RELIANCE OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal RWF 312-12
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal RWF 312-12
Field Rulison
County Garfield State Colorado
Location: API # : 05-045-24275
SEC 12 TWP 6S RGE 94W

Other Services

				Elevation
Permanent Datum	Ground Level	Elevation	5466.8'	K.B. 5490.8'
Log Measured From	Kelly Bushing	24 FT		D.F. 5489.8'
Drilling Measured From	Kelly Bushing			G.L. 5466.8'

Date	22-FEB-2020
Run Number	One
Depth Driller	8820 FT
Depth Logger	8739 FT
Bottom Logged Interval	8727 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Fresh Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	244°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	16:00
Equipment Number	HD-359
Location	Grand Junction, CO
Recorded By	James Donnelly
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	1040 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	8780 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 at 4756 FT - 4777 FT
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!!

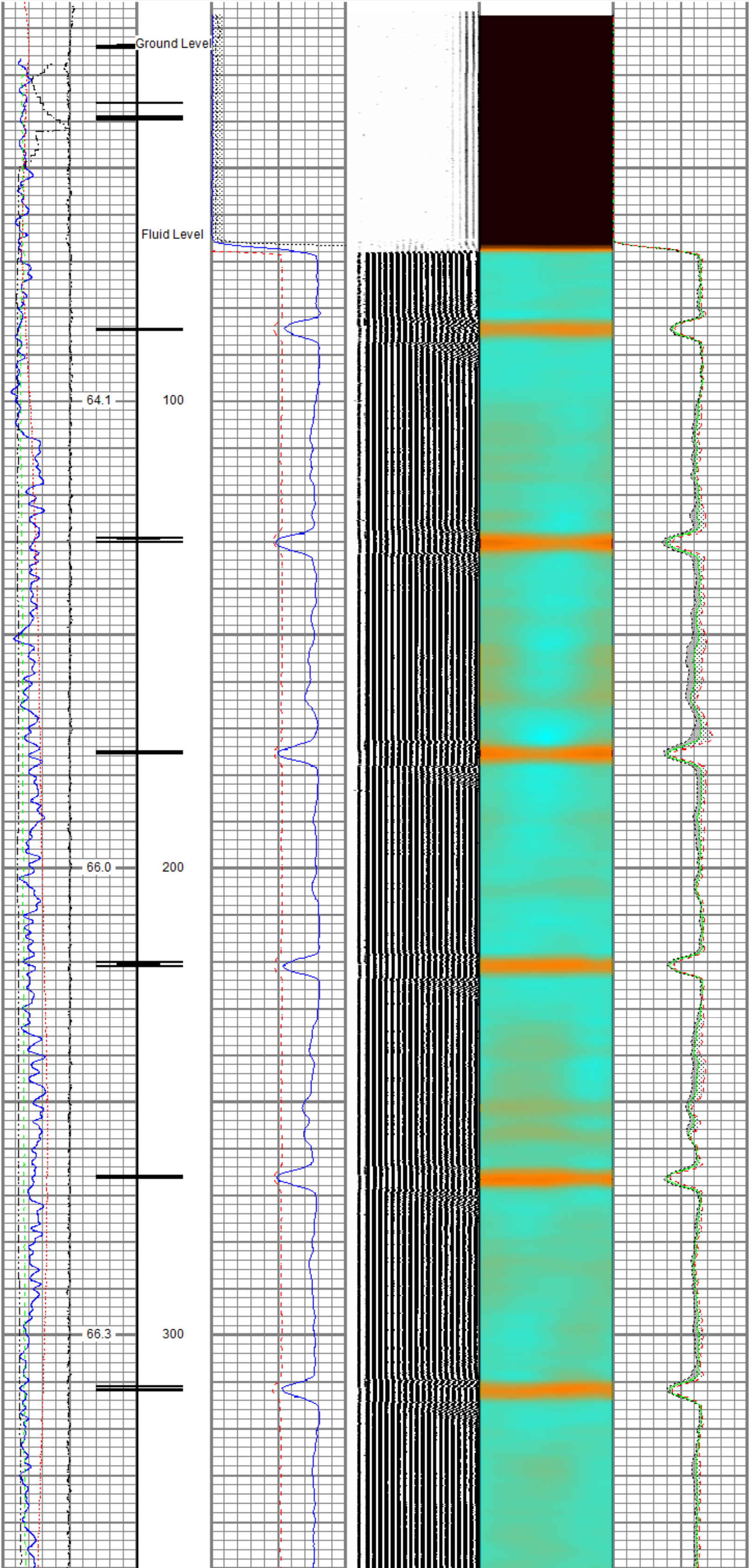
RELIANCE OILFIELD SERVICES

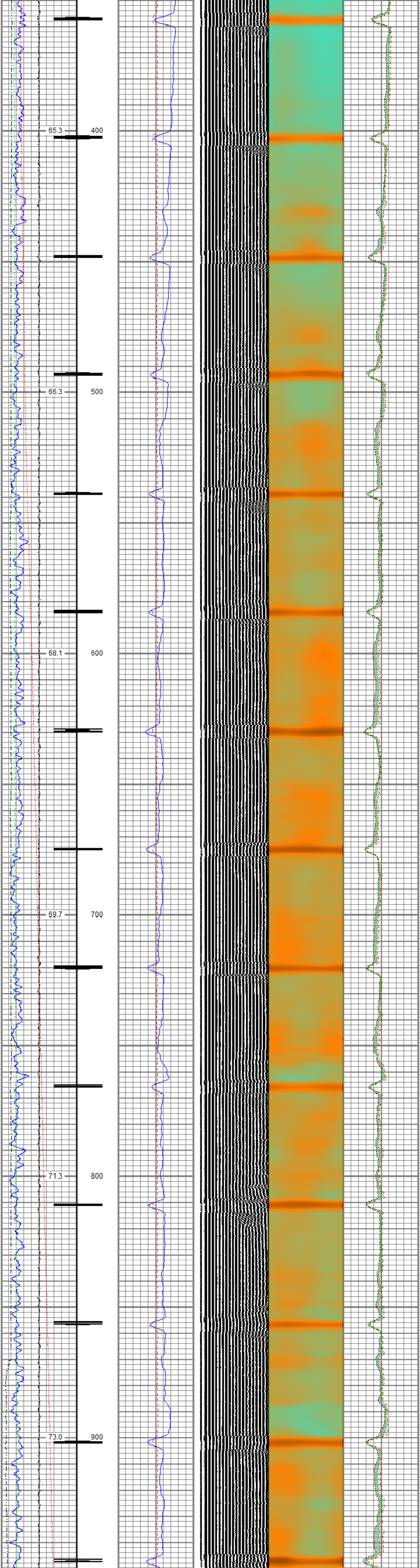
Main Pass

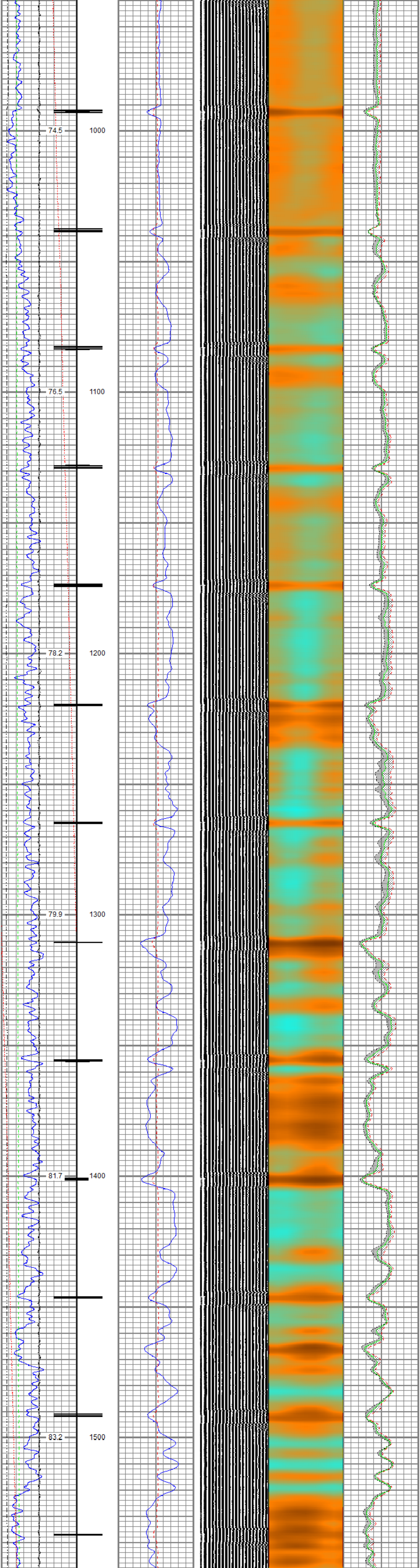
Recorded With 0 PSI Surface Induced Pressure

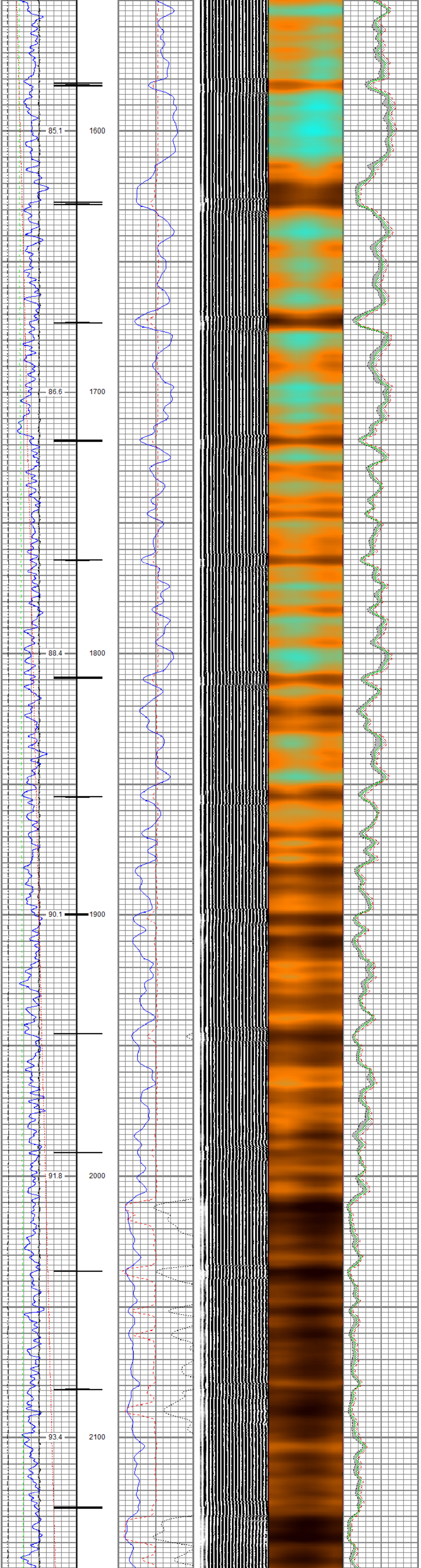
Database File	tep\tep_federal rwf 312-12_rbl_02-22-20\processed_tep_federal rwf 312-12_rbl_02-22-20.db
Dataset Pathname	Main.1
Presentation Format	ros_radii_tep
Dataset Creation	Sun Feb 23 19:10:05 2020
Charted by	Depth in Feet scaled 1:240

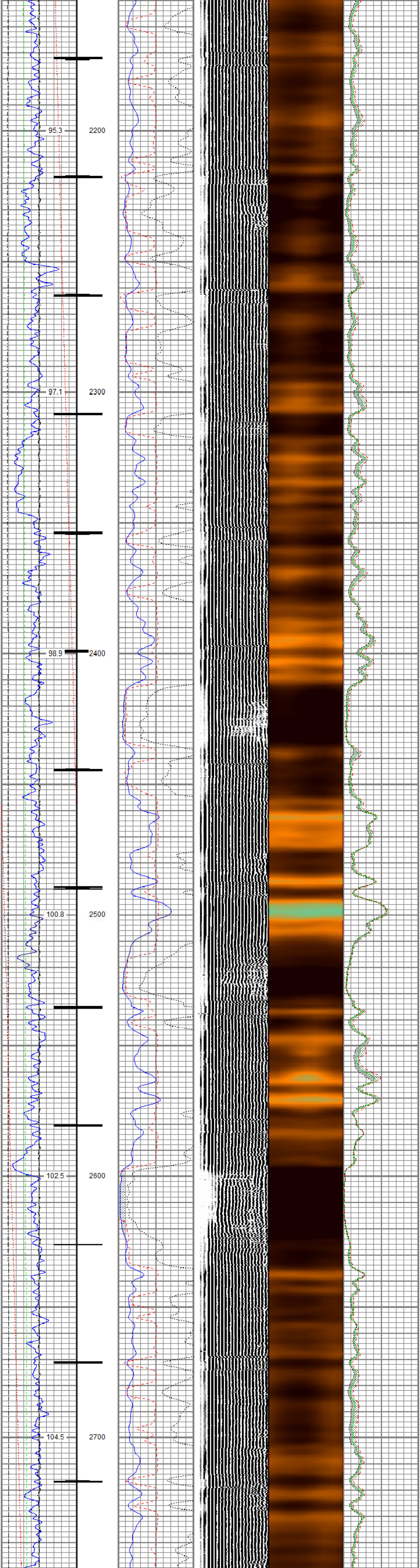
Curve	Left	Unit	Right
Gamma Ray	0	(GAPI)	200
Line Speed	-150	(ft/min)	150
Line Tension	0	(lb)	2000
Differential Temperature	-2	(degF)	2
Temperature	0	(degF)	20
Casing Collar Locator			
3' Amplitude	0	(mV)	100
3' Amplitude x 5	0	(mV)	20
3' Travel Time	300	(usec)	200
5' Variable Density Log	200	(usec)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

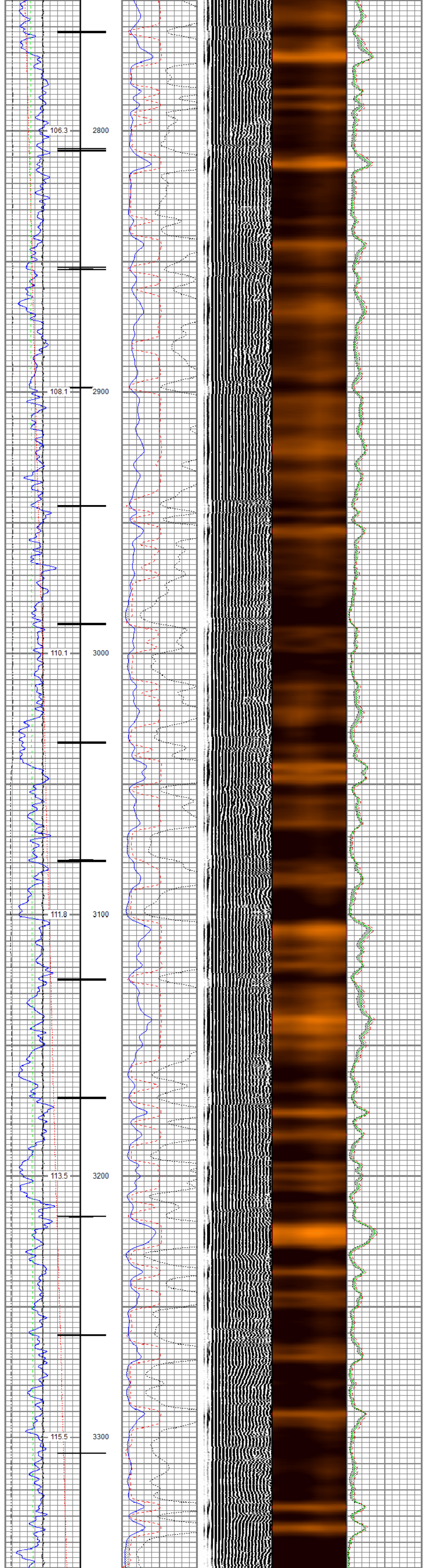


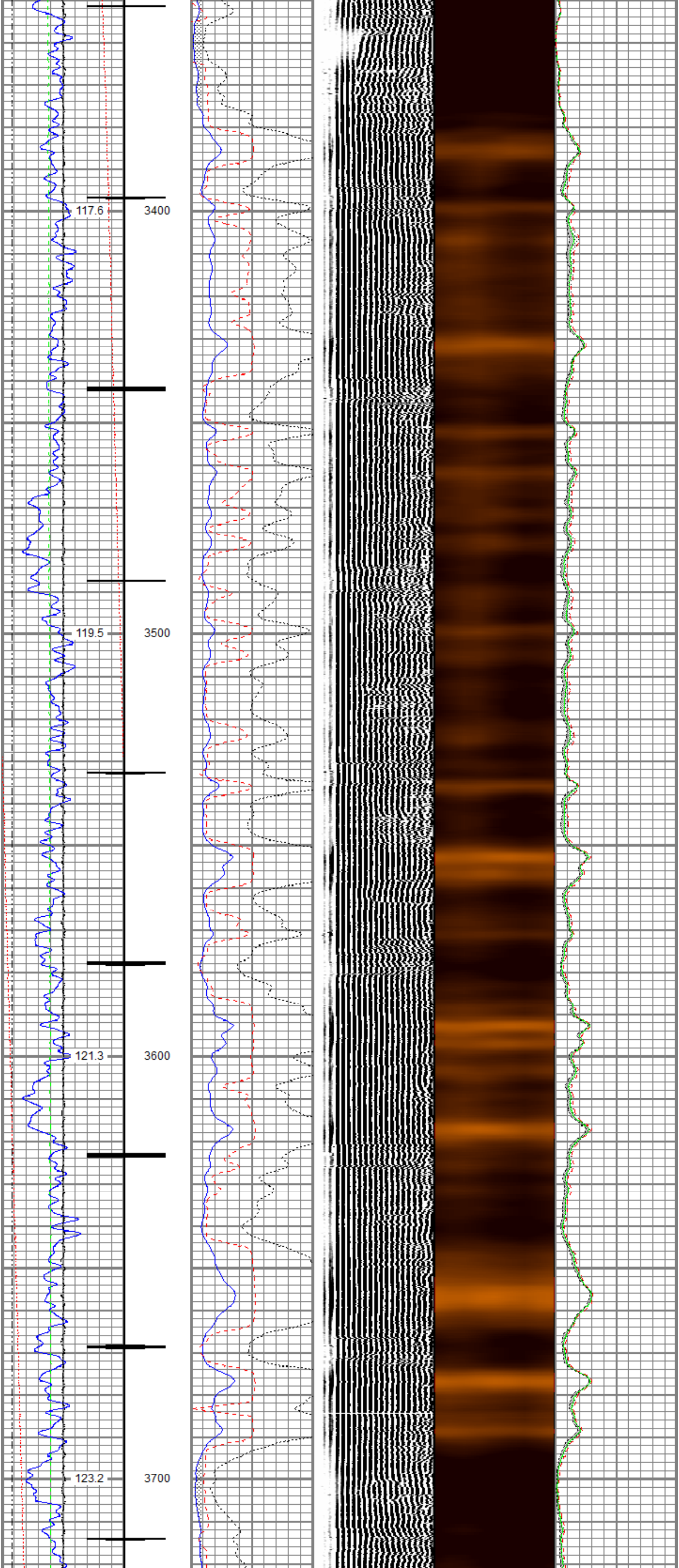


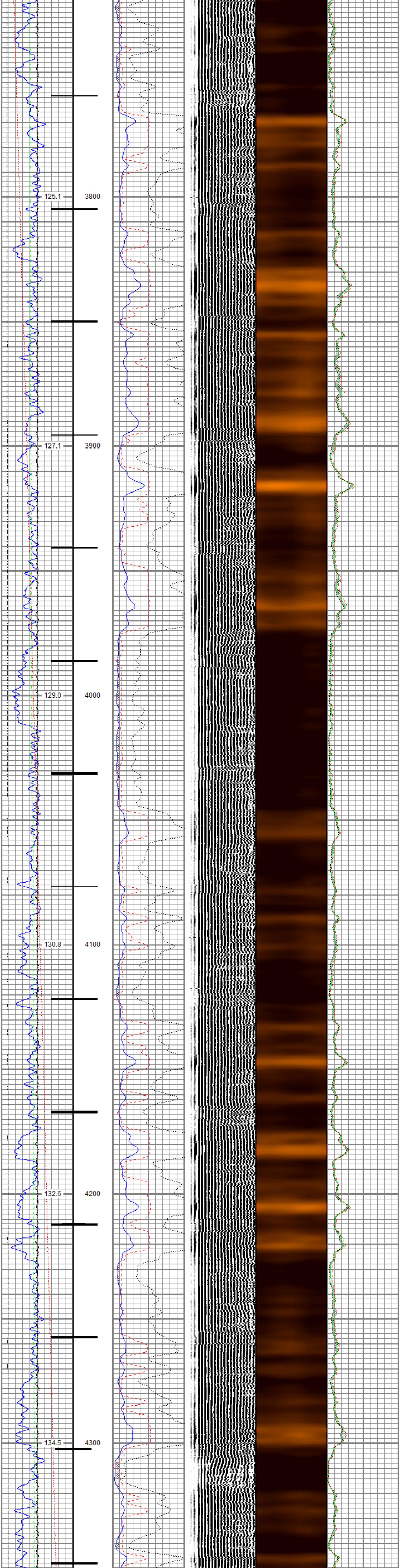








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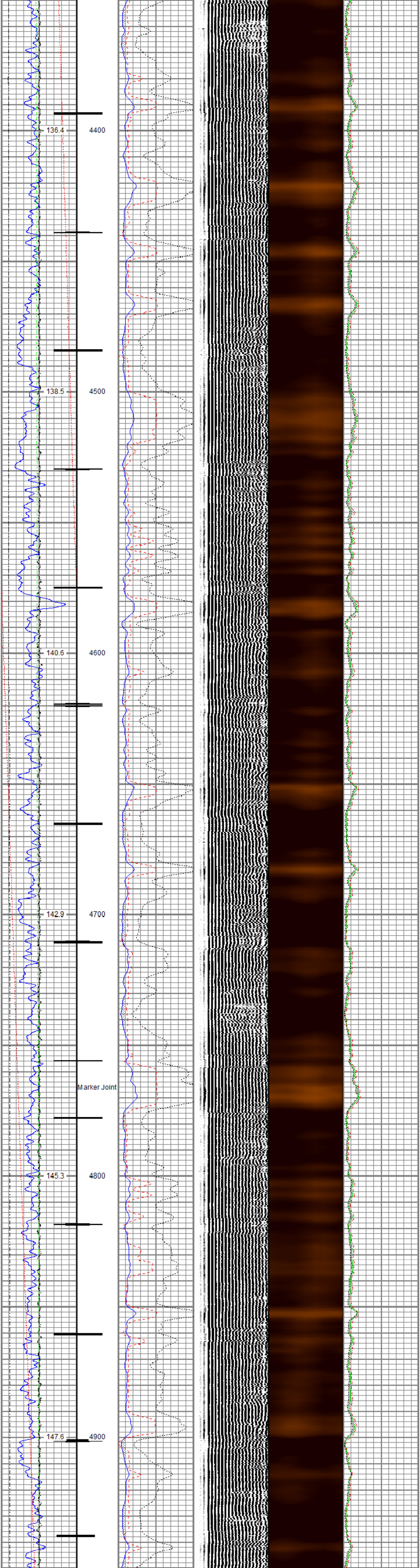
3800
127.1
3900
129.0
4000
130.8
4100
132.6
4200
134.5
4300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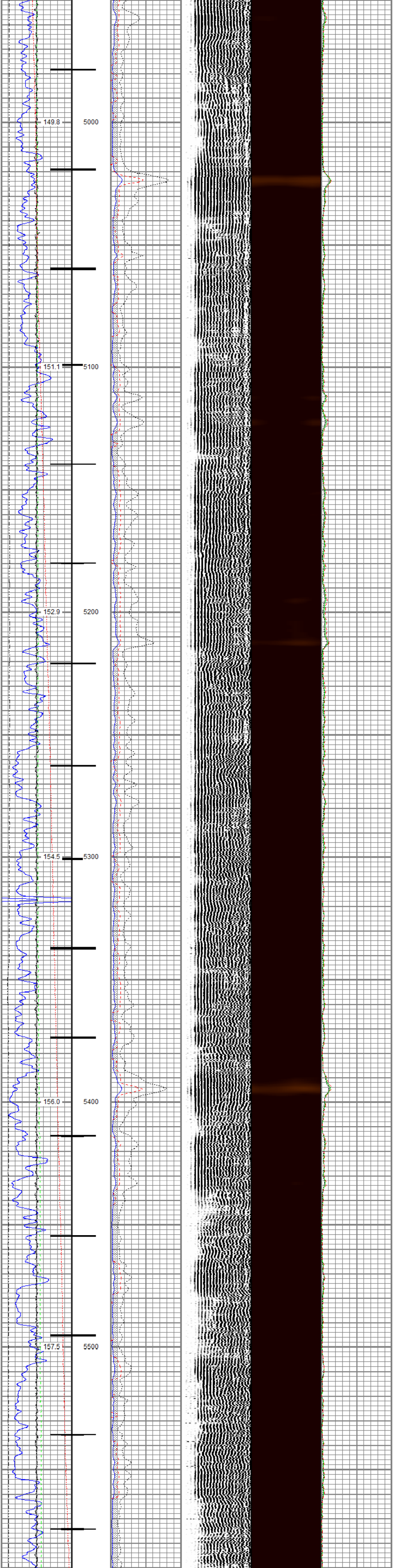
4400
138.5
4500
140.6
4600
142.9
4700
Marker Joint
145.3
4800
147.6
4900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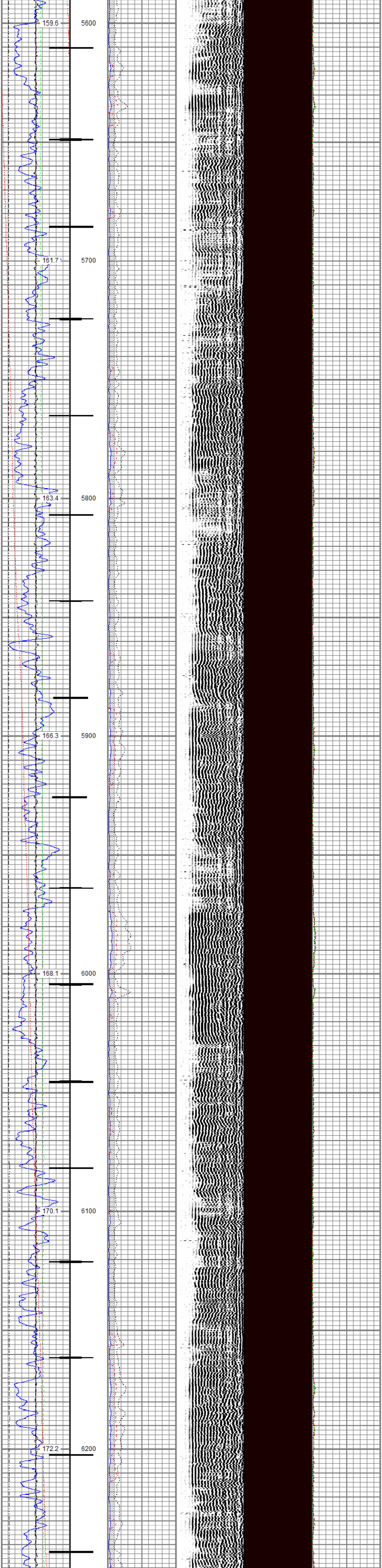
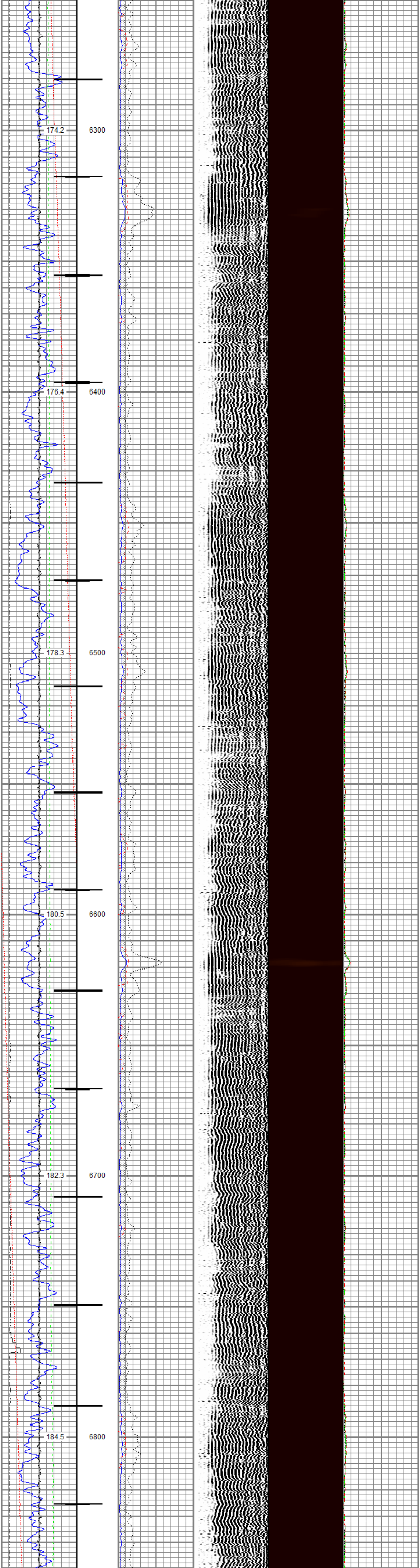
5100
152.9
5200
154.5
5300
156.0
5400
157.5
5500


159.6
5600
161.7
5700
163.4
5800
166.3
5900
168.1
6000
170.1
6100
172.2
6200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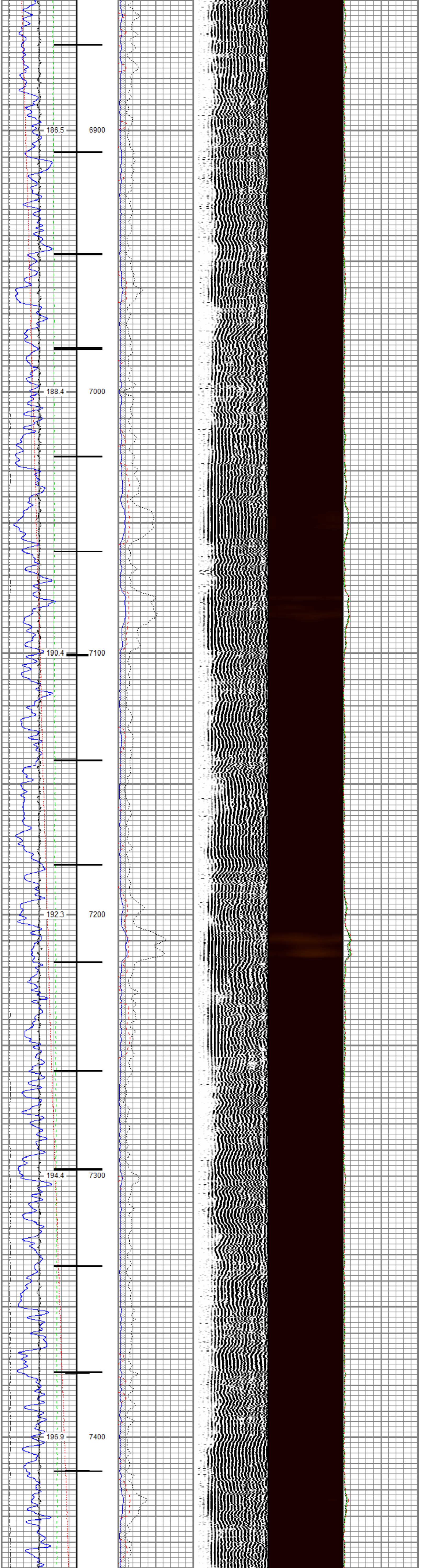
6300
176.4
6400
178.3
6500
180.5
6600
182.3
6700
184.5
6800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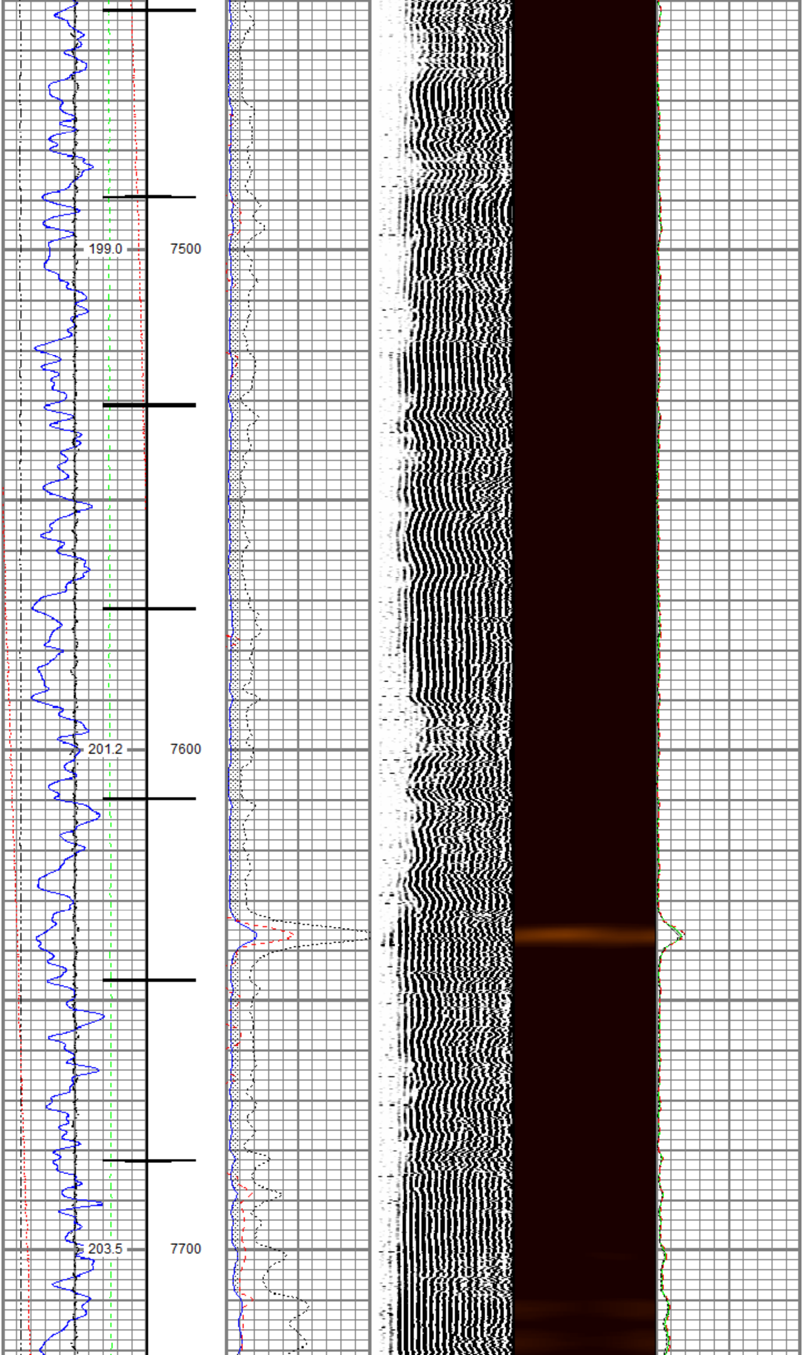
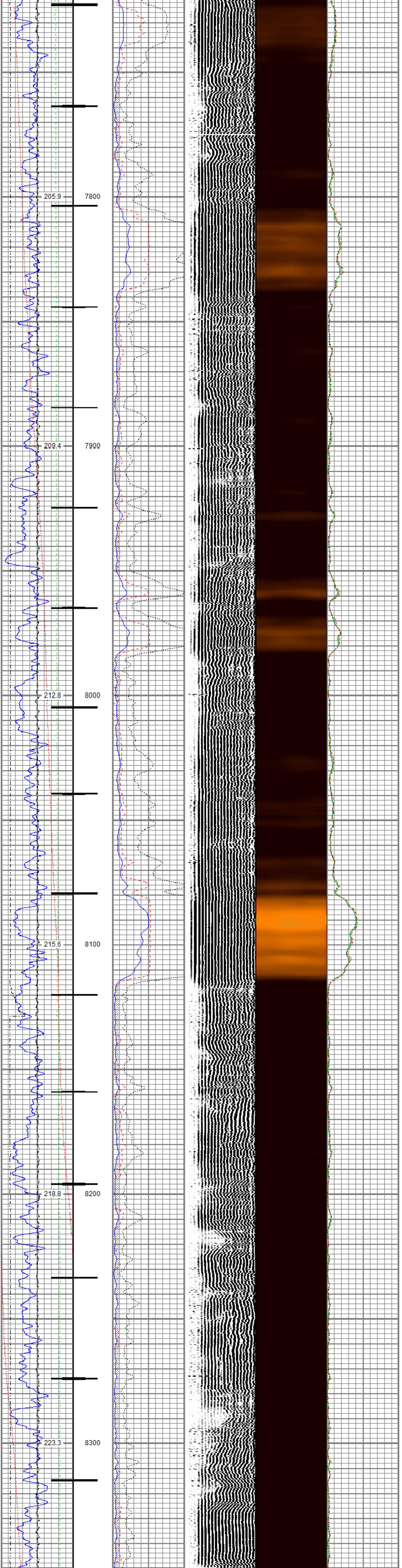
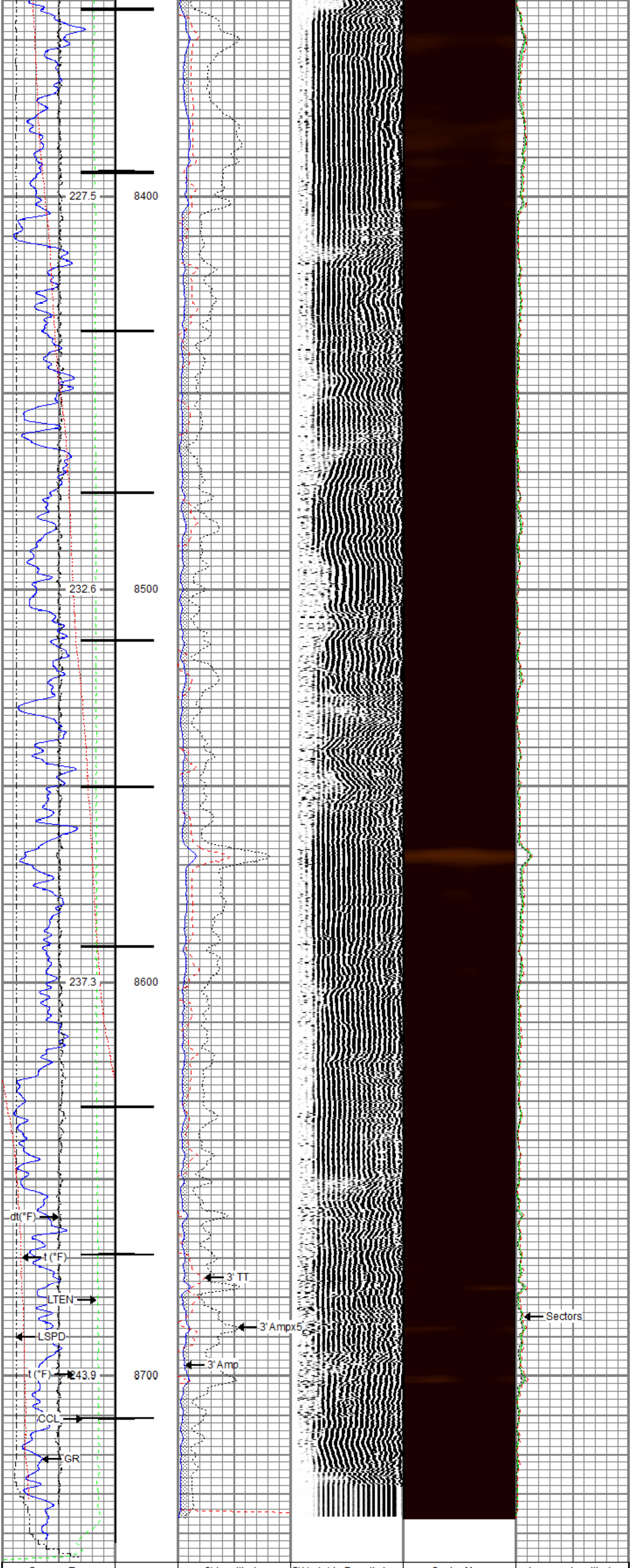
6900
188.4
7000
190.4
7100
192.3
7200
194.4
7300
196.9
7400


199.0
7500
201.2
7600
203.5
7700





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
Casing Collar Locator

3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

5' Variable Density Log
200 (usec) 1200

Sector Map

Average Amplitude
0 150
MimimumAmplitude
0 150
MaximumAmplitude
0 150

Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal rwf 312-12_rbl_02-22-20\processed_tep_federal rwf 312-12_rbl_02-22-20.db
Dataset Pathname	repeat2.2
Presentation Format	ros_radii_tep
Dataset Creation	Sun Feb 23 19:38:14 2020
Charted by	Depth in Feet scaled 1:240

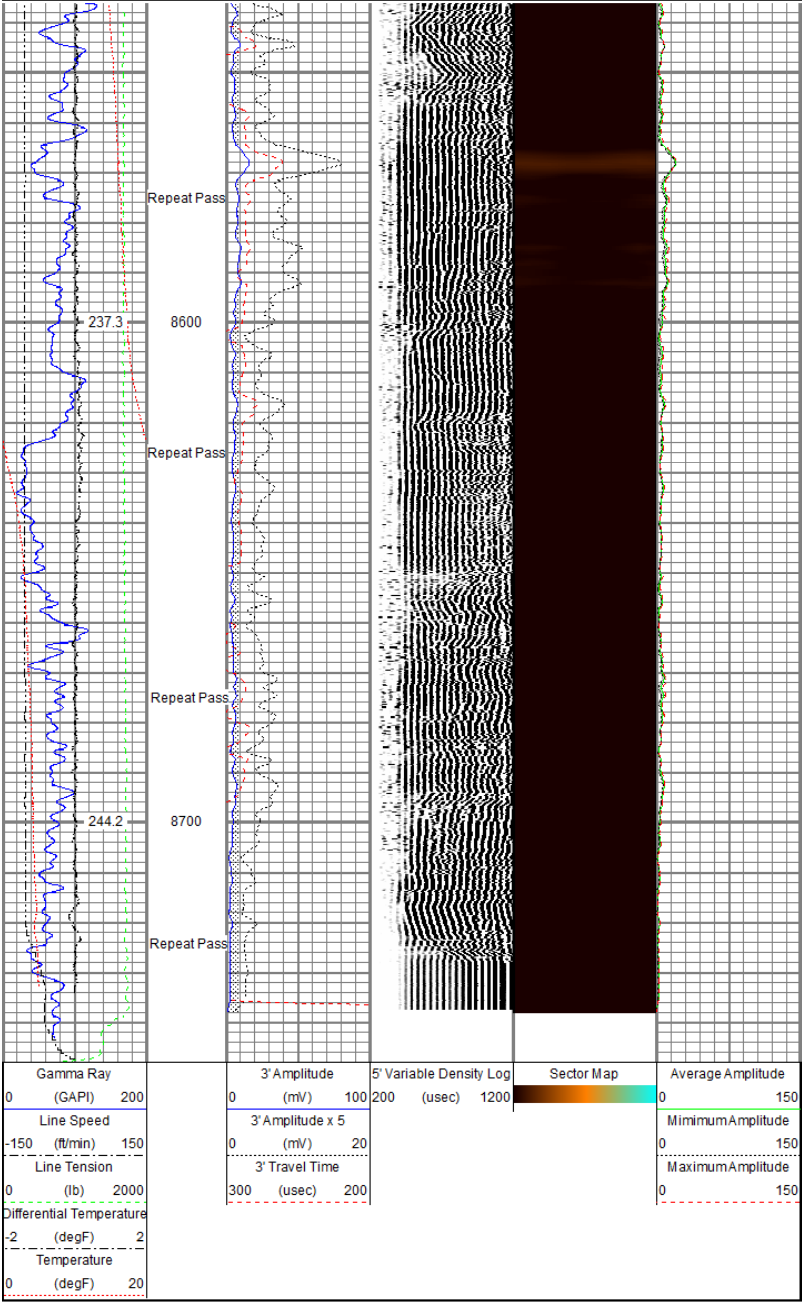
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

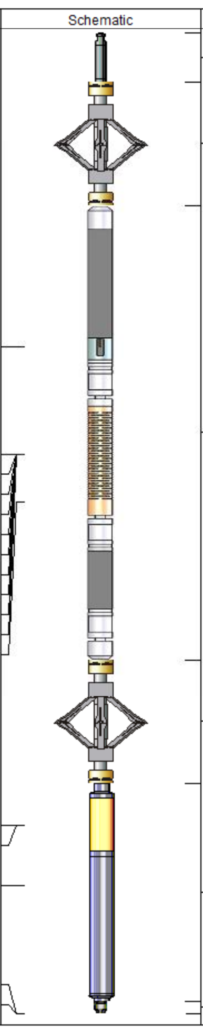
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

5' Variable Density Log
200 (usec) 1200

Sector Map

Average Amplitude
0 150
MimimumAmplitude
0 150
MaximumAmplitude
0 150



Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	3.60
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer with GO Ends	2.55	2.75	32.00
TEMP	13.79					
			Probe Radii-2750 RBT (FW0712-020) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS8	11.55					
WVFS7	11.55					
WVFS6	11.55					
WVFS5	11.55					
WVFS4	11.55					
WVFS3	11.55					
WVFS2	11.55					
WVFS1	11.55					
WVFCAL	11.55					
WVF3FT	11.55					
WVF5FT	10.55					
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer with GO Ends	2.55	2.75	32.00
CCL$2	3.88					
CCL$1	3.88					
GR	2.63		Probe GR-CCL-2750 GOB (FW1211-081) Probe 2-3/4" rev.2 Digital Scintillation Gamma Ray/CCL Combined with GO Bottom	4.51	2.75	55.00
LOCTIM	0.00					
UTCTIM	0.00		GO BN-14375 GO 1-7/16" Bull Nose with Go Box Top	0.25	1.44	1.00

Dataset:	processed_tep_federal rwf 312-12_rbl_02-22-20.db: field/well/run1/Main.1
Total length:	20.27 ft
Total weight:	228.60 lb
O.D.:	2.75 in

Calibration Report

Database File	c:\programdata\warrior\data\tep\tep_federal rwf 312-12_rbl_02-22-20\processed_tep_federal rwf 312-12_rbl_
Dataset Pathname	Main.1
Dataset Creation	Sun Feb 23 19:10:05 2020

Gamma Ray Calibration Report

Serial Number:	FW1211-081	
Tool Model:	2750 GOB	
Performed:	Mon Oct 01 11:32:39 2018	
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:	FW0712-020	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	35.174	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.004	0.753	0.800	81.196	106.184	1.239
CAL	-0.000	0.744				
5'	-0.003	0.691	0.800	81.196	115.889	1.123
SUM						
S1	-0.006	0.825	0.000	100.000	120.230	0.780
S2	-0.005	0.820	0.000	100.000	121.259	0.548
S3	-0.004	0.863	0.000	100.000	115.316	0.512
S4	-0.004	0.931	0.000	100.000	106.976	0.407
S5	-0.002	0.924	0.000	100.000	108.045	0.195
S6	-0.004	0.898	0.000	100.000	110.892	0.439
S7	-0.004	0.866	0.000	100.000	114.865	0.486
S8	-0.005	0.849	0.000	100.000	117.125	0.563

Air Zero Calibration, performed Sat Feb 22 15:08:19 2020:

	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:	FW0712-020	
Tool Model:	2750 RBT	
Performed:	Mon Oct 01 11:32:14 2018	
	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	

RELIANCE OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal RWF 312-12
Field	Rulison
County	Garfield
State	Colorado