



**Radial Cement Bond
Variable Density Log
W/Gamma Ray/CCL/Temp**

Company Antero Resources
Well Patty 1H
Field River Front
County Tyler
State West Virginia

Company Antero Resources
Well Patty 1H
Field River Front
County Tyler
State West Virginia
Location: API #: 47-095-02732-0000
Other Services

SEC N/A TWP N/A RGE N/A
Permanent Datum Ground Level Elevation
Log Measured From Kelly Bushing (30') Elevation
Drilling Measured From Kelly Bushing G.L. Elevation

Date	July 12 2021	One			
Run Number		19,610 ft.			
Depth Driller		6,890 ft.			
Depth Logger		6,890 ft.			
Bottom Logged Interval		Surface			
Top Log Interval		N/A			
Open Hole Size		Water			
Type Fluid		N/A			
Density / Viscosity		140.9 Deg. F			
Max. Recorded Temp.		4,510 ft.			
Estimated Cement Top		14:30			
Time Well Ready		16:27			
Time Logger on Bottom		Unit 133			
Equipment Number		Marietta Ohio			
Location		Thomas Weese			
Recorded By		Reagle			
Witnessed By					
Borehole Record		Tubing Record			
Run Number	Bit	From	To	Size	Weight
					From
					To
Casing Record	Size	Wt/ft	Top	Bottom	
Surface String	13 3/8	54#	Surface	391 ft.	
Prot. String	9 5/8	36#	Surface	2,761 ft.	
Production String	5 1/2	20#	Surface	19,610 ft.	
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

Primary Log on Well

Marker Joint @ 5,680 - 5,690 ft.
Correction to Pipe Tally Depth Shifted (-6)

Main Pass 1,500 psi
Repeat Pass 1,500 psi

Thank You for Choosing Nine Energy Service Wireline. Marietta, Ohio

Database File	antero_patty_1h_rcbl_july122021.db
Dataset Pathname	Marcellus/Patty_1H/RCBL_1/pass12.11
Presentation Format	rcbl-bond index for antero 1020
Dataset Creation	Tue Jul 13 10:28:44 2021
Charted by	Depth in Feet scaled 1:240

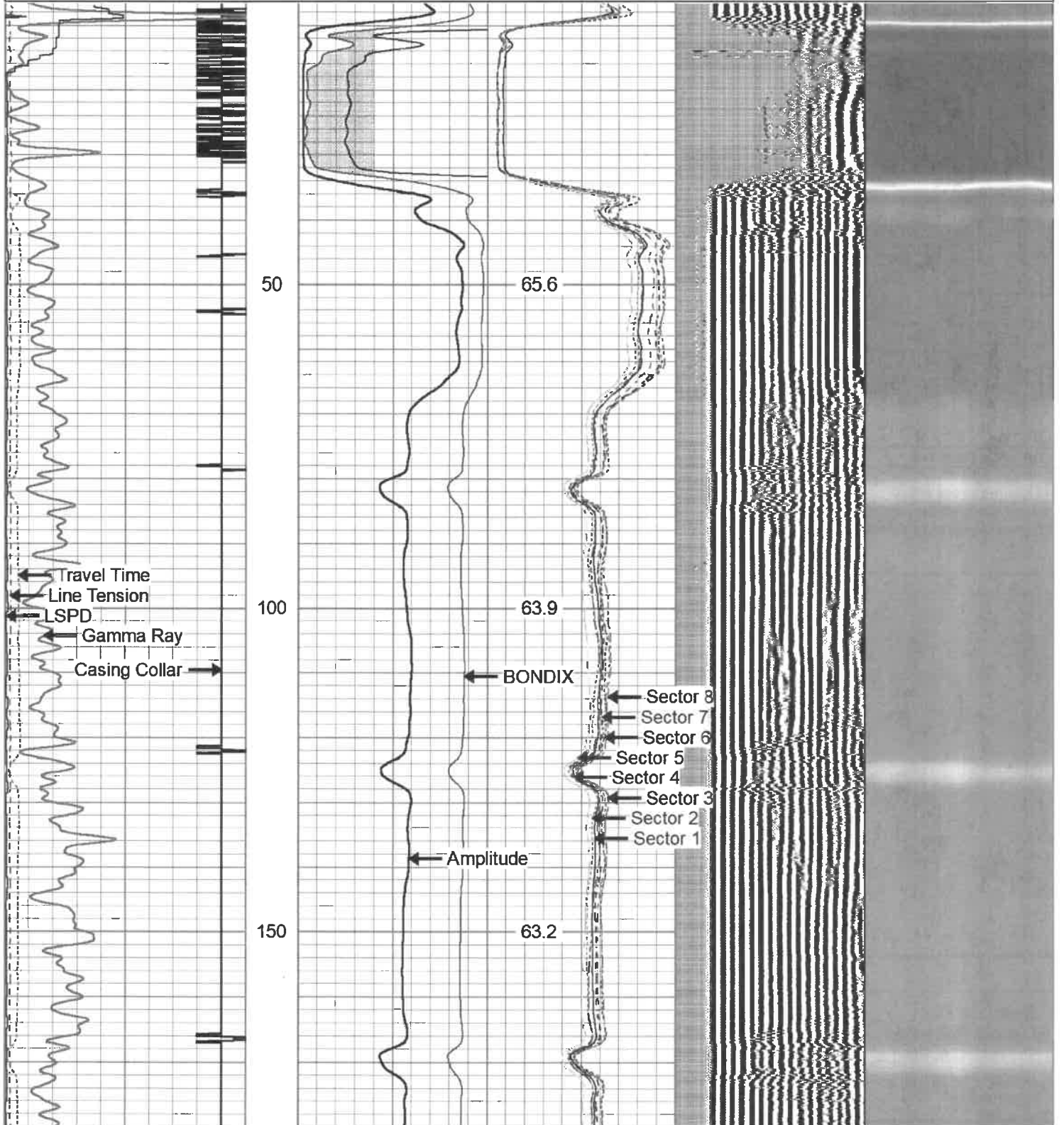
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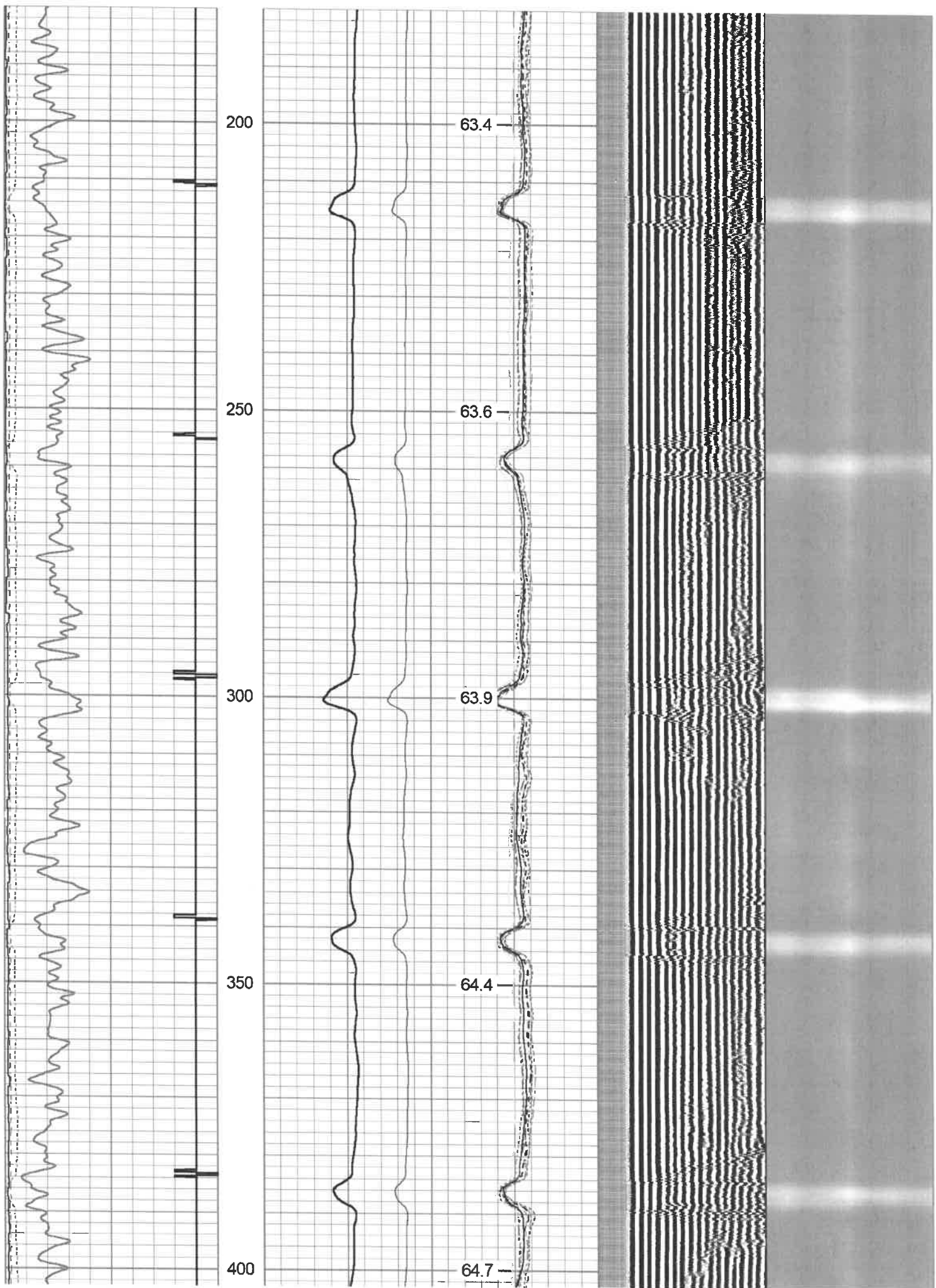
285	Travel Time (usec)	185
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000
-100	LSPD (ft/min)	100

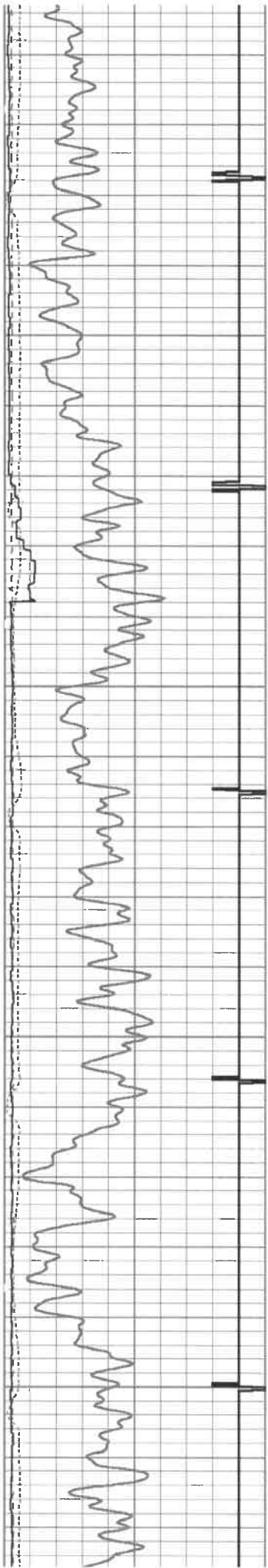
0	Amplitude (mV)	100	-5	Sector 1	150
1	BONDIX	0	-5	Sector 2	150
0	AMPx10 (mV)	10	-5	Sector 3	150
			-5	Sector 4	150
			-5	Sector 5	150
			-5	Sector 6	150
			-5	Sector 7	150
			-5	Sector 8	150

Variable Density 1 Cement Map 8
200 (usec) 1200

TEMP
(degF)







450

500

550

600

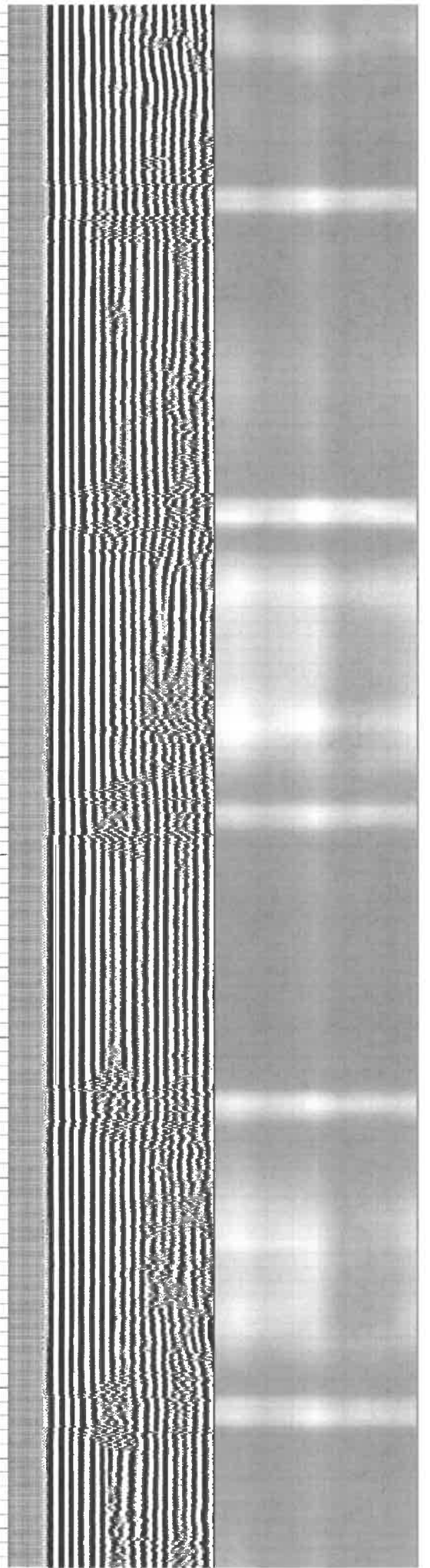


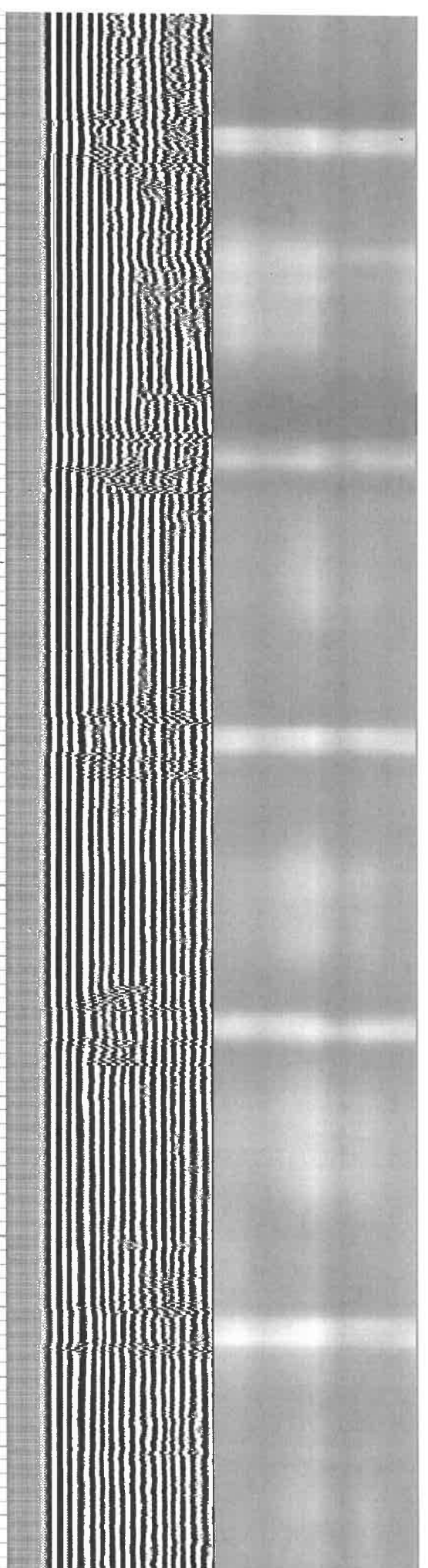
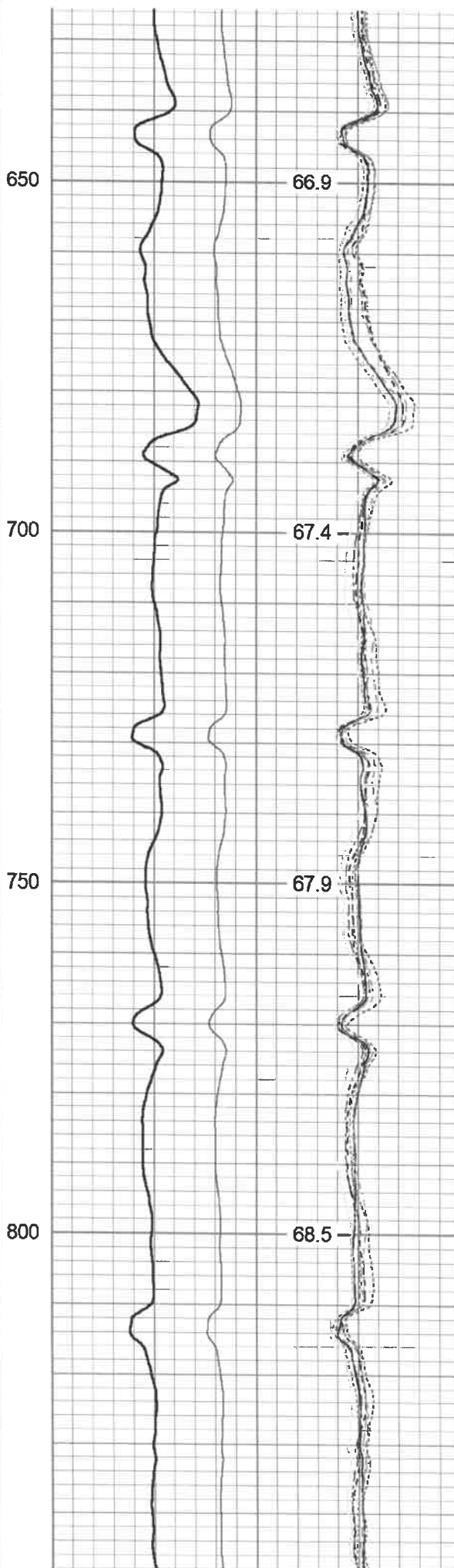
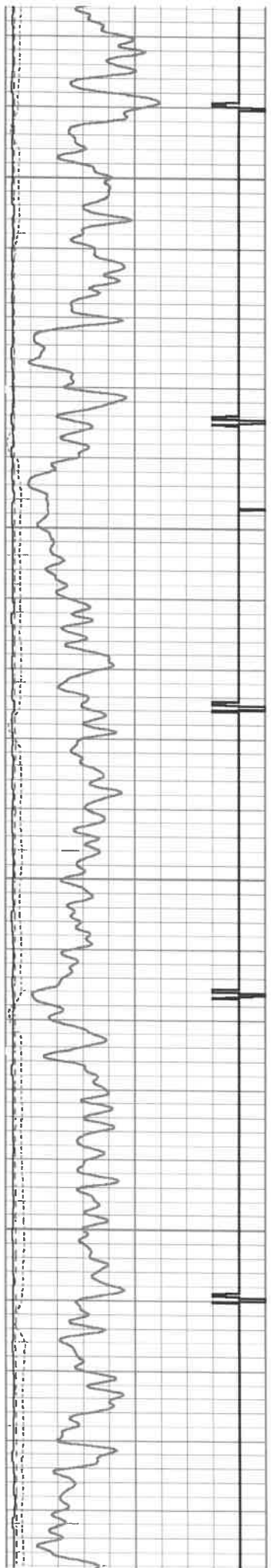
65.0

65.6

65.9

66.4





650

700

750

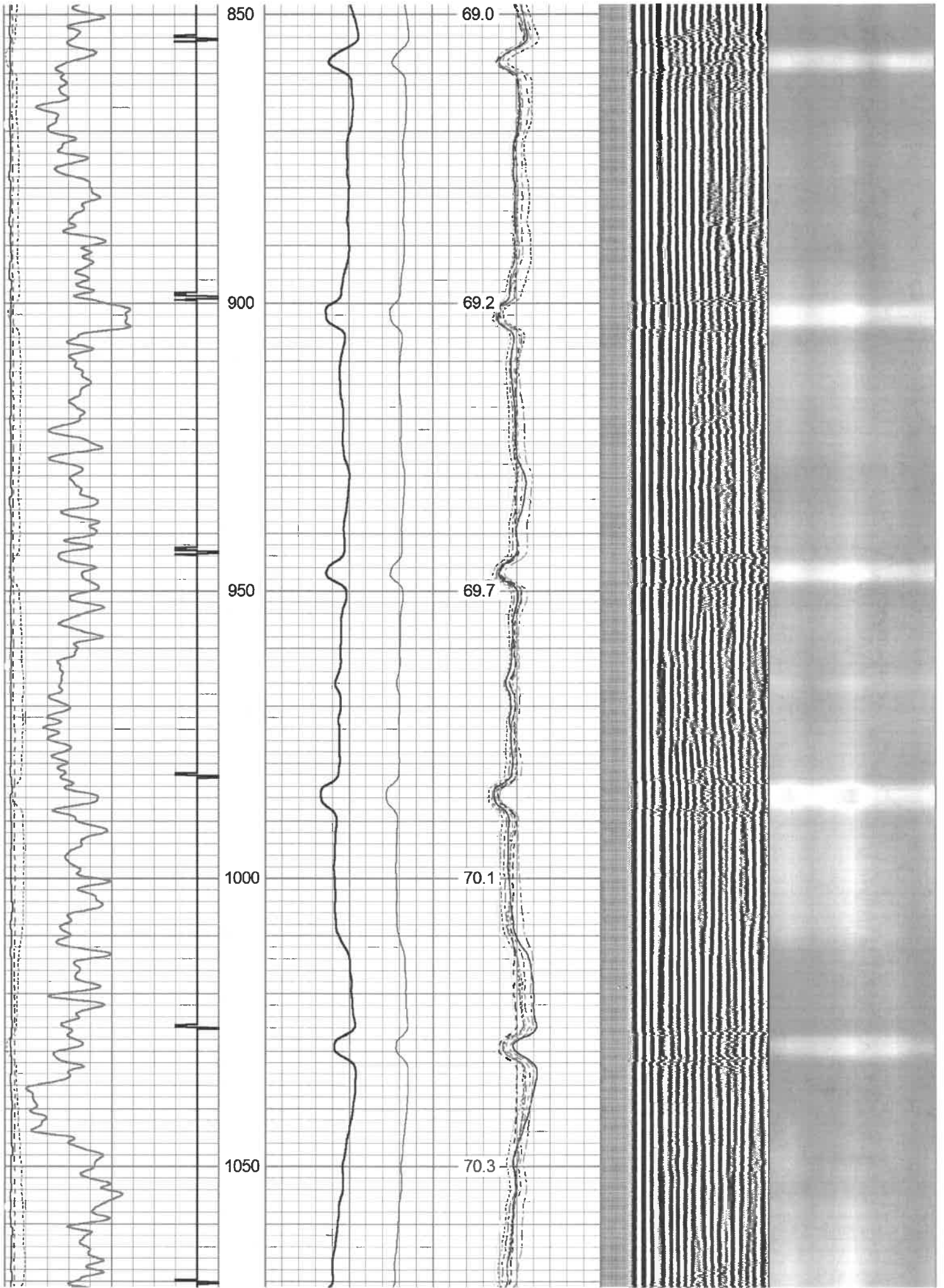
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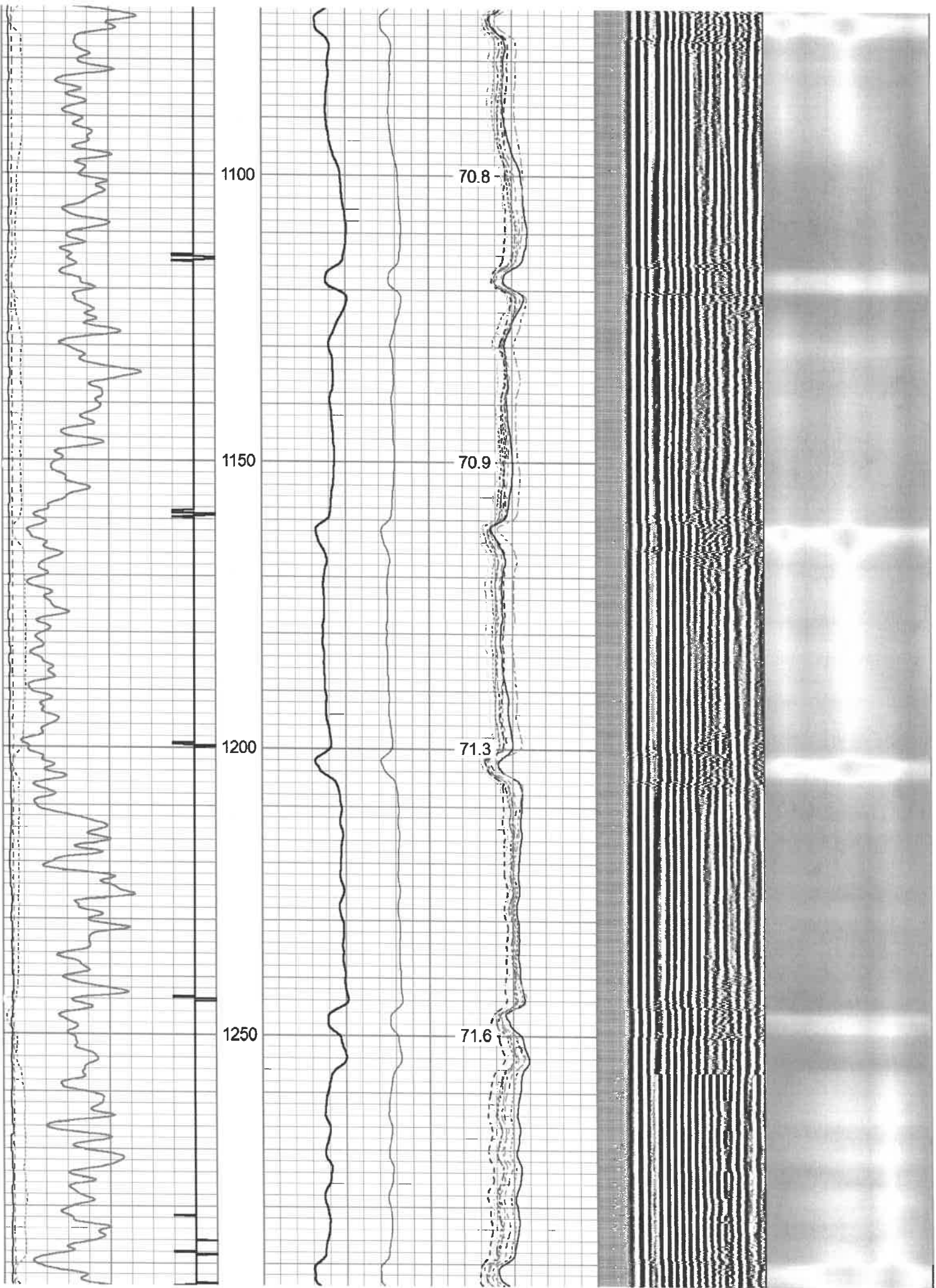
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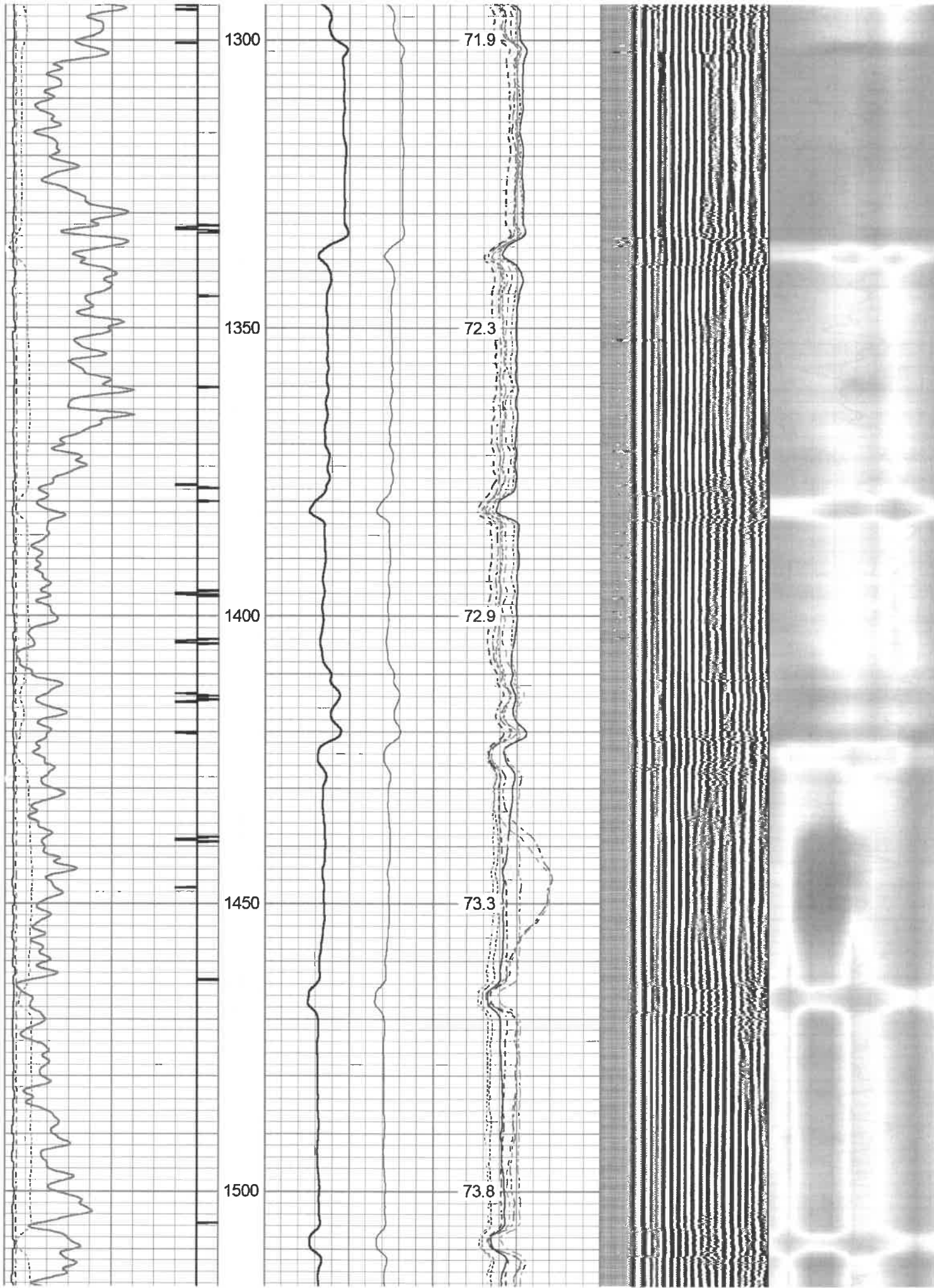
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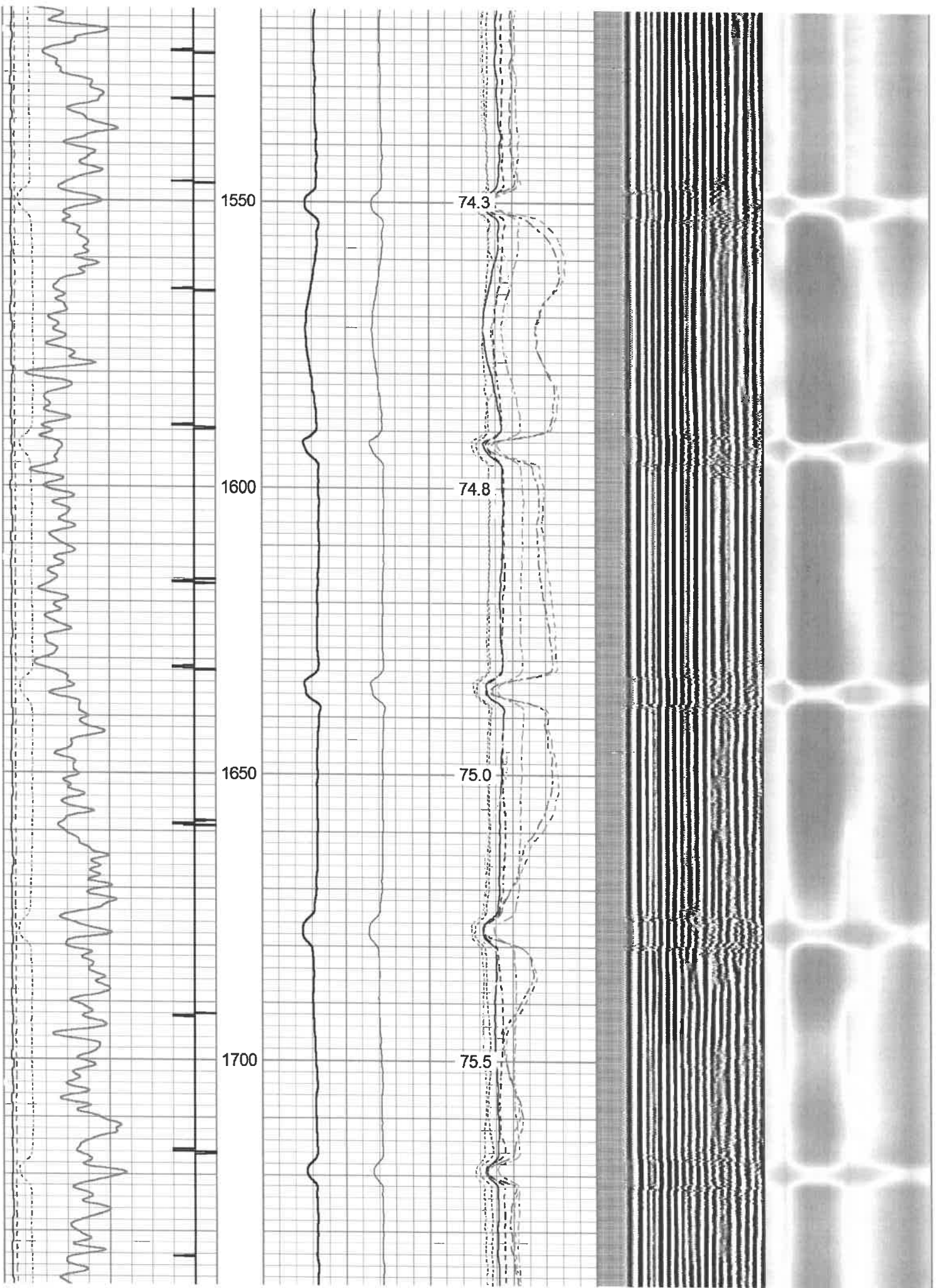
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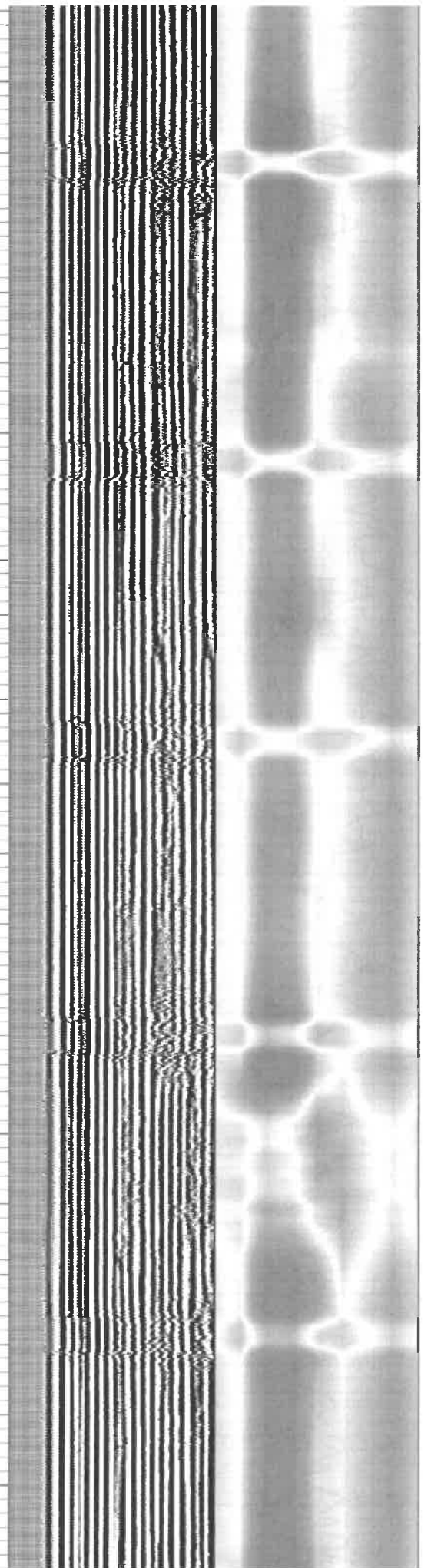
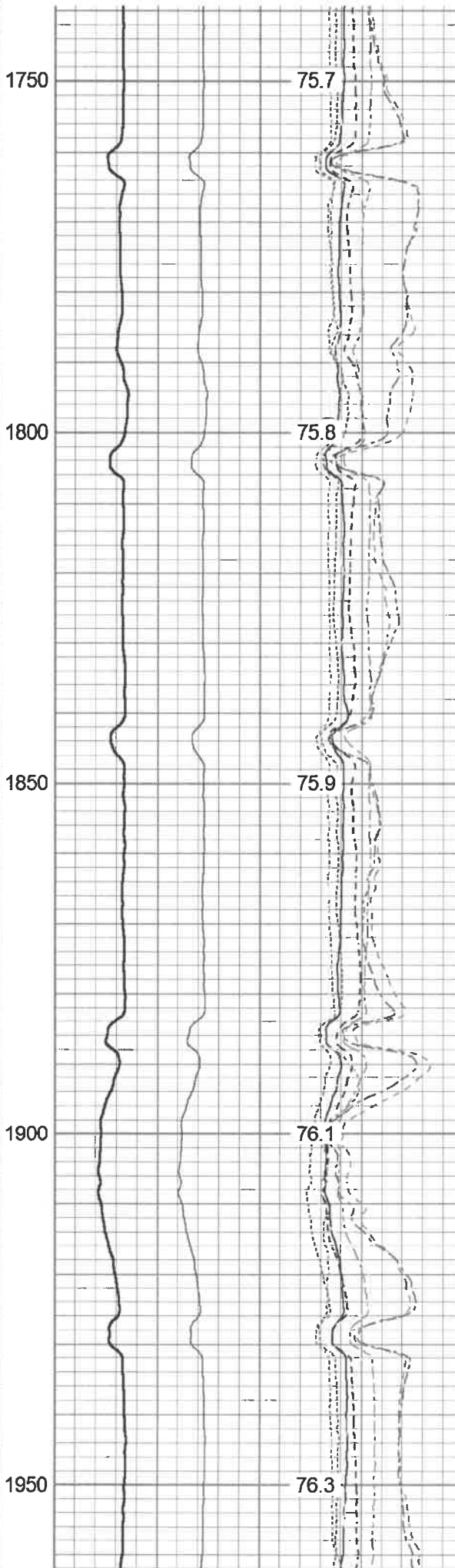
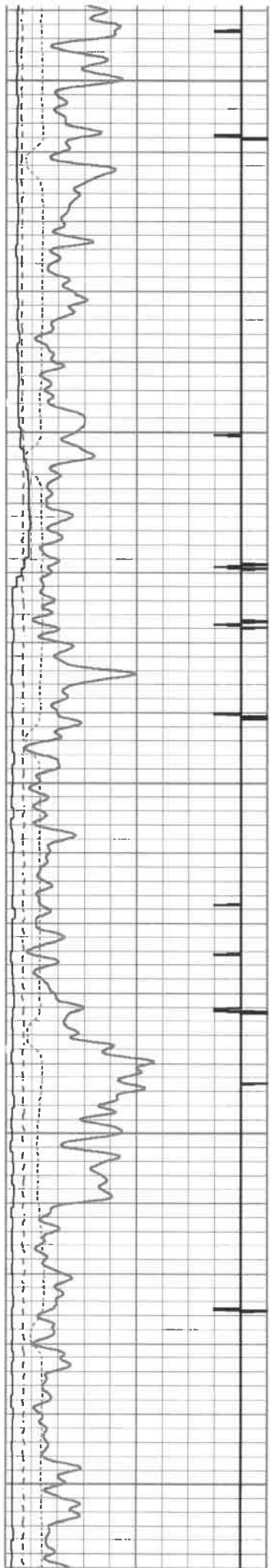
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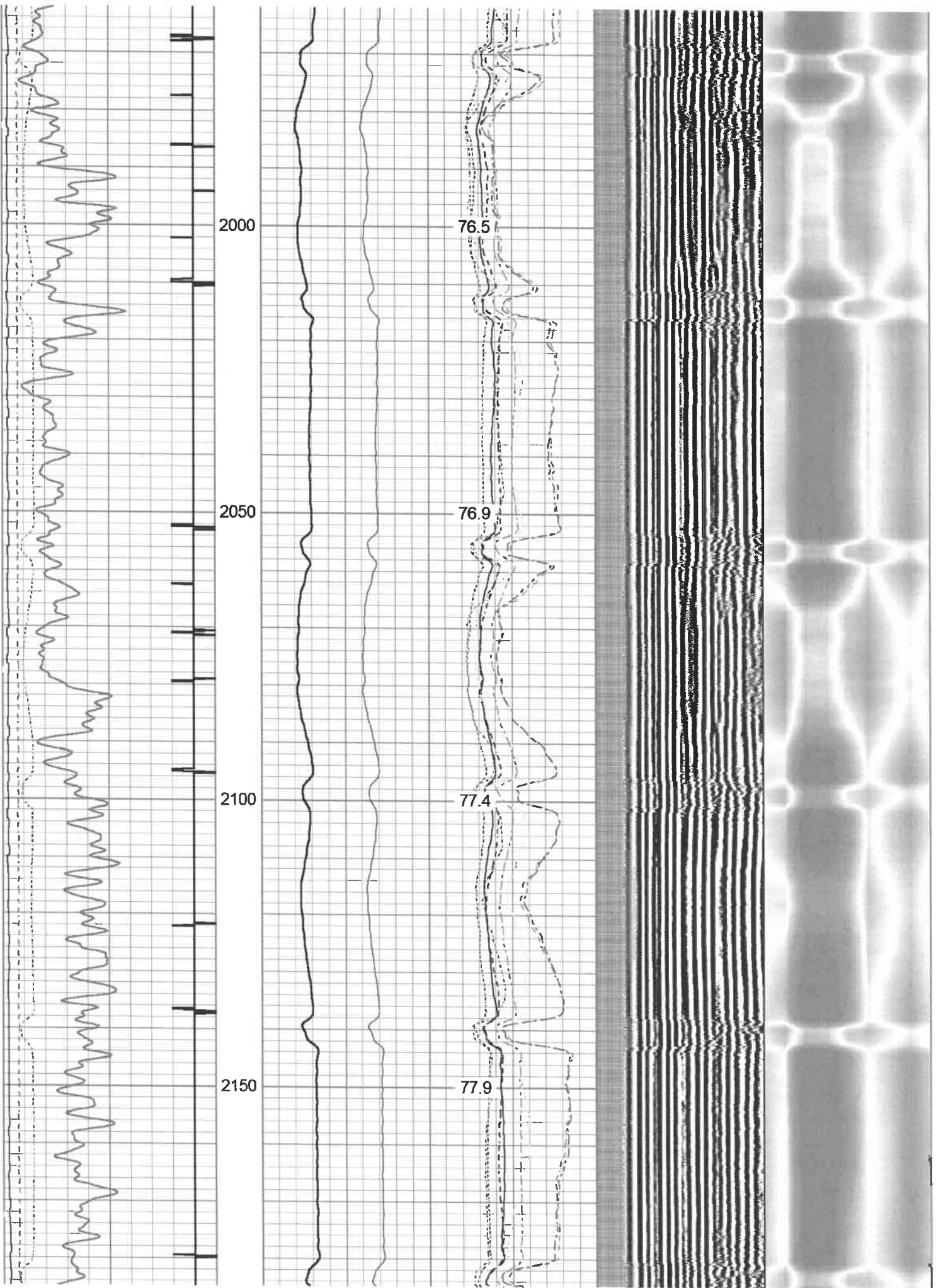


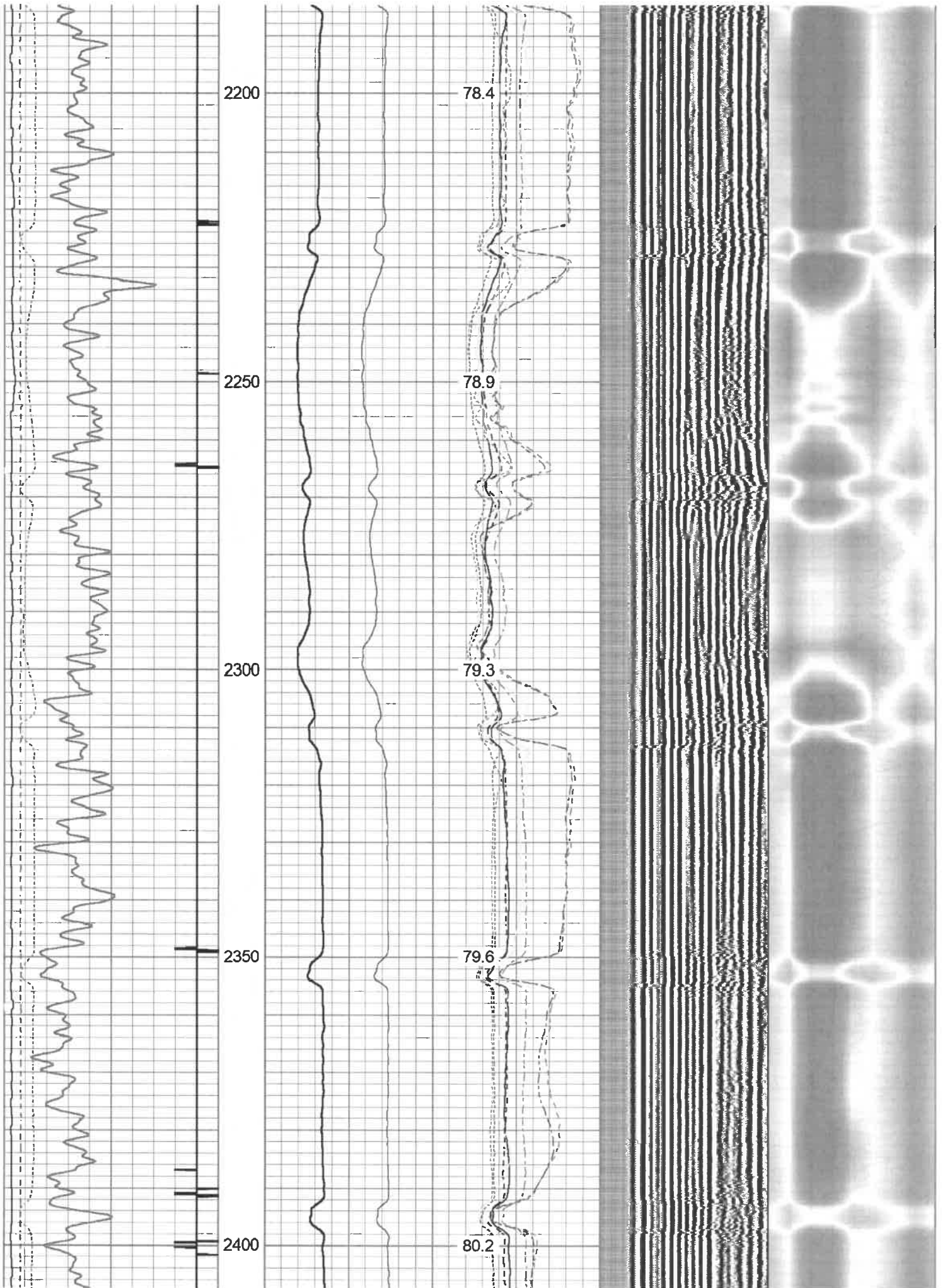


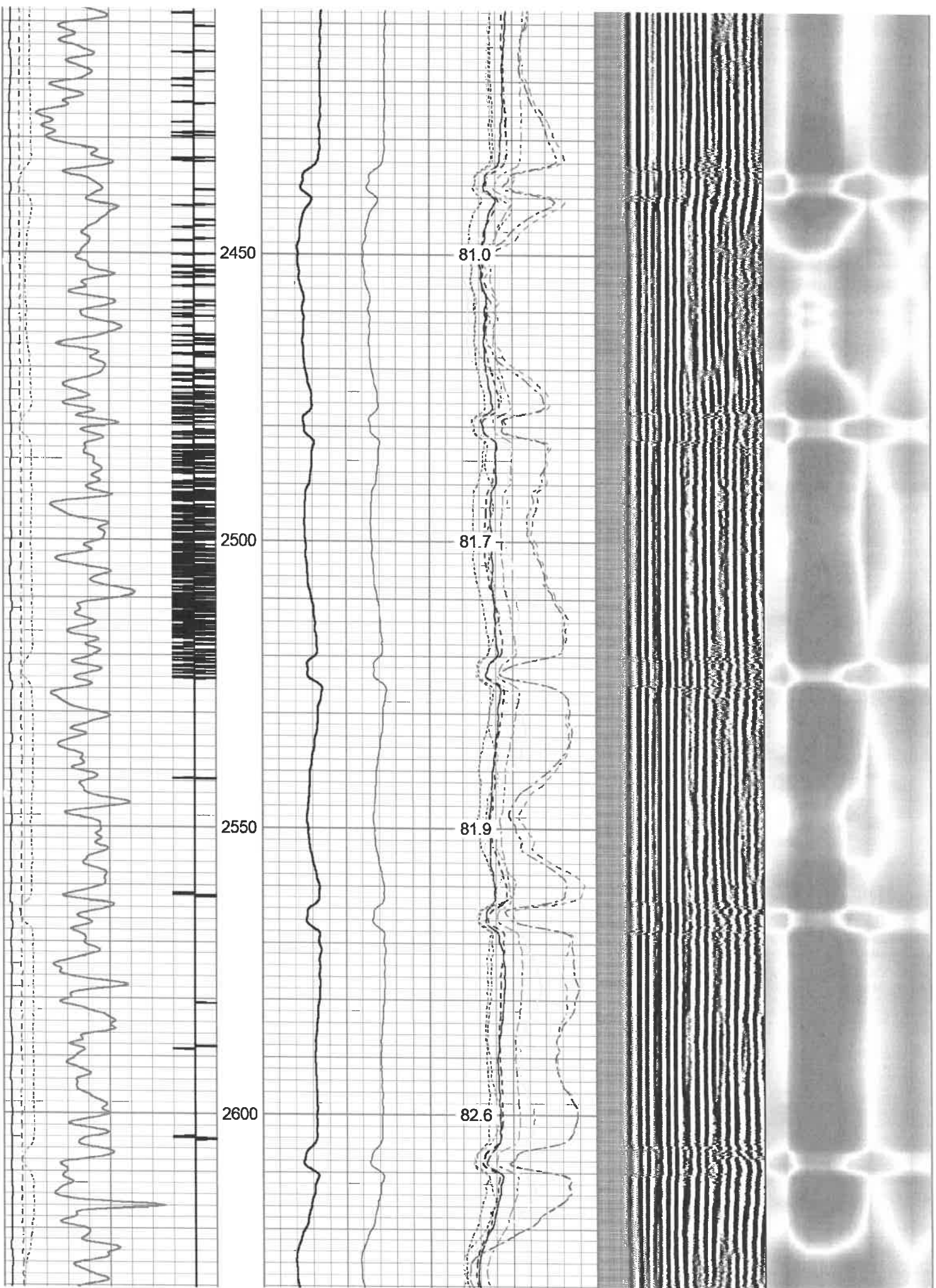


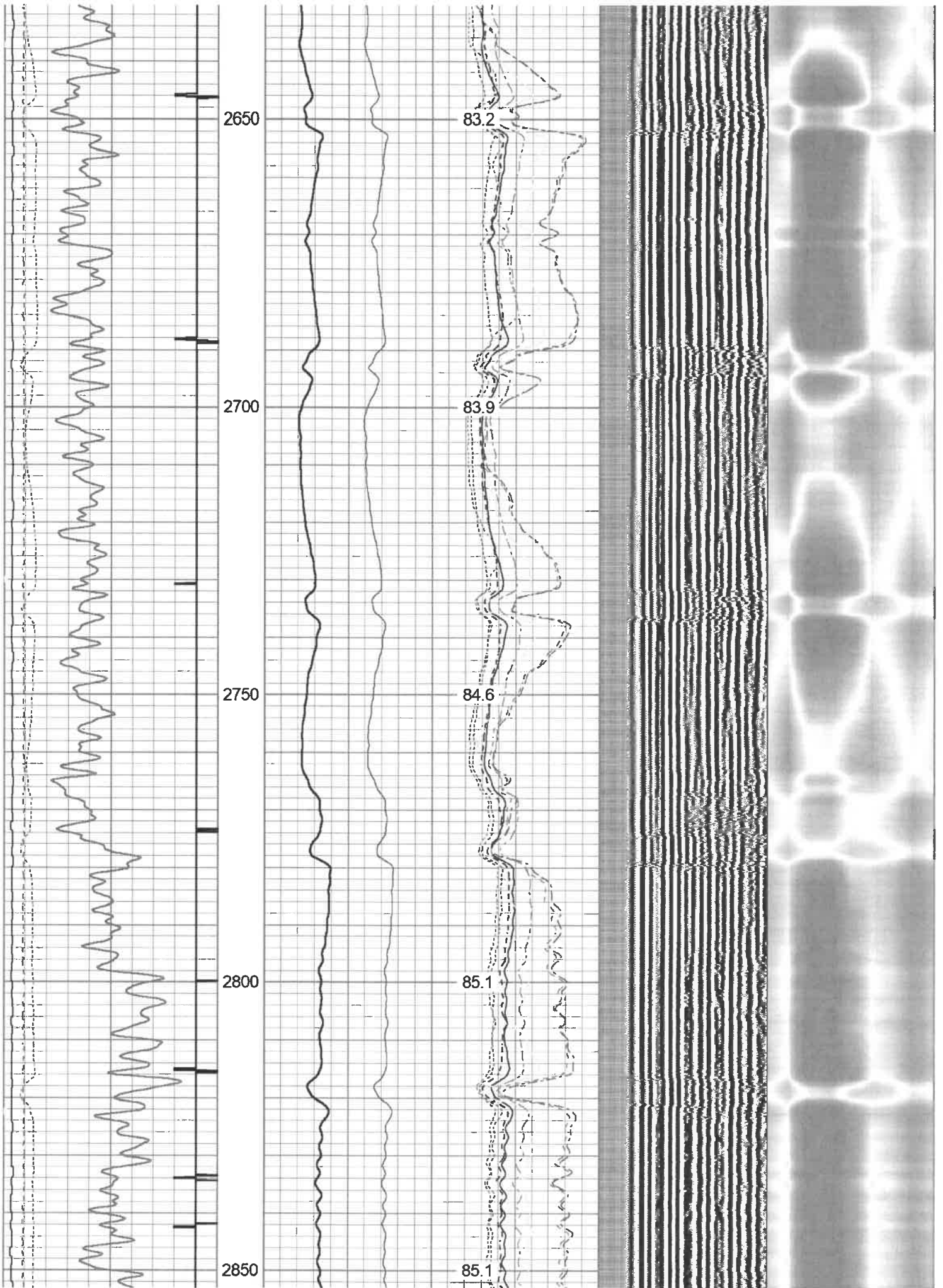


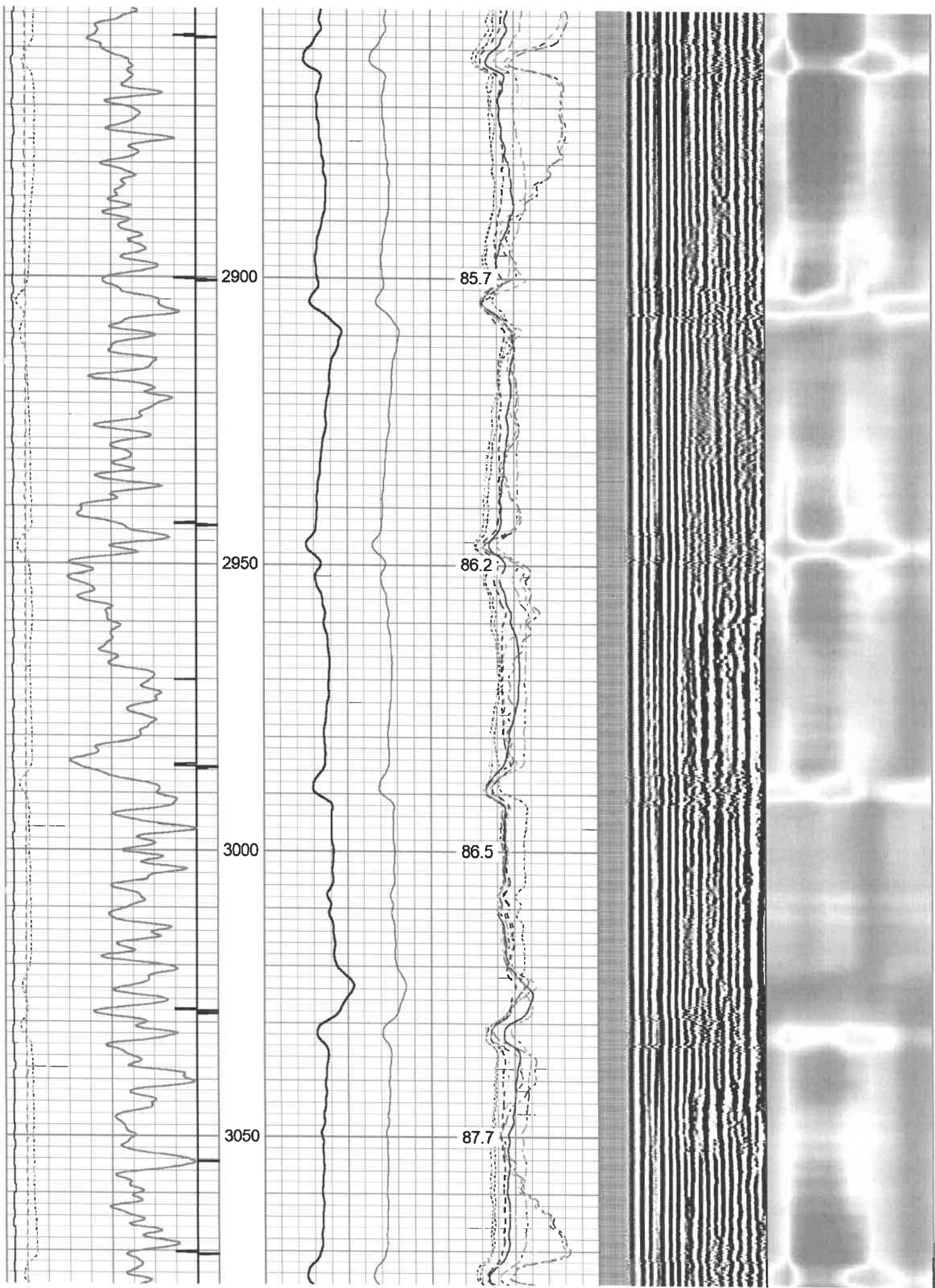


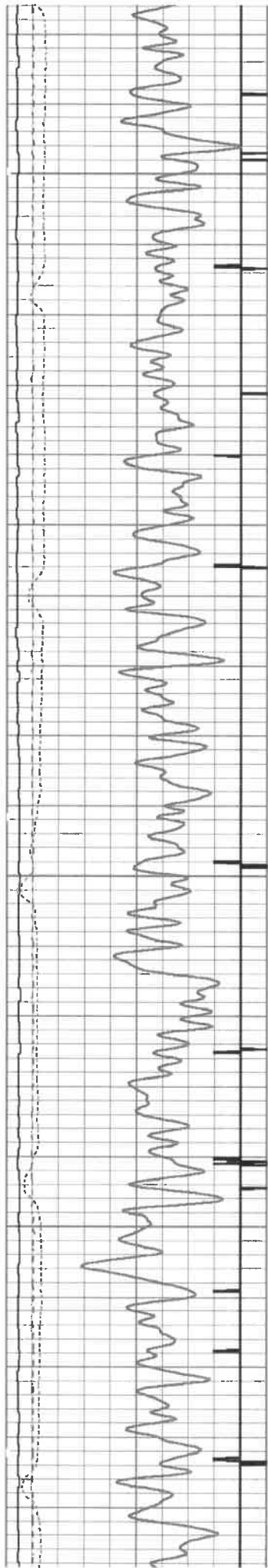










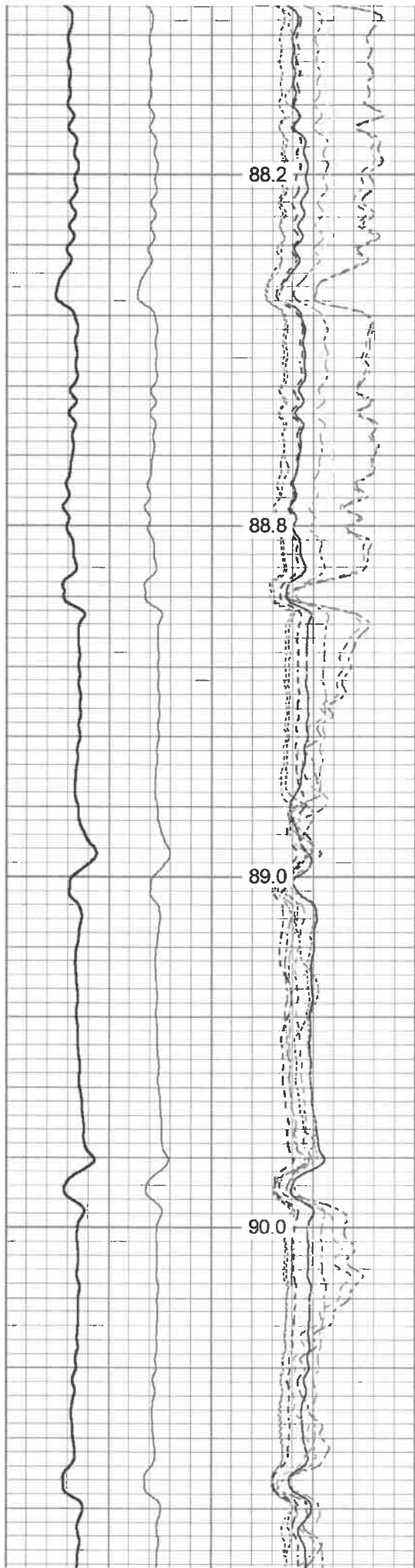


3100

3150

3200

3250

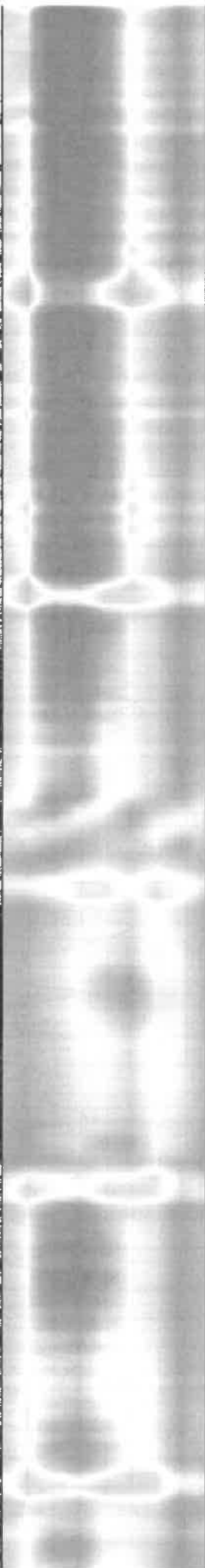
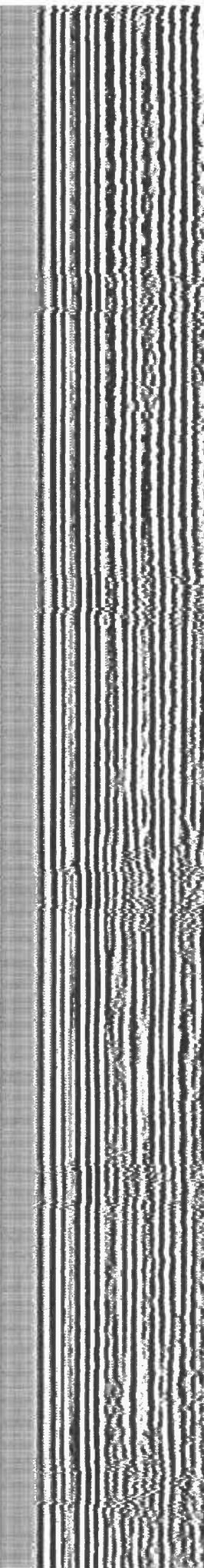


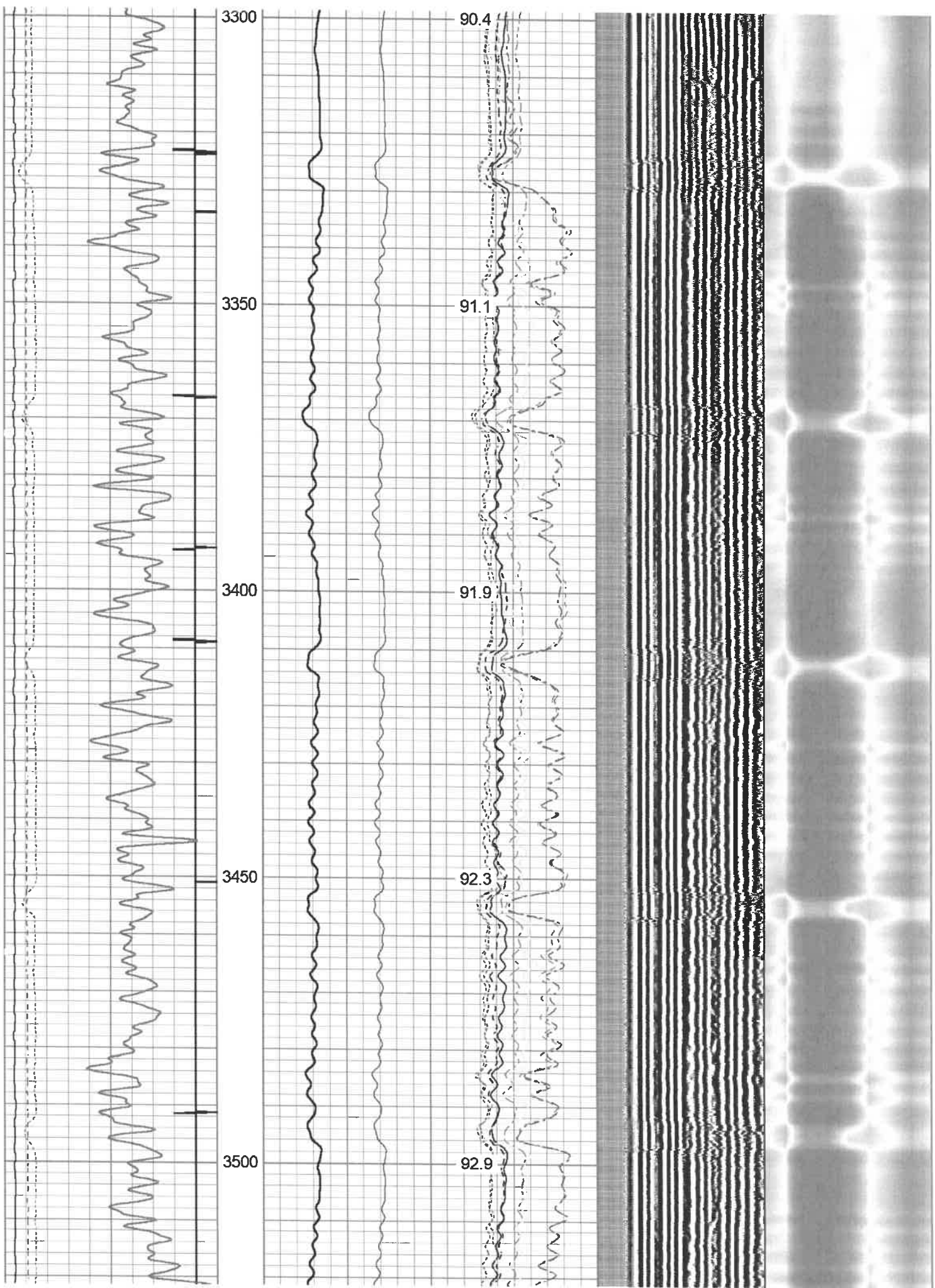
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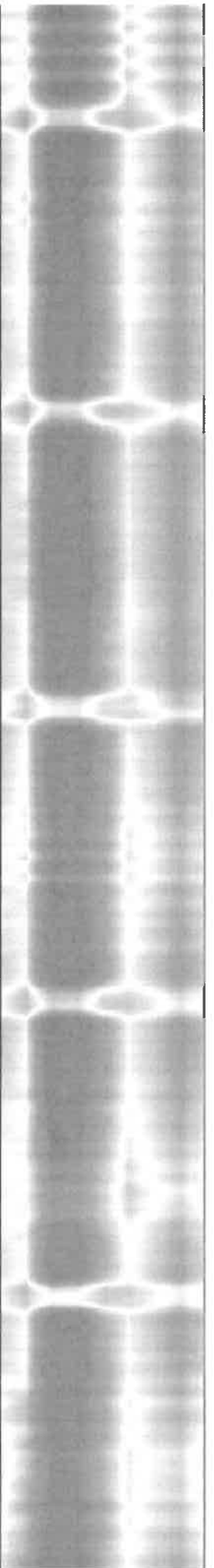
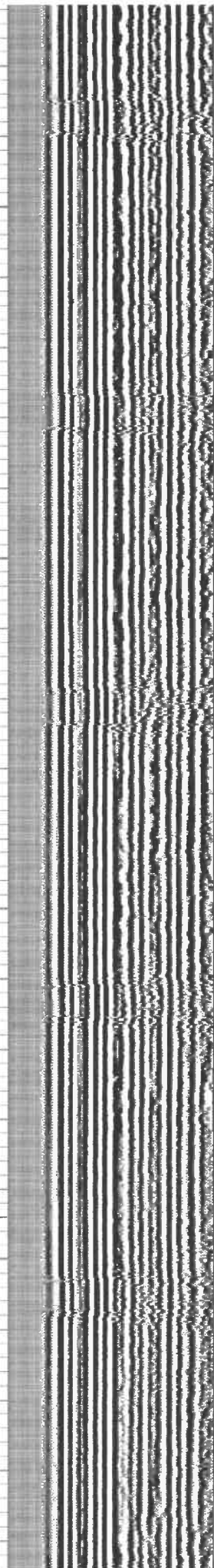
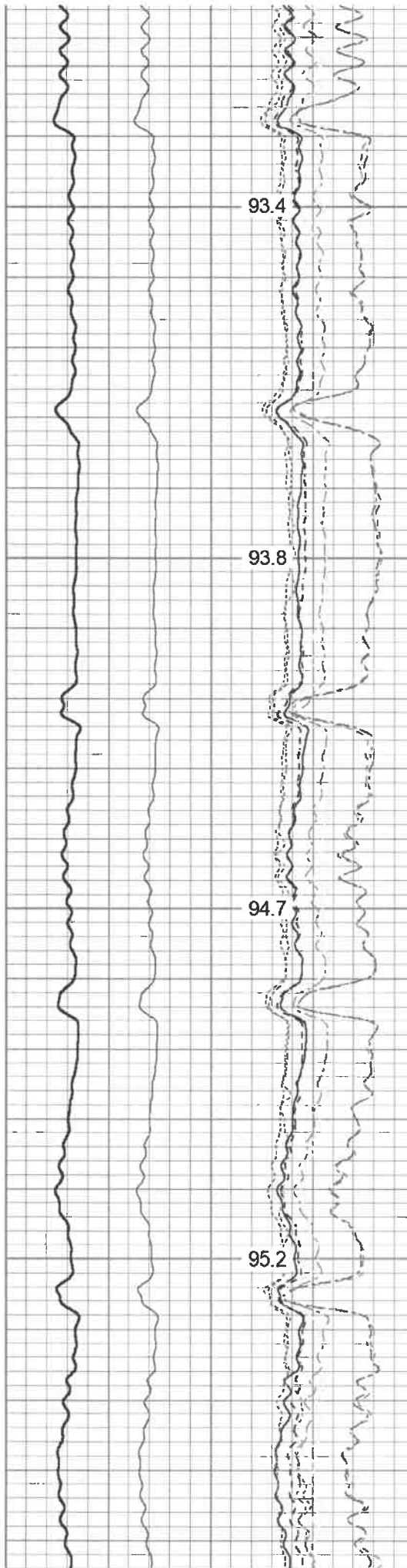
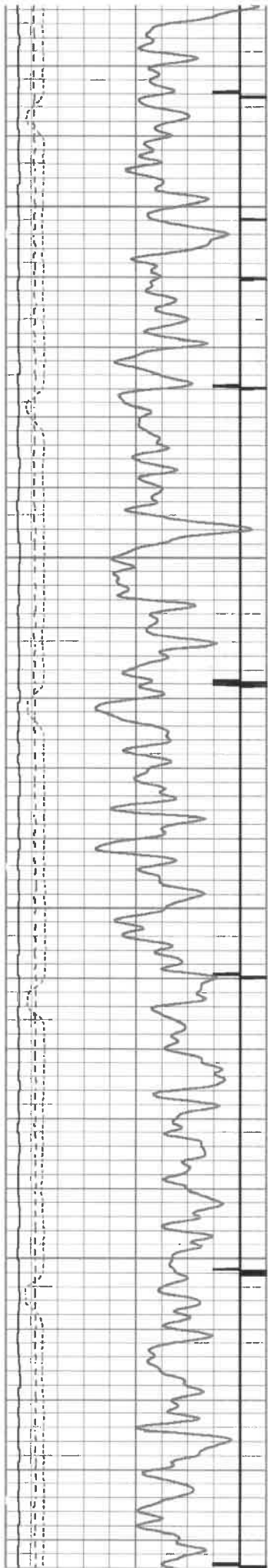
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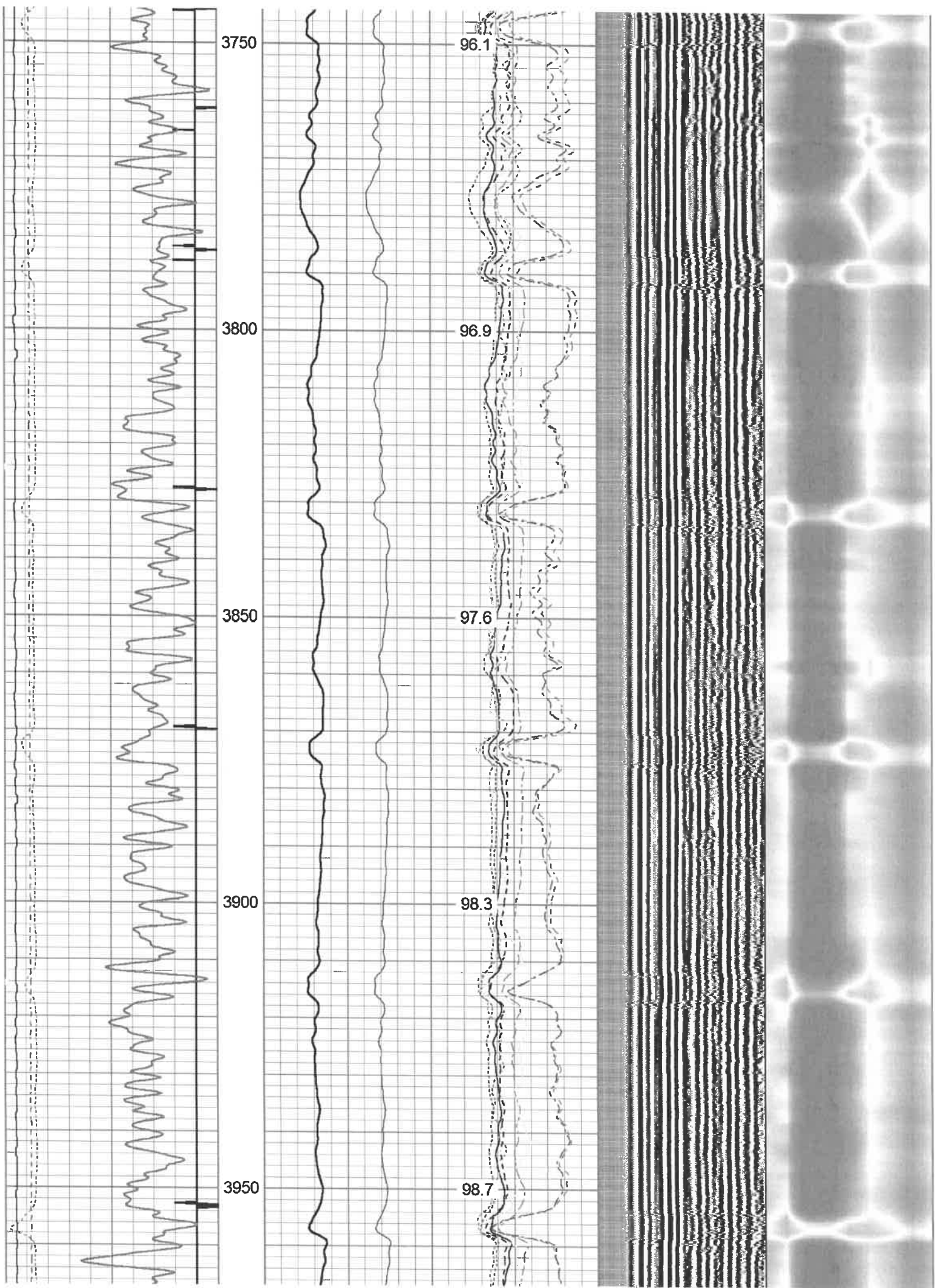
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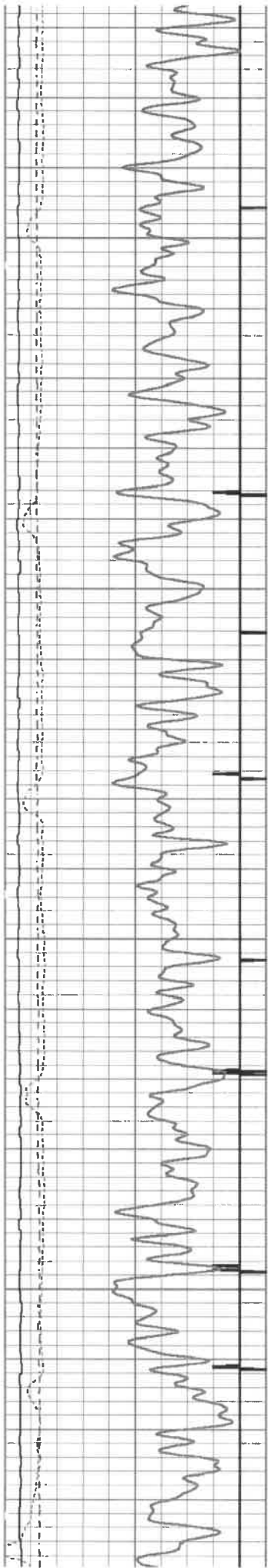
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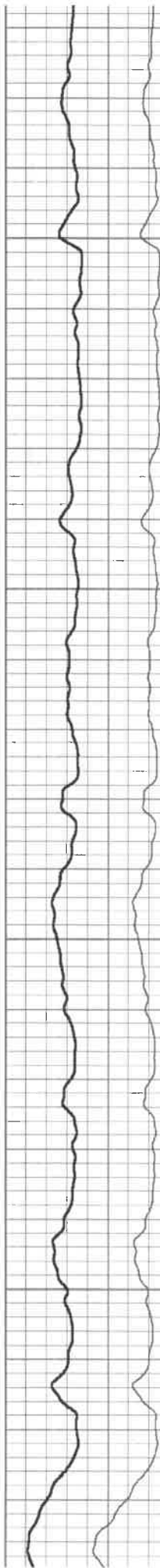


4000

4050

4100

4150

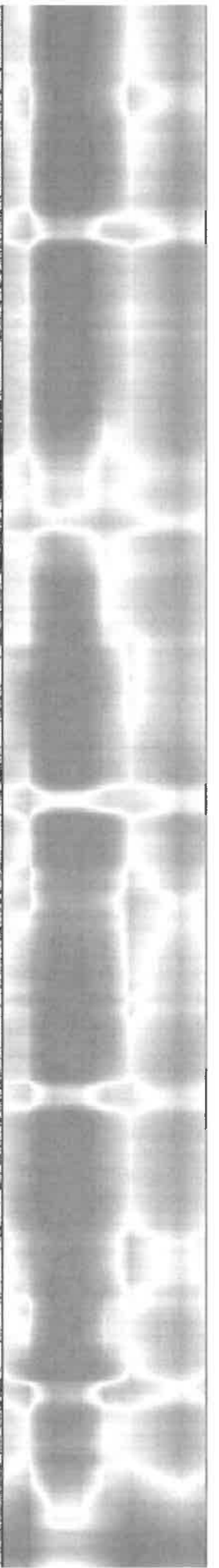
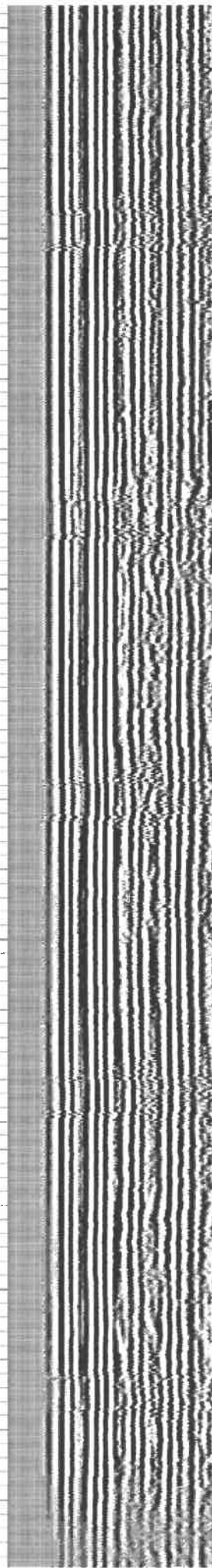


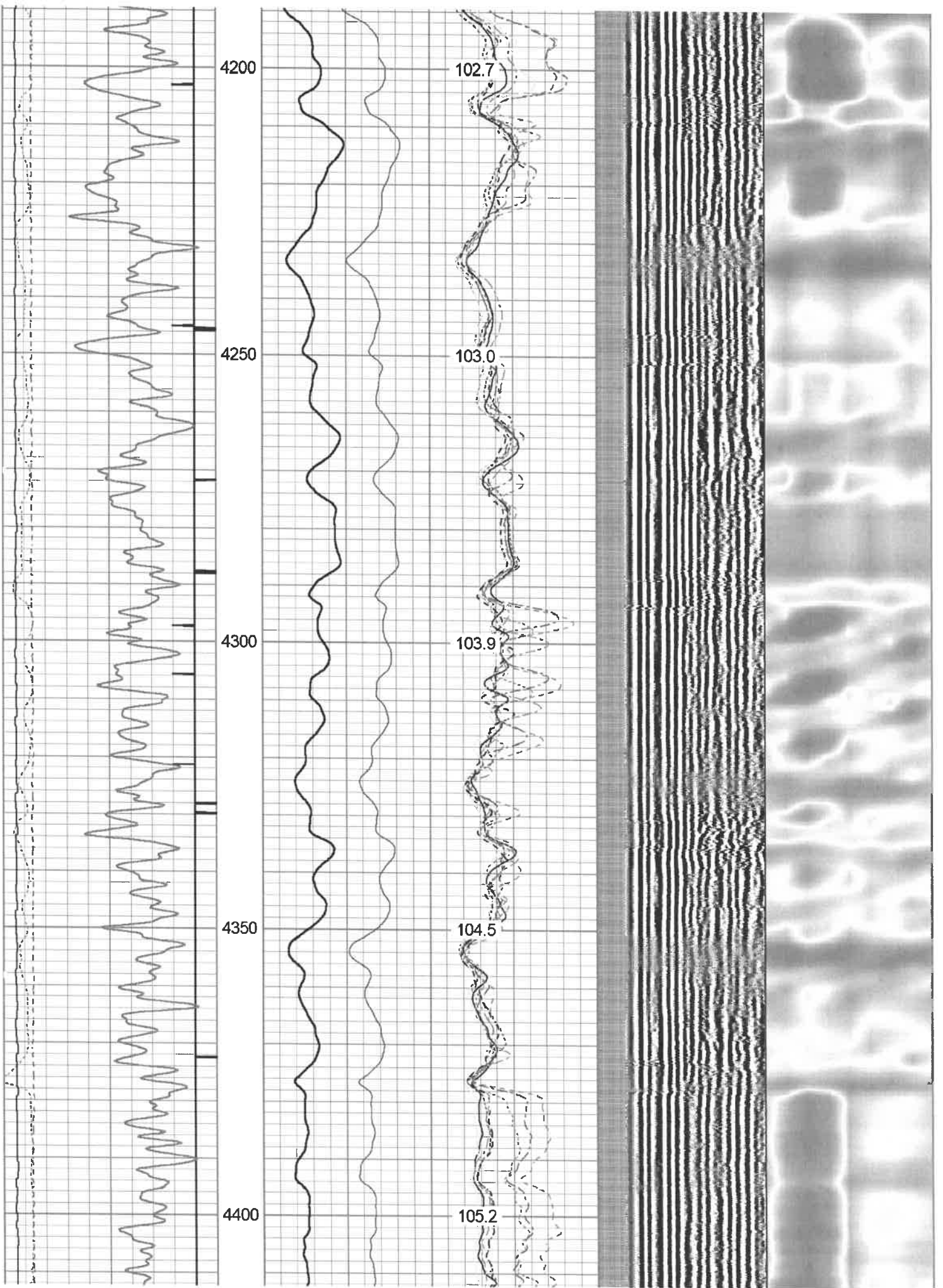
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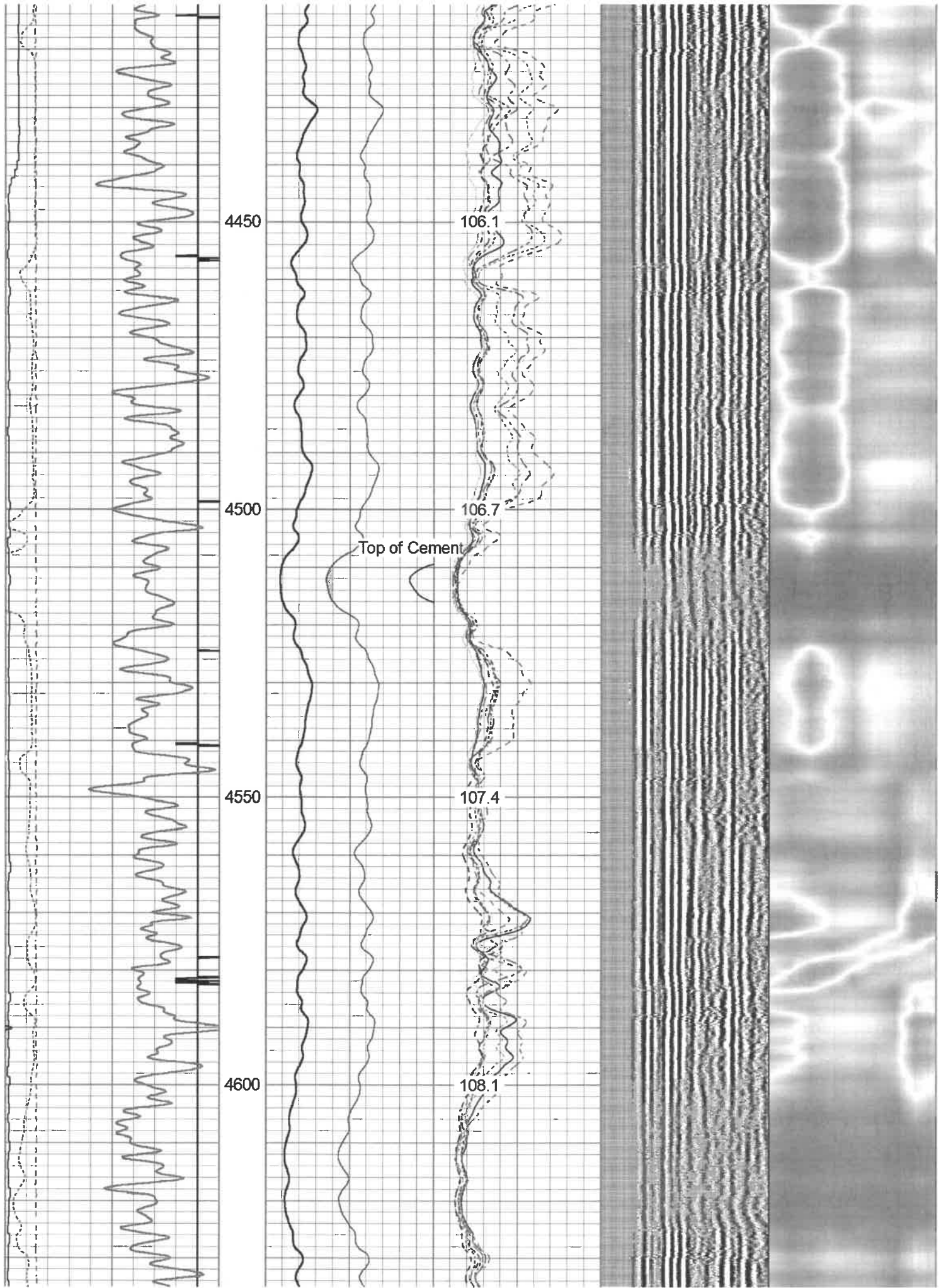
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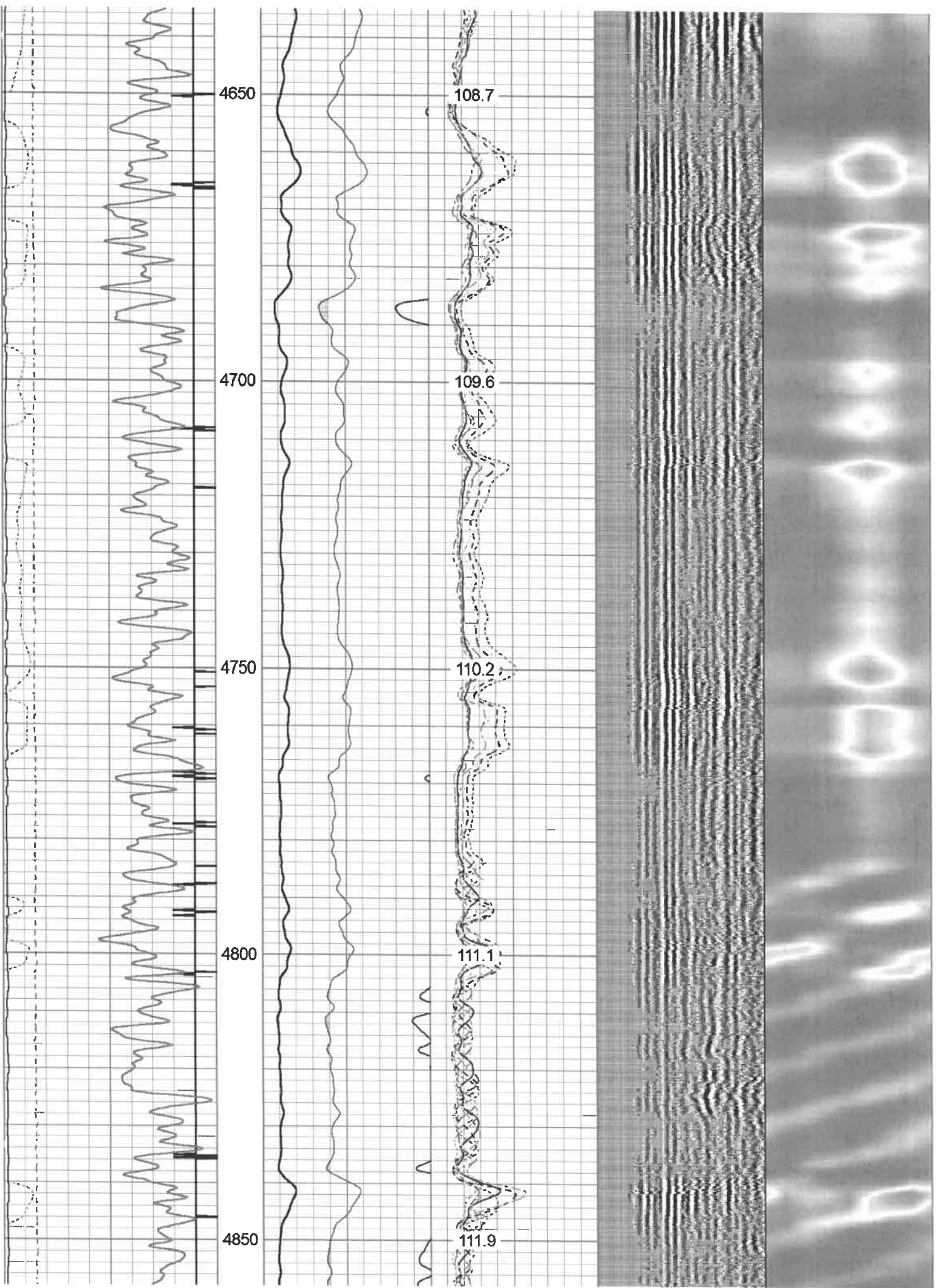
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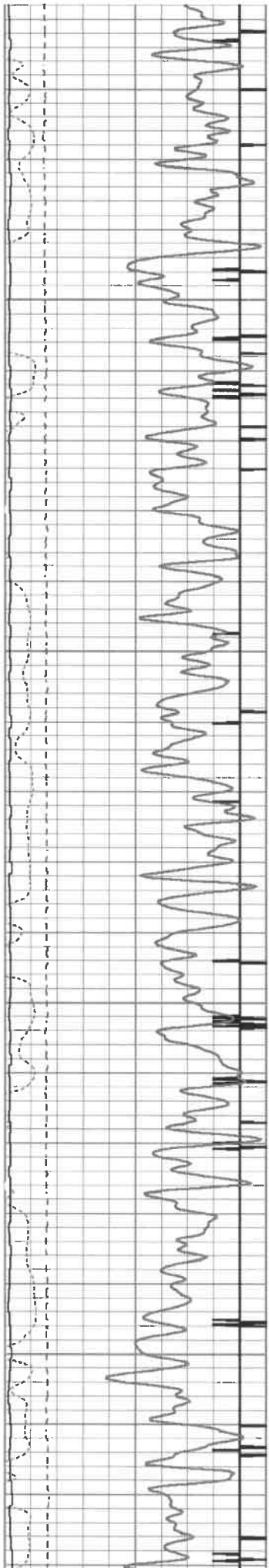
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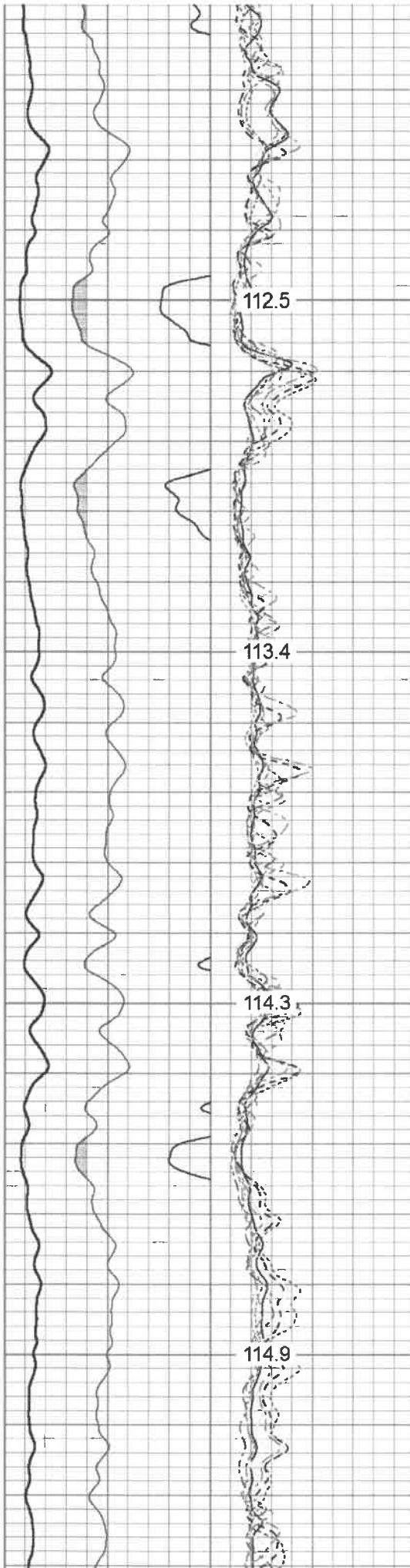


4900

4950

5000

5050

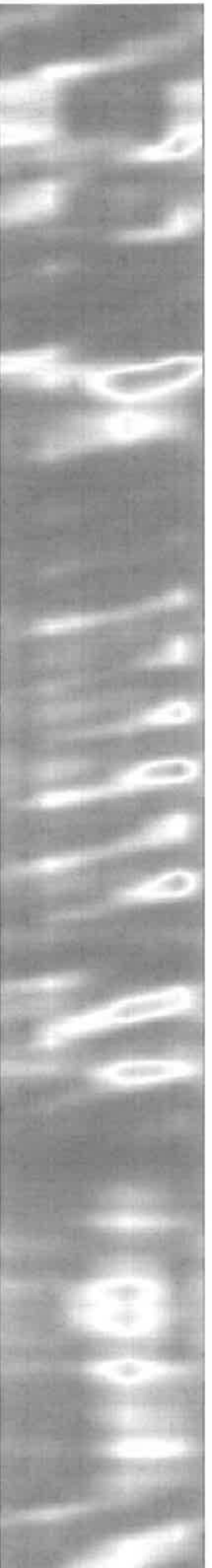
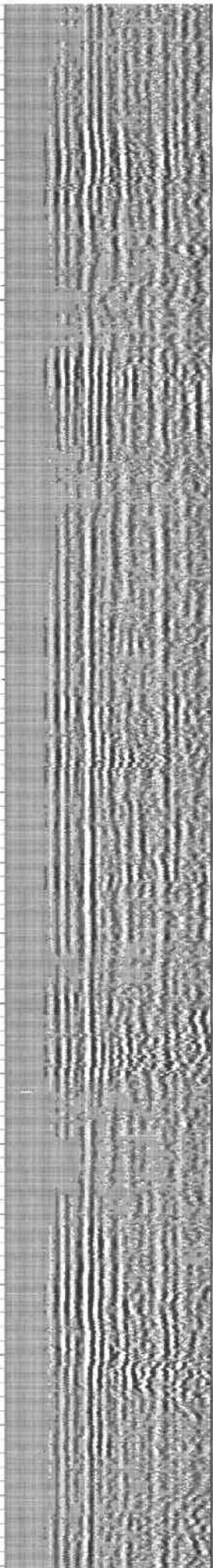


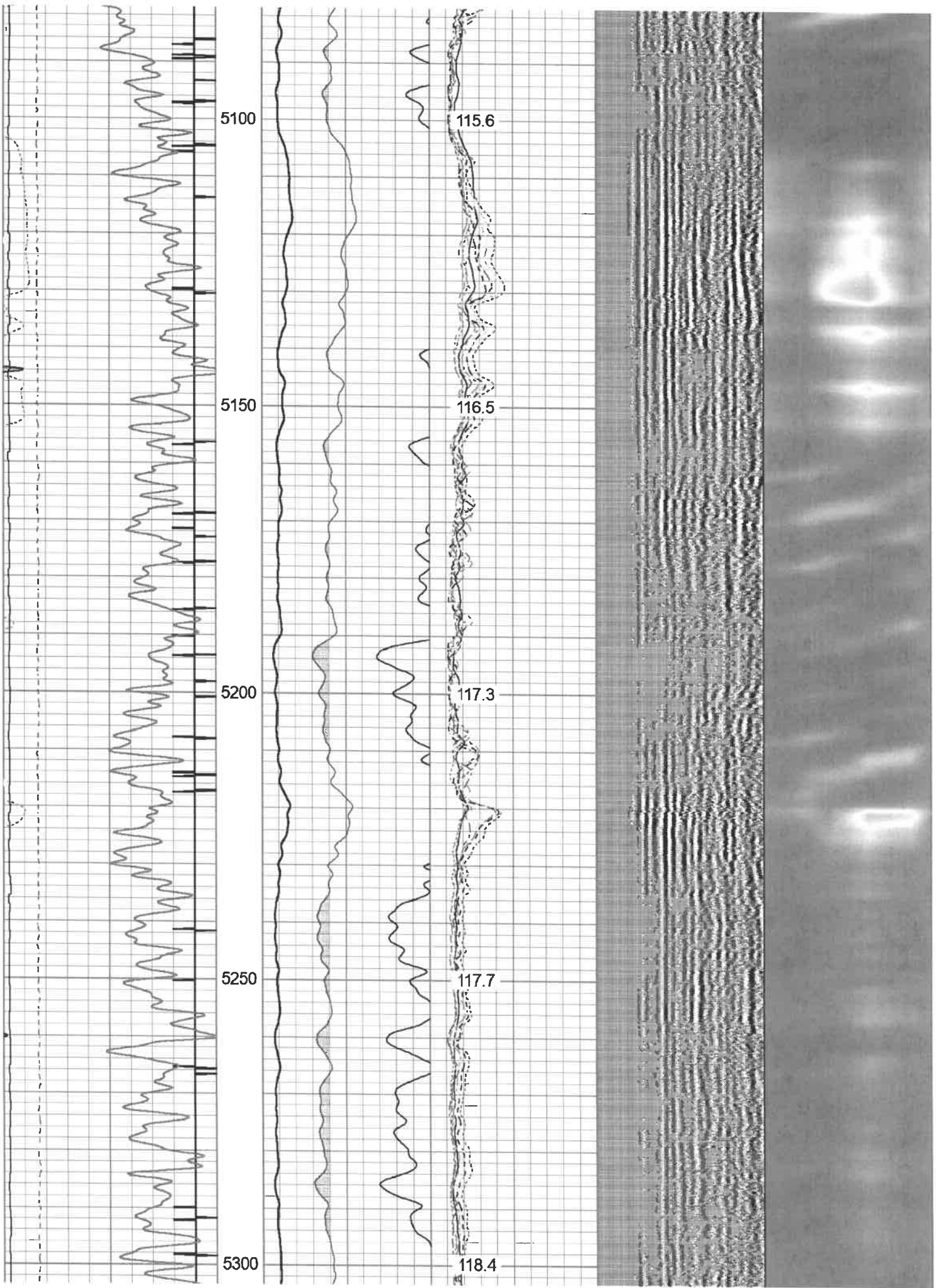
112.5

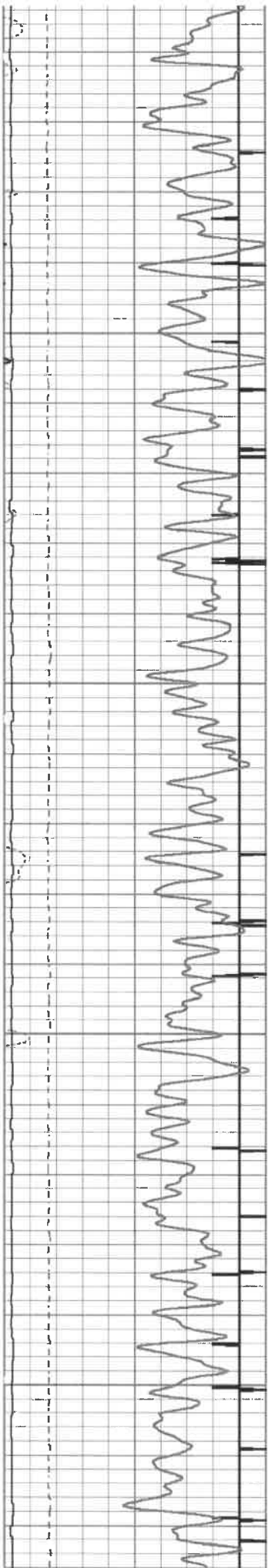
113.4

114.3

114.9





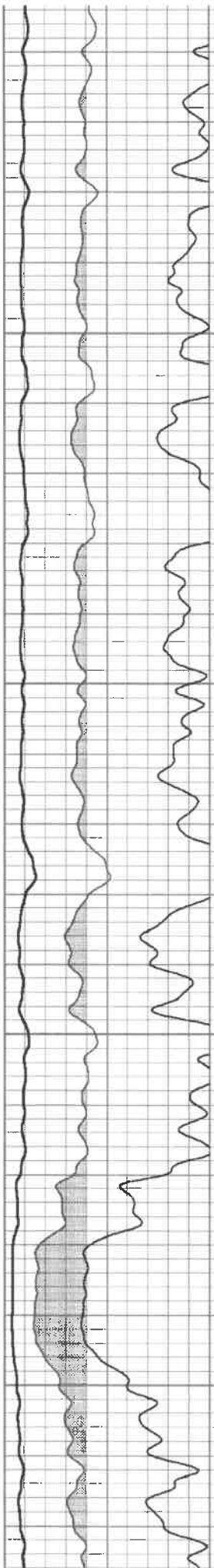


5350

5400

5450

5500

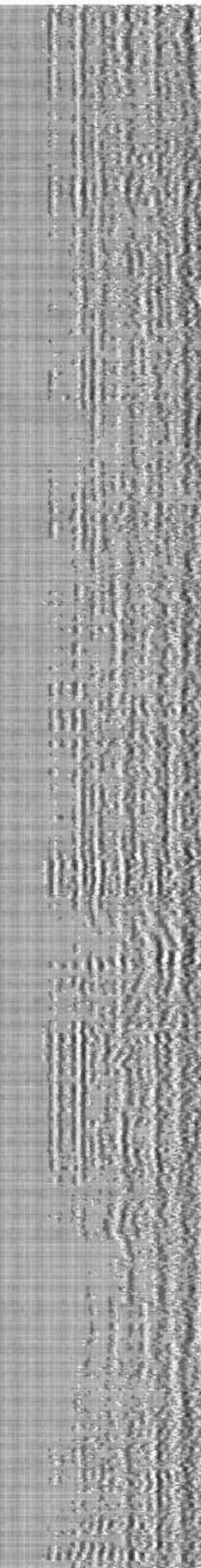
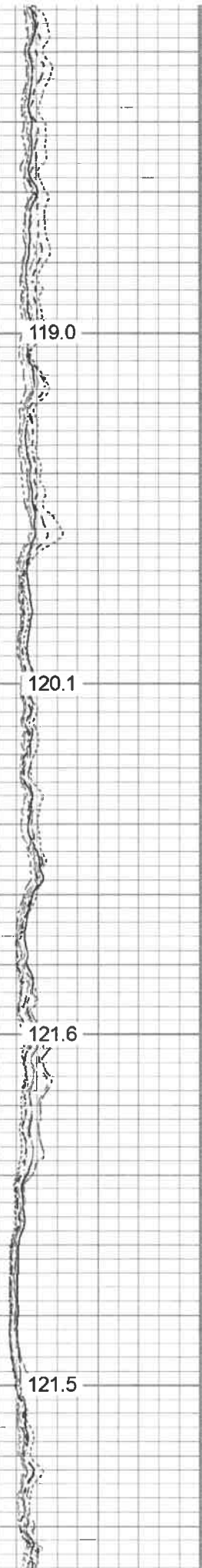


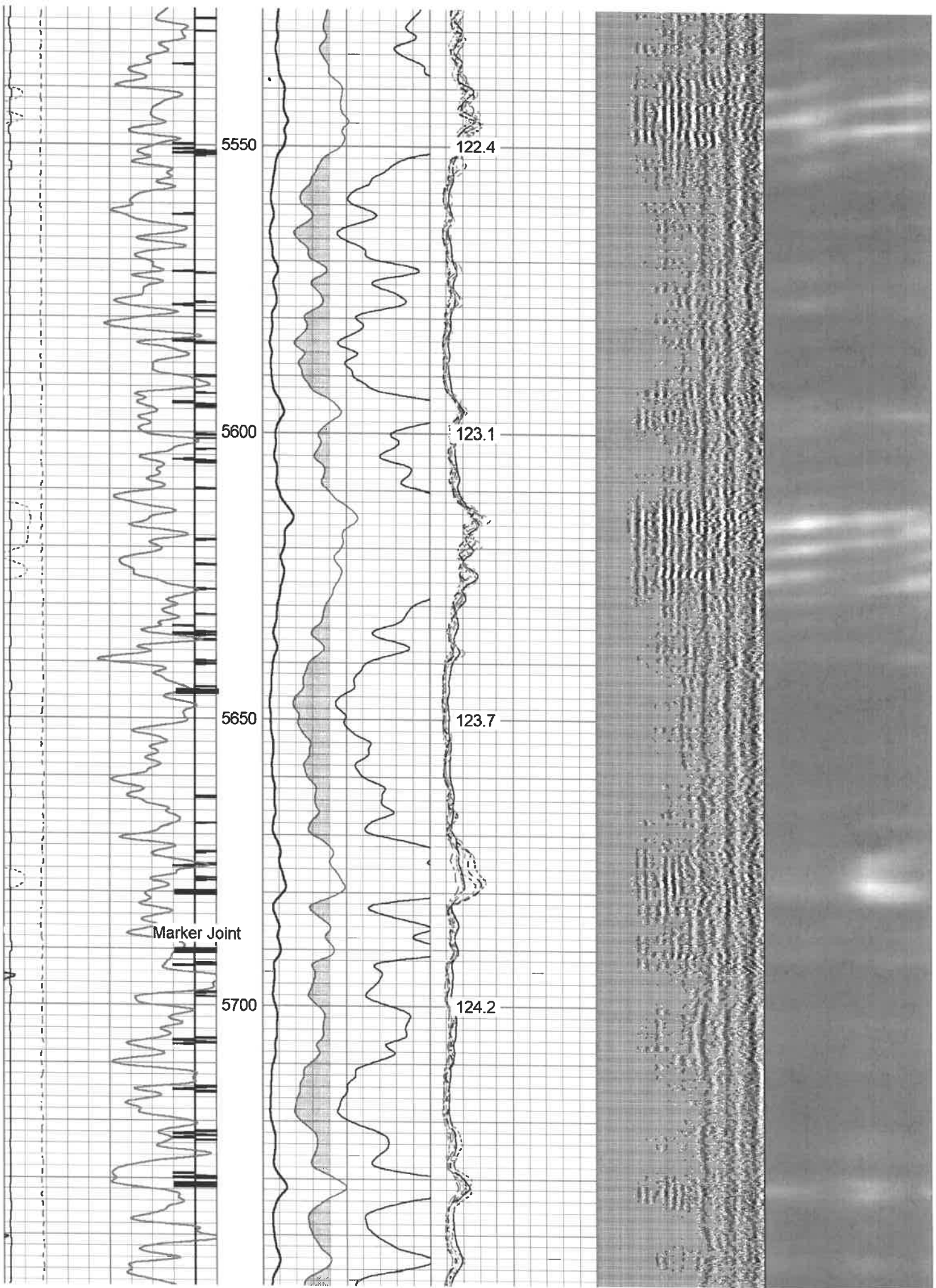
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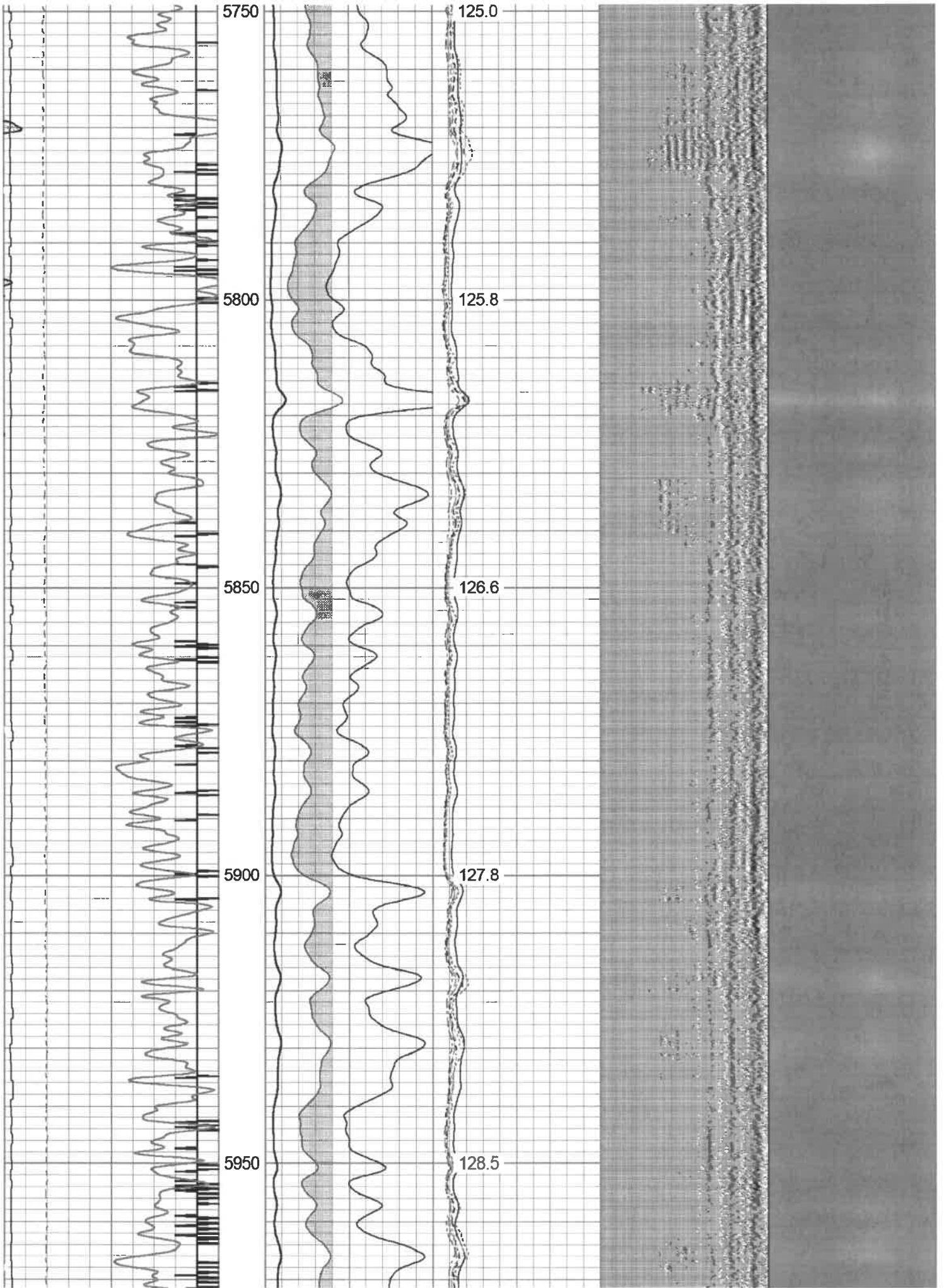
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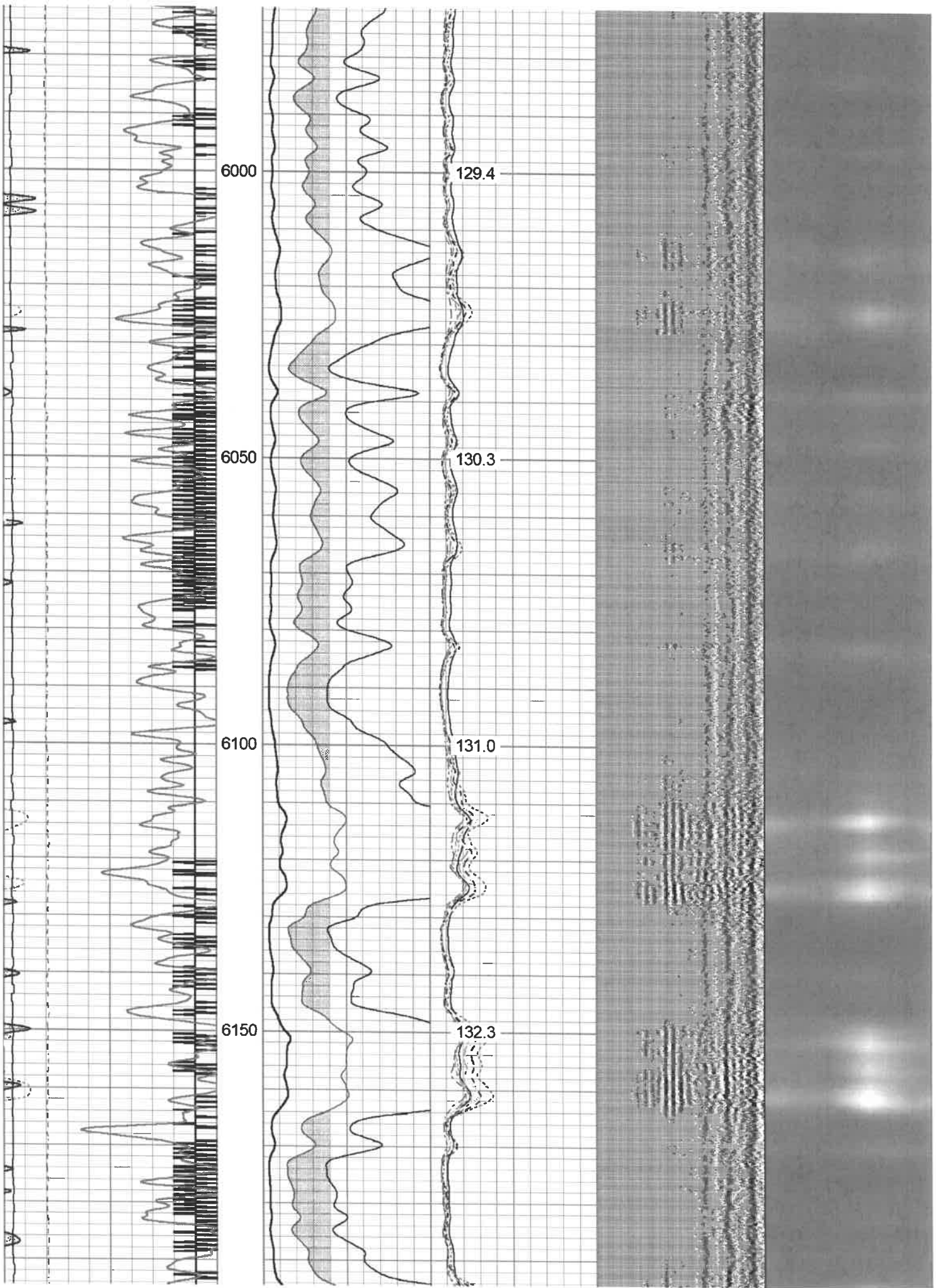
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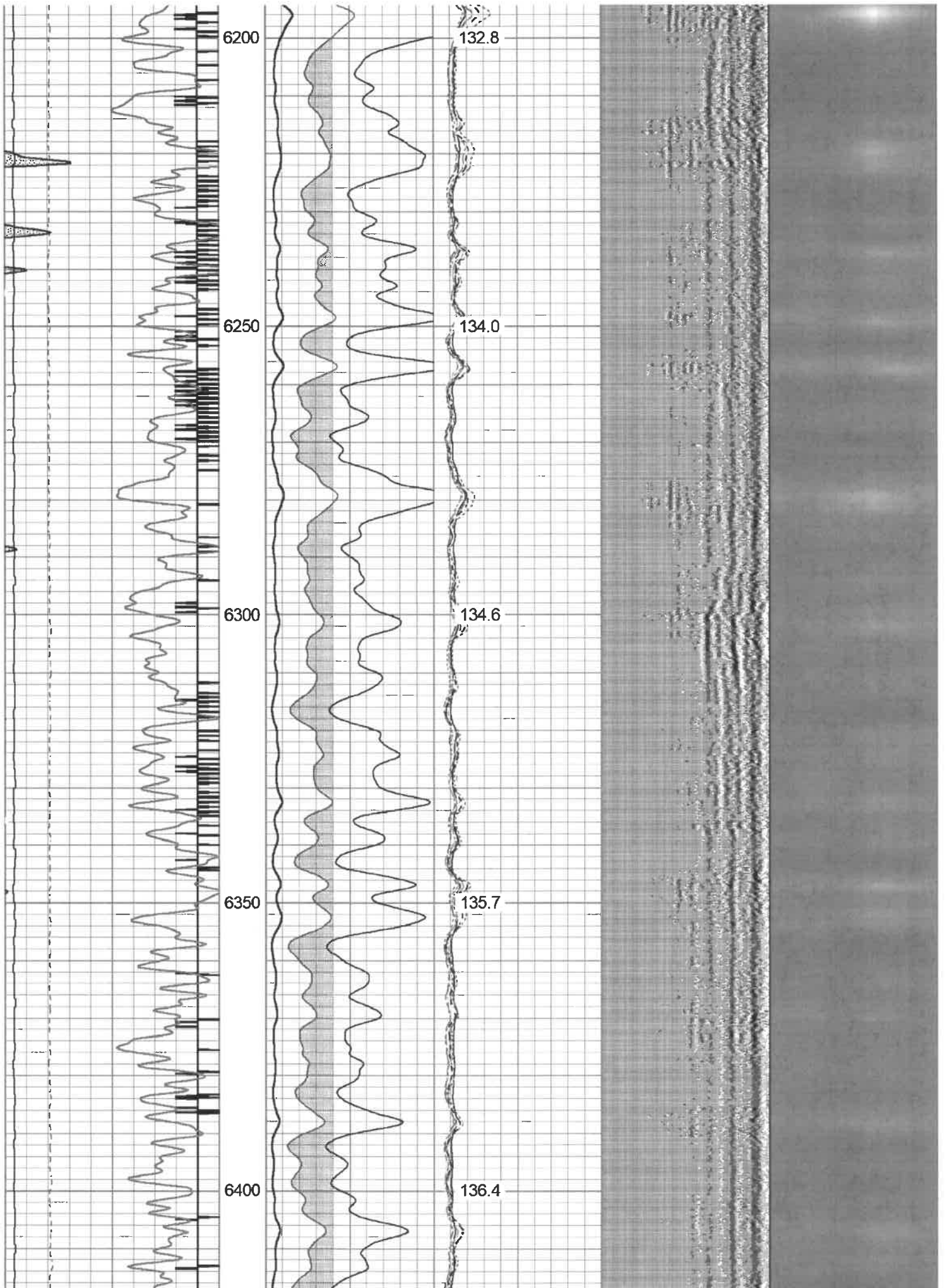
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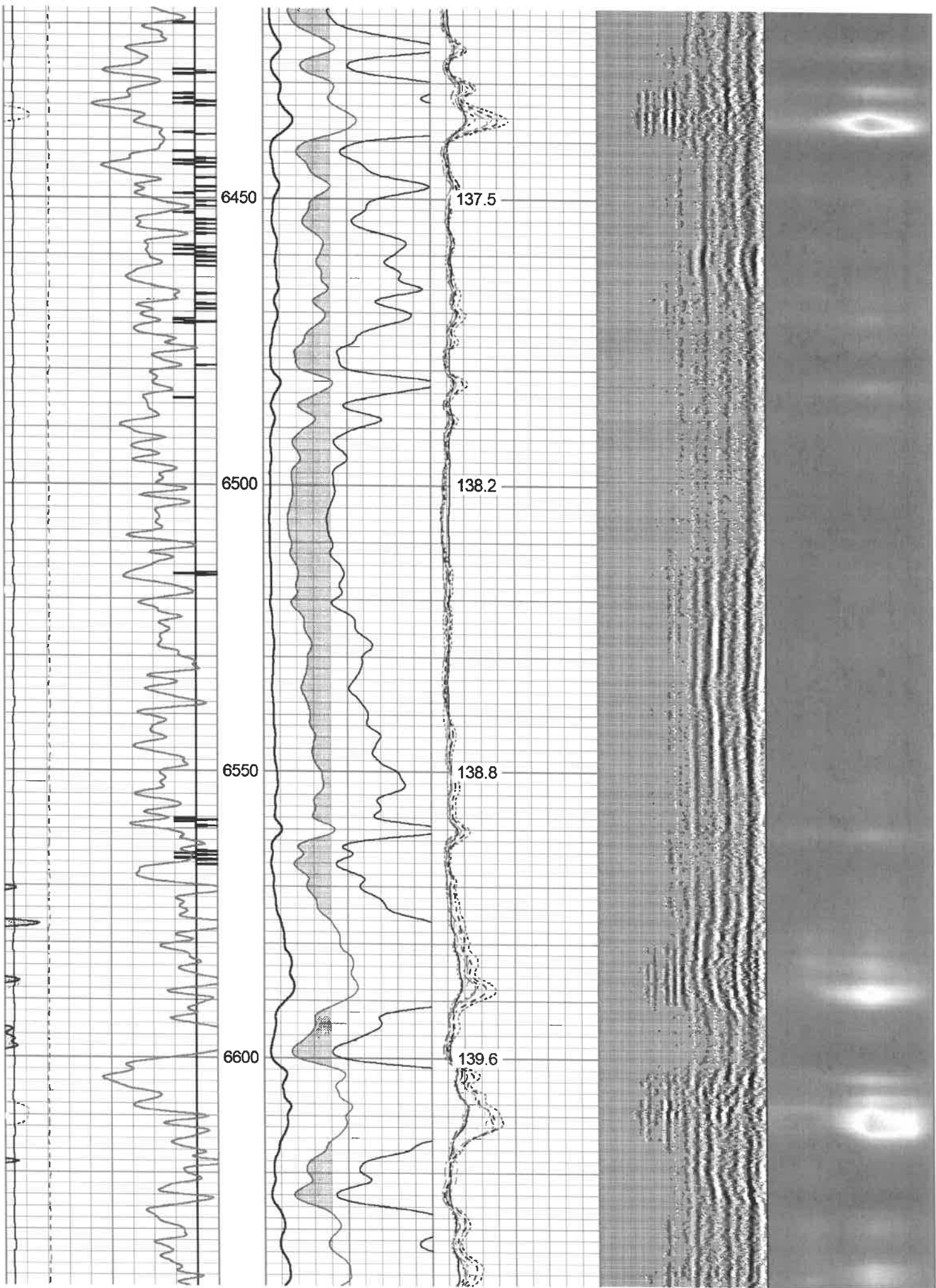


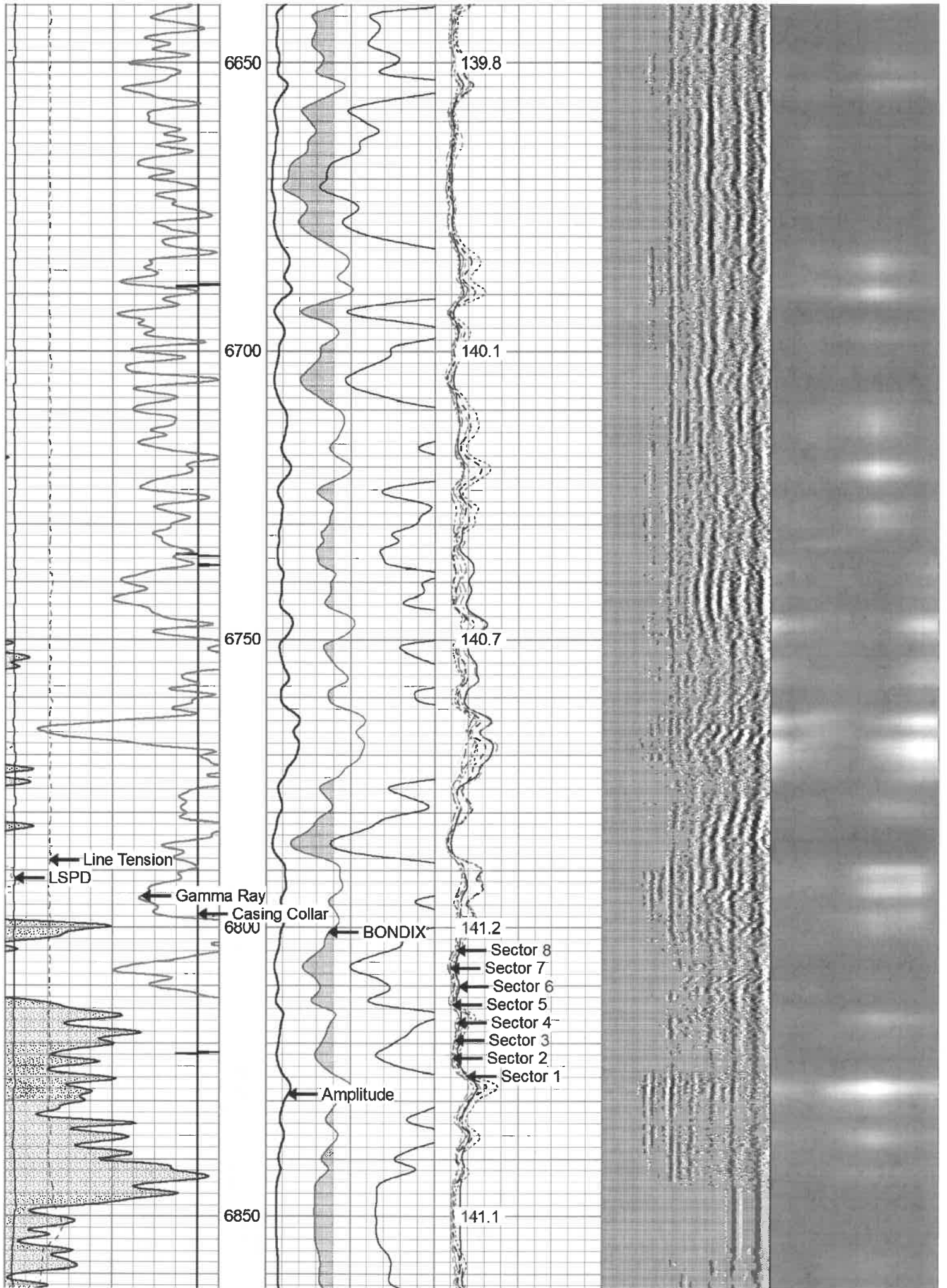


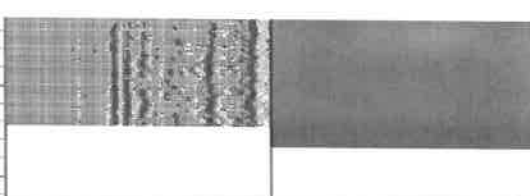
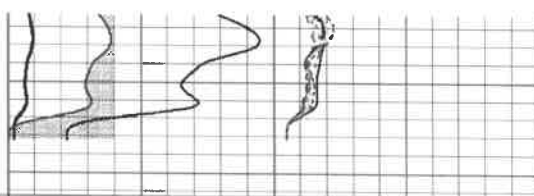
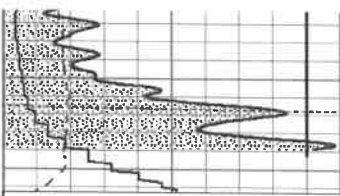












285	Travel Time (usec)	185
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000
-100	LSPD (ft/min)	100

0	Amplitude (mV)	100	-5	Sector 1	150
1	BONDIX	0	-5	Sector 2	150
0	AMPx10 (mV)	10	-5	Sector 3	150
			-5	Sector 4	150
			-5	Sector 5	150
			-5	Sector 6	150
			-5	Sector 7	150
			-5	Sector 8	150

Variable Density	1	Cement Map	8
200	(usec)	1200	

TEMP
(degF)



Repeat Pass 1500 PSI

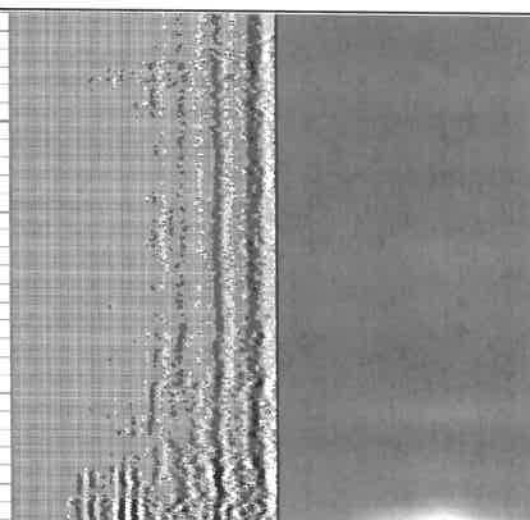
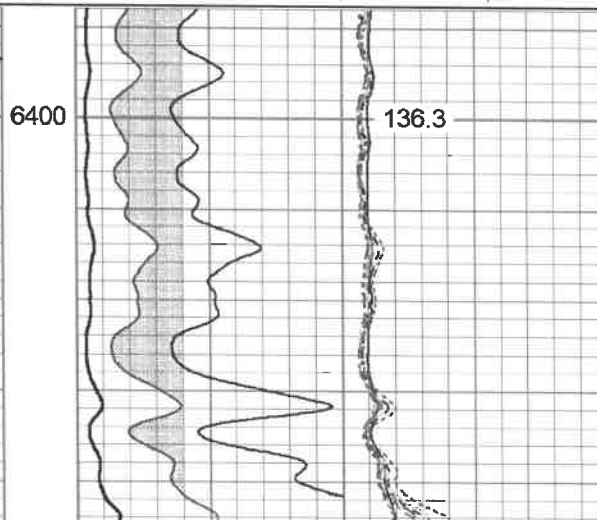
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 Dataset Pathname Marcellus/Patty_1H/RCBL_1/pass10.1
 Presentation Format rcbl-bond index for antero 1020
 Dataset Creation Tue Jul 13 05:50:23 2021
 Charted by Depth in Feet scaled 1:240

315	Travel Time (usec)	215
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000
-100	LSPD (ft/min)	100

0	Amplitude (mV)	100	-5	Sector 1	150
1	BONDIX	0	-5	Sector 2	150
0	AMPx10 (mV)	10	-5	Sector 3	150
			-5	Sector 4	150
			-5	Sector 5	150
			-5	Sector 6	150
			-5	Sector 7	150
			-5	Sector 8	150

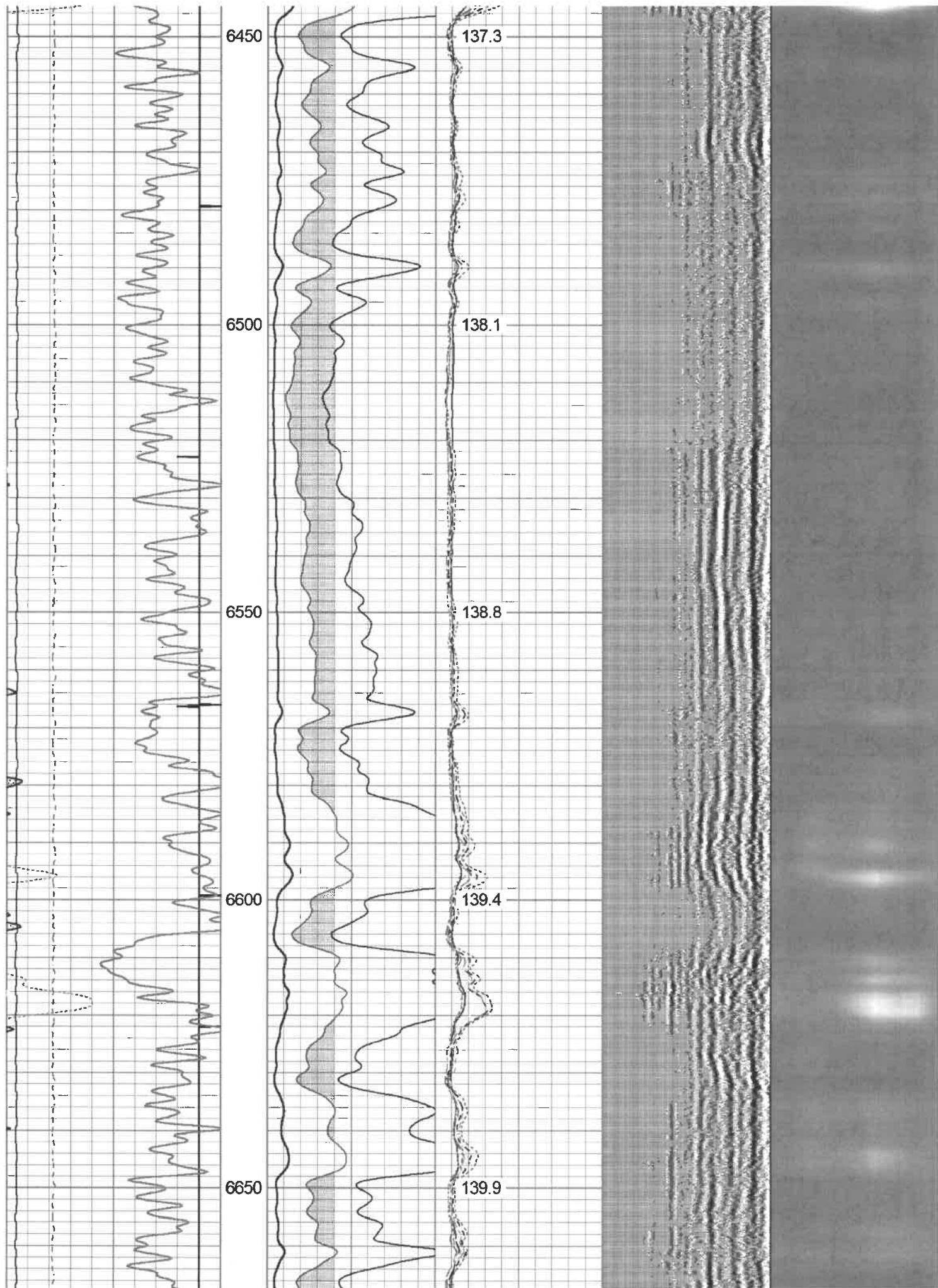
Variable Density	1	Cement Map	8
200	(usec)	1200	

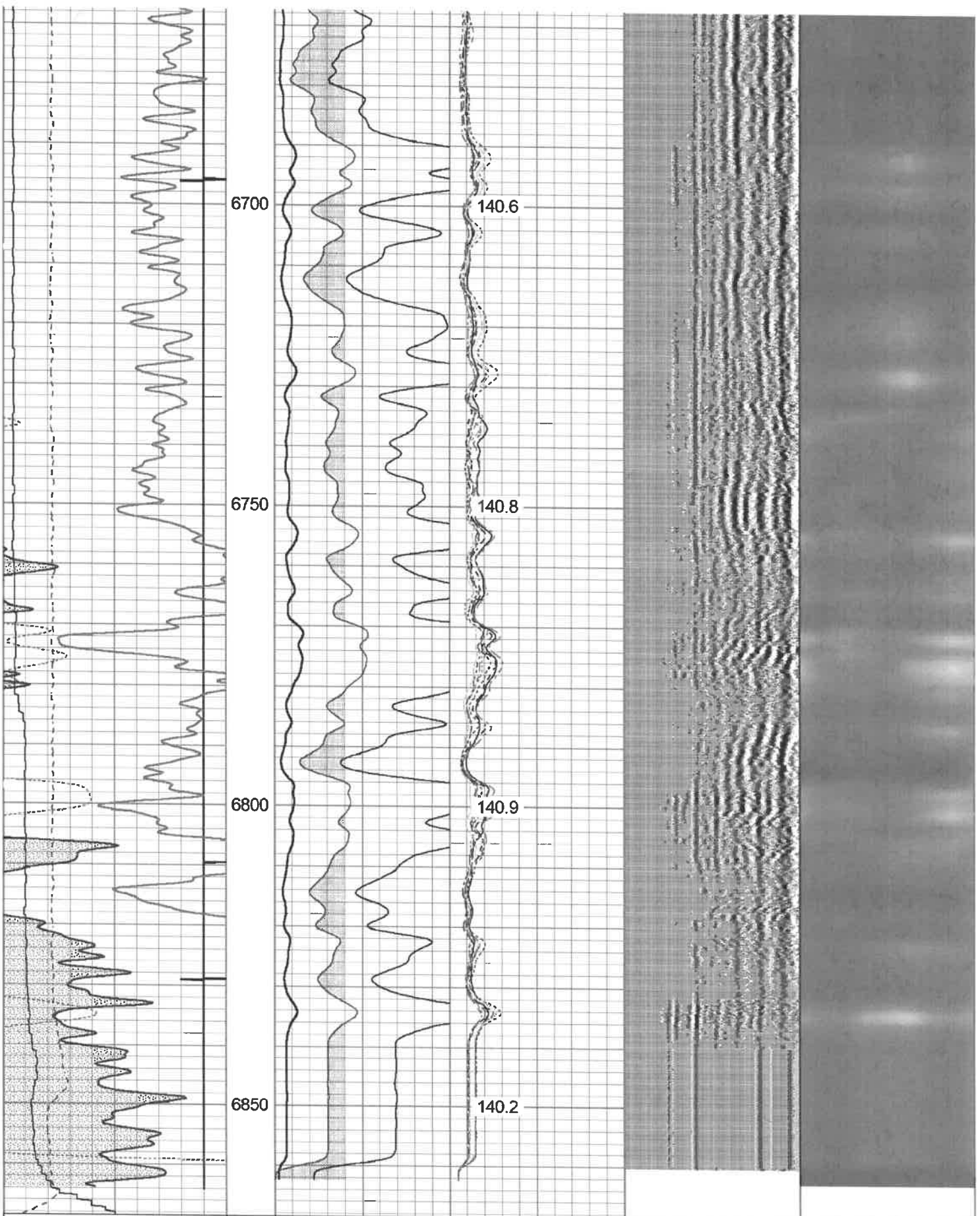
TEMP
(degF)



6400

136.3





315	Travel Time (usec)	215
9	Casing Collar	-1
0	Gamma Ray (GAPI)	150
0	Line Tension (lb)	5000
100	LOGD (#/min)	100

0	Amplitude (mV)	100	-5	Sector 1	150
1	BONDIX	0	-5	Sector 2	150
0	AMPx10 (mV)	10	-5	Sector 3	150
			-5	Sector 4	150
			5	Sector 5	150

Variable Density	1	Cement Map	8
200 (usec)	1200		

-100 LSPD (100000) 100

-5	Sector 5	150
-5	Sector 6	150
-5	Sector 7	150
-5	Sector 8	150
TEMP		
(degF)		

Log Variables

Database: C:\ProgramData\Warrior\Data\antero_patty_1h_rcbl_july122021.db

Dataset: Marcellus/Patty_1H/RCBL_1/pass12.8/_vars_

Top - Bottom

BHTEMP_Src	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	CASEWGHT lb/ft	MAXAMPL mV	MINAMPL mV
TEMP	7.875	100	5.5	0.376	20	72	2.2
MINATTN db/ft	PERFS	PPT usec	SRFTEMP degF	TDEPTH ft			
0.8	No	0	0	0			

Variable Description

BHTEMP_Src : BHTEMP Input Source Selector
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude

MINAMPL : Minimum Amplitude
 MINATTN : Minimum Attenuation
 PERFS : Perforation Flag
 PPT : Predicted Pipe Time
 SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

Calibration Report

Database File antero_patty_1h_rcbl_july122021.db
 Dataset Pathname Marcellus/Patty_1H/RCBL_1/pass12.8
 Dataset Creation Mon Jul 12 18:34:36 2021

Gamma Ray Calibration Report

Serial Number: FW1211-86
 Tool Model: Probe
 Performed: Mon Feb 03 15:18:32 2014

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.8000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1312-32
 Tool Model: Probe275T

Calibration Casing Diameter: 5.500 in
 Calibration Depth: 2980.375 ft

Master Calibration, performed Mon Jul 12 16:05:47 2021:

Raw (v)		Calibrated (mv)		Results	
Zero	Cal	Zero	Cal	Gain	Offset


3'	0.000	0.558	2.200	71.921	58.968	2.200
CAL	0.000	0.768				
5'	0.000	0.471	2.200	71.921	80.944	2.200
SUM						
S1	0.000	0.827	2.200	100.000	80.204	2.200
S2	0.000	0.715	2.200	100.000	81.860	2.200
S3	0.000	0.595	2.200	100.000	91.341	2.200
S4	0.000	0.592	2.200	100.000	85.256	2.200
S5	0.000	0.623	2.200	100.000	77.069	2.200
S6	0.000	0.612	2.200	100.000	89.817	2.200
S7	0.000	0.581	2.200	100.000	78.470	2.200
S8	0.000	0.658	2.200	100.000	88.653	2.200

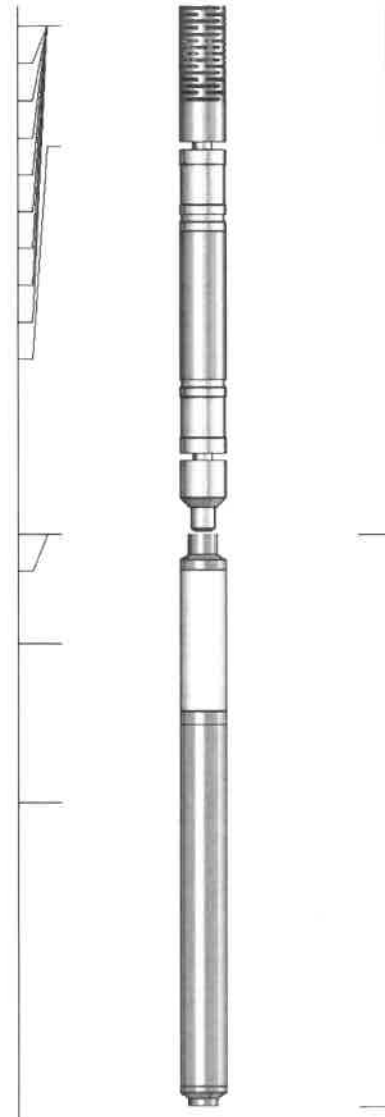
Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.000	0.768	1.000	0.000

Air Zero Calibration, performed Mon Jul 12 14:48:42 2021:

	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	

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
Temp	11.27		CHD-Titan Standard 1 7/16" Cable Head	1.02	1.44	1.00
			RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00

WVFS8	9.03					
WVFS7	9.03					
WVFS6	9.03					
WVFS5	9.03					
WVFS4	9.03					
WVFS3	9.03					
WVFS2	9.03					
WVFS1	9.03					
WVF3FT	9.03					
WVF5FT	8.03					
HeadVolt	4.78					
WVFCAL	4.78					
CCL	3.88					
GR	2.54		GR-Probe (FW1211-86) Probe 2 3/4" Logging Gamma Ray	4.78	2.75	57.00

Dataset: antero_patty_1h_rcbl_july122021.db: Marcellus/Patty_1H/RCBL_1/pass12.8
 Total length: 15.19 ft
 Total weight: 148.00 lb
 O.D.: 2.75 in

	Company	Antero Resources
	Well	Patty 1H
	Field	River Front
	County	Tyler
	State	West Virginia