RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal GM 332-10
Field	Grand Valley
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal GM 332-10
Field Grand Valley
County Garfield State Colorado
Location: API # : 05-045-22691
2100' FNL & 1943' FWL SENW
SEC 10 TWP 7S RGE 96W

Other Services
PDN

Permanent Datum	Ground Level	Elevation	6148'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 6172'
D.F. 6171'
G.L. 6148'

Date	15-OCT-2017
Run Number	One
Depth Driller	6850 FT
Depth Logger	6766 FT
Bottom Logged Interval	6766 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Fresh Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	197°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	11:00
Equipment Number	HD-359
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	1001 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	6805 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 the top of cut pipe
Marker Joint logged at 3202 FT - 3224 FT
Log ran from 6766 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 332-10_rbl_10-15-17\processed_tep_federal gm 332-10_rbl_10-15-17.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Oct 17 11:33:09 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				

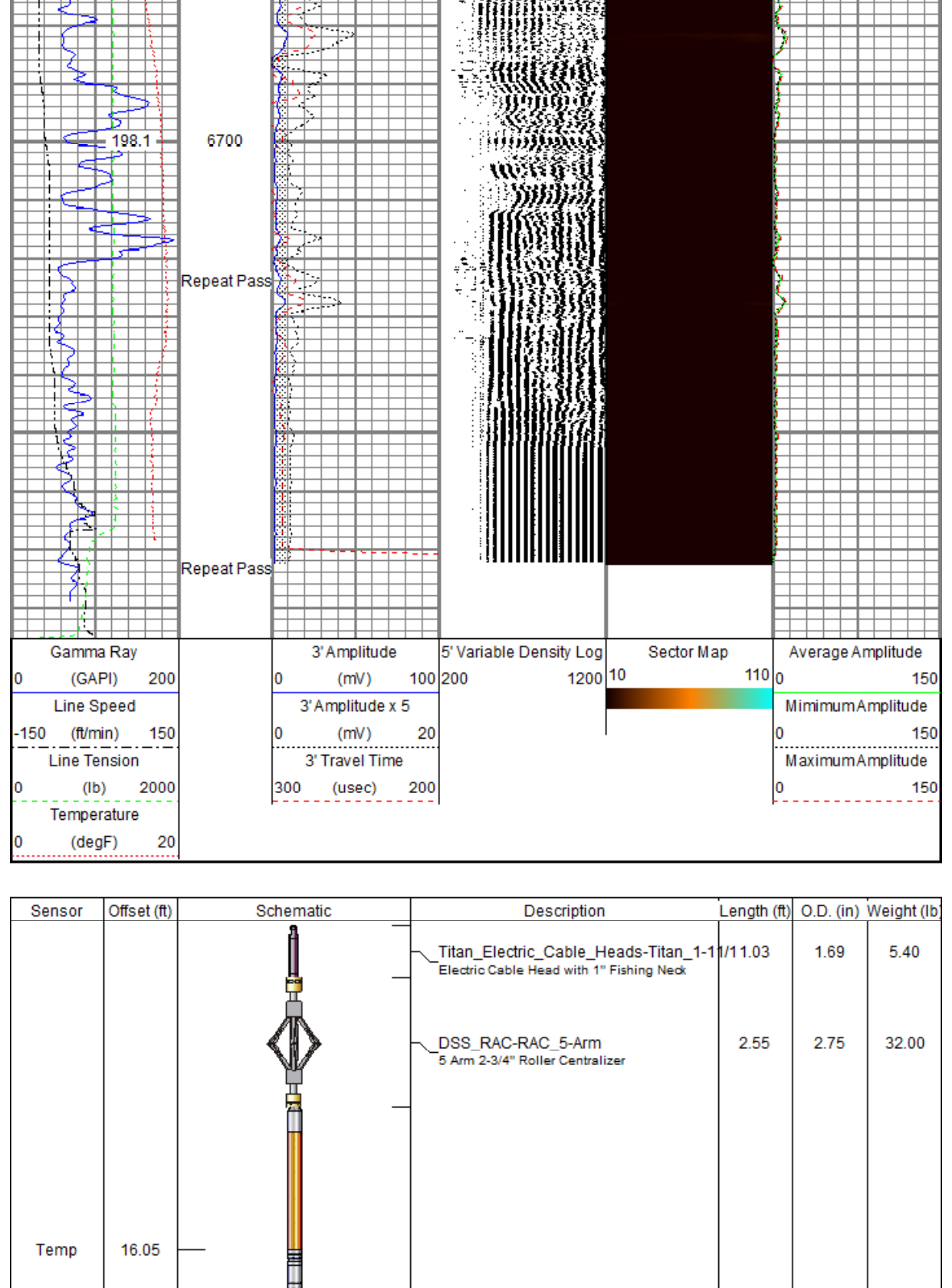
Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150
Casing Collar Locator	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Speed -150 (ft/min) 150	3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Line Tension 0 (lb)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

Repeat Pass

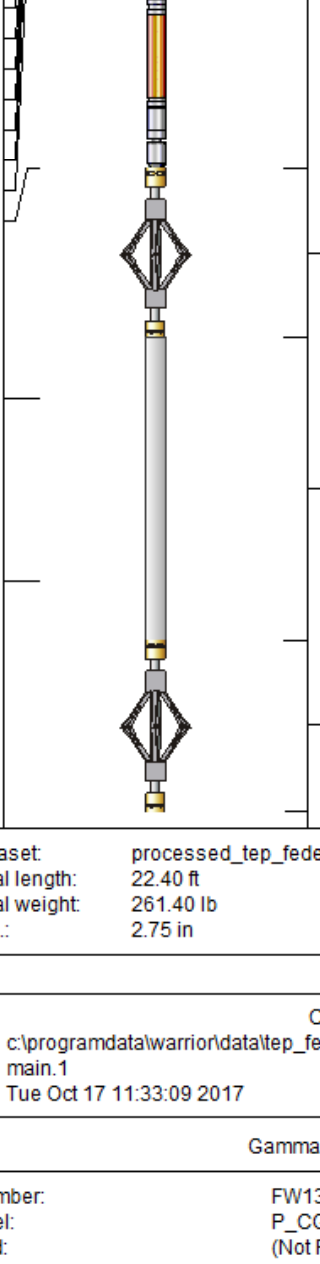
Recorded With 0 PSI Surface Induced Pressure

Database File	tep_federal gm 332-10_rbl_10-15-17\processed_tep_federal gm 332-10_rbl_10-15-17.db
Dataset Pathname	repeat.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Oct 17 11:39:30 2017
Charted by	Depth in Feet scaled 1:240

Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	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
Temperature 0 (degF) 20				



Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	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
Temperature 0 (degF) 20				



Sensor	Offset (ft)
Temp	16.05
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
CCL	6.18
GR	3.44

Description	Length (ft)	O.D. (in)	Weight (lb
Titan_Electric_Cable_Heads-Titan_1-1/1 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
Probe_RADII-C-P_RBT_2750 (FW1311-0 Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	19.19	2.75	105.00
DSS_RAC-RAC_5-Arm 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00
Probe_GR-CCL_ANL-P_CGR_2750_ANL Probe 2.75" Analog 4 Channel Pulse CCL / Gamma Ray Combined	4.54	1305-(2.75	55.00
DSS_RAC-RAC_5-Arm 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00

Dataset: processed_tep_federal gm 332-10_rbl_10-15-17.db: field/well/run1/main.1
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 332-10_rbl_10-15-17\processed_tep_federal gm 332-10_rbl_10
Dataset Pathname	main.1
Dataset Creation	Tue Oct 17 11:33:09 2017

Gamma Ray Calibration Report

Serial Number:	FW1305-083	
Tool Model:	P_CGR_2750_ANL	
Performed:	(Not Performed)	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	1.0000	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1311-014	
Tool Model:	P_RBT_2750	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	423.425	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.010	0.619	0.800	81.196	127.798	2.096
CAL	-0.006	0.767				
5'	-0.001	0.575	0.800	81.196	139.800	0.877
SUM						
S1	0.001	0.647	0.000	100.000	154.817	-0.201
S2	0.010	0.655	0.000	100.000	154.936	-1.482
S3	0.009	0.652	0.000	100.000	155.537	-1.472
S4	0.010	0.642	0.000	100.000	158.284	-1.644
S5	0.006	0.624	0.000	100.000	161.930	-1.029
S6	0.001	0.622	0.000	100.000	161.021	-0.140
S7	-0.003	0.613	0.000	100.000	162.166	0.545
S8	-0.002	0.622	0.000	100.000	160.313	0.363

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.006	0.767	1.000	0.000

Air Zero Calibration, performed Sun Oct 15 07:47:39 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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Field	Grand Valley
County	Garfield
State	Colorado