Company	CUB CREEK ENERGY
Well	MARKHAM 4
Field	WATTENBERG
County	WELD
State	COLORADO
Country	USA

Cutters Wireline Service, Inc. A Cased Hole Wireline Company

RADIAL CEMENT BOND LOG

Company CUB CREEK ENERGY
Well MARKHAM 4
Field WATTENBERG
County WELD
State COLORADO Country USA

Location: API #: 05-123-43243-0000
NWSE
LAT: 40.268750 LONG: -105.023130
SHL: 2373' FSL & 1515' FEL
SEC 32 TWP 4N RGE 68W

Other Services
NONE

Permanent Datum GROUND LEVEL Elevation 5042'
Log Measured From KELLY BUSHING = 17'
Drilling Measured From KELLY BUSHING

Elevation
K.B. 5059'
D.F. 5058'
G.L. 5042'

Date	14 SEPTEMBER 2016
Run Number	ONE
Depth Driller	12042'
Depth Logger	7622'
Bottom Logged Interval	7622'
Top Log Interval	SURFACE
Open Hole Size	8-3/4"
Type Fluid	WATER
Density / Viscosity	~8.3#
Max. Recorded Temp.	222 DEG F
Estimated Cement Top	~400'
Time Well Ready	ROA
Time Logger on Bottom	07:00
Equipment Number	W-060
Location	WINDSOR, CO
Recorded By	Z. EMICK
Witnessed By	T. THOMAS

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	13-1/2"	0'	1525'				
TWO	8-3/4"	1525'	12055'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	9-5/8"	36#	0'	1524'
Prot. String				
Production String	5-1/2"	17#	0'	12042'
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 NOT CORRELATED TO ANY OTHER LOG

FREE PIPE READING = 72mV

LOG RAN WITH 0 PSI ON CASING

MARKER JOINT @ 5622.5' - 5659.5'

THANK YOU FOR CHOOSING CUTTERS WIRELINE SERVICE

Calibration Report

Database File:	markham 4.db
Dataset Pathname:	pass7
Dataset Creation:	Wed Sep 14 07:38:56 2016 by Log 7.0 B1

Temperature Calibration Report

Serial Number:	TEMP_CMPRB_1375_01	
Tool Model:	Comprobe	
Performed:	Wed Apr 27 14:32:04 2011	
	Reference	Reading
Low Reference:	32.00 degF	320.00 cps
High Reference:	500.00 degF	5000.00cps
Gain:	0.10	
Offset:	0.00	
Delta Spacing	1	

Gamma Ray Calibration Report

Serial Number:	060109	
Tool Model:	Probe	
Performed:	Mon Jan 26 09:19:58 2009	
Calibrator Value:	185.2	GAPI
Background Reading:	4.8	cps
Calibrator Reading:	200.0	cps
Sensitivity:	0.9487	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	060112_45	
Tool Model:	Probe	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	7021.142	ft

Master Calibration, performed Sun Aug 21 06:25:13 2016:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.008	0.689	0.000	71.921	87.697	-0.878
CAL	0.020	0.878				
5'	0.018	0.598	0.000	71.921	124.150	-2.270
SUM						
S1	0.018	0.680	0.000	100.000	151.138	-2.751
S2	0.019	0.684	0.000	100.000	150.458	-2.878
S3	0.018	0.696	0.000	100.000	147.633	-2.709
S4	0.018	0.703	0.000	100.000	145.929	-2.635
S5	0.018	0.718	0.000	100.000	142.887	-2.545
S6	0.018	0.720	0.000	100.000	142.497	-2.541
S7	0.018	0.712	0.000	100.000	144.172	-2.606
S8	0.018	0.679	0.000	100.000	151.401	-2.781

Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.020	0.878	1.000	0.000

Air Zero Calibration, performed Sat Aug 20 05:53:58 2016:

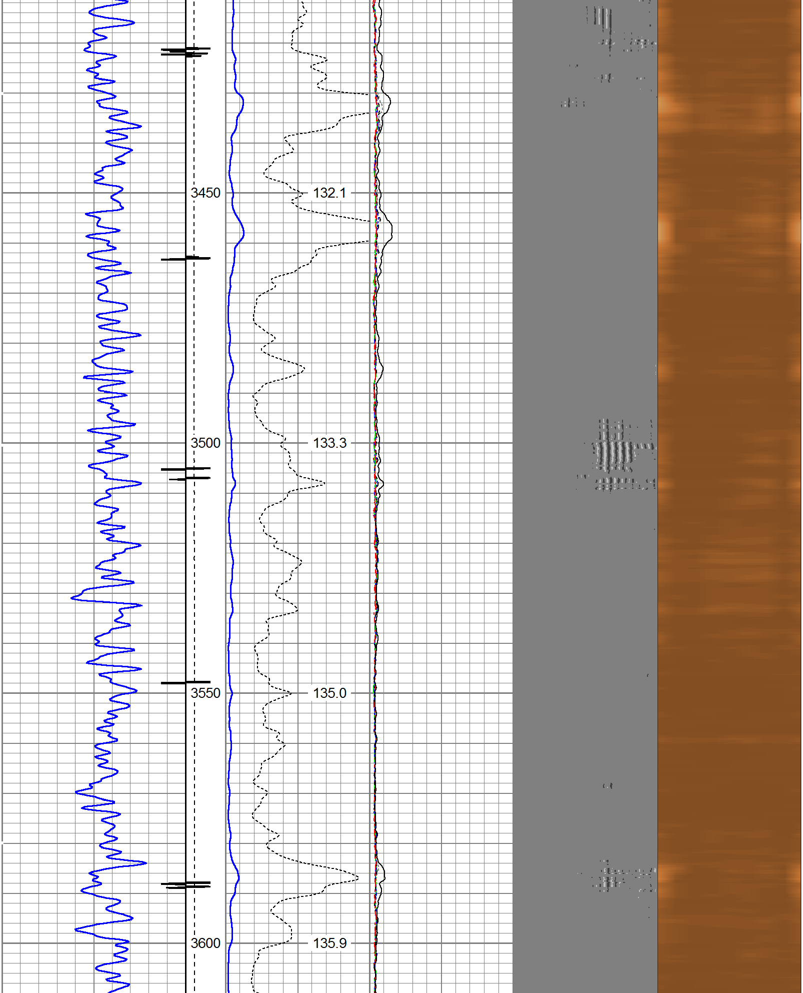
	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.000	0.000	0.000
5'	0.000	0.000	0.000
SUM			
S1	0.000	0.000	0.000
S2	0.000	0.000	0.000
S3	0.000	0.000	0.000
S4	0.000	0.000	0.000
S5	0.000	0.000	0.000
S6	0.000	0.000	0.000
S7	0.000	0.000	0.000
S8	0.000	0.000	0.000

Cutters Wireline Service, Inc. A Cased Hole Wireline Company

MAIN PASS

5" = 100'

Database File:	markham 4.db
Dataset Pathname:	pass7
Presentation Format:	rbl55
Dataset Creation:	Wed Sep 14 07:38:56 2016 by Log 7.0 B1
Charted by:	Depth in Feet scaled 1:240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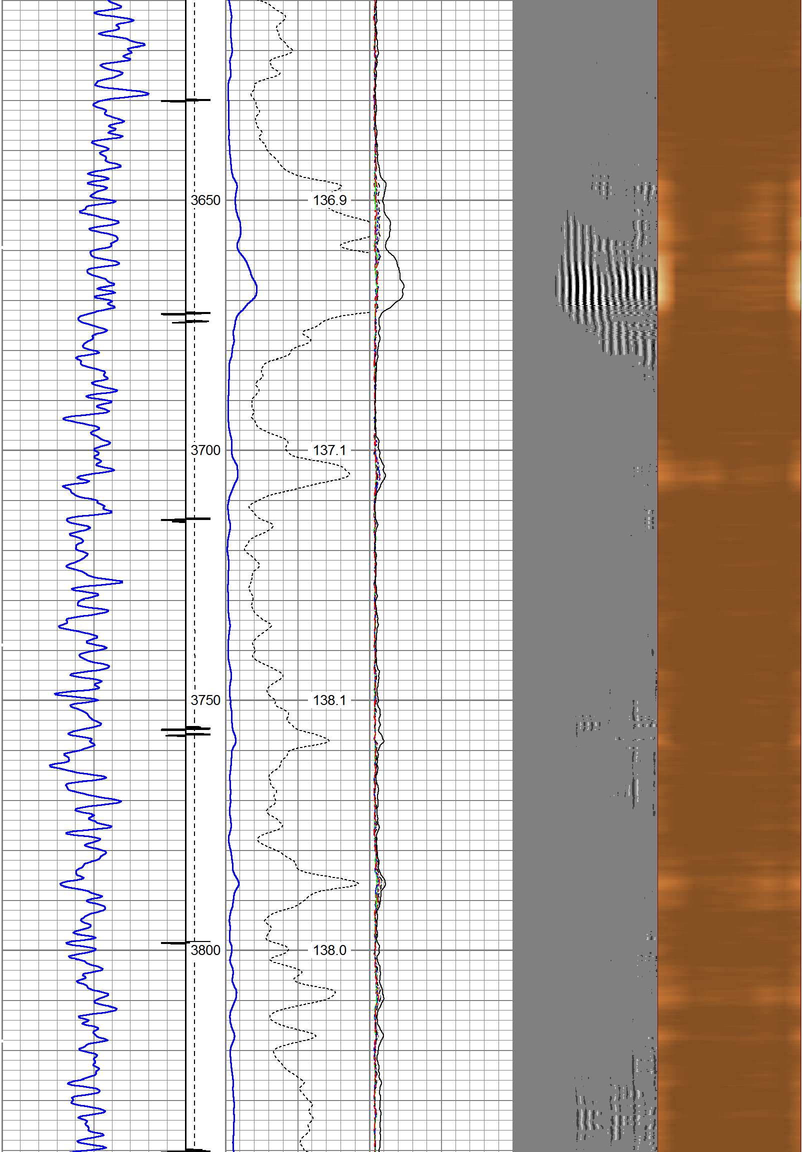
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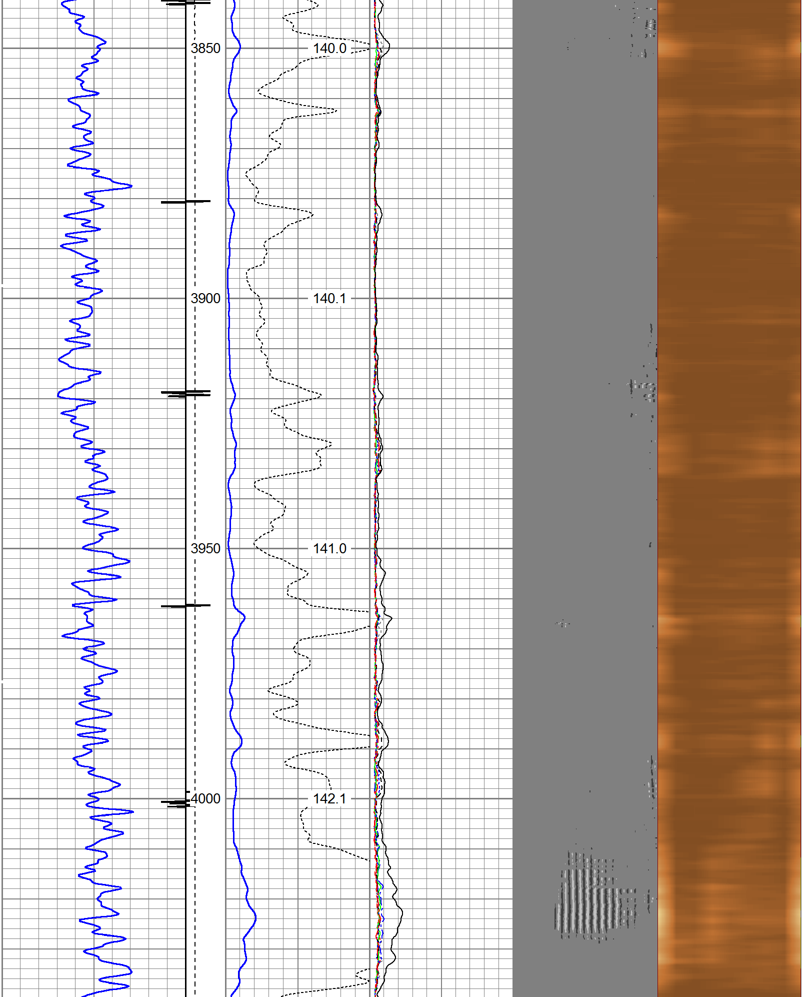
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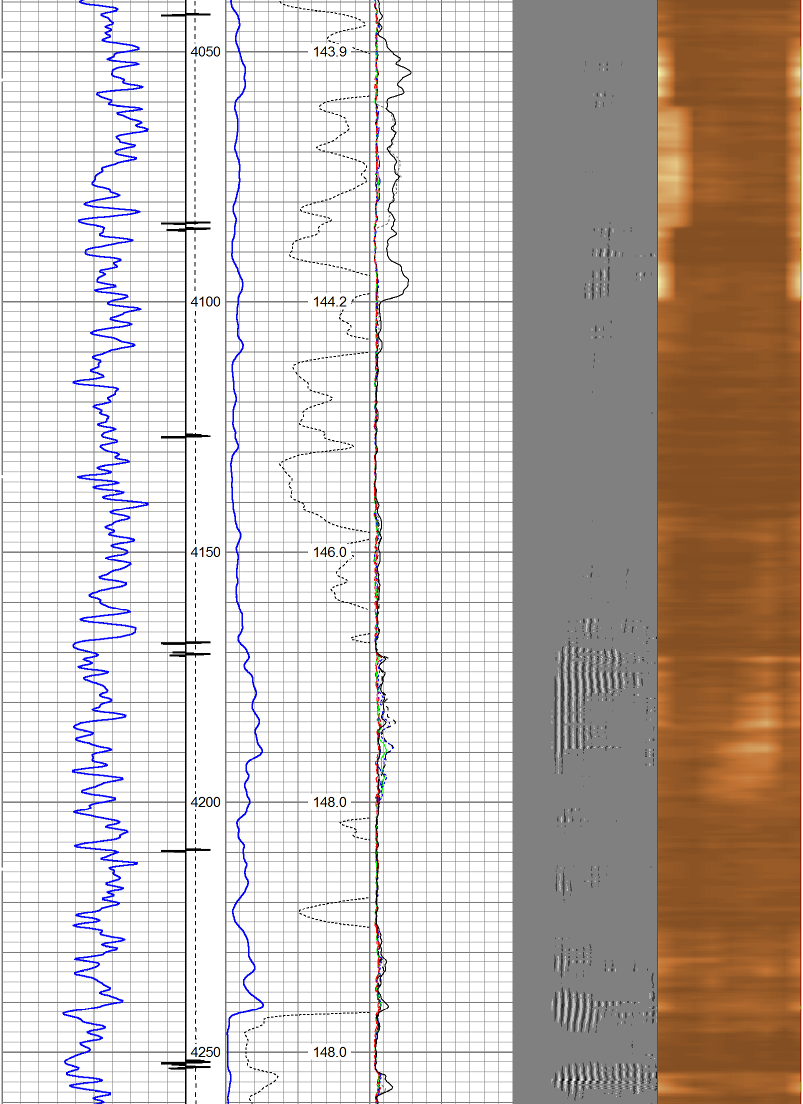
140.1
3950
141.0
4000
142.1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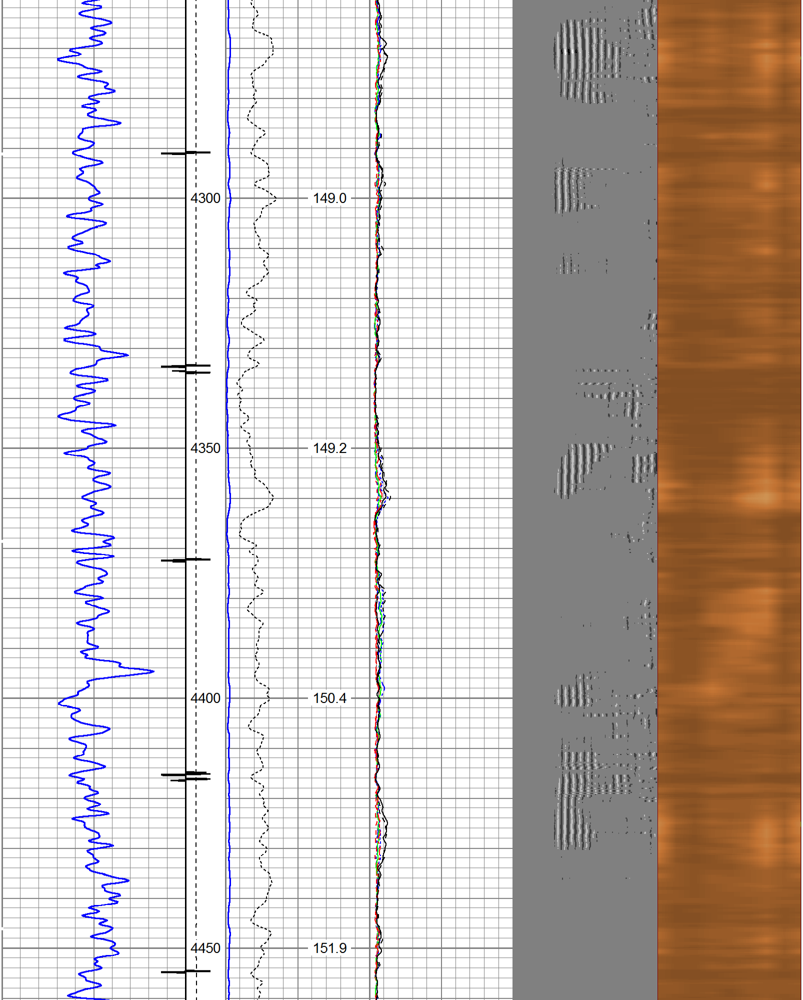
146.0
4200
148.0
4250
148.0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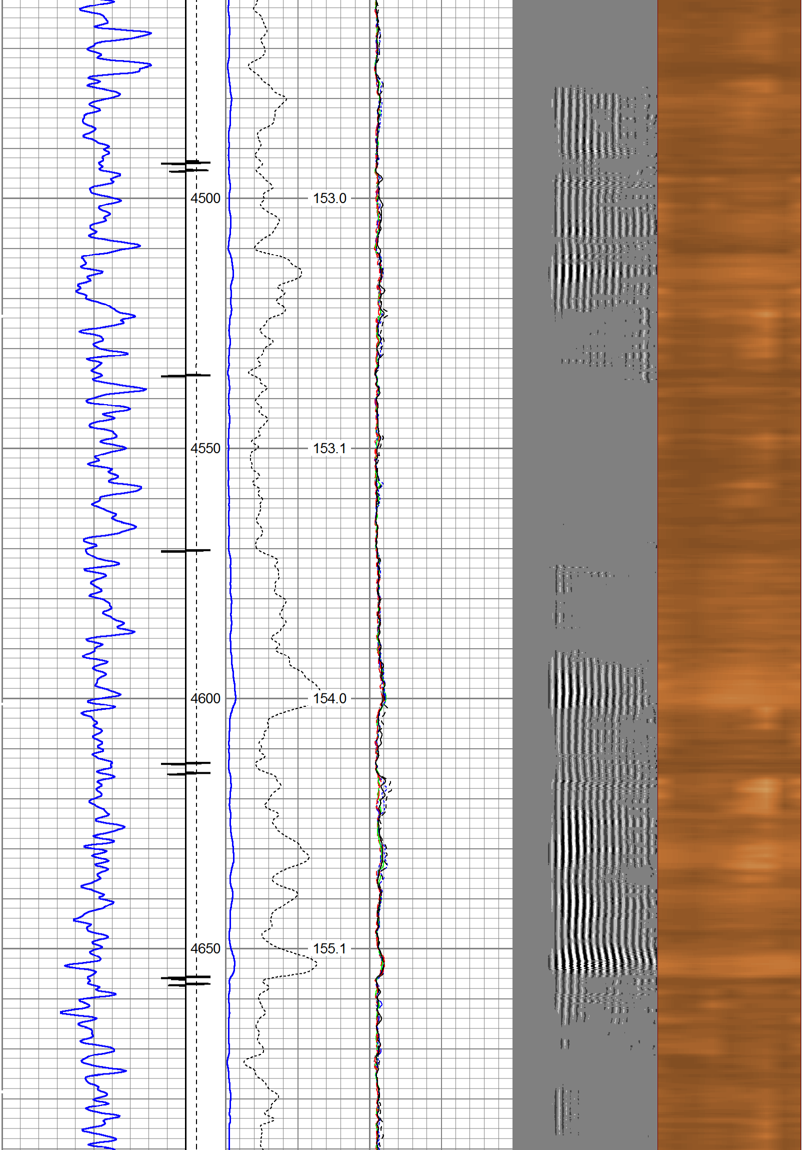
4350
149.2
4400
150.4
4450
151.9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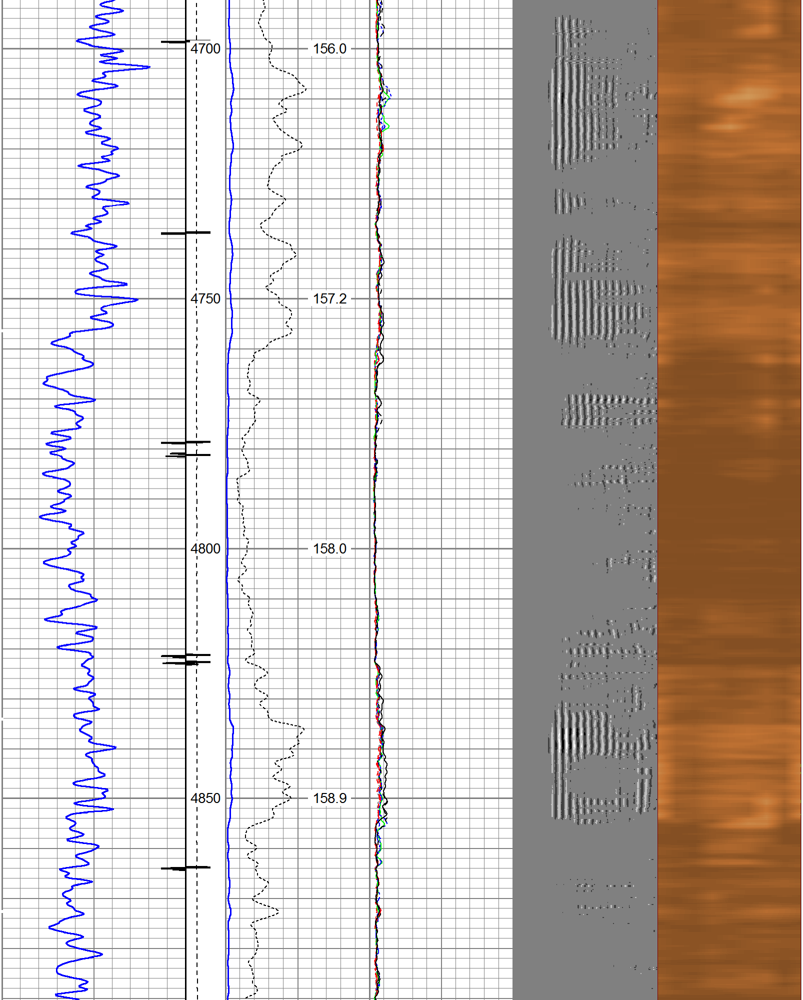
4650
155.1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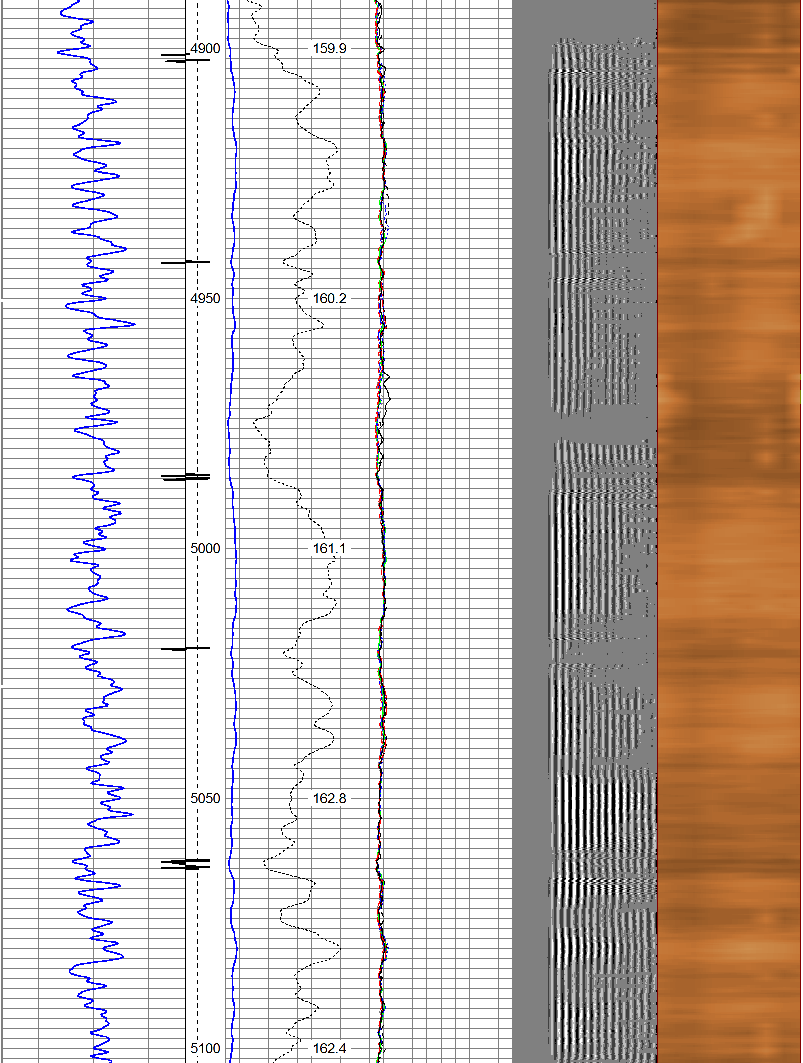
158.9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4950
160.2
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161.1
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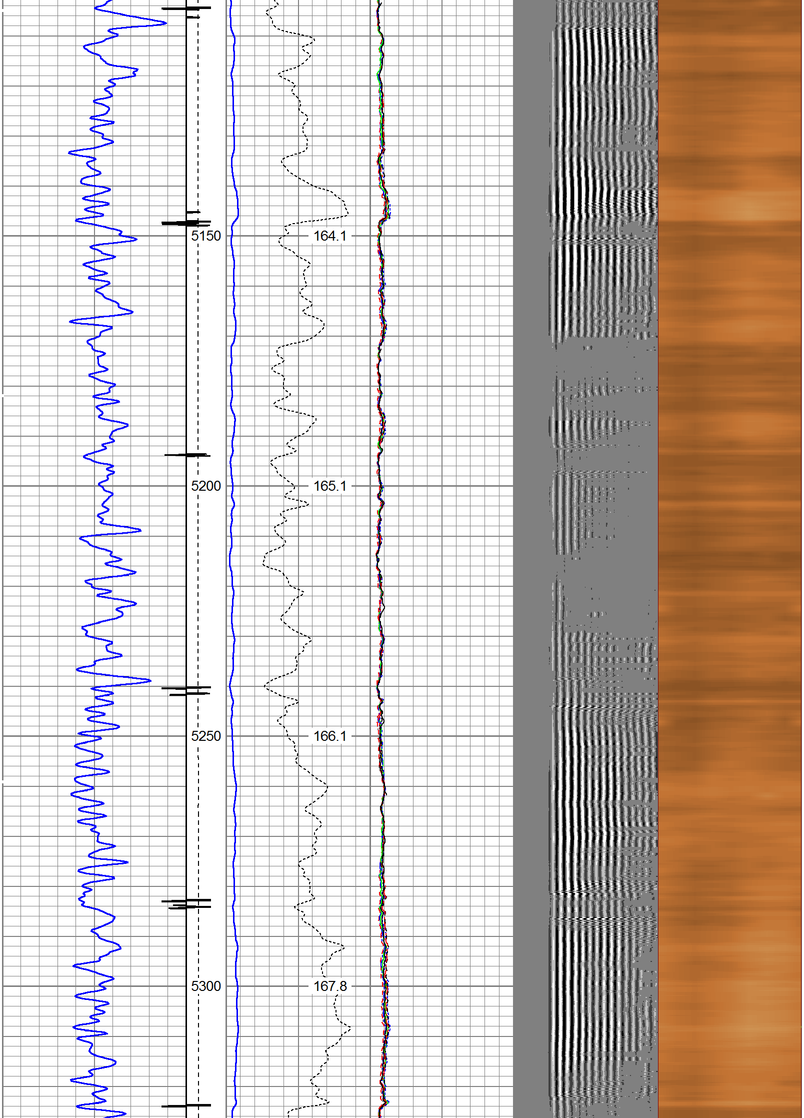
162.4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165.1
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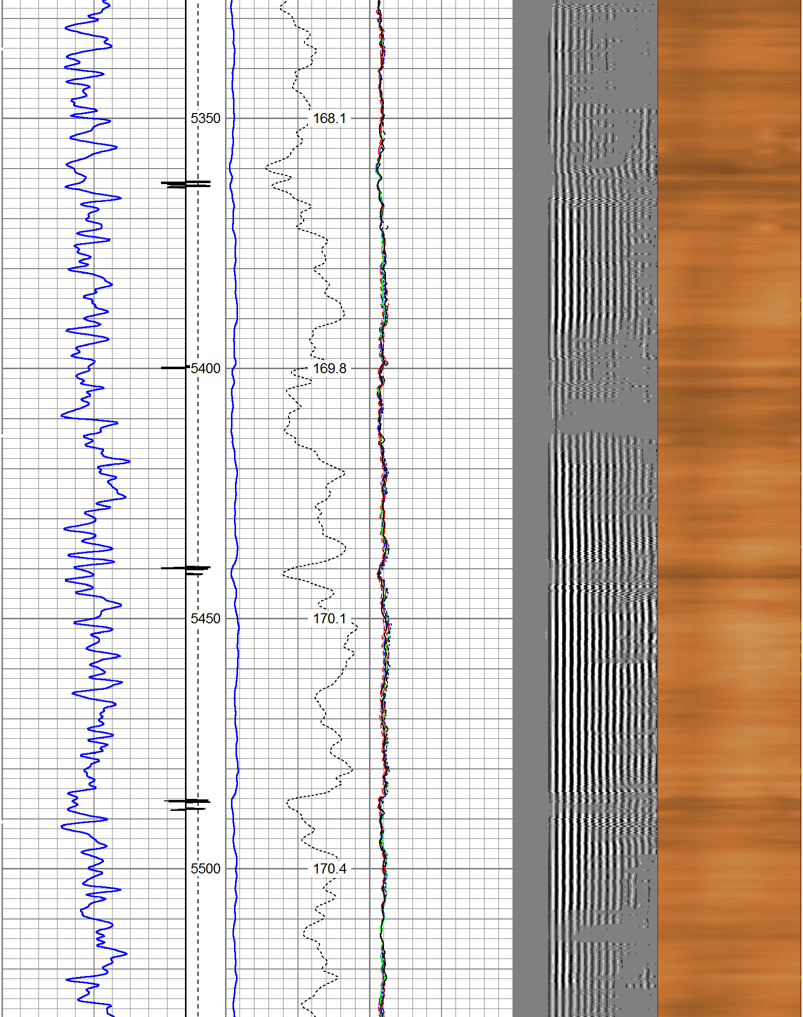
167.8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5400
169.8
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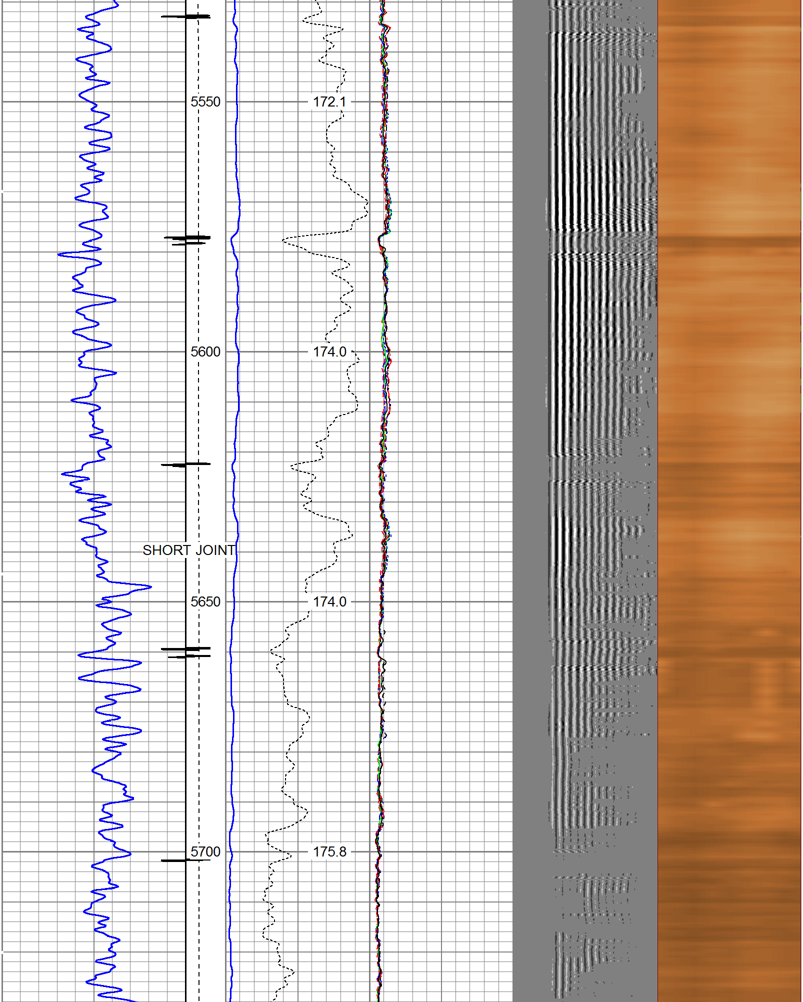
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5650
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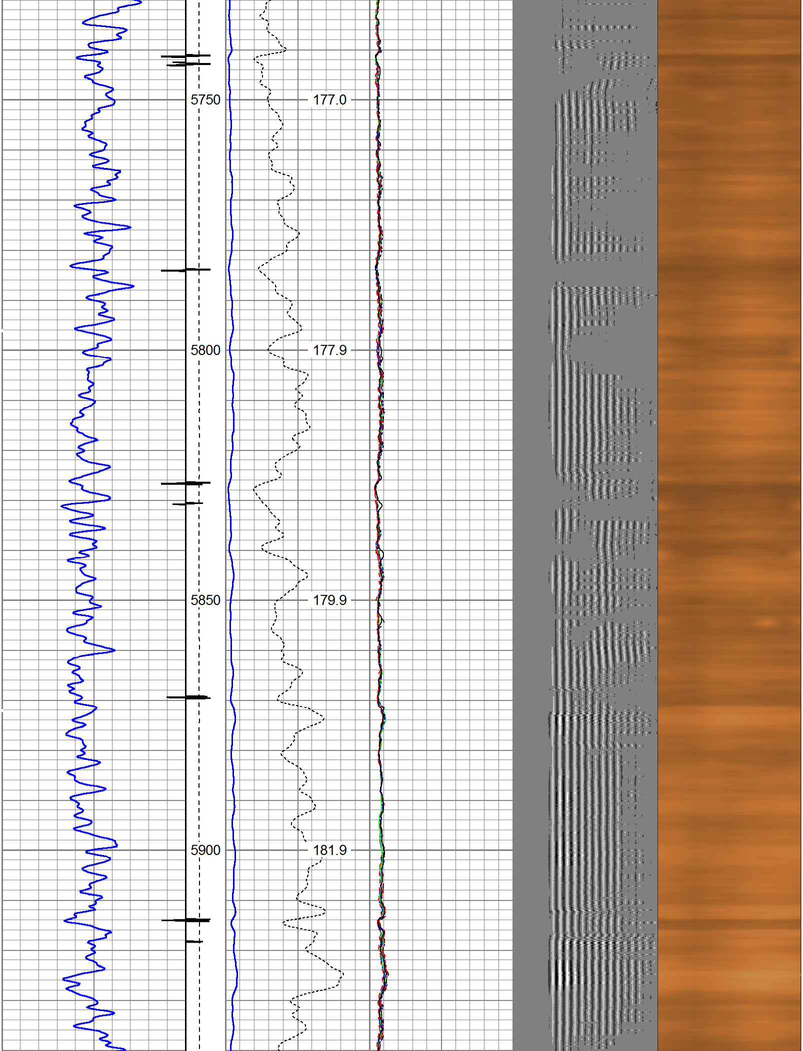
175.8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5800
177.9
5850
179.9
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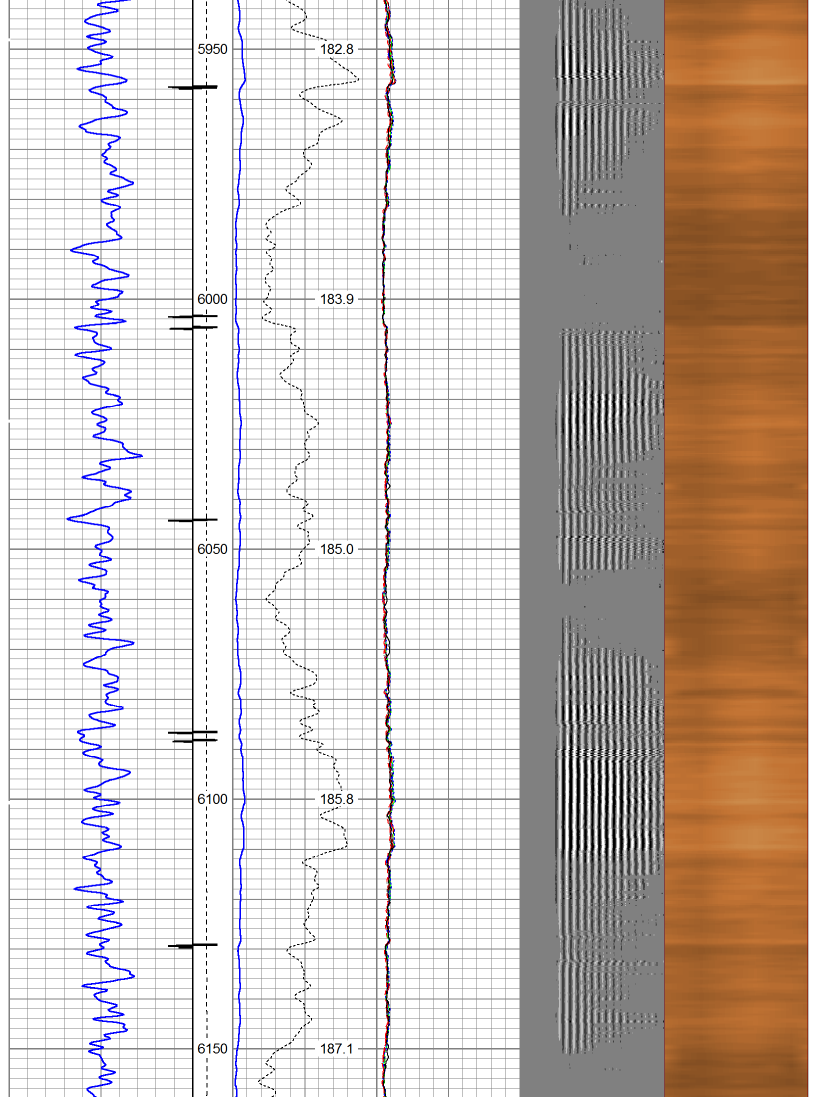
181.9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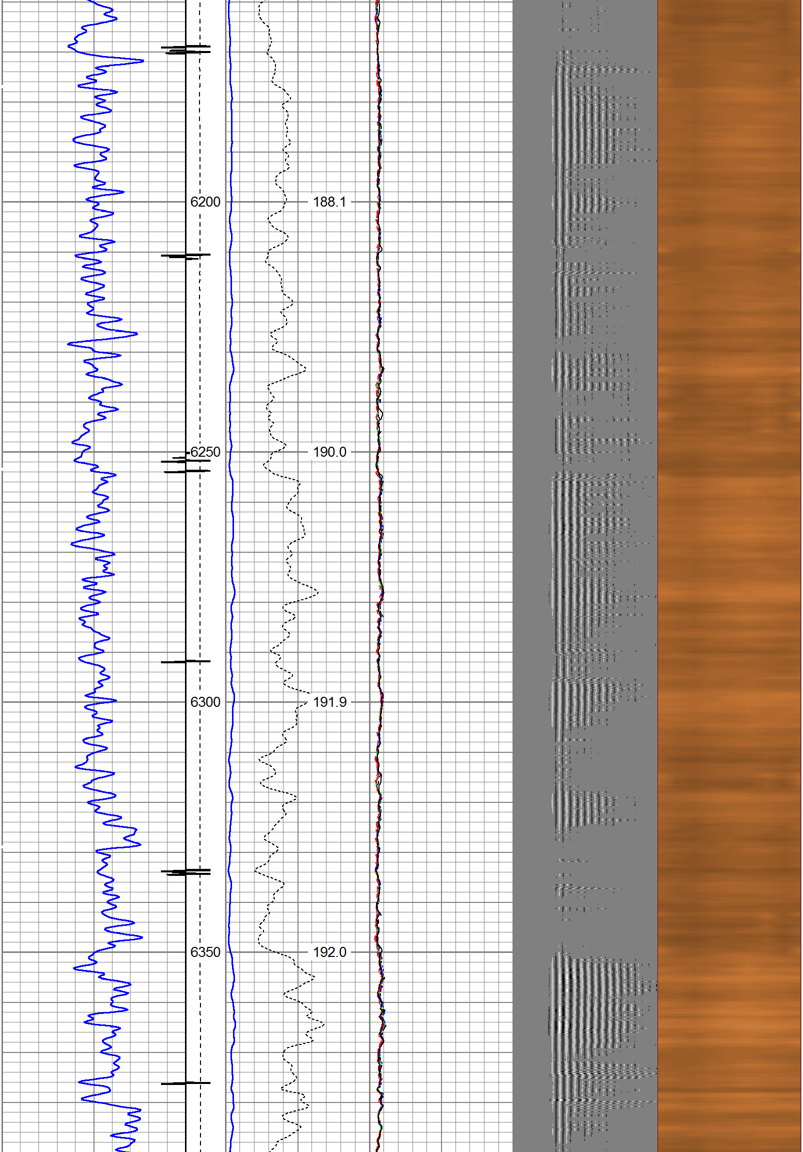
185.8
6150
187.1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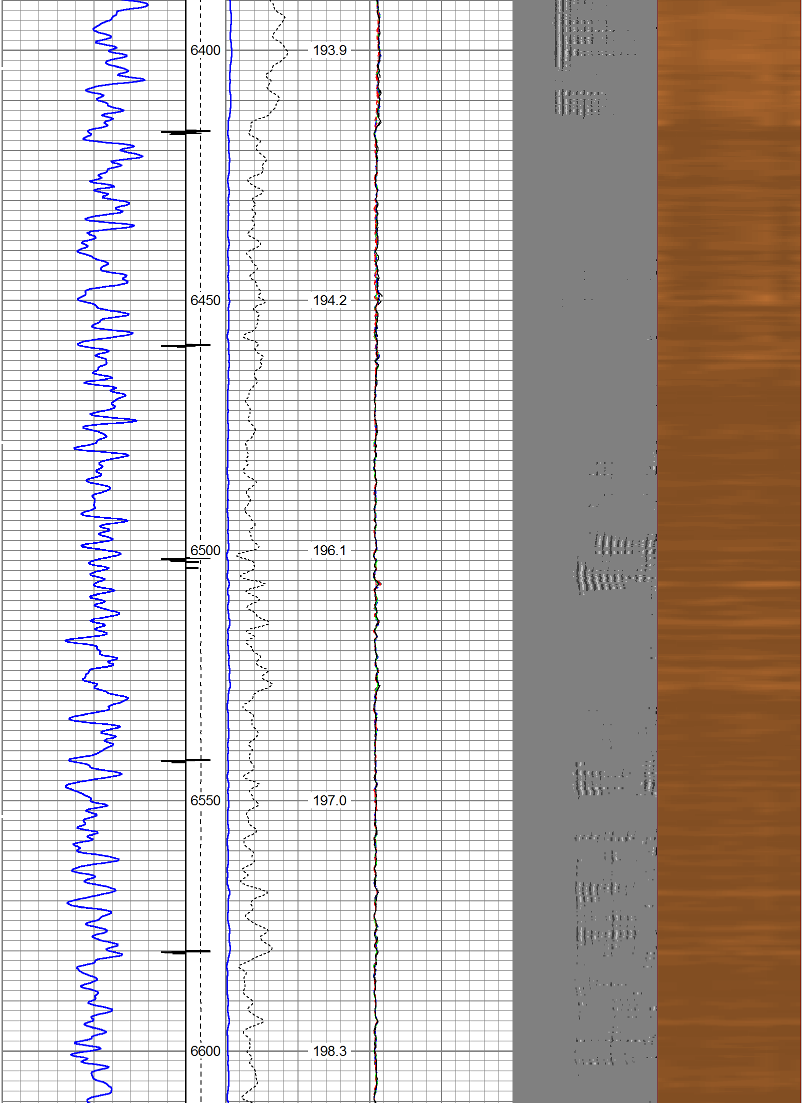
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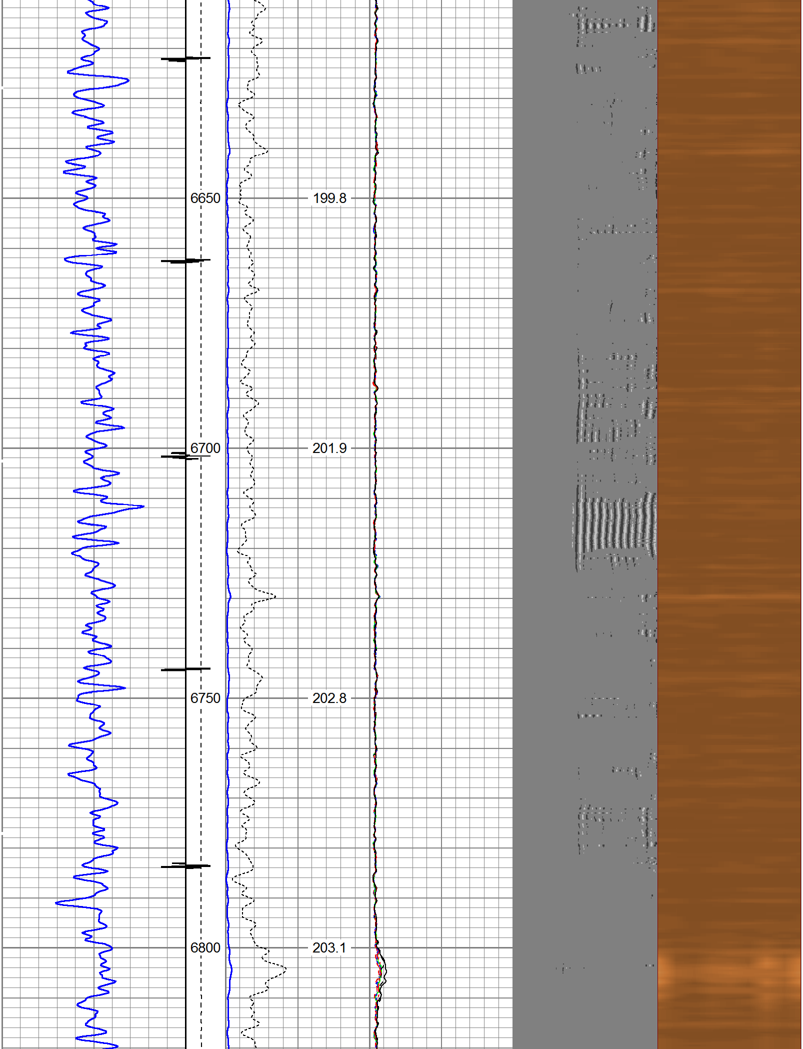
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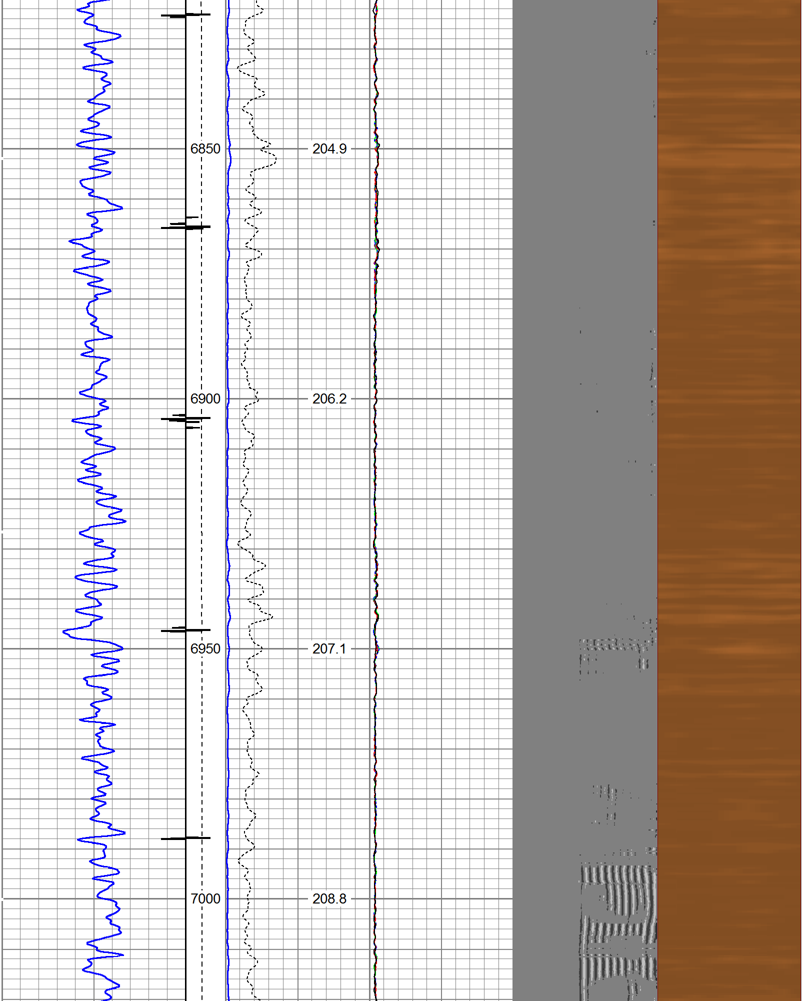
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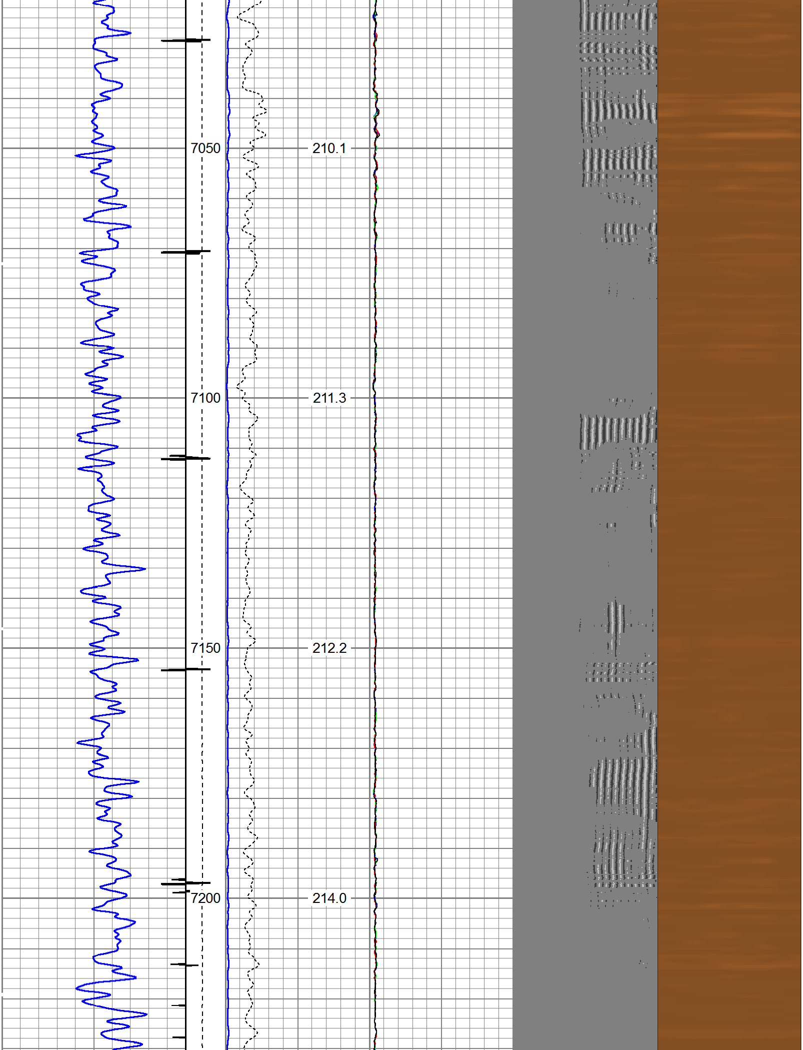
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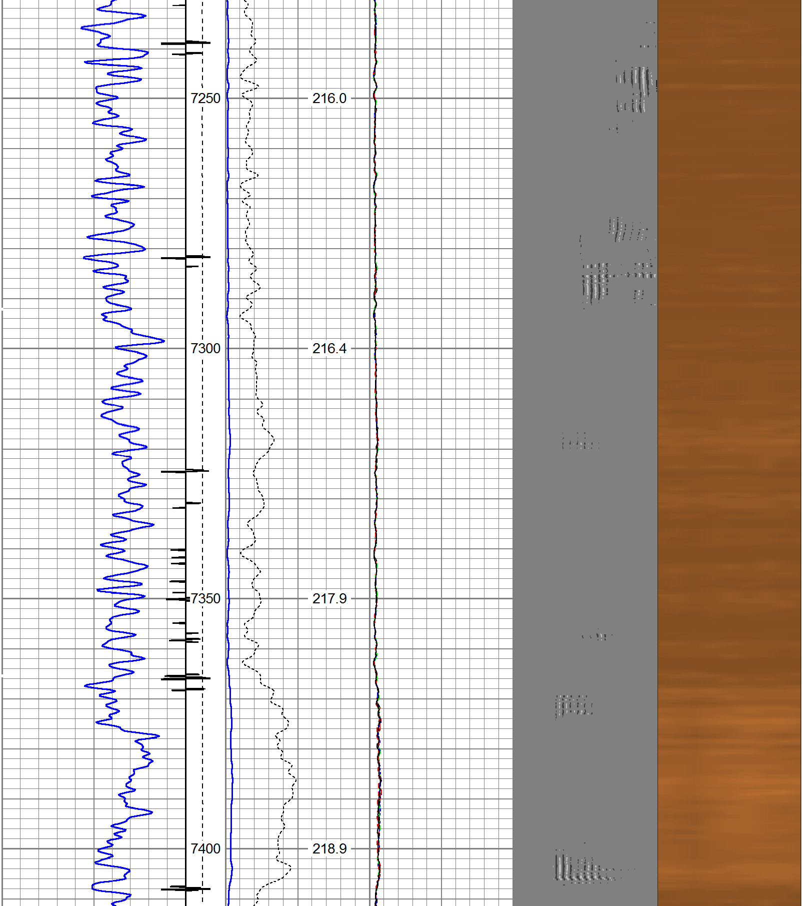
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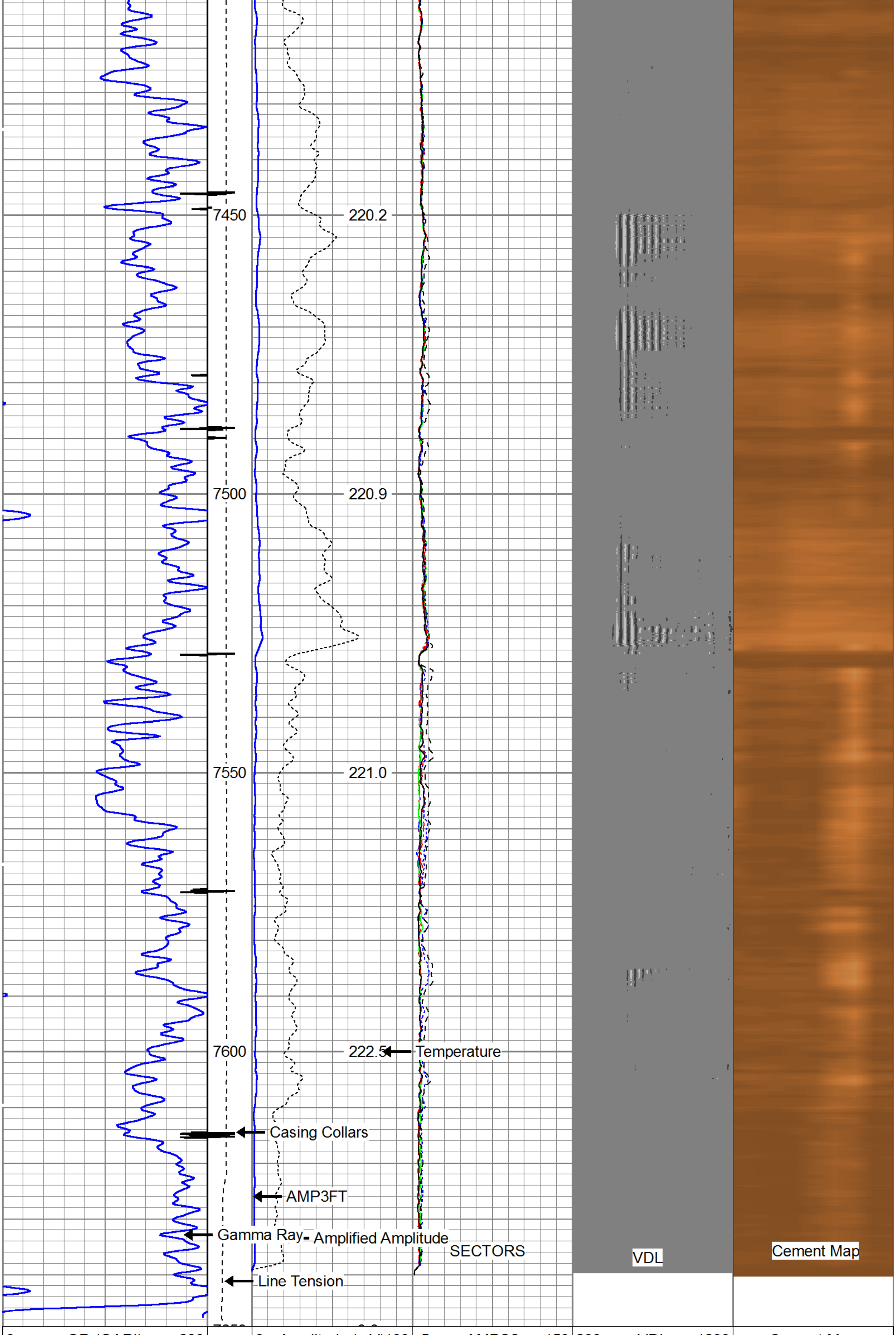


0 GR (GAPI) 200	LTEN	0 Amplitude (mV)100	-5 AMPS2 150	200 VDL 1200	Cement Map
	CCLlb)	Amplified Amplitude	-5 AMPS3 150		1 80
	(4000	0 (mV) 10	-5 AMPS4 150		
		Temperature	-5 AMPS5 150		
		(degF)	-5 AMPS6 150		
			-5 AMPS7 150		
			-5 AMPS8 150		
			-5 AMPS1 150		

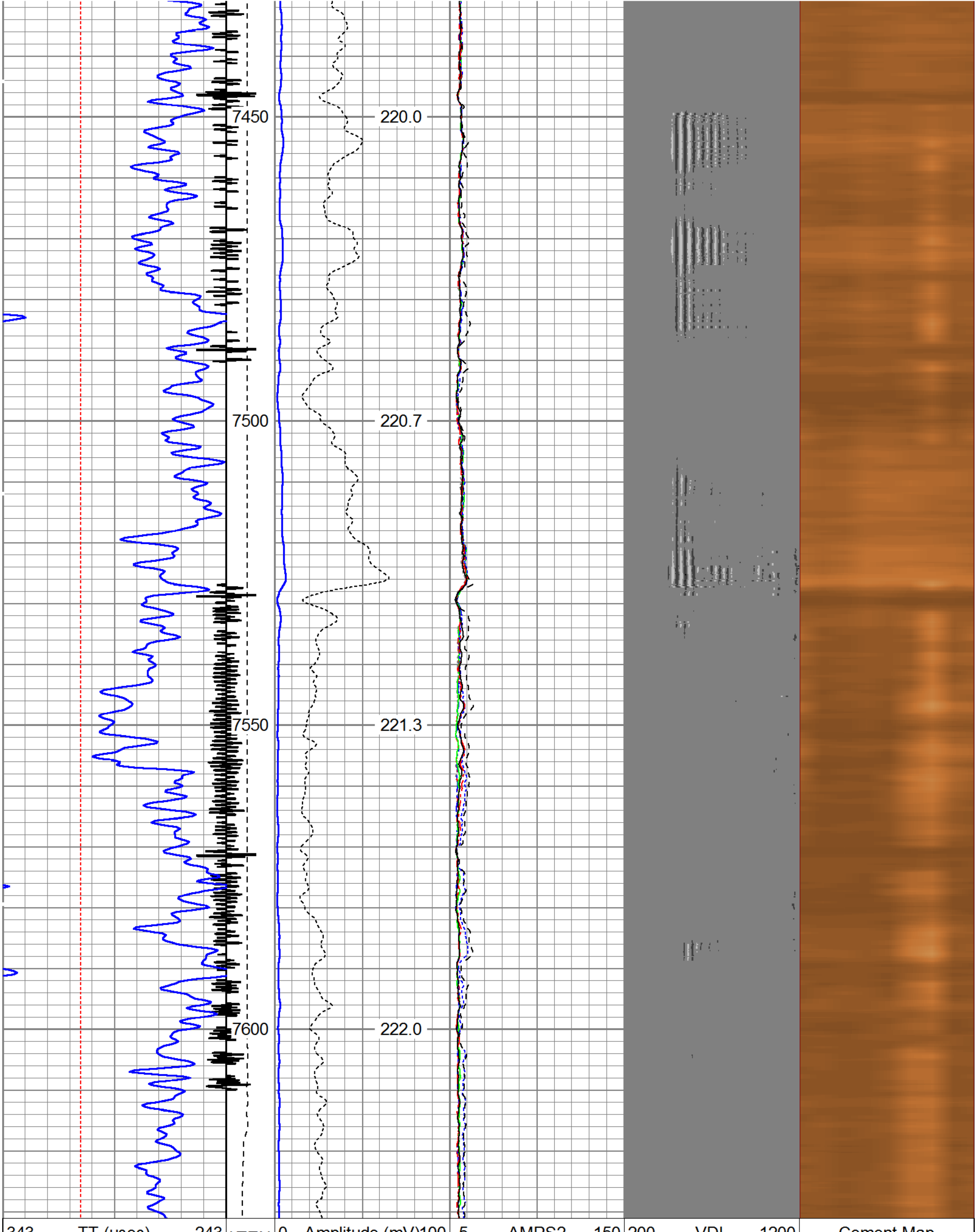
Cutters
Wireline Service, Inc.
A Cased Hole Wireline Company

REPEAT PASS

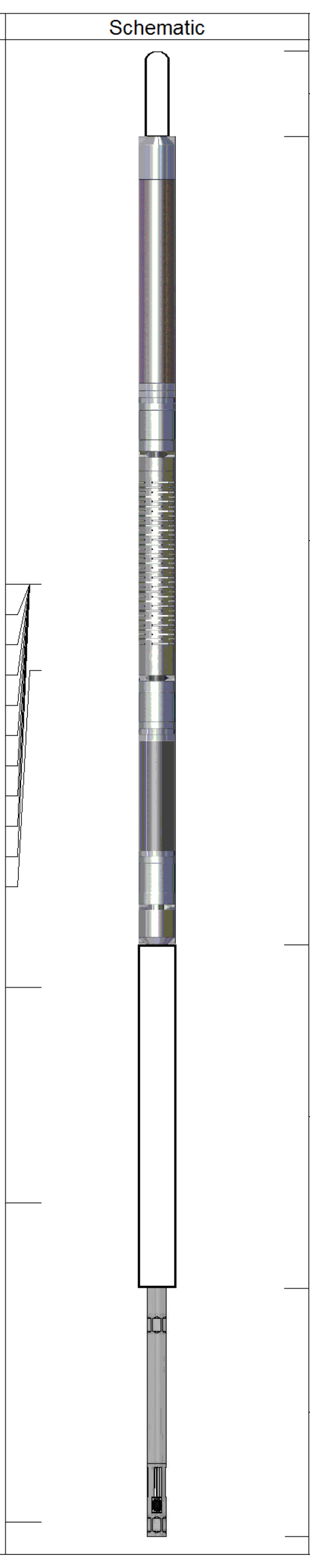
5" = 100'

Database File:	markham 4.db
Dataset Pathname:	pass6
Presentation Format:	rbl55
Dataset Creation:	Wed Sep 14 07:25:58 2016 by Log 7.0 B1
Charted by:	Depth in Feet scaled 1:240

343 TT (usec) 243	LTEN	0 Amplitude (mV)100	-5 AMPS2 150	200 VDL 1200	Cement Map
0 GR (GAPI) 200	(lb)	Amplified Amplitude	-5 AMPS3 150		1 80
	CCL 000	0 (mV) 10	-5 AMPS4 150		
		Temperature	-5 AMPS5 150		
		(degF)	-5 AMPS6 150		
			-5 AMPS7 150		
			-5 AMPS8 150		
			-5 AMPS1 150		



343 TT (usec) 243	LTEN	0 Amplitude (mV)100	-5 AMPS2 150	200 VDL 1200	Cement Map
0 GR (GAPI) 200	(lb)	Amplified Amplitude	-5 AMPS3 150		1 80
	CCL 000	0 (mV) 10	-5 AMPS4 150		
		Temperature	-5 AMPS5 150		
		(degF)	-5 AMPS6 150		
			-5 AMPS7 150		
			-5 AMPS8 150		
			-5 AMPS1 150		

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			CHD-STNDRD (1) Standard Cable Head	1.00	1.69	10.00
WVF3FT WVFCAL WVFS1 WVFS2 WVFS3 WVFS4 WVFS5 WVFS6 WVFS7 WVFS8 WVF5FT	11.06 11.06 11.06 11.06 11.06 11.06 11.06 11.06 11.06 11.06 10.06		RBT-Probe (060112_45) Probe 2.75" Radii Bond Tool	9.39	2.75	90.00
CCL GR	6.38 3.88		GR-Probe (060109) Probe 2.75" 4 Channel Pulse	4.00	2.75	30.00
TEMP	0.17		TEMP-Comprobe (TEMP_CMPRB_1375_02.88 Positive pulse Temp tool		1.38	15.00

Dataset:	markham 4.db: field/well/run1/pass7
Total Length:	17.27 ft
Total Weight:	145.00 lb
O.D.	2.75 in

Cutters
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A Cased Hole Wireline Company

Company	CUB CREEK ENERGY
Well	MARKHAM 4
Field	WATTENBERG
County	WELD
State	COLORADO