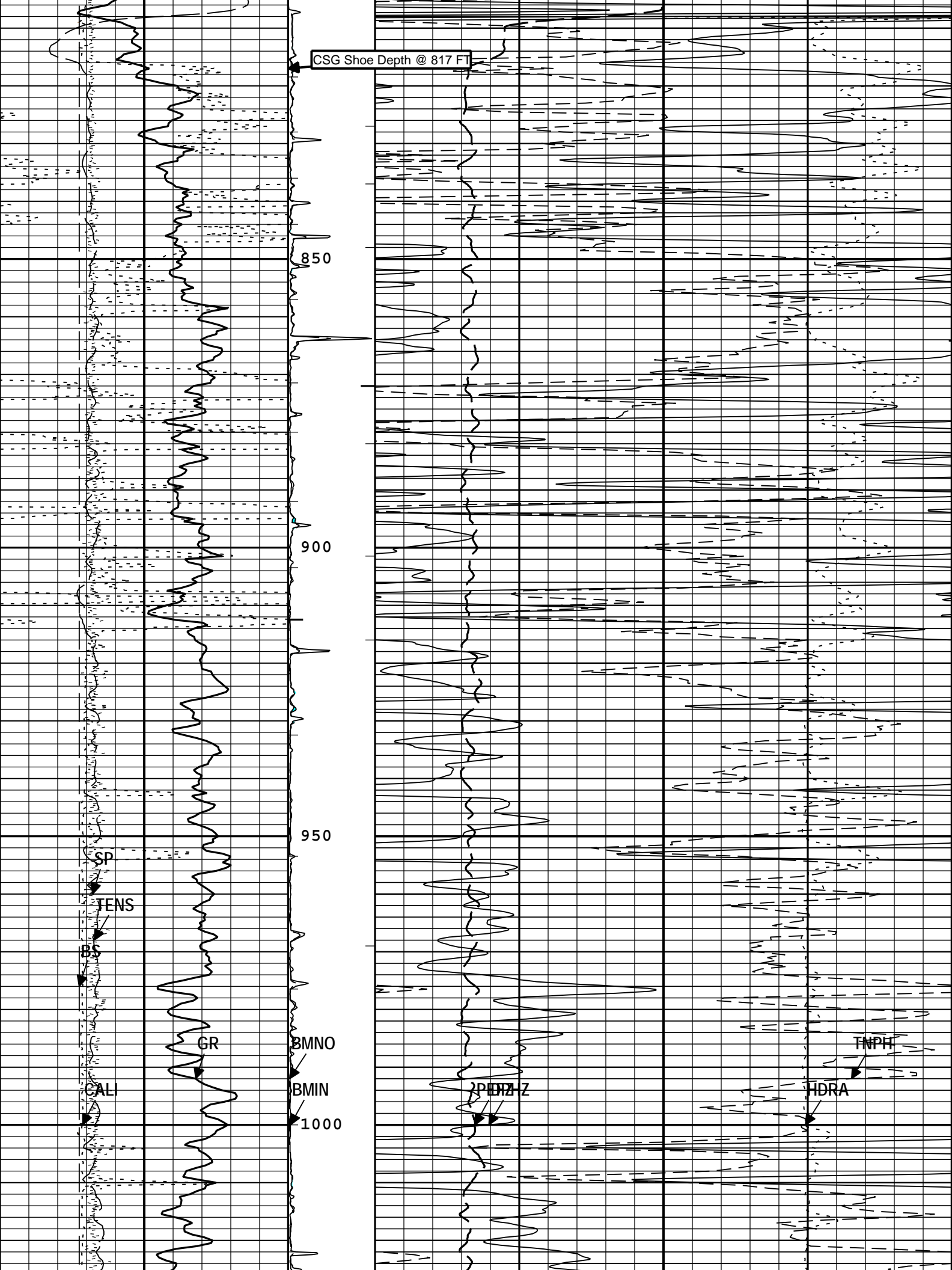
Gamma Ray Backup		
Mud-Cake		
Caliper (CALI) HDRS-H		
6	in	16
Gamma Ray (GR) HGNS-H		
0	gAPI	150
Gamma Ray (GR) HGNS-H		
150	gAPI	300
Bit Size (BS)		
6	in	16
Cable Tension (TENS)		
0	lbf	8000
Spontaneous Potential (SP) AIT-M		
-160	mV	40

Possible Permiability
Micro Inverse (BMIN) MLT-B
0 ohm.m 40
Micro Normal (BMNO) MLT-B
0 ohm.m 40

Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
0		10
Density Standoff Correction (HDRA) HDRS-H		
-0.25	g/cm3	0.25
Gas		
Standard Resolution Density Porosity (DPHZ) HDRS-H		
0.3	ft3/ft3	-0.1
Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H		
0.3	ft3/ft3	-0.1
Sonic Porosity (SPHI) DSST-B		
0.3	ft3/ft3	-0.1

Limestone Matrix, 2.71 g/cc





CSG Shoe Depth @ 817 Ft

850

900

950

BMNO

BMIN

1000

SP

TENS

GR

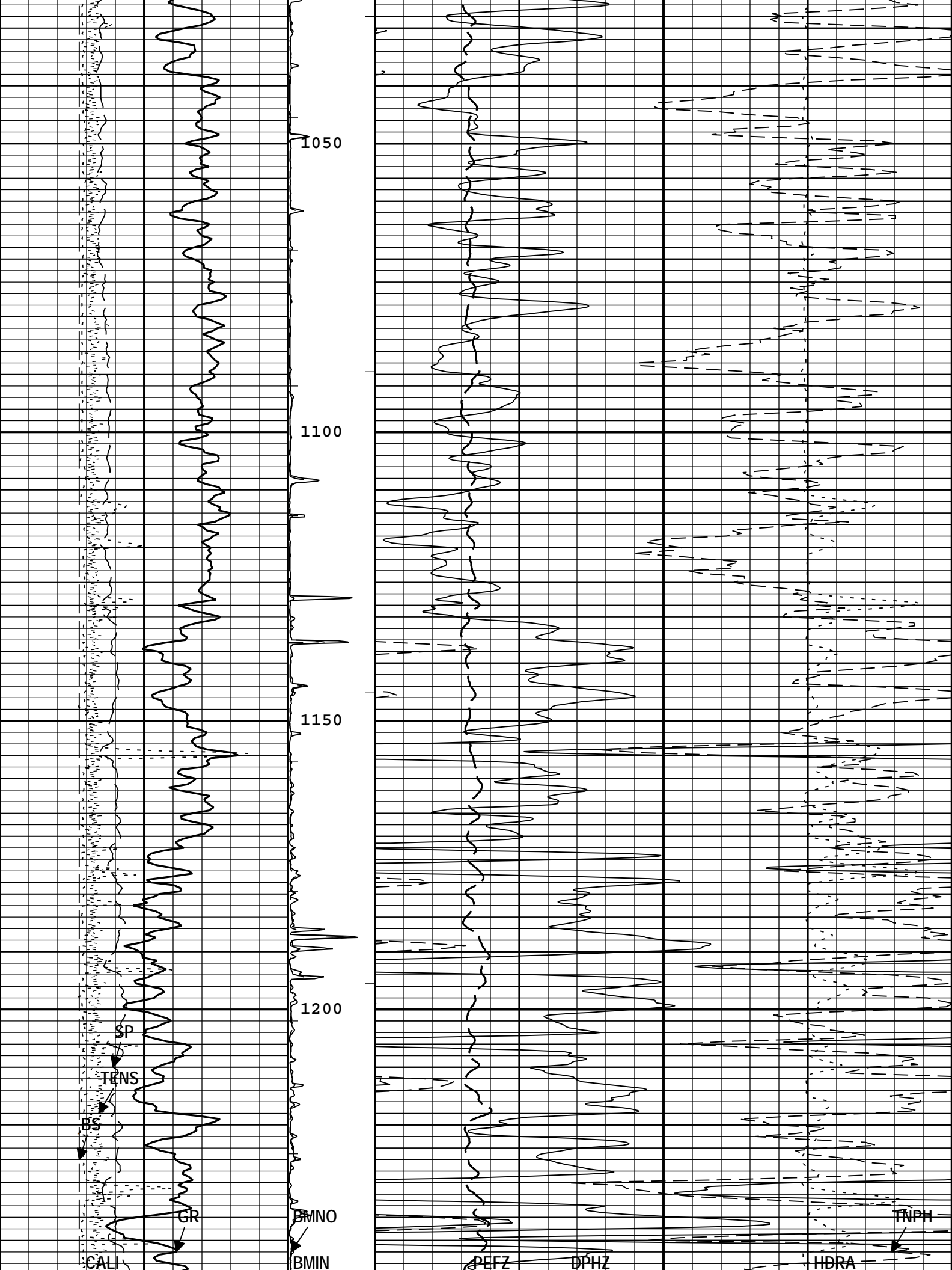
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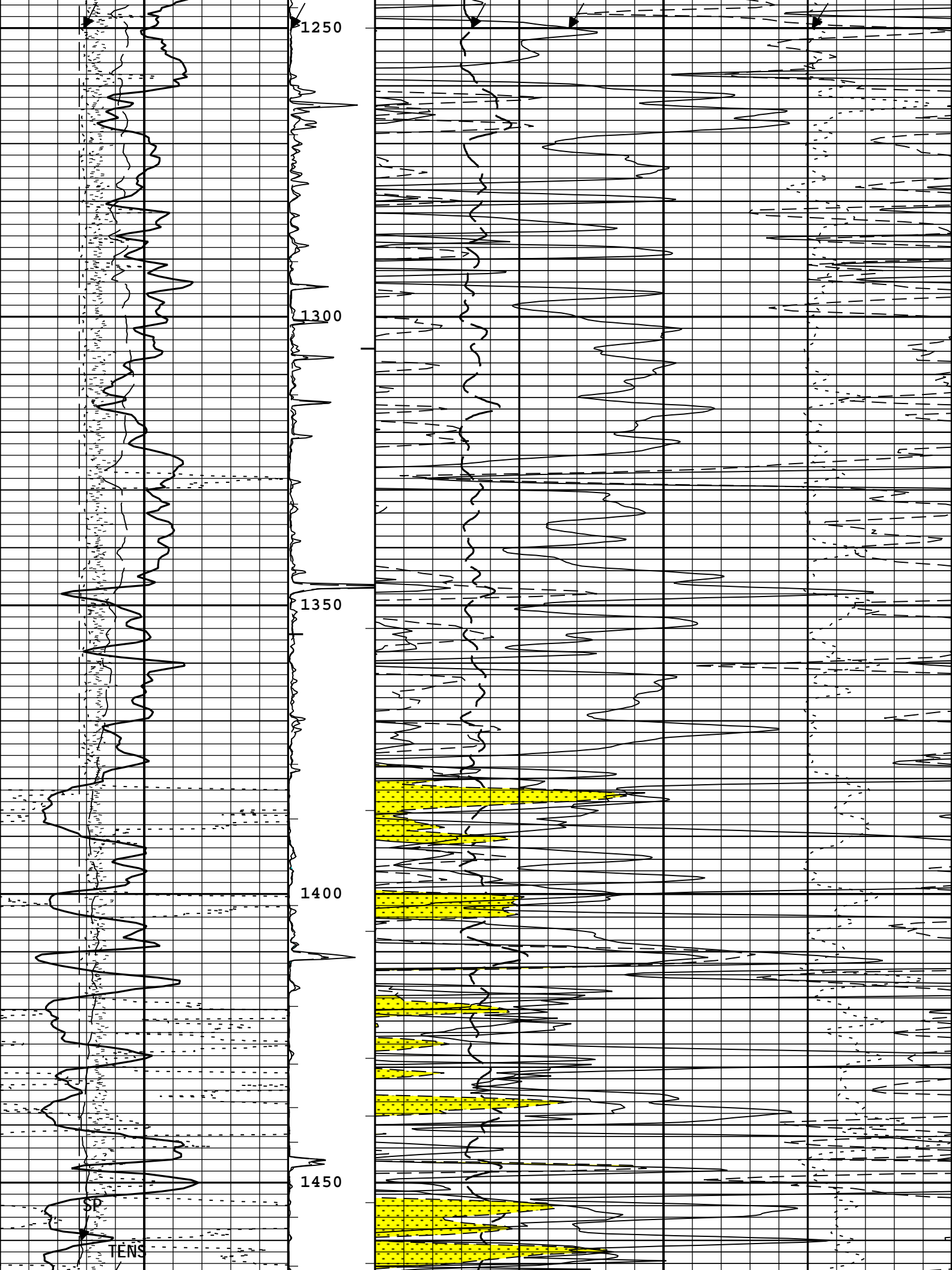
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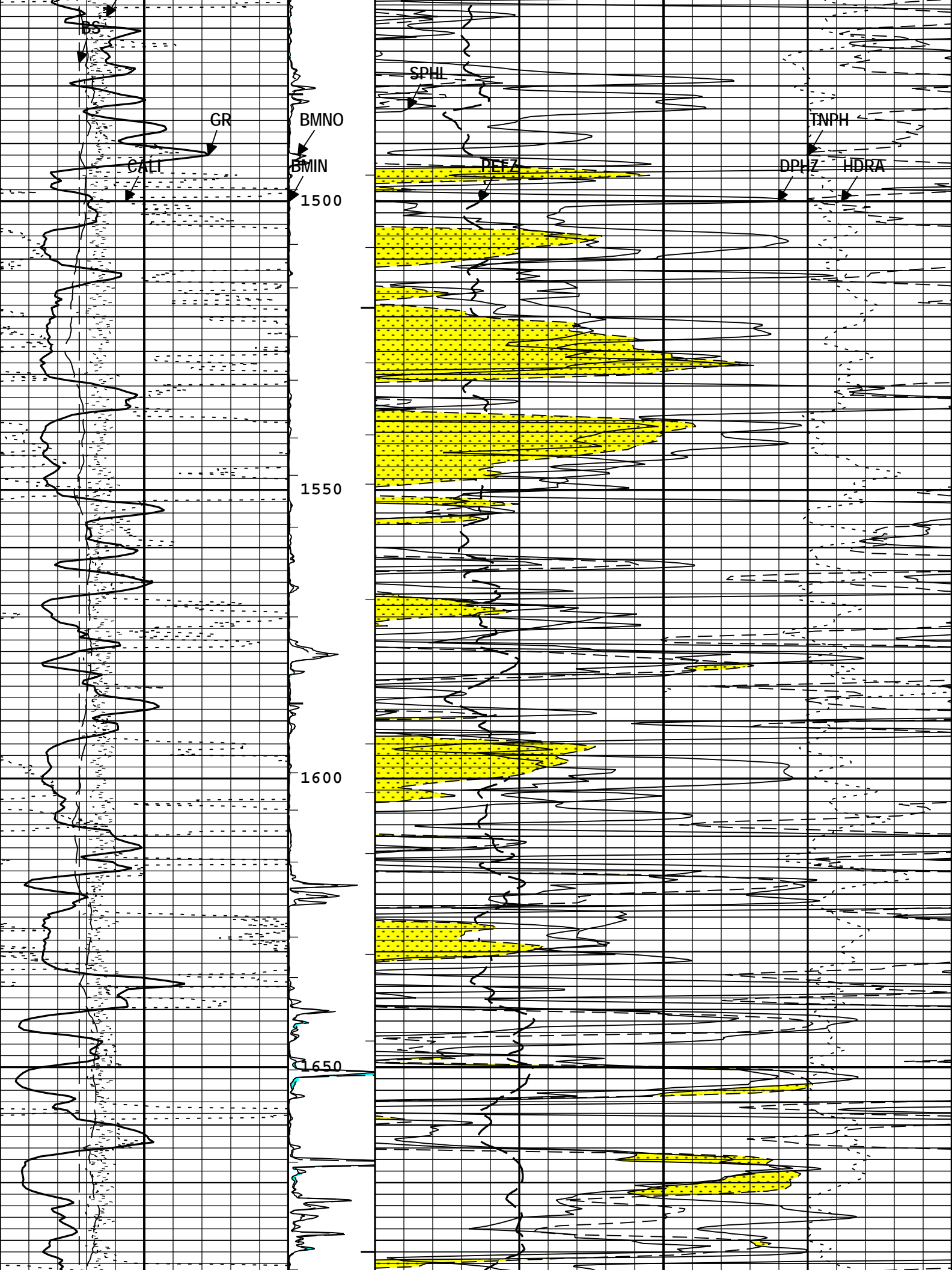
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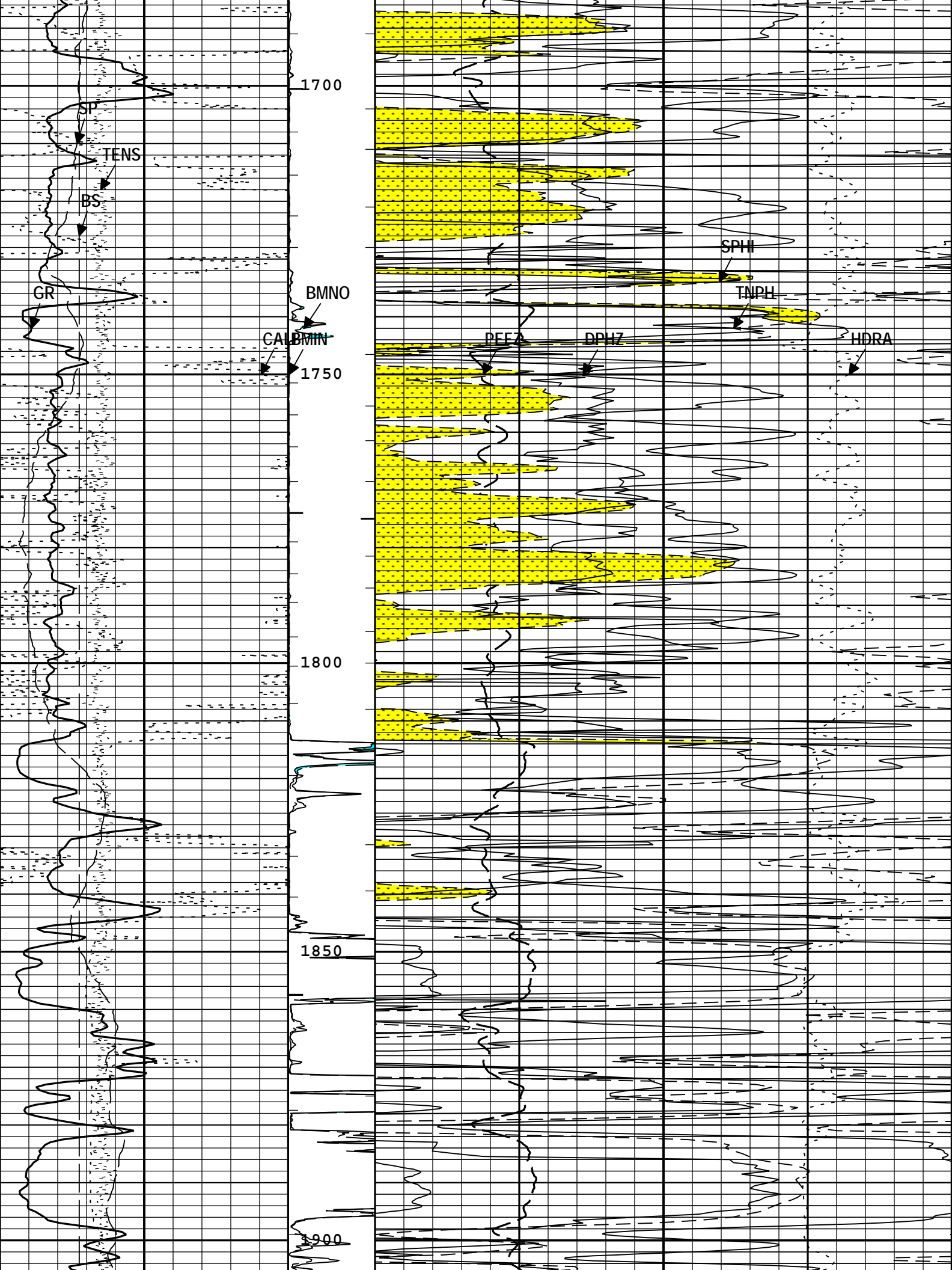
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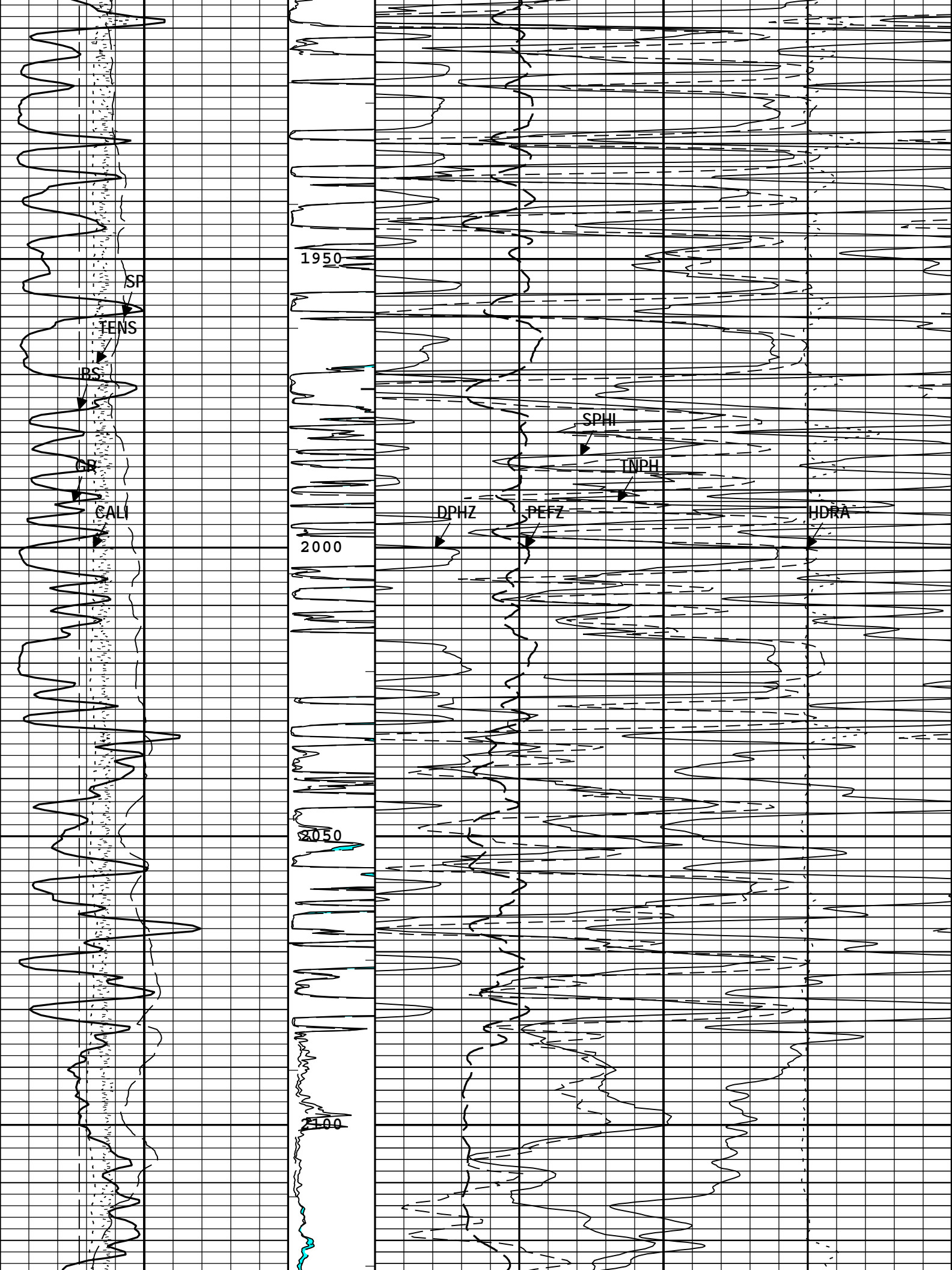
HDRA











1950

SP

TENS

CALI

2000

DPHZ

DEFZ

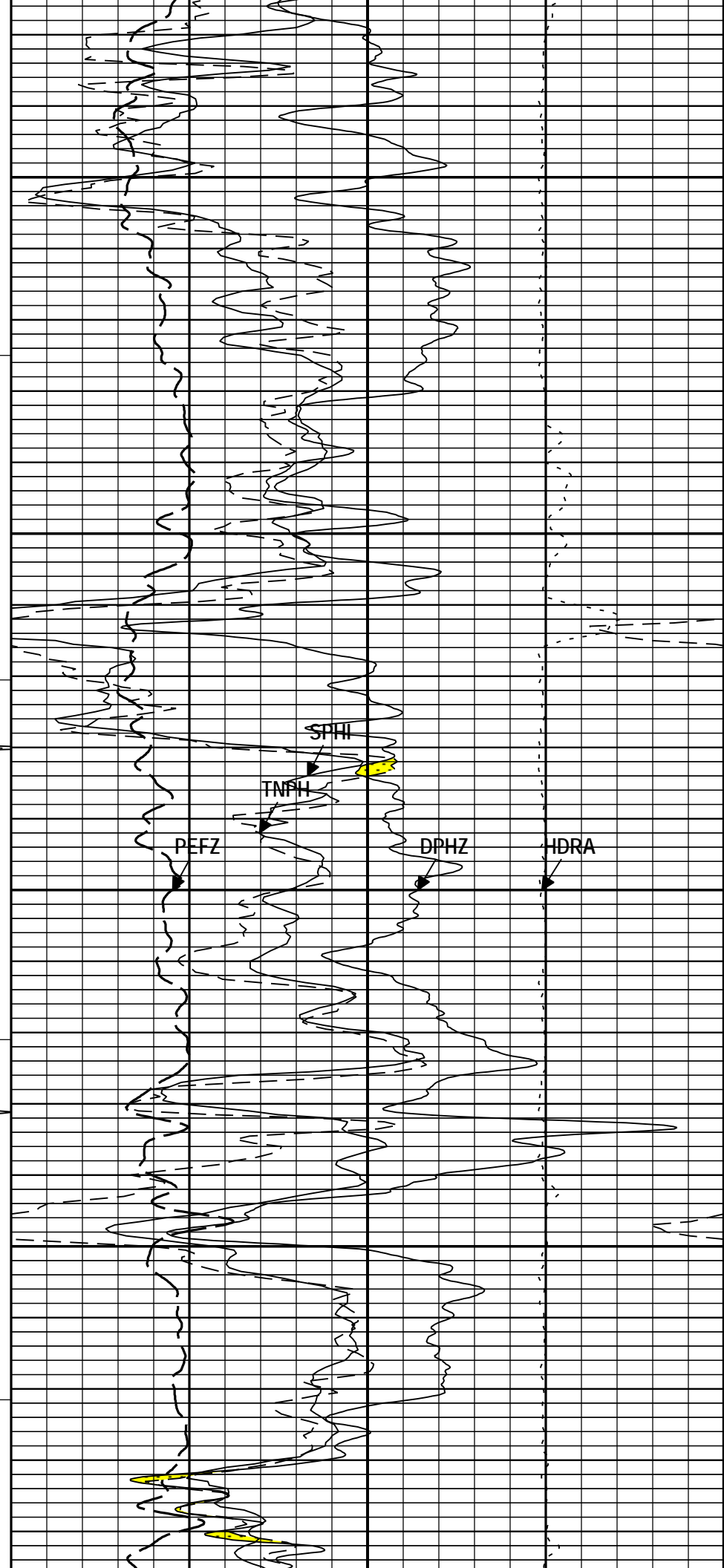
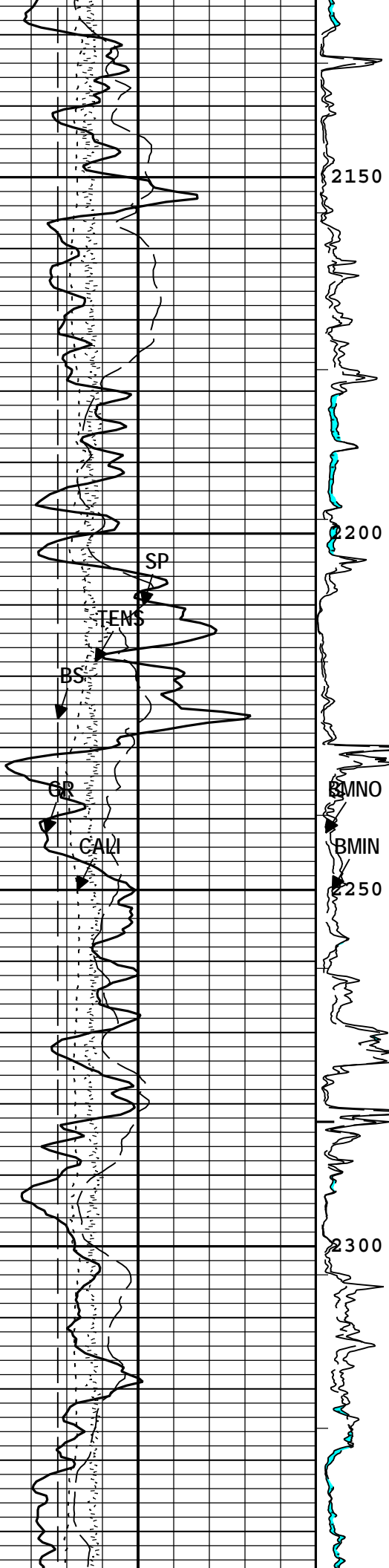
SPH

INPH

HDRA

2050

2100



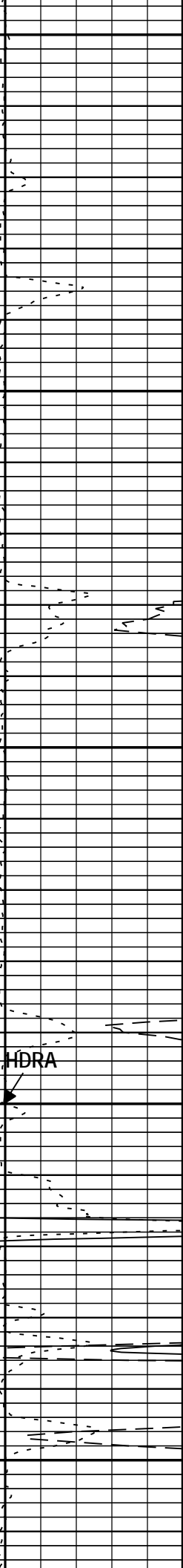
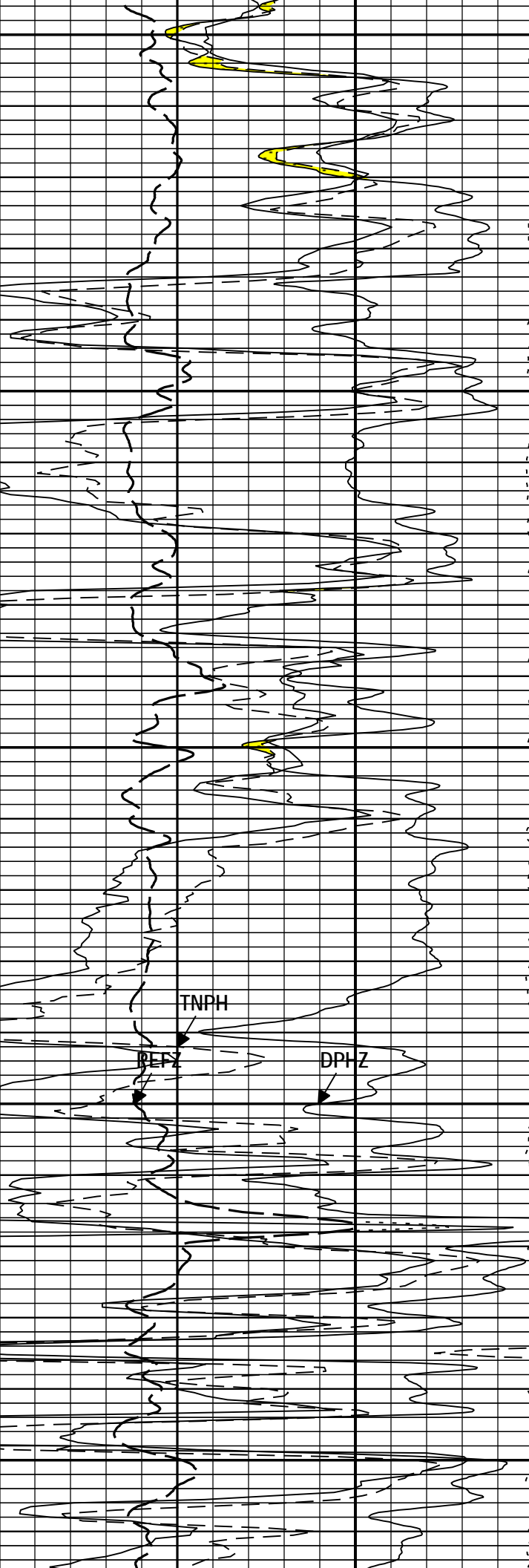
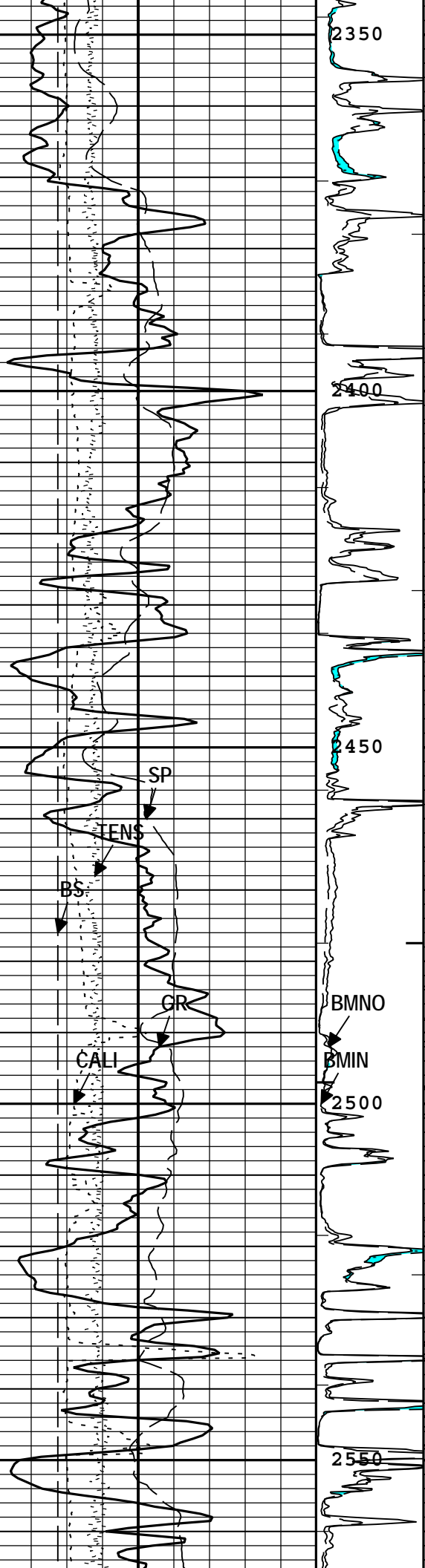
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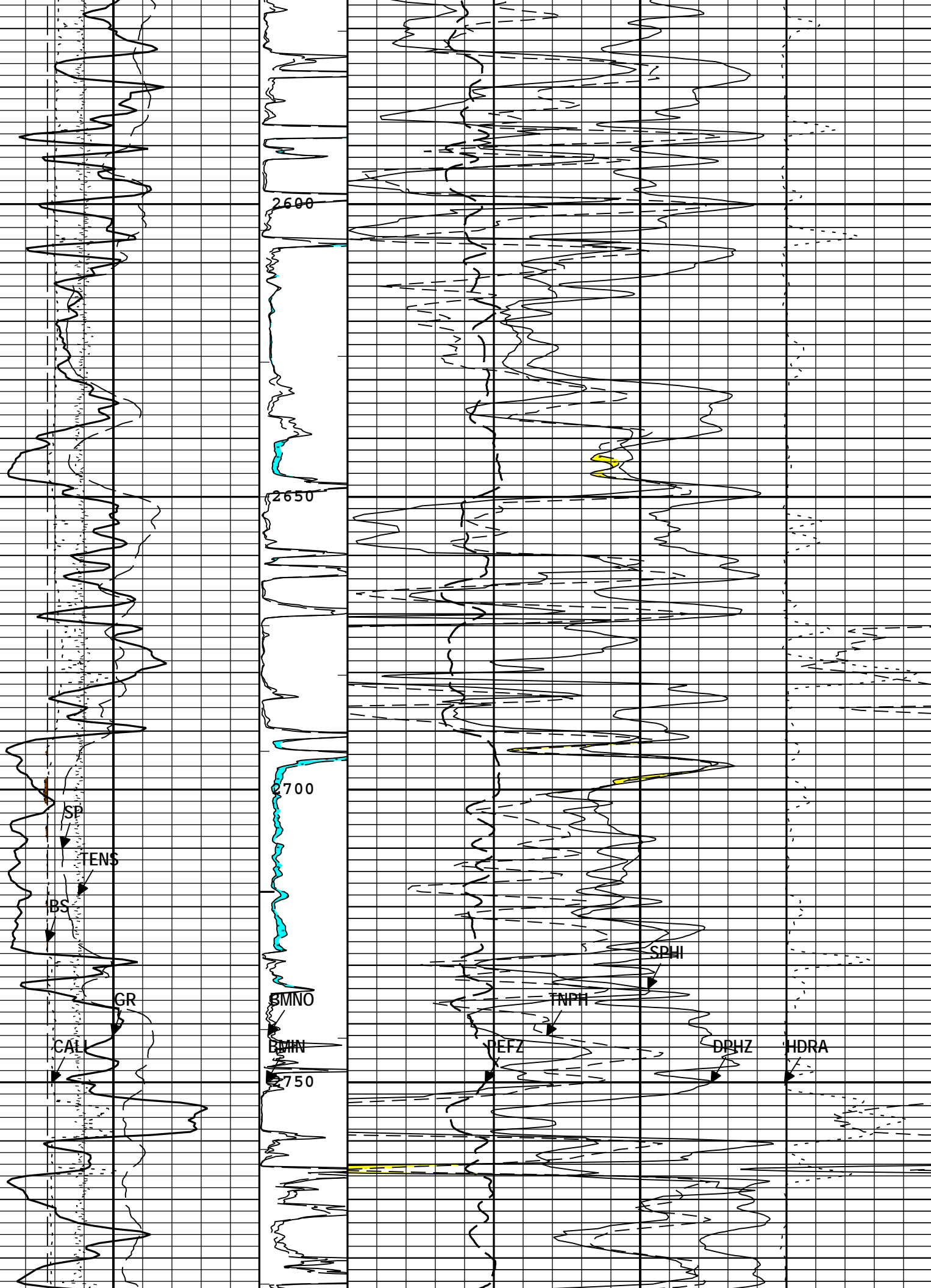
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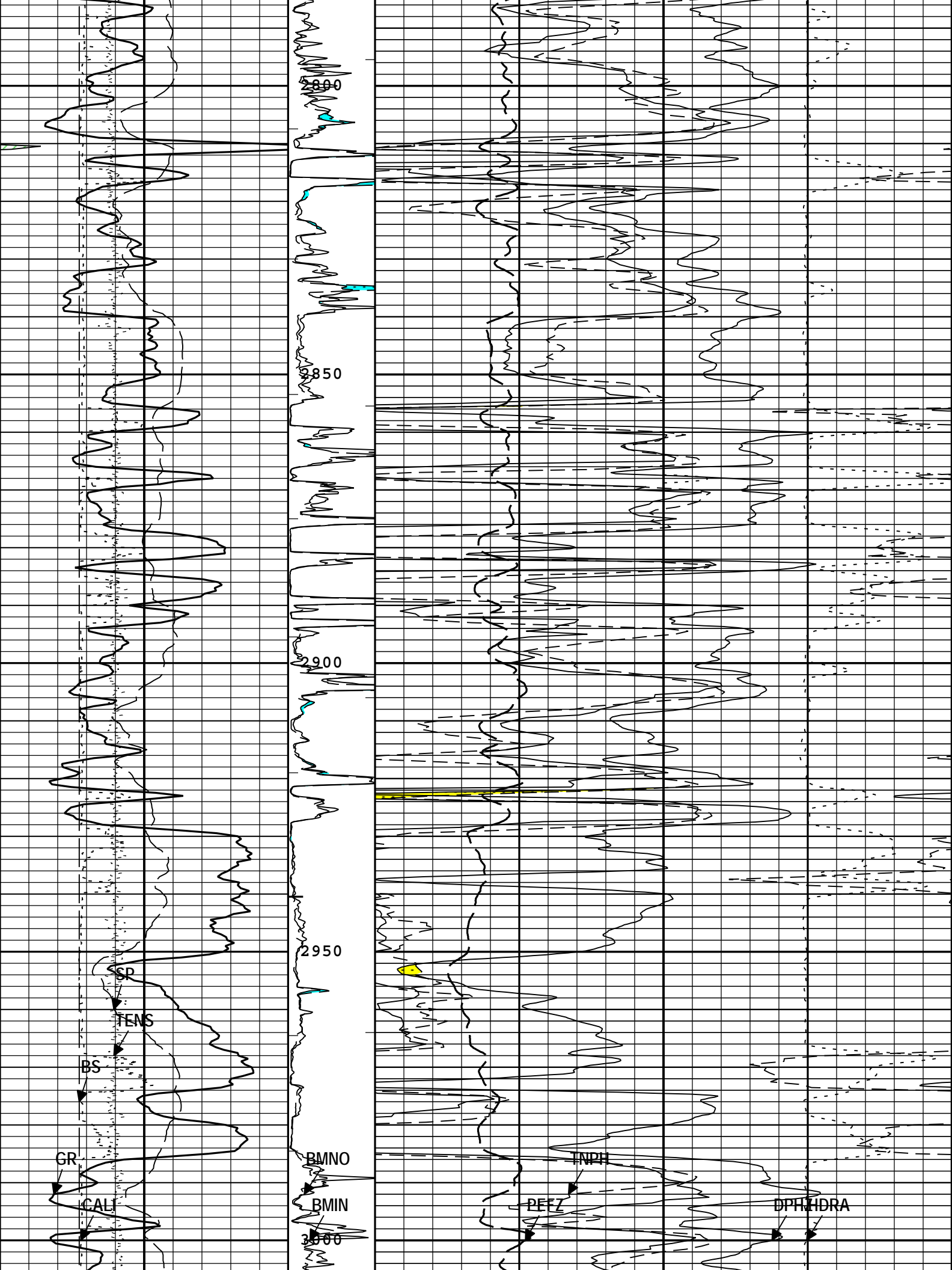
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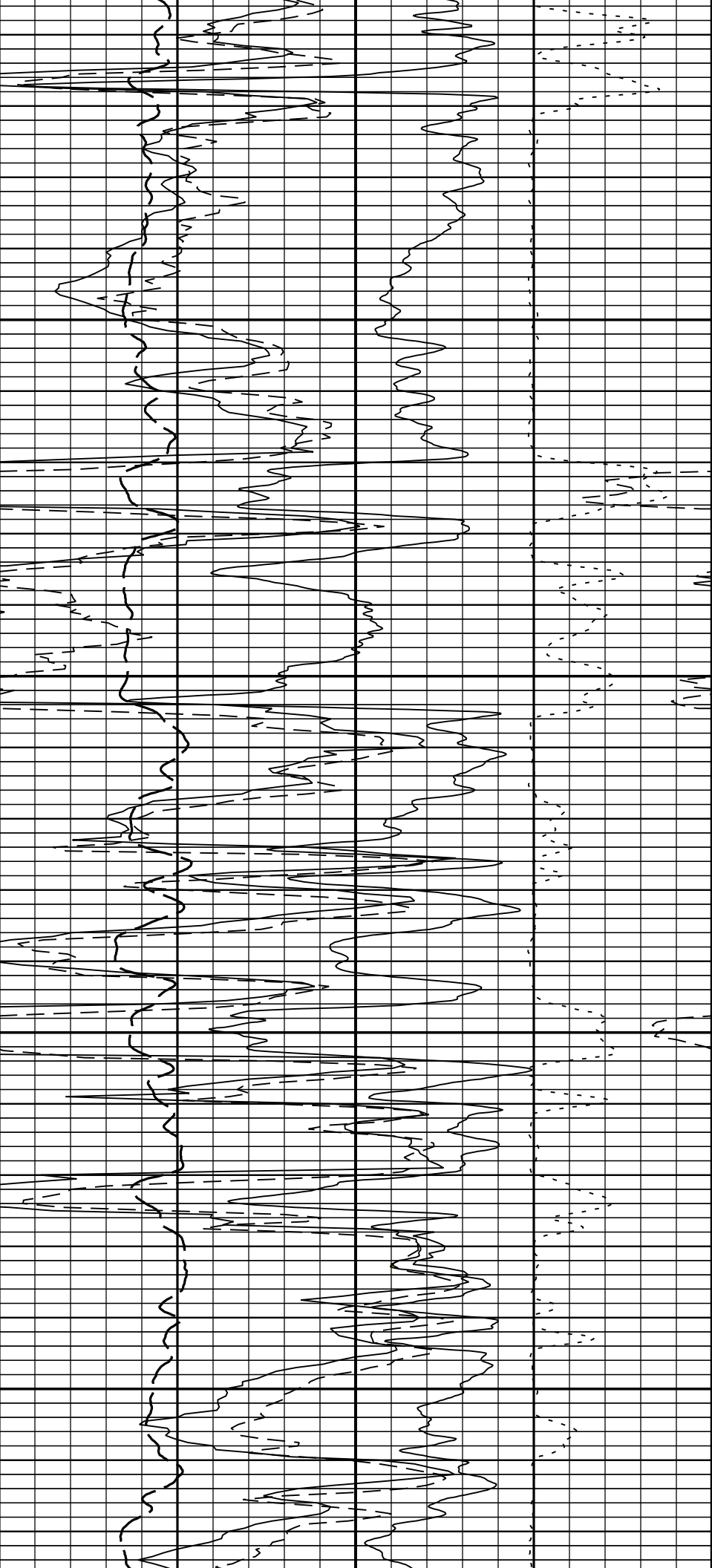
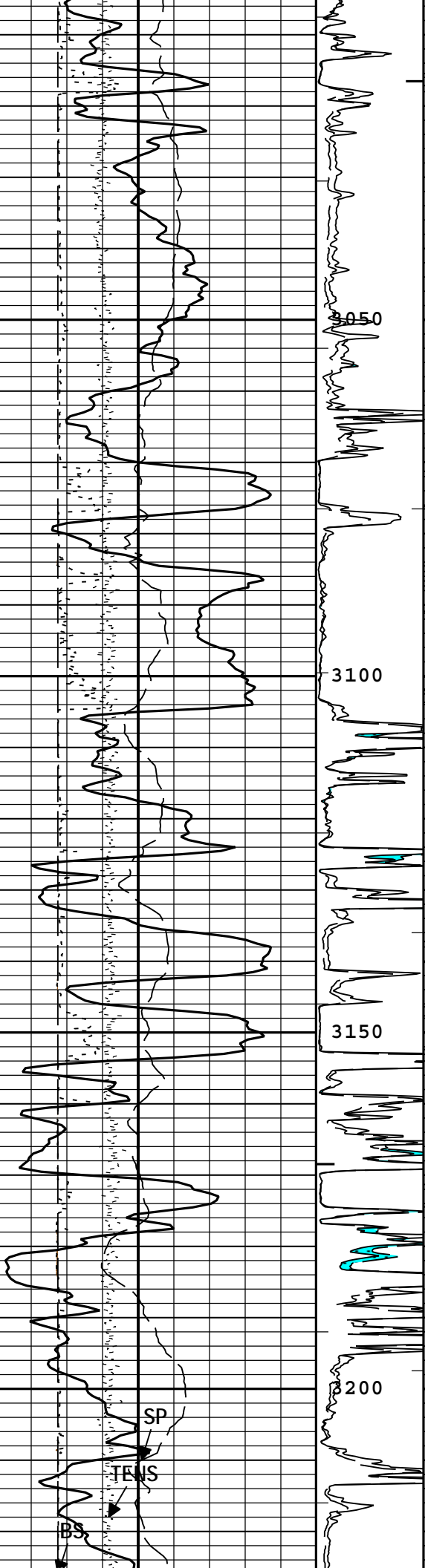
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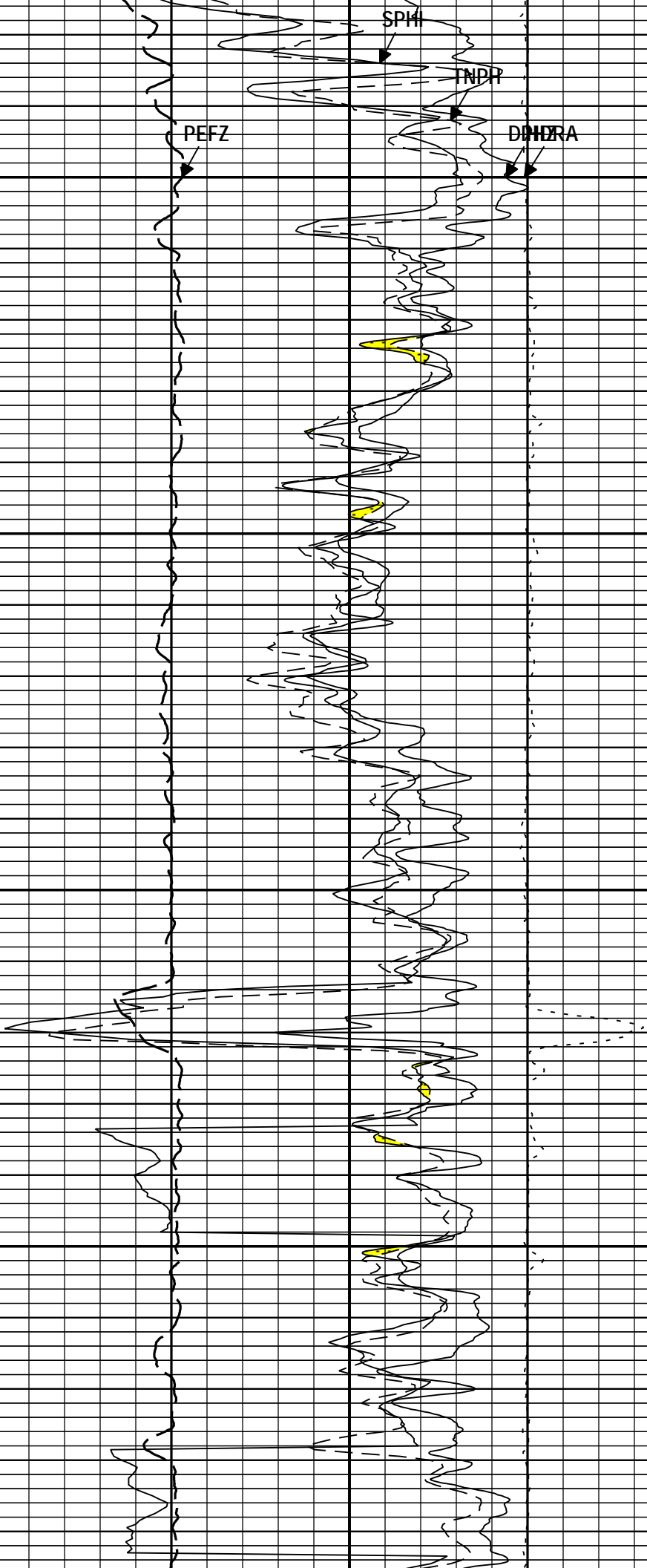
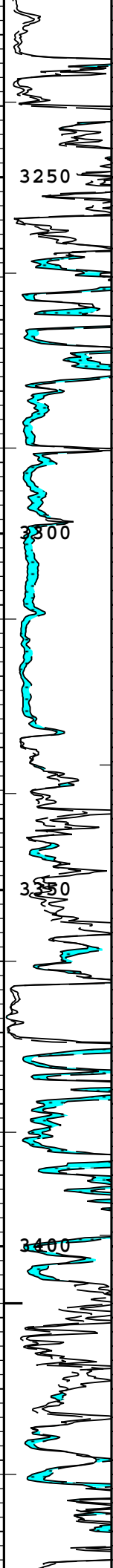
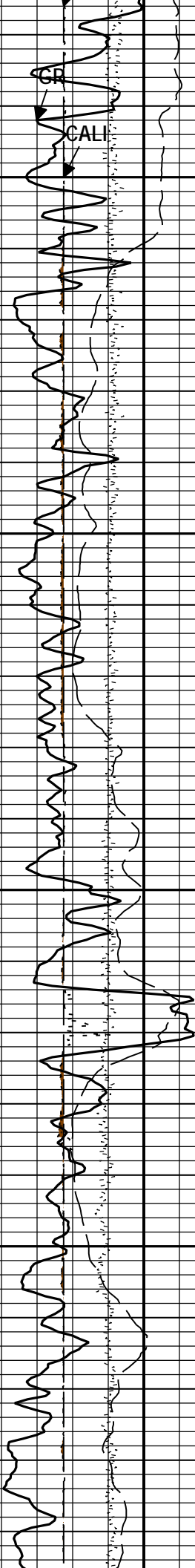
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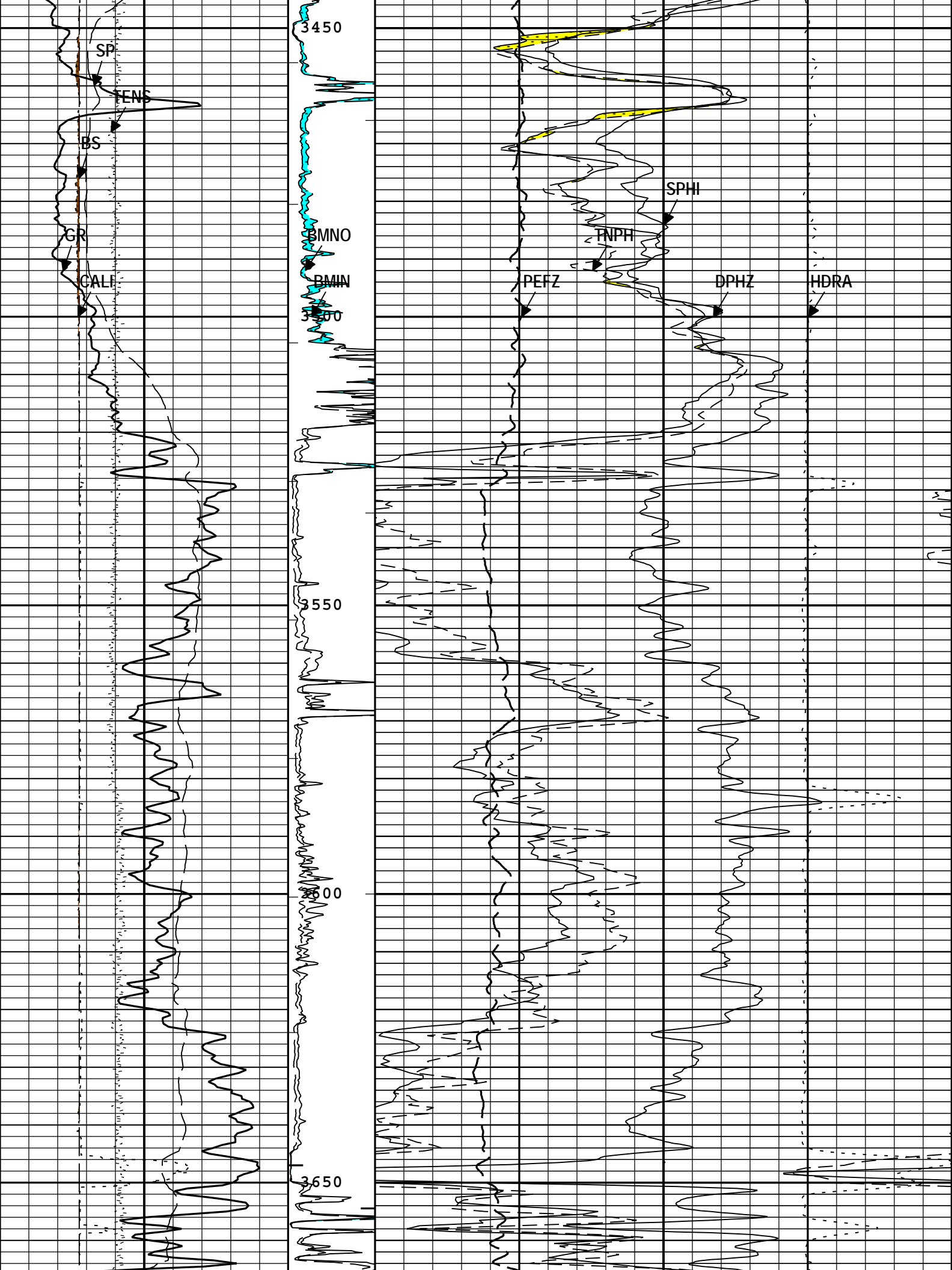


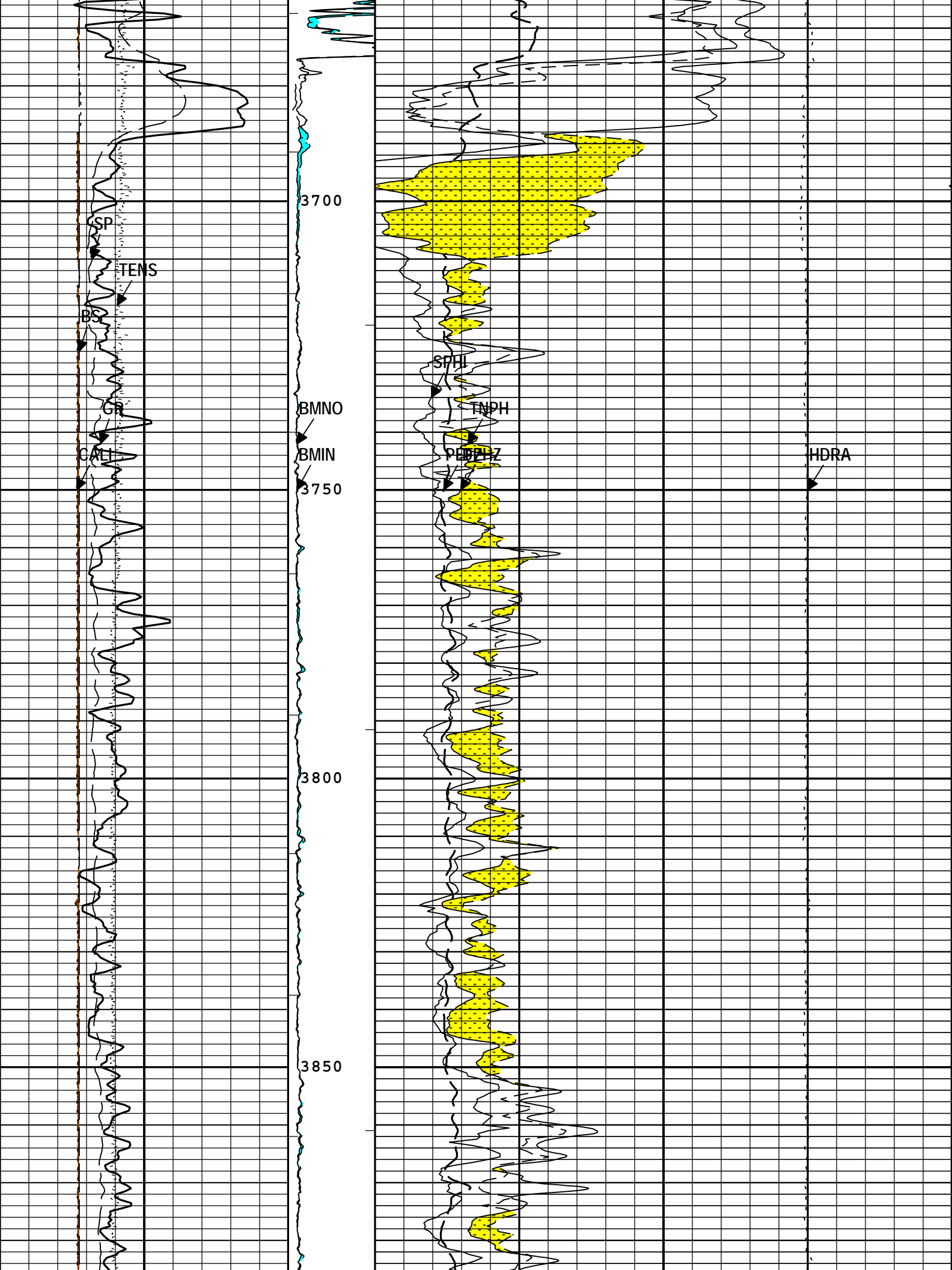


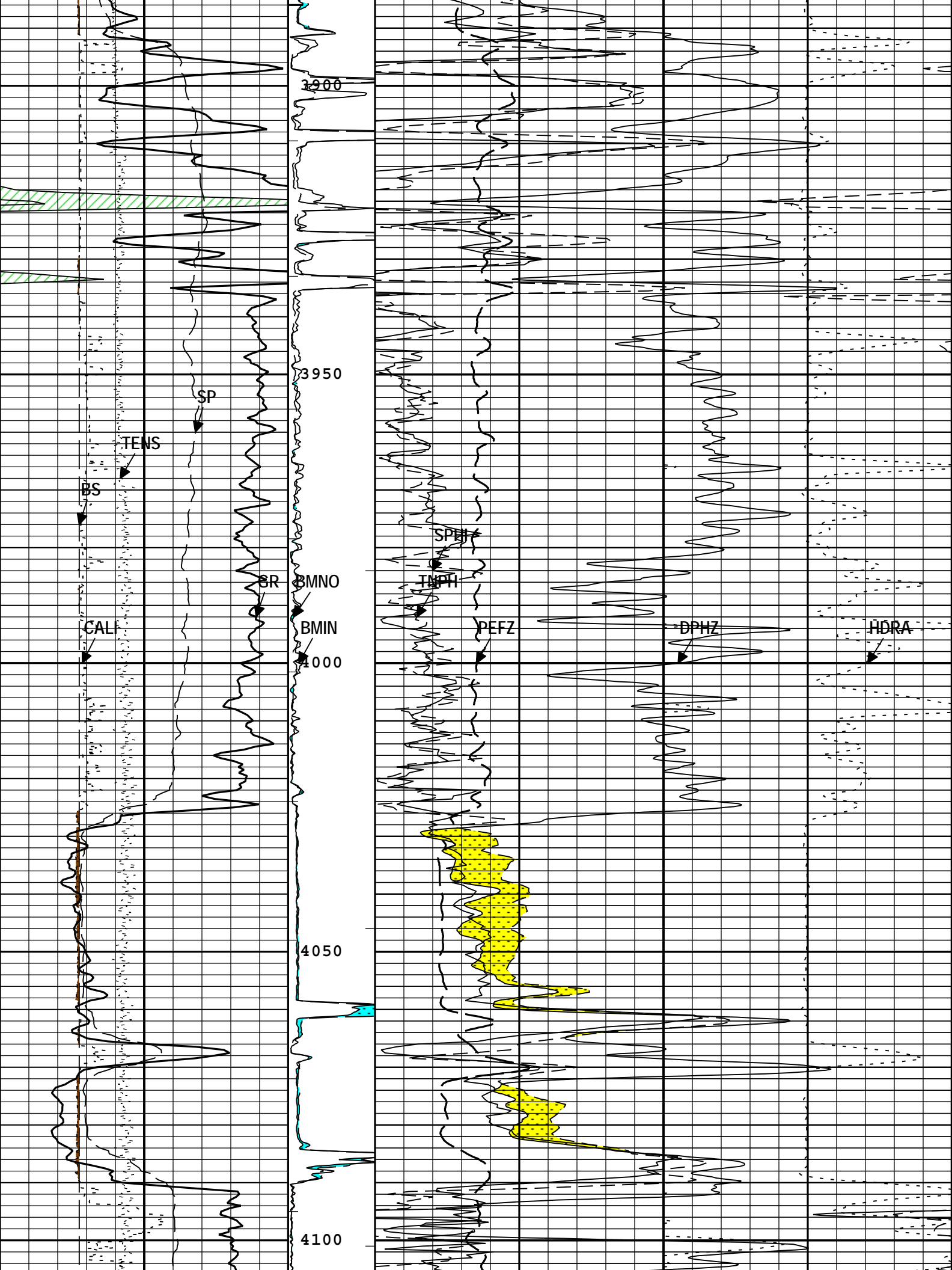


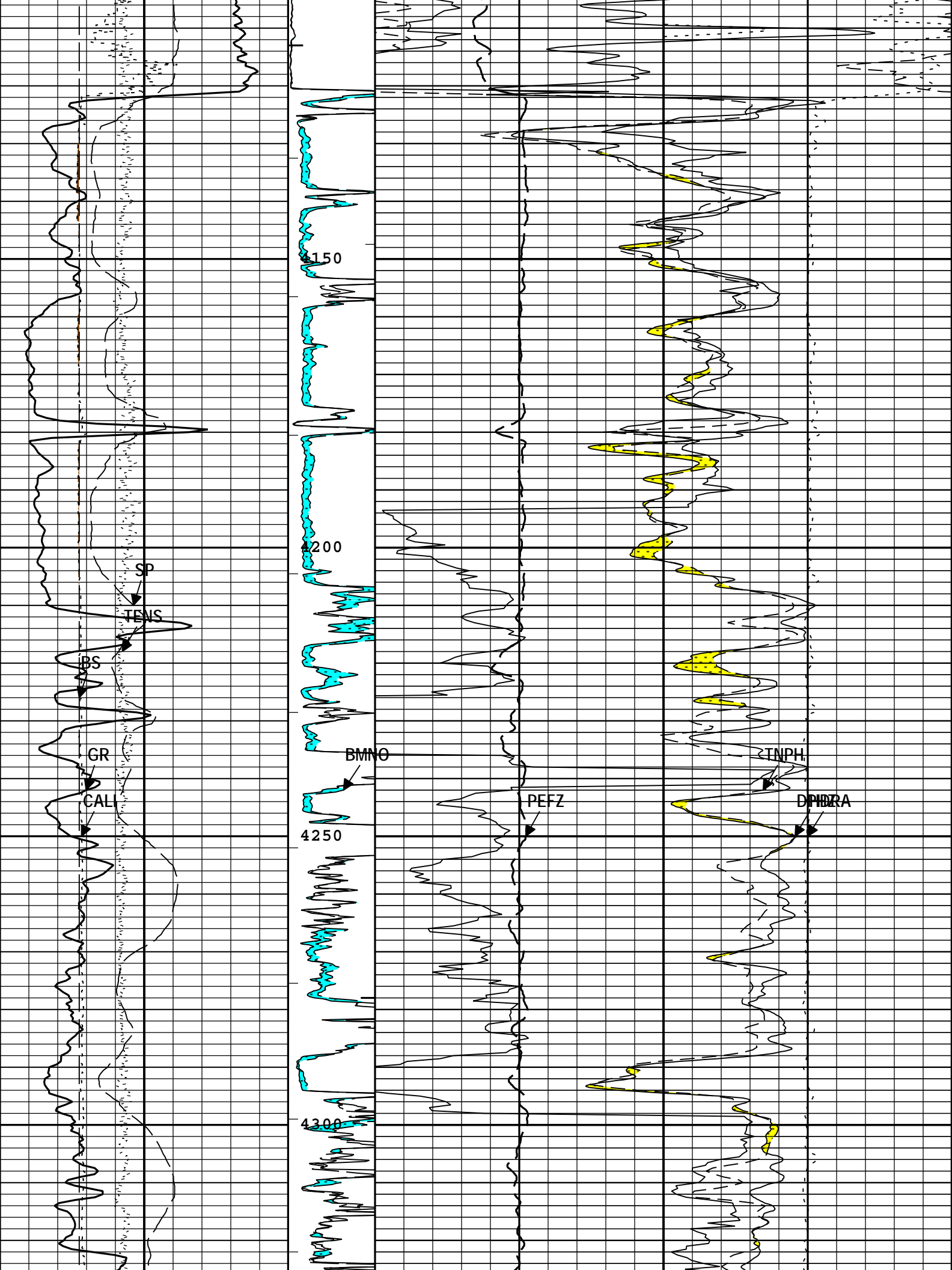


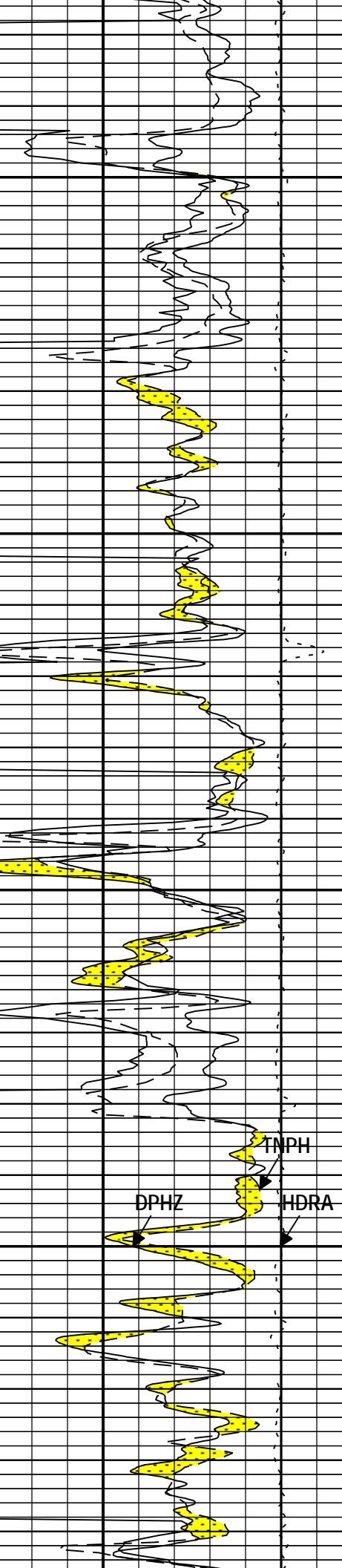
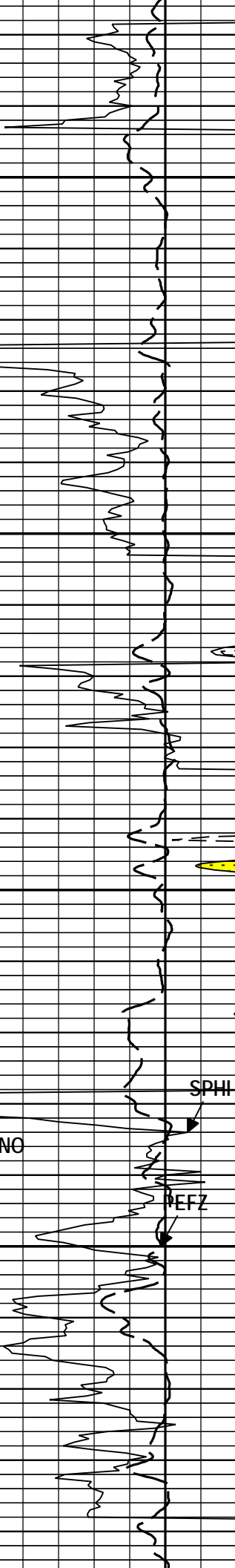
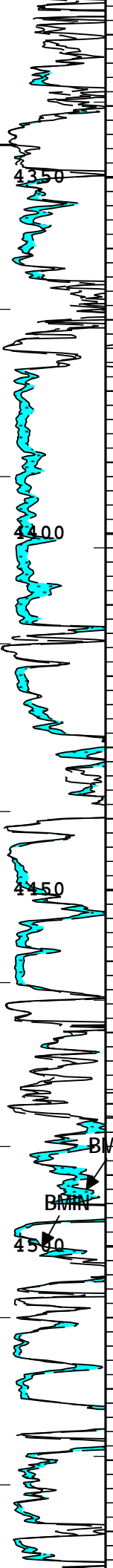
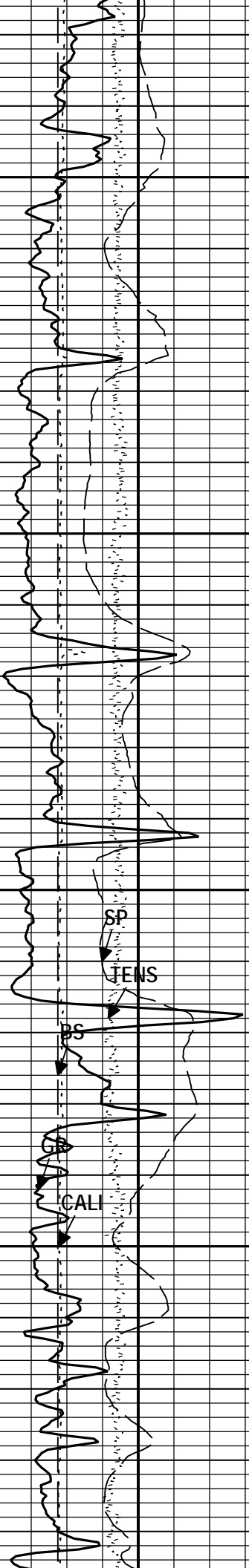


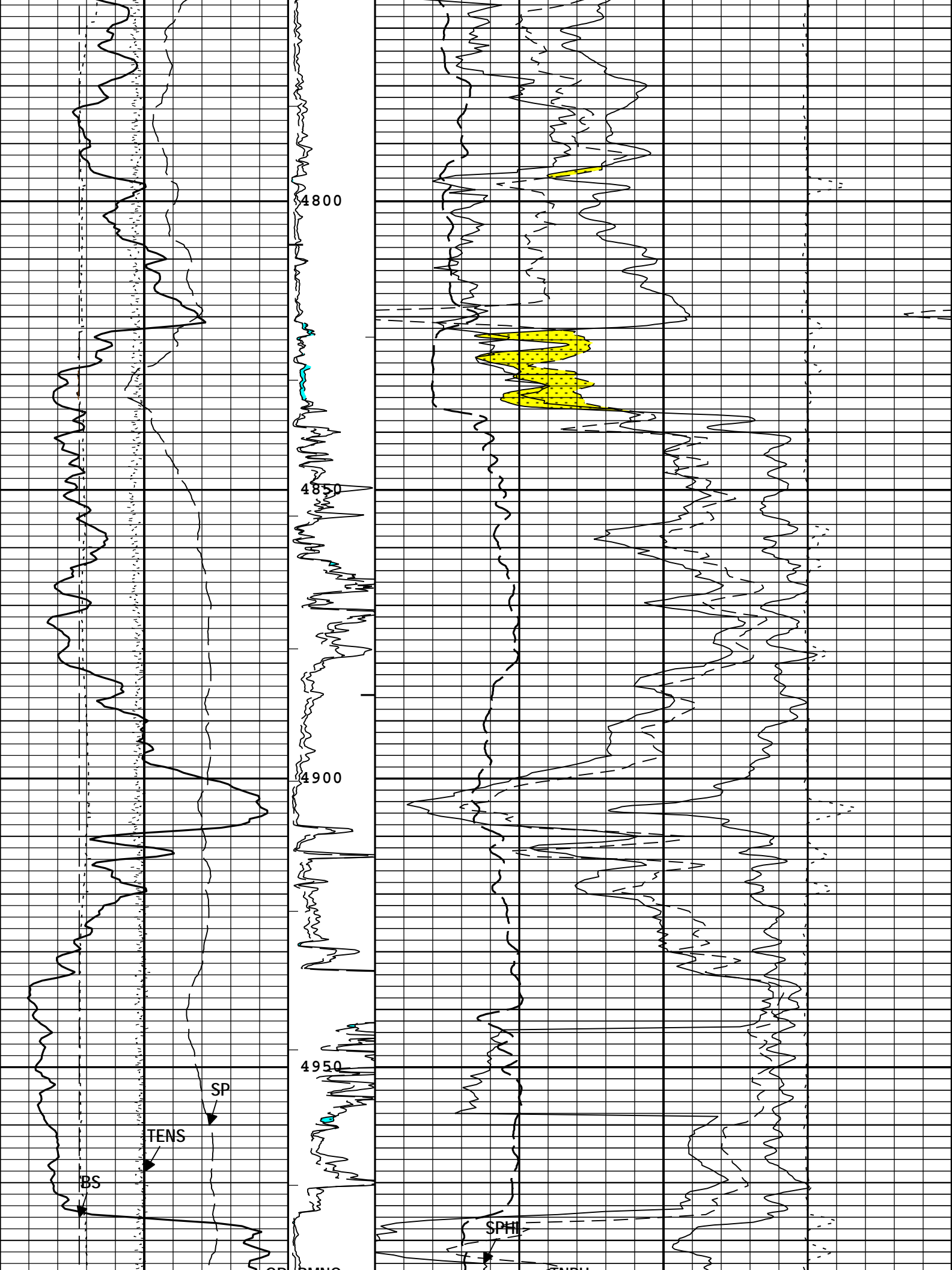


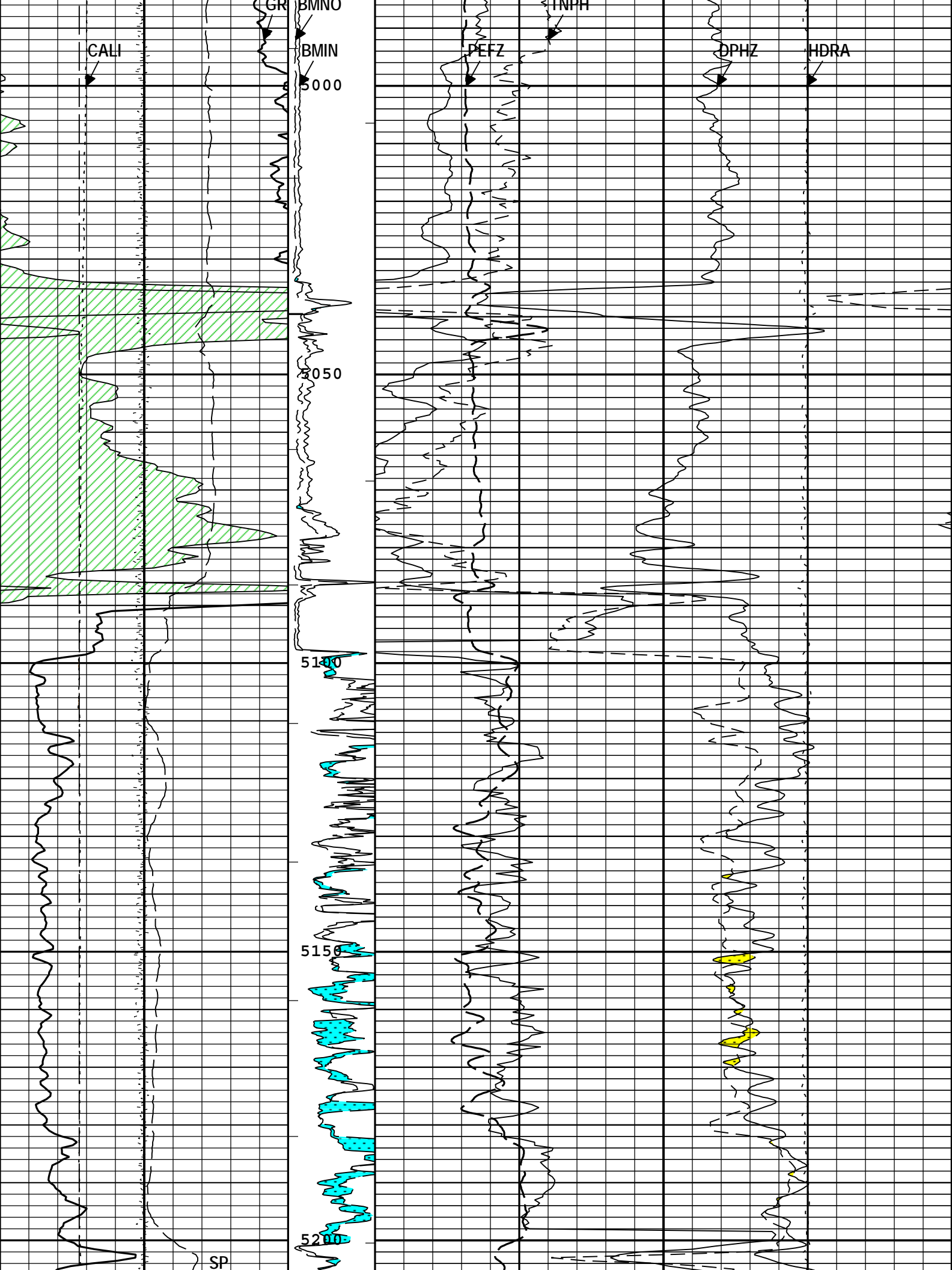


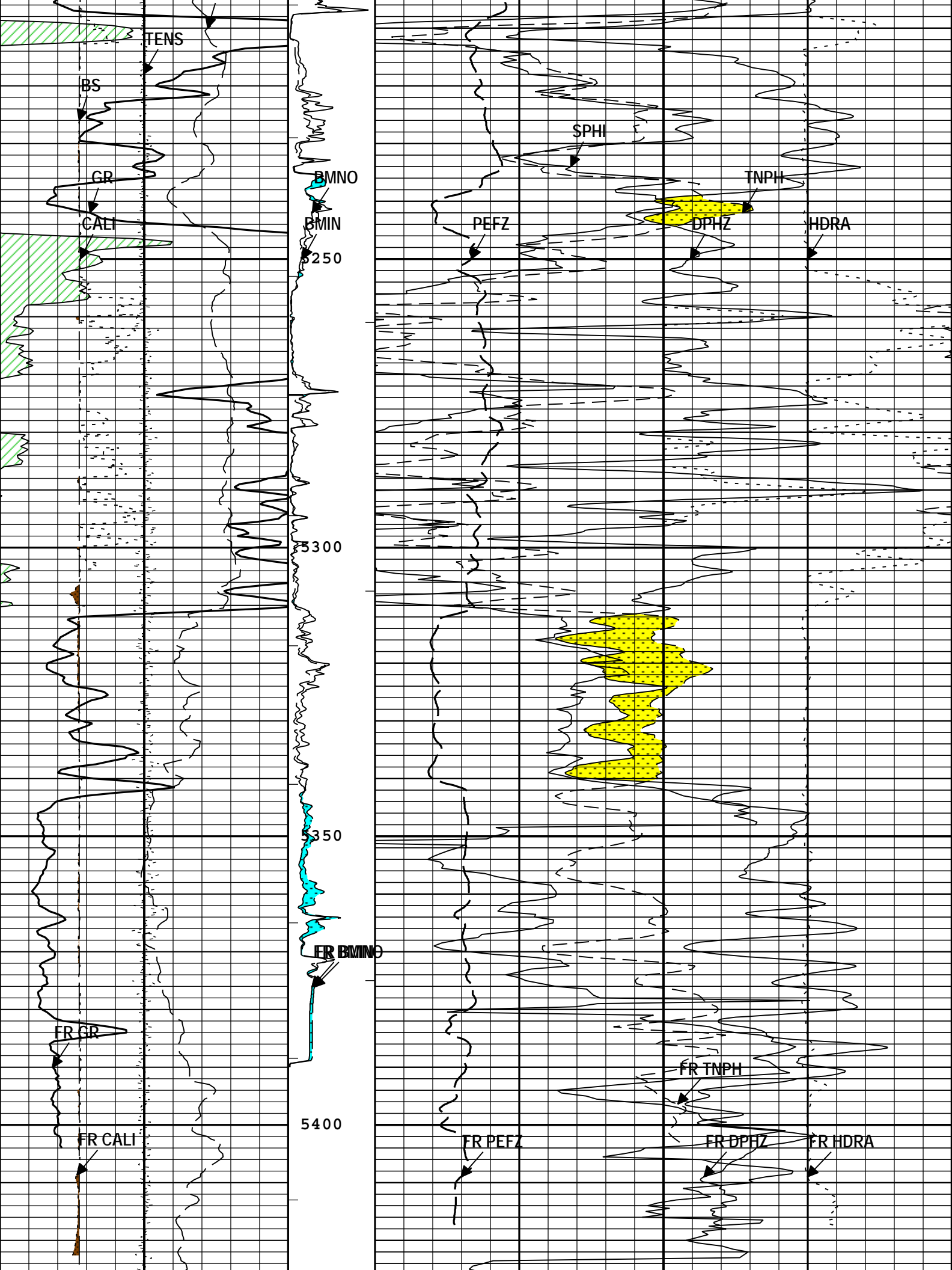


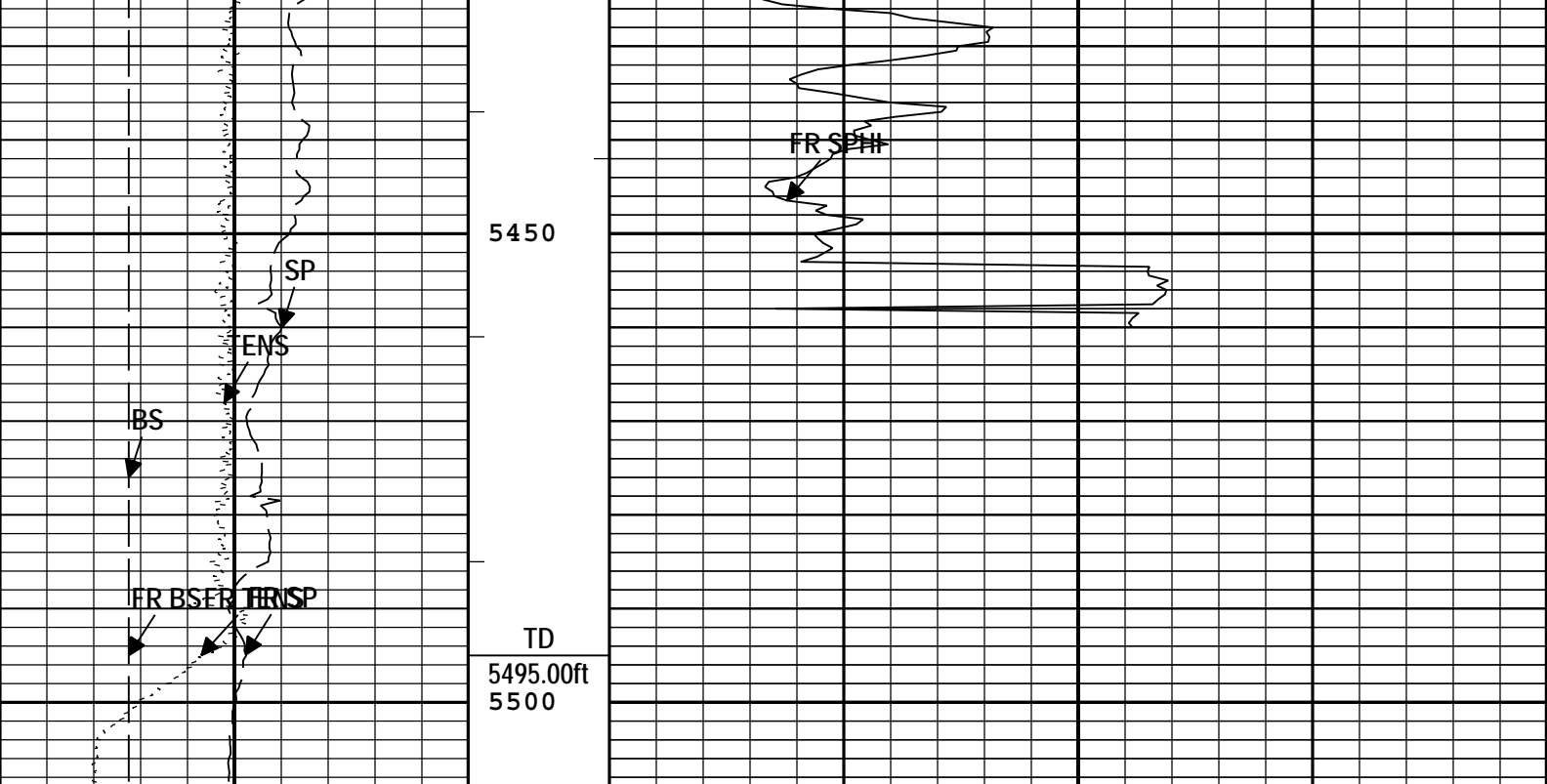












Limestone Matrix, 2.71 g/cc

Gamma Ray Backup	Possible Permiability	Gas
Mud-Cake	Micro Inverse (BMIN) MLT-B	Standard Resolution Density Porosity (DPHZ) HDRS-H
Caliper (CALI) HDRS-H	0.3	ft3/ft3 -0.1
6 in 16	0 ohm.m 40	Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H
Gamma Ray (GR) HGNS-H	0.3	ft3/ft3 -0.1
0 gAPI 150	Micro Normal (BMNO) MLT-B	Sonic Porosity (SPHI) DSST-B
Gamma Ray (GR) HGNS-H	0.3	ft3/ft3 -0.1
150 gAPI 300	Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H	Density Standoff Correction (HDRA) HDRS-H
Bit Size (BS)	0	-0.25 g/cm3 0.25
6 in 16	10	
Cable Tension (TENS)		
0 lbf 8000		
Spontaneous Potential (SP) AIT-M		
-160 mV 40		

TIME_1900 - Time Marked every 60.00 (s)

- |ICV - Integrated Cement Volume every 100.00 (ft3)
- |IHV - Integrated Hole Volume every 10.00 (ft3)
- |IHV - Integrated Hole Volume every 100.00 (ft3)
- |ICV - Integrated Cement Volume every 10.00 (ft3)

Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 30-Oct-2012 13:38:03

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in

BSAL	Borehole Salinity	Borehole	3000	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	817	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
CDTS	Correction for Delta-T Shale, Empirical	Borehole	100	us/ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	Fresh WBM	
DHC	Density Hole Correction	HDRS-H	Bit Size	
DSST_DTCS	Compressional Delta-T Source for DTCO Channel	DSST-B	PS Comp	
DTF	Delta-T Fluid	Borehole	189	us/ft
DTM	Delta-T Matrix	Borehole	47.6	us/ft
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
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	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
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	77	degF
NPRM	HRDD Nuclear Processing Mode	HDRS-H	High Resolution	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.61	ohm.m
SBO4	STC Search Band Offset - Monopole P&S	DSST-B	360	us
SBW4	STC Search Bandwidth - Monopole P&S	DSST-B	2400	us
SEMTHR4	STC Semblance Threshold - Monopole P & S	DSST-B	0.35	
SFTY	Slowness Formation Type (Fast, Intermediate, Slow, etc.)	Borehole	Intermediate	
SLL4	STC Slowness Lower Limit - Monopole P&S	DSST-B	40	us/ft
SOCO	Standoff Correction Option	HGNS-H	Yes	
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
SPFS	Sonic Porosity Formula	Borehole	Wyllie	
SPM4	Slowness Determination Processing Mode - Monopole P&S	DSST-B	DDBHC	
SPS4	Slowness Processing Switch for SAM4	DSST-B	On	
SPSO	Sonic Porosity Source	DSST-B	DTCO	
SST4	STC Slowness Step - Monopole P&S	DSST-B	2	us/ft
SUL4	STC Slowness Upper Limit - Monopole P&S	DSST-B	240	us/ft
SWD4	STC Slowness Width - Monopole P&S	DSST-B	20	us/ft
TLL4	STC Time Lower Limit - Monopole P&S	DSST-B	400	us
TRCLL4	Tracking Compressinal Lower Limit - Monopole PS	DSST-B	56.67	us/ft
TRCUL4	Tracking Compressinal Upper Limit - Monopole PS	DSST-B	127.5	us/ft
TST4	STC Time Step - Monopole P&S	DSST-B	100	us
TUL4	STC Time Upper Limit - Monopole P&S	DSST-B	4100	us
TWD4	STC Time Width - Monopole P&S	DSST-B	1800	us
TWI4	STC Integration Time Window - Monopole P&S	DSST-B	320	us

XFH4	STC Filter High - Monopole P & S	DSST-B	16000	Hz
XFL4	STC Filter Low - Monopole P & S	DSST-B	4000	Hz
XFS4	STC Filter Size - Monopole P & S	DSST-B	49	

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	1800	ft/h
SAM4	DSST Sonic Acquisition Mode 4 - Monopole Mode for P&S	DSST-B	Odd	
SAMX	Sonic Acquisition Mode X - Both Dipoles and Monopole Modes for Expert	DSST-B	BCR	

ONE

Repeat Pass Porosity 5" = 100'

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	72.15	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	138.96	ft3

Software Version

Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20120723-3.1.9755.1112 EXP_APL-MASTAXIS-3.1.9755.1221

Computation	Description	Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	3.1.9755.0
HENVIR	Computation Ensemble for the HGNS Neutron environmental corrections	3.1.9755.0

Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	3.1.9755.0	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	3.1.9755.0	3.0
MLT-B	Microlog Tool	3.1.9755.0	
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	3.1.9755.0	2.0
SPAC-B	Digitizing Sonic Logging Cartridge - B	3.1.9755.0	
AMIS	Array Induction Sonde - M	3.1.9755.1112	1

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[6]:Up	Up	809.28 ft	1216.53 ft	29-Oct-2012 2:25:44 PM	29-Oct-2012 2:49:25 PM	3.32 ft	

All depths are referenced to toolstring zero

Log

ONE: Log[6]:Up

Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 30-Oct-2012 13:38:07

Channel	Source	Sampling
BMIN	MLT-B:MLT-B:MLT-B	2in
BMNO	MLT-B:MLT-B:MLT-B	2in
BS	Borehole	6in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in
GR	HGNS-H:HGNS-H:HGNS-H	6in
HRDA	HDRS-H:HRMS-H:HRGD-H	2in

TDRA	HDRS-H:HRMS-H:HRGD-H	2in
ICV	Borehole	6in
IHV	Borehole	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
SP	AIT-M:AMIS:AMIS	6in
SPHI	DSST-B:SPAC-B:SPAC-B	6in
TENS	WLWorkflow	1in
TNPH	HGNS-H:HGNS-H:HGNS-H	6in

- |ICV - Integrated Cement Volume every 10.00 (ft3)
- |IHV - Integrated Hole Volume every 100.00 (ft3)
- |IHV - Integrated Hole Volume every 10.00 (ft3)
- |ICV - Integrated Cement Volume every 100.00 (ft3)

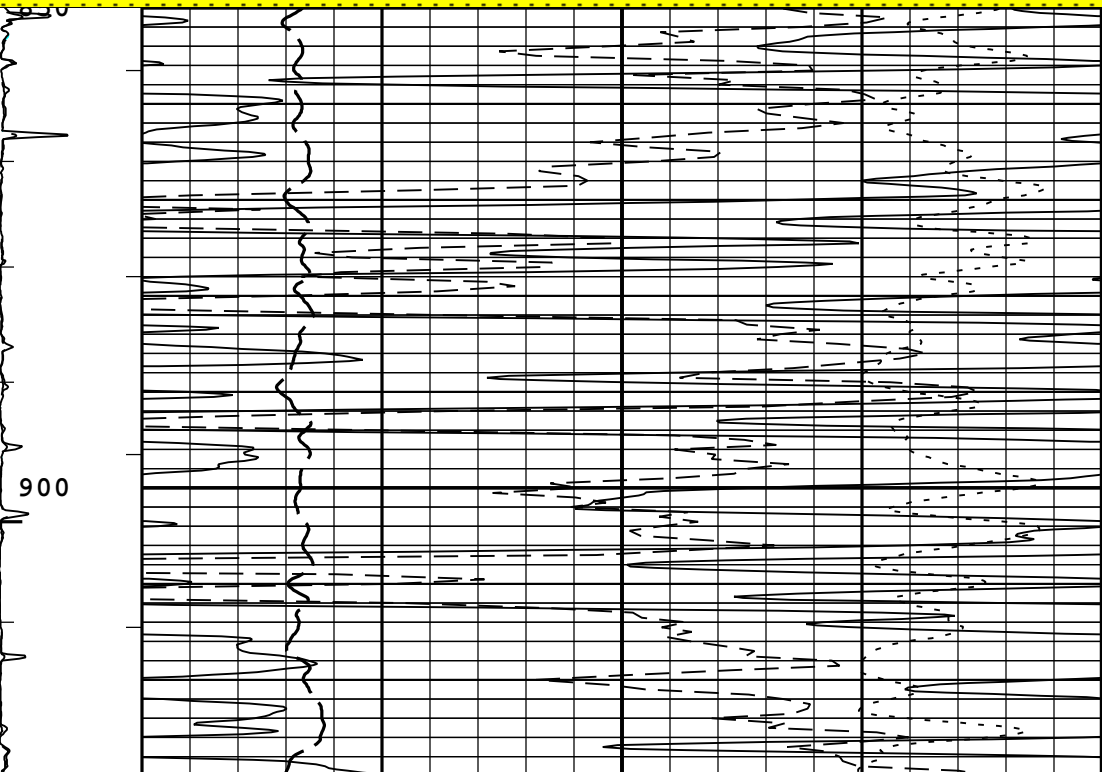
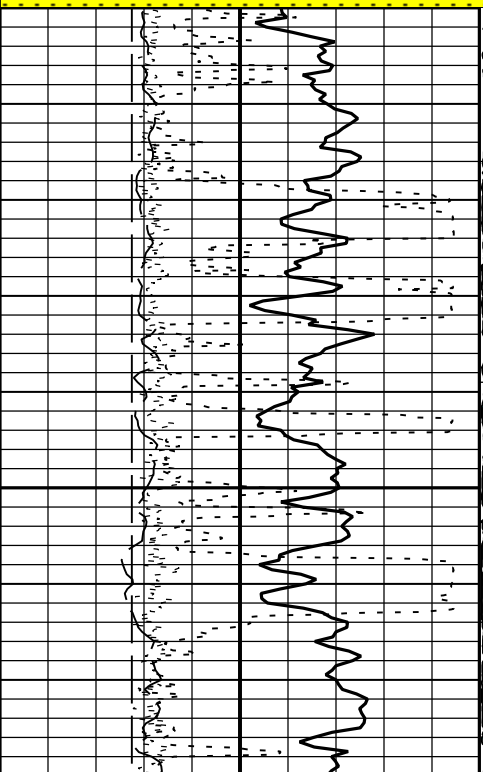
TIME_1900 - Time Marked every 60.00 (s)

Gamma Ray Backup		
Mud-Cake		
Caliper (CALI) HDRS-H		
6	in	16
Gamma Ray (GR) HGNS-H		
0	gAPI	150
Gamma Ray (GR) HGNS-H		
150	gAPI	300
Bit Size (BS)		
6	in	16
Cable Tension (TENS)		
0	lbf	8000
Spontaneous Potential (SP) AIT-M		
-160	mV	40

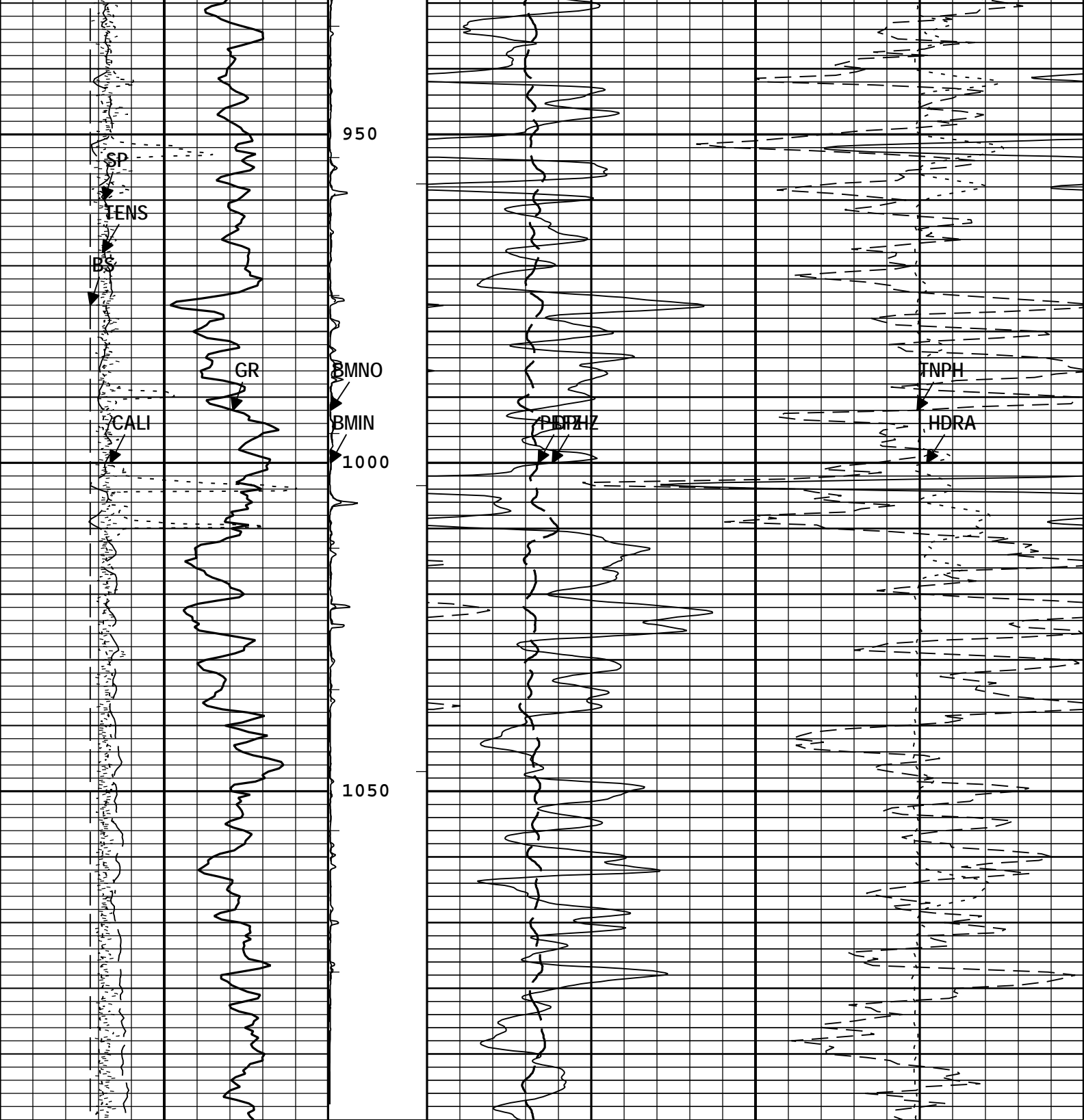
Possible Permiability
Micro Inverse (BMIN) MLT-B
0 ohm.m 40
Micro Normal (BMNO) MLT-B
0 ohm.m 40

Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		Density Standoff Correction (HDRA) HDRS-H	
0	10	-0.25	0.25
Gas			
Standard Resolution Density Porosity (DPHZ) HDRS-H			
0.3	ft3/ft3	-0.1	
Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H			
0.3	ft3/ft3	-0.1	
Sonic Porosity (SPHI) DSST-B			
0.3	ft3/ft3	-0.1	

Limestone Matrix, 2.71 g/cc



900



Limestone Matrix, 2.71 g/cc

Gamma Ray Backup		Possible Permiability	Gas	
Mud-Cake		Micro Inverse (BMIN) MLT-B	Standard Resolution Density Porosity (DPHZ) HDRS-H	
6	in	0 ohm.m	0.3	ft3/ft3 -0.1
Caliper (CALI) HDRS-H		Micro Normal (BMNO) MLT-B	Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H	
16		0 ohm.m	0.3	ft3/ft3 -0.1
Gamma Ray (GR) HGNS-H			Sonic Porosity (SPHI) DSST-B	
0	gAPI		0.3	ft3/ft3 -0.1
Gamma Ray (GR) HGNS-H			Standard Resolution Formation Photoelectric	
150	gAPI	300	0 ohm.m	Density Standoff Correction (HDRA) HDRS-H

Bit Size (BS)	0	Factor (PEFZ) HDRS-H	0.25	g/cm3	0.25
6 in 16					
Cable Tension (TENS)	0				
lbf 8000					
Spontaneous Potential (SP) AIT-M	-160				
mV 40					
TIME_1900 - Time Marked every 60.00 (s)					
<ul style="list-style-type: none"> └─ ICV - Integrated Cement Volume every 100.00 (ft3) └─ IHV - Integrated Hole Volume every 10.00 (ft3) └─ IHV - Integrated Hole Volume every 100.00 (ft3) └─ ICV - Integrated Cement Volume every 10.00 (ft3) 					

Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 30-Oct-2012 13:38:07

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	3000	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	817	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
CDTS	Correction for Delta-T Shale, Empirical	Borehole	100	us/ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	9.625	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	Fresh WBM	
DHC	Density Hole Correction	HDRS-H	Bit Size	
DSST_DTCS	Compressional Delta-T Source for DTCO Channel	DSST-B	PS Comp	
DTF	Delta-T Fluid	Borehole	189	us/ft
DTM	Delta-T Matrix	Borehole	47.6	us/ft
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
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	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
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	77	degF
NPRM	HRDD Nuclear Processing Mode	HDRS-H	High Resolution	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.61	ohm.m
SBO4	STC Search Band Offset - Monopole P&S	DSST-B	360	us
SBW4	STC Search Bandwidth - Monopole P&S	DSST-B	2400	us

SEMTHR4	STC Semblance Threshold - Monopole P & S	DSST-B	0.35	
SFTY	Slowness Formation Type (Fast, Intermediate, Slow, etc.)	Borehole	Intermediate	
SLL4	STC Slowness Lower Limit - Monopole P&S	DSST-B	40	us/ft
SOCO	Standoff Correction Option	HGNS-H	Yes	
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
SPFS	Sonic Porosity Formula	Borehole	Wyllie	
SPM4	Slowness Determination Processing Mode - Monopole P&S	DSST-B	DDBHC	
SPS4	Slowness Processing Switch for SAM4	DSST-B	On	
SPSO	Sonic Porosity Source	DSST-B	DTCO	
SST4	STC Slowness Step - Monopole P&S	DSST-B	2	us/ft
SUL4	STC Slowness Upper Limit - Monopole P&S	DSST-B	240	us/ft
SWD4	STC Slowness Width - Monopole P&S	DSST-B	20	us/ft
TLL4	STC Time Lower Limit - Monopole P&S	DSST-B	400	us
TRCLL4	Tracking Compressinal Lower Limit - Monopole PS	DSST-B	56.67	us/ft
TRCUL4	Tracking Compressinal Upper Limit - Monopole PS	DSST-B	127.5	us/ft
TST4	STC Time Step - Monopole P&S	DSST-B	100	us
TUL4	STC Time Upper Limit - Monopole P&S	DSST-B	4100	us
TWD4	STC Time Width - Monopole P&S	DSST-B	1800	us
TWI4	STC Integration Time Window - Monopole P&S	DSST-B	320	us
XFH4	STC Filter High - Monopole P & S	DSST-B	16000	Hz
XFL4	STC Filter Low - Monopole P & S	DSST-B	4000	Hz
XFS4	STC Filter Size - Monopole P & S	DSST-B	49	

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	1800	ft/h
SAM4	DSST Sonic Acquisition Mode 4 - Monopole Mode for P&S	DSST-B	Odd	
SAMX	Sonic Acquisition Mode X - Both Dipoles and Monopole Modes for Expert	DSST-B	BCR	

ONE

Repeat Analysis

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	759.48 ft	5508.95 ft	29-Oct-2012 9:42:39 AM	29-Oct-2012 2:16:18 PM	3.49 ft	
ONE	Log[6]:Up	Up	809.28 ft	1216.53 ft	29-Oct-2012 2:25:44 PM	29-Oct-2012 2:49:25 PM	3.32 ft	

All depths are referenced to toolstring zero

Log

ONE: Log[4]:Up

Description: Nuclear standard resolution template for Platform Express Format: Log (Porosity 5 inch RA_1) Index Scale: 5 in per 100 ft Index Unit: ft Index 13:38:08

Channel Source Sampling

ICV Borehole 6in

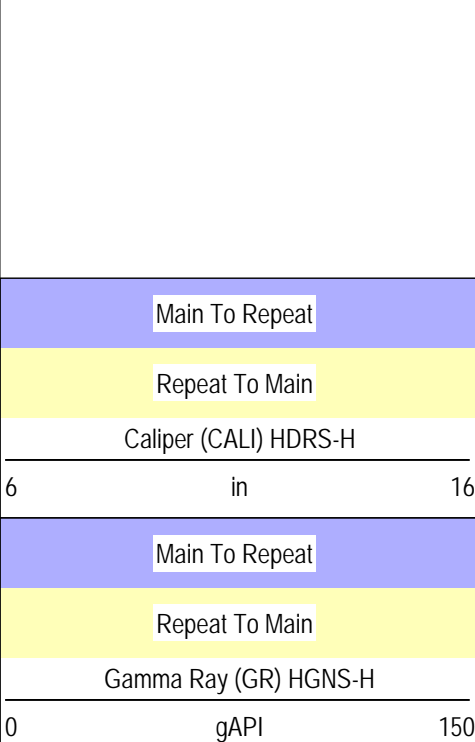
IHV Borehole 6in

—|ICV - Integrated Cement Volume every 10.00 (ft3)

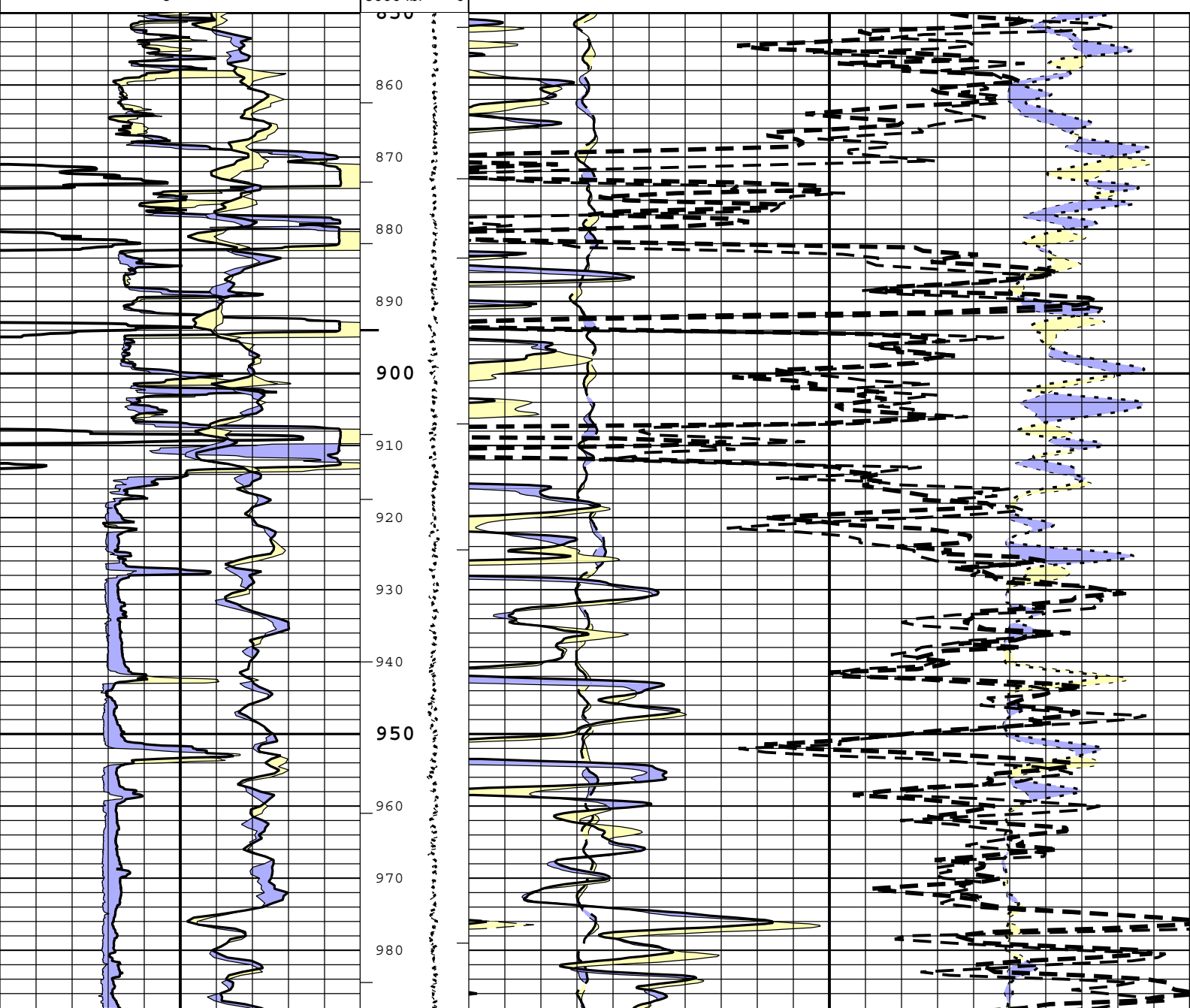
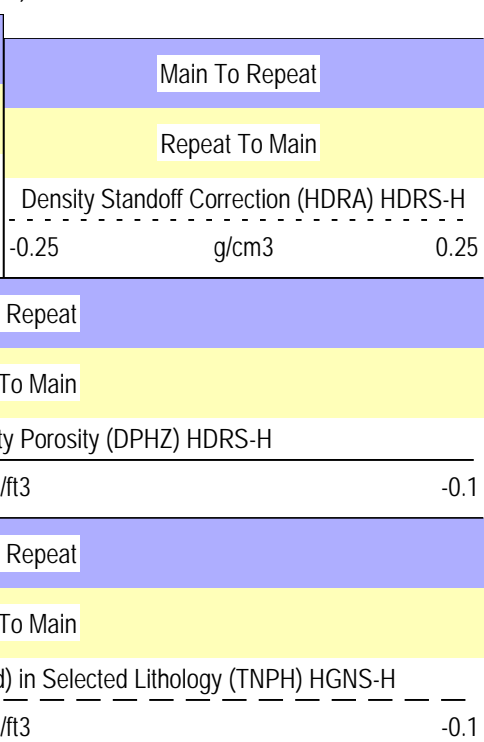
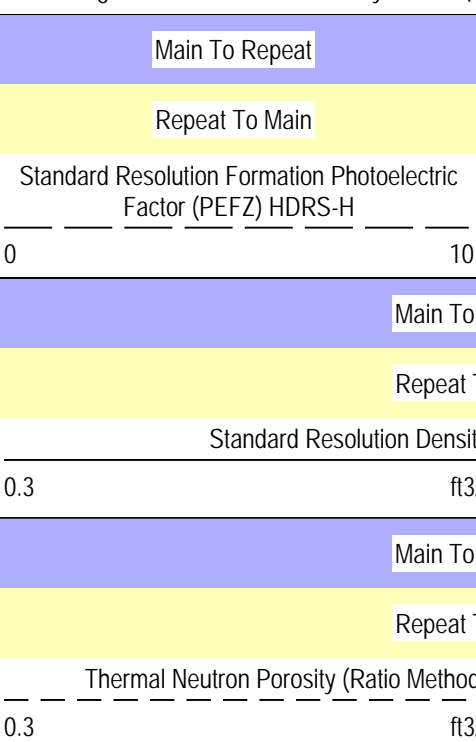
—|IHV - Integrated Hole Volume every 100.00 (ft3)

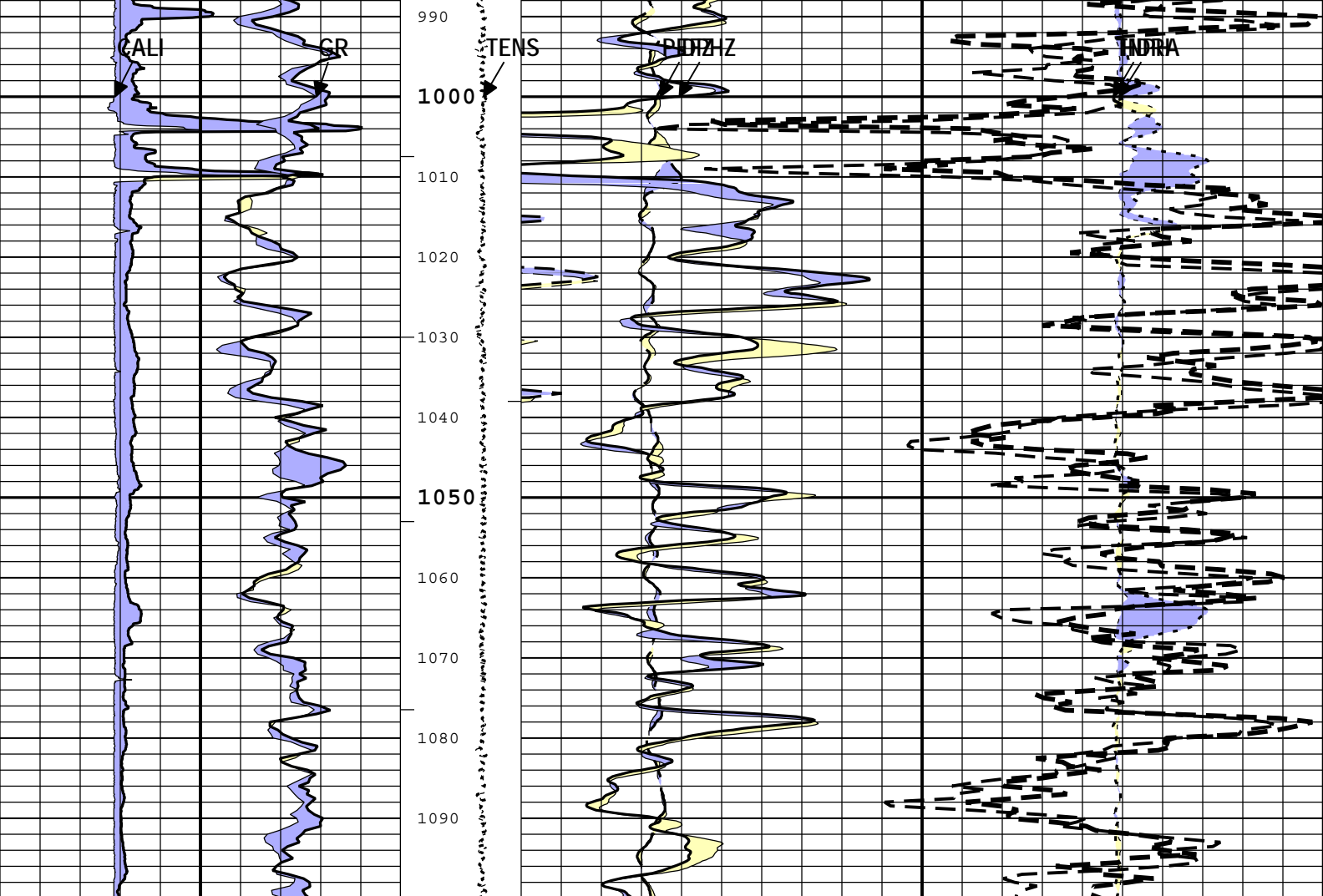
—|IHV - Integrated Hole Volume every 10.00 (ft3)

ICV - Integrated Cement Volume every 100.00 (ft3)



Main To Repeat
Repeat To Main
Cable Tension (TENS)
8000 lbf





Main To Repeat		
Repeat To Main		
Caliper (CALI) HDRS-H		
6	in	16
Main To Repeat		
Repeat To Main		
Gamma Ray (GR) HGNS-H		
0	gAPI	150

Main To Repeat
Repeat To Main
Cable Tension (TENS)
8000 lbf 0

Main To Repeat		
Repeat To Main		
Standard Resolution Density Porosity (DPHZ) HDRS-H		
0.3	ft3/ft3	-0.1
Main To Repeat		
Repeat To Main		
Thermal Neutron Porosity (Ratio Method) in Selected Lithology (TNPH) HGNS-H		
0.3	ft3/ft3	-0.1

Main To Repeat	
Repeat To Main	
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H	
0	10

Main To Repeat	
Repeat To Main	
Density Standoff Correction (HDRA) HDRS-H	
-0.25	g/cm3 0.25

- ICV - Integrated Cement Volume every 100.00 (ft3)
- IHV - Integrated Hole Volume every 10.00 (ft3)
- IHV - Integrated Hole Volume every 100.00 (ft3)
- ICV - Integrated Cement Volume every 10.00 (ft3)



Main Pass Density 5" = 100'

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
IHV	Integrated Hole Volume	GCSE_UP_PASS	2391.31	ft3
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	1137.48	ft3

Software Version

Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20120723-3.1.9755.1112 EXP_APL-MASTAXIS-3.1.9755.1221

Computation	Description	Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	3.1.9755.0

Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	3.1.9755.0	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	3.1.9755.0	3.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	3.1.9755.0	2.0

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	759.48 ft	5508.95 ft	29-Oct-2012 9:42:39 AM	29-Oct-2012 2:16:18 PM	3.49 ft	

All depths are referenced to toolstring zero

Log

ONE: Log[4]:Up

Description: Nuclear standard resolution template for Platform Express Format: Log (Bulk Density_5 Inch) Index Scale: 5 in per 100 ft Index Unit: ft
 Index Type: Measured Depth Creation Date: 30-Oct-2012 13:38:09

Channel	Source	Sampling
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR	HGNS-H:HGNS-H:HGNS-H	6in
HDRA	HDRS-H:HRMS-H:HRGD-H	2in
ICV	Borehole	6in
IHV	Borehole	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
RHOZ	HDRS-H:HRMS-H:HRGD-H	2in
TENS	WLWorkflow	6in

-|ICV - Integrated Cement Volume every 100.00 (ft3)

-|IHV - Integrated Hole Volume every 10.00 (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)

Gamma Ray Backup

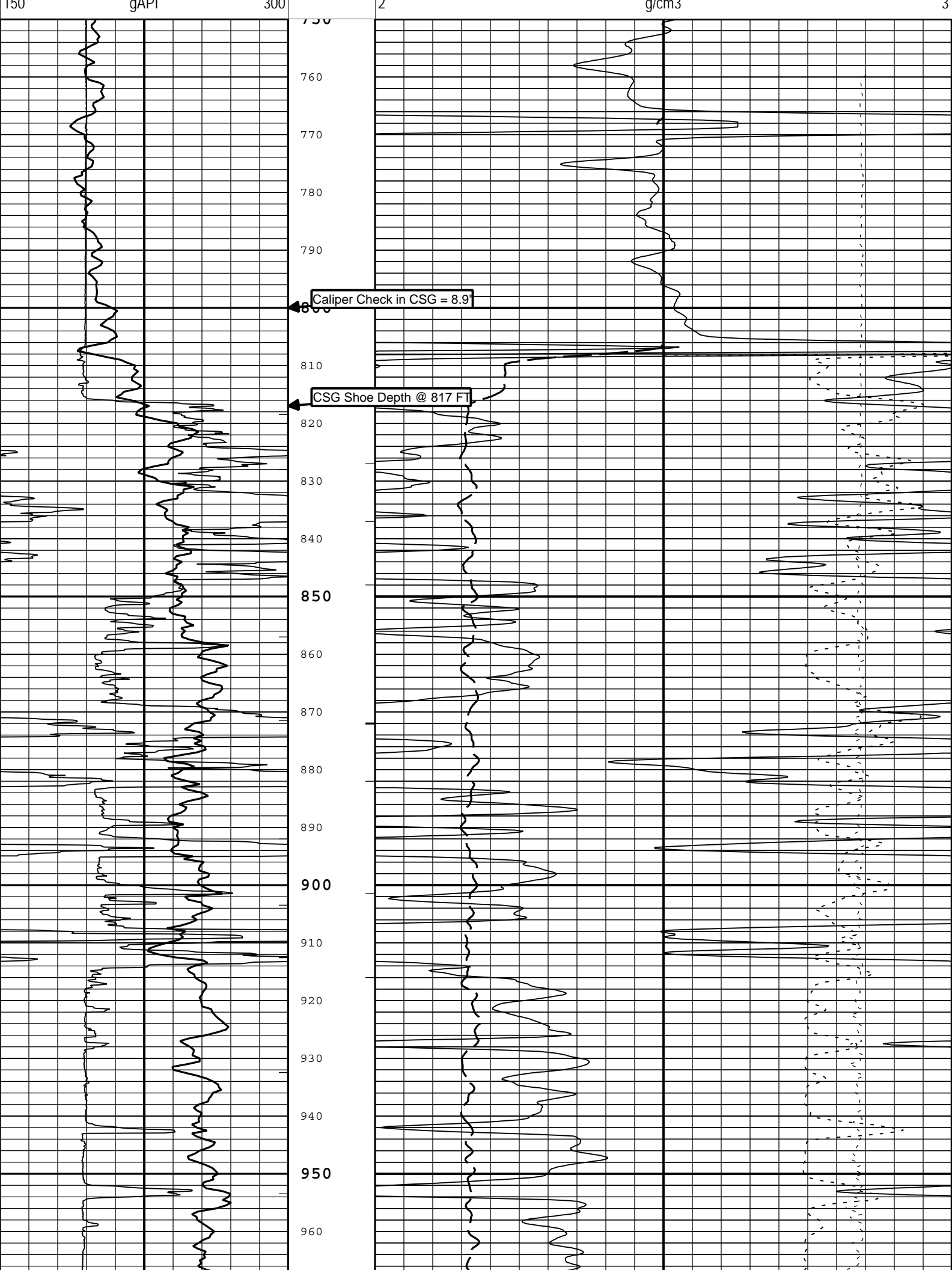
Caliper (CALI) HDRS-H		
6	in	16
Gamma Ray (GR) HGNS-H		
0	gAPI	150
Gamma Ray (GR) HGNS-H		
150	gAPI	200

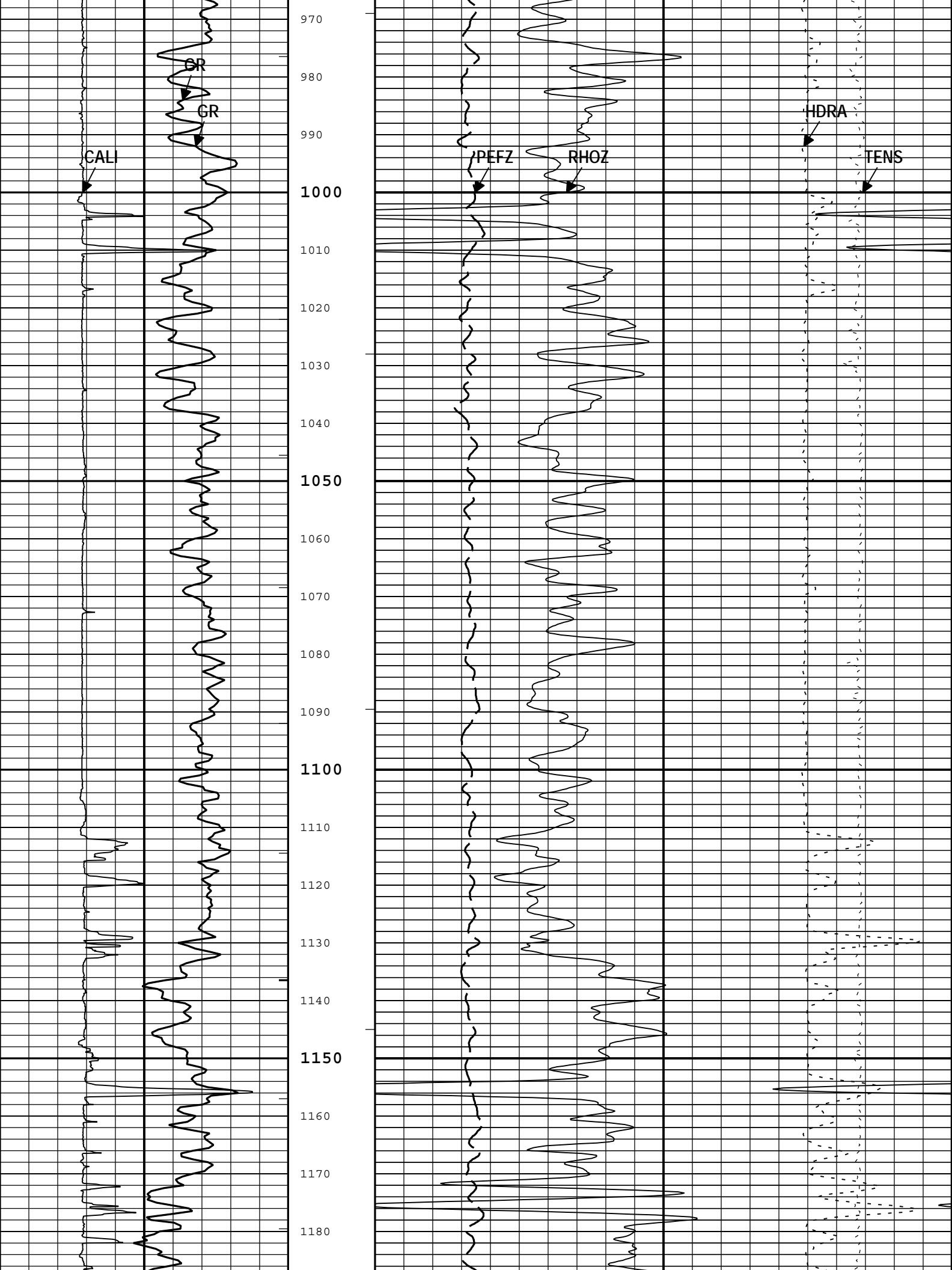
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
0	10	

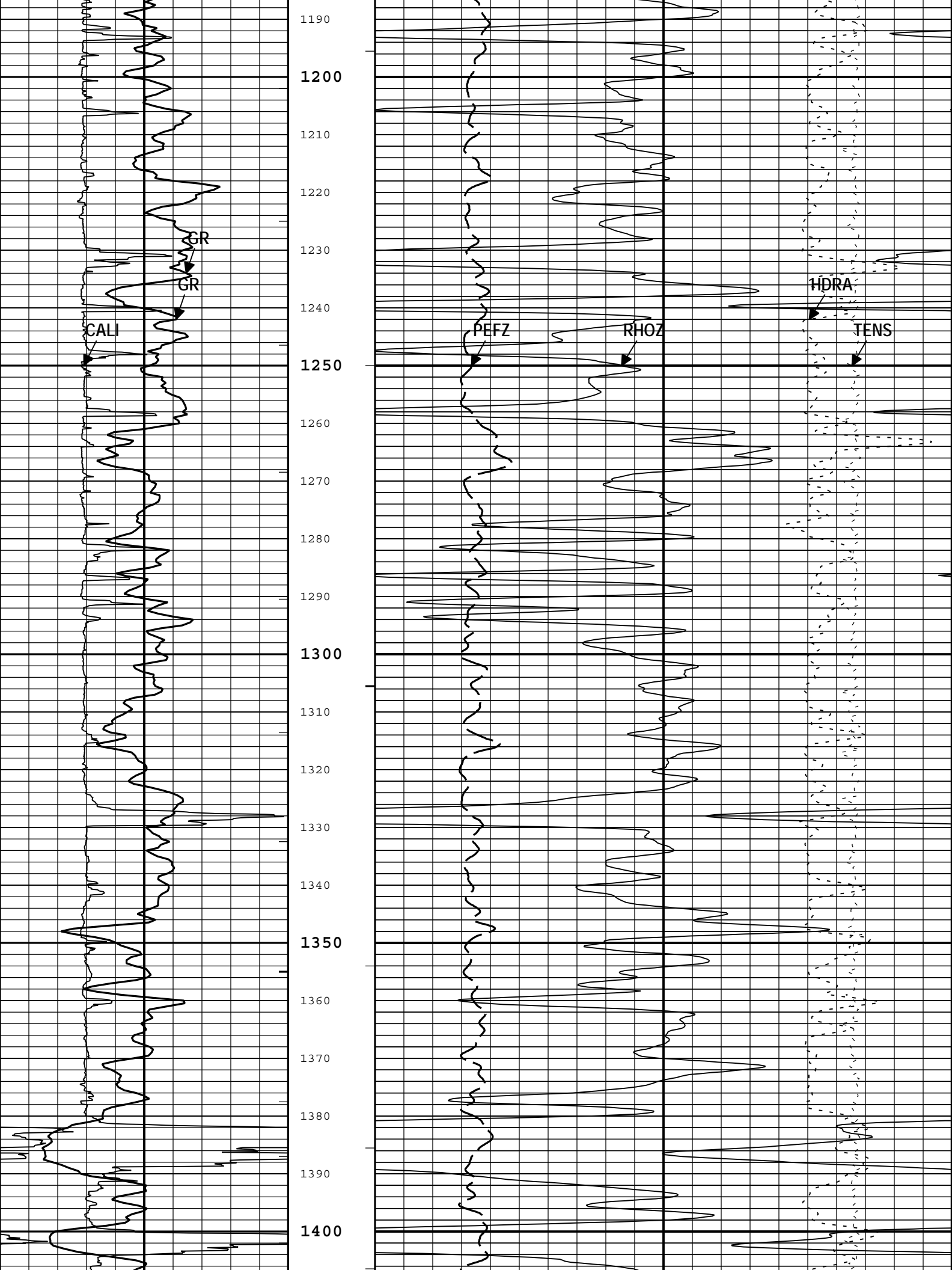
Cable Tension (TENS)		
8000	lbf	0

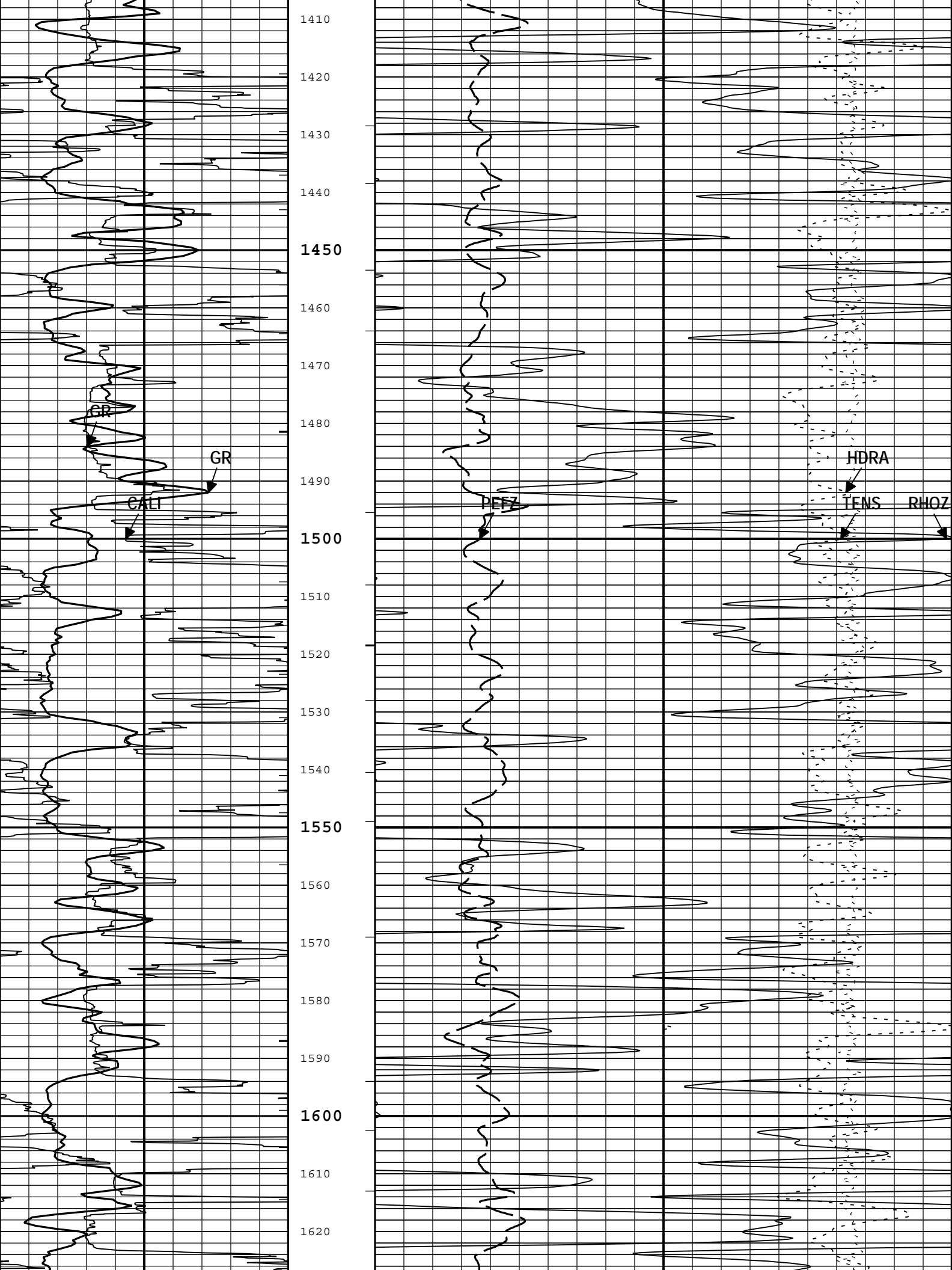
Density Standoff Correction (HDRA) HDRS-H		
-0.25	g/cm3	0.25

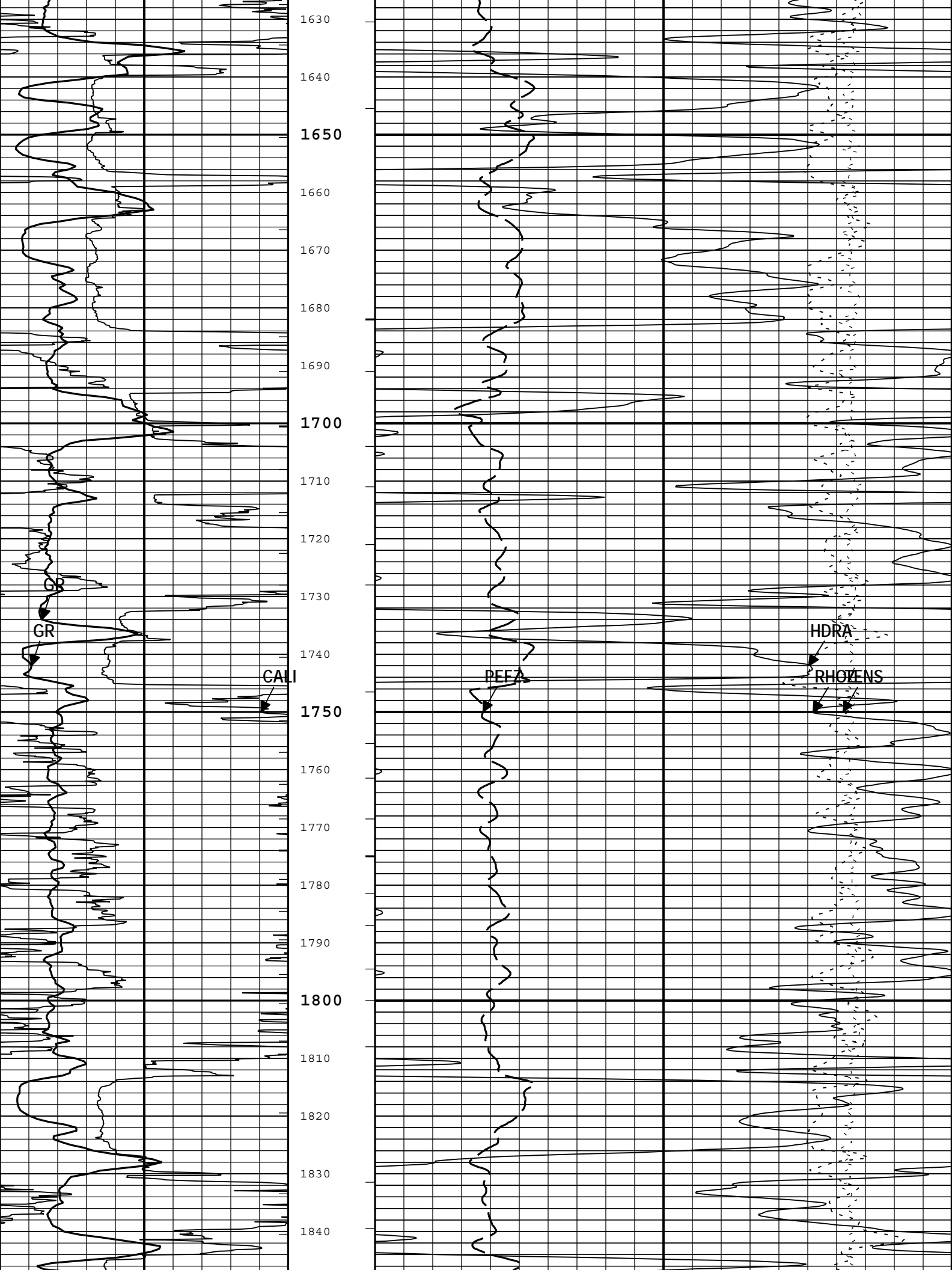
Standard Resolution Formation Density (RHOZ) HDRS-H		
2	g/cm3	200

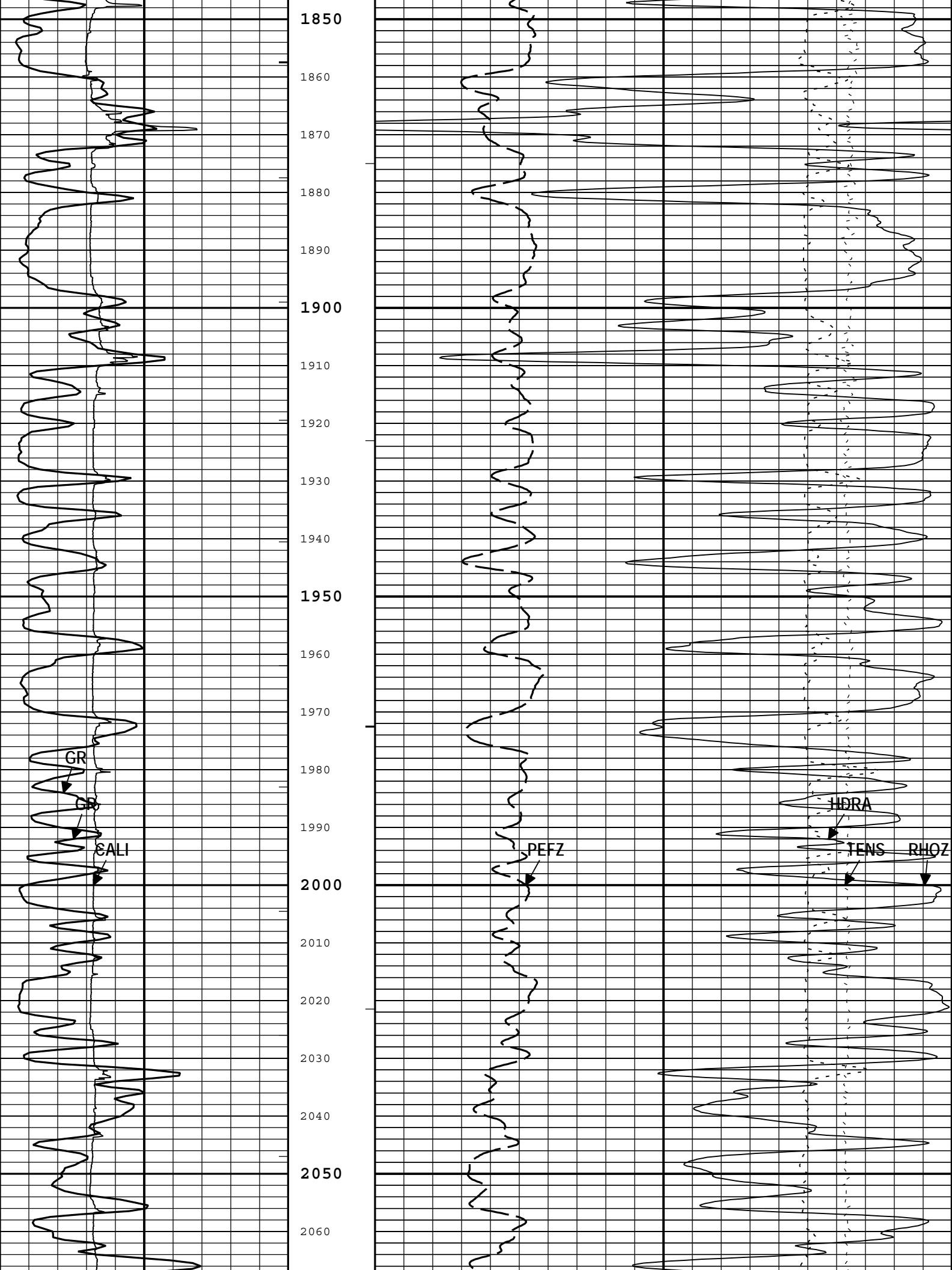


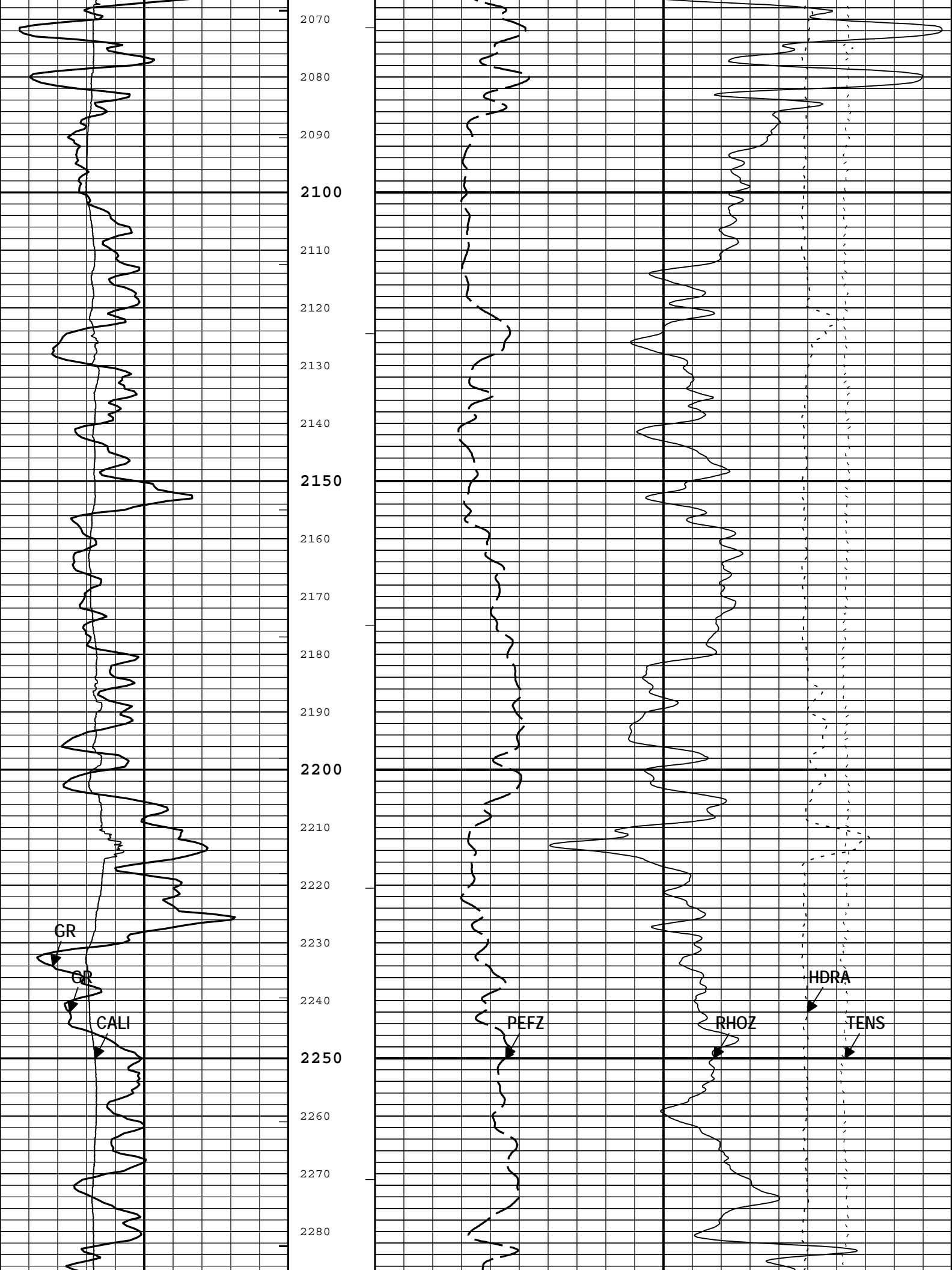


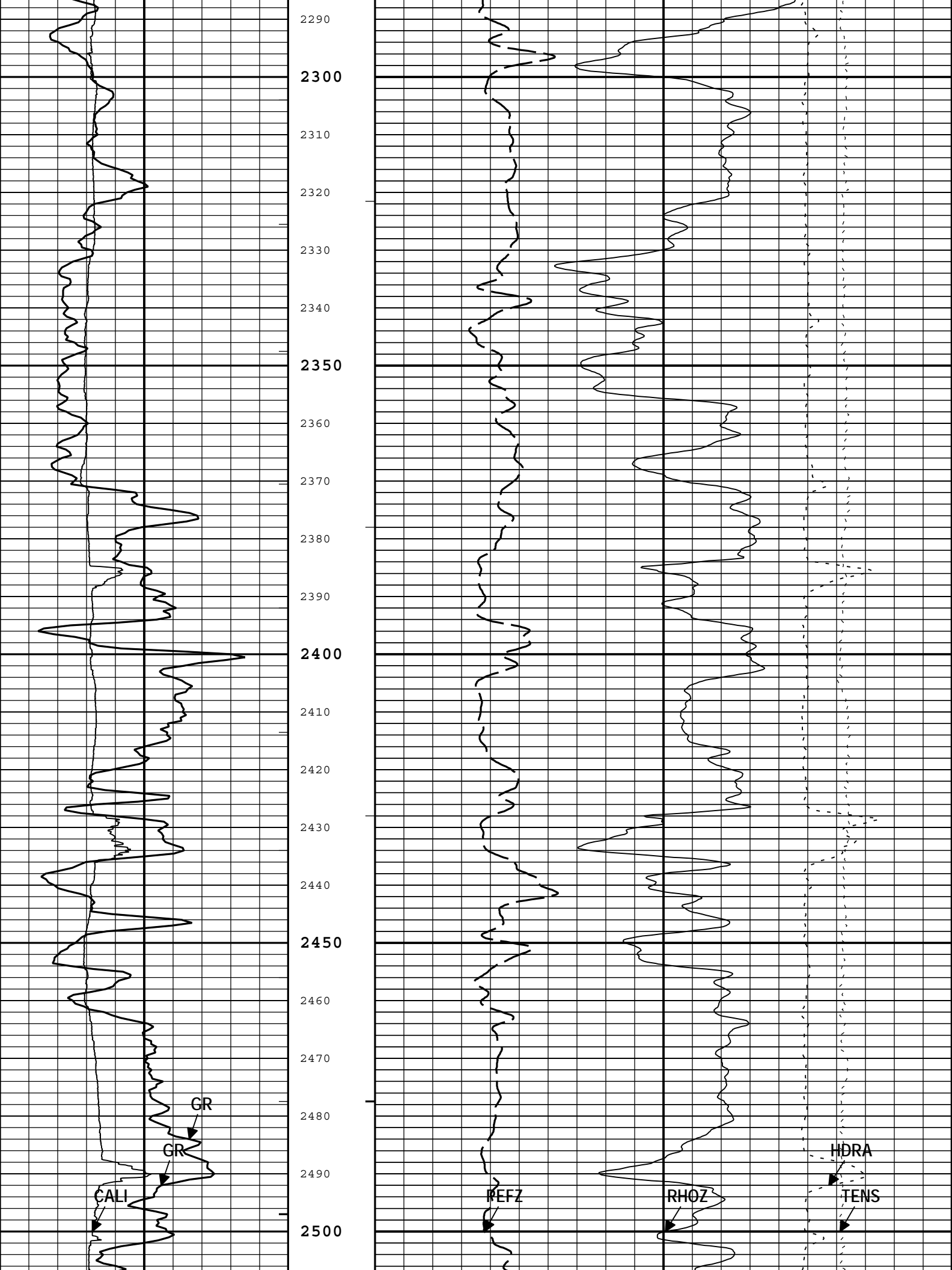


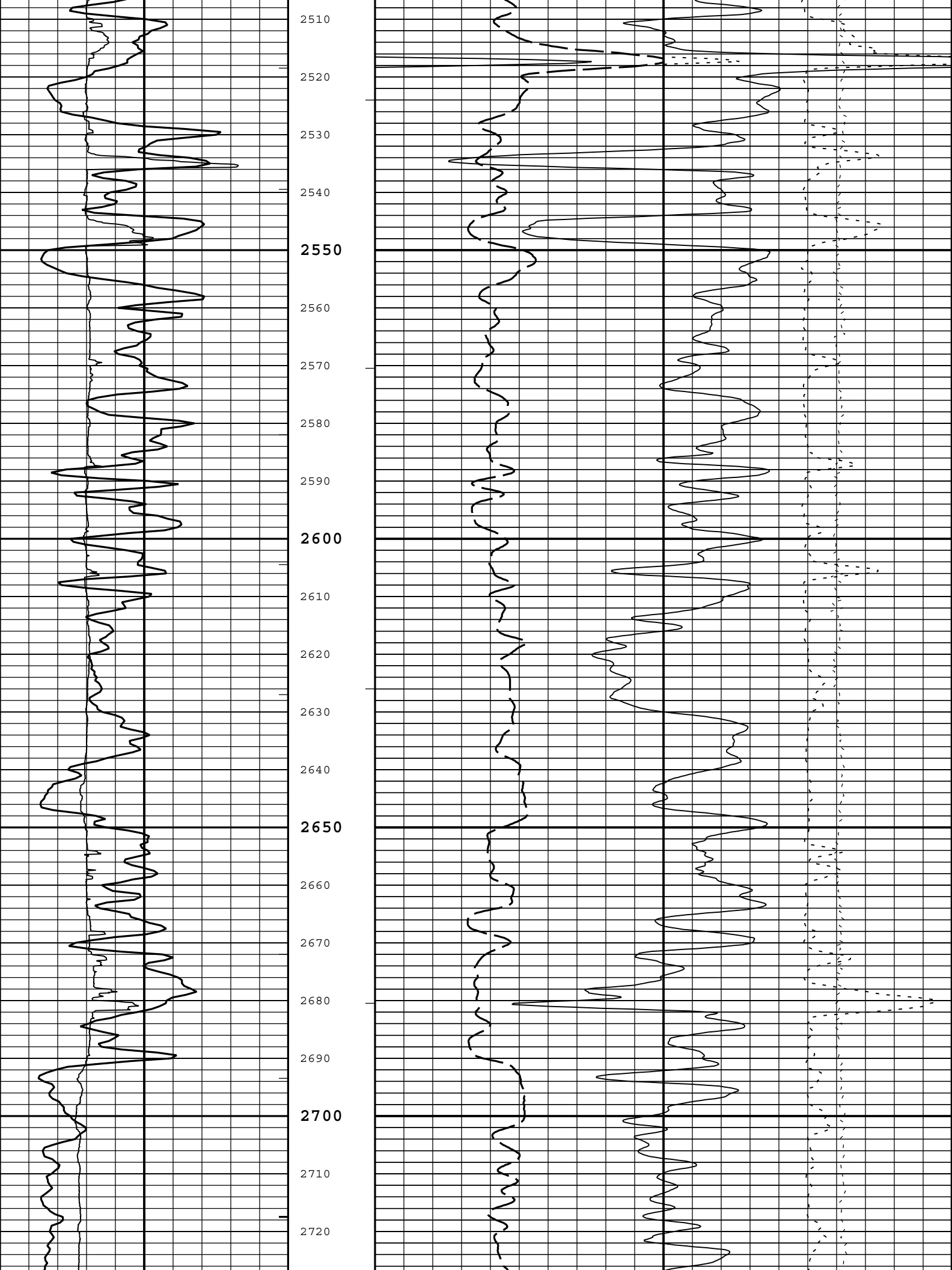


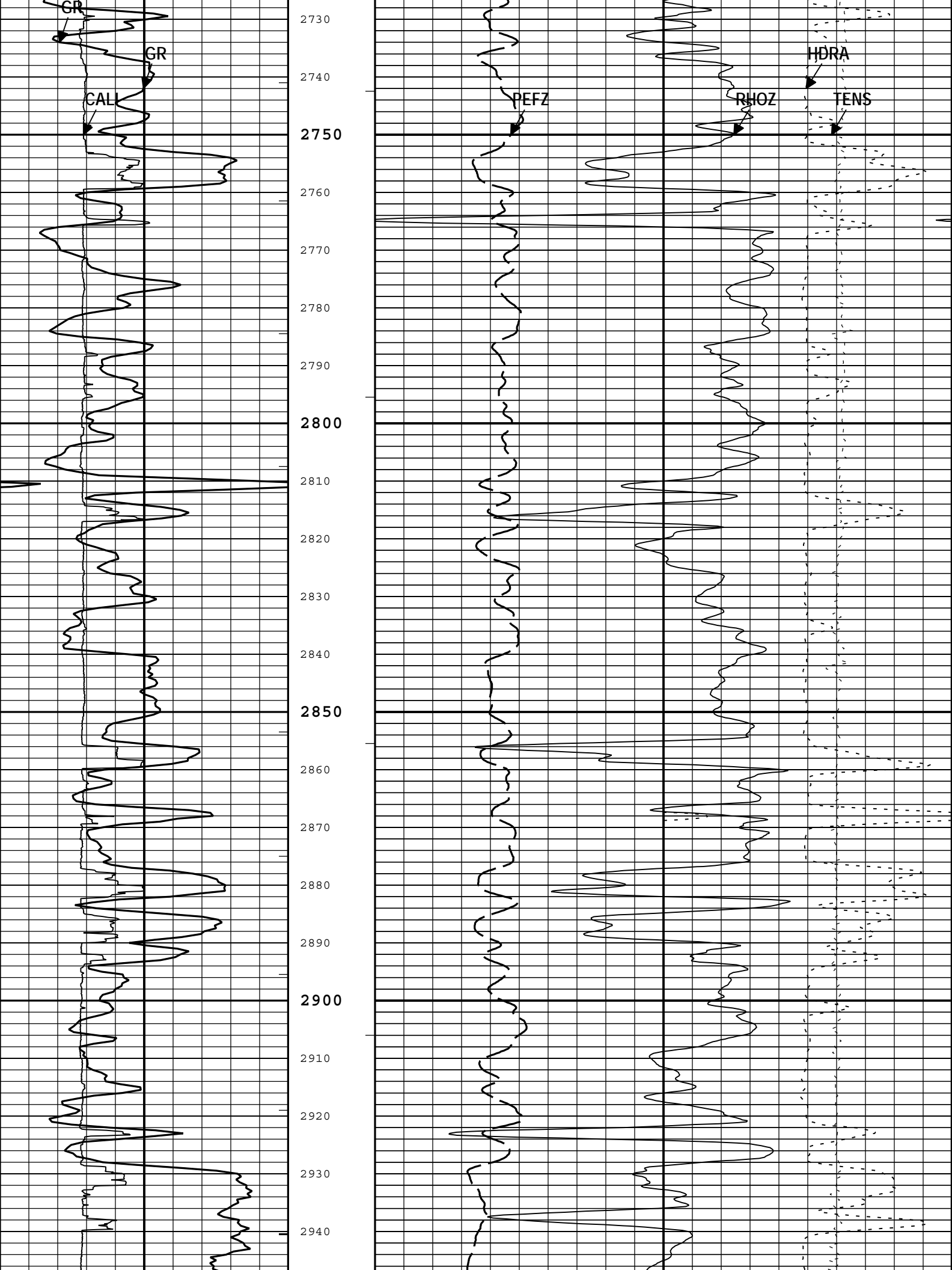


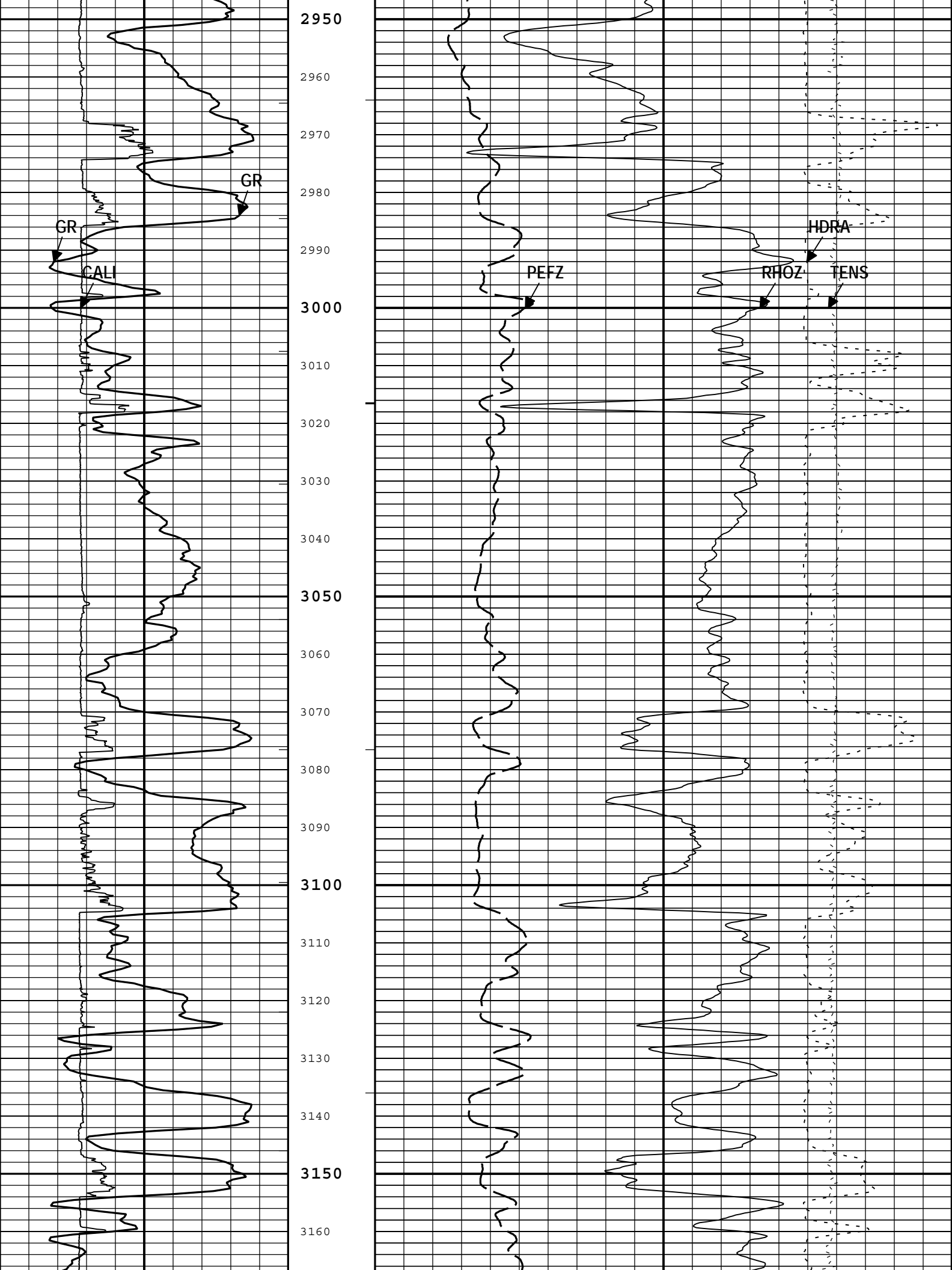


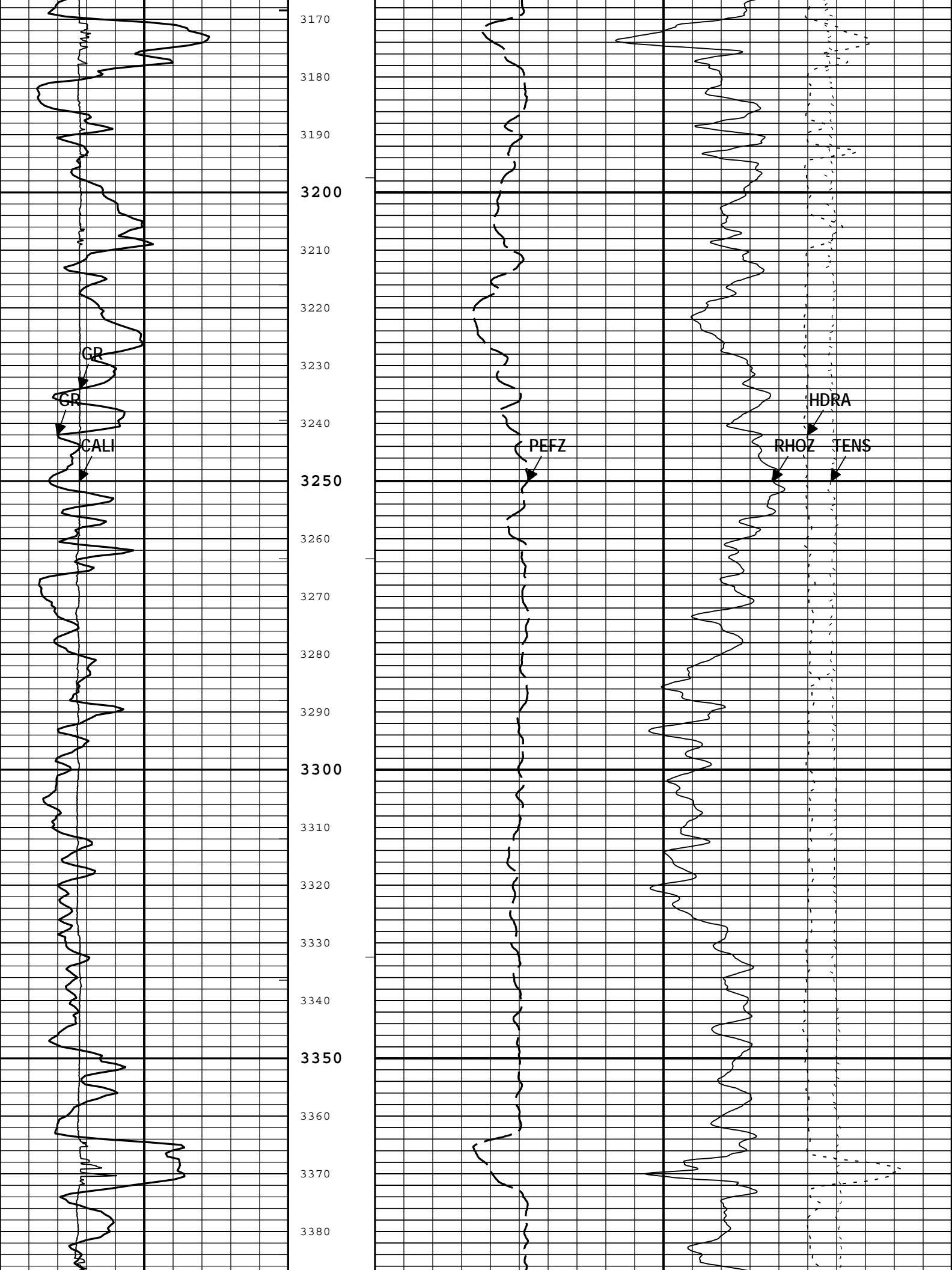


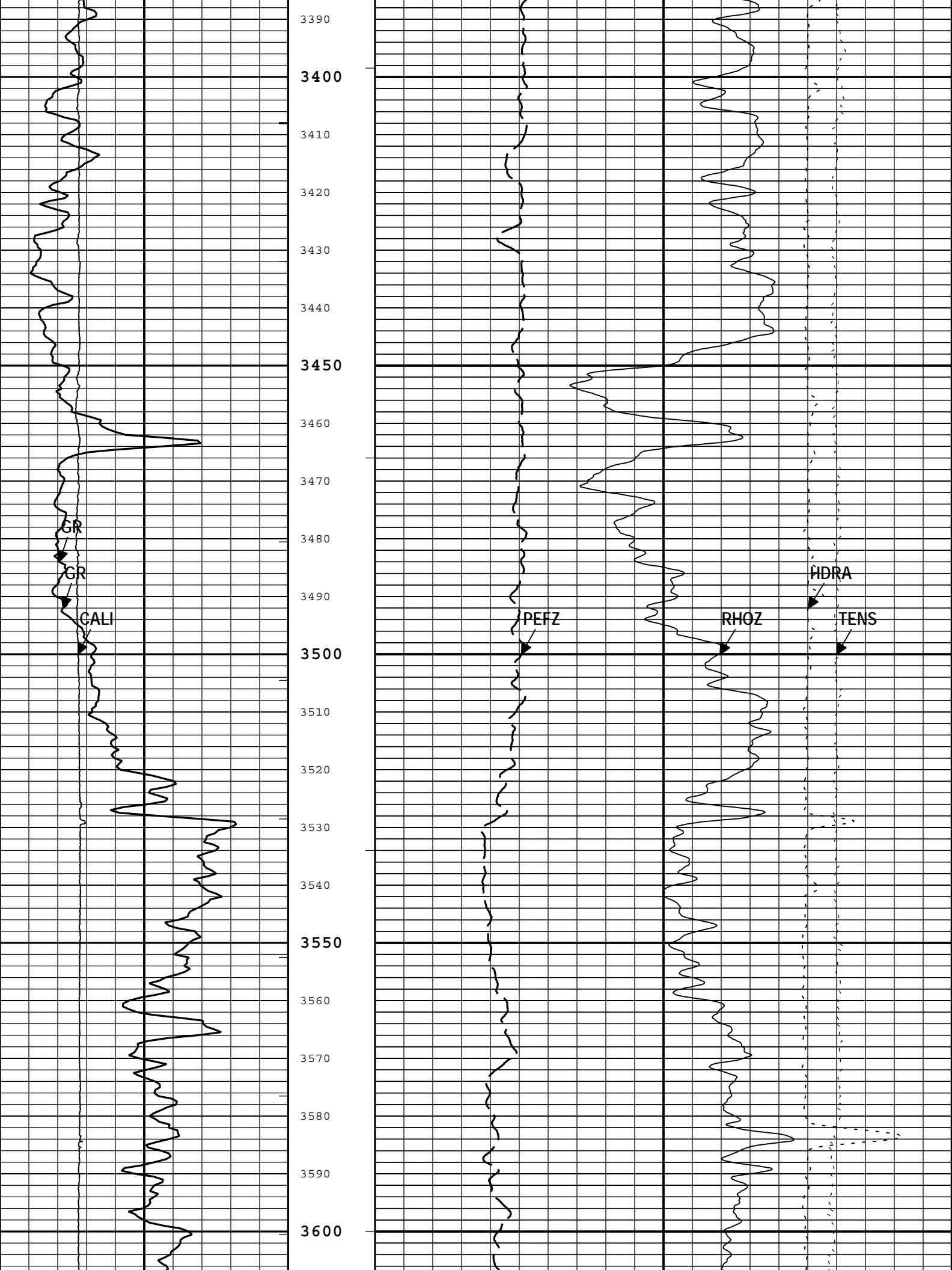


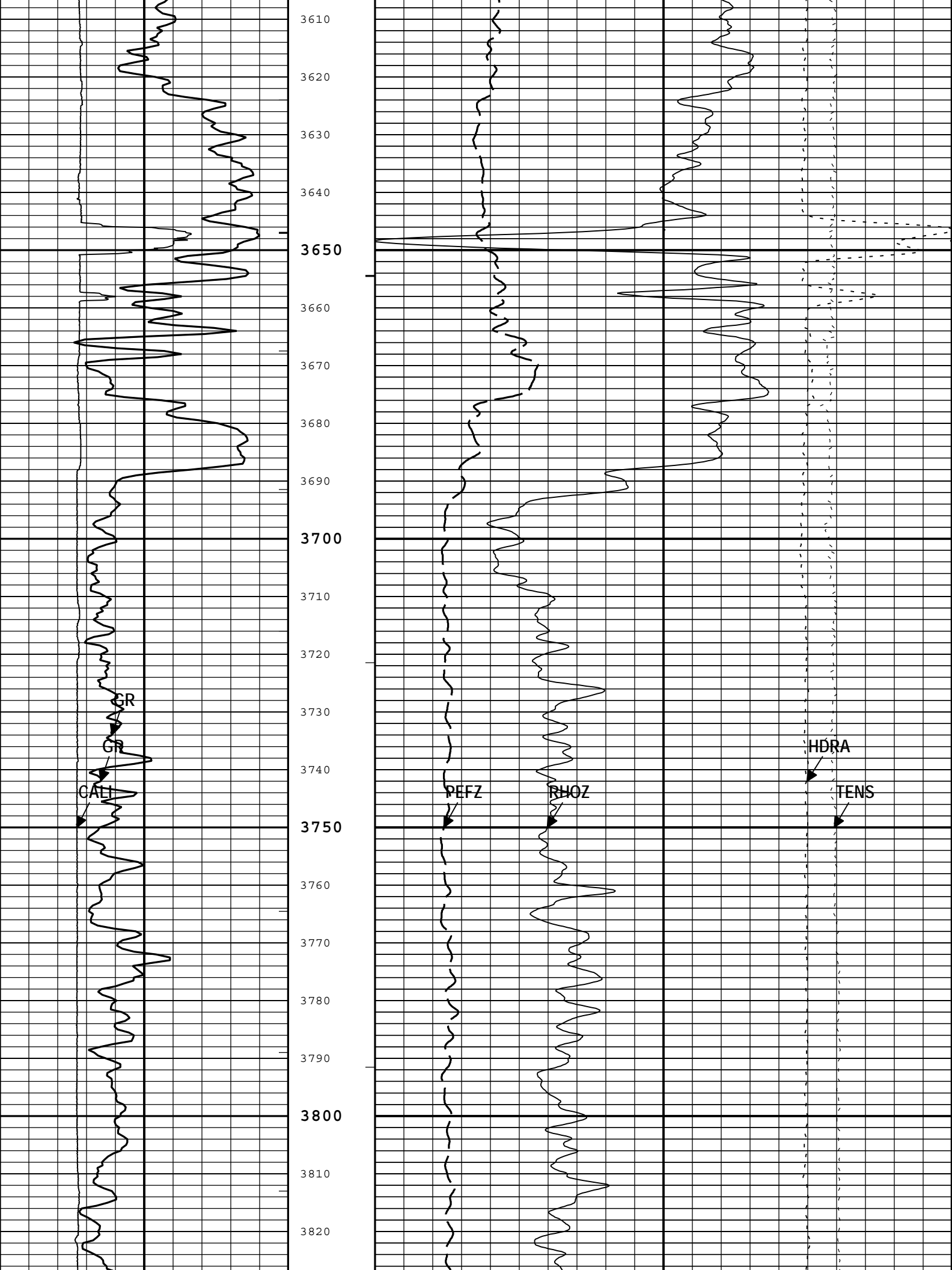


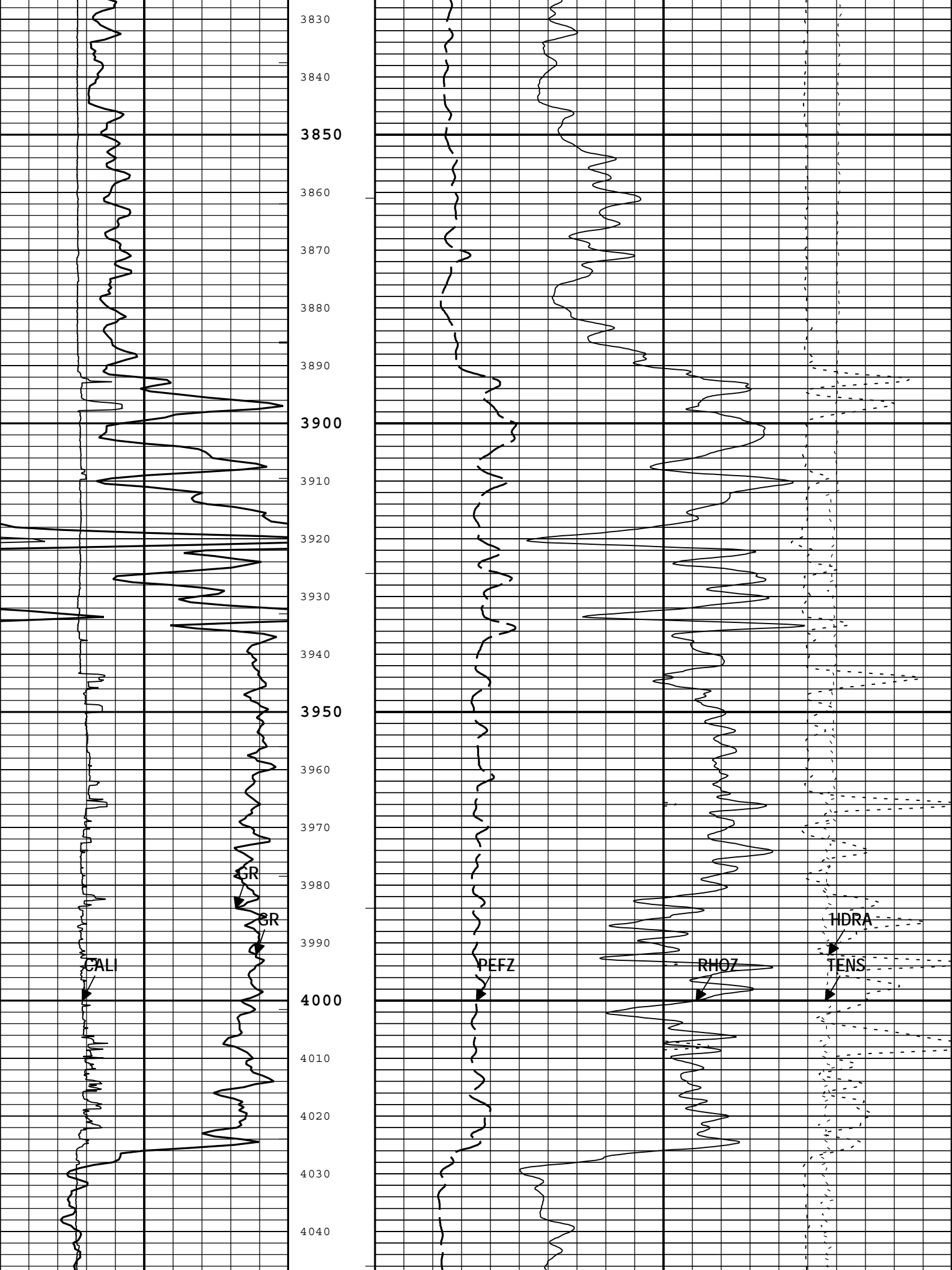


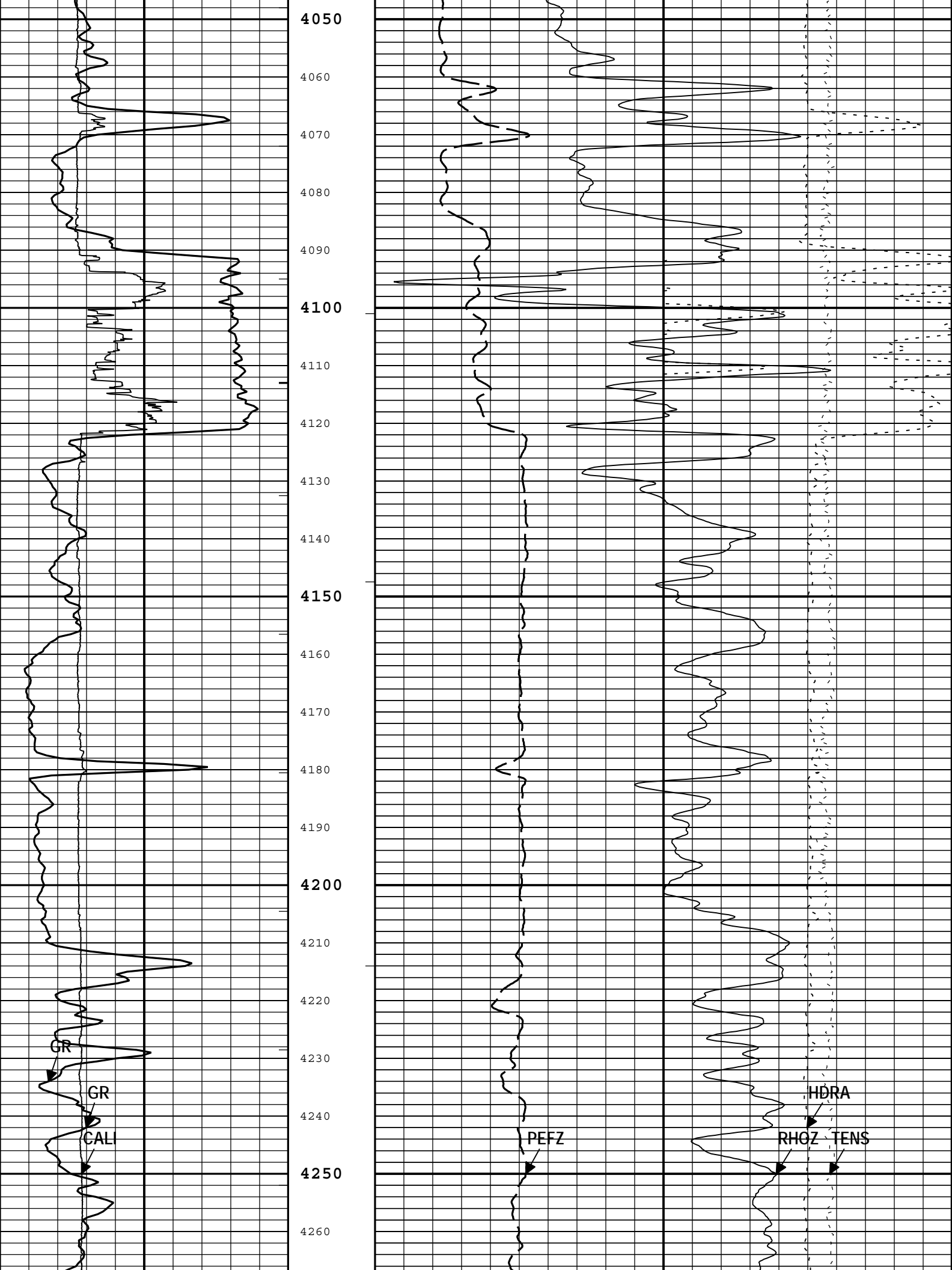


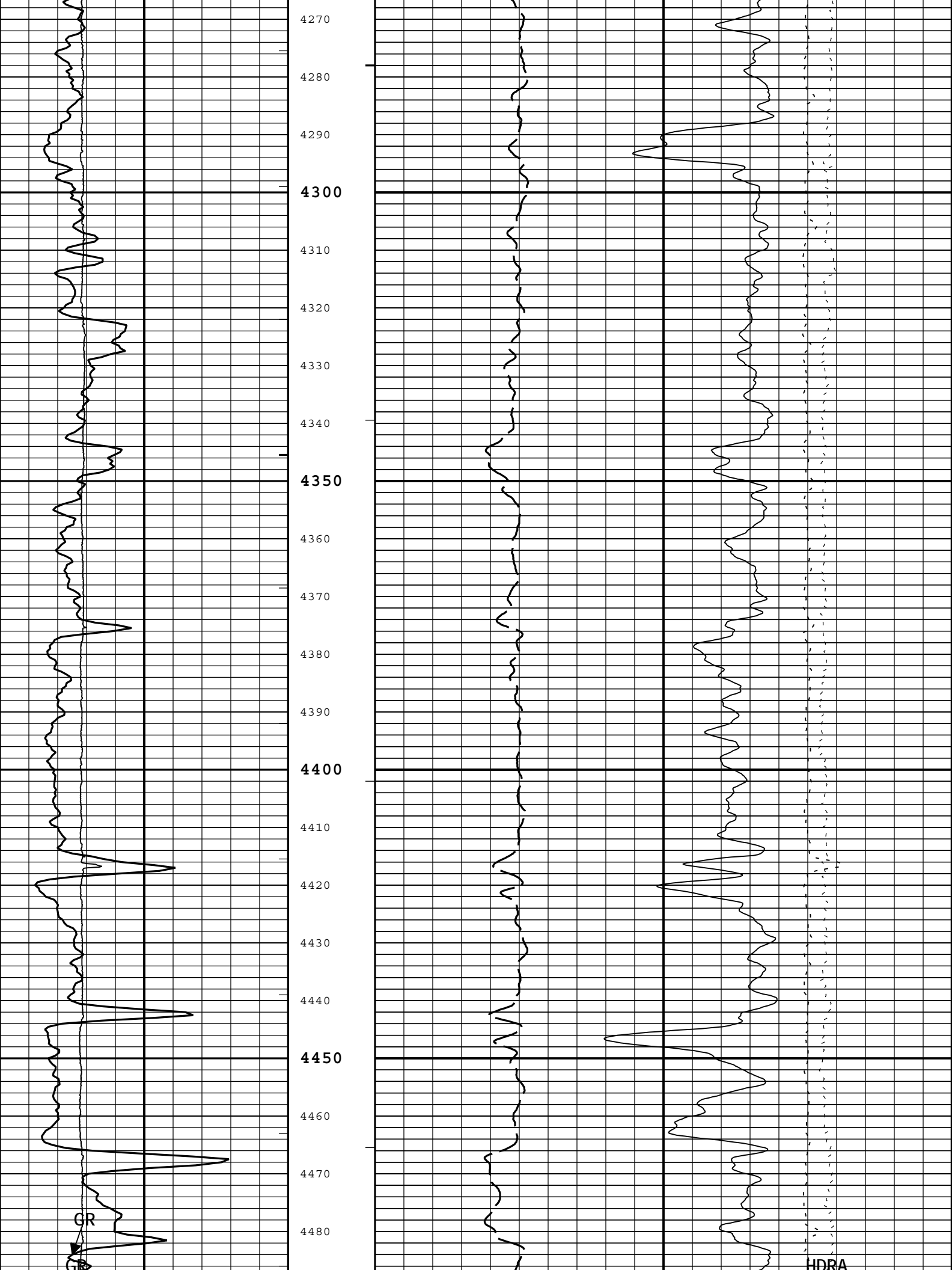


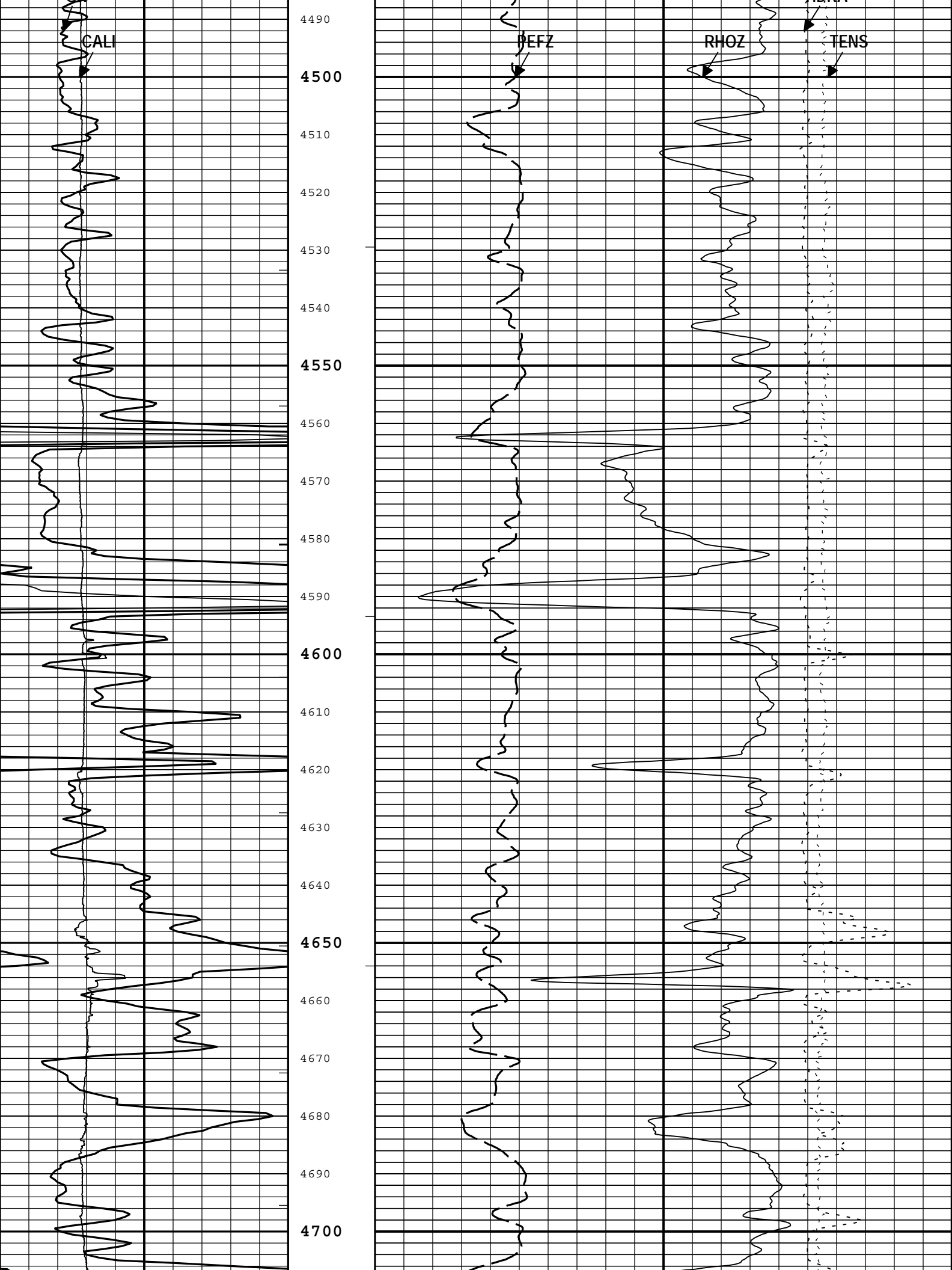


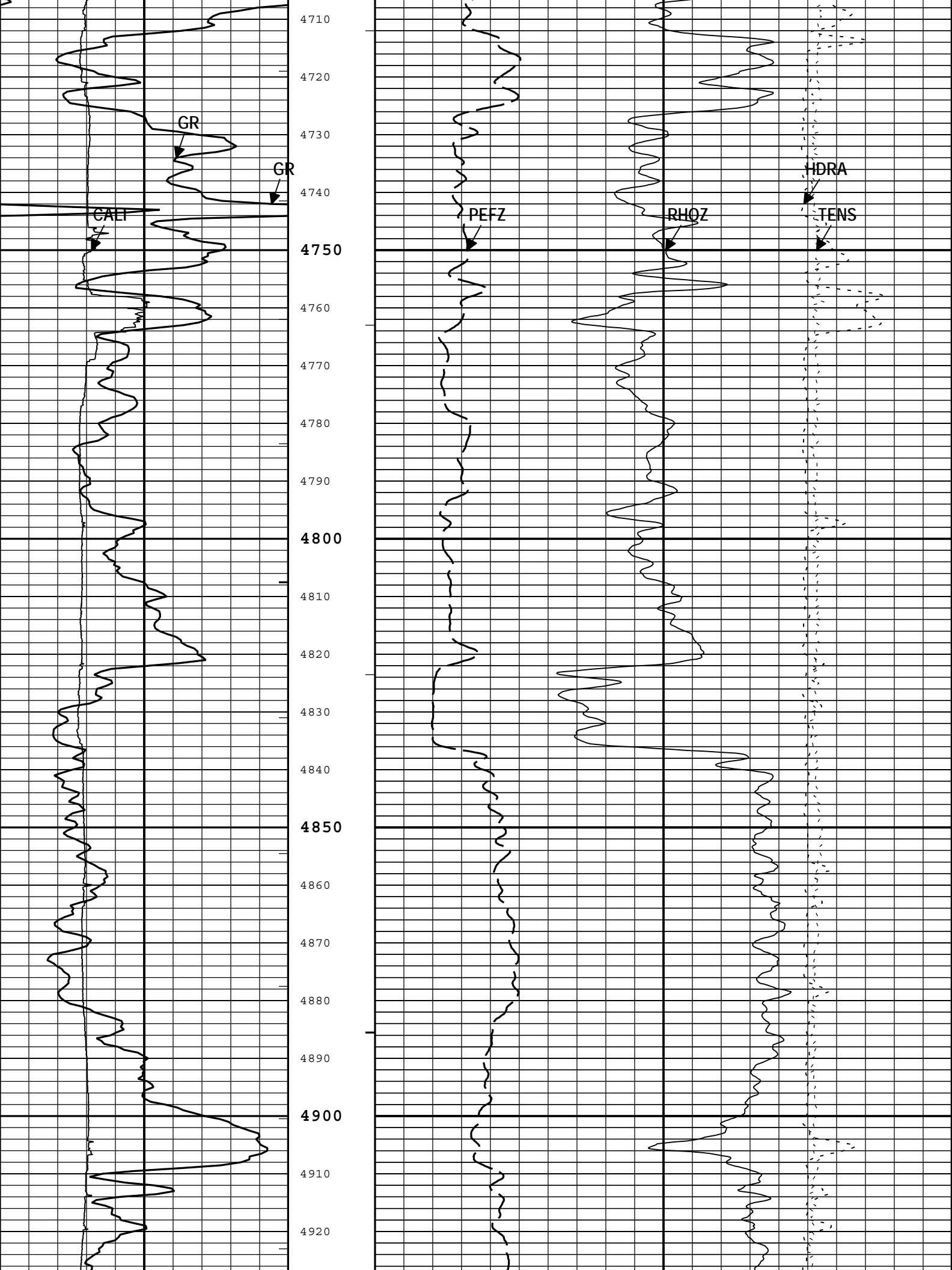


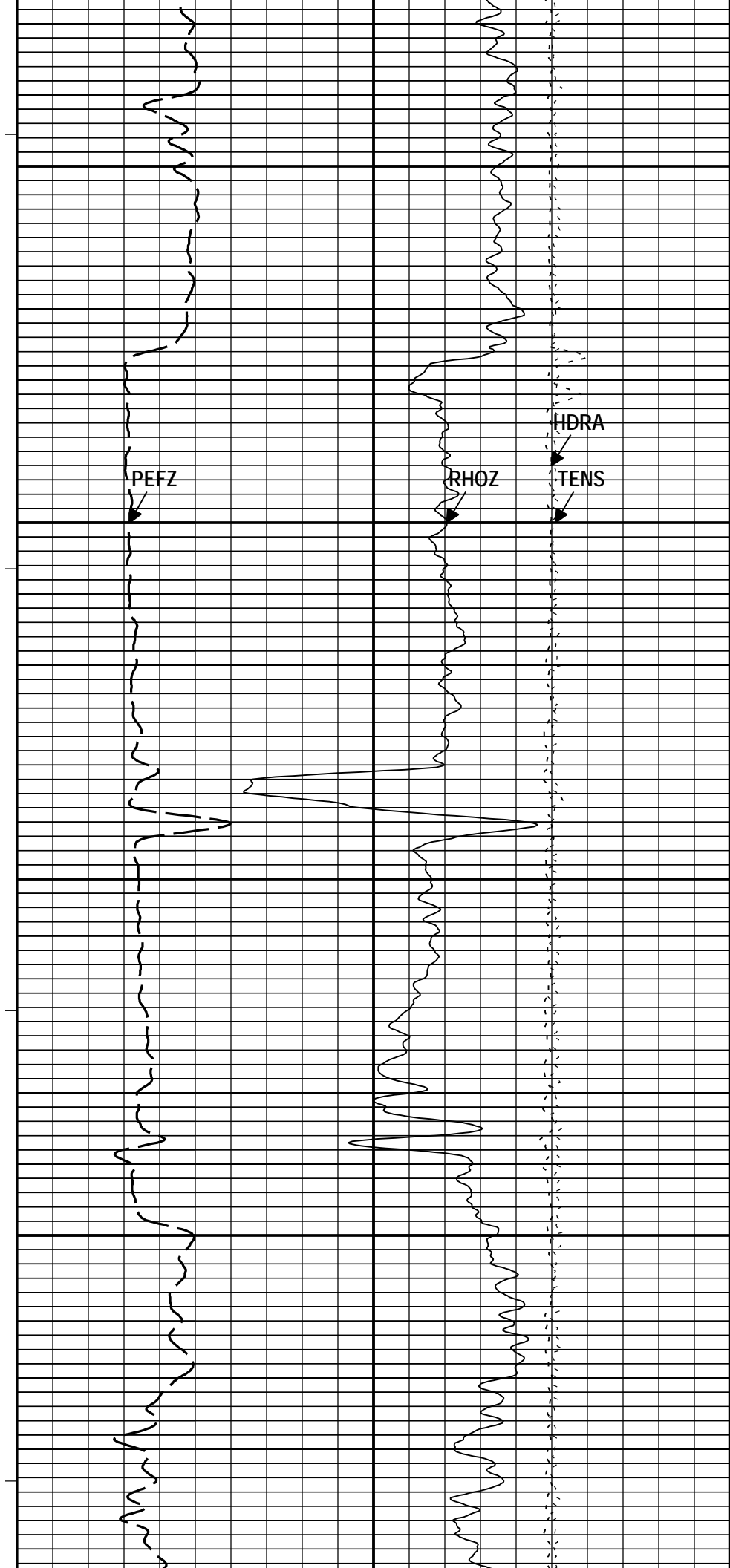
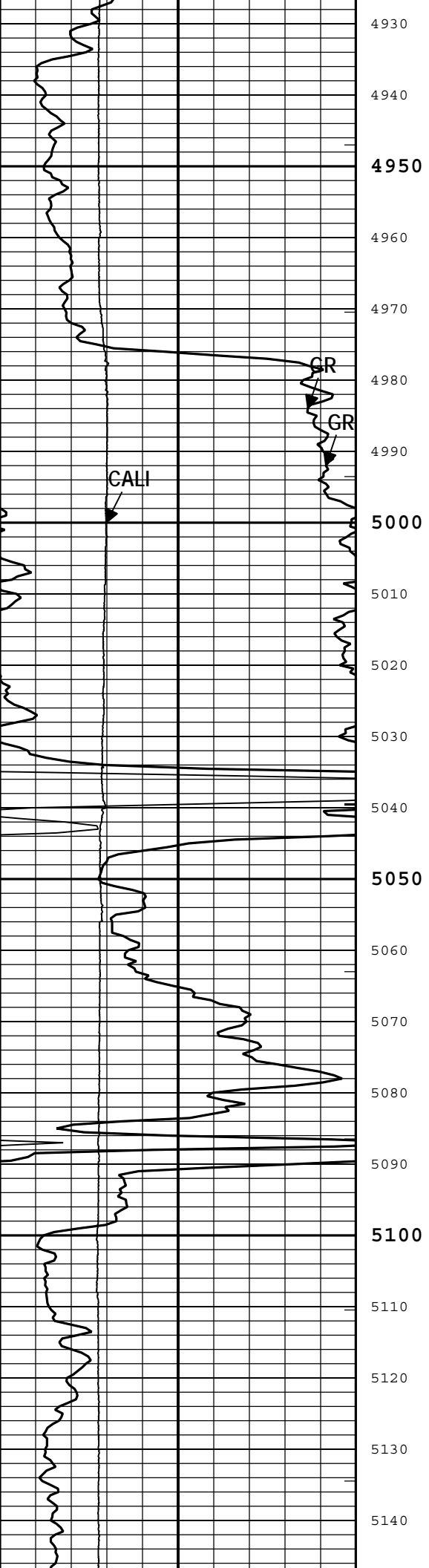


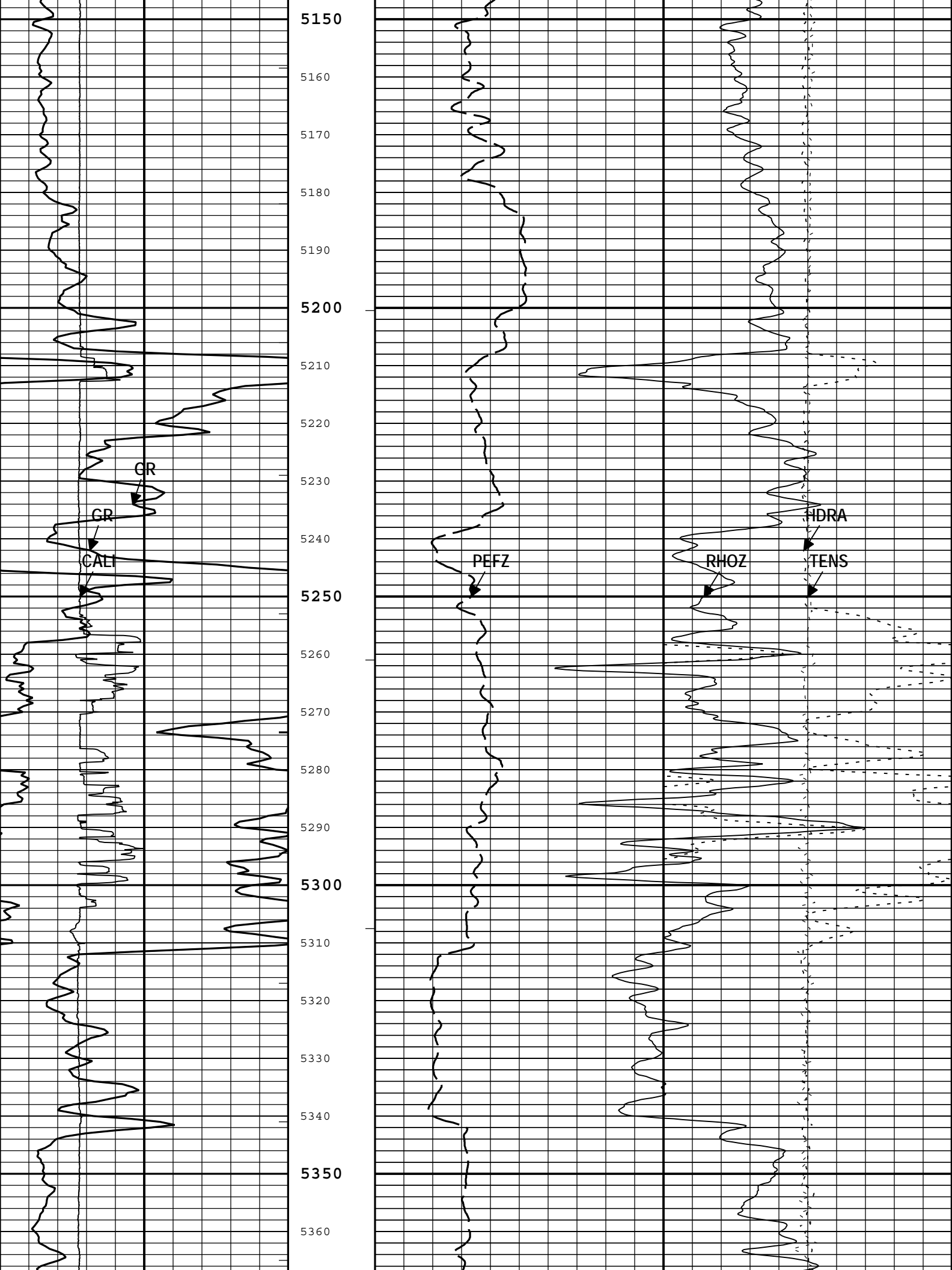


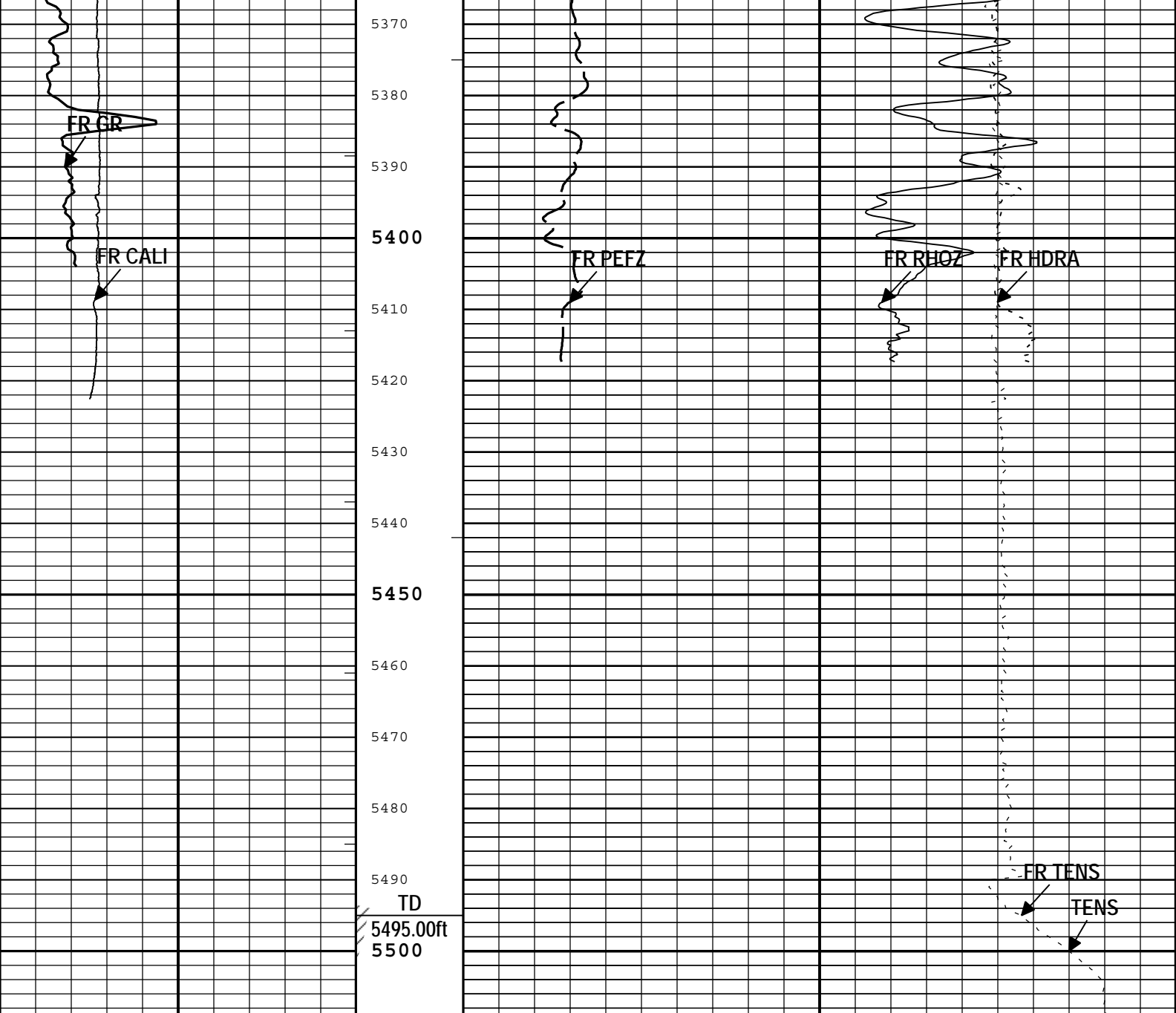












Gamma Ray Backup		
Caliper (CALI) HDRS-H		
6	in	16
Gamma Ray (GR) HGNS-H		
0	gAPI	150
Gamma Ray (GR) HGNS-H		
150	gAPI	300

Standard Resolution Formation Density (RHOZ) HDRS-H		
2	g/cm3	3
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
0	10	10
Cable Tension (TENS)		
8000	lbf	0
Density Standoff Correction (HDRA) HDRS-H		
-0.25	g/cm3	0.25

- IHV - Integrated Hole 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 10.00 (ft3)
- ICV - Integrated Cement Volume every 100.00 (ft3)

Description: Nuclear standard resolution template for Platform Express Format: Log (Bulk Density_5 Inch) Index Scale: 5 in per 100 ft Index Unit: ft
 Index Type: Measured Depth Creation Date: 30-Oct-2012 13:38:09

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit

Sonde Error Correction Real - 3	mS/m	Master	----	39.000	49.795	89.000	
Sonde Error Correction Quad - 3		Master	----	-250.000	-21.815	250.000	
Sonde Error Correction Real - 4	mS/m	Master	----	15.000	27.091	35.000	
Sonde Error Correction Quad - 4		Master	----	-63.000	1.553	63.000	
Sonde Error Correction Real - 5	mS/m	Master	----	4.000	13.215	24.000	
Sonde Error Correction Quad - 5		Master	----	-50.000	-0.906	50.000	
Sonde Error Correction Real - 6	mS/m	Master	----	5.000	9.873	15.000	
Sonde Error Correction Quad - 6		Master	----	-30.000	0.685	30.000	
Sonde Error Correction Real - 7	mS/m	Master	----	-5.000	-0.825	5.000	
Sonde Error Correction Quad - 7		Master	----	-30.000	0.214	30.000	

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM): 11:43:11 26-Oct-2012							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	1.031	1.200	
Fine Gain		Master	1.000	0.800	1.026	1.200	

AIT Electronics Check - Thru Calibration Check

Master (EEPROM): 11:43:11 26-Oct-2012 Before (Measured): 13:40:28 27-Oct-2012 After: Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Thru Cal Mag - 0	V	Master	----	0.366	0.613	0.854		
		Before	----	0.366	0.613	0.854		
		After	----	----	----	----	----	
		Before-Master	----	----	0.000	----	----	
		After-Before	----	----	----	----	----	
Thru Cal Phase - 0	deg	Master	----	137.000	-170.542	-103.000		
		Before	----	137.000	-173.872	-103.000		
		After	----	----	----	----	----	
		Before-Master	----	----	----	-3.330	----	
		After-Before	----	----	----	----	----	
Thru Cal Mag - 1	V	Master	----	0.762	1.256	1.778		
		Before	----	0.762	1.257	1.778		
		After	----	----	----	----	----	
		Before-Master	----	----	----	0.001	----	
		After-Before	----	----	----	----	----	
Thru Cal Phase - 1	deg	Master	----	136.000	-171.609	-104.000		
		Before	----	136.000	-174.938	-104.000		
		After	----	----	----	----	----	
		Before-Master	----	----	----	-3.329	----	
		After-Before	----	----	----	----	----	
Thru Cal Mag - 2	V	Master	----	0.372	0.622	0.868		
		Before	----	0.372	0.622	0.868		
		After	----	----	----	----	----	
		Before-Master	----	----	----	0.000	----	
		After-Before	----	----	----	----	----	
Thru Cal Phase - 2	deg	Master	----	132.000	-175.163	-108.000		
		Before	----	132.000	-178.494	-108.000		
		After	----	----	----	----	----	
		Before-Master	----	----	----	-3.331	----	
		After-Before	----	----	----	----	----	
Thru Cal Mag - 3	V	Master	----	0.420	0.703	0.980		
		Before	----	0.420	0.703	0.980		
		After	----	----	----	----	----	
		Before-Master	----	----	----	0.000	----	
		After-Before	----	----	----	----	----	
Thru Cal Phase - 3	deg	Master	----	131.000	-175.925	-109.000		
		Before	----	131.000	-179.255	-109.000		
		After	----	----	----	----	----	
		Before-Master	----	----	----	-3.330	----	
		After-Before	----	----	----	----	----	
Thru Cal Mag - 4	V	Master	----	0.804	1.315	1.876		
		Before	----	0.804	1.315	1.876		
		After	----	----	----	----	----	
		Before-Master	----	----	----	0.000	----	
		After-Before	----	----	----	----	----	
Thru Cal Phase - 4	deg	Master	----	125.000	177.964	-115.000		
		Before	----	125.000	174.630	-115.000		

		After	----	----	-3.334	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 5	V	Master	----	1.176	1.915	2.744	
		Before	----	1.176	1.915	2.744	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 5	deg	Master	----	122.000	176.323	-118.000	
		Before	----	122.000	172.987	-118.000	
		After	----	----	----	----	
		Before-Master	----	----	-3.336	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 6	V	Master	----	1.176	1.911	2.744	
		Before	----	1.176	1.911	2.744	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 6	deg	Master	----	121.000	176.366	-119.000	
		Before	----	121.000	173.031	-119.000	
		After	----	----	----	----	
		Before-Master	----	----	-3.335	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 7	V	Master	----	0.846	1.378	1.974	
		Before	----	0.846	1.378	1.974	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 7	deg	Master	----	115.000	175.636	-125.000	
		Before	----	115.000	172.279	-125.000	
		After	----	----	----	----	
		Before-Master	----	----	-3.357	----	
		After-Before	----	----	----	----	
SPA Zero	mV	Master	----	-50.000	-0.093	50.000	
		Before	----	-50.000	-0.079	50.000	
		After	----	----	----	----	
		Before-Master	----	----	0.014	----	
		After-Before	----	----	----	----	
SPA Plus	mV	Master	----	941.000	994.921	1040.000	
		Before	----	941.000	994.908	1040.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.013	----	
		After-Before	----	----	----	----	
Temperature Zero	V	Master	----	-0.050	0.000	0.050	
		Before	----	-0.050	0.000	0.050	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Temperature Plus	V	Master	----	0.870	0.922	0.960	
		Before	----	0.870	0.922	0.960	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	

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

Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	4709
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	4700

Auxiliary Equipment :

HRDD Backscatter Detector	Backscatter	26832
HRDD Long Spacing Detector	Long Spacing	28642
HRDD Short Spacing Detector	Short Spacing	27727
Cesium 137 Gamma-Ray Logging Source	GSR-J	5370
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	4709

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): 13:41:59 27-Oct-2012 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.96	10.00	
Large Ring	in	Before	12.00	9.00	12.26	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM): 17:08:56 12-Oct-2012

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.597	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.690	1.696	
Pe Aluminum		Master	2.570	2.470	2.575	2.670	
Pe Magnesium		Master	2.650	2.550	2.611	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM): 17:08:56 12-Oct-2012

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.2224	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.6826	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.2714	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.2063	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.4025	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.5182	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM): 17:08:56 12-Oct-2012 Before (Measured): 13:44:05 27-Oct-2012 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7395		
		Before	0.7395	0.7025	0.7431	0.7765	
		Before-Master	----	----	0.0036	----	
BS Window Sum	1/s	Master	1		23882		
		Before	23882	22688	24302	25076	
		Before-Master	----	----	420	----	
SS Window Ratio		Master	1.0000		0.4798		
		Before	0.4798	0.4559	0.4794	0.5038	
		Before-Master	----	----	-0.0004	----	
SS Window Sum	1/s	Master	1		10763		
		Before	10763	10225	10733	11301	
		Before-Master	----	----	-30	----	
LS Window Ratio		Master	1.0000		0.2993		
		Before	0.2993	0.2843	0.2974	0.3142	
		Before-Master	----	----	-0.0019	----	
LS Window Sum	1/s	Master	1		1326		
		Before	1326	1259	1320	1392	
		Before-Master	----	----	-6	----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 17:08:56 12-Oct-2012 Before (Measured): 13:44:05 27-Oct-2012 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1256	2400	
		Before		1000	1246	2400	
		Before-Master	----	-100	-10	100	
SS PM High Voltage	V	Master		1000	1648	2400	
		Before		1000	1679	2400	
		Before-Master	----	-100	31	100	
LS PM High Voltage	V	Master		1000	1651	2400	
		Before		1000	1669	2400	
		Before-Master	----	-100	18	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 17:08:56 12-Oct-2012 Before (Measured): 13:44:05 27-Oct-2012 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
SS Crystal Quality	%	Master	5.00	5.00	10.44	25.00	

BS Crystal Resolution	%	Master		5.00	10.41	25.00	
		Before		5.00	10.52	25.00	
		Before-Master	----	-1.00	0.11	1.00	
SS Crystal Resolution	%	Master		5.00	10.77	20.00	
		Before		5.00	11.44	20.00	
		Before-Master	----	-1.00	0.67	1.00	
LS Crystal Resolution	%	Master		5.00	9.09	20.00	
		Before		5.00	9.24	20.00	
		Before-Master	----	-1.00	0.15	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 13:39:02 27-Oct-2012 Expired by 1 days							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3826	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3809	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3818	4136	

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

Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC		HGNS-H	3964
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	4166
AmBe Neutron Logging Source		NSR-F	5075
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)		160	

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 07:43:02 29-Oct-2012							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.0	32.8	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-Jul-2005							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	
Accelerometer Coefficients - 0		Master	----	----	11397.000	----	
Accelerometer Coefficients - 1		Master	----	----	-4.294	----	
Accelerometer Coefficients - 2		Master	----	----	-0.010	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.740	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	299.000	----	
Accelerometer Coefficients - 9		Master	----	----	0.994	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 15:04:40 01-Sep-2012 Before (Measured): 13:46:09 27-Oct-2012 After: Expired by 1 days							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	28.4	40.0	
		Before	0	5.0	27.4	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.3	-1.0	4.3	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	29.8	40.0	
		Before	0	5.0	31.0	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.5	1.2	4.5	
		After-Before	----	----	----	----	

Near Plus Measurement - 0	1/s	Master Before After Before-Master After-Before	6031.0 ---- ---- ---- ----	4700.0 ---- ---- ---- ----	5316.0 ---- ---- ---- ----	6900.0 ---- ---- ---- ----	
Far Plus Measurement - 0	1/s	Master Before After Before-Master After-Before	2793.0 ---- ---- ---- ----	1900.0 ---- ---- ---- ----	2233.0 ---- ---- ---- ----	2900.0 ---- ---- ---- ----	
Near Corrected Plus Measurement - 0	1/s	Master Before After Before-Master After-Before	---- ---- ---- ---- ----	4700.0 ---- ---- ---- ----	5293.0 ---- ---- ---- ----	6900.0 ---- ---- ---- ----	
Far Corrected Plus Measurement - 0	1/s	Master Before After Before-Master After-Before	---- ---- ---- ---- ----	1900.0 ---- ---- ---- ----	2207.0 ---- ---- ---- ----	2900.0 ---- ---- ---- ----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured): 13:52:07 27-Oct-2012 Expired by 1 days After:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	25.1	120.0	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	179.8	152.4	169.5	200.0	
		After	----	----	NOT DONE	----	
		After-Before	----	----	----	----	
GR Calibration Gain		Before	0.89	0.80	0.94	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

GPIT-F (General-Purpose Inclinometer Tool) Calibration - Run ONE

Primary Equipment :	
GPIT DHRU Sensor Block - F	DHRU-F

GPIT-F Accelerometers Master Calibration - Signals and Temperature Correction for Accelerometers

Master (EEPROM): 00:00:00 23-May-2007							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
GPIT-F Accelero X Model[0,0]		Master	----	----	-0.06520186	----	
GPIT-F Accelero X Model[0,1]		Master	----	----	0.000675352	----	
GPIT-F Accelero X Model[1,0]		Master	----	----	-0.0006131698	----	
GPIT-F Accelero X Model[1,1]		Master	----	----	-9.612935E-08	----	
GPIT-F Accelero X Model[2,0]		Master	----	----	1.514328E-05	----	
GPIT-F Accelero X Model[2,1]		Master	----	----	5.712145E-10	----	
GPIT-F Accelero X Model[3,0]		Master	----	----	-6.094048E-08	----	
GPIT-F Accelero X Model[3,1]		Master	----	----	-3.138383E-12	----	
GPIT-F Accelero Y Model[0,0]		Master	----	----	0.05210502	----	
GPIT-F Accelero Y Model[0,1]		Master	----	----	-0.0006859233	----	
GPIT-F Accelero Y Model[1,0]		Master	----	----	0.0001154679	----	
GPIT-F Accelero Y Model[1,1]		Master	----	----	9.234969E-08	----	
GPIT-F Accelero Y Model[2,0]		Master	----	----	-6.518238E-06	----	
GPIT-F Accelero Y Model[2,1]		Master	----	----	-5.111535E-10	----	
GPIT-F Accelero Y Model[3,0]		Master	----	----	2.253236E-08	----	
GPIT-F Accelero Y Model[3,1]		Master	----	----	3.013151E-12	----	
GPIT-F Accelero Z Model[0,0]		Master	----	----	0.01391718	----	
GPIT-F Accelero Z Model[0,1]		Master	----	----	0.0006439438	----	
GPIT-F Accelero Z Model[1,0]		Master	----	----	-0.0002379933	----	
GPIT-F Accelero Z Model[1,1]		Master	----	----	-1.002419E-07	----	
GPIT-F Accelero Z Model[2,0]		Master	----	----	6.357586E-06	----	
GPIT-F Accelero Z Model[2,1]		Master	----	----	7.233418E-10	----	
GPIT-F Accelero Z Model[3,0]		Master	----	----	-2.871651E-08	----	
GPIT-F Accelero Z Model[3,1]		Master	----	----	-3.711842E-12	----	

GPIT-F Accelerometers Master Calibration - Perpendicular Correction for Accelerometers

GPIT-F Accelerometers Master Calibration - Perpendicular Correction for Accelerometers							
Master (EEPROM):		00:00:00 23-May-2007					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
GPIT-F Accelero Axis Model[0,0]		Master	----	----	0.0003513678	----	
GPIT-F Accelero Axis Model[0,1]		Master	----	----	-0.0003022868	----	
GPIT-F Accelero Axis Model[0,2]		Master	----	----	-0.0004285045	----	
GPIT-F Accelero Axis Model[0,3]		Master	----	----	0.003075516	----	
GPIT-F Accelero Axis Model[0,4]		Master	----	----	-5.465622E-05	----	
GPIT-F Accelero Axis Model[0,5]		Master	----	----	-0.002538488	----	
GPIT-F Accelero Axis Model[0,6]		Master	----	----	0	----	
GPIT-F Accelero Axis Model[1,0]		Master	----	----	-1.496734E-07	----	
GPIT-F Accelero Axis Model[1,1]		Master	----	----	-6.315433E-06	----	
GPIT-F Accelero Axis Model[1,2]		Master	----	----	8.280348E-07	----	
GPIT-F Accelero Axis Model[1,3]		Master	----	----	-4.16839E-06	----	
GPIT-F Accelero Axis Model[1,4]		Master	----	----	2.221102E-06	----	
GPIT-F Accelero Axis Model[1,5]		Master	----	----	-7.451202E-07	----	
GPIT-F Accelero Axis Model[1,6]		Master	----	----	0	----	
GPIT-F Magnetometers Master Calibration - Signals and Temperature Correction for Magnetometer							
Master (EEPROM):		00:00:00 23-May-2007					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
GPIT-F Magneto X Model[0,0]		Master	----	----	26.92656	----	
GPIT-F Magneto X Model[0,1]		Master	----	----	4.880175	----	
GPIT-F Magneto X Model[1,0]		Master	----	----	-2.061889	----	
GPIT-F Magneto X Model[1,1]		Master	----	----	-0.0004949515	----	
GPIT-F Magneto X Model[2,0]		Master	----	----	0.02390821	----	
GPIT-F Magneto X Model[2,1]		Master	----	----	4.033175E-06	----	
GPIT-F Magneto X Model[3,0]		Master	----	----	-0.00012512	----	
GPIT-F Magneto X Model[3,1]		Master	----	----	-1.247498E-08	----	
GPIT-F Magneto Y Model[0,0]		Master	----	----	-45.8747	----	
GPIT-F Magneto Y Model[0,1]		Master	----	----	-4.952594	----	
GPIT-F Magneto Y Model[1,0]		Master	----	----	-1.786735	----	
GPIT-F Magneto Y Model[1,1]		Master	----	----	0.0005532397	----	
GPIT-F Magneto Y Model[2,0]		Master	----	----	0.044249	----	
GPIT-F Magneto Y Model[2,1]		Master	----	----	-4.416749E-06	----	
GPIT-F Magneto Y Model[3,0]		Master	----	----	-0.0001748142	----	
GPIT-F Magneto Y Model[3,1]		Master	----	----	1.3847E-08	----	
GPIT-F Magneto Z Model[0,0]		Master	----	----	-65.26407	----	
GPIT-F Magneto Z Model[0,1]		Master	----	----	4.894859	----	
GPIT-F Magneto Z Model[1,0]		Master	----	----	-1.039983	----	
GPIT-F Magneto Z Model[1,1]		Master	----	----	-0.0006373863	----	
GPIT-F Magneto Z Model[2,0]		Master	----	----	0.006300236	----	
GPIT-F Magneto Z Model[2,1]		Master	----	----	6.364226E-06	----	
GPIT-F Magneto Z Model[3,0]		Master	----	----	-3.945231E-05	----	
GPIT-F Magneto Z Model[3,1]		Master	----	----	-2.145275E-08	----	
GPIT-F Magnetometers Master Calibration - Perpendicular Correction for Magnetometer							
Master (EEPROM):		00:00:00 23-May-2007					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
GPIT-F Magneto Axis Model[0,0]		Master	----	----	-0.004418057	----	
GPIT-F Magneto Axis Model[0,1]		Master	----	----	0.006629823	----	
GPIT-F Magneto Axis Model[0,2]		Master	----	----	-0.001756015	----	
GPIT-F Magneto Axis Model[0,3]		Master	----	----	0.005601955	----	
GPIT-F Magneto Axis Model[0,4]		Master	----	----	0.002778016	----	
GPIT-F Magneto Axis Model[0,5]		Master	----	----	-0.004542477	----	
GPIT-F Magneto Axis Model[0,6]		Master	----	----	0	----	
GPIT-F Magneto Axis Model[1,0]		Master	----	----	4.557499E-06	----	
GPIT-F Magneto Axis Model[1,1]		Master	----	----	-1.89625E-05	----	
GPIT-F Magneto Axis Model[1,2]		Master	----	----	1.006579E-05	----	
GPIT-F Magneto Axis Model[1,3]		Master	----	----	-1.232903E-06	----	
GPIT-F Magneto Axis Model[1,4]		Master	----	----	-2.239778E-06	----	
GPIT-F Magneto Axis Model[1,5]		Master	----	----	2.237716E-06	----	
GPIT-F Magneto Axis Model[1,6]		Master	----	----	0	----	
GPIT-F DHRU102 Master Calibration -							
Master (EEPROM):		00:00:00 18-May-2007					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
GPIT-F Electronic Coeff 1[0,0]		Master	----	----	-0.1781729	----		
GPIT-F Electronic Coeff 1[0,1]		Master	----	----	250.0788	----		
GPIT-F Electronic Coeff 1[1,0]		Master	----	----	-0.02852506	----		
GPIT-F Electronic Coeff 1[1,1]		Master	----	----	0.02050912	----		
GPIT-F Electronic Coeff 1[2,0]		Master	----	----	0.0009170125	----		
GPIT-F Electronic Coeff 1[2,1]		Master	----	----	-0.0004162126	----		
GPIT-F Electronic Coeff 1[3,0]		Master	----	----	-9.40057E-06	----		
GPIT-F Electronic Coeff 1[3,1]		Master	----	----	3.709562E-06	----		
GPIT-F Electronic Coeff 1[4,0]		Master	----	----	3.159152E-08	----		
GPIT-F Electronic Coeff 1[4,1]		Master	----	----	-1.154867E-08	----		
GPIT-F Electronic Coeff 2[0,0]		Master	----	----	-0.2194204	----		
GPIT-F Electronic Coeff 2[0,1]		Master	----	----	249.9551	----		
GPIT-F Electronic Coeff 2[1,0]		Master	----	----	0.005875901	----		
GPIT-F Electronic Coeff 2[1,1]		Master	----	----	0.02307141	----		
GPIT-F Electronic Coeff 2[2,0]		Master	----	----	0.000244787	----		
GPIT-F Electronic Coeff 2[2,1]		Master	----	----	-0.0003963299	----		
GPIT-F Electronic Coeff 2[3,0]		Master	----	----	-3.15967E-06	----		
GPIT-F Electronic Coeff 2[3,1]		Master	----	----	3.23559E-06	----		
GPIT-F Electronic Coeff 2[4,0]		Master	----	----	1.078289E-08	----		
GPIT-F Electronic Coeff 2[4,1]		Master	----	----	-9.783856E-09	----		
GPIT-F Electronic Coeff 3[0,0]		Master	----	----	-2.489313	----		
GPIT-F Electronic Coeff 3[0,1]		Master	----	----	250.2106	----		
GPIT-F Electronic Coeff 3[1,0]		Master	----	----	-0.00818715	----		
GPIT-F Electronic Coeff 3[1,1]		Master	----	----	0.01369928	----		
GPIT-F Electronic Coeff 3[2,0]		Master	----	----	0.0005232173	----		
GPIT-F Electronic Coeff 3[2,1]		Master	----	----	-0.0002643134	----		
GPIT-F Electronic Coeff 3[3,0]		Master	----	----	-6.04207E-06	----		
GPIT-F Electronic Coeff 3[3,1]		Master	----	----	2.538423E-06	----		
GPIT-F Electronic Coeff 3[4,0]		Master	----	----	2.048748E-08	----		
GPIT-F Electronic Coeff 3[4,1]		Master	----	----	-8.548901E-09	----		

GPIT-F DHRU102 Master Calibration -

Master (EEPROM): 00:00:00 18-May-2007

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
GPIT-F Electronic Coeff 4[0,0]		Master	----	----	-0.3550956	----		
GPIT-F Electronic Coeff 4[0,1]		Master	----	----	0.128049	----		
GPIT-F Electronic Coeff 4[1,0]		Master	----	----	0.01202708	----		
GPIT-F Electronic Coeff 4[1,1]		Master	----	----	9.996227E-06	----		
GPIT-F Electronic Coeff 4[2,0]		Master	----	----	-0.0001396749	----		
GPIT-F Electronic Coeff 4[2,1]		Master	----	----	-1.758866E-07	----		
GPIT-F Electronic Coeff 4[3,0]		Master	----	----	1.641565E-06	----		
GPIT-F Electronic Coeff 4[3,1]		Master	----	----	1.515733E-09	----		
GPIT-F Electronic Coeff 4[4,0]		Master	----	----	-5.109247E-09	----		
GPIT-F Electronic Coeff 4[4,1]		Master	----	----	-4.647319E-12	----		
GPIT-F Electronic Coeff 5[0,0]		Master	----	----	-0.3550956	----		
GPIT-F Electronic Coeff 5[0,1]		Master	----	----	0.128049	----		
GPIT-F Electronic Coeff 5[1,0]		Master	----	----	0.01202708	----		
GPIT-F Electronic Coeff 5[1,1]		Master	----	----	9.996227E-06	----		
GPIT-F Electronic Coeff 5[2,0]		Master	----	----	-0.0001396749	----		
GPIT-F Electronic Coeff 5[2,1]		Master	----	----	-1.758866E-07	----		
GPIT-F Electronic Coeff 5[3,0]		Master	----	----	1.641565E-06	----		
GPIT-F Electronic Coeff 5[3,1]		Master	----	----	1.515733E-09	----		
GPIT-F Electronic Coeff 5[4,0]		Master	----	----	-5.109247E-09	----		
GPIT-F Electronic Coeff 5[4,1]		Master	----	----	-4.647319E-12	----		
GPIT-F Electronic Coeff 6[0,0]		Master	----	----	-0.3550956	----		
GPIT-F Electronic Coeff 6[0,1]		Master	----	----	0.128049	----		
GPIT-F Electronic Coeff 6[1,0]		Master	----	----	0.01202708	----		
GPIT-F Electronic Coeff 6[1,1]		Master	----	----	9.996227E-06	----		
GPIT-F Electronic Coeff 6[2,0]		Master	----	----	-0.0001396749	----		
GPIT-F Electronic Coeff 6[2,1]		Master	----	----	-1.758866E-07	----		
GPIT-F Electronic Coeff 6[3,0]		Master	----	----	1.641565E-06	----		
GPIT-F Electronic Coeff 6[3,1]		Master	----	----	1.515733E-09	----		
GPIT-F Electronic Coeff 6[4,0]		Master	----	----	-5.109247E-09	----		
GPIT-F Electronic Coeff 6[4,1]		Master	----	----	-4.647319E-12	----		

Company: TUG HILL OPERATING, LLC

Schlumberger

Well: DONOVAN 1-SWD

Field: WILDCAT

County: BARBER

State: KANSAS

POROSITY LOG

COMPENSATED NEUTRON/LITHOLOGY DENSITY/SONIC

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