

HALLIBURTON

SPECTRAL DENSITY  
DUAL SPACED NEUTRON  
HIGH RESOLUTION INDUCTION

COMPANY		LARAMIE ENERGY II LLC	
WELL		JOHNSON 5-02B	
FIELD		MAMM CREEK	
COUNTY		GARFIELD	
STATE		CO	
Permanent Datum		GL	Elev: 8163.0 ft
Log measured from		KB	Elev: K.B. 8184.0 ft
Drilling measured from		KB	D.F. 8183.0 ft
			G.L. 8163.0 ft
Date		24-Nov-08	
Run No.		ONE	
Depth - Driller		10410.0 ft	
Depth - Logger		10400.0 ft	
Bottom - Logged Interval		10390.0 ft	
Top - Logged Interval		1521.0 ft	
Casing - Driller		8.625 in	@
Casing - Logger		1530.0 ft	@
Bit Size		7.875 in	@
Type Fluid in Hole		LSND	
Density	Viscosity	9.8 ppq	70.00 s/qt
PH	Fluid Loss	10.30 pH	5.2 cpm
Source of Sample		MUD TANK	
Rm @ Meas. Temperature		2.92 ohmm	@ 56.20 degF
Rmf @ Meas. Temperature		2.01 ohmm	@ 62.00 degF
Rmc @ Meas. Temperature		3.40 ohmm	@ 64.00 degF
Source Rmf	Rmc	MEAS.	
Rm @ BHT		0.80 ohmm	@ 223.0 degF
Time Since Circulation		10.0 hr	
Time on Bottom		25-Nov-08 00:52	
Max. Rec. Temperature		223.0 degF	@ 10400.0 ft
Equipment	Location	10549593	G.J.
Recorded By		J. GEISER	
Witnessed By		M. BLAKLEY	

COMPANY	LARAMIE ENERGY II LLC
WELL	JOHNSON 5-02B
FIELD	MAMM CREEK
COUNTY	GARFIELD
STATE	CO
API No.	05045169610000
Location	SURFACE: 2269' FNL, 2577' FEL BOTTOM: 527' FNL, 1998' FEL
Other Services:	NONE

Fold here

Service Ticket No.: 6280928				API Serial No.: 05045169610000				PGM Version: WL INSITE R2.2 (Build 9)							
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.		@		@		ONE		HRID-81S0944		N/A		1.5" STANDOFF		N/A	
Rmc @ Meas. Temp.		@		@											
Source Rmf		Rmc		CALC		CALC									
Rm @ BHT		0.80 ohmm		@ 223 degF		@									
Rmf @ BHT		0.55 ohmm		@ 223 degF		@									
Rmc @ BHT		0.93 ohmm		@ 223 degF		@									
EQUIPMENT DATA															
GAMMA				ACOUSTIC				DENSITY				NEUTRON			
Run No.		ONE		Run No.				Run No.		ONE		Run No.		ONE	
Serial No.		108617_2		Serial No.				Serial No.		I709MC136		Serial No.		108734	
Model No.		NGRT		Model No.				Model No.		SDL_DC		Model No.		DSN-II	
Diameter		3.625"		No. of Cent.				Diam eter		4.5"		Diameter		3.625"	
Detector Model No.		NGRT		Spacing				Log Type		GAMMA-GAMMA		Log Type		THERMAL	
Type		SCINT						Source Type		Cs137		Source Type		Am241Be	
Length		4"		HSA 6041				Serial No.		2189GW		Serial No.		DSN-60	

Length		Log [Y/N]		Serial No.	Pressure	Serial No.	Serial No.												
Distance to Source	10'	FWDA [Y/N]		Strength	1.5 CI	Strength	18.5 CI												
LOGGING DATA																			
GENERAL			GAMMA		ACOUSTIC		DENSITY	NEUTRON											
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix								
No.	From	To	ft/min	L	R	L	R		L	R									
ONE	TD	CASING	REC	0 api	200 api				30 %	-10 %	2.68 g/cc	30 %	-10 %	SAND					
DIRECTIONAL INFORMATION																			
Maximum Deviation					@					KOP					@				
Remarks: RWCH-D4TS-NGRT-DSN-SDL-HRI WERE RUN IN COMBINATION.																			
HOLE RUGOSITY AND TENSION PULLS MAY AFFECT DATA QUALITY.																			
AHV CALCULATED FOR 4.5" CASING.																			
CHLORIDES REPORTED AT 1050 mg/L.																			
LATITUDE: 39.397 N // LONGITUDE: 107.797 W																			
YOUR CREW TODAY IS: A. LEWIS AND R. MONTGOMERY.																			
RIG: GREYWOLF 706																			
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES - GRAND JUNCTION, COLORADO (970) 523-3600.																			
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.																			
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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	MDWT	Borehole Fluid Weight	9.800	ppg
	SHARED	RMUD	Mud Resistivity	2.920	ohmm
	SHARED	TRM	Temperature of Mud	56.2	degF
	SHARED	OBM	Oil Based Mud System?	No	
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	ST	Surface Temperature	25.0	degF
	SHARED	TD	Total Well Depth	10410.00	ft
	SHARED	BHT	Bottom Hole Temperature	223.0	degF
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm

Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
NGRT	GROK	Process Gamma Ray?	Yes	
NGRT	GRSO	Gamma Tool Standoff	0.000	in
NGRT	GEOK	Process Gamma Ray EVR?	No	
DSN_II	DNOK	Process DSN?	Yes	
DSN_II	DEOK	Process DSN EVR?	No	
DSN_II	NLIT	Neutron Lithology	Sandstone	
DSN_II	DNSO	DSNTool Standoff	0.000	in
DSN_II	DNTP	Temperature Correction Type	None	
DSN_II	DPRS	DSN Pressure Correction Type	None	
DSN_II	SHCO	View More Correction Options	No	
DSN_II	UTVD	Use TVD for Gradient Corrections?	No	
DSN_II		Logging Horizontal Water Tank?	No	
SDL_DC	DNOK	Process Density?	Yes	
SDL_DC	DNOK	Process Density EVR?	No	
SDL_DC	AD	Is Hole Air Drilled?	No	
SDL_DC	CB	Use Calibration Blocks?	No	
SDL_DC	SPVT	SDLT Pad Temperature Valid?	Yes	
SDL_DC	MDTP	Weighted Mud Correction Type?	None	
SDL_DC	DMA	Formation Density Matrix	2.680	g/cc
SDL_DC	DFL	Formation Density Fluid	1.000	g/cc
SDL_DC	CLOK	Process Caliper Outputs?	Yes	
HRID	HRE	Do HRI Induction Calculation?	Yes	
HRID	DFLE	Do DFL Calculation?	Yes	
HRID	PYRI	Pyrite Switch	Off	
HRID	CSDP	Casing Depth	1521.0	ft
HRID	HDSP	Spike Reduction Filter Type	DELTA	
HRID	HRTC	Temperature Correction Source	None	
HRID	MMRS	Hrimap Minimum Resistivity	0.20	
HRID	MXRS	Hrimap Maximum Resistivity	200.00	

BOTTOM

Data: LAR\_JOHN\_5\_02B\0001 TRIPLE-D4TS-DC\IDLE

Date: 25-Nov-08 03:43:12

**HALLIBURTON**

Plot Time: 25-Nov-08 04:55:51

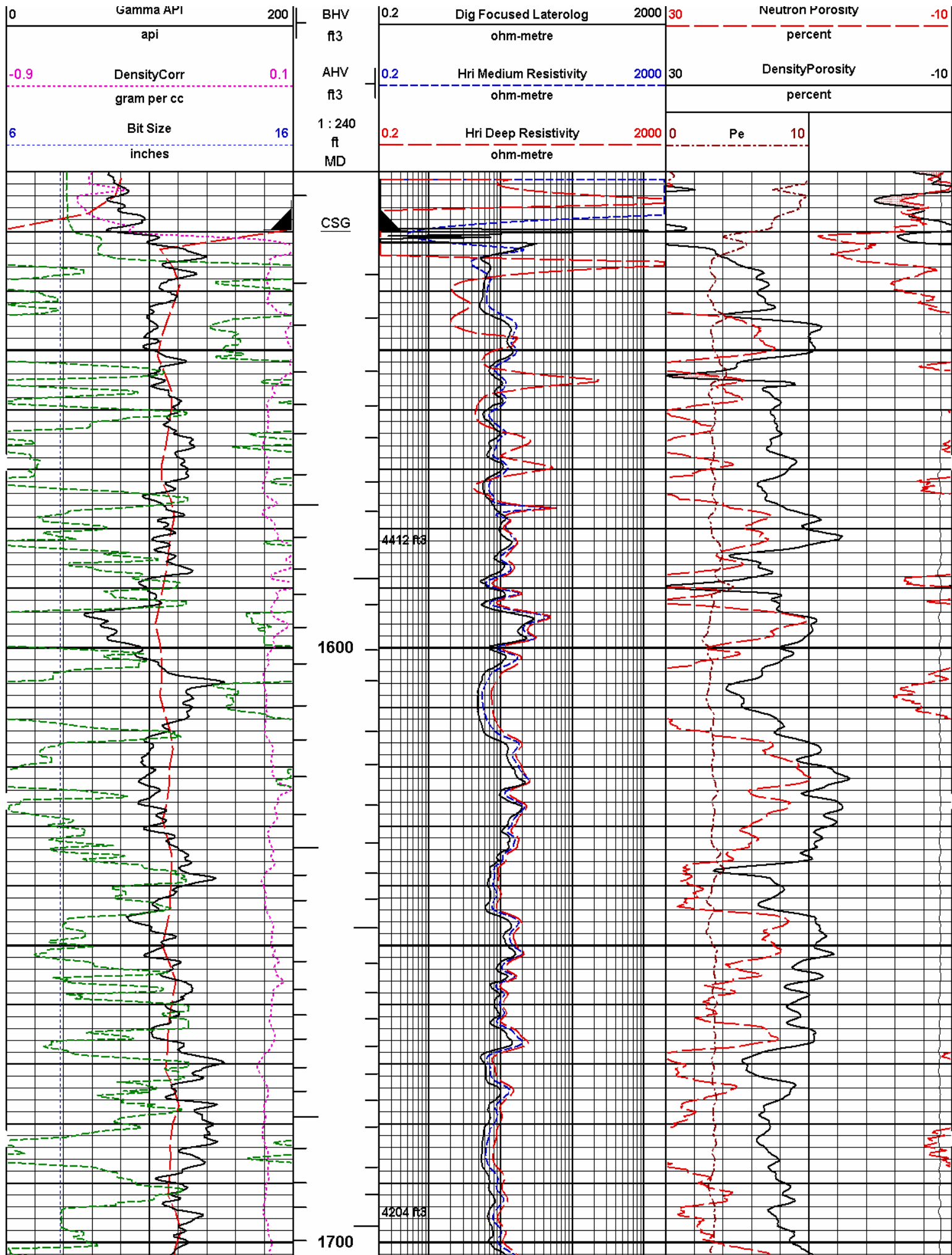
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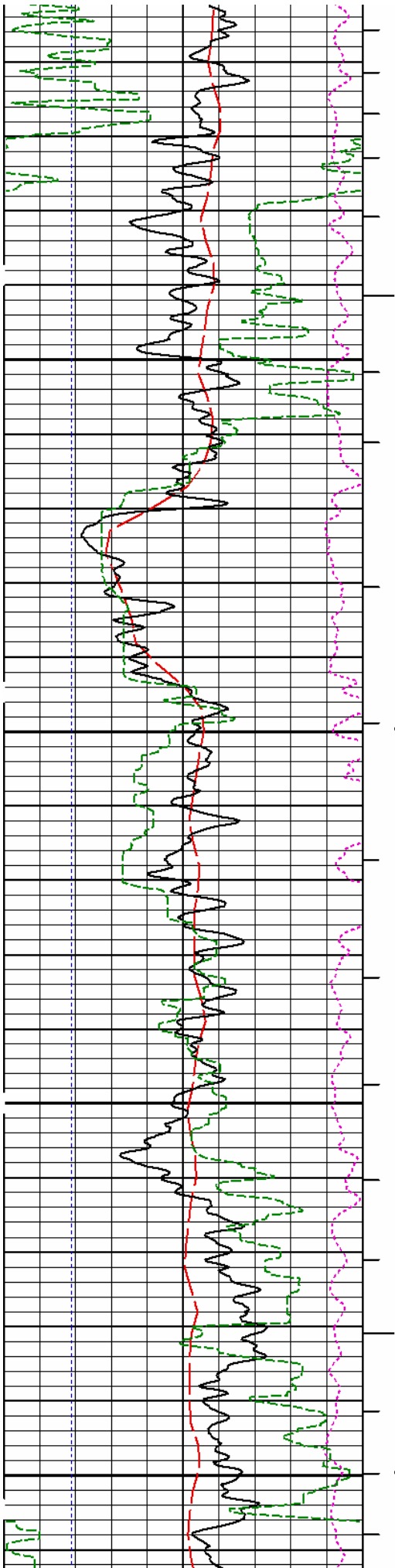
Data: LAR\_JOHN\_5\_02B\Well Based\1

Plot File: \\TRIPLE\DITS\_COMPOSITE\_HRI\_5N\_RM

**MAIN PASS 5" = 100'**

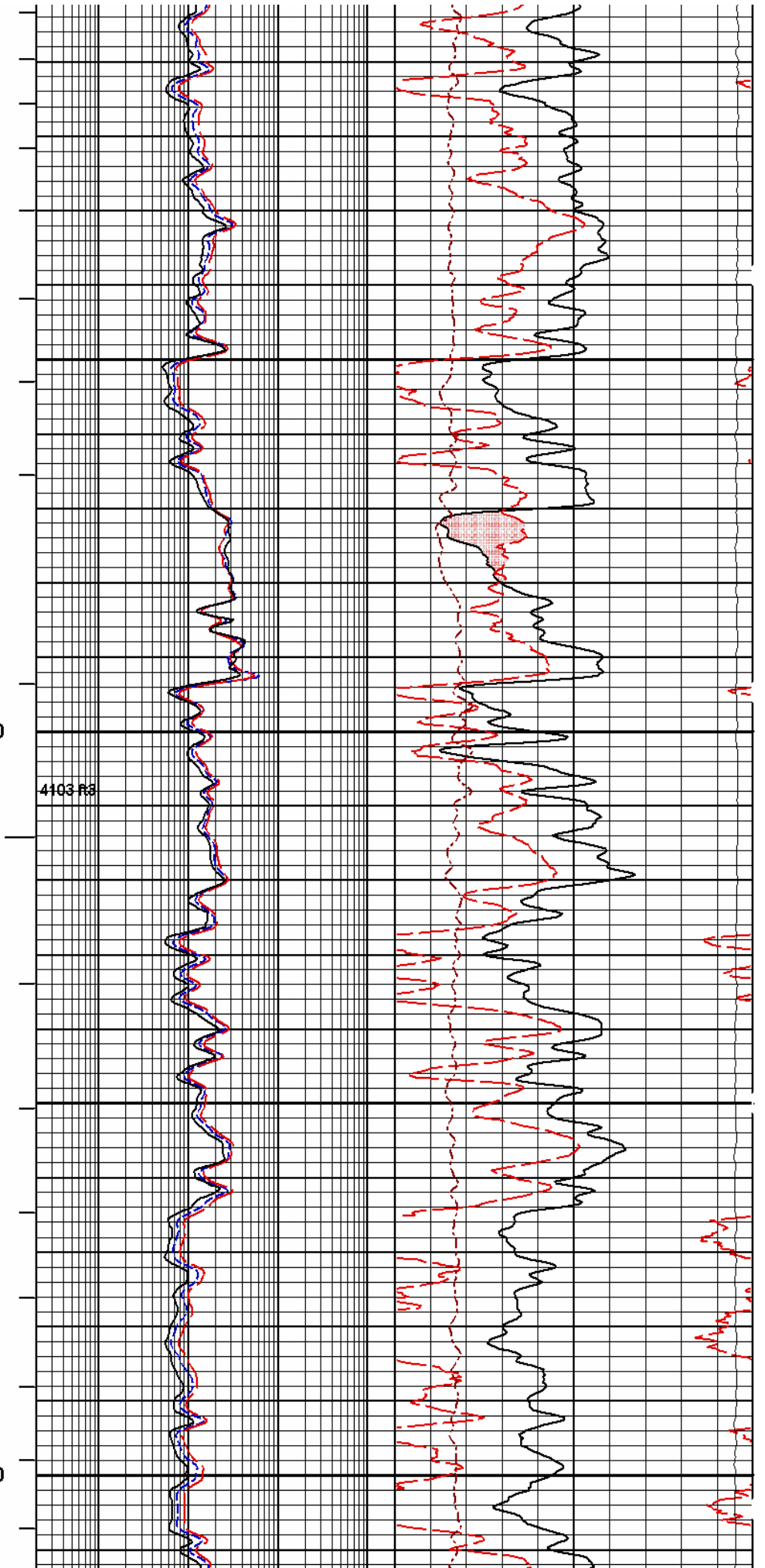
SP			
-10[+			
6	Caliper	16	
inches			
		21000	Tension
		1000	
		pounds	



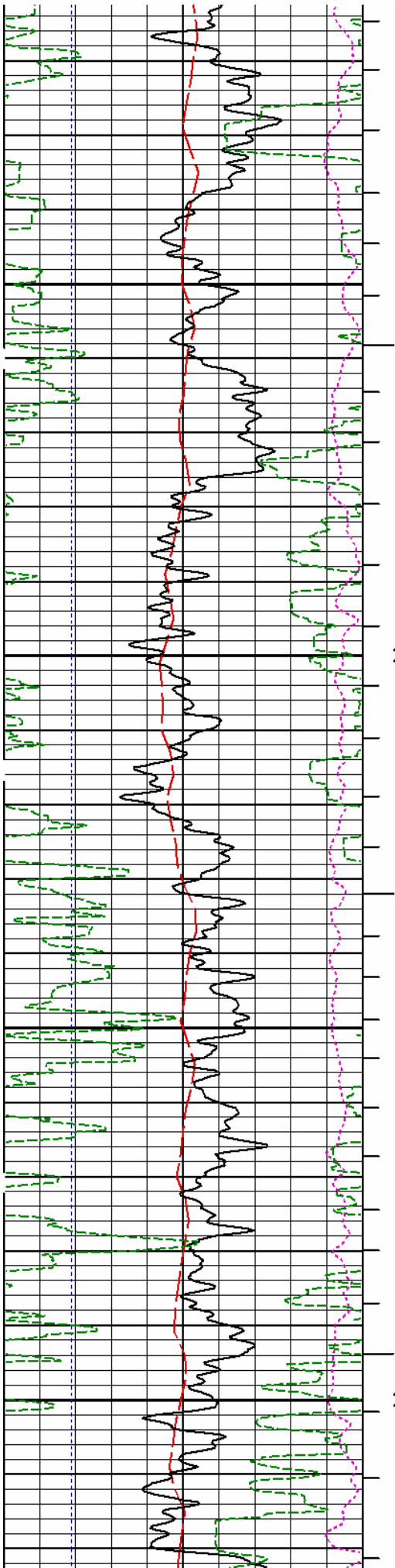


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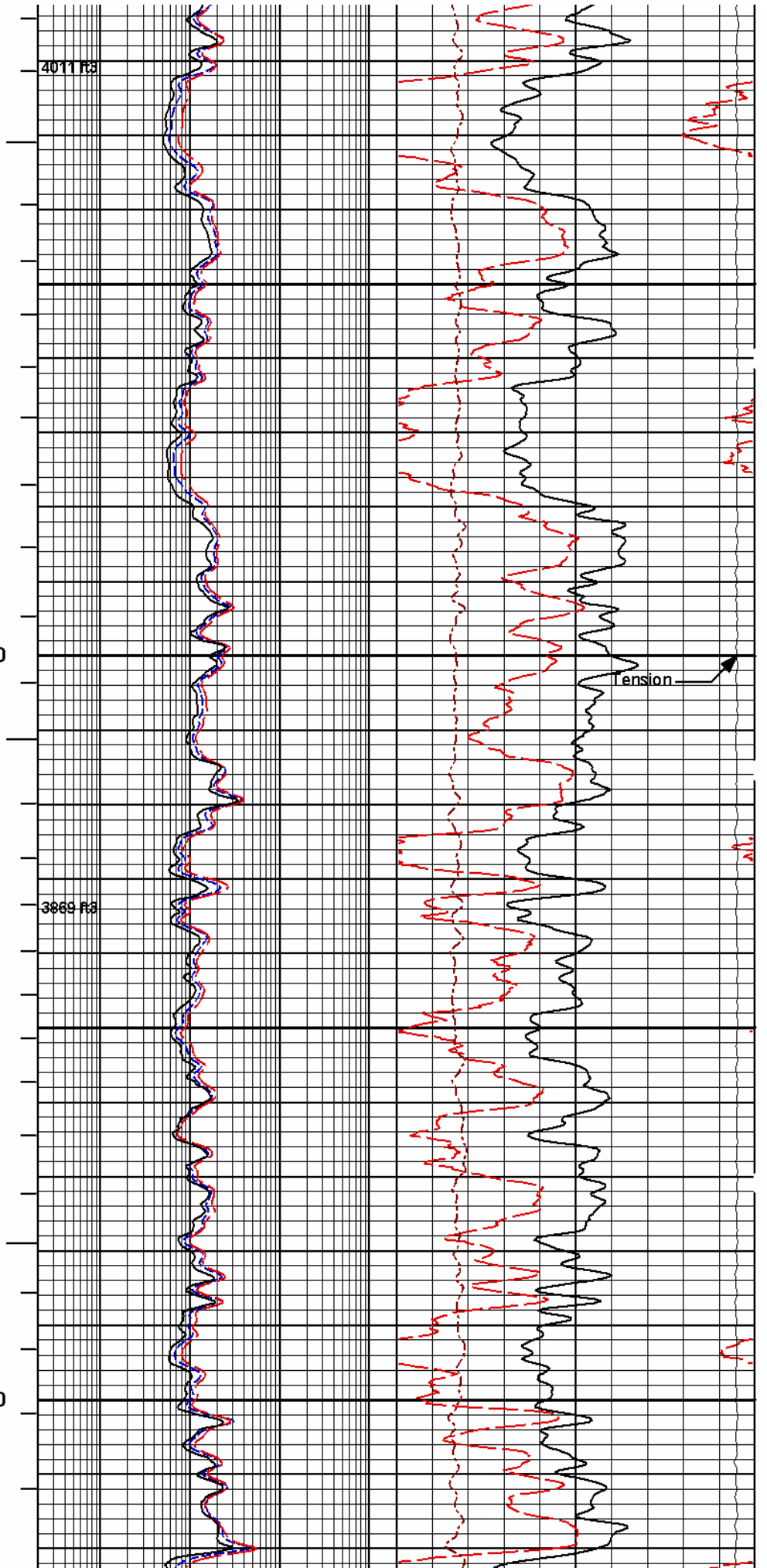


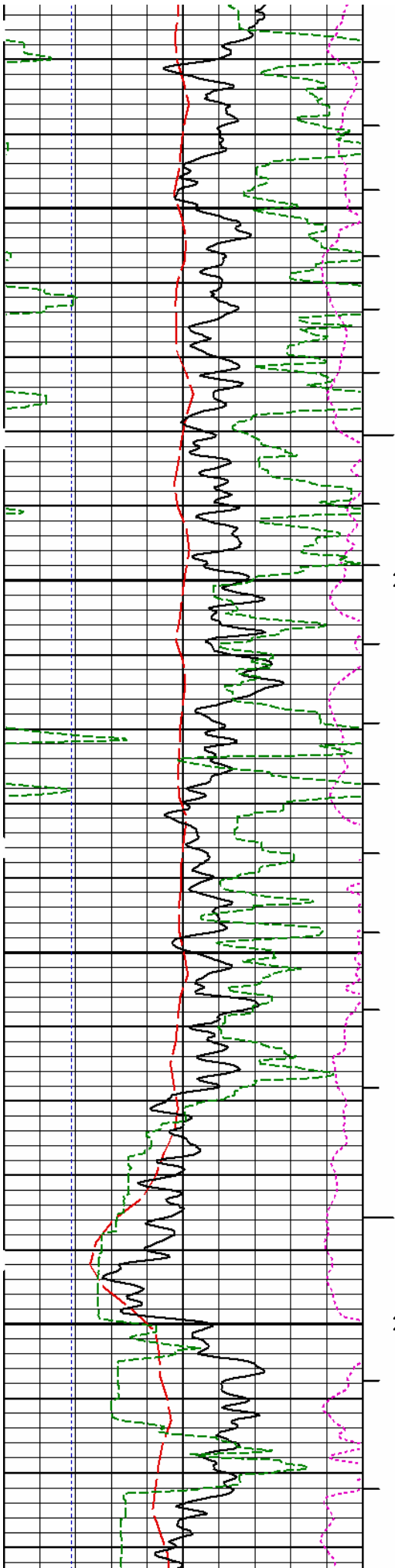
4103 R3



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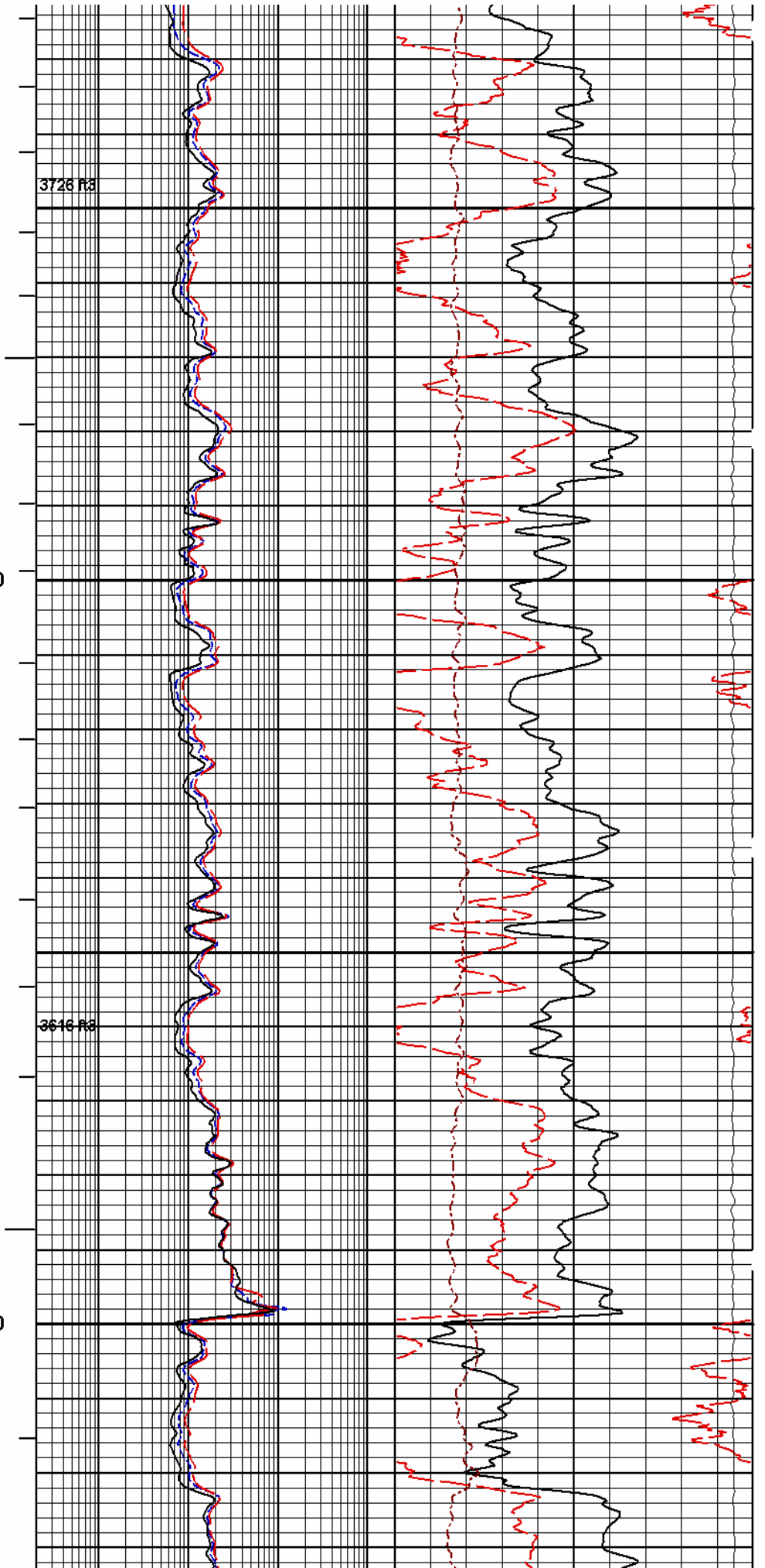
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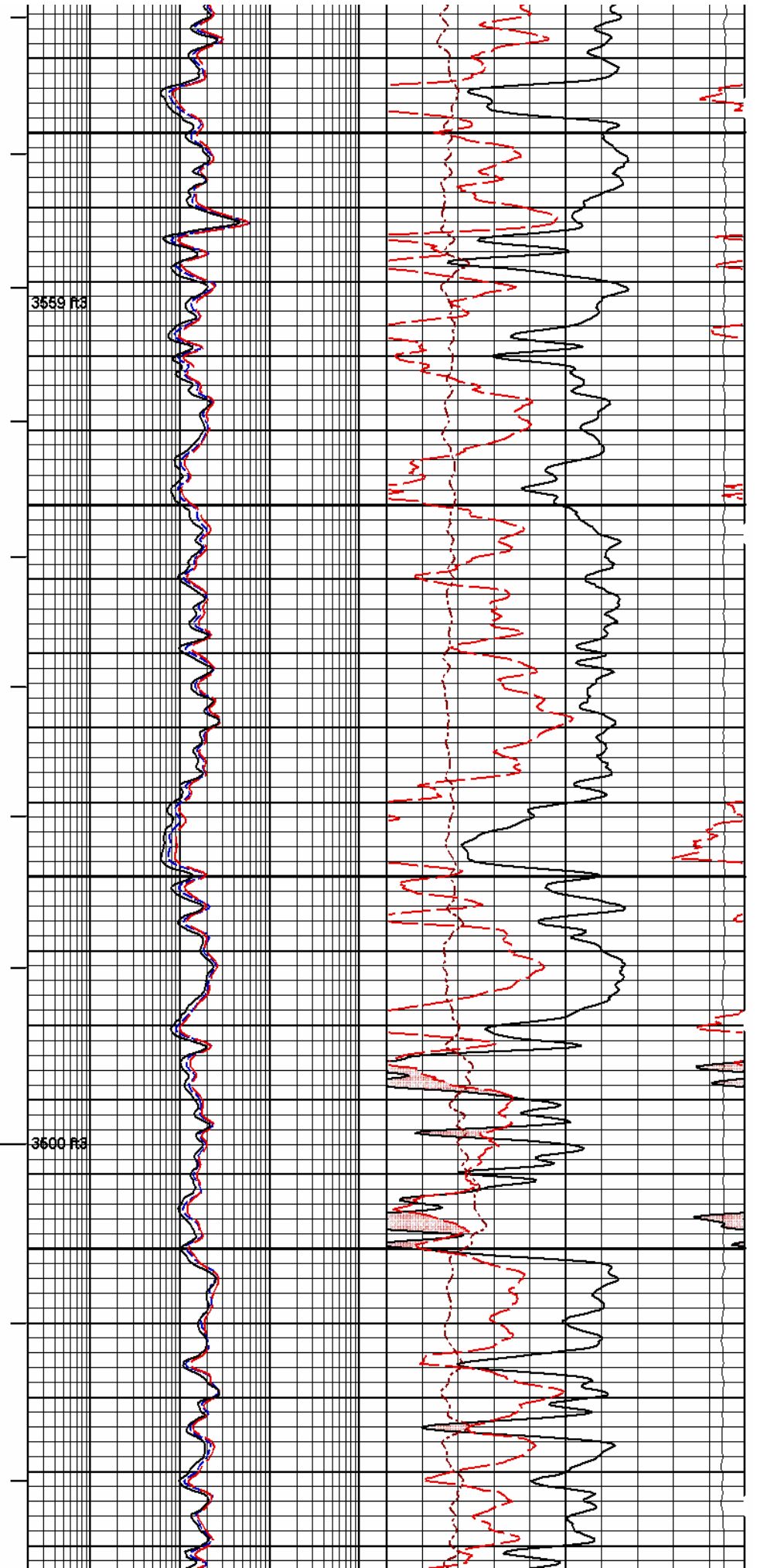
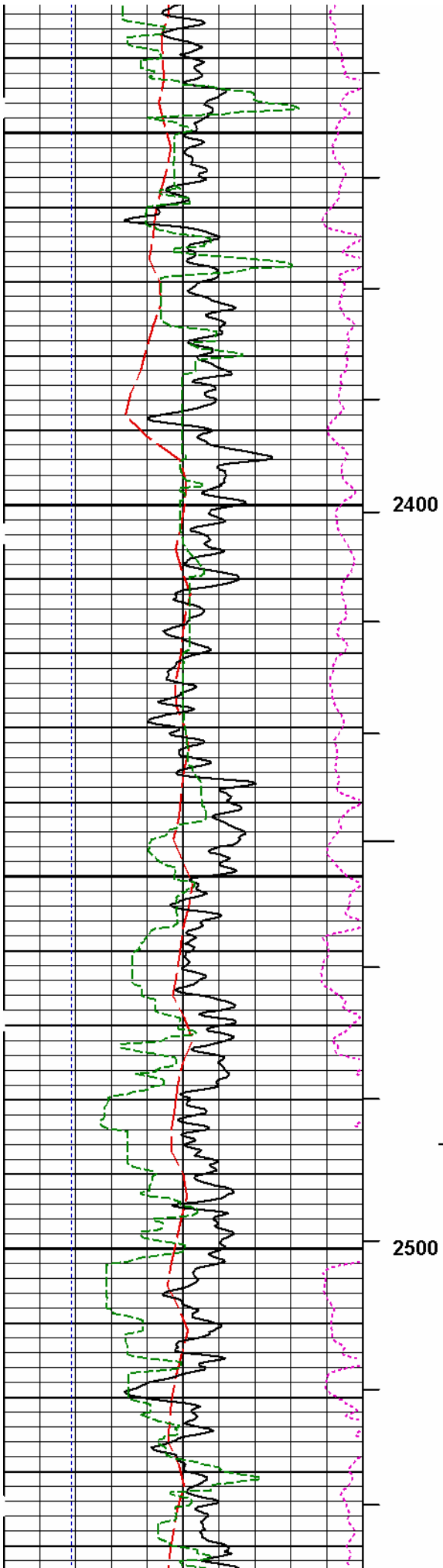
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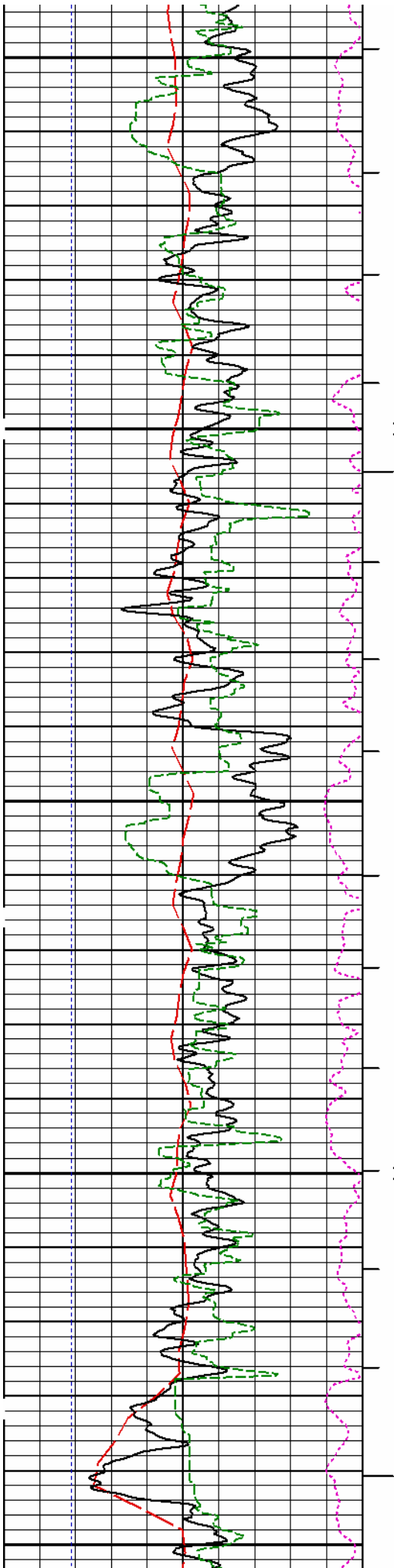
3726 ft

3616 ft



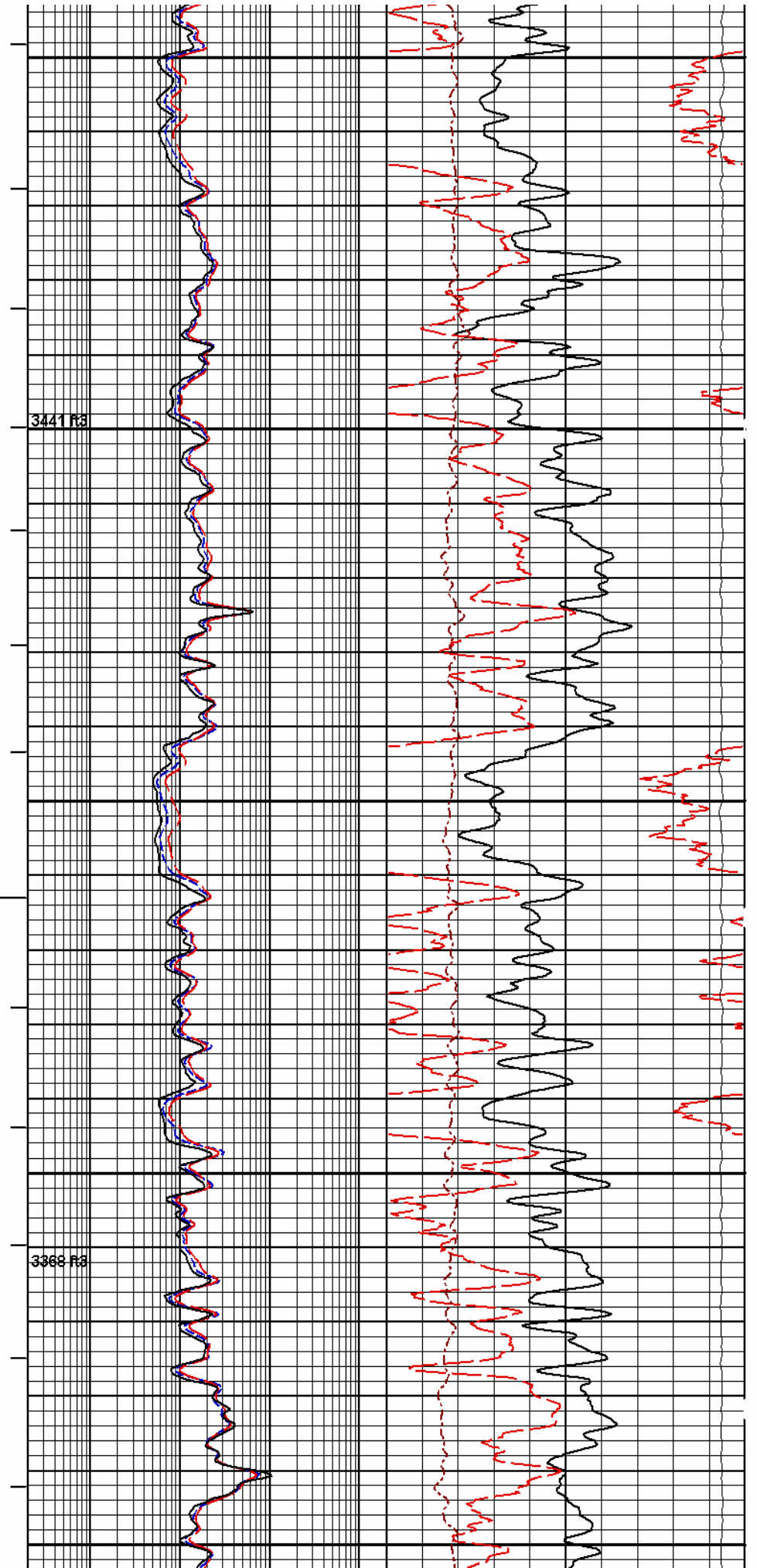






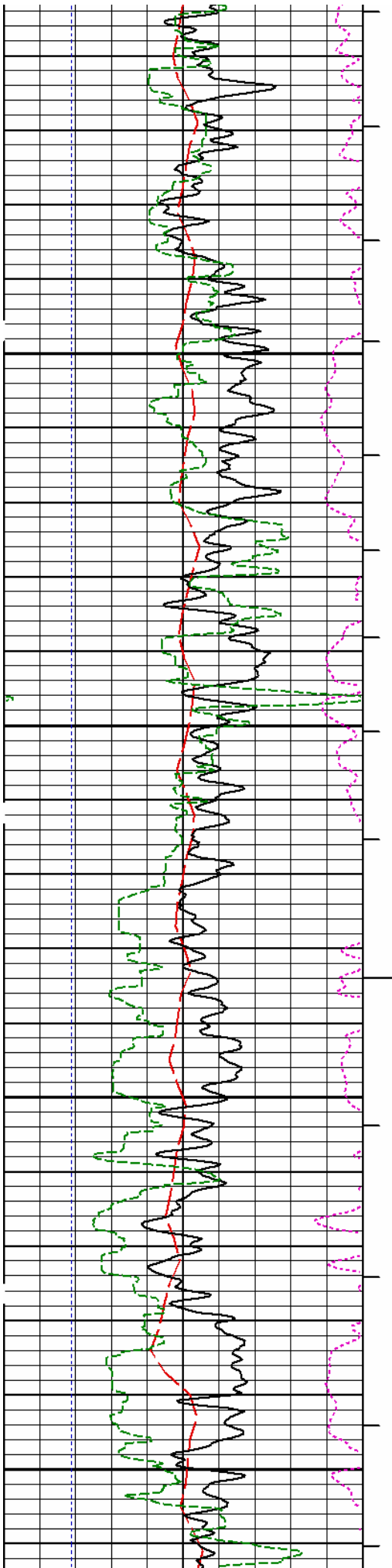
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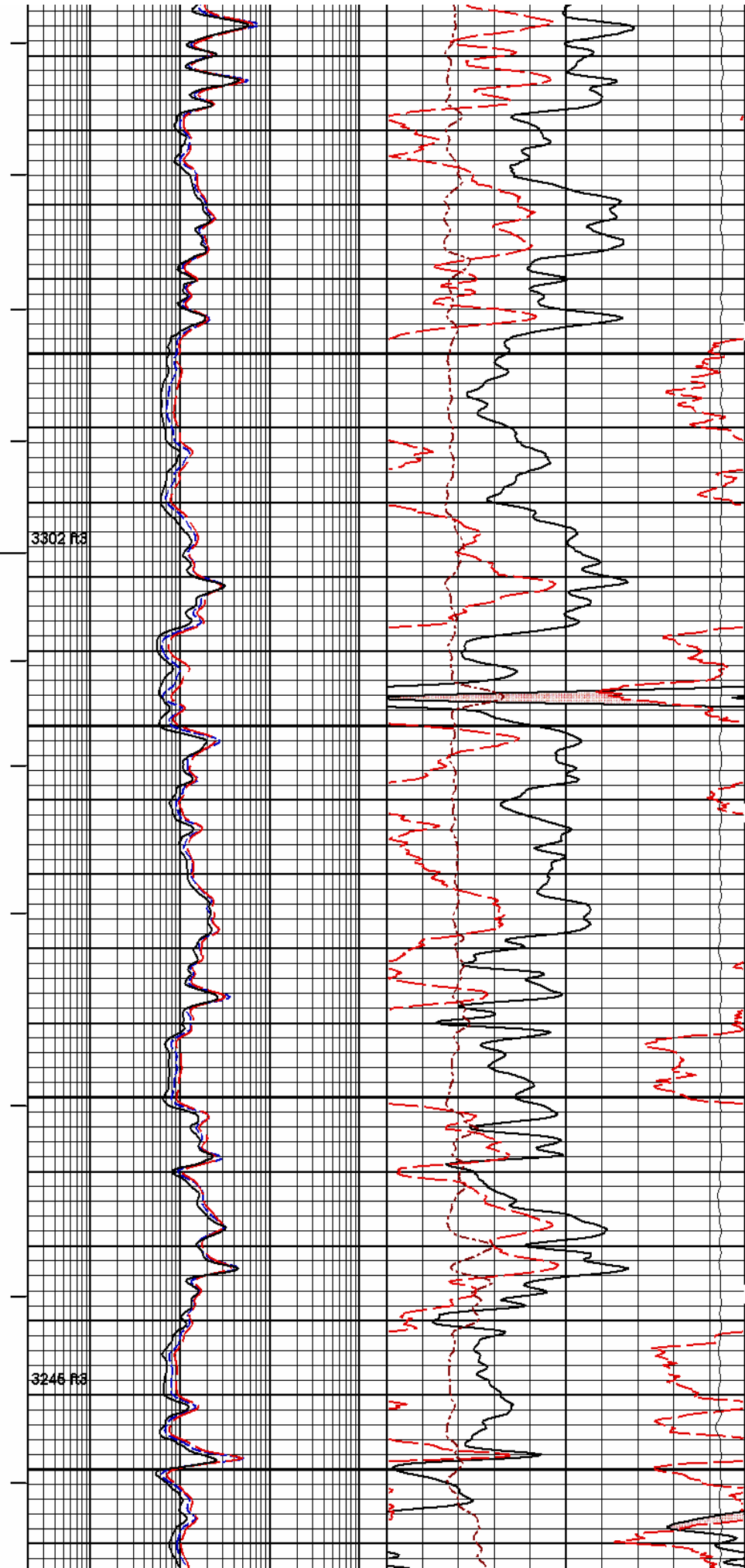
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3368 R3



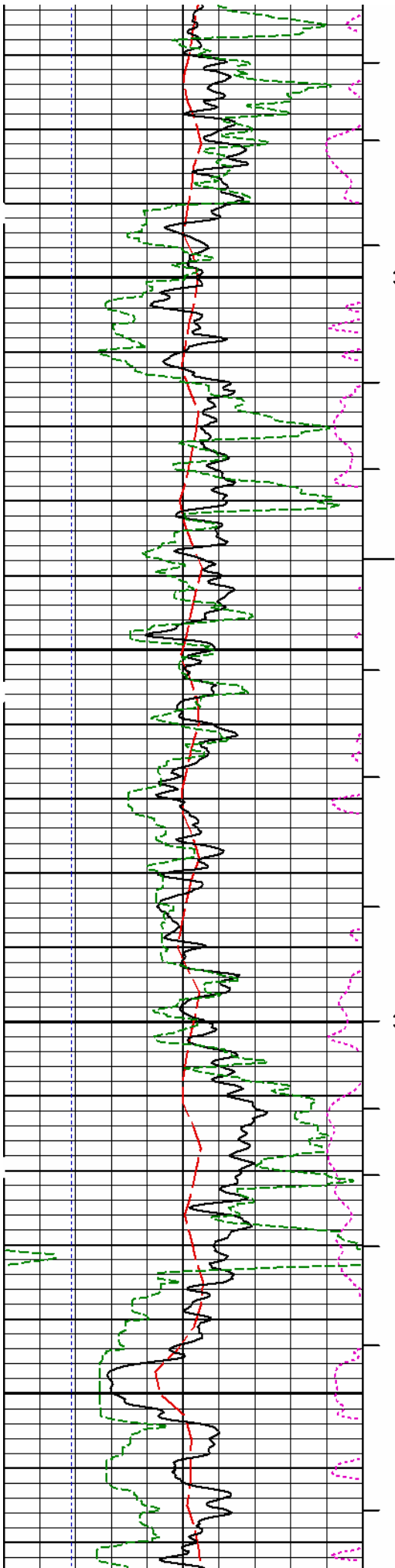
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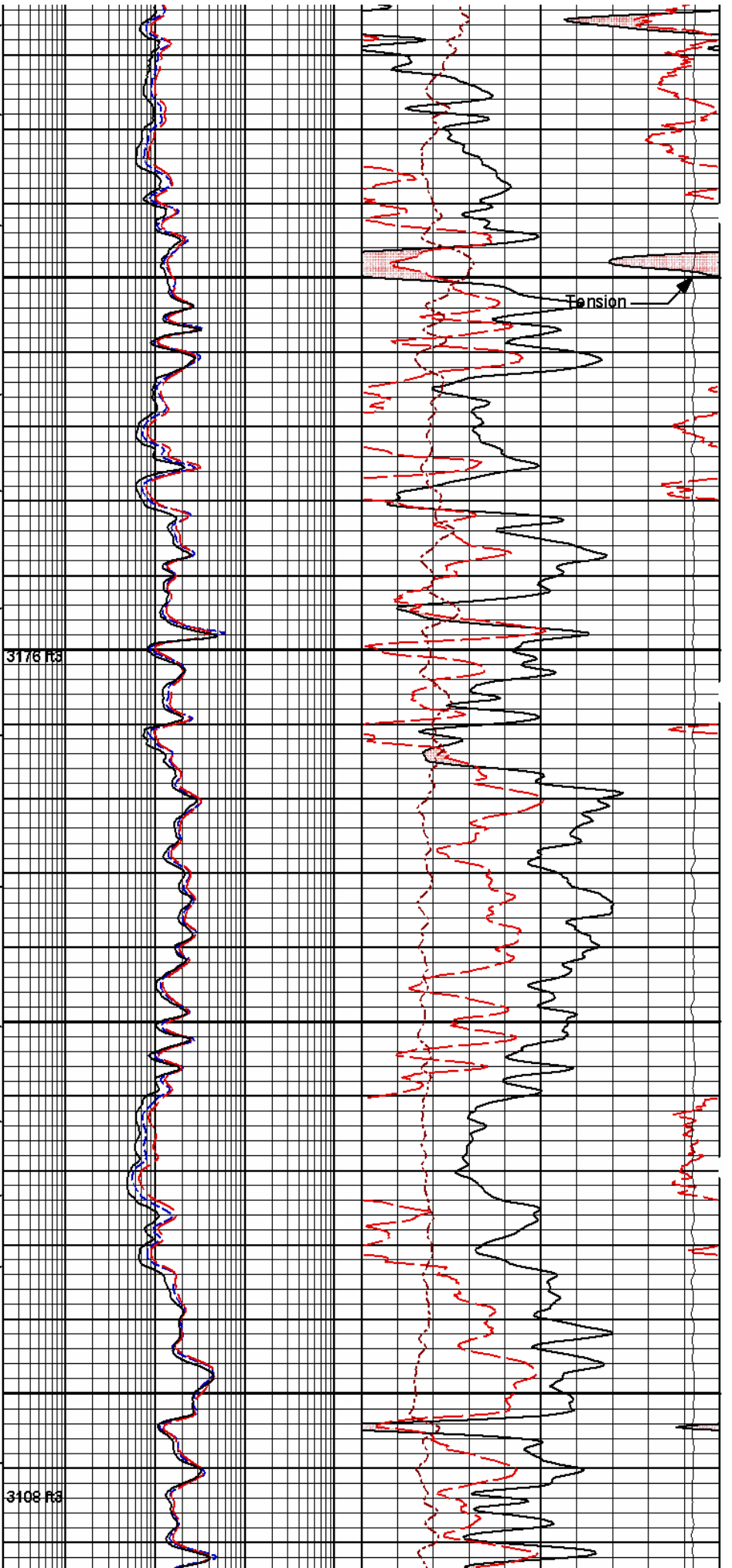
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3246 R3



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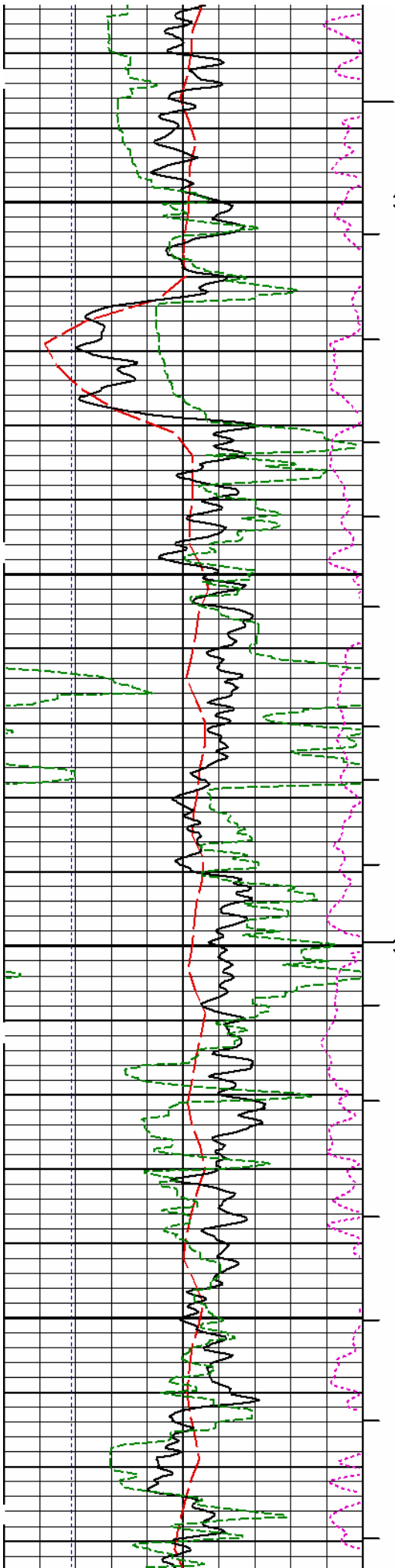
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Tension

3176

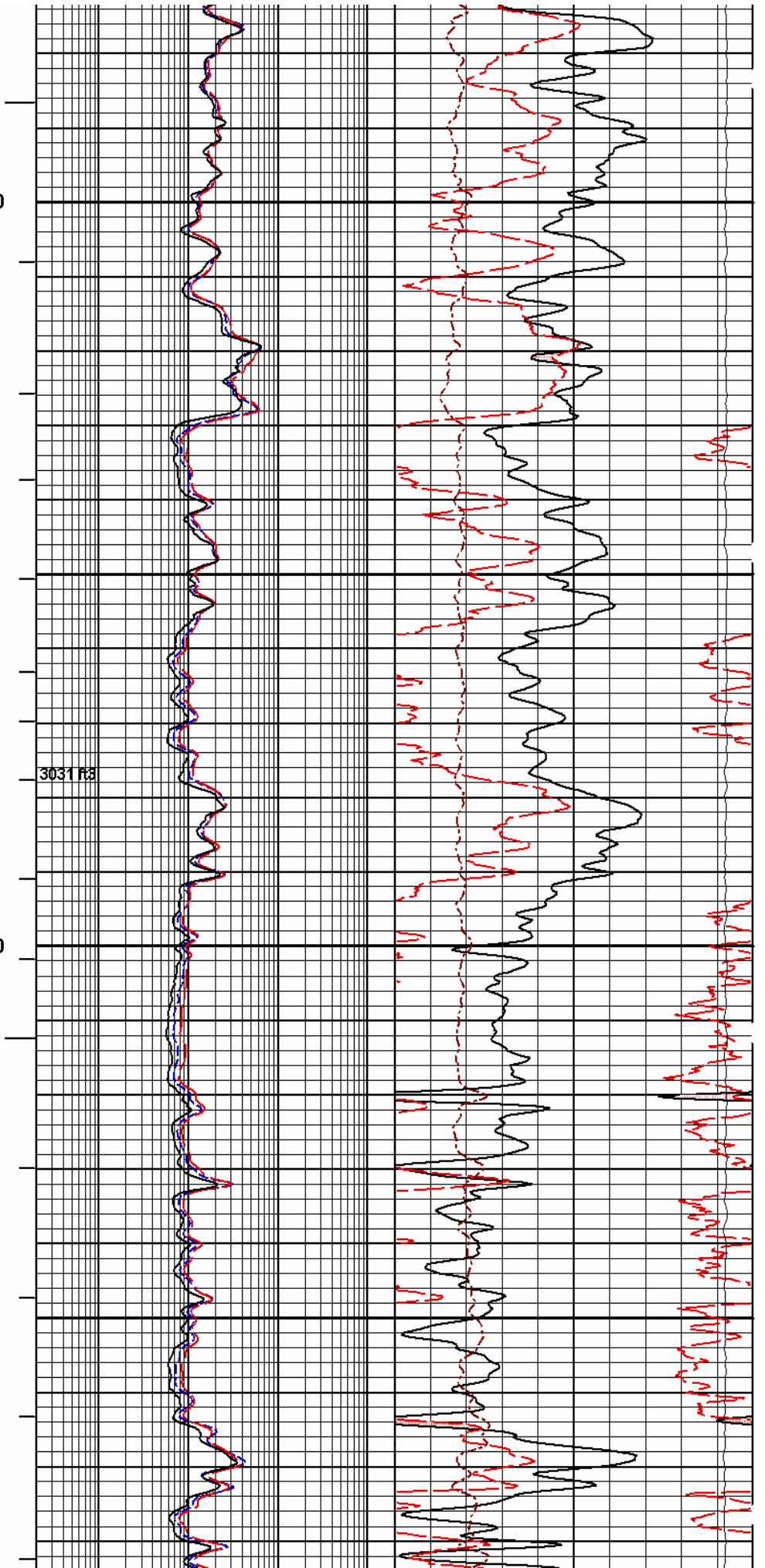
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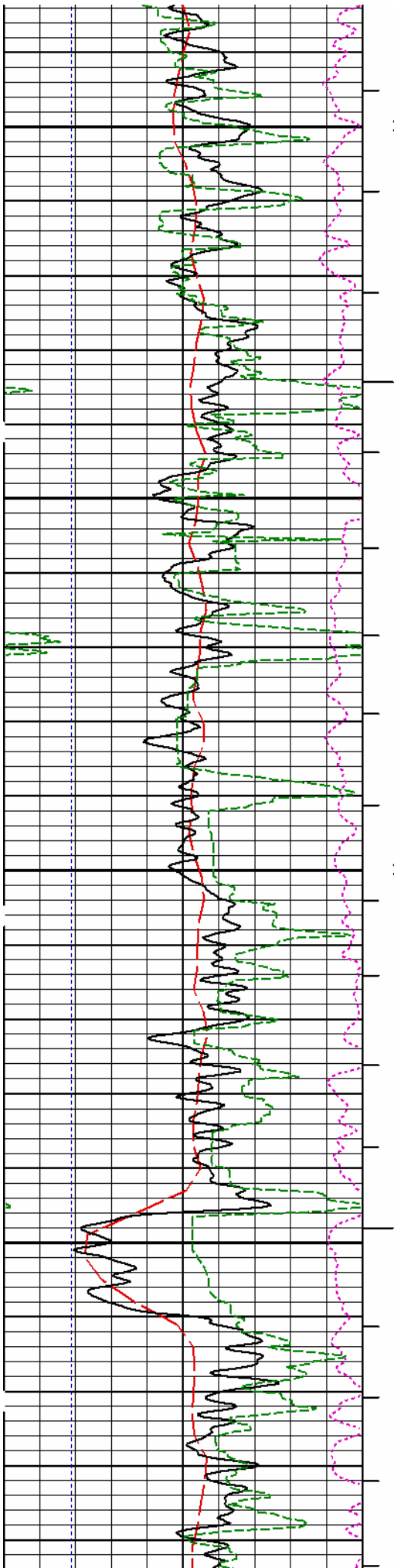


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3031 R3

3300



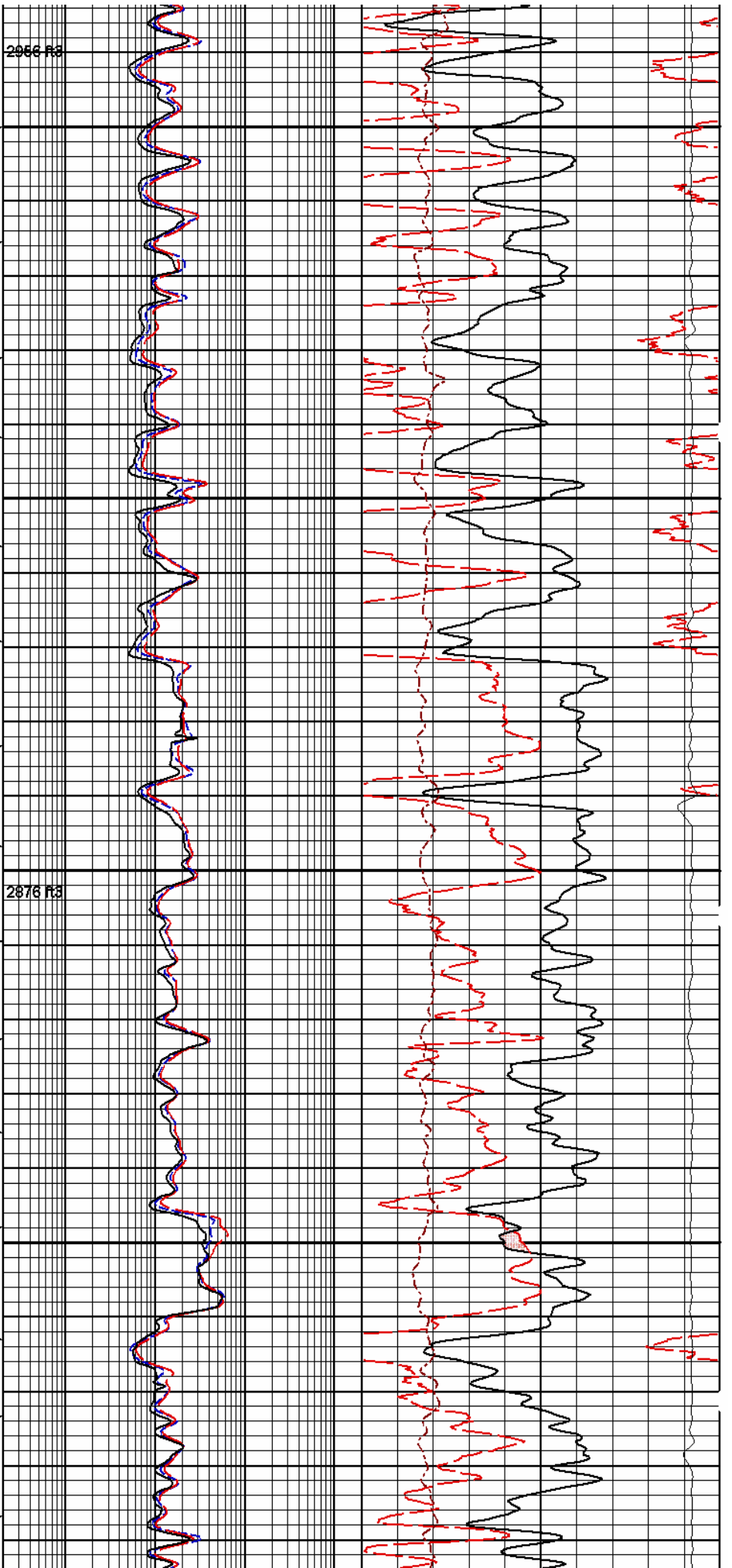


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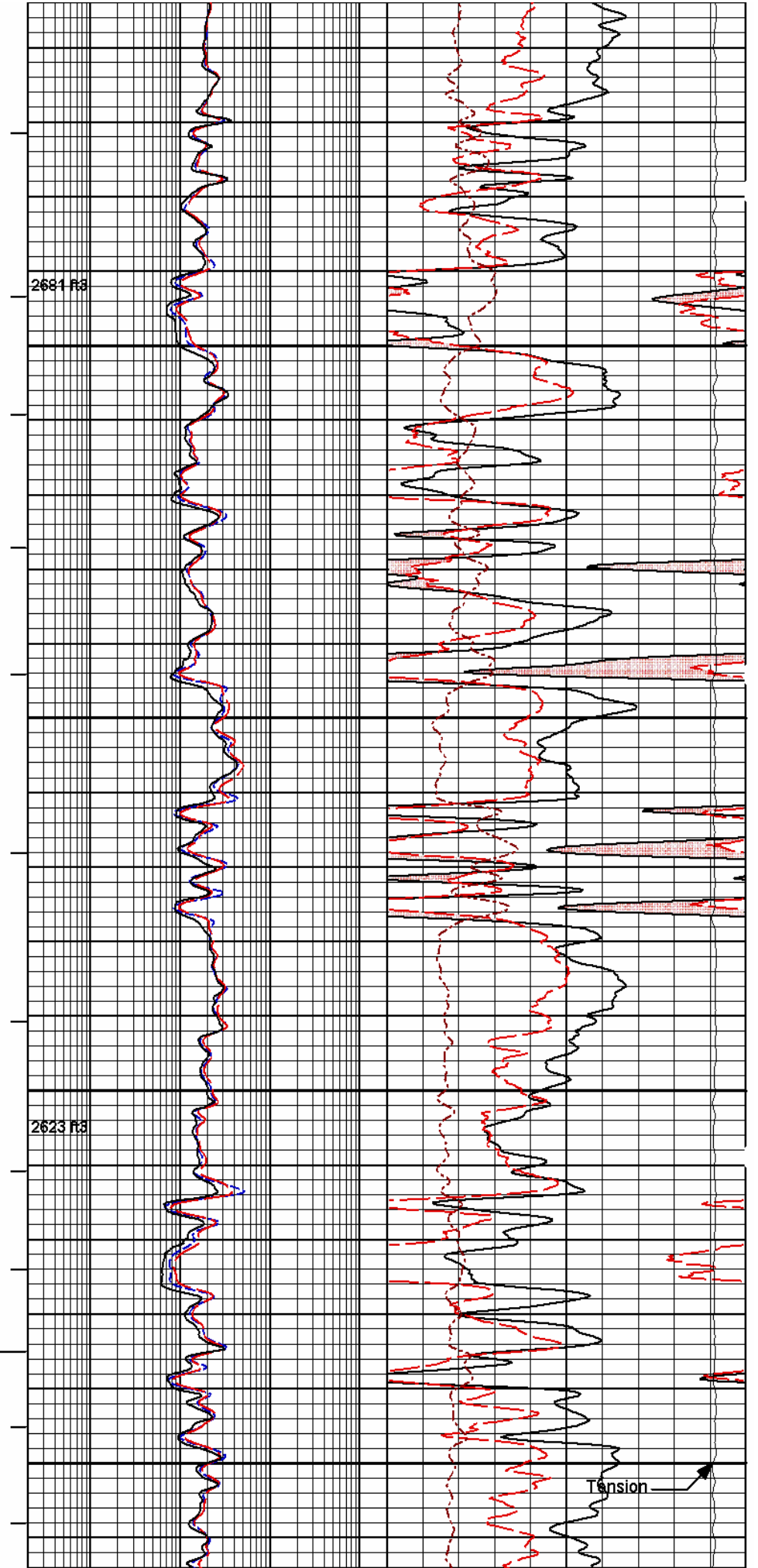
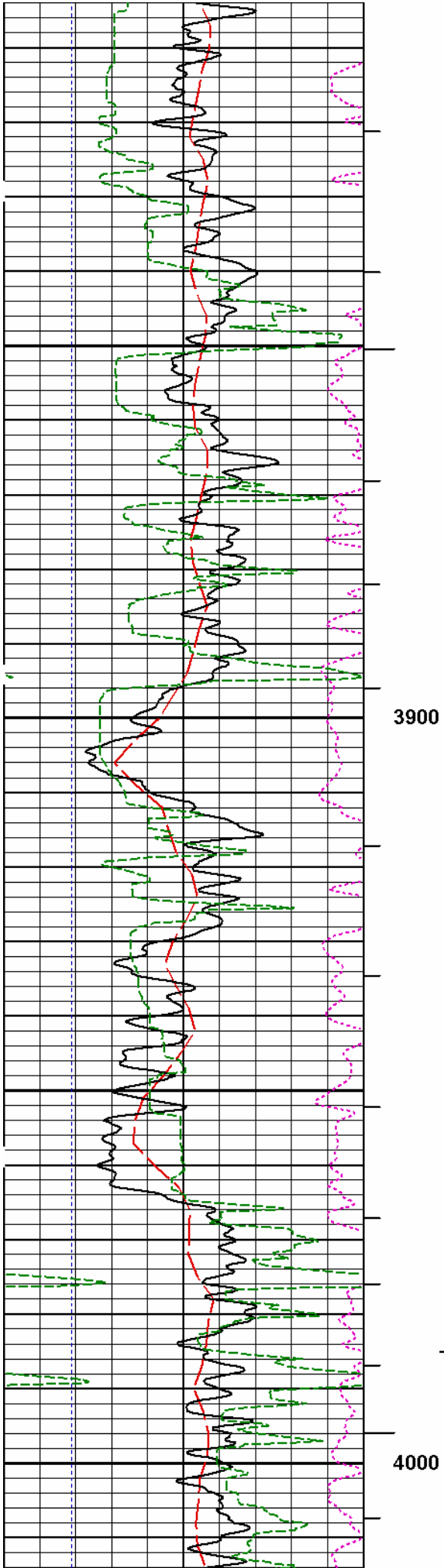
2966 RB

2876 RB

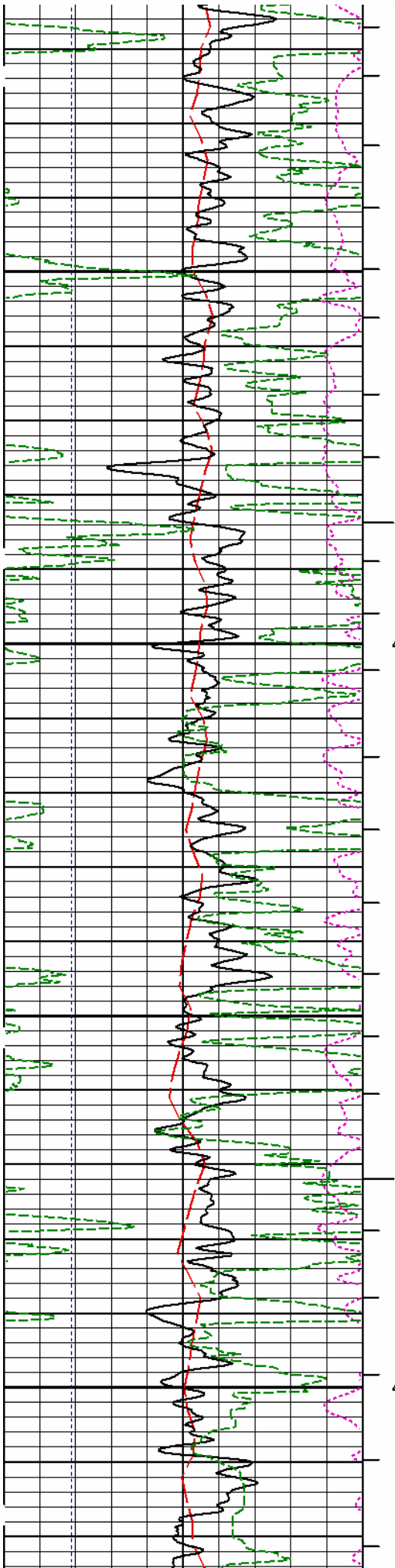






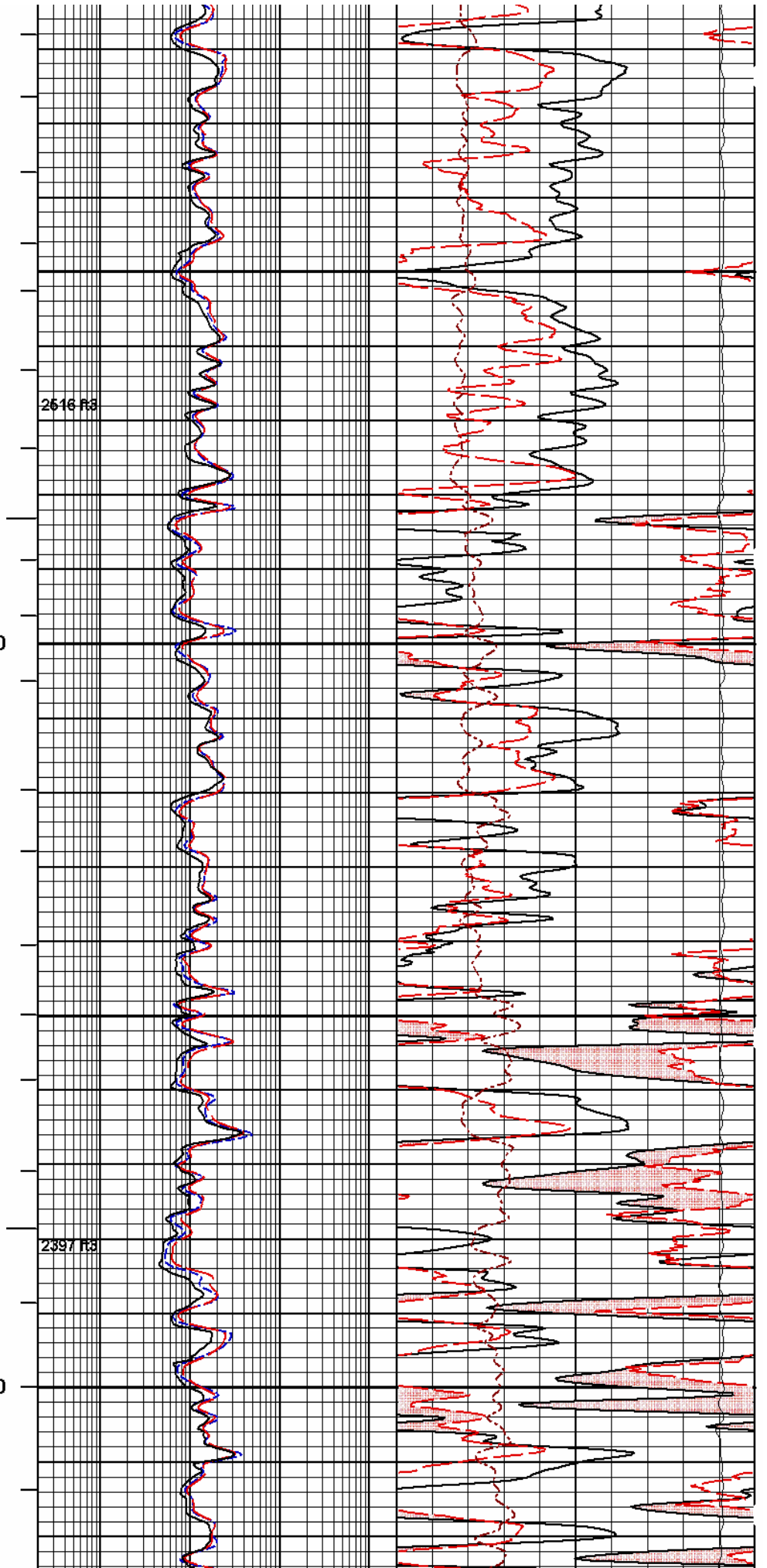






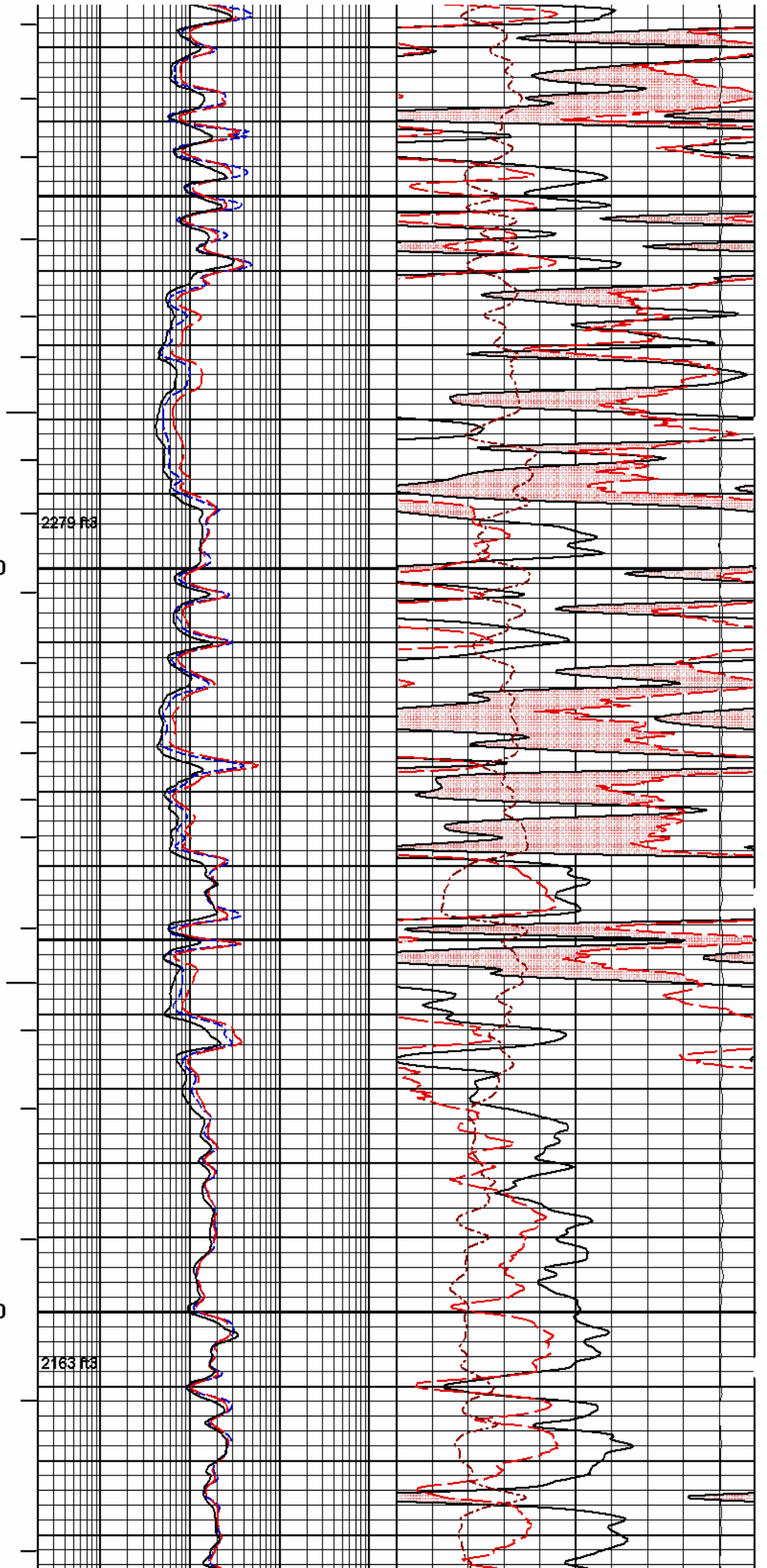
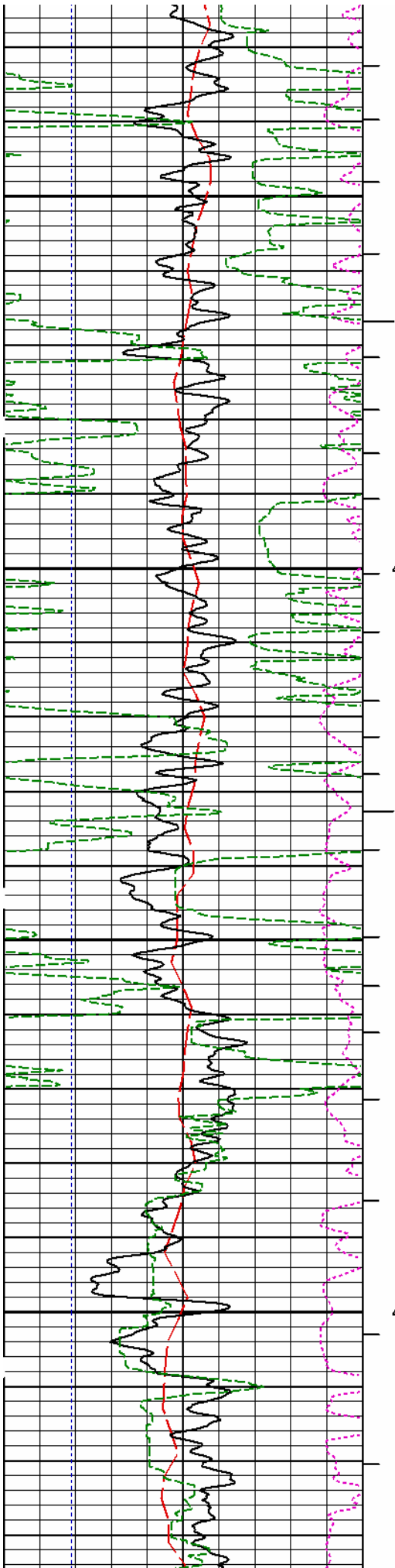
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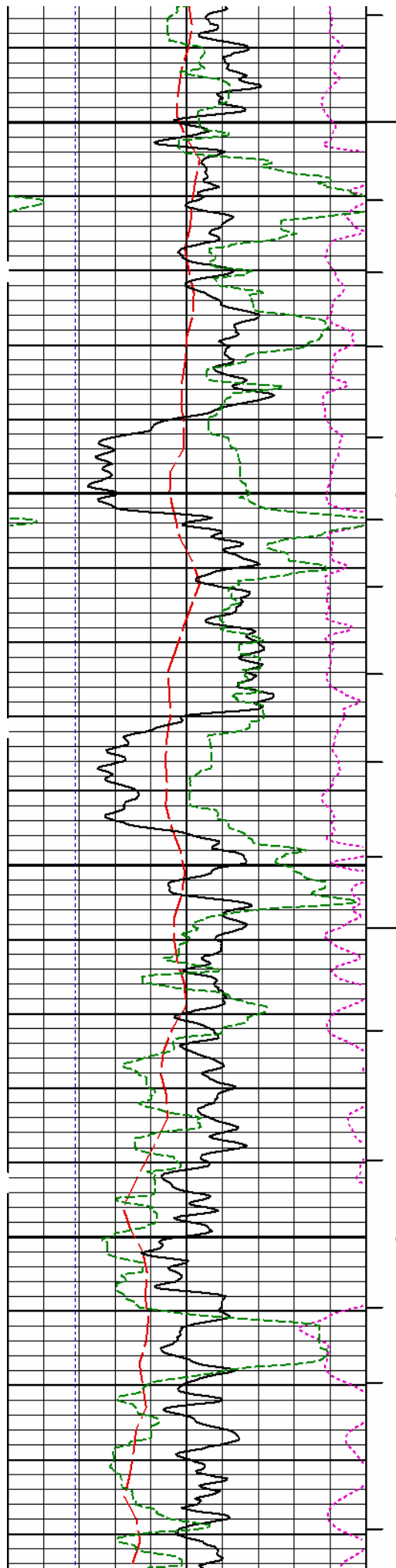
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2616 R3

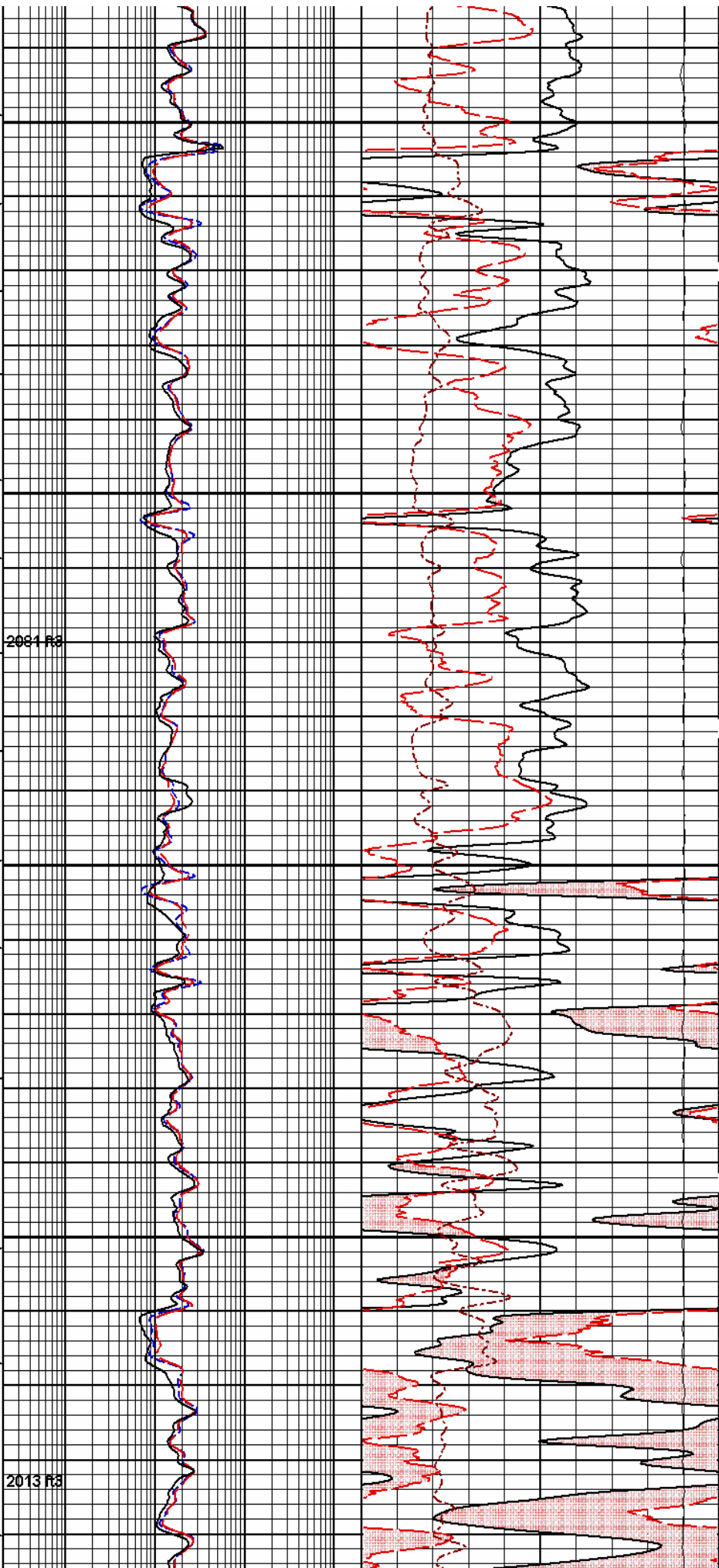
2397 R3





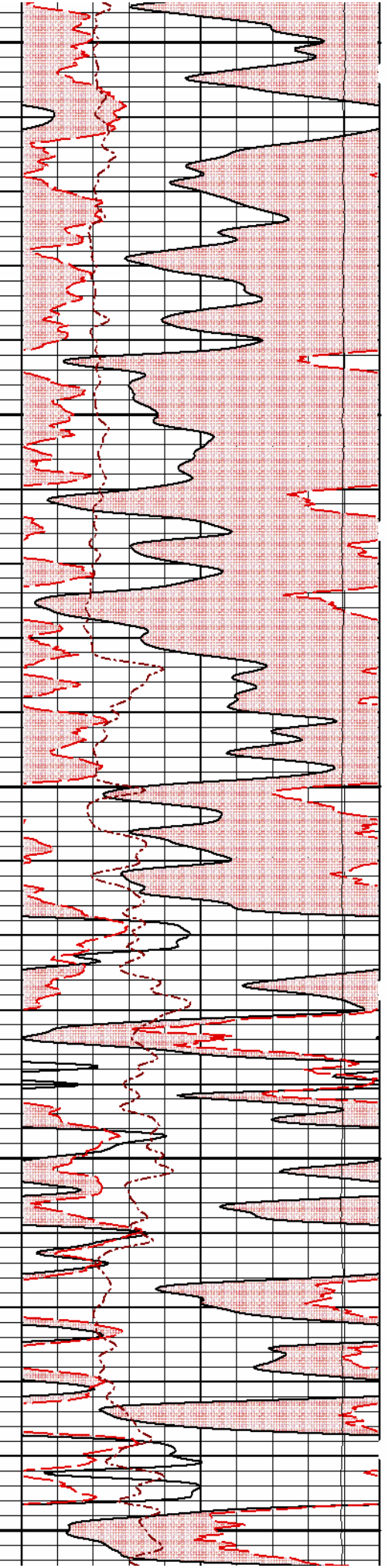
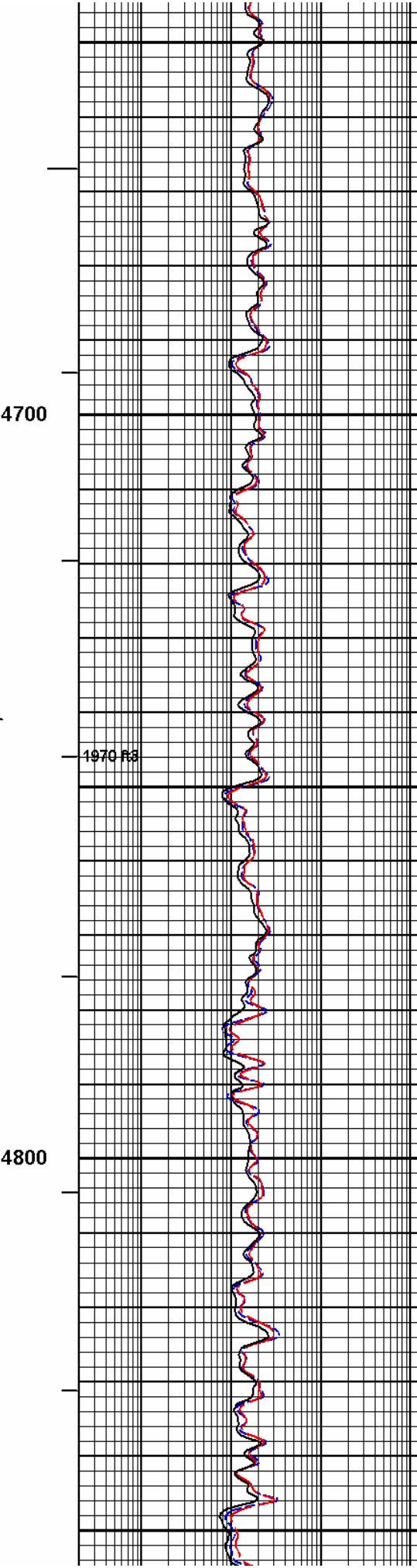
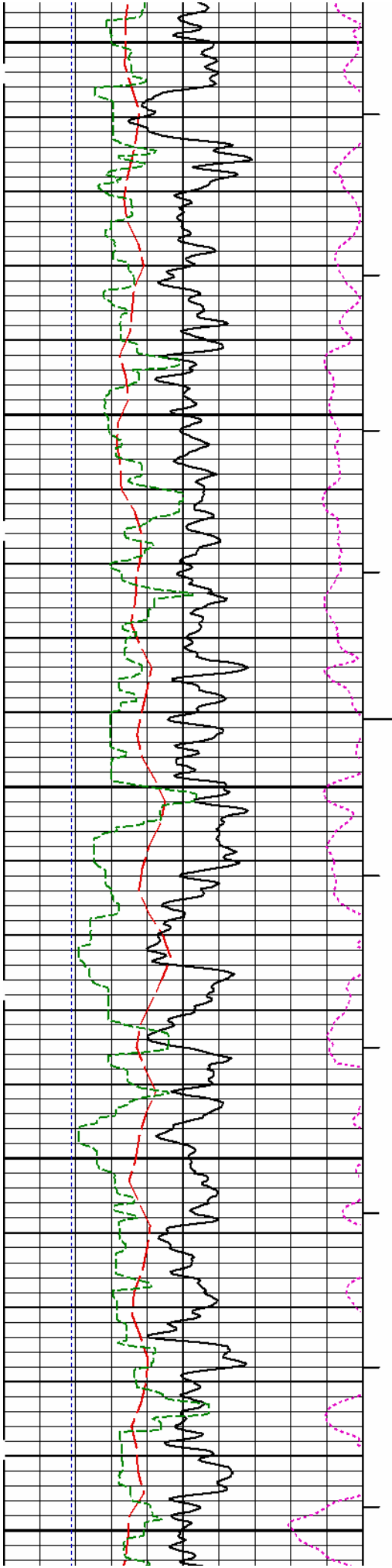
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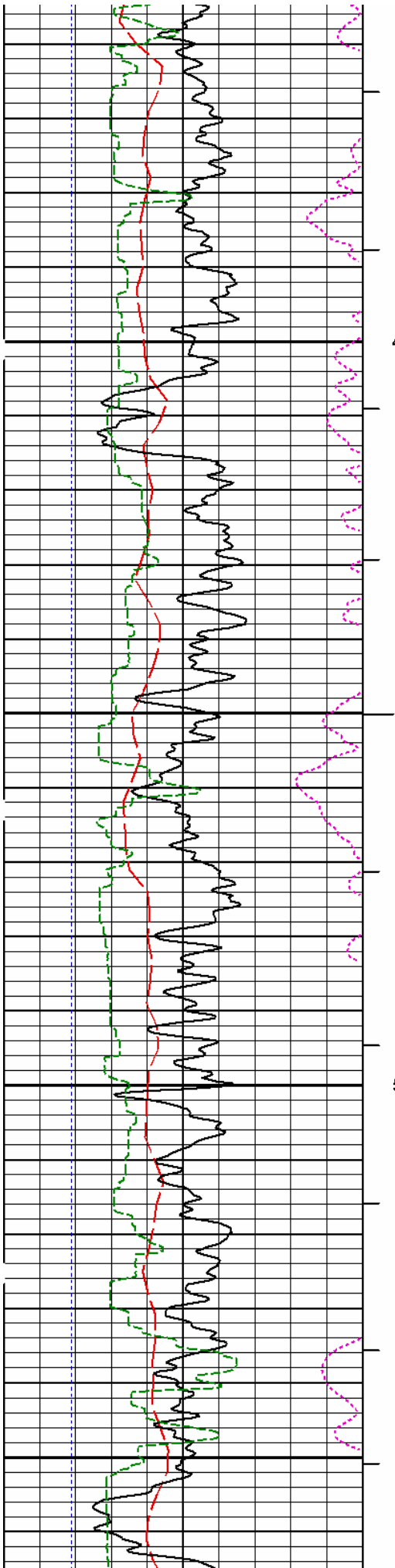


2001 R8

2013 R8

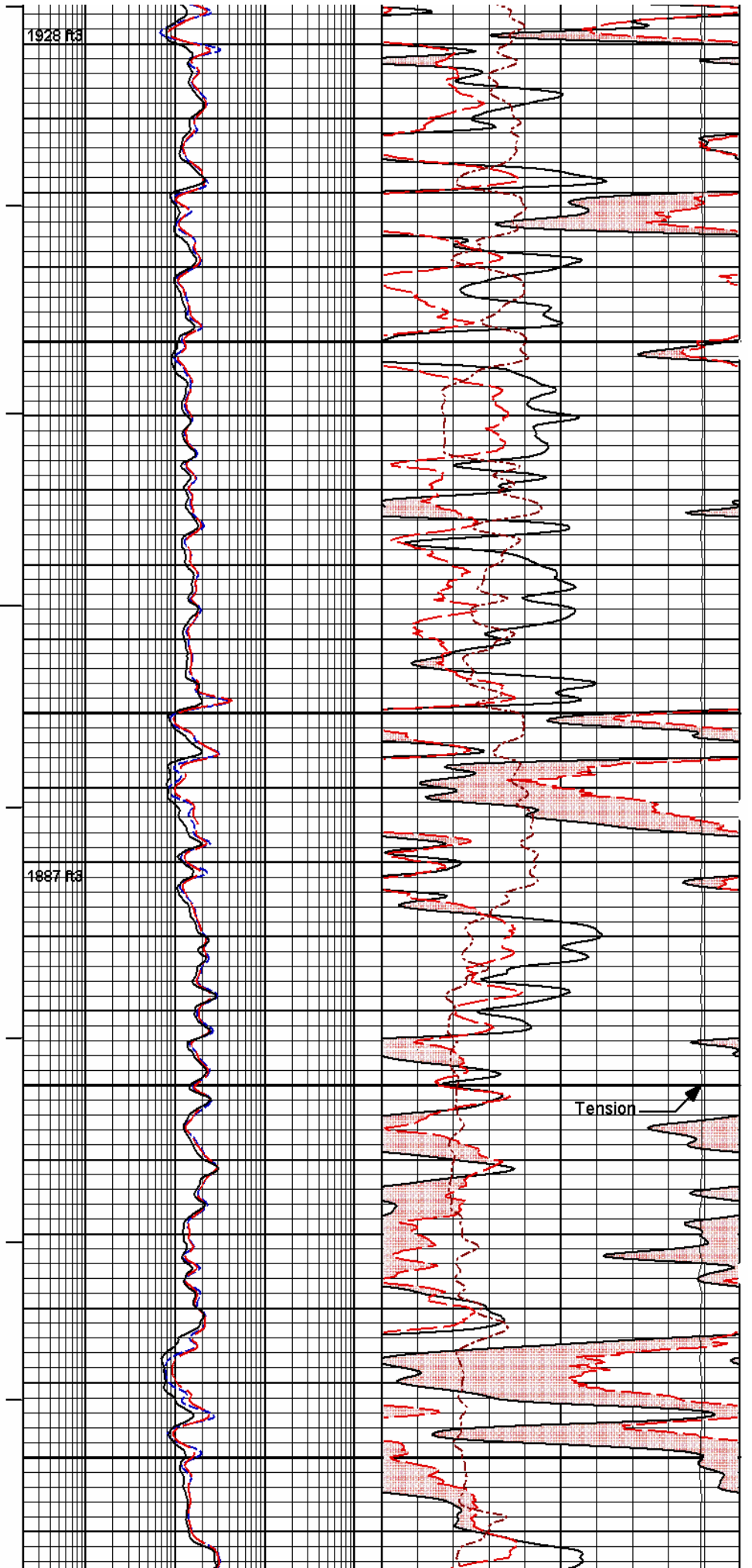






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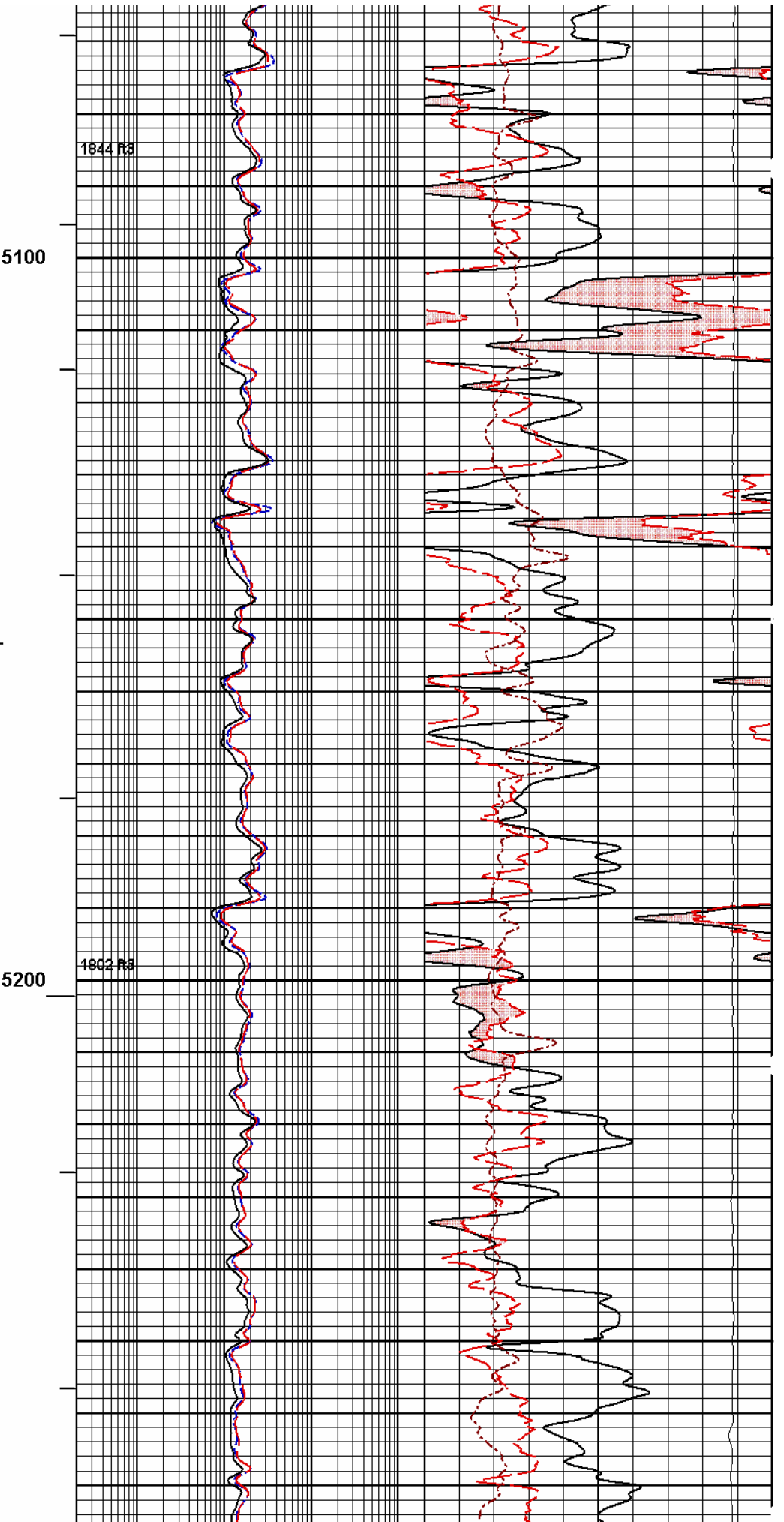
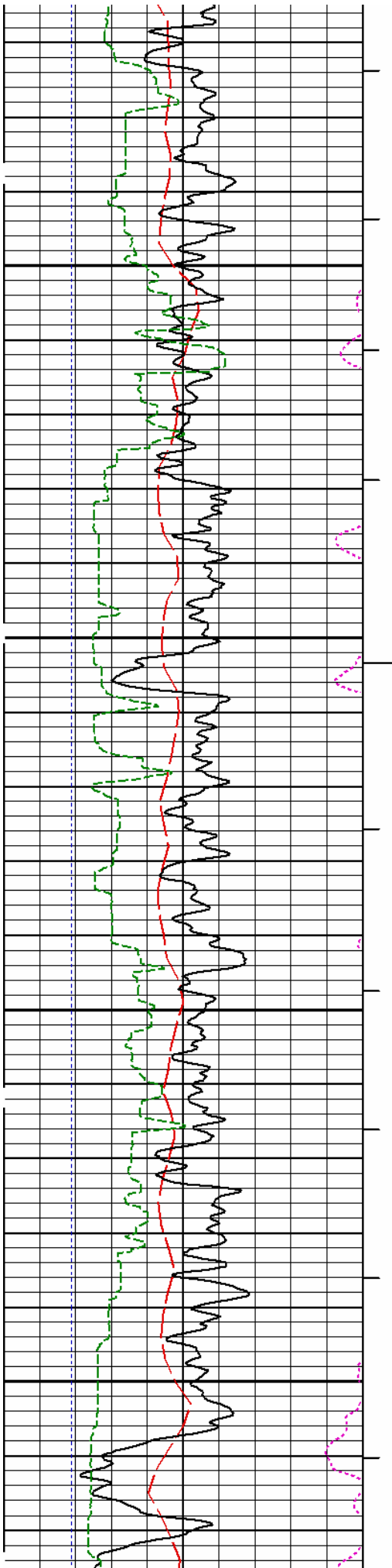
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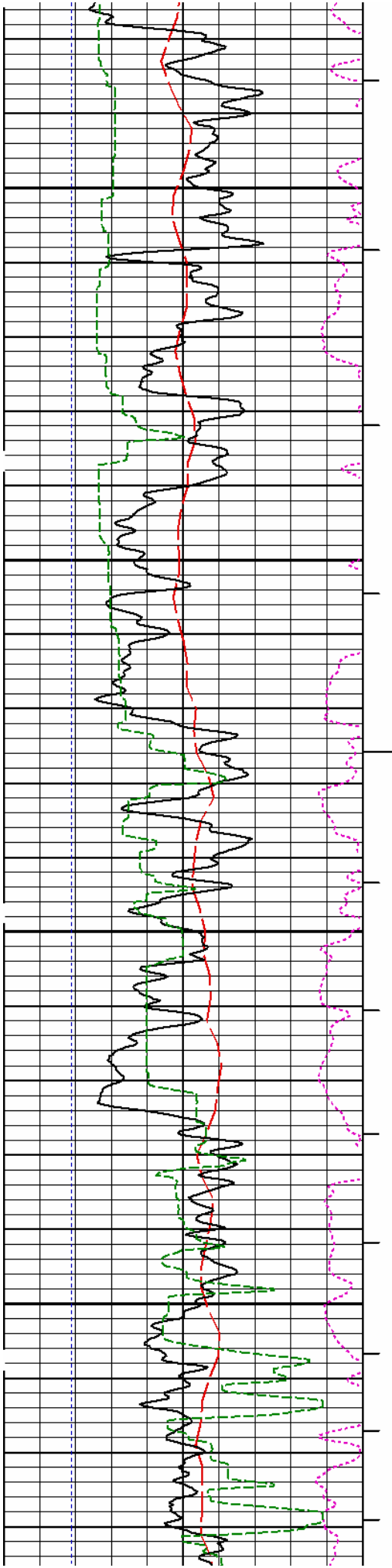


4928 ft

4987 ft

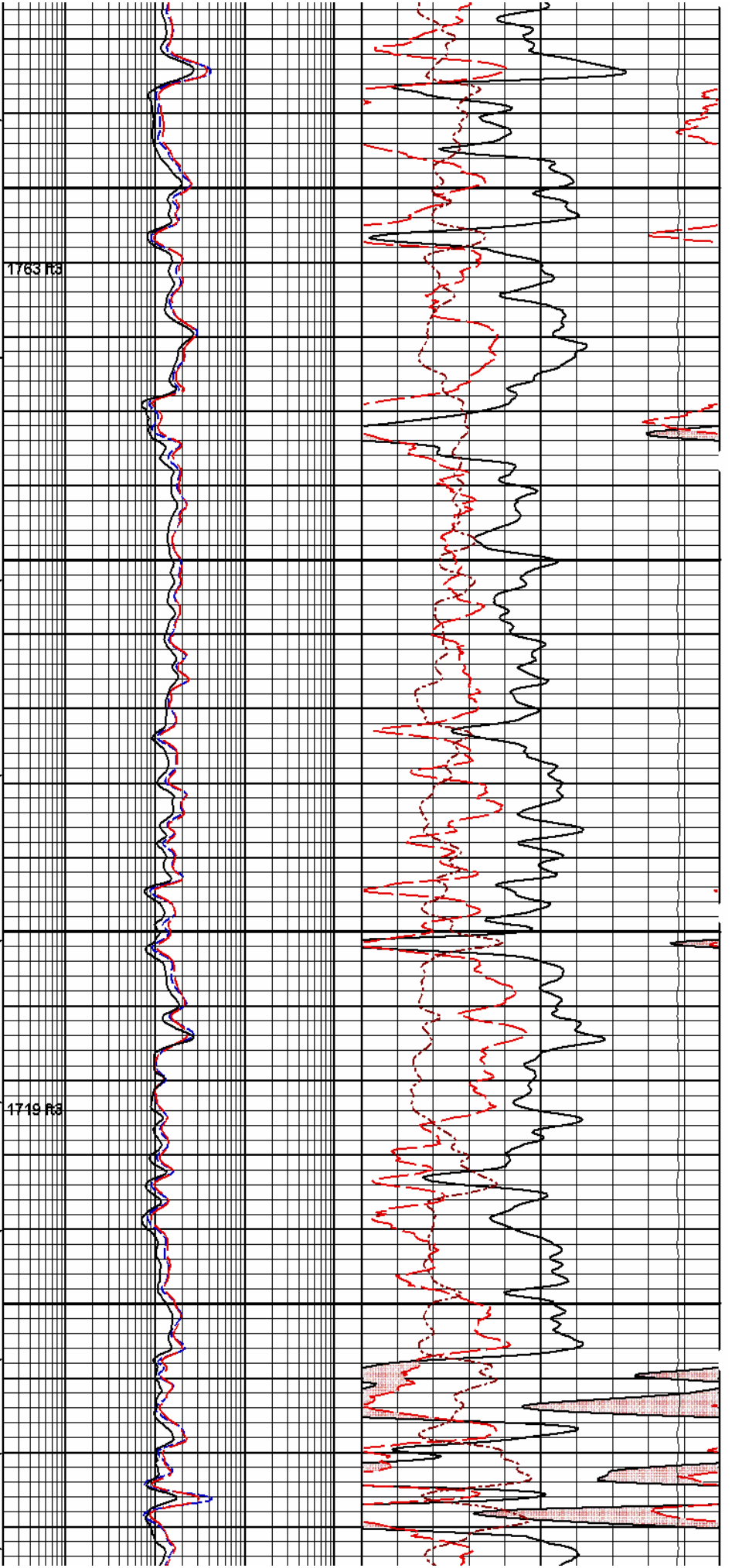
Tension





5300

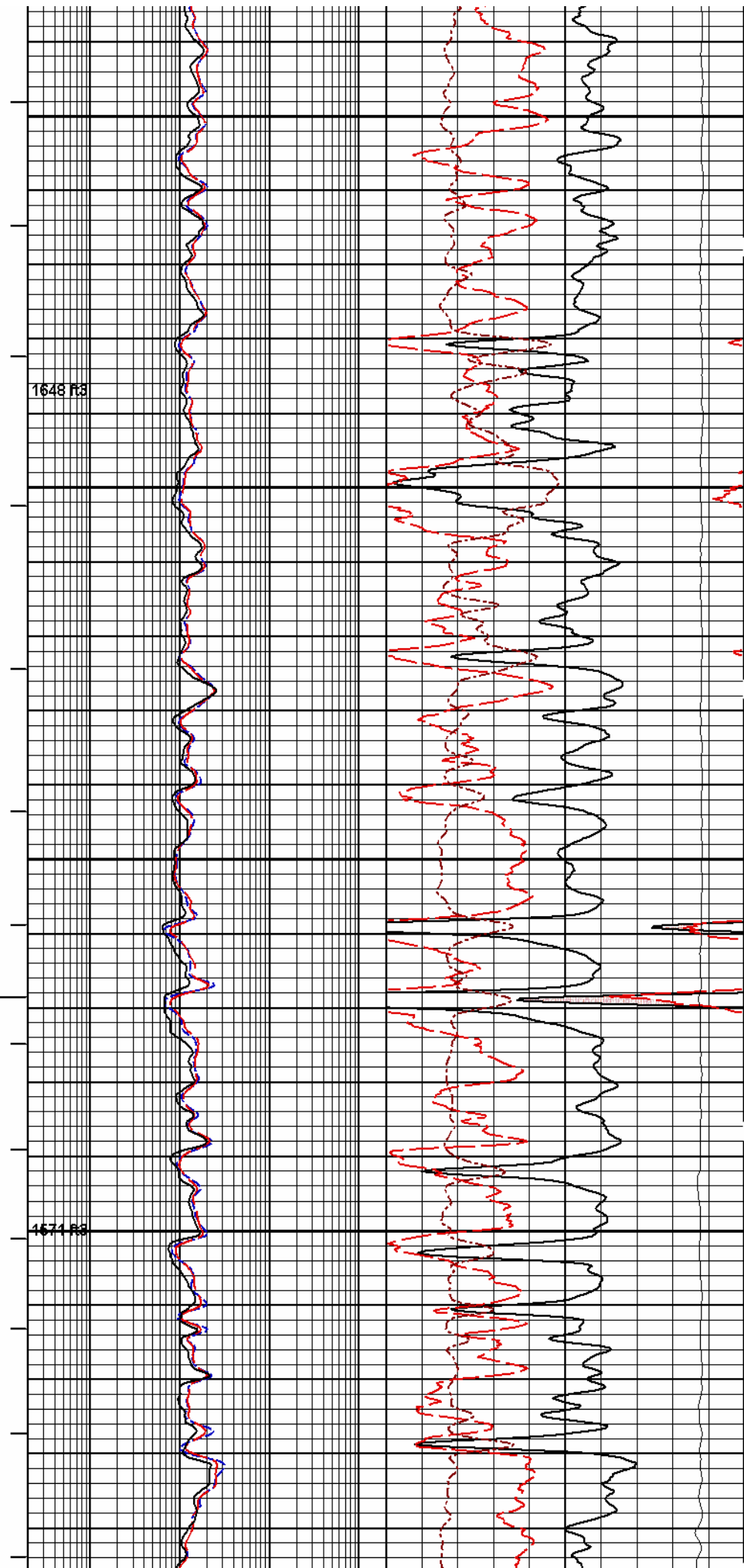
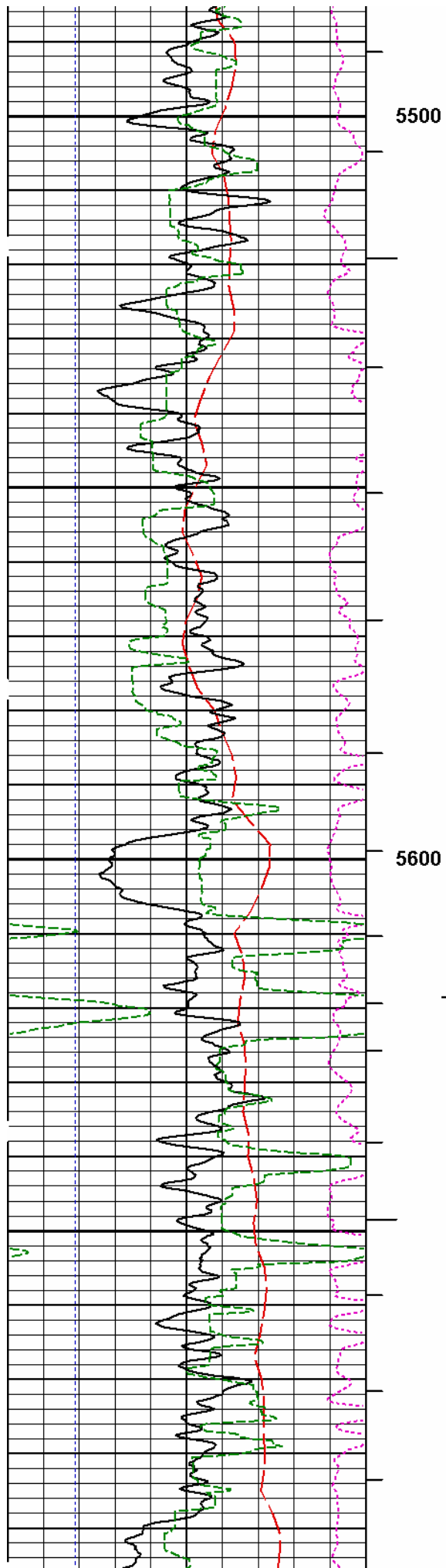
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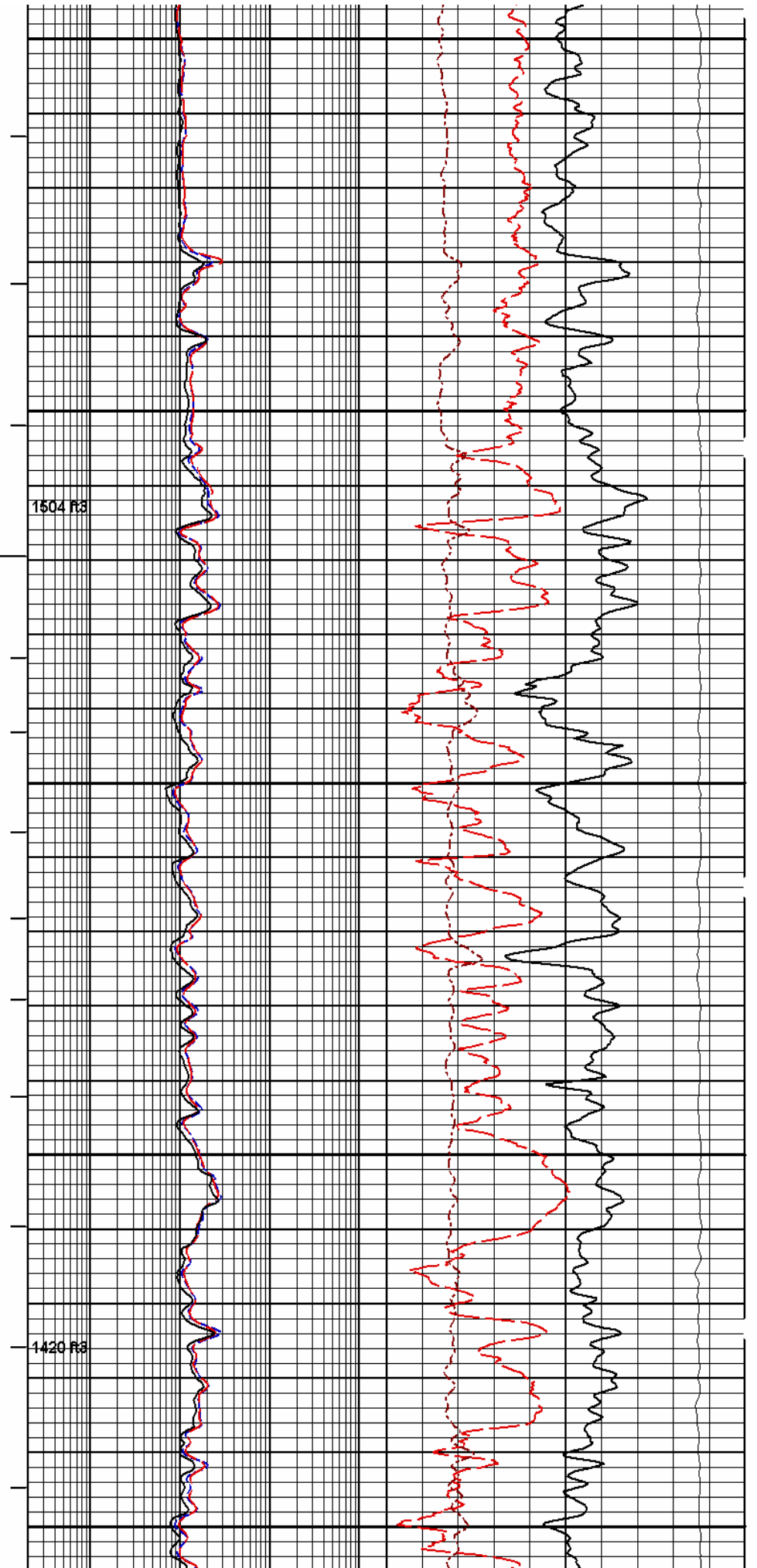
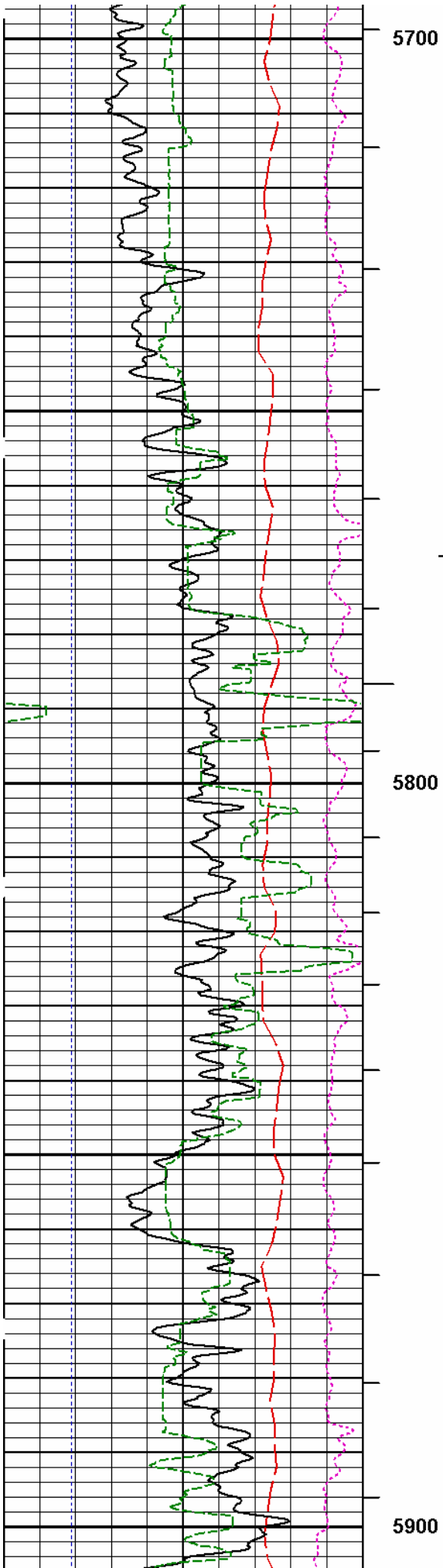


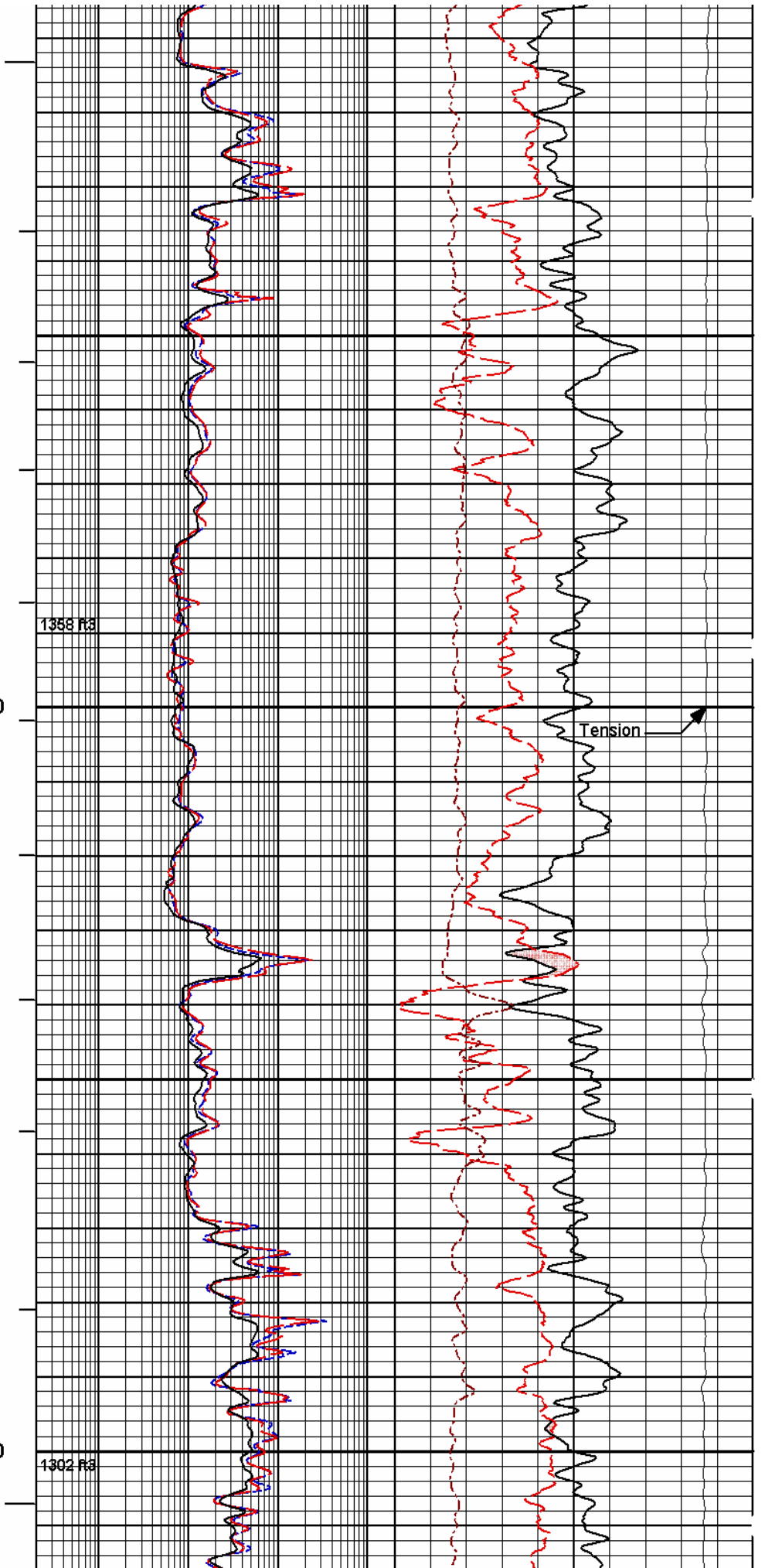
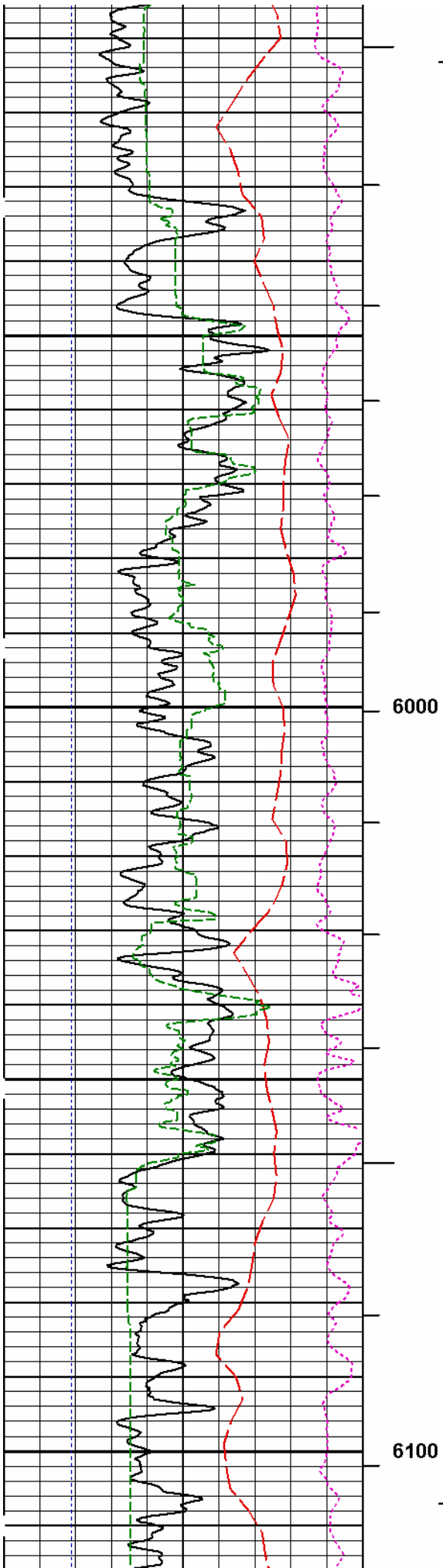
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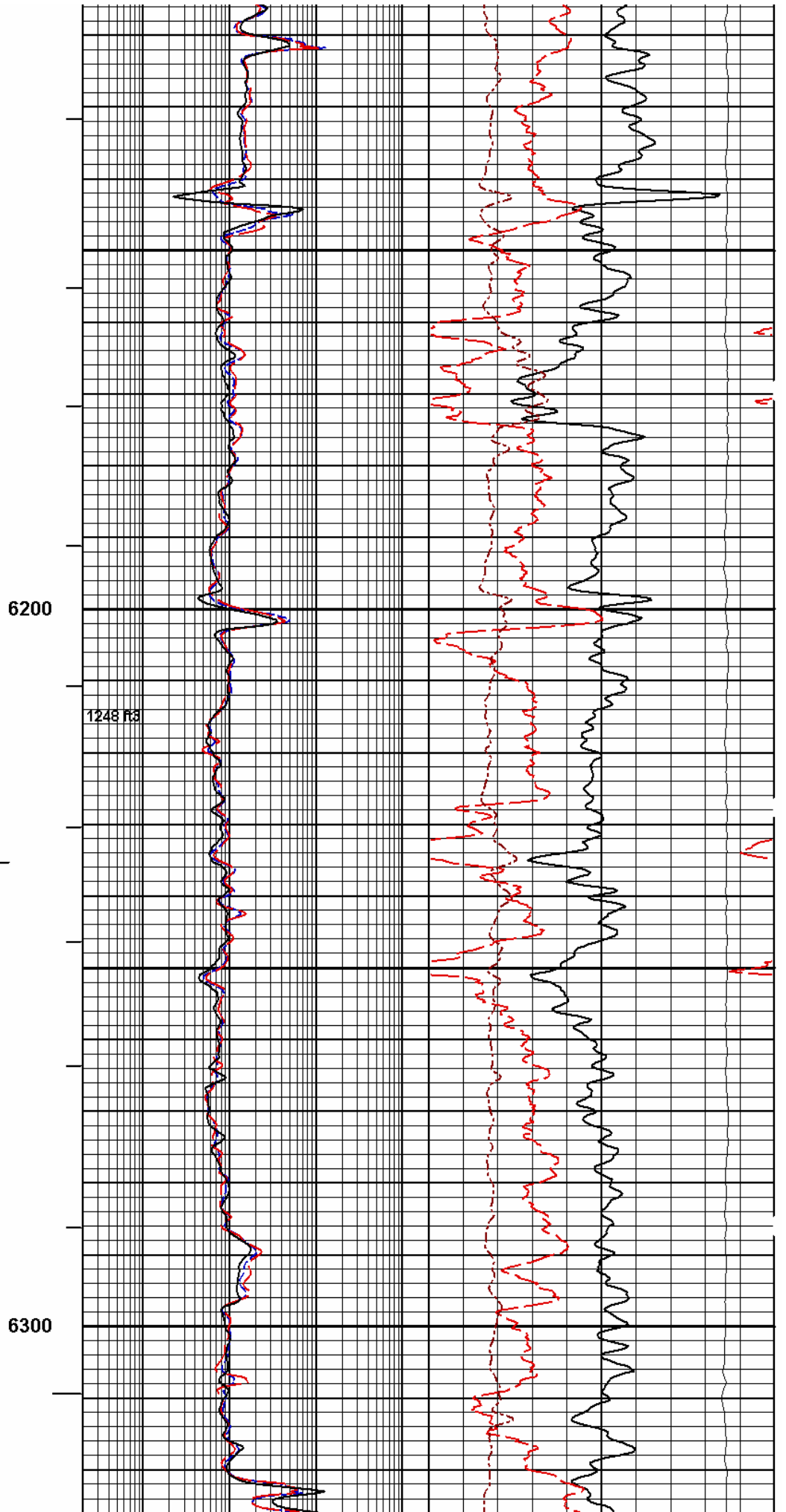
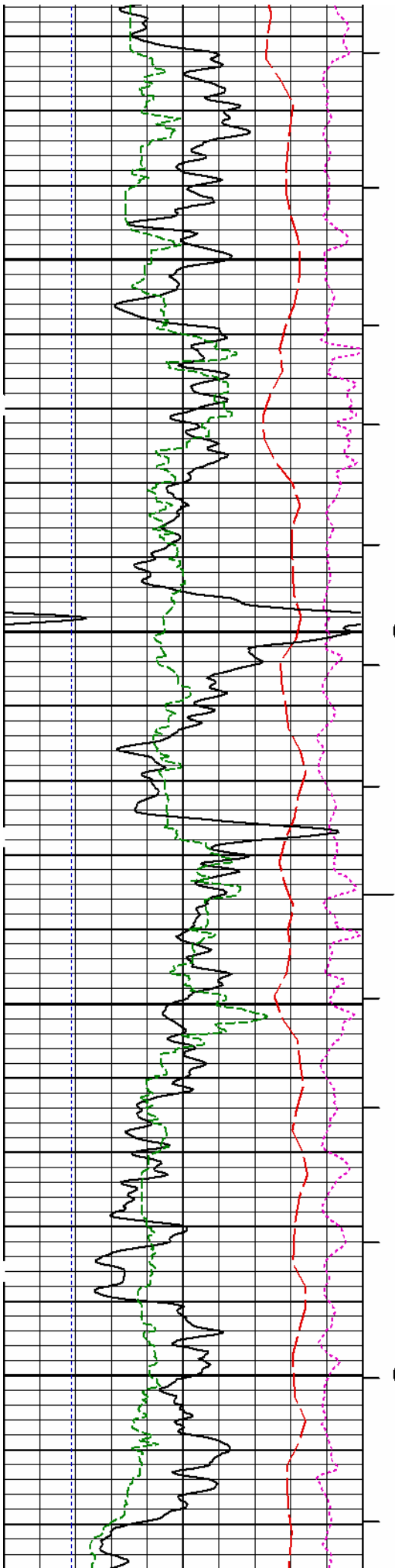
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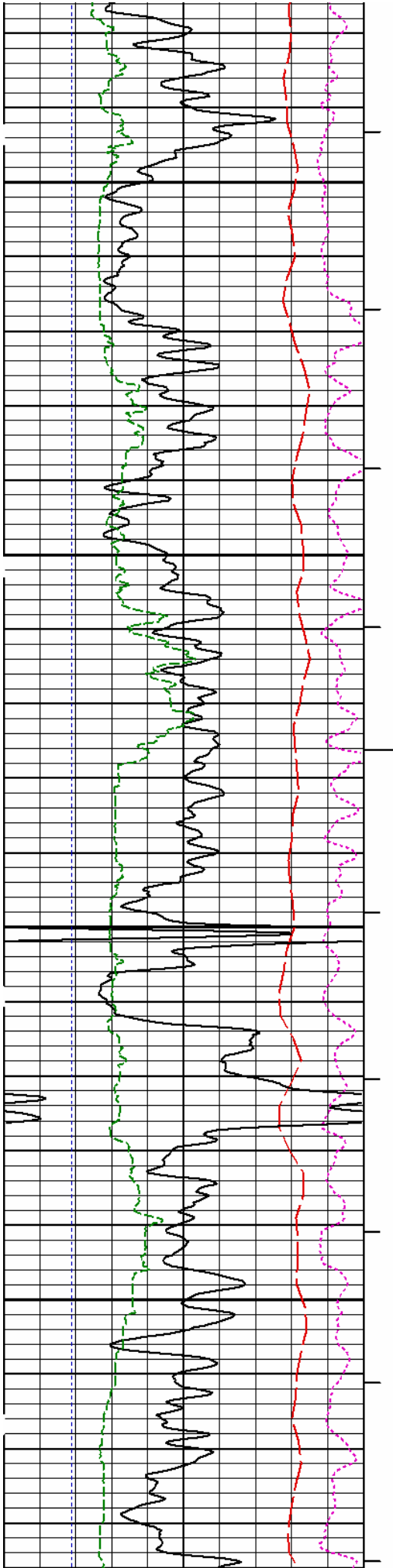






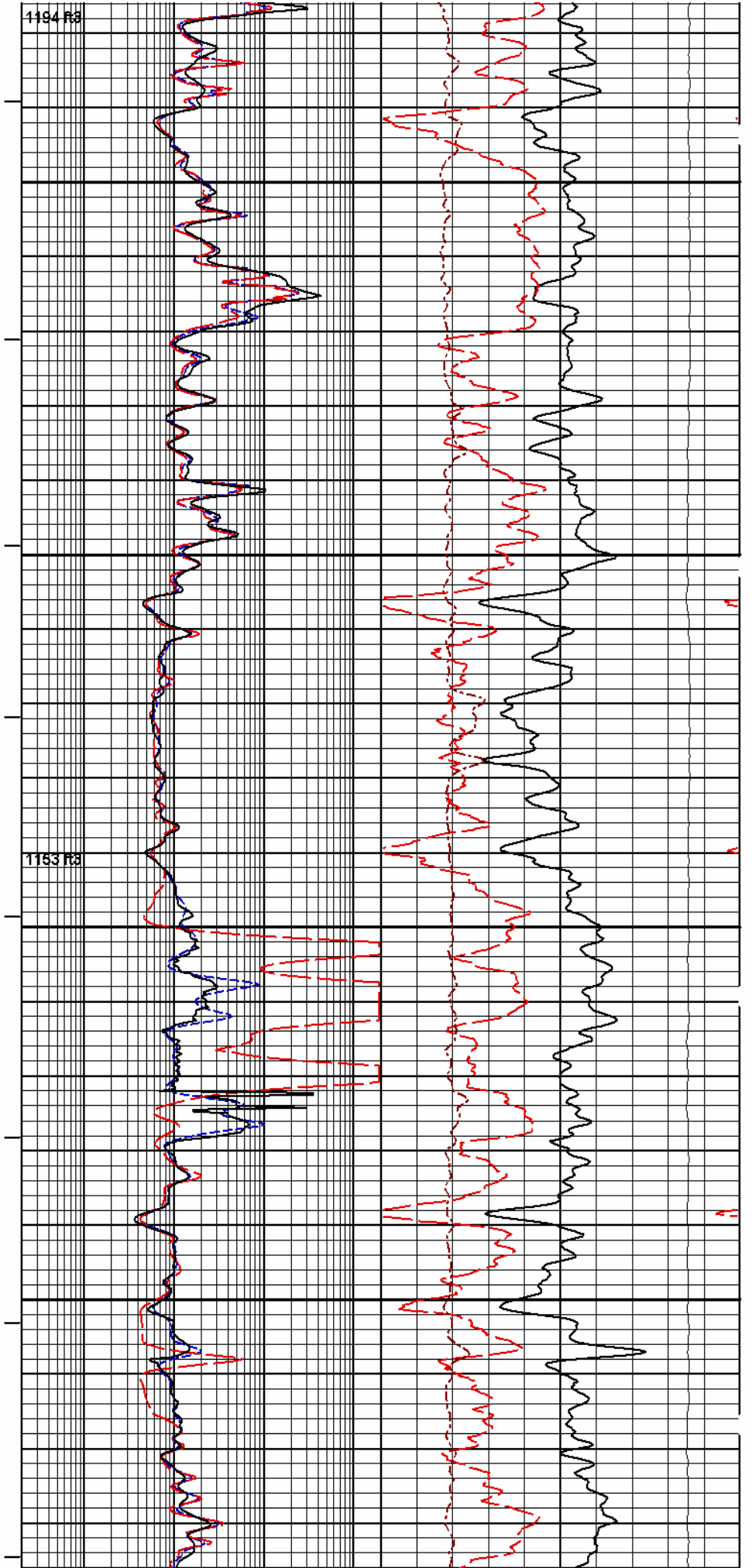






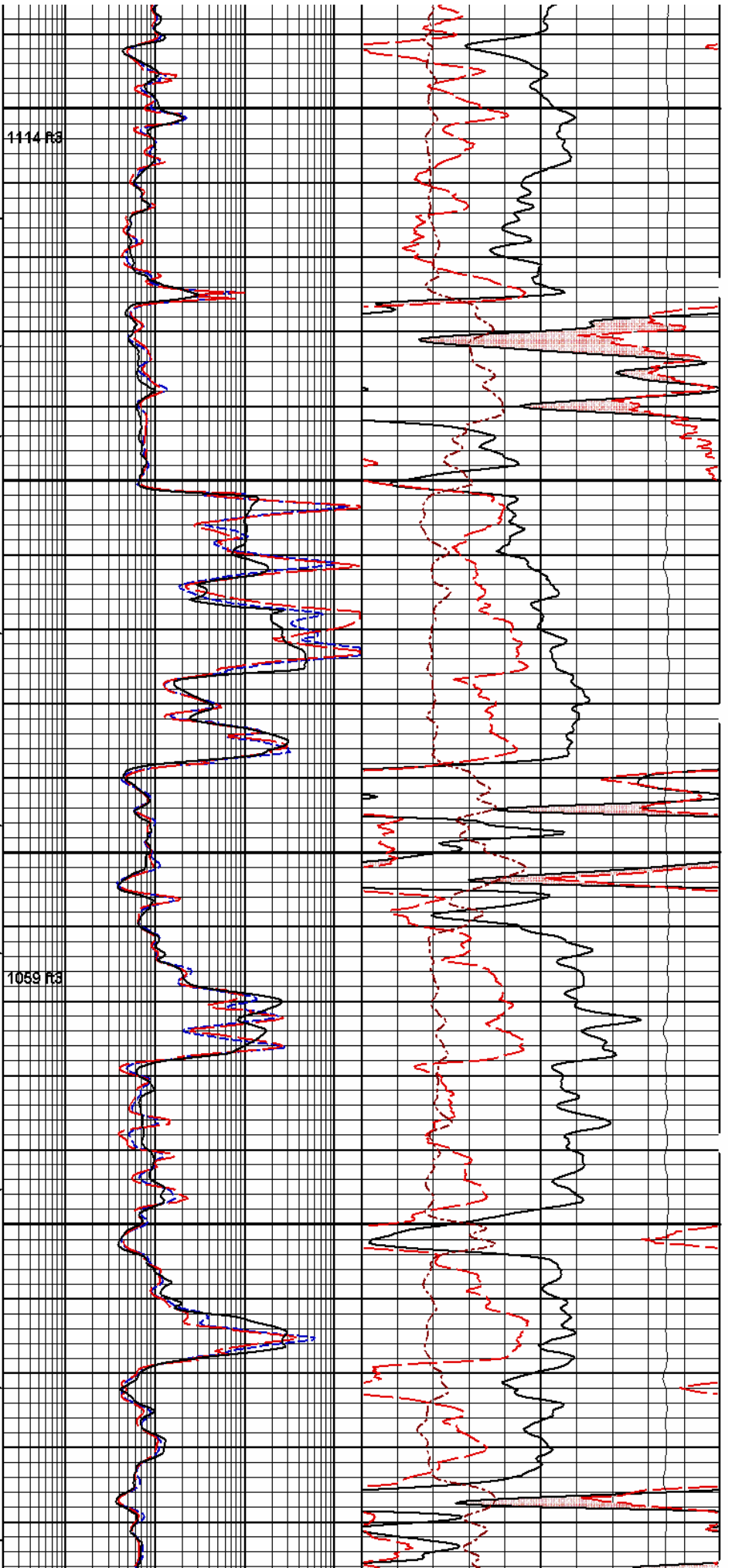
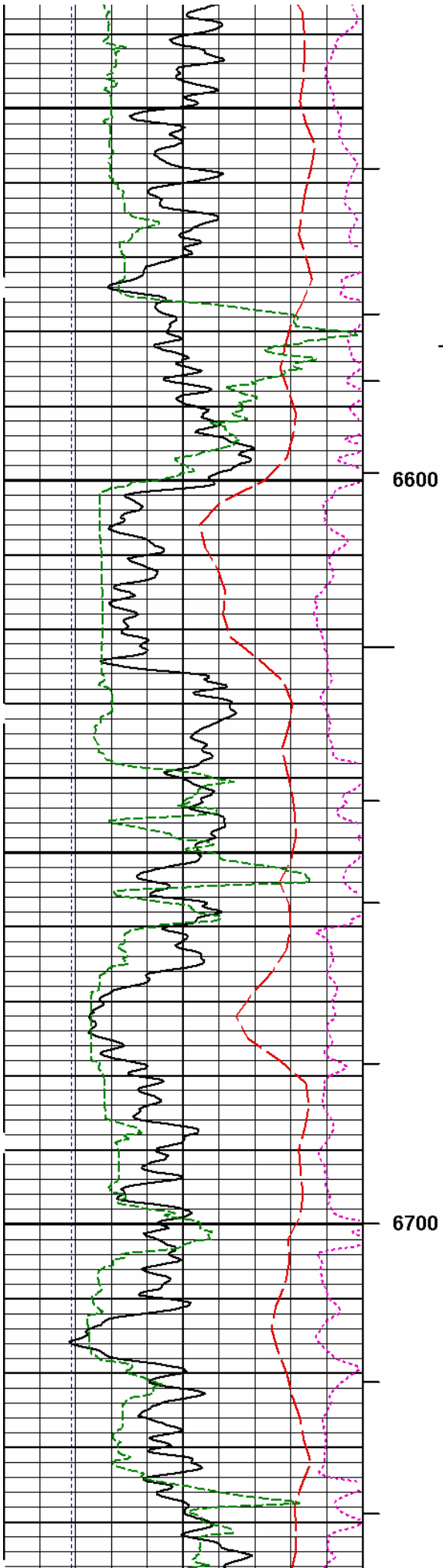
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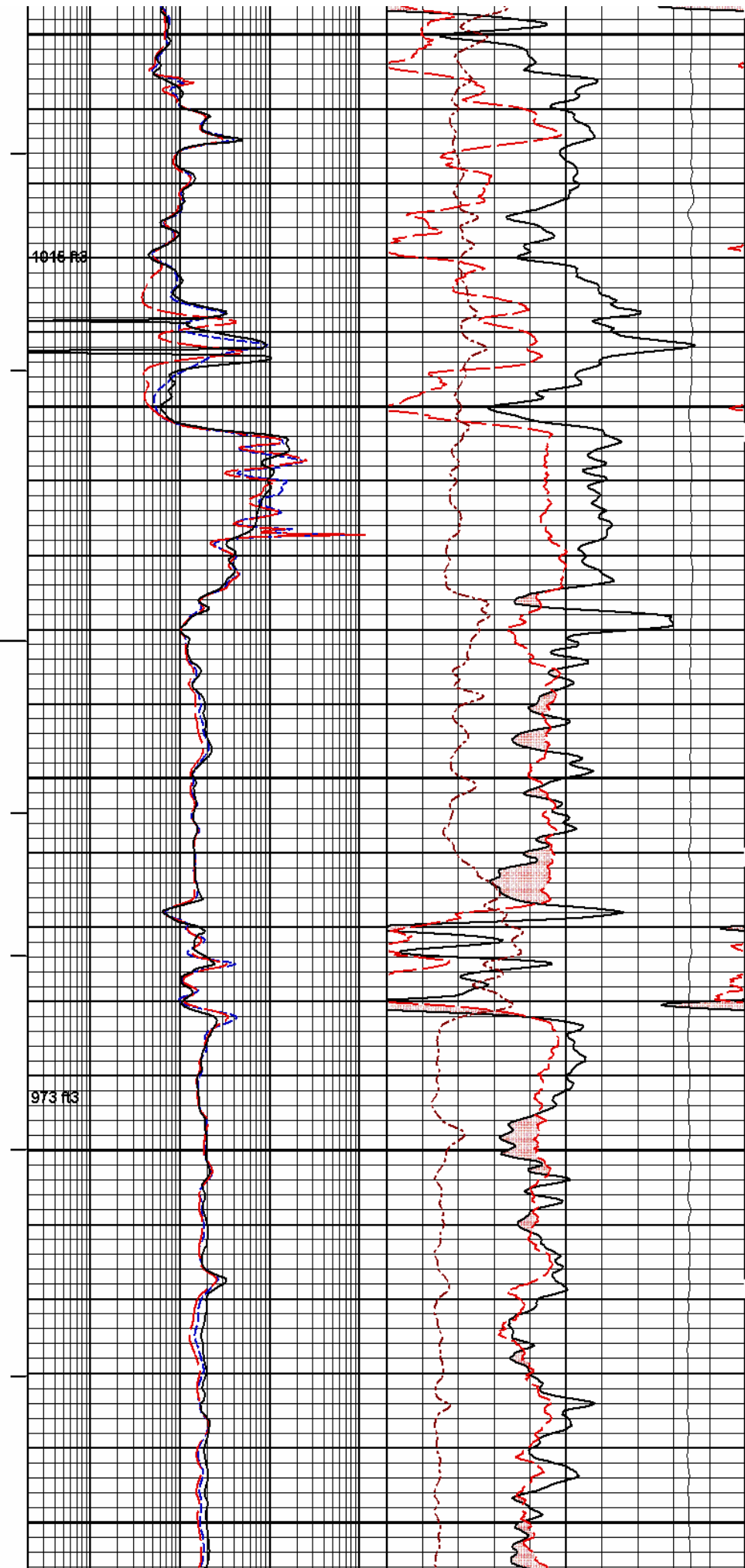
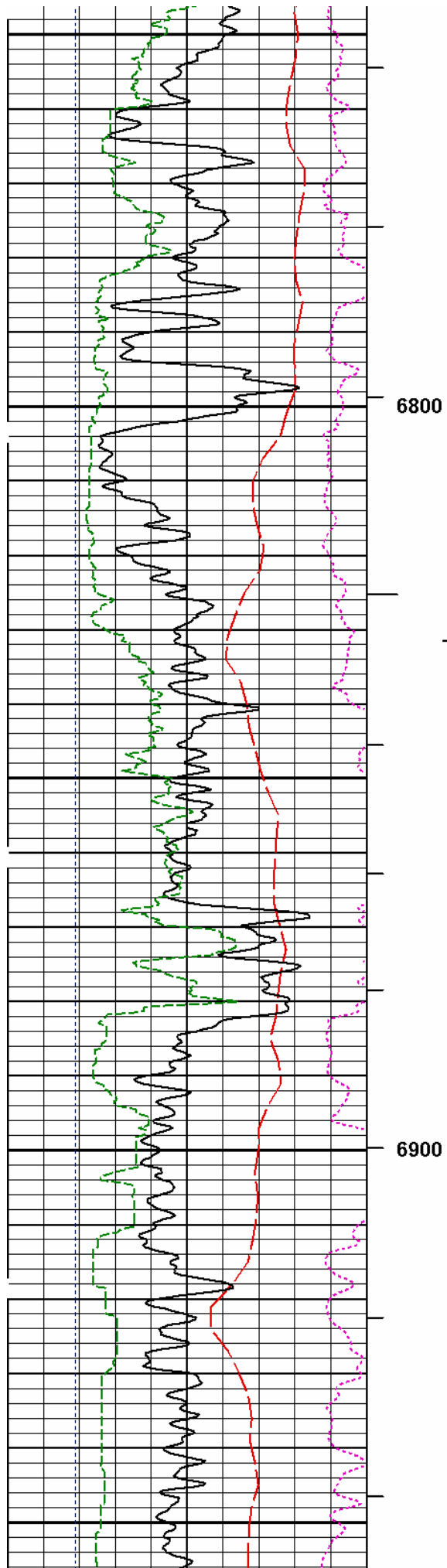


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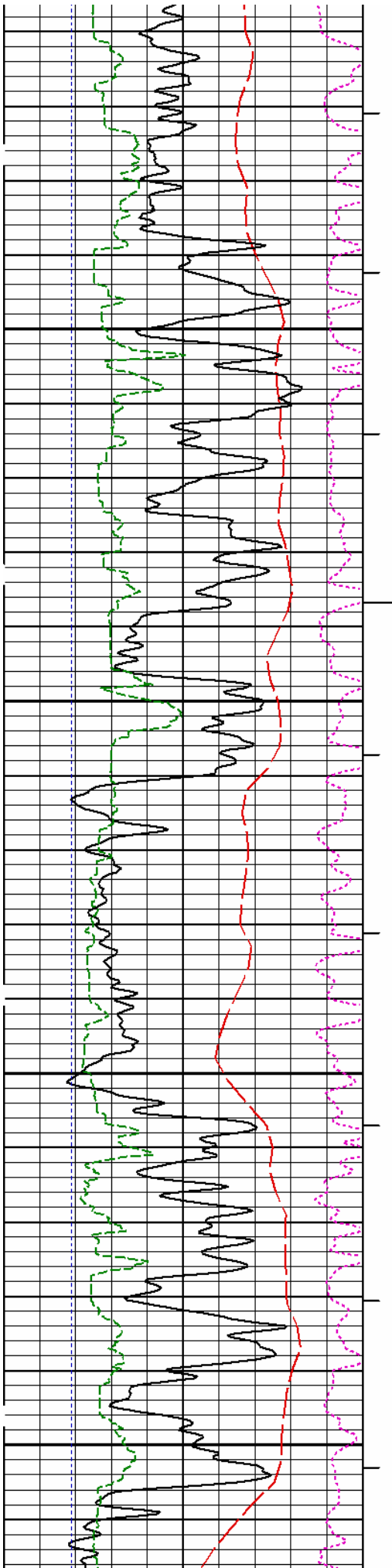
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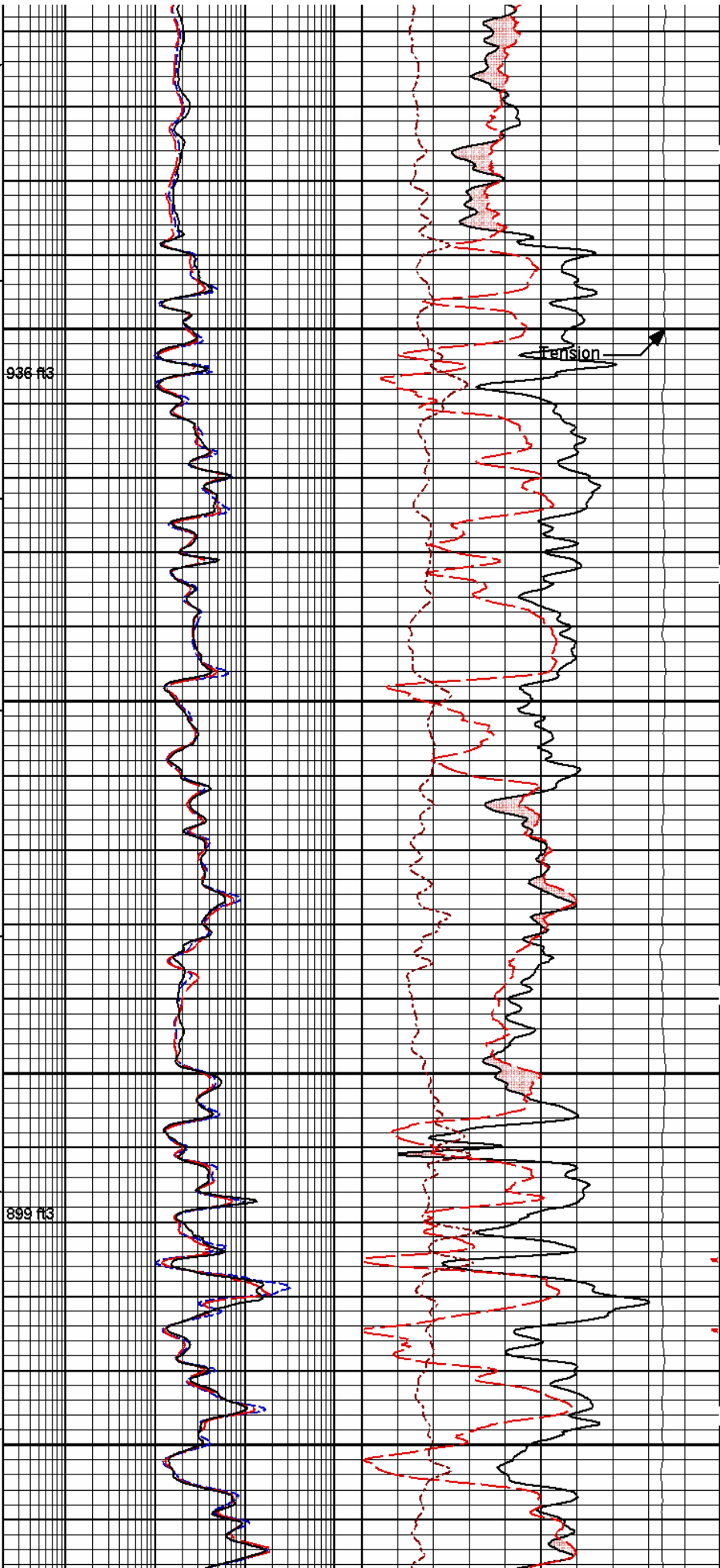






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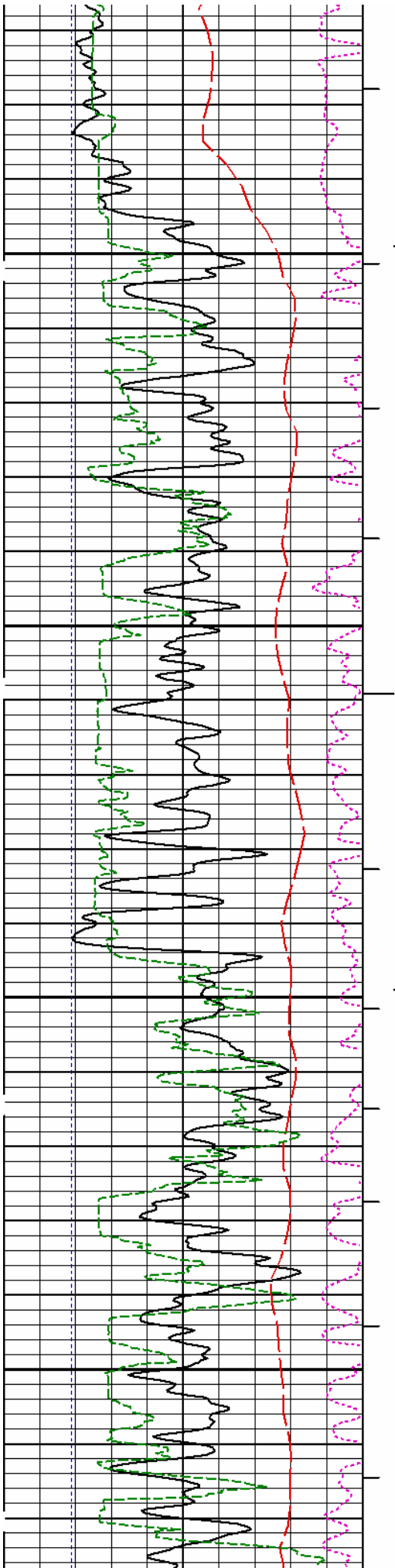
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936 R3

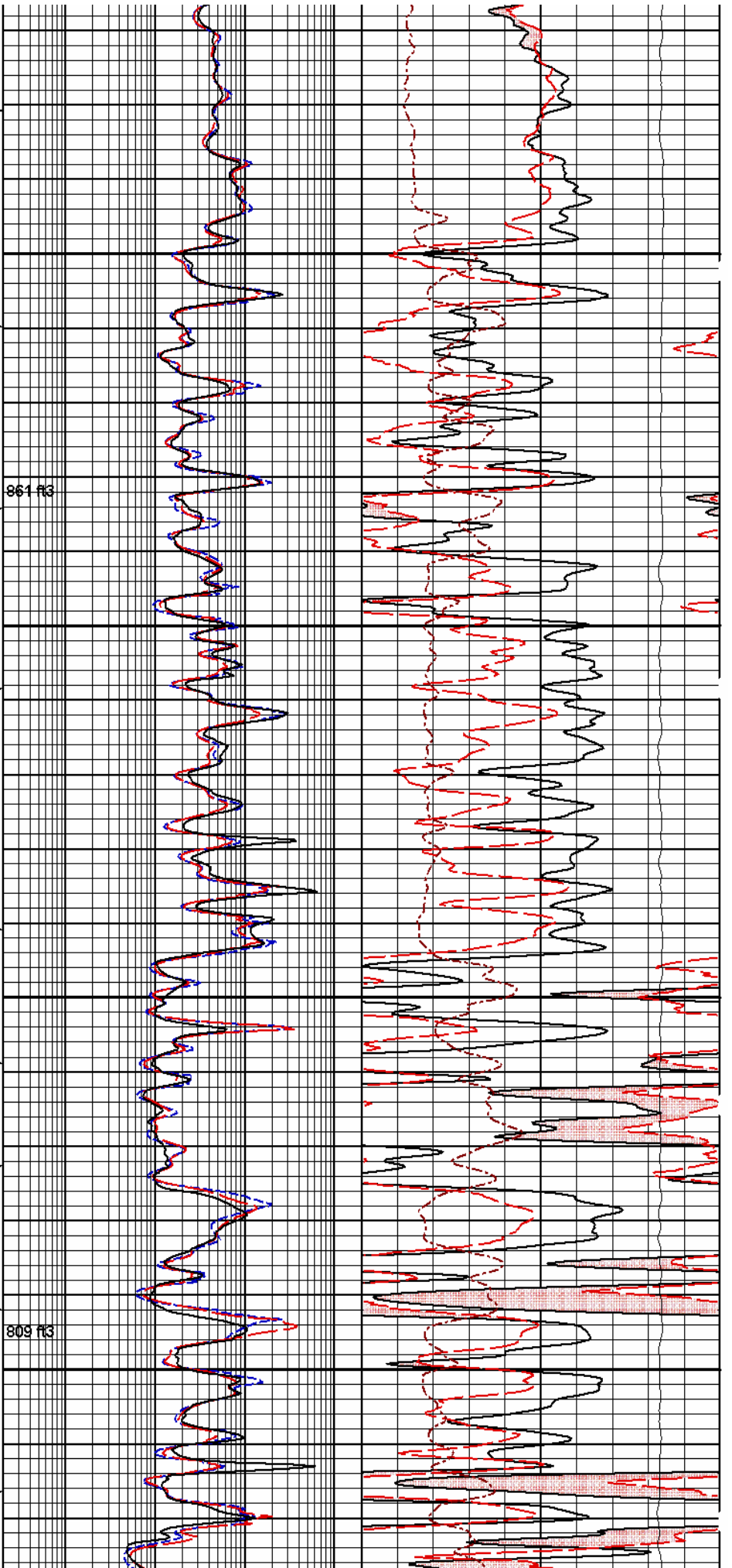
899 R3

Tension



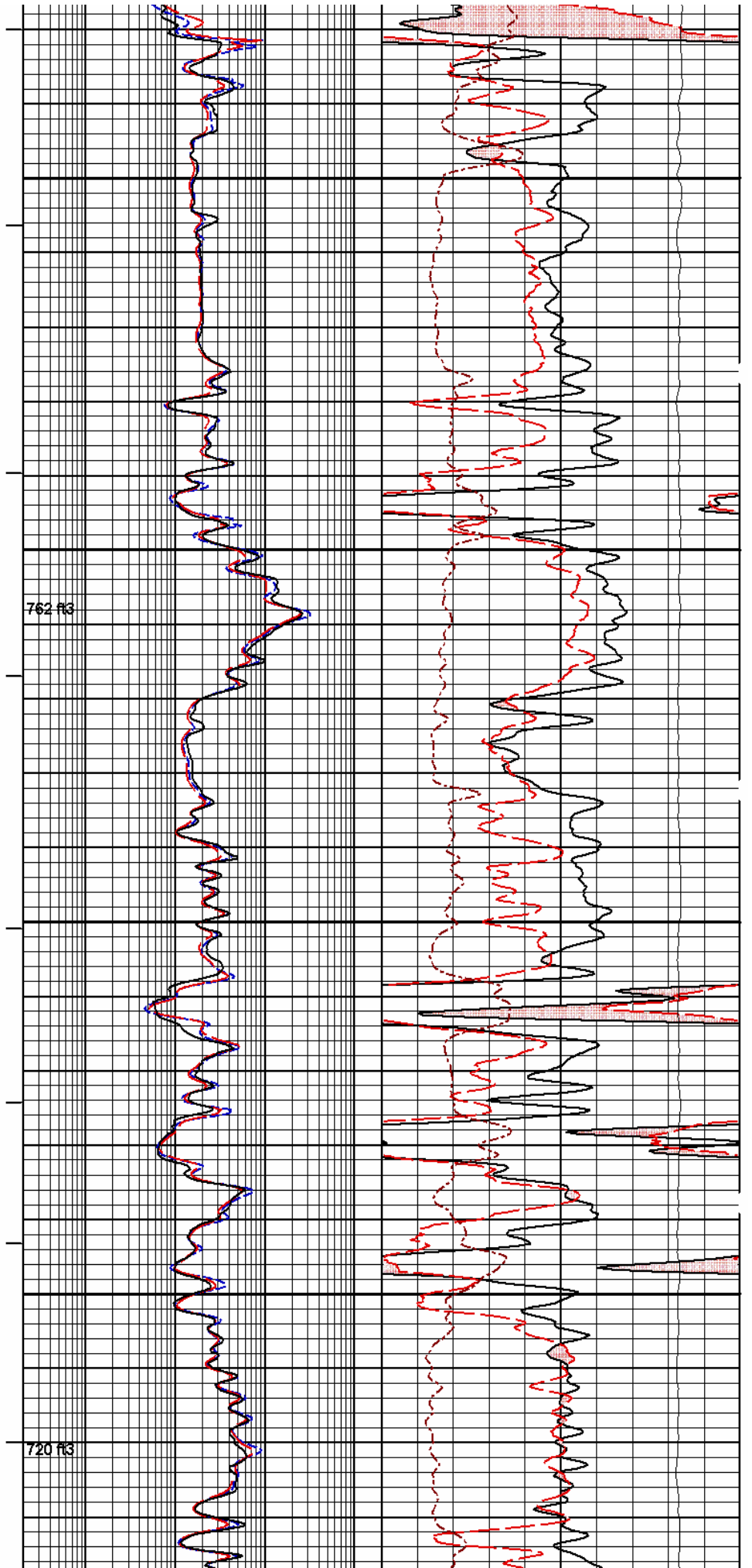
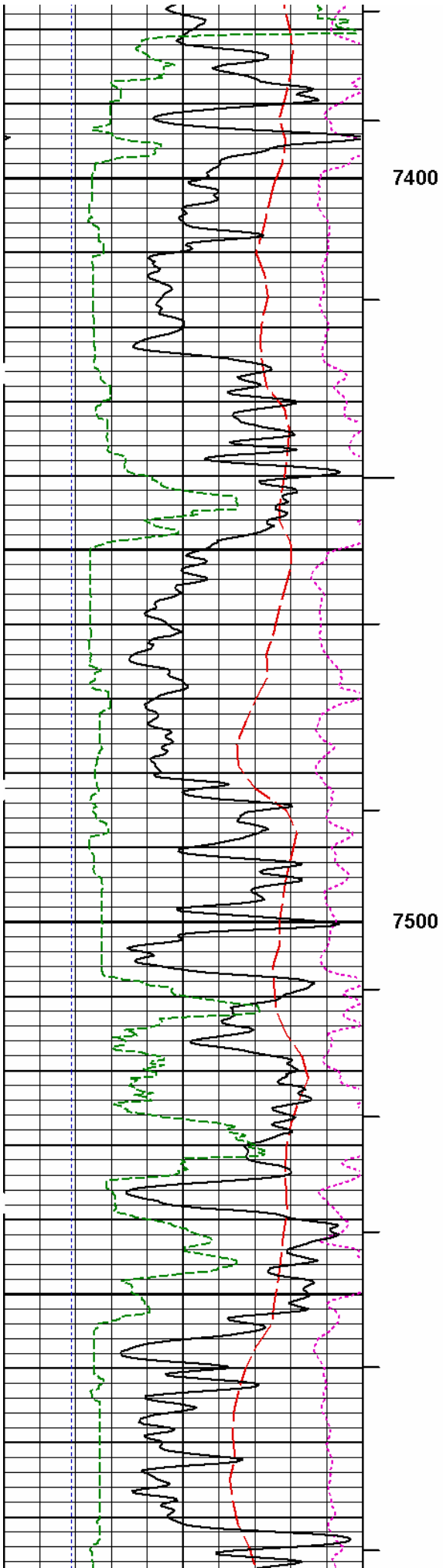
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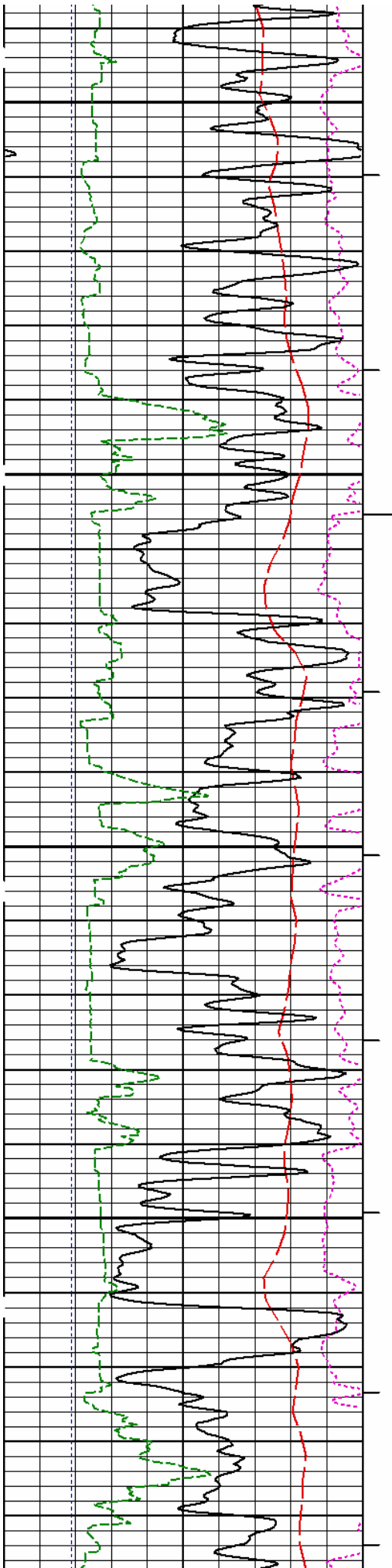
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861 ft

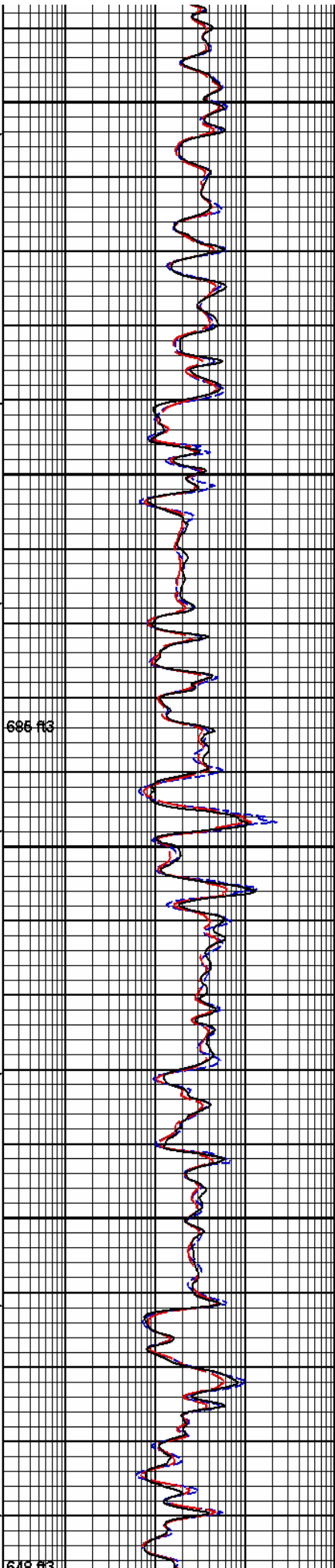
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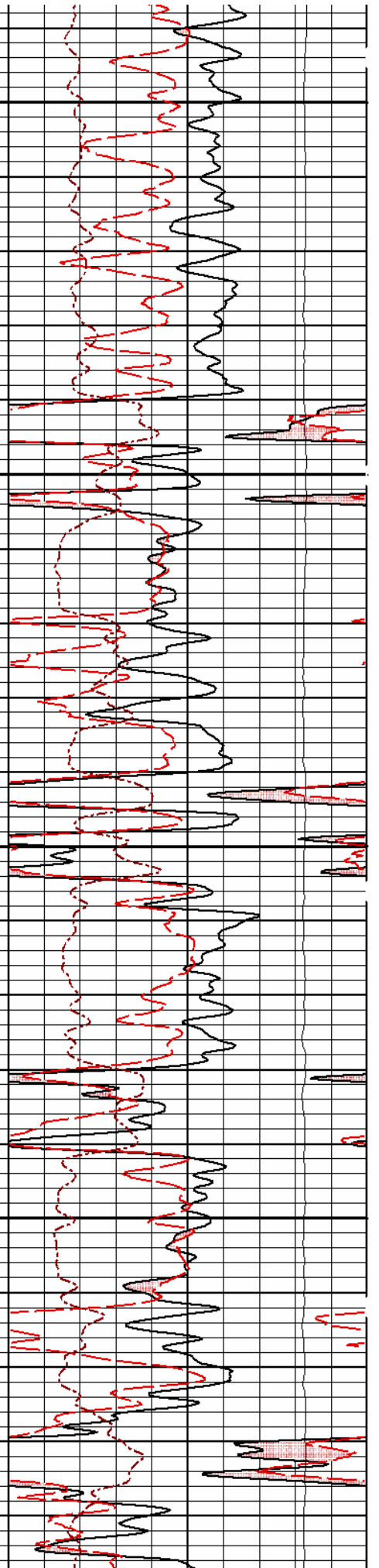


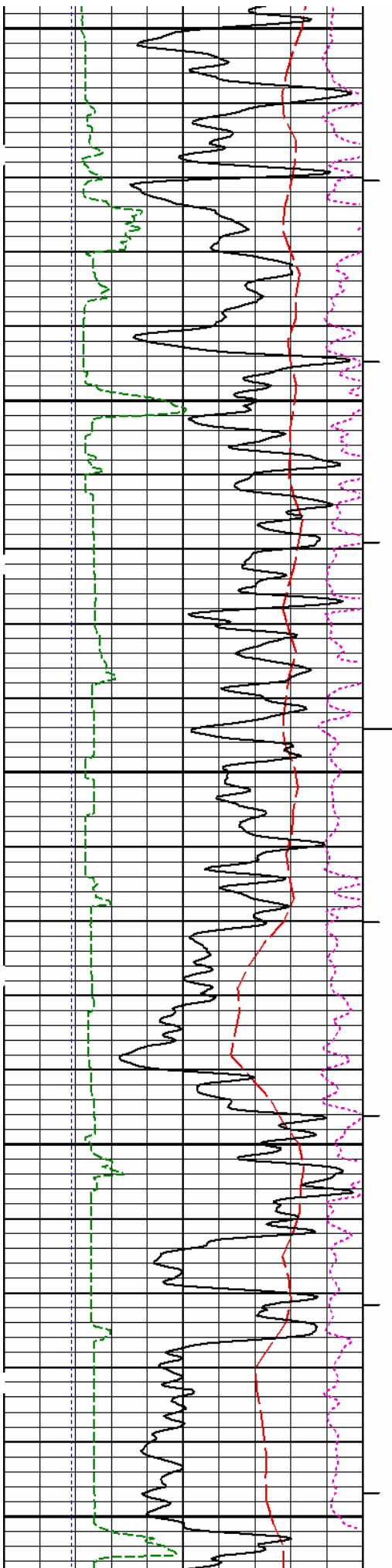
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7700



695 R3

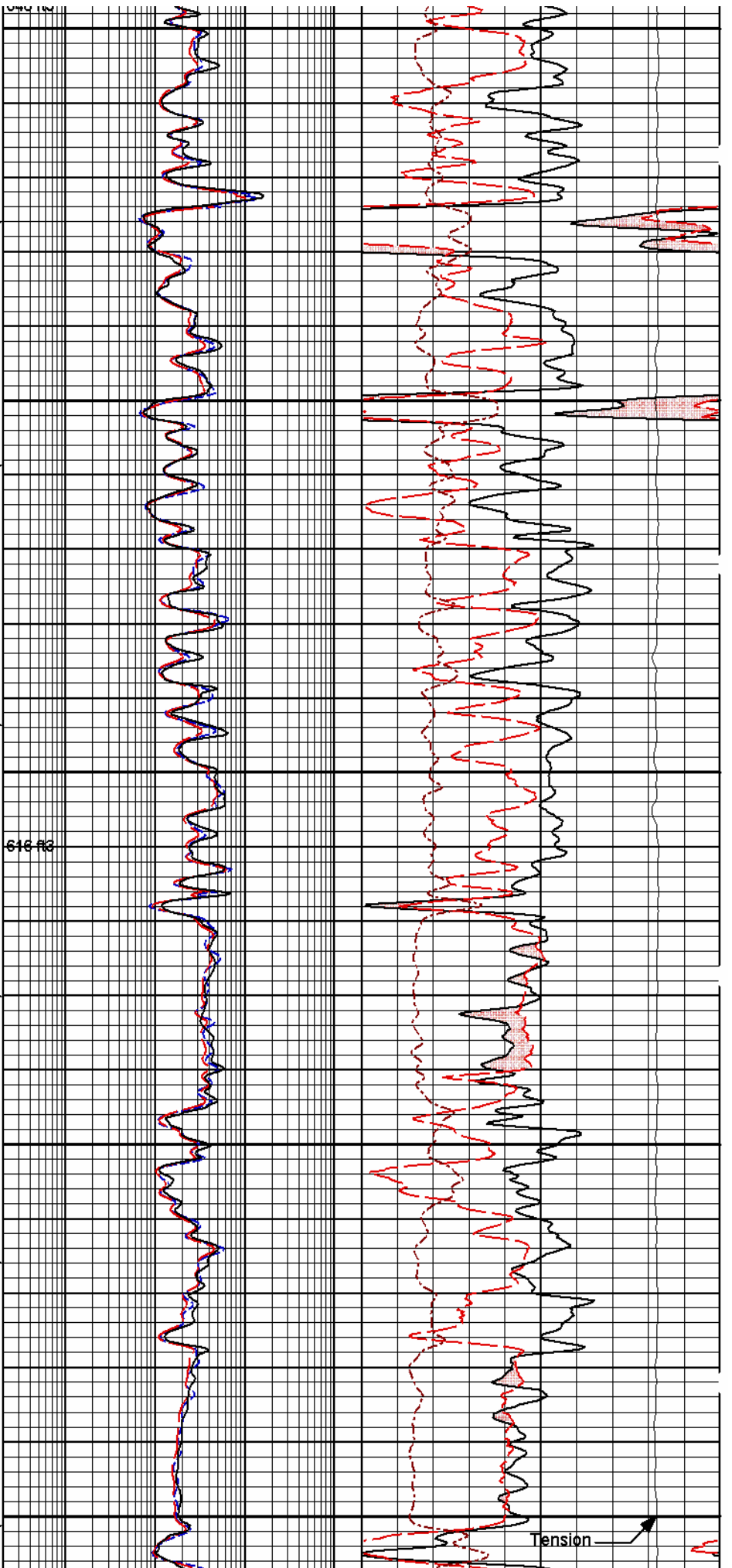




7800

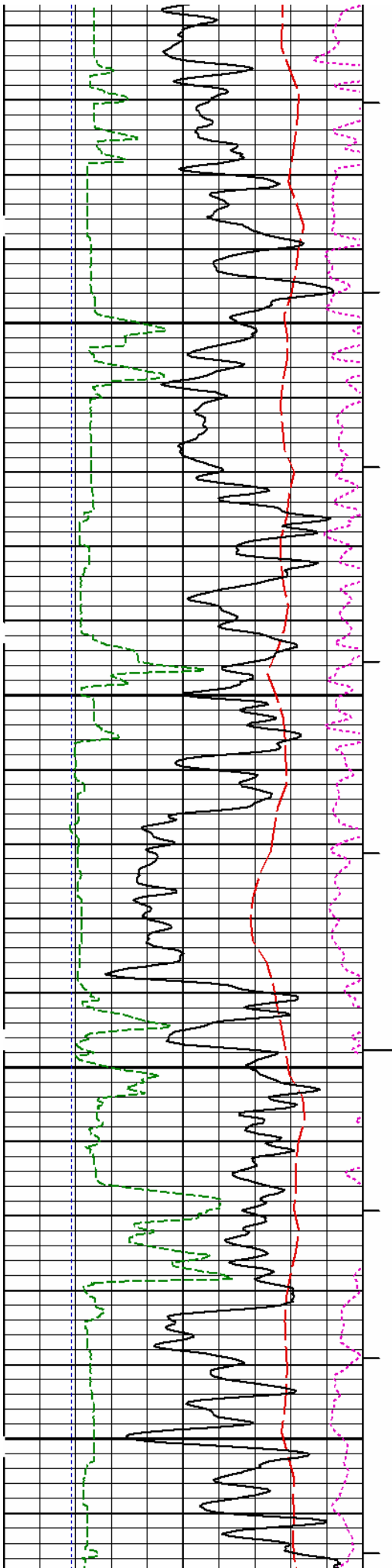
7900

8000



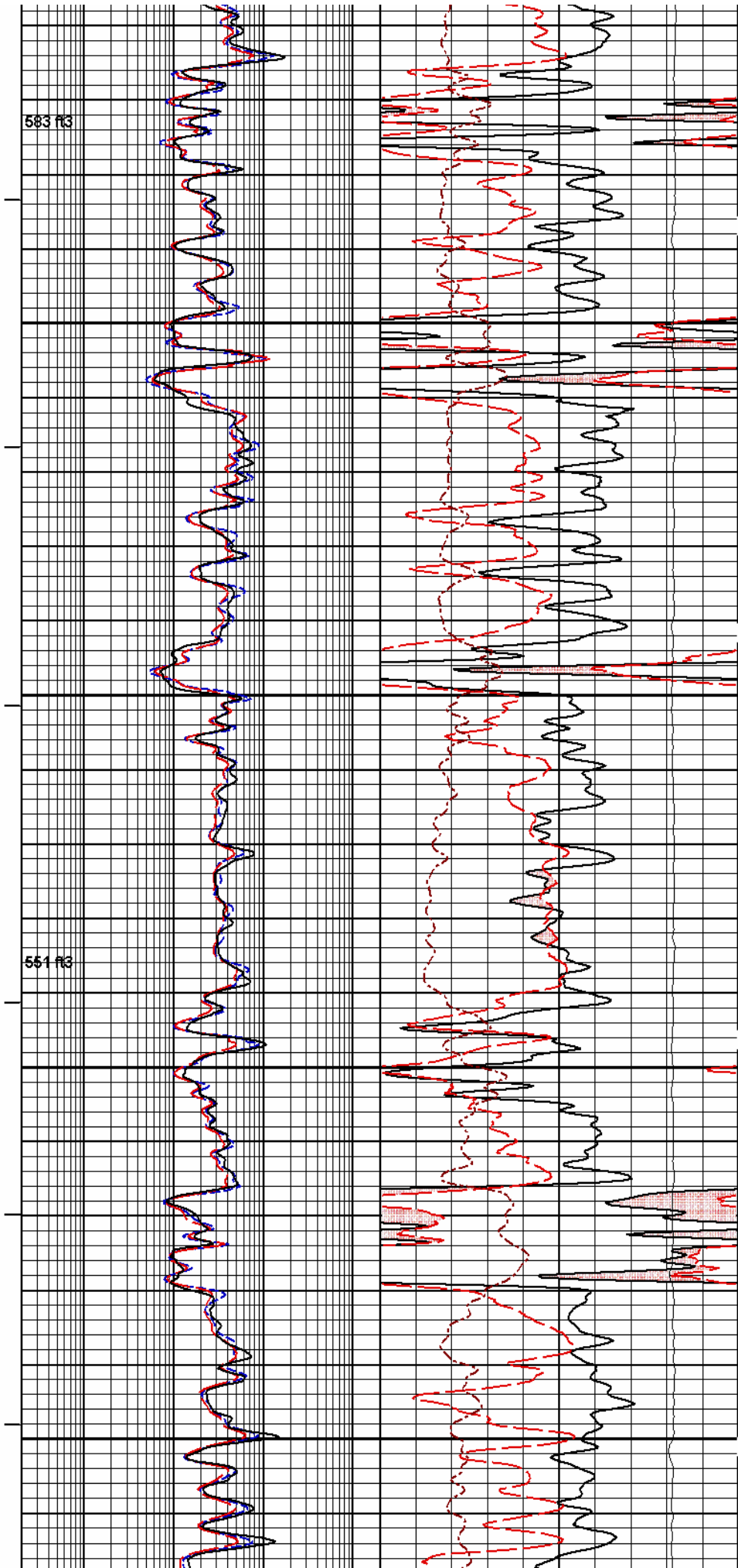
616 R2

Tension



8100

8200

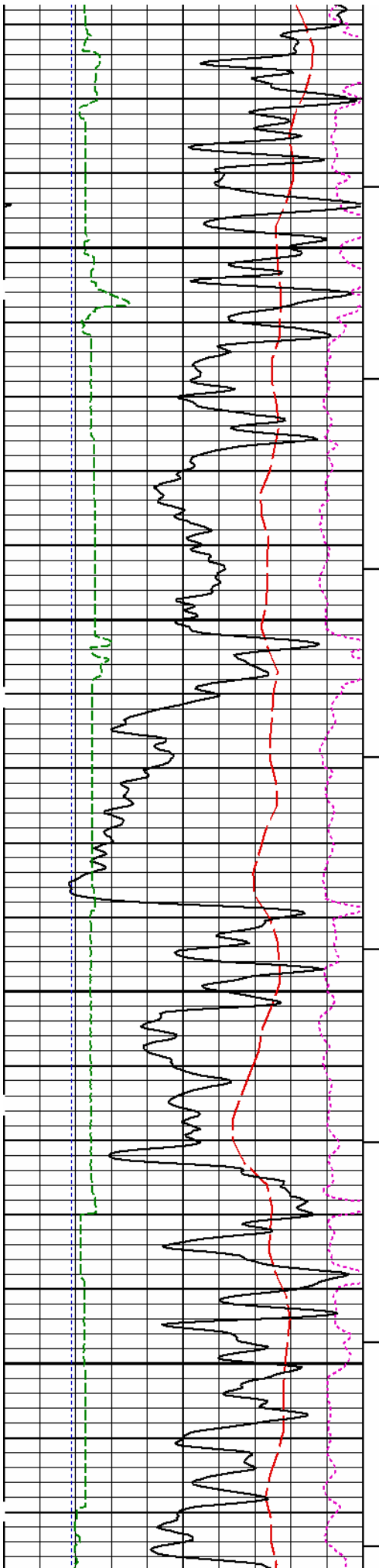


583 ft

551 ft

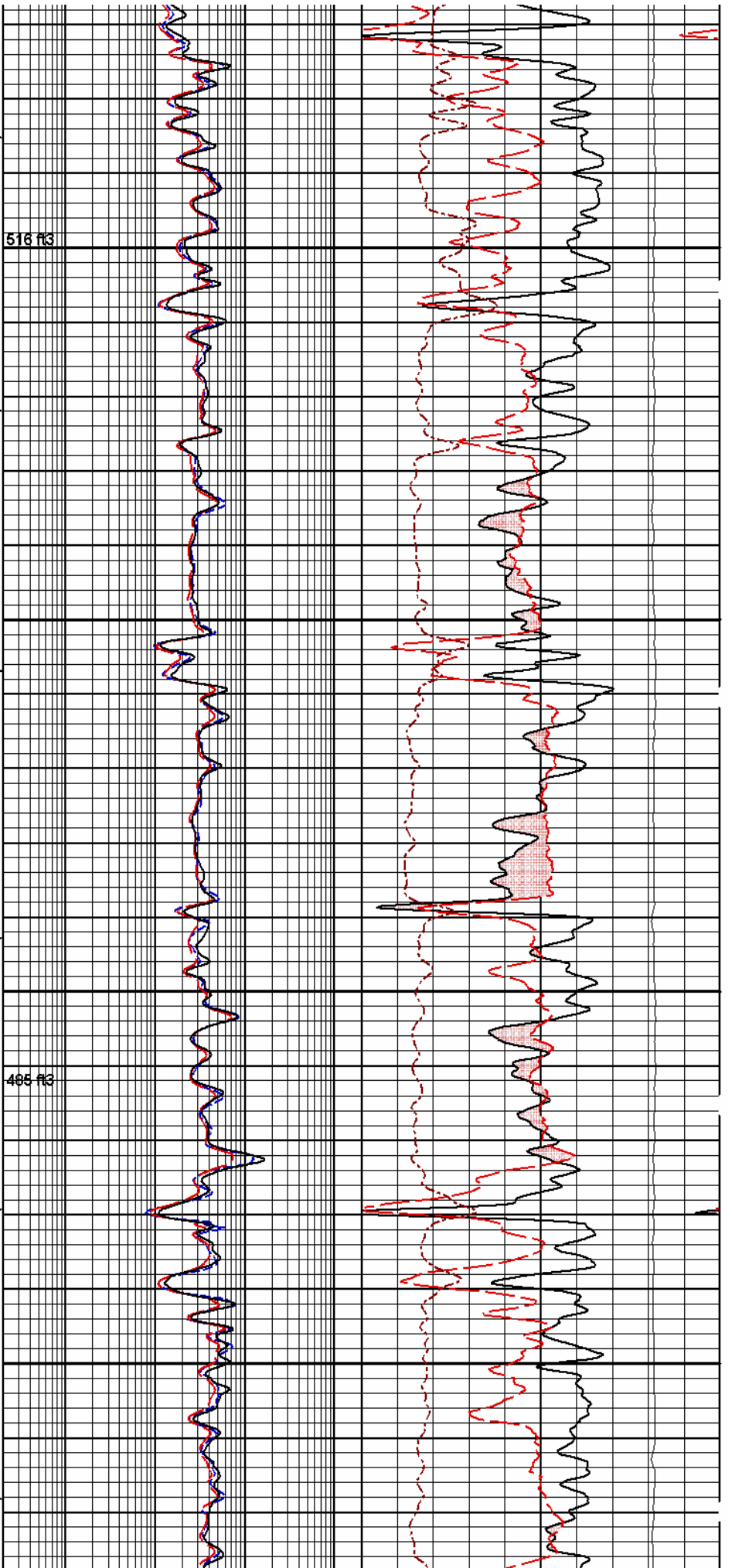
8200





8300

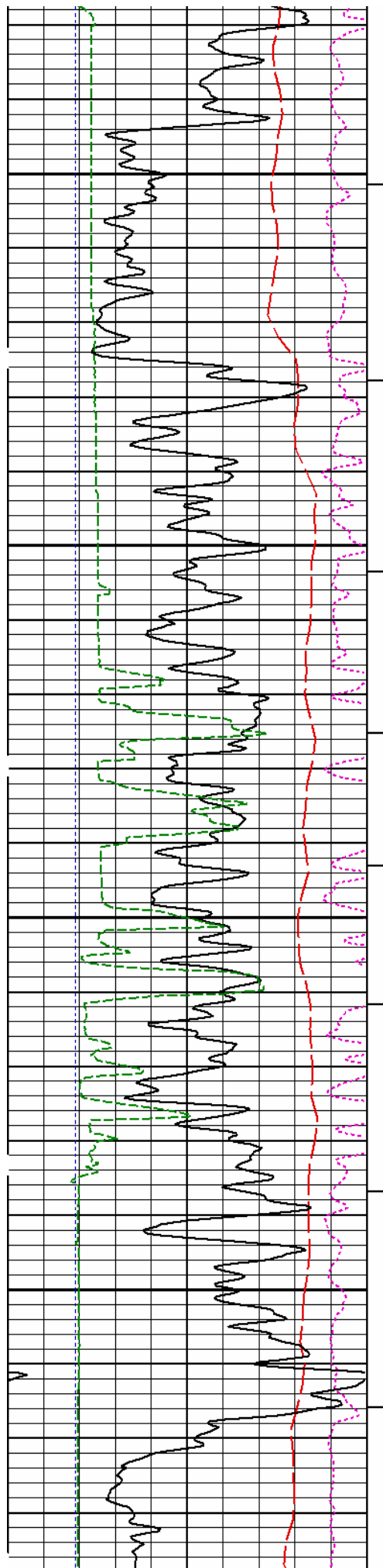
8400



516 ft<sup>3</sup>

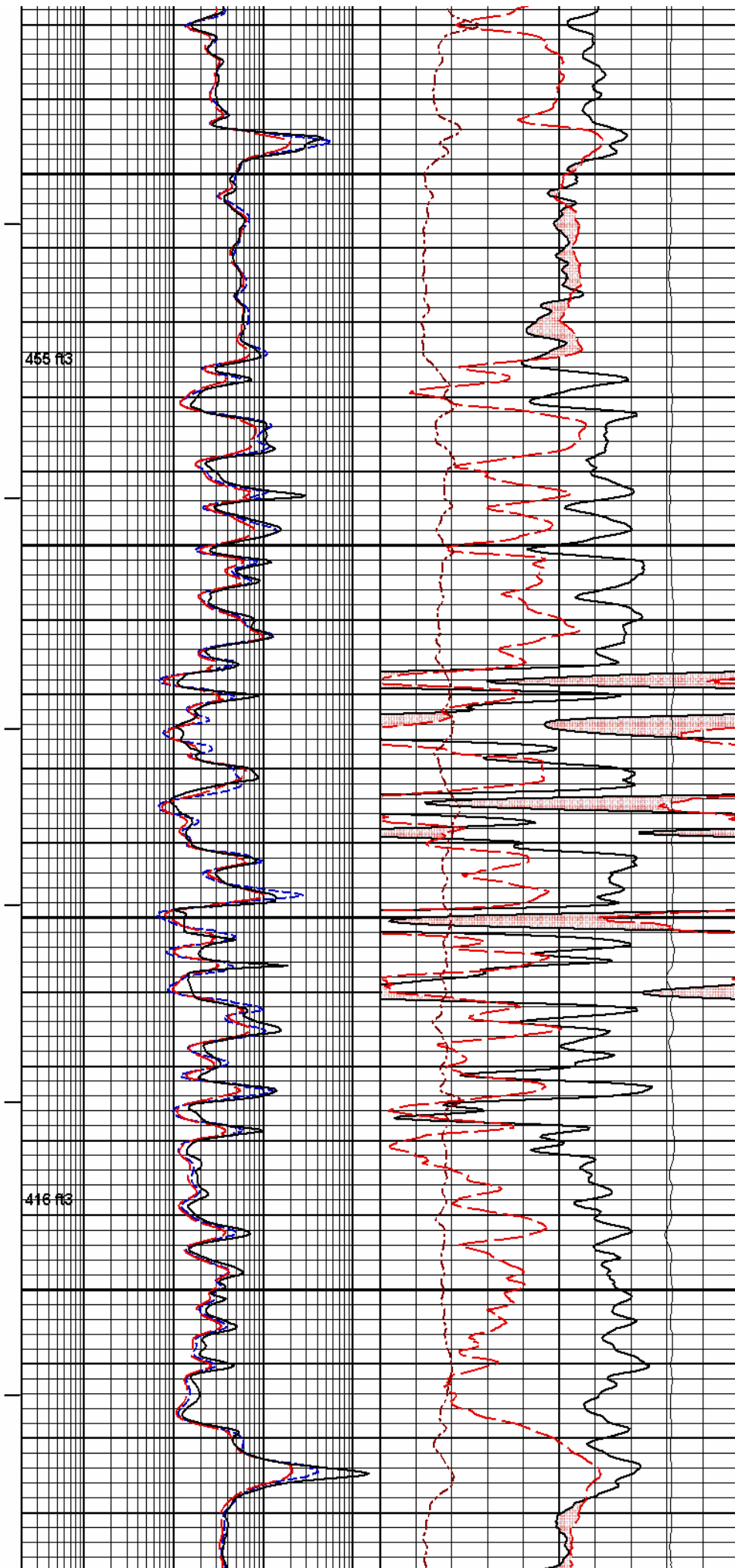
405 ft<sup>3</sup>





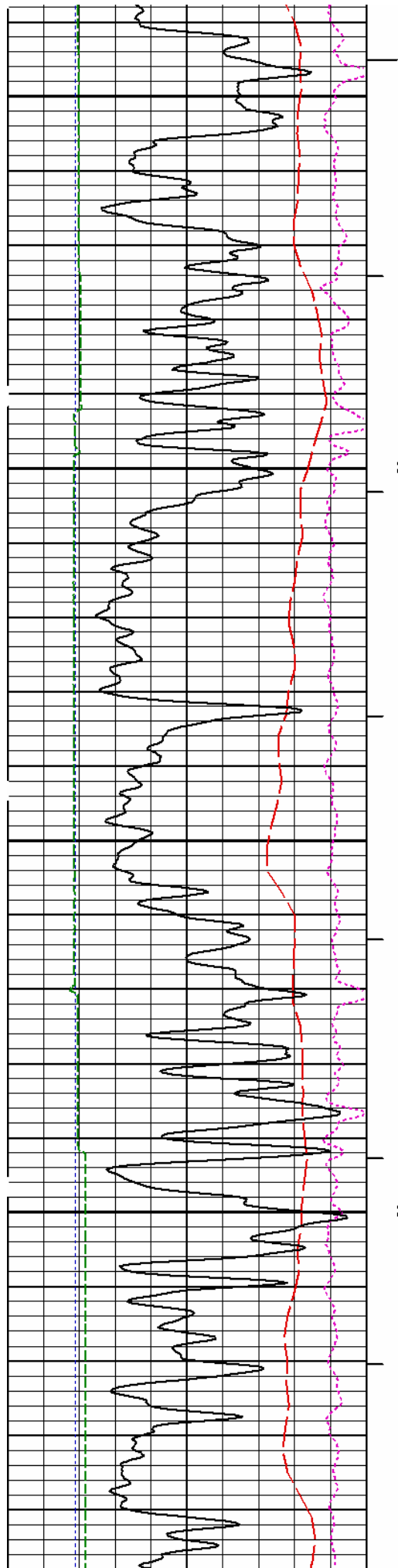
8500

8600



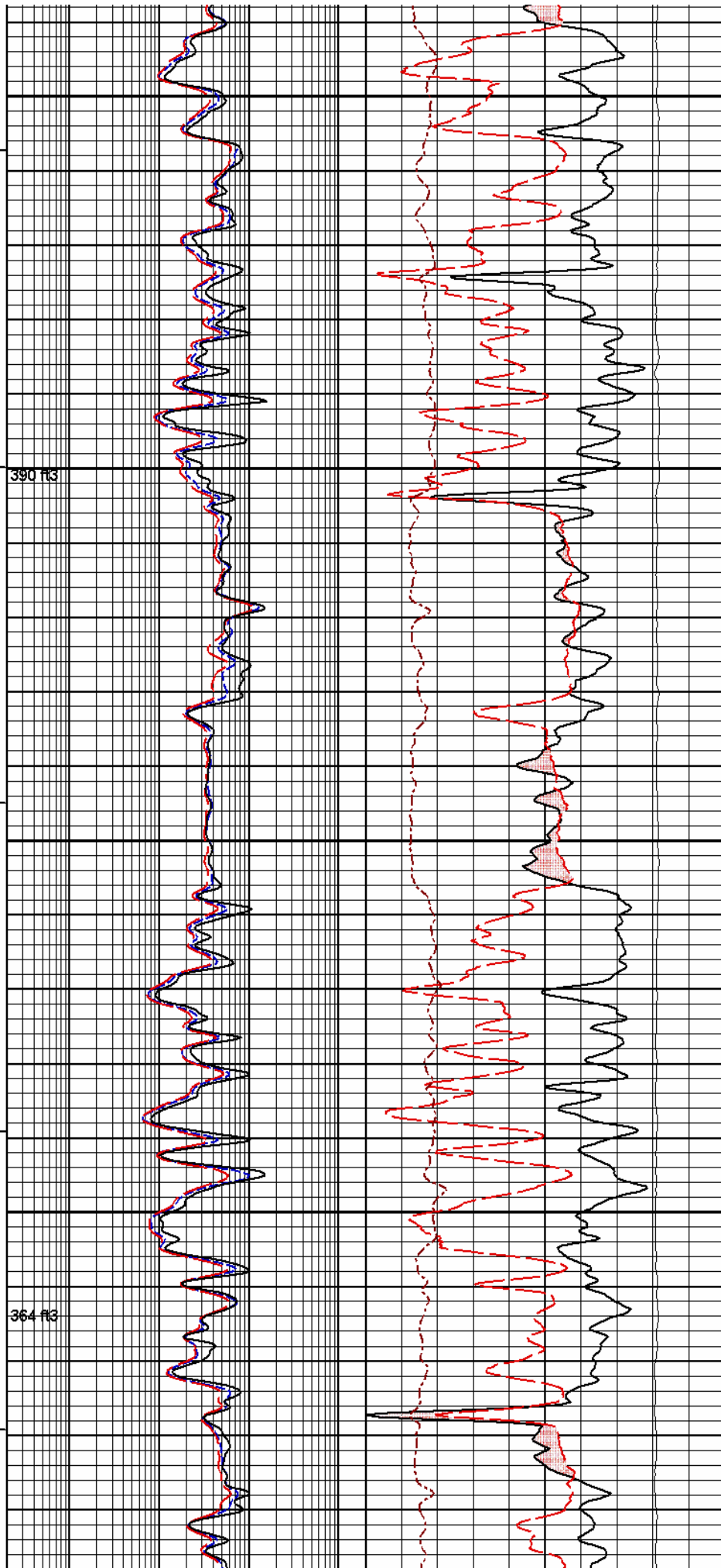
455 ft<sup>3</sup>

416 ft<sup>3</sup>



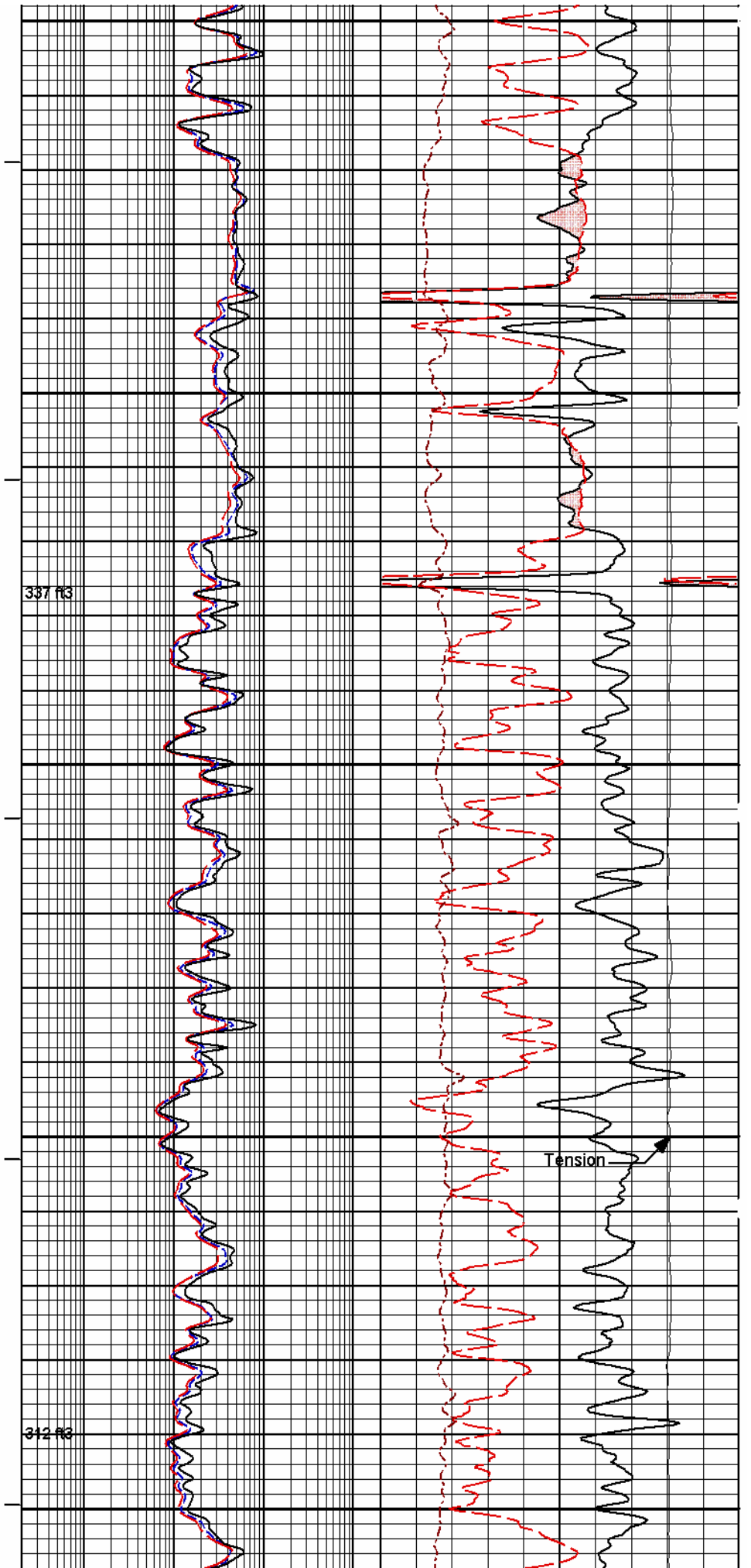
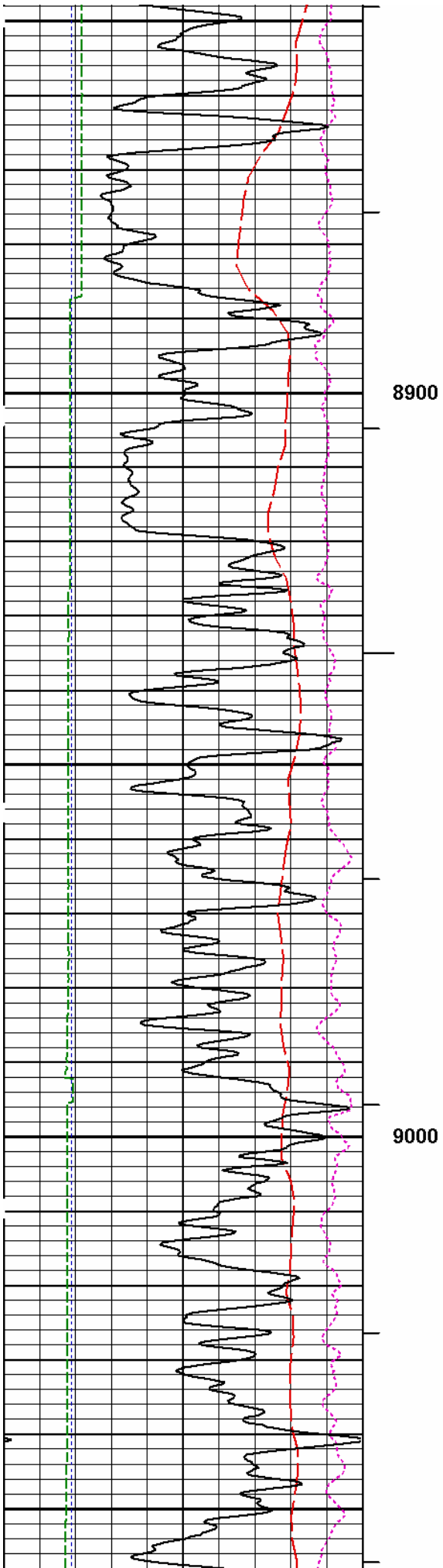
8700

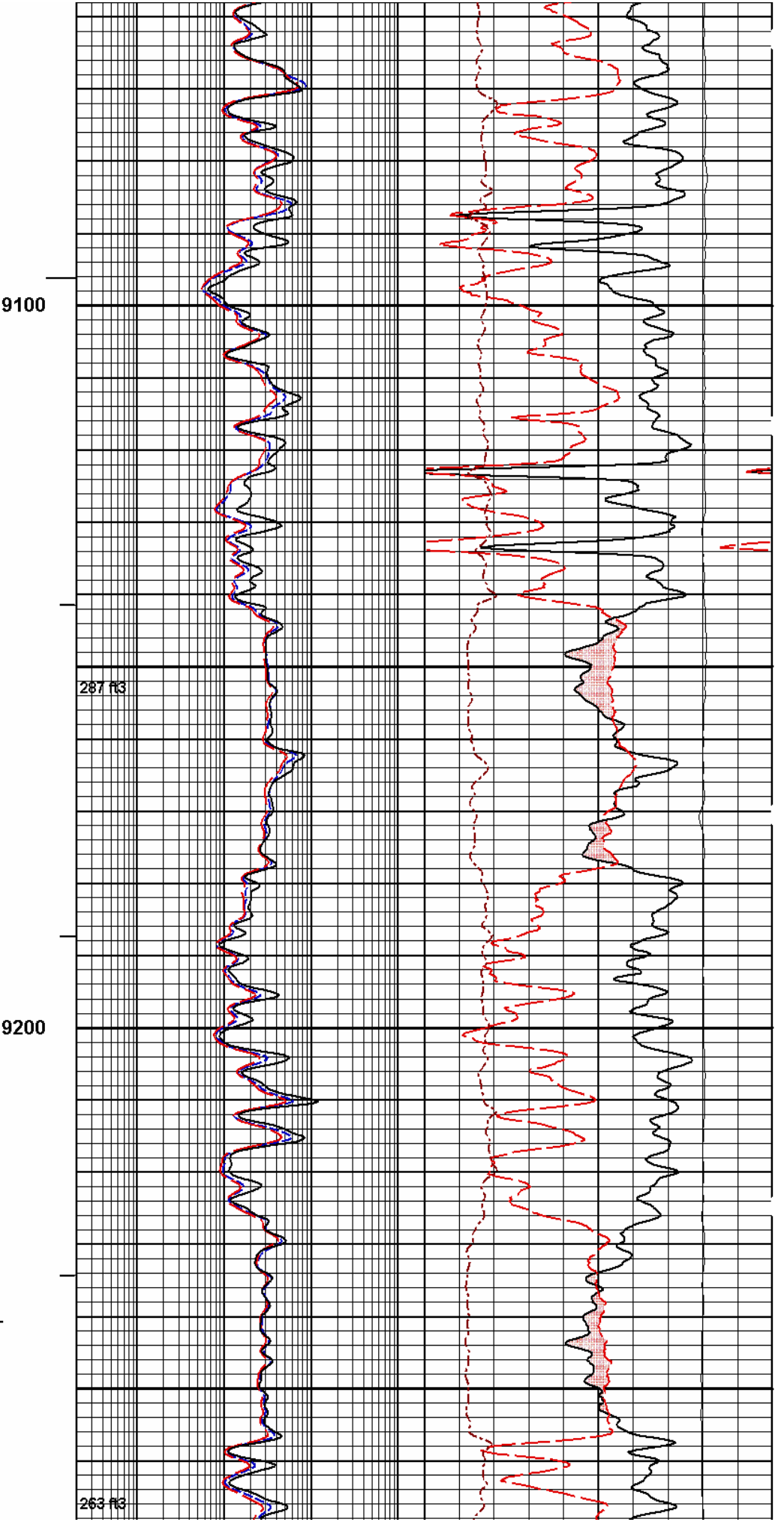
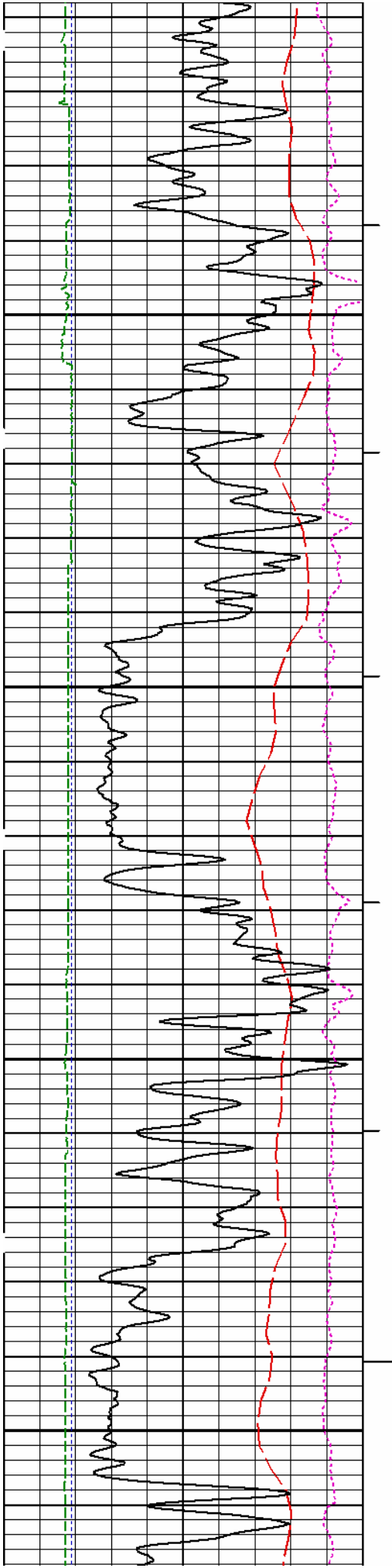
8800

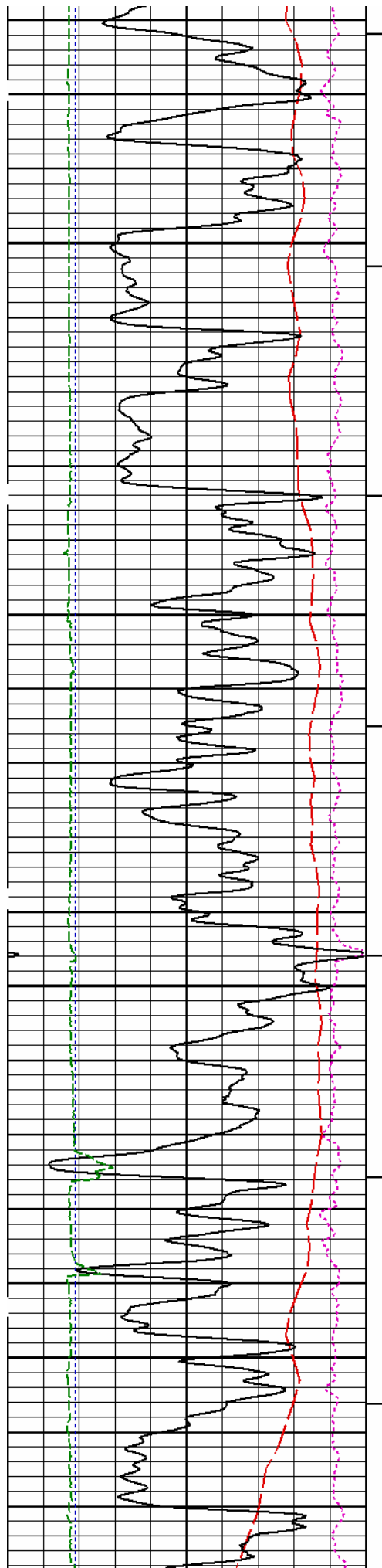


390 R3

364 R3

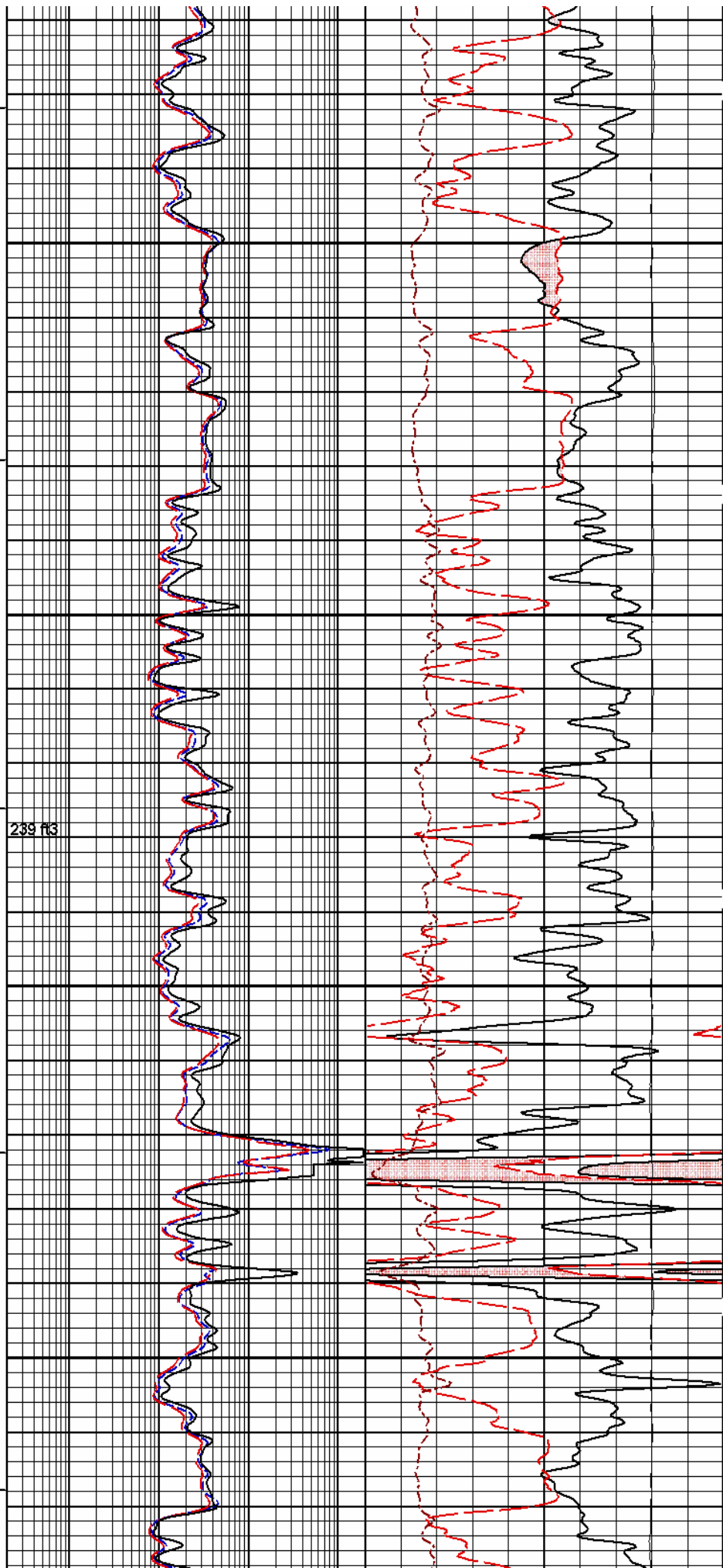




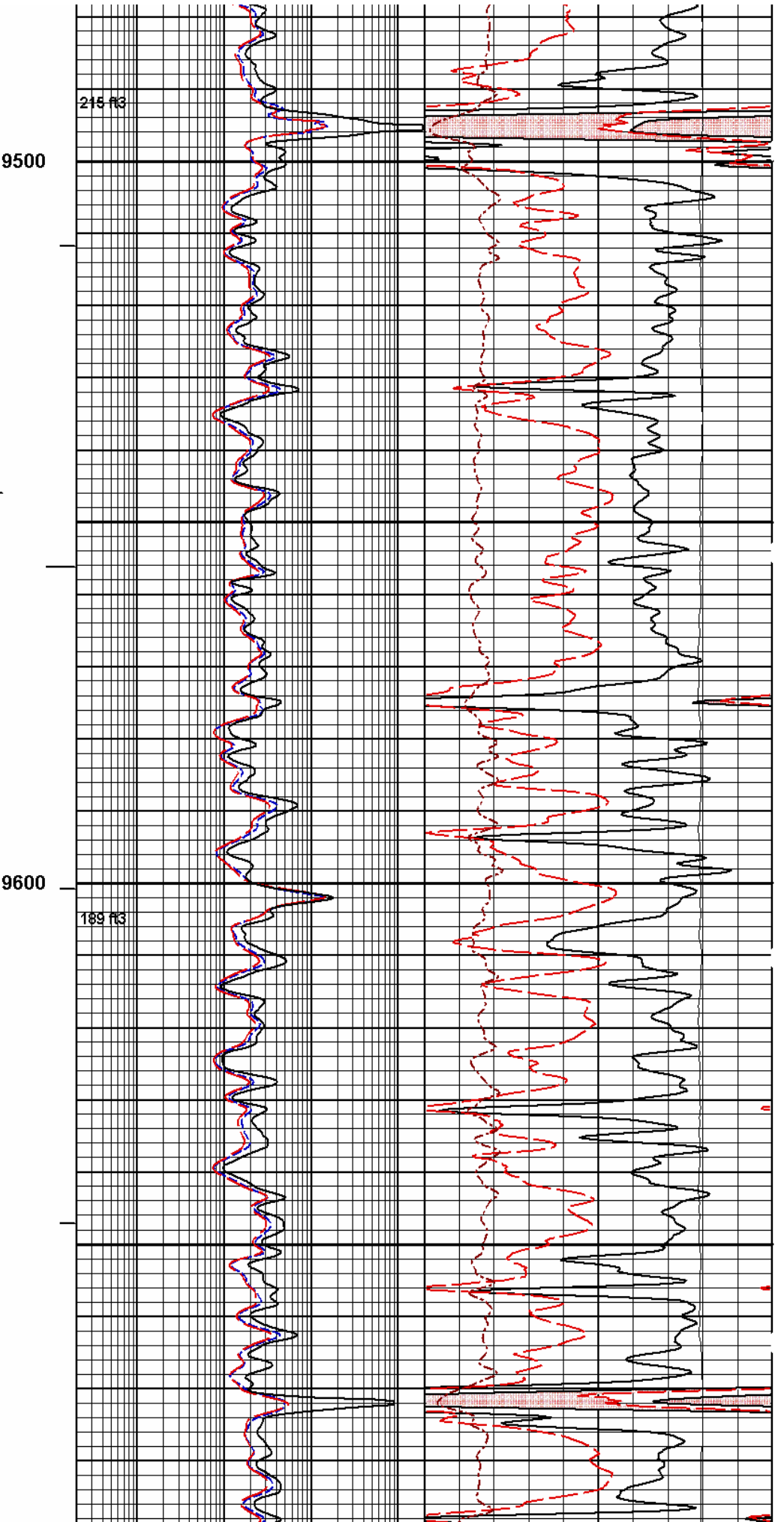
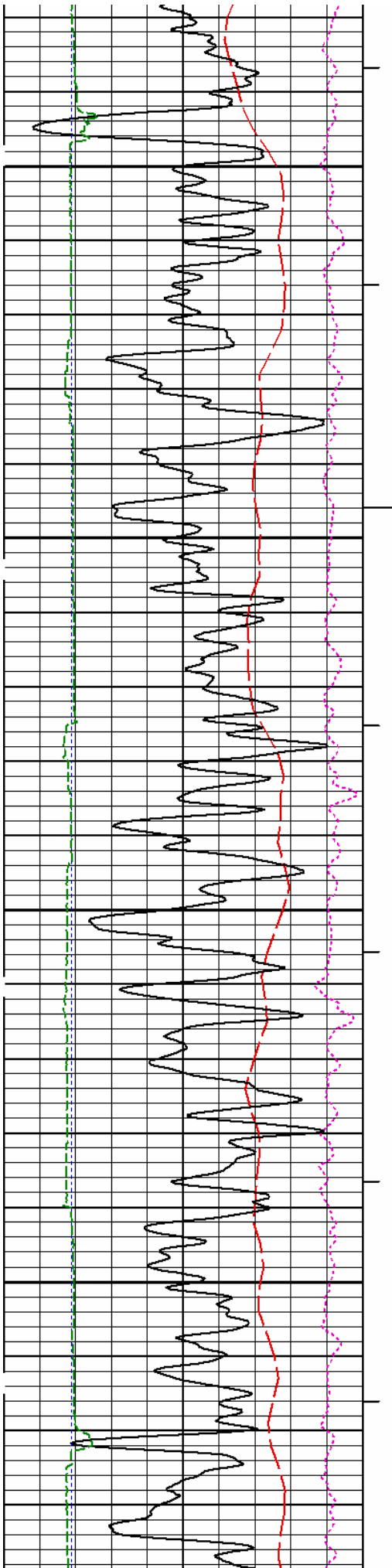


9300

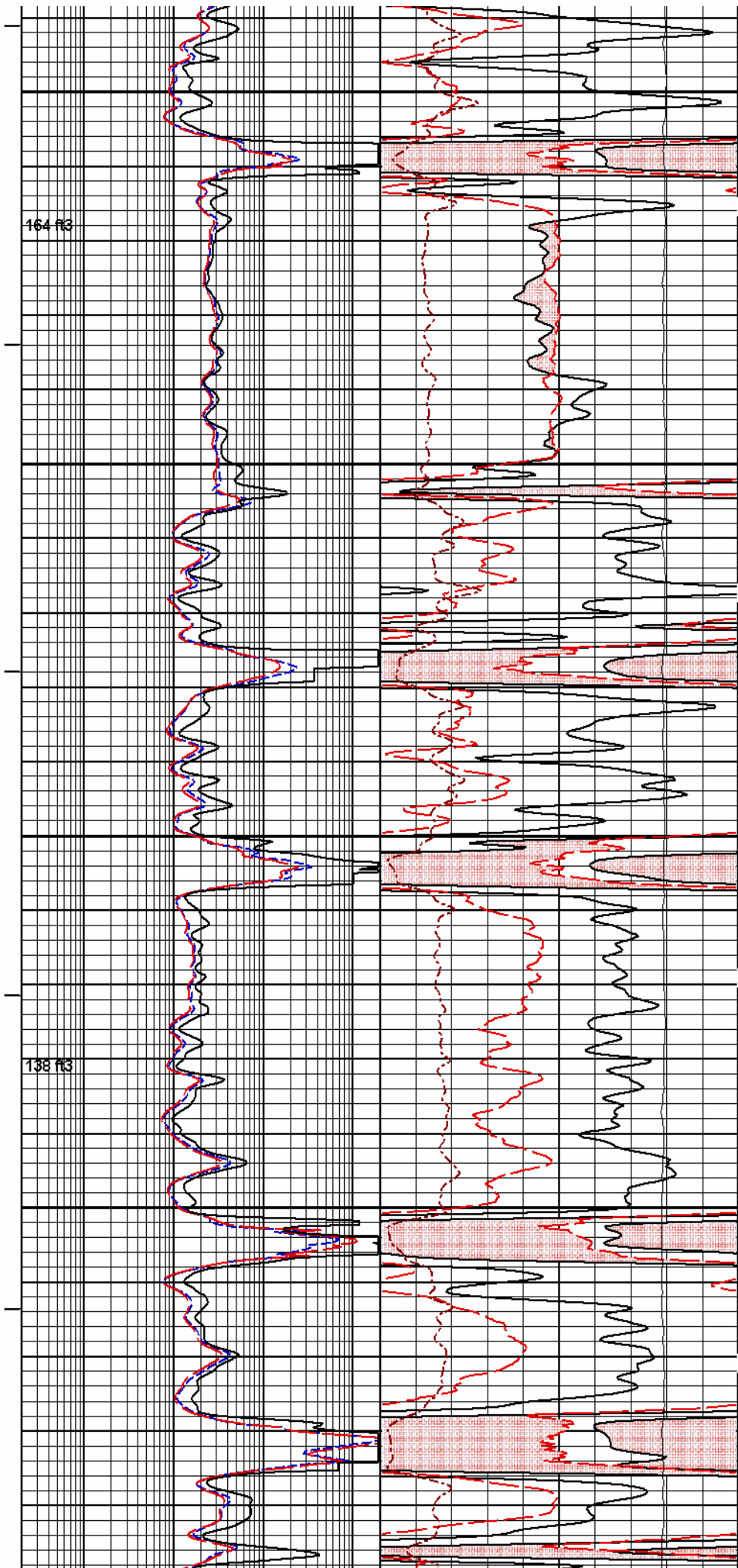
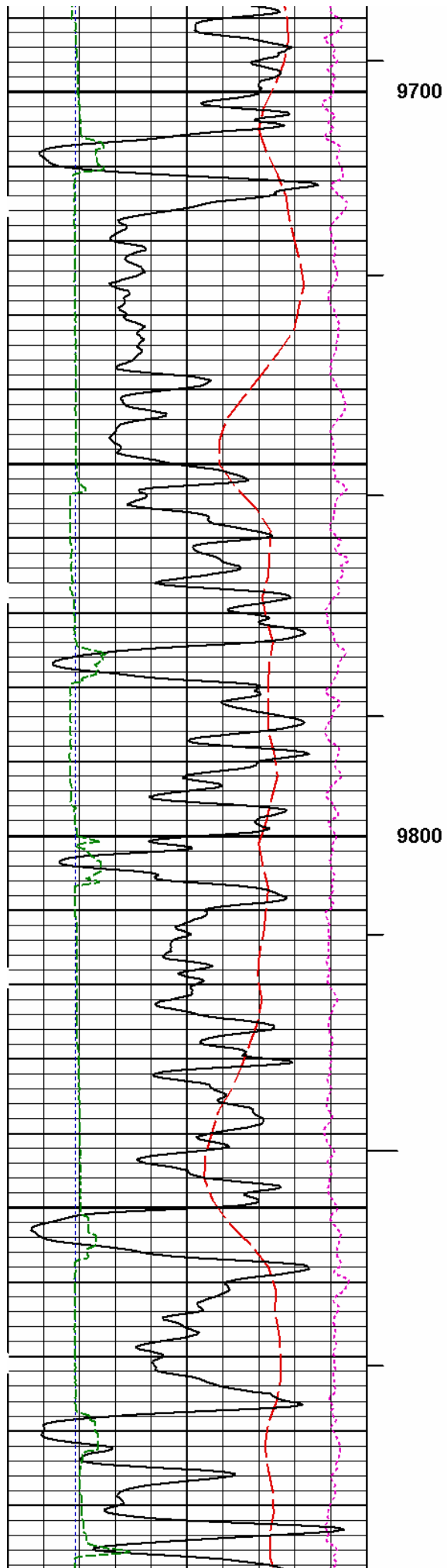
9400

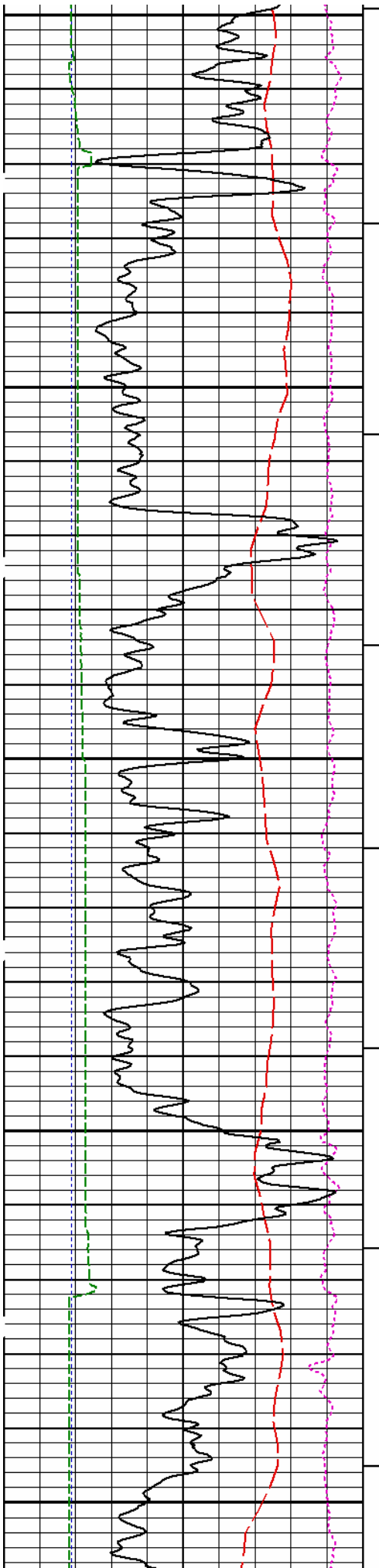


239 m3





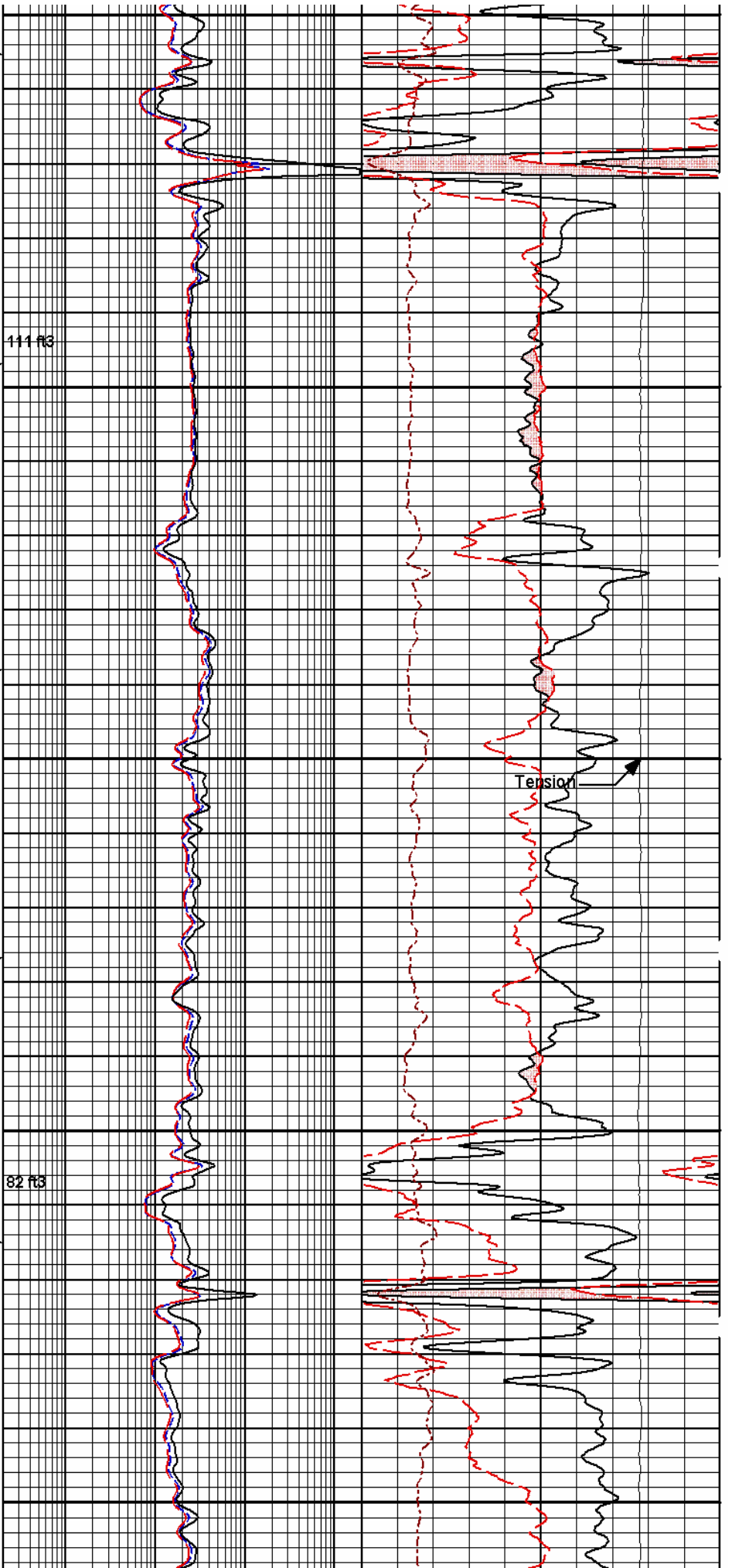




9900

10000

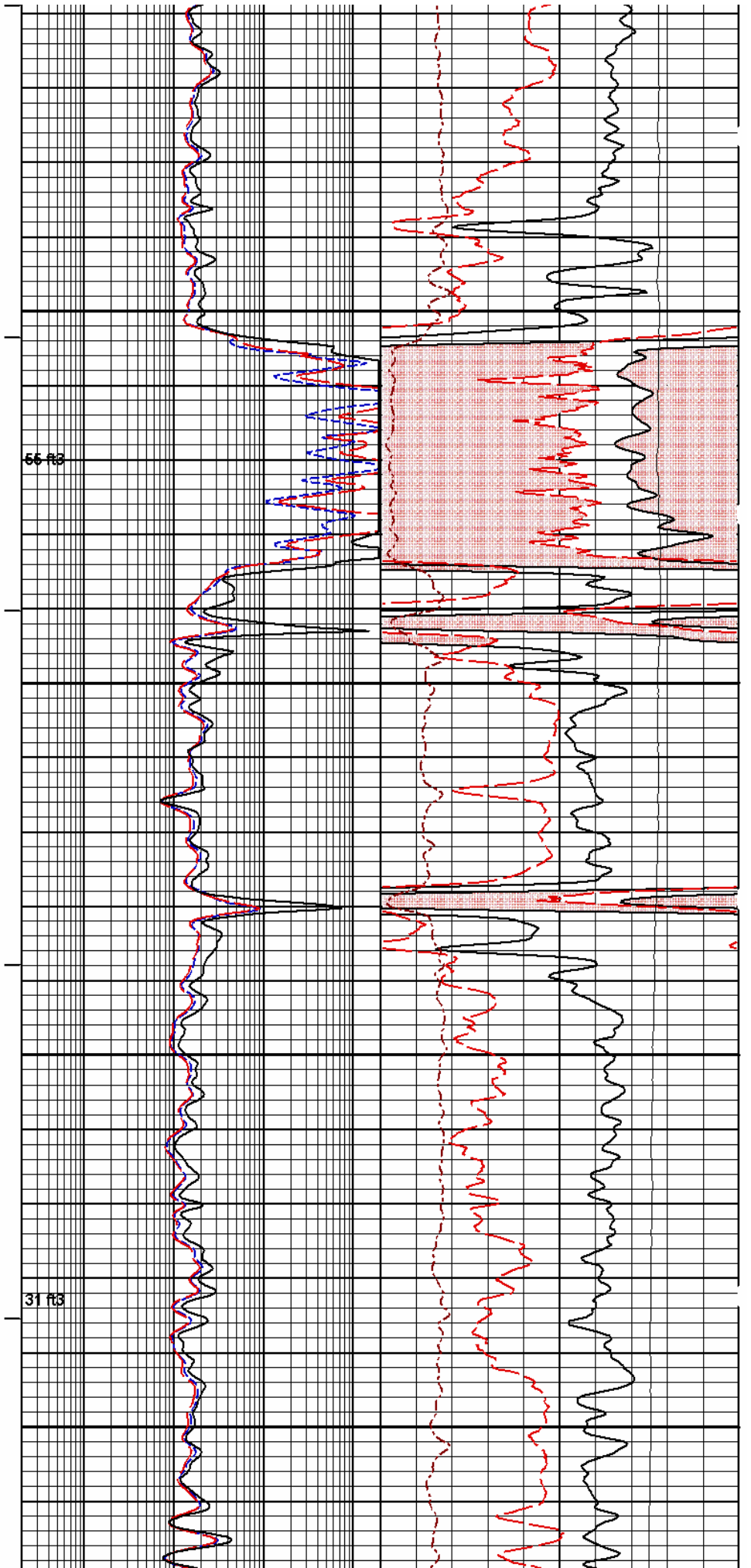
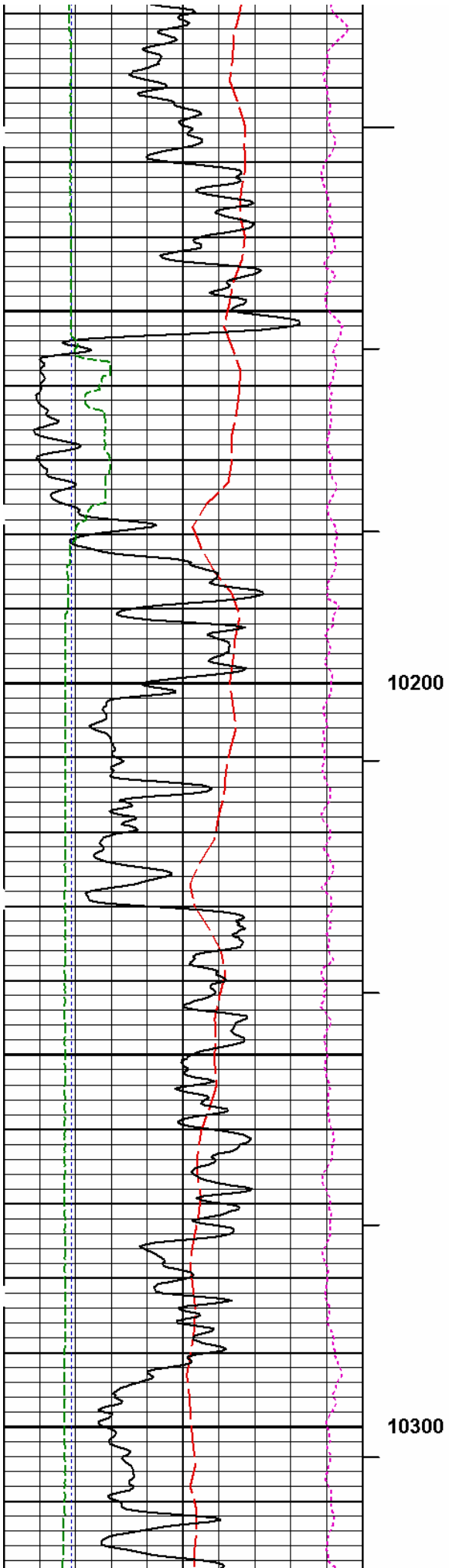
10100

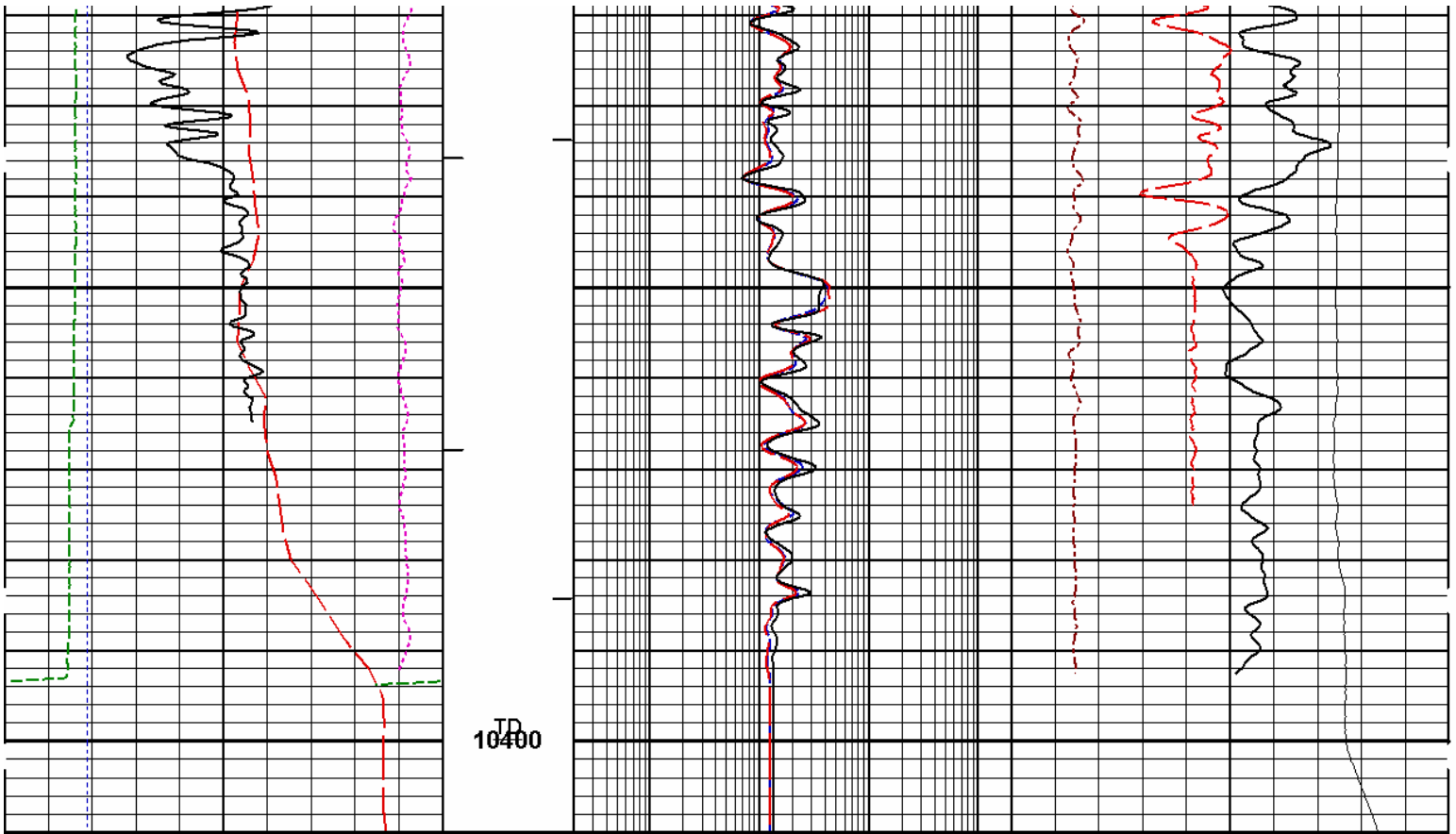


111 ft3

82 ft3

Tension





**HALLIBURTON**

Plot Time: 25-Nov-08 04:56:09  
Plot Range: 1520 ft to 10410 ft  
Data: LAR\_JOHN\_5\_02B\Well Based\1  
Plot File: \\TRIPLE\DITS\_COMPOSITE\_HRI\_0N\_RM

**MAIN PASS 5" = 100'**

**HALLIBURTON**

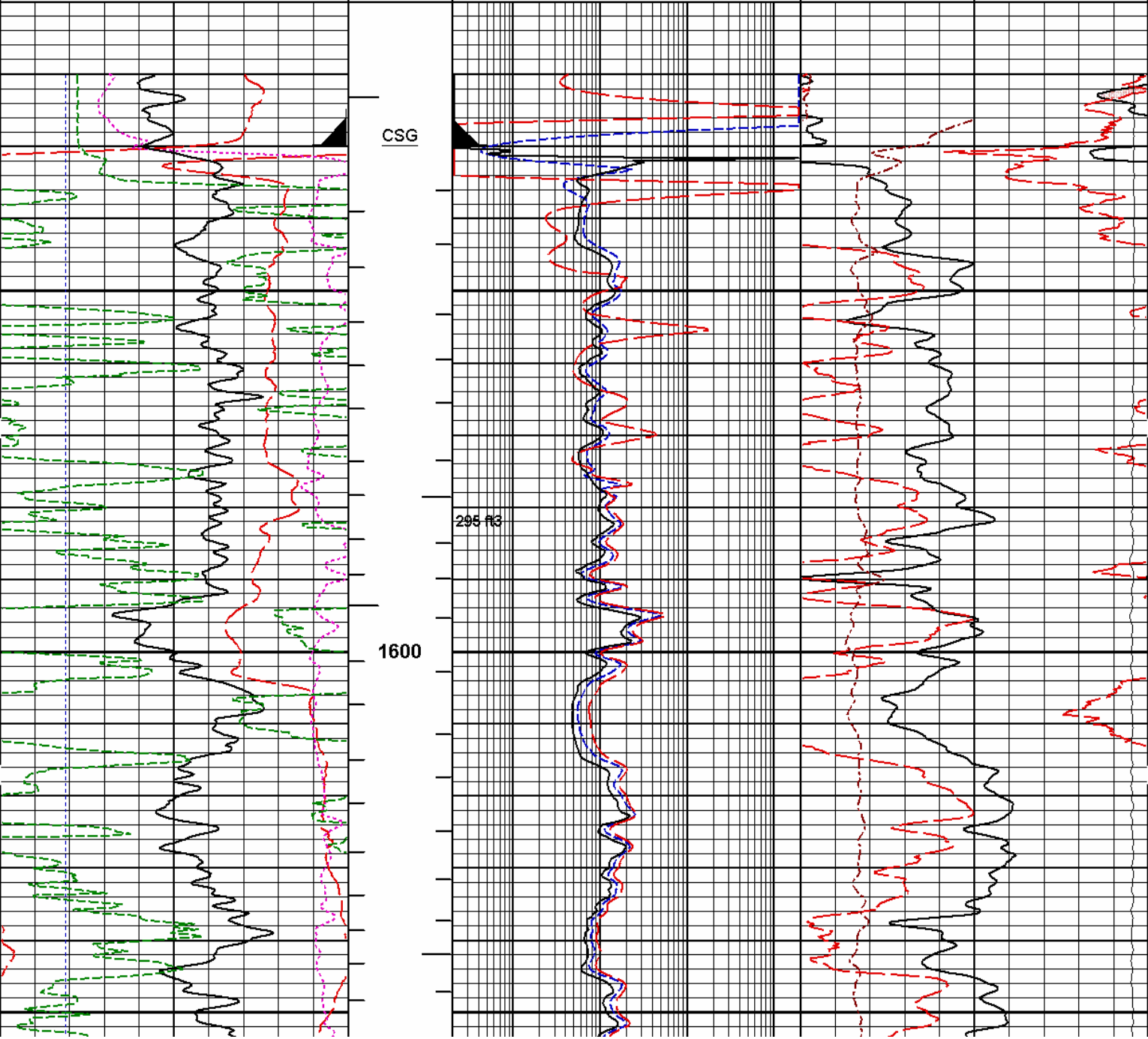
Plot Time: 25-Nov-08 04:56:09  
Plot Range: 1510 ft to 1776 ft  
Data: LAR\_JOHN\_5\_02B\Well Based\REPEAT  
Plot File: \\TRIPLE\REPEAT

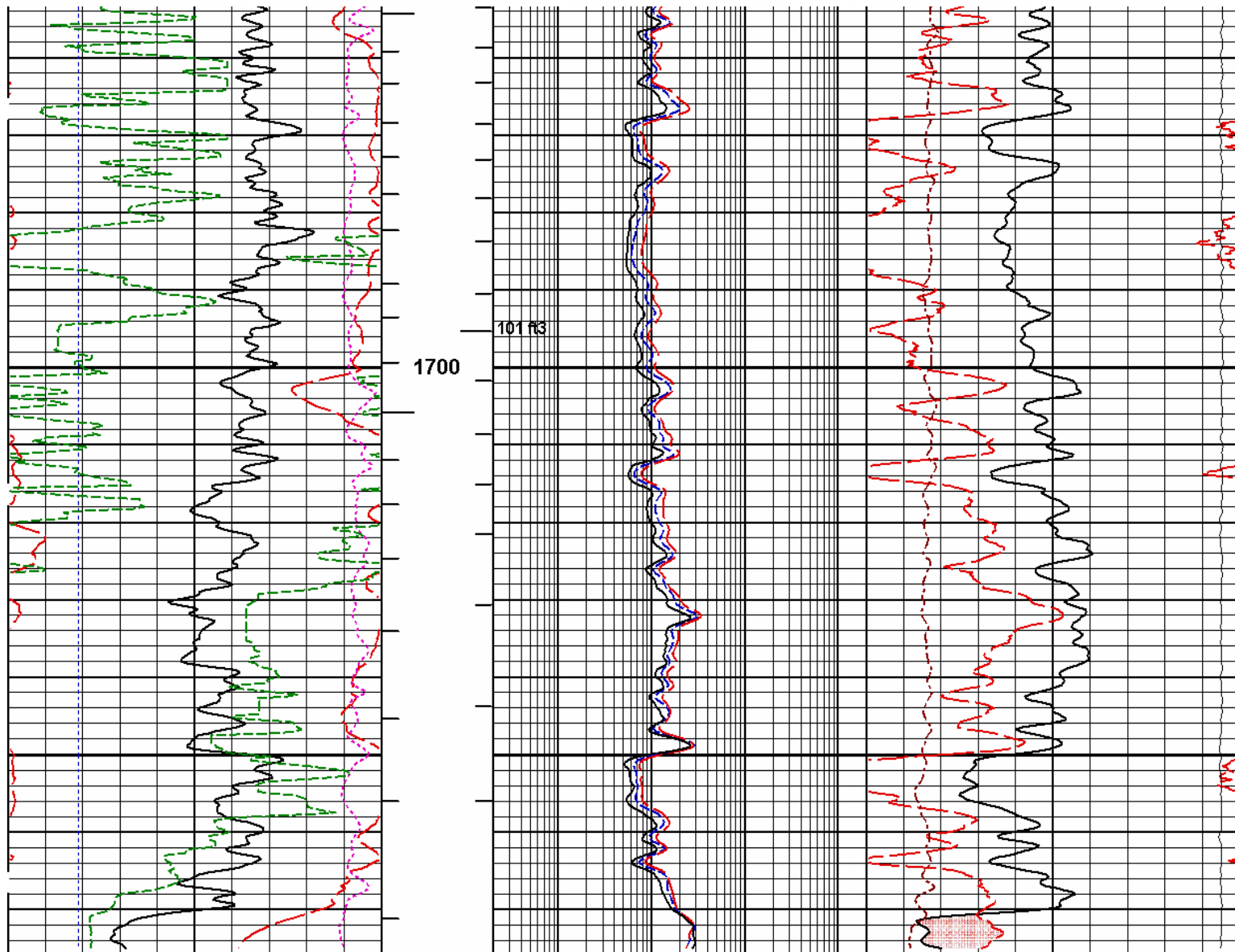
**REPEAT PASS 5" = 100'**

SP		
-]10[+		
6	Caliper	16
inches		
0	Gamma API	200
api		
-0.9	DensityCorr	0.1
gram per cc		
6	Bit Size	16
inches		

BHV	0.2	Dig Focused Laterolog	2000
ft3			
ohm-metre			
AHV	0.2	Hri Medium Resistivity	2000
ft3			
ohm-metre			
1 : 240	0.2	Hri Deep Resistivity	2000
ft			
MD	ohm-metre		

21000	Tension	1000
pounds		
30	Neutron Porosity	-10
percent		
30	DensityPorosity	-10
percent		
0	Pe	10





6	Bit Size	16	1 : 240	0.2	Hri Deep Resistivity	2000	0	Pe	10
	inches		ft		ohm-metre				
			MD						
-0.9	DensityCorr	0.1	AHV	0.2	Hri Medium Resistivity	2000	30	DensityPorosity	-10
	gram per cc		ft3		ohm-metre			percent	
0	Gamma API	200	BHV	0.2	Dig Focused Laterolog	2000	30	Neutron Porosity	-10
	api		ft3		ohm-metre			percent	
6	Caliper	16					21000	Tension	1000
	inches							pounds	
	SP								
	-10[+								

**HALLIBURTON**

Plot Time: 25-Nov-08 04:56:11  
 Plot Range: 1510 ft to 1776 ft  
 Data: LAR\_JOHN\_5\_02B\Well Based\REPEAT\  
 Plot File: \TRIPLE\REPEAT

**REPEAT PASS 5" = 100'**



**CALIBRATION REPORT****NATURAL GAMMA RAY TOOL SHOP CALIBRATION**

Tool Name: NGRT - 108617\_2

Reference Calibration Date: 25-Oct-08 22:27:15

Engineer: J. GEISER

Calibration Date: 17-Nov-08 19:09:12

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Calibrator Source S/N: TB-255

Calibrator API Reference: 253.00 api

Measurement	Measured	Calibrated	Units
Background	90.9	85.0	api
Background + Calibrator	361.2	338.0	api
Calibrator	247.2	253.0	api

**NATURAL GAMMA RAY TOOL FIELD CALIBRATION**

Tool Name: NGRT - 108617\_2

Reference Calibration Date: 17-Nov-08 19:09:12

Engineer: E. KIND

Calibration Date: 24-Nov-08 13:50:34

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Calibrator Source S/N: TB-255

Calibrator API Reference: 253.00 api

Field Verification	Shop	Field	Units
Background	85.0	93.4	api
Background + Calibrator	338.0	343.2	api
Calibrator	253.0	249.8	api

Shop	Field	Difference	Tolerance
253.0	249.8	3.2	+/- 9.00

**NATURAL GAMMA RAY TOOL POST CALIBRATION**

Tool Name: NGRT - 108617\_2

Reference Calibration Date: 24-Nov-08 13:50:34

Engineer: J. GEISER

Calibration Date: 25-Nov-08 04:53:31

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Calibrator Source S/N: TB-255

Calibrator API Reference: 253.00 api

Post Verification	Field	Post	Units
Background	93.4	108.2	api
Background + Calibrator	343.2	361.5	api
Calibrator	249.8	253.3	api

Shop	Field	Post	Difference	Tolerance
253.0	249.8	253.3	-3.5	+/- 9.00

**DUAL SPACED NEUTRON SHOP CALIBRATION**

Tool Name: DSN\_II - 108734

Reference Calibration Date: 06-Oct-08 16:38:05

Engineer: E. KIND

Calibration Date: 21-Nov-08 10:22:07

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Logging Source S/N: DSN-60

Calibrator Source S/N: CAL-131

Water Tank S/N: GJ\_TANK

Water Tank Value: 52.750

Snow Block S/N: OH477-(10549593)

Calibration Tank Water Temperature: 67 degF

Min. Tool Housing Outside Diameter: 3.525 in

#### WATER TANK SUMMARY (Horizontal Water Tank)

Measurement	Measured	Calibrated	Units
Ratio	6.457	6.450	
Porosity	0.11767	0.11749	decP

#### SNOW BLOCK SUMMARY

Measurement	Measured	Calibrated	Units
Ratio	6.032	6.073	
Porosity	0.11748	0.11642	decP

DSN Sensitivity: 1.062

#### DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: DSN\_II - 108734

Reference Calibration Date: 21-Nov-08 10:22:07

Engineer: E. KIND

Calibration Date: 24-Nov-08 13:57:54

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Logging Source S/N: DSN-60

Calibrator Source S/N: CAL-131

Snow Block S/N: OH477-(10549593)

#### SNOW BLOCK SUMMARY

Measurement	Shop	Field	Units
Ratio	6.073	5.984	
Porosity	0.11642	0.11479	decP

DSN Sensitivity: 1.062

#### DUAL SPACED NEUTRON POST CALIBRATION

Tool Name: DSN\_II - 108734

Reference Calibration Date: 24-Nov-08 13:57:54

Engineer: J. GEISER

Calibration Date: 25-Nov-08 04:48:53

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Logging Source S/N: DSN-60

Calibrator Source S/N: CAL-131

Snow Block S/N: OH477-(10549593)

#### SNOW BLOCK SUMMARY

Measurement	Field	Post	Units
Ratio	5.984	5.978	
Porosity	0.11479	0.11462	decP

DSN Sensitivity: 1.062

#### SPECTRAL DENSITY SHOP CALIBRATION

## SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDL\_DC - I709MC136

Reference Calibration Date: 21-Oct-08 23:38:07

Engineer: J. GEISER

Calibration Date: 21-Nov-08 11:57:06

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Logging Source S/N: 2189GW

Aluminum Block S/N: 63094

Density: 2.610g/cc

Magnesium Block S/N: 63387

Density: 1.685g/cc

## DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	0.9934	0.9813	0.85 - 1.15
Near Dens Gain	0.9991	0.9811	0.85 - 1.15
Near Peak Gain	1.0005	0.9698	0.85 - 1.15
Near Lith Gain	1.0210	0.9910	0.85 - 1.15
Far Bar Gain	1.0253	1.0203	0.85 - 1.15
Far Dens Gain	1.0054	1.0020	0.85 - 1.15
Far Peak Gain	0.9964	0.9951	0.85 - 1.15
Far Lith Gain	0.9934	0.9929	0.85 - 1.15
Near Bar Offset	0.4438	0.5651	NONE
Near Dens Offset	0.3061	0.4776	NONE
Near Peak Offset	0.2416	0.5134	NONE
Near Lith Offset	0.0638	0.3328	NONE
Far Bar Offset	0.1955	0.2548	NONE
Far Dens Offset	0.3446	0.3847	NONE
Far Peak Offset	0.4632	0.4821	NONE
Far Lith Offset	0.6219	0.6326	NONE
Near Bar Background	963.13	961.29	700 - 1500
Near Dens Background	393.30	396.69	290 - 600
Near Peak Background	173.45	173.80	130 - 280
Near Lith Background	166.74	166.86	125 - 270
Far Bar Background	485.07	485.01	350 - 750
Far Dens Background	184.26	182.89	140 - 300
Far Peak Background	74.12	72.74	50 - 130
Far Lith Background	76.63	76.01	50 - 130

## CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.689	1.685	-0.004	+/- 0.015
Pe	2.505	2.520	0.015	+/- 0.150
ALUMINUM				
Density (g/cc)	2.610	2.610	0.000	+/- 0.01500
Pe	3.230	3.210	-0.020	+/- 0.150

## TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits

QUALITY

## QUALITY

Background	-0.0035	+/- 0.0110	-0.0030	+/- 0.0140
Magnesium Block	-0.0006	+/- 0.0110	-0.0055	+/- 0.0140
Aluminum Block	0.0030	+/- 0.0110	0.0031	+/- 0.0140
Resolution	8.96	6.00 - 11.00	10.10	6.00 - 11.00
Internal Verifier(B+D+P+L)	1699	1250 - 2700	817	600 - 1300

## PASS/FAIL SUMMARY

Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

## SPECTRAL DENSITY FIELD CHECK

Tool Name: SDL\_DC - I709MC136

Reference Calibration Date: 21-Nov-08 11:57:06

Engineer: E. KIND

Calibration Date: 24-Nov-08 13:51:14

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Aluminum Block S/N: 63094

Density: 2.610g/cc

Magnesium Block S/N: 63387

Density: 1.685g/cc

Pad Temperature: 60.0 degF

## DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1698.641	1697.064	-1.577	16.543
Far (B+D+P+L) cps	816.647	820.007	3.360	15.777
Near Resolution	8.96	8.99	0.030	0.50
Far Resolution	10.04	10.10	-0.060	1.00

## PASS/FAIL SUMMARY

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

## SPECTRAL DENSITY POST CHECK

Tool Name: SDL\_DC - I709MC136

Reference Calibration Date: 24-Nov-08 13:51:14

Engineer: J. GEISER

Calibration Date: 25-Nov-08 04:39:51

Software Version: WL INSITE R2.2 (Build 9)

Calibration Version: 1

Aluminum Block S/N: 63094

Density: 2.610g/cc

Magnesium Block S/N: 63387

Density: 1.685g/cc

Pad Temperature: 50.7 degF

## DENSITY POST CALIBRATION SUMMARY

Measurement	Field	Post	Change	Control Limit +/-
Near (B+D+P+L) cps	1697.064	1698.871	1.807	18.378
Far (B+D+P+L) cps	820.007	819.914	-0.093	17.049
Near Resolution	8.99	8.96	-0.030	0.50
Far Resolution	10.16	10.04	0.120	1.00

**PASS/FAIL SUMMARY**

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

**CALIPER SHOP CALIBRATION**

Tool Name:	SDL_DC - I709MC136	Reference Calibration Date:	23-Oct-08 20:05:22
Engineer:	J. GEISER	Calibration Date:	21-Nov-08 12:16:04
Software Version:	WL INSITE R2.2 (Build 9)	Calibration Version:	1

**MEASURED CALIPER RINGS**

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change
RING DIAMETER:			
Ring #1 (in)	6.13	6.00	0.13
Ring #2 (in)	13.62	13.88	-0.26

**CALIPER FIELD CALIBRATION**

Tool Name:	SDL_DC - I709MC136	Reference Calibration Date:	21-Nov-08 12:16:04
Engineer:	E. KIND	Calibration Date:	24-Nov-08 13:52:45
Software Version:	WL INSITE R2.2 (Build 9)	Calibration Version:	1

**MEASURED CALIPER RINGS**

Measurement	Shop	Field	Change	Control Limit On New Value
Ring #1 (in)	6.13	6.27	0.15	+/- 0.50

**PASS/FAIL SUMMARY**

Ring #1 Check:	Passed
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**CALIPER POST CALIBRATION**

Tool Name:	SDL_DC - I709MC136	Reference Calibration Date:	24-Nov-08 13:52:45
Engineer:	J. GEISER	Calibration Date:	25-Nov-08 04:38:02
Software Version:	WL INSITE R2.2 (Build 9)	Calibration Version:	1

**MEASURED CALIPER RING**

Measurement	Field	Post	Change	Control Limit On New Value
Ring #1 (in)	6.27	6.04	-0.23	+/- 0.50

**PASS/FAIL SUMMARY**

Ring #1 Check:	Passed
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**HIGH RESOLUTION INDUCTION SHOP CALIBRATION**

Tool Name:	HRID - I81S0944	Reference Calibration Date:	25-Jul-08 14:06:02
Engineer:	J. GEISER	Calibration Date:	17-Sep-08 10:59:41
Software Version:	WL INSITE R2.2 (Build 9)	Calibration Version:	1

**HIGH RESOLUTION INDUCTION SHOP CALIBRATION SUMMARY****TEST LOOP RESPONSE**

1 - Test Loop Closed	Measured Signal	Nominal	Units
	R X	R X	

HRD	1976	1972	1976	1972	MMHOS
HRM	2838	2832	2838	2832	MMHOS

	2 - Test Loop Off(Sonde Error)		Measured Signal		Nominal		Units
	R	X	R	X			
HRD	-4	-94	+/- 15	+/- 100			MMHOS
HRM	-11	-112	+/- 15	+50/-150			MMHOS

ELECTRONICS RELATIVE GAIN				
	Set		Nominal	
	Magnitude	Phase	Magnitude	Phase
HRD	1.00	-1.38	1. +/- .1	0. +/- 5
HRM	1.00	-1.29	1. +/- .1	0. +/- 5
Temperature at time of calibration: 83.23 degF				

\*\*\*\*\* NOTICE \*\*\*\*\*  
 THE HIGH RESOLUTION INDUCTION TOOL (HRID) IS A CONTINUAL SELF-CALIBRATING TOOL. DURING LOGGING, THE TOOL CONSTANTLY SELF-UPDATES ITS COEFFICIENTS, THE SHOP CALIBRATION IS PERFORMED UNDER VERY STRINGENT CONDITIONS. SINCE THE TOOL IS SELF-CALIBRATING DURING LOGGING, FIELD AND POST CALIBRATIONS ARE NOT AVAILABLE OR NECESSARY FOR THE HRID TOOL.

### CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
NGRT-108617_2						
Gamma Ray Calibrator	253.0	249.8	253.3	-3.5	+/- 9.00	api
DSN_II-108734						
Snow Block Porosity	0.11642	0.11479	0.11462	0.00017	+/- 0.00900	decp
SDL_DC-I709MC136						
Near(B+D+P+L)	1698.641	1697.064	1698.871	-1.807	+/-18.378	cps
Far(B+D+P+L)	816.647	820.007	819.914	0.093	+/-17.049	cps
Field Block Density	2.130	0.000	0.000	0.000	+/-0.01500	g/cc
Ring #1	6.00	6.27	6.04	0.23	+/-0.500	in

Data: LAR\_JOHN\_5\_02B\0001 TRIPLE-D4TS-DC\VDLE

Date: 25-Nov-08 04:54:00

**HALLIBURTON**

### CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	24-Nov-08 23:47:11	1848.00	Logging 001 24-Nov-08 23:47 Up @1847.8f
	24-Nov-08 23:55:24	1456.83	Halting 001 24-Nov-08 23:47 Up @1847.8f
	25-Nov-08 00:04:28	2500.00	Logging 002 25-Nov-08 00:04 Dn @2504.5f
	25-Nov-08 00:51:56	10427.82	Halting 002 25-Nov-08 00:04 Dn @2504.5f
	25-Nov-08 00:52:10	10430.50	Logging 003 25-Nov-08 00:52 Up 10430.5f
	25-Nov-08 03:39:22	749.49	Halting 003 25-Nov-08 00:52 Up 10430.5f
	25-Nov-08 03:40:46	1847.50	Relogging 001.01 25-Nov-08 03:40 Up
	25-Nov-08 03:41:13	1454.92	Halting 001.01 25-Nov-08 03:40 Up

Data: LAR\_JOHN\_5\_02B\0001 TRIPLE-D4TS-DC\HWI0782

Date: 25-Nov-08 03:42:00

**HALLIBURTON**

### TOOL STRING DIAGRAM REPORT



Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-A032 135.00 lbs	Ø 3.625 in →		← Load Cell @ 80.19 ft ← BH Temperature @ 79.62 ft	6.25 ft	83.87 ft
D4TS-109040GJ 100.00 lbs	Ø 3.625 in →			6.50 ft	77.62 ft
NGRT-108617_2 176.00 lbs	Ø 3.625 in →		← GammaRay @ 64.45 ft	8.00 ft	71.12 ft
DSN_II-108734 195.80 lbs	Ø 3.625 in →		← Neutron Porosity @ 54.77 ft	10.25 ft	63.12 ft
SDL_DC-I709MC136 420.00 lbs	Ø 4.500 in →		← SDL Caliper @ 35.94 ft ← SDL @ 35.48 ft	19.43 ft	52.87 ft

HRID-I81S0944  
445.00 lbs

Ø 3.625 in →

33.33 ft

33.44 ft

HRID @ 8.91 ft  
SP @ 8.81 ft

Bull Nose-002  
1.00 lbs

Ø 2.750 in →

0.11 ft

0.11 ft

0.00 ft

Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	A032	135.00	6.25	77.62	300.00
D4TS	DITS 4 Telemetry Sub	109040GJ	100.00	6.50	71.12	300.00
NGRT	Natural Gamma Ray Tool	108617_2	176.00	8.00	63.12	60.00
DSN_II	Dual Spaced Neutron-II Tool	108734	195.80	10.25	52.87	60.00
SDLD	SDL (D) with (C) Mandrel w/ EVR	I709MC136	420.00	19.43	33.44	60.00
HRID	High Resolution Induction Tool Dits	I81S0944	445.00	33.33	0.11	100.00
SP	SP Ring	PROTO1	0.00	0.00	*	300.00
BLNS	Bull Nose	002	1.00	0.11	0.00	300.00
<b>Total</b>			<b>1,472.80</b>	<b>83.87</b>		
* Not included in Total Length and Length Accumulation.						
Data: LAR_JOHN_5_02B\0001 TRIPLE-D4TS-DC\003 25-Nov-08 00:52 Up 10430.5f						Date: 25-Nov-08 01:19:33

WELL	JOHNSON 5-02B
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FIELD MAMM CREEK

COUNTY	<b>GARFIELD</b>	STATE	<b>CO</b>
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# HALLIBURTON

**SPECTRAL DENSITY  
DUAL SPACED NEUTRON  
HIGH RESOLUTION INDUCTION**