Radial Cement Bond
Gamma Ray
Casing Collar Log

RELIANCE OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Clough NR 322-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Clough NR 322-3
Field Rulison
County Garfield State Colorado

Location: API # : 05-045-23905
SEC 3 TWP 6S RGE 94W

Other Services
--

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	03-OCT-2018		
Run Number	One		
Depth Driller	10062 FT		
Depth Logger	9960 FT		
Bottom Logged Interval	9946 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Fresh Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	247°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	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	1143 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9994 FT
Intermediate #2					
Liner					

<<< Fold Here >>>

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 5878 FT - 5892 FT
Log ran from 9946 FT to Surface
Log ran with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!!

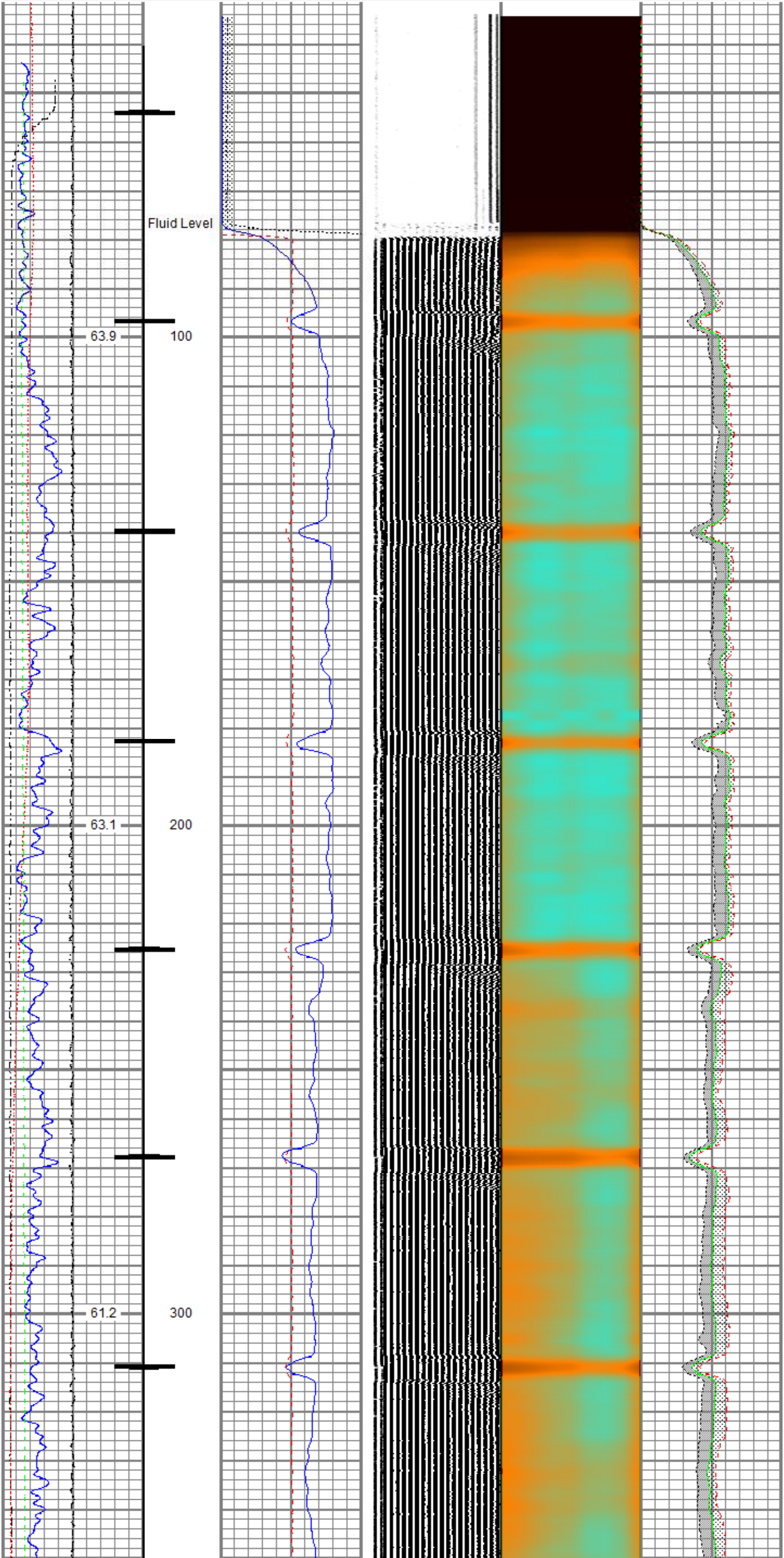
RELIANCE OILFIELD SERVICES

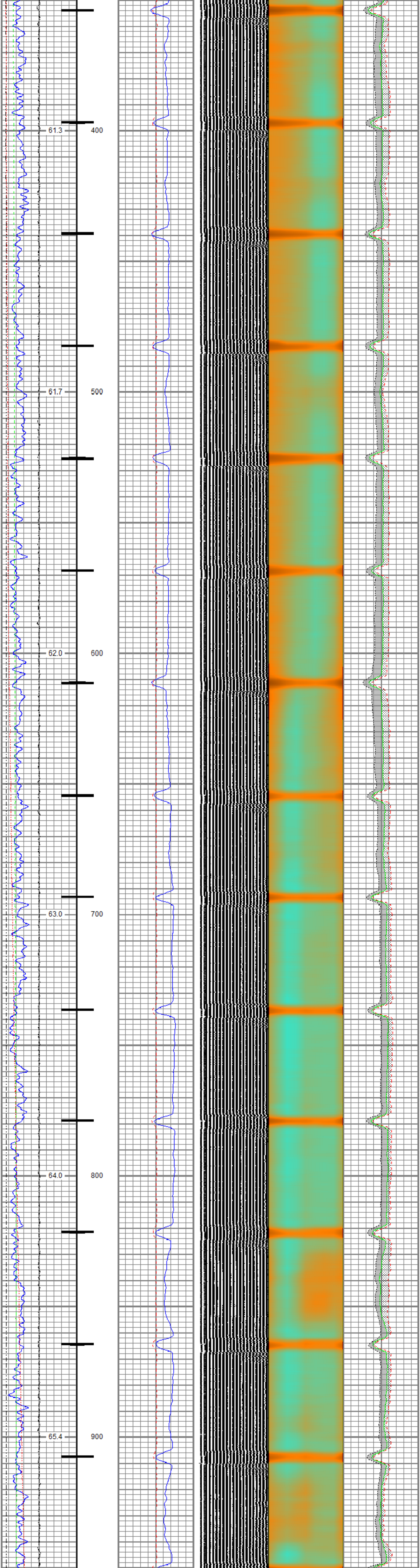
Main Pass

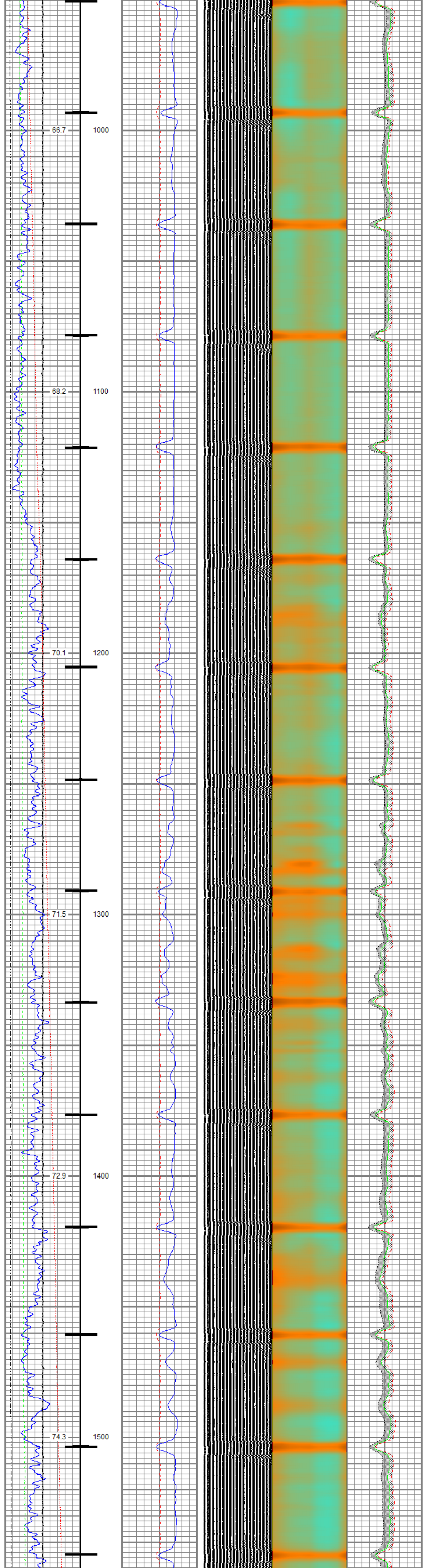
Recorded With 0 PSI Surface Induced Pressure

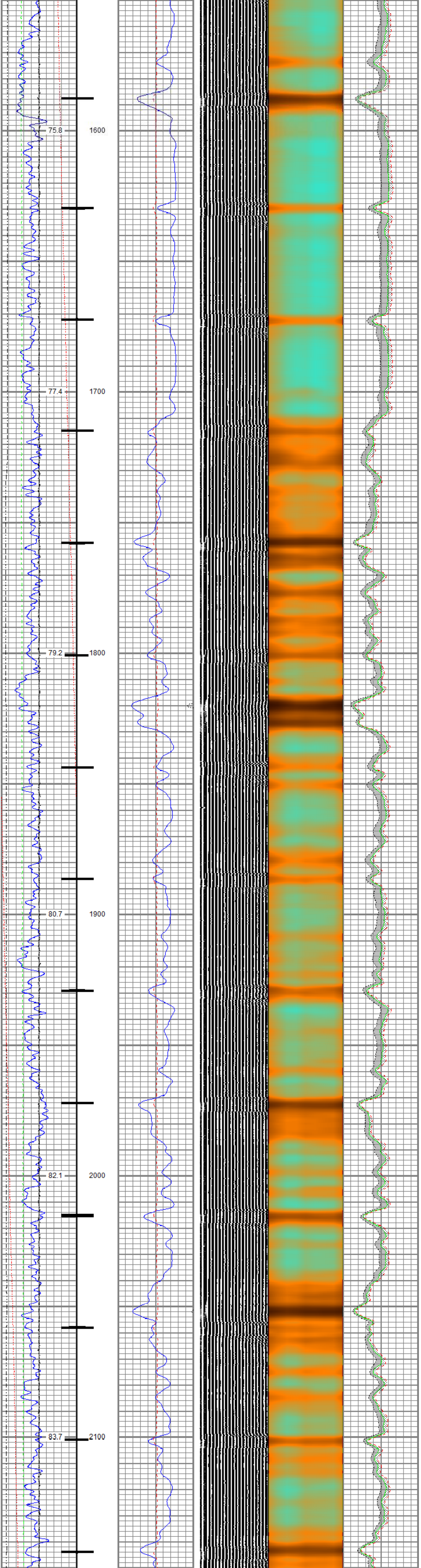
Database File	tep_clough nr 322-3_rbl_10-03-18\processed_tep_clough nr 322-3_rbl_10-03-18.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Thu Oct 04 09:23:11 2018
Charted by	Depth in Feet scaled 1:240

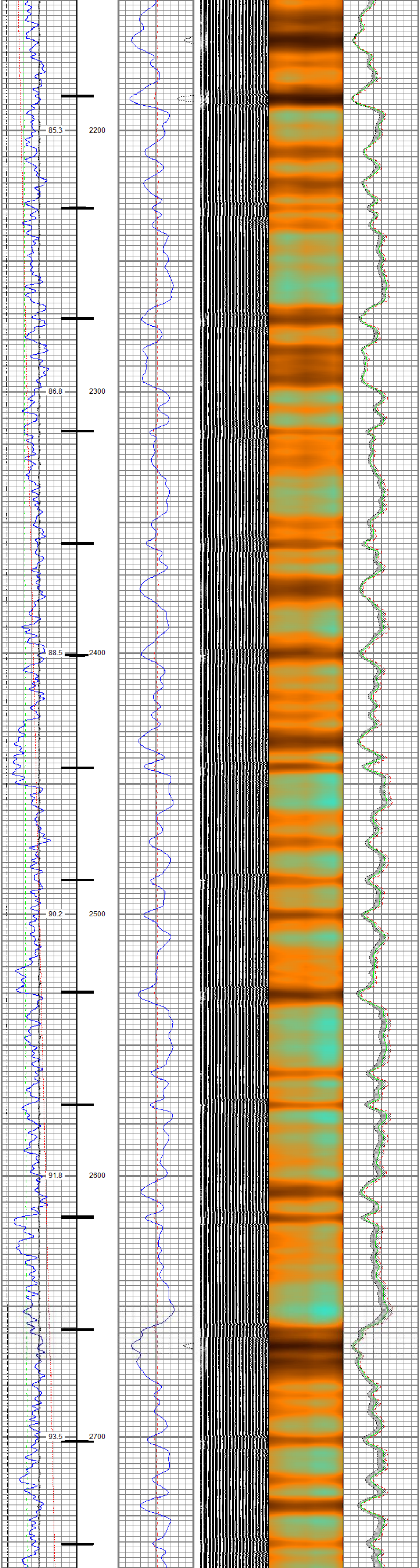
Track 1			Track 3			Track 4			Track 5		Track 6		
Gamma Ray			3' Amplitude			5' Variable Density Log			Sector Map		Average Amplitude		
0	(GAPI)	200	0	(mV)	100	200		1200	10	110	0		150
Line Speed			3' Amplitude x 5								Mimimum Amplitude		
-150	(ft/min)	150	0	(mV)	20						0		150
Line Tension			3' Travel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

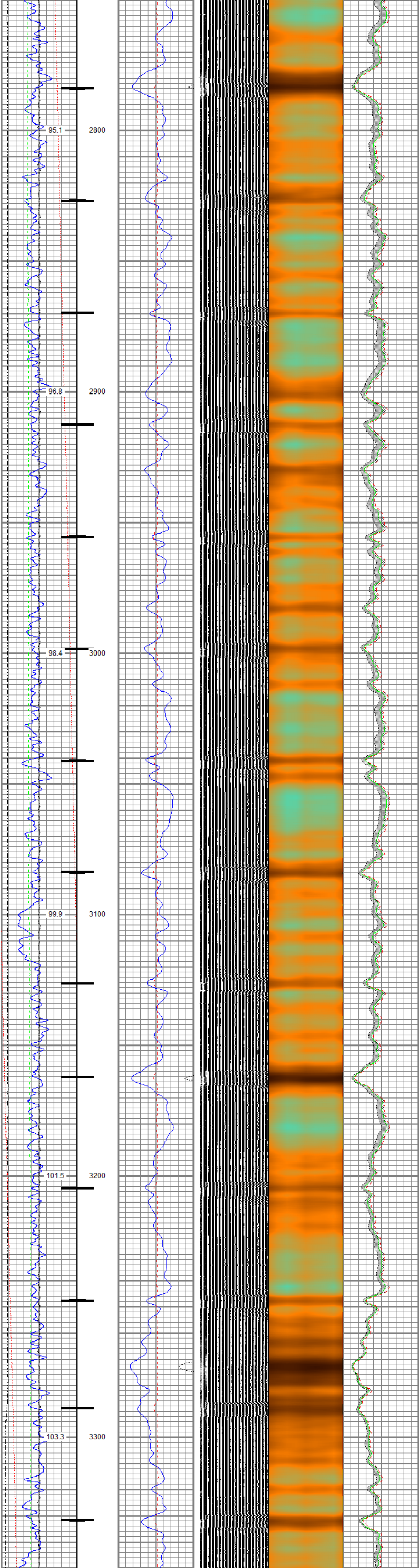


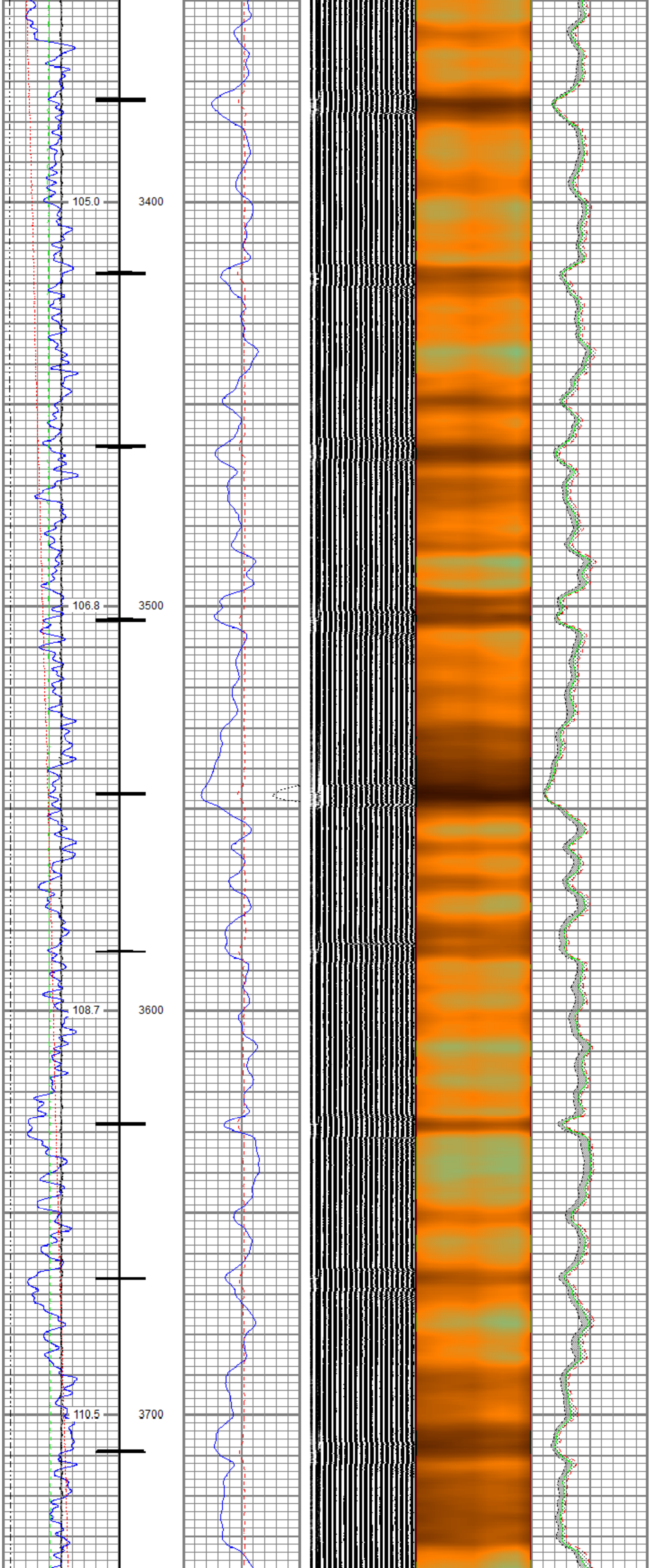


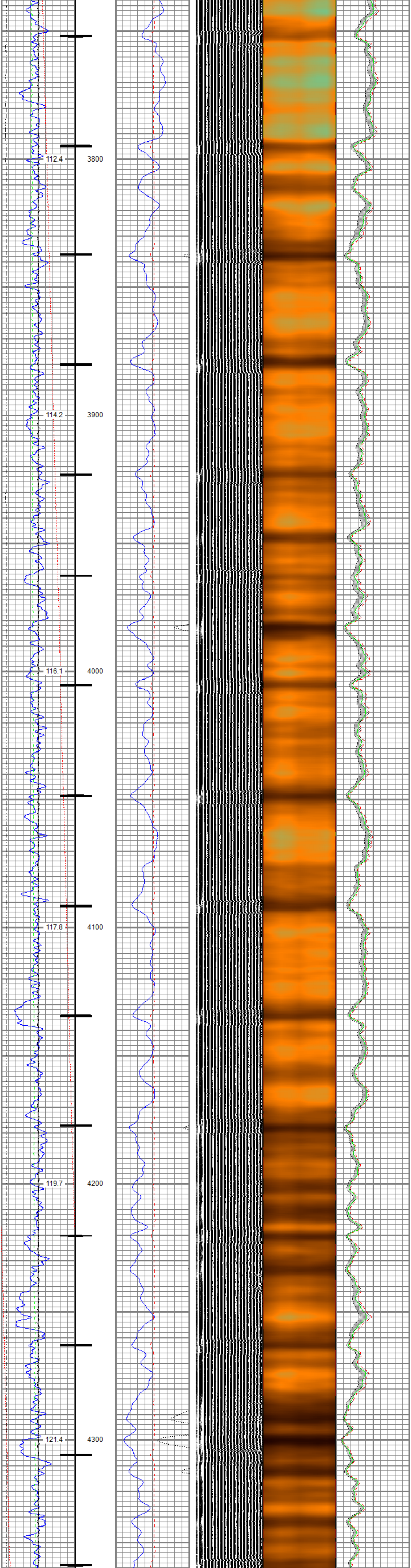


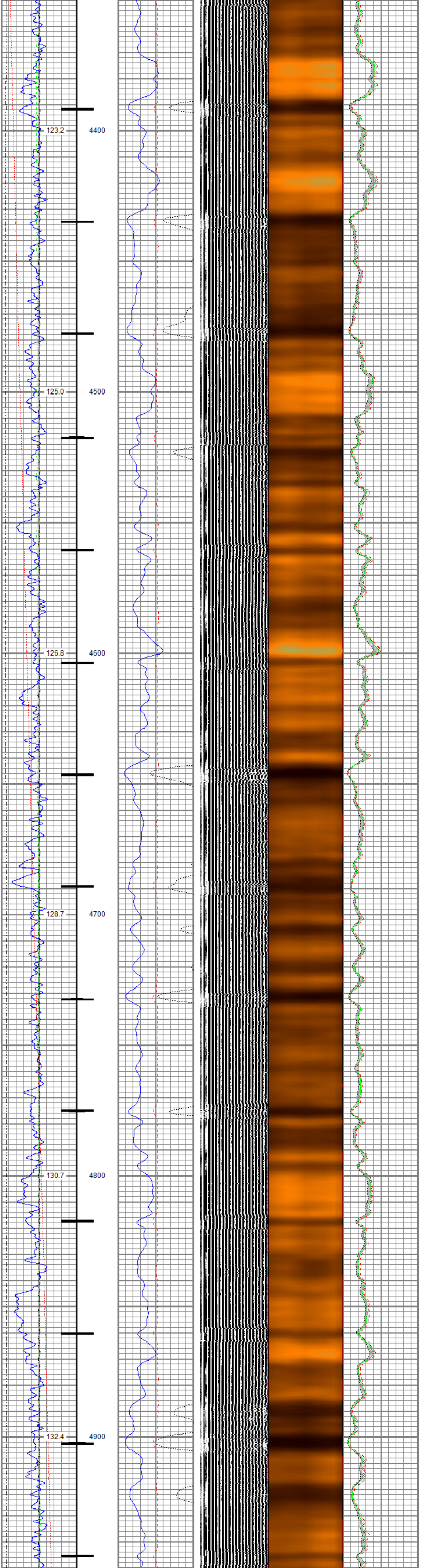


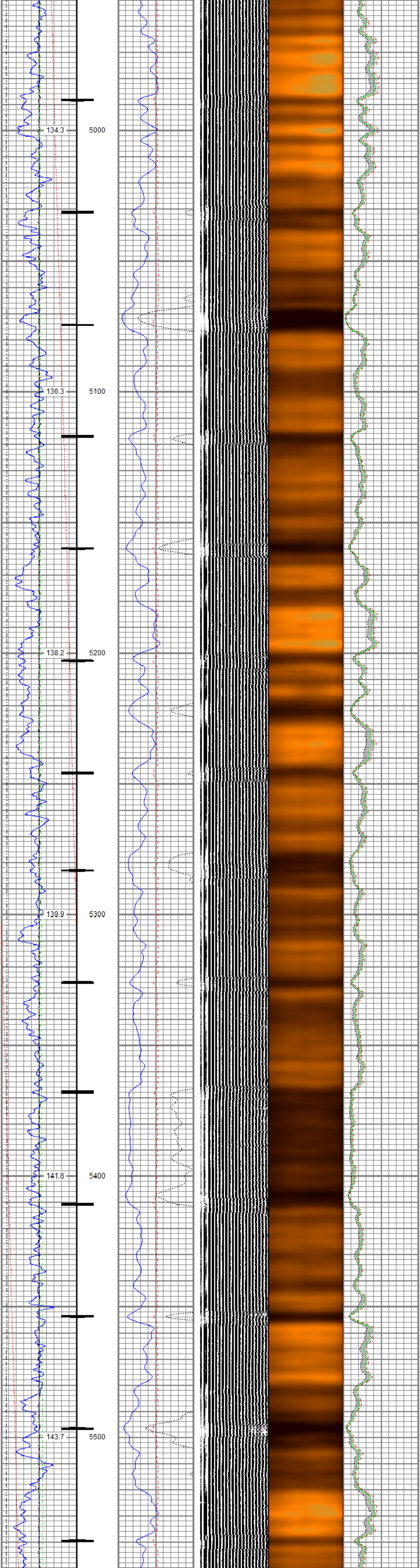


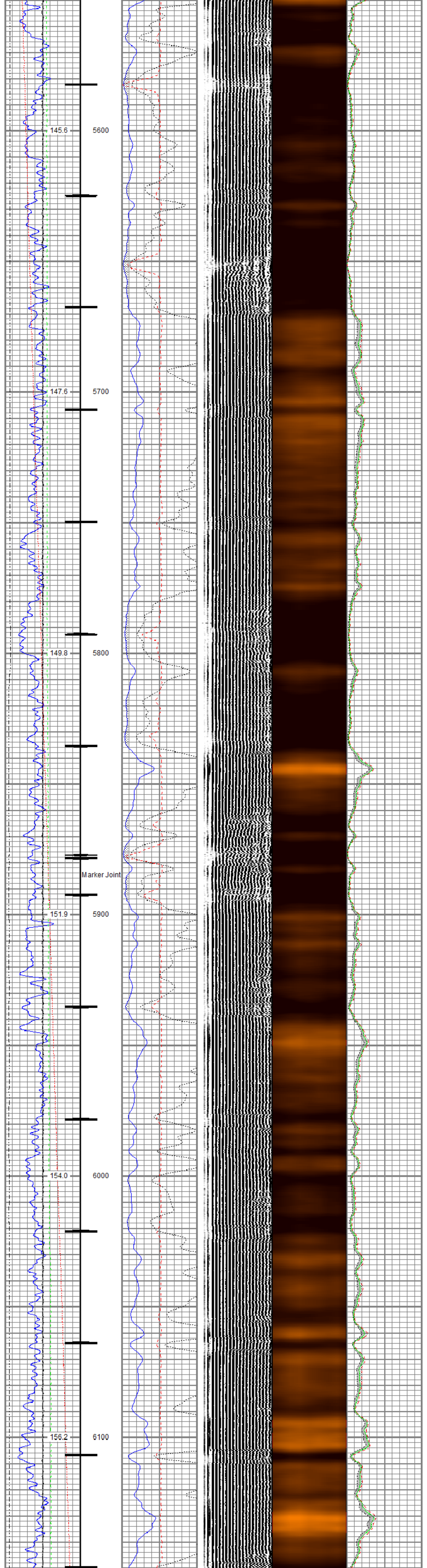


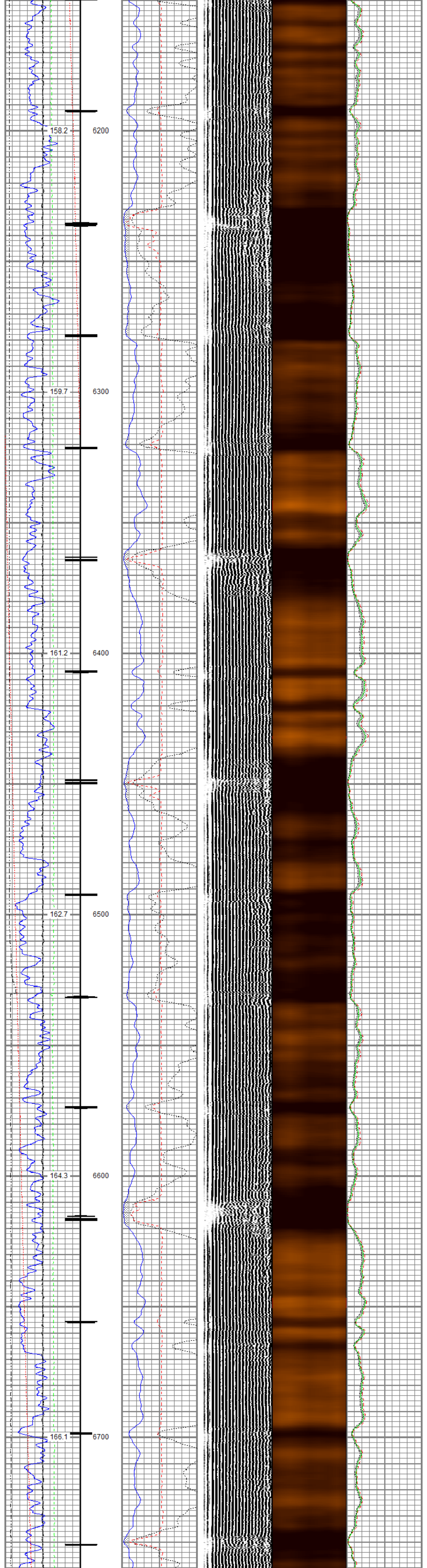


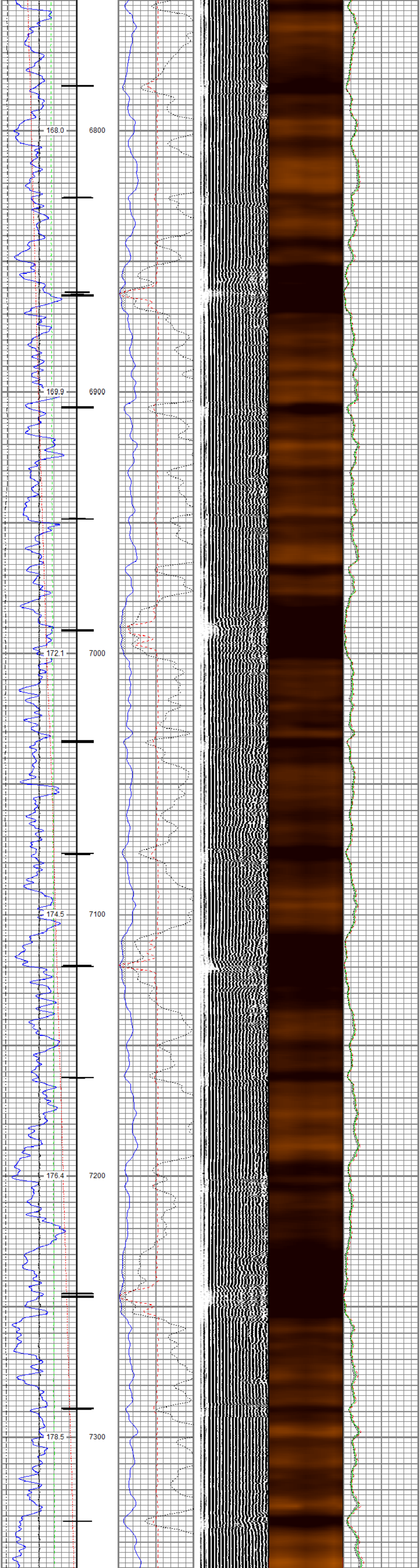

112.4
3800
114.2
3900
116.1
4000
117.8
4100
119.7
4200
121.4
4300

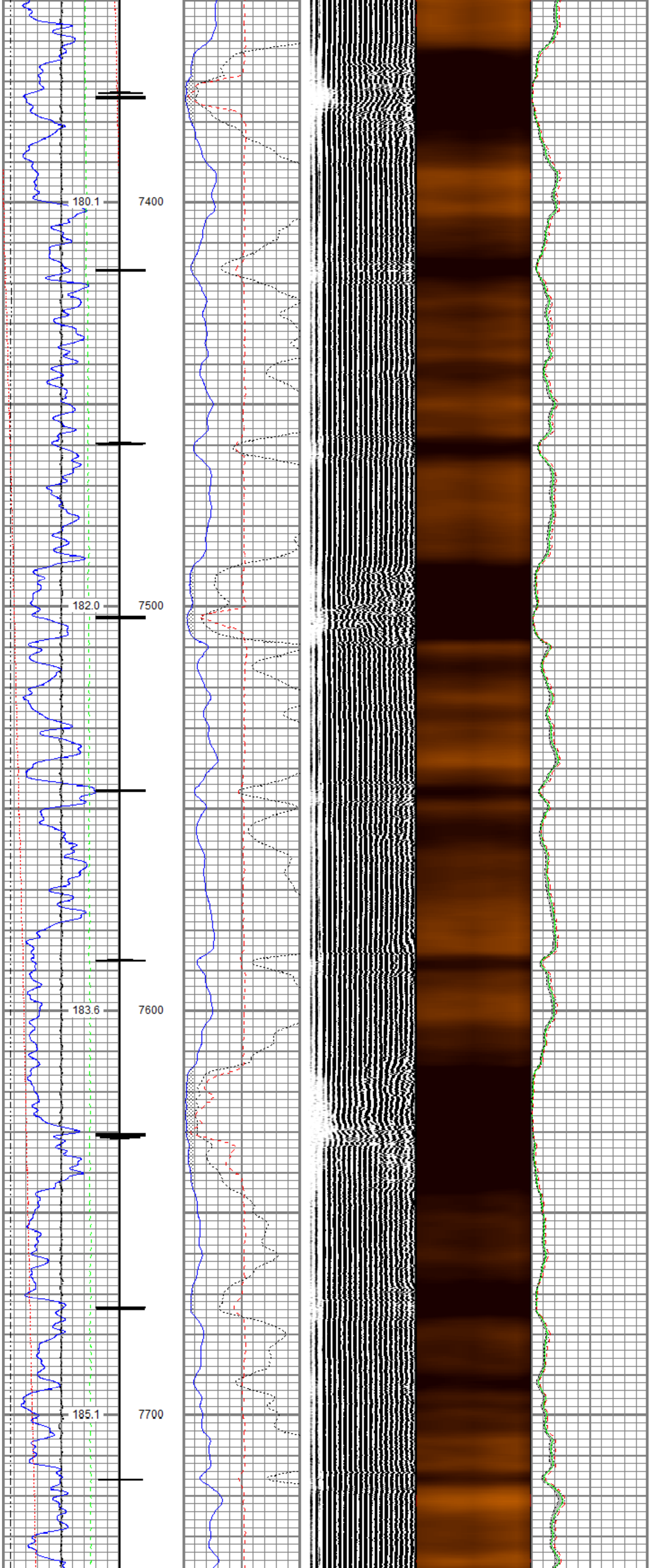

123.2
4400
125.0
4500
126.8
4600
128.7
4700
130.7
4800
132.4
4900

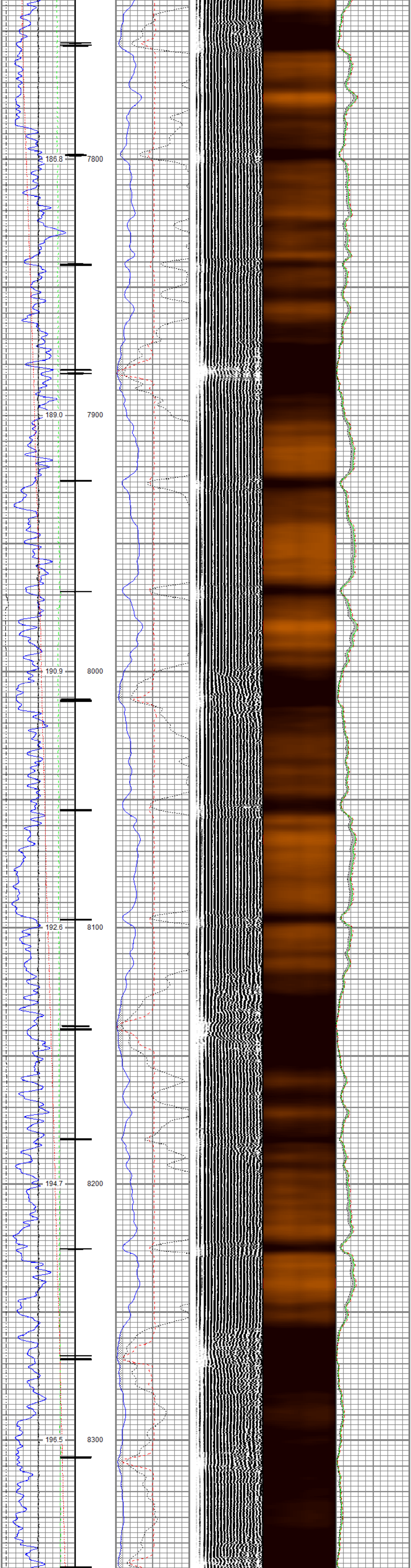

134.3
5000
136.3
5100
138.2
5200
139.9
5300
141.8
5400
143.7
5500

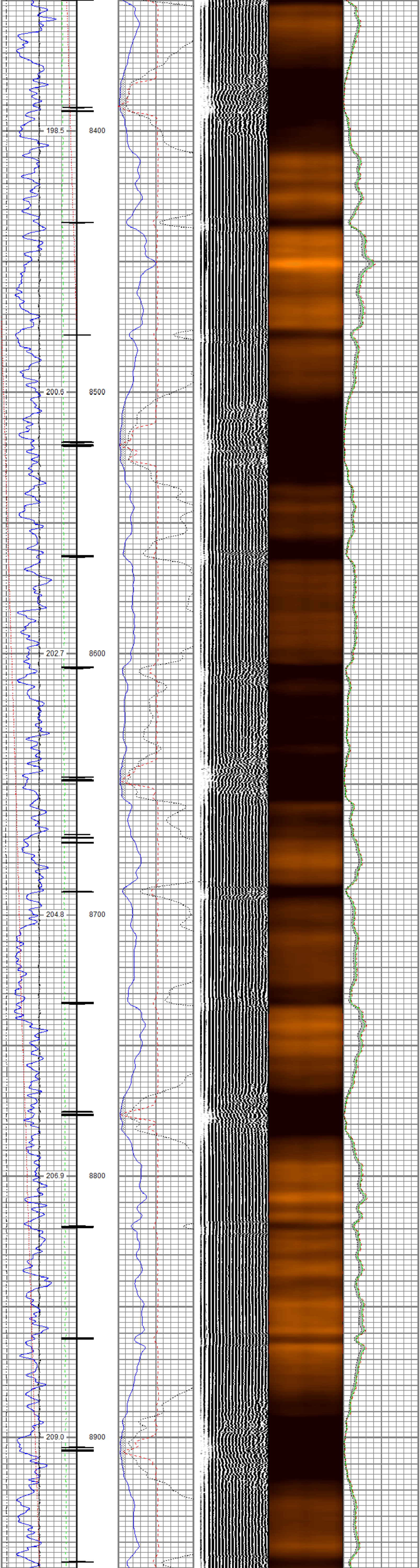

145.6
5600
147.6
5700
149.8
5800
Marker Joint
151.9
5900
154.0
6000
156.2
6100

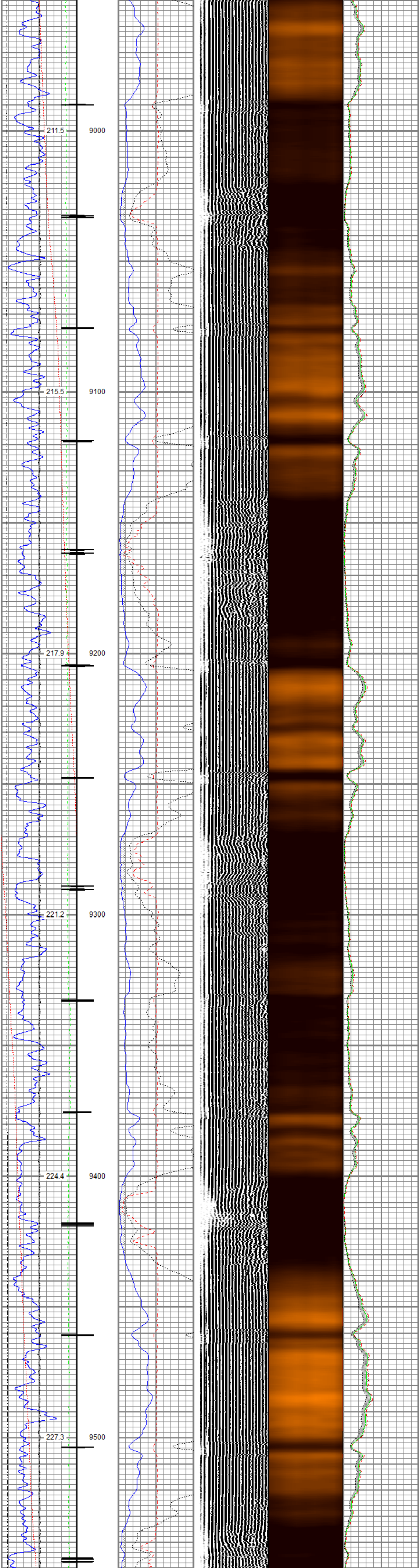

158.2
6200
159.7
6300
161.2
6400
162.7
6500
164.3
6600
166.1
6700

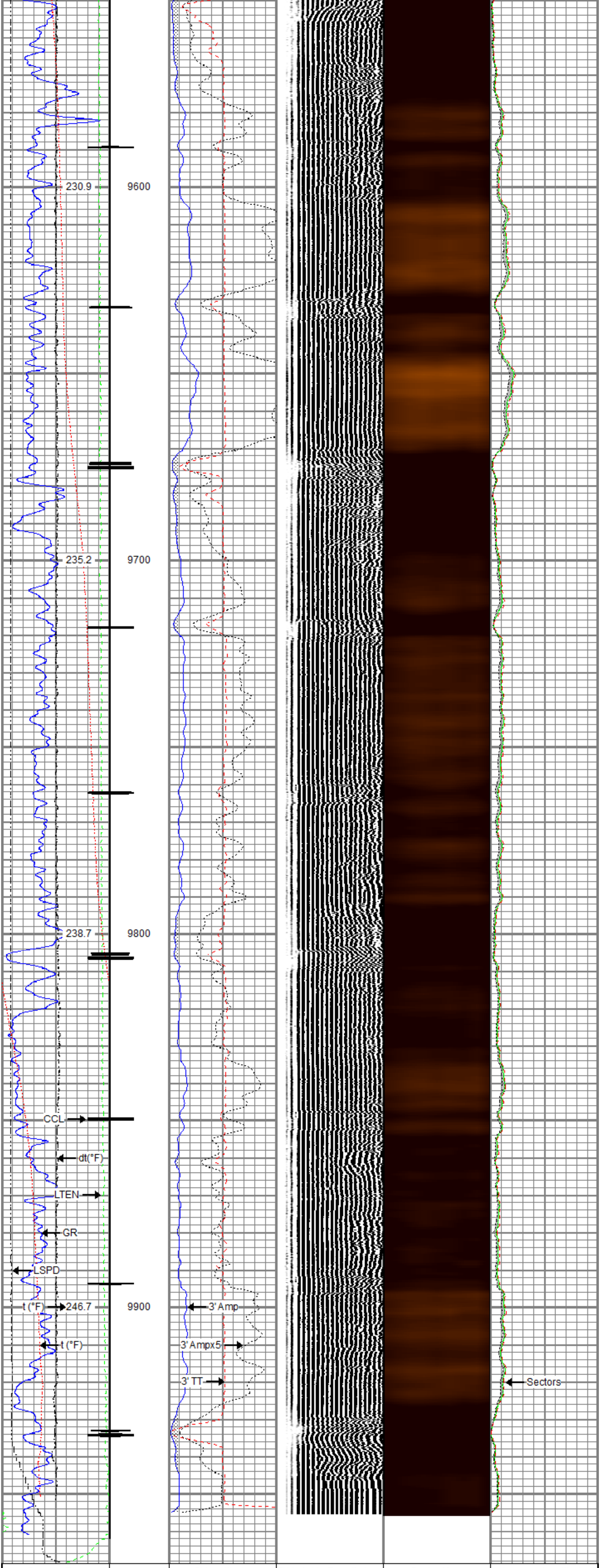

168.0
6800
169.9
6900
172.1
7000
174.5
7100
176.4
7200
178.5
7300


180.1
7400
182.0
7500
183.6
7600
185.1
7700









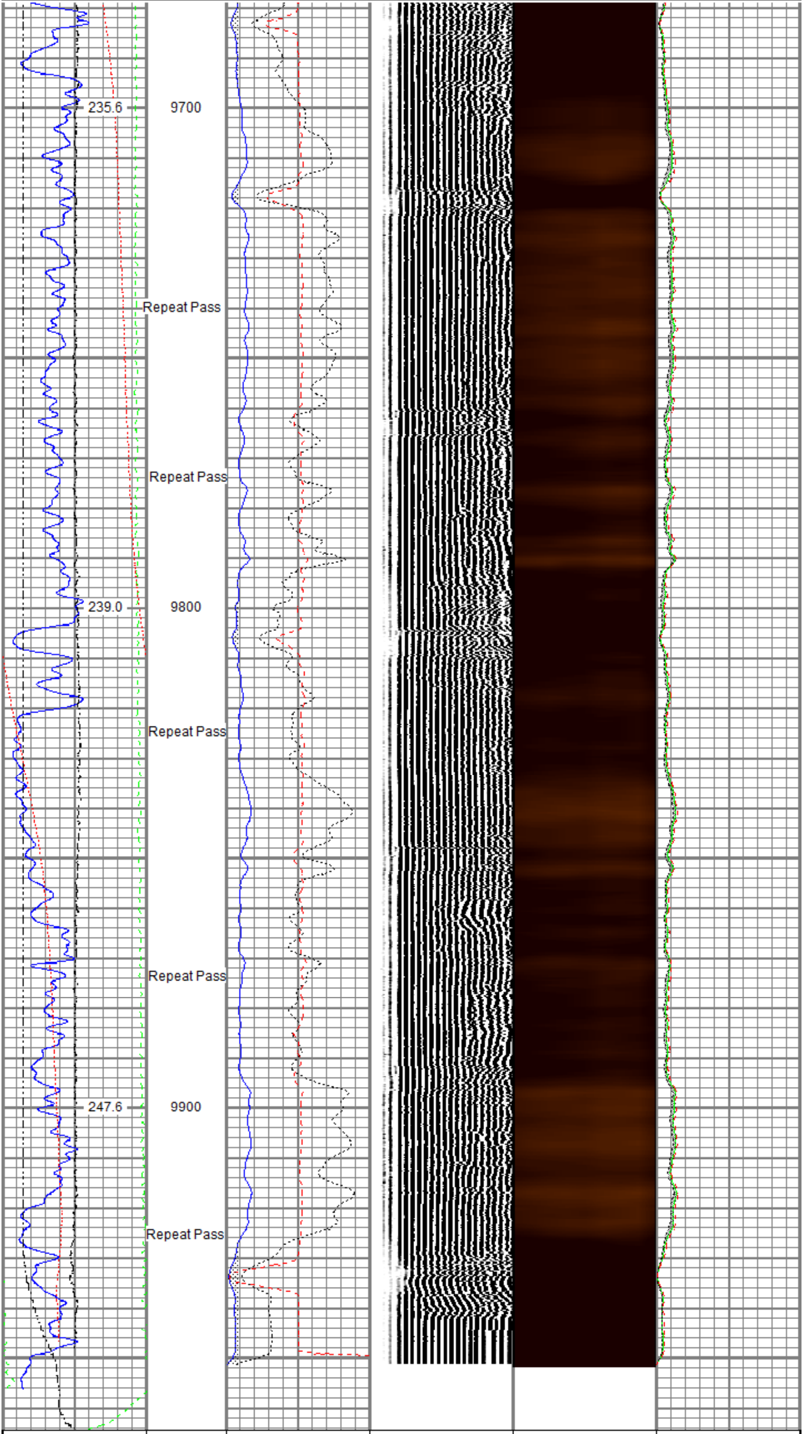
Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200		0 (mV) 100	200 1200	10 110	0 150
Line Speed		3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150		0 (mV) 20			0 150
Line Tension		3' Travel Time			Maximum Amplitude
0 (lb) 2000		300 (usec) 200			0 150
Differential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

Repeat Pass

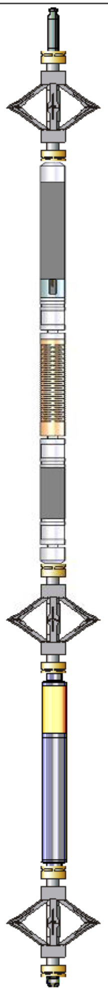
Recorded With 0 PSI Surface Induced Pressure

Database File	tep_clough nr 322-3_rbl_10-03-18\processed_tep_clough nr 322-3_rbl_10-03-18.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Thu Oct 04 09:29:51 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 (FW1302-001) 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 322-3_RBL_10-03-18.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 322-3_rbl_10-03-18\processed_tep_clough nr 322-3_rbl_10-03-1
Dataset Pathname	main.1
Dataset Creation	Thu Oct 04 09:23:11 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:	44.690	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.002	0.817	0.800	81.196	98.150	1.037
CAL	-0.006	0.740				
5'	-0.024	0.697	0.800	81.196	111.458	3.485
SUM						
S1	-0.006	0.914	0.000	100.000	108.721	0.677
S2	-0.004	0.871	0.000	100.000	114.319	0.433
S3	-0.004	0.874	0.000	100.000	113.804	0.484
S4	-0.004	0.954	0.000	100.000	104.327	0.449
S5	-0.004	0.998	0.000	100.000	99.766	0.430
S6	-0.004	0.886	0.000	100.000	112.329	0.429
S7	-0.005	0.803	0.000	100.000	123.884	0.580
S8	-0.005	0.764	0.000	100.000	130.116	0.606

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.006	0.740	1.000	0.000

Air Zero Calibration, performed Wed Sep 12 05:03:57 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.003	0.000	0.000
5'	0.008	0.000	-0.002
SUM			
S1	-0.003	0.000	0.000
S2	-0.002	0.000	0.000
S3	-0.003	0.000	0.000
S4	-0.003	0.000	0.000
S5	-0.003	0.000	0.001
S6	-0.003	0.000	0.001
S7	-0.003	0.000	0.000
S8	-0.003	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	

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Clough NR 322-3
Field	Rulison
County	Garfield
State	Colorado