Company	TEP Rocky Mountain LLC
Well	Clough NR 414-3
Field	Rulison
County	Garfield
State	Colorado

RELIANCE OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	TEP Rocky Mountain LLC		
Well	Clough NR 414-3		
Field	Rulison		
County	Garfield	State	Colorado
Location:	API # : 05-045-23911		Other Services
	SEC 3 TWP 6S RGE 94W		--
Permanent Datum	Ground Level	Elevation 6719.1'	Elevation
Log Measured From	Kelly Bushing	24 FT	K.B. 6743.1' D.F. 6742.1' G.L. 6719.1'
Drilling Measured From	Kelly Bushing		

Date	15-JAN-2019
Run Number	One
Depth Driller	10214 FT
Depth Logger	10140 FT
Bottom Logged Interval	10126 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	251°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	21:30
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	36	J-55	Surface	1112 FT
Intermediate #1	4 1/2	11.6	P-110	Surface	10200 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 6146-6167 FT
Log ran from 10126 FT to Surface
Recorded with 0 PSI Surface Induced Pressure

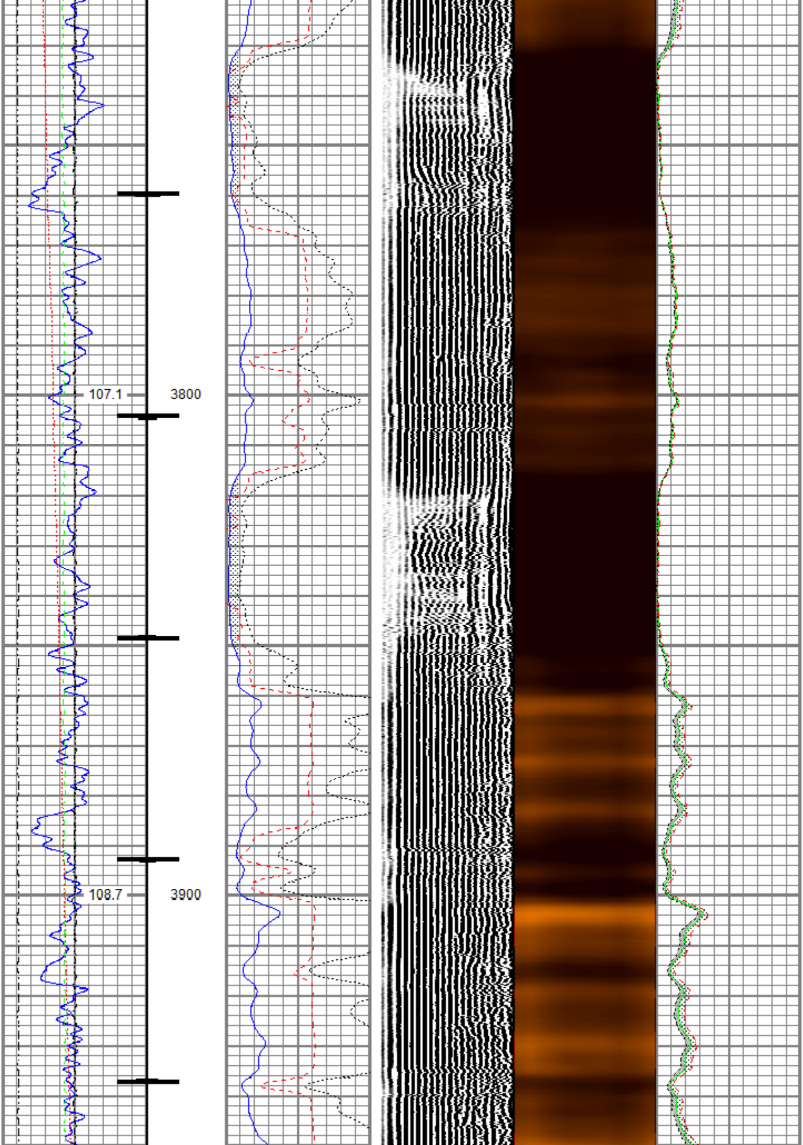
Thank you for choosing Reliance Oilfield Services, LLC!

RELIANCE OILFIELD SERVICES

Main Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_clough nr 414-3_rbl_01-15-19\tep_clough nr 414-3_rbl_01-15-19.db
Dataset Pathname	main.1
Presentation Format	ros_rbt004_tep
Dataset Creation	Thu Jan 17 10:26:10 2019
Charted by	Depth in Feet scaled 1:240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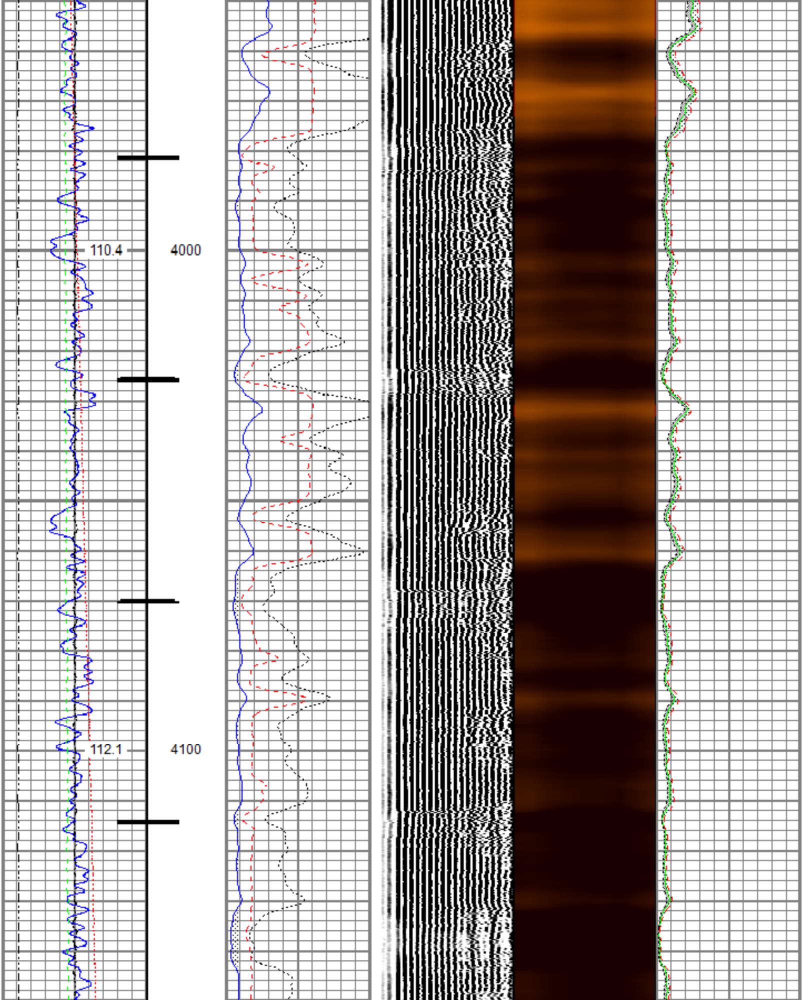
3800
108.7
3900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4000
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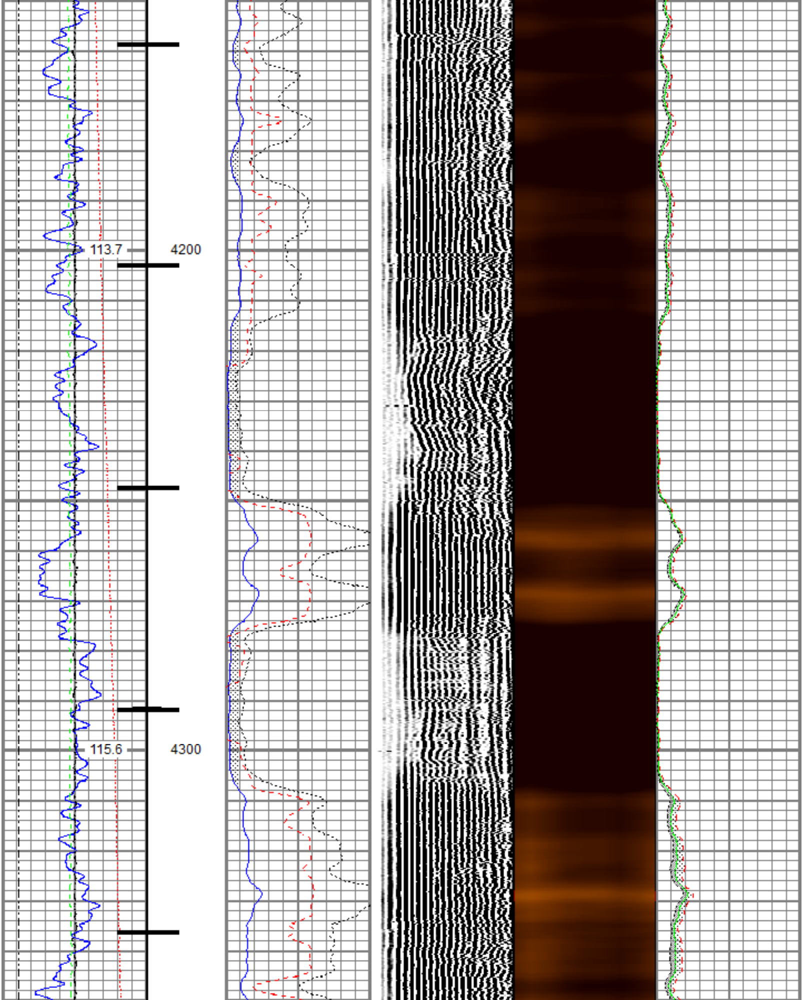
4100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115.6
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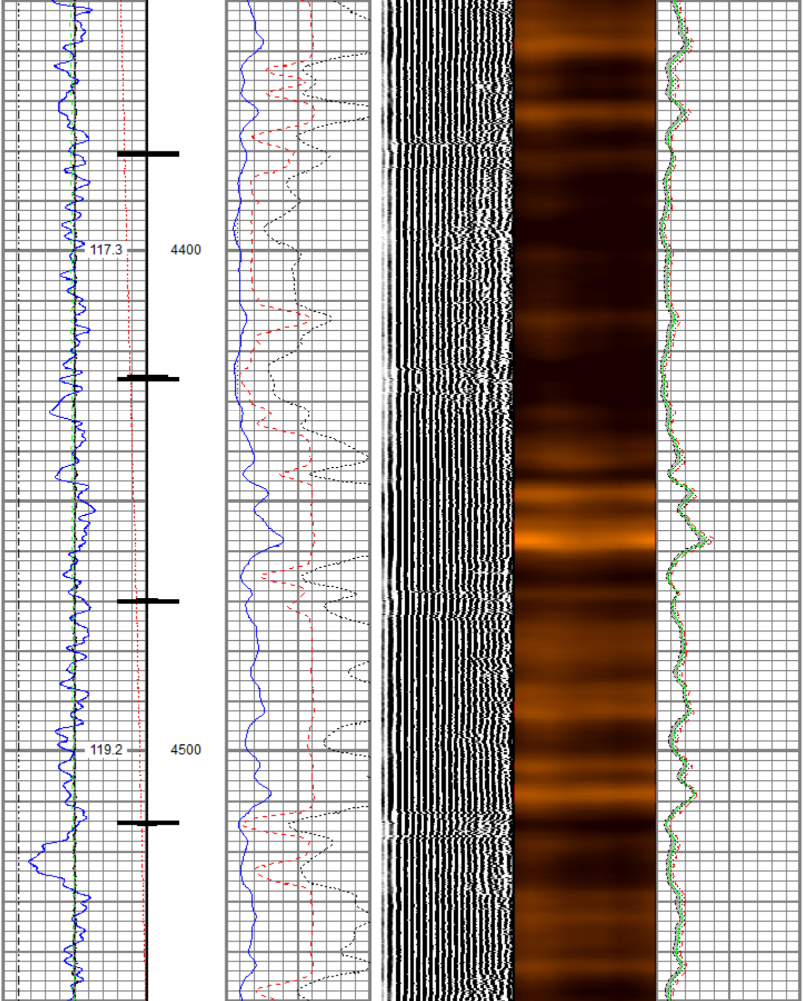
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119.2
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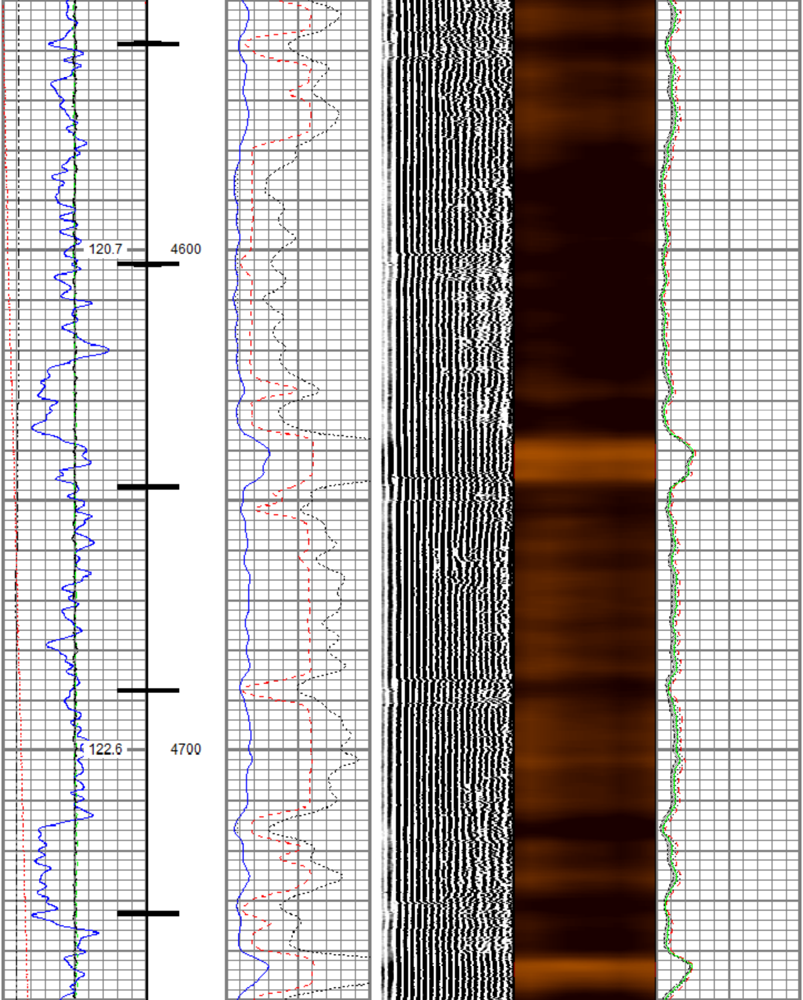
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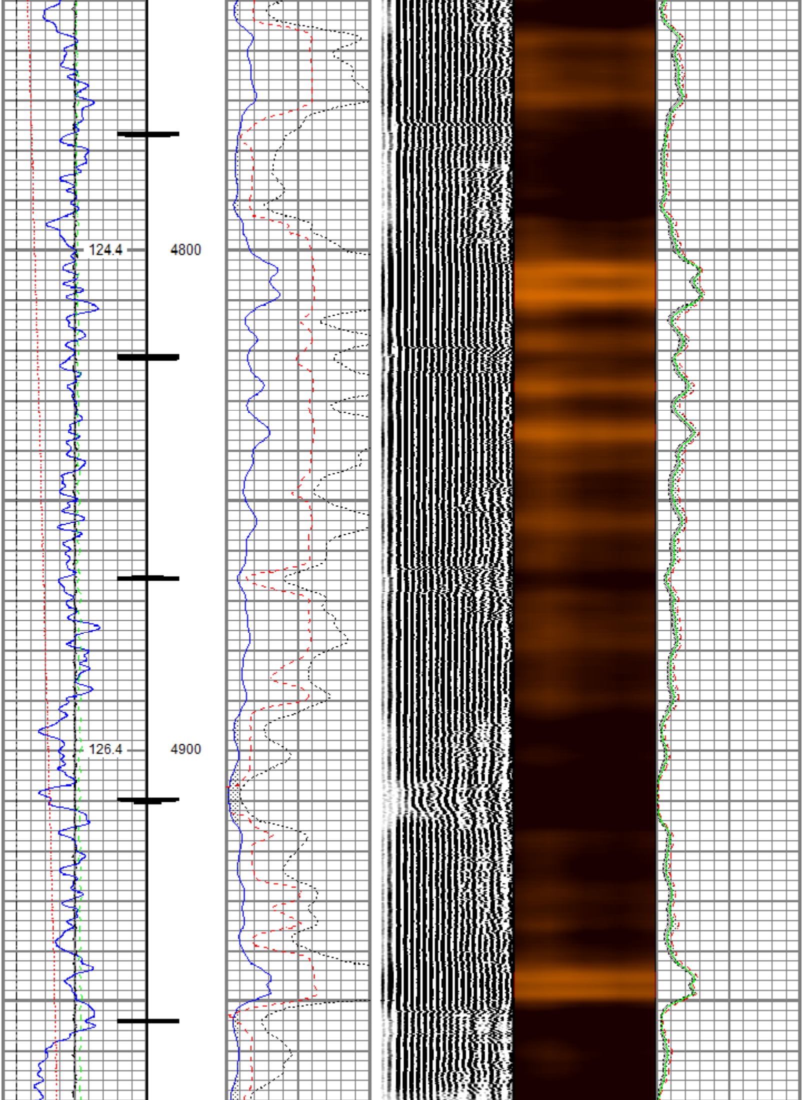
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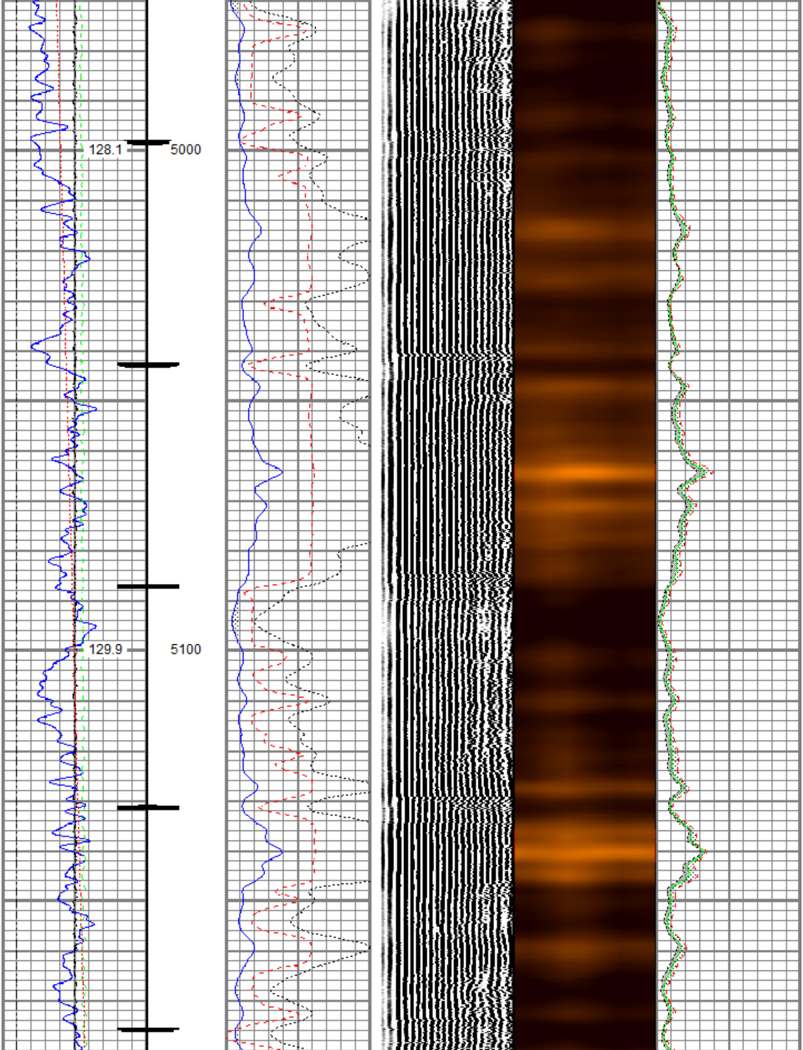
126.4
4900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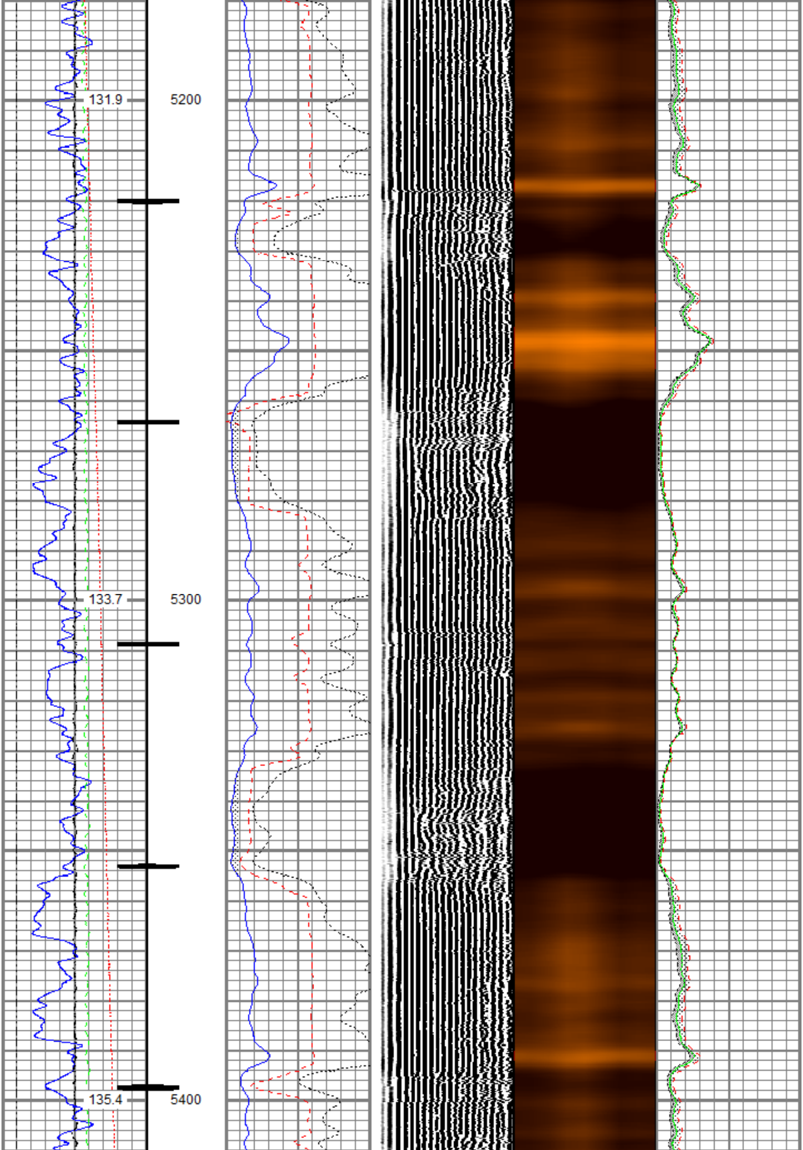
5000
129.9
5100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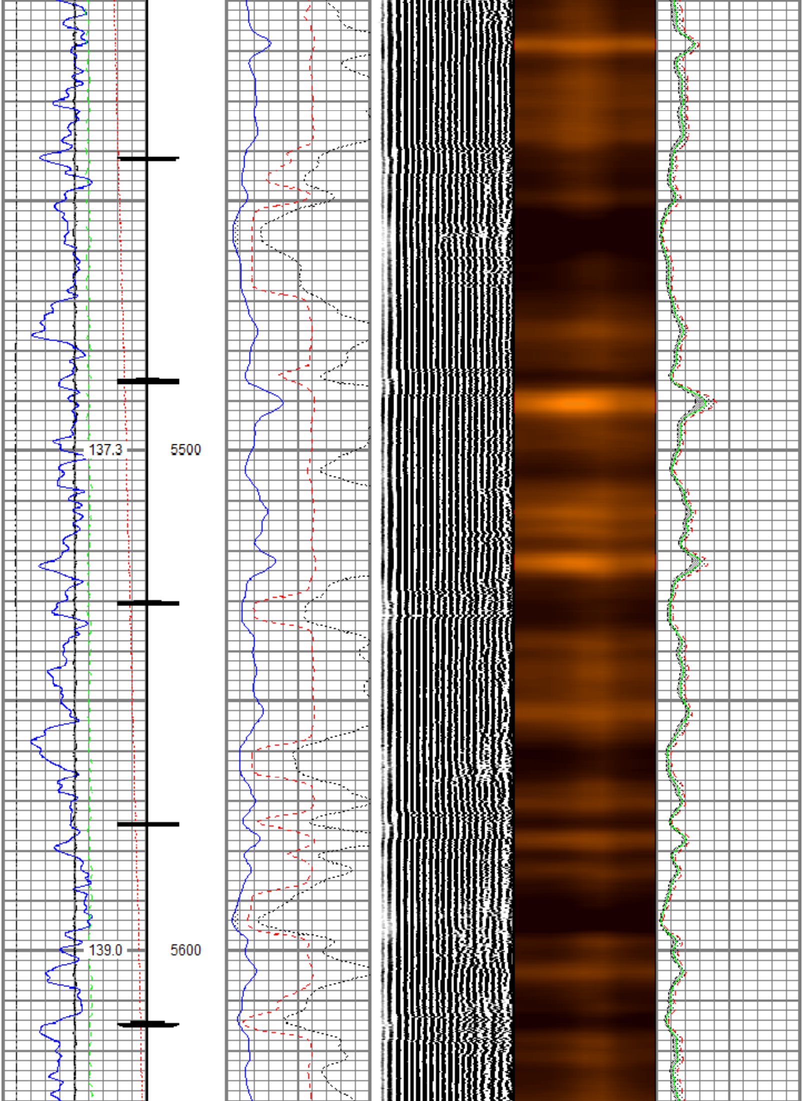
5400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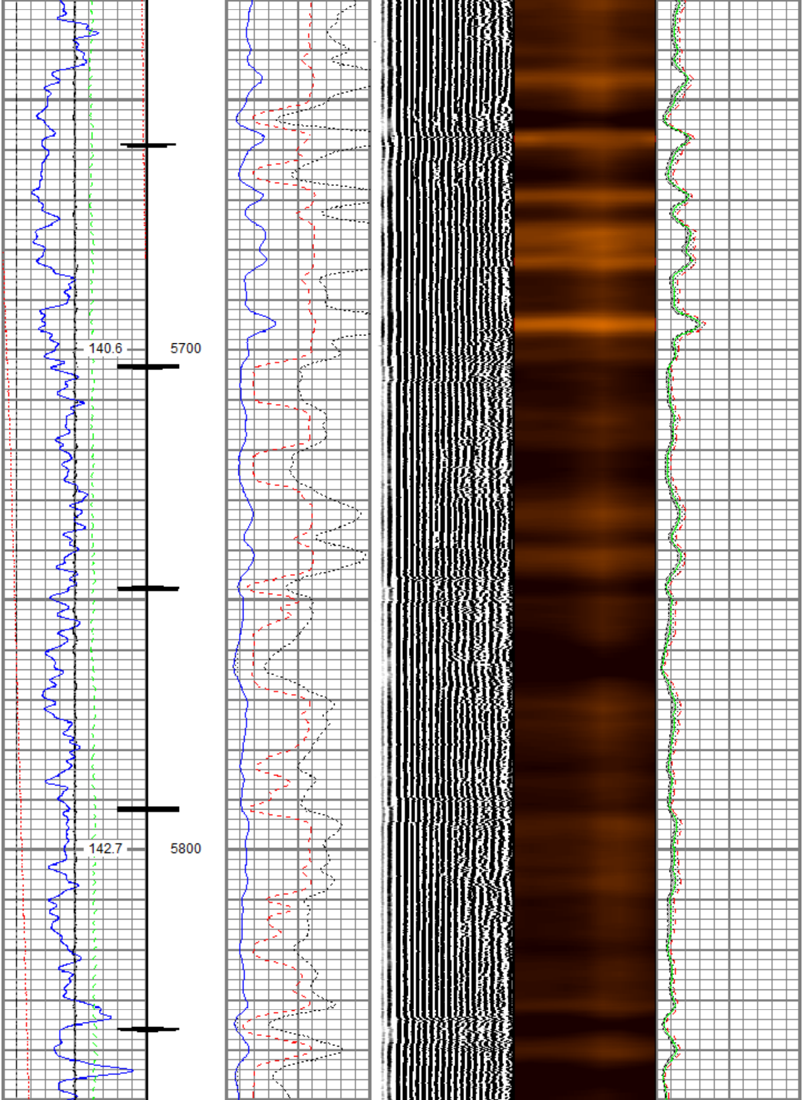
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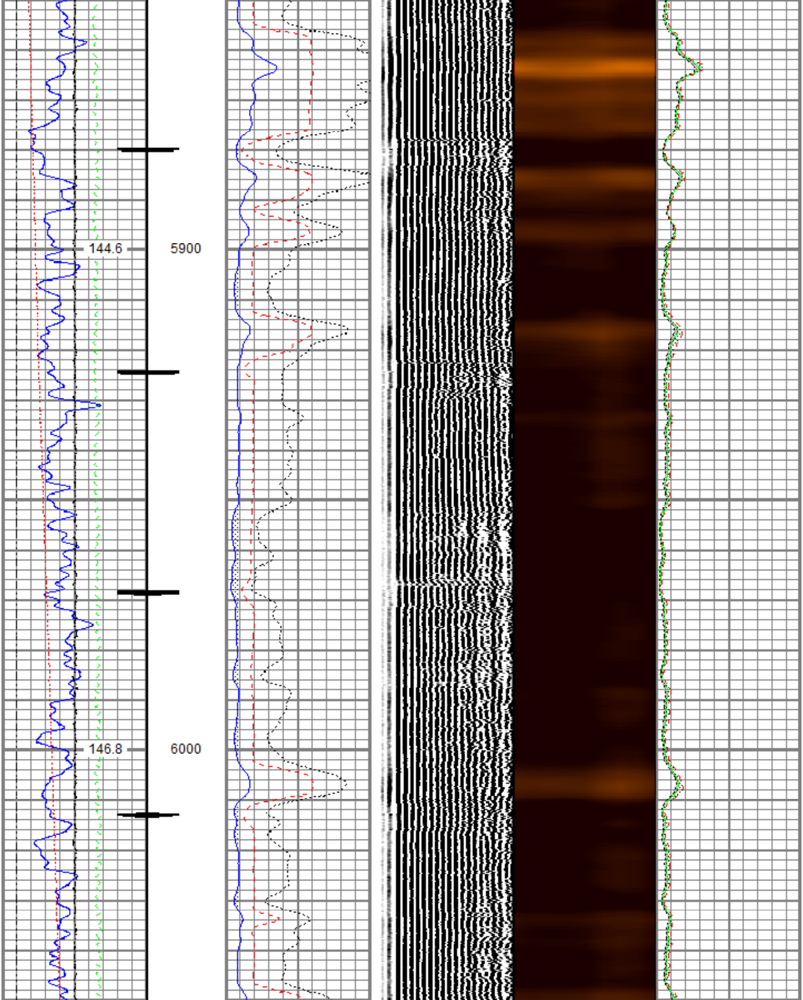
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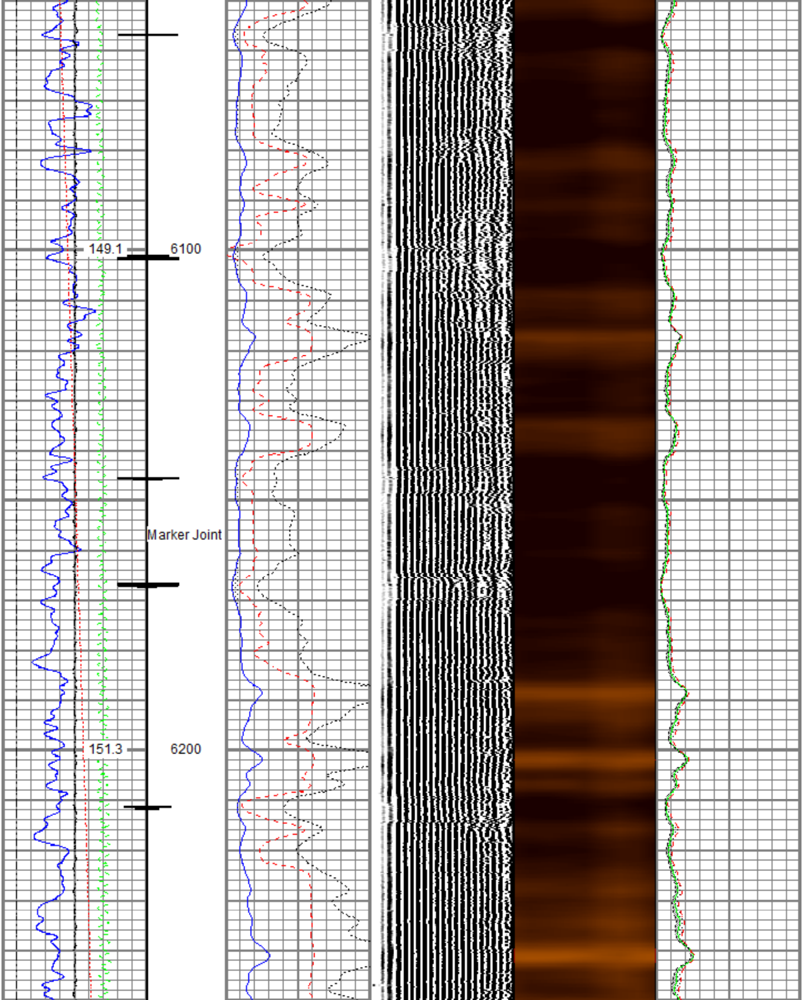
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Marker Joint
151.3
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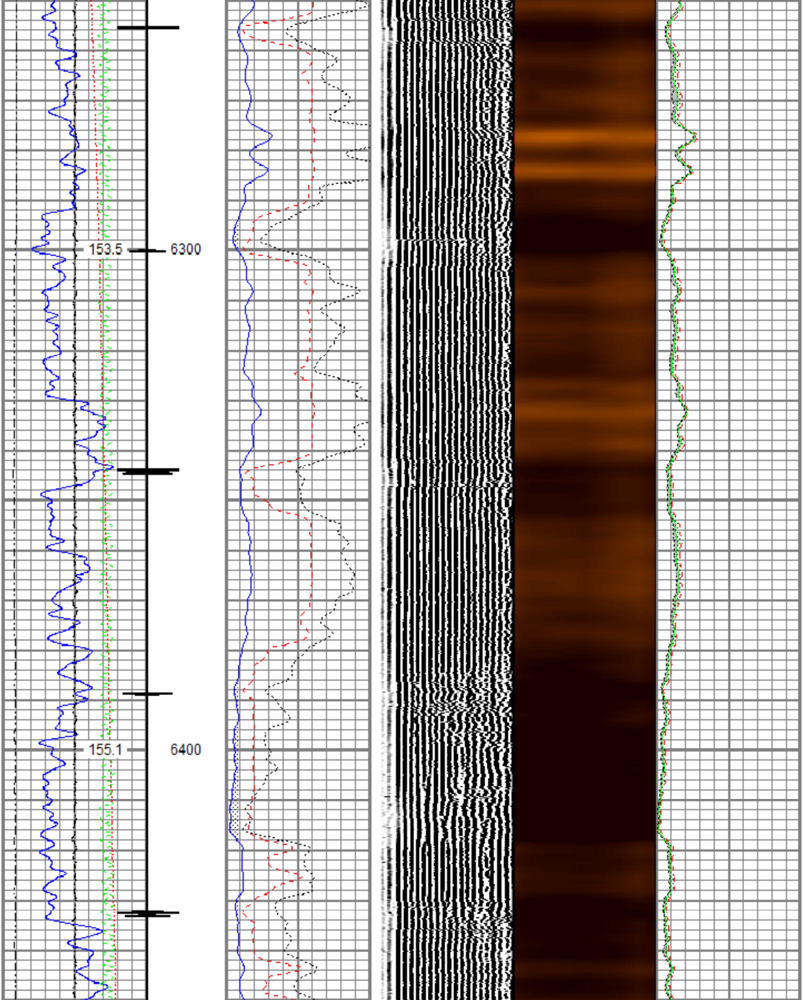
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155.1
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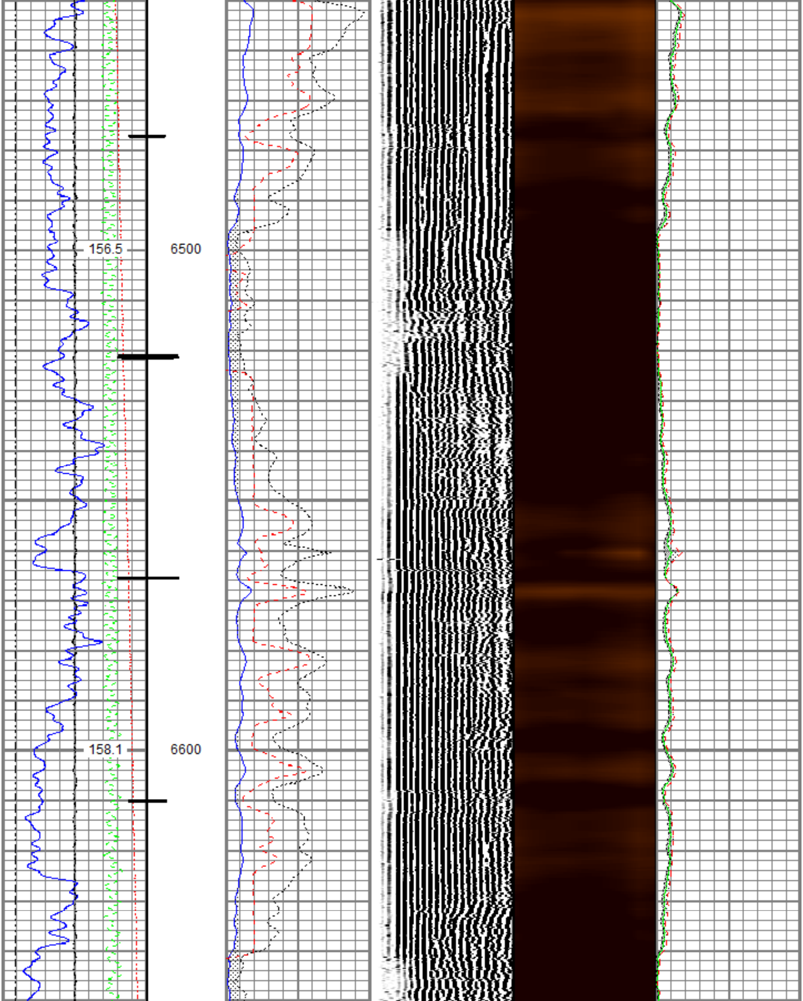
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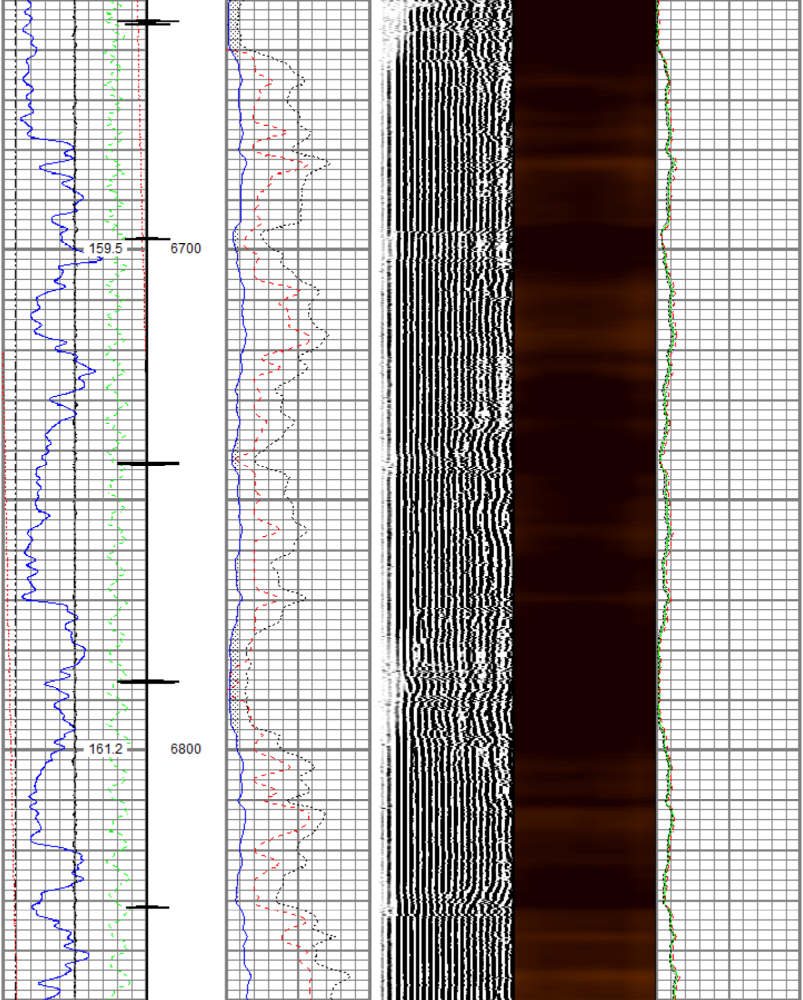
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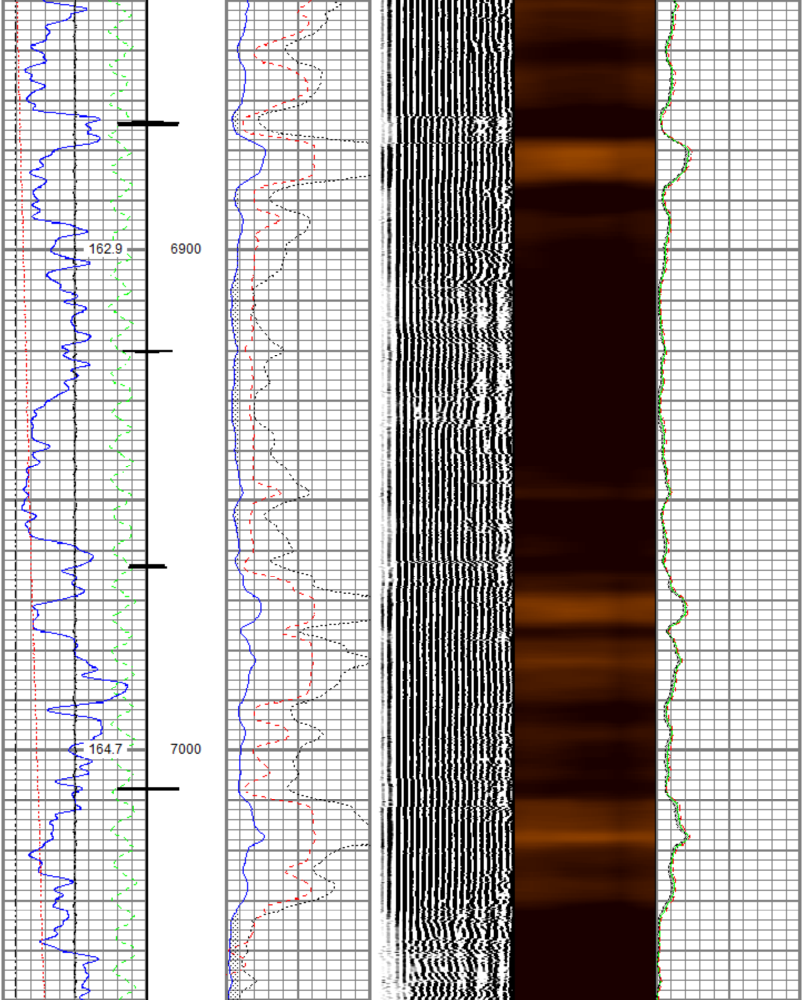
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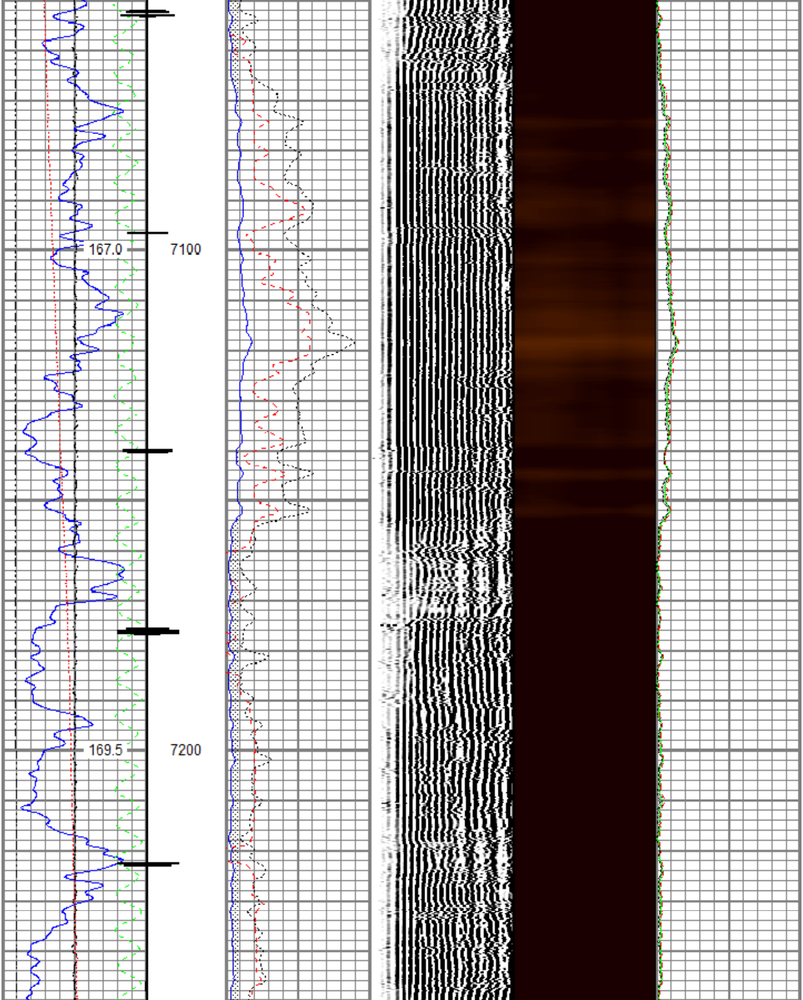
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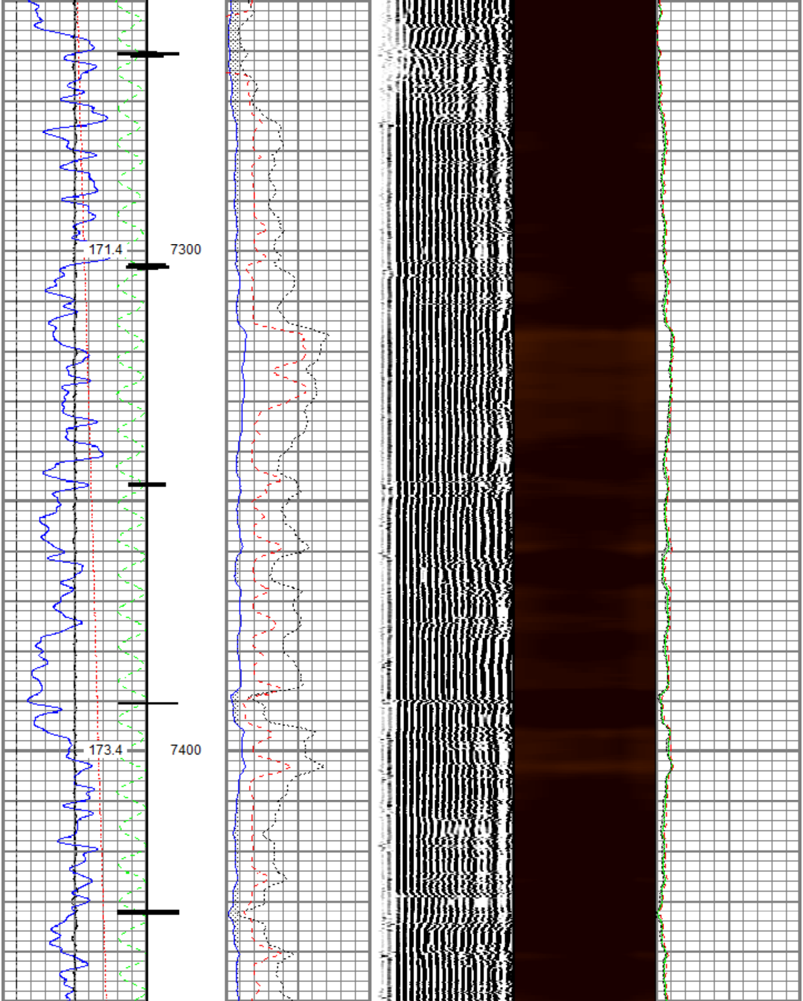
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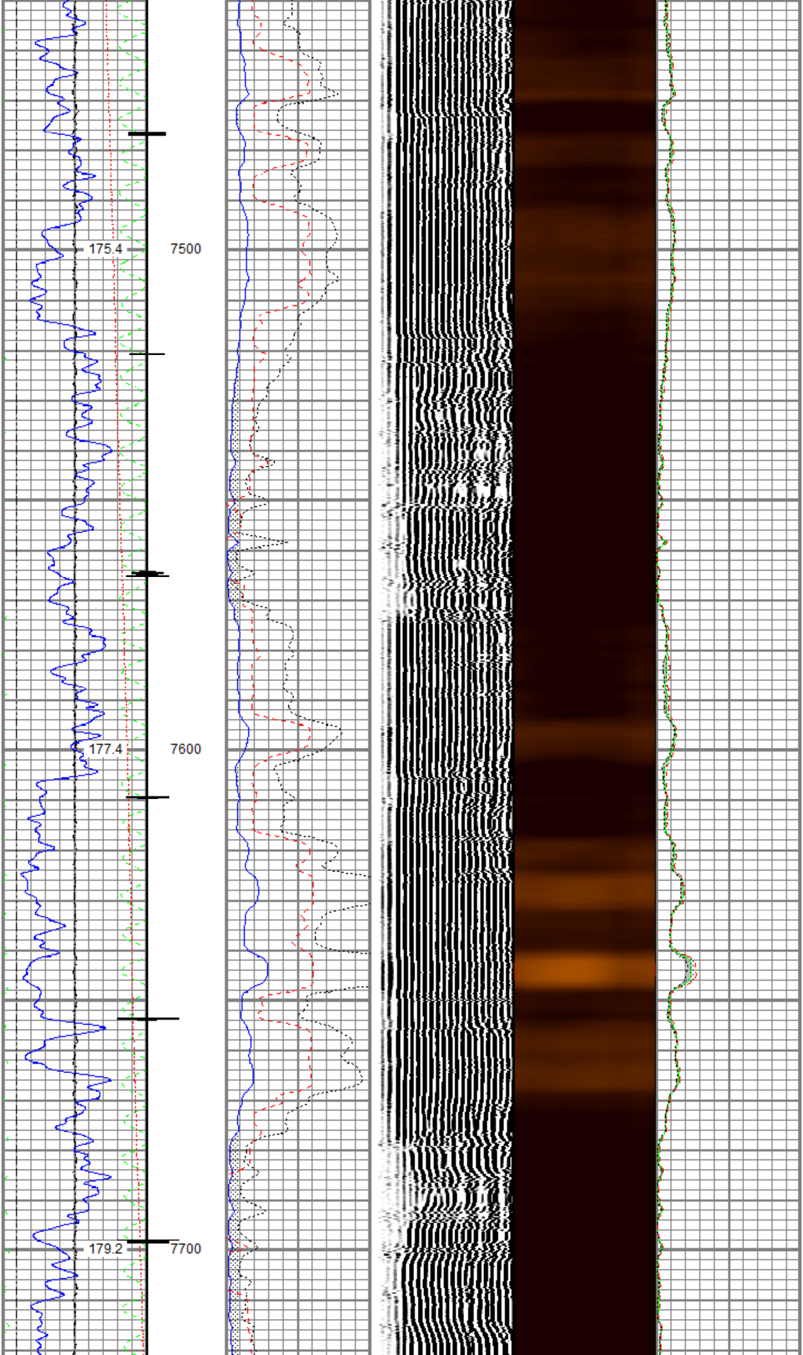

175.4
7500
177.4
7600
179.2
7700

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 1200

Sector Map
10 110

Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150

RELIANCE
OILFIELD SERVICES

Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File	tep\tep_clough nr 414-3_rbl_01-15-19\tep_clough nr 414-3_rbl_01-15-19.db
Dataset Pathname	repeat.2
Presentation Format	ros_rbt004_tep
Dataset Creation	Thu Jan 17 10:33:43 2019
Charted by	Depth in Feet scaled 1:240

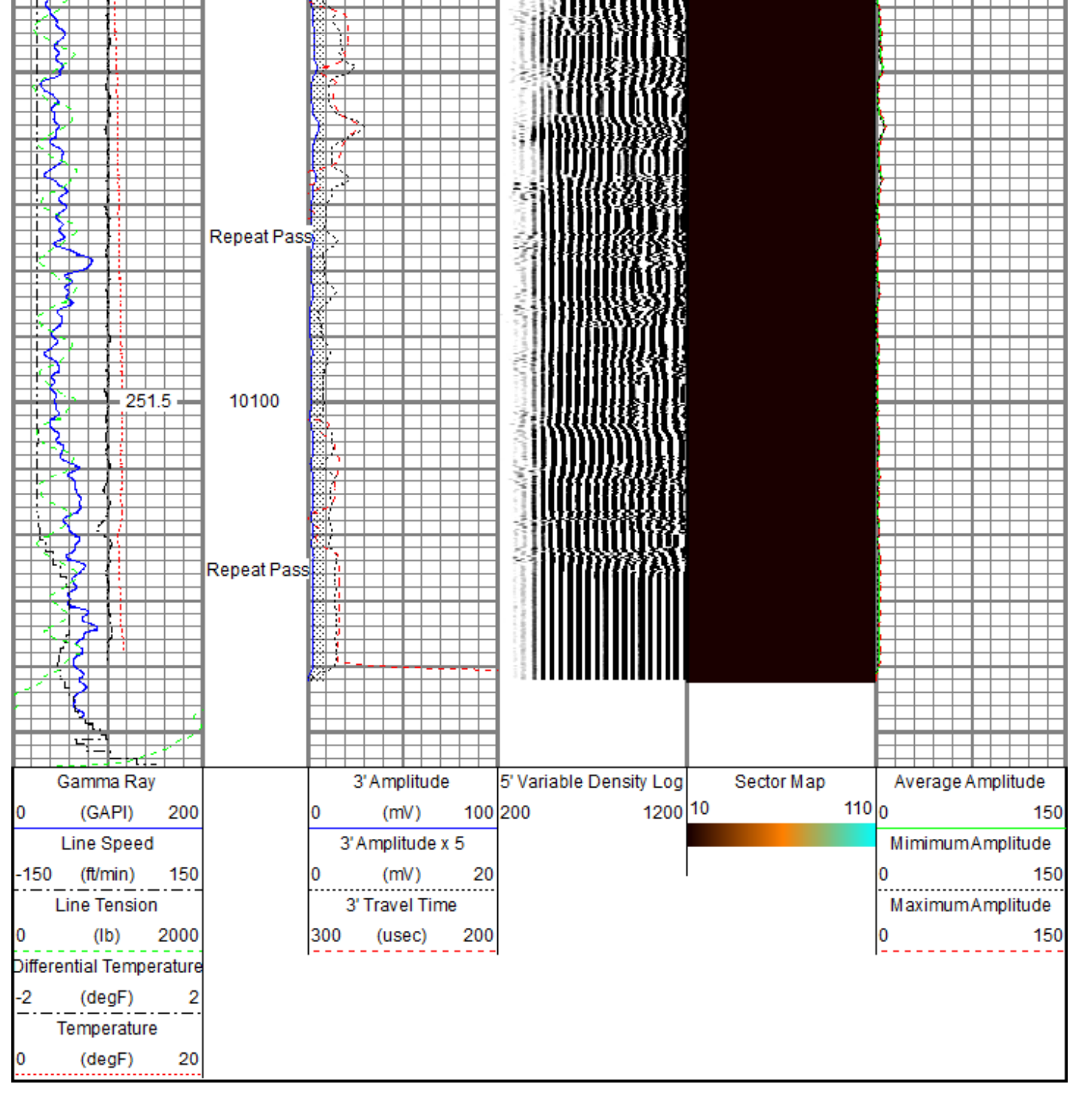
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

5' Variable Density Log
200 1200

Sector Map
10 110

Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150



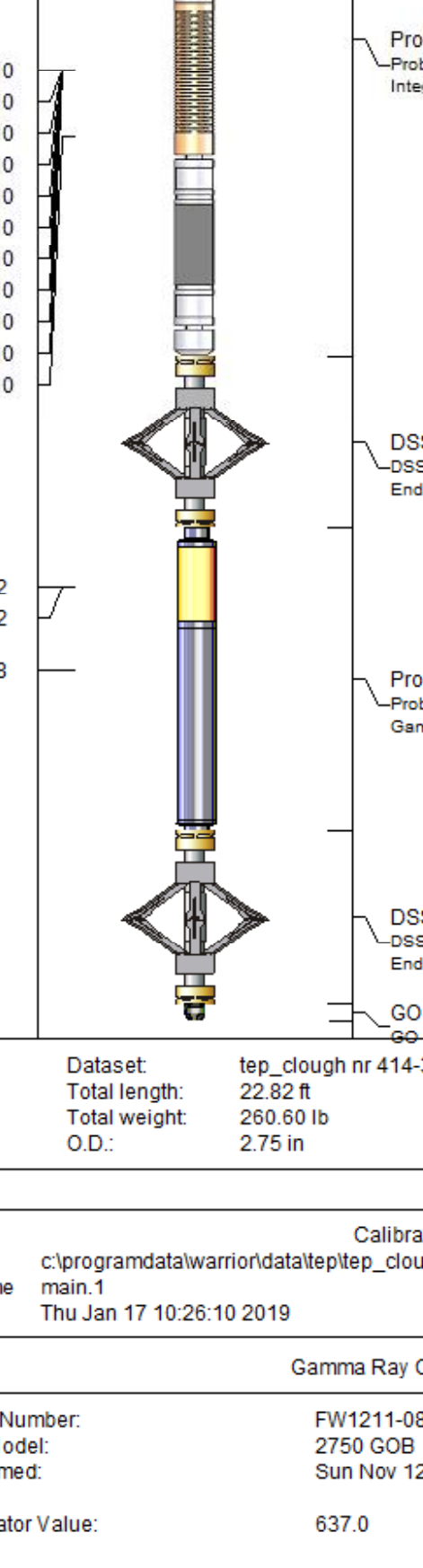
Gamma Ray
0 (GAPI) 200
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
Differential Temperature
-2 (degF) 2
Temperature
0 (degF) 20

3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
300 (usec) 200

5' Variable Density Log
200 1200

Sector Map
10 110

Average Amplitude
0 150
Mimimum Amplitude
0 150
Maximum Amplitude
0 150

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 WVFS8 WVFS7 WVFS6 WVFS5 WVFS4 WVFS3 WVFS2 WVFS1 WVFCAL WVF3FT WVF5FT	16.33 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 14.10 13.10		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
CCL$2 CCL$1 GR	6.42 6.42 5.18		Probe GR-CCL-2750 GOB (FW1211-081) 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_clough nr 414-3_rbl_01-15-19.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_clough nr 414-3_rbl_01-15-19\tep_clough nr 414-3_rbl_01-15-19.db
Dataset Pathname	main.1
Dataset Creation	Thu Jan 17 10:26:10 2019

Gamma Ray Calibration Report

Serial Number:	FW1211-081	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 12:22:44 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	112.4	cps
Calibrator Reading:	1008.7	cps
Sensitivity:	0.7107	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	101013	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	21.500	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.008	0.863	0.800	81.196	94.068	0.027
CAL	0.721	0.722				
5'	0.008	0.711	0.800	81.196	114.281	-0.094
SUM						
S1	0.001	0.863	0.000	100.000	116.058	-0.123
S2	0.004	0.839	0.000	100.000	119.852	-0.512
S3	0.005	0.854	0.000	100.000	117.743	-0.543
S4	0.005	0.894	0.000	100.000	112.411	-0.506
S5	0.004	0.922	0.000	100.000	108.842	-0.392
S6	0.005	0.916	0.000	100.000	109.707	-0.499
S7	0.003	0.904	0.000	100.000	110.898	-0.287
S8	0.006	0.891	0.000	100.000	112.981	-0.648

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.721	0.722	1.000	0.000

Air Zero Calibration, performed Tue Jan 15 18:06:24 2019:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.001	0.000	-0.000
5'	0.006	0.000	-0.000
SUM			
S1	-0.001	0.000	0.001
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	0.004	0.000	-0.000
S7	0.004	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	

RELIANCE
OILFIELD SERVICES

Company	TEP Rocky Mountain LLC
Well	Clough NR 414-3
Field	Rulison
County	Garfield
State	Colorado