RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Clough NR 34-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Clough NR 34-3
Field Rulison
County Garfield State Colorado

Location: API # : 05-045-23908
SEC 3 TWP 6S RGE 94W

Other Services
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Permanent Datum	Ground Level	Elevation	6719.1'
Log Measured From	Kelly Bushing		24 FT
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 6743.1'
D.F. 6742.1'
G.L. 6719.1'

Date	26-NOV-2018
Run Number	One
Depth Driller	9993 FT
Depth Logger	9947 FT
Bottom Logged Interval	9933 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	233°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	22:00
Equipment Number	HD-0359
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	1128 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9951 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 5948 - 5962 FT
Log ran from 9933 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

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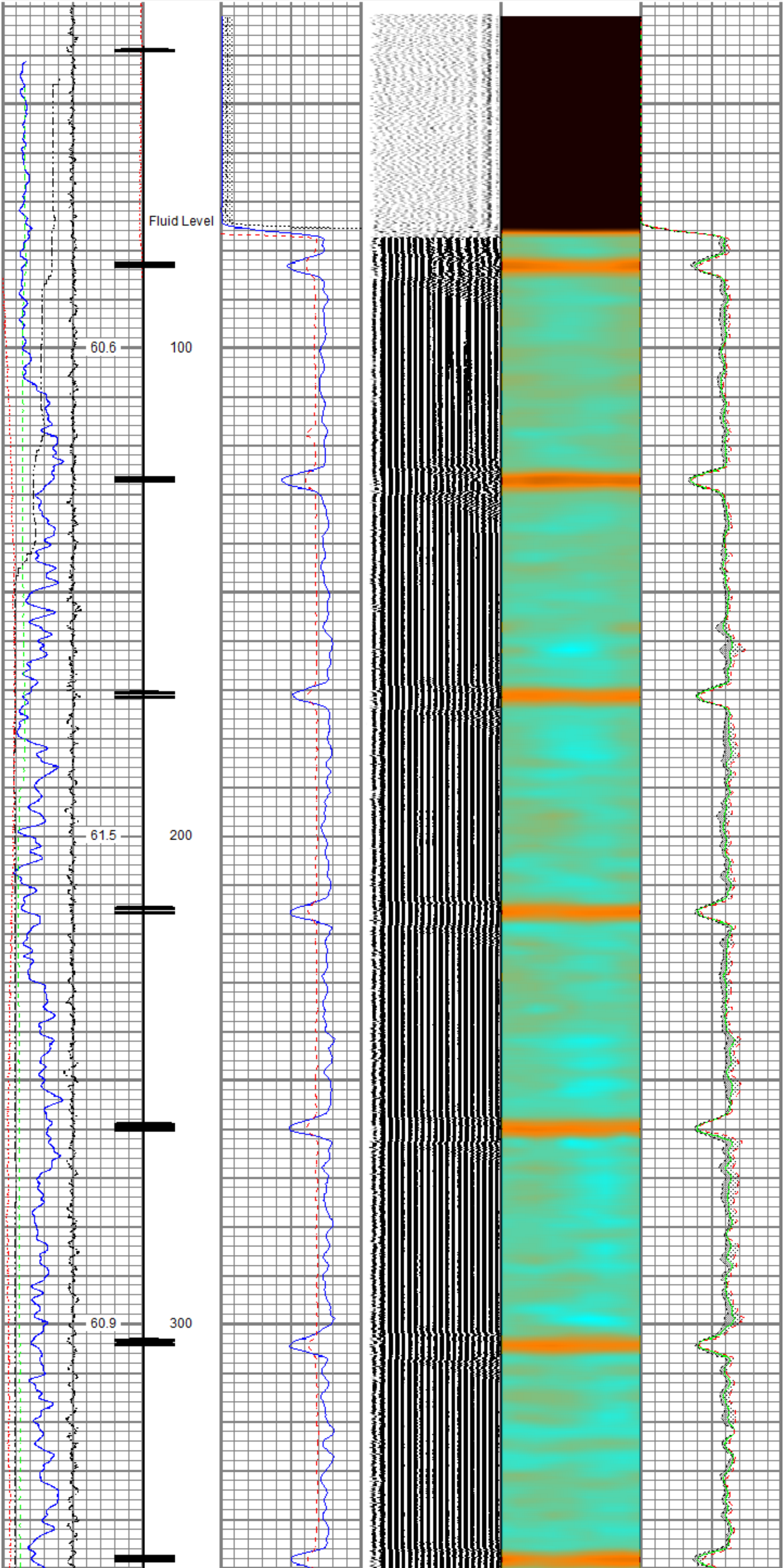
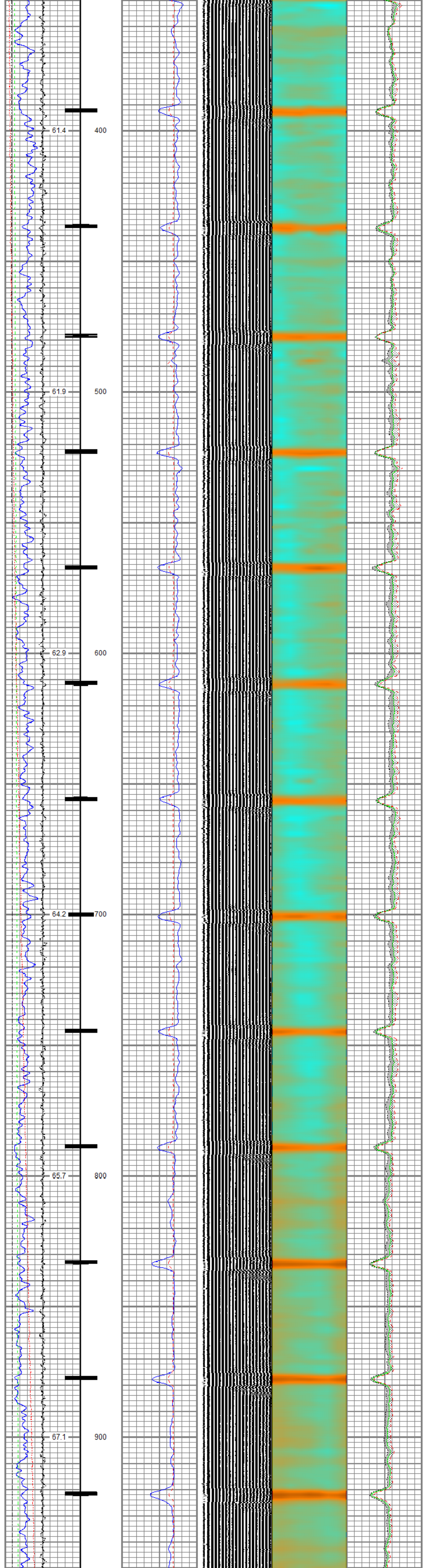
Main Pass

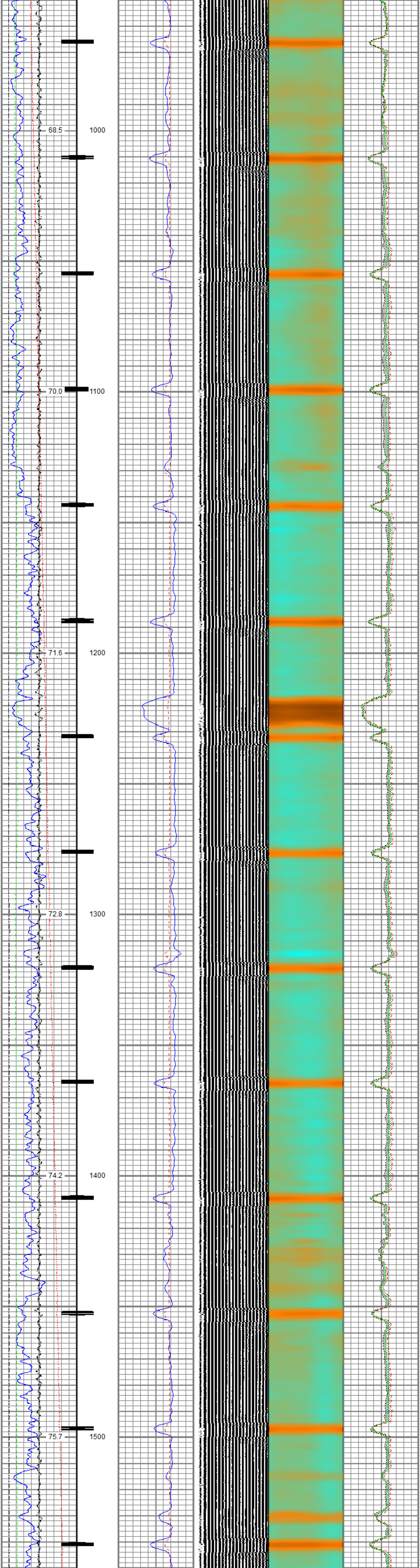
Recorded With 0 PSI Surface Induced Pressure

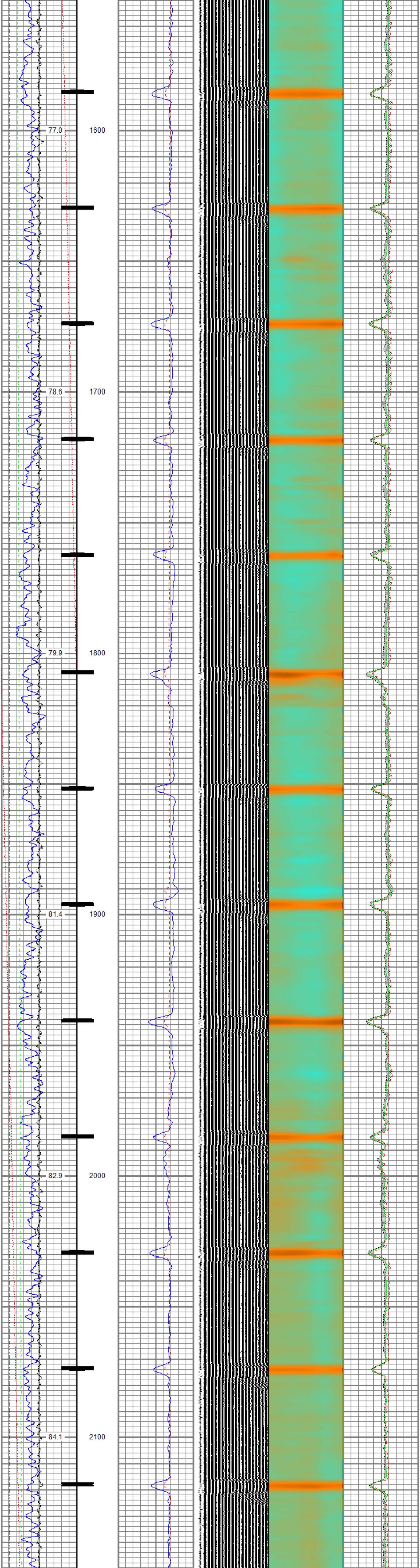
Database File	tep_clough nr 34-3_rbl_11-26-18\processed_tep_clough nr 34-3_rbl_11-26-18.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Nov 28 14:17:46 2018
Charted by	Depth in Feet scaled 1:240

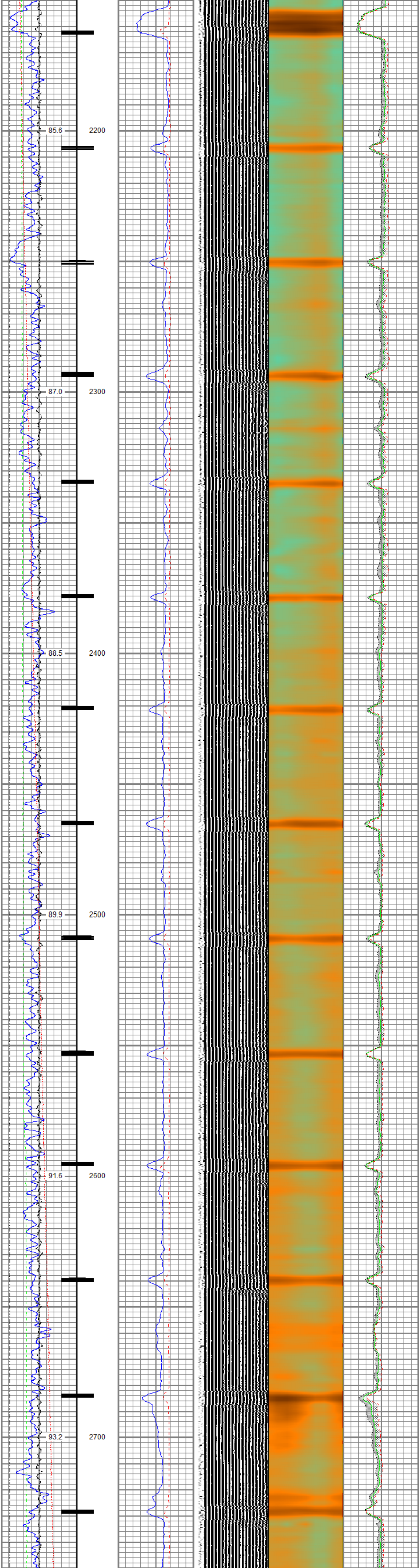
Track 1	Track 3	Track 4	Track 5	Track 6
Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150
Line Speed -150 (ft/min) 150	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000	3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential Temperature -2 (degF) 2				
Temperature 0 (degF) 20				
CCL 10 0				

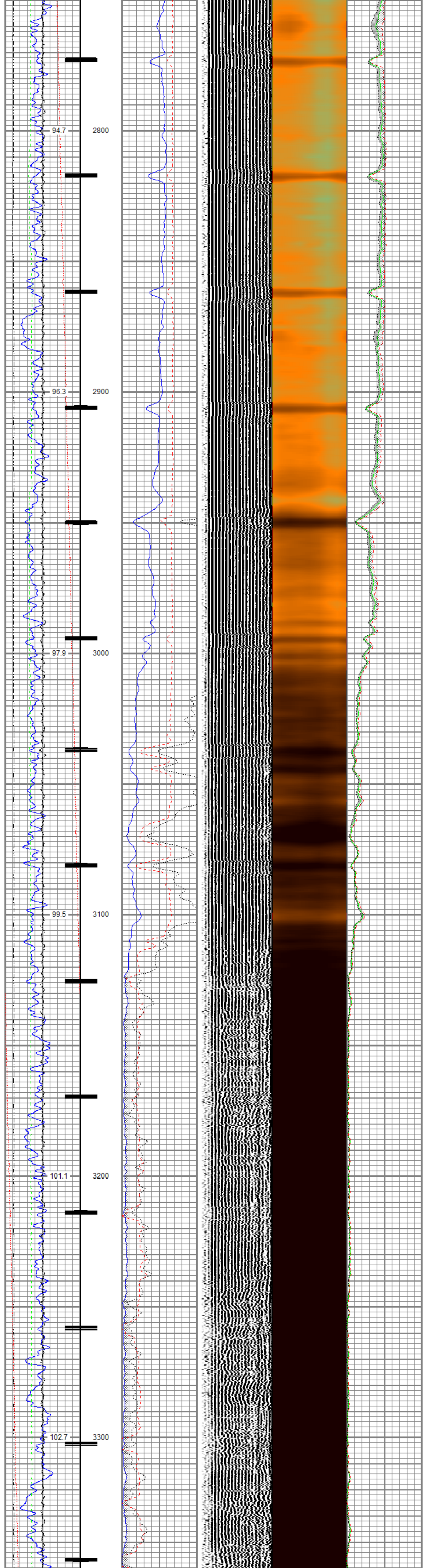


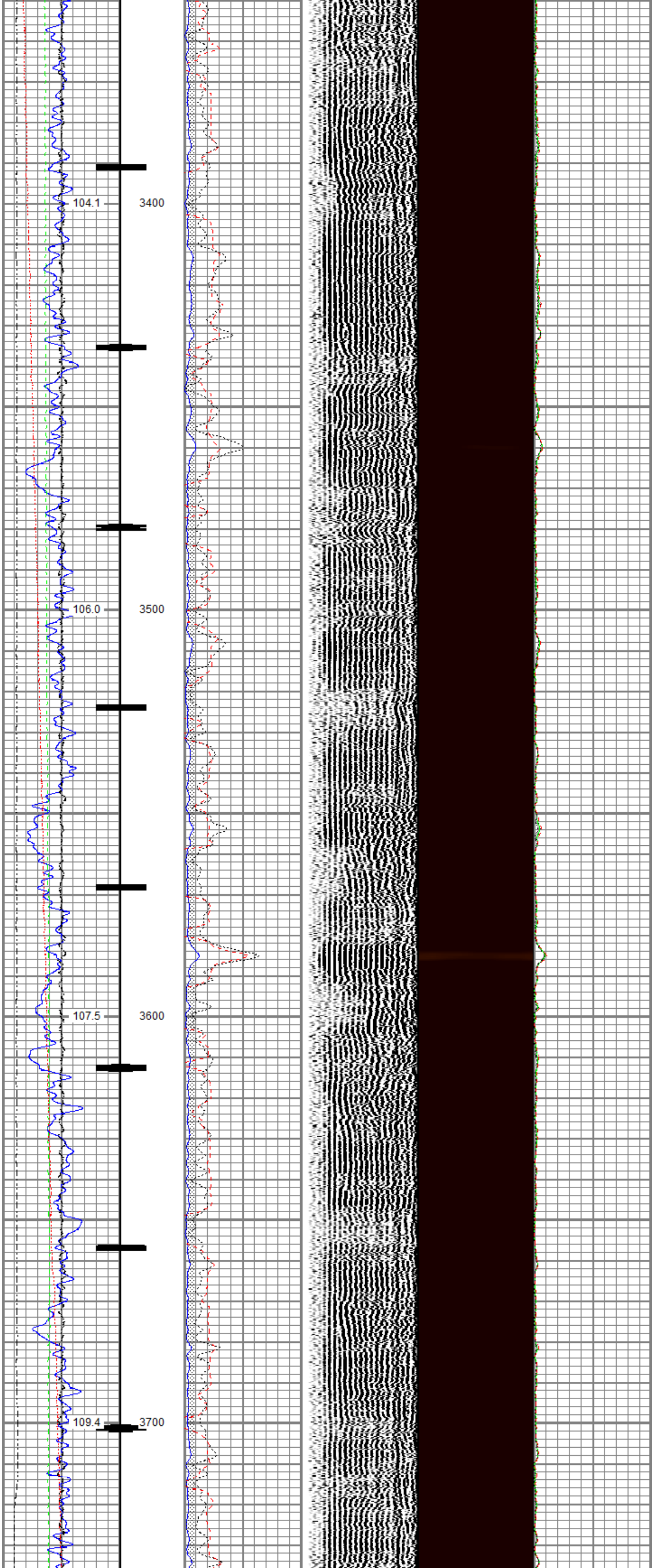


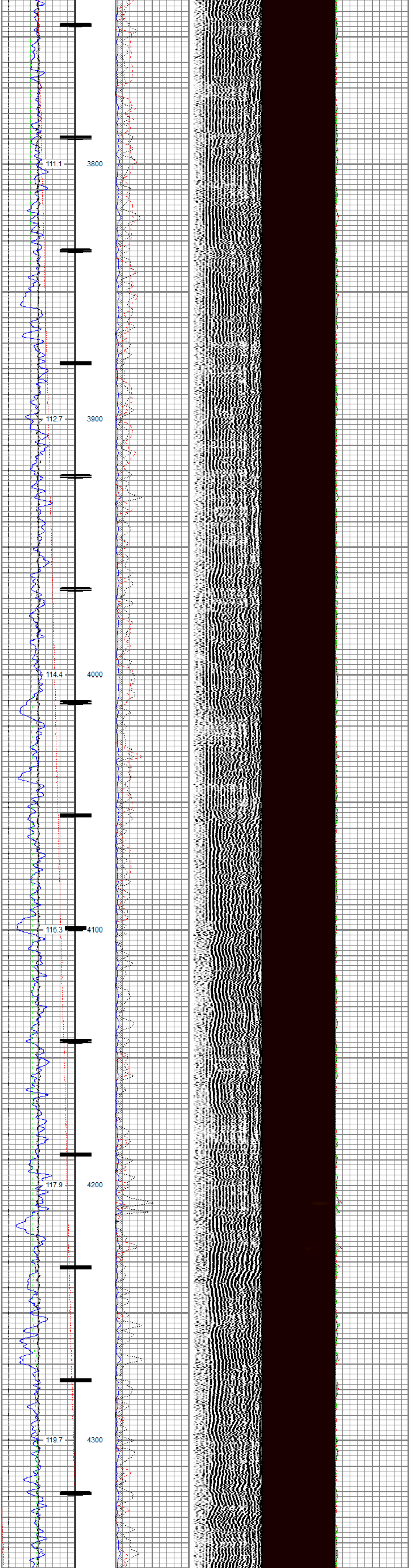








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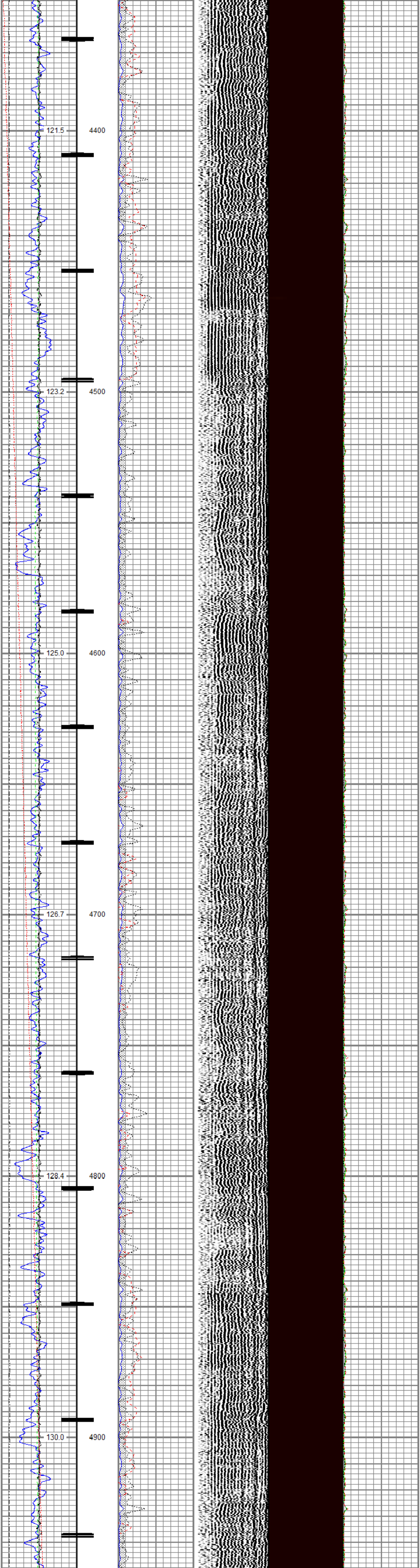
3800
112.7
3900
114.4
4000
116.3
4100
117.9
4200
119.7
4300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125.0
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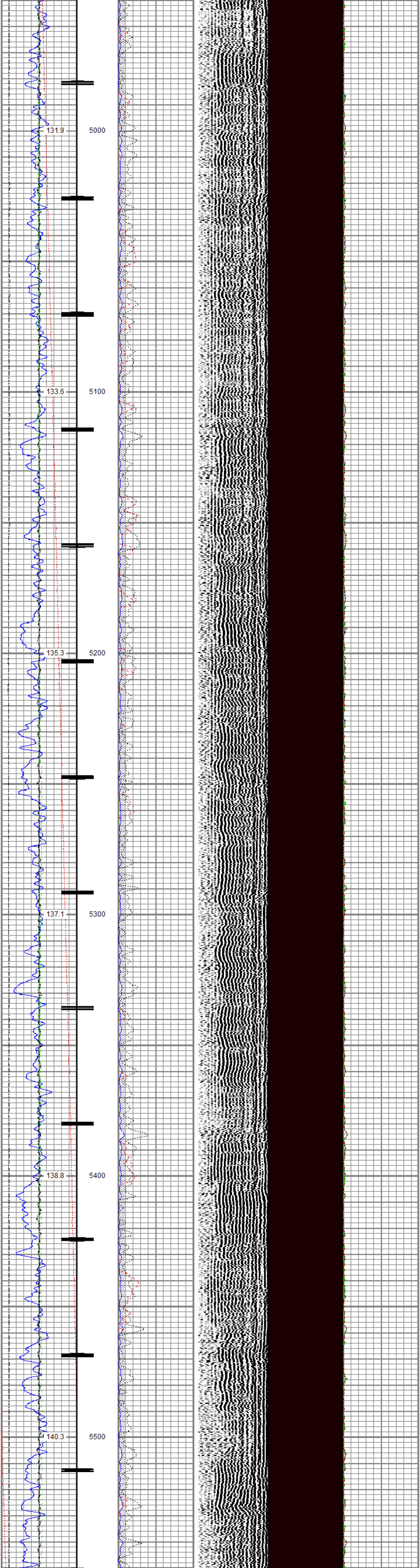
4700
128.4
4800
130.0
4900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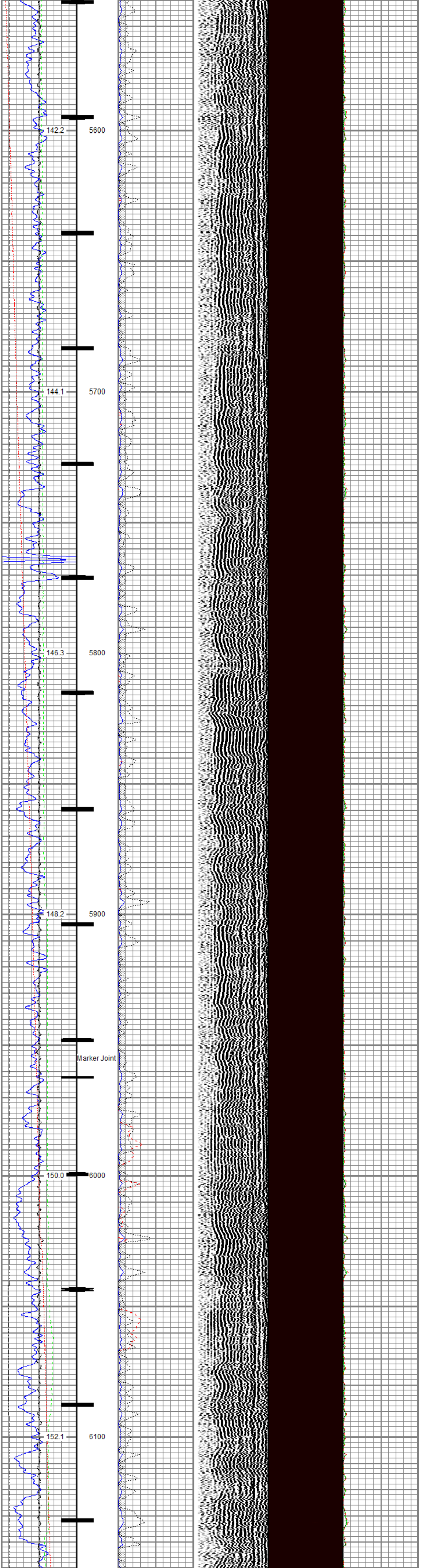
135.3
5200
137.1
5300
138.8
5400
140.3
5500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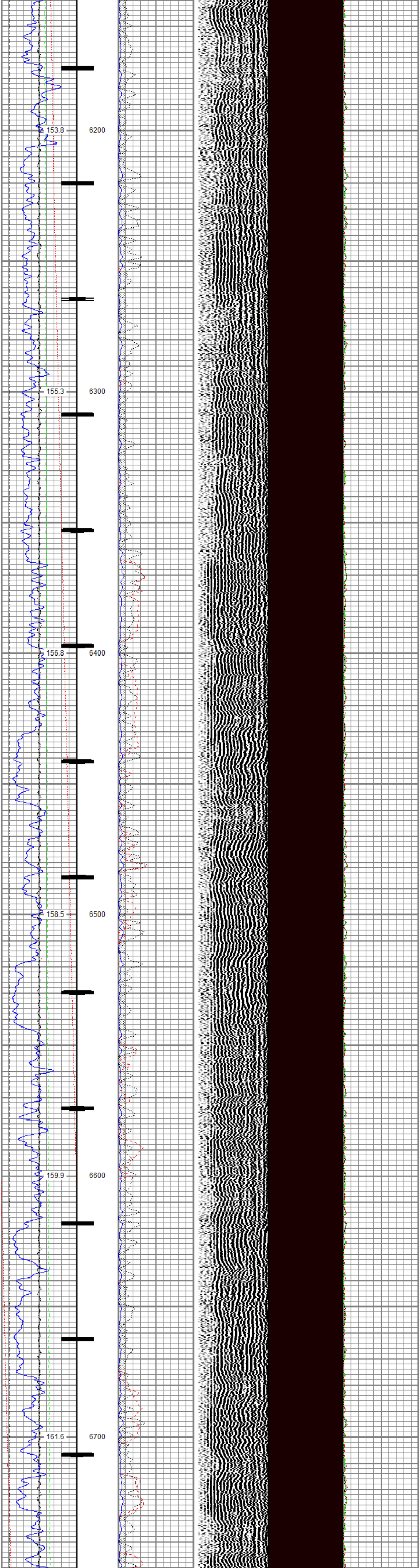
5600
144.1
5700
146.3
5800
148.2
5900
Marker Joint
150.0
6000
152.1
6100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6200
155.3
6300
156.8
6400
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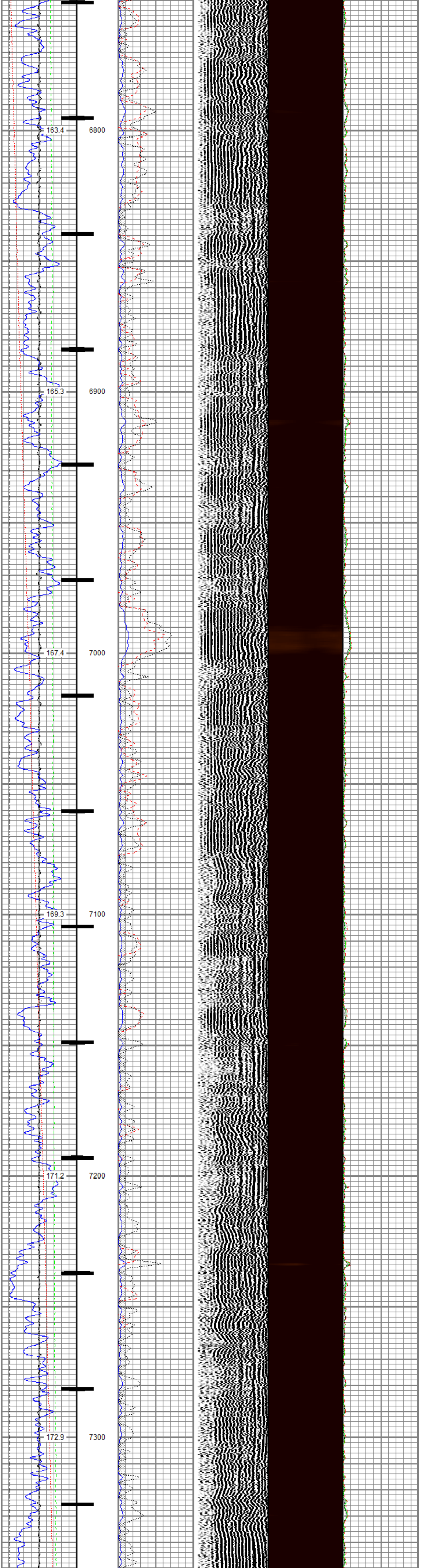
6500
159.9
6600
161.6
6700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167.4
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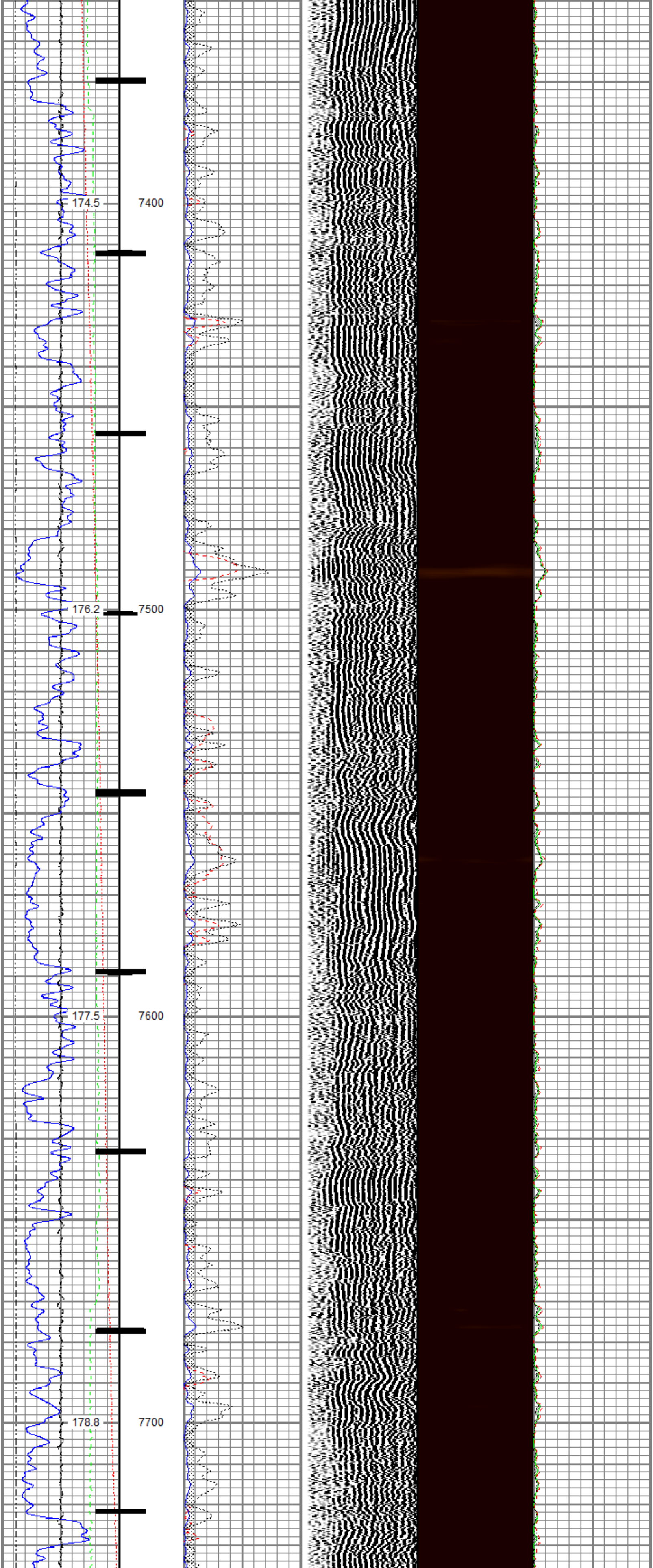
171.2
7200
172.9
7300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7400
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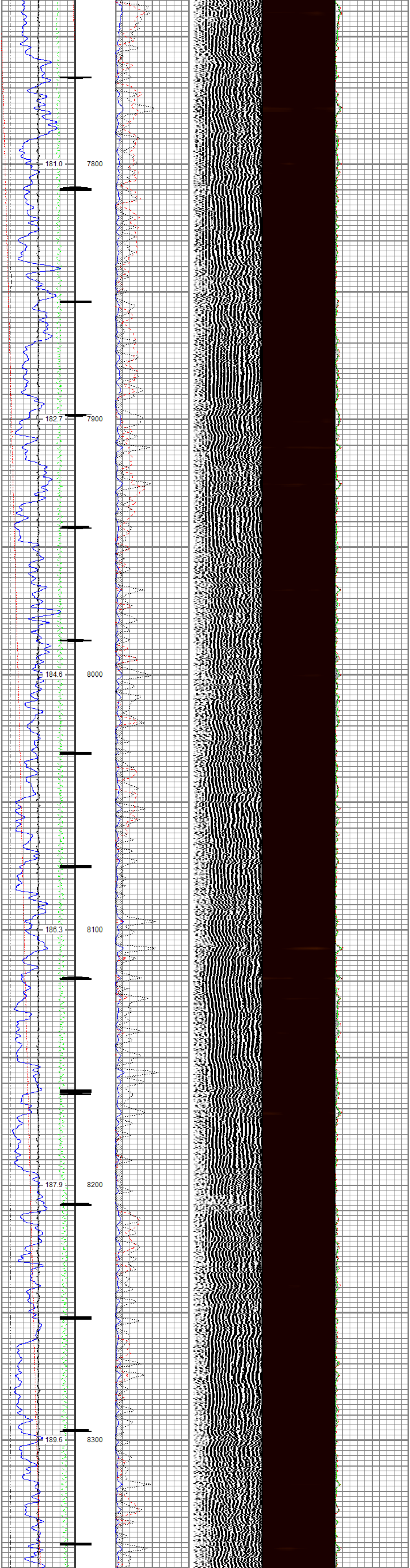
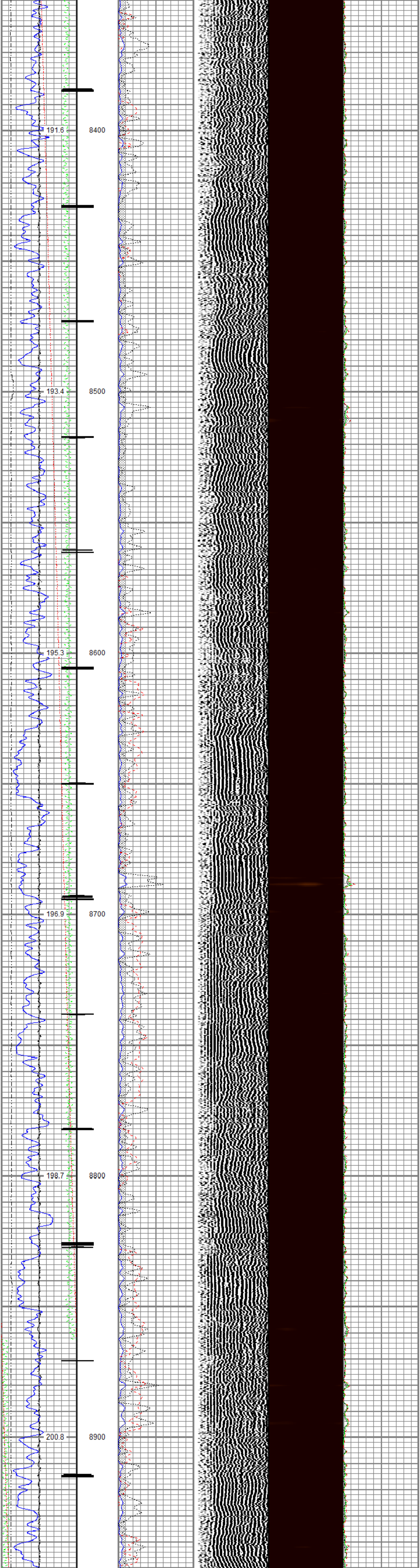
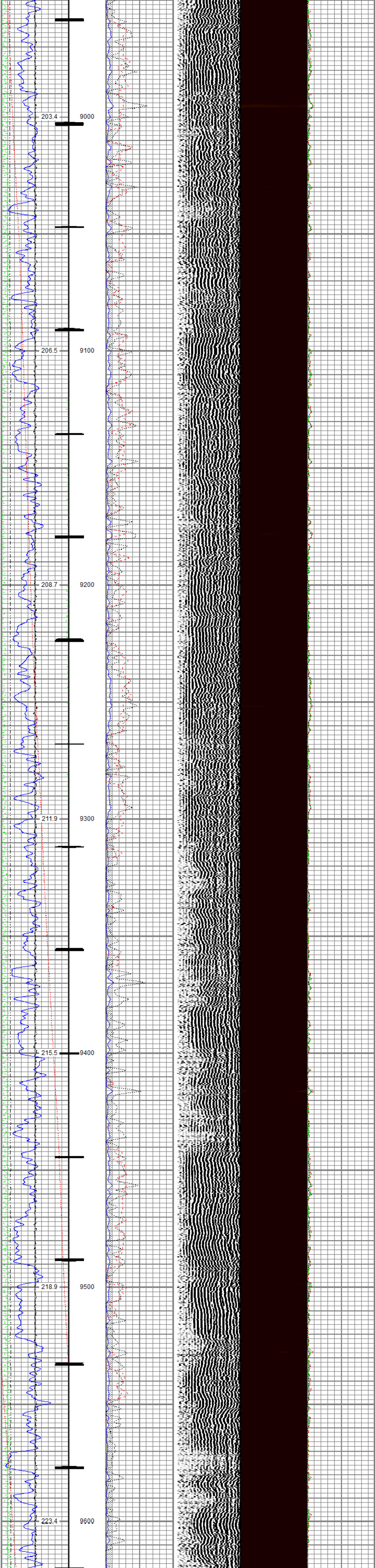
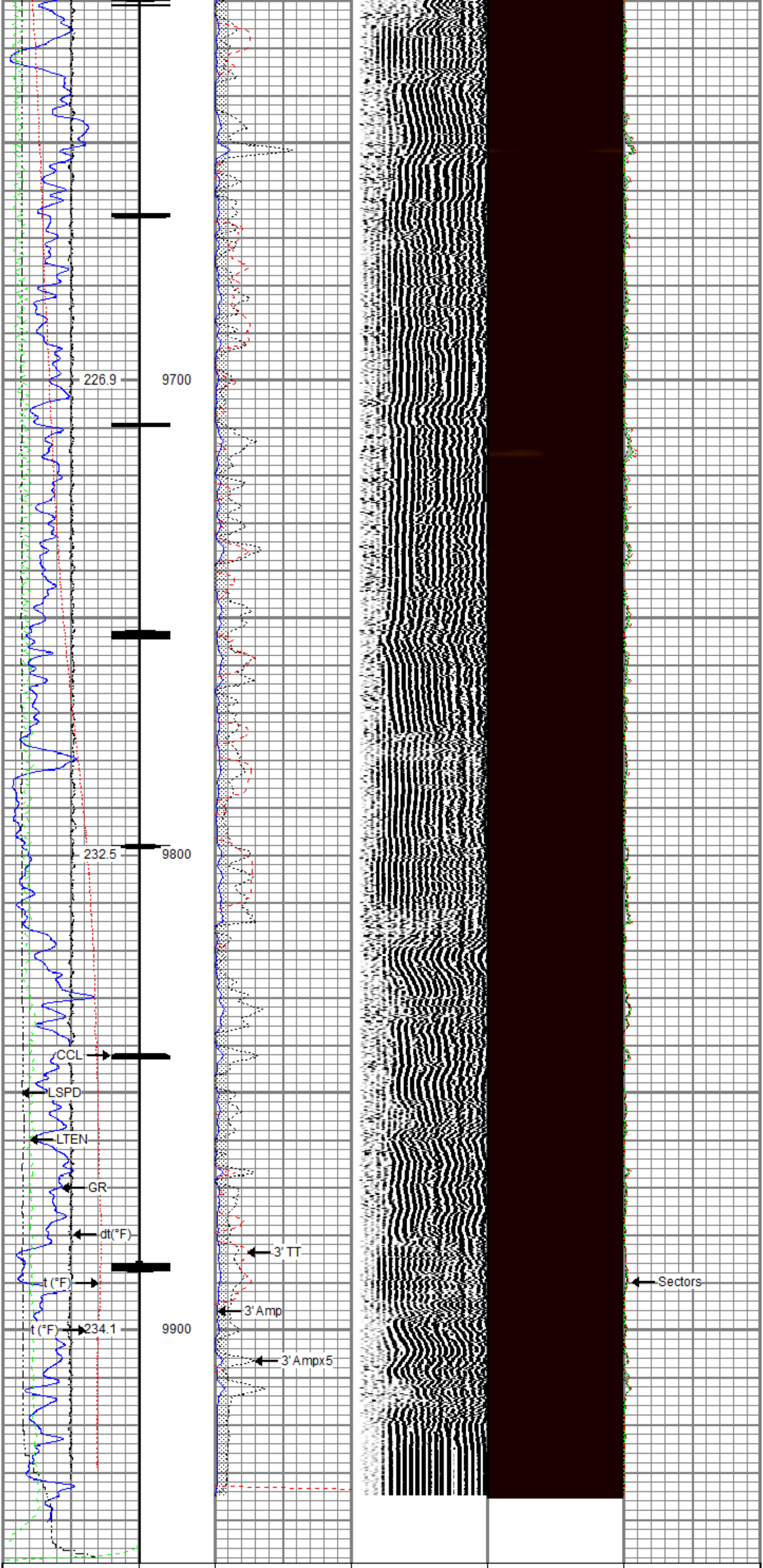
177.5
7600
178.8
7700









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				
10 CCL 0				

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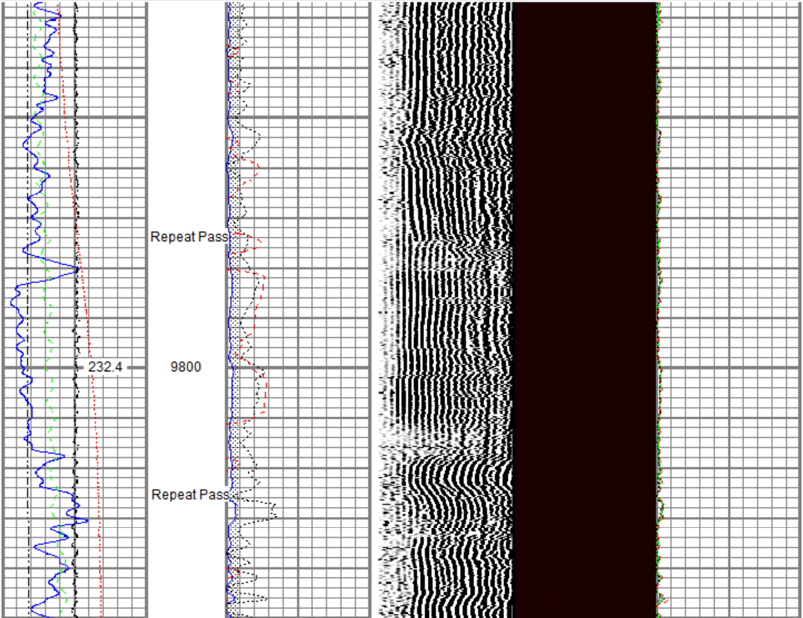
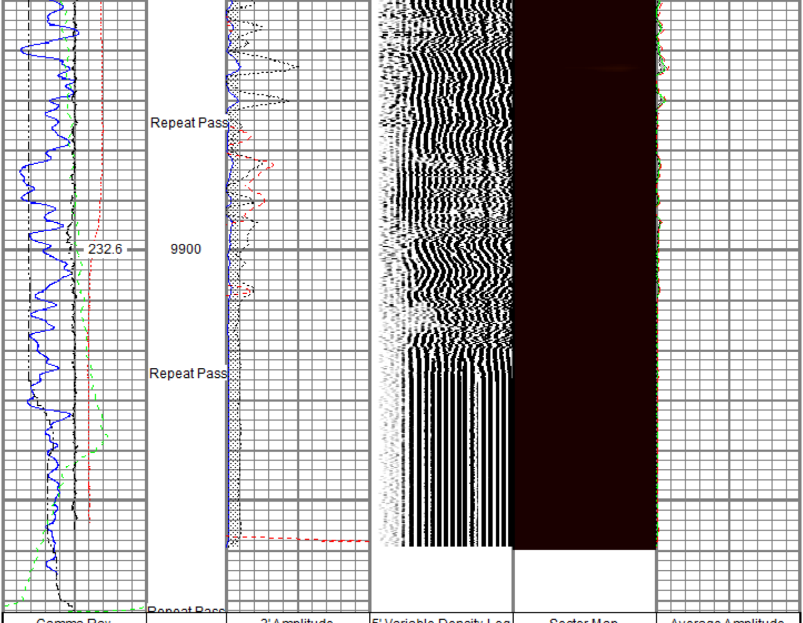
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

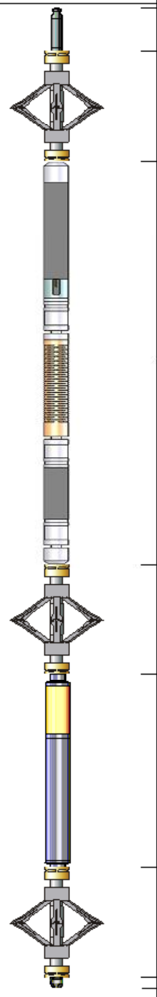
Database File	tep_clough nr 34-3_rbl_11-26-18\processed_tep_clough nr 34-3_rbl_11-26-18.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Nov 28 14:20:38 2018
Charted by	Depth in Feet scaled 1:240

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				





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)	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 (FW1311-021) 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 (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: PROCESSED_TEP_Clough NR 34-3_RBL_11-26-18.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 34-3_rbl_11-26-18\processed_tep_clough nr 34-3_rbl_11-26-18.
Dataset Pathname main.1
Dataset Creation Wed Nov 28 14:17:46 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: FW1311-021
Tool Model: 2750 RBT

Calibration Casing Diameter: 4.500 in
Calibration Depth: 650.591 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.007	0.922	0.800	81.196	87.886	0.200
CAL	-0.012	0.751				
5'	0.017	0.724	0.800	81.196	113.749	-1.147
SUM						
S1	0.005	1.064	0.000	100.000	94.414	-0.430
S2	0.007	0.989	0.000	100.000	101.787	-0.669
S3	0.009	0.885	0.000	100.000	114.218	-1.078
S4	0.009	0.838	0.000	100.000	120.561	-1.051
S5	0.009	0.849	0.000	100.000	119.130	-1.119
S6	0.009	0.875	0.000	100.000	115.450	-1.001
S7	0.008	0.937	0.000	100.000	107.668	-0.850
S8	0.008	1.043	0.000	100.000	96.637	-0.804

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.012	0.751	1.000	0.000

Air Zero Calibration, performed Sun Nov 12 12:30:08 2017:

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

Temperature Calibration Report

Serial Number: FW1311-021
Tool Model: 2750 RBT
Performed: Sun Nov 12 13:54:42 2017

	Reference	Reading
Low Reference:	100.00 degF	112.12 degF
High Reference:	350.00 degF	415.62 degF

Gain: 0.82
Offset: 7.65
Delta Spacing 1

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Company	TEP Rocky Mountain LLC
Well	Clough NR 34-3
Field	Rulison
County	Garfield
State	Colorado