RELIANCE
OILFIELD SERVICES

Radial Cement Bond Gamma Ray Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Clough NR 334-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Clough NR 334-3
Field Rulison
County Garfield State Colorado
Location: API #: 05-045-23909
SEC 3 TWP 6S RGE 94W

Other Services

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

Date	14-JAN-2019
Run Number	One
Depth Driller	9995 FT
Depth Logger	9780 FT
Bottom Logged Interval	9776 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	241°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	22:35
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	1108 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9954 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 5936-5957 FT
Log ran from 9776 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

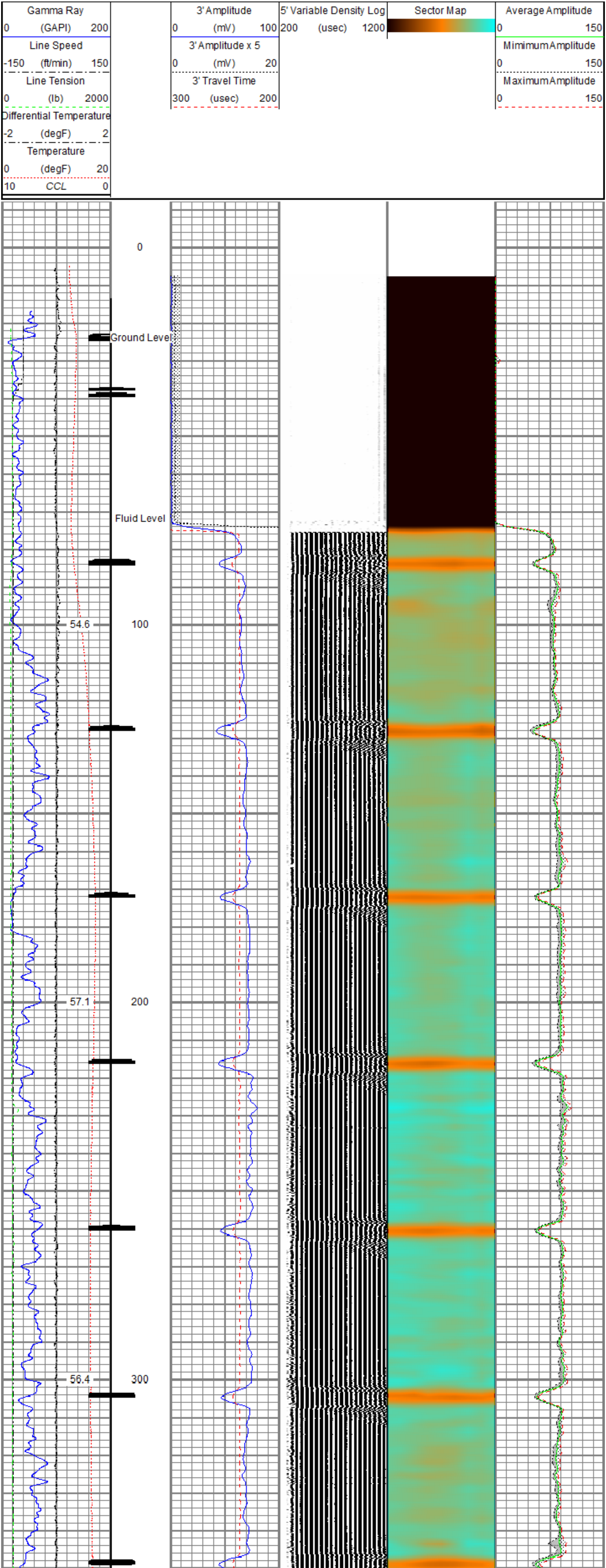
Thank you for choosing Reliance Oilfield Services, LLC!

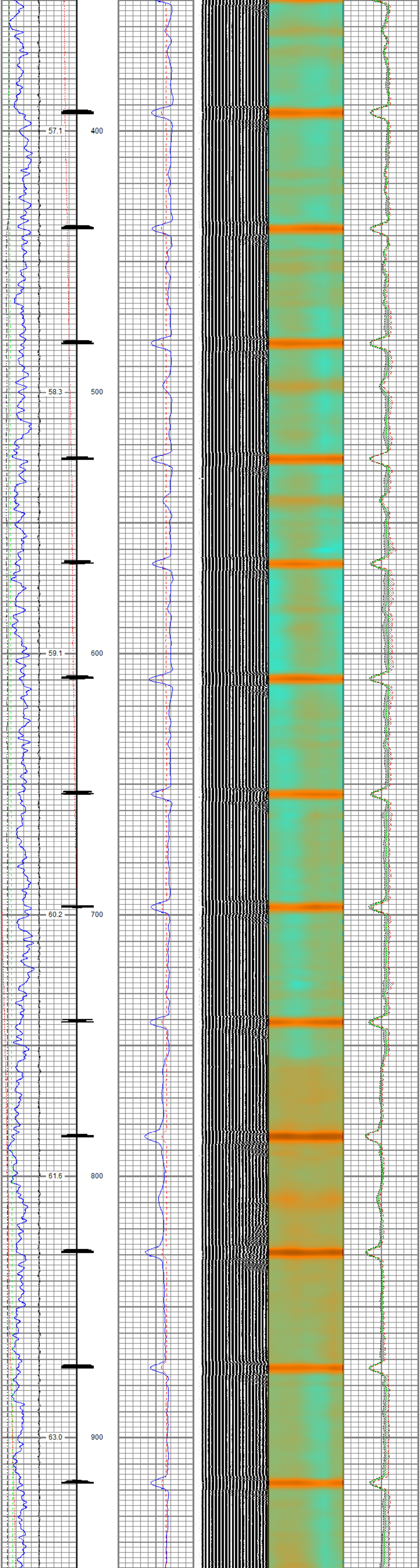
RELIANCE
OILFIELD SERVICES

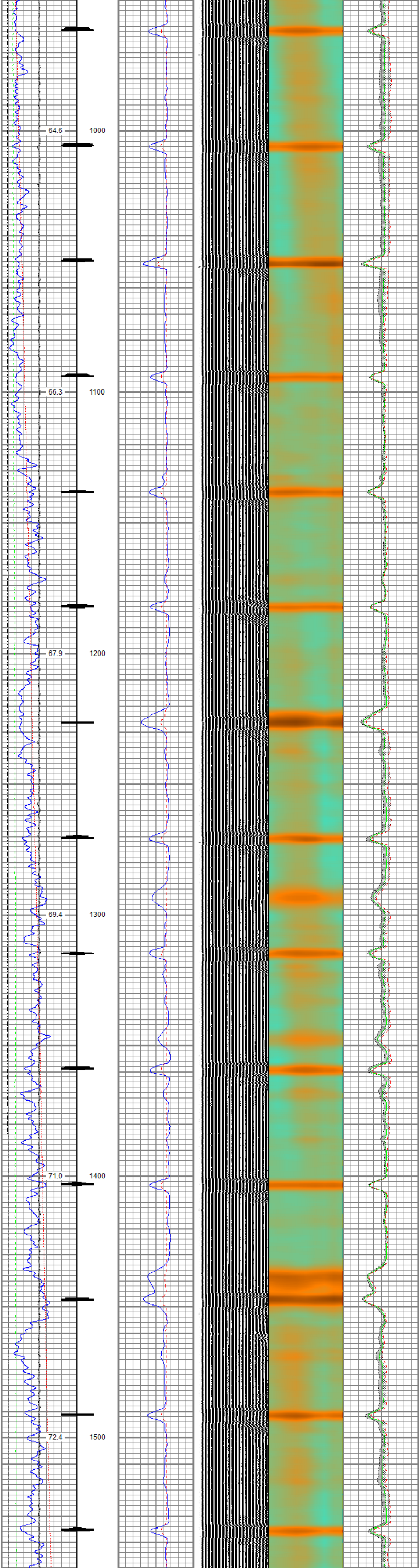
Main Pass

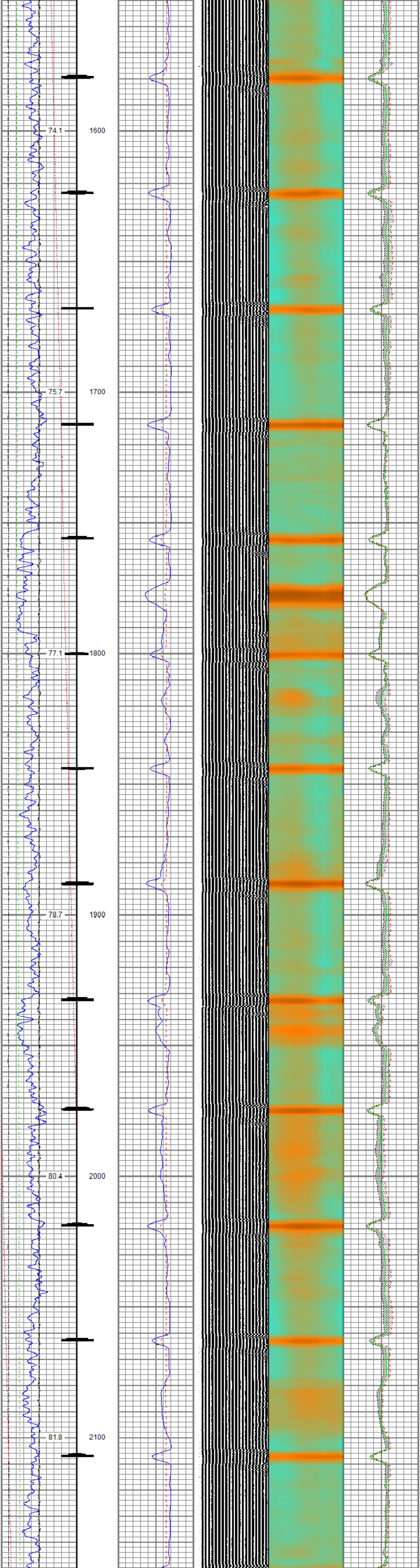
Recorded With 0 PSI Surface Induced Pressure

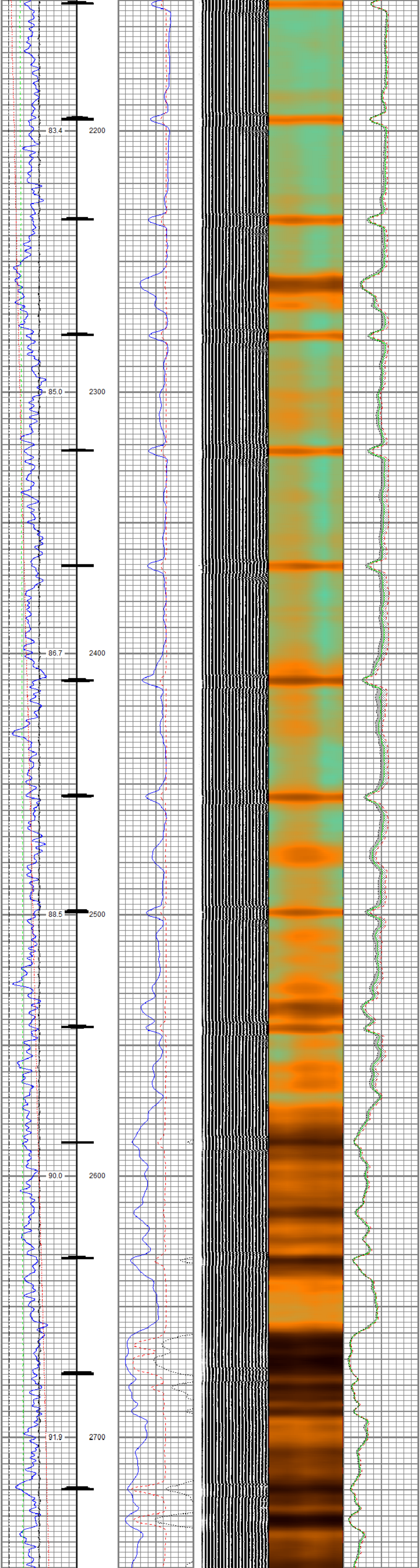
Database File	tep_clough nr 334-3_rbl_01-14-19\tep_clough nr 334-3_rbl_01-14-19.db
Dataset Pathname	main
Presentation Format	ros_rbt004_tep
Dataset Creation	Mon Jan 14 22:34:51 2019
Charted by	Depth in Feet scaled 1:240

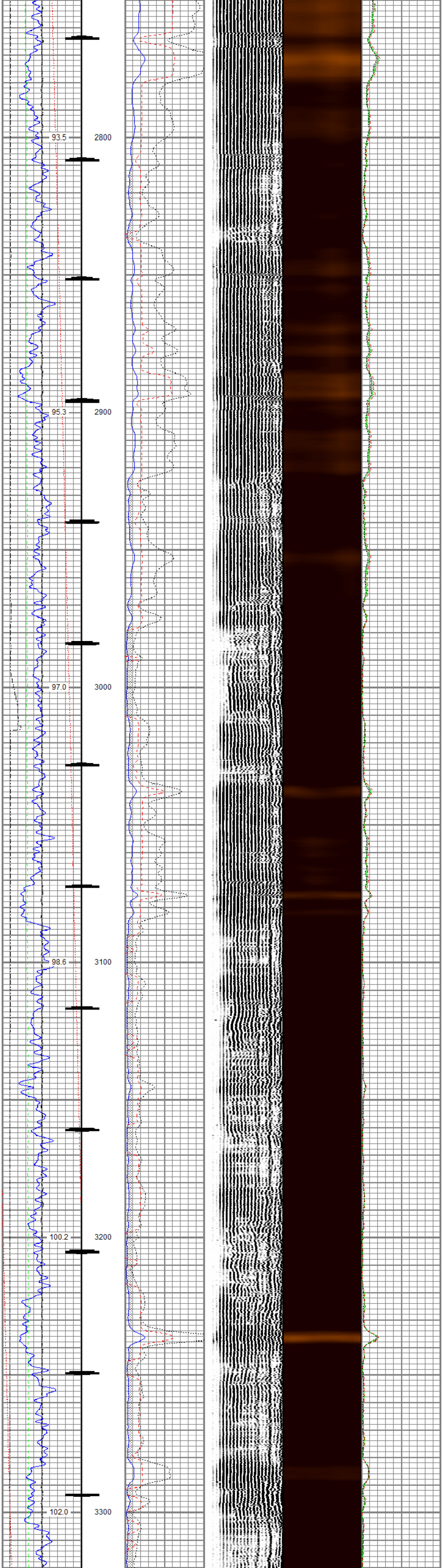


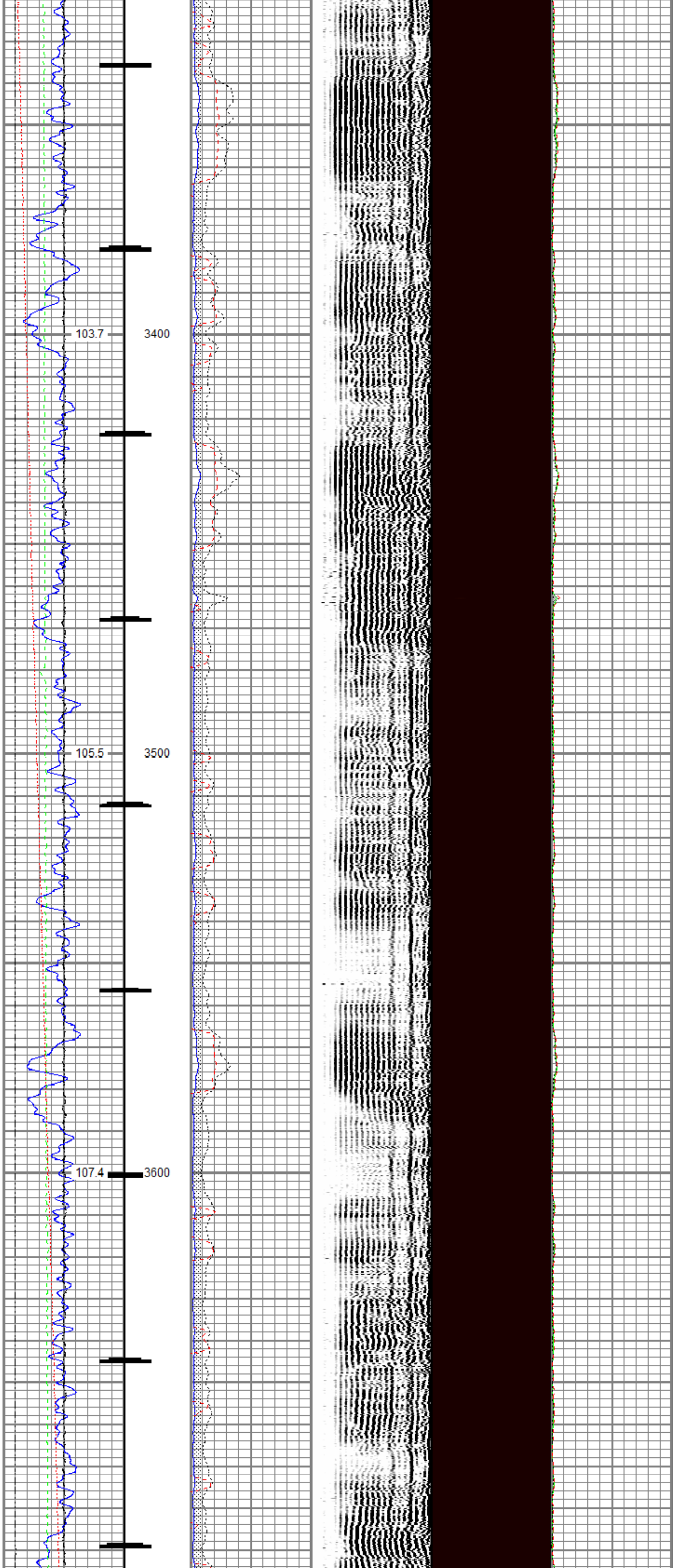


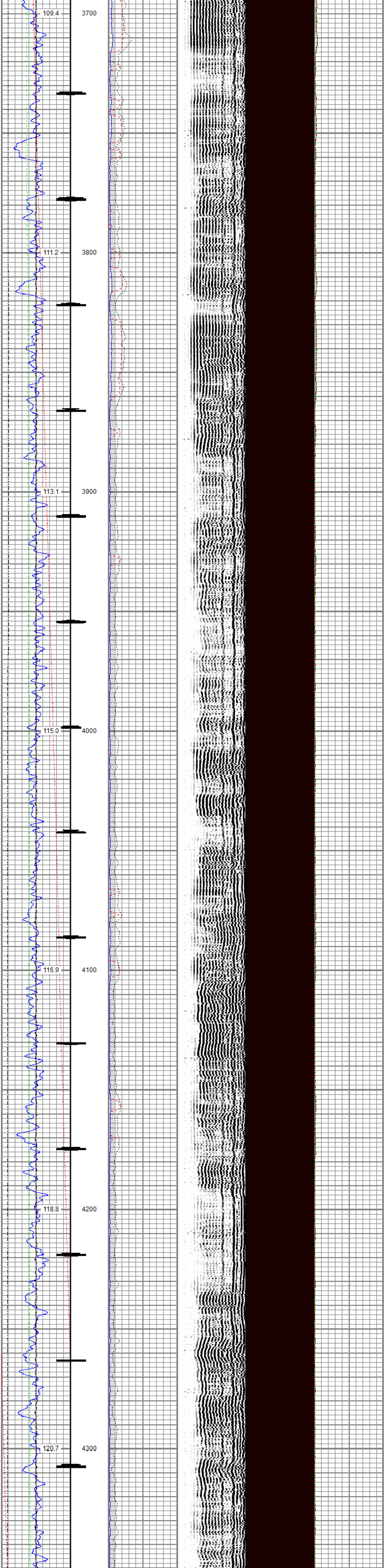


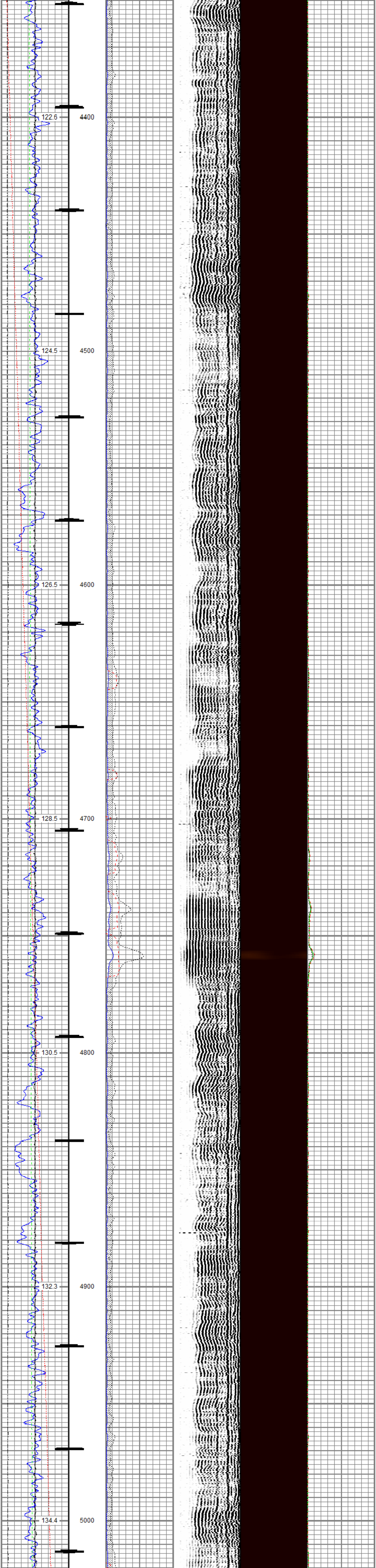


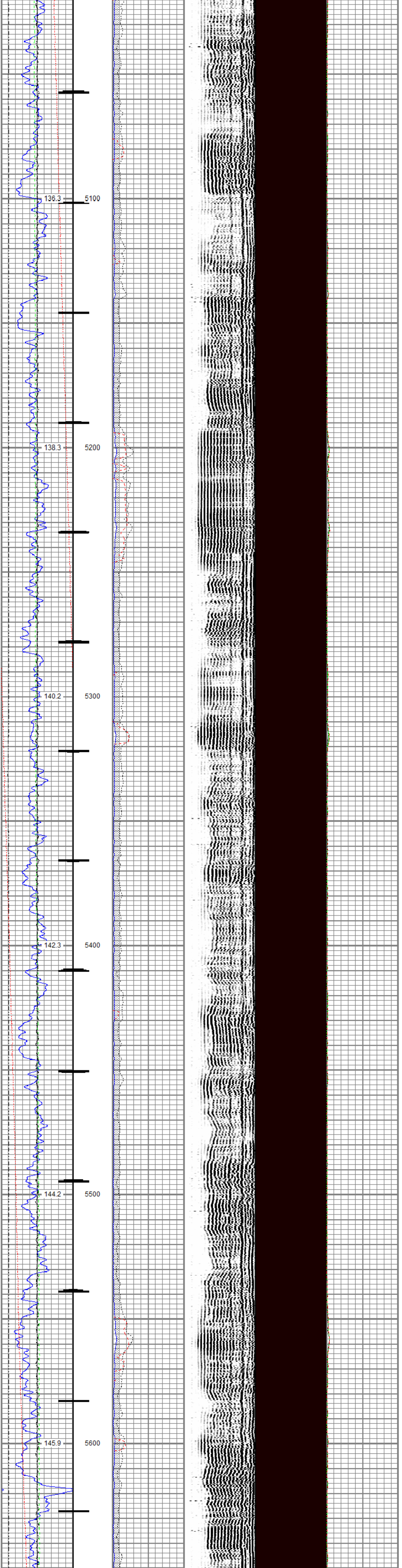


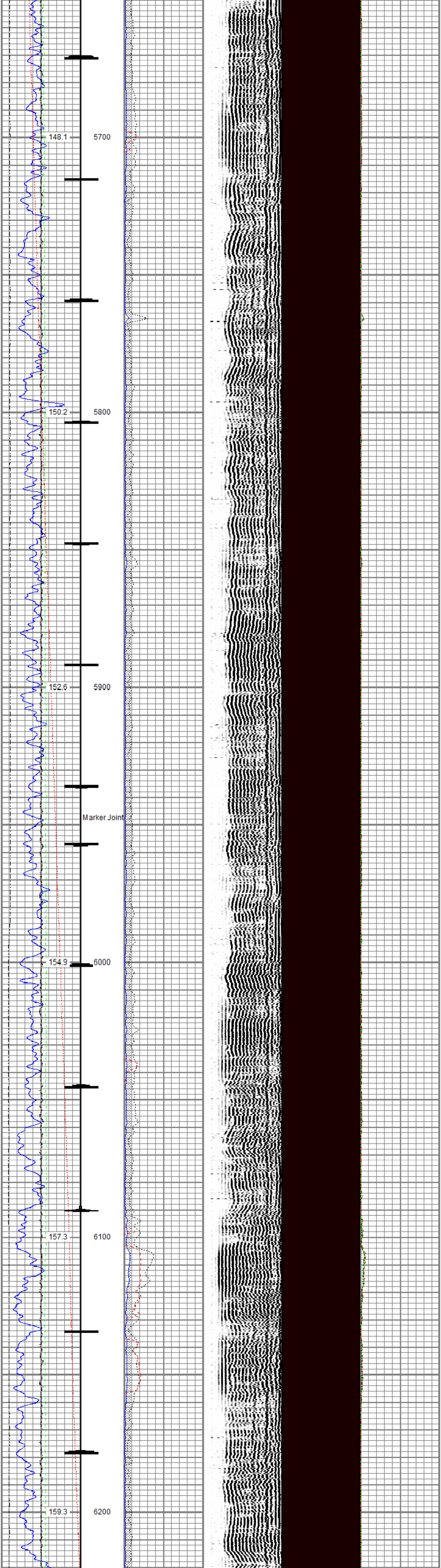


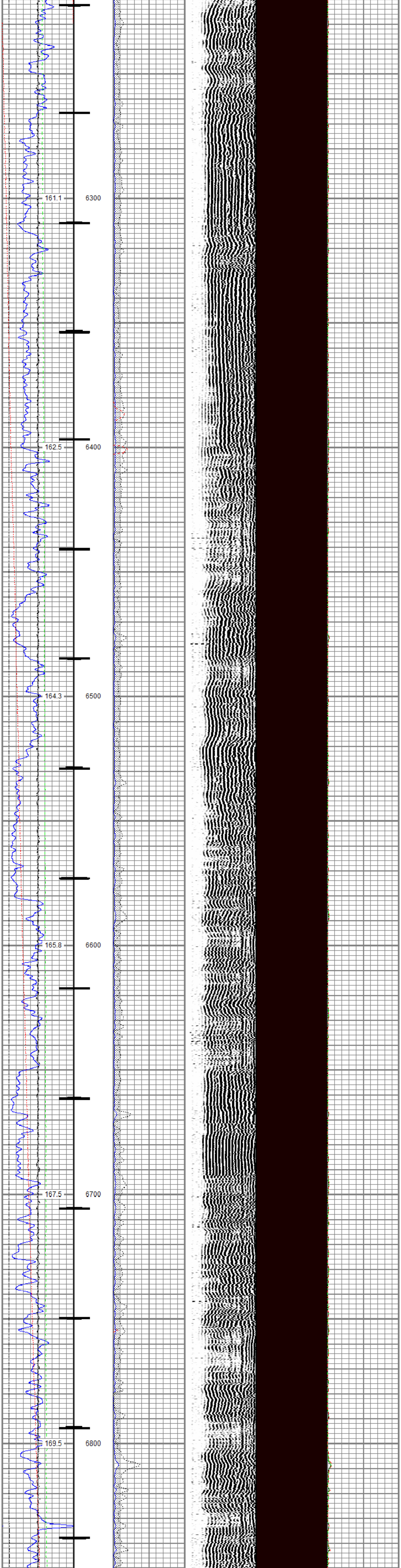


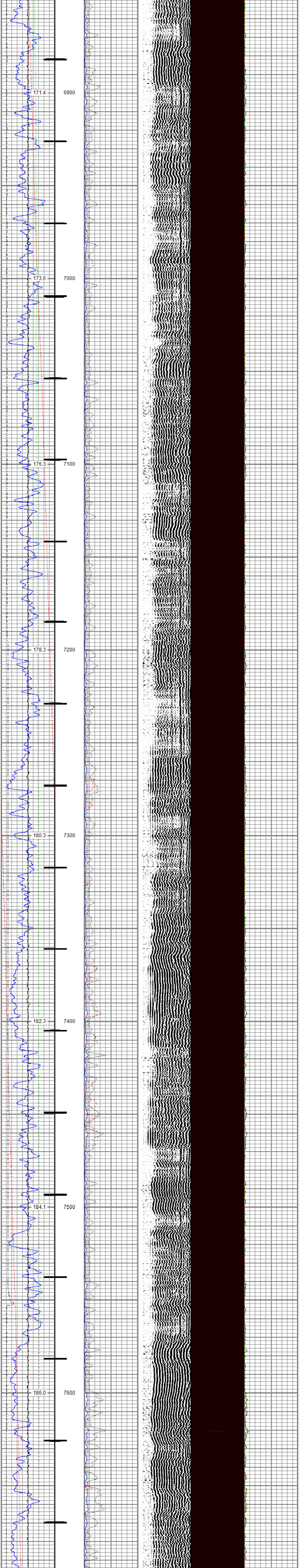

109.4
3700
111.2
3800
113.1
3900
115.0
4000
116.9
4100
118.8
4200
120.7
4300

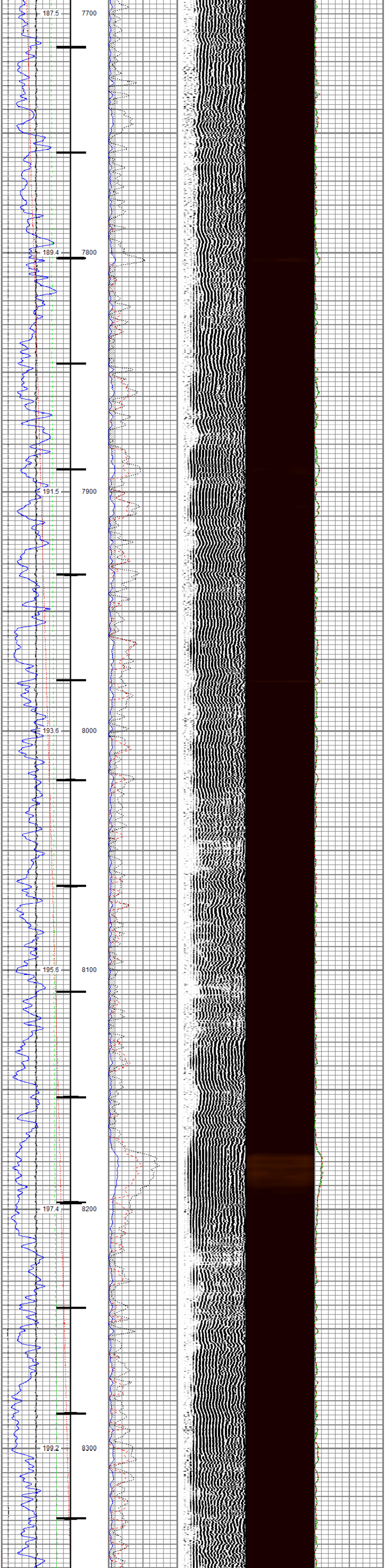

122.6
4400
124.5
4500
126.5
4600
128.5
4700
130.5
4800
132.3
4900
134.4
5000

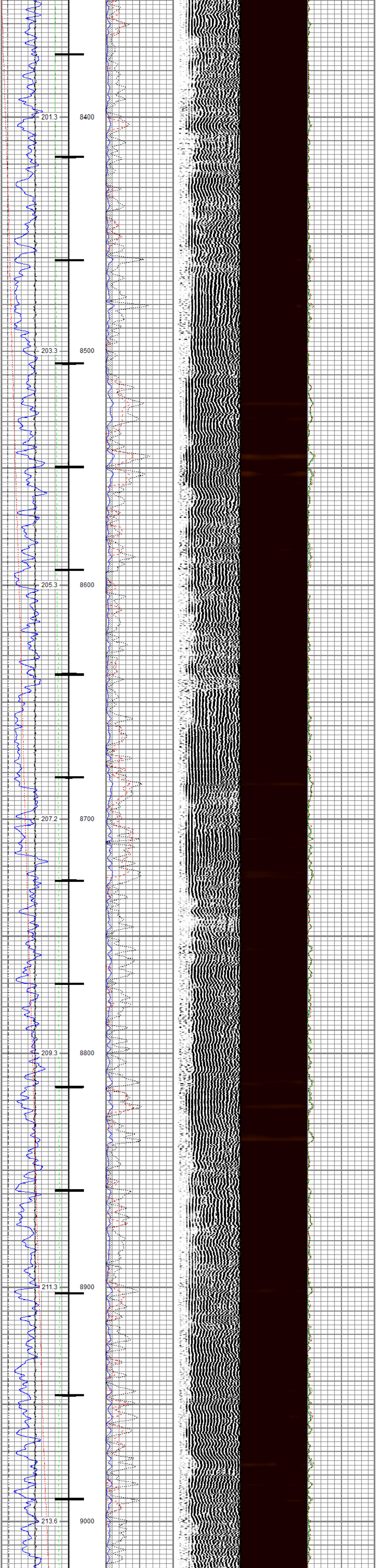

136.3
5100
138.3
5200
140.2
5300
142.3
5400
144.2
5500
145.9
5600

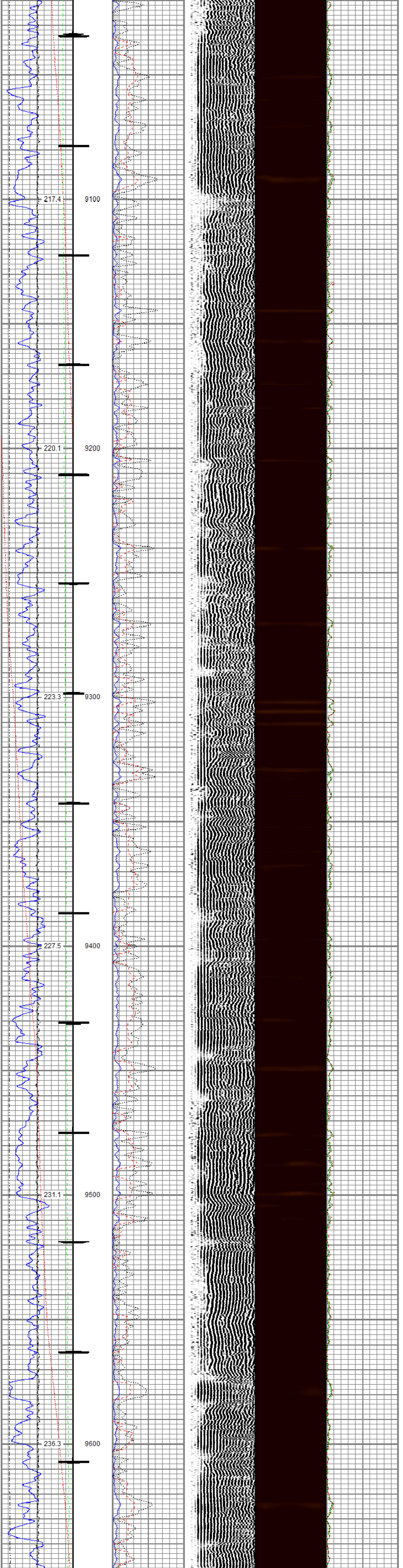

148.1
5700
150.2
5800
152.6
5900
Marker Joint
154.9
6000
157.3
6100
159.3
6200

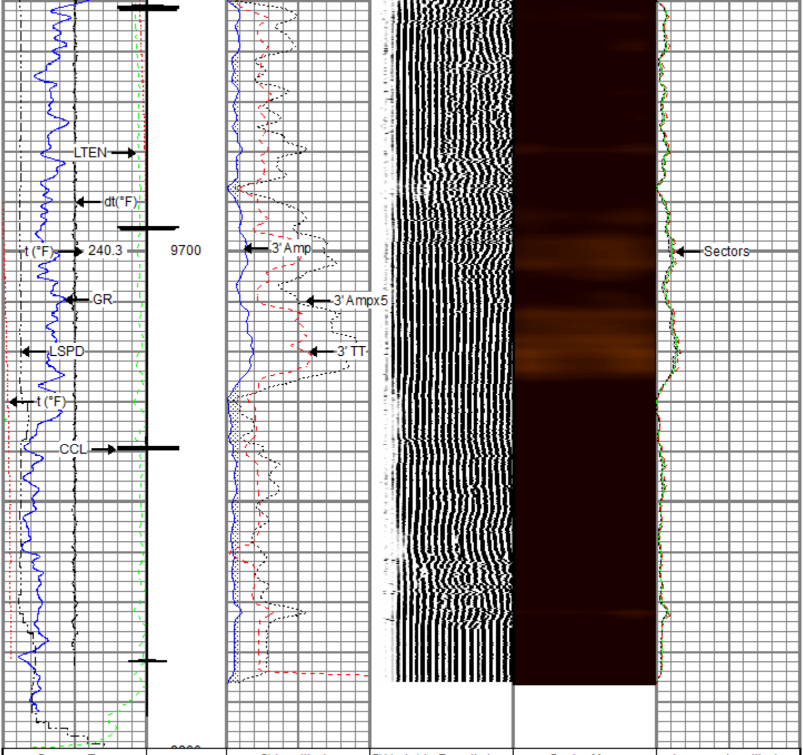

161.1
6300
162.5
6400
164.3
6500
165.8
6600
167.5
6700
169.5
6800


171.4
6900
173.6
7000
176.3
7100
178.3
7200
180.3
7300
182.3
7400
184.1
7500
186.0
7600









Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200		0 (mV) 100	200 (usec) 1200		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					

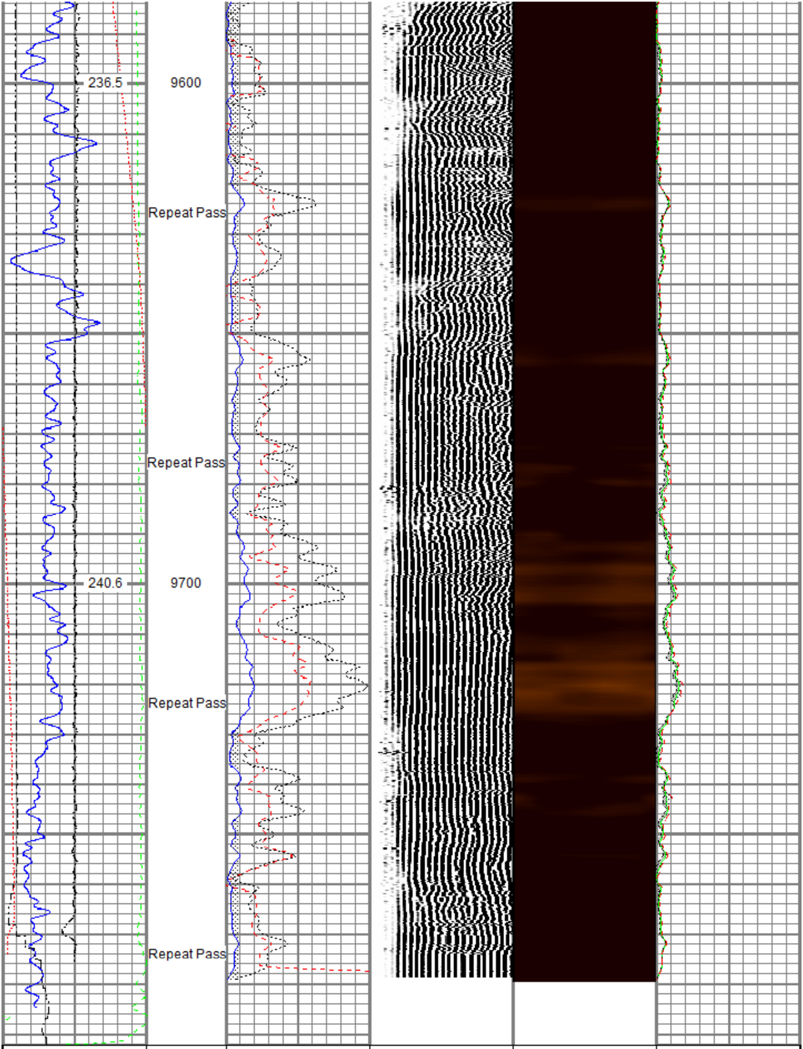
RELIANCE
OILFIELD SERVICES

Repeat Pass

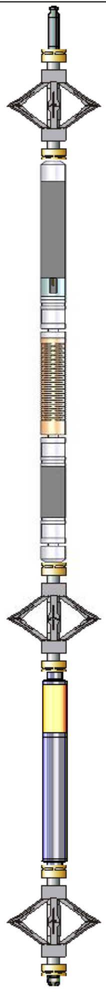
Recorded With 0 PSI Surface Induced Pressure

Database File	tep_clough nr 334-3_rbl_01-14-19\tep_clough nr 334-3_rbl_01-14-19.db
Dataset Pathname	repeat
Presentation Format	ros_rbt004_tep
Dataset Creation	Mon Jan 14 22:31:56 2019
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 (usec) 1200		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 (usec) 1200		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 (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:	TEP_Clough NR 334-3_RBL_01-14-19.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 334-3_RBL_01-14-19\TEP_Clough NR 334-3_RBL_01-14-1
Dataset Pathname	main
Dataset Creation	Mon Jan 14 22:34:51 2019

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:	28.761	ft

Master Calibration, performed Mon Jan 14 22:00:59 2019:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.004	0.796	0.800	81.196	100.483	1.221
CAL	0.775	0.777				
5'	-0.002	0.769	0.800	81.196	104.218	1.033
SUM						
S1	-0.004	0.765	0.000	100.000	130.073	0.497
S2	-0.004	0.769	0.000	100.000	129.409	0.458
S3	-0.004	0.762	0.000	100.000	130.533	0.504
S4	-0.004	0.786	0.000	100.000	126.547	0.514
S5	-0.004	0.781	0.000	100.000	127.452	0.451
S6	-0.004	0.778	0.000	100.000	127.984	0.492
S7	-0.004	0.753	0.000	100.000	132.187	0.520
S8	-0.004	0.797	0.000	100.000	124.760	0.509

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.775	0.777	1.000	0.000

Air Zero Calibration, performed Mon Jan 14 22:01:18 2019:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.004	0.000	-0.000
5'	-0.002	0.000	-0.001
SUM			
S1	-0.004	0.000	0.000
S2	-0.004	0.000	0.000
S3	-0.004	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	-0.004	0.000	0.000
S8	-0.004	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

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Clough NR 334-3
Field	Rulison
County	Garfield
State	Colorado