

Company: ALTA MESA SERVICES, LP

Well: ML INVESTMENTS 2-10

Field: WILLOW

County: PAYETTE State: IDAHO

Location: SHL: 1493.5' FNL & 1201.6' FEL  
 Well: ML INVESTMENTS 2-10  
 Company: ALTA MESA SERVICES, LP

Platform Express		Elev.: 2298.26 f	
Combo Print		K.B. 2318.26 ft	
AIT-TLD-CNL-GR		G.L. 2298.26 ft	
SHL: 1493.5' FNL & 1201.6' FEL		D.F. 2317.26 ft	
Permanent Datum:	Ground Level		
Log Measured From: Kelly Bushing		20.00 ft above Perm. Datum	
Drilling Measured From: Kelly Bushing			
API Serial No. 11-075-20022-0000	Section: 10	Township: 8N	Range: 4W

Logging Date	09-Aug-2013
Run Number	ONE
Depth Driller	4991.00 ft
Schlumberger Depth	4996.00 ft
Bottom Log Interval	4988.00 ft
Top Log Interval	962.00 ft
Casing Driller Size @ Depth	8.625 in @ 960.00 ft
Casing Schlumberger	962 ft
Bit Size	7.875 in
Type Fluid	Water
Density	10 lbm/gal
Fluid Loss	4.8 cm <sup>3</sup>
PH	6.7
Source of Sample	Active Tank
RM @ Meas Temp	1.14 ohm.m @ 97.7 degF
RMF @ Meas Temp	0.86 ohm.m @ 97.7 degF
RMC @ Meas Temp	1.72 ohm.m @ 97.7 degF
Source RMF	Calculated
RM @ BHT	0.56 @ 204.95
RMF @ BHT	0.42 @ 204.95
Max Recorded Temperatures	204.95 degF 204.95 204.95
Circulation Stopped	09-Aug-2013 11:00:00
Logger on Bottom	09-Aug-2013 21:45:00
Unit Number	2271
Location:	STEVEN VIEVAN M 66310
Recorded By	STEVEN VIEVAN M
Witnessed By	MIKE MCMENNAMY

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## 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.

## Contents

<ol style="list-style-type: none"> <li>1. Header</li> <li>2. Disclaimer</li> <li>3. Contents</li> <li>4. Remarks and Equipment Summary</li> <li>5. Depth Summary</li> <li>6. ONE Main Pass - Induction             <ol style="list-style-type: none"> <li>6.1 Integration Summary</li> <li>6.2 Composite Summary</li> <li>6.3 Log ( AIT )</li> <li>6.4 Parameter Listing</li> </ol> </li> <li>7. ONE Main Pass - Density             <ol style="list-style-type: none"> <li>7.1 Integration Summary</li> <li>7.2 Software Version</li> <li>7.3 Composite Summary</li> <li>7.4 Log ( Dens )</li> <li>7.5 Parameter Listing</li> </ol> </li> <li>8. ONE Main Pass - Triple Combo</li> </ol>	<ol style="list-style-type: none"> <li>9.2 Log ( Combo_Fax RA )</li> <li>10. Calibration Report</li> <li>11. Tail</li> </ol>
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- 8.1 Integration Summary
- 8.2 Software Version
- 8.3 Composite Summary
- 8.4 Log ( Combo\_Fax )
- 8.5 Parameter Listing
- 9. ONE Repeat
- 9.1 Composite Summary

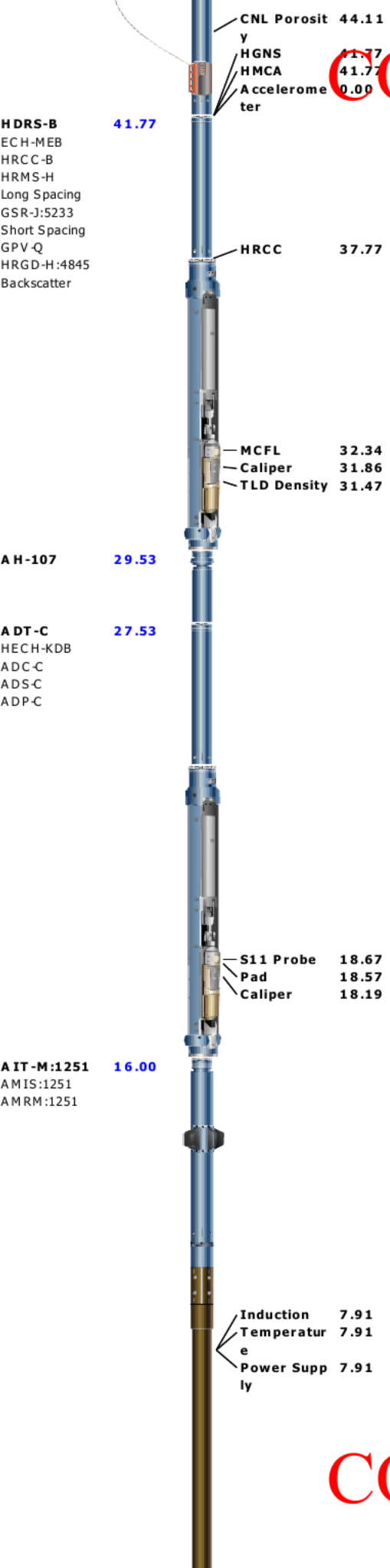
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## Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks
<b>Equip name</b> LEH-QT LEH-QT	<b>Length</b> 82.44	<b>MP name</b>	<b>Offset</b>	1. THIS IS THE FIRST RUN IN HOLE.
				2. TOOL RAN AS PER TOOL SKETCH.
				3. MATRIX = SANDSTONE, MATRIX DENSITY = 2.65 G/CC
<b>EDTC-B</b> EDTH-B EDTG-A EDTC-B	79.52			4. FLUID DENSITY = 1.00 G/CC
				5. WASHOUTS ADVERSELY AFFECT LOG QUALITY.
		CTEM	76.02	THANK YOU FOR CHOOSING ROCK SPRINGS WIRELINE!!!
		ACCZ	0.00	
		HV	0.00	
		Gamma Ray	74.15	
		TelStatus	73.02	
<b>HNGS-BA</b> HEH-K HNGS-BA	73.02			
		GR	70.04	
<b>HNGC-B</b> HNGH-A HNGC-B	64.83			
		Tel Status	63.08	
<b>LDSC-B</b> LD SH-A LDSC-B	61.33			
		Tel Status	59.58	
<b>ECS-A</b> EC SH-A ECSD-A ECS-A NSR-F	57.83			
		Detector	56.55	
<b>HGNS-H</b> HGNH NSR-F:687 NPV-N HACCZ-H:5118 HGNS-H HMCA-H	51.18	Temperatur e	51.16	
		GR	50.44	

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SP 0.08  
 Mud Resistivity 0.00  
 Head Tension  
 TOOL\_ZERO

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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**

<b>Depth Control Parameters</b>	ONE		
Conveyance Type	Wireline		
Log Sequence	FIRST		
Rig Up Length at Surface ( ft )	195.60		
Rig Up Length at Bottom ( ft )	195.60		
Rig Up Length Correction ( ft )	0.00		
Stretch Correction ( ft )	5.73		
Tool Zero Reference Check at Surface ( ft )	0.00		
Reference Log Date	09-Aug-2013		
Reference Log Name	DOWNLOG		
Reference Log Run Number	ONE		
Rig Type	SINGLE		
<b>Depth Remark Parameters</b>	ONE		
Depth Remark 1	1. ALL SCHLUMBERGER DEPTH PROCEDURES FOLLOWED		
Depth Remark 2	2. IDW USED AS PRIMARY DEPTH CONTROL		
Depth Remark 3	3. Z-CHART USED AS SECONDARY DEPTH CONTROL		
<b>Depth Measuring Device</b>	ONE		
Type	IDW-B		
Wheel Correction 1	1		
Wheel Correction 2	0		
<b>Tension Device</b>	ONE		
Type	CMTD-B/A		
Calibration Points	0		
<b>Logging Cable</b>	ONE		
Type	7-46NT-XS		
Logging Cable Length ( ft )	24000.00		

**ONE**

**Main Pass - Induction**

**Integration Summary**

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
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**Pass Summary**

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	868.43 ft	5010.40 ft	09-Aug-2013 9:54:54 PM	10-Aug-2013 12:18:33 AM	5.73 ft	

All depths are referenced to toolstring zero

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**Log**

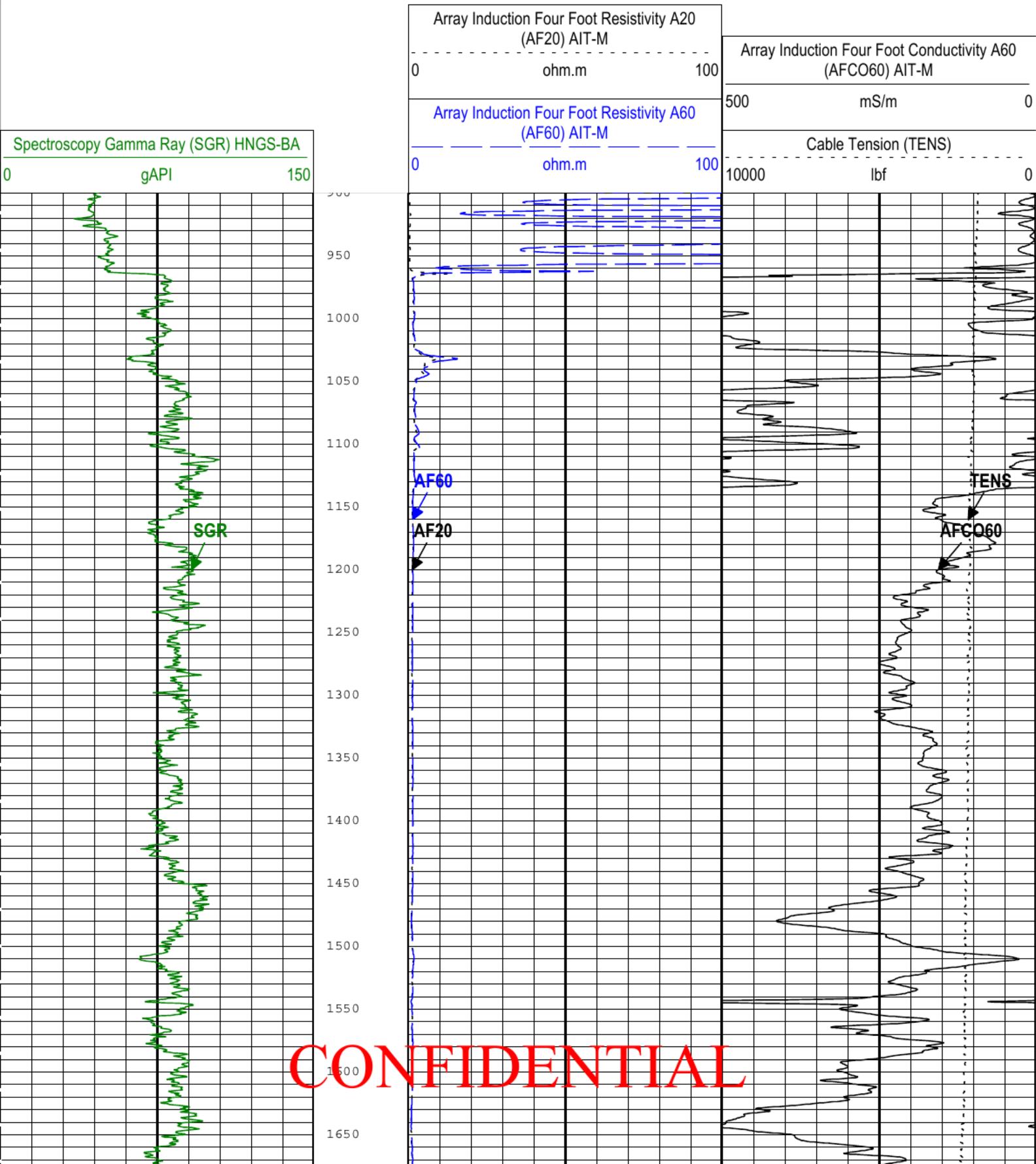
ONE: Log[3]:Up



Channel	Source	Sampling
AF20	AIT-M:AMIS:AMIS	3in
AF60	AIT-M:AMIS:AMIS	3in
AFCO60	AIT-M:AMIS:AMIS	3in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

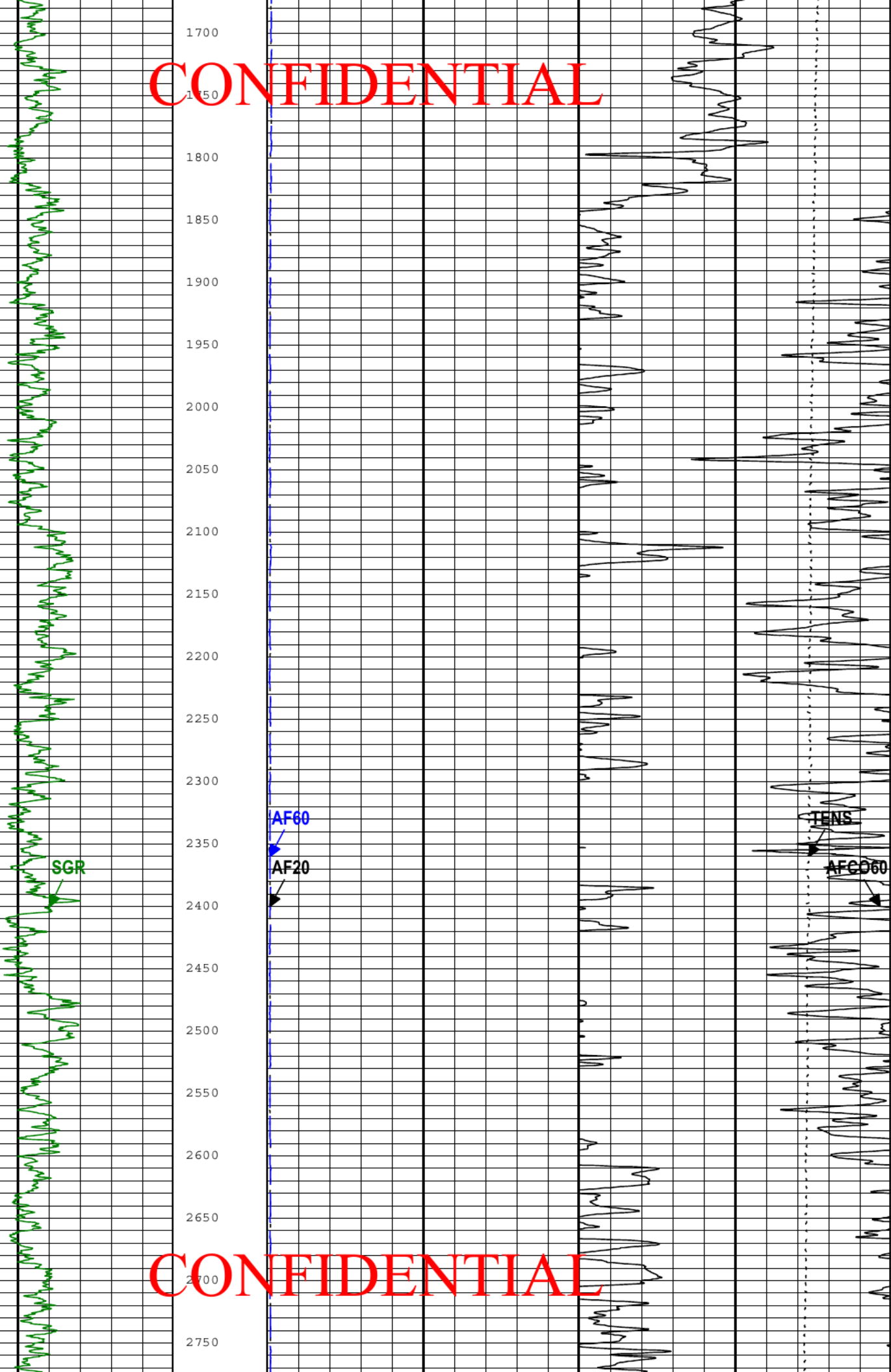
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TIME\_1900 - Time Marked every 60.00 (s)



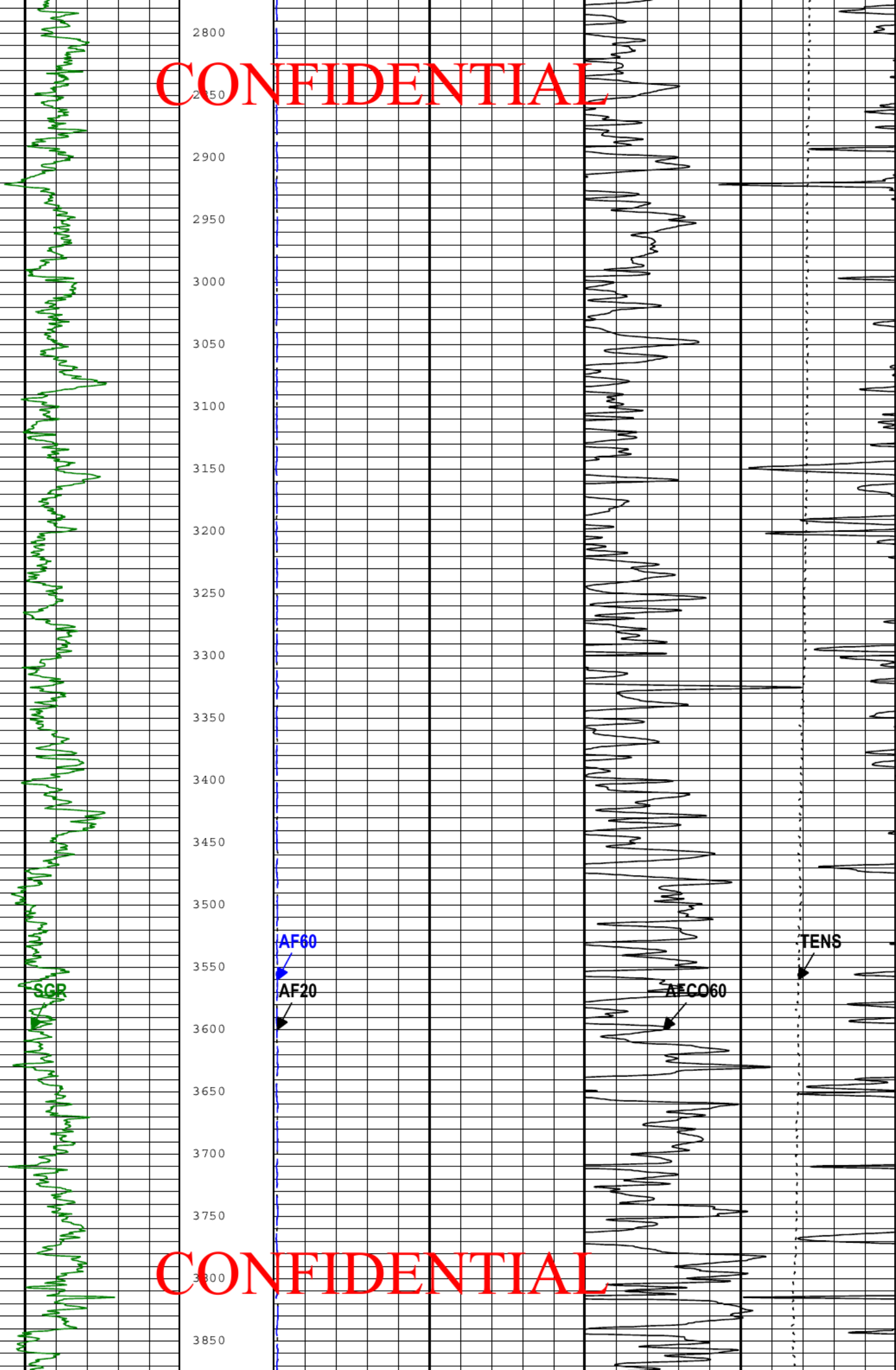
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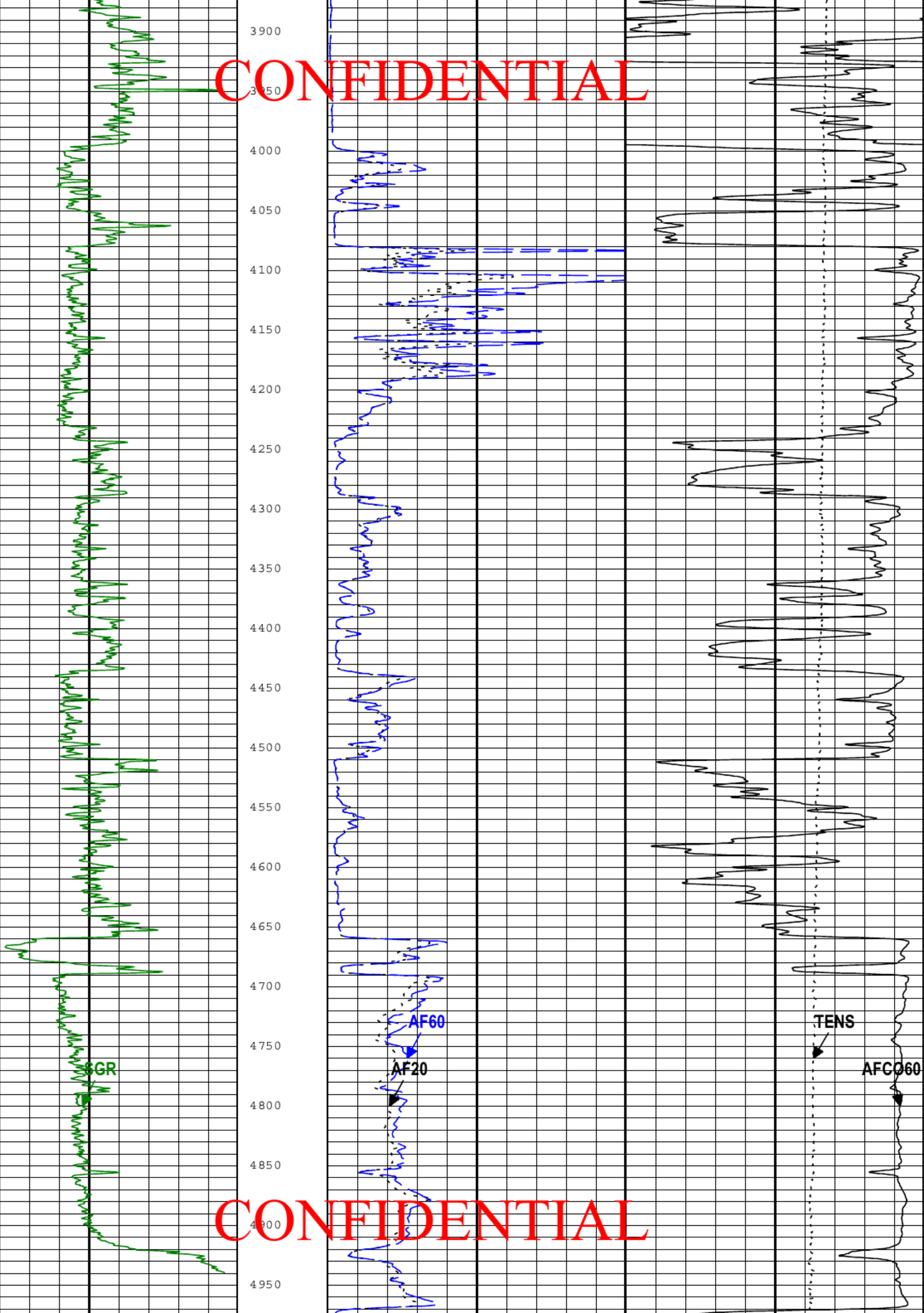
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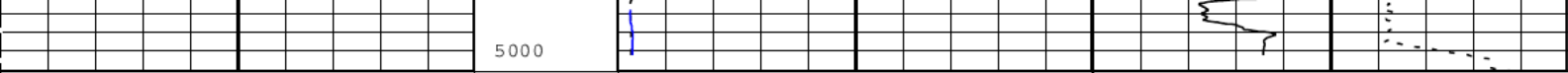


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Spectroscopy Gamma Ray (SGR) HNGS-BA  
0 gAPI 150

Array Induction Four Foot Resistivity A20  
(AF20) AIT-M  
0 ohm.m 100

Array Induction Four Foot Resistivity A60  
(AF60) AIT-M  
0 ohm.m 100

Array Induction Four Foot Conductivity A60  
(AFCO60) AIT-M  
500 mS/m 0

Cable Tension (TENS)  
10000 lbf 0

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TIME\_1900 - Time Marked every 60.00 (s)

Description: Format: Log (AIT) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 20:09:17

**ONE**

**Main Pass - Density**

**Integration Summary**

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
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**Software Version**

Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20130325-3.1.9755.1799

Computation	Description	Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	3.1.9755.1799

Tool Elements	Description	Software Version	Firmware Version
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	3.1.9755.0	3.0
HNGS-BA	HNGS Sonde Element	3.1.9755.0	2.0
HRCC-B	HILT High-Resolution Control Cartridge, 125 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[3]:Up	Up	868.43 ft	5010.40 ft	09-Aug-2013 9:54:54 PM	10-Aug-2013 12:18:33 AM	5.73 ft	

All depths are referenced to toolstring zero

**Log**

ONE: Log[3]:Up

Description: Format: Log (Dens) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 20:09:19

Channel	Source	Sampling
BS	Borehole	6in
CALI	HDRS-B:HRCC-B:HRCC-B	1in
PEFZ	HDRS-B:HRMS-B:HRGD-H	2in
RHOZ	HDRS-B:HRMS-B:HRGD-H	2in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

TIME\_1900 - Time Marked every 60.00 (s)

Area from BS to CALI

Caliper (CALI) HDRS-B  
4 in 14

Spectroscopy Gamma Ray (SGR) HNGS-BA  
0 gAPI 150

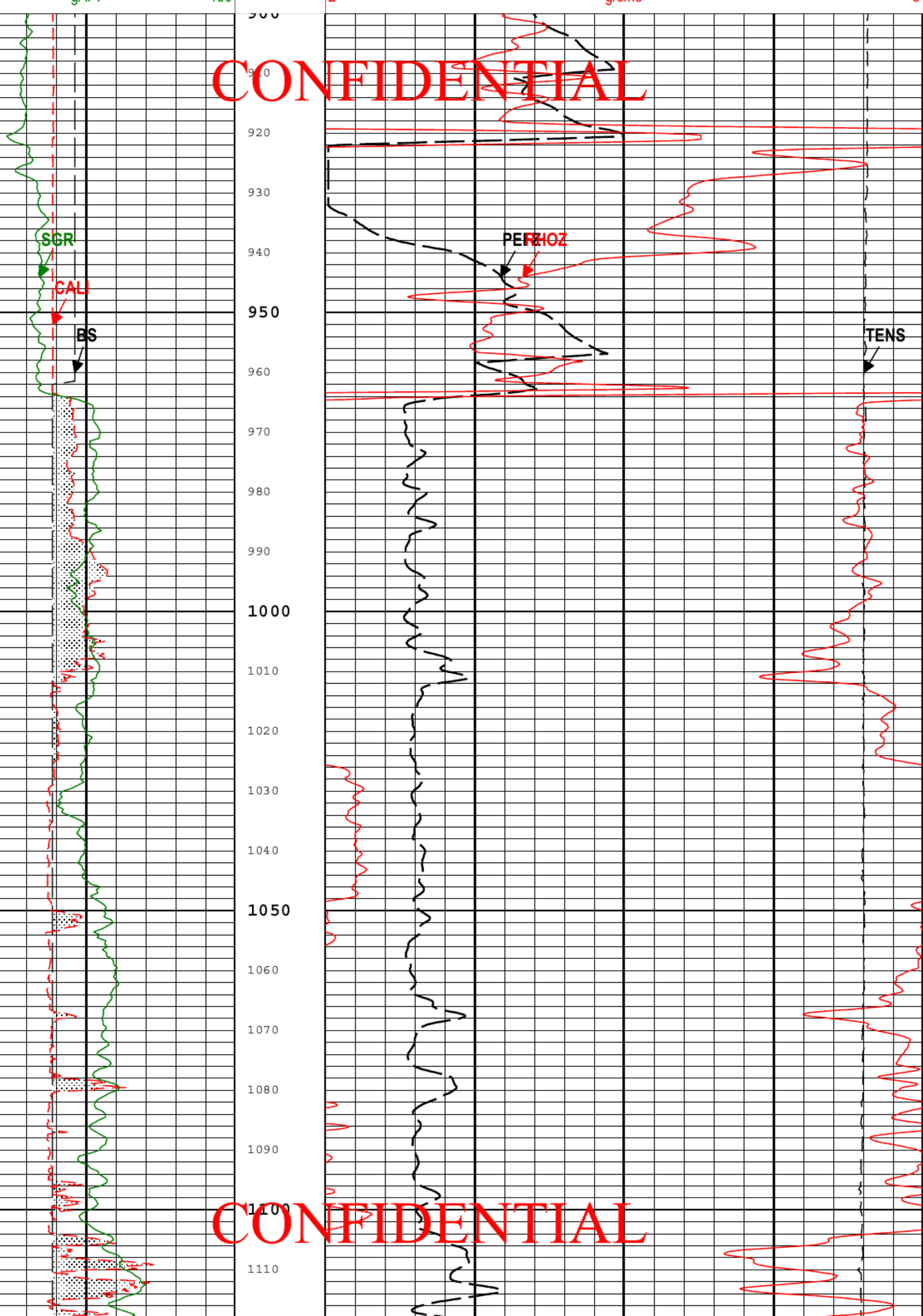
Standard Resolution Formation Photoelectric Factor (PEF) HDRS-B  
0 10

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

Cable Tension (TENS)  
10000 lbf 0

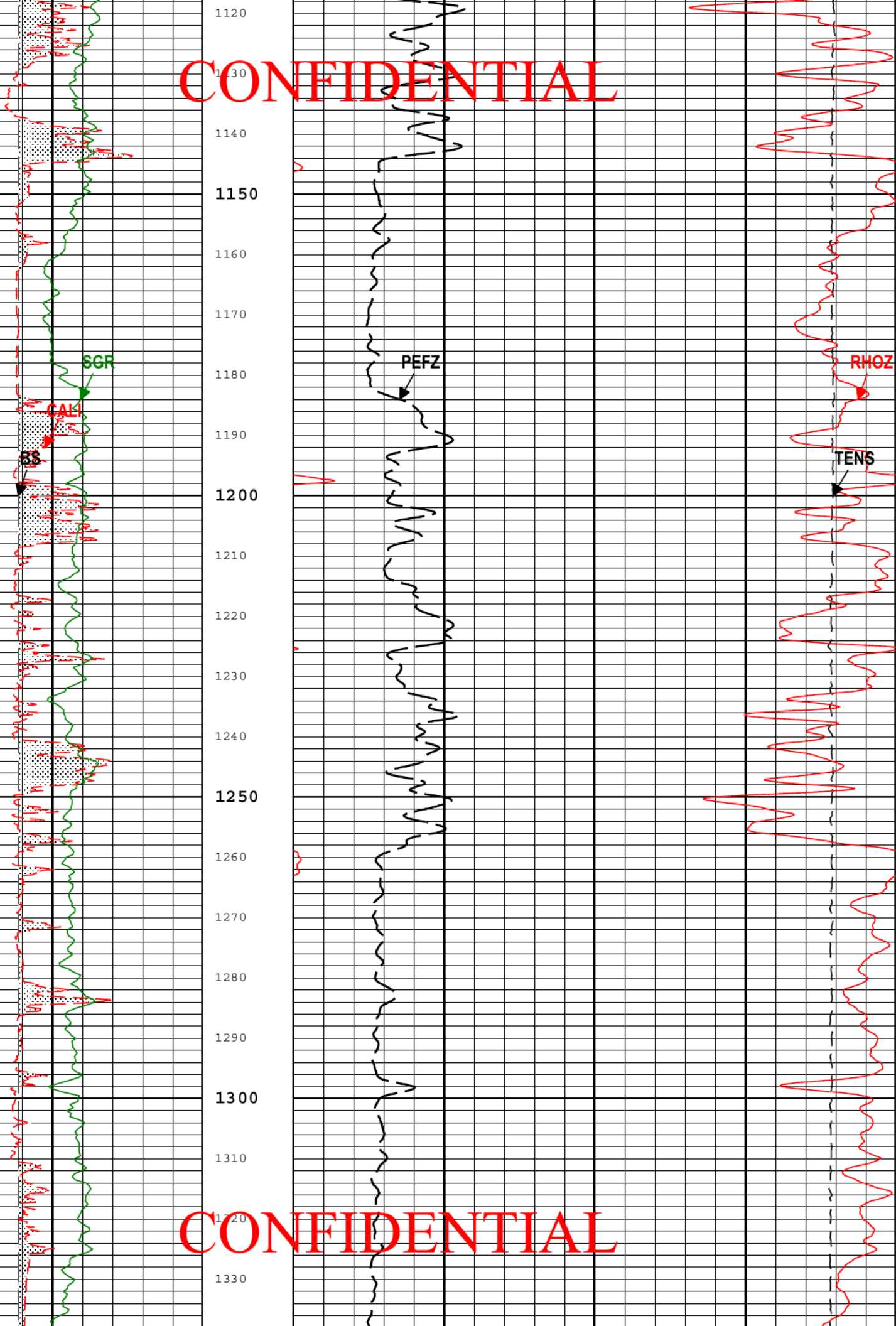
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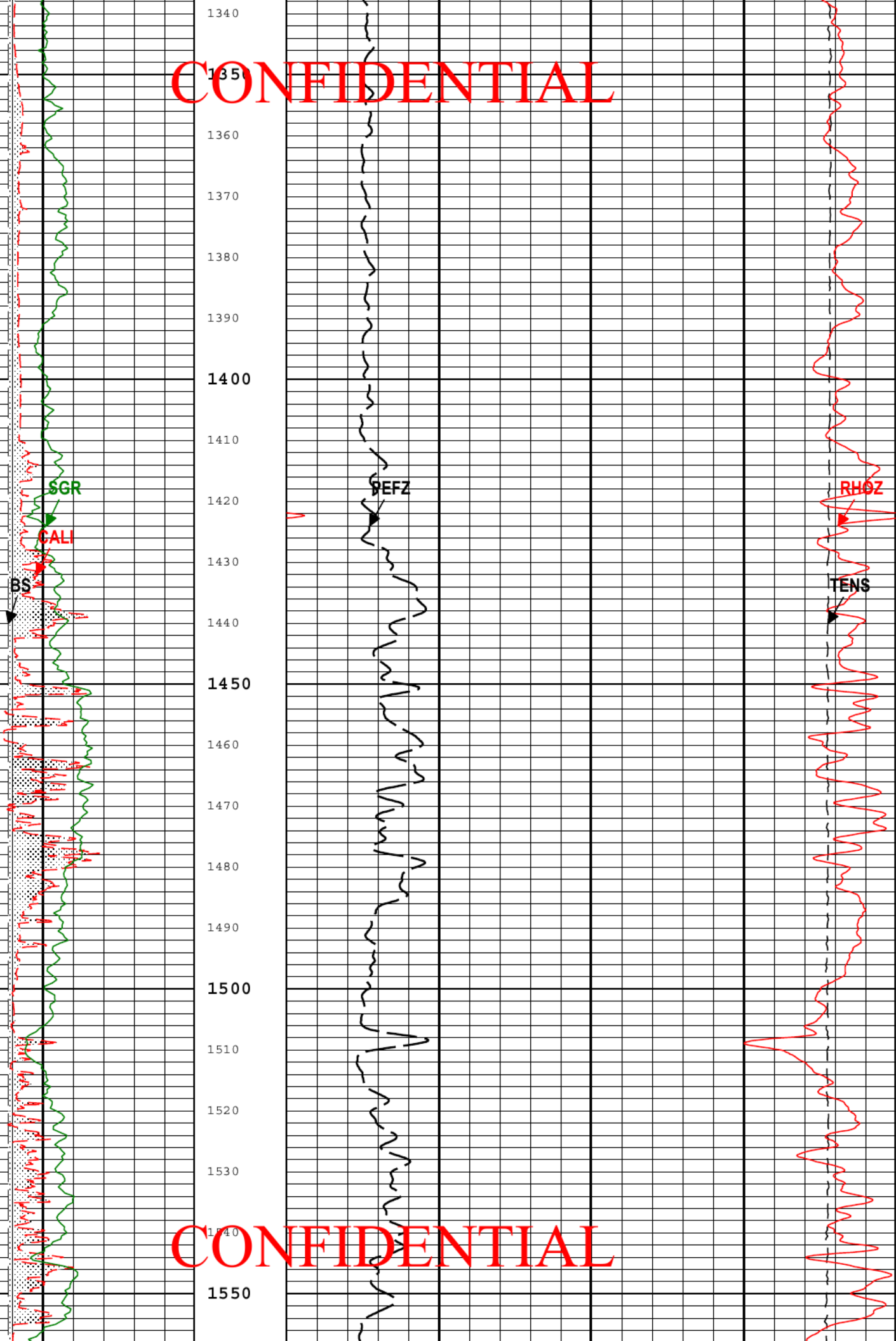
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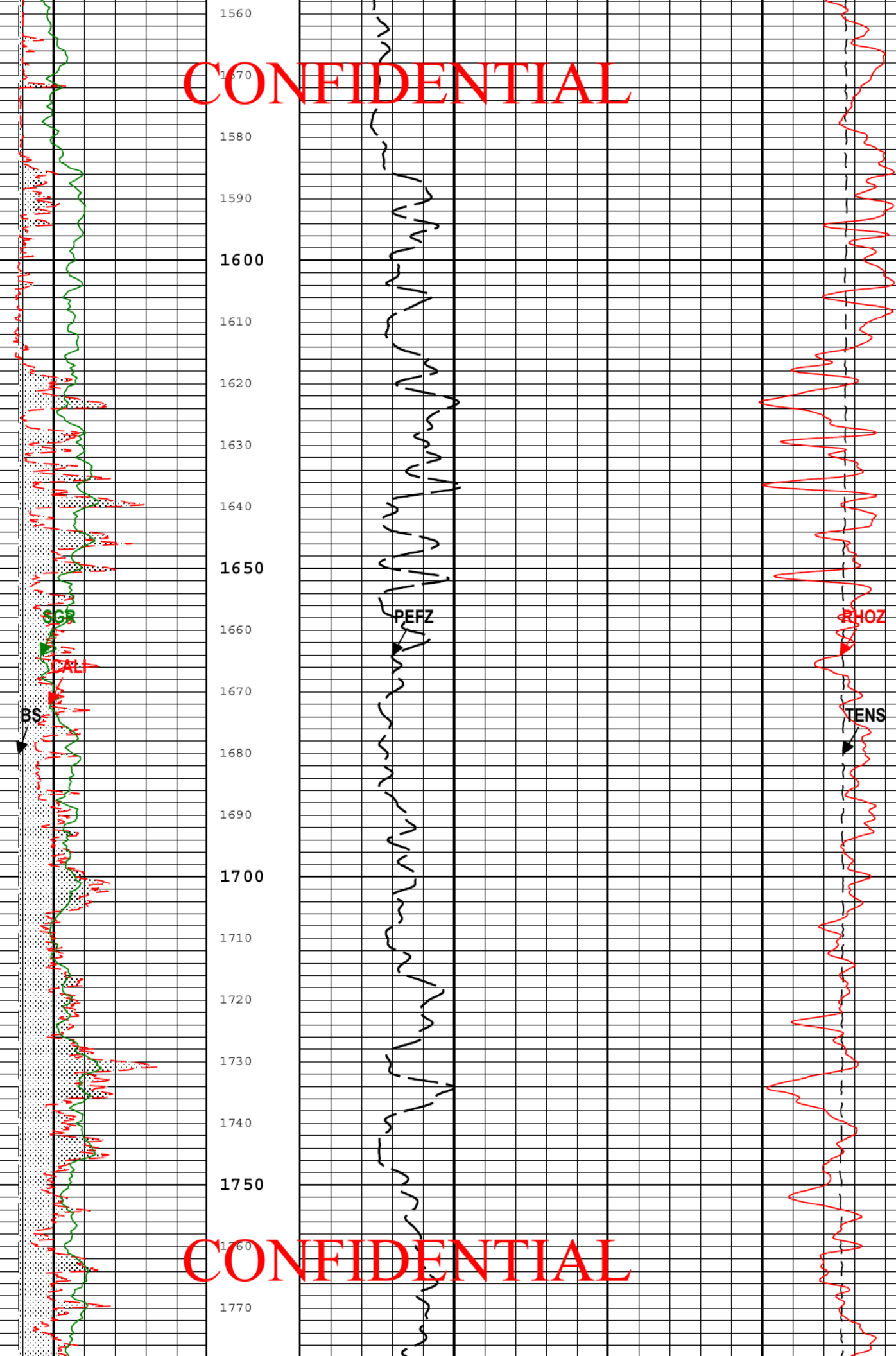
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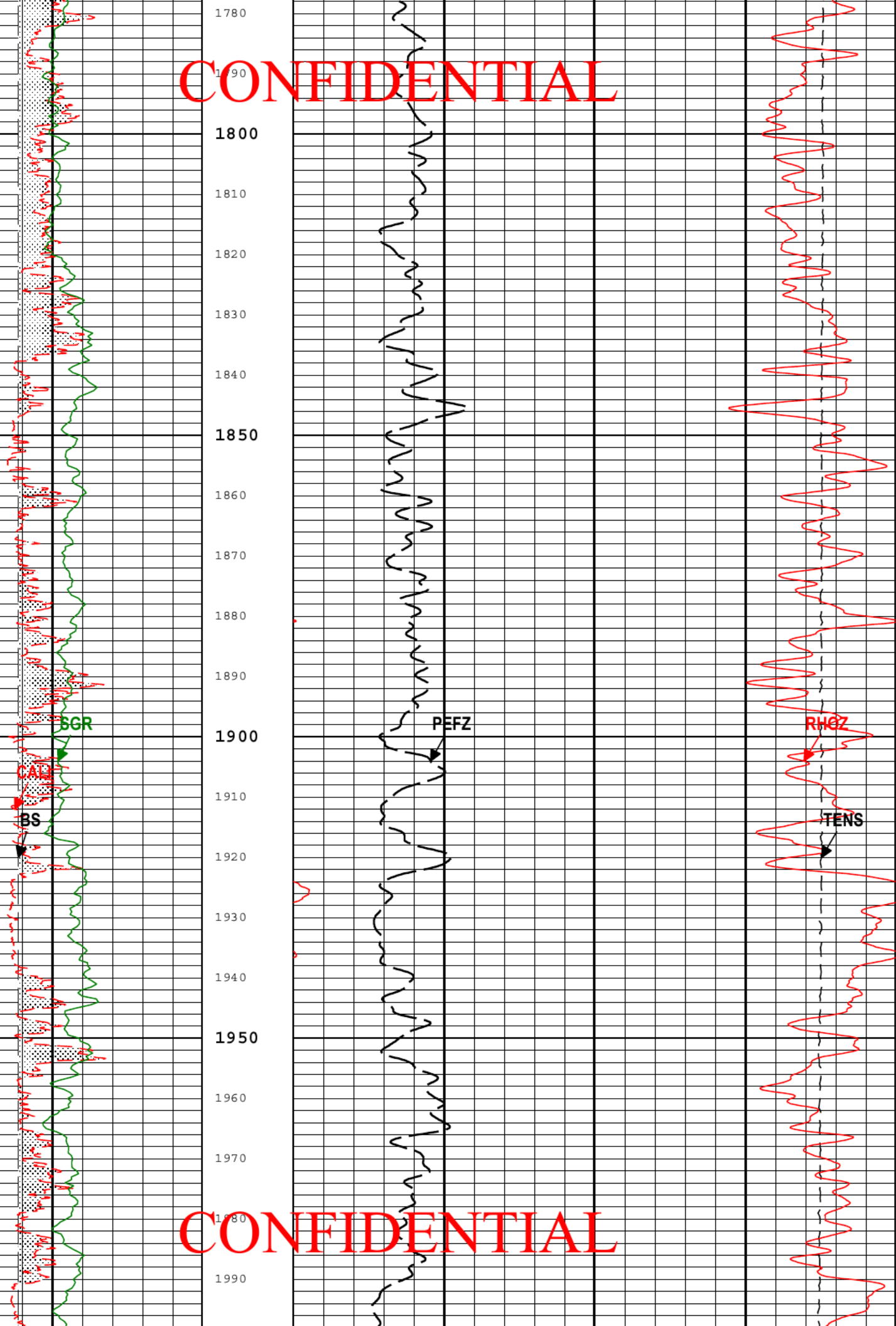


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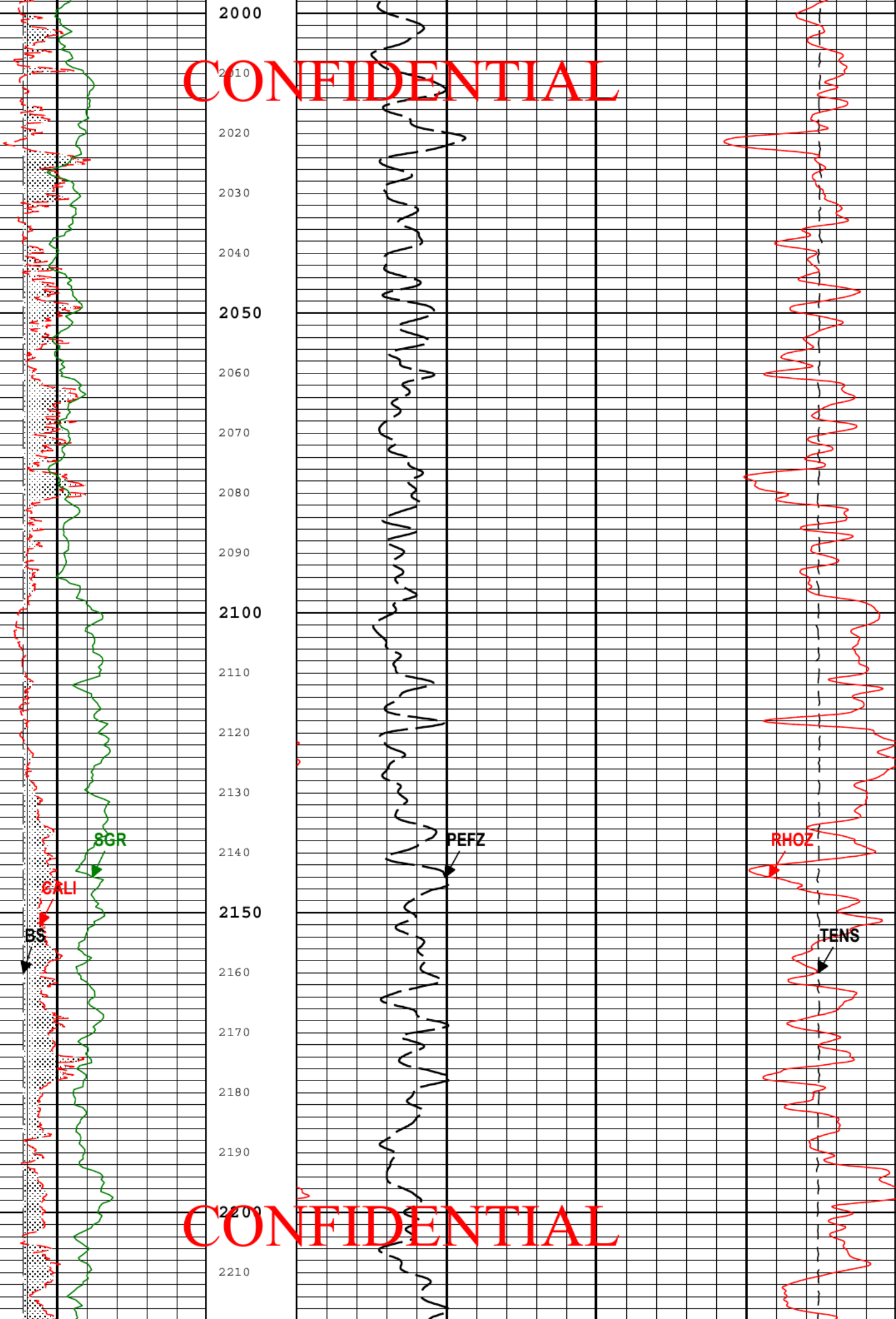
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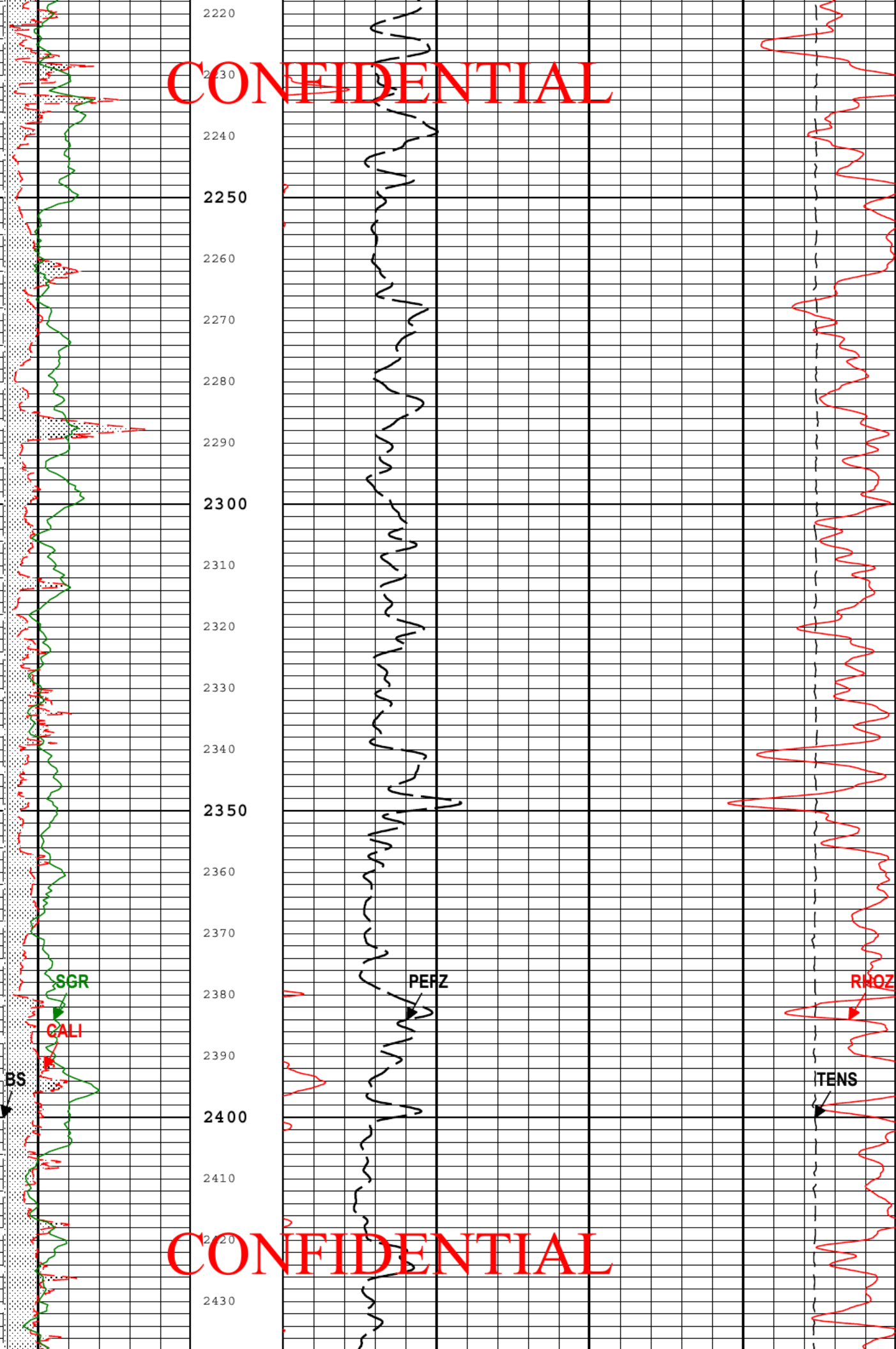
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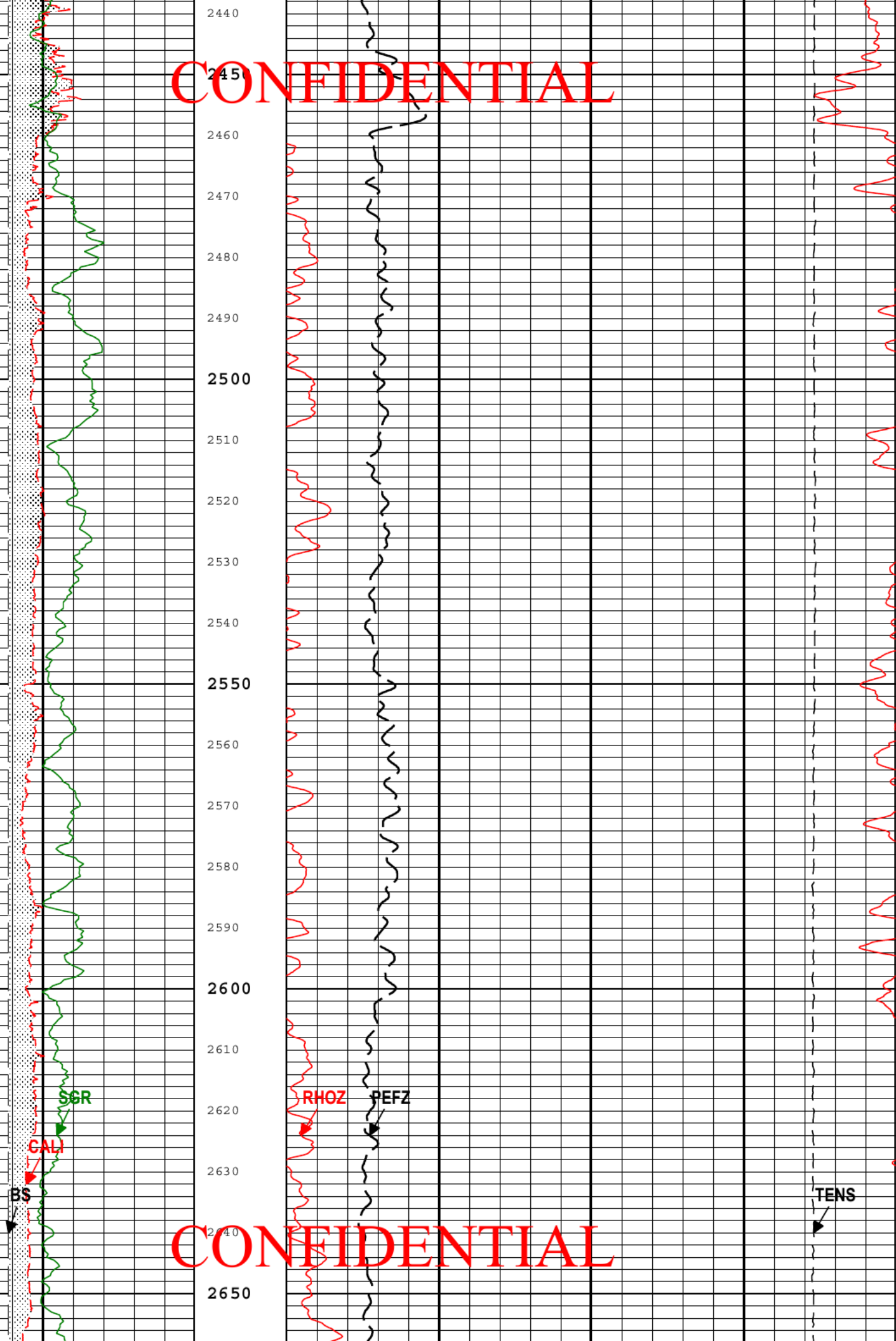
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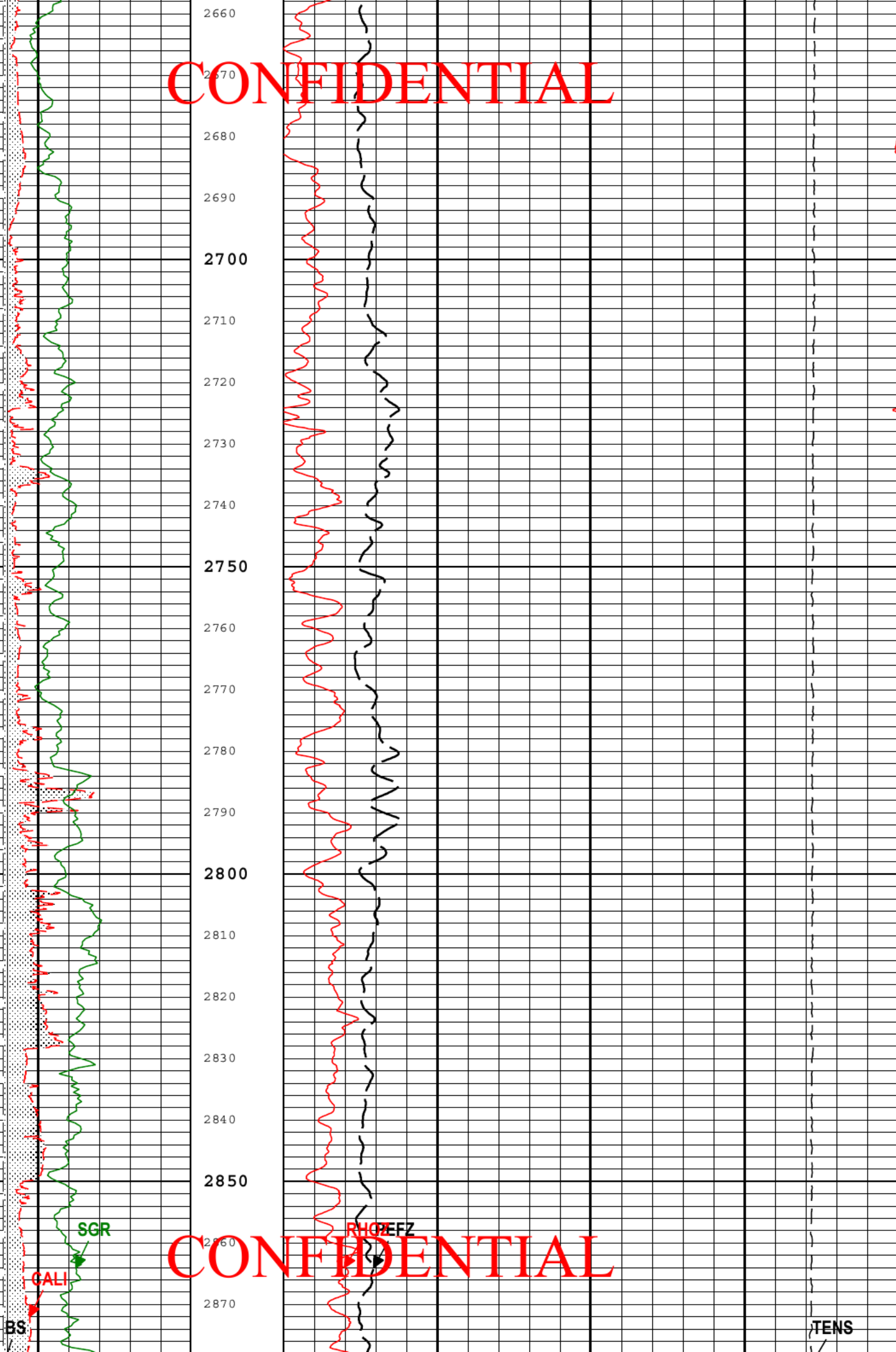
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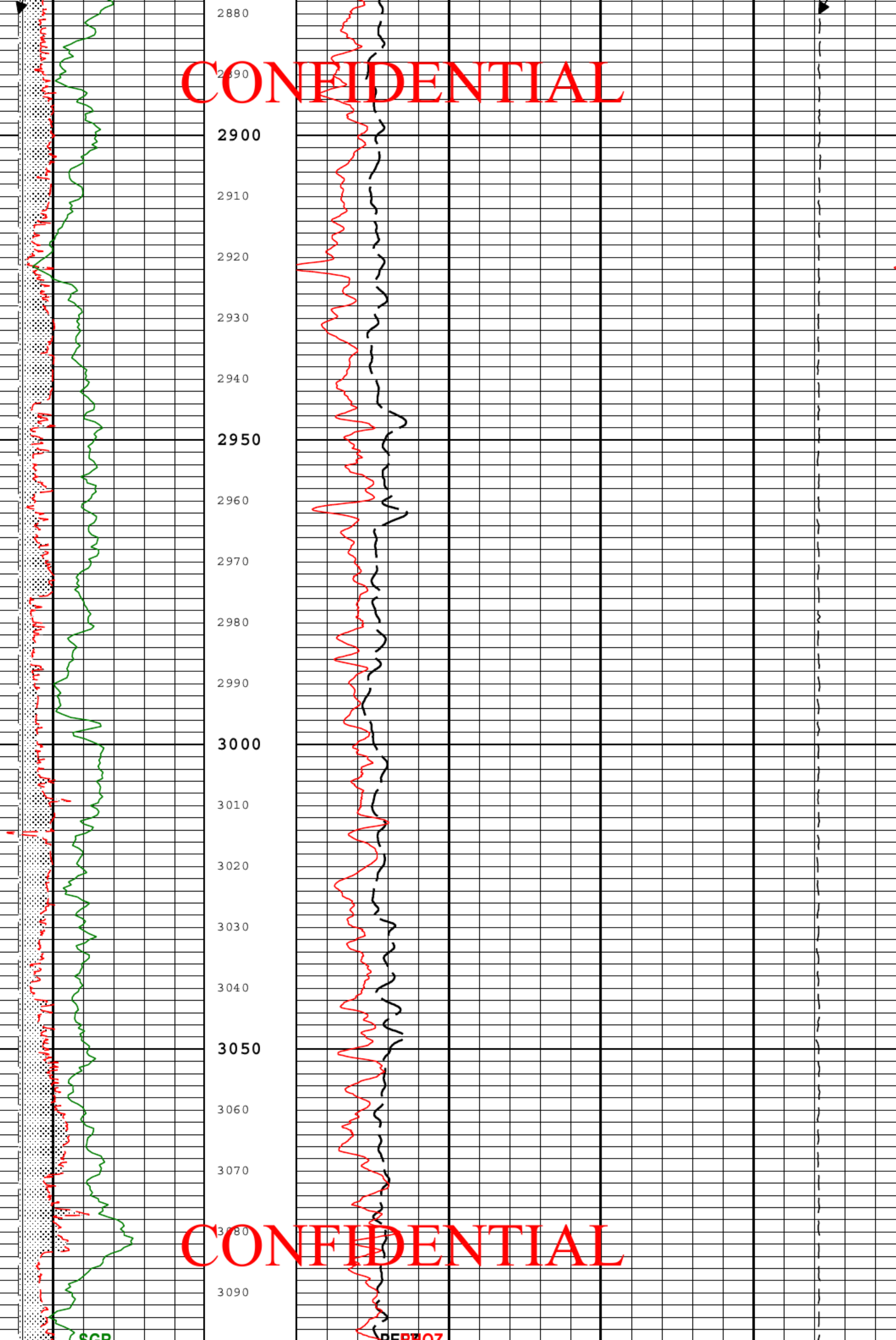
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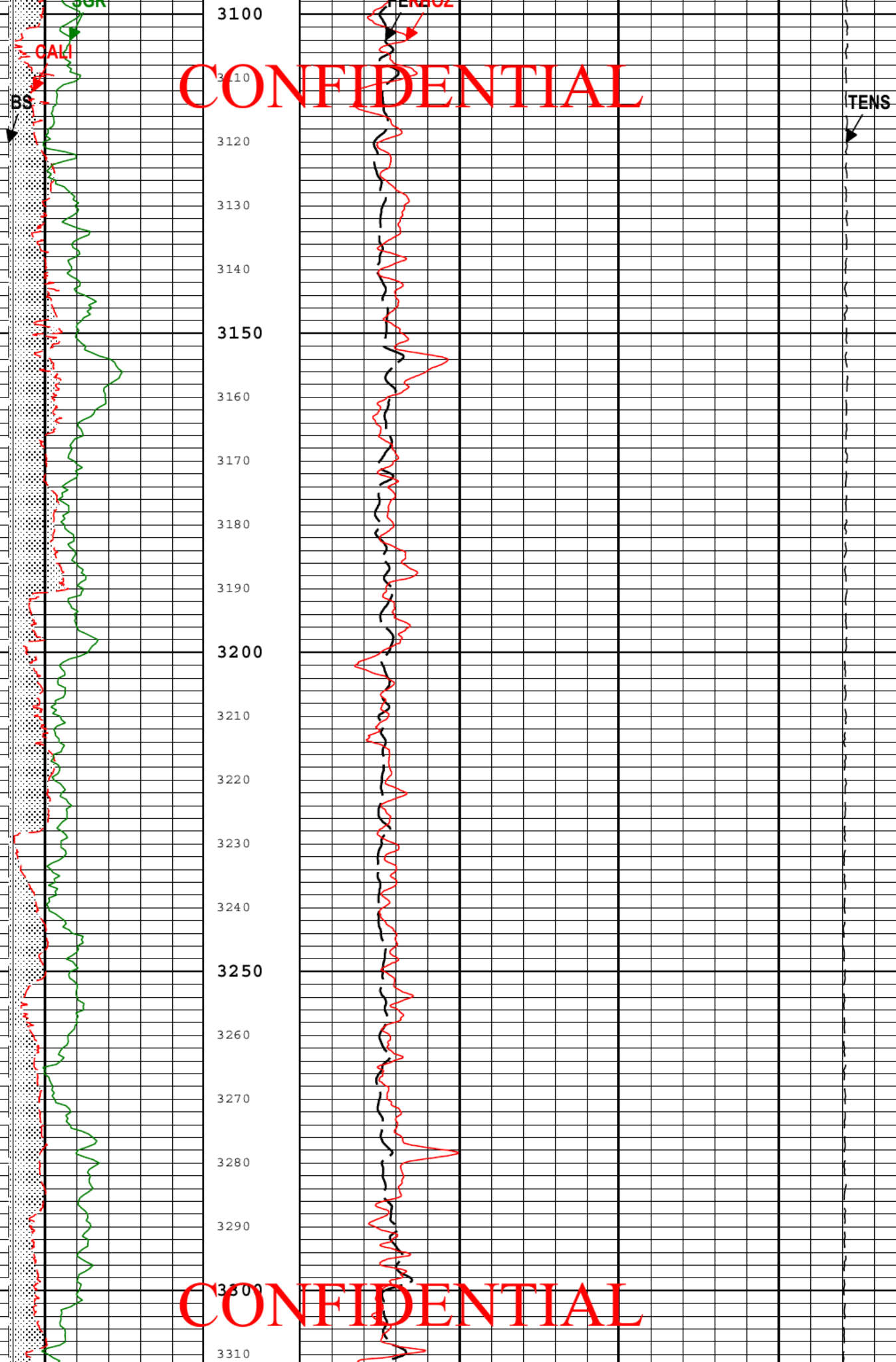


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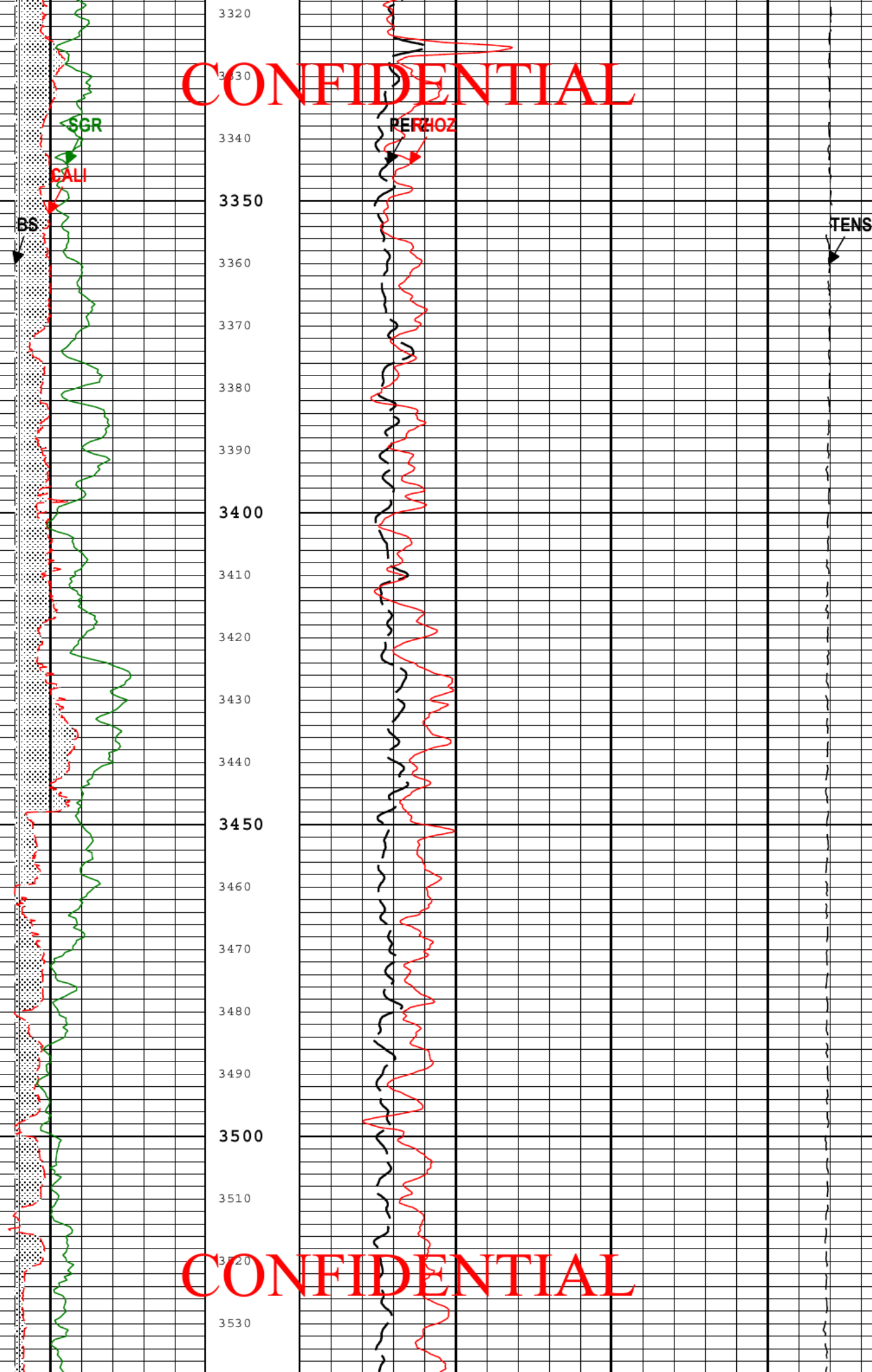
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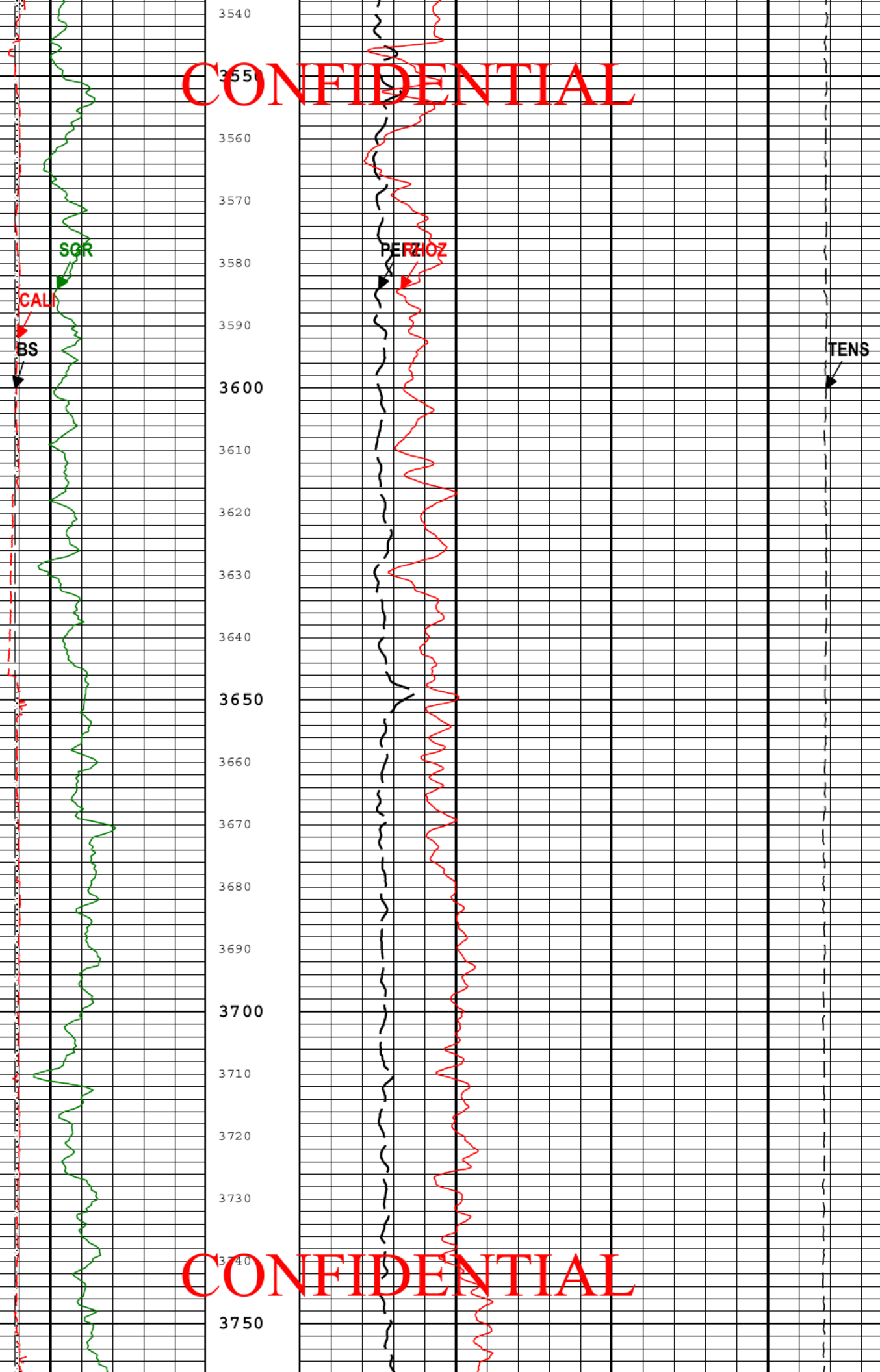


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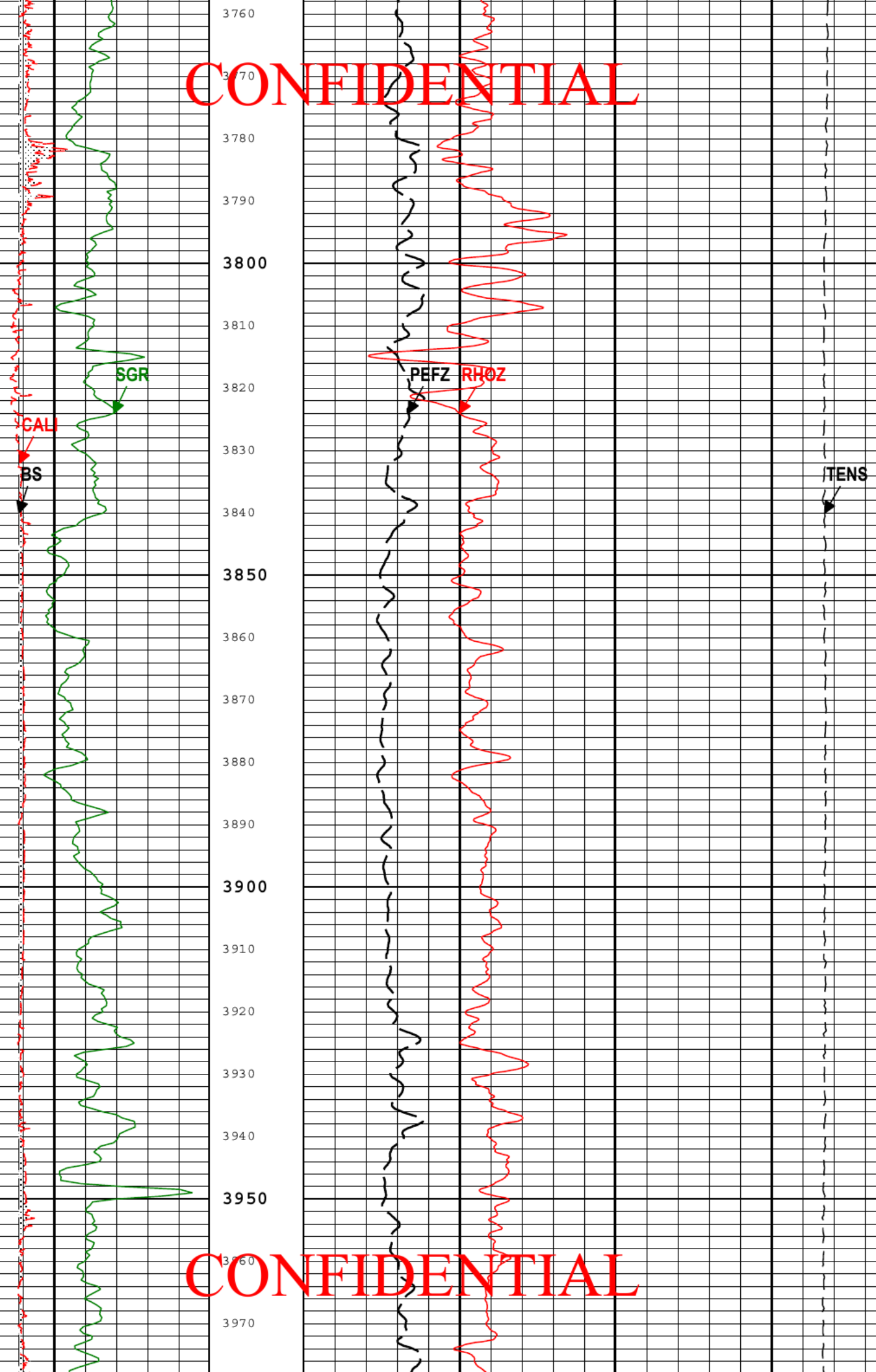
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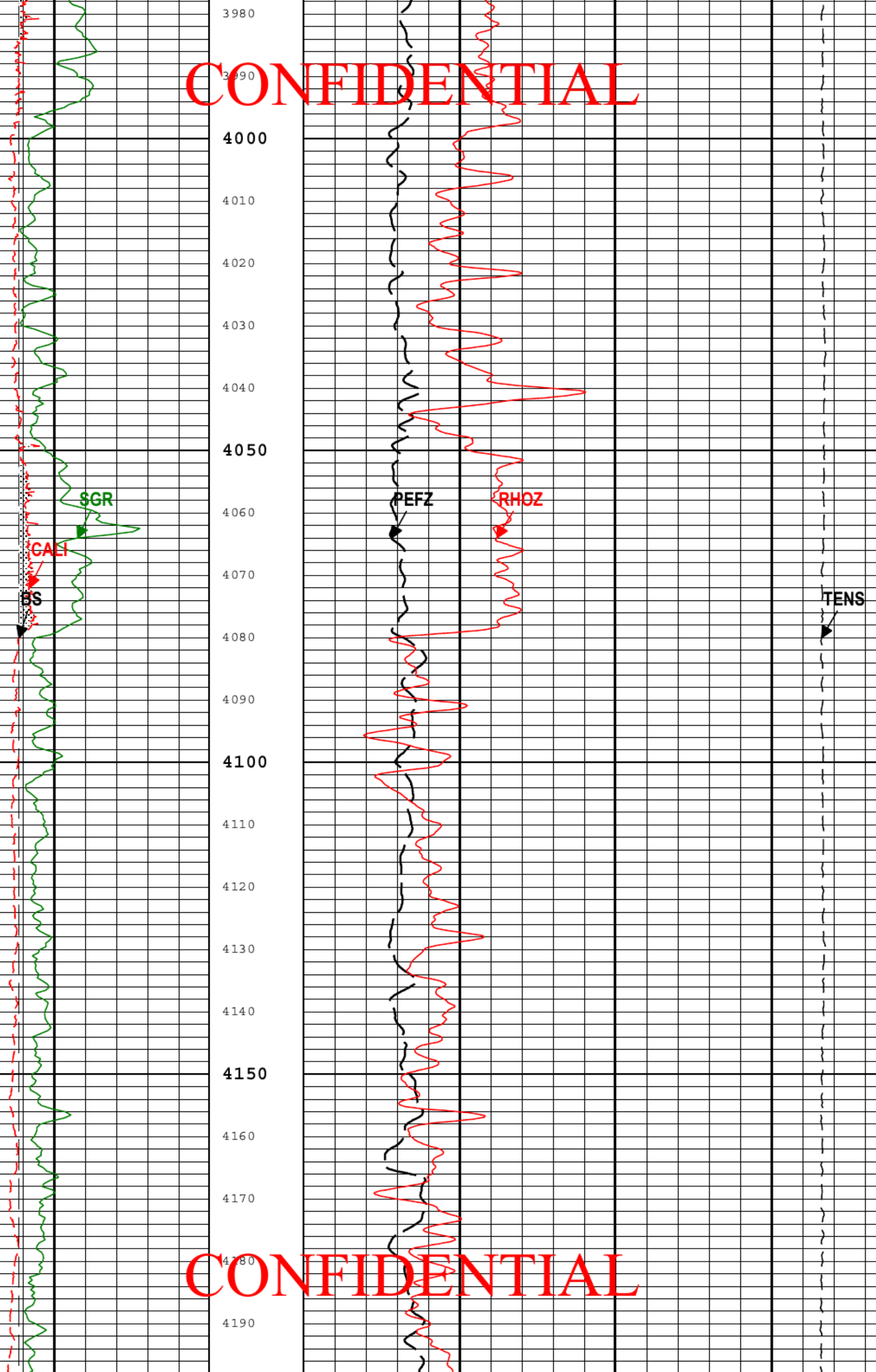
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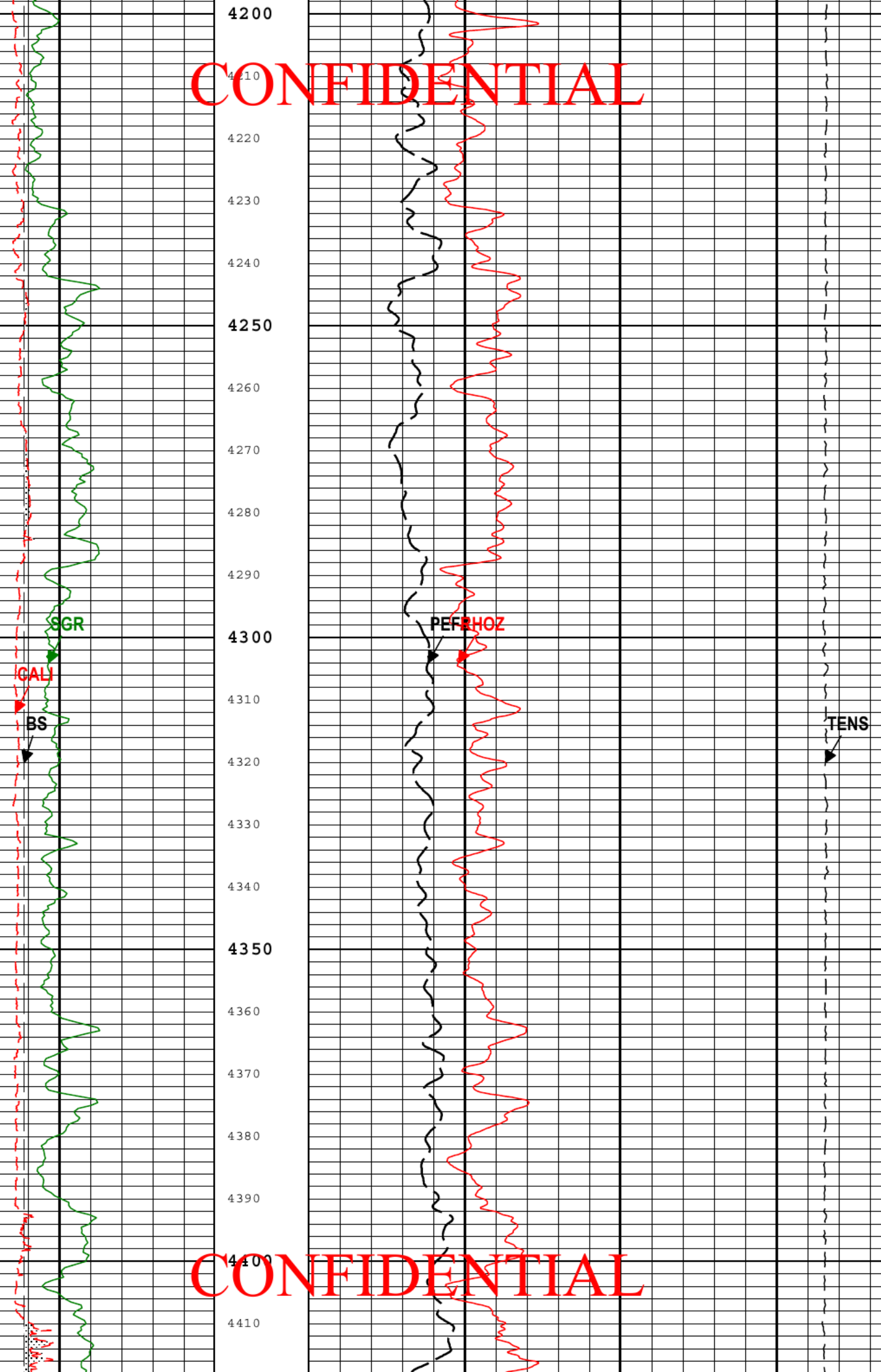
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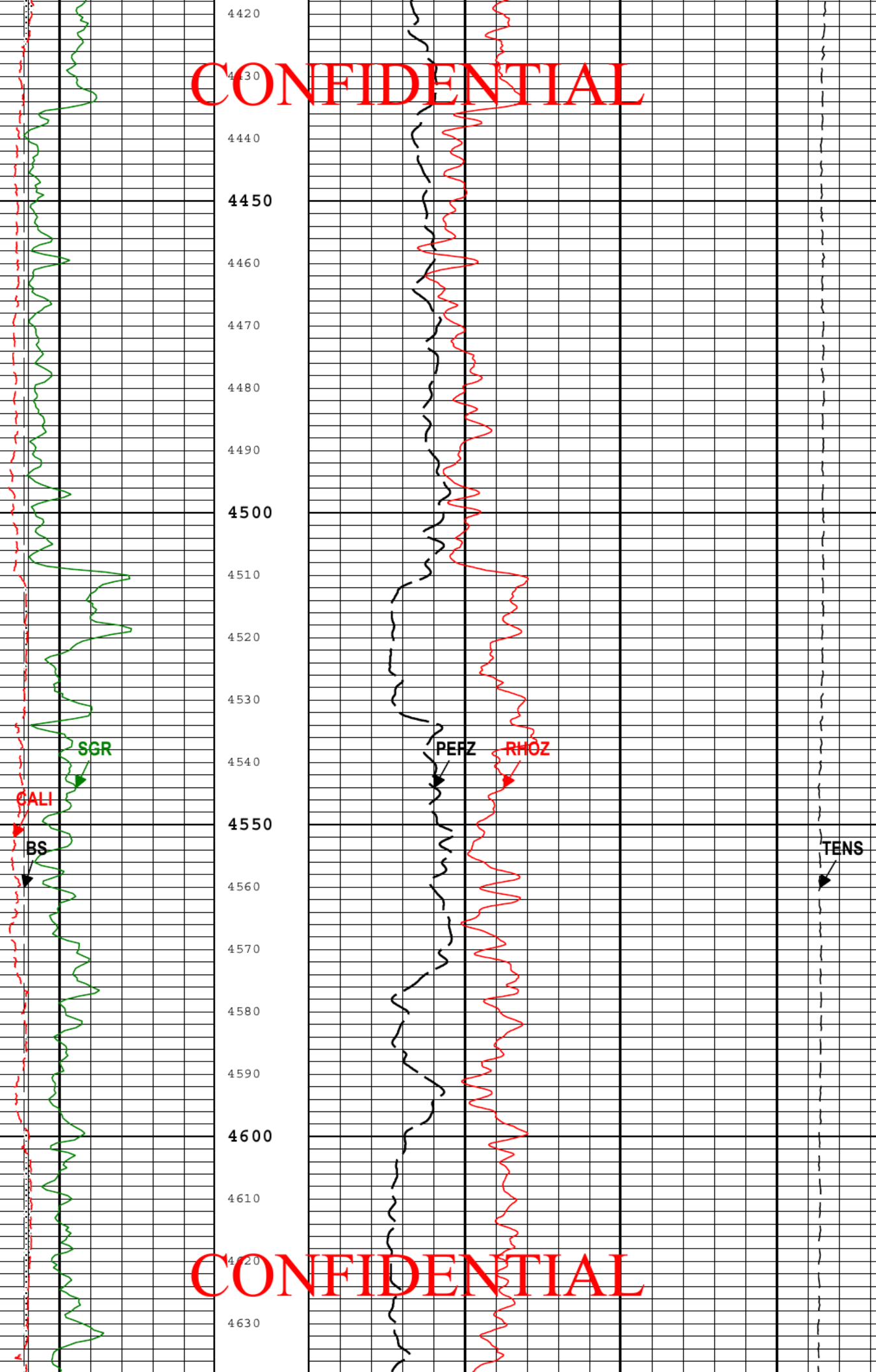
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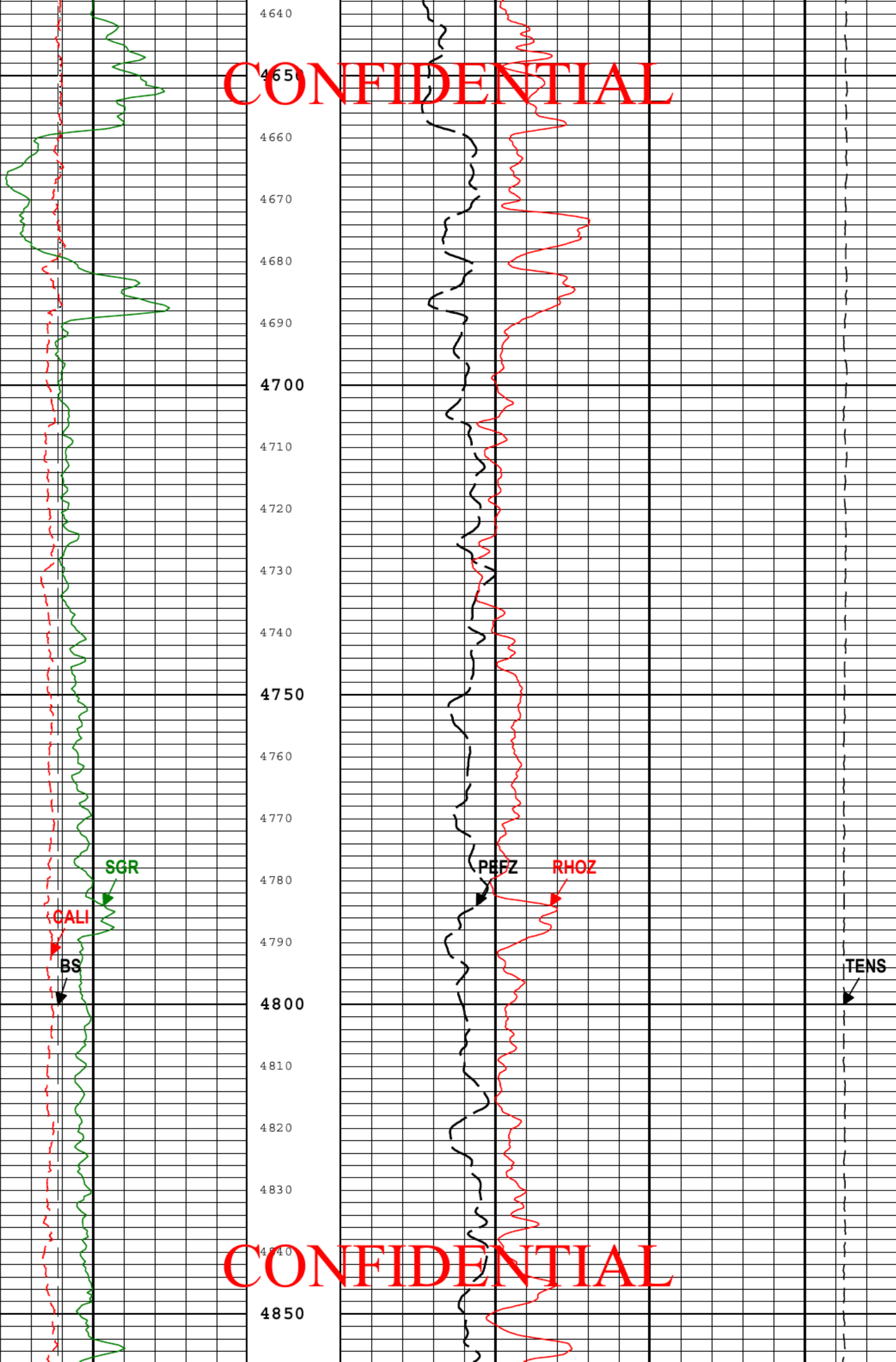
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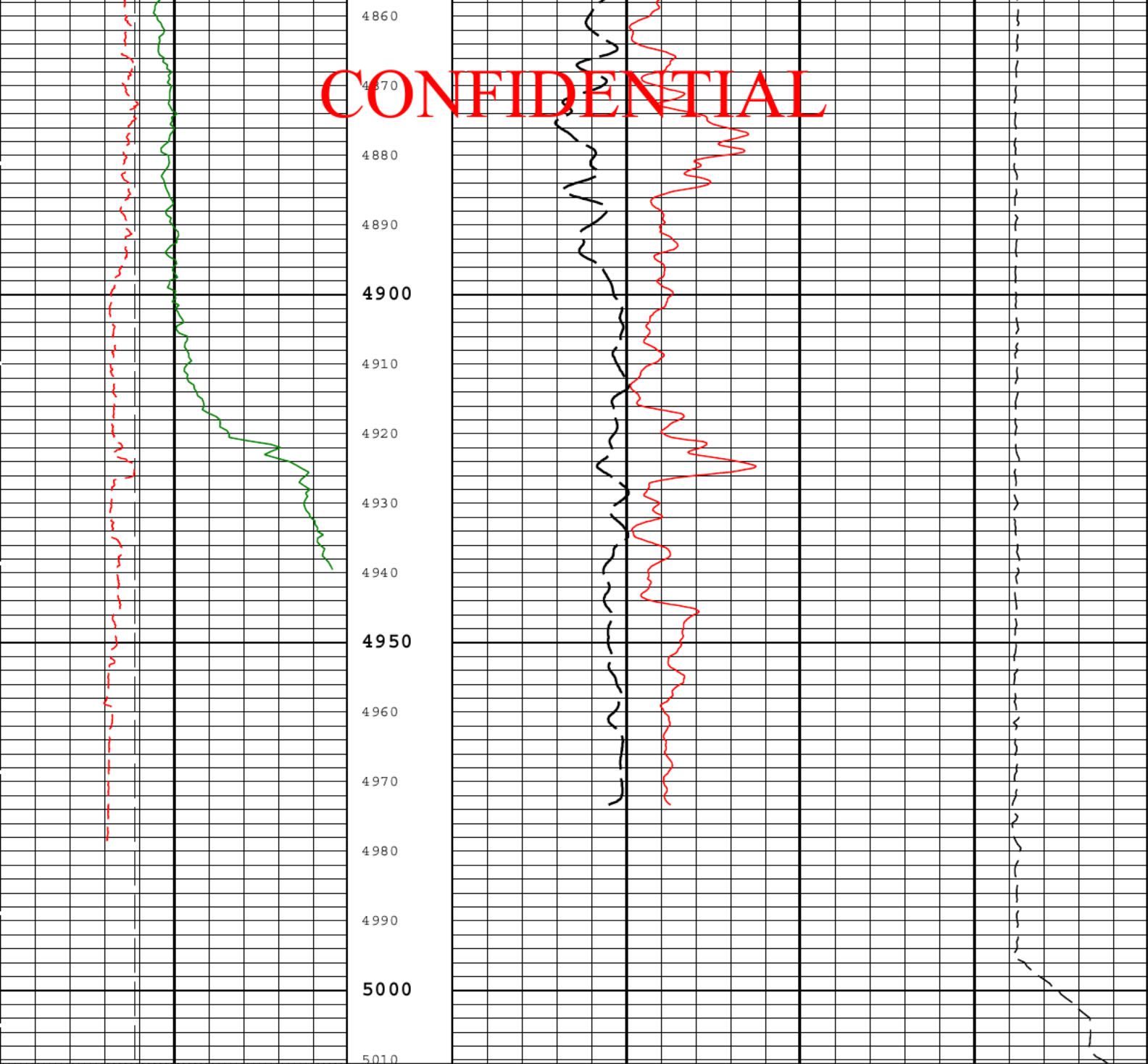
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Area from BS to CALI		
4	in	14
Caliper (CALI) HDRS-B		
0	gAPI	150
Spectroscopy Gamma Ray (SGR) HNGS-BA		

Standard Resolution Formation Density (RHOZ) HDRS-B		
2	g/cm3	3
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-B		Cable Tension (TENS)
0	10	10000 lbf 0

TIME\_1900 - Time Marked every 60.00 (s)

Description: Format: Log ( Dens ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 20:09:19

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI SHIFT	CALI Supplementary Offset	HDRS-B	0.029	in

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CBLO	Casing Bottom (Logger)	WLSESSION	962	ft
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DC_MODE	Depth Correction Mode	Depth Correction	Real-time	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DHC	Density Hole Correction	HDRS-B	Bit Size	
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	
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
NPRM	HRDD Nuclear Processing Mode	HDRS-B	High Resolution	
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	

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### Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	0	900	962
BS	7.875	962	5010.5

All depth are actual.

### Tool Control Parameters

Parameter	Description	Tool	Value	Unit
HRGD_BRD_TYPE	HRGD Board Type	HDRS-B	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h
NPUC	Nuclear Pile-Up Correction	HDRS-B	On	

## ONE

### Main Pass - Triple Combo

### Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
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### Software Version

Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20130325-3.1.9755.1799

Computation	Description	Version
Borehole	Borehole Ensemble provides common Borehole Parameters and Channels	3.1.9755.1799
HENVIR	Computation Ensemble for the HGNS Neutron environmental corrections	3.1.9755.0
DepthCorrection	DepthCorrection	3.1.9755.1799

Tool Elements	Description	Software Version	Firmware Version
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	3.1.9755.0	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	3.1.9755.0	3.0
HNGS-BA	HNGS Sonde Element	3.1.9755.0	2.0
AMIS	Array Induction Sonde - M	3.1.9755.0	1
HRCC-B	HILT High-Resolution Control Cartridge, 125 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[3]:Up	Up	868.43 ft	5010.40 ft	09-Aug-2013 9:54:54 PM	10-Aug-2013 12:18:33 AM	5.73 ft	

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All depths are referenced to toolstring zero

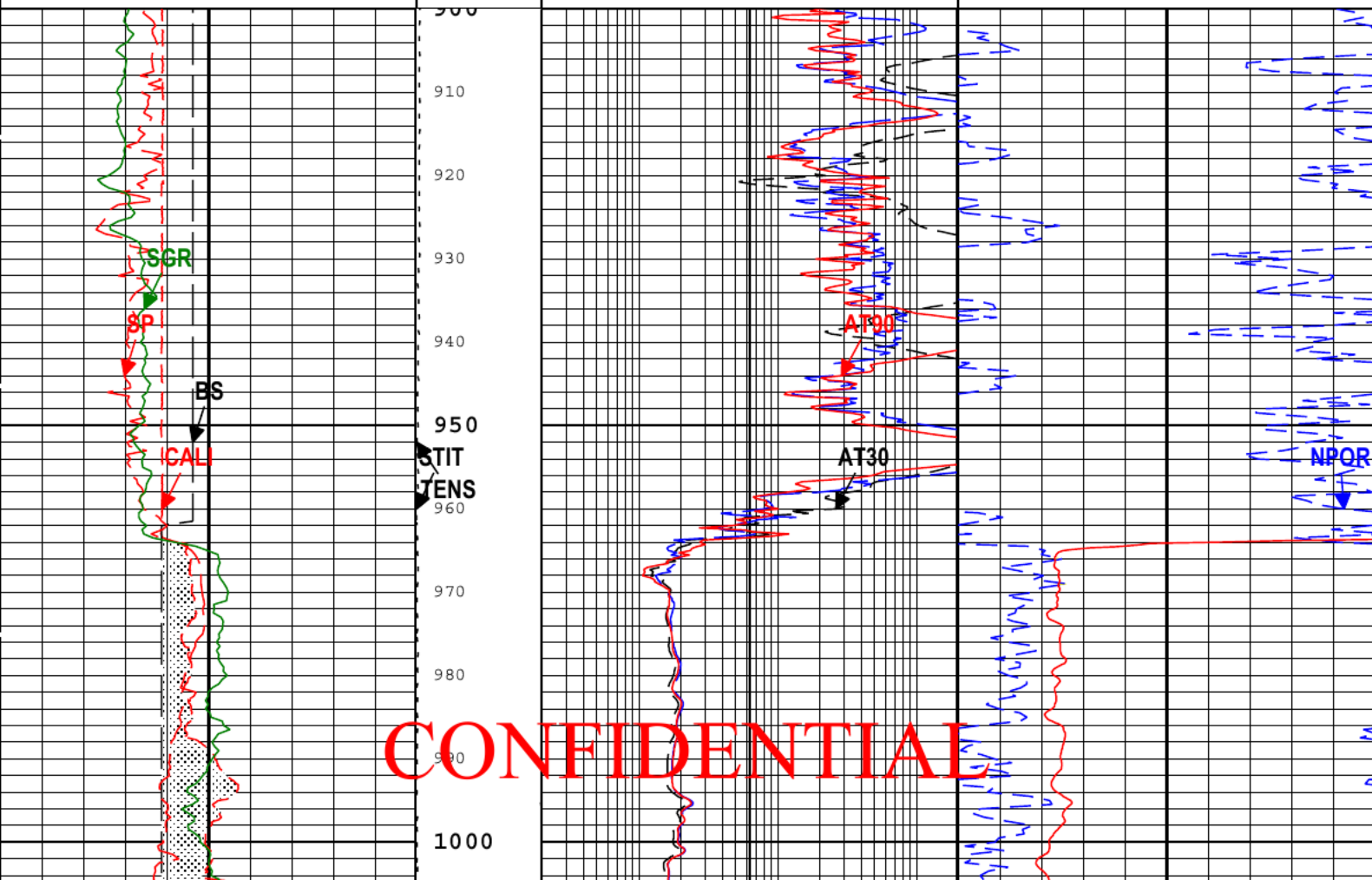
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Channel	Source	Sampling
AT30	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
BS	Borehole	6in
CALI	HDRS-B:HRCC-B:HRCC-B	1in
DPHZ	HDRS-B:HRMS-B:HRGD-H	2in
NPOR	HGNS-H:HGNS-H:HGNS-H	6in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
SP	AIT-M:AMIS:AMIS	6in
STIT	DepthCorrection	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

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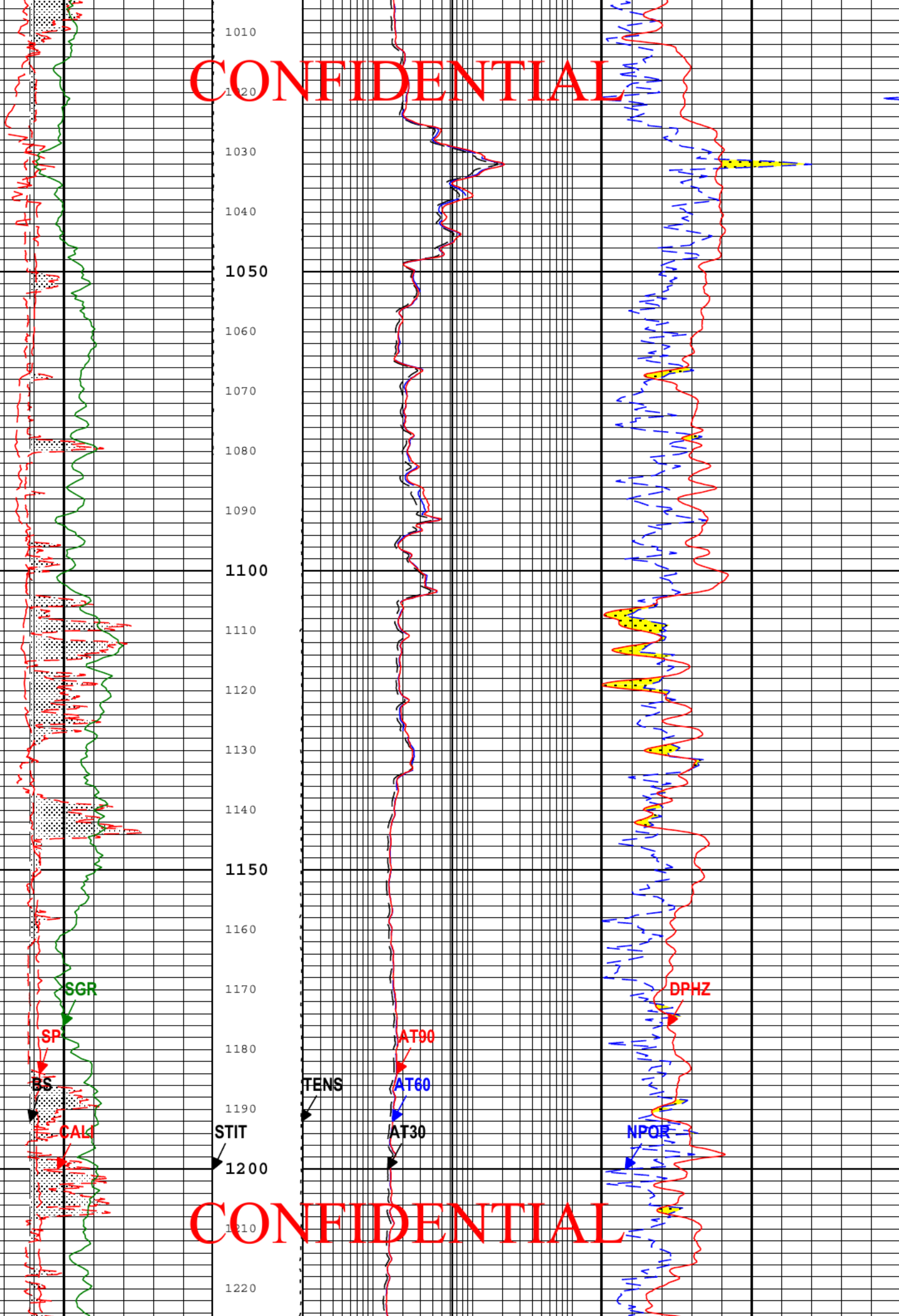
TIME\_1900 - Time Marked every 60.00 (s)

Area from BS to Cali		0.2	ohm.m	200	Crossover	
Caliper (CALI) HDRS-B 4 in 14		Array Induction Two Foot Resistivity A60 (AT60) AIT-M 0.2 ohm.m 200		Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H 0.6 ft3/ft3 0		
Spontaneous Potential (SP) AIT-M -80 mV 20		Array Induction Two Foot Resistivity A90 (AT90) AIT-M 0.2 ohm.m 200		Standard Resolution Density Porosity (DPHZ) HDRS-B 0.6 ft3/ft3 0		
Spectroscopy Gamma Ray (SGR) HNGS-BA 0 gAPI 150		Array Induction Two Foot Resistivity A30 (AT30) AIT-M 0.2 ohm.m 200		Standard Resolution Density Porosity (DPHZ) HDRS-B 0.6 ft3/ft3 0		
Stuck Tool Indicator, Total (STIT) 0 ft 50		Cable Tension (TENS) 8000 lbf 2000				



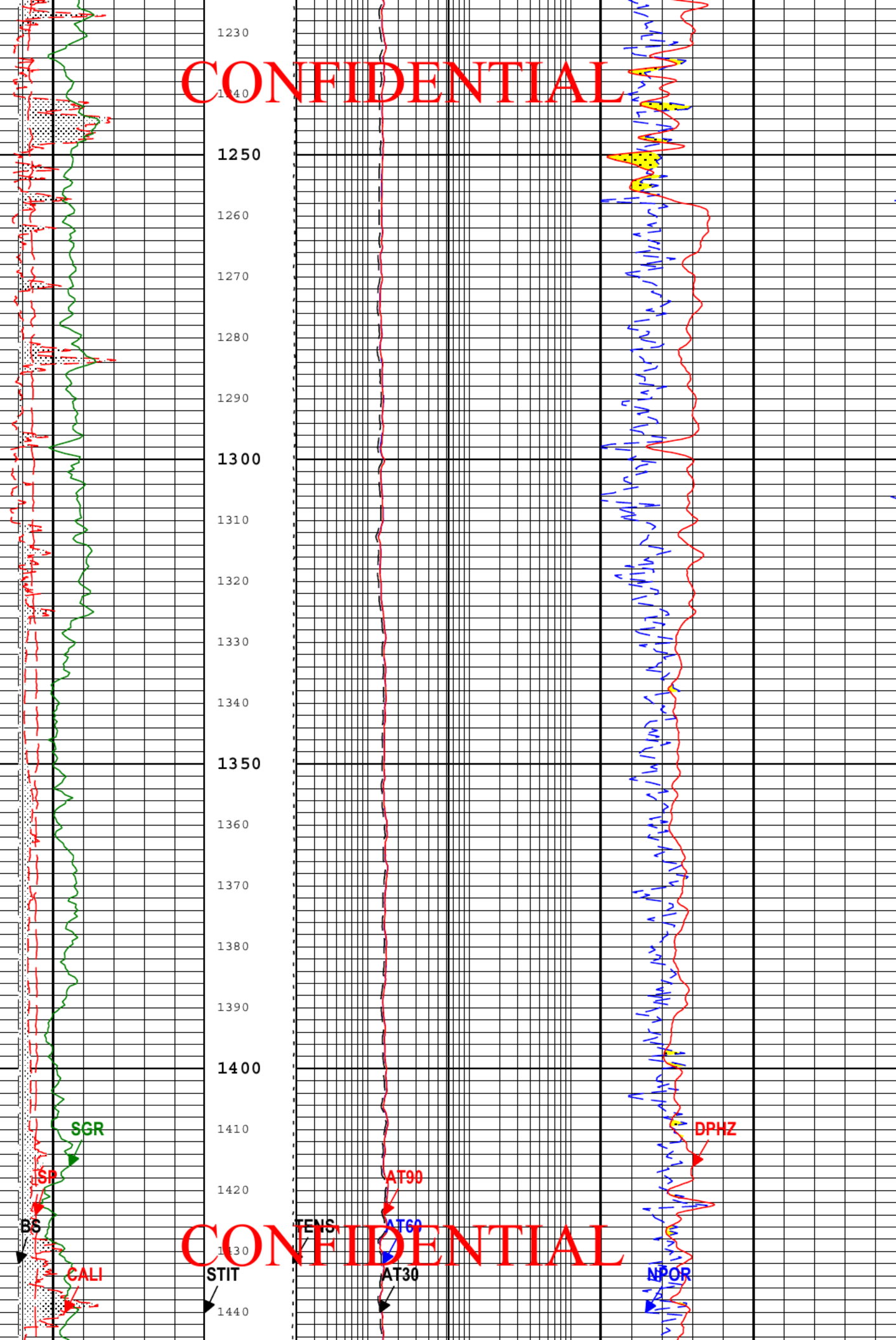
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1230

1240

1250

1260

1270

1280

1290

1300

1310

1320

1330

1340

1350

1360

1370

1380

1390

1400

1410

1420

1430

1440

SGR

ISP

BS

CALI

AT90

AT60

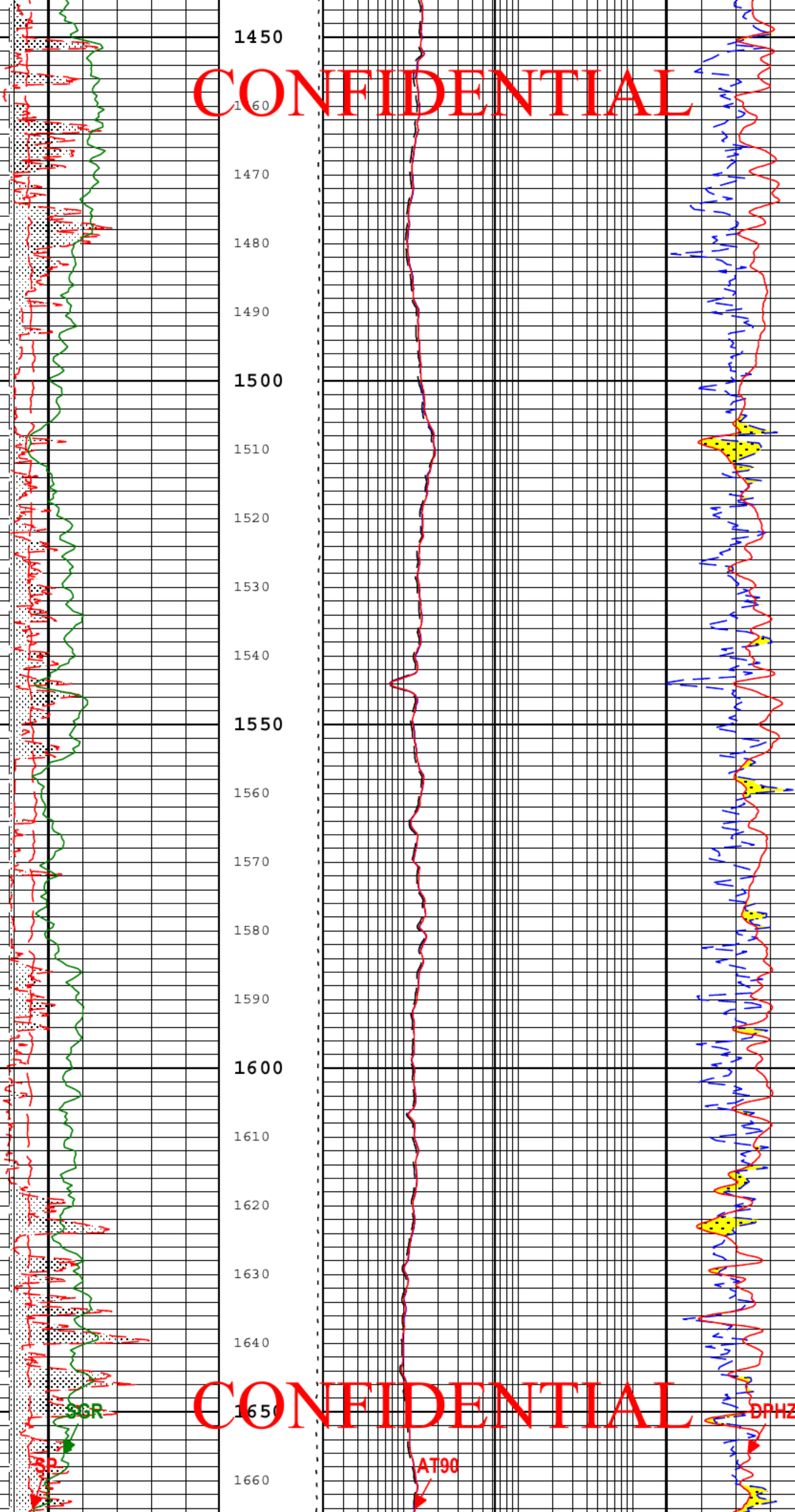
AT30

DPHZ

NPOR

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1450

1460

1470

1480

1490

1500

1510

1520

1530

1540

1550

1560

1570

1580

1590

1600

1610

1620

1630

1640

1650

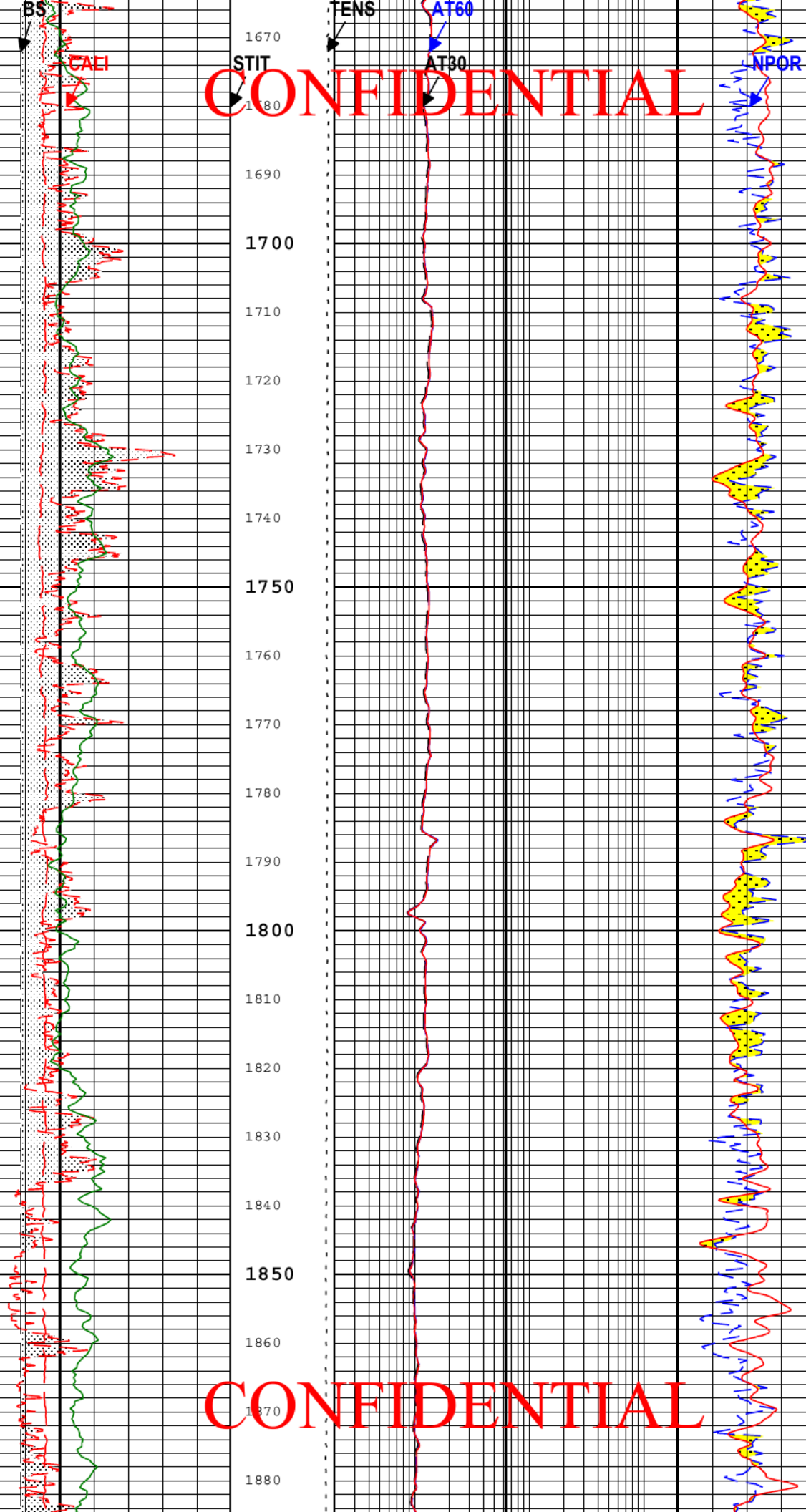
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SGR

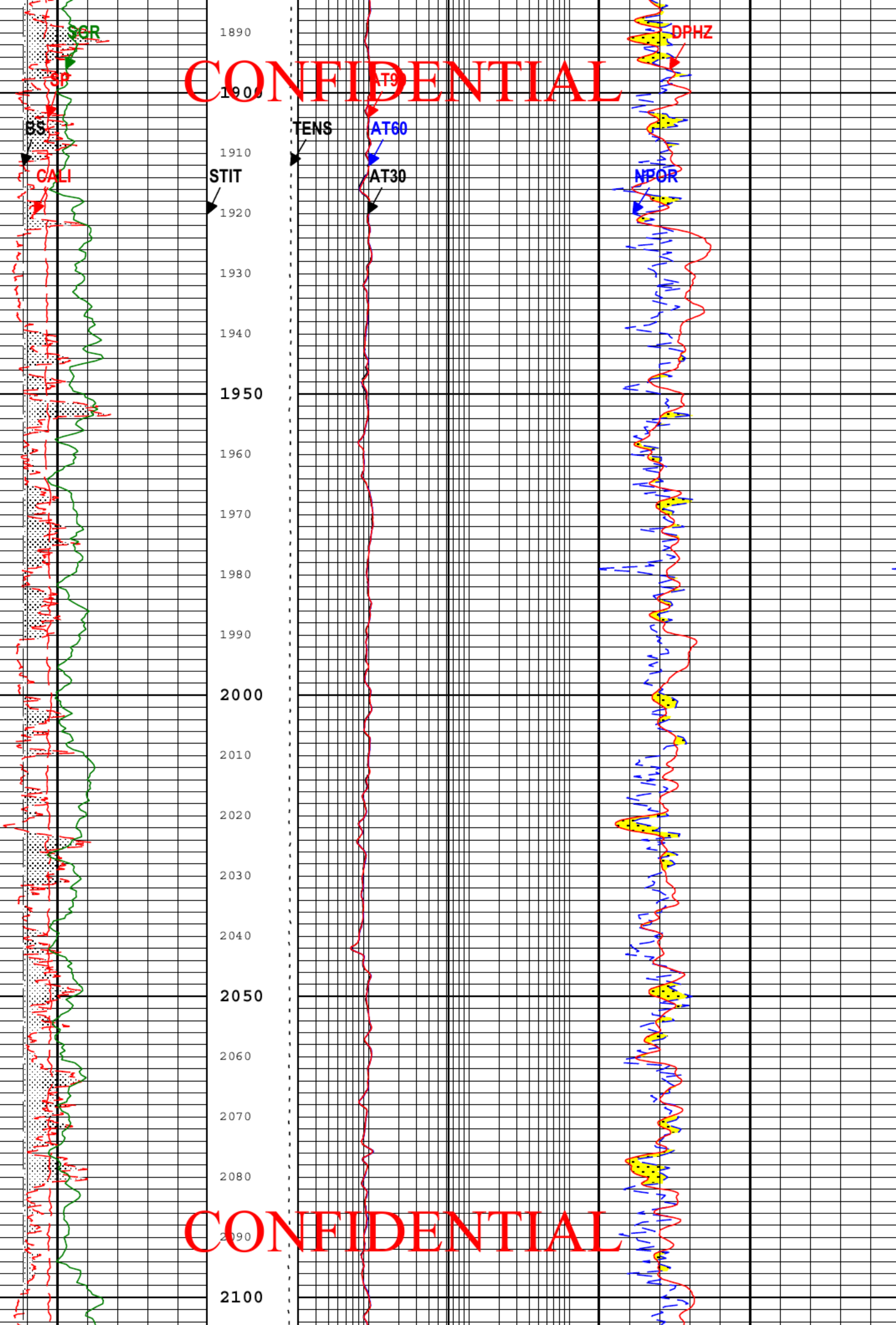
AT90

DPHZ



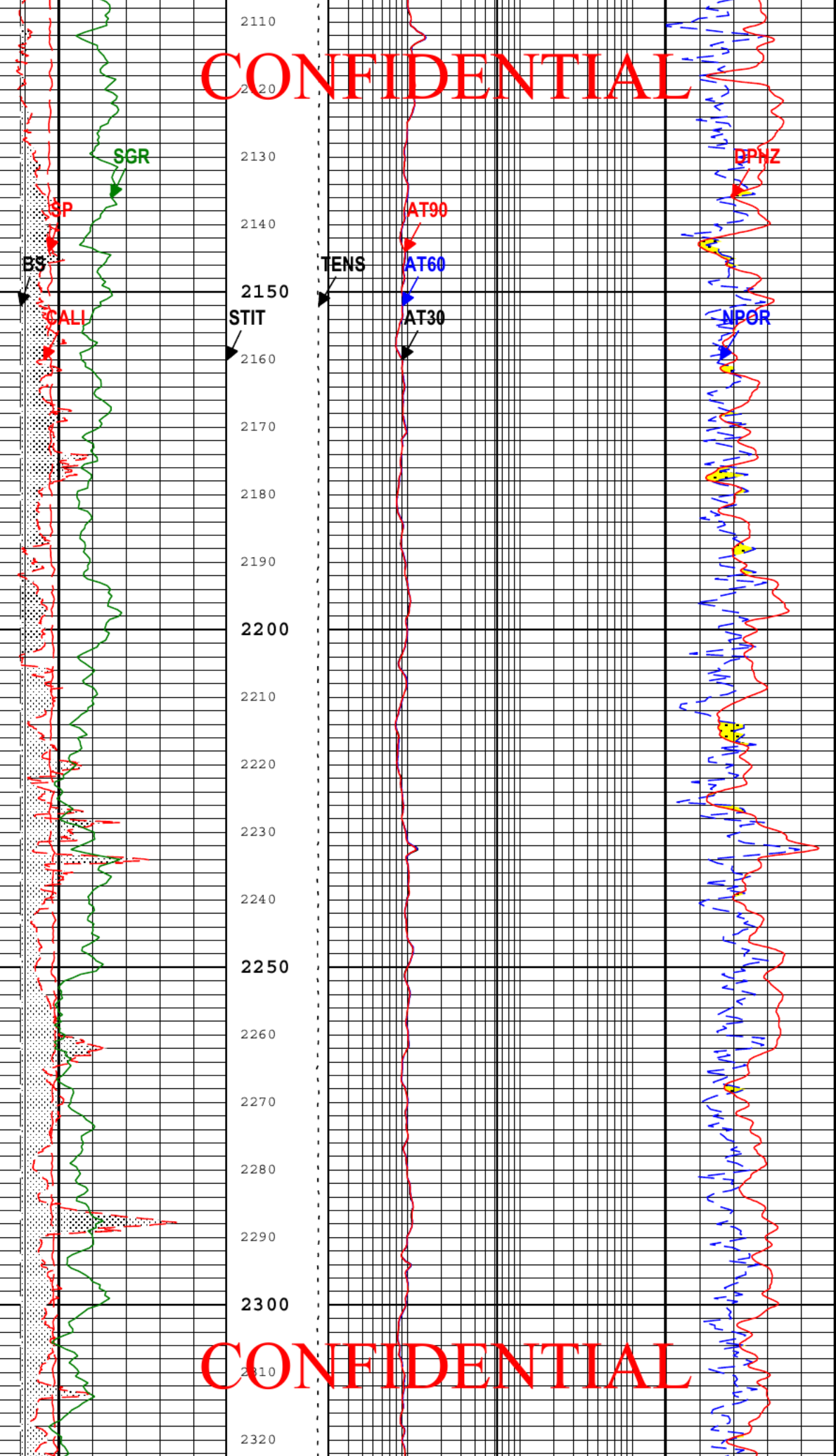


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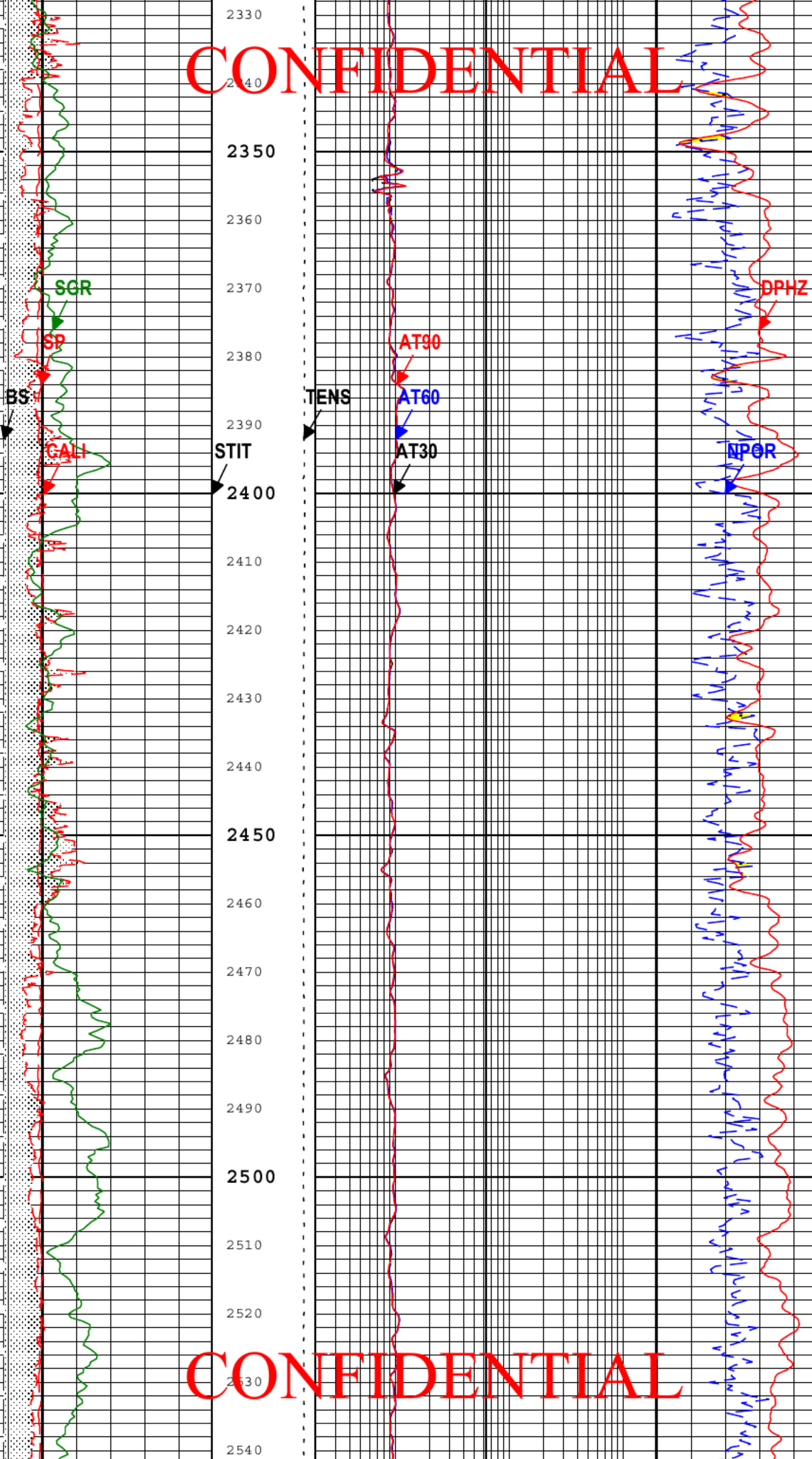
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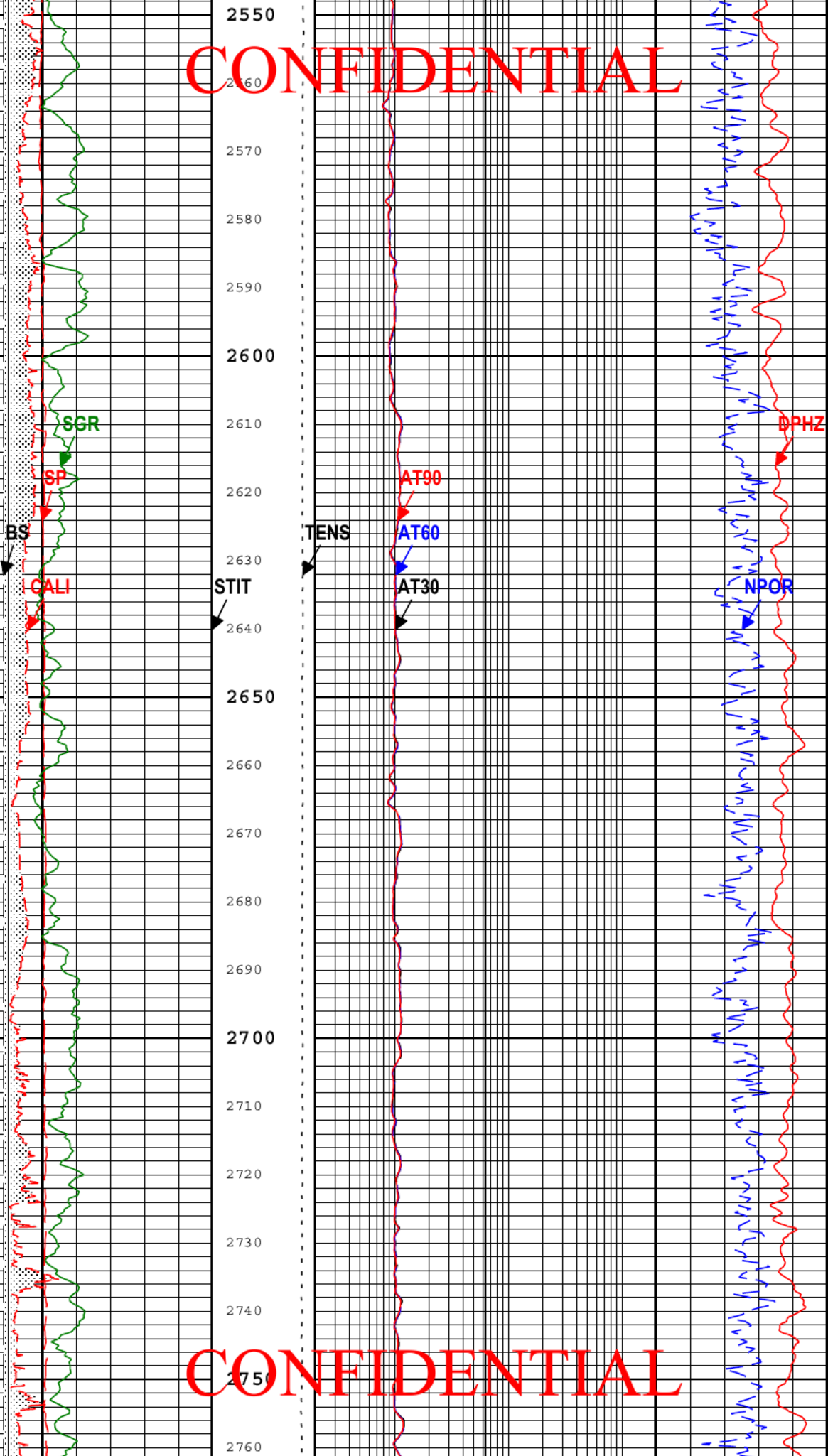


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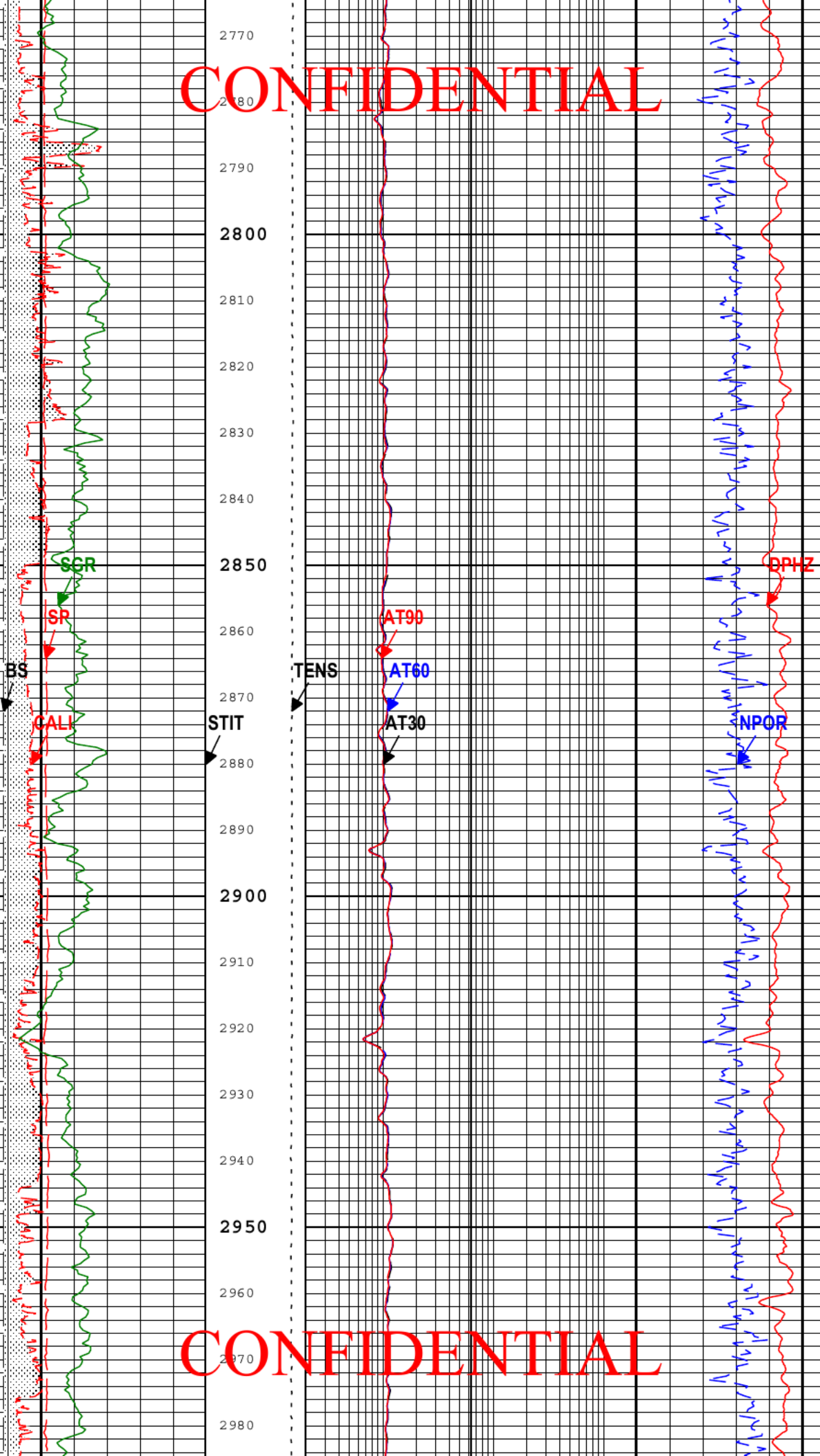
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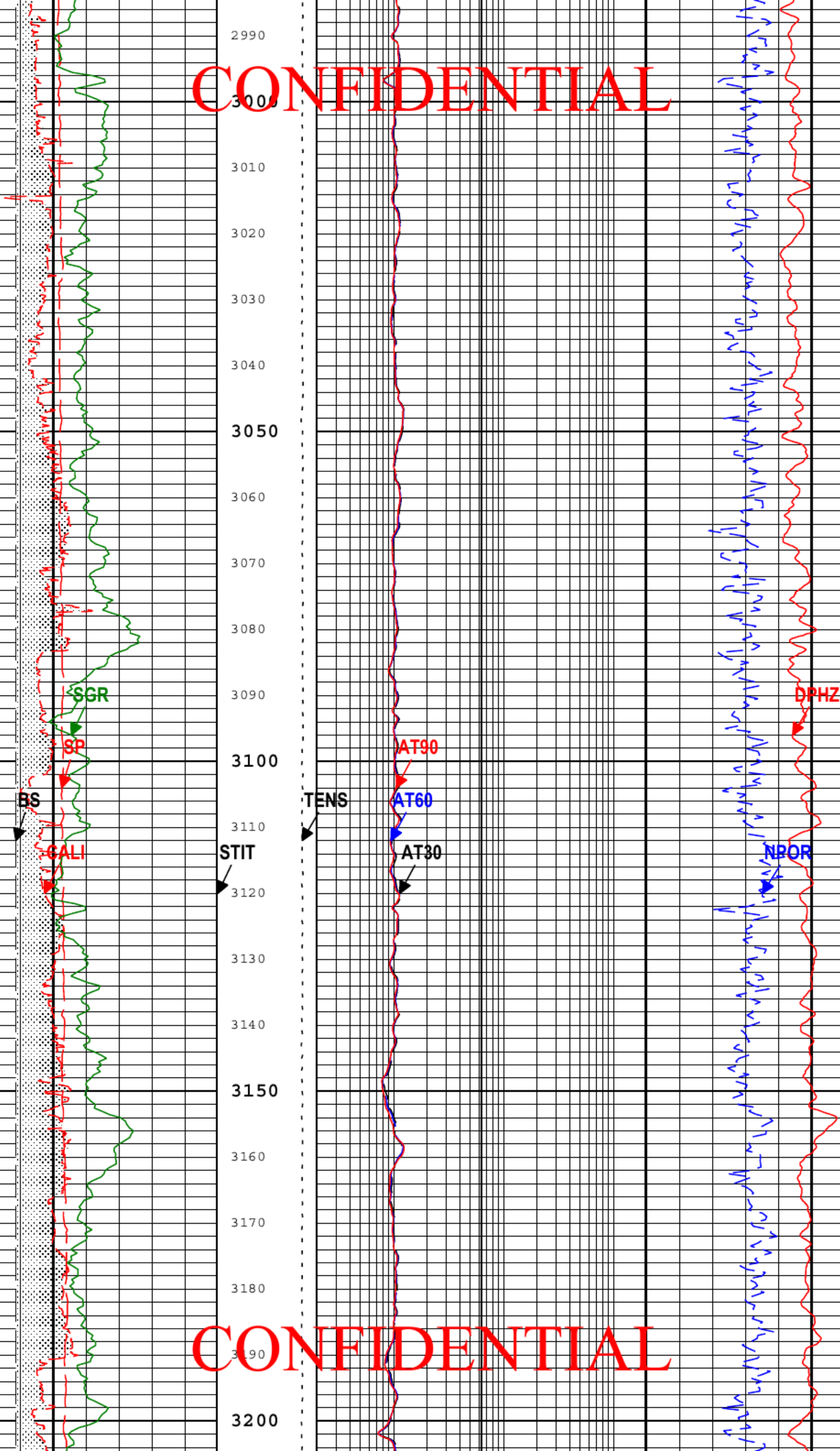
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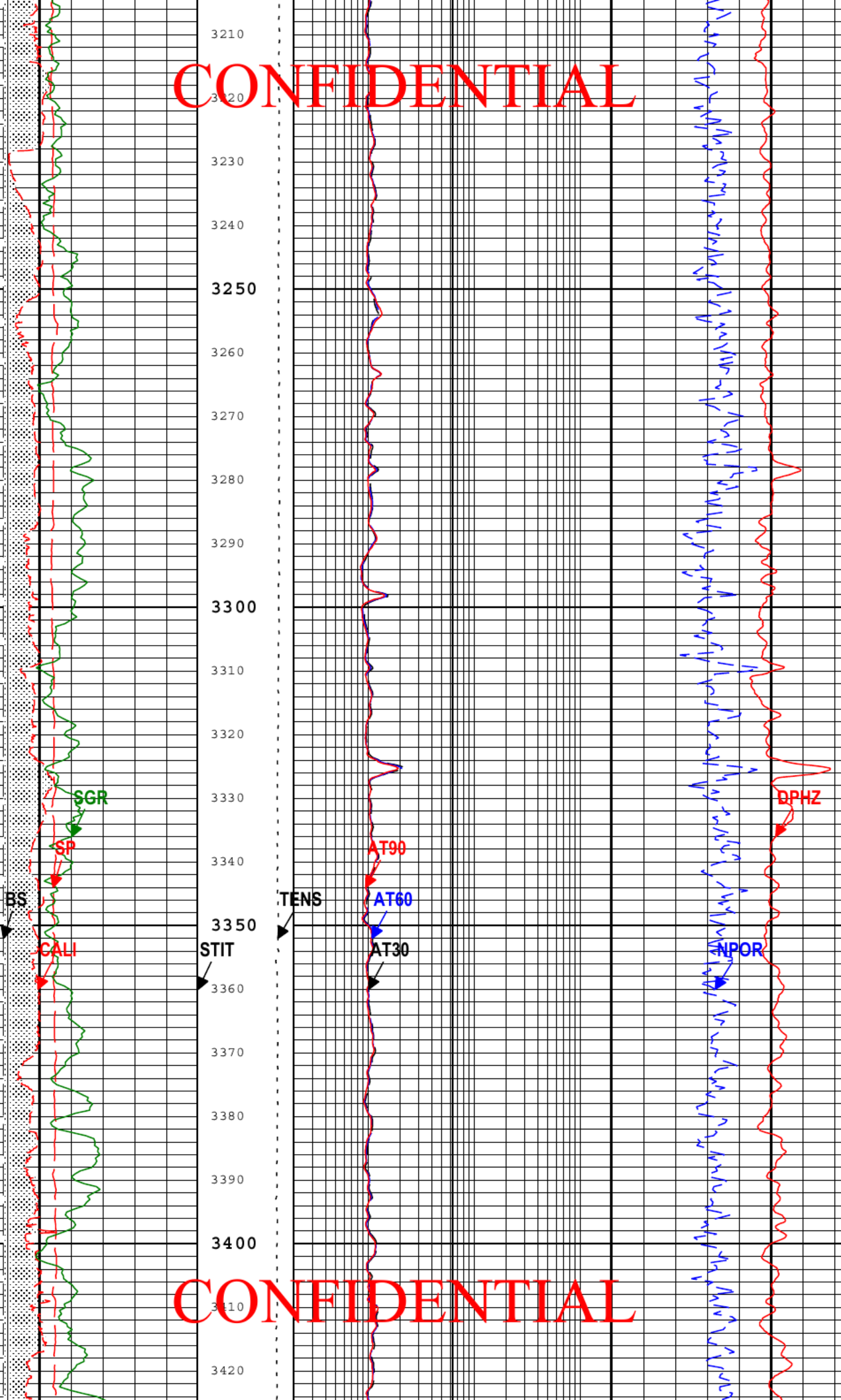
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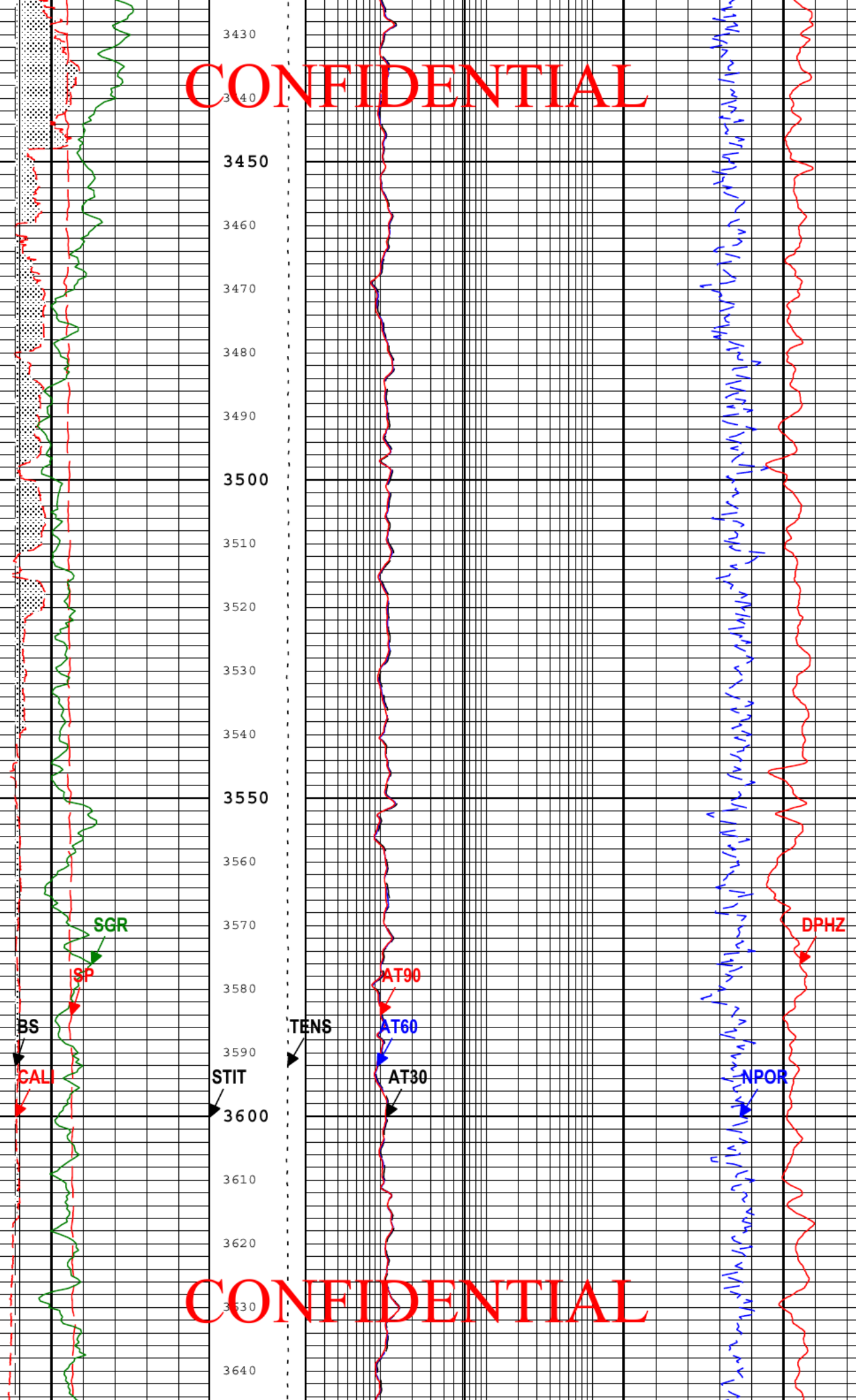
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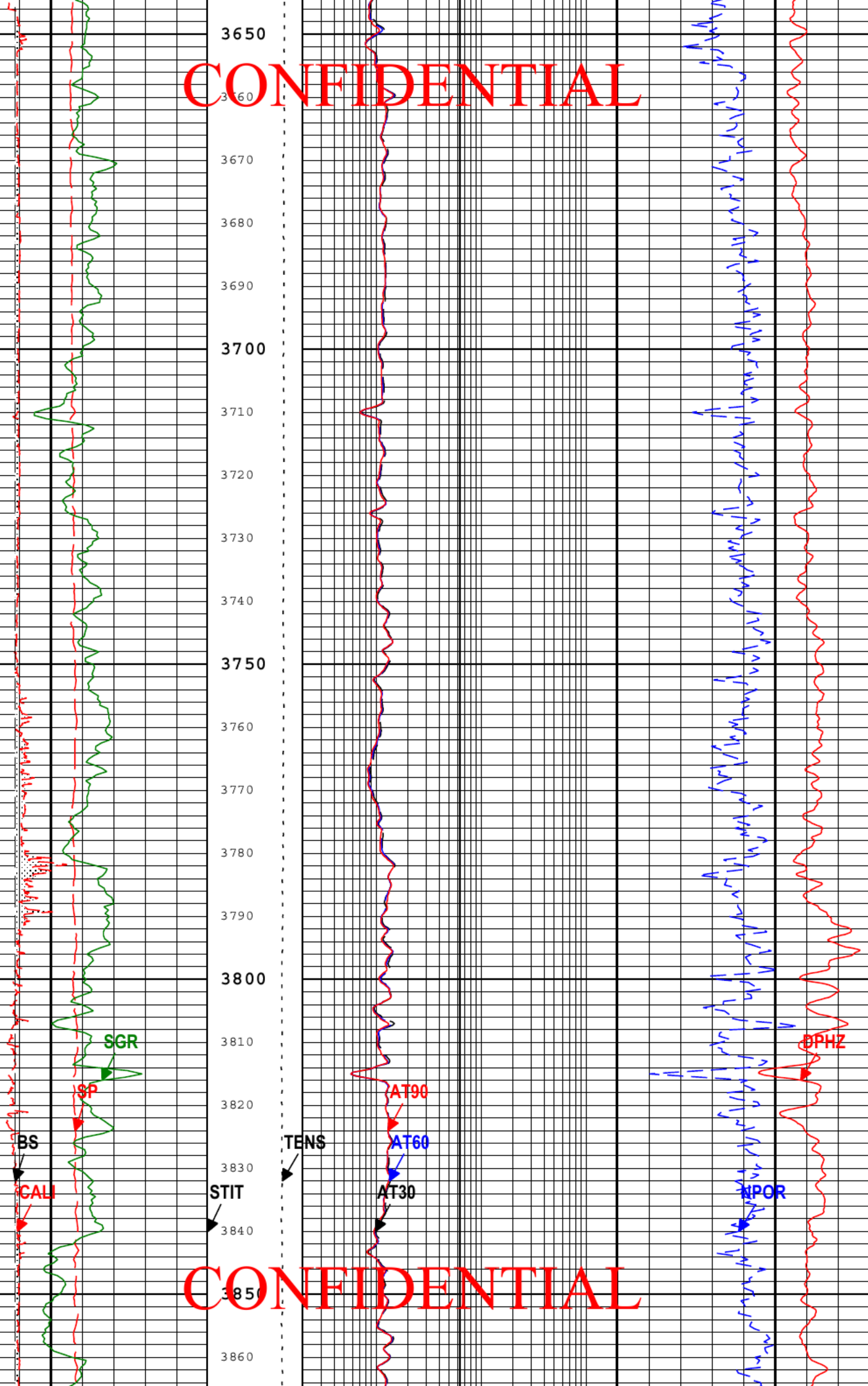
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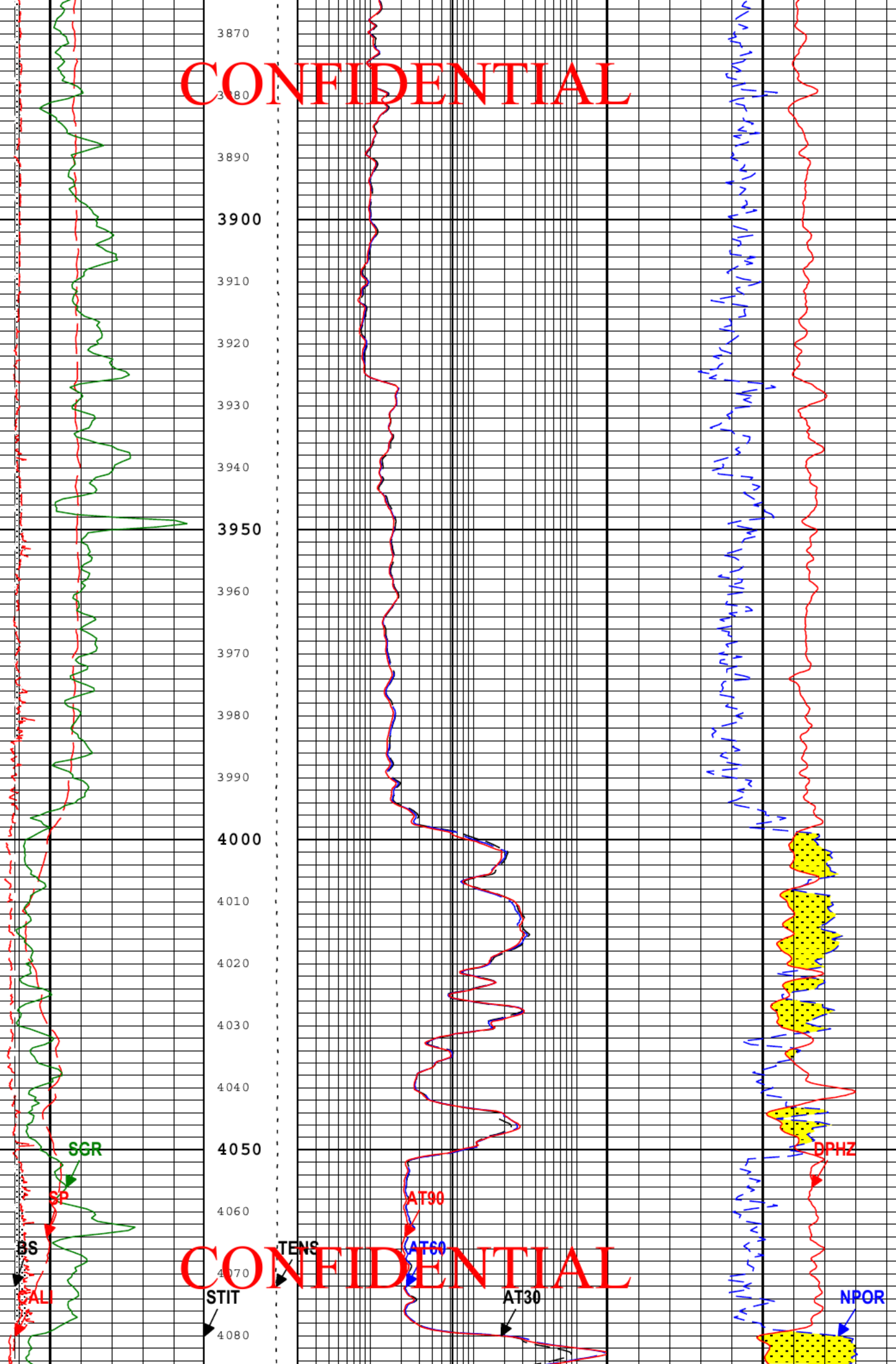
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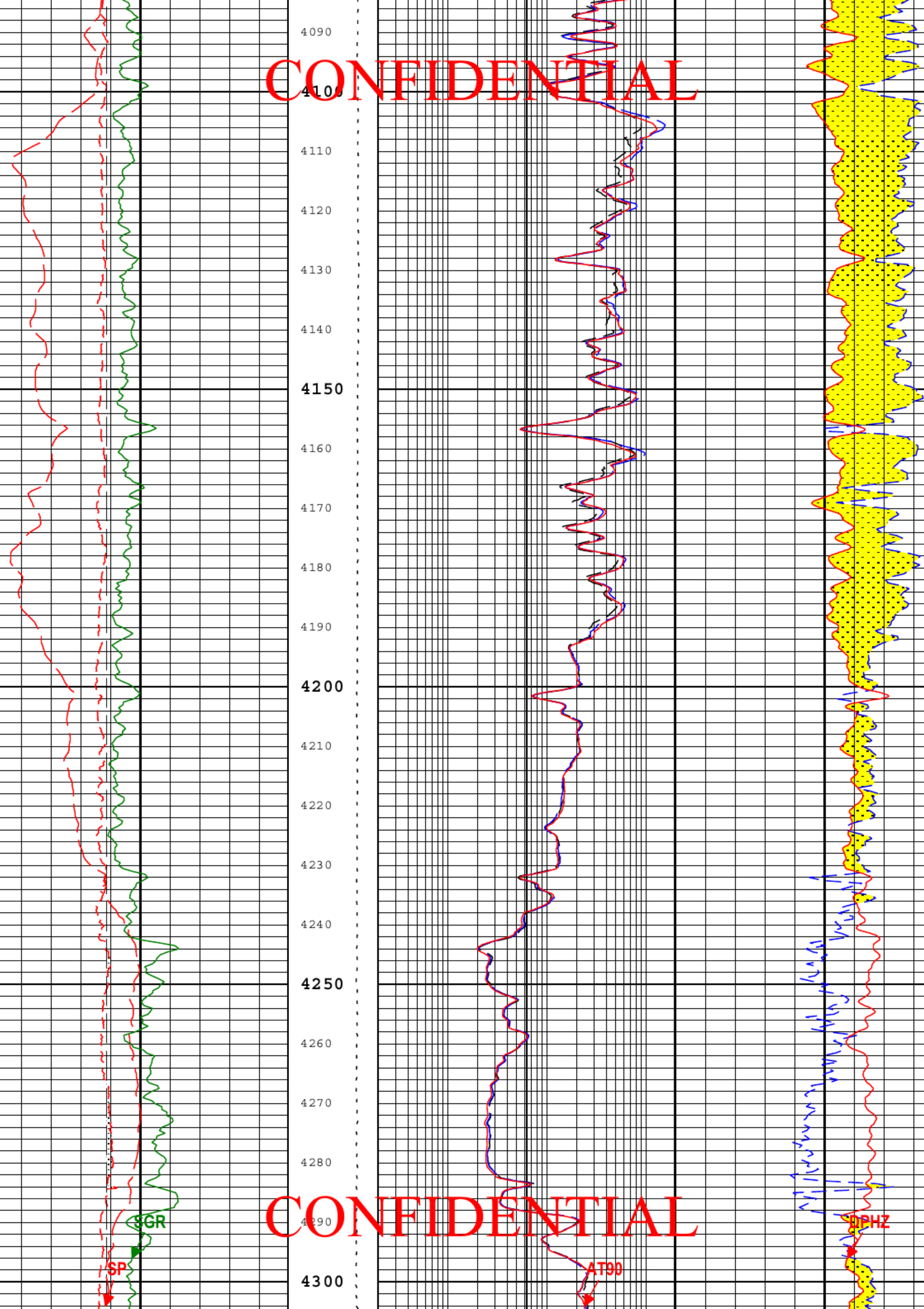
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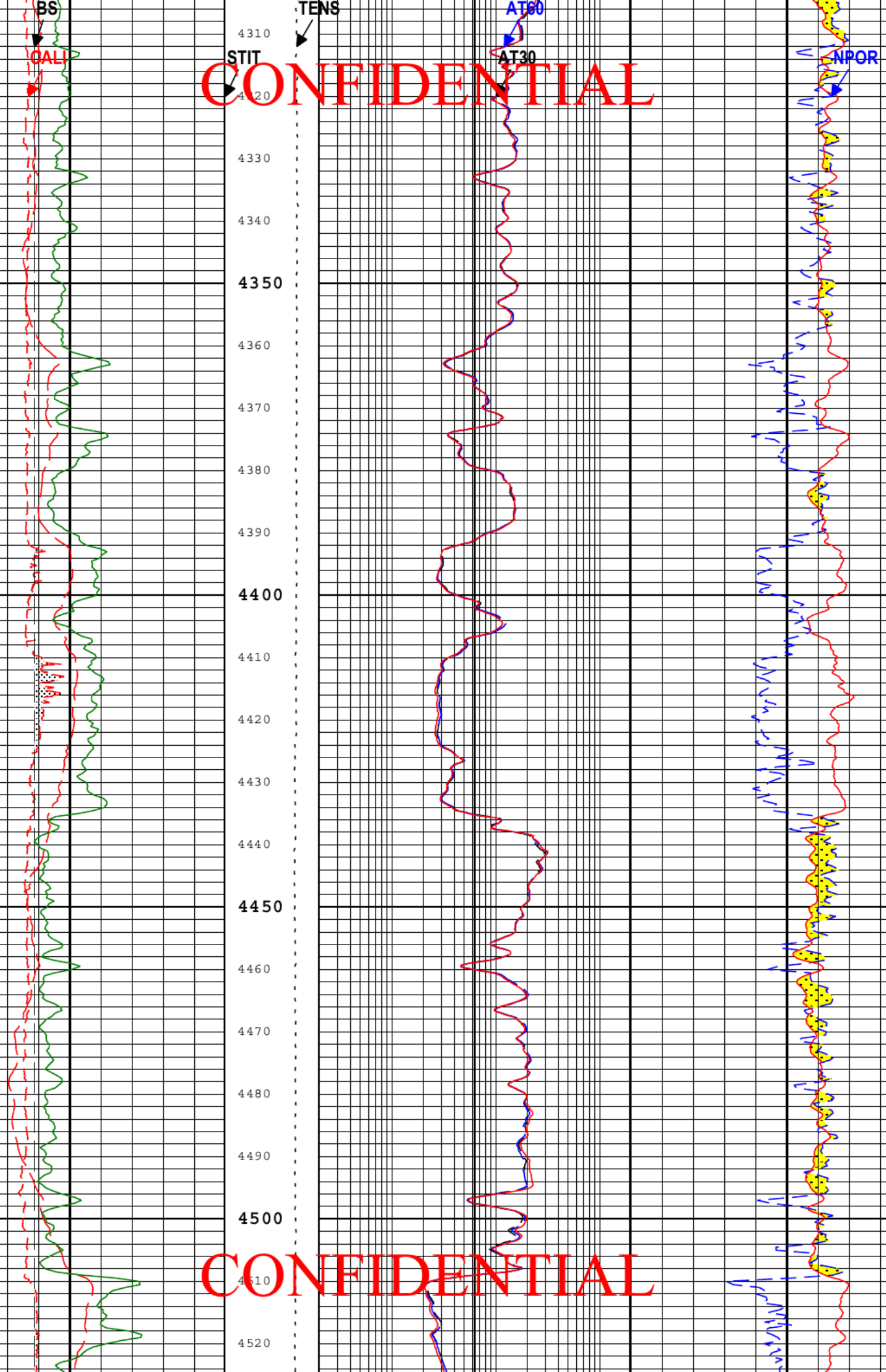


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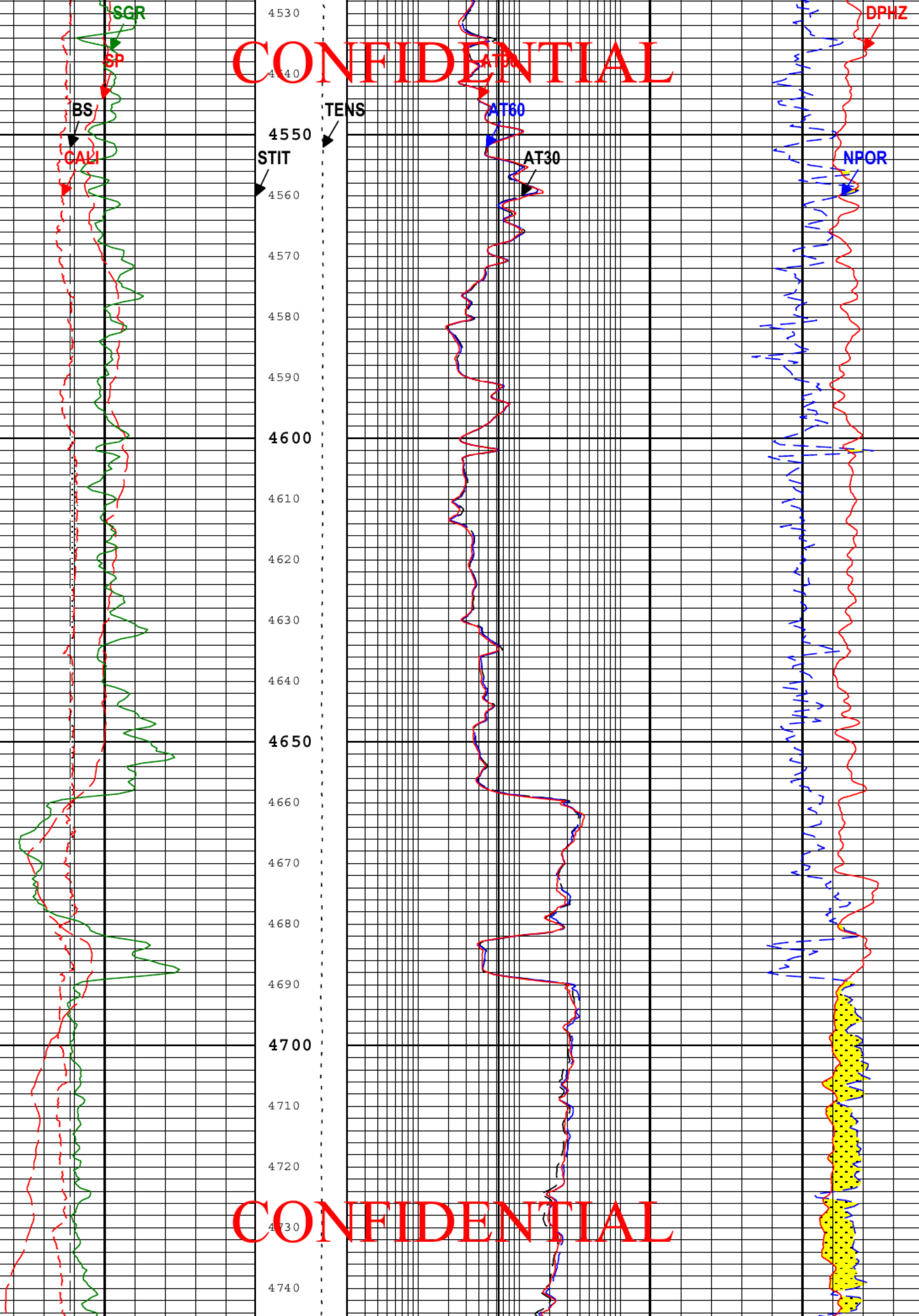
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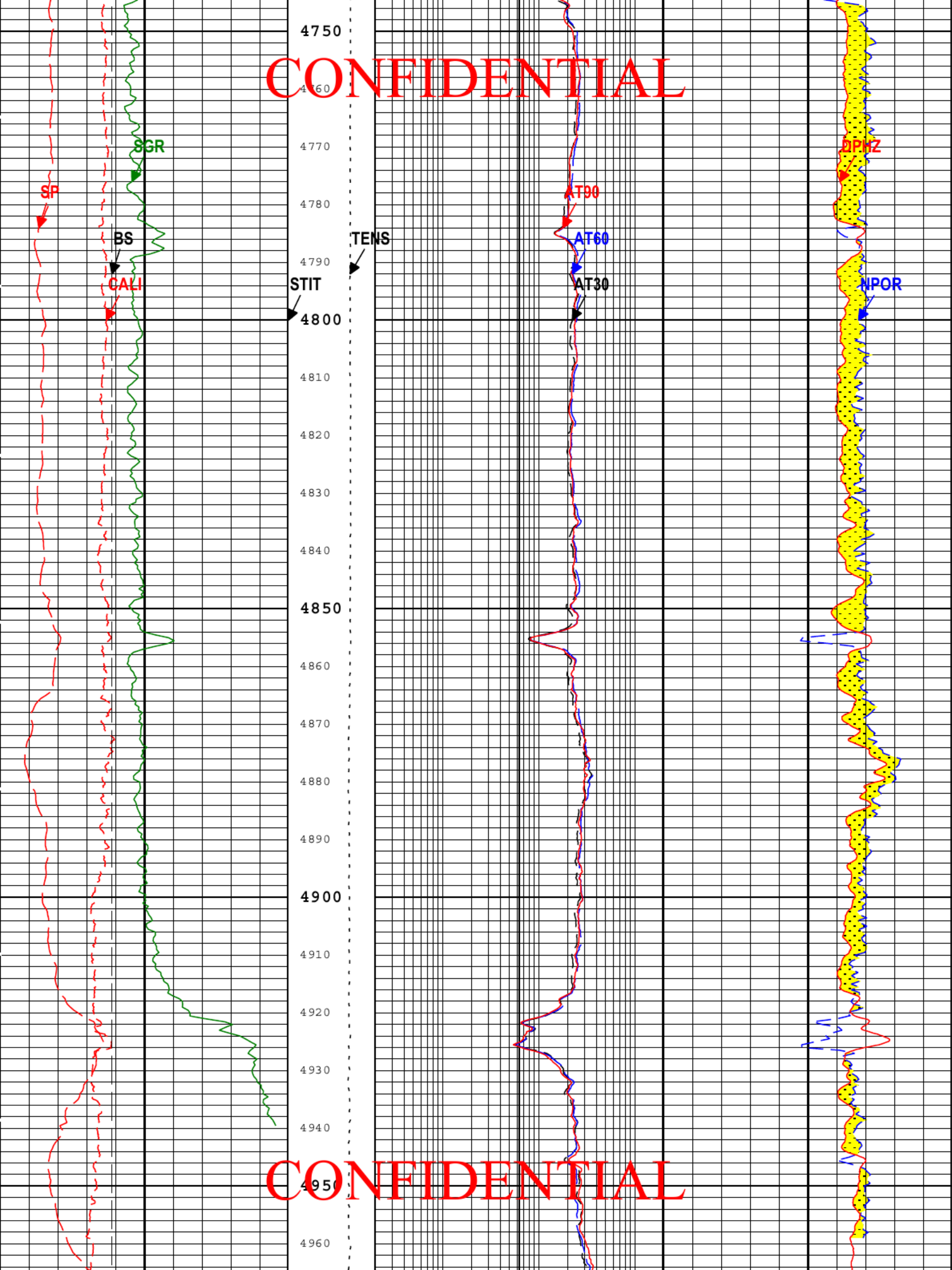
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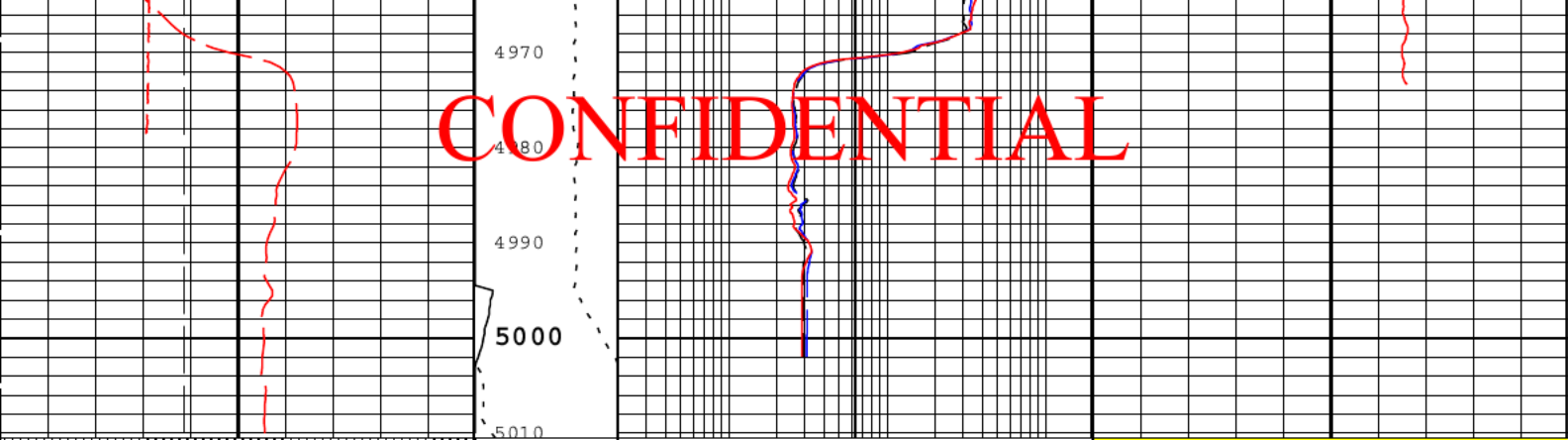
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Area from BS to Cali	Stuck Tool Indicator, Total (STIT)	Array Induction Two Foot Resistivity A30 (AT30) AIT-M	Crossover
Caliper (CALI) HDRS-B 4 in 14	0 ft 50	0.2 ohm.m 200	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H 0.6 ft3/ft3 0
Spontaneous Potential (SP) AIT-M -80 mV 20	Cable Tension (TENS)	Array Induction Two Foot Resistivity A60 (AT60) AIT-M 0.2 ohm.m 200	Standard Resolution Density Porosity (DPHZ) HDRS-B 0.6 ft3/ft3 0
Spectroscopy Gamma Ray (SGR) HNGS-BA 0 gAPI 150	8000 lbf 2000	Array Induction Two Foot Resistivity A90 (AT90) AIT-M 0.2 ohm.m 200	

TIME\_1900 - Time Marked every 60.00 (s)

Description: Format: Log (Combo\_Fax) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 20:09:23

## Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
AAPL	Array Induction Answer Product Level(Depth Log/View only)	AIT-M	Radial	
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Standoff	
ABLM	Array Induction Basic Logs Mode	AIT-M	Normal	
ACDE	Array Induction Casing Detection Enable	AIT-M	No	
ACEN	Array Induction Tool Centering Flag (in Borehole)	AIT-M	Eccentered	
AMRF	Array Induction Mud Resistivity Factor	AIT-M	1	
ASTA	Array Induction Tool Standoff	AIT-M	0.625	in
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	AIT-M	Internal	
AZ_ENABLE	Z-Axis Acceleration Channel Enabled for Real-Time Depth Correction	DepthCorrection	No	
BAR1	Detector 1 Barite Constant	HNGS-BA	1	
BAR2	Detector 2 Barite Constant	HNGS-BA	1	
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	650	ppm
BSCO	Borehole Salinity Correction Option	HGNS-H	No	
CALI_SHIFT	CALI Supplementary Offset	HDRS-B	0.029	in
CBLO	Casing Bottom (Logger)	WLSESSION	962	ft
CCCO	Casing & Cement Thickness Correction Option	HGNS-H	No	
DBCC	Barite Constant Correction Flag	HNGS-BA	No	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DC_RT_ENABLE	Depth Correction Real-Time Enabled	DepthCorrection	No	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DET	Drilling Fluid Type	Borehole	Water	

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DHC	Density Hole Correction	HDRS-B	Bit Size	
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
FSCO	Formation Salinity Correction Option	HGNS-H	No	
GCLF	Coal-Like Formation	HDRS-B	No	
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
H1P	Detector 1 Allow/Disallow in Processing	HNGS-BA	Allow	
H2P	Detector 2 Allow/Disallow in Processing	HNGS-BA	Allow	
HALF	Alpha Filter Length	HNGS-BA	60	in
HATIM	Marquardt Accumulation Time	HNGS-BA	600	s
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
MCCO	Mud Cake Correction Option	HGNS-H	No	
MDEN	Matrix Density for Density Porosity	Borehole	2.65	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	97.7	degF
MWCO	Mud Weight Correction Option	HGNS-H	No	
NAAC	Switch for the correction of formation activation by the APS	HDRS-B	Off	
NPRM	HRDD Nuclear Processing Mode	HDRS-B	High Resolution	
NTCO	HRDD Nuclear Temperature Correction Option	HDRS-B	On	
PTCO	Pressure Temperature Correction Option	HGNS-H	No	
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.86	ohm.m
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	
SOCN	Standoff Distance	HGNS-H	0.125	in
SOCO	Standoff Correction Option	HGNS-H	Yes	
SP_SHIFT	SP Shift	AIT-M	-60	mV
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
TPOS	Tool Position: Centered or Eccentered	HNGS-BA	Eccentered	

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Depth Zone Parameters			
Parameter	Value	Start ( ft )	Stop ( ft )
BS	0	900	962
BS	7.875	962	5010.5

All depth are actual.

Tool Control Parameters				
Parameter	Description	Tool	Value	Unit
HMCA_BRD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BRD_TYPE	HRGD Board Type	HDRS-B	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h
NDTC	Nuclear Dead Time Correction	HDRS-B	On	
NPUC	Nuclear Pile-Up Correction	HDRS-B	On	
STSO_HRDD	Temperature Source for the Density Algorithm	HDRS-B	HRT data channel	

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ONE

Repeat



# Pass Summary

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Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	868.43 ft	5010.40 ft	09-Aug-2013 9:54:54 PM	10-Aug-2013 12:18:33 AM	5.73 ft	
ONE	Log[4]:Up	Up	204.61 ft	1412.91 ft	10-Aug-2013 12:19:43 AM	10-Aug-2013 12:54:34 AM	4.69 ft	

All depths are referenced to toolstring zero

## Log

ONE: Log[3]:Up

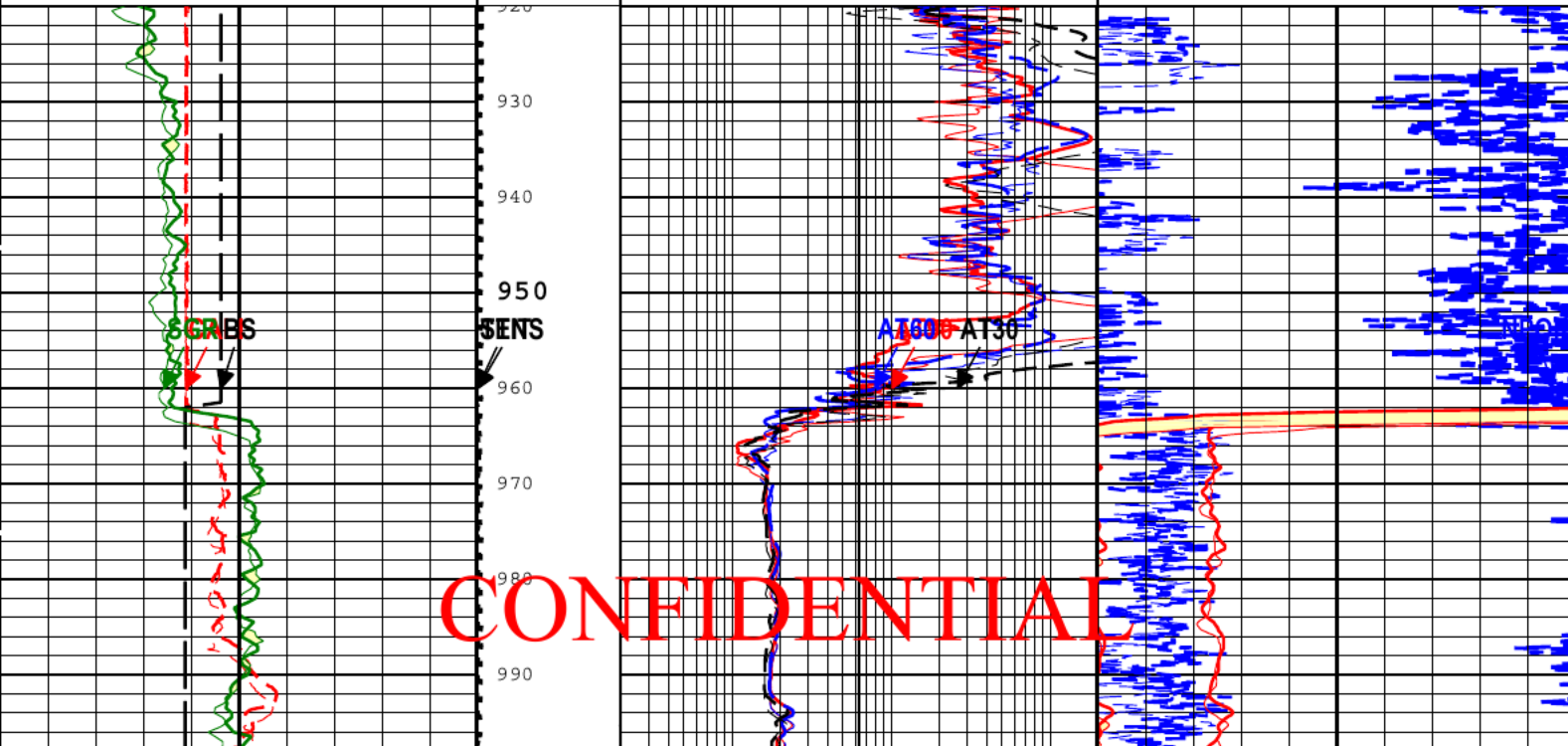
Description: Format: Log ( Combo\_Fax RA ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2013 20:09:28

Channel Source Sampling

TIME\_1900 WLWorkflow 0.1in

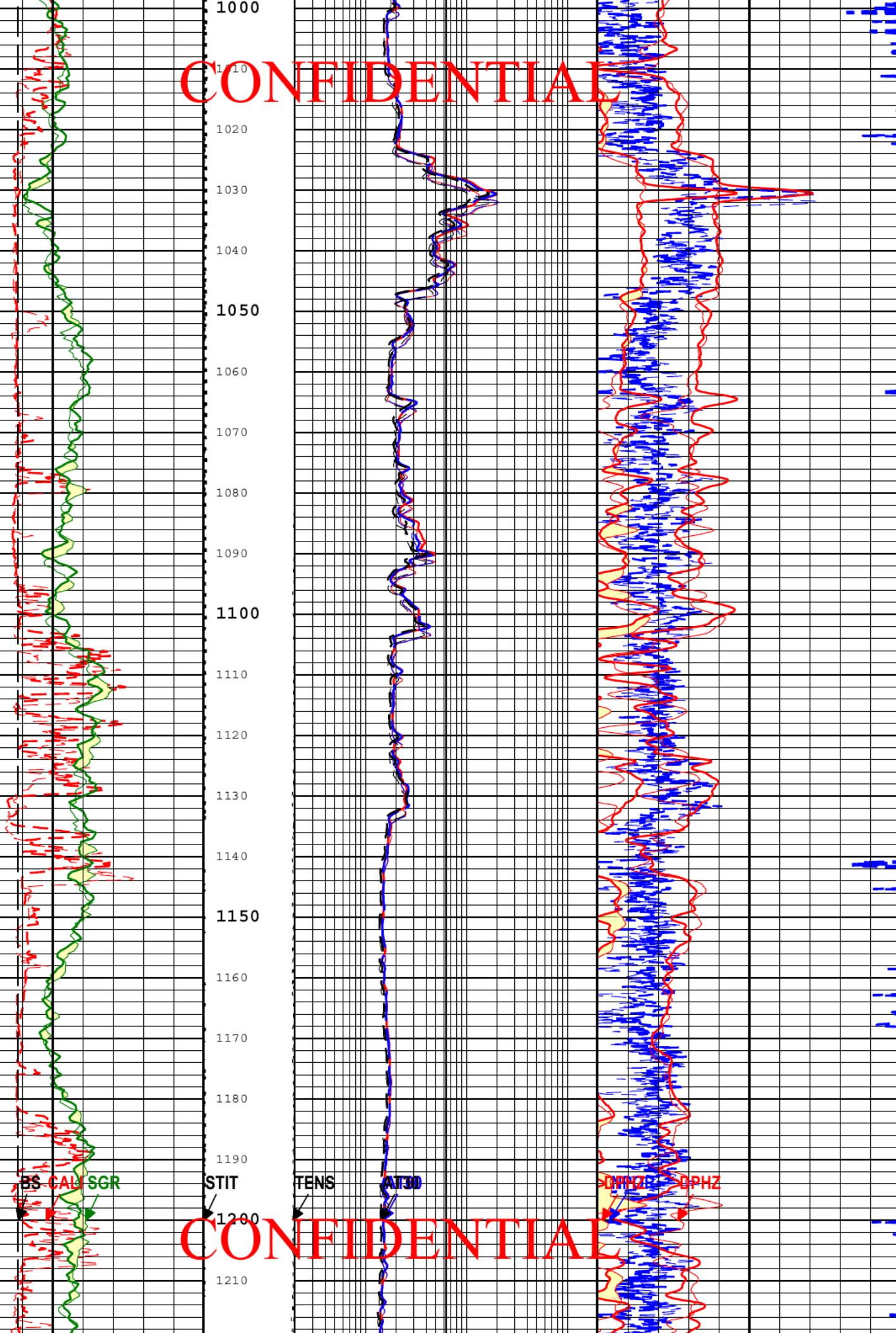
TIME\_1900 - Time Marked every 60.00 (s)

Main To Repeat		Main To Repeat		Main To Repeat		Main To Repeat	
Repeat To Main		Repeat To Main		Repeat To Main		Repeat To Main	
Caliper (CALI) HDRS-B		Array Induction Two Foot Resistivity A90 (AT90) AIT-M		Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H			
4	14	0.2	200	0.6	0		
Stuck Tool Indicator, Total (STIT)		Array Induction Two Foot Resistivity A60 (AT60) AIT-M		Standard Resolution Density Porosity (DPHZ) HDRS-B			
0	50	0.2	200	0.6	0		
Cable Tension (TENS)		Array Induction Two Foot Resistivity A30 (AT30) AIT-M		Standard Resolution Density Porosity (DPHZ) HDRS-B			
0	2000	0.2	200	0.45	-0.15		



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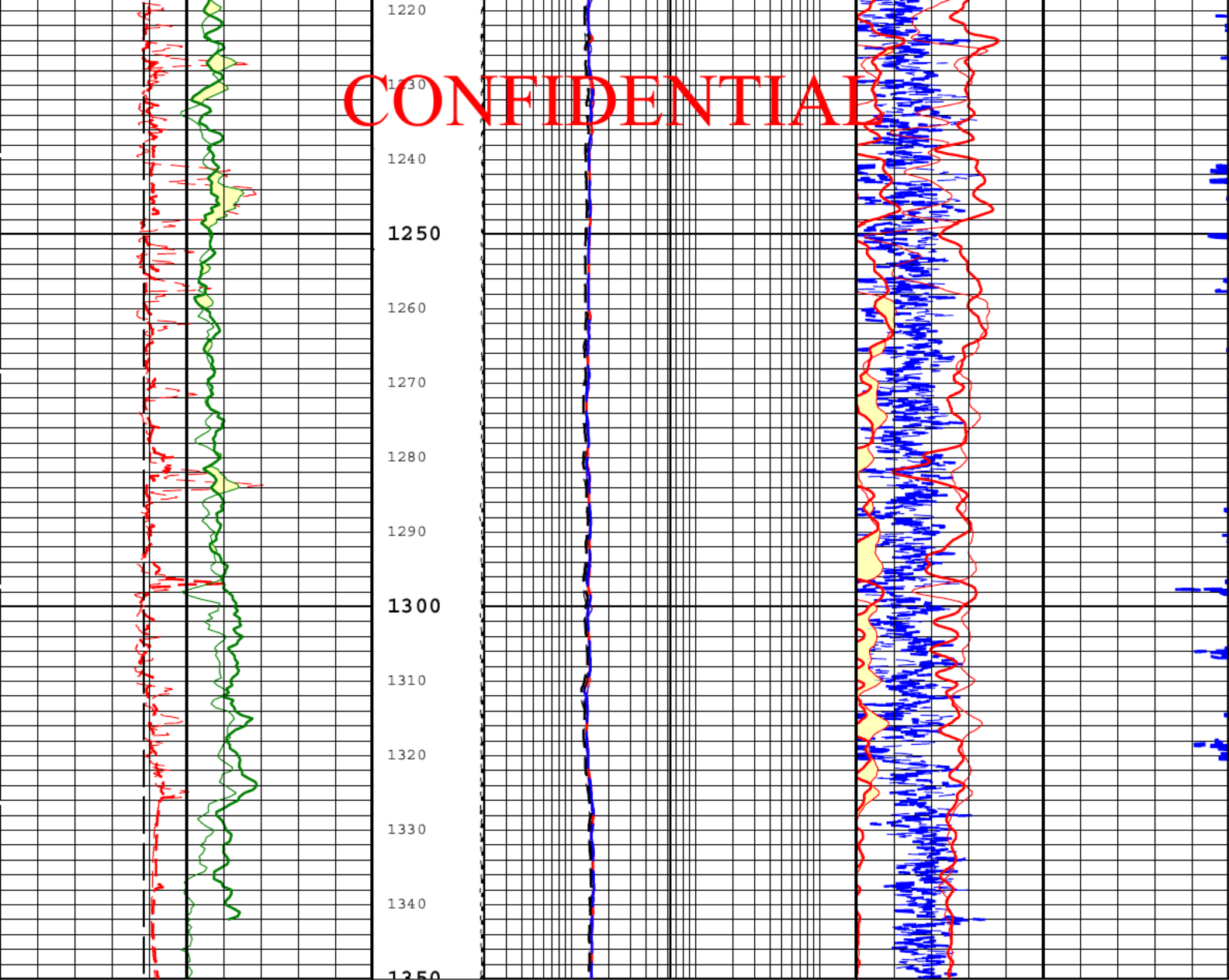
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Main To Repeat Repeat To Main Caliper (CALI) HDRS-B 4 in 14	Main To Repeat Repeat To Main Stuck Tool Indicator, Total (STIT) 0 ft 50	Main To Repeat Repeat To Main Array Induction Two Foot Resistivity A90 (AT90) AIT-M 0.2 ohm.m 200	Main To Repeat Repeat To Main Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H 0.6 ft3/ft3 0
Main To Repeat Repeat To Main Bit Size (BS) 4 in 14	Main To Repeat Repeat To Main Cable Tension (TENS) 0 8000 lb 2000	Main To Repeat Repeat To Main Array Induction Two Foot Resistivity A60 (AT60) AIT-M 0.2 ohm.m 200	Main To Repeat Repeat To Main Standard Resolution Density Porosity (DPHZ) HDRS-B 0.6 ft3/ft3 0
Main To Repeat Repeat To Main Spectroscopy Gamma Ray (SGR) HNGS-BA 0 gAPI 160	Main To Repeat Repeat To Main Array Induction Two Foot Resistivity A30 (AT30) AIT-M 0.2 ohm.m 200	Main To Repeat Repeat To Main Standard Resolution Density Porosity (DPHZ) HDRS-B 0.45 ft3/ft3 -0.15	

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# Calibration Report

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

<b>Primary Equipment :</b>		
Array Induction Sonde - M	AMIS	1251
<b>Auxiliary Equipment :</b>		
AITM Rm/SP Bottom Nose	AMRM	1251

## AIT Sonde Calibration - Test Loop Gain

Master (EEPROM):		17:24:23 05-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.013	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	0.501	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.012	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.554	3.000	
Test Loop Gain - 2		Master	1.000	0.950	1.022	1.050	
Test Loop Phase - 2	deg	Master	0	-3.000	-0.098	3.000	
Test Loop Gain - 3		Master	1.000	0.950	1.021	1.050	
Test Loop Phase - 3	deg	Master	0	-3.000	-0.054	3.000	
Test Loop Gain - 4		Master	1.000	0.950	1.000	1.050	
Test Loop Phase - 4	deg	Master	0	-3.000	-0.100	3.000	
Test Loop Gain - 5		Master	1.000	0.950	0.987	1.050	
Test Loop Phase - 5	deg	Master	0	-3.000	-0.098	3.000	
Test Loop Gain - 6		Master	1.000	0.950	0.995	1.050	
Test Loop Phase - 6	deg	Master	0	-3.000	0.275	3.000	
Test Loop Gain - 7		Master	1.000	0.950	1.008	1.050	
Test Loop Phase - 7	deg	Master	0	-3.000	-0.038	3.000	

## AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		17:24:23 05-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Sonde Error Correction Real - 0	mS/m	Master	----	-231.000	-80.646	119.000	
Sonde Error Correction Quad - 0		Master	----	-2250.000	-1198.021	2250.000	
Sonde Error Correction Real - 1	mS/m	Master	----	114.000	141.134	204.000	
Sonde Error Correction Quad - 1		Master	----	-625.000	38.833	625.000	
Sonde Error Correction Real - 2	mS/m	Master	----	66.000	118.546	156.000	
Sonde Error Correction Quad - 2		Master	----	-350.000	2.967	350.000	
Sonde Error Correction Real - 3	mS/m	Master	----	39.000	60.524	89.000	
Sonde Error Correction Quad - 3		Master	----	-250.000	-16.372	250.000	
Sonde Error Correction Real - 4	mS/m	Master	----	15.000	25.159	35.000	
Sonde Error Correction Quad - 4		Master	----	-63.000	11.424	63.000	
Sonde Error Correction Real - 5	mS/m	Master	----	4.000	14.007	24.000	
Sonde Error Correction Quad - 5		Master	----	-50.000	2.986	50.000	
Sonde Error Correction Real - 6	mS/m	Master	----	5.000	9.313	15.000	
Sonde Error Correction Quad - 6		Master	----	-30.000	5.518	30.000	
Sonde Error Correction Real - 7	mS/m	Master	----	-5.000	-1.683	5.000	
Sonde Error Correction Quad - 7		Master	----	-30.000	-0.021	30.000	

## AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		17:24:23 05-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coarse Gain		Master	1.000	0.800	1.060	1.200	
Fine Gain		Master	1.000	0.800	1.060	1.200	

## AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		17:24:23 05-Aug-2013		Before (Measured):		02:49:19 09-Aug-2013		After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit			
Thru Cal Mag - 0	V	Master	----	0.366	0.617	0.854			
		Before	----	0.366	0.617	0.854			
		After	----	----	----	----	----		
		Before-Master	----	----	0.000	----	----		
		After-Before	----	----	----	----	----		
Thru Cal Phase - 0	deg	Master	----	137.000	-174.541	-103.000			
		Before	----	137.000	-168.087	-103.000			

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		After	----	----	6.454	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 1		Master	----	0.762	1.264	1.778	
		Before	----	0.762	1.264	1.778	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 1	deg	Master	----	136.000	-175.588	-104.000	
		Before	----	136.000	-169.131	-104.000	
		After	----	----	----	----	
		Before-Master	----	----	6.457	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 2	V	Master	----	0.372	0.627	0.868	
		Before	----	0.372	0.627	0.868	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 2	deg	Master	----	132.000	-178.958	-108.000	
		Before	----	132.000	-172.499	-108.000	
		After	----	----	----	----	
		Before-Master	----	----	6.459	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 3	V	Master	----	0.420	0.708	0.980	
		Before	----	0.420	0.708	0.980	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 3	deg	Master	----	131.000	-179.685	-109.000	
		Before	----	131.000	-173.224	-109.000	
		After	----	----	----	----	
		Before-Master	----	----	6.461	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 4	V	Master	----	0.804	1.330	1.876	
		Before	----	0.804	1.331	1.876	
		After	----	----	----	----	
		Before-Master	----	----	0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 4	deg	Master	----	125.000	174.434	-115.000	
		Before	----	125.000	-179.097	-115.000	
		After	----	----	----	----	
		Before-Master	----	----	-353.531	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 5	V	Master	----	1.176	1.940	2.744	
		Before	----	1.176	1.941	2.744	
		After	----	----	----	----	
		Before-Master	----	----	0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 5	deg	Master	----	122.000	172.834	-118.000	
		Before	----	122.000	179.307	-118.000	
		After	----	----	----	----	
		Before-Master	----	----	6.473	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 6	V	Master	----	1.176	1.934	2.744	
		Before	----	1.176	1.935	2.744	
		After	----	----	----	----	
		Before-Master	----	----	0.001	----	
		After-Before	----	----	----	----	
Thru Cal Phase - 6	deg	Master	----	121.000	172.899	-119.000	
		Before	----	121.000	179.374	-119.000	
		After	----	----	----	----	
		Before-Master	----	----	6.475	----	
		After-Before	----	----	----	----	
Thru Cal Mag - 7		Master	----	0.846	1.391	1.974	
		Before	----	0.846	1.391	1.974	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	

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Thru Cal Phase - 7	deg	Master Before After Before-Master After-Before	----- ----- ----- ----- -----	115.000 115.000 ----- ----- -----	171.912 178.439 ----- 6.527 -----	-125.000 -125.000 ----- ----- -----	
SPA Zero	mV	Master Before After Before-Master After-Before	----- ----- ----- ----- -----	-50.000 -50.000 ----- ----- -----	-0.091 -0.077 ----- 0.014 -----	50.000 50.000 ----- ----- -----	
SPA Plus	mV	Master Before After Before-Master After-Before	----- ----- ----- ----- -----	941.000 941.000 ----- ----- -----	985.854 985.448 ----- -0.406 -----	1040.000 1040.000 ----- ----- -----	
Temperature Zero	V	Master Before After Before-Master After-Before	----- ----- ----- ----- -----	-0.050 -0.050 ----- ----- -----	0.000 0.000 ----- 0.000 -----	0.050 0.050 ----- ----- -----	
Temperature Plus	V	Master Before After Before-Master After-Before	----- ----- ----- ----- -----	0.870 0.870 ----- ----- -----	0.913 0.913 ----- 0.000 -----	0.960 0.960 ----- ----- -----	

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<b>ADT-C (Dielectric Scanner) Calibration - Run ONE</b>	
<b>Primary Equipment :</b>	
ADT Pad Element	ADP-C
<b>Calibration Parameter :</b>	
Small Ring Size (Caliper Calibration Small Ring)	6.00
Large Ring Size (Caliper Calibration Large Ring)	12.00

<b>ADT Caliper Calibration - Caliper Accumulations</b>							
Before (Measured):	03:04:09 09-Aug-2013						
<b>Measurement</b>	<b>Unit</b>	<b>Phase</b>	<b>Nominal</b>	<b>Low Limit</b>	<b>Actual</b>	<b>High Limit</b>	
Small Ring RCAL	in	Before	6.00	3.00	6.00	9.00	
Large Ring RCAL	in	Before	12.00	6.00	11.34	18.00	

<b>HDRS-B (HILT Density and Rxo Sonde, 125 degC) Calibration - Run ONE</b>		
<b>Primary Equipment :</b>		
HILT High-Resolution Control Cartridge, 125 degC	HRCC-B	
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	4845
<b>Auxiliary Equipment :</b>		
HRDD Backscatter Detector	Backscatter	
HRDD Long Spacing Detector	Long Spacing	
HRDD Short Spacing Detector	Short Spacing	
Cesium 137 Gamma-Ray Logging Source	GSR-J	5233
HILT High-Resolution Control Cartridge, 125 degC	HRCC-B	
HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	
<b>Calibration Parameter :</b>		
Small Ring Size (Caliper Calibration Small Ring)	6.00	
Large Ring Size (Caliper Calibration Large Ring)	12.00	

<b>HDRS Caliper Calibration - Caliper Accumulations</b>							
Before (Measured):	02:51:23 09-Aug-2013						
<b>Measurement</b>	<b>Unit</b>	<b>Phase</b>	<b>Nominal</b>	<b>Low Limit</b>	<b>Actual</b>	<b>High Limit</b>	
Small Ring	in	Before	6.00	4.50	6.67	7.50	
Large Ring	in	Before	12.00	9.00	12.96	15.00	

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### HDRS Density Calibration - Inversion Results

Master (EEPROM):		15:25:24 02-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	5.6	5.586	2.598	2.606	
Rho Magnesium	g/cm3	Master	6.6	6.676	1.691	1.696	
Pe Aluminum		Master	2.570	2.470	2.576	2.670	
Pe Magnesium		Master	2.650	2.550	2.619	2.750	

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### HDRS Density Calibration - Deviation Summary

Master (EEPROM):		15:25:24 02-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.3241	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.6939	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3823	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.1615	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.7182	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.8938	3.5000	

### HDRS Density Calibration - Background Summary

Master (EEPROM):		15:25:24 02-Aug-2013		Before (Measured):		02:50:23 09-Aug-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7279		
		Before	0.7279	0.6916	0.7297	0.7643	
		Before-Master	----	----	0.0018	----	
BS Window Sum	1/s	Master	1		27137		
		Before	27137	25781	27184	28494	
		Before-Master	----	----	47	----	
SS Window Ratio		Master	1.0000		0.4830		
		Before	0.4830	0.4588	0.4855	0.5071	
		Before-Master	----	----	0.0025	----	
SS Window Sum	1/s	Master	1		12581		
		Before	12581	11952	12573	13210	
		Before-Master	----	----	-8	----	
LS Window Ratio		Master	1.0000		0.2947		
		Before	0.2947	0.2800	0.2940	0.3094	
		Before-Master	----	----	-0.0007	----	
LS Window Sum	1/s	Master	1		1296		
		Before	1296	1231	1291	1360	
		Before-Master	----	----	-5	----	

### HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		15:25:24 02-Aug-2013		Before (Measured):		02:50:23 09-Aug-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1762	2400	
		Before		1000	1752	2400	
		Before-Master	----	-100	-10	100	
SS PM High Voltage	V	Master		1000	1593	2400	
		Before		1000	1594	2400	
		Before-Master	----	-100	1	100	
LS PM High Voltage	V	Master		1000	1438	2400	
		Before		1000	1439	2400	
		Before-Master	----	-100	1	100	

### HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		15:25:24 02-Aug-2013		Before (Measured):		02:50:23 09-Aug-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	12.67	25.00	
		Before		5.00	12.63	25.00	
		Before-Master	----	-1.00	-0.04	1.00	
SS Crystal Resolution	%	Master		5.00	10.42	20.00	
		Before		5.00	10.35	20.00	
		Before-Master	----	-1.00	-0.07	1.00	
LS Crystal Resolution	%	Master		5.00	8.98	20.00	
		Before		5.00	9.06	20.00	
		Before-Master	----	-1.00	0.08	1.00	

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### HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		20:42:26 09-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	



Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3874	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3793	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3803	4136	

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

<b>Primary Equipment :</b>			
HILT Gamma-Ray and Neutron Sonde, 150 degC	HGNS-H		
<b>Auxiliary Equipment :</b>			
HGNS Accelerometer, 150 degC	HACCZ-H	5118	
AmBe Neutron Logging Source	NSR-F	687	
<b>Calibration Parameter :</b>			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)	165		

### HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured):	20:35:03 09-Aug-2013						
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-May-2006						
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	----	----	2900.000	----	
Accelerometer Coefficients - 1		Master	----	----	19.000	----	
Accelerometer Coefficients - 2		Master	----	----	0.002	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.747	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	299.100	----	
Accelerometer Coefficients - 9		Master	----	----	0.993	----	

### HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM):	17:54:16 05-Aug-2013	Before (Measured):	03:09:48 09-Aug-2013	After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	26.7	40.0	
		Before	0	5.0	26.6	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.0	-0.1	4.0	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	26.2	40.0	
		Before	0	5.0	28.1	40.0	
		After	----	----	----	----	
		Before-Master	----	-3.9	1.9	3.9	
		After-Before	----	----	----	----	
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5192.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2124.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	5090.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	

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		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2050.0	2900.0	
		Before					
		After					
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

### HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured):		03:02:17 09-Aug-2013		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	56.3	120.0	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	169.5	206.3	
		After	----	----	NOT DONE	----	
		After-Before	----	----	----	----	
GR Calibration Gain		Before	0.89	0.80	0.97	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

### ECS-A (Elemental Capture Spectroscopy Tool) Calibration - Run ONE

**Primary Equipment :**  
The ECS sonde is used to measure elemental concentrations. ECS-A

**Auxiliary Equipment :**  
Litho-Density Spectroscopy Cartridge LDSC-B  
Housing for the LDSC LDSH-A  
Housing to contain the ECS Sonde Assembly ECSH-A  
The gamma ray BGO detector is used to detect prompt capture gamma rays for spectroscopy measurement. ECSD-A  
The AmBe source provides neutrons for the prompt capture spectroscopy measurement. NSR-F

### ECS Background Measurement Check - ECS Calibration Check

Master:		Before (Measured):		02:52:35 09-Aug-2013		After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Detector resolution (20 DegC)	%	Master	13.000	11.200	NOT DONE	14.000	
		Before	13.000	11.200	13.168	14.000	
		After	13.000	11.200	NOT DONE	14.000	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

### ECS Spectral Calibration - ECS Spectral Calibration

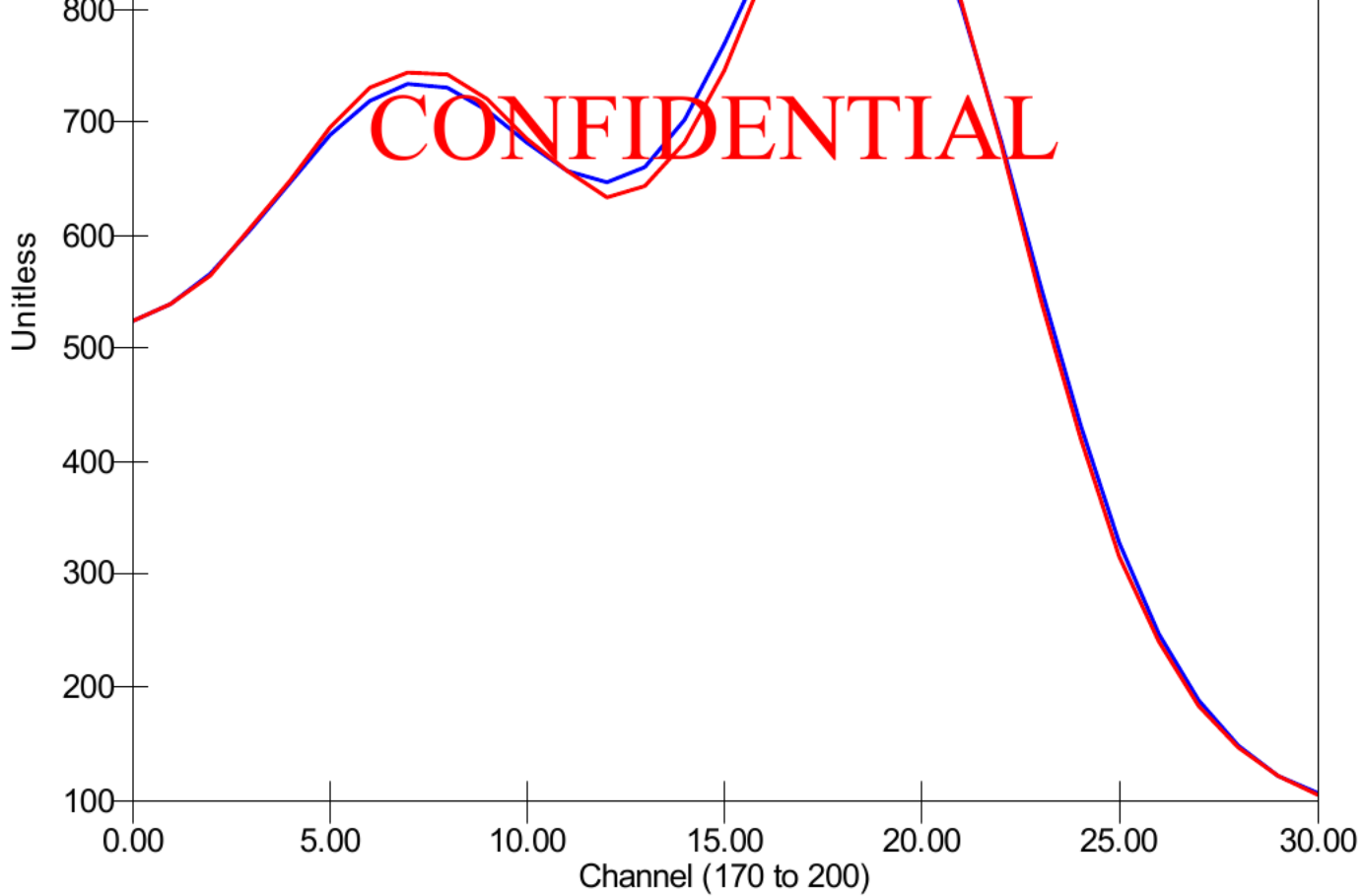
Master (EEPROM):		21:16:22 09-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Spectral Shift Factor		Master	1.000	-0.500	-0.038	1.500	

## Spectrum Without Shift Plot

SHOP

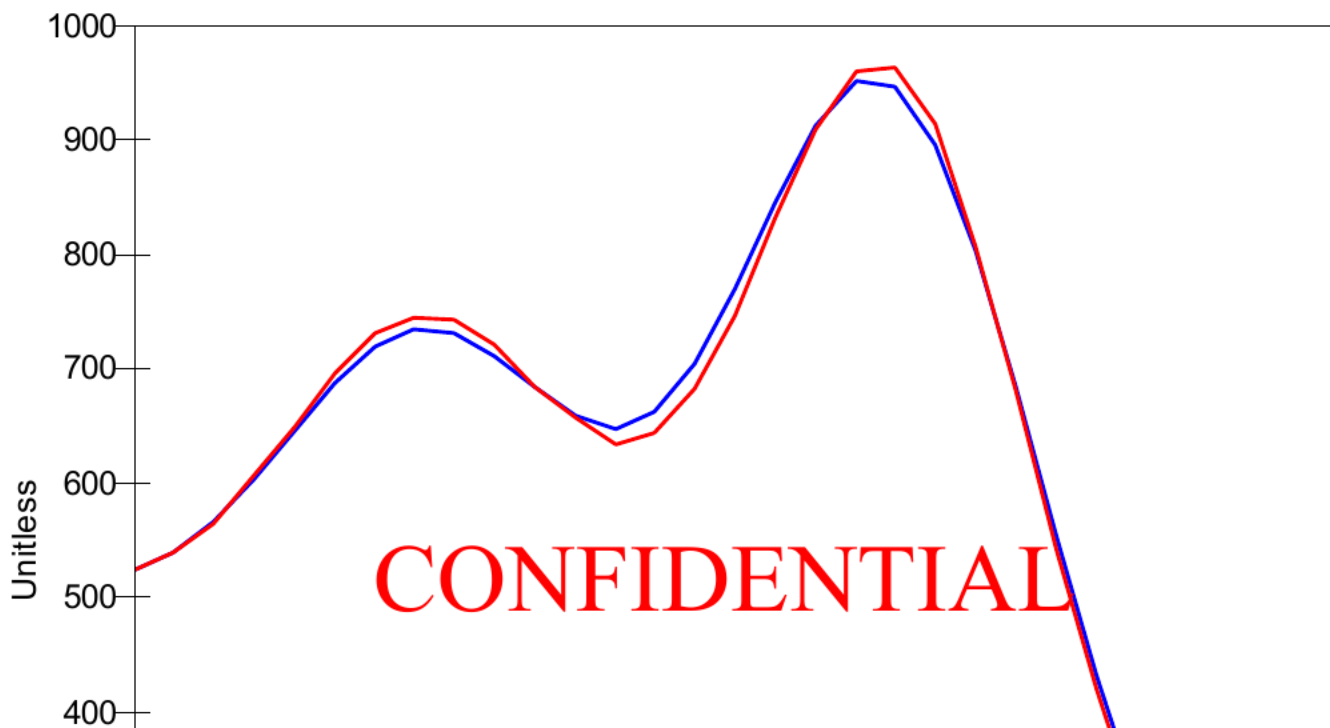
— FITTED\_SPEC (FITTED\_SPEC)  
— DATA\_SPEC (DATA\_SPEC)





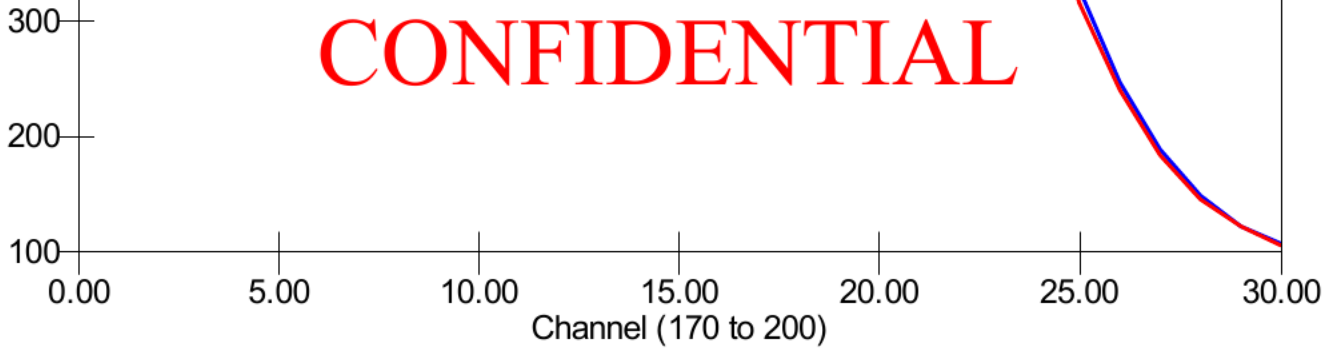
### Spectrum With Shift Plot SHOP

- FITTED\_SPEC\_SF (FITTED\_SPEC\_SF)
- DATA\_SPEC\_SF (DATA\_SPEC\_SF)

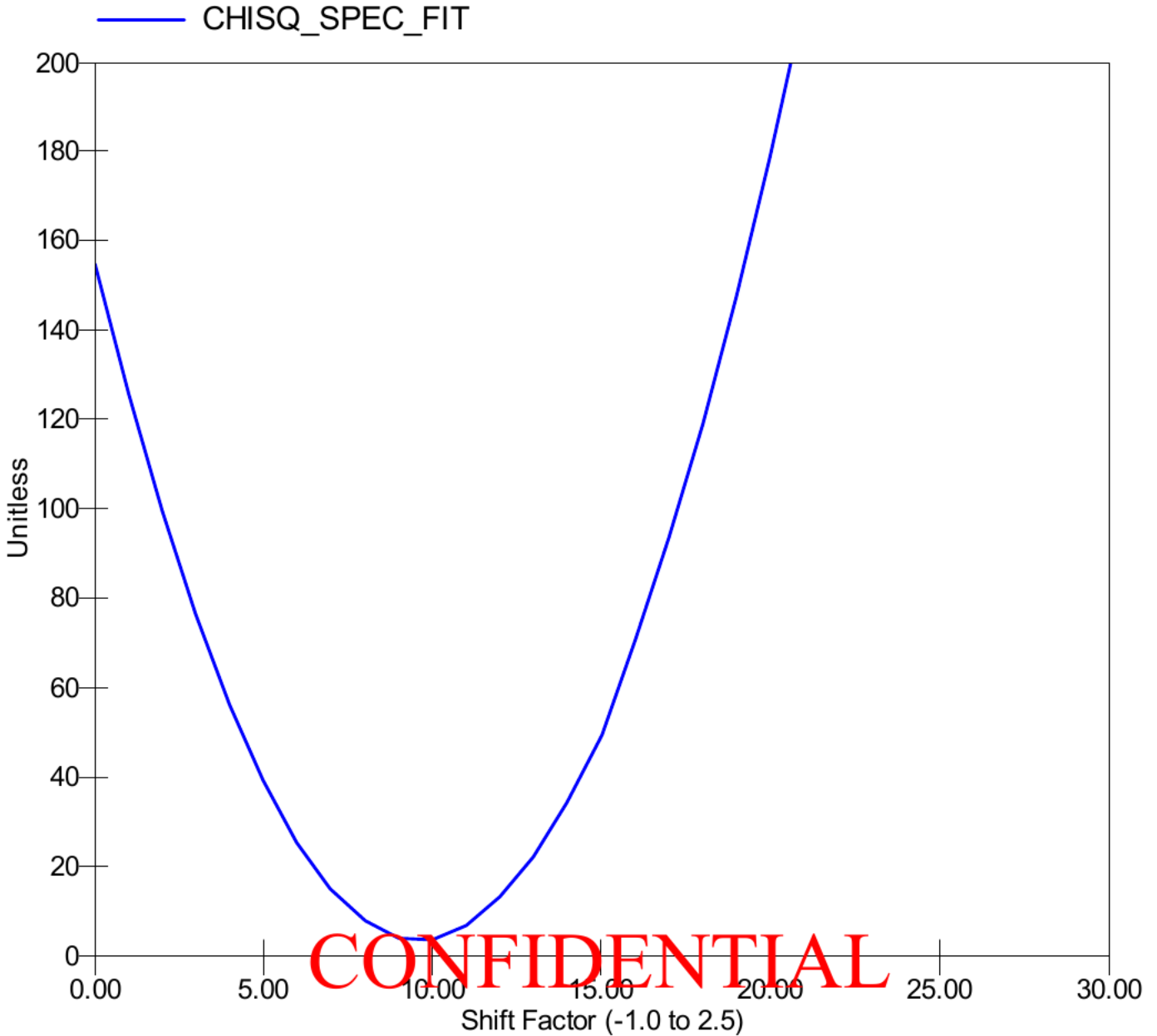




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**Chi Square for Spectral Fit Plot**  
SHOP



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## HNGS-BA (Hostile-environment Natural Gamma-ray Sonde) Calibration - Run ONE

**Primary Equipment :**

HNGS Sonde Element HNGS-BA

**Auxiliary Equipment :**

Hostile Natural Gamma Ray Cartridge HNGC-B

Housing for the HNGC HNGH-A

HNGS Housing Element HEH-K

### HNGS Background and Na22 Set Point Determination - Detector 1 Check

Master (Measured): 03:21:02 09-Aug-2013      Before (Measured): 02:50:01 09-Aug-2013      After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master	40.000	37.500	39.572	42.500	█
		Before	40.000	37.500	39.627	42.500	█
		After	----	----	----	----	█
		Before-Master	----	----	0.055	----	█
		After-Before	----	----	----	----	█
Na 511 Peak Resolution	%	Master	15.500	12.000	16.635	19.000	█
		Before	15.500	12.000	16.982	19.000	█
		After	----	----	----	----	█
		Before-Master	----	----	0.347	----	█
		After-Before	----	----	----	----	█
High Voltage DAC Value	V	Master	1150.000	850.000	1071.326	1600.000	█
		Before	1150.000	850.000	1070.536	1600.000	█
		After	----	----	----	----	█
		Before-Master	----	----	-0.790	----	█
		After-Before	----	----	----	----	█
Na 1785 Peak Location		Master	142.650	135.000	142.800	150.300	█
		Before	142.650	135.000	143.044	150.300	█
		After	----	----	----	----	█
		Before-Master	----	----	0.244	----	█
		After-Before	----	----	----	----	█
Na 1785 Peak Resolution	%	Master	8.500	7.000	9.791	11.000	█
		Before	8.500	7.000	9.129	11.000	█
		After	----	----	----	----	█
		Before-Master	----	----	-0.662	----	█
		After-Before	----	----	----	----	█
Temperature	degF	Master	59.900	-20.002	84.171	140.000	█
		Before	59.900	-20.002	84.212	140.000	█
		After	----	----	----	----	█
		Before-Master	----	----	0.041	----	█
		After-Before	----	----	----	----	█
Na Count Rate	CPS	Master	45.000	10.000	34.770	100.000	█
		Before	45.000	10.000	35.583	100.000	█
		After	----	----	----	----	█
		Before-Master	----	----	0.813	----	█
		After-Before	----	----	----	----	█

### HNGS Background and Na22 Set Point Determination - Detector 2 Check

Master (Measured): 03:21:02 09-Aug-2013      Before (Measured): 02:50:01 09-Aug-2013      After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master	40.000	37.500	39.490	42.500	█
		Before	40.000	37.500	39.616	42.500	█
		After	----	----	----	----	█
		Before-Master	----	----	0.126	----	█
		After-Before	----	----	----	----	█
Na 511 Peak Resolution		Master	15.500	12.000	16.187	19.000	█
		Before	15.500	12.000	17.130	19.000	█
		After	----	----	----	----	█
		Before-Master	----	----	0.943	----	█
		After-Before	----	----	----	----	█

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High Voltage DAC Value	V	Master Before After Before-Master After-Before	1150.000 1150.000 ---- ---- ----	850.000 850.000 ---- ---- ----	1101.694 1102.668 ---- 0.974 ----	1600.000 1600.000 ---- ---- ----	
Na 1785 Peak Location		Master Before After Before-Master After-Before	142.650 142.650 ---- ---- ----	135.000 135.000 ---- ---- ----	141.327 142.211 ---- 0.884 ----	150.300 150.300 ---- ---- ----	
Na 1785 Peak Resolution	%	Master Before After Before-Master After-Before	8.500 8.500 ---- ---- ----	7.000 7.000 ---- ---- ----	9.750 8.697 ---- -1.053 ----	11.000 11.000 ---- ---- ----	
Temperature	degF	Master Before After Before-Master After-Before	59.900 59.900 ---- ---- ----	-20.002 -20.002 ---- ---- ----	85.004 85.394 ---- 0.390 ----	140.000 140.000 ---- ---- ----	
Na Count Rate	CPS	Master Before After Before-Master After-Before	45.000 45.000 ---- ---- ----	10.000 10.000 ---- ---- ----	34.584 35.280 ---- 0.696 ----	100.000 100.000 ---- ---- ----	

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

Master (Measured): 03:21:02 09-Aug-2013		Before (Measured): 02:50:01 09-Aug-2013		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coincidence Count Rate Ratio		Master	1.000	0.950	1.002	1.050	
		Before	1.000	0.950	1.006	1.050	
		After	----	----	----	----	
		Before-Master	----	----	0.004	----	
		After-Before	----	----	----	----	

### HNCS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (Measured): 03:21:02 09-Aug-2013		Before (Measured): 02:50:01 09-Aug-2013		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location - 0		Master	209.630	201.000	212.598	218.250	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Th Peak Resolution - 0	%	Master	7.000	5.000	7.116	9.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Background Count Rate	CPS	Master	142.500	10.000	168.916	265.000	
		Before	142.500	10.000	159.100	265.000	
		After	----	----	----	----	
		Before-Master	----	----	-9.816	----	
		After-Before	----	----	----	----	
Gain Ratio - 0		Master	1.000	0.940	1.022	1.060	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

### HNCS Background and Na22 Set Point Determination - Detector 2 Calibration

Master (Measured): 03:21:02 09-Aug-2013		Before (Measured): 02:50:01 09-Aug-2013		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location - 0		Master	209.630	201.000	210.838	218.250	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Th Peak Resolution - 0	%	Master	7.000	5.000	7.734	9.000	
		Before	----	----	----	----	

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		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Background Count Rate	CPS	Master	12.00	10.00	162.417	265.000	
		Before	12.00	10.00	128.687	265.000	
		After	----	----	----	----	
		Before-Master	----	----	-33.730	----	
		After-Before	----	----	----	----	
Gain Ratio - 0		Master	1.000	0.940	1.016	1.060	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

### HNCS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (Measured):		03:21:02 09-Aug-2013	Before (Measured):		02:50:01 09-Aug-2013	After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point - 0		Master	40.000	38.000	40.000	43.500	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

### HNCS Background and Na22 Set Point Determination - Detector 2 Calibration

Master (Measured):		03:21:02 09-Aug-2013	Before (Measured):		02:50:01 09-Aug-2013	After:	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point - 0		Master	40.000	38.000	41.000	43.500	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

### EDTC-B (Enhanced Digital Telemetry Cartridge - Version B) Calibration - Run ONE

Primary Equipment :		Enhanced Digital Telemetry Cartridge - B	EDTC-B
Calibration Parameter :		Plus Reference (Jig minus background reference)	165

### EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

Before (Measured):		20:34:14 09-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	ft/s2	Before	32.19	31.53	32.22	32.84	

### EDTC-B Memory Data - EDTC-B Memory Data

Master (EEPROM):		20:33:15 09-Aug-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Initial PMT HV	V	Master			1526.000		
Accelerometer Serial Number		Master			618		
Accelerometer Coefficients - 0		Master	----	----	2.962	----	
Accelerometer Coefficients - 1		Master	----	----	0.000	----	
Accelerometer Coefficients - 2		Master	----	----	0.000	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	0.000	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	-0.009	----	
Accelerometer Coefficients - 8		Master	----	----	0.000	----	
Accelerometer Coefficients - 9		Master	----	----	0.000	----	
Accelerometer Coefficients - 10		Master	----	----	0.000	----	
Accelerometer Coefficients - 11		Master	----	----	0.000	----	
Gamma-Ray Detector Serial Number		Master			7714		

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### EDTC-B Gamma-Ray Calibration - Gamma-Ray Coefficients

Before (Measured):		02:55:45 09-Aug-2013		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Gain		Before	1.000	0.900	1.033	1.100	

After -----  
 After-Before -----


**EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations**

Before (Measured): 02:55:45 09-Aug-2015 After: **CONFIDENTIAL**

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before		0	37.255	120.000	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	165.000	150.000	159.789	180.000	
		After			NOT DONE		
		After-Before	----	----	----	----	

**LEH-QT (Logging Equipment Head - QT, 3-3/8 inch 31 pin HPHT with Tension Sensor) Calibration - Run ONE**

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

**HTEN Master Calibration - HTEN Master Calibration**

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
HTEN Shop Gain		Master	1.000	0.800	NOT DONE	4.500	
HTEN Shop Offset	lbf	Master	0	-1000.000	NOT DONE	1000.000	

**HTEN Before Calibration - HTEN Before Calibration**

Before:

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

Company:	ALTA MESA SERVICES, LP	<b>Schlumberger</b>
Well:	ML INVESTMENTS 2-10	
Field:	WILLOW	
County:	PAYETTE	
State:	IDAHO	

Platform Express  
 Combo Print  
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