RELIANCE OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal RU 523-17
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal RU 523-17
Field Rulison
County Garfield State Colorado
Location: API # : 05-045-23735
SEC 17 TWP 7S RGE 93W
Other Services

Permanent Datum	Ground Level	Elevation	8365.6'	Elevation K.B. 8389.6' D.F. 8388.6' G.L. 8365.6'
Log Measured From	Kelly Bushing	24 FT		
Drilling Measured From	Kelly Bushing			

Date	27-APR-2018		
Run Number	One		
Depth Driller	10390 FT		
Depth Logger	10328 FT		
Bottom Logged Interval	10328 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	243°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	01:40		
Equipment Number	HD-0359		
Location	Grand Junction, CO		
Recorded By	J.Donnelly		
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	32.3	H-40	Surface	1130 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10350 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 6182 FT-6203 FT
Log ran from 10328 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

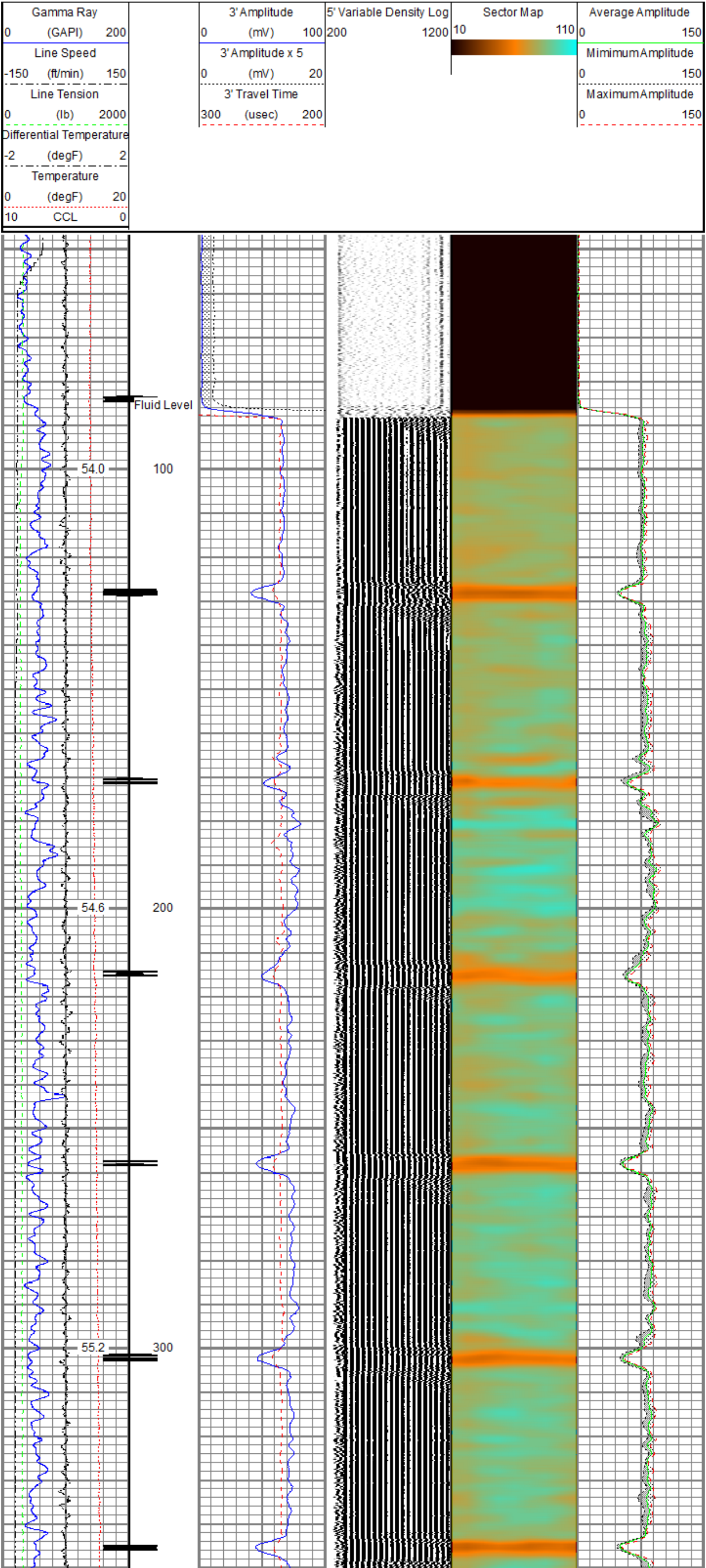
Thank you for choosing Reliance Oilfield Services, LLC!

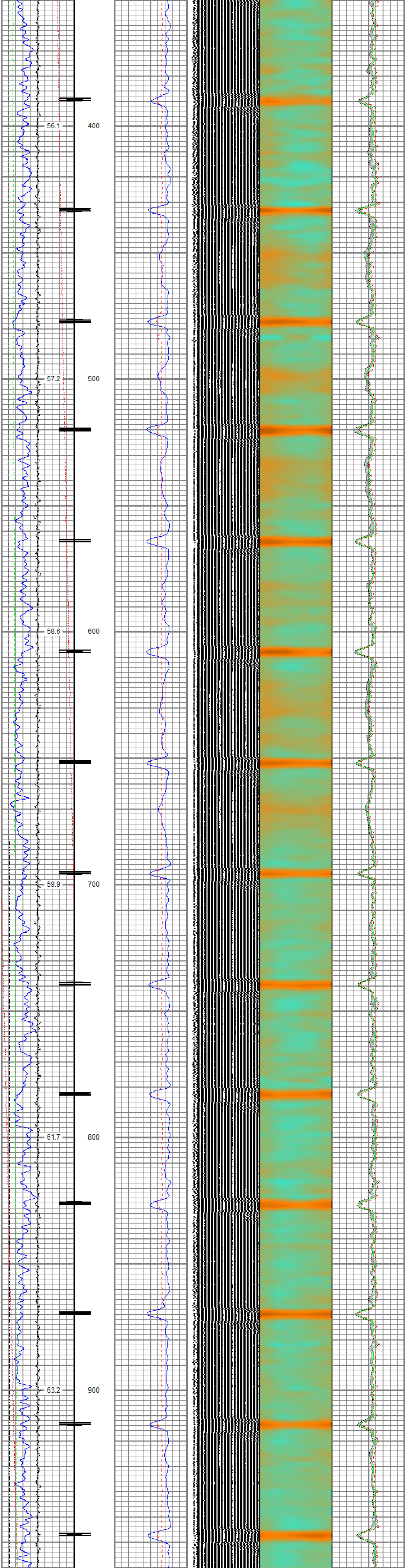
RELIANCE OILFIELD SERVICES

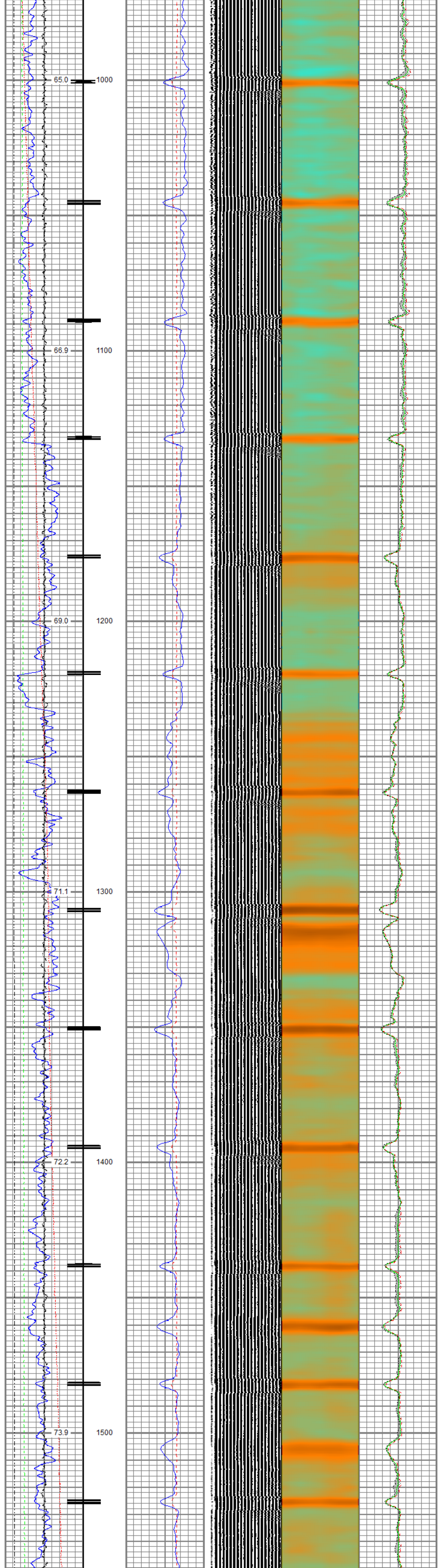
Main Pass

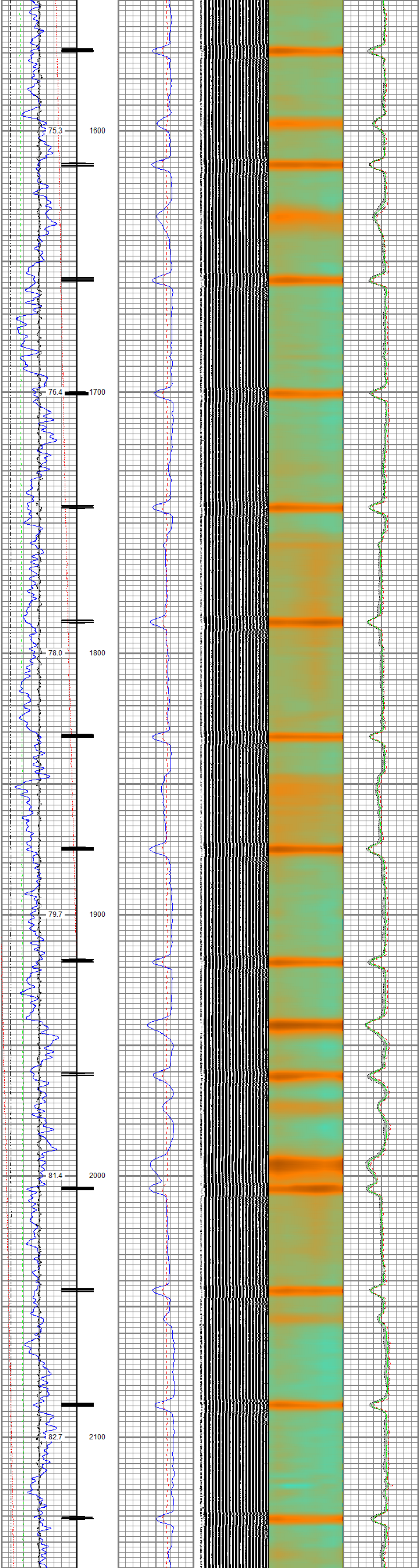
Recorded With 0 PSI Surface Induced Pressure

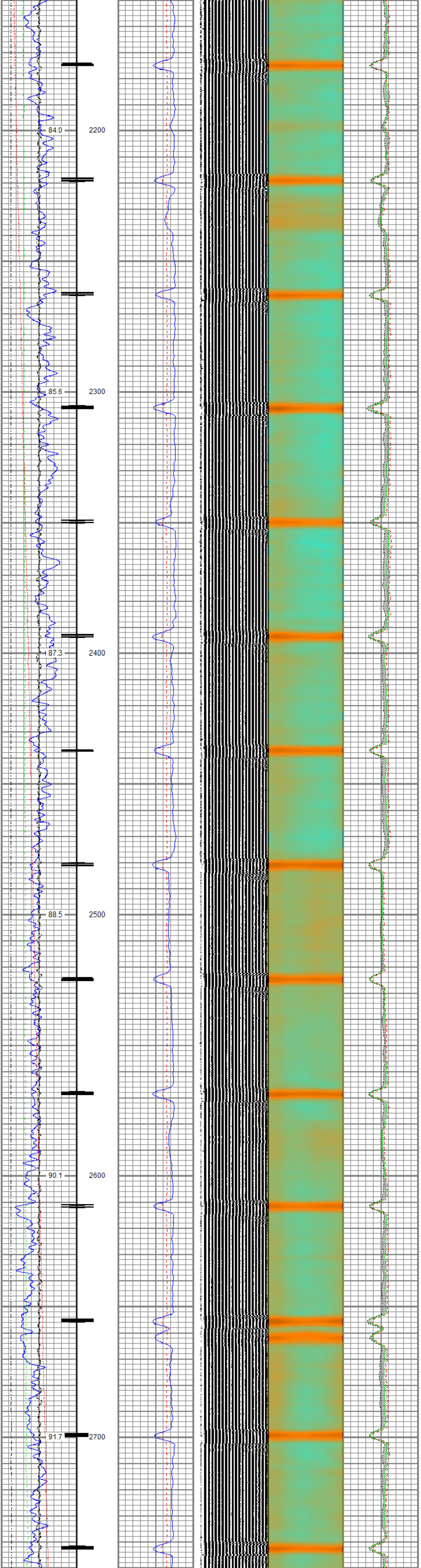
Database File	federal ru 523-17\tep_federal ru 523-17_rbl_04-27-18.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Fri Apr 27 10:46:16 2018
Charted by	Depth in Feet scaled 1:240

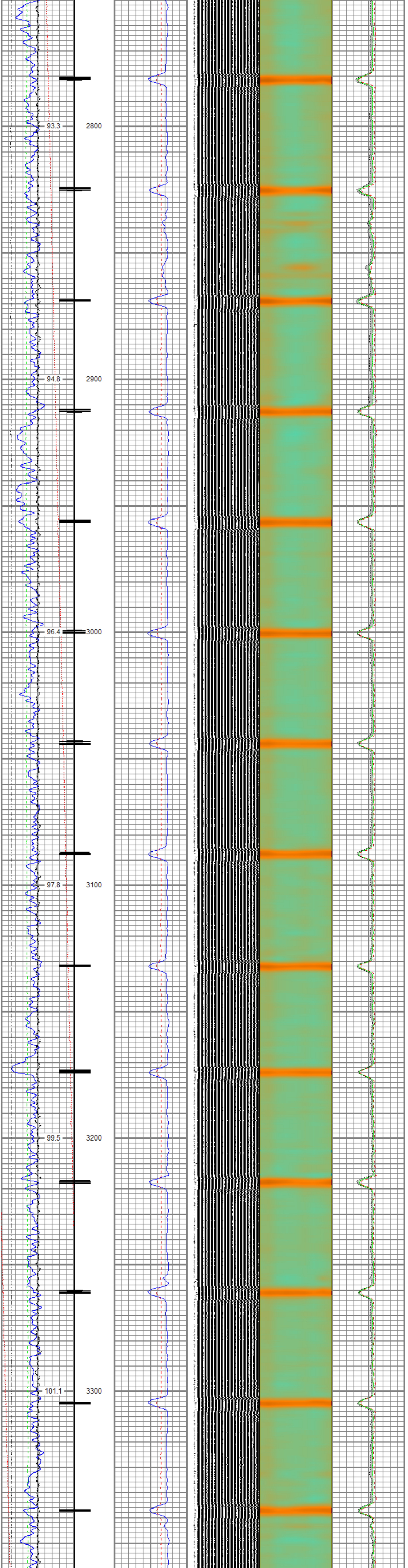


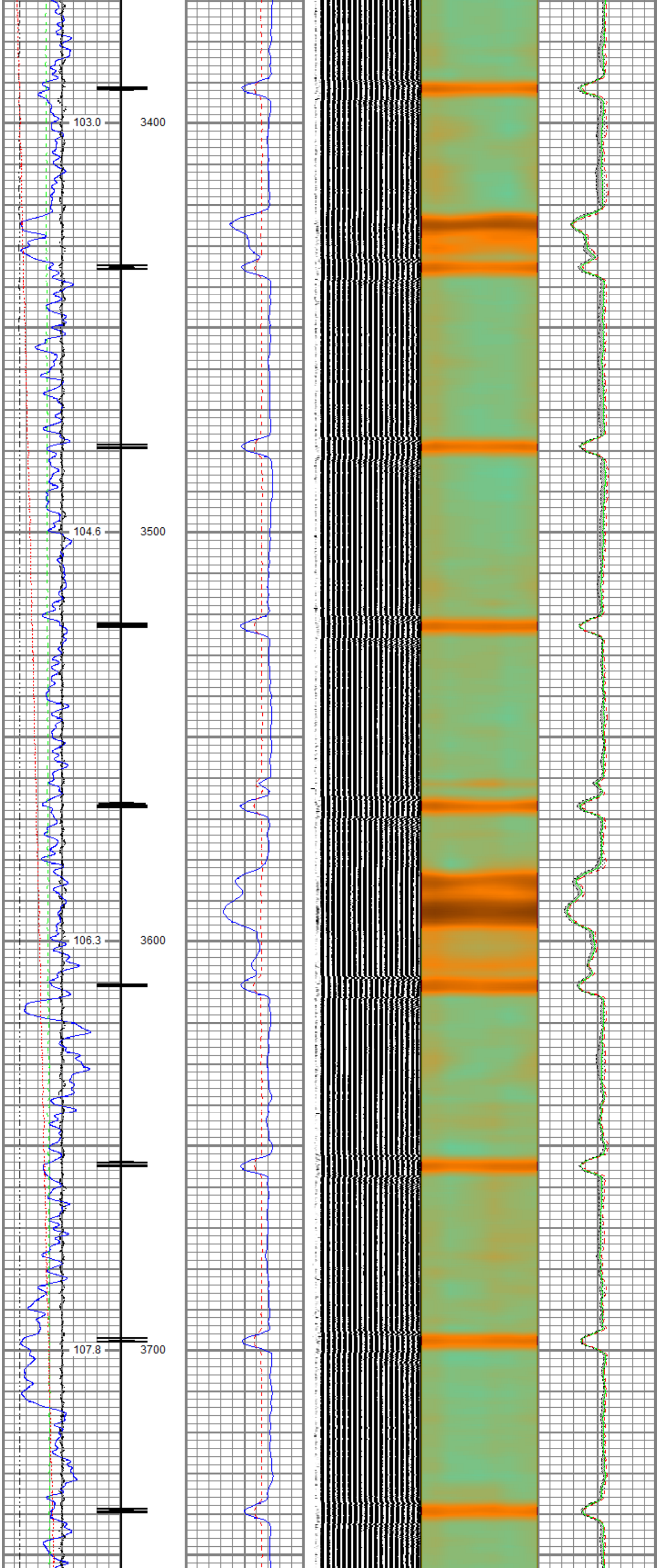


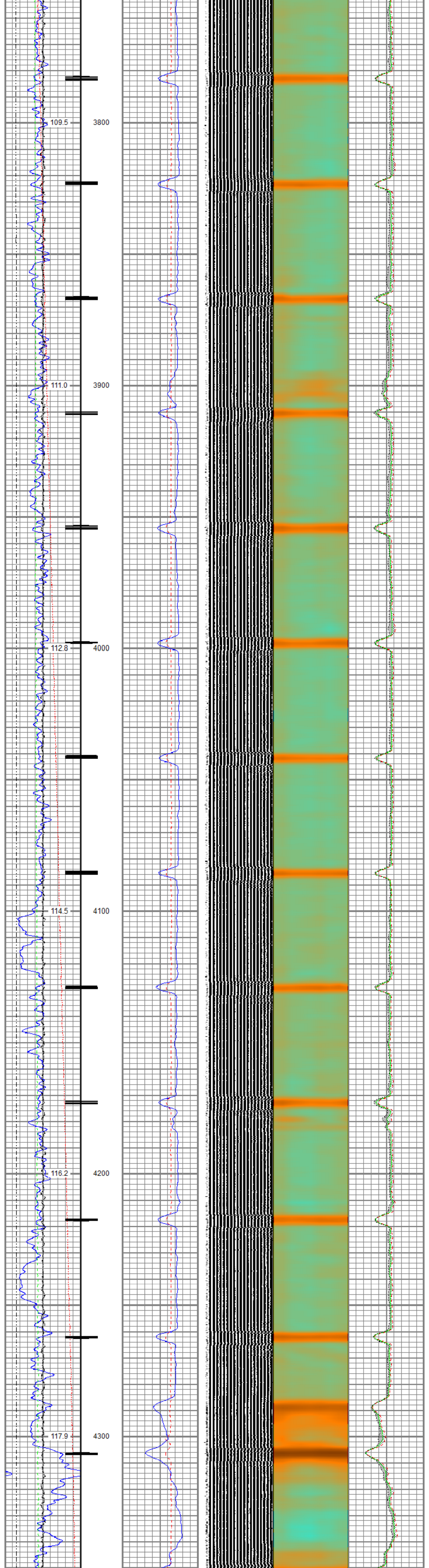








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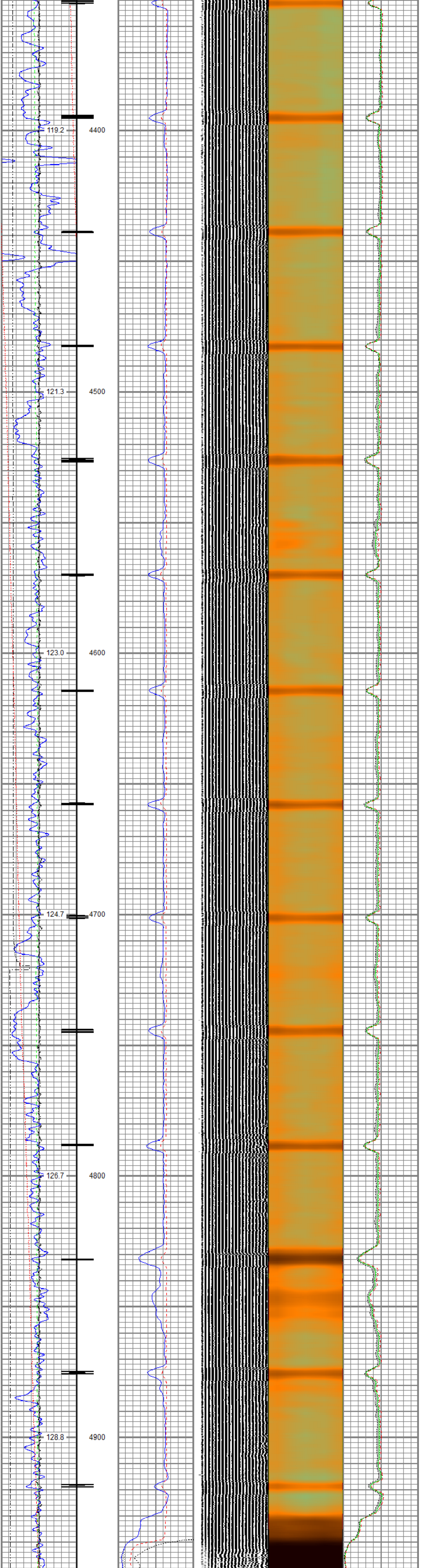
116.2
4200
117.9
4300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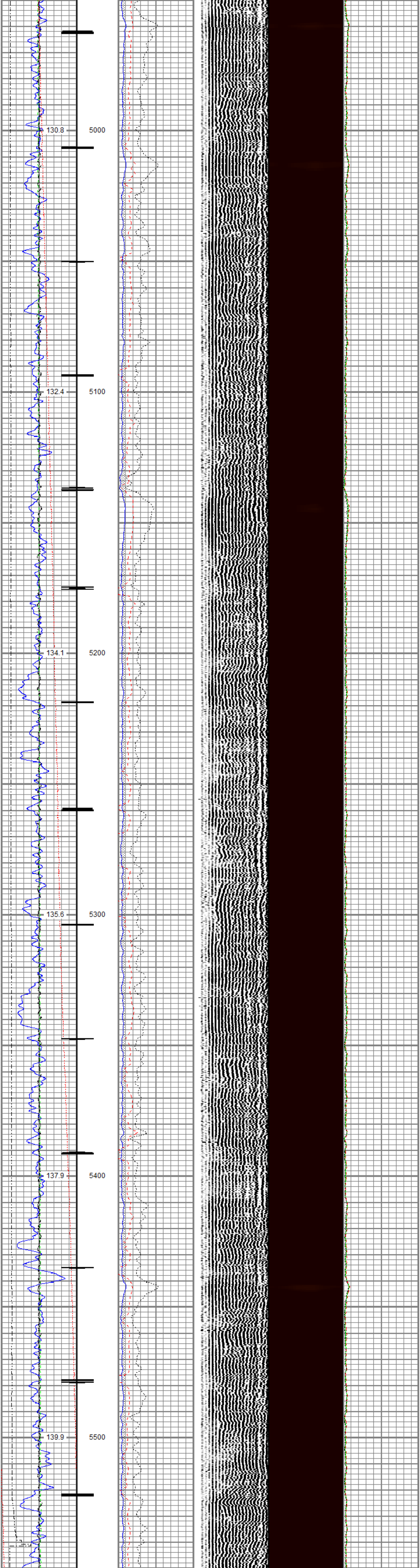
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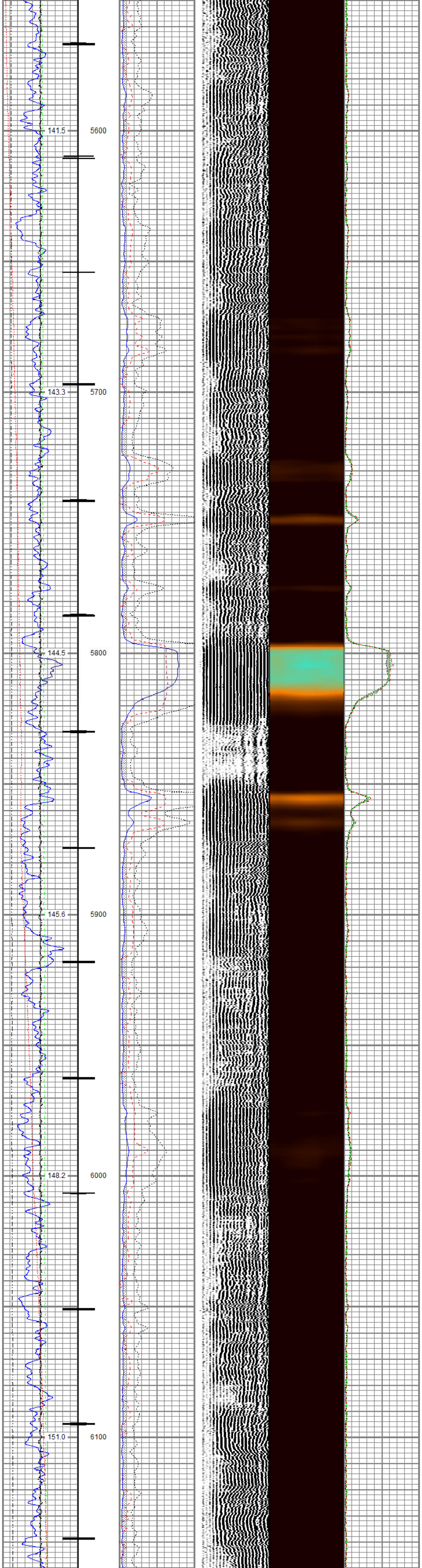
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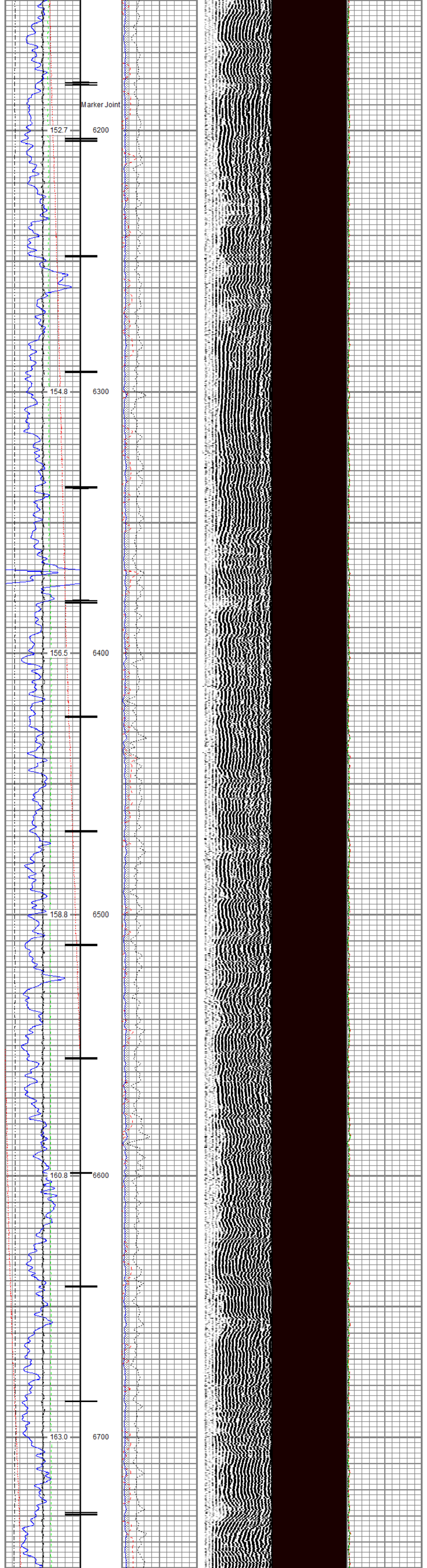
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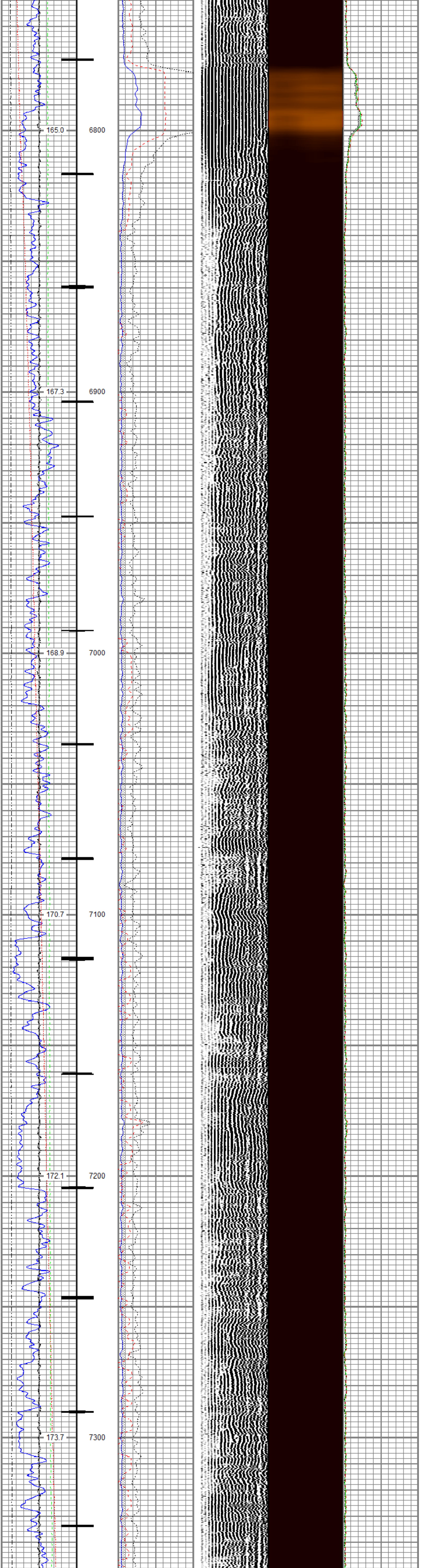
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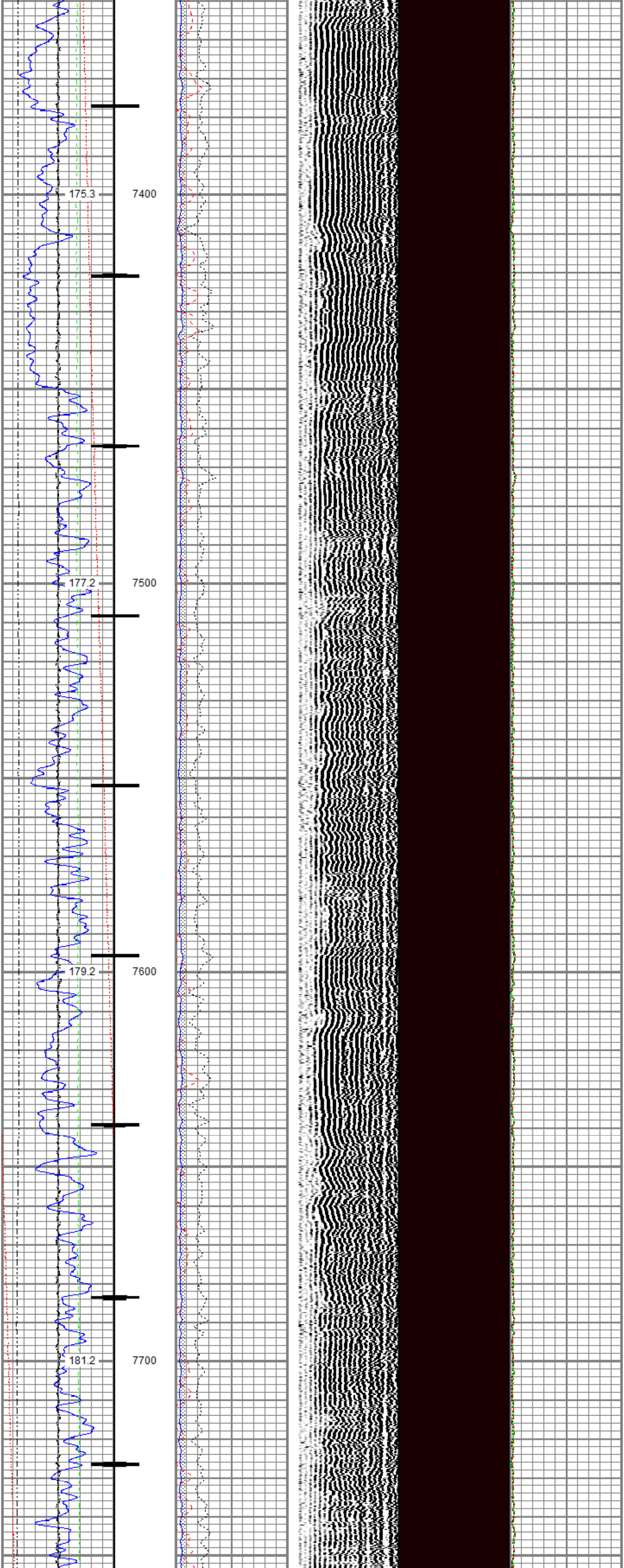
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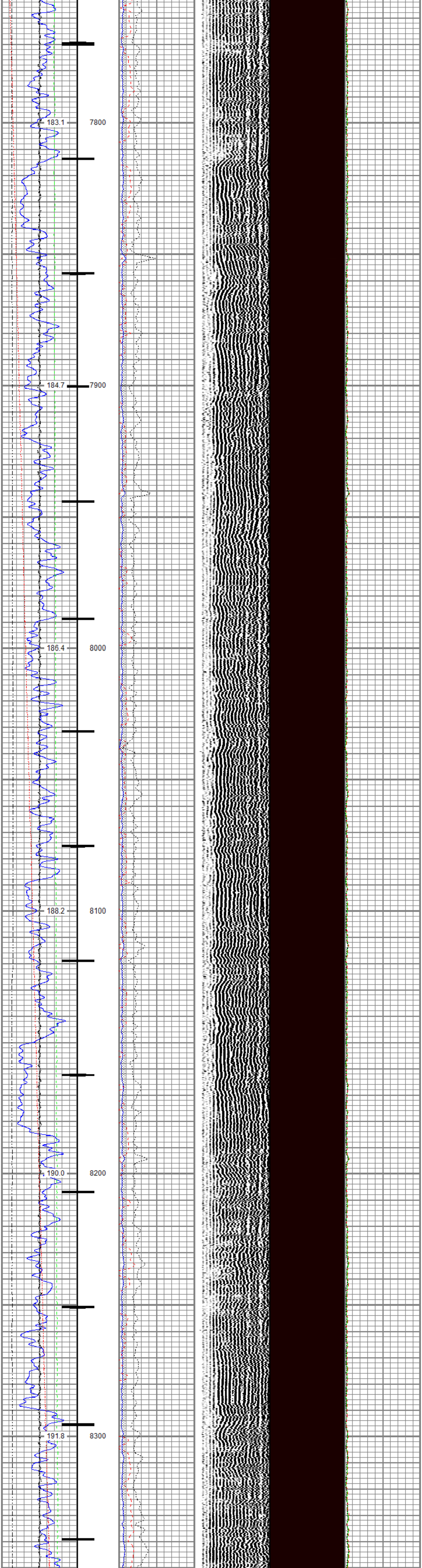

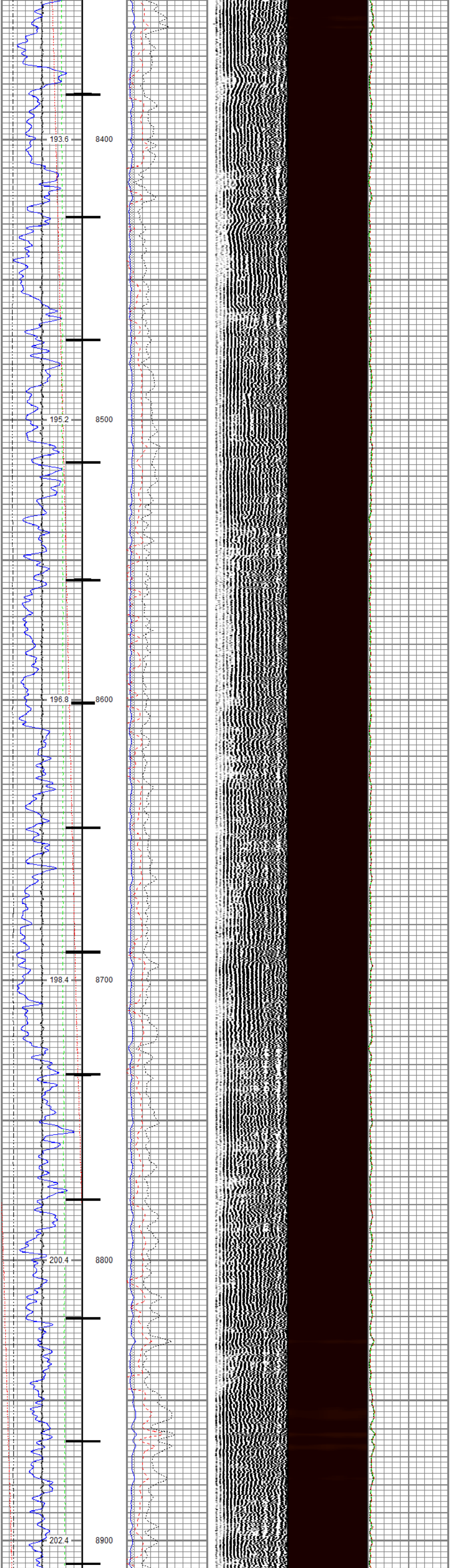

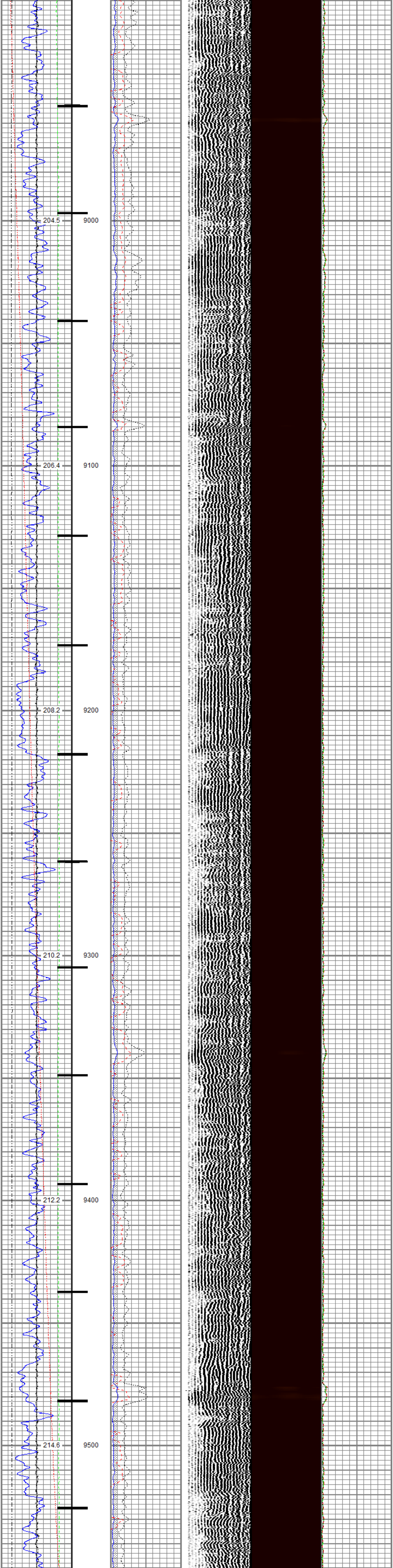

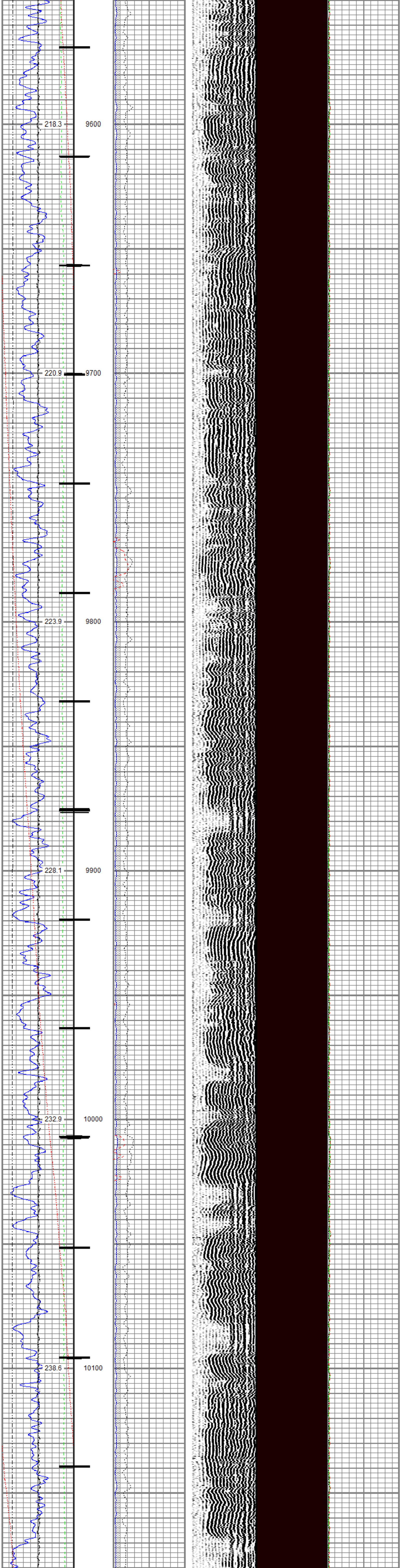

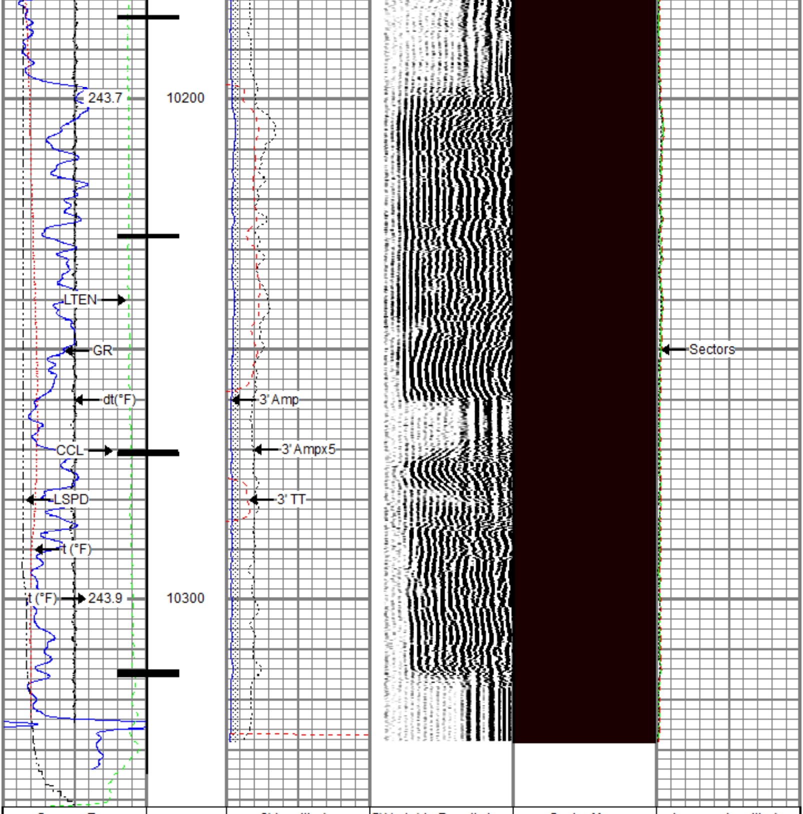

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 1200	10 110	0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				
10 CCL 0				

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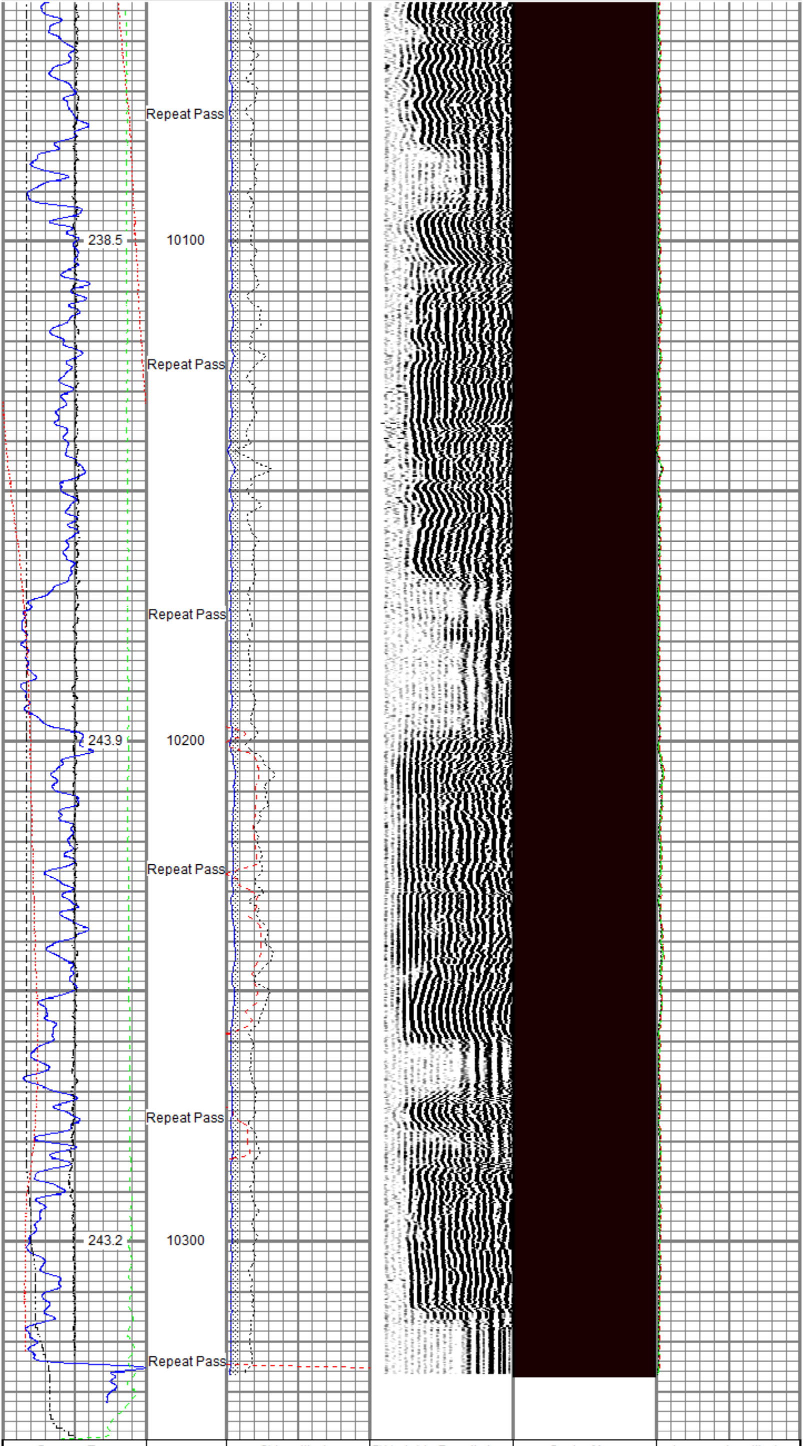
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	federal ru 523-17\tep_federal ru 523-17_rbl_04-27-18.db
Dataset Pathname	repeat1.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Fri Apr 27 14:08:00 2018
Charted by	Depth in Feet scaled 1:240

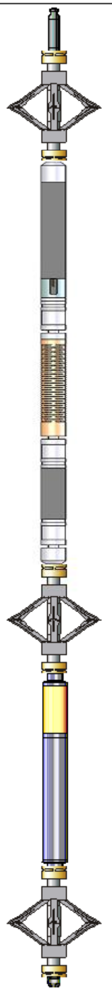
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 1200	10 110	0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential 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 1200	10 110	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)
TEMP	16.33
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
CCL$2	6.42
CCL$1	6.42
GR	5.18

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
Probe Radii-2750 RBT (FW1302-001) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
Probe GR-CCL-2750 GOB (FW1307-038) 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_federal ru 523-17_rbl_04-27-18.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\federal ru 523-17\tep_federal ru 523-17_rbl_04-27-18.db
Dataset Pathname	main.1
Dataset Creation	Fri Apr 27 10:46:16 2018

Gamma Ray Calibration Report

Serial Number:	FW1307-038	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 12:44:12 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	113.2	cps
Calibrator Reading:	1022.4	cps
Sensitivity:	0.7007	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1302-001	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	-1705.394	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.019	0.969	0.800	81.196	81.350	2.366
CAL	-0.005	0.745				
5'	-0.012	1.164	0.800	81.196	68.336	1.640
SUM						
S1	-0.026	1.216	0.000	100.000	80.479	2.132
S2	-0.020	1.158	0.000	100.000	84.882	1.737
S3	-0.013	0.986	0.000	100.000	100.069	1.319
S4	-0.018	0.911	0.000	100.000	107.570	1.952
S5	-0.023	0.904	0.000	100.000	107.917	2.463
S6	-0.028	0.943	0.000	100.000	102.954	2.891
S7	-0.018	0.993	0.000	100.000	98.930	1.764
S8	-0.026	1.127	0.000	100.000	86.746	2.221

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.005	0.745	1.000	0.000

Air Zero Calibration, performed Fri Apr 27 02:01:58 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.000	0.000	-0.000
5'	0.011	0.000	0.000
SUM			
S1	0.001	0.000	0.000
S2	0.000	0.000	-0.001
S3	0.000	0.000	-0.000
S4	0.000	0.000	-0.001
S5	0.000	0.000	-0.000
S6	0.001	0.000	-0.000
S7	0.001	0.000	-0.001
S8	0.001	0.000	0.000

Temperature Calibration Report

Serial Number:	FW1302-001	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:24:58 2017	
	Reference	Reading
Low Reference:	100.00 degF	107.47 degF
High Reference:	350.00 degF	404.08 degF
Gain:	0.84	
Offset:	9.42	
Delta Spacing	1	

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