RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal PA 434-24
Field	Parachute
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal PA 434-24
Field Parachute
County Garfield State Colorado
Location: API # : 05-045-23764
SEC 19 TWP 6S RGE 94W
Other Services
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				Elevation
Permanent Datum	Ground Level	Elevation	5732.2'	K.B. 5756.2'
Log Measured From	Kelly Bushing	24 FT		D.F. 5755.2'
Drilling Measured From	Kelly Bushing			G.L. 5732.2'

Date	15-OCT-2018
Run Number	One
Depth Driller	8840 FT
Depth Logger	8765 FT
Bottom Logged Interval	8751 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	237°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	09:00
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	1133 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	8800 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 4854-4869 FT
Log ran from 8751 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

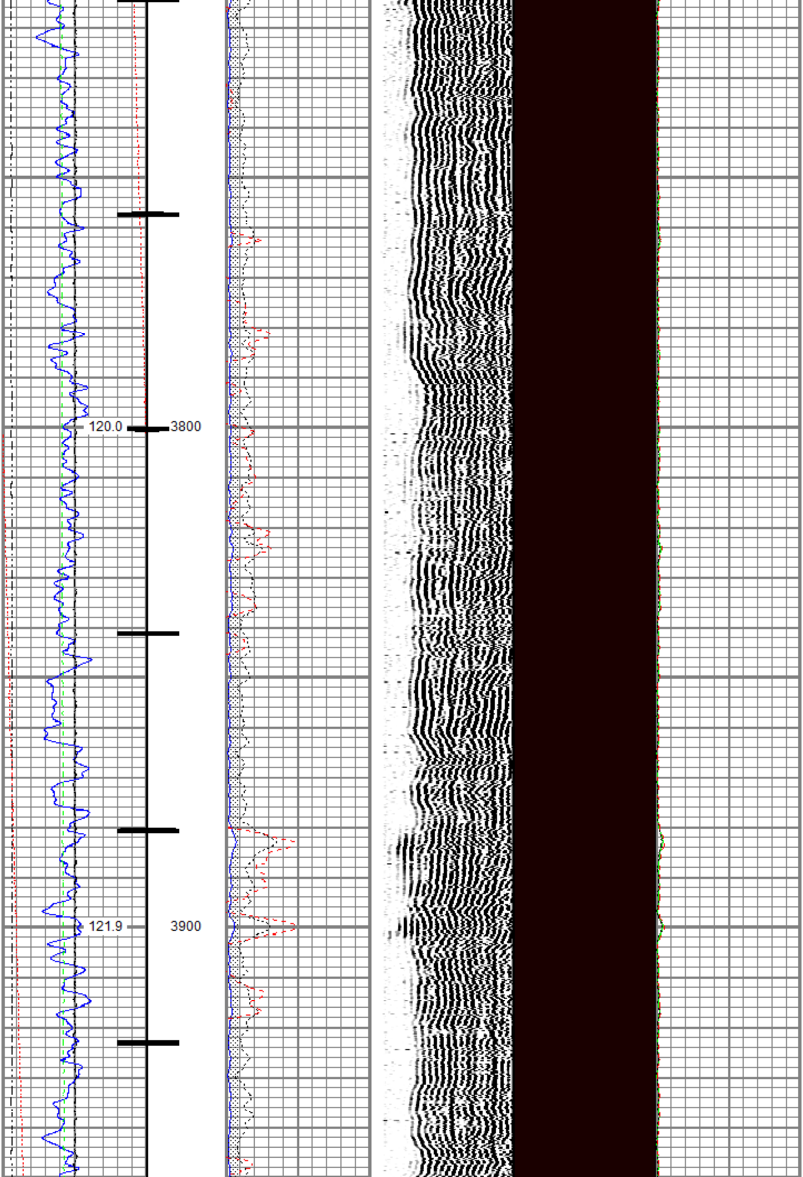
Thank you for choosing Reliance Oilfield Services, LLC!

RELIANCE
OILFIELD SERVICES

Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep_federal pa 434-24_rbl_10-15-18\processed_tep_federal pa 434-24_rbl_10-15-18.db
Dataset Pathname	Main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Oct 16 10:15:20 2018
Charted by	Depth in Feet scaled 1:240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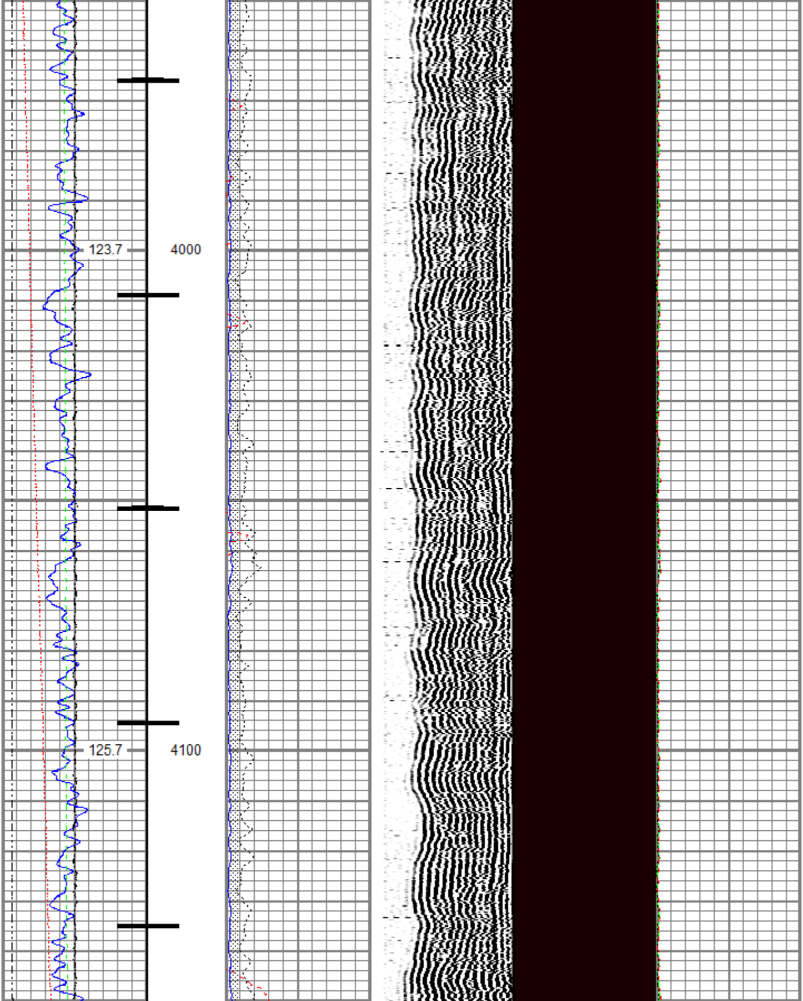
121.9
3900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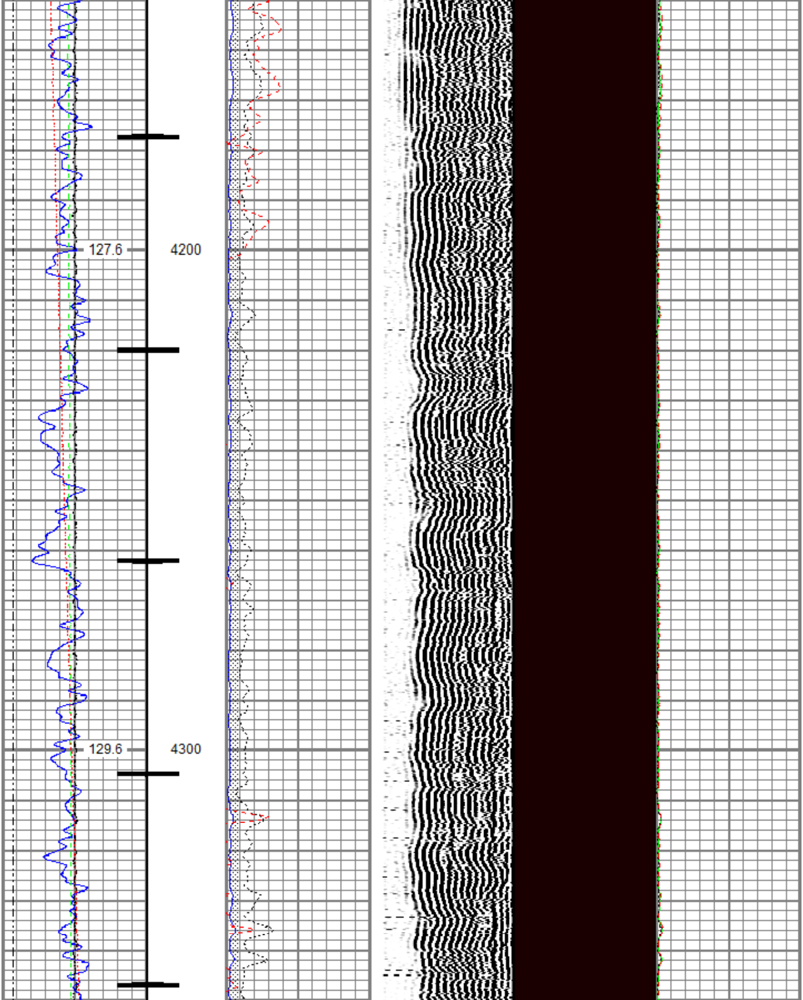
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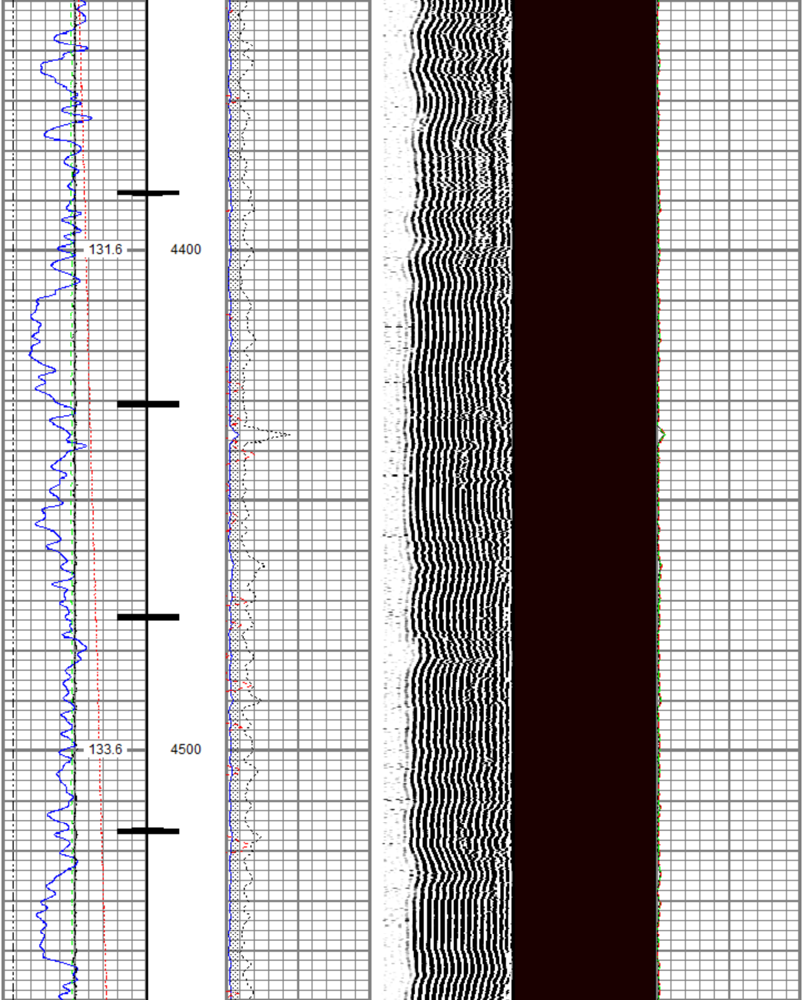
4200
129.6
4300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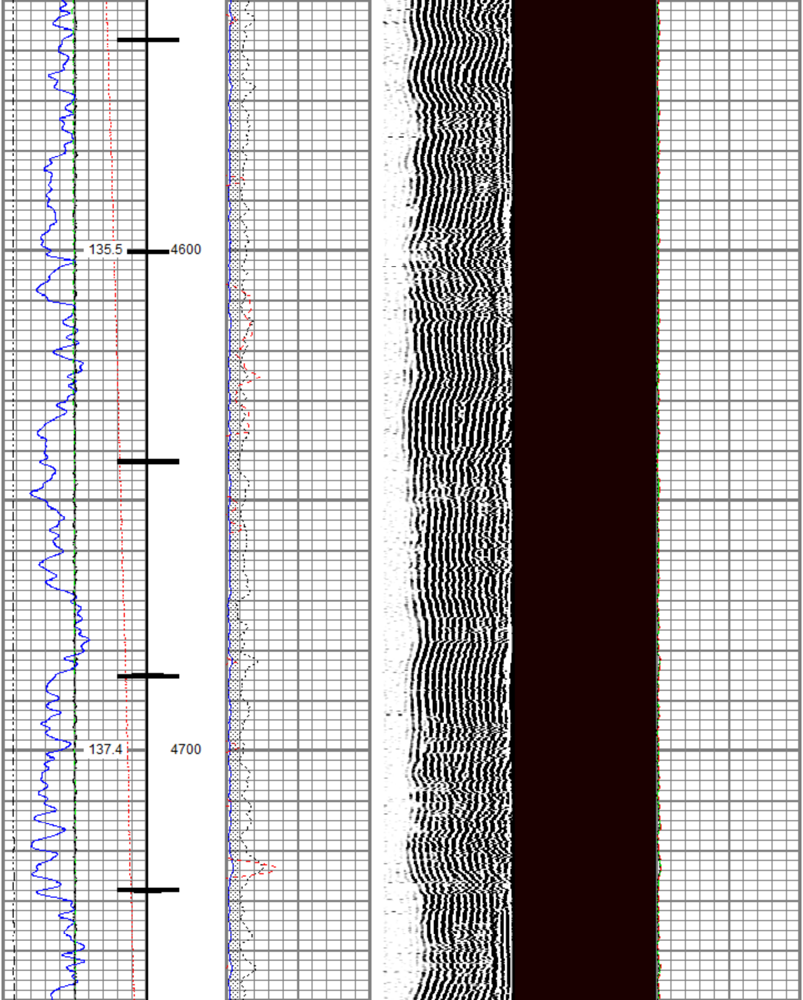
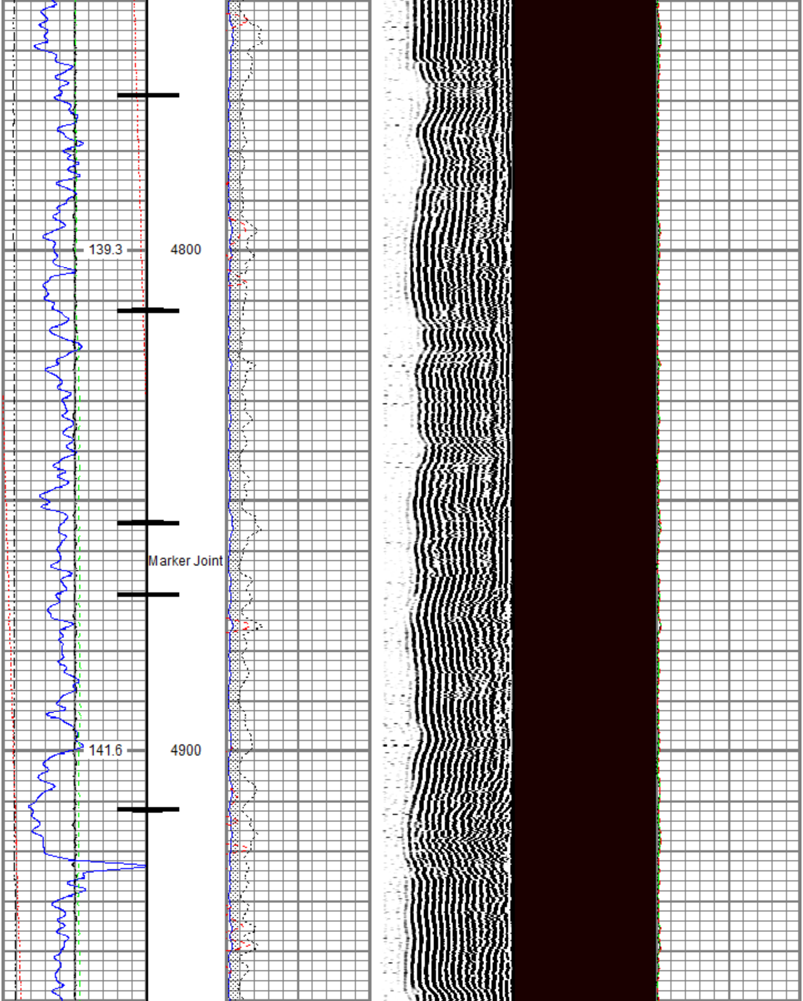
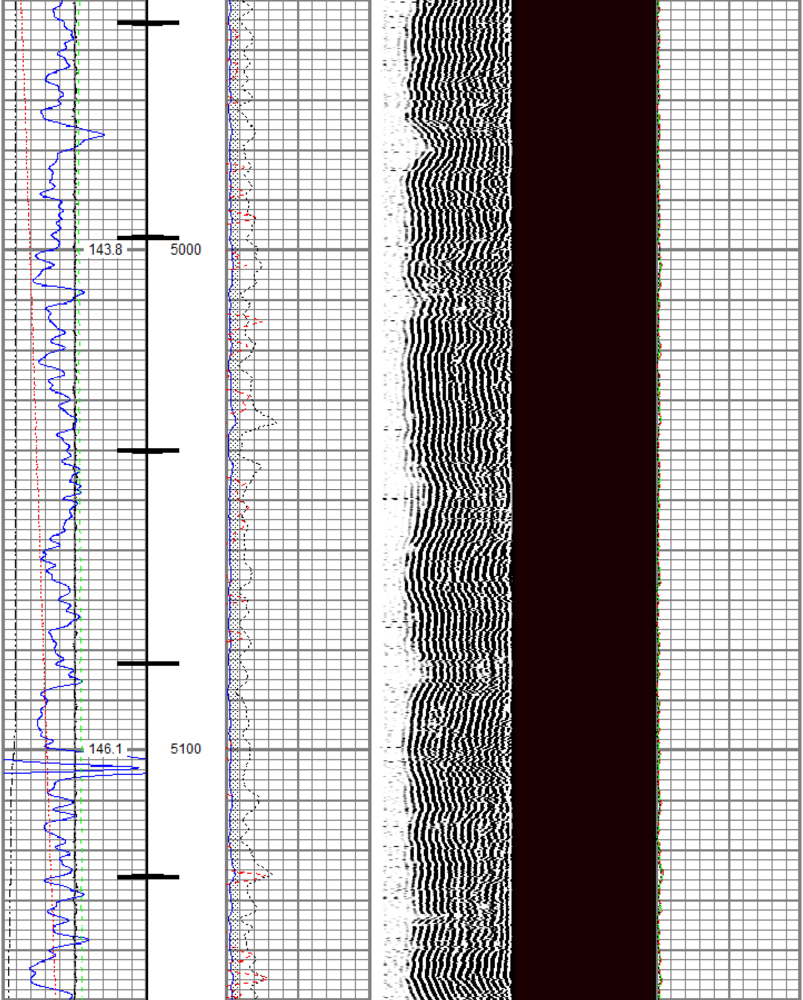
133.6
4500


135.5
4600
137.4
4700


139.3
4800
Marker Joint
141.6
4900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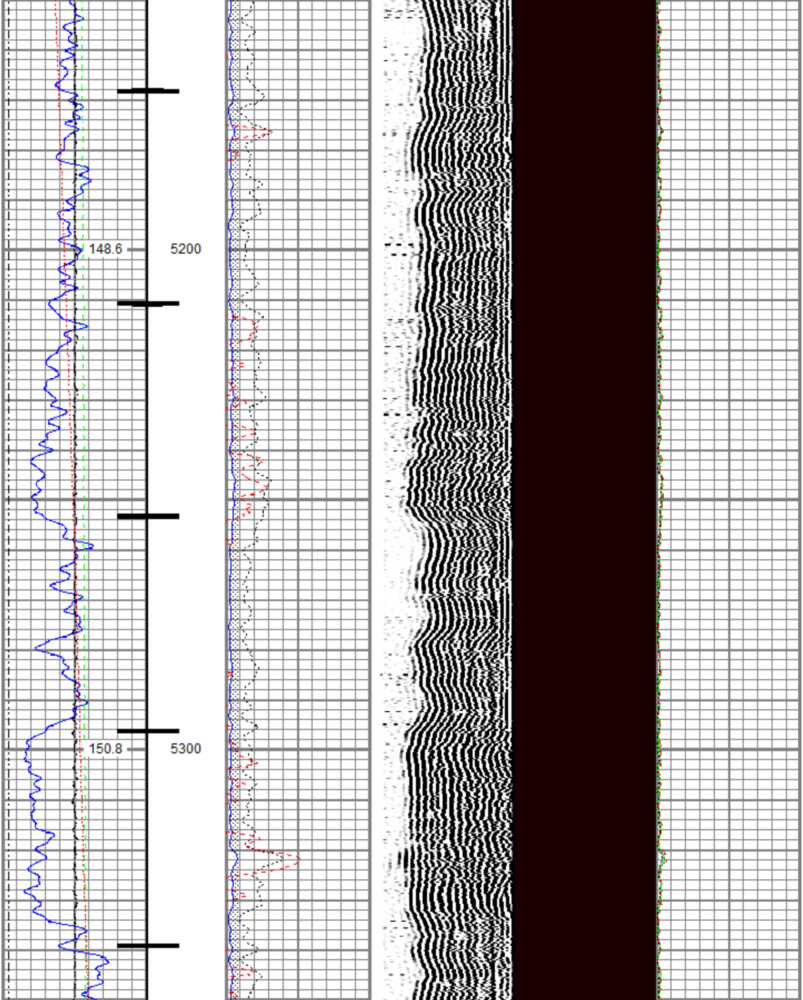
5000
146.1
5100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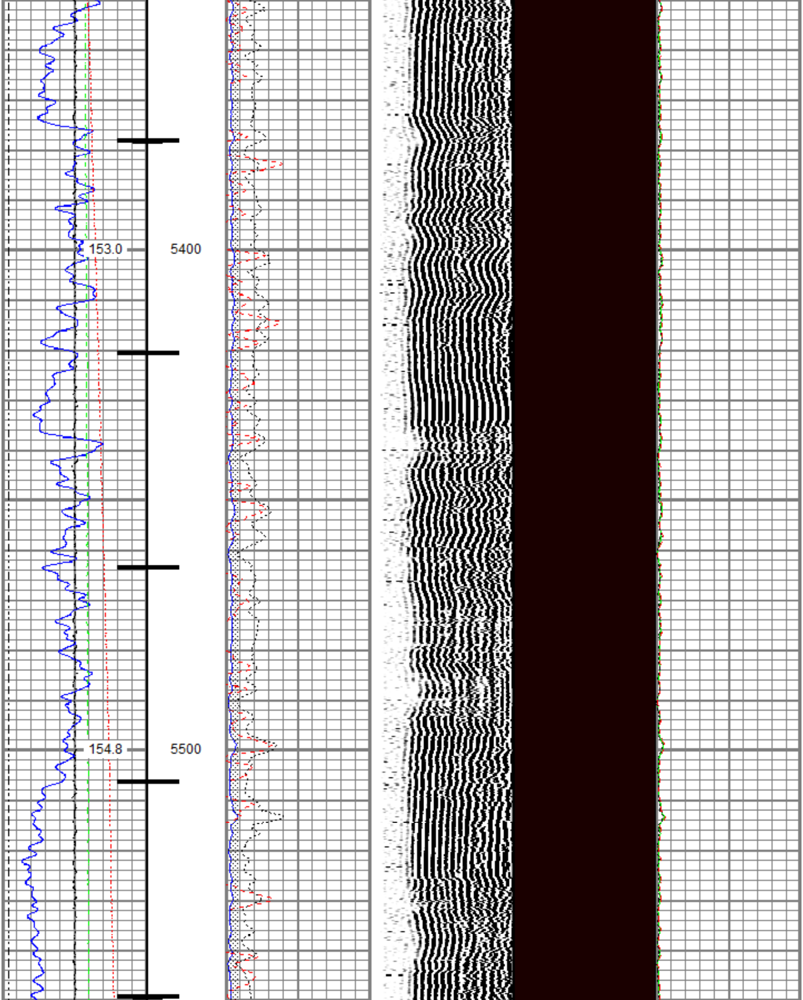
5200
150.8
5300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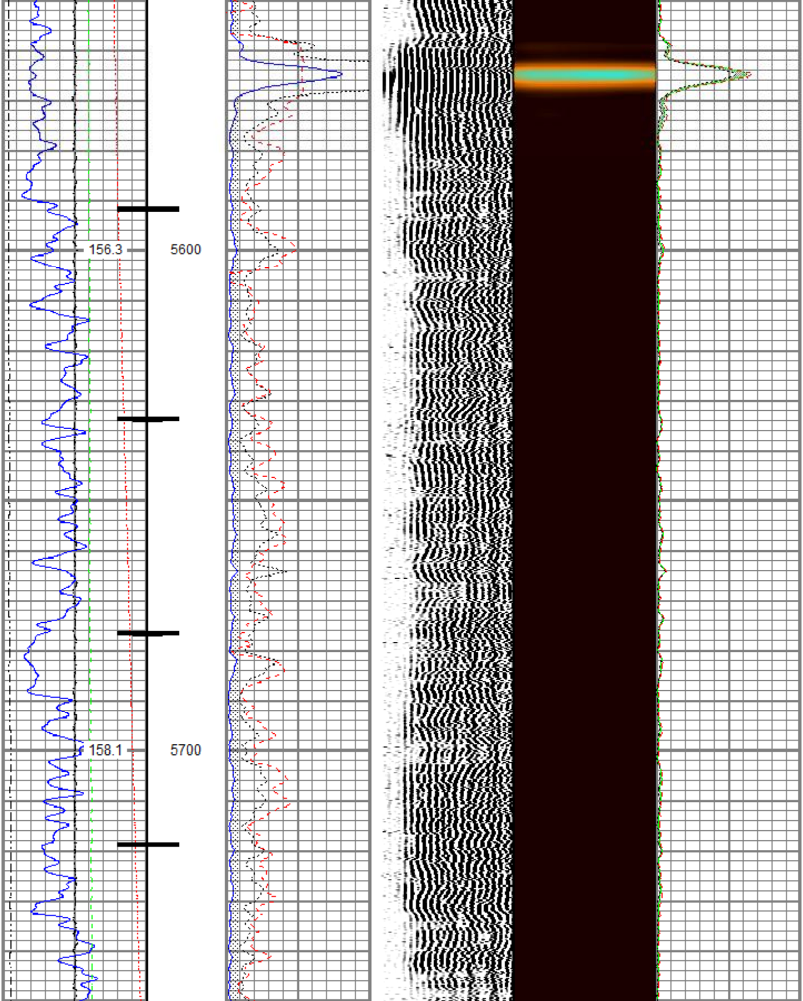
5500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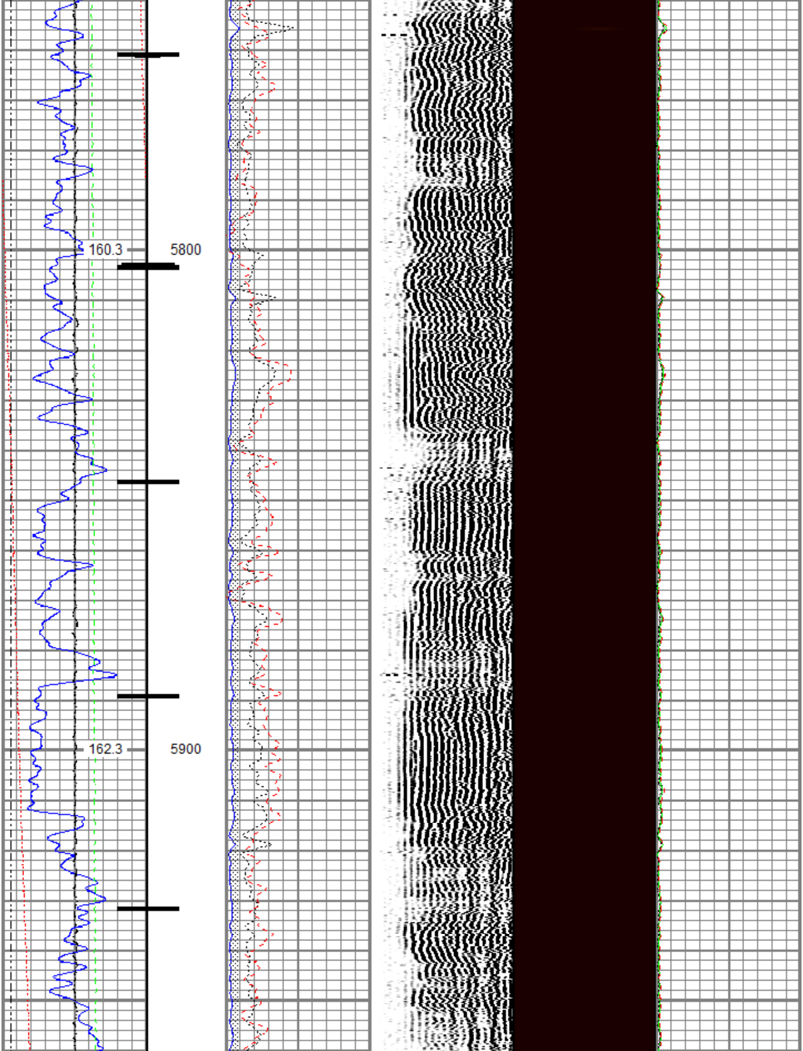
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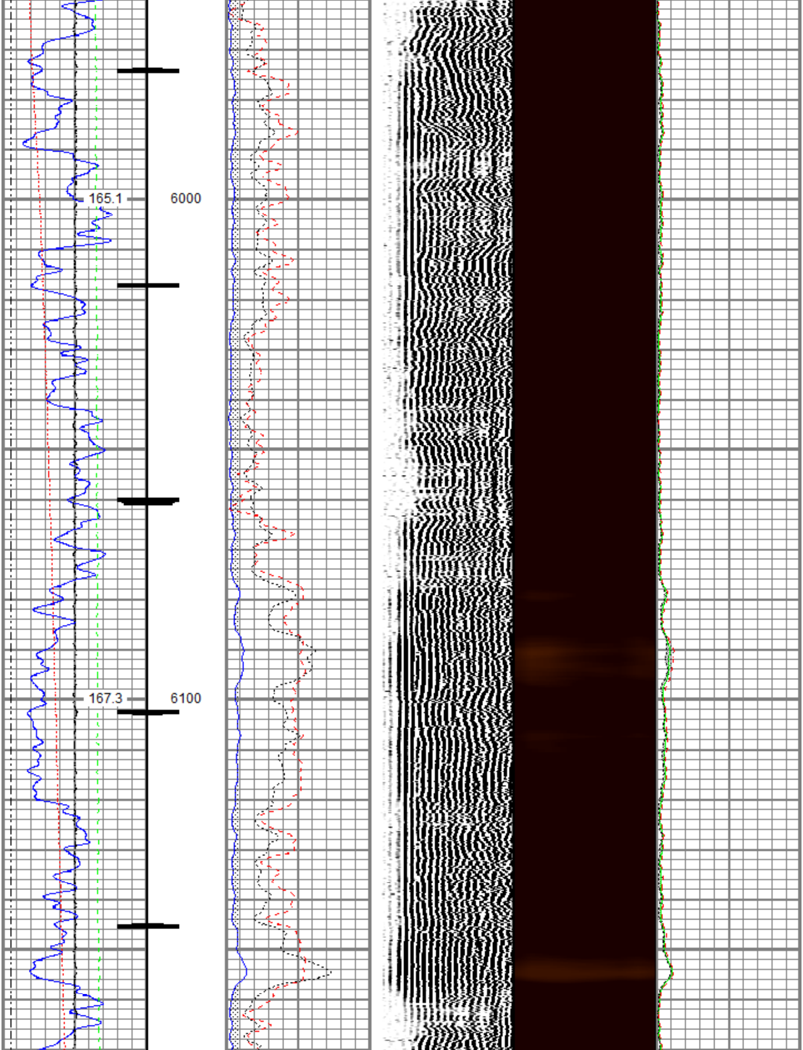
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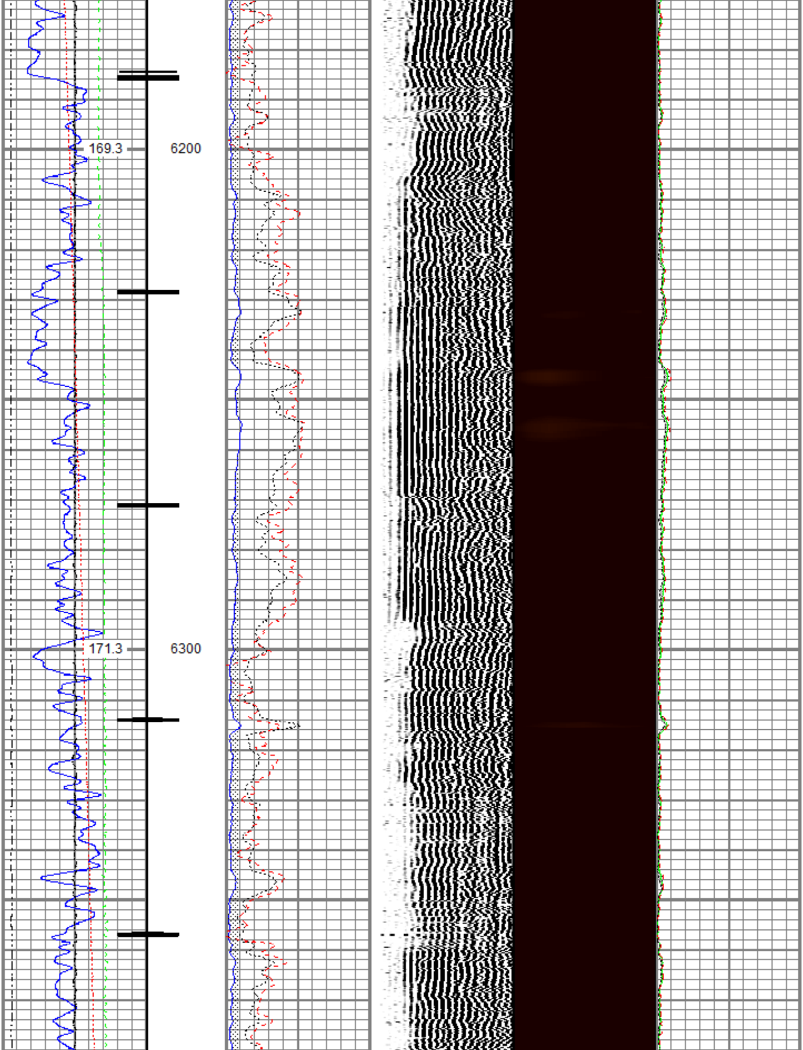
6000
167.3
6100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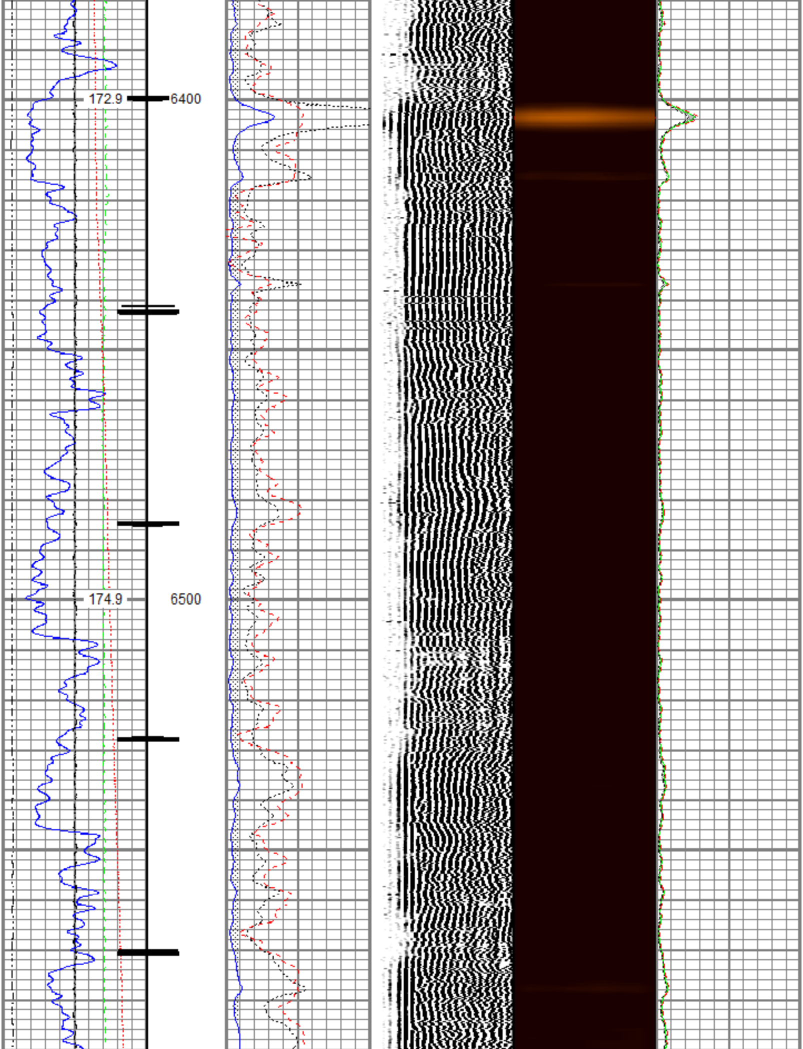
6300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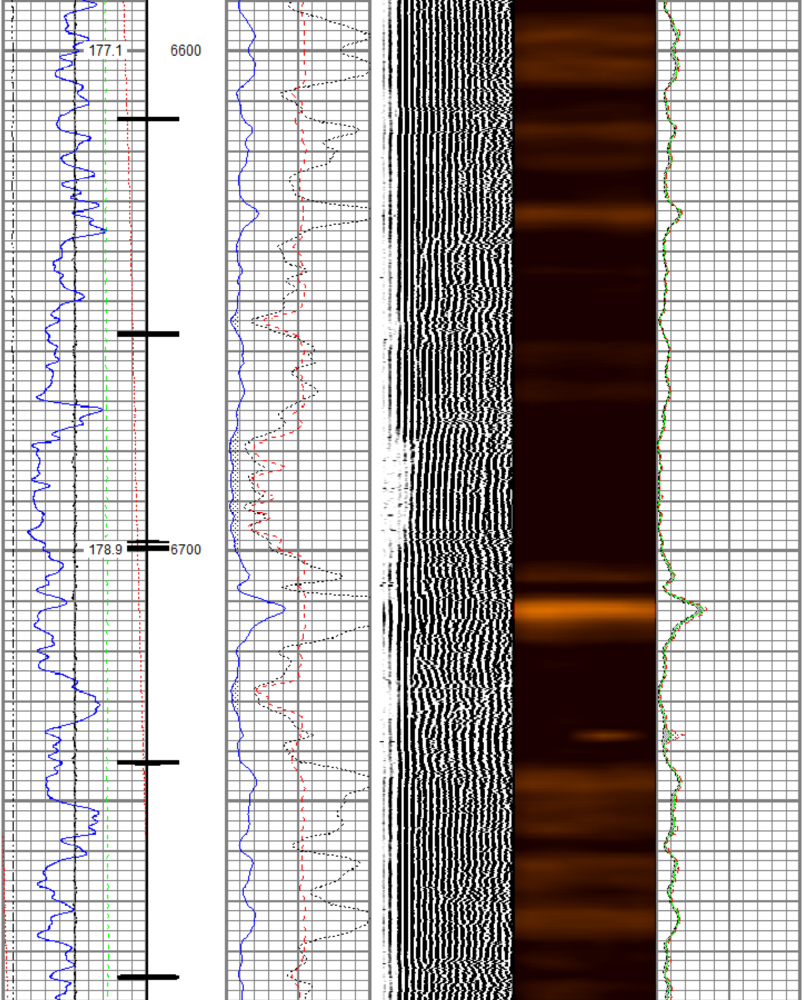
6400
174.9
6500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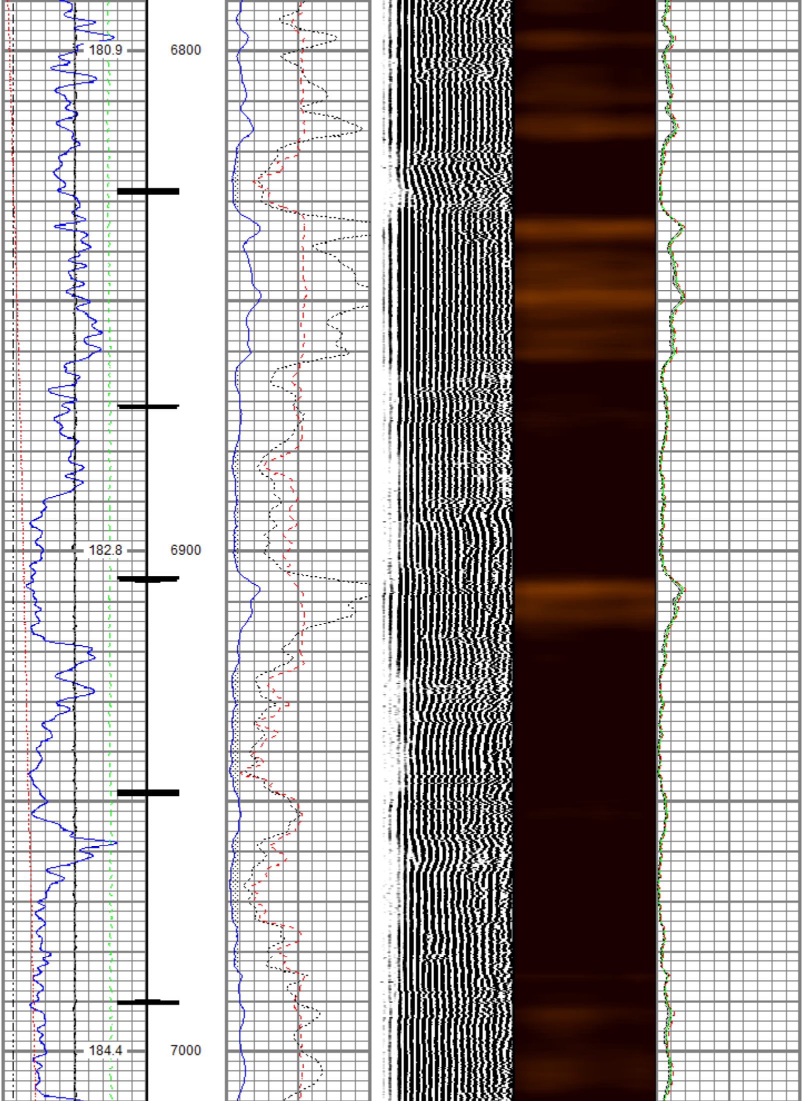
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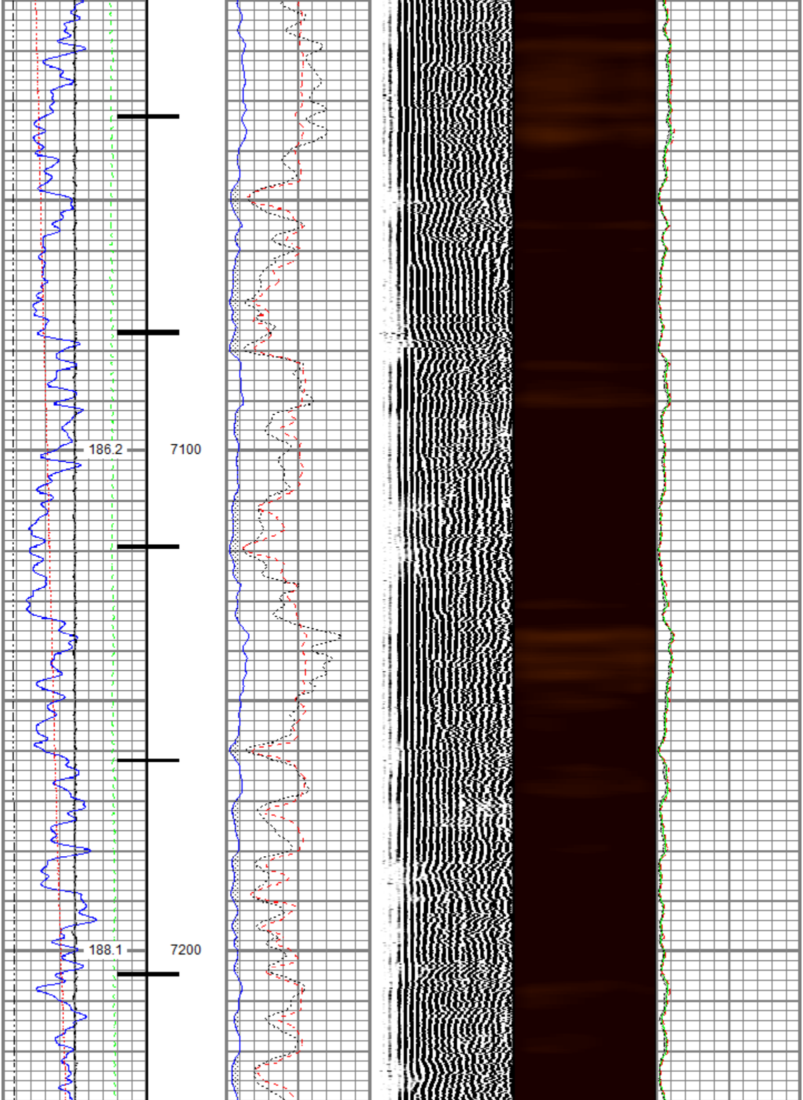
184.4
7000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7100
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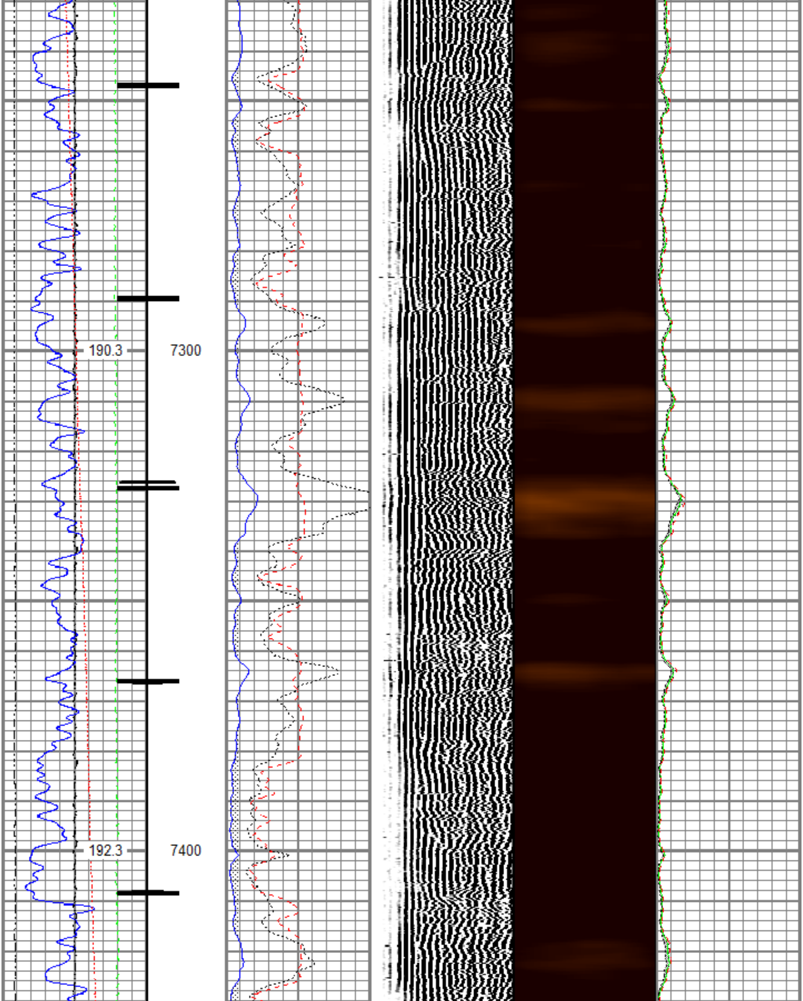
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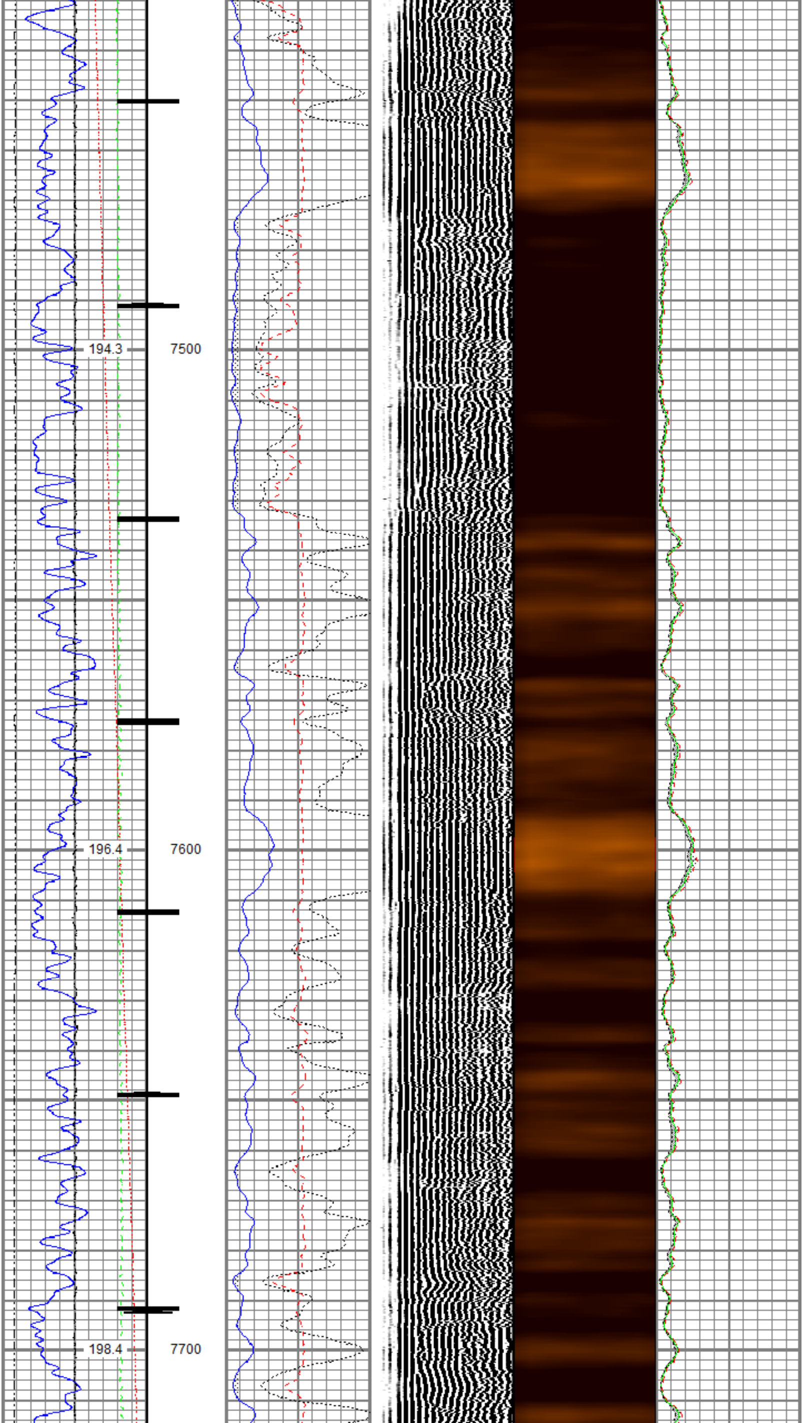
194.3
7500
196.4
7600
198.4
7700

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
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

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Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File tep_federal pa 434-24_rbl_10-15-18\processed_tep_federal pa 434-24_rbl_10-15-18.db
Dataset Pathname Repeat1.2
Presentation Format ros_rbt004_tep
Dataset Creation Tue Oct 16 10:20:03 2018
Charted by Depth in Feet scaled 1:240

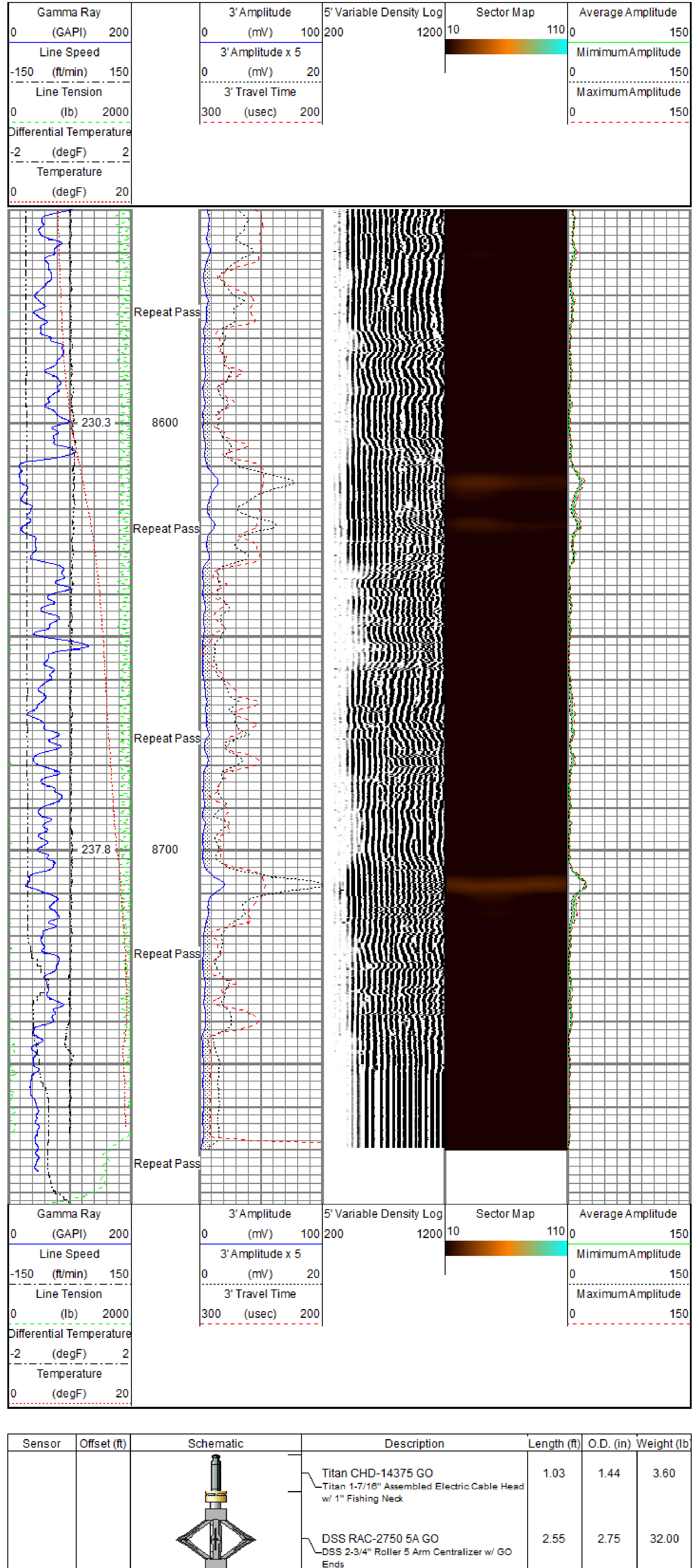
Gamma Ray 0 (GAPI) 200
Line Speed -150 (ft/min) 150
Line Tension 0 (lb) 2000
Differential Temperature -2 (degF) 2
Temperature 0 (degF) 20

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



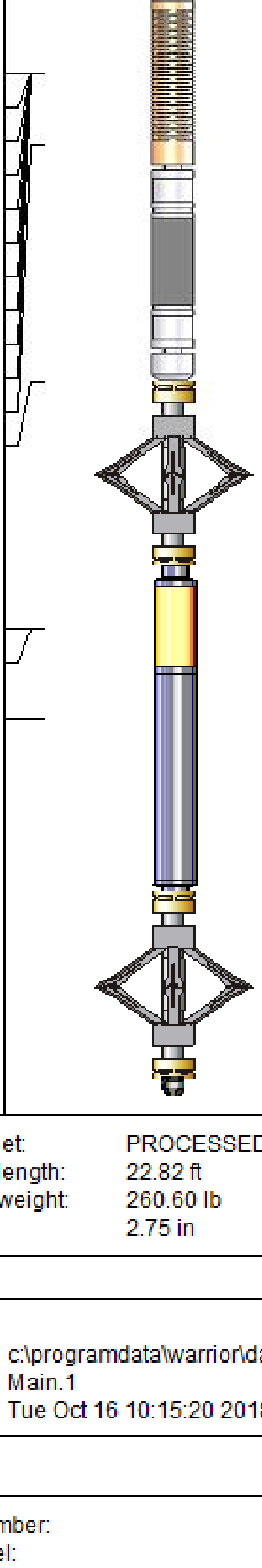
Gamma Ray 0 (GAPI) 200
Line Speed -150 (ft/min) 150
Line Tension 0 (lb) 2000
Differential Temperature -2 (degF) 2
Temperature 0 (degF) 20

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



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
HEADVOLT	9.85
CCL$2	6.42
CCL$1	6.42
GR	5.18

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 (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
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 PA 434-24_RBL_10-15-18.db: field/well/run1/Main
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 pa 434-24_rbl_10-15-18\processed_tep_federal pa 434-24_rbl_10-
Dataset Pathname Main.1
Dataset Creation Tue Oct 16 10:15:20 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: 52.751 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.004	0.640	0.800	81.196	124.789	1.270
CAL	-0.005	0.761				
5'	-0.027	0.639	0.800	81.196	120.718	4.065
SUM						
S1	-0.008	0.748	0.000	100.000	132.264	1.066
S2	-0.004	0.672	0.000	100.000	147.865	0.636
S3	-0.004	0.695	0.000	100.000	142.921	0.630
S4	-0.007	0.751	0.000	100.000	131.925	0.887
S5	-0.009	0.752	0.000	100.000	131.390	1.162
S6	-0.007	0.717	0.000	100.000	138.117	0.910
S7	-0.009	0.673	0.000	100.000	146.623	1.341
S8	-0.008	0.707	0.000	100.000	140.000	1.071

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.005	0.761	1.000	0.000

Air Zero Calibration, performed Sun Oct 14 08:27:43 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.005	0.000	0.000
5'	-0.000	0.000	-0.001
SUM			
S1	-0.007	0.000	0.000
S2	-0.004	0.000	0.000
S3	-0.004	0.000	0.001
S4	-0.004	0.000	-0.000
S5	-0.003	0.000	-0.000
S6	-0.004	0.000	-0.000
S7	-0.004	0.000	0.000
S8	-0.004	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

RELIANCE OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal PA 434-24
Field	Parachute
County	Garfield
State	Colorado