



**RADIAL  
BOND  
LOG**

Company ANTERO  
Well RUSSELL 1H  
Field SOUTH CANTON  
County DODDRIDGE  
State WEST VIRGINIA

Company ANTERO  
Well RUSSELL 1H  
Field SOUTH CANTON  
County DODDRIDGE State WEST VIRGINIA

Location: API #: 47017069000000  
SEC TWP RGE Elevation 30'  
Permanent Datum GL KB  
Log Measured From KB  
Drilling Measured From KB  
Other Services  
K.B. N/A  
D.F. N/A  
G.L. N/A

Date	05-MAR-2021	
Run Number	ONE	
Depth Driller	17,596'	
Depth Logger	7,290'	
Bottom Logged Interval	7,280'	
Top Log Interval	SURFACE	
Open Hole Size	N/A	
Type Fluid	BRINE	
Density / Viscosity	8.6#	
Max. Recorded Temp.	153°F	
Estimated Cement Top	6678'	
Time Well Ready	07.15	
Time Logger on Bottom	08.05	
Equipment Number	TK-127	
Location	CHARLEROI, PA	
Recorded By	D. JOSEPHIK	
Witnessed By	BOB REED	
Borehole Record		
Run Number	Bit	From To
Tubing Record		
	Size	Weight From To
Casing Record	Size	Wgt/Ft Top Bottom
Surface String		
Prot. String		
Production String	5.5	20# SURFACE 17,596'
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 CORRELATED TO MARKER JOINT PER OSR  
MARKER JOINT@ 5933'-5943'**

RECEIVED  
Office of Oil and Gas  
AUG 30 2021  
WV Department of  
Environmental Protection

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			CHD-Titan Titan 1 7/16" GO Cablehead	1.00	1.44	5.00

			CENT-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75	35.00
HeadVolt	16.97					
Temp	14.12					
WVFS8	11.89		RBT-Probe275T (FW1312-32) Probe 2.75" Radial with Integral Temperature Sub	9.39	2.75	90.00
WVFS7	11.89					
WVFS6	11.89					
WVFS5	11.89					
WVFS4	11.89					
WVFS3	11.89					
WVFS2	11.89					
WVFS1	11.89					
WVF3FT	11.89					
WVF5FT	10.89					
WVFCAL	7.64					
HEADVOLT	7.64					
			CENT-Titn275Adj Titan 2 3/4" Adjustable Centralizer	2.86	2.75	35.00
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\_russell1h\_cbl\_mar\_5\_2021.db: field/well/run1/MAIN  
 Total length: 20.89 ft  
 Total weight: 222.00 lb  
 O.D.: 2.75 in

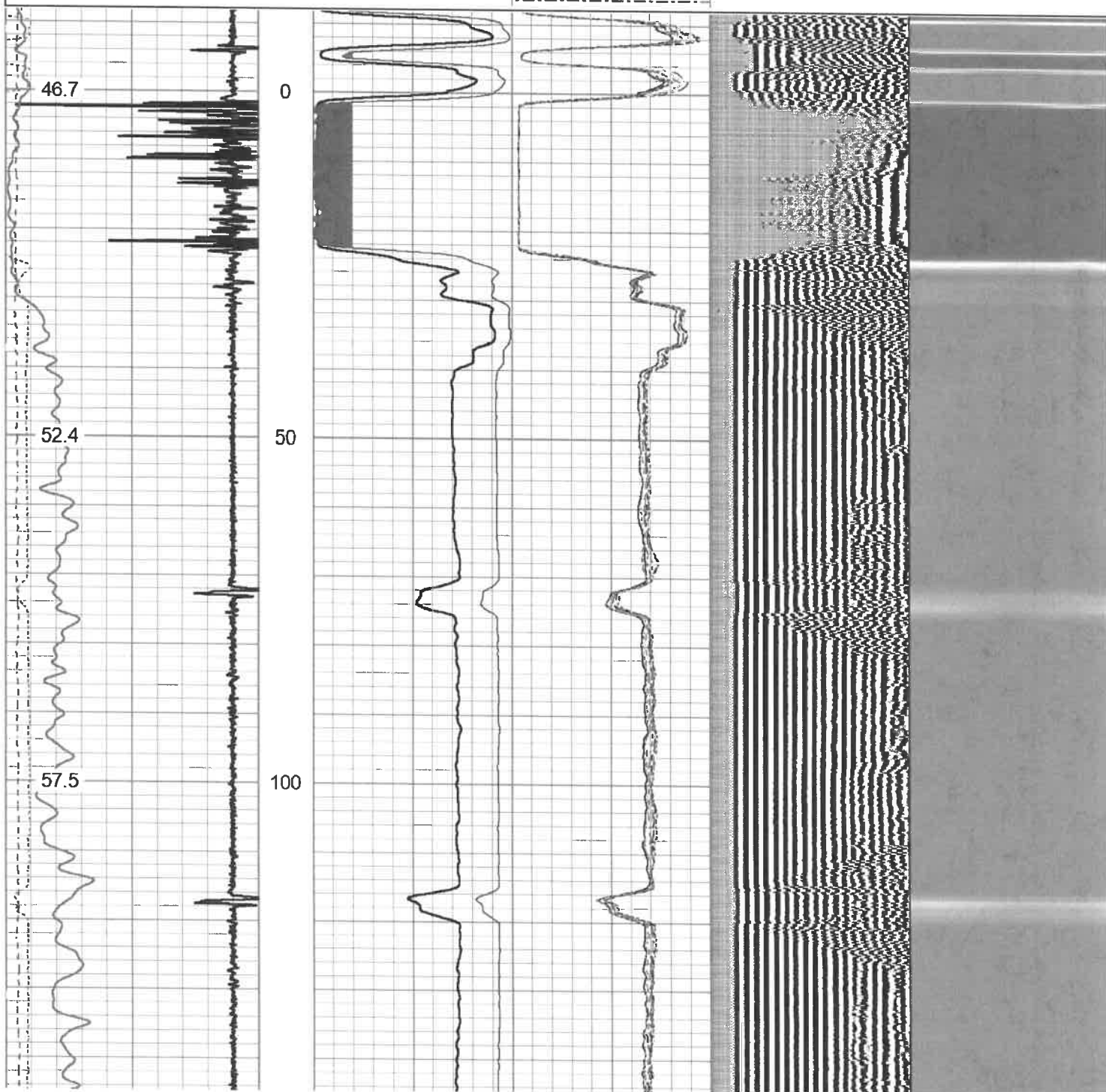


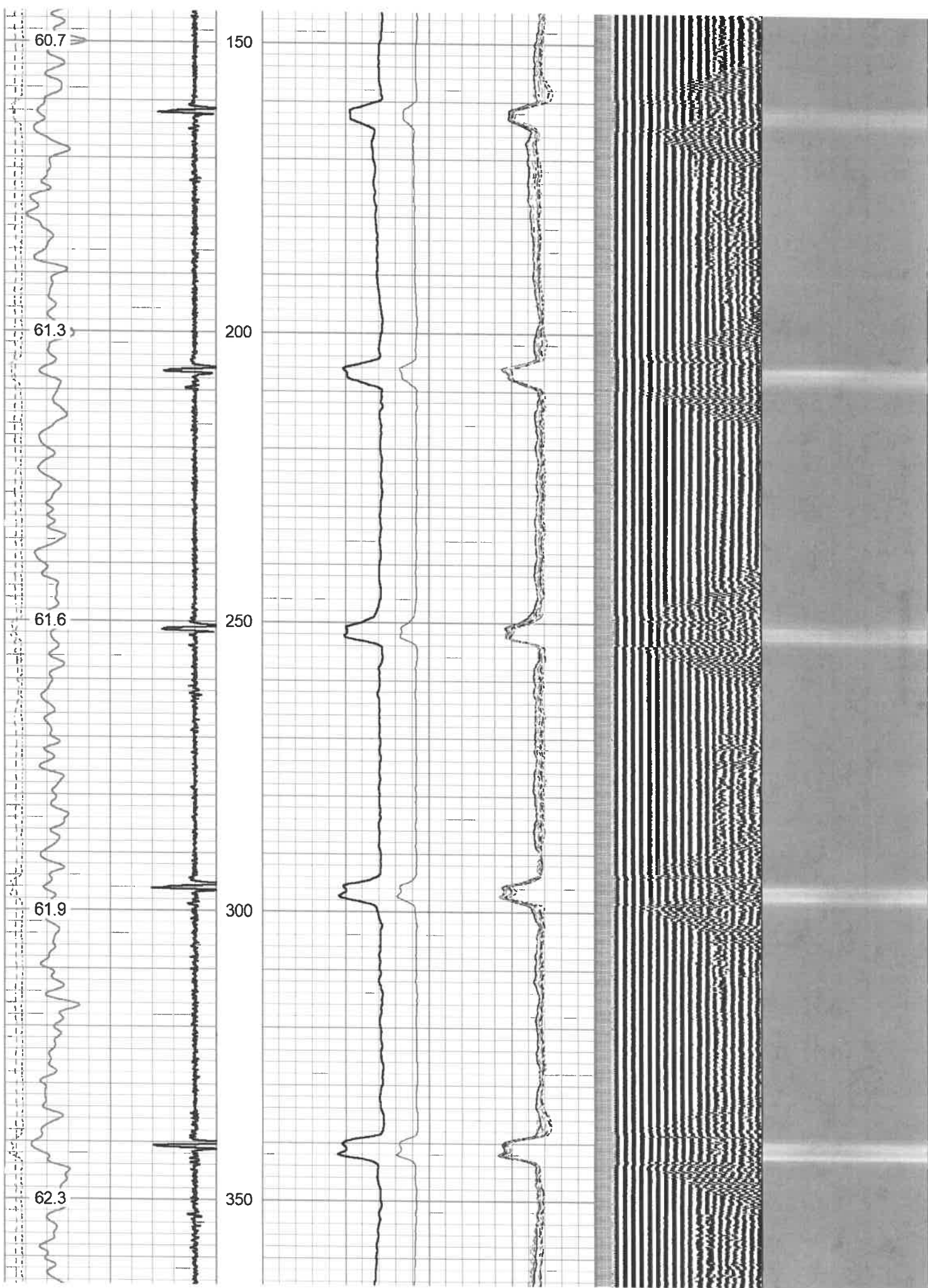
# MAIN LOG

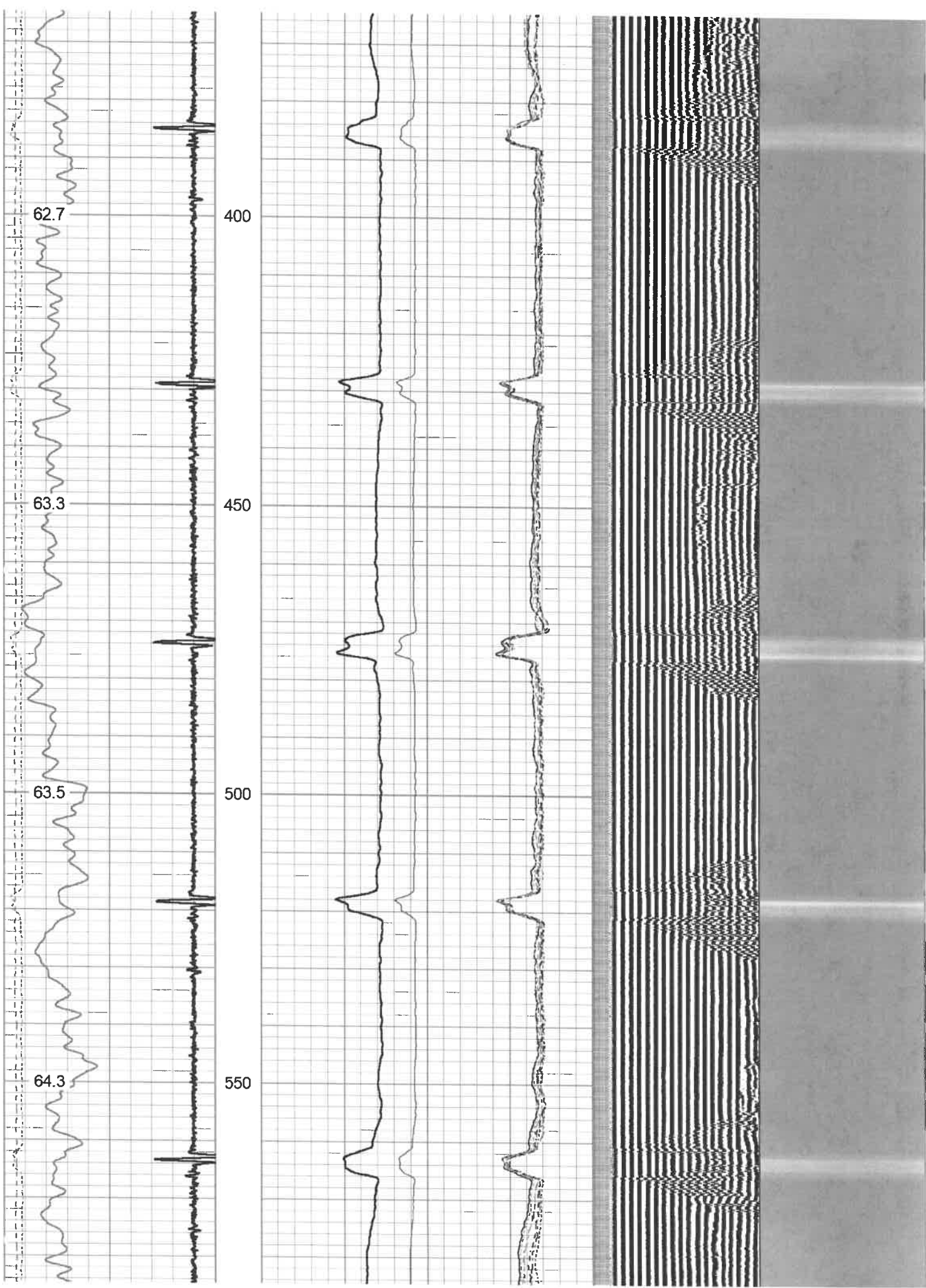
1500 PSI

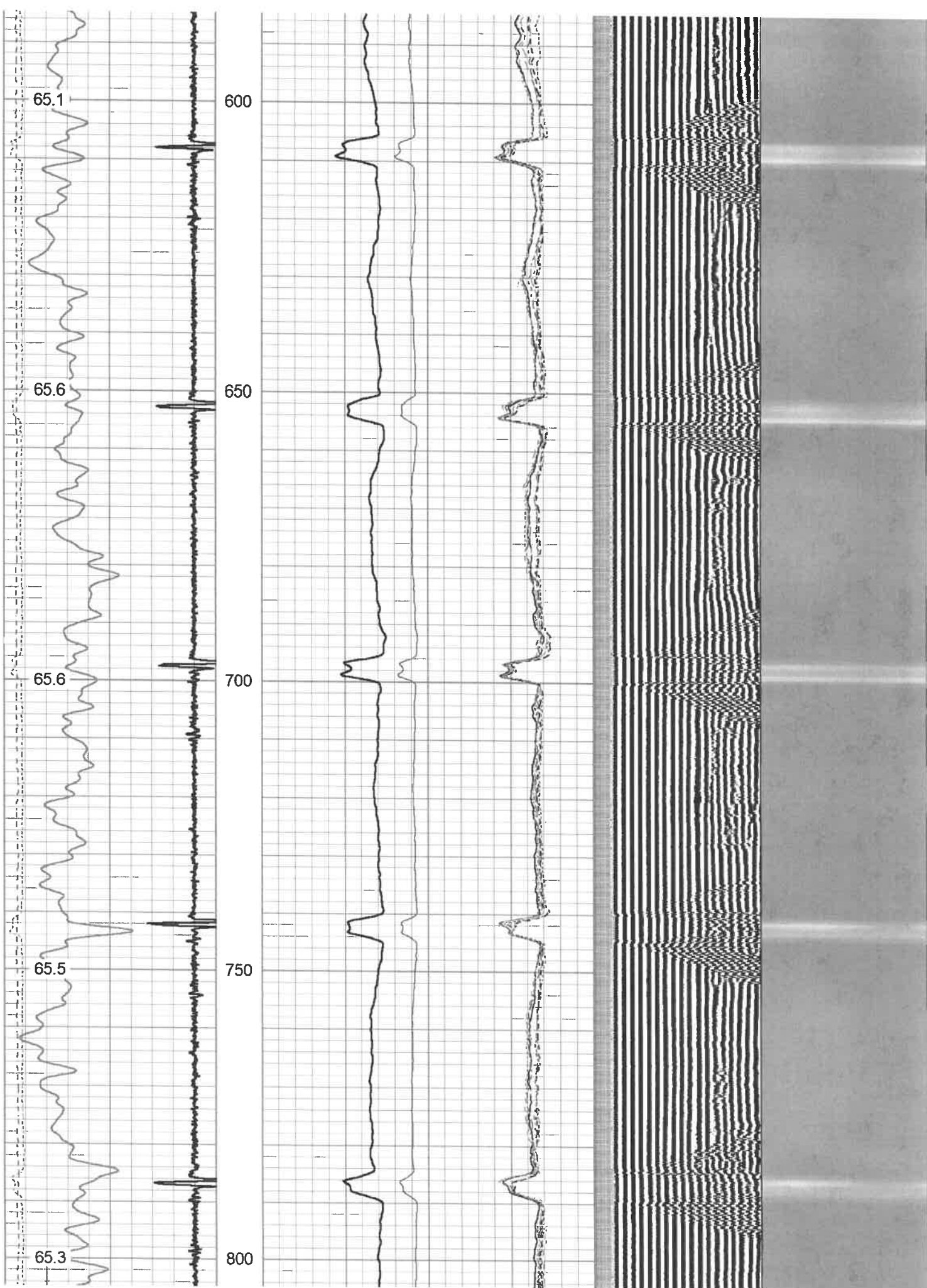
Database File antero\_russell1h\_cbl\_mar\_5\_2021.db  
 Dataset Pathname MAIN  
 Presentation Format 9rcbl  
 Dataset Creation Fri Mar 05 11:31:55 2021  
 Charted by Depth in Feet scaled 1:240

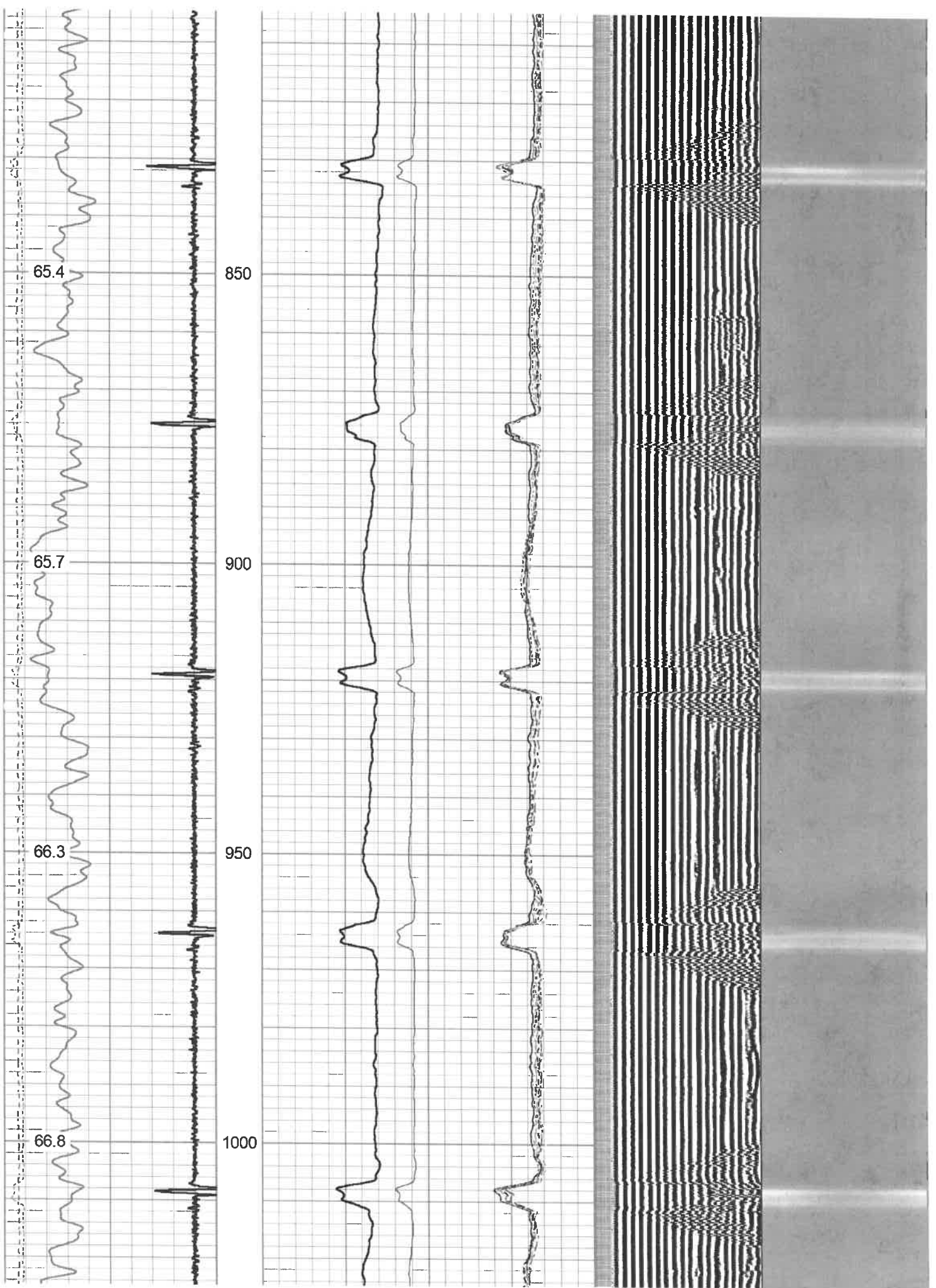
263	Travel Time (usec)	163	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	Sector 2	150	200 (usec)	1200		
0	Gamma Ray (GAPI)	150				-5	Sector 3	150				
0	Line Tension (lb)	5000				-5	Sector 4	150				
	TEMP					-5	Sector 5	150				
	(degF)					-5	Sector 6	150				
						-5	Sector 7	150				
						-5	Sector 8	150				

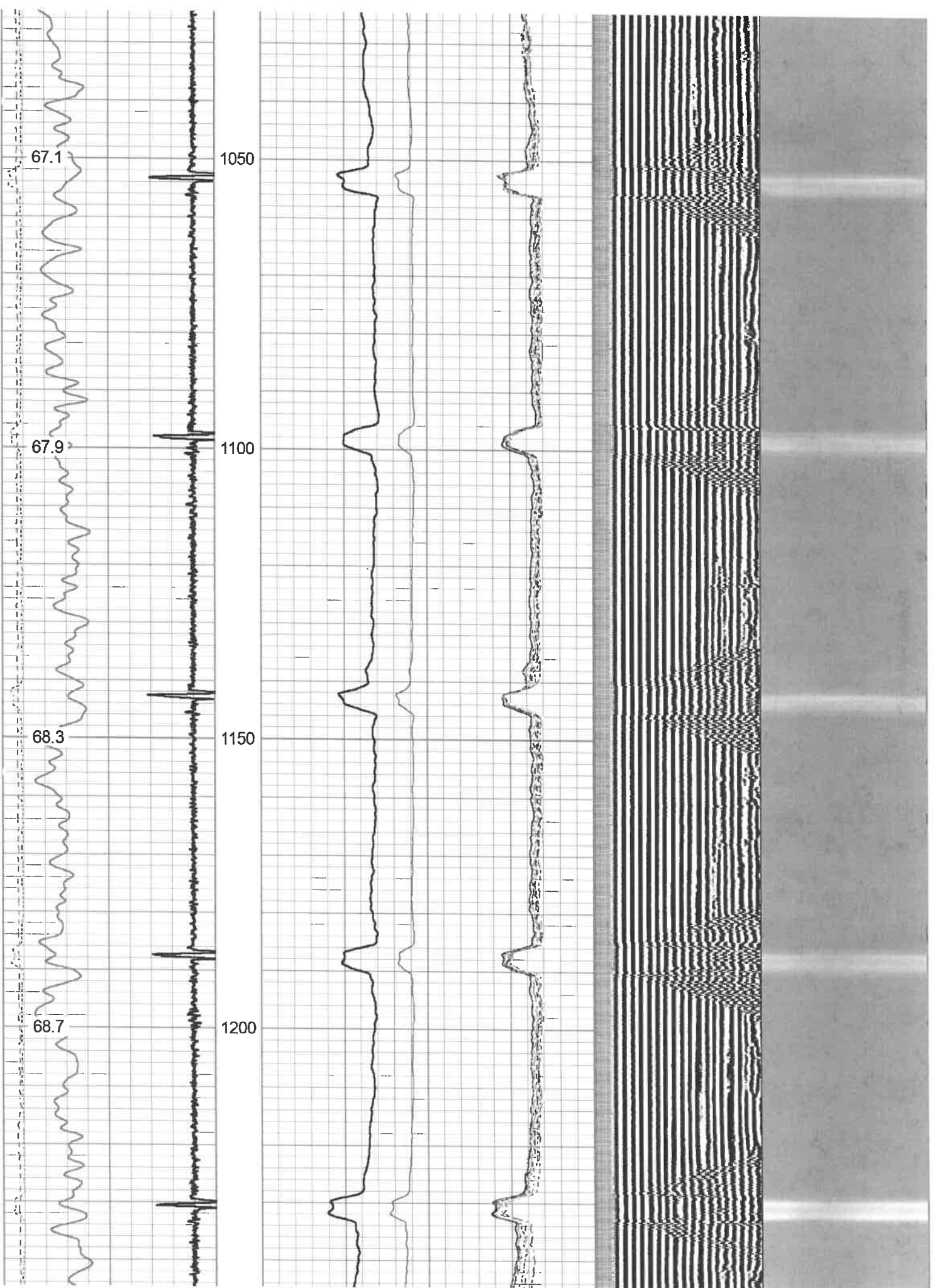




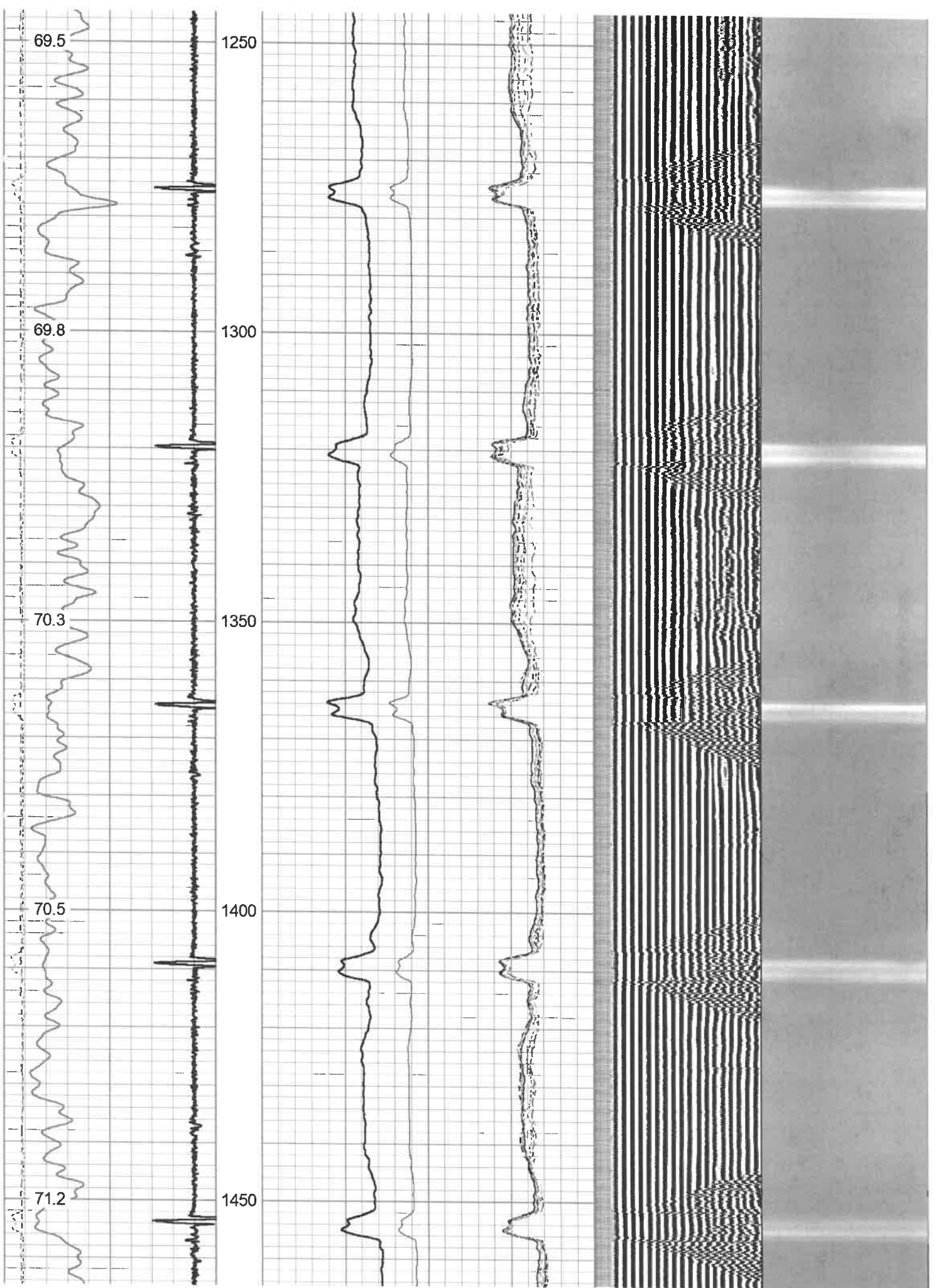


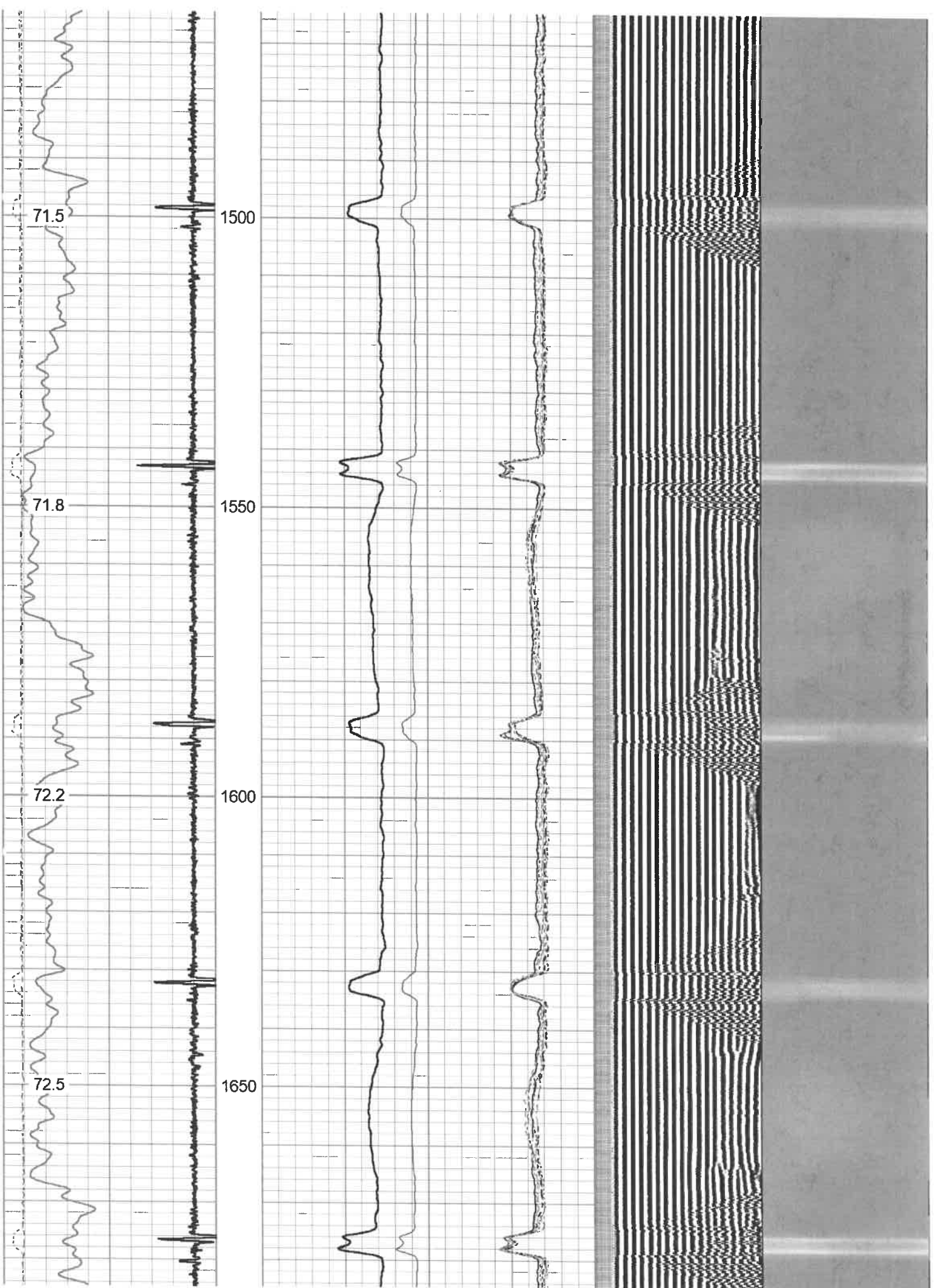


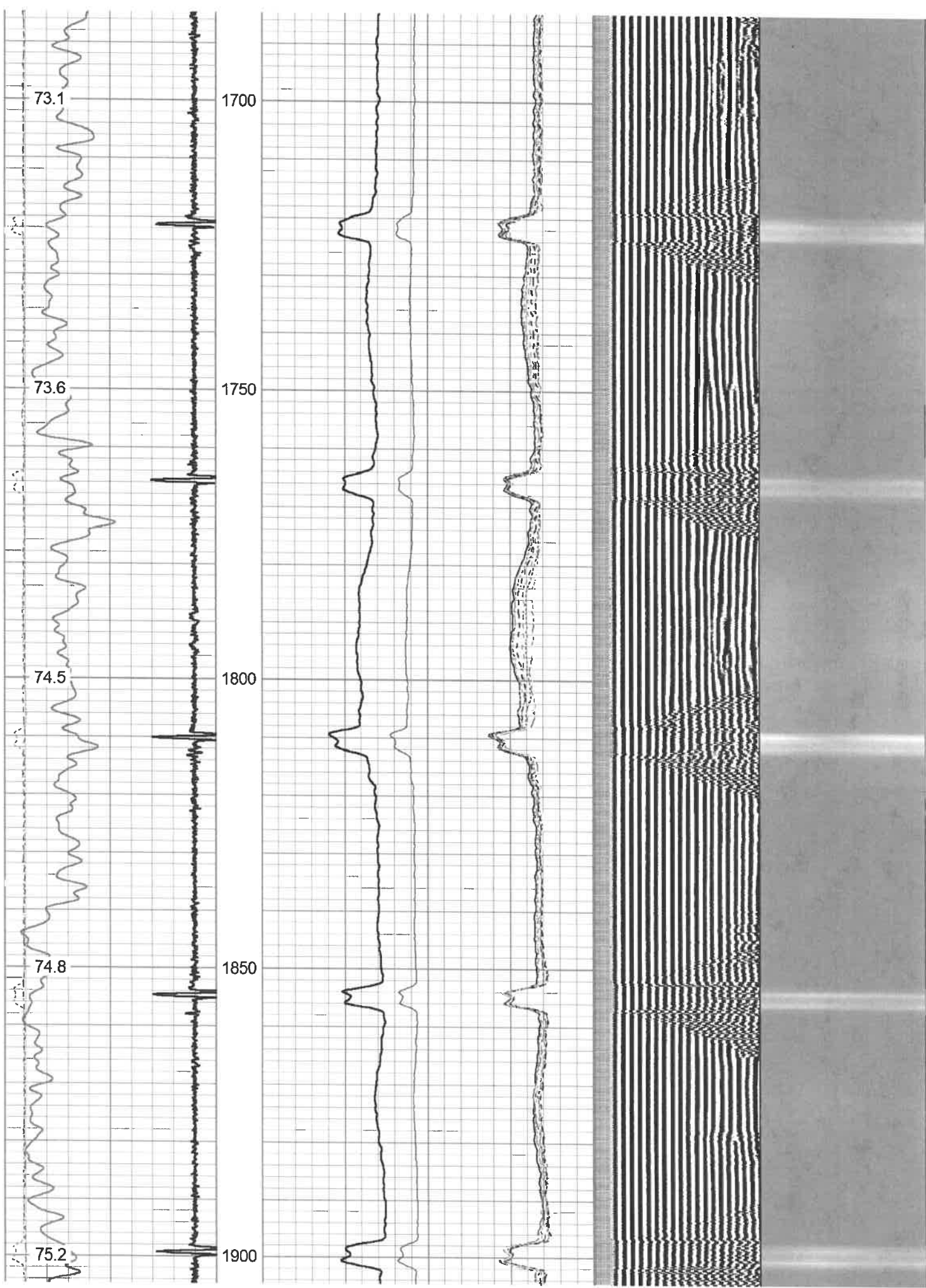


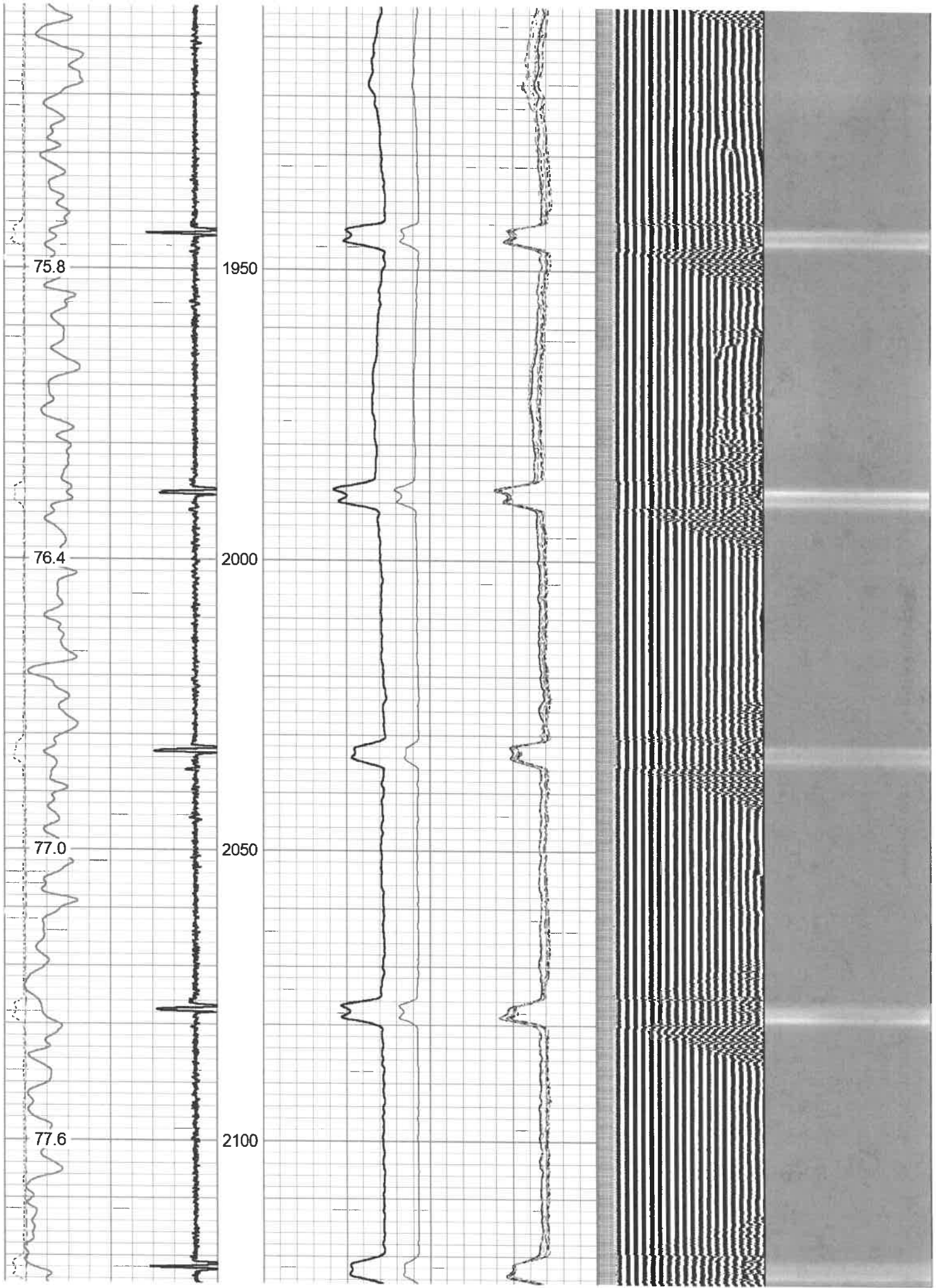


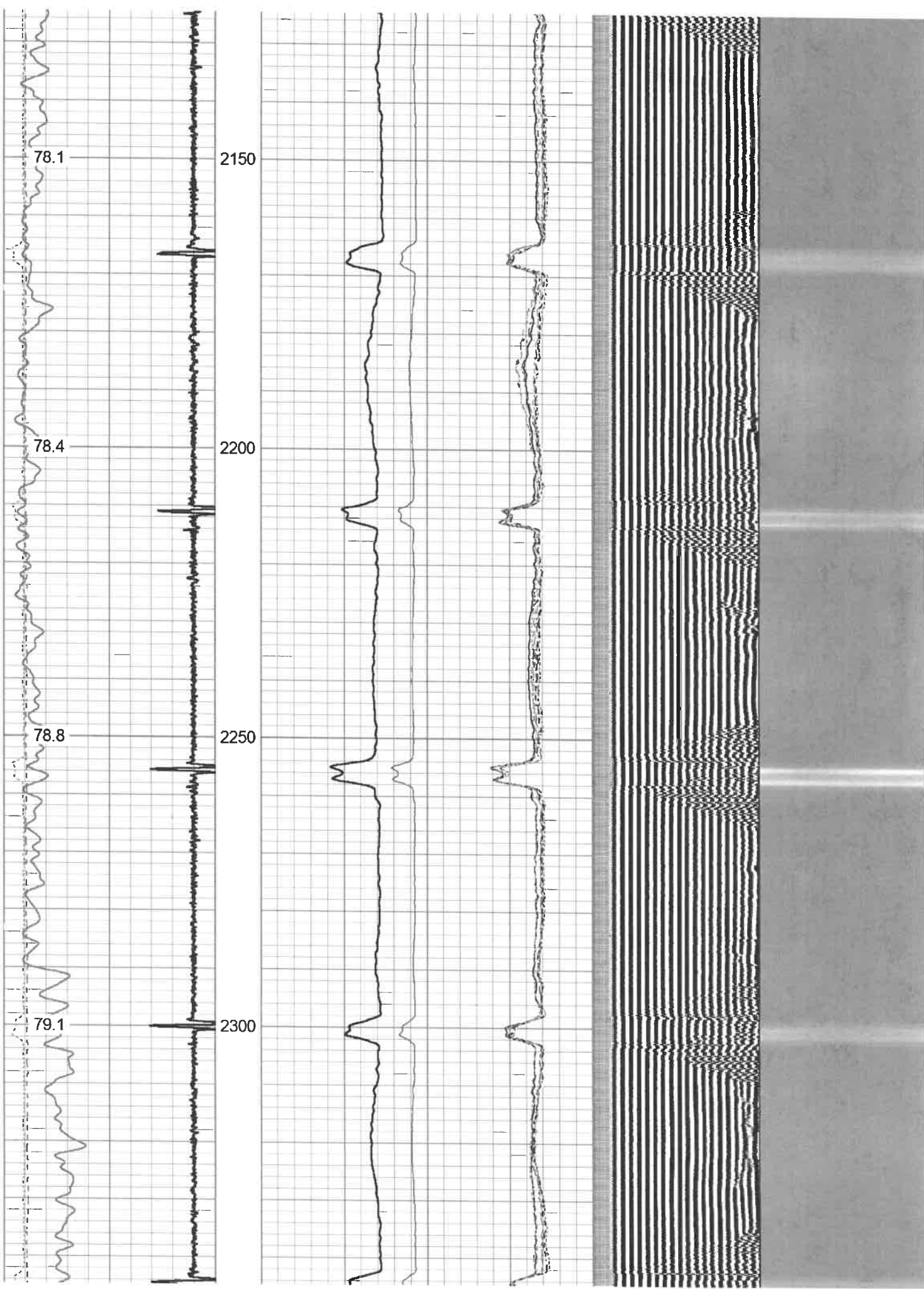


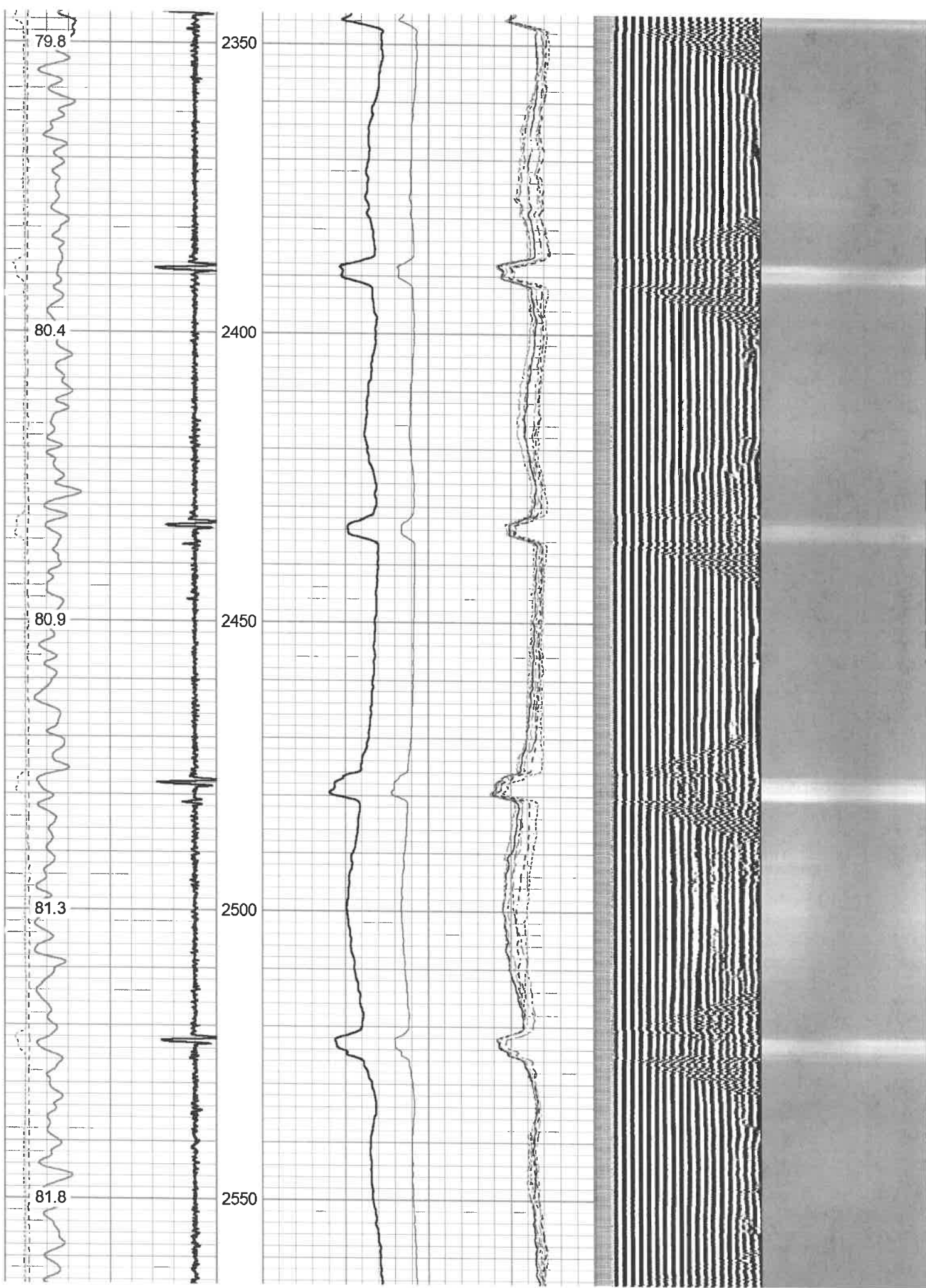


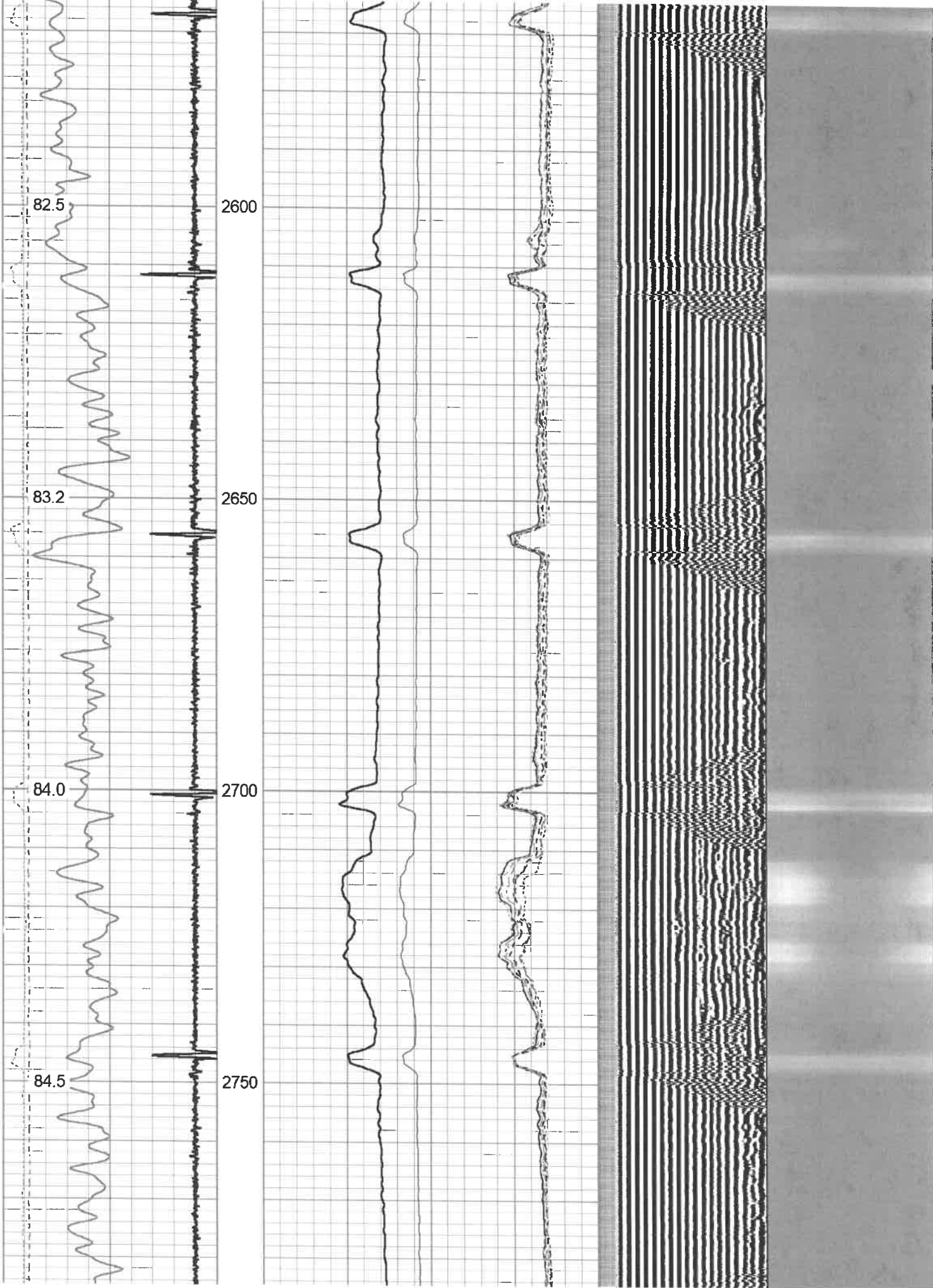






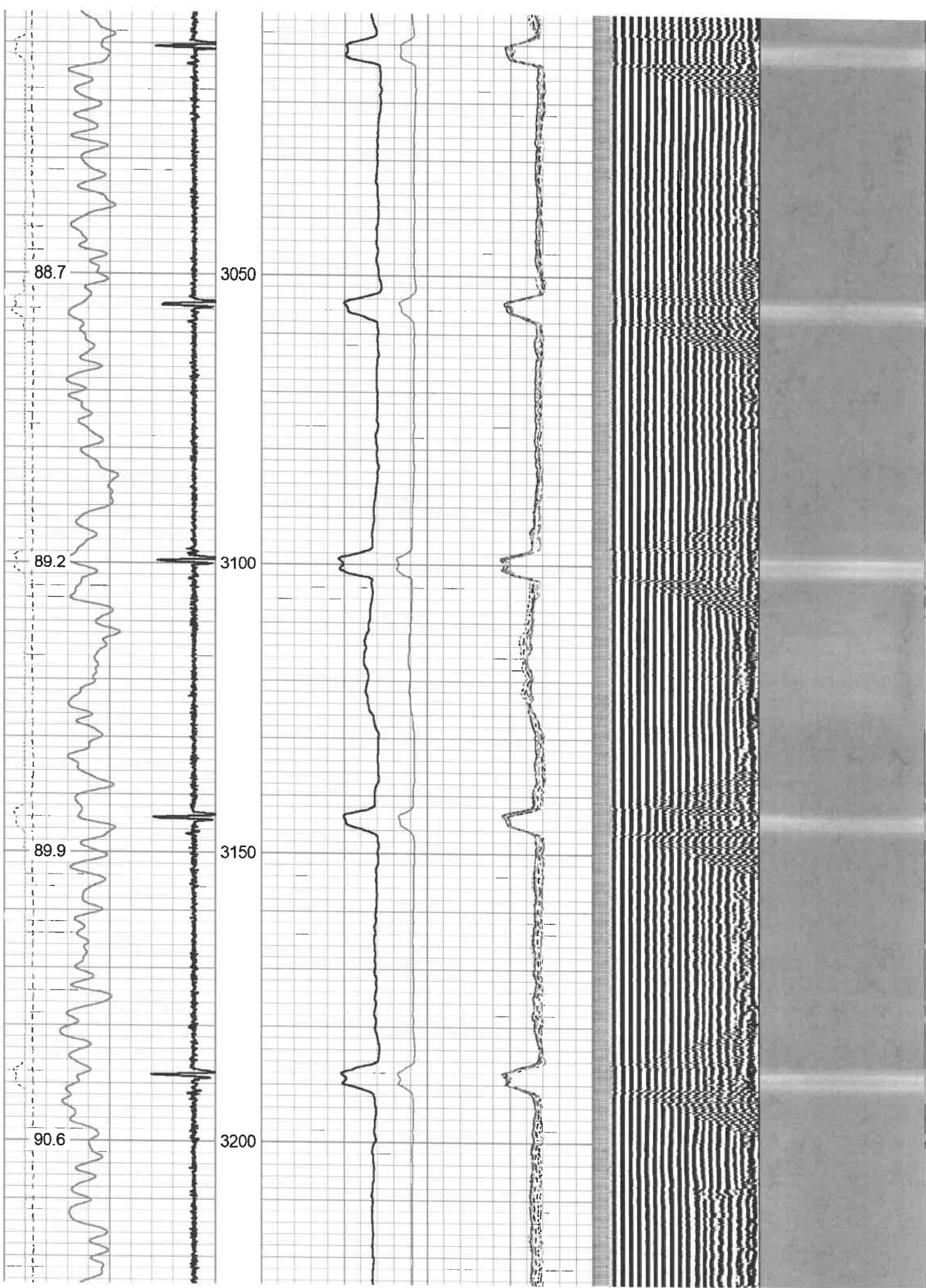


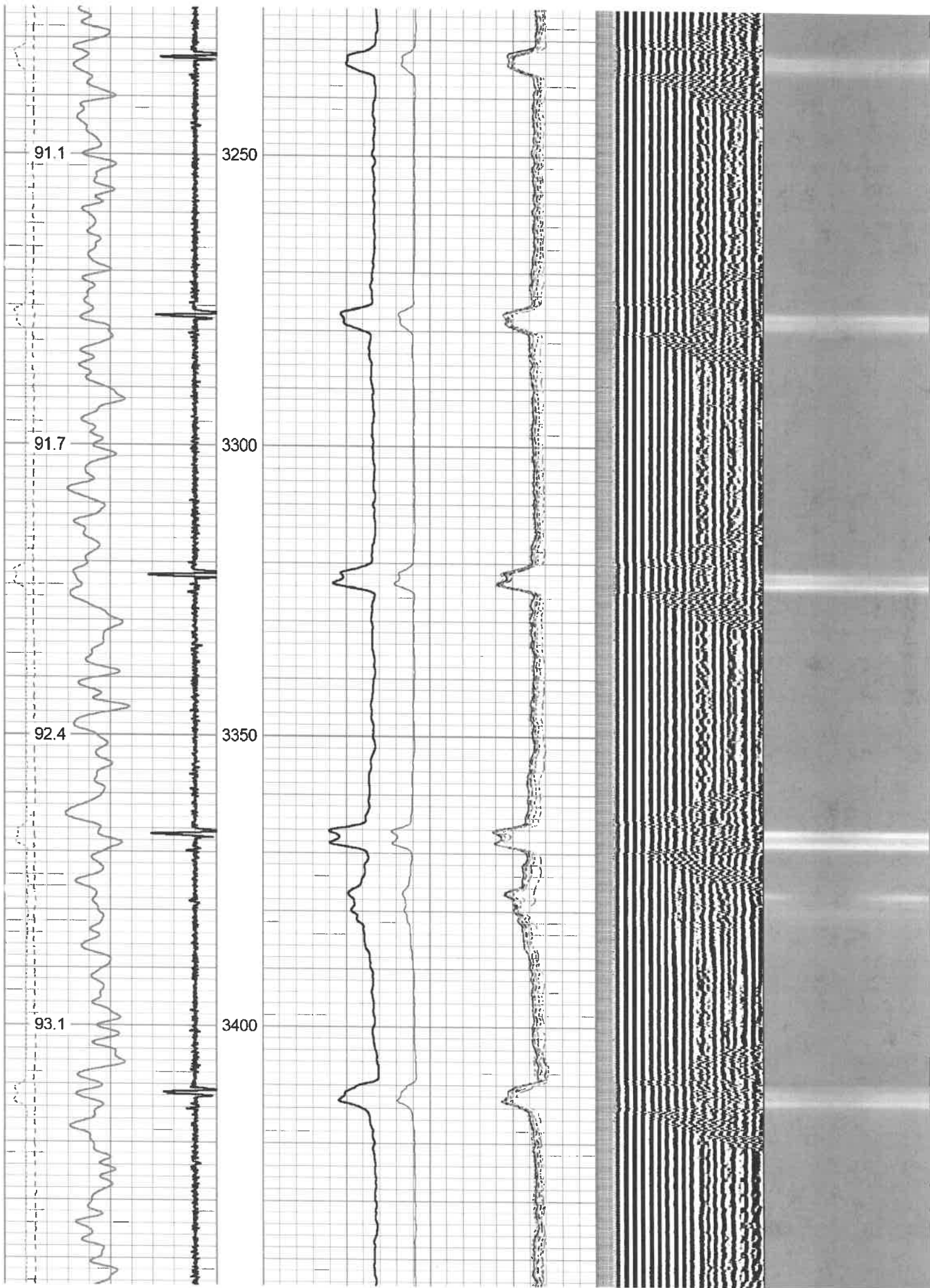


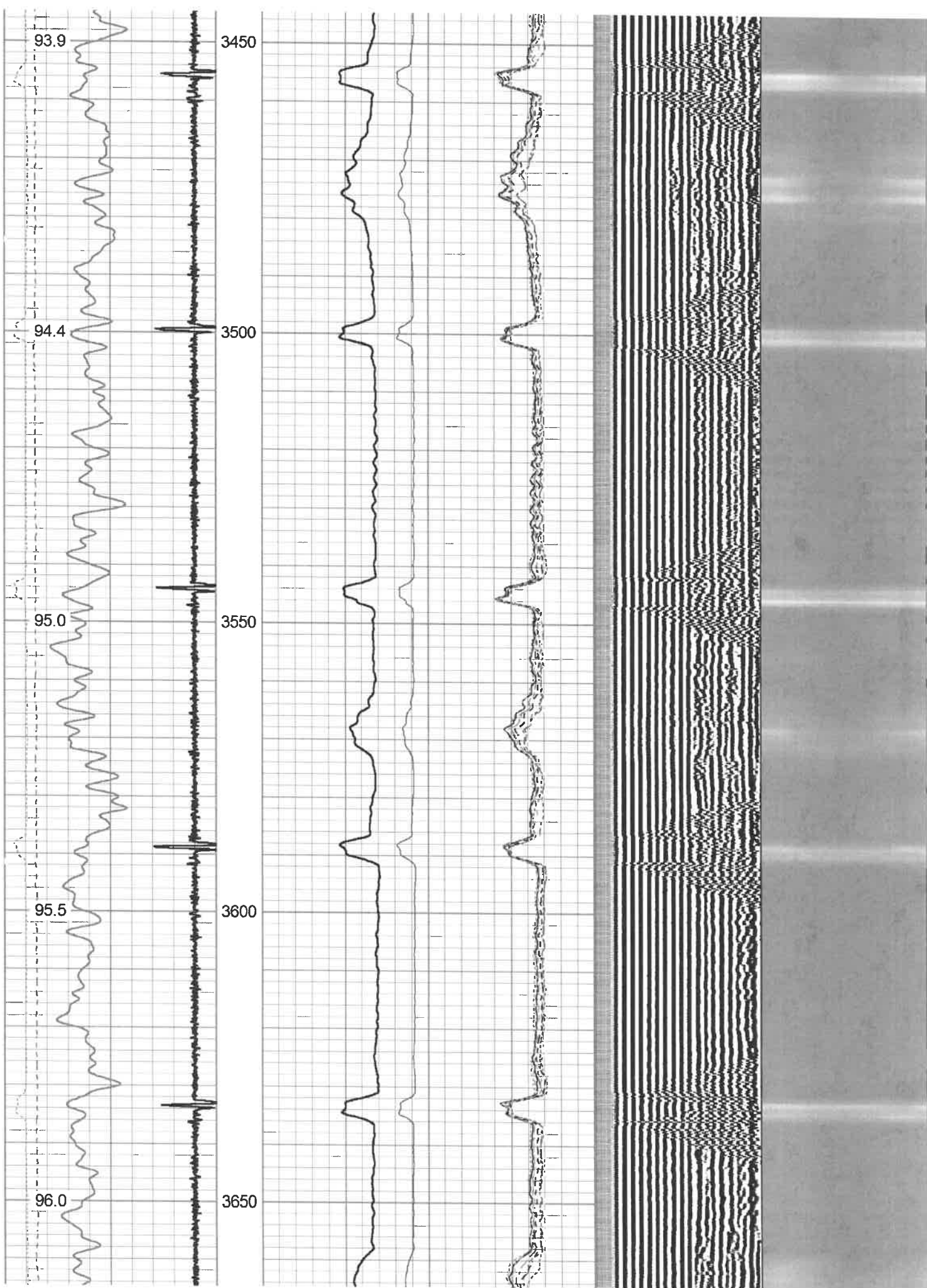


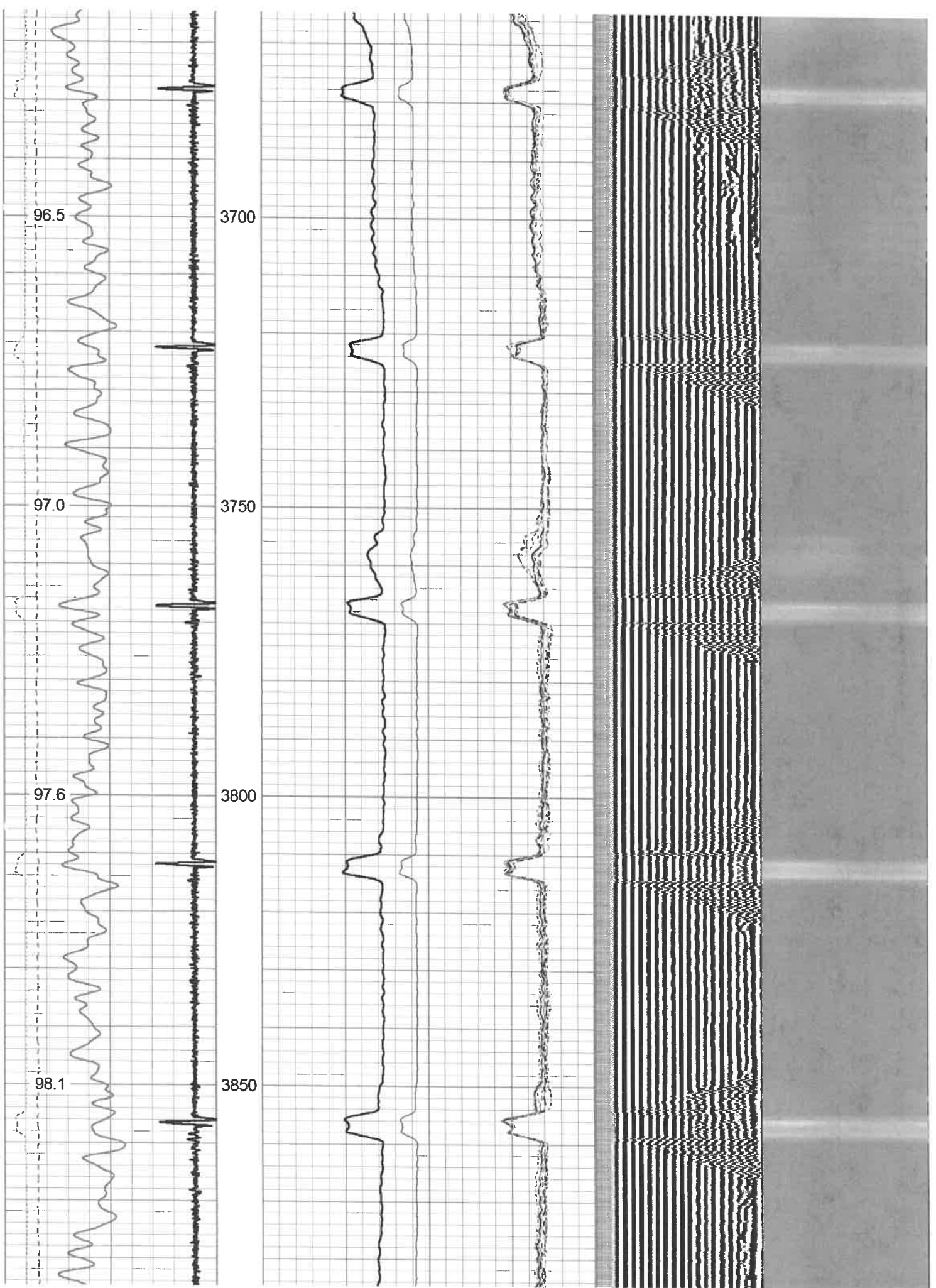


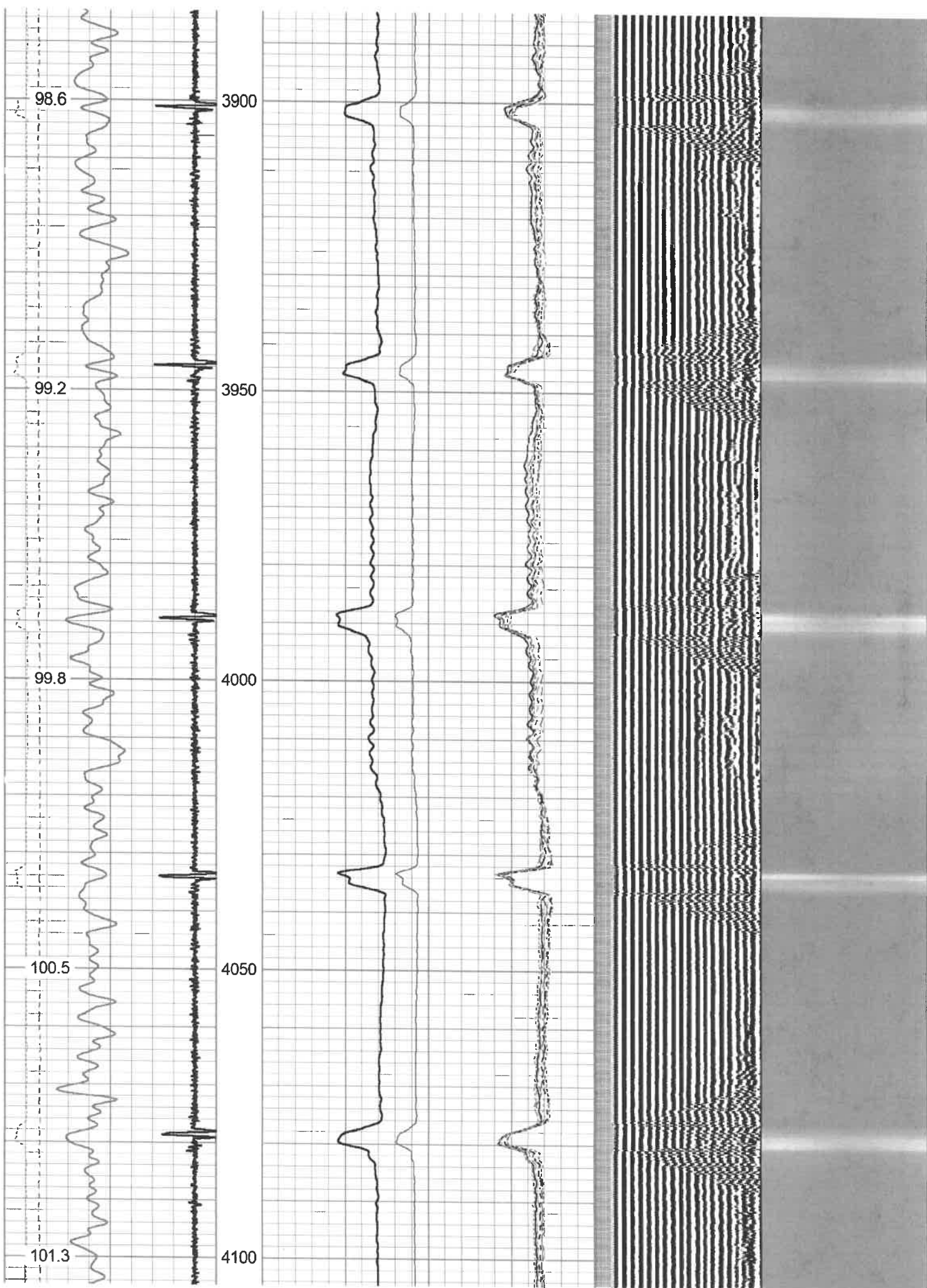


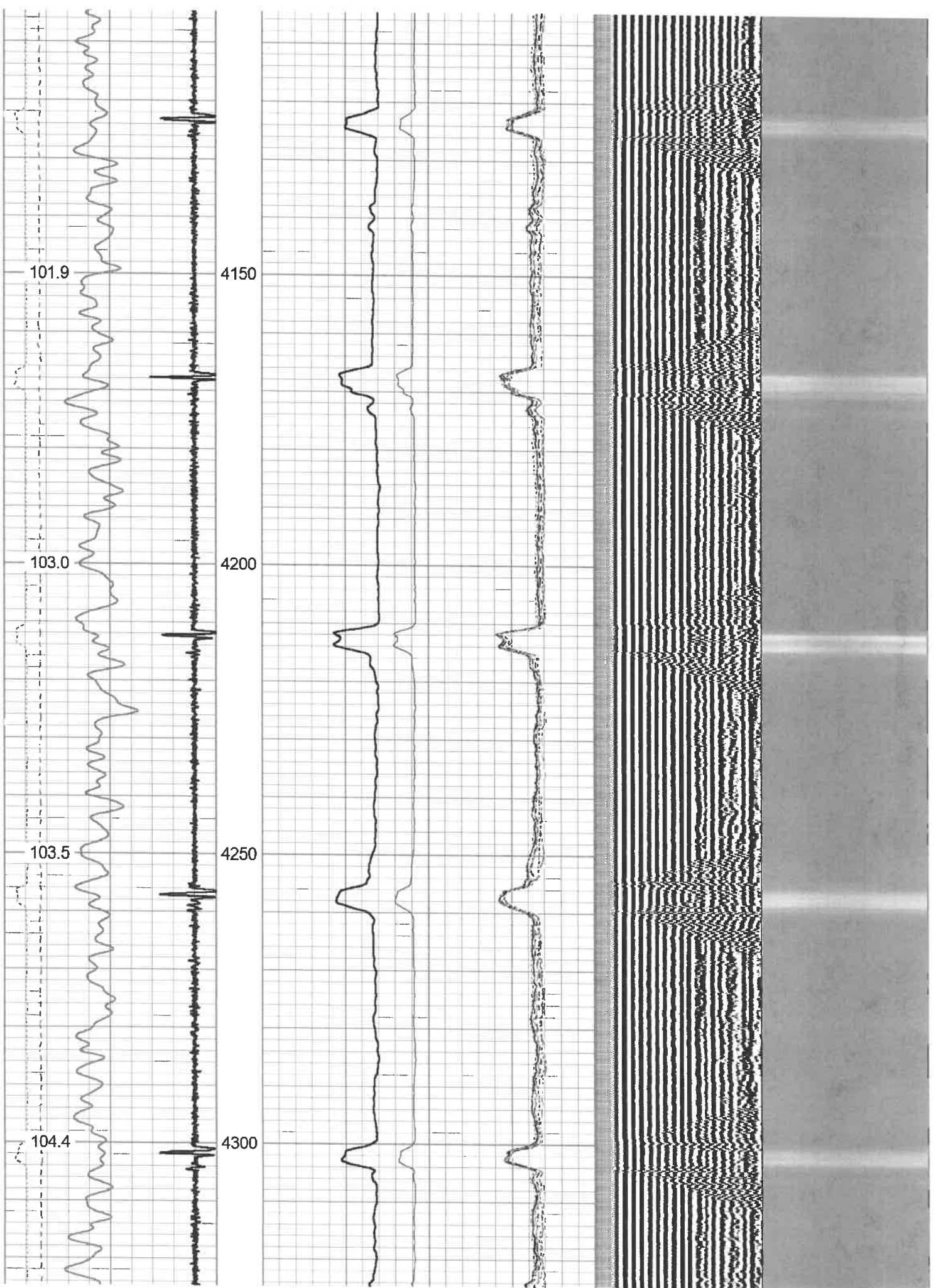


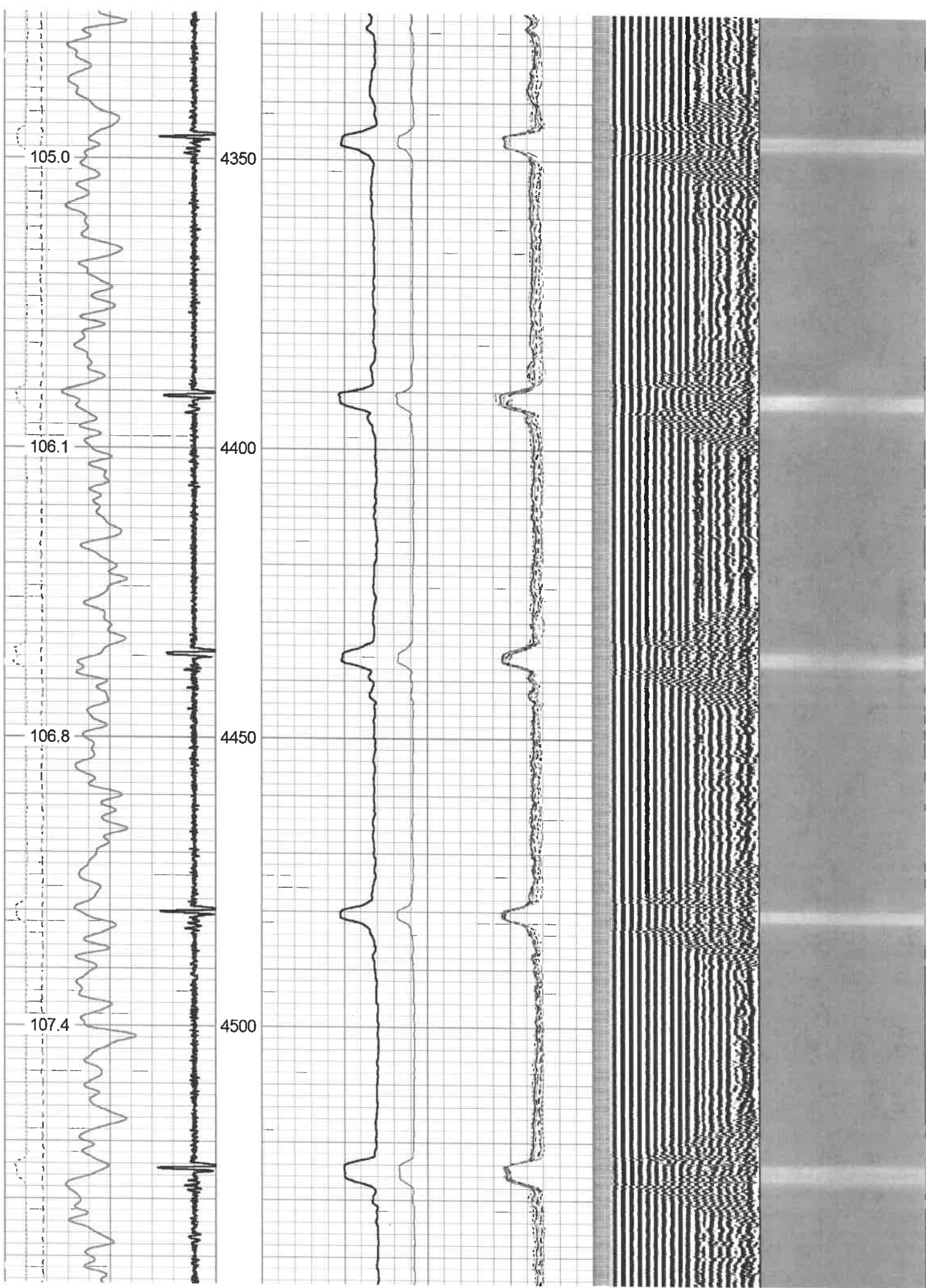


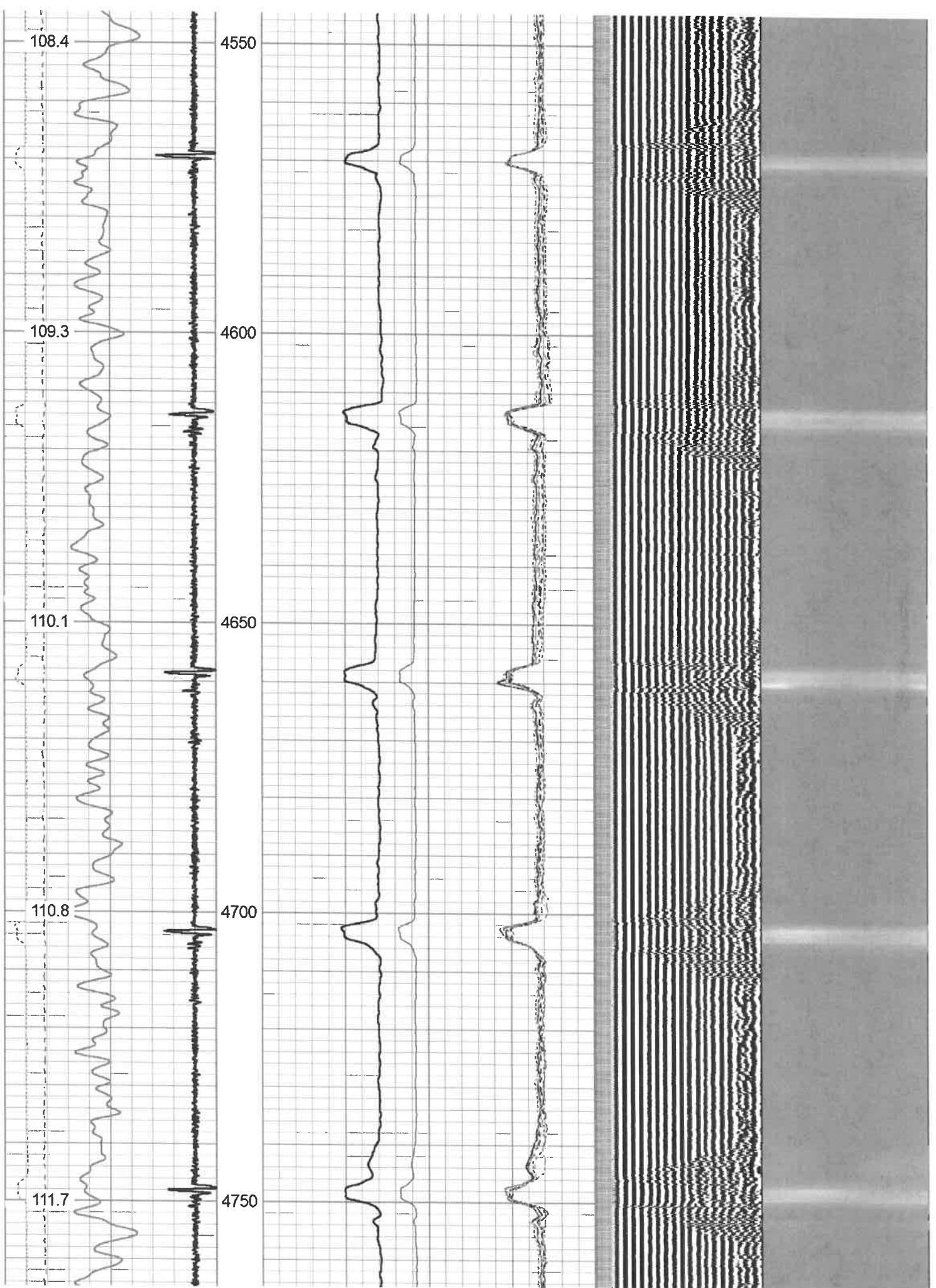




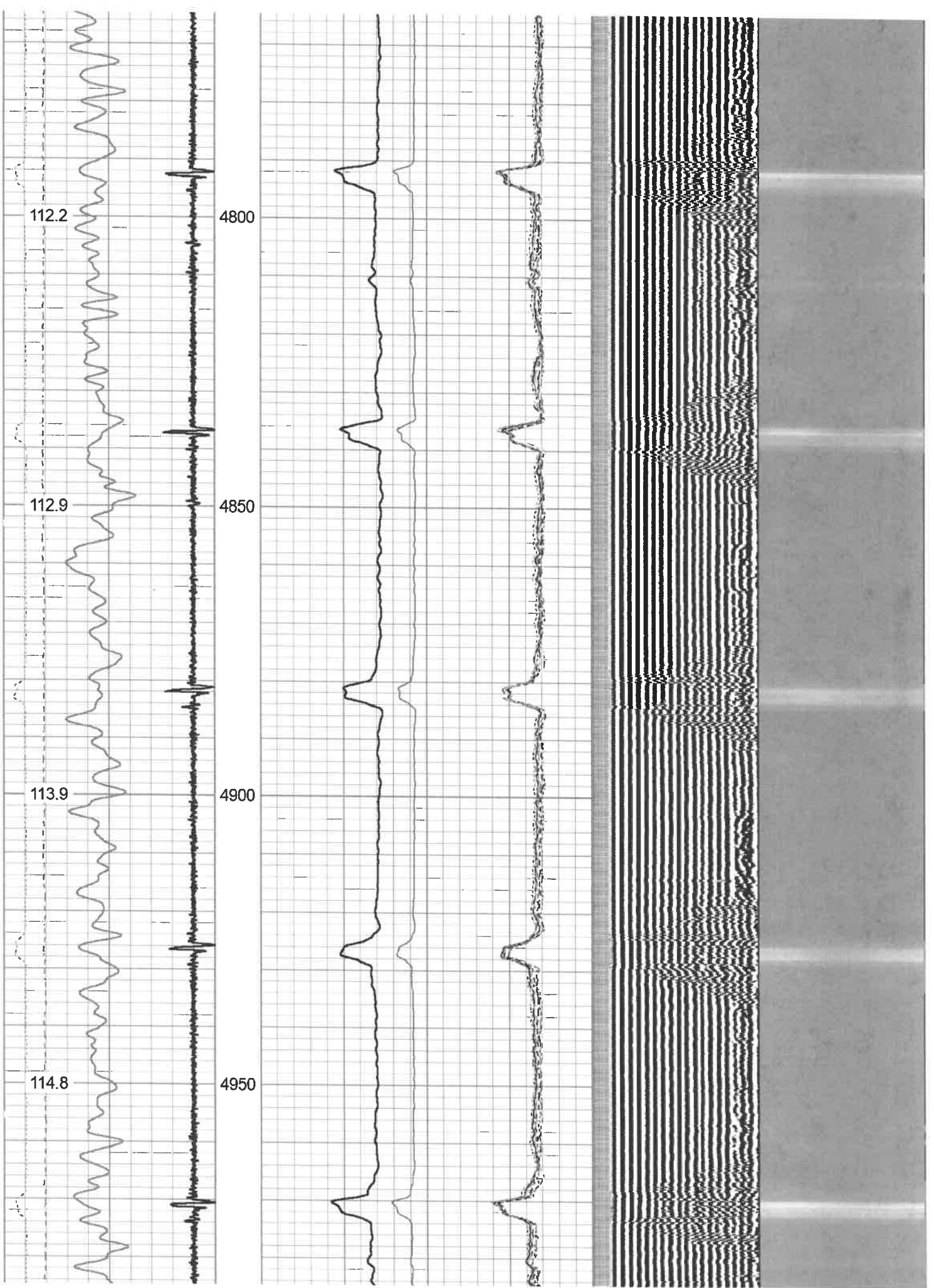


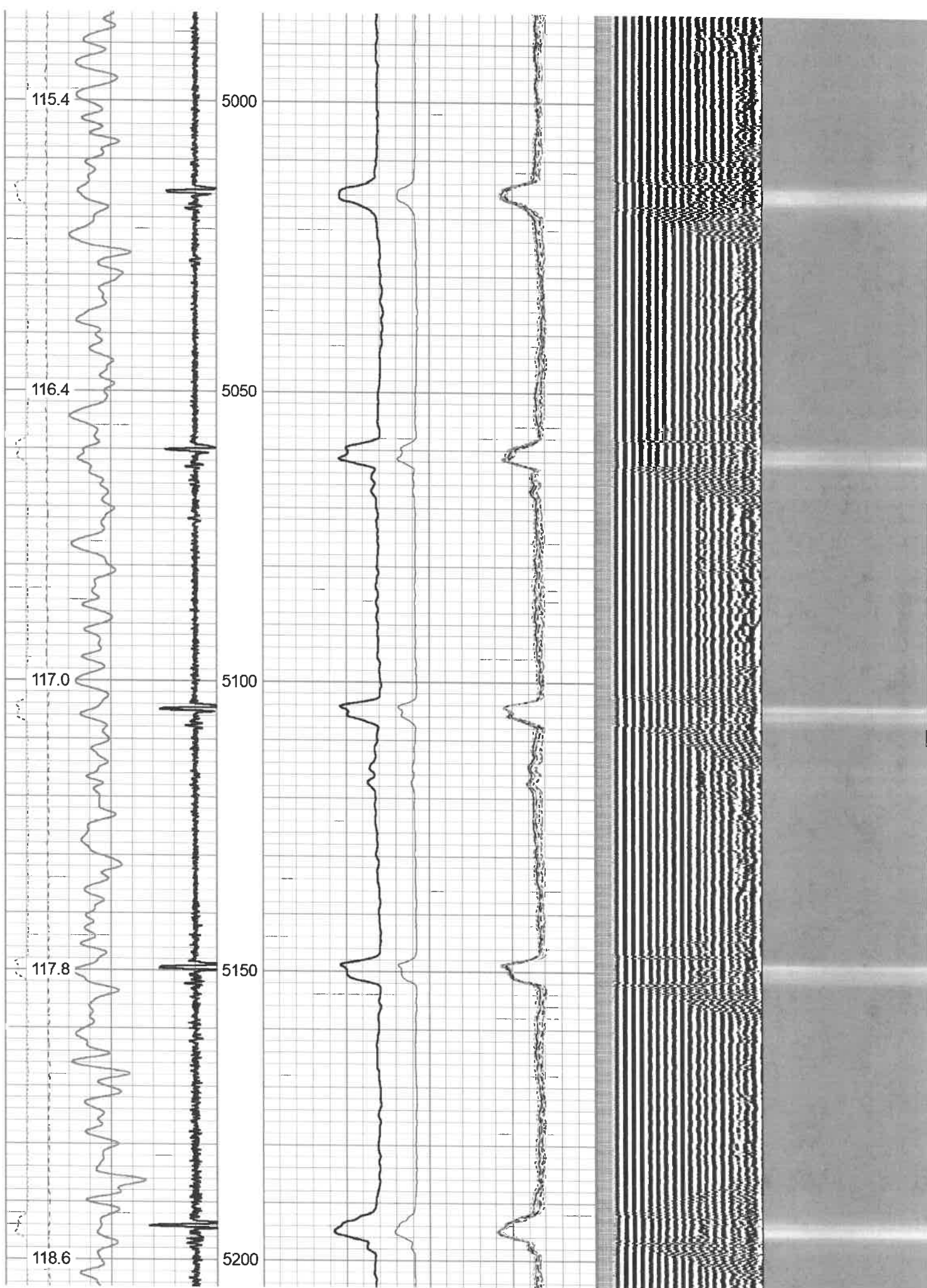


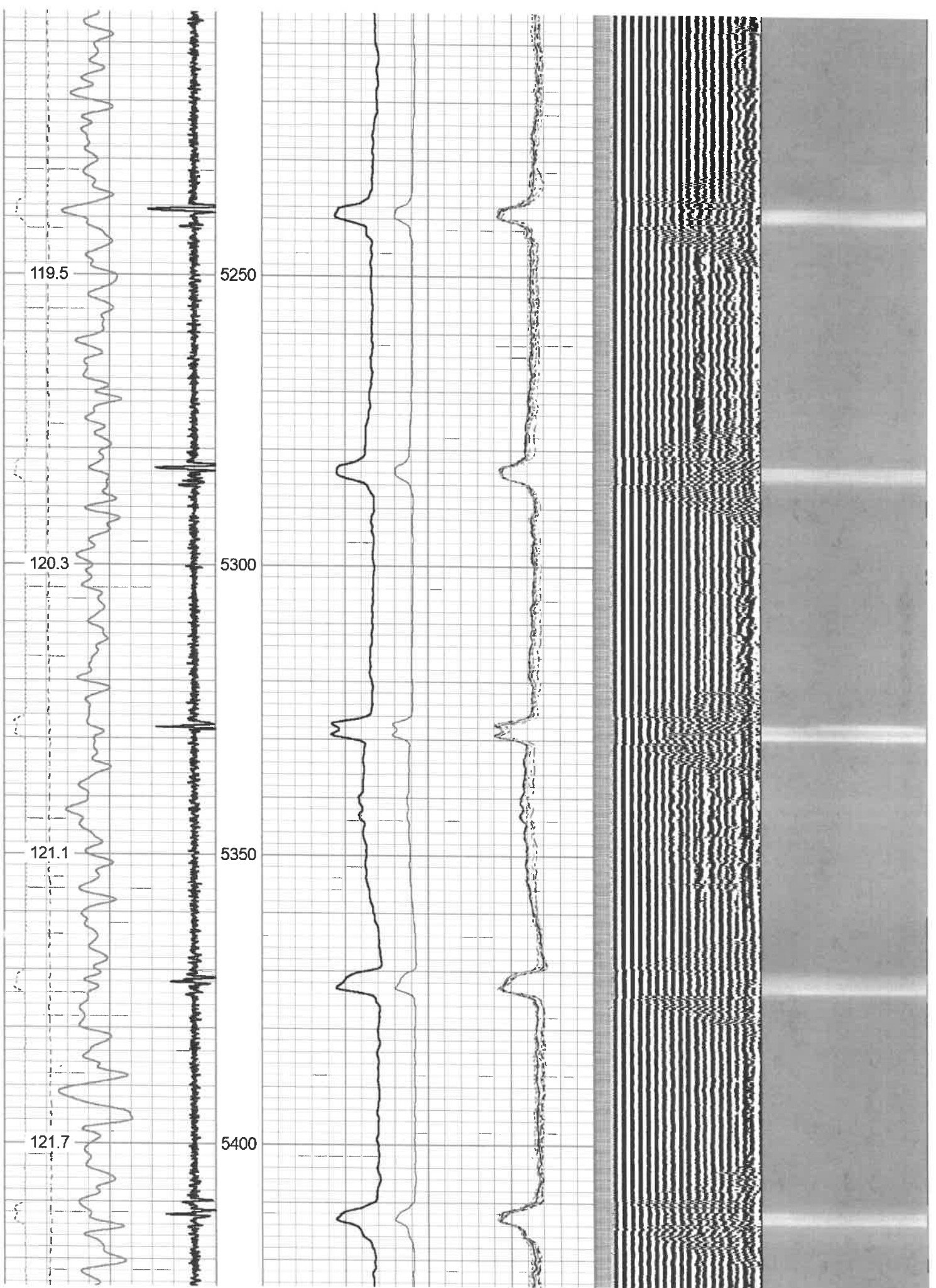




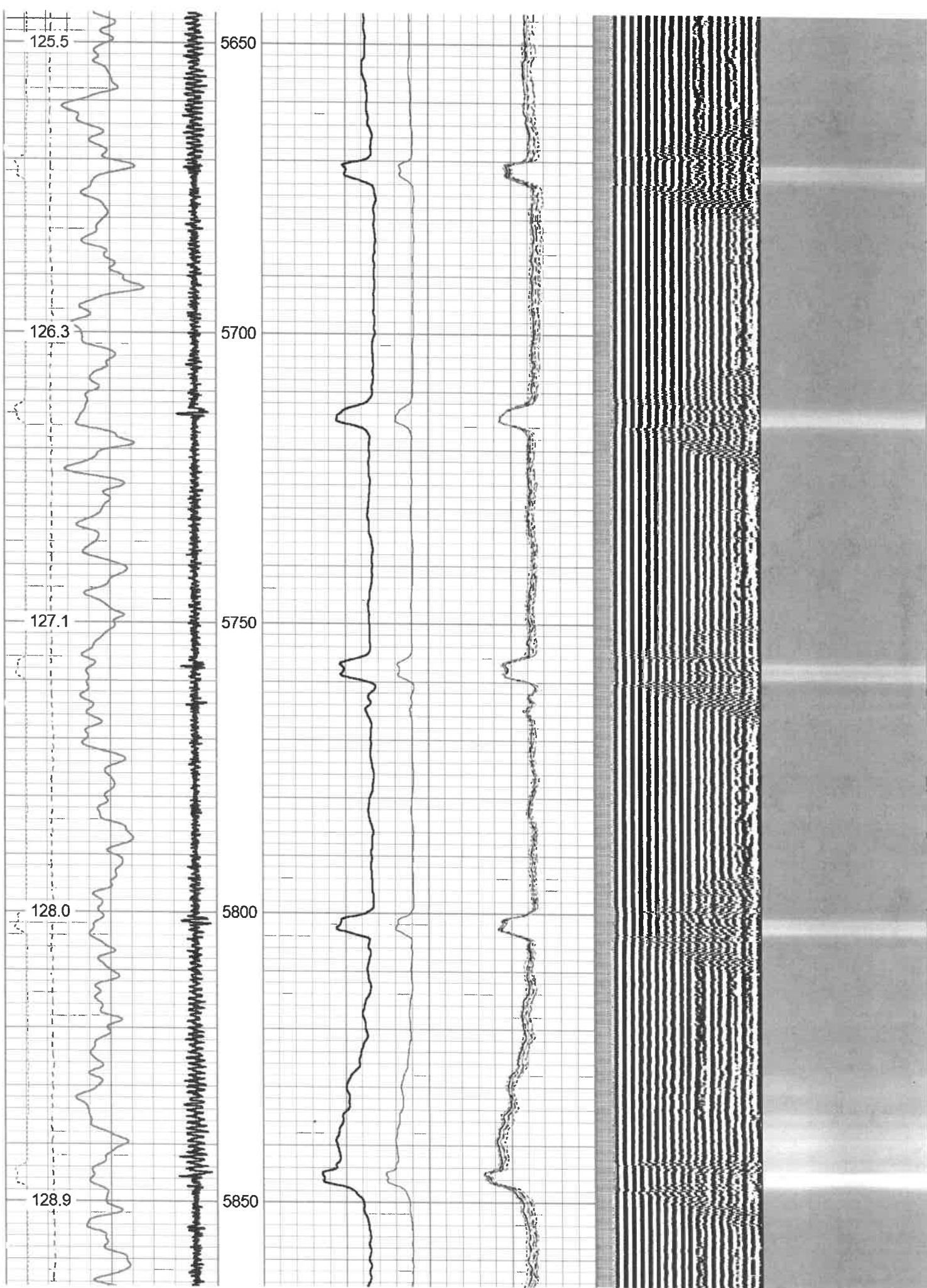


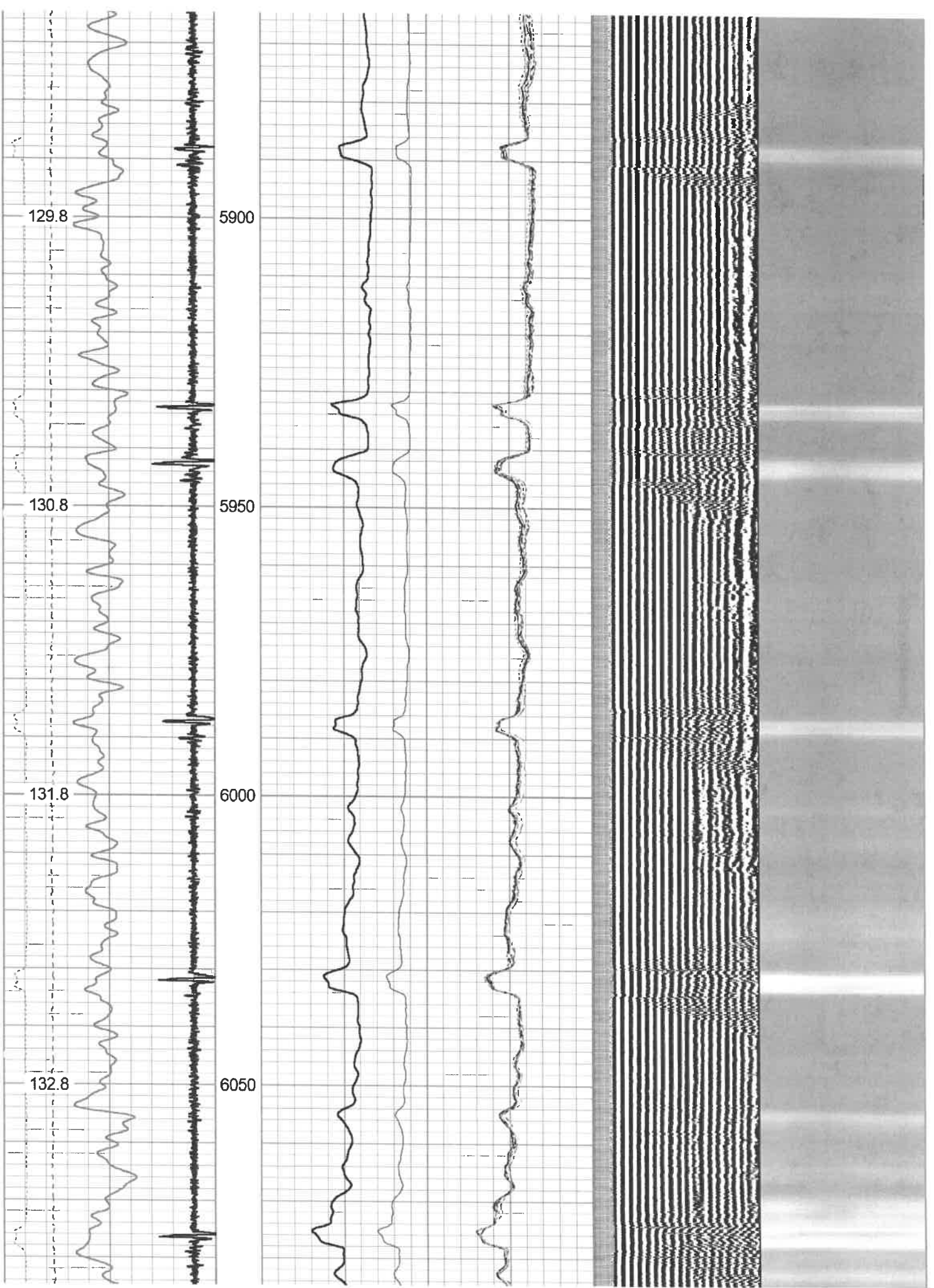


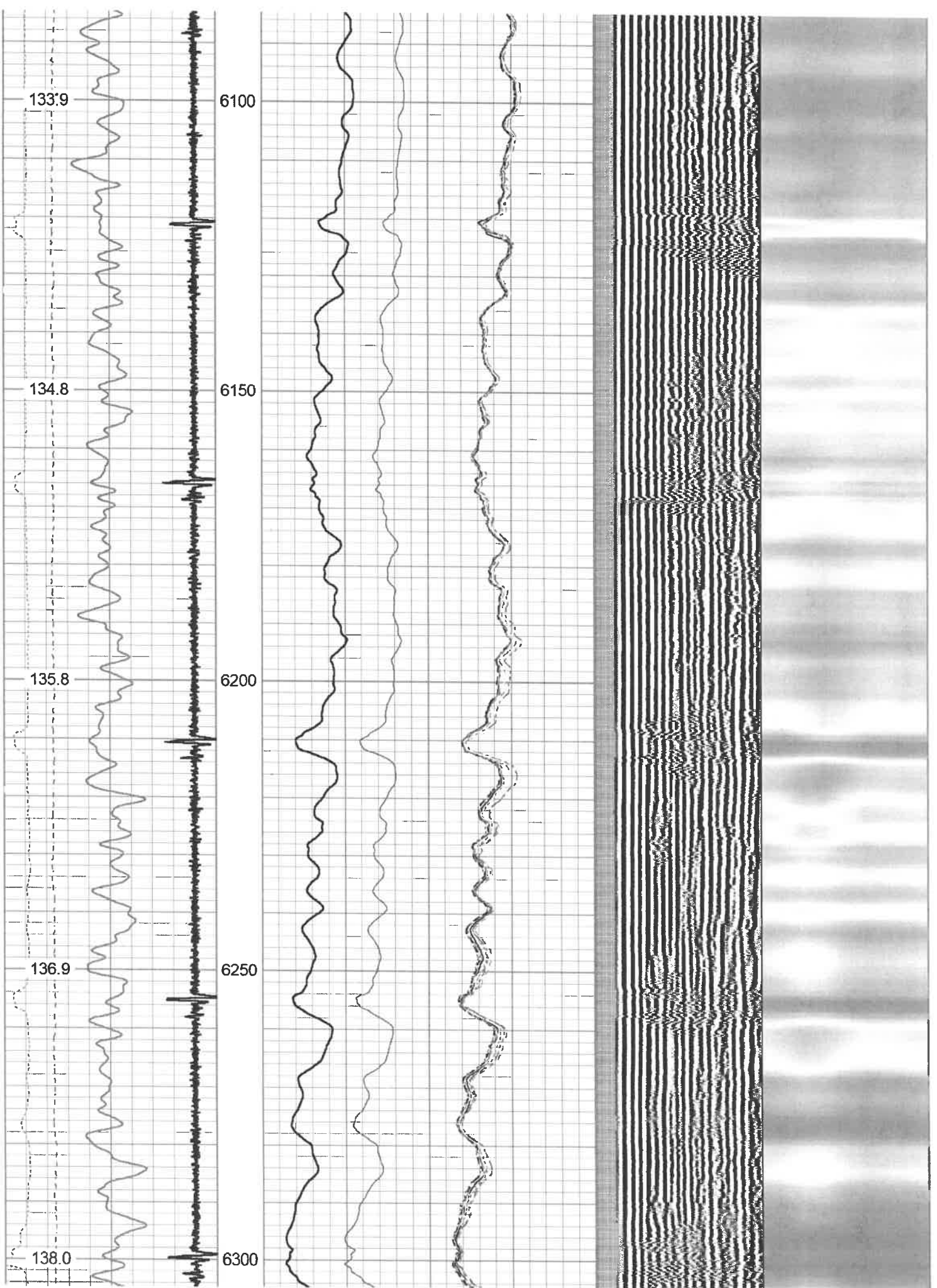


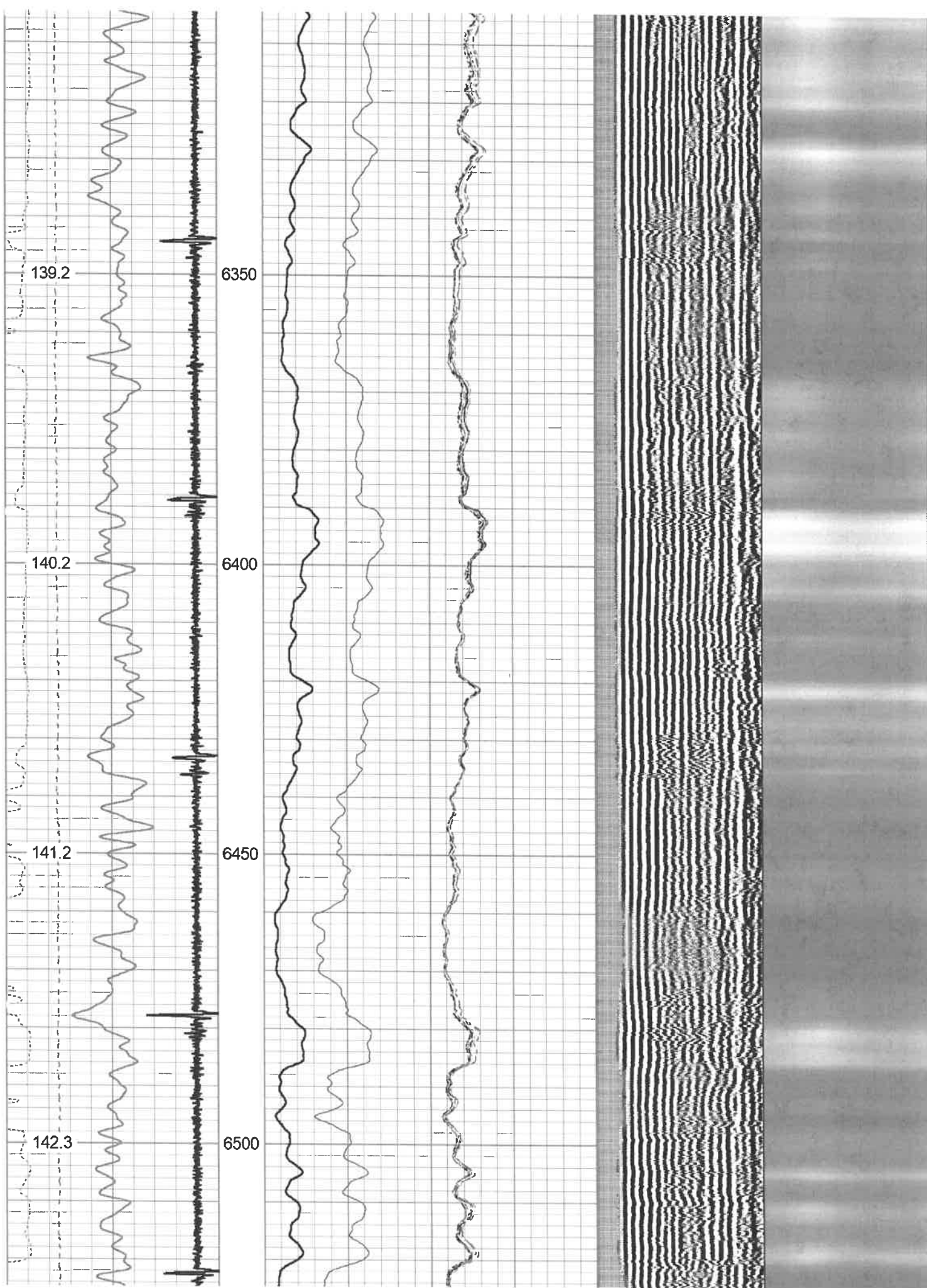




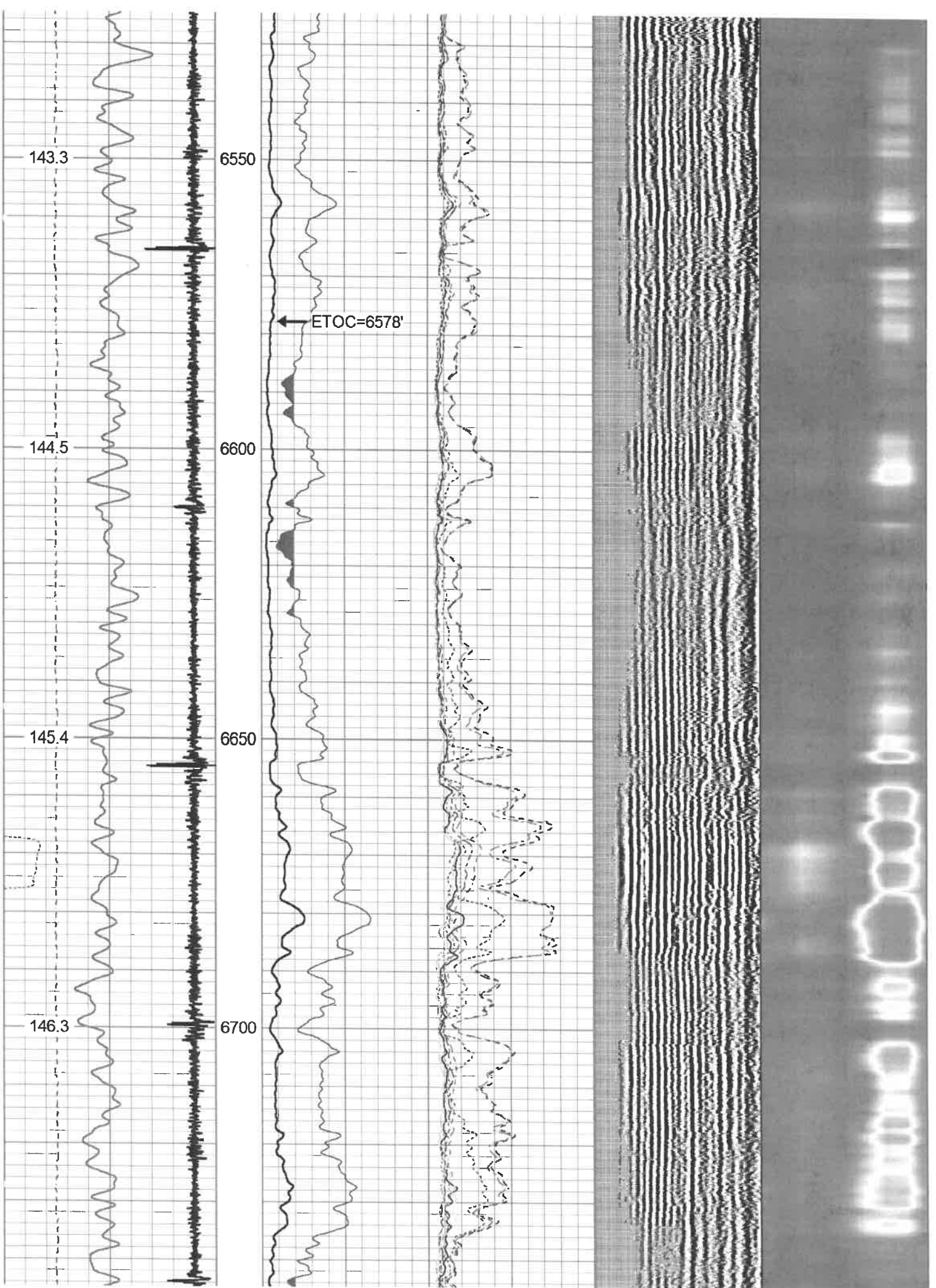


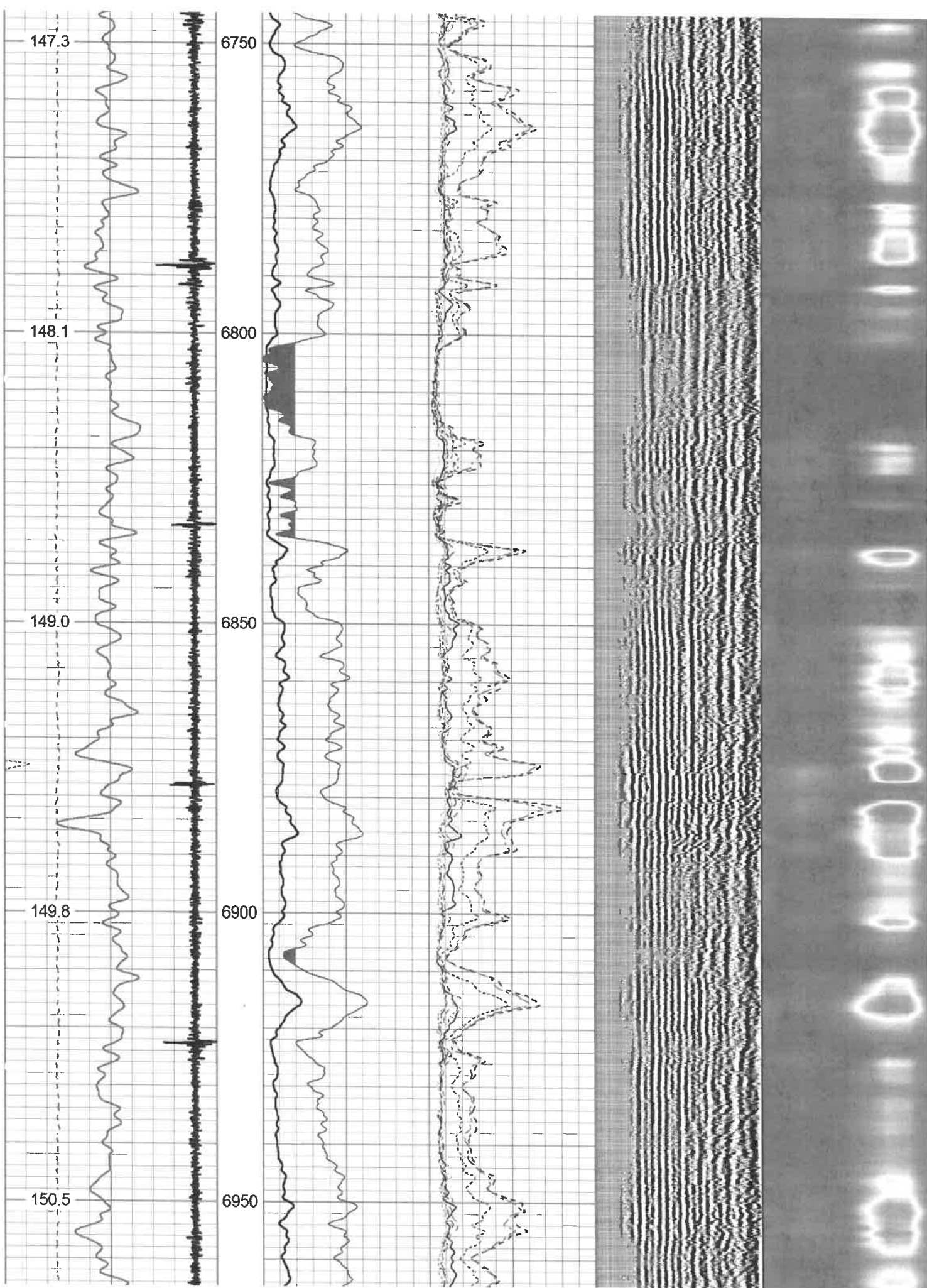


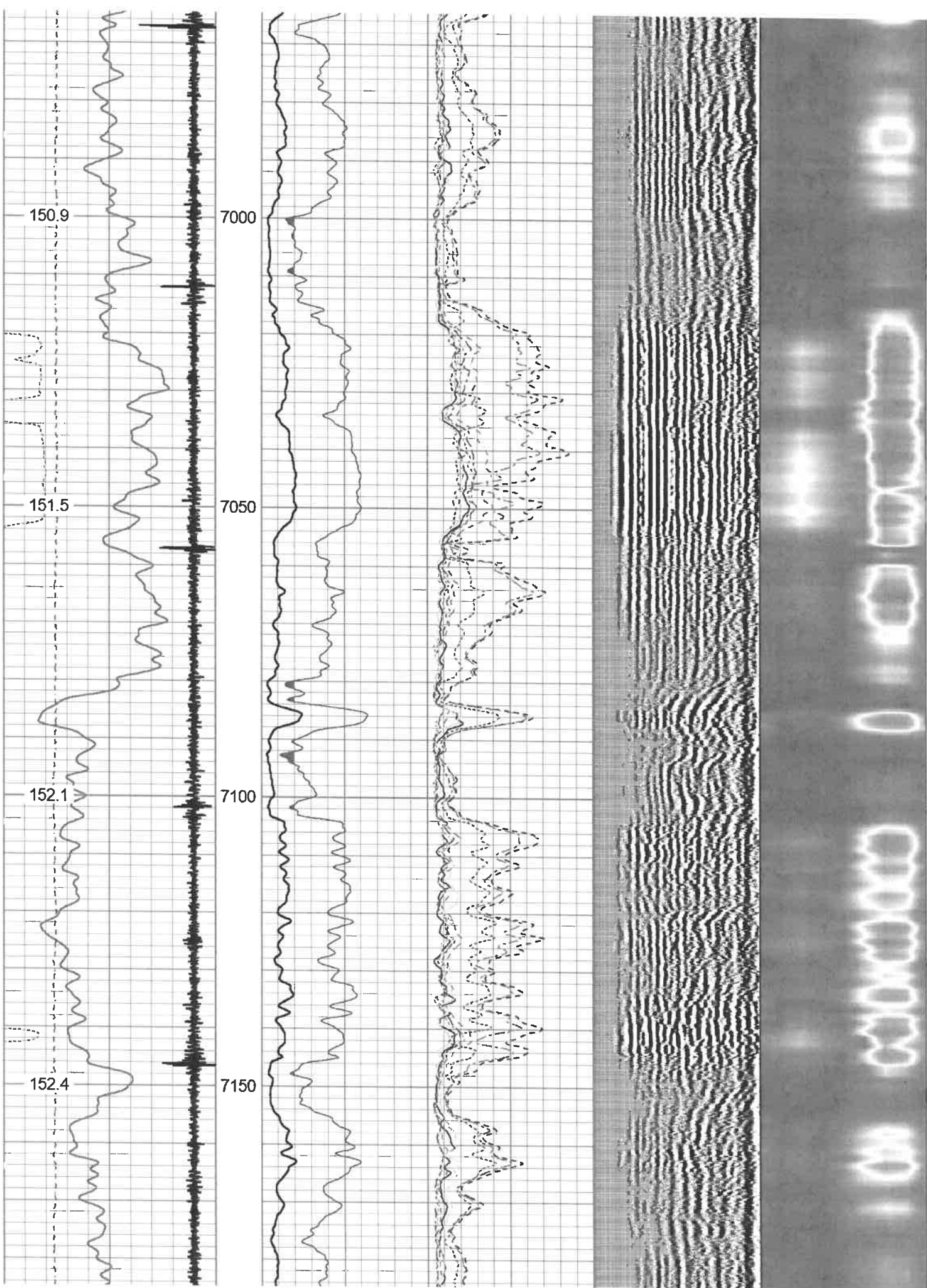


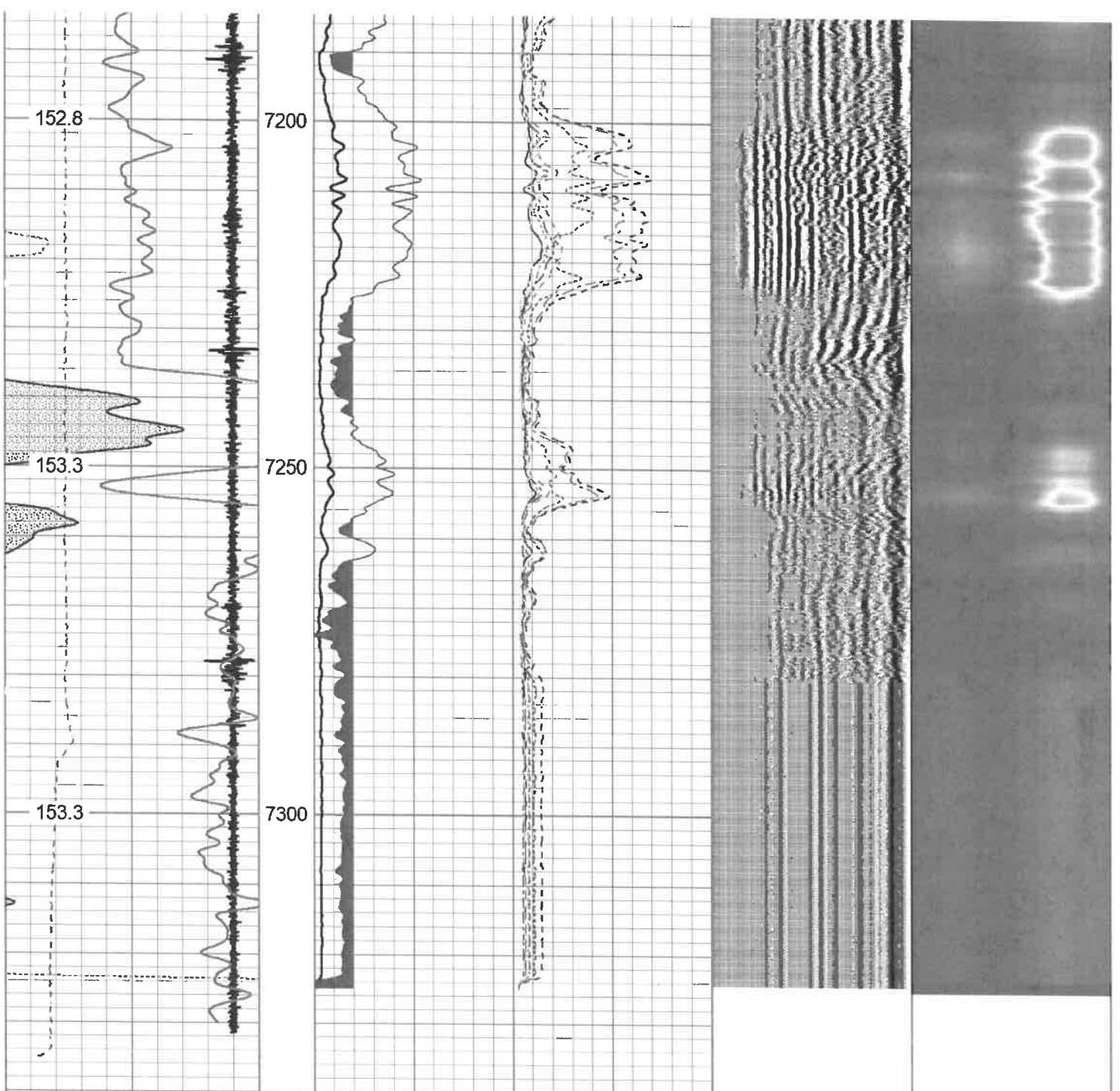












263	Travel Time (usec)	163	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	Sector 2	150		200 (usec)		1200
0	Gamma Ray (GAPI)	150				-5	Sector 3	150				
0	Line Tension (lb)	5000				-5	Sector 4	150				
	TEMP					-5	Sector 5	150				
	(degF)					-5	Sector 6	150				
						-5	Sector 7	150				
						-5	Sector 8	150				

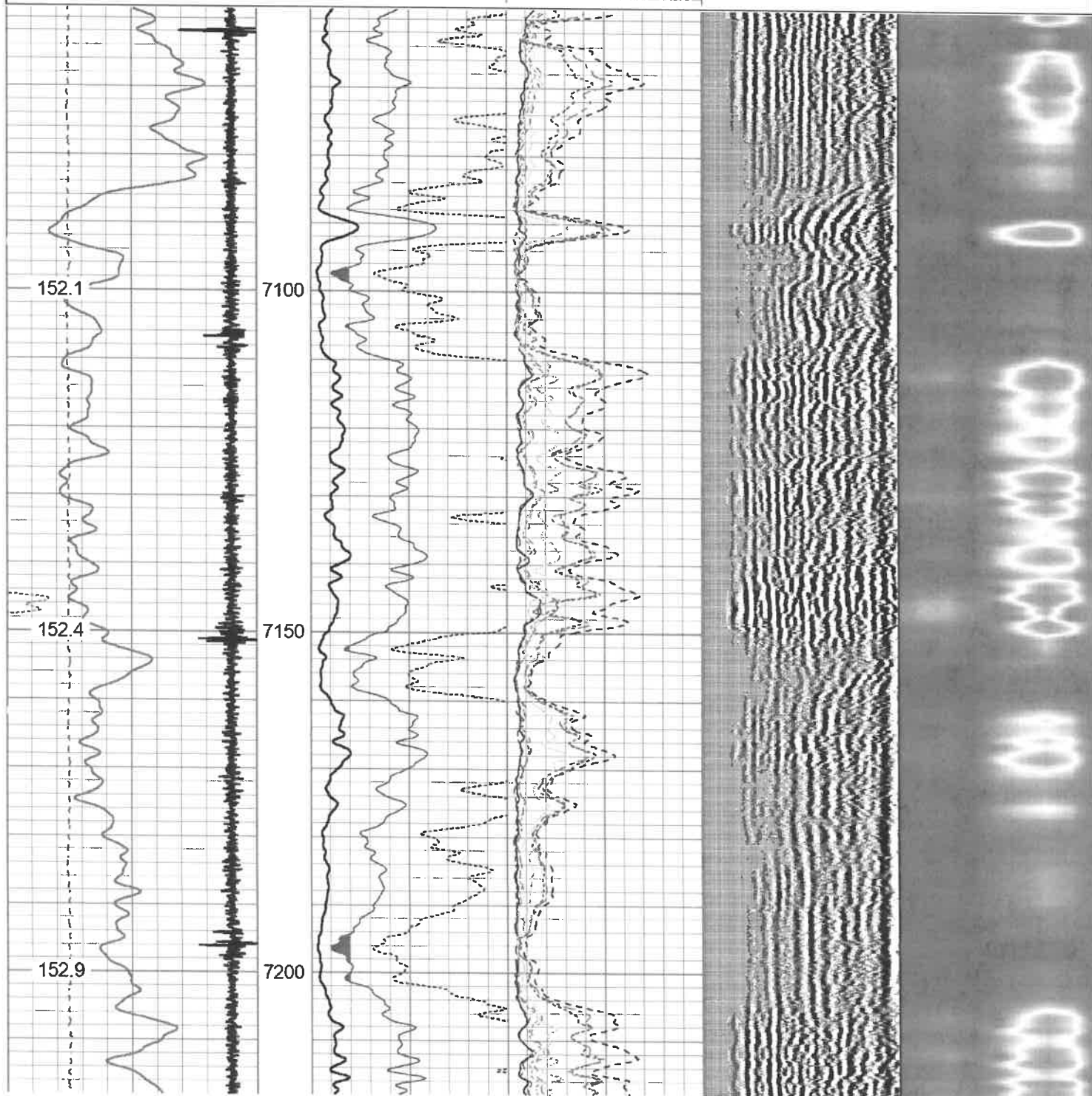


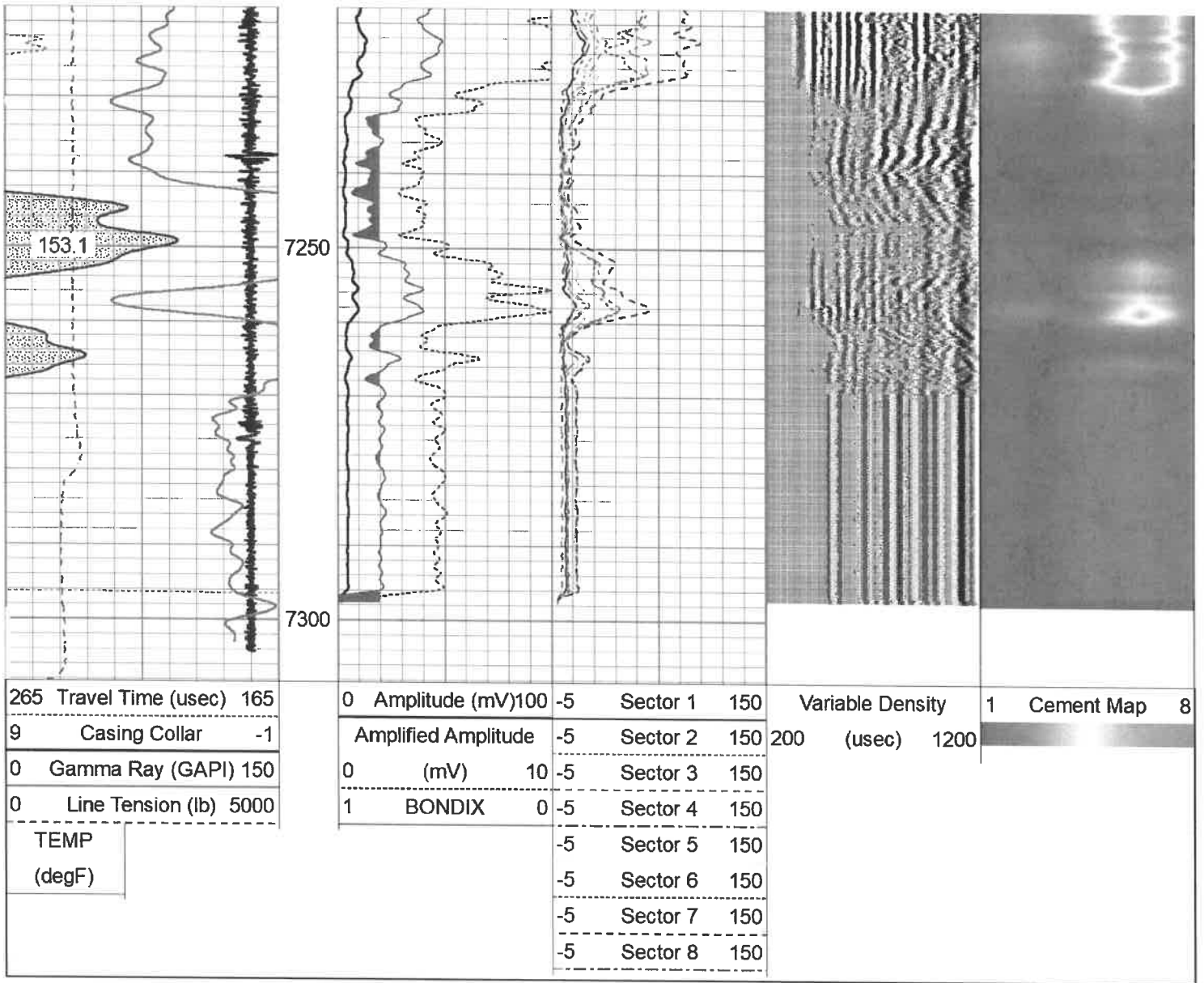
## REPEAT LOG

1500 PSI

Database File antero\_russell1h\_cbl\_mar\_5\_2021.db  
 Dataset Pathname REPEAT  
 Presentation Format 9rcbl  
 Dataset Creation Fri Mar 05 08:17:22 2021  
 Charted by Depth in Feet scaled 1:240

265	Travel Time (usec)	165	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density	1	Cement Map	8
9	Casing Collar	-1		Amplified Amplitude		-5	Sector 2	150				
0	Gamma Ray (GAPI)	150	0	(mV)	10	-5	Sector 3	150	200	(usec)	1200	
0	Line Tension (lb)	5000	1	BONDIX	0	-5	Sector 4	150				
TEMP (degF)						-5	Sector 5	150				
						-5	Sector 6	150				
						-5	Sector 7	150				
						-5	Sector 8	150				





## Log Variables

Database: C:\ProgramData\Warrior\Data\antero\_russell1h\_cbl\_mar\_5\_2021.db  
 Dataset: field/well/run1/MAIN/\_vars\_

### Top - Bottom

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
	in	degF	in	in	lb/ft	mV	mV
TEMP	7.875	100	5.5	0	20	71.9	2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft		usec	degF	ft			
0.8	No	261	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\_russell1h\_cbl\_mar\_5\_2021.db  
 Dataset Pathname MAIN  
 Dataset Creation Fri Mar 05 11:31:55 2021

Gamma Ray Calibration Report

Serial Number: FW1211-86  
 Tool Model: Probe  
 Performed: Thu Dec 19 22:27:19 2019

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
 Calibrator Reading: 1.0 cps

Sensitivity: 0.5000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1312-32  
 Tool Model: Probe275T

Calibration Casing Diameter: 5.500 in  
 Calibration Depth: 1519.208 ft

Master Calibration, performed Fri Mar 05 07:34:48 2021:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.009	1.150	2.200	71.921	61.116	1.644
CAL	0.009	1.420				
5'	0.009	1.046	2.200	71.921	67.229	1.594
SUM						
S1	0.009	1.174	0.000	100.000	85.829	-0.752
S2	0.009	1.216	0.000	100.000	82.866	-0.732
S3	0.009	1.221	0.000	100.000	82.528	-0.744
S4	0.009	1.203	0.000	100.000	83.740	-0.747
S5	0.009	1.146	0.000	100.000	87.918	-0.780
S6	0.009	1.070	0.000	100.000	94.293	-0.852
S7	0.009	1.025	0.000	100.000	98.437	-0.872
S8	0.009	1.062	0.000	100.000	94.947	-0.823

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.009	1.420	1.000	0.000

Air Zero Calibration, performed Fri Mar 05 07:01:49 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



Company	ANTERO
Well	RUSSELL 1H
Field	SOUTH CANTON
County	DODDRIDGE
State	WEST VIRGINIA

RECEIVED  
Office of Oil and Gas  
AUG 30 2021  
WV Department of  
Environmental Protection