RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Clough RWF 421-10
Field Rulison
County Garfield
State Colorado

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Well Clough RWF 421-10
Field Rulison
County Garfield State Colorado
Location: API #: 05-045-23926
SEC 3 TWP 6S RGE 94W
Other Services ---

Permanent Datum	Ground Level	Elevation 6719.1'	Elevation	
Log Measured From	Kelly Bushing	24 FT	K.B. 6743.1'	
Drilling Measured From	Kelly Bushing		D.F. 6742.1'	
			G.L. 6719.1'	

Date	15-JAN-2019
Run Number	One
Depth Driller	10318 FT
Depth Logger	10176 FT
Bottom Logged Interval	10162 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	245°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	21:00
Equipment Number	HD-0331
Location	Grand Junction, CO
Recorded By	Z. Fisher
Witnessed By	Dustin Welsh

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	1110 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10303 FT
Intermediate #2					
Liner					

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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

Log ran as per customer request
Depth referenced to Kelly Bushing at 24 FT
Marker Joint Logged from 6293-6315 FT
Log ran from 10162 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

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Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep_clough rwf 421-10\tep_clough rwf 421-10_rbl_01-15-19.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Jan 16 14:03:33 2019
Charted by	Depth in Feet scaled 1:240

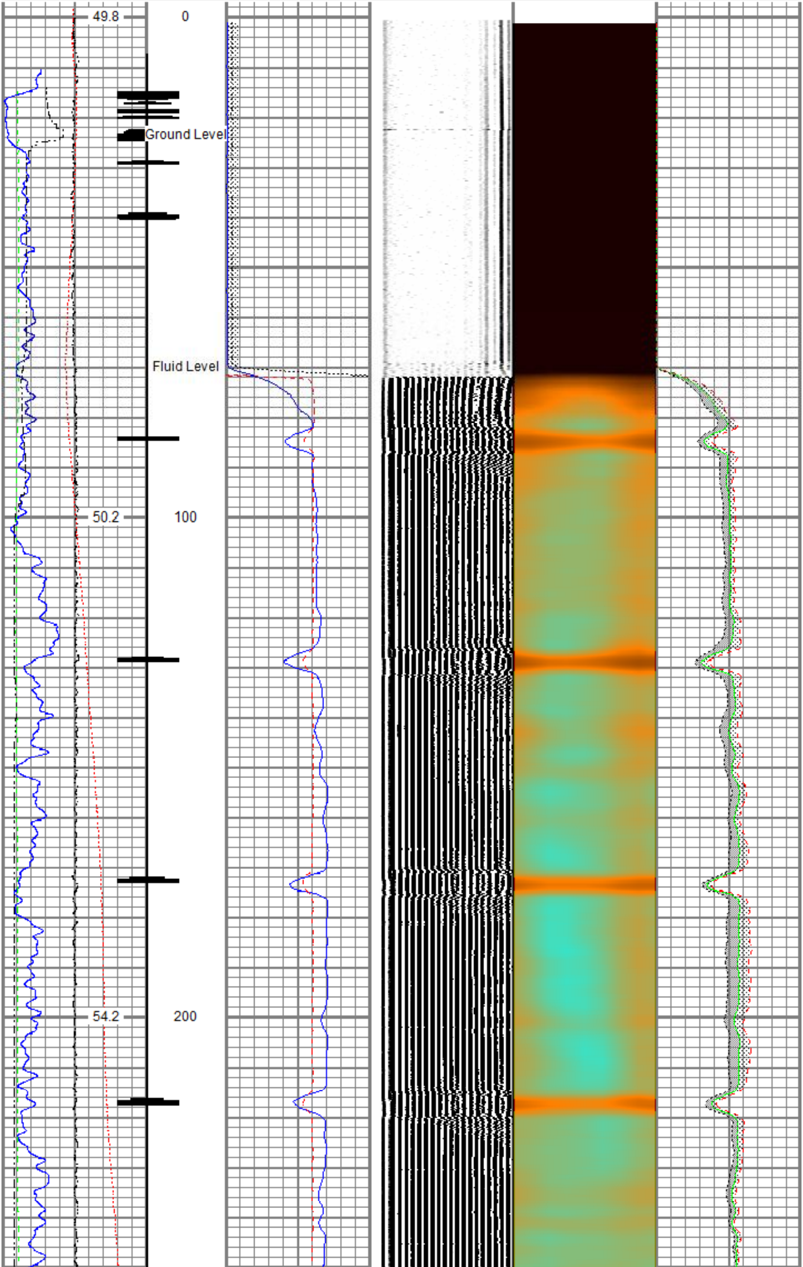
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20
10 CCL 0

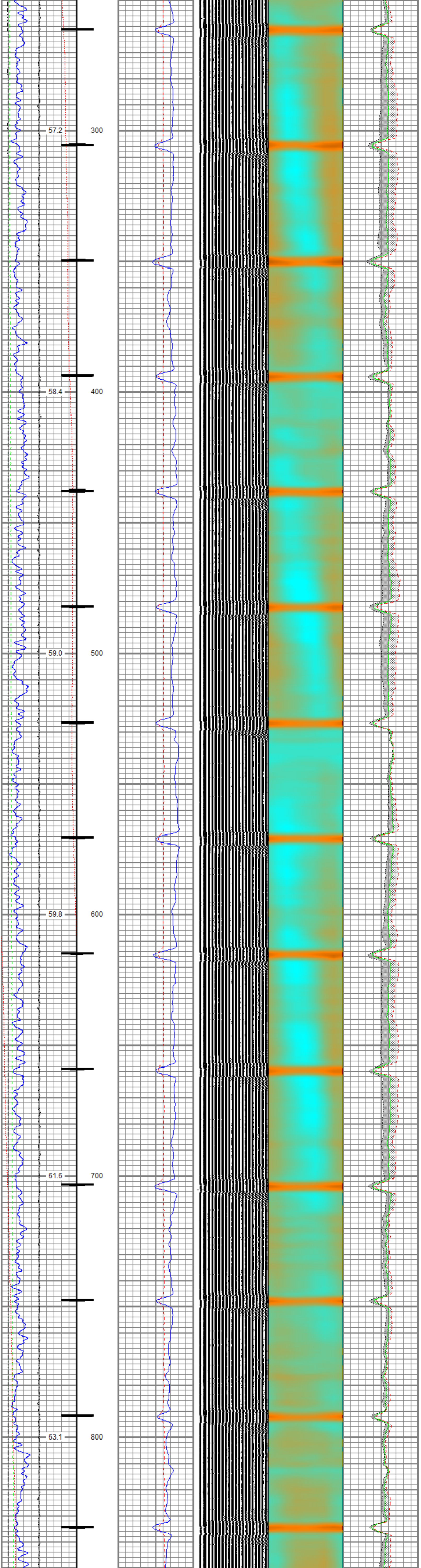
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

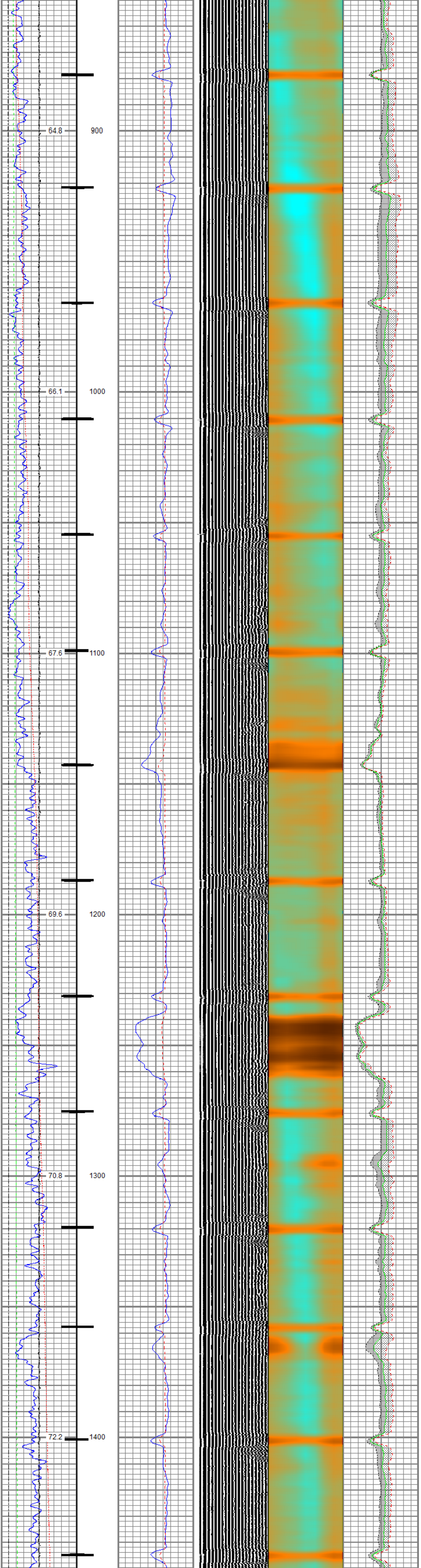
5' Variable Density Log
200 (usec) 1200

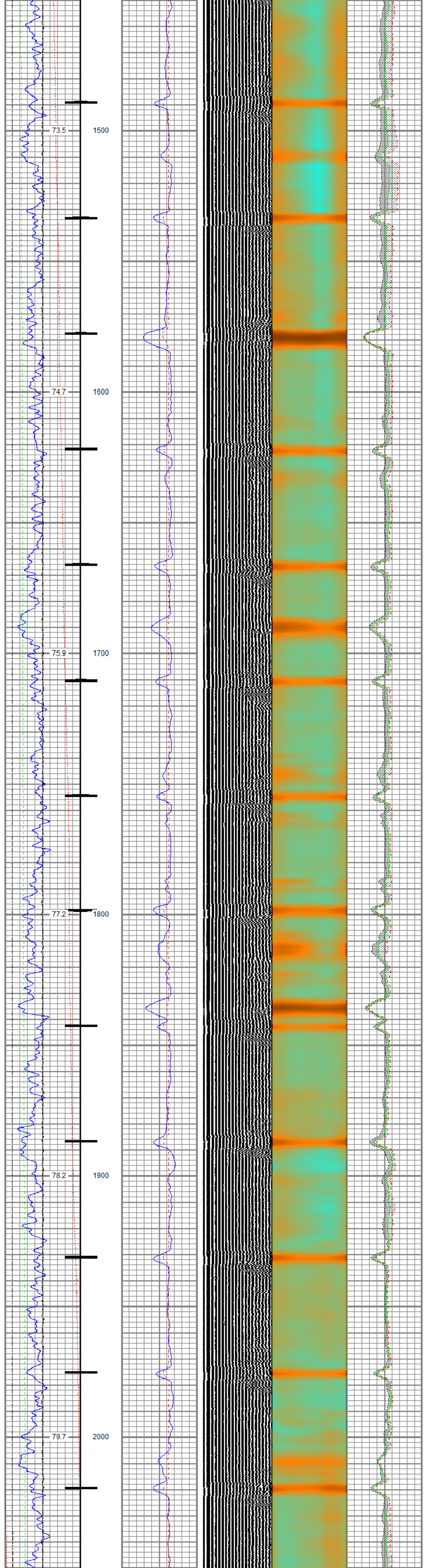
Sector Map

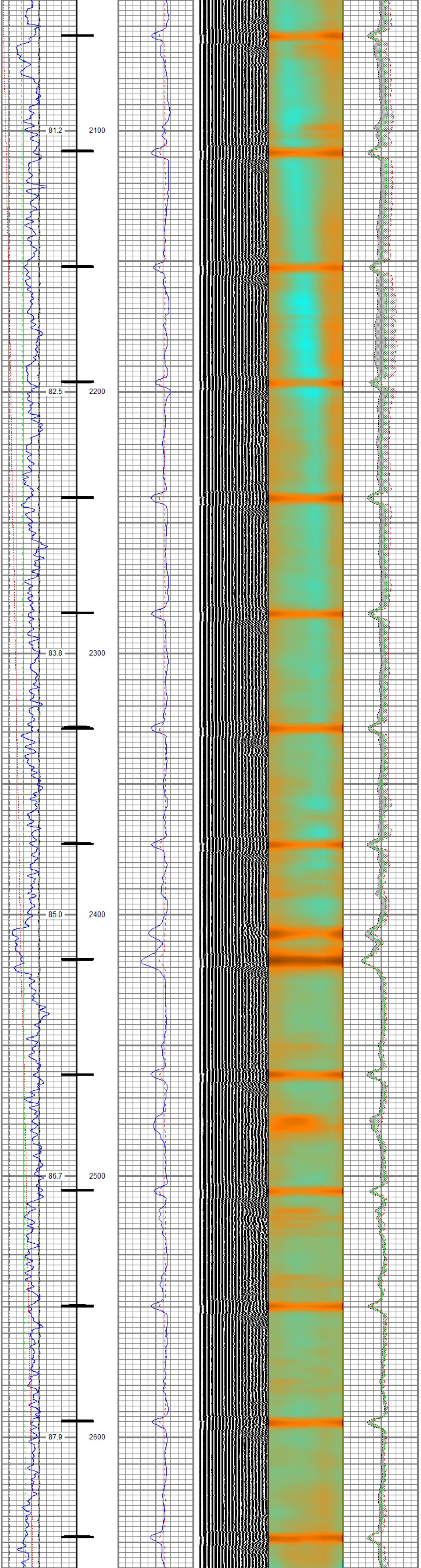
Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150

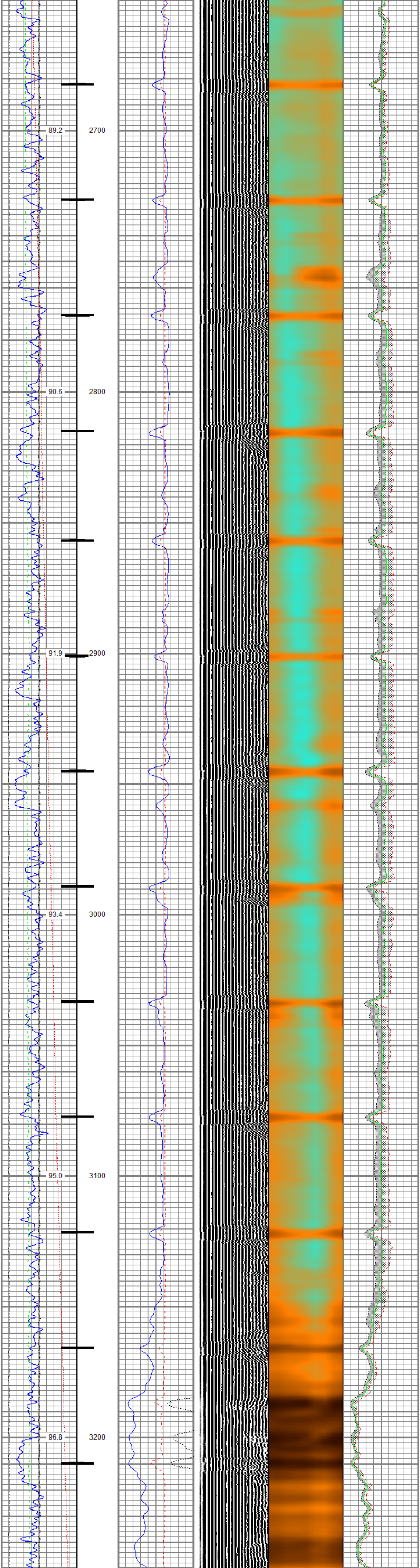


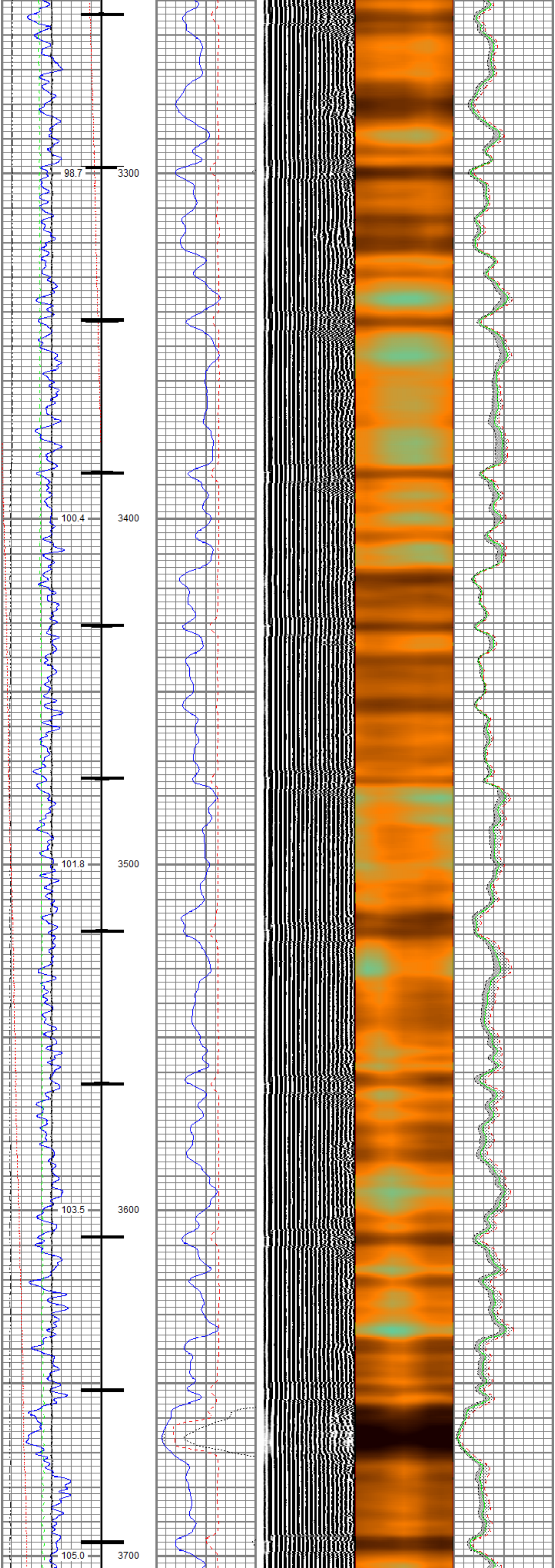


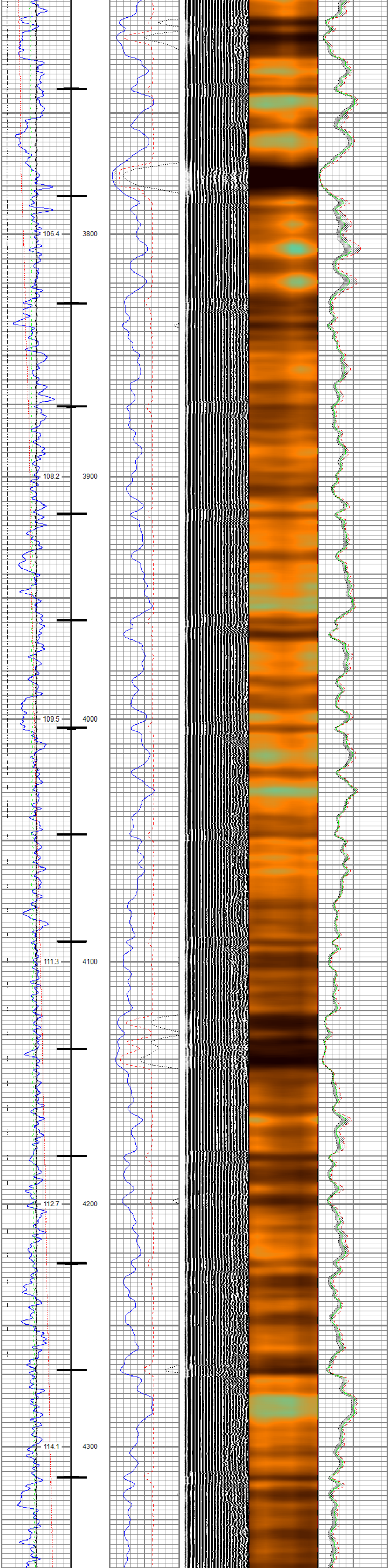








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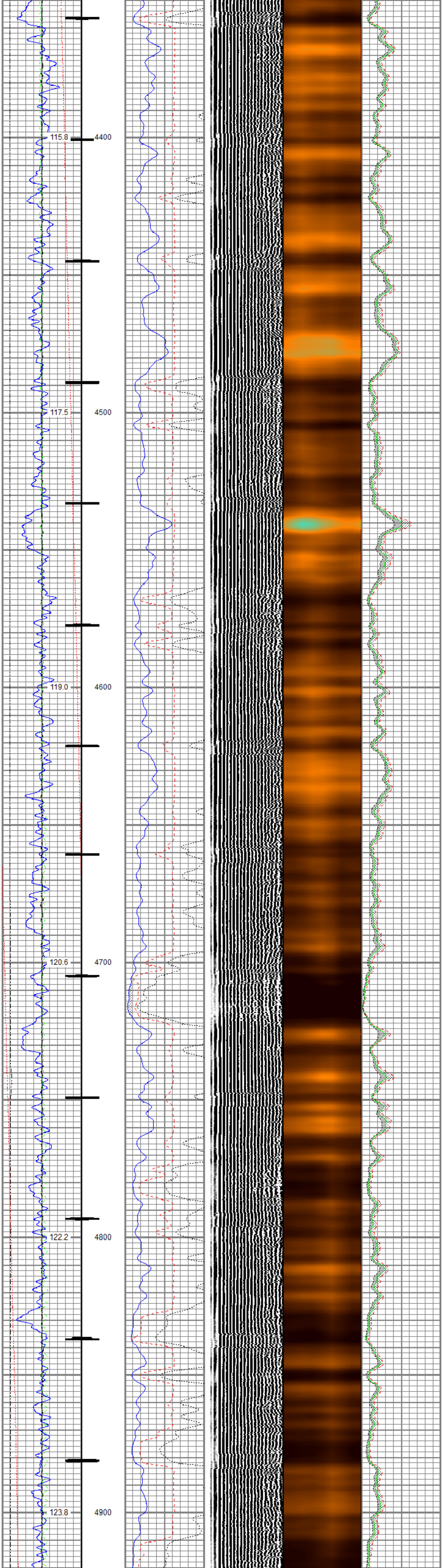
108.2
3900
109.5
4000
111.3
4100
112.7
4200
114.1
4300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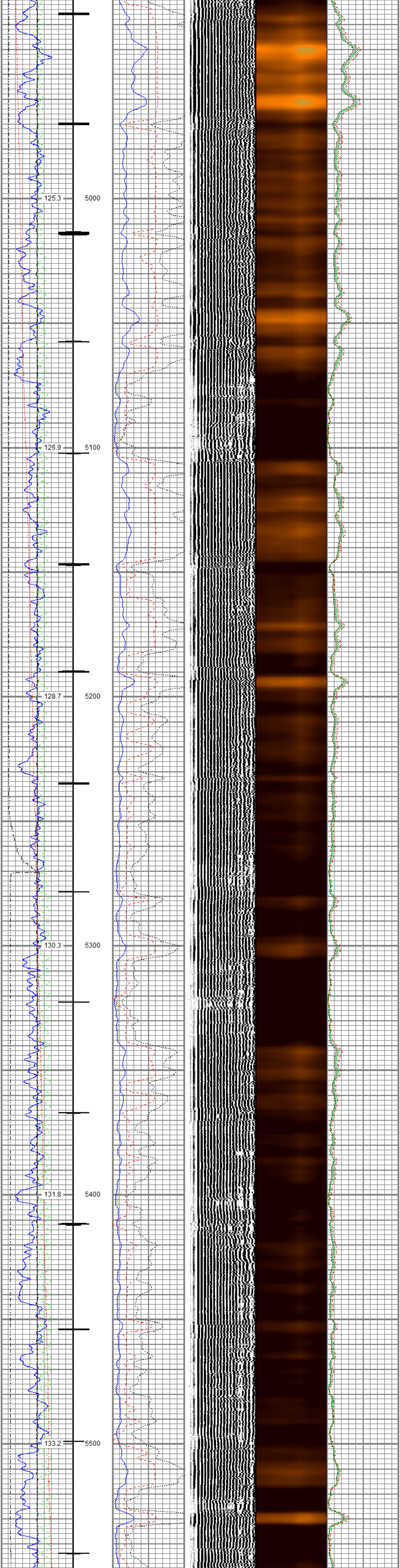
117.5
4500
119.0
4600
120.6
4700
122.2
4800
123.8
4900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128.7
5200
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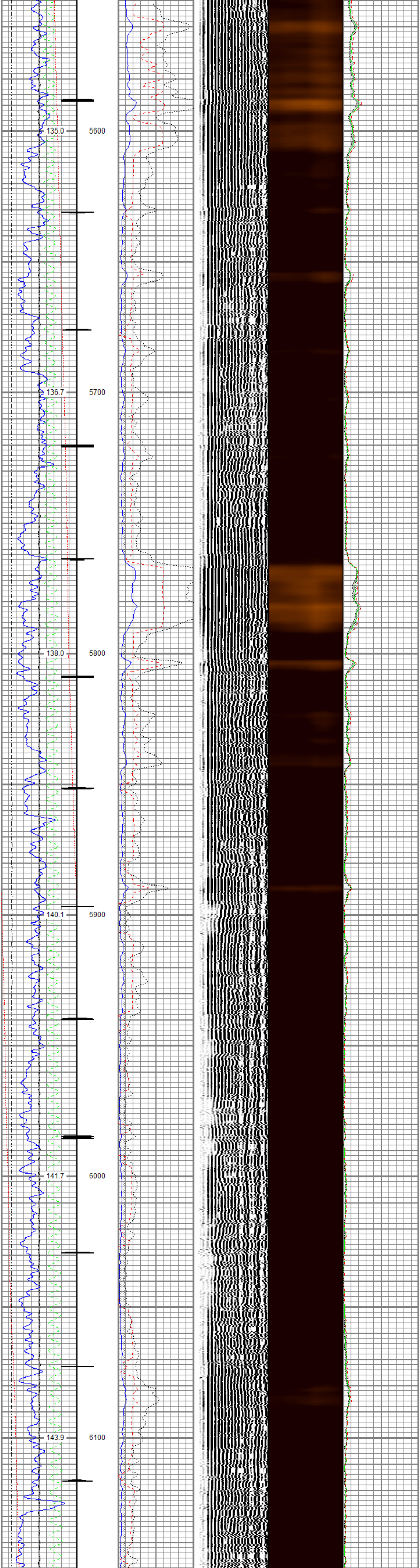
5300
131.8
5400
133.2
5500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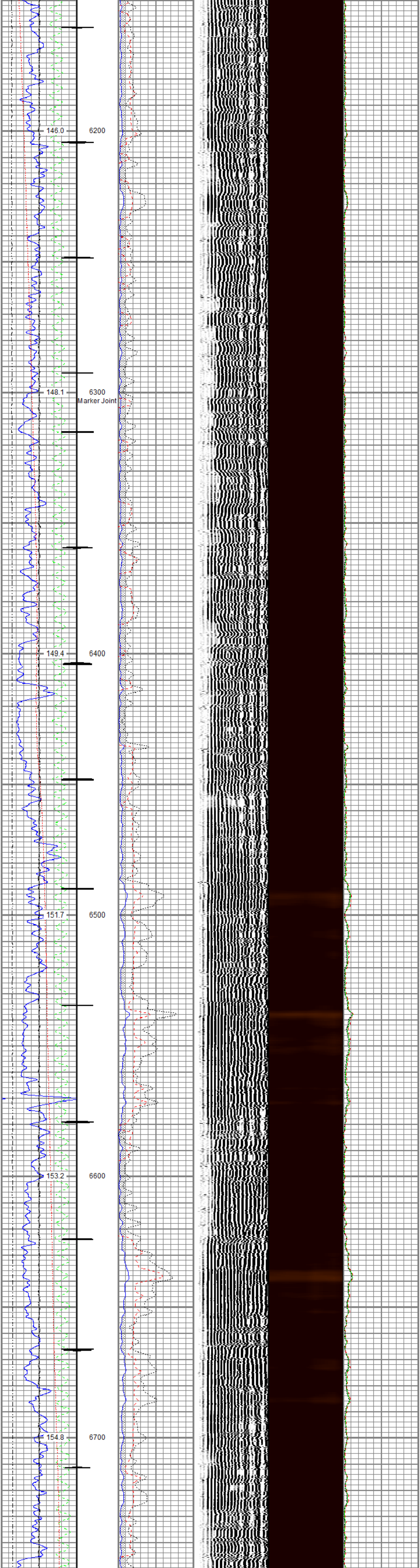
141.7
6000
143.9
6100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6300
Marker Joint
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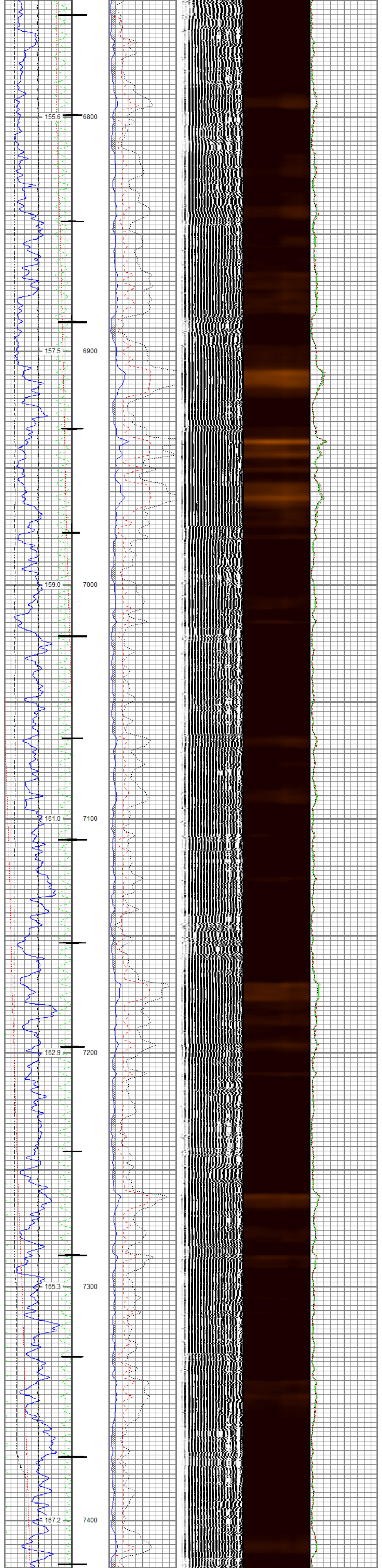
6400
151.7
6500
153.2
6600
154.8
6700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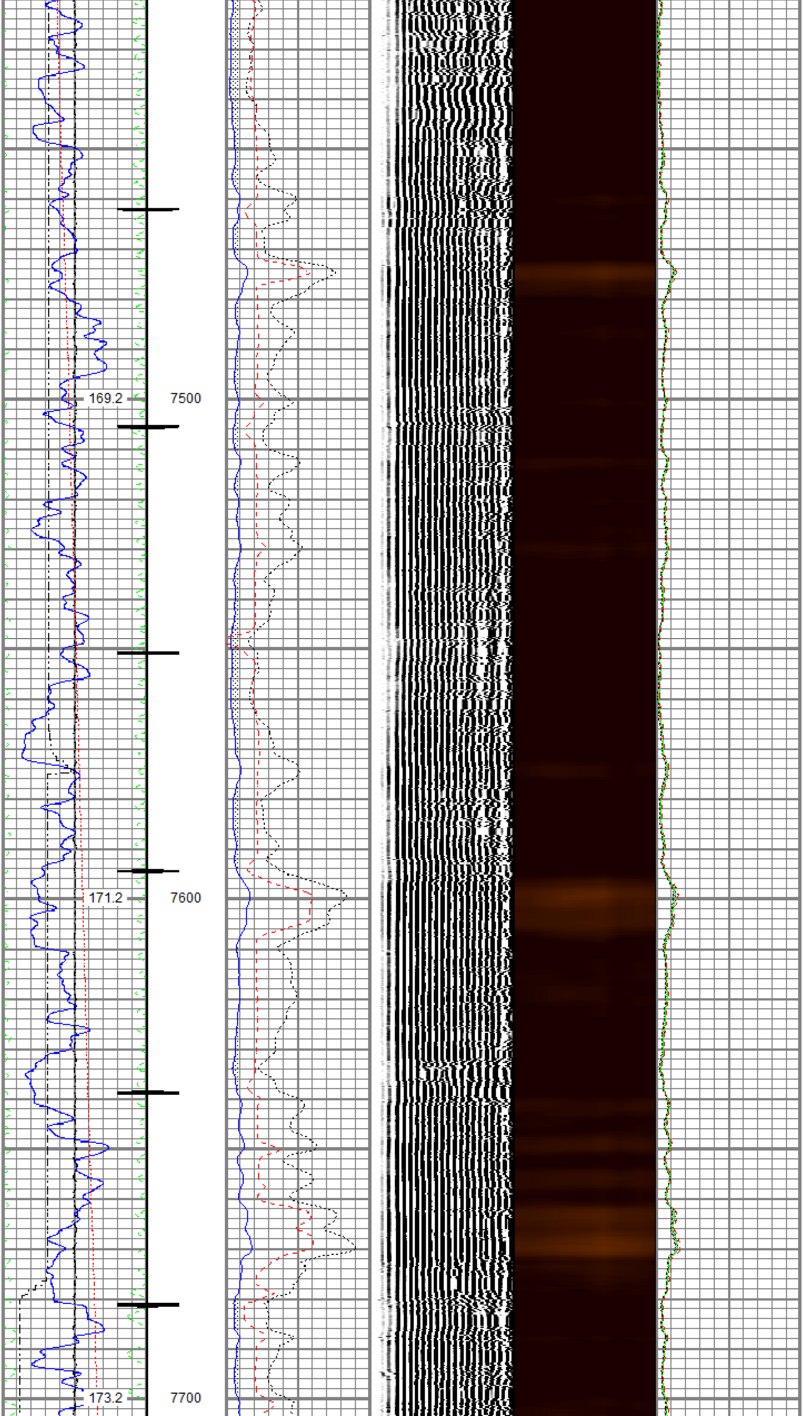
7400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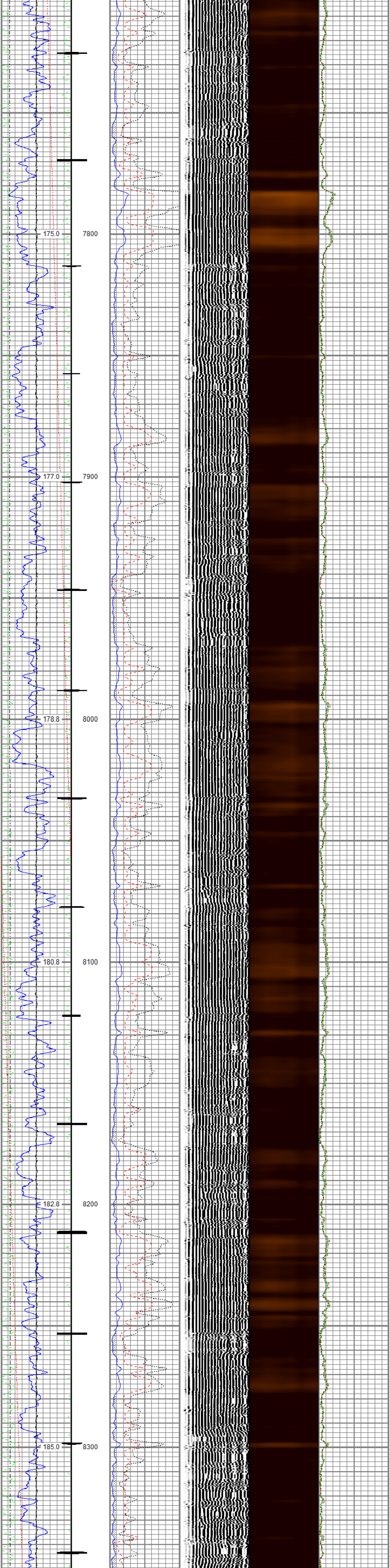
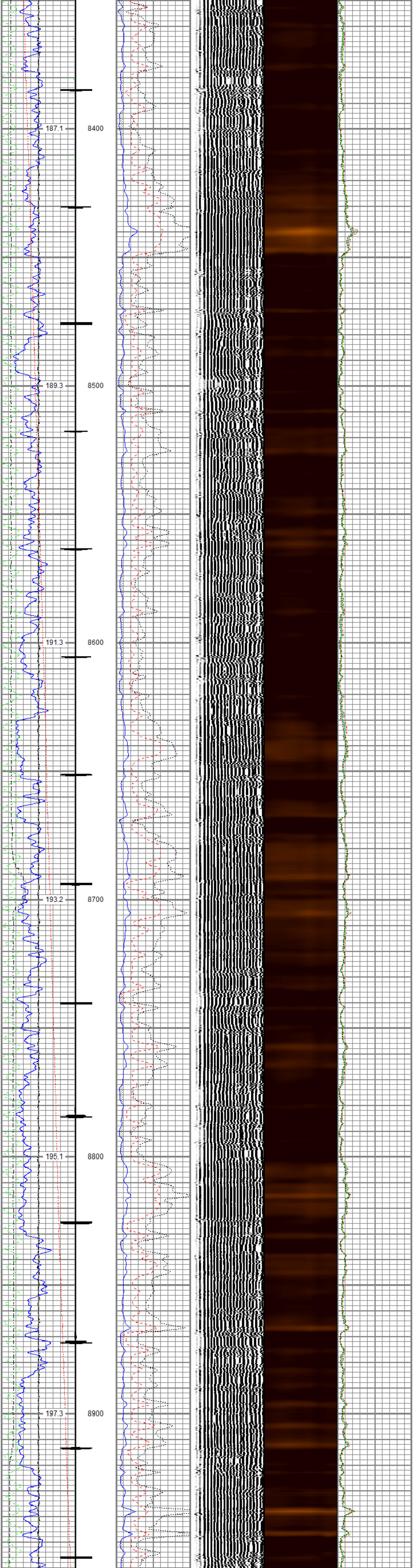
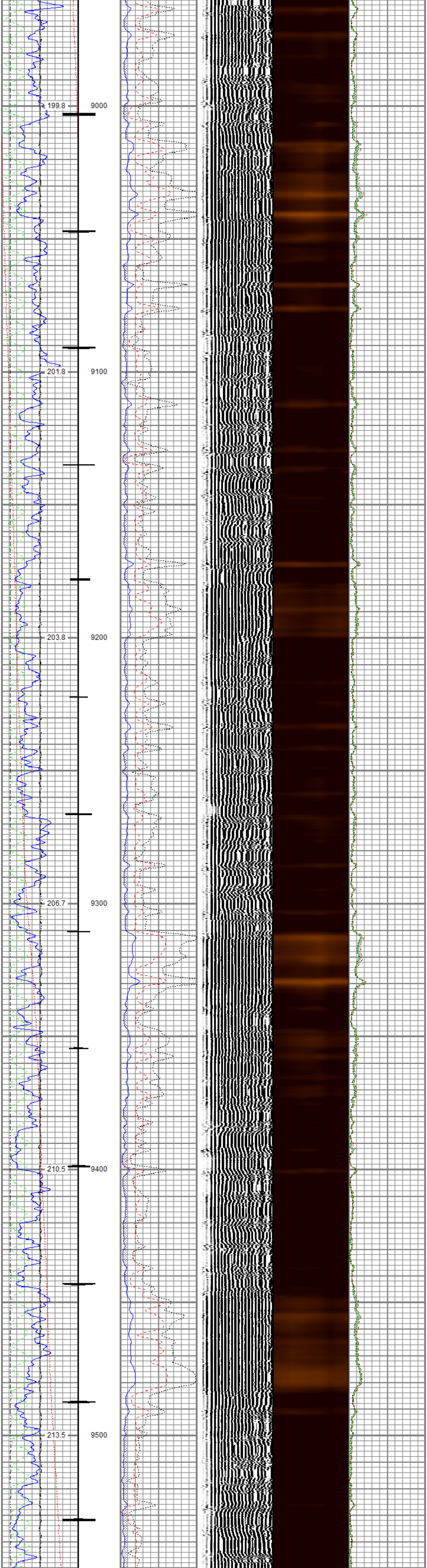
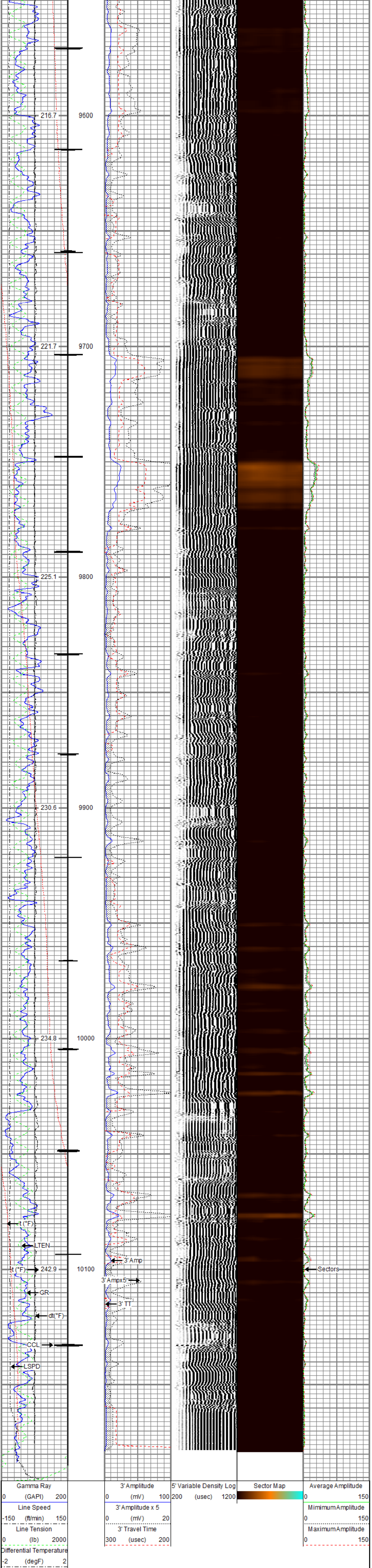
173.2
7700









Temperature
0 (degF) 20
10 CCL 0

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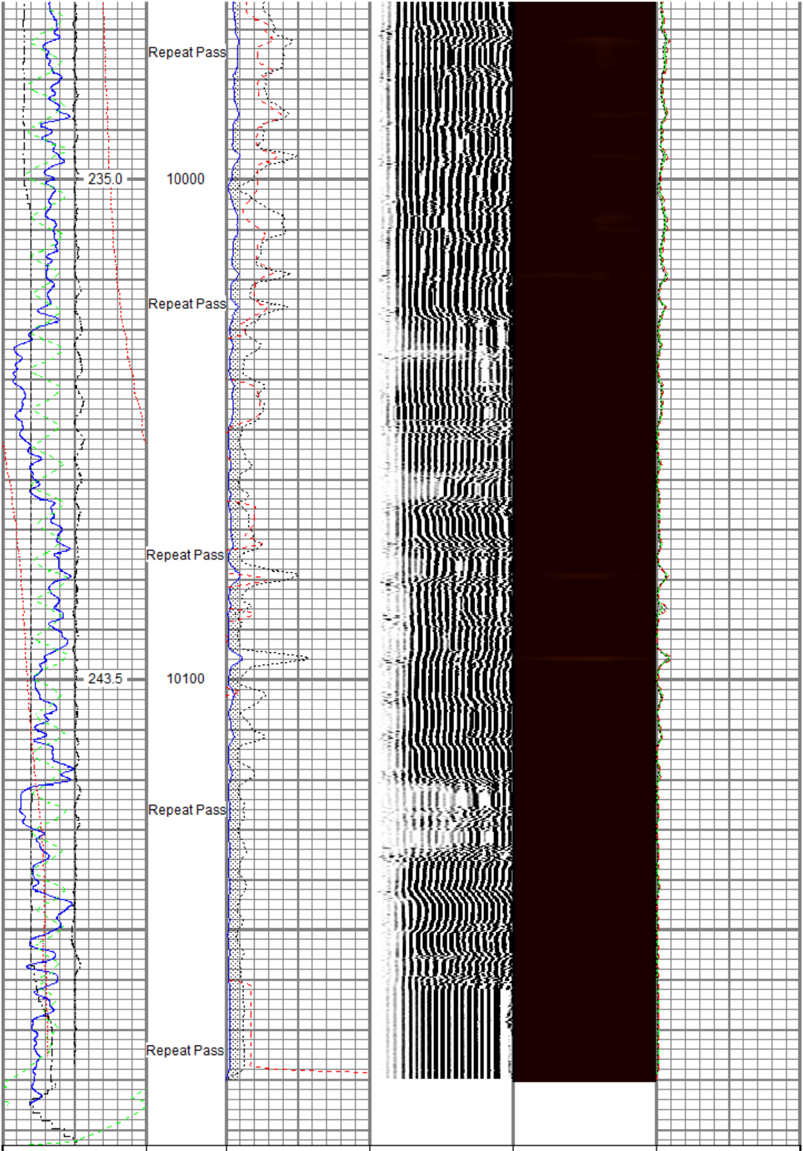
Repeat Pass

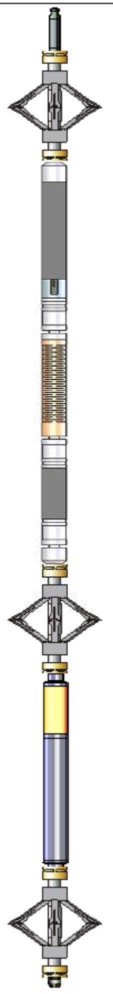
Recorded With 0 PSI Surface Induced Pressure

Database File	tep_clough rwf 421-10\tep_clough rwf 421-10_rbl_01-15-19.db
Dataset Pathname	repeat.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Jan 16 14:09:17 2019
Charted by	Depth in Feet scaled 1:240

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 (usec) 1200		0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				



Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 (usec) 1200		0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck	1.03	1.44	3.60
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
TEMP	16.33					
			Probe Radii-2750 RBT (101013) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS8	14.10					
WVFS7	14.10					
WVFS6	14.10					
WVFS5	14.10					
WVFS4	14.10					
WVFS3	14.10					
WVFS2	14.10					
WVFS1	14.10					
WVFCAL	14.10					
WVF3FT	14.10					
WVF5FT	13.10					
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
CCL$2	6.42					
CCL$1	6.42					
GR	5.18		Probe GR-CCL-2750 GOB (FW1211-081) Probe 2-3/4" rev.2 Digital Scintillation Gamma Ray/CCL Combined	4.51	2.75	55.00
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
			GO BN-14375 GO 1 7/16" Bull Nose with Go Box Top	0.25	1.44	1.00

Dataset: tep_clough rwf 421-10_rbl_01-15-19.db: field/well/run1/main.1
Total length: 22.82 ft
Total weight: 260.60 lb
O.D.: 2.75 in

Calibration Report

Database File	c:\programdata\warrior\data\tep_clough rwf 421-10\tep_clough rwf 421-10_rbl_01-15-19.db
Dataset Pathname	main.1
Dataset Creation	Wed Jan 16 14:03:33 2019

Gamma Ray Calibration Report

Serial Number:	FW1211-081	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 12:22:44 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	112.4	cps
Calibrator Reading:	1008.7	cps
Sensitivity:	0.7107	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	101013	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	21.500	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.007	0.793	0.800	81.196	102.336	0.074
CAL	0.721	0.722				
5'	0.008	0.640	0.800	81.196	127.144	-0.217
SUM						
S1	0.001	0.842	0.000	100.000	118.820	-0.075
S2	0.004	0.778	0.000	100.000	129.174	-0.549
S3	0.003	0.763	0.000	100.000	131.666	-0.444
S4	0.004	0.804	0.000	100.000	124.987	-0.454
S5	0.005	0.830	0.000	100.000	121.180	-0.596
S6	0.004	0.833	0.000	100.000	120.659	-0.477
S7	0.003	0.855	0.000	100.000	117.326	-0.371
S8	0.005	0.876	0.000	100.000	114.754	-0.572

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.721	0.722	1.000	0.000

Air Zero Calibration, performed Tue Jan 15 18:06:24 2019:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.001	0.000	-0.000
5'	0.006	0.000	-0.000
SUM			
S1	-0.001	0.000	0.001
S2	0.004	0.000	-0.000
S3	0.003	0.000	0.000
S4	0.004	0.000	0.000
S5	0.004	0.000	-0.000
S6	0.004	0.000	-0.000
S7	0.004	0.000	-0.000
S8	0.003	0.000	-0.000

Temperature Calibration Report

Serial Number:	101013	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:21:13 2017	
	Reference	Reading
Low Reference:	100.00 degF	112.30 degF
High Reference:	350.00 degF	394.75 degF
Gain:	0.89	
Offset:	0.60	
Delta Spacing	1	

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Company	TEP Rocky Mountain LLC
Well	Clough RWF 421-10
Field	Rulison
County	Garfield
State	Colorado