RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal GM 312-8
Field	Grand Valley
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal GM 312-8
Field Grand Valley
County Garfield State Colorado
Location: API # : 05-045-24024
SEC 8 TWP 7S RGE 96W

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

Date	01-FEB-2019
Run Number	One
Depth Driller	7125 FT
Depth Logger	7037 FT
Bottom Logged Interval	7023 FT
Top Log Interval	Surface
Open Hole Size	12.250"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	209°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	7:35
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	1039 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	7083 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 3193-3215 FT
Log ran from 7023 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

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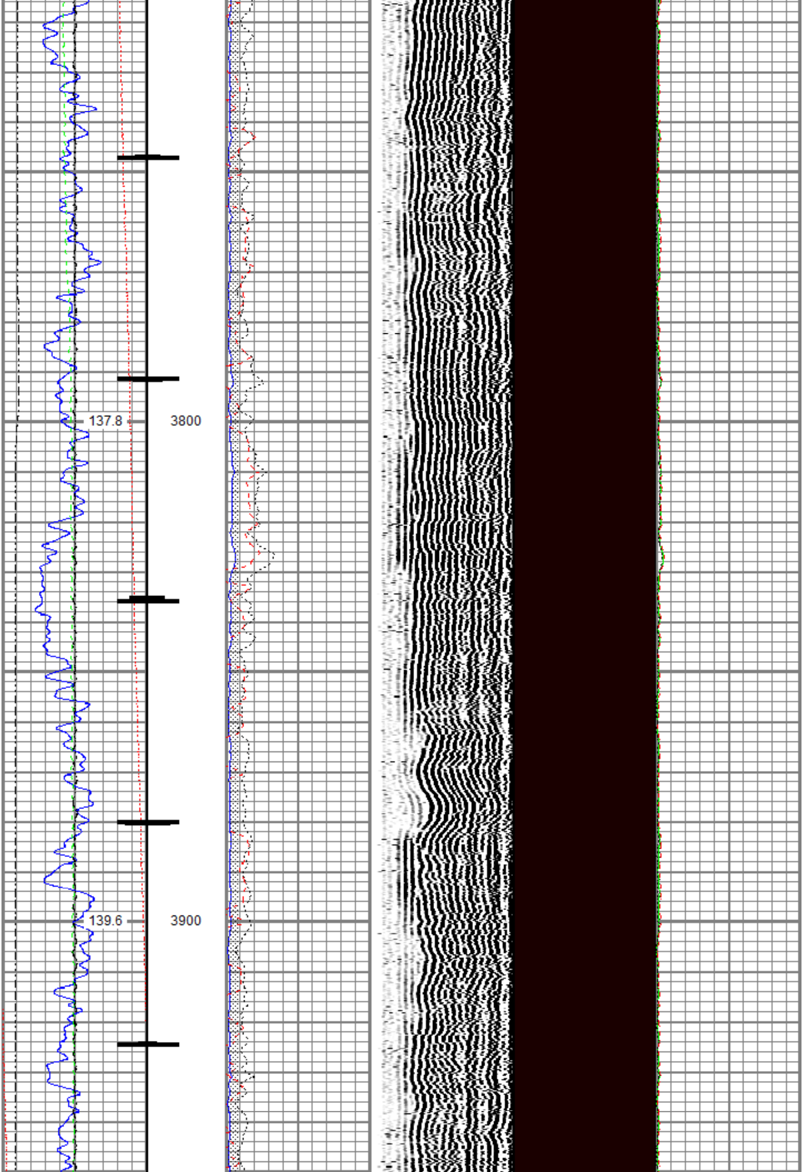
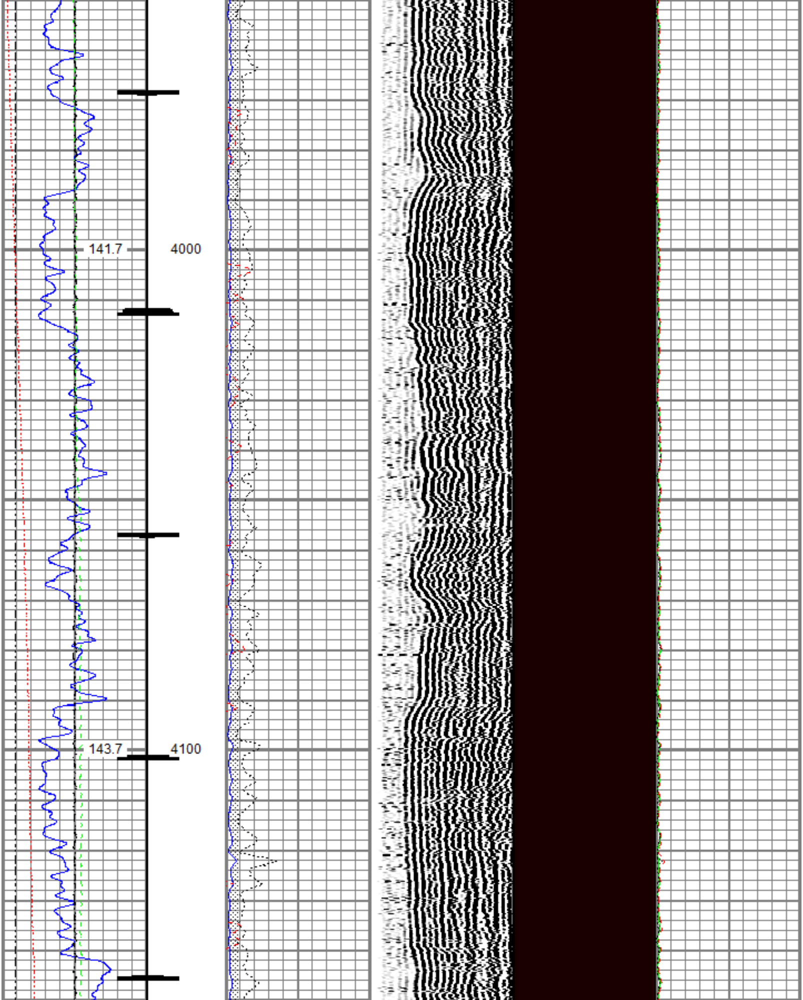
Main Pass

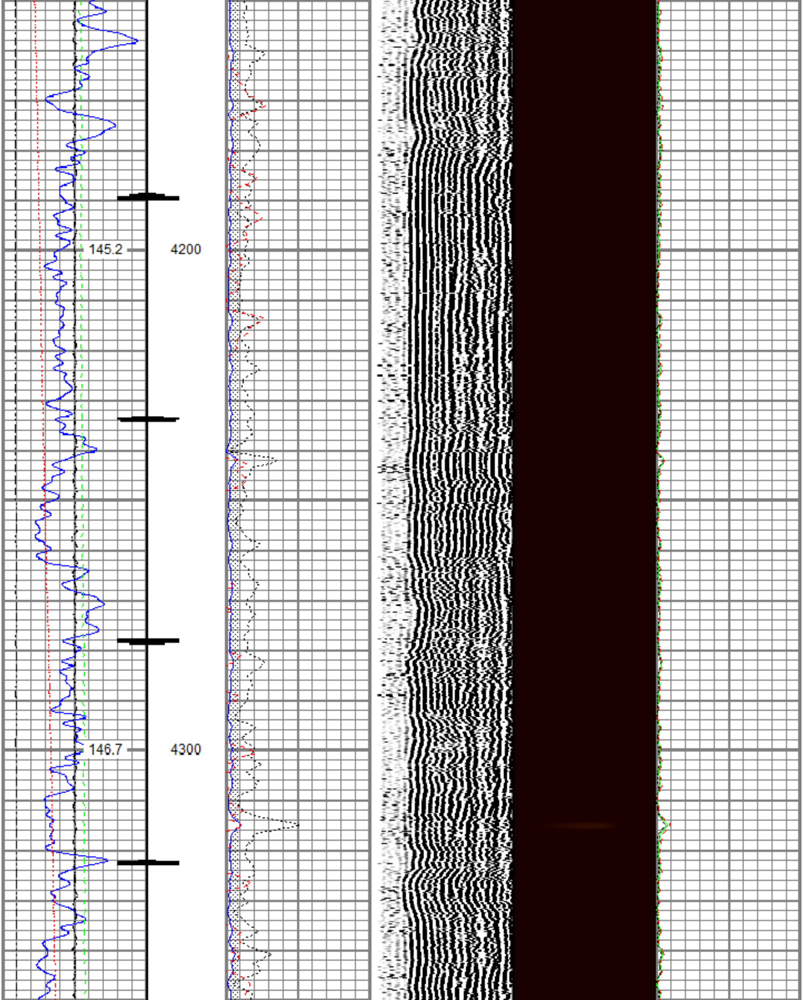
Recorded With 0 PSI Surface Induced Pressure

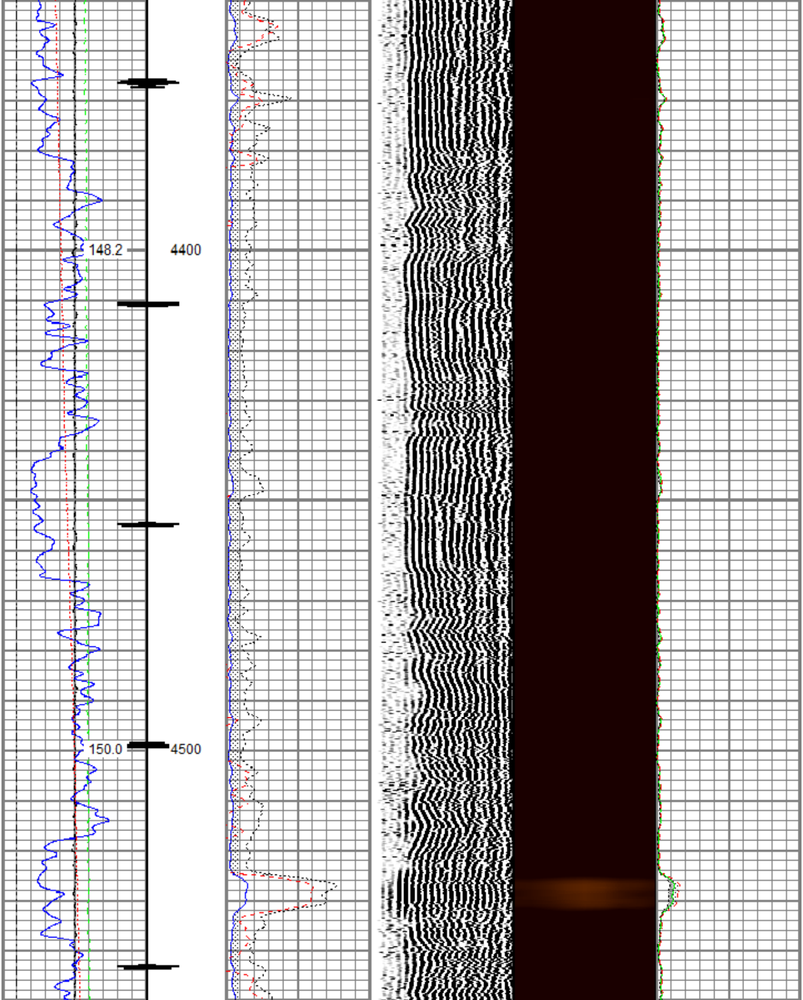
Database File	tep\tep_federal gm 312-8_rbl_02-01-19\tep_federal gm 312-8_rbl_02-01-19.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Mon Feb 04 09:40:29 2019
Charted by	Depth in Feet scaled 1:240

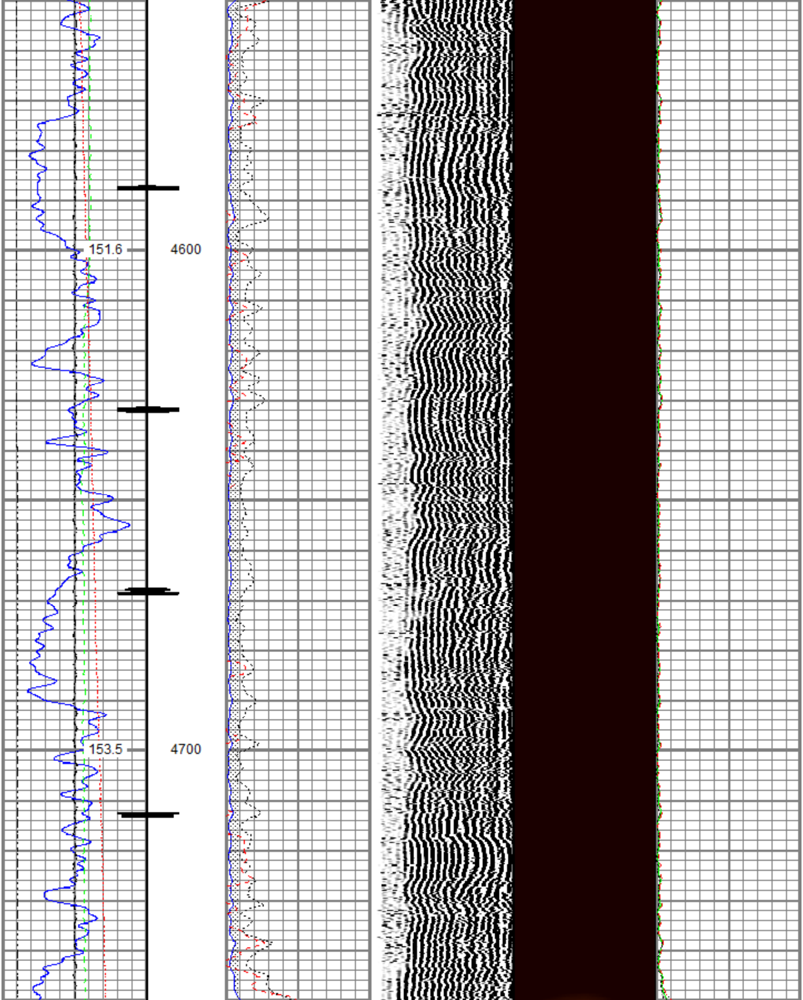
Gamma Ray 0 (GAPI) 200	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150
Line Speed -150 (ft/min) 150	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000	3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential Temperature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

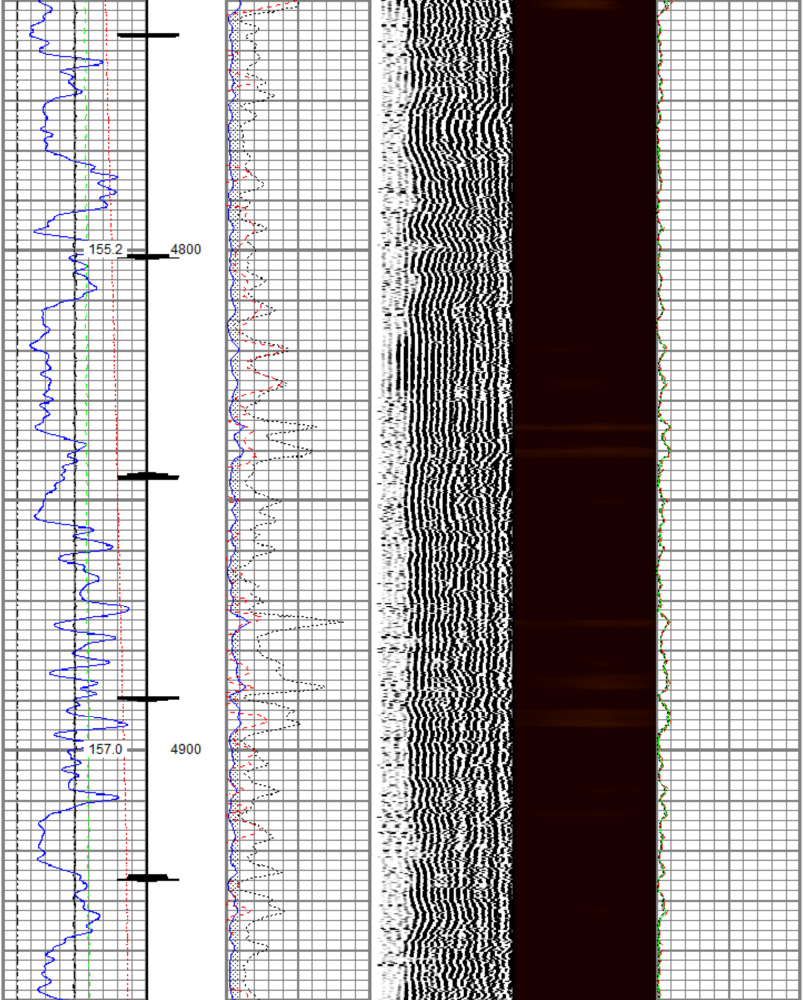


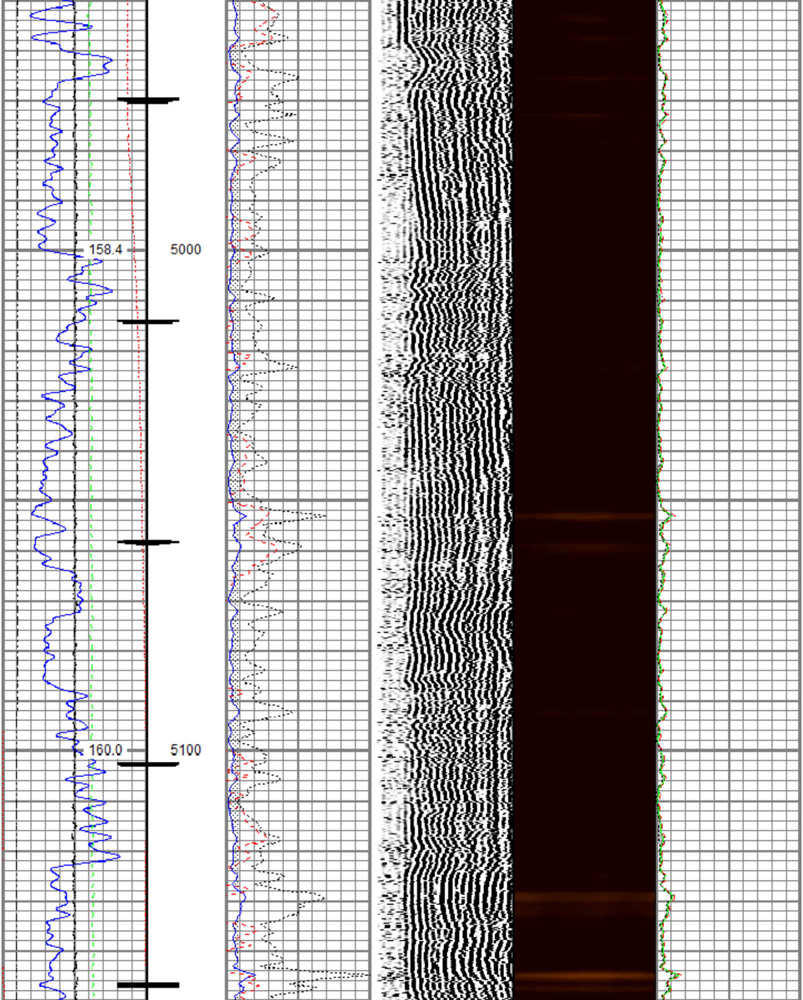


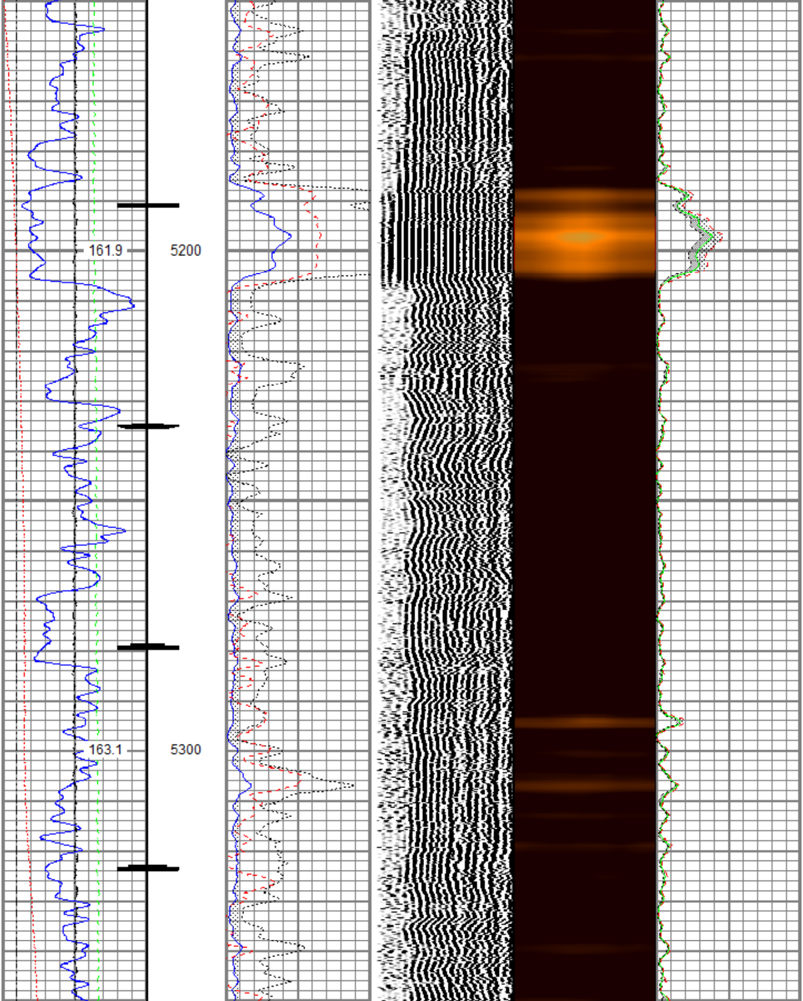


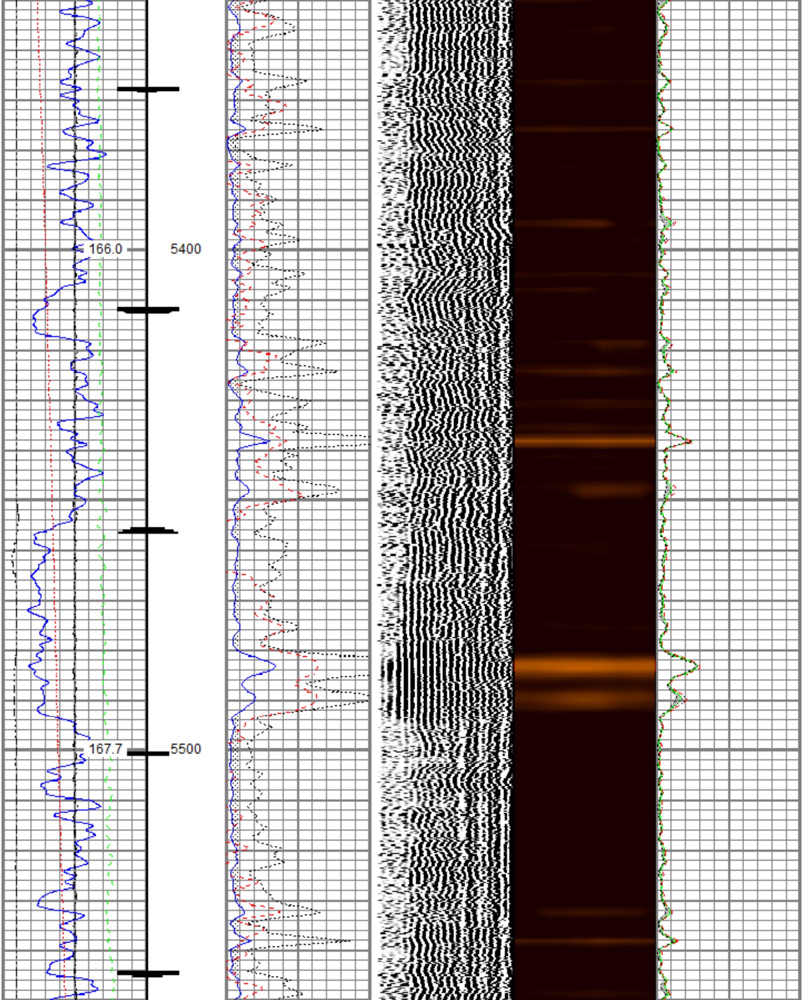


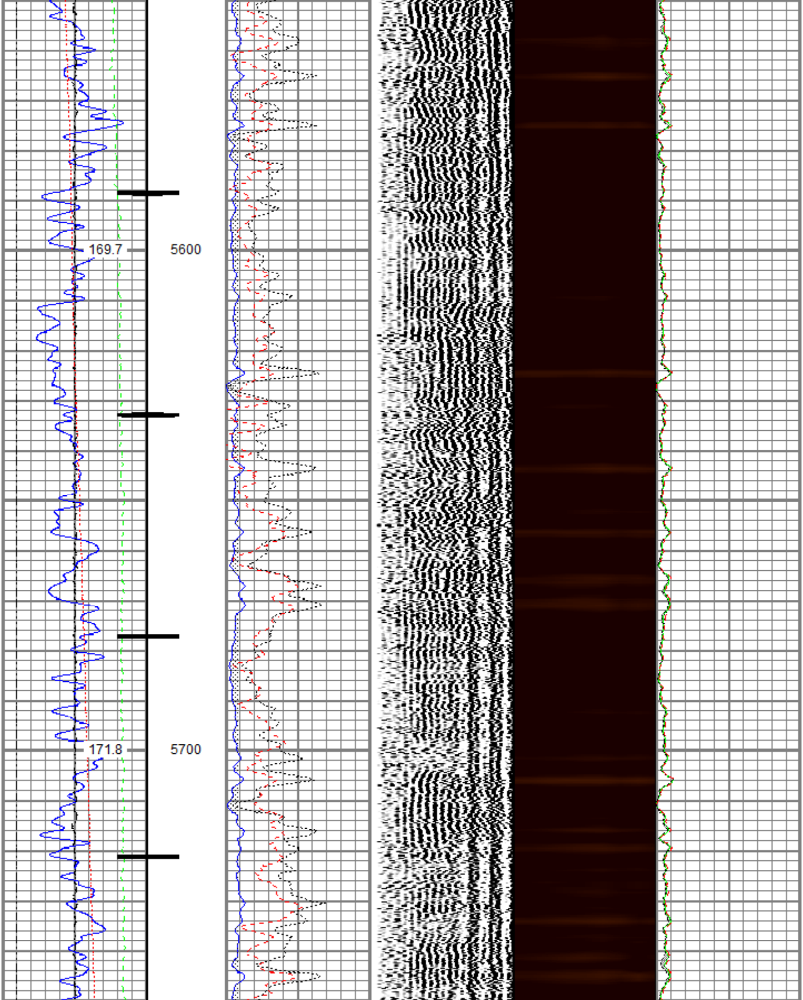


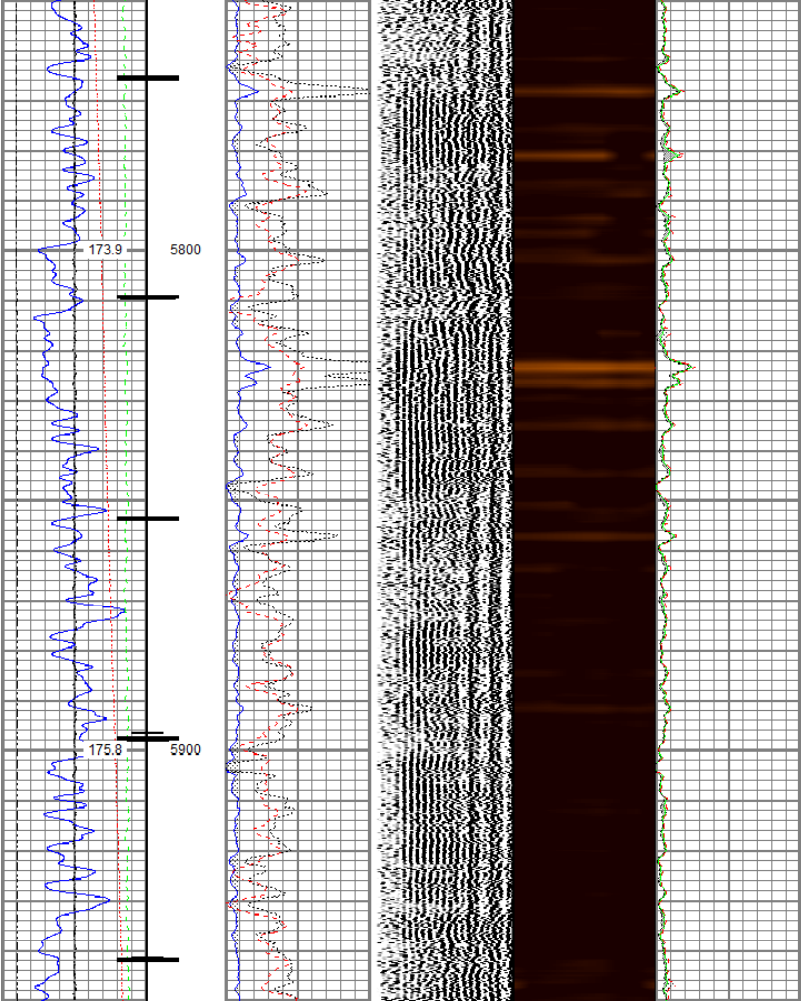


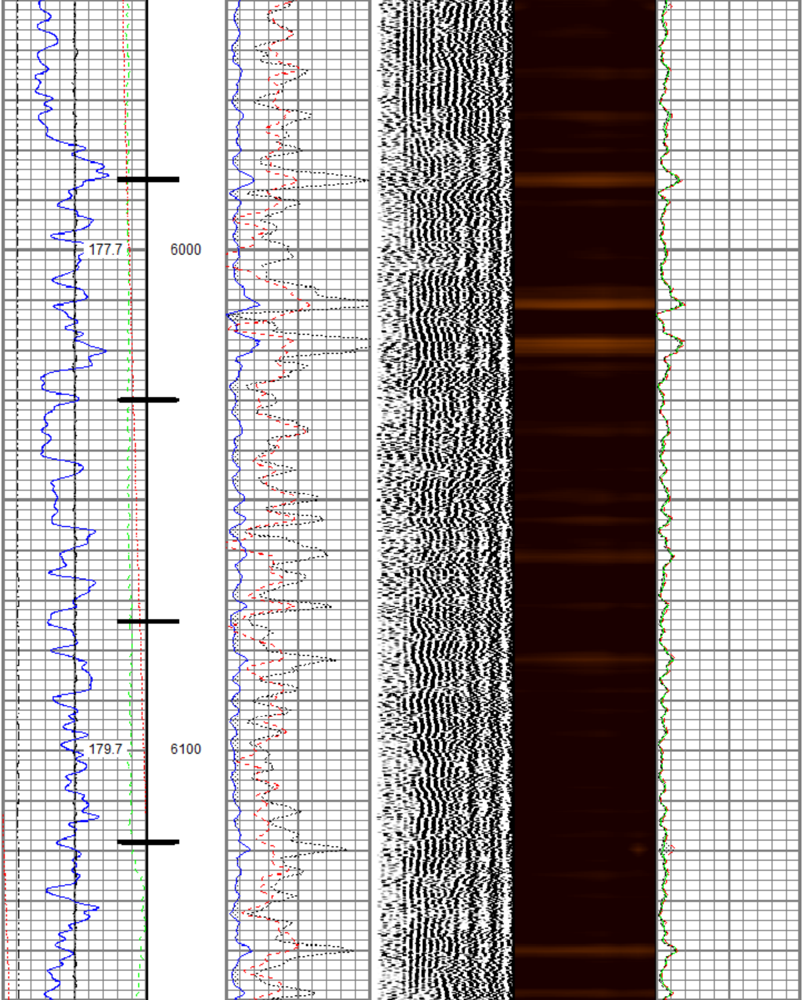


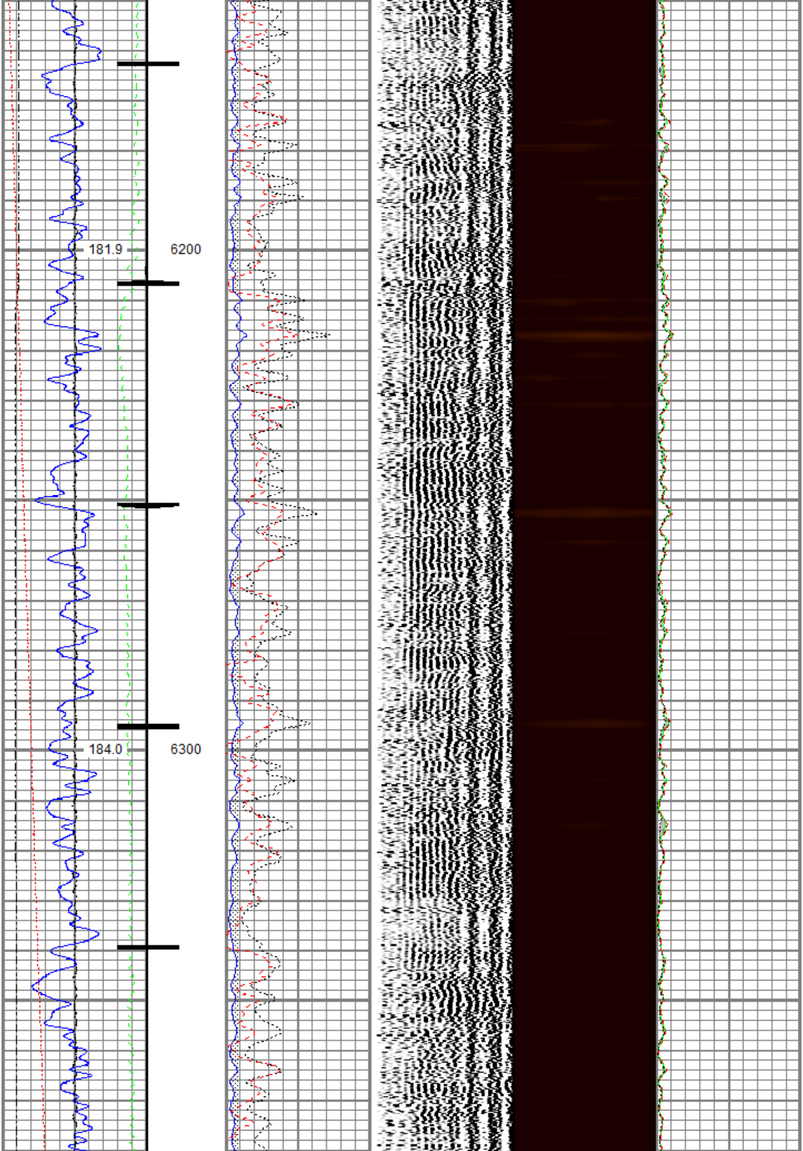


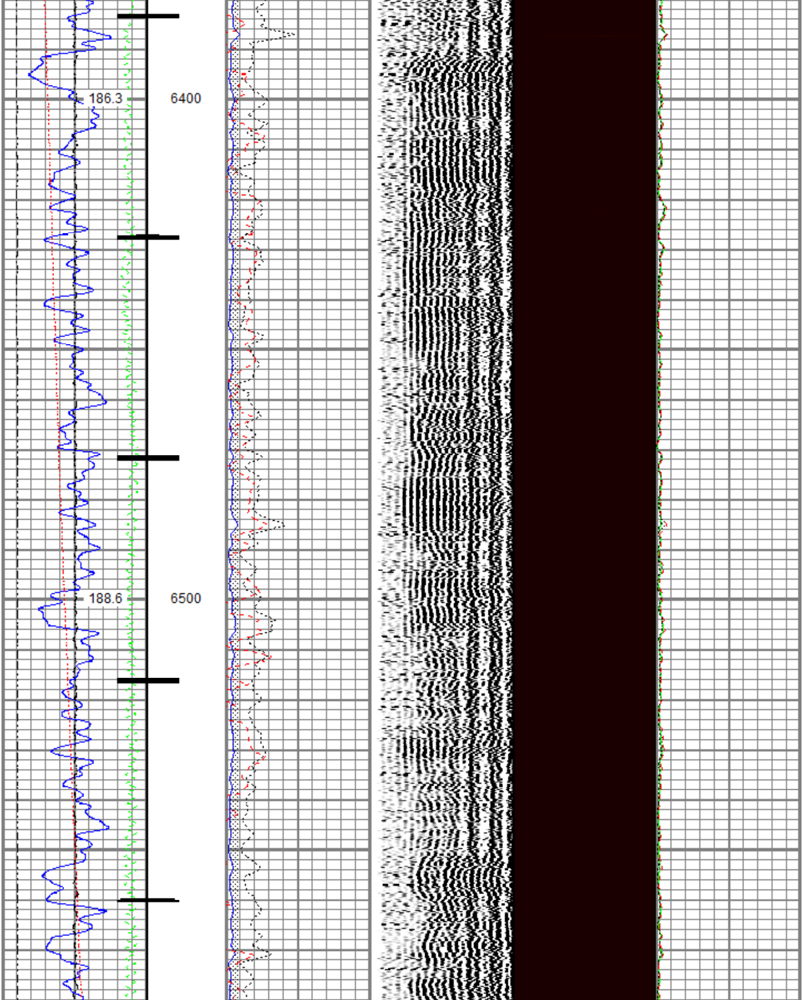


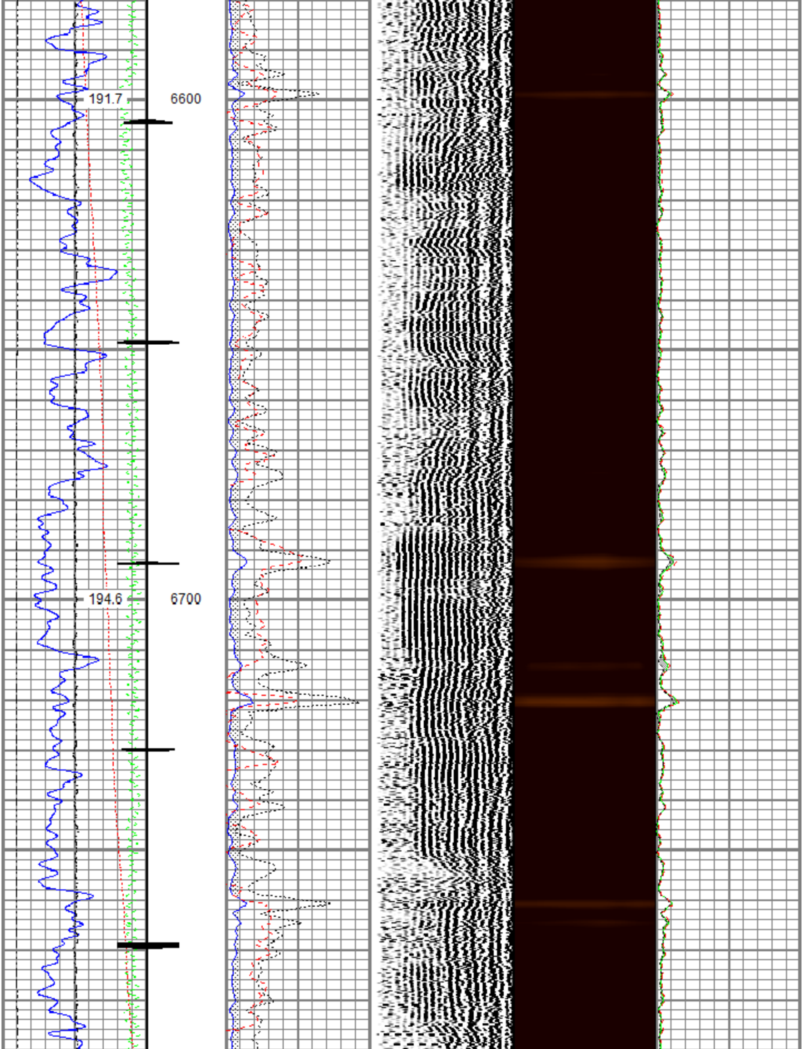


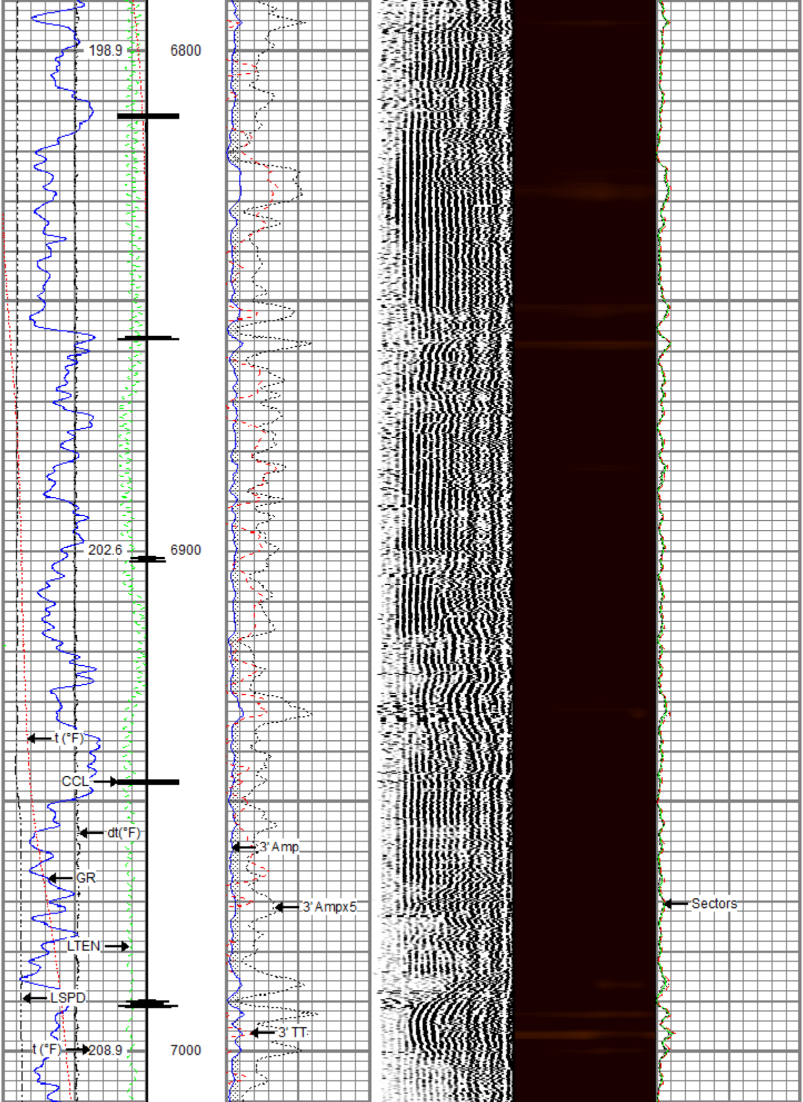


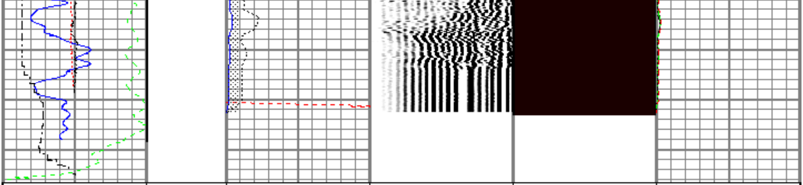












Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 1200	10 110	0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential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

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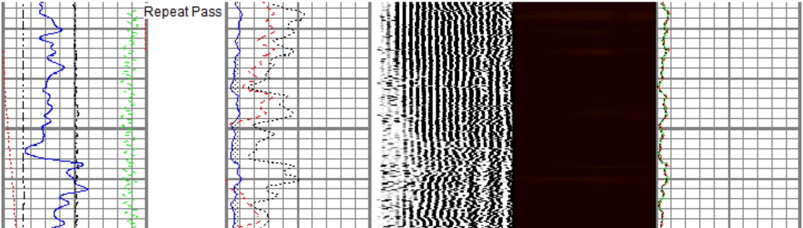
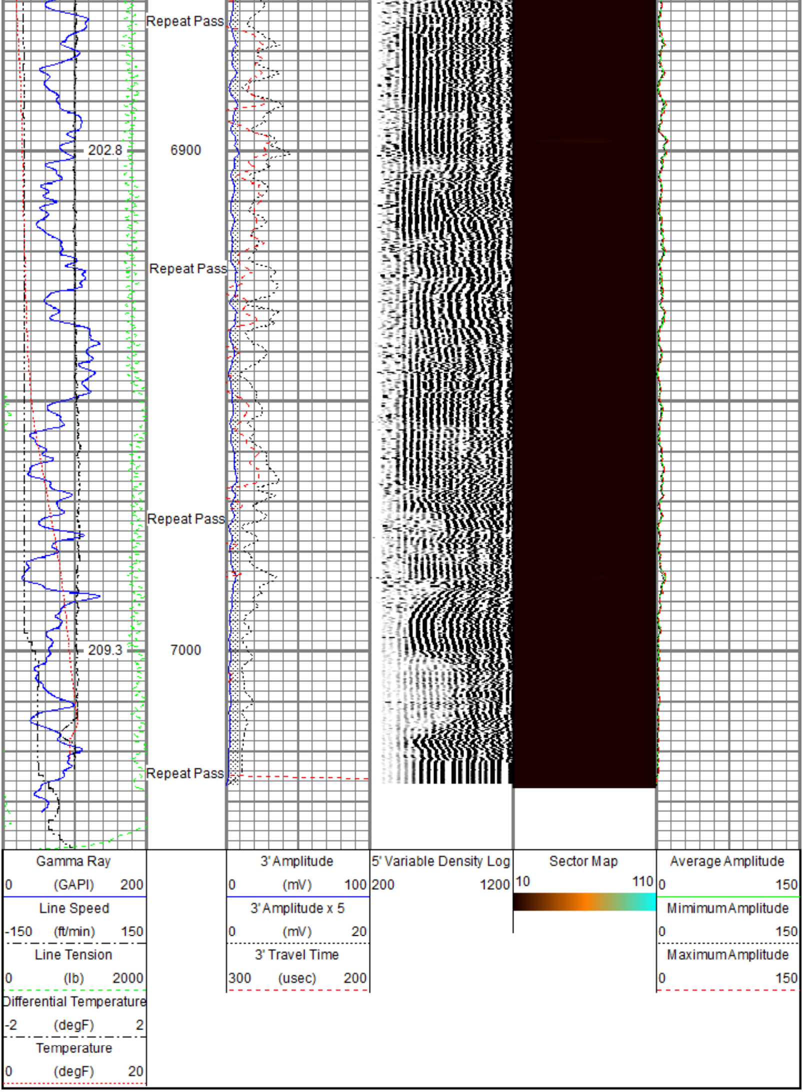
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_federal gm 312-8_rbl_02-01-19\tep_federal gm 312-8_rbl_02-01-19.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Mon Feb 04 09:51:21 2019
Charted by	Depth in Feet scaled 1:240

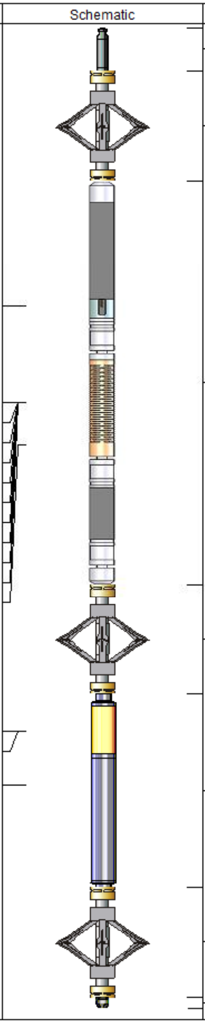
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 200	0 (mV) 100	200 1200	10 110	0 150
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 150
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	300 (usec) 200			0 150
Differential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





Sensor	Offset (ft)
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

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
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 312-8_rbl_02-01-19.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 312-8_rbl_02-01-19\tep_federal gm 312-8_rbl_02-01-19.db
Dataset Pathname	main.1
Dataset Creation	Mon Feb 04 09:40:29 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: 29.320 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.008	0.882	0.800	81.196	91.971	0.092
CAL	0.003	0.749				
5'	0.008	0.715	0.800	81.196	113.697	-0.059
SUM						
S1	0.002	0.909	0.000	100.000	110.216	-0.180
S2	0.005	0.892	0.000	100.000	112.787	-0.589
S3	0.004	0.895	0.000	100.000	112.219	-0.451
S4	0.004	0.922	0.000	100.000	108.903	-0.453
S5	0.004	0.916	0.000	100.000	109.665	-0.428
S6	0.004	0.891	0.000	100.000	112.796	-0.445
S7	0.005	0.878	0.000	100.000	114.553	-0.629
S8	0.006	0.898	0.000	100.000	112.072	-0.679

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.003	0.749	1.000	0.000

Air Zero Calibration, performed Fri Feb 01 07:04:50 2019:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.003	0.000	0.001
5'	0.003	0.000	0.000
SUM			
S1	0.003	0.000	-0.000
S2	0.004	0.000	-0.000
S3	0.003	0.000	-0.000
S4	0.004	0.000	-0.000
S5	0.004	0.000	-0.000
S6	0.003	0.000	0.000
S7	0.003	0.000	0.000
S8	0.003	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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Field	Grand Valley
County	Garfield
State	Colorado