RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Clough NR 443-3
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Clough NR 443-3
Field Rulison
County Garfield State Colorado

Location: API # : 05-045-23919
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	10578 FT		
Depth Logger	10472 FT		
Bottom Logged Interval	10458 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	243°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	18:35		
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	1127 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10522 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 6180 - 6194 FT
Log ran from 10458 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

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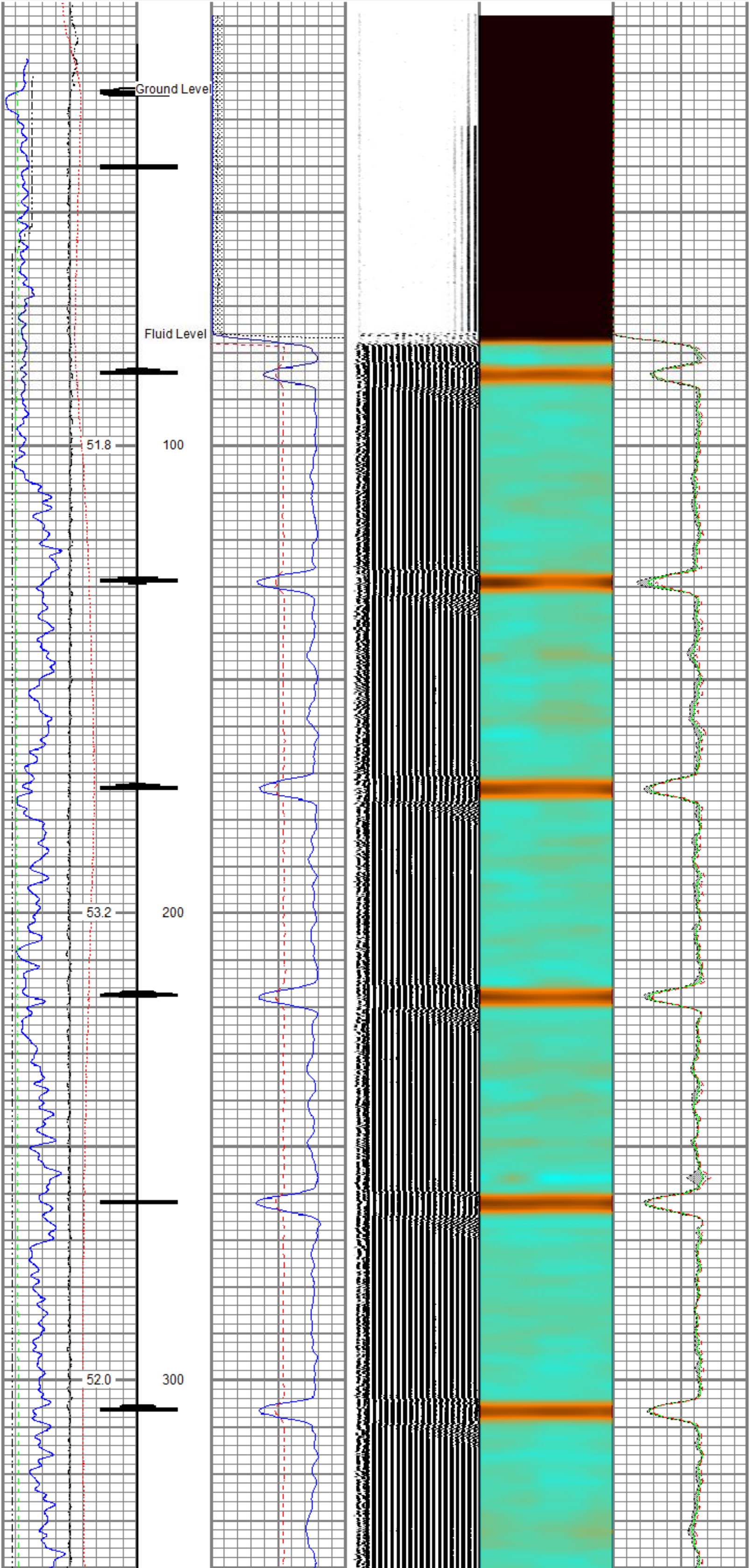
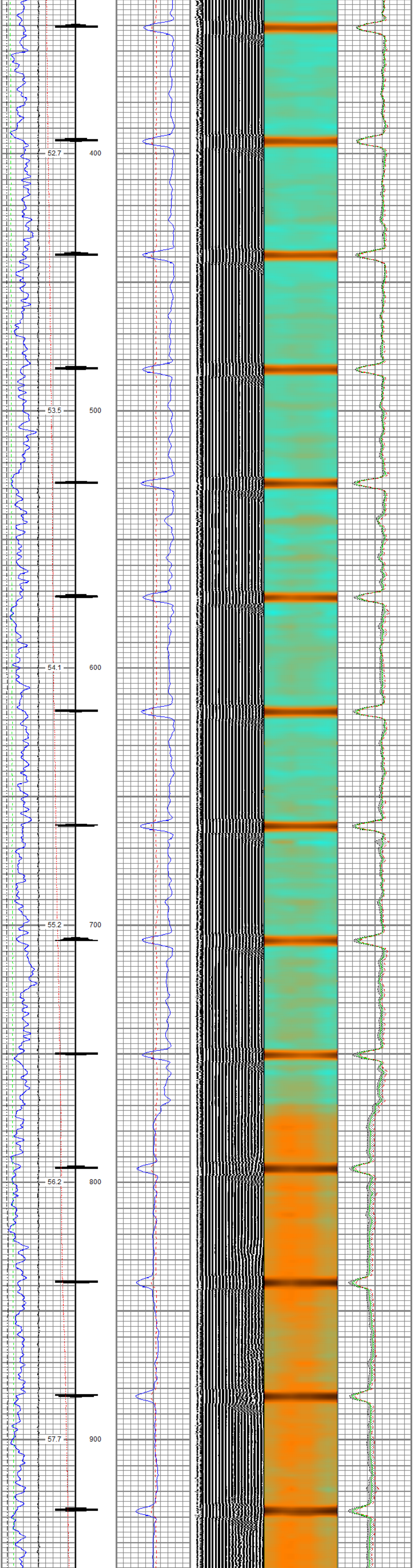
Main Pass

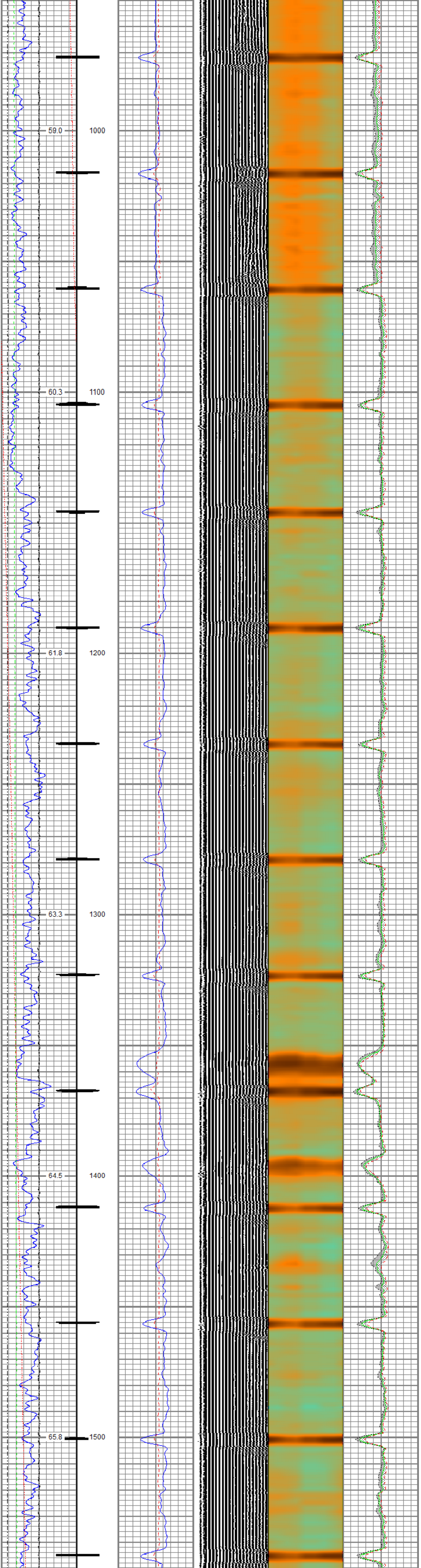
Recorded With 0 PSI Surface Induced Pressure

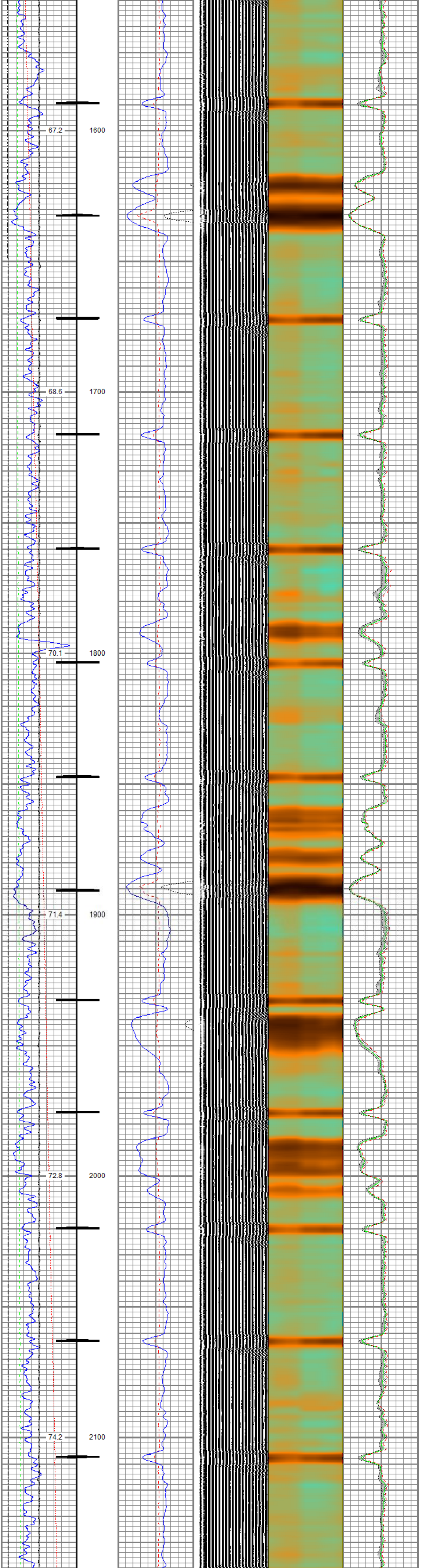
Database File	tep_clough nr 443-3_rbl_11-26-18\processed_tep_clough nr 443-3_rbl_11-26-18.db
Dataset Pathname	Main.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Nov 28 16:35:00 2018
Charted by	Depth in Feet scaled 1:240

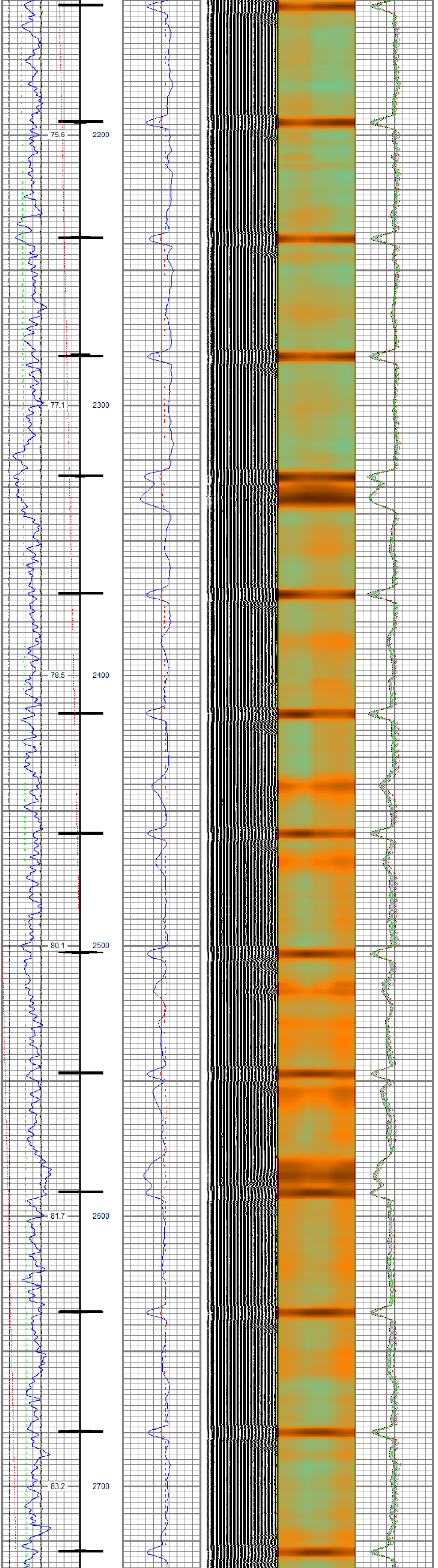
Curve	Left	Unit	Right
Gamma Ray	0	(GAPI)	200
Casing Collar Locator			
Line Speed	-150	(ft/min)	150
Line Tension	0	(lb)	2000
Differential Temperature	-2	(degF)	2
Temperature	0	(degF)	20
3' Amplitude	0	(mV)	100
3' Amplitude x 5	0	(mV)	20
3' Travel Time	300	(usec)	200
5' Variable Density Log	200		1200
Sector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

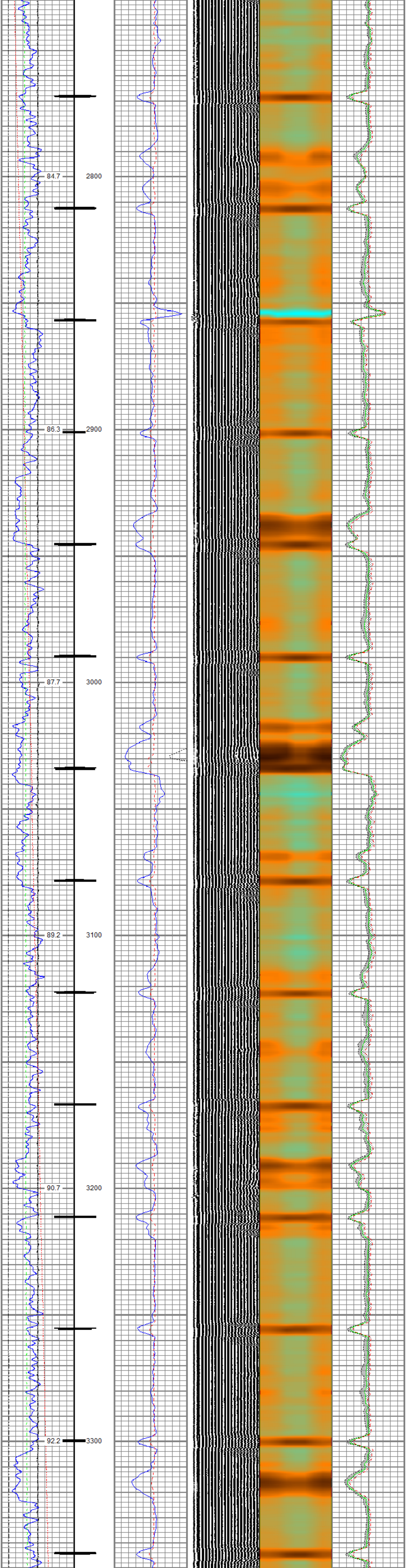


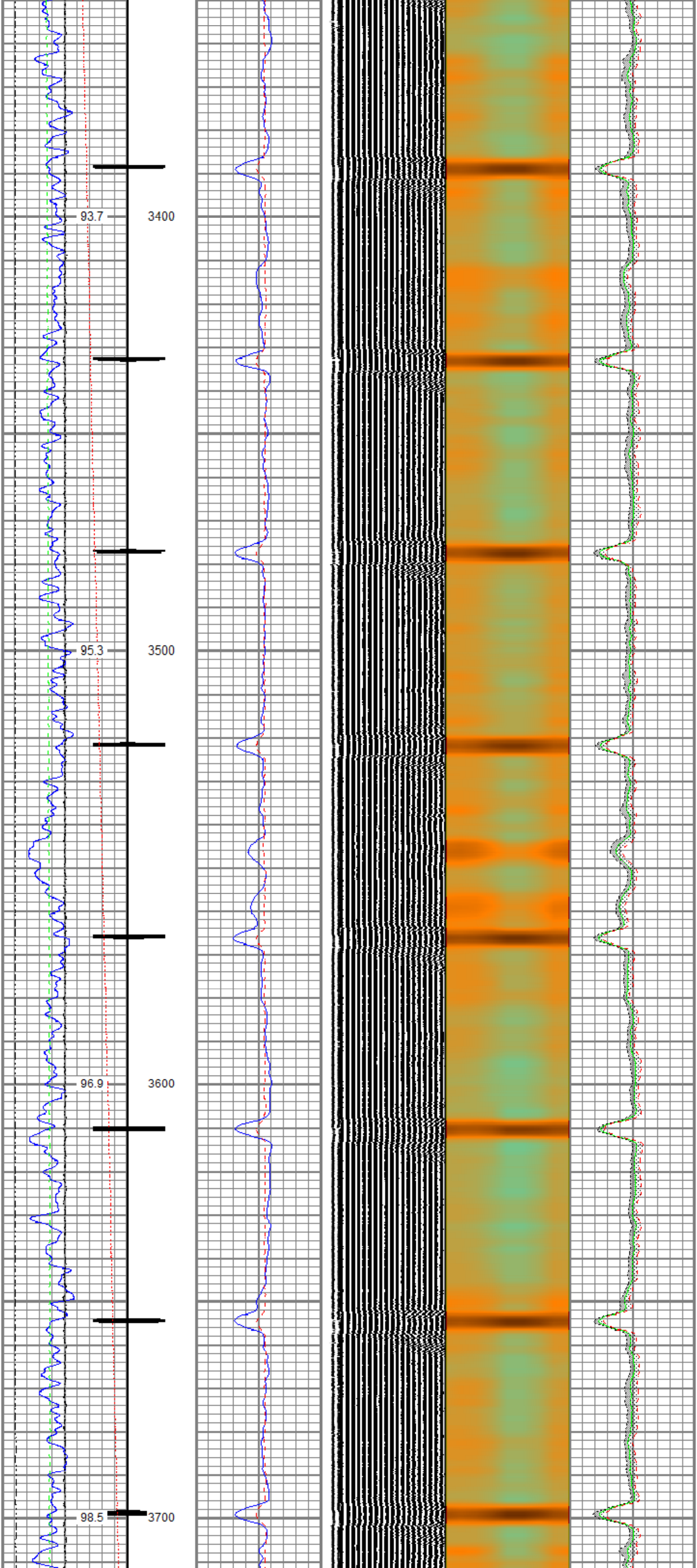


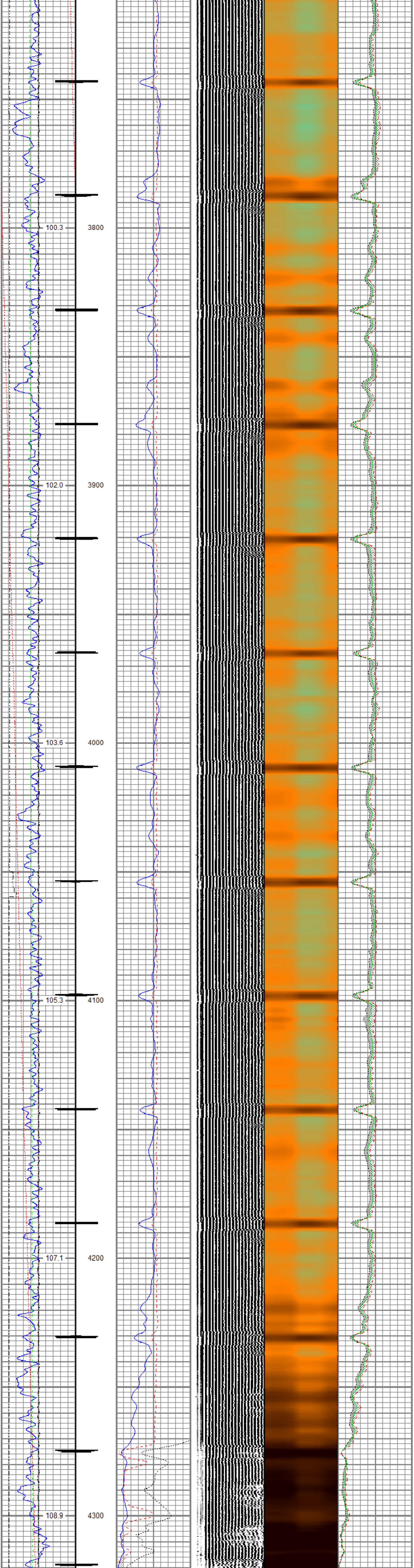








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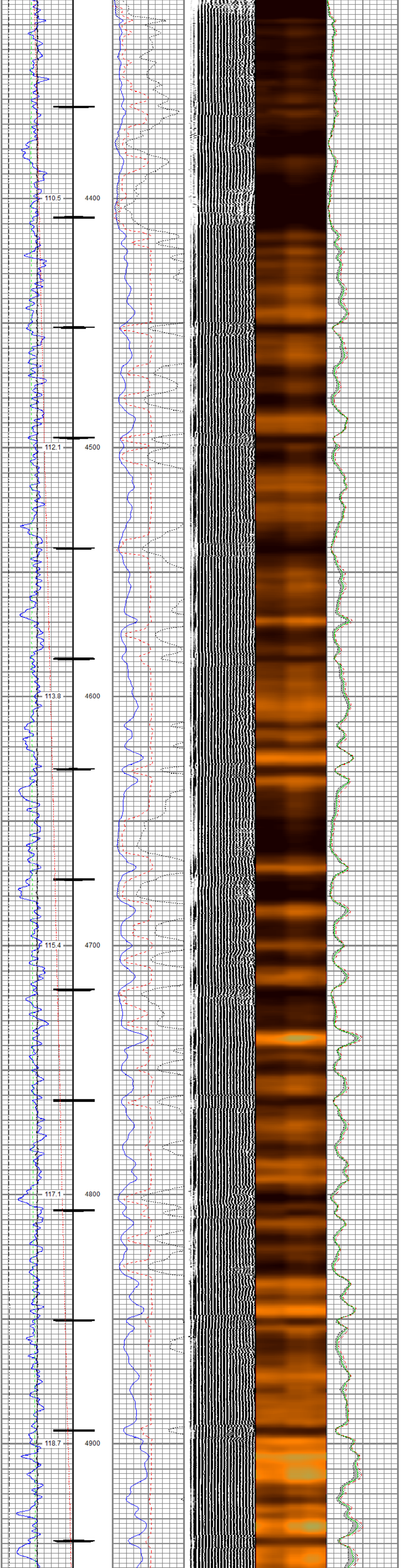
3900
103.6
4000
105.3
4100
107.1
4200
108.9
4300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112.1
4500
113.8
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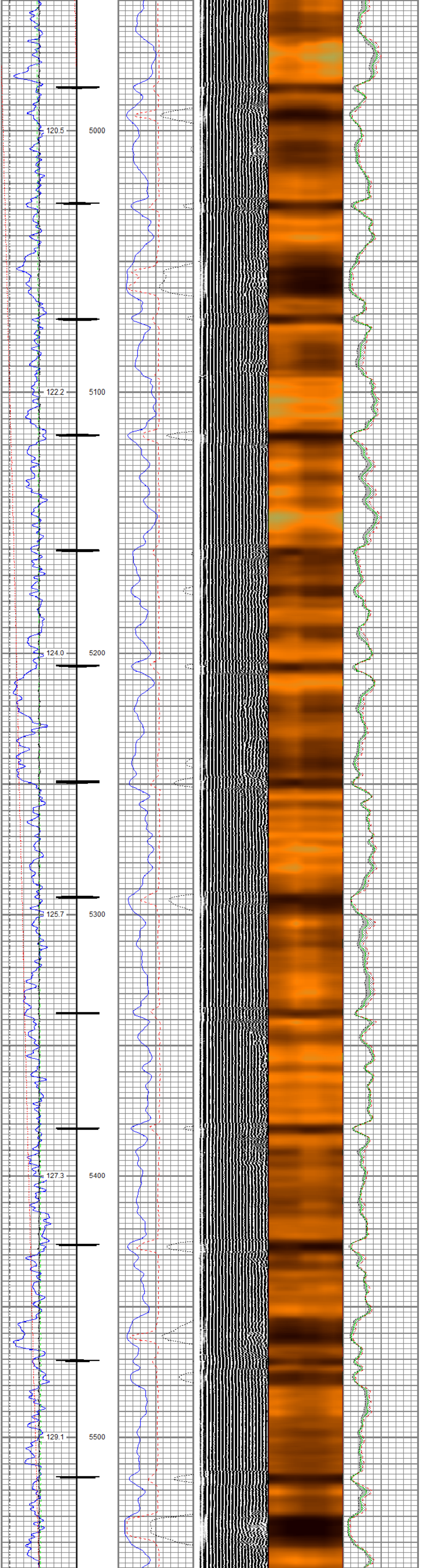
115.4
4700
117.1
4800
118.7
4900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5100
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125.7
5300
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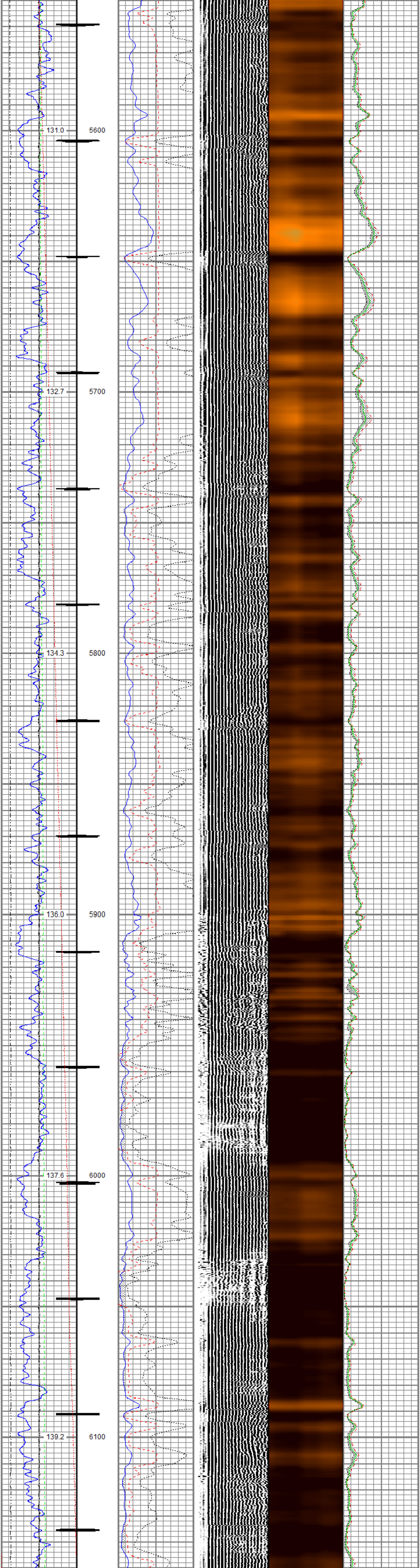
5400
129.1
5500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134.3
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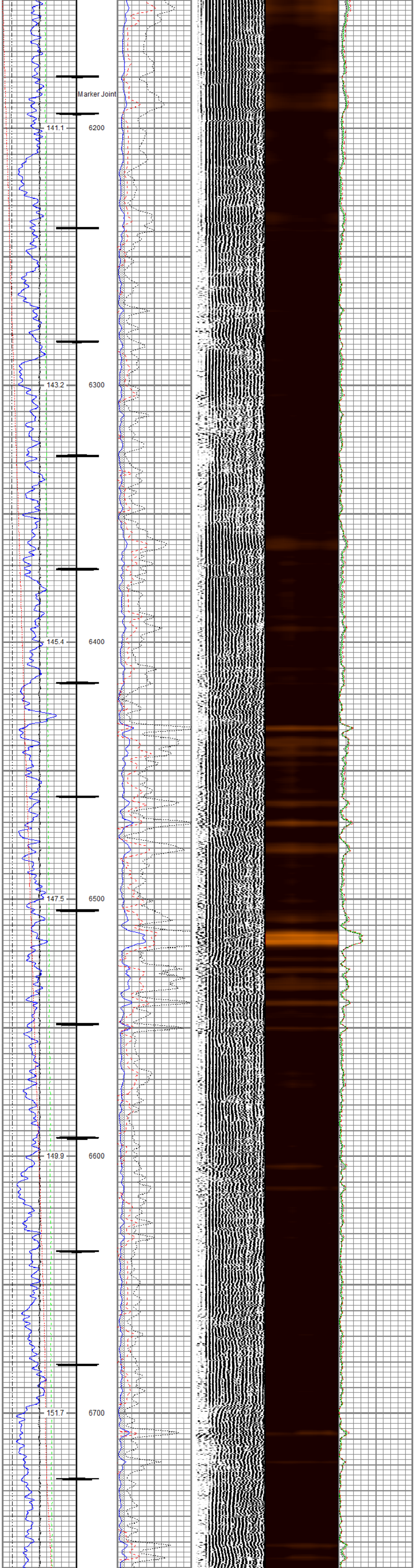
6000
139.2
6100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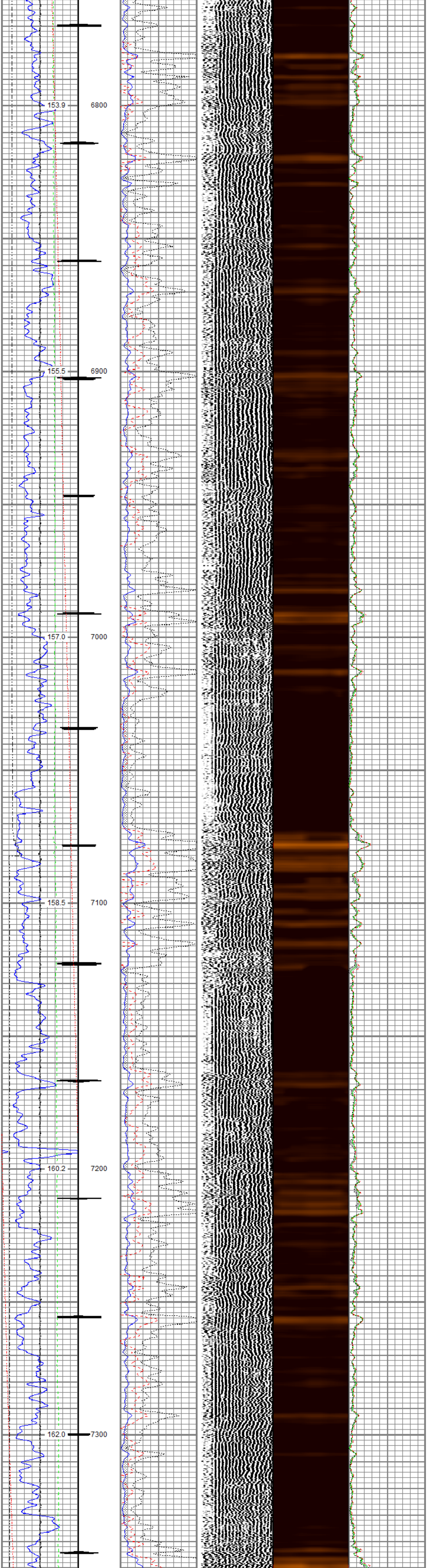
6600
151.7
6700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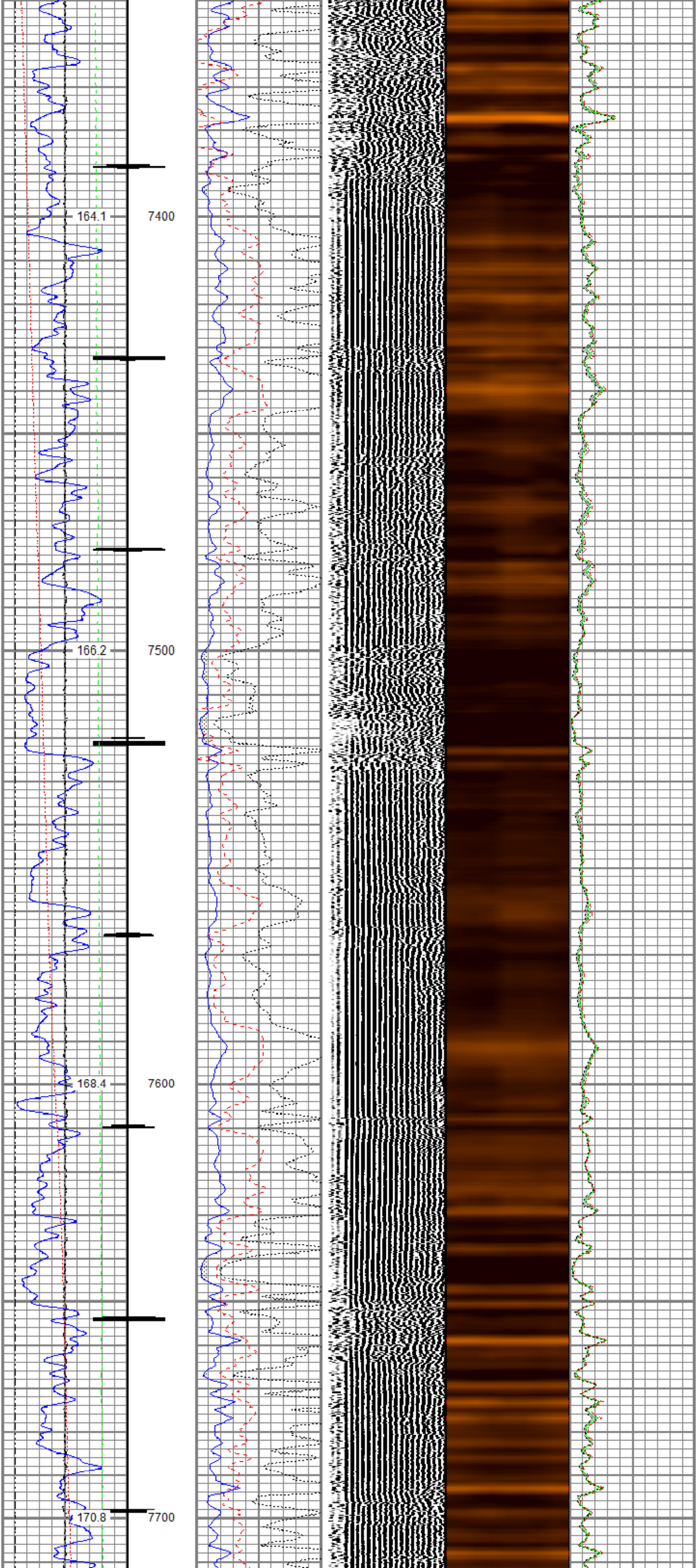
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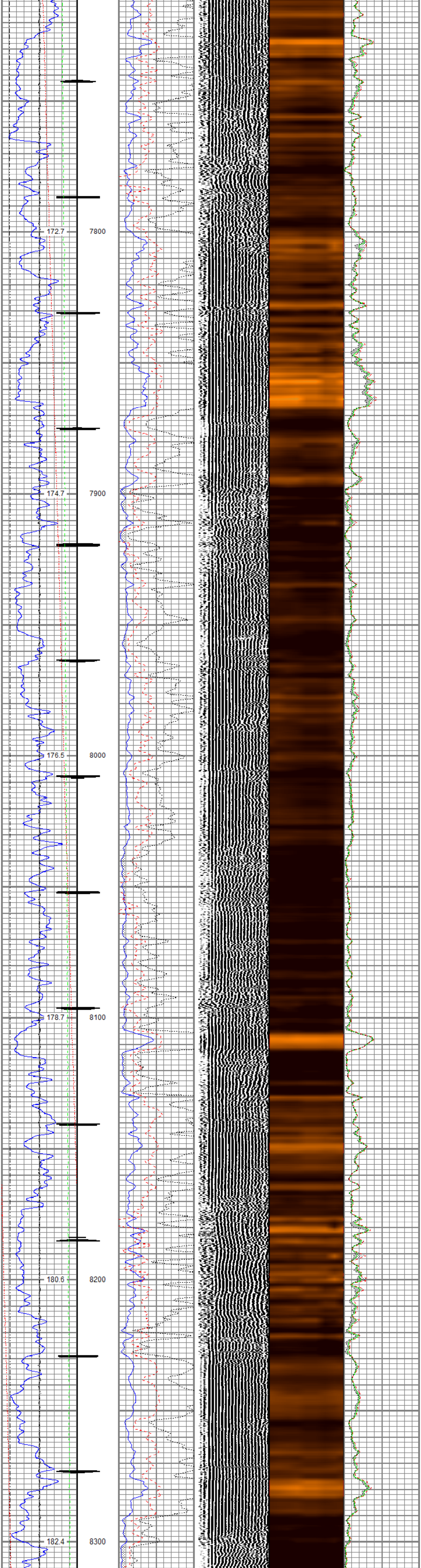

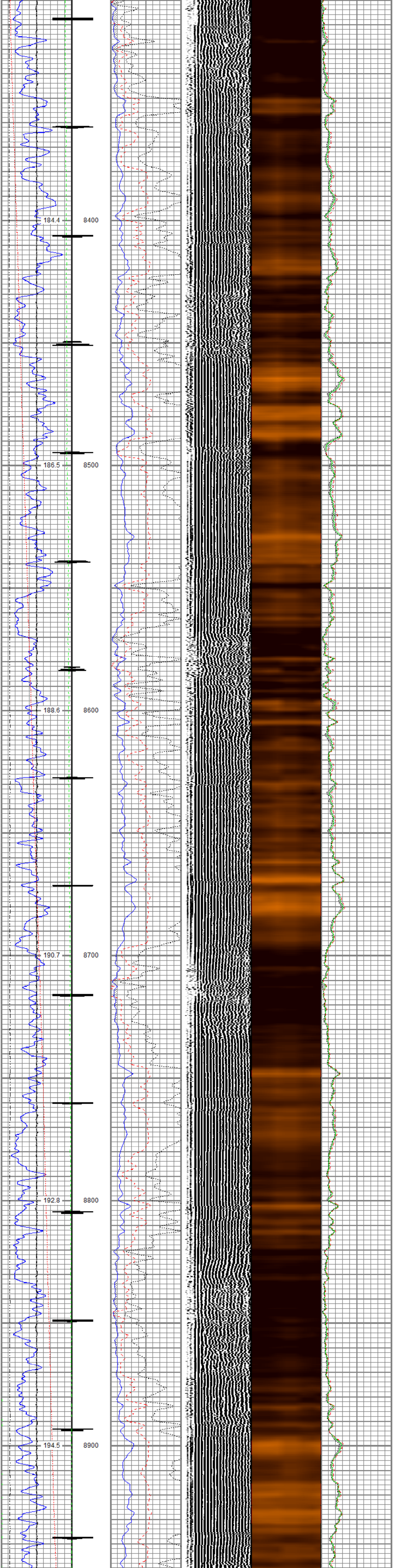

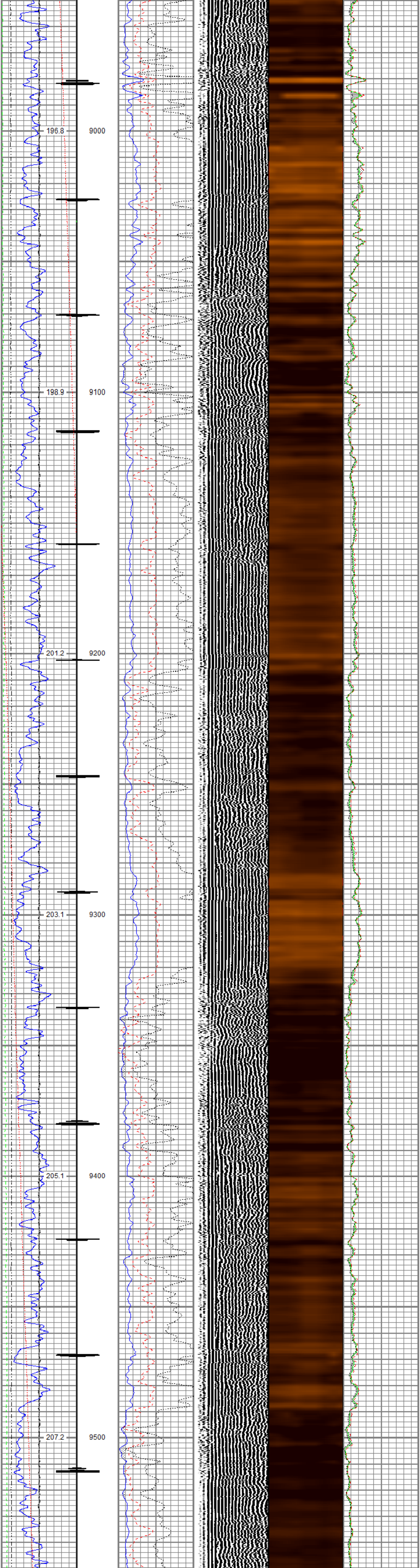

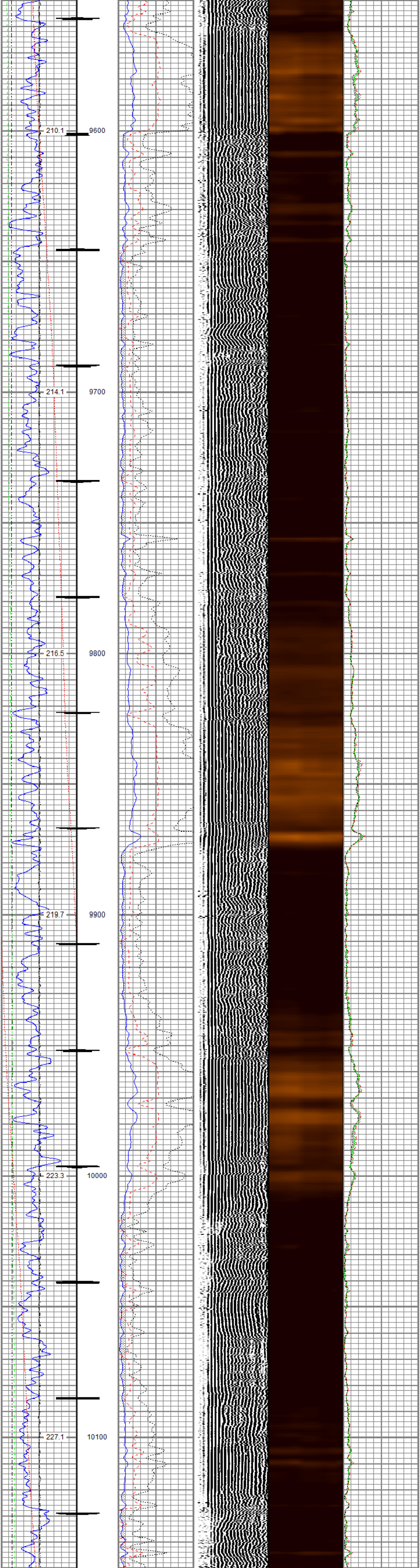

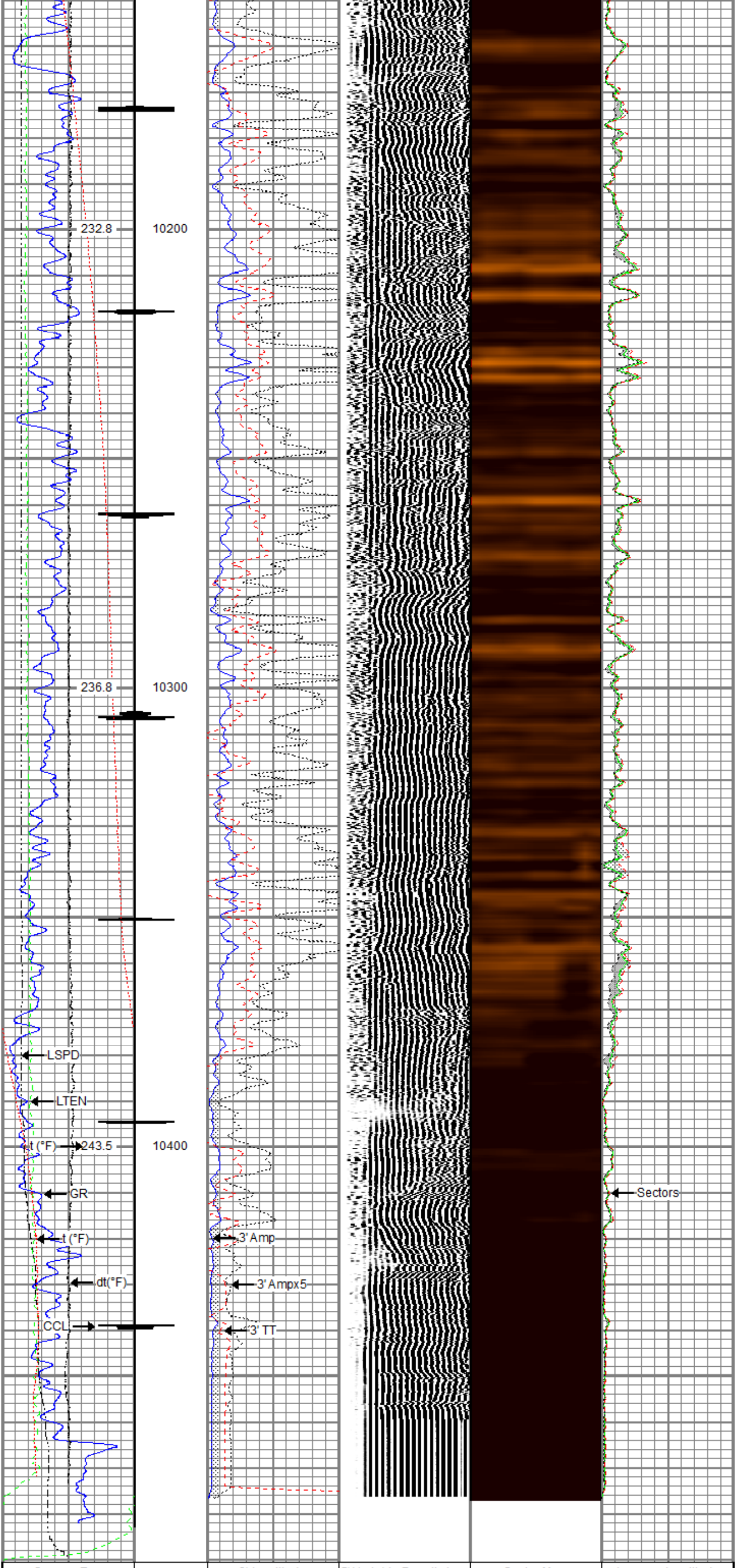

Gamma Ray 0 (GAPI) 200 *Casing Collar Locator* Line Speed -150 (ft/min) 150 Line Tension 0 (lb) 2000 Differential Temperature -2 (degF) 2 Temperature 0 (degF) 20	3' Amplitude 0 (mV) 100 3' Amplitude x 5 0 (mV) 20 3' Travel Time 300 (usec) 200	5' Variable Density Log 200 1200	Sector Map 10 110	Average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

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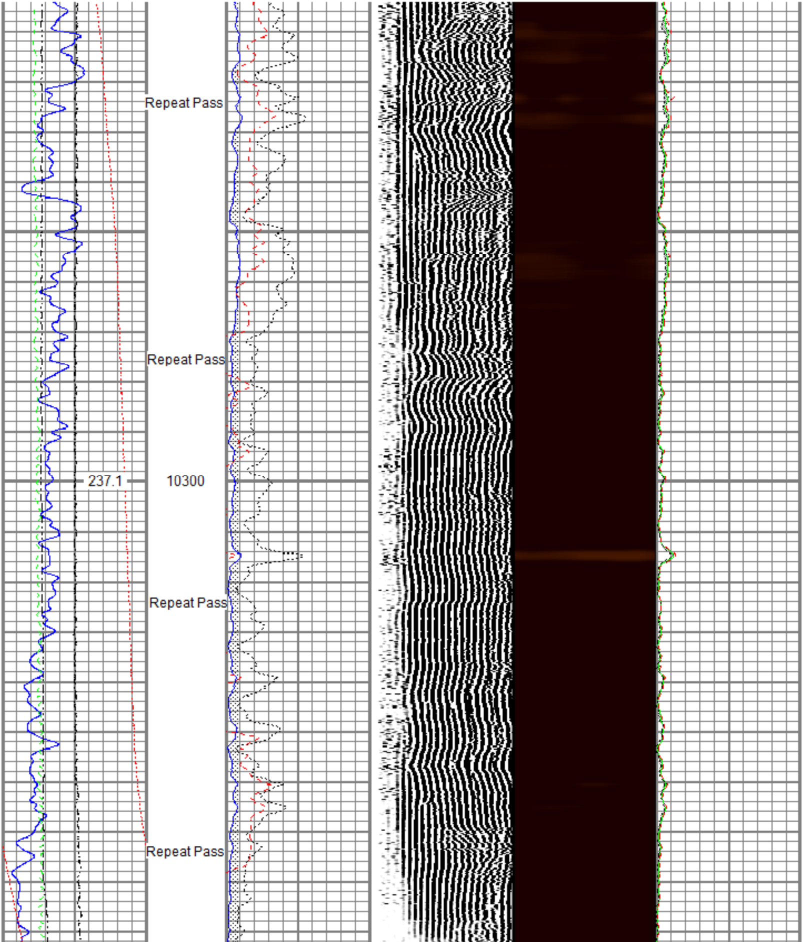
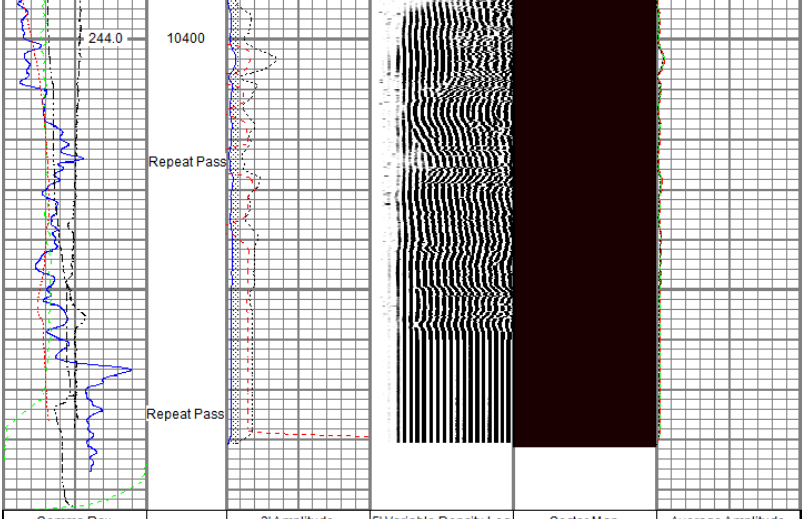
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

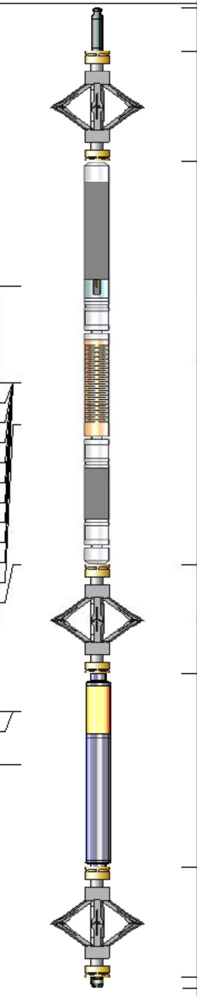
Database File	tep_clough nr 443-3_rbl_11-26-18\processed_tep_clough nr 443-3_rbl_11-26-18.db
Dataset Pathname	Repeat.3
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Nov 28 16:41:39 2018
Charted by	Depth in Feet scaled 1:240

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	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 443-3_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 443-3_rbl_11-26-18\processed_tep_clough nr 443-3_rbl_11-26-1
Dataset Pathname Main.2
Dataset Creation Wed Nov 28 16:35:00 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: 30.803 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.002	0.846	0.800	81.196	94.783	1.008
CAL	0.742	0.742				
5'	0.000	0.743	0.800	81.196	108.269	0.768
SUM						
S1	-0.007	0.826	0.000	100.000	119.981	0.888
S2	-0.004	0.856	0.000	100.000	116.293	0.449
S3	-0.004	0.927	0.000	100.000	107.432	0.418
S4	-0.003	1.026	0.000	100.000	97.181	0.337
S5	-0.004	0.986	0.000	100.000	101.029	0.405
S6	-0.004	0.986	0.000	100.000	101.029	0.405
S7	-0.005	0.920	0.000	100.000	108.170	0.525
S8	-0.005	0.871	0.000	100.000	114.166	0.572

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.742	0.742	1.000	0.000

Air Zero Calibration, performed Mon Nov 26 15:32:25 2018:

	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: 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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Company	TEP Rocky Mountain LLC
Well	Clough NR 443-3
Field	Rulison
County	Garfield
State	Colorado