HALLIBURTON

RESERVOIR MONITOR
TOOL - ELITE

Company	KINDER MORGAN CO2 CO LP
Well	CD 4
Field	MCELMO
County	MNTZMA State CO

Company KINDER MORGAN CO2 CO LP
Well CD 4
Field MCELMO
County MNTZMA State CO
API No.: 05083067180000 Serv #: 902064811
Location: SURFACE HOLE LOCATION:
1580' FSL & 2356' FEL
BOTTOM HOLE LOCATION:
2286' FNL & 2144' FWL
LATITUDE: 37.548680
LONGITUDE: -108.873080
Sec: 18 Twp: 38N Rge: 18W

Other Services: RADIAL BOND TOOL

Permanent Datum	GL	Elevation	6795	K.B.	6817.5
Log Measured From	KB	22.5	Ft. above perm. datum	D.F.	6817.5
Drilling Measured From	KB			G.L.	6795

Date @ Time Logged	23-JAN-15 @ 13:00			Type Fluid in Hole	H2O				
Run No.	ONE			Density of Fluid	8.33				
Depth - Driller	8725			Fluid Level	250				
Depth - Logger	8578			Cement Top Est. Logged	8410				
Bottom - Logged Interval	8572			Equipment / Location	11726109 /		GJ		
Top - Log Interval	250			Recorded by	NATHANIEL MILES				
Max. Recorded Temp.	180			Witnessed by	PETE MCNEAL				
CEMENTING DATA	Surface String		Protection String	Production String	Liner				
Date / Time Cemented									
Primary / Squeeze									
Expected Compressive Strength		psi@	hrs	psi@	hrs	psi@	hrs	psi@	hrs
Cement Volume									
Cement Type / Weight	/			/		/		/	
Formulation									
Mud Type / Mud Wgt.	/			/		/		/	

Borehole Record

Run Number	Bit	From	To
PRODUCTION	8.75	0	6096
PRODUCTION	8.75	6096	8153
PRODUCTION	8.75	8153	8315
LINER	6	8032	8623

Casing & Tubing Record

Size	Weight	From	To
7	29	0	6096
7	32	6096	8153
7	29	8153	8315
4.5	12.6	8032	8623

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Comments

HES DUAL SPACED NEUTRON SPECTRAL DENSITY LOG DATED: 02-DEC-14 IS THE PRIMARY DEPTH REFERENCE FOR THIS WELL
GR-RMT-RBT RAN IN COMBINATION

LOG INTERVALS PER CUSTOMER REQUEST

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES

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

EQUIPMENT DATA

TELEMETRY		RESERVOIR MONITOR TOOL		RADIAL BOND TOOL			
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	
Serial No.	11224503	Serial No.	12095949	Serial No.	11333931	Serial No.	
Model No.	TTTCU-002	Model No.	RMT-I	Model No.	RBT-004	Model No.	
Diameter	1.688"	Diameter	2.125"	Diameter	3.125	Diameter	

LOGGING DATA

General Data

Pass	Depths		Well Head	Speed	Logging Run Comments
No.	From	To	Pressure	Ft/Min	
ONE	8572	250	0	25	

	GAMMA RAY		NEAR BORE SI (SGBN)		RATION (RNF)		RICF	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ONE	0	200	200	0	7	1	0	18

DIRECTIONAL INFORMATION

Maximum Deviation		deg. @		KOP		

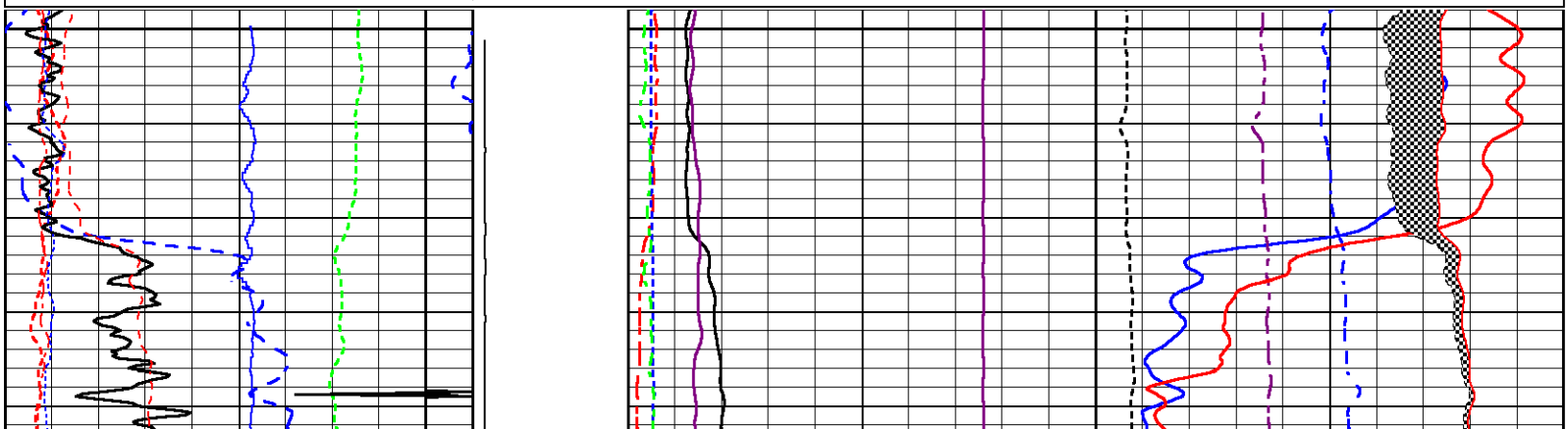
HALLIBURTON

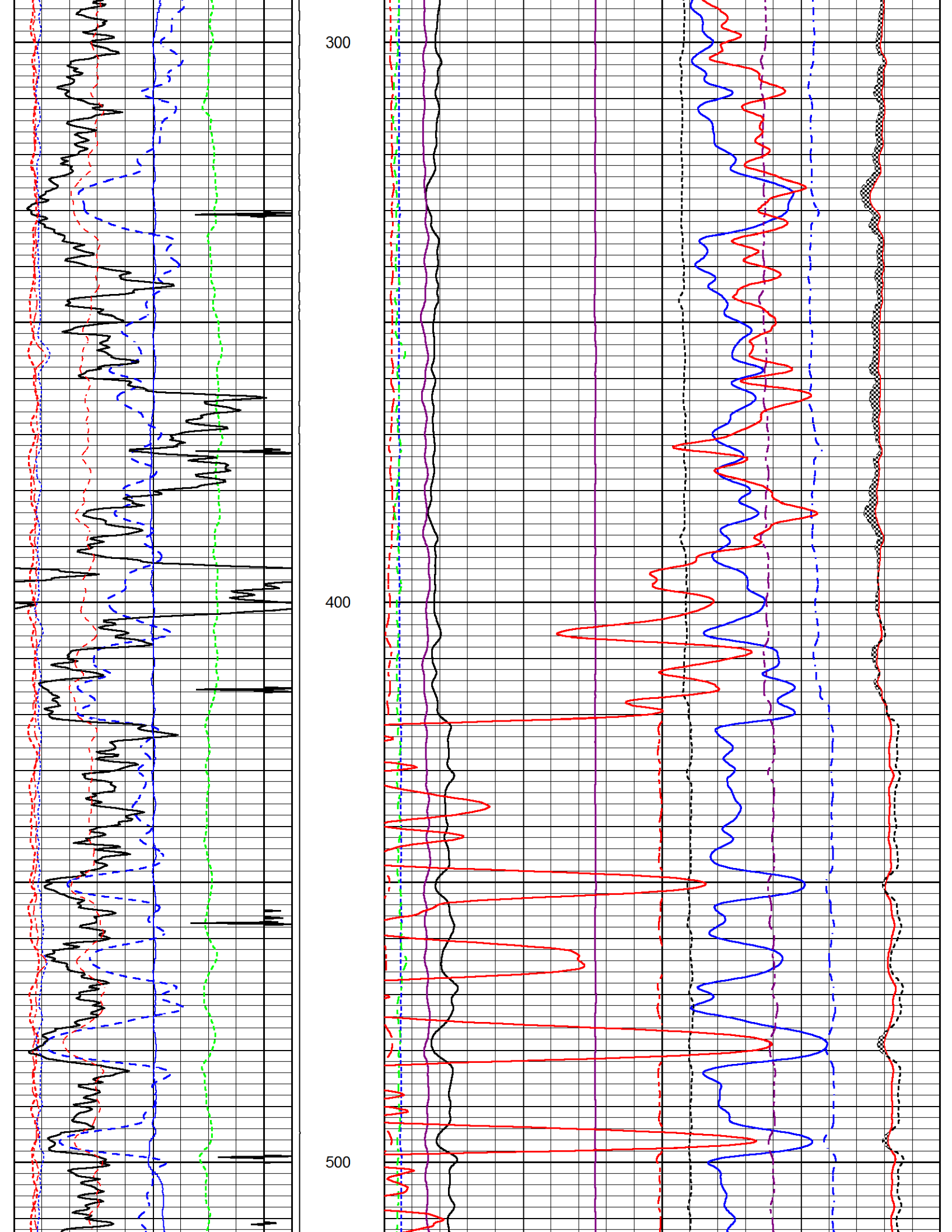
MAIN LOG SECTION

5" = 100'

Database File	km cd 4.db
Dataset Pathname	1-23-15/RMT-RBT/MAIN1.2
Presentation Format	RMTE_M~1
Dataset Creation	Fri Jan 23 20:44:49 2015
Charted by	Depth in Feet scaled 1:240

200	Near Bore Si (SGBN)	0	TENSION	60	SGIN	0		
0	OAI	100		0.6	PHIT ( )	0		
10	FAR FIT ERR (SGFF)	40		7	RATIO (RNF)	1	60000	Near Counts (NCAP) 0
0	GR (GAPI)	200		0	RIN	15	60000	Far Counts (FCAP) 0
0	NEAR FIT ERR (SGFN)	100		0	RICF	18	100000	FAR INTEL CT (FSIN) 0
-2700	CCL	300		0	H YIELD (YH2)	1	100000	NEAR INTEL CT (NSIN) 0
0	IN FIT ERR (CFTR1) NEAR	1		0	H YIELD (YH1)	1	ET INL NEAR (NNIN	
0	IN FIT ERR (CFTR2) FAR	1			-1500 INOX2	1500	50000	-1000
50	LSPD (ft/min) (ft/min)	0						

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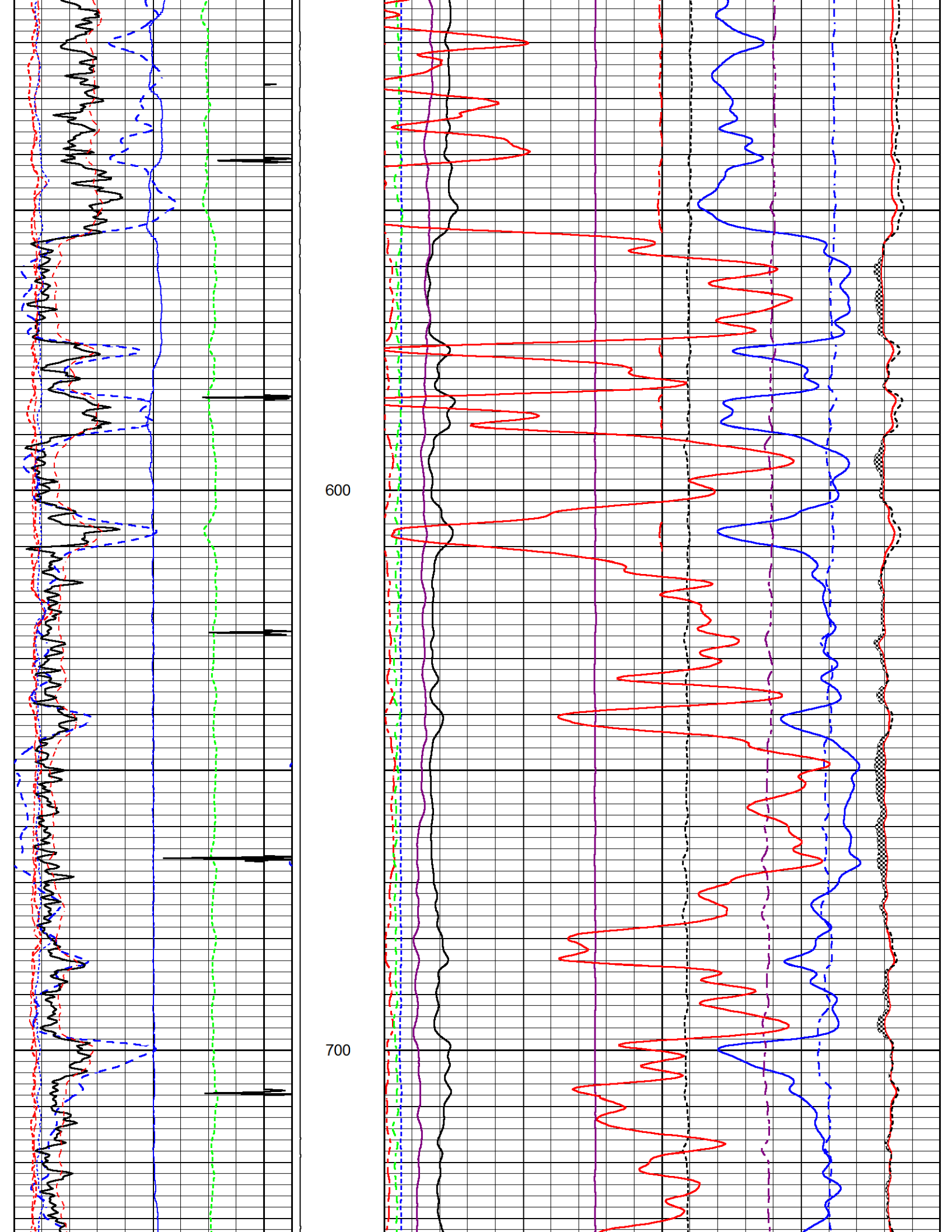
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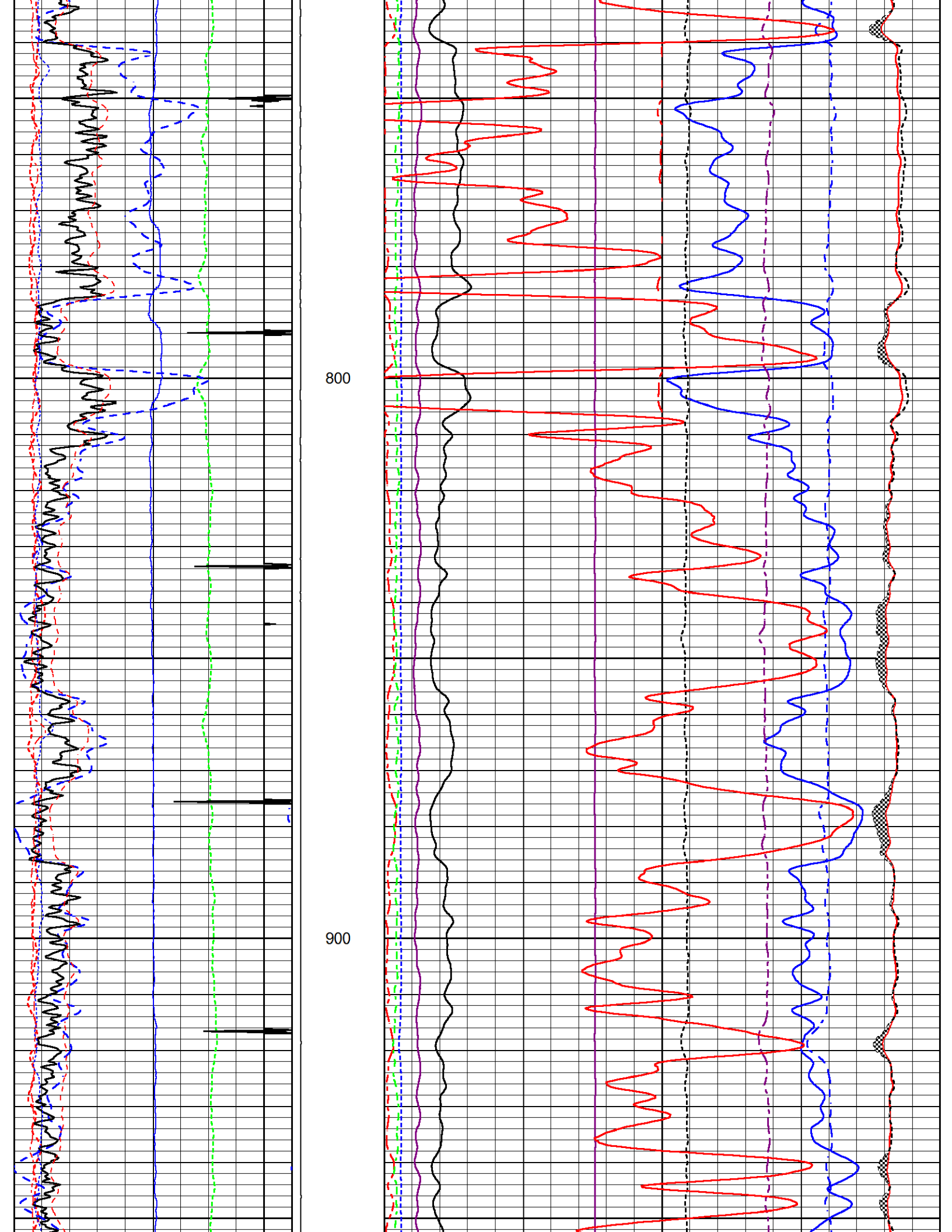
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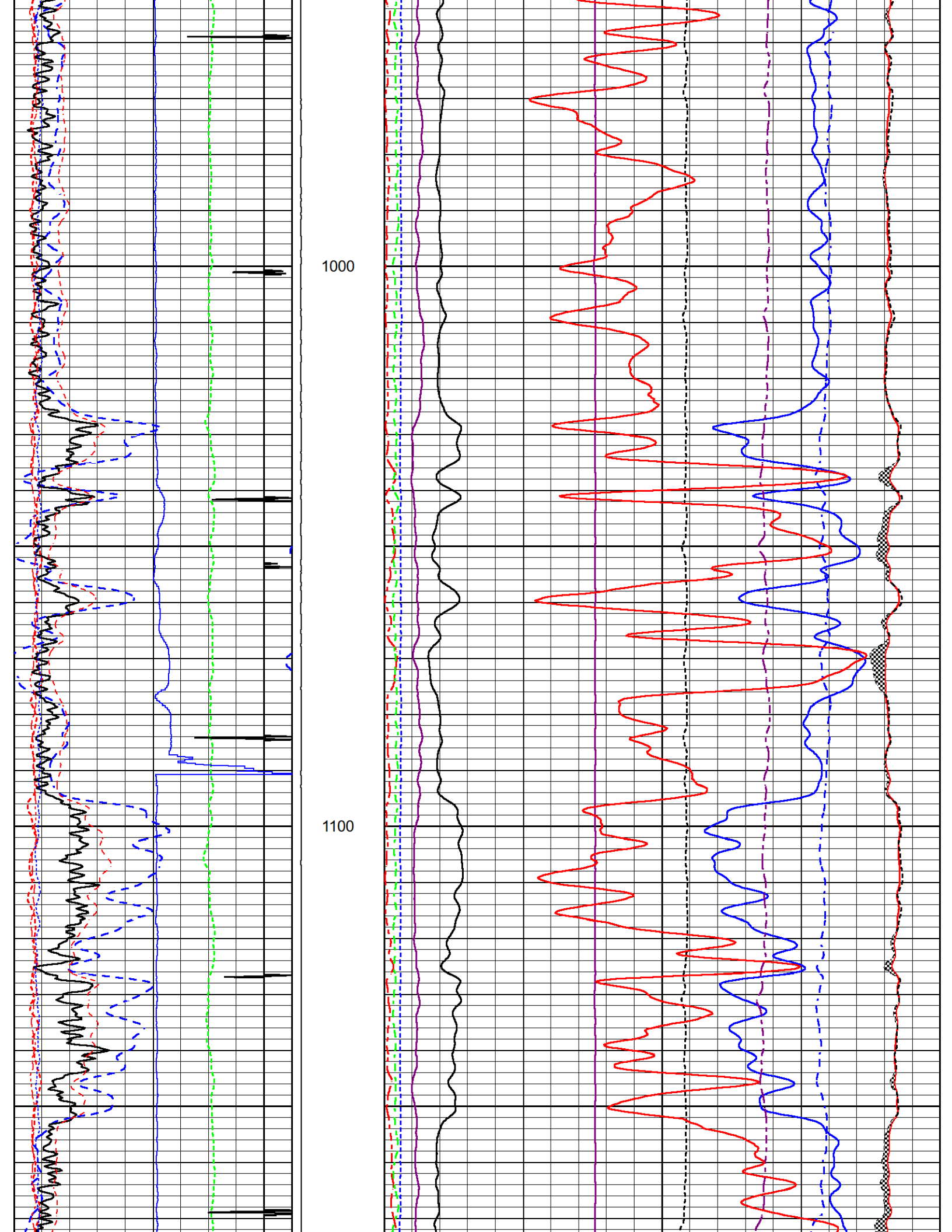
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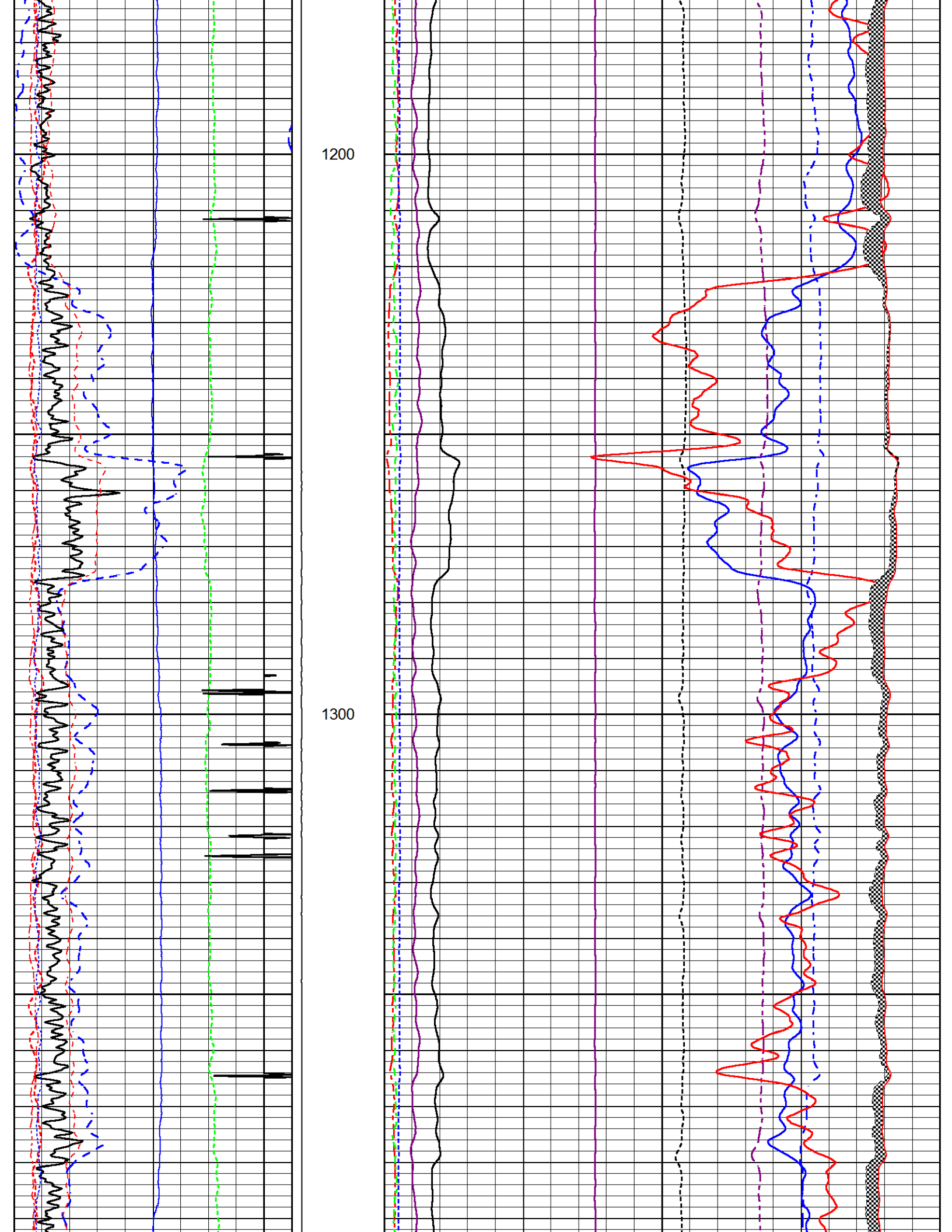
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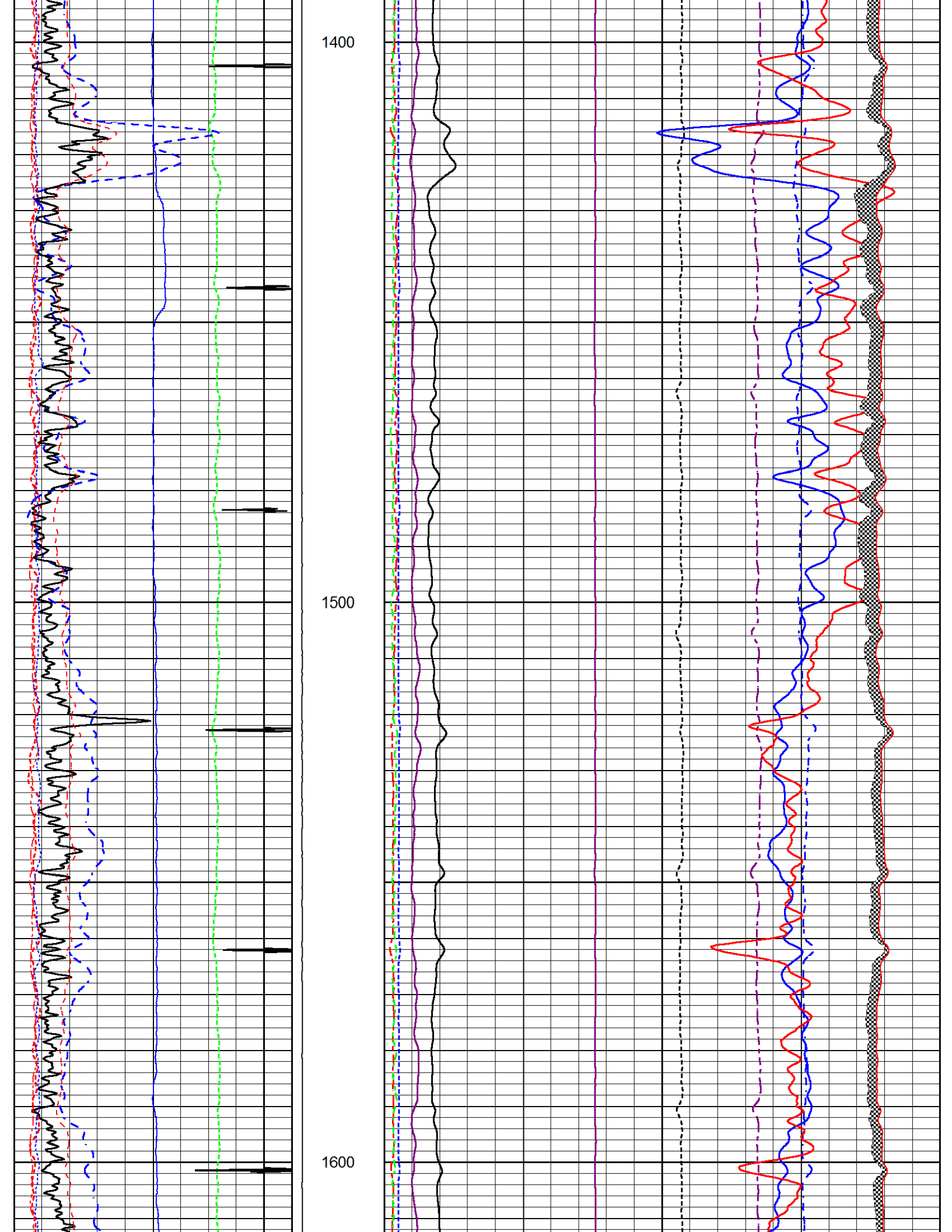
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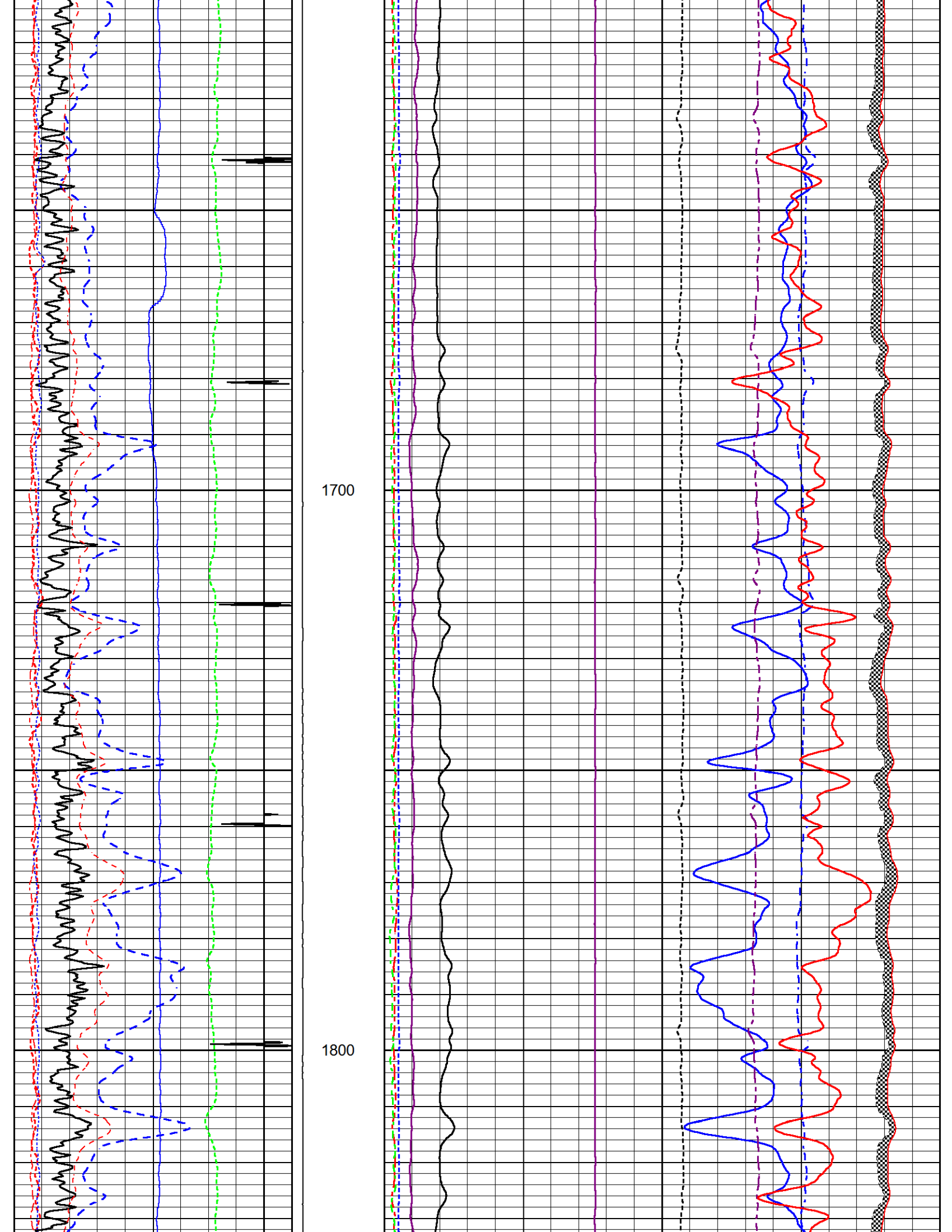
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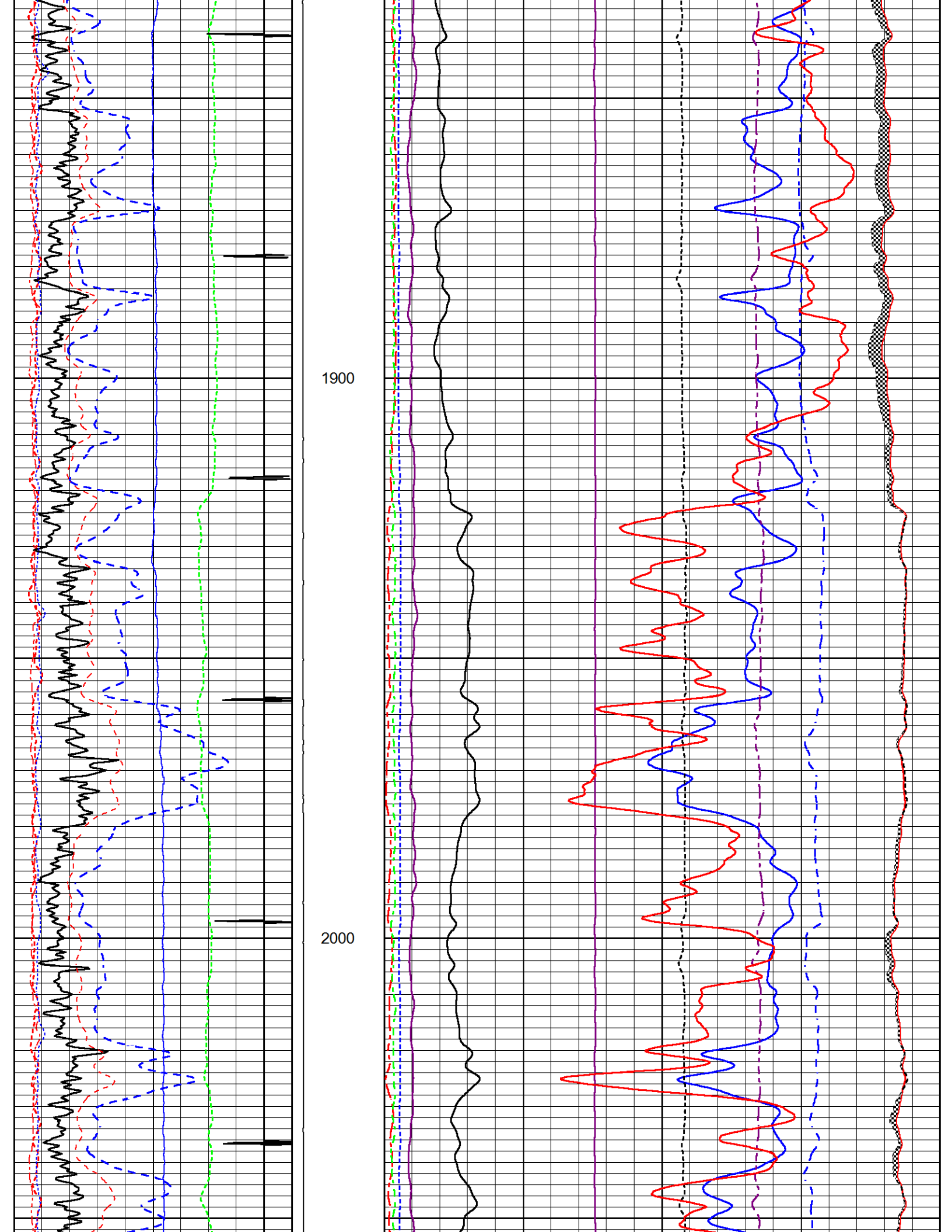
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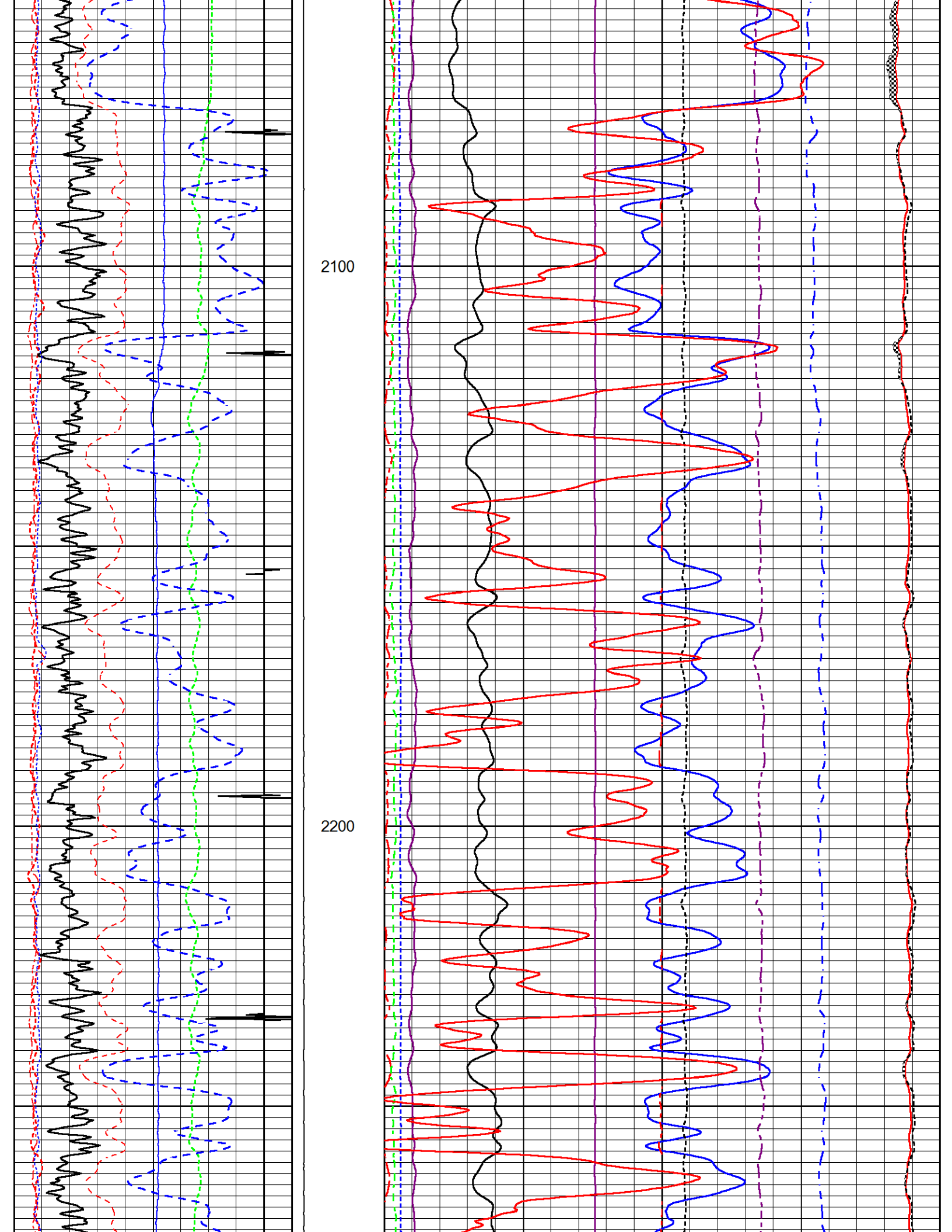
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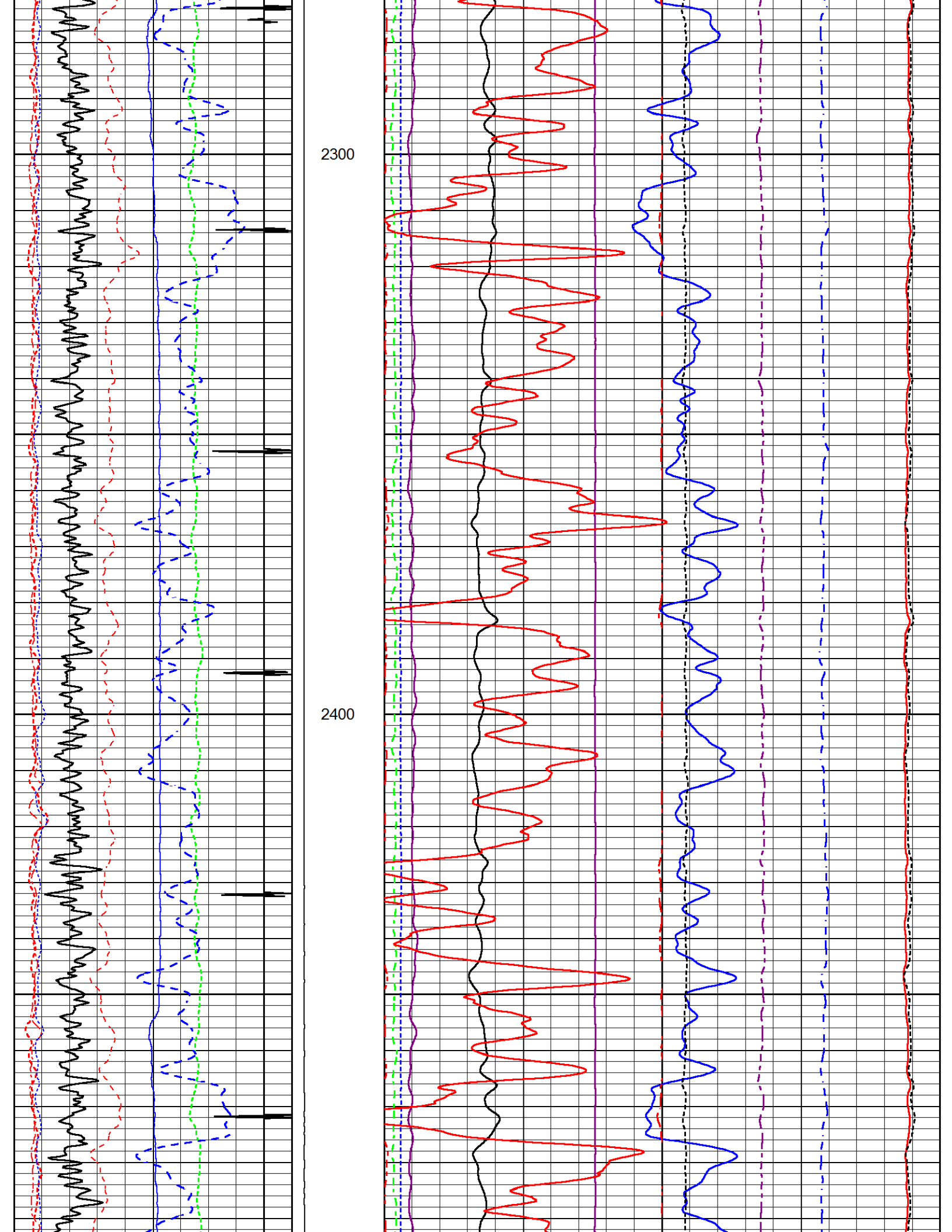
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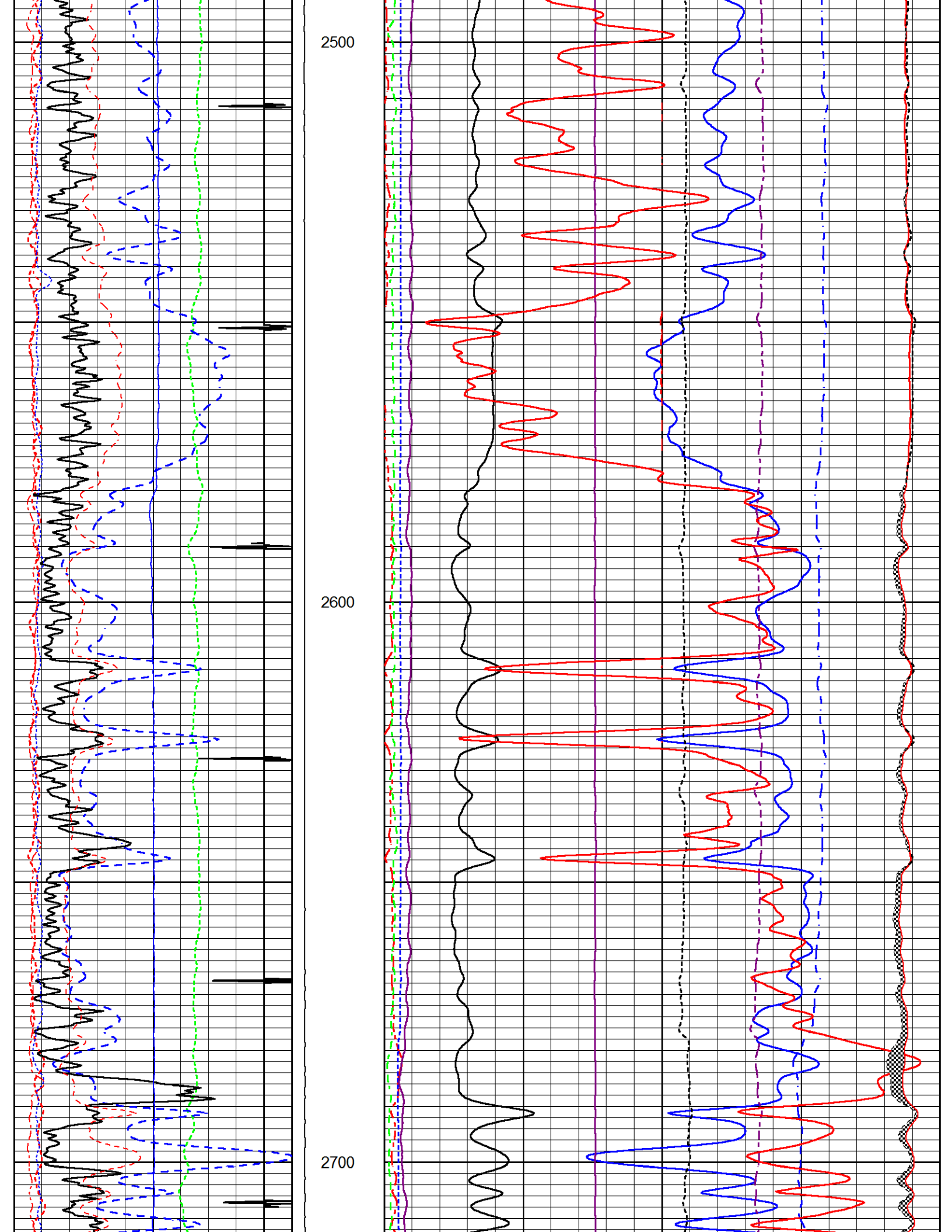
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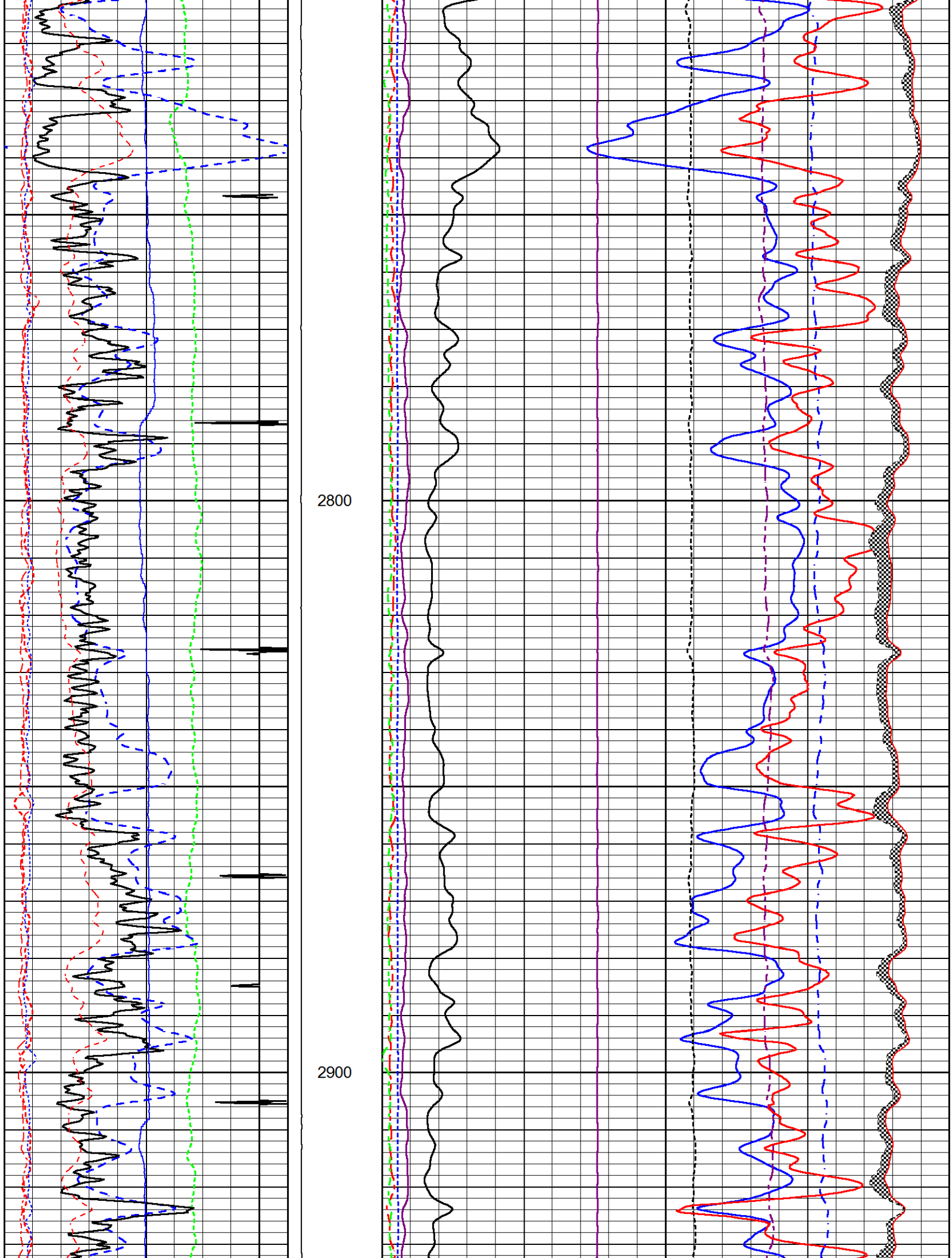
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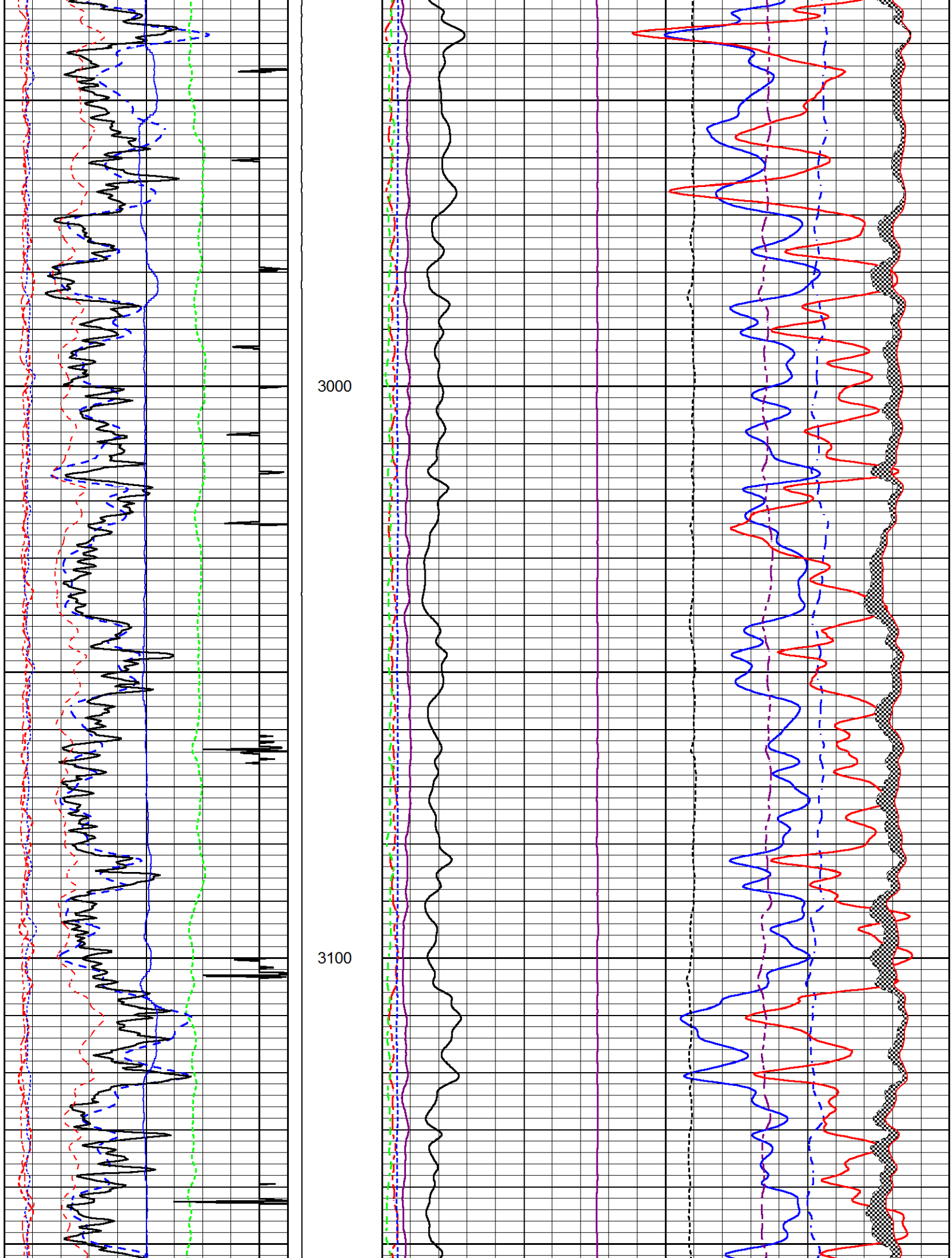
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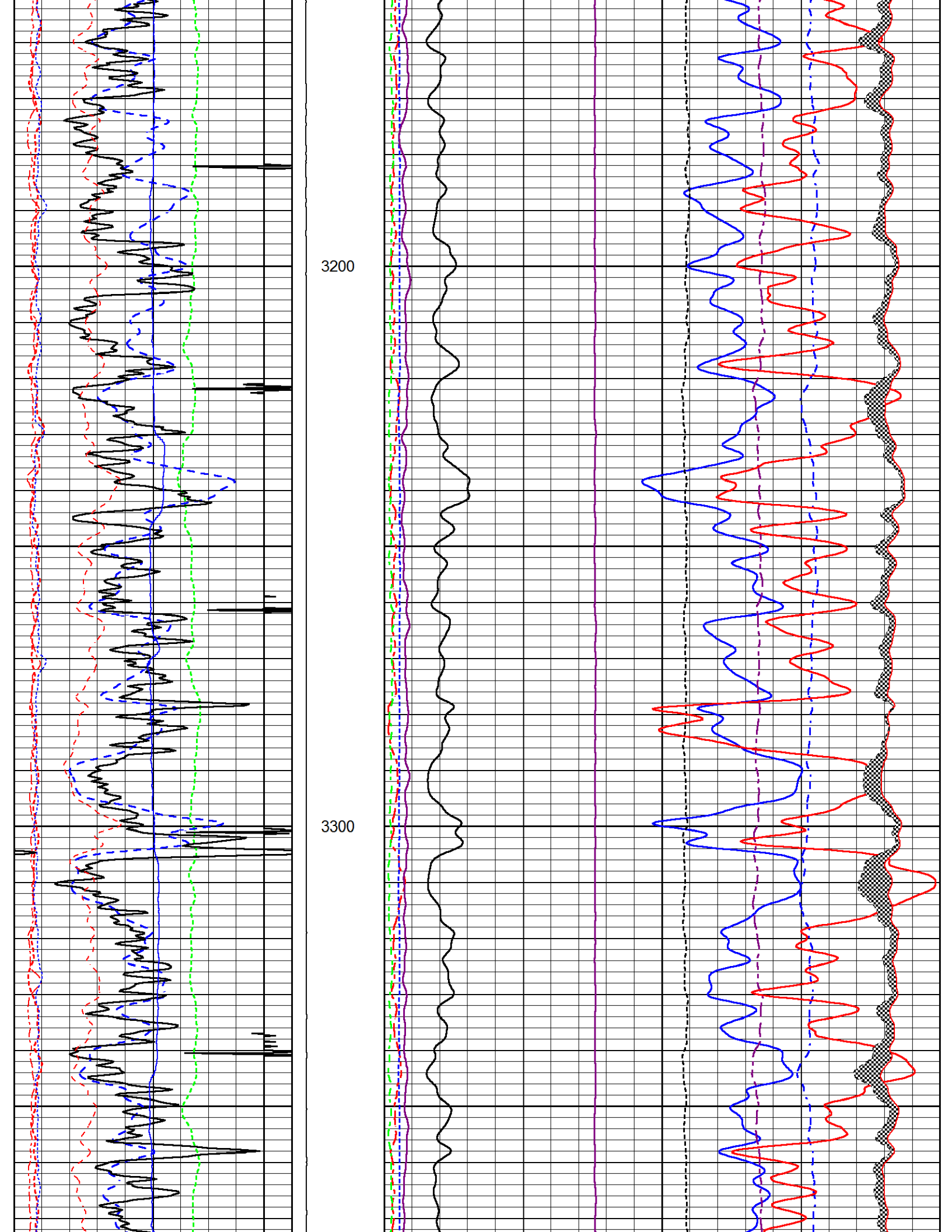
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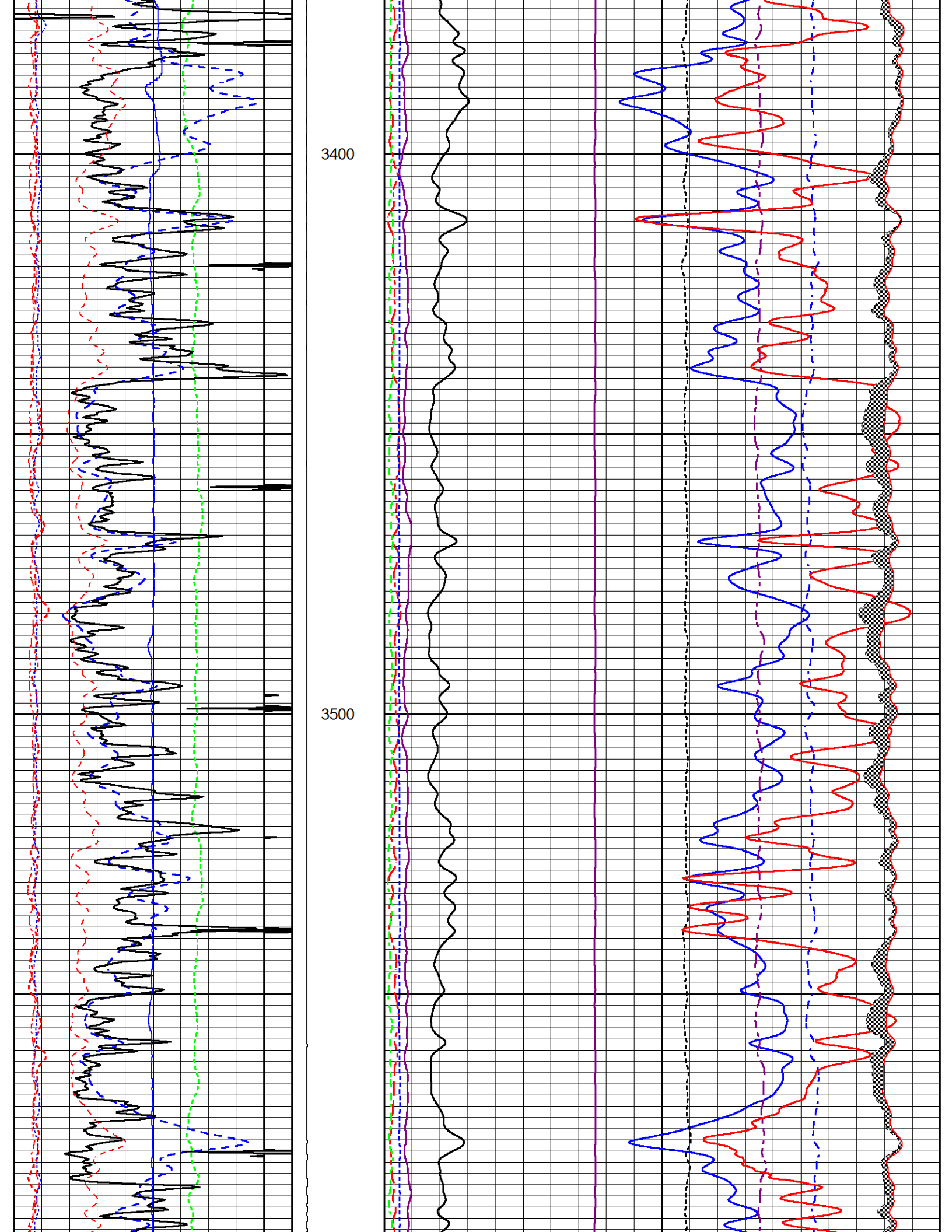
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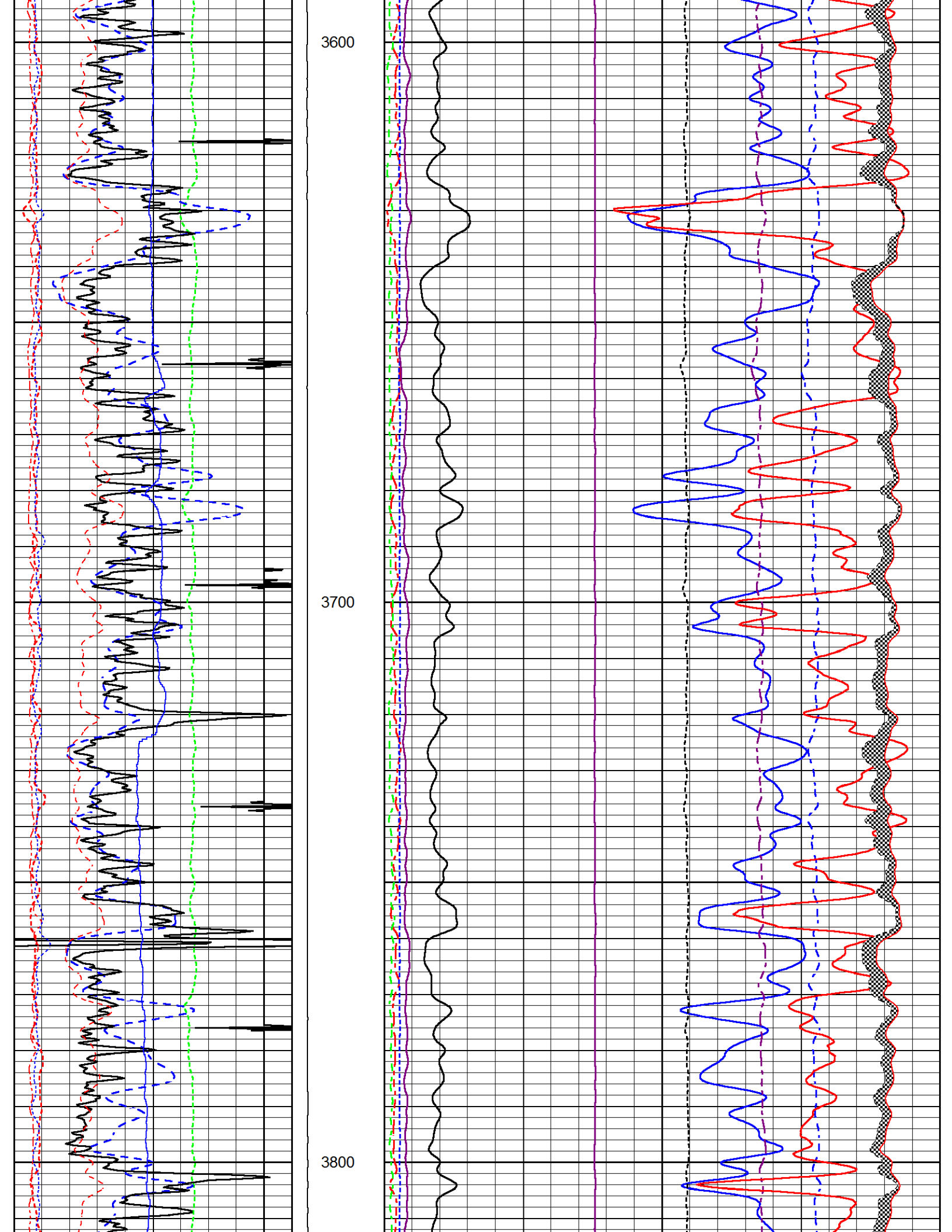
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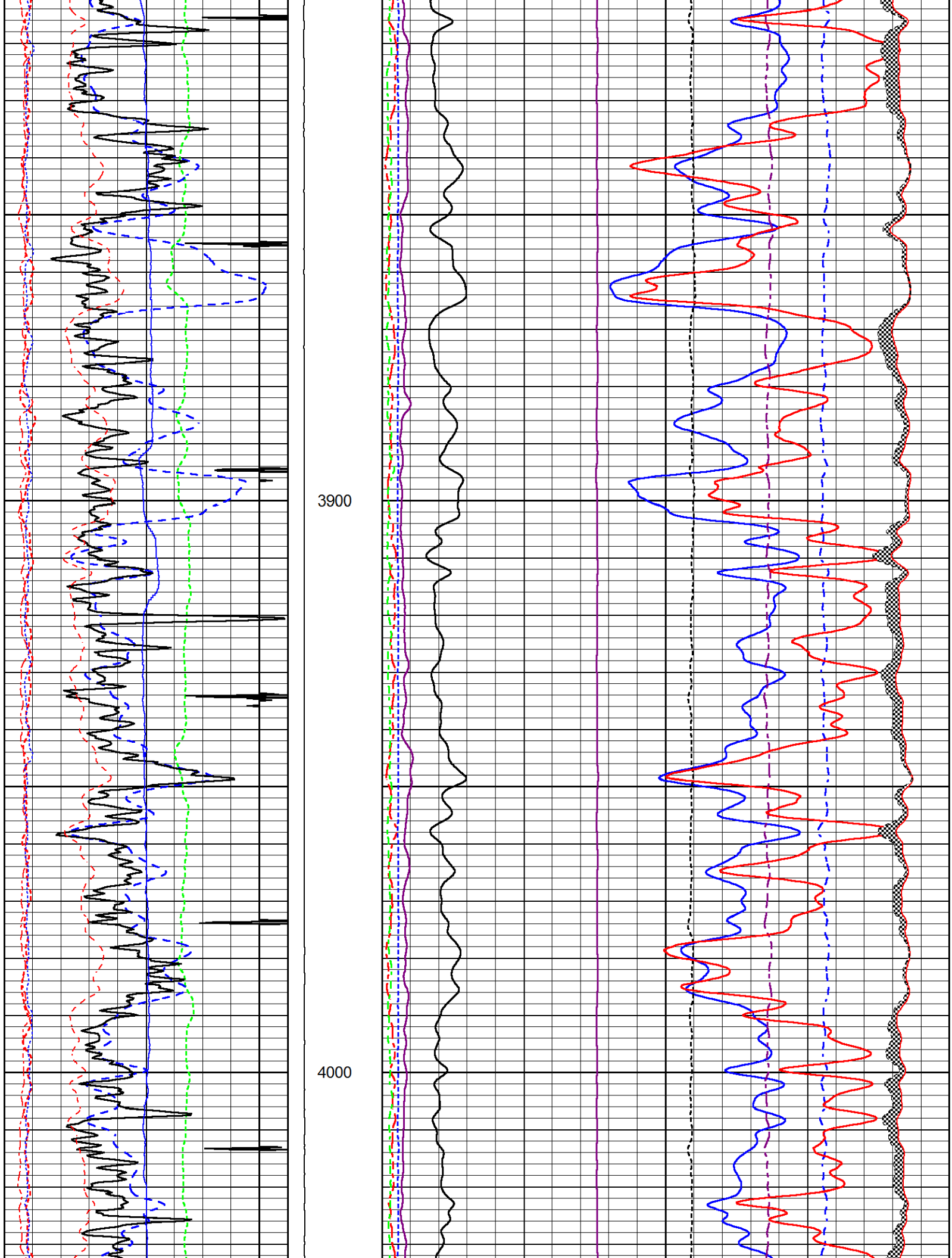
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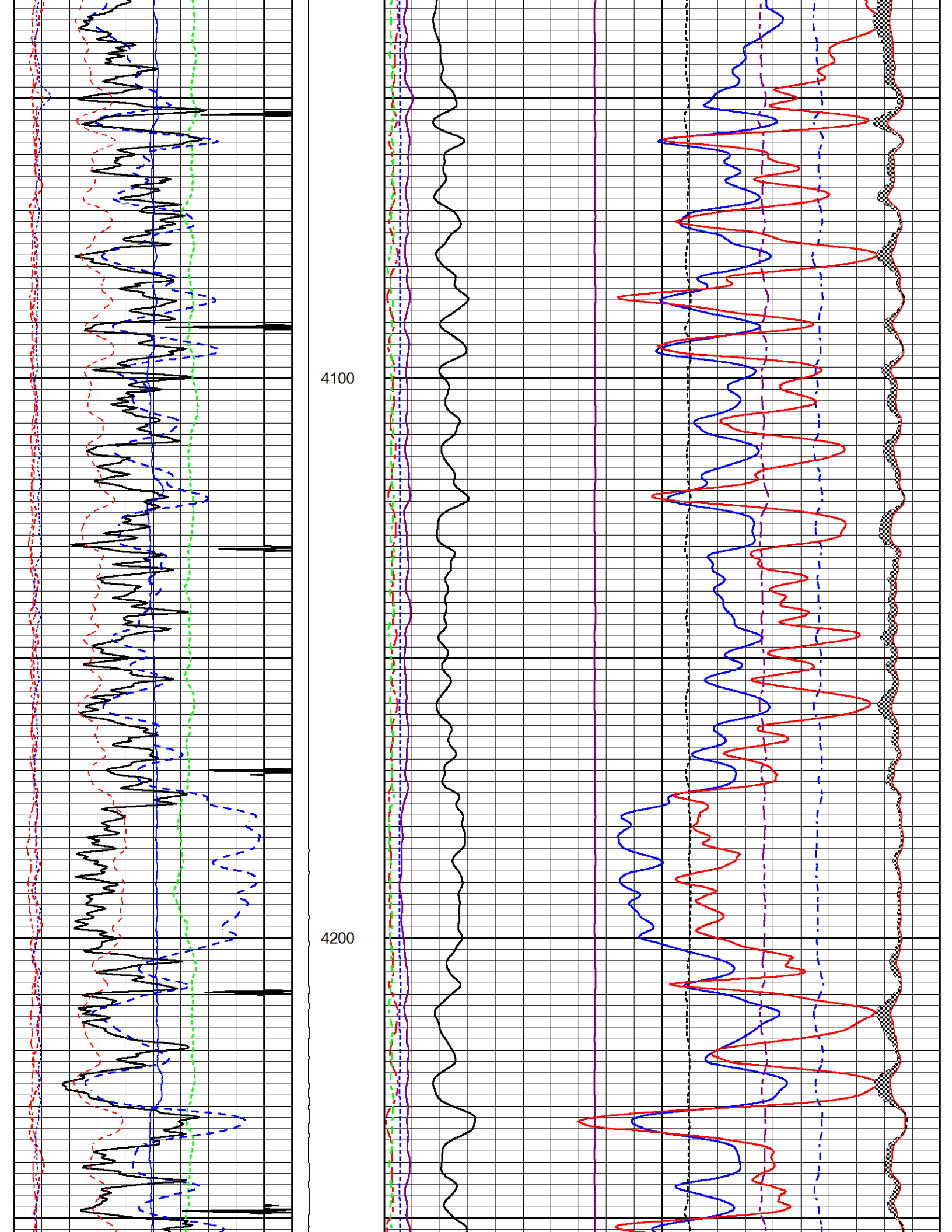
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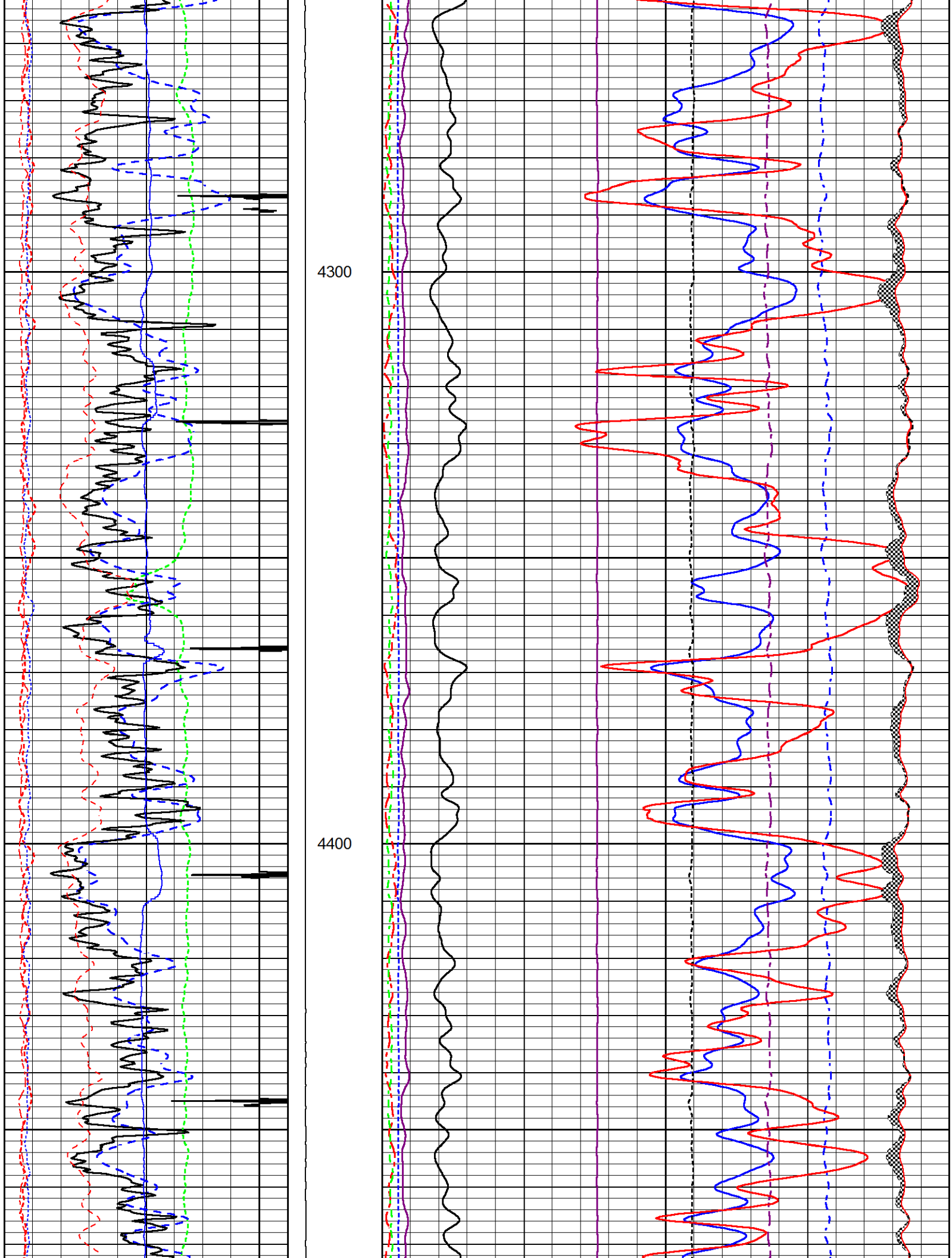
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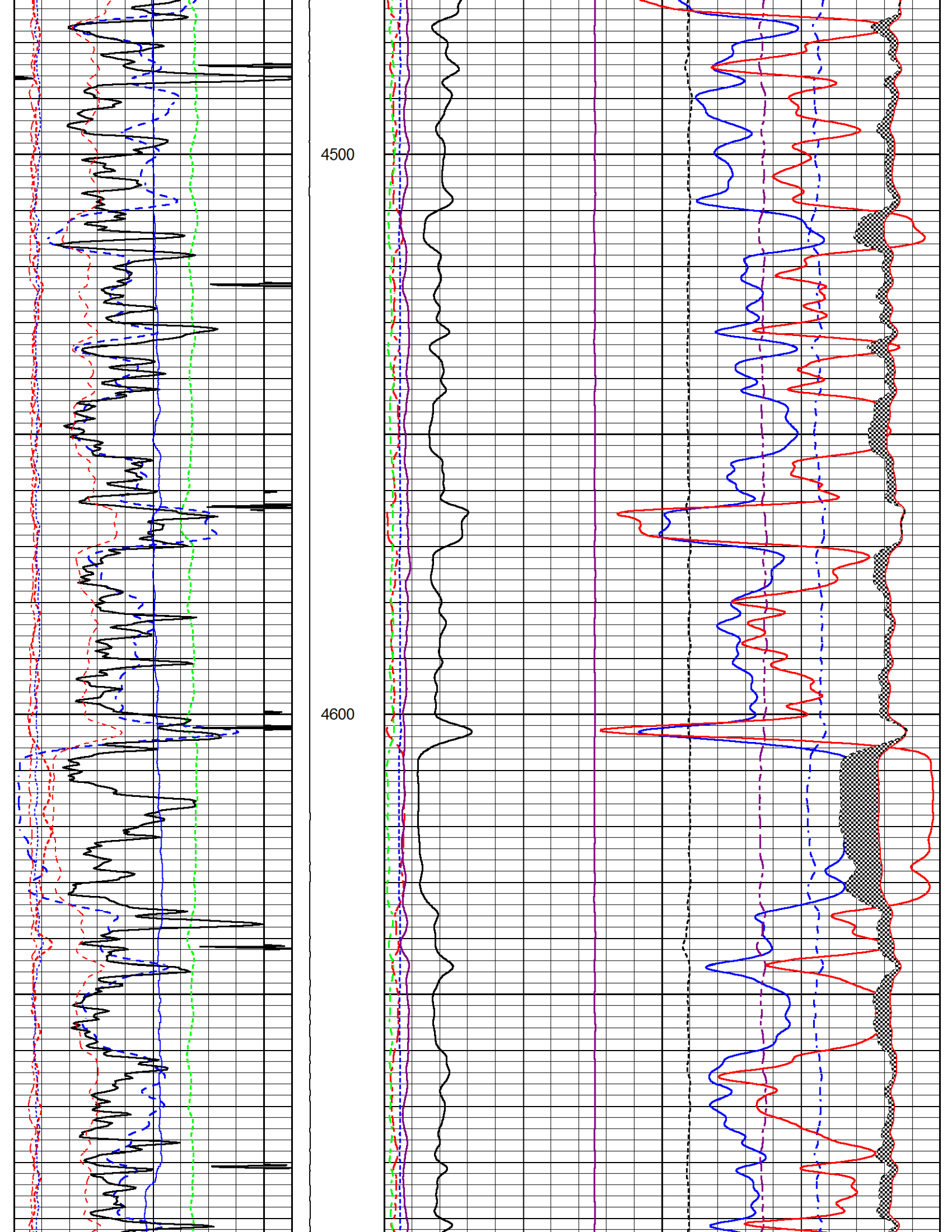
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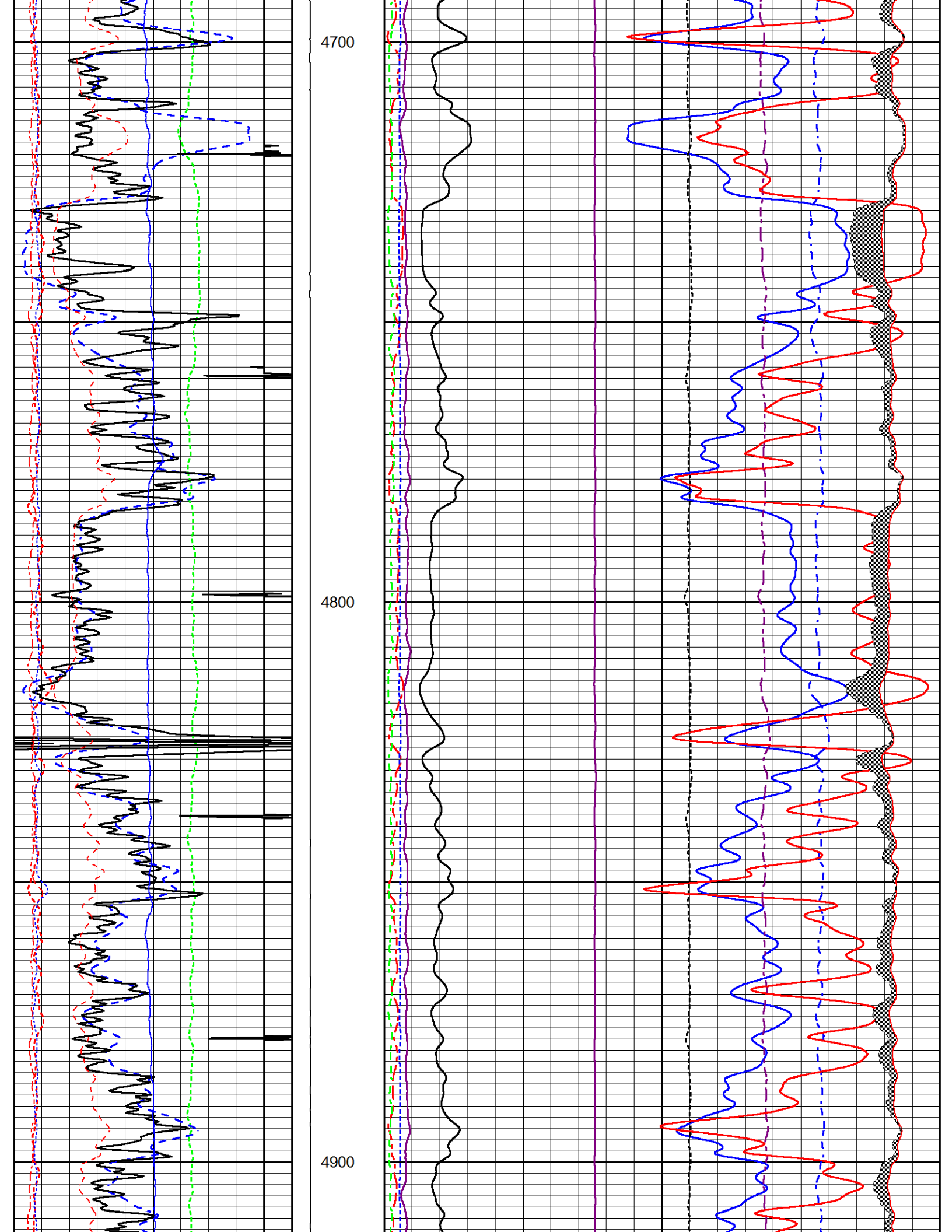
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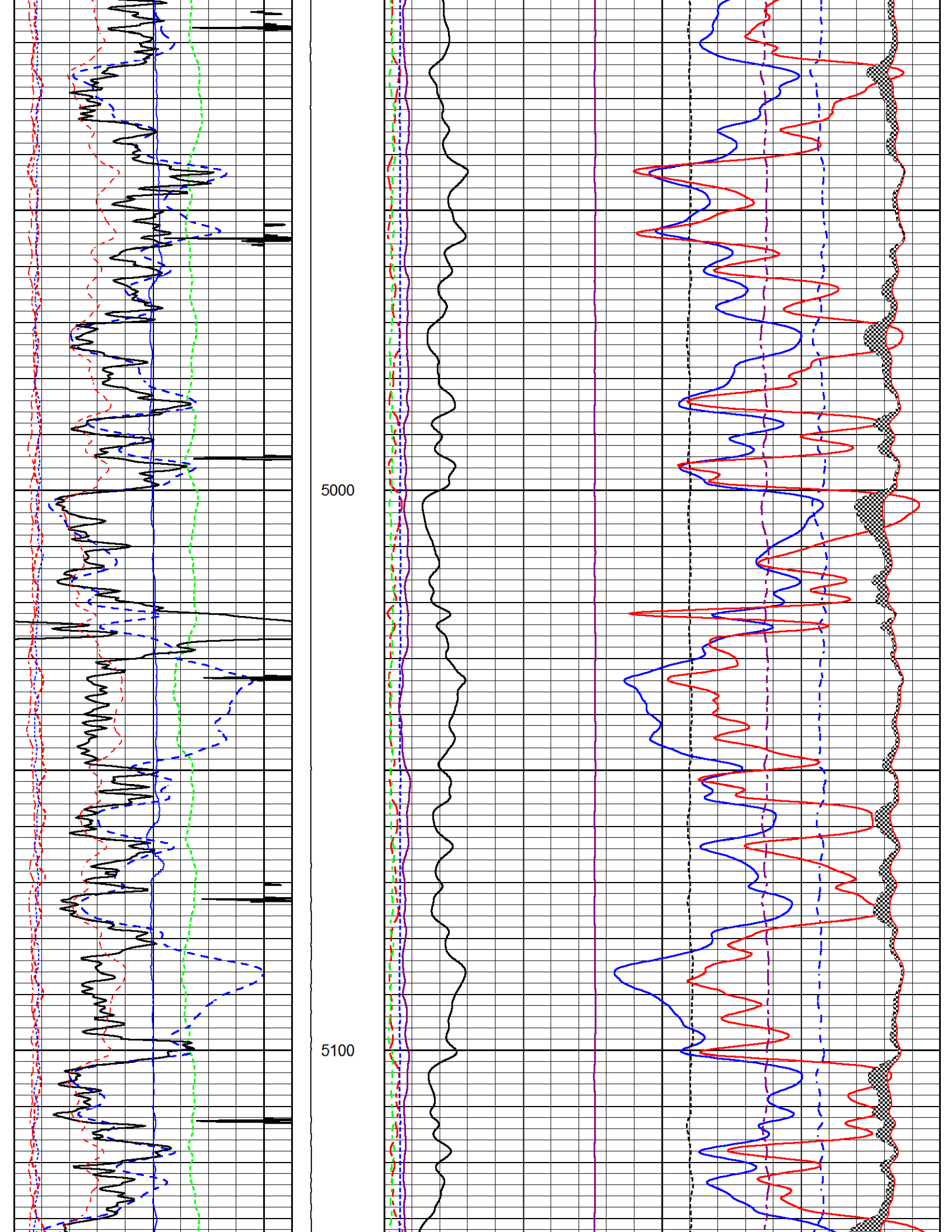
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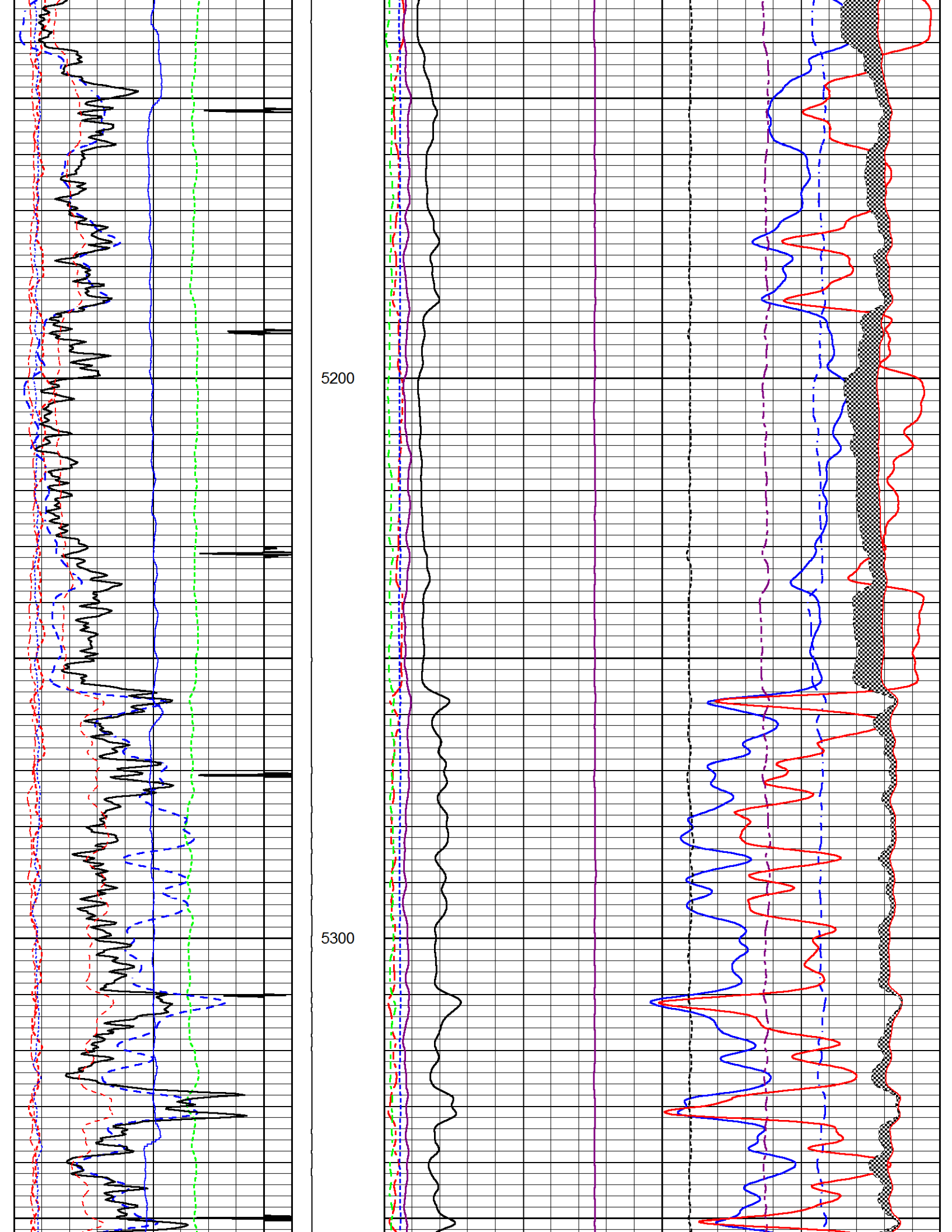
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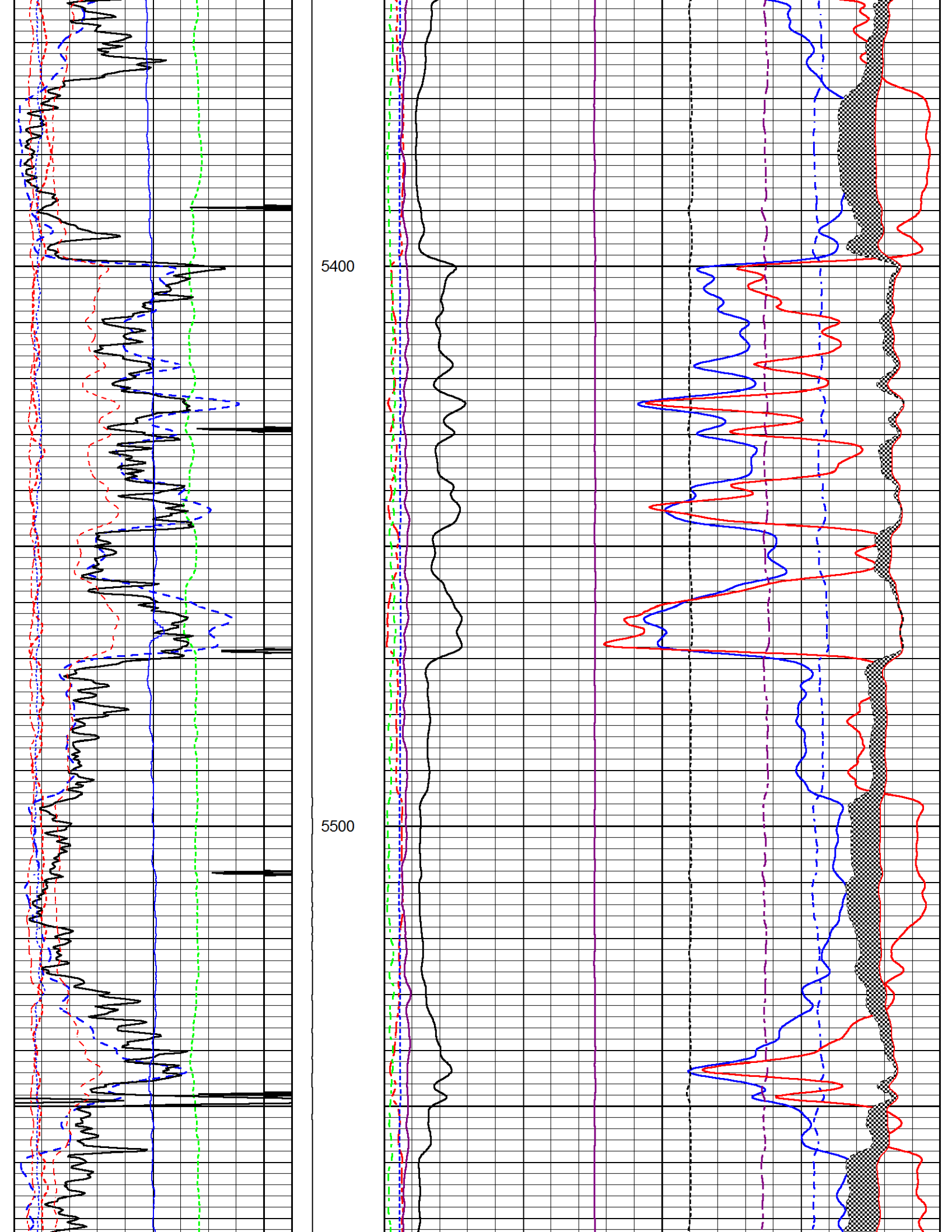
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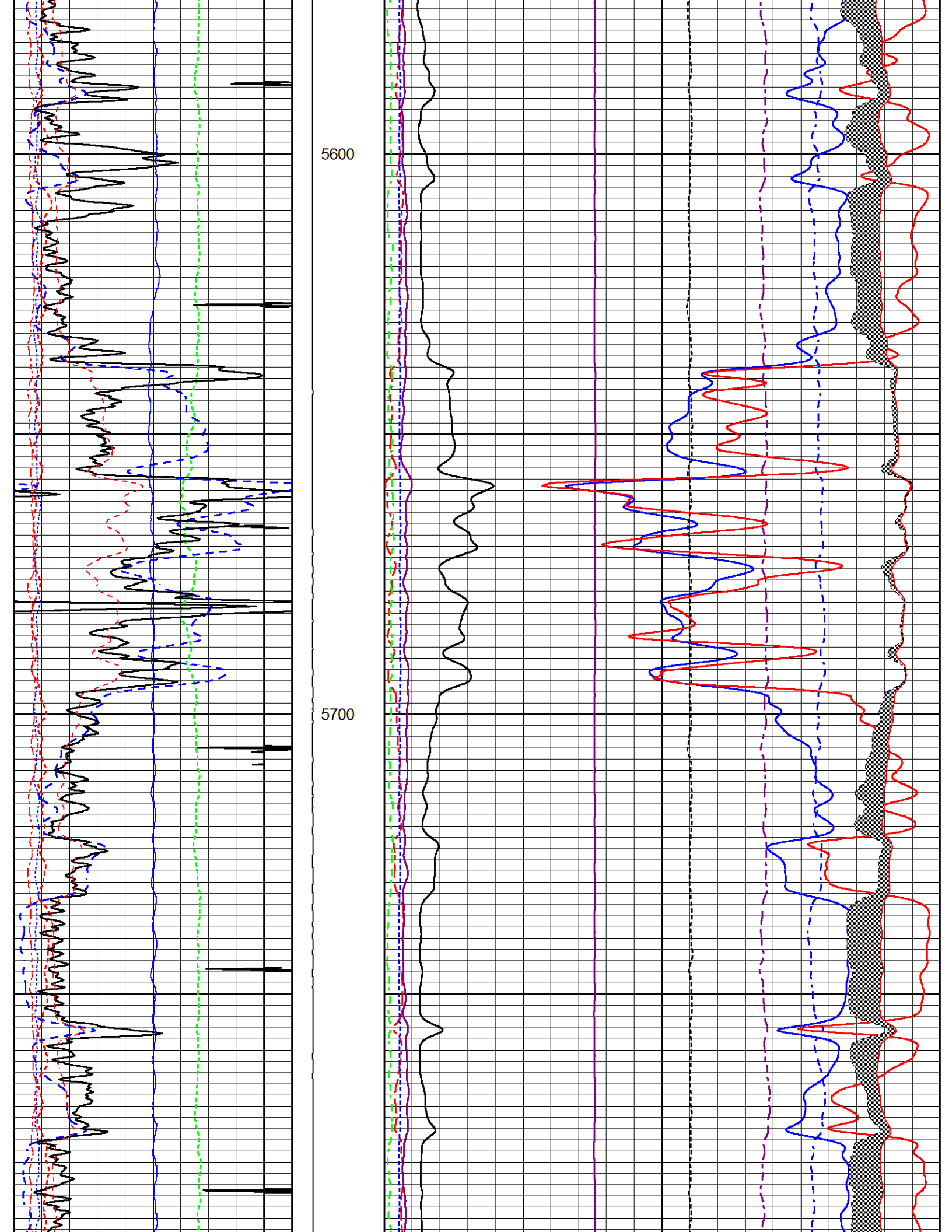
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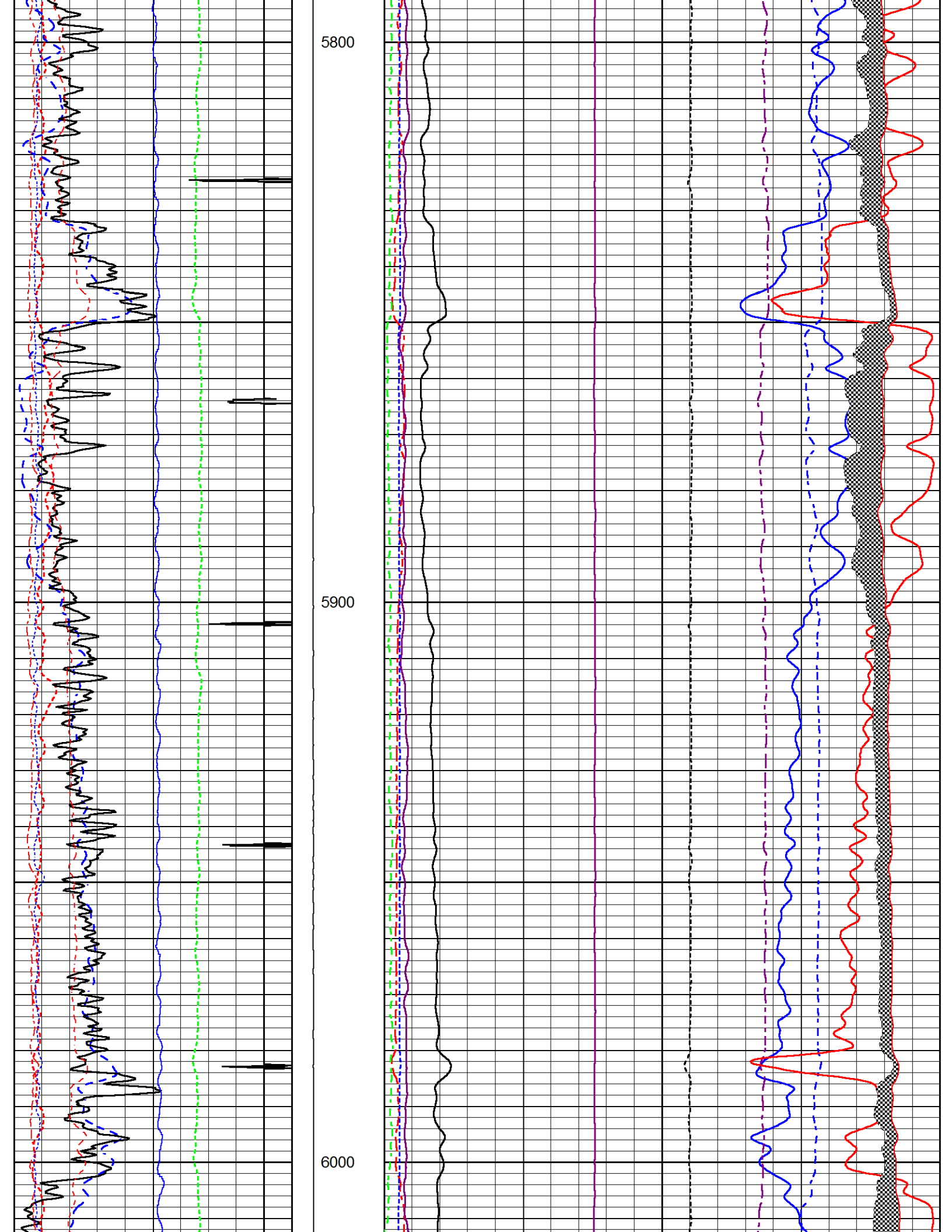
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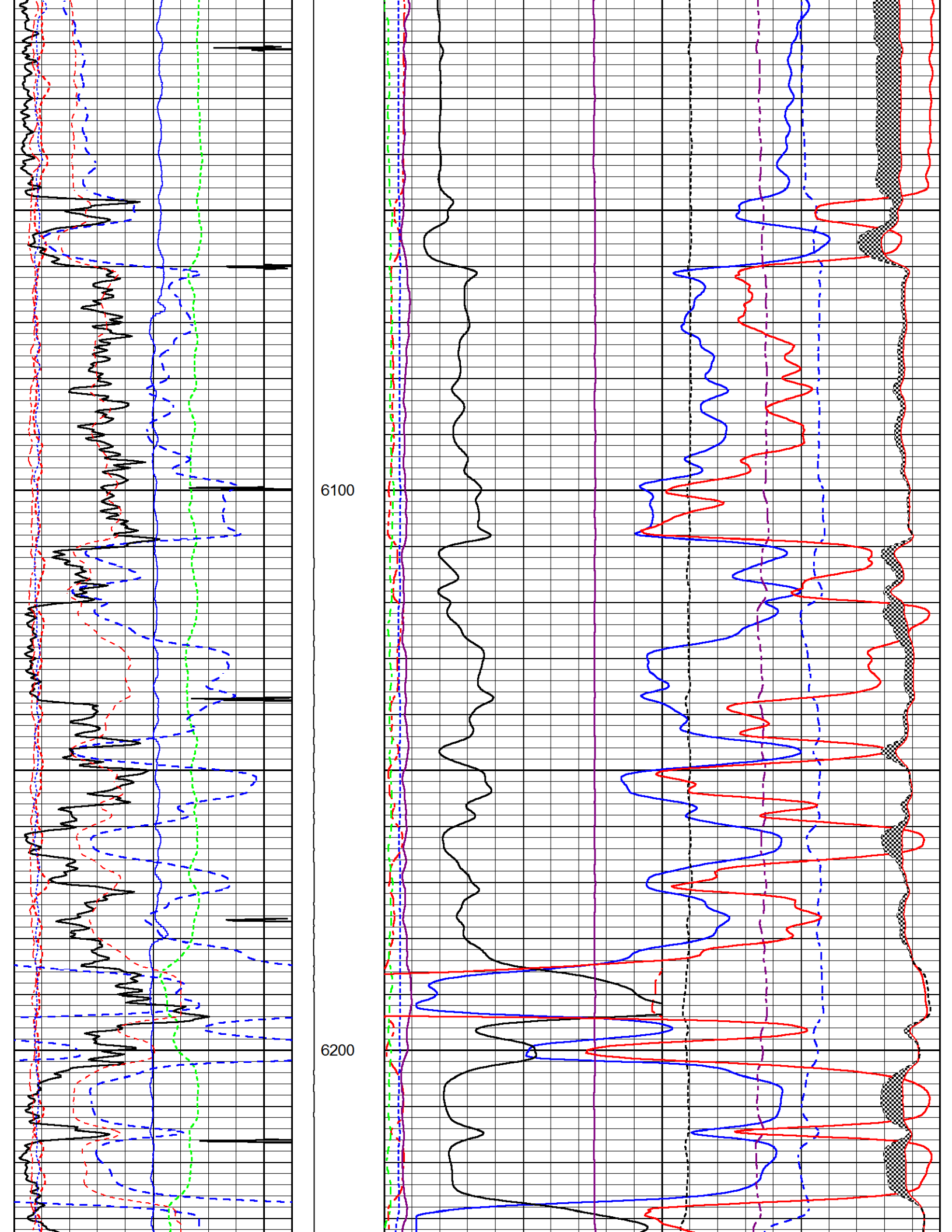
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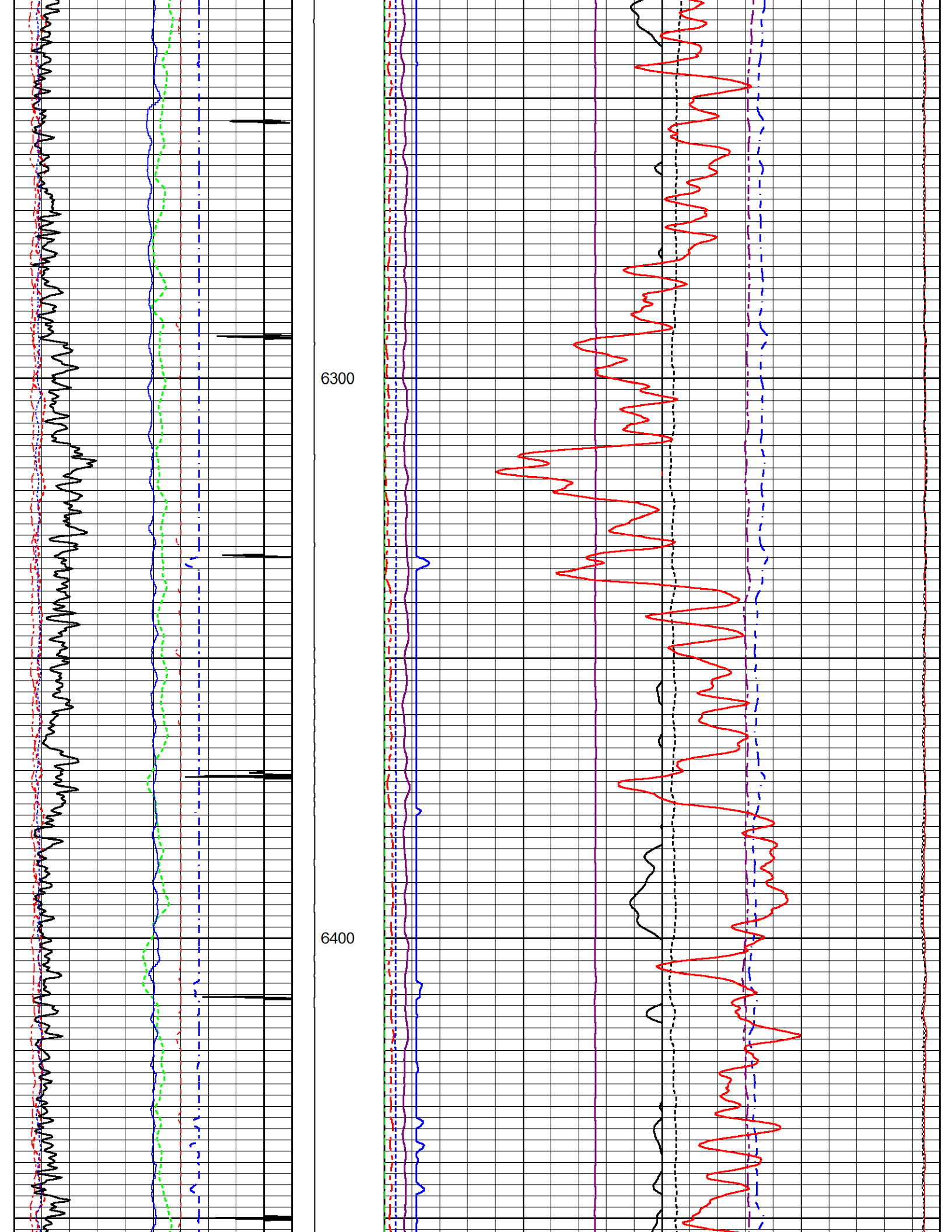
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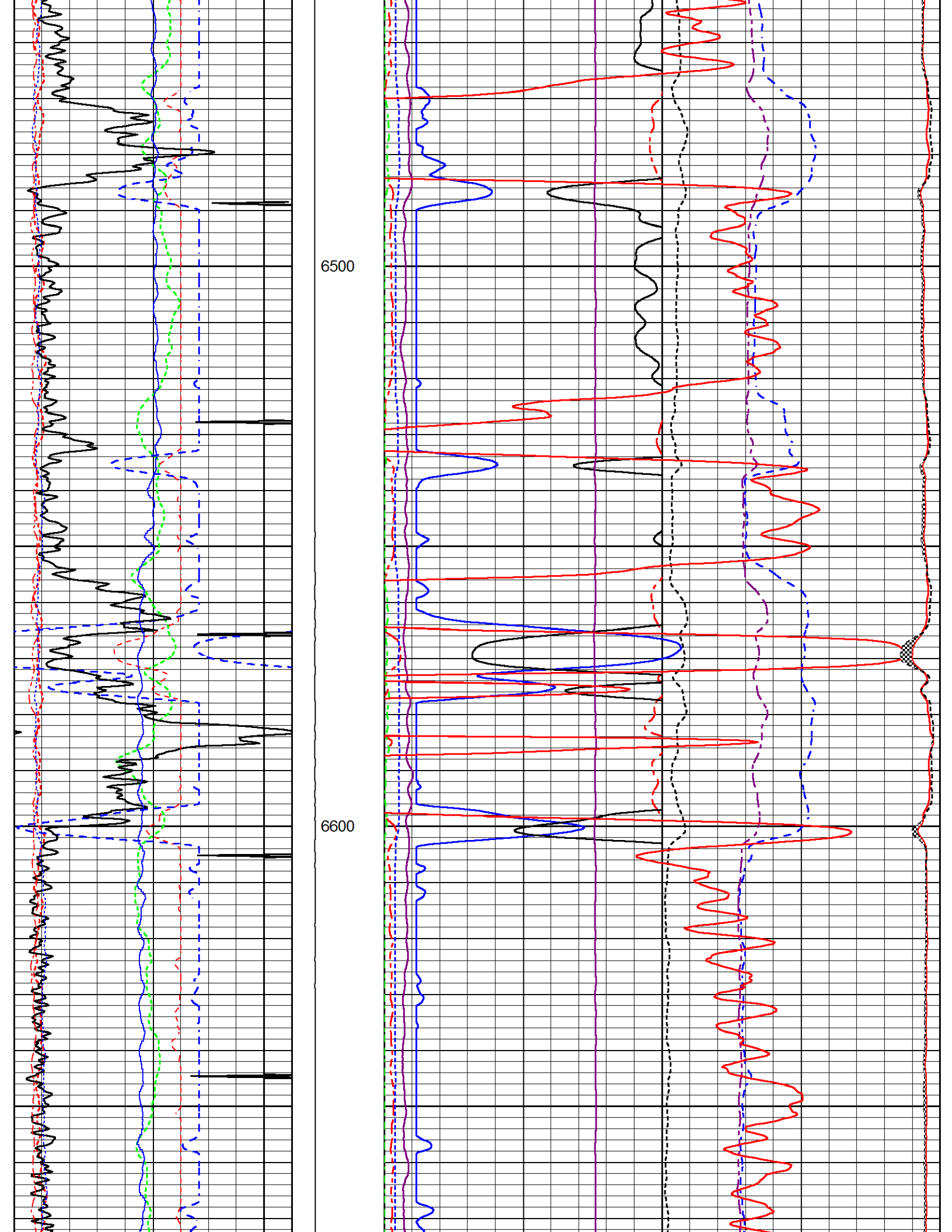
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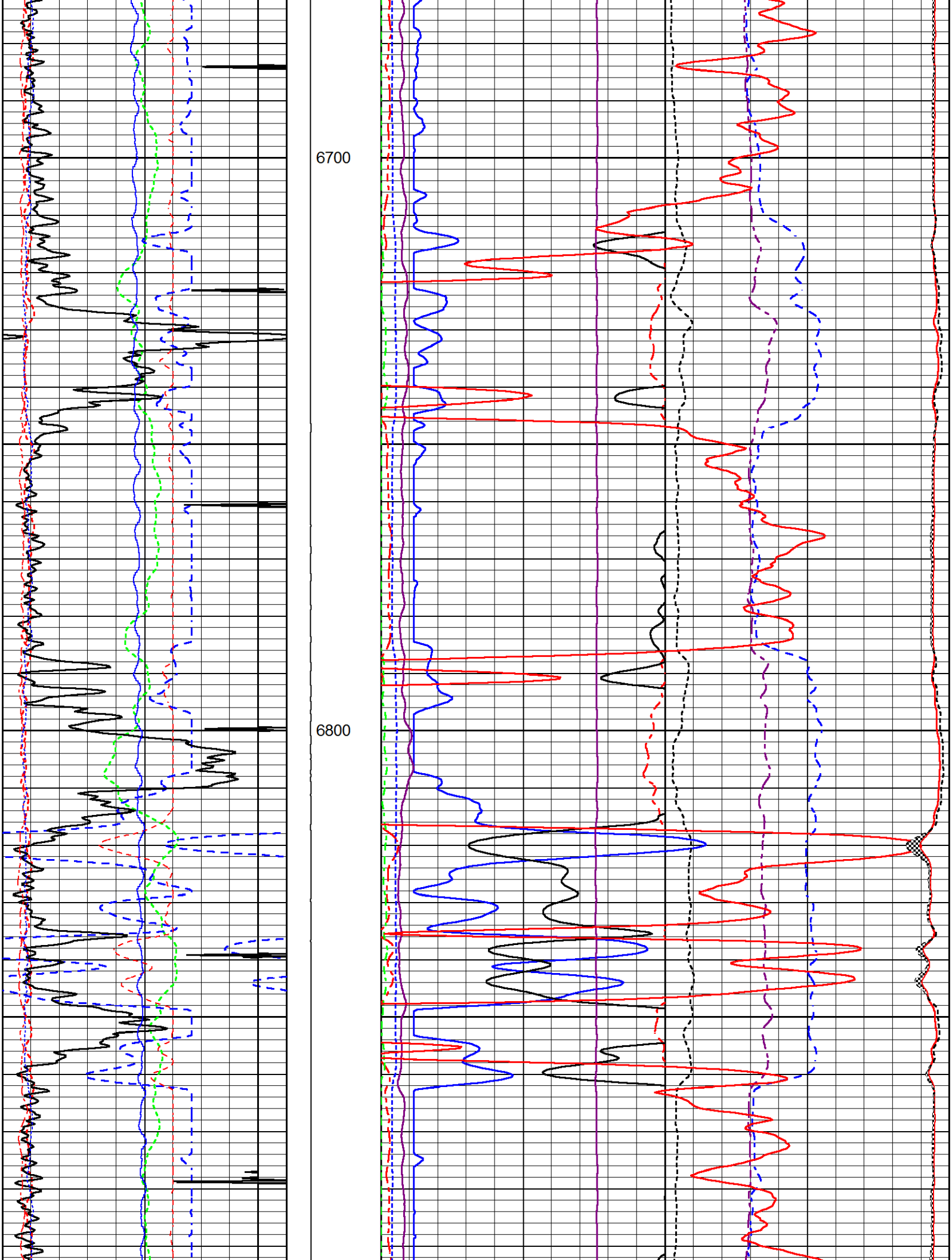
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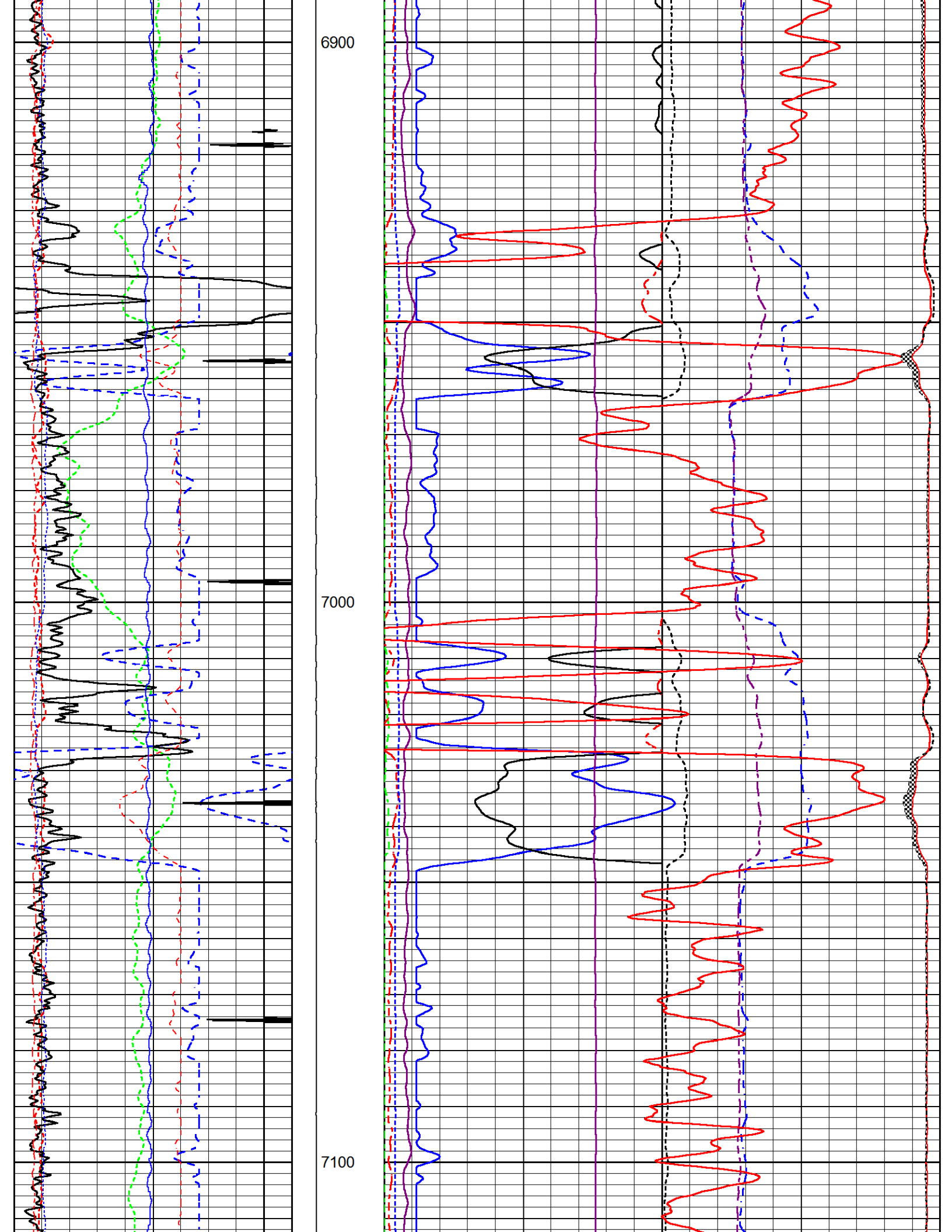
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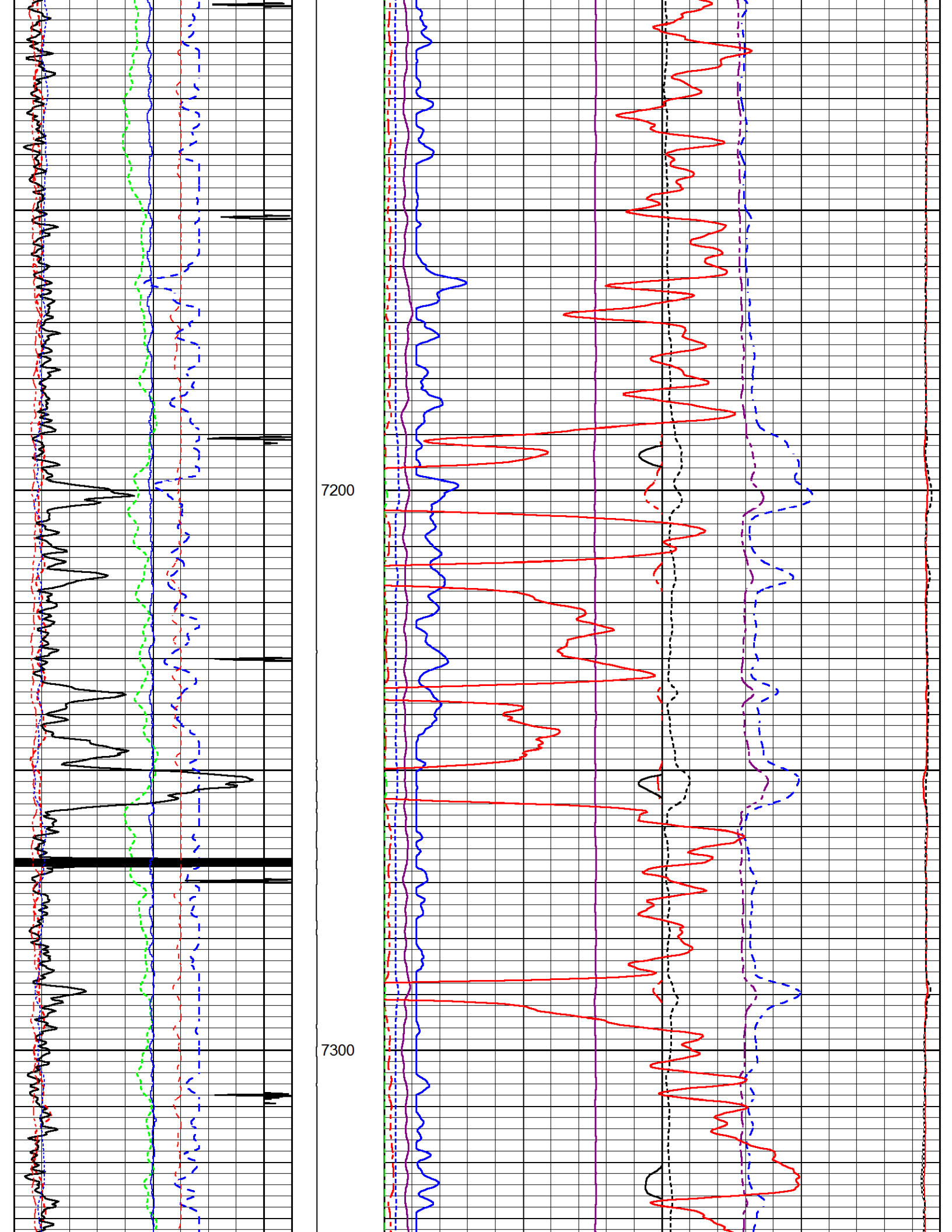
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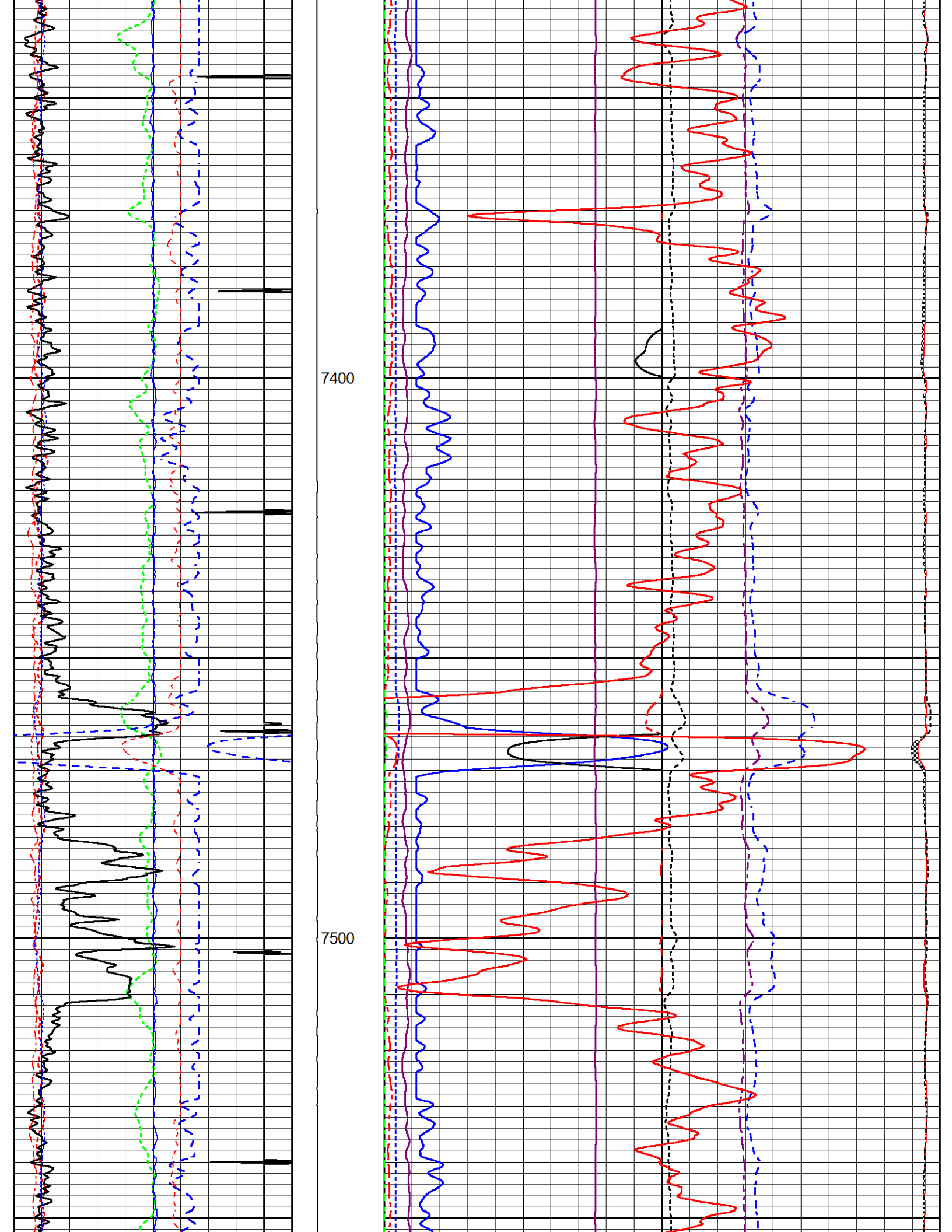
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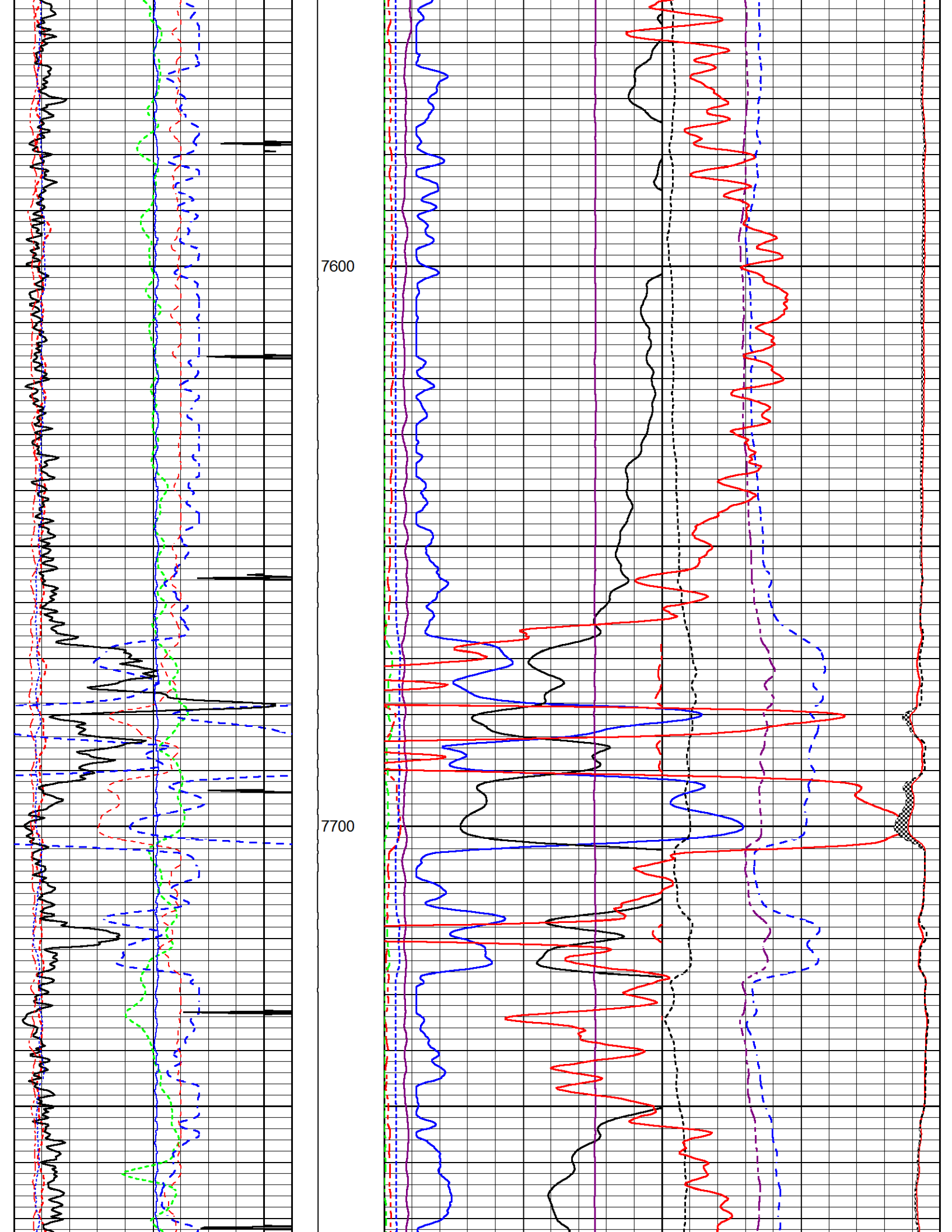
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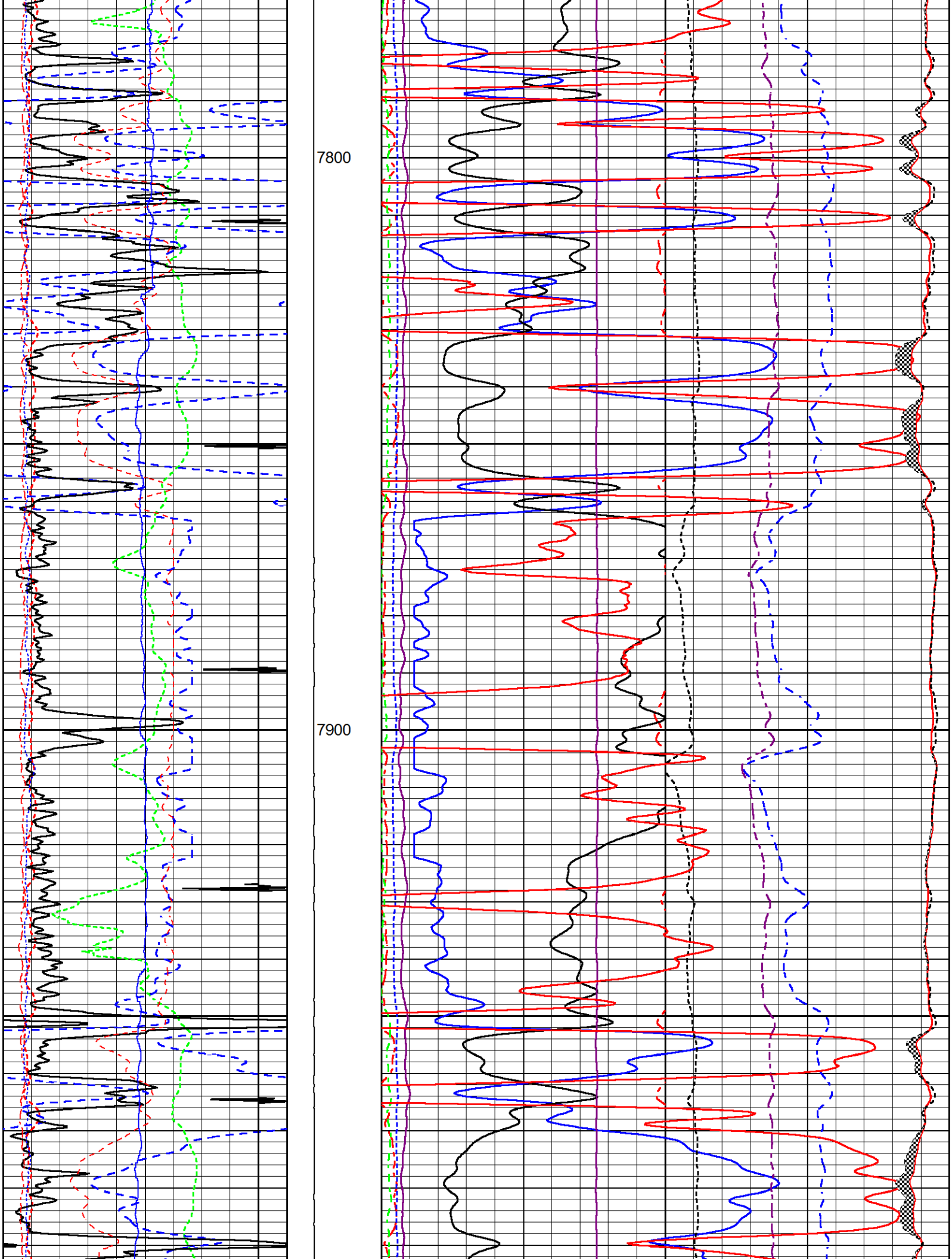
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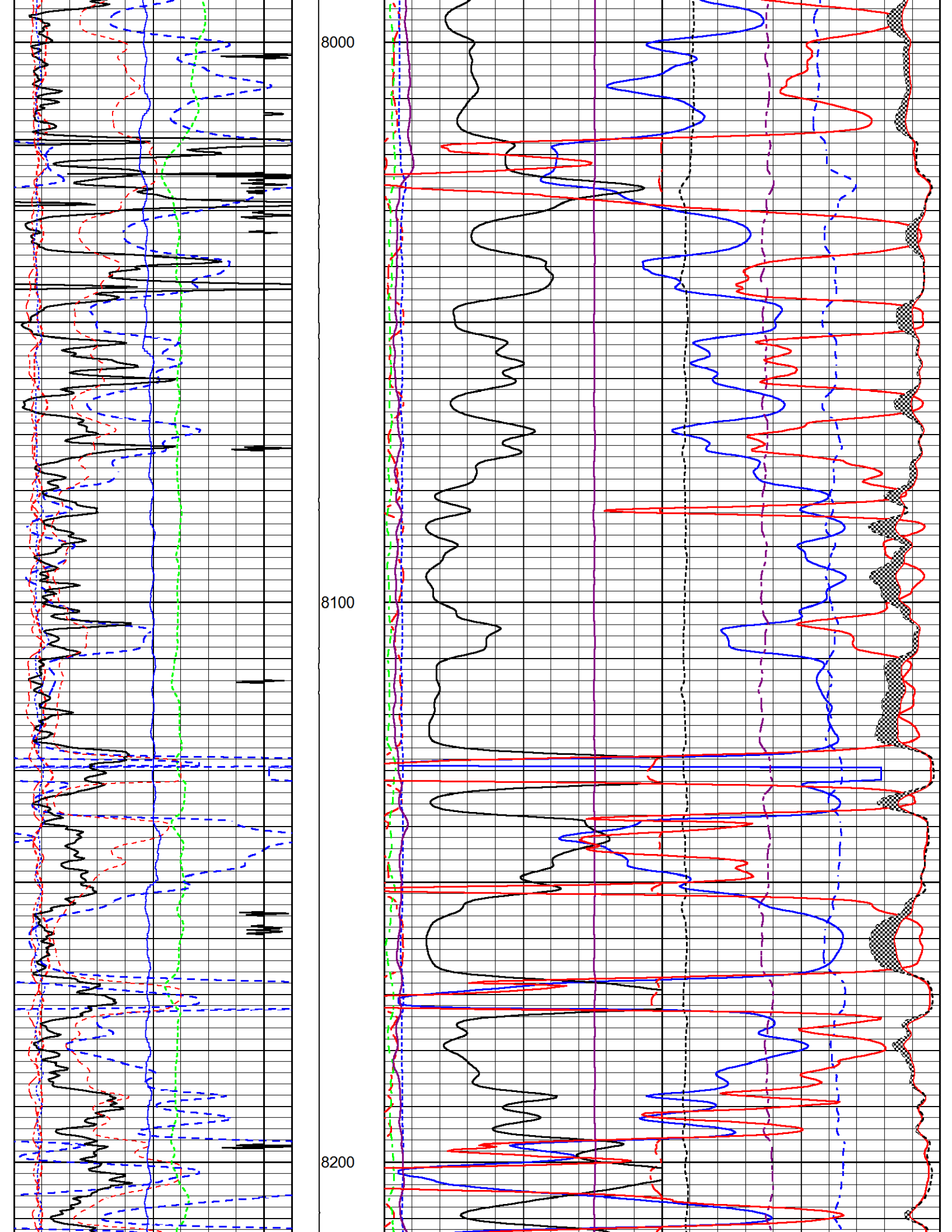
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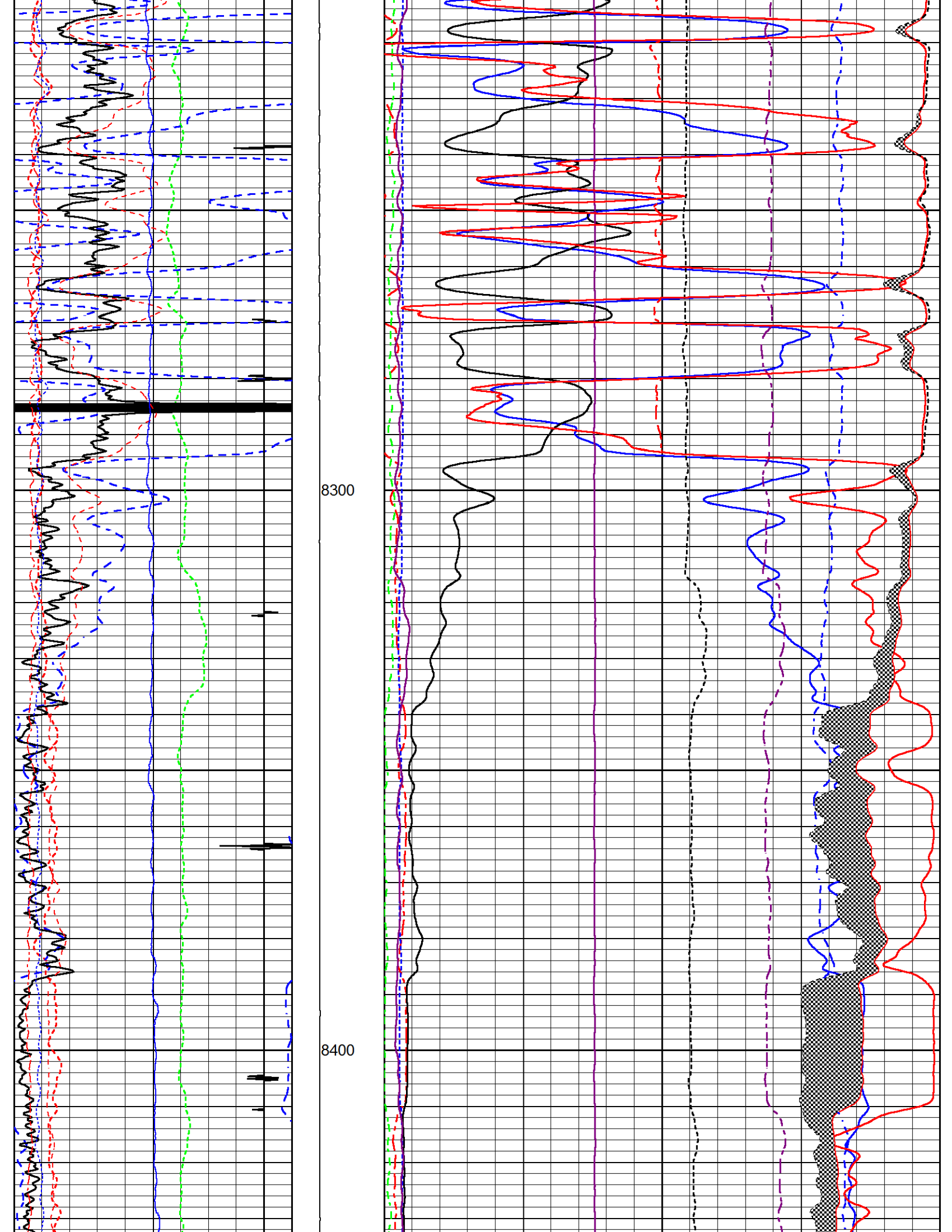
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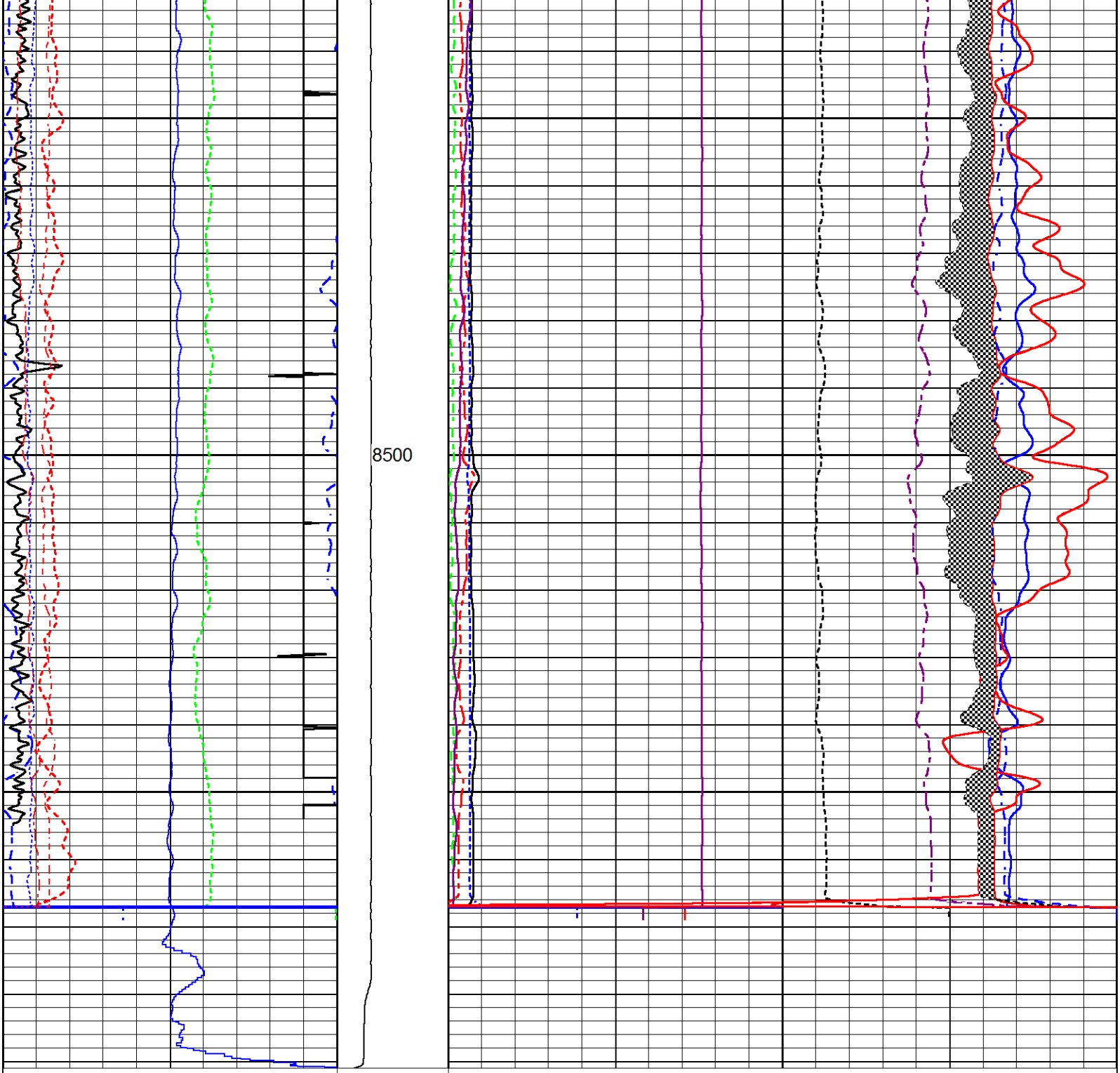


200	Near Bore Si (SGBN)	0
0	OAI	100
10	FAR FIT ERR (SGFF)	40
0	GR (GAPI)	200
0	NEAR FIT ERR (SGFN)	100
-2700	CCL	300
0	IN FIT ERR (CFTR1) NEAR	1
0	IN FIT ERR (CFTR2) FAR	1
50	LSPD (ft/min) (ft/min)	0

TENSION

60	SGIN	0
0.6	PHIT ( )	0
7	RATIO (RNF) 1	60000 Near Counts (NCAP) 0
0	RIN 15	60000 Far Counts (FCAP) 0
0	RICF 18	100000 FAR INTEL CT (FSIN) 0
0	H YIELD (YH2) 1	100000 NEAR INTEL CT (NSIN) 0
0	H YIELD (YH1) 1	ET INL NEAR (NNIN
	-1500 INOX2 1500	50000 -1000

HALLIBURTON

MAIN LOG SECTION

5" = 100'

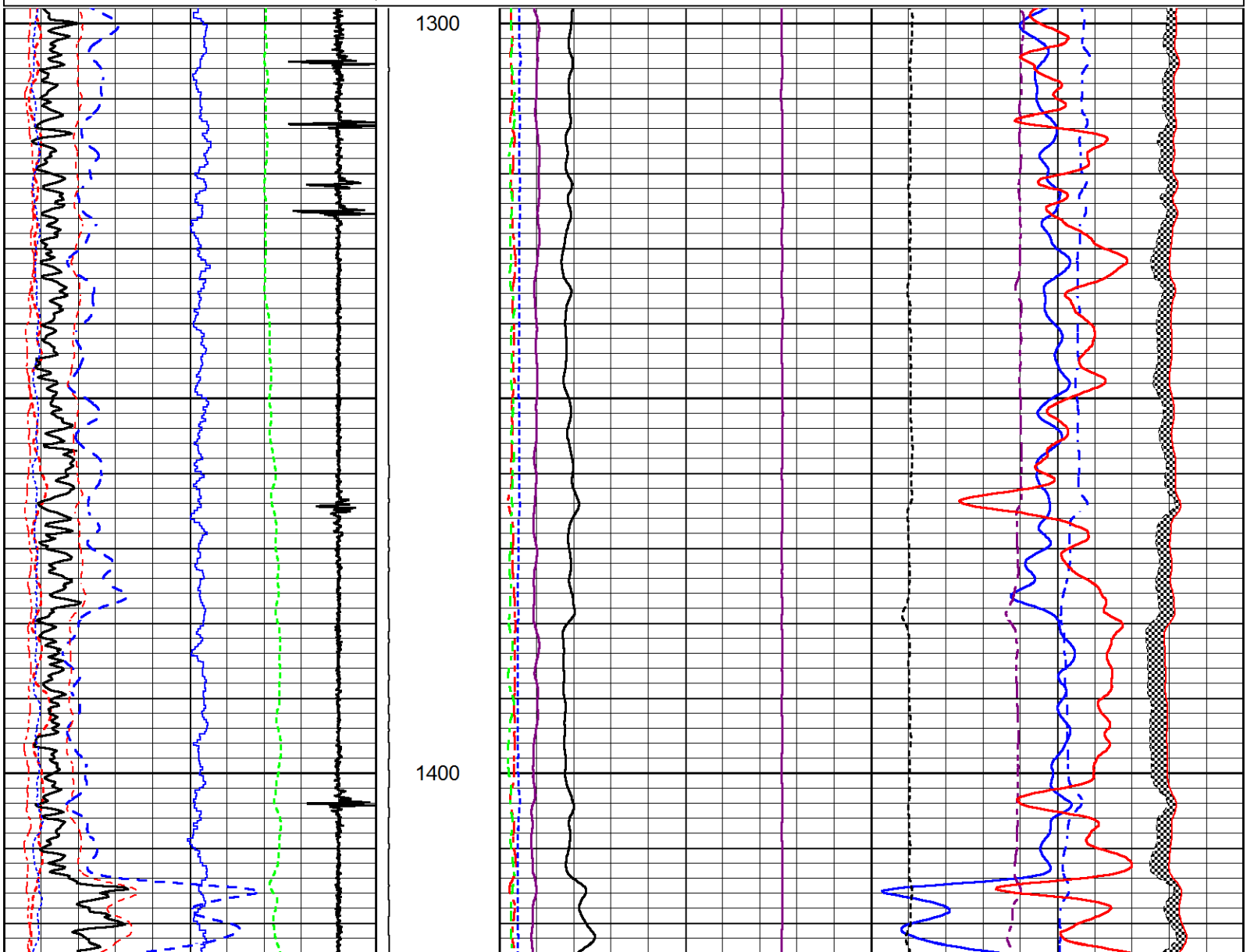
HALLIBURTON

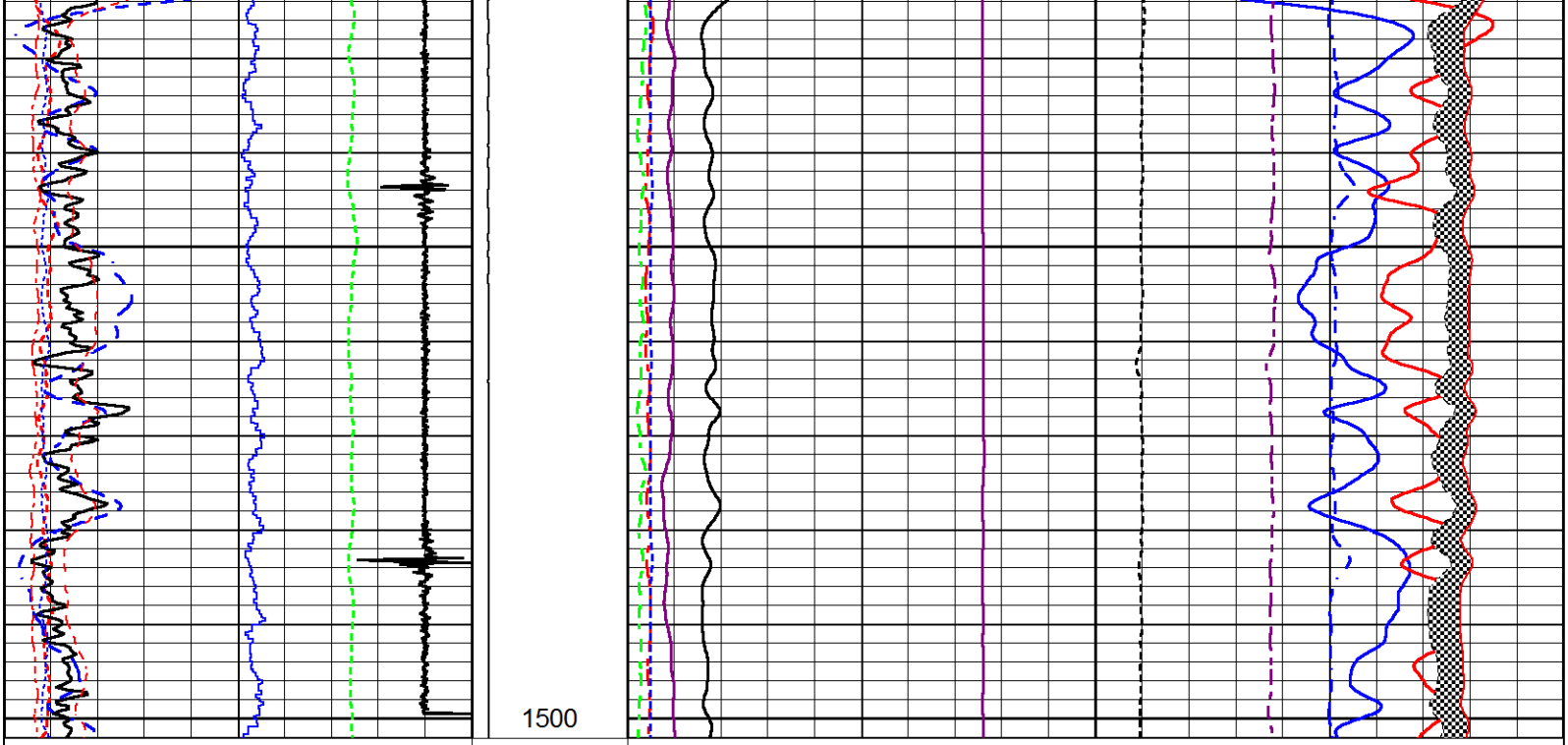
REPEAT LOG SECTION

5" = 100'

Database File	km cd 4.db
Dataset Pathname	1-23-15/RBT-RMT/REPEAT1.1
Presentation Format	RMTE_M~1
Dataset Creation	Fri Jan 23 19:56:31 2015
Charted by	Depth in Feet scaled 1:240

200	Near Bore Si (SGBN)	0	TENSION	60	SGIN	0		
0	OAI	100		0.6	PHIT ( )	0		
10	FAR FIT ERR (SGFF)	40		7	RATIO (RNF)	1	60000 Near Counts (NCAP)	0
0	GR (GAPI)	200		0	RIN	15	60000 Far Counts (FCAP)	0
0	NEAR FIT ERR (SGFN)	100		0	RICF	18	100000 FAR INTEL CT (FSIN)	0
-2700	CCL	300		0	H YIELD (YH2)	1	100000 NEAR INTEL CT (NSIN)	0
0	IN FIT ERR (CFTR1) NEAR	1		0	H YIELD (YH1)	1	ET INL NEAR (NNIN	
0	IN FIT ERR (CFTR2) FAR	1			-1500 INOX2	1500	50000 -1000	
50	LSPD (ft/min) (ft/min)	0						





200	Near Bore Si (SGBN)	0	TENSION	60	SGIN	0
0	OAI	100		0.6	PHIT ( )	0
10	FAR FIT ERR (SGFF)	40		7	RATIO (RNF) 1	60000 Near Counts (NCAP) 0
0	GR (GAPI)	200		0	RIN 15	60000 Far Counts (FCAP) 0
0	NEAR FIT ERR (SGFN)	100		0	RICF 18	100000 FAR INTEL CT (FSIN) 0
-2700	CCL	300		0	H YIELD (YH2) 1	100000 NEAR INTEL CT (NSIN) 0
0	IN FIT ERR (CFTR1) NEAR	1		0	H YIELD (YH1) 1	ET INL NEAR (NNIN
0	IN FIT ERR (CFTR2) FAR	1			-1500 INOX2 1500	50000 -1000
50	LSPD (ft/min) (ft/min)	0				

HALLIBURTON

REPEAT LOG SECTION

5" = 100'

Log Variables

Database D:\Warrior_data\km cd 4.db
Dataset field/1-23-15/RMT-RBT/MAIN1.2/_vars_

Top - 0.00 ft

BHTEMP_Src	BHSAL2	BHSAL1	POROS2	POROS1	LTH	UHSGC	RHOCF
ITEMPX	0	1	0	1	Limestone	NONE	0.25
SO in	BORSAL kppm	CASED?	PPT usec	CASEWGHT lb/ft	MAXAMPL mV	MINAMPL mV	MINATTN db/ft
0	150	Yes	0	29	62	1.5	0.8
SRFTEMP degF	MudWgt lb/gal	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BITSIZE in
30	8.33	0.816	7	0	0	30	8.75

0.00 ft - 10.00 ft

BHTEMP_Src	BHSAL2	BHSAL1	POROS2	POROS1	LTH	UHSGC	RHOCF
ITEMPX	0	1	0	1	Limestone	NONE	0.25
SO in 0	BORSAL kppm 150	CASED? Yes	PPT usec 0	CASEWGHT lb/ft 29	MAXAMPL mV 62	MINAMPL mV 1.5	MINATTN db/ft 0.8
SRFTEMP degF 30	MudWgt lb/gal 8.33	CASETHCK in 0.816	CASEOD in 7	PERFS 0	**TDEPTH** **ft** **10**	**BOTTEMP** **degF** **180**	BITSIZE in 8.75

10.00 ft - 6096.00 ft

BHTEMP_Src	BHSAL2	BHSAL1	POROS2	POROS1	LTH	UHSGC	RHOCF
ITEMPX	0	1	0	1	Limestone	NONE	0.25
SO in 0	BORSAL kppm 150	CASED? Yes	PPT usec 0	CASEWGHT lb/ft 29	MAXAMPL mV 62	MINAMPL mV 1.5	MINATTN db/ft 0.8
SRFTEMP degF 30	MudWgt lb/gal 8.33	CASETHCK in 0.816	CASEOD in 7	PERFS 0	**TDEPTH** **ft** **6096**	BOTTEMP degF 180	BITSIZE in 8.75

6096.00 ft - 8032.00 ft

BHTEMP_Src	BHSAL2	BHSAL1	POROS2	POROS1	LTH	UHSGC	RHOCF
ITEMPX	0	1	0	1	Limestone	NONE	0.25
SO in 0	BORSAL kppm 150	CASED? Yes	PPT usec 0	**CASEWGHT** **lb/ft** **32**	MAXAMPL mV 62	MINAMPL mV 1.5	MINATTN db/ft 0.8
SRFTEMP degF 30	MudWgt lb/gal 8.33	CASETHCK in 0.816	CASEOD in 7	PERFS 0	**TDEPTH** **ft** **8032**	BOTTEMP degF 180	BITSIZE in 8.75

8032.00 ft - Bottom

BHTEMP_Src	BHSAL2	BHSAL1	POROS2	POROS1	LTH	UHSGC	RHOCF
ITEMPX	0	1	0	1	Limestone	NONE	0.25

SO in 0	BORSAL kppm 150	CASED? Yes	PPT usec 0	**CASEWGHT lb/ft 12.6**	**MAXAMPL mV 81**	MINAMPL mV 1.5	MINATTN db/ft 0.8
SRFTEMP degF 30	MudWgt lb/gal 8.33	**CASETHCK in 0.542**	**CASEOD in 4.5**	PERFS 0	**TDEPTH ft 8580**	BOTTEMP degF 180	**BITSIZE in 6**

Calibration Report

Database File km cd 4.db
Dataset Pathname 1-23-15/RMT-RBT/MAIN1.2
Dataset Creation Fri Jan 23 20:44:49 2015

Segmented Cement Bond Log Calibration Report

Serial Number: 11333931
Tool Model: 004

Calibration Casing Diameter: 4.500 in
Calibration Depth: 1231.396 ft

Master Calibration, performed Fri Jan 23 13:41:09 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.221	0.942	0.000	81.196	112.630	-24.902
5FT	0.220	1.134	0.000	81.196	88.850	-19.584
S1	0.220	0.936	0.000	100.000	139.686	-30.693
S2	0.217	0.972	0.000	100.000	132.542	-28.816
S3	0.219	0.997	0.000	100.000	128.516	-28.171
S4	0.217	0.994	0.000	100.000	128.706	-27.966
S5	0.219	0.954	0.000	100.000	135.936	-29.703
S6	0.218	0.906	0.000	100.000	145.375	-31.728
S7	0.218	0.889	0.000	100.000	148.973	-32.468
S8	0.217	0.890	0.000	100.000	148.514	-32.224

Calibration Report

Serial Number: 11333931
Tool Model: 004
Performed:

	Reference (degF)	Reading ()
Low:	0.000	0.000
High:	1.000	1.000
	Gain = 1.000	Offset = 0.000

Reservoir Monitor Tool I Calibration Report

Serial-Model: 12095949-A

Shop Calibration Performed: Sat Jan 10 12:20:30 2015

Carbon/Oxygen Mode

Stabilization

Result	Logged	Expected Value	Diff.	Tol.	Units
GENV	79.00	80.00	-1.00	+/-15.00	V
ITCR2	3278	3250	28	+/-250	cps

Near Detector

	Channel	Expected Value	Amplitude	FWHM	Tol.
H	60	60 +/-2	0.0273	5.29	<6.00
Fe	207	206 +/-2	0.0959	-----	-----
NGAIN = 0.994	NZOFF = 0.6				

Far Detector

	Channel	Expected Value	Amplitude	FWHM	Tol.
H	60	60 +/-2	0.0360	5.73	<6.50
Fe	210	208 +/-2	0.0904	-----	-----
FGAIN = 0.990	FZOFF = 0.5				

Flask Temperature 64.8 degF

Result	Logged	Expected Value	Diff.	Tol.	Units
COIR2	0.45	0.45	-0.00	+/-0.02	
LIRI2	1.65	1.64	0.01	+/-0.05	
TCCR2	5072	5000	72	+/-1000	cps
ITCR2	3247	3200	47	+/-250	cps

Sigma Mode

Stabilization

Result	Logged	Expected Value	Diff.	Tol.	Units
GENV	79.00	80.00	-1.00	+/-15.00	V
FCAP	10192	10000	192	+/-500	cps

Horizontal Water Tank

Result	Logged	Expected Value	Diff.	Tol.	Units
N/F Normalizer	0.91	0.95	-0.04		
N/F Inel Norm	0.59	0.61	-0.02		
RNF	1.10	1.07	0.03	+/-0.12	
RINC	1.70	1.64	0.06	+/-0.18	
SGFN	24.10	24.00	0.10	+/-0.50	cu
SGFF	22.95	22.85	0.10	+/-0.50	cu
FSIN	24378	24000	378	+/-2000	cps
FCAP	10276	10000	276	+/-1000	cps
NFTR	0.83			<5.00	
FFTR	0.91			<5.00	
NBKG	199			<500	cps
FBKG	95			<500	cps
RTN	0.40	0.40	-0.00	+/-0.10	usec
RTF	0.42	0.40	0.02	+/-0.10	usec

Calibration Software Modules

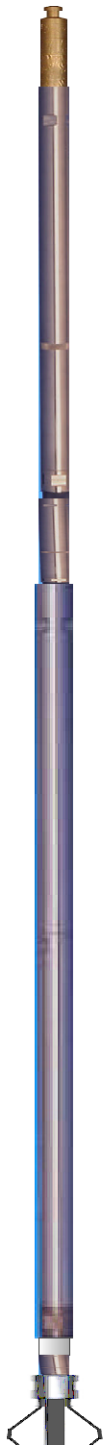
HRMTI Module	2013.11.14.0
RMTI Module	2014.8.28.1

Log Data Acquisition Software Modules

HRMTI Module	2013.11.14.0
RMTI Module	2014.8.28.1

Gamma Ray Calibration Report

Serial Number:	11224503	
Tool Model:	002	
Performed:	Fri Jan 23 08:54:47 2015	
Calibrator Value:	433.0	GAPI
Background Reading:	35.4	cps
Calibrator Reading:	284.8	cps
Sensitivity:	1.7366	GAPI/cps

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	36.80					
GR	34.54		TTTCU-002 (11224503) Through Tubing Telemetry Cartridge - Ultrawire	7.65	1.69	100.00
			XHU-003 (10004394) Crossover Halliburton 1553 to Ultrawire	1.58	1.69	7.00
RmtTFGT	23.89					
RmtTNGT	23.39		RMTI-A (12095949) Halliburton RMTI Tool	14.00	2.13	77.00
RmtFP5V	15.64		X-OVER-SondexxGo Sondex Box x Go Pin Cross Over	0.31	1.69	1.00
RmtCommFWar	15.64		AUH-001 (10003731) Adaptor Ultrawire/Halliburton	0.38	1.69	3.00

			Adaptor Ultrawire/Halliburton			
			CENT-Probe_275 Probe 2 3/4 Centralizer	2.58	2.75	20.00
CBLTEMP	8.02		RBT-004 (11333931) Radial Bond Tool (UW 3 1/8) 20K Rated	9.48	3.13	140.00
			CENT-Probe_275 Probe 2 3/4 Centralizer	2.58	2.75	20.00
LLMTEN	0.00		BUL-001 (000001) Bullnose	0.30	1.69	1.50

Dataset: km cd 4.db: field/1-23-15/RMT-RBT/MAIN2
Total length: 40.37 ft
Total weight: 370.50 lb
O.D.: 3.13 in

Company KINDER MORGAN CO2 CO LP
Well CD 4
Field MCELMO
County MONTEZUMA State CO

HALLIBURTON

RESERVOIR MONITOR
TOOL - ELITE