

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
ARRAY COMPENSATED
TRUE RESISTIVITY
FIELD PRINT

COMPANY		KERR-MCGEE OIL & GAS ONSHORE LP	
WELL		CANNON 22-3	
FIELD		WATTENBERG	
COUNTY		WELD	
STATE		CO	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		12-Jul-11	
Run No.		ONE	
Depth - Driller		8086.00 ft	
Depth - Logger		8030.0 ft	
Bottom - Logged Interval		8021 ft	
Top - Logged Interval		CSG	
Casing - Driller		8.625 in @ 747.0 ft	
Casing - Logger		3525.0 ft	
Bit Size		7.875 in @	
Type Fluid in Hole		WATER BASED MUD	
Density		8.4 ppq 26.00 s/qt	
PH		26.00 pH 0.0 cp/m	
Source of Sample		MUD CELL	
Rm @ Meas. Temperature		0.950 ohmm @ 75.00 degF @	
Rmf @ Meas. Temperature		0.80 ohmm @ 75.00 degF @	
Rmc @ Meas. Temperature		0.867 ohmm @ 75.00 degF @	
Source Rmf		CHART	
Rm @ BHT		0.37 ohmm @ 205.0 degF @	
Time Since Circulation		10.0 hr	
Time on Bottom		12-Jul-11 11:38	
Max. Rec. Temperature		205.0 degF @ 8035.0 ft @	
Equipment		11454566 BRIGHTON	
Recorded By		F. LODER	
Witnessed By		J. ADAMS	
W. TEKELL			

Fold here

Service Ticket No.: 8311650						API Serial No.: 05123325590000						PGM Version: WL INSITE R3.2.5 (Build 2)																	
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE												RESISTIVITY SCALE CHANGES																	
Date		Sample No.										Type Log		Depth		Scale Up Hole				Scale Down Hole									
Depth-Driller																													
Type Fluid in Hole																													
Density		Viscosity																											
Ph		Fluid Loss																											
Source of Sample												RESISTIVITY EQUIPMENT DATA																	
Rm @ Meas. Temp				@				@				Run No.		Tool Type & No.				Pad Type				Tool Pos.				Other			
Rmf @ Meas. Temp.				@				@				OEN		SACRt 714-718				N/A				FREE				N/A			
Rmc @ Meas. Temp.				@				@																					
Source Rmf		Rmc																											
Rm @ BHT				@				@																					
Rmf @ BHT				@				@																					
Rmc @ BHT				@				@																					
EQUIPMENT DATA																													
GAMMA						ACOUSTIC						DENSITY						NEUTRON											
Run No.		ONE				Run No.						Run No.		ONE				Run No.		ONE									
Serial No.		11577722				Serial No.						Serial No.		M43P31N34				Serial No.		11581734									
Model No.		S4TG				Model No.						Model No.		SSDL				Model No.		SDSN									
Diameter		2.35"				No. of Cent.						Diameter		2.35"				Diameter		2.35"									
Detector Model No.		2G8BICORN				Spacing						Log Type		GAM-GAM				Log Type		NEU-NEU									
Type		SCINT										Source Type		Cs137				Source Type		Am241Be									
Length		8"				LSA [Y/N]						Serial No.		5265GW				Serial No.		DSN434									
Distance to Source		10'				FWDA [Y/N]						Strength		1.5 Ci				Strength		15 Ci									

GENERAL			GAMMA		ACOUSTIC		DENSITY		NEUTRON										
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix					
No.	From	To	ft/min	L	R	L	R		L	R		L	R						
ONE	8030'	3525'	REC	0 API	200 API				20 %	0 %	2.71 g/cc	20 %	0 %	LIME					
DIRECTIONAL INFORMATION																			
Maximum Deviation								@	KOP							@			
Remarks: SCH-S4TG-SDSN-SSDL-SACT RAN IN COMBINATION																			
TENSION PULLS AND BOREHOLE RUGOSITY AFFECT LOG RESPONSE																			
ANNULAR HOLE VOLUME CALCULATED USING 4.5 INCH PRODUCTION CASING																			
CREW: M. BURNETT, R. PERSHALL															RIG: PATTERSON 189				
THANK YOU FOR USING HALLIBURTON ENERGY SERVICES -- BRIGHTON, CO -- 303.825.4346																			
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.																			
															HALLIBURTON				



PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	8.400	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.950	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	80.0	degF
	SHARED	TD	Total Well Depth	8066.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	S4TG	
	SHARED	TEMM	Temperature Master Tool	NONE	
	SHARED	BHSM	Borehole Size Master Tool	NONE	
	S4TG	GROK	Process Gamma Ray?	Yes	
	S4TG	GRSO	Gamma Tool Standoff	0.000	in
	S4TG	GEOK	Process Gamma Ray EVR?	No	
	S4TG	TPOS	Tool Position	Eccentered	
	SDSN	DNOK	Process DSN?	Yes	

SDSN	DNOK	Process DSN?	Yes	
SDSN	DEOK	Process DSN EVR?	No	
SDSN	NLIT	Neutron Lithology	Limestone	
SDSN	DSNO	DSNTool Standoff	0.000	in
SDSN	DNTP	Temperature Correction Type	None	
SDSN	DPRS	DSN Pressure Correction Type	None	
SDSN	SHCO	View More Correction Options	No	
SDSN	UTVD	Use TVD for Gradient Corrections?	No	
SDSN	LHWT	Logging Horizontal Water Tank?	No	
SDSN	UCLA	Classic Neutron Parameter utilized?	No	
SSDL	DNOK	Process Density?	Yes	
SSDL	DNOK	Process Density EVR?	No	
SSDL	CB	Logging Calibration Blocks?	No	
SSDL	SPVT	SDLT Pad Temperature Valid?	Yes	
SSDL	DTWN	Disable temperature warning	No	
SSDL	MLPE	Higher PE Accuracy?	No	
SSDL	DMA	Formation Density Matrix	2.710	g/cc
SSDL	DFL	Formation Density Fluid	1.000	g/cc
SSDL	CLOK	Process Caliper Outputs?	Yes	
SACRT	RTOK	Process ACRT?	Yes	
SACRT	MNSO	Minimum Tool Standoff	1.50	in
SACRT	TCS1	Temperature Correction Source	FP Lwr & FP Up	
SACRT	TPOS	Tool Position	Free Hanging	
SACRT	RMOP	Rmud Source	Mud Cell	
SACRT	RMIN	Minimum Resistivity for MAP	0.20	ohmm
SACRT	RMIN	Maximum Resistivity for MAP	200.00	ohmm
SACRT	THQY	Threshold Quality	0.50	

BOTTOM

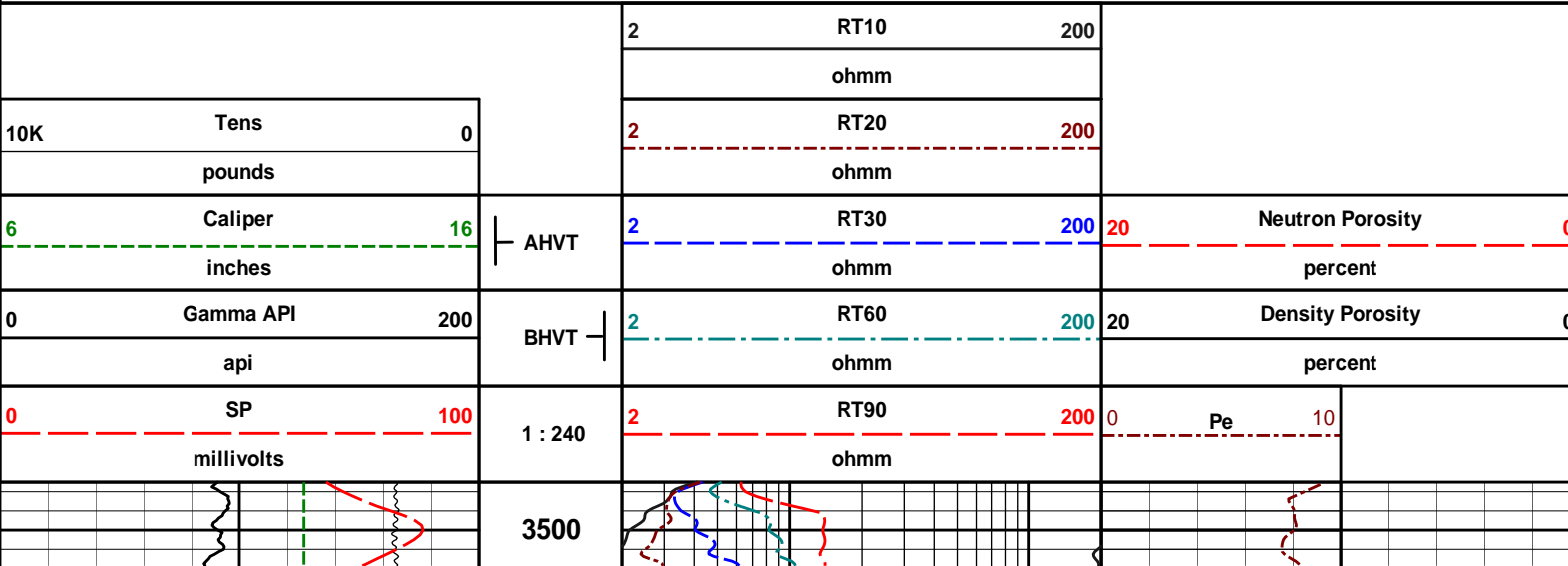
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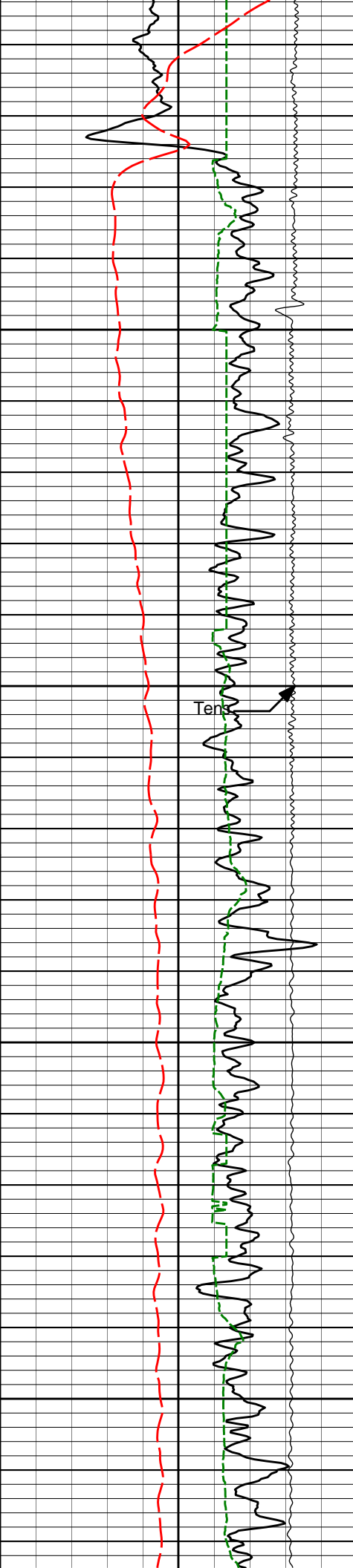
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HALLIBURTON

Plot Time: 12-Jul-11 16:43:40
Plot Range: 3495 ft to 8027.42 ft
Data: {ActiveWell}\Well Based\MAIN*
Plot File: \COMP\MAIN

REPEAT SECTION 5" = 100'



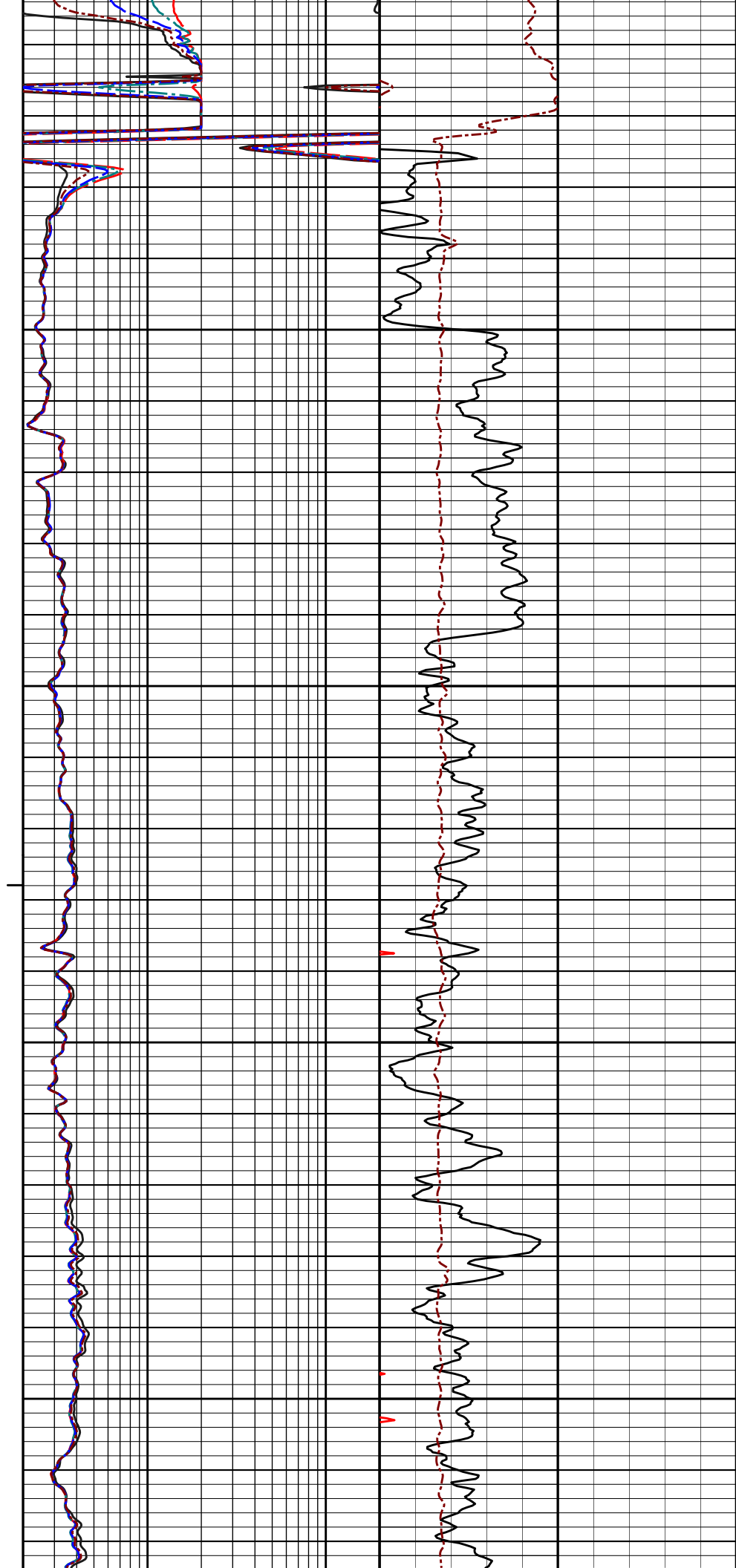


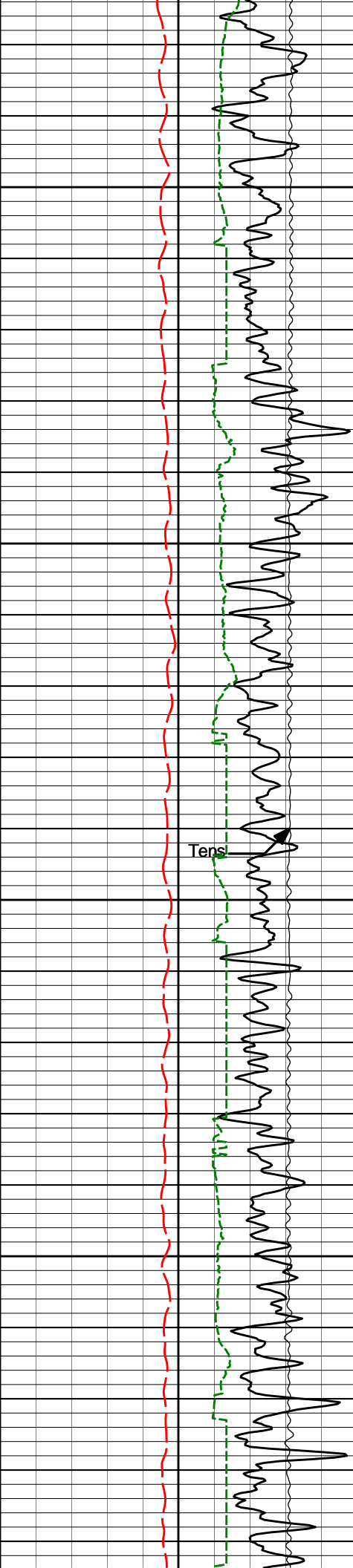
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3600

3650

3700





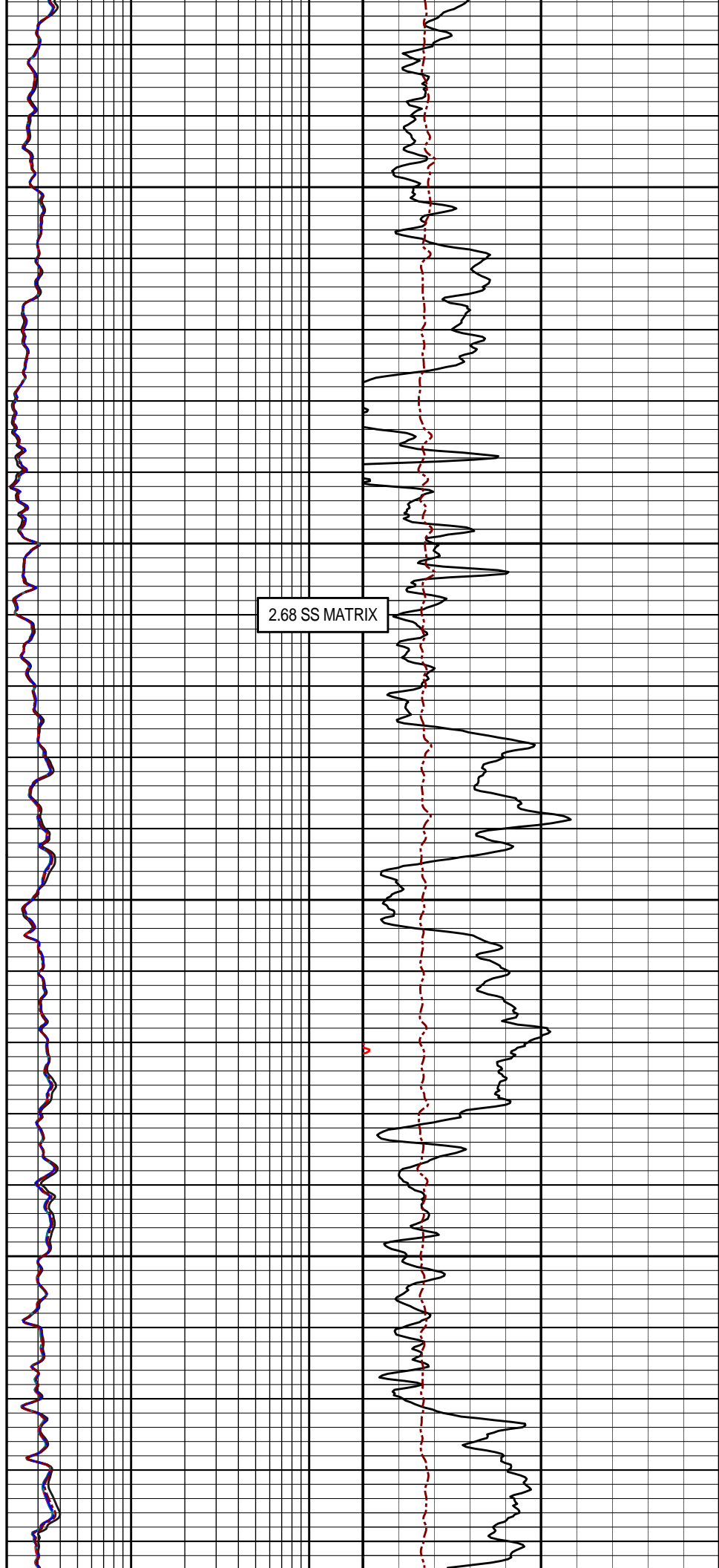
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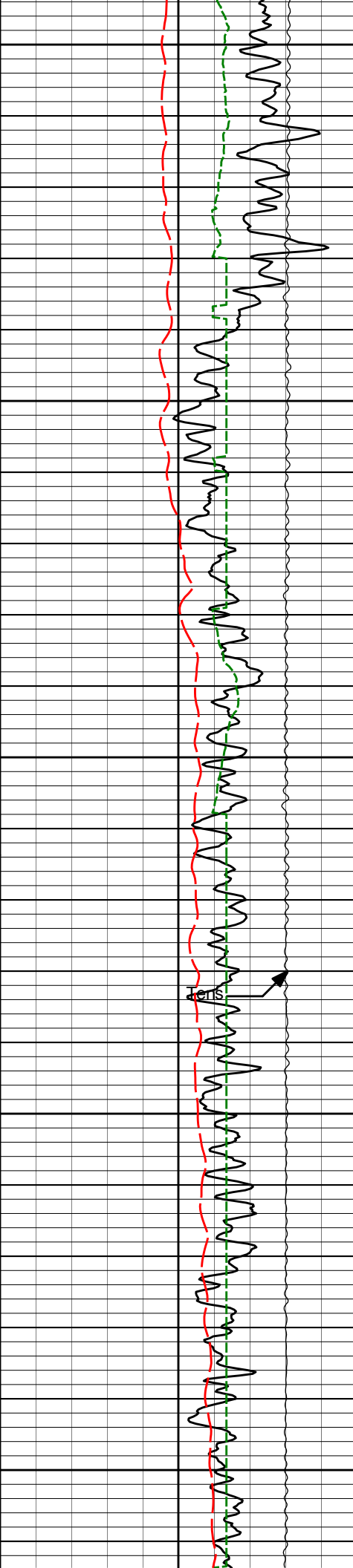
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3900

Tens



2.68 SS MATRIX



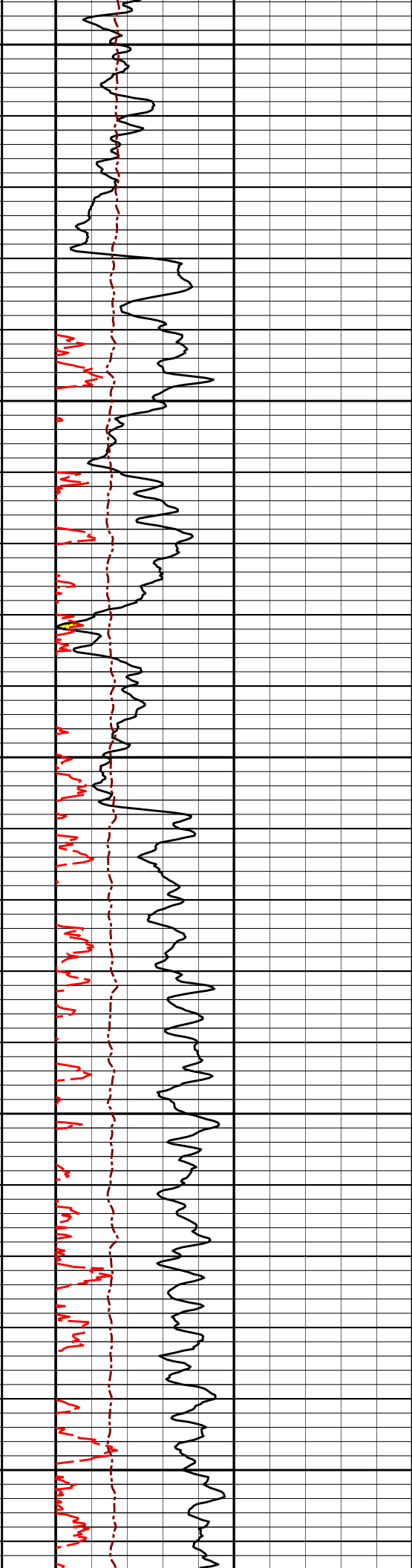
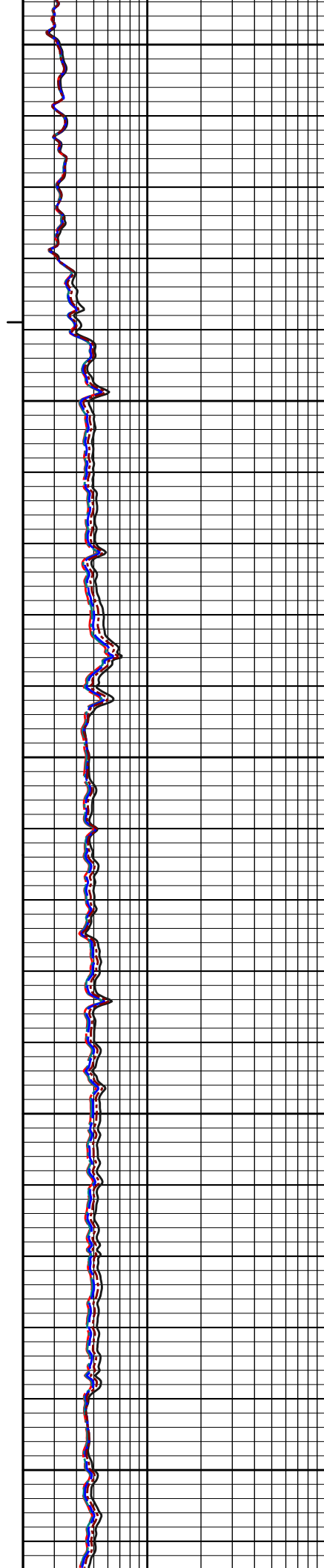
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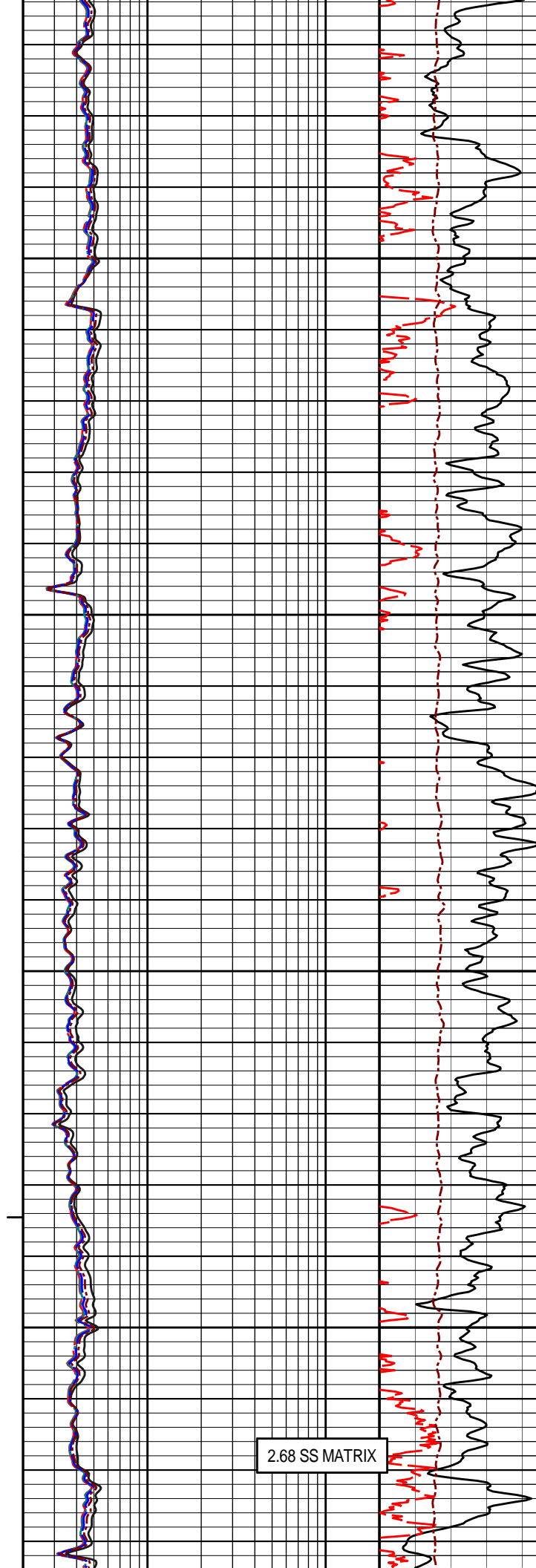
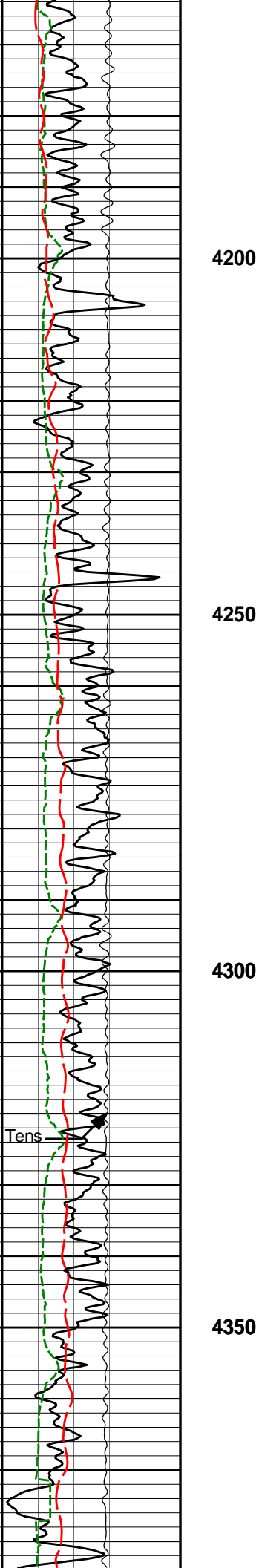
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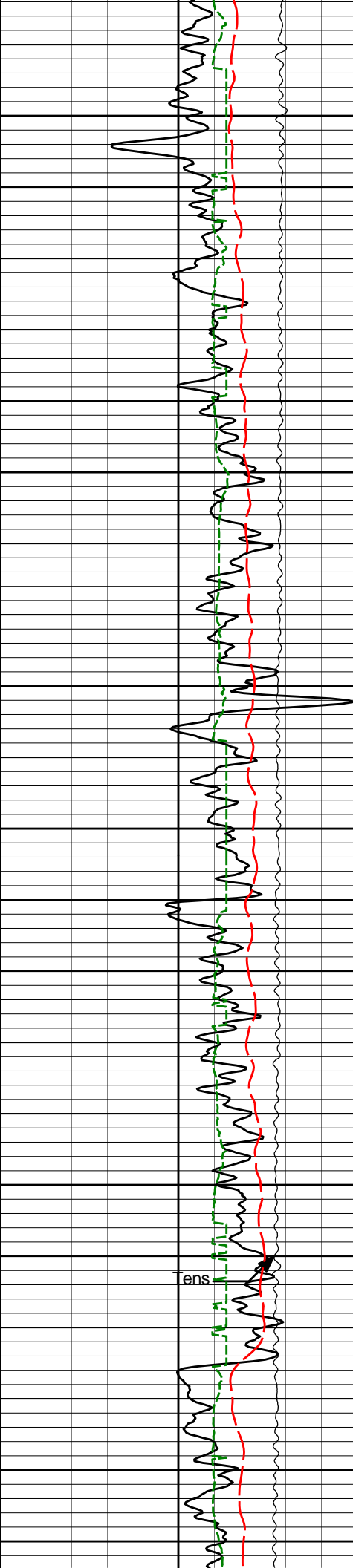
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4150





2.68 SS MATRIX



4400

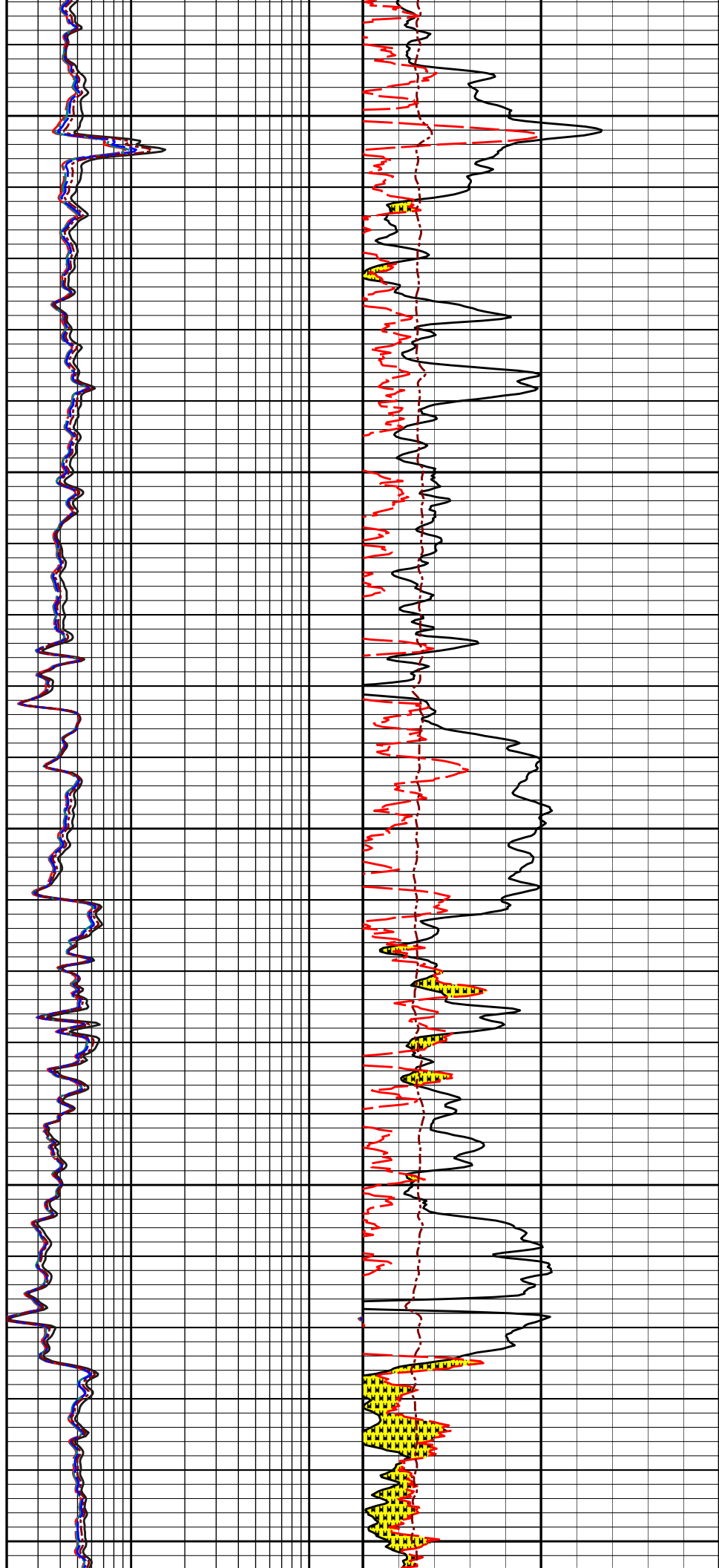
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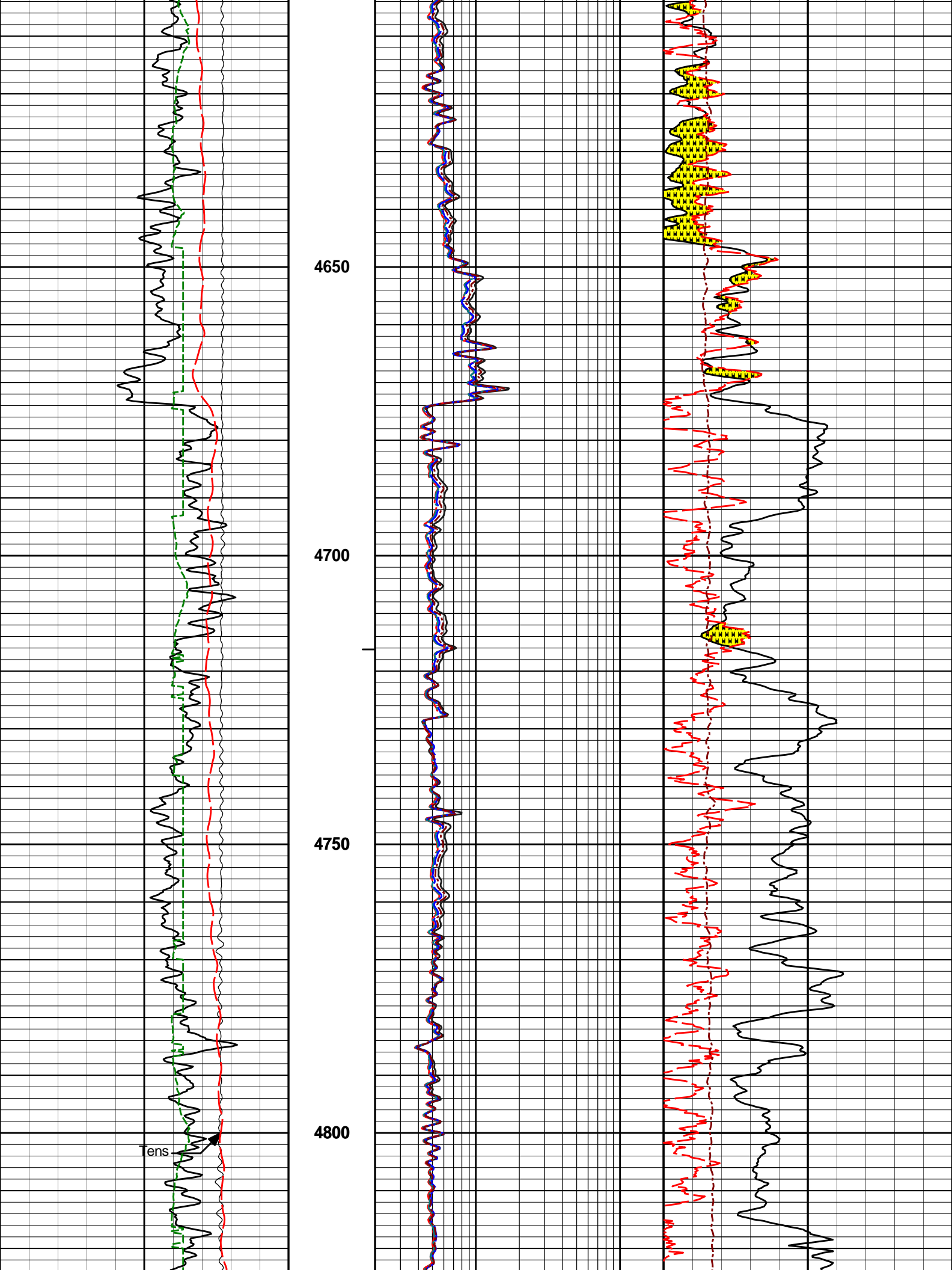
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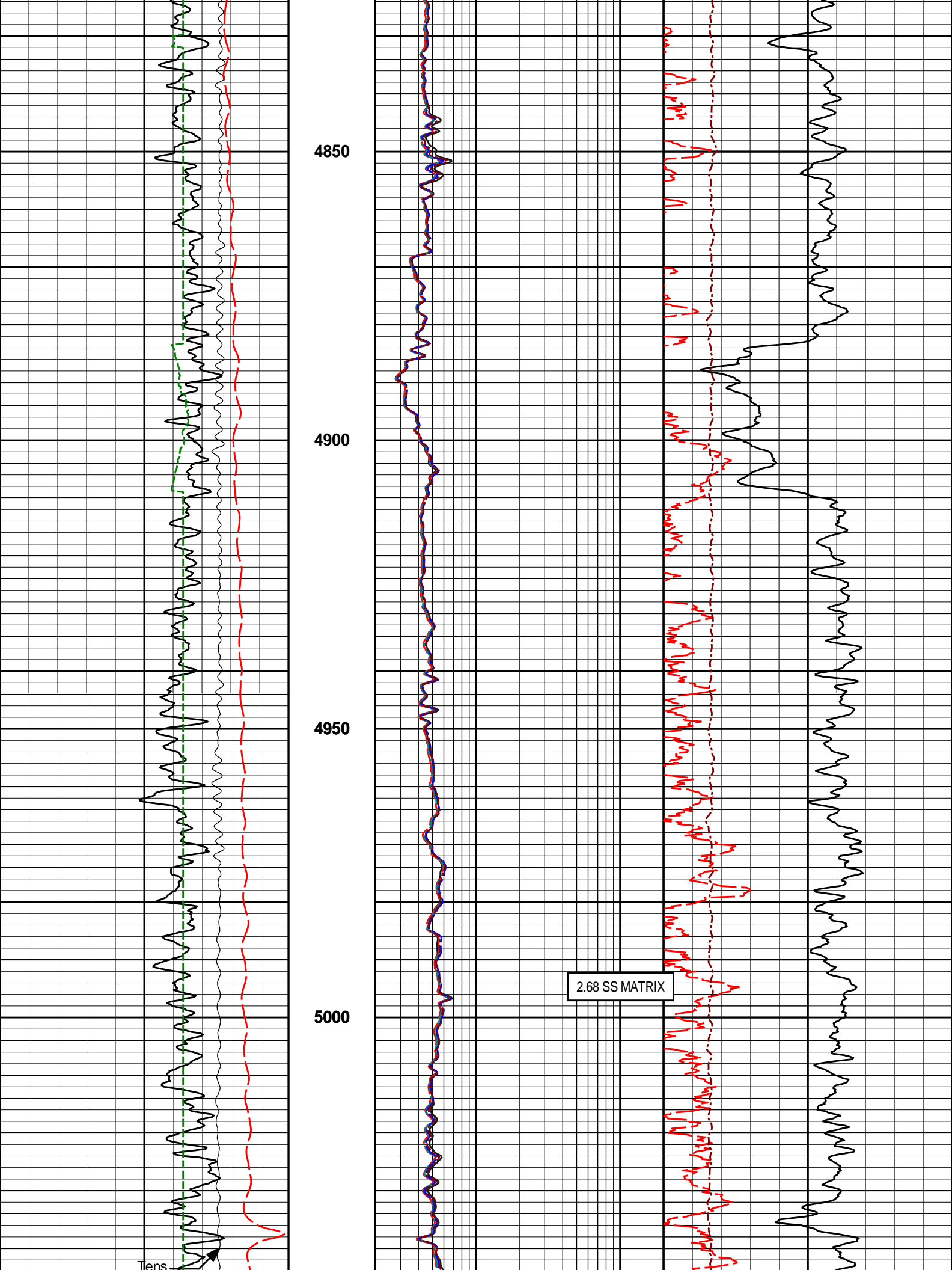
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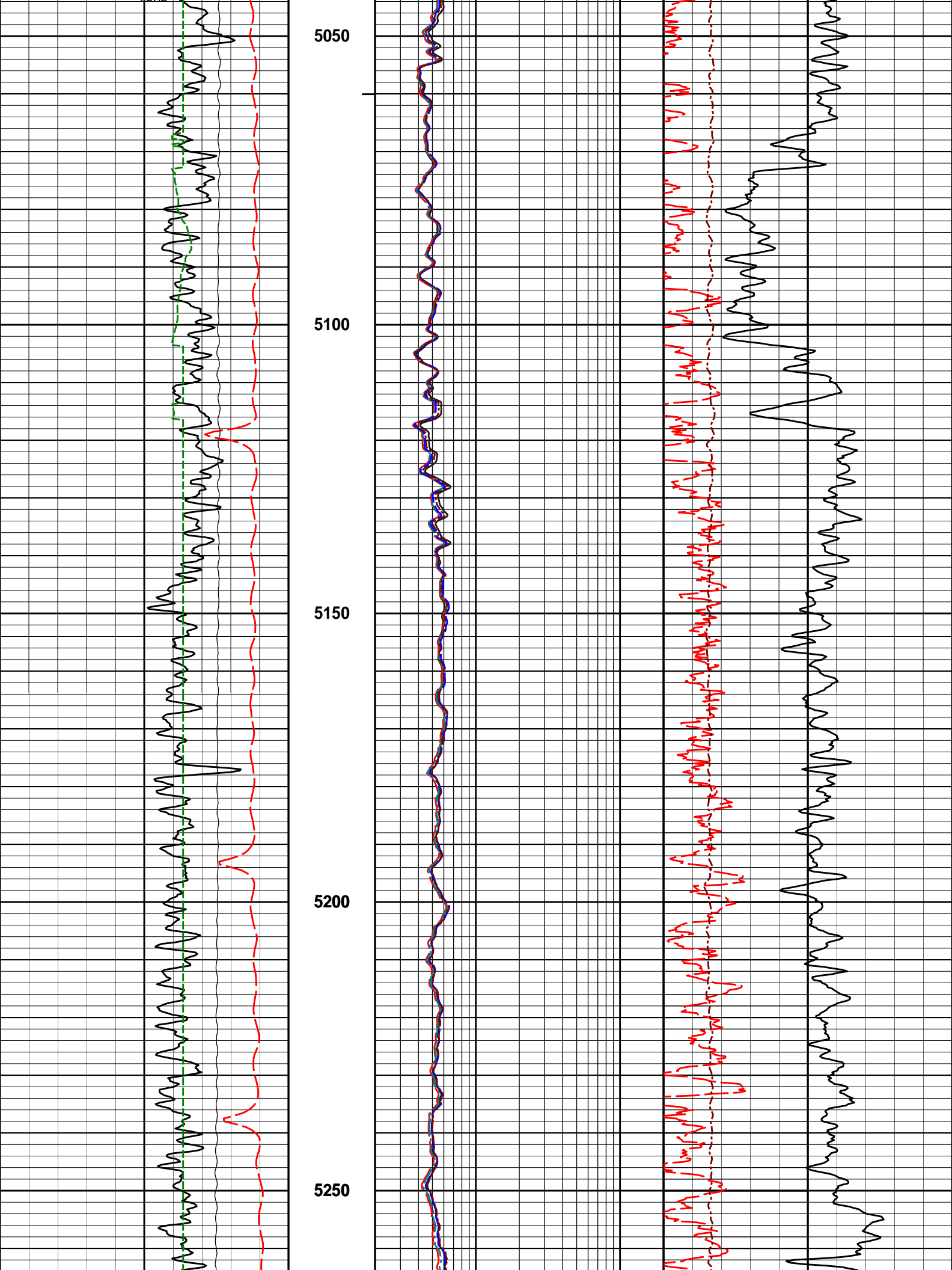
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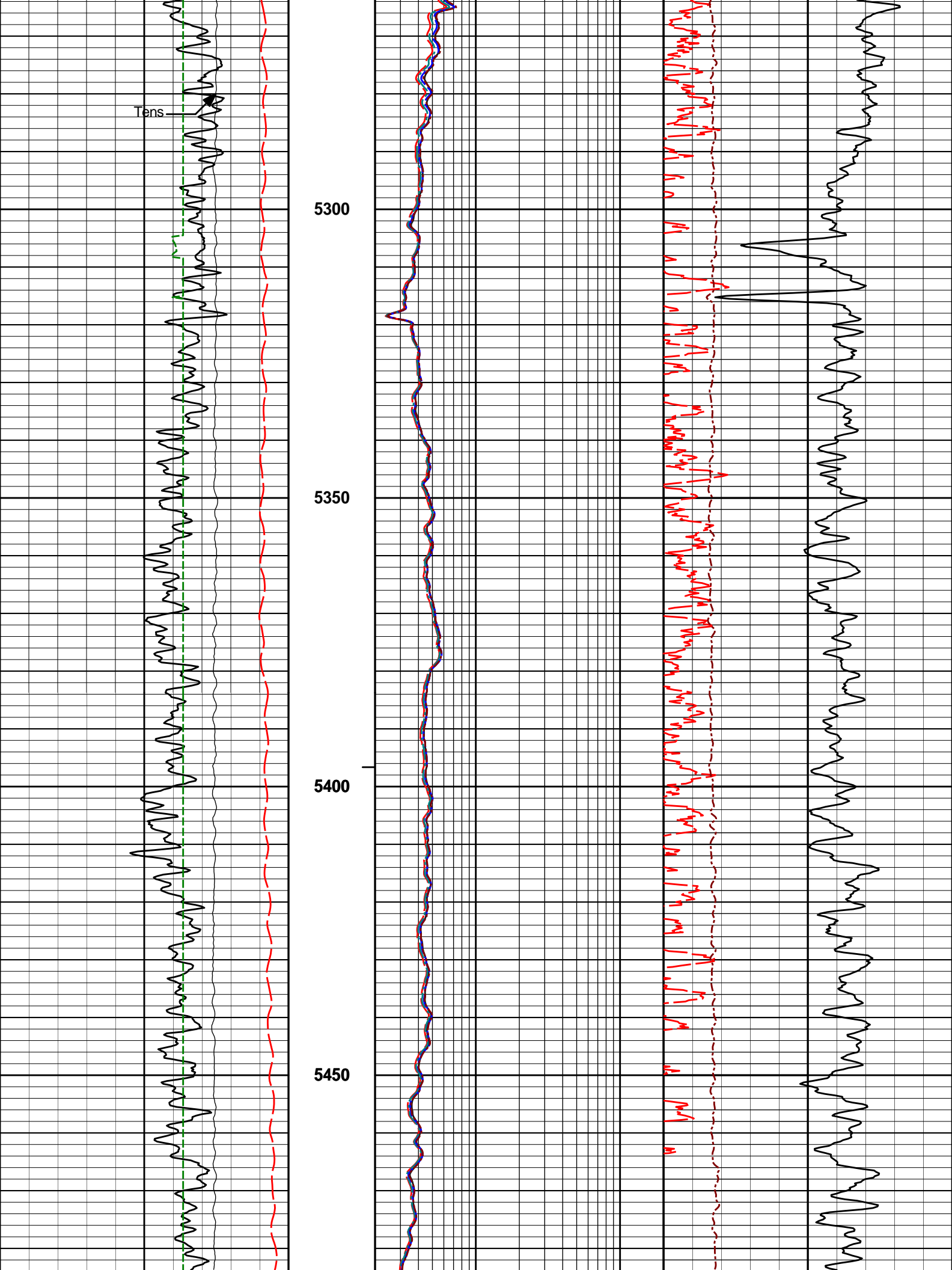
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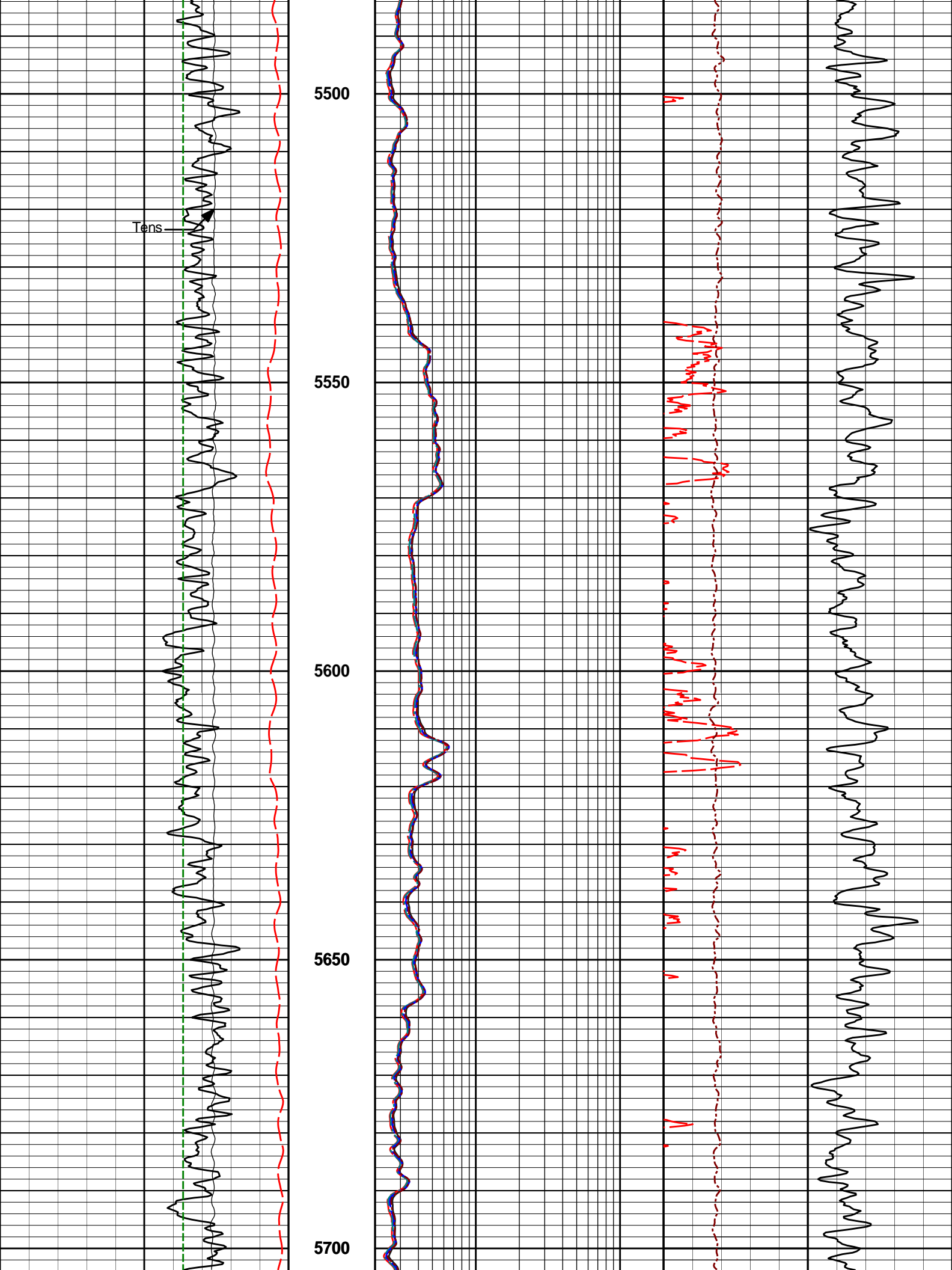


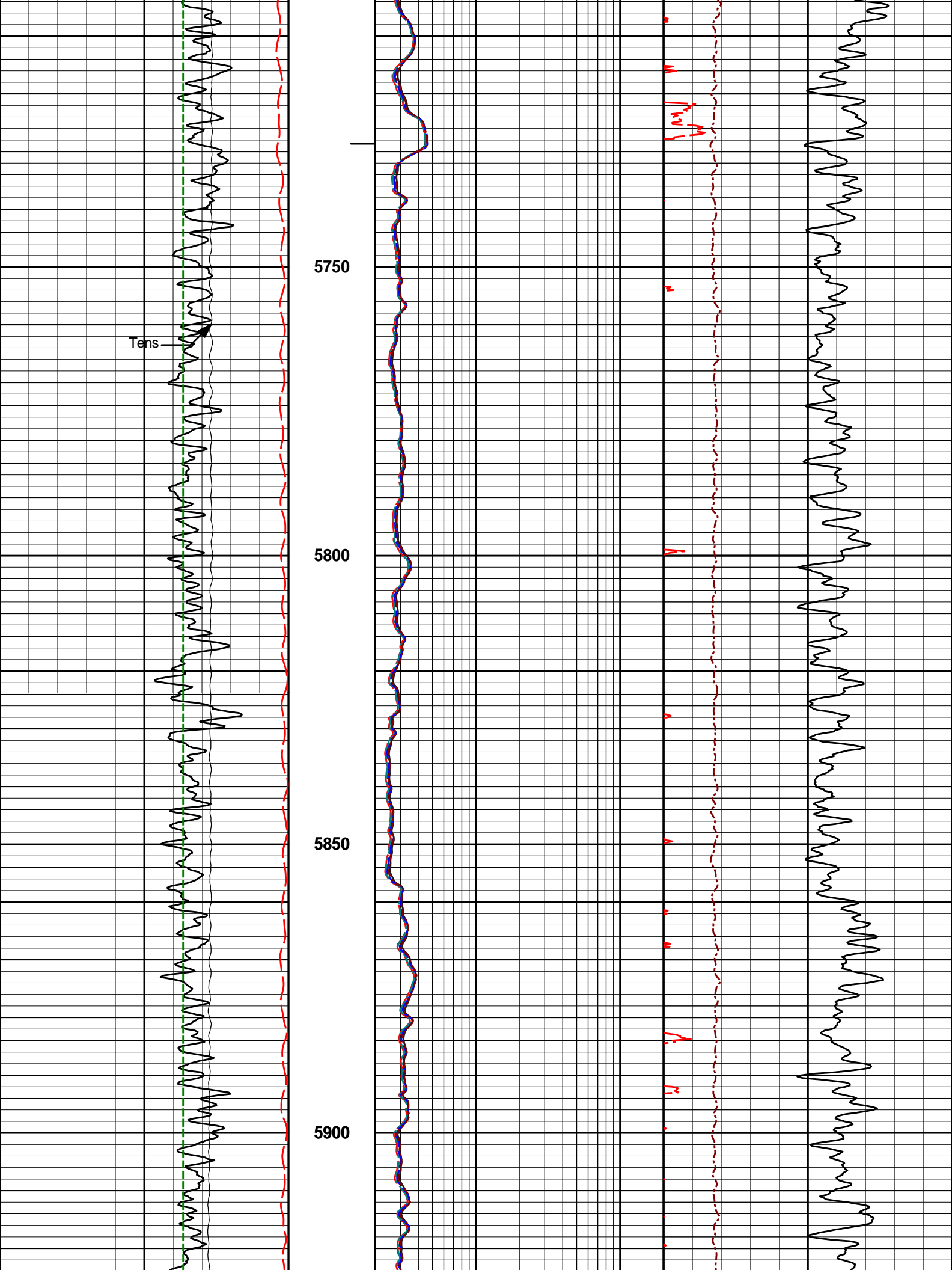


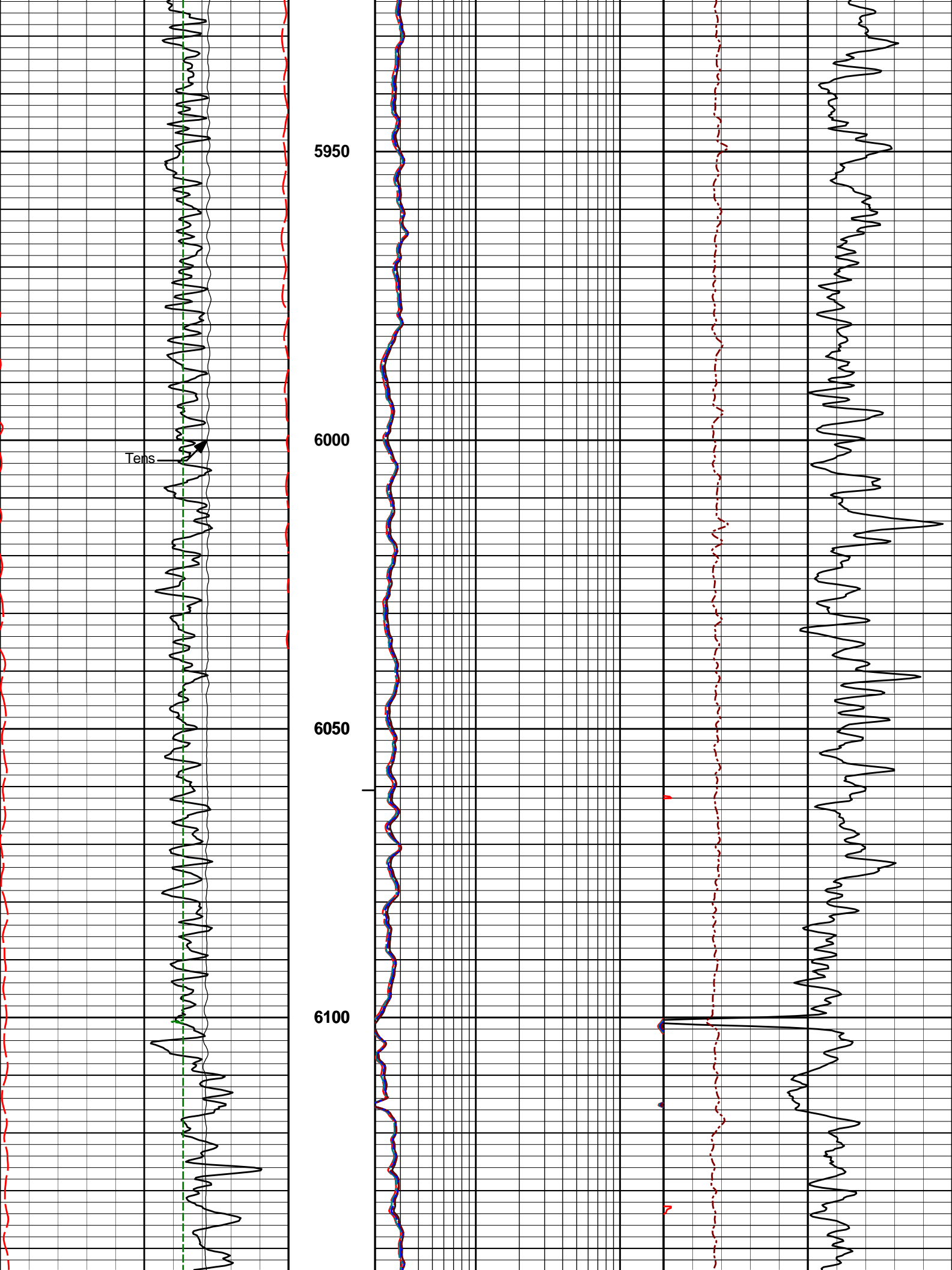


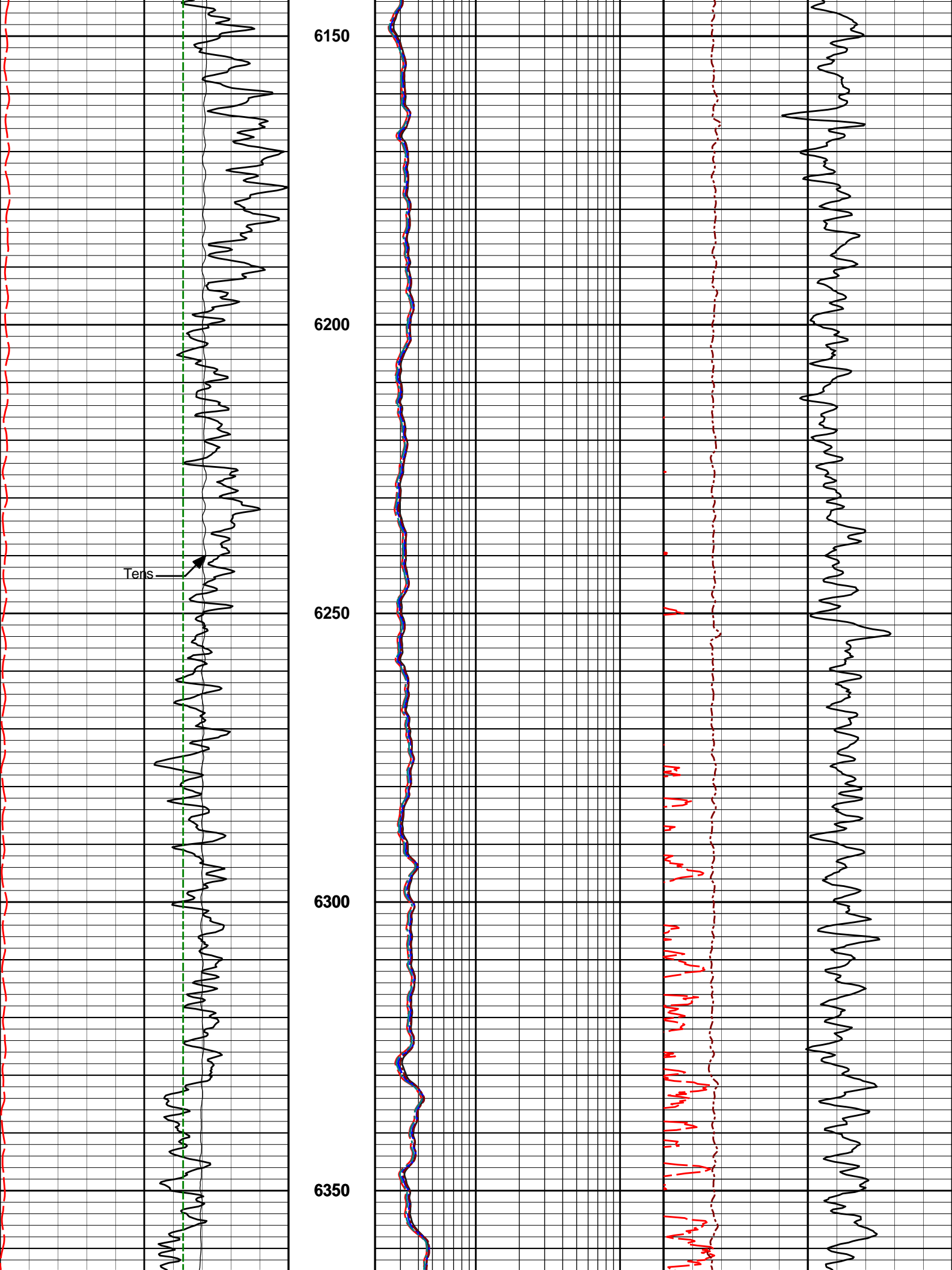


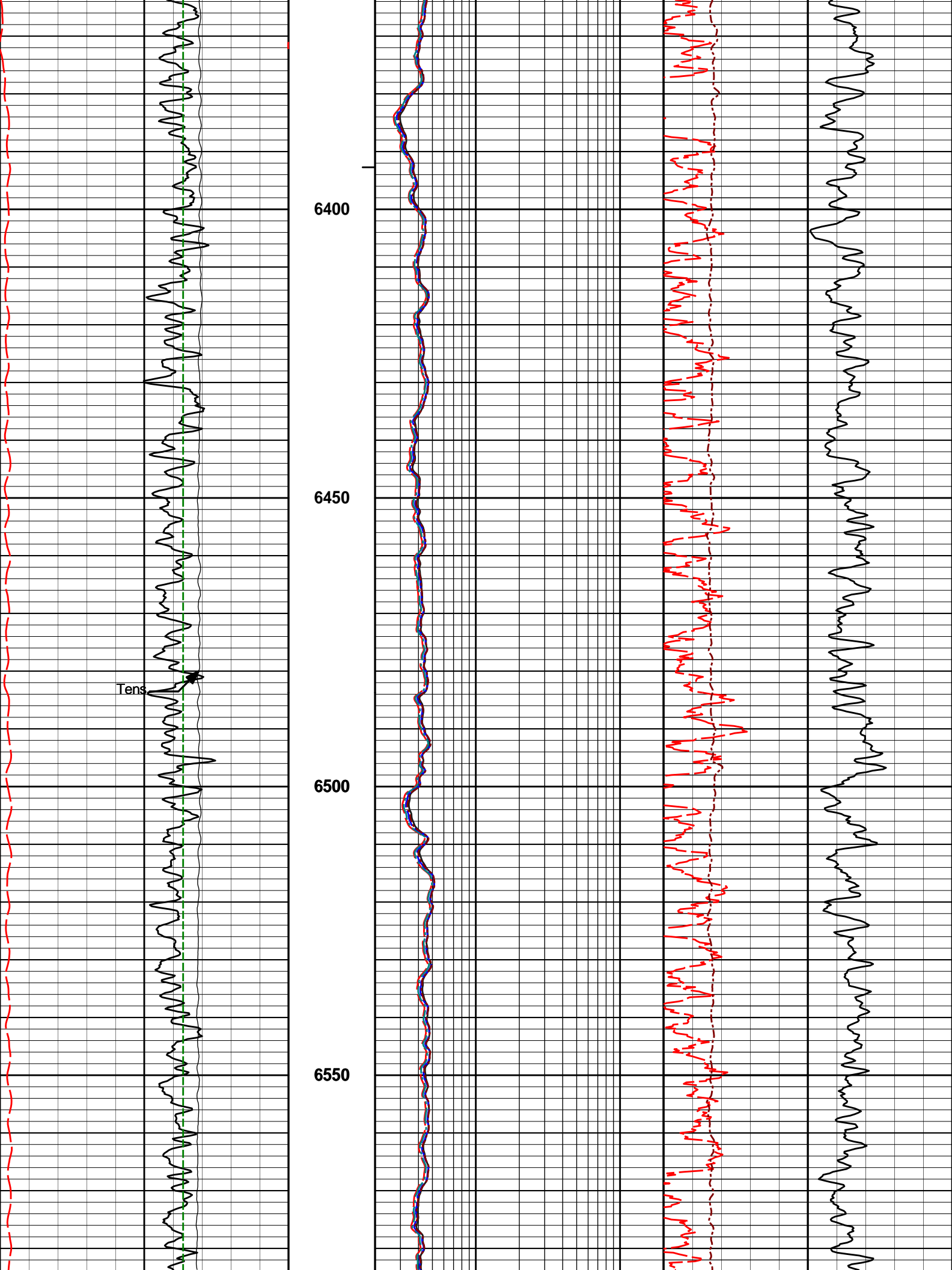


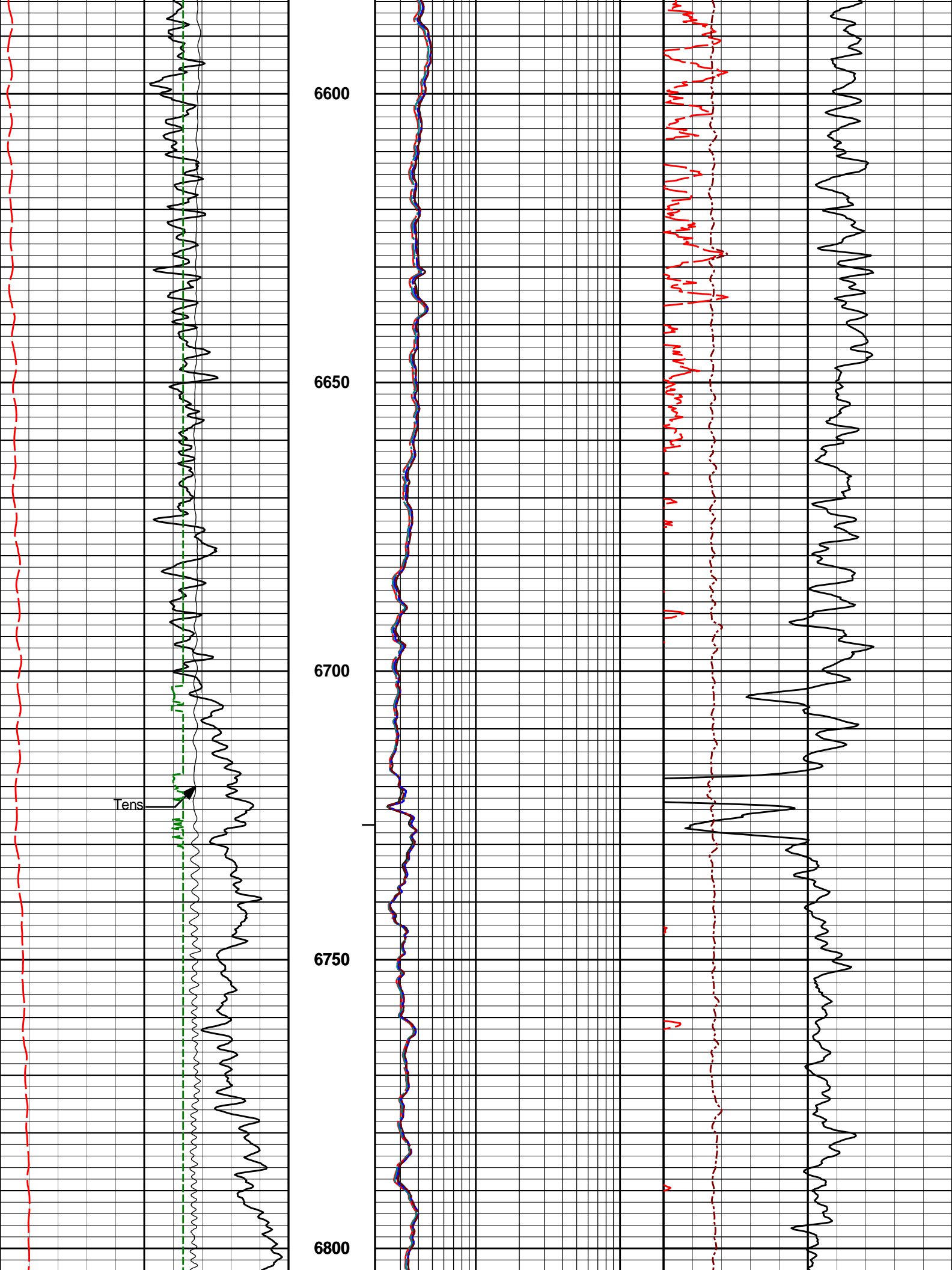


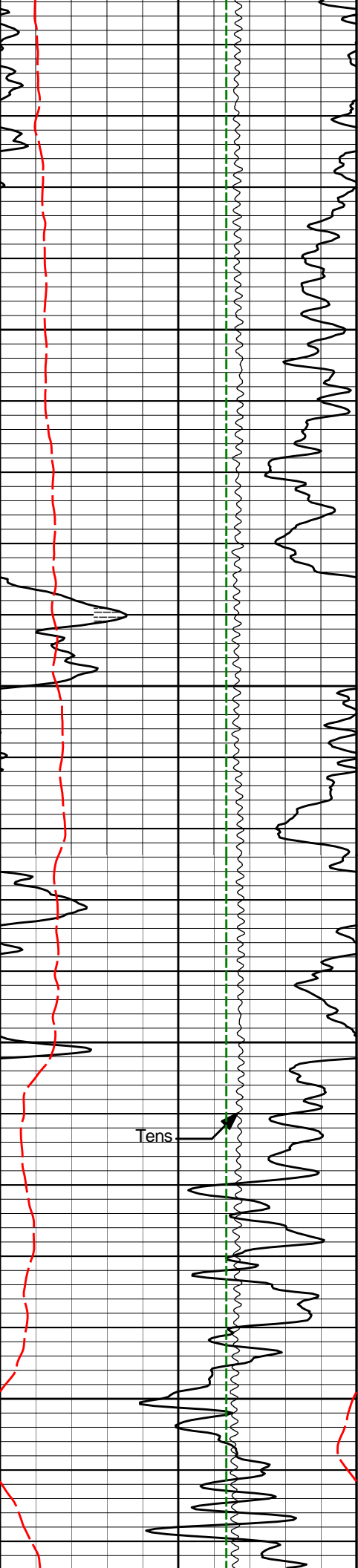










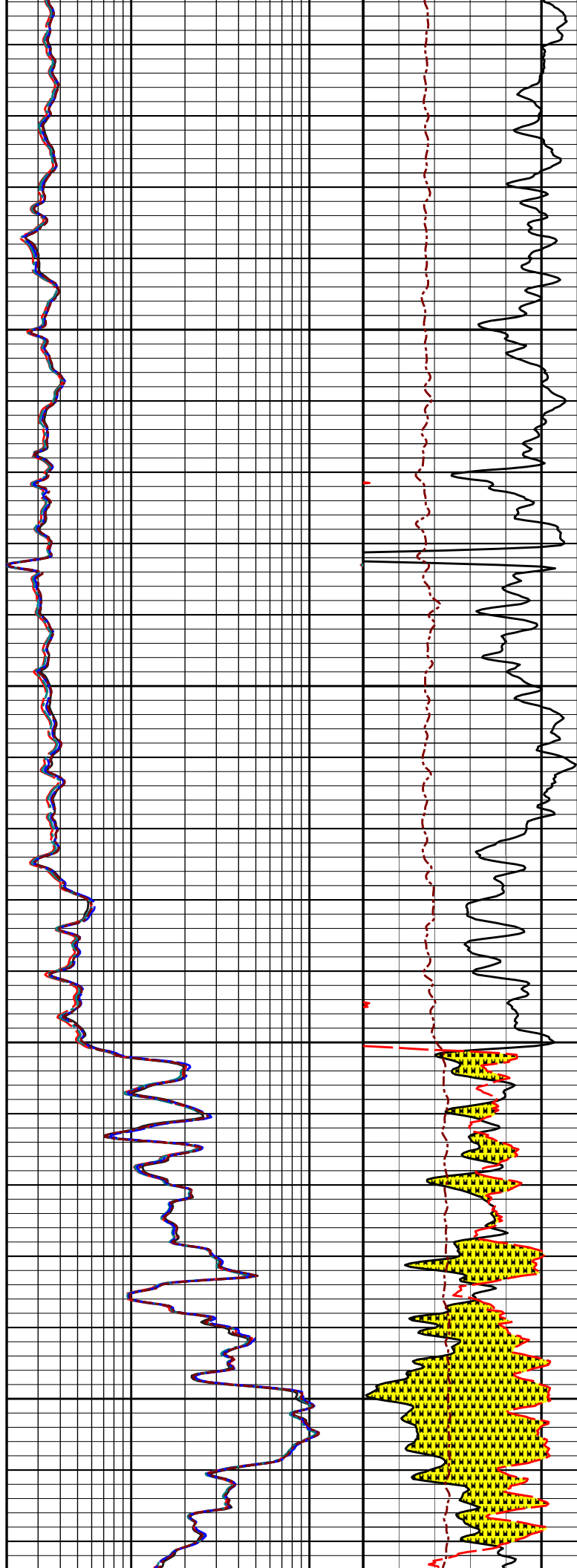


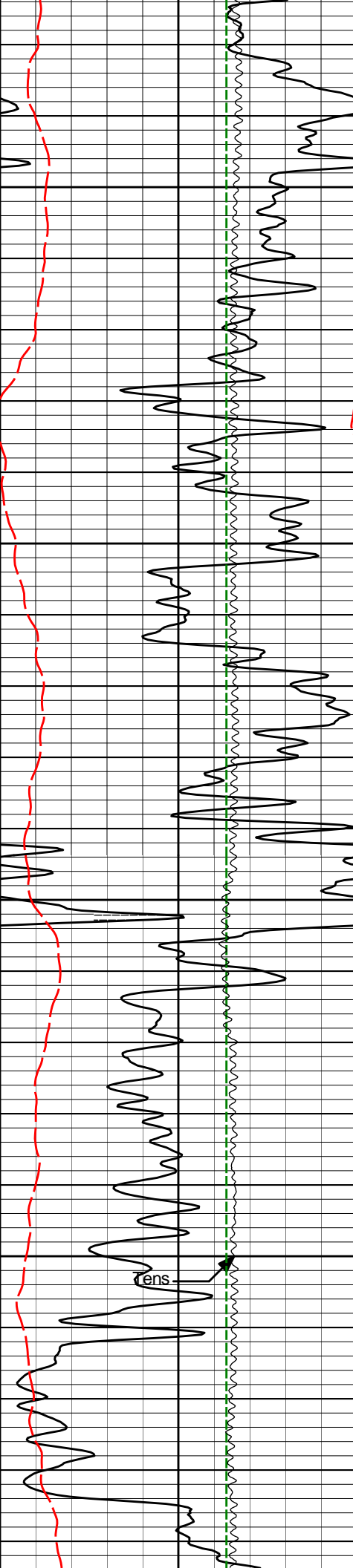
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6900

6950

7000



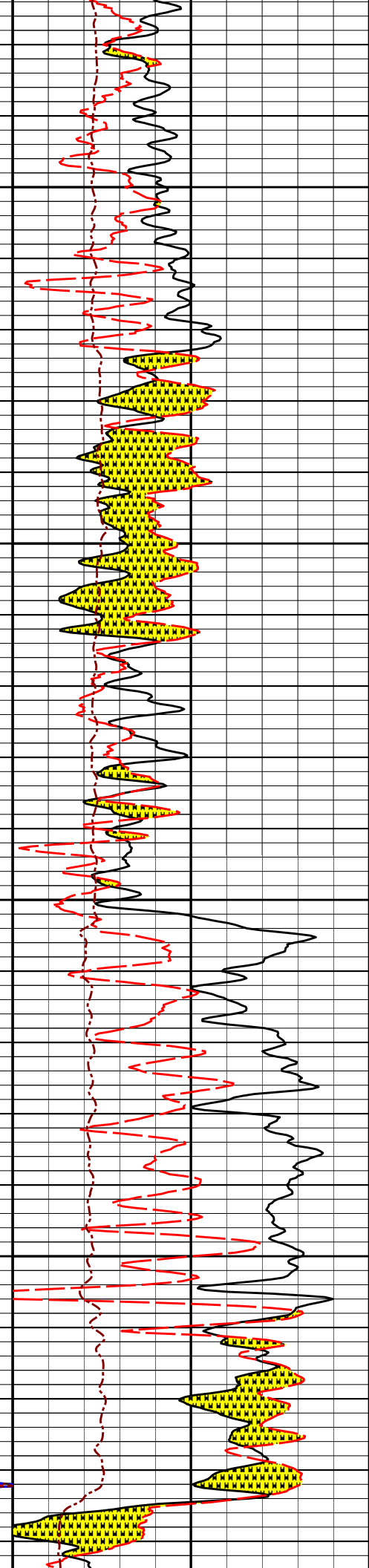
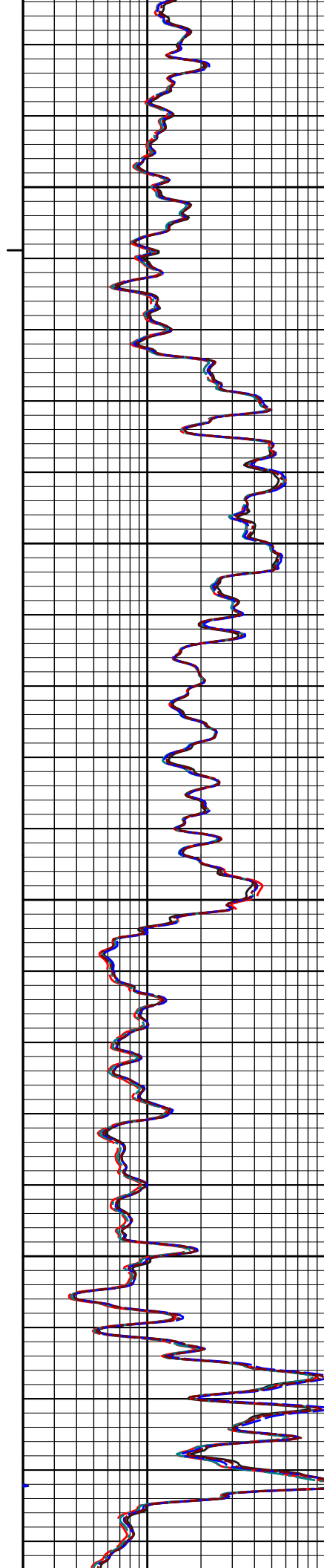


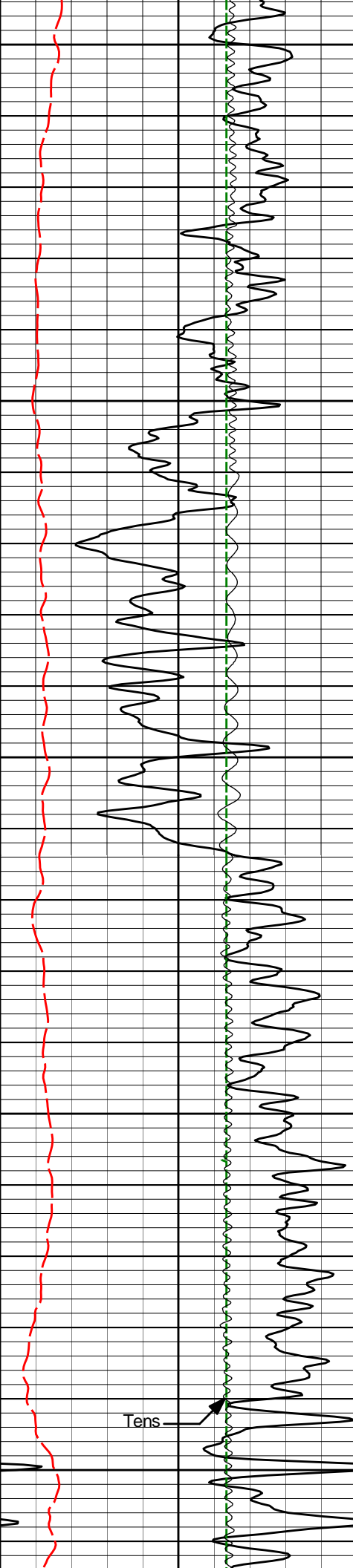
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7200





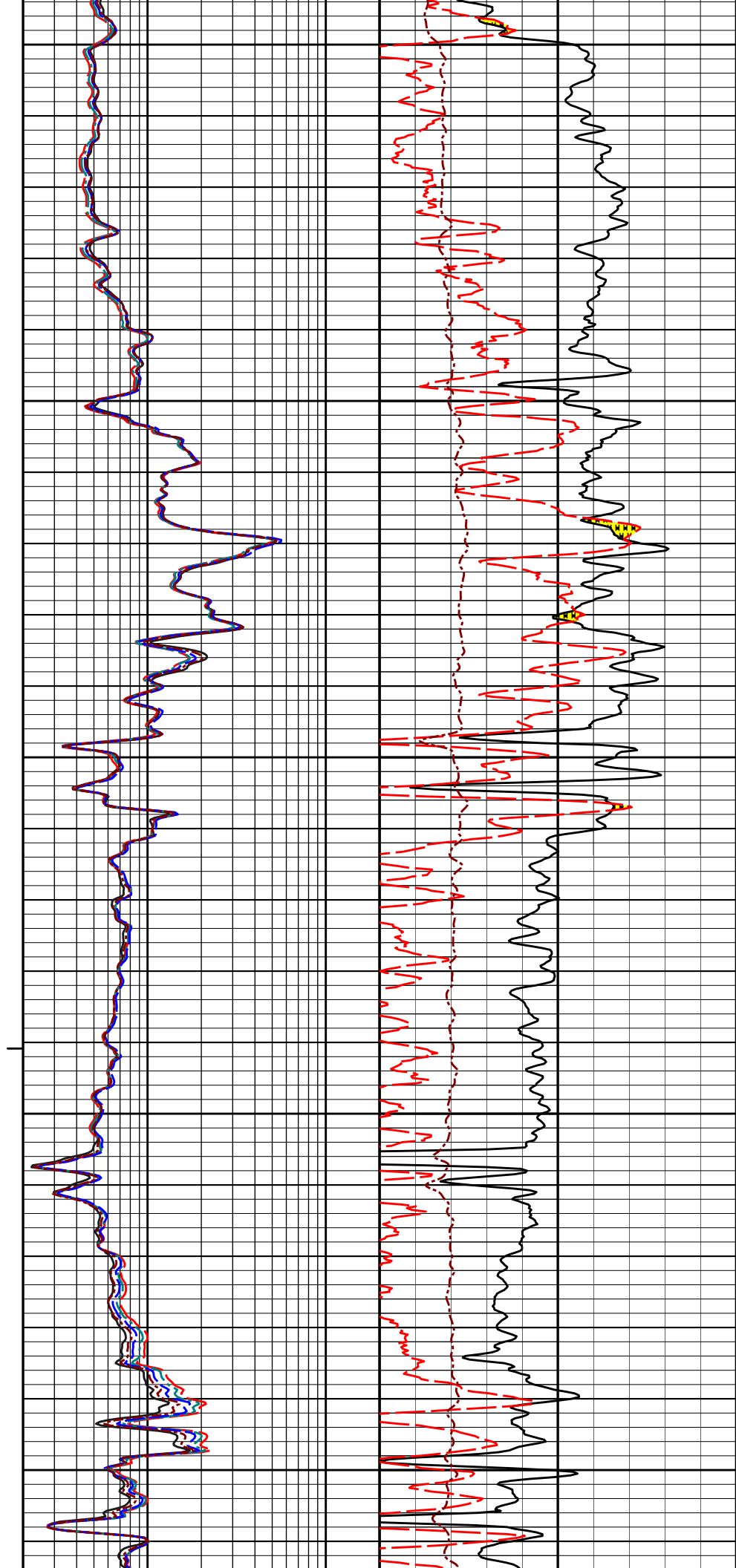
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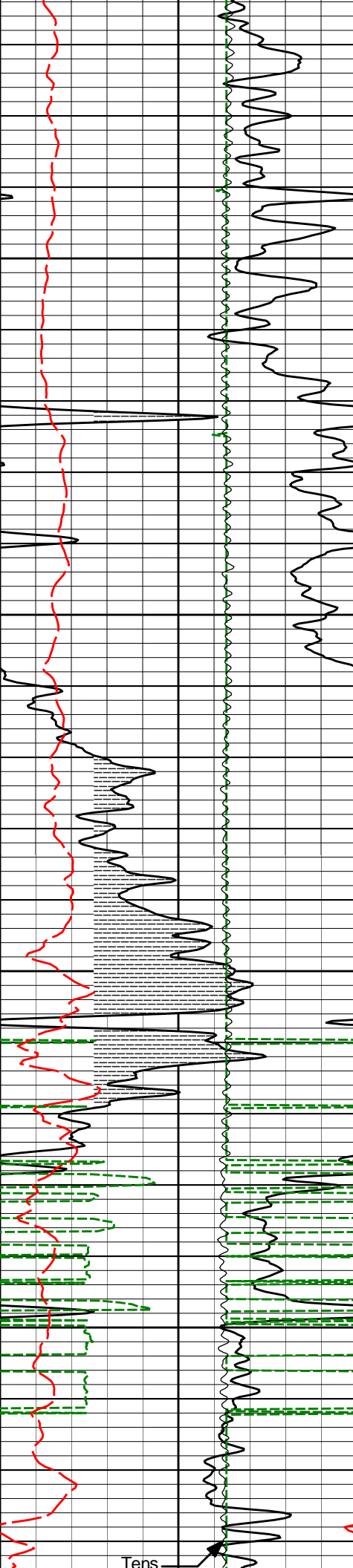
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7350

7400

7450



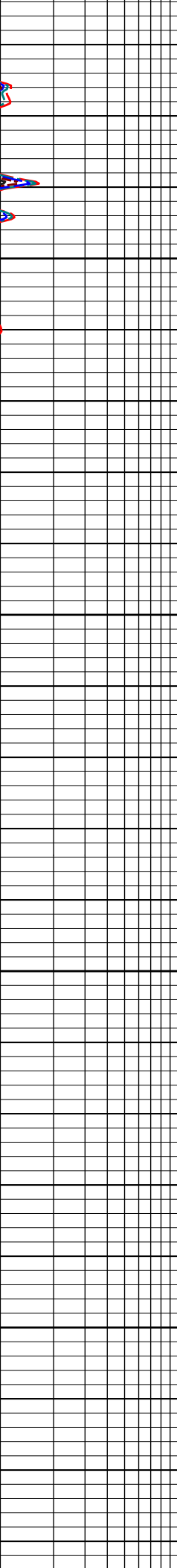
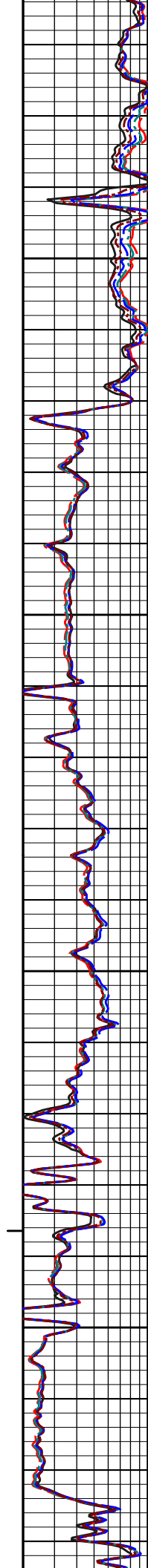


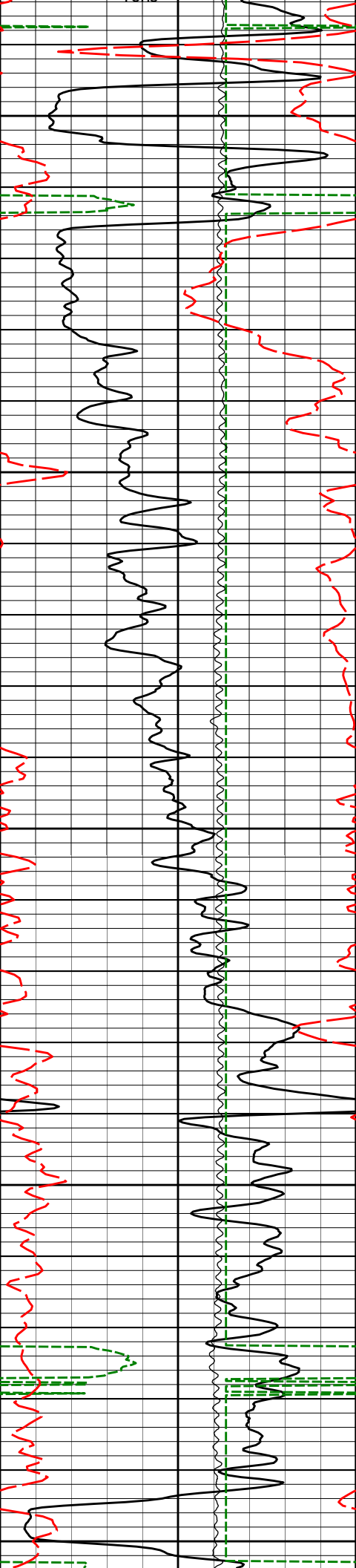
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7600

7650





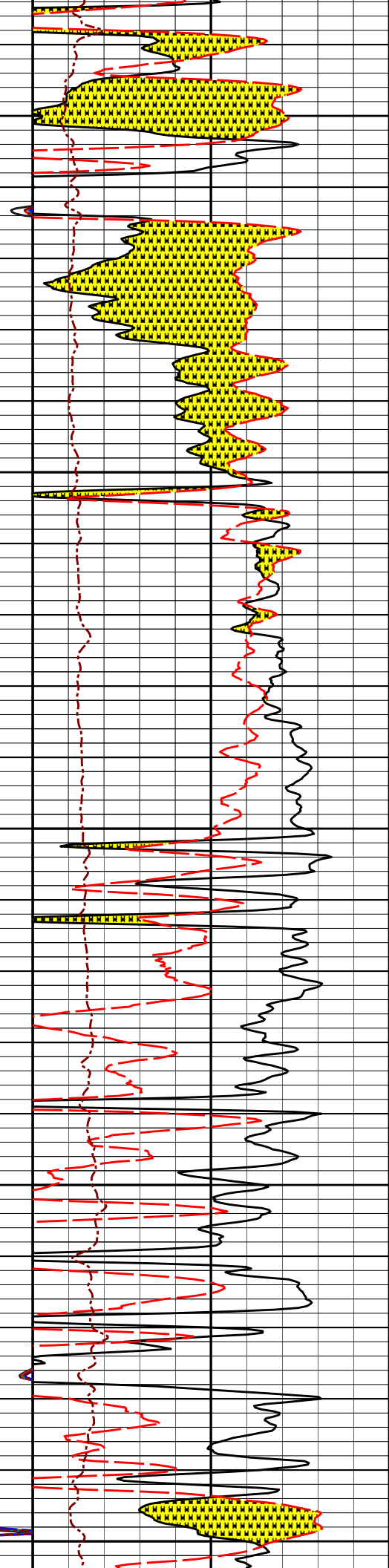
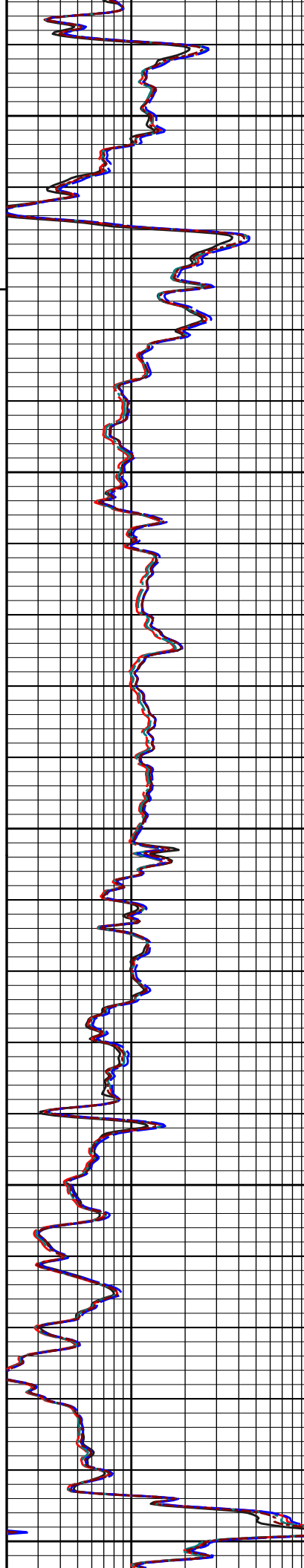
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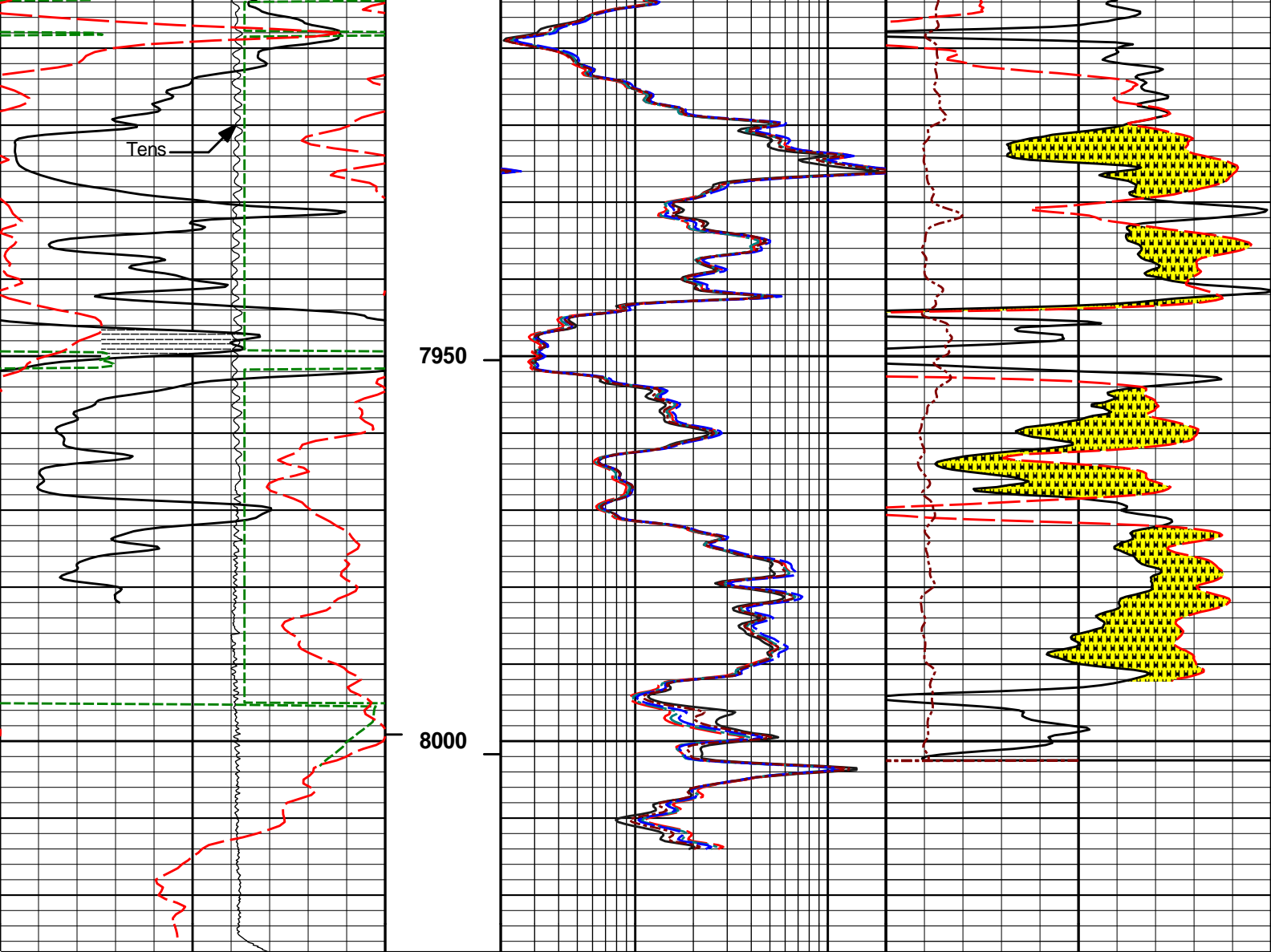
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7800

7850

7900





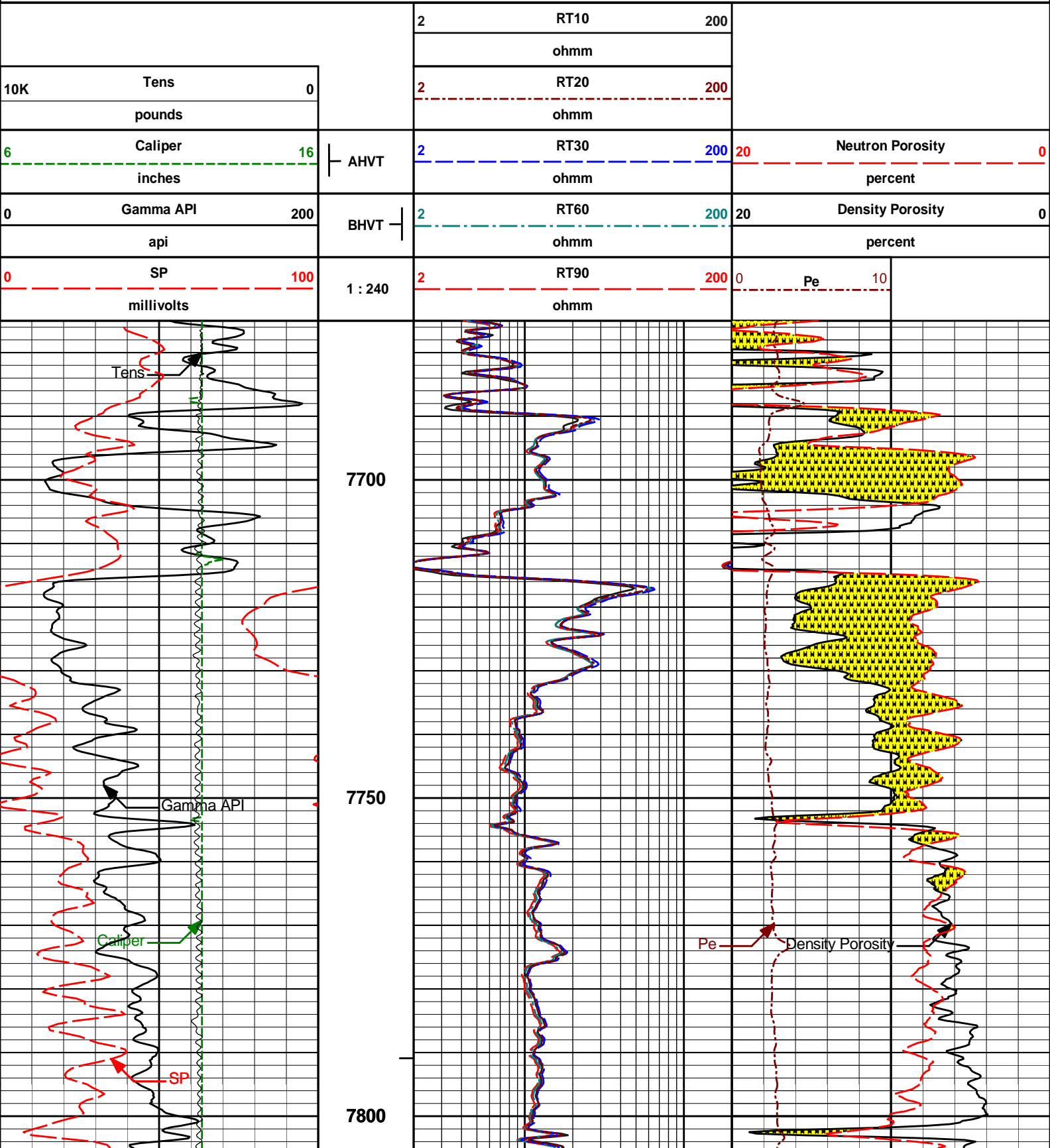
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	api				ohmm			percent	
6	Caliper	16	AHVT	2	RT30	200	20	Neutron Porosity	0
	inches				ohmm			percent	
10K	Tens	0		2	RT20	200			
	pounds				ohmm				
				2	RT10	200			
					ohmm				

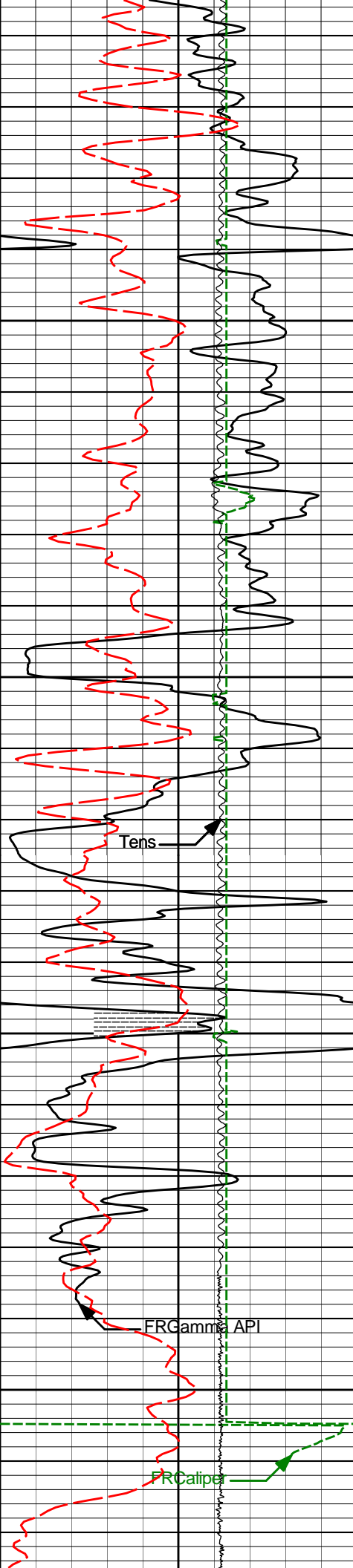
HALLIBURTON Plot Time: 12-Jul-11 16:43:45
 Plot Range: 3495 ft to 8027.42 ft
 Data: {ActiveWell}\Well Based\MAIN*
 Plot File: \COMP\MAIN

REPEAT SECTION 5" = 100'

HALLIBURTON Plot Time: 12-Jul-11 16:43:45

REPEAT SECTION 5" = 100'



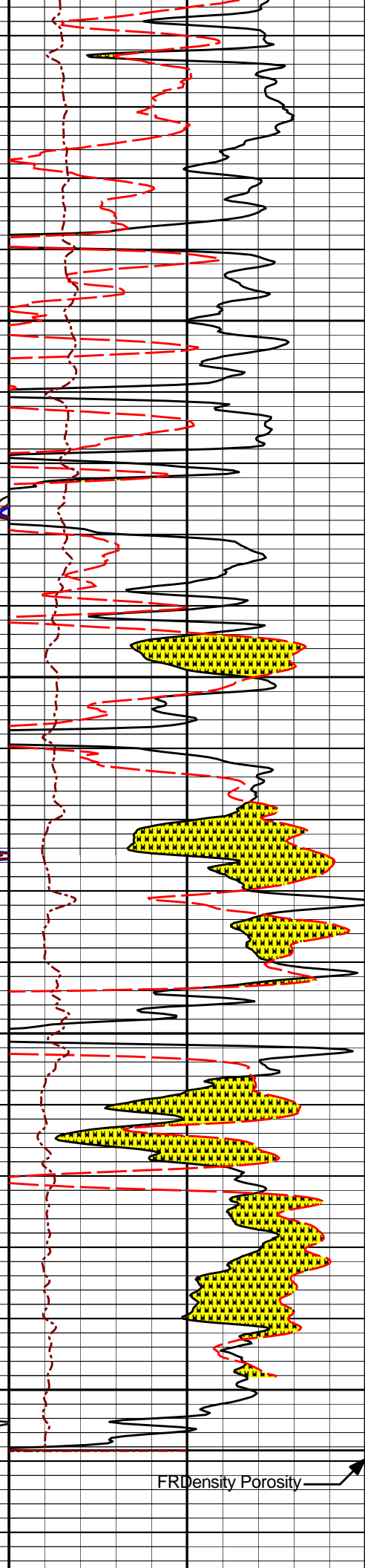
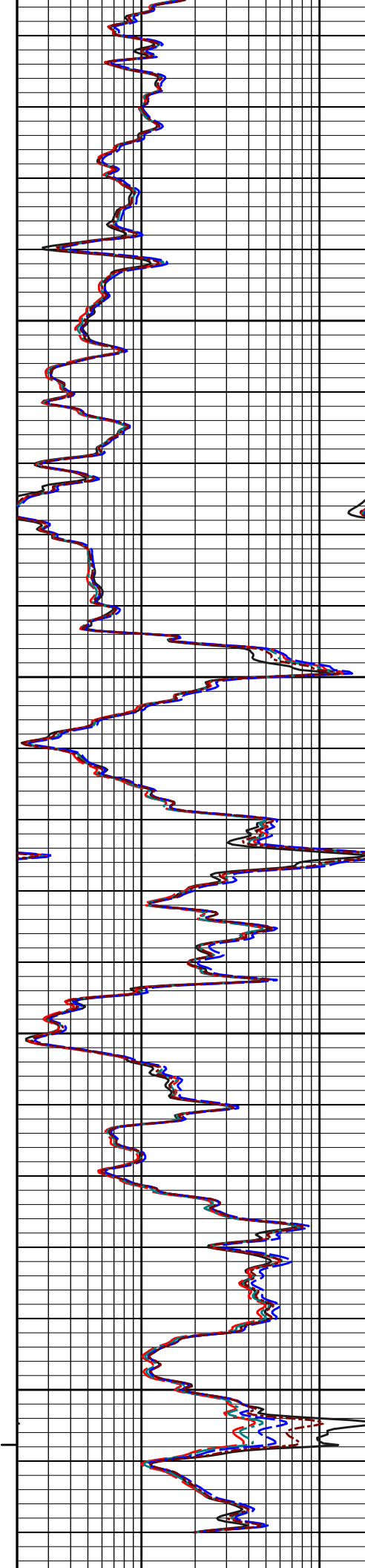


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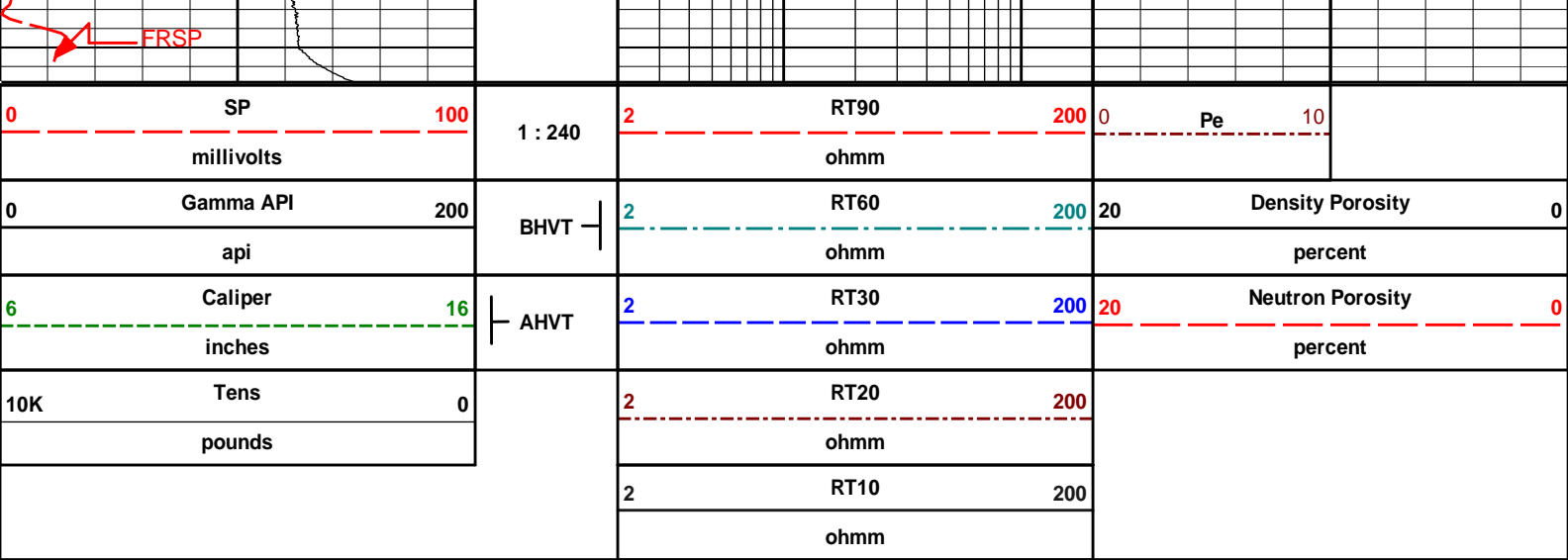
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8000



FRDensity Porosity




HALLIBURTON

Plot Time: 12-Jul-11 16:43:46
Plot Range: 7675 ft to 8033.67 ft
Data: {ActiveWell}\Well Based\REPEAT*
Plot File: \\COMP\REPEAT

REPEAT SECTION 5" = 100'

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
SCHD-001 40.00 lbs		Ø 2.350 in →		← Temperature @ 56.32 ft	4.00 ft	58.32 ft
SBIS-001 15.00 lbs		Ø 2.350 in →			1.11 ft	54.32 ft
						53.21 ft
S4TG-11577722 90.00 lbs		Ø 2.350 in →			9.63 ft	
				← GammaRay @ 44.63 ft		43.58 ft
SCEN-001 75.00 lbs		Ø 2.750 in →			5.25 ft	
						38.33 ft

SDSN-11581734
100.00 lbs

Ø 2.350 in →

9.00 ft

← DSN Far @ 32.70 ft
← DSN Near @ 31.86 ft

29.33 ft

SSDL-M43P31N34
130.00 lbs

Ø 2.350 in →
SDL Arm Caliper @ 23.50 ft →

11.00 ft

← SDL Pad Caliper @ 23.42 ft
← SDL @ 23.01 ft

18.33 ft

SACRT-E714_S718
135.00 lbs

Ø 2.350 in →

18.00 ft

← Mud Resistivity @ 13.19 ft

← ACRt @ 9.21 ft

SP Ring-1
0.00 lbs

Ø 3.625 in* →

← SP @ 1.61 ft

0.33 ft

Bull Nose-BN
5.00 lbs

Ø 2.750 in →

0.33 ft

0.00 ft

Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
SCHD	Ultra-Slim Cable Head		001	40.00	4.00	54.32	300.00
SBIS	Ultra-Slim Battery and Inverter Sub		001	15.00	1.11	53.21	300.00
S4TG	Ultra-Slim Quad Telemetry Gamma Cartridge		11577722	90.00	9.63	43.58	60.00
SCEN	SLIM DECENTRALIZER		001	75.00	5.25	38.33	300.00
SDSN	Ultra-Slim Hole Dual Spaced Neutron		11581734	100.00	9.00	29.33	60.00
SSDL	Ultra-Slim Hole Spectral Density		M43P31N34	130.00	11.00	18.33	60.00
SACRT	Array Compensated True Resistivity		E714_S718	135.00	18.00	0.33	300.00
SP	SP Ring		1	0.00	0.25	*	300.00
BLNS	Bull Nose		BN	5.00	0.33	0.00	300.00
Total				590.00	58.32		

* Not included in Total Length and Length Accumulation.

Data: CANNON_22_3\0001 SLIM_TRIPLE\004 12-Jul-11 13:40 Up @8028.3f

Date: 12-Jul-11 14:57:50

COMPANY	KERR-MCGEE OIL & GAS ONSHORE LP		
WELL	CANNON 22-3		
FIELD	WATTENBERG		
COUNTY	WELD	STATE	CO
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON ARRAY COMPENSATED TRUE RESISTIVITY LOG	