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OILFIELD SERVICES

Radial Cement Bond Gamma Ray Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal GM 34-5
Field	Grand Valley
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal GM 34-5
Field Grand Valley
County Garfield State Colorado
Location: API # : 05-045-22667
SEC 5 TWP 7S RGE 96W

Other Services
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Permanent Datum	Ground Level	Elevation	5977'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 6001'
D.F. 6000'
G.L. 5977'

Date	29-OCT-2017
Run Number	One
Depth Driller	6938 FT
Depth Logger	6869 FT
Bottom Logged Interval	6864 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Fresh Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	210°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	12:28
Equipment Number	HD-359
Location	Grand Junction, CO
Recorded By	Z.Fisher
Witnessed By	D. Welsh

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size (in)	Weight (lb/ft)	From	To

Casing Record	Size (in)	Wgt (lb/ft)	Grade	Top	Bottom
Surface Casing	9 5/8	32.3	H-40	Surface	1023 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	6894 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
Ground Level 1 FT below top of cut pipe
Marker Joint logged at 4303 FT- 4325 FT
Log ran from 6869 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!!

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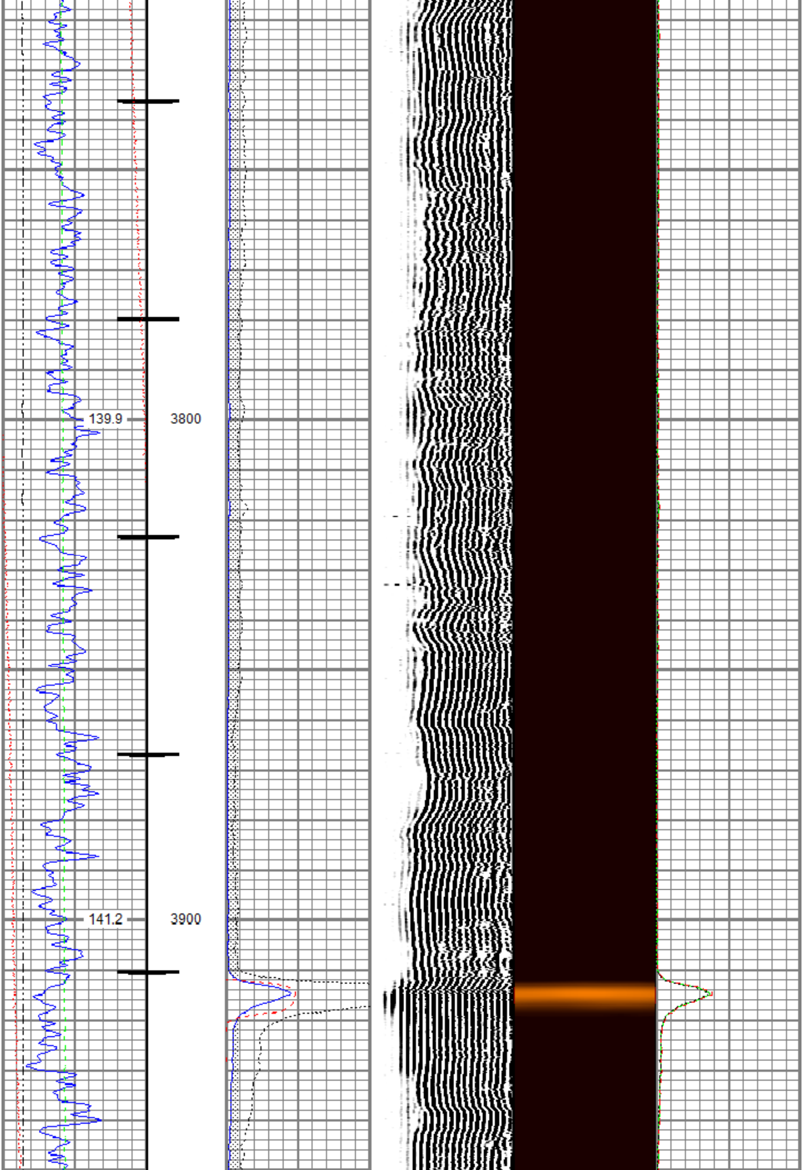
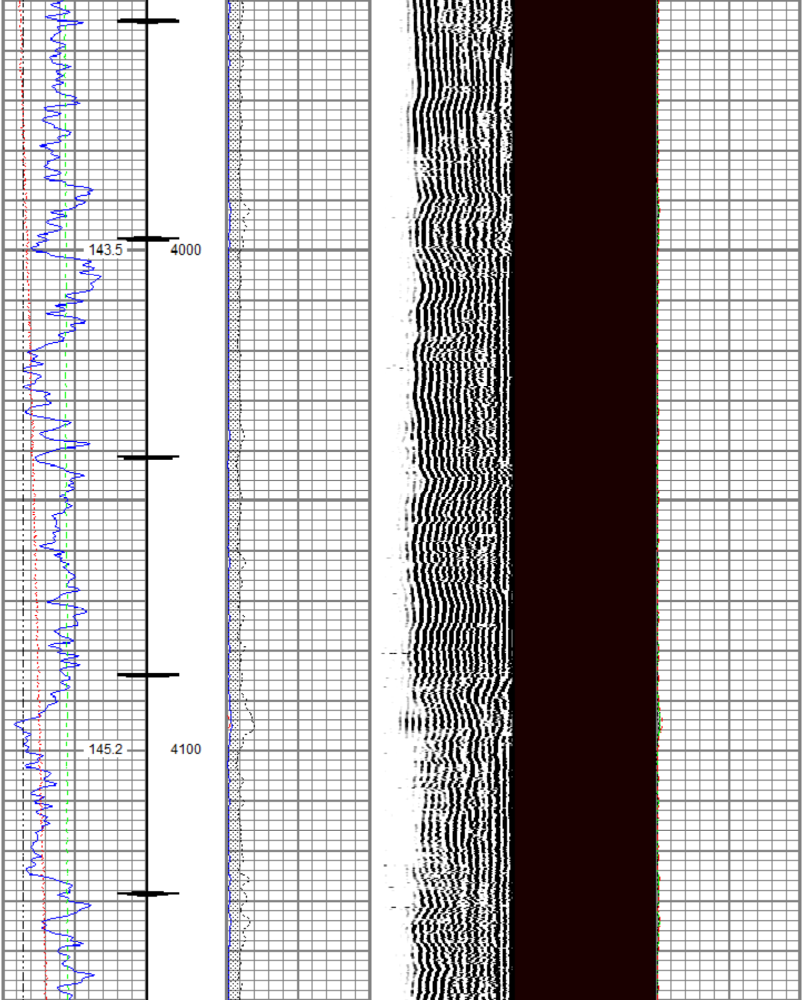
Main Pass

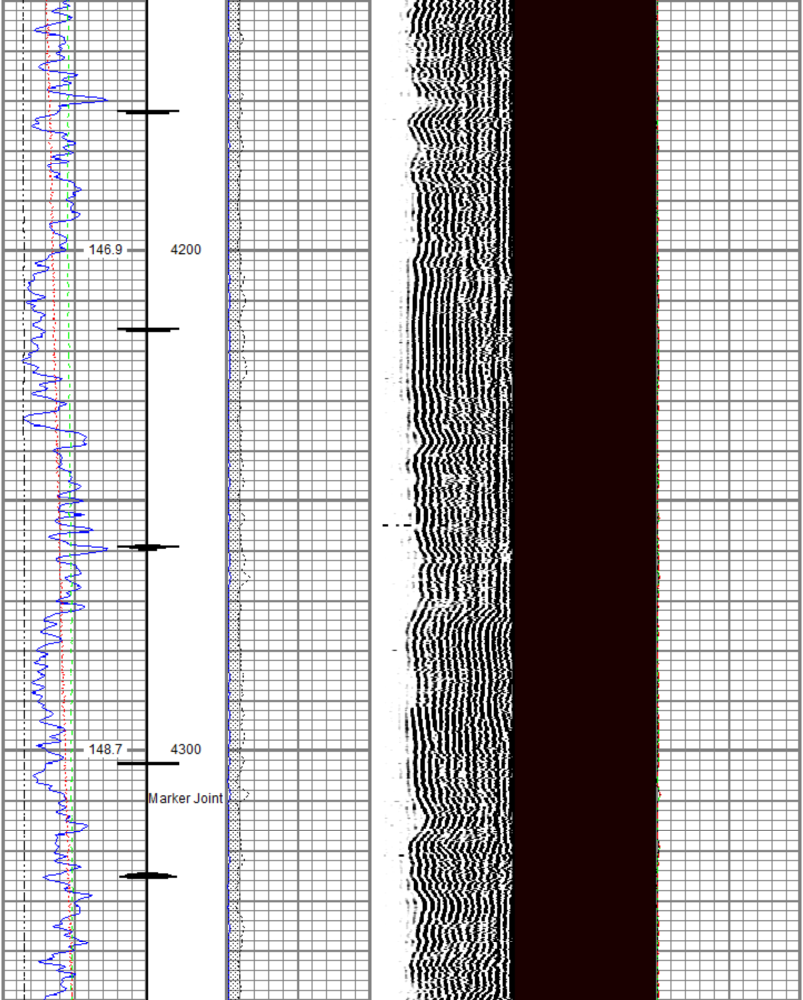
Recorded with 0 PSI Surface Induced Pressure

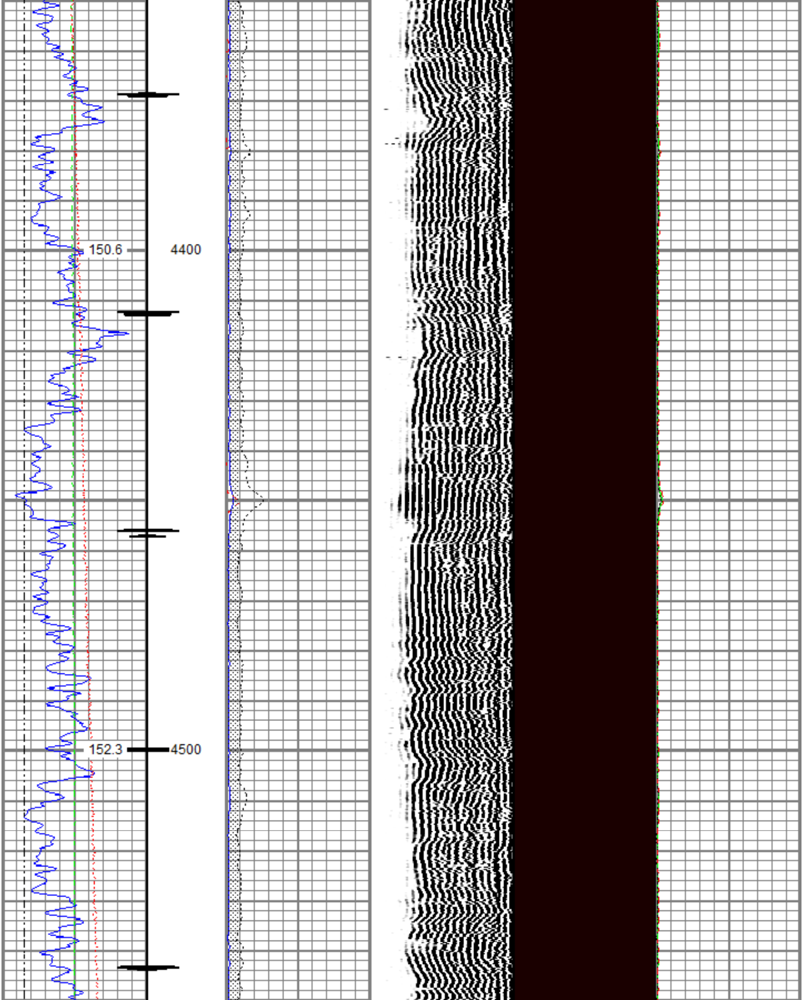
Database File	tep_federal gm 34-5_rbl_10-29-17\tep_federal gm 34-5_rbl_10-29-17.db
Dataset Pathname	Main
Presentation Format	ros_rbt004_tep
Dataset Creation	Sun Oct 29 12:22:57 2017
Charted by	Depth in Feet scaled 1:240

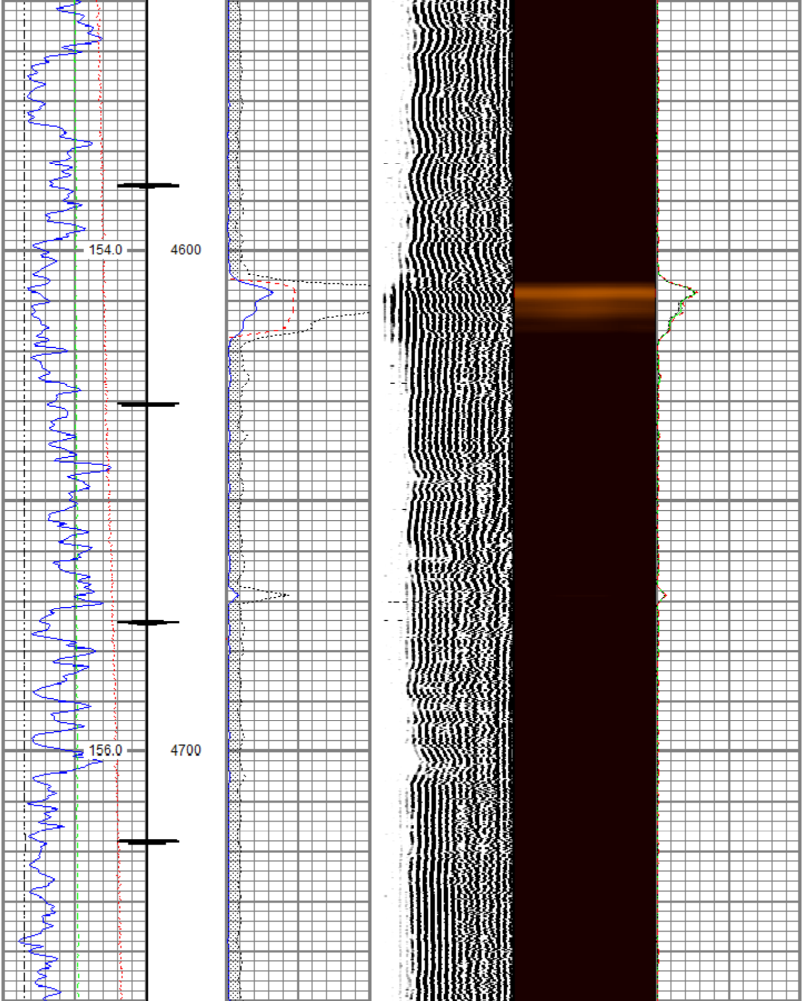
Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200		0 (mV) 100	200 1200	10 110	0 150
Casing Collar Locator		3' Amplitude x 5			Mimimum Amplitude
Line Speed		0 (mV) 20			0 150
-150 (ft/min) 150		3' Travel Time			Maximum Amplitude
Line Tension		300 (usec) 200			0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

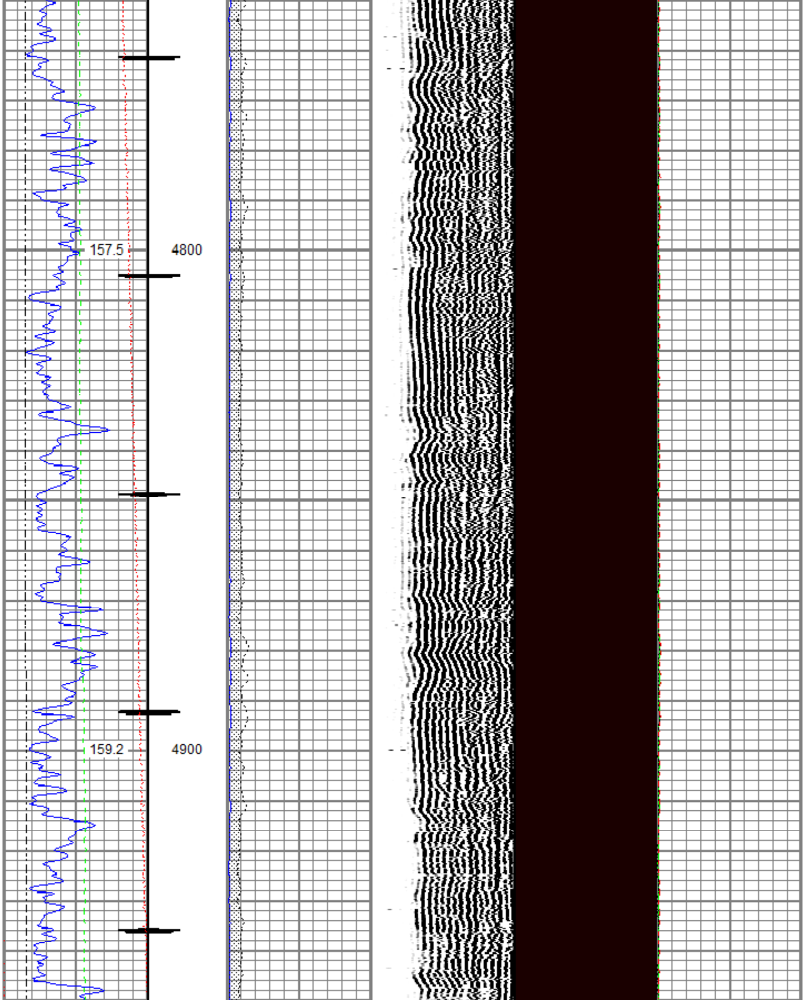


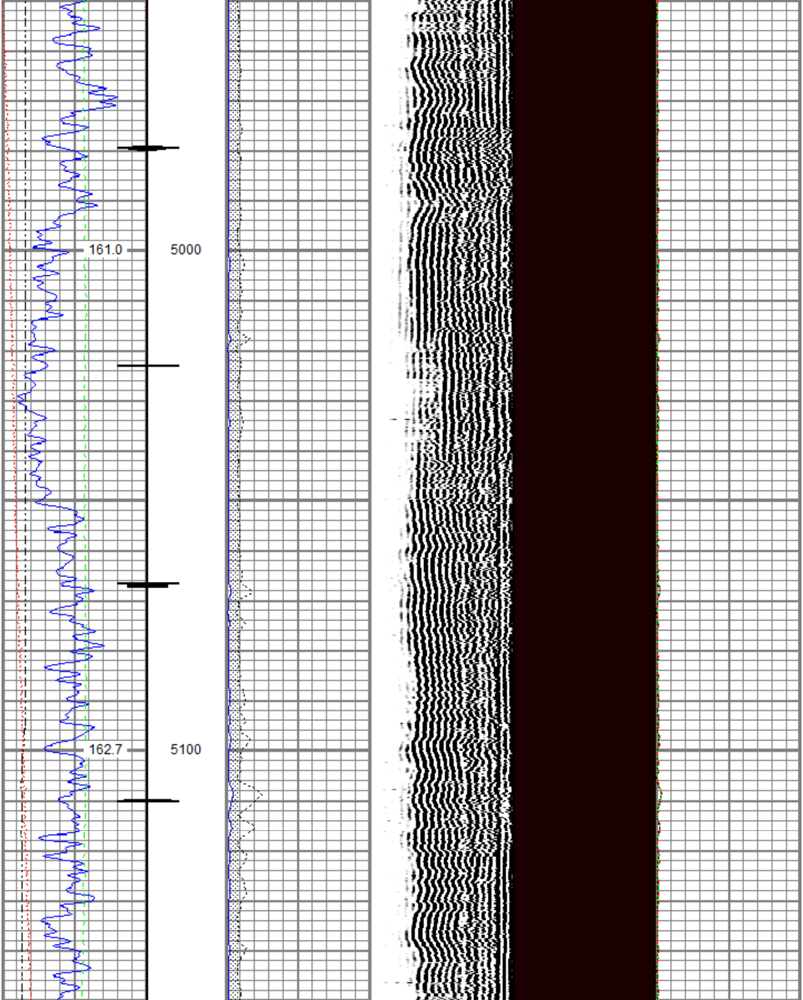


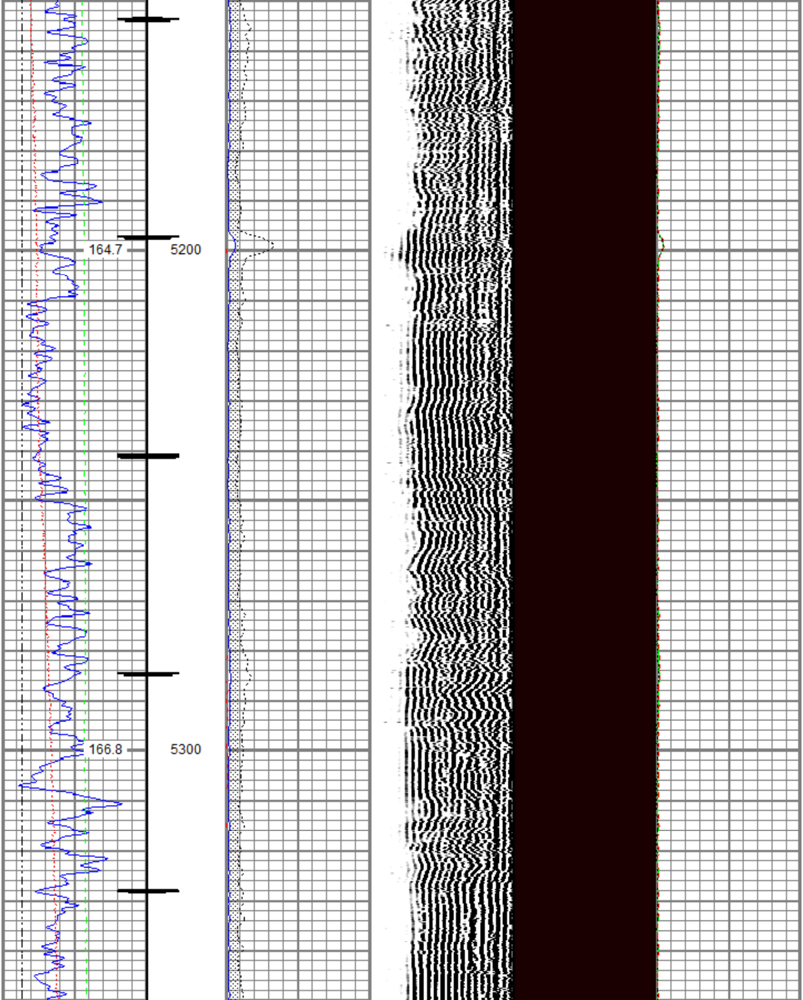


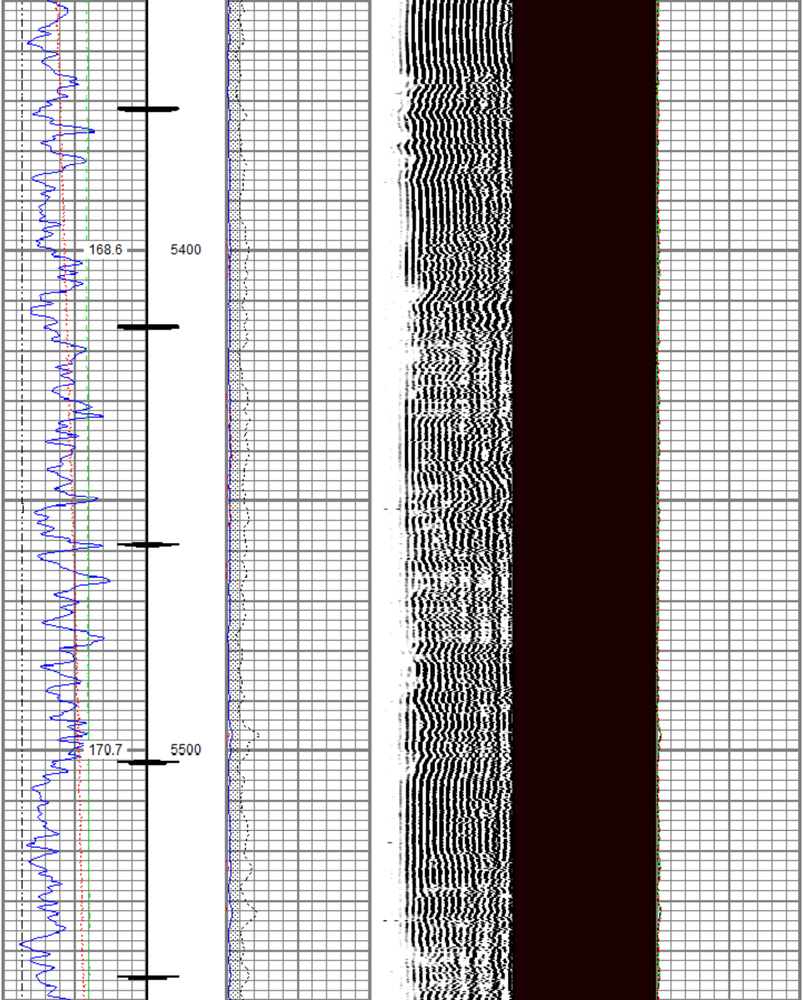


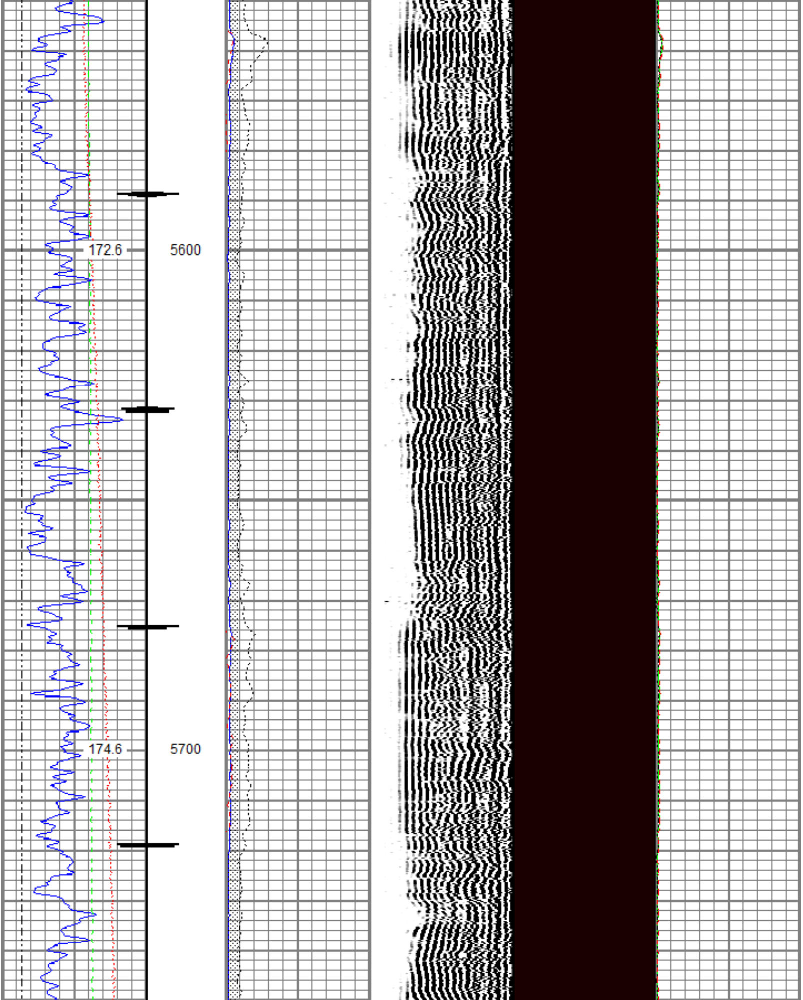


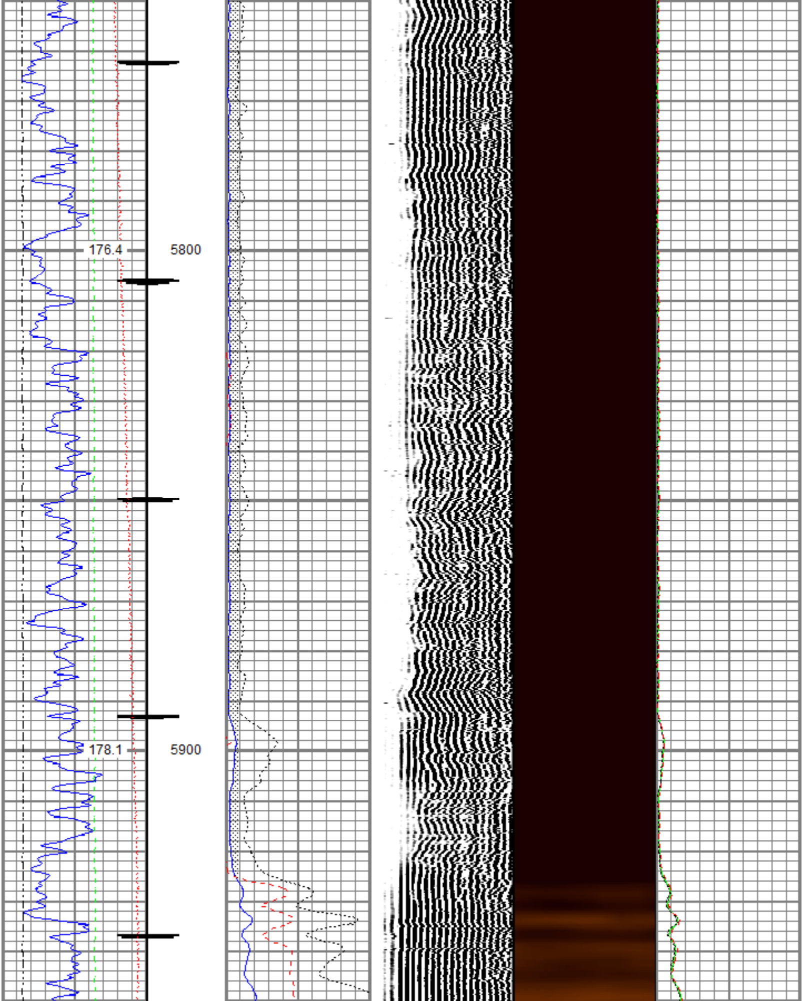


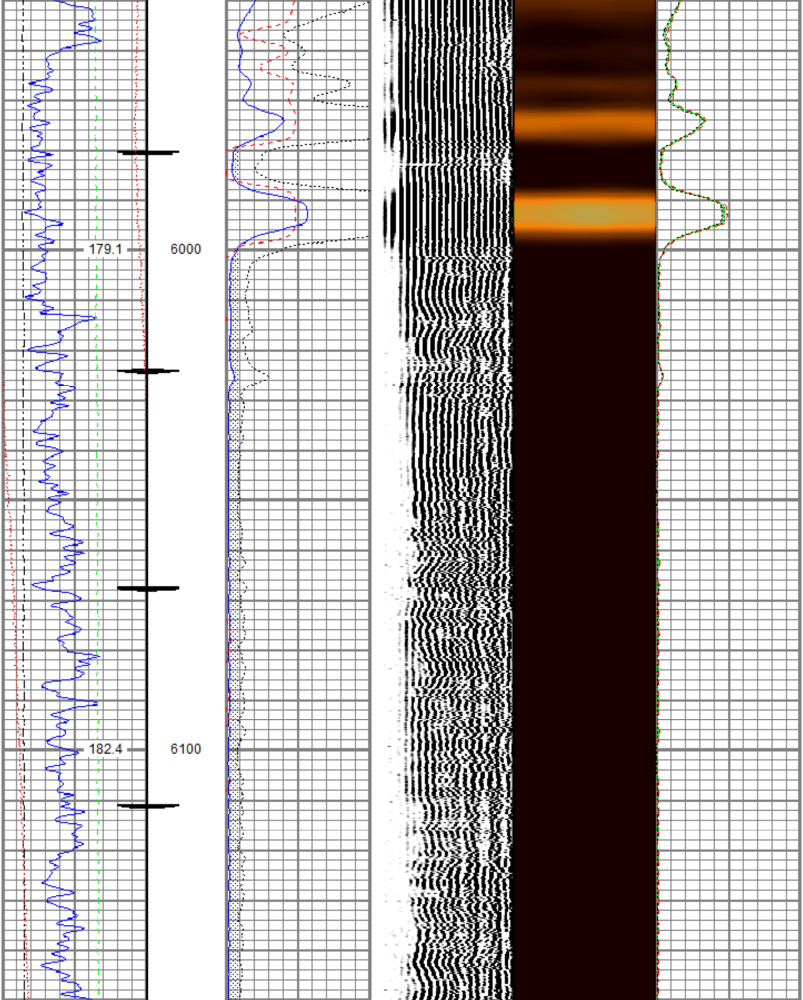


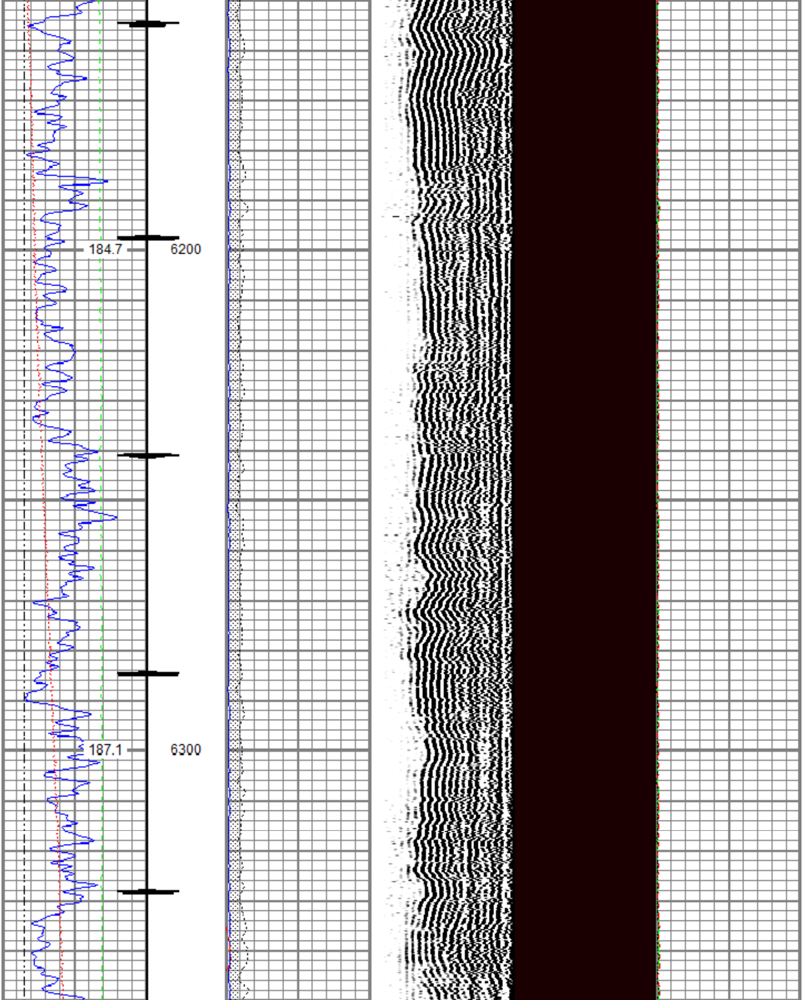


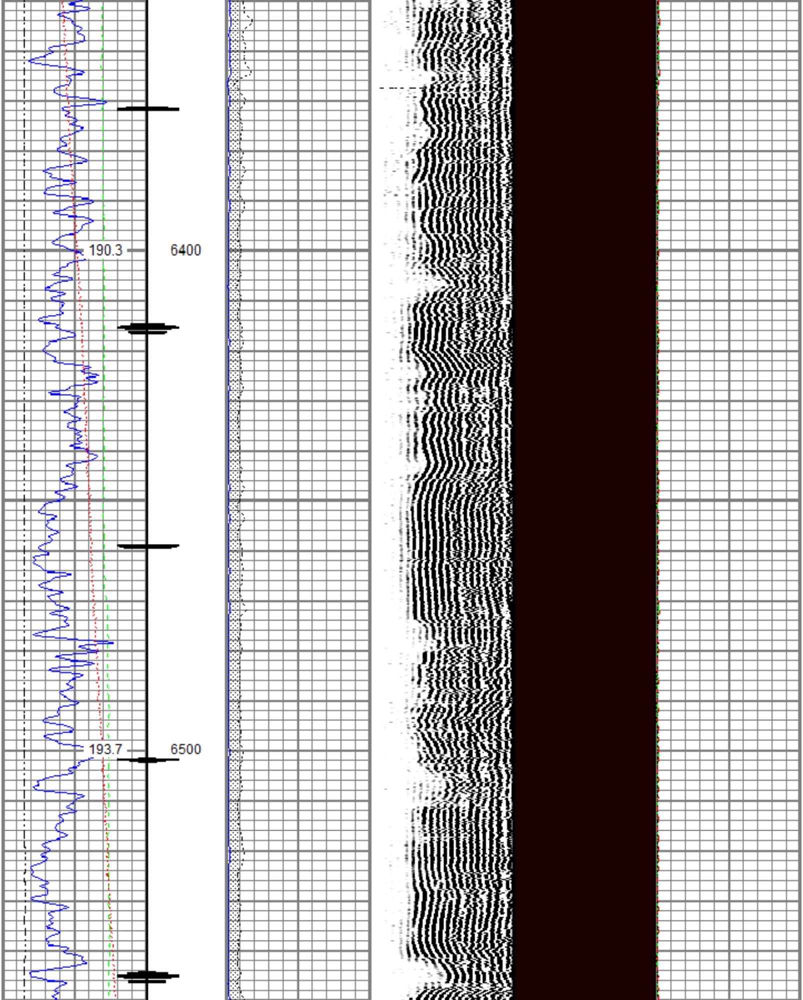


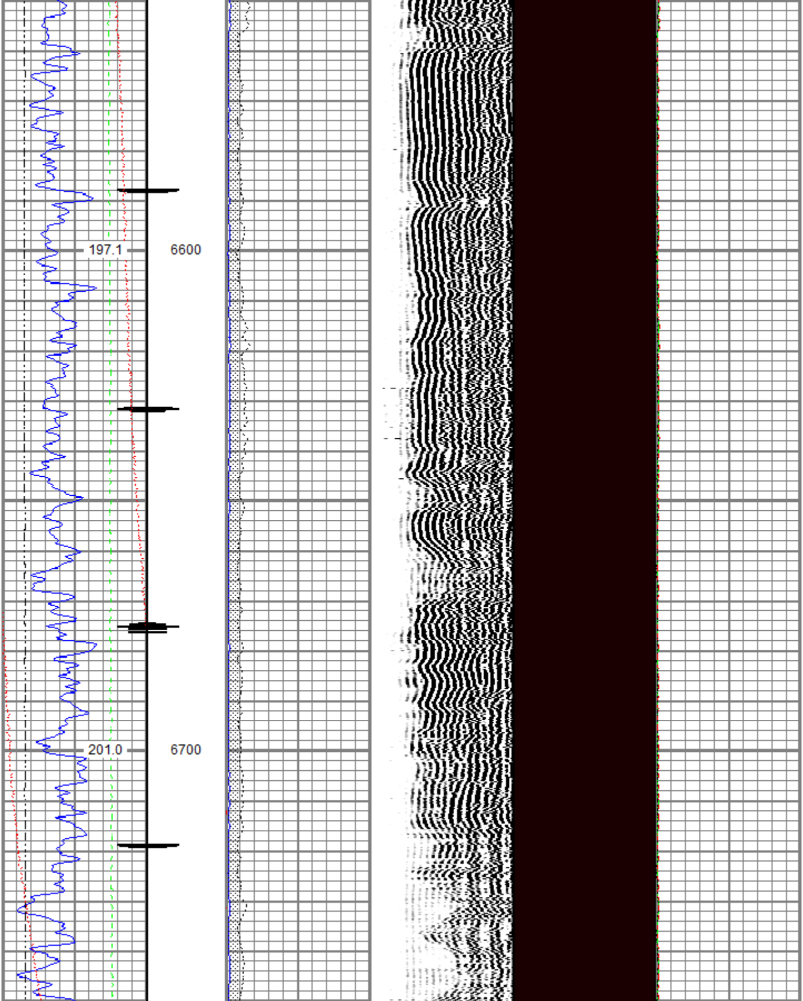


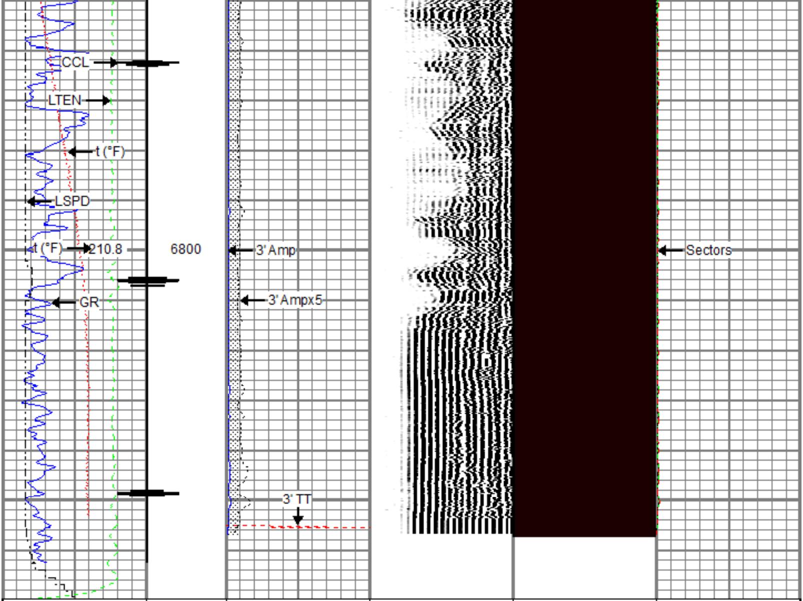












Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200		0 (mV) 100	200 1200	10 110	0 150
Casing Collar Locator		3' Amplitude x 5			Mimimum Amplitude
Line Speed		0 (mV) 20			0 150
-150 (ft/min) 150		3' Travel Time			Maximum Amplitude
Line Tension		300 (usec) 200			0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

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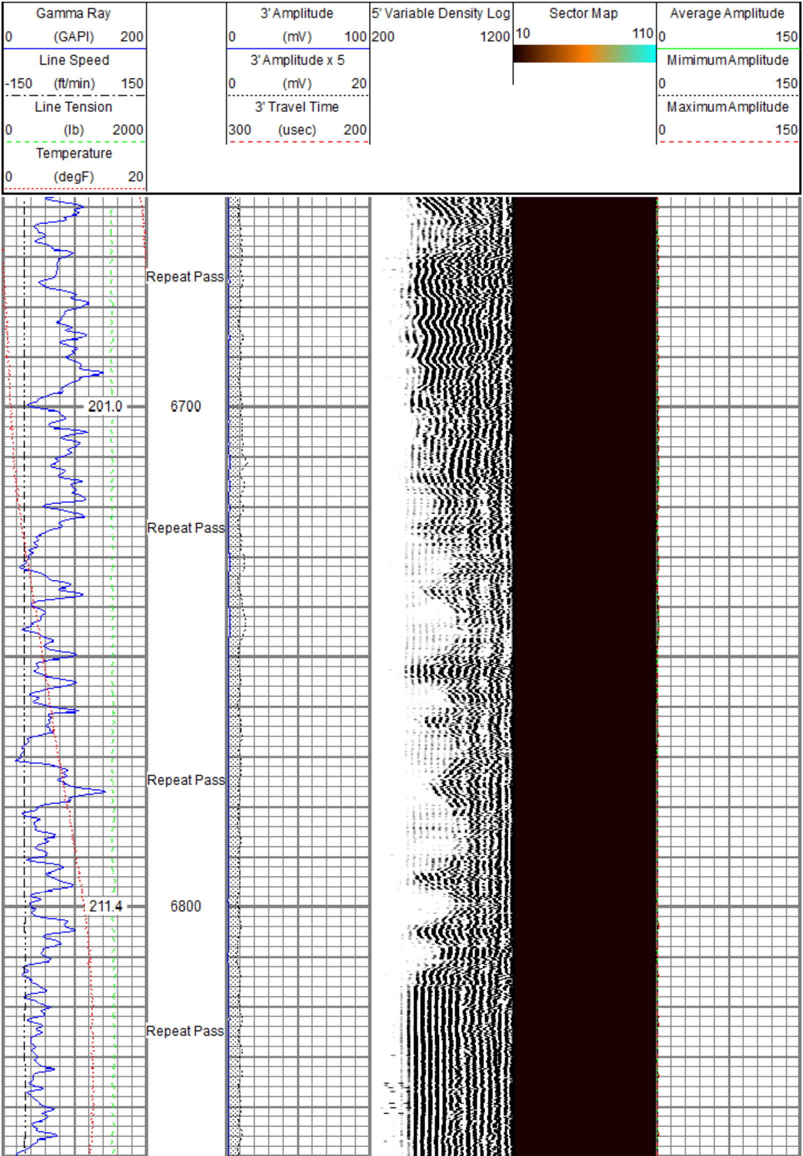
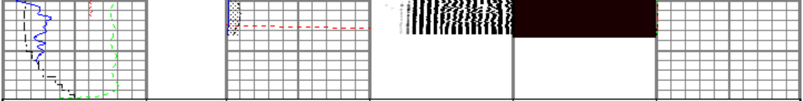
Repeat Pass

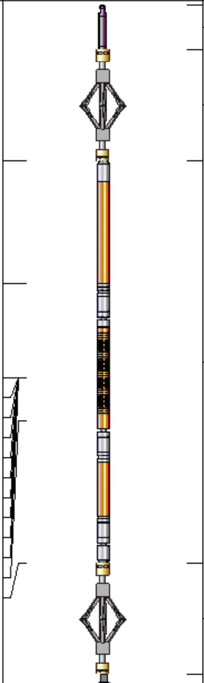
Recorded with 0 PSI Surface Induced Pressure

Database File	tep_federal gm 34-5_rbl_10-29-17\tep_federal gm 34-5_rbl_10-29-17.db
Dataset Pathname	Repeat
Presentation Format	ros_rbt004_tep
Dataset Creation	Sun Oct 29 12:19:52 2017
Charted by	Depth in Feet scaled 1:240

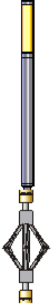




Gamma Ray		3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200		0 (mV) 100	200 1200	10 110	0 150
Line Speed		3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150		0 (mV) 20			0 150
Line Tension		3' Travel Time			Maximum Amplitude
0 (lb) 2000		300 (usec) 200			0 150
Temperature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



Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan_Electric_Cable_Heads-Titan_1-11/1 Electric Cable Head with 1" Fishing Neck	1.03	1.69	5.40
			DSS_RAC-RAC_5-Arm 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00
HeadVolt	18.84					
Temp	16.05					
			Probe_RADII-C-P_RBT_2750 (FW1305-0 Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	9.19	2.75	105.00
WVFS8	13.88					
WVFS7	13.88					
WVFS6	13.88					
WVFS5	13.88					
WVFS4	13.88					
WVFS3	13.88					
WVFS2	13.88					
WVFS1	13.88					
WVFCAL	13.88					
WVF3FT	13.88					
WVF5FT	12.88					
HEADVOLT	9.63					
			DSS_RAC-RAC_5-Arm 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00



DCCL CCL GR	6.18 6.18 4.96	Probe_GR_CCL-P_CGR_2750_S (FW1214.541) Probe 2-3/4" Digital CCL / Gamma Ray Combined		2.75	55.00
		DSS_RAC-RAC_5-Arm 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00

Dataset:	TEP_Federal GM 34-5_RBL_10-29-17.db: field/well/run1/Main
Total length:	22.40 ft
Total weight:	261.40 lb
O.D.:	2.75 in

Calibration Report

Database File	C:\ProgramData\Warrior\Data\TEP_Federal GM 34-5_RBL_10-29-17\TEP_Federal GM 34-5_RBL_10-29-17.
Dataset Pathname	Main
Dataset Creation	Sun Oct 29 12:22:57 2017

Gamma Ray Calibration Report

Serial Number:	FW1211-081	
Tool Model:	P_CGR_2750_S	
Performed:	Sat Feb 06 11:31:52 2016	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.6	cps
Sensitivity:	0.6061	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1305-098	
Tool Model:	P_RBT_2750	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	32.746	ft

Master Calibration, performed Sun Oct 29 06:58:07 2017:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.002	0.852	0.800	81.196	94.152	1.023
CAL	0.755	0.829				
5'	0.001	0.697	0.800	81.196	115.407	0.741
SUM						
S1	-0.008	0.871	0.000	100.000	113.779	0.904
S2	-0.005	0.907	0.000	100.000	109.658	0.542
S3	-0.006	0.913	0.000	100.000	108.799	0.622
S4	-0.006	0.896	0.000	100.000	110.854	0.624
S5	-0.006	0.867	0.000	100.000	114.617	0.652
S6	-0.006	0.840	0.000	100.000	118.238	0.677
S7	-0.006	0.824	0.000	100.000	120.511	0.728
S8	-0.005	0.823	0.000	100.000	120.655	0.655

Internal Reference Calibration, performed Fri May 05 10:29:14 2017:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.755	0.829	1.000	0.000

Air Zero Calibration, performed Sun Oct 29 06:56:42 2017:

	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

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