RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal SG 421-22
Field Grand Valley
County Garfield State Colorado
Location: API # : 05-045-24134
Other Services ---
SEC 22 TWP 7S RGE 96W

Permanent Datum	Ground Level	Elevation 6090.8'	Elevation
Log Measured From	Kelly Bushing	24 FT	K.B. 6114.8'
Drilling Measured From	Kelly Bushing		D.F. ---
			G.L. 6090.8'

Company	TEP Rocky Mountain LLC
Well	Federal SG 421-22
Field	Grand Valley
County	Garfield
State	Colorado

Date	25-FEB-2019
Run Number	One
Depth Driller	6488 FT
Depth Logger	6434 FT
Bottom Logged Interval	6420 FT
Top Log Interval	Surface
Open Hole Size	---
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	179°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	18:00
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	32.3	H-40	Surface	1011 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	6447 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 3598-3620 FT
Log ran from 6420 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

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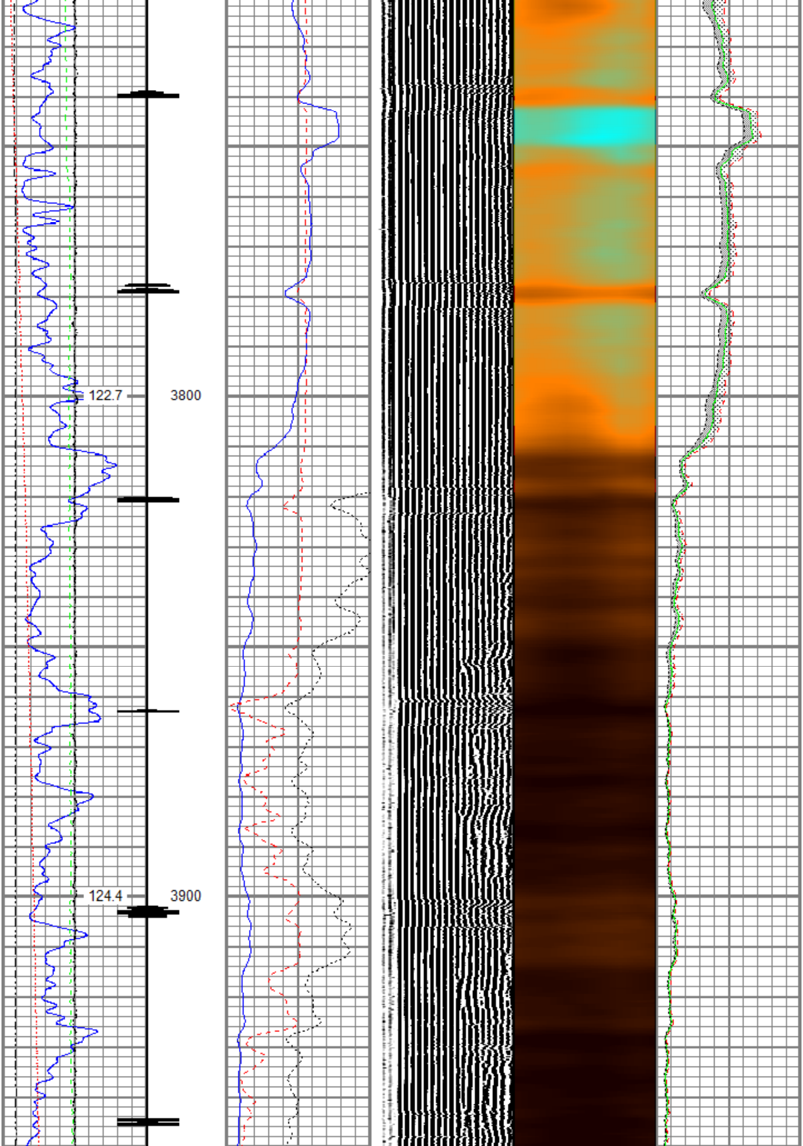
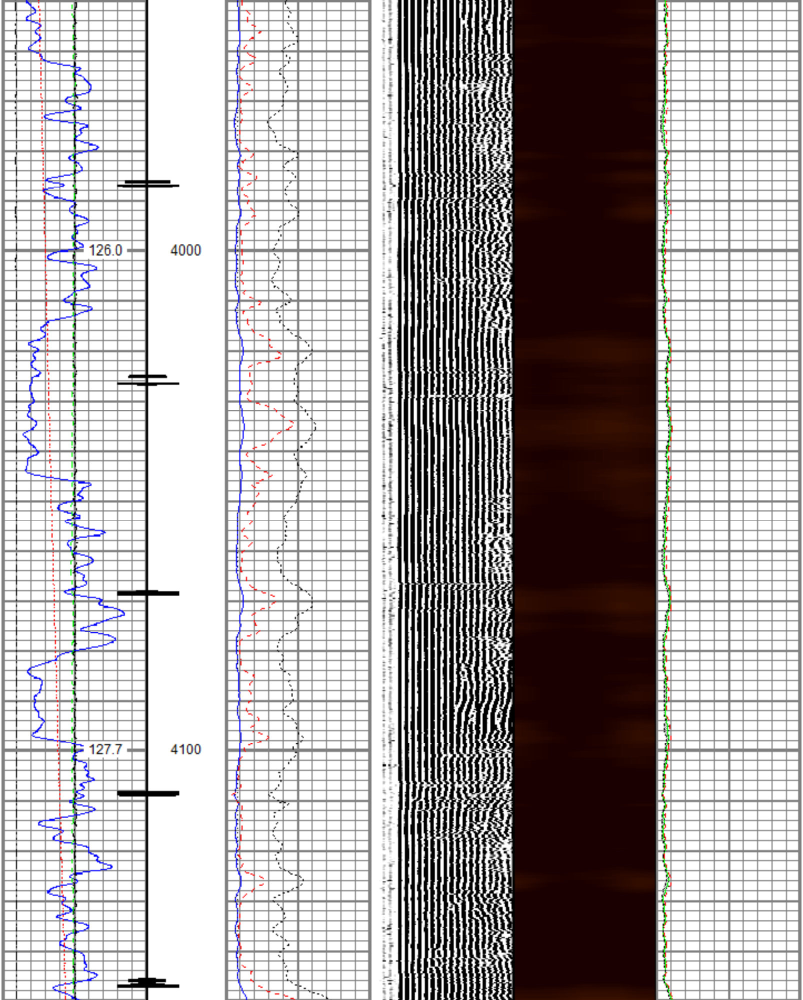
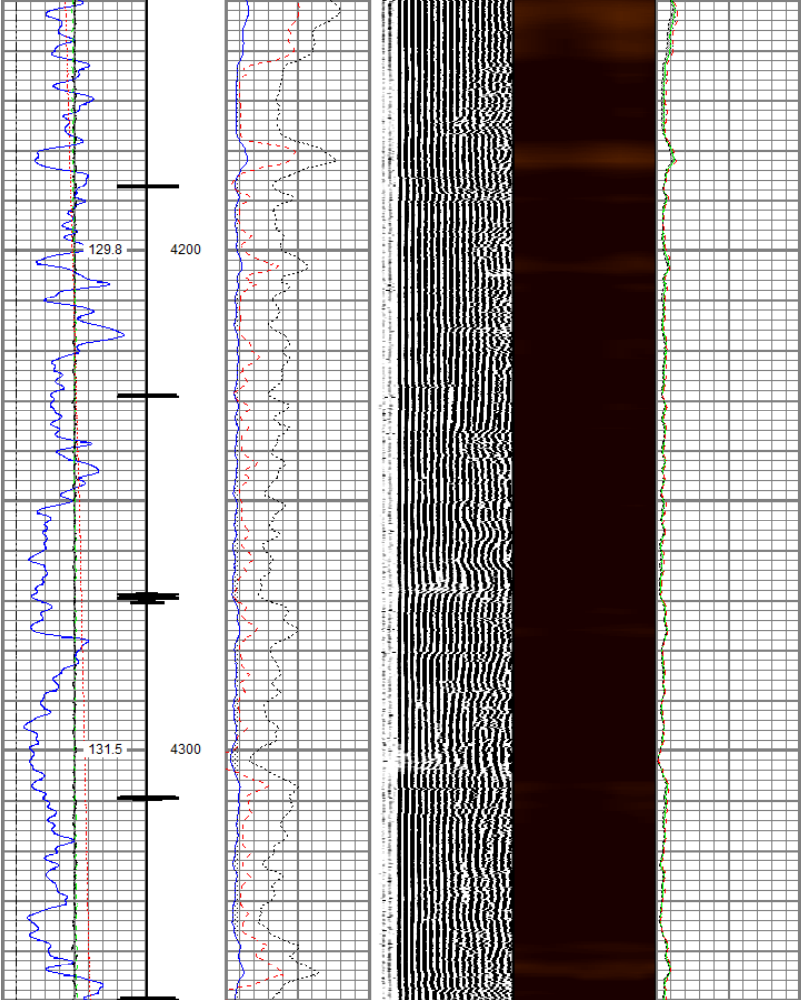
Main Pass

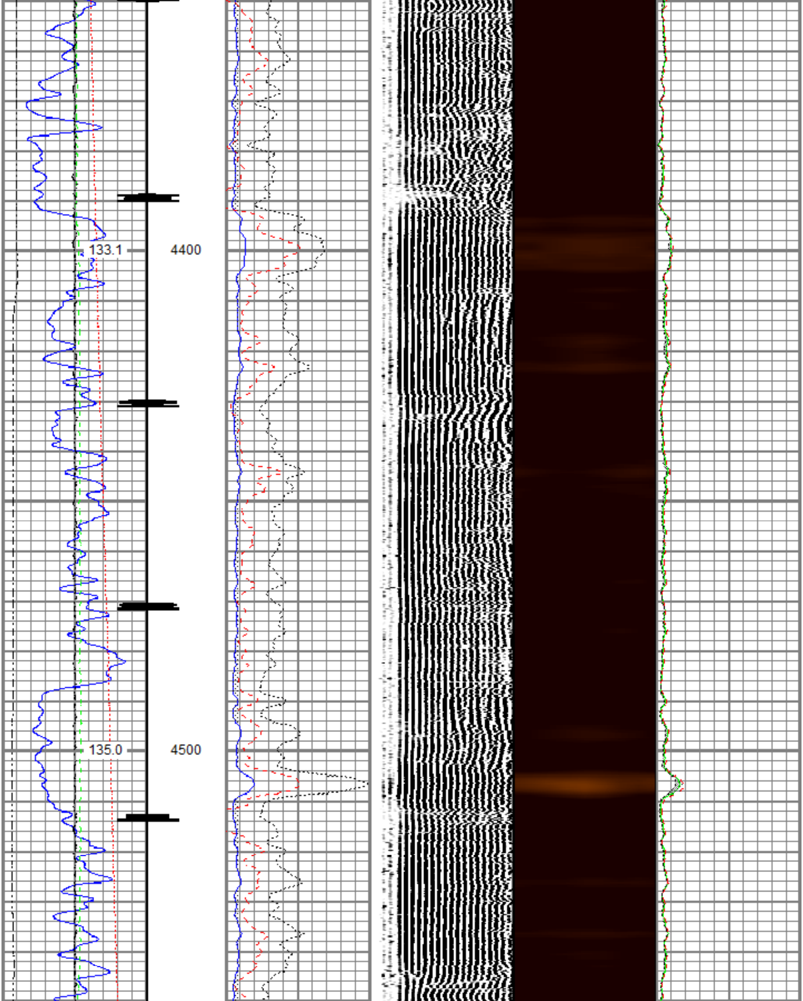
Recorded With 0 PSI Surface Induced Pressure

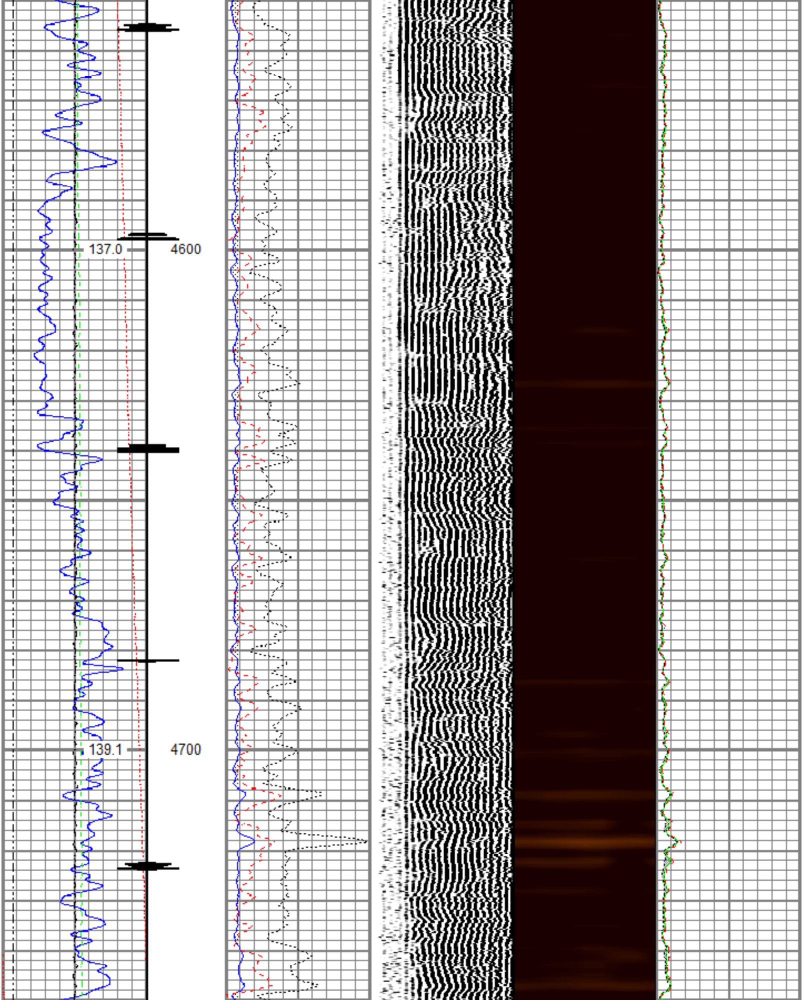
Database File	tep\tep_federal sg 421-22_rbl_02-25-19\processed_tep_federal sg 421-22_rbl_02-25-19.db
Dataset Pathname	Main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Feb 26 14:09:55 2019
Charted by	Depth in Feet scaled 1:240

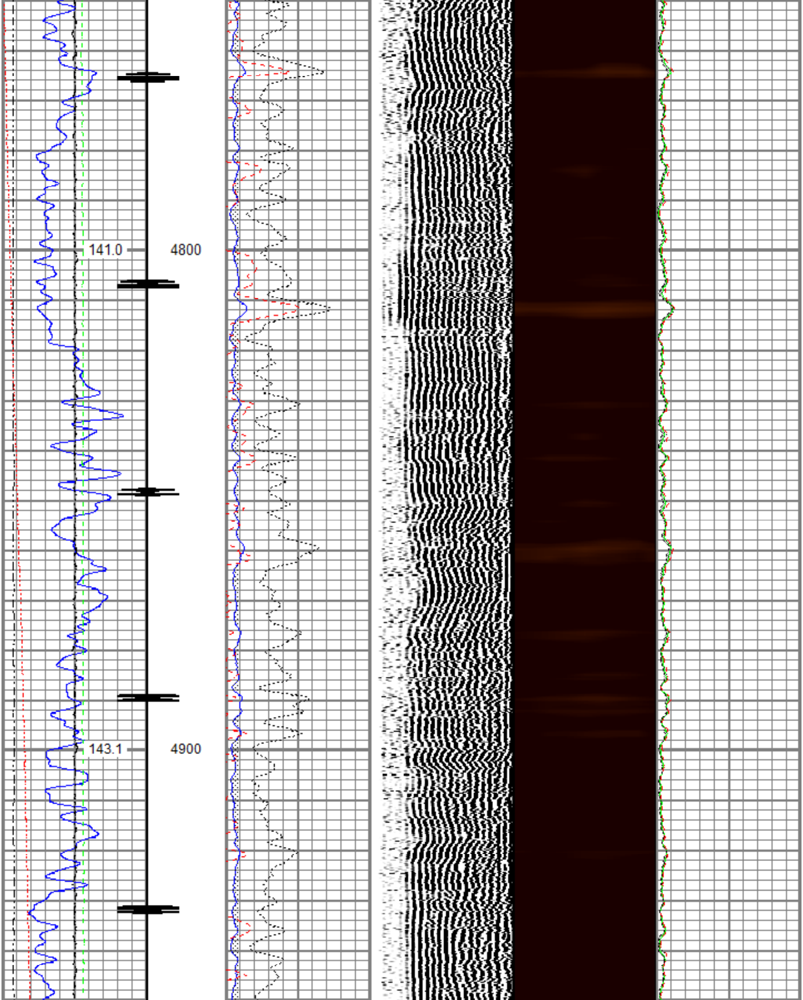


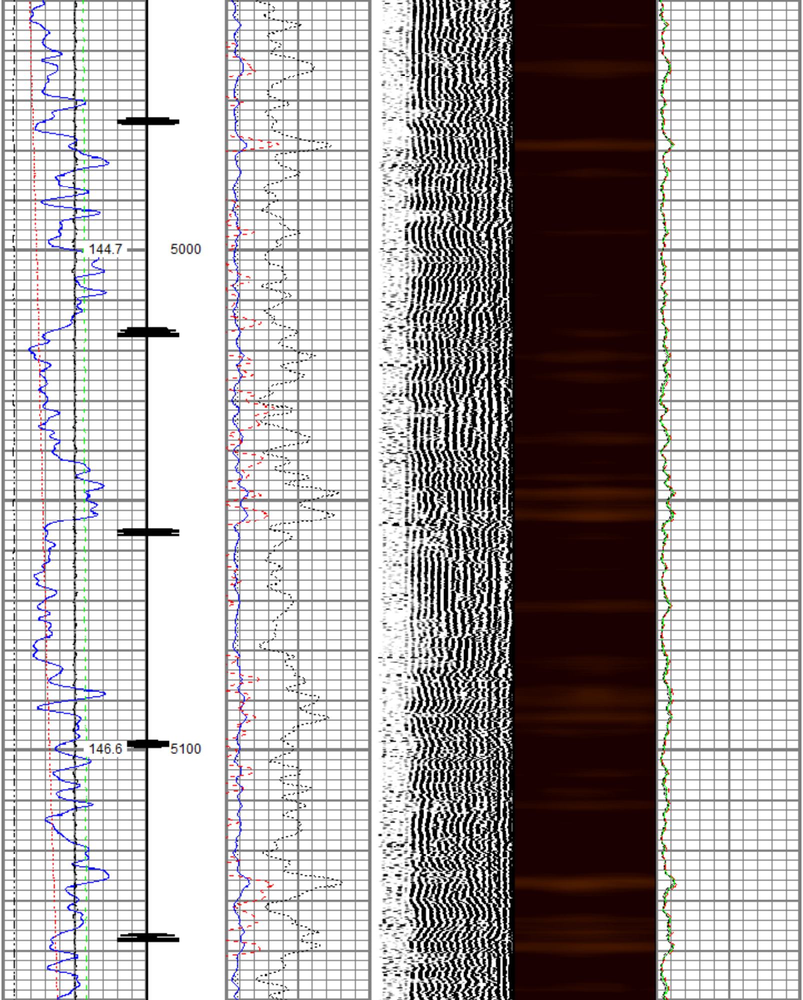


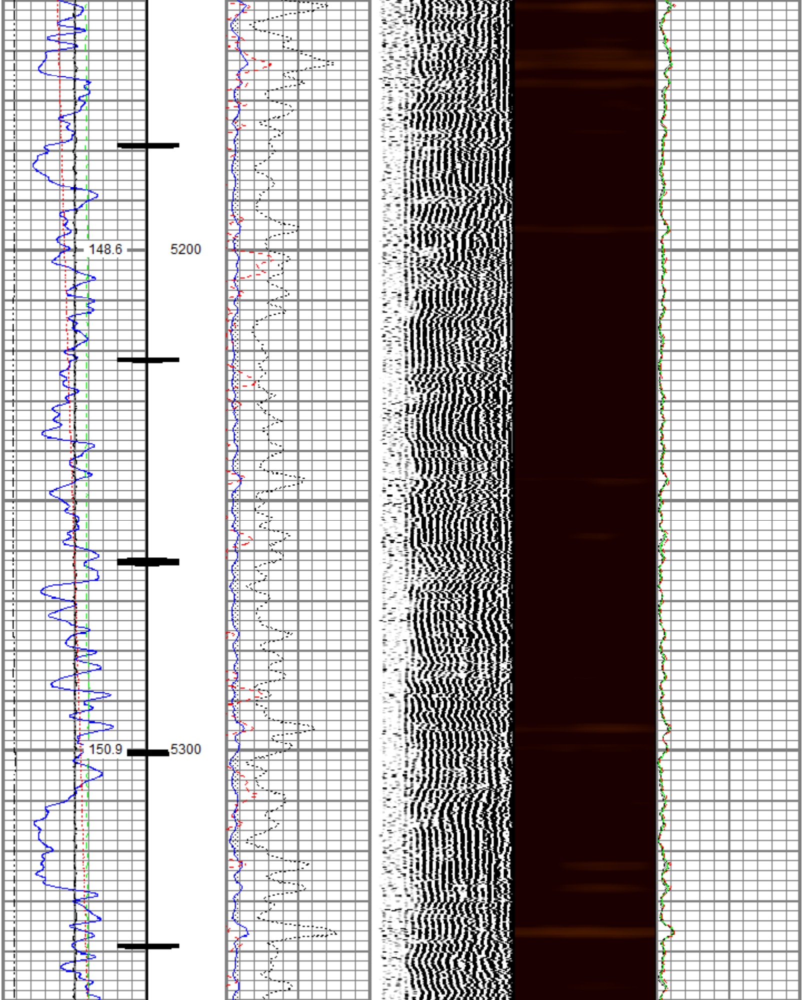


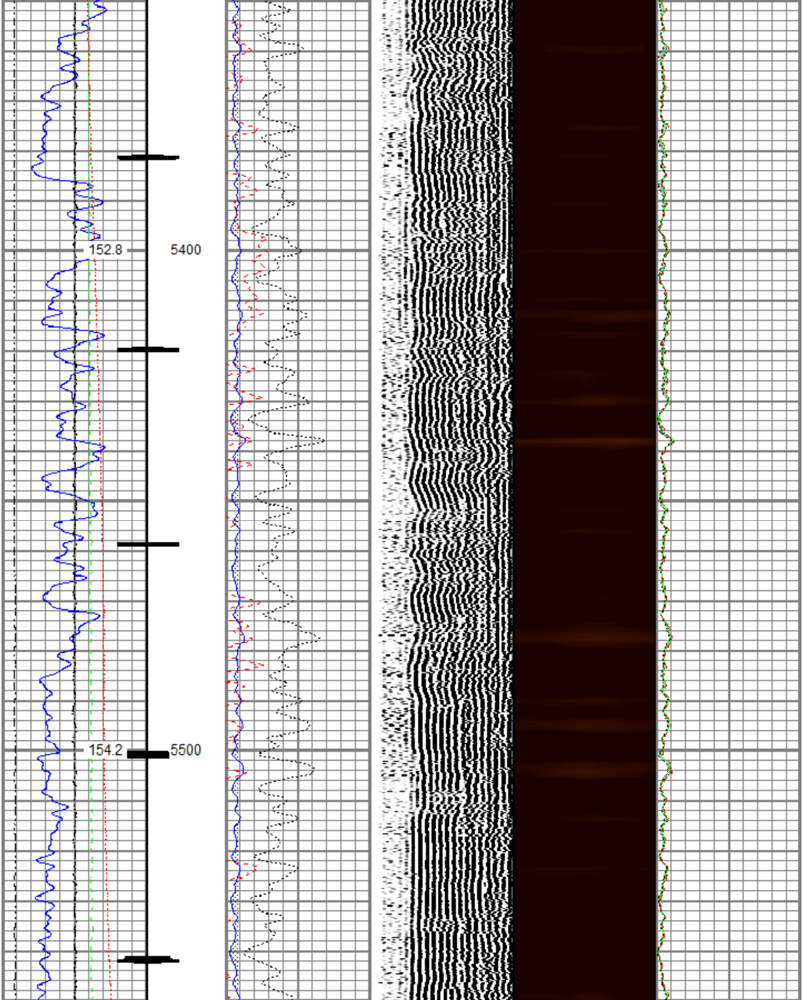


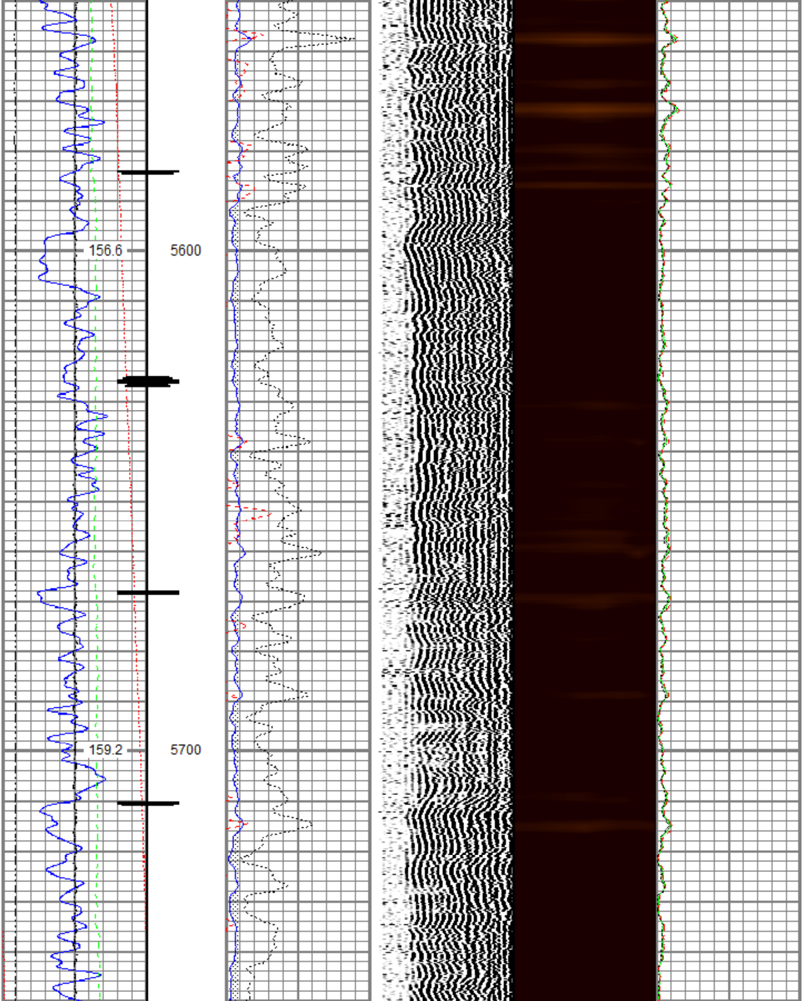


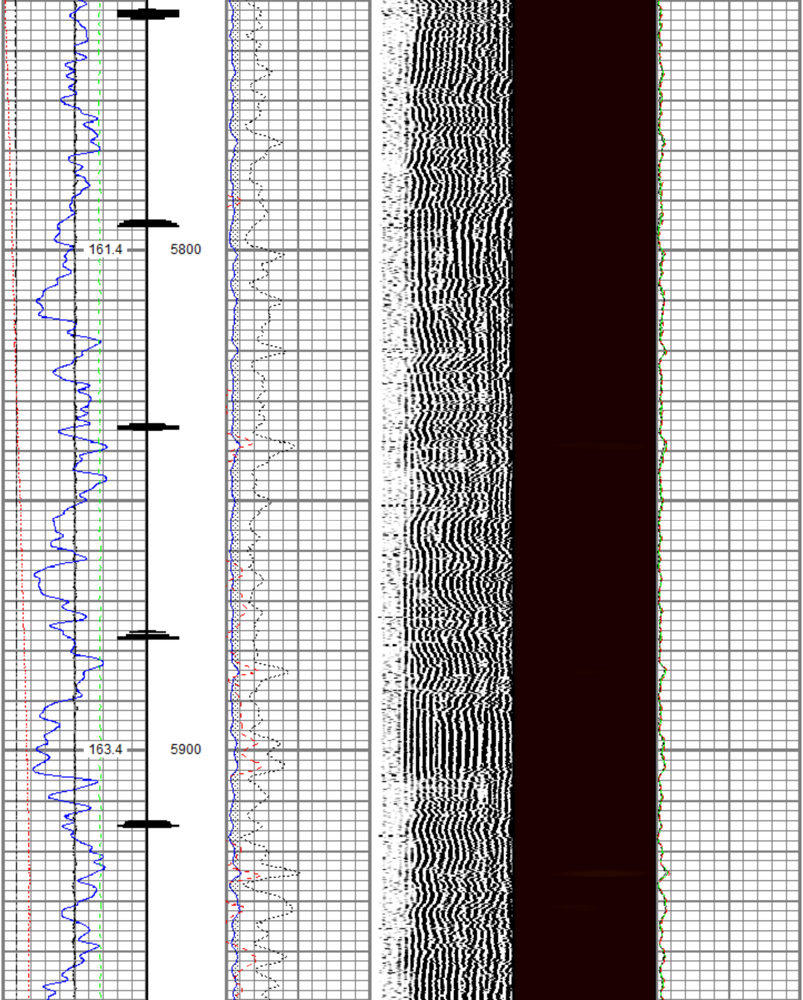


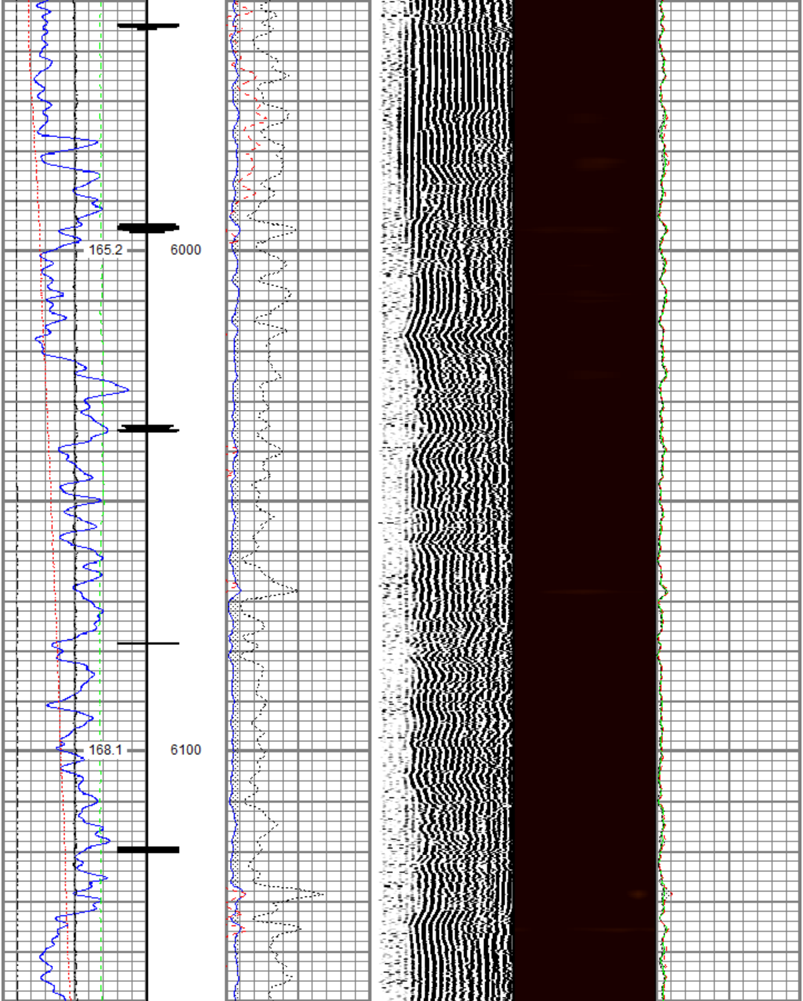


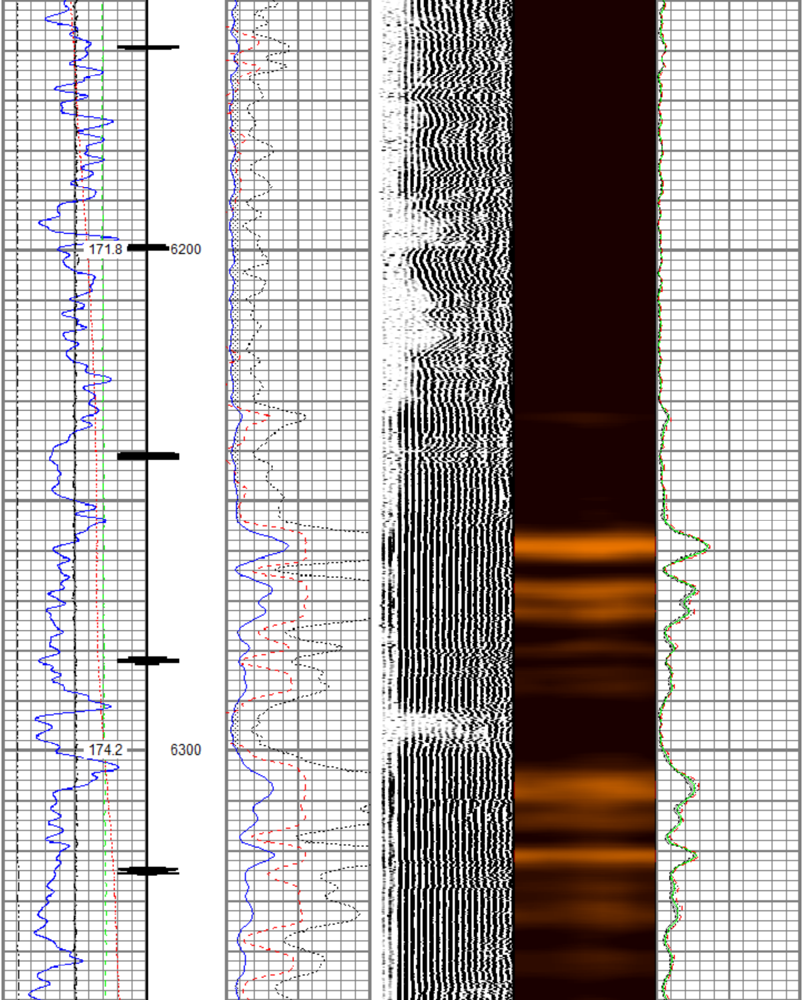


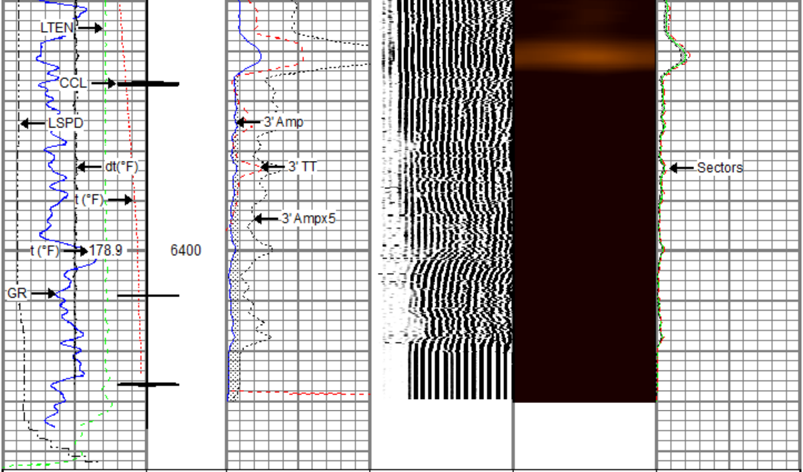












Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 1200	10 110	0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential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

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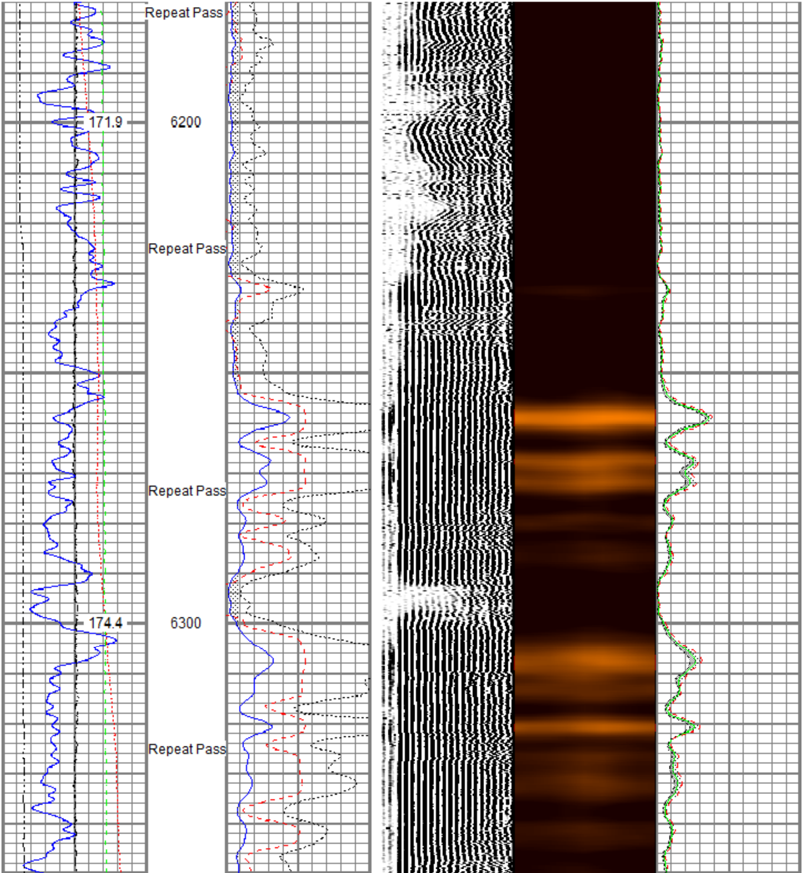
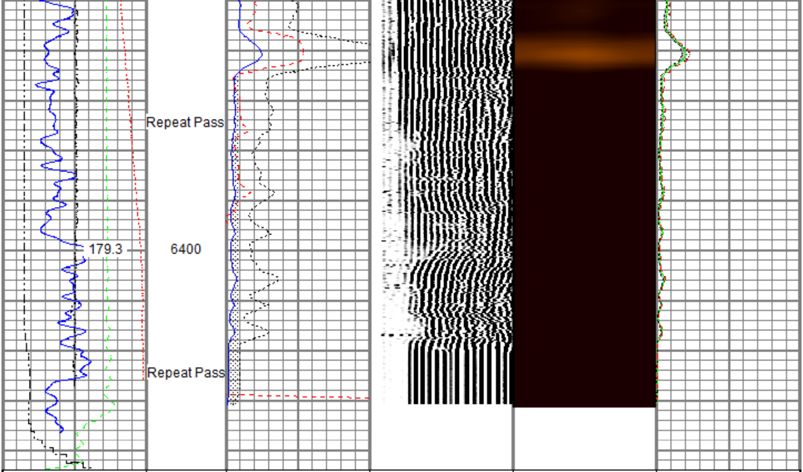
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

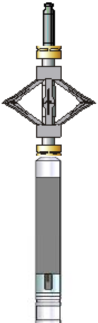
Database File	tep\tep_federal sg 421-22_rbl_02-25-19\processed_tep_federal sg 421-22_rbl_02-25-19.db
Dataset Pathname	repeat1.4
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Feb 26 14:22:23 2019
Charted by	Depth in Feet scaled 1:240

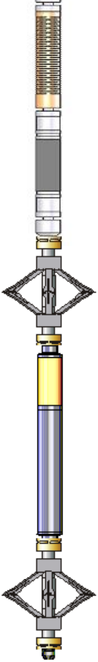
Gamma Ray 0 (GAPI) 200 Line Speed -150 (ft/min) 150 Line Tension 0 (lb) 2000 Differential Temperature -2 (degF) 2 Temperature 0 (degF) 20		3' Amplitude 0 (mV) 100 3' Amplitude x 5 0 (mV) 20 3' Travel Time 300 (usec) 200	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150 Mimimum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



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
CCL$2	6.42
CCL$1	6.42
GR	5.18

Probe Radii-2750 RBT (101013) 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 sg 421-22_rbl_02-25-19.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\tep\tep_federal sg 421-22_rbl_02-25-19\processed_tep_federal sg 421-22_rbl_
Dataset Pathname	Main.1
Dataset Creation	Tue Feb 26 14:09:55 2019

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:	101013	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	32.870	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.001	0.984	0.800	81.196	81.558	0.913
CAL	0.018	0.758				
5'	-0.002	0.764	0.800	81.196	104.979	0.982
SUM						
S1	-0.006	1.025	0.000	100.000	96.999	0.566
S2	-0.002	0.994	0.000	100.000	100.415	0.212
S3	-0.002	0.994	0.000	100.000	100.440	0.156
S4	-0.002	1.026	0.000	100.000	97.321	0.190
S5	-0.003	1.018	0.000	100.000	97.976	0.274
S6	-0.003	1.009	0.000	100.000	98.839	0.283
S7	-0.003	1.013	0.000	100.000	98.386	0.287
S8	-0.003	1.035	0.000	100.000	96.346	0.294

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.018	0.758	1.000	0.000

Air Zero Calibration, performed Mon Feb 25 15:24:20 2019:

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

Temperature Calibration Report

Serial Number:	101013	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:21:13 2017	
	Reference	Reading
Low Reference:	100.00 degF	112.30 degF
High Reference:	350.00 degF	394.75 degF
Gain:	0.89	
Offset:	0.60	
Delta Spacing	1	

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Company	TEP Rocky Mountain LLC
Well	Federal SG 421-22
Field	Grand Valley
County	Garfield
State	Colorado