RELIANCE OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Clough NR 312-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Clough NR 312-3
Field Rulison
County Garfield State Colorado

Location: API # : 05-045-23922

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	30-OCT-2018		
Run Number	One		
Depth Driller	10185 FT		
Depth Logger	10109 FT		
Bottom Logged Interval	10095 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Fresh Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	248°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	12:00		
Equipment Number	HD-0359		
Location	Grand Junction, CO		
Recorded By	A. Ellsworth		
Witnessed By	D. 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	1126 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10144 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 5773 FT - 5787 FT
Log ran from 10095 FT to Surface
Log ran 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	tep\tep_clough nr 312-3_rbl_10-30-18\tep_clough nr 312-3_rbl_10-30-18.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Oct 31 09:26:17 2018
Charted by	Depth in Feet scaled 1:240

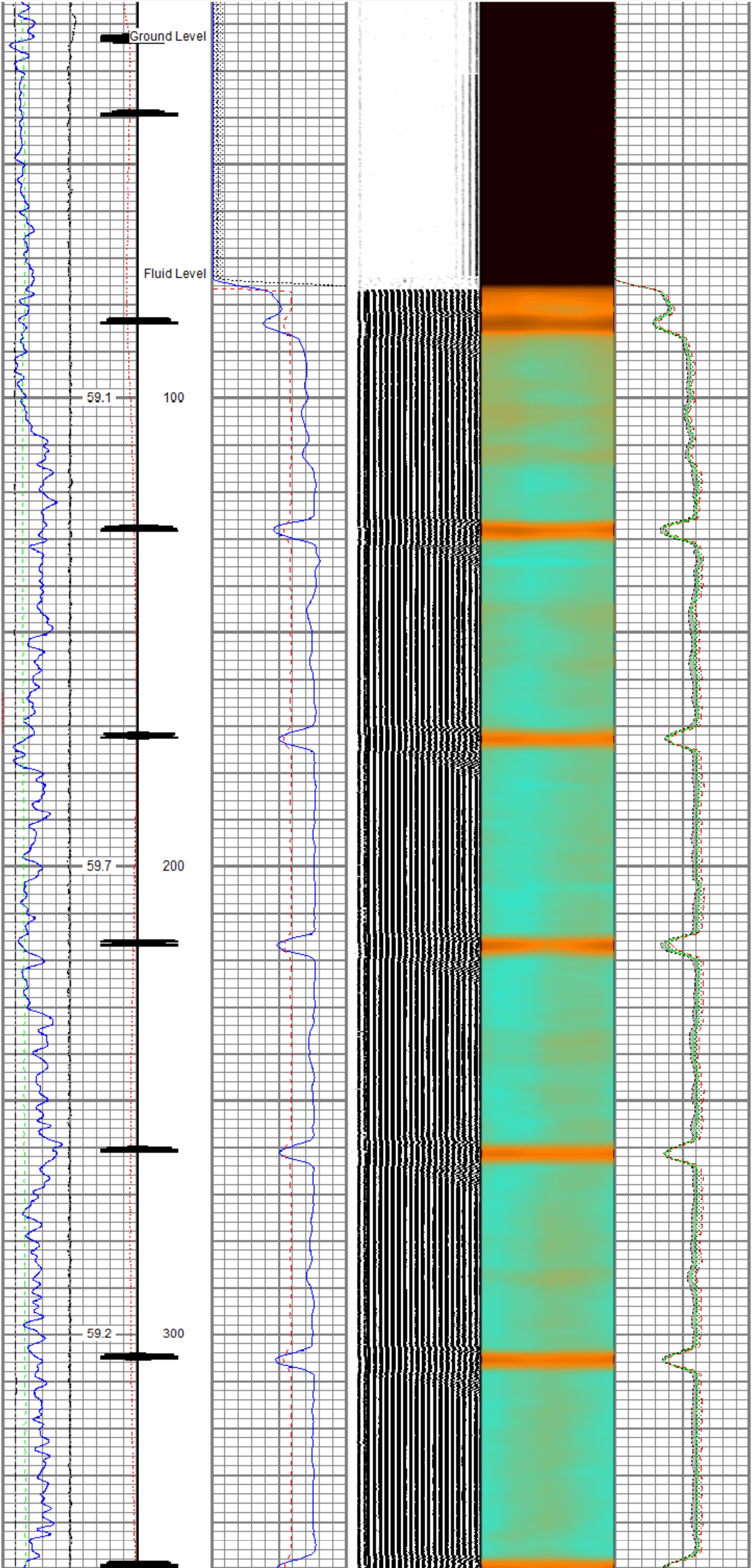
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20
10 CCL 0

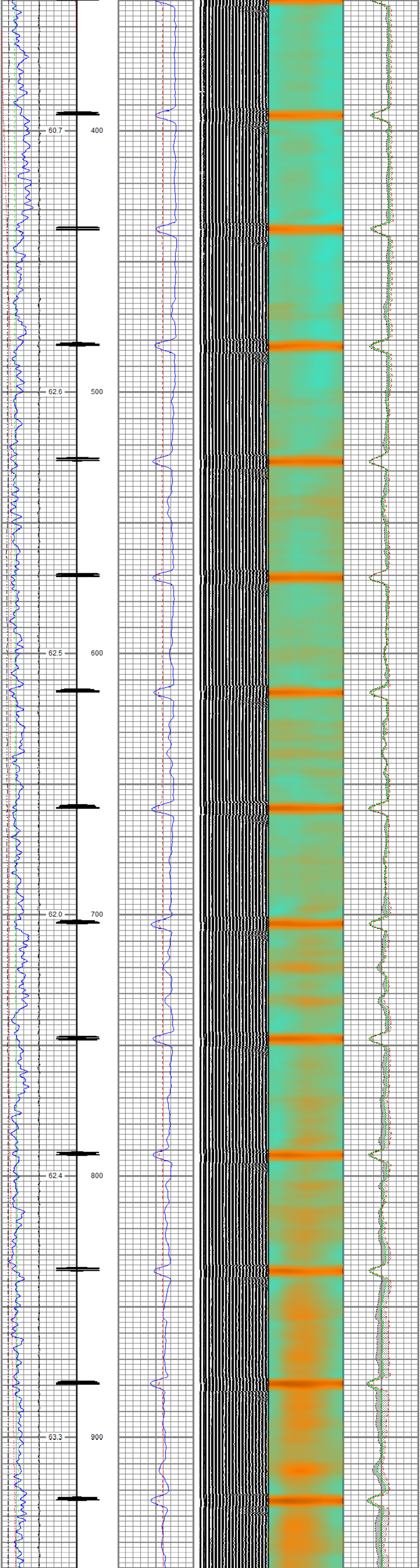
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

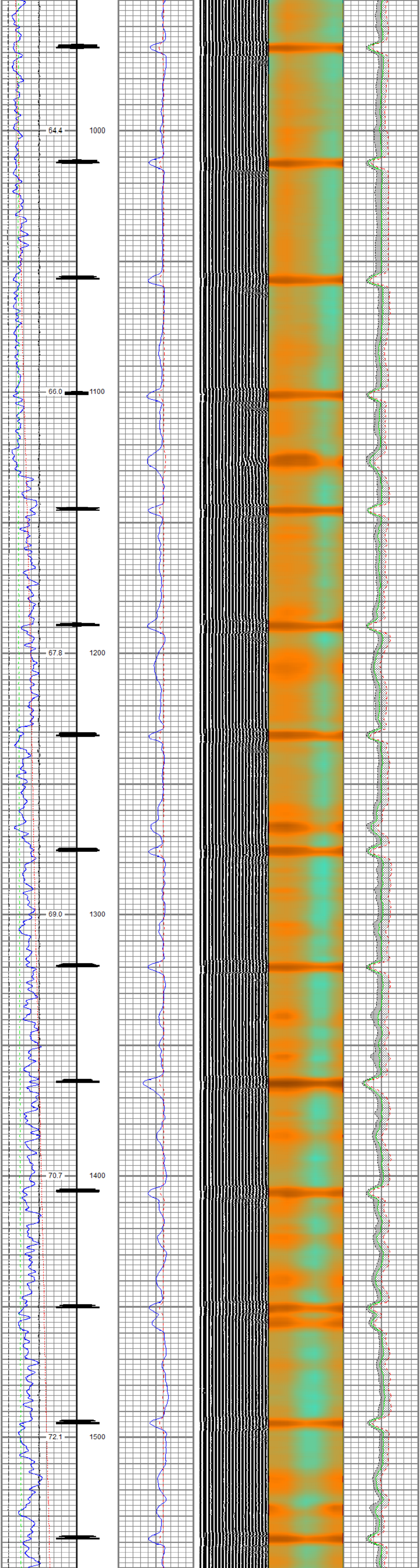
5' Variable Density Log
200 1200

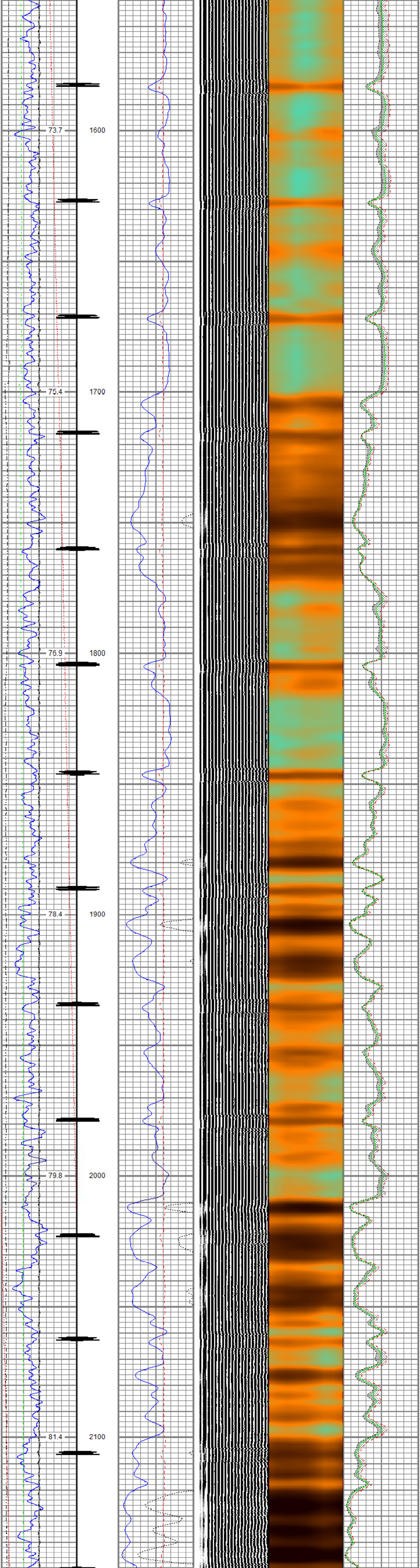
Sector Map
10 110

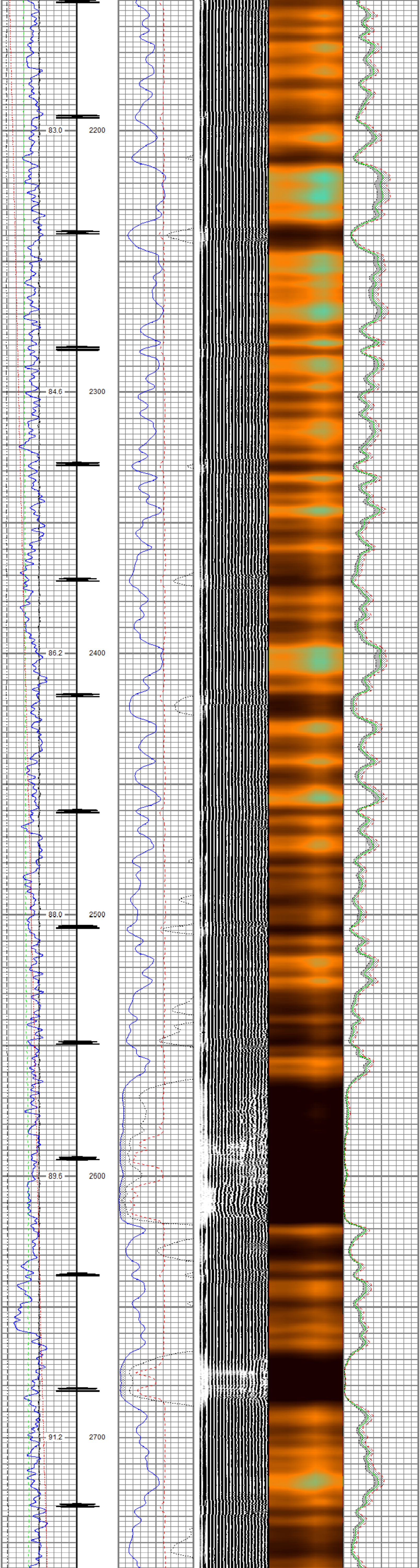
Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150

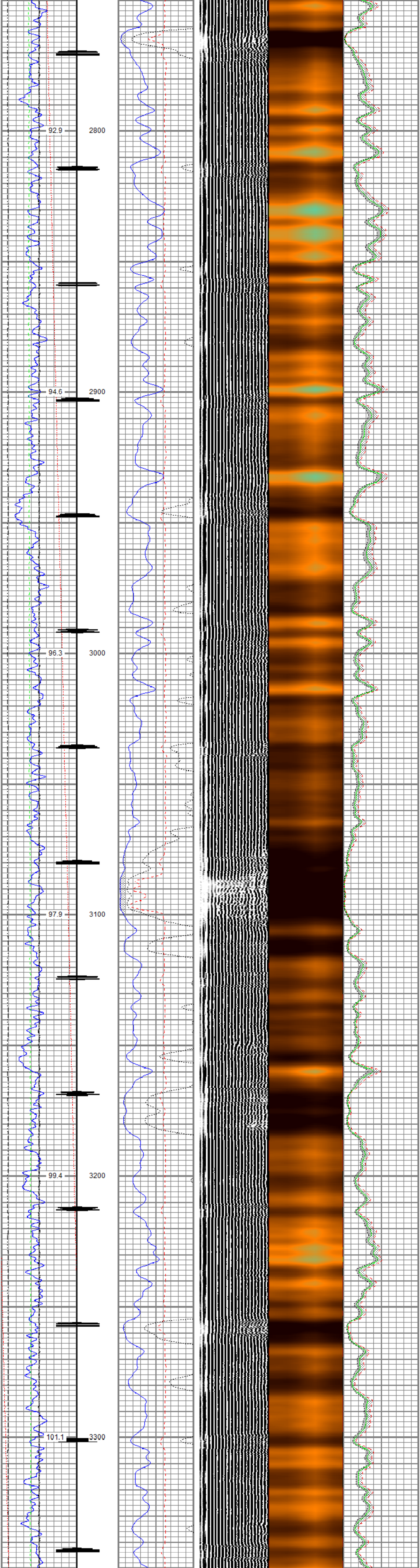


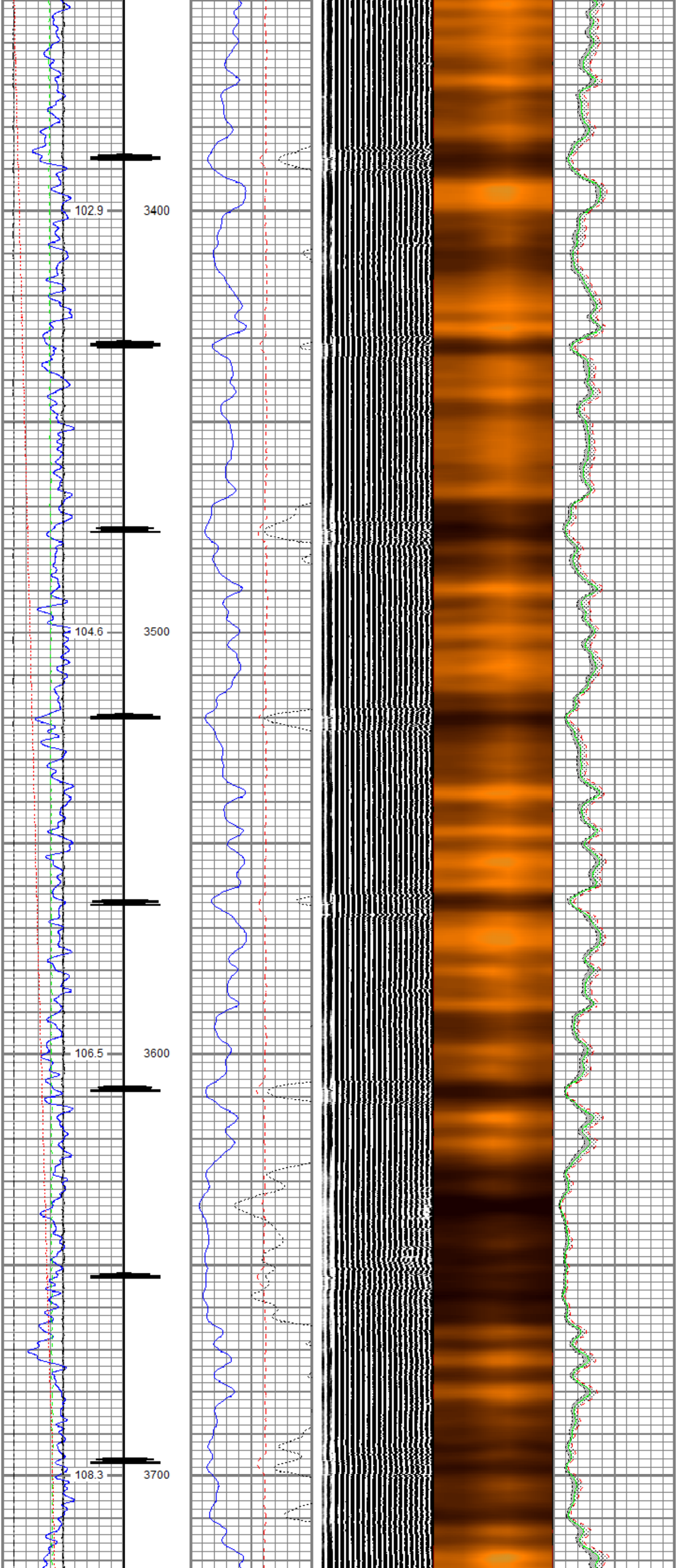


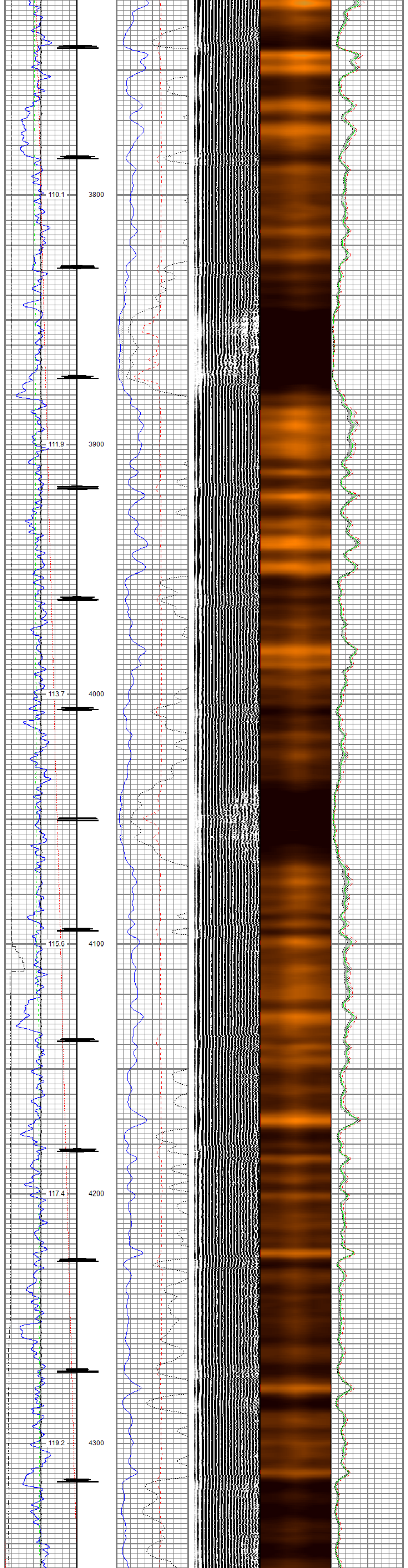








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113.7
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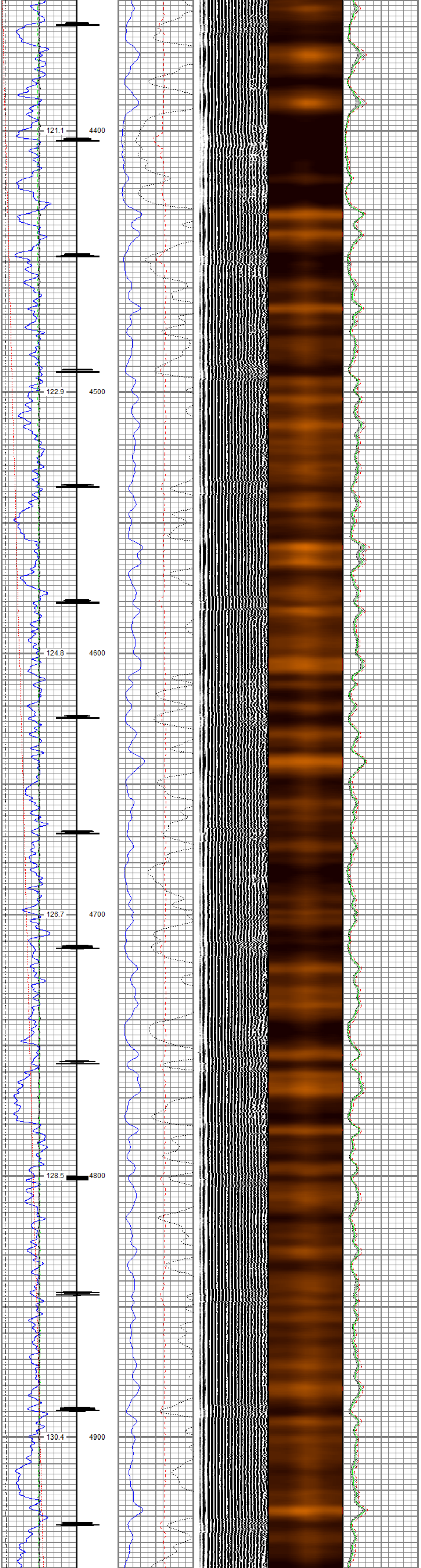
115.6
4100
117.4
4200
119.2
4300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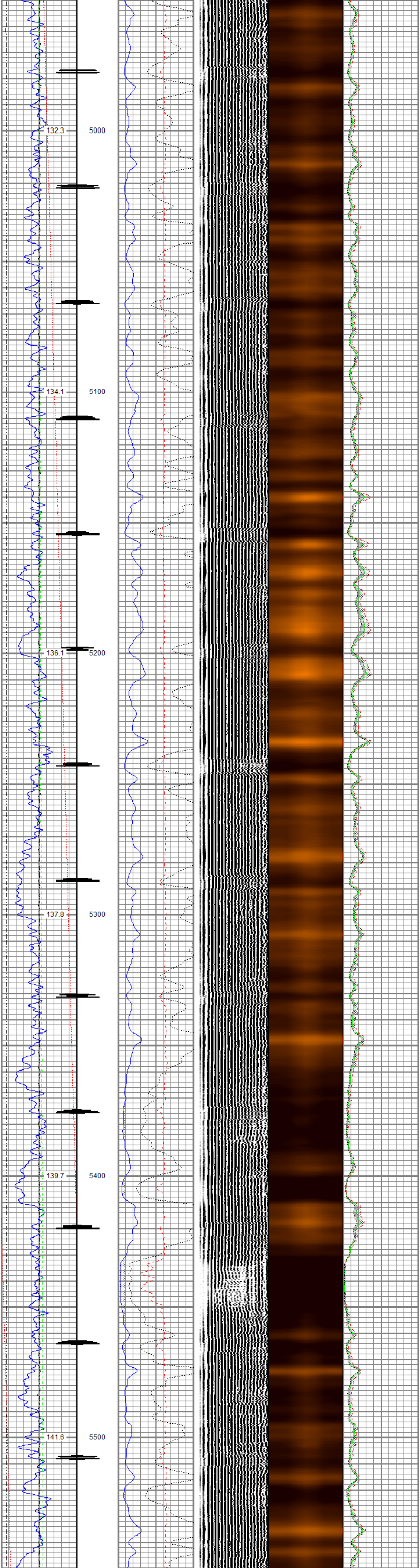
128.5
4800
130.4
4900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5200
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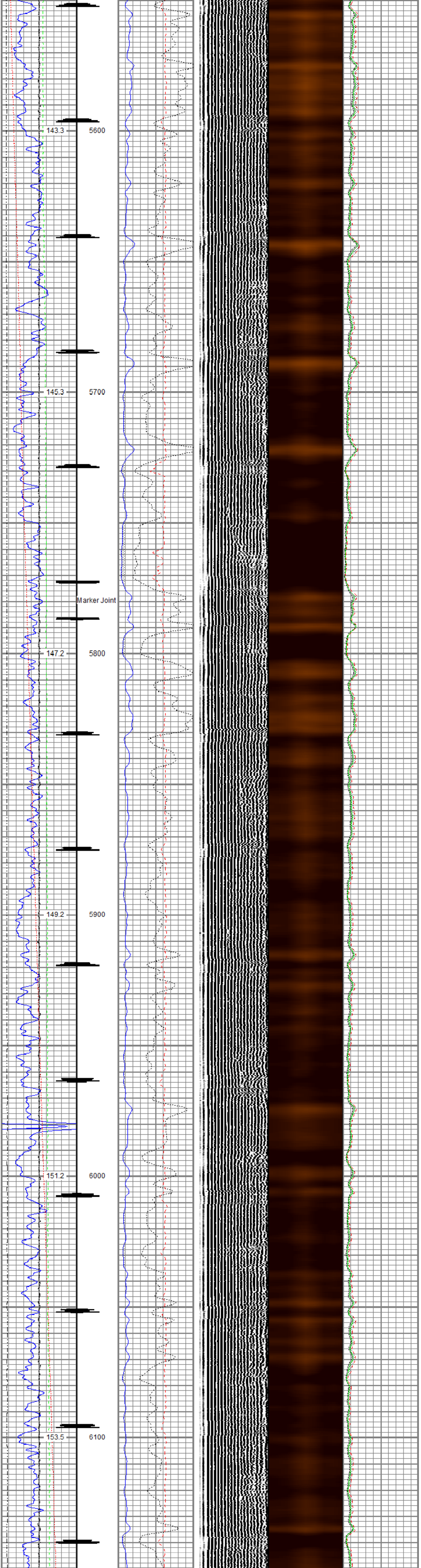
5400
141.6
5500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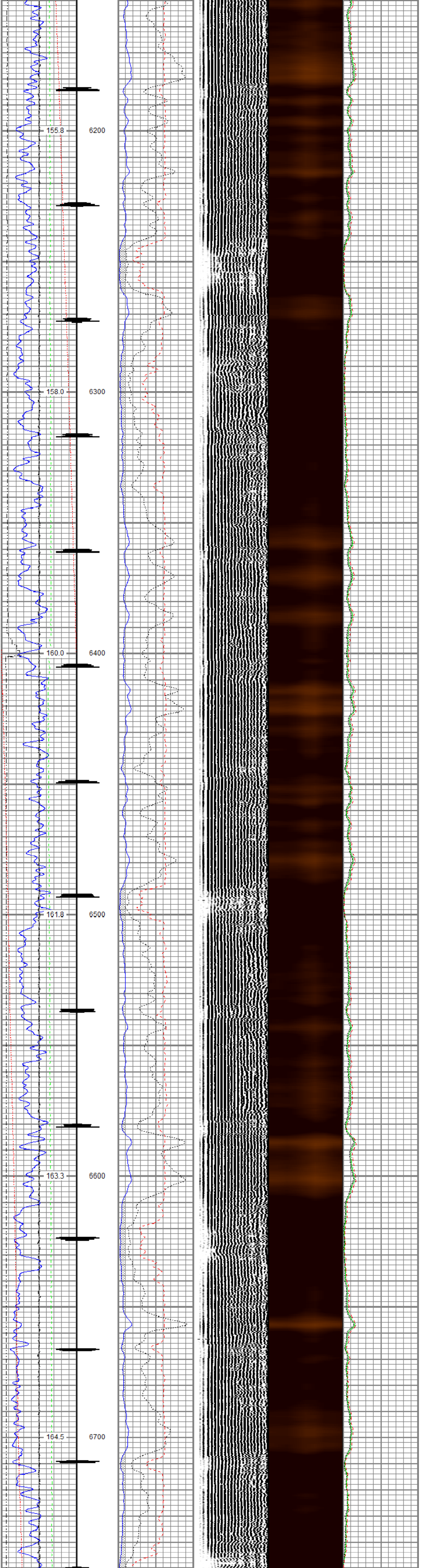
145.3
5700
Marker Joint
147.2
5800
149.2
5900
151.2
6000
153.5
6100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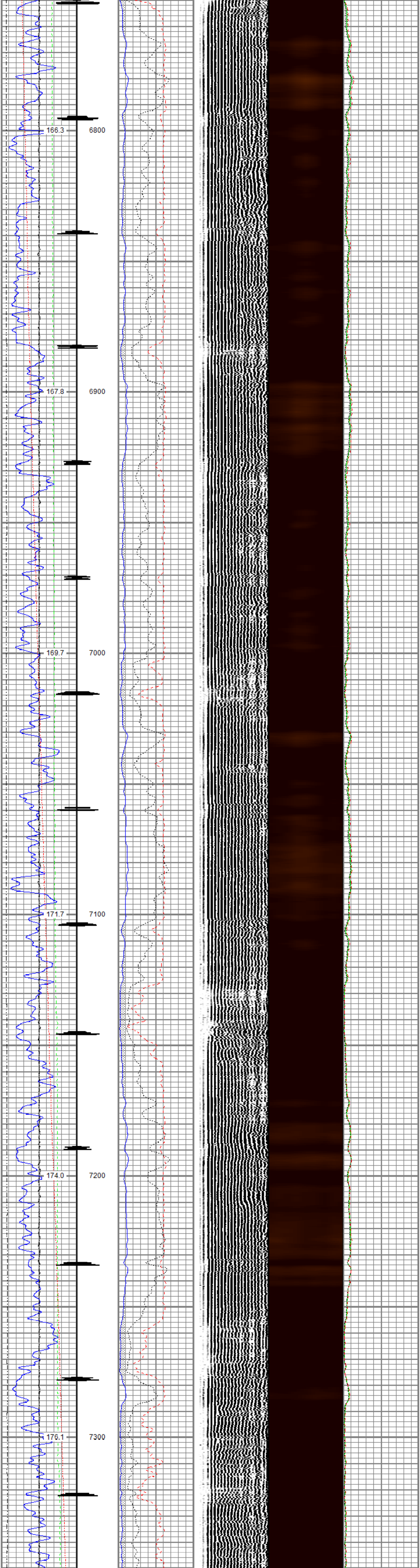
6500
163.3
6600
164.5
6700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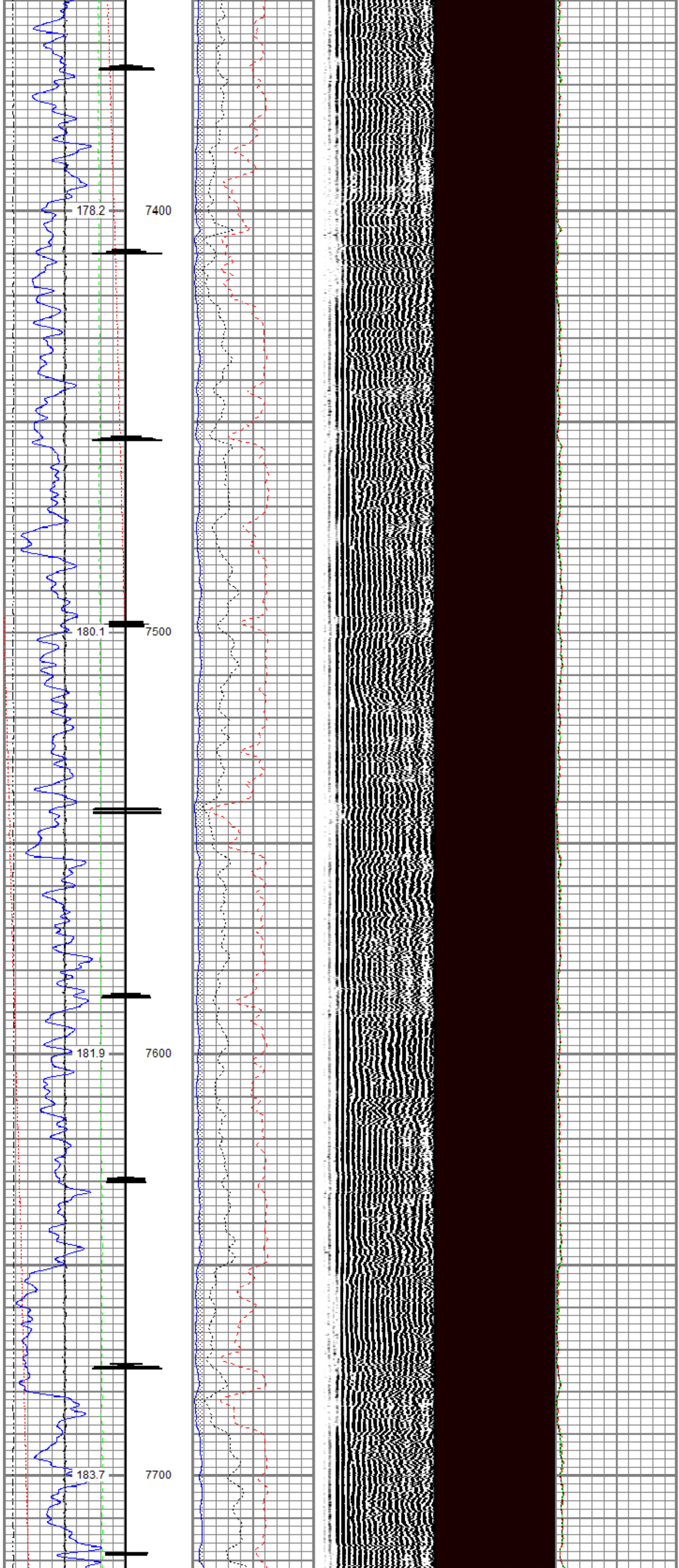
7300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180.1
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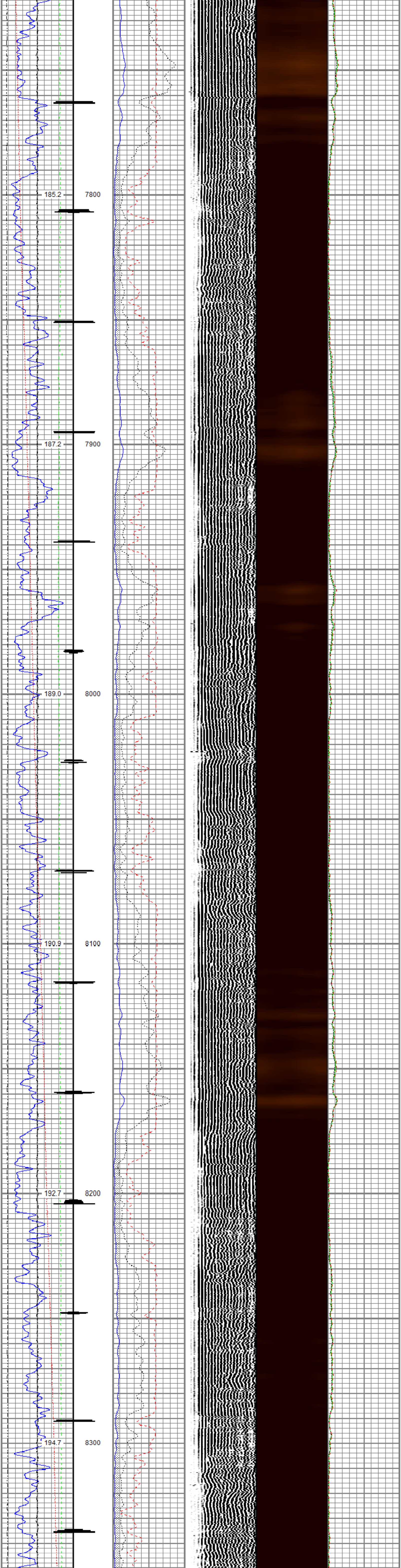
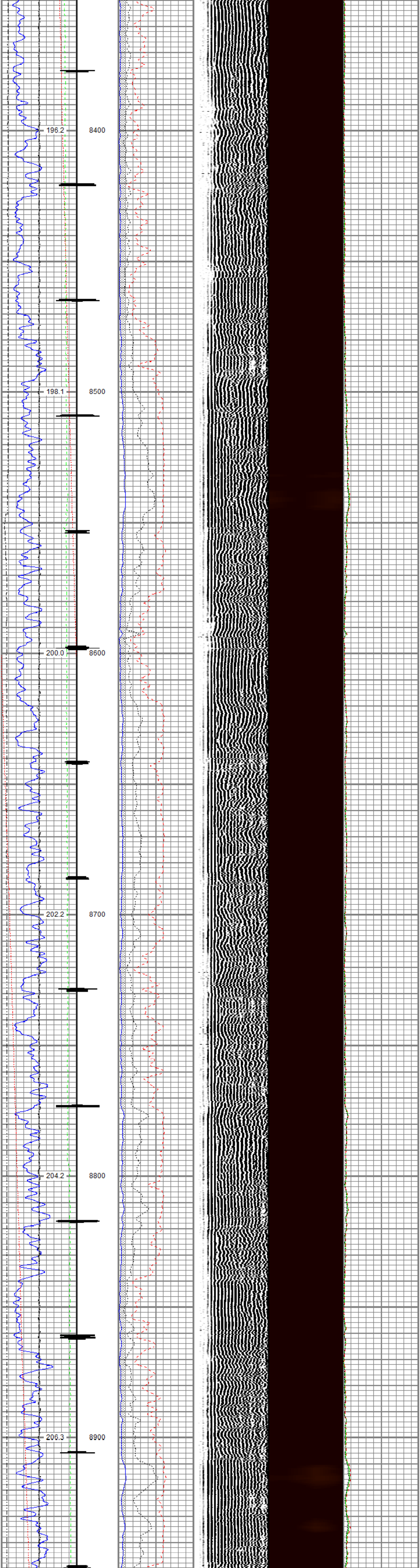
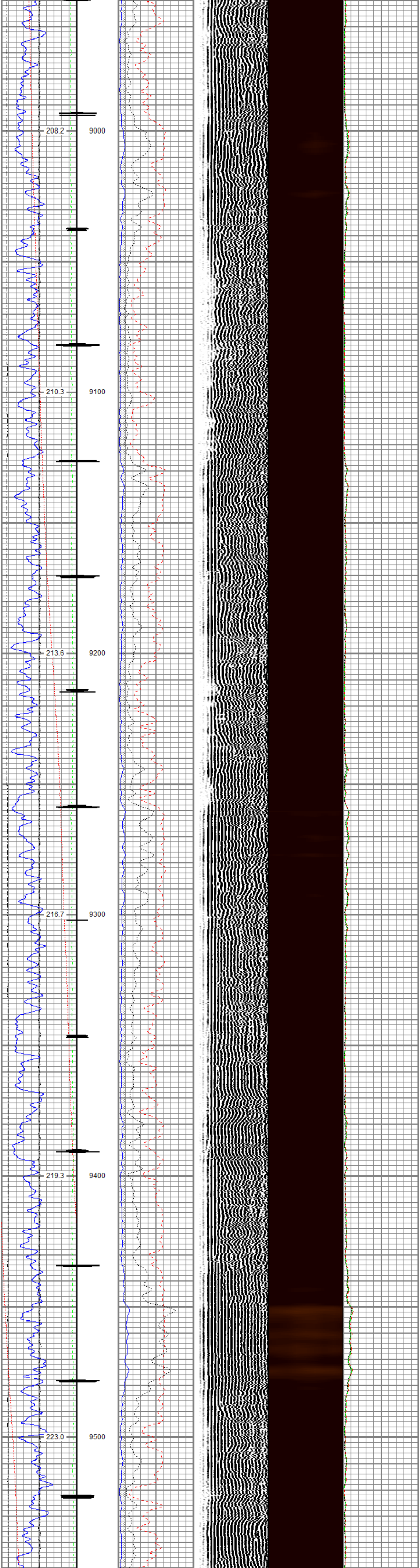
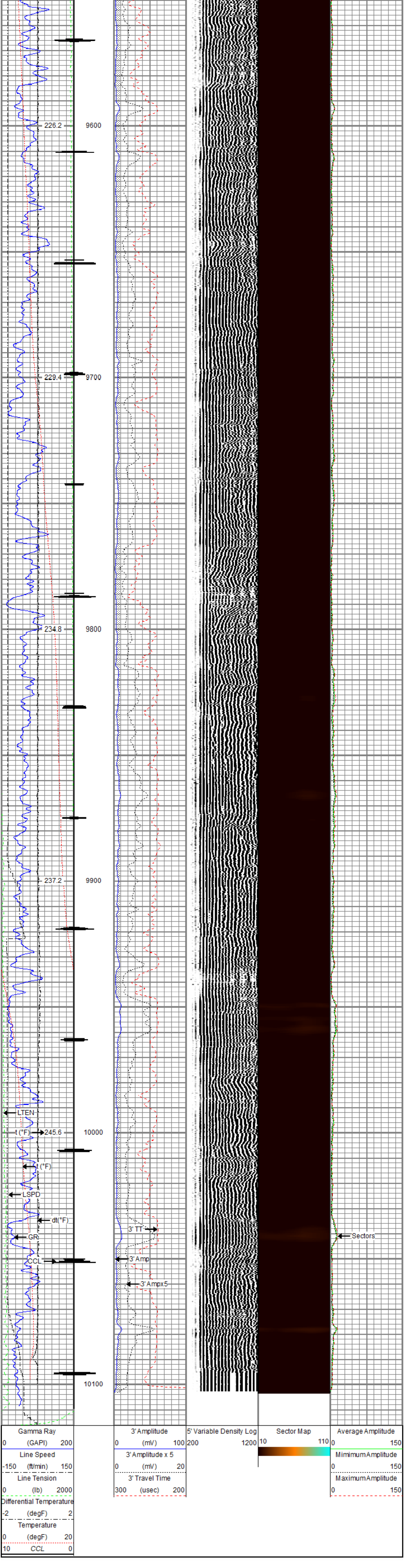
181.9
7600
183.7
7700









Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_clough nr 312-3_rbl_10-30-18\tep_clough nr 312-3_rbl_10-30-18.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Oct 31 09:37:11 2018
Charted by	Depth in Feet scaled 1:240

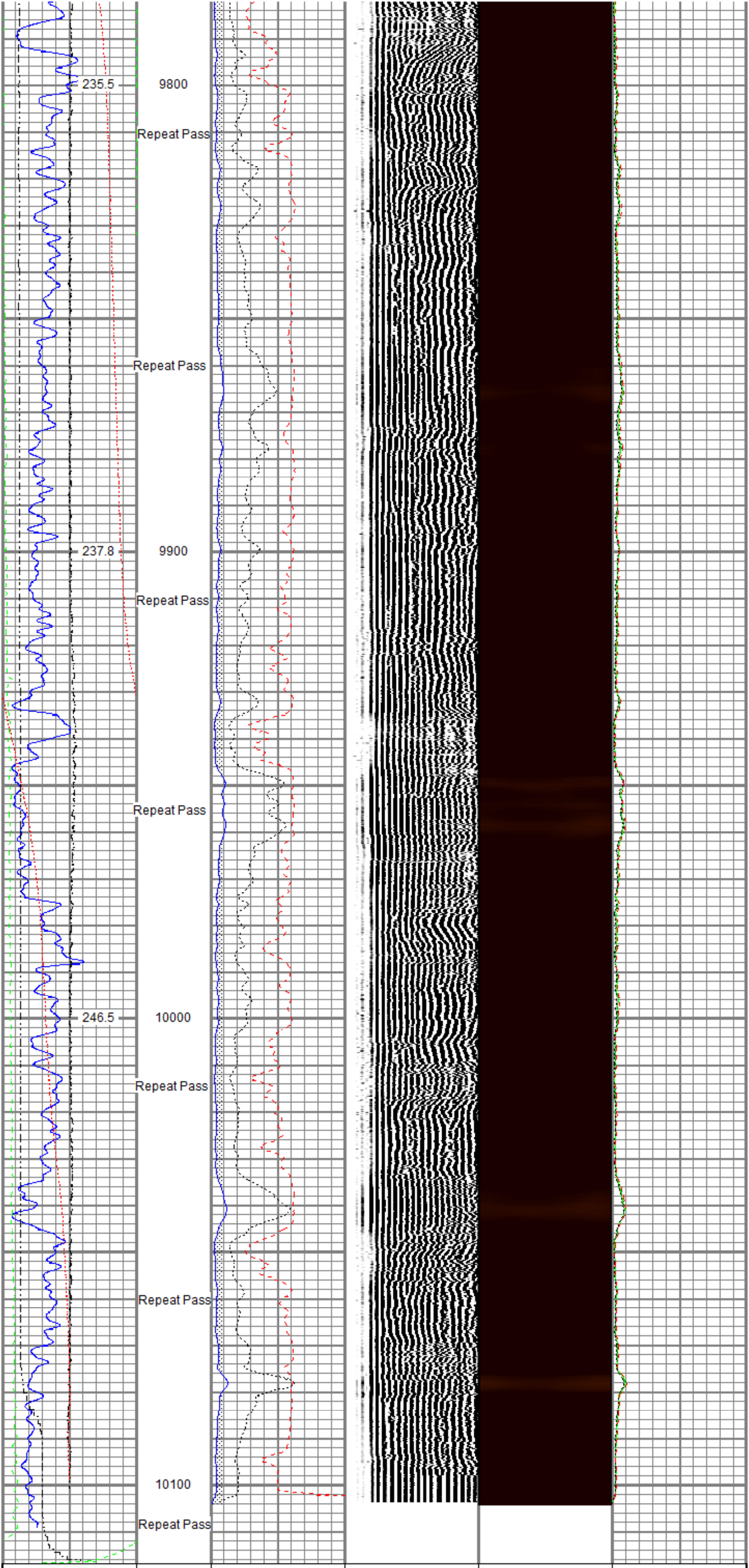
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

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



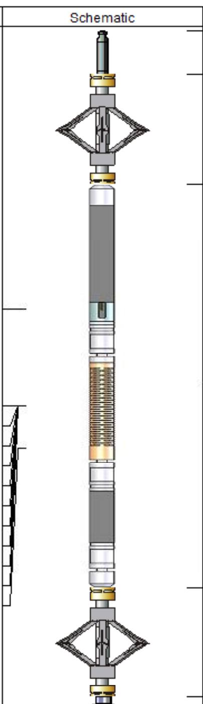
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

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

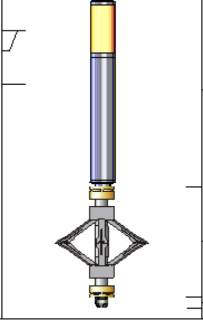
5' Variable Density Log
200 1200

Sector Map
10 110

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

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 WVFS8 WVFS7 WVFS6 WVFS5 WVFS4 WVFS3 WVFS2 WVFS1 WVFCAL WVF3FT WVF5FT	16.33 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 13.10		Probe Radii-2750 RBT (FW0712-020) 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

CCL$2	6.42
CCL$1	6.42
GR	5.18



Probe GR-CCL-2750 GOB (FW1302-119) 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 nr 312-3_rbl_10-30-18.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\tep\tep_clough nr 312-3_rbl_10-30-18\tep_clough nr 312-3_rbl_10-30-18.db
Dataset Pathname	main.1
Dataset Creation	Wed Oct 31 09:26:17 2018

Gamma Ray Calibration Report

Serial Number:	FW1302-119	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 12:33:00 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	112.3	cps
Calibrator Reading:	1039.1	cps
Sensitivity:	0.6873	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW0712-020	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	32.485	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.002	0.925	0.800	81.196	86.745	0.971
CAL	0.740	0.942				
5'	-0.026	0.728	0.800	81.196	106.697	3.564
SUM						
S1	-0.008	0.882	0.000	100.000	112.411	0.889
S2	-0.005	0.925	0.000	100.000	107.524	0.568
S3	-0.005	1.010	0.000	100.000	98.546	0.463
S4	-0.005	1.081	0.000	100.000	92.085	0.475
S5	-0.006	1.100	0.000	100.000	90.463	0.523
S6	-0.006	1.008	0.000	100.000	98.679	0.576
S7	-0.006	0.919	0.000	100.000	108.194	0.609
S8	-0.005	0.883	0.000	100.000	112.616	0.582

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.740	0.942	1.000	0.000

Air Zero Calibration, performed Tue Oct 30 04:57:06 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.003	0.000	-0.000
5'	-0.001	0.000	-0.000
SUM			
S1	-0.007	0.000	-0.000
S2	-0.004	0.000	-0.000
S3	-0.005	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	-0.005	0.000	0.000
S8	-0.005	0.000	-0.000

Temperature Calibration Report

Serial Number:	FW0712-020	
Tool Model:	2750 RBT	
Performed:	Thu Dec 21 07:48:40 2017	
	Reference	Reading
Low Reference:	100.00 degF	109.43 degF
High Reference:	350.00 degF	405.87 degF
Gain:	0.84	
Offset:	7.72	
Delta Spacing	1	

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Clough NR 312-3
Field	Rulison
County	Garfield
State	Colorado