RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal RU 312-17
Field Rulison
County Garfield
State Colorado

Company	TEP Rocky Mountain LLC
Well	Federal RU 312-17
Field	Rulison
County	Garfield State Colorado
Location:	API # : 05-045-23736
	SEC 17 TWP 7S RGE 93W

Other Services
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Permanent Datum	Ground Level	Elevation 8365.6'	Elevation
Log Measured From	Kelly Bushing	24 FT	K.B. 8389.6'
Drilling Measured From	Kelly Bushing		D.F. 8388.6'
			G.L. 8365.6'

Date	01-APR-2018
Run Number	One
Depth Driller	10872 FT
Depth Logger	10785 FT
Bottom Logged Interval	10780 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	246°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	2:00
Equipment Number	HD-0359
Location	Grand Junction, CO
Recorded By	Z.Fisher
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	32.3	H-40	Surface	1142 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10833 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 6691 FT to 6713 FT
Log ran from 10785 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

RELIANCE
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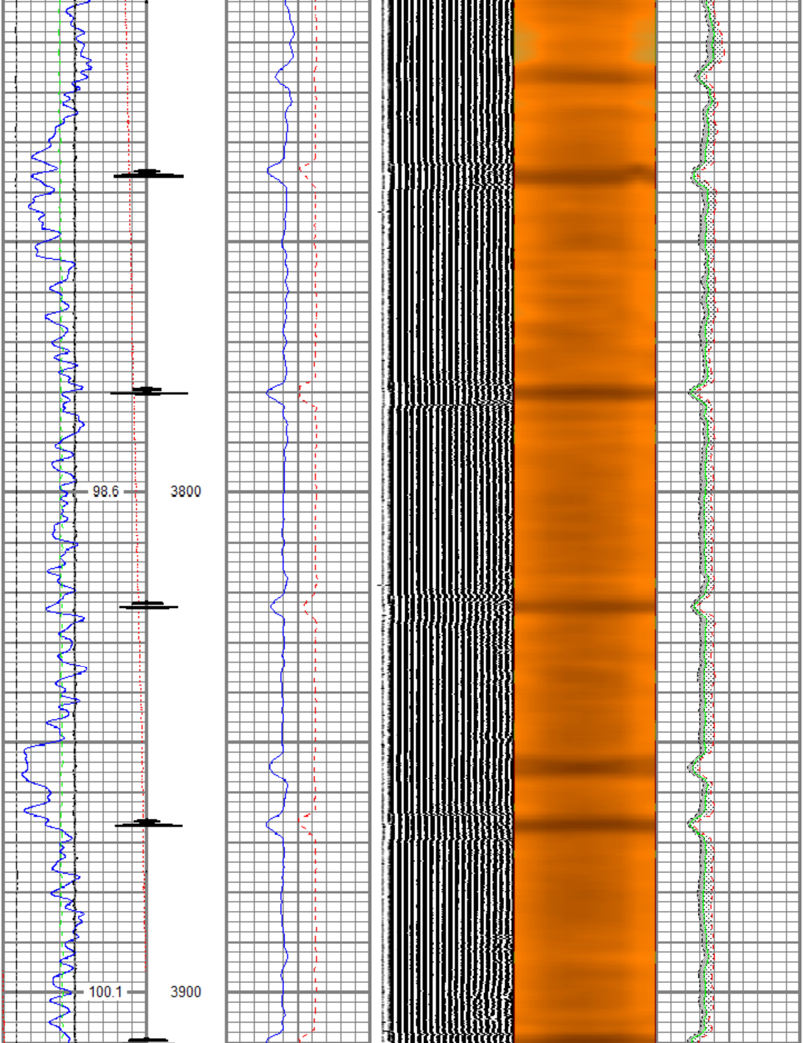
Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	new folder (3)\processed_tep_federal ru 312-17_rbl_04-01-18.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Sun Apr 01 17:19:30 2018
Charted by	Depth in Feet scaled 1:240

Gamma Ray	CCL$2	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0.5 10	0 (mV) 100	200 1200	10 110	0 150
Casing Collar Locator		3' Amplitude x 5			Mimimum Amplitude
Line Speed		0 (mV) 20			0 150
-150 (ft/min) 150		3' Travel Time			Maximum Amplitude
Line Tension		300 (usec) 200			0 150
0 (lb) 2000					
Differential Temperature					
-2 (degF) 2					
Temperature					
0 (degF) 20					
20 CCL$2 0.5					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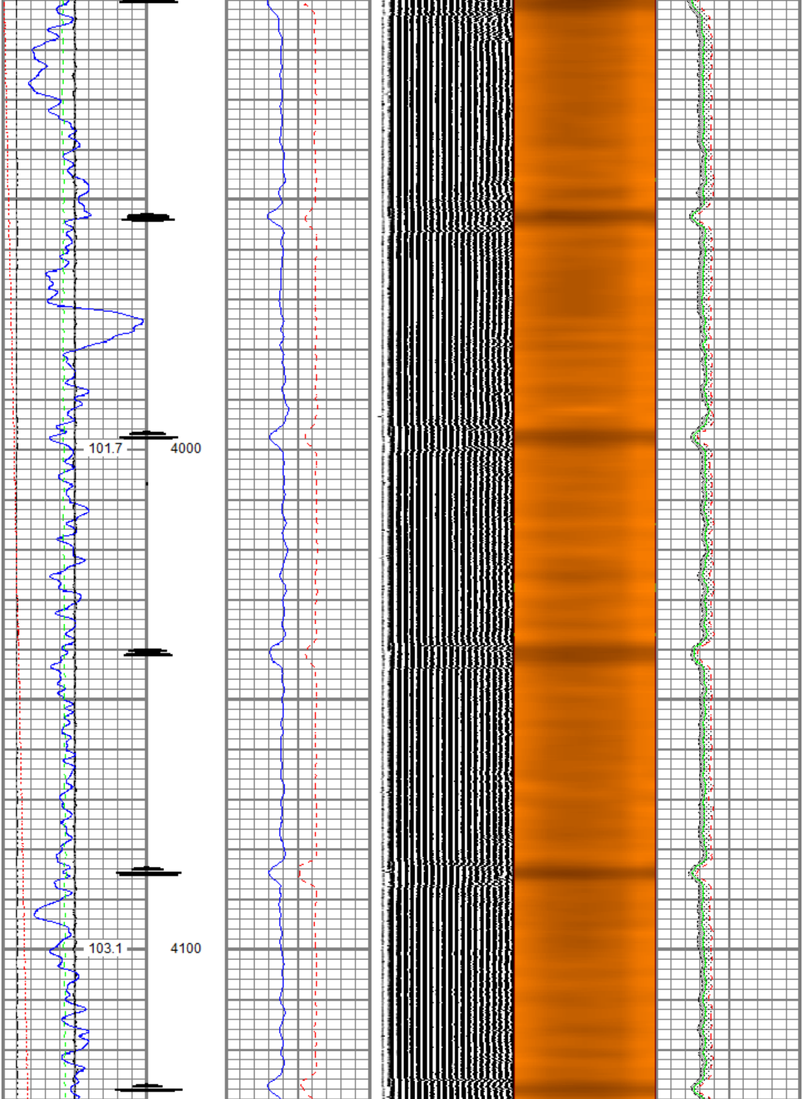
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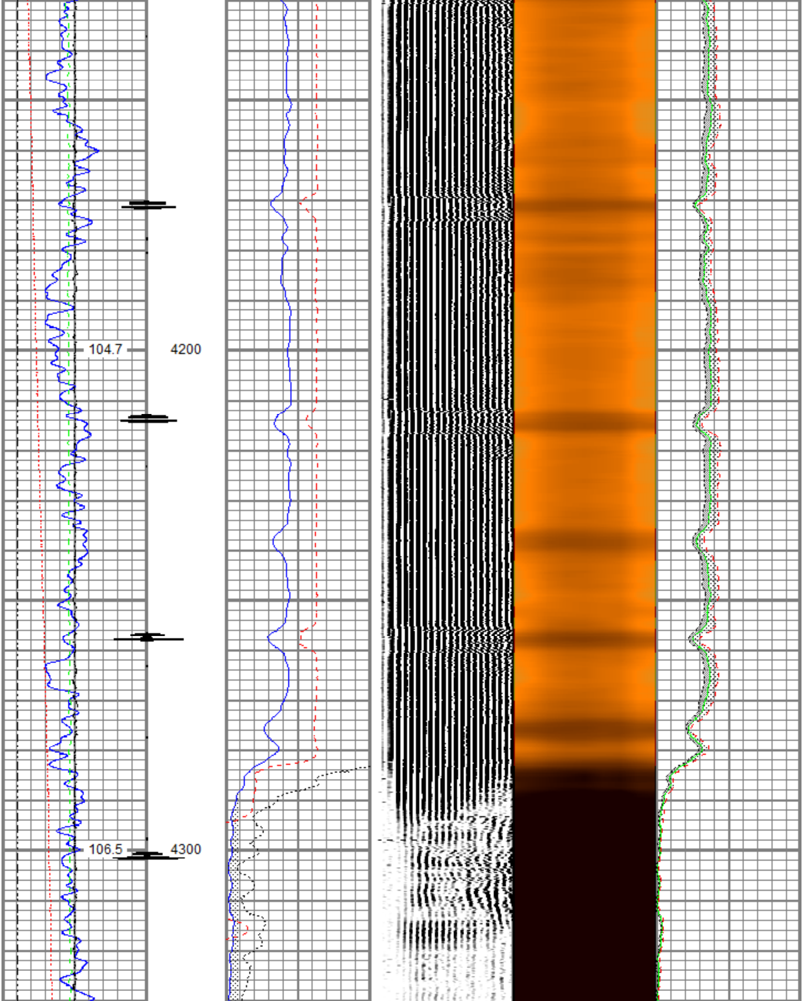
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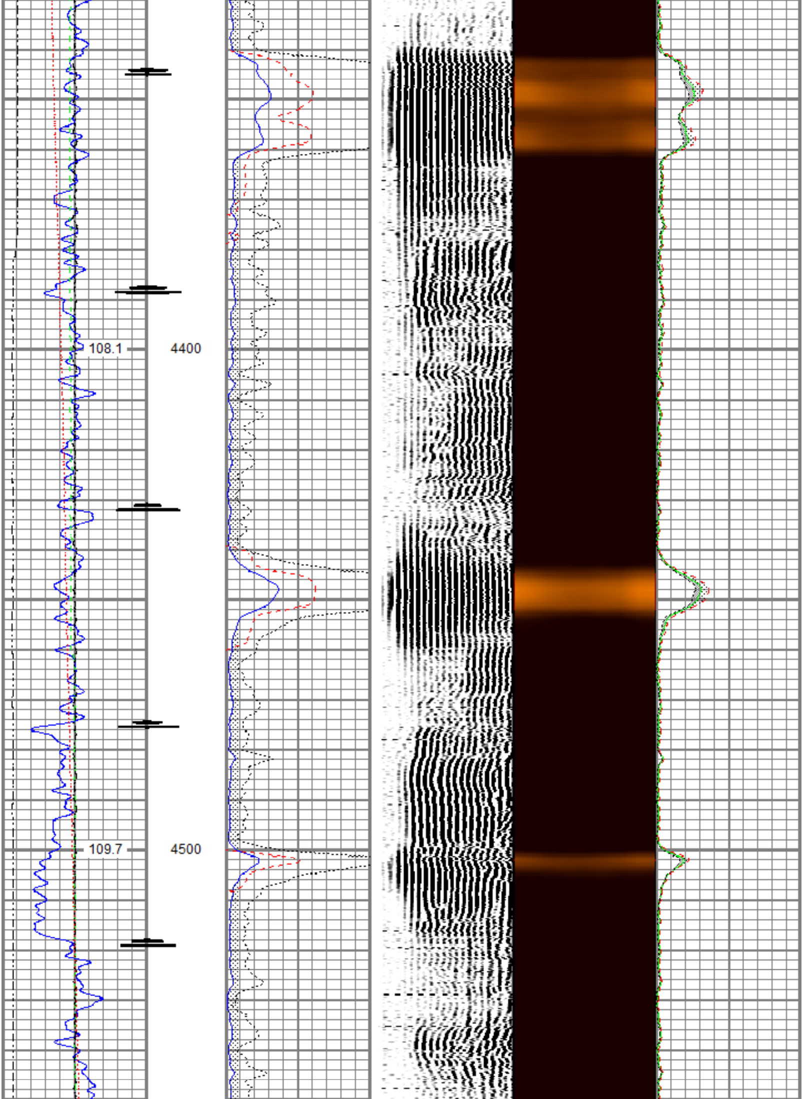
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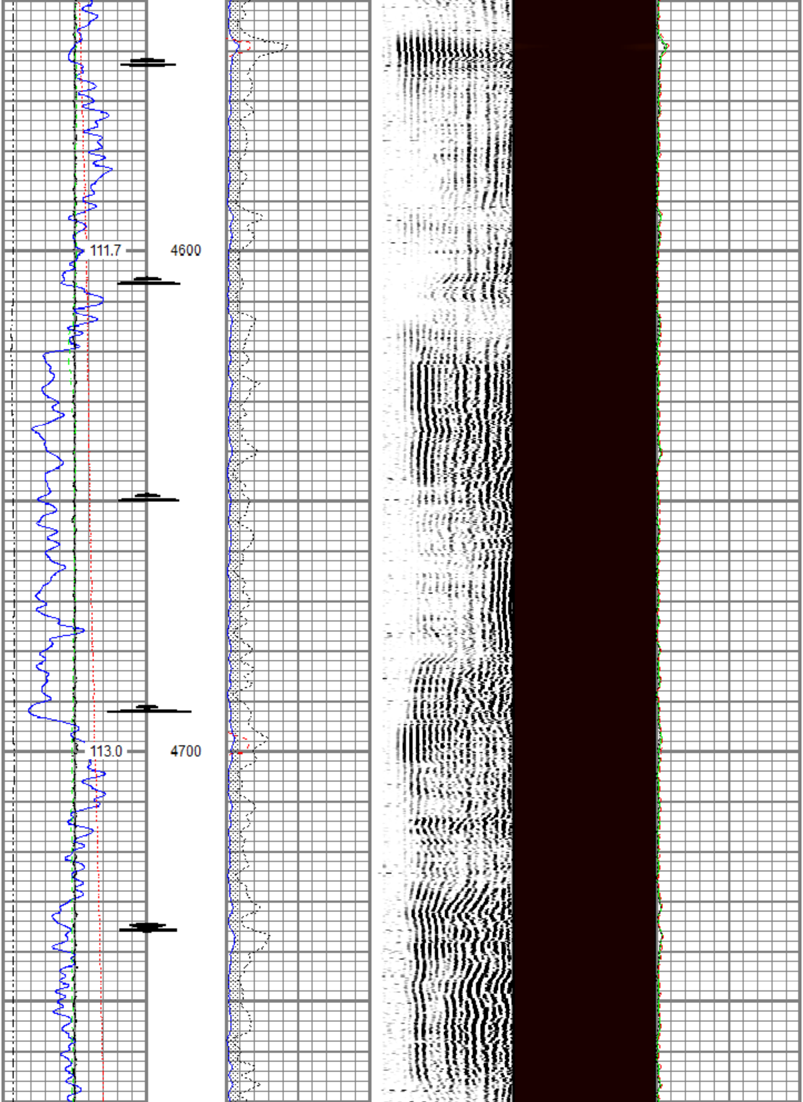
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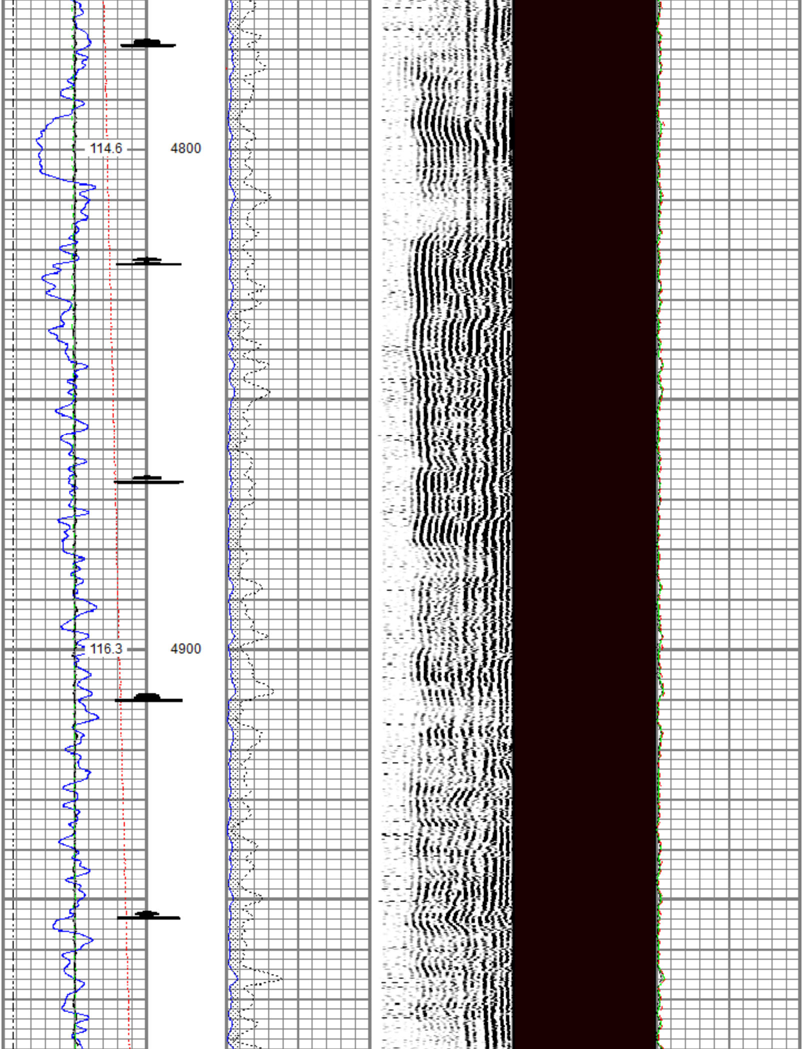
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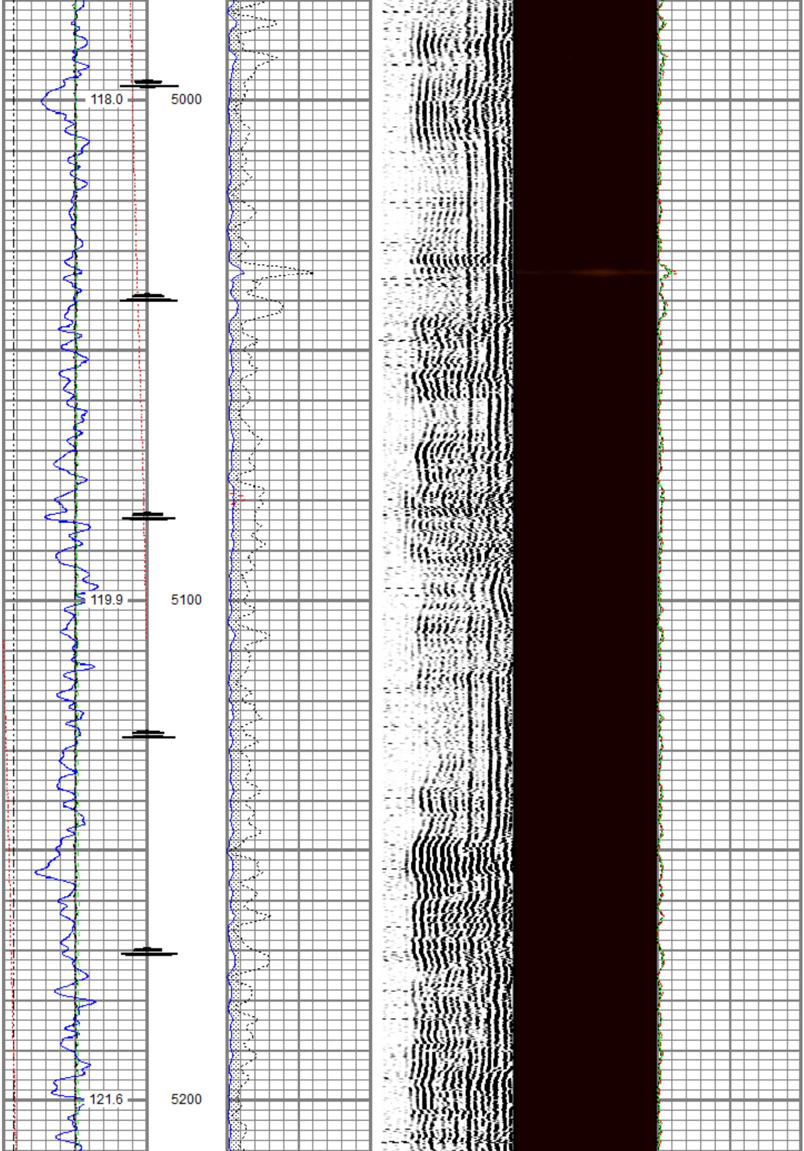
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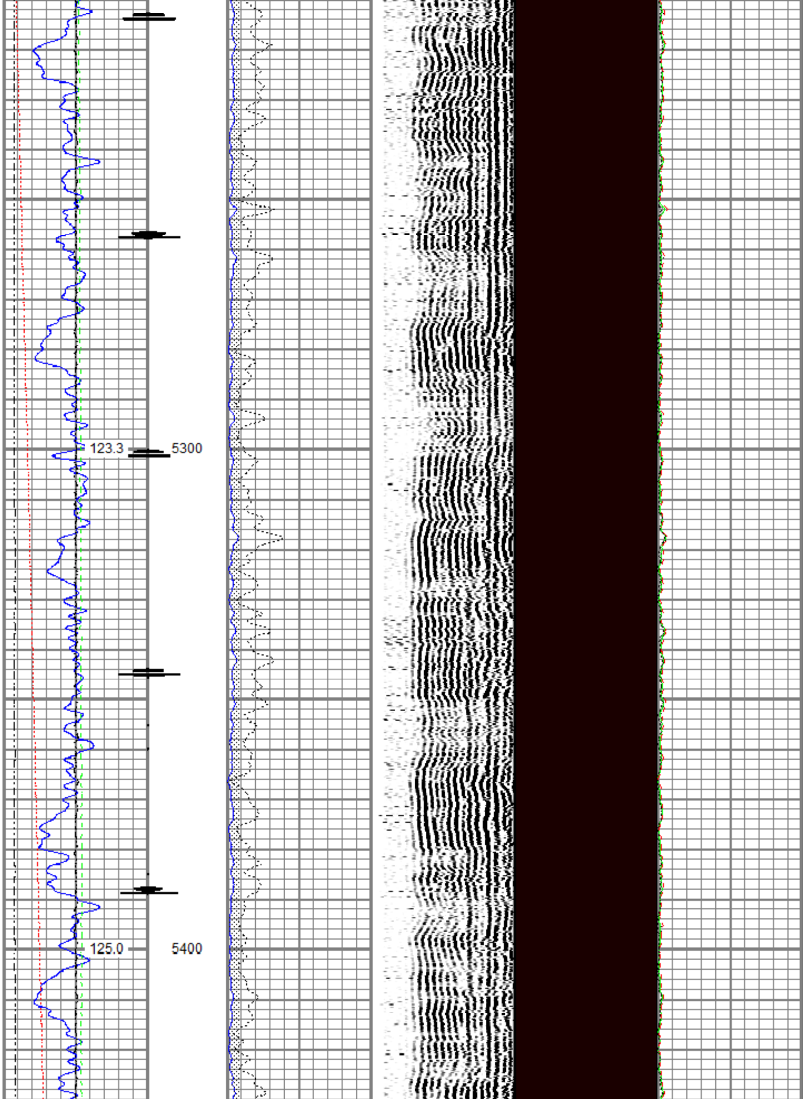
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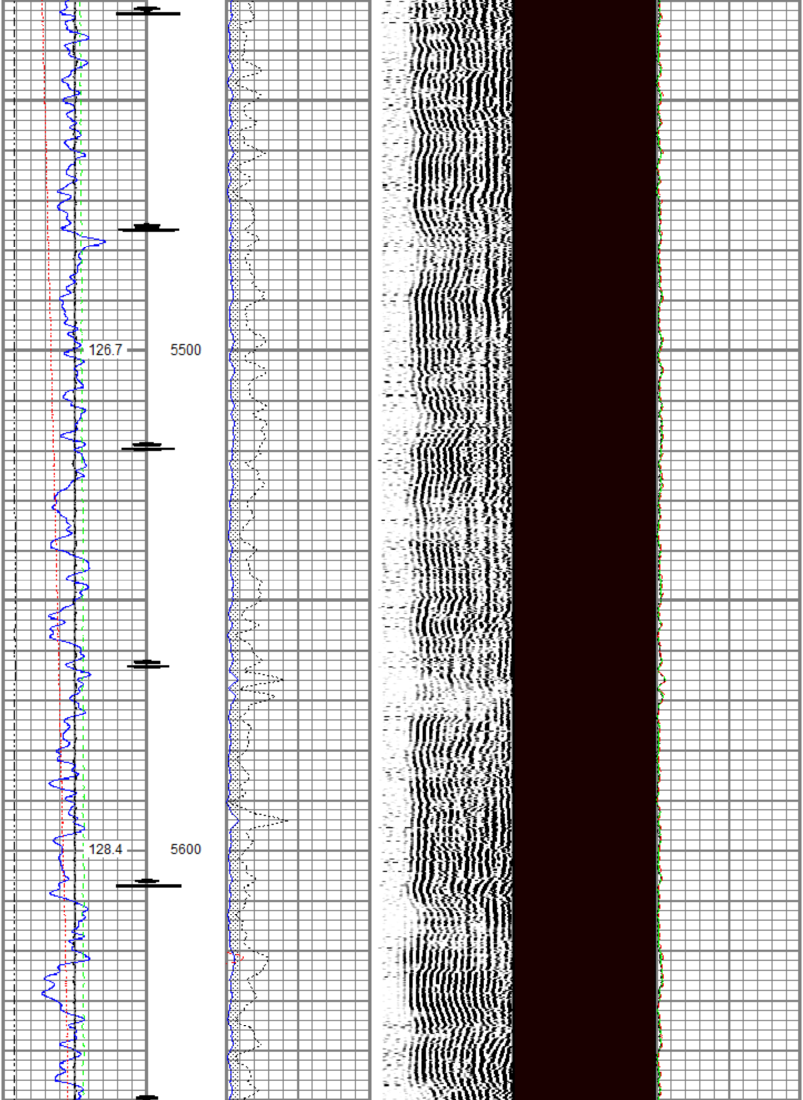
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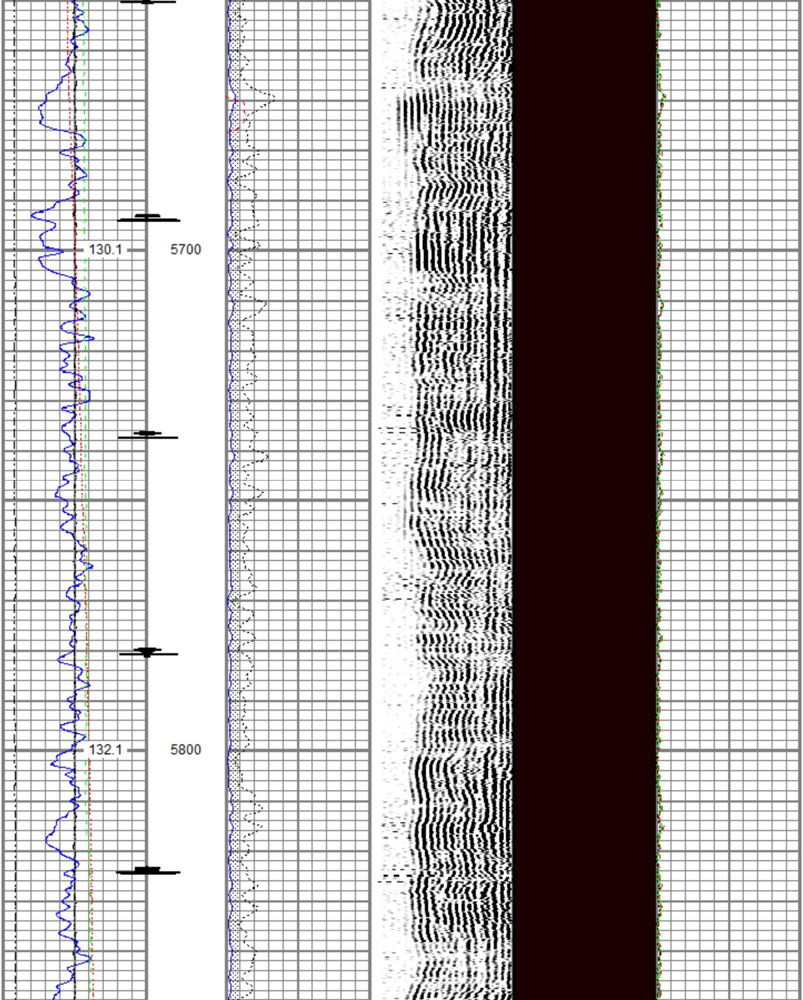
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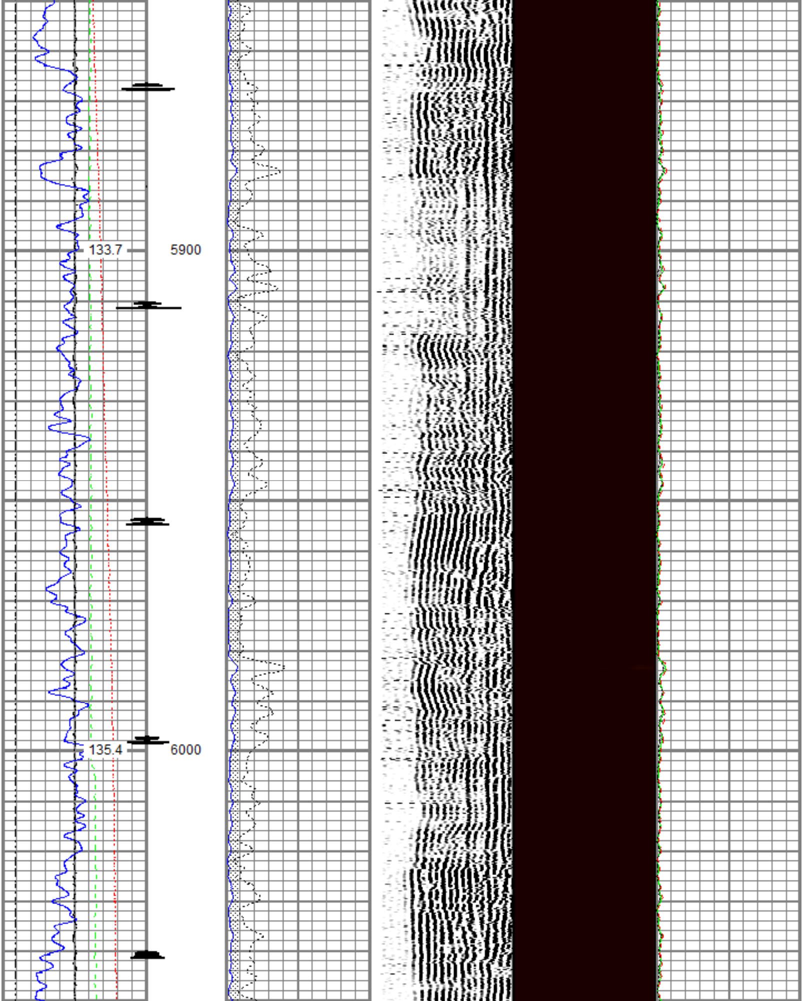
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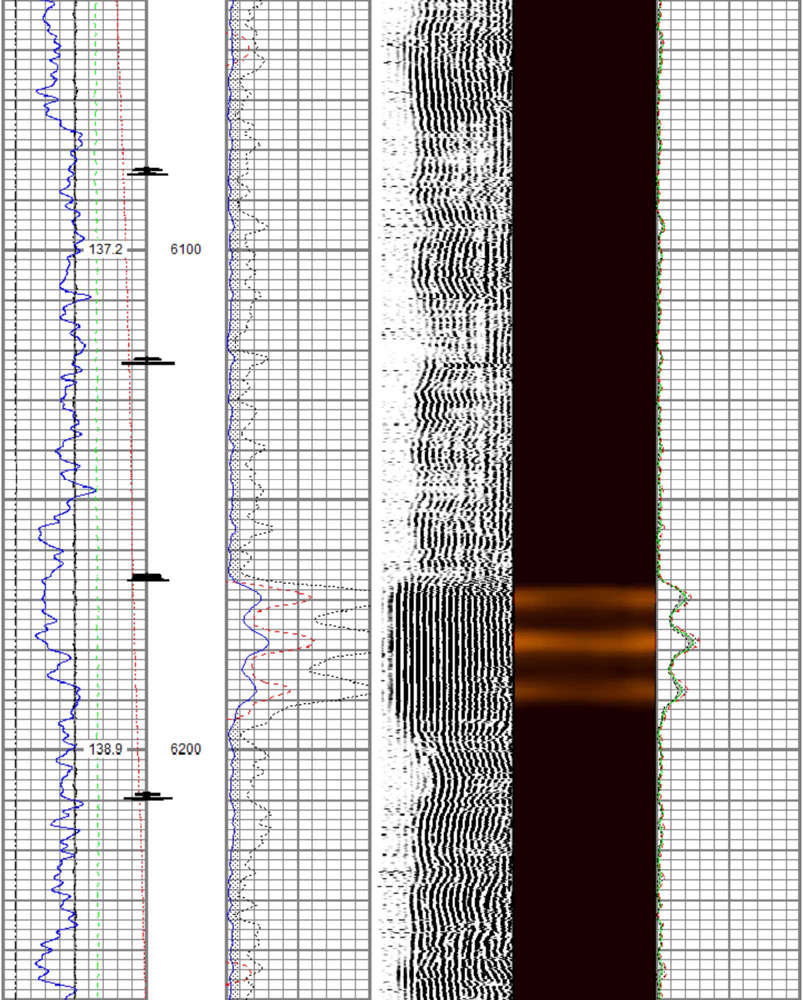
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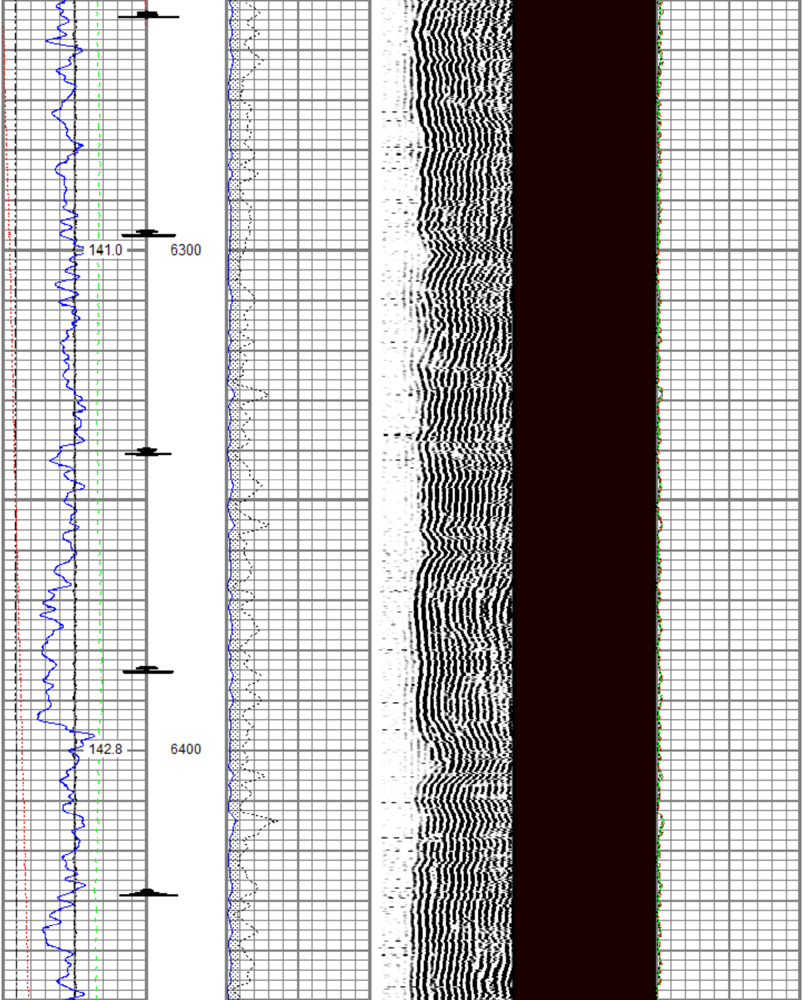
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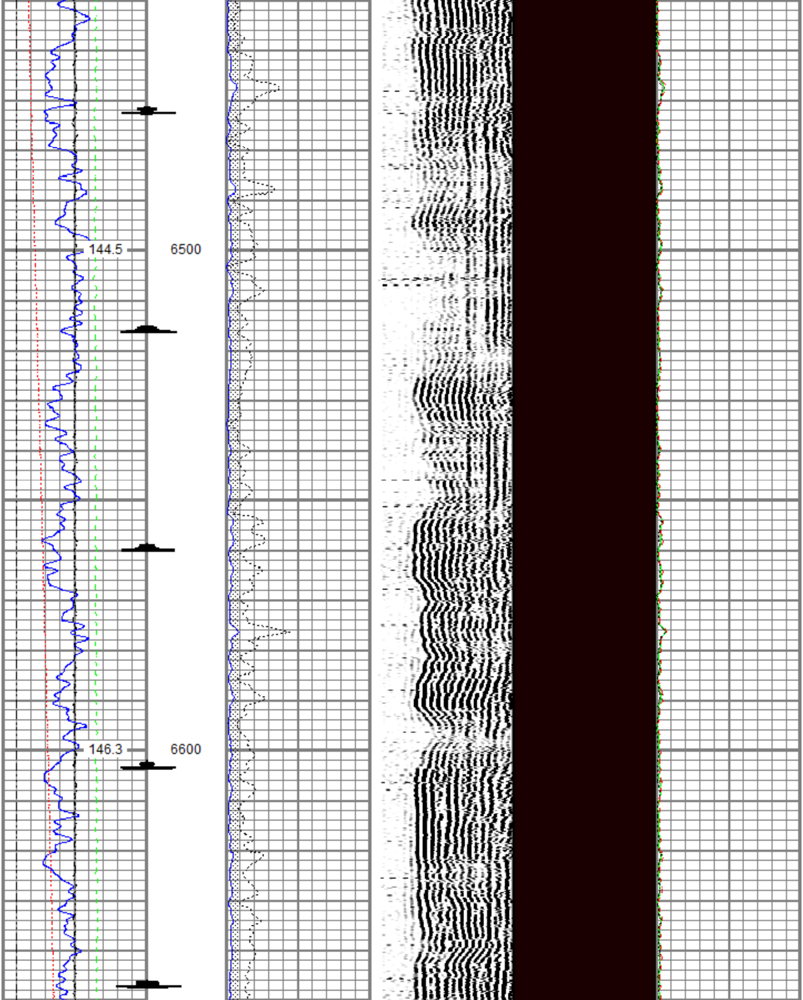
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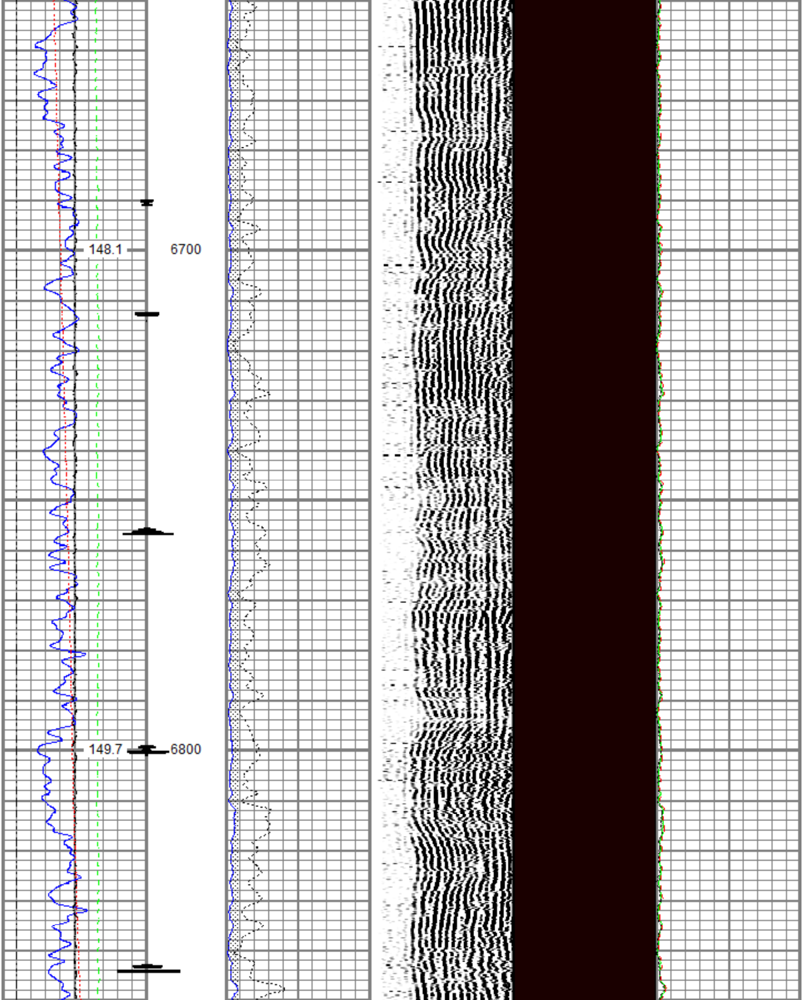
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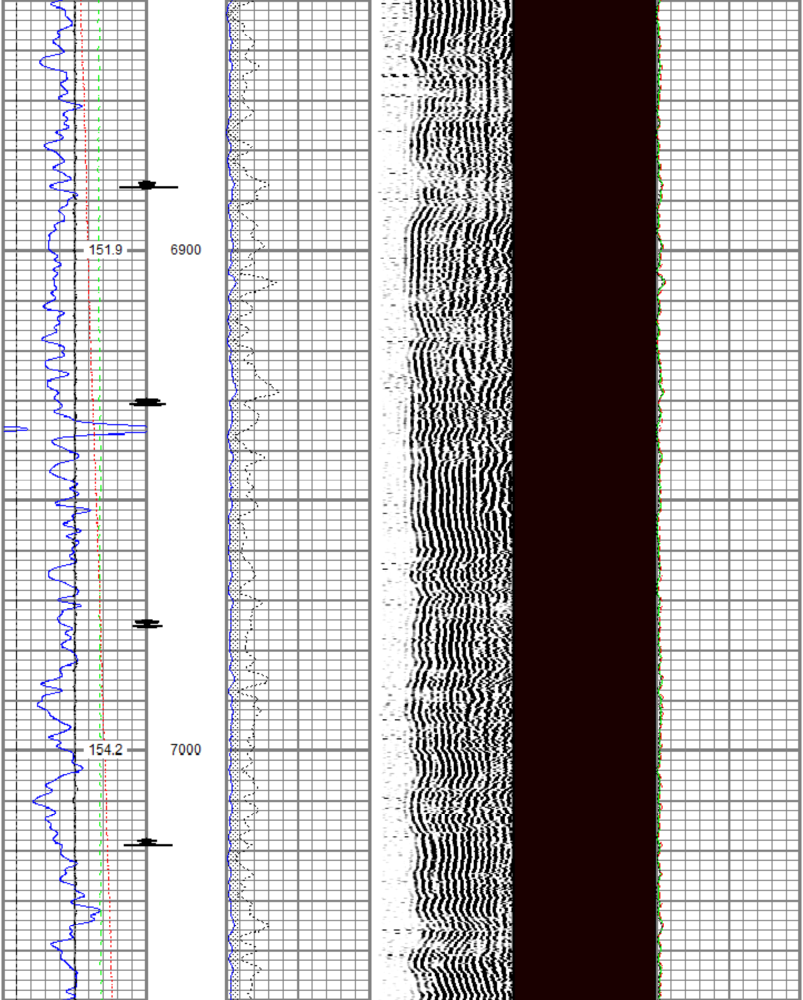
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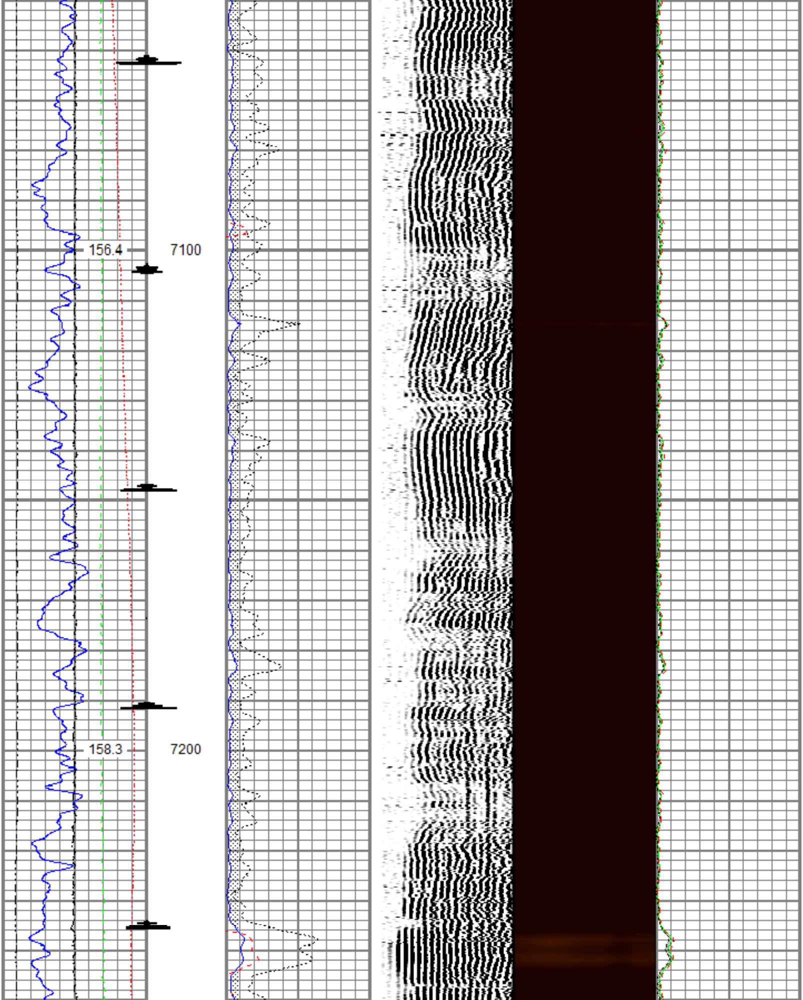
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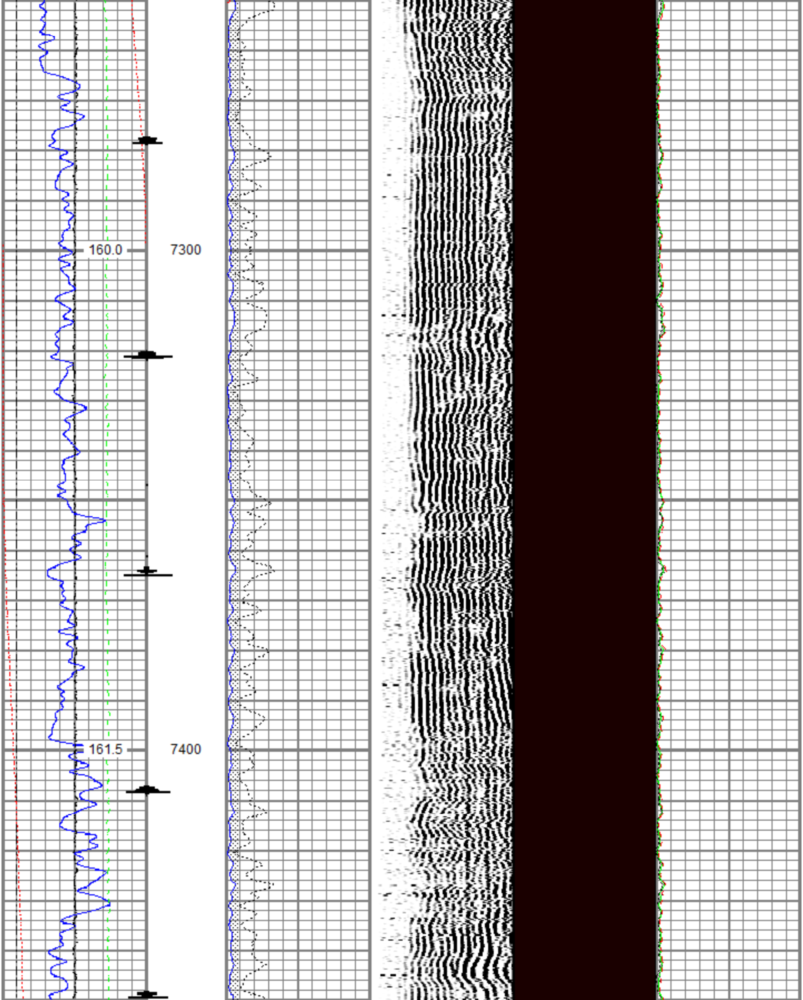
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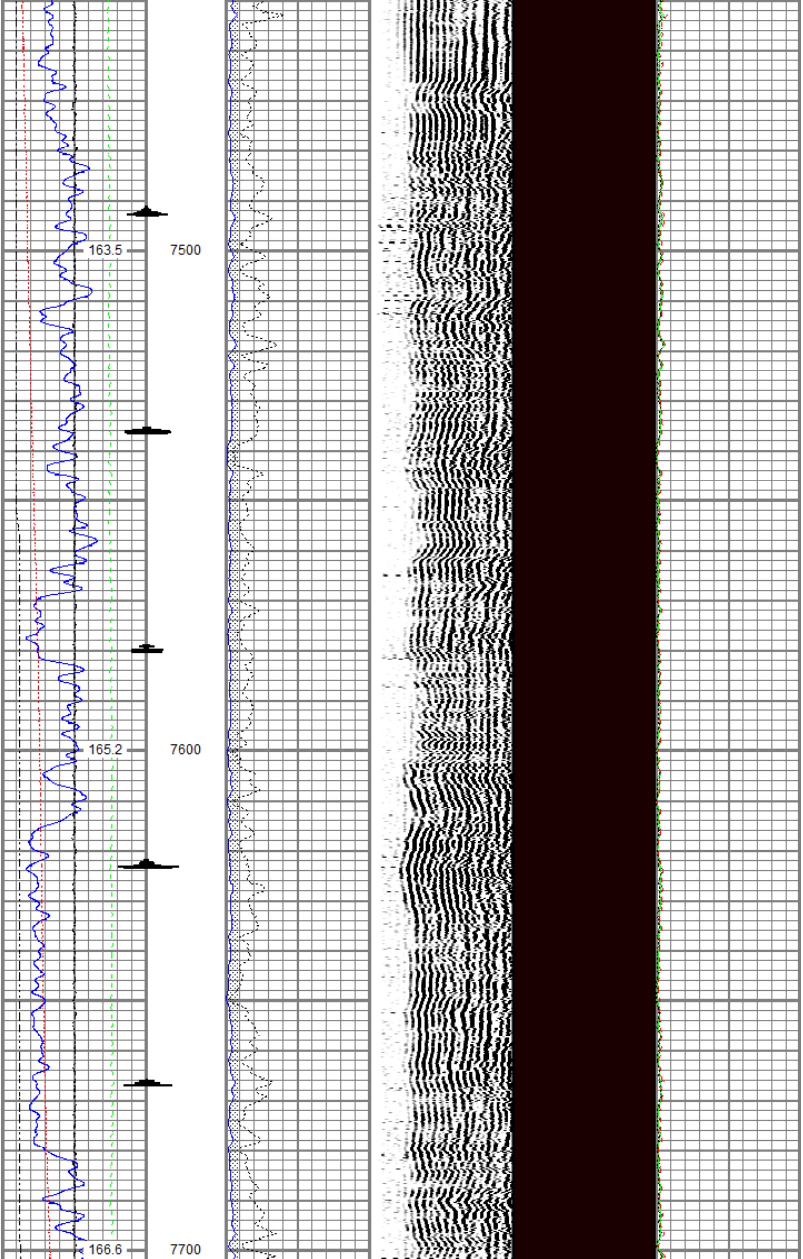
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7600
166.6
7700

Gamma Ray	CCL$2	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0.5 10	0 (mV) 100	200 1200	10 110	0 150
Casing Collar Locator		3' Amplitude x 5			Mimimum Amplitude
Line Speed		0 (mV) 20			0 150
-150 (ft/min) 150		3' Travel Time			Maximum Amplitude
Line Tension		300 (usec) 200			0 150
0 (lb) 2000					
Differential Temperature					
-2 (degF) 2					
Temperature					
0 (degF) 20					
20 CCL$2 0.5					

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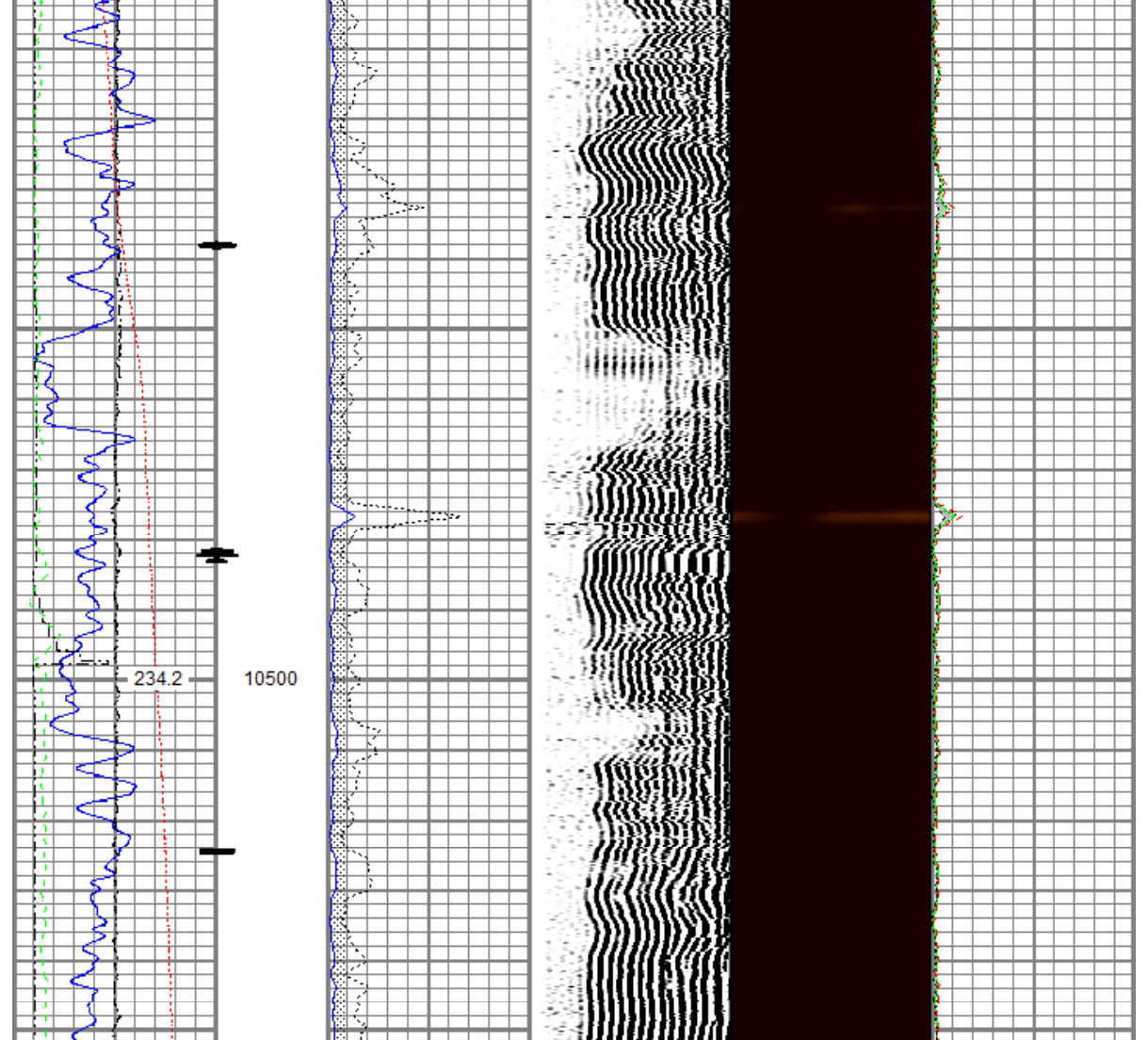
Repeat Pass

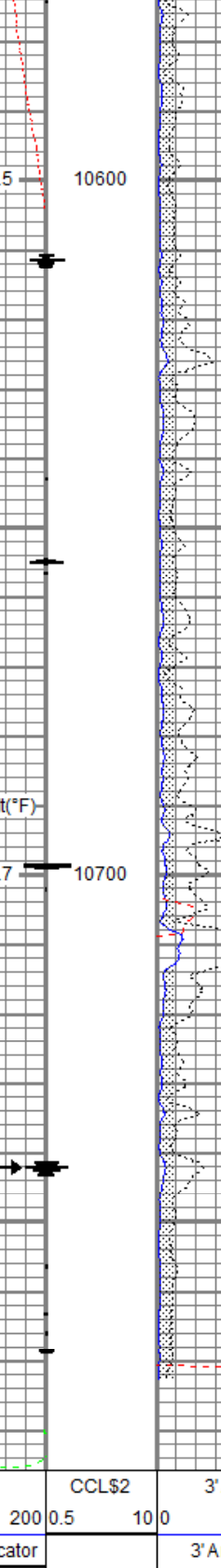
Recorded With 0 PSI Surface Induced Pressure

Database File	new folder (3)\processed_tep_federal ru 312-17_rbl_04-01-18.db
Dataset Pathname	repeat.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Sun Apr 01 17:28:17 2018
Charted by	Depth in Feet scaled 1:240

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



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



Sensor	Offset (ft)	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 (FW1305-098) 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 (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 RU 312-17_RBL_04-01-18.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\New folder (3)\PROCESSED_TEP_Federal RU 312-17_RBL_04-01-18.db
Dataset Pathname	main.1
Dataset Creation	Sun Apr 01 17:19:30 2018

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:	FW1305-098	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	239.325	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.001	0.506	0.800	81.196	158.661	0.883
CAL	0.746	0.749				
5'	-0.001	0.394	0.800	81.196	203.594	1.038
SUM						
S1	-0.007	0.463	0.000	100.000	212.915	1.485
S2	-0.002	0.488	0.000	100.000	203.812	0.482
S3	-0.003	0.530	0.000	100.000	187.486	0.574
S4	-0.006	0.586	0.000	100.000	168.922	0.943
S5	-0.006	0.592	0.000	100.000	167.225	0.979
S6	-0.006	0.547	0.000	100.000	181.051	1.033
S7	-0.005	0.497	0.000	100.000	198.954	1.036
S8	-0.003	0.470	0.000	100.000	211.368	0.574

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.746	0.749	1.000	0.000

Air Zero Calibration, performed Sun Apr 01 00:24:05 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:	FW1305-098	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:43:57 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
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Company	TEP Rocky Mountain LLC
Well	Federal RU 312-17
Field	Rulison
County	Garfield
State	Colorado