

Company: Alta Mesa Services, LP

Well: ML Investments 1-11

Field: Willow

County: Payette State: Idaho

Platform Express - Quad Combo

Density - Neutron Porosity - Sonic - Propagation Resistivity

Sandstone Matrix Print - 2.65 g/cm3

County: Payette  
 Field: Willow  
 Location: SWNE, Sec. 11, T8N, R4W  
 Well: ML Investments 1-11  
 Company: Alta Mesa Services, LP

Location:		SWNE, Sec. 11, T8N, R4W	Elev.:	K.B. 2403.40 ft
		SHL: 2740' FNL x 160' FWL		G.L. 2389.40 ft
		Lat/Long: 44.045934/-116.82488		D.F. 2402.40 ft
Permanent Datum:	Ground Level		Elev.:	2389.40 f
Log Measured From:	Kelly Bushing			14.00 ft above Perm. Datum
Drilling Measured From:	Kelly Bushing			
API Serial No.:	Section:	11	Township:	8N
11-075-20025-0000			Range:	4W

Logging Date	05-Sep-2014
Run Number	One
Depth Driller	5500.00 ft
Schlumberger Depth	5488.00 ft
Bottom Log Interval	5455.00 ft
Top Log Interval	1082.00 ft
Casing Driller Size @ Depth	9.625 in @ 1082.00 ft
Casing Schlumberger	1082 ft
Bit Size	8.75 in
Type Fluid Available	Synthetic Oil
Density	9.95 lbm/gal
Fluid Loss	PH
Source of Sample	N/A
RM @ Meas Temp	N/A
RMF @ Meas Temp	N/A
RM @ Meas Temp	N/A
Source RMF	N/A
RM @ BHT	N/A
RMF @ BHT	N/A
Max Recorded Temperatures	220 degF
Circulation Stopped	05-Sep-2014 10:00:00
Logger on Bottom	05-Sep-2014 17:29:44
Unit Number	2135
Recorded By	Elizabeth Wilson
Witnessed By	Hector Caram

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## Disclaimer

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9.4 Log ( Dens )

9.5 Parameter Listing

10. One 1" Main Pass - Quad Combo

10.1 Integration Summary

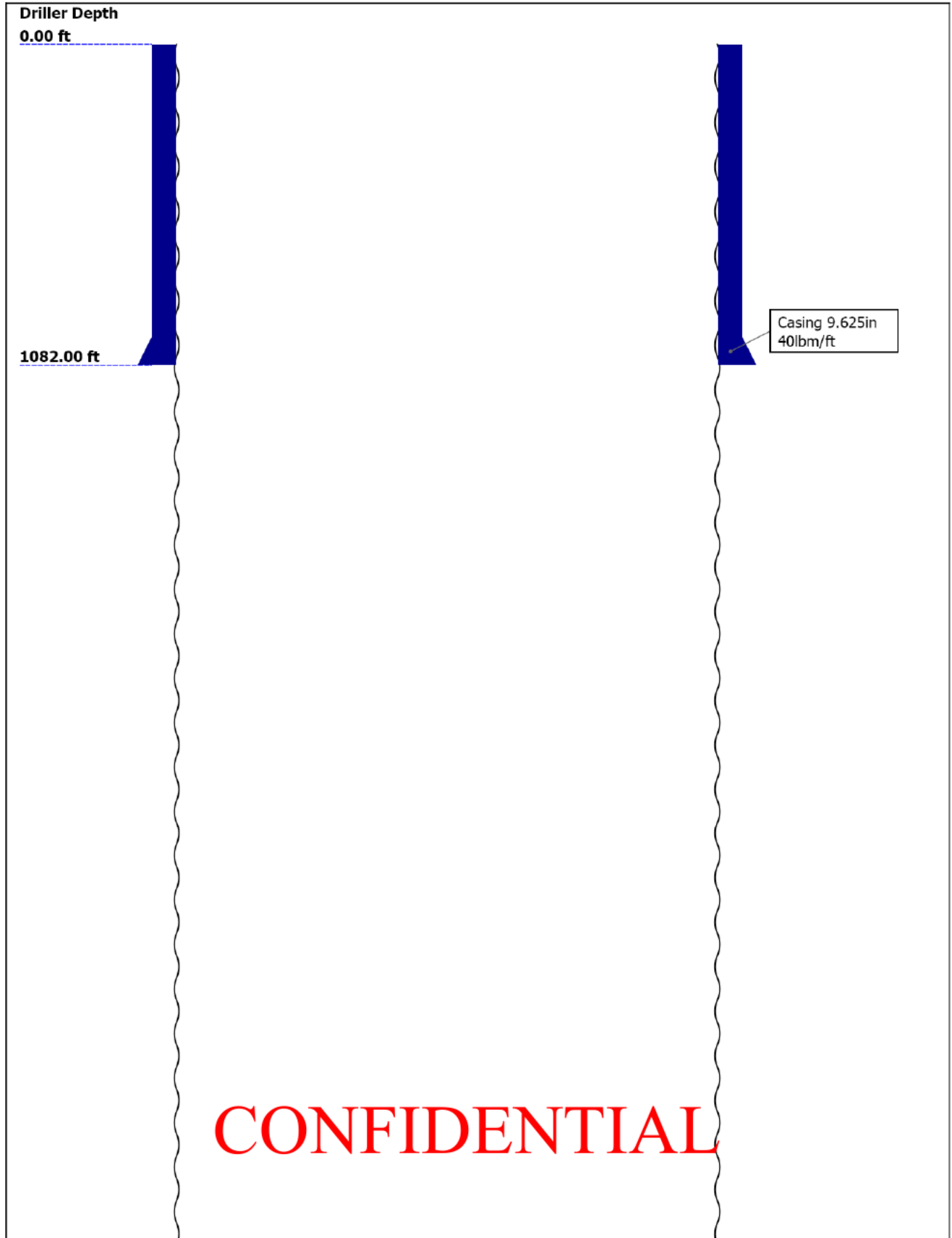
10.2 Software Version

10.3 Composite Summary

10.4 Log ( Combo\_Fax )

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## Well Sketch



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Open Hole 8.75in

5500.00 ft

## Borehole Size/Casing/Tubing Record

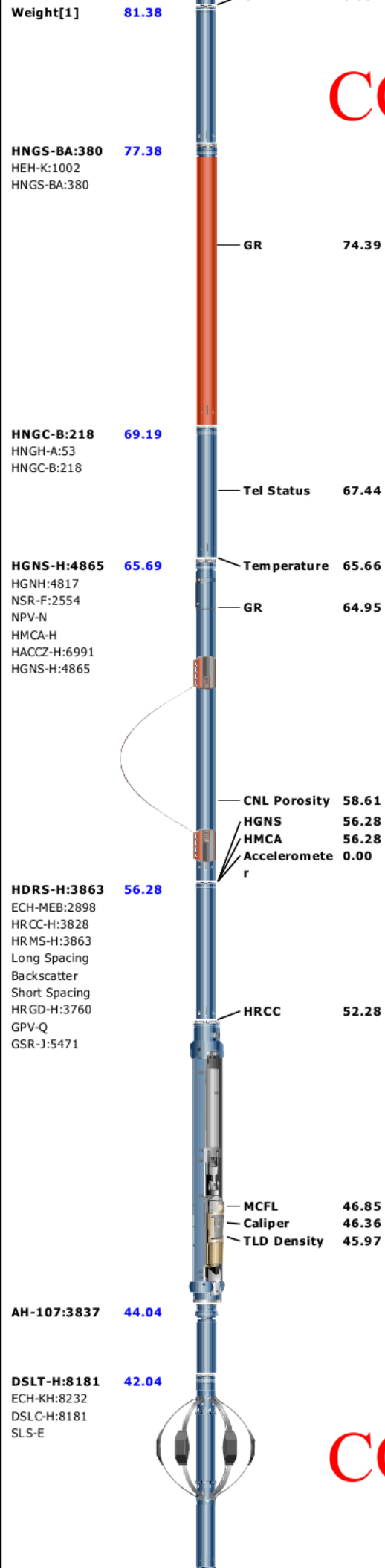
<b>Bit</b>						
Bit Size ( in )	8.75					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	5500					
Bottom Logger ( ft )	5488					
<b>Casing</b>						
Size ( in )	9.625					
Weight ( lbm/ft )	40					
Inner Diameter ( in )	8.835					
Grade	J55					
Top Driller ( ft )	0					
Top Logger ( ft )	0					
Bottom Driller ( ft )	1082					
Bottom Logger ( ft )	1082					

## Remarks and Equipment Summary

One : Toolstring				One : Remarks		
<b>Equip name</b>	<b>Length</b>	<b>MP name</b>	<b>Offset</b>	Toolstring ran as per tool sketch Crew: Alonzo Carrera, David Marquez Thank you for choosing Schlumberger Wireline Services		
LEH-QT:2426 LEH-QT:2426	98.8					
<b>EDTC-B:8629</b>	95.88					
EDTH-B:8652 EDTG-A:77792 EDTC-B:8629						
		CTEM	92.38			
		ACCZ	0.00			
		HV	0.00			
		Gamma Ray	90.51			
		TelStatus	89.38			
<b>Weight[2]</b>	89.38					
		GPIT-F Incliner	83.96			
		GPIT	0.00			
<b>GPIT-F:708</b>	85.38					
GPIH-B:708 GPIC-F:708 DHRU-F						

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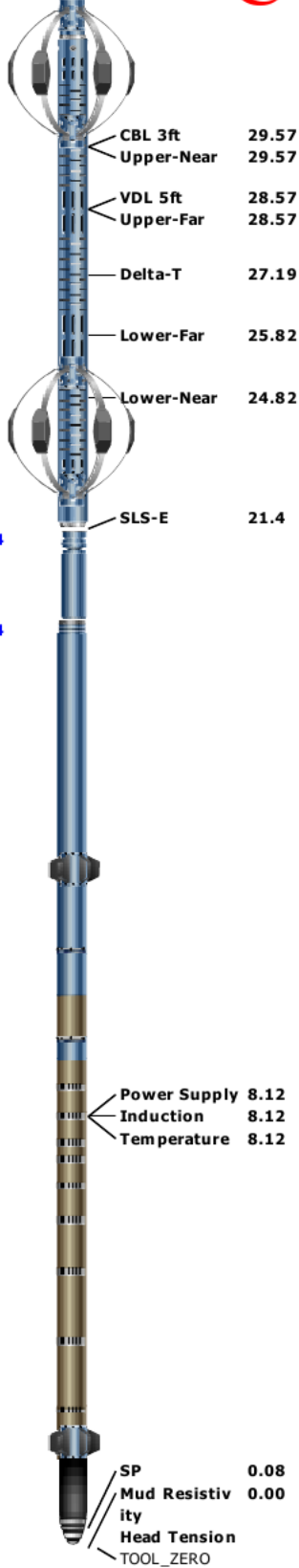
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**CBL 3ft**      29.57  
**Upper-Near**   29.57  
  
**VDL 5ft**      28.57  
**Upper-Far**     28.57  
  
**Delta-T**        27.19  
  
**Lower-Far**     25.82  
  
**Lower-Near**    24.82  
  
**SLS-E**          21.4

**AH-184:3918**    21.4

**ZAIT-E:99**      19.4  
 AZIS:99  
 AZRM

**Power Supply** 8.12  
**Induction**     8.12  
**Temperature** 8.12

**SP**                0.08  
**Mud Resistivity** 0.00  
**Head Tension**  
**TOOL\_ZERO**

Lengths are in ft  
 Maximum Outer Diameter = 7.000 in  
 Line: Sensor Location, Value: Gating Offset  
 All measurements are relative to TOOL\_ZERO

## Depth Summary

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	One	
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<b>Depth Measuring Device</b>		
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Type	IDW-JA	
Serial Number	5916	

Calibration Date	24-Mar-2014	<b>CONFIDENTIAL</b>
Calibrator Serial Number		
Calibration Cable Type	7-46P-LXS	
Wheel Correction 1	-6	
Wheel Correction 2	-3	

<b>Tension Device</b>		
Type	CMTD-B/A	
Serial Number	1919	
Calibration Date	01-Sep-2014	
Calibrator Serial Number	100513A	
Number of Calibration Points	10	
Calibration Root Mean Square Error	15	
Calibration Peak Error	24	

<b>Logging Cable</b>		
Type	7-46P-XS	
Serial Number	U711057	
Length	18300.00 ft	
Conveyance Type	Wireline	
Rig Type	Land	

<b>One :Depth Control Parameters</b>		<b>Depth Control Remarks</b>
Log Sequence	First Log In the Well	All Schlumberger depth policies and procedures followed
Rig Up Length At Surface		IDW used as primary depth reference
Rig Up Length At Bottom		Z-chart used as secondary depth reference
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

**One**

**Main Pass - Induction**

**Software Version**

<b>Acquisition System</b>		<b>Version</b>	
MaxWell		4.0.9163.3000	
Application Patch		Patch-SP-10767_18214-4.0.9163.3001	
		Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002	
<b>Tool Elements</b>	<b>Description</b>	<b>Software Version</b>	<b>Firmware Version</b>
AZIS	Array Induction Sonde - Z	4.0.9427.3000	
HNGS-BA	HNGS Sonde Element	4.0.9360.3000	2.0

**Pass Summary**

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	72.46 ft	5503.13 ft	05-Sep-2014 5:33:14 PM	05-Sep-2014 9:14:35 PM	ON	1.50 ft	No

All depths are referenced to toolstring zero

**Log** Company:Alta Mesa Services, LP    Well:ML Investments 1-11  
One : Log[3]:Up:S019

Description: Format: Log ( AIT ) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 06-Sep-2014 09:51:30

Channel	Source	Sampling
AF20	ZAIT-E:AZIS:AZIS	3in
AF60	ZAIT-E:AZIS:AZIS	3in
AFCO60	ZAIT-E:AZIS:AZIS	3in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
TIME_1900	WLWorkflow	0.1in

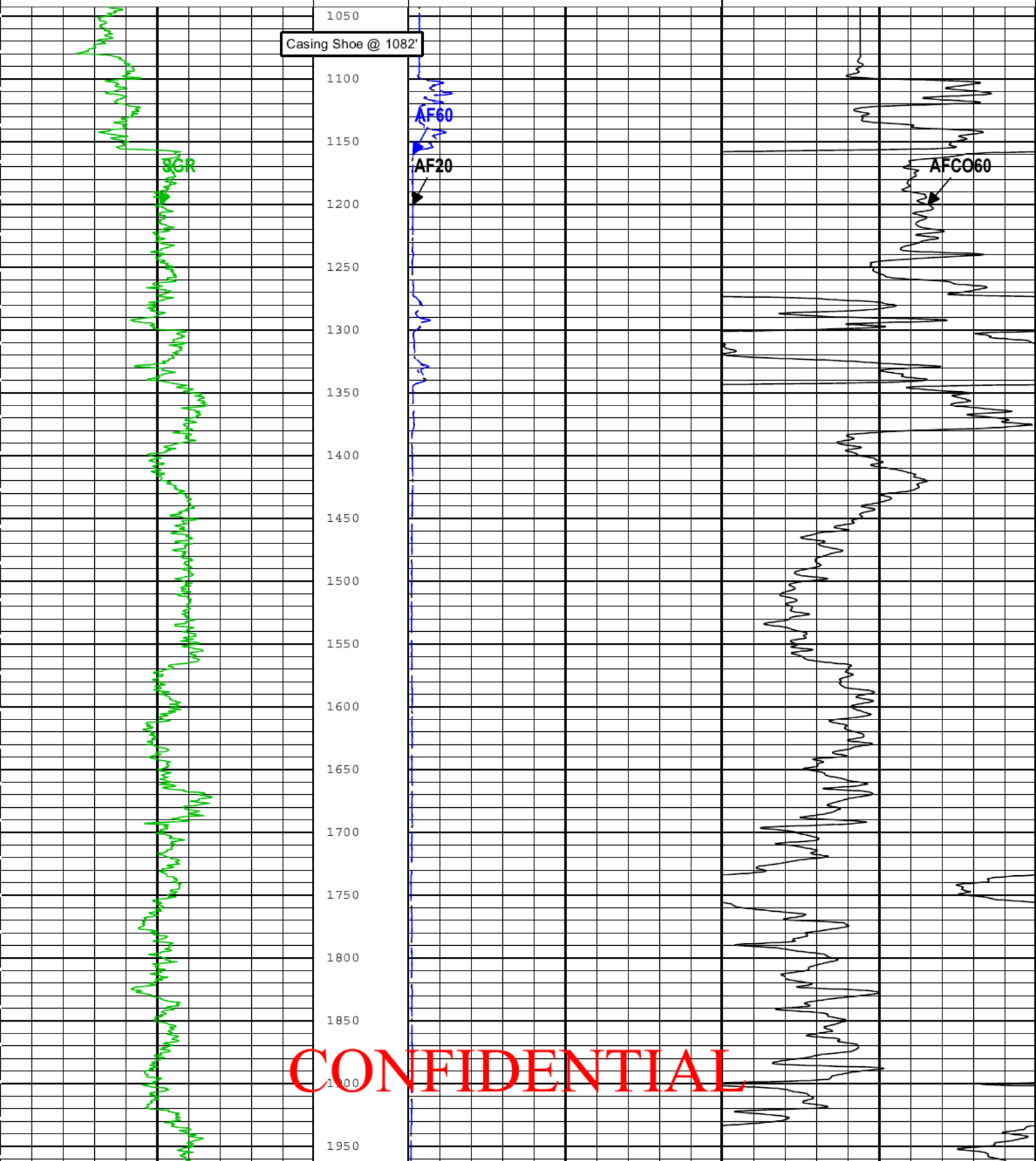
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Spectroscopy Gamma Ray (SGR) HNGS-BA  
0 gAPI 150

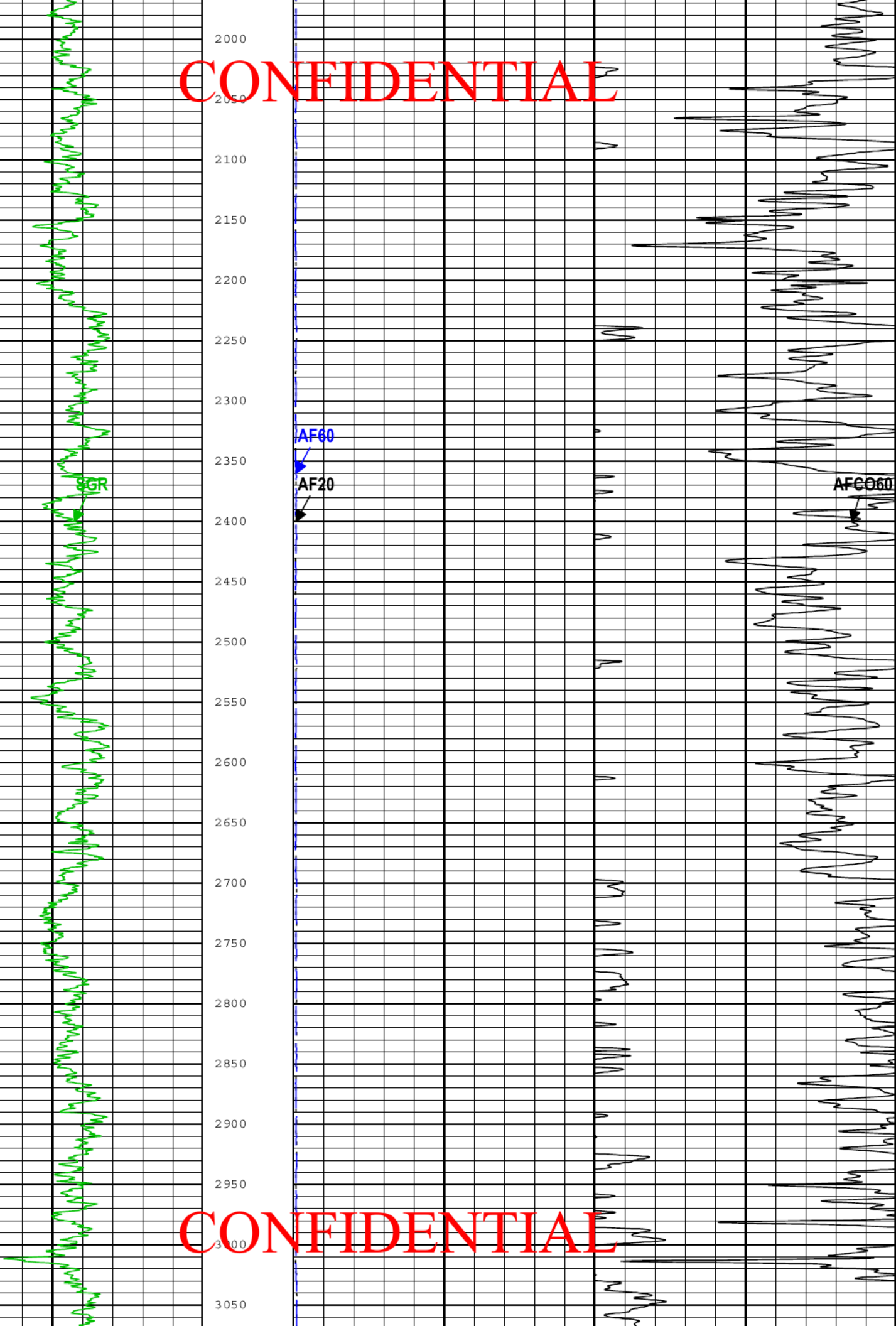
Array Induction Four Foot Resistivity A20  
(AF20) ZAIT-E  
0 ohm.m 100

Array Induction Four Foot Conductivity A60  
(AFCO60) ZAIT-E  
500 mS/m 0



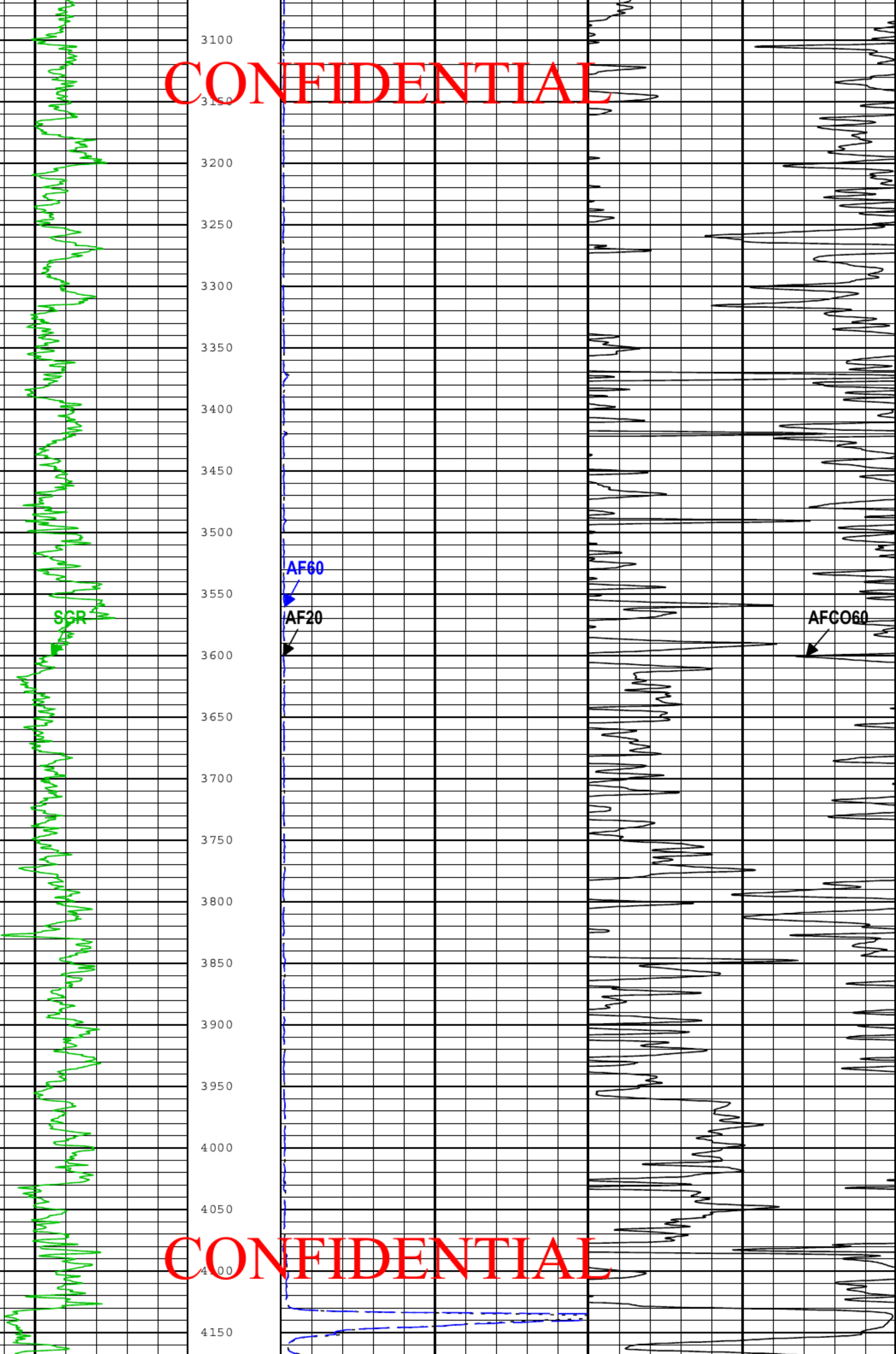
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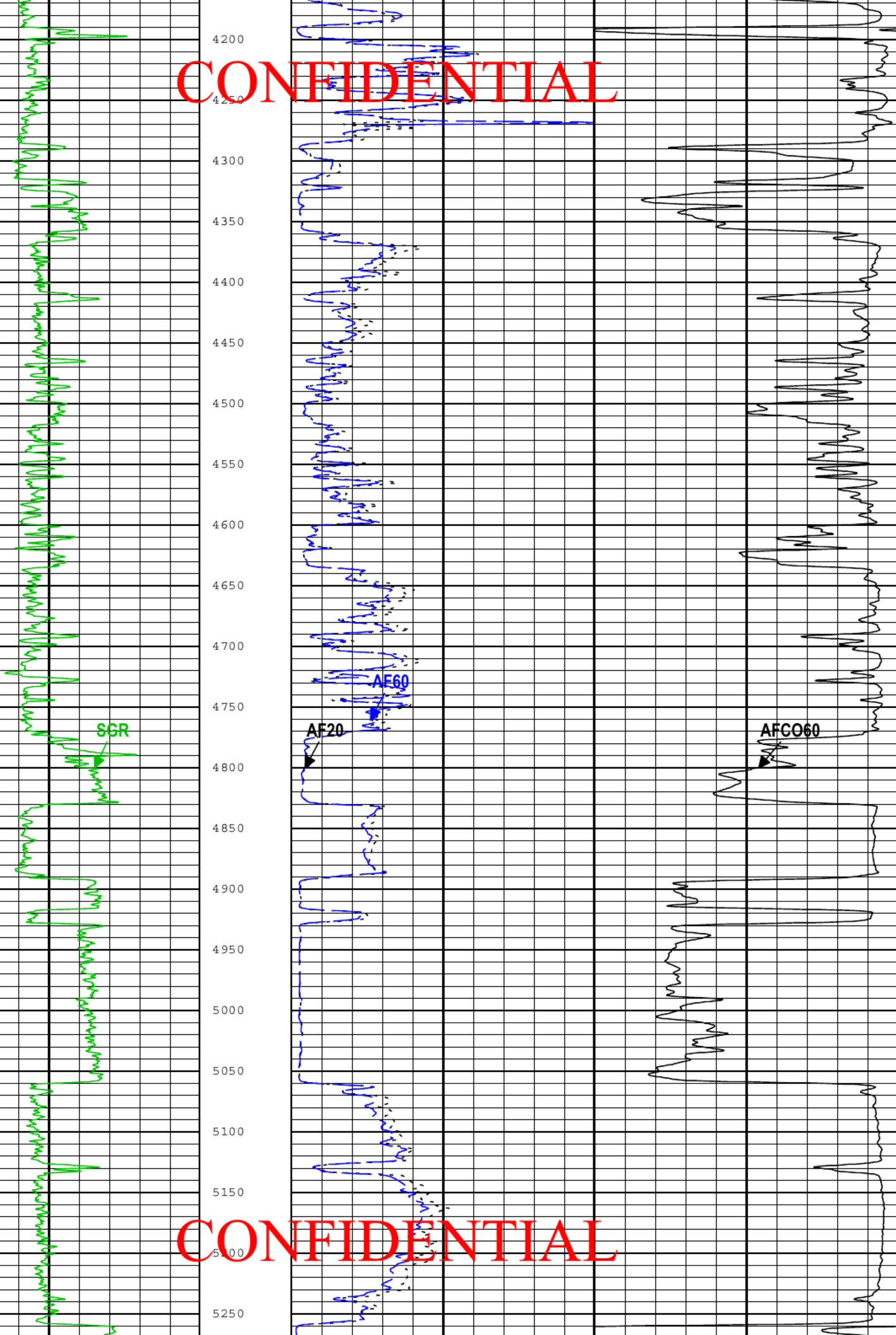
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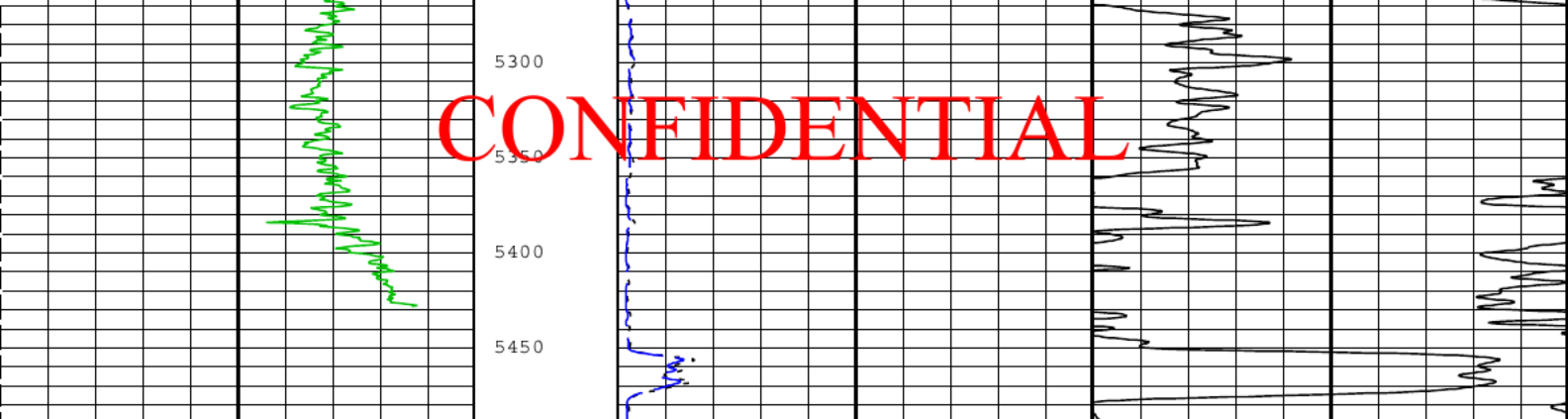


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Spectroscopy Gamma Ray (SGR) HNGS-BA  
0 gAPI 150

Array Induction Four Foot Resistivity A20 (AF20) ZAIT-E  
0 ohm.m 100

Array Induction Four Foot Conductivity A60 (AF60) ZAIT-E  
500 mS/m 100

Array Induction Four Foot Resistivity A60 (AF60) ZAIT-E  
0 ohm.m 100

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: 06-Sep-2014 09:51:30

### Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
ABHME	Array Induction Extended Borehole Correction Mode	ZAIT-E	Compute OBM Plus Dip Normal	
ACDE	Array Induction Casing Detection Enable	ZAIT-E	Yes	
AOFFX	X Accelerometer Offset	GPIT-F	0	ft/s2
AOFFY	Y Accelerometer Offset	GPIT-F	0	ft/s2
AOFFZ	Z Accelerometer Offset	GPIT-F	-0.02	ft/s2
AROT	Array Induction Rotation Selector	ZAIT-E	North	
BARI	Barite Mud Presence Flag	Borehole	No	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.125	in
CBLO	Casing Bottom (Logger)	WLSESSION	1082	ft
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.95	lbm/gal
DFT	Drilling Fluid Type	Borehole	Oil	
FOFFX	X Magnetometer Offset	GPIT-F	0	mT
FOFFY	Y Magnetometer Offset	GPIT-F	0	mT
FOFFZ	Z Magnetometer Offset	GPIT-F	0	mT
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	
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
ICMO	Inclinometry Computation Mode	GPIT-F	Automatic Selection	
LOG_SPEED_RNG	Logging Speed Range	GPIT-F	Normal (600 ft/h - 3600 ft/h)	
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	
USER_LOCB	User-supplied values for Magnetic Flux Density	WLSESSION	52970.05	nT

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USER_MDEC	User-supplied values for Magnetic Declination	WLSESSION	13.96	deg
USER_MDIP	User-supplied values for Magnetic Dip Angle	WLSESSION	67.54	deg

## Tool Control Parameters

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Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

One

## Main Pass - Density

### Software Version

Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_18214-4.0.9163.3001 Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002

Tool Elements	Description	Software Version	Firmware Version
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	4.0.9385.3000	2.0
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	4.0.9385.3000	3.0
HNGS-BA	HNGS Sonde Element	4.0.9360.3000	2.0

### Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	72.46 ft	5503.13 ft	05-Sep-2014 5:33:14 PM	05-Sep-2014 9:14:35 PM	ON	1.50 ft	No

All depths are referenced to toolstring zero

### Log

Company: Alta Mesa Services, LP    Well: ML Investments 1-11  
One : Log[3]:Up:S019

Description: Format: Log ( Dens )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 06-Sep-2014 09:51:31

Channel	Source	Sampling
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DSOZ	HDRS-H:HRMS-H:HRGD-H	2in
HDRA	HDRS-H:HRMS-H:HRGD-H	2in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
RHO8	HDRS-H:HRMS-H: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)

Standard Resolution Density Standoff (DSOZ) HDRS-H	Cable Tension (TENS)		
	10000	lb	0
0	Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
2	Density Standoff Correction (HDRA) HDRS-H		
2	High Resolution Formation Density (RHO8) HDRS-H		
2	Caliper (CALI) HDRS-H		





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Casing Shoe @ 1082'

1070

1080

1090

1100

1110

1120

1130

1140

1150

1160

1170

1180

1190

1200

1210

1220

1230

1240

1250

1260

1270

1280

SGR

DSOZ

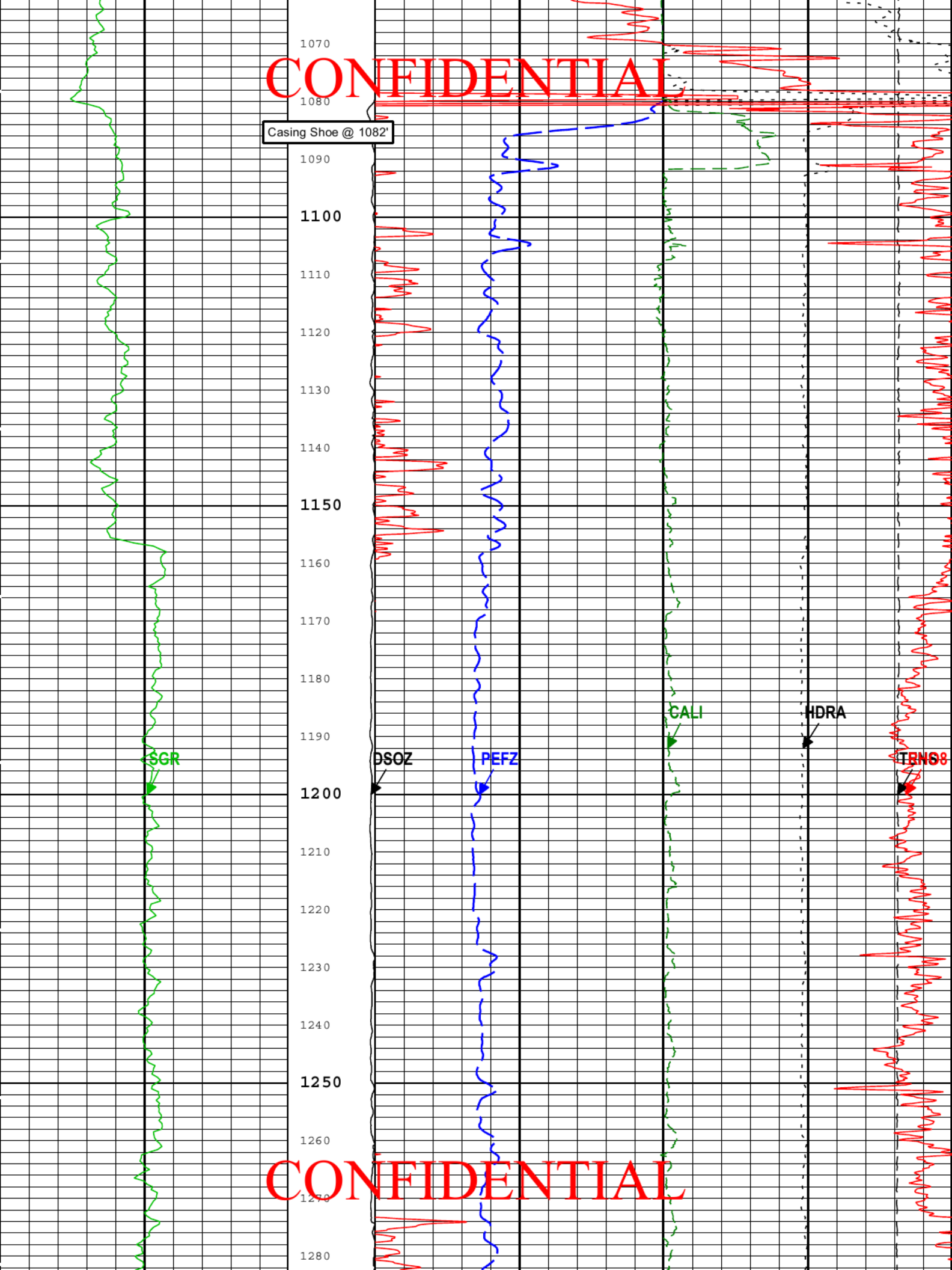
PEFZ

CALI

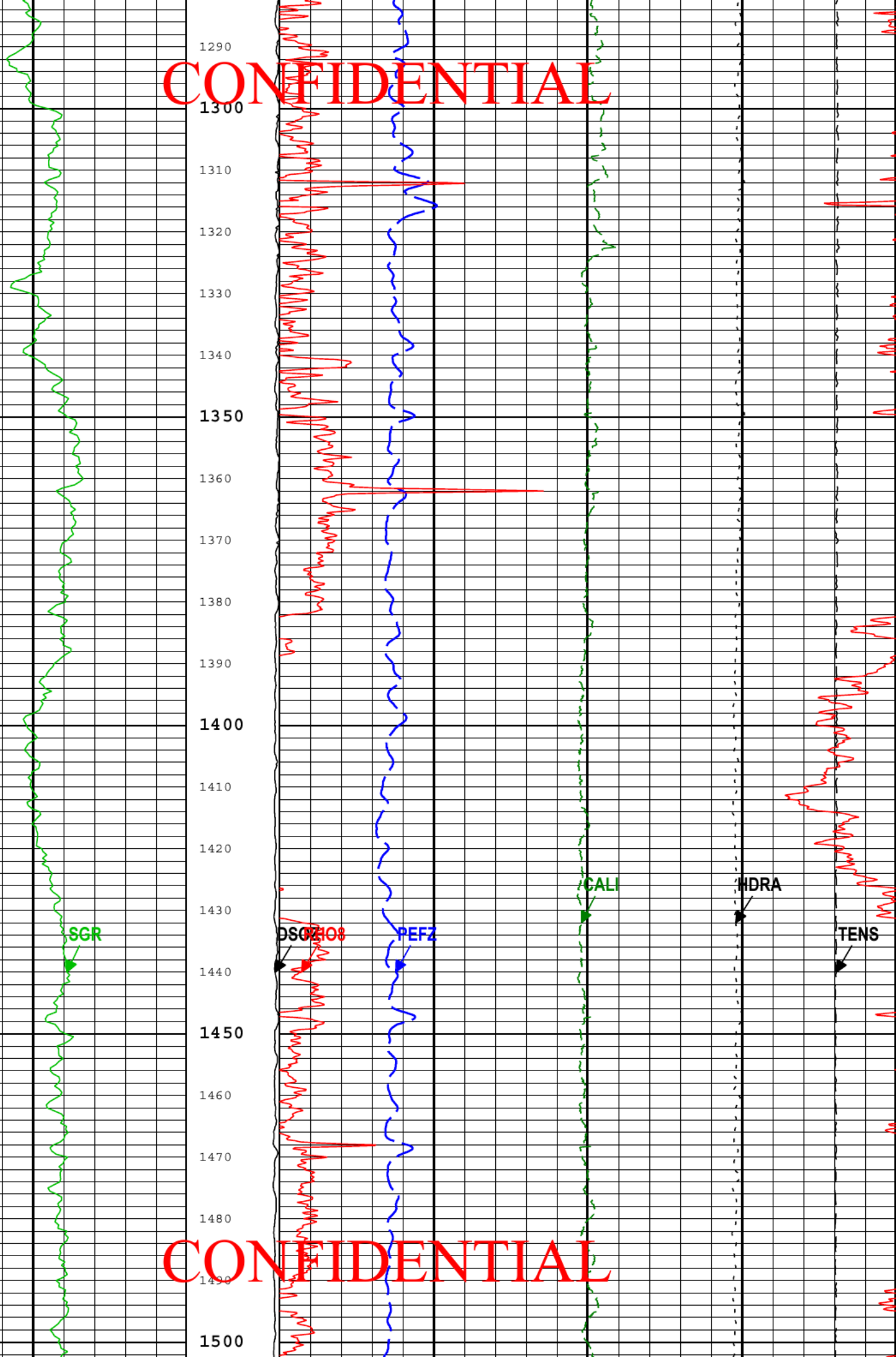
HDRA

TENS8

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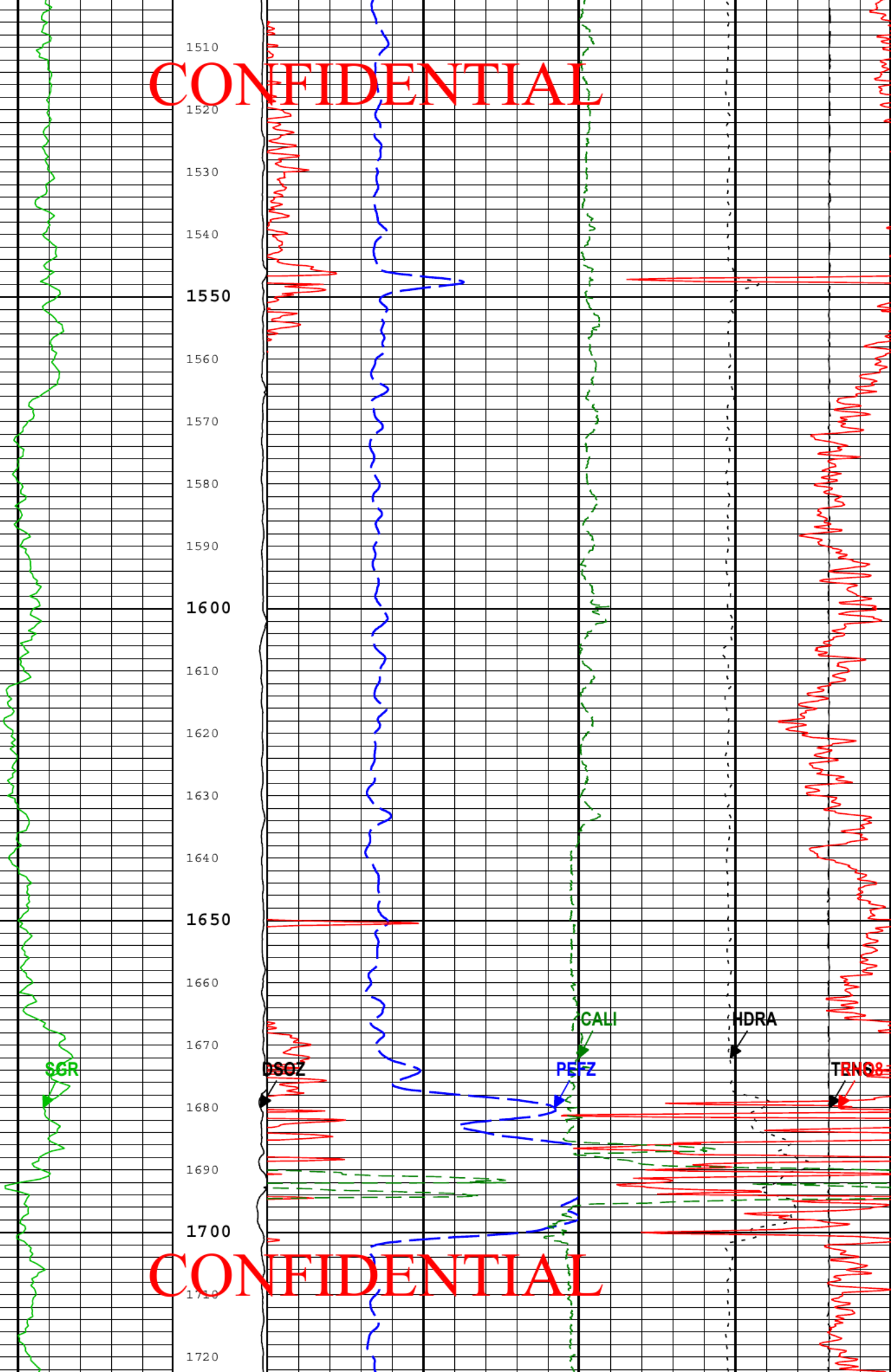


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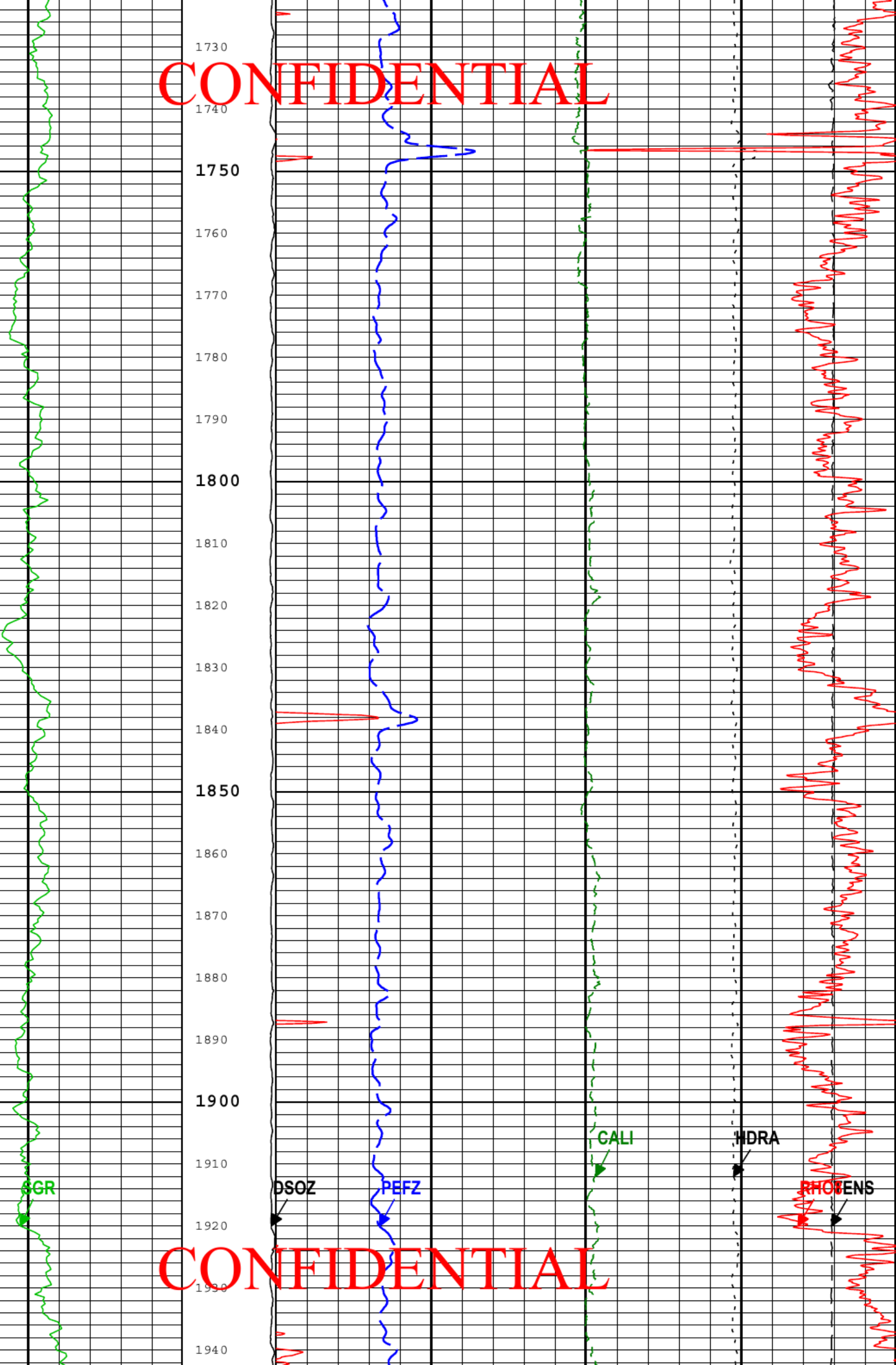
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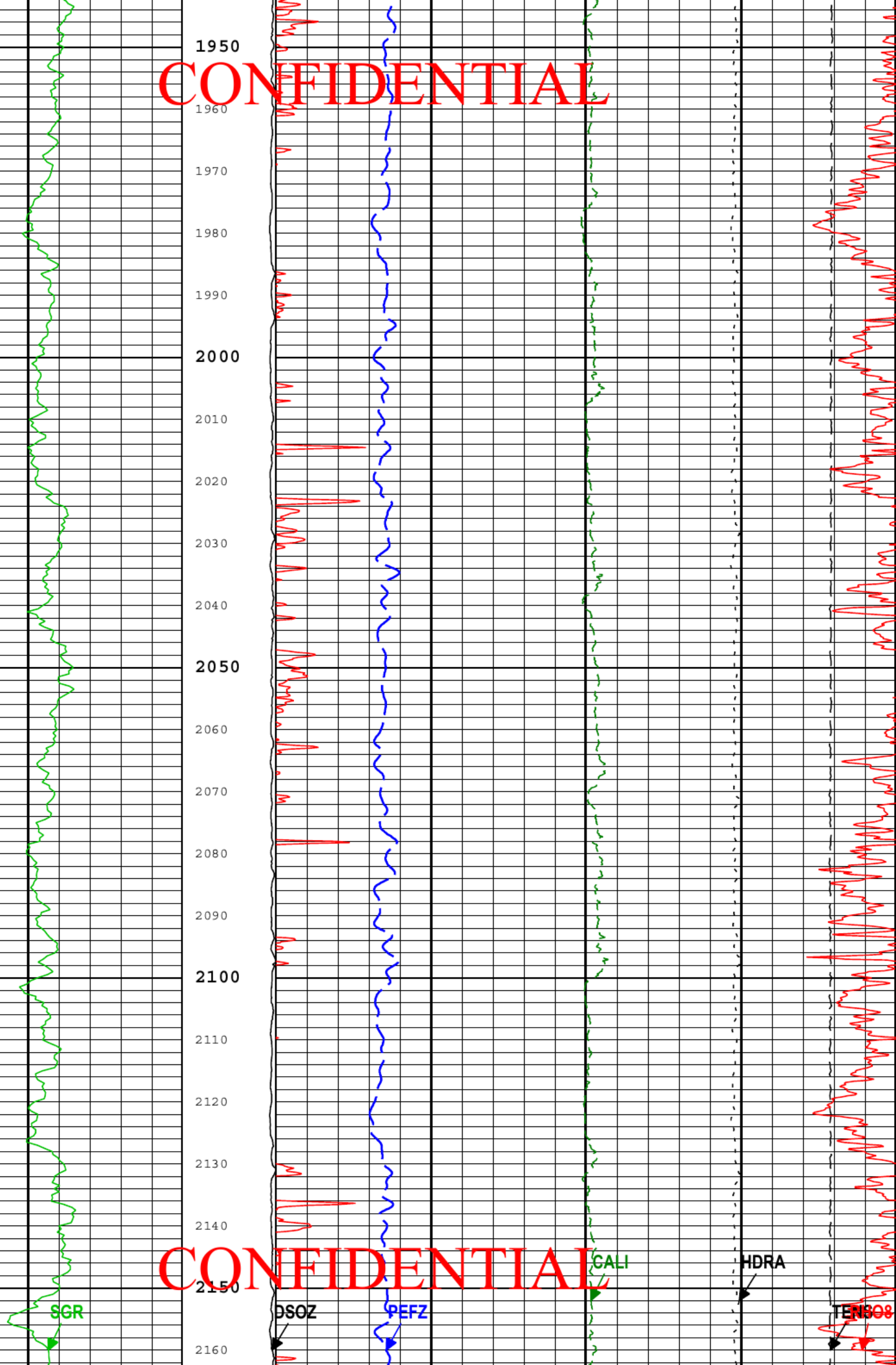
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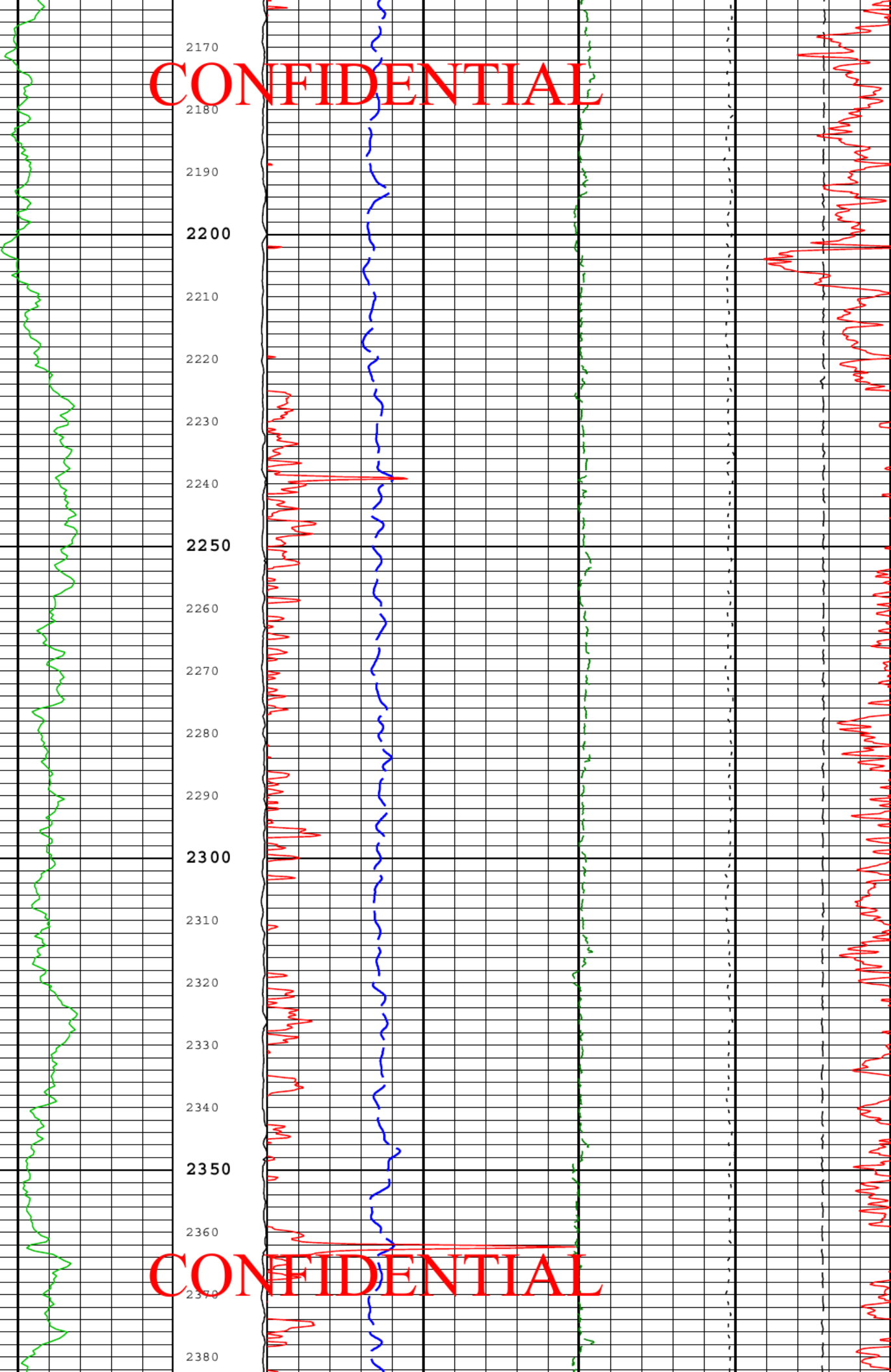
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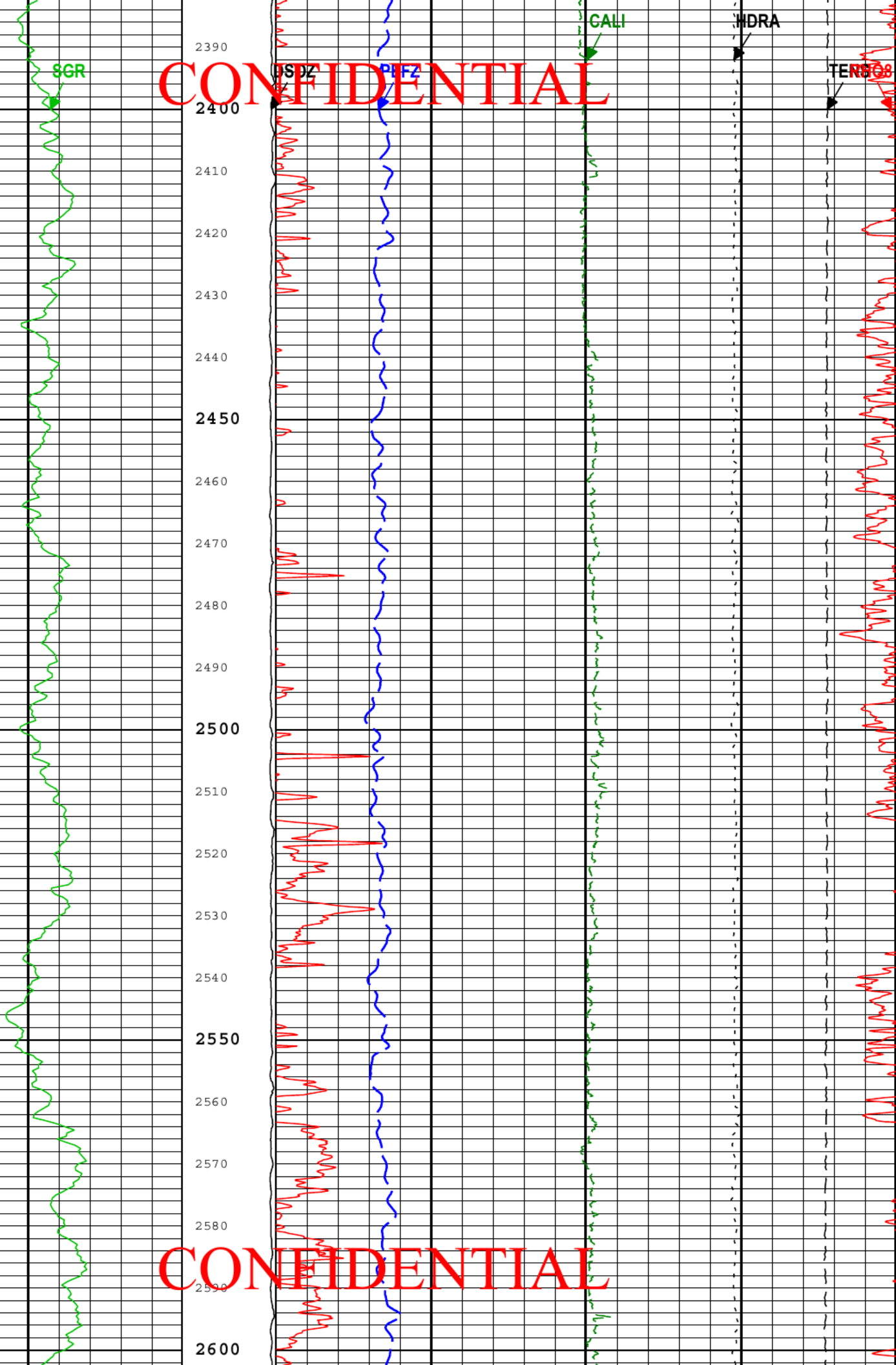
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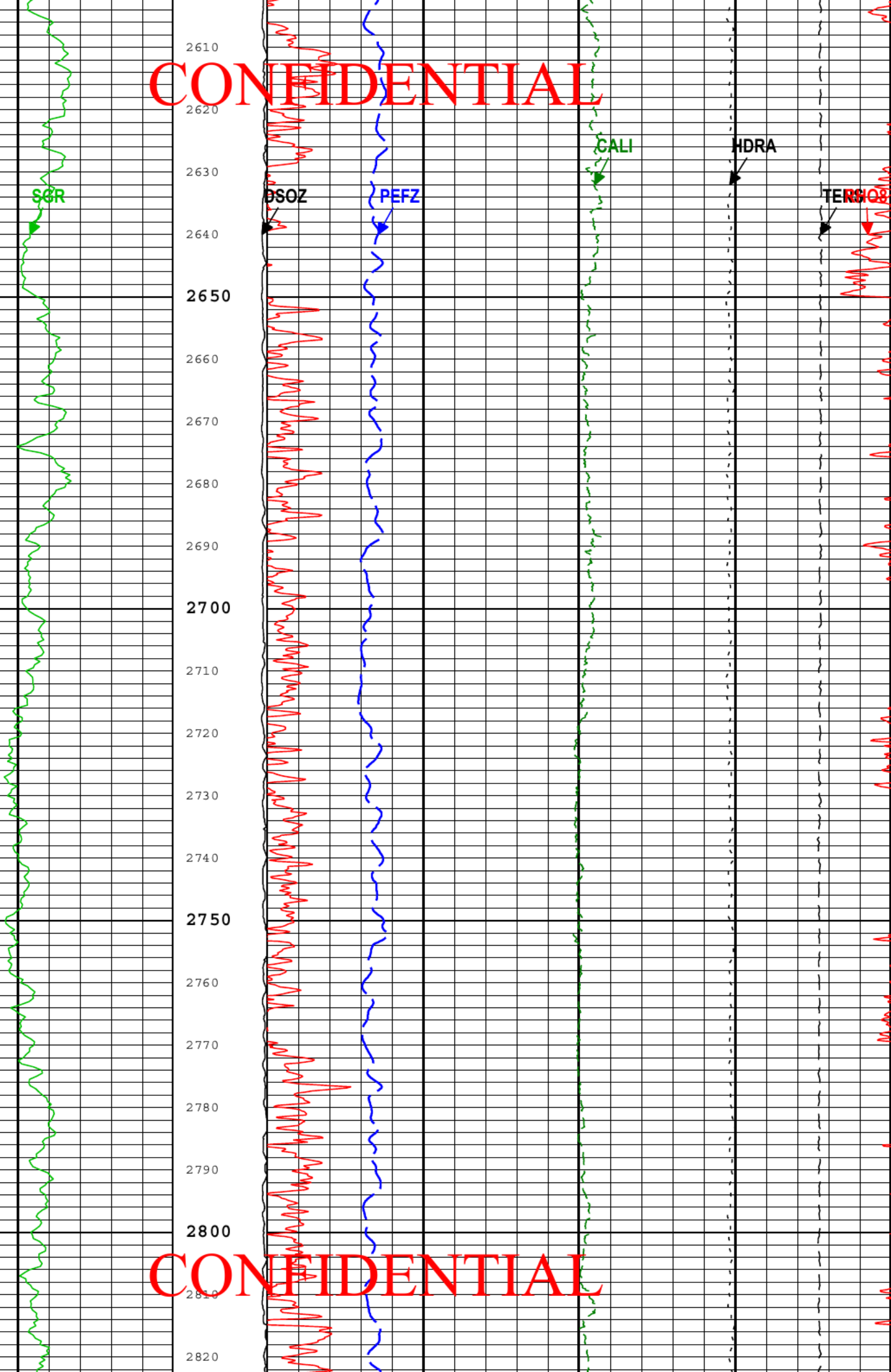
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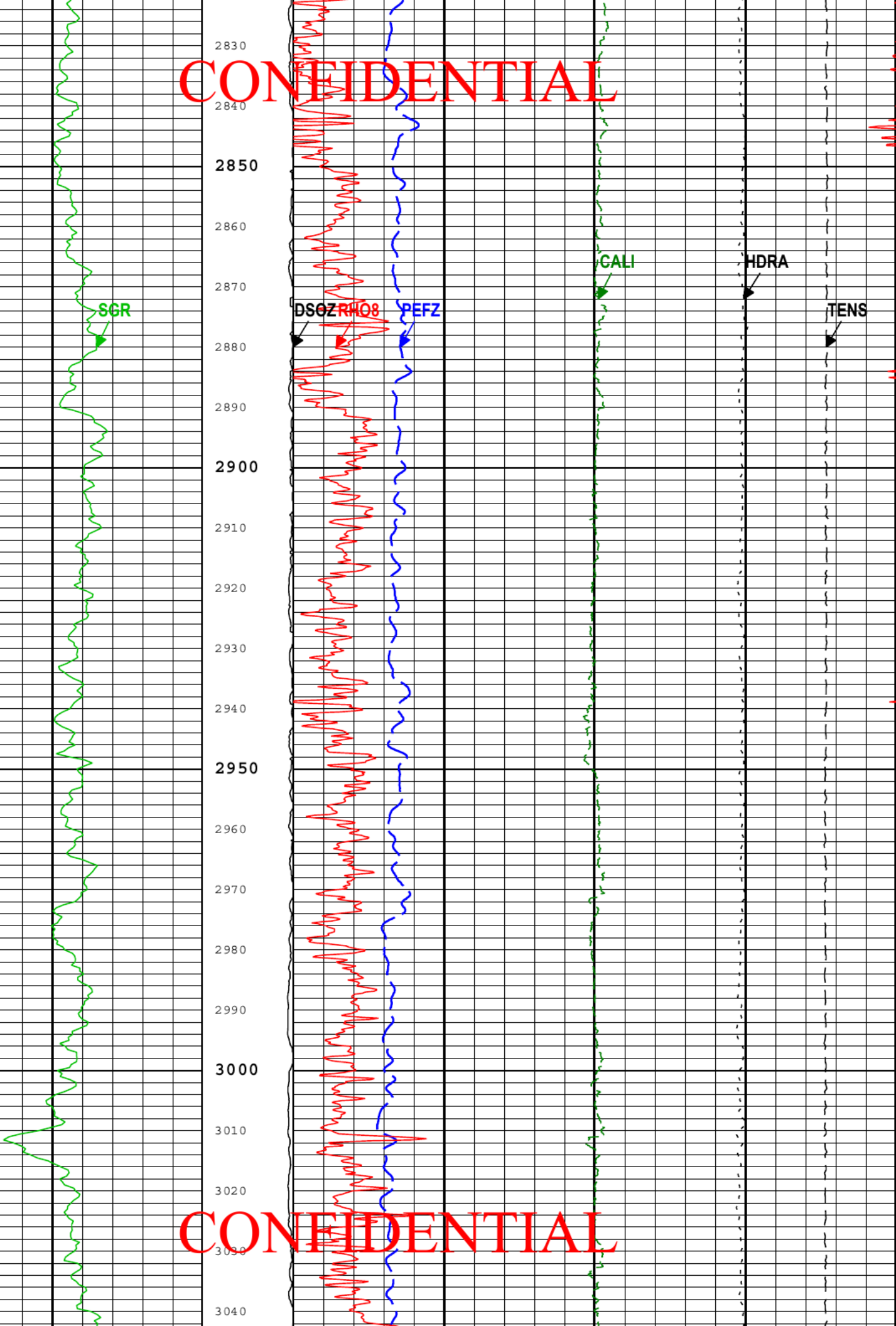
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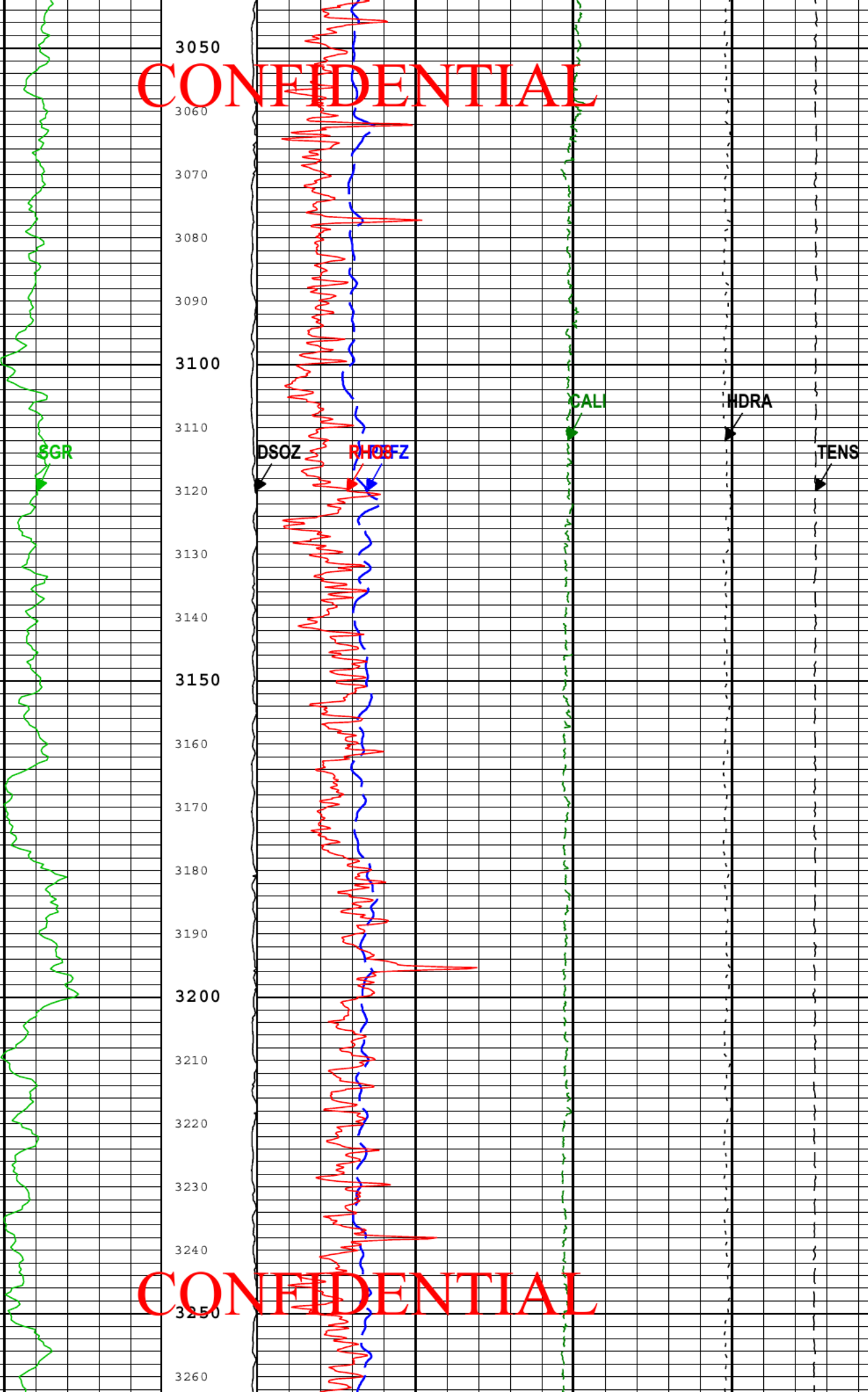


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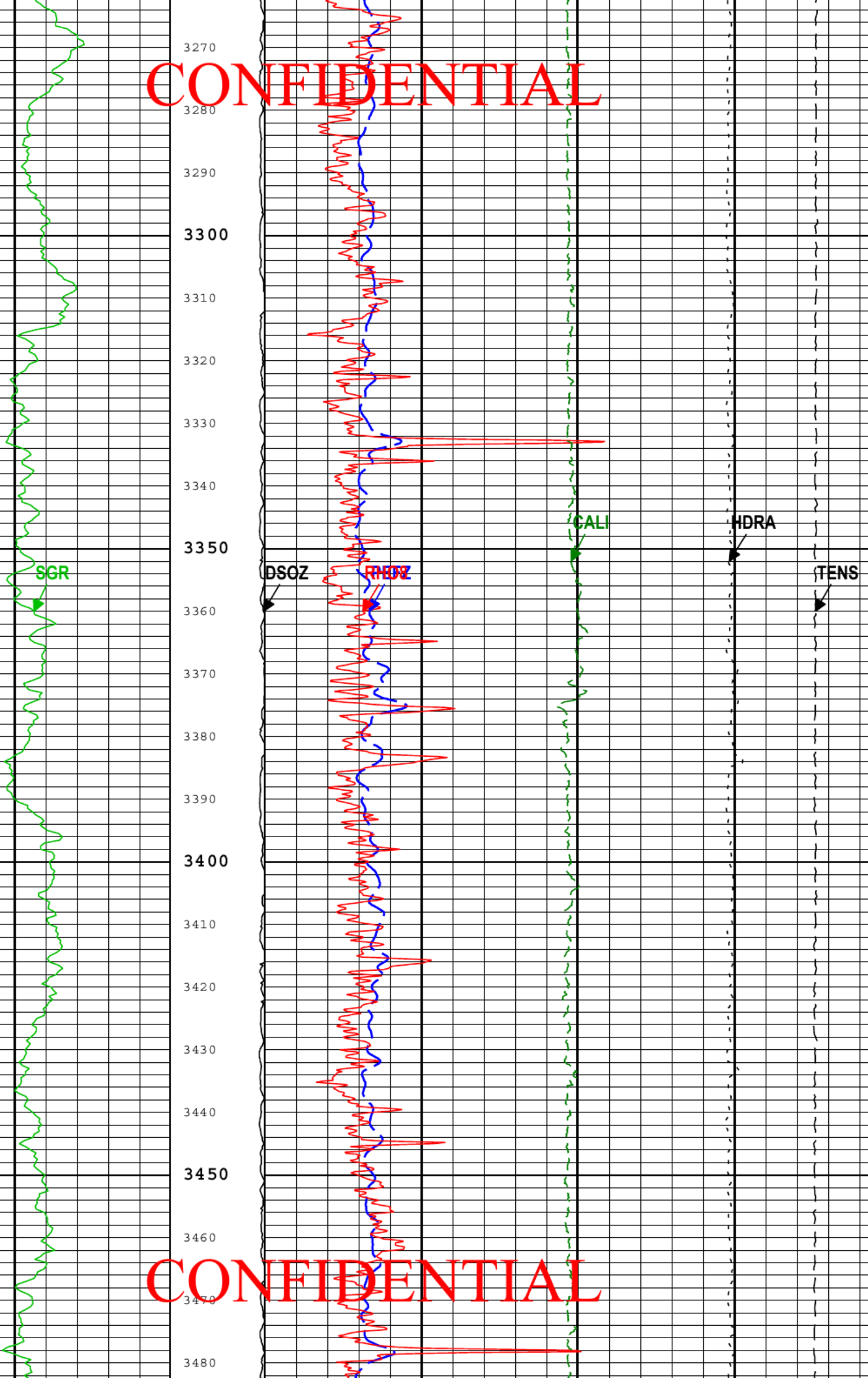
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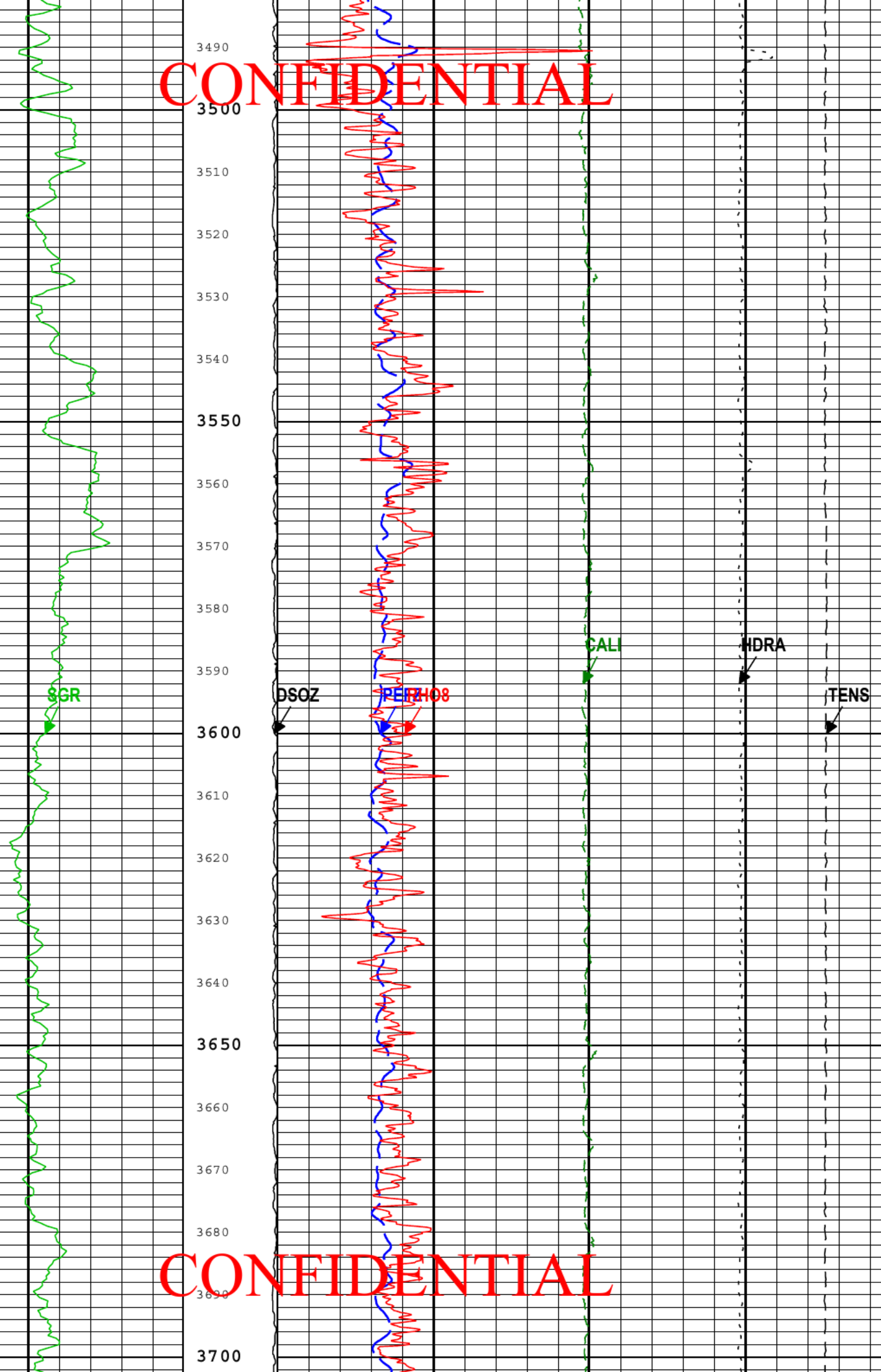
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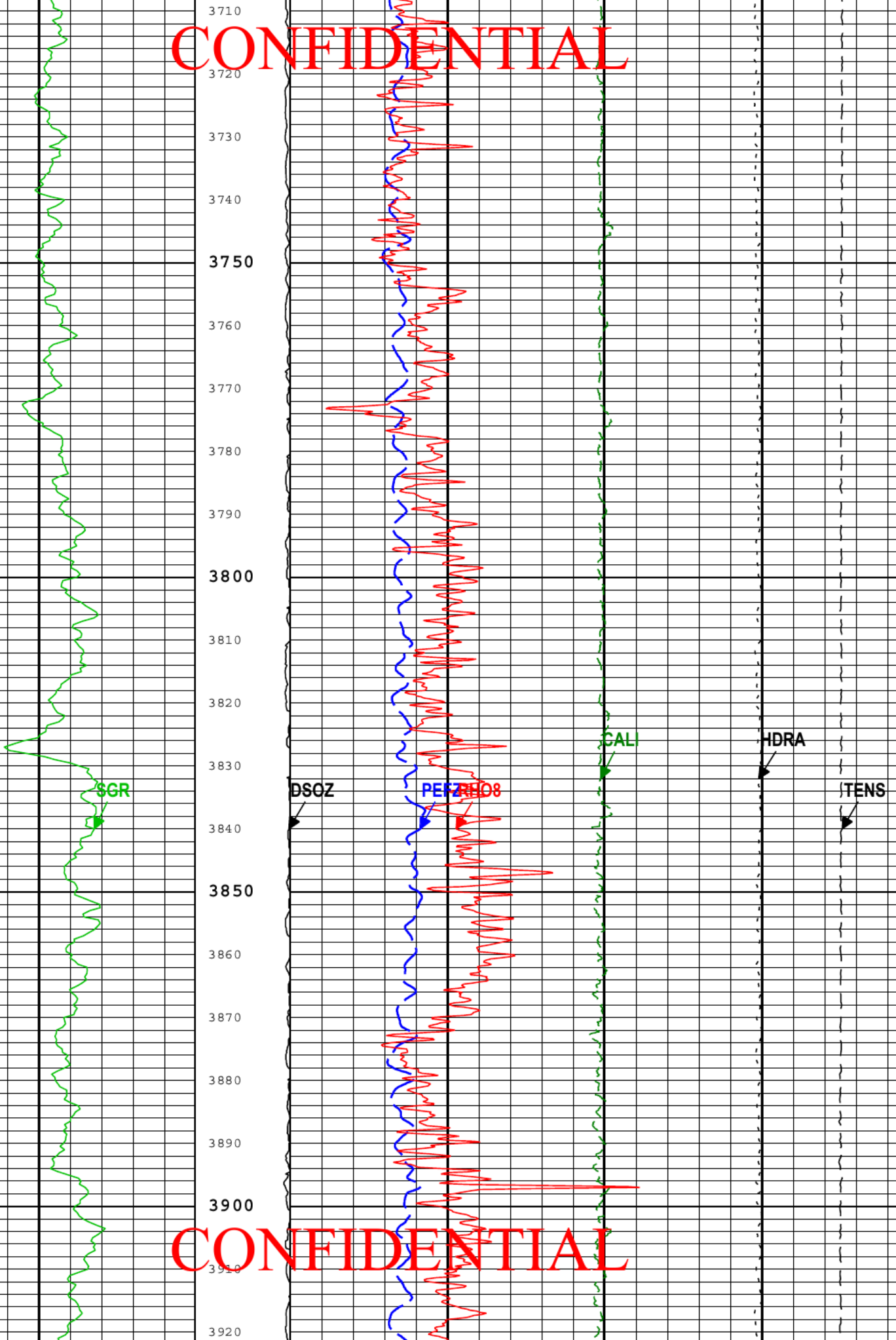
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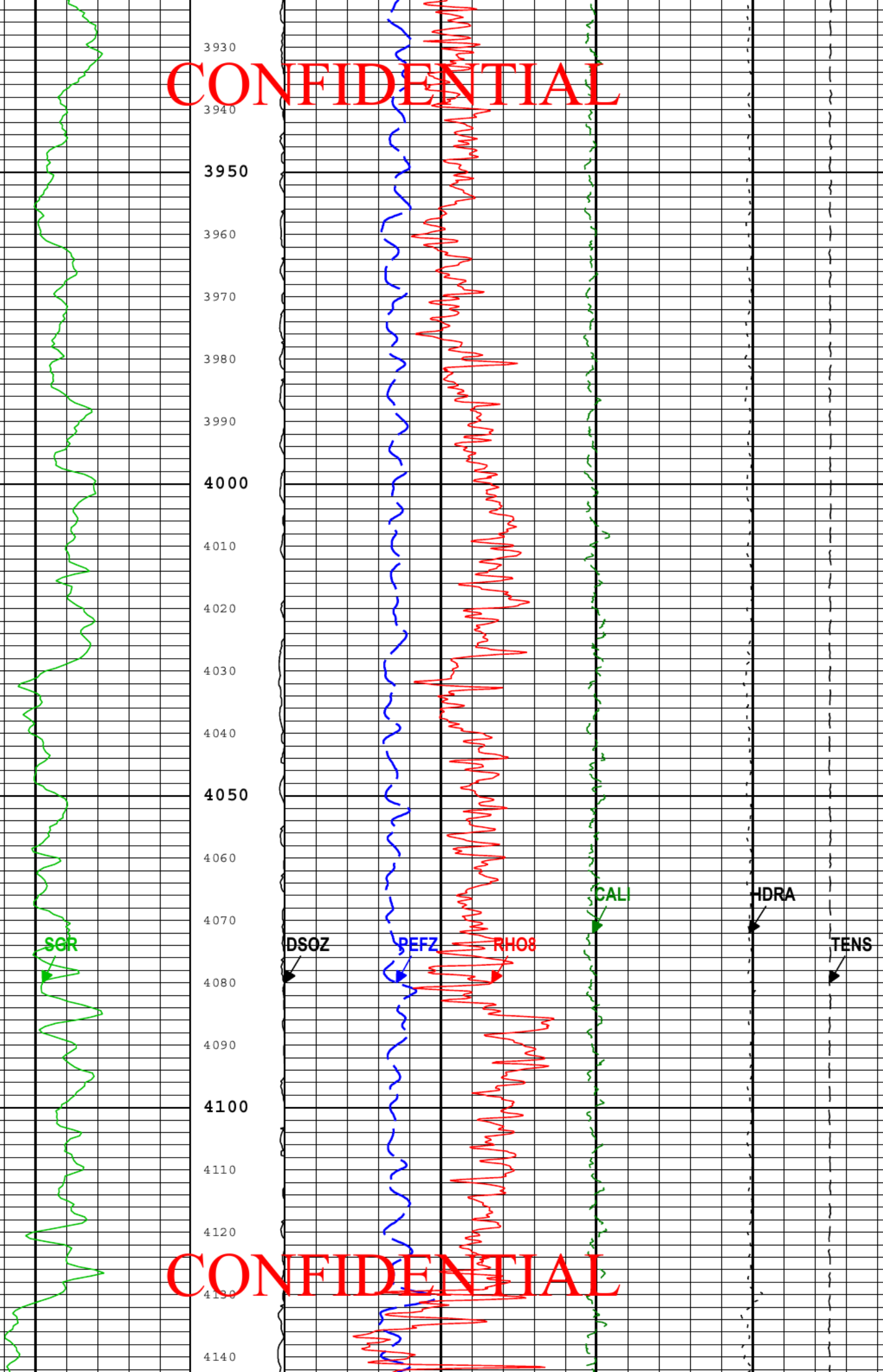
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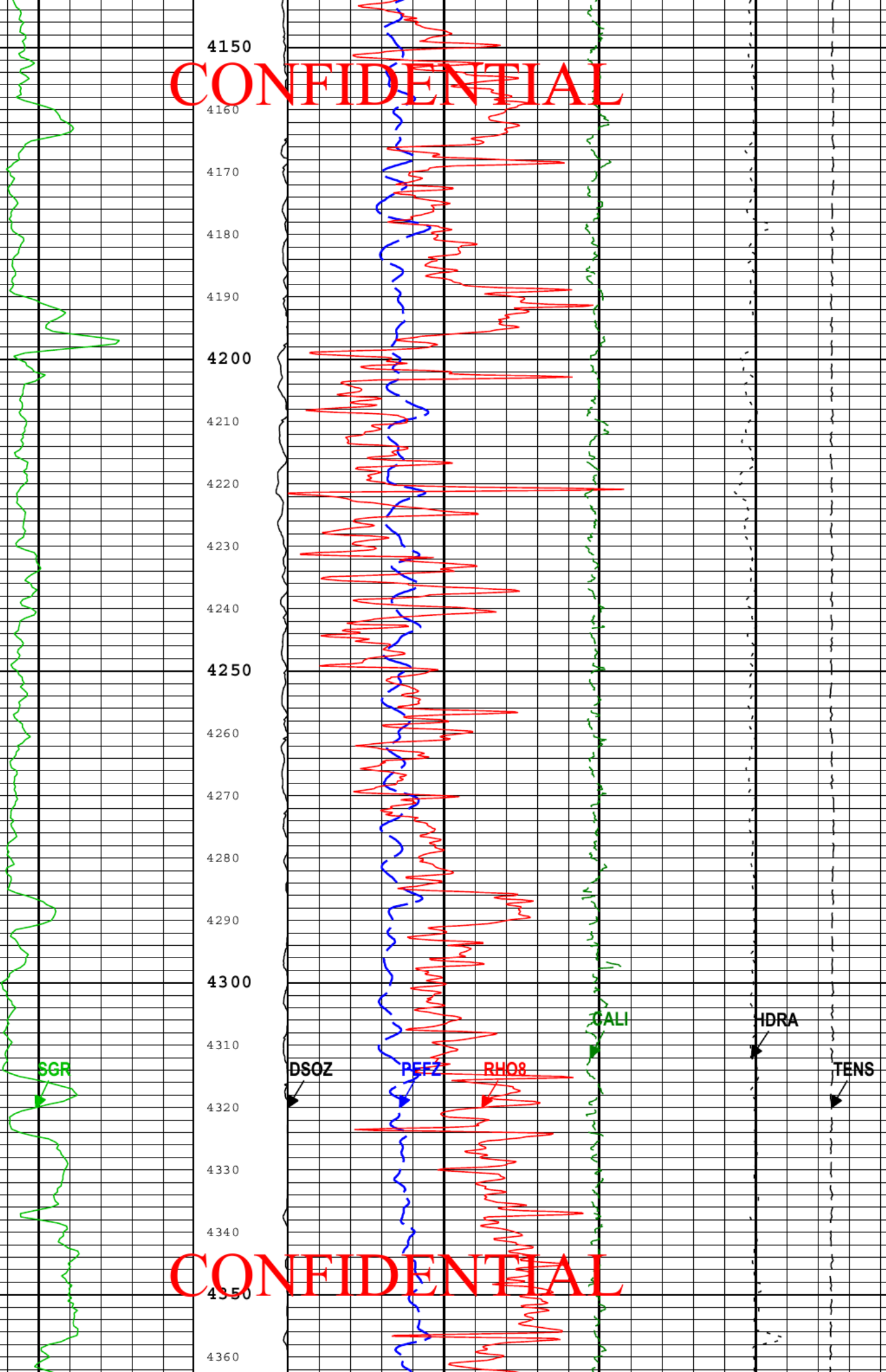
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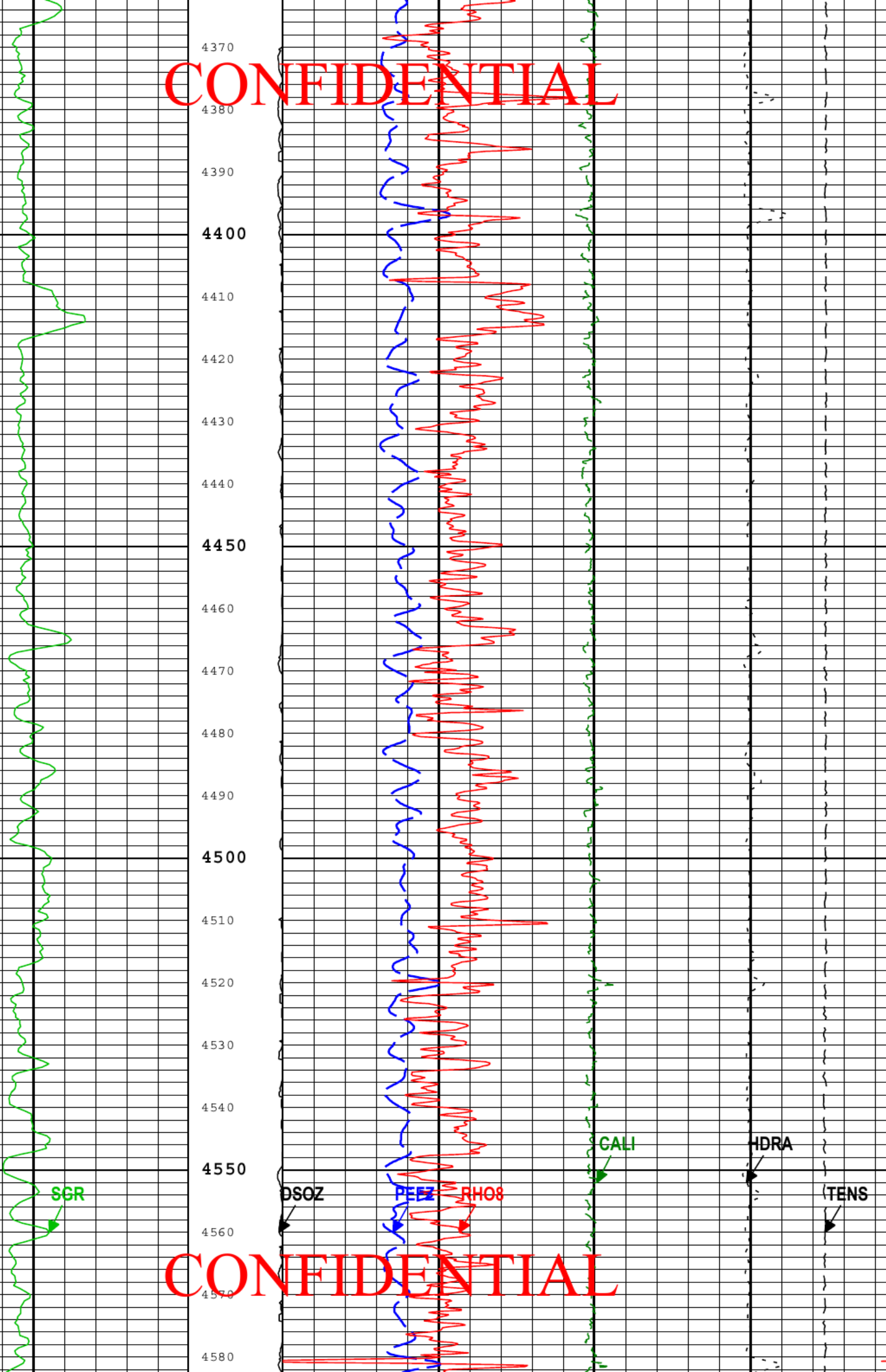
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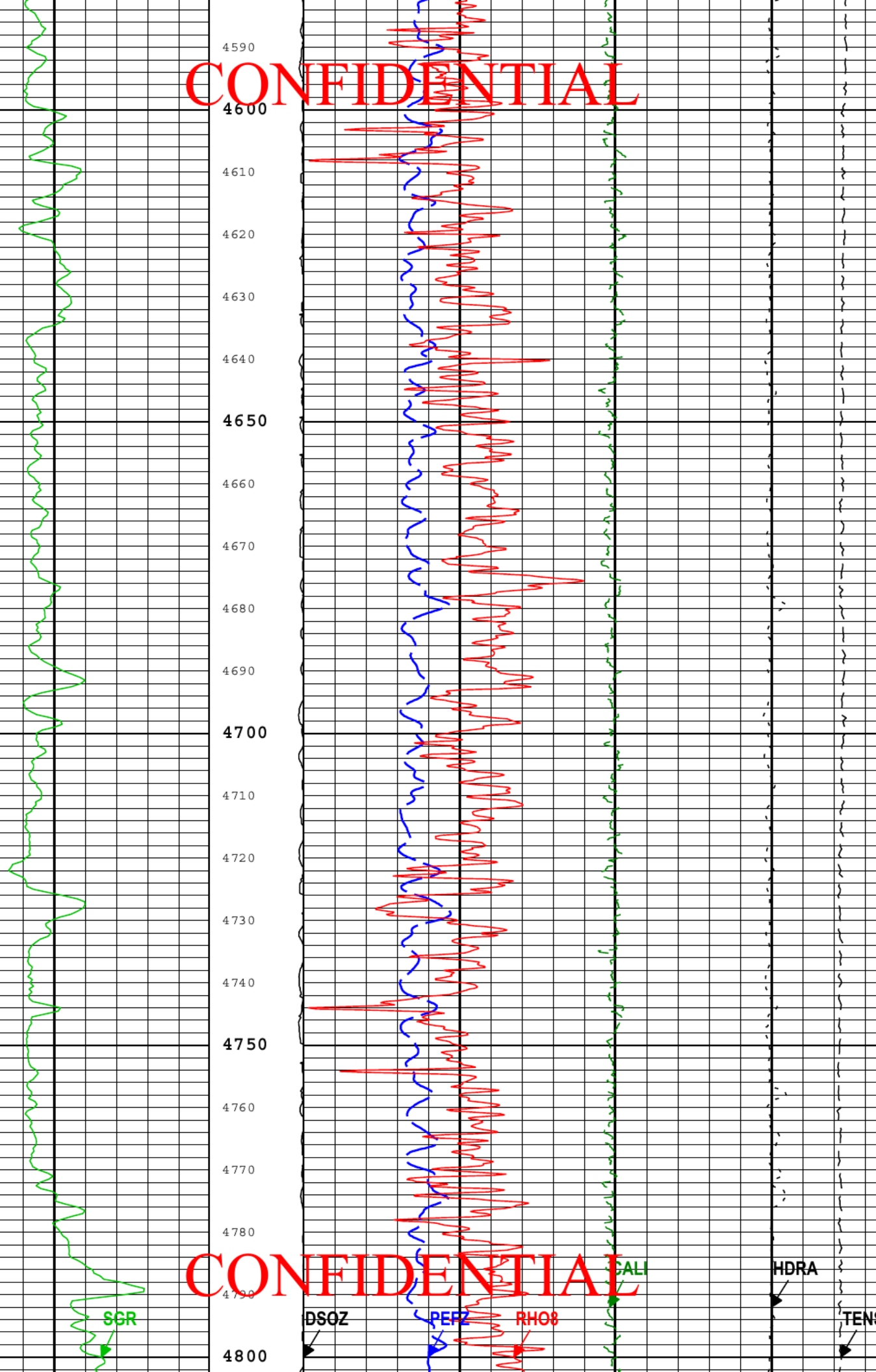
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SGR

DSOZ

PEFZ

RHO8

EALI

HDRA

TENS

4800

4790

4780

4770

4760

4750

4740

4730

4720

4710

4700

4690

4680

4670

4660

4650

4640

4630

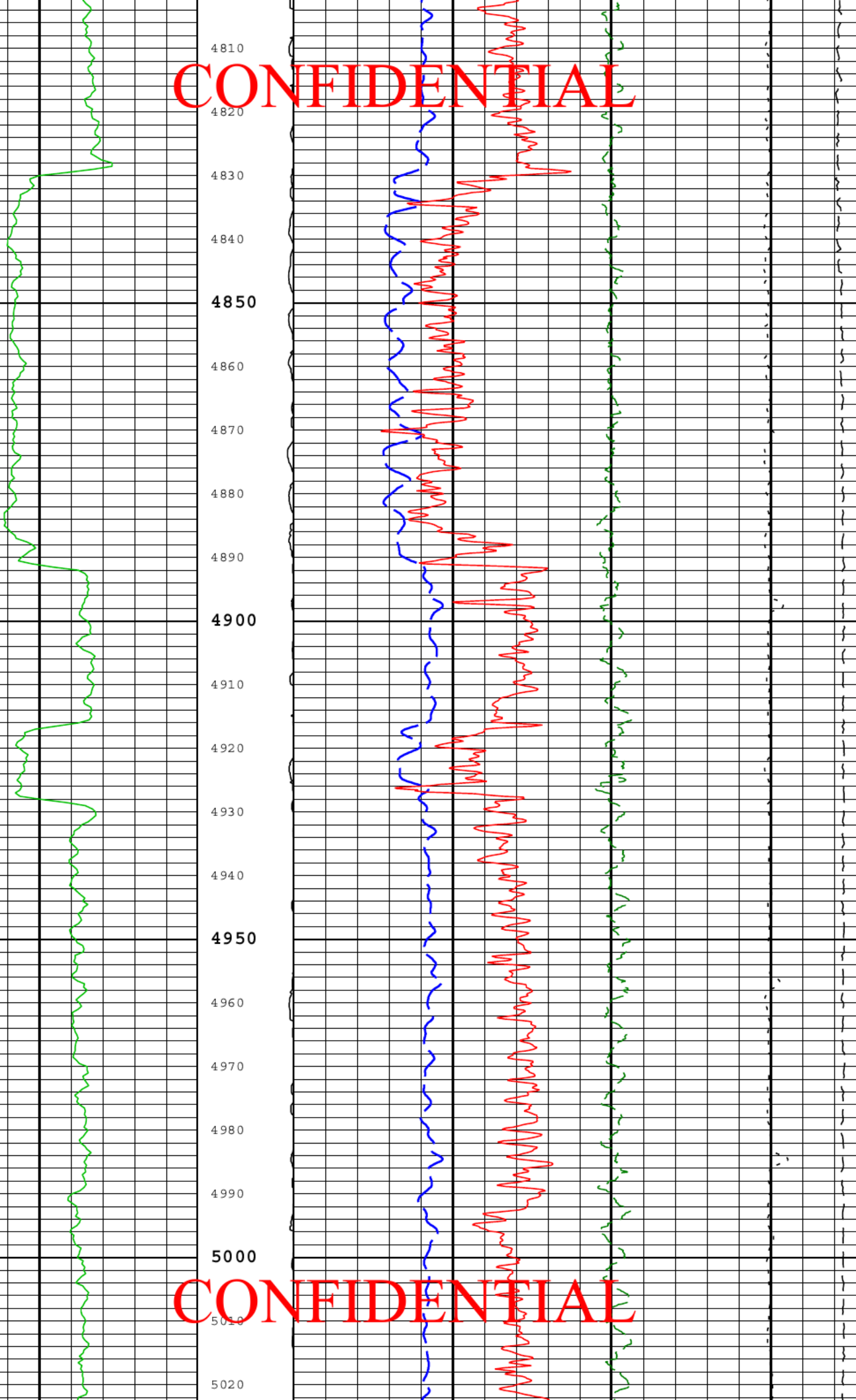
4620

4610

4600

4590

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4810

4820

4830

4840

4850

4860

4870

4880

4890

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4910

4920

4930

4940

4950

4960

4970

4980

4990

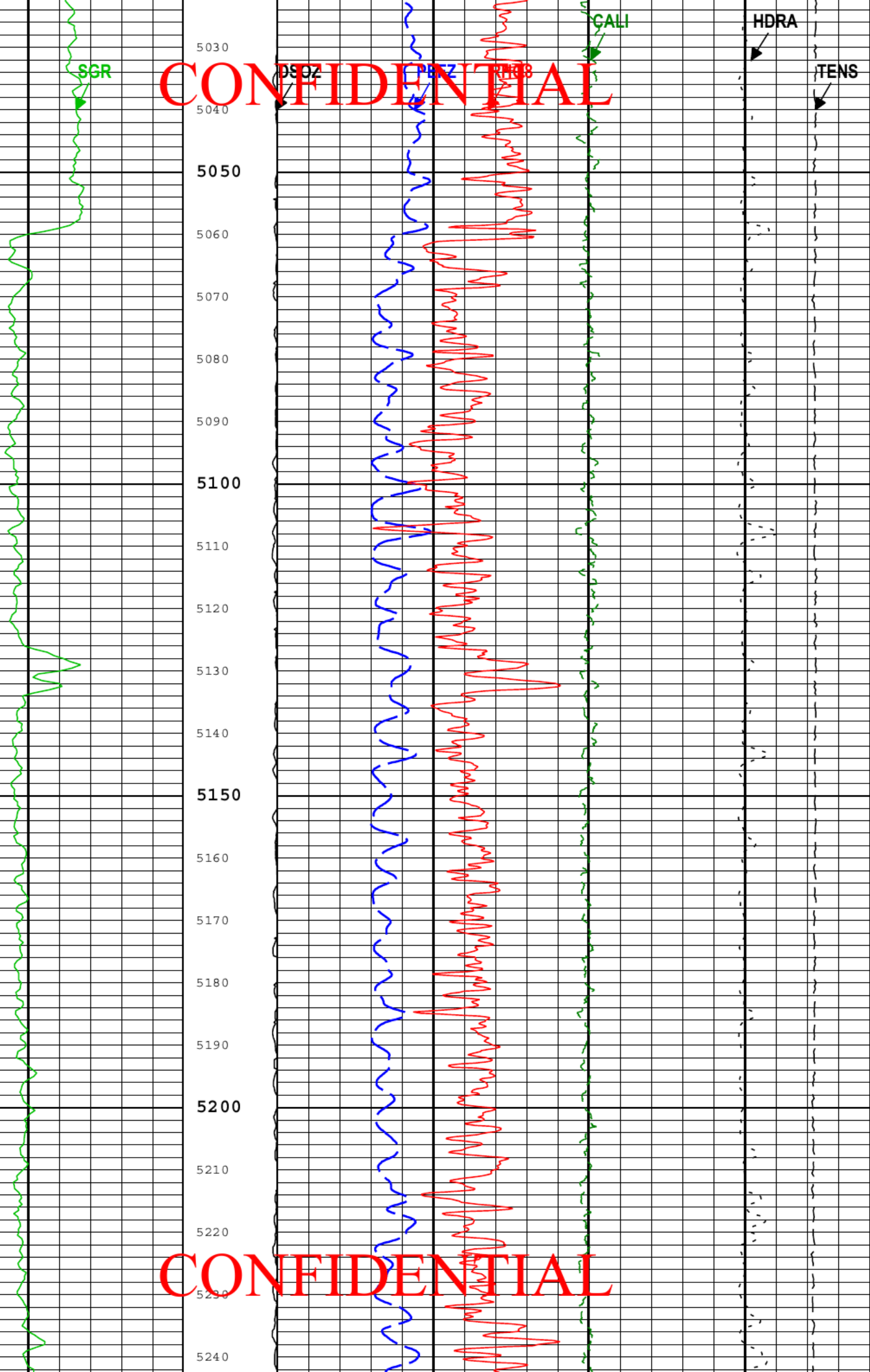
5000

5010

5020

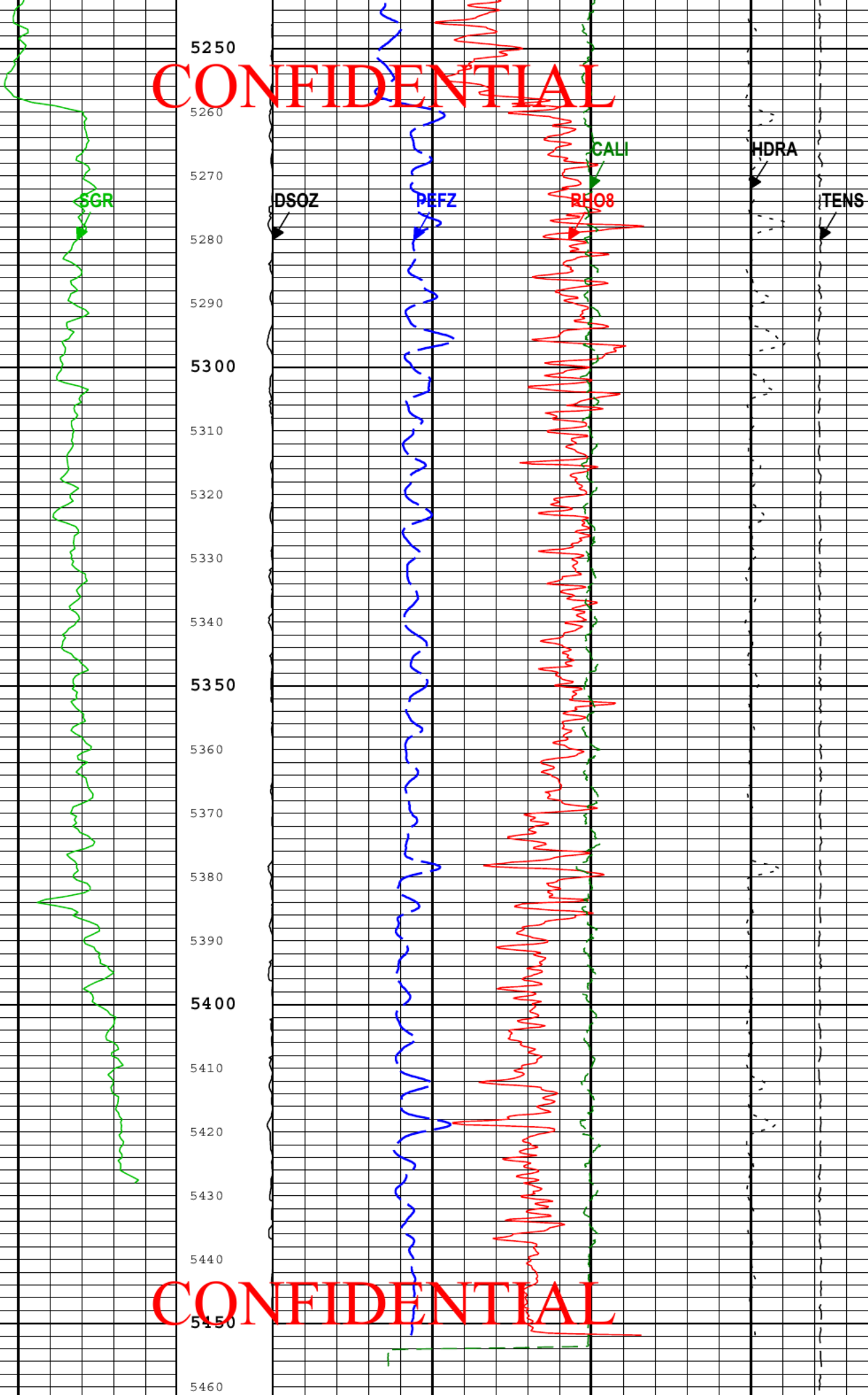
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5470  
5480  
5490  
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Spectroscopy Gamma Ray (SGR) HNGS-BA  
0 gAPI 150

Standard Resolution Density Standoff (DSOZ) HDRS-H  
2 in 0

High Resolution Formation Density (RHO8) HDRS-H  
2 g/cm3 3

Caliper (CALI) HDRS-H  
0 in 17.5

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

Cable Tension (TENS)  
10000 lbf 0

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

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: 06-Sep-2014 09:51:31

### Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	No	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.75	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.125	in
CBLO	Casing Bottom (Logger)	WLSESSION	1082	ft
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9.95	lbm/gal
DFT	Drilling Fluid Type	Borehole	Oil	
DHC	Density Hole Correction	HDRS-H	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-H	High Resolution	
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	

### Tool Control Parameters

Parameter	Description	Tool	Value	Unit
HRGD_BRD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

One

1" Main Pass - Quad Combo

### Software Version

Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_18214-4.0.9163.3001 Patch-Hotfix_Task_Tree_GDI_SP2-20806-4.0.9434.3002

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Computation	Description	Version																																												
Sonic Openhole Ensemble	Sonic Openhole Ensemble	4.0.9360.3000																																												
HENVIR	Computation Ensemble for the HGNS Neutron environmental corrections	4.0.9360.3000																																												
PEQL	Platform Express Quicklook	4.0.9385.3000																																												
DepthCorrection	DepthCorrection	4.0.9433.3000																																												
Tool Elements	Description	Software Version	Firmware Version																																											
HRCC-H	HILT High-Resolution Control Cartridge, 150 degC	4.0.9385.3000	2.0																																											
AZIS	Array Induction Sonde - Z	4.0.9427.3000																																												
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	4.0.9385.3000	2.0																																											
HRGD-H	HILT Resistivity Gamma-Ray Density Device, 150 degC	4.0.9385.3000	3.0																																											
HNGS-BA	HNGS Sonde Element	4.0.9360.3000	2.0																																											
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	4.0.9360.3000	4.0																																											
Pass Summary																																														
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data																																					
One	Log[3]:Up	Up	72.46 ft	5503.13 ft	05-Sep-2014 5:33:14 PM	05-Sep-2014 9:14:35 PM	ON	1.50 ft	No																																					
All depths are referenced to toolstring zero																																														
Log	Company:Alta Mesa Services, LP						Well:ML Investments 1-11																																							
One : Log[3]:Up:S019																																														
Description: Format: Log ( Combo_Fax ) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 06-Sep-2014 09:51:33																																														
Channel	Source	Sampling																																												
AT30	ZAIT-E:AZIS:AZIS	3in																																												
AT60	ZAIT-E:AZIS:AZIS	3in																																												
AT90	ZAIT-E:AZIS:AZIS	3in																																												
CALI	HDRS-H:HRCC-H:HRCC-H	1in																																												
DPH8	HDRS-H:HRMS-H:HRGD-H	2in																																												
NPOR	HGNS-H:HGNS-H:HGNS-H	6in																																												
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in																																												
RWA	PEQL	6in																																												
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in																																												
SPHI	DSL-T-H:SLS-E:SLS-E	6in																																												
STIT	DepthCorrection	6in																																												
TENS	WLWorkflow	6in																																												
TIME_1900	WLWorkflow	0.1in																																												
TIME_1900 - Time Marked every 60.00 (s)																																														
Spectroscopy Gamma Ray (SGR) HNGS-BA		Stuck Tool Indicator, Total (STIT)																																												
0	gAPI 150	0 ft 50																																												
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		Cable Tension (TENS)																																												
0	10	8000 lbf 2000																																												
Apparent Formation Water Resistivity (RWA)		Caliper (CALI) HDRS-H																																												
0.02	ohm.m 200	0 in 17.5																																												
		1050																																												
<table border="1"> <tr> <td colspan="2">Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E</td> <td colspan="2">Crossover</td> </tr> <tr> <td>0.2</td> <td>ohm.m 200</td> <td colspan="2">Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H</td> </tr> <tr> <td colspan="2">Array Induction Two Foot Resistivity A60 (AT60) ZAIT-E</td> <td>0.6</td> <td>ft3/ft3 0</td> </tr> <tr> <td colspan="2">Spectroscopy Gamma Ray (SGR) HNGS-BA</td> <td colspan="2">High Resolution Density Porosity (DPH8) HDRS-H</td> </tr> <tr> <td>0.2</td> <td>ohm.m 200</td> <td colspan="2">Sonic Porosity (SPHI) DSL-T-H</td> </tr> <tr> <td colspan="2">Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H</td> <td>0.6</td> <td>ft3/ft3 0</td> </tr> <tr> <td colspan="2">Apparent Formation Water Resistivity (RWA)</td> <td colspan="2">Cable Tension (TENS)</td> </tr> <tr> <td>0.02</td> <td>ohm.m 200</td> <td>0.2</td> <td>ohm.m 200</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Caliper (CALI) HDRS-H</td> </tr> <tr> <td>0</td> <td>10</td> <td>0.6</td> <td>ft3/ft3 0</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Crossover</td> </tr> </table>			Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E		Crossover		0.2	ohm.m 200	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H		Array Induction Two Foot Resistivity A60 (AT60) ZAIT-E		0.6	ft3/ft3 0	Spectroscopy Gamma Ray (SGR) HNGS-BA		High Resolution Density Porosity (DPH8) HDRS-H		0.2	ohm.m 200	Sonic Porosity (SPHI) DSL-T-H		Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		0.6	ft3/ft3 0	Apparent Formation Water Resistivity (RWA)		Cable Tension (TENS)		0.02	ohm.m 200	0.2	ohm.m 200			Caliper (CALI) HDRS-H		0	10	0.6	ft3/ft3 0			Crossover	
Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E		Crossover																																												
0.2	ohm.m 200	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H																																												
Array Induction Two Foot Resistivity A60 (AT60) ZAIT-E		0.6	ft3/ft3 0																																											
Spectroscopy Gamma Ray (SGR) HNGS-BA		High Resolution Density Porosity (DPH8) HDRS-H																																												
0.2	ohm.m 200	Sonic Porosity (SPHI) DSL-T-H																																												
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		0.6	ft3/ft3 0																																											
Apparent Formation Water Resistivity (RWA)		Cable Tension (TENS)																																												
0.02	ohm.m 200	0.2	ohm.m 200																																											
		Caliper (CALI) HDRS-H																																												
0	10	0.6	ft3/ft3 0																																											
		Crossover																																												



Casing Shoe @ 1082'

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1100  
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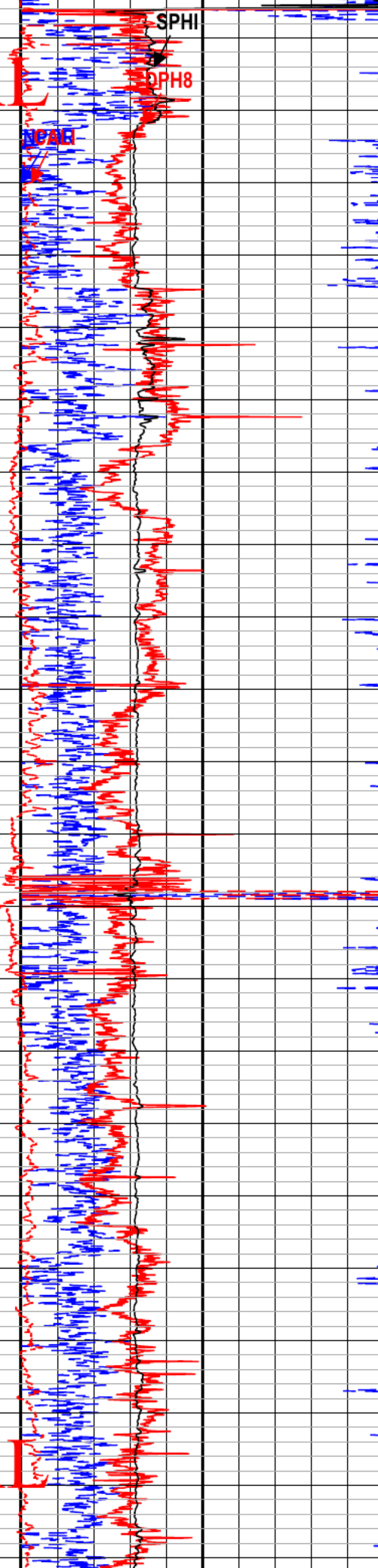
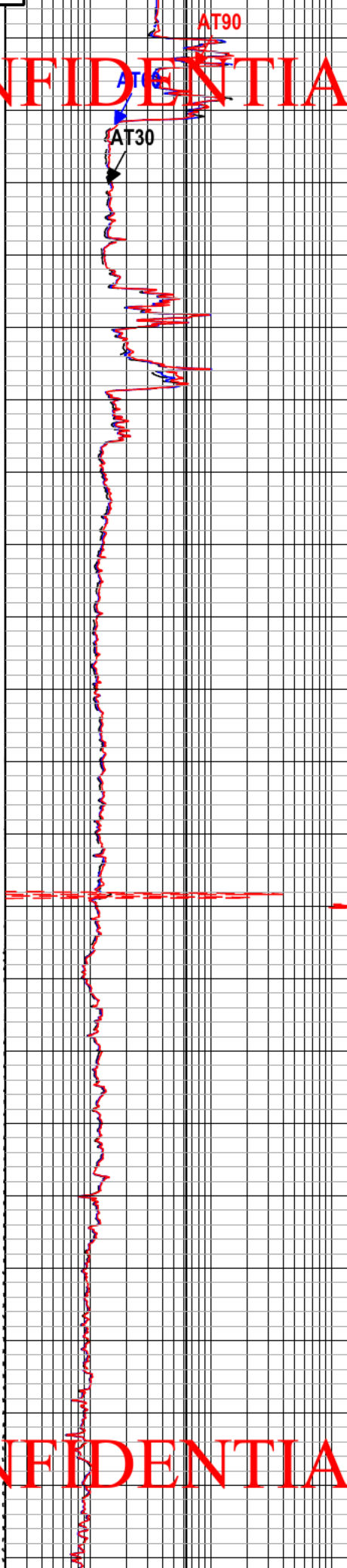
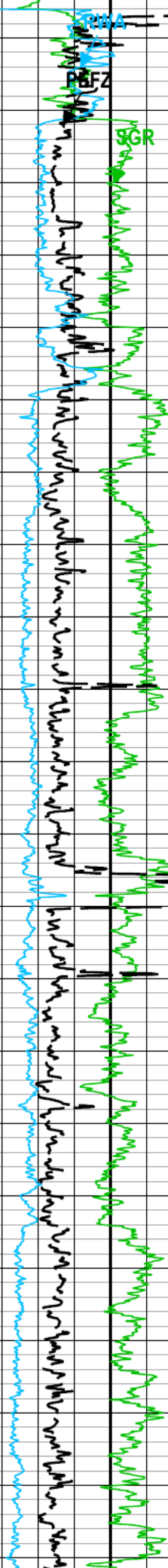
AT90

SPHI

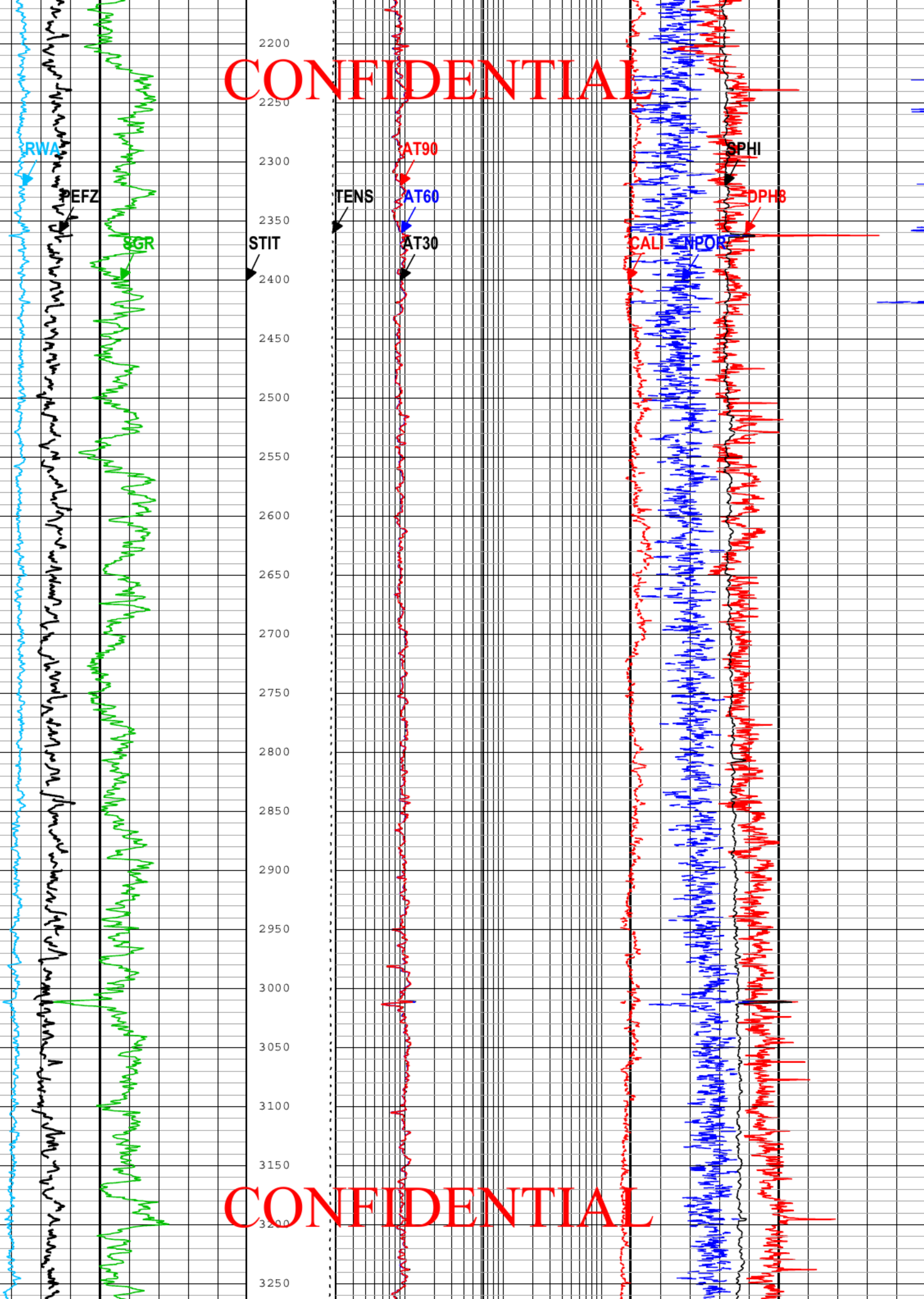
DPH8

AT30

MPAI



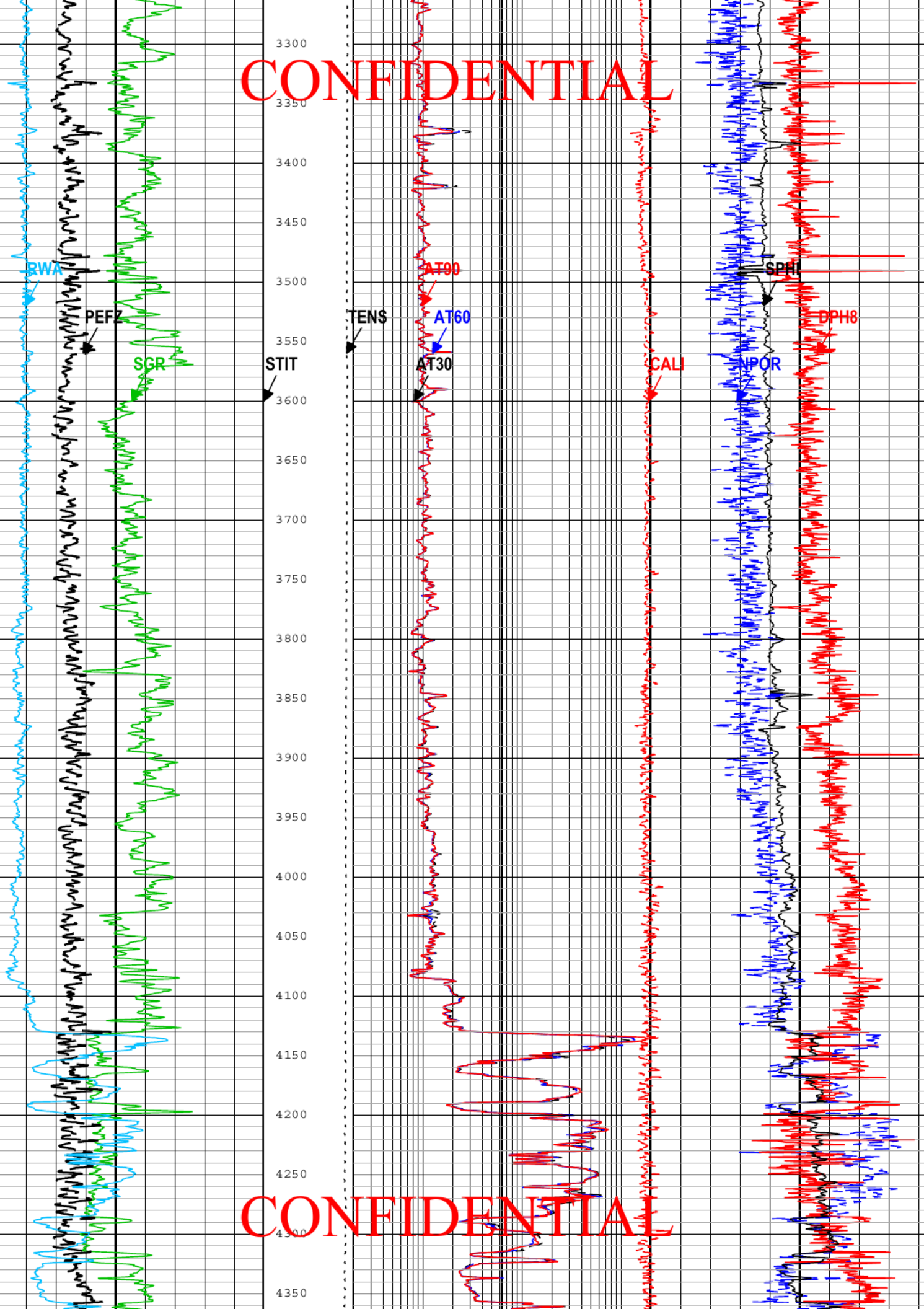
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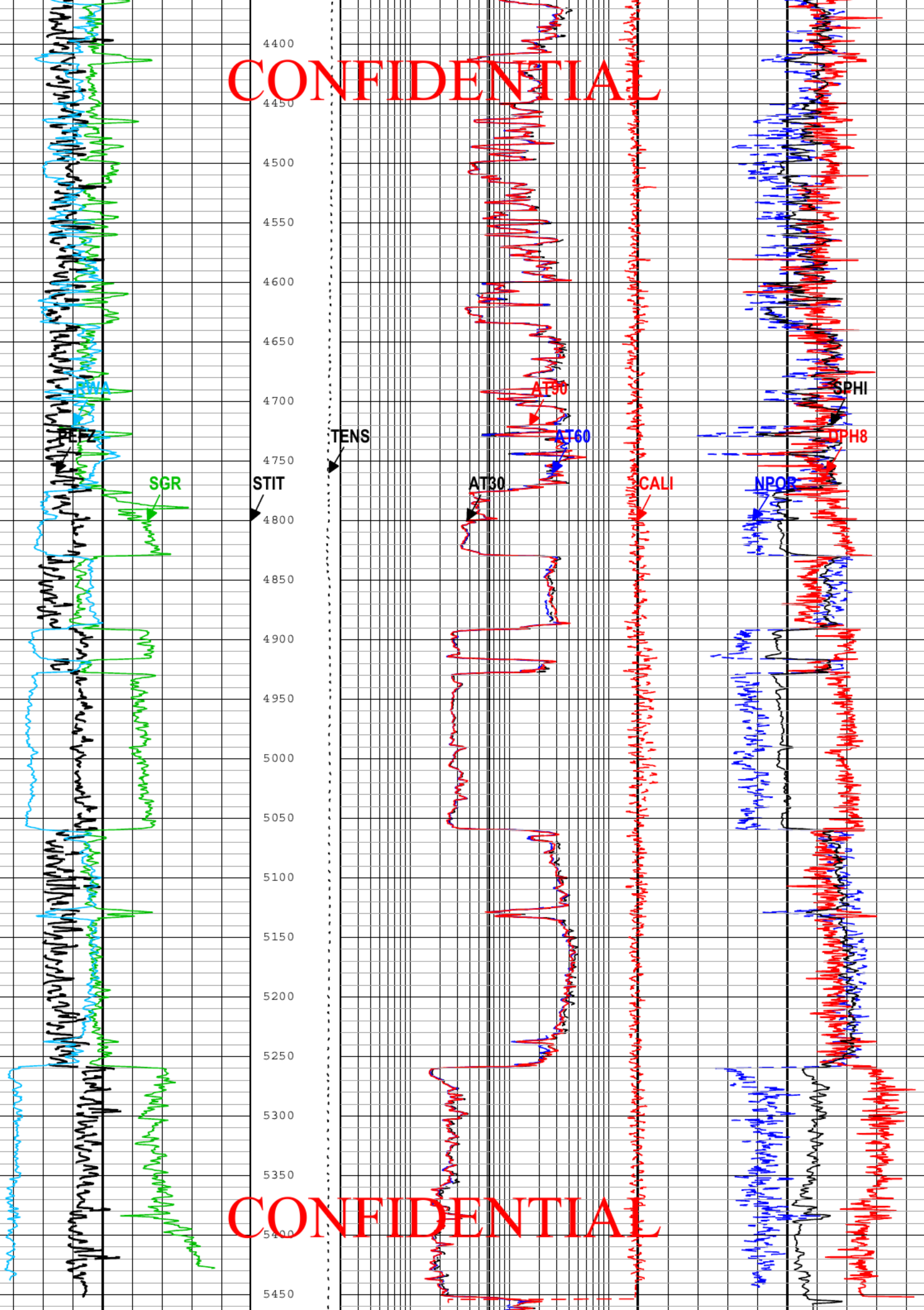


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Spectroscopy Gamma Ray (SGR) HNGS-BA		Stuck Tool Indicator Total (STT)
0	gAPI	150
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		0 ft 50
0		10
Apparent Formation Water Resistivity (RWA)		Cable Tension (TENS)
0.02	ohm.m	8000 lbf 2000
		200

Caliper (CALI) HDRS-H		
CONFIDENTIAL		
Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E		
0.2	ohm.m	200
Array Induction Two Foot Resistivity A60 (AT60) ZAIT-E		
0.6	ft3/ft3	0
0.2	ohm.m	200
Array Induction Two Foot Resistivity A90 (AT90) ZAIT-E		
0.6	ft3/ft3	0
0.2	ohm.m	200
0.6	ft3/ft3	0

Crossover	
Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H	
0.6	ft3/ft3
High Resolution Density Porosity (DPH8) HDRS-H	
0.6	ft3/ft3
Sonic Porosity (SPHI) DSLT-H	
0.6	ft3/ft3

TIME\_1900 - Time Marked every 60.00 (s)

Description: Format: Log (Combo\_Fax) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 06-Sep-2014 09:51:33

### Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
ABHME	Array Induction Extended Borehole Correction Mode	ZAIT-E	Compute OBM Plus Dip Normal	
ACDE	Array Induction Casing Detection Enable	ZAIT-E	Yes	
AOFFX	X Accelerometer Offset	GPIT-F	0	ft/s2
AOFFY	Y Accelerometer Offset	GPIT-F	0	ft/s2
AOFFZ	Z Accelerometer Offset	GPIT-F	-0.02	ft/s2
AROT	Array Induction Rotation Selector	ZAIT-E	North	
BARI	Barite Mud Presence Flag	Borehole	No	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	220	degF
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	0	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.125	in
CBLO	Casing Bottom (Logger)	WLSESSION	1082	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
CDTS	Correction for Delta-T Shale, Empirical	Borehole	100	us/ft
DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DETE	Delta-T Detection	DSL-T-H	E2	
DFD	Drilling Fluid Density	Borehole	9.95	lbm/gal
DFT	Drilling Fluid Type	Borehole	Oil	
DHC	Density Hole Correction	HDRS-H	Bit Size	
DTCM	Delta-T Computation Mode	DSL-T-H	Full	
DTF	Delta-T Fluid	Borehole	189	us/ft
DTM	Delta-T Matrix	Borehole	56	us/ft
FD	Fluid Density	Borehole	1	g/cm3
FOFFX	X Magnetometer Offset	GPIT-F	0	mT
FOFFY	Y Magnetometer Offset	GPIT-F	0	mT
FOFFZ	Z Magnetometer Offset	GPIT-F	0	mT
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	
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
ICMO	Inclinometry Computation Mode	GPIT-F	Automatic Selection	
LOG_SPEED_RNG	Logging Speed Range	GPIT-F	Normal (600 ft/h - 3600 ft/h)	
M	Exponent M of the Archie Formation Factor - Porosity Equation	Borehole	2	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH-H	120	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
MDEN	Matrix Density for Density Porosity	Borehole	2.65	g/cm3
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLTH-H	100	
N	N Exponent in SW Formula	Borehole	2	
NMSG	Near Minimum Sliding Gate	DSLTH-H	140	us
NPRM	HRDD Nuclear Processing Mode	HDRS-H	High Resolution	
RW	Connate Water Resistivity	Borehole	1	ohm.m
SGAD	Sliding Gate Status	DSLTH-H	On	
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	
SOCO	Standoff Correction Option	HGNS-H	Yes	
SPFS	Sonic Porosity Formula	Borehole	Raymer-Hunt	
SPSO	Sonic Porosity Source	DSLTH-H	DT	
TD	Total Measured Depth	Borehole	5488	ft
TWS	Connate Water Temperature	Borehole	68	degF
USER_LOCB	User-supplied values for Magnetic Flux Density	WLSESSION	52970.05	nT
USER_MDEC	User-supplied values for Magnetic Declination	WLSESSION	13.96	deg
USER_MDIP	User-supplied values for Magnetic Dip Angle	WLSESSION	67.54	deg

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## Tool Control Parameters

Parameter	Description	Tool	Value	Unit
DSLTH_MODE	DSLTH Acquisition Mode	DSLTH-H	BHC	
DSLTH_RATE	DSLTH Firing Rate	DSLTH-H	15 Hz	
DTFS	DSLTH Telemetry Frame Size	DSLTH-H	536	
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

## One

### 5" Main Pass - Quad Combo

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	72.46 ft	5503.13 ft	05-Sep-2014 5:33:14 PM	05-Sep-2014 9:14:35 PM	ON	1.50 ft	No

All depths are referenced to toolstring zero

<b>Log</b>	Company: Alta Mesa Services, LP	Well: ML Investments 1-11
	One : Log[3]:Up:S019	

Description: Format: Log ( Combo\_Fax ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 06-Sep-2014 09:51:34

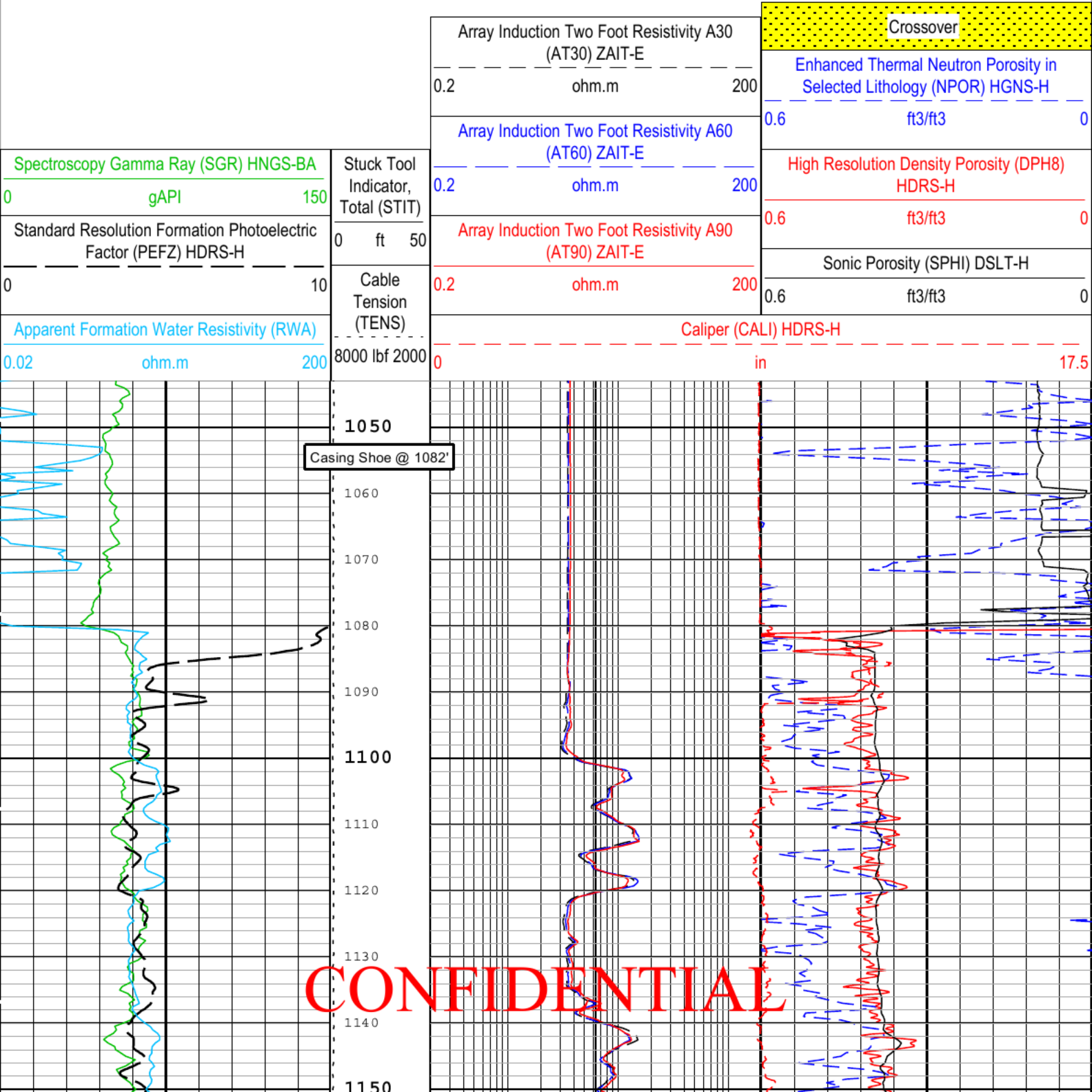
Channel	Source	Sampling
AT30	ZAIT-E:AZIS:AZIS	3in
AT60	ZAIT-E:AZIS:AZIS	3in

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AT90	ZAIT-E:AZIS:AZIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPH8	HDRS-H:HRMS-H:HRGD-H	2in
NPOR	HGNS-H:HGNS-H:HGNS-H	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
RWA	PEQL	6in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
SPHI	DSLT-H:SLS-E:SLS-E	6in
STIT	DepthCorrection	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

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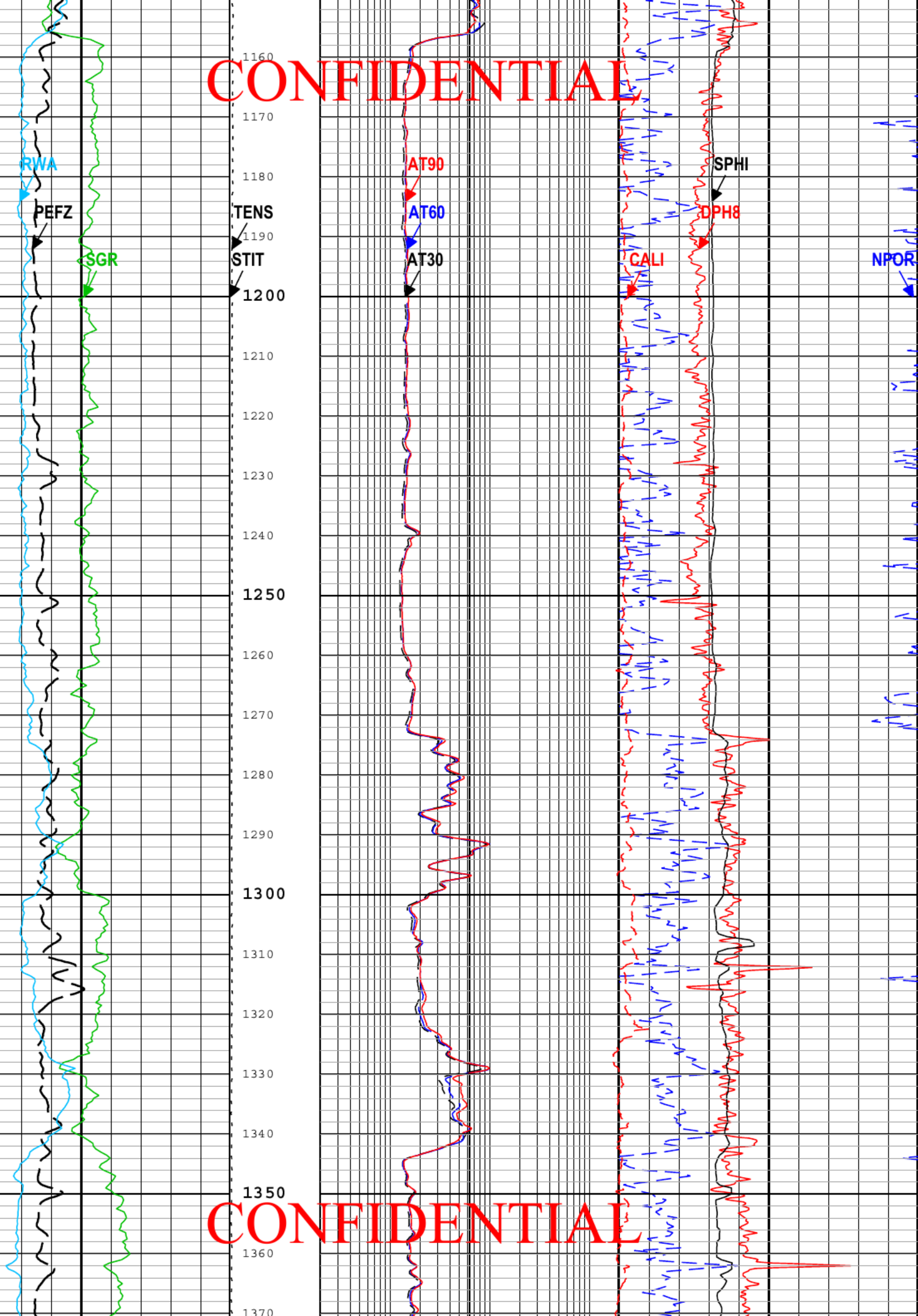
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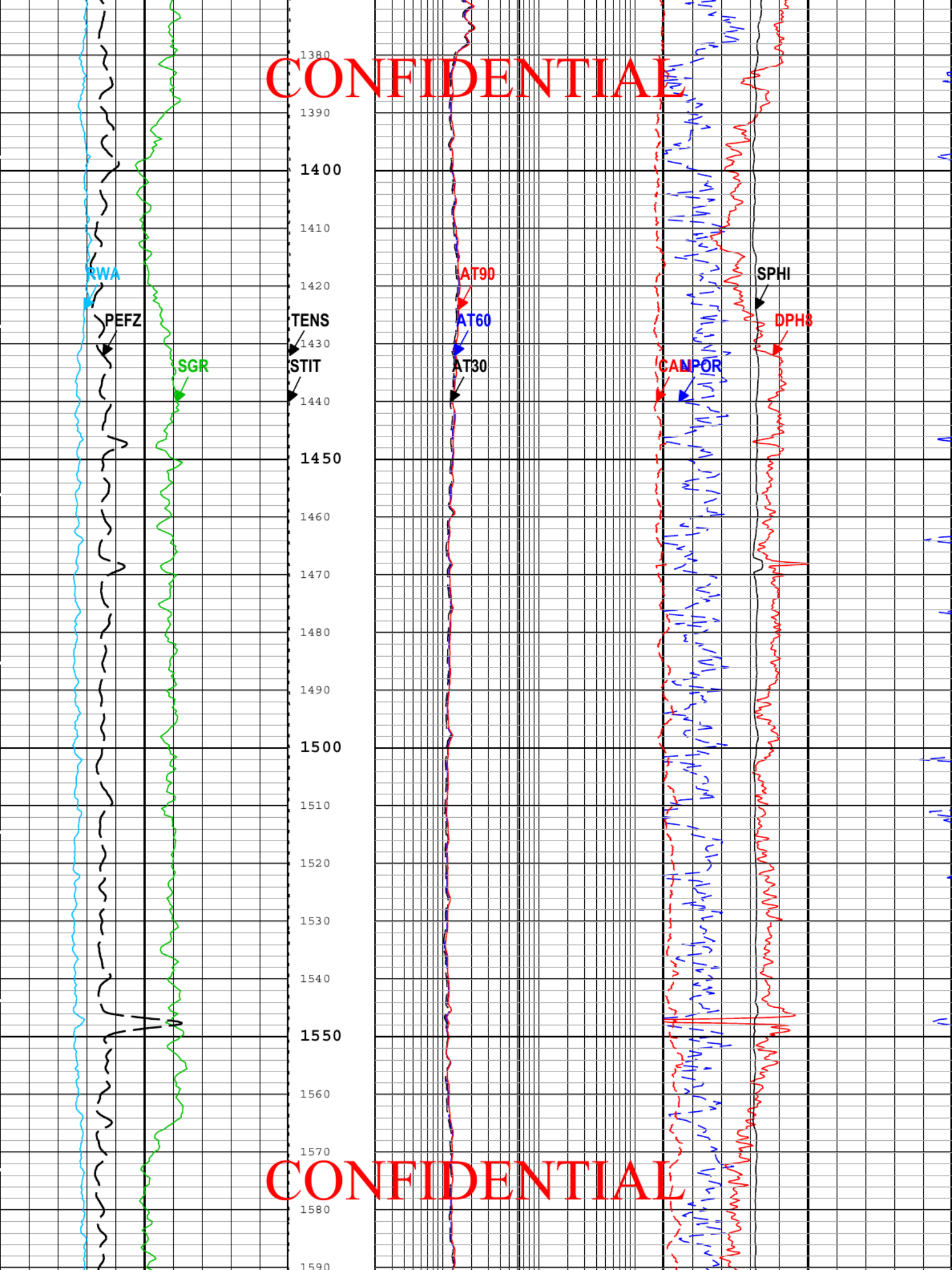


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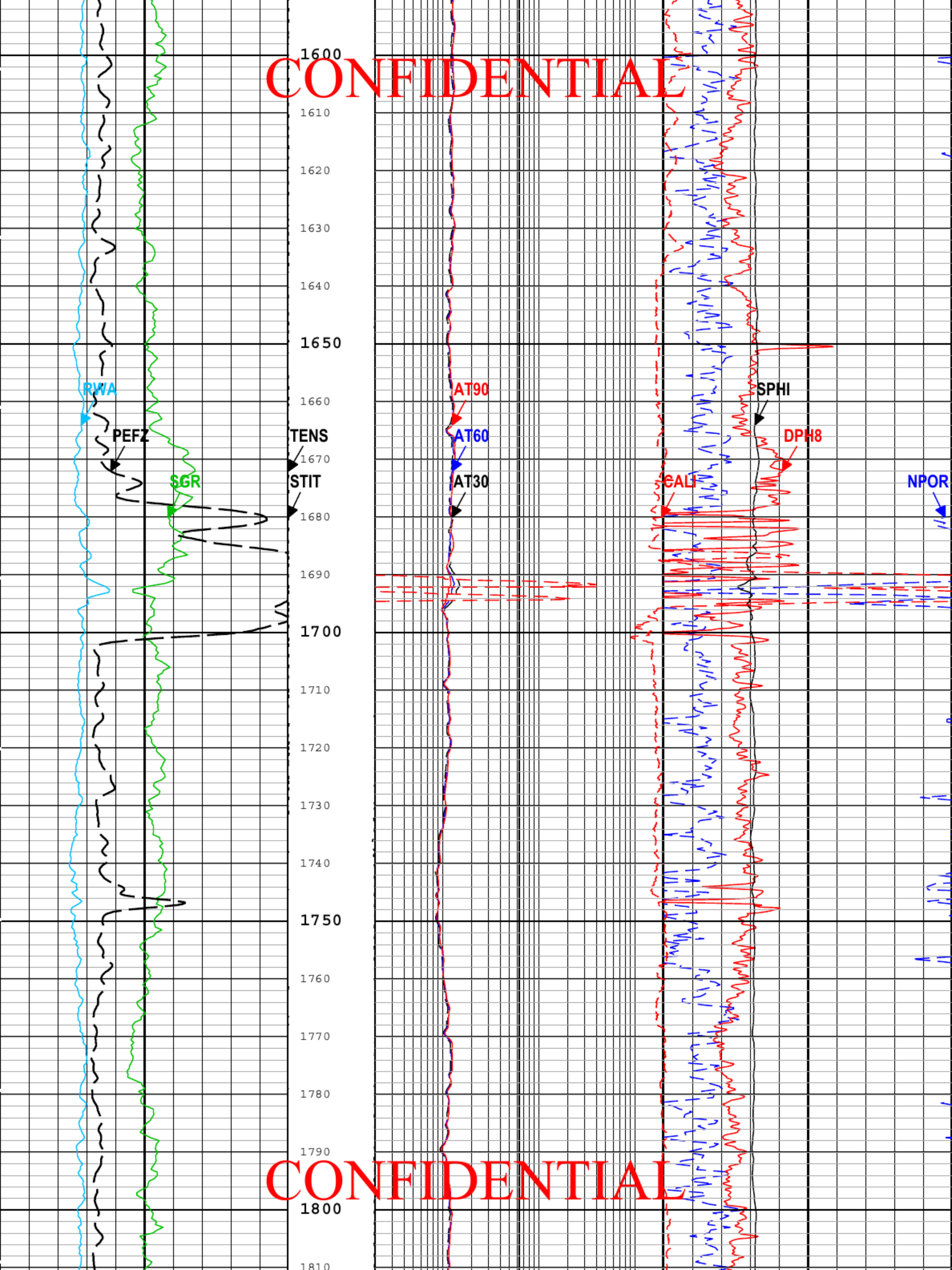
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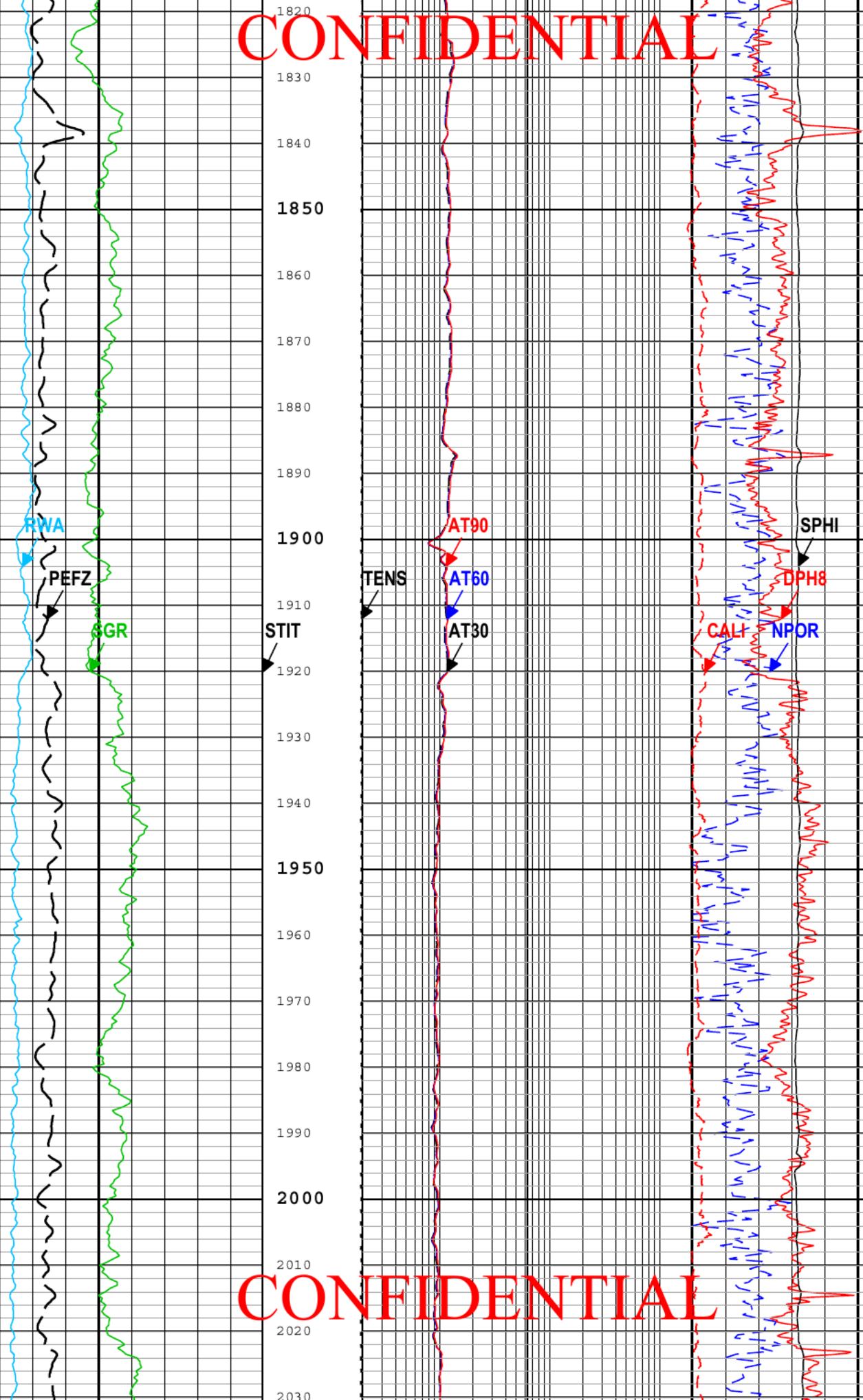


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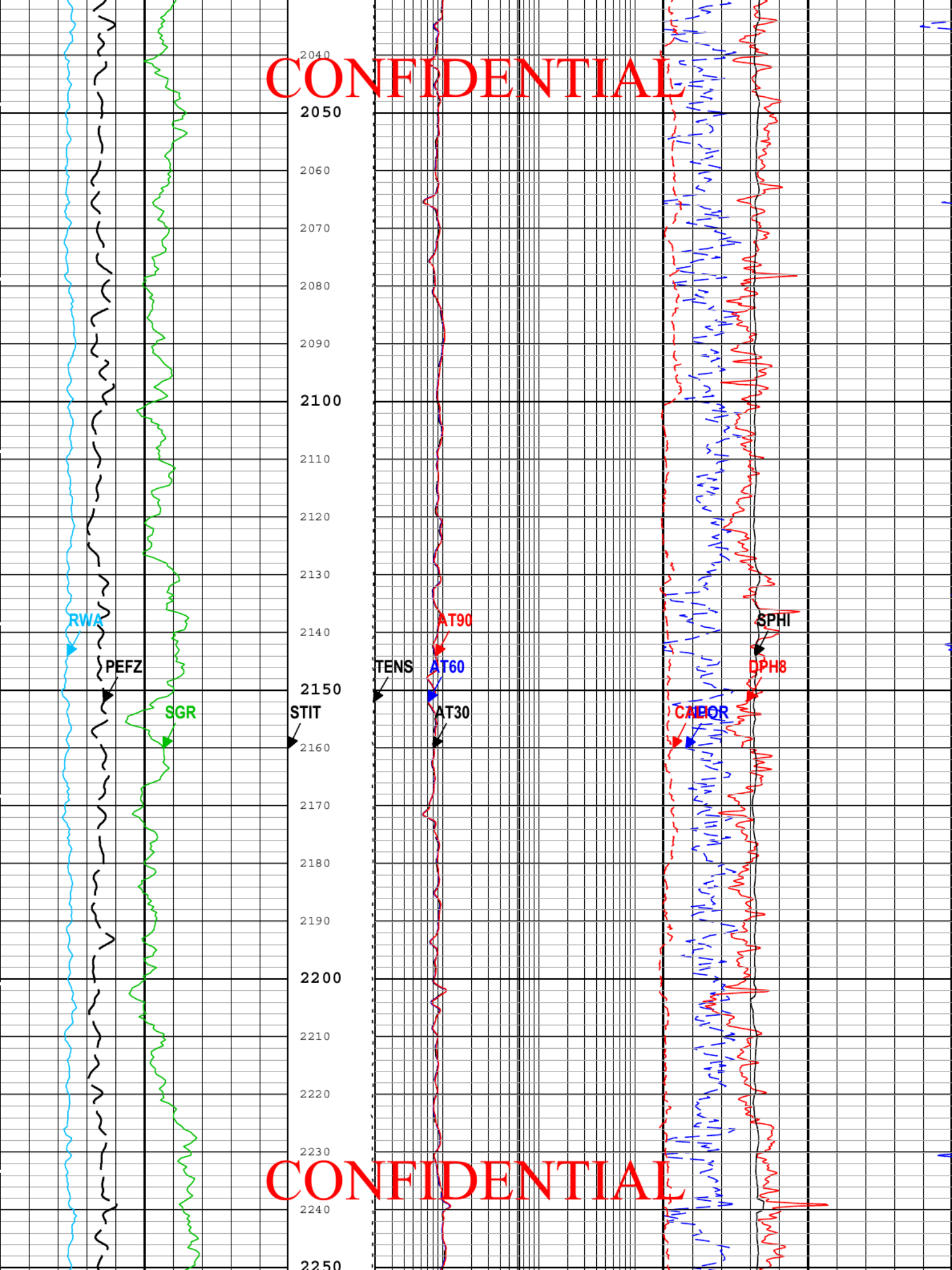
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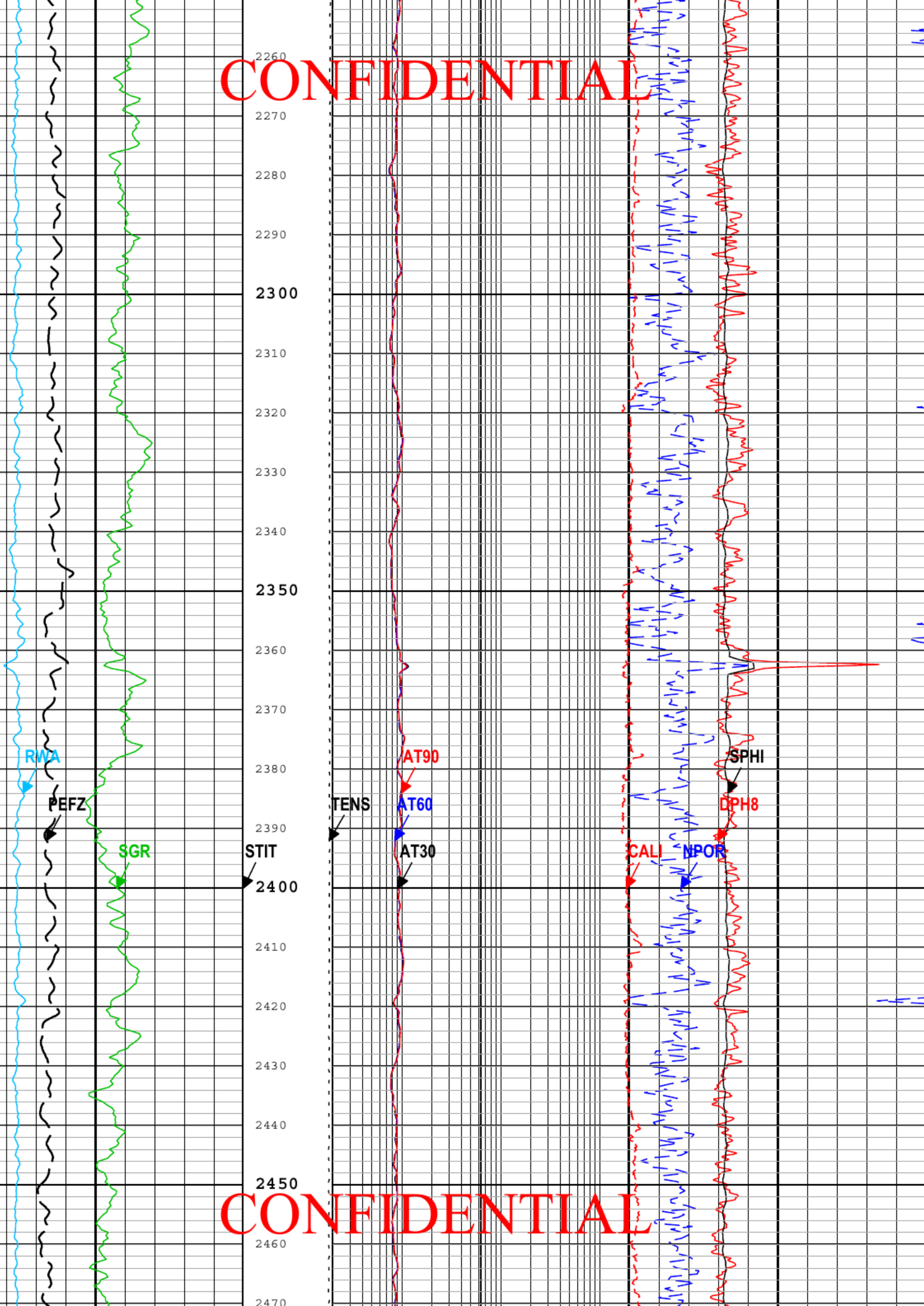
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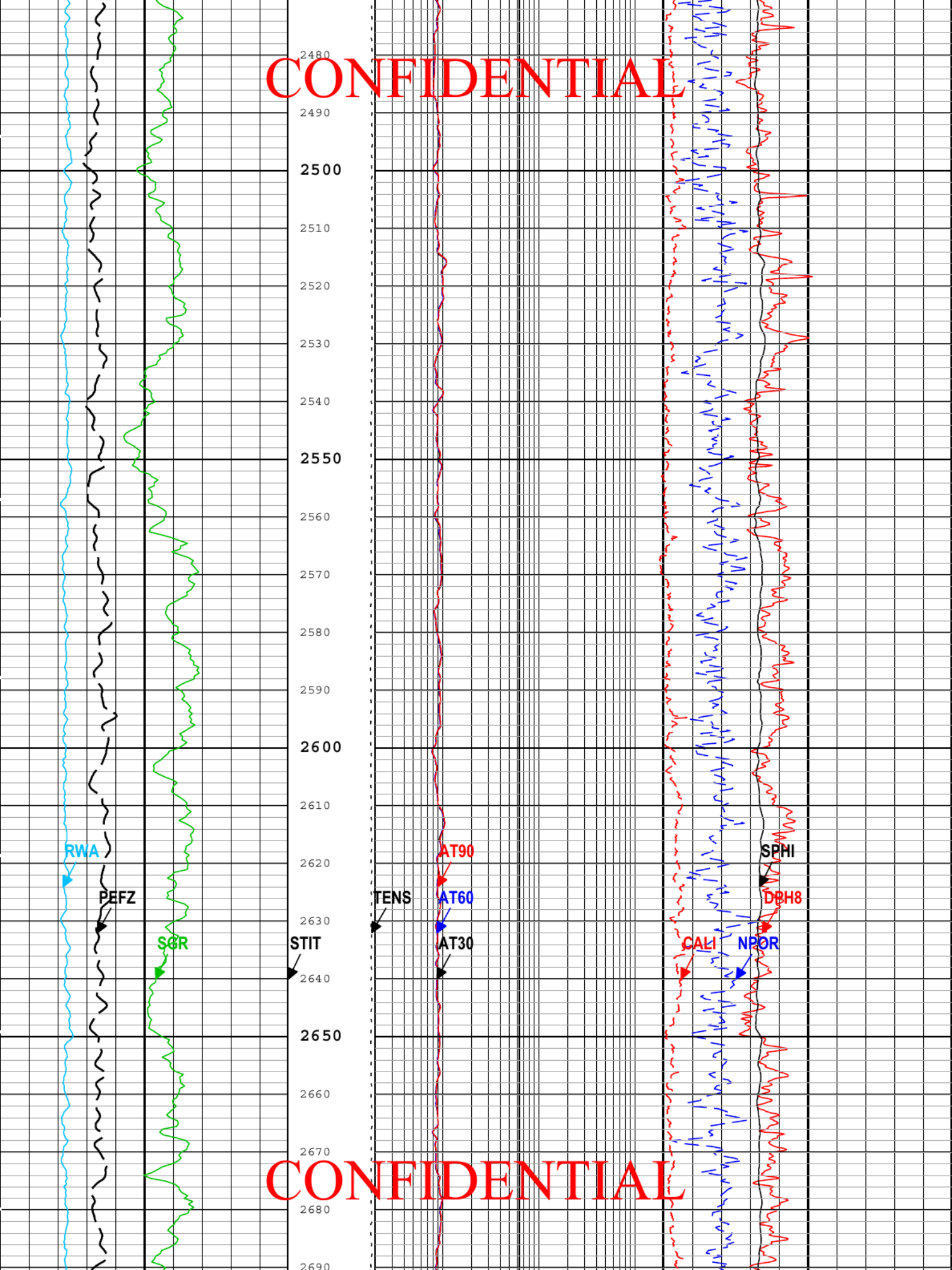
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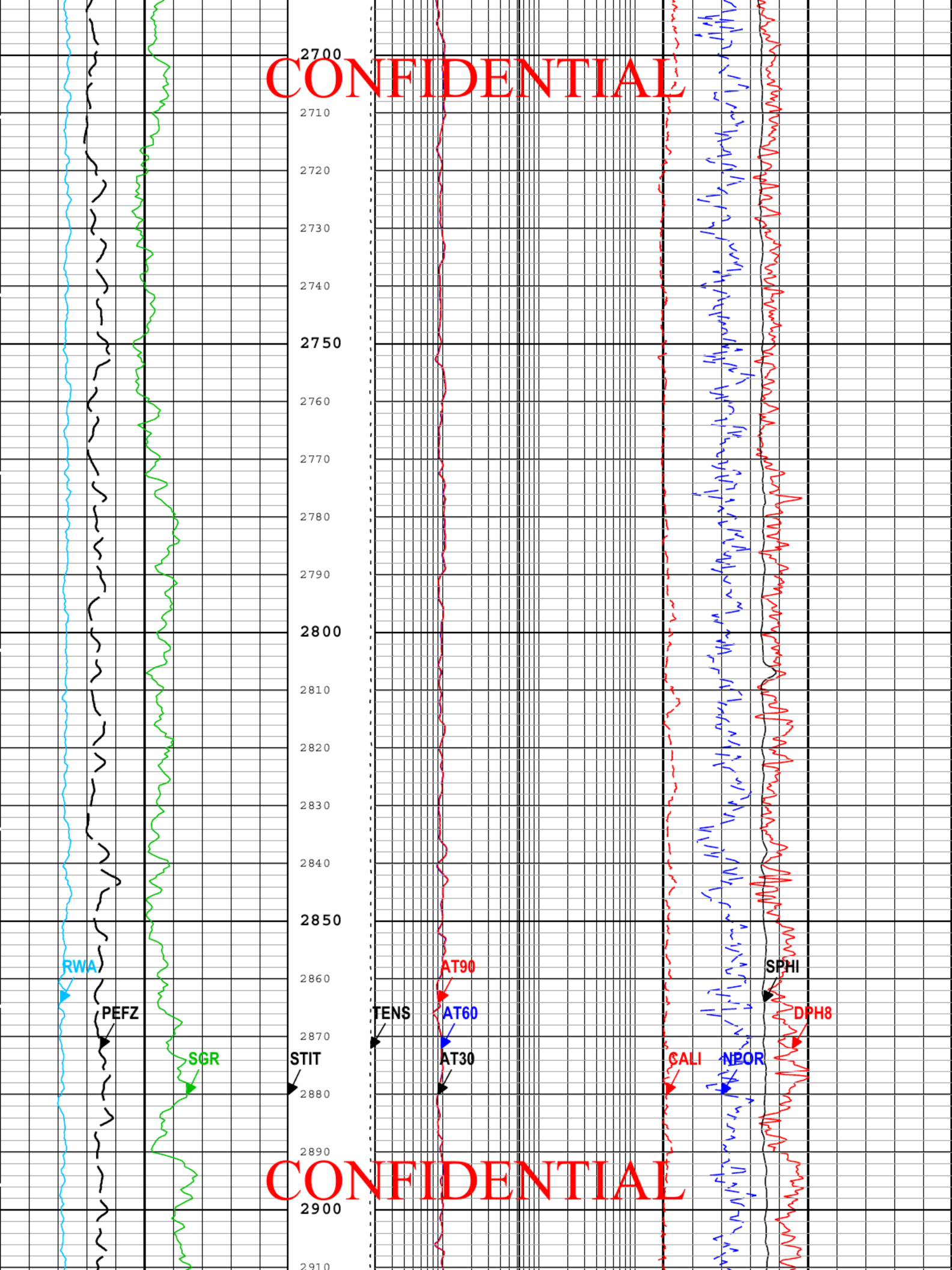
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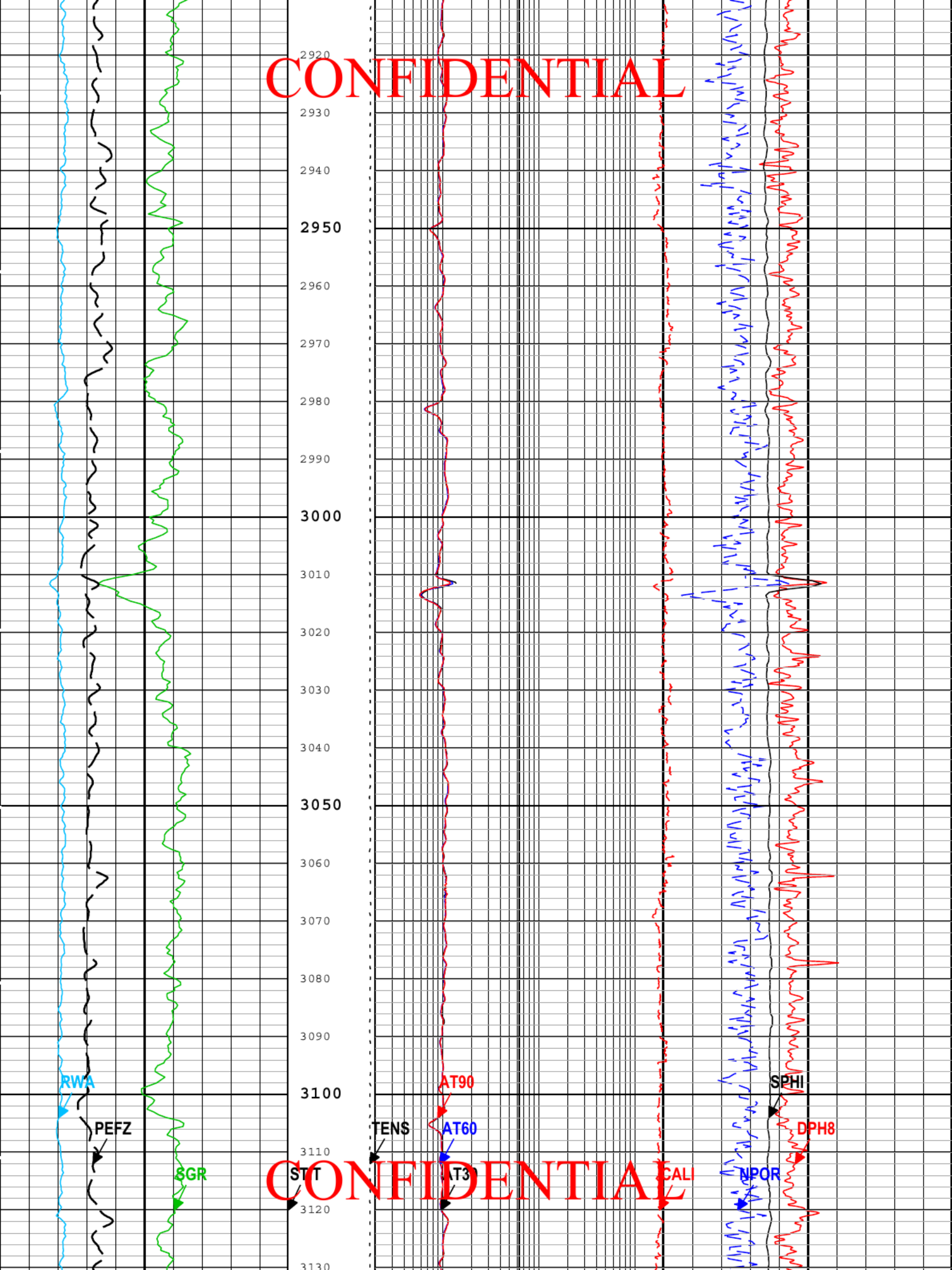
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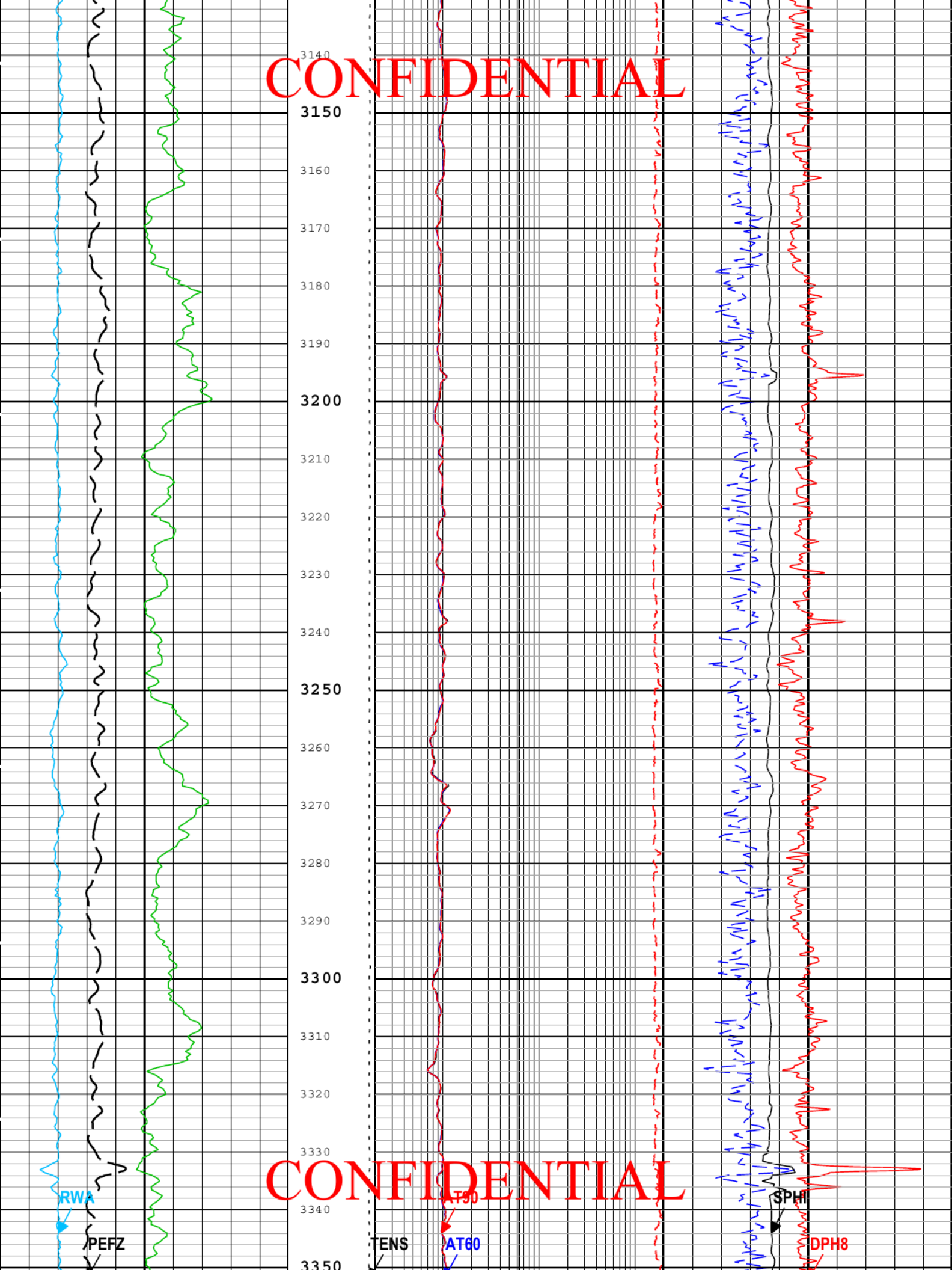
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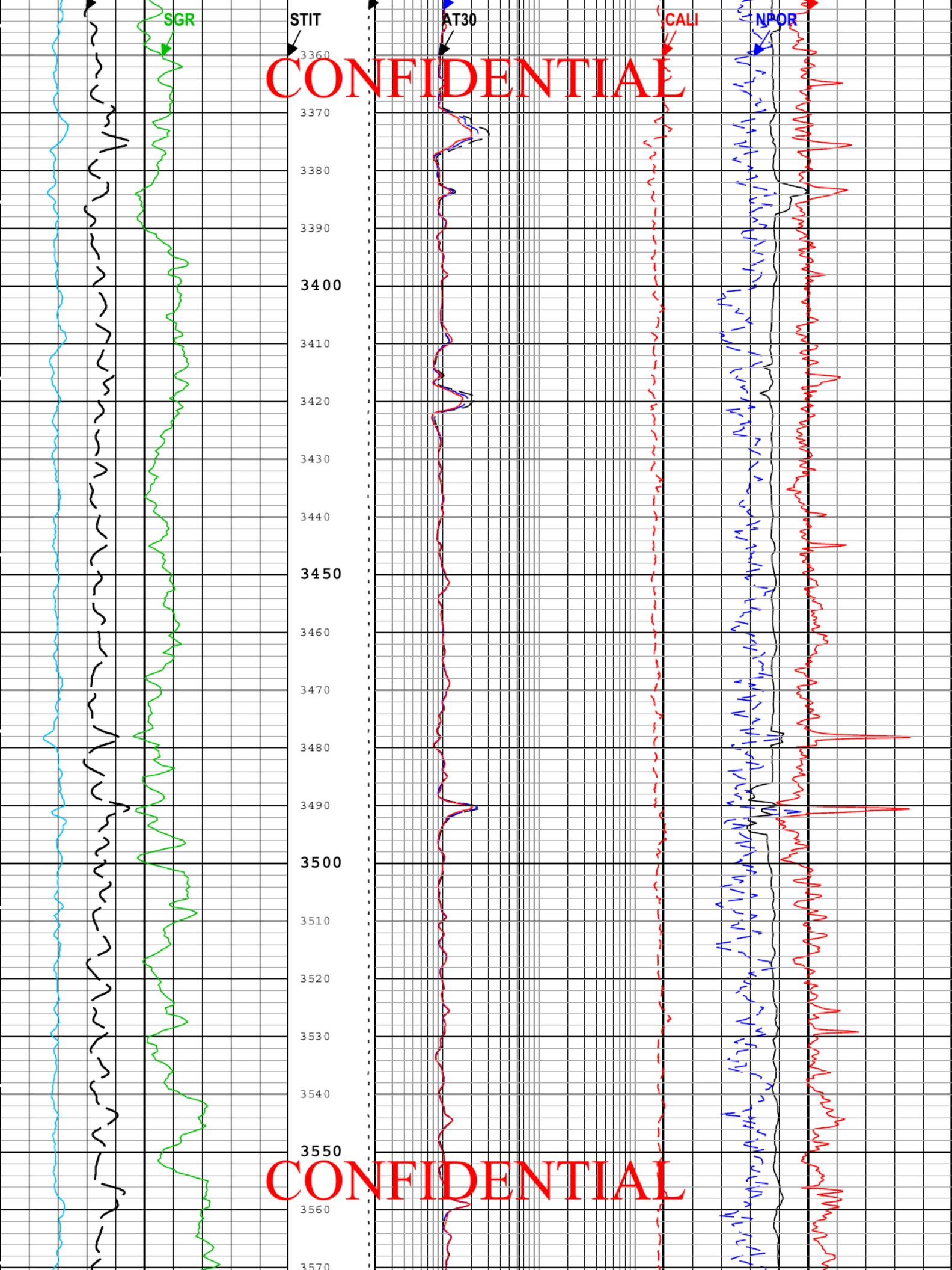


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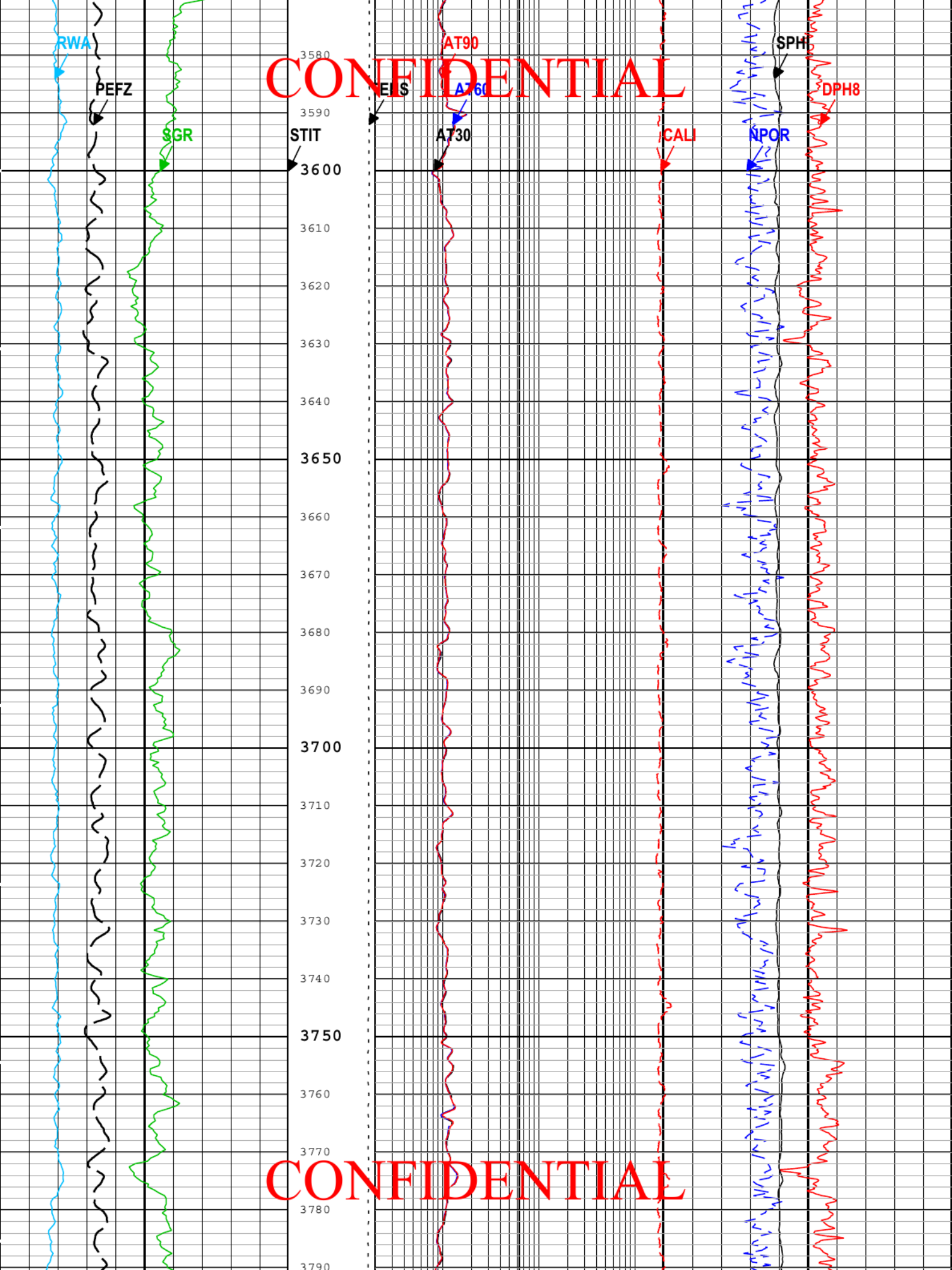
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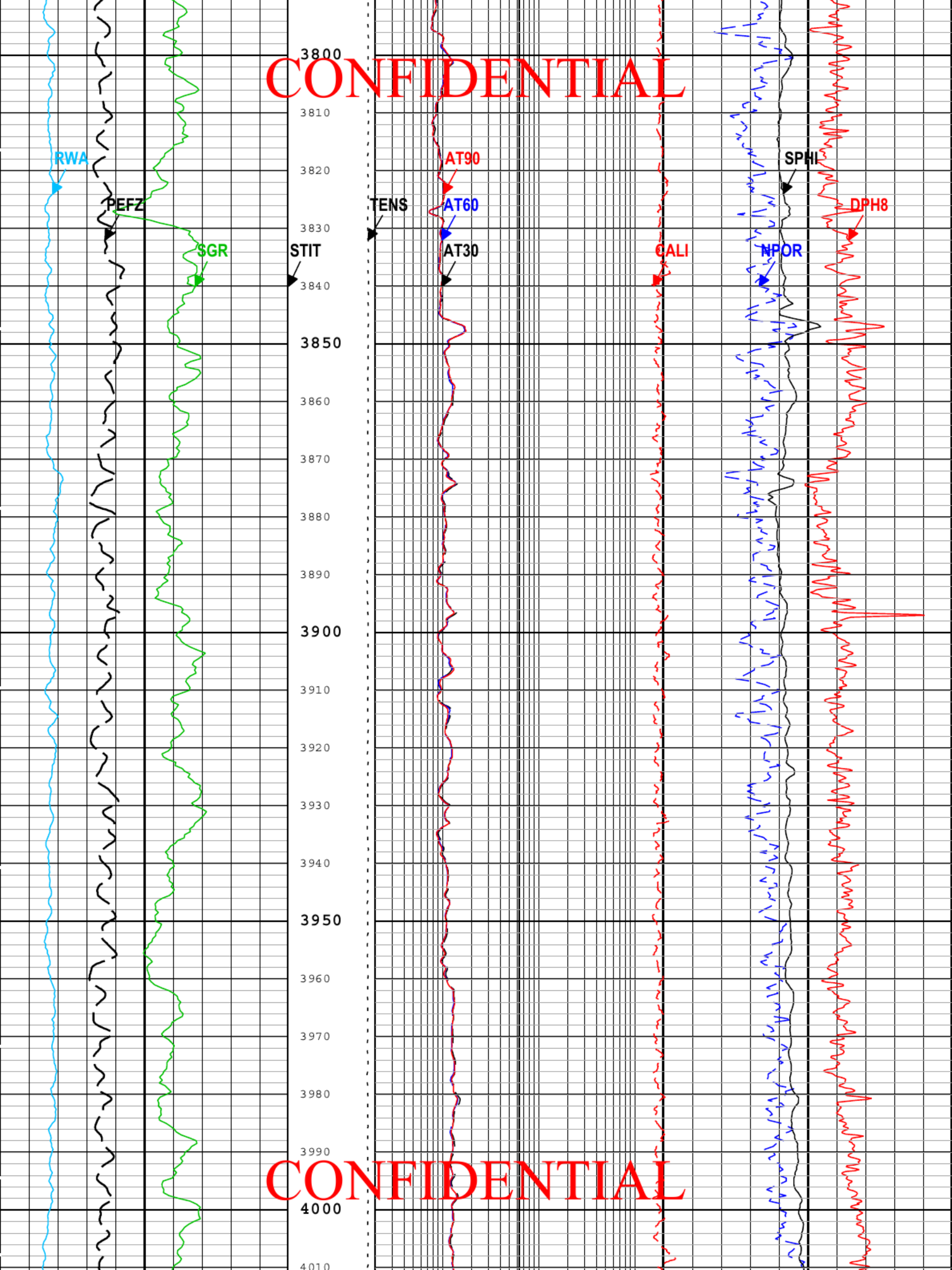
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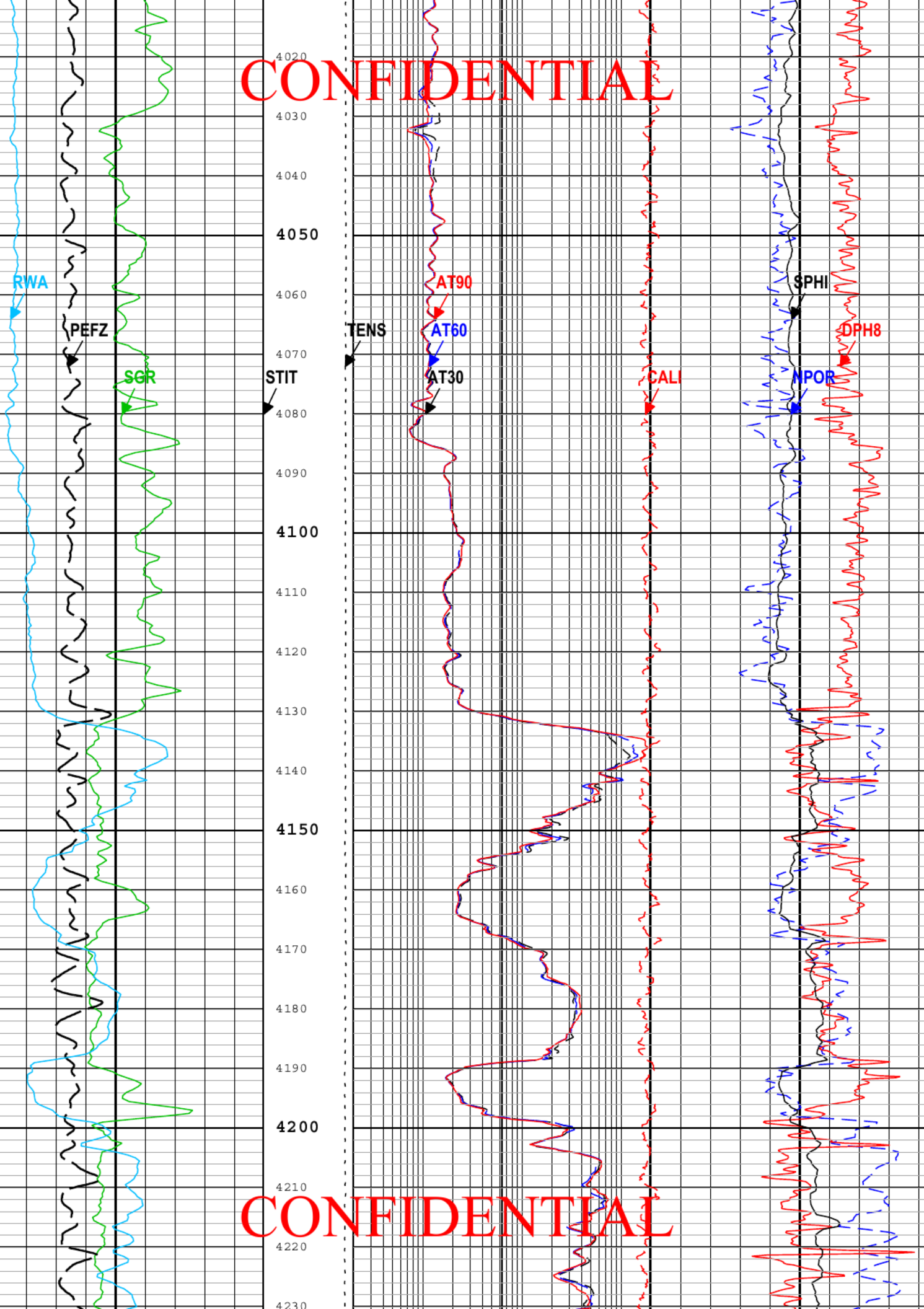
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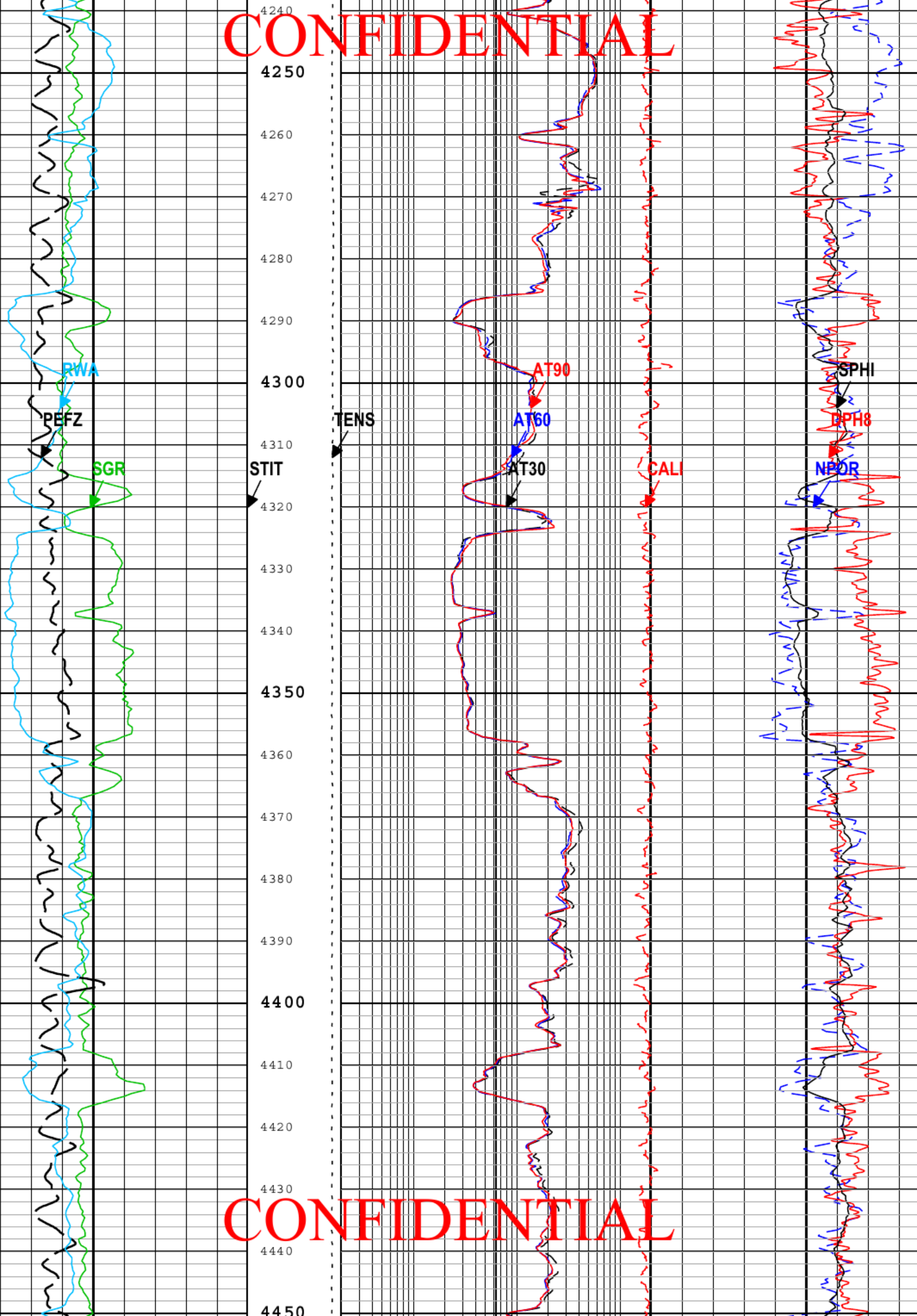
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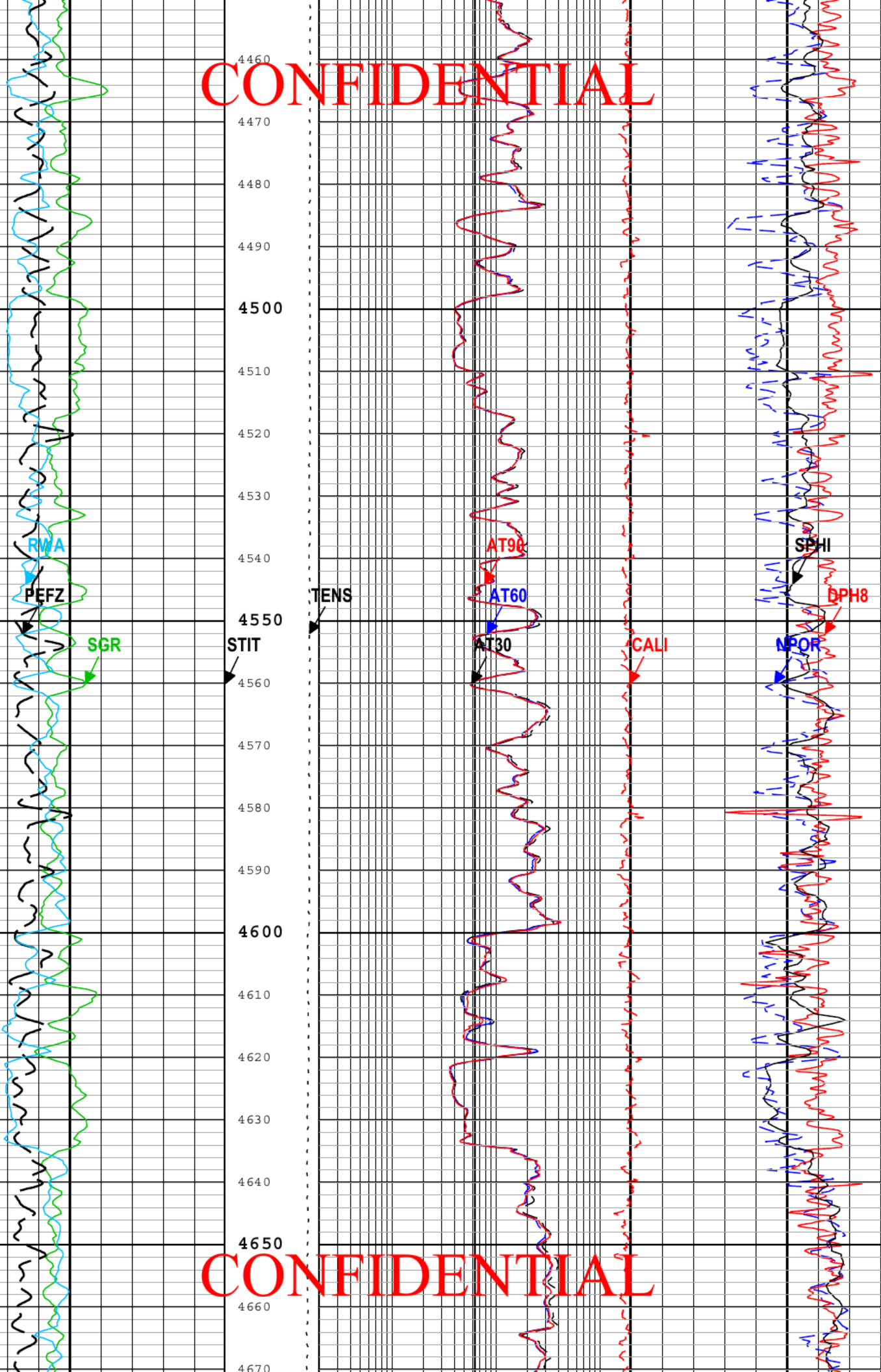
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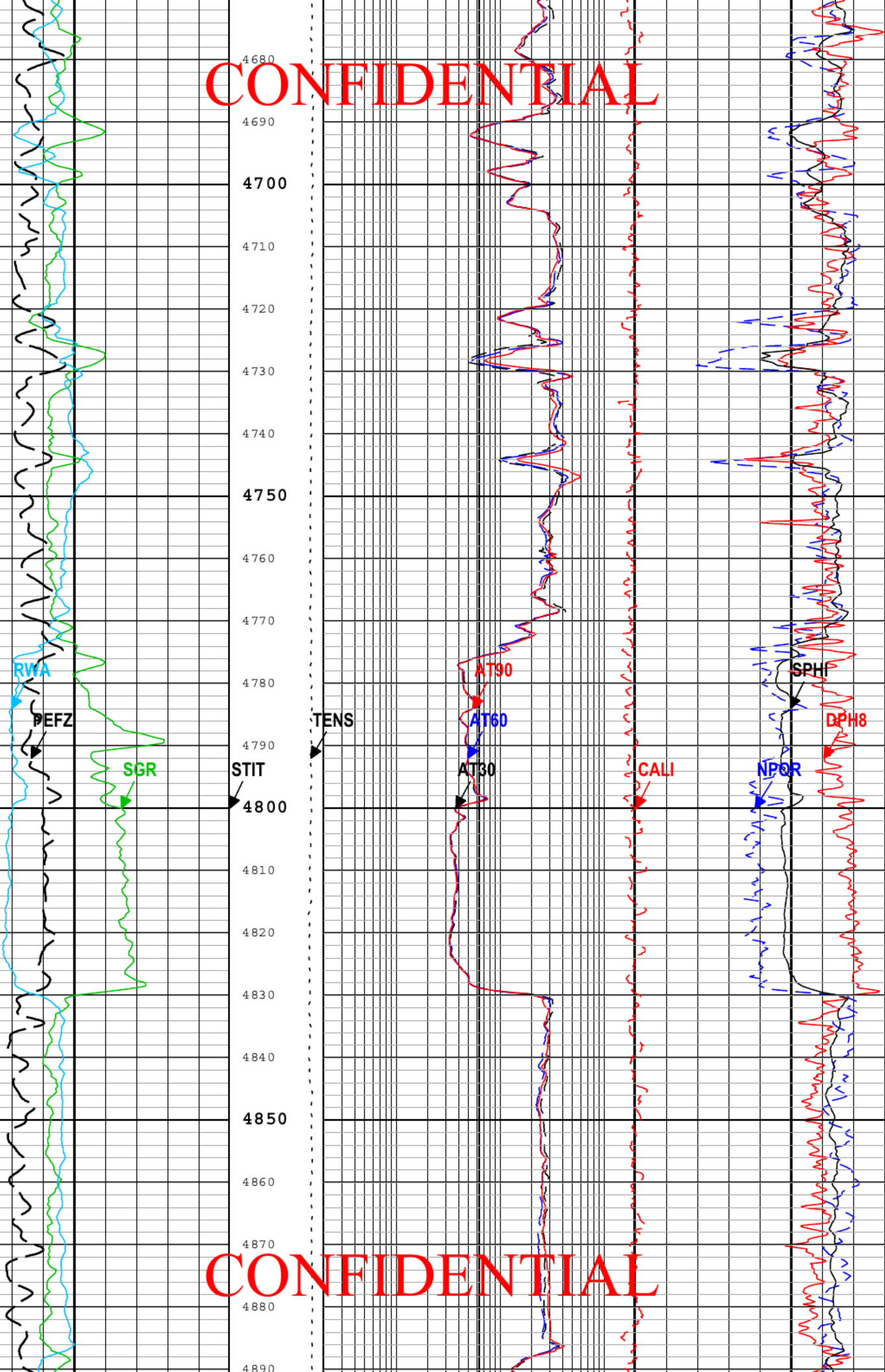
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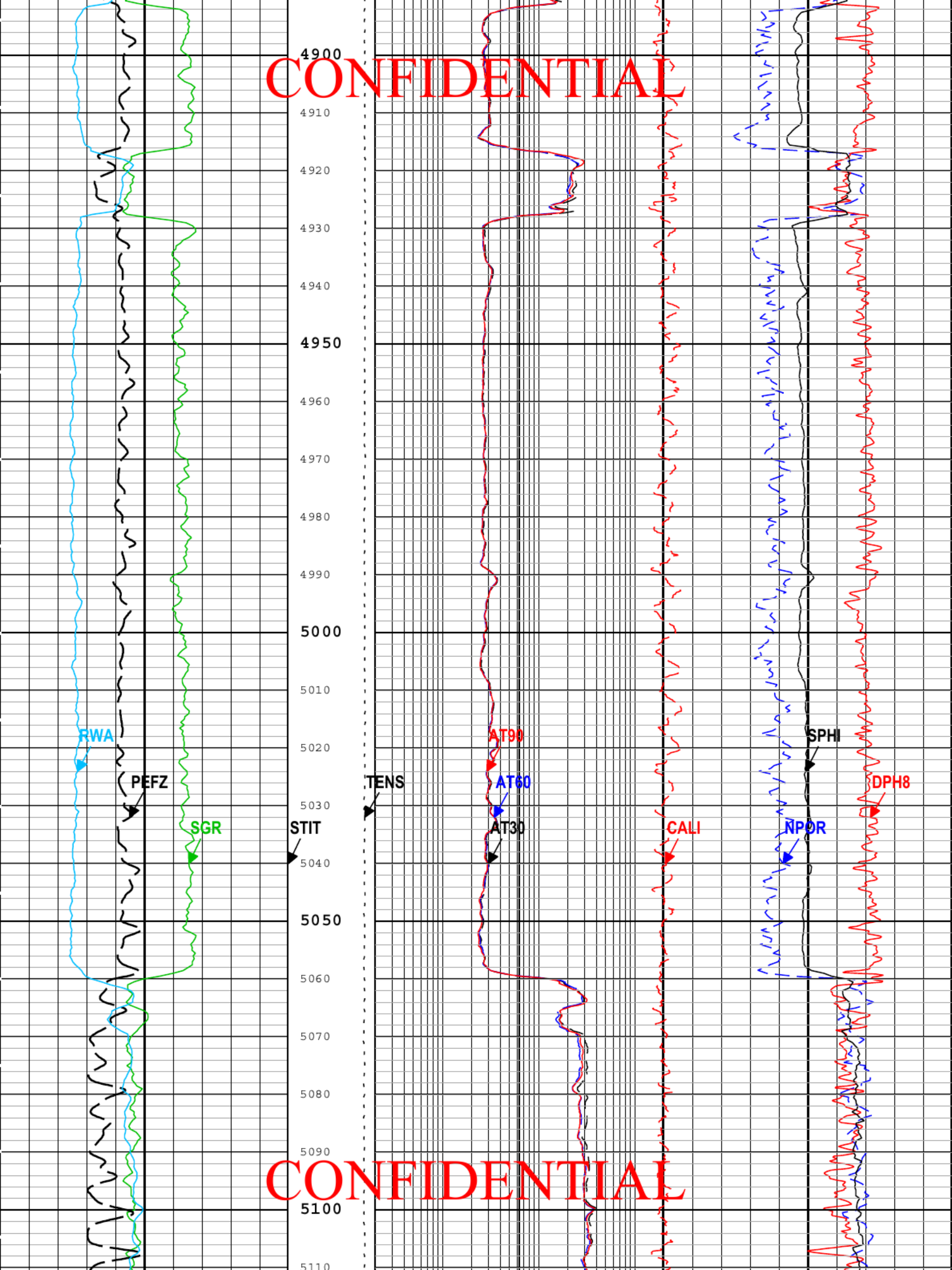


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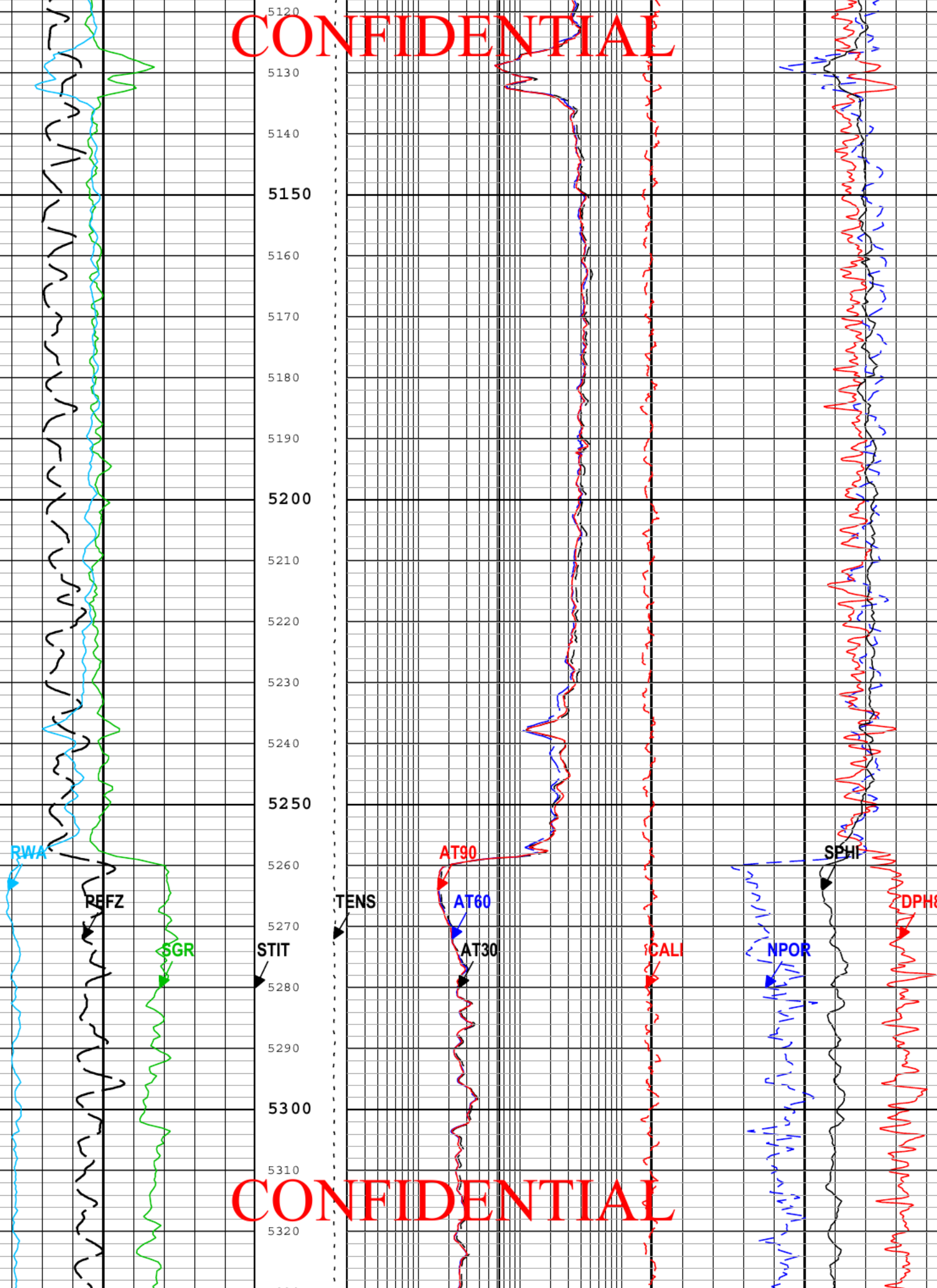
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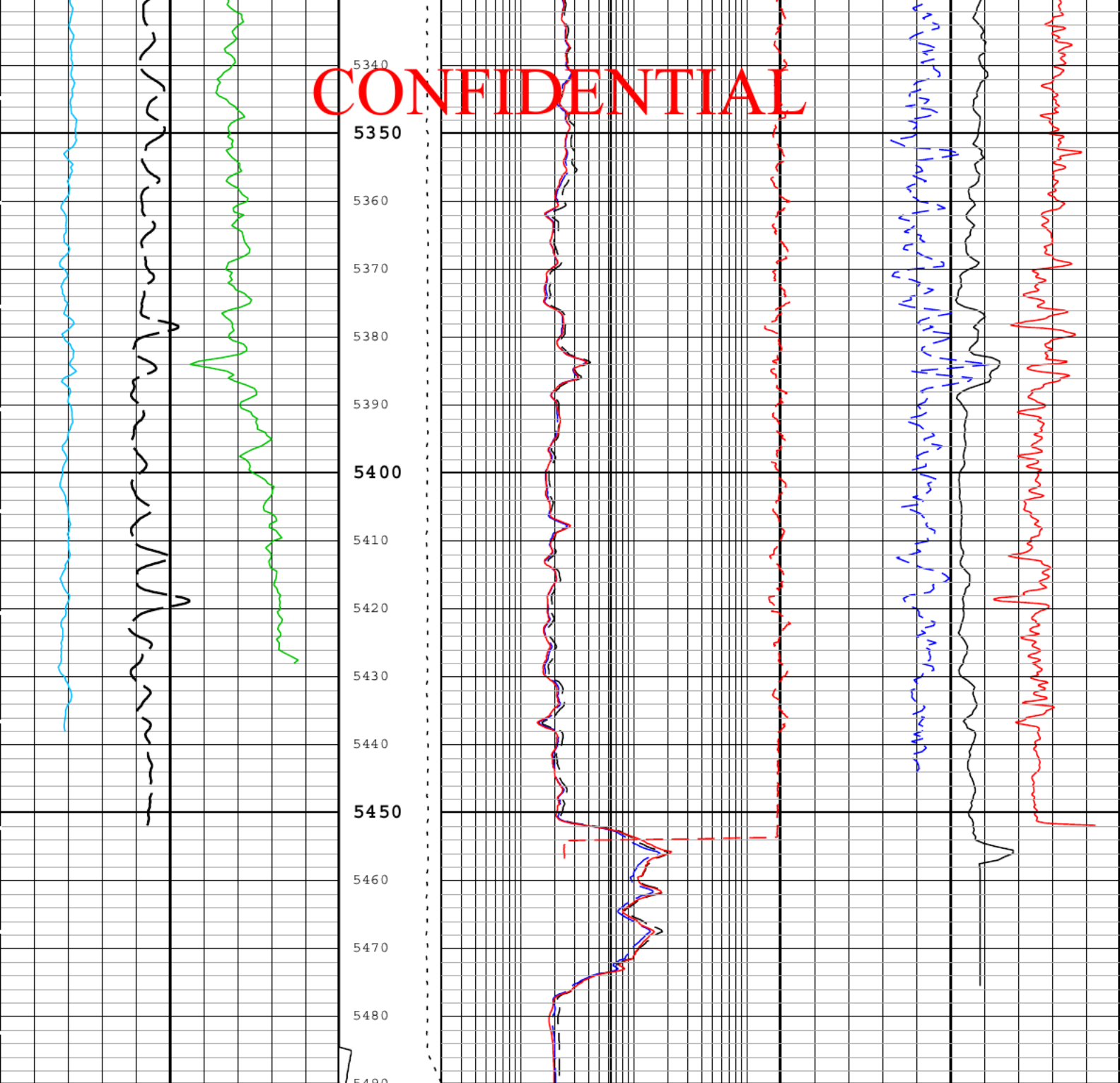
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Spectroscopy Gamma Ray (SGR) HNGS-BA		Stuck Tool Indicator, Total (STIT)	Caliper (CALI) HDRS-H	
0	150		0	17.5
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		0 ft 50	Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E	
0	10	0.2	ohm.m	200
Apparent Formation Water Resistivity (RWA)		Array Induction Two Foot Resistivity A60 (AT60) ZAIT-E		0.6 ft3/ft3 0
0.02	200	0.2	ohm.m	200
Cable Tension (TENS)		Array Induction Two Foot Resistivity A90 (AT90) ZAIT-E		0.6 ft3/ft3 0
8000 lbf 2000		0.2	ohm.m	200
		High Resolution Density Porosity (DPH8) HDRS-H		0.6 ft3/ft3 0
		Sonic Porosity (SPHI) DSLT-H		0.6 ft3/ft3 0

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# One CONFIDENTIAL 5' Repeat Pass - Quad Combo

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	5194.53 ft	5503.48 ft	05-Sep-2014 5:06:09 PM	05-Sep-2014 5:27:31 PM	ON	1.50 ft	No
One	Log[3]:Up	Up	72.46 ft	5503.13 ft	05-Sep-2014 5:33:14 PM	05-Sep-2014 9:14:35 PM	ON	1.50 ft	No

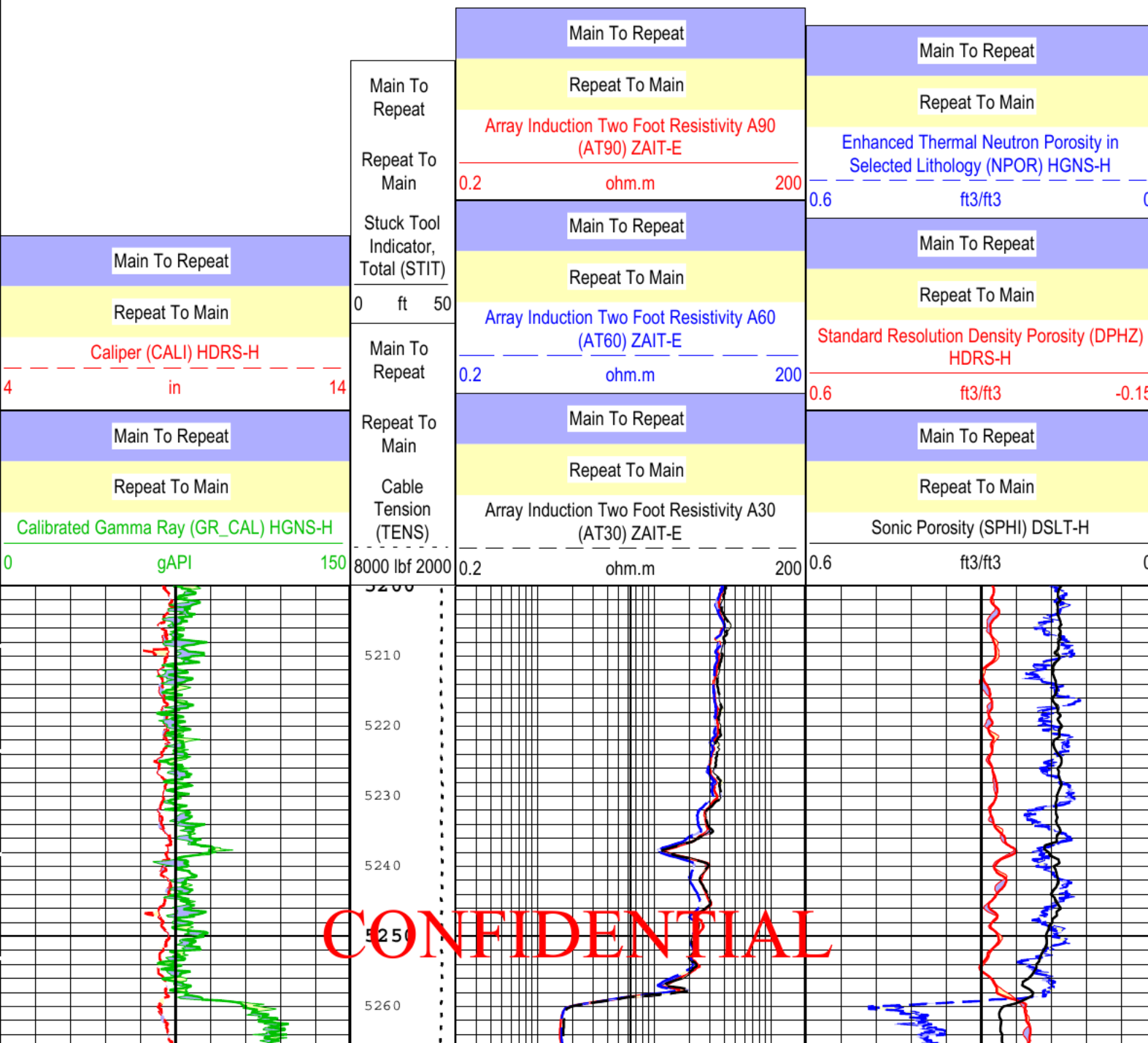
All depths are referenced to toolstring zero

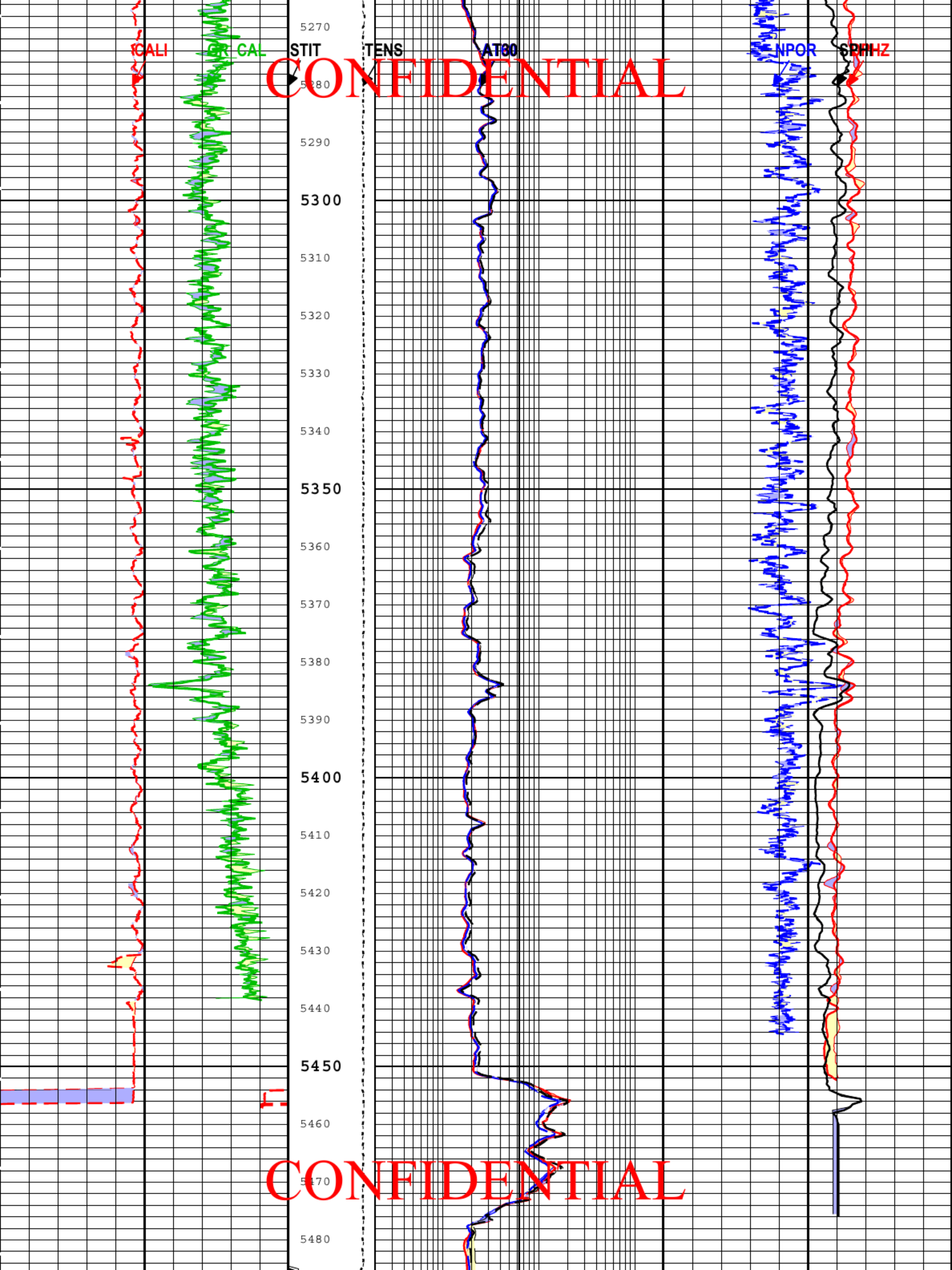
## Log

Company: Alta Mesa Services, LP Well: ML Investments 1-11

One : Log[3]:Up:S019

TIME\_1900 - Time Marked every 60.00 (s)





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Main To Repeat	Main To Repeat	Main To Repeat	Main To Repeat
Repeat To Main	Repeat	Repeat To Main	Repeat To Main
Caliper (CALI) HDRS-H	Repeat To Main	Array Induction Two Foot Resistivity A90 (AT90) ZAIT-E	Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H
4 in 14	Stuck Tool Indicator, Total (STIT)	0.2 ohm.m 200	0.6 ft3/ft3 0
Main To Repeat	0 ft 50	Main To Repeat	Main To Repeat
Repeat To Main	Main To Repeat	Repeat To Main	Repeat To Main
Calibrated Gamma Ray (GR_CAL) HGNS-H	Repeat To Main	Array Induction Two Foot Resistivity A60 (AT60) ZAIT-E	Standard Resolution Density Porosity (DPHZ) HDRS-H
0 gAPI 150	Repeat To Main	0.2 ohm.m 200	0.6 ft3/ft3 -0.15
Cable Tension (TENS)	Main To Repeat	Main To Repeat	Main To Repeat
8000 lbf 2000	Repeat To Main	Repeat To Main	Repeat To Main
	Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E	Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E	Sonic Porosity (SPHI) DSLT-H
	0.2 ohm.m 200	0.2 ohm.m 200	0.6 ft3/ft3 0

TIME\_1900 - Time Marked every 60.00 (s)

Description: Format: Log ( Combo\_Fax RA ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 06-Sep-2014 09:51:36

One

10" Main Pass - Quad Combo

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	72.46 ft	5503.13 ft	05-Sep-2014 5:33:14 PM	05-Sep-2014 9:14:35 PM	ON	1.50 ft	No

All depths are referenced to toolstring zero

Log

Company:Alta Mesa Services, LP Well:ML Investments 1-11  
One : Log[3]:Up:S019

Description: Format: Log ( Combo\_Fax ) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 06-Sep-2014 09:51:37

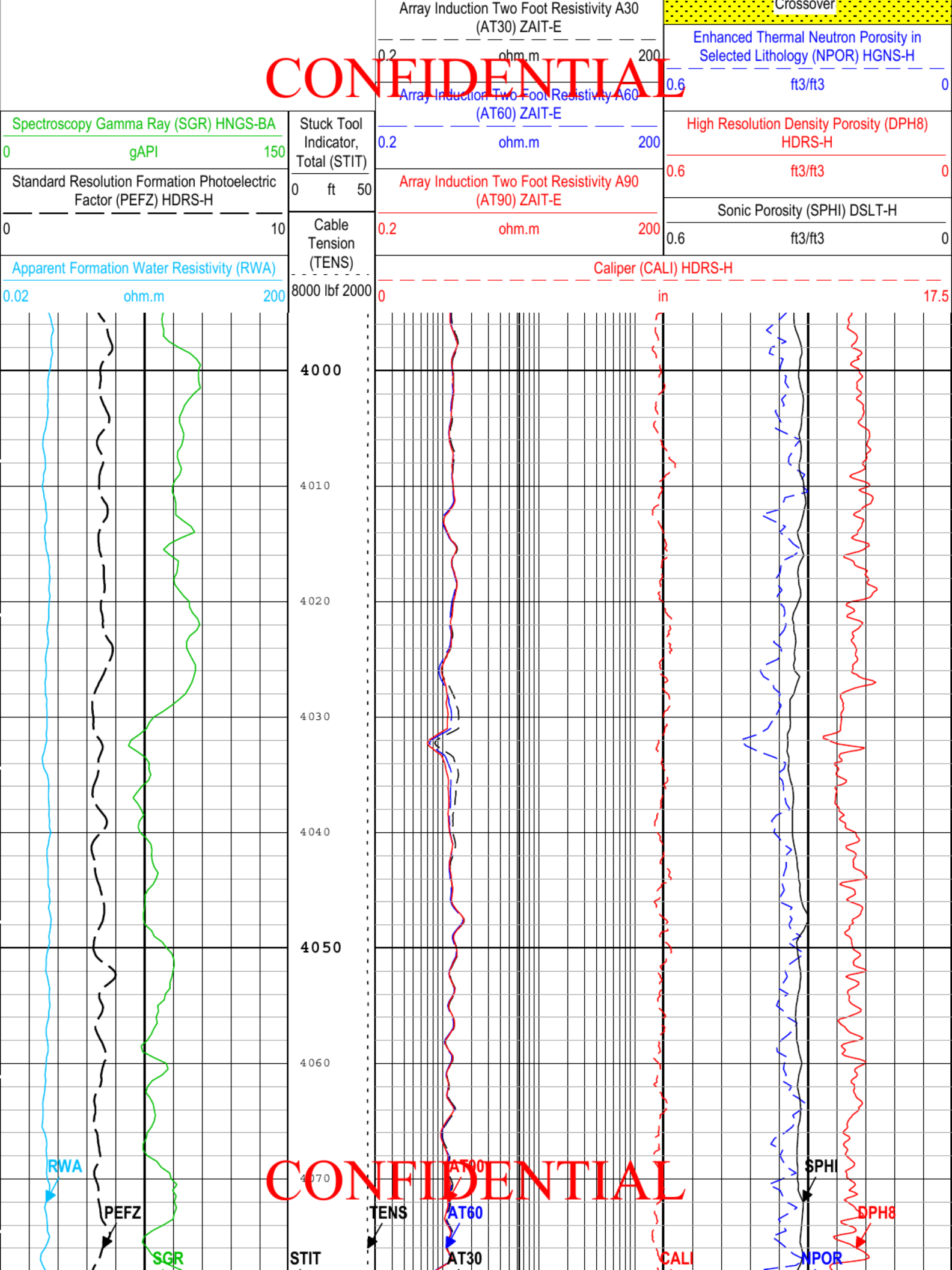
Channel	Source	Sampling
AT30	ZAIT-E:AZIS:AZIS	3in
AT60	ZAIT-E:AZIS:AZIS	3in
AT90	ZAIT-E:AZIS:AZIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPH8	HDRS-H:HRMS-H:HRGD-H	2in
NPOR	HGNS-H:HGNS-H:HGNS-H	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
RWA	PEQL	6in
SGR	HNGS-BA:HNGS-BA:HNGS-BA	6in
SPHI	DSL-T-H:SLS-E:SLS-E	6in
STIT	DepthCorrection	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

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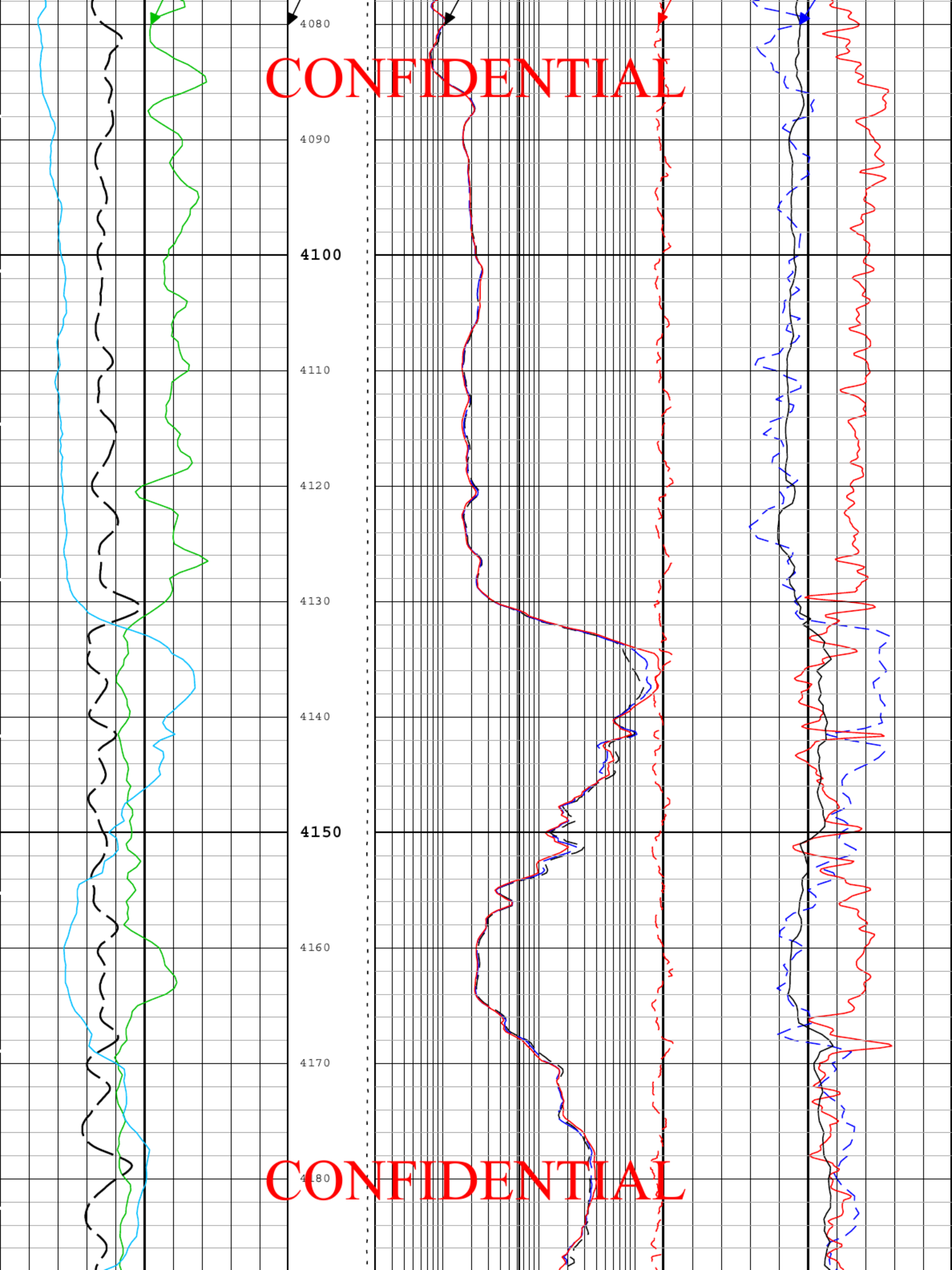
TIME\_1900 - Time Marked every 60.00 (s)



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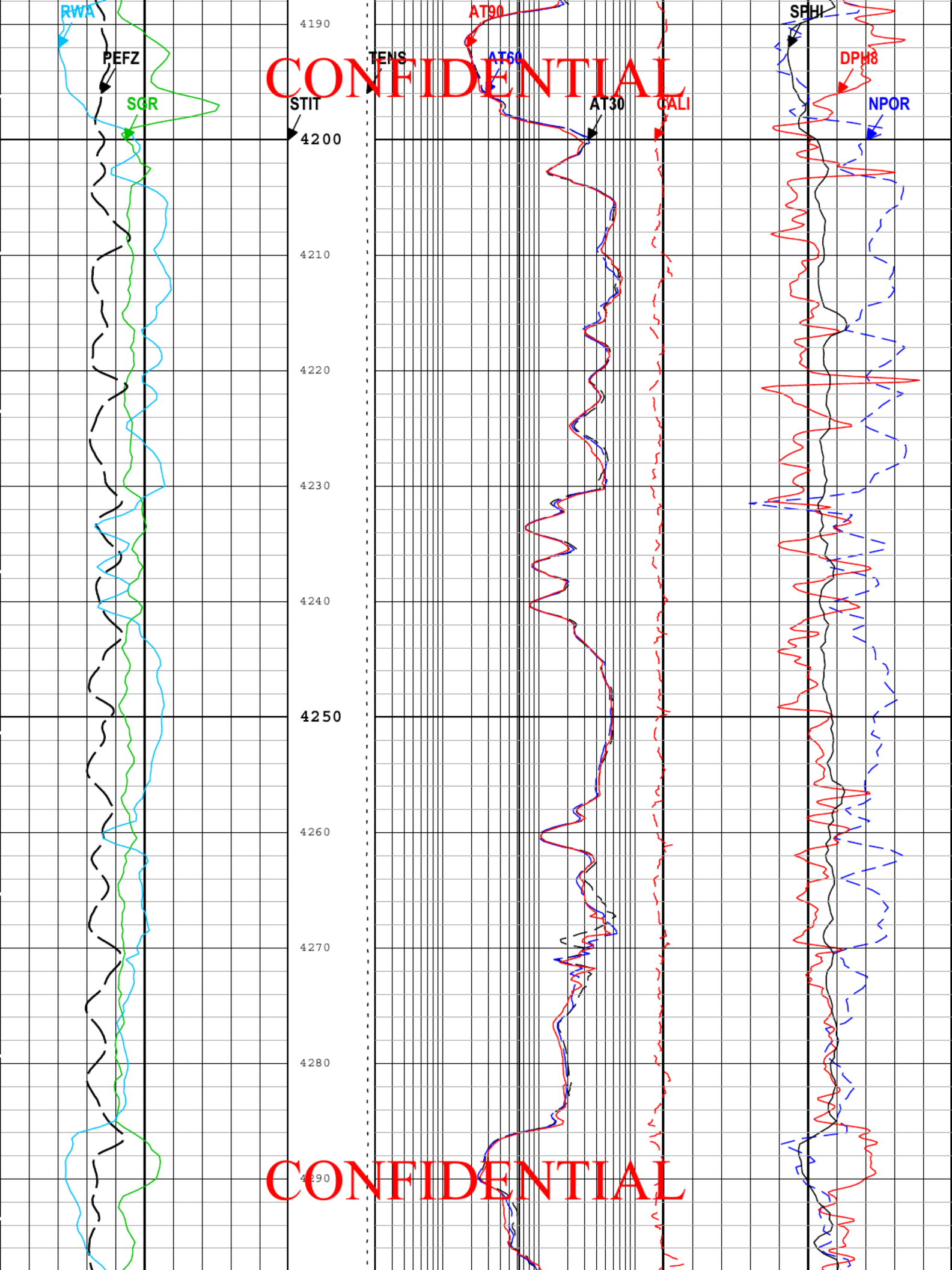
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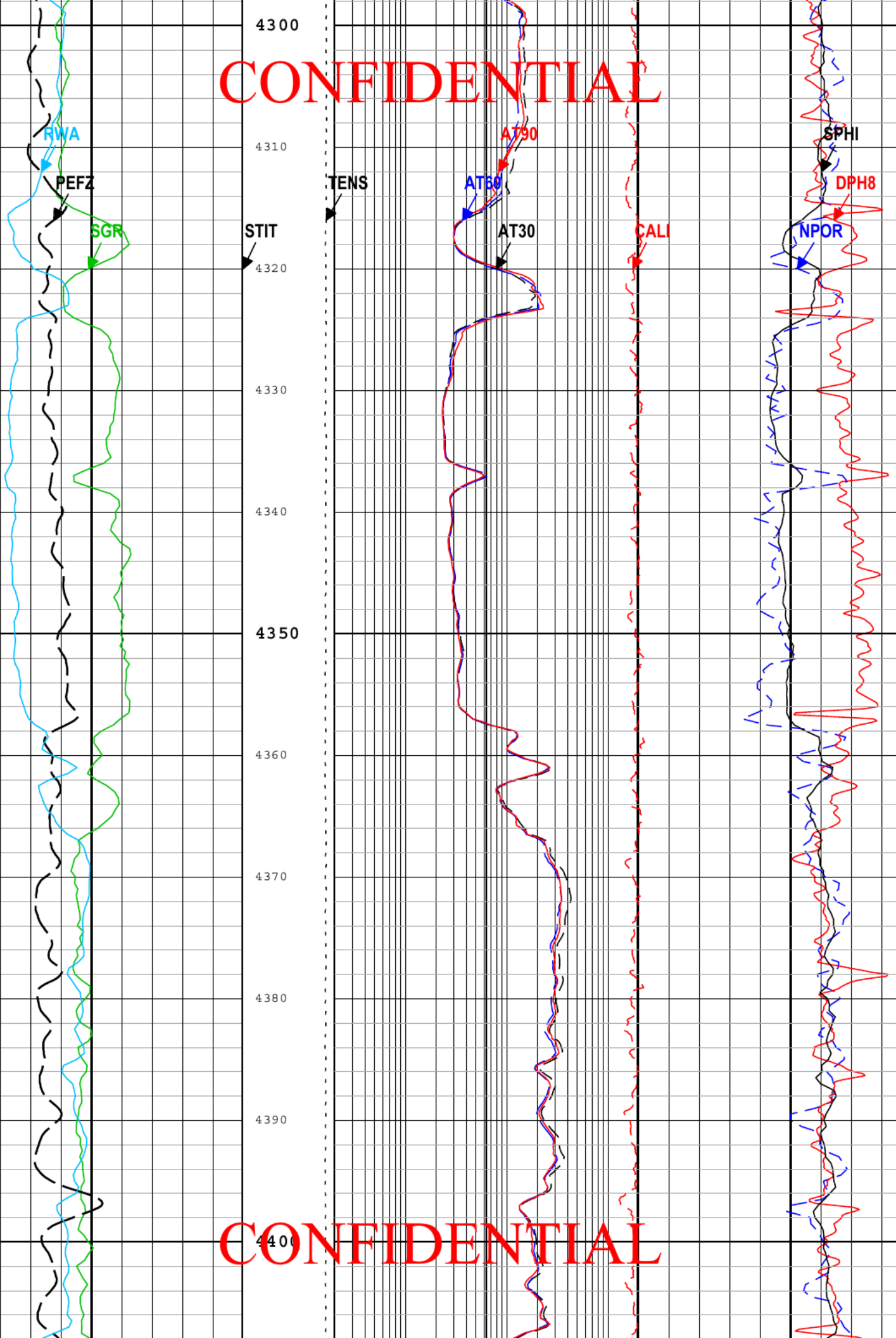
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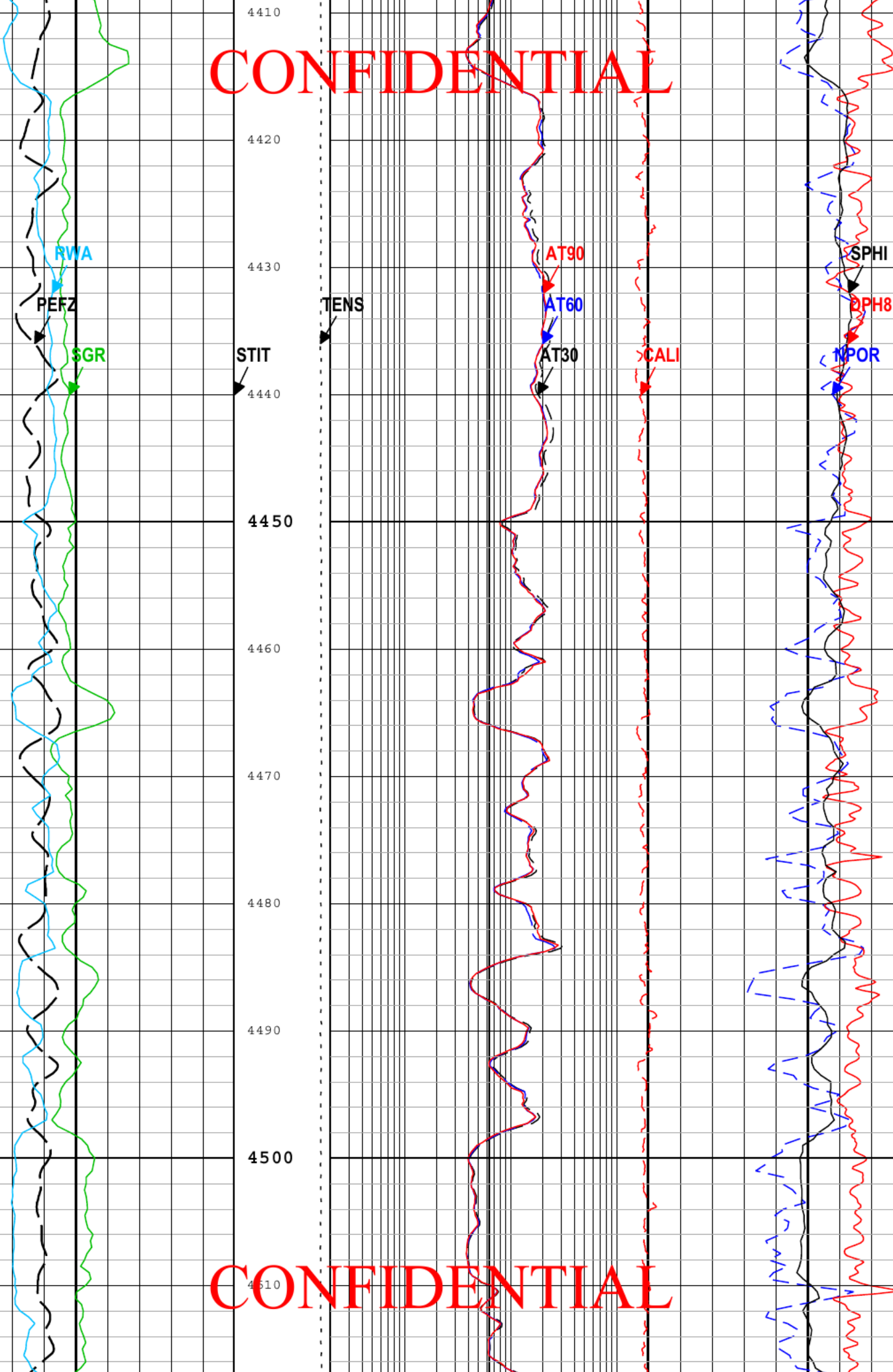


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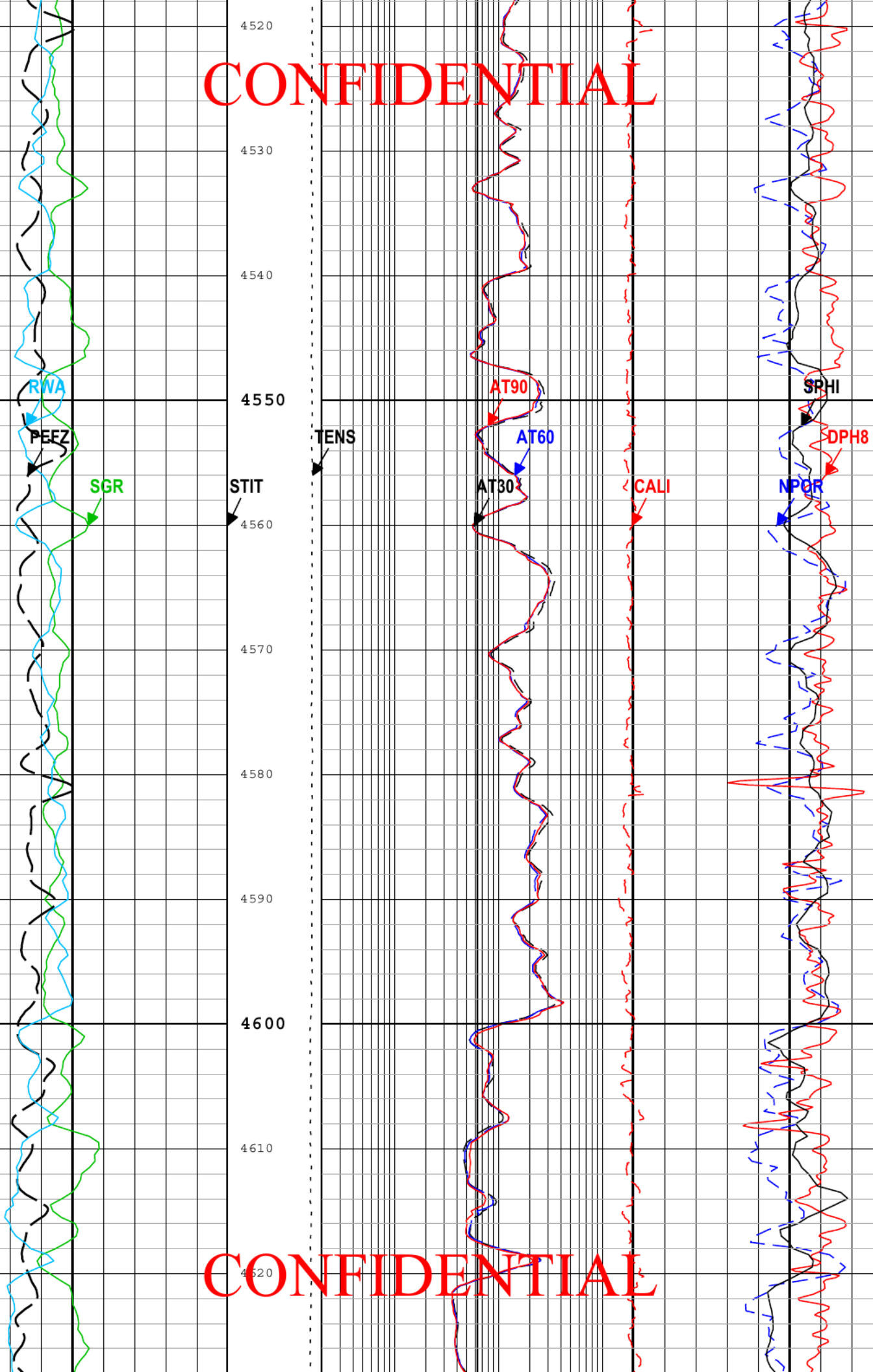
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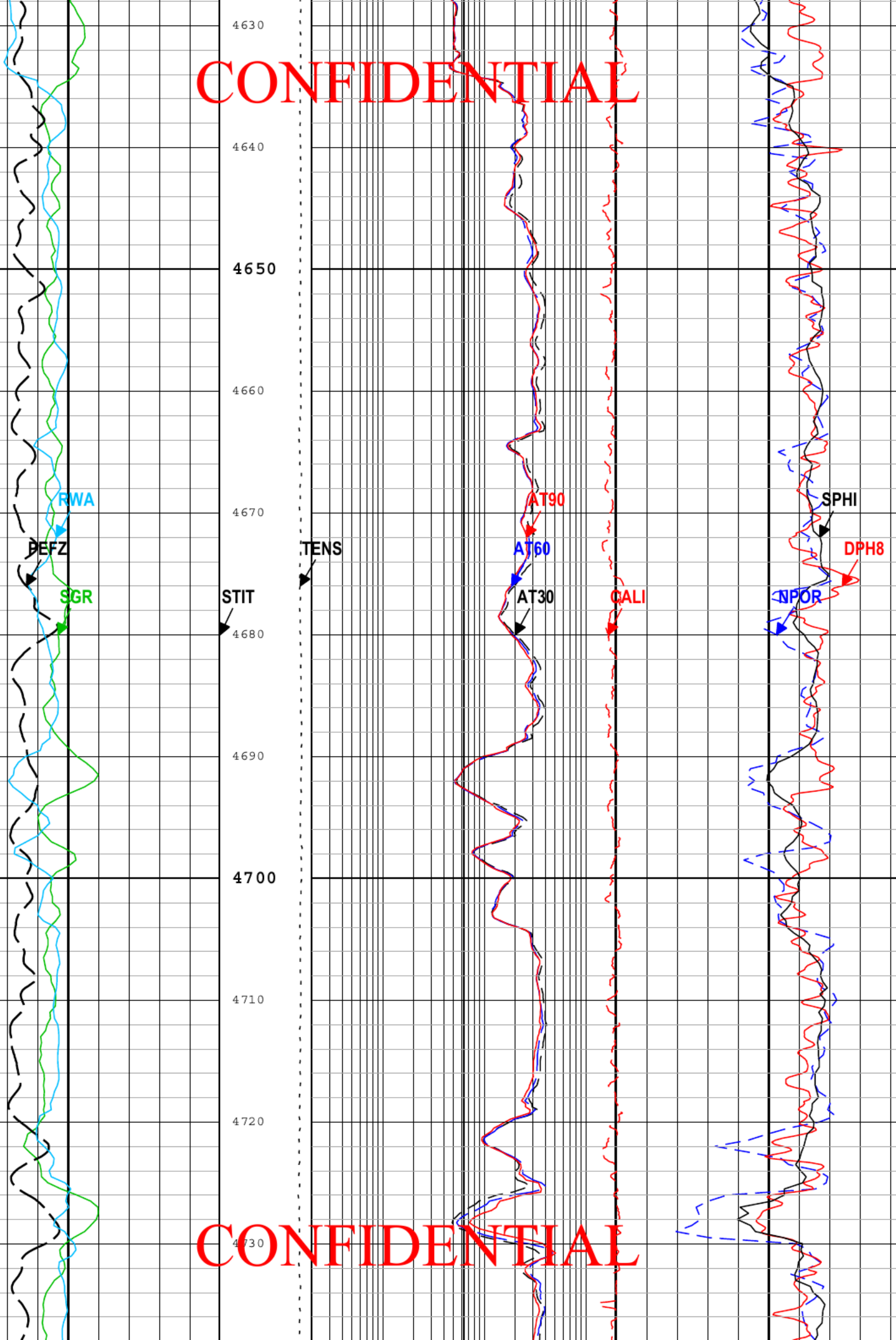
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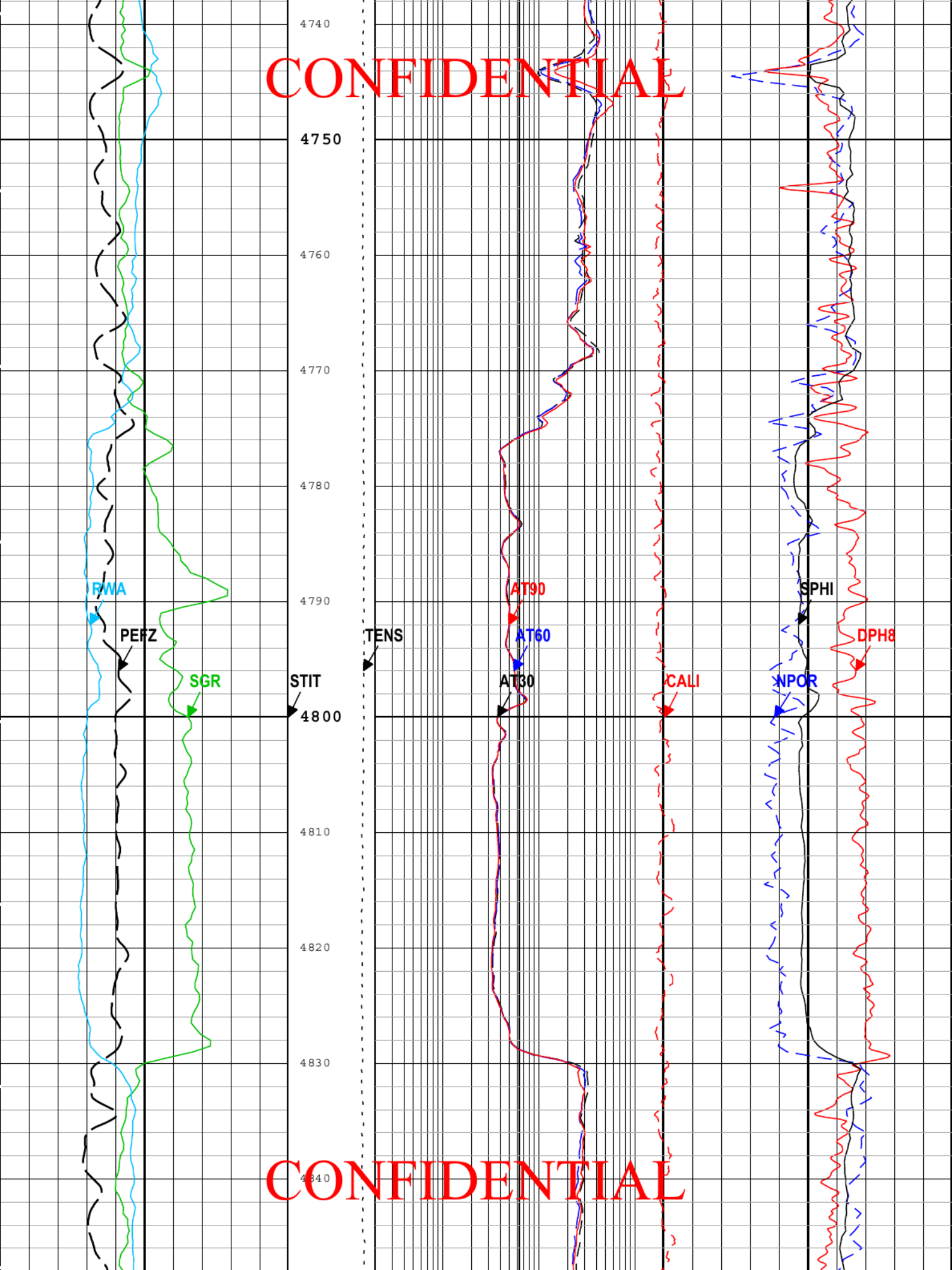
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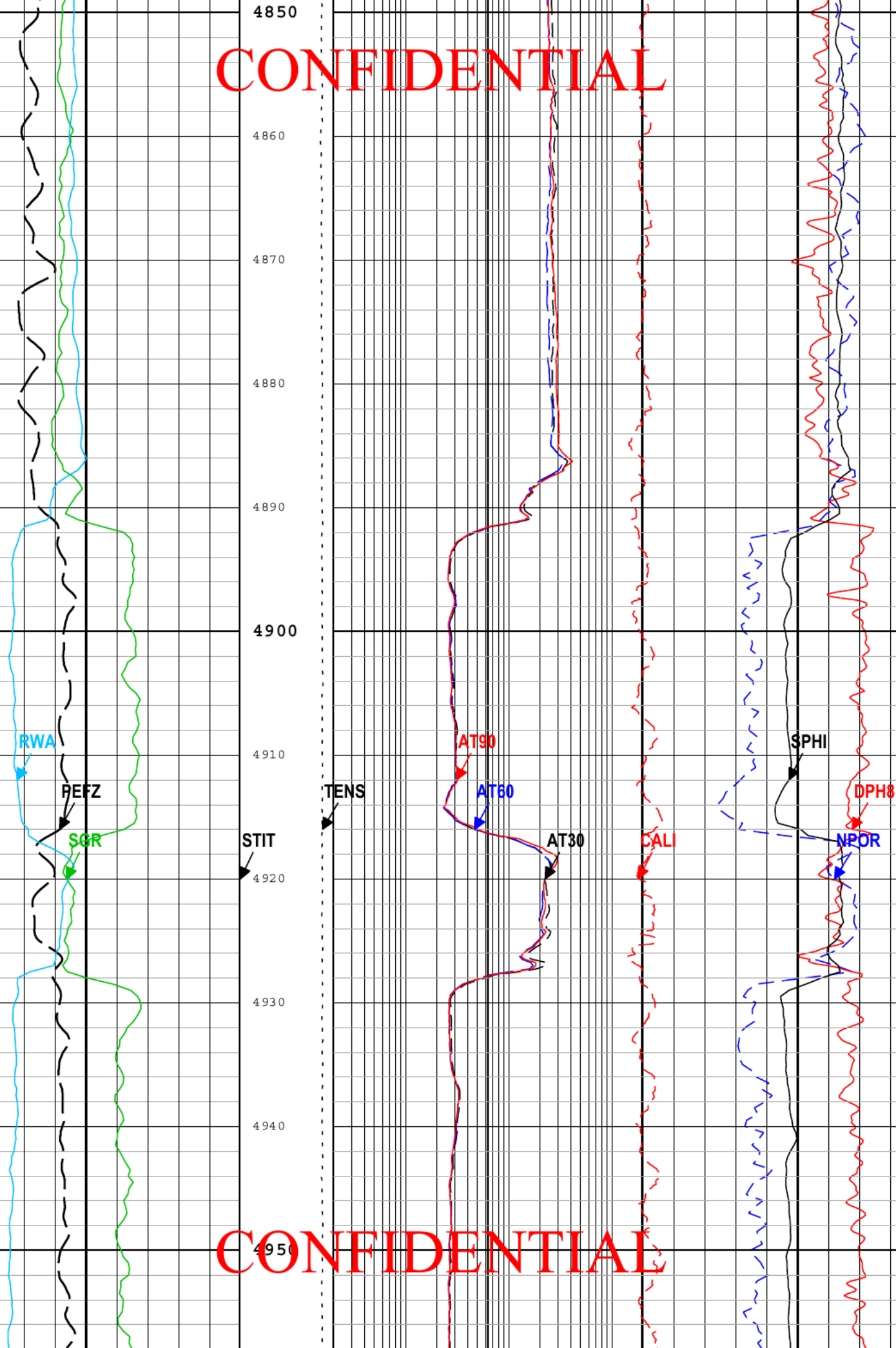


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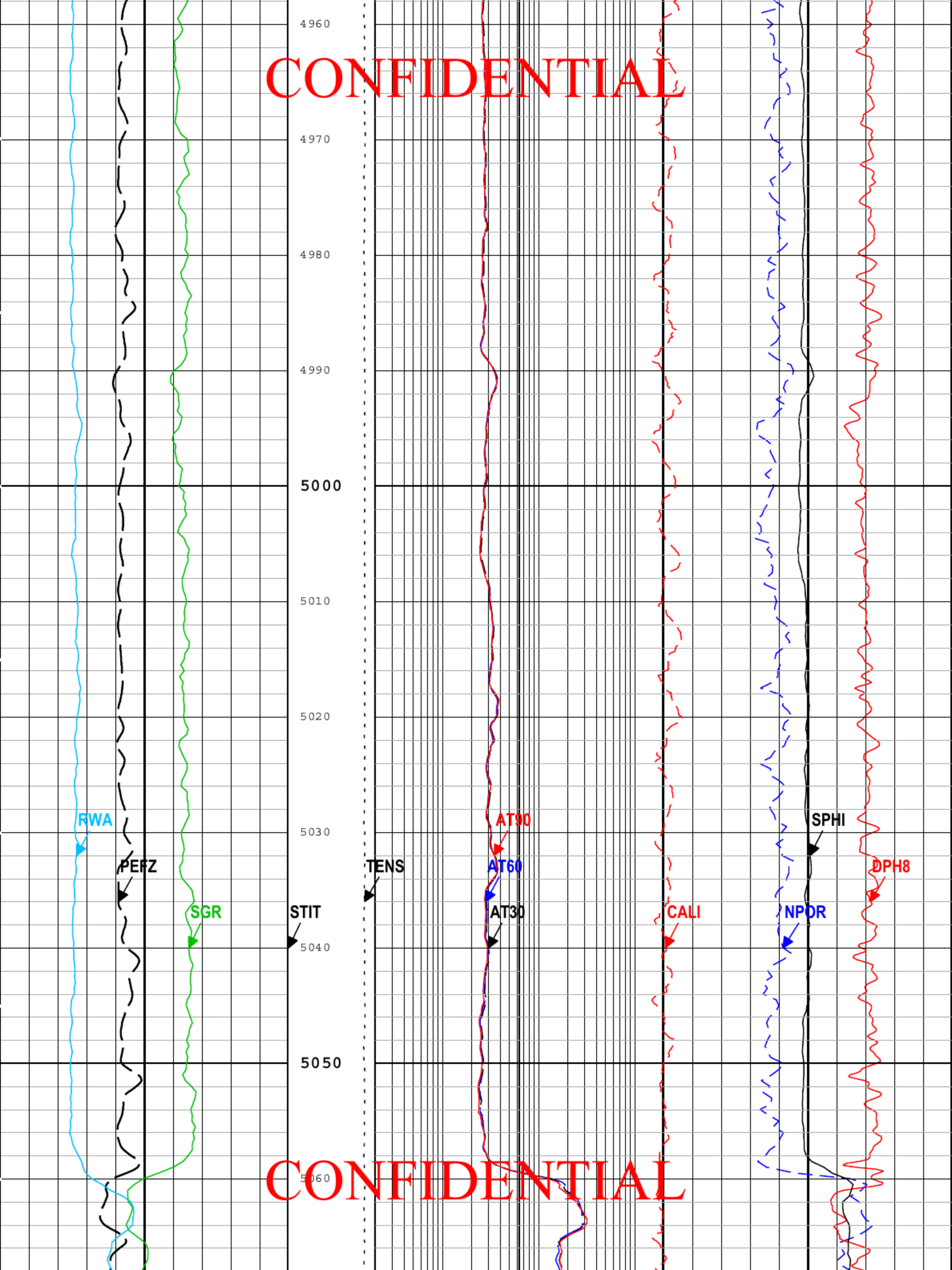
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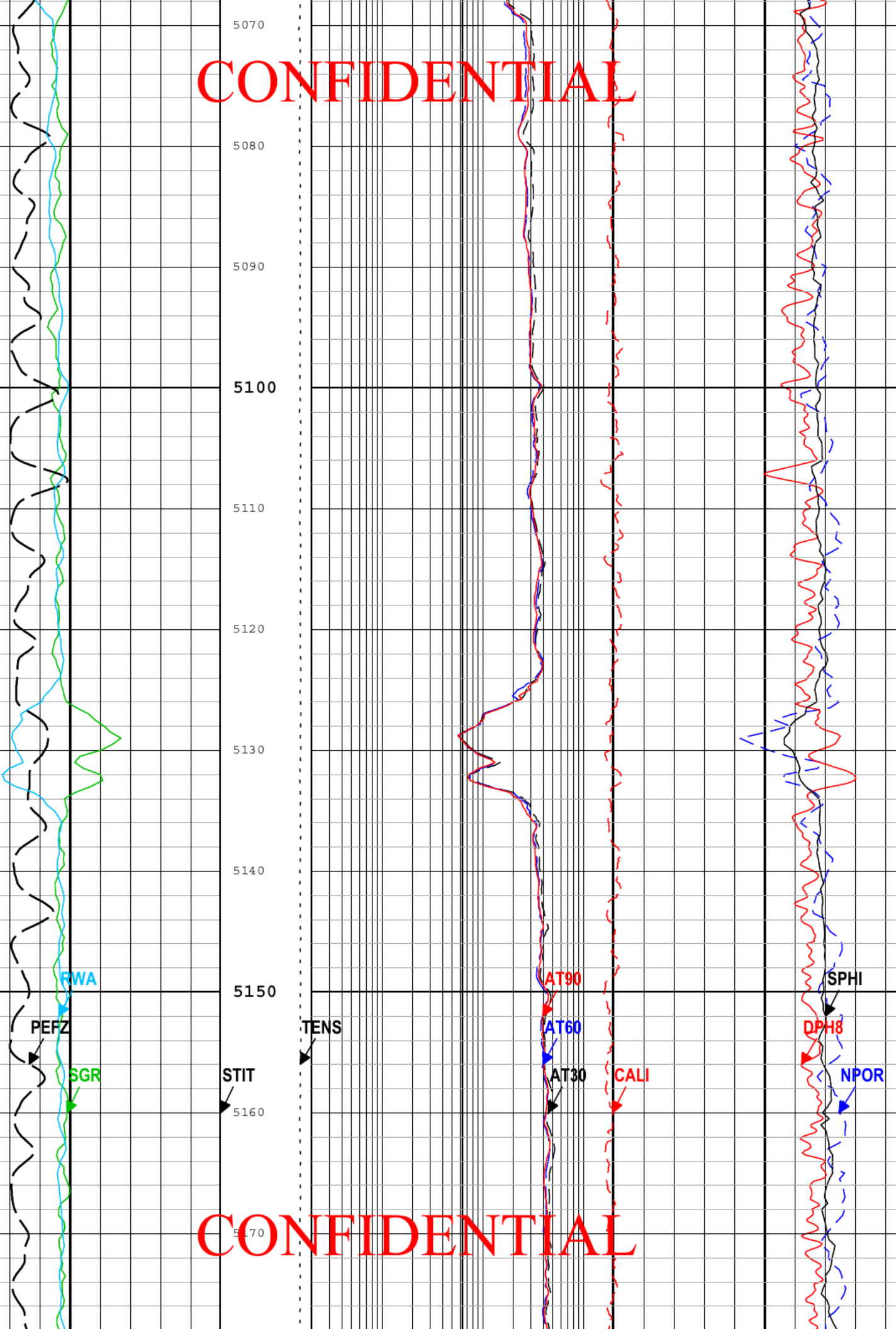
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5180

5190

5200

5210

5220

5230

5240

5250

5260

5270

5280

RWA

PEFZ

SGR

STIT

TENS

AT90

AT60

AT30

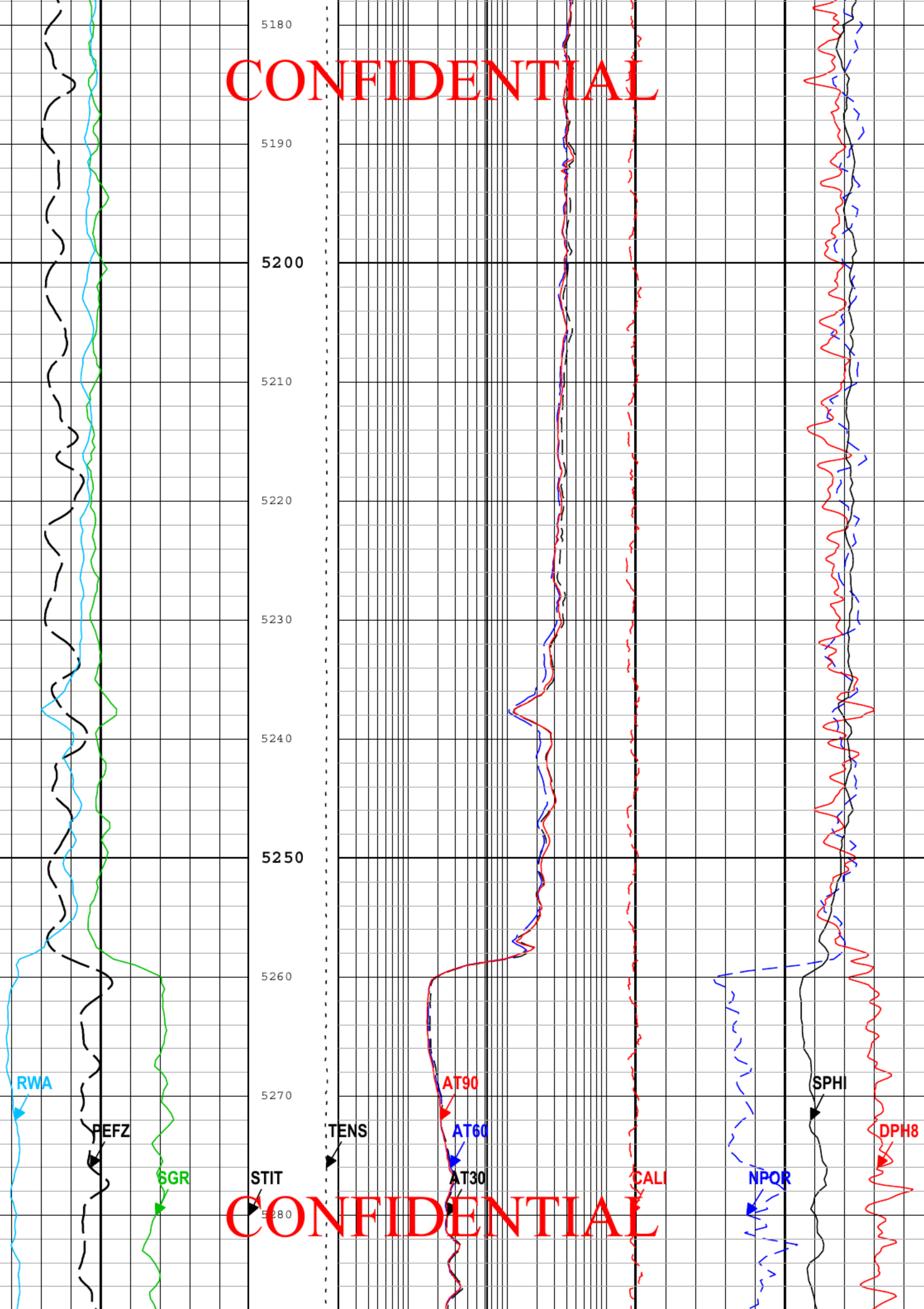
CALI

SPHI

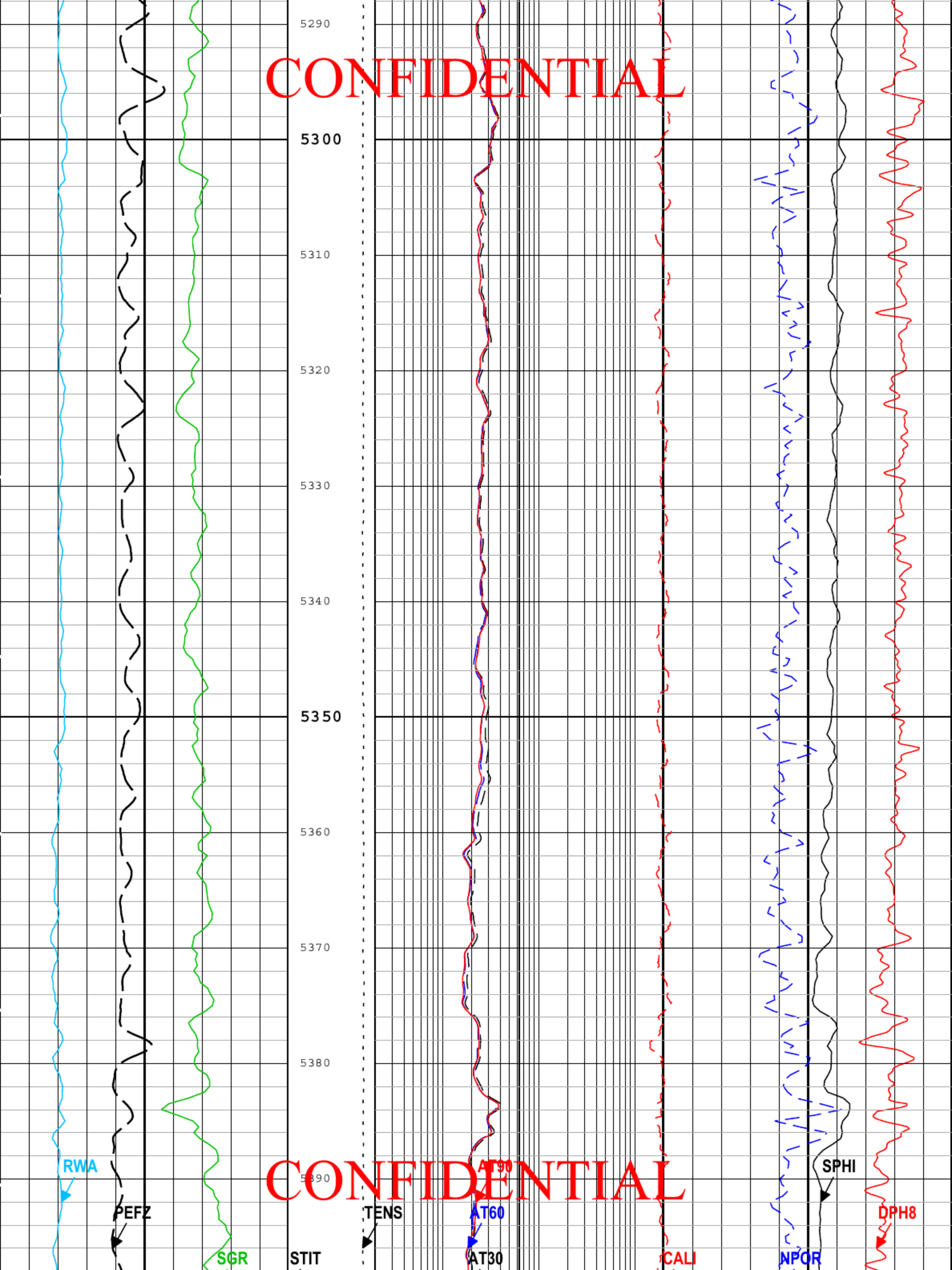
NPOR

DPH8

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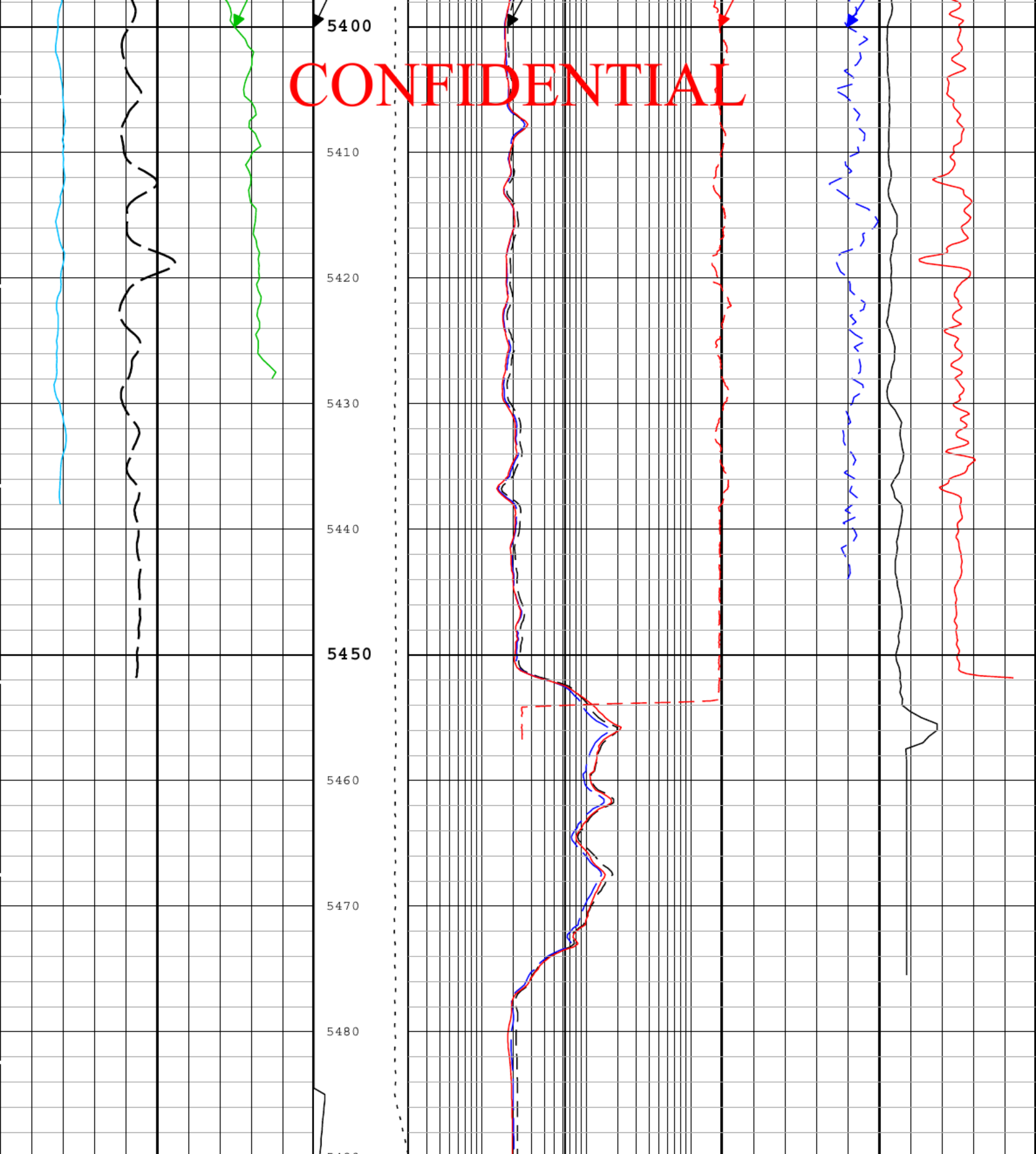


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Spectroscopy Gamma Ray (SGR) HNGS-BA		
0	gAPI	150
Standard Resolution Formation Photoelectric Factor (PEFZ) HDRS-H		
0		10
Apparent Formation Water Resistivity (RWA)		
0.02	ohm.m	200

Stuck Tool Indicator, Total (STIT)	
0	ft 50
Cable Tension (TENS)	
8000 lbf	2000

Caliper (CALI) HDRS-H		
0	in	17.5
Array Induction Two Foot Resistivity A30 (AT30) ZAIT-E		
0.2	ohm.m	200
Array Induction Two Foot Resistivity A60 (AT60) ZAIT-E		
0.2	ohm.m	200

Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H	
0.6	ft3/ft3
High Resolution Density Porosity (DPH8)	

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		Before-Master	9772	9284	9749	10261	
LS Window Ratio		Master	1.0000		0.2994		
		Before	0.2994	0.284	0.3008	0.3144	
		Before-Master	-----	-----	0.0014	-----	
LS Window Sum	1/s	Master	1		1176		
		Before	1176	1117	1179	1235	
		Before-Master	-----	-----	3	-----	

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

Master (EEPROM):		19:57:24 07-Aug-2014		Before (Measured):		11:22:16 04-Sep-2014 Expired by 1 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1375	2400	
		Before		1000	1358	2400	
		Before-Master	-----	-100	-17	100	
SS PM High Voltage	V	Master		1000	1632	2400	
		Before		1000	1645	2400	
		Before-Master	-----	-100	13	100	
LS PM High Voltage	V	Master		1000	1188	2400	
		Before		1000	1197	2400	
		Before-Master	-----	-100	9	100	

### HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		19:57:24 07-Aug-2014		Before (Measured):		11:22:16 04-Sep-2014 Expired by 1 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	10.72	25.00	
		Before		5.00	10.48	25.00	
		Before-Master	-----	-1.00	-0.24	1.00	
SS Crystal Resolution	%	Master		5.00	9.28	20.00	
		Before		5.00	9.38	20.00	
		Before-Master	-----	-1.00	0.10	1.00	
LS Crystal Resolution	%	Master		5.00	8.42	20.00	
		Before		5.00	8.46	20.00	
		Before-Master	-----	-1.00	0.04	1.00	

### HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		11:22:54 04-Sep-2014 Expired by 1 days					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3861	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3809	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3822	4136	

### 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		4865
<b>Auxiliary Equipment :</b>			
HGNS Accelerometer, 150 degC	HACCZ-H		6991
AmBe Neutron Logging Source	NSR-F		2554
<b>Calibration Parameter :</b>			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)	165		

### HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured):		17:01:44 05-Sep-2014					
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-May-2007					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0	

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Accelerometer Coefficients - 0		Master	----	----	-4298.000	----	
Accelerometer Coefficients - 1		Master	----	----	50.180	----	
Accelerometer Coefficients - 2		Master	----	----	-0.002	----	
Accelerometer Coefficients - 3		Master	----	----	0.000	----	
Accelerometer Coefficients - 4		Master	----	----	2.754	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	300.500	----	
Accelerometer Coefficients - 9		Master	----	----	0.994	----	

**HGNS Neutron Calibration - HGNS Neutron Accumulations**

Master (EEPROM):		14:29:32 23-Jul-2014		Before (Measured):		11:20:38 04-Sep-2014 Expired by 1 days	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	27.5	40.0	
		Before	0	5.0	28.1	40.0	
		Before-Master	----	-4.1	0.6	4.1	
Far Zero Measurement	1/s	Master	0	5.0	28.9	40.0	
		Before	0	5.0	27.7	40.0	
		Before-Master	----	-4.3	-1.2	4.3	
Near Plus Measurement	1/s	Master	6031.0	4700.0	5764.0	6900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Far Plus Measurement	1/s	Master	2793.0	1900.0	2396.0	2900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Near Corrected Plus Measurement	1/s	Master		4700.0	5720.0	6900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Far Corrected Plus Measurement	1/s	Master		1900.0	2356.0	2900.0	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

**HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations**

Before (Measured):		11:24:06 04-Sep-2014 Expired by 1 days					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	73.9	120.0	
RGR Plus Measurement	gAPI	Before	185.4	157.1	177.0	206.3	
GR Calibration Gain		Before	0.89	0.80	0.93	1.05	

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Company:	Alta Mesa Services, LP	<b>Schlumberger</b>
Well:	ML Investments 1-11	
Field:	Willow	
County:	Payette	
State:	Idaho	

Platform Express - Quad Combo  
Density - Neutron Porosity - Sonic - Propagation Resistivity  
Sandstone Matrix Print - 2.65 g/cm<sup>3</sup>

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