



# RADIAL CEMENT BOND LOG

## GAMMA RAY

### CCL

Company KERR MCGEE OIL AND GAS ONSHORE  
Well MILLER X31-5JI  
Field WATTENBERG  
County WELD  
State COLORADO

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County WELD State COLORADO

Location: API # : 05-123-22276  
SEC 31 TWP 2N RGE 65W  
Permanent Datum G.L. Elevation 5010  
Log Measured From KB 10  
Drilling Measured From K.B  
Other Services  
Elevation  
K.B. 5020  
D.F. 5019  
G.L. 5010

Date 2-14-2014

Run Number ONE  
Depth Driller 8045  
Depth Logger 5200  
Bottom Logged Interval 5200  
Top Log Interval SURFACE  
Open Hole Size 8.875  
Type Fluid WATER  
Density / Viscosity 1.0  
Max. Recorded Temp. 4028/678  
Estimated Cement Top  
Time Well Ready  
Time Logger on Bottom 4740  
Equipment Number GREELEY, CO  
Location J.J.BULLARD  
Recorded By J. CHANDLER  
Witnessed By

Borehole Record  
Run Number Bit From To Size Weight From To

|                   |      |        |     |        |
|-------------------|------|--------|-----|--------|
| Casing Record     | Size | Wgt/Ft | Top | Bottom |
| Surface String    | 8.63 | 24     | 0   | 1034   |
| Prot. String      |      |        |     |        |
| Production String | 4.5  | 11.6   | 0   | 8045   |
| 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

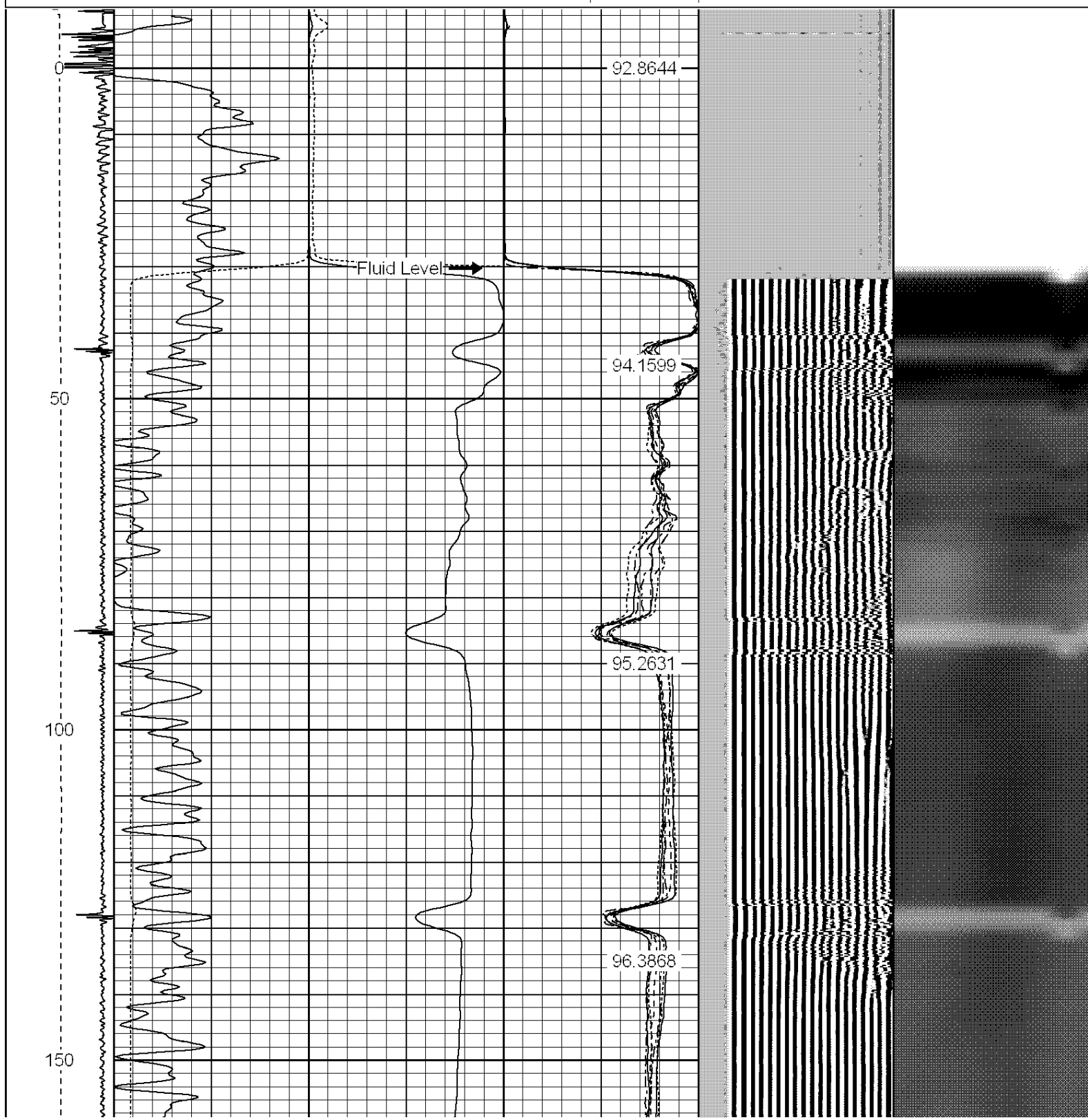
LOGGED TO VERIFY CEMENT BOND

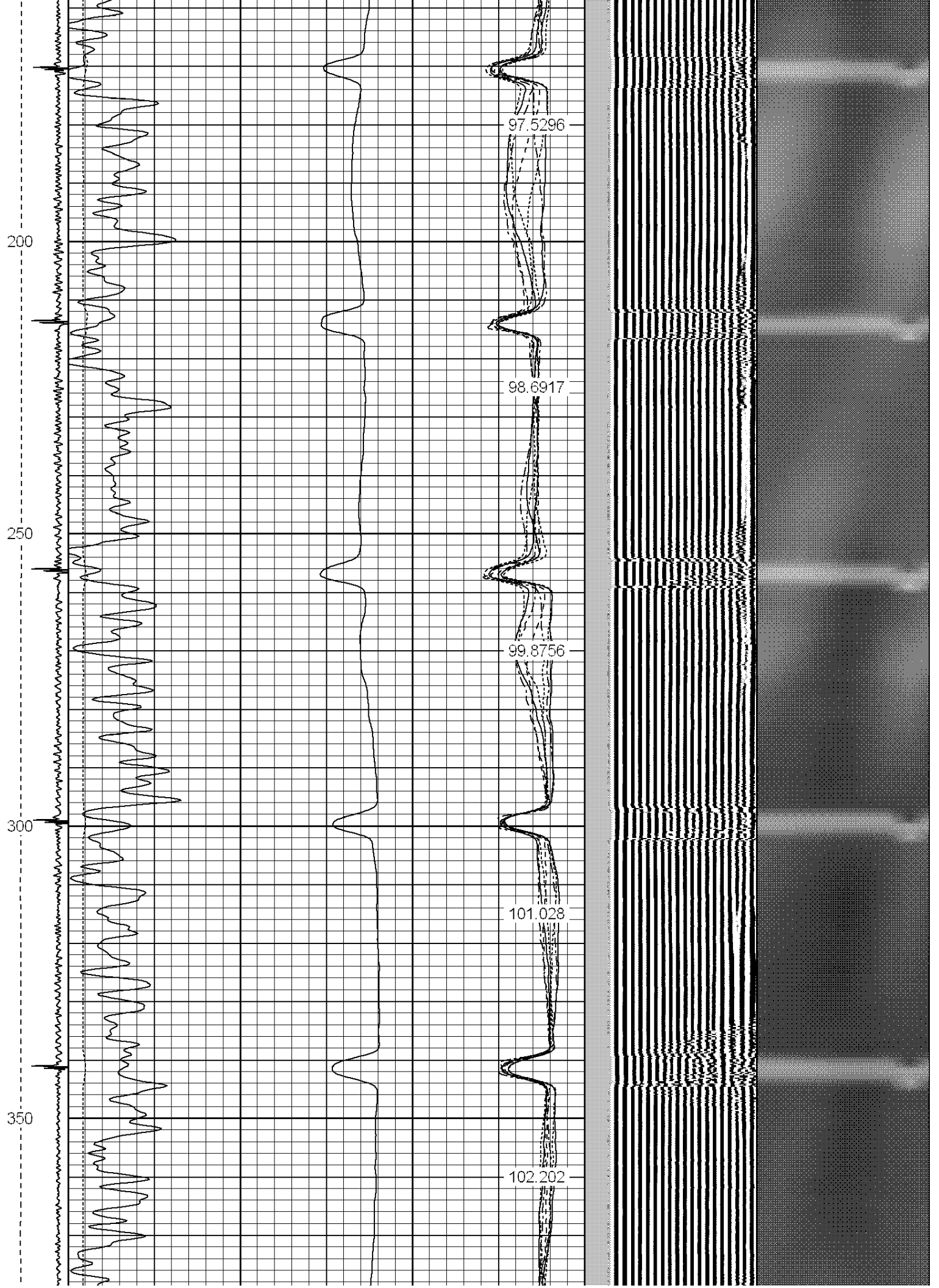
THANK YOU FOR USING WARRIOR ENERGY SERVICES!!!

| Sensor | Offset (ft) | Schematic | Description | Len (ft) | OD (in) | Wt (lb) |
|--------|-------------|-----------|-------------|----------|---------|---------|
|        |             |           |             |          |         |         |

[illegible]

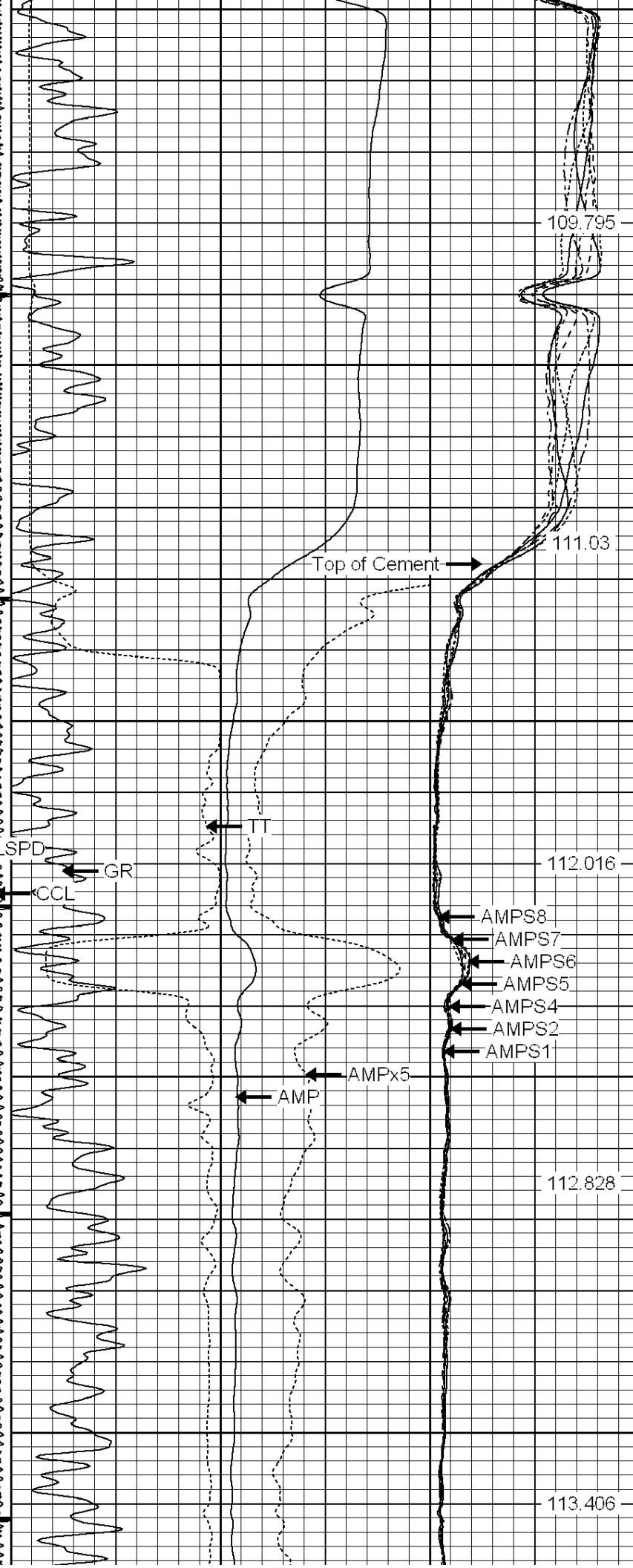
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|------------------|-----|---|-----------|-----------|-----|---|------------|-----|----|-------|-------------------|-----|-----|------|---|------------|---|
| -9               | CCL | 1 | 200       | TT (usec) | 800 | 0 | AMP (mV)   | 100 | 0  | AMPS1 | 100               | 200 | VDL | 1200 | 1 | Cement Map | 8 |
| LSPD<br>(ft/min) | 30  |   | GR (GAPI) |           | 130 | 0 | AMPx5 (mV) |     | 20 | 0     | AMPS2             | 100 |     |      | 1 | 100        |   |
|                  | 130 |   | GR (GAPI) |           | 230 |   |            |     |    | 0     | AMPS4             | 100 |     |      |   |            |   |
|                  |     |   |           |           |     |   |            |     |    | 0     | AMPS5             | 100 |     |      |   |            |   |
|                  |     |   |           |           |     |   |            |     |    | 0     | AMPS6             | 100 |     |      |   |            |   |
|                  |     |   |           |           |     |   |            |     |    | 0     | AMPS7             | 100 |     |      |   |            |   |
| 0                | 250 |   |           |           |     |   |            |     |    | 0     | AMPS8             | 100 |     |      |   |            |   |
|                  |     |   |           |           |     |   |            |     |    |       | IntTemp<br>(degF) |     |     |      |   |            |   |







600  
650  
700  
750  
800





850

114.169

900

114.937

950

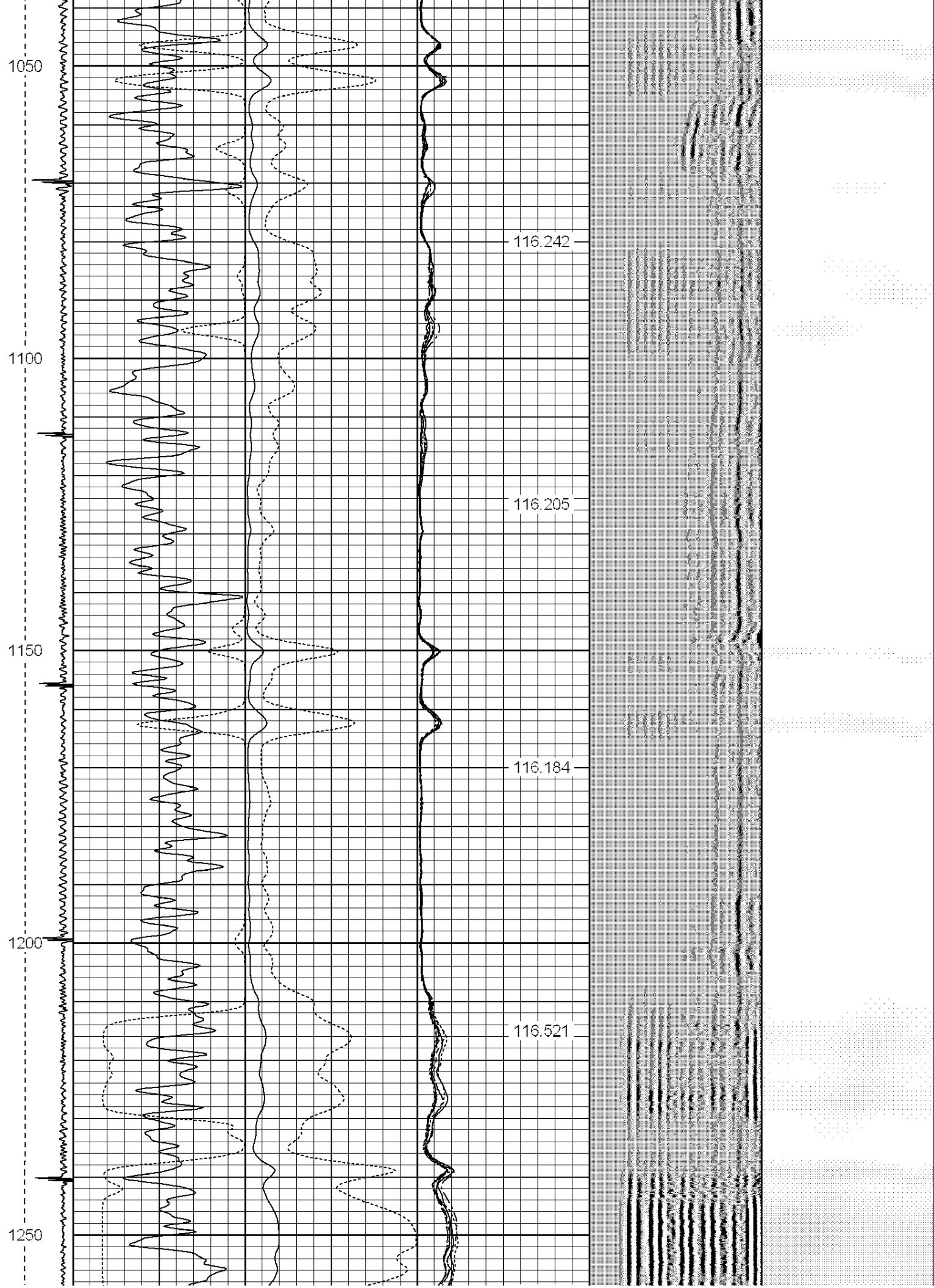
115.781

1000

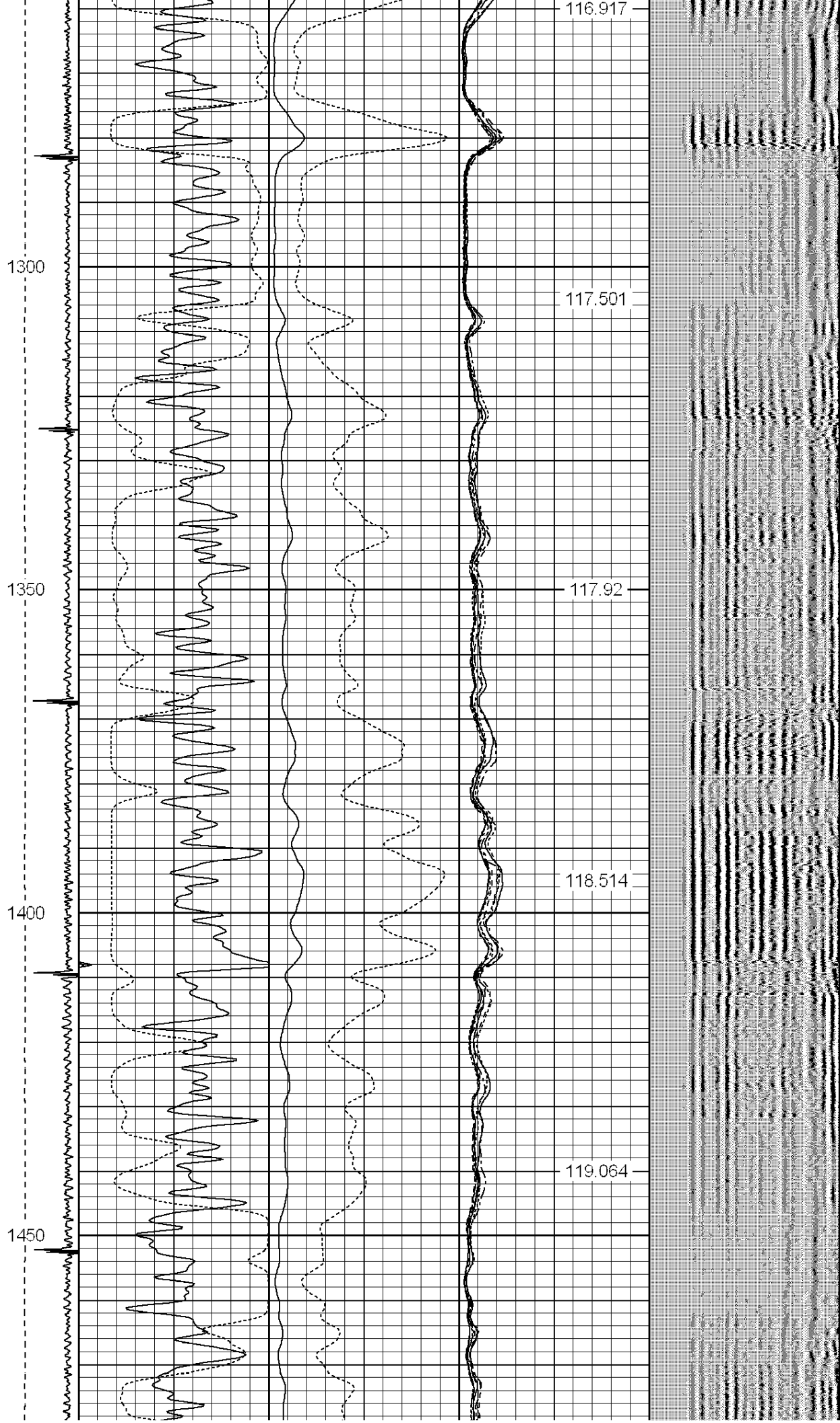
116.539

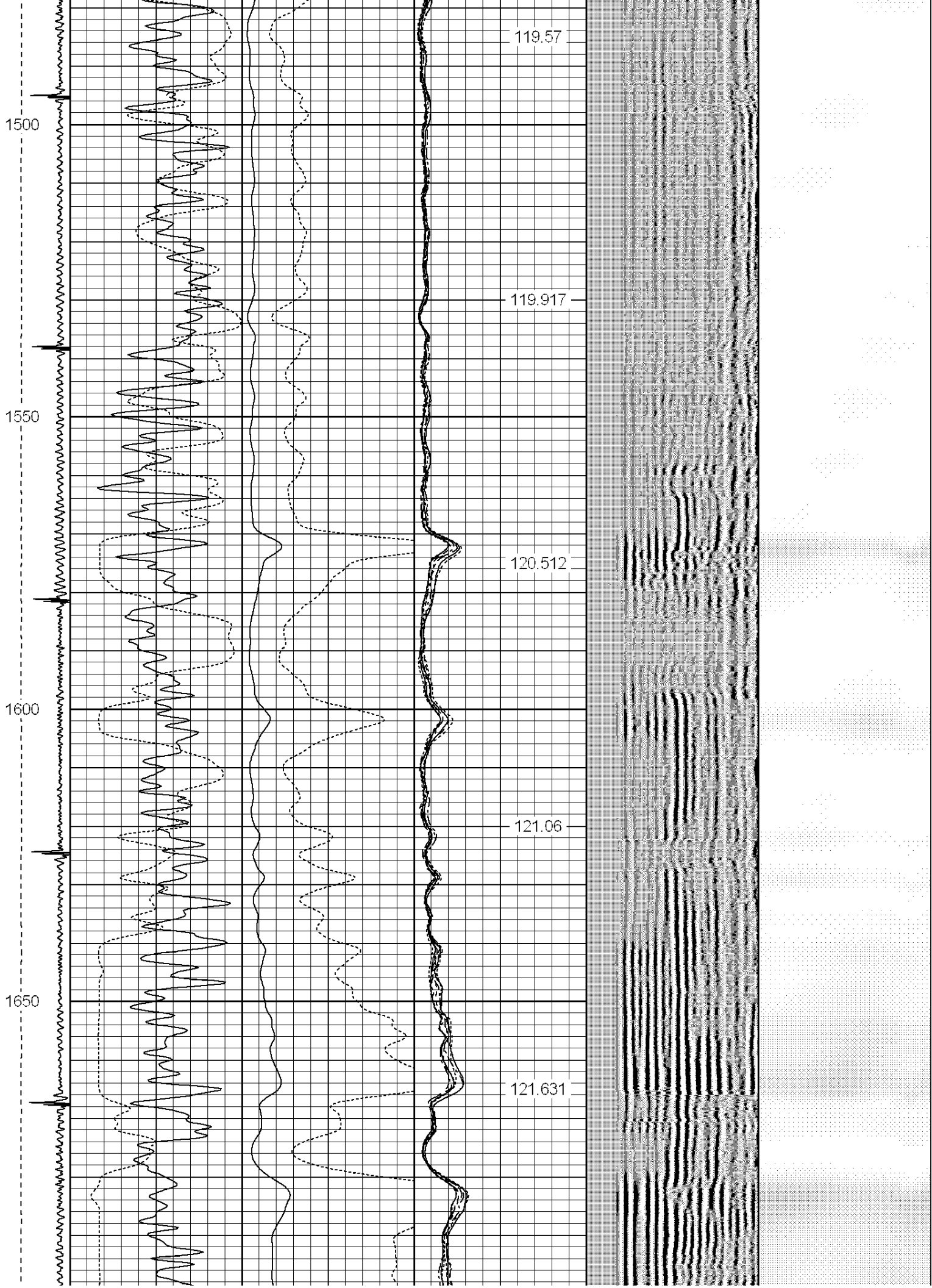
116.658











1700  
1750  
1800  
1850  
1900

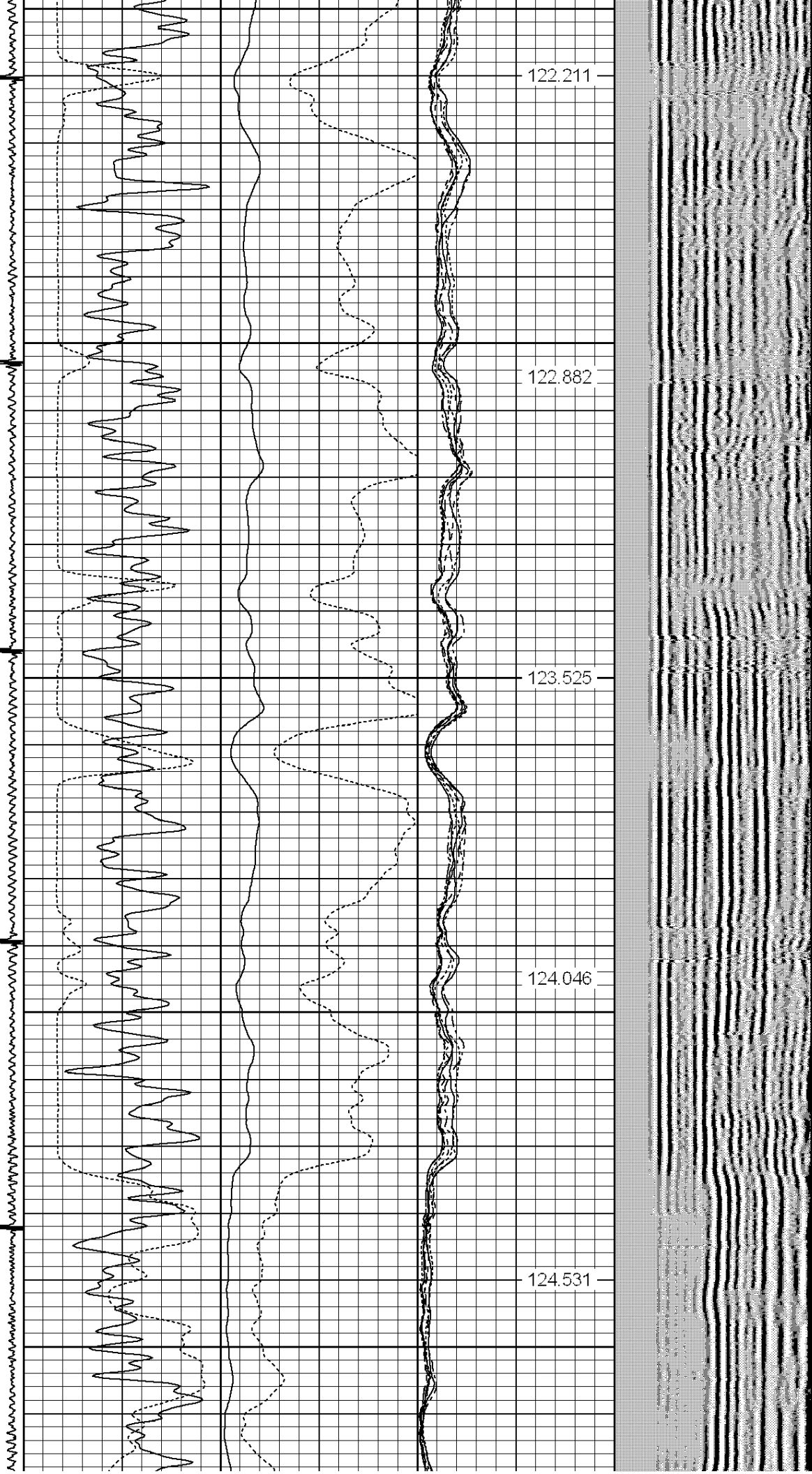
122.211

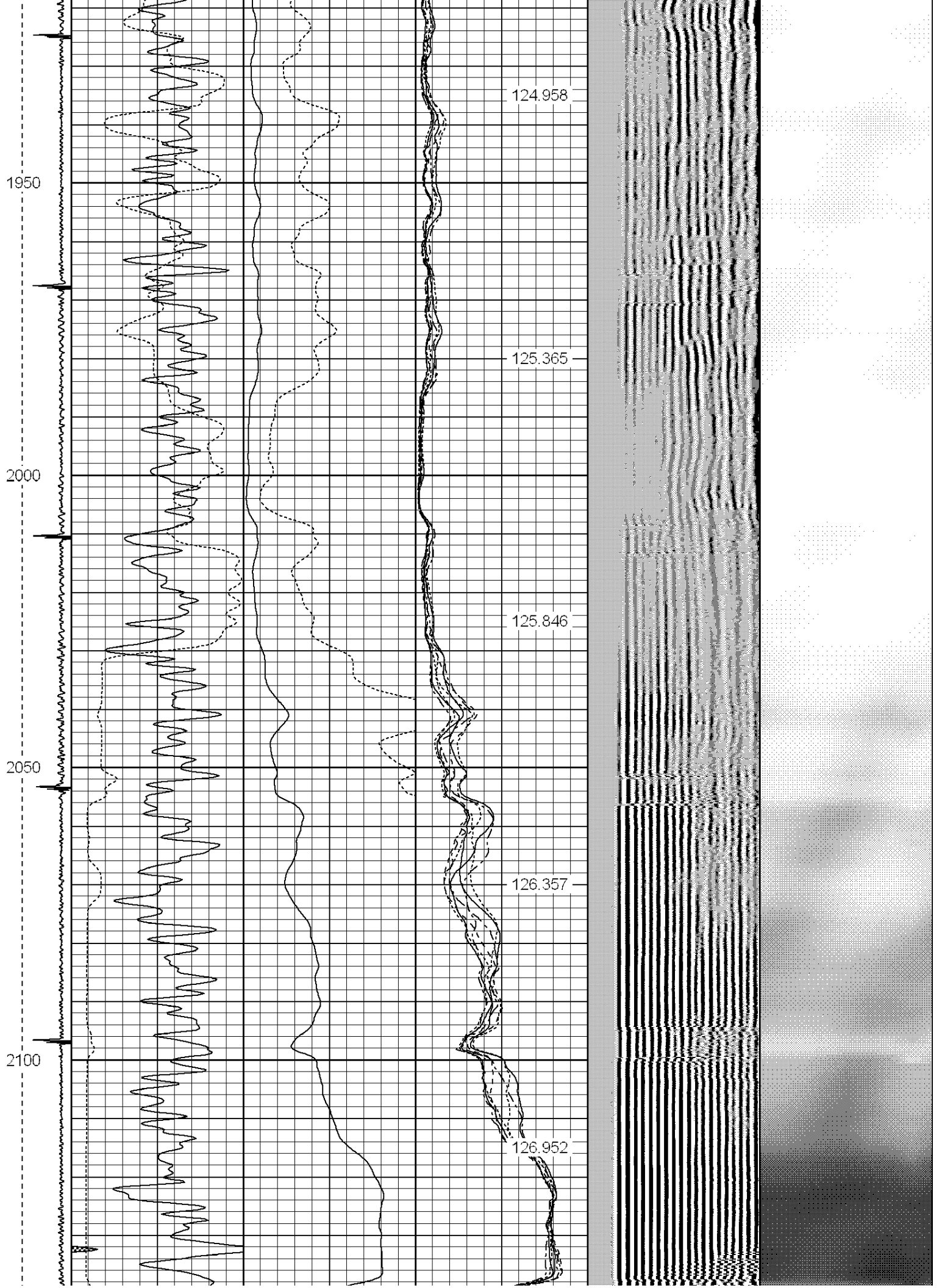
122.882

123.525

124.046

124.531





2150

2200

2250

2300

2350

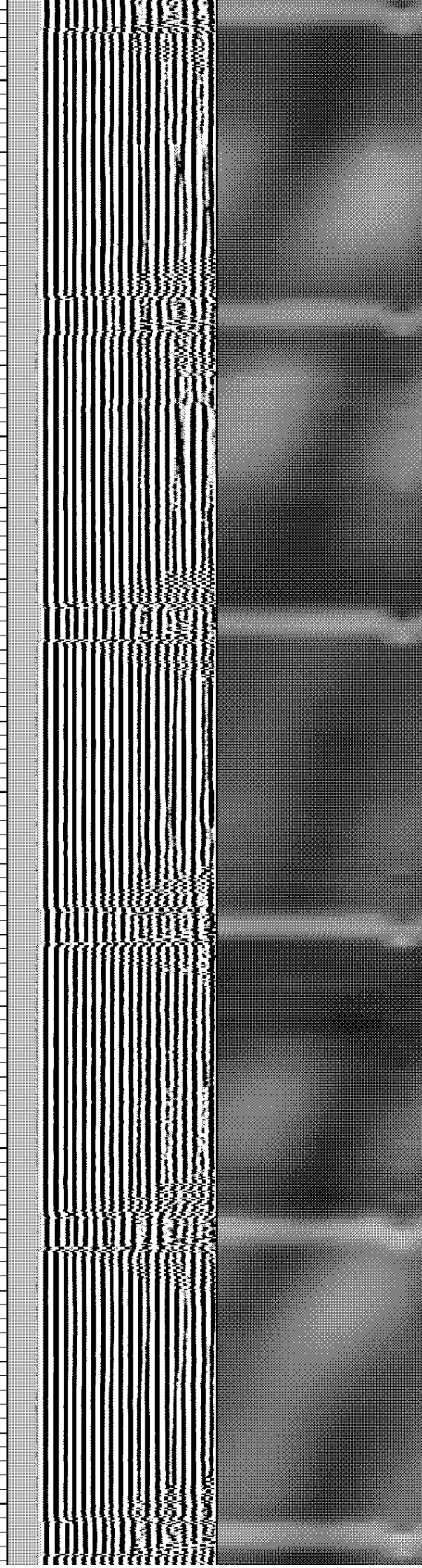
127.762

128.513

129.383

130.232

131.012





2400

2450

2500

2550

131.879

132.683

133.403

134.187

134.966





2600

2650

2700

2750

135.649

136.37

137.092

137.852

138.514



2800

2850

2900

2950

3000

139.115

139.831

140.428

141.072

141.631

3050

3100

3150

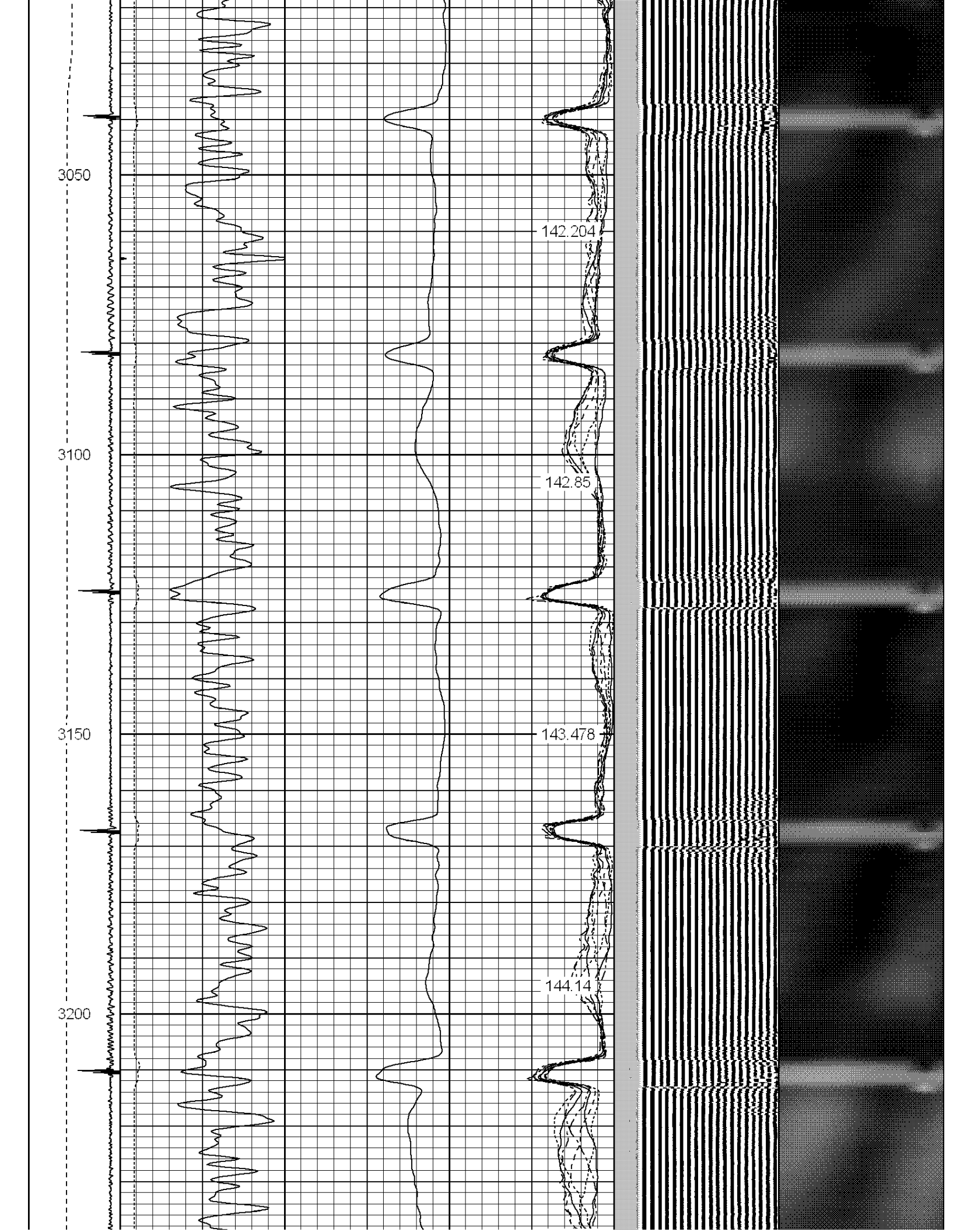
3200

142.204

142.85

143.478

144.14



3250

3300

3350

3400

3450

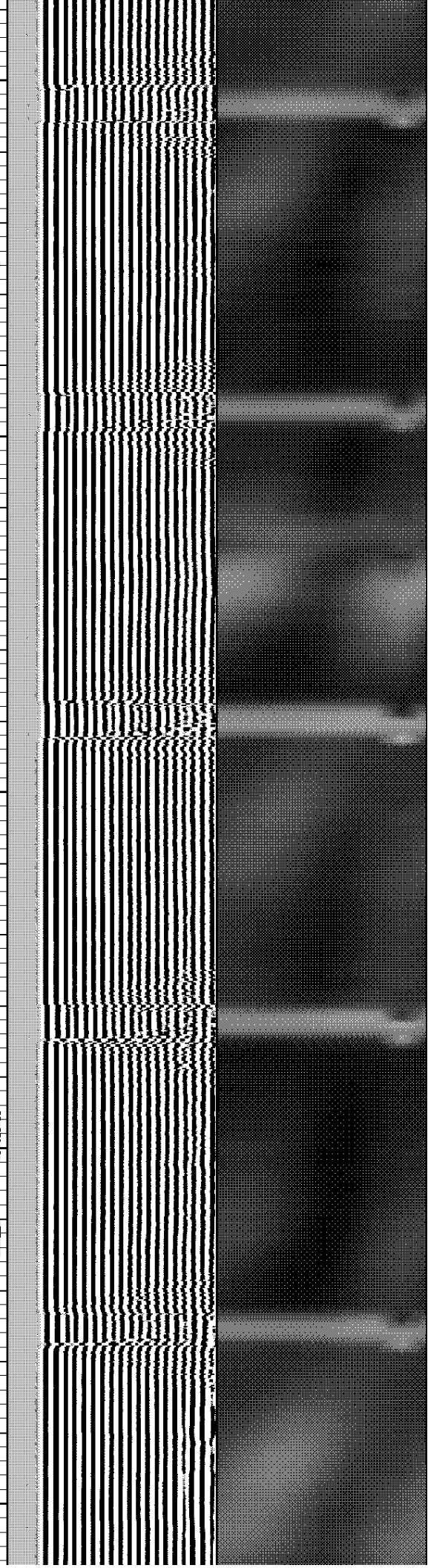
144.769

145.341

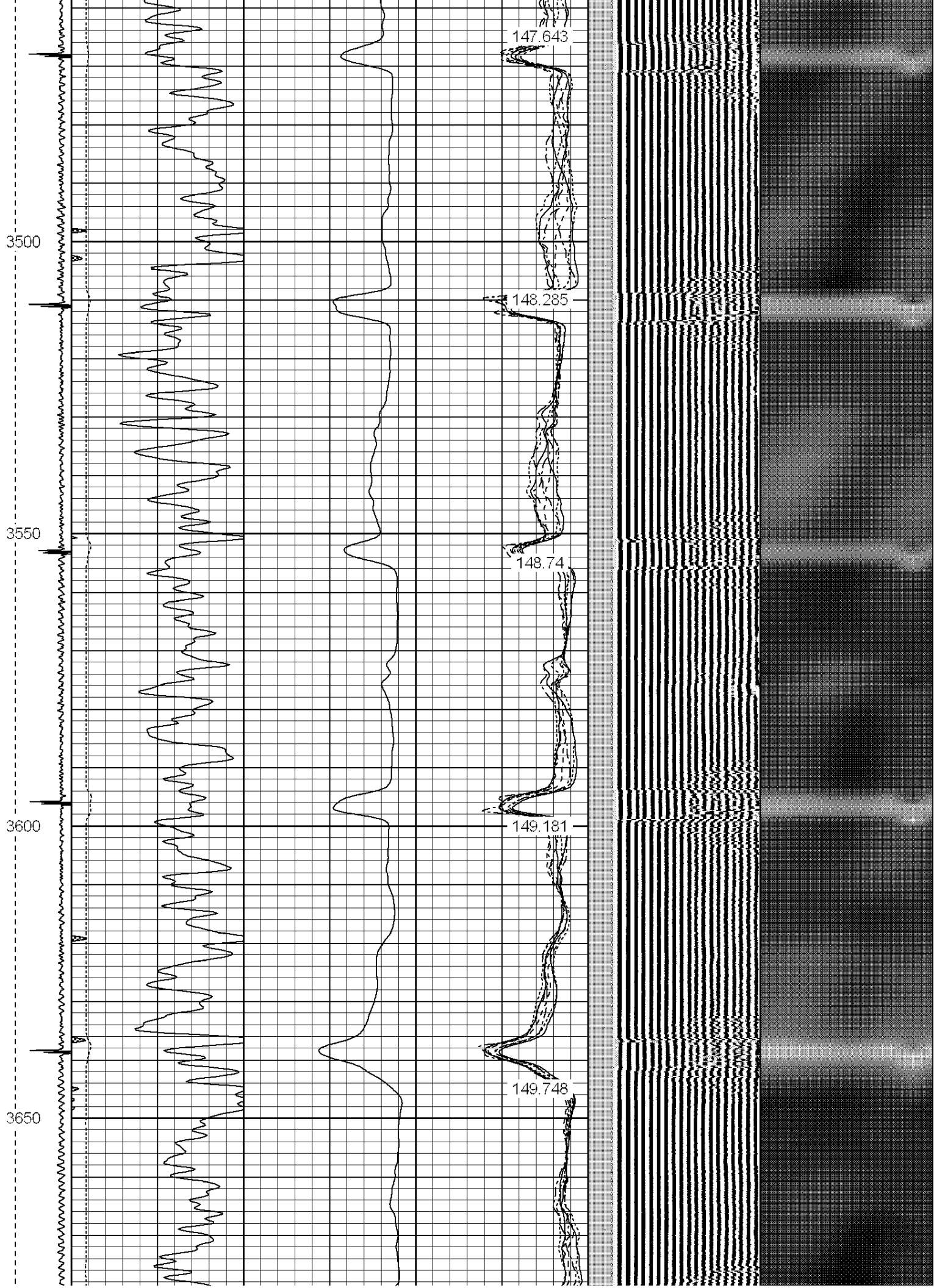
145.99

146.579

147.077







3700

3750

3800

3850

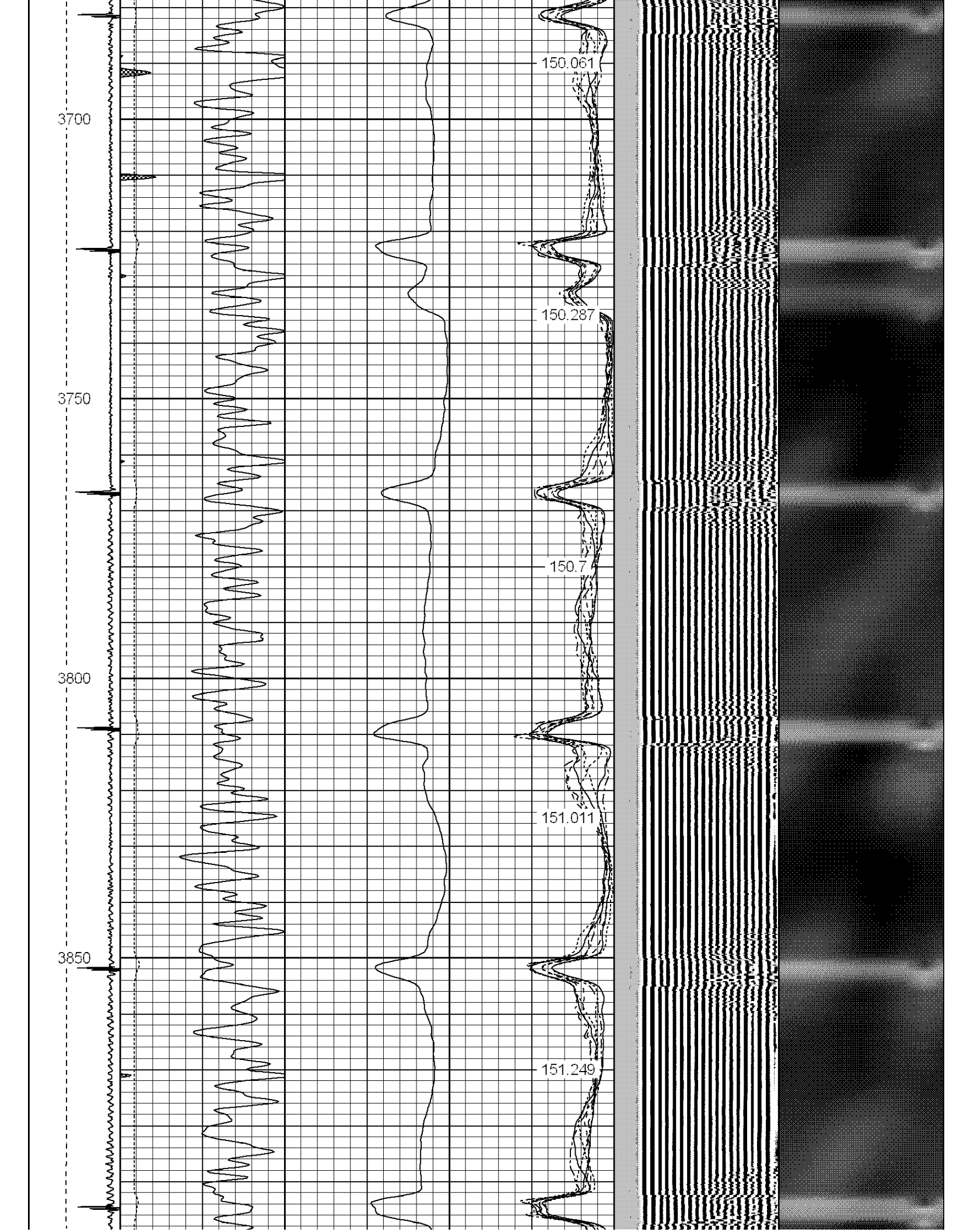
150.061

150.287

150.7

151.011

151.249





3900

3950

4000

4050

4100

151.444

151.674

151.817

Top of Cement

AMPS7

AMPS6

AMPS5

AMPS4

AMPS2

AMPS1

151.438

AMPx5

AMP

151.507

4150

4200

4250

4300

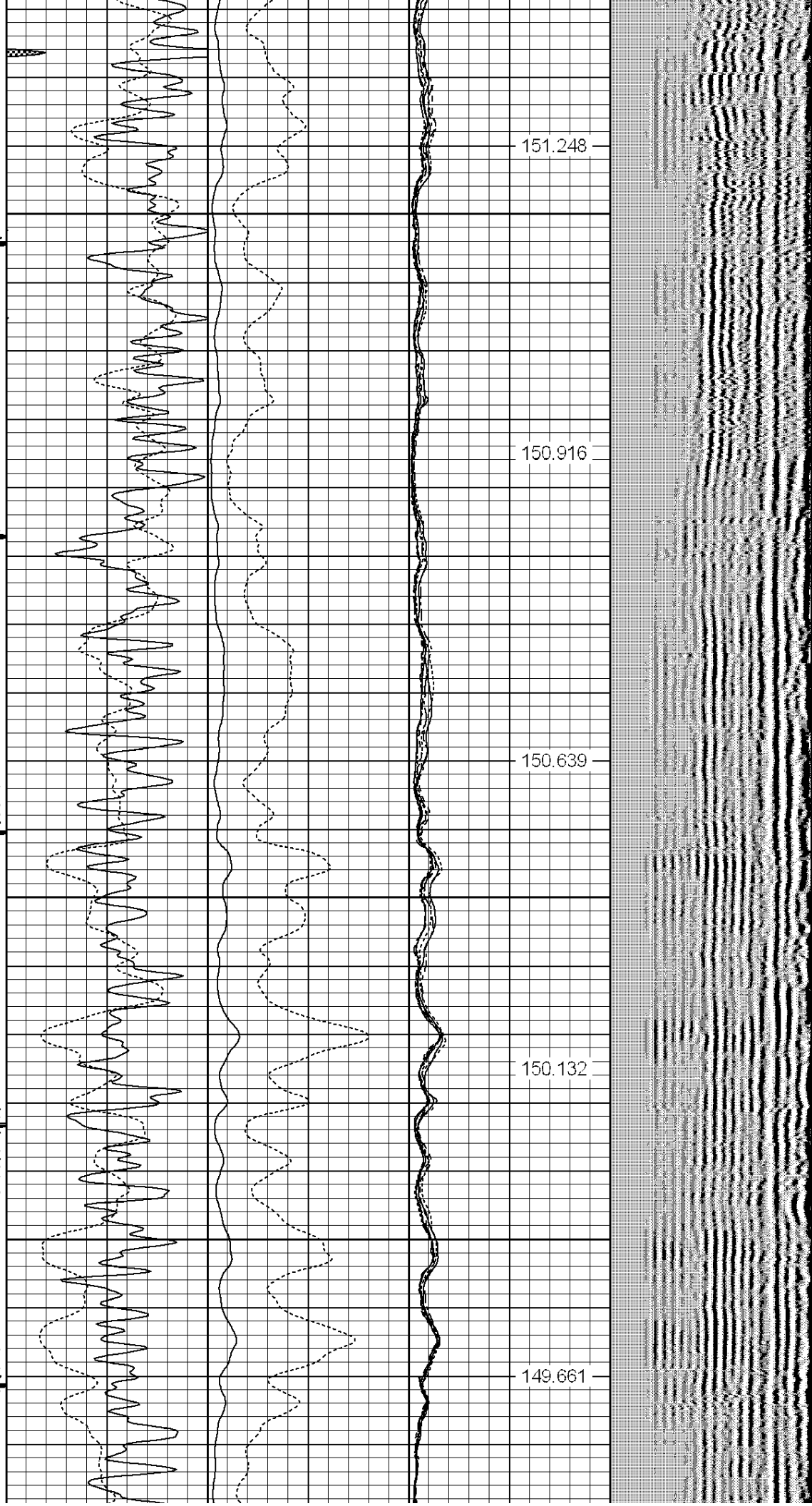
151.248

150.916

150.639

150.132

149.661



4350

4400

4450

4500

4550

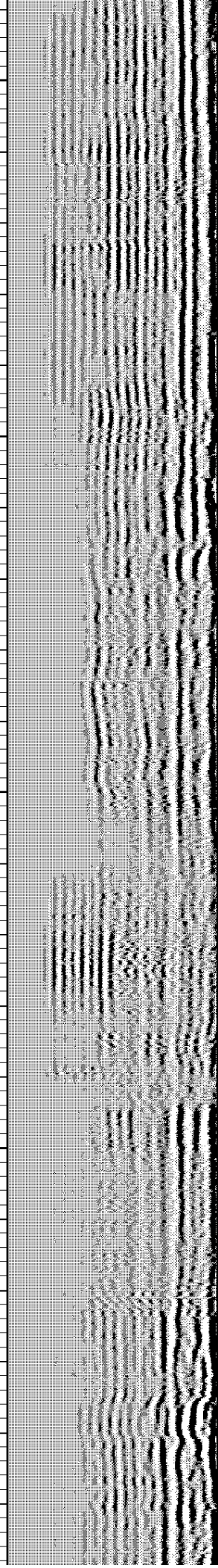
149.172

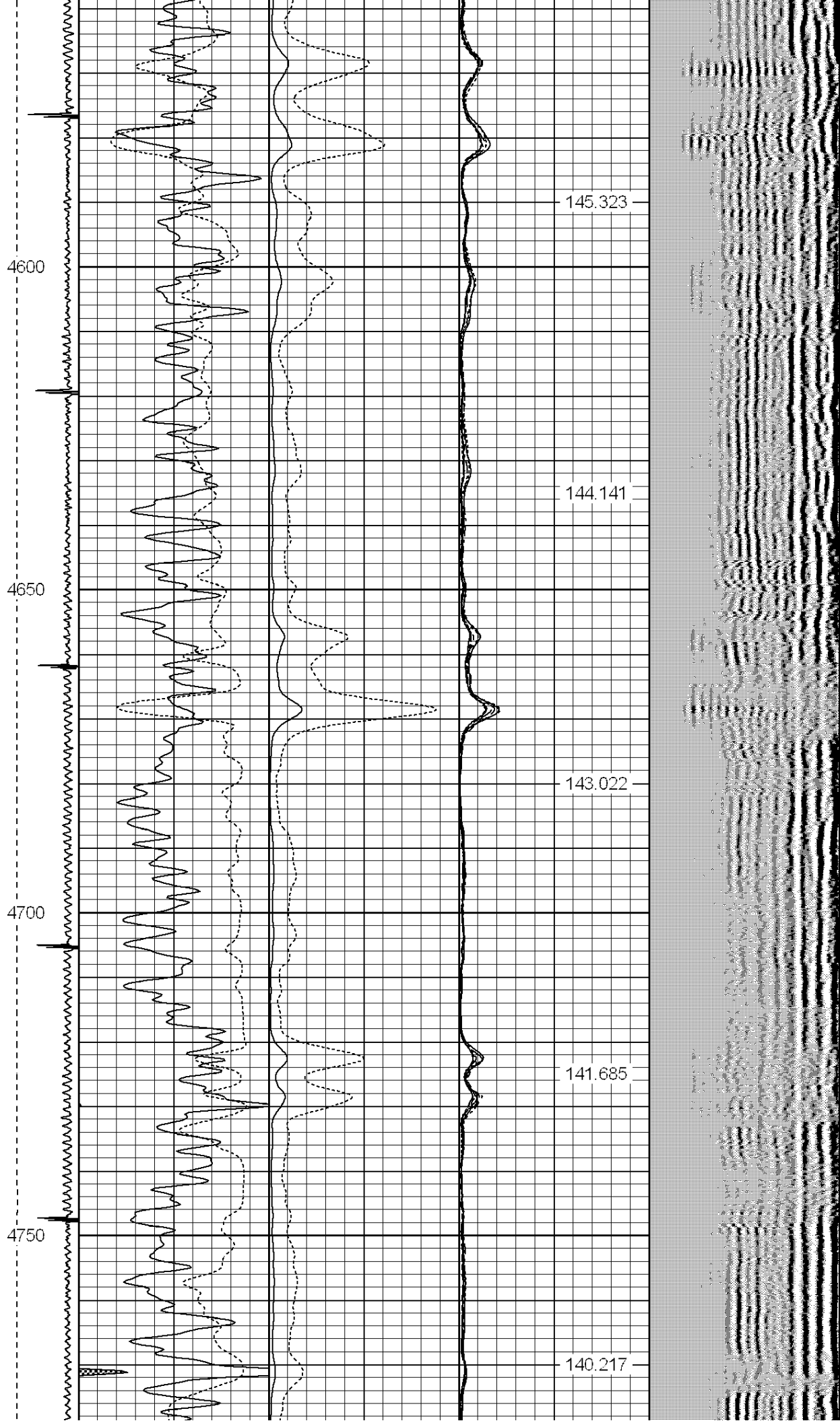
148.577

147.885

147.069

146.24





4800

4850

4900

4950

138.652

136.972

135.124

133.097

LO PD

CCL

GR

AMPS8

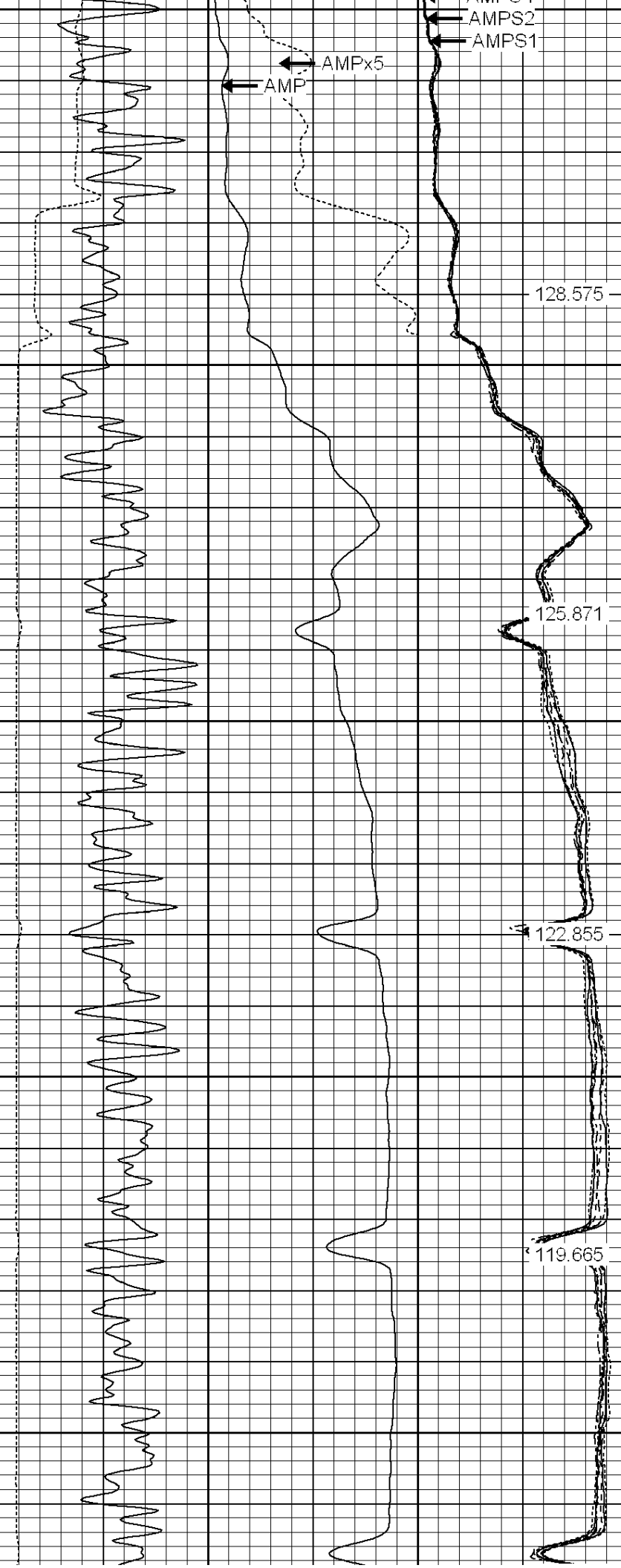
AMPS7

AMPS6

AMPS5 130.972

AMPS4

5000  
5050  
5100  
5150  
5200

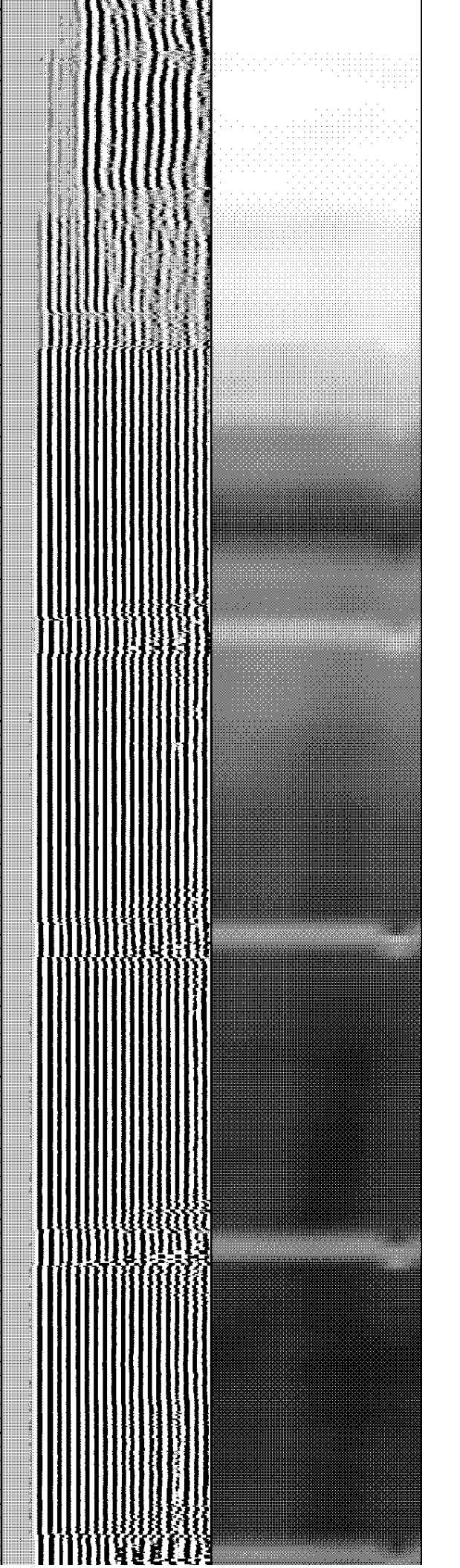


128.575

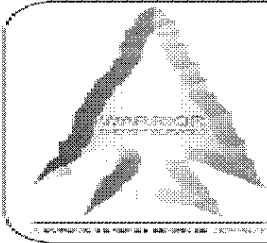
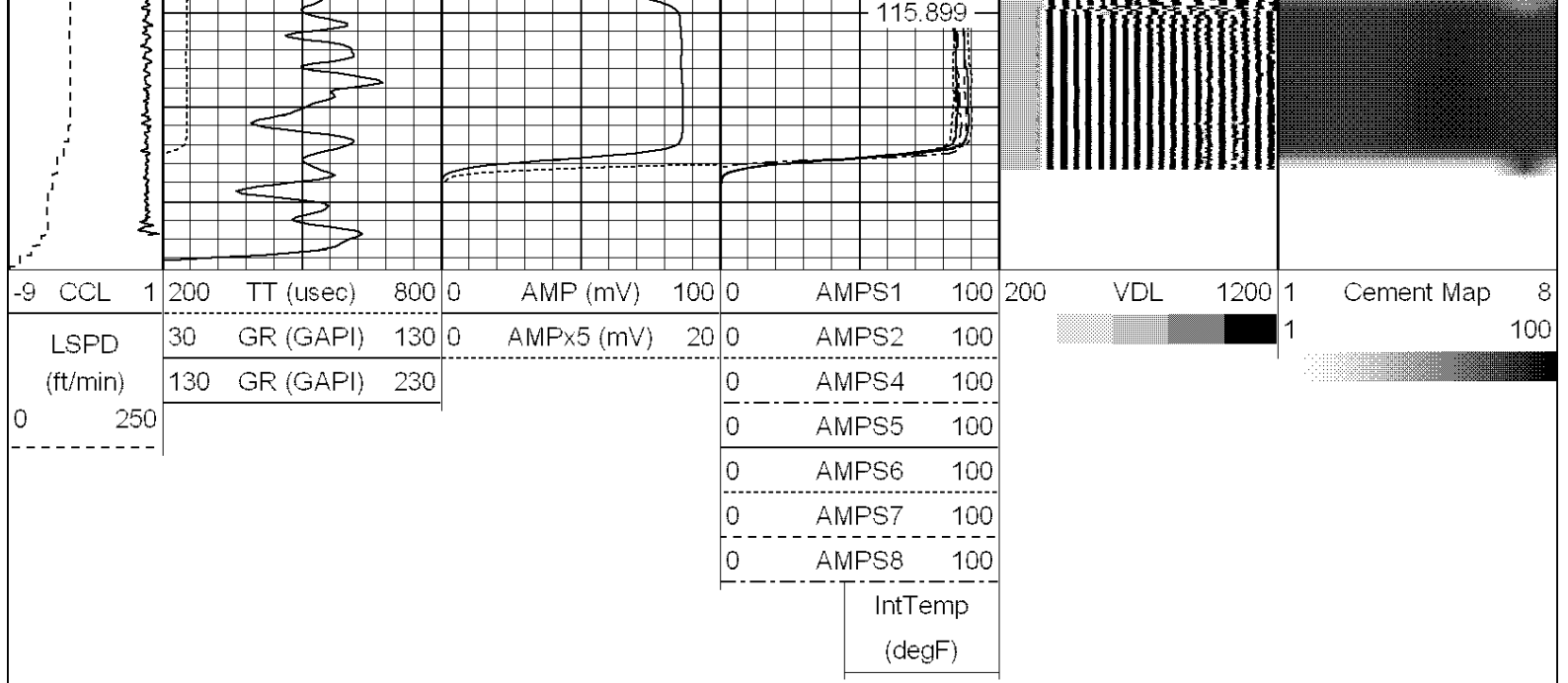
125.871

122.855

119.665







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