RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Clough NR 343-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Clough NR 343-3
Field Rulison
County Garfield State Colorado

Location: API # : 05-045-23910
SEC 3 TWP 6S RGE 94W

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

Date	13-NOV-2018		
Run Number	One		
Depth Driller	10610 FT		
Depth Logger	10524 FT		
Bottom Logged Interval	10510 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	251°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	18:20		
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	36	J-55	Surface	1128 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10567 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 6568 - 6582 FT
Log ran from 10510 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 nr 343-3_rbl_11-13-18\processed_tep_clough nr 343-3_rbl_11-13-18.db
Dataset Pathname	main
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Nov 13 18:23:17 2018
Charted by	Depth in Feet scaled 1:240

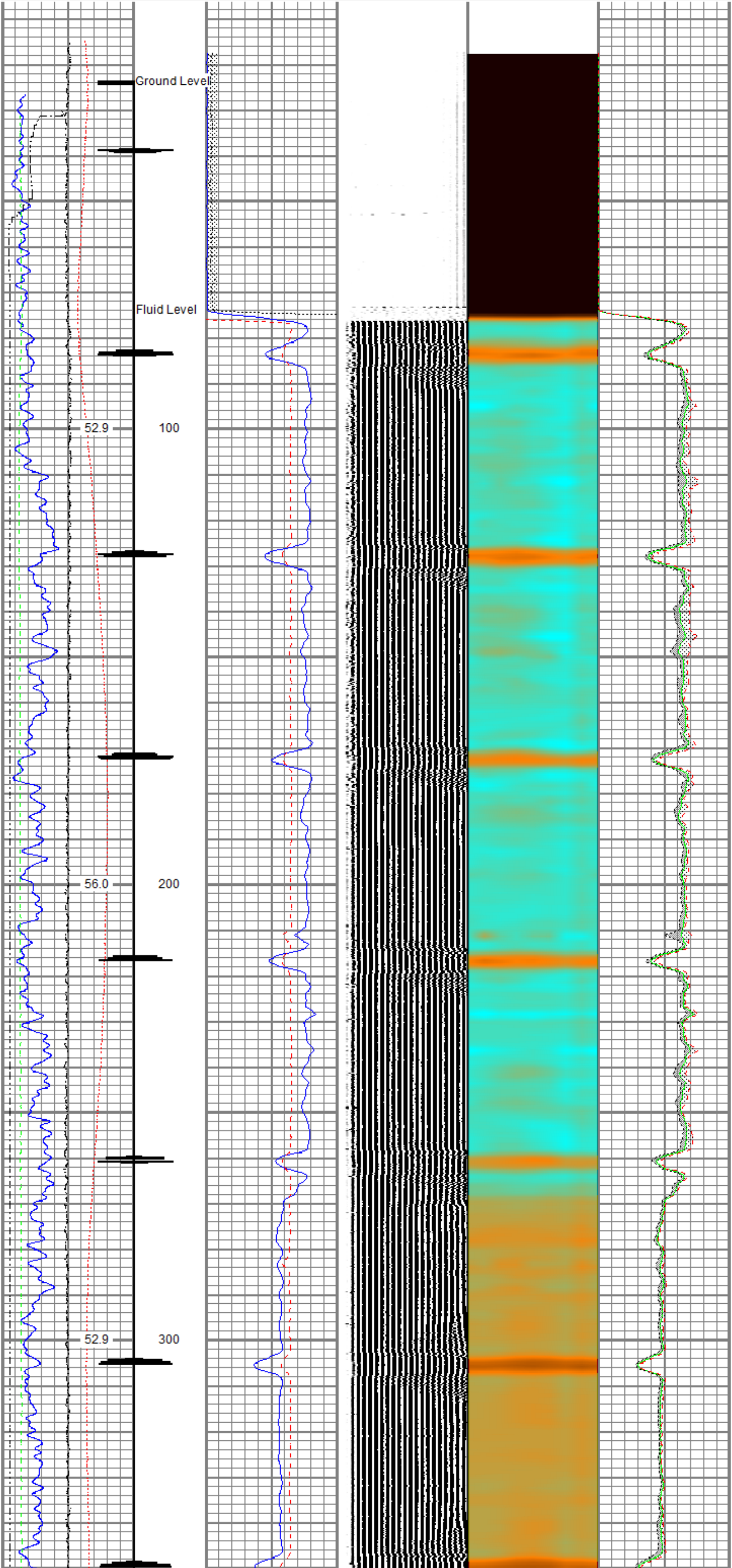
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20
10 CCL 0

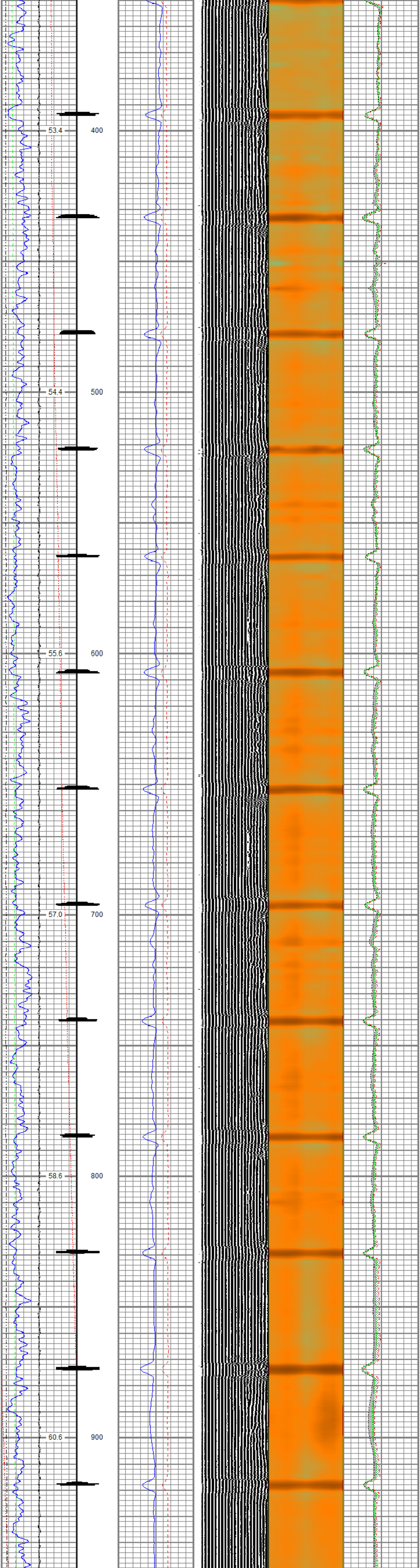
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

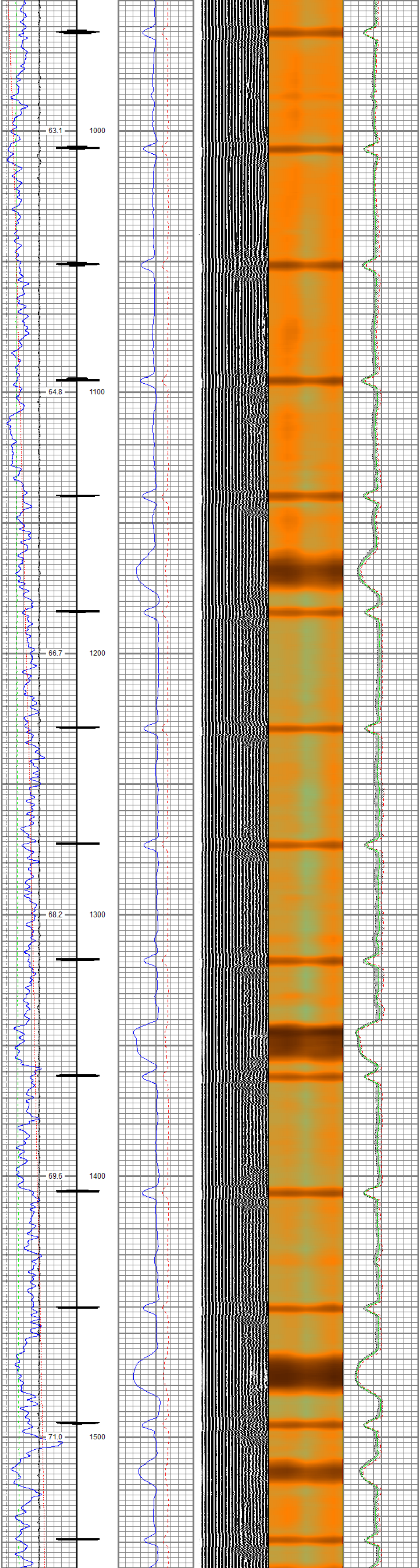
5' Variable Density Log
200 1200

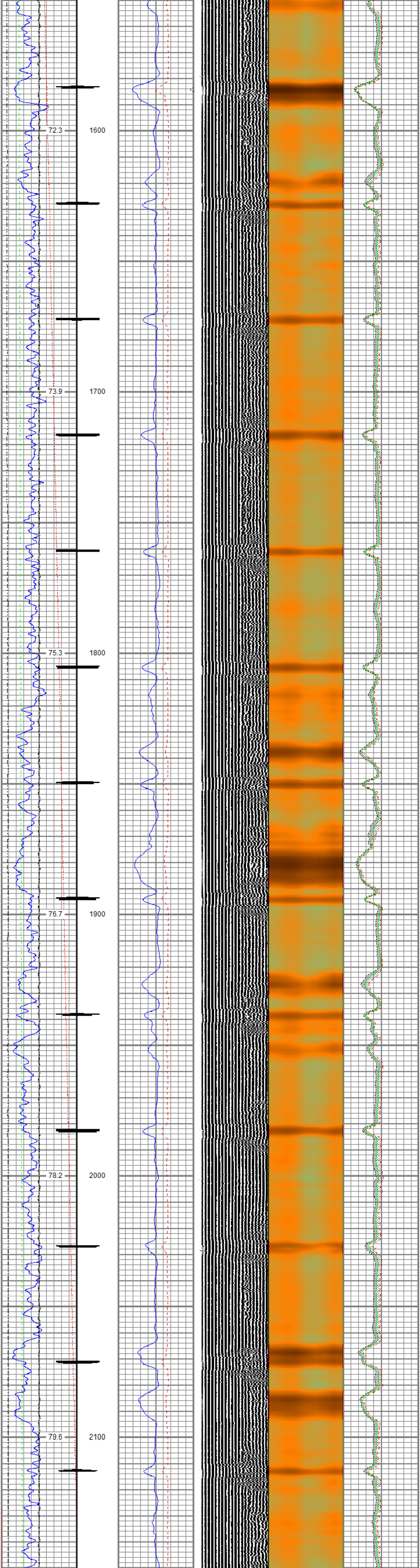
Sector Map
10 110

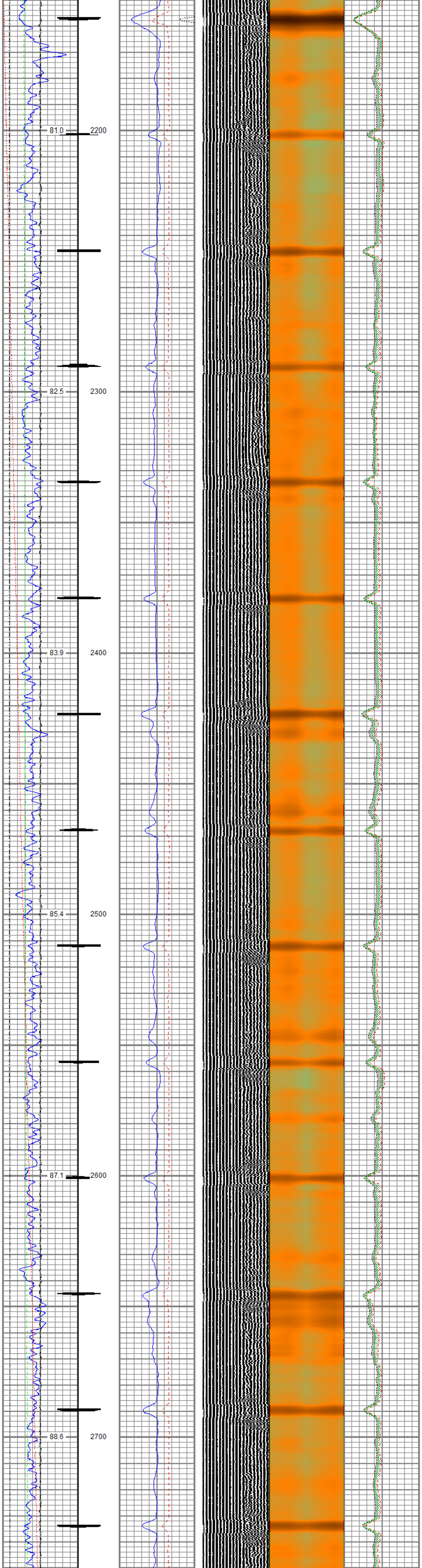
Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150

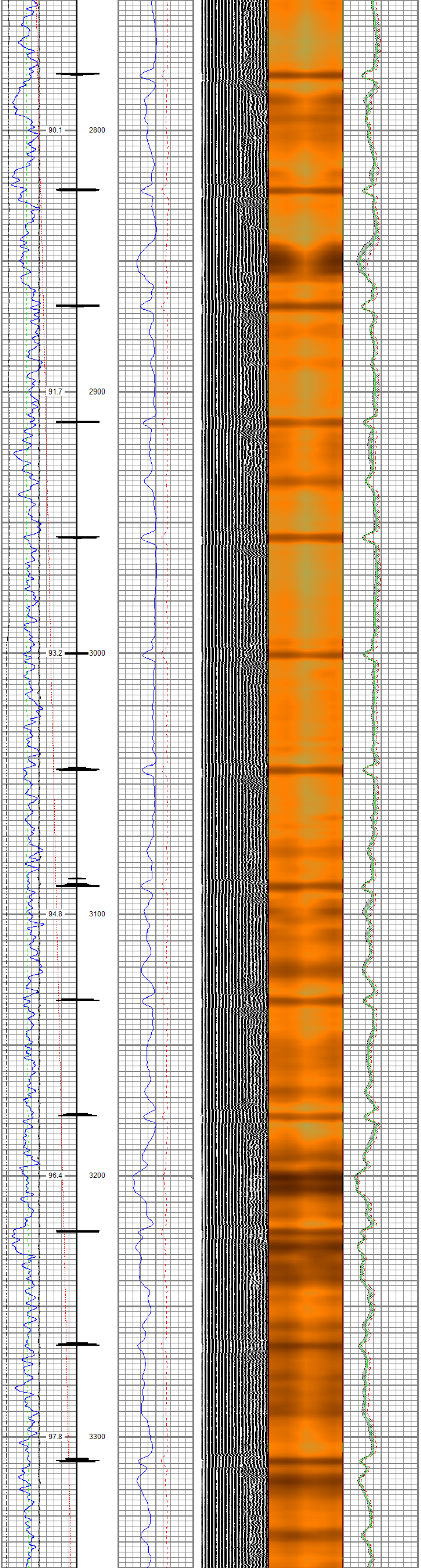


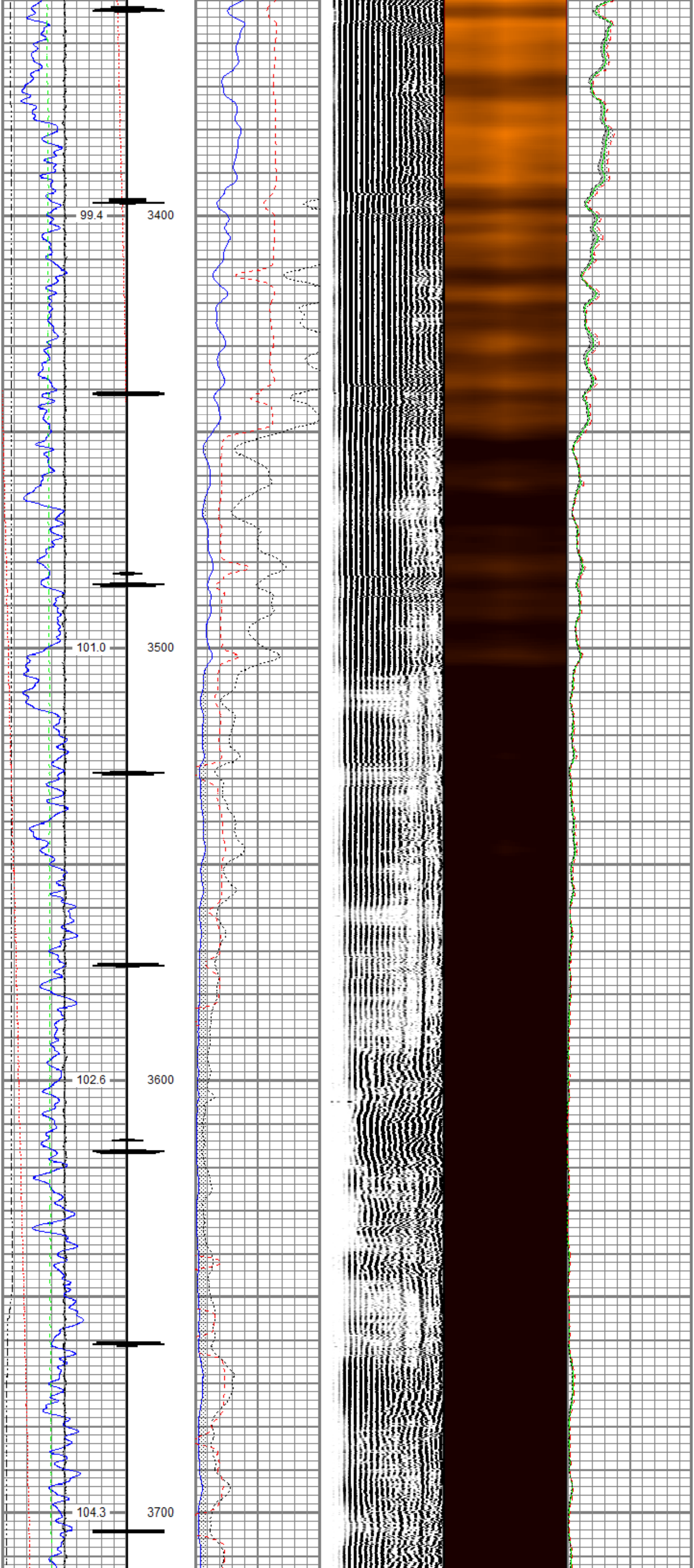


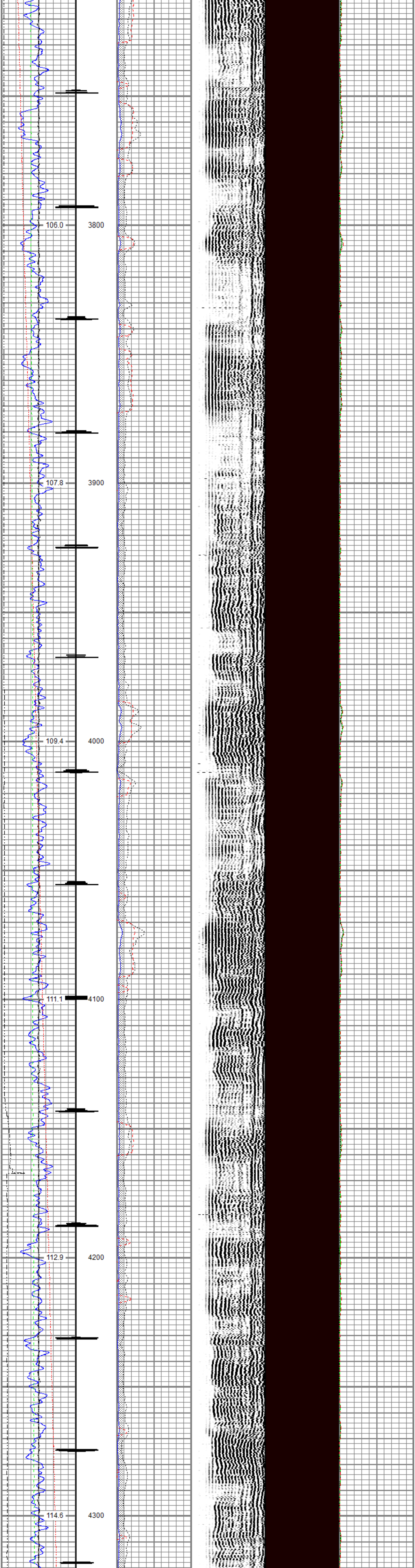








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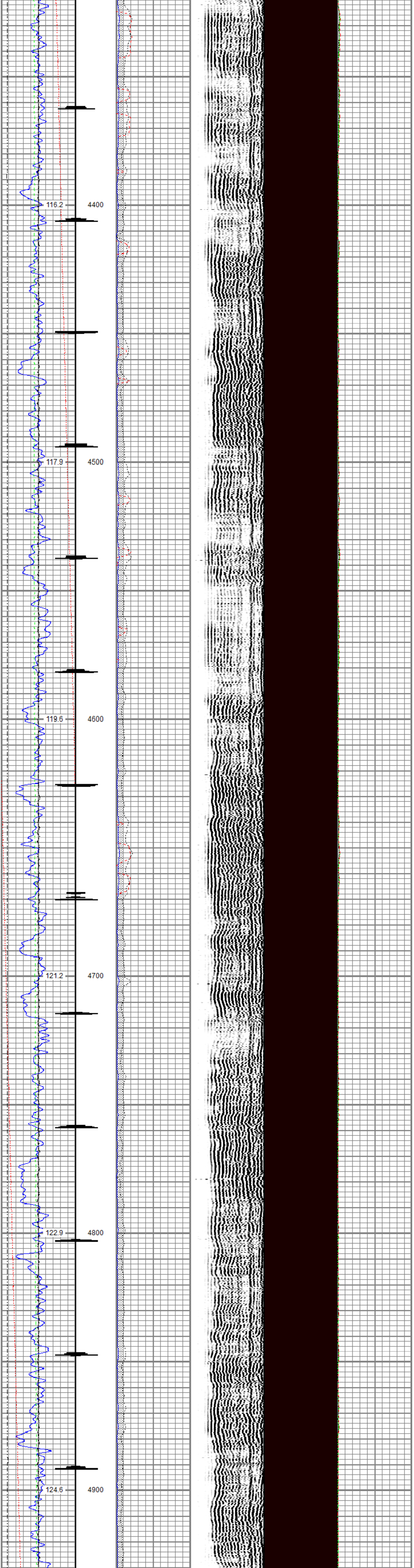
107.8
3900
109.4
4000
111.1
4100
112.9
4200
114.6
4300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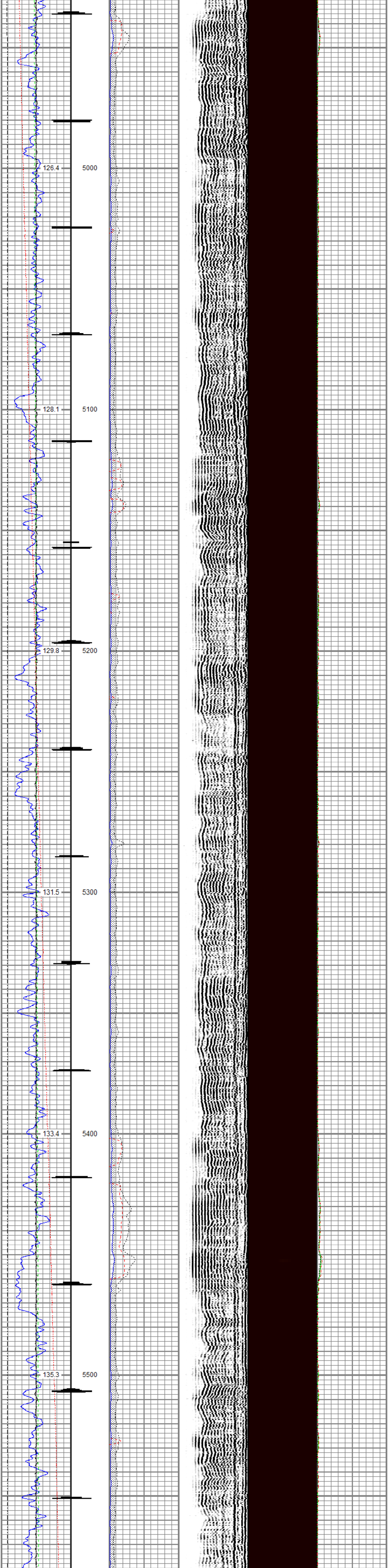
4400
117.9
4500
119.6
4600
121.2
4700
122.9
4800
124.6
4900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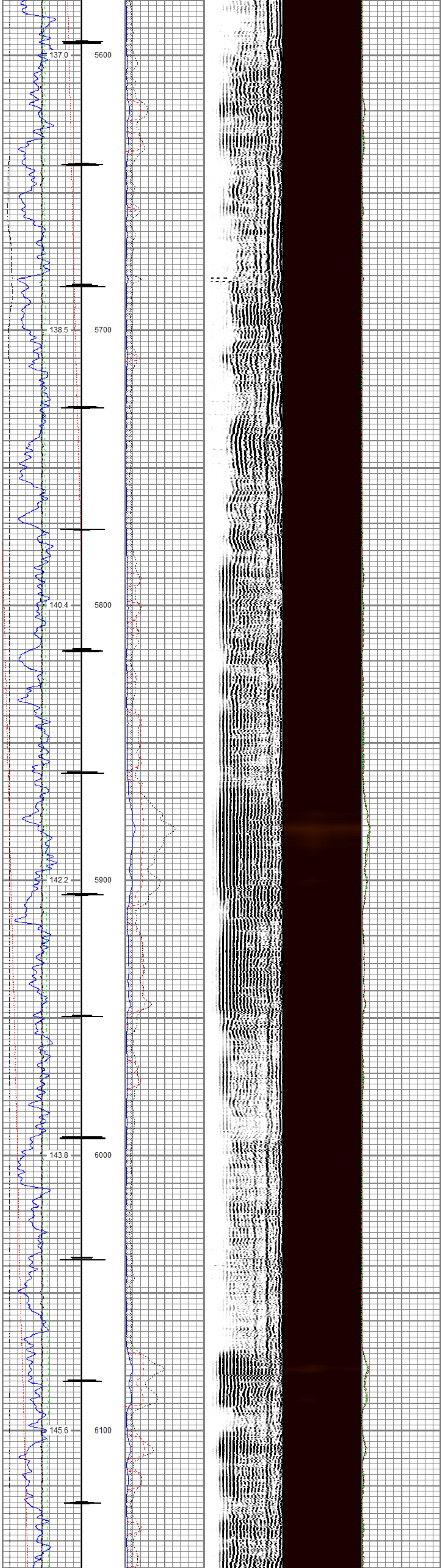
5000
128.1
5100
129.8
5200
131.5
5300
133.4
5400
135.3
5500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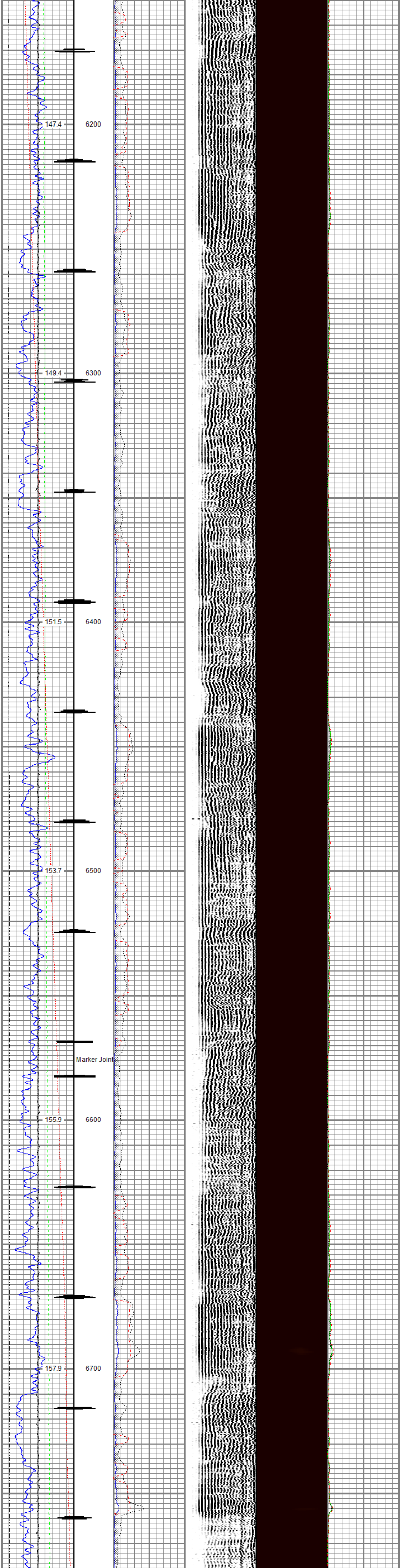
140.4
5800
142.2
5900
143.8
6000
145.6
6100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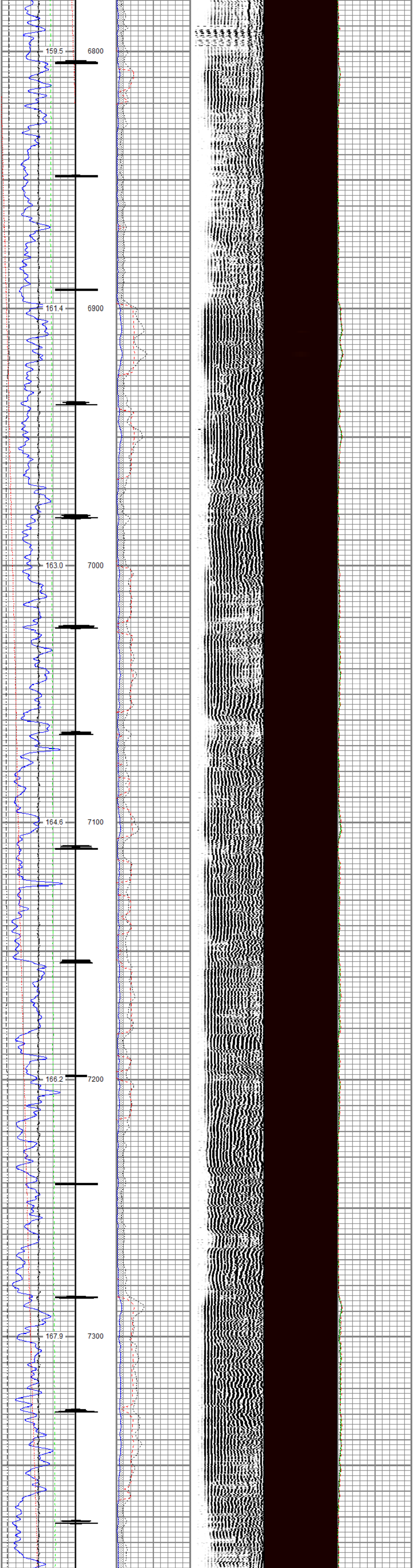
6200
149.4
6300
151.5
6400
153.7
6500
Marker Joint
155.9
6600
157.9
6700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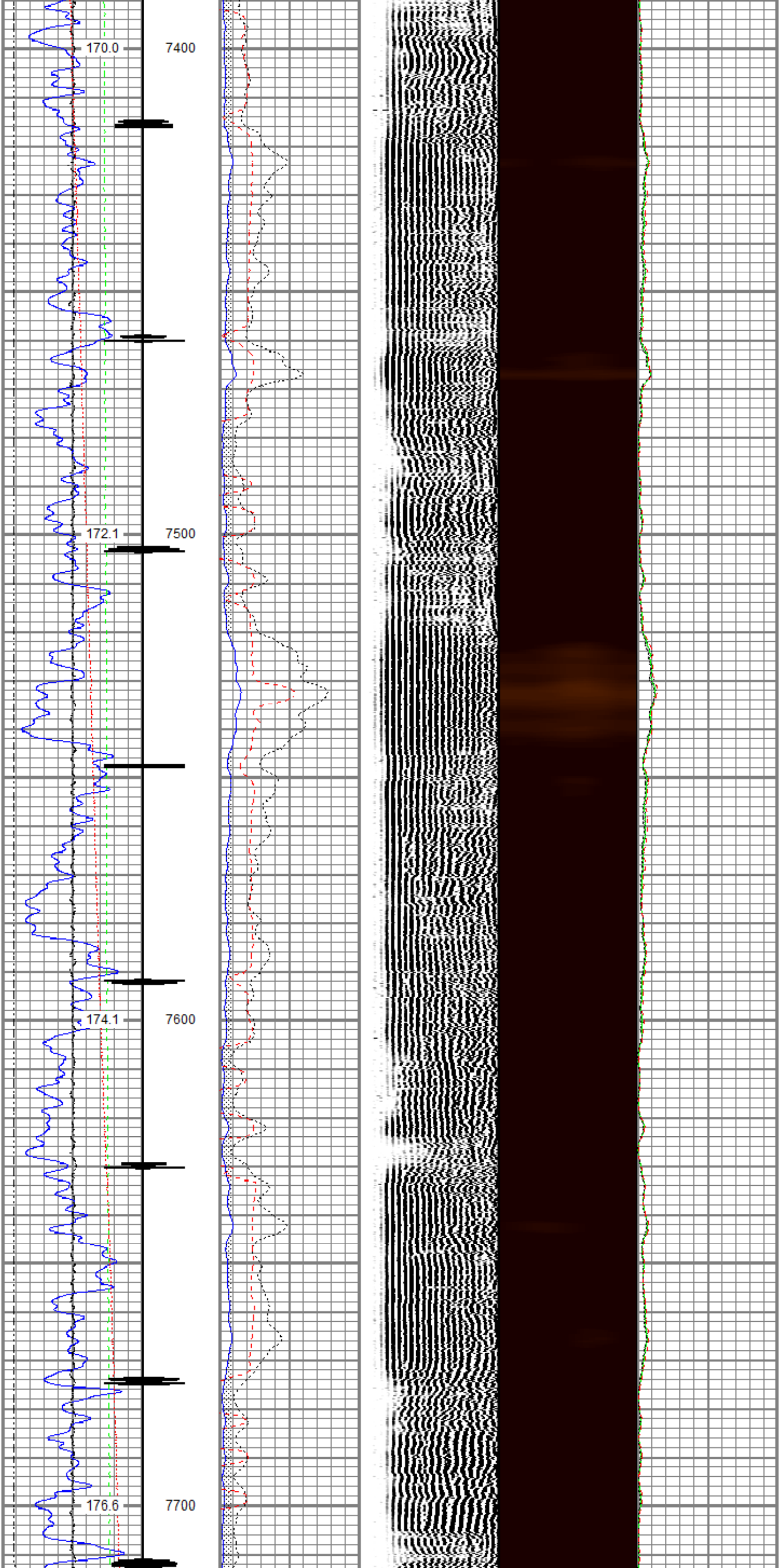
7300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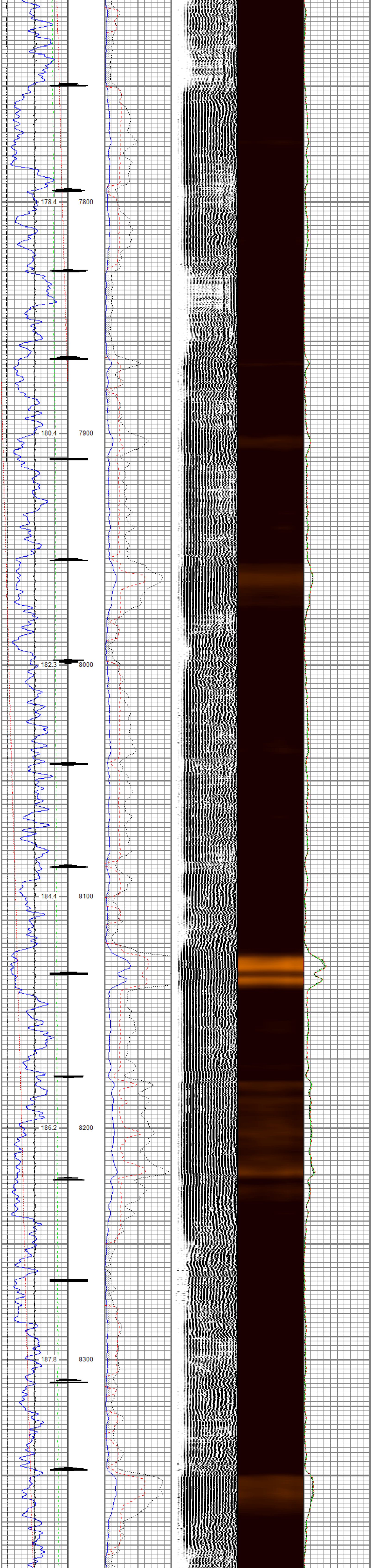
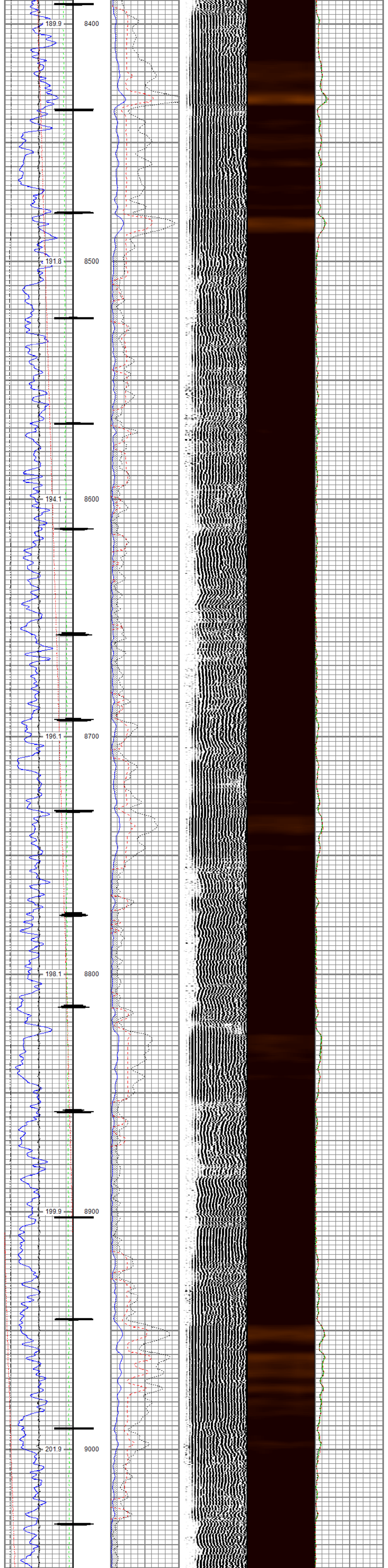
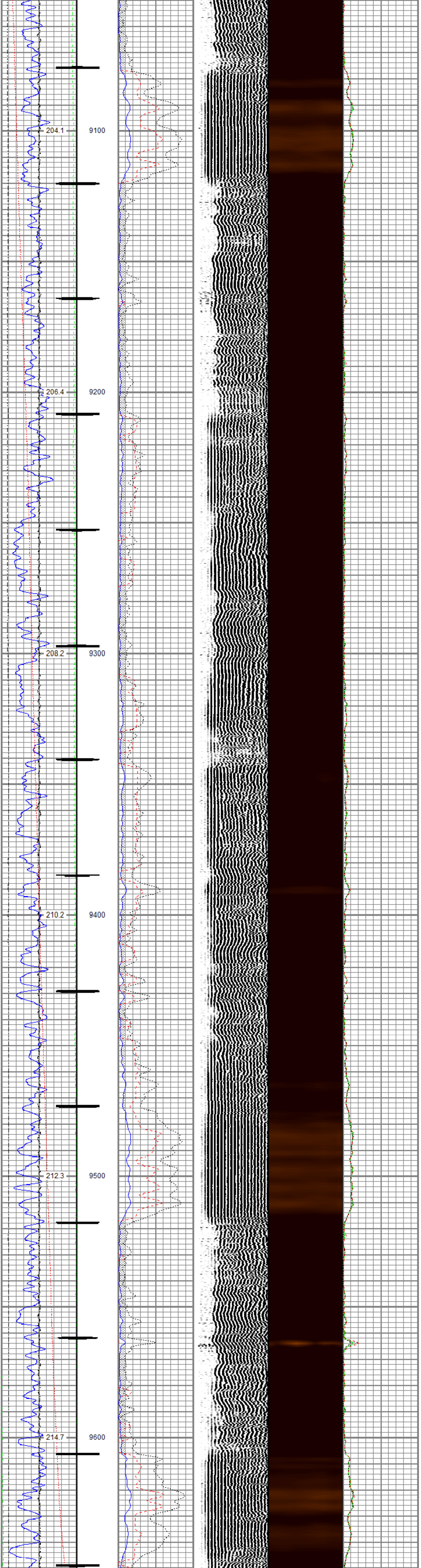
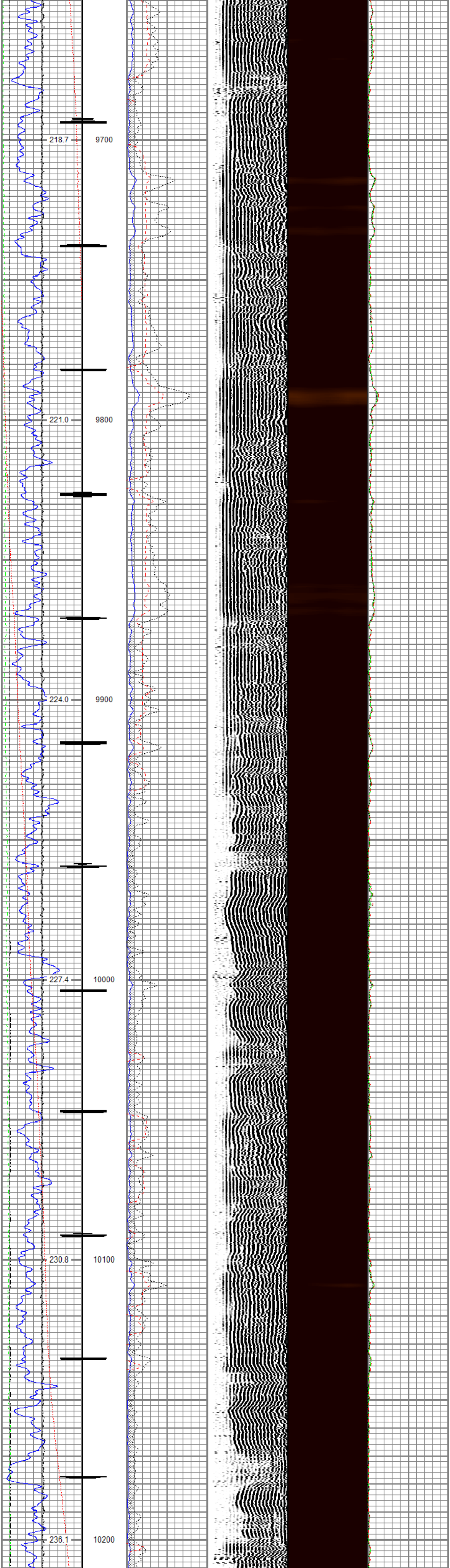
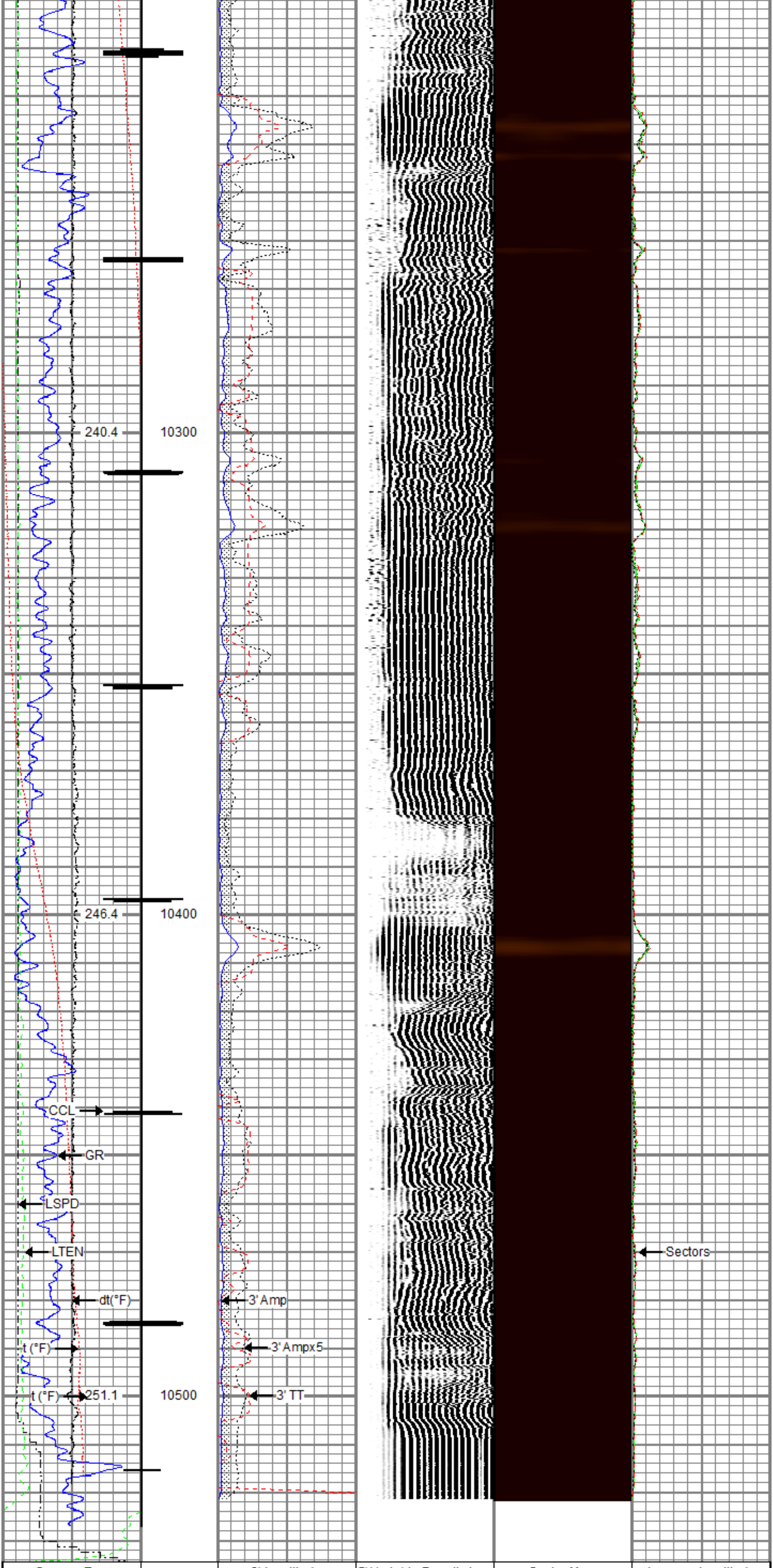
174.1
7600
176.6
7700











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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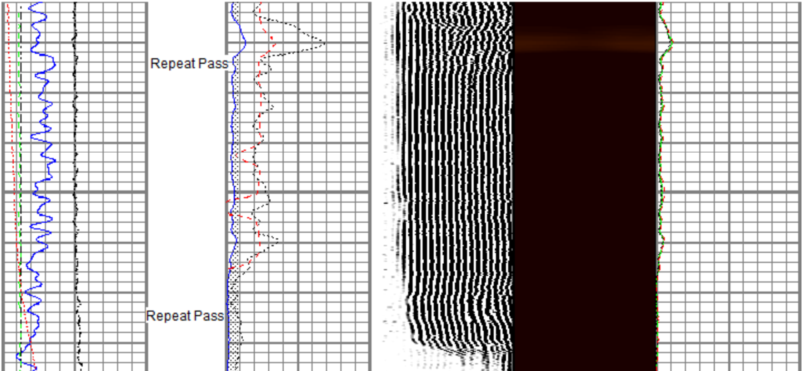
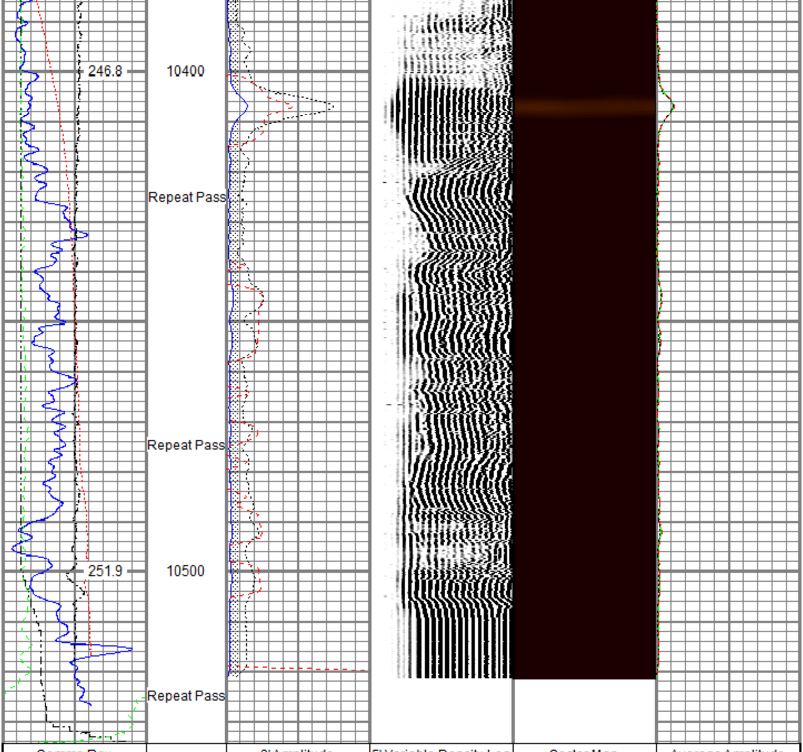
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

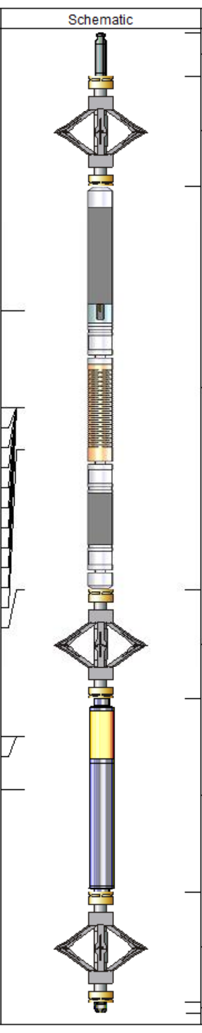
Database File	tep_clough nr 343-3_rbl_11-13-18\processed_tep_clough nr 343-3_rbl_11-13-18.db
Dataset Pathname	repeat
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Nov 13 18:20:16 2018
Charted by	Depth in Feet scaled 1:240

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 0 (GAPI) 200		3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150
Line Speed -150 (ft/min) 150		3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000		3' Travel Time 300 (usec) 200			Maximum Amplitude 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					
HEADVOLT	9.85					
			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:	PROCESSED_TEP_Clough NR 343-3_RBL_11-13-18.db: field/well/run1/main
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 NR 343-3_RBL_11-13-18\PROCESSED_TEP_Clough NR 343-3
Dataset Pathname	main
Dataset Creation	Tue Nov 13 18:23:17 2018

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:	-46.592	ft

Master Calibration, performed Tue Nov 13 05:02:10 2018:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.005	0.754	0.800	81.196	105.914	1.313
CAL	0.743	0.744				
5'	-0.003	0.720	0.800	81.196	111.206	1.135
SUM						
S1	-0.004	0.715	0.000	100.000	139.057	0.614
S2	-0.005	0.720	0.000	100.000	137.912	0.680
S3	-0.005	0.716	0.000	100.000	138.716	0.704
S4	-0.005	0.739	0.000	100.000	134.374	0.640
S5	-0.004	0.733	0.000	100.000	135.645	0.518
S6	-0.005	0.726	0.000	100.000	136.921	0.637
S7	-0.004	0.698	0.000	100.000	142.296	0.634
S8	-0.004	0.754	0.000	100.000	131.819	0.573

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.743	0.744	1.000	0.000

Air Zero Calibration, performed Tue Nov 13 05:02:29 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.005	0.000	0.000
5'	-0.003	0.000	-0.000
SUM			
S1	-0.005	0.000	0.000
S2	-0.005	0.000	-0.000
S3	-0.005	0.000	0.000
S4	-0.005	0.000	0.000
S5	-0.004	0.000	0.000
S6	-0.005	0.000	-0.000
S7	-0.005	0.000	0.000
S8	-0.005	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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Field	Rulison
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State	Colorado