RELIANCE
OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal RU 313-17
Field	Rulison
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal RU 313-17
Field Rulison
County Garfield State Colorado
Location: API # : 05-045-23743
SEC 17 TWP 7S RGE 93W

Other Services
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			Elevation
Permanent Datum	Ground Level	Elevation 8365.6'	K.B. 8389.6'
Log Measured From	Kelly Bushing	24 FT	D.F. 8388.6'
Drilling Measured From	Kelly Bushing		G.L. 8365.6'

Date	23-APR-2018
Run Number	One
Depth Driller	10727 FT
Depth Logger	10656 FT
Bottom Logged Interval	10642 FT
Top Log Interval	50 FT
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	255°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	14:50
Equipment Number	HD-0359
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	9 5/8	32.3	H-40	Surface	1122 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10687 FT
Intermediate #2					
Liner					

<<< Fold Here >>>

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 6549-6570 FT
Log ran from 10642 FT to 50 FT
Unable to log to Surface due to Drilling Rig
Sector 8 data removed above 3775 FT
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

RELIANCE
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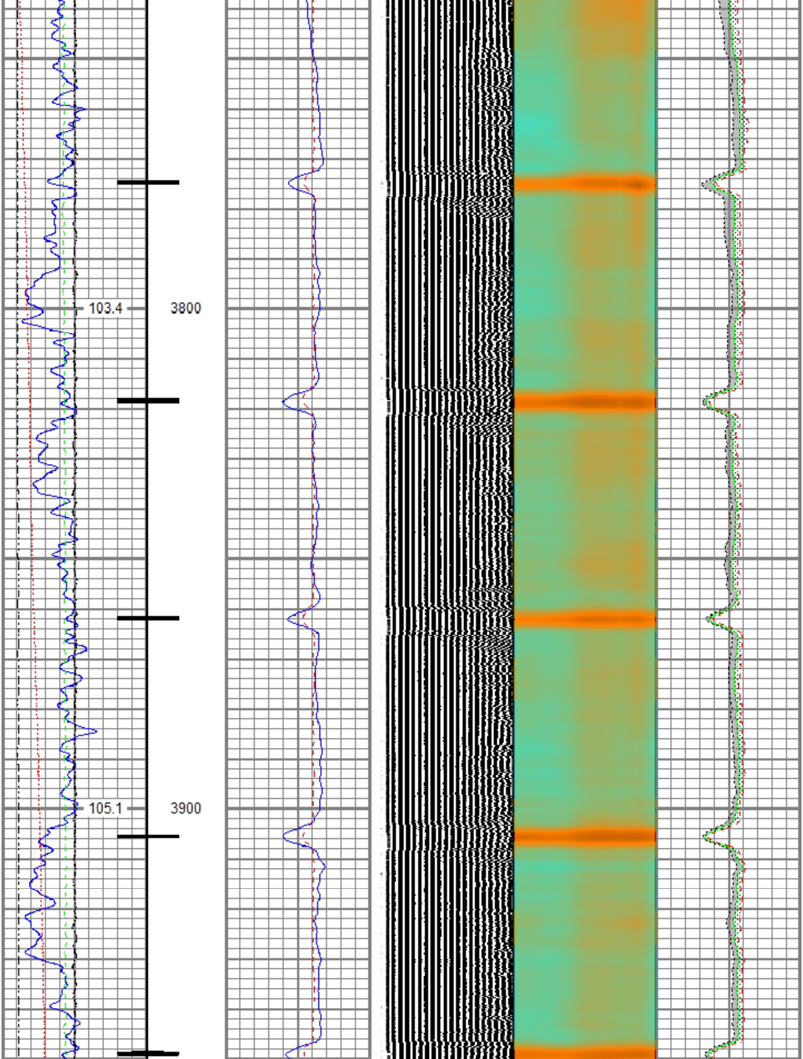
Main Pass

Recorded with 0 PSI Surface Induced Pressure

Database File	tep\federal ru 313-17\rbl\tep_federal ru 313-17_rbl_04-23-18.db
Dataset Pathname	merge1
Presentation Format	ros_rbt004_t
Dataset Creation	Tue Apr 24 10:11:00 2018
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 (usec) 1200	Sector Map	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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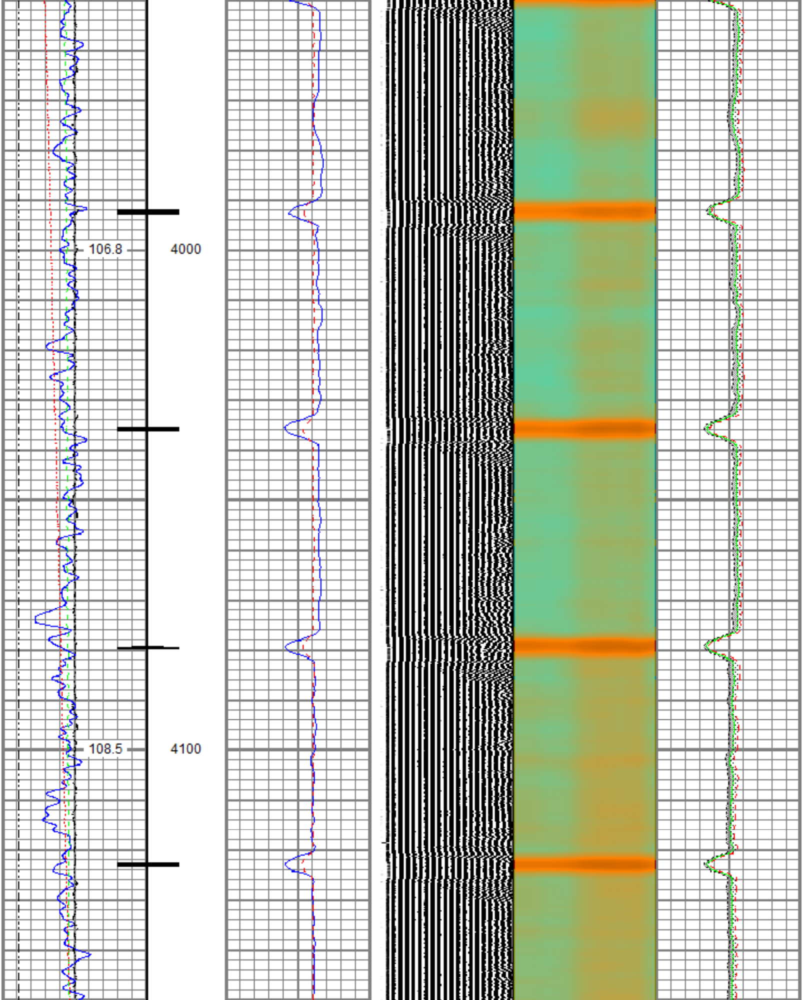
3800
105.1
3900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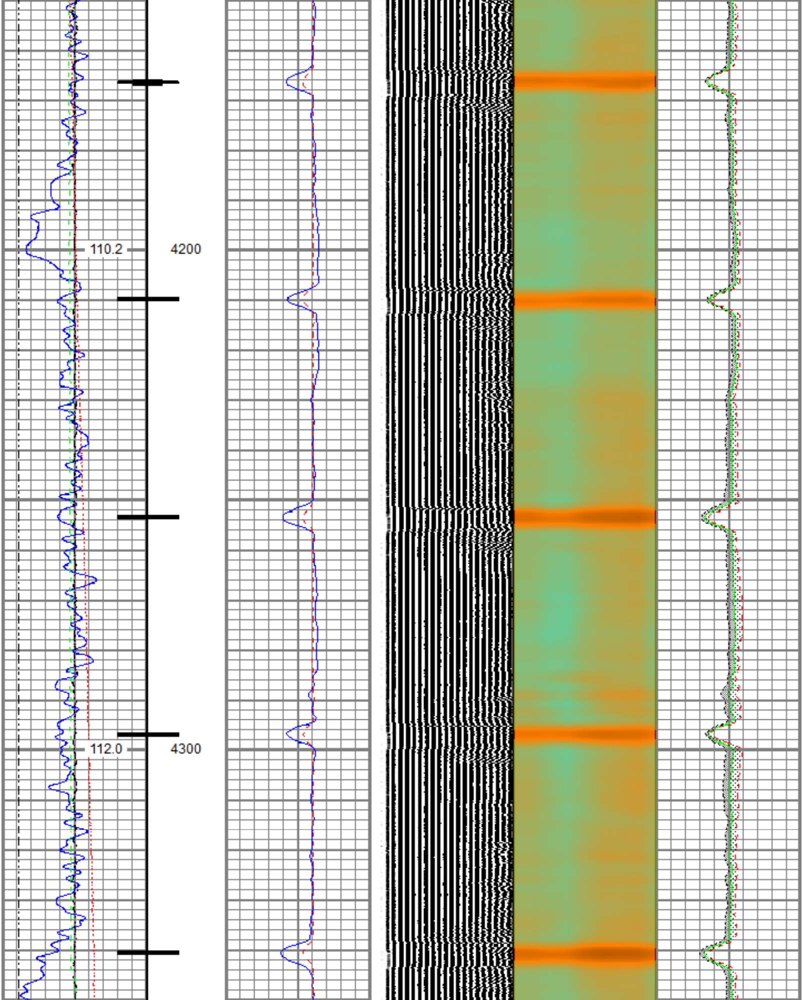
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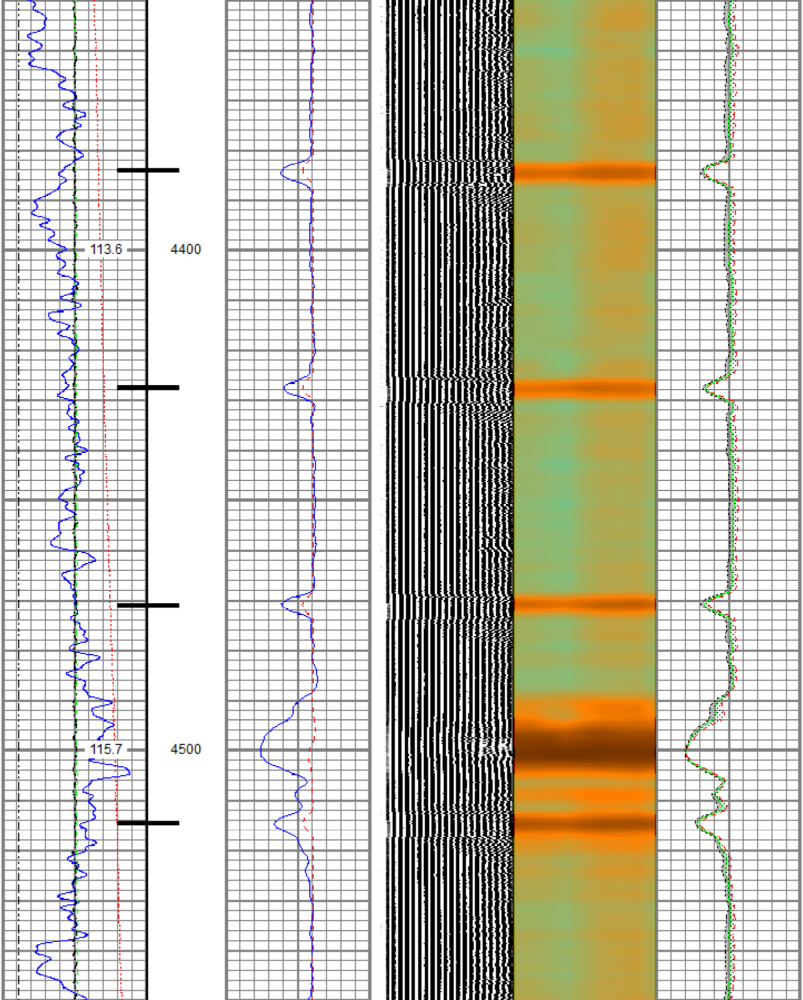
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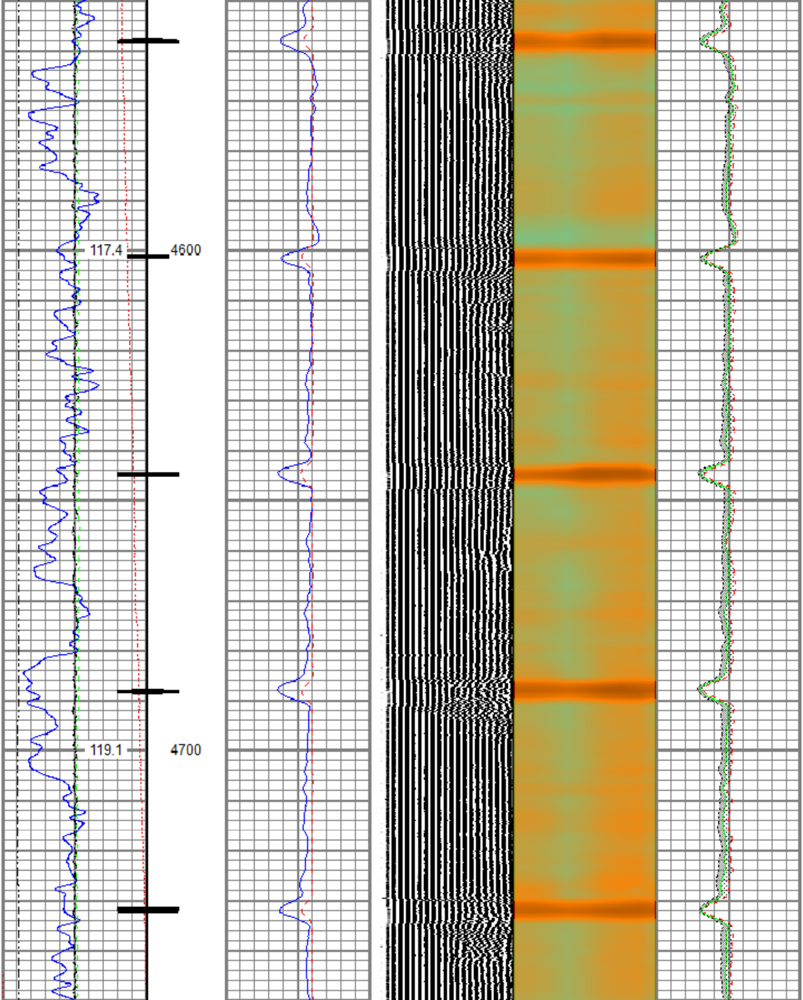
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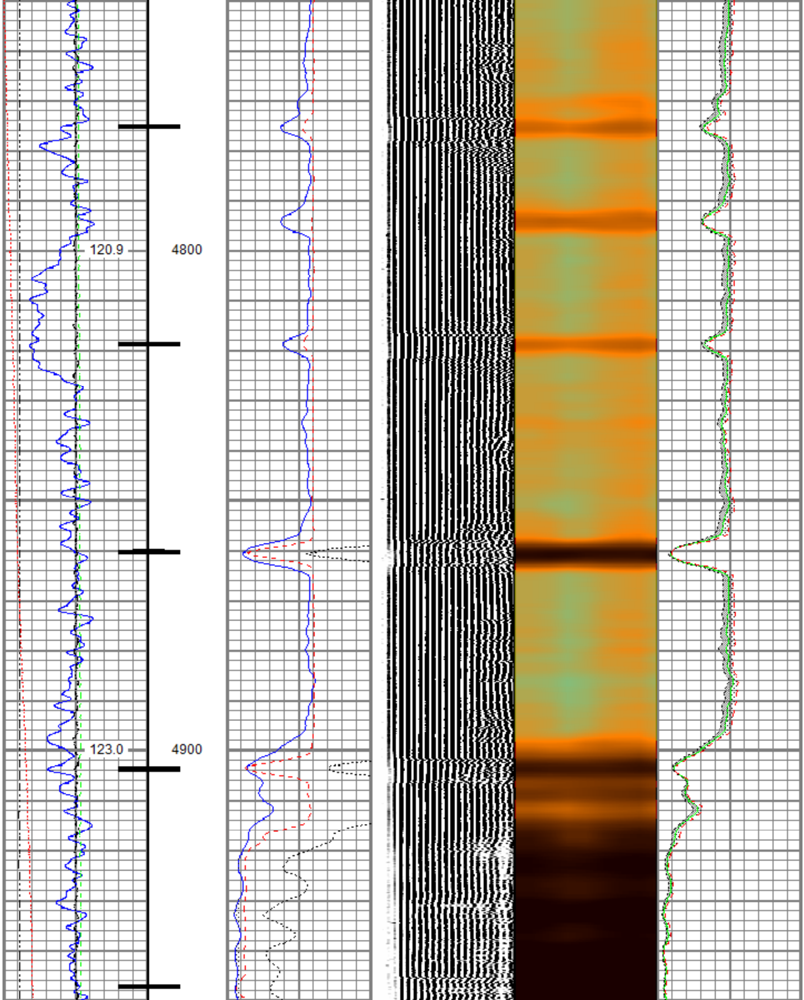
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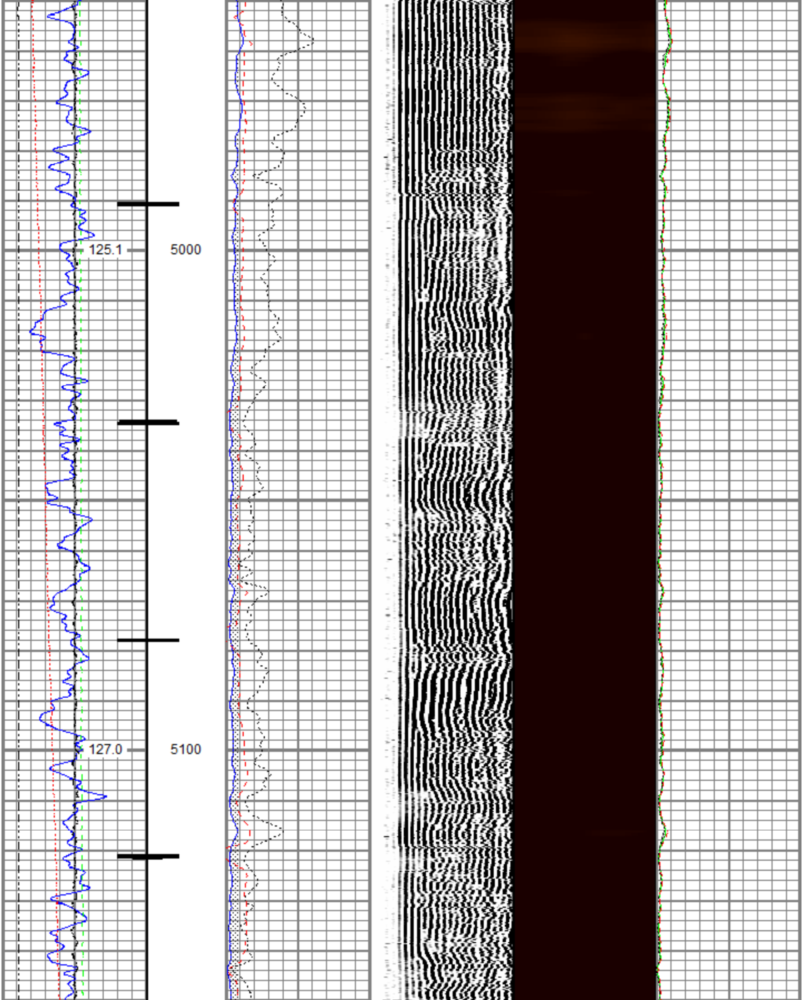
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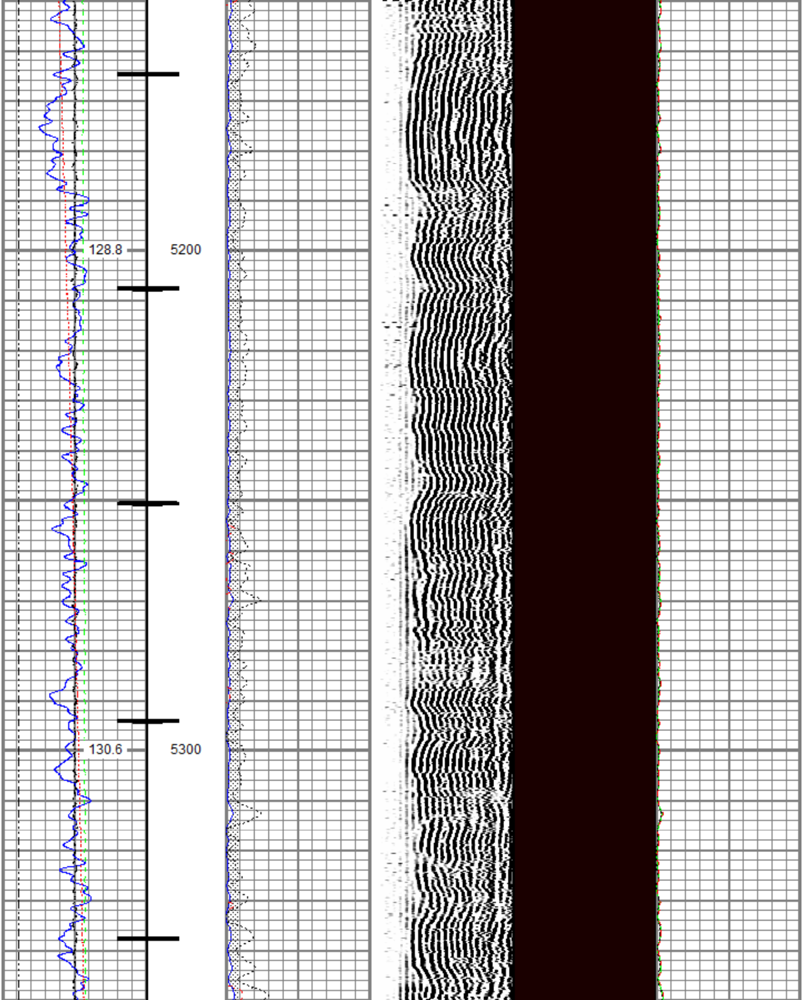
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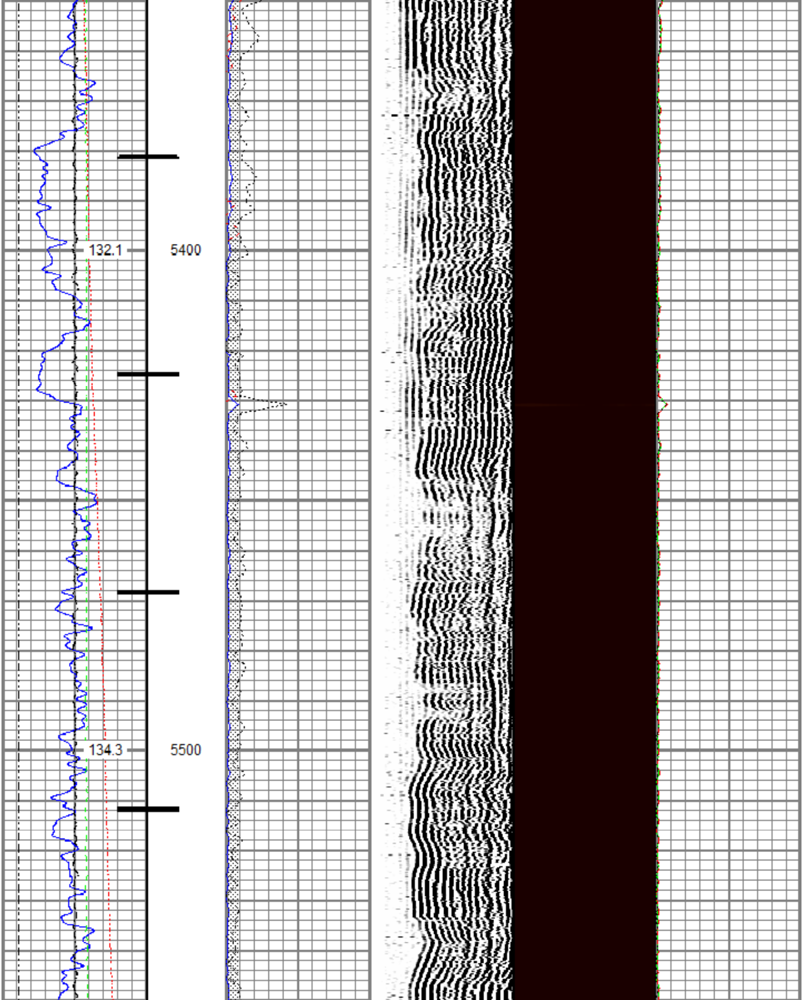
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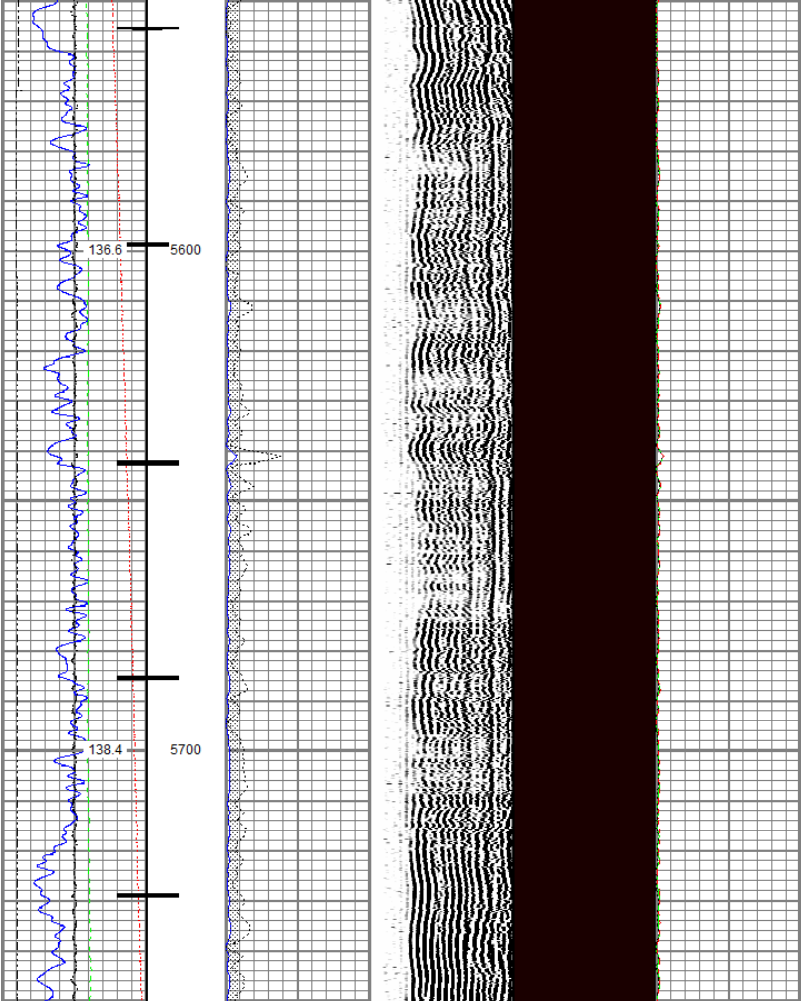
5500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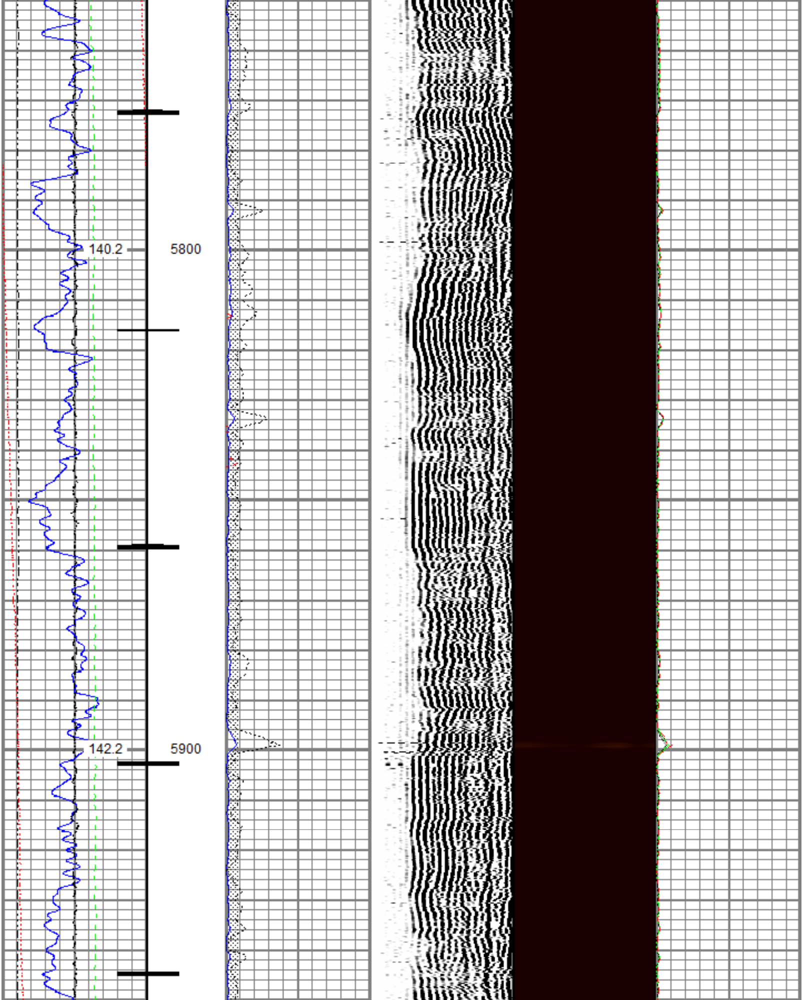
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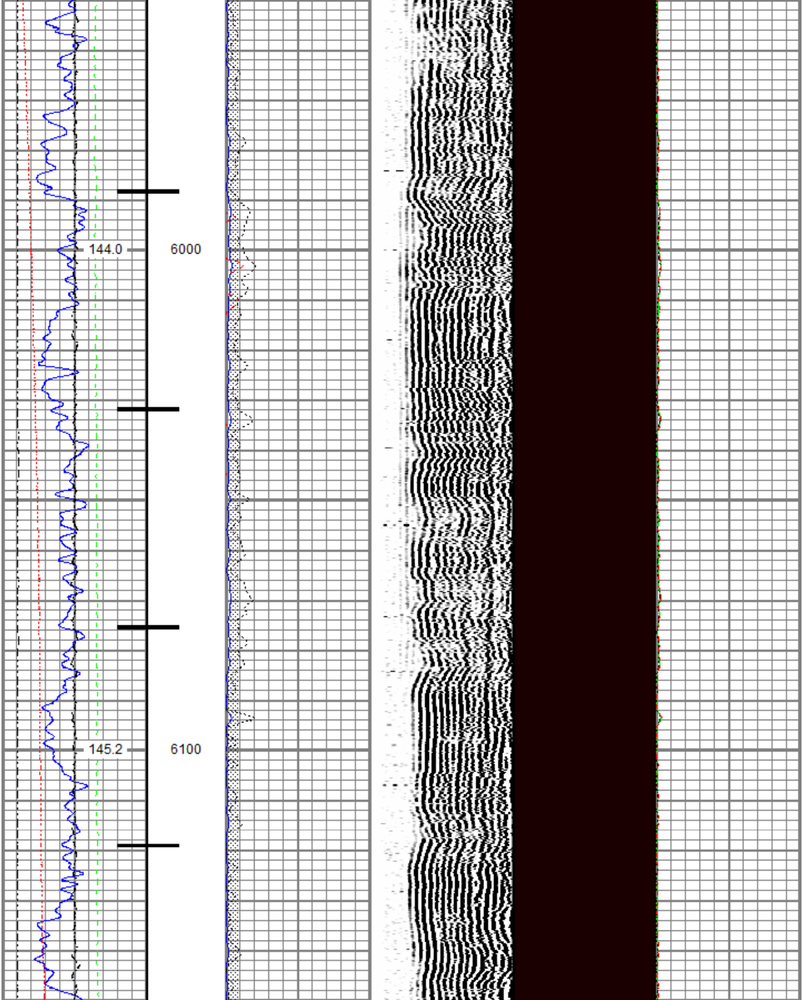
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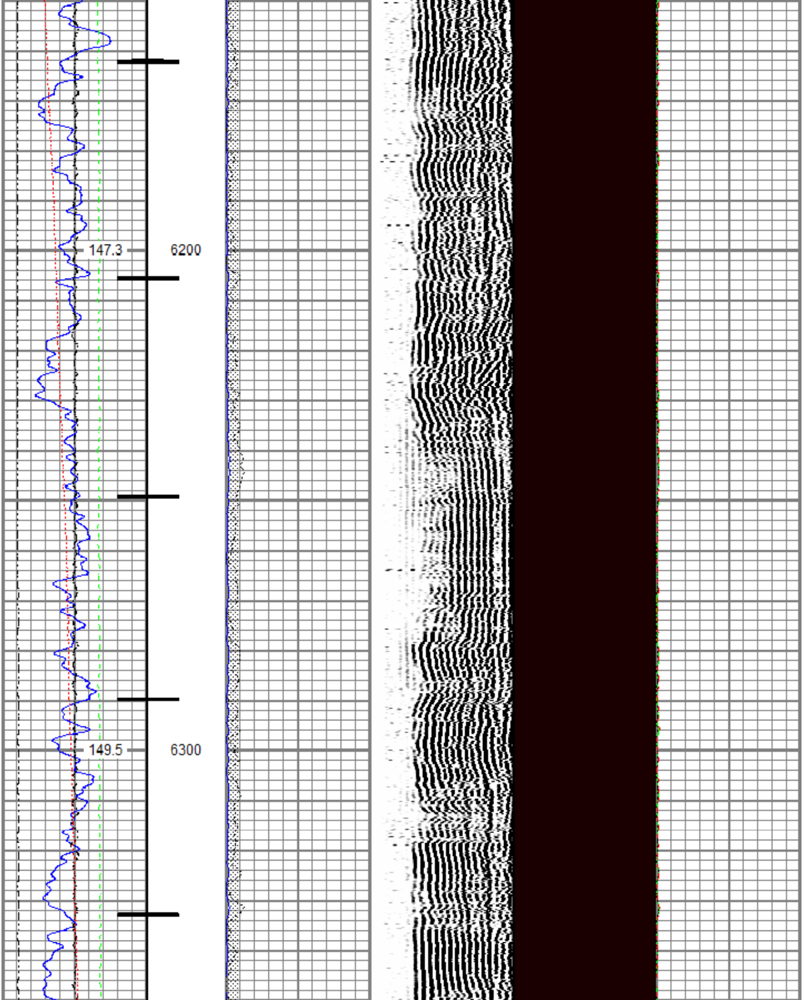
145.2
6100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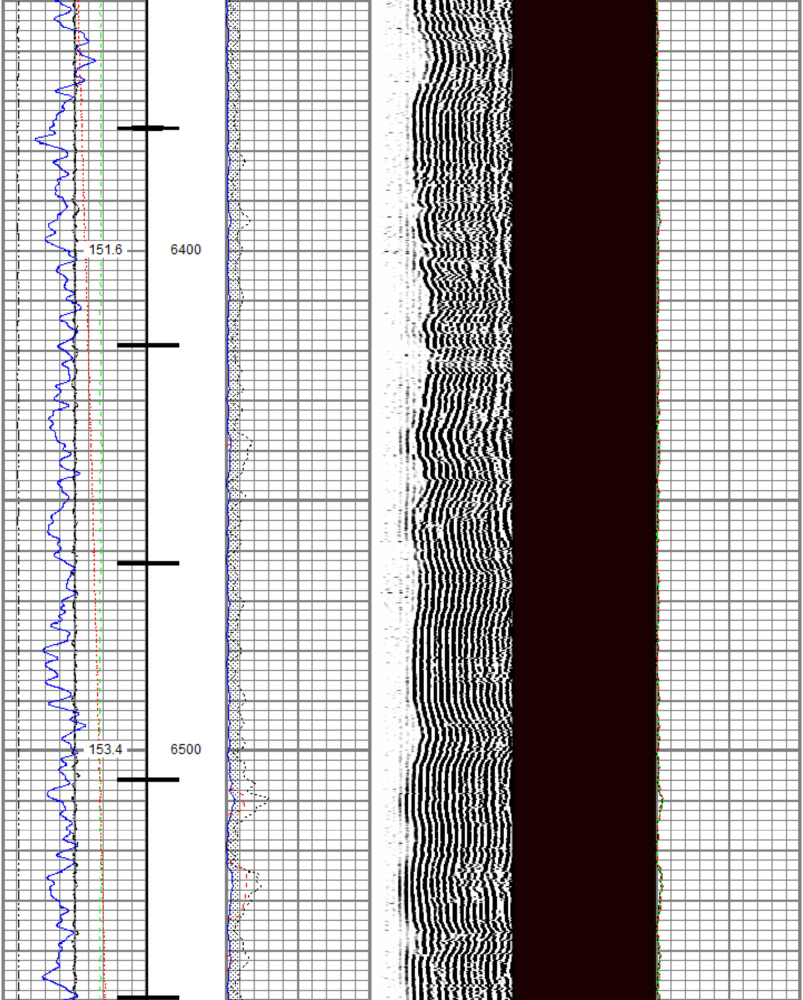
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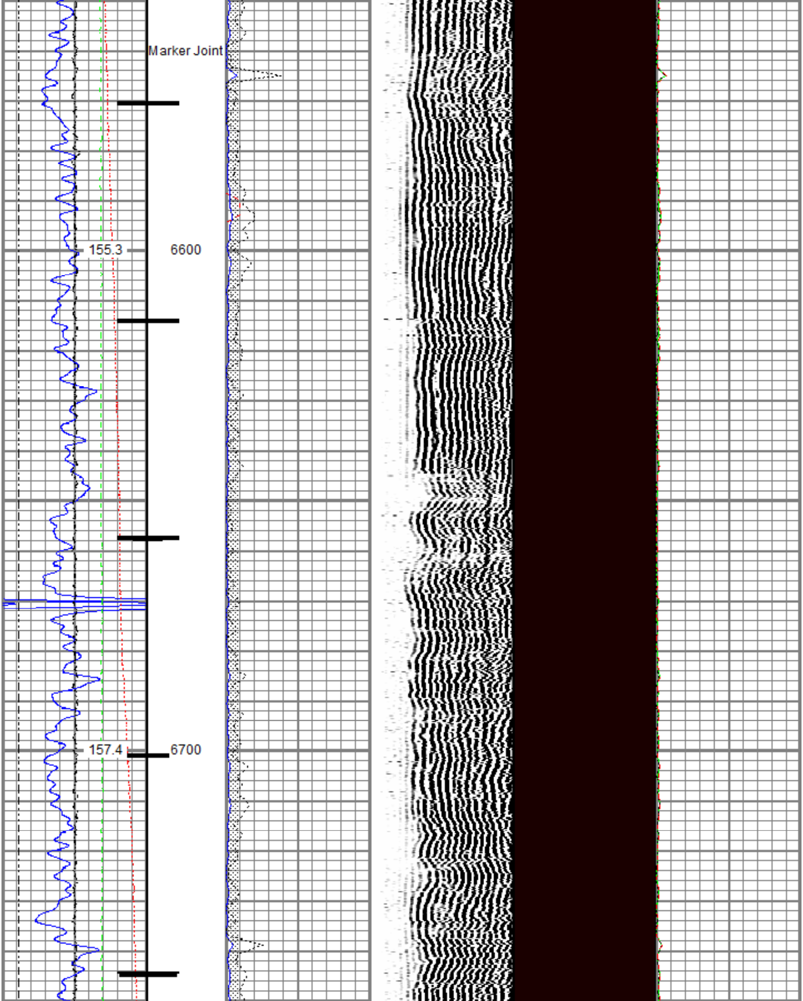
Marker Joint
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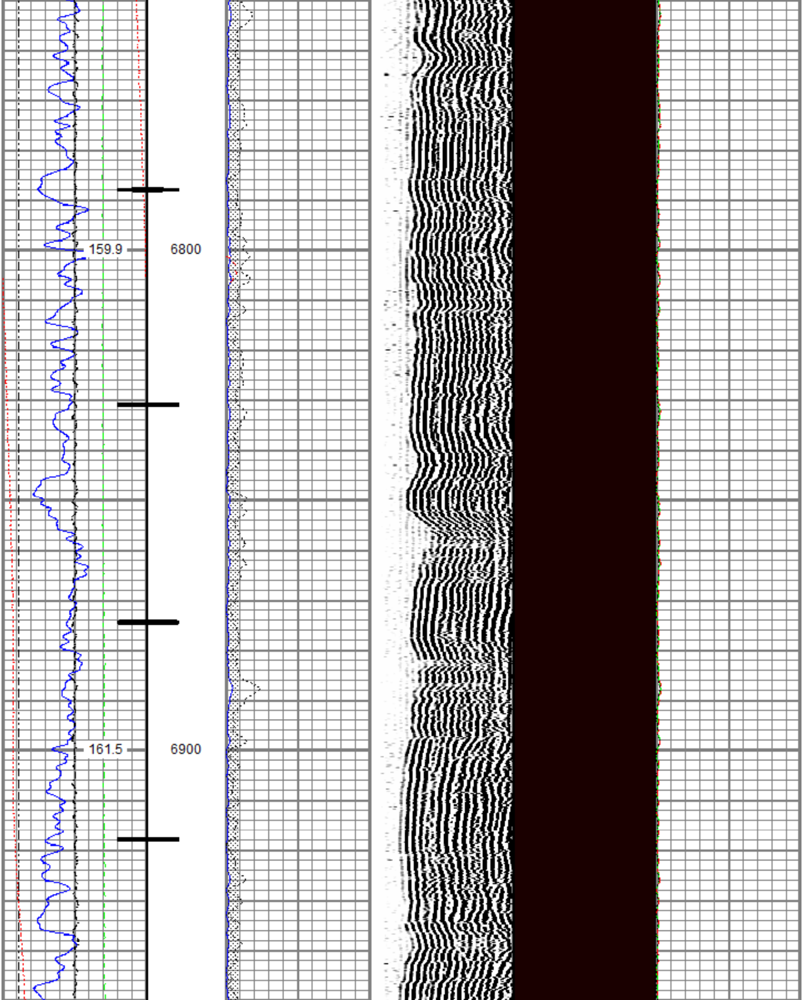
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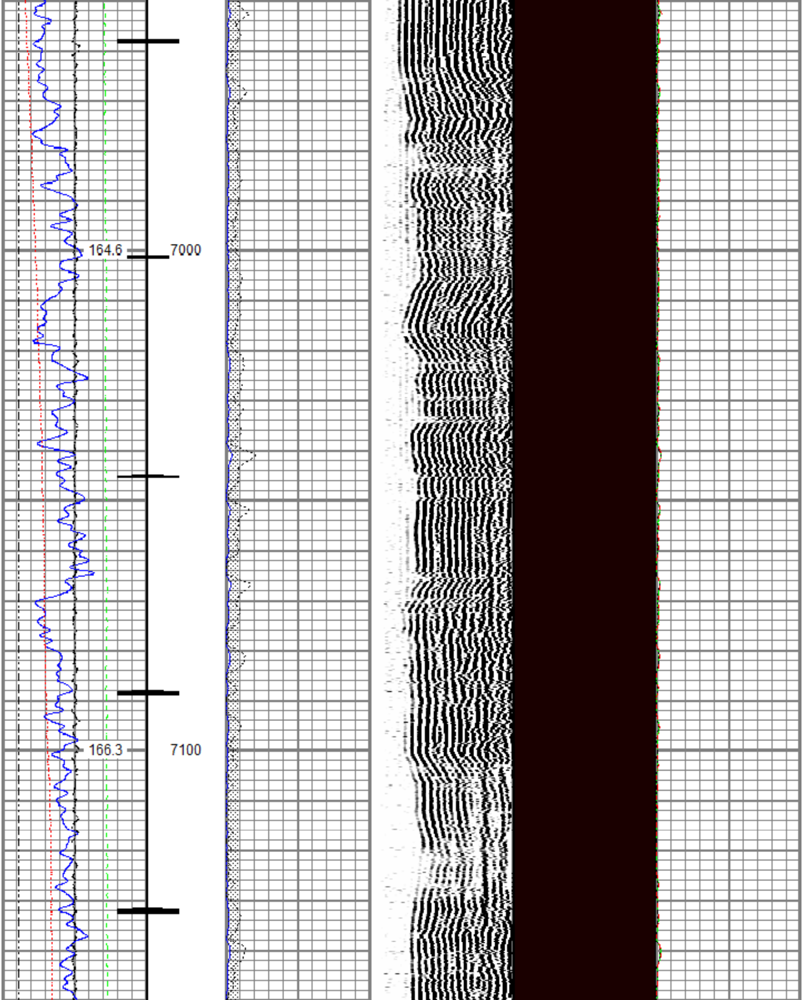
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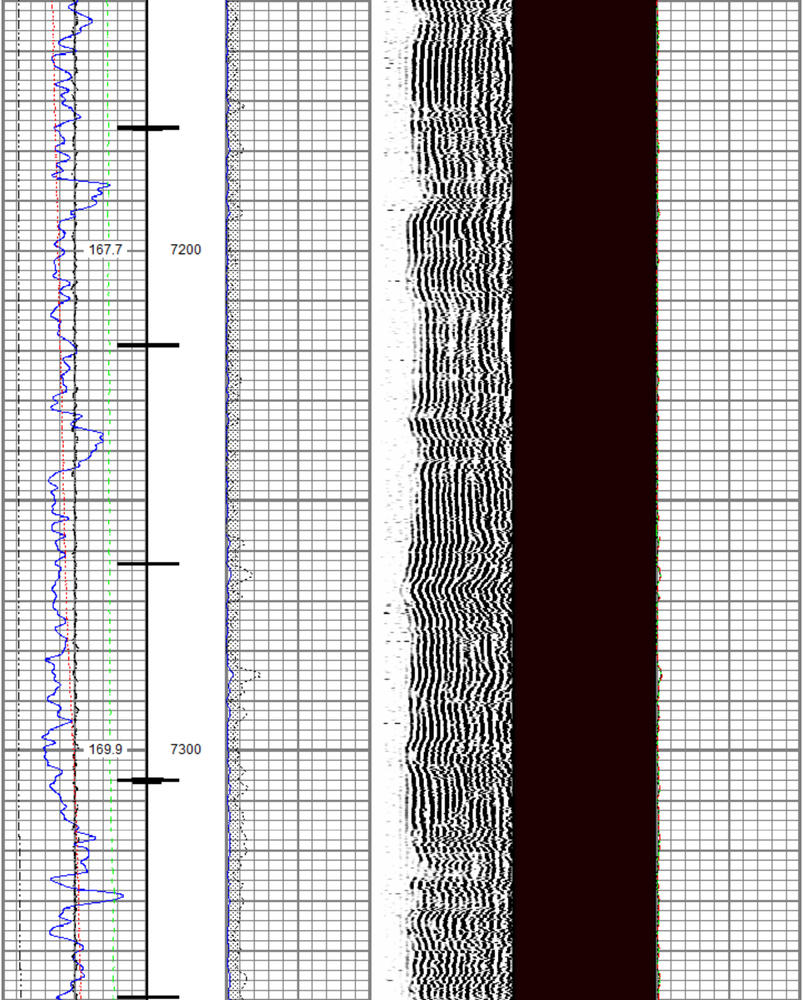
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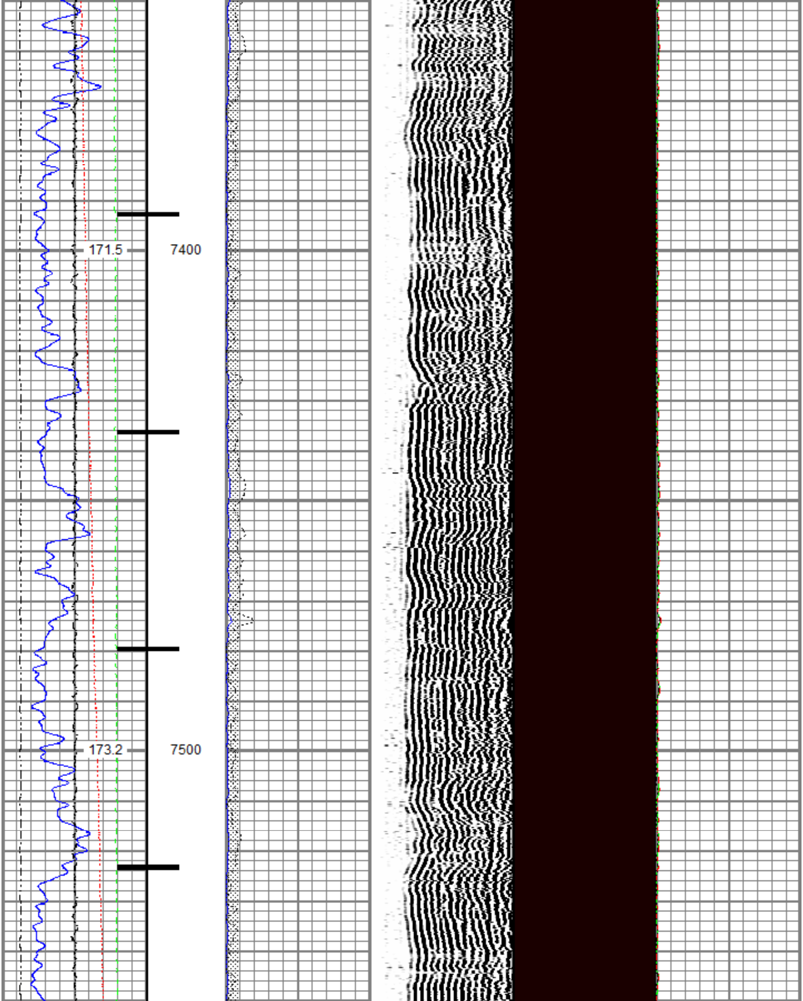
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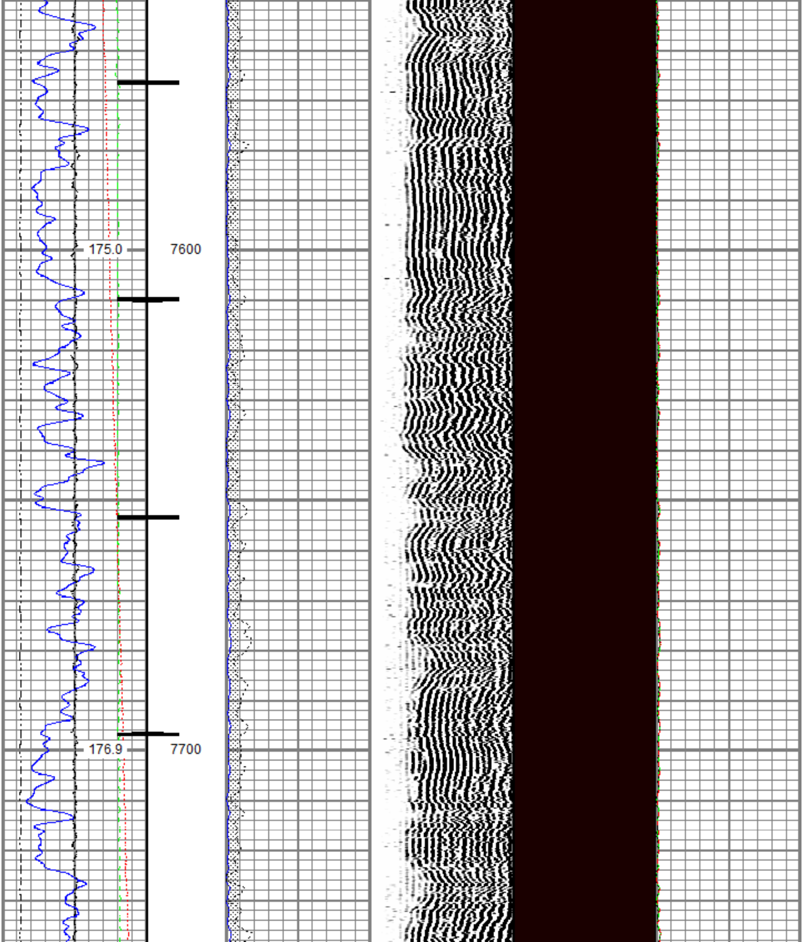
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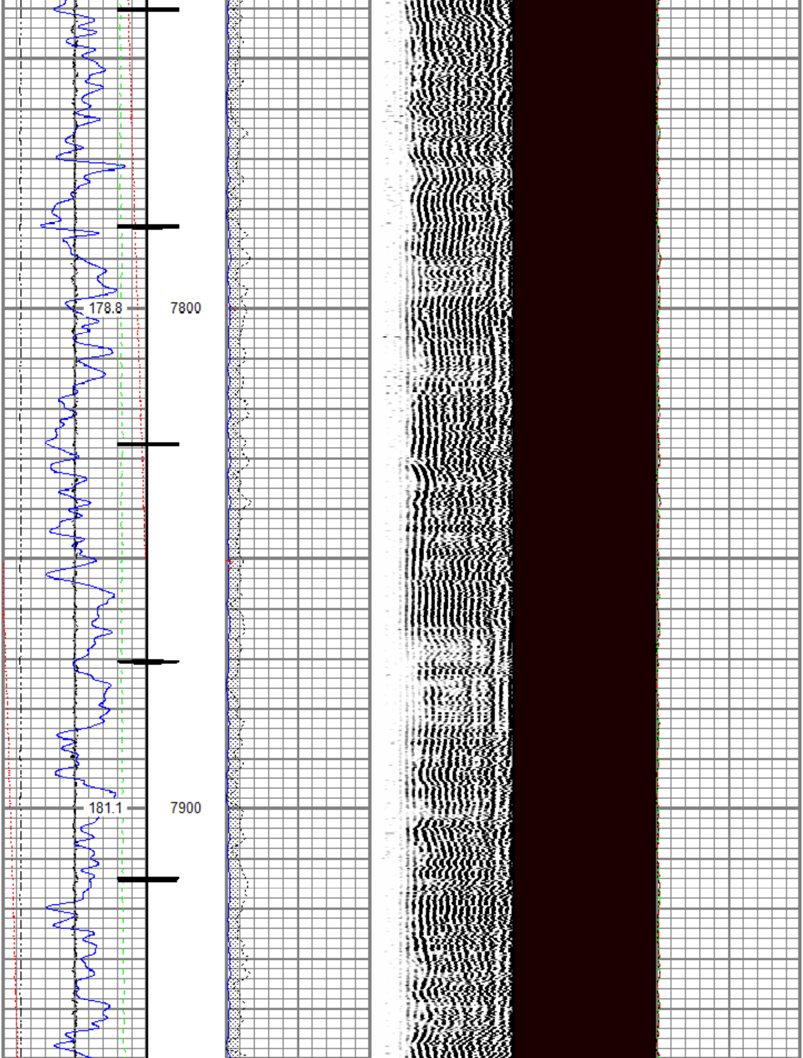
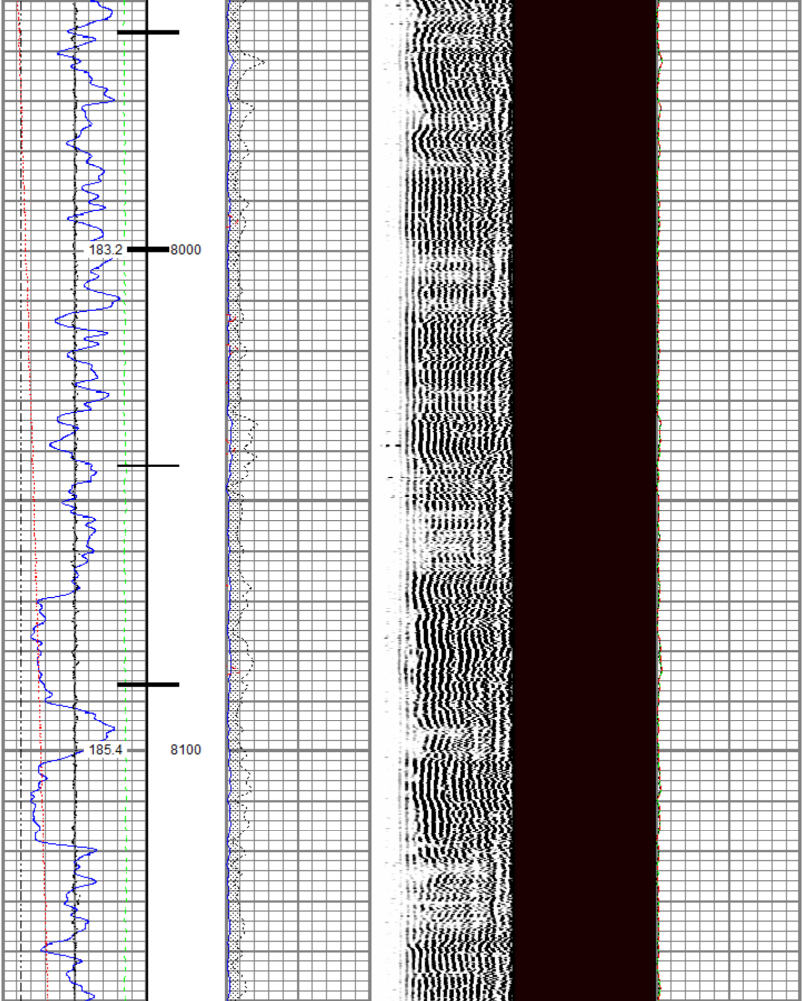
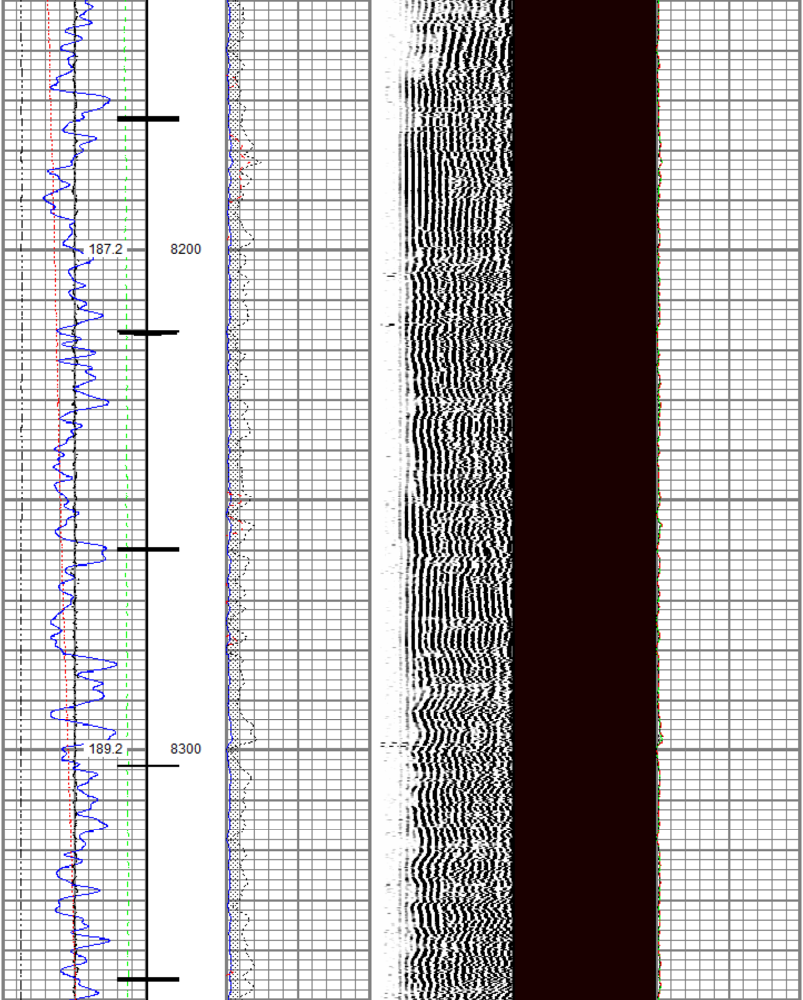
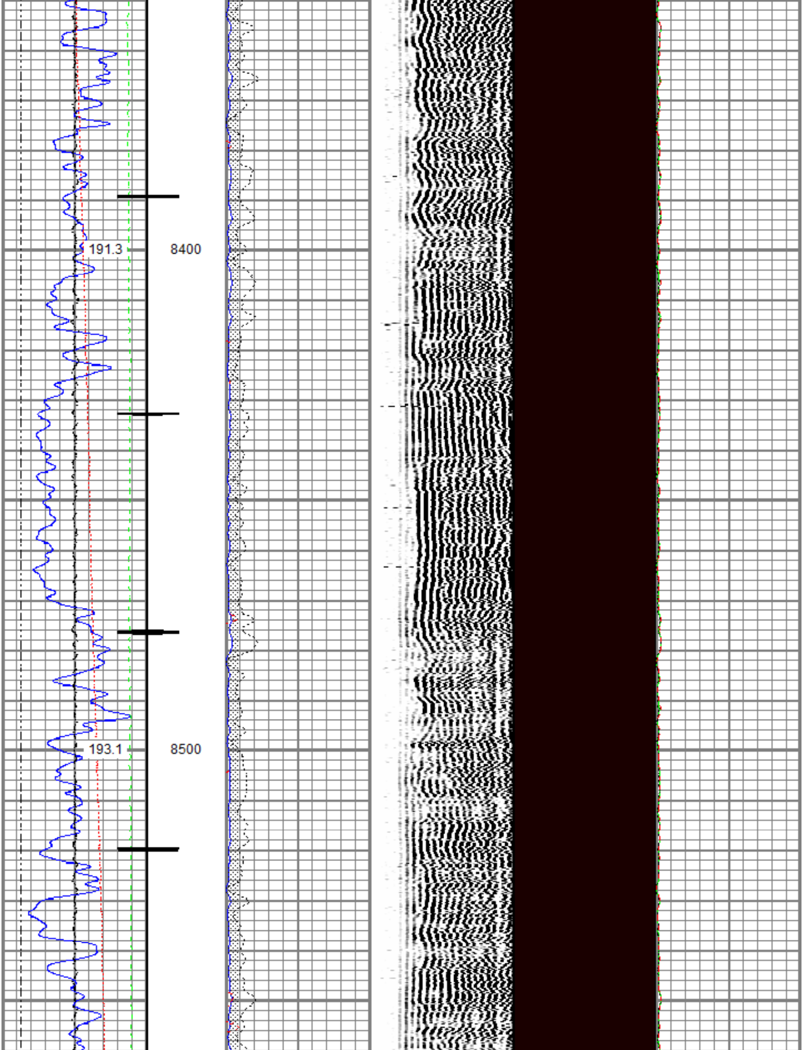
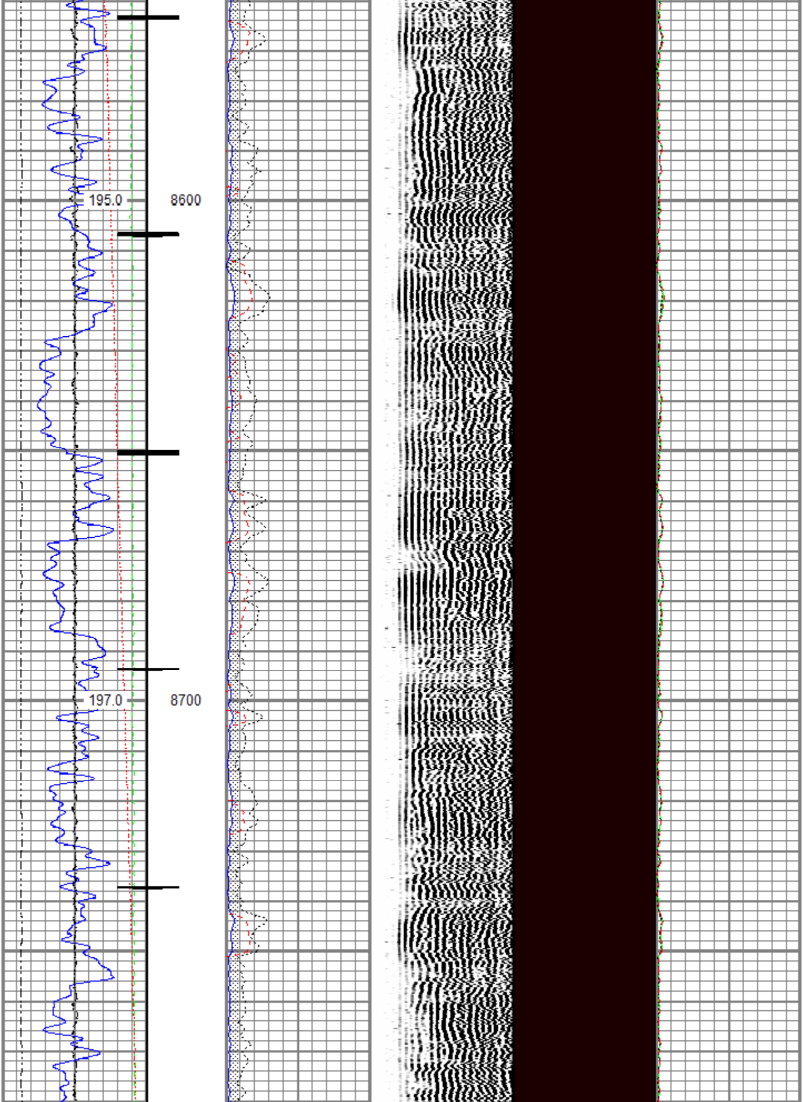
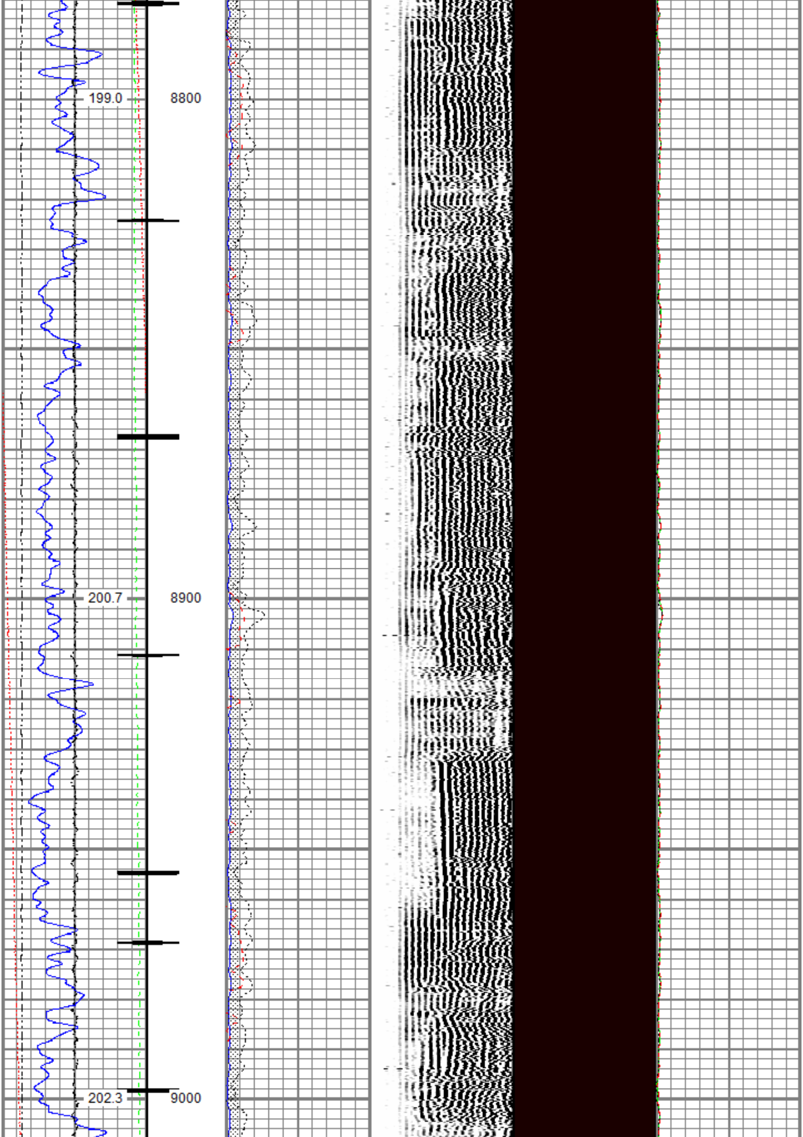


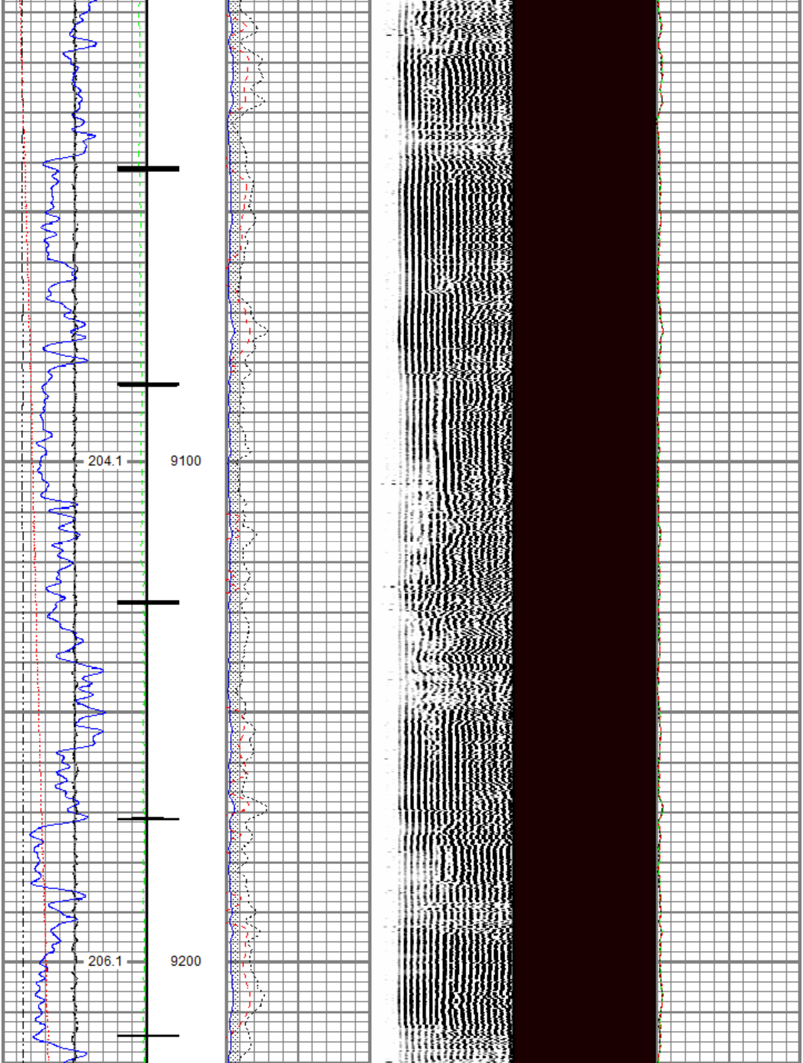


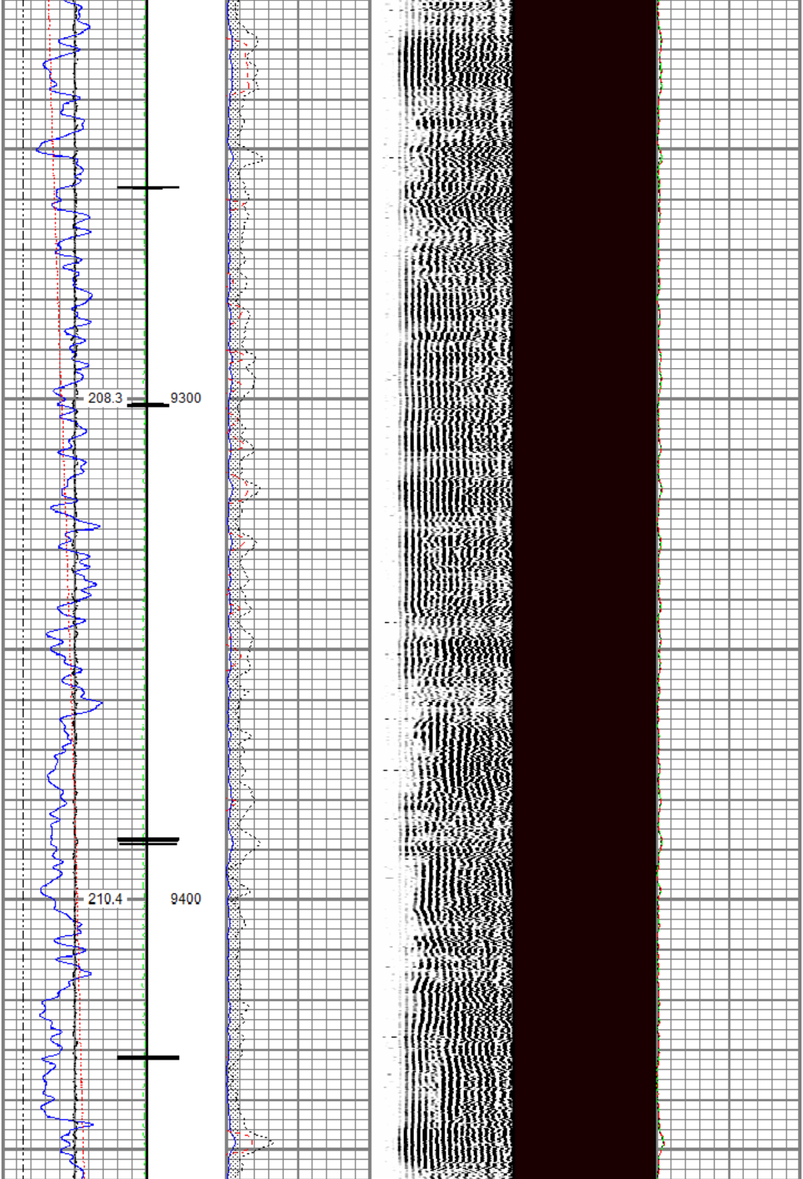


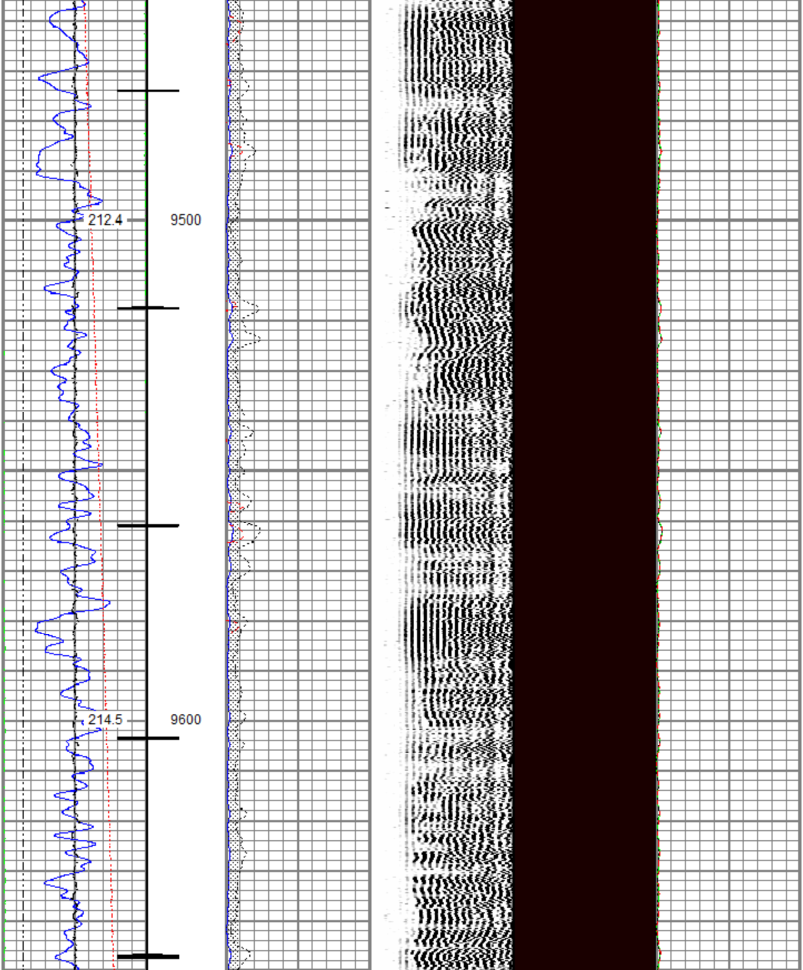


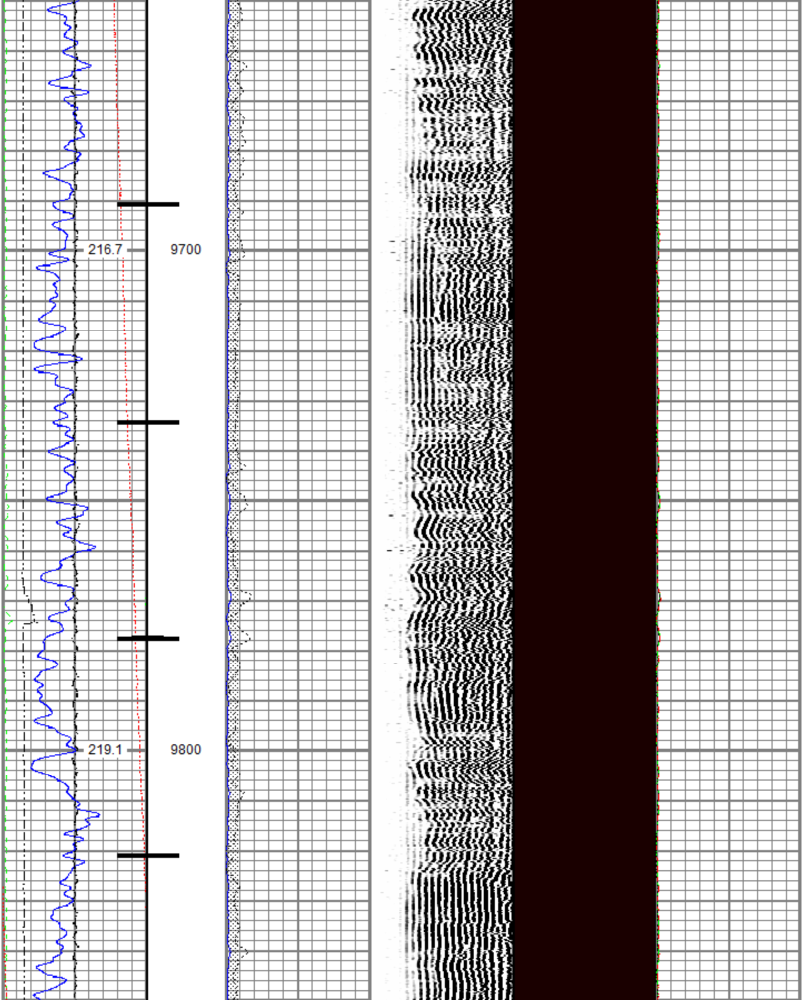


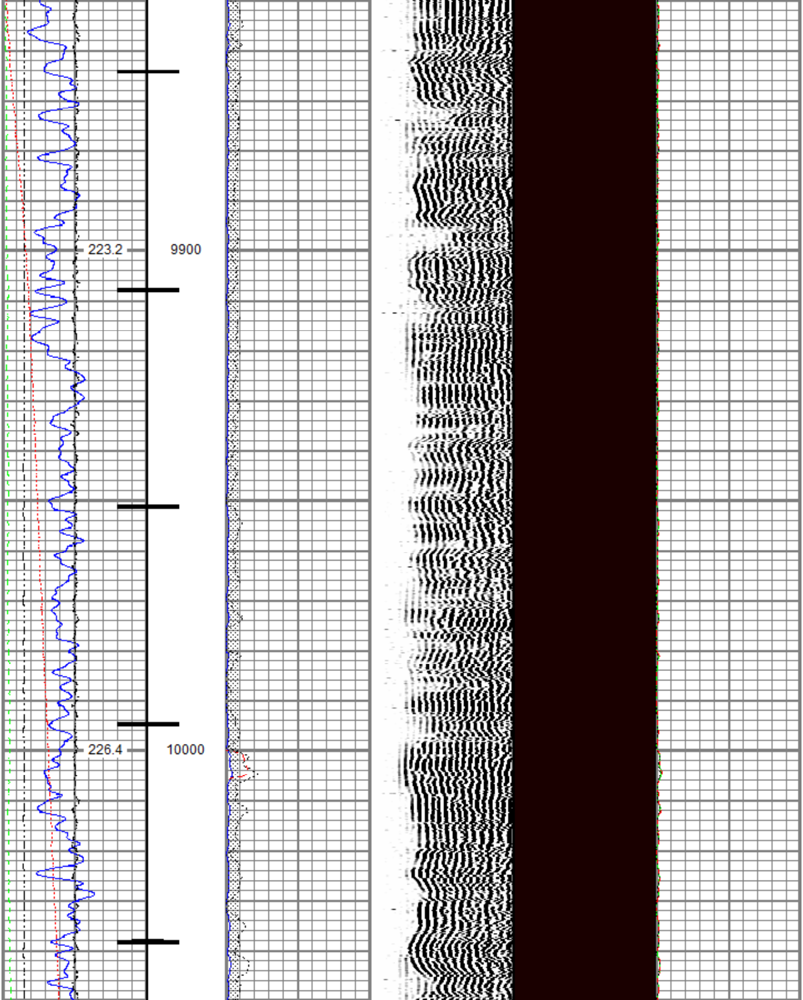


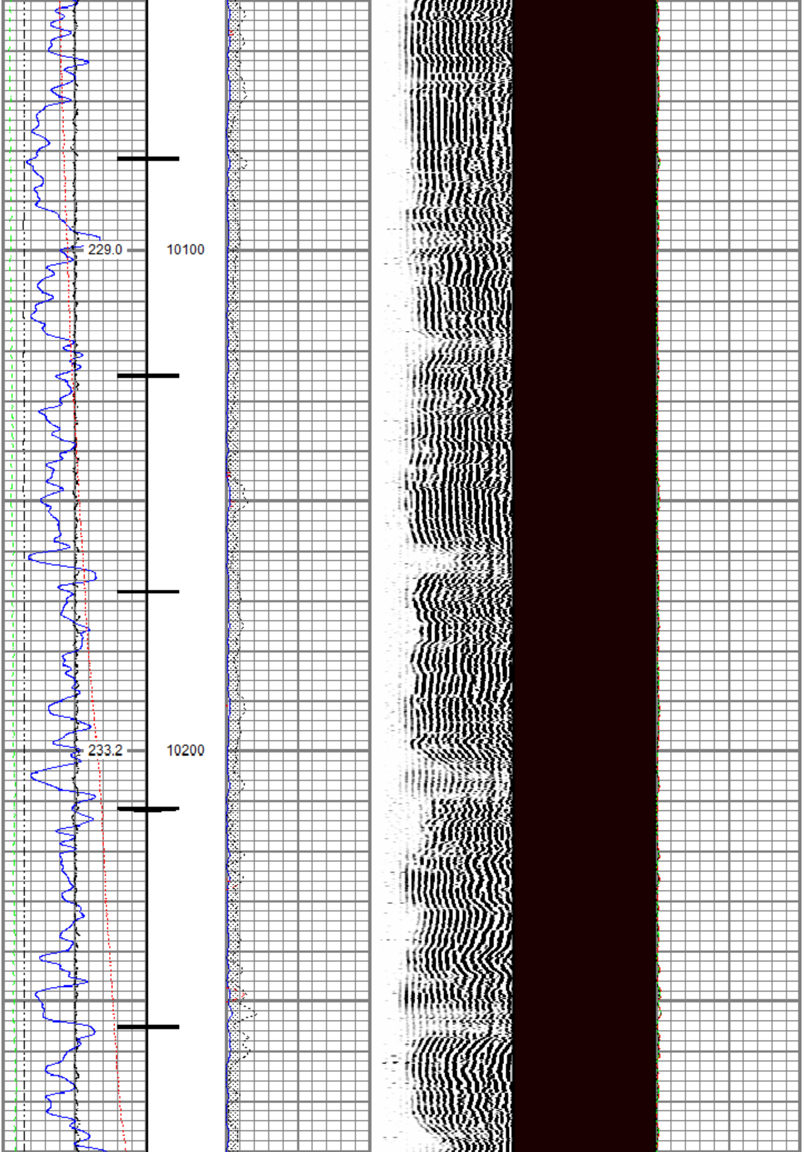


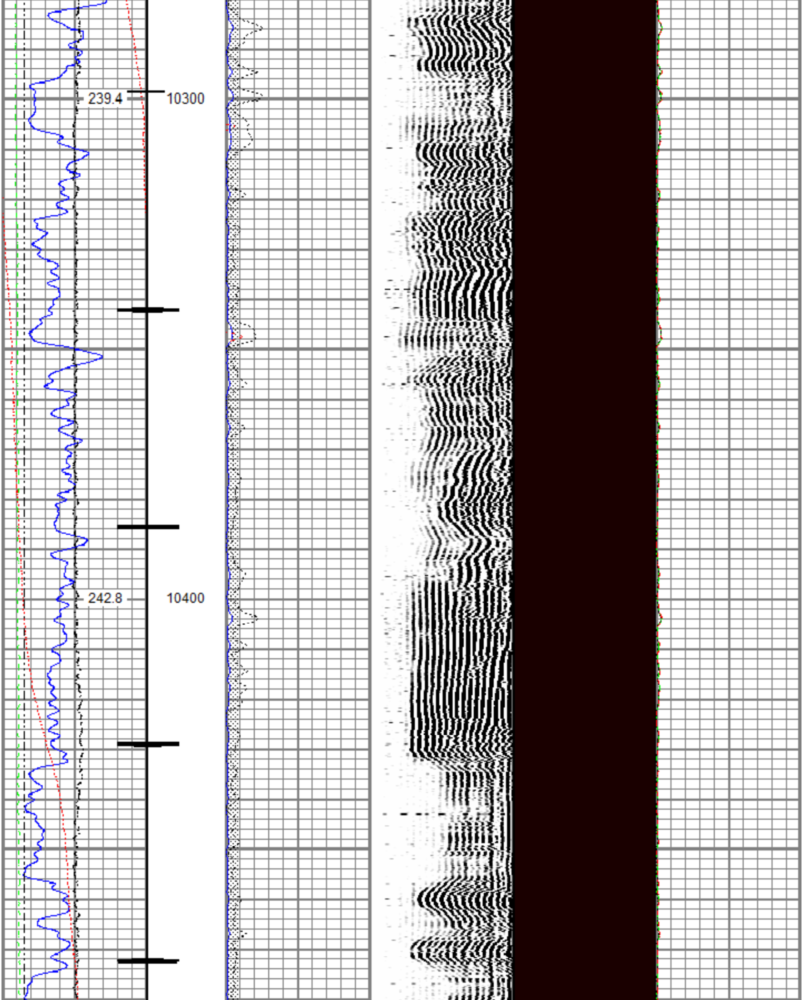


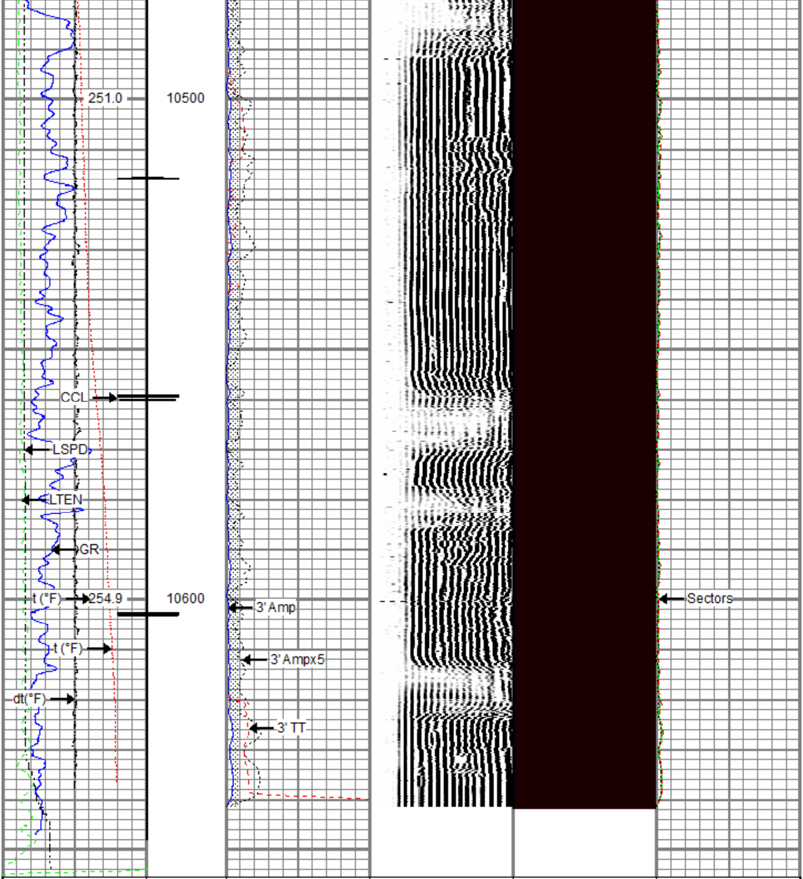












Gamma Ray 0 (GAPI) 200		3' Amplitude 0 (mV) 100	5' Variable Density Log 200 (usec) 1200	Sector Map	Average Amplitude 0 150
Line Speed -150 (ft/min) 150		3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000		3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential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

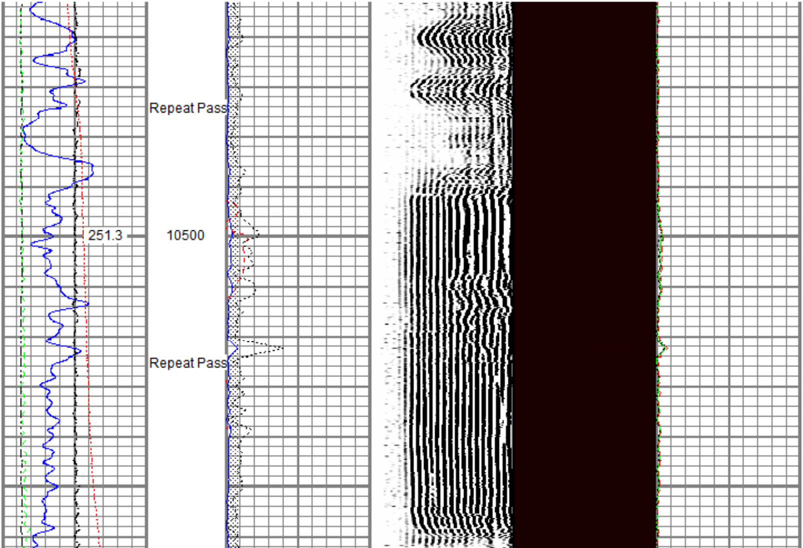
RELIANCE
OILFIELD SERVICES

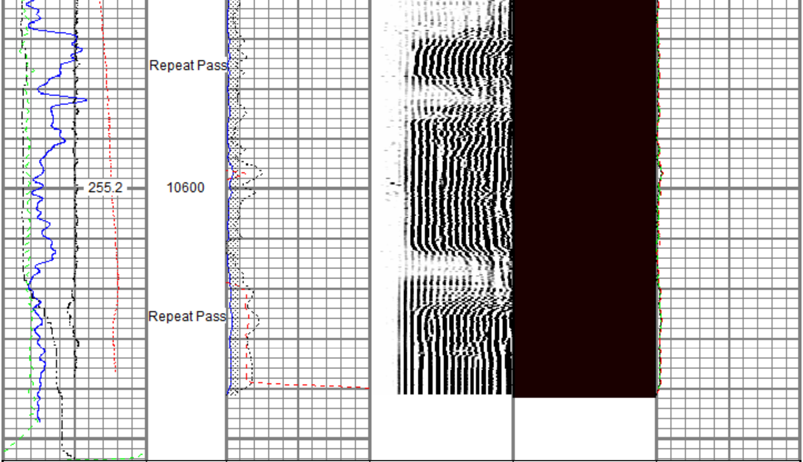
Repeat Pass

Recorded with 0 PSI Surface Induced Pressure

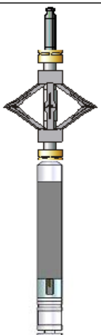
Database File	tep\federal ru 313-17\rbl\tep_federal ru 313-17_rbl_04-23-18.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Apr 24 10:16:42 2018
Charted by	Depth in Feet scaled 1:240

Curve	Left	Unit	Right
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	(usec)	1200
Sector Map			
Average Amplitude	0		150
MimimumAmplitude	0		150
MaximumAmplitude	0		150

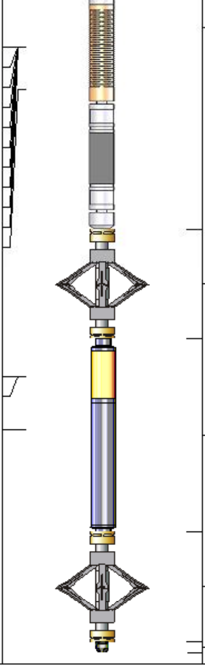




Gamma Ray 0 (GAPI) 200		3' Amplitude 0 (mV) 100	5' Variable Density Log 200 (usec) 1200	Sector Map	Average Amplitude 0 150
Line Speed -150 (ft/min) 150		3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 150
Line Tension 0 (lb) 2000		3' Travel Time 300 (usec) 200			Maximum Amplitude 0 150
Differential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

WVFS1	14.10
WVFS8	14.10
WVFS7	14.10
WVFS6	14.10
WVFS5	14.10
WVFS4	14.10
WVFS3	14.10
WVFS2	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 (27125) 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 ru 313-17_rbl_04-23-18.db: field/well/run1/merge1
Total length:	22.82 ft
Total weight:	260.60 lb
O.D.:	2.75 in

Calibration Report

Database File	c:\programdata\warrior\data\tep\federal ru 313-17\rbl\tep_federal ru 313-17_rbl_04-23-18.db
Dataset Pathname	merge1
Dataset Creation	Tue Apr 24 10:11:00 2018

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:	27125	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	32.948	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.008	0.691	0.000	81.196	116.013	0.977
CAL	-0.006	0.743				
5'	-0.007	0.668	0.000	81.196	120.304	0.807
SUM						
S1	-0.008	0.739	0.000	100.000	133.914	1.061
S2	-0.007	0.739	0.000	100.000	133.914	1.003
S3	-0.010	0.729	0.000	100.000	135.373	1.376
S4	-0.007	0.757	0.000	100.000	130.846	0.922
S5	-0.009	0.770	0.000	100.000	128.414	1.104
S6	-0.009	0.765	0.000	100.000	129.270	1.120
S7	-0.009	0.747	0.000	100.000	132.207	1.249
S8	-0.006	0.786	0.000	100.000	126.320	0.714

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.006	0.743	1.000	0.000

Air Zero Calibration, performed Mon Apr 23 15:05:26 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.000	0.000	-0.005
5'	0.000	0.000	-0.003
SUM			
S1	0.000	0.000	-0.005
S2	0.000	0.000	-0.005
S3	0.000	0.000	-0.005
S4	0.000	0.000	-0.005
S5	0.000	0.000	-0.004
S6	0.000	0.000	-0.005
S7	0.000	0.000	-0.005
S8	0.000	0.000	-0.004

Temperature Calibration Report

Serial Number:	27125	
Tool Model:	2750 RBT	
Performed:	(Not Performed)	
	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	

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal RU 313-17
Field	Rulison
County	Garfield
State	Colorado