RELIANCE OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal PA 433-24
Field Parachute
County Garfield
State Colorado

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Well Federal PA 433-24
Field Parachute
County Garfield State Colorado
Location: API # : 05-045-23760
SEC 19 TWP 6S RGE 94W
Other Services

Permanent Datum	Ground Level	Elevation 5732.2'	Elevation
Log Measured From	Kelly Bushing	24 FT	K.B. 5756.2'
Drilling Measured From	Kelly Bushing		D.F. 5755.2'
			G.L. 5732.2'

Date	01-NOV-2018		
Run Number	One		
Depth Driller	9055 FT		
Depth Logger	8986 FT		
Bottom Logged Interval	8972 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	11:45		
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	1124 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9016 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 5132 - 5145 FT
Log ran from 8972 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

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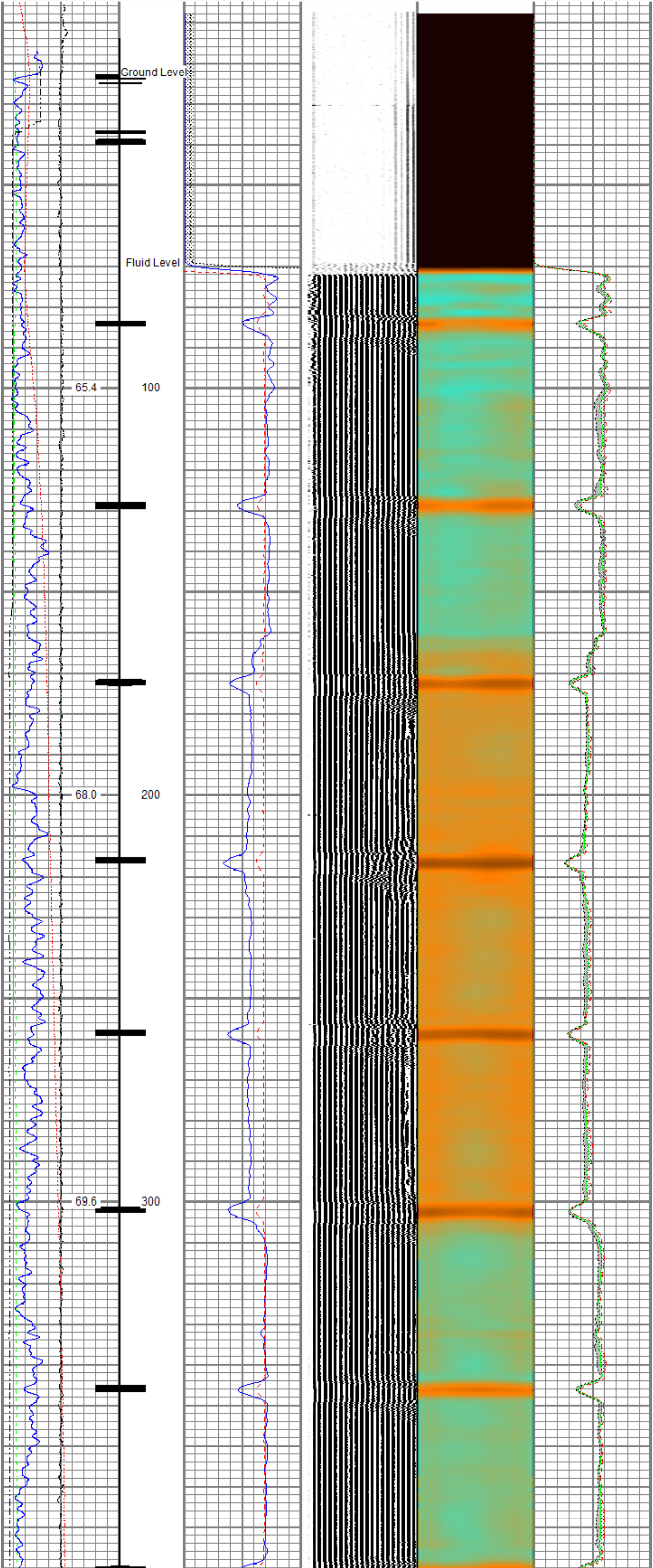
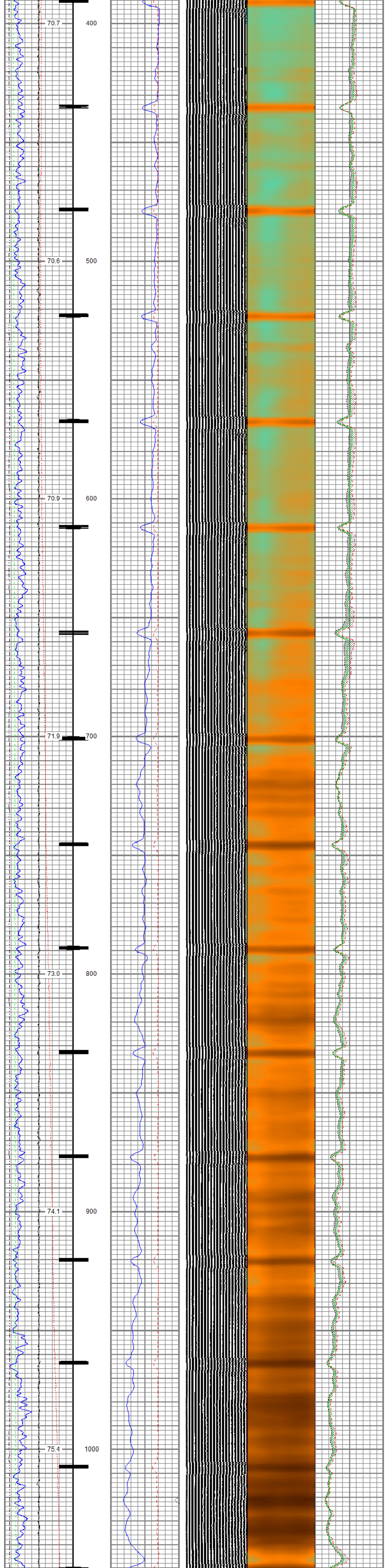
Main Pass

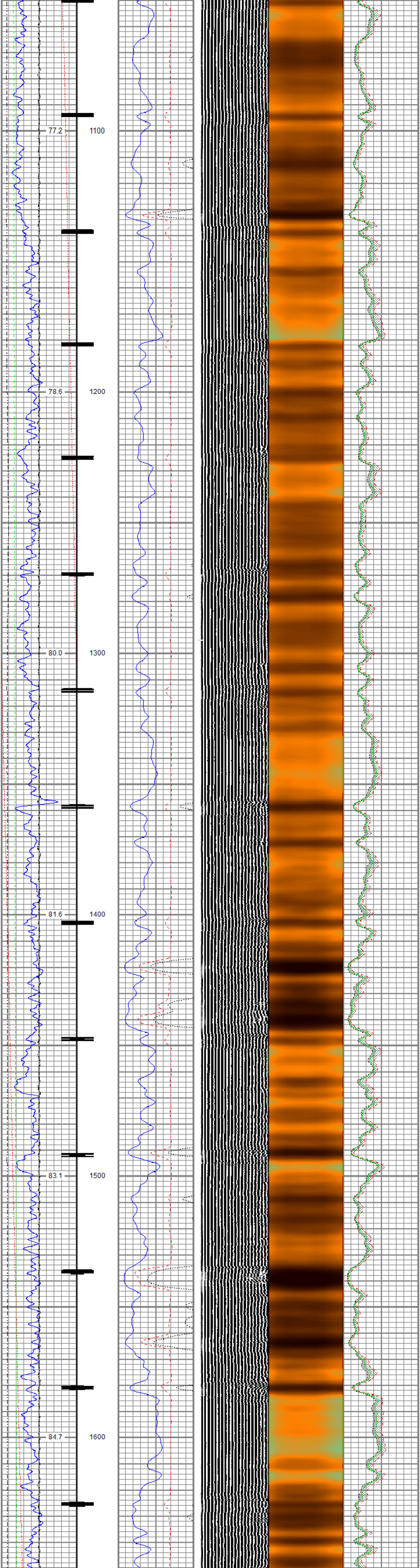
Recorded With 0 PSI Surface Induced Pressure

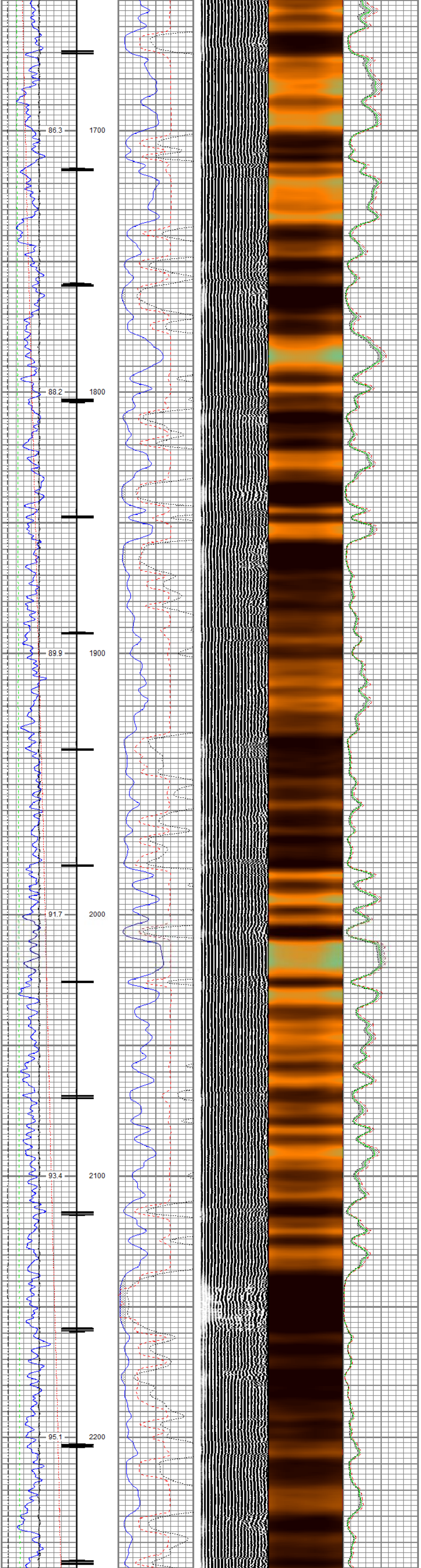
Database File	tep\tep_federal pa 433-24_rbl_11-01-18\tep_federal pa 433-24_rbl_11-01-18.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Fri Nov 02 08:30:46 2018
Charted by	Depth in Feet scaled 1:240

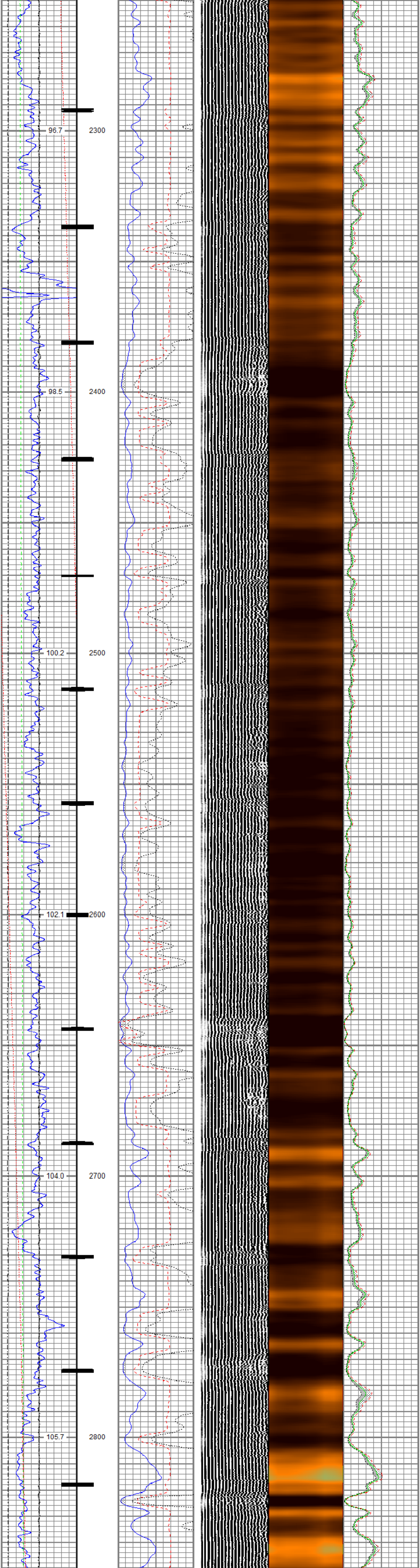
Track 1		Track 2	5' Variable Density Log	Sector Map	Track 4
Gamma Ray 0 (GAPI) 200		3' Amplitude 0 (mV) 100	200 1200	10 110	Average Amplitude 0 150
Line Speed -150 (ft/min) 150		3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000		3' Travel Time 300 (usec) 200			MaximumAmplitude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

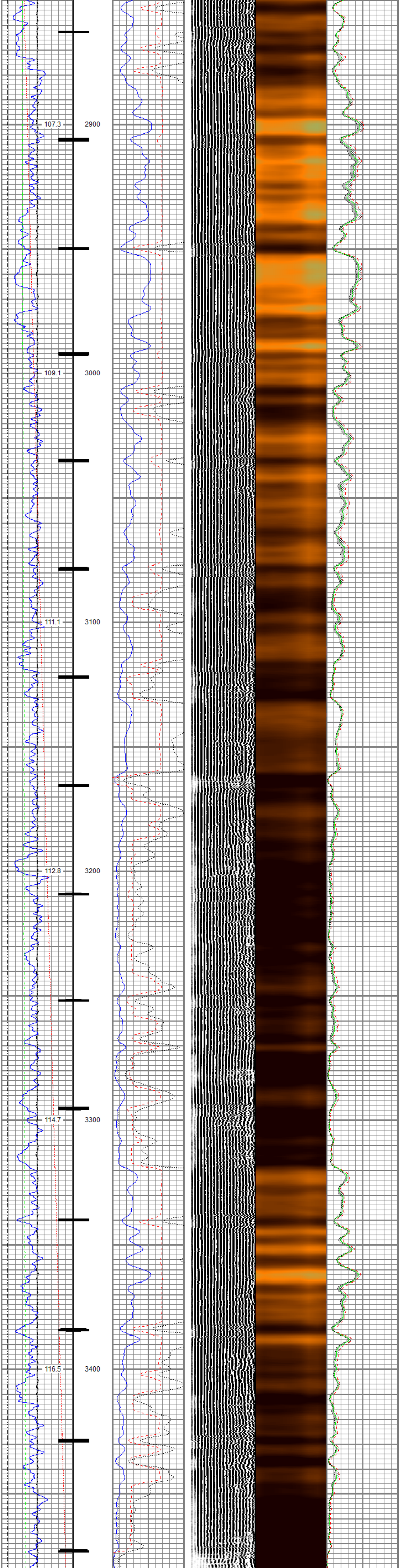


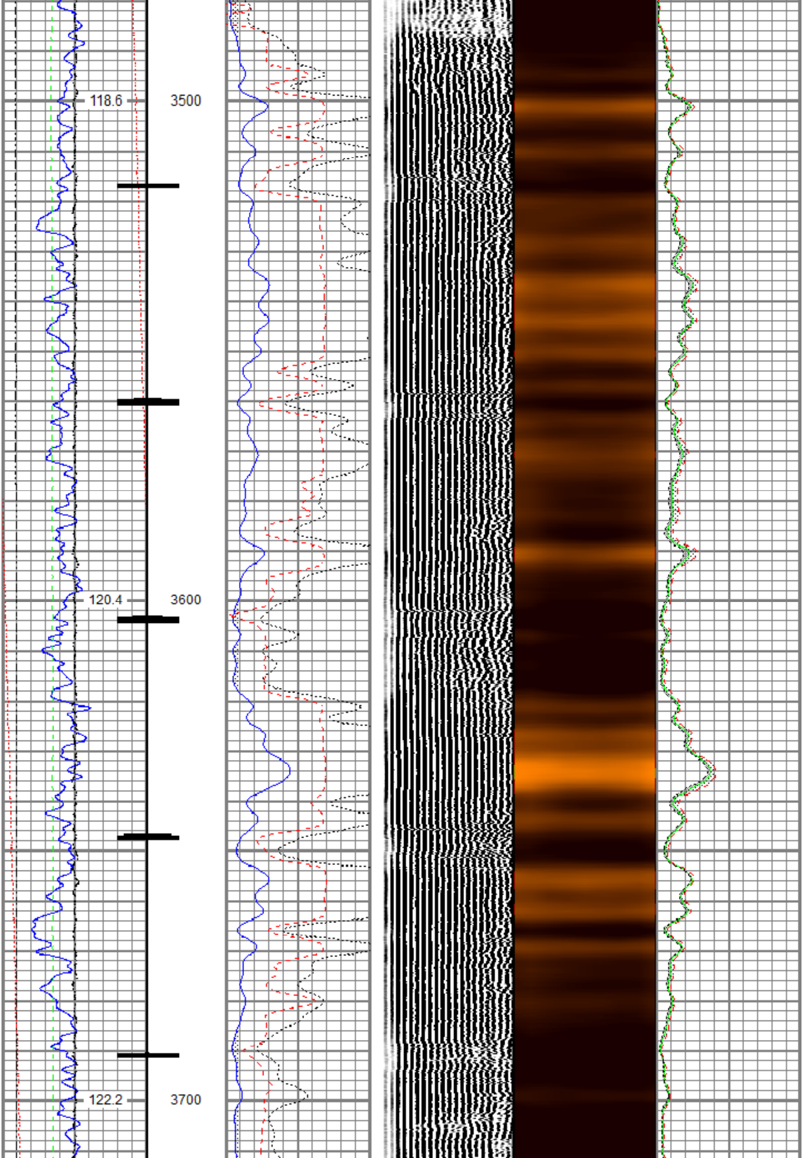


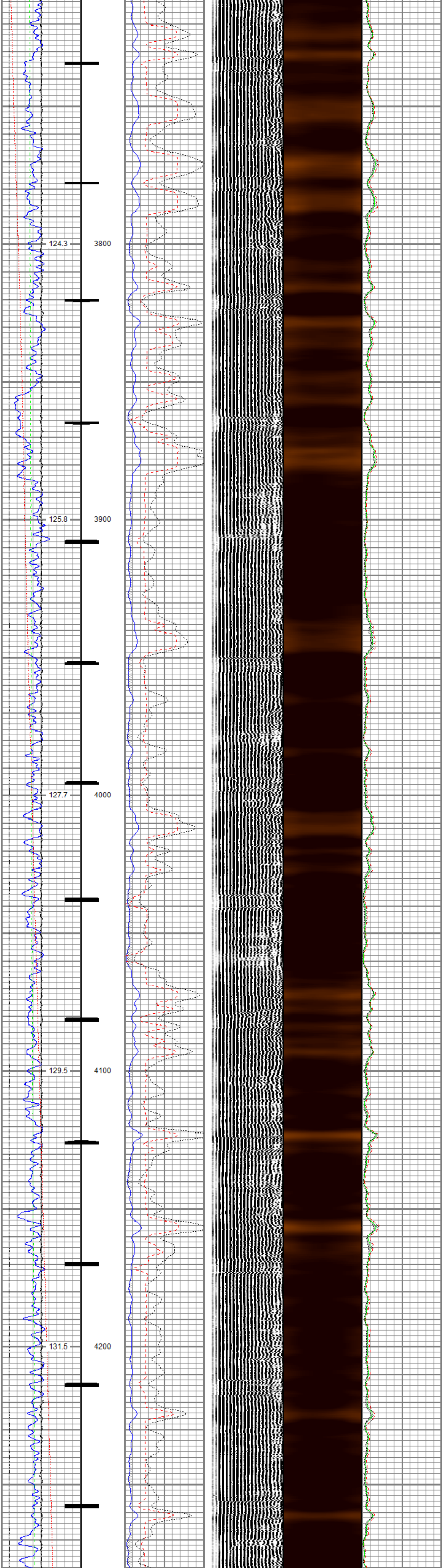








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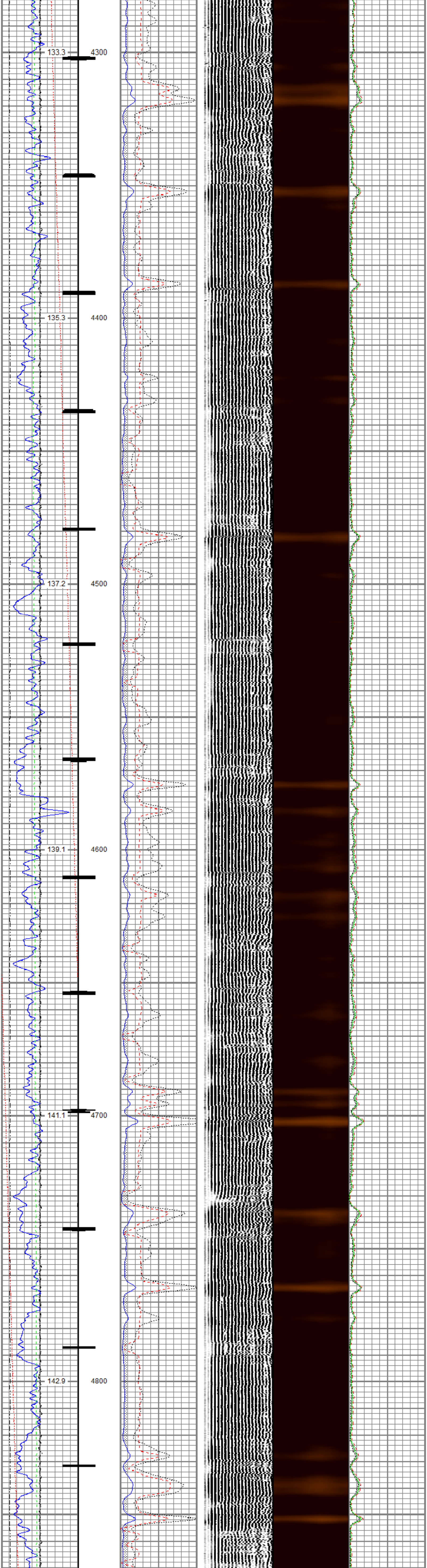
3900
127.7
4000
129.5
4100
131.5
4200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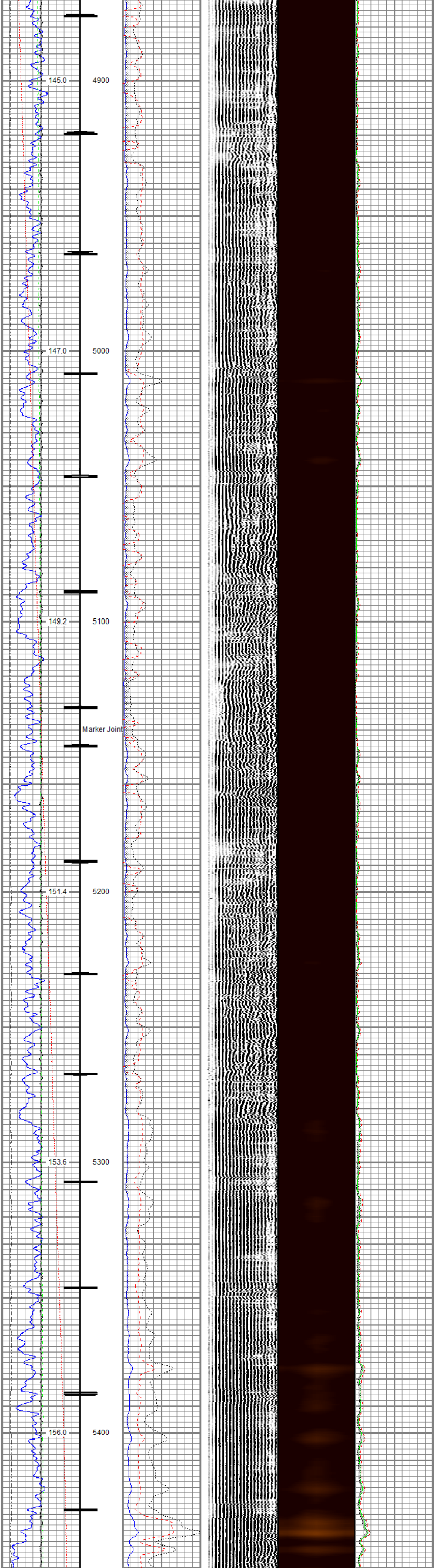
4300
135.3
4400
137.2
4500
139.1
4600
141.1
4700
142.9
4800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5000
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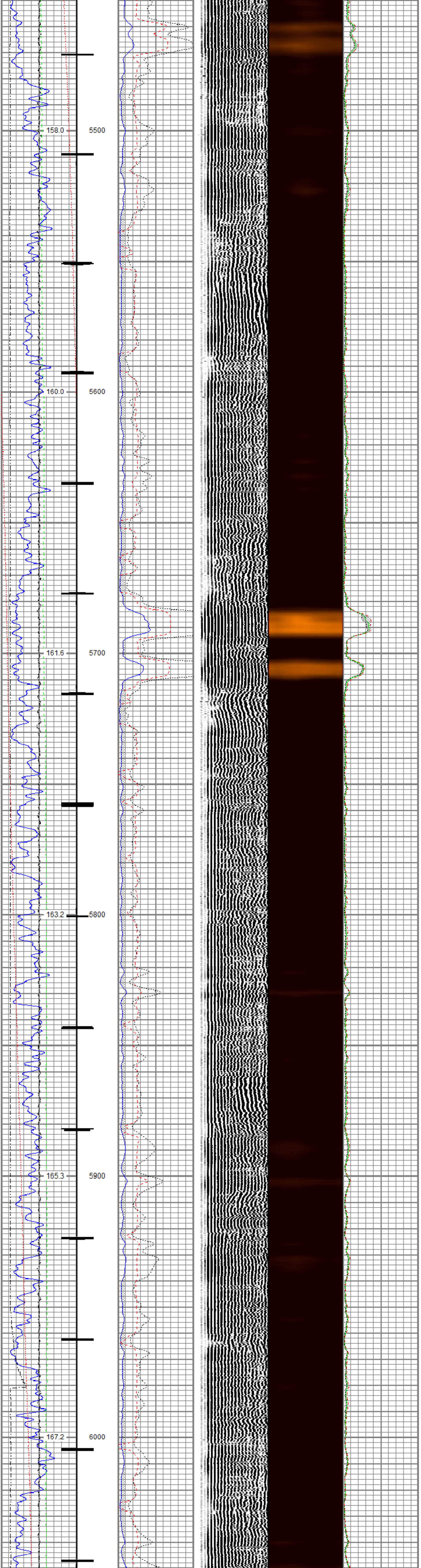
5100
Marker Joint
151.4
5200
153.6
5300
156.0
5400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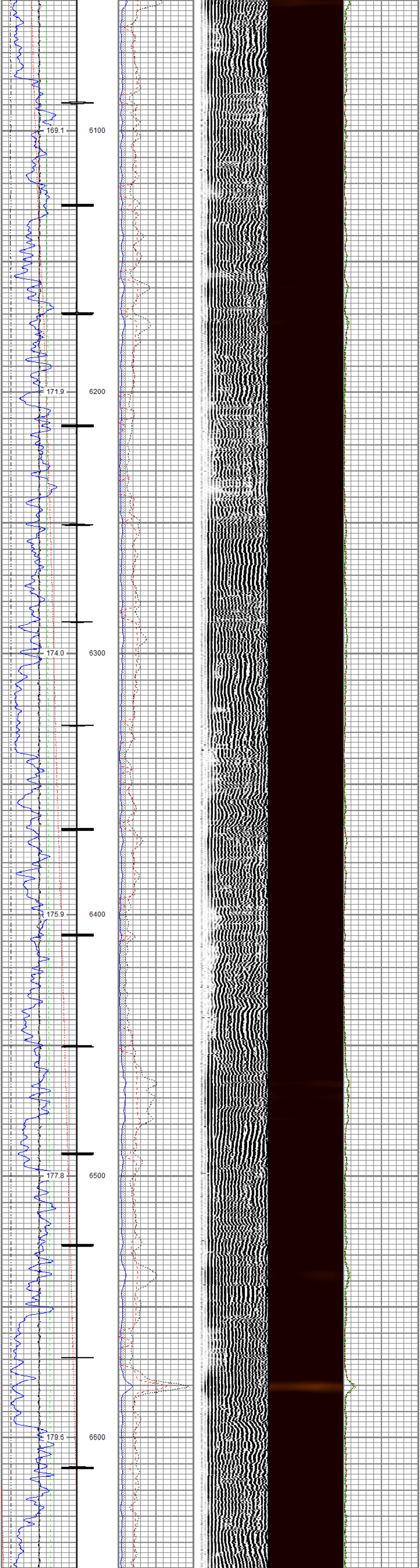
5800
165.3
5900
167.2
6000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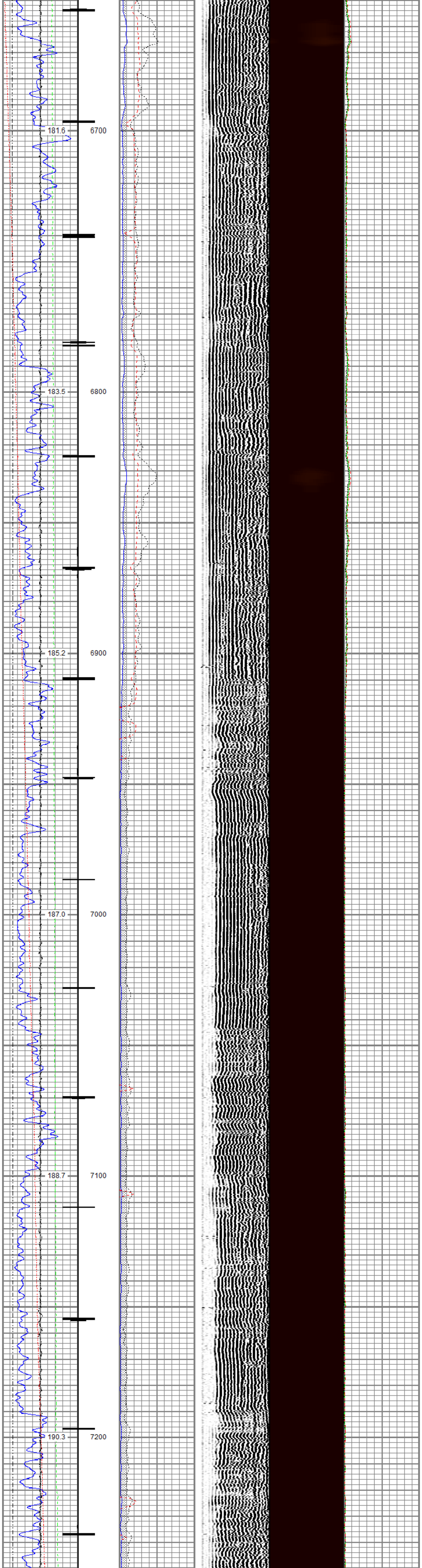
6500
179.6
6600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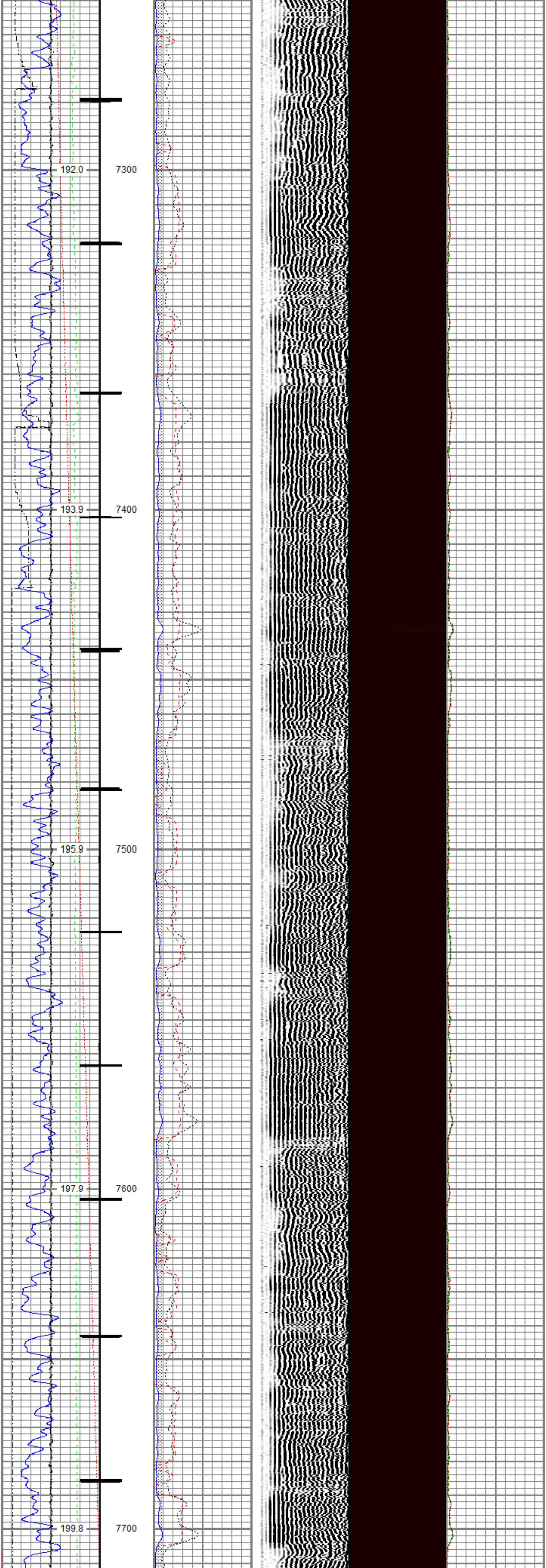
7200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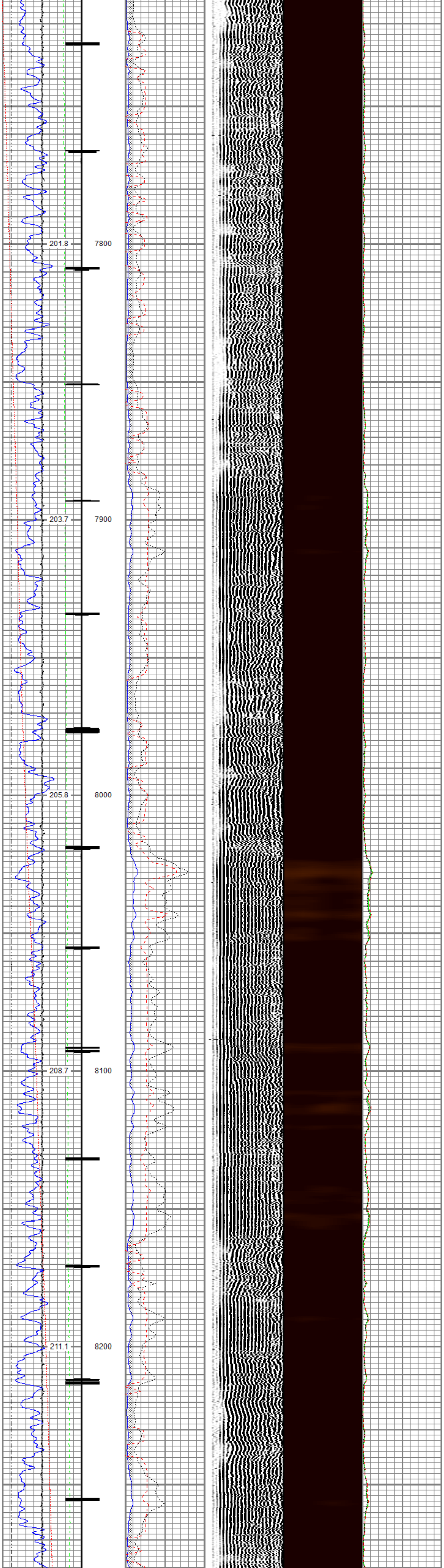
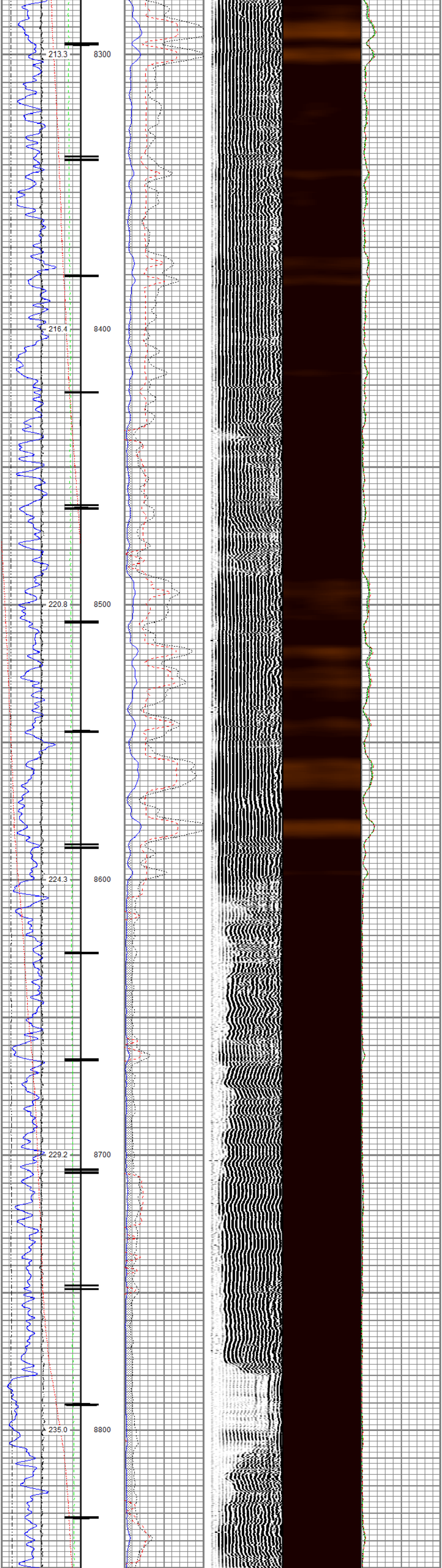
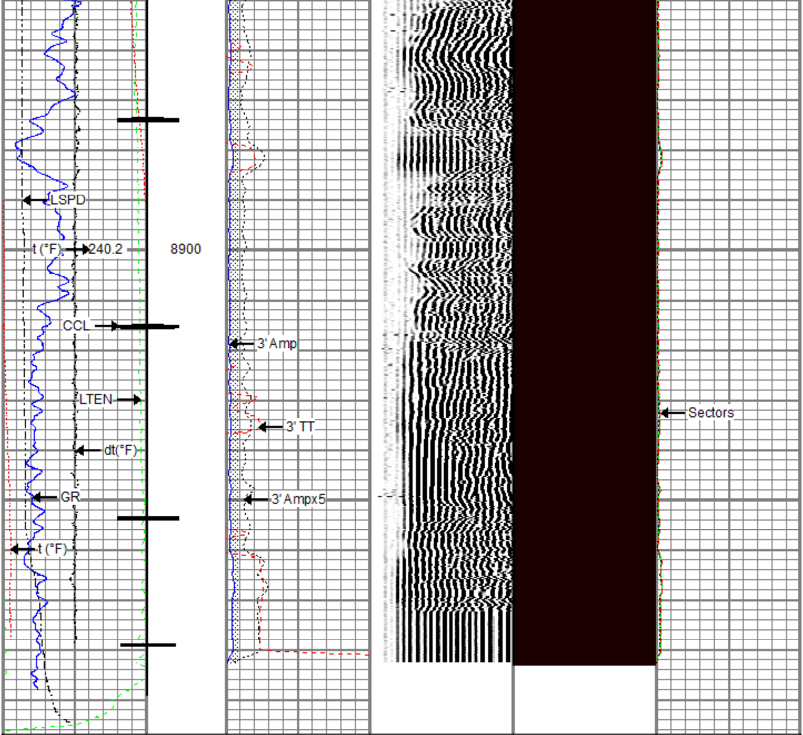
7600
199.8
7700







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				
10 CCL 0				

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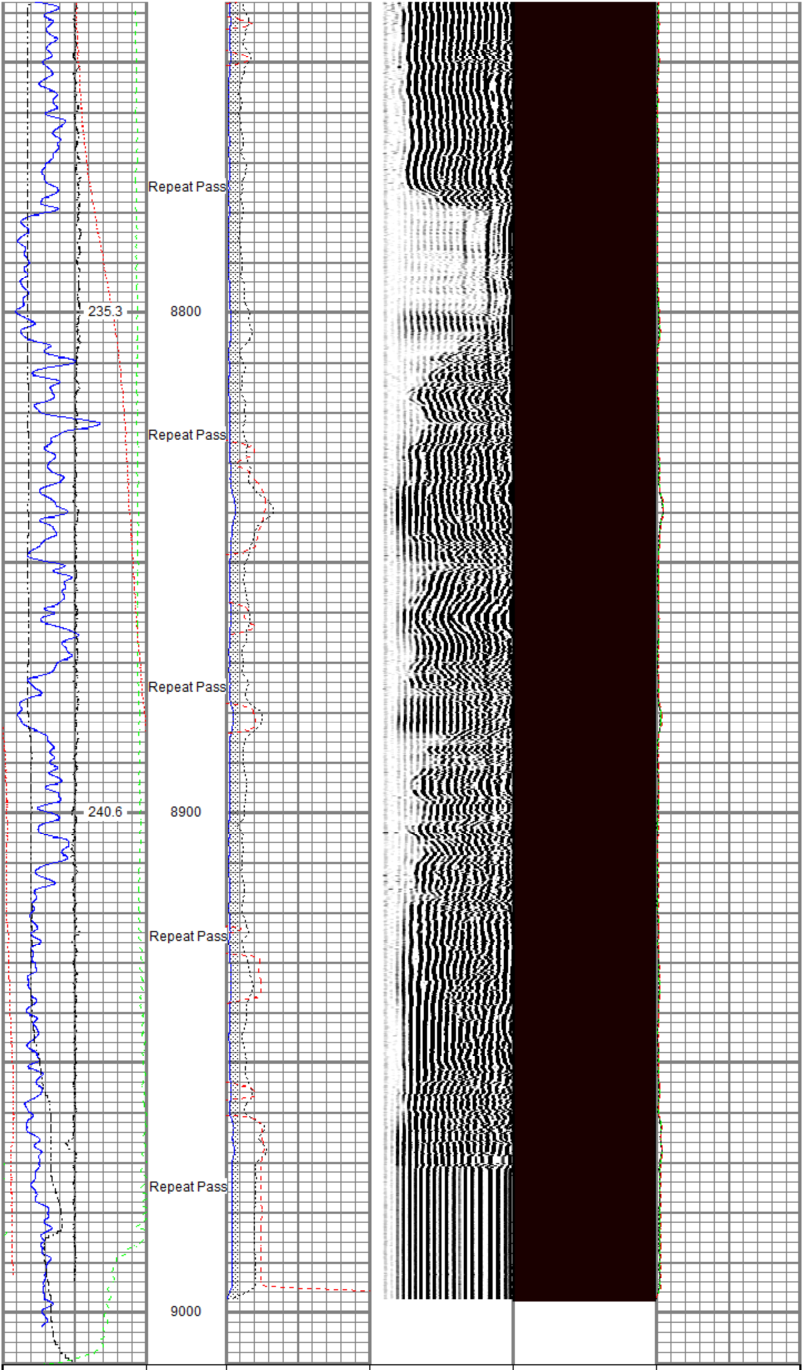
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal pa 433-24_rbl_11-01-18\tep_federal pa 433-24_rbl_11-01-18.db
Dataset Pathname	repeat1.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Fri Nov 02 08:56:49 2018
Charted by	Depth in Feet scaled 1:240

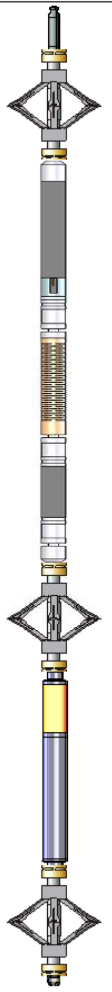
Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150
Line Speed -150 (ft/min) 150	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000	3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential Temperature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



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)
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

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
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
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_federal pa 433-24_rbl_11-01-18.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_federal pa 433-24_rbl_11-01-18\tep_federal pa 433-24_rbl_11-01-18.db
Dataset Pathname main.1
Dataset Creation Fri Nov 02 08:30:46 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:	45.512	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.829	0.800	81.196	97.063	0.767
CAL	0.002	0.746				
5'	0.000	0.745	0.800	81.196	107.968	0.798
SUM						
S1	0.001	0.838	0.000	100.000	119.452	-0.111
S2	0.001	0.860	0.000	100.000	116.434	-0.151
S3	0.001	0.807	0.000	100.000	124.067	-0.120
S4	0.001	0.809	0.000	100.000	123.788	-0.099
S5	0.000	0.802	0.000	100.000	124.820	-0.055
S6	-0.002	0.825	0.000	100.000	120.965	0.197
S7	-0.004	0.827	0.000	100.000	120.337	0.454
S8	0.001	0.874	0.000	100.000	114.430	-0.062

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.002	0.746	1.000	0.000

Air Zero Calibration, performed Thu Nov 01 02:03:53 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.003	0.000	-0.000
5'	0.004	0.000	-0.000
SUM			
S1	0.002	0.000	0.000
S2	0.003	0.000	0.000
S3	0.003	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	0.003	0.000	-0.001
S8	0.003	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	

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Company	TEP Rocky Mountain LLC
Well	Federal PA 433-24
Field	Parachute
County	Garfield
State	Colorado