

# HALLIBURTON

## RESERVOIR MONITORING TOOL ELITE

Company URSA OPERATING COMPANY LLC  
Well MONUMENT RIDGE B 44C-08-7-95  
Field PARACHUTE  
County GARFIELD State CO

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Field PARACHUTE  
County GARFIELD State CO

API No.: 05045229640000 Serv. #: 903669012  
Location: SHL: 1000' FSL & 144' FEL  
BHL: 576' FSL & 670' FEL

Other Services

Permanent Datum GROUND LEVEL Elevation 5702'  
Log Measured From KB, 17' Ft. above perm. datum  
Drilling Measured From KB

Date @ Time Logged	27 NOV 2016 @ 17:00		Type Fluid in Hole	FRESH WATER	Elevation	5719'	
Run No.	ONE		Density of Fluid	8.4 PPG	D.F.	5719'	
Depth - Driller	7098'		Fluid Level	SURFACE	G.L.	5702'	
Depth - Logger	6832'		Cement Top Est. Logged	1405'			
Bottom - Logged Interval	6628'		Equipment / Location	11808537 / RS, WY			
Top - Log Interval	3203'		Recorded by	B. RIDDEL			
Max. Recorded Temp.	208 degF		Witnessed by	R. TOLLE			
CEMENTING DATA			Protection		Liner		
Date / Time Cemented	String		String				
Primary / Squeeze	N/A		N/A		N/A		
Expected Compressive Strength	N/A	psi@ N/A hrs	N/A	psi@ N/A hrs	N/A	psi@ N/A hrs	
Cement Volume	N/A		N/A		N/A		
Cement Type / Weight	N/A	/ N/A	N/A	/ N/A	N/A	/ N/A	
Formulation	N/A		N/A		N/A		
Mud Type / Mud Wgt.	N/A	/ N/A	N/A	/ N/A	N/A	/ N/A	
Borehole Record			Casing & Tubing Record				
Run Number	Bit	From	To	Size	Weight	From	To
ONE	2 1/4"	SURFACE	60'	16"	75.5 #	SURFACE	60'
TWO	12.25"	60'	1712'	8.625"	32.0 #	SURFACE	1712'
THREE	7.875"	1712'	7098'	4.5"	11.6 #	SURFACE	7098'

<<< Fold Here >>>

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.

Comments

ESTIMATED TOP OF CEMENT : 1405'  
GAMMA BLANKET : 408 GAPI  
FREE PIPE CALIBRATION DEPTH : 253'

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SVCS.  
YOUR CREW TODAY: BLAKE RIDDEL, DANIEL FLINDERS, BRAD BRUDERER

Service Ticket No. 903669012      API No. 05045229640000      PGM Ver 15.10.29001

The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client

EQUIPMENT DATA

XHU		GAMMA		RMTI		CBL	
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	12146425	Serial No.	11224503	Serial No.	11680606	Serial No.	11836468
Model No.	XHU-3	Model No.	TTTC-U2	Model No.	RMTI	Model No.	CBLM
Diameter	1 11/16"	Diameter	1 11/16"	Diameter	2.25"	Diameter	2.75"

LOGGING DATA

General Data

Pass	Depths		Well Head	Speed	Logging Run Comments		
No	From	To	Pressure	Ft/Min			

ONE	4000'	3750'	0 PSI	20	REPEAT		
TWO	6832'	3203'	0 PSI	20	MAIN		
	GAMMA		SIGMA		AMPLITUDE		
Pass	Scale		Scale		Scale		Scale
No.	L	R	L	R	L	R	L L
ONE	0	200	60	0	0	100	
TWO	0	200	60	0	0	100	
DIRECTIONAL INFORMATION							
Maximum Deviation			deg. @		KOP		

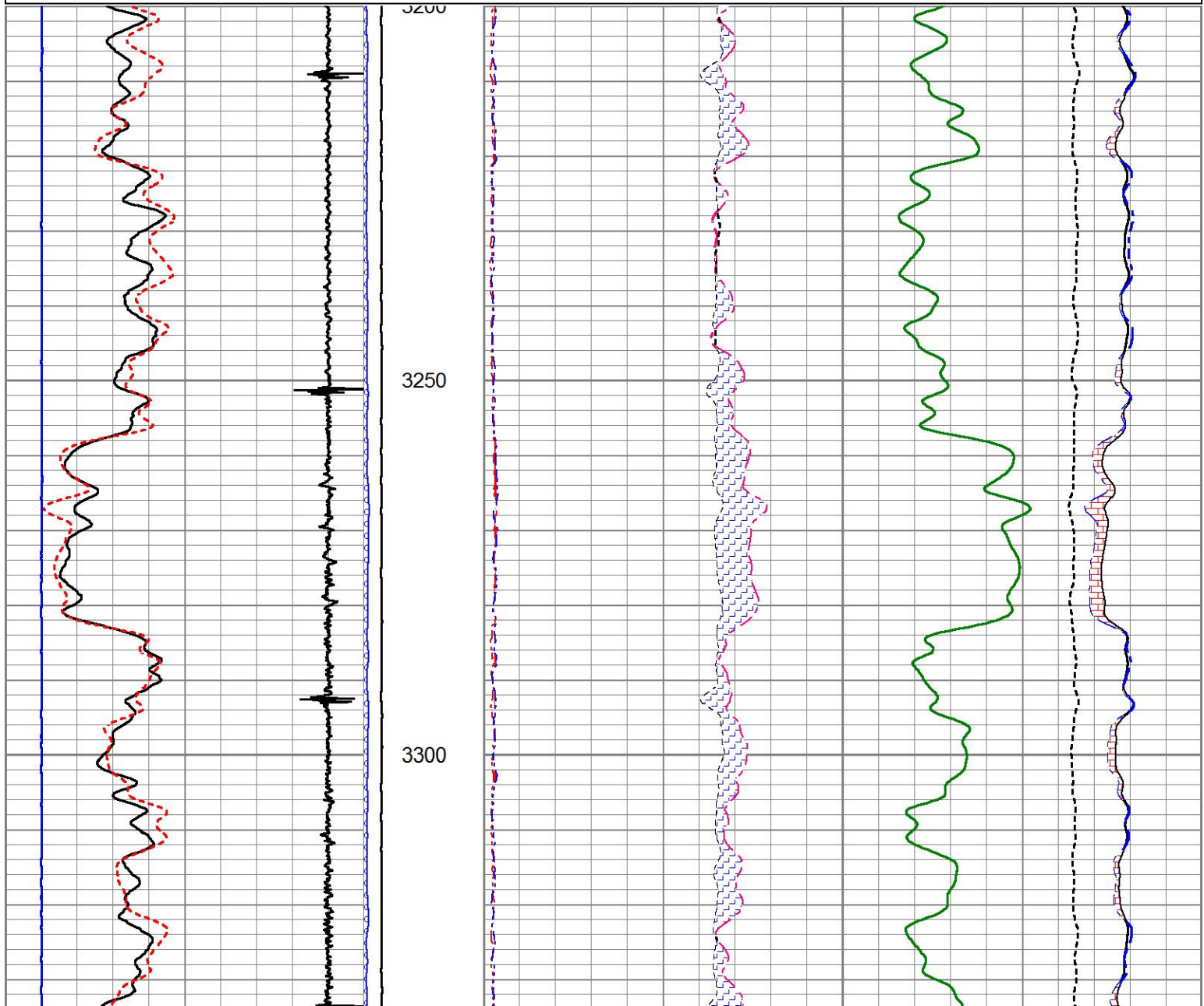
**HALLIBURTON**

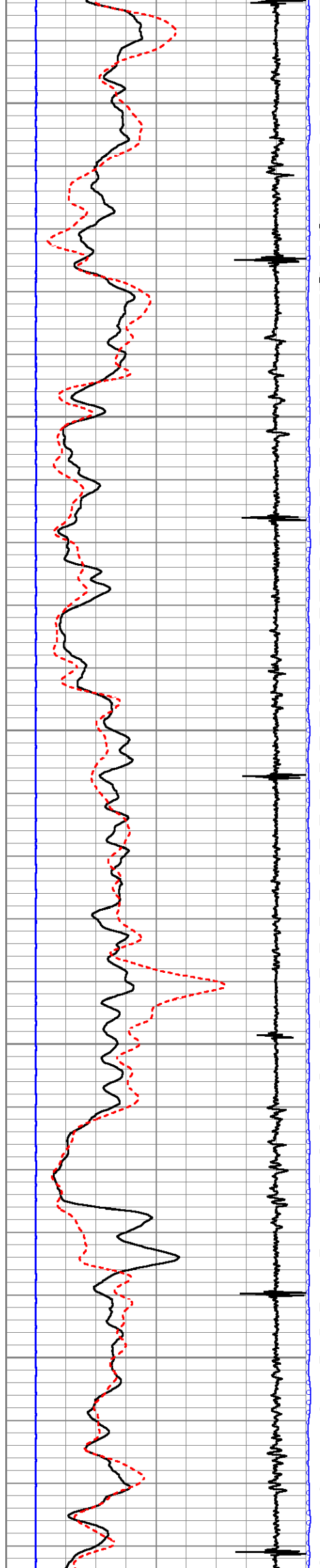
**MAIN PASS**

5" = 100'

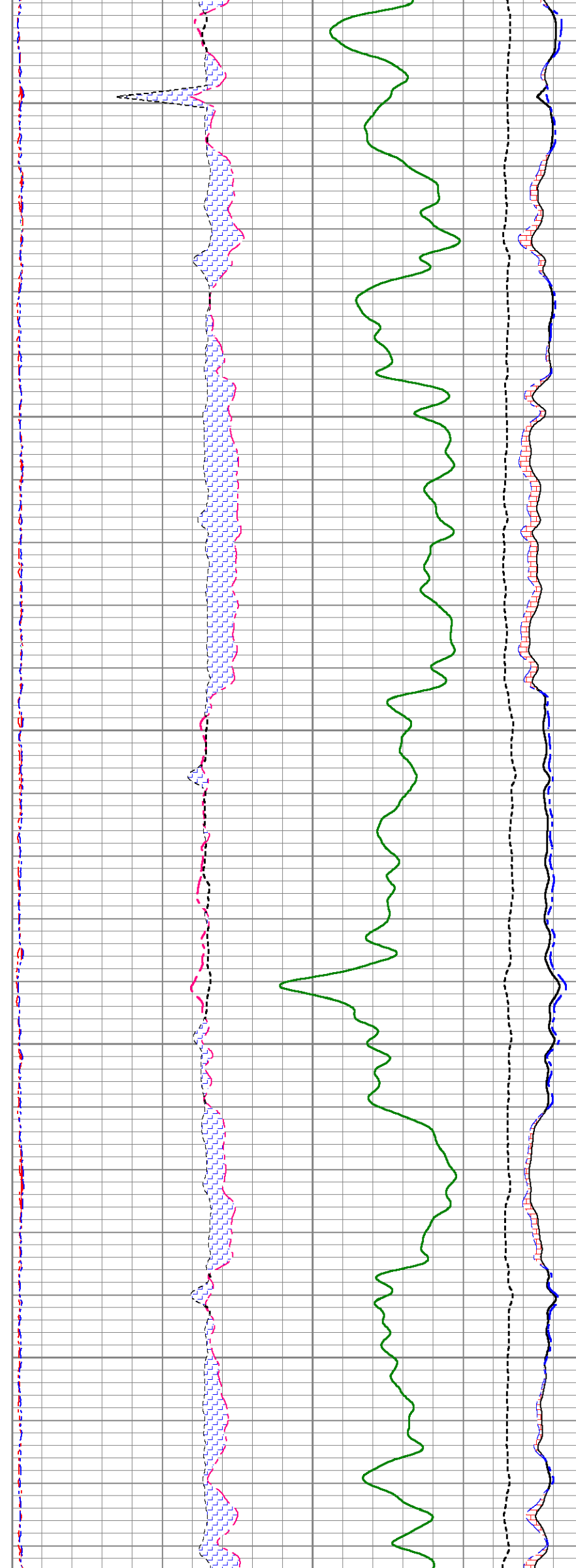
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Dataset Pathname    pass10  
Presentation Format   !!!!rmt\_rmti  
Dataset Creation     Sun Nov 27 18:24:59 2016  
Charted by            Depth in Feet scaled 1:240

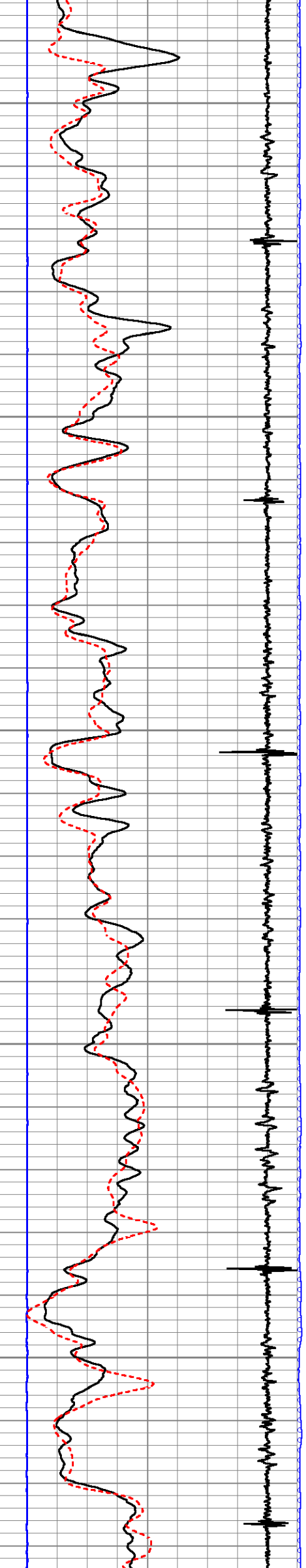
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0	LSPD (ft/min)	200	0 OAI1100	1.65	RIN (Ratio Near/Far Incl)	0.65 60000 NCAP 0
10	SGINear	40		0	NFTR (Near Fit Error)	100 60000 FCAP 0
				0	FFTR (Far Fit Error)	100





3350  
3400  
3450  
3500  
3550





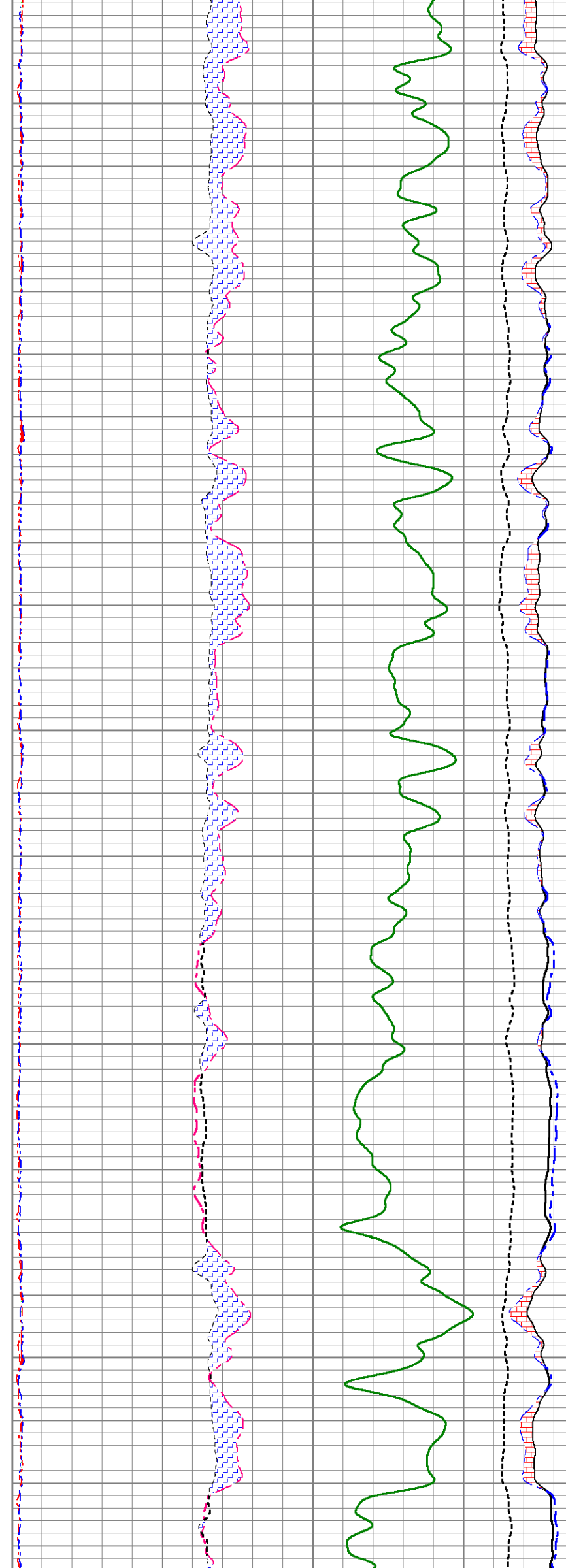
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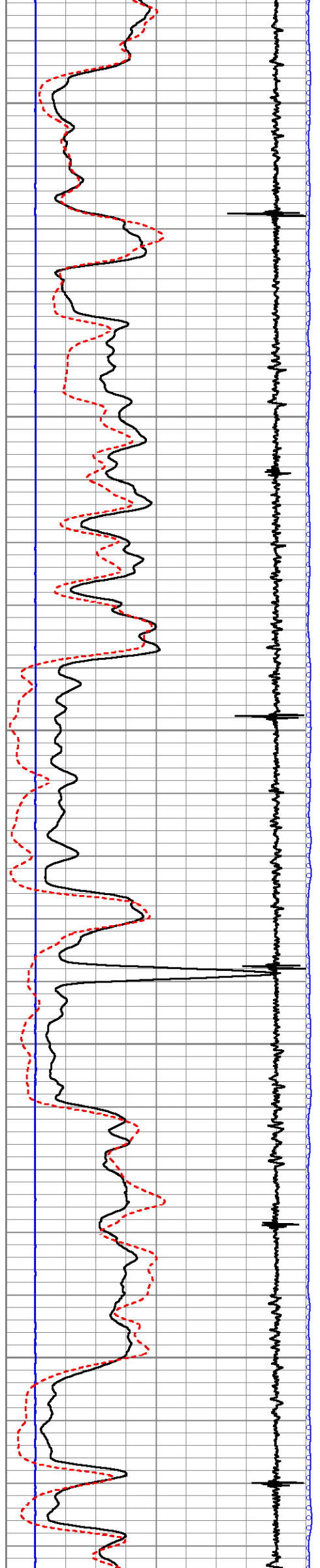
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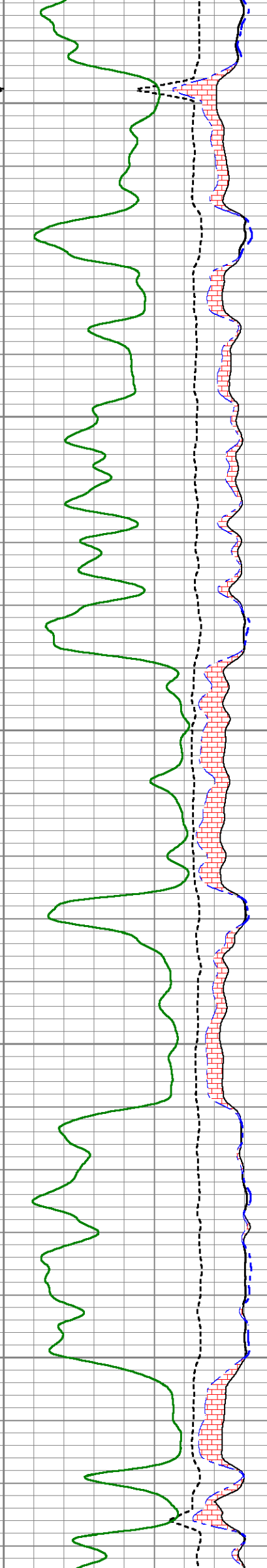
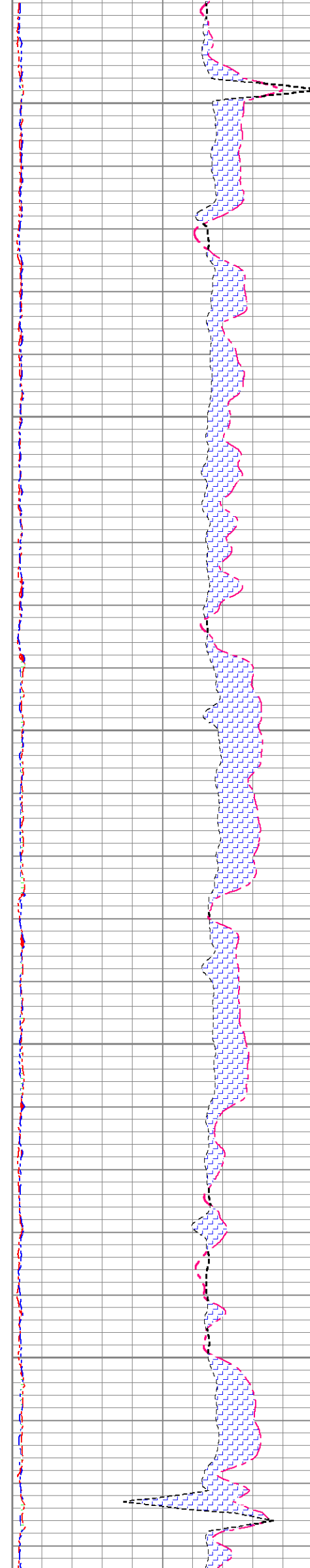
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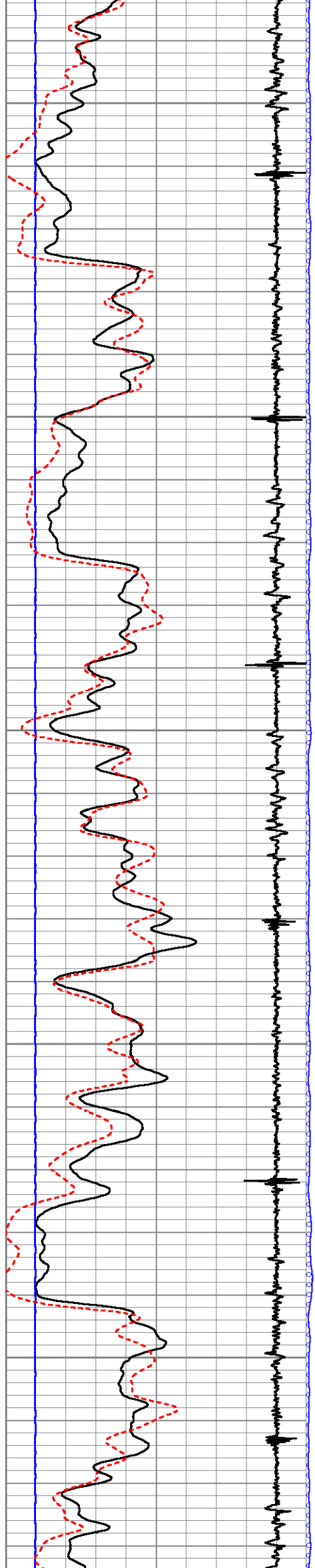
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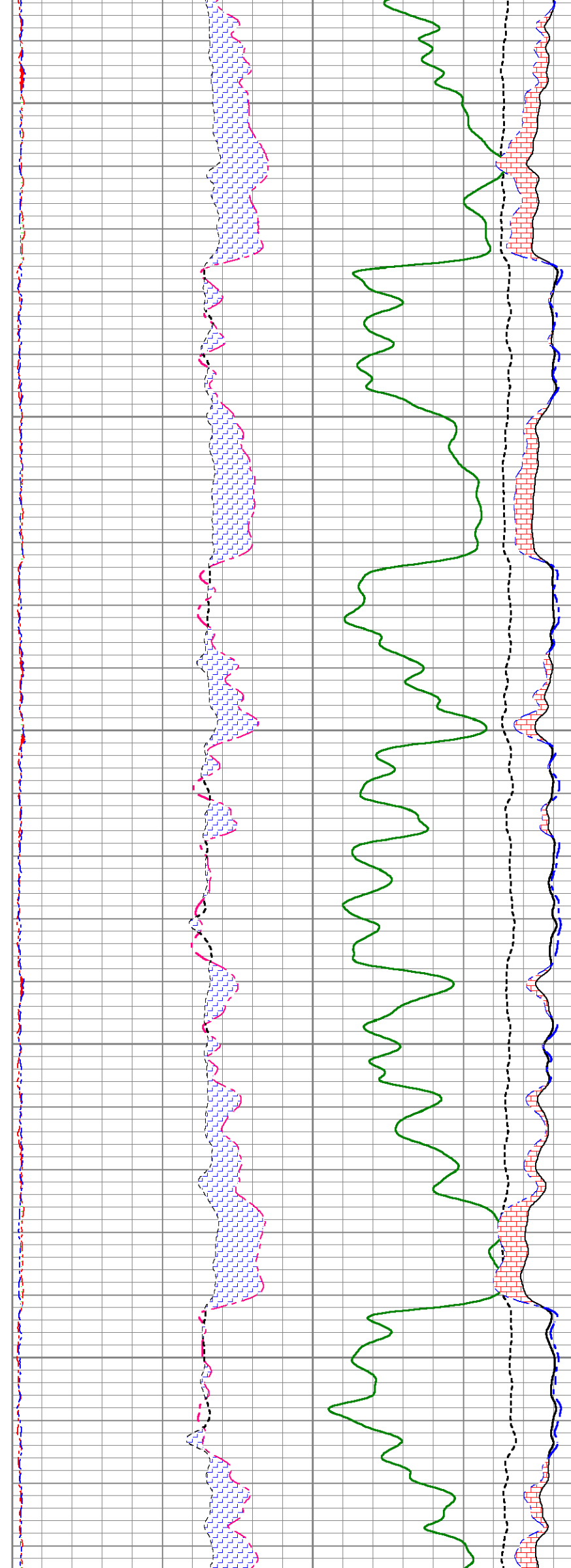
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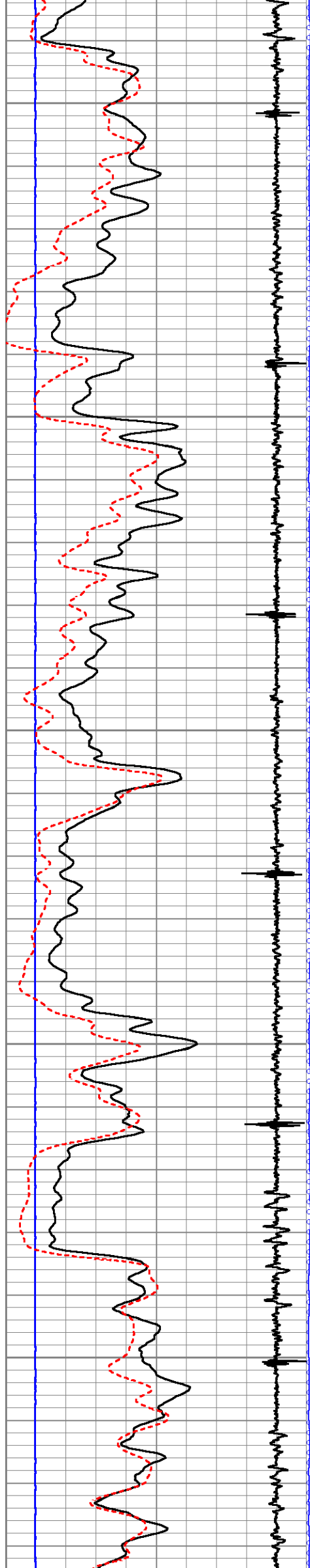
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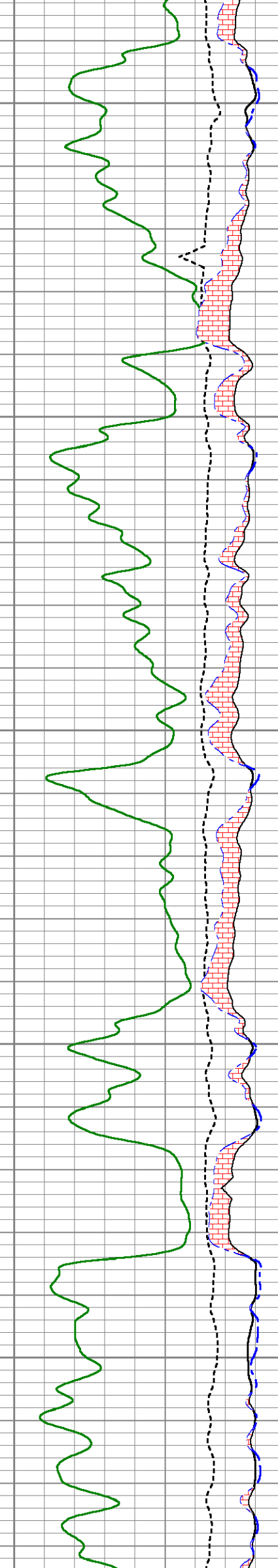
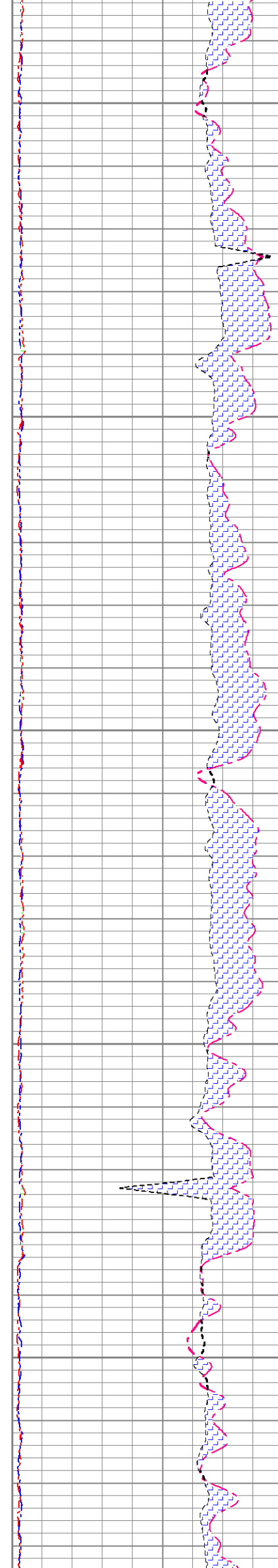
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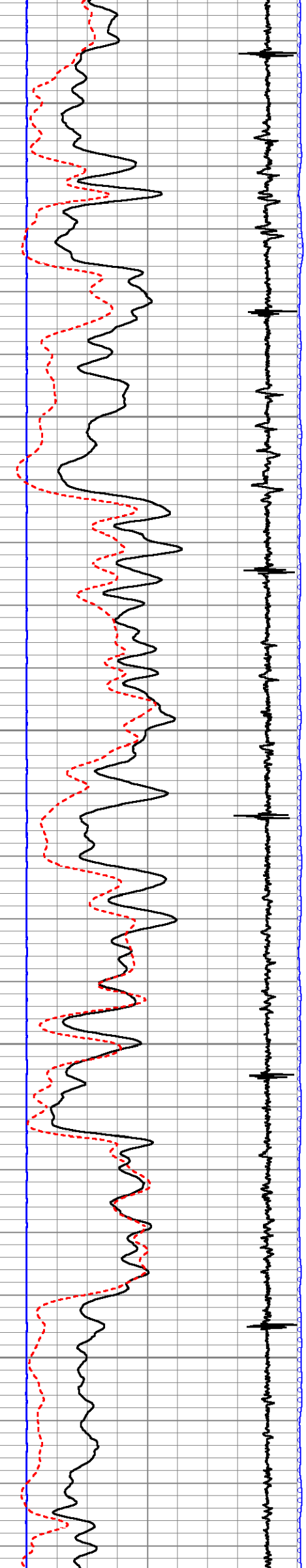
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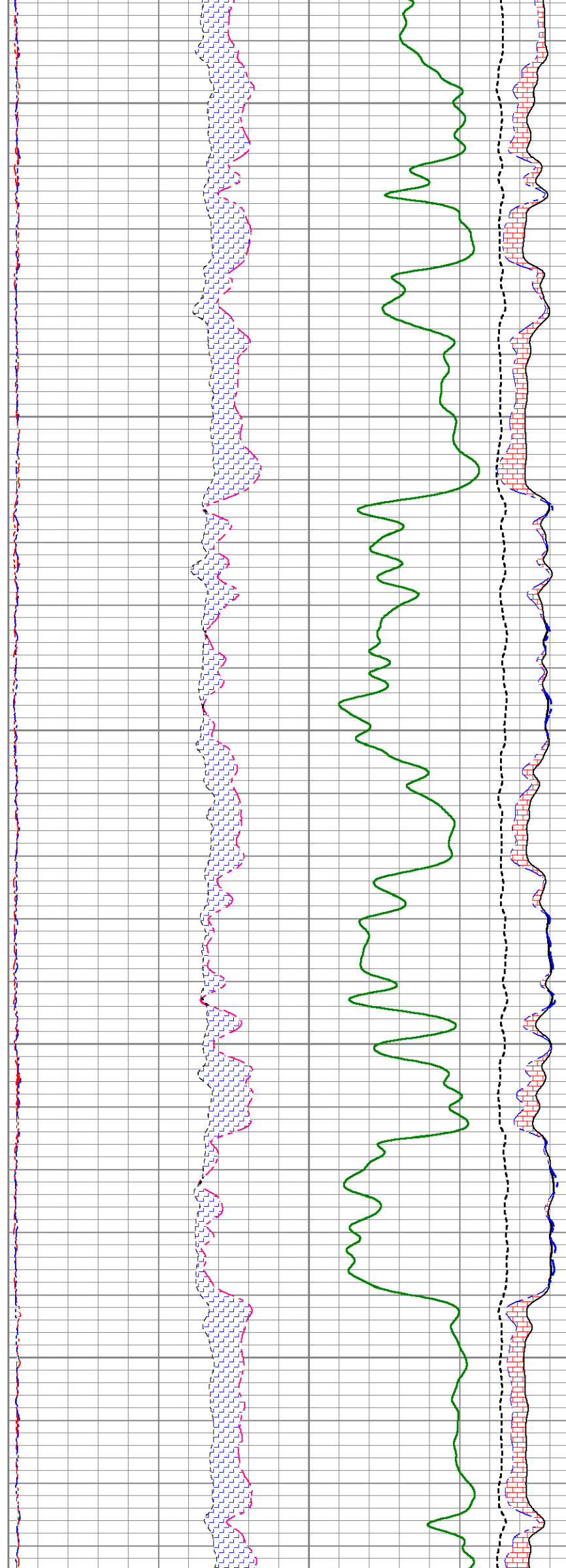
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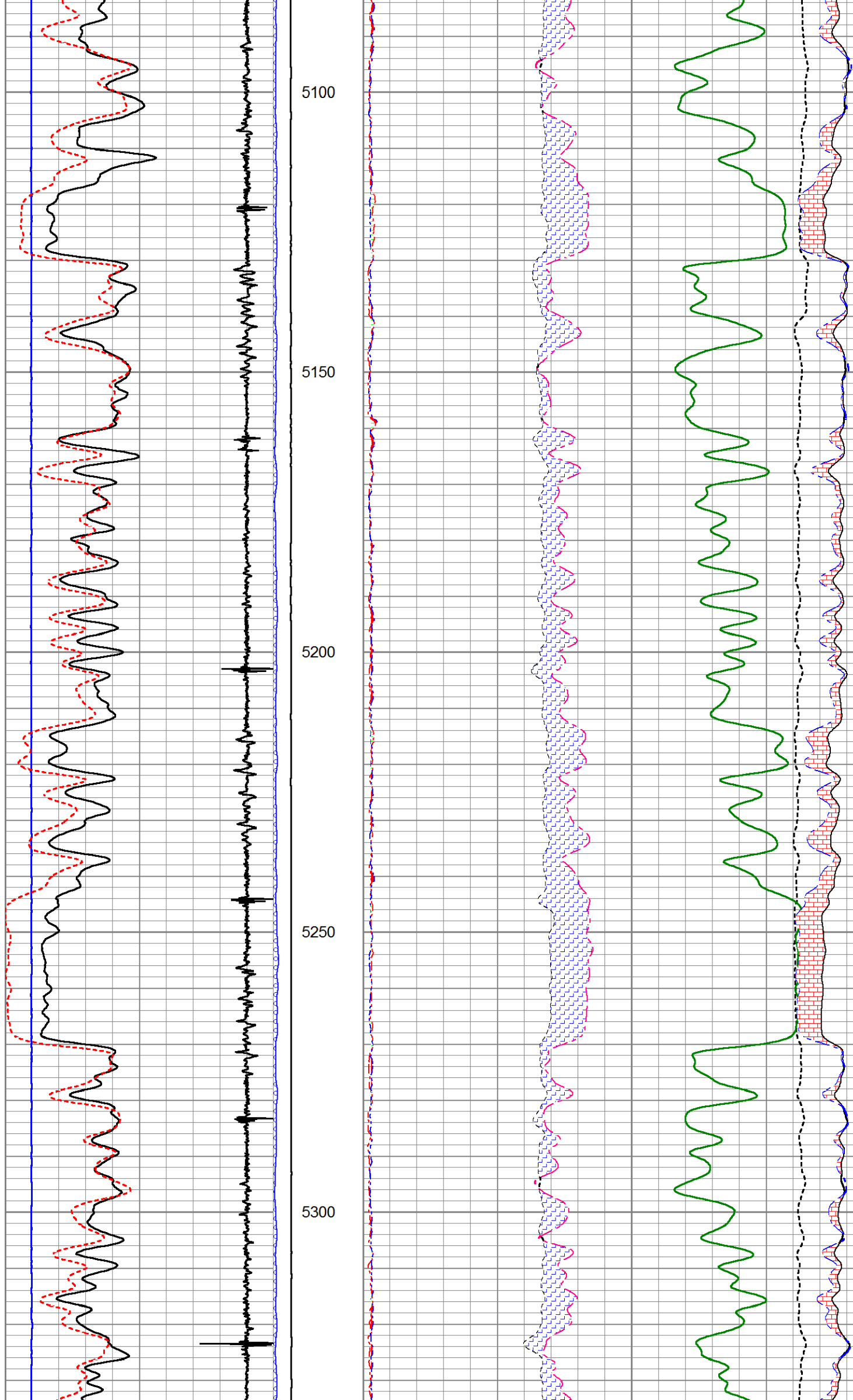
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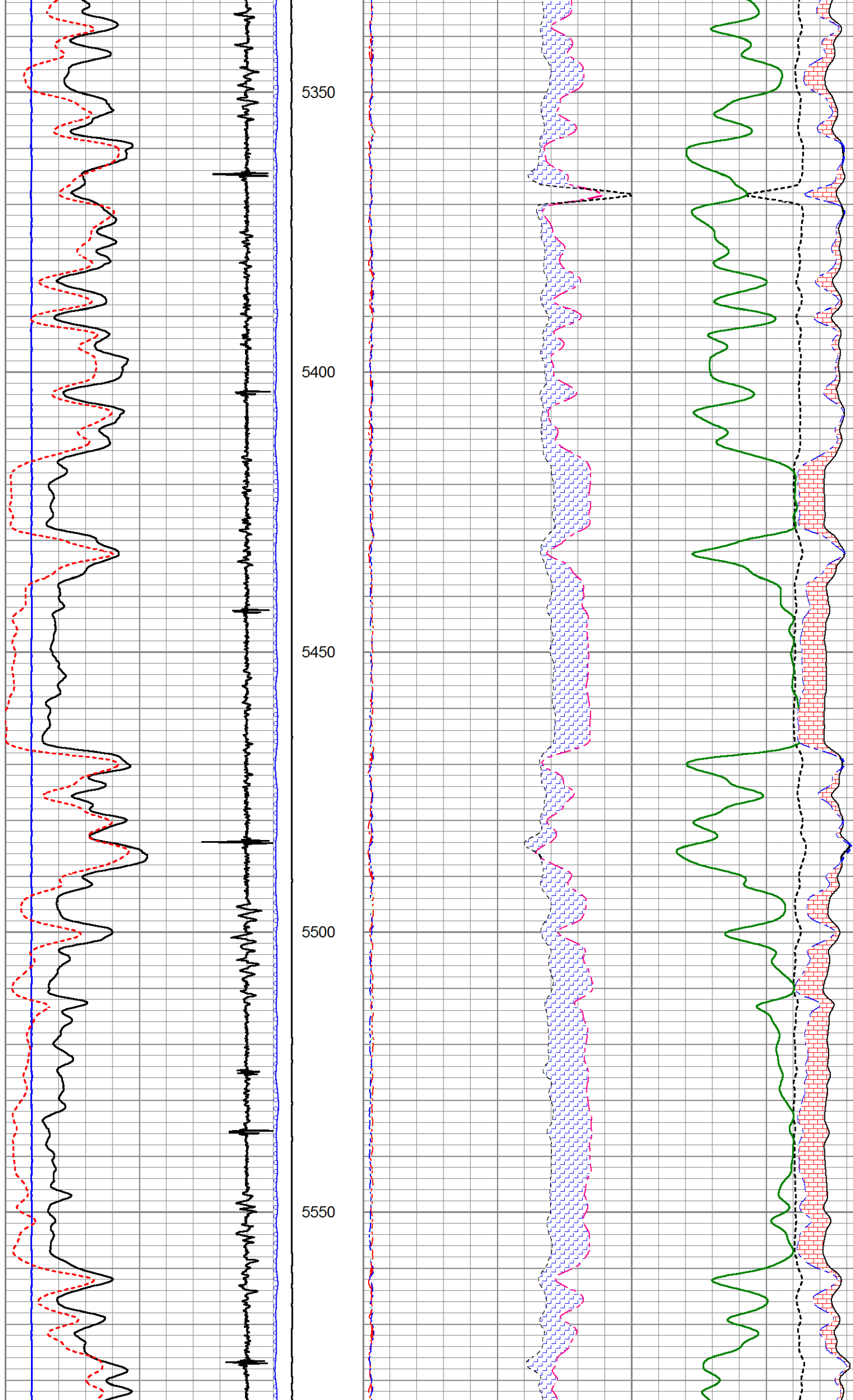
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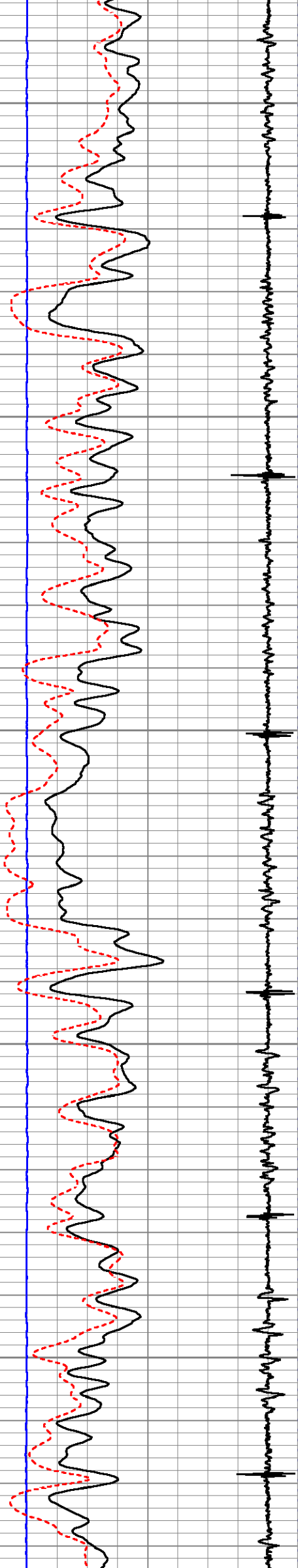
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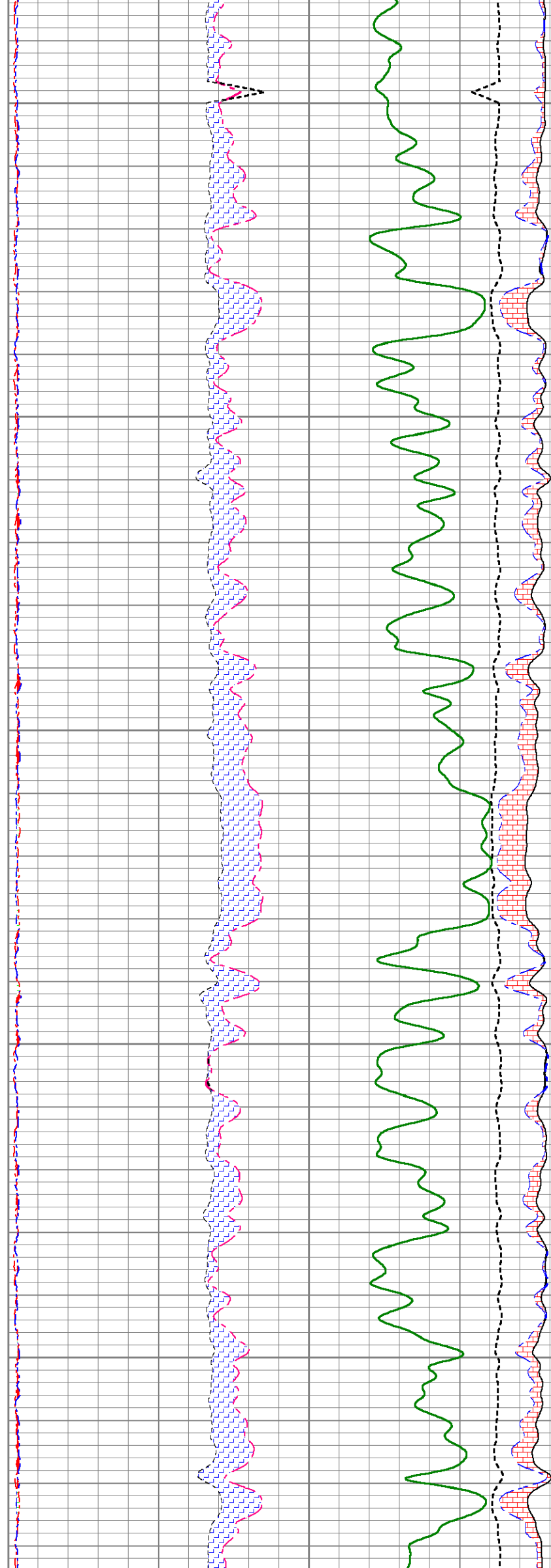
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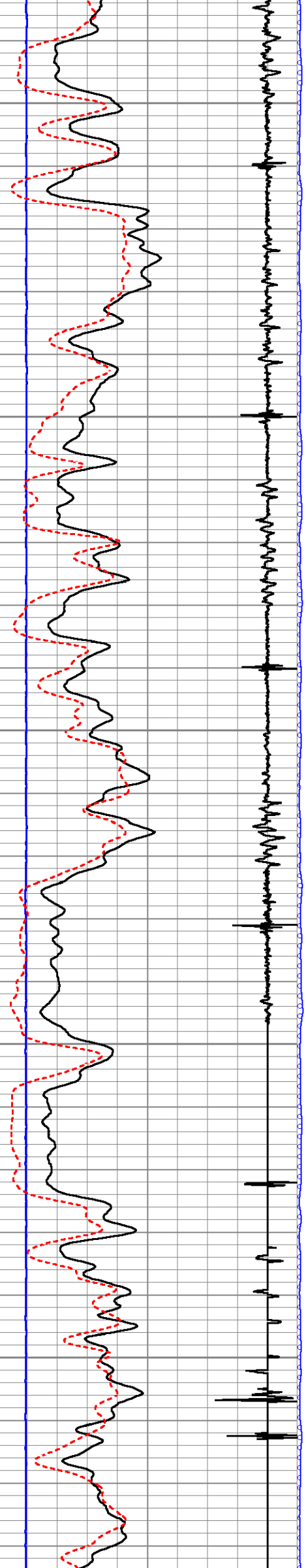
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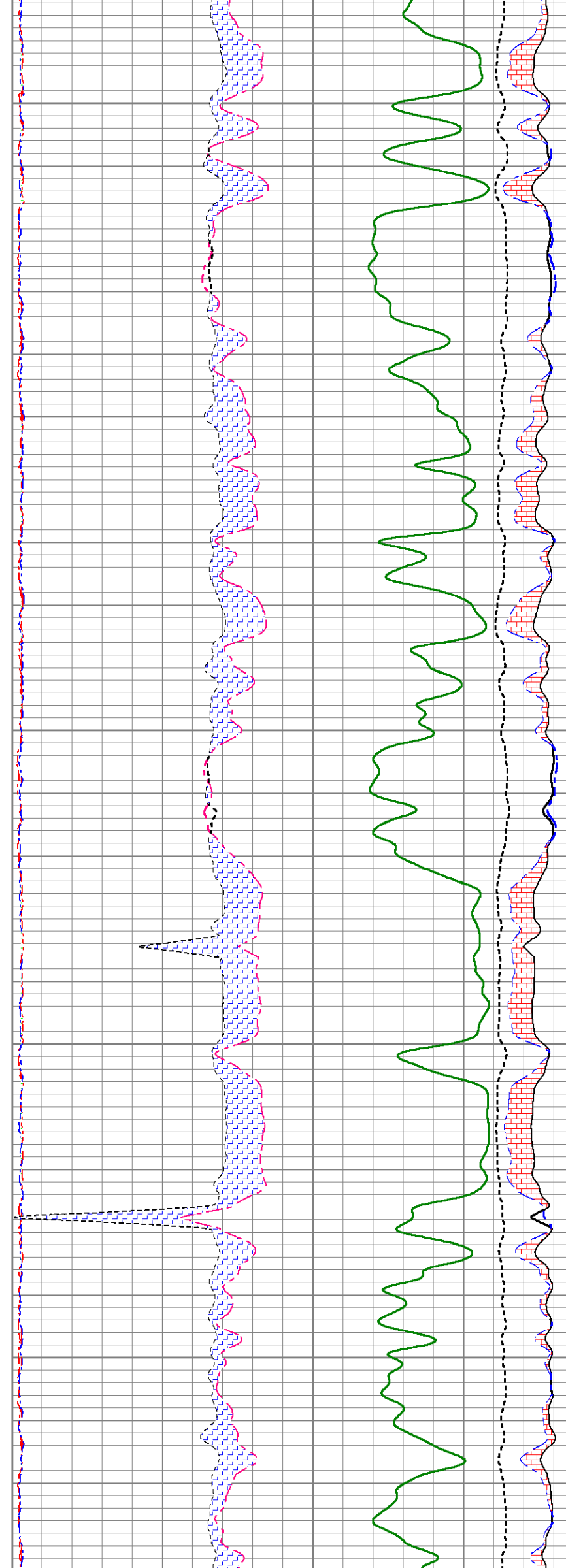
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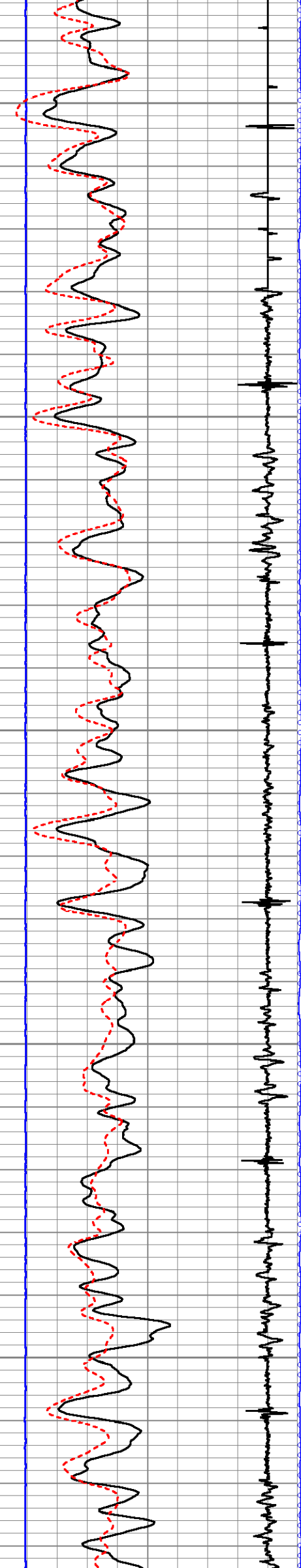
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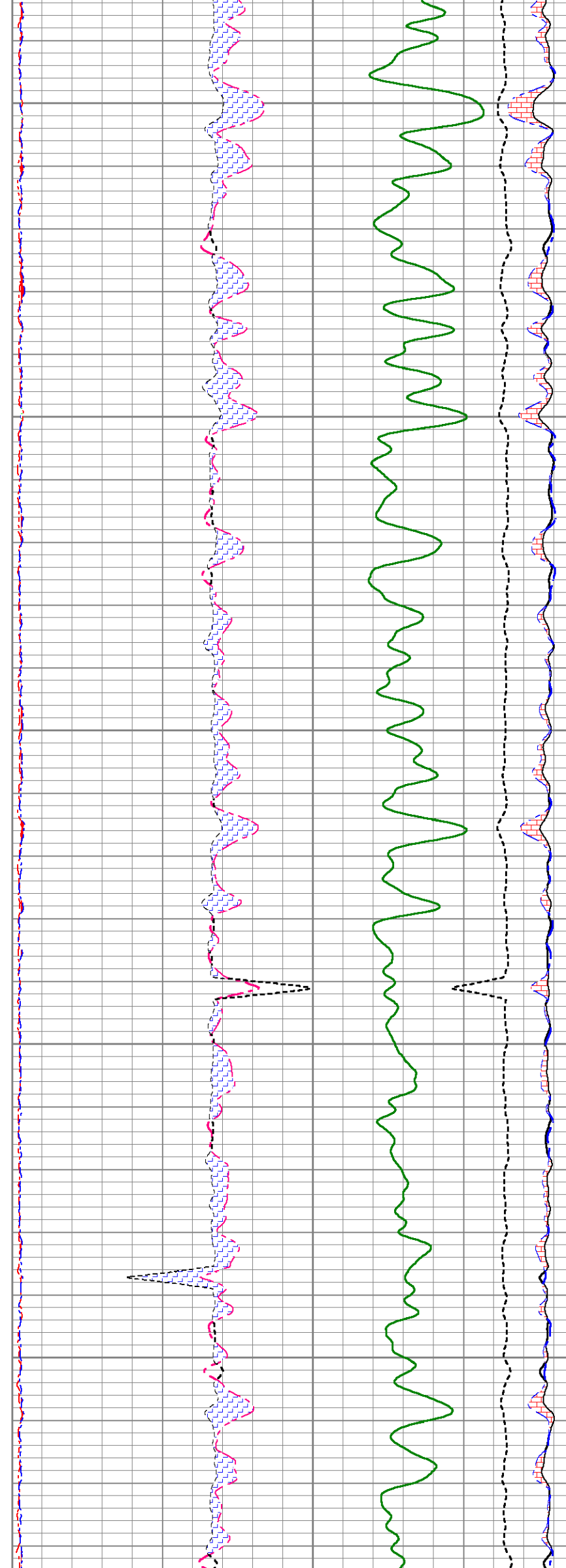
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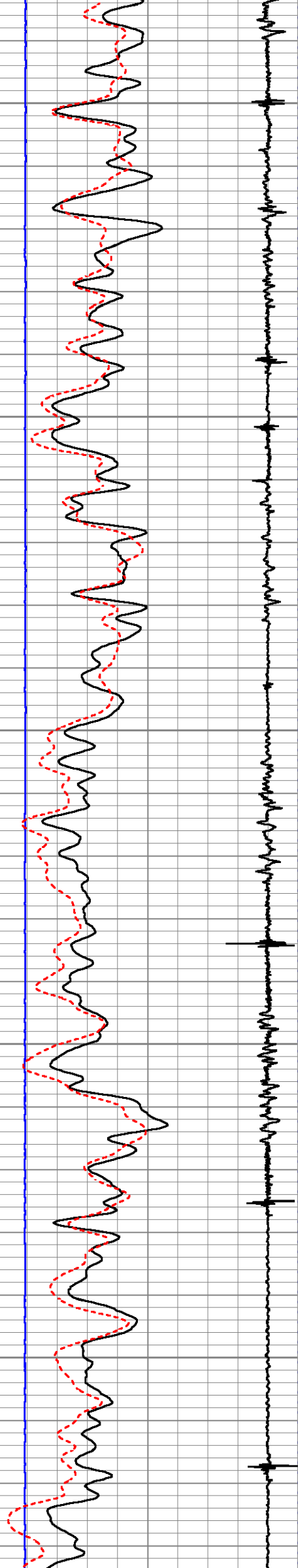
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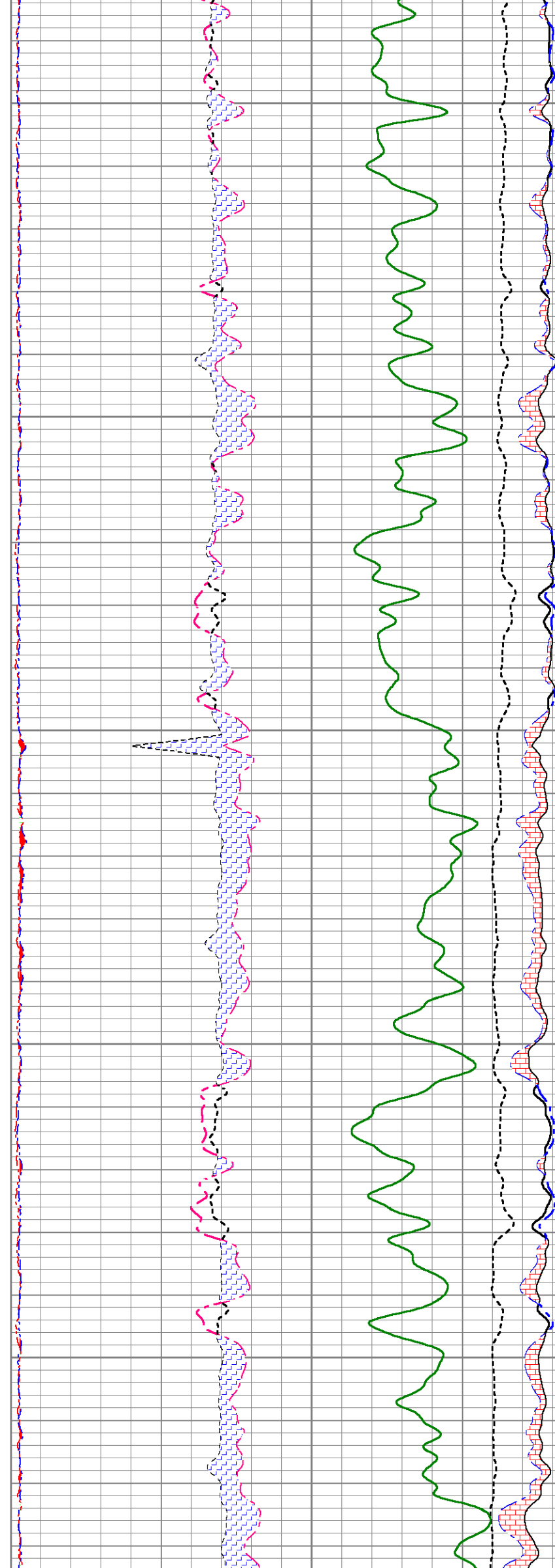
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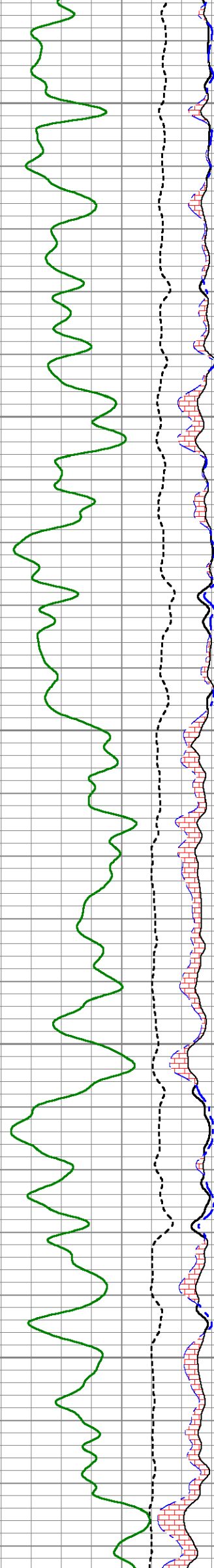
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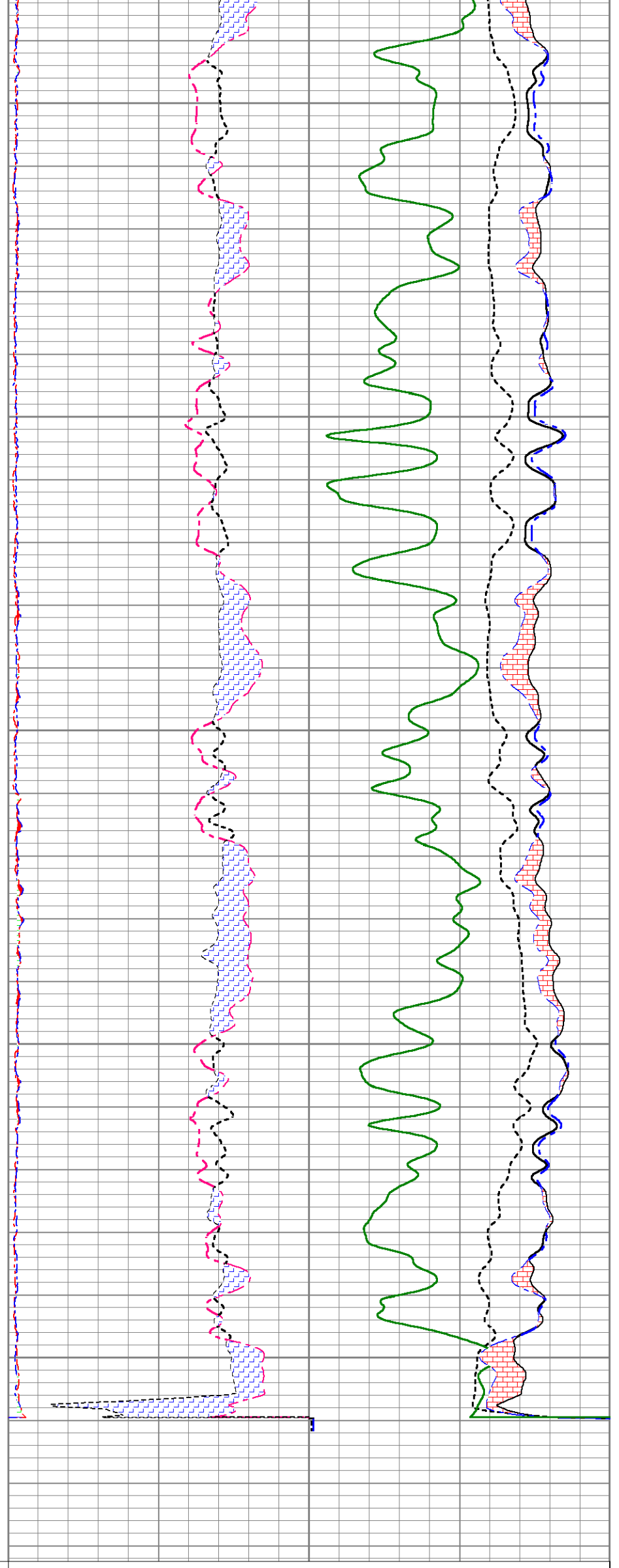
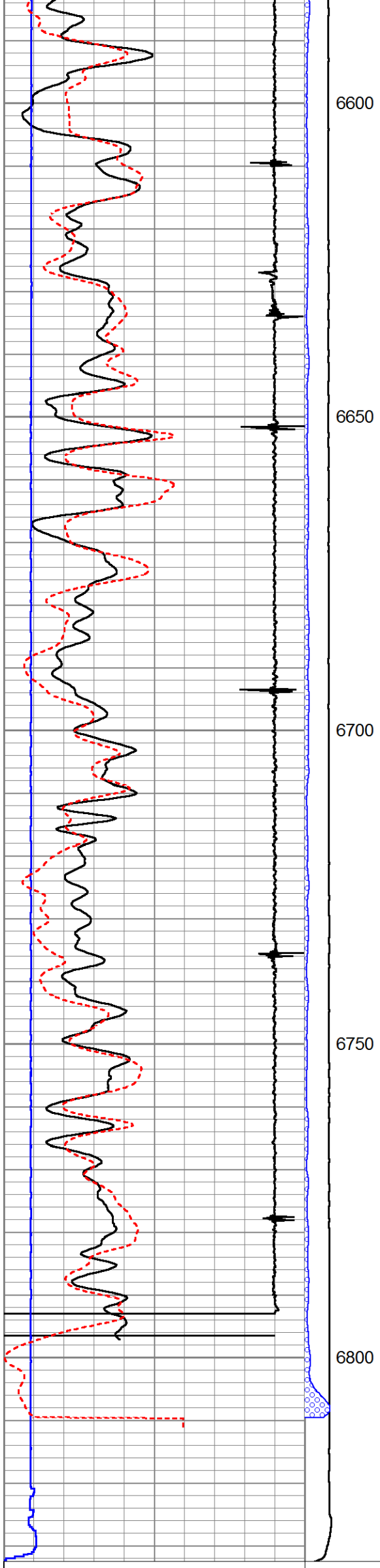
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0	GR	200	LTEN	60	SGFF	0			
2700	CCL	-300	0 (lb5000)	2	RNF (Ratio Near/Far)	0.5	100000	FSIN	0
0	LSPD (ft/min)	200	0 OAI1100	1.65	RIN (Ratio Near/Far Incl)	0.65	60000	NCAP	0
10	SGNear	40		0	NFTR (Near Fit Error)	100	60000	FCAP	0
				0	FFTR (Far Fit Error)	100			

## MAIN PASS

**HALLIBURTON**

5" = 100'

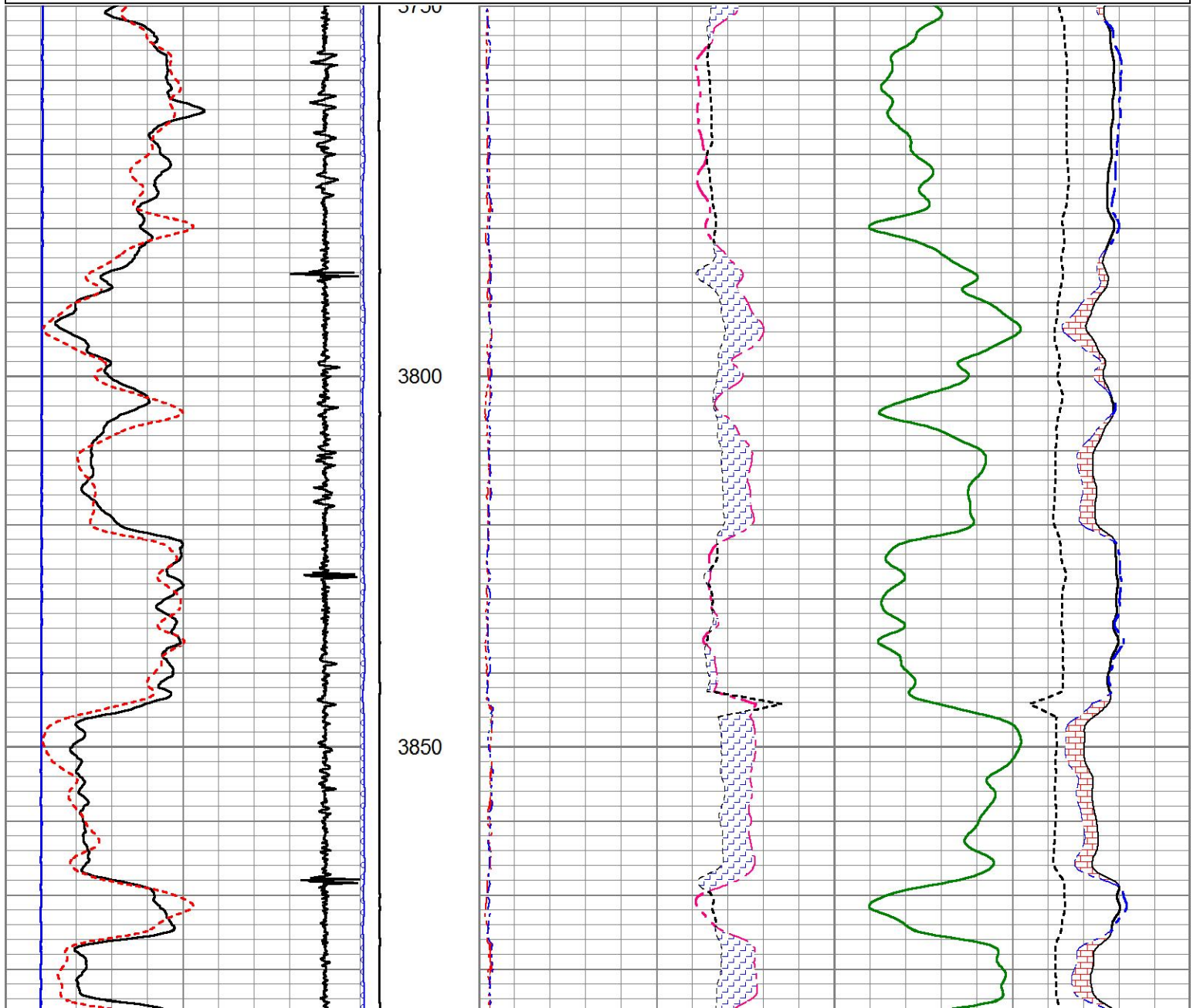
## REPEAT PASS

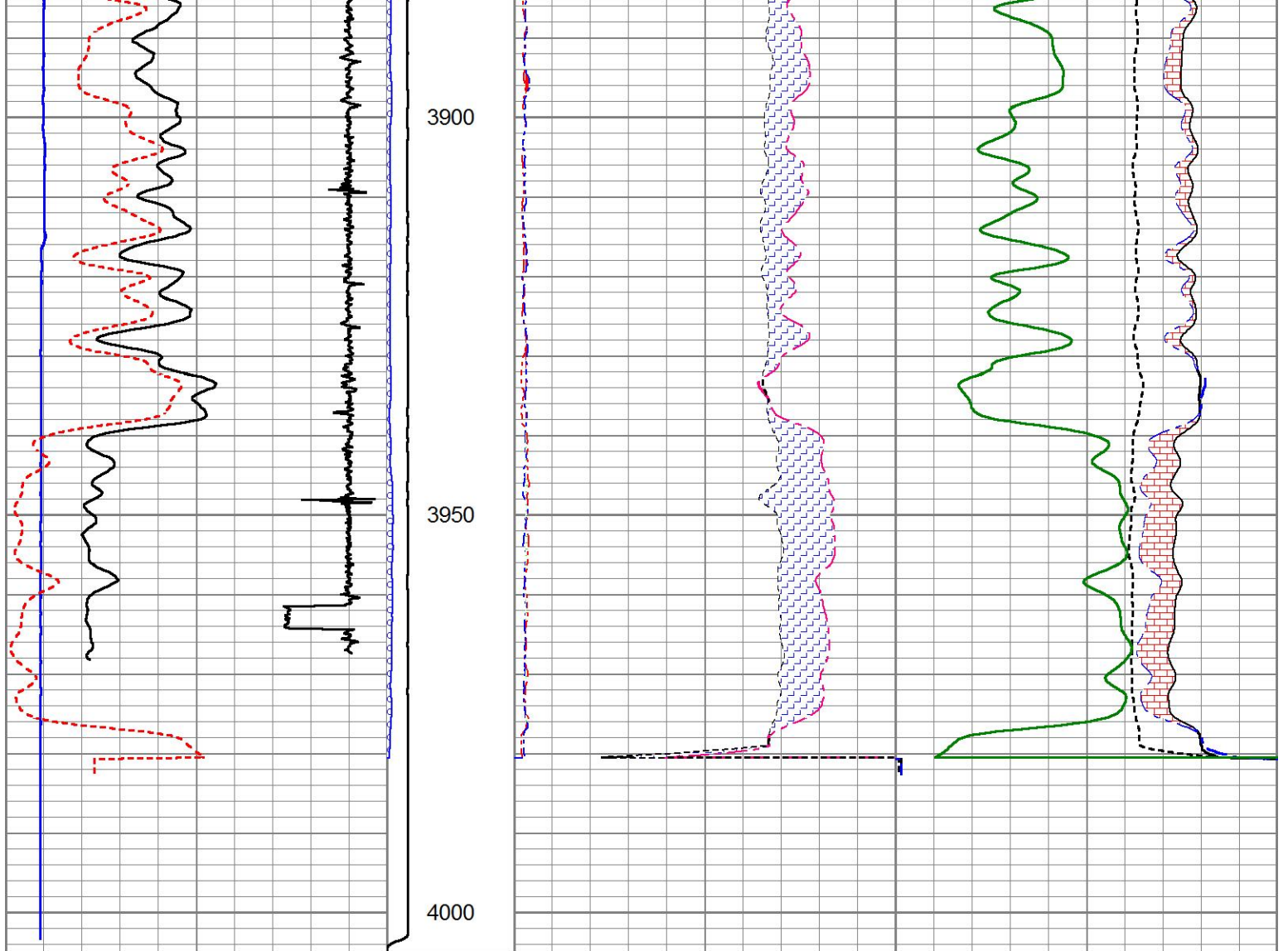
**HALLIBURTON**

5" = 100'

Database File mr\_b\_44c\_08\_7\_95.db  
 Dataset Pathname pass11  
 Presentation Format !1!!rmt\_rmti  
 Dataset Creation Sun Nov 27 22:11:22 2016  
 Charted by Depth in Feet scaled 1:240

0	GR	200	LTEN	60	SGFF	0			
2700	CCL	-300	0 (lb5000)	2	RNF (Ratio Near/Far)	0.5	100000	FSIN	0
0	LSPD (ft/min)	200	0 OAI1100	1.65	RIN (Ratio Near/Far Incl)	0.65	60000	NCAP	0
10	SGNear	40		0	NFTR (Near Fit Error)	100	60000	FCAP	0
				0	FFTR (Far Fit Error)	100			





0	GR	200	LTEN	60	SGFF	0
2700	CCL	-300	0 (lb/5000)	2	RNF (Ratio Near/Far)	0.5 100000 FSIN 0
0	LSPD (ft/min)	200	0 OAI1100	1.65	RIN (Ratio Near/Far Inel)	0.65 60000 NCAP 0
10	SGINear	40		0	NFTR (Near Fit Error)	100 60000 FCAP 0
				0	FFTR (Far Fit Error)	100

## REPEAT PASS

**HALLIBURTON**

5" = 100'

### Log Variables

Database: C:\ProgramData\Warrior\Data\mr\_b\_44c\_08\_7\_95.db  
 Dataset: field/well/run1/pass11/\_vars\_

#### Top - Bottom

BHSAL1	BHSAL2	BHTEMP_Src	BITSIZE	BORSAL	BOTTEMP	CASED?	CASEOD
1	0	TEMP	in 7.875	kppm 150	degF 210	Yes	in 4.5
CASETHCK	CASEWGHT	LTH	MSGGN	MudWgt	PERFS	POROS1	POROS2
in 0.625	lb/ft 11.6	Sandstone	1	lb/gal 8.4	0	1	0
RHOFC	SO	SRFTEMP	TDEPTH	UHSGC	USERFTT	ZREF	
0.25	in 0	degF 50	ft 7098	NONE	usec/ft 0	MRayl 1.7	

#### Calibration Report

Database File: mr\_b\_44c\_08\_7\_95.db  
 Dataset Pathname: pass11  
 Dataset Creation: Sun Nov 27 22:11:22 2016

Cement Bond Log Shop Calibration Report

Serial-Model: 11836468-A  
 Calibration Performed: Sun Nov 27 16:47:31 2016

Free Pipe Calibration

	Measured	Units
TT	246.0	usec
Amplitude	505.7	mV
Log Base Line	19.1	mV

Calibration References and Gain

Name	Value	Units
Pipe O.D.	4.500	in
Pipe Weight	11.6	lb/ft
Pipe Ref. Amp.	81.2	mV
Amp. Gain	0.167	

Reservoir Monitor Tool I Calibration Report

Serial-Model: 11680606-A  
 Shop Calibration Performed: Wed Nov 23 17:48:39 2016

Carbon/Oxygen Mode

Stabilization

Result	Logged	Expected Value	Diff.	Tol.	Units
GENV	73.00	80.00	-7.00	+/-15.00	V
ITCR2	3224	3250	-26	+/-250	cps

Near Detector

	Channel	Expected Value	Amplitude	FWHM	Tol.
H	60	60 +/-2	0.0234	5.86	<6.00
Fe	206	206 +/-2	0.0940	----	----
NGAIN = 0.998		NZOFF = 0.4			

Far Detector

	Channel	Expected Value	Amplitude	FWHM	Tol.
H	60	60 +/-2	0.0349	5.88	<6.50
Fe	210	208 +/-2	0.0908	----	----
FGAIN = 0.989		FZOFF = 0.7			

Flask Temperature 53.0 degF

Result	Logged	Expected Value	Diff.	Tol.	Units
COIR2	0.45	0.45	-0.00	+/-0.02	
LIRI2	1.37	1.36	0.01	+/-0.05	
TCCR2	5216	5000	216	+/-1000	cps
ITCR2	3271	3200	71	+/-250	cps

Sigma Mode

Stabilization

Result	Logged	Expected Value	Diff.	Tol.	Units
GENV	73.00	80.00	-7.00	+/-15.00	V
FCAP	10194	10000	194	+/-500	cps

Horizontal Water Tank

Result	Logged	Expected Value	Diff.	Tol.	Units
N/F Normalizer	0.97	0.95	0.02		
N/F Inel Norm	0.64	0.61	0.03		
RNF	1.03	1.07	-0.04	+/-0.12	
RINC	1.57	1.64	-0.07	+/-0.18	
SGFN	24.09	24.00	0.09	+/-0.50	cu
SGFF	22.92	22.85	0.07	+/-0.50	cu
FSIN	24310	24000	310	+/-2000	cps
FCAP	10233	10000	233	+/-1000	cps
NFTR	0.79			<5.00	
FFTR	0.85			<5.00	
NBKG	140			<500	cps
FBKG	108			<500	cps
RTN	0.42	0.40	0.02	+/-0.10	usec
RTF	0.45	0.40	0.05	+/-0.10	usec

Calibration Software Modules

HRMTI Module 2015.5.4.0  
RMTI Module 2015.10.16.1

Log Data Acquisition Software Modules

HRMTI Module 2015.5.4.0  
RMTI Module 2015.10.16.1

Gamma Ray Calibration Report

Type / Serial: 002 / 11214503

SHOP CALIBRATION

Wed Nov 09 16:25:32 2016

	Counts/Sec.	Gain	Offset	Jig	Units
Background	34.1				cps
Calibrator	297.9				cps
		1.3950			GAPI/cps

PRIMARY VERIFICATION


	Counts/Sec.	Offset	Units
Background	42.3		cps
Calibrator	413.8		cps
Difference		371.5	GAPI

BEFORE SURVEY VERIFICATION

	Counts/Sec.	Offset	Units
Background	0.0		cps
Calibrator	0.0		cps
Difference		0.0	GAPI

AFTER SURVEY VERIFICATION

	Counts/Sec.	Offset	Units
Background	0.0		cps
Calibrator	0.0		cps
Difference		0.0	GAPI

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			STNDCH-STND_CH 1.4375 IN CABLE HEAD	1.50	1.44	1.00
CCL	35.82					
GR	33.56		TTTCU-002 (11214503) Through Tubing Telemetry Cartridge - Ultrawire	7.65	1.69	100.00

			XHU-003 (000001) Crossover Halliburton 1553 to Ultrawire	1.58	1.69	7.00
RmtTFGT	22.91					
RmtTNGT	22.41					
			RMTI-A (11680606) Halliburton RMTI Tool	14.00	2.13	77.00
RmtFP5V	14.66					
RmtNFwvMcsPI	14.66		X-OVER-GoxSondex Go Box x Sondex Pin CrossOver	0.27	1.69	1.00
RmtCommFWa	14.66		CENT-CASTM-CENT CAST M INLINE CENTRALIZER	2.16	3.13	25.00
Temp	9.57					
TT3FT	7.32					
AMP3FT	7.32		HCBLM-A (11836468) Halliburton HCBLM Tool	9.38	2.75	116.00
WVF5FT	6.36					
WVF3FT	2.84		CENT-CASTM-CENT CAST M INLINE CENTRALIZER	2.16	3.13	25.00
LLMTEN	0.00		AUH-001 (11072111) Adaptor Ultrawire/Halliburton	0.38	1.69	3.00
			BUL-001 (000001) Bullnose	0.30	1.69	1.50
Dataset:			mr_b_44c_08_7_95.db: field/well/run1/pass11			
Total length:			39.39 ft			
Total weight:			356.50 lb			
O.D.:			3.13 in			

Company	URSA OPERATING COMPANY LLC				
Well	MONUMENT RIDGE B 44C-08-7-95				
Field	PARACHUTE				
County	GARFIELD	State	CO		
<b>HALLIBURTON</b>	RESERVOIR MONITORING TOOL ELITE				