



Composite Log

Company Pronghorn Operating, LLC.
Well UPPR 14 - 5 #1X
Field Cheyenne Wells
County Cheyenne State Colorado

Location: 622' FSL & 674' FWL
SEC 5 TWP 14S RGE 44W
Permanent Datum G.L. Elevation 4301' ft.
Log Measured From K.B. , 17 ft. above perm. datum
Drilling Measured From K.B. G.L. Elevation 4318 ft.
D.F. 4311 ft.
G.L. 4301 ft.

Date	1-Apr-2013		
Run Number	One		
Depth Driller	5623'		
Depth Logger	5618'		
Bottom Logged Interval	5616'		
Top Log Interval	3500'		
Casing Driller	8.625" @ 1688'	@	@
Casing Logger	1694'		
Bit Size	7.875"	@	@
Type Fluid in Hole	WBM		
Density / Viscosity	9.0 / 65		
pH / Fluid Loss	8.5 / 6.2		
Source of Sample	Mud Pit		
Rm @ Meas. Temp	1.1 @ 46 °F	@	@
Rmf @ Meas. Temp	0.88 @ 46 °F	@	@
Rmc @ Meas. Temp	1.43 @ 46 °F	@	@
Source of Rmf / Rmc	Calculated		
Rm @ BHT	0.35 @ 146 °F	@	@
Time Circulation Stopped	31-Mar-2013 @ 20:15		
Time Logger on Bottom	3:45		
Maximum Recorded Temperature	146 °F		
Equipment Number	10002		
Location	Brighton		
Recorded By	B. Oetting		
Witnessed By	Z. Kuenzler		

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Equipment and Log Data

Service Order: 23239

Gamma		Density		Neutron		Sonic		IAT	
Run No.	One	Run No.	One	Run No.	One	Run No.	One	Run No.	One
Serial No.	9990	Serial No.	5302	Serial No.	7985	Serial No.	N/A	Serial No.	10110
O.D.	3.375 in.	Source No.	50130B	Source No.	66010B	Centralizers	N/A	Standoffs	2 @ 1.5"
		O.D.	4.5 in.	O.D.	3.375 in.	O.D.	3.375 in.	O.D.	3.875 in.

Logging Pass Data

General		Gamma		Density		Neutron		Sonic		IAT	
		Scales		Scales		Scales		Scales		Scales	
Run	Depths	Left	Right	Left	Right	Matrix	Left	Right	Matrix	Left	Right
One	TD CSG	0	150	0.3	-0.1	2.71 g/cc	0.3	-0.1	Limestone	N/A	N/A

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

First Run In Hole
Tools Ran As Per Tool Sketch With Bowspring Ran On Neutron Tool
5.5" Production Casing Used To Calculate Annular Hole Volumes
Chlorides Reported at: 2200 ppm
LCM Reported at 16 lb/bbl

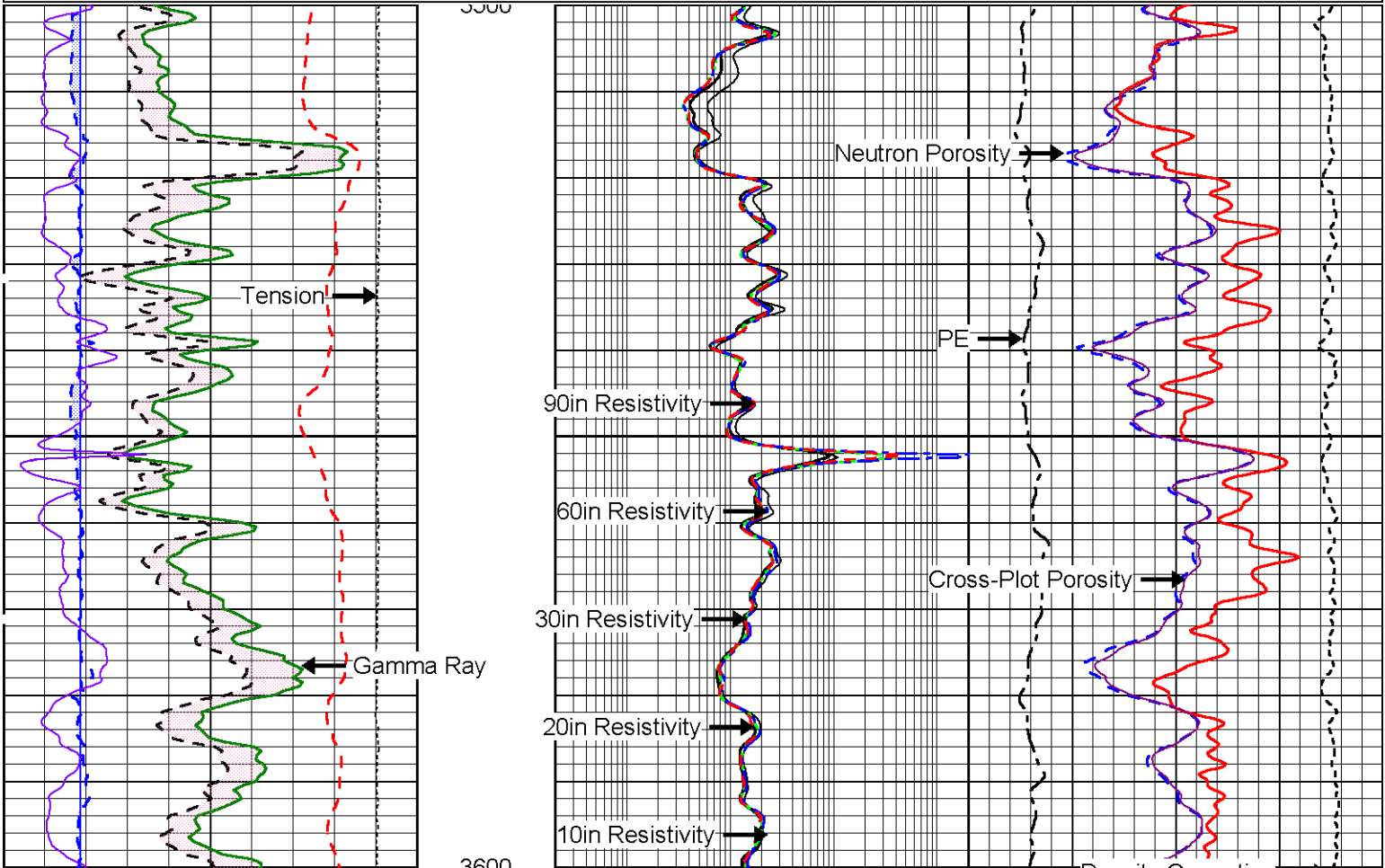
YOUR CREW TODAY: A. Hughes, E. Soto

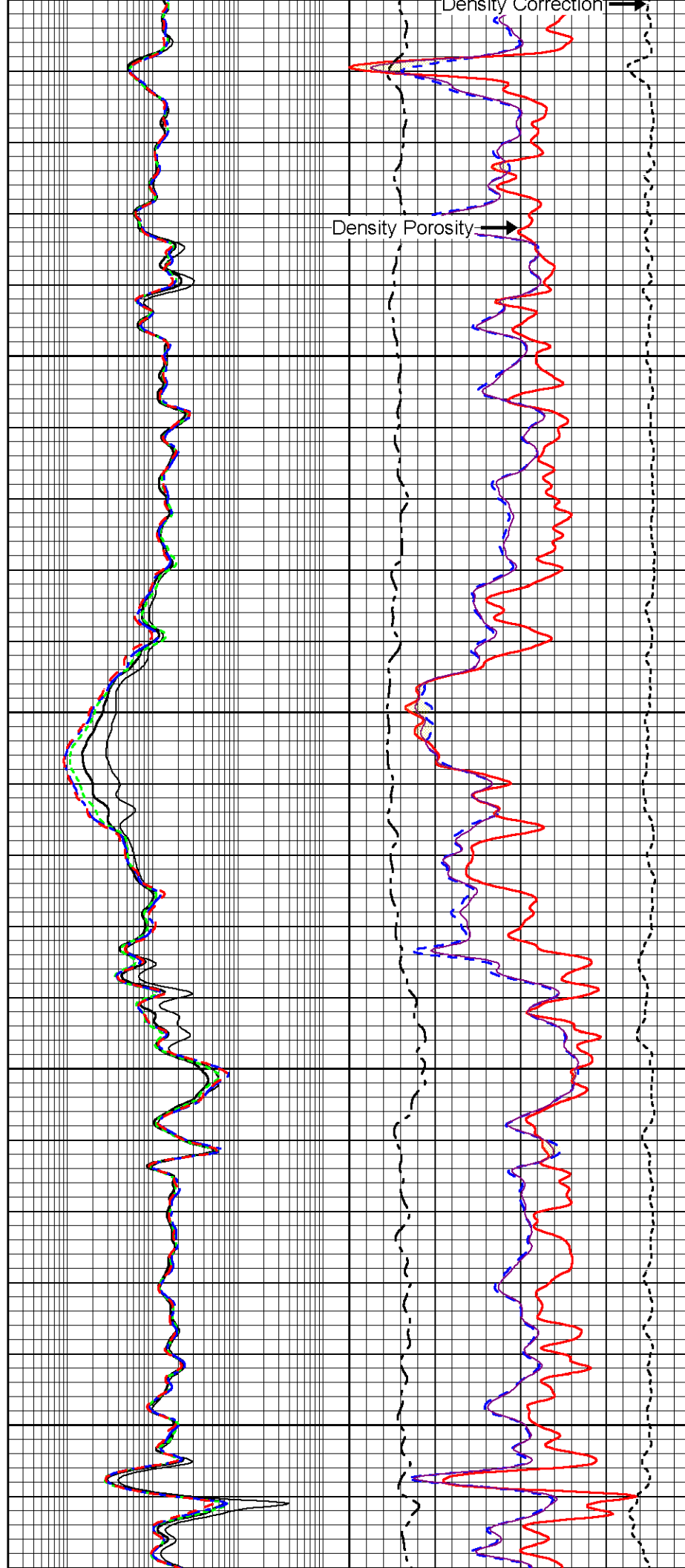
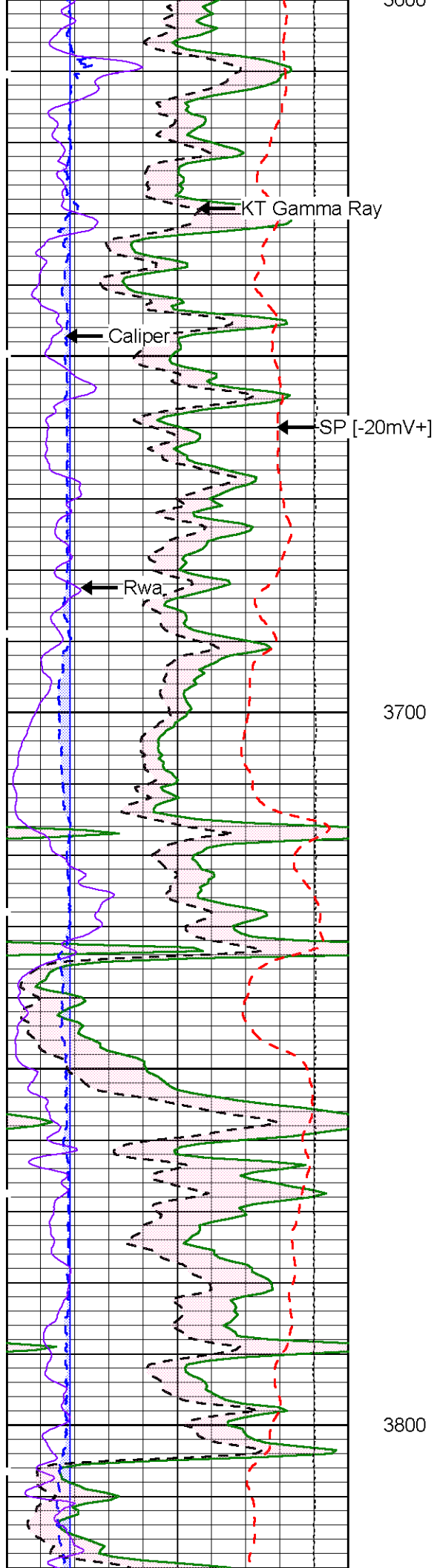


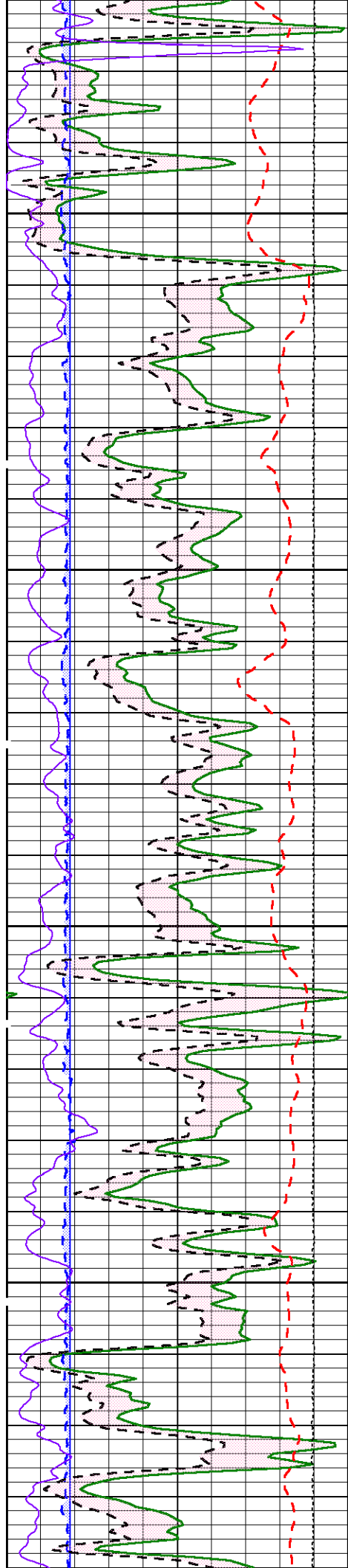
Main Pass Limestone Matrix

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Dataset Pathname: Lime3
Presentation Format: a3prong
Dataset Creation: Mon Apr 01 05:54:54 2013 by Calc Sondex V7.03
Charted by: Depth in Feet scaled 1:240

6	Bitsize (in)	16	0.2	10in Resistivity (Ohm-m)	2000	0.3	Neutron Porosity	-0.1
0	Gamma Ray (GAPI)	150	0.2	20in Resistivity (Ohm-m)	2000	0.3	Density Porosity	-0.1
6	Caliper (in)	16	0.2	30in Resistivity (Ohm-m)	2000	0	PE	10
	SP [-20mV+]		0.2	60in Resistivity (Ohm-m)	2000			Density Correction
0	KT Gamma Ray (GAPI)	150	0.2	90in Resistivity (Ohm-m)	2000			0.8 (g/cc) -0.2
0	Rwa (Ohm-m)	1				0.3	Cross Plot Porosity	-0.1
	Tension							
	10000 (lb)	0						

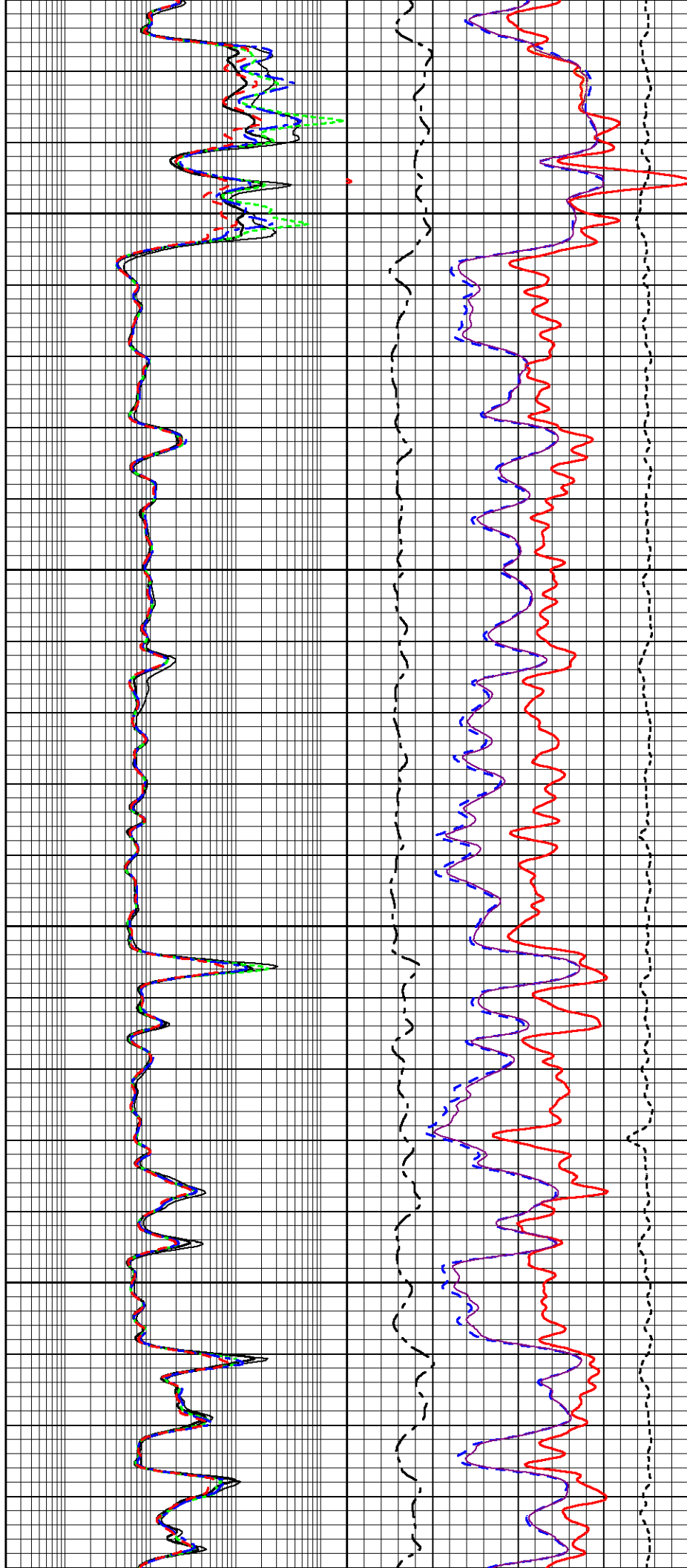


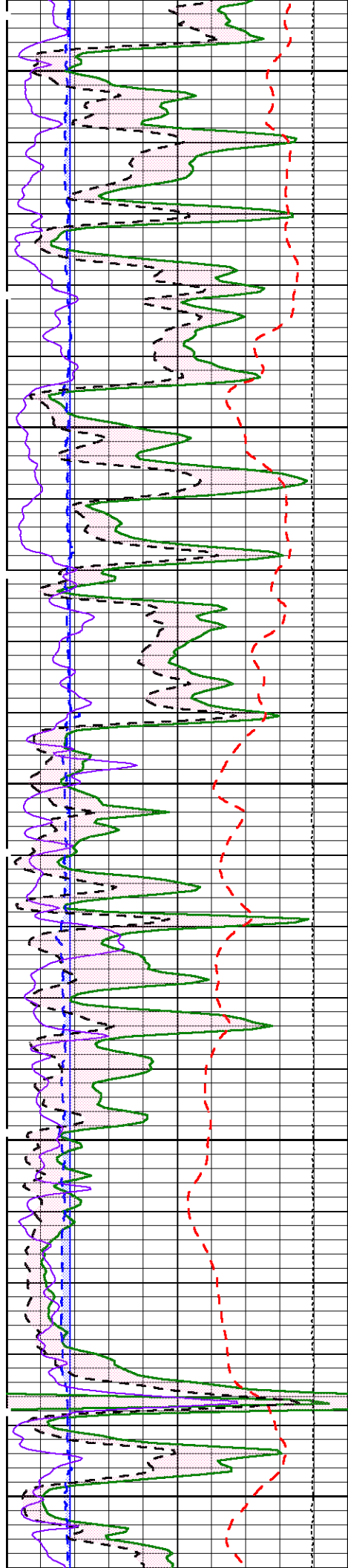




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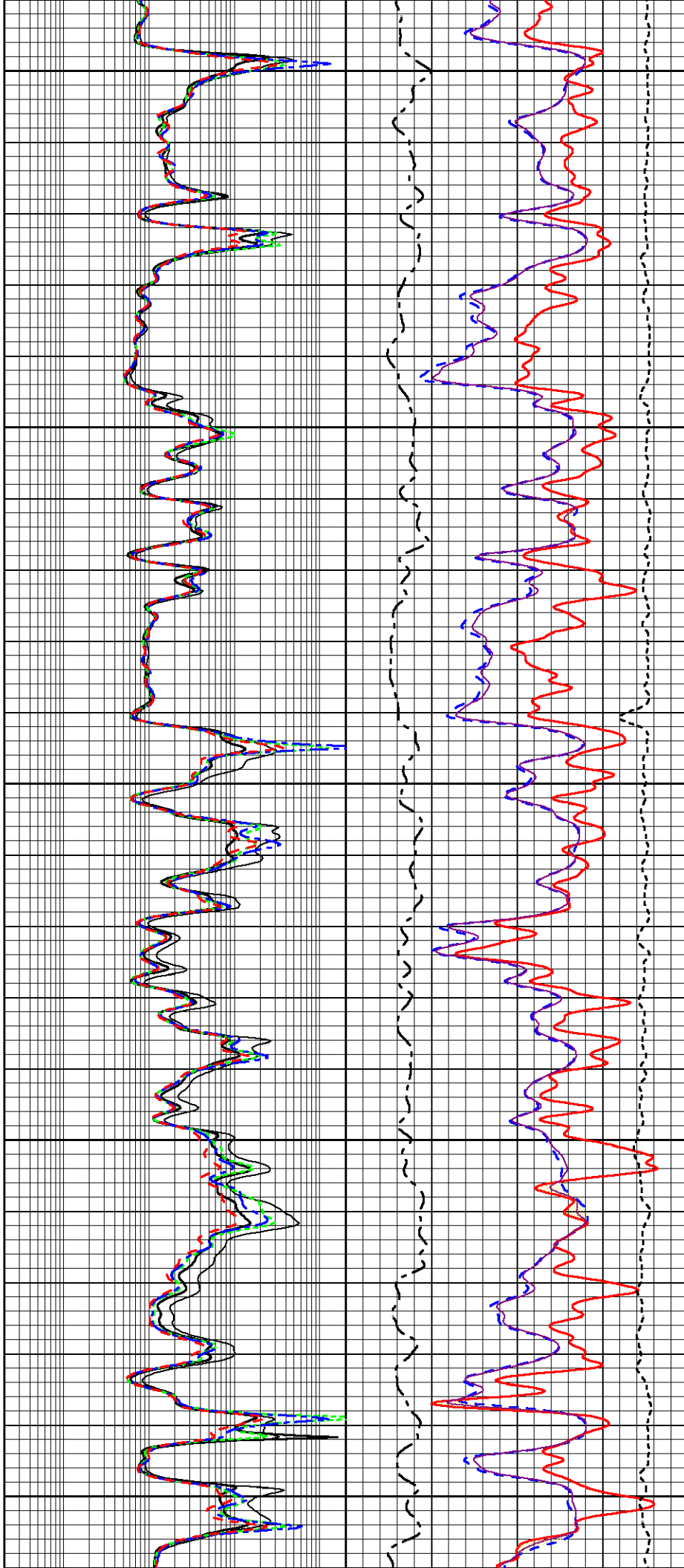
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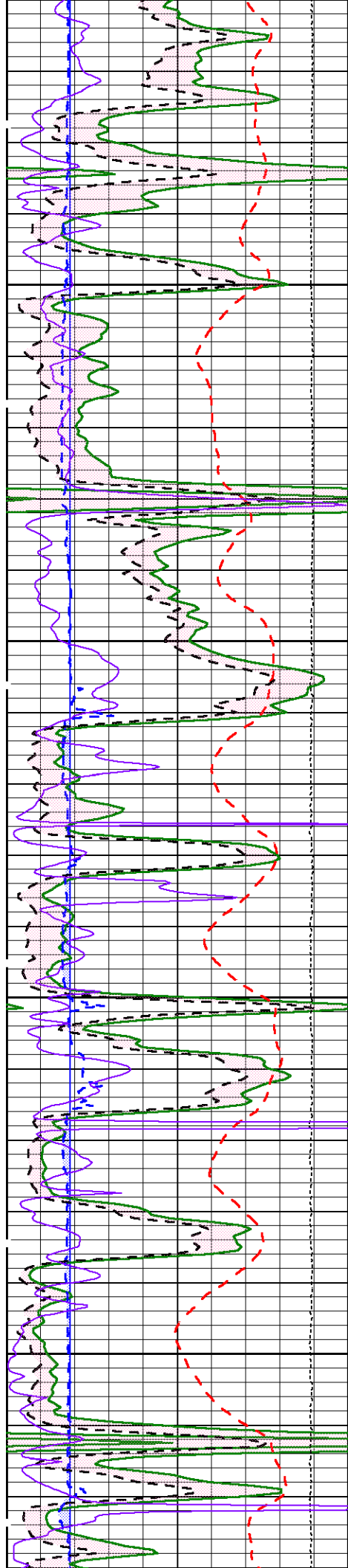




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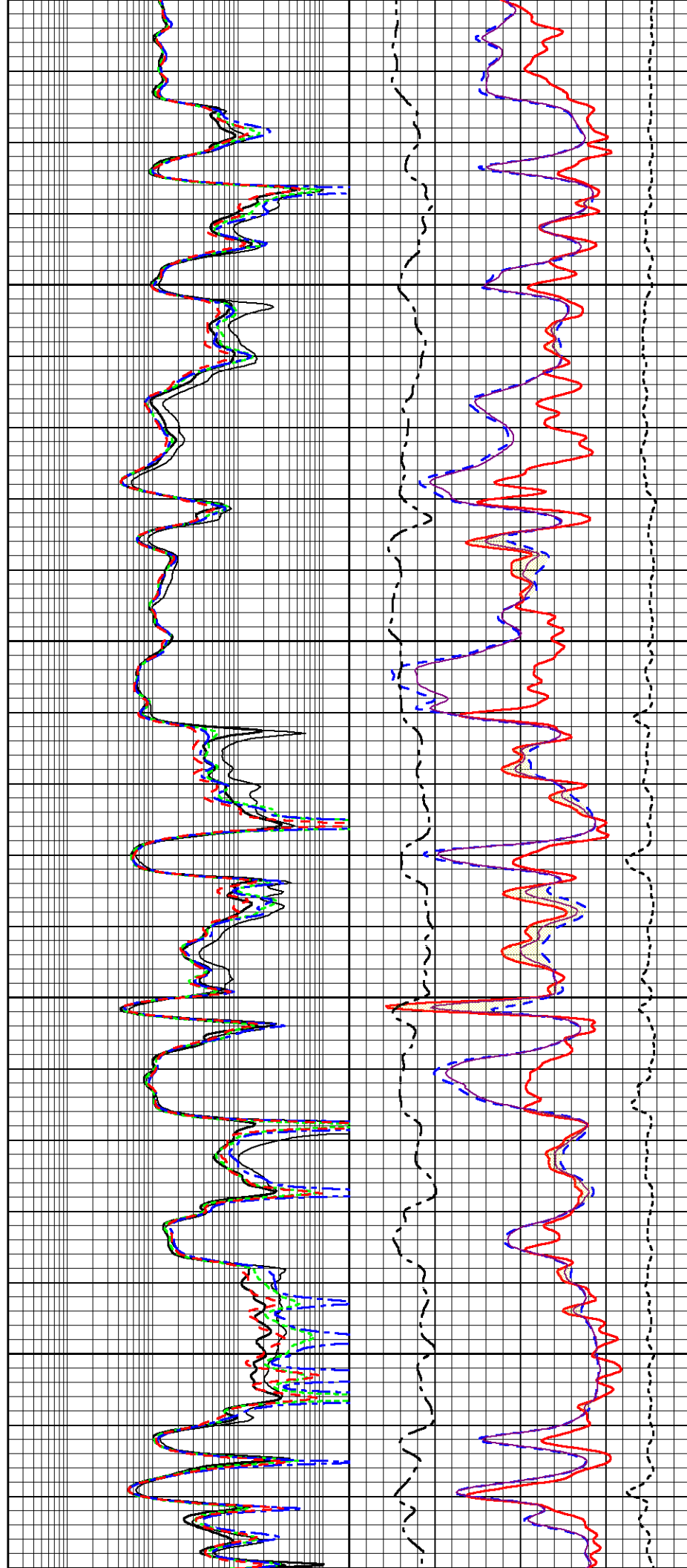
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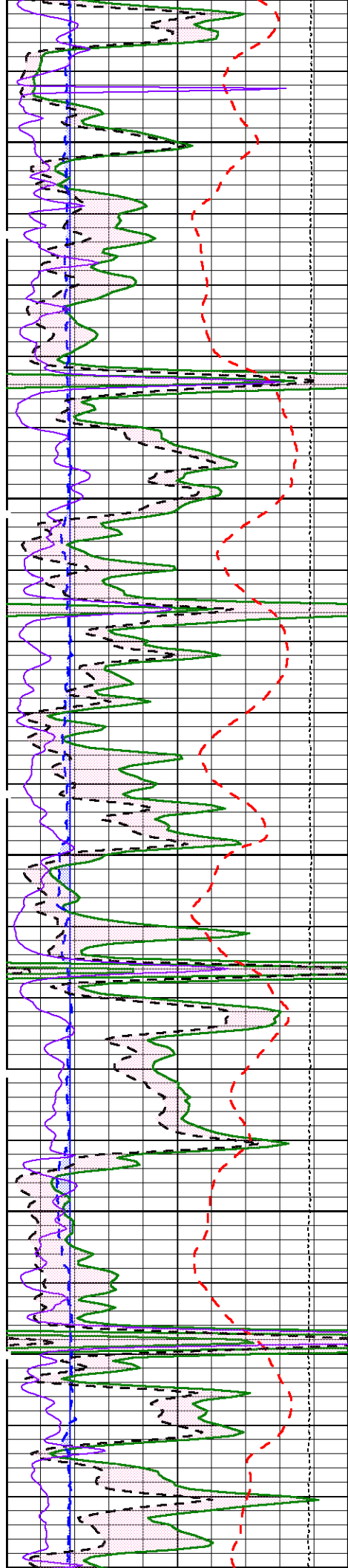




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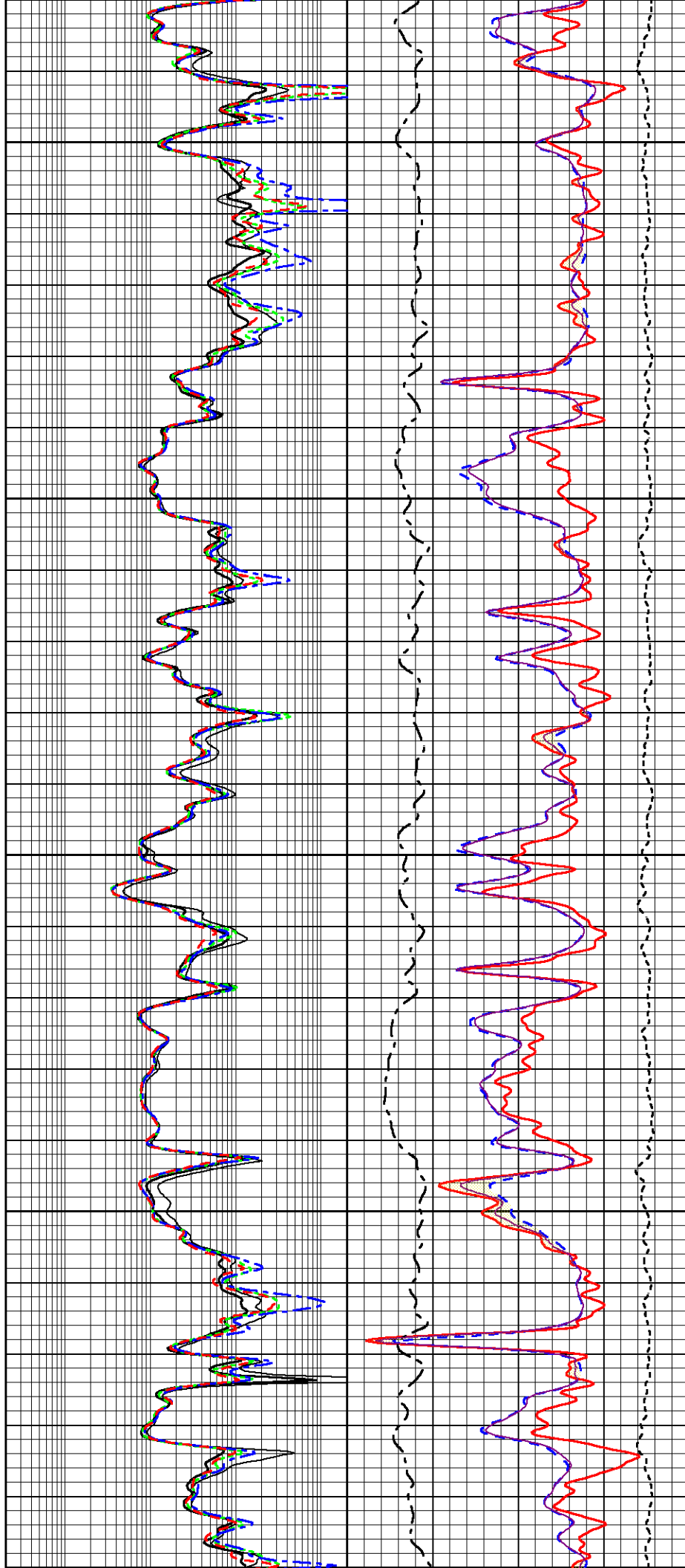




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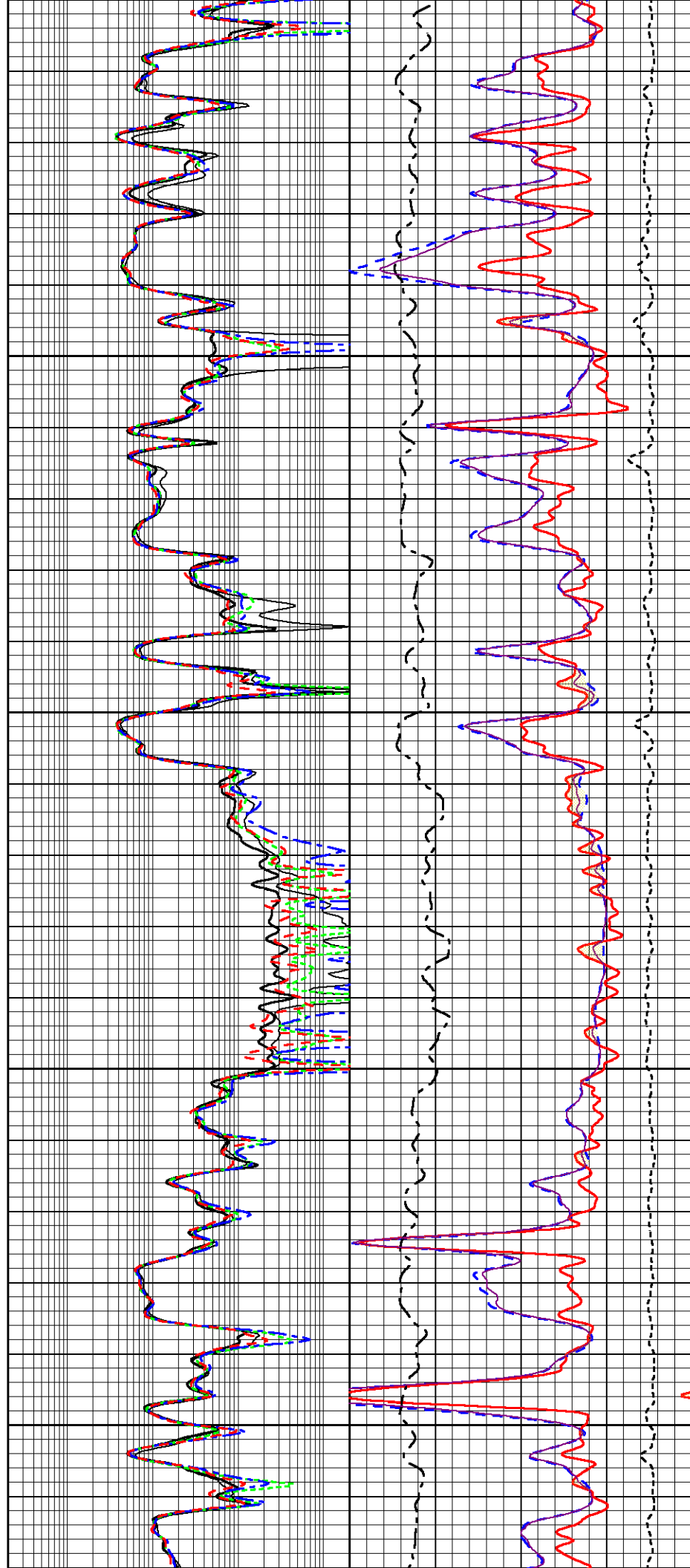
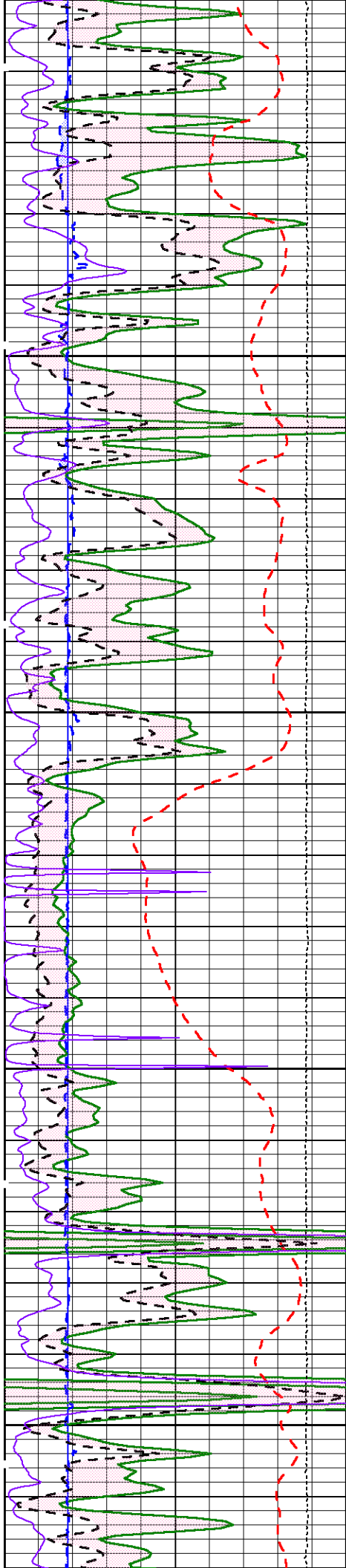
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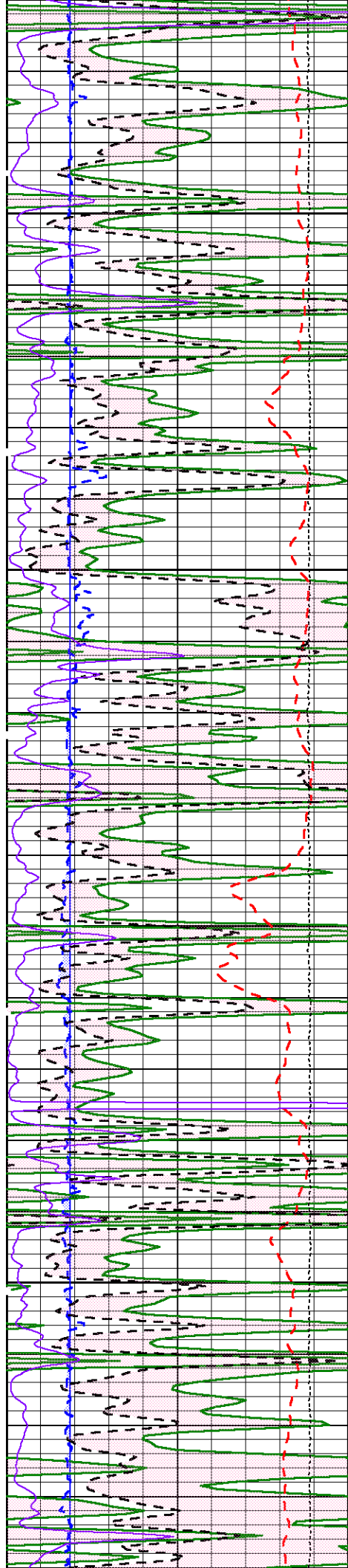


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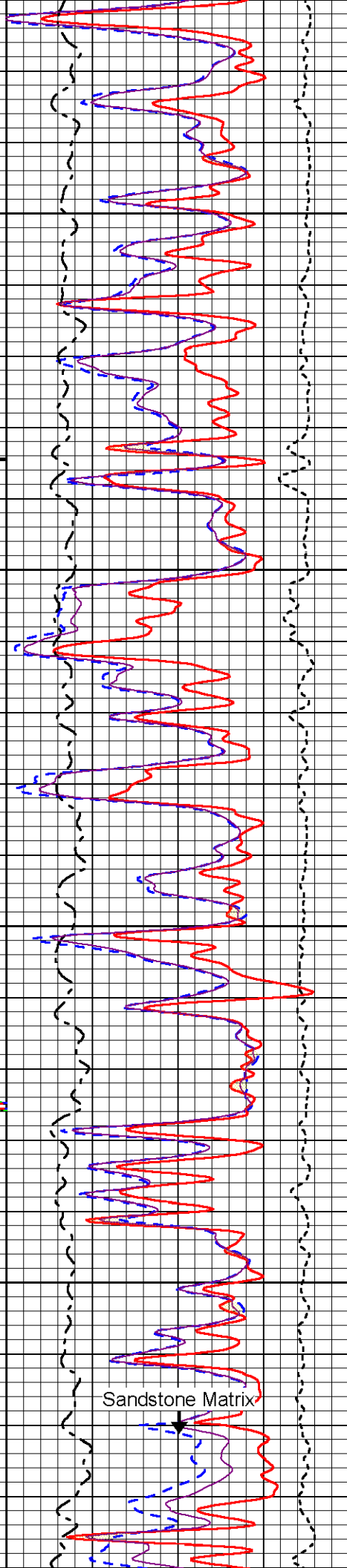
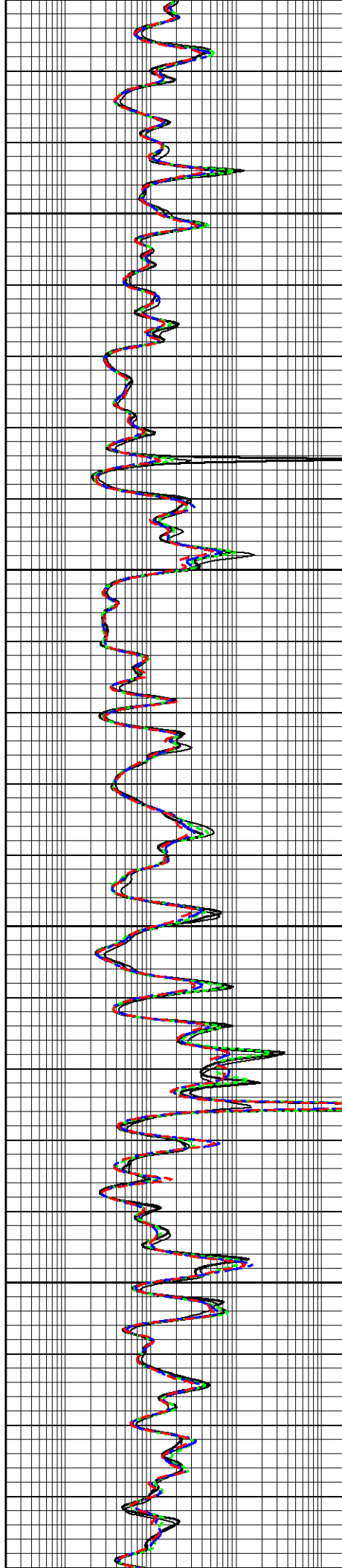
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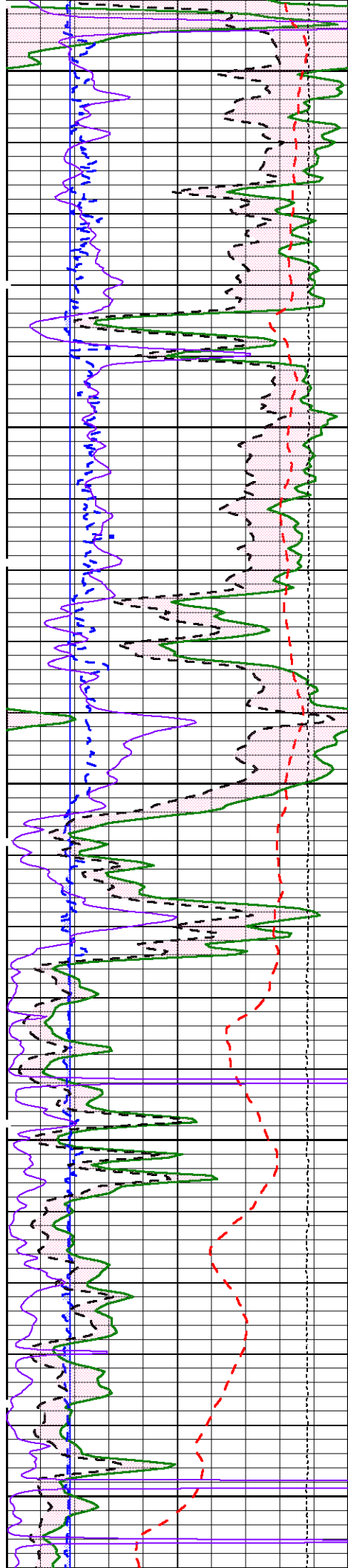




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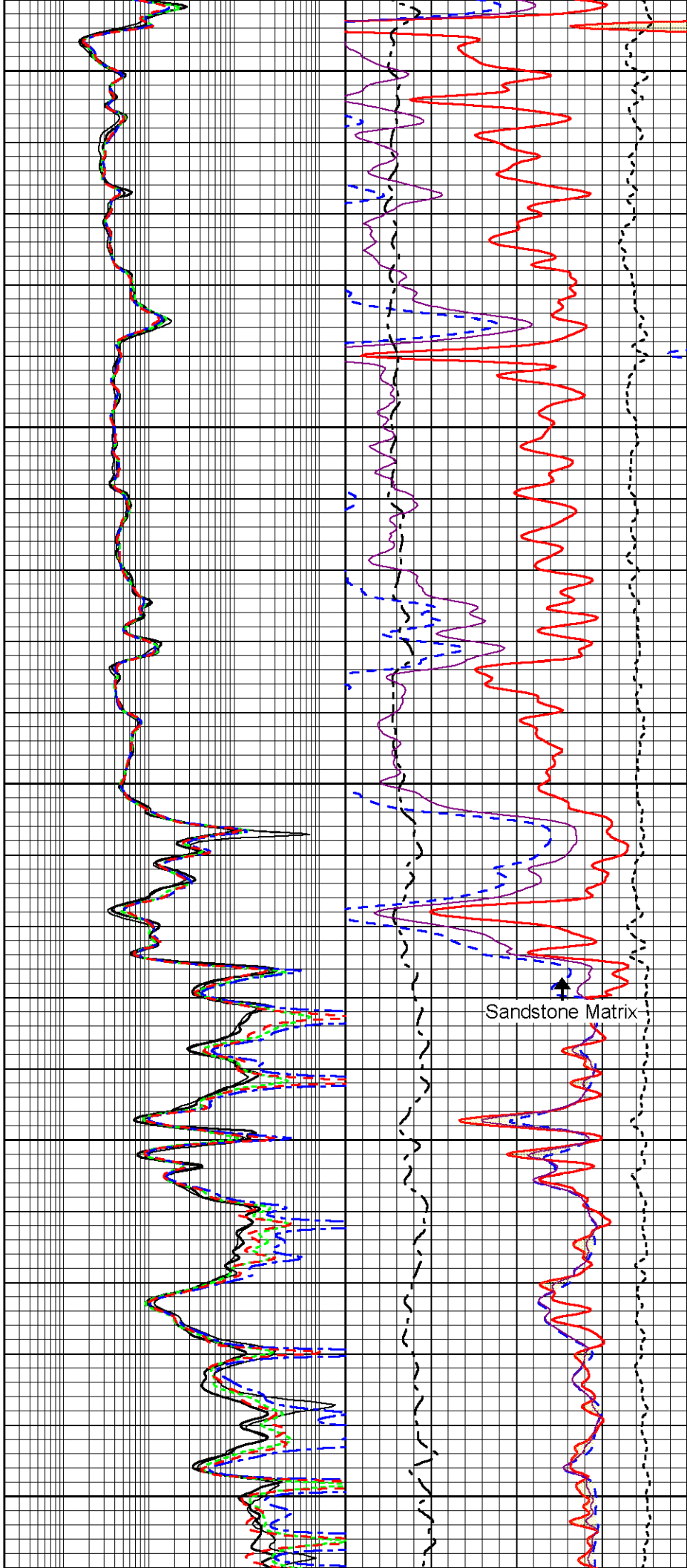
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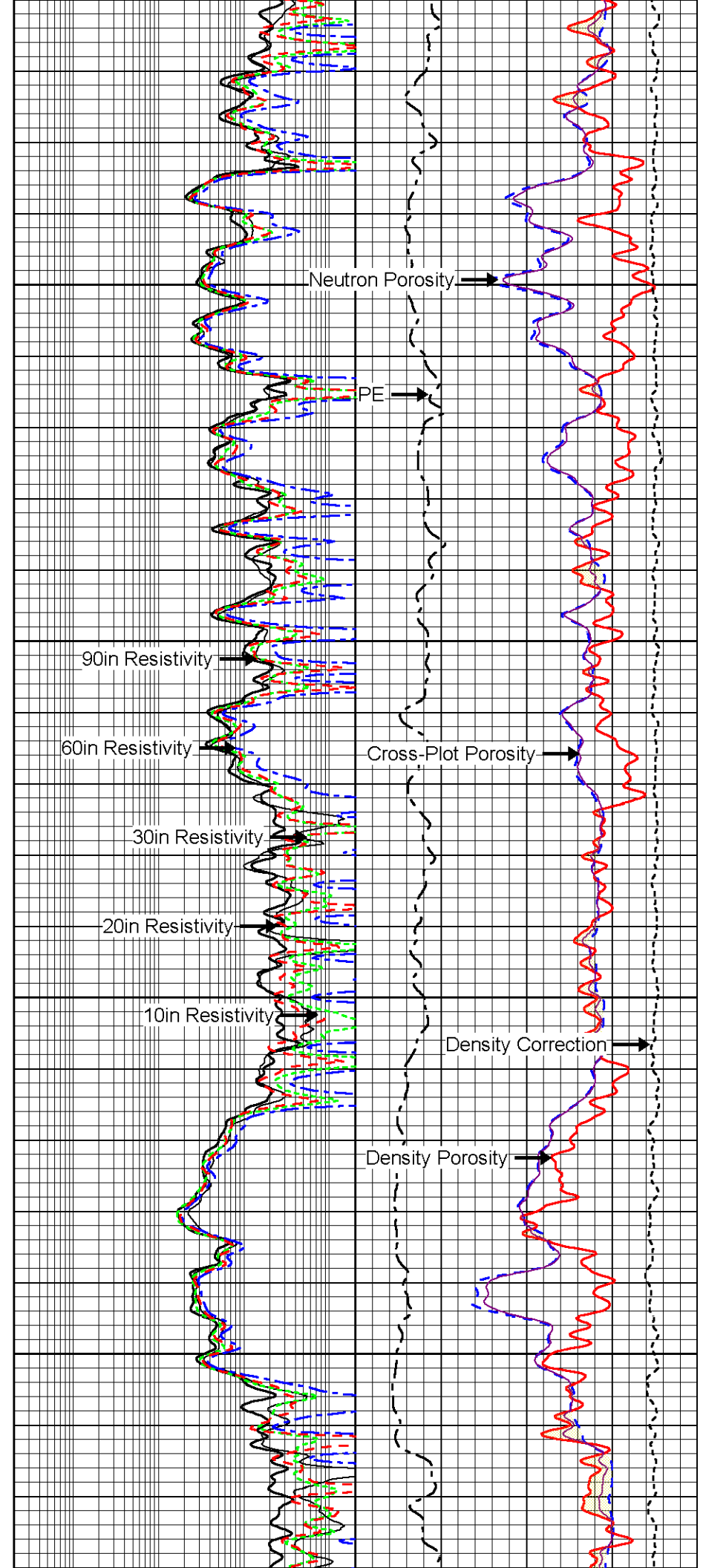
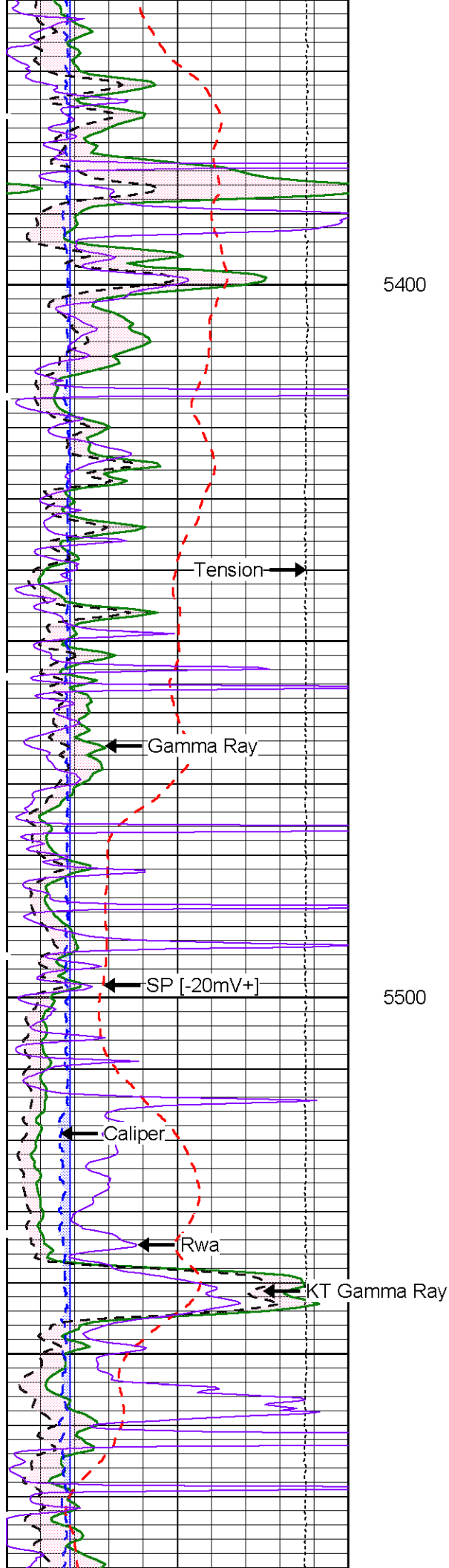


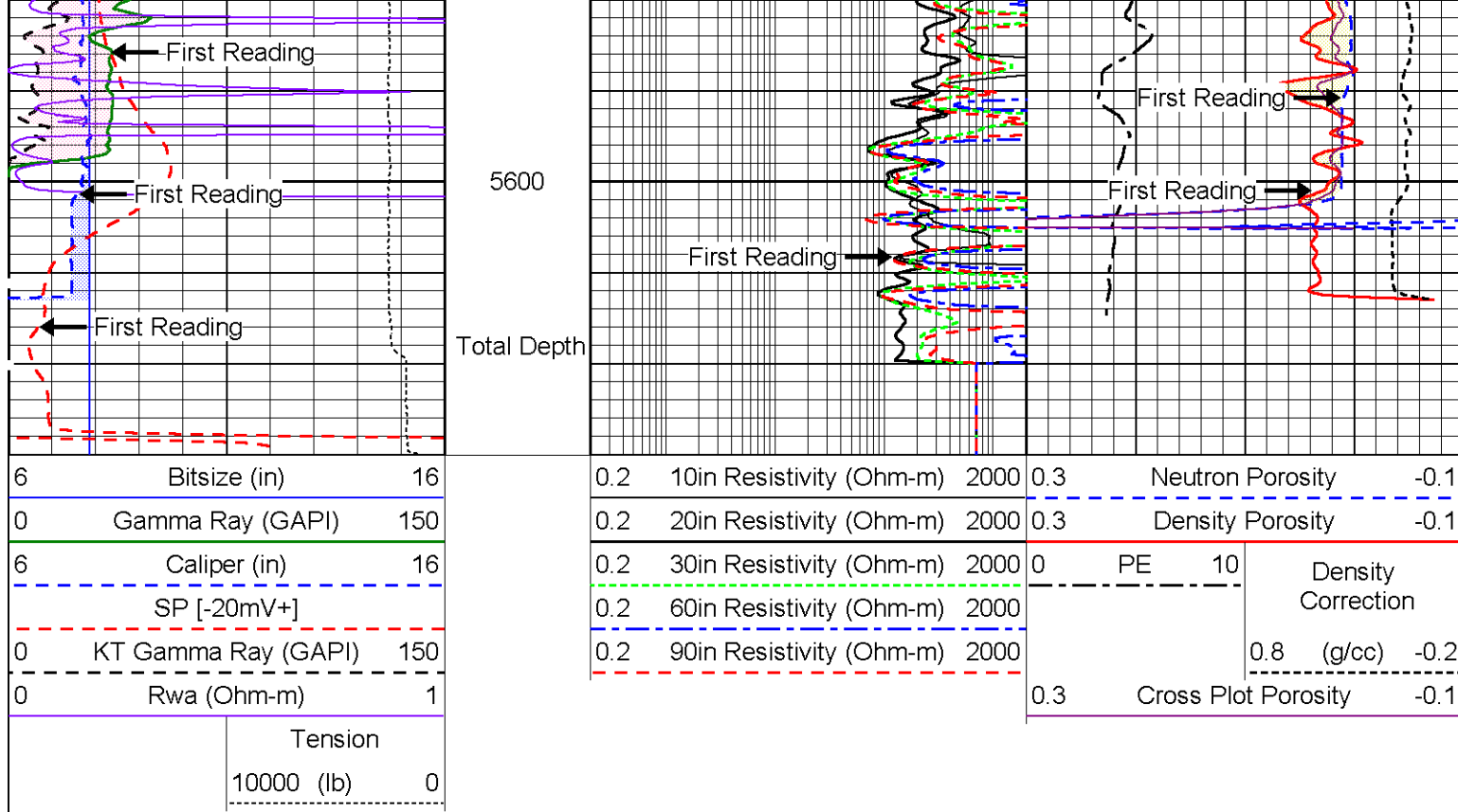


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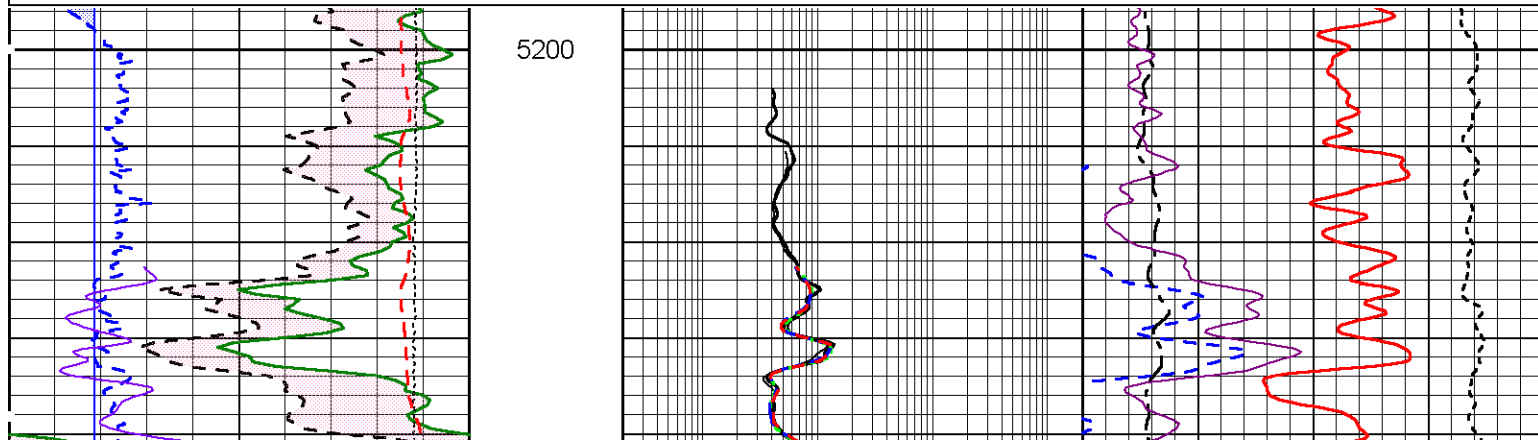
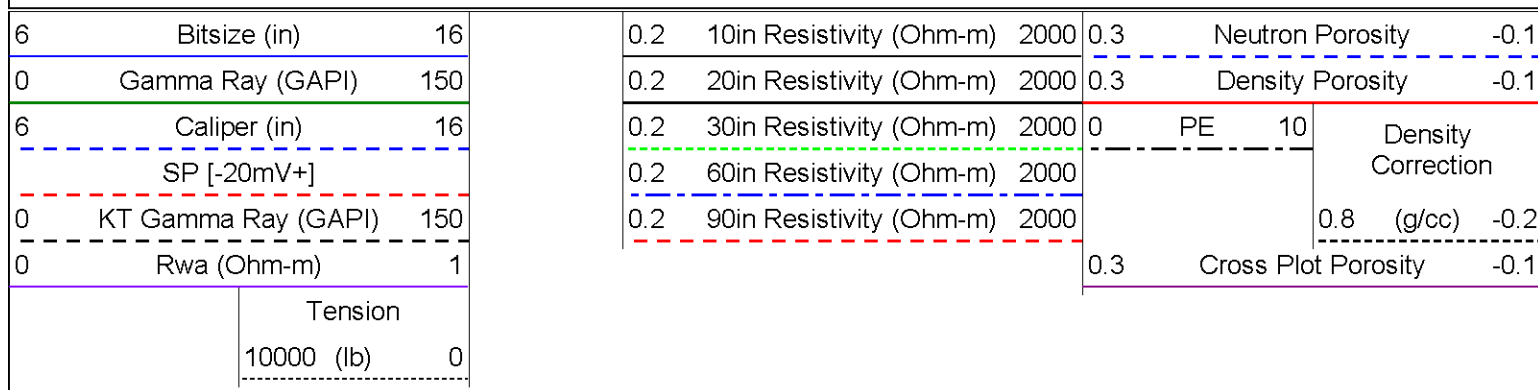


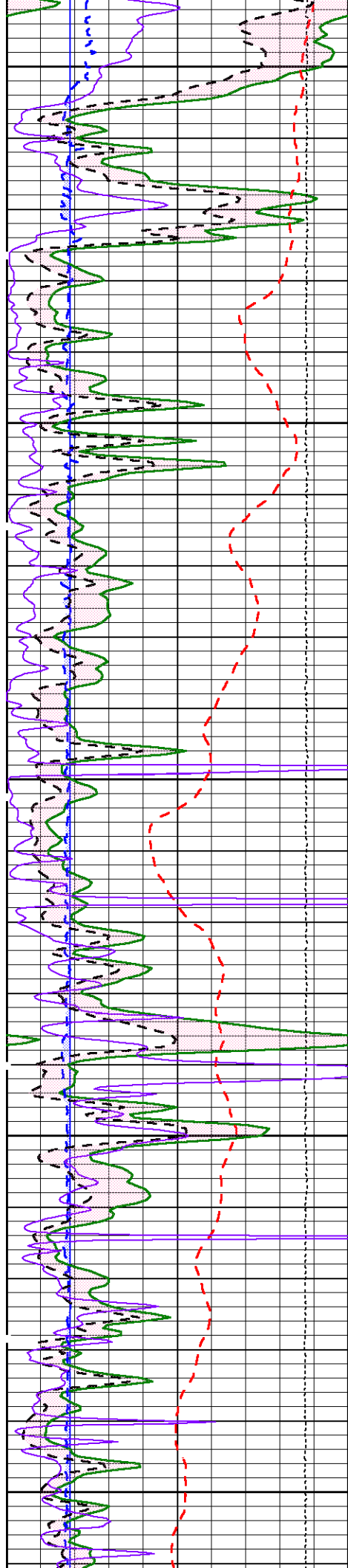




Repeat Pass Limestone Matrix

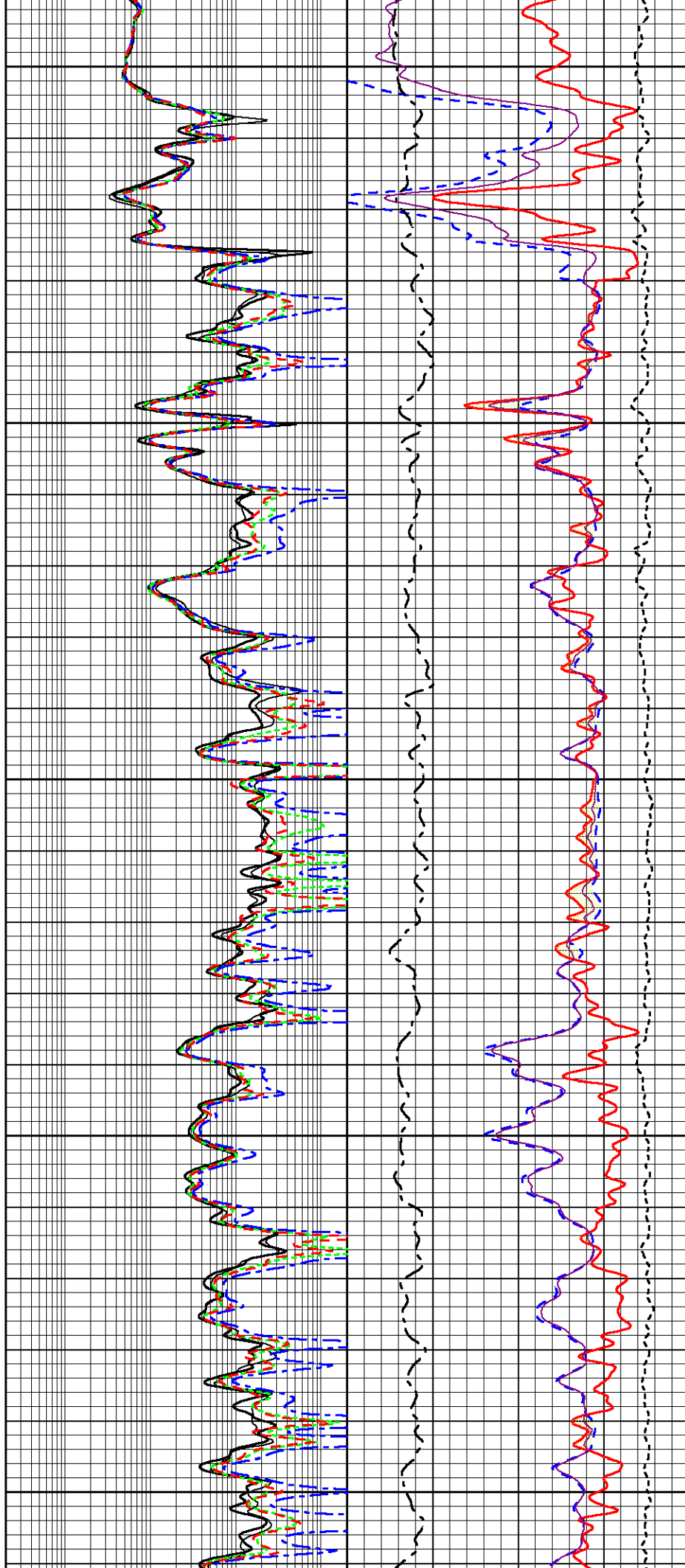
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 Dataset Creation: Mon Apr 01 06:33:30 2013 by Calc Sondex V7.03
 Charted by: Depth in Feet scaled 1:240

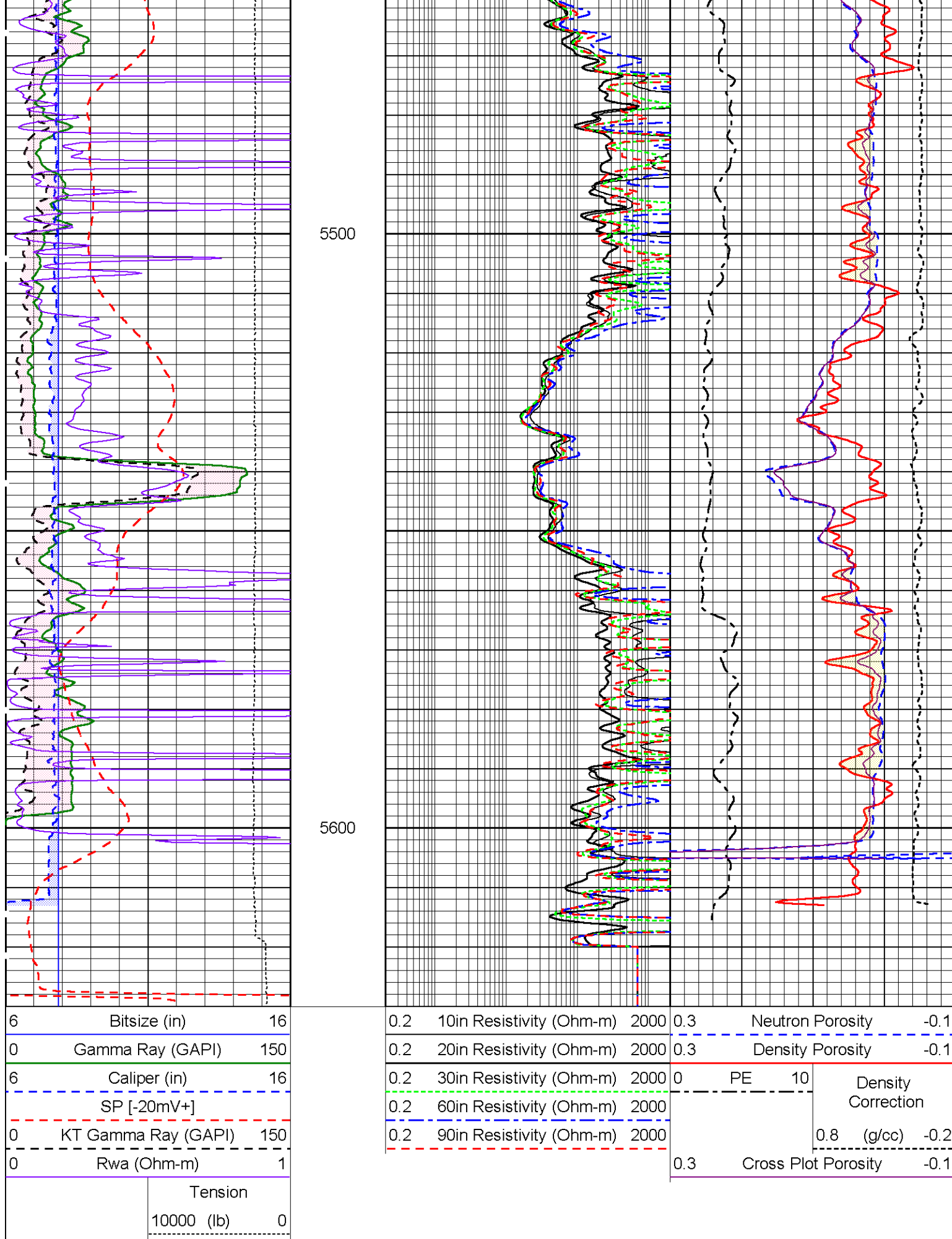




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Log Variables

Database: C:\Warrior\Data\pronghorn_uppr_14-5_1x.db
Data set: field\wall\run1\line2

Top - 1688.00 ft

FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.75	DE-CENT Yes	CASED? Yes	CASEWGHT lb/ft 24
NPORSEL Limestone	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.71	SPSHIFT mV -80	CASEOD in 8.625	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 12.25	A 1	M 2			

1688.00 ft - 5120.00 ft

FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.75	DE-CENT Yes	CASED? No	CASEWGHT lb/ft 17
NPORSEL Limestone	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.71	SPSHIFT mV -80	CASEOD in 5.5	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 7.875	A 1	M 2			

5120.00 ft - 5280.00 ft

FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.75	DE-CENT Yes	CASED? No	CASEWGHT lb/ft 17
NPORSEL Sandstone	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.65	SPSHIFT mV -80	CASEOD in 5.5	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 7.875	A 1	M 2			

5280.00 ft - Bottom

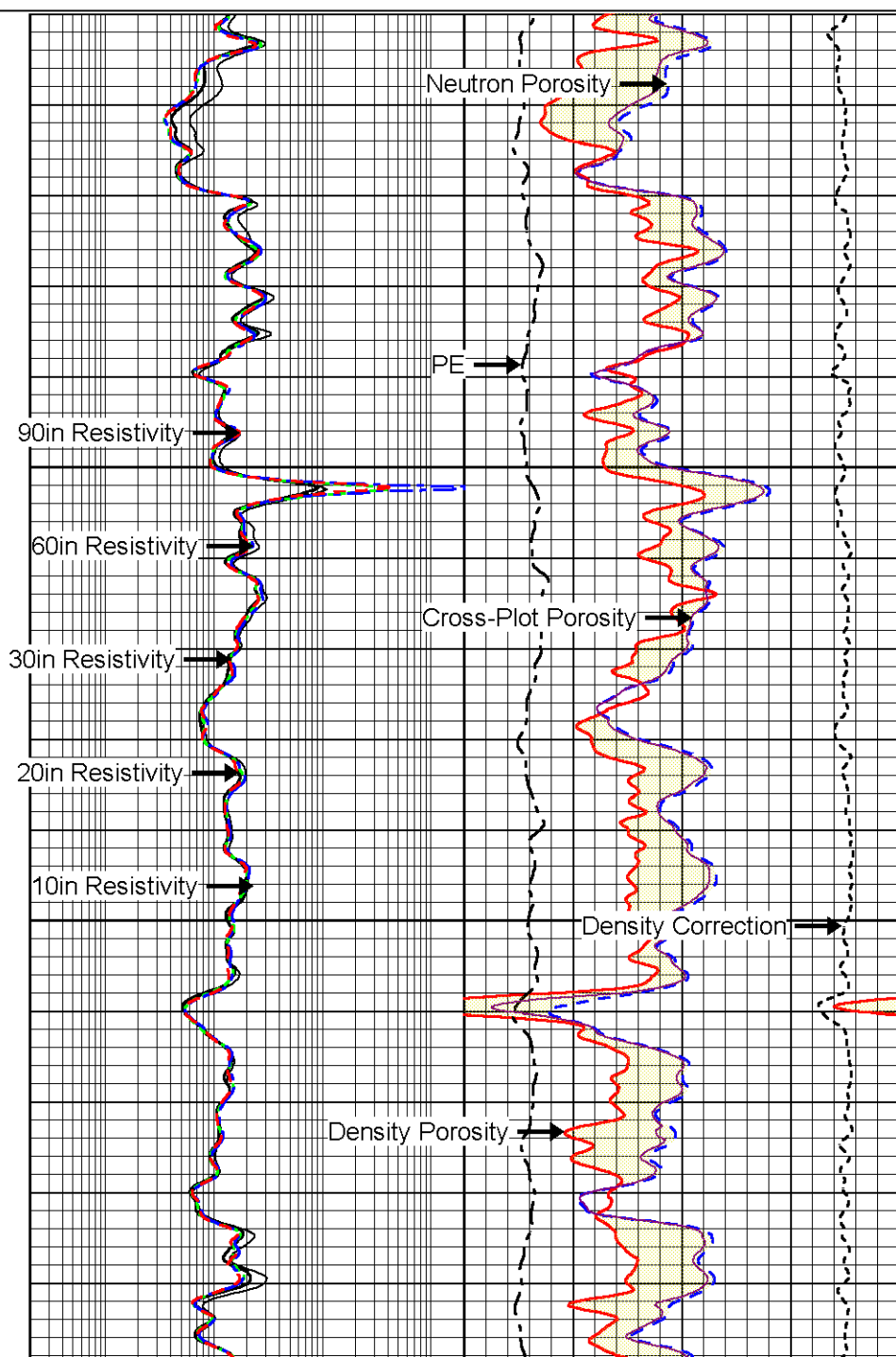
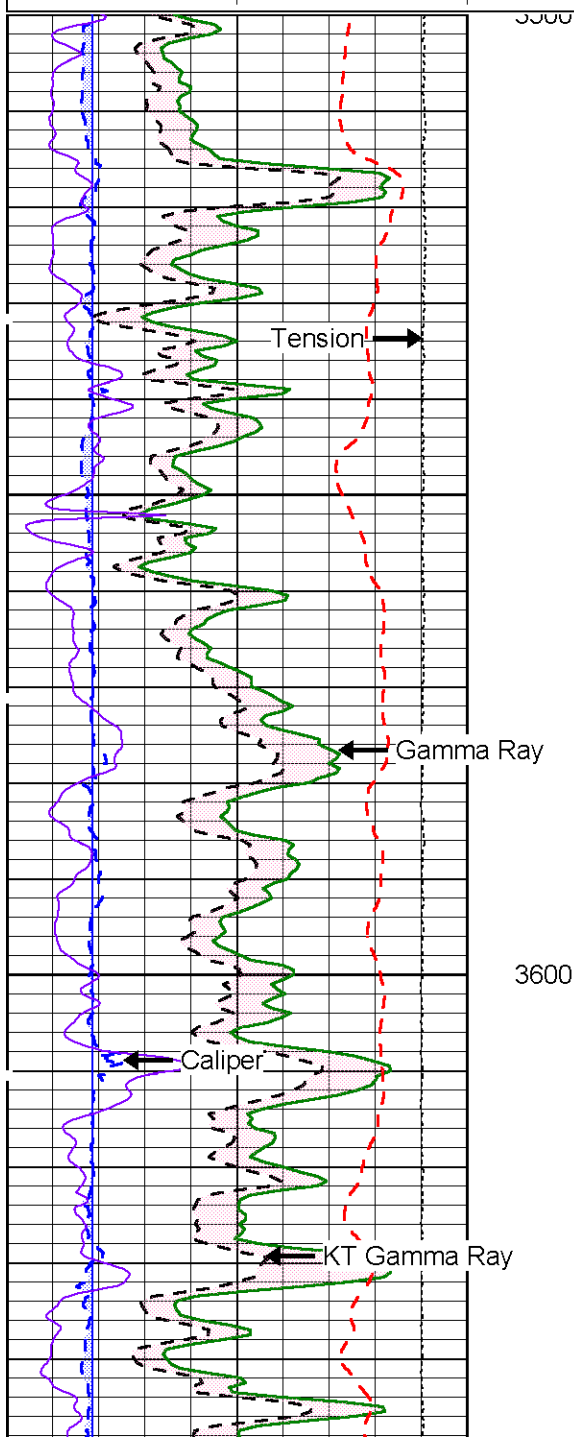
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NPORSEL Limestone	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.71	SPSHIFT mV -80	CASEOD in 5.5	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 7.875	A 1	M 2			

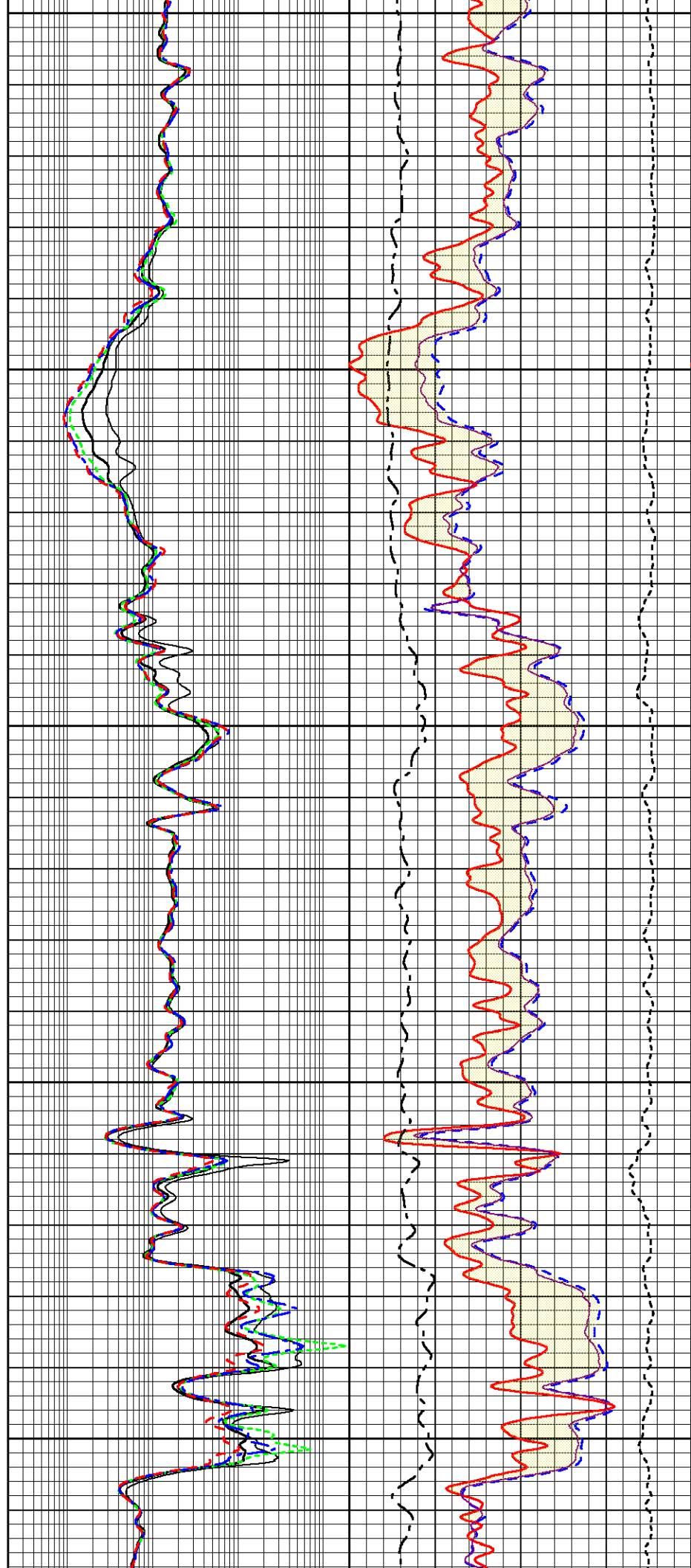
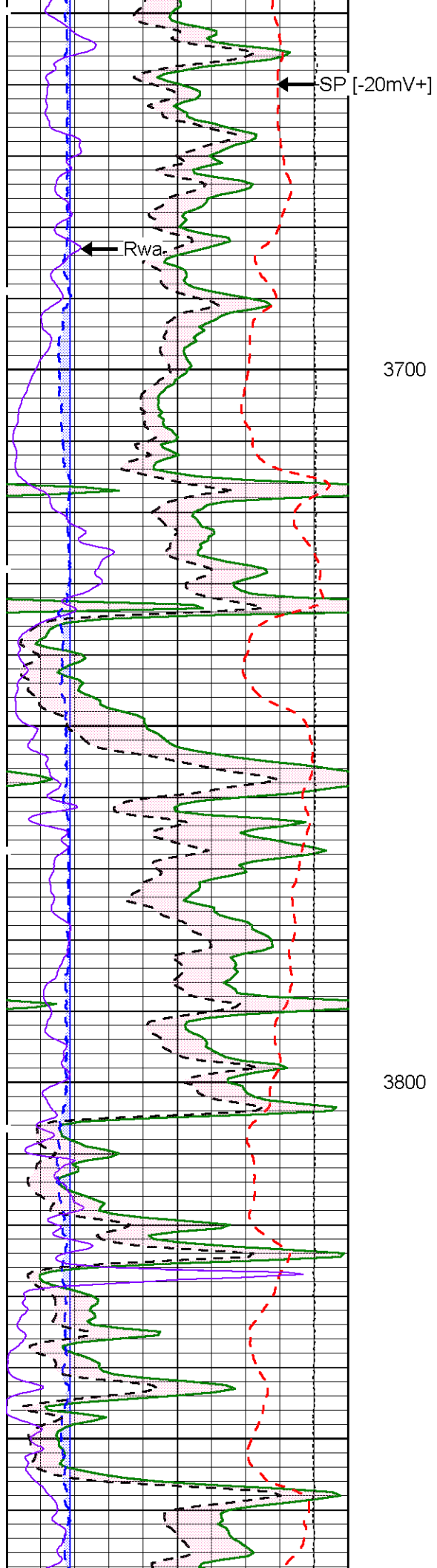
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 Presentation Format: a3prong
 Dataset Creation: Mon Apr 01 06:04:27 2013 by Calc Sondex V7.03
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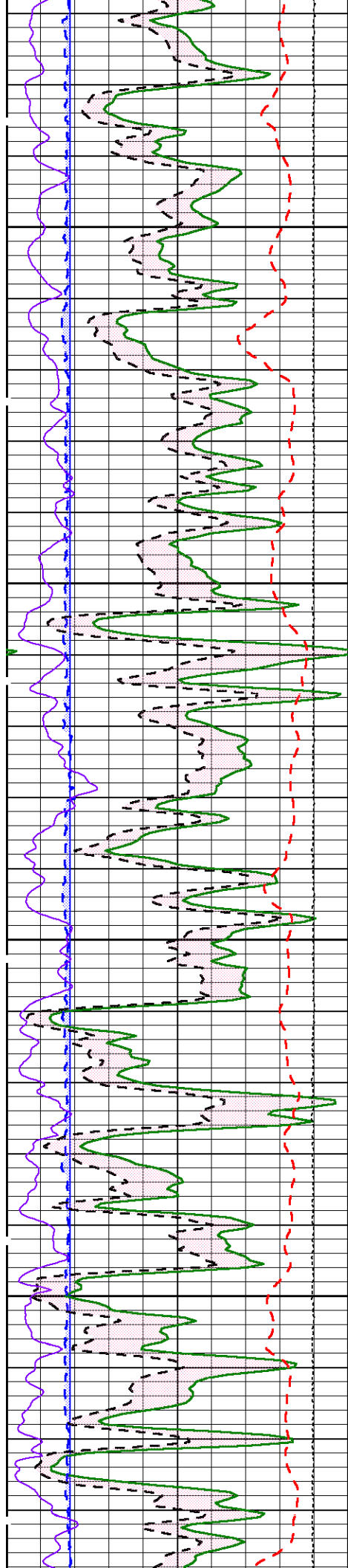
6	Bitsize (in)	16
0	Gamma Ray (GAPI)	150
6	Caliper (in)	16
SP [-20mV+]		
0	KT Gamma Ray (GAPI)	150
0	Rwa (Ohm-m)	1
Tension		
10000	(lb)	0

0.2	10in Resistivity (Ohm-m)	2000
0.2	20in Resistivity (Ohm-m)	2000
0.2	30in Resistivity (Ohm-m)	2000
0.2	60in Resistivity (Ohm-m)	2000
0.2	90in Resistivity (Ohm-m)	2000

0.3	Neutron Porosity	-0.1
0.3	Density Porosity	-0.1
0	PE	10
Density Correction		
0.8	(g/cc)	-0.2
0.3	Cross Plot Porosity	-0.1

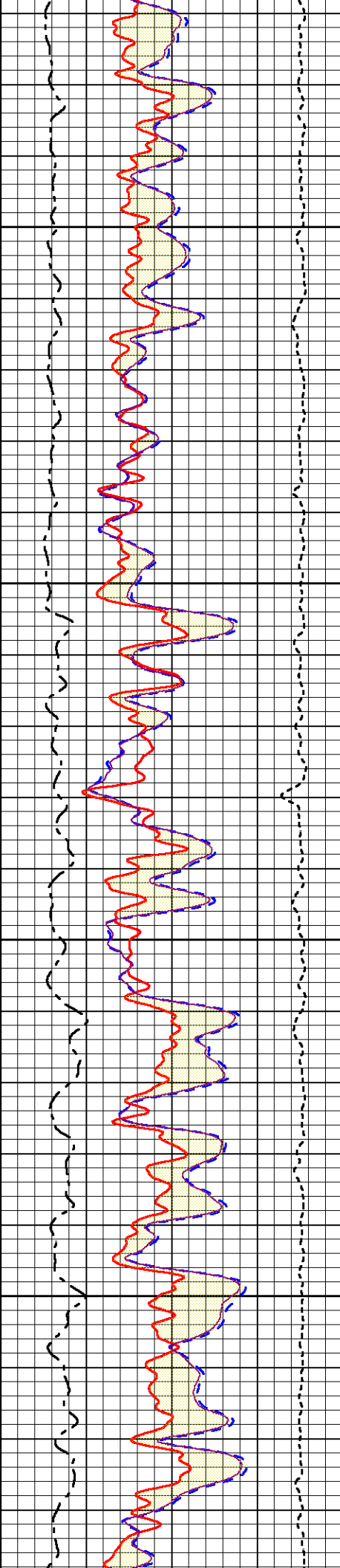
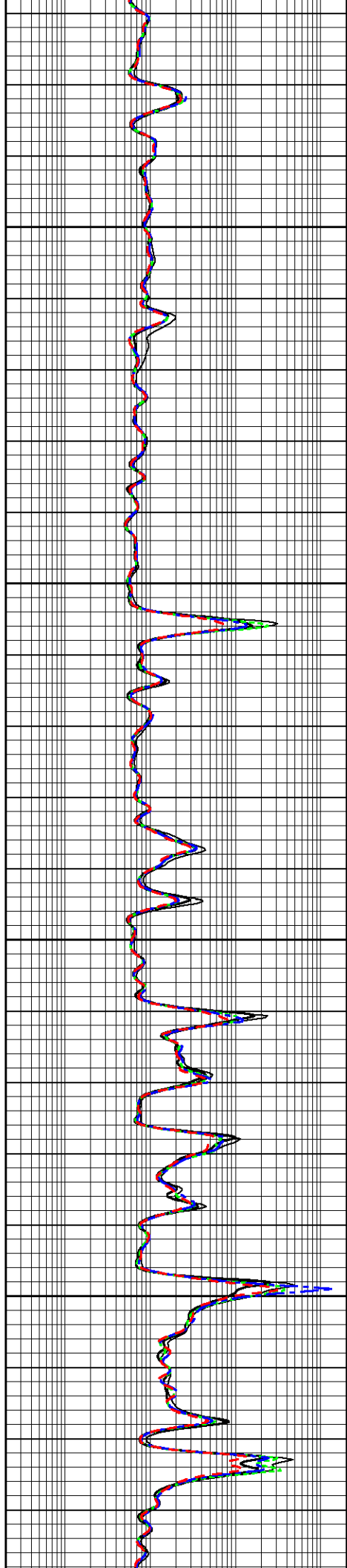


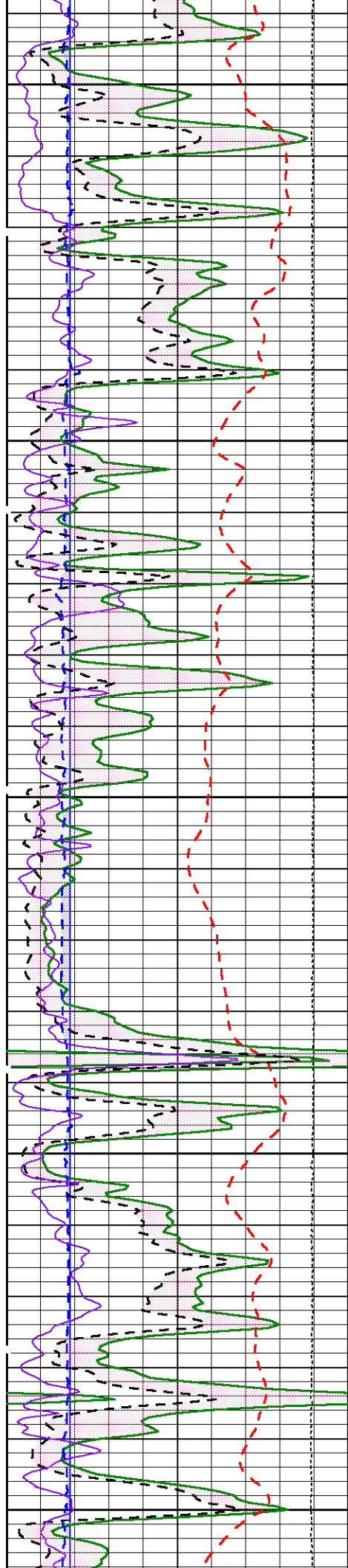




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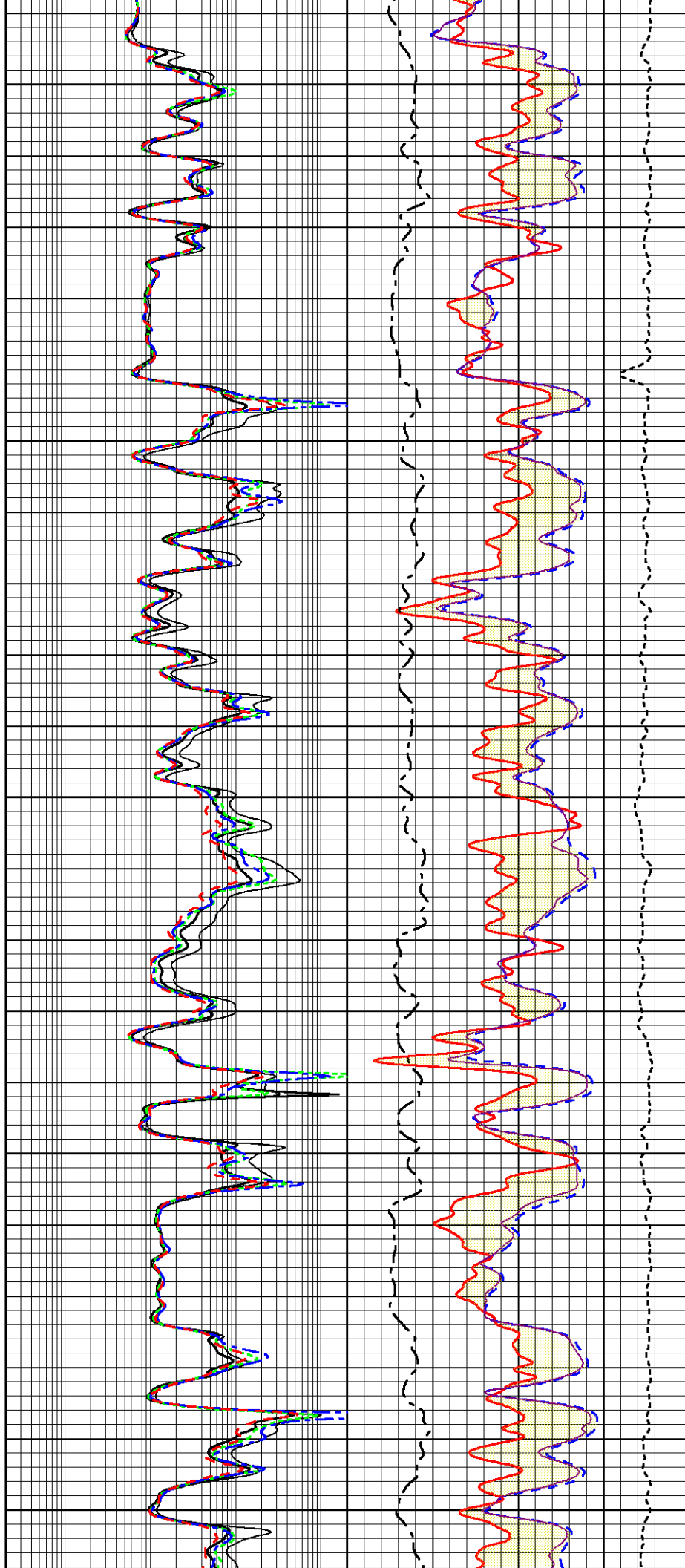


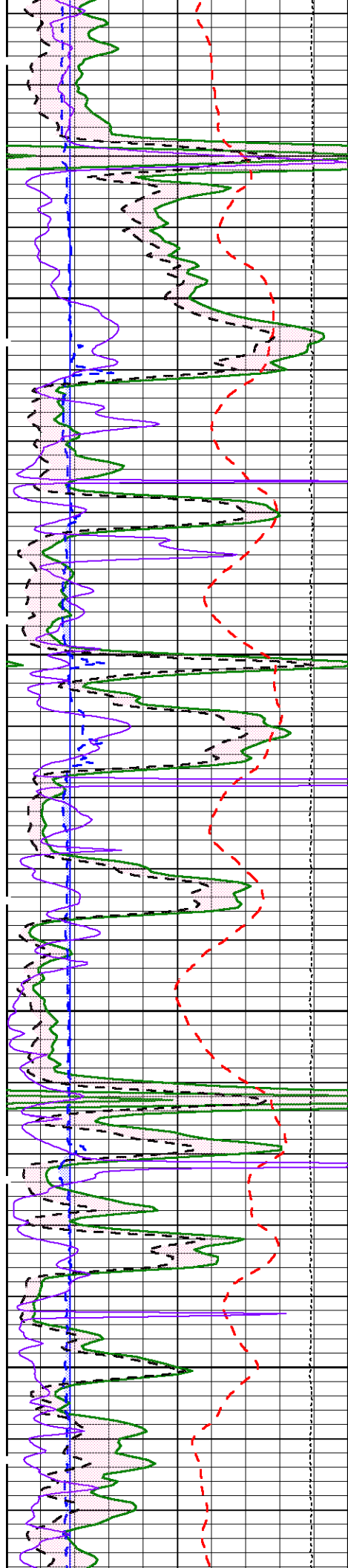


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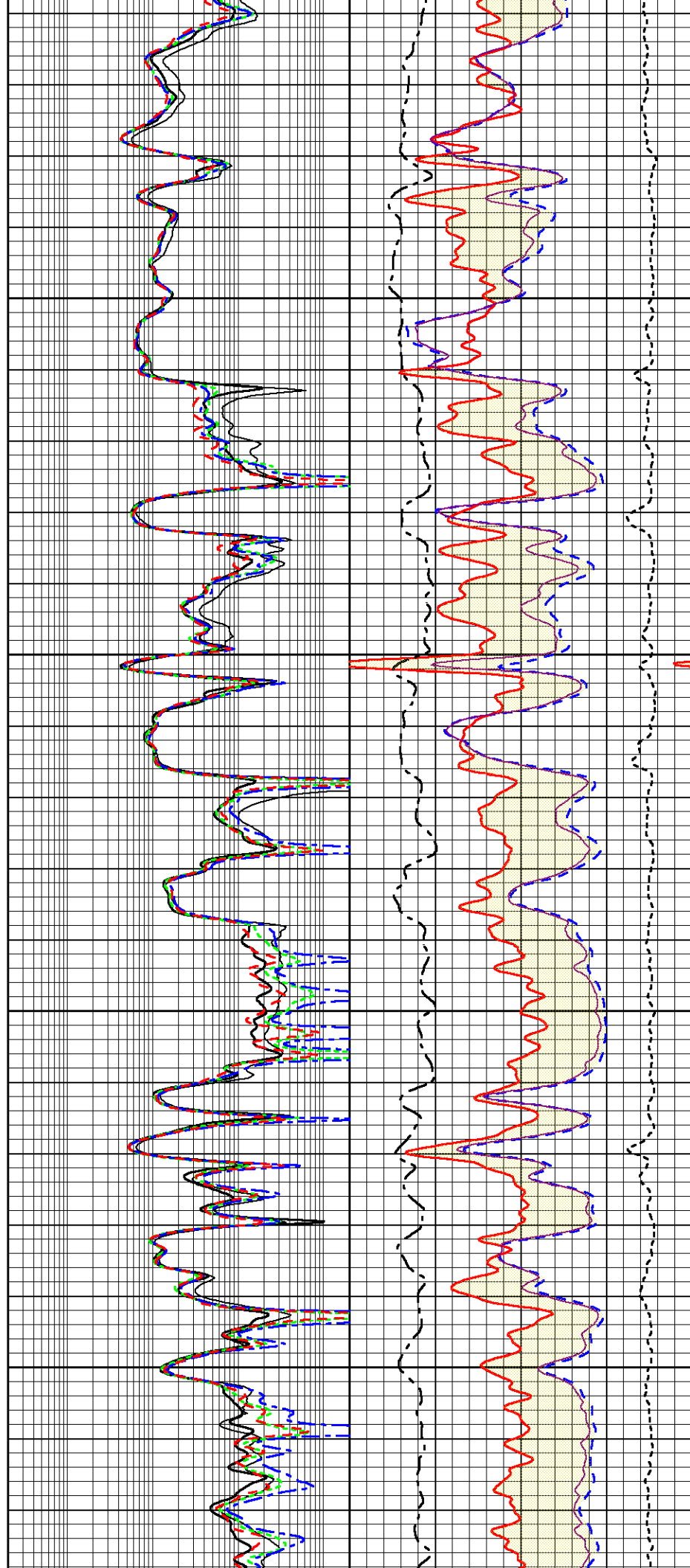
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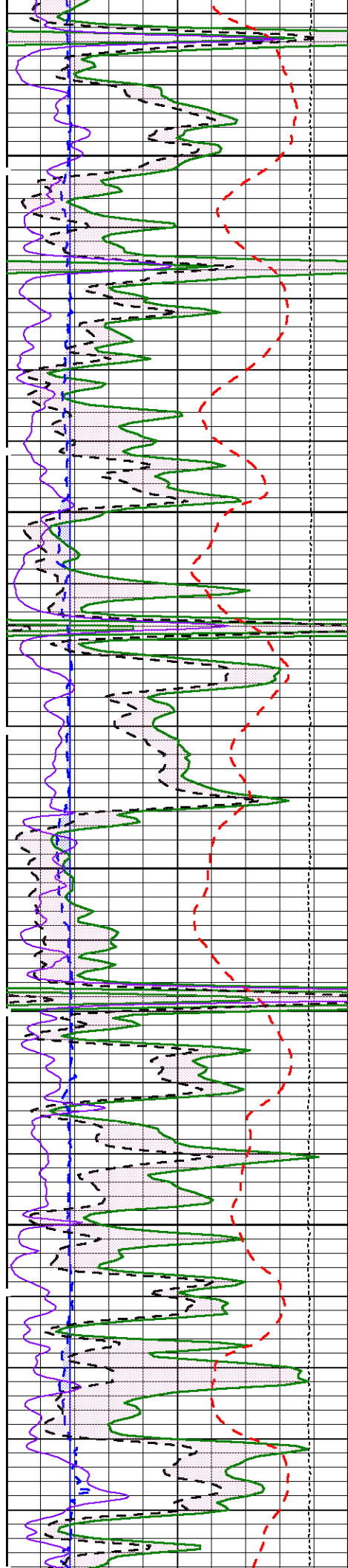




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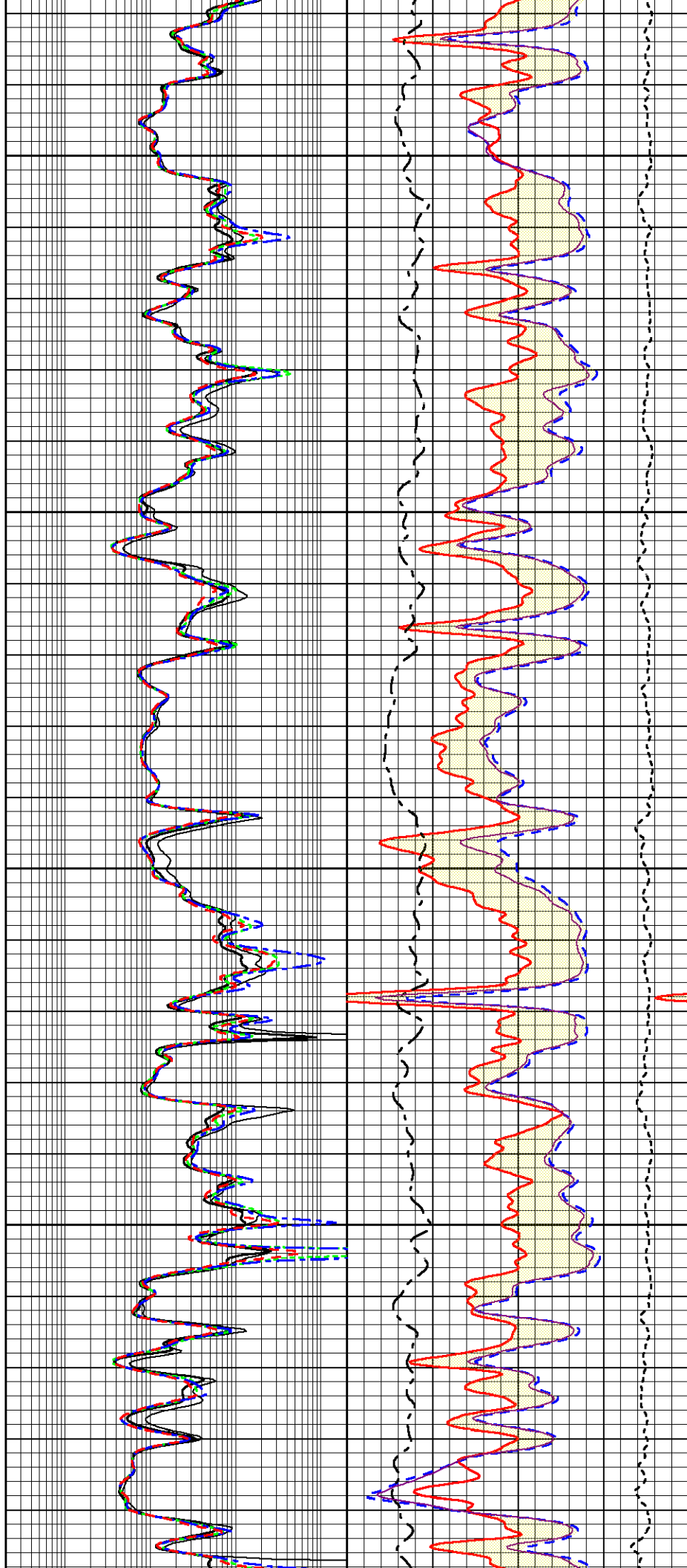
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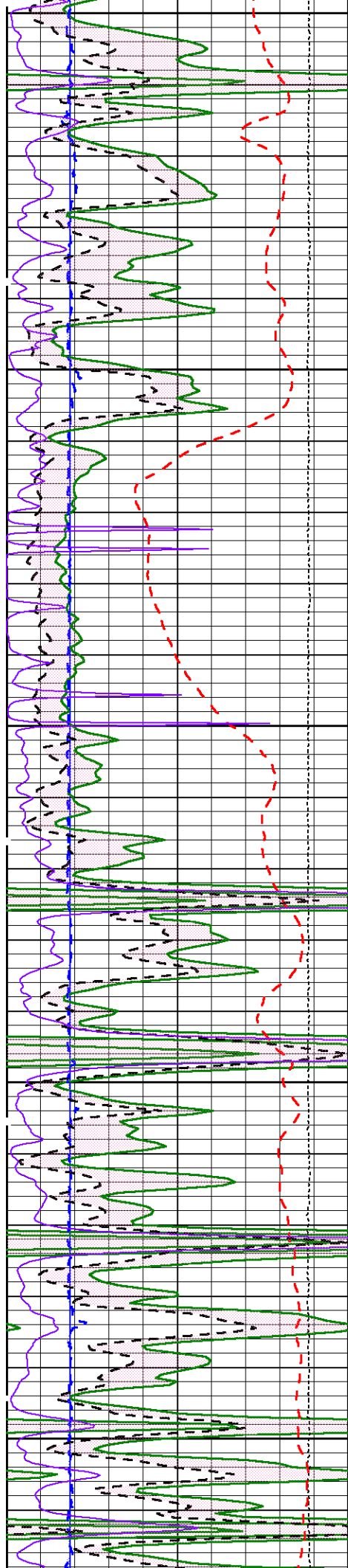




4600

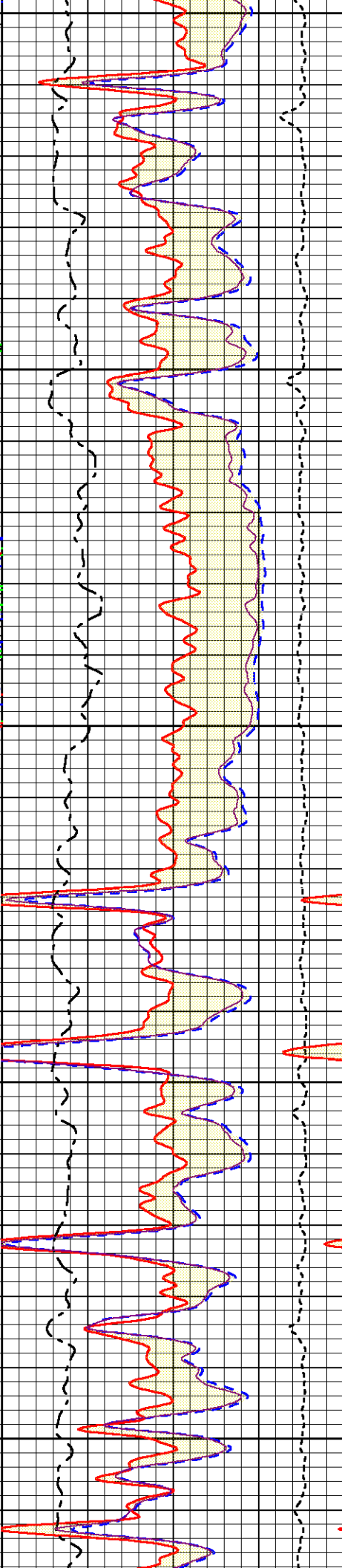
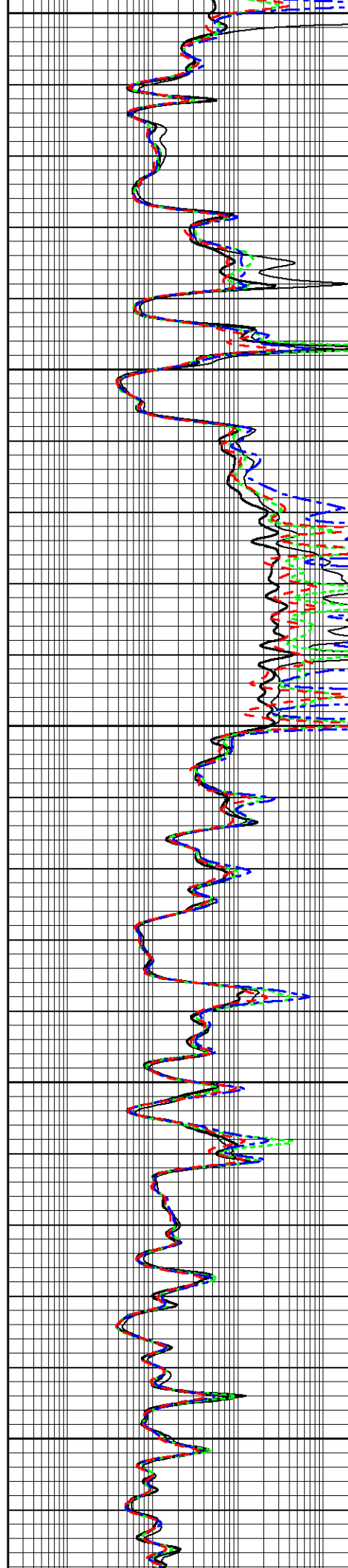
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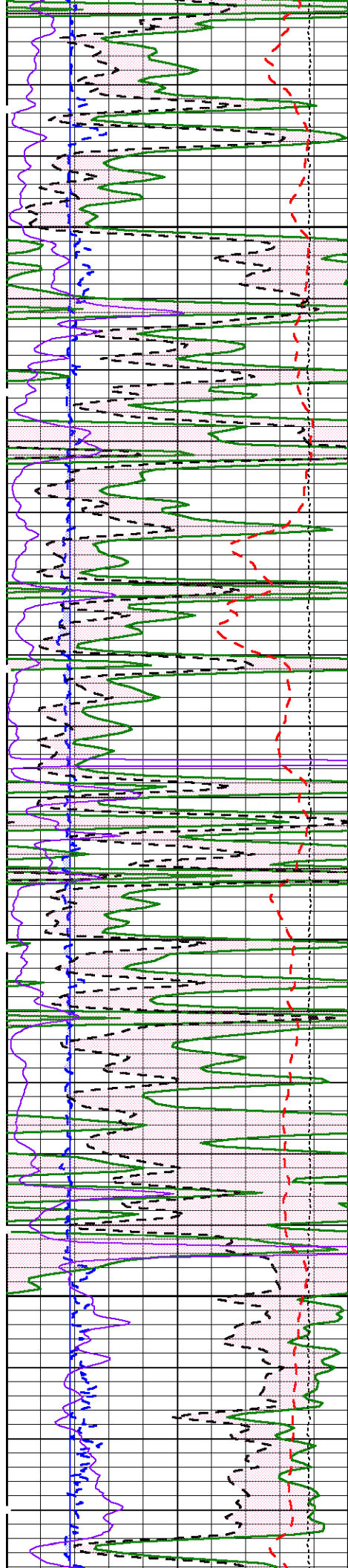




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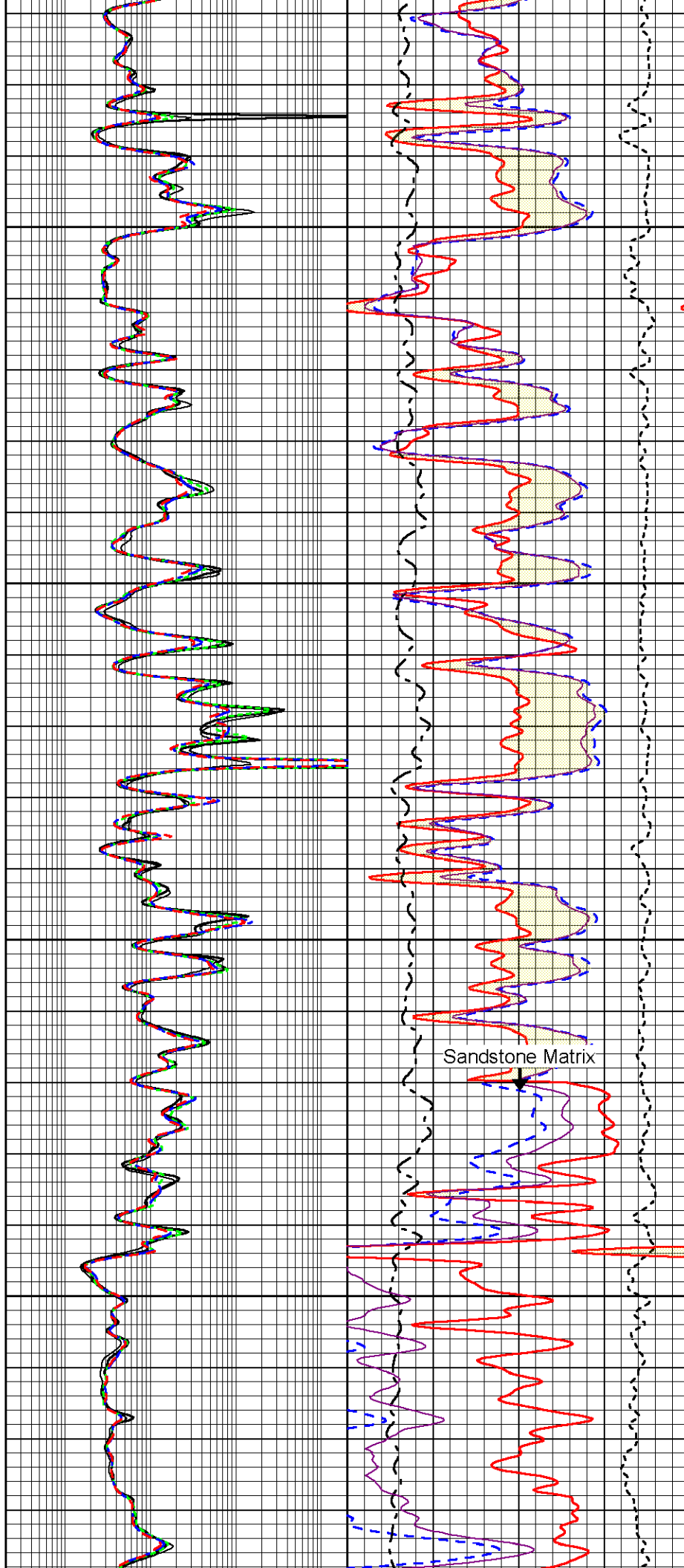
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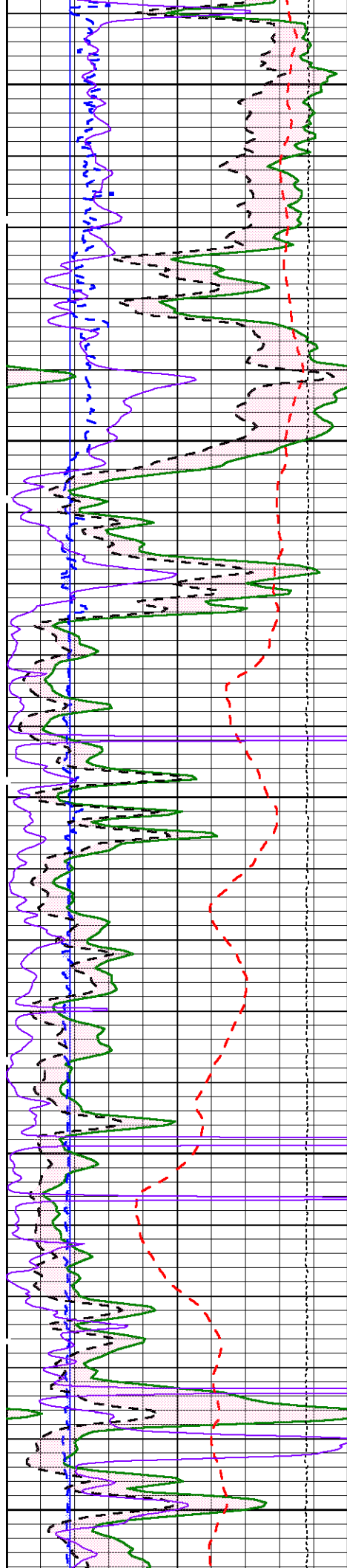


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5100



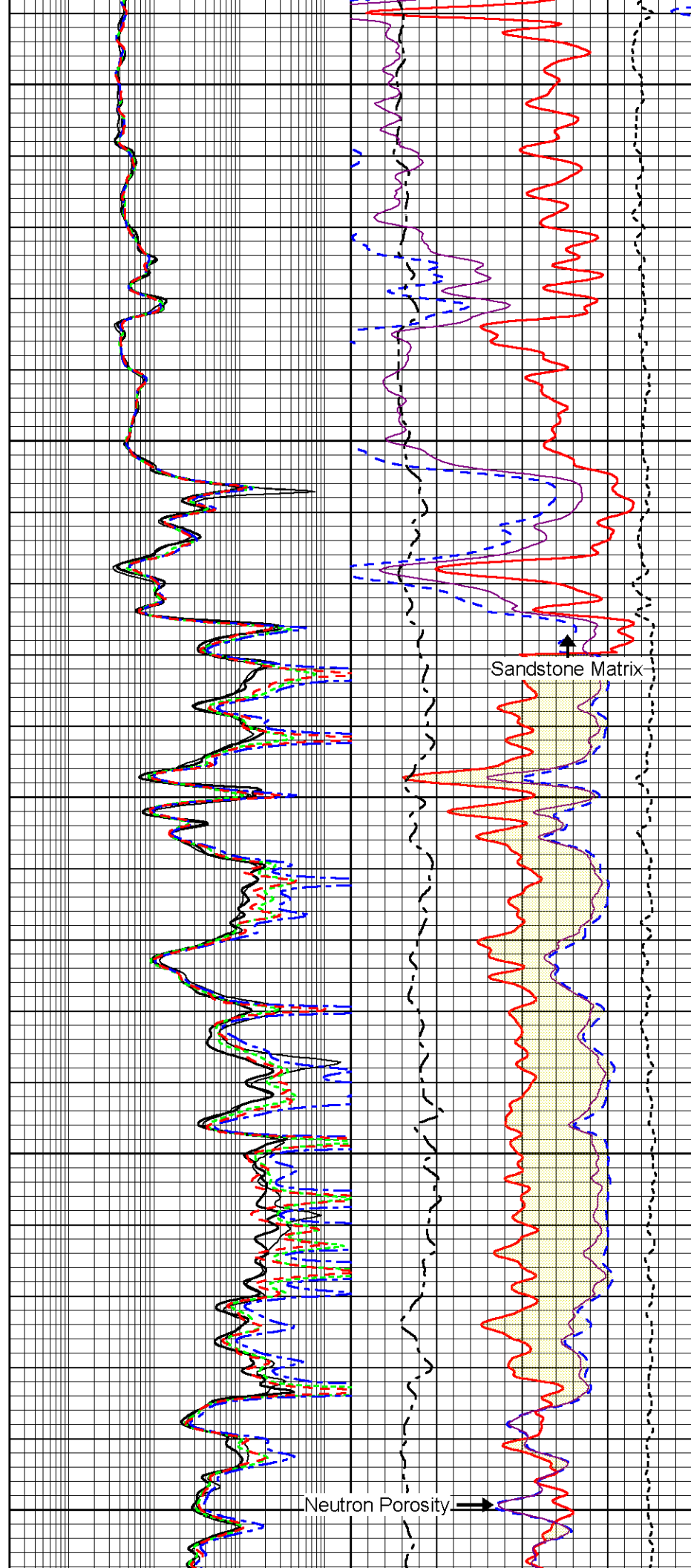
Sandstone Matrix



5200

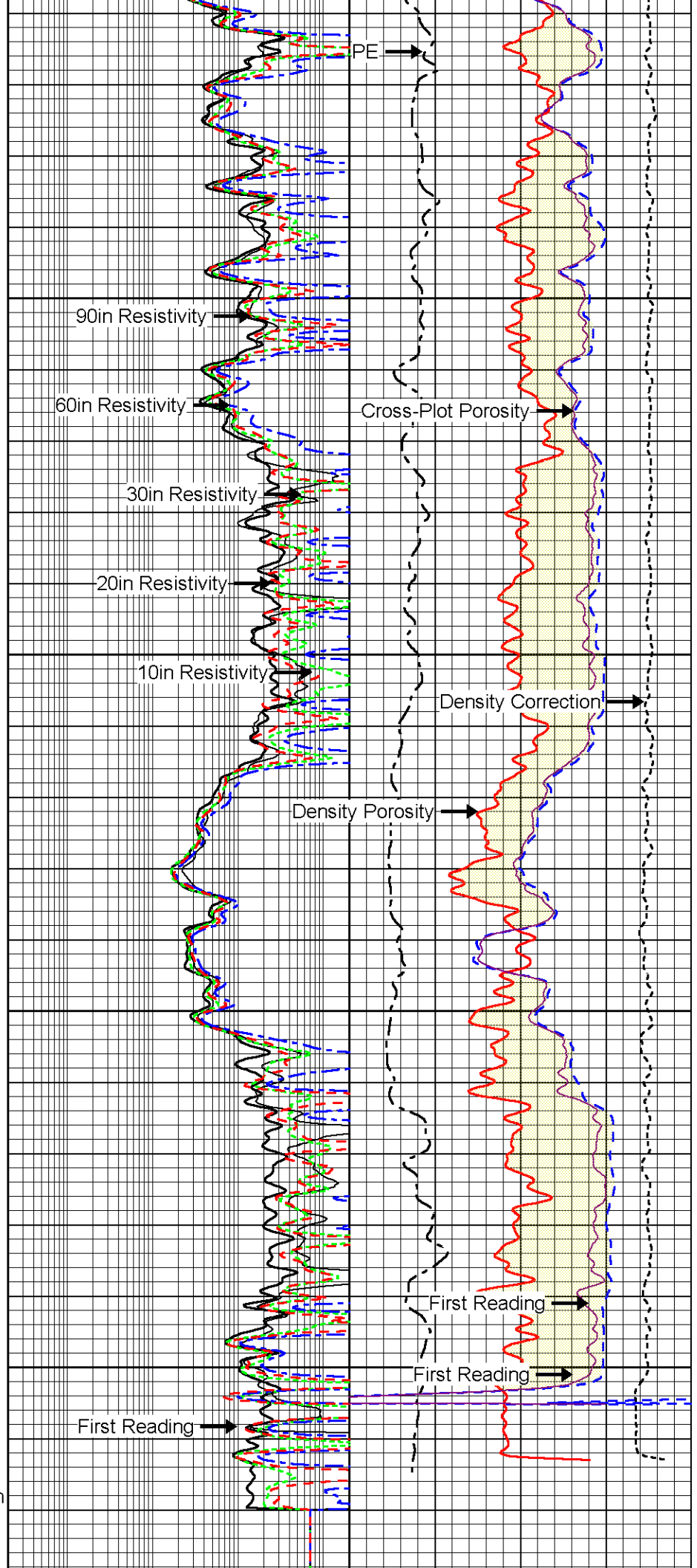
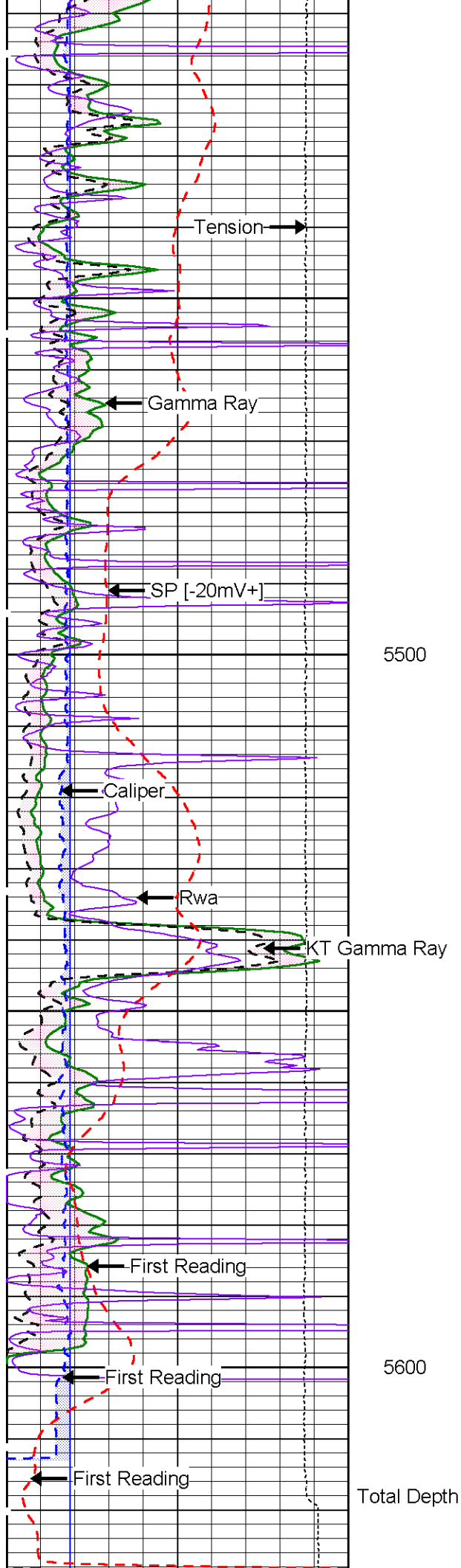
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Sandstone Matrix

Neutron Porosity



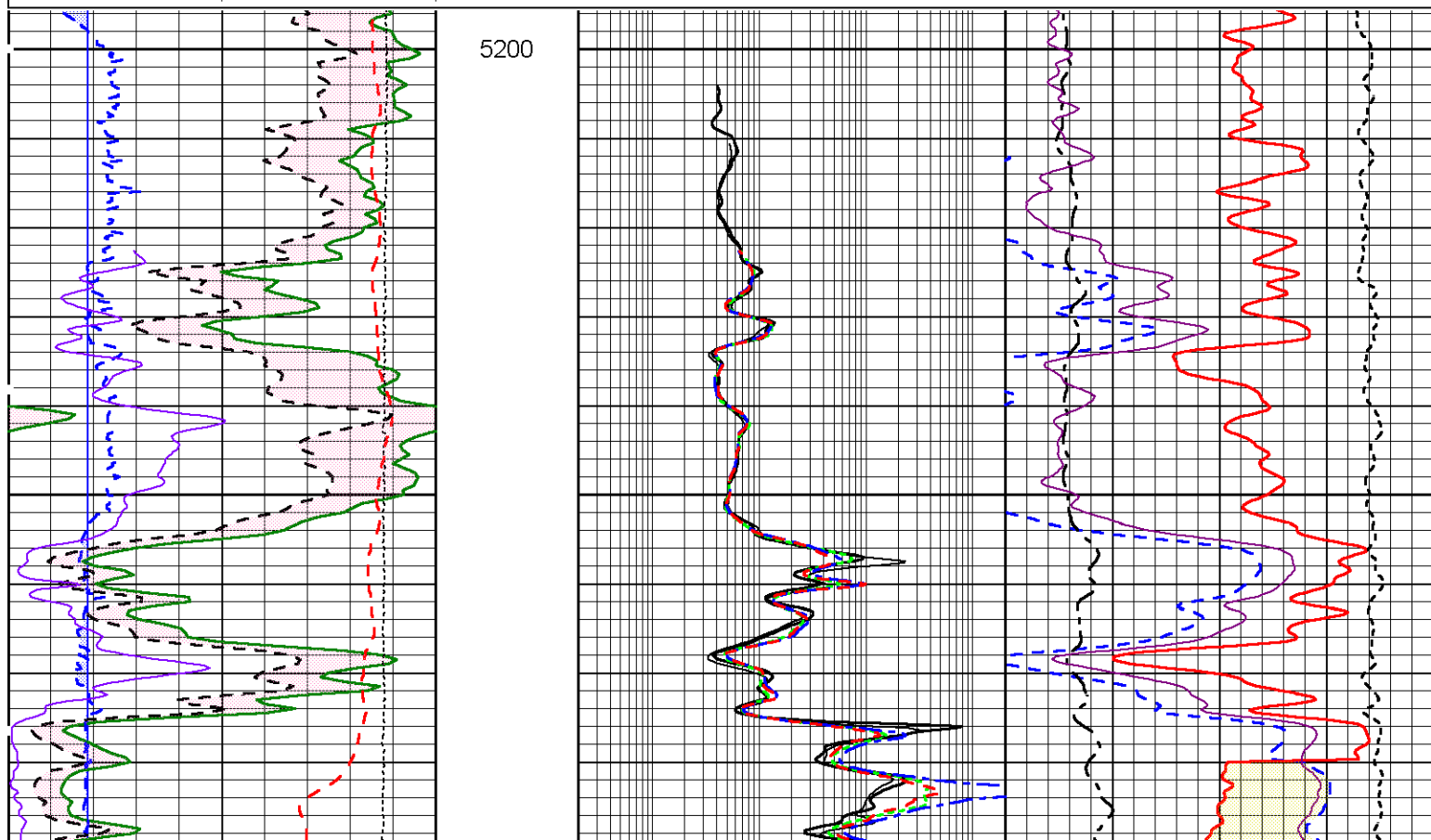
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0	Gamma Ray (GAPI)	150	0.2	20in Resistivity (Ohm-m)	2000	0.3	Density Porosity	-0.1
6	Caliper (in)	16	0.2	30in Resistivity (Ohm-m)	2000	0	PE	10
	SP [-20mV+]		0.2	60in Resistivity (Ohm-m)	2000		Density Correction	
0	KT Gamma Ray (GAPI)	150	0.2	90in Resistivity (Ohm-m)	2000		0.8 (g/cc)	-0.2
0	Rwa (Ohm-m)	1				0.3	Cross Plot Porosity	-0.1
	Tension							
	10000 (lb)	0						

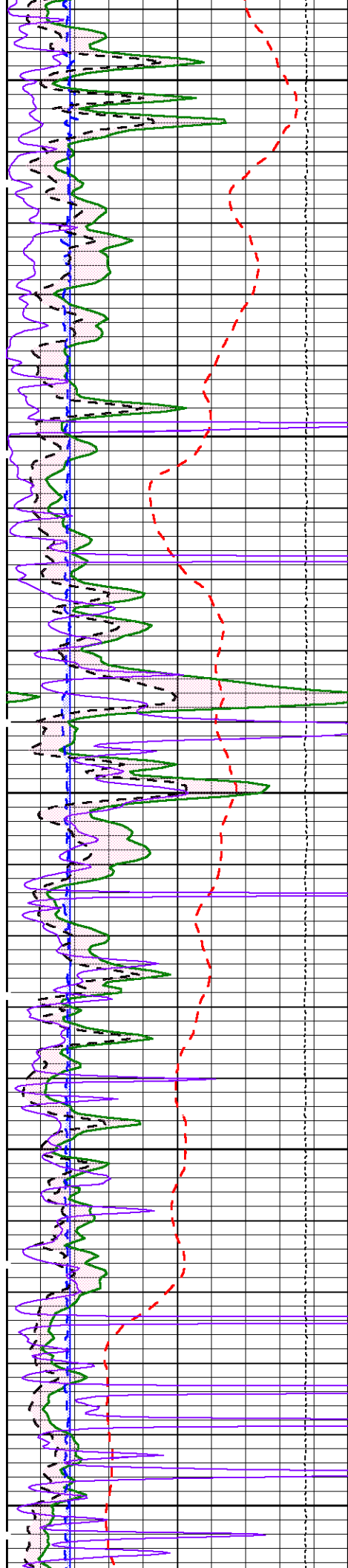


Repeat Pass Dolomite Matrix

Database File: pronghorn_uppr_14-5_1x.db
 Dataset Pathname: repeatdol
 Presentation Format: a3prong
 Dataset Creation: Mon Apr 01 06:35:21 2013 by Calc Sondex V7.03
 Charted by: Depth in Feet scaled 1:240

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0	Gamma Ray (GAPI)	150	0.2	20in Resistivity (Ohm-m)	2000	0.3	Density Porosity	-0.1
6	Caliper (in)	16	0.2	30in Resistivity (Ohm-m)	2000	0	PE	10
	SP [-20mV+]		0.2	60in Resistivity (Ohm-m)	2000		Density Correction	
0	KT Gamma Ray (GAPI)	150	0.2	90in Resistivity (Ohm-m)	2000		0.8 (g/cc)	-0.2
0	Rwa (Ohm-m)	1				0.3	Cross Plot Porosity	-0.1
	Tension							
	10000 (lb)	0						

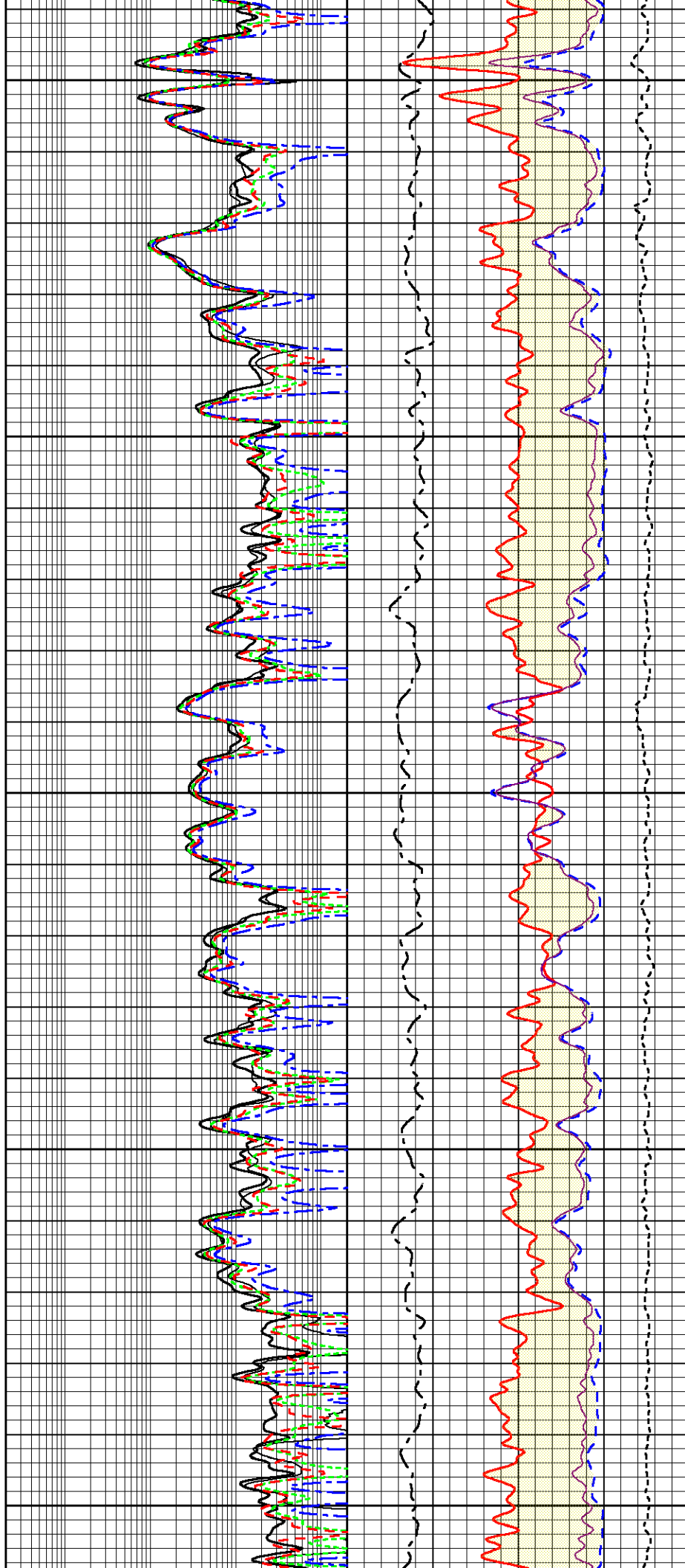


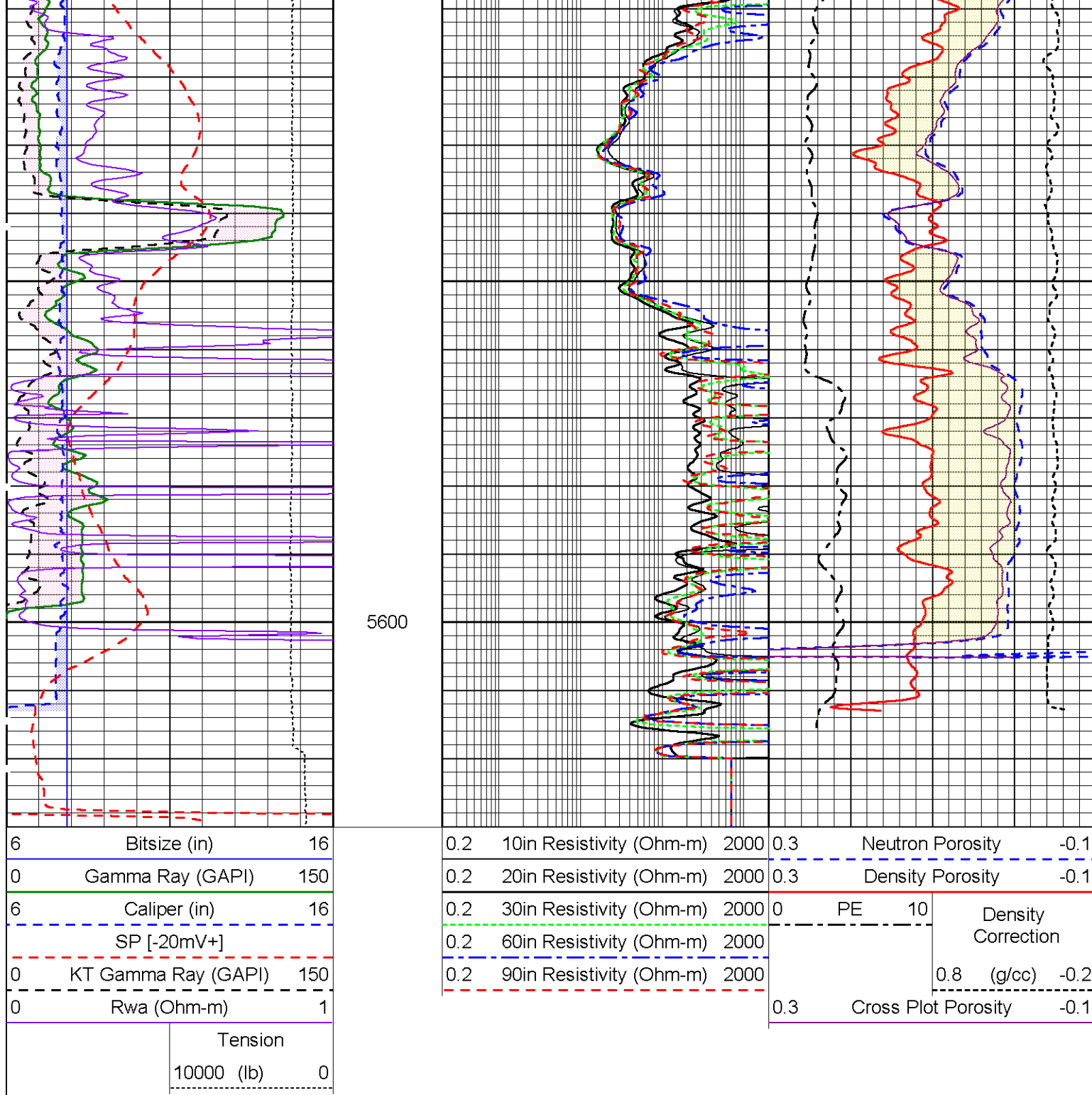


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Log Variables

Database: C:\Warrior\Data\pronghorn_uppr_14-5_1x.db

Dataset: field/well/run1/dolo

Top - 1688.00 ft

FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.75	DE-CENT Yes	CASED? Yes	CASEWGT lb/ft 24
NPORSEL Dolomite	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.87	SPSHIFT mV -80	CASEOD in 8.625	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 12.25	A 1	M 2			

3023	124	12.25	1	2			
1688.00 ft - 5120.00 ft							
FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.75	DE-CENT Yes	CASED? No	CASEWGHT lb/ft 17
NPORSEL Dolomite	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.87	SPSHIFT mV -80	CASEOD in 5.5	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 7.875	A 1	M 2			

5120.00 ft - 5280.00 ft							
FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.75	DE-CENT Yes	CASED? No	CASEWGHT lb/ft 17
NPORSEL Sandstone	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.65	SPSHIFT mV -80	CASEOD in 5.5	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 7.875	A 1	M 2			

5280.00 ft - Bottom							
FRMSALIN kppm 0	MUDSALIN kppm 0	DEVI ° 0	SRFTEMP degF 68	SO in 0.75	DE-CENT Yes	CASED? No	CASEWGHT lb/ft 17
NPORSEL Dolomite	AIR_HOLE? No	MudWgt lb/gal 9	FLUIDDEN g/cc 1	MATRXDEN g/cc 2.87	SPSHIFT mV -80	CASEOD in 5.5	PERFS 0
TDEPTH ft 5623	BOTTEMP degF 124	BOREID in 7.875	A 1	M 2			

Calibration Report								
Database File:	pronghorn_uppr_14-5_1x.db							
Dataset Pathname:	repeatdol							
Dataset Creation:	Mon Apr 01 06:35:21 2013 by Calc Sondex V7.03							
Induction Array Tool Calibration Report								
Serial Number:				B10110				
Tool Model:				002				
Master Calibration Performed:				Thu Oct 04 13:27:29 2012				
Temperature:				85.6 degF				
Sonde Error:								
Array	1	2	3	4	5	6	7	
Real	190.3	-13.2	-39.0	-14.3	-2.6	2.9	2.2	mmho/m
Imaginary	-2.6	10.4	-5.6	-5.9	-21.5	4.2	0.4	mmho/m

Loop Gain:								
Array	1	2	3	4	5	6	7	
Loop (real)	537.7	678.5	1295.3	1394.1	1144.8	712.8	404.8	mmho/m
Loop (imaginary)	73.3	92.5	389.8	419.5	344.5	214.5	121.8	mmho/m
Real	757.8	730.3	1244.5	1374.3	1158.6	740.8	421.9	mmho/m
Imaginary	73.2	115.2	380.7	415.8	329.9	225.7	130.4	mmho/m
Gain (real)	0.947	0.913	1.009	1.004	0.986	0.966	0.964	
Gain (imaginary)	0.967	0.883	1.009	0.995	0.980	0.969	0.937	

Before Survey Verification Performed:				Thu Oct 04 13:29:32 2012			
Sonde 1 Temperature:				83.1 degF			
Sonde 2 Temperature:				86.7 degF			
Array 1 Temperature:				83.1 degF			
Array	1	2	3	4	5	6	7
TxlR	-0.0	-0.0	0.1	0.1	0.1	0.1	0.1
TxlX	-0.0	-0.0	-0.2	-0.2	-0.2	-0.2	-0.2
Tx Magnitude	0.0	0.0	0.2	0.2	0.2	0.2	0.2
Gain	121.5	180.0	190.0	190.0	190.0	190.0	190.0
RxCR	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0
RxCX	0.2	0.2	0.2	0.2	0.2	0.2	0.2
RxC Magnitude	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Tool Module Parameters							
Software Version:				1.9.1.0			
Borehole Size Source:				CALI			
Mud Resistivity Source:				Hilchie			
Mud Resistivity At Surface:				0.80 Ohm-m			
Mud Resistivity Surface Temperature:				75.0 degF			
Borehole Corrections:				Automatic			
Minimum Standoff:				1.4 in			

Litho Density Tool Calibration Report

Serial Number:	B5302S50130B
Tool Model:	002

Caliper Calibration Performed:				Fri Feb 22 11:41:00 2013			
	Diameter			Reading			
Small Ring:	6.000	in		1487.600	cps		
Large Ring:	13.000	in		2139.900	cps		
Gain:	0.0107						
Offset:	-10.5038						

Master Calibration Performed:				Tue Mar 05 12:07:40 2013			
Source Number:				50130B			
Medium:				Water			
Al Block Density:				2.6016 g/cc			
	Background	Al Block	Al Block + Fe				
SS1	780.5	4386.8	3774.6	cps			
SS2	2197.3	29044.2	24959.6	cps			
SSTOTAL	5207.4	46782.0	39943.5	cps			
LITH	84.9	469.7	282.6	cps			
LL	170.9	807.6	709.1	cps			
LU	482.6	1021.7	947.6	cps			
LS	653.5	1829.3	1656.7	cps			
LSTOTAL	1250.4	4515.2	3655.9	cps			
SSHV	1452.1	1455.2	1455.7	V			
L SHV	1475.1	1474.2	1475.4	V			

SSHV	1475.1	1474.2	1475.4	V
SSFF	0.002	0.009	0.007	
LSFF	-0.007	0.008	0.007	

Before Survey Verification Performed:
After Survey Verification Performed:

	Master Background	Before Survey Background	After Survey Background	
SS1	780.5			cps
SS2	2197.3			cps
SSTOTAL	5207.4			cps
LITH	84.9			cps
LL	170.9			cps
LU	482.6			cps
LS	653.5			cps
LSTOTAL	1250.4			cps
SSHV	1452.1			V
LSHV	1475.1			V
SSFF	0.002			
LSFF	-0.007			

Tool Module Parameters

Software Version: 2.5.1.0
Borehole Size Source: CALI
Pad Type: 2

Compensated Neutron Tool Calibration Report

Serial Number: C7985S66010B
Tool Model: 009

Master Calibration Performed: Wed Mar 20 22:16:15 2013

Source Number: 66010B

Short Spacing Counts: 6783.48 cps
Long Spacing Counts: 298.71 cps
High Voltage: 1375.68 V

Target Ratio: 23.9200
Ratio: 22.7092
K-Factor: 1.0533

Before Survey Verification Performed:
After Survey Verification Performed:

Verifier Number: 6494

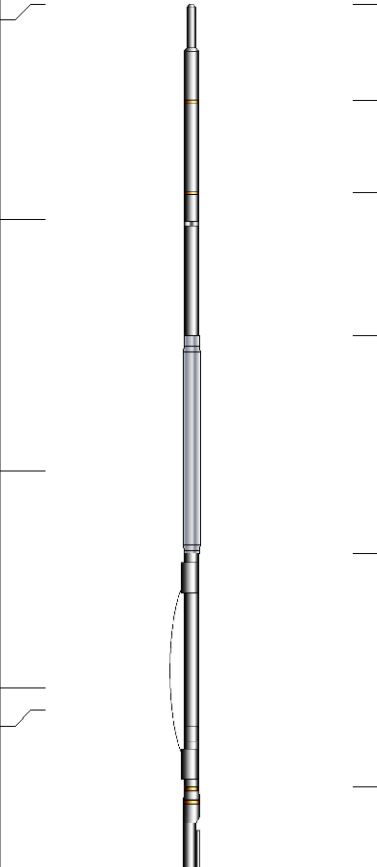
Verifier Values	Master Cal	Before Survey	After Survey	
Short Spacing Counts:	230.60			cps
Long Spacing Counts:	254.13			cps
High Voltage:	1375.63			V
Ratio:	0.9074			

Tool Module Parameters

Software Version: 1.5.0.0
Borehole Size Source: CALI
Clip Crossplot Porosity: YES

Spectral Gamma Ray Tool Calibration Report

Serial Number: 220344 Tool Model: 002	
Performed:	Wed Mar 27 10:17:59 2013
Source Number:	Th Blanket #14
Calibrator Value:	217.0 API
Background Reading:	476.3 cps
Calibrator Reading:	2122.6 cps
Sensitivity:	0.132 API / cps
Before Survey Verification Performed: After Survey Verification Performed:	
	Before Survey After Survey
Background Reading	cps
Verifier Reading:	cps
Tool Module Parameters	
Software Version:	1.8.8.0
Gamma Ray Calibration Report	
Serial Number: 10009990 Tool Model: 001	
Performed:	Wed Mar 27 09:56:46 2013
Calibrator Value:	236.0 GAPI
Background Reading:	205.7 cps
Calibrator Reading:	961.5 cps
Sensitivity:	0.3122 GAPI/cps

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
CHD	42.61		CHD-001 (000004) Cable Head	2.19	3.38	35.00
			XTU-008 (10007730) Crossover Ultrawire Toolbus to Ultralink	2.08	3.38	47.00
GR	37.73		GRT-001 (10009990) Gamma Ray Tool	3.22	3.38	69.00
SGR	32.05		SGR-002 (220344) Spectral Gamma Ray Tool	4.94	3.88	120.00
CNLSC CNSSC	27.16 26.66		CNL-009 (C7985S66010B) Compensated Neutron Logging Tool	5.27	3.38	125.00

