Company	TEP Rocky Mountain LLC
Well	Federal RWF 511-17
Field	Rulison
County	Garfield
State	Colorado

RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal RWF 511-17
Field Rulison
County Garfield State Colorado

Location: API # : 05-045-24037
SEC 17 TWP 6S RGE 94W

Other Services
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Permanent Datum	Ground Level	Elevation	6175'	Elevation
Log Measured From	Kelly Bushing	24 FT		K.B. 6199' D.F. -- G.L. 6175'
Drilling Measured From	Kelly Bushing			

Date	24-JUN-2019		
Run Number	One		
Depth Driller	8945 FT		
Depth Logger	8869 FT		
Bottom Logged Interval	8855 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Fresh Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	238°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	03:30		
Equipment Number	HD-0331		
Location	Grand Junction, CO		
Recorded By	A. Ellsworth		
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	1136 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	8901 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 4889-4911 FT
Log ran with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!!

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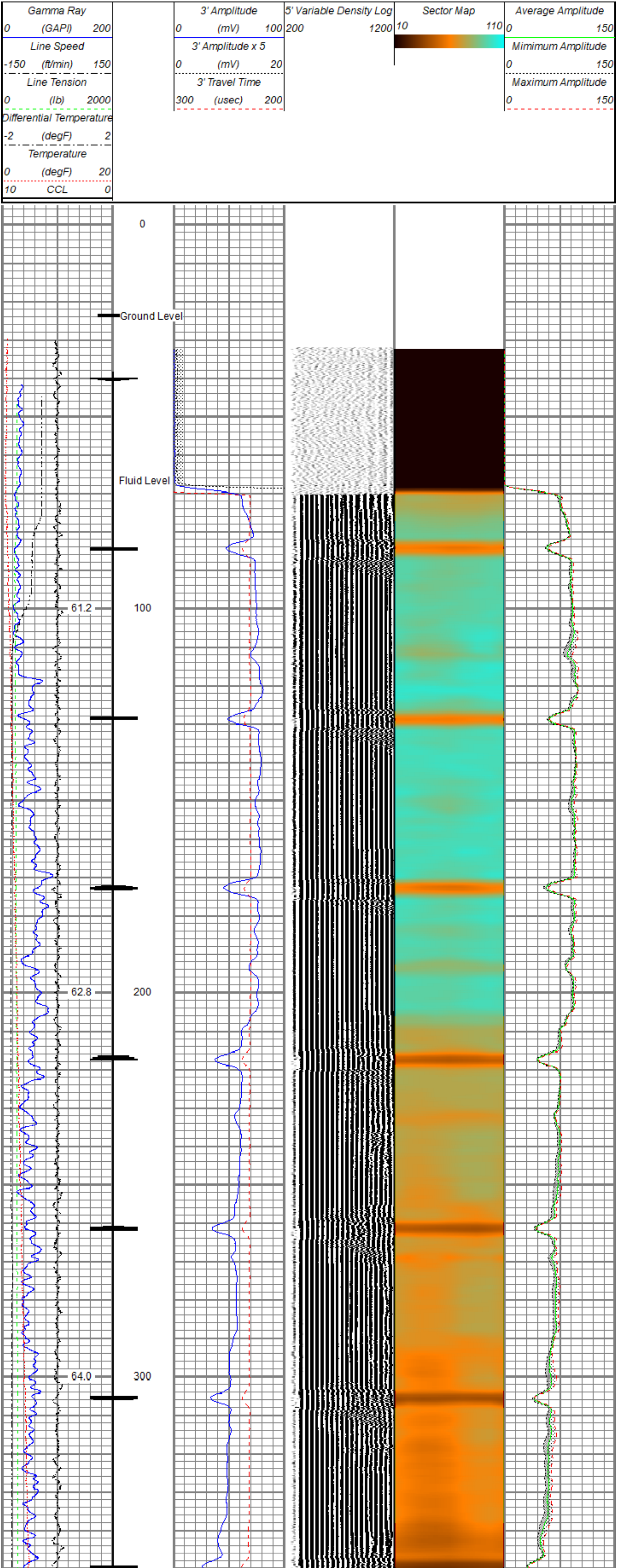
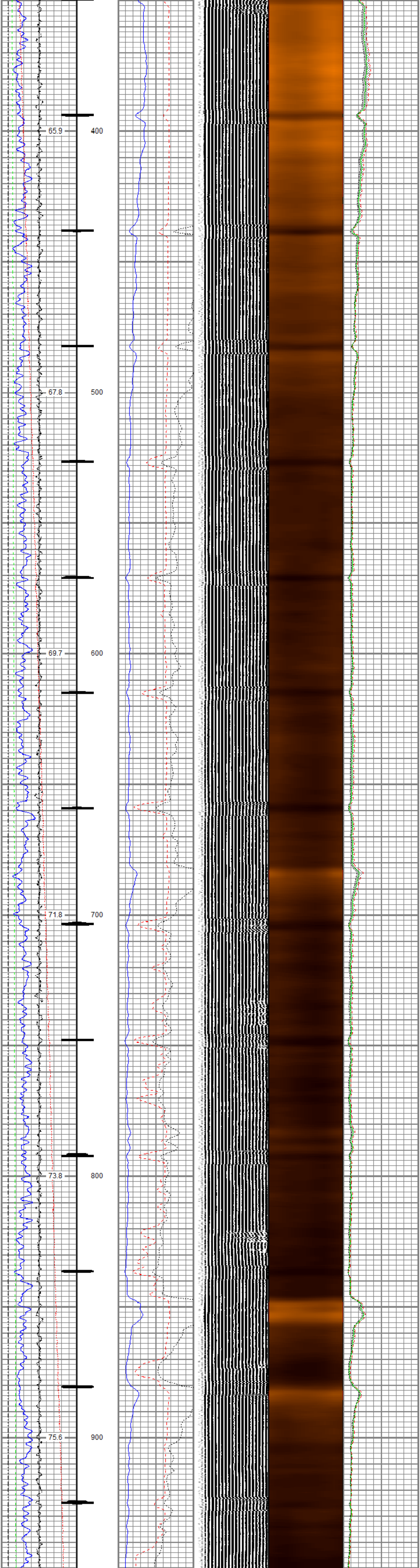
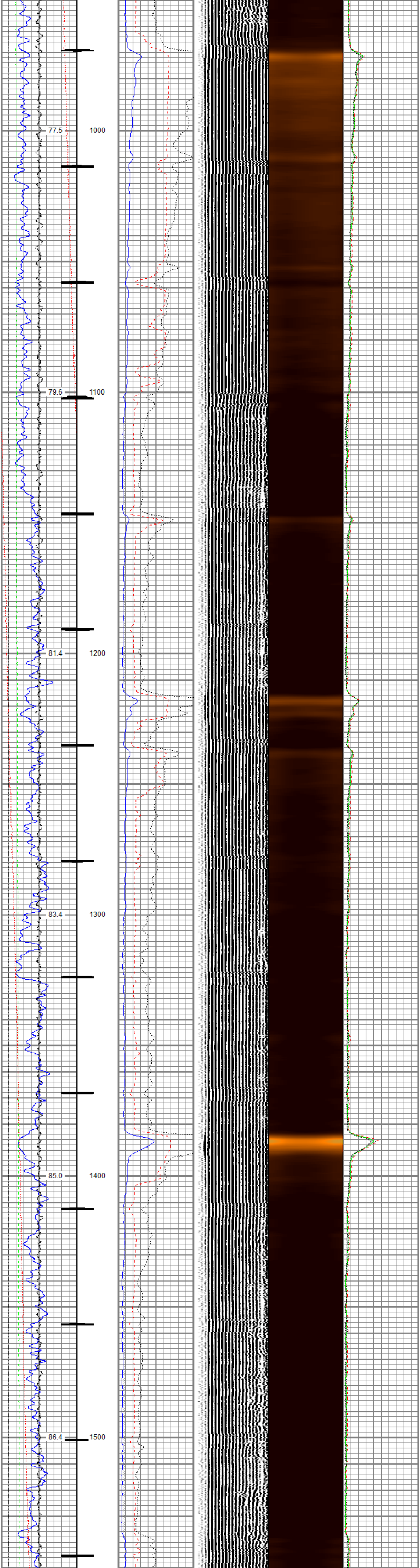
Main Pass

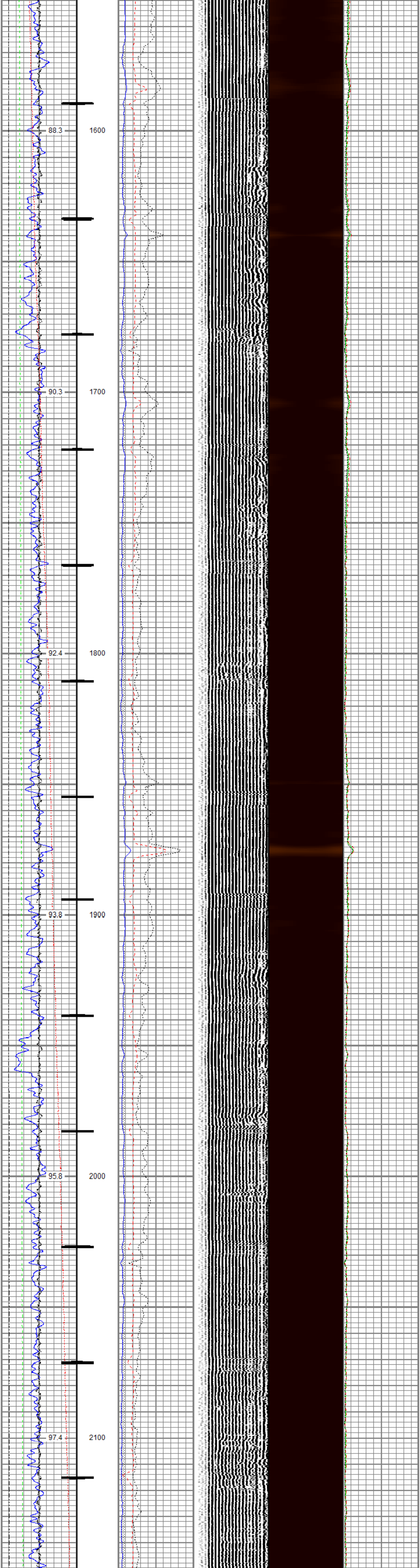
Recorded With 0 PSI Surface Induced Pressure

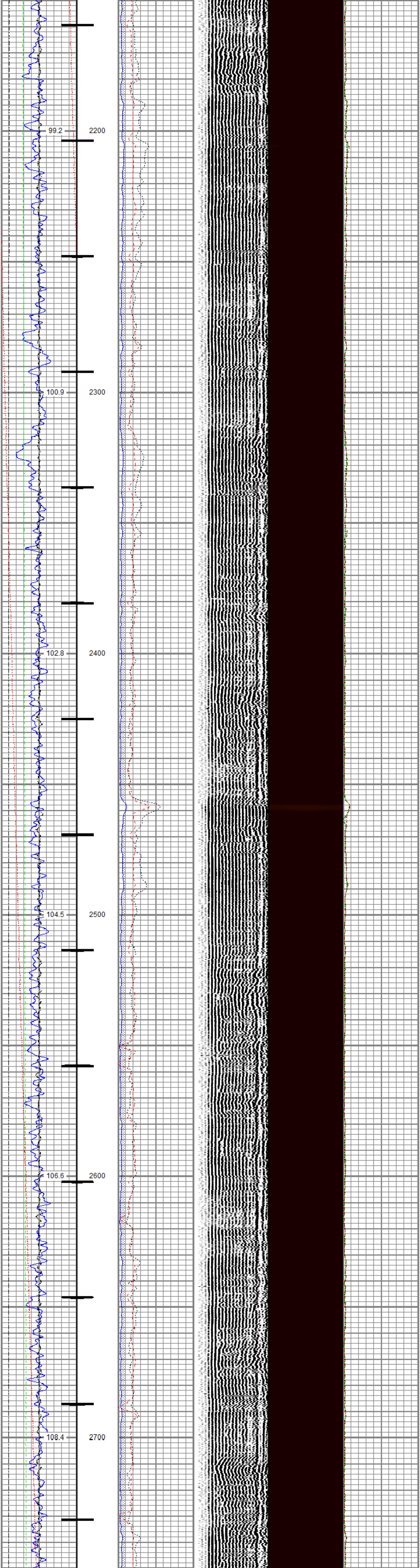
Database File	tep\tep_federal rwf 511-17_rbl_06-24-19\processed_tep_federal rwf 511-17_rbl_06-24-19.db
Dataset Pathname	main.6
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Jun 25 21:52:28 2019
Charted by	Depth in Feet scaled 1:240

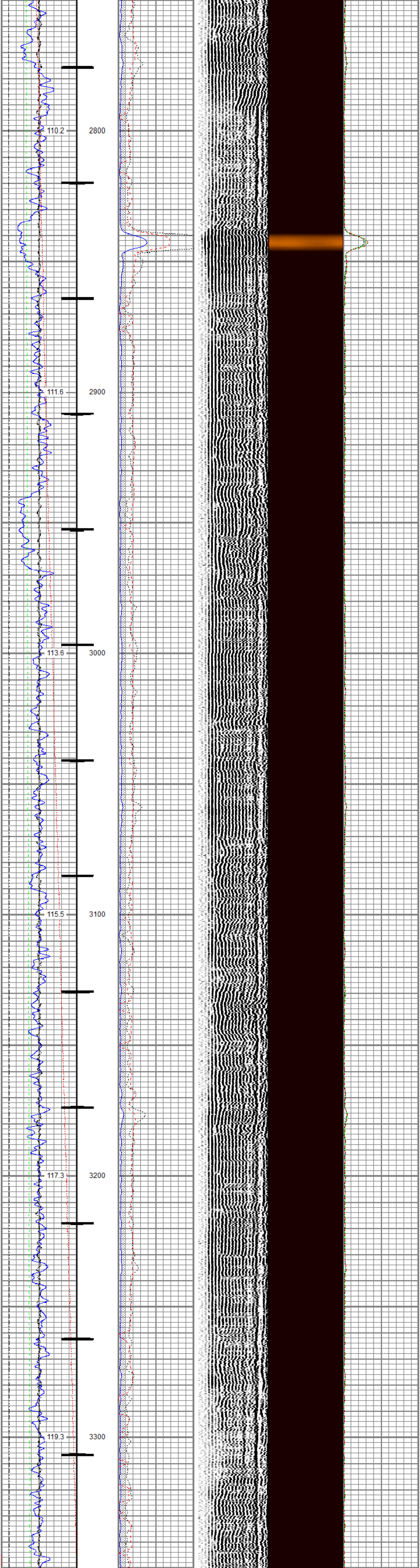


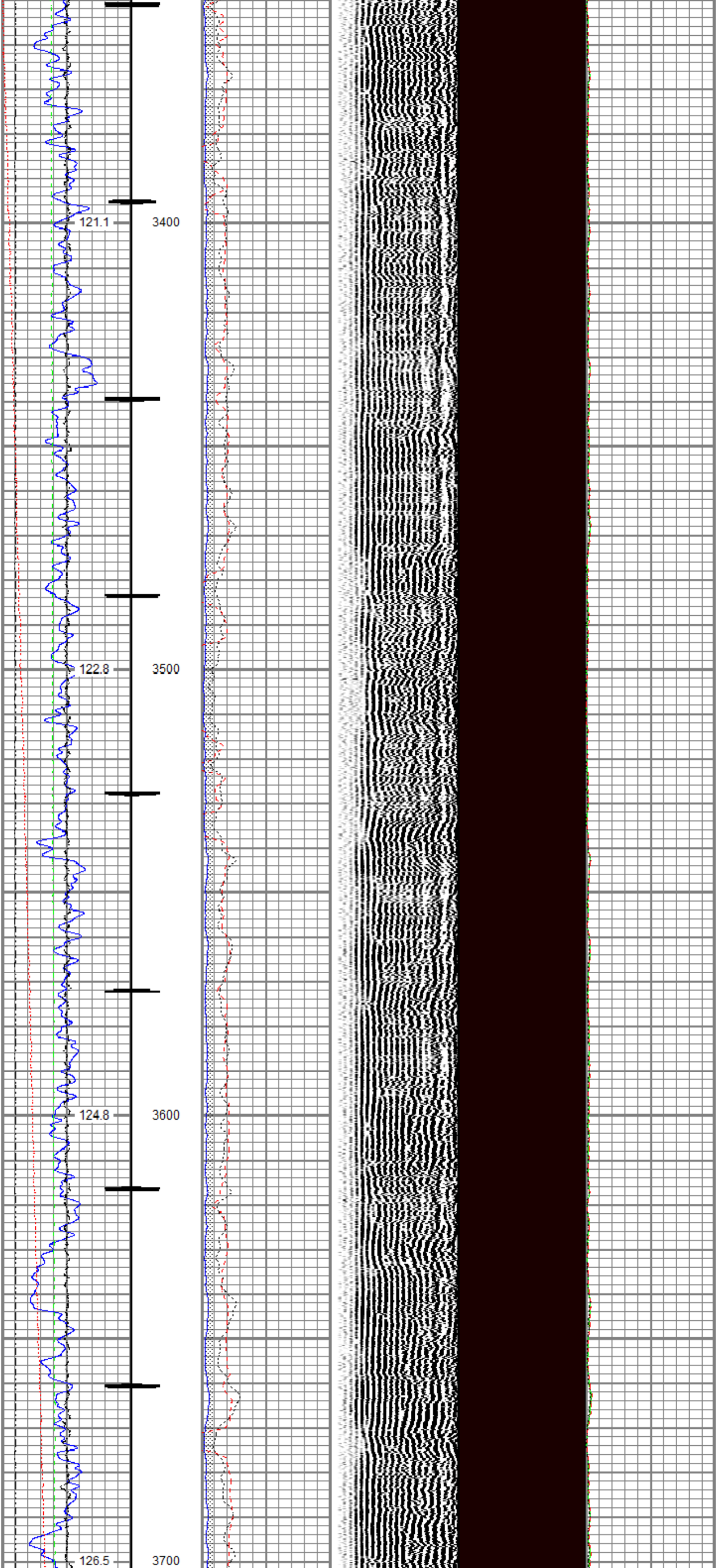


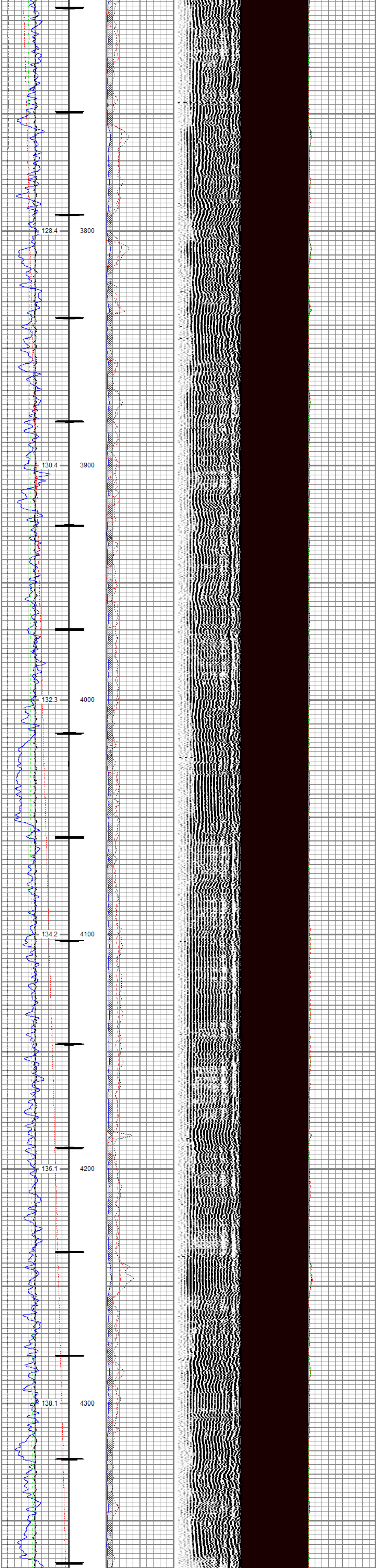








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3900
132.3
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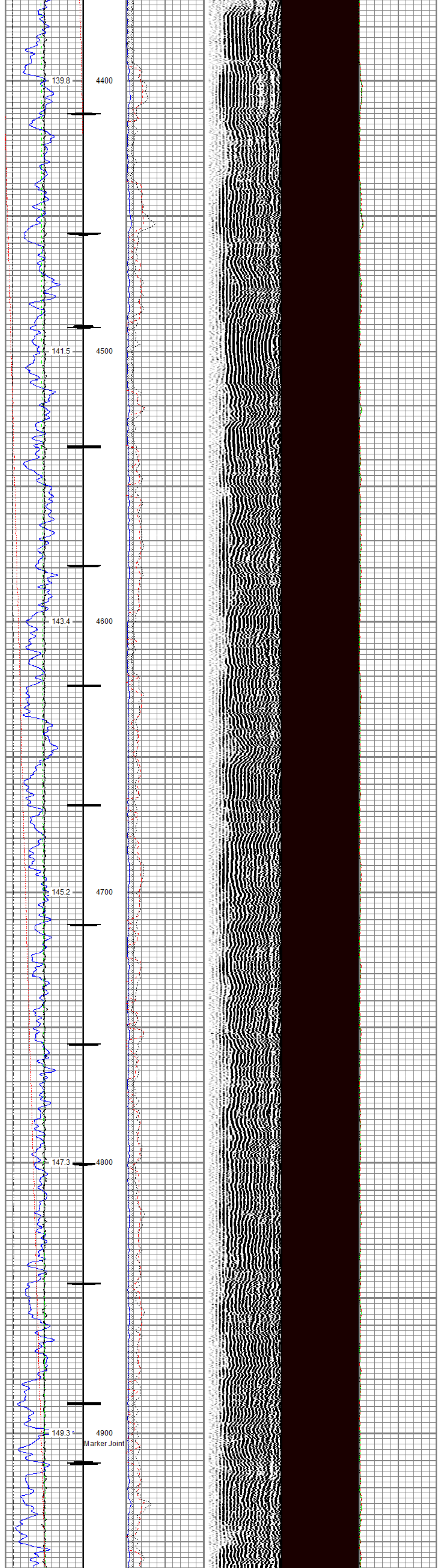
4100
136.1
4200
138.1
4300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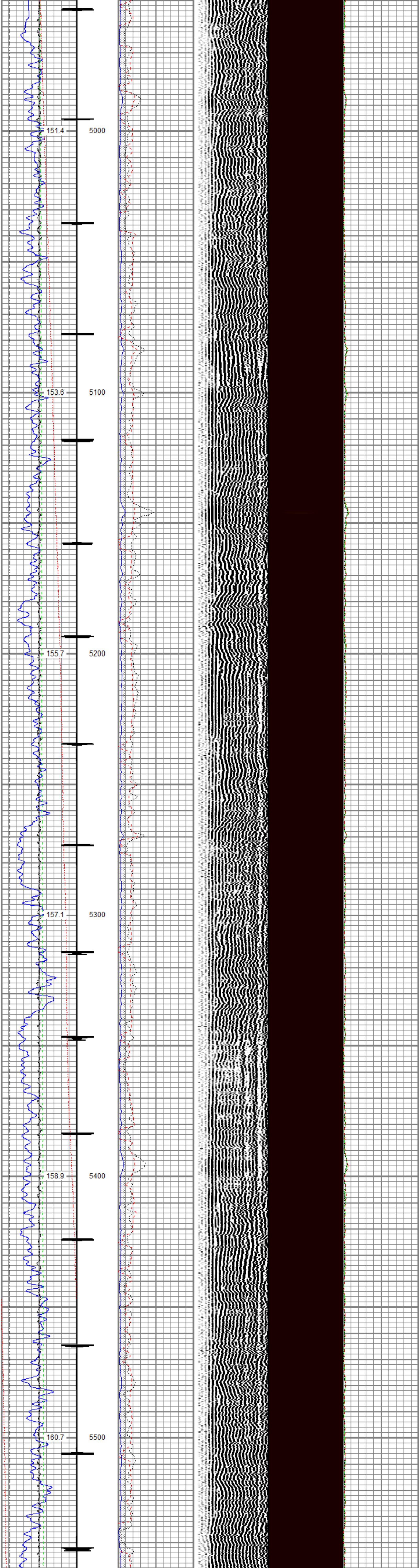
Marker Joint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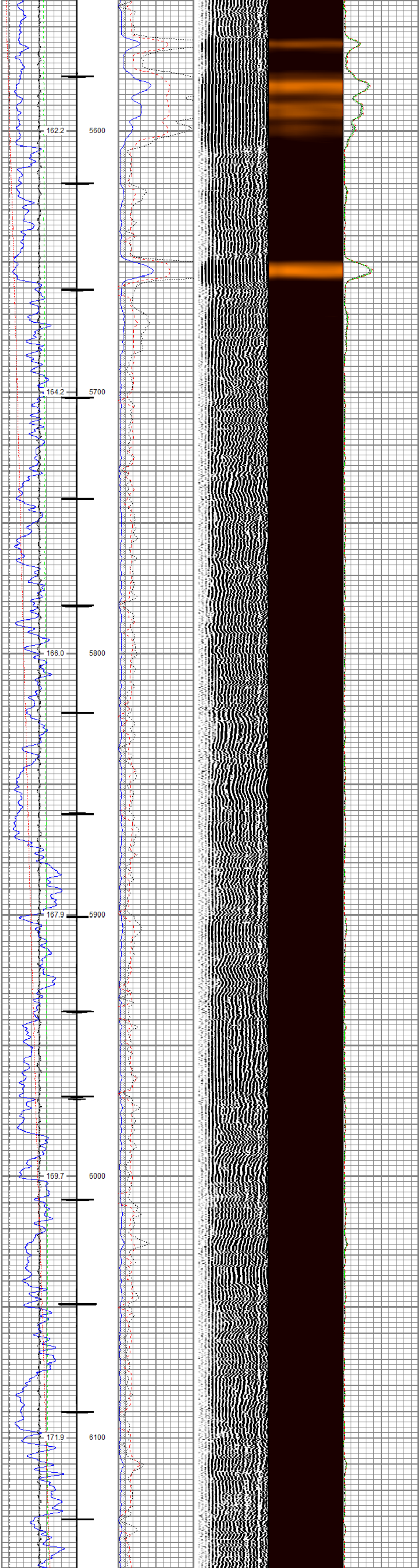
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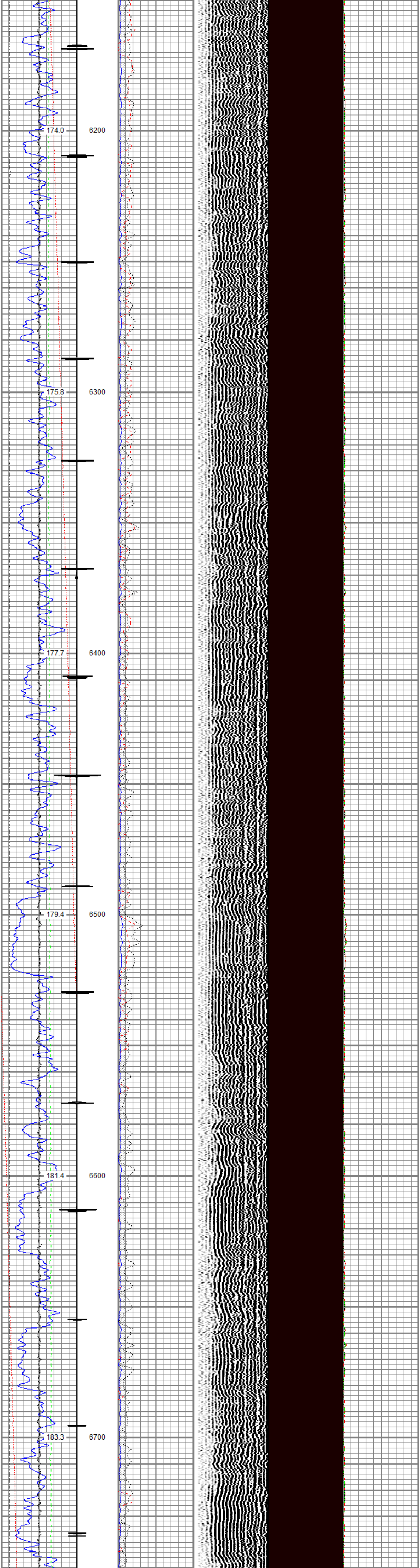
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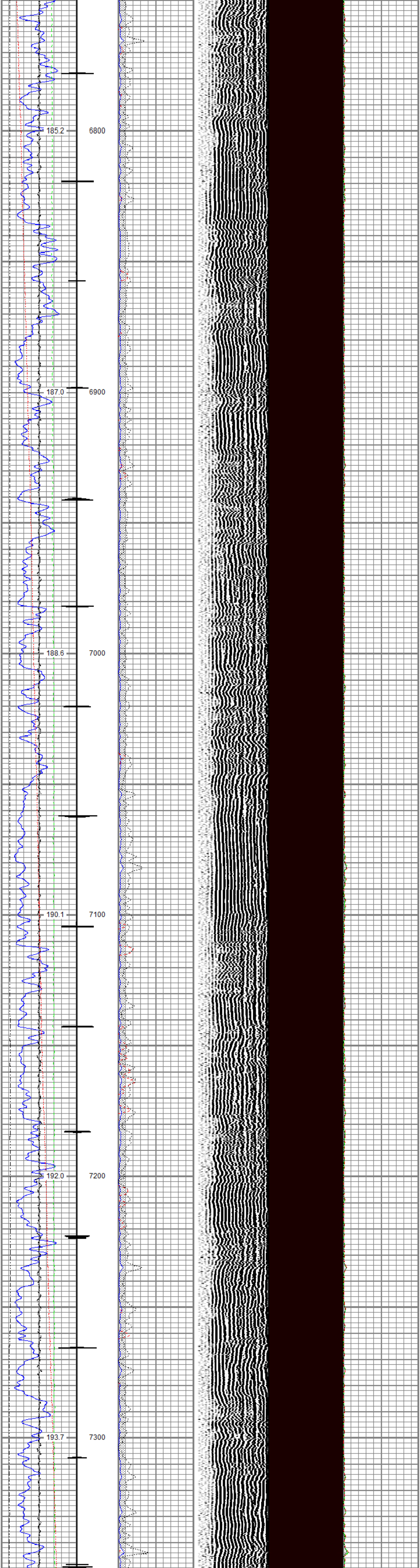
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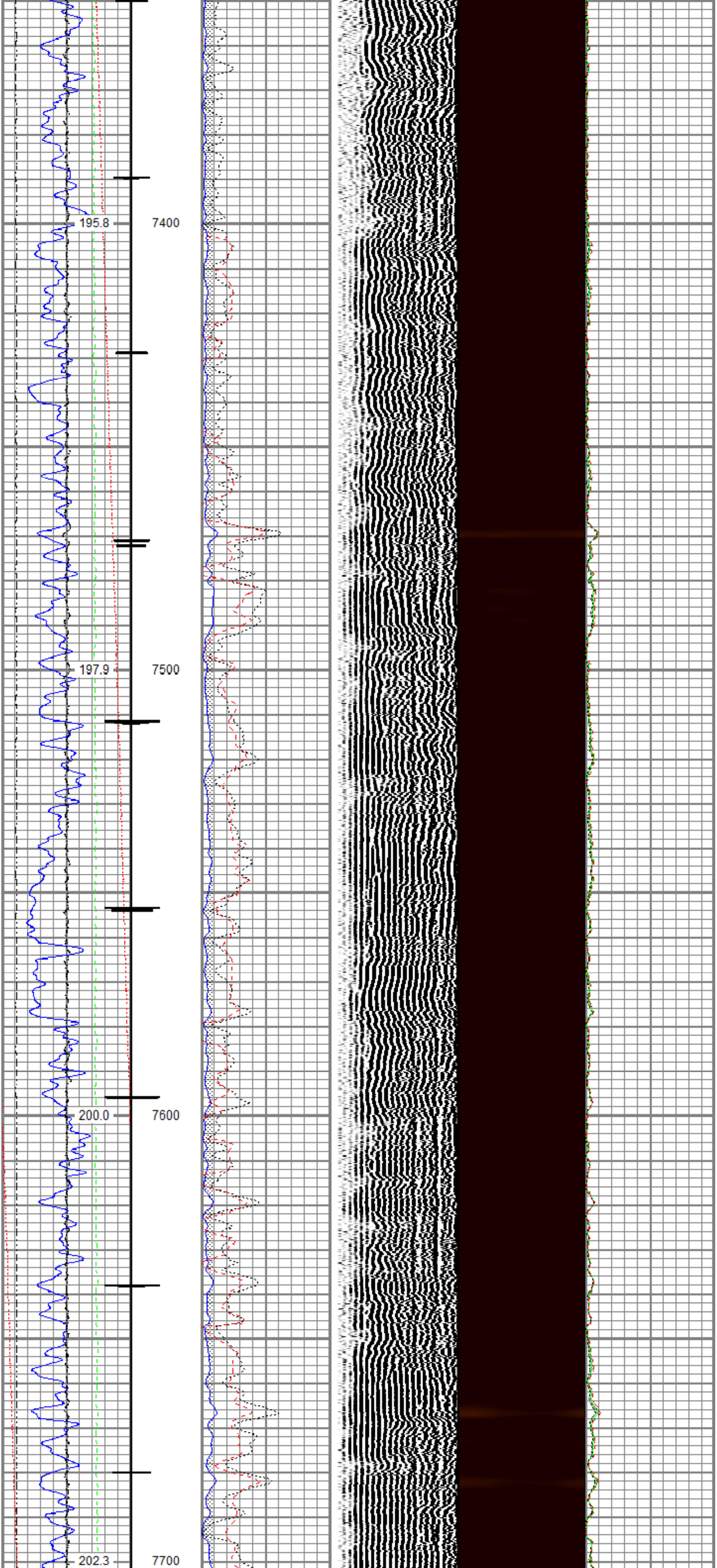
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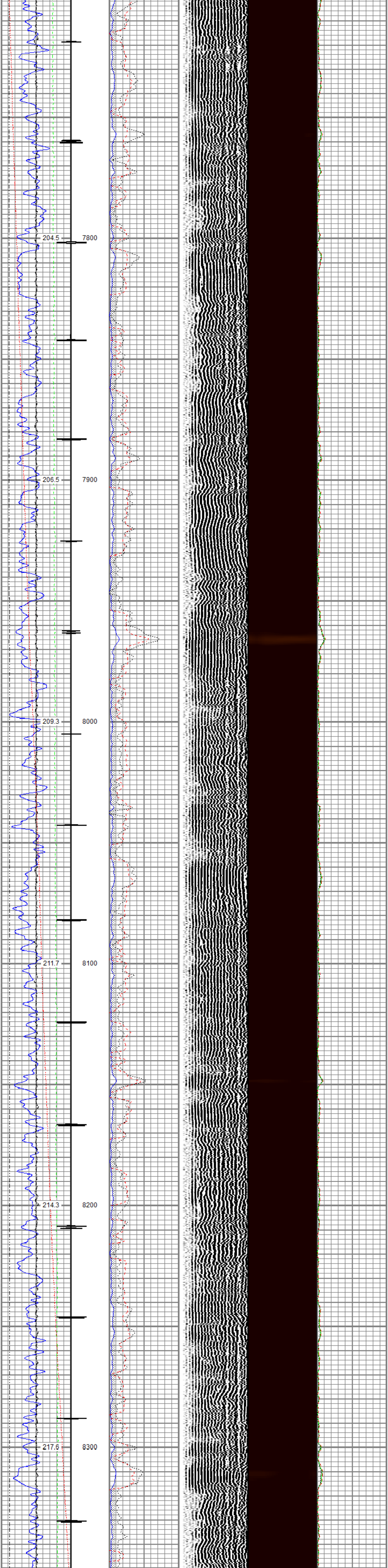
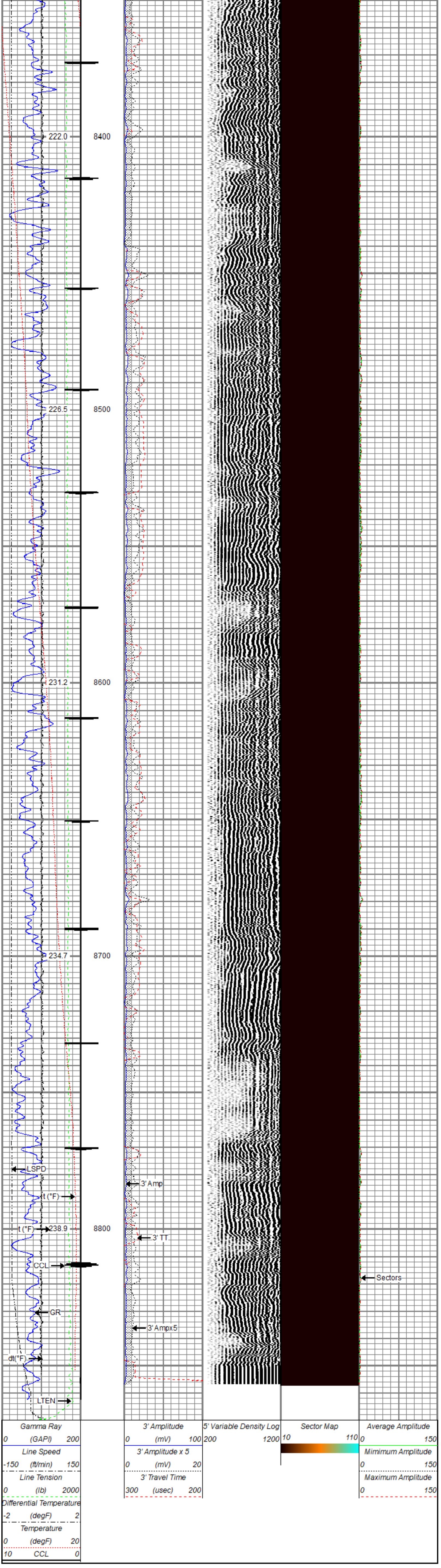




Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal rwf 511-17_rbl_06-24-19\processed_tep_federal rwf 511-17_rbl_06-24-19.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Jun 25 22:26:09 2019
Charted by	Depth in Feet scaled 1:240

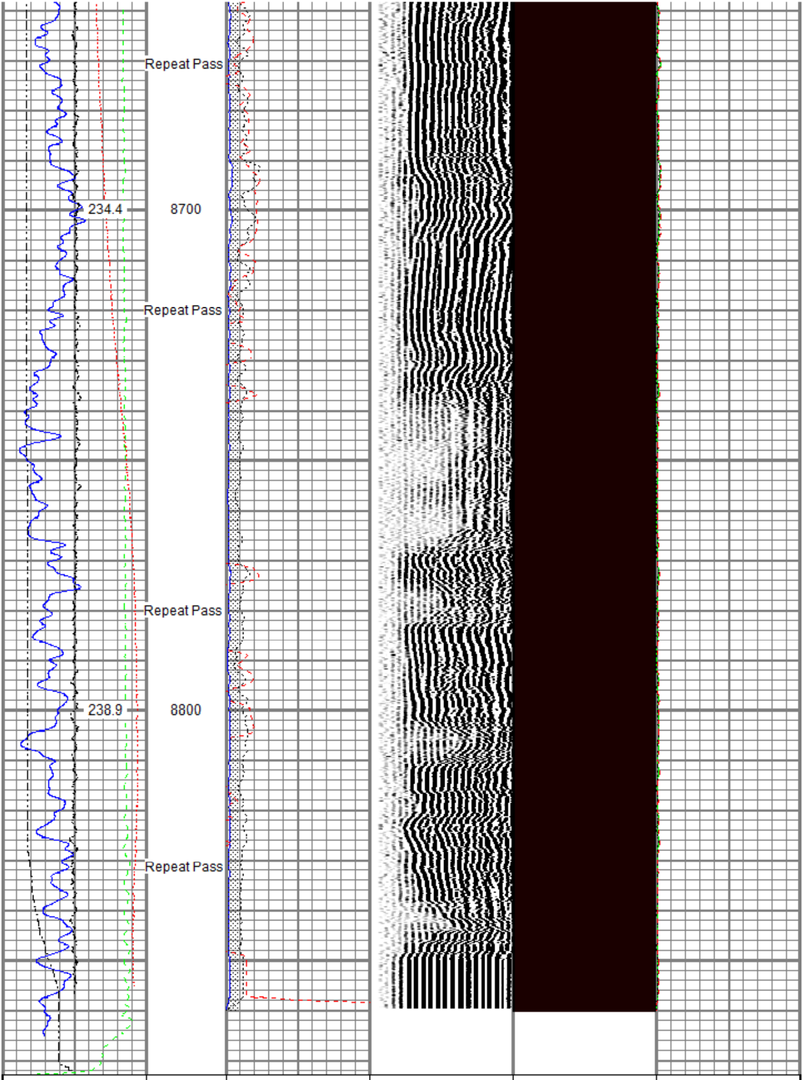
Gamma Ray 0 (GAPI) 200
Line Speed -150 (ft/min) 150
Line Tension 0 (lb) 2000
Differential Temperature -2 (degF) 2
Temperature 0 (degF) 20

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



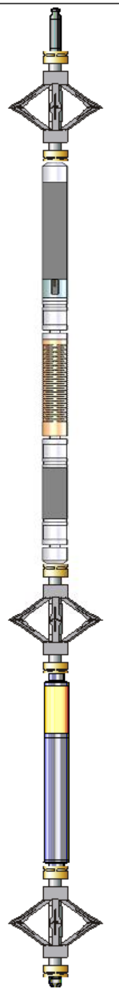
Gamma Ray 0 (GAPI) 200
Line Speed -150 (ft/min) 150
Line Tension 0 (lb) 2000
Differential Temperature -2 (degF) 2
Temperature 0 (degF) 20

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)
TEMP	16.33
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
CCL$2	6.42
CCL$1	6.42
GR	5.18

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
Probe Radii-2750 RBT (101013) 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
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_federal rwf 511-17_rbl_06-24-19.db: field/well/run1/main.6
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_federal rwf 511-17_rbl_06-24-19\processed_tep_federal rwf 511-17_rbl_
Dataset Pathname	main.6
Dataset Creation	Tue Jun 25 21:52:28 2019

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:	101013	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	306.086	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.006	0.889	0.800	81.196	91.101	0.226
CAL	0.003	0.750				
5'	0.013	0.855	0.800	81.196	95.475	-0.446
SUM						
S1	0.010	0.993	0.000	100.000	101.648	-0.977
S2	0.008	0.942	0.000	100.000	107.048	-0.816
S3	0.006	0.863	0.000	100.000	116.665	-0.724
S4	0.006	0.824	0.000	100.000	122.202	-0.685
S5	0.005	0.834	0.000	100.000	120.666	-0.628
S6	0.006	0.844	0.000	100.000	119.417	-0.762
S7	0.009	0.888	0.000	100.000	113.723	-0.994
S8	0.009	0.955	0.000	100.000	105.642	-0.929

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.003	0.750	1.000	0.000

Air Zero Calibration, performed Sun Jun 23 17:36:45 2019:

	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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