RELIANCE OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC
Well	Federal GM 41-10
Field	Grand Valley
County	Garfield
State	Colorado

Company TEP Rocky Mountain LLC
Well Federal GM 41-10
Field Grand Valley
County Garfield State Colorado

Location: API # : 05-045-22698
2102' FNL & 1936' FWL SENW
SEC 10 TWP 7S RGE 96W

Other Services
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			Elevation
Permanent Datum	Ground Level	Elevation 6148'	K.B. 6172'
Log Measured From	Kelly Bushing	24 FT	D.F. 6171'
Drilling Measured From	Kelly Bushing		G.L. 6148'

Date	09-OCT-2017
Run Number	One
Depth Driller	7902 FT
Depth Logger	7856 FT
Bottom Logged Interval	7856 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Fresh Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	192°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	16:10
Equipment Number	HD-359
Location	Grand Junction, CO
Recorded By	J.Donnelly
Witnessed By	D.Welsh

Borehole Record

Run Number	Bit	From	To

Tubing Record

Size	Weight	From	To

Casing Record	Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom
Surface Casing	9 5/8	32.3	H-40	Surface	1088 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	7866 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 at 3862 FT - 3883 FT
Log ran from 7856 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

Thank you for choosing Reliance Oilfield Services, LLC!!

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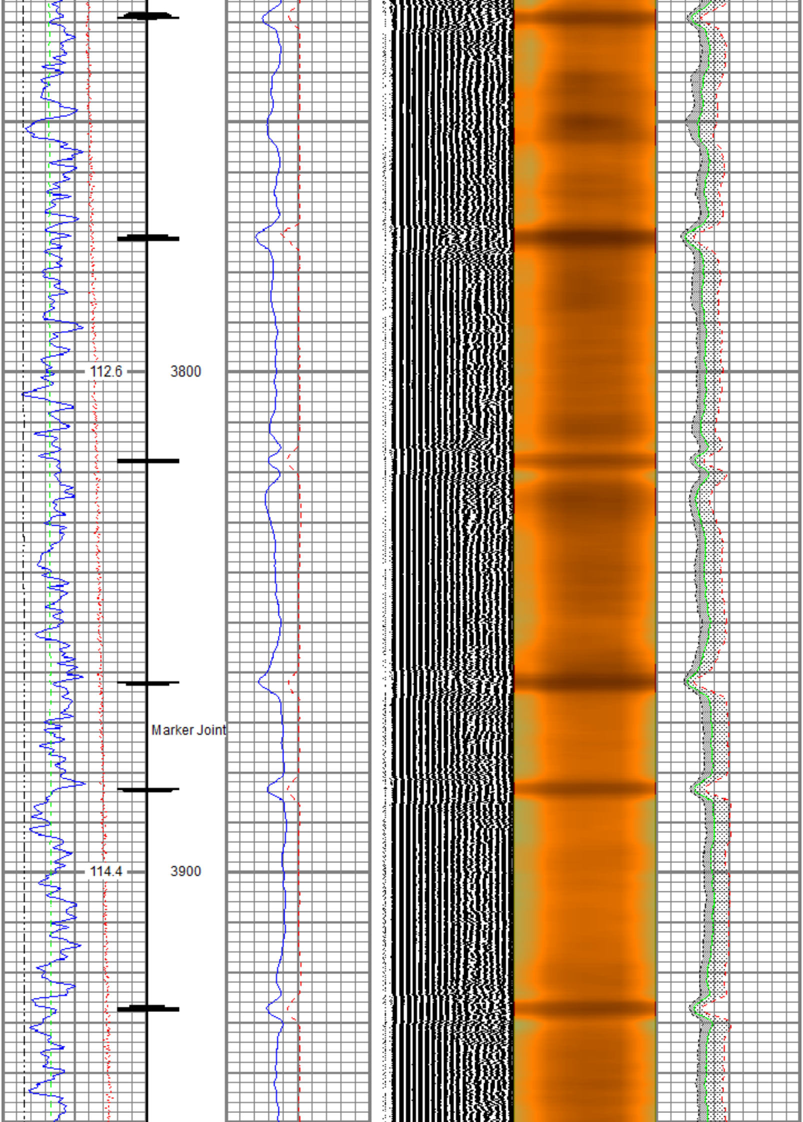
Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep_federal gm 41-10_rbl_10-09-17\processed_tep_federal gm 41-10_rbl_10-09-17.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Oct 10 11:09:07 2017
Charted by	Depth in Feet scaled 1:240

Track	Left	Unit	Right
Gamma Ray	0	(GAPI)	200
Casing Collar Locator			
Line Speed	-150	(ft/min)	150
Line Tension	0	(lb)	2000
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		1200
Sector Map	10		110
Average Amplitude	0		150
Mimimum Amplitude	0		150
Maximum Amplitude	0		150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Marker Joint
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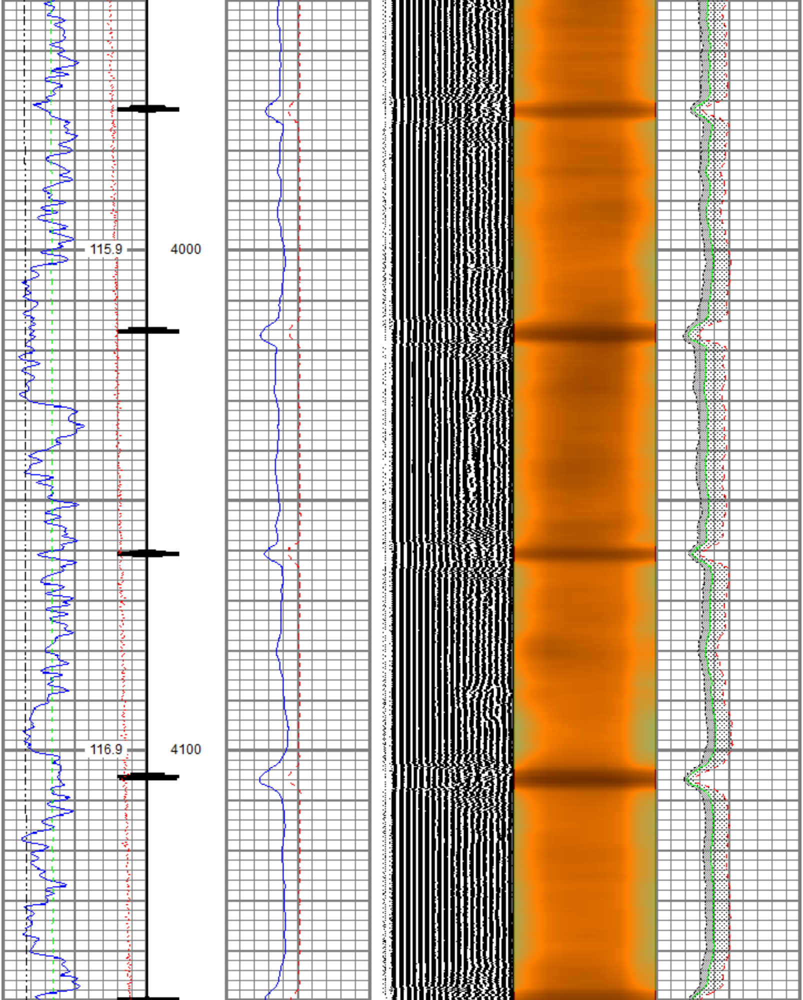
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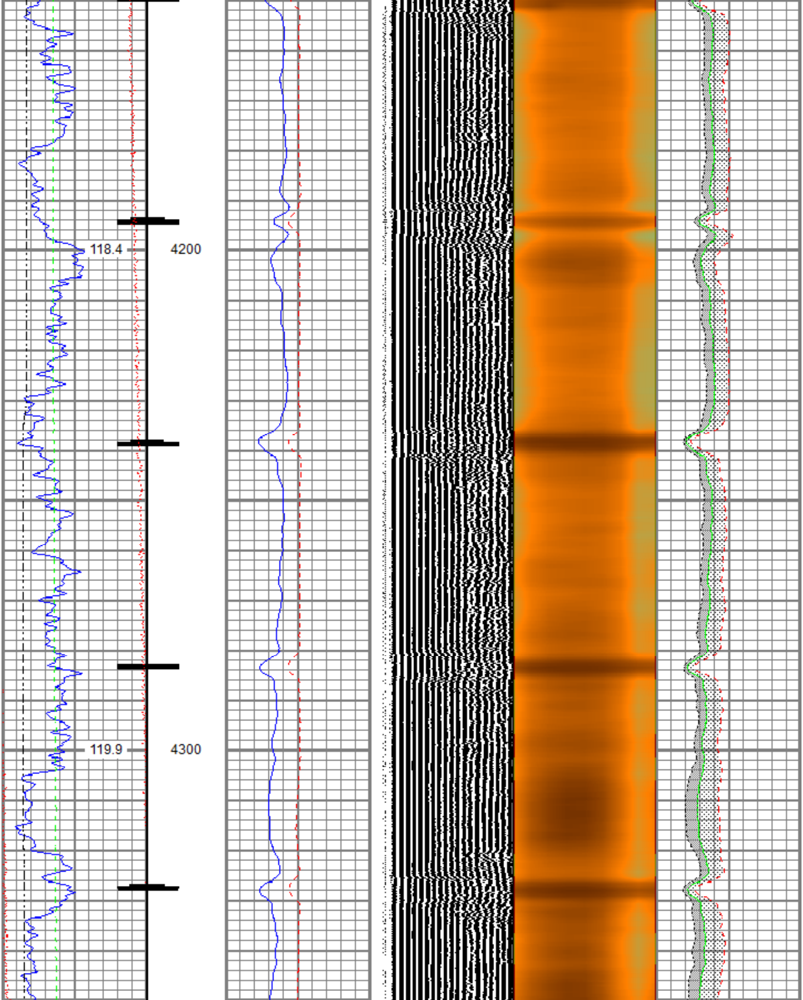
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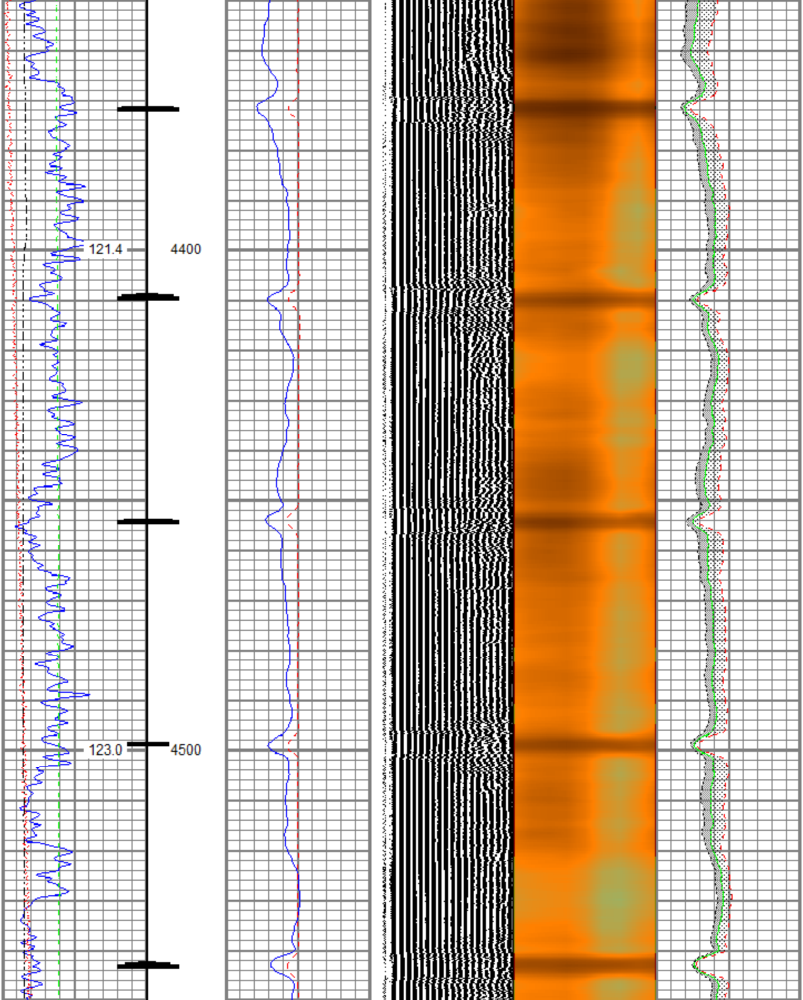
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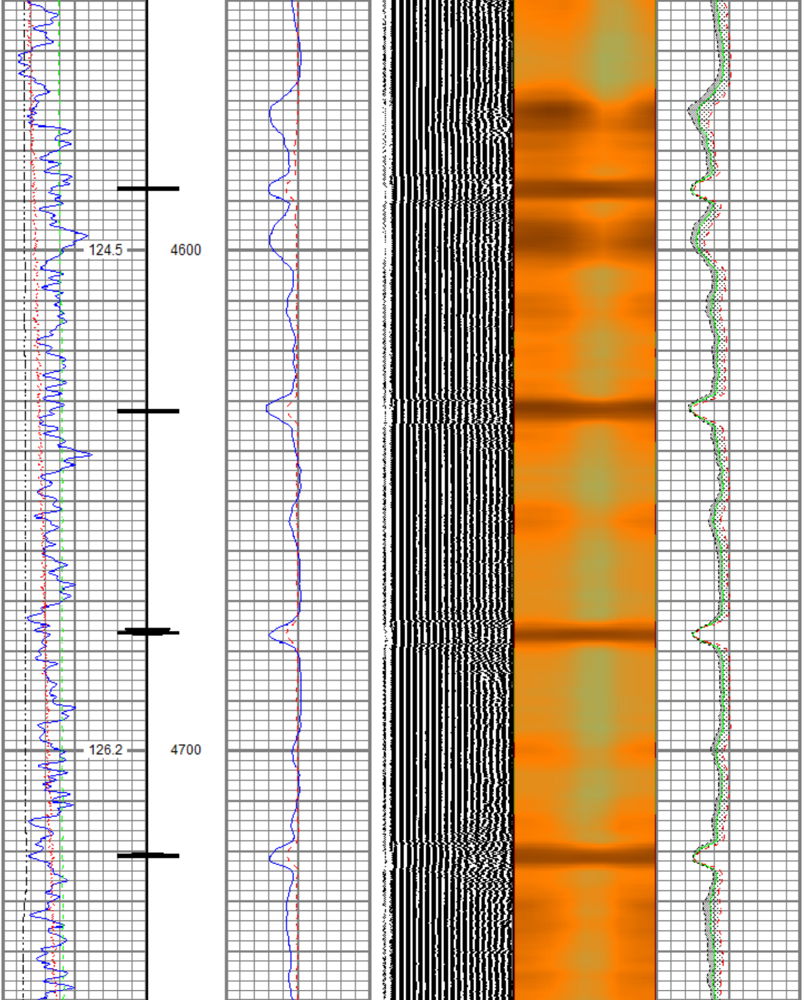
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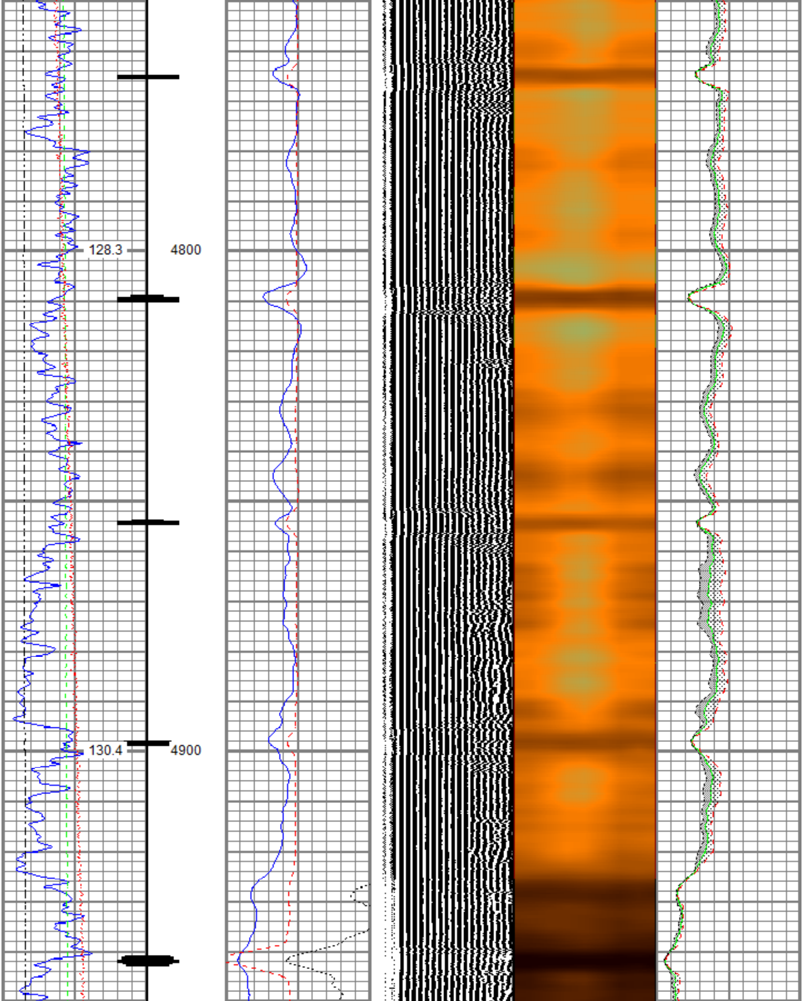
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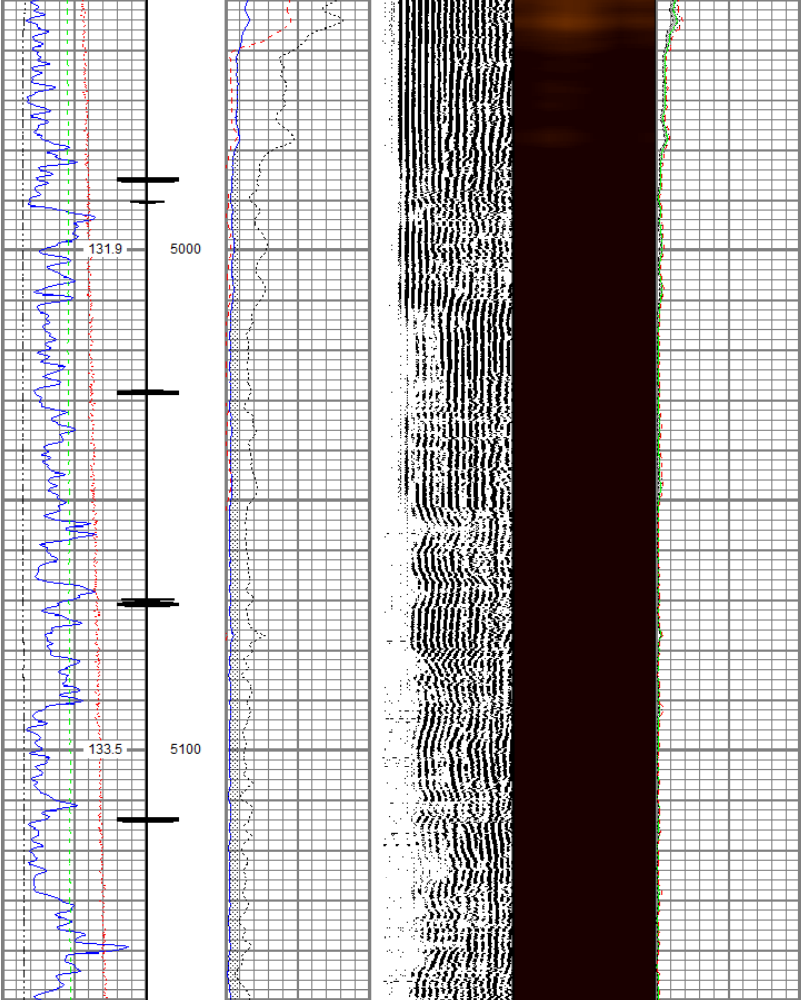
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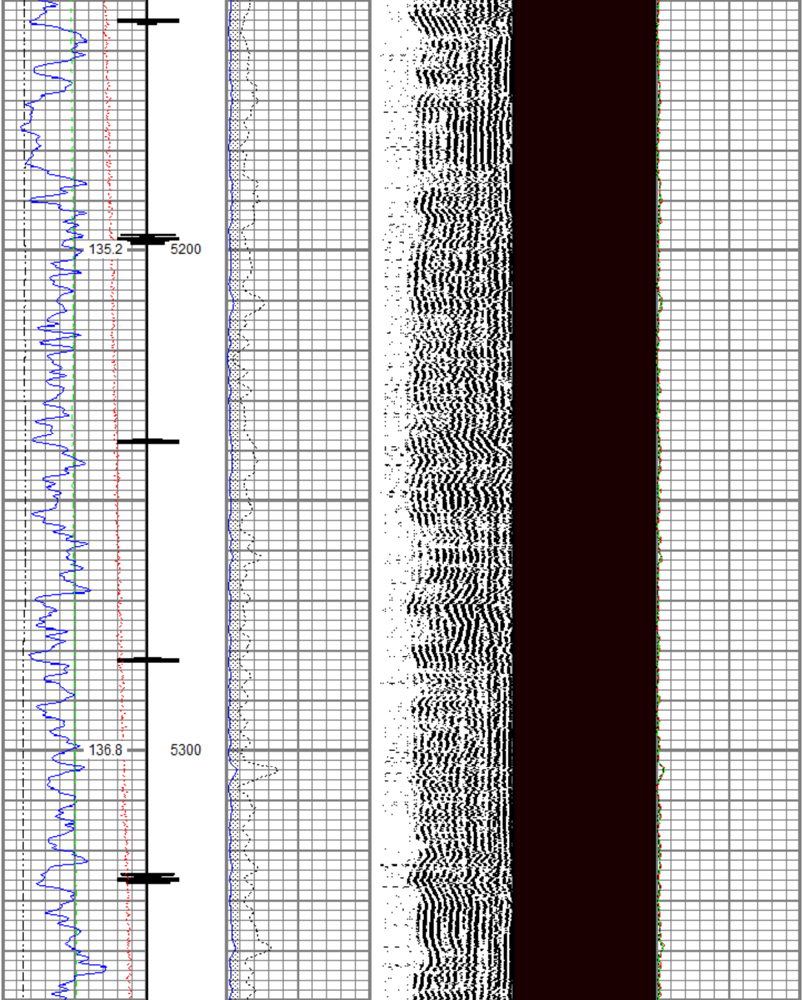
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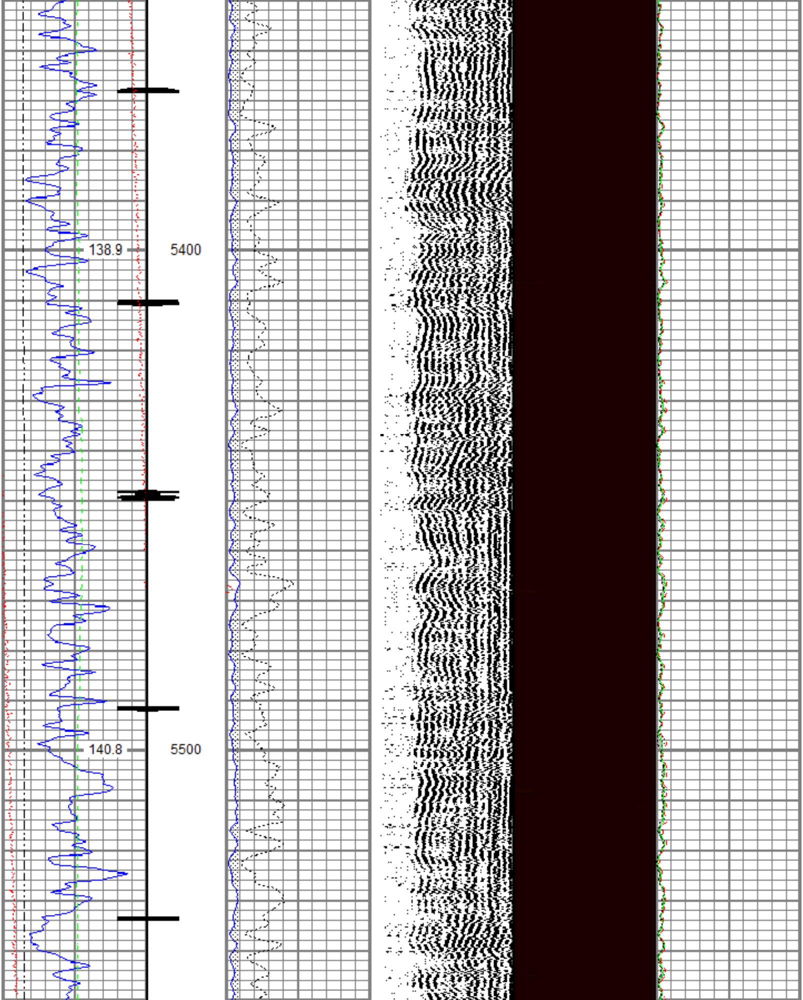
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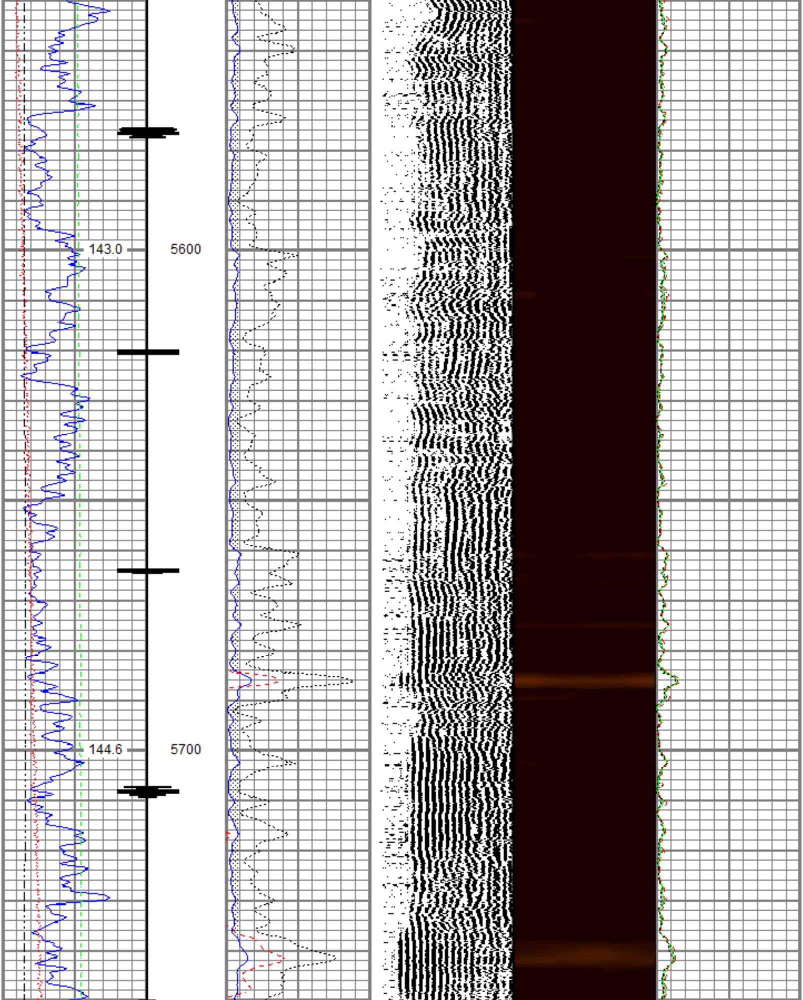
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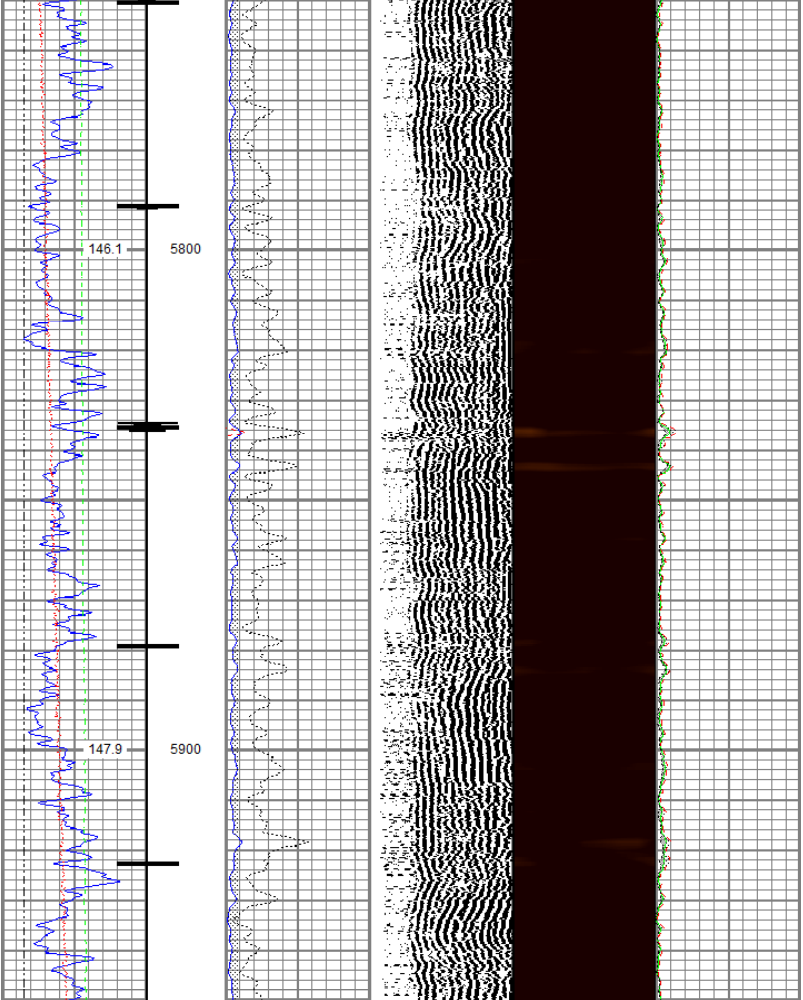
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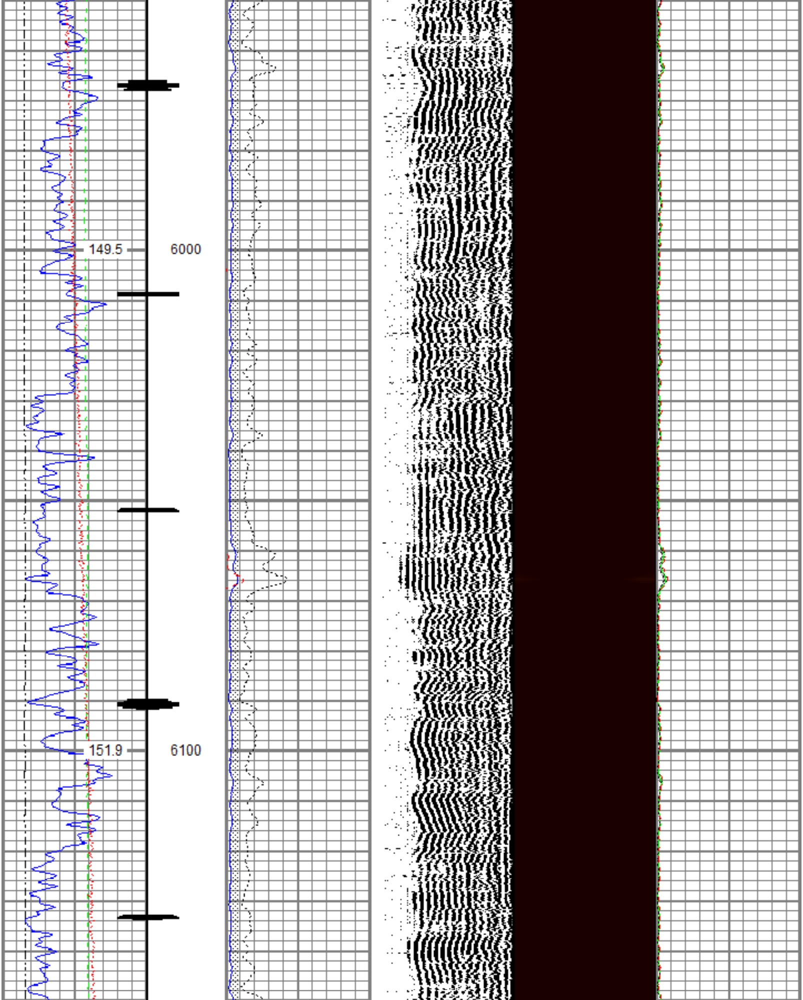
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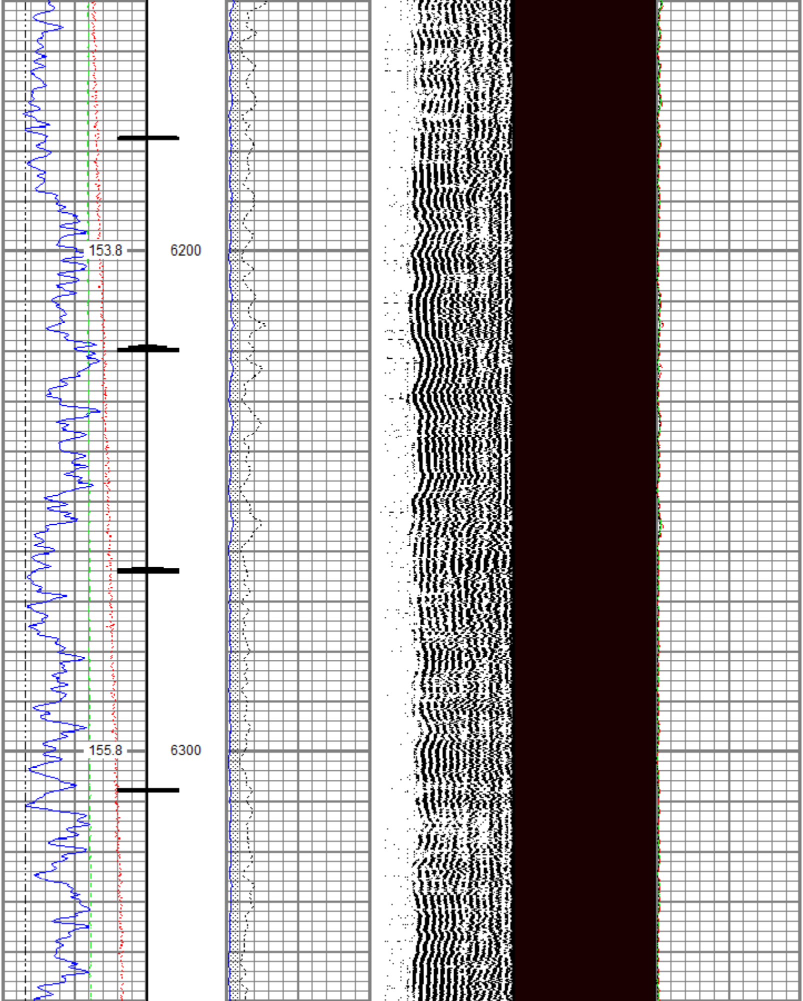
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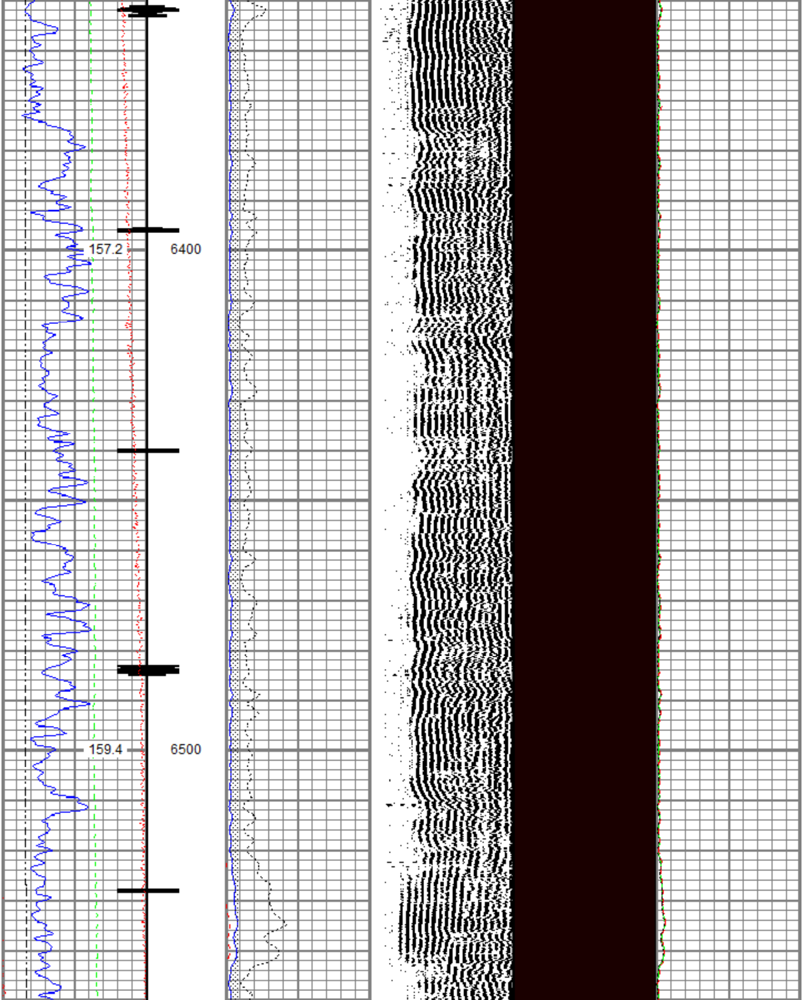
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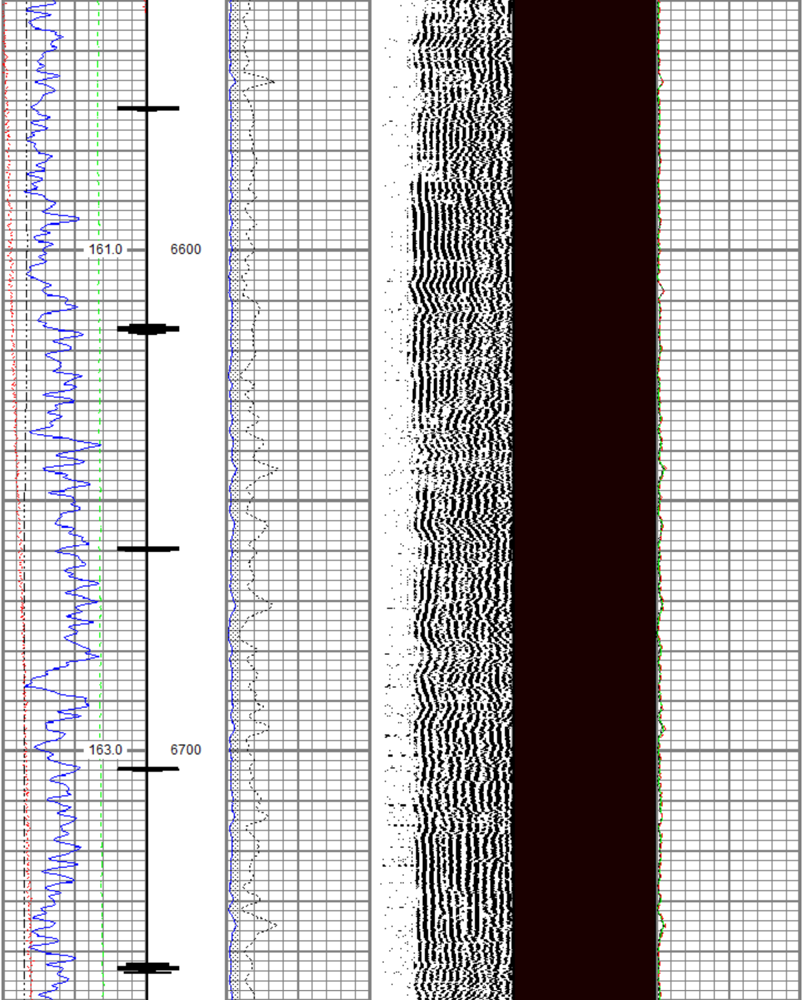
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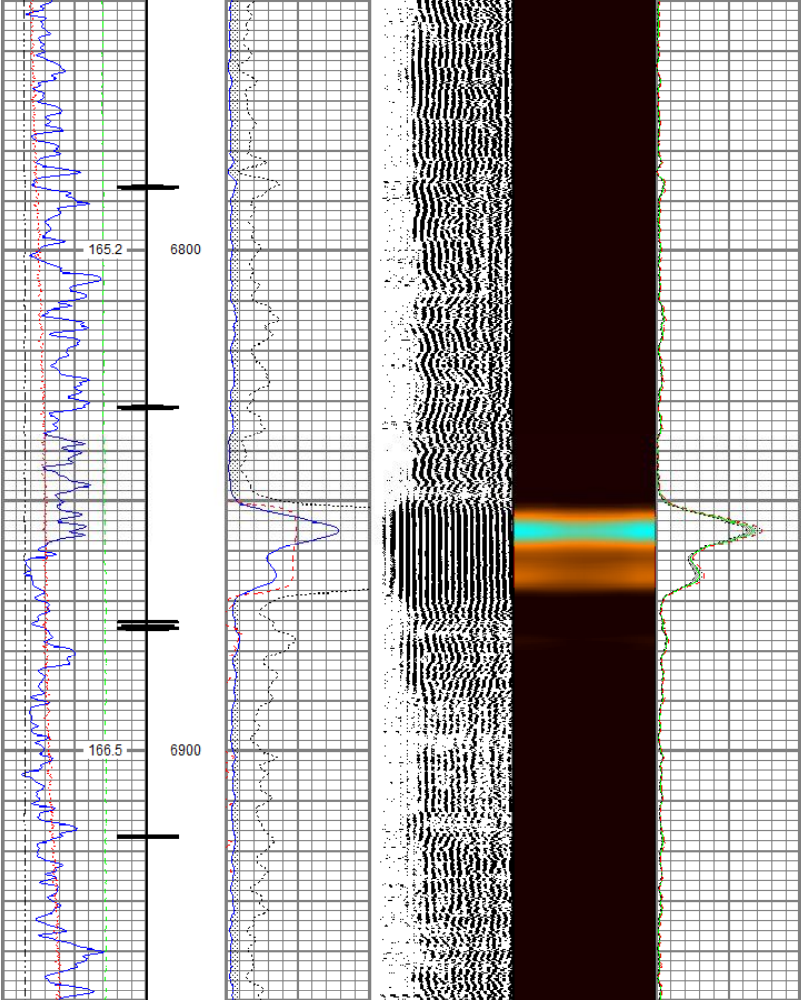
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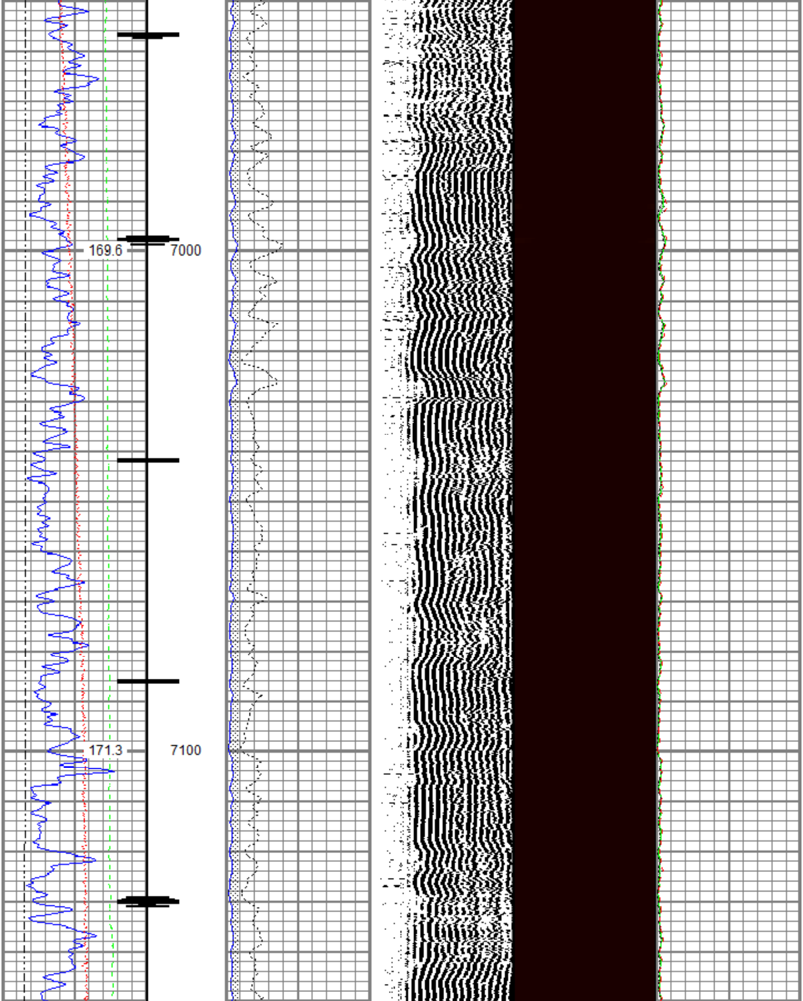
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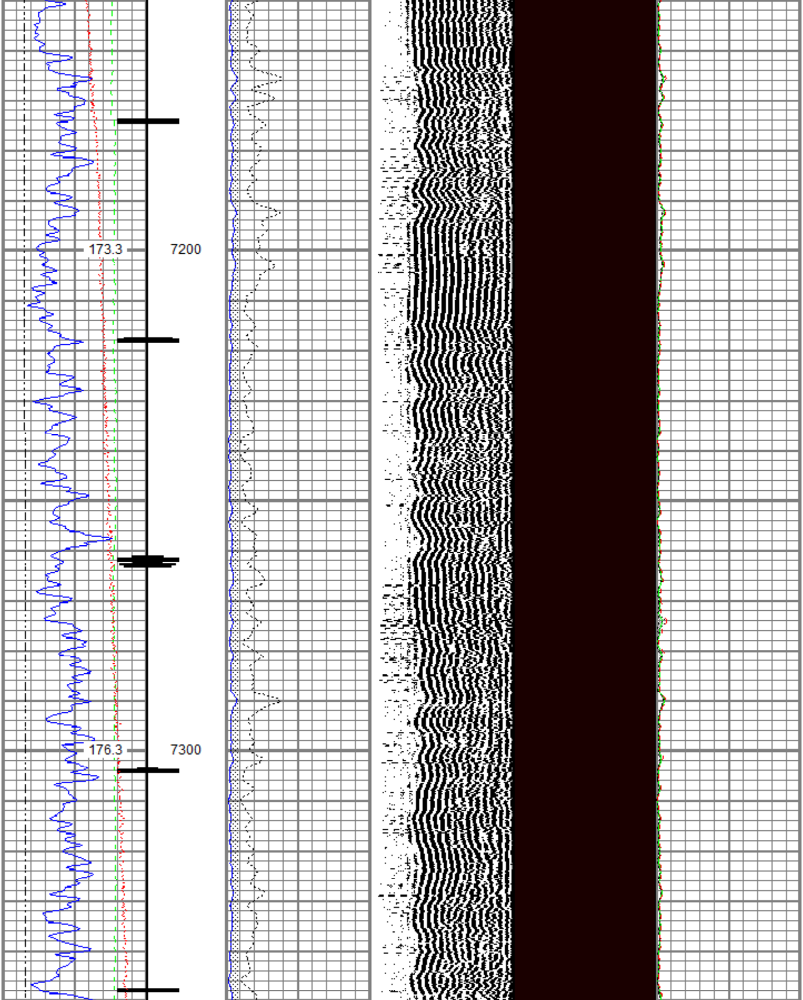
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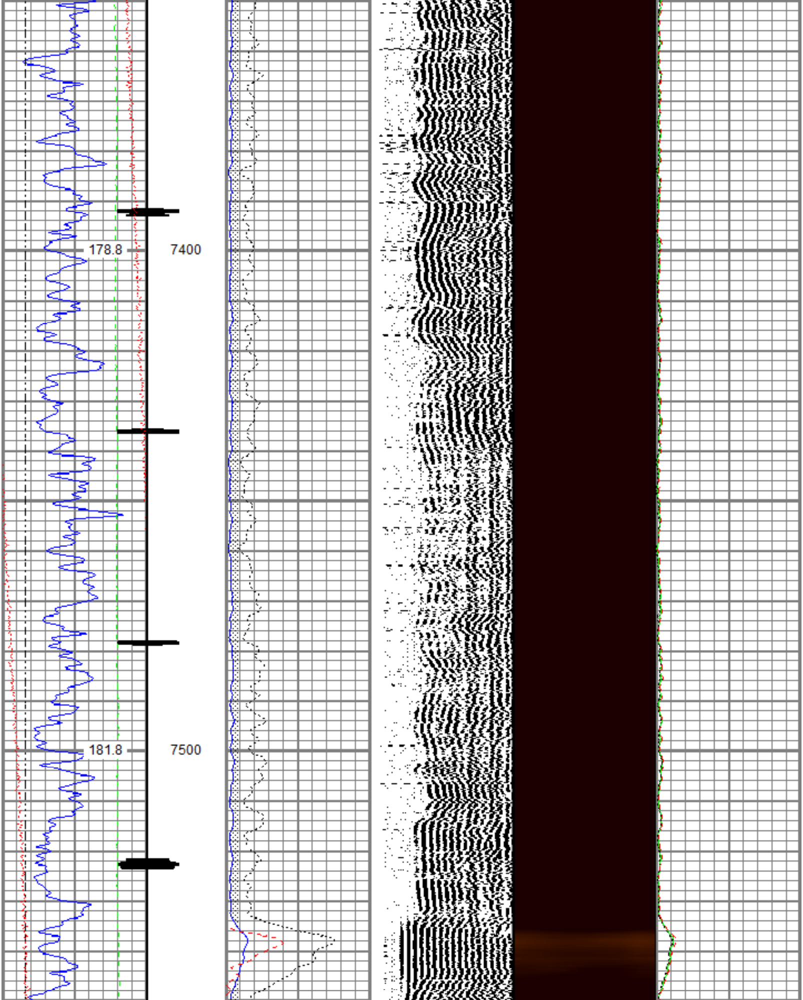
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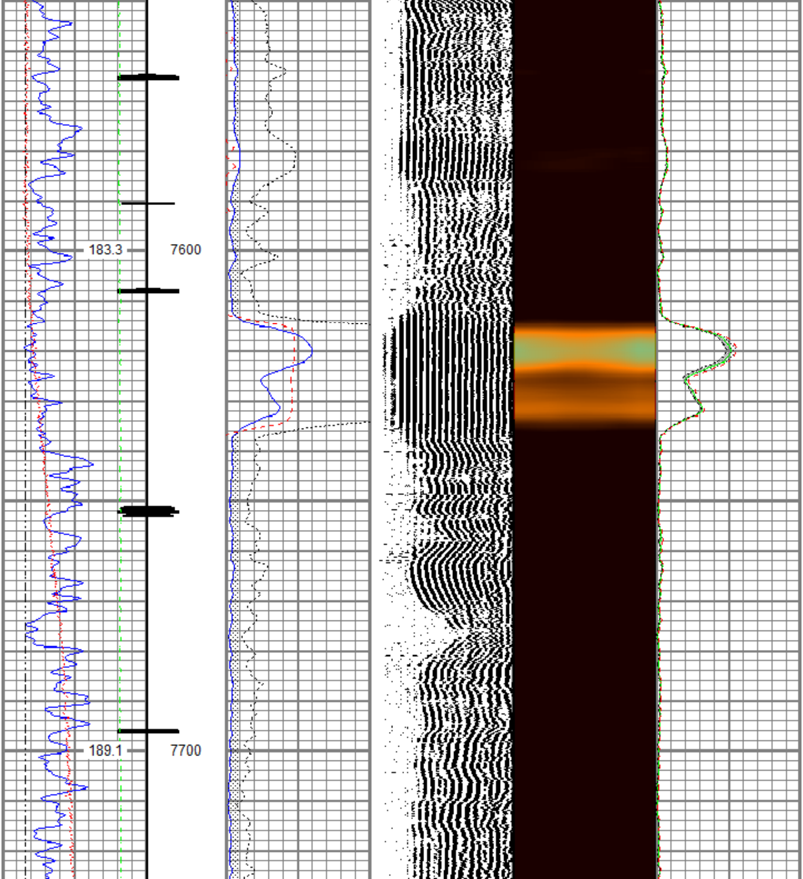
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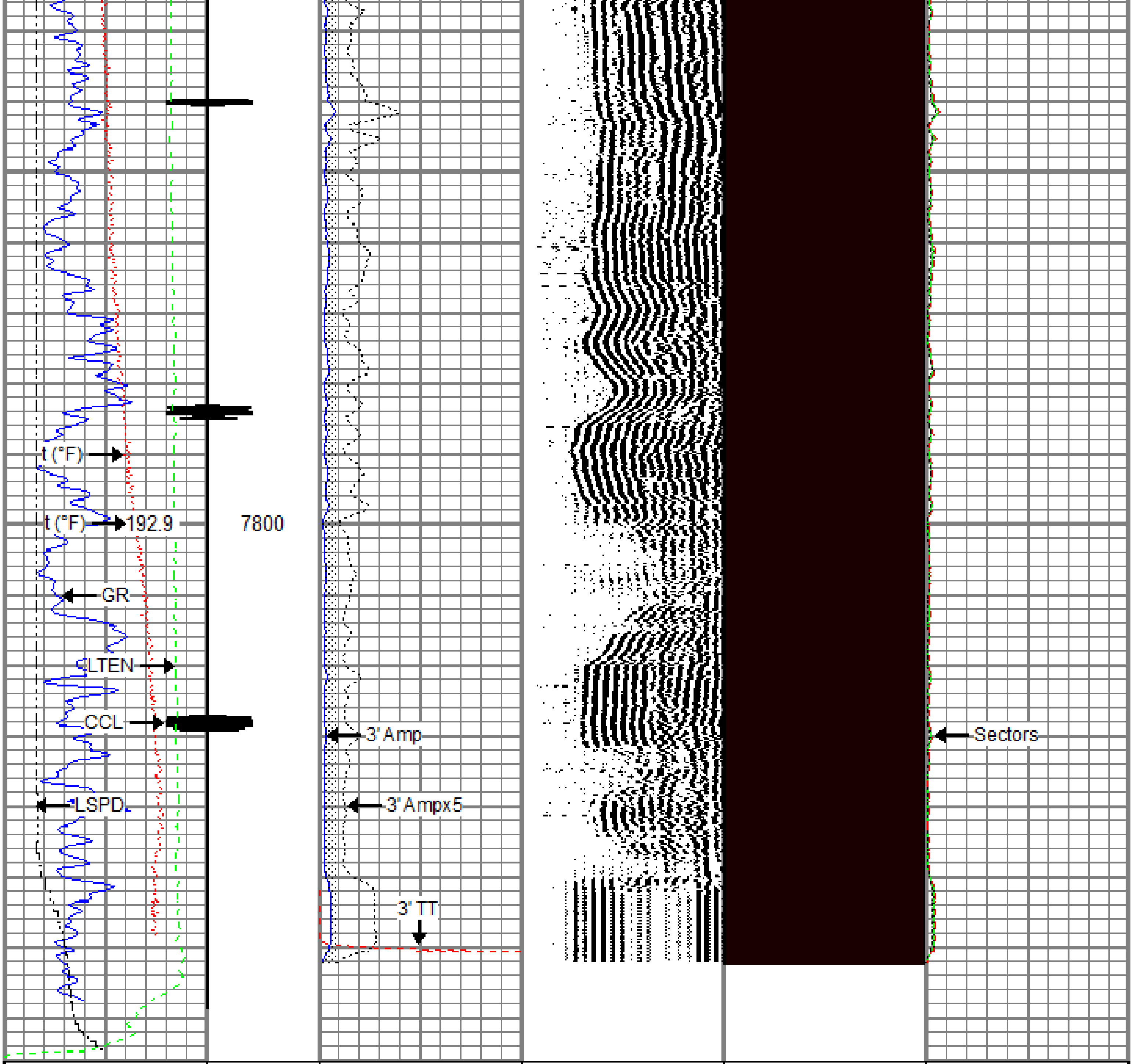

Gamma Ray 0 (GAPI) 200 Casing Collar Locator Line Speed -150 (ft/min) 150 Line Tension 0 (lb) 2000 Temperature 0 (degF) 20		3' Amplitude 0 (mV) 100 3' Amplitude x 5 0 (mV) 20 3' Travel Time 300 (usec) 200	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150 MimimumAmplitude 0 150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

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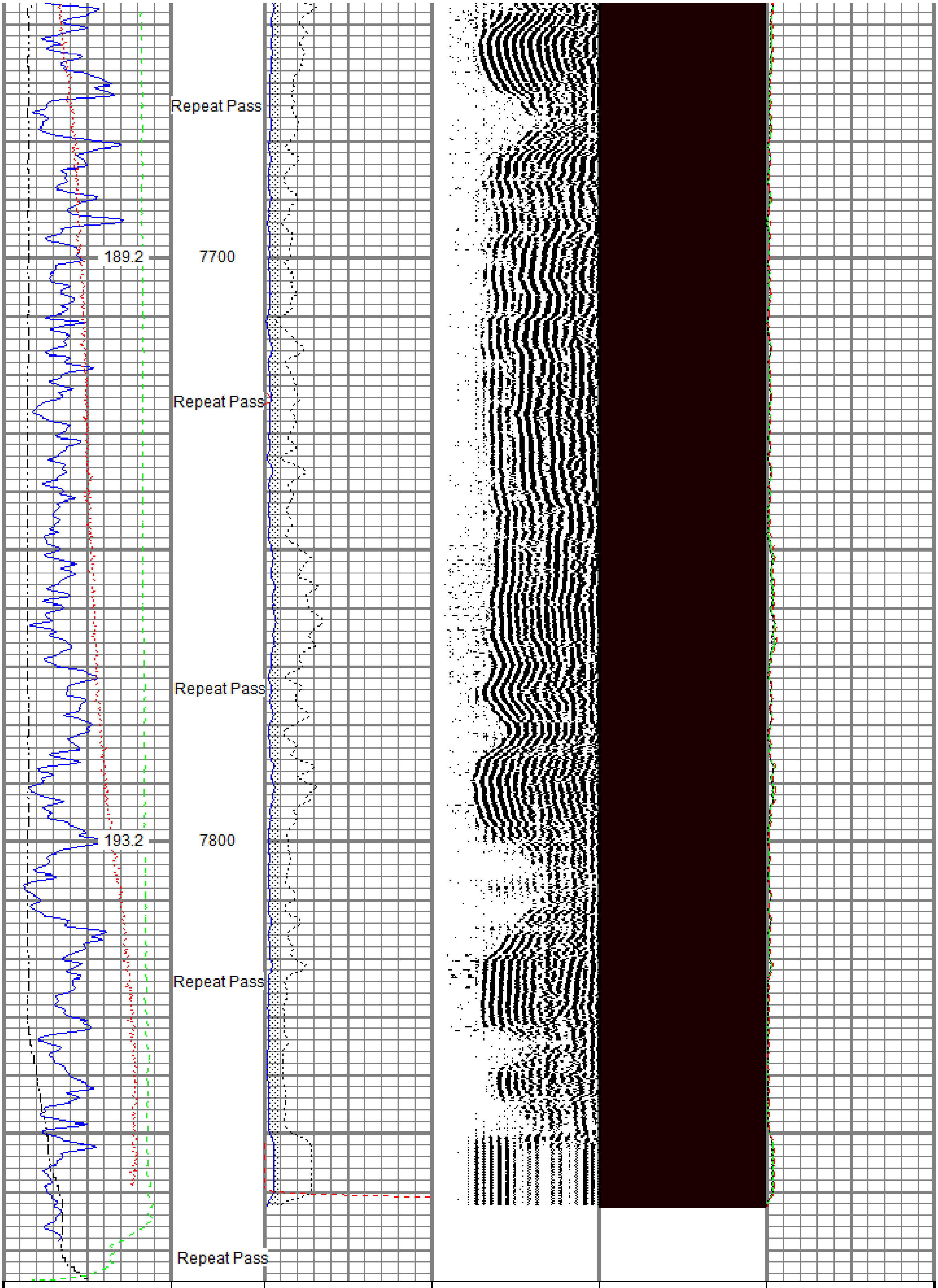
Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep_federal gm 41-10_rbl_10-09-17\processed_tep_federal gm 41-10_rbl_10-09-17.db
Dataset Pathname	repeat.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Tue Oct 10 11:15:41 2017
Charted by	Depth in Feet scaled 1:240

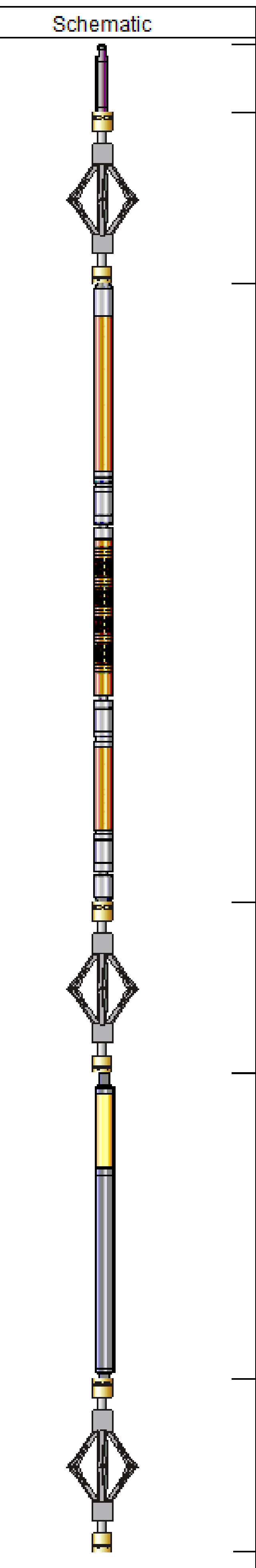
Gamma Ray 0 (GAPI) 200 Line Speed -150 (ft/min) 150 Line Tension 0 (lb) 2000 Temperature 0 (degF) 20		3' Amplitude 0 (mV) 100 3' Amplitude x 5 0 (mV) 20 3' Travel Time 300 (usec) 200	5' Variable Density Log 200 1200	Sector Map 10 110	Average Amplitude 0 150 MimimumAmplitude 0 150 MaximumAmplitude 0 150



Gamma Ray 0 (GAPI) 200 Line Speed -150 (ft/min) 150 Line Tension 0 (lb) 2000 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 1200	Sector Map 10 110	Average Amplitude 0 150 MimimumAmplitude 0 150 MaximumAmplitude 0 150

Sensor	Offset (ft)
HeadVolt	18.84
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
DCCL	6.18
CCL	6.18
GR	4.96

Schematic



Description	Length (ft)	O.D. (in)	Weight (lb)
Titan_Electric_Cable_Heads-Titan_1-11/1 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 (FW1305-0 Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	9.19	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-P_CGR_2750_S (FW1214-541) Probe 2-3/4" Digital CCL / Gamma Ray Combined	4.54	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 41-10_RBL_10-09-17.db: field/well/run1/main
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 41-10_rbl_10-09-17\processed_tep_federal gm 41-10_rbl_10-0
Dataset Pathname	main.1
Dataset Creation	Tue Oct 10 11:09:07 2017

Gamma Ray Calibration Report

Serial Number:	FW1211-081	
Tool Model:	P_CGR_2750_S	
Performed:	Sat Feb 06 11:31:52 2016	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.6	cps
Sensitivity:	0.6061	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1305-098	
Tool Model:	P_RBT_2750	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	28.652	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.006	0.699	0.800	81.196	114.034	1.537
CAL	0.782	0.781				
5'	-0.000	0.528	0.800	81.196	152.132	0.811
SUM						
S1	-0.007	0.650	0.000	100.000	152.262	1.017
S2	-0.003	0.656	0.000	100.000	151.578	0.503
S3	-0.005	0.680	0.000	100.000	145.962	0.724
S4	-0.005	0.721	0.000	100.000	137.851	0.672
S5	-0.005	0.736	0.000	100.000	134.991	0.700
S6	-0.005	0.714	0.000	100.000	139.059	0.726
S7	-0.005	0.683	0.000	100.000	145.474	0.673
S8	-0.006	0.648	0.000	100.000	152.894	0.874

Internal Reference Calibration, performed Fri May 05 10:29:14 2017:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.782	0.781	1.000	0.000

Air Zero Calibration, performed Mon Oct 09 10:29:46 2017:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	-0.006	0.000	-0.000
5'	-0.002	0.000	-0.000
SUM			
S1	-0.008	0.000	0.000
S2	-0.005	0.000	0.000
S3	-0.005	0.000	0.000
S4	-0.005	0.000	0.000
S5	-0.006	0.000	0.000
S6	-0.005	0.000	0.001
S7	-0.006	0.000	0.000
S8	-0.005	0.000	-0.000

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Field	Grand Valley
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