RELIANCE OILFIELD SERVICES

Company TEP Rocky Mountain LLC
Well Federal PA 512-26
Field Parachute
County Garfield
State Colorado

Radial Cement Bond Gamma Ray Casing Collar Log

Company TEP Rocky Mountain LLC
Well Federal PA 512-26
Field Parachute
County Garfield State Colorado
Location: API # : 05-045-23723
SEC 26 TWP 6S RGE 95W
Other Services --

Permanent Datum Ground Level Elevation 5636.9'
Log Measured From Kelly Bushing 24 FT
Drilling Measured From Kelly Bushing
Elevation K.B. 5660.9' D.F. 5659.9' G.L. 5636.9'

Date	02-SEP-2018
Run Number	One
Depth Driller	8558 FT
Depth Logger	8498 FT
Bottom Logged Interval	8484 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	234°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	09:10
Equipment Number	HD-0359
Location	Grand Junction, CO
Recorded By	A. Ellsworth
Witnessed By	J.Skalla

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	1128 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	8516 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 4447 FT to 4470 FT
Log ran from 8484 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!

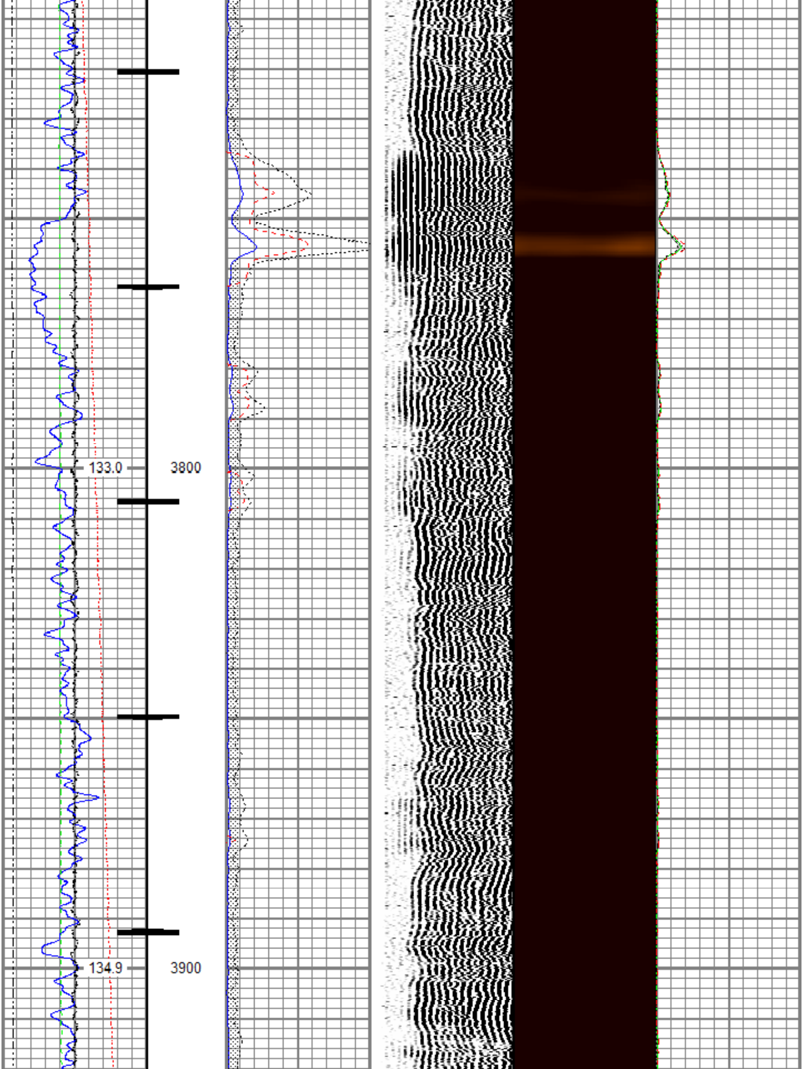
RELIANCE OILFIELD SERVICES

Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\federal pa 512-26\tep_federal pa 512-26_rbl_09-02-18.db
Dataset Pathname	main.3
Presentation Format	ros_rbt004_tep
Dataset Creation	Sun Sep 02 16:34:10 2018
Charted by	Depth in Feet scaled 1:240

Track 1	Track 3	Track 4	Track 5	Track 6
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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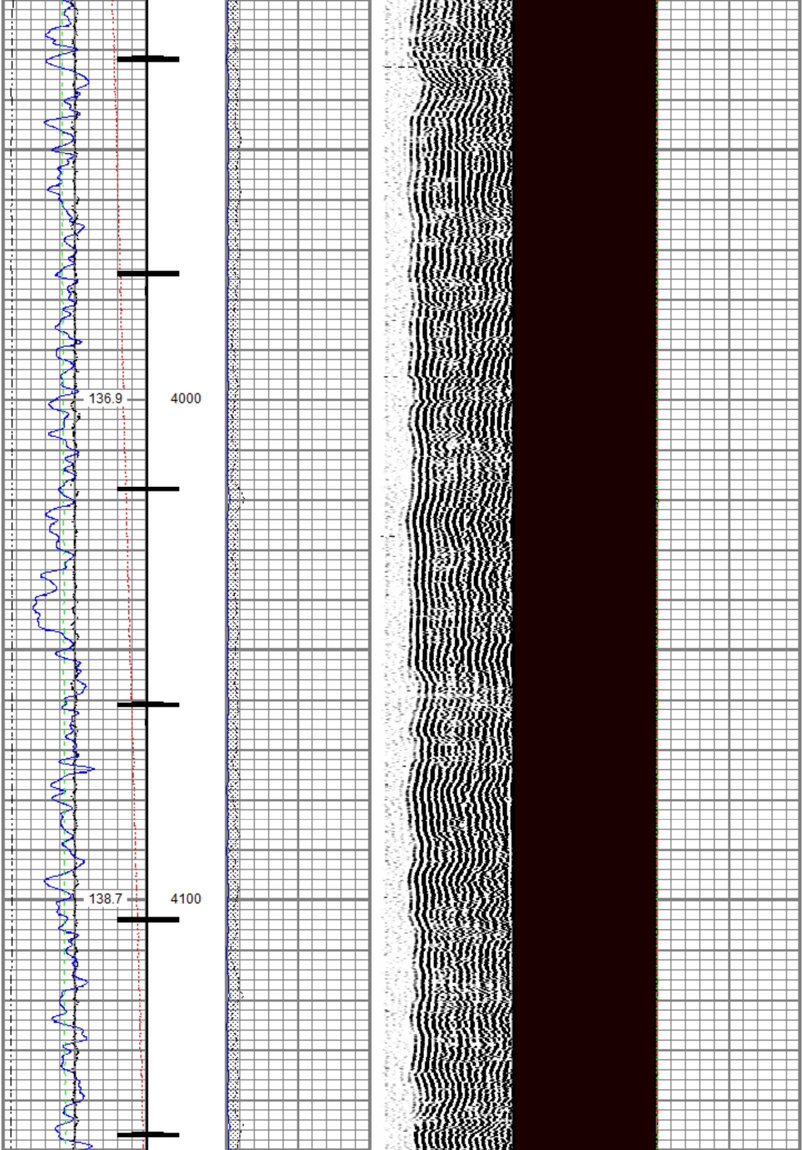
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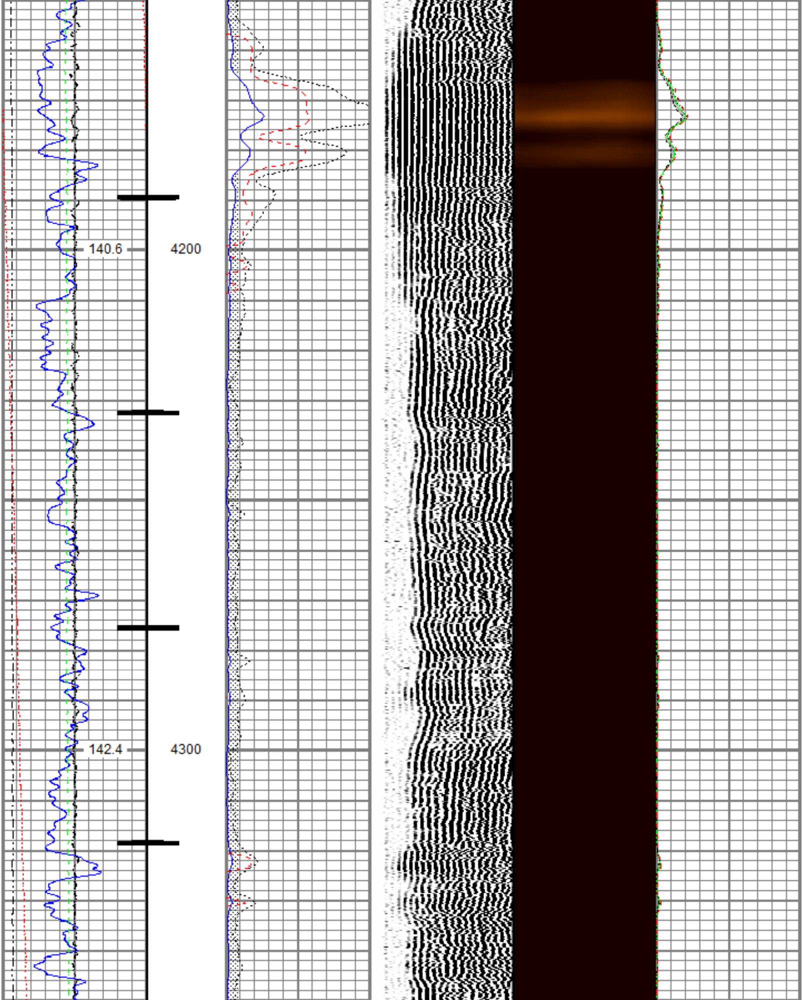
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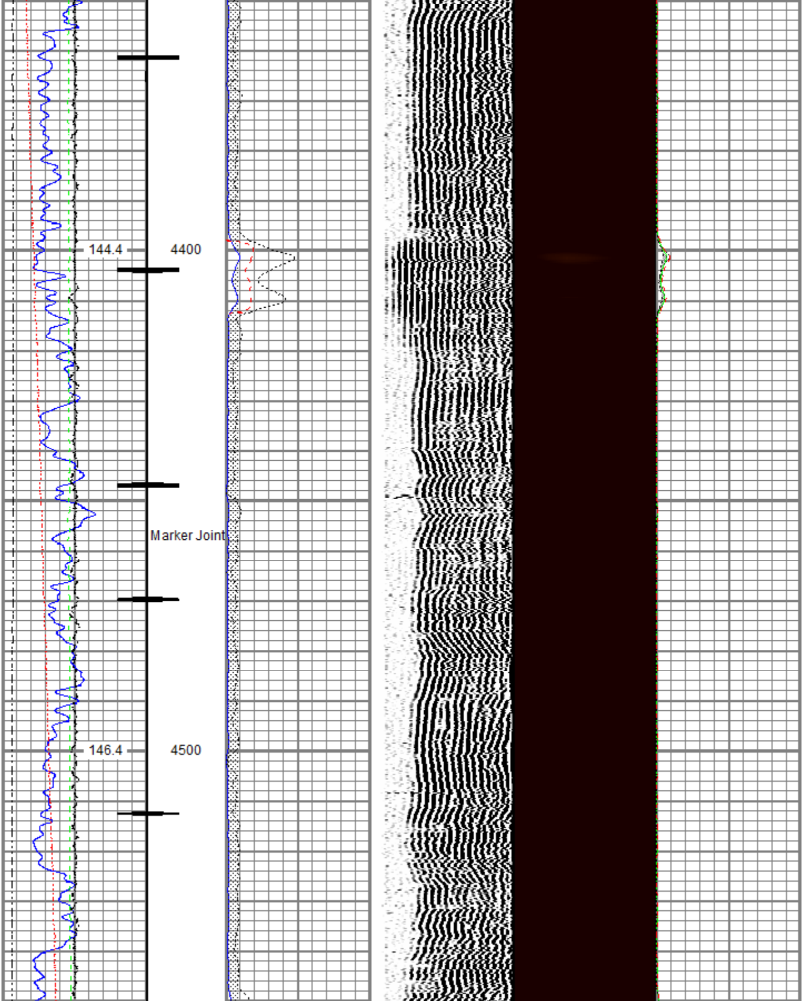
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Marker Joint
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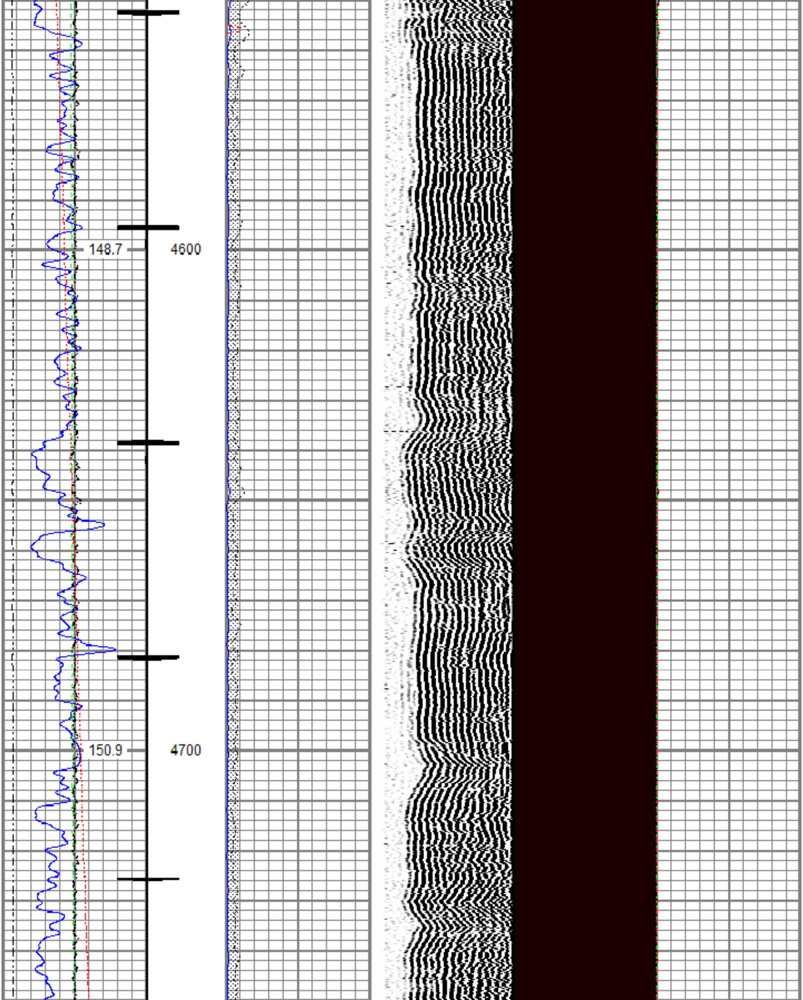
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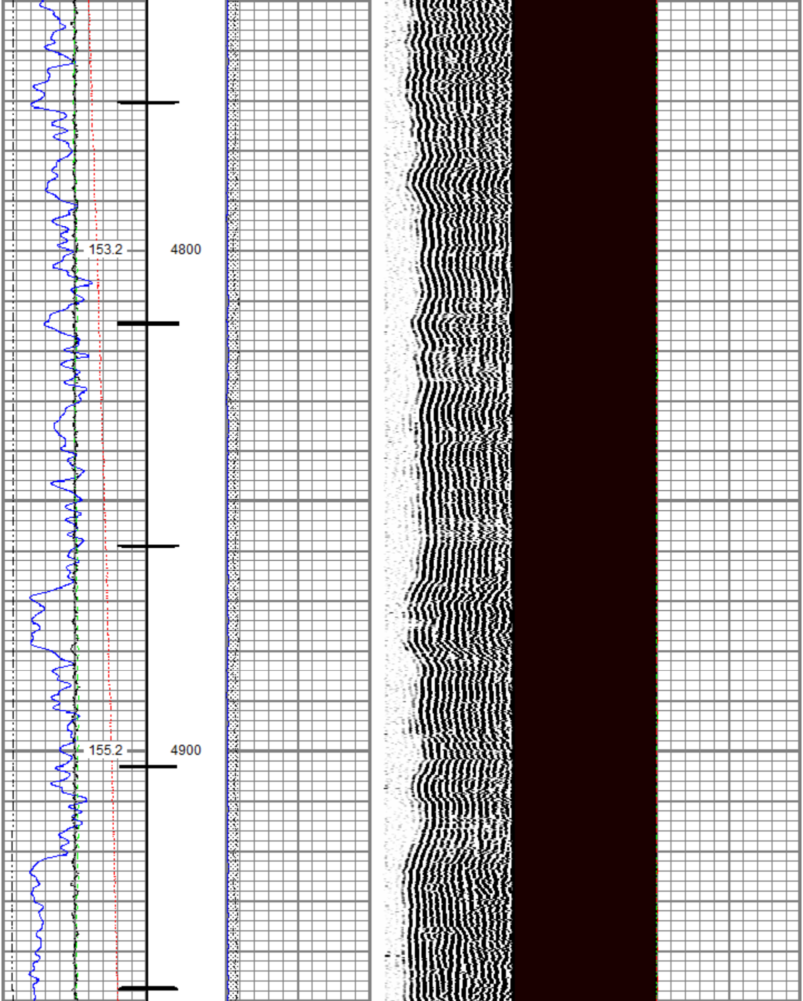
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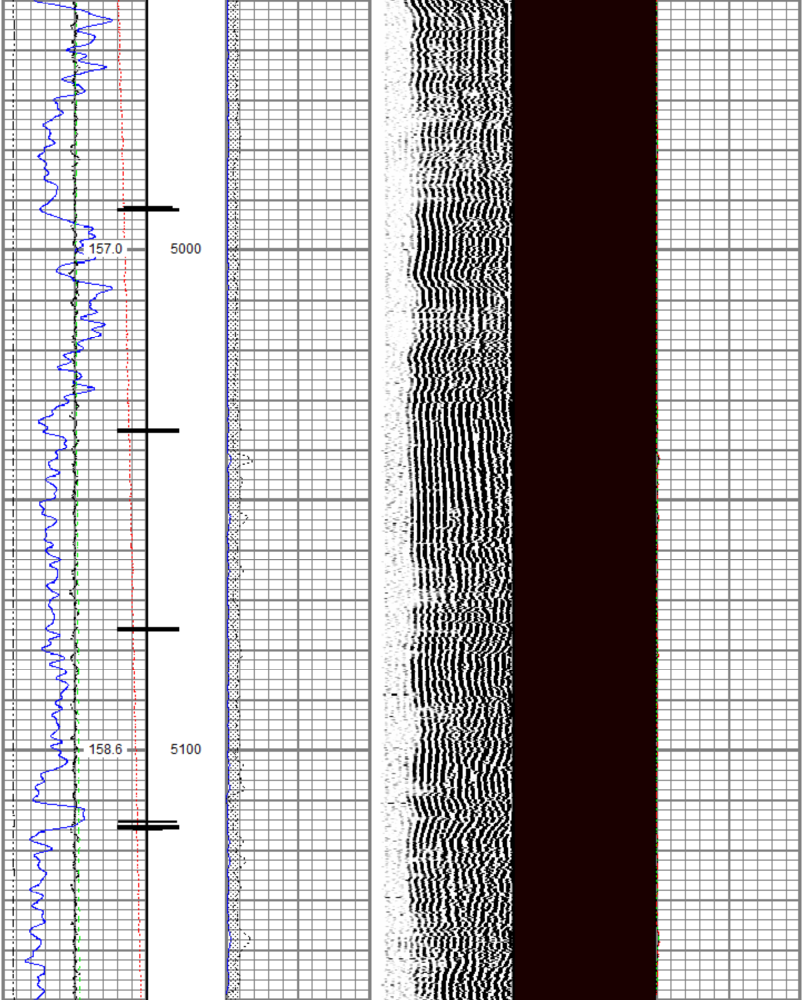
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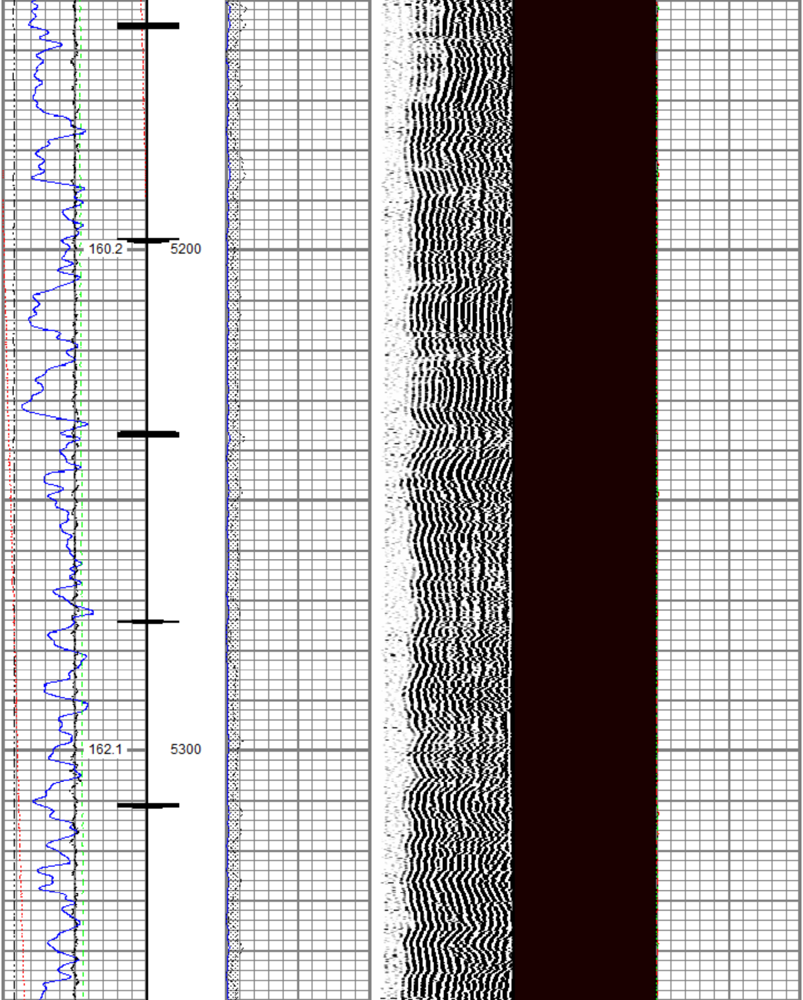
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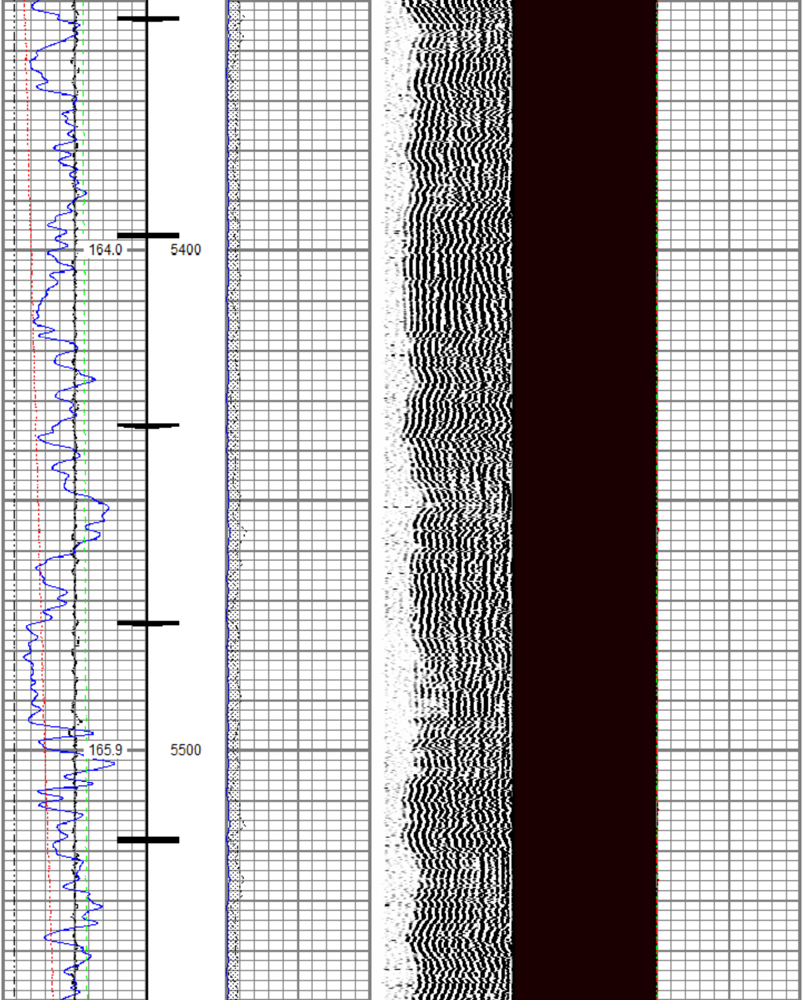
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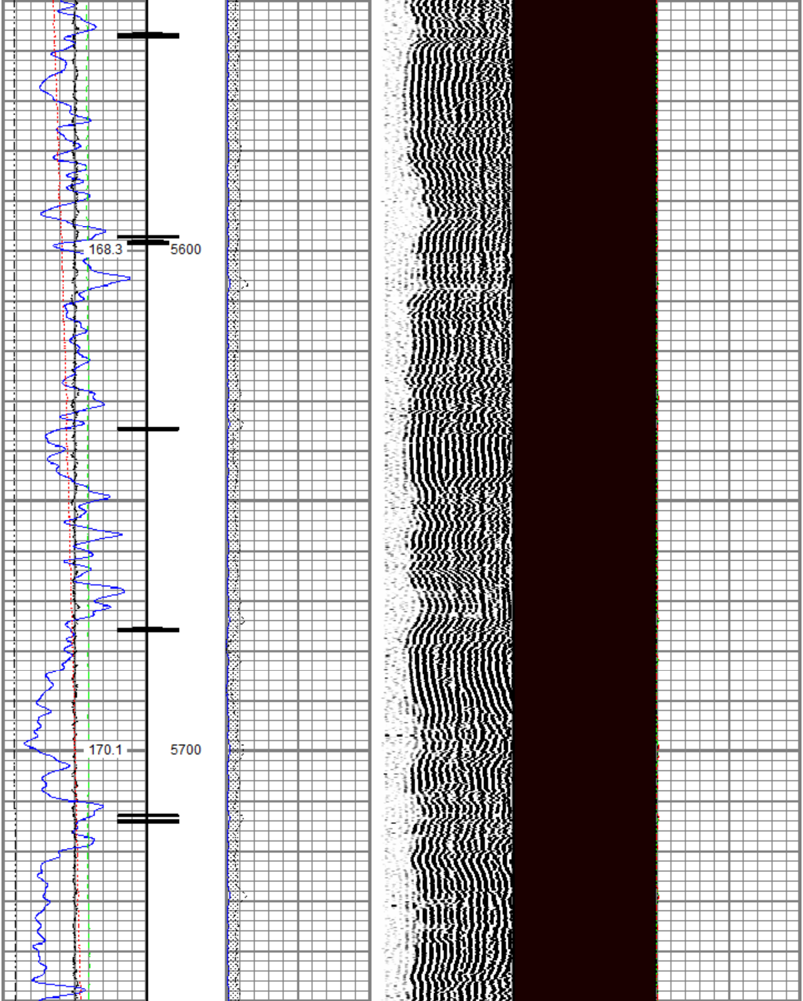
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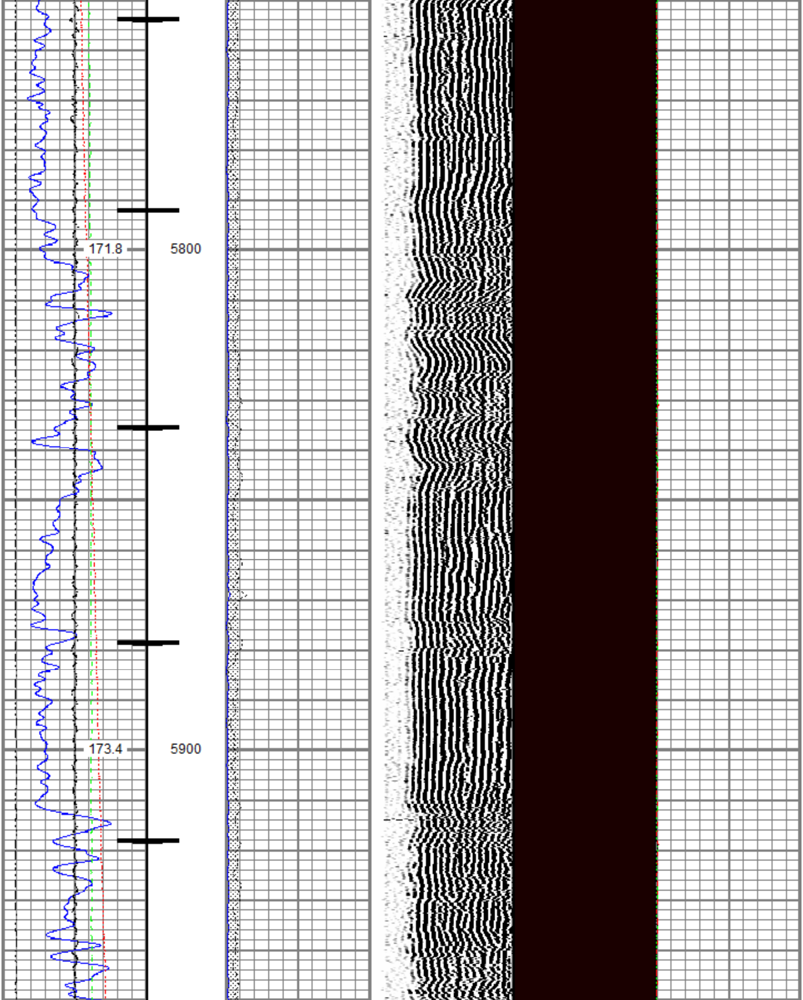
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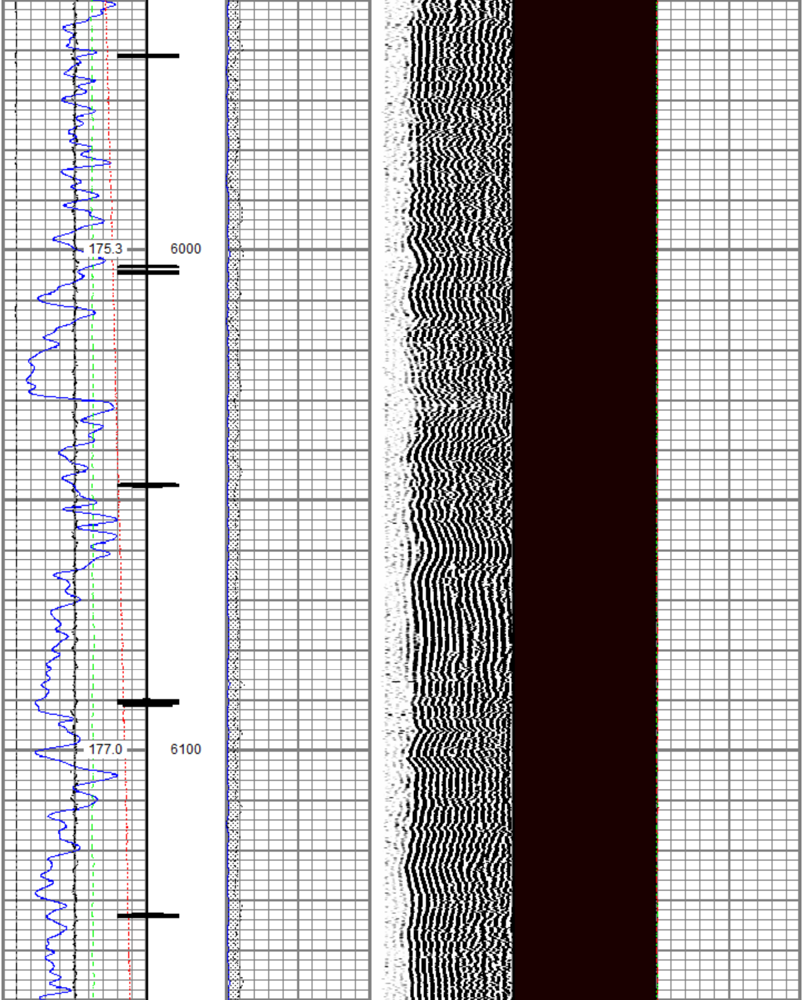
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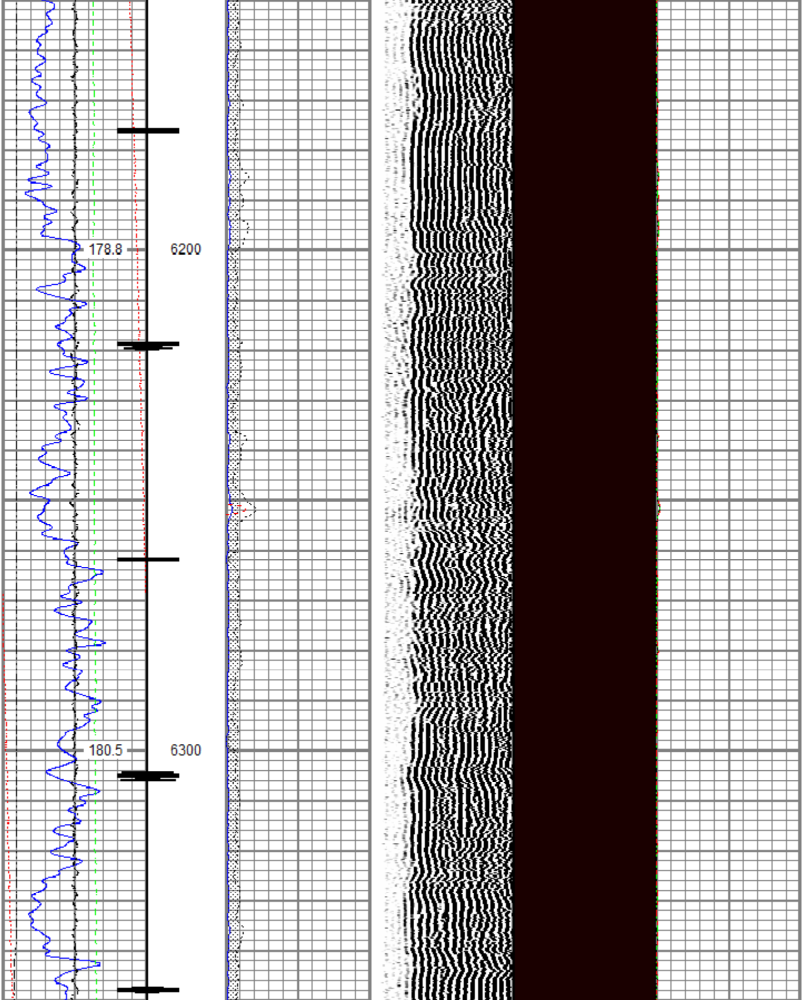
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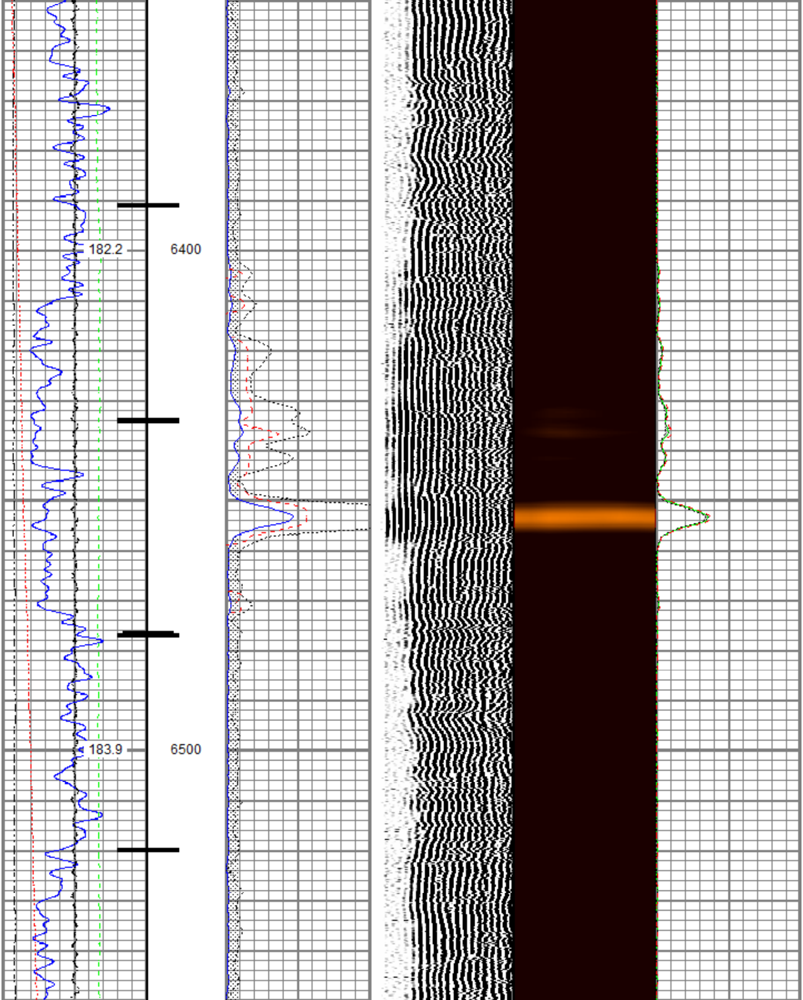
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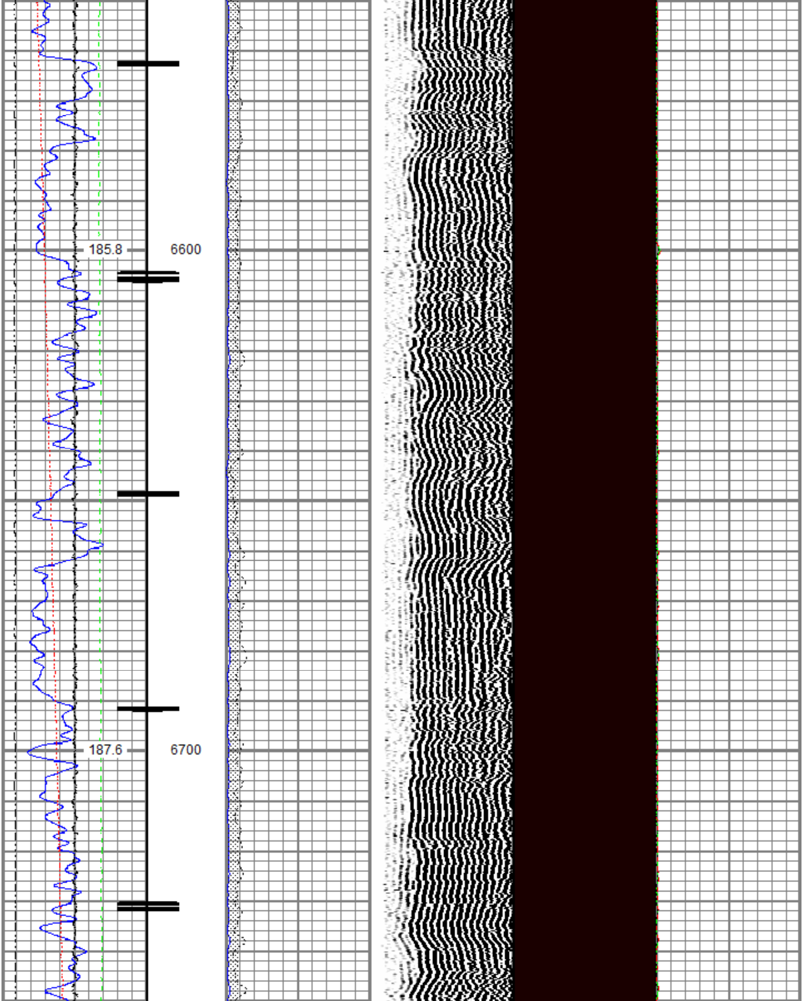
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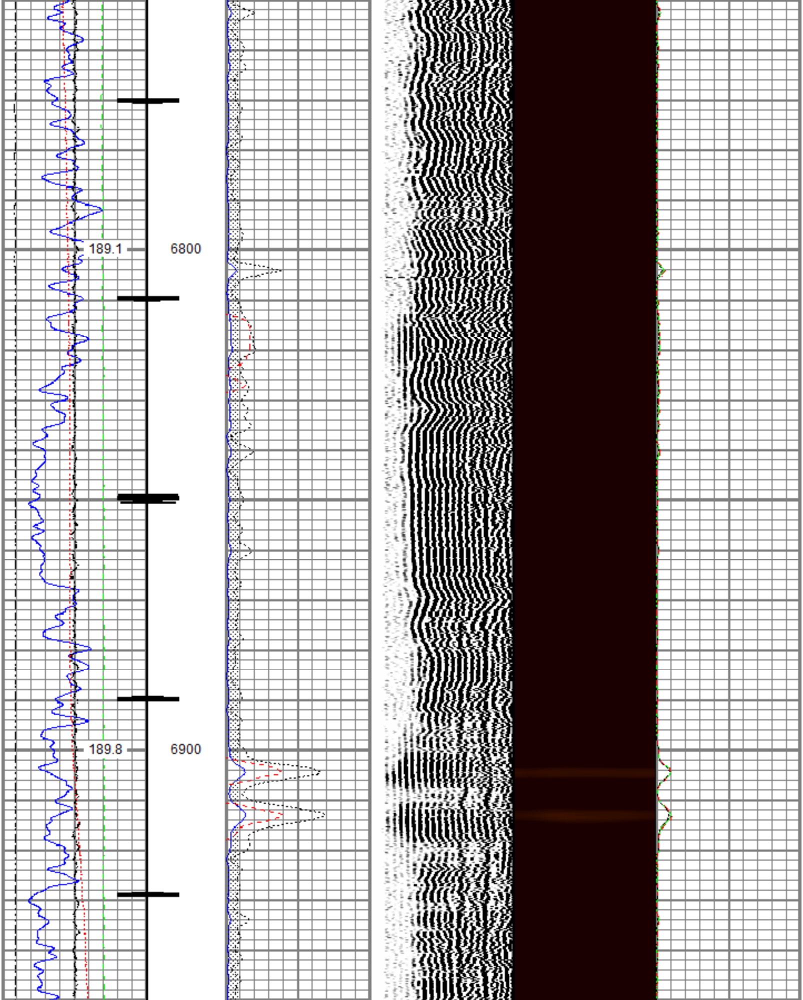
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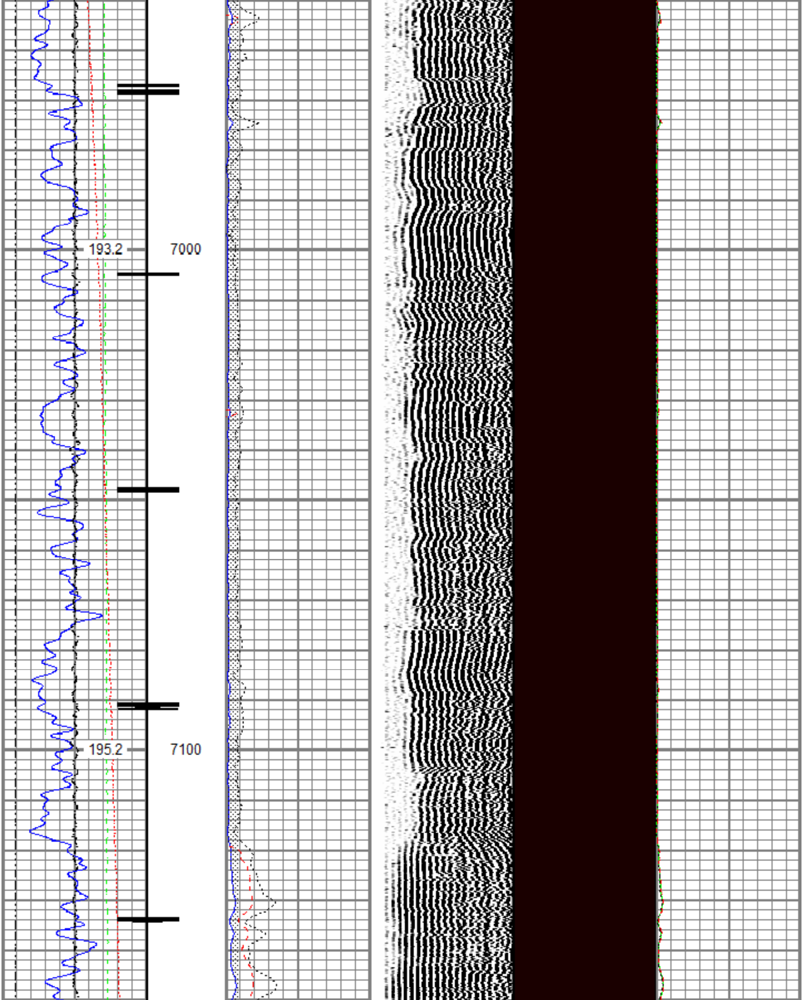
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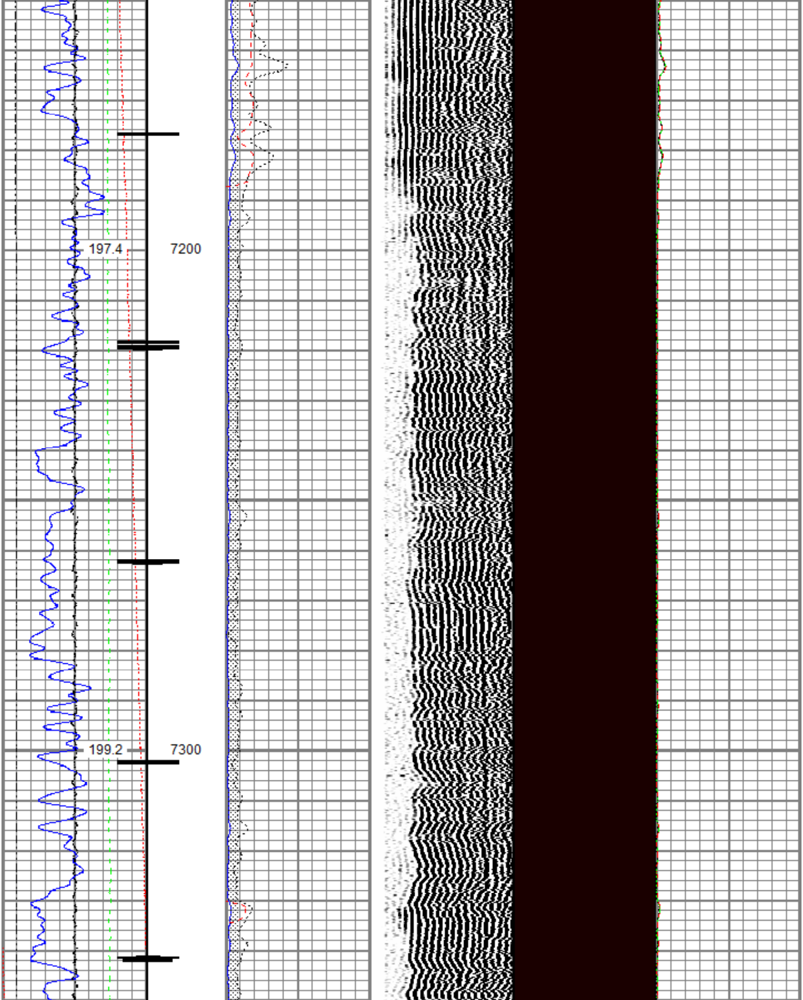
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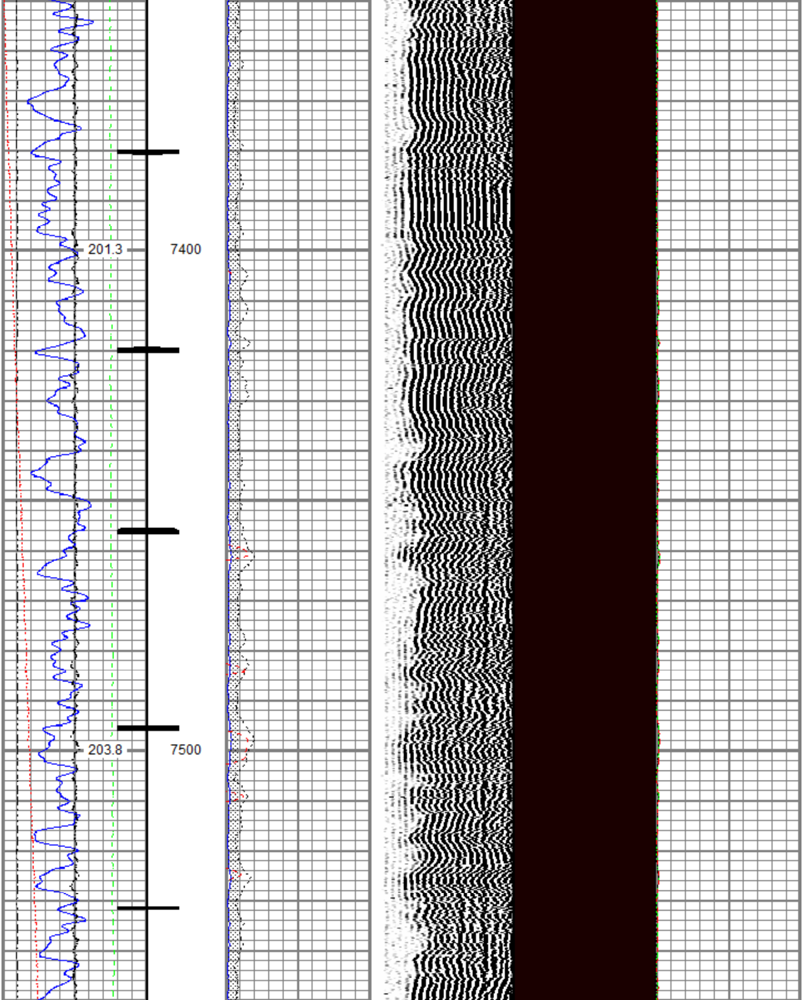
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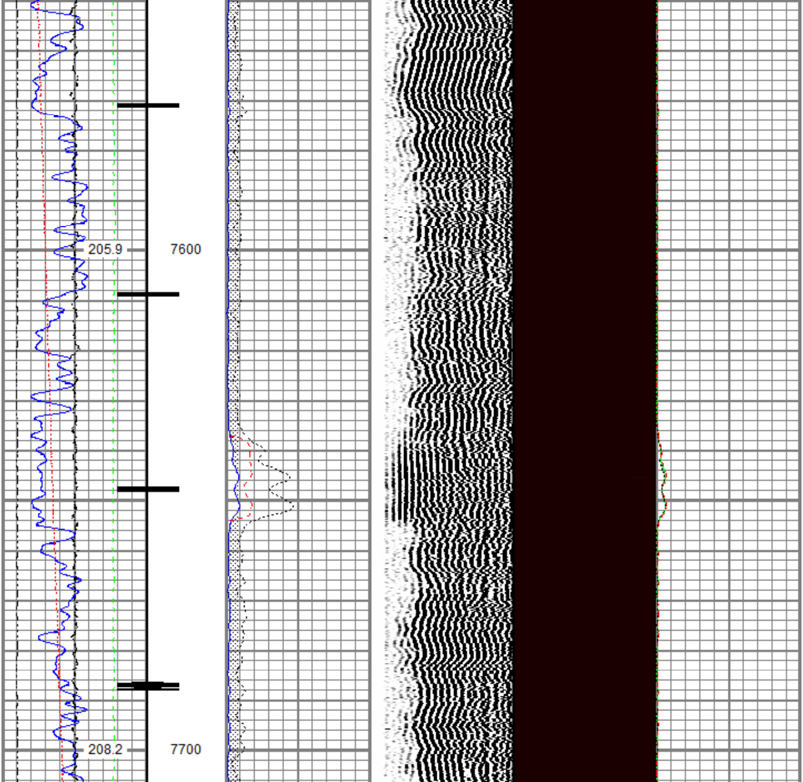
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Gamma Ray 0 (GAPI) 200 Line Speed -150 (ft/min) 150 Line Tension 0 (lb) 2000 Differential Temperature -2 (degF) 2 Temperature 0 (degF) 20 10 CCL 0		3' Amplitude 0 (mV) 100 3' Amplitude x 5 0 (mV) 20 3' Travel Time 300 (usec) 200	5' Variable Density Log 200 (usec) 1200	Sector Map	Average Amplitude 0 150 Mimimum Amplitude 0 150 Maximum Amplitude 0 150

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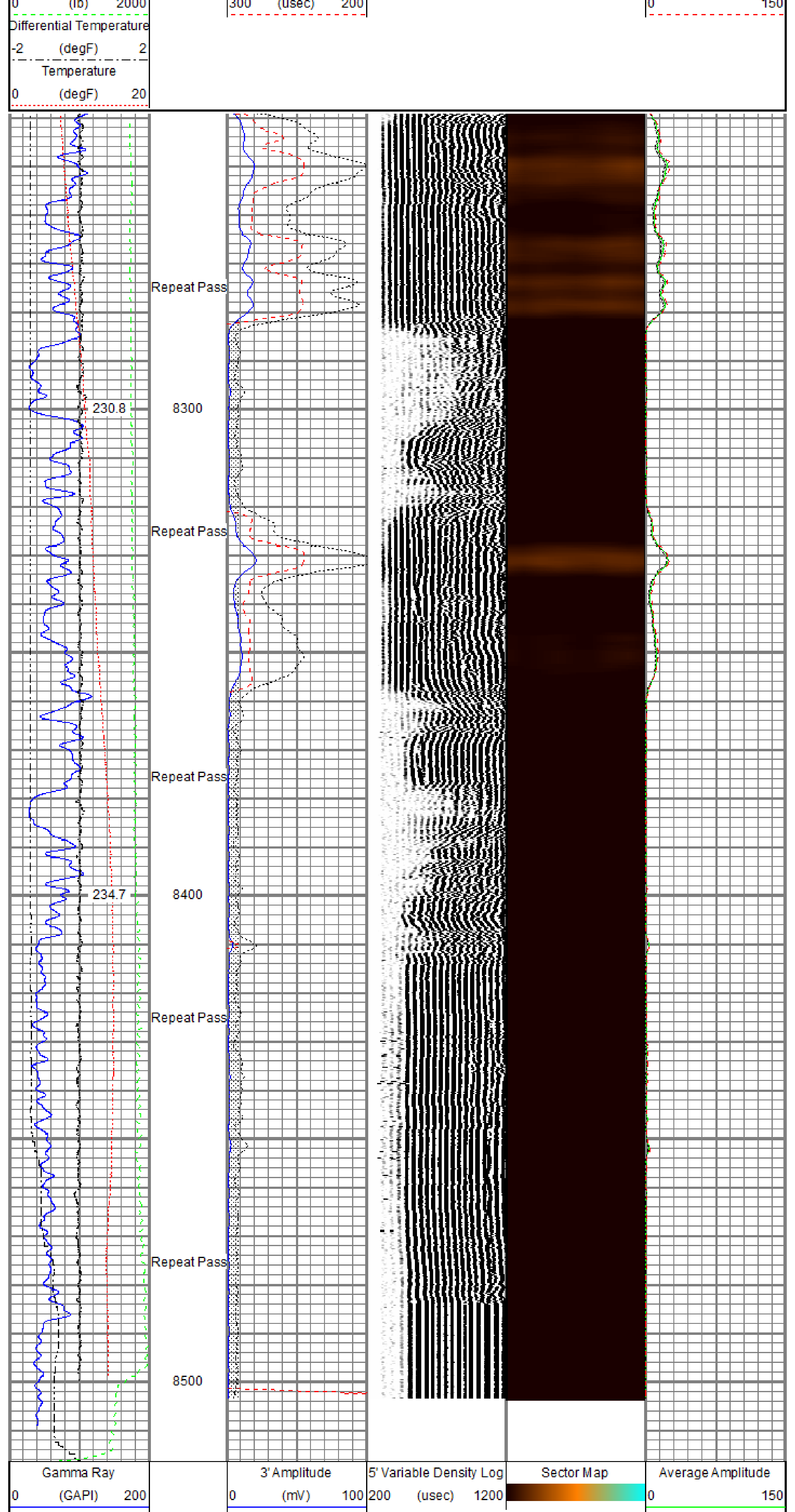
Repeat Pass

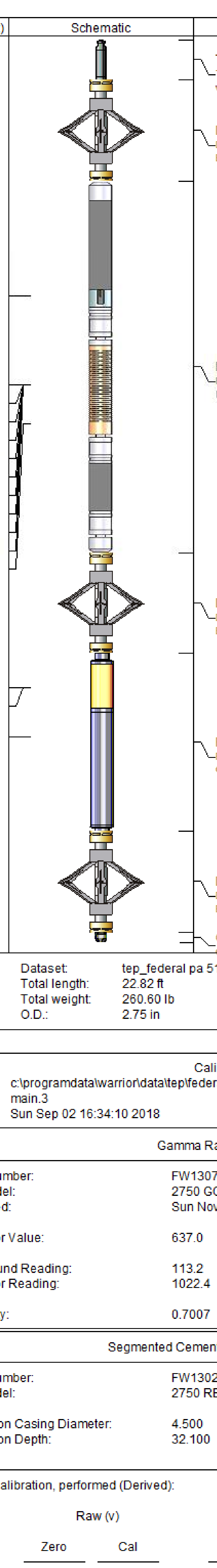
Recorded With 0 PSI Surface Induced Pressure

Database File	tep\federal pa 512-26\tep_federal pa 512-26_rbl_09-02-18.db
Dataset Pathname	Repeat 1
Presentation Format	ros_rbt004_tep
Dataset Creation	Sun Sep 02 16:42:49 2018
Charted by	Depth in Feet scaled 1:240

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 Mimimum Amplitude 0 150 Maximum Amplitude 0 150



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 Mimimum Amplitude 0 150 Maximum Amplitude 0 150



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
CCLS2	6.42
CCLS1	6.42
GR	5.18

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 (FW1302-001) 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 pa 512-26_rbl_09-02-18.db: field/well/run1/main.3
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 pa 512-26\tep_federal pa 512-26_rbl_09-02-18.db
Dataset Pathname main.3
Dataset Creation Sun Sep 02 16:34:10 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:	FW1302-001	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	32.100	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.003	0.858	0.800	81.196	93.382	1.039
CAL	-0.005	0.740				
5'	0.004	0.733	0.800	81.196	110.240	0.359
SUM						
S1	-0.000	1.100	0.000	100.000	90.884	0.006
S2	-0.001	0.996	0.000	100.000	100.242	0.140
S3	-0.001	0.837	0.000	100.000	119.310	0.080
S4	-0.002	0.780	0.000	100.000	127.906	0.279
S5	-0.002	0.803	0.000	100.000	124.298	0.199
S6	-0.002	0.822	0.000	100.000	121.393	0.194
S7	-0.002	0.866	0.000	100.000	115.228	0.206
S8	-0.003	0.997	0.000	100.000	100.069	0.271

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	-0.005	0.740	1.000	0.000

Air Zero Calibration, performed Sun Sep 02 08:36:44 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.002	0.000	-0.000
5'	0.008	0.000	-0.001
SUM			
S1	-0.002	0.000	0.001
S2	-0.002	0.000	0.000
S3	-0.003	0.000	0.001
S4	-0.002	0.000	-0.000
S5	-0.003	0.000	-0.000
S6	-0.002	0.000	0.000
S7	-0.002	0.000	-0.000
S8	-0.002	0.000	-0.000

Temperature Calibration Report

Serial Number:	FW1302-001	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:24:58 2017	
	Reference	Reading
Low Reference:	100.00 degF	107.47 degF
High Reference:	350.00 degF	404.08 degF
Gain:	0.84	
Offset:	9.42	
Delta Spacing:	1	

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OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Federal PA 512-26
Field	Parachute
County	Garfield
State	Colorado