FMC Technologies

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	Whiting Oil and Gas Corporation
Well	Razor 26L-3501A
Field	Wildcat
County	Weld
State	Colorado

Company	Whiting Oil and Gas Corporation		
Well	Razor 26L-3501A		
Field	Wildcat		
County	Weld	State	Colorado
Location:	API # : 05-123-37990		
	SHL: 2319' FSL 594' FWL Lat/Long: 40.808753/-103.839531 SEC 26 TWP 10N RGE 58W		

Permanent Datum	Ground Level	Elevation	4734'	Other Services	MIT
Log Measured From	Kelly Bushing	17 FT			Gauge ring
Drilling Measured From	Kelly Bushing				Set RBP

Elevation
K.B. 4751'
D.F. 4750'
G.L. 4734'

Date	11-July-2014
Run Number	Three
Depth Driller	12470 FT
Depth Logger	4850 FT
Bottom Logged Interval	4845 FT
Top Log Interval	Surface
Open Hole Size	8.765"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	185°F
Estimated Cement Top	208 FT
Time Well Ready	ROA
Time Logger on Bottom	16:30
Equipment Number	HD-0324
Location	Fort Lupton, CO
Recorded By	J. Raby
Witnessed By	Tom Flynn

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To

Casing Record	Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom
Surface Casing	9 5/8"	36	J-55	Surface	1519 FT
Intermediate #1	7"	29	L-80	Surface	5958 FT
Intermediate #2					
Liner	4 1/2"	11.6	L-80	4818 FT	12455 FT

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Comments

Log ran as per Customer request.
Depth reference to Casing Tally reported Liner Top at 4818 FT.
Adjusted log 30 FT from KB zero to correlate with Liner Top.
Log ran from just below liner top to surface.
Log ran with 1500 PSI surface induced pressure.

Thank you for choosing FMC Technologies Completion Services, Inc.!!

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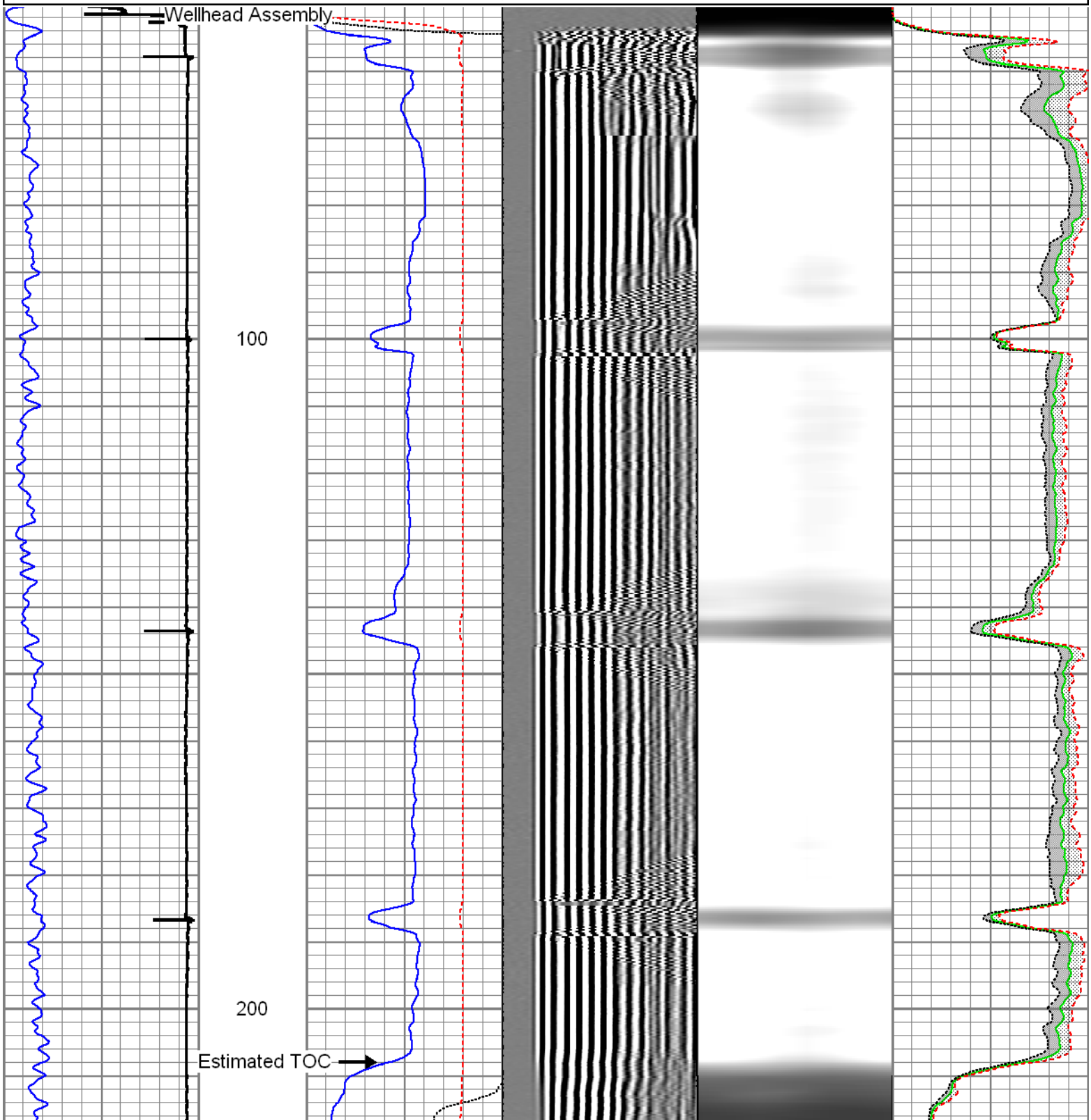
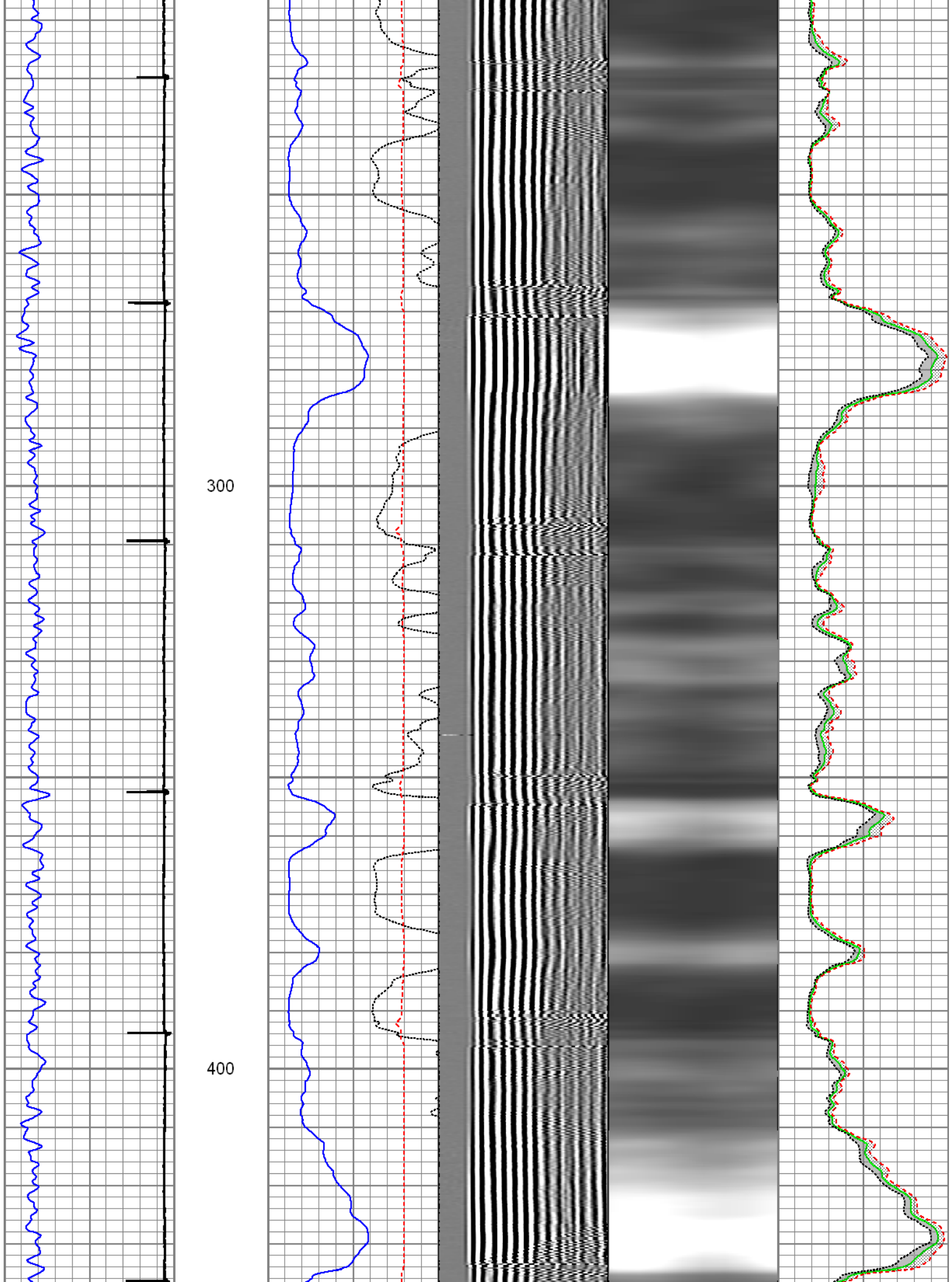
Main Pass

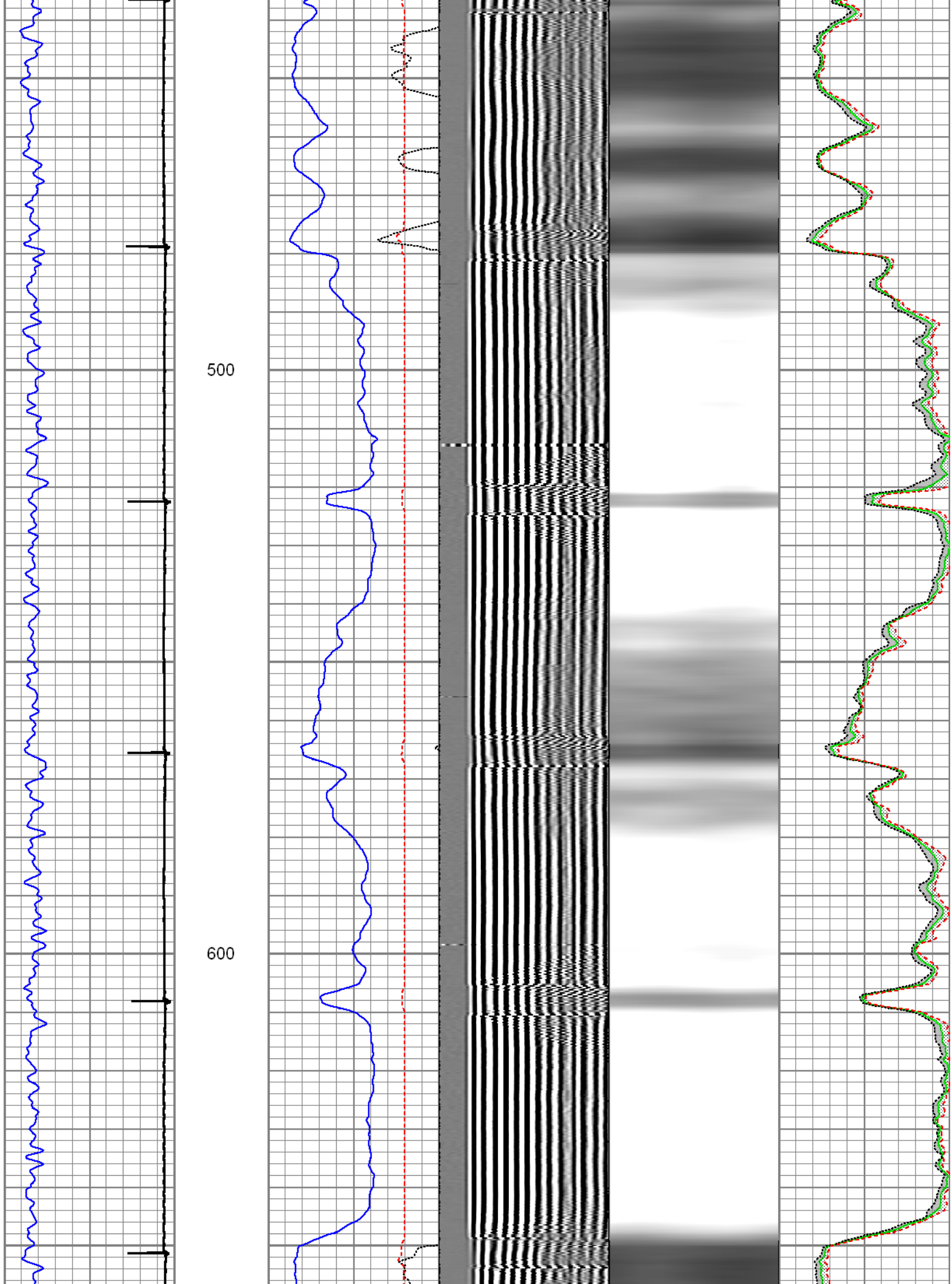
Recorded with 1500 PSI surface induced pressure.

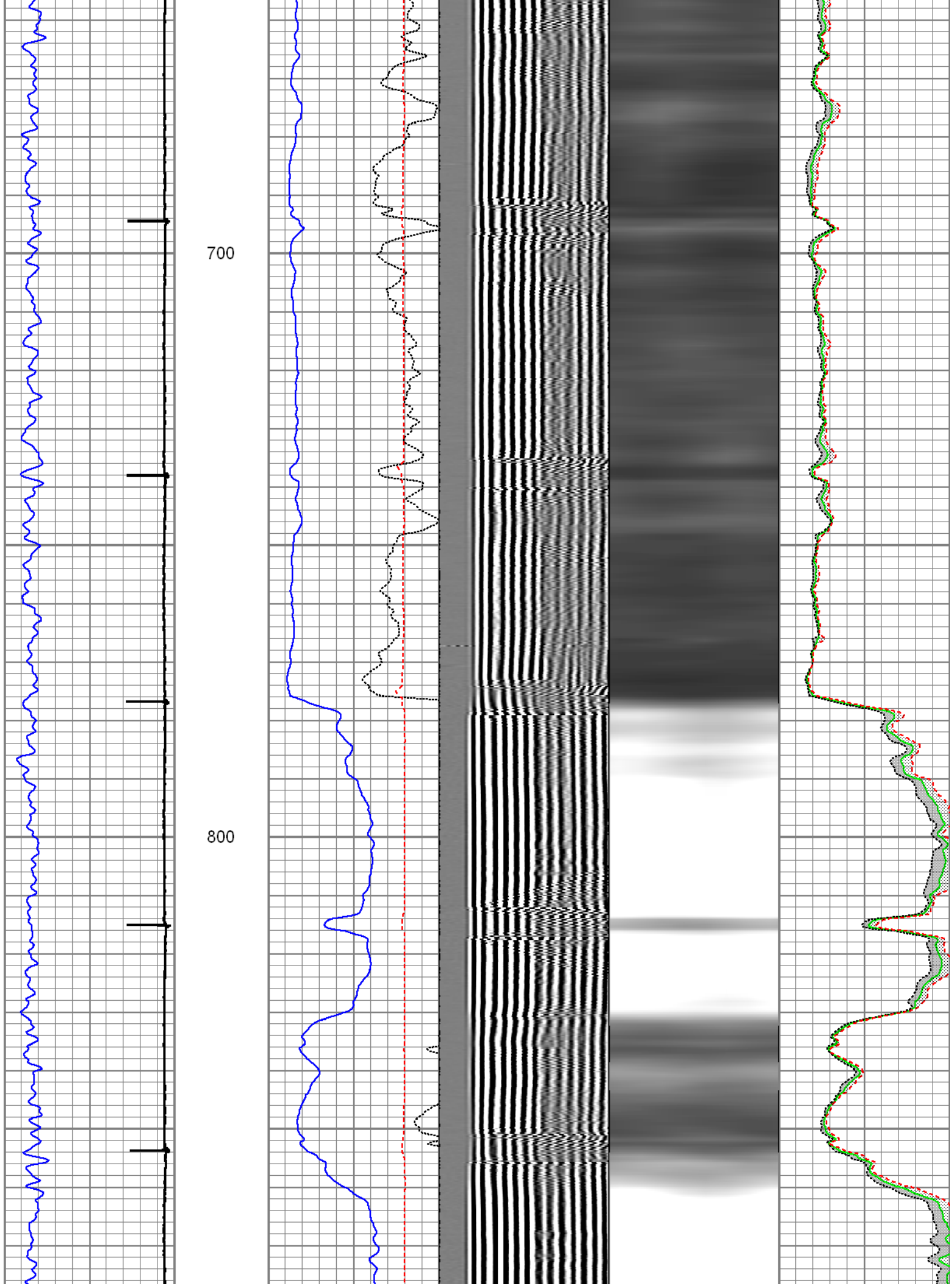
Database File:	07-11-14_whiting_razor 26l-3501a_mit_rbl.db
Dataset Pathname:	pass6
Presentation Format:	rbt4_mit
Dataset Creation:	Fri Jul 11 16:45:15 2014 by Log 7.0 B1
Charted by:	Depth in Feet scaled 1:240

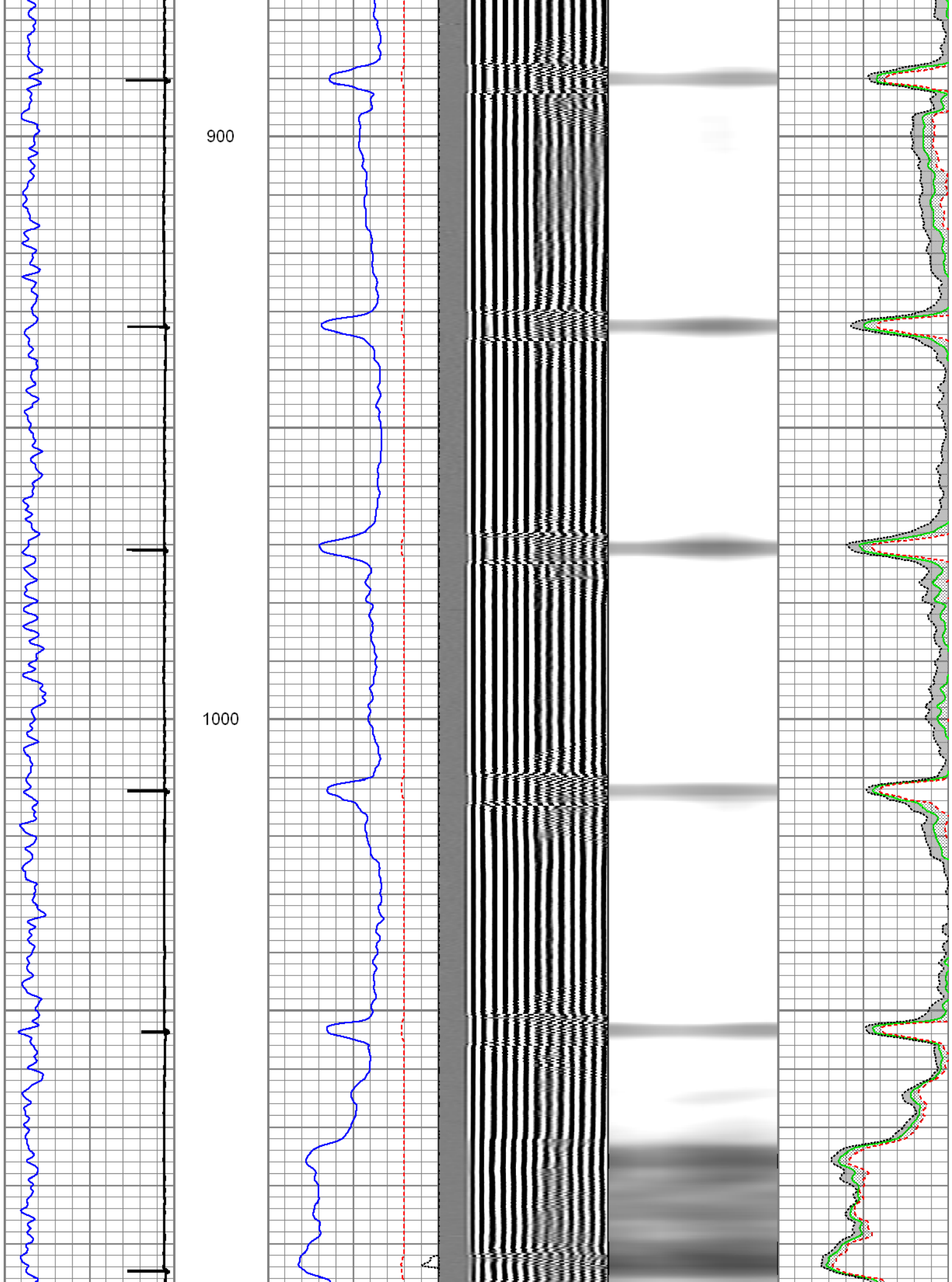
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
	0 (mV) 20			0 100
	3' Travel Time			Maximum Amplitude
	650 (usec) 150			0 100




300
400


500
600


700
800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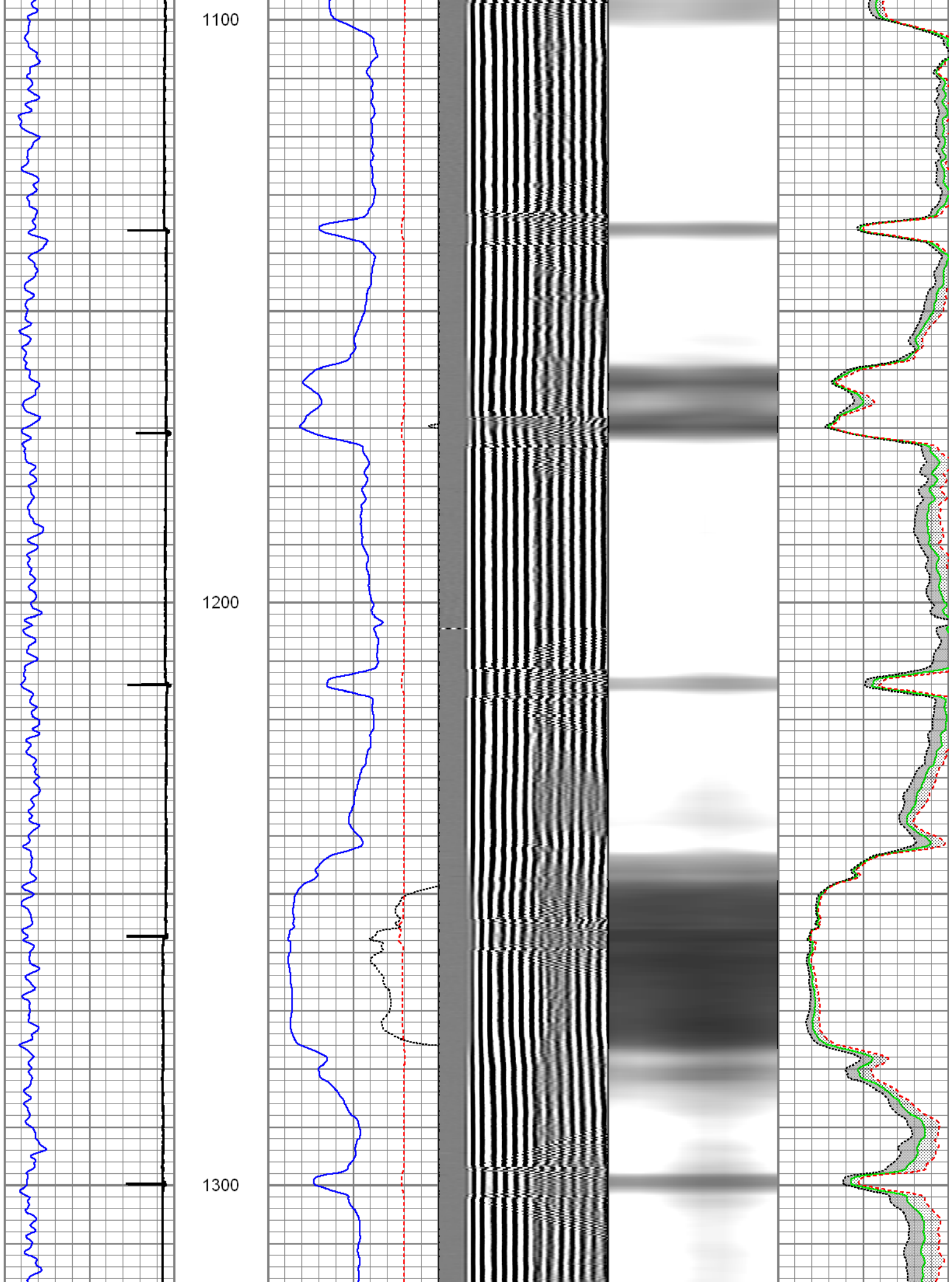
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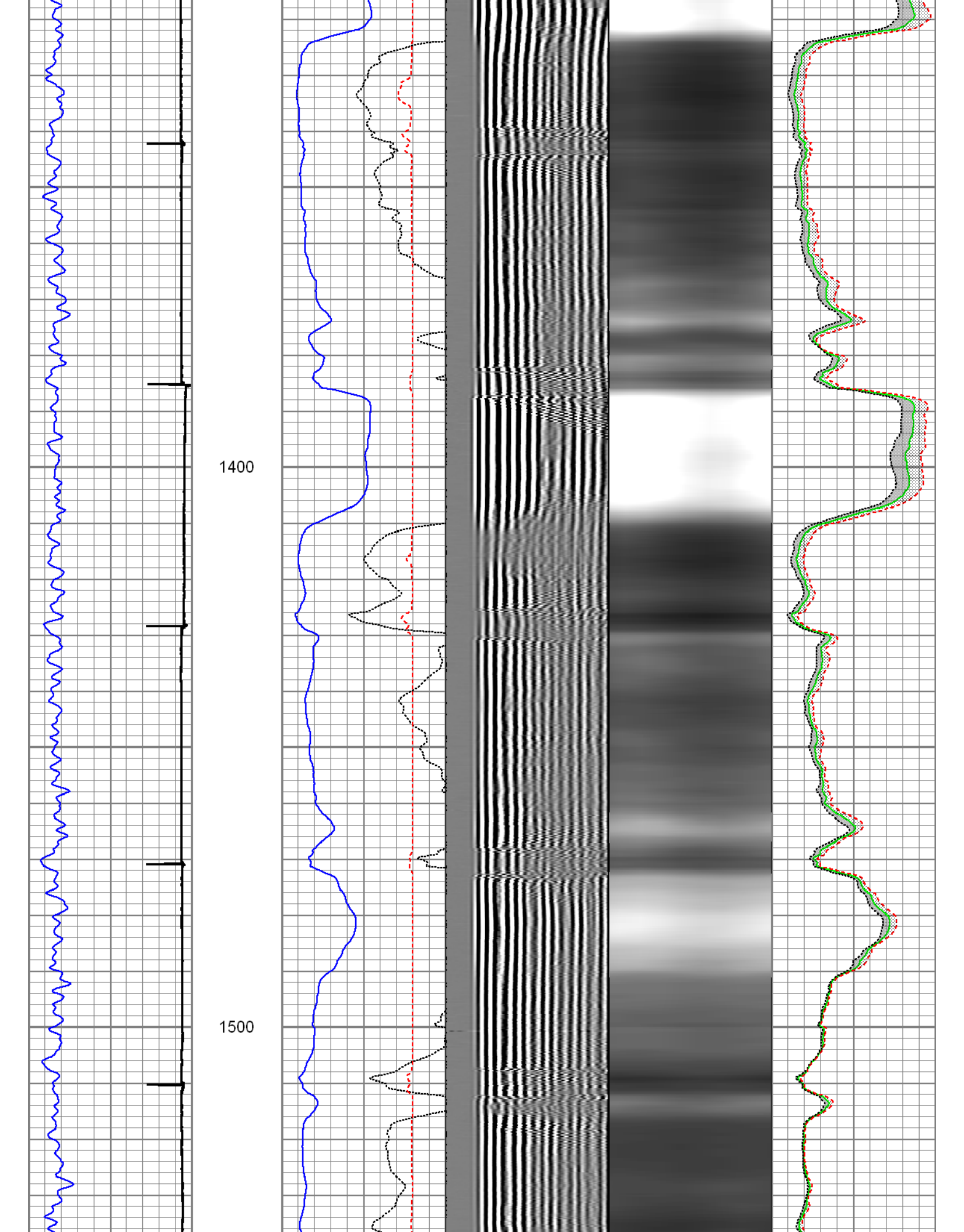
1200
1300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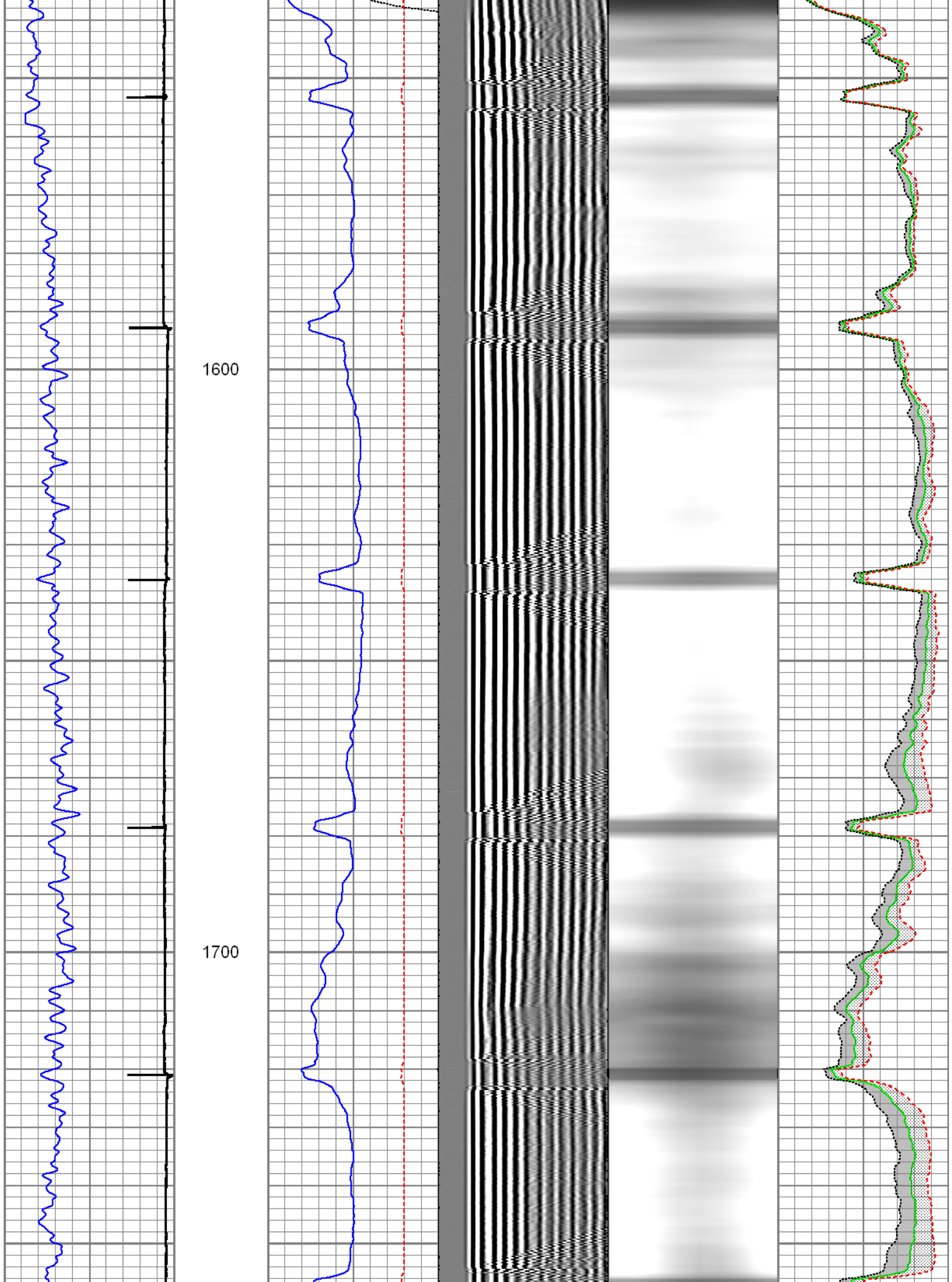
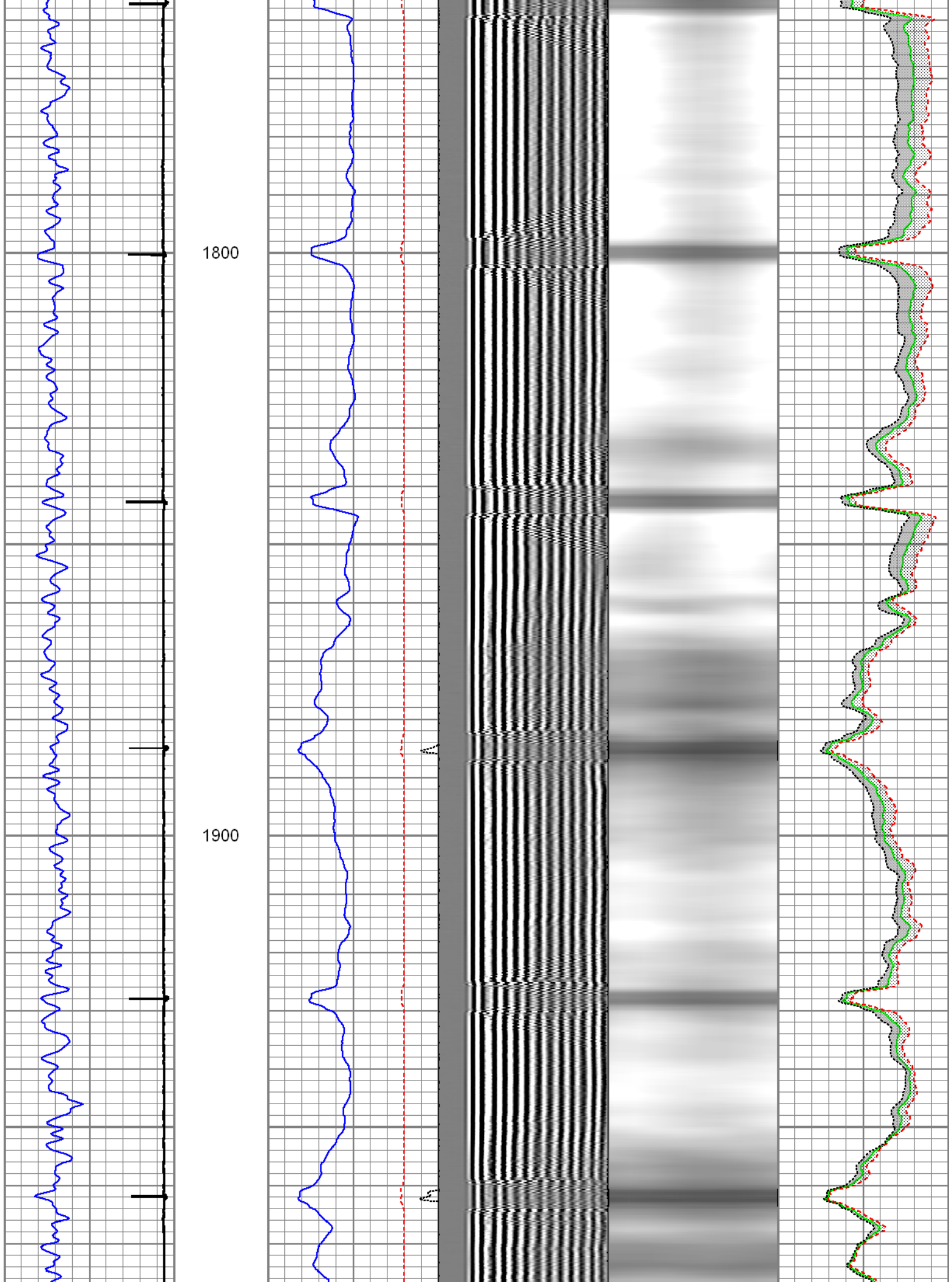
1500


1600
1700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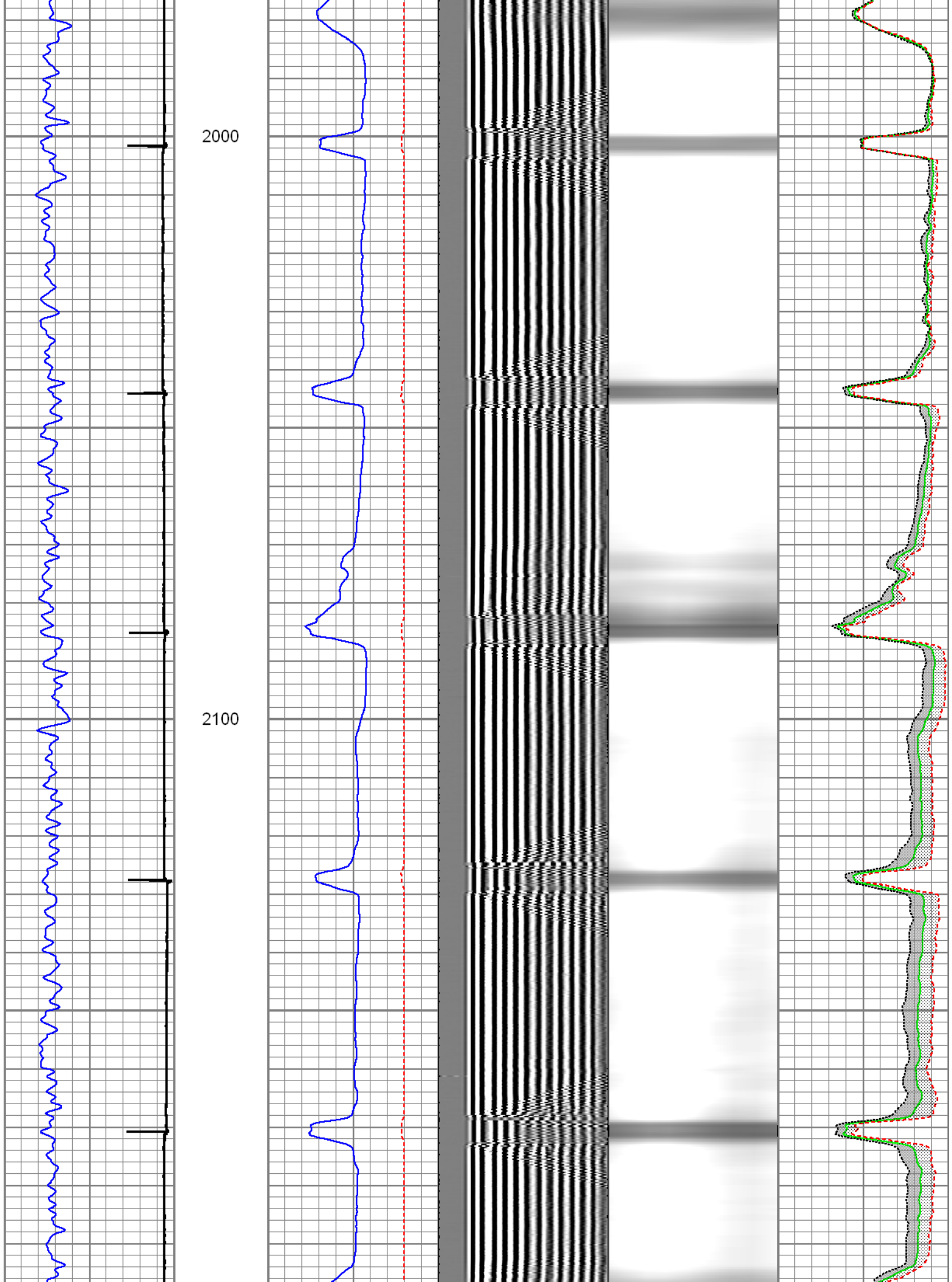
2000
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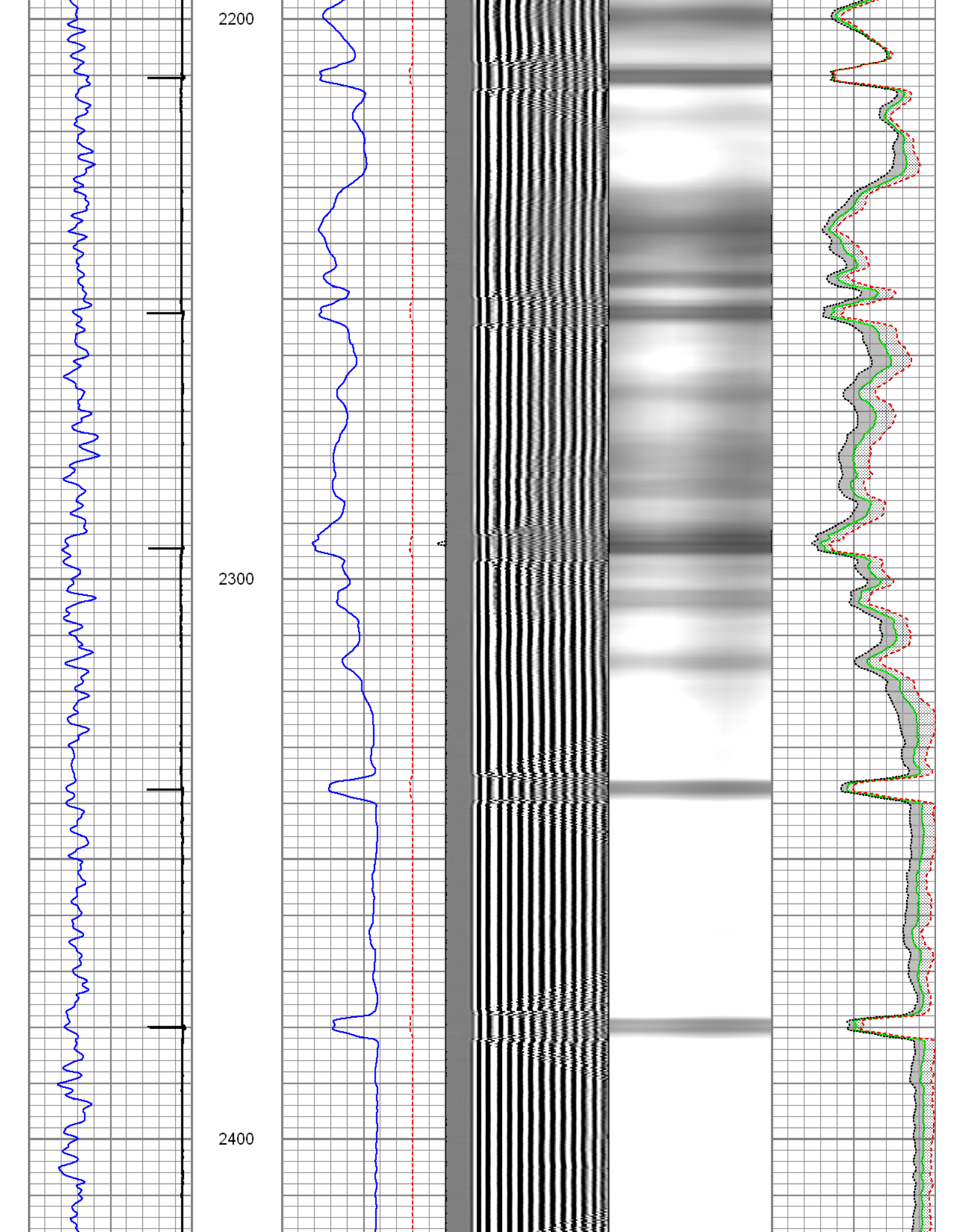
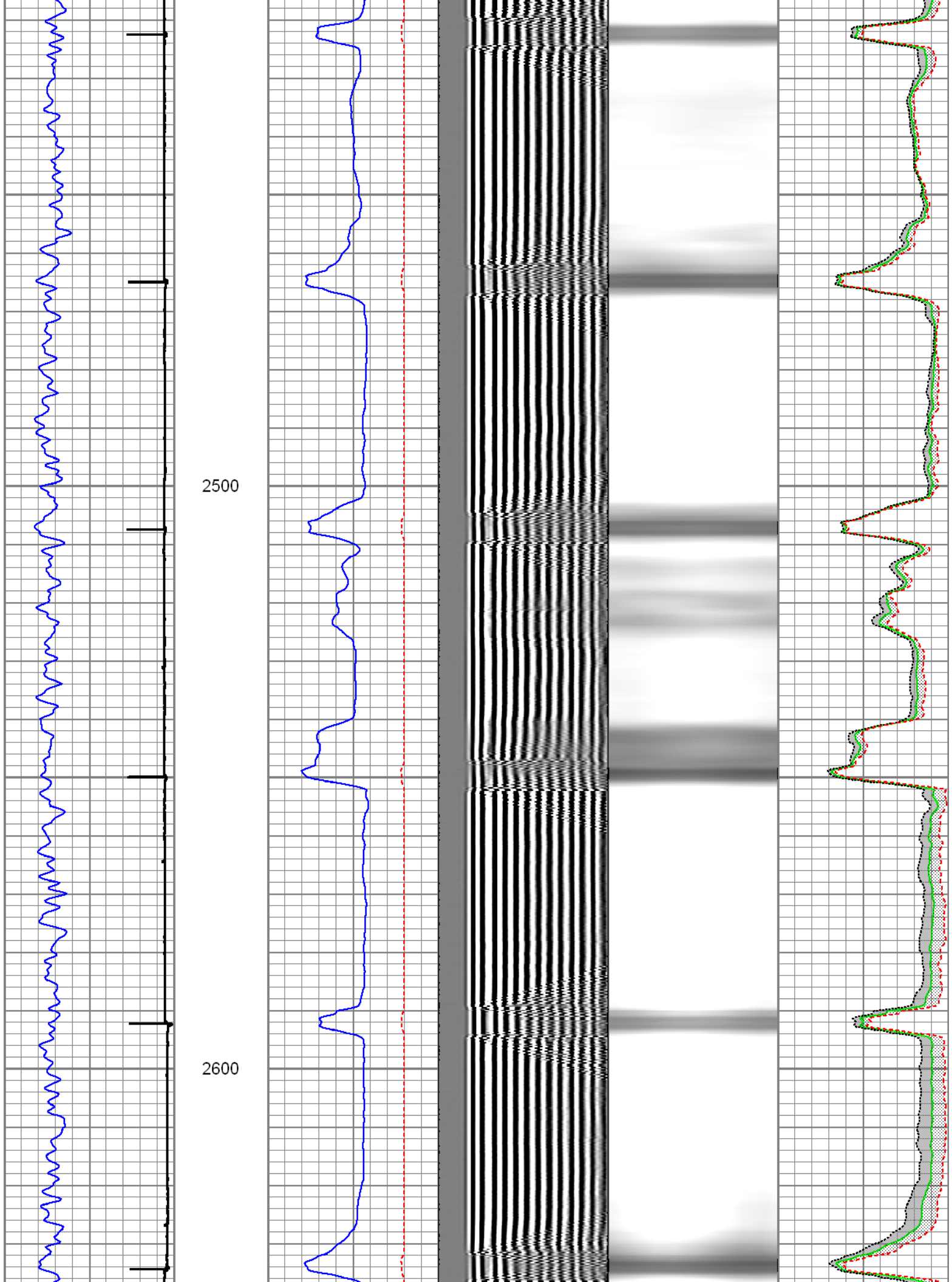

2200
2300
2400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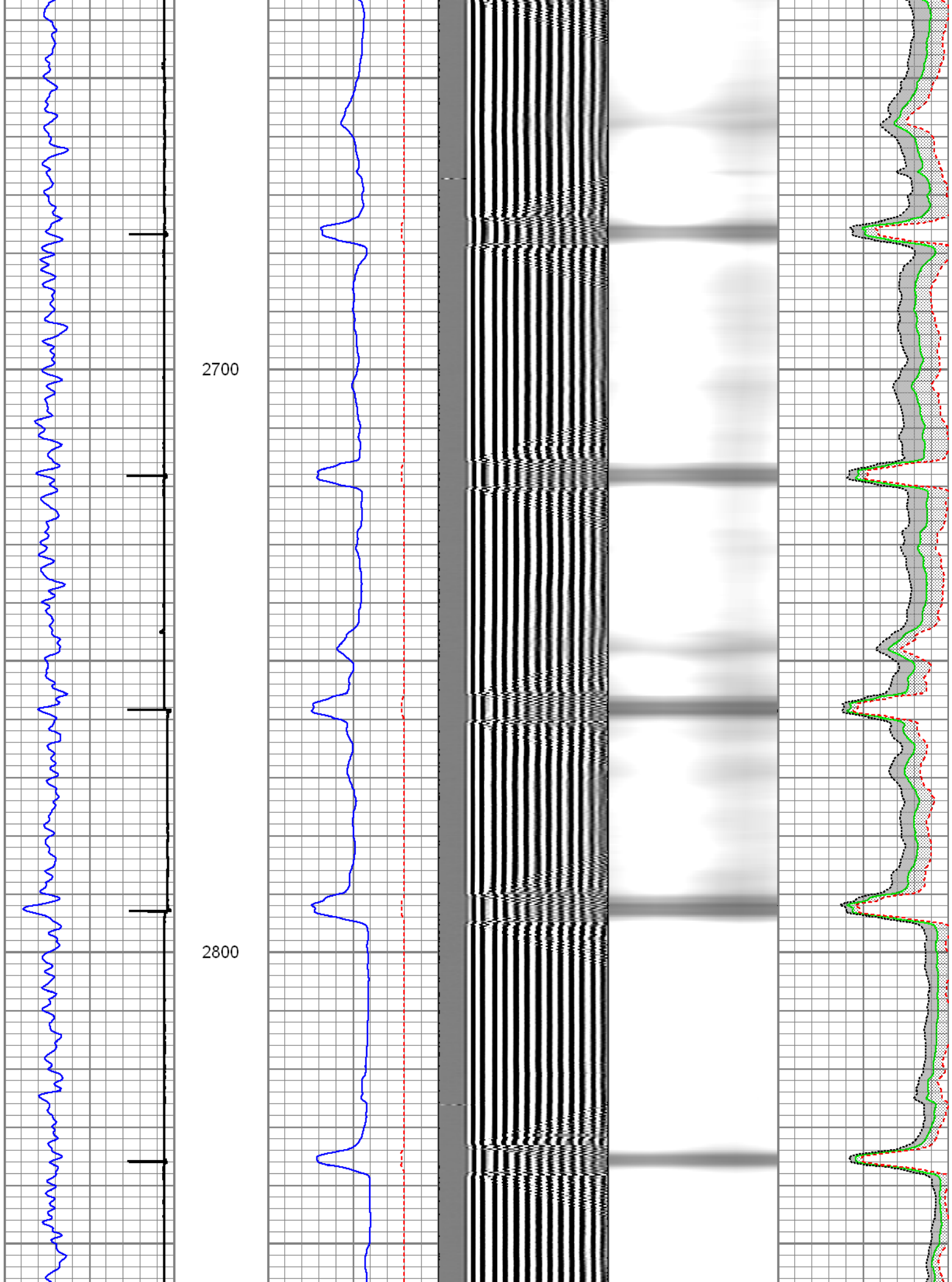
2600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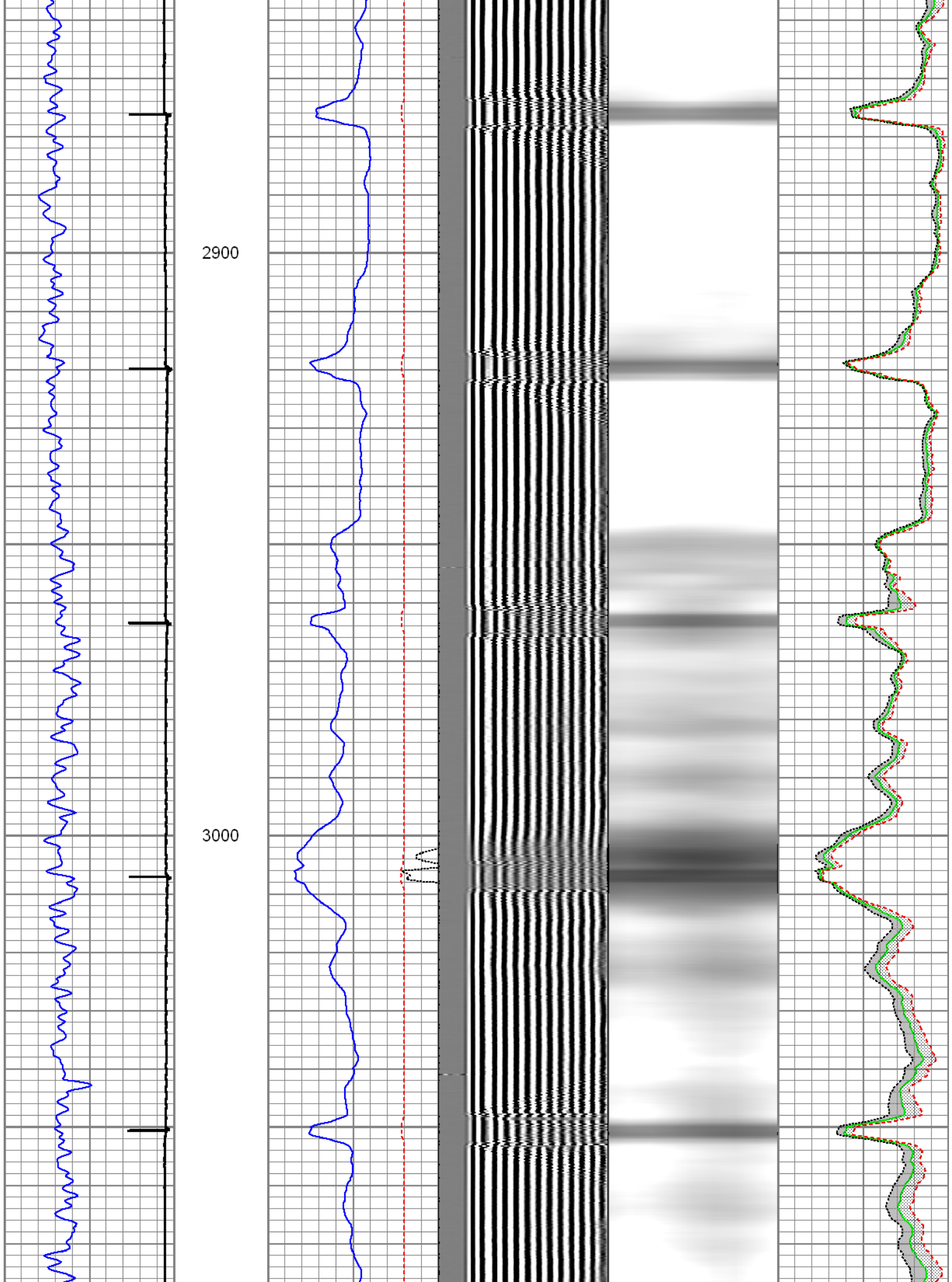
2800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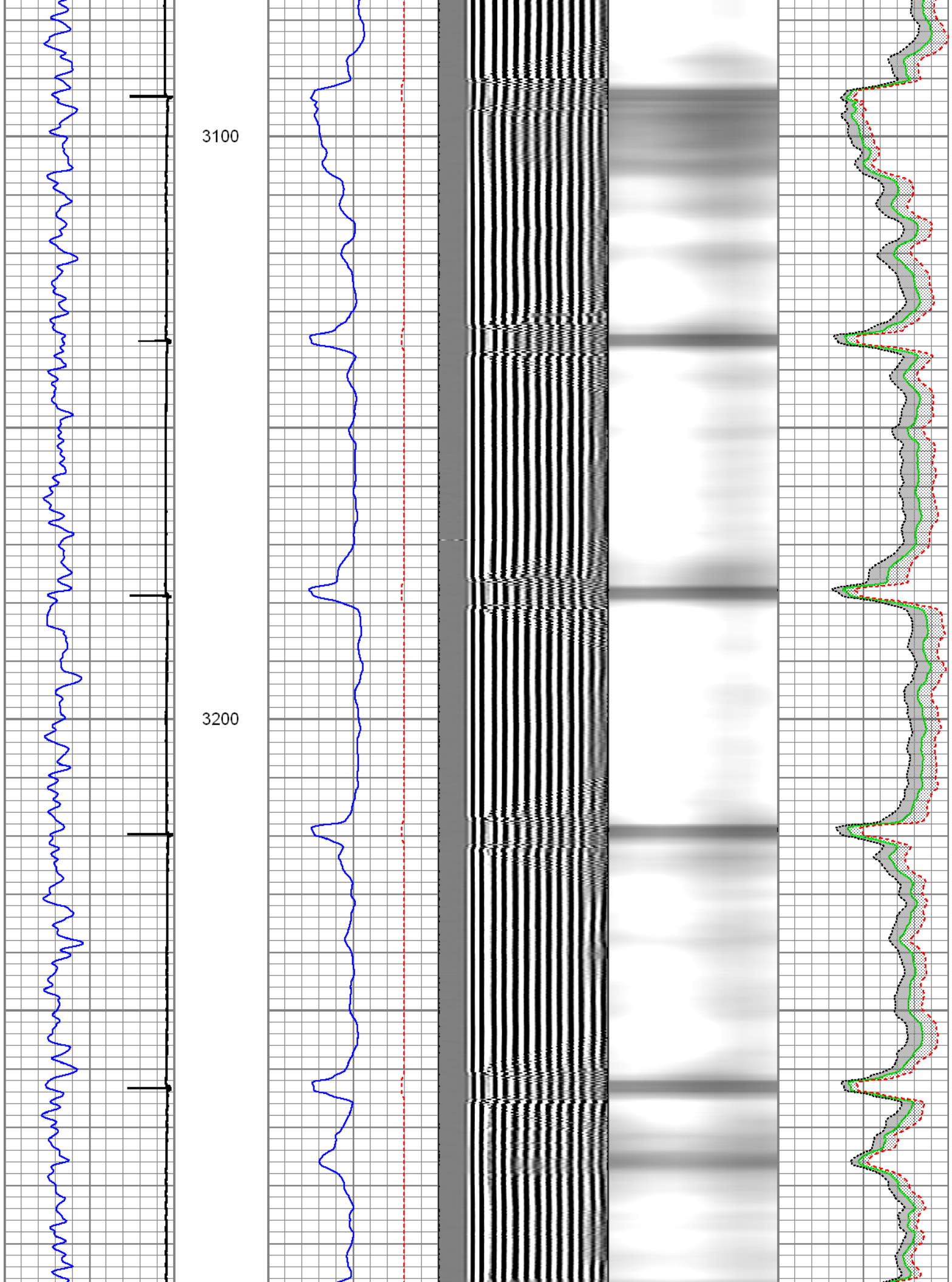
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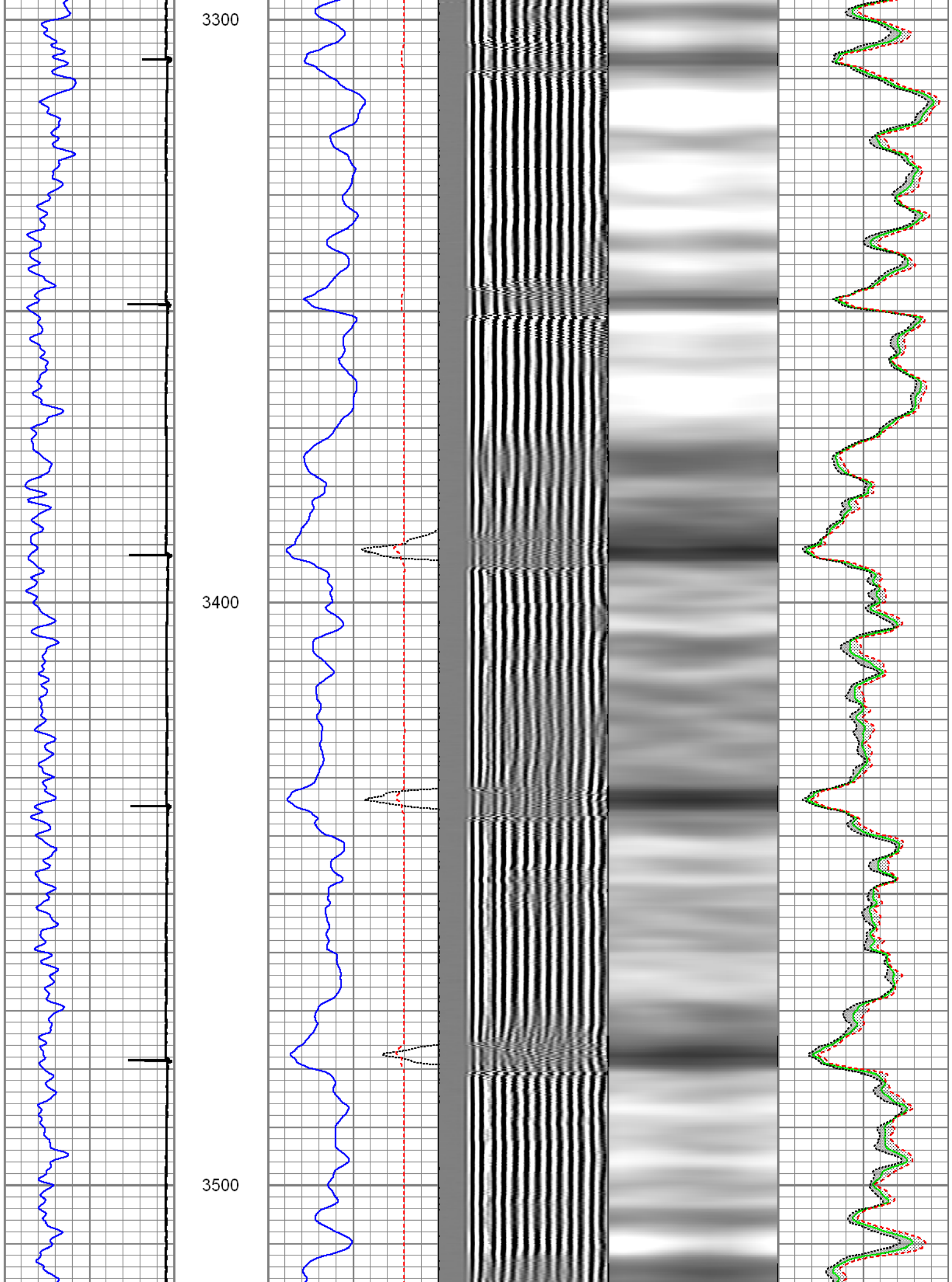
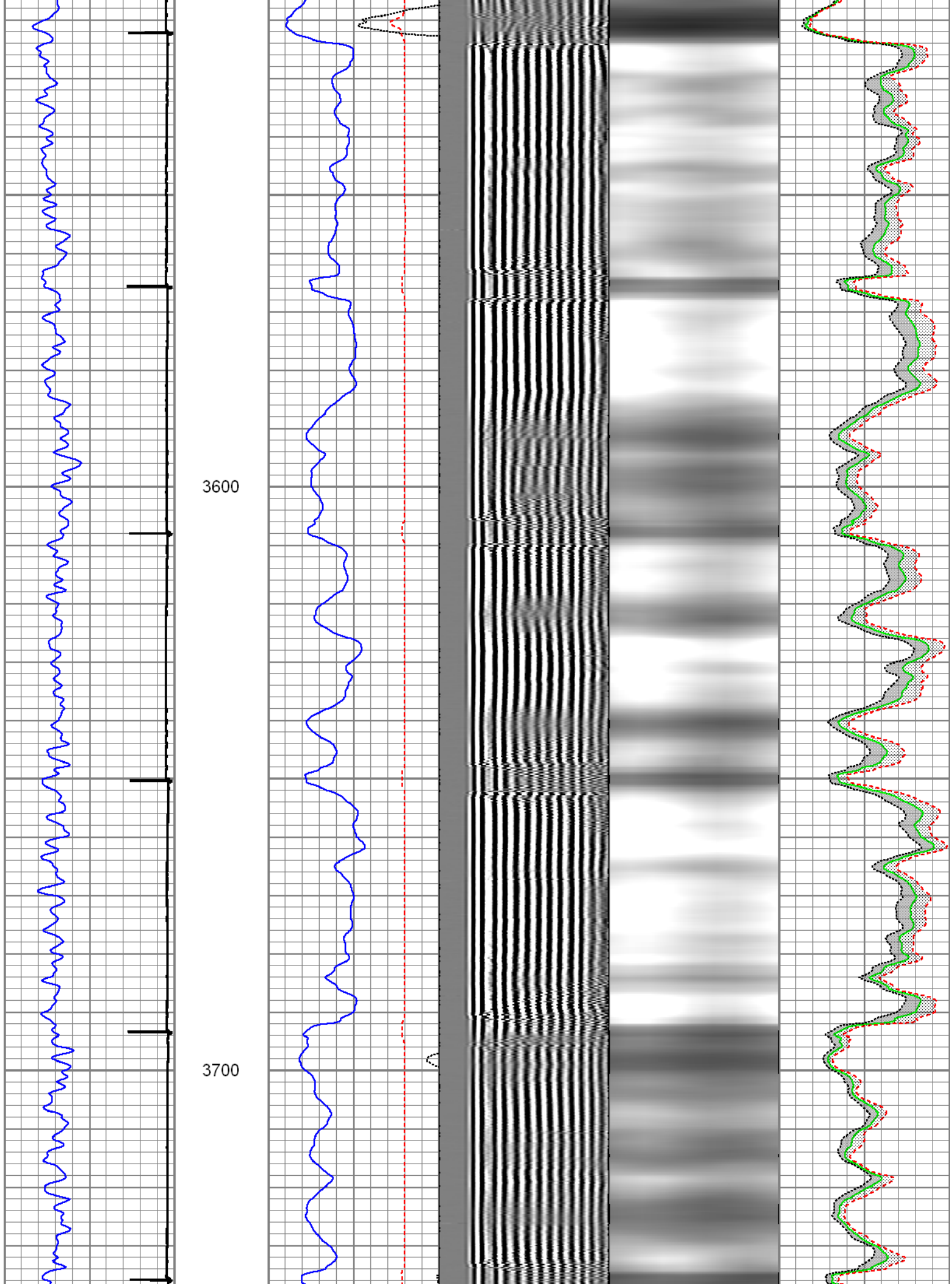
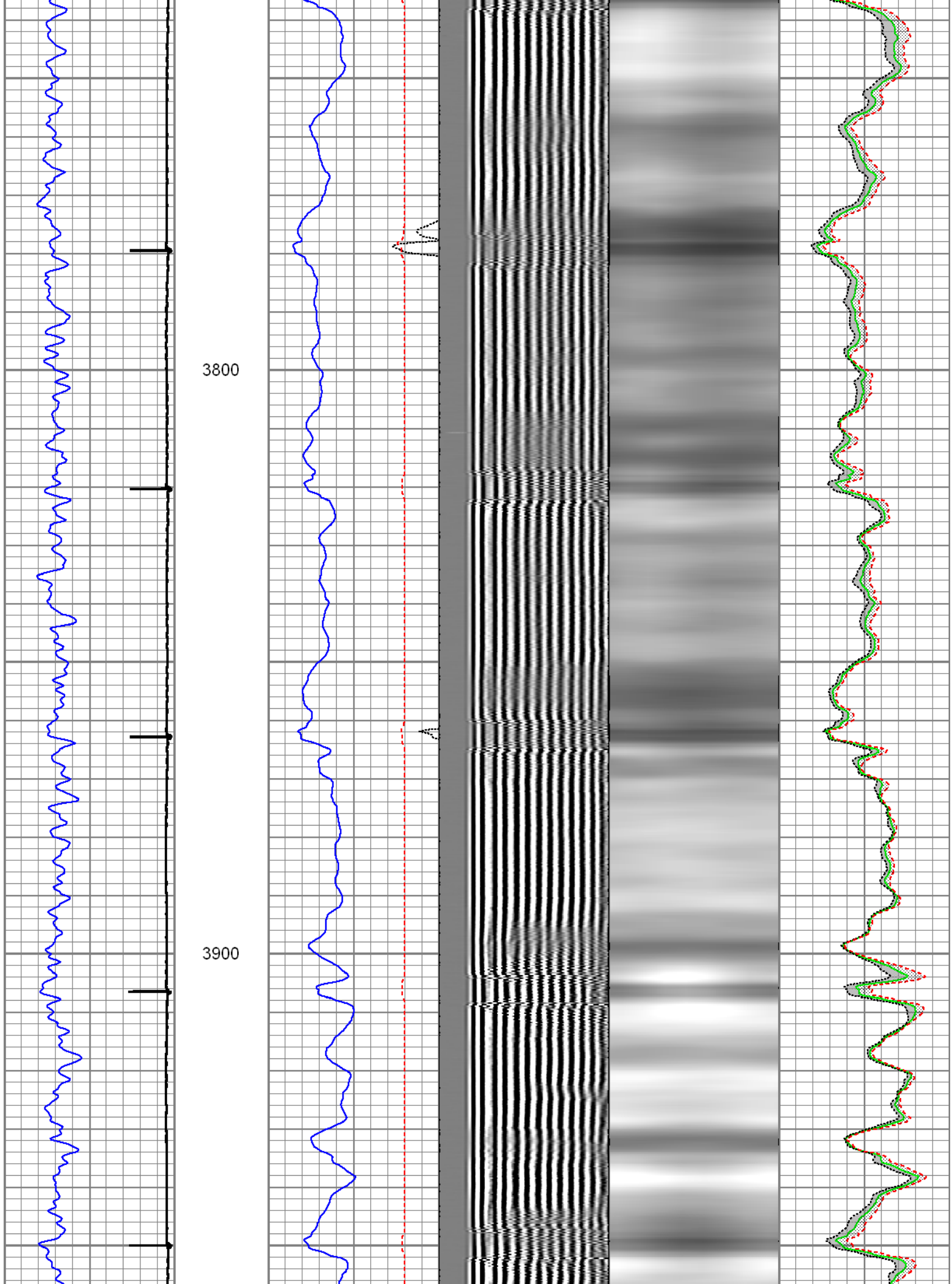
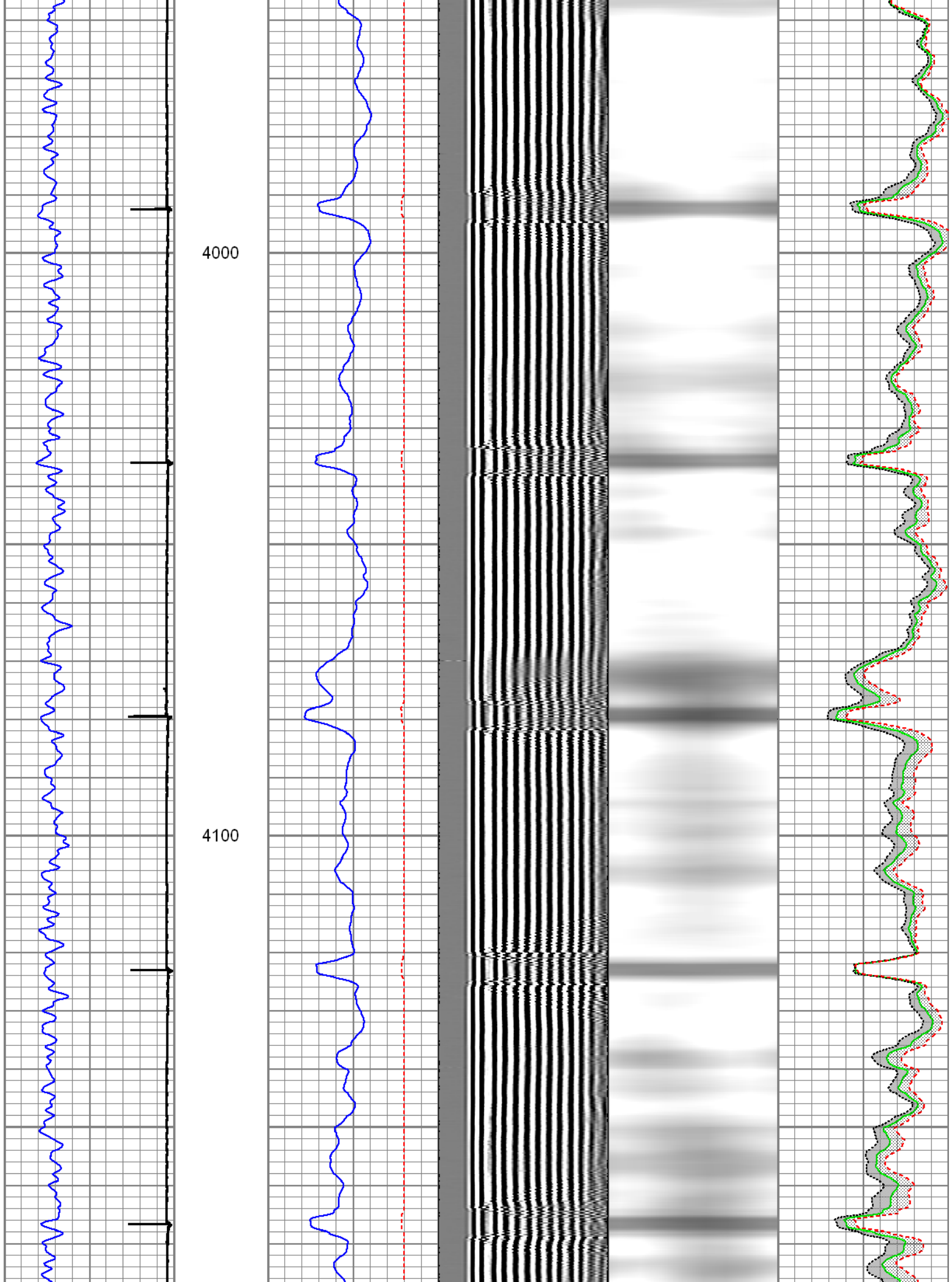
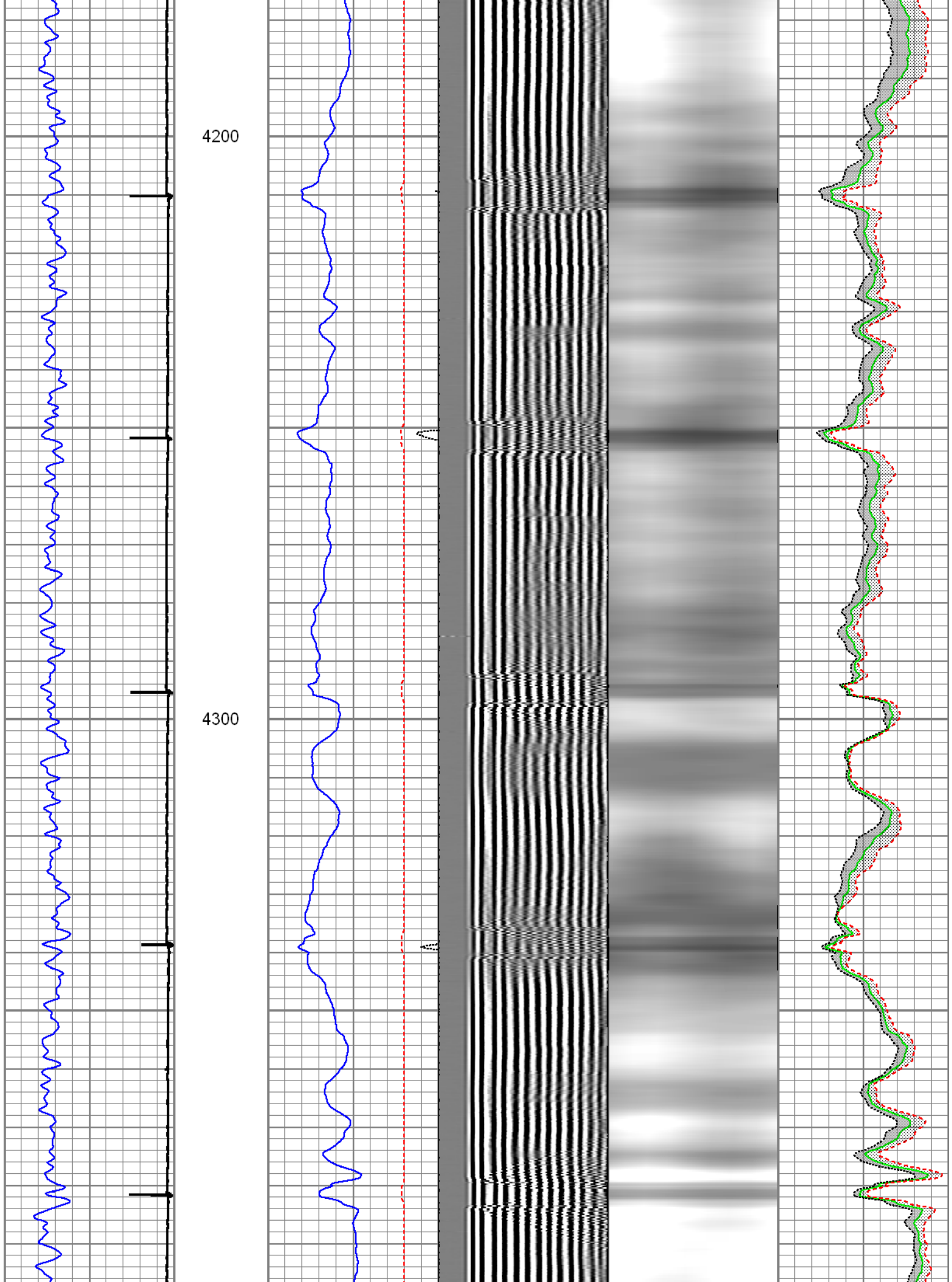
3200

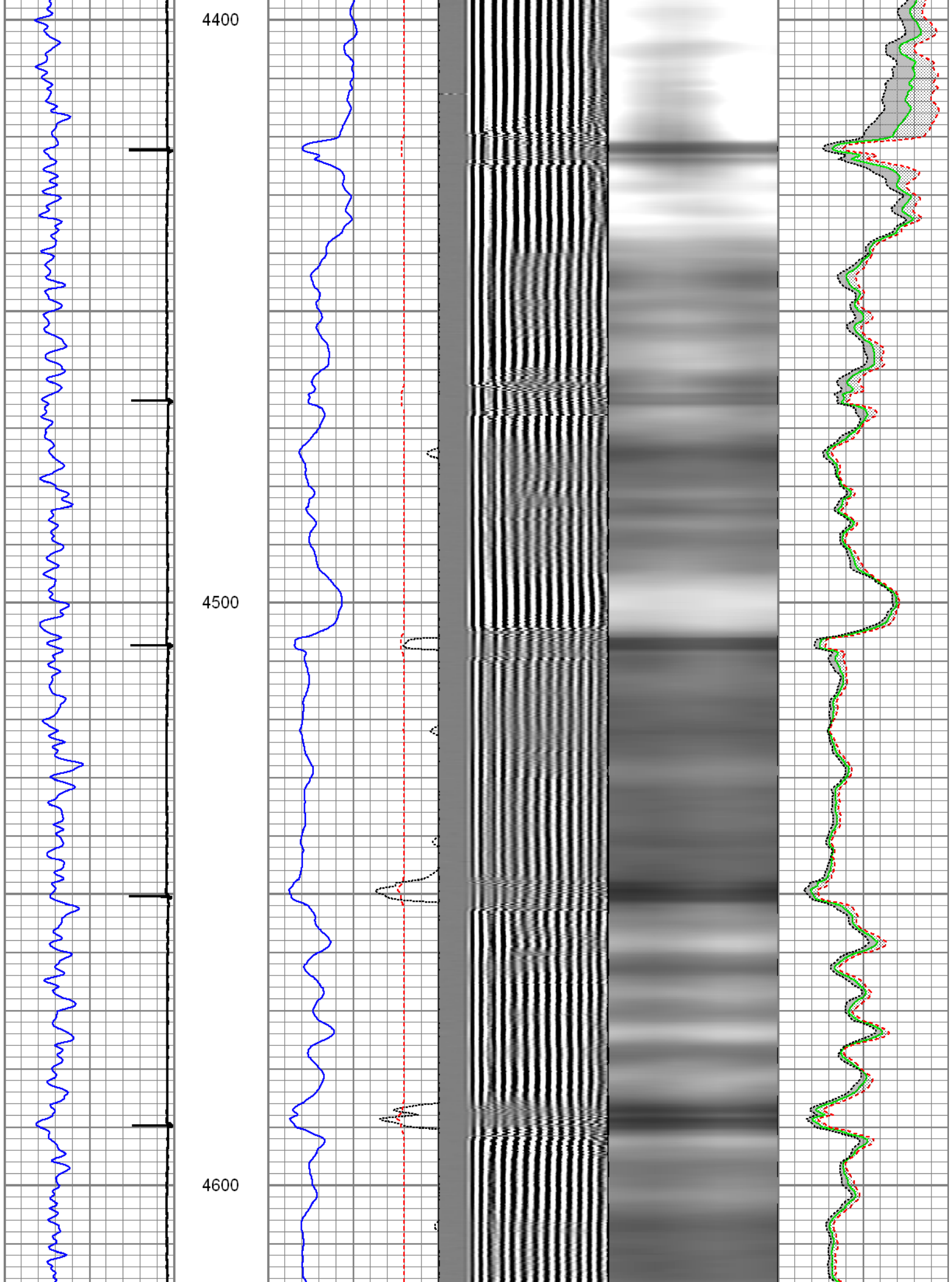

3300
3400
3500

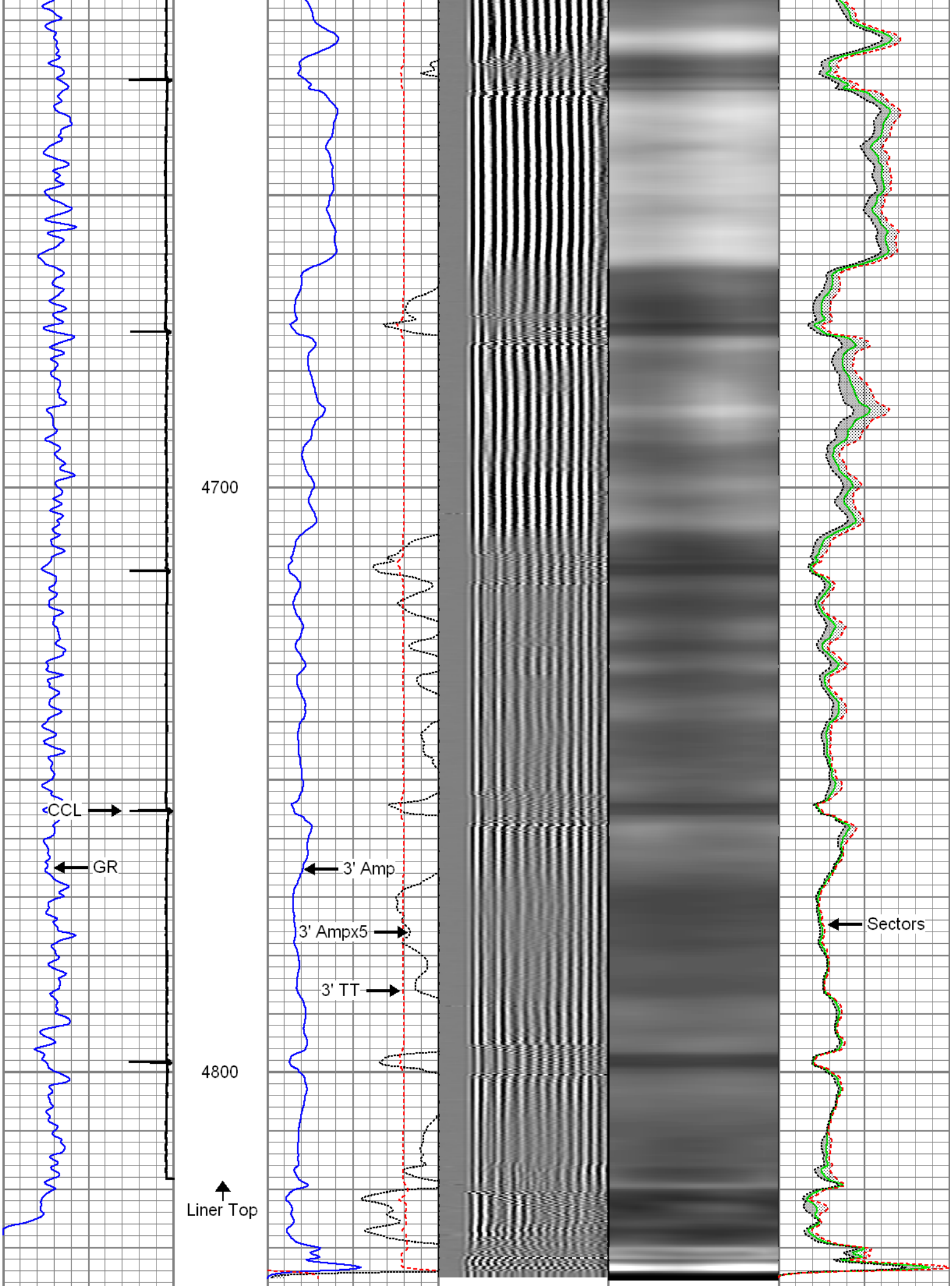

3600
3700


3800
3900


4000
4100


4200
4300


4400
4500
4600


4700
CCL
GR
3' Amp
3' Ampx5
3' TT
Sectors
4800
Liner Top

Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120		0 (mV) 100	200 1200		0 100
Casing Collar Locator		3' Amplitude x 5			Mimimum Amplitude
		0 (mV) 20			0 100
		3' Travel Time			Maximum Amplitude
		650 (usec) 150			0 100

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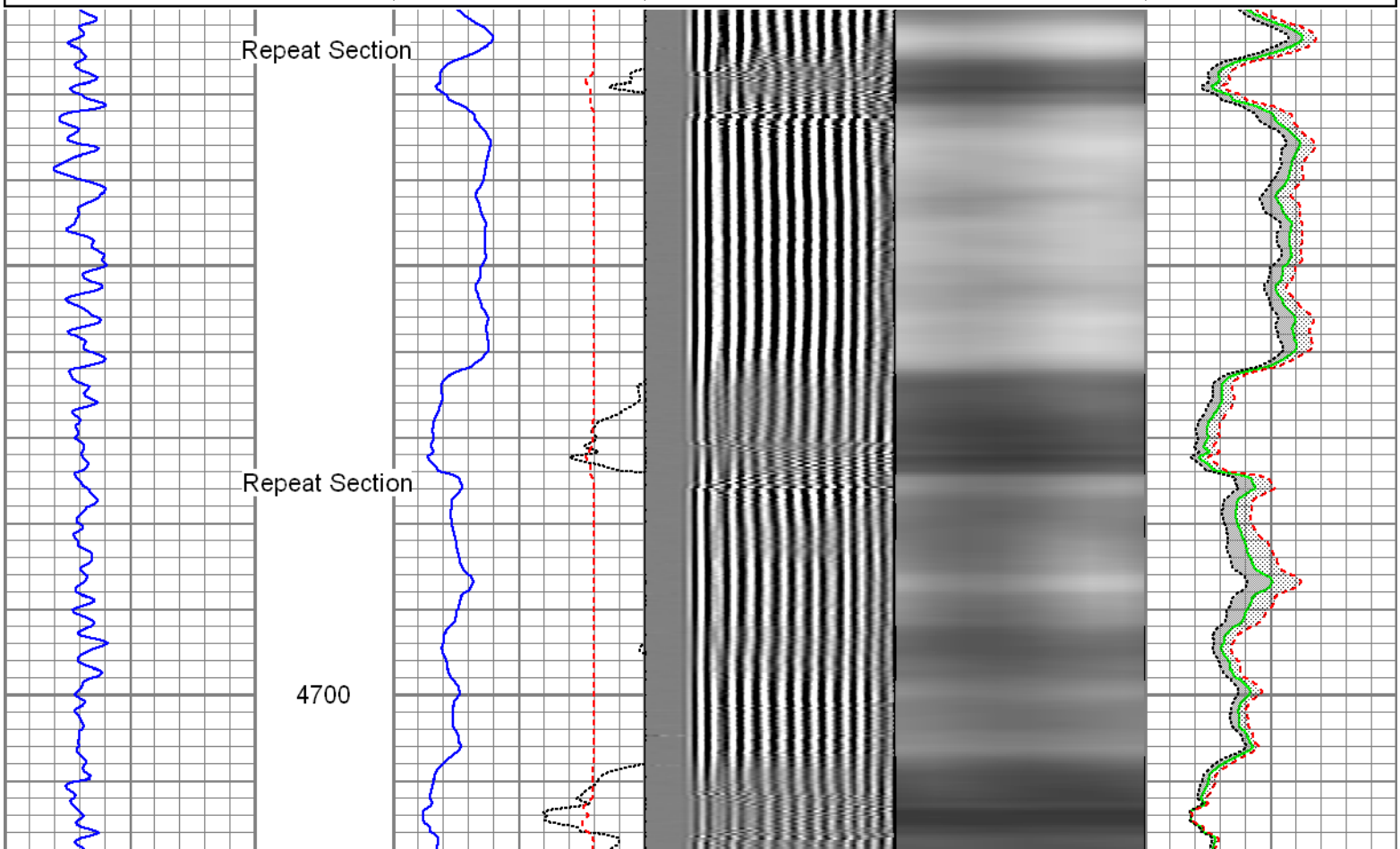
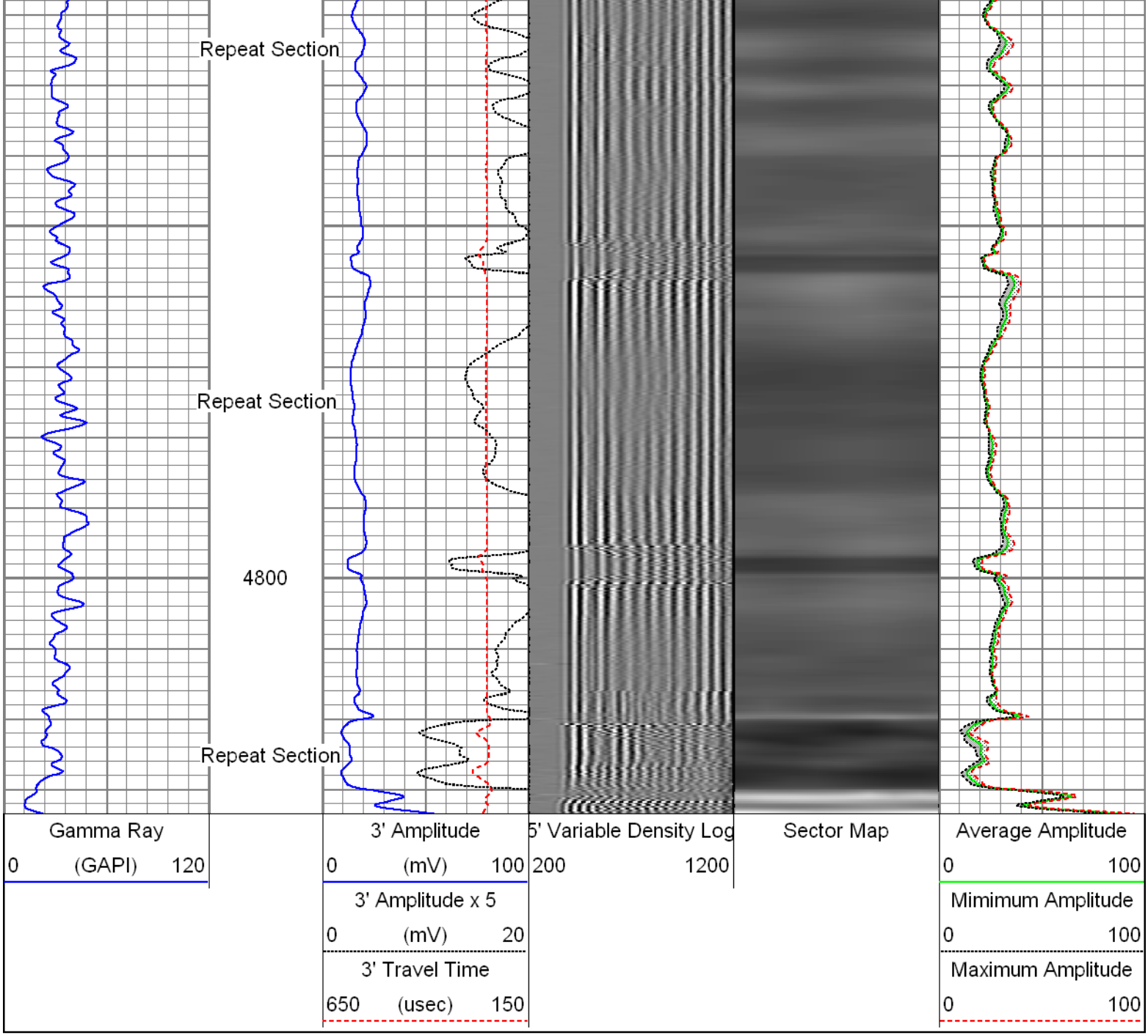
Repeat Pass

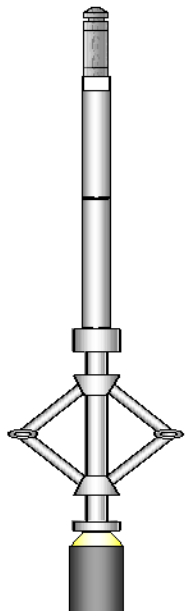
Recorded with 1500 PSI surface induced pressure.

Database File:	07-11-14_whiting_razor 26I-3501a_mit_rbl.db
Dataset Pathname:	pass5
Presentation Format:	rbt4_mit
Dataset Creation:	Fri Jul 11 16:36:05 2014 by Log 7.0 B1
Charted by:	Depth in Feet scaled 1:240

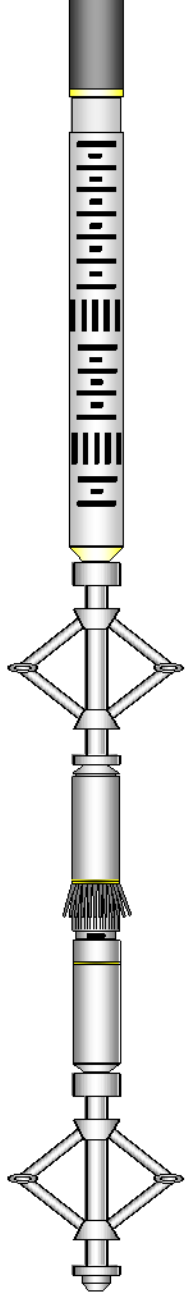
Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120		0 (mV) 100	200 1200		0 100
		3' Amplitude x 5			Mimimum Amplitude
		0 (mV) 20			0 100
		3' Travel Time			Maximum Amplitude
		650 (usec) 150			0 100





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	23.67		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			UW_AGS-UW_AGS_001 (215017) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (10010519) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (050836) Production Gamma Ray	1.93	1.69	9.50
			UW_PRC #3 -UW_PRC_057 (1102) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00

WVF3FT	15.85	UW_RBT-UW_RBT_004 (1066) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.85				
WVFS2	15.85				
WVFS3	15.85				
WVFS4	15.85				
WVFS5	15.85				
WVFS6	15.85				
WVFS7	15.85				
WVFS8	15.85				
CBLTEMP	15.85				
CBLROT	15.85				
WVF5FT	14.85				
		UW_PRC #4 -UW_PRC_057 (1038) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
MIT	5.41	UW_MIT-UW_MIT40_027 (218950) 40 Multifinger Imaging Tool	4.54	2.75	61.10
		UW_PRC-UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
TSTAMP	0.00	UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20



Dataset:	07-11-14_Whiting_Razor 26L-3501A_MIT_RBL.db: field/well/run1/pass6
Total Length:	27.92 ft
Total Weight:	319.30 lb
O.D.	3.13 in

Calibration Report

Database File:	07-11-14_Whiting_Razor 26L-3501A_MIT_RBL.db
Dataset Pathname:	pass7
Dataset Creation:	Fri Jul 11 18:32:00 2014 by Log 7.0 B1

Multi-finger Imaging Tool Calibration Report

Serial Number:	218950
Number of Fingers:	40
Tool Model:	UW_MIT40_027

Inclinometer Calibration Report

Performed:	Wed Apr 23 11:10:45 2014
Calibration Angle:	46

	Inc X	Inc Y
Vertical:	1983	1966
Finger 1 up:	2225	2223

Finger 31 up:		1727	2194
Finger 21 up:		1746	1724
Finger 11 up:		2256	1730
Sensitivity ratio:	1.04732		
X-axis angle:	312.539		
Deviation const.:	344.577		

Finger Calibration Report

Performed: Fri Jul 11 16:06:23 2014

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1471	273.0	1744	289.0	2033	296.0	2329
Finger 02:	1571	248.0	1819	252.0	2071	256.0	2327
Finger 03:	1436	275.0	1711	290.0	2001	300.0	2301
Finger 04:	1460	276.0	1736	290.0	2026	291.0	2317
Finger 05:	1487	269.0	1756	274.0	2030	281.0	2311
Finger 06:	1422	283.0	1705	291.0	1996	302.0	2298
Finger 07:	1424	278.0	1702	287.0	1989	300.0	2289
Finger 08:	1448	277.0	1725	283.0	2008	292.0	2300
Finger 09:	1434	285.0	1719	288.0	2007	298.0	2305
Finger 10:	1461	269.0	1730	282.0	2012	291.0	2303
Finger 11:	1426	278.0	1704	288.0	1992	300.0	2292
Finger 12:	1407	283.0	1690	296.0	1986	307.0	2293
Finger 13:	1509	263.0	1772	268.0	2040	278.0	2318
Finger 14:	1449	269.0	1718	286.0	2004	297.0	2301
Finger 15:	1437	283.0	1720	295.0	2015	307.0	2322
Finger 16:	1463	271.0	1734	291.0	2025	300.0	2325
Finger 17:	1435	277.0	1712	297.0	2009	305.0	2314
Finger 18:	1472	266.0	1738	285.0	2023	291.0	2314
Finger 19:	1467	273.0	1740	291.0	2031	300.0	2331
Finger 20:	1461	272.0	1733	290.0	2023	303.0	2326
Finger 21:	1437	282.0	1719	306.0	2025	313.0	2338
Finger 22:	1473	264.0	1737	283.0	2020	291.0	2311
Finger 23:	1475	272.0	1747	288.0	2035	298.0	2333
Finger 24:	1481	271.0	1752	286.0	2038	290.0	2328
Finger 25:	1459	273.0	1732	291.0	2023	297.0	2320
Finger 26:	1459	278.0	1737	295.0	2032	301.0	2333
Finger 27:	1499	269.0	1768	283.0	2051	289.0	2340
Finger 28:	1487	275.0	1762	289.0	2051	294.0	2345
Finger 29:	1549	260.0	1809	275.0	2084	277.0	2361
Finger 30:	1456	273.0	1729	292.0	2021	302.0	2323
Finger 31:	1471	279.0	1750	297.0	2047	301.0	2348
Finger 32:	1531	263.0	1794	276.0	2070	278.0	2348
Finger 33:	1475	277.0	1752	298.0	2050	302.0	2352
Finger 34:	1460	271.0	1731	295.0	2026	302.0	2328
Finger 35:	1524	250.0	1774	270.0	2044	272.0	2316
Finger 36:	1507	261.0	1768	281.0	2049	288.0	2337
Finger 37:	1476	273.0	1749	294.0	2043	294.0	2337
Finger 38:	1541	247.0	1788	261.0	2049	269.0	2318
Finger 39:	1494	267.0	1761	279.0	2040	282.0	2322
Finger 40:	1429	280.0	1709	301.0	2010	304.0	2314

Post Survey Calibration Check

Performed: Fri Jul 11 18:31:54 2014

Ring size:	4	Nom.	5	Nom.	6	Nom.	7	Nom.
(in)		wear		wear		wear		wear
Finger 01:	4.010	0.005	4.999	-0.000	5.996	-0.002	6.994	-0.003
Finger 02:	4.010	0.005	4.994	-0.003	5.994	-0.003	7.002	0.001
Finger 03:	4.001	0.000	5.002	0.001	5.999	-0.001	7.004	0.002
Finger 04:	3.999	-0.000	5.008	0.004	6.000	0.000	7.000	-0.000
Finger 05:	4.003	0.002	4.994	-0.003	6.003	0.002	7.004	0.002
Finger 06:	4.005	0.002	4.992	-0.004	5.999	-0.000	7.001	0.000
Finger 07:	4.003	0.002	4.997	-0.002	5.999	-0.000	7.002	0.001
Finger 08:	4.006	0.003	4.995	-0.003	5.995	-0.003	6.999	-0.000

Finger 09:	4.001	0.000	4.999	-0.000	5.989	-0.005	6.999	-0.001
Finger 10:	4.000	0.000	5.003	0.002	6.001	0.000	7.005	0.003
Finger 11:	4.001	0.001	4.992	-0.004	5.994	-0.003	7.003	0.002
Finger 12:	4.003	0.002	4.999	-0.000	5.998	-0.001	7.000	-0.000
Finger 13:	4.007	0.003	4.997	-0.001	5.999	-0.001	6.999	-0.001
Finger 14:	4.007	0.004	4.998	-0.001	6.001	0.000	6.999	-0.000
Finger 15:	3.997	-0.002	5.001	0.000	6.001	0.001	6.999	-0.001
Finger 16:	4.004	0.002	5.009	0.004	6.001	0.001	7.003	0.002
Finger 17:	4.003	0.001	5.003	0.001	6.004	0.002	7.008	0.004
Finger 18:	3.996	-0.002	5.002	0.001	5.995	-0.002	6.999	-0.000
Finger 19:	4.006	0.003	5.004	0.002	5.999	-0.000	7.001	0.000
Finger 20:	4.006	0.003	4.999	-0.001	6.000	0.000	7.002	0.001
Finger 21:	4.002	0.001	5.001	0.001	5.998	-0.001	7.004	0.002
Finger 22:	4.004	0.002	4.999	-0.000	5.997	-0.001	6.996	-0.002
Finger 23:	4.003	0.001	5.001	0.001	6.001	0.001	7.006	0.003
Finger 24:	4.004	0.002	4.996	-0.002	5.993	-0.004	7.000	0.000
Finger 25:	4.005	0.002	5.000	0.000	5.996	-0.002	6.995	-0.002
Finger 26:	4.005	0.003	4.998	-0.001	5.994	-0.003	6.999	-0.000
Finger 27:	4.003	0.001	4.993	-0.004	5.999	-0.001	6.999	-0.000
Finger 28:	4.005	0.002	4.999	-0.000	6.005	0.003	7.011	0.006
Finger 29:	4.007	0.003	4.995	-0.002	5.997	-0.002	7.004	0.002
Finger 30:	4.000	0.000	4.995	-0.003	5.995	-0.003	7.000	-0.000
Finger 31:	4.006	0.003	4.999	-0.001	6.000	-0.000	7.003	0.002
Finger 32:	4.005	0.002	4.998	-0.001	5.998	-0.001	6.999	-0.000
Finger 33:	4.006	0.003	5.002	0.001	5.998	-0.001	7.001	0.000
Finger 34:	4.001	0.000	4.999	-0.000	6.000	0.000	7.002	0.001
Finger 35:	3.985	-0.008	5.000	0.000	5.998	-0.001	6.999	-0.001
Finger 36:	3.999	-0.000	5.004	0.002	6.001	0.001	7.000	-0.000
Finger 37:	4.001	0.000	5.001	0.000	5.995	-0.002	6.999	-0.001
Finger 38:	4.005	0.003	5.005	0.002	6.001	0.000	6.997	-0.001
Finger 39:	4.009	0.005	5.003	0.002	6.004	0.002	7.011	0.005
Finger 40:	4.005	0.003	5.001	0.001	5.997	-0.002	7.005	0.002
Average:	4.003	0.002	4.999	-0.000	5.998	-0.001	7.001	0.001

Segmented Cement Bond Log Calibration Report

Serial Number: 1066
Tool Model: UW_RBT_004

Calibration Casing Diameter: 7.000 in
Calibration Depth: 168.621 ft

Master Calibration, performed Fri Jul 11 16:20:39 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.005	0.787	0.800	62.165	78.415	0.443
5FT	-0.001	0.776	0.800	62.165	78.937	0.896
S1	0.005	0.747	0.000	100.000	134.819	-0.678
S2	0.004	0.783	0.000	100.000	128.277	-0.476
S3	0.004	0.806	0.000	100.000	124.694	-0.464
S4	0.004	0.819	0.000	100.000	122.633	-0.437
S5	0.004	0.807	0.000	100.000	124.535	-0.534
S6	0.004	0.798	0.000	100.000	125.969	-0.461
S7	0.005	0.786	0.000	100.000	127.966	-0.615
S8	0.004	0.757	0.000	100.000	132.787	-0.574

Gamma Ray Calibration Report

Serial Number: 050836
Tool Model: UW_PGR_020
Performed: Sun Jun 13 13:33:21 1993

Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	1.0000	GAPI/cps

Company	Whiting Oil and Gas Corporation
Well	Razor 26L-3501A
Field	Wildcat
County	Weld
State	Colorado