RELIANCE OILFIELD SERVICES

Radial Cement Bond Gamma Ray Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal PA 34-26
Field	Parachute
County	Garfield
State	Colorado

Company	TEP Rocky Mountain LLC		
Well	Federal PA 34-26		
Field	Parachute		
County	Garfield	State	Colorado
Location:	API # : 05-045-23724		Other Services ---
SEC 26 TWP 6S RGE 95W			
Permanent Datum	Ground Level	Elevation 5636.9'	Elevation K.B. 5660.9' D.F. 5659.9' G.L. 5636.9'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Date	16-JUL-2018
Run Number	One
Depth Driller	8383 FT
Depth Logger	8324 FT
Bottom Logged Interval	8310 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	245°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	09:44
Equipment Number	HD-0359
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	32.3	H-40	Surface	1140 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	8340 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 3973 FT to 3994 FT
Log ran from 8310 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

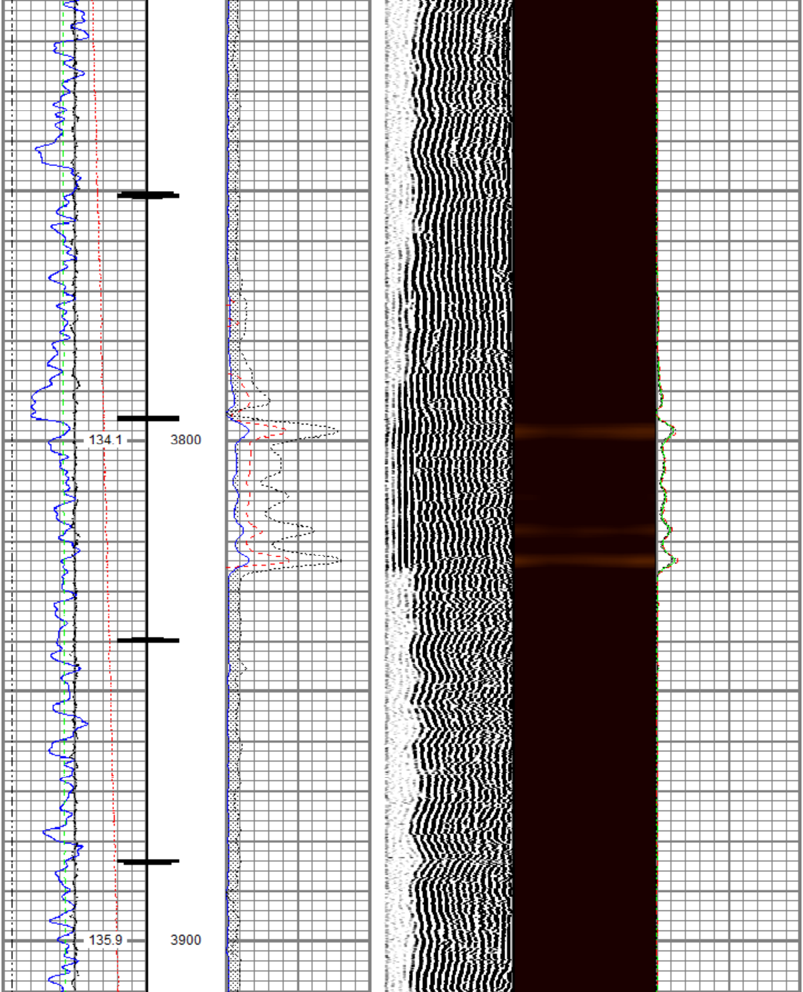
RELIANCE OILFIELD SERVICES

Main Pass

Recorded with 0 PSI Surface Induced Pressure

Database File	tep_federal pa 34-26_rbl_07-16-18\processed_tep_federal pa 34-26_rbl_07-16-18.db
Dataset Pathname	main
Presentation Format	ros_rbt004_tep
Dataset Creation	Mon Jul 16 10:43:42 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					
10 CCL 0					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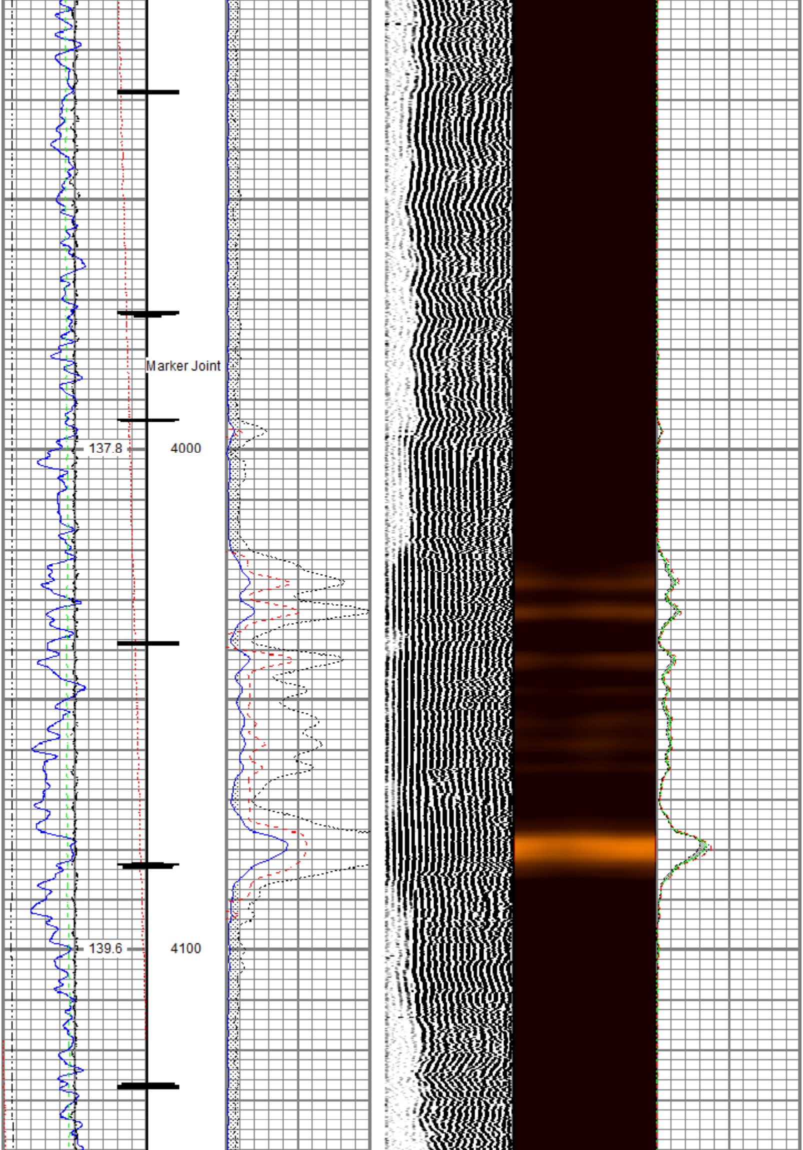
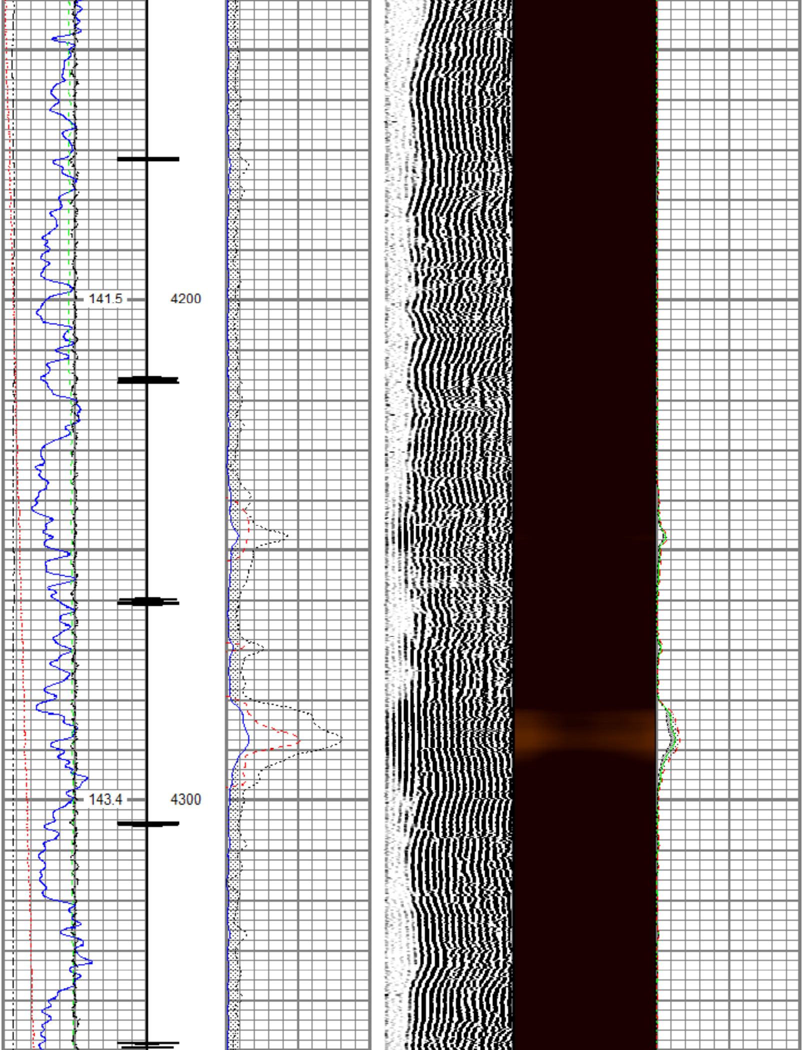
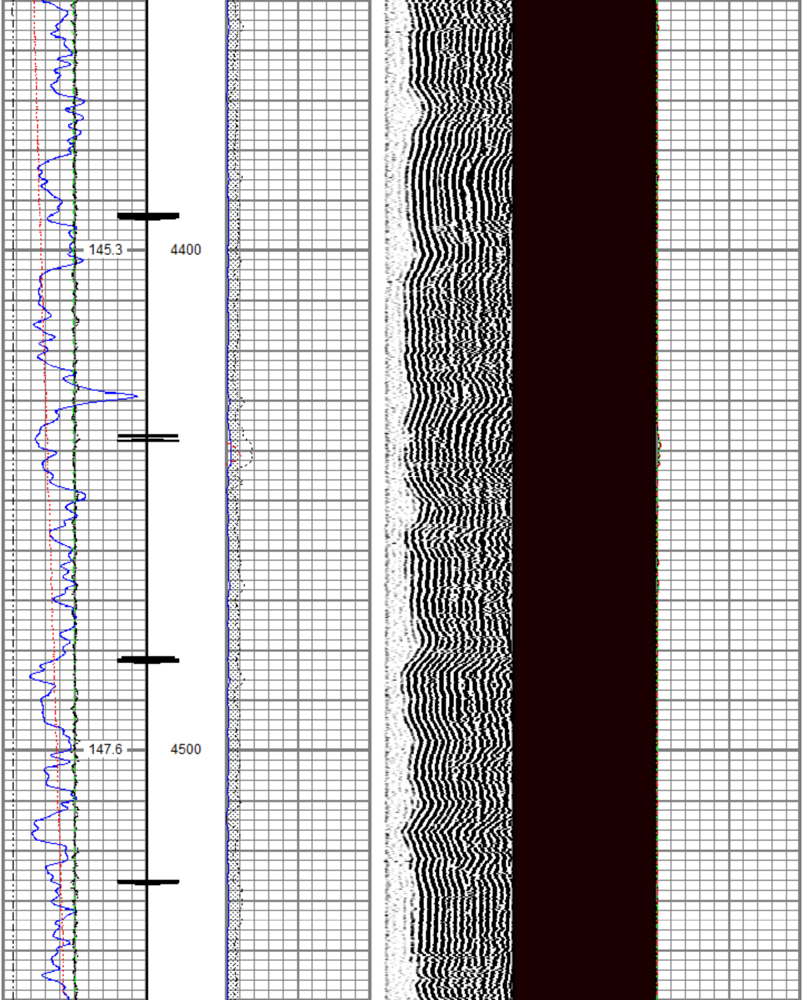
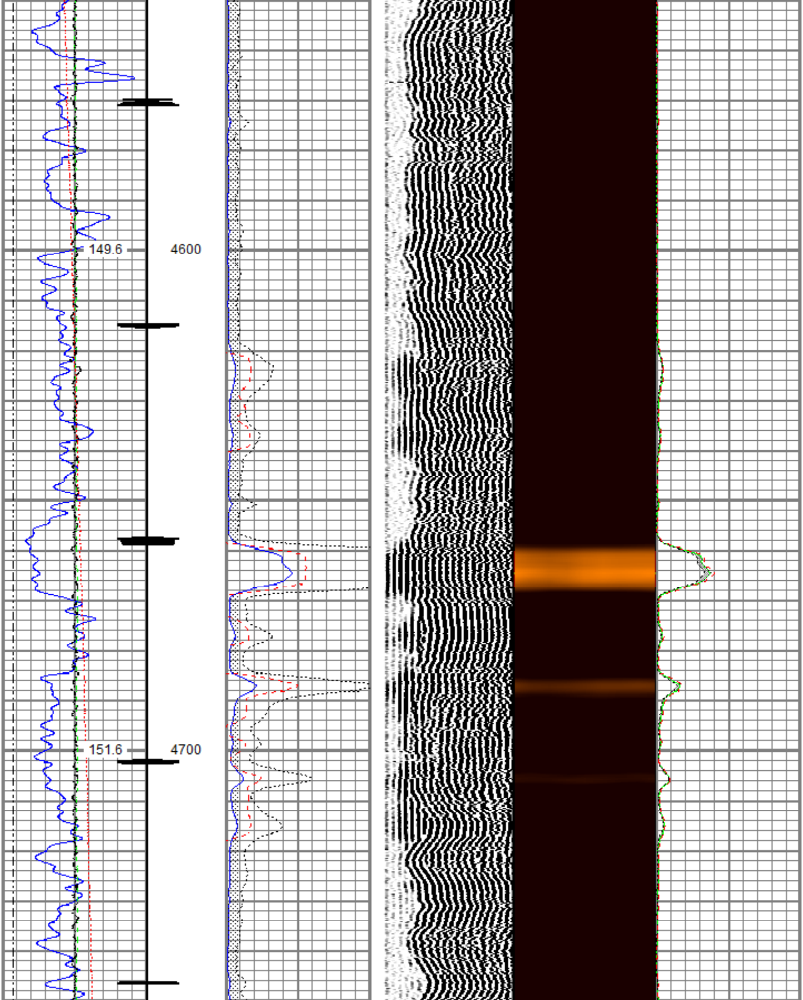
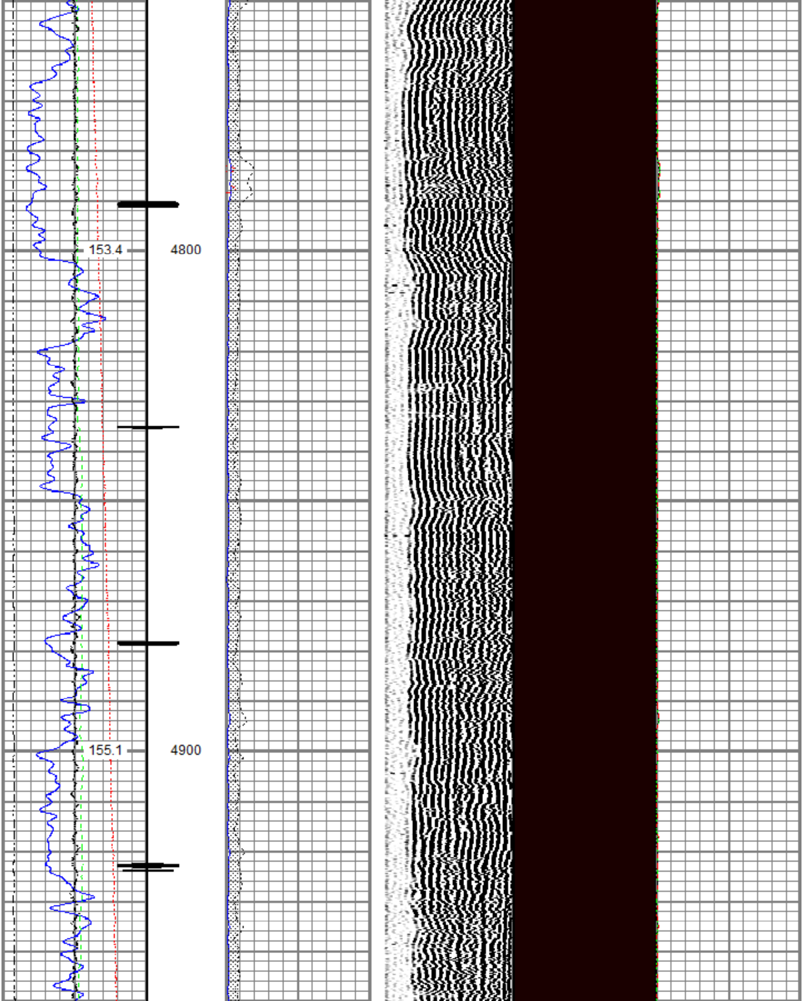
3800
135.9
3900

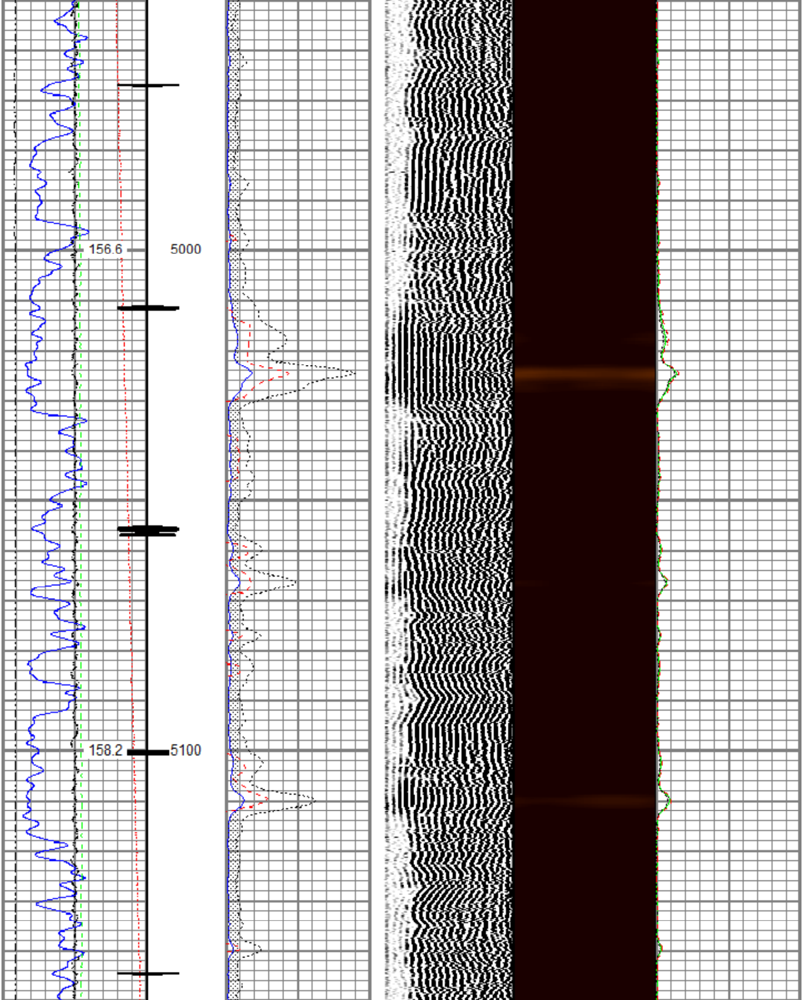

Marker Joint
137.8
4000
139.6
4100

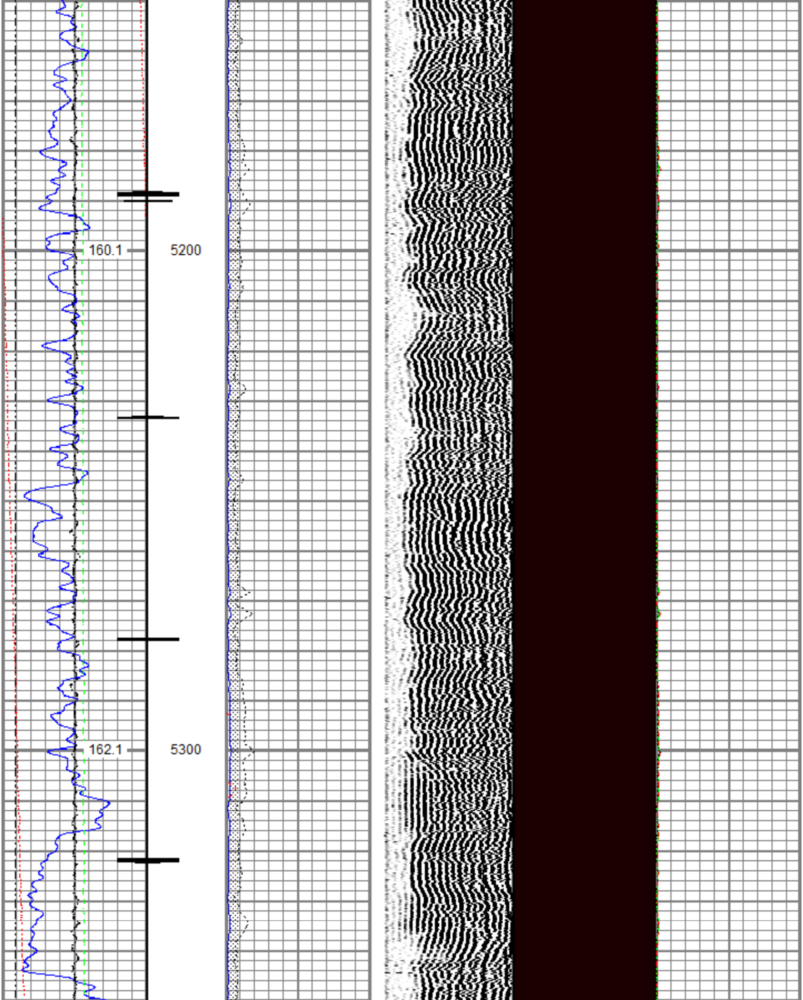

141.5
4200
143.4
4300


145.3
4400
147.6
4500


149.6
4600
151.6
4700


153.4
4800
155.1
4900


156.6
5000
158.2
5100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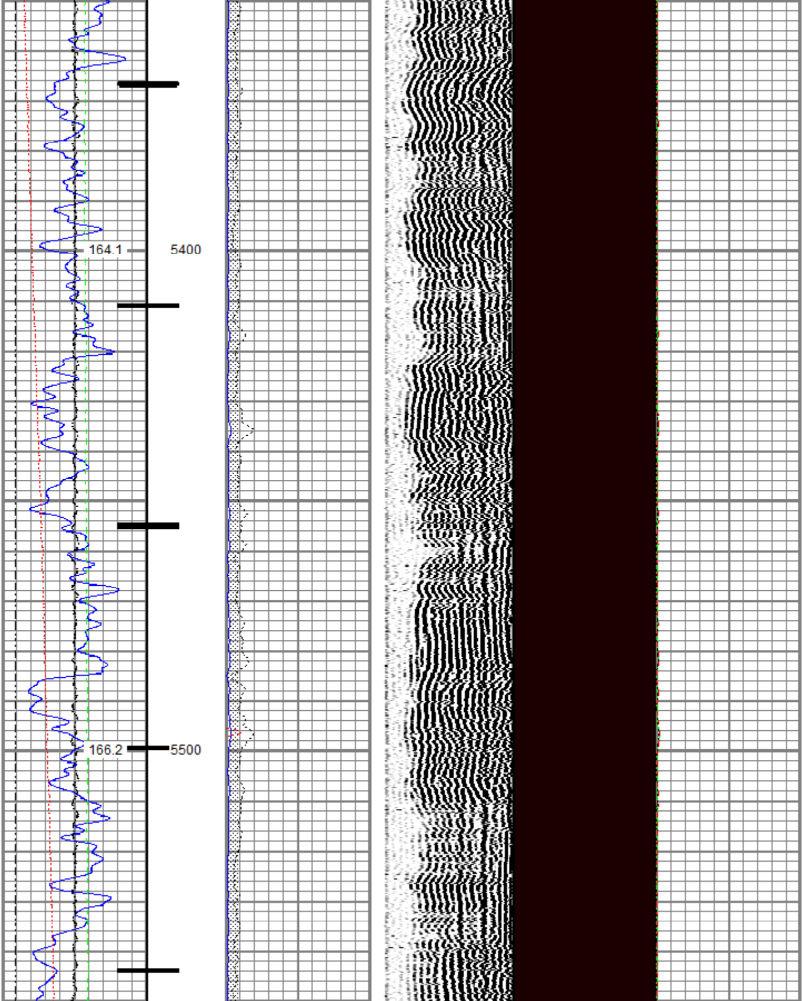
5200
162.1
5300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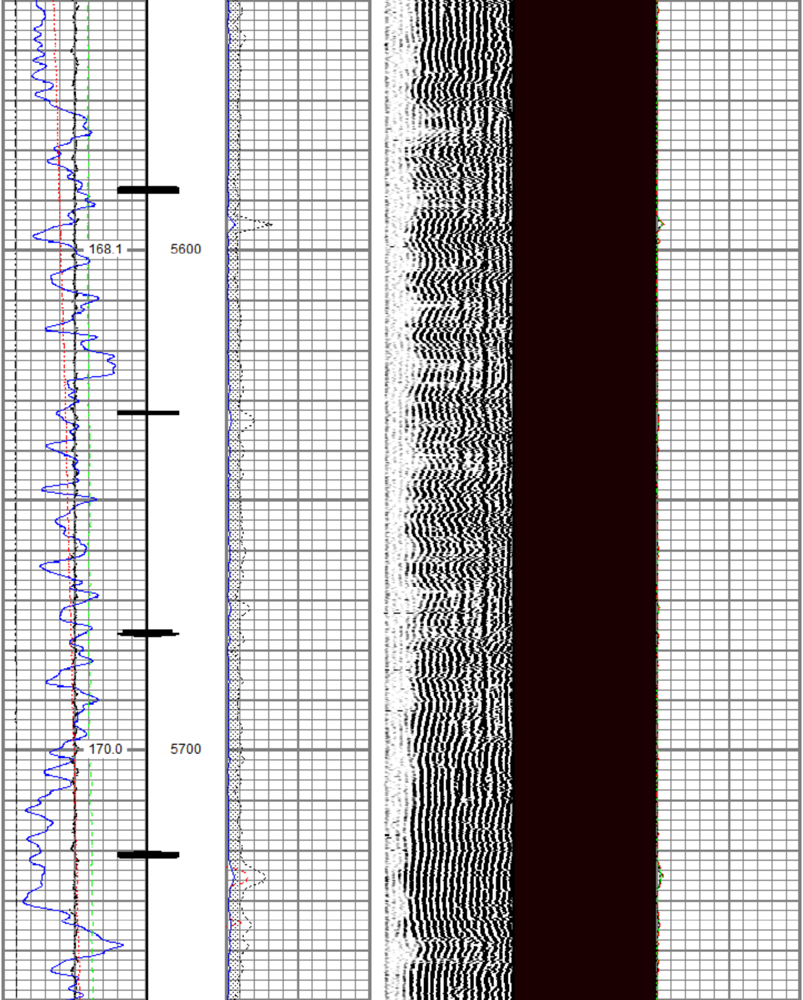
5400
166.2
5500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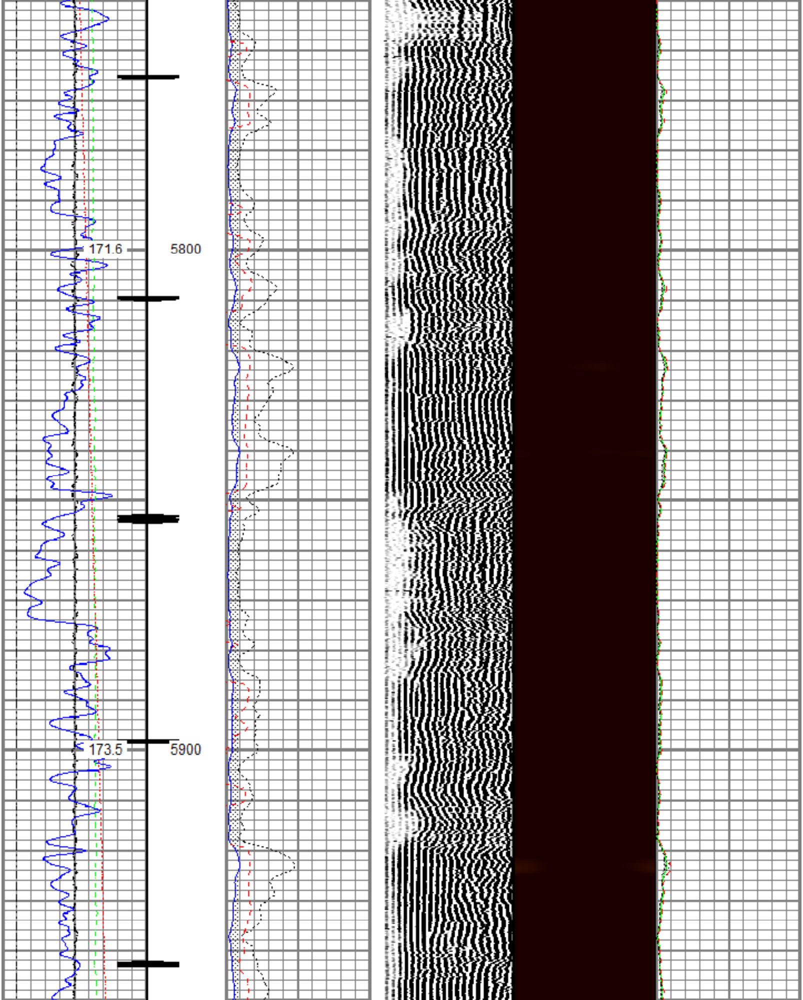
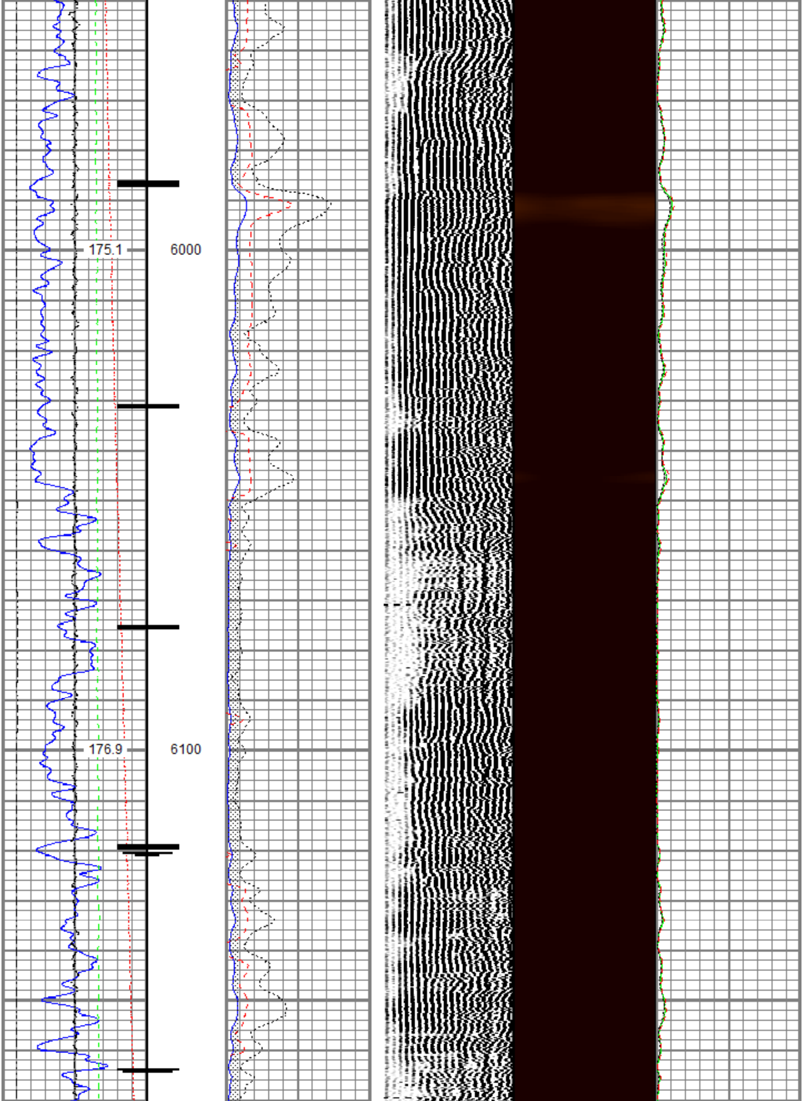
5600
170.0
5700


171.6
5800
173.5
5900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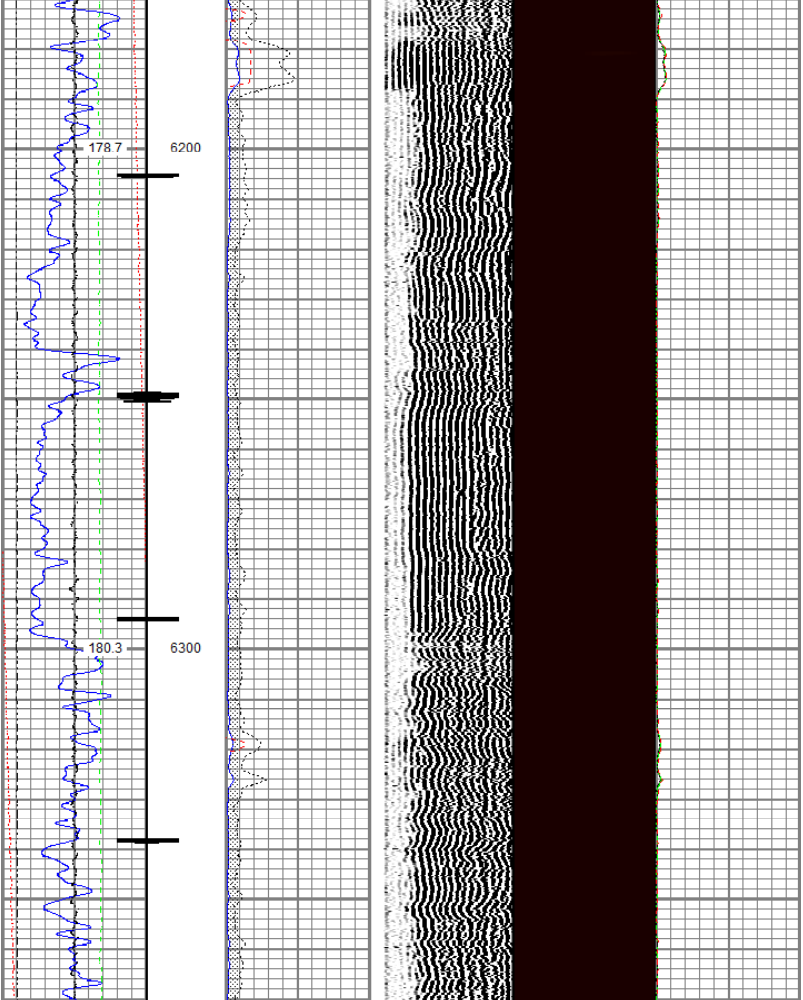
6100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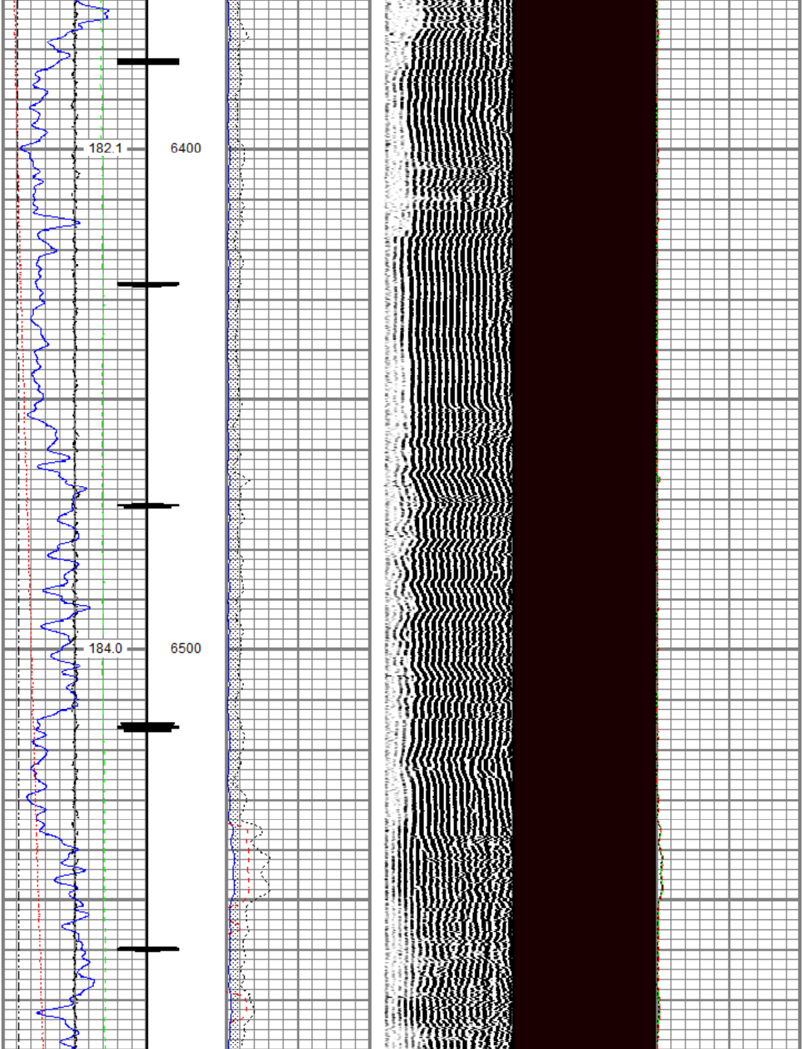
6200
180.3
6300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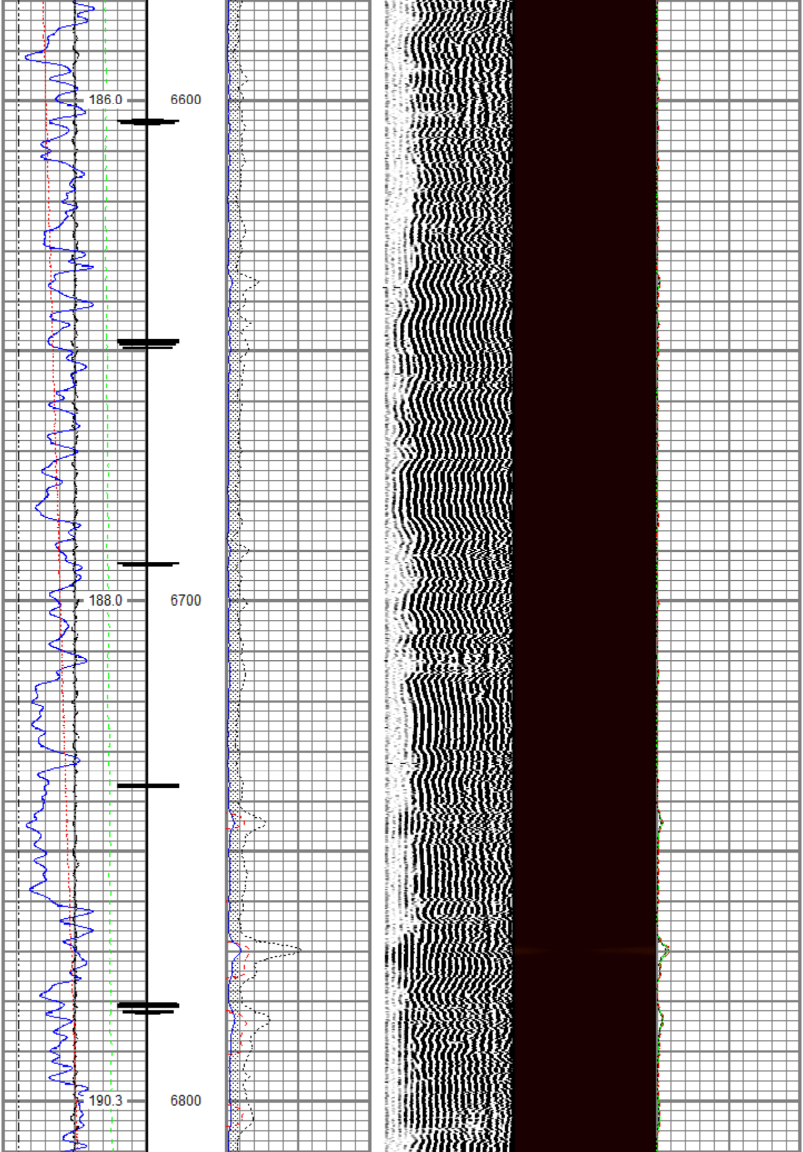
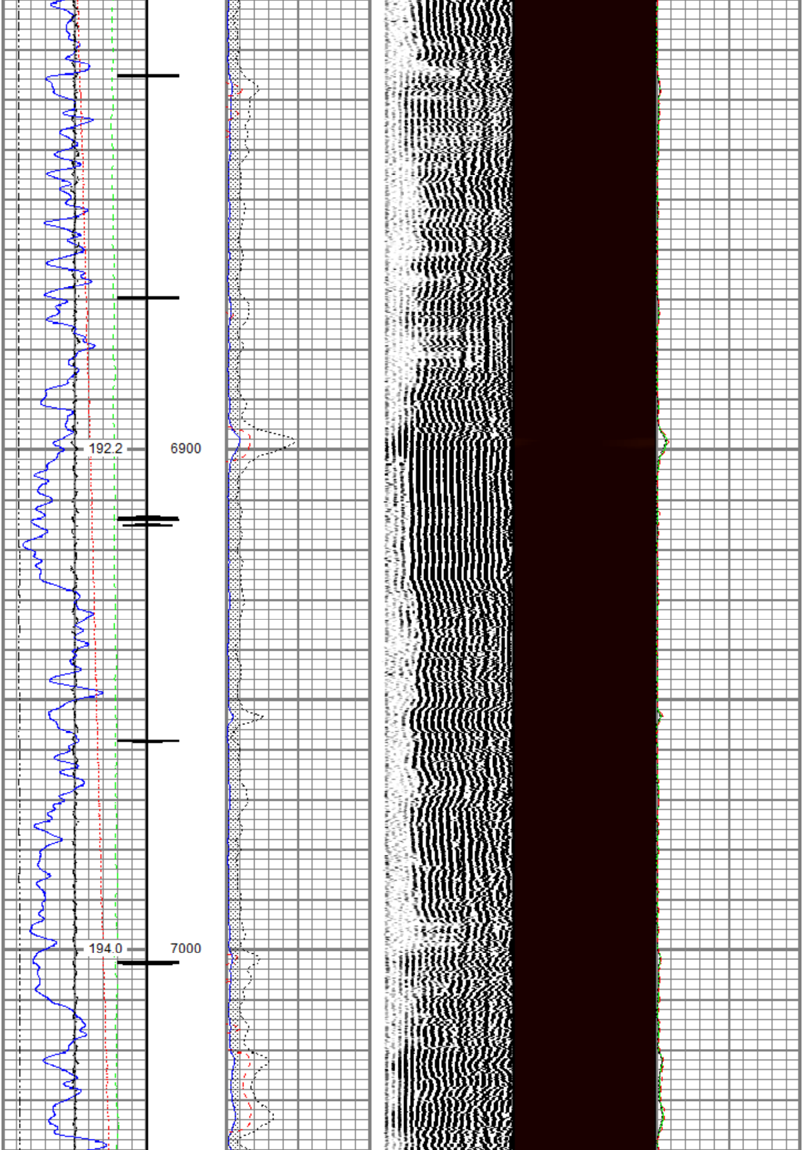
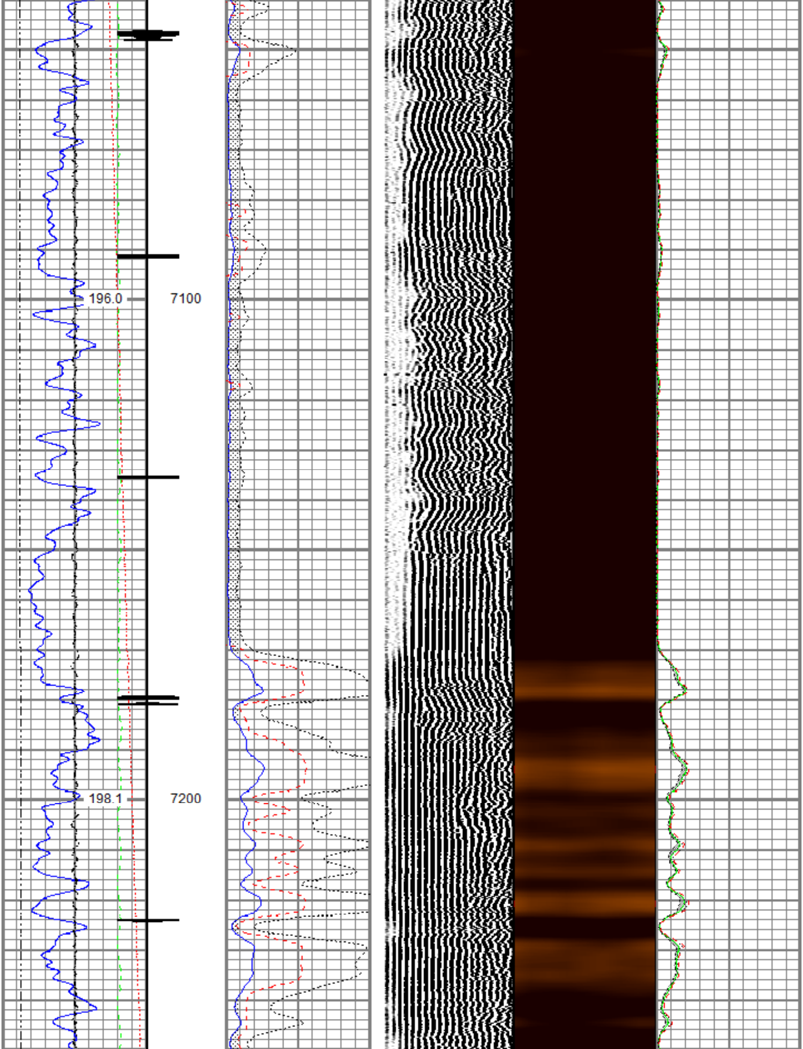
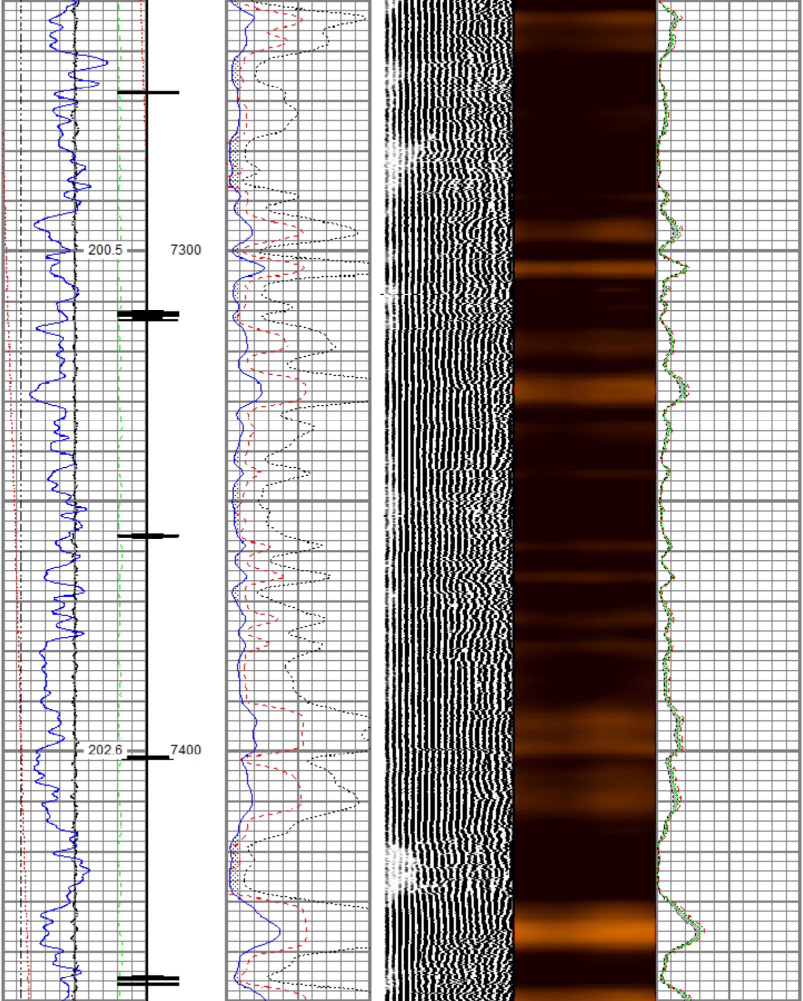
6400
184.0
6500


186.0
6600
188.0
6700
190.3
6800


192.2
6900
194.0
7000


196.0
7100
198.1
7200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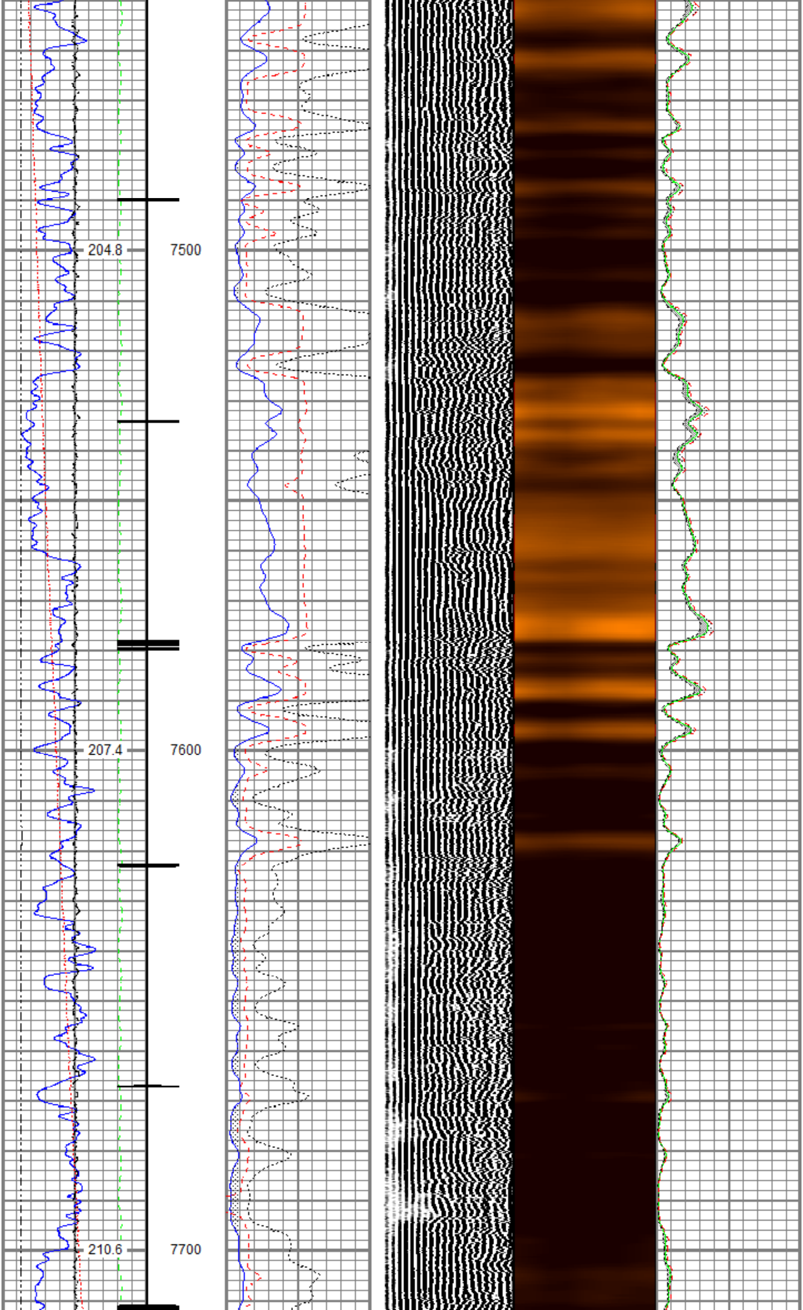
7300
202.6
7400


204.8
7500
207.4
7600
210.6
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 34-26_rbl_07-16-18\processed_tep_federal pa 34-26_rbl_07-16-18.db
Dataset Pathname	repeat
Presentation Format	ros_rbt004_tep
Dataset Creation	Mon Jul 16 10:39:47 2018
Charted by	Depth in Feet scaled 1:240

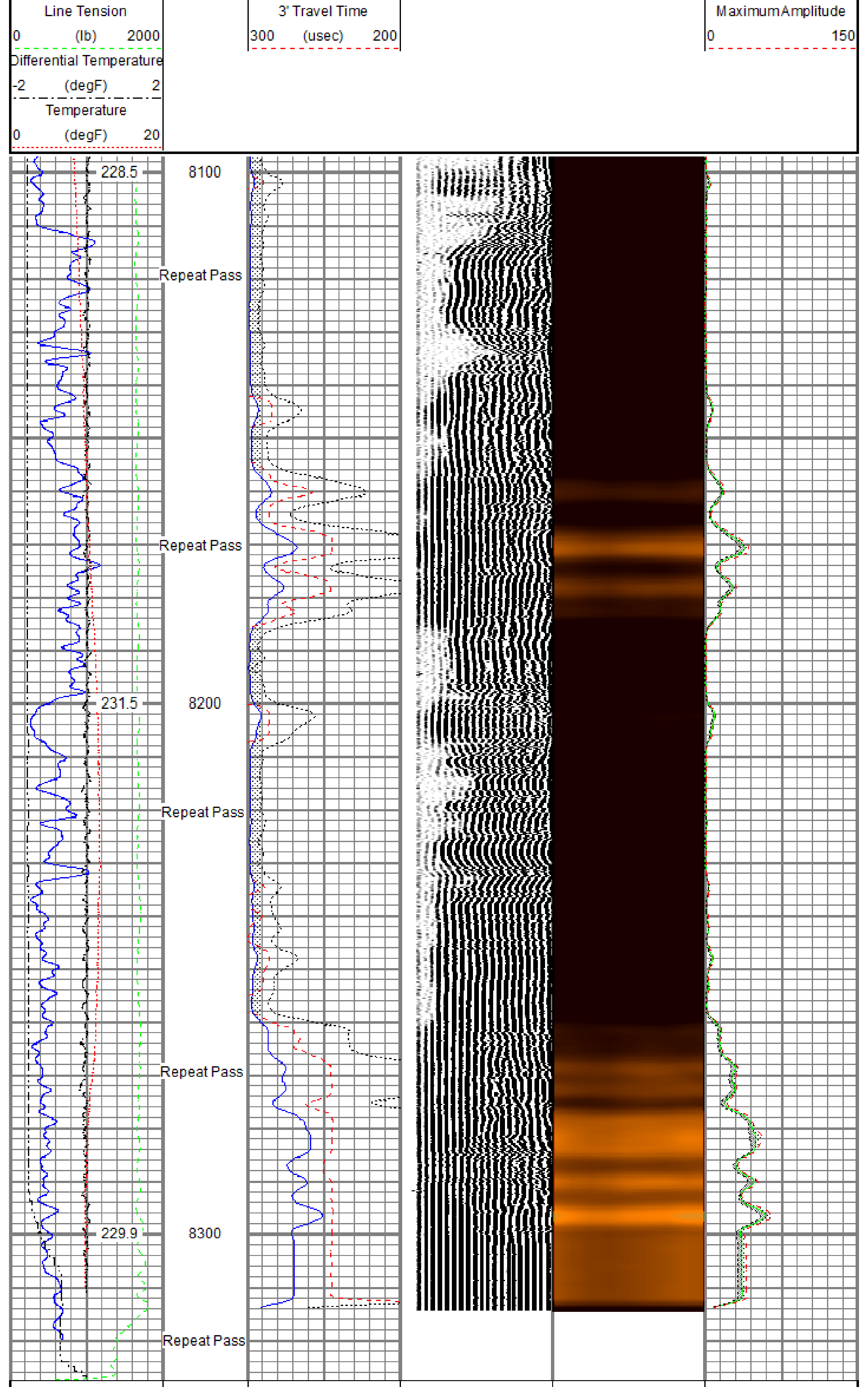
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

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



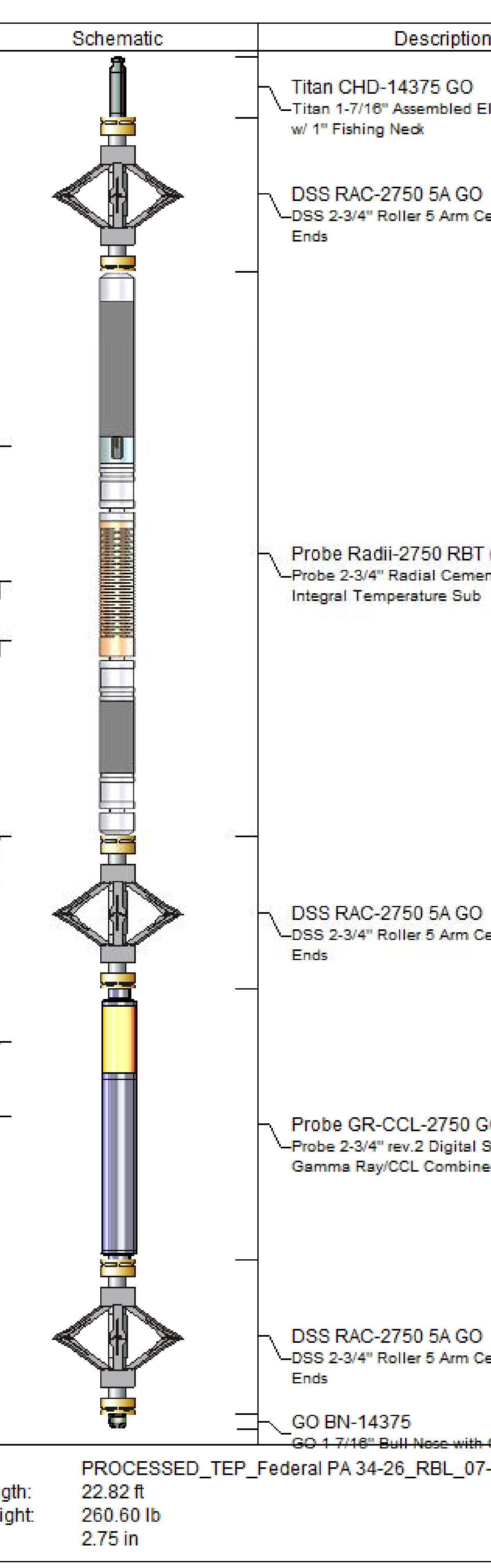
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

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)	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 (FW1302-001) 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					
HEADVOLT	9.85					
			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 PA 34-26_RBL_07-16-18.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 34-26_RBL_07-16-18\PROCESSED_TEP_Federal PA 34-26
Dataset Pathname	main
Dataset Creation	Mon Jul 16 10:43:42 2018

Gamma Ray Calibration Report

Serial Number:	FW1307-038	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 11:44:12 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:	3238.333	ft

Master Calibration, performed Mon Jul 16 09:14:09 2018:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.001	0.775	0.800	81.196	103.597	0.886
CAL	-0.006	0.790				
5'	0.009	0.582	0.800	81.196	140.320	-0.476
SUM						
S1	0.000	0.797	0.000	100.000	125.469	-0.021
S2	0.000	0.803	0.000	100.000	124.576	-0.029
S3	-0.001	0.797	0.000	100.000	125.459	0.063
S4	-0.001	0.772	0.000	100.000	129.422	0.106
S5	-0.001	0.729	0.000	100.000	136.979	0.139
S6	-0.001	0.715	0.000	100.000	139.774	0.131
S7	-0.000	0.753	0.000	100.000	132.789	0.031
S8	-0.001	0.788	0.000	100.000	126.882	0.071

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.006	0.790	1.000	0.000

Air Zero Calibration, performed Mon Jul 16 09:14:33 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.002	0.000	0.001
5'	0.010	0.000	-0.001
SUM			
S1	-0.001	0.000	0.001
S2	0.001	0.000	-0.000
S3	-0.001	0.000	0.000
S4	-0.001	0.000	0.000
S5	-0.001	0.000	0.000
S6	-0.002	0.000	0.001
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 12:24:58 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
Well	Federal PA 34-26
Field	Parachute
County	Garfield
State	Colorado