RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal GM 311-8
Field	Grand Valley
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal GM 311-8
Field Grand Valley
County Garfield State Colorado
Location: API # : 05-045-24017
SEC 8 TWP 7S RGE 96W

Other Services
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			Elevation
Permanent Datum	Ground Level	Elevation 6172.4'	K.B. 6196.4'
Log Measured From	Kelly Bushing	24 FT	D.F. 6195.4'
Drilling Measured From	Kelly Bushing		G.L. 6172.4'

Date	03-FEB-2019
Run Number	One
Depth Driller	7319 FT
Depth Logger	7242 FT
Bottom Logged Interval	7228 FT
Top Log Interval	Surface
Open Hole Size	12.250"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	217°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	17:30
Equipment Number	HD-0131
Location	Grand Junction, CO
Recorded By	Z. Fisher
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	13 3/8	54.5	J-55	Surface	1037 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	7280 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 3395-3416 FT
Log ran from 7228 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 gm 311-8_rbl_02-03-19\tep_federal gm 311-8_rbl_02-03-19.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Mon Feb 04 10:12:18 2019
Charted by	Depth in Feet scaled 1:240

Track 1	Track 2	Track 3	Track 4	Track 5
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
Differential Temperature -2 (degF) 2				
Temperature 0 (degF) 20				
10 CCL 0				

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
Differential Temperature -2 (degF) 2				
Temperature 0 (degF) 20				
10 CCL 0				

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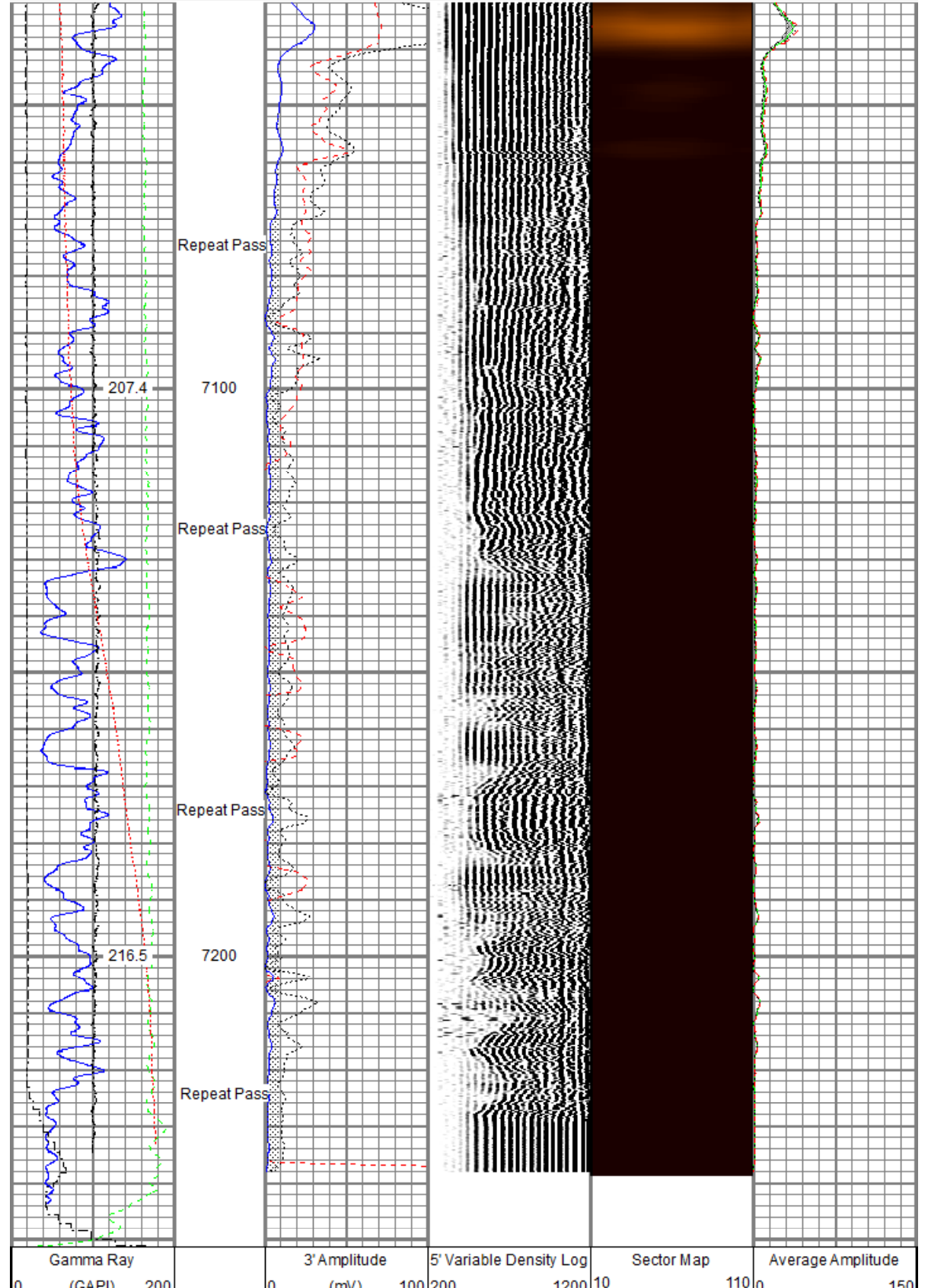
Repeat Pass

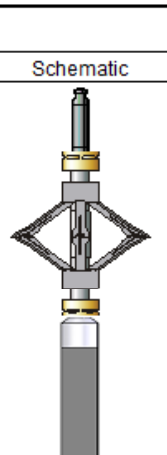
Recorded With 0 PSI Surface Induced Pressure

Database File tep\tep_federal gm 311-8_rbl_02-03-19\tep_federal gm 311-8_rbl_02-03-19.db
Dataset Pathname repeat.2
Presentation Format ros_rbt004_tep
Dataset Creation Mon Feb 04 10:15:20 2019
Charted by Depth in Feet scaled 1:240

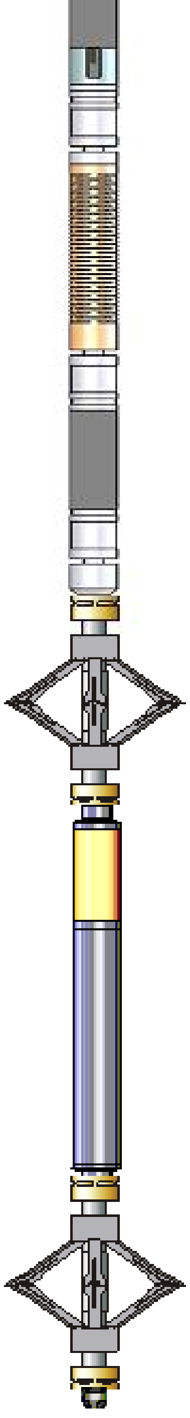
Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150
Line Speed -150 (ft/min) 150	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000	3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential Temperature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

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:	tep_federal gm 311-8_rbl_02-03-19.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 gm 311-8_rbl_02-03-19\tep_federal gm 311-8_rbl_02-03-19.db
Dataset Pathname	main.1
Dataset Creation	Mon Feb 04 10:12:18 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:	-5.773	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.003	0.977	0.800	81.196	82.557	0.531
CAL	0.003	0.759				
5'	0.005	0.862	0.800	81.196	93.785	0.348
SUM						
S1	0.007	0.964	0.000	100.000	104.473	-0.744
S2	0.004	0.952	0.000	100.000	105.498	-0.456
S3	0.006	0.948	0.000	100.000	106.164	-0.598
S4	0.004	0.971	0.000	100.000	103.464	-0.455
S5	0.004	0.996	0.000	100.000	100.834	-0.382
S6	0.005	1.006	0.000	100.000	99.937	-0.528
S7	0.005	1.001	0.000	100.000	100.360	-0.457
S8	0.004	0.974	0.000	100.000	103.134	-0.463

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.003	0.759	1.000	0.000

Air Zero Calibration, performed Sun Feb 03 15:58:04 2019:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.007	0.000	0.000
5'	0.006	0.000	-0.001
SUM			
S1	0.005	0.000	0.000
S2	0.006	0.000	-0.000
S3	0.007	0.000	0.000
S4	0.006	0.000	0.000
S5	0.005	0.000	0.000
S6	0.007	0.000	0.001
S7	0.005	0.000	0.000
S8	0.006	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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