Company TEP Rocky Mountain LLC
Well Federal PA 332-24
Field Parachute
County Garfield
State Colorado

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal PA 332-24
Field Parachute
County Garfield State Colorado

Location: API # : 05-045-23763
SEC 19 TWP 6S RGE 94W

Other Services

Permanent Datum	Ground Level	Elevation	5732.2'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 5756.2'
D.F. 5755.2'
G.L. 5732.2'

Date	01-NOV-2018		
Run Number	One		
Depth Driller	9201 FT		
Depth Logger	9167 FT		
Bottom Logged Interval	9153 FT		
Top Log Interval	Surface		
Open Hole Size	8.750"		
Type Fluid	Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	242°F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	18:50		
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	1127 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	9161 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 5005 - 5019 FT
Log ran from 9153 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal pa 332-24_rbl_11-01-18\tep_federal pa 332-24_rbl_11-01-18.db
Dataset Pathname	main.3
Presentation Format	ros_rbt004_tep
Dataset Creation	Fri Nov 02 09:22:15 2018
Charted by	Depth in Feet scaled 1:240

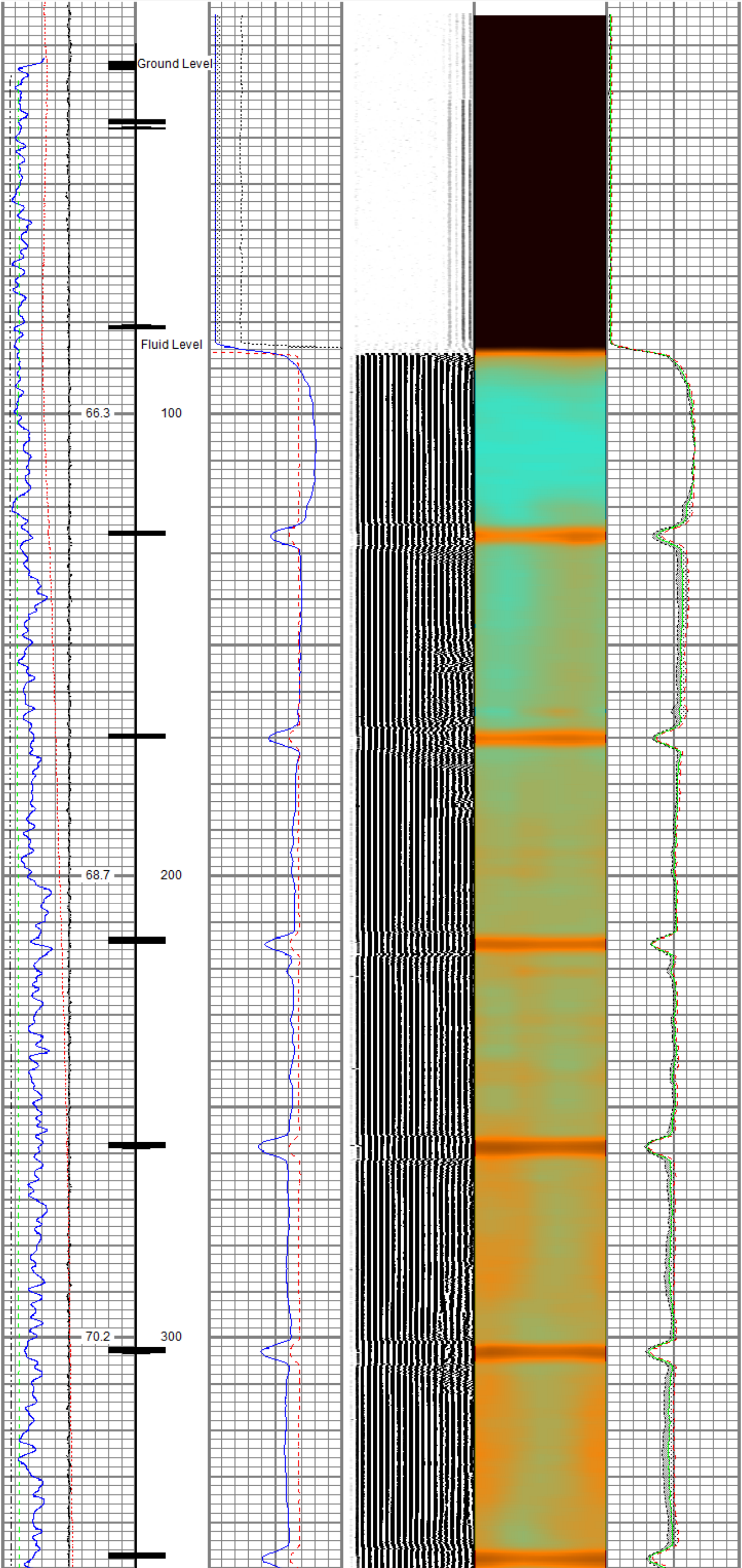
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20
10 CCL 0

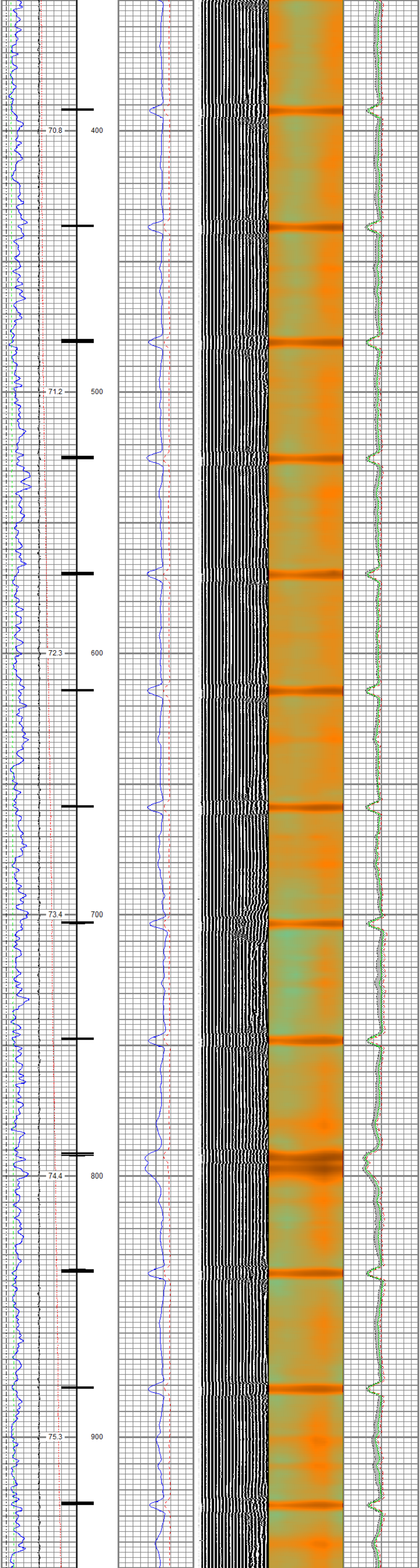
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

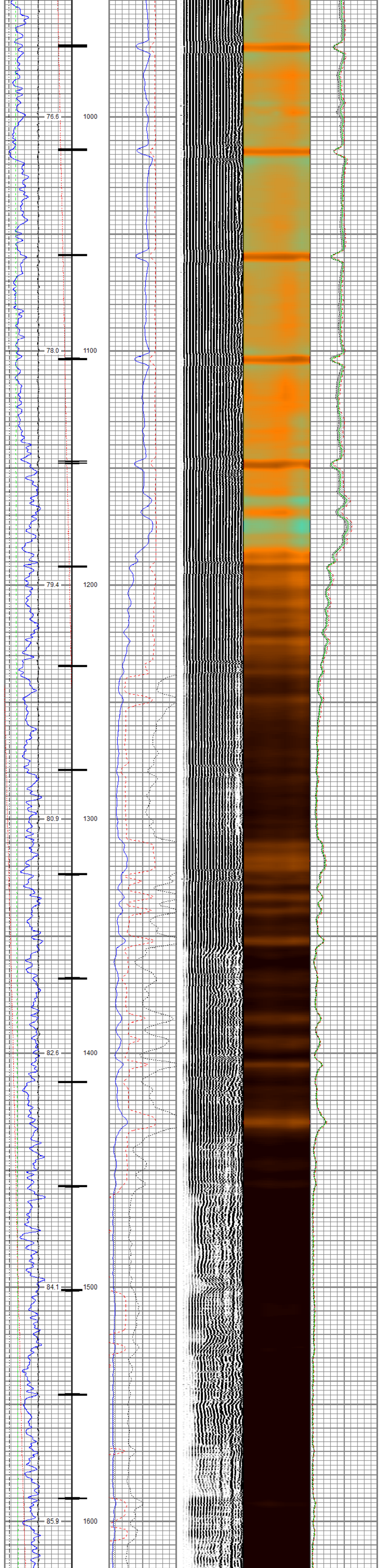
5' Variable Density Log
200 1200

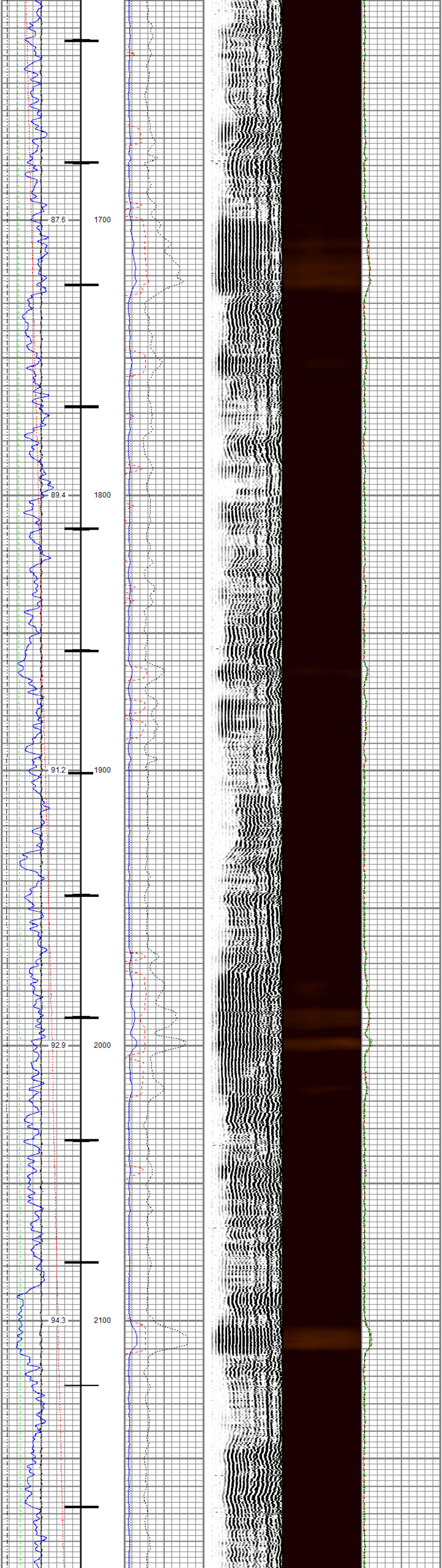
Sector Map
10 110

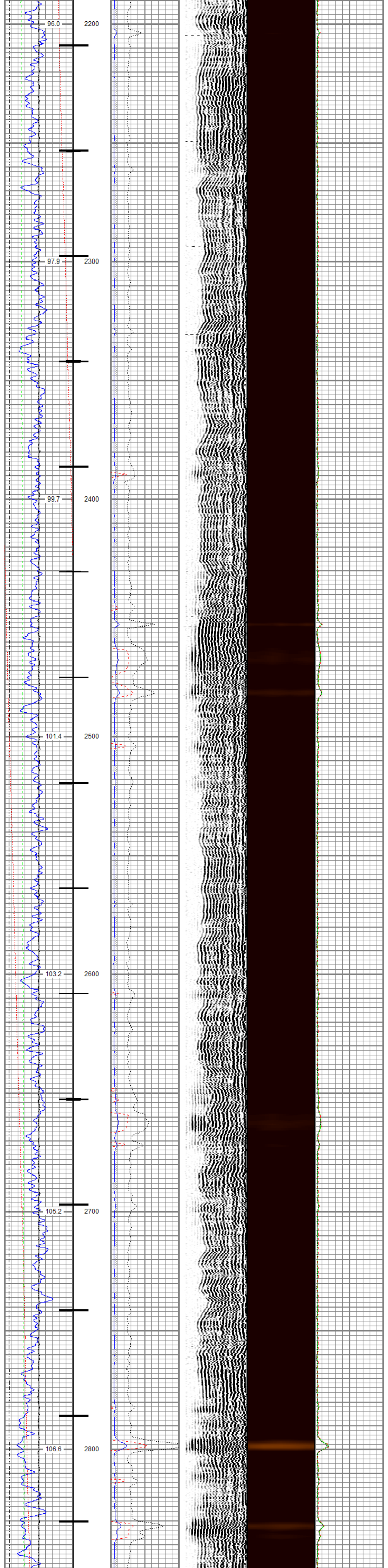
Average Amplitude
0 150
MimimumAmplitude
0 150
MaximumAmplitude
0 150

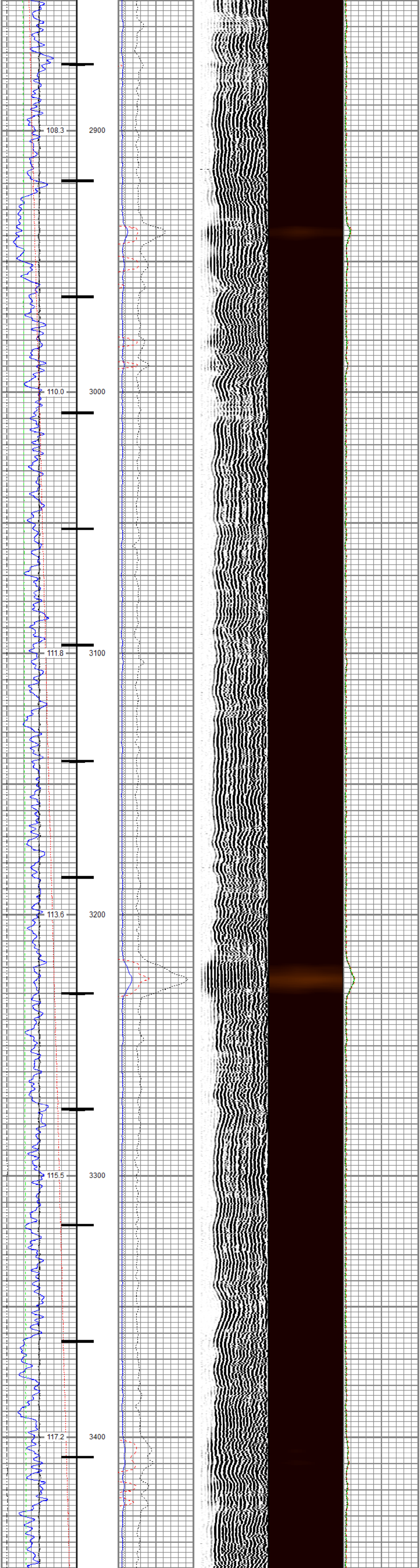


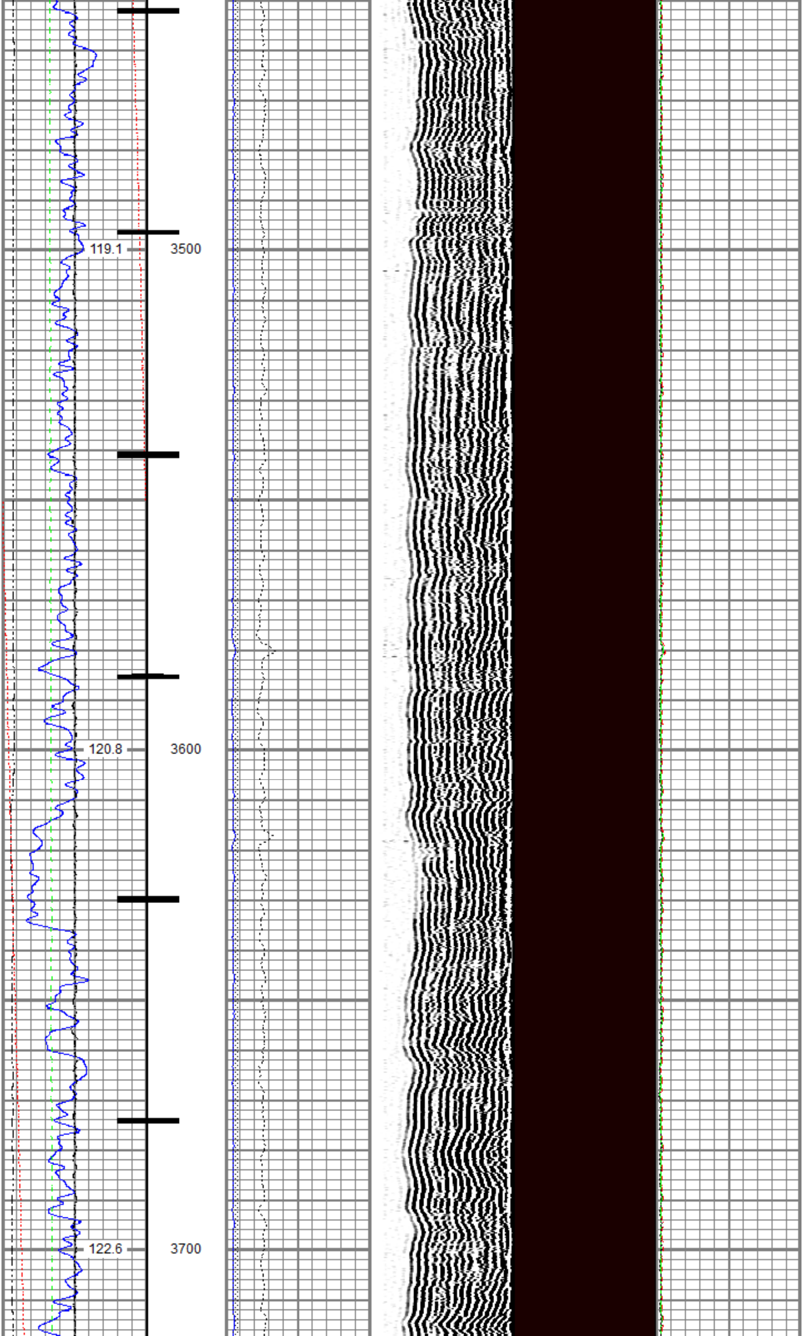


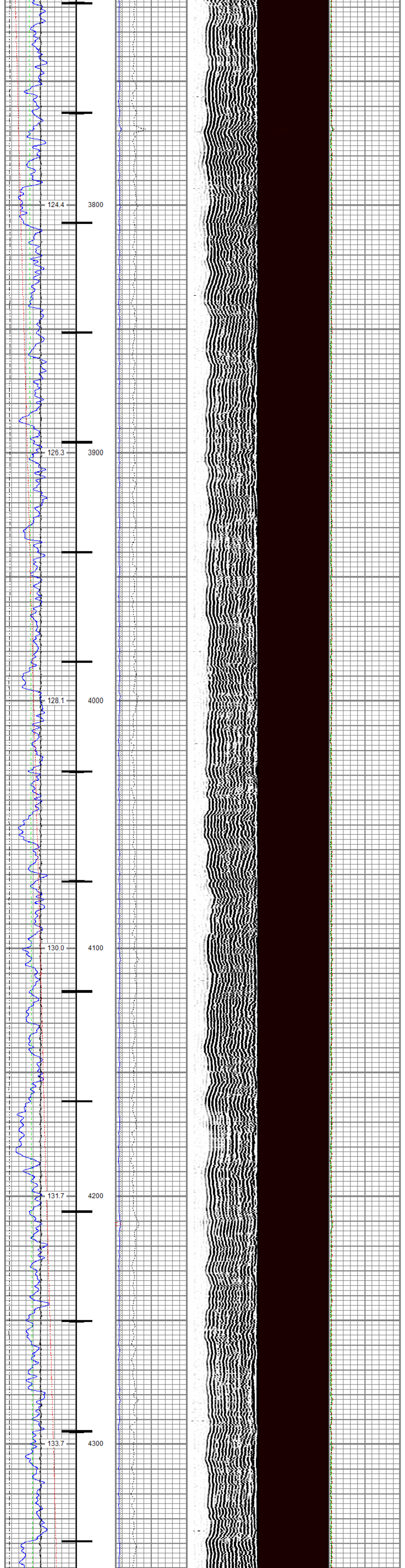








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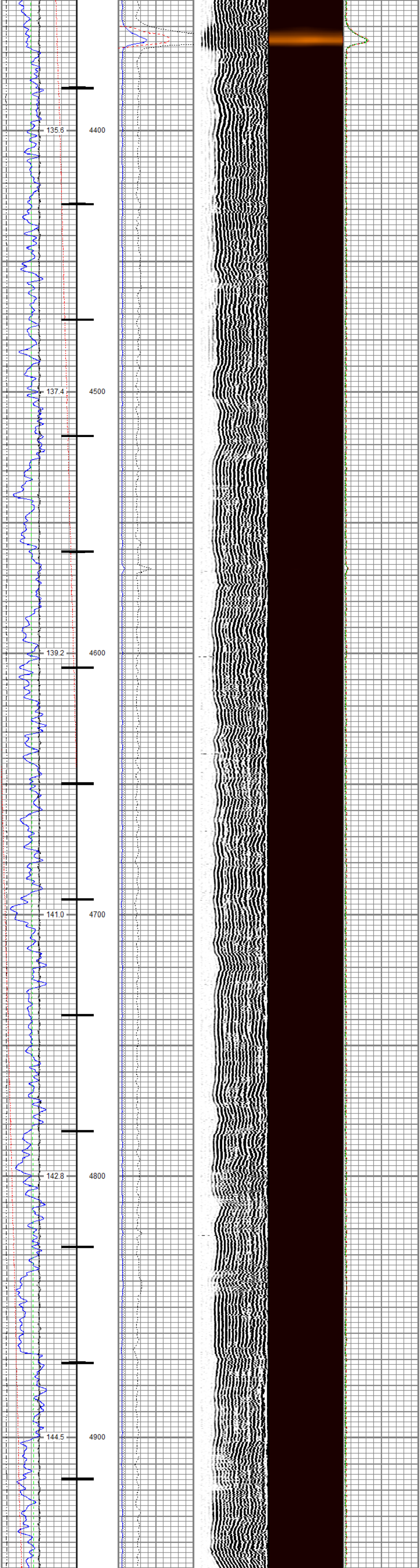
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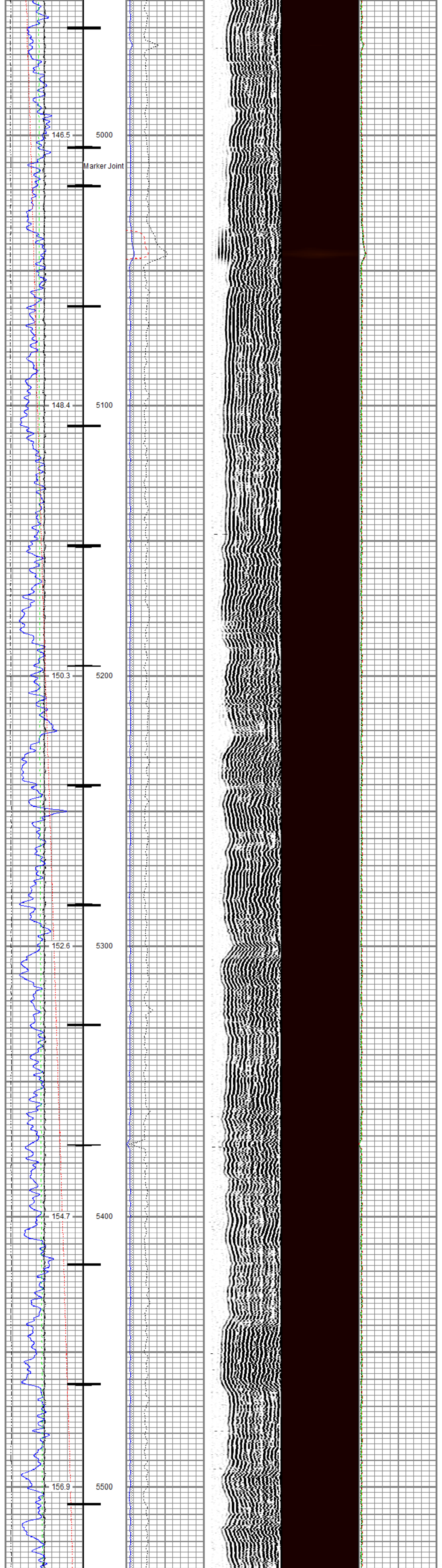
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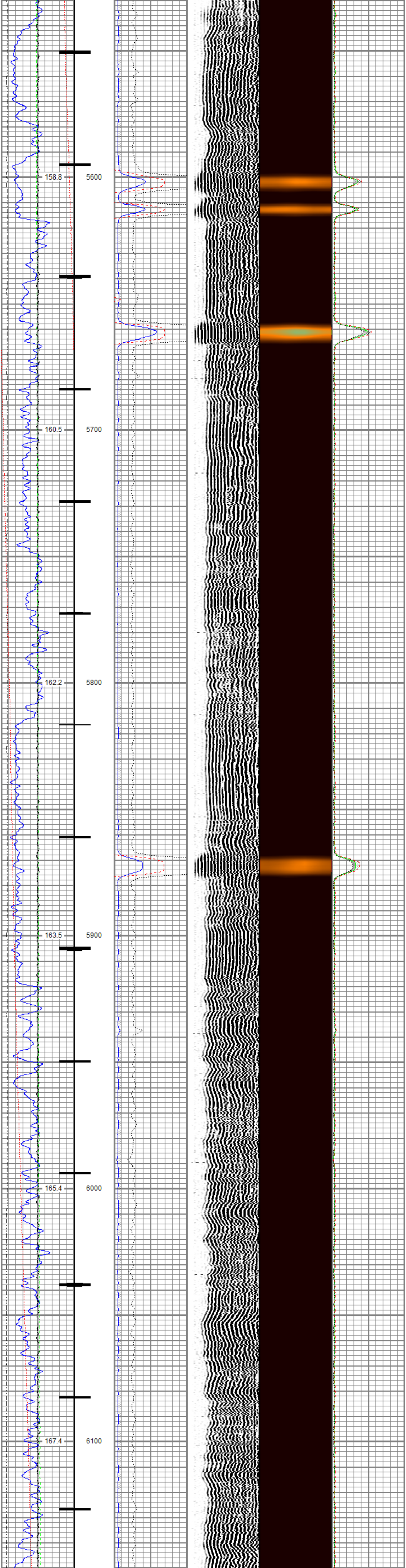
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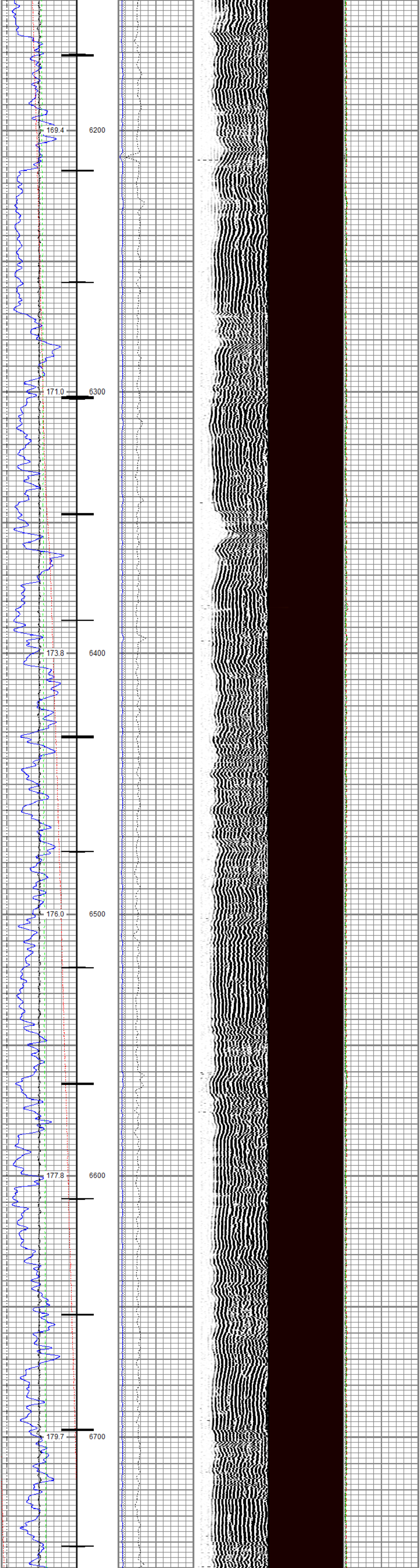
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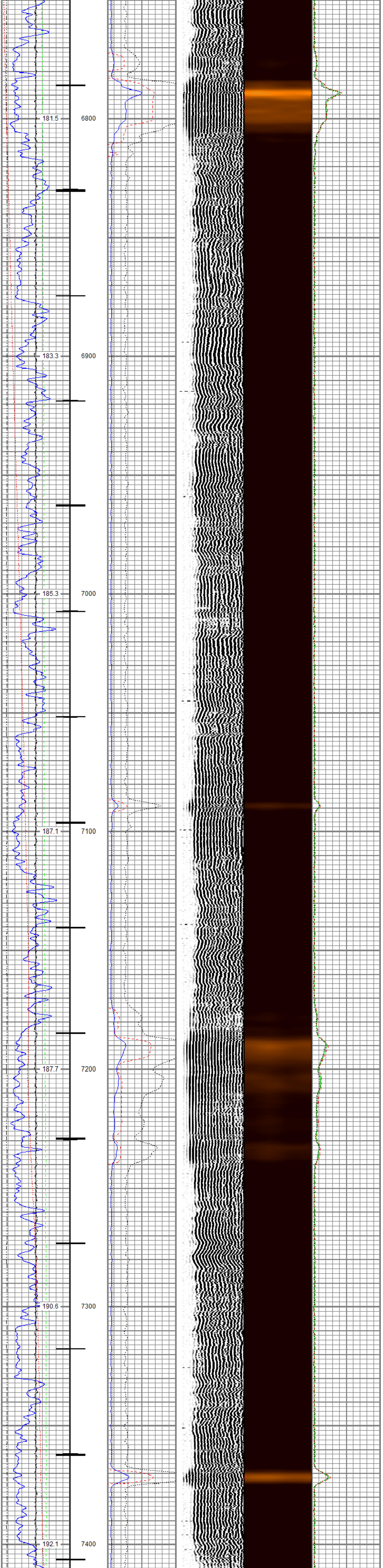
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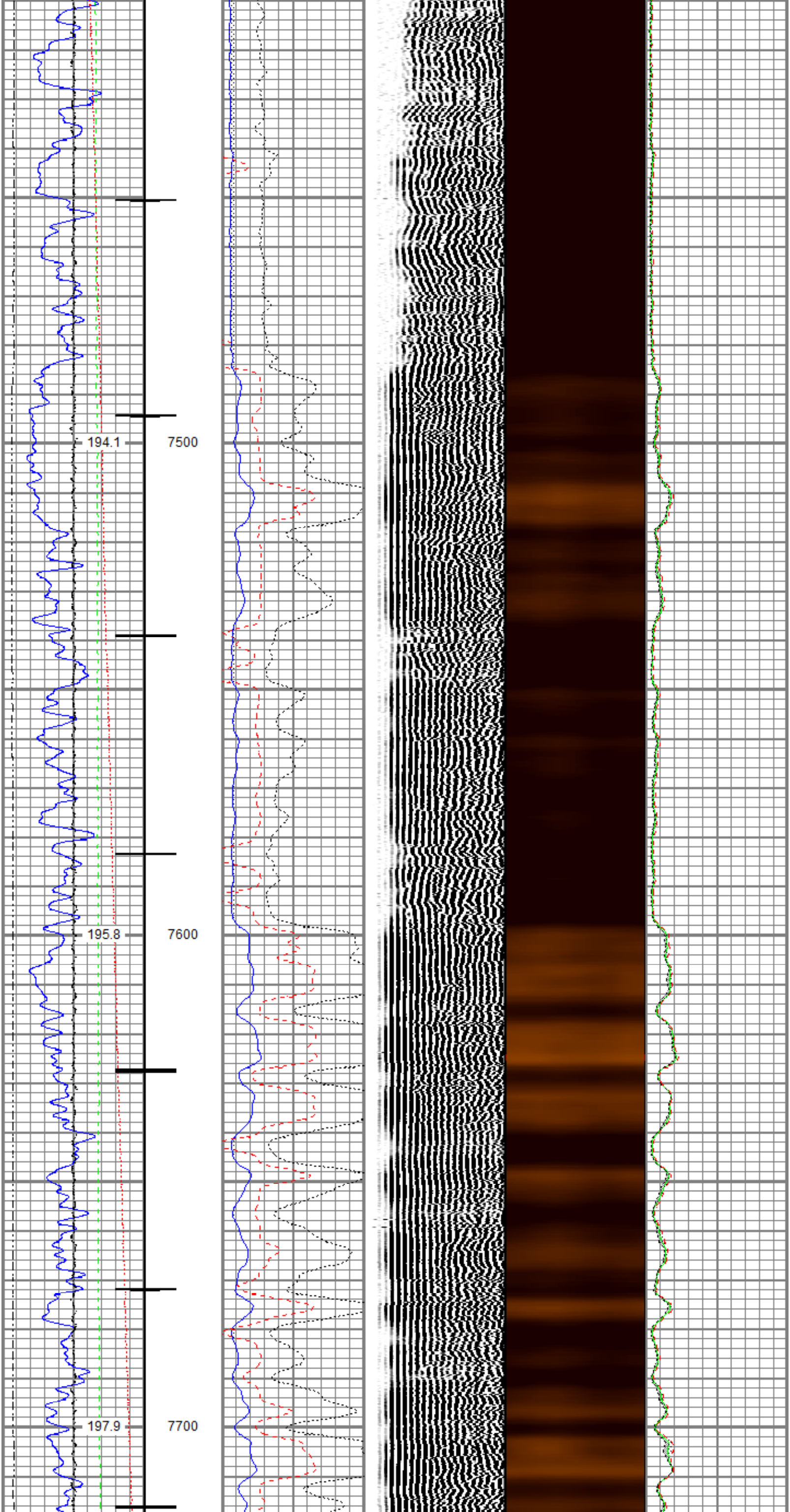
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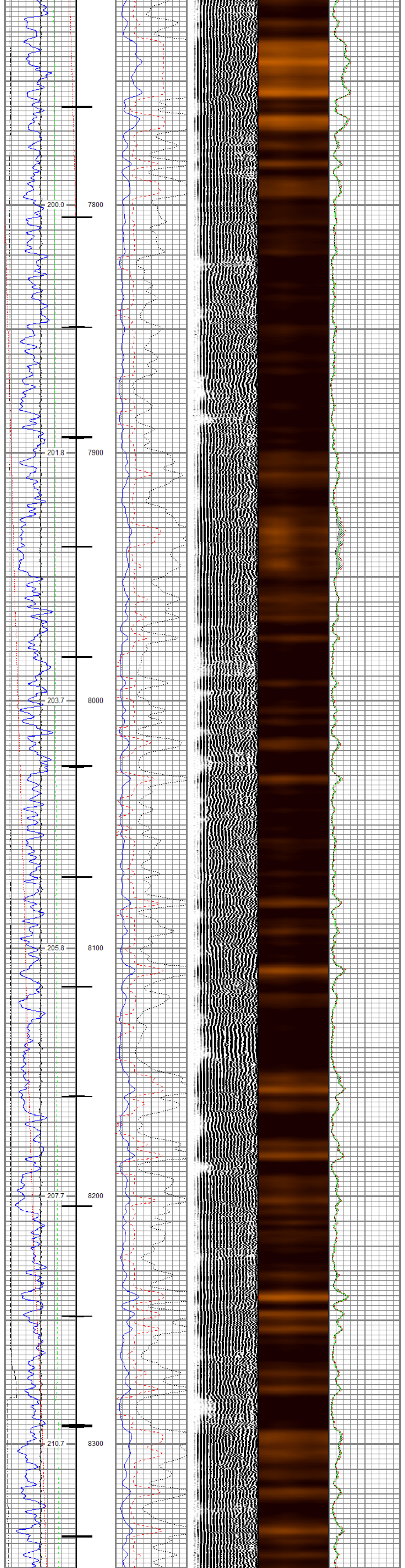
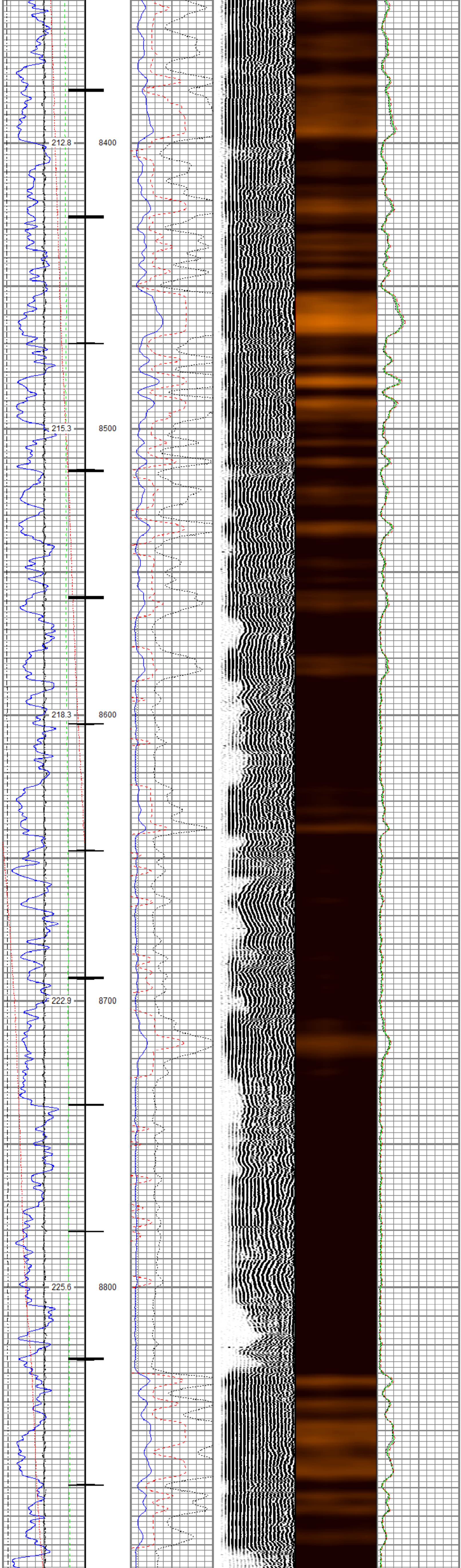
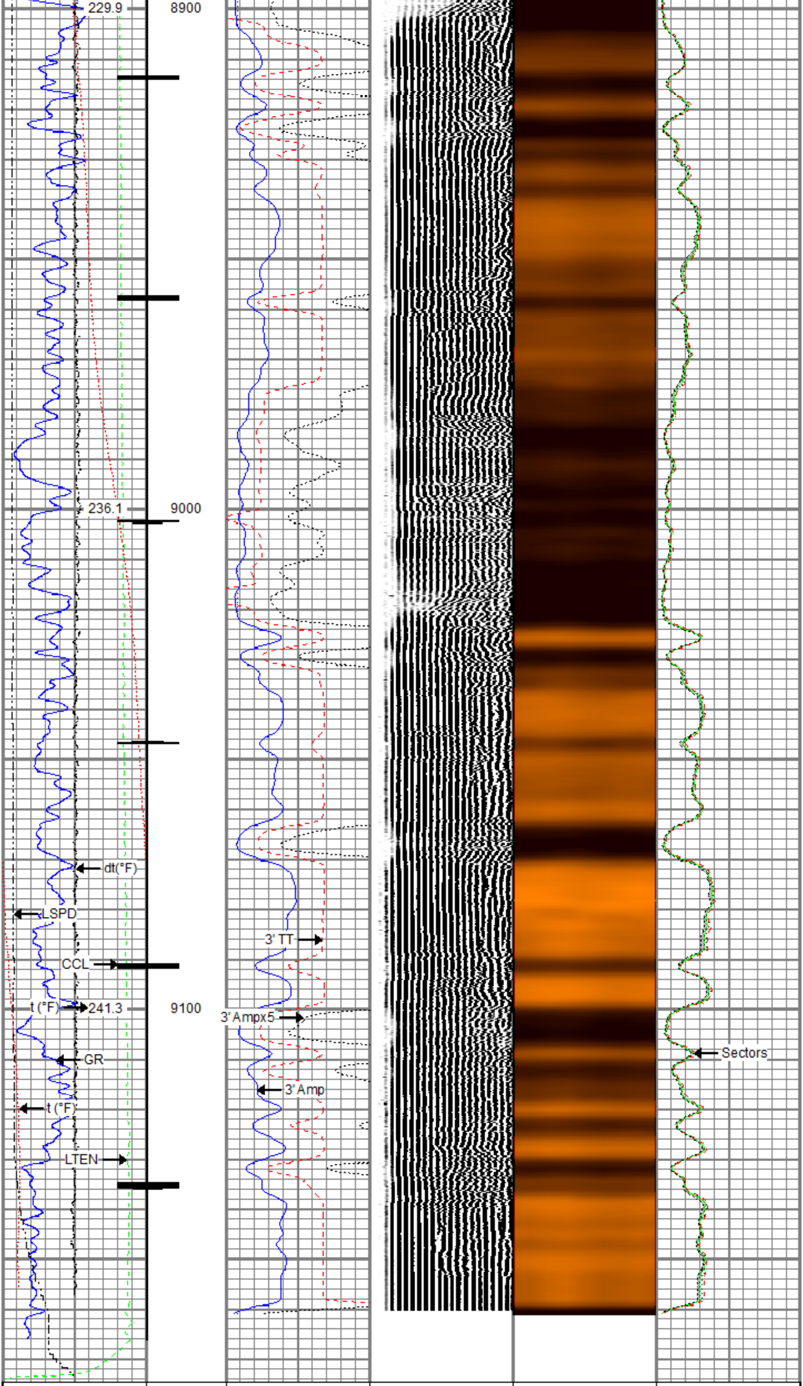






Gamma Ray 0 (GAPI) 200 Line Speed -150 (ft/min) 150 Line Tension 0 (lb) 2000 Differential Temperature -2 (degF) 2 Temperature 0 (degF) 20 10 CCL 0		3' Amplitude 0 (mV) 100 3' Amplitude x 5 0 (mV) 20 3' Travel Time 300 (usec) 200	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150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

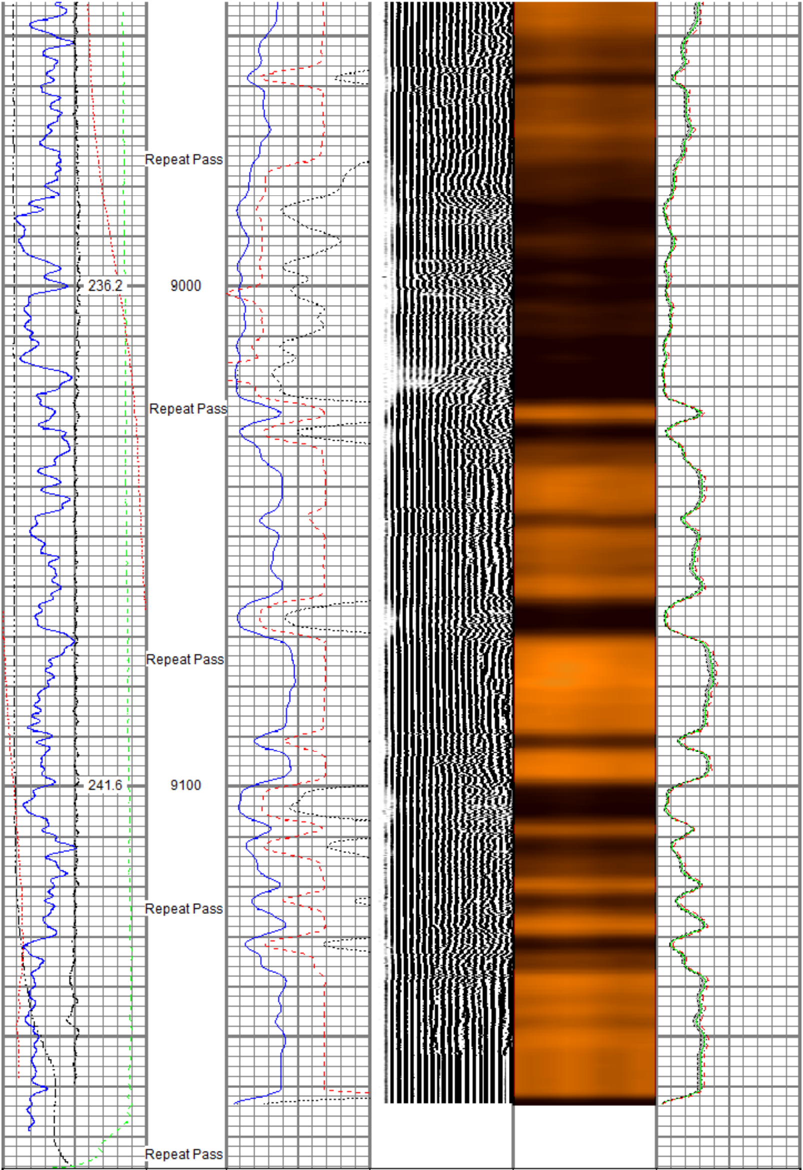
RELIANCE
OILFIELD SERVICES

Repeat Pass

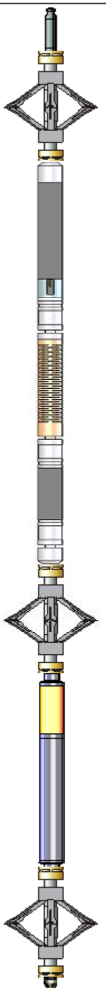
Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal pa 332-24_rbl_11-01-18\tep_federal pa 332-24_rbl_11-01-18.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Fri Nov 02 09:31:14 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



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
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
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 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 (FW0712-020) 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					
			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 (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 332-24_rbl_11-01-18.db: field/well/run1/main.3
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 332-24_rbl_11-01-18\tep_federal pa 332-24_rbl_11-01-18.db
Dataset Pathname	main.3
Dataset Creation	Fri Nov 02 09:22:15 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'	-0.033	0.677	0.800	81.196	113.210	4.574
CAL	0.002	0.746				
5'	-0.015	0.572	0.800	81.196	136.860	2.867
SUM						
S1	-0.029	0.687	0.000	100.000	139.615	4.040
S2	-0.027	0.661	0.000	100.000	145.422	3.930
S3	-0.034	0.634	0.000	100.000	149.679	5.094
S4	-0.040	0.649	0.000	100.000	145.190	5.798
S5	-0.037	0.661	0.000	100.000	143.181	5.351
S6	-0.029	0.679	0.000	100.000	141.326	4.082
S7	-0.031	0.689	0.000	100.000	138.862	4.274
S8	-0.031	0.707	0.000	100.000	135.442	4.192

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	

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal PA 332-24
Field	Parachute
County	Garfield
State	Colorado