

# RADIAL CEMENT BOND LOG GAMMA RAY CCL

Company KERR-McGEE OIL & GAS ONSHORE LP  
Well PSC 15-10  
Field WATTENBERG  
County WELD  
State COLORADO

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Location: API # : 05-123-21625  
SW/SE  
LAT:40.25760 & LONG:-104.86250  
SEC 10 TWP 3N RGE 67W  
Permanent Datum GL  
Log Measured From KB 12' Elevation 4791'  
Drilling Measured From KB  
Other Services  
K.B. 4803'  
D.F. 4802'  
G.L. 4791'

Date 9-30-2015

Run Number ONE  
Depth Driller 7262'  
Depth Logger 3706'  
Bottom Logged Interval 3706'  
Top Log Interval SURFACE  
Open Hole Size 7 7/8"  
Type Fluid WATER  
Density / Viscosity 1.0  
Max. Recorded Temp. 134 Deg. F  
Estimated Cement Top 102'  
Time Well Ready N/A  
Time Logger on Bottom N/A  
Equipment Number 5432  
Location GREELEY  
Recorded By M. JANDREAU  
Witnessed By Bill Smith

Borehole Record  
Run Number Bit From To Size Weight From To  
ONE  
TWO

Casing Record  
Surface String Size 8 5/8 Wgt/Ft 24# Top 0 Bottom 523'  
Prot. String  
Production String 4 1/2 11.6 0 7246'  
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

NOT CORRELATED  
RAN BOND LOG TO VERIFY CEMENT  
CALIBRATED FREE PIPE AT 3110' AT 81 Mv  
THANK YOU FOR USING WARRIOR ENERGY SERVICES!!!!

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
CENT	18.91					

				PTS275	2.83	2.75	
HEADVOLT	16.08						
RBT	16.08						
IntTemp	14.66						
WVF3FT	11.41						
WVFCAL	11.41						
WVFS1	11.41						
WVFS2	11.41						
WVFS3	11.41						
WVFS4	11.41						
WVFS5	11.41						
WVFS6	11.41						
WVFS7	11.41						
WVFS8	11.41						
WVF5FT	10.41						
CNLSC	6.00						
CNSSC	5.17						
GR	4.33						
CCL	3.64						
GR	0.90						
Dataset: psc 15-10.db: field/well/run1/pass3 Total Length: 18.91 ft Total Weight: 160.00 lb O.D. 2.75 in							

## Gamma Ray Calibration Report

Serial Number: 275  
 Tool Model: Probe  
 Performed: Fri Nov 07 09:08:01 2014  
  
 Calibrator Value: 120.0 cps  
  
 Background Reading: 30.0 cps  
 Calibrator Reading: 210.0 cps  
  
 Sensitivity: 1.1000 cps/cps

## Compensated Neutron Calibration Report

Serial Number: 275  
 Tool Model: Probe\_B

CALIBRATION Wed Jul 30 08:47:19 2008

Detector	Readings	Target	Normalization
Short Space	5001.20 cps	0.00 cps	1.0000
Long Space	1029.31 cps	0.00 cps	1.0000

## PRE-SURVEY VERIFICATION

	Detector	Readings	Measured	Target
1)	Short Space	cps		
	Long Space	cps	pu	pu
2)	Short Space	cps		
	Long Space	cps	pu	
3)	Short Space	cps		
	Long Space	cps	pu	

## POST-SURVEY VERIFICATION

	Detector	Readings	Measured	Target
1)	Short Space	cps		
	Long Space	cps	pu	pu
2)	Short Space	cps		
	Long Space	cps	pu	pu
3)	Short Space	cps		
	Long Space	cps	pu	pu

## Segmented Cement Bond Log Calibration Report

Serial Number: Base  
 Tool Model: Probe  
  
 Calibration Casing Diameter: 4.500 in  
 Calibration Depth: 3088.508 ft

Master Calibration, performed Wed Sep 30 07:52:15 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.003	2.140	1.500	81.196	37.302	1.370
CAL	1.039	2.400				

CAL	0.000	2.100	1.500	81.196	39.790	1.347
5'	0.004	2.007				
SUM						
S1	0.002	2.144	0.500	81.000	37.585	0.412
S2	0.006	2.030	0.500	81.000	39.767	0.279
S3	0.004	1.935	0.500	81.000	41.704	0.316
S4	0.004	2.001	0.500	81.000	40.326	0.320
S5	0.005	2.100	0.500	81.000	38.424	0.296
S6	0.006	2.221	0.500	81.000	36.341	0.294
S7	0.006	2.267	0.500	81.000	35.606	0.281
S8	0.004	2.262	0.500	81.000	35.653	0.345

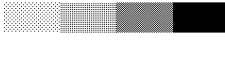

Internal Reference Calibration, performed Tue Jun 05 07:53:42 2012:

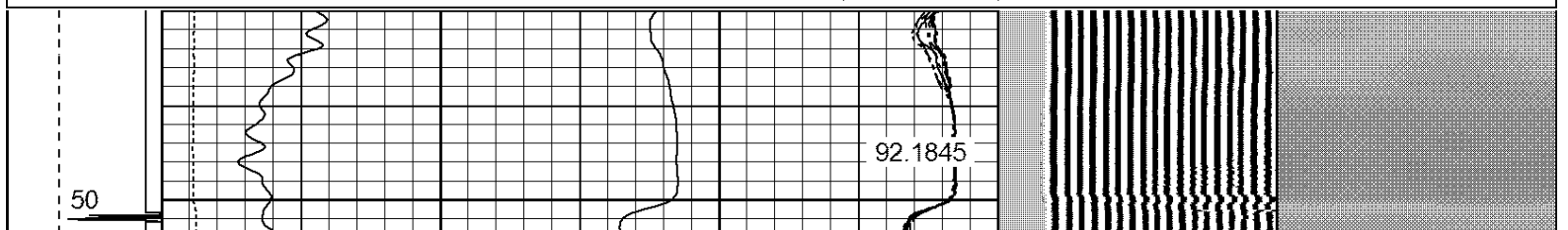
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	1.039	2.400	1.000	0.000

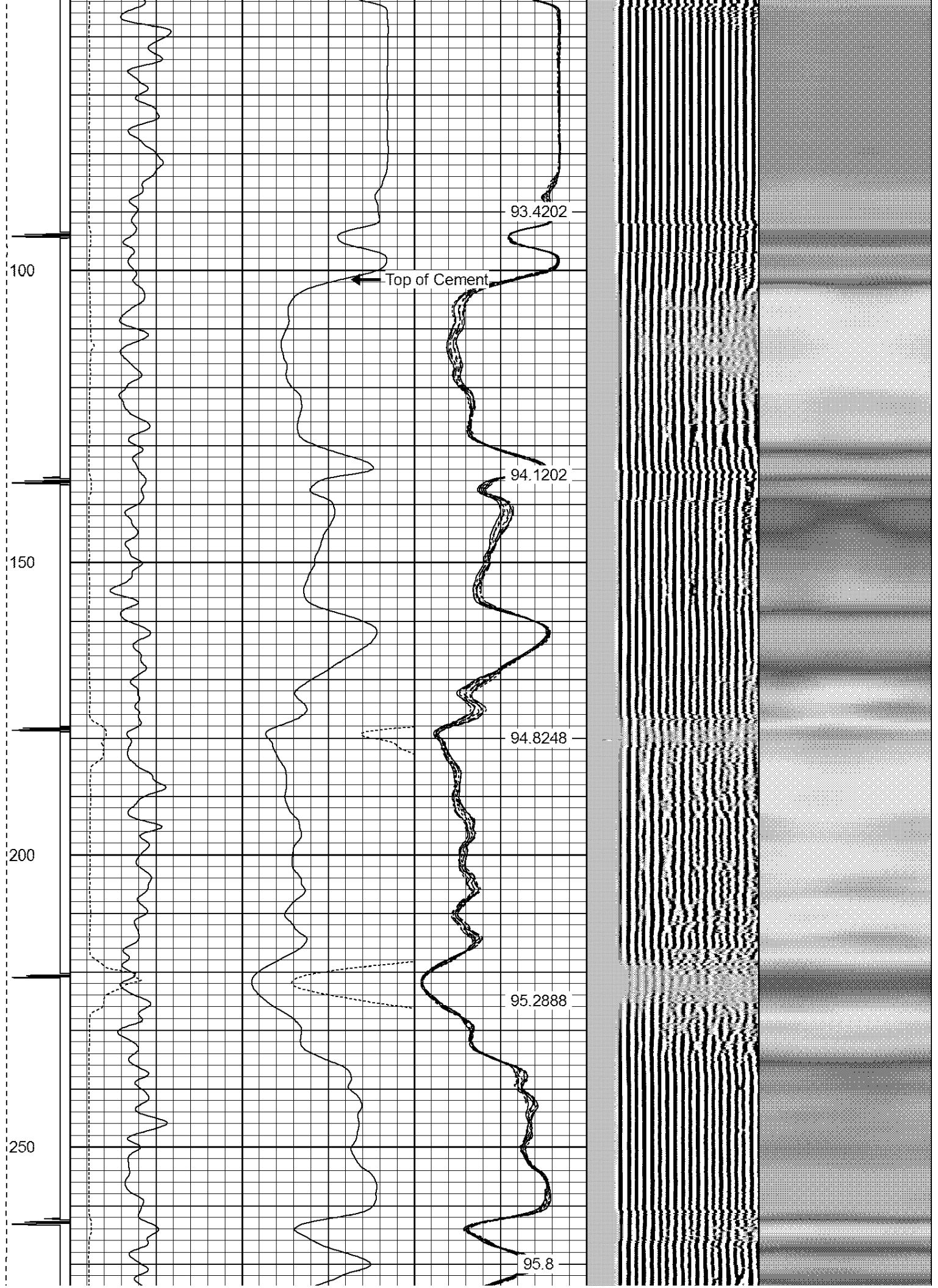
Air Zero Calibration, performed Wed Sep 30 07:38:30 2015:

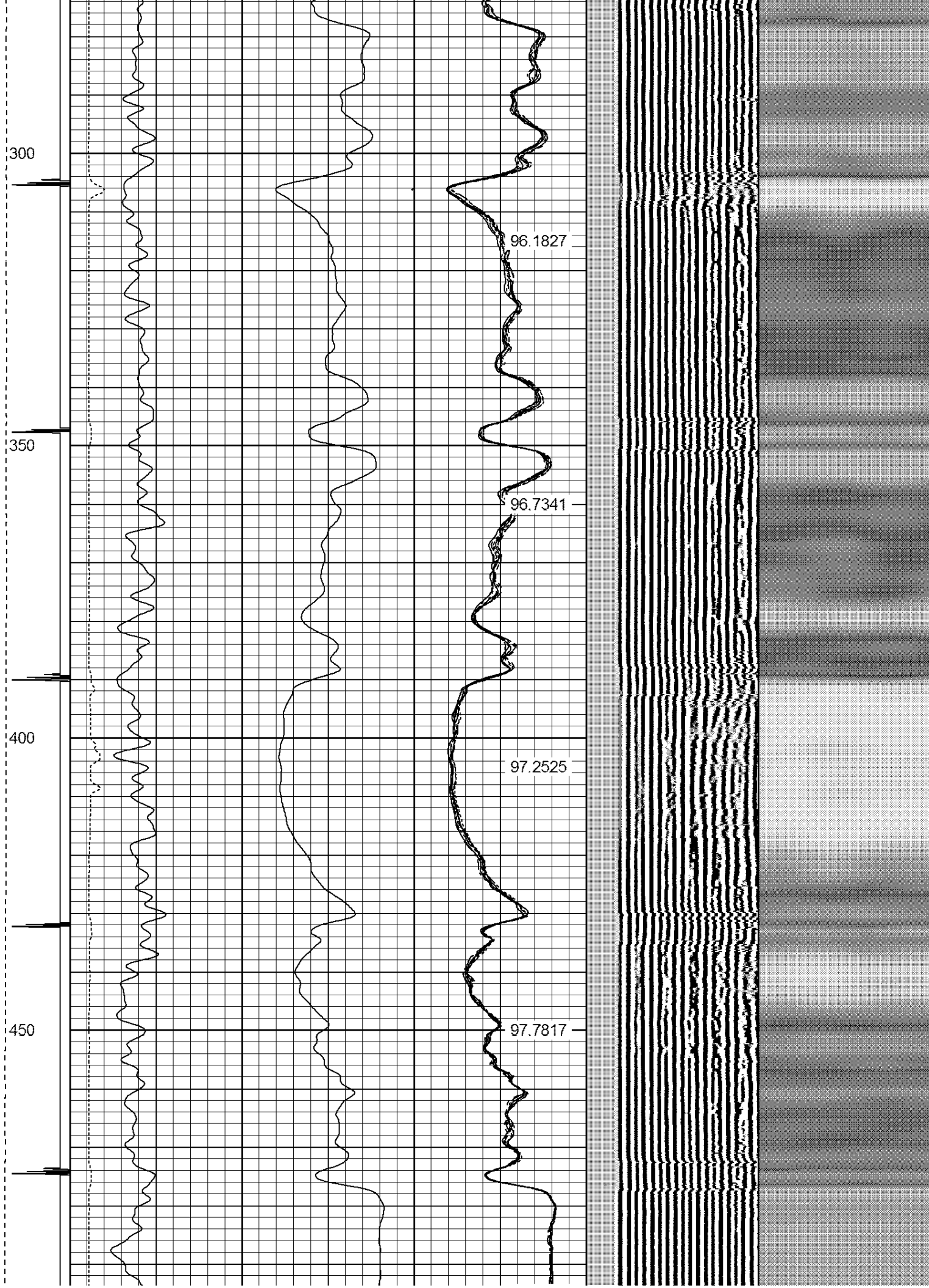
	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.000		0.000		0.000	
5'	0.000		0.000		0.000	
SUM						
S1	0.000		0.000		0.000	
S2	0.000		0.000		0.000	
S3	0.000		0.000		0.000	
S4	0.000		0.000		0.000	
S5	0.000		0.000		0.000	
S6	0.000		0.000		0.000	
S7	0.000		0.000		0.000	
S8	0.000		0.000		0.000	

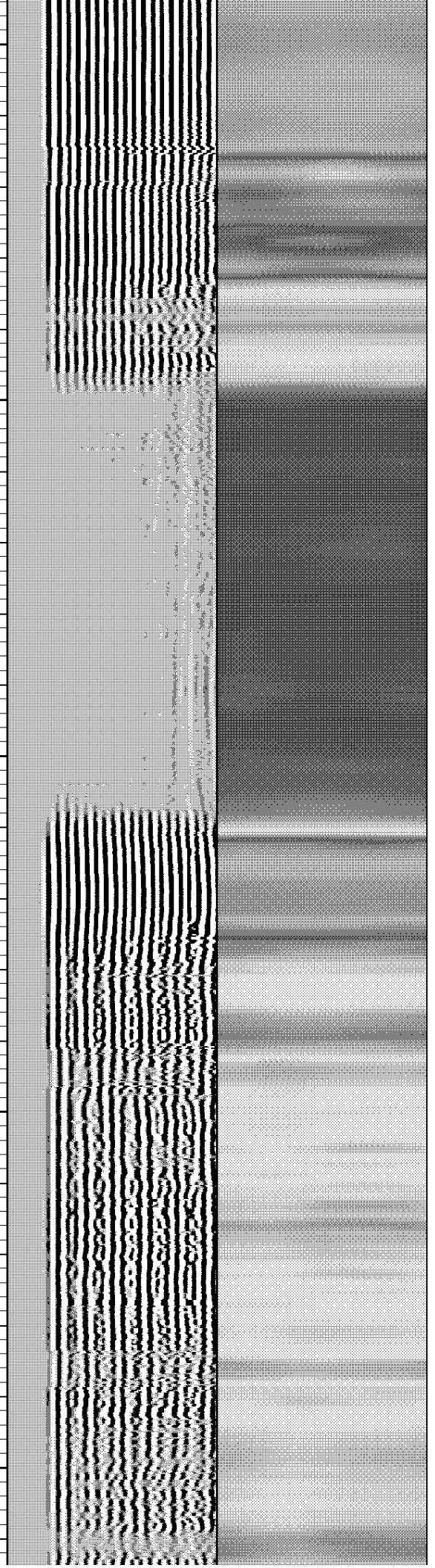
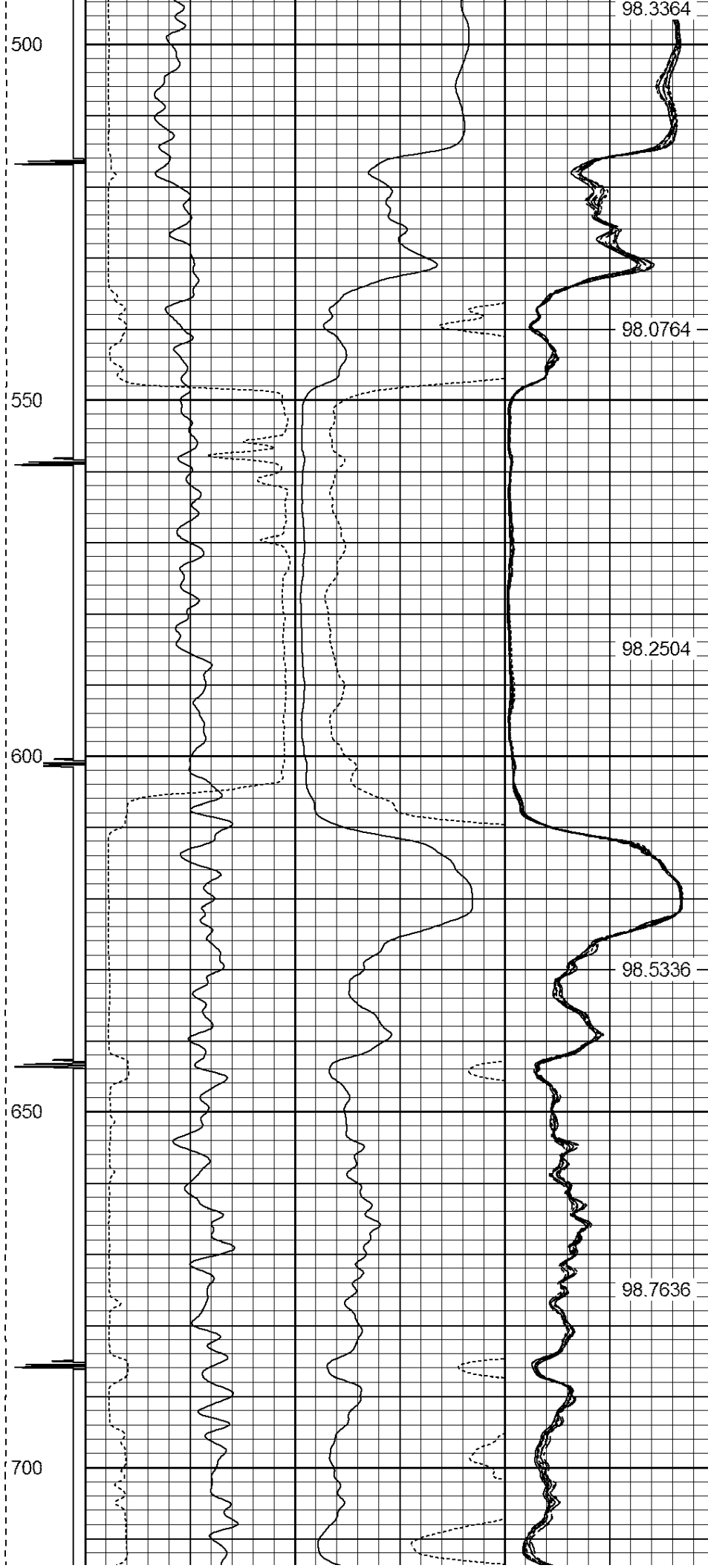
Database File: psc 15-10.db  
Dataset Pathname: pass3  
Presentation Format: ips\_rbt  
Dataset Creation: Wed Sep 30 07:59:57 2015 by Log 7.0 B1  
Charted by: Depth in Feet scaled 1:240

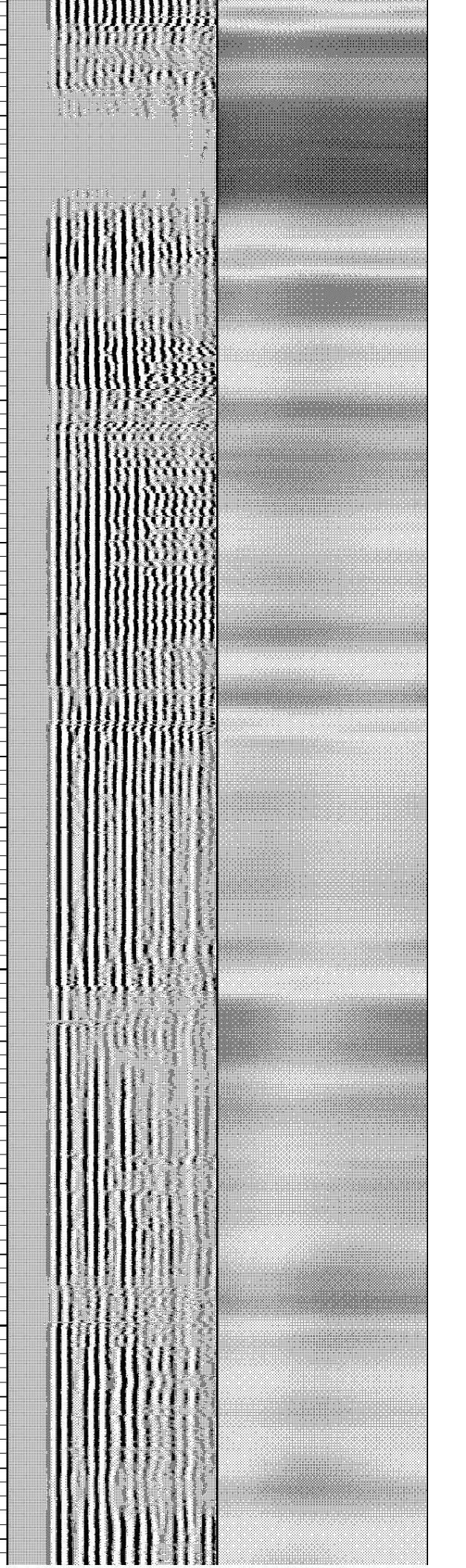
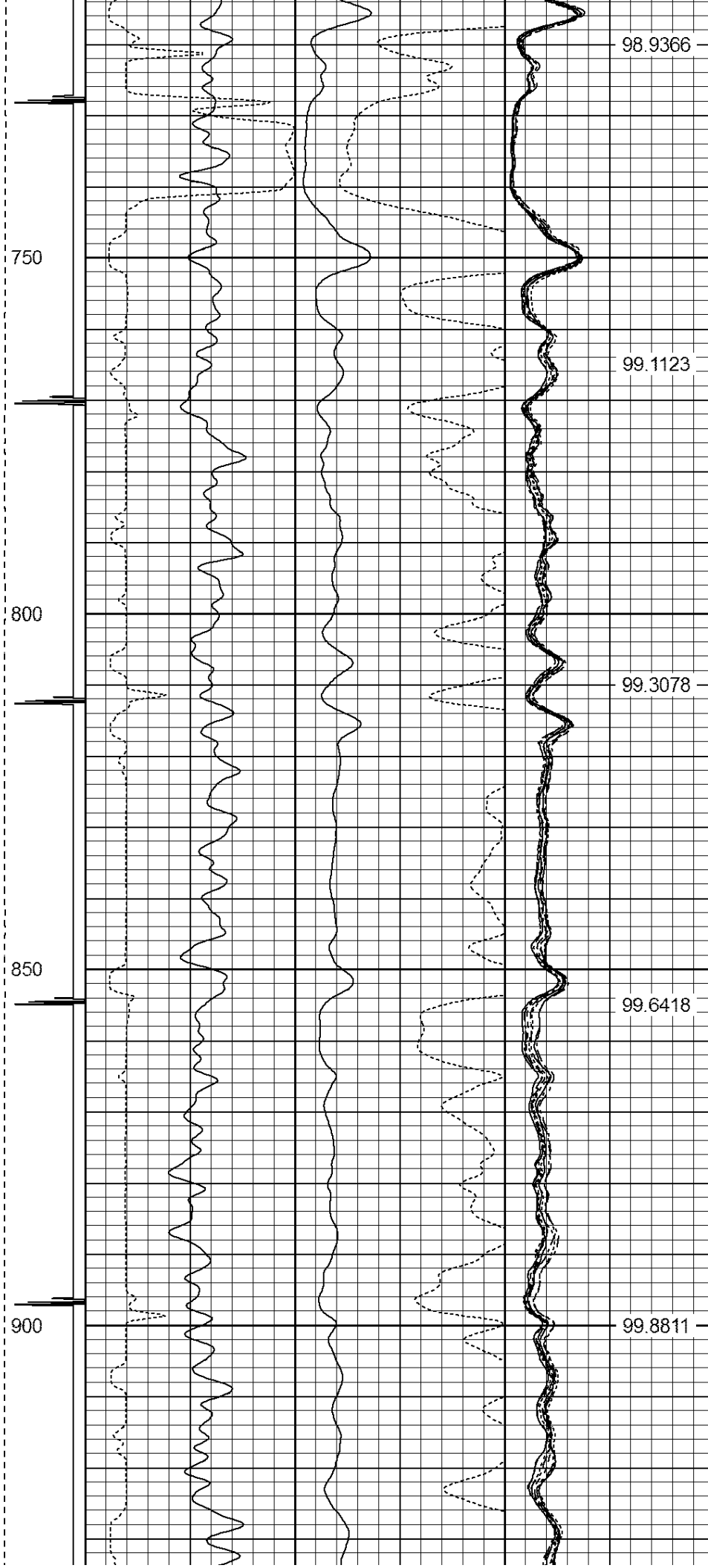
-9	CCL	1	200	TT (usec)	800	0	AMP (mV)	100	0	AMPS1	100	200	VDL	1200	1	Cement Map	8		
LSPD (ft/min)  0250			0	GR (cps)	200	0	AMPx5 (mV)	20	0	AMPS2	100				1		100		
			200	GR (cps)	400				0	AMPS3	100								
										0	AMPS4				100				
										0	AMPS5				100				
										0	AMPS6				100				
										0	AMPS7				100				
										0	AMPS8				100				
										IntTemp (degF)									















1400

1450

1500

1550

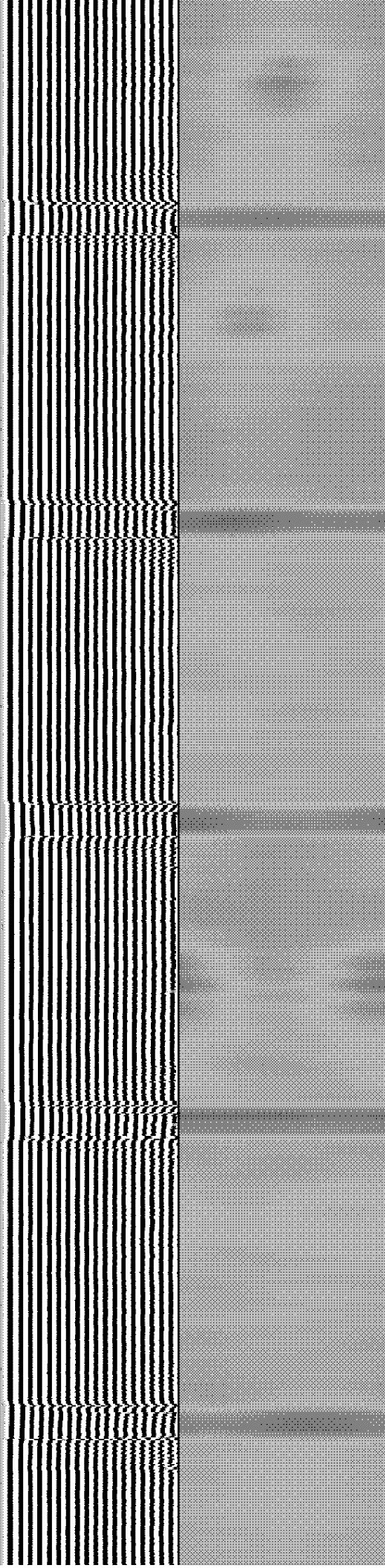
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108.533

109.478

110.445

111.416



1600

1650

1700

1750

1800

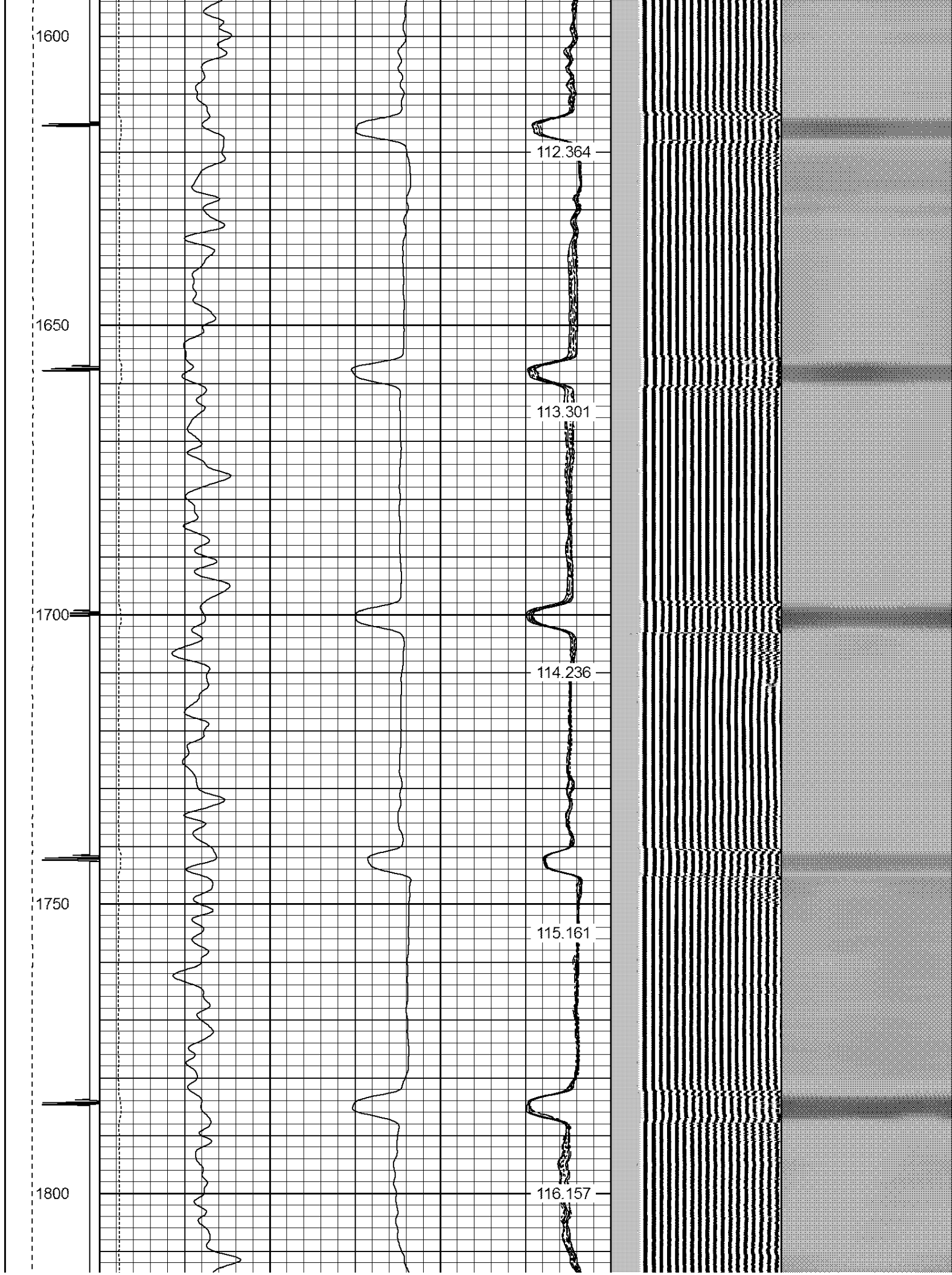
112.364

113.301

114.236

115.161

116.157



1850

1900

1950

2000

117.042

118.012

118.919

119.733

120.62

2050

2100

2150

2200

2250

121.527

122.267

123.076

123.765

124.571



2500

2550

2600

2650

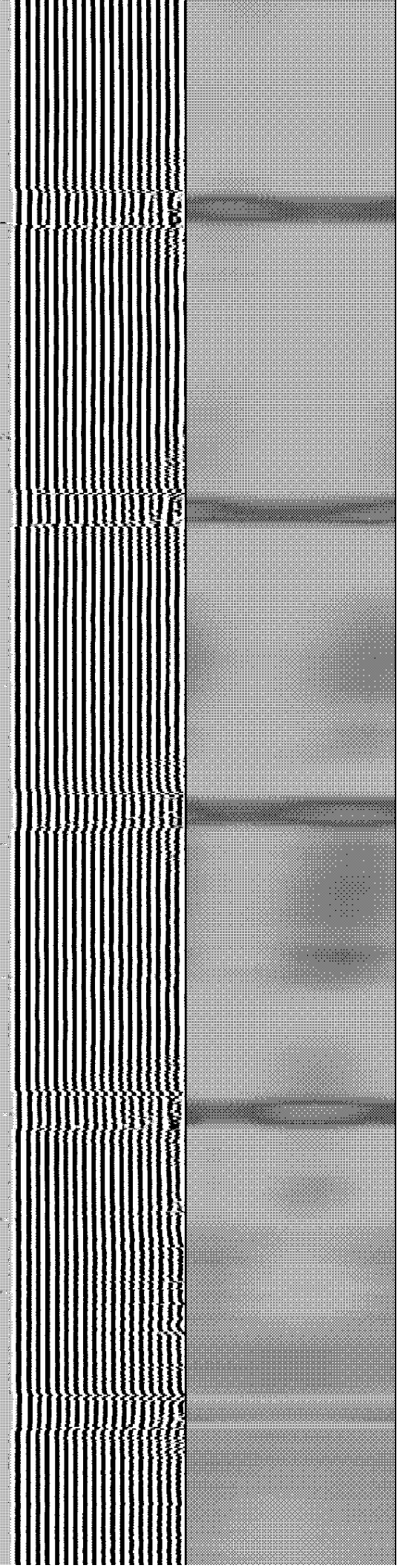
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128.417

129.043

129.686

130.245



2700

130.833

2750

131.284

2800

131.743

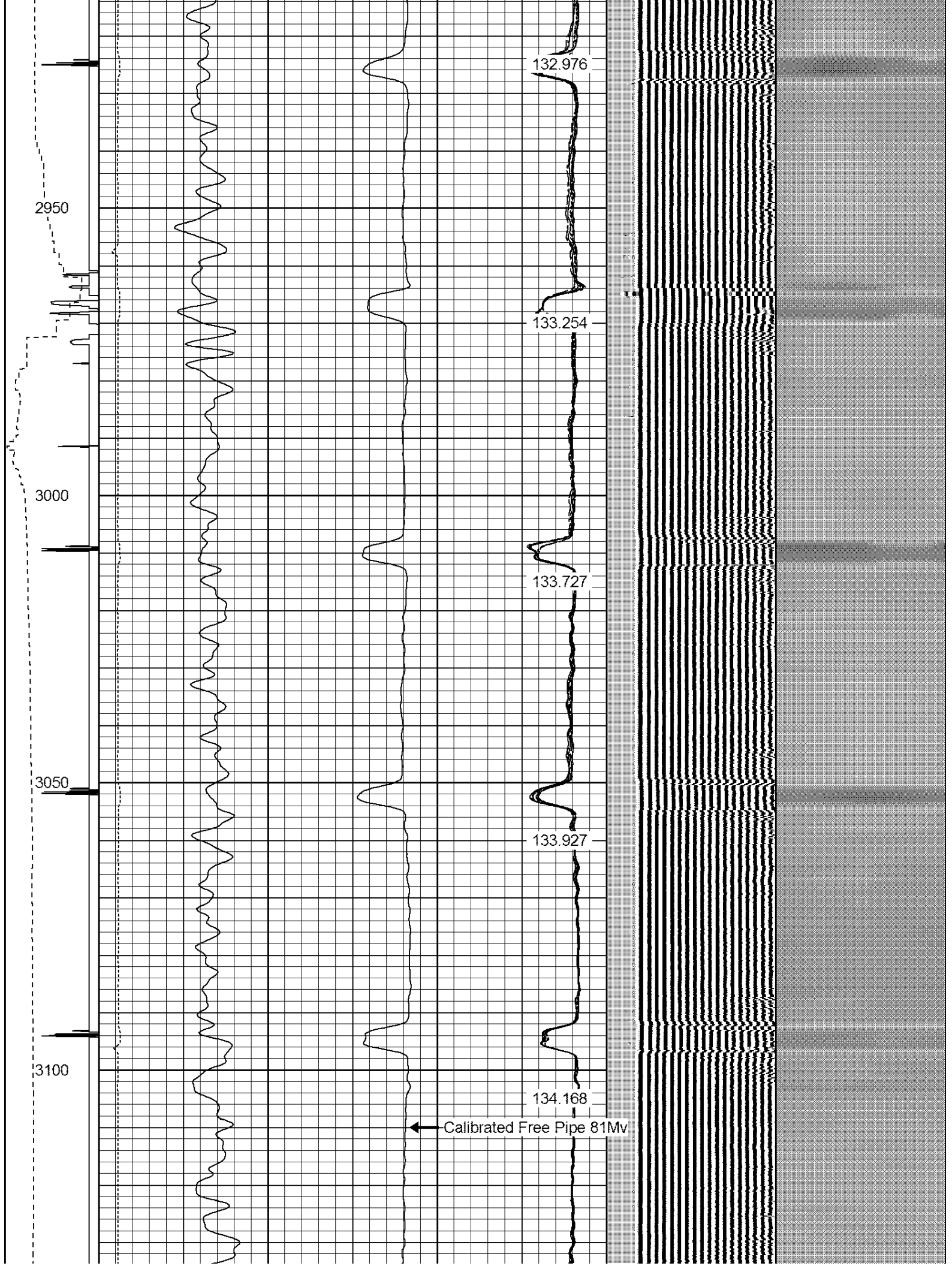
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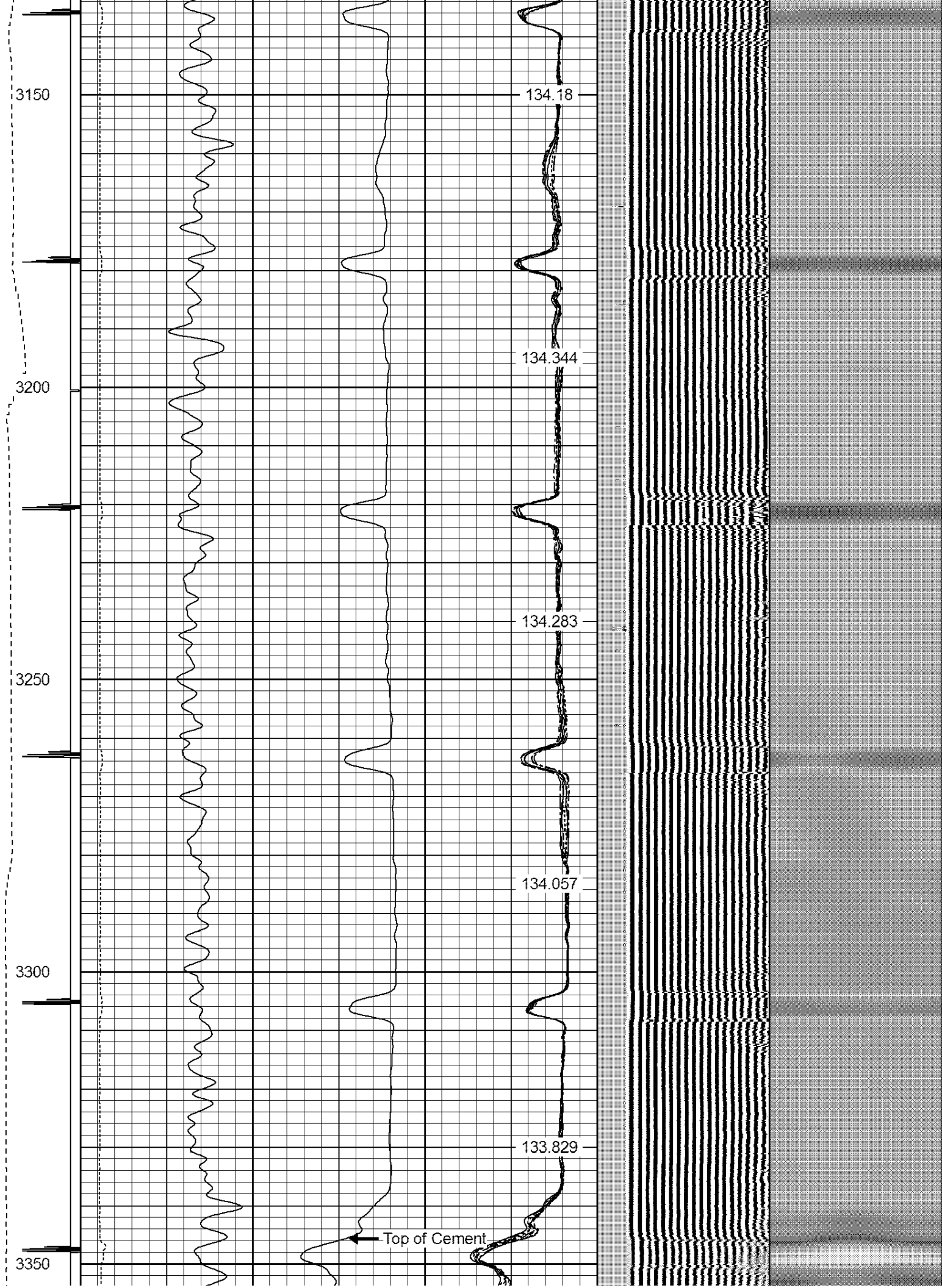
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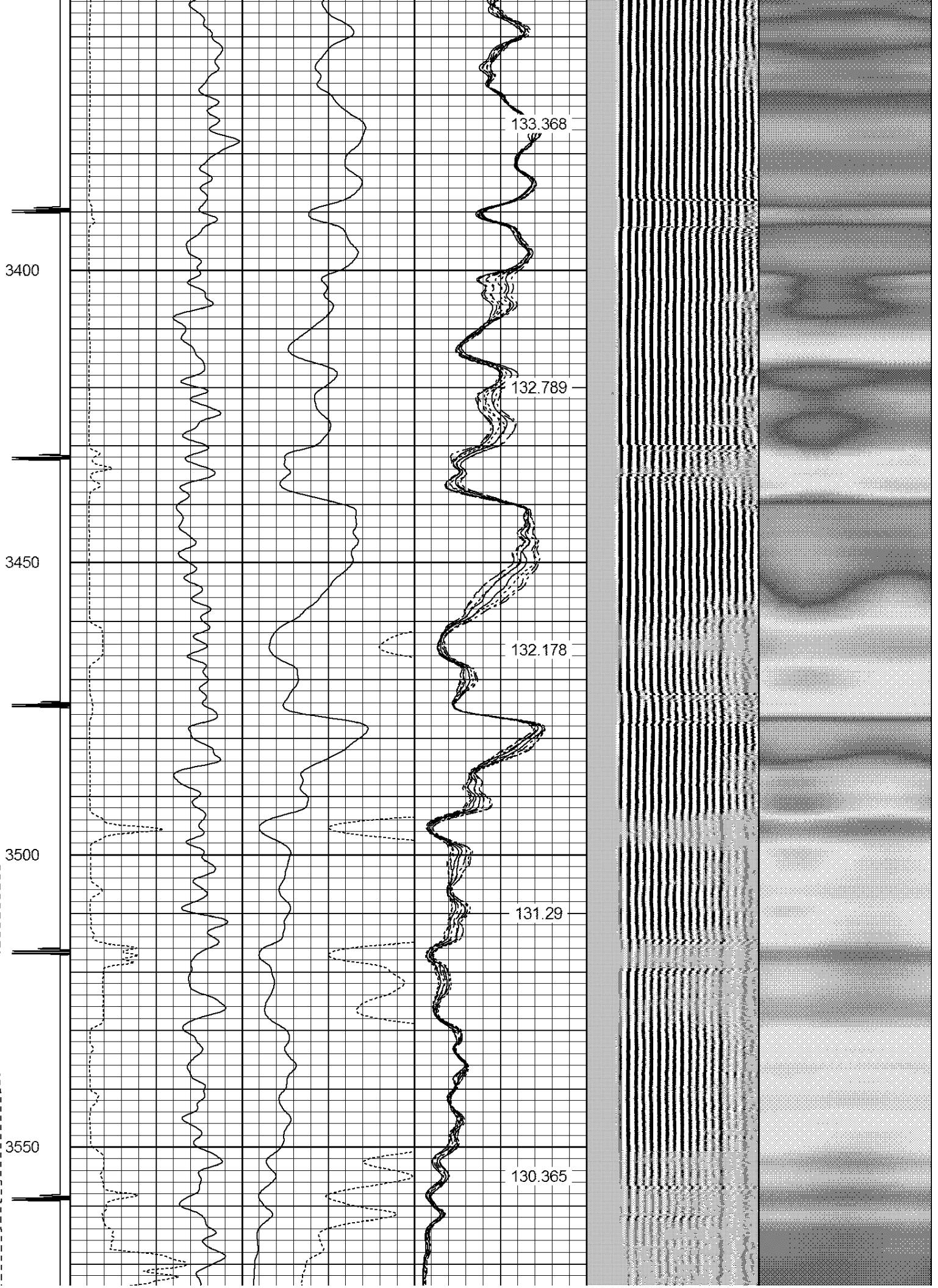
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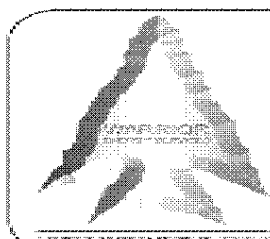
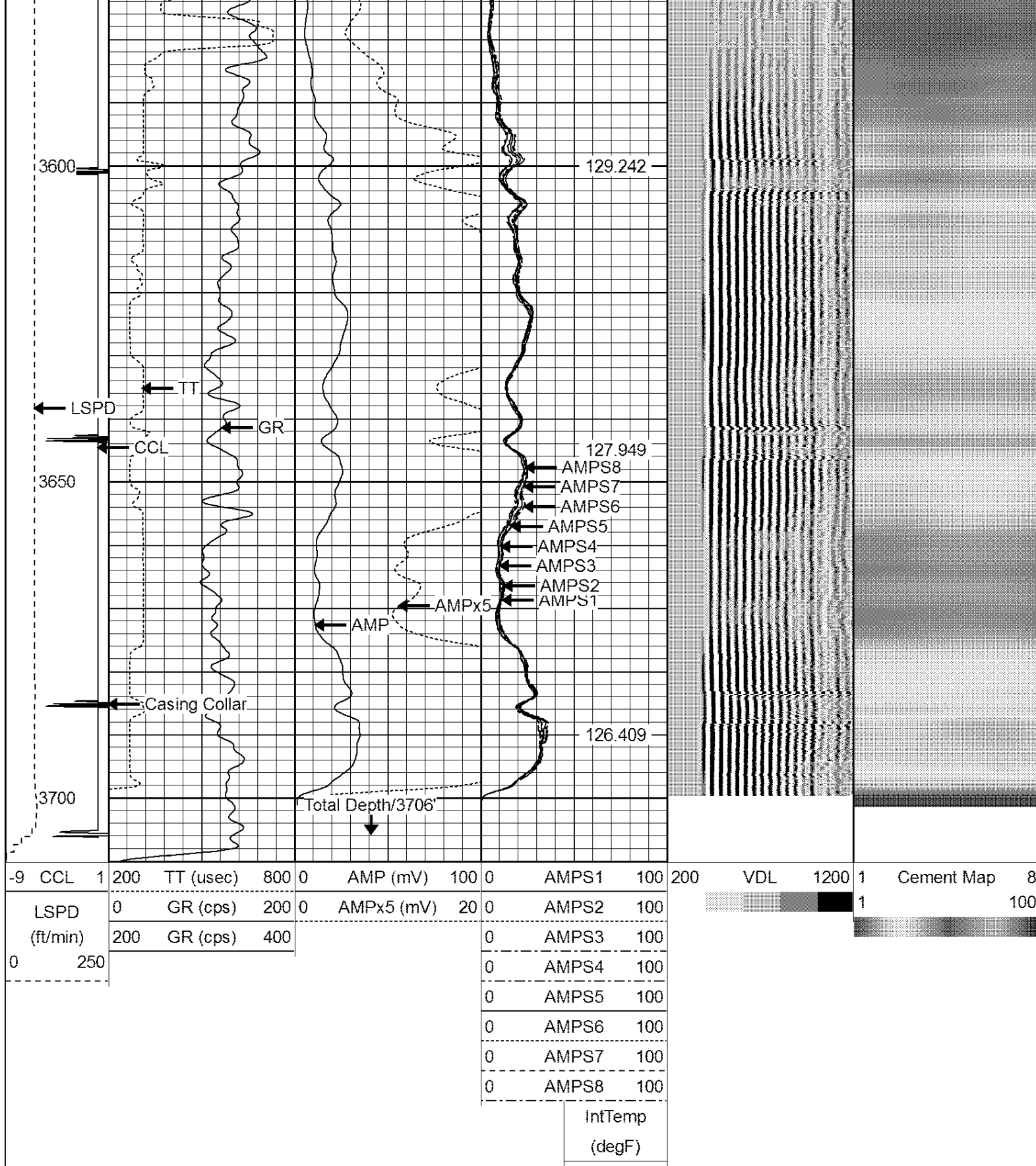
132.689











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