



# RADIAL BOND LOG

Company ANTERO  
 Well RUSSELL 2H  
 Field SOUTH CANTON  
 County DODDRIDGE  
 State WEST VIRGINIA

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 Well RUSSELL 2H  
 Field SOUTH CANTON  
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Location: API #: 47017069010000  
 Other Services

SEC TWP RGE Elevation  
 Permanent Datum GL KB  
 Log Measured From KB  
 Drilling Measured From KB

Date	04-MAR-2021		
Run Number	ONE		
Depth Driller	18,440'		
Depth Logger	7334'		
Bottom Logged Interval	7322'		
Top Log Interval	SURFACE		
Open Hole Size	N/A		
Type Fluid	BRINE		
Density / Viscosity	8.6#		
Max. Recorded Temp.	153°F		
Estimated Cement Top	5812'		
Time Well Ready	16.25		
Time Logger on Bottom	16:50		
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
Liner			18,440'

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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 CORRELATED TO MARKER JOINT PER OSR

MARKER JOINT@ 6054'-6064'

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\_russell2h\_cbl\_mar\_4\_2021.db: field/well/run1/MAIN  
 Total length: 20.89 ft  
 Total weight: 222.00 lb  
 O.D.: 2.75 in

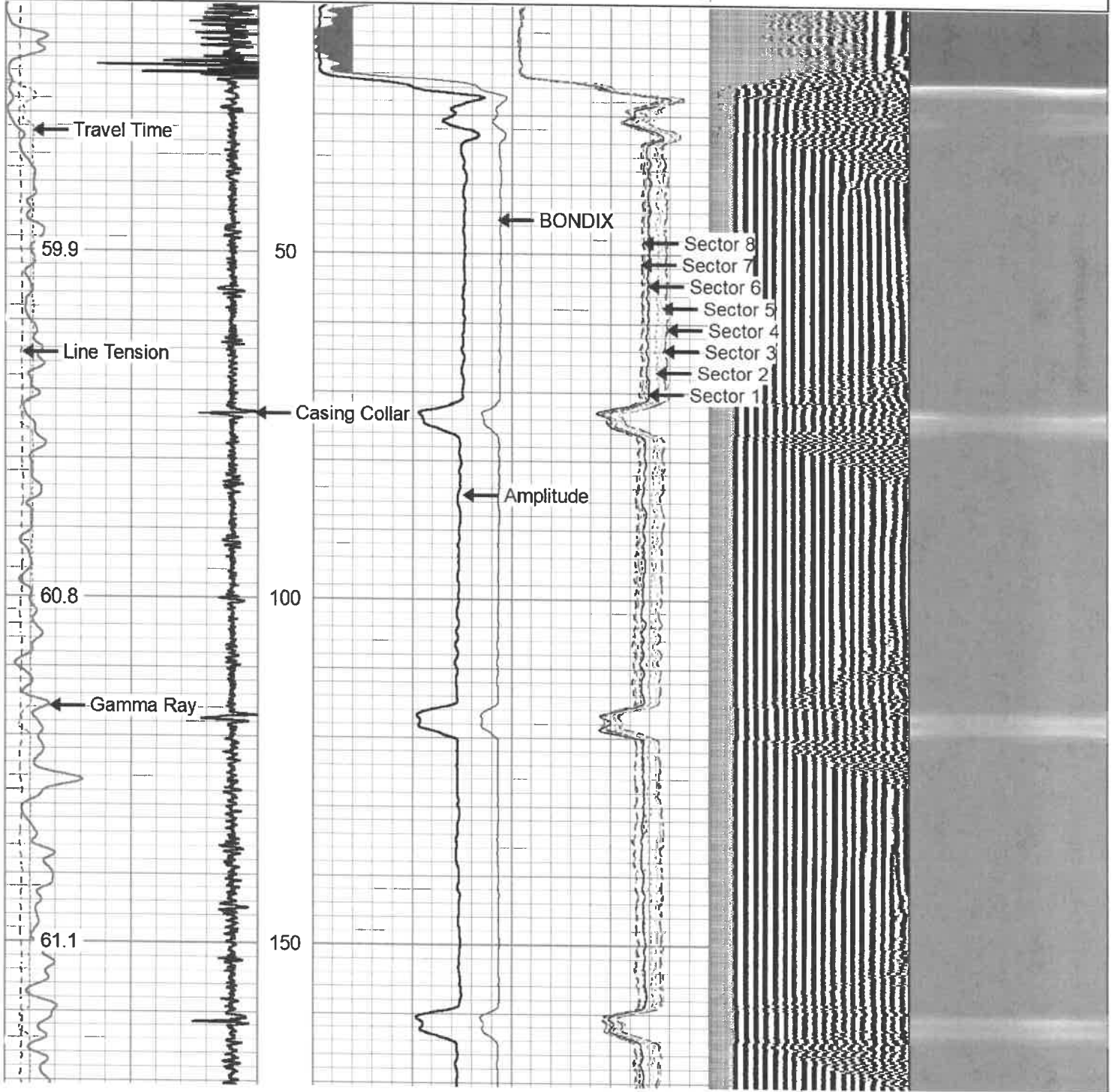


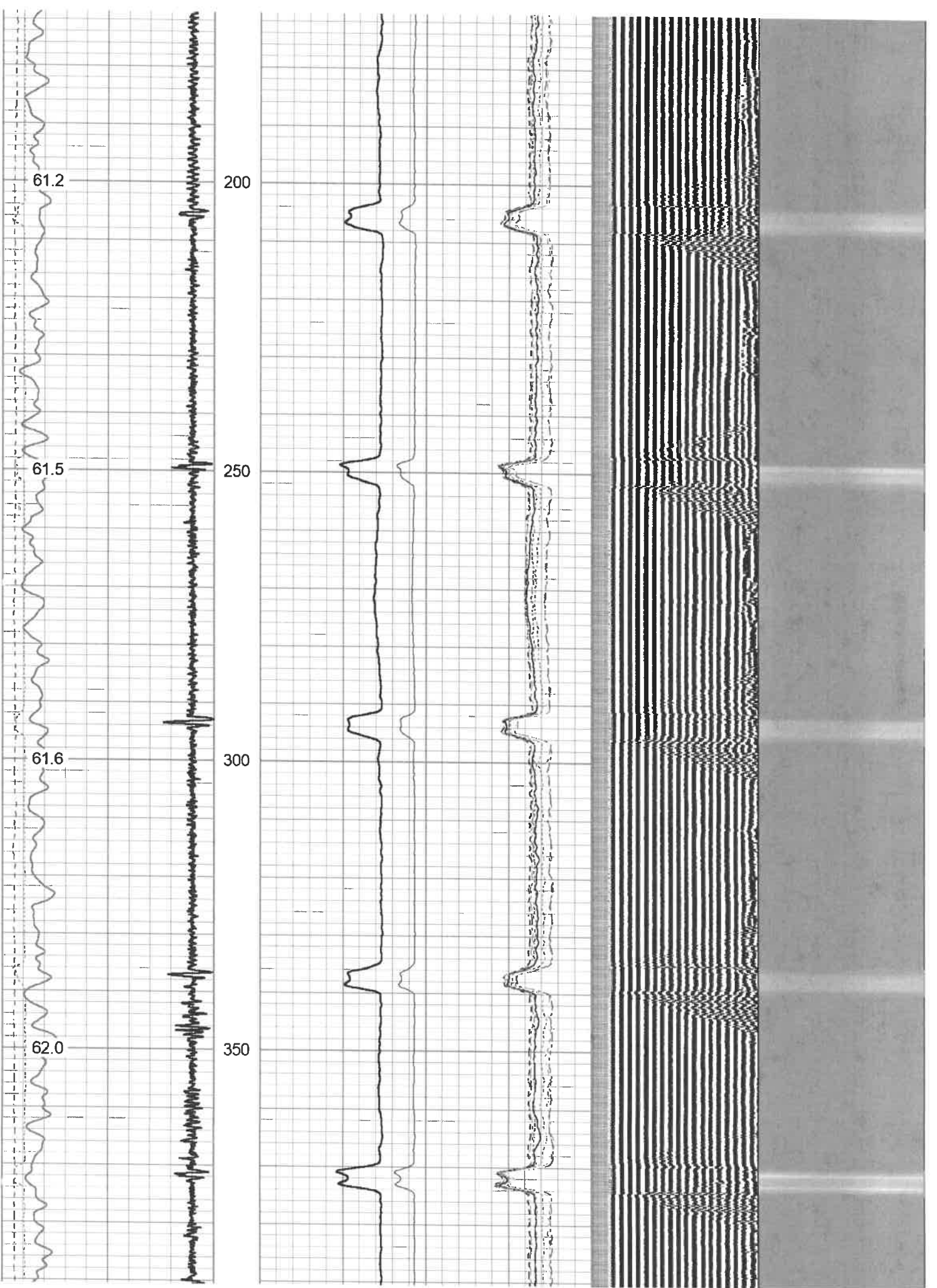
MAIN LOG

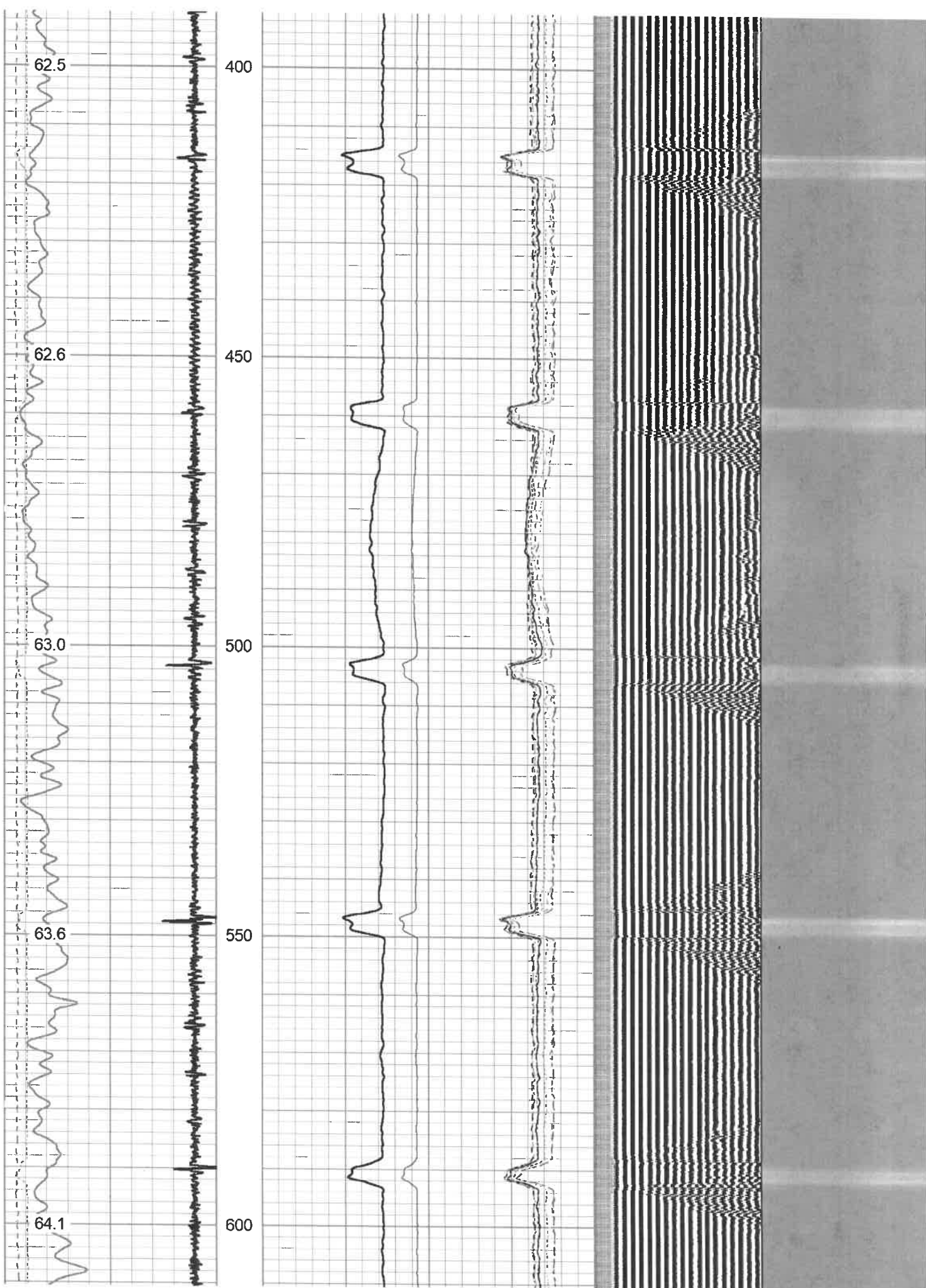
1500 PSI

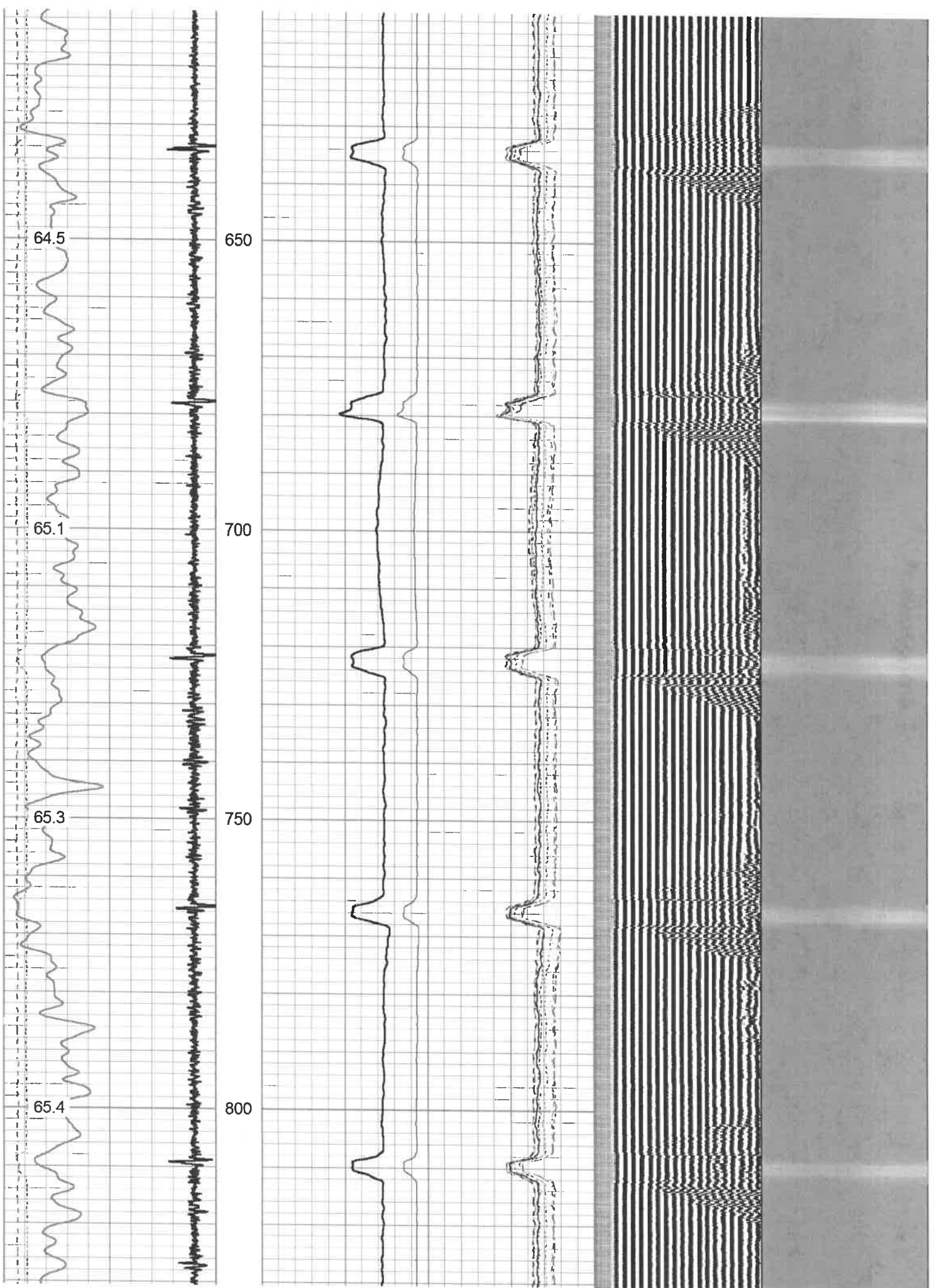
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 Dataset Pathname MAIN  
 Presentation Format 9rcbl  
 Dataset Creation Thu Mar 04 16:59:59 2021  
 Charted by Depth in Feet scaled 1:240

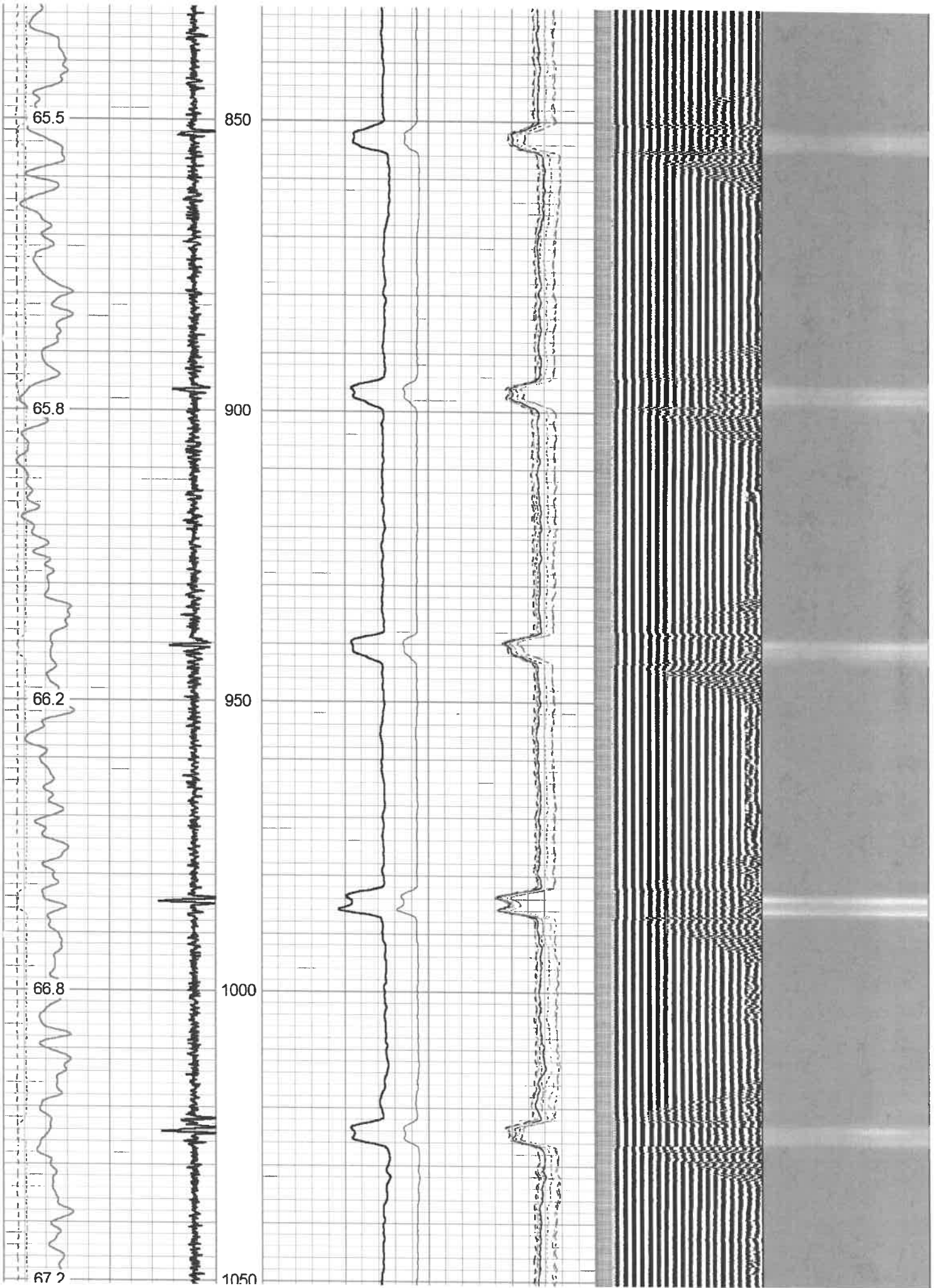
265	Travel Time (usec)	165	0	Amplitude (mV)	100	-5	Sector 1	150	Variable Density		1	Cement Map	8
9	Casing Collar	-1	1	BONDIX	0	-5	Sector 2	150	200	(usec)	1200		
0	Gamma Ray (GAPI)	150				-5	Sector 3	150					
0	Line Tension (lb)	5000				-5	Sector 4	150					
	TEMP (degF)					-5	Sector 5	150					
					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

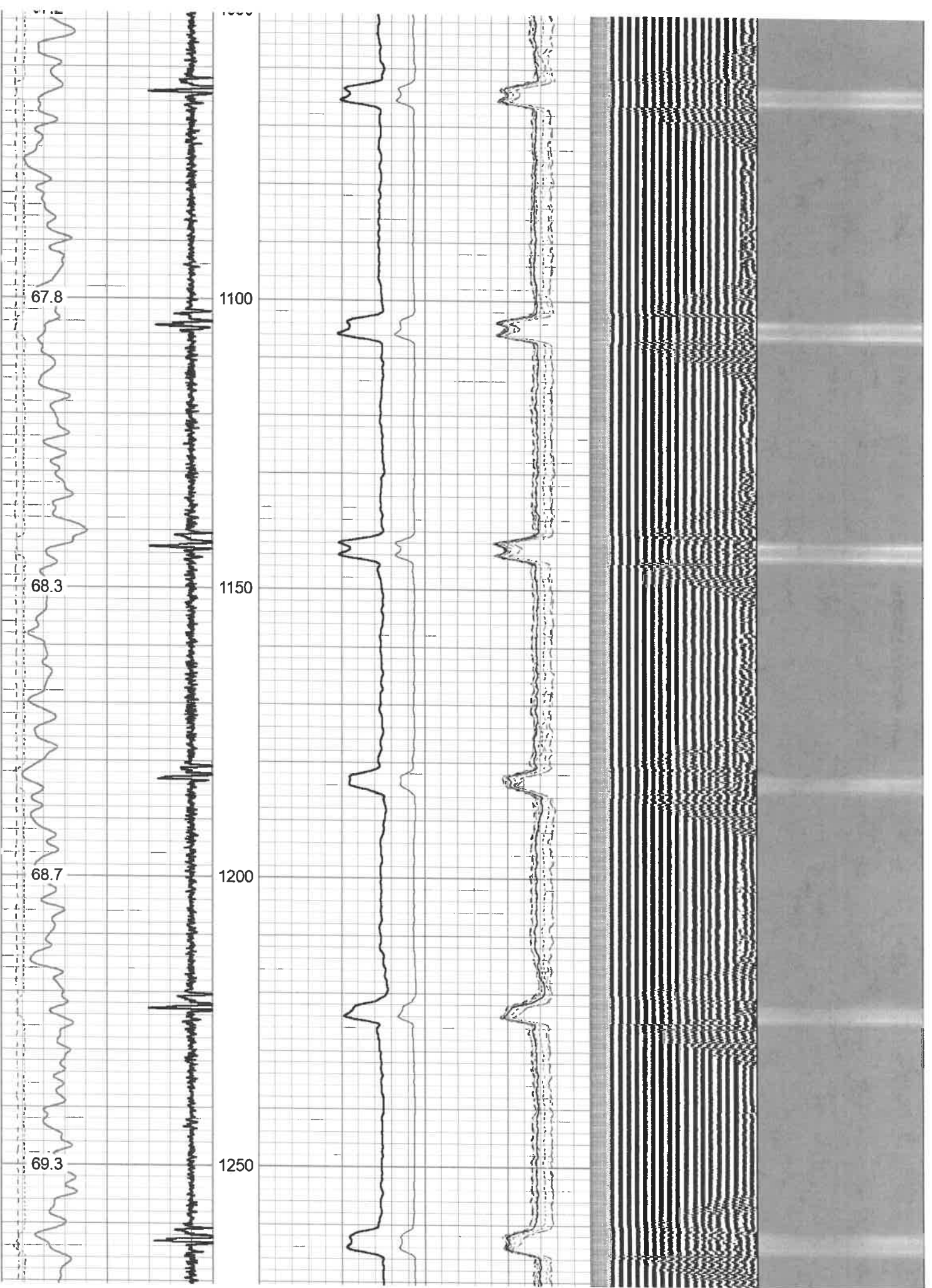




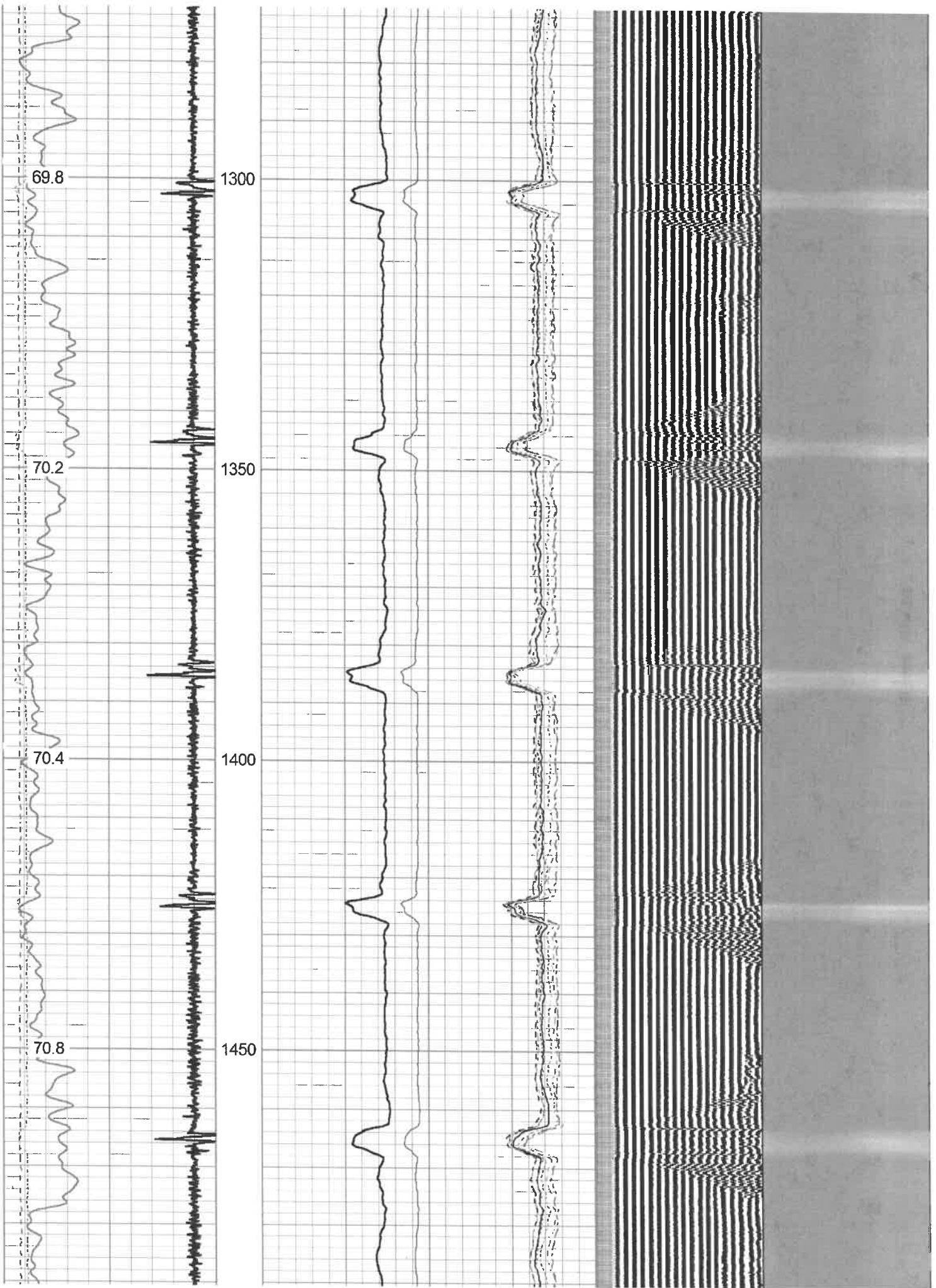


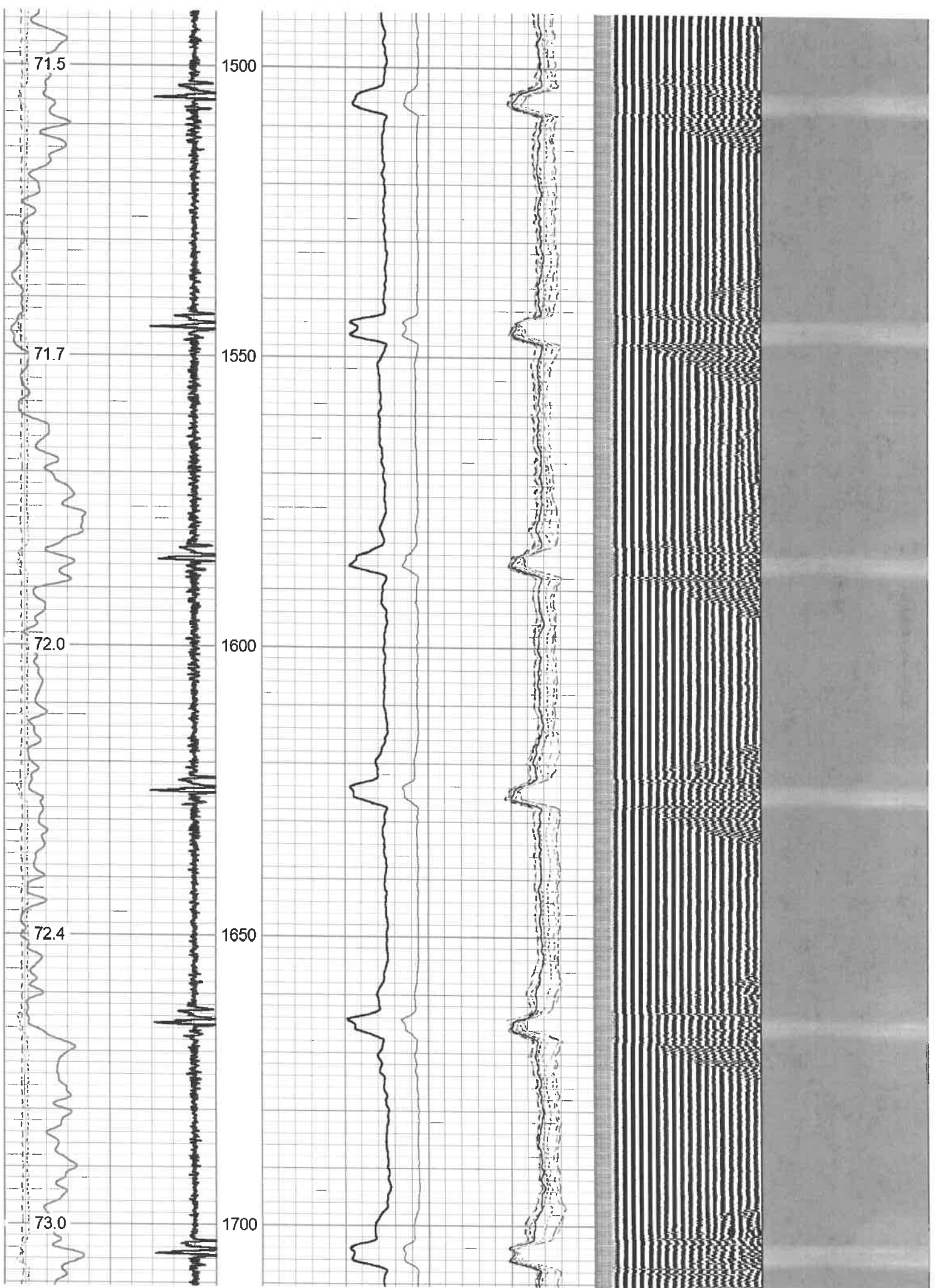


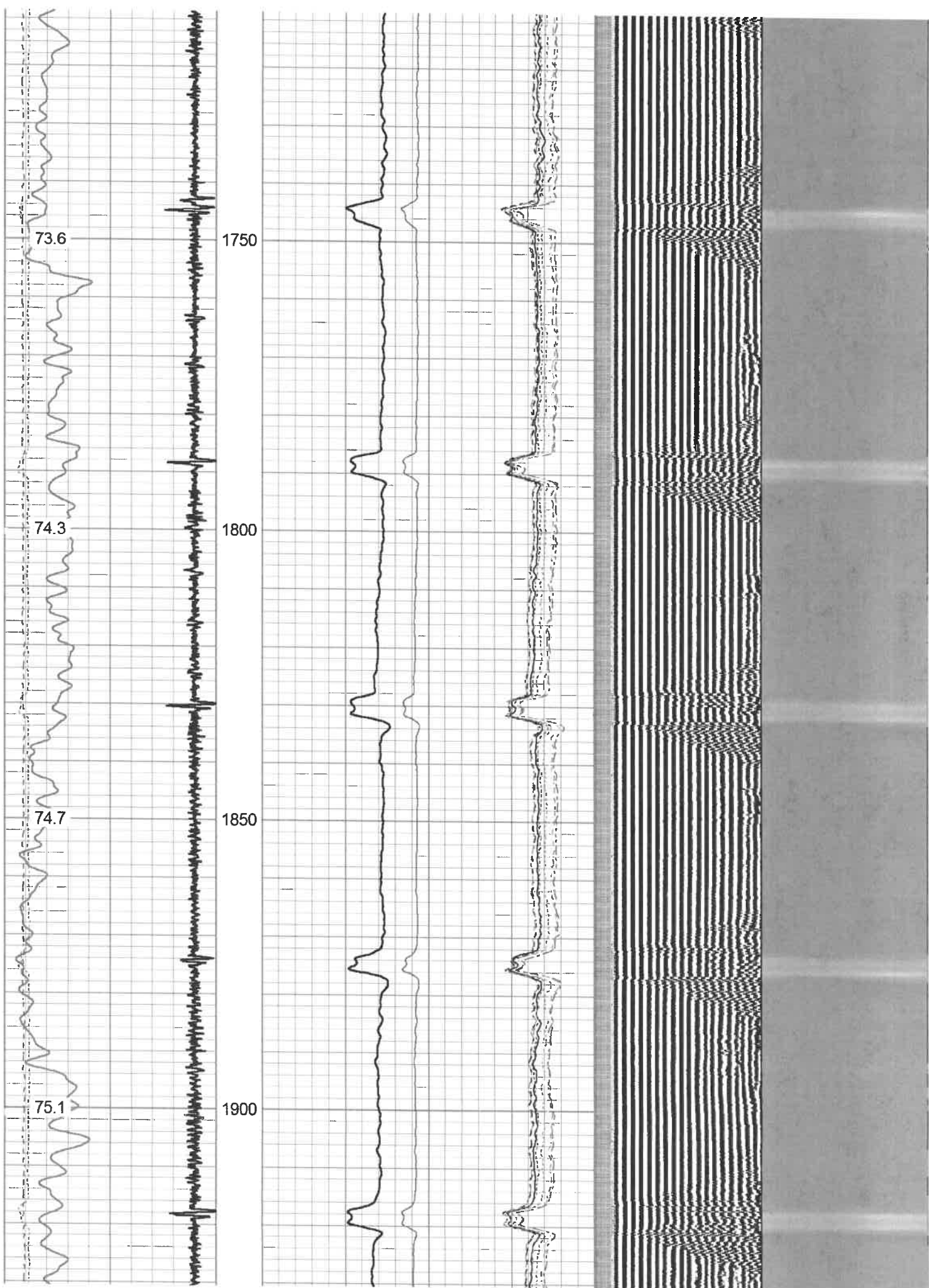




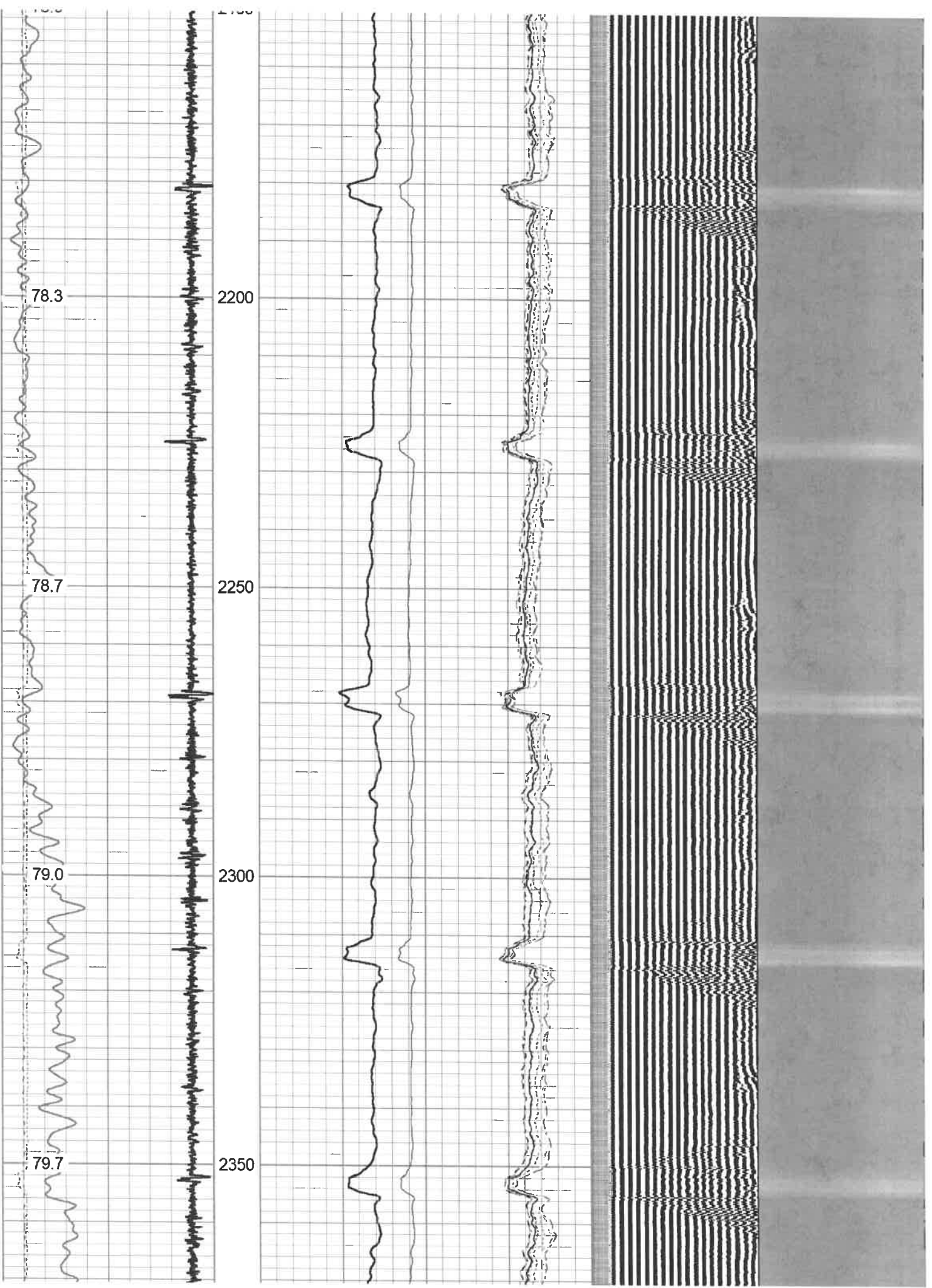


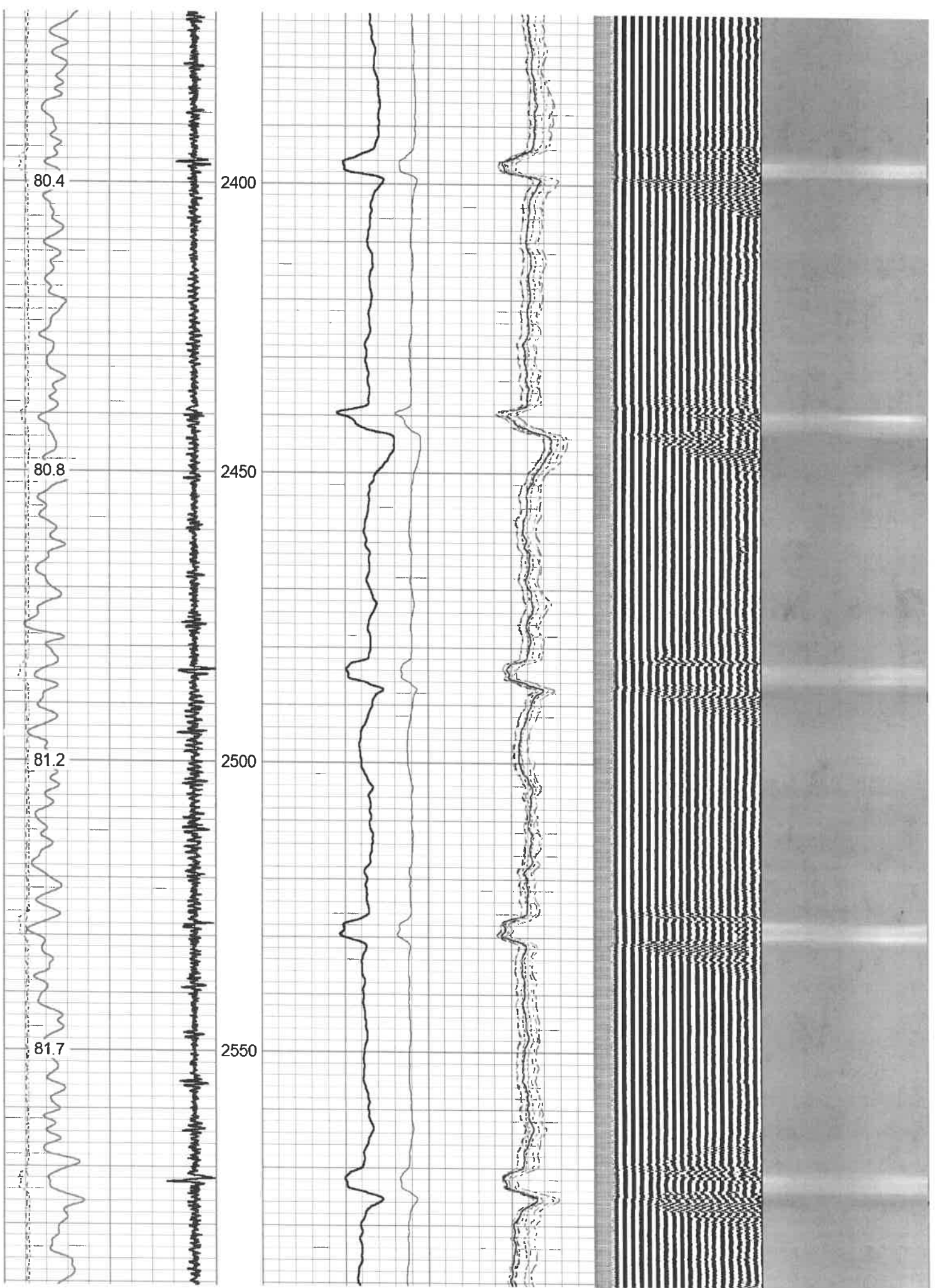


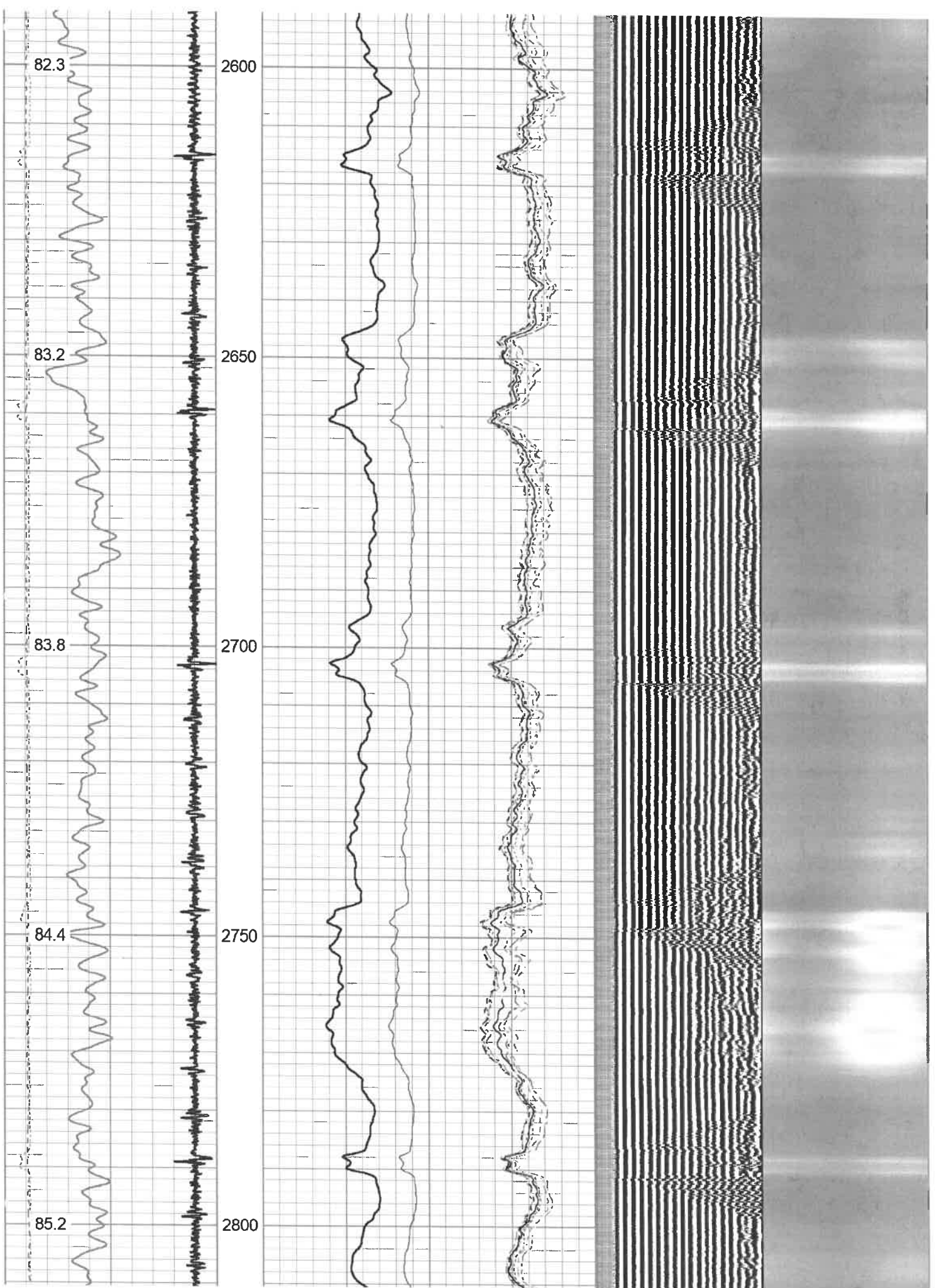


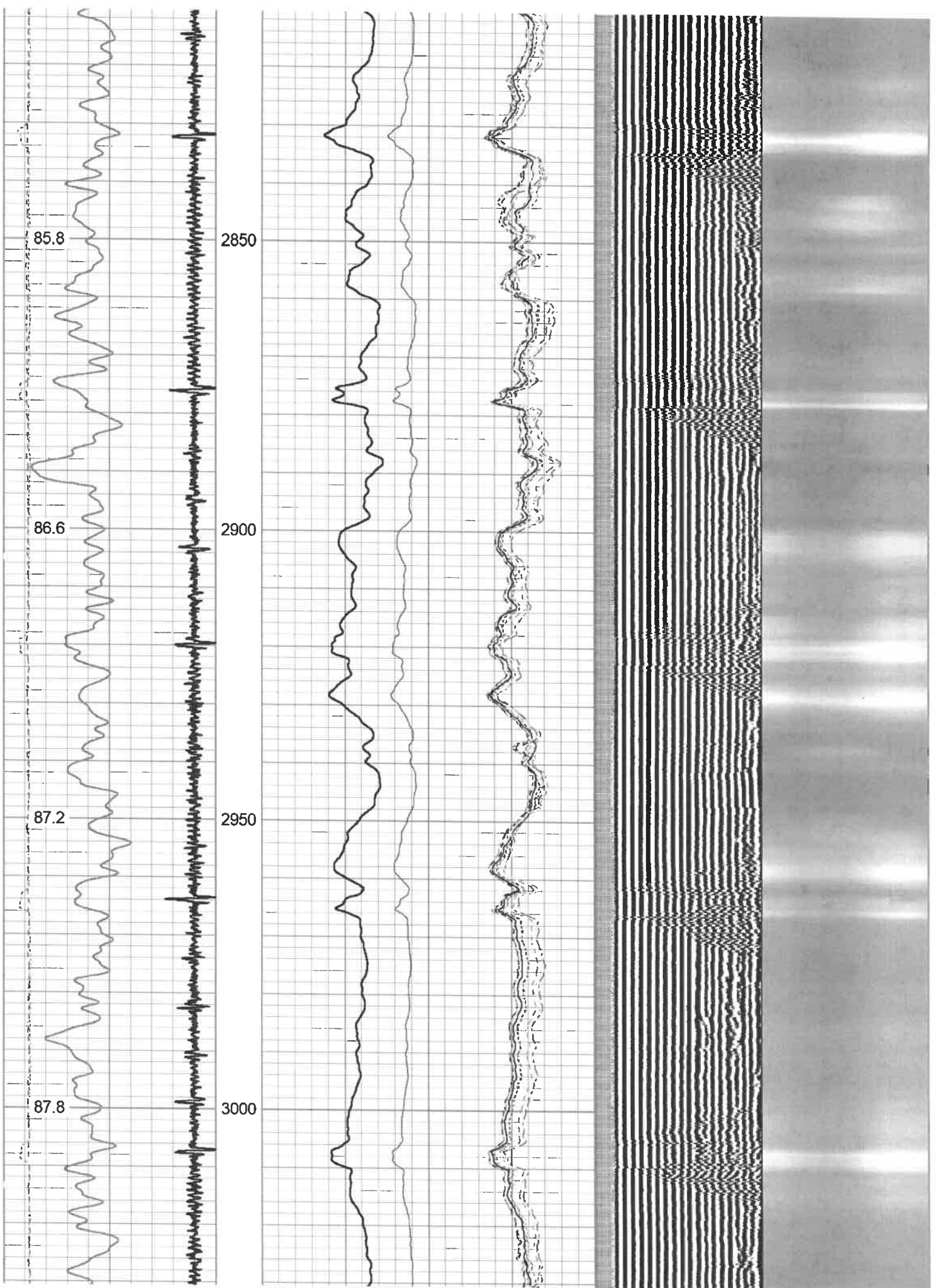




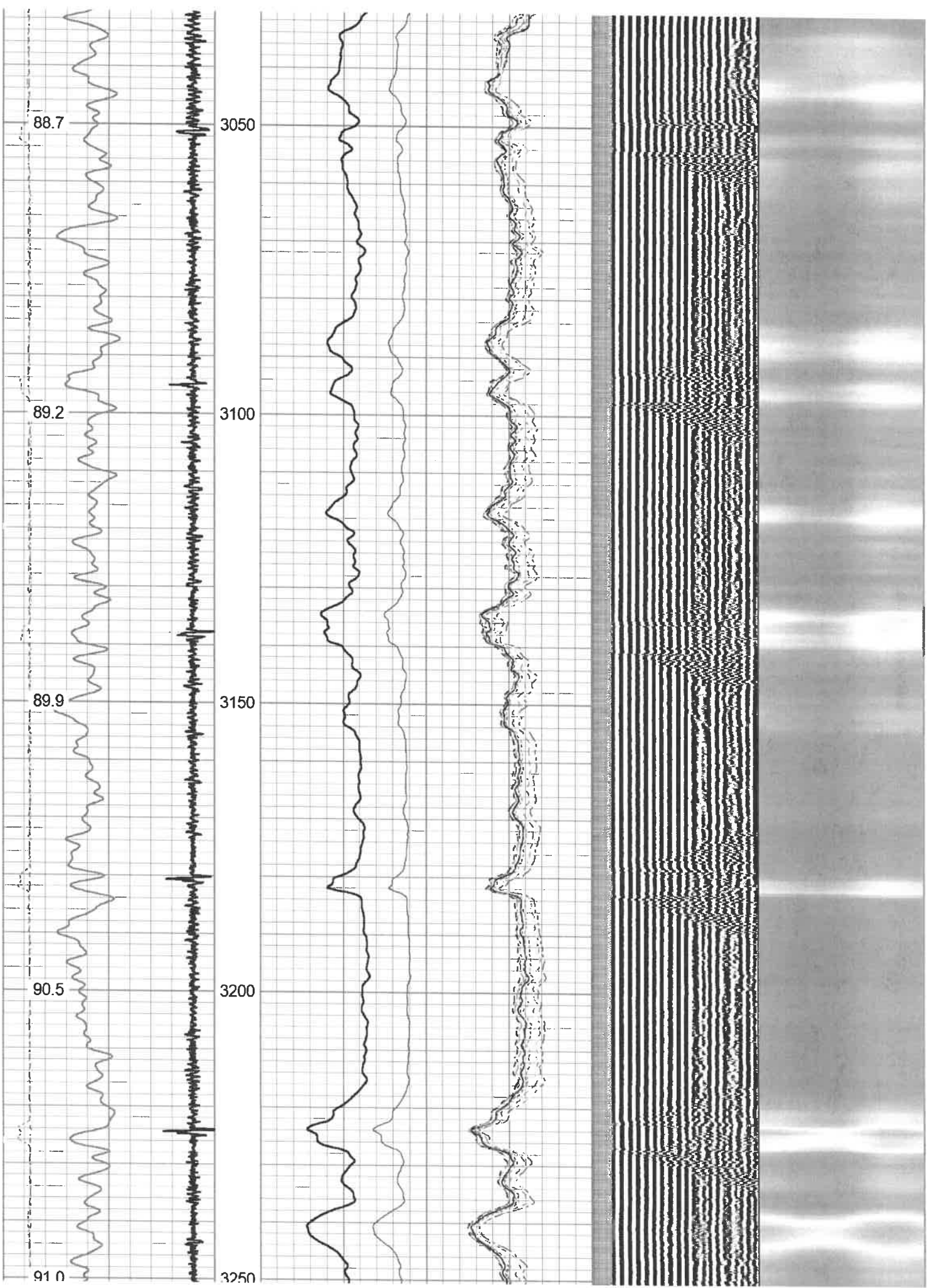


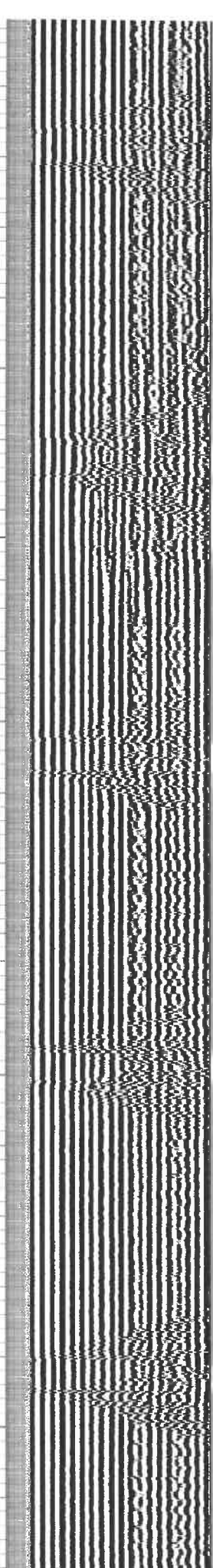
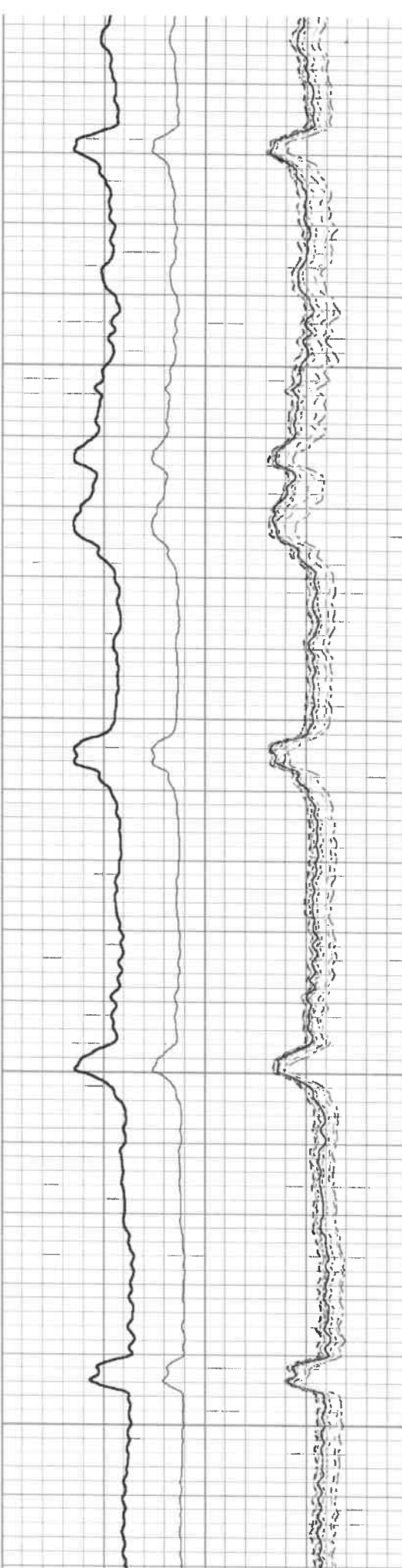
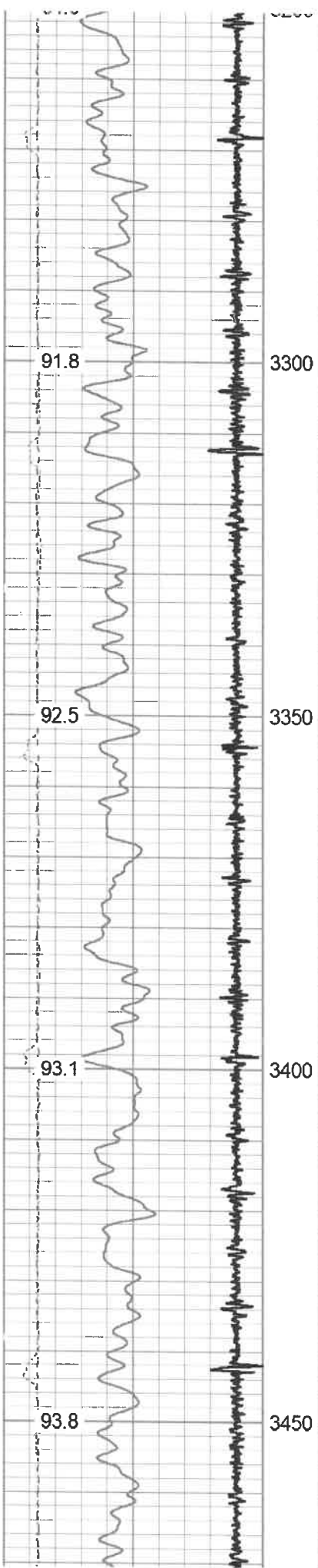


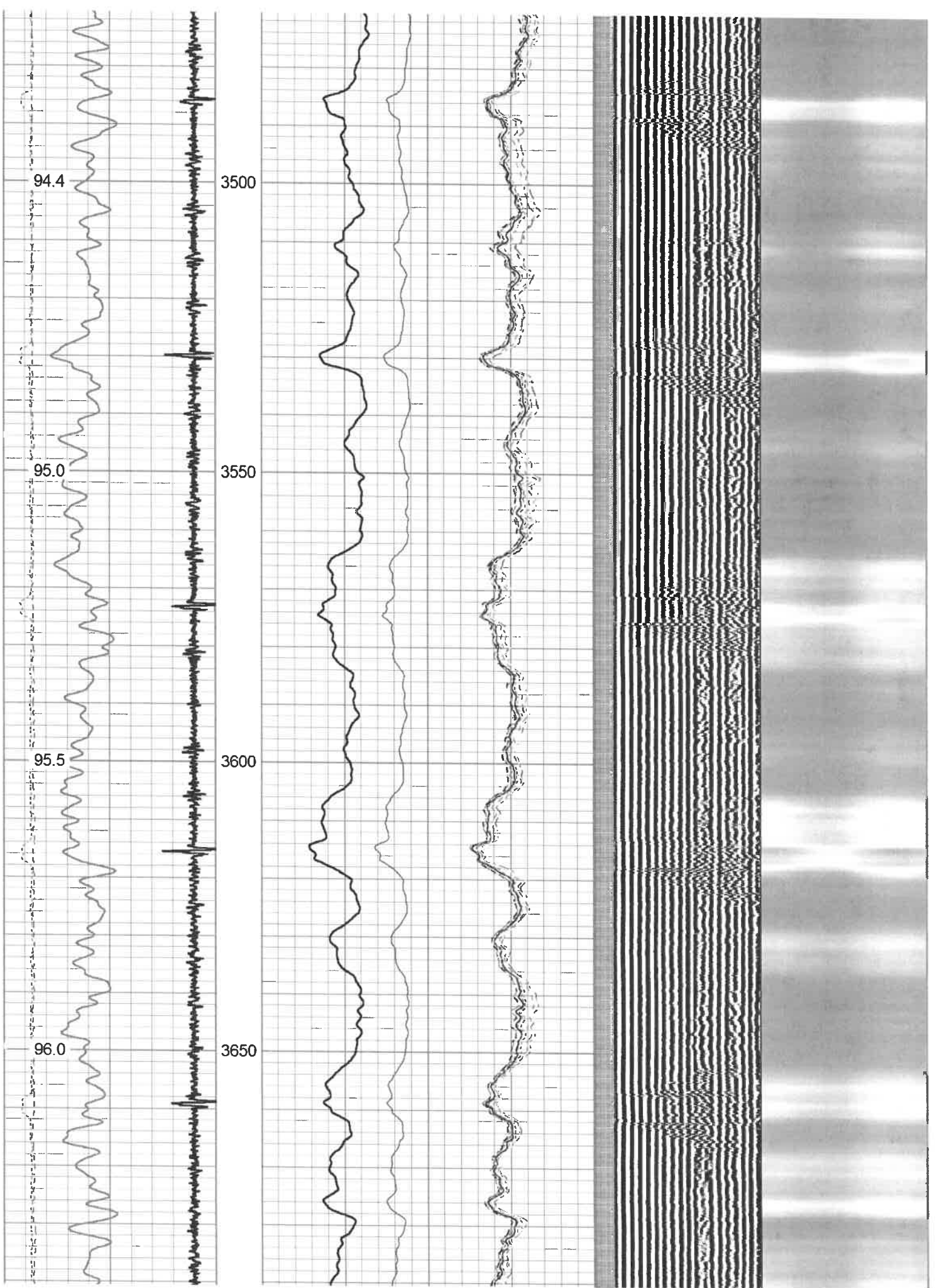


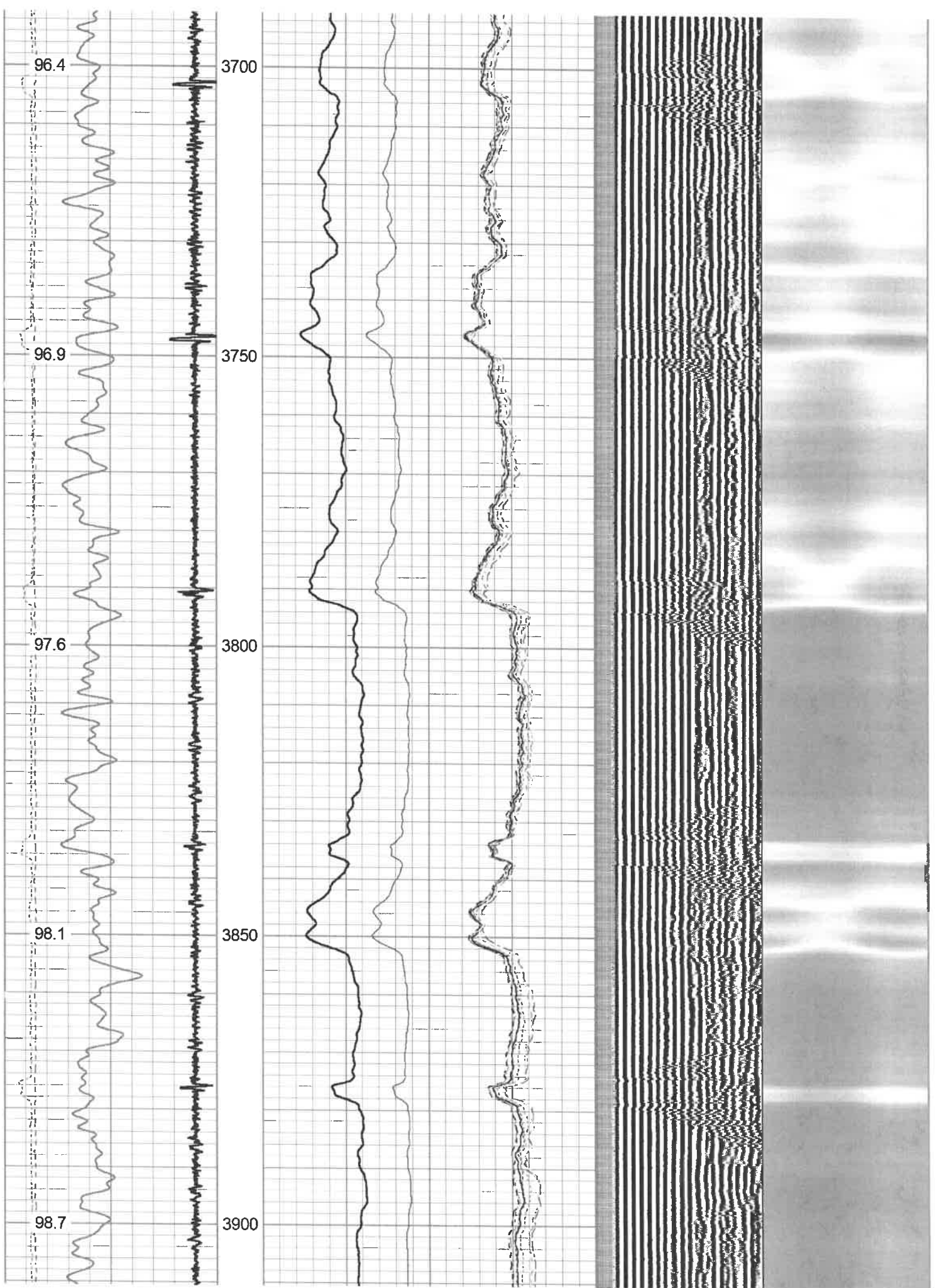


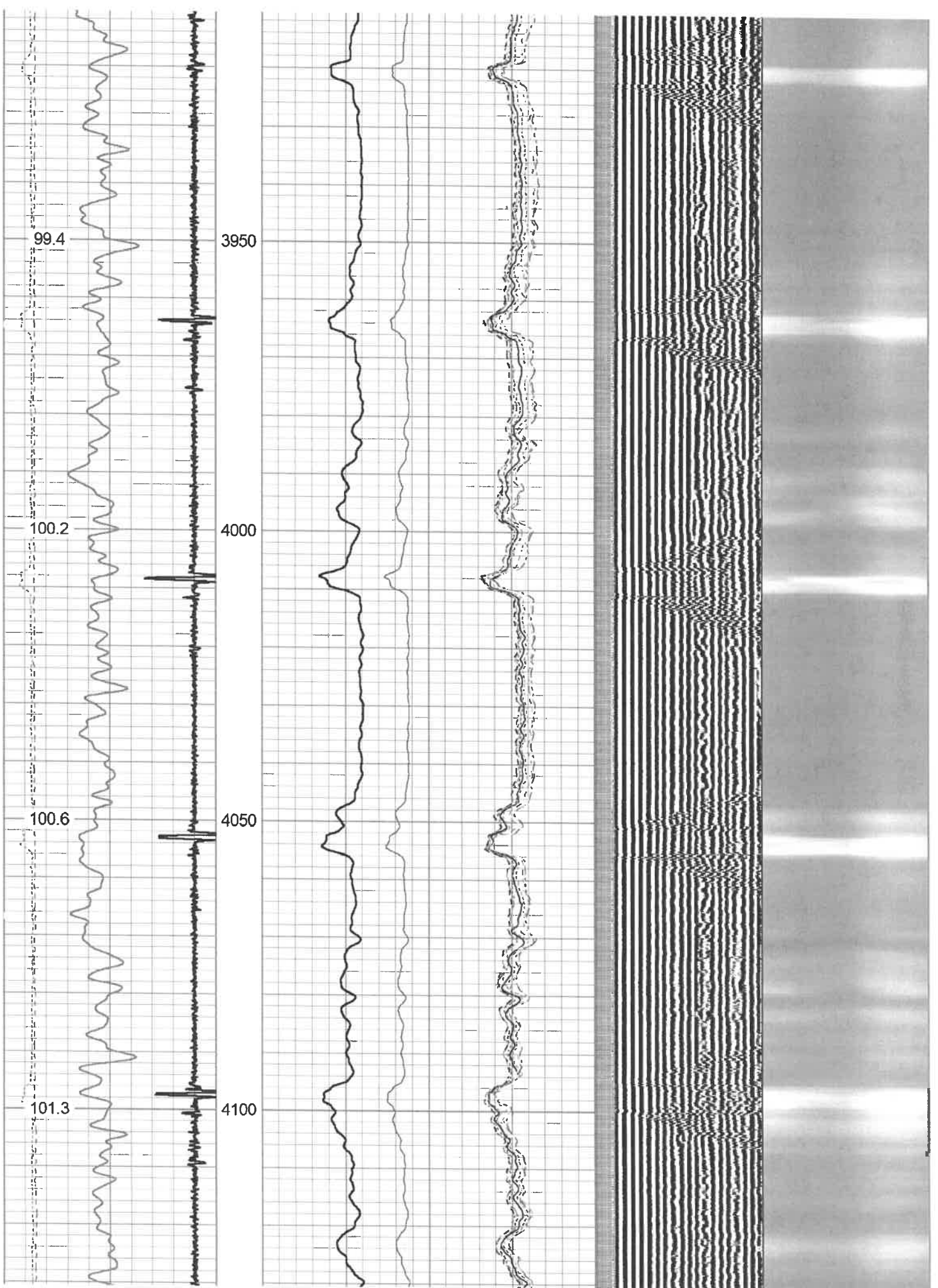


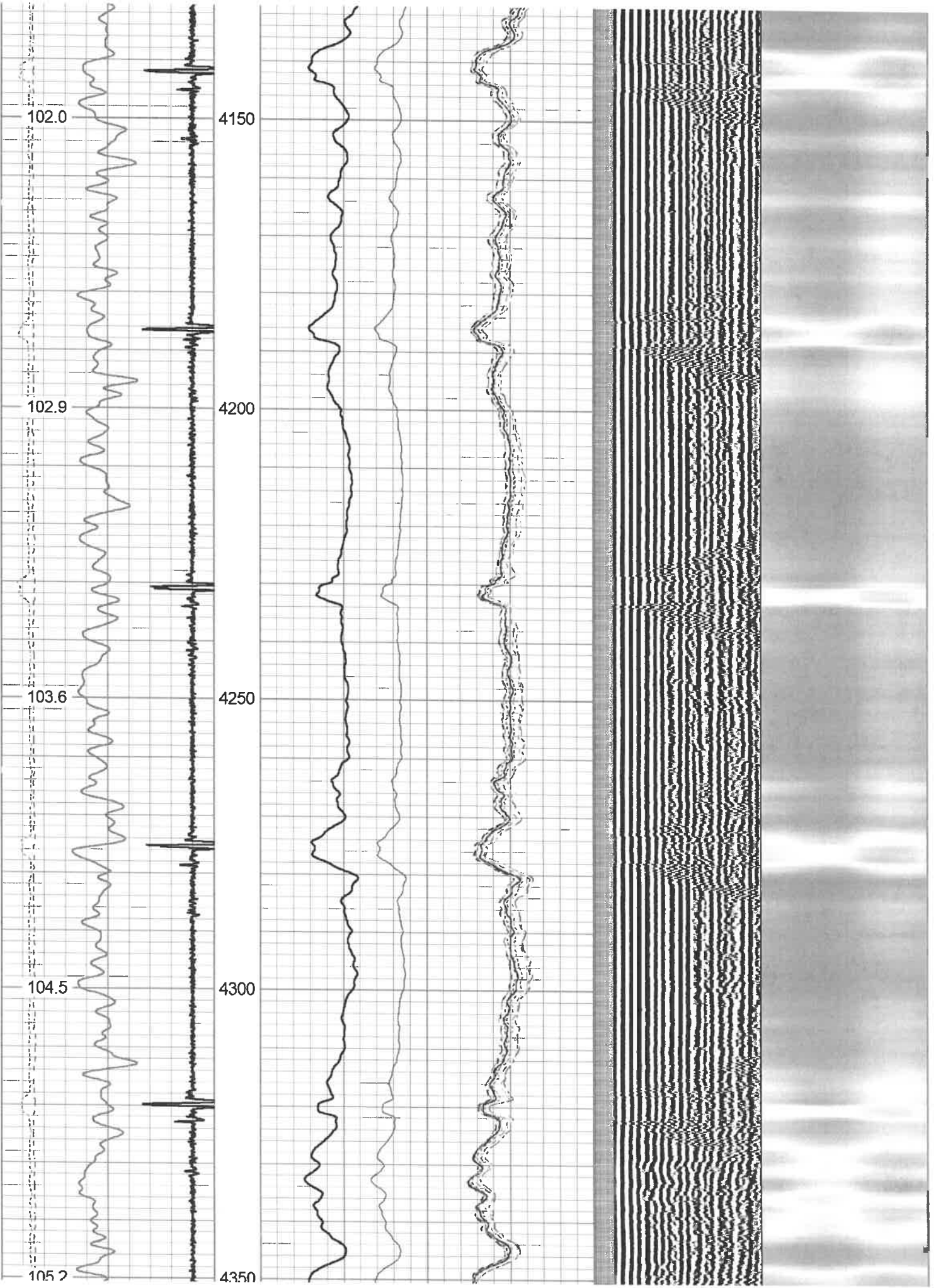


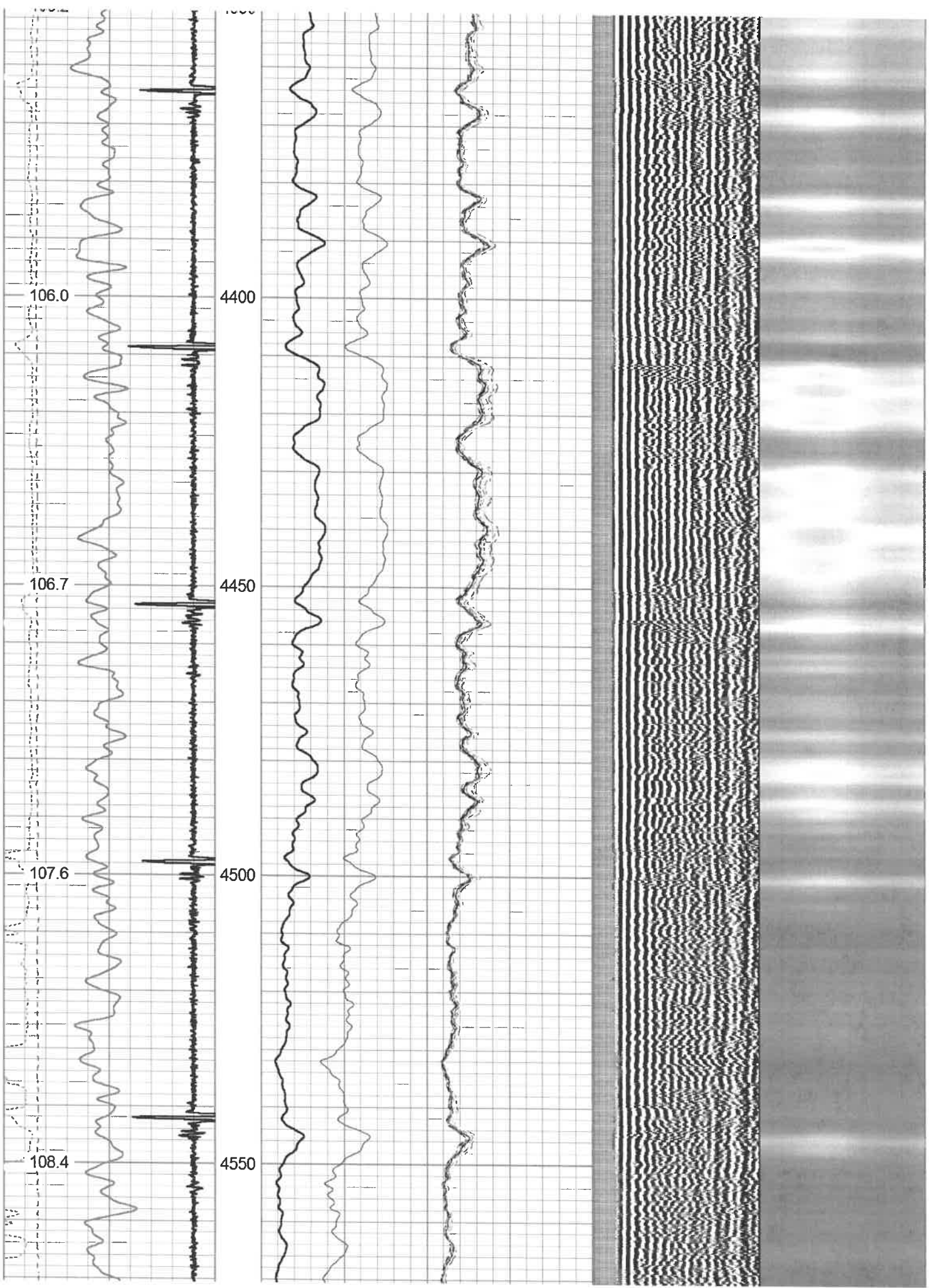


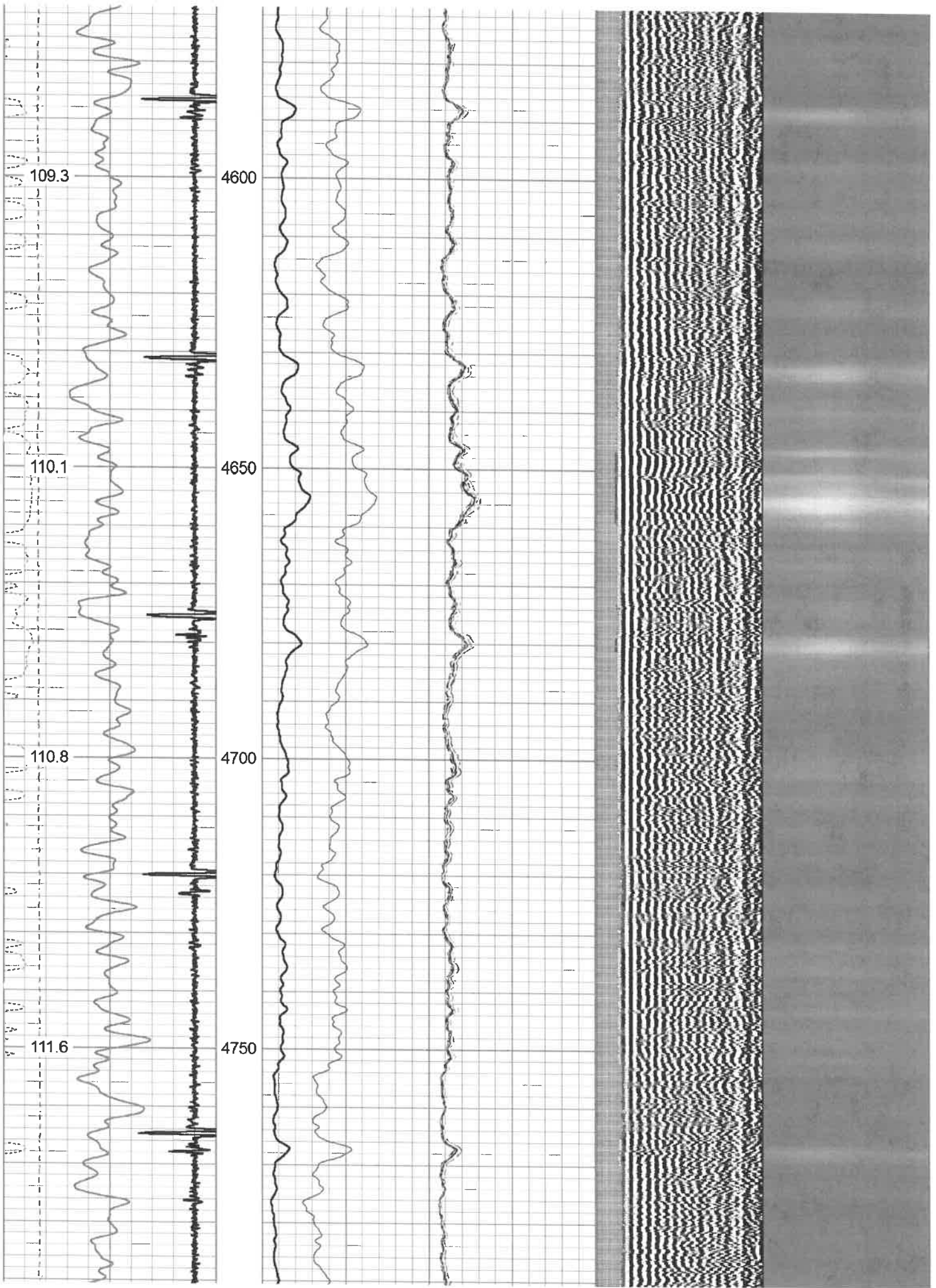




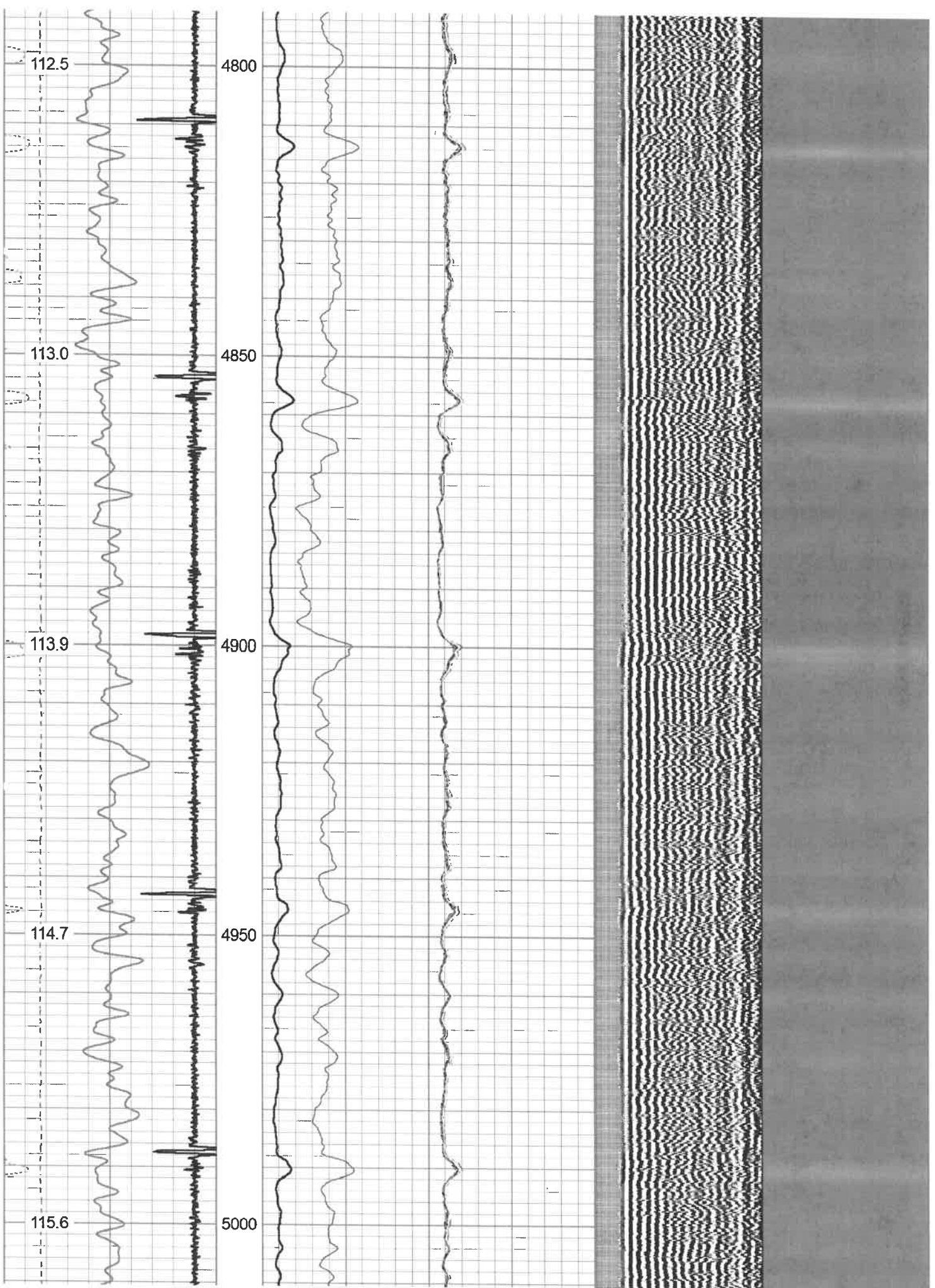


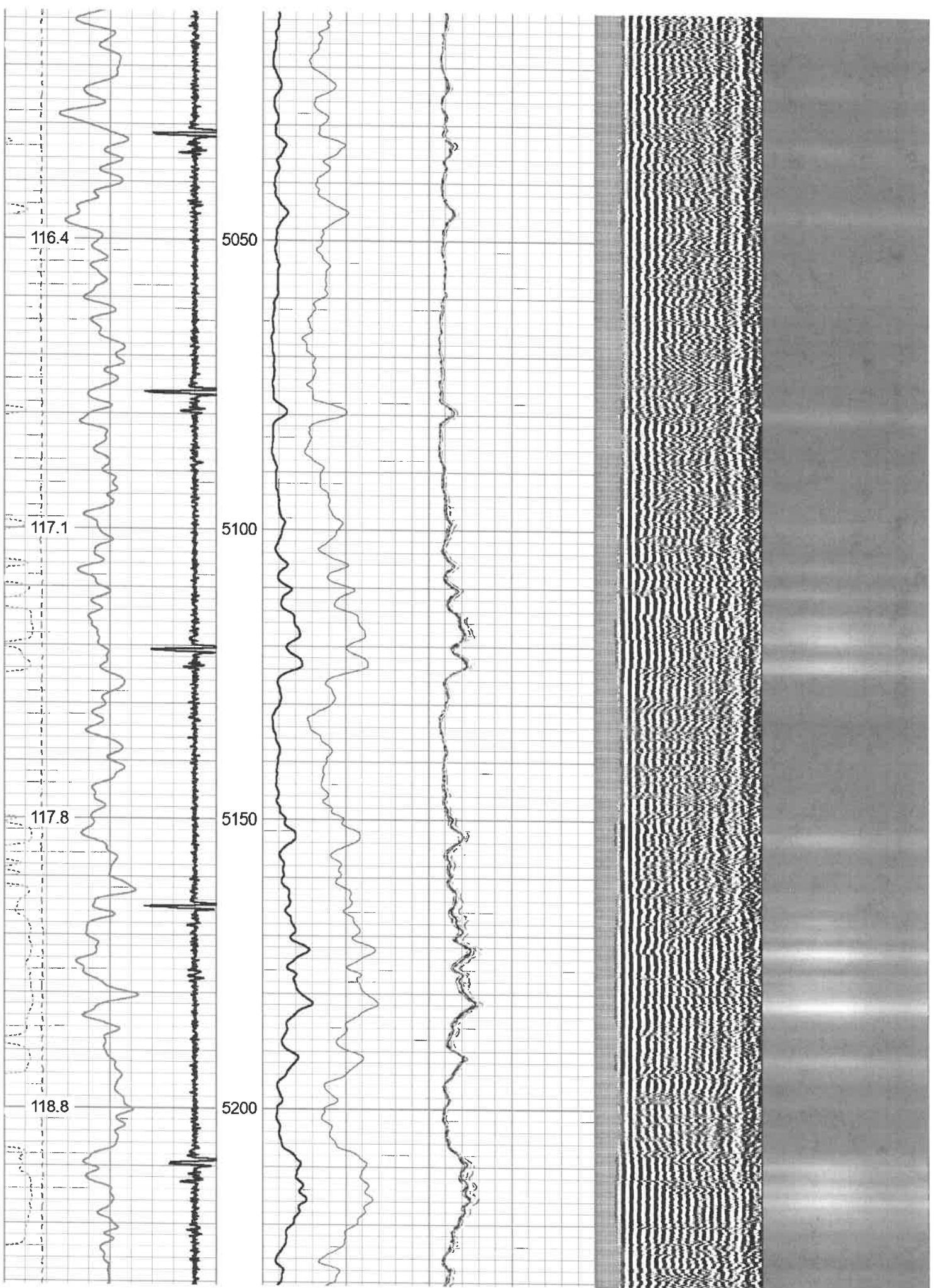


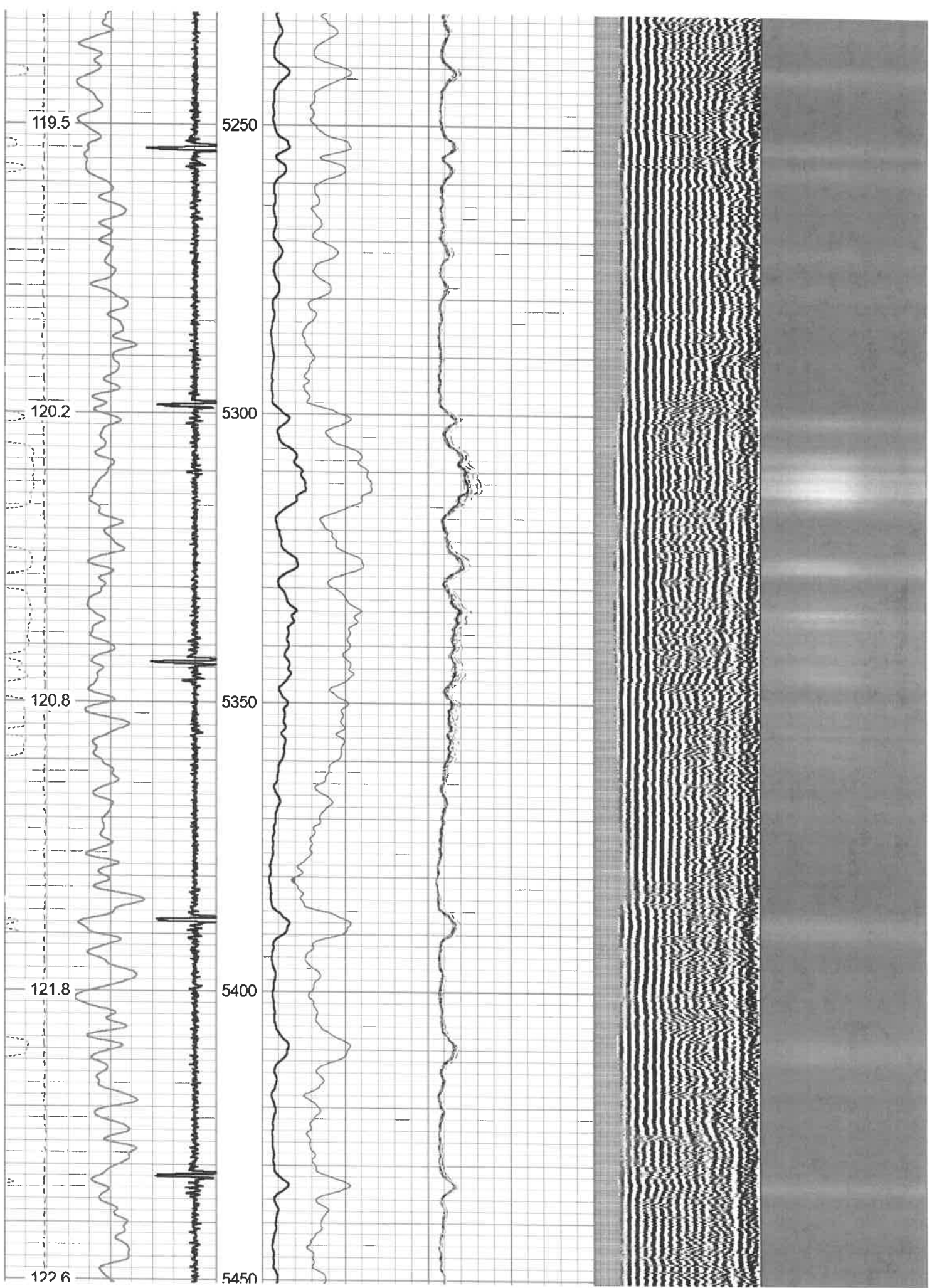


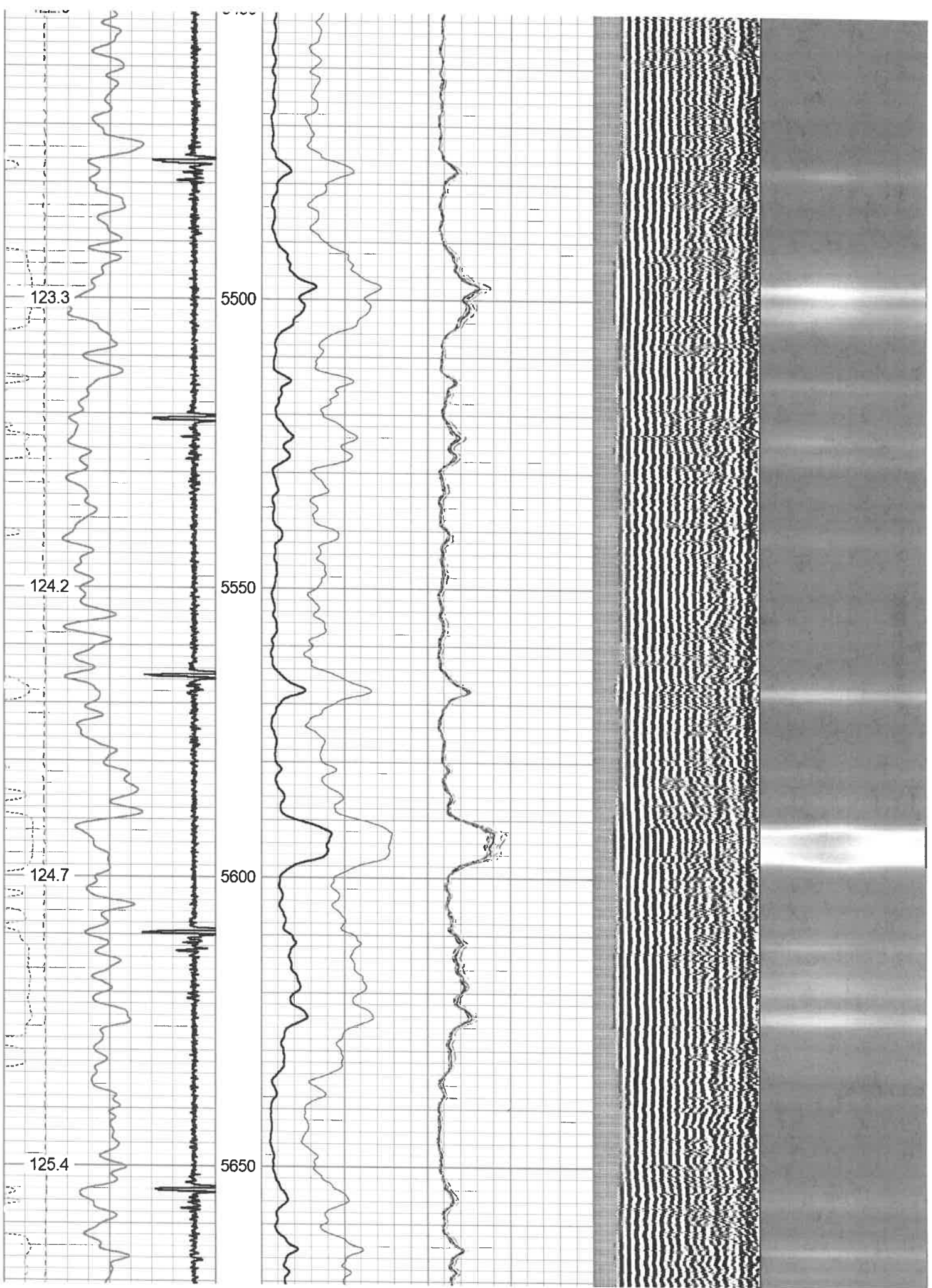


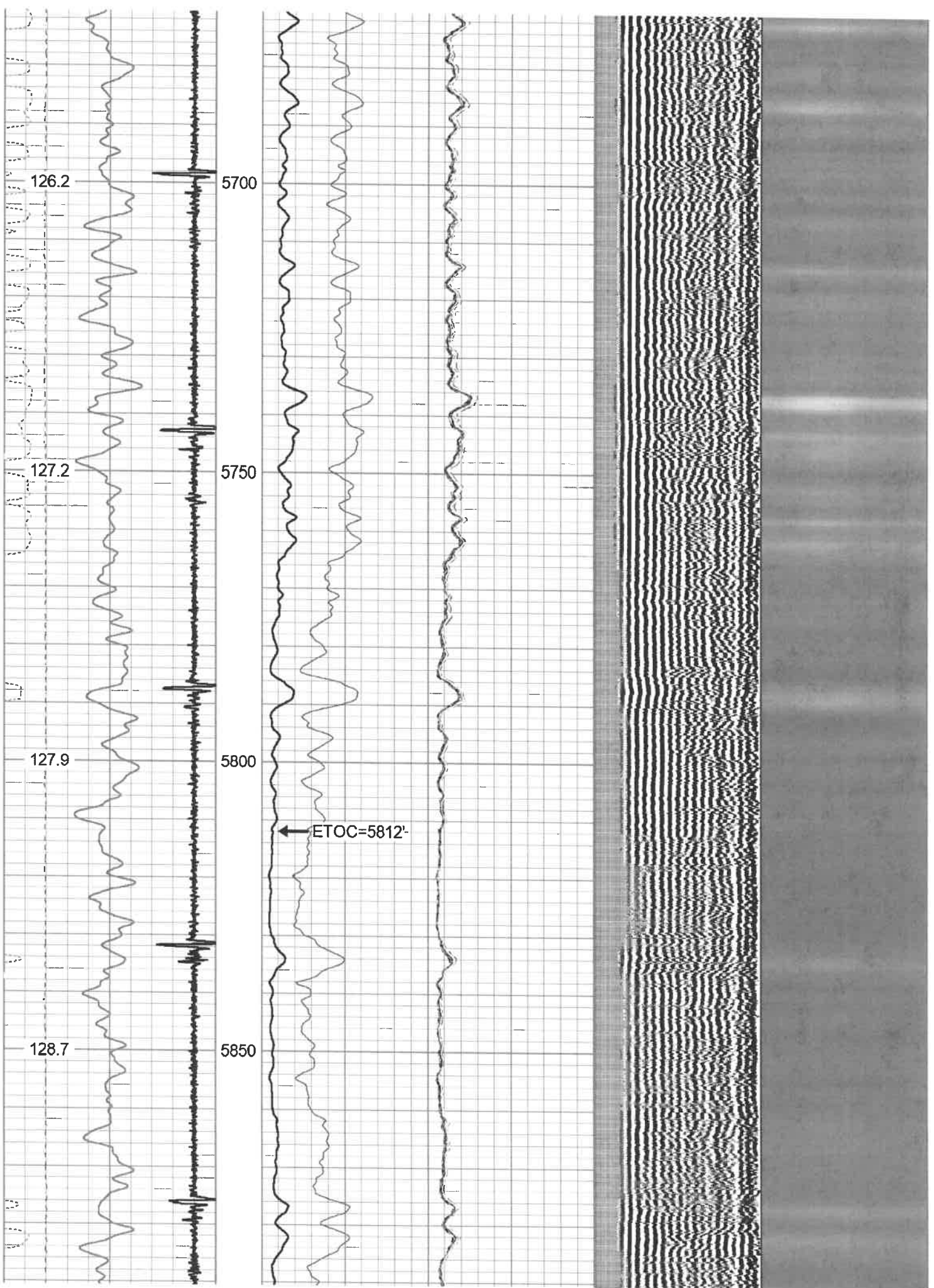


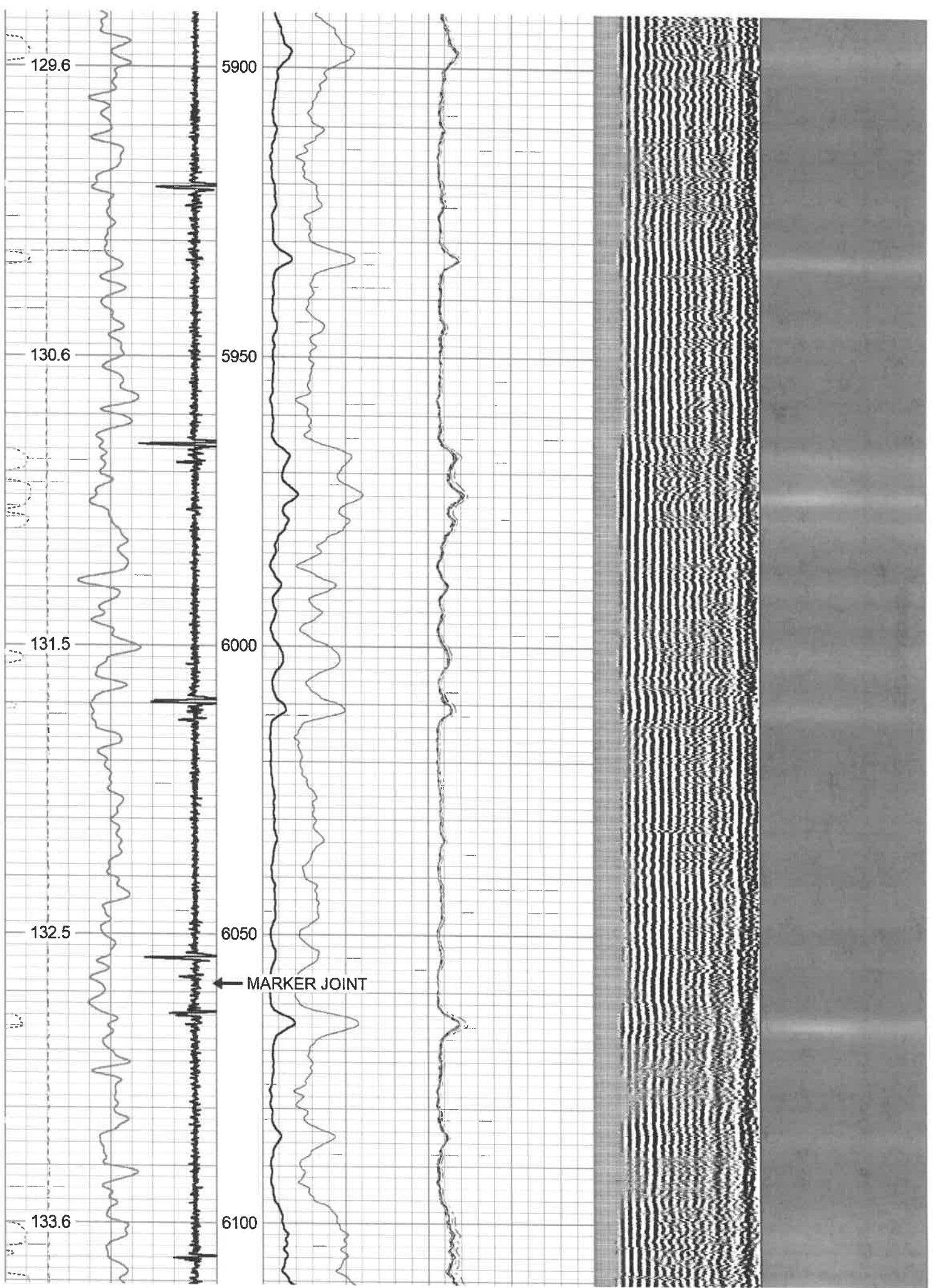


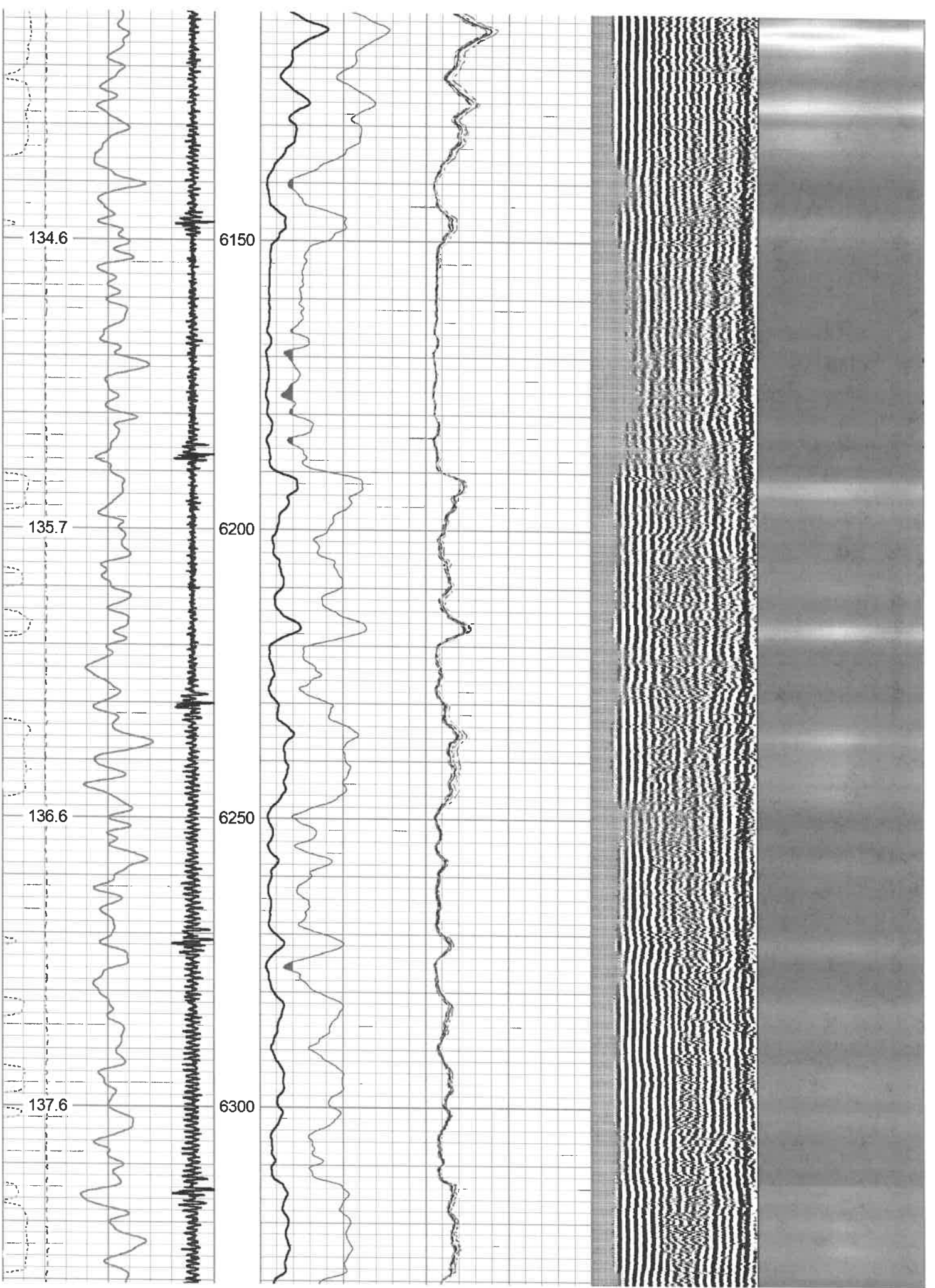


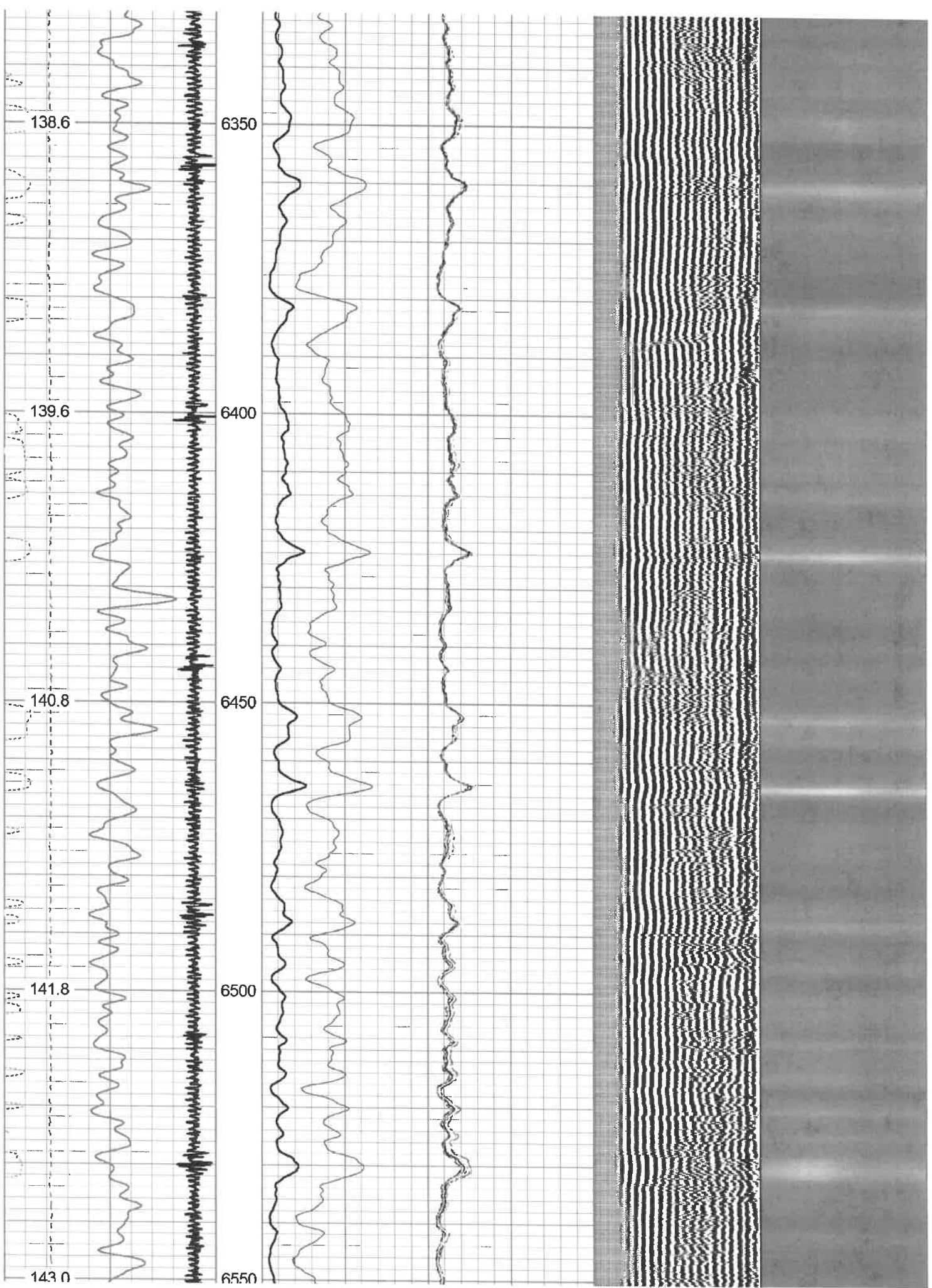




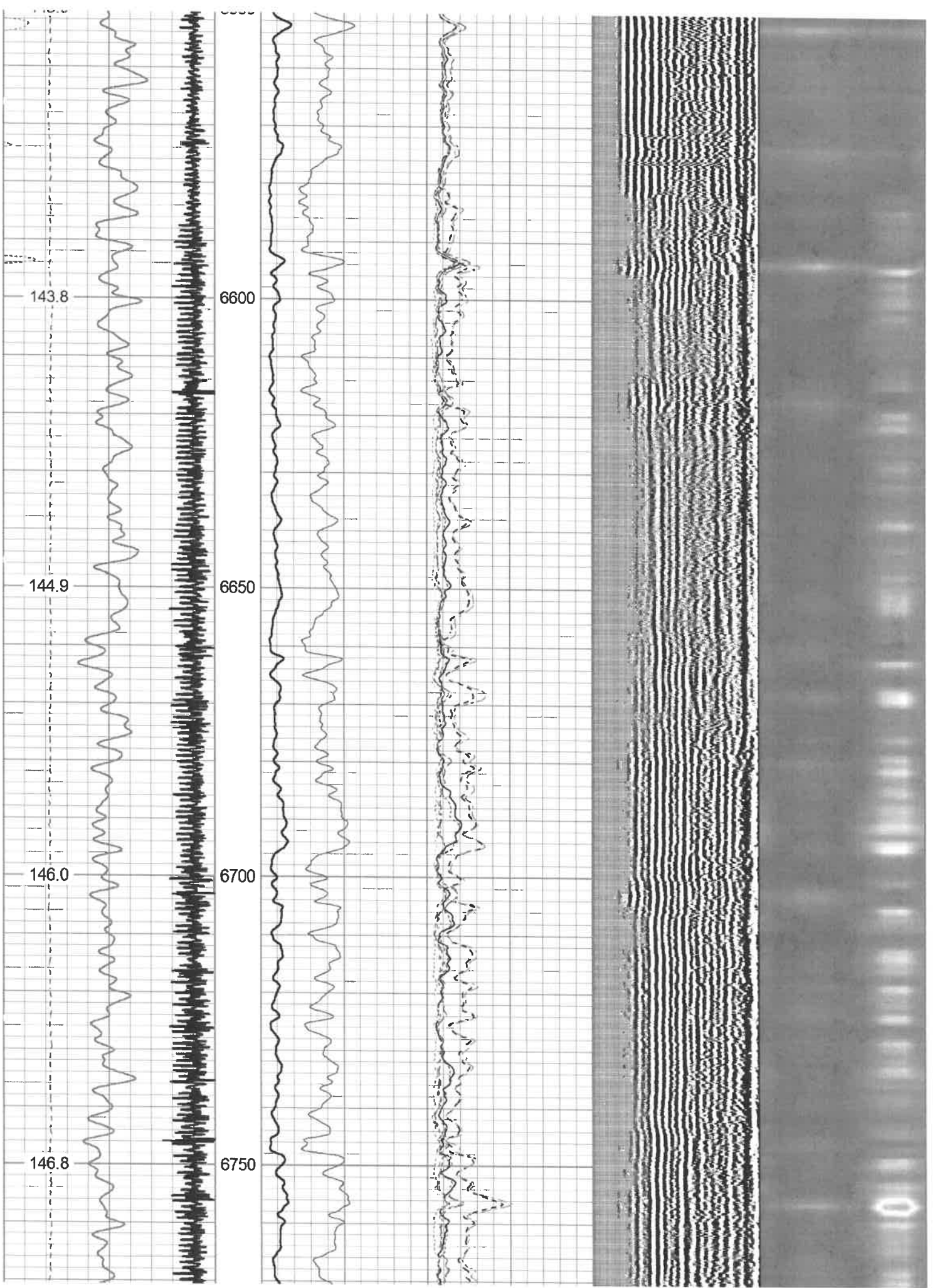


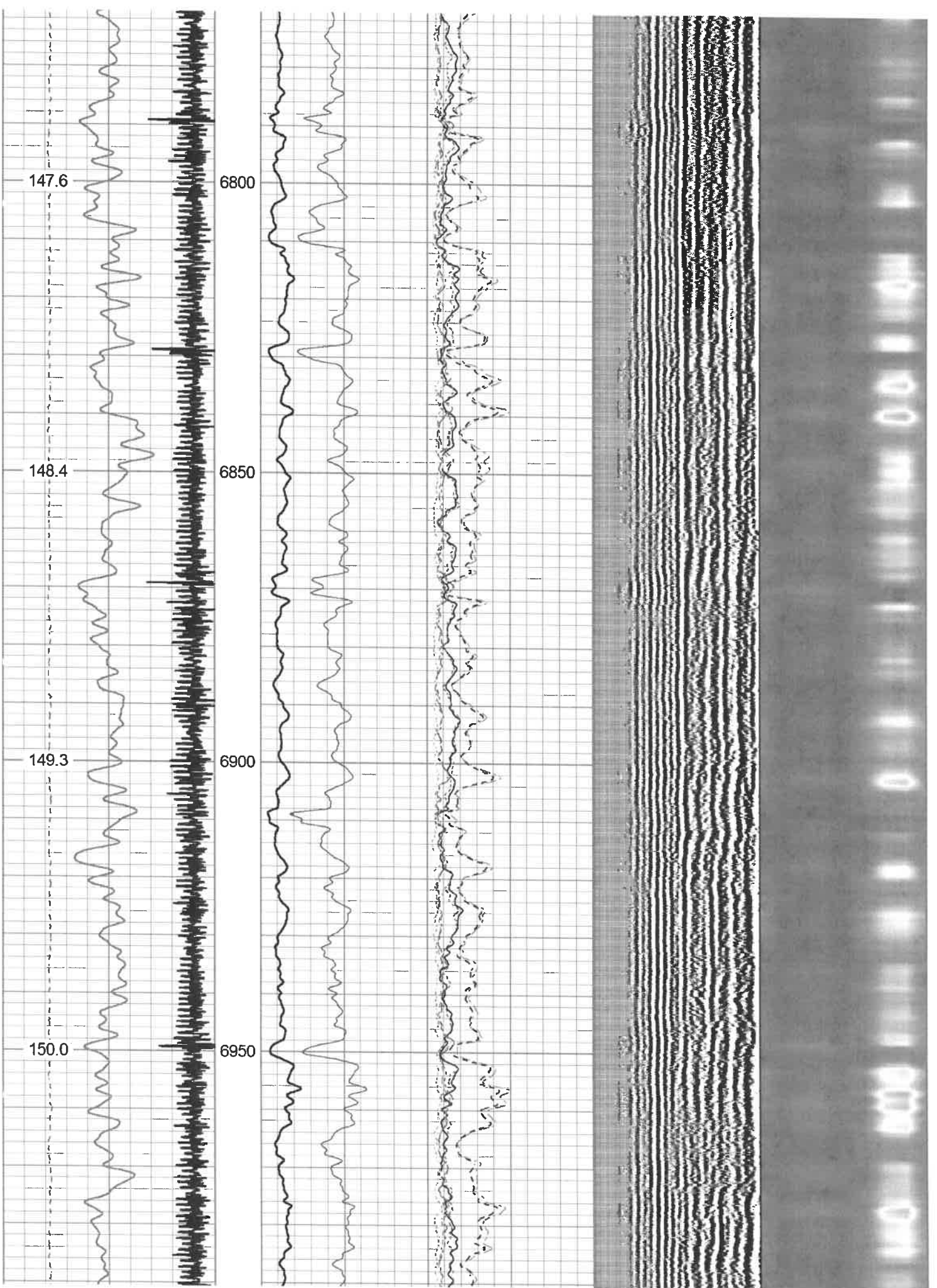


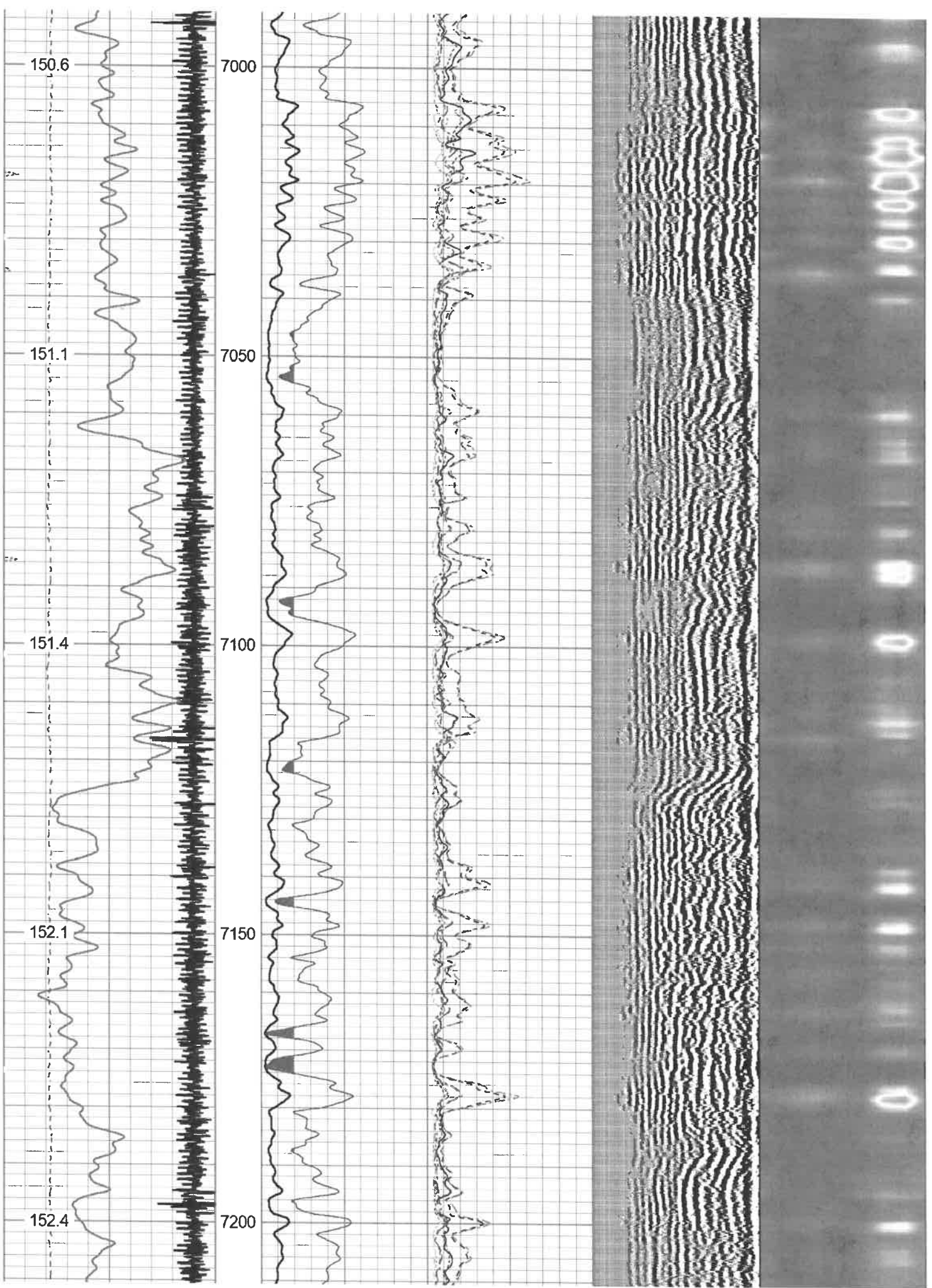


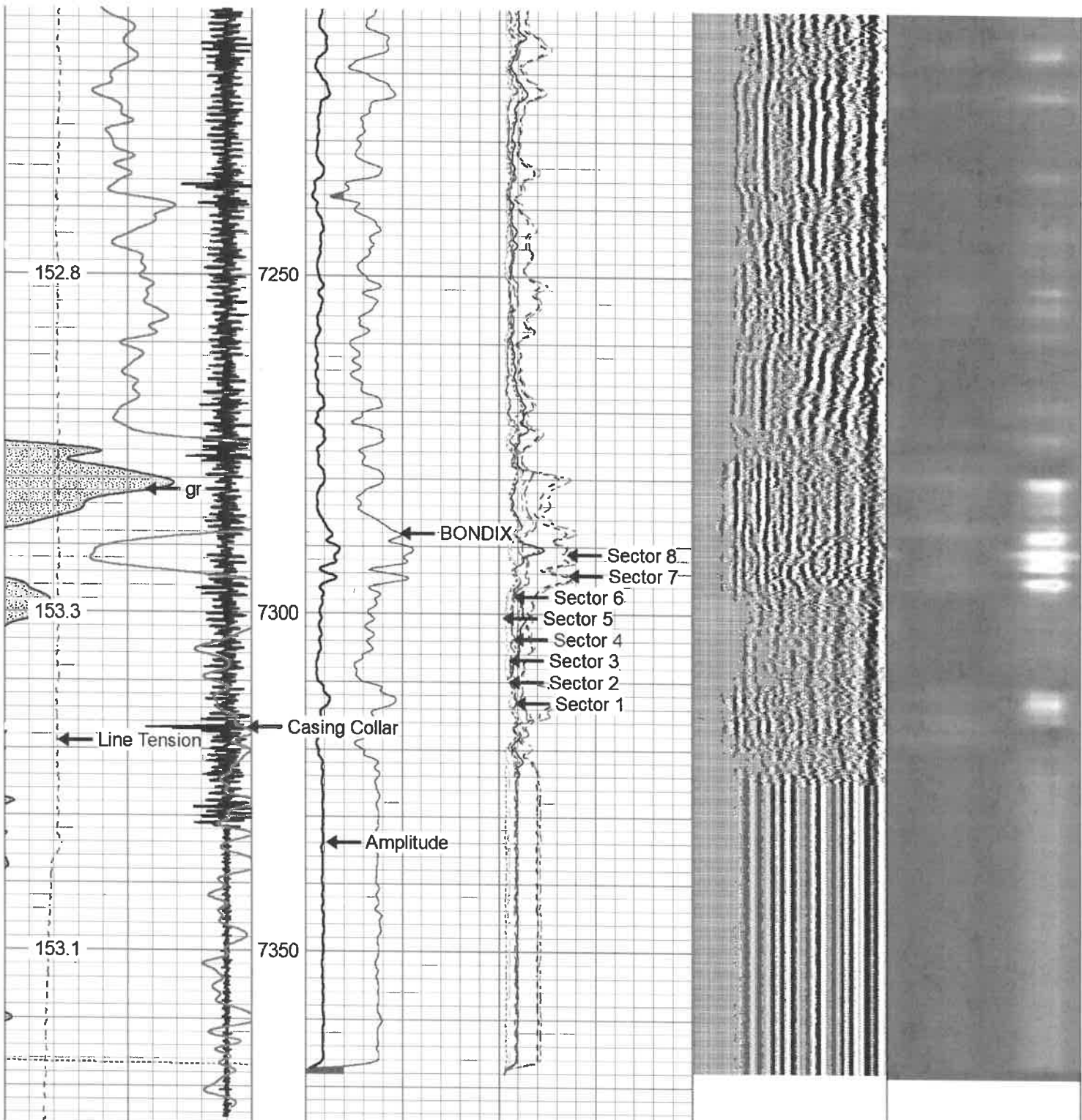












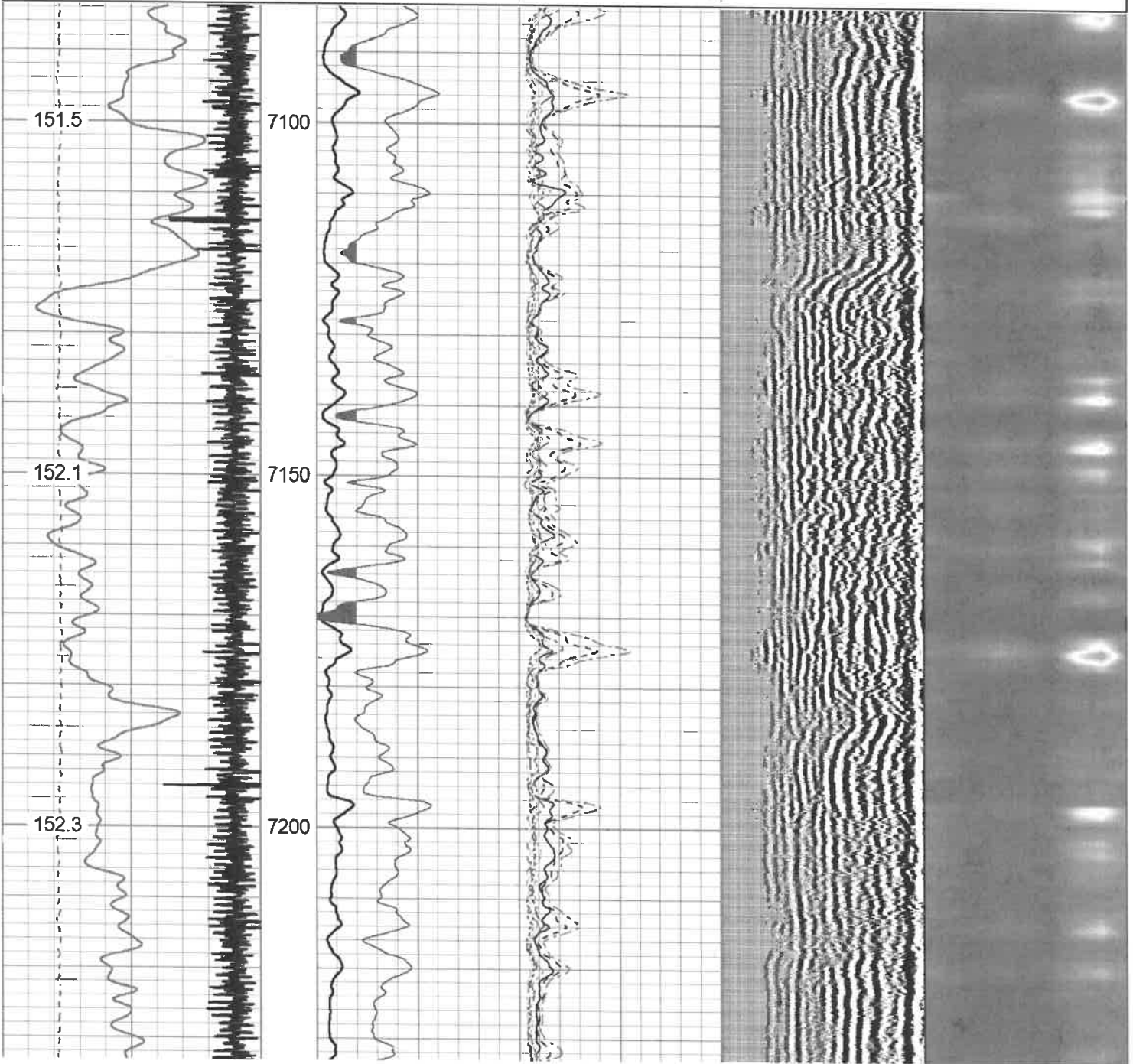
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9	Casing Collar	-1	1	BONDIX	0	-5	Sector 2	150				
0	Gamma Ray (GAPI)	150				-5	Sector 3	150	200	(usec)	1200	
0	Line Tension (lb)	5000				-5	Sector 4	150				
	TEMP (degF)					-5	Sector 5	150				
						-5	Sector 6	150				
						-5	Sector 7	150				
						-5	Sector 8	150				

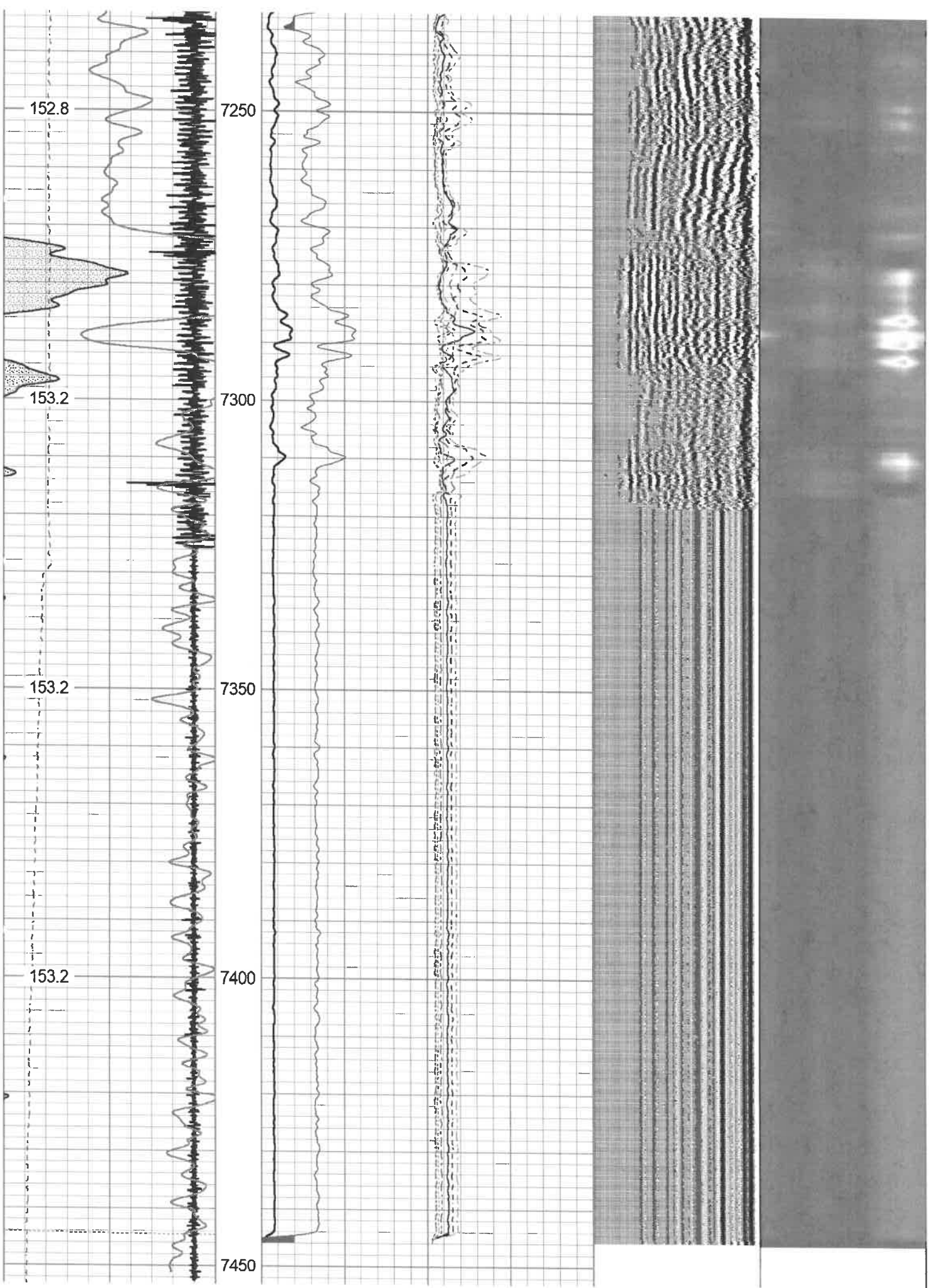


REPEAT LOG

Database File antero\_russell2h\_cbl\_mar\_4\_2021.db  
 Dataset Pathname REPEAT  
 Presentation Format 9rcbl  
 Dataset Creation Thu Mar 04 16:46:54 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	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 (degF)					-5	Sector 5	150					
						-5	Sector 6	150					
						-5	Sector 7	150					
						-5	Sector 8	150					





265	Travel Time (usec)	165	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				

**Log Variables** DatabaseC:\ProgramData\Warrior\Data\antero\_russell2h\_cbl\_mar\_4\_2021.db  
Dataset field/well/run1/MAIN/\_vars\_

**Top - Bottom**

BHTEMP_Src	BOREID	BOTTEMP	CASEOD	CASETHCK	CASEWGHT	MAXAMPL	MINAMPL
TEMP	in 7.875	degF 100	in 5.5	in 0	lb/ft 20	mV 71.9	mV 2.2
MINATTN	PERFS	PPT	SRFTEMP	TDEPTH			
db/ft 0.8	No	usec 261	degF 0	ft 0			

**Variable Description**

BHTEMP_Src : BHTEMP Input Source Selector	MINAMPL : Minimum Amplitude
BOREID : Borehole I.D.	MINATTN : Minimum Attenuation
BOTTEMP : Bottom Hole Temperature	PERFS : Perforation Flag
CASEOD : Casing O.D.	PPT : Predicted Pipe Time
CASETHCK : Casing Thickness	SRFTEMP : Surface Temperature
CASEWGHT : Casing Weight	TDEPTH : Total Depth
MAXAMPL : Maximum Amplitude	

**Calibration Report**

Database File antero\_russell2h\_cbl\_mar\_4\_2021.db  
Dataset Pathname MAIN  
Dataset Creation Thu Mar 04 16:59:59 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: 501.867 ft

Master Calibration, performed 1 Fri Mar 04 13:40:44 2021:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.009	1.068	2.200	71.921	65.813	1.628
CAL	0.009	1.378				
5'	0.009	0.974	2.200	71.921	72.237	1.581
SUM						
S1	0.008	1.094	0.000	100.000	92.126	-0.777
S2	0.009	1.081	0.000	100.000	93.228	-0.818
S3	0.008	1.048	0.000	100.000	96.228	-0.800
S4	0.008	1.049	0.000	100.000	96.115	-0.817
S5	0.008	1.043	0.000	100.000	96.625	-0.810
S6	0.009	1.067	0.000	100.000	94.457	-0.821
S7	0.009	1.065	0.000	100.000	94.629	-0.806
S8	0.009	1.078	0.000	100.000	93.514	-0.818

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.009	1.378	1.000	0.000

Air Zero Calibration, performed Thu Mar 04 06:42:07 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 2H  
 Field SOUTH CANTON  
 County DODDRIDGE  
 State WEST VIRGINIA

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