RELIANCE
OILFIELD SERVICES

Radial Cement Bond Gamma Ray Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal RU 514-17
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal RU 514-17
Field Rulison
County Garfield State Colorado
Location: API # : 05-045-23733
SEC 17 TWP 7S RGE 93W

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

Date	05-JUN-2018
Run Number	One
Depth Driller	10872 FT
Depth Logger	10821 FT
Bottom Logged Interval	10807 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Fresh Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	247°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	01:47
Equipment Number	HD-0359
Location	Grand Junction, CO
Recorded By	A. Ellsworth
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	32.3	H-40	Surface	1137 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 6946 FT - 6968 FT
Log ran from 10807 FT to Surface
Log ran with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!!

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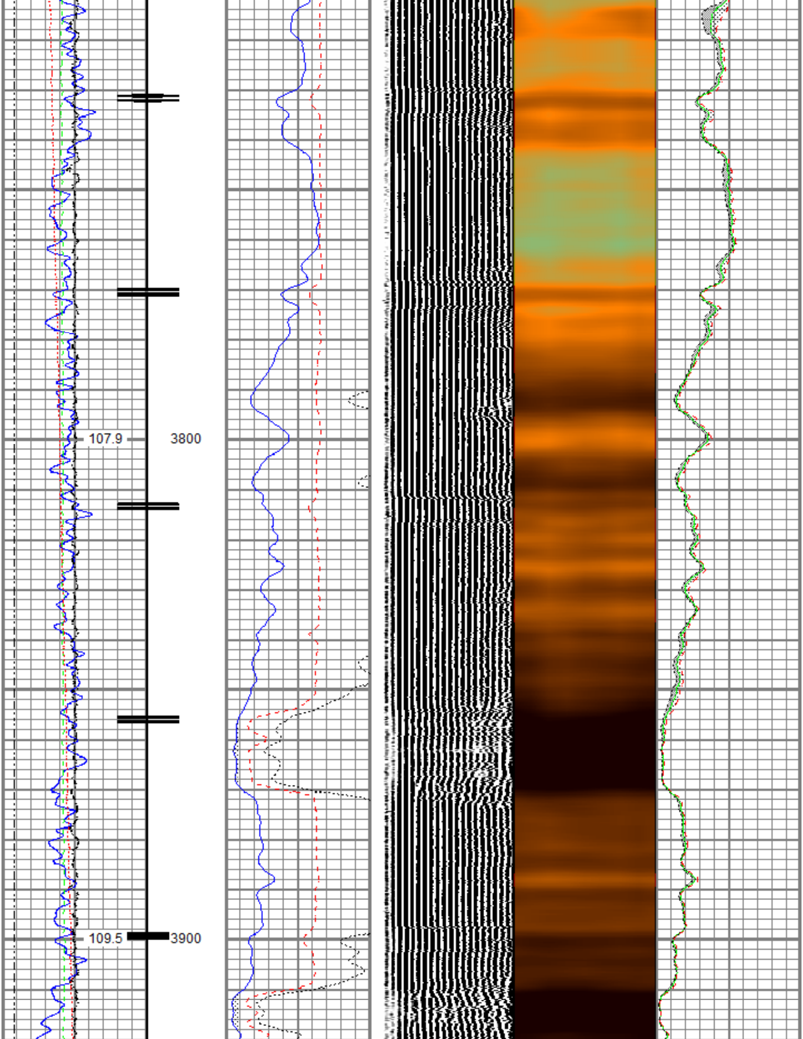
Main Pass

Recorded with 0 PSI Surface Induced Pressure

Database File	tep\federal ru 514-17\rbl\tep_federal ru 514-17_rbl_06-05-18.db
Dataset Pathname	main.7
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Jun 06 14:17:58 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 (usec) 1200		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					
10 CCL 0					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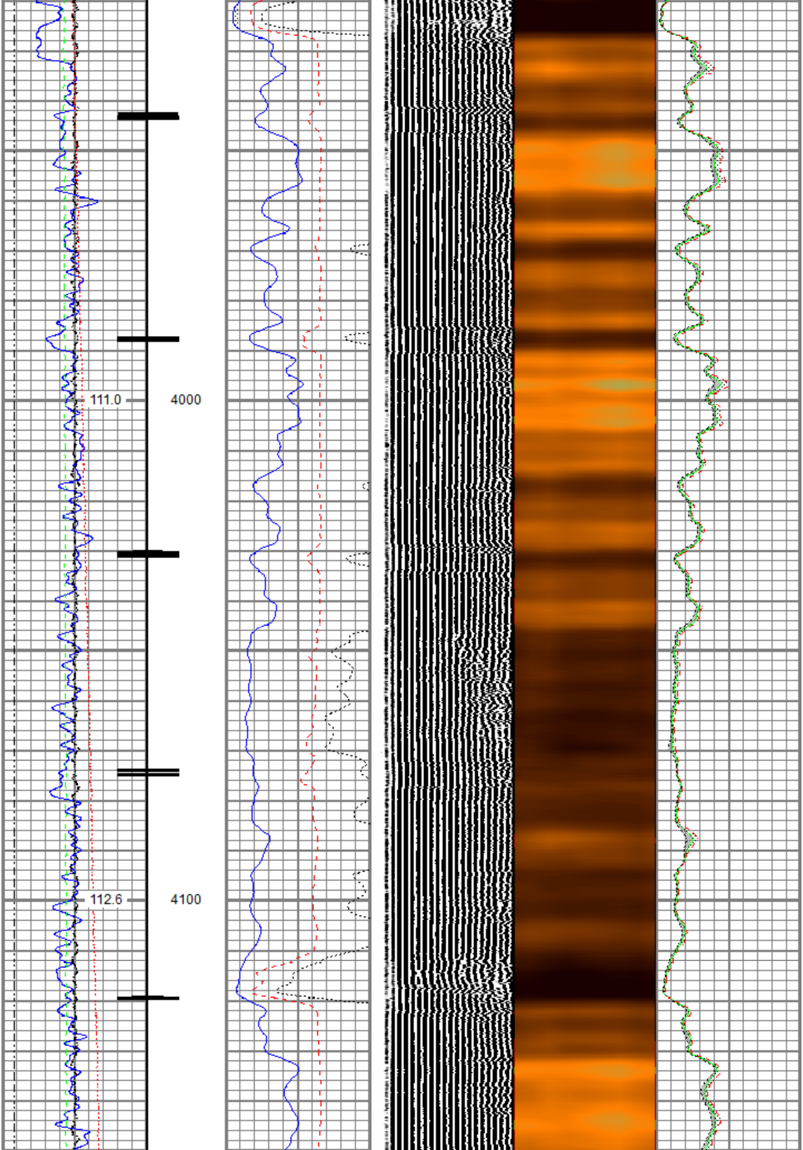
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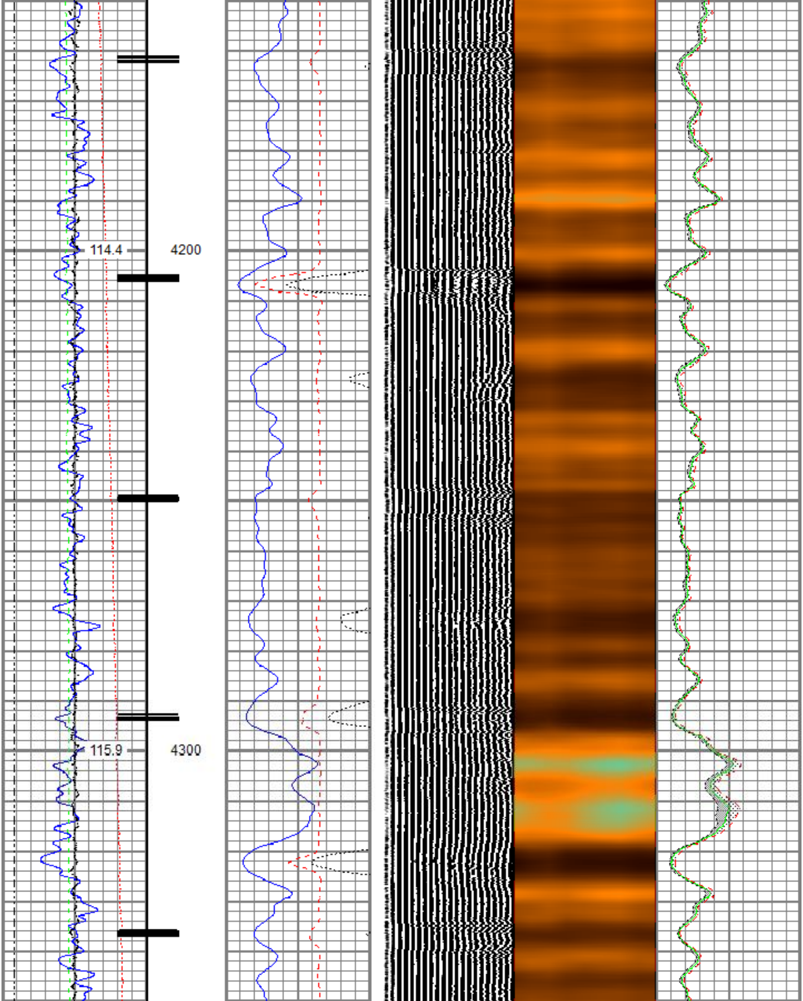
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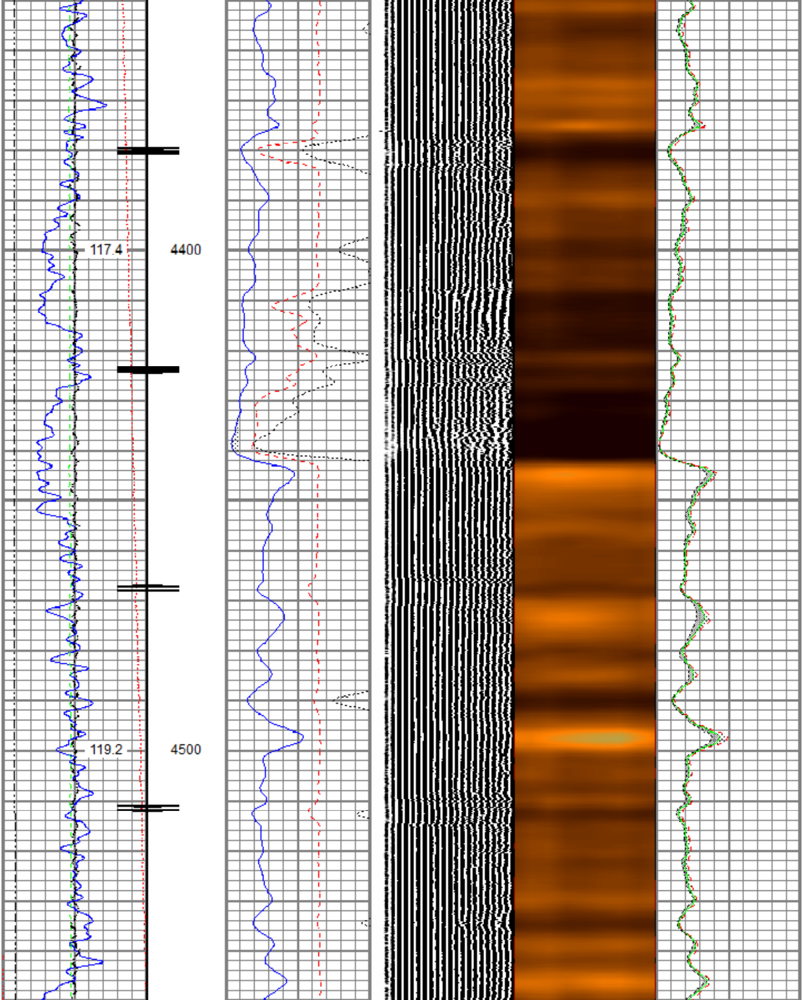
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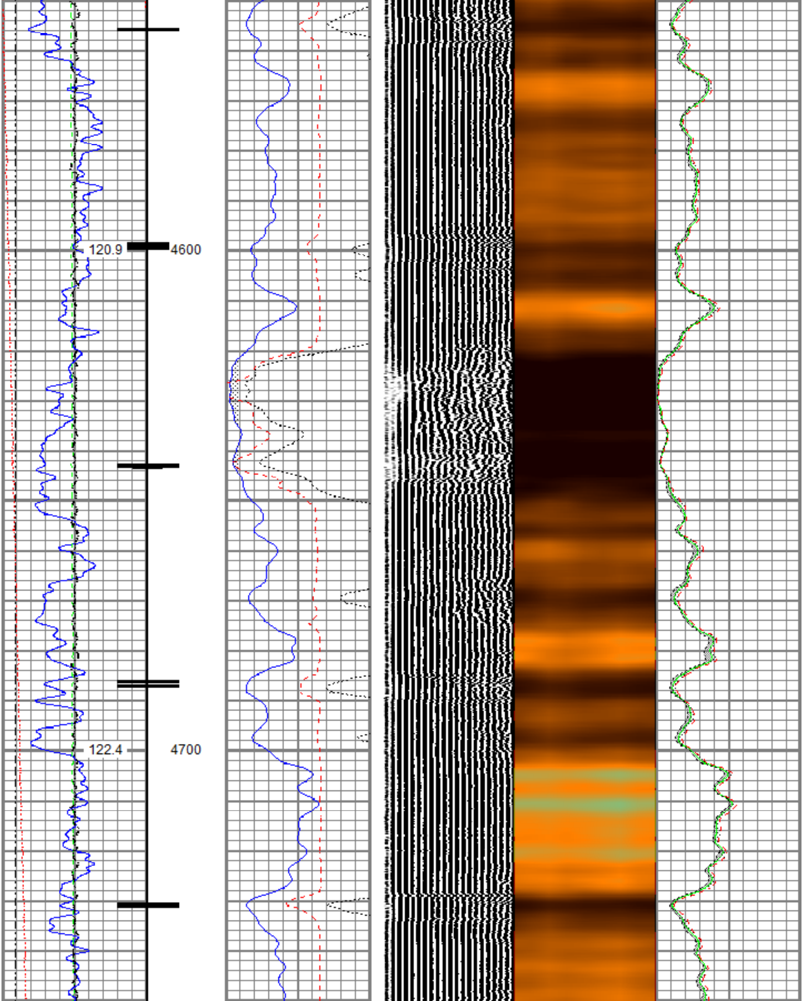
4500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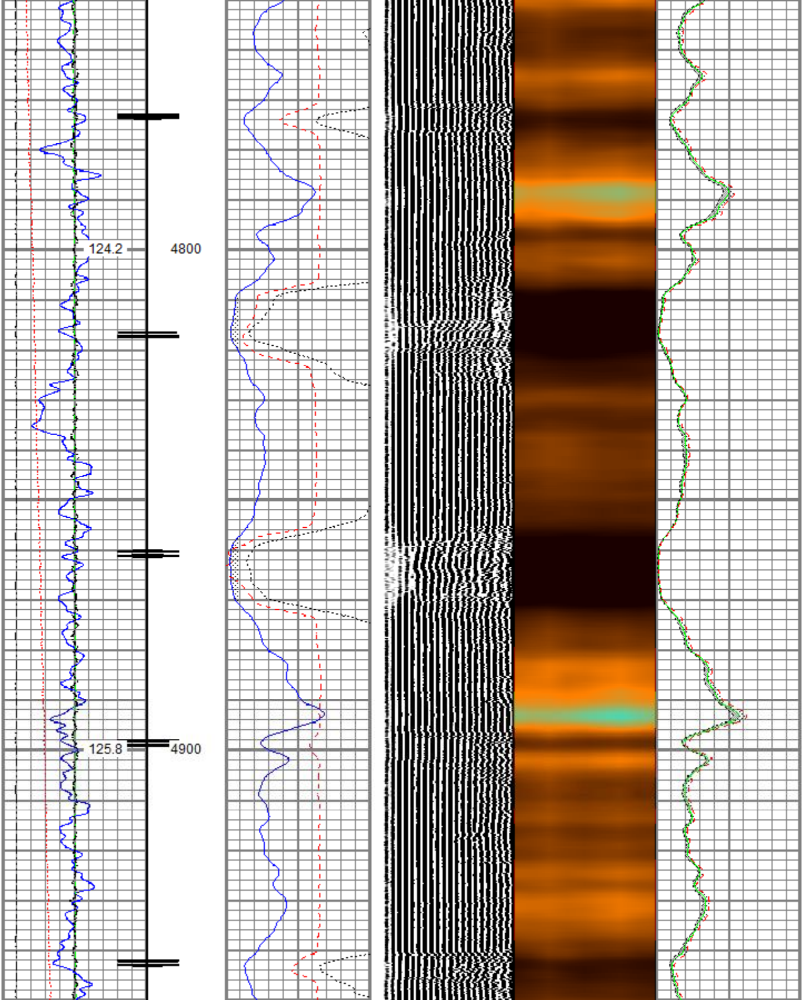
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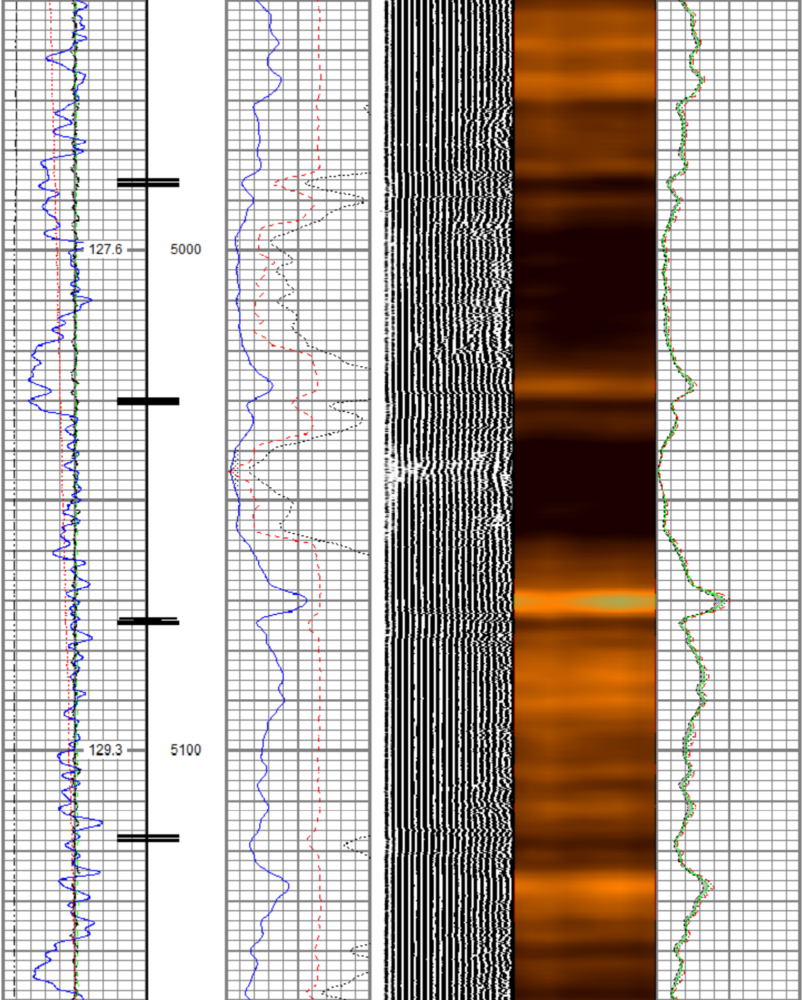
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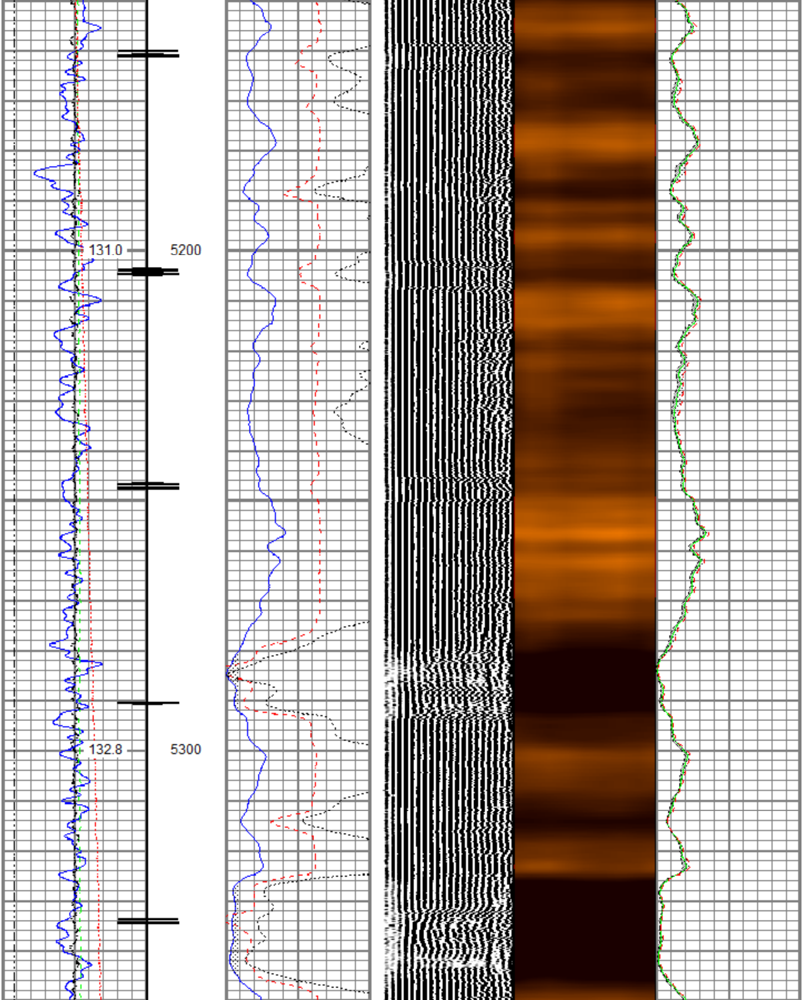
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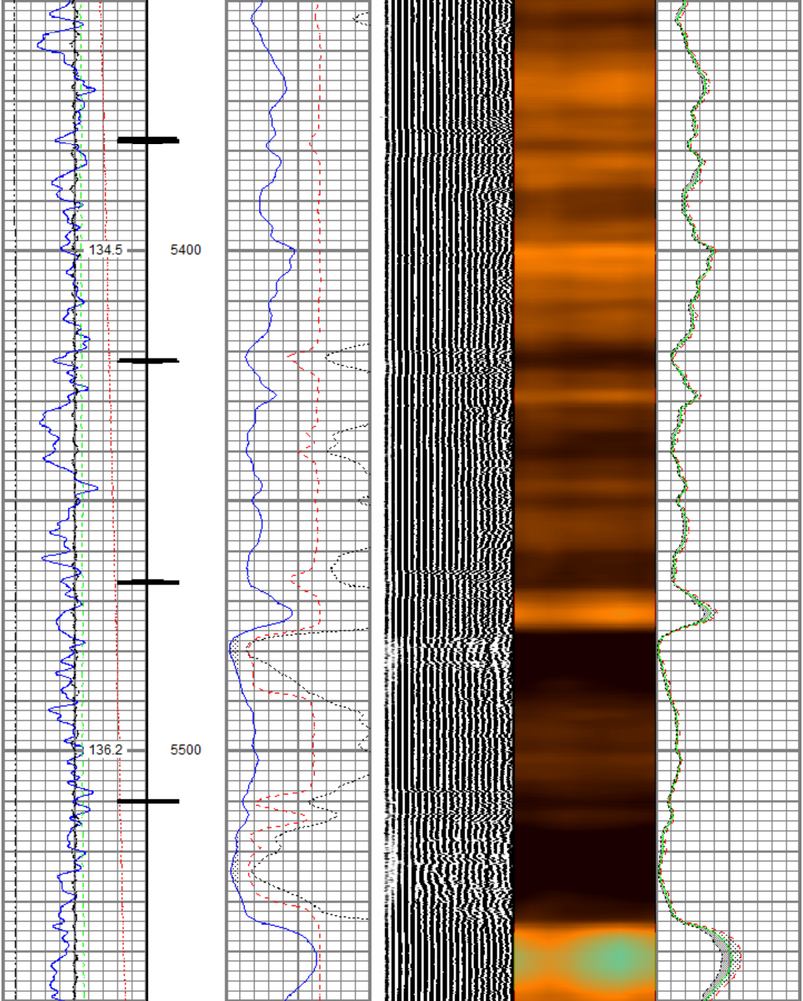
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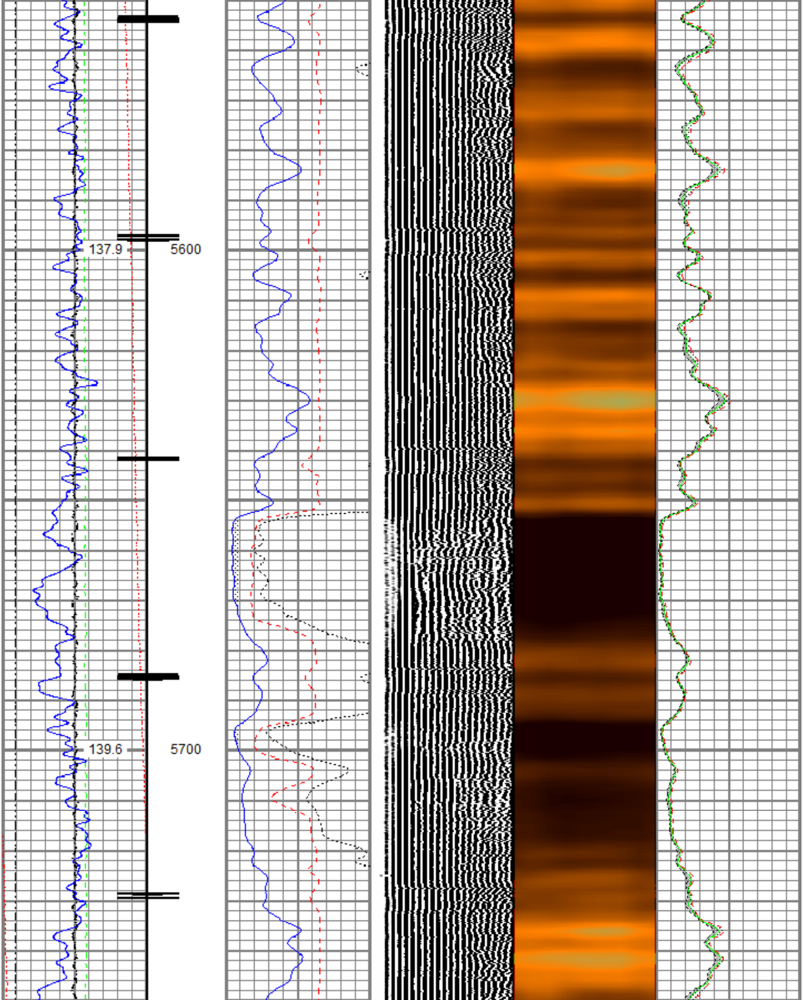
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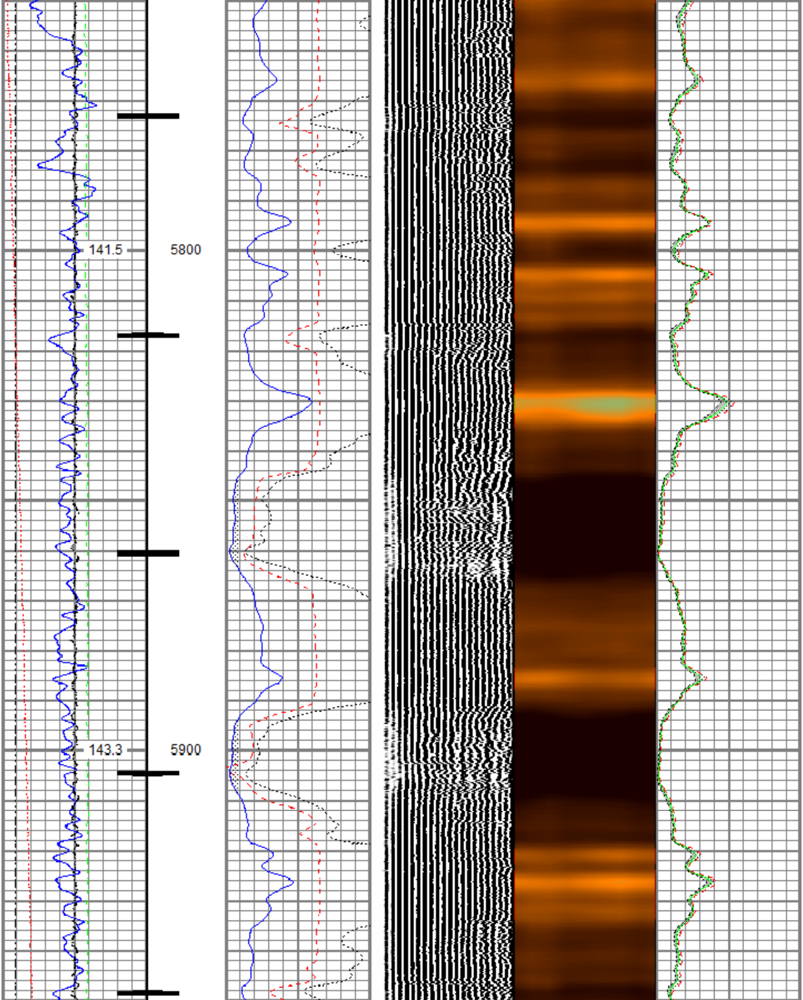
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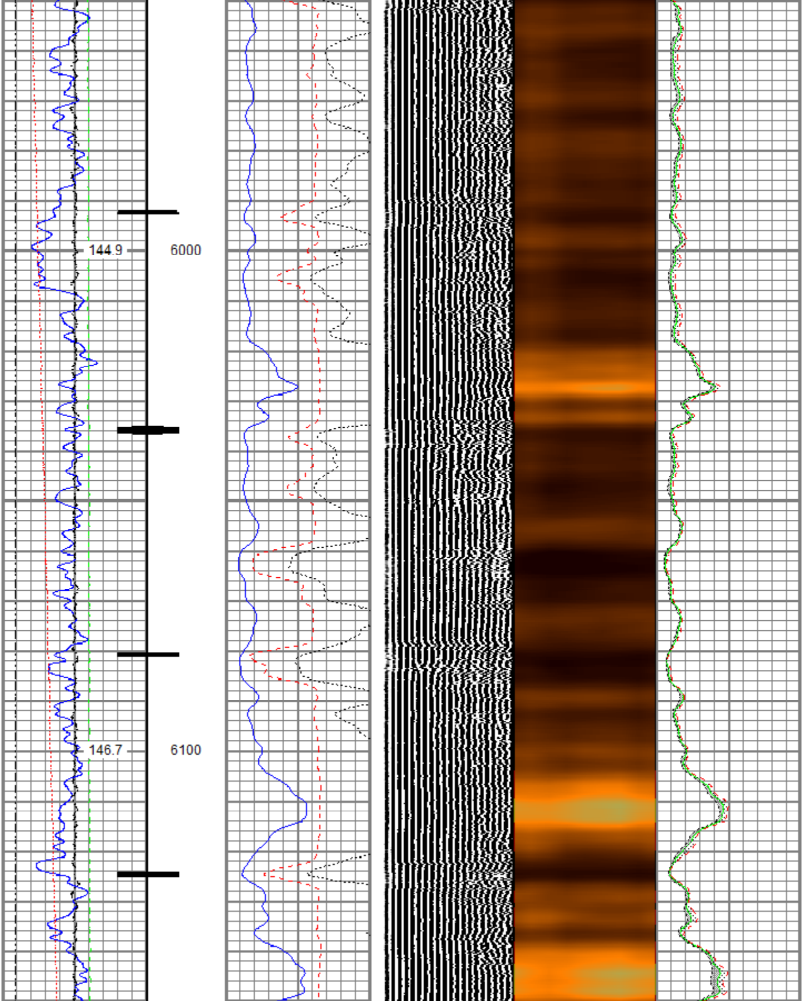
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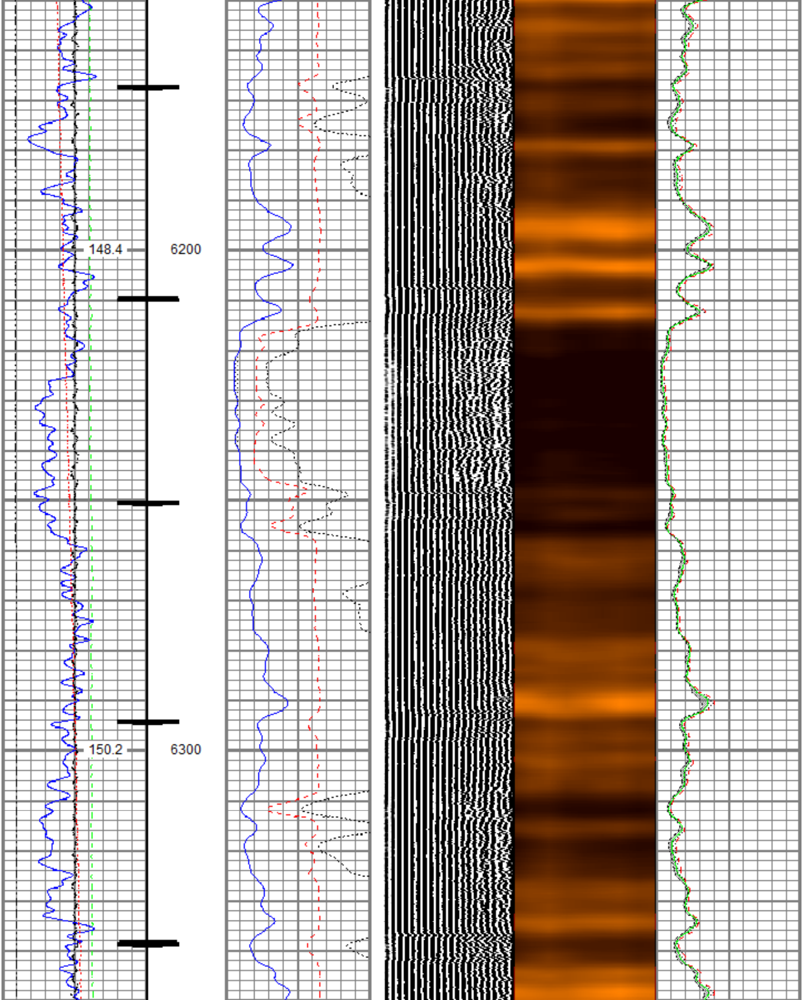
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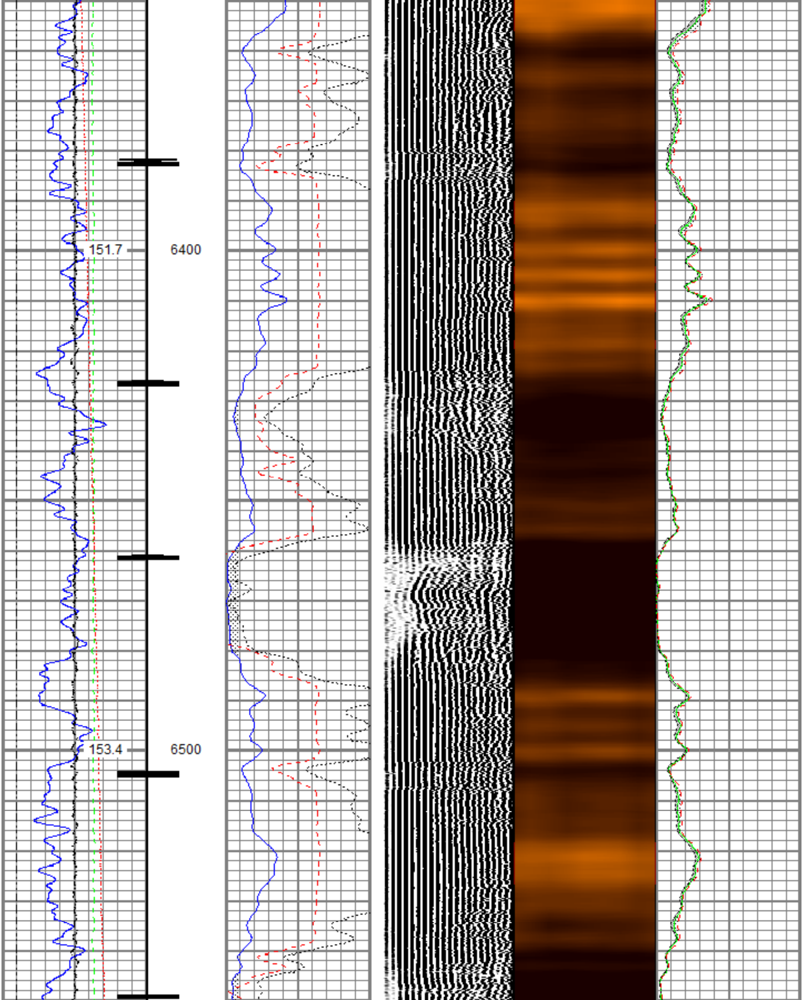
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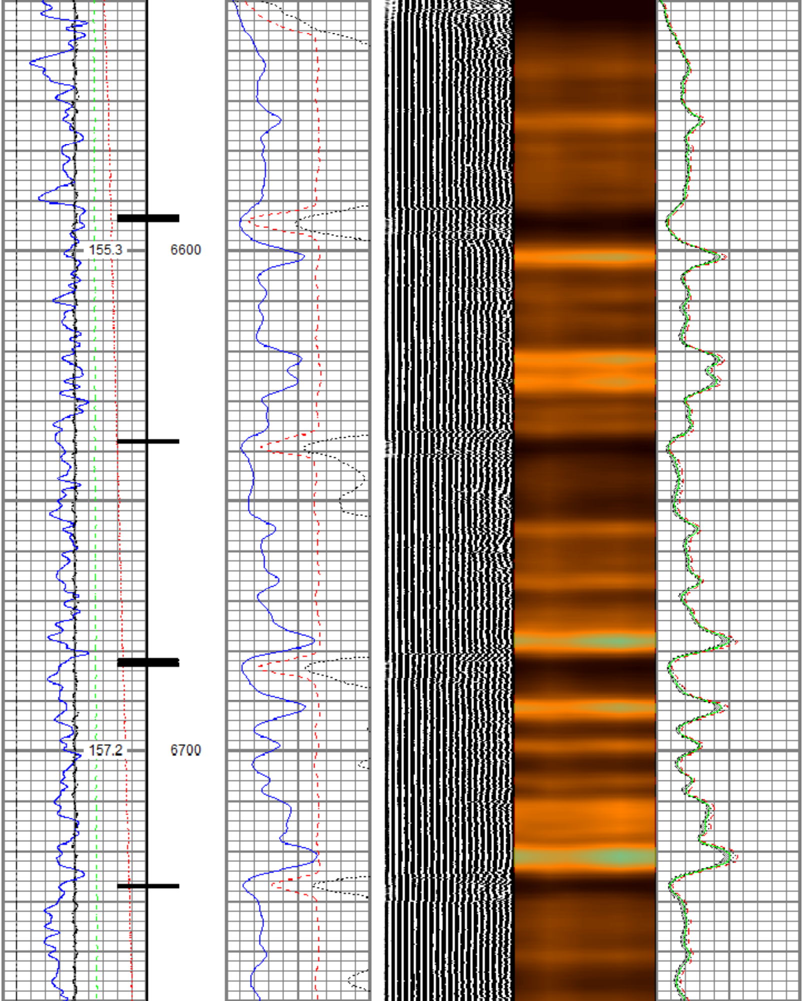
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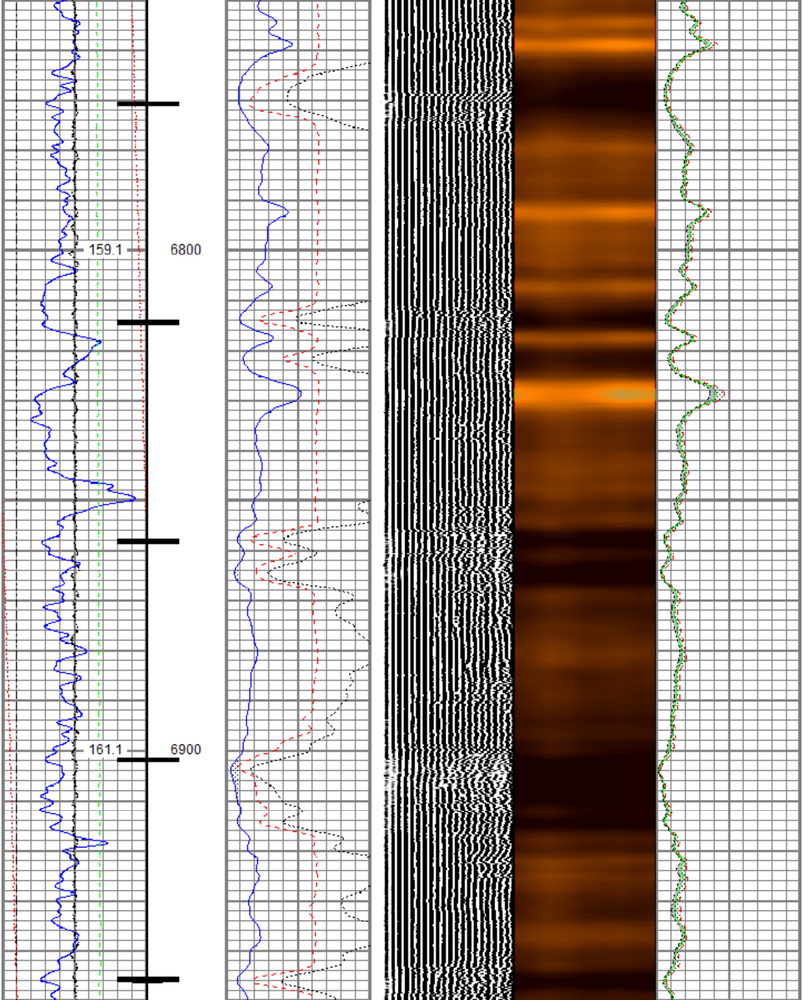
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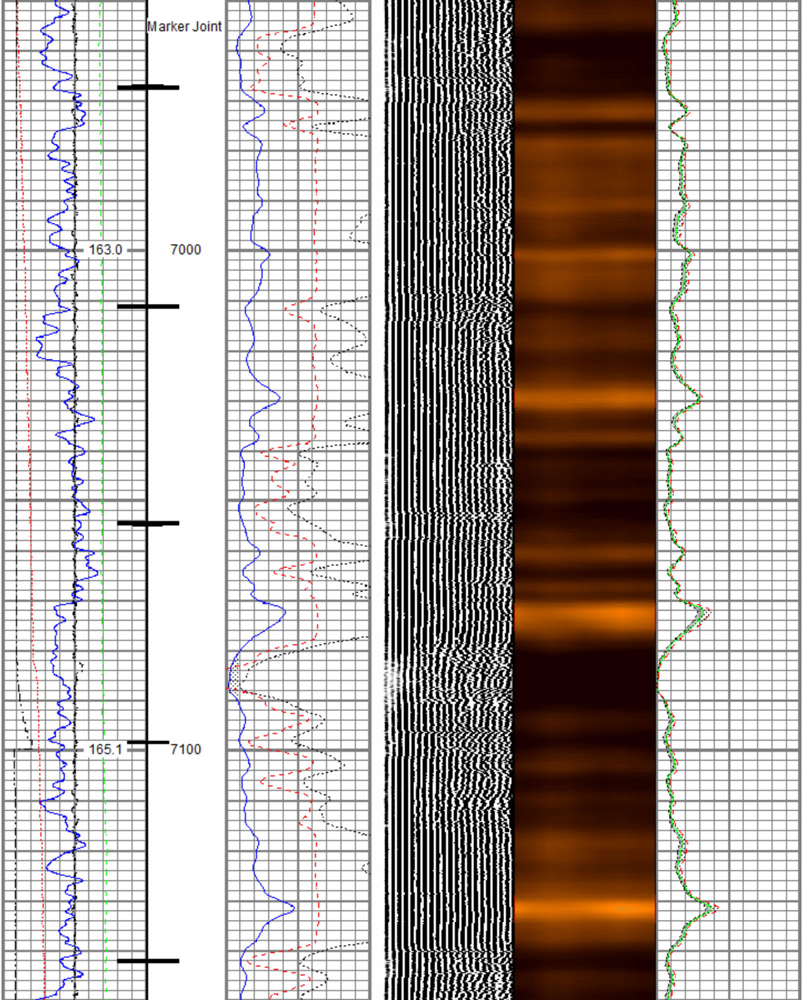
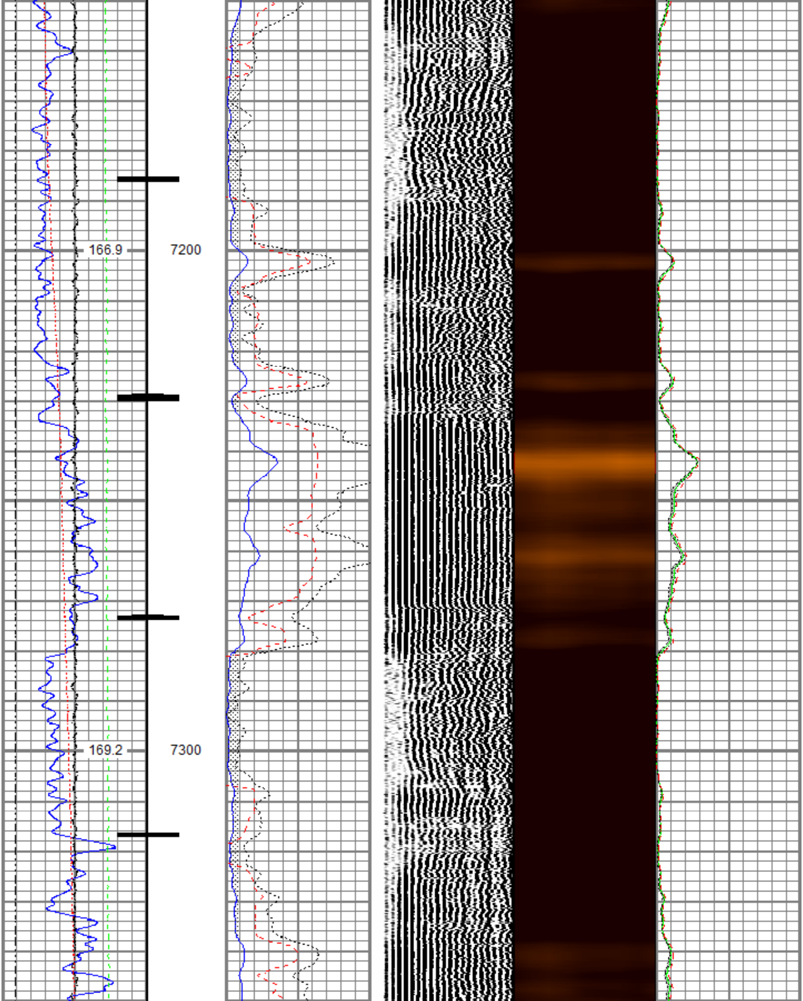

Marker Joint
163.0
7000
165.1
7100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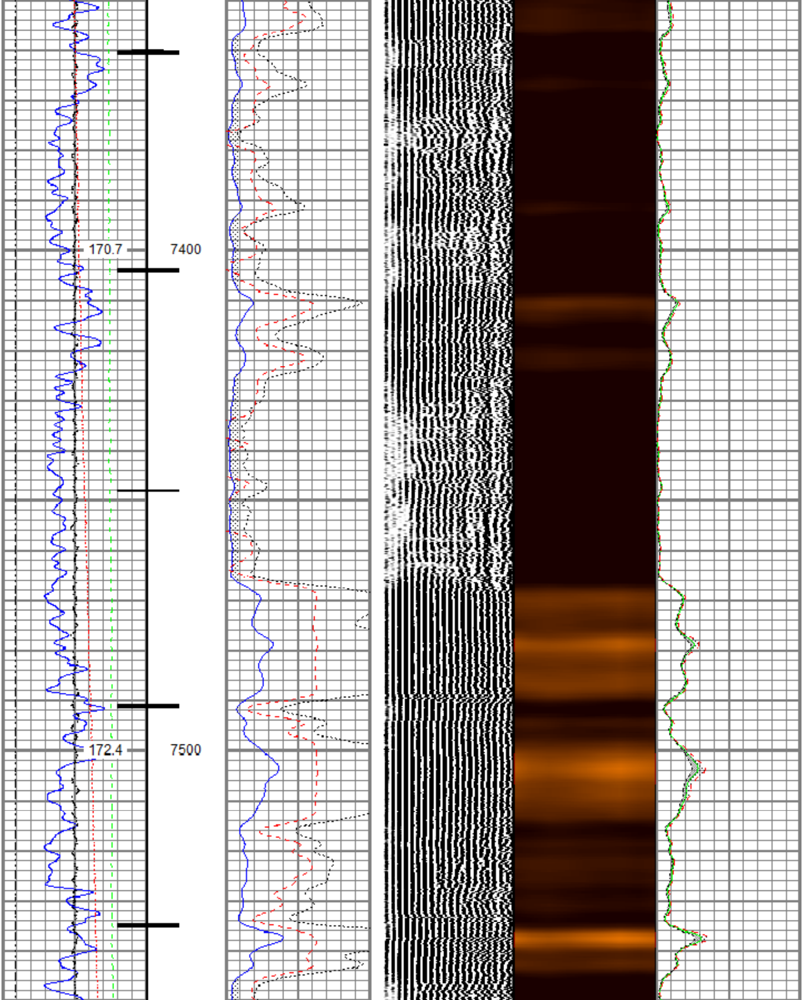
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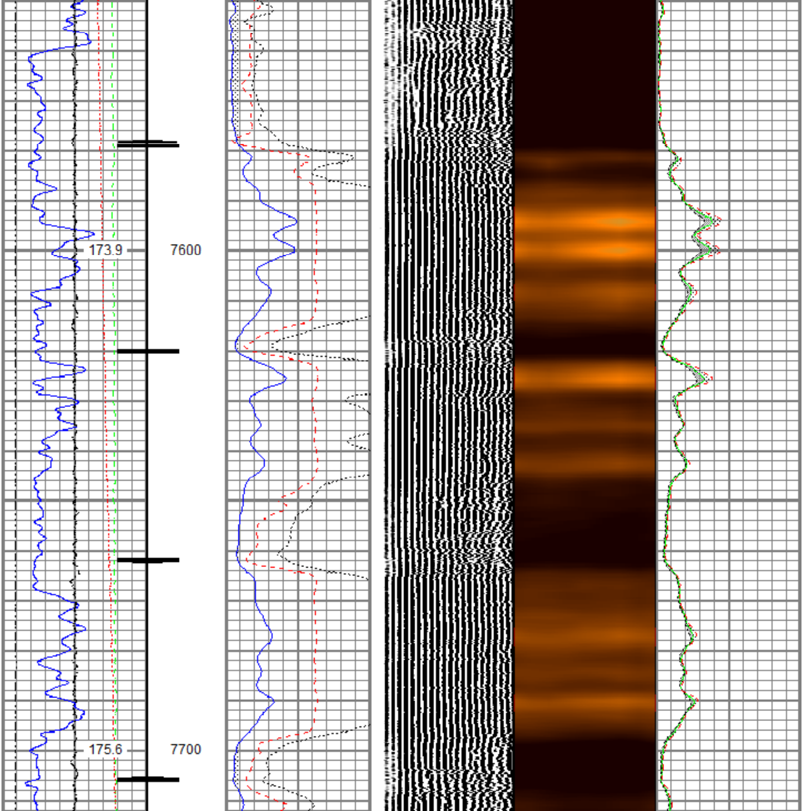
173.9
7600
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Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 (usec) 1200	Sector Map	Average Amplitude 0 150
Line Speed -150 (ft/min) 150	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000	3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential Temperature -2 (degF) 2				
Temperature 0 (degF) 20				
10 CCL 0				

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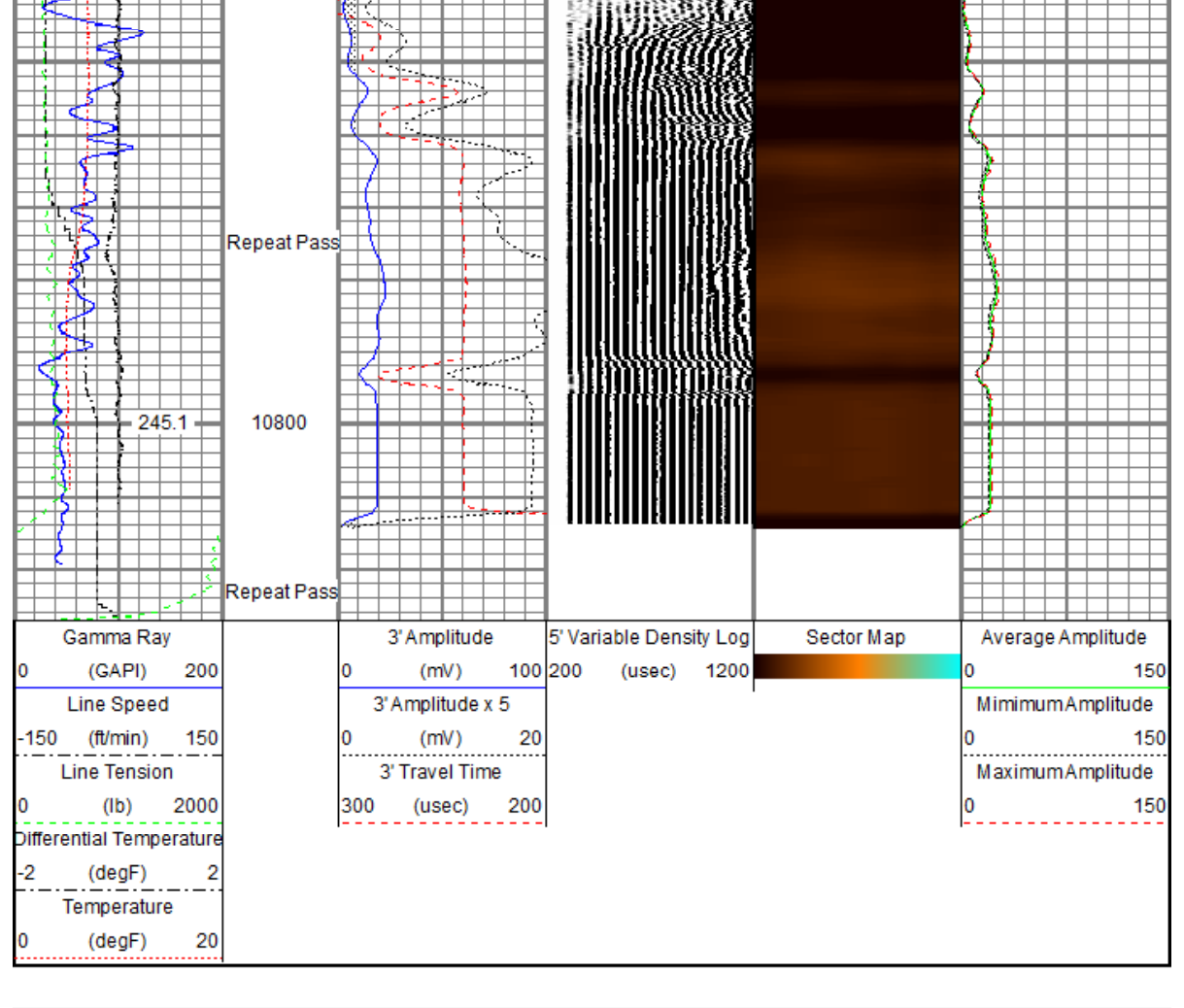
Repeat Pass

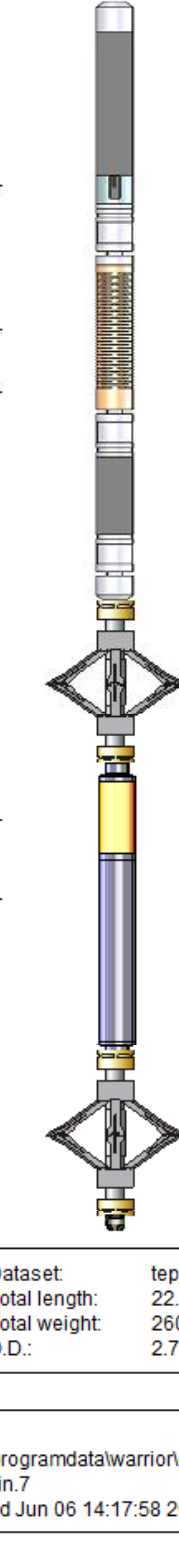
Recorded with 0 PSI Surface Induced Pressure

Database File	tep\federal ru 514-17\rbl\tep_federal ru 514-17_rbl_06-05-18.db
Dataset Pathname	repeat.5
Presentation Format	ros_rbt004_tep
Dataset Creation	Wed Jun 06 14:21:52 2018
Charted by	Depth in Feet scaled 1:240

Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 (usec) 1200	Sector Map	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 (usec) 1200	Sector Map	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)	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					
WVFS8 WVFS7 WVFS6 WVFS5 WVFS4 WVFS3 WVFS2 WVFS1 WVFCAL WVF3FT WVF5FT	14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 13.10		Probe Radii-2750 RBT (FW1302-001) 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
CCL$2 CCL$1	6.42 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: tep_federal ru 514-17_rbl_06-05-18.db: field/well/run1/main.7
Total length: 22.82 ft
Total weight: 260.60 lb
O.D.: 2.75 in

Calibration Report

Database File	c:\programdata\warrior\data\tep\federal ru 514-17\rbl\tep_federal ru 514-17_rbl_06-05-18.db
Dataset Pathname	main.7
Dataset Creation	Wed Jun 06 14:17:58 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:	FW1302-001	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	33.334	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.001	0.900	0.800	81.196	89.272	0.878
CAL	-0.005	0.729				
5'	0.011	0.714	0.800	81.196	114.410	-0.478
SUM						
S1	0.005	1.083	0.000	100.000	92.839	-0.504
S2	0.002	1.057	0.000	100.000	94.817	-0.215
S3	0.000	0.929	0.000	100.000	107.654	-0.038
S4	0.000	0.840	0.000	100.000	119.020	-0.009
S5	-0.001	0.837	0.000	100.000	119.261	0.172
S6	-0.000	0.852	0.000	100.000	117.319	0.031
S7	0.002	0.874	0.000	100.000	114.639	-0.247
S8	0.003	0.995	0.000	100.000	100.824	-0.289

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.005	0.729	1.000	0.000

Air Zero Calibration, performed Tue Jun 05 21:47:47 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.001	0.000	0.000
5'	0.008	0.000	0.001
SUM			
S1	0.001	0.000	-0.001
S2	0.000	0.000	-0.001
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:	FW1302-001	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:24:58 2017	
	Reference	Reading
Low Reference:	100.00 degF	107.47 degF
High Reference:	350.00 degF	404.08 degF
Gain:	0.84	
Offset:	9.42	
Delta Spacing	1	

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Company	TEP Rocky Mountain LLC
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