



**COMPLETION  
& PRODUCTION  
SERVICES CO.**

**DUAL  
INDUCTION  
LOG**

|                              |                                              |           |                           |
|------------------------------|----------------------------------------------|-----------|---------------------------|
| Company                      | RITCHIE EXPLORATION, INC.                    |           |                           |
| Well                         | #1 GALEN DURLER                              |           |                           |
| Field                        | WILDCAT                                      |           |                           |
| County                       | FORD                                         | State     | KANSAS                    |
| Location:                    | API # : 15-057-20906<br>335' FSL & 1680' FEL |           | Other Services<br>CDL/CNL |
| SEC 14 TWP 26S RGE 23W       |                                              |           | Elevation                 |
| Permanent Datum              | GROUND LEVEL                                 | Elevation | 2426                      |
| Log Measured From            | KELLY BUSHING 10' A.G.L.                     |           | K.B. 2436                 |
| Drilling Measured From       | KELLY BUSHING                                |           | D.F.<br>G.L. 2426         |
| Date                         | 8-12-13                                      |           |                           |
| Run Number                   | ONE                                          |           |                           |
| Depth Driller                | 5120                                         |           |                           |
| Depth Logger                 | 5118                                         |           |                           |
| Bottom Logged Interval       | 5116                                         |           |                           |
| Top Log Interval             | 00                                           |           |                           |
| Casing Driller               | 364                                          |           |                           |
| Casing Logger                | 364                                          |           |                           |
| Bit Size                     | 7.875                                        |           |                           |
| Type Fluid in Hole           | CHEMICAL MUD                                 |           |                           |
| Density / Viscosity          | 9.6 / 49                                     |           |                           |
| pH / Fluid Loss              | 9.0 / 11.6                                   |           |                           |
| Source of Sample             | FLOWLINE                                     |           |                           |
| Rim @ Meas. Temp             | 0.65 @ 92F                                   |           |                           |
| Rmf @ Meas. Temp             | 0.49 @ 92F                                   |           |                           |
| Rmc @ Meas. Temp             | 0.78 @ 92F                                   |           |                           |
| Source of Rmf / Rmc          | MEASURED                                     |           |                           |
| Rim @ BHT                    | .420 @ 143F                                  |           |                           |
| Time Circulation Stopped     | 3 HOURS                                      |           |                           |
| Time Logger on Bottom        | 2:15 A.M.                                    |           |                           |
| Maximum Recorded Temperature | 143F                                         |           |                           |
| Equipment Number             | 860                                          |           |                           |
| Location                     | HAYS, KS.                                    |           |                           |
| Recorded By                  | RUPP                                         |           |                           |
| Witnessed By                 | MIKE ENGELBRECHT                             |           |                           |

<<< 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

NABORS COMPLETION & PRODUCTION SERVICES  
785-628-6395  
THANK YOU FOR YOUR BUSINESS  
DIRECTIONS: WRIGHT ELEVATOR & CO. RD. BLACKTOP, 5E, N INTO.



**COMPLETION  
& PRODUCTION**

**MAIN SECTION**

Database File: 010201ddn.db  
 Dataset Pathname: pass5.1A  
 Presentation Format: \_dil2  
 Dataset Creation: Mon Aug 12 04:31:37 2013  
 Charted by: Depth in Feet scaled 1:600

0 Gamma Ray (GAPI) 150

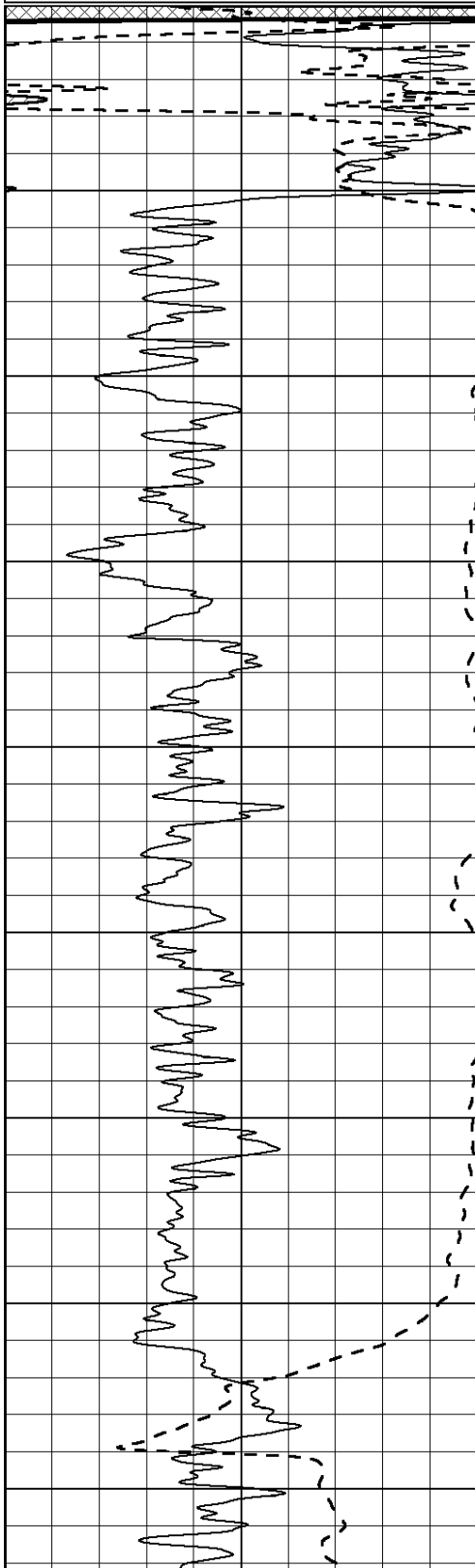
0 RLL3 (Ohm-m) 50

0 Deep Induction (Ohm-m) 50

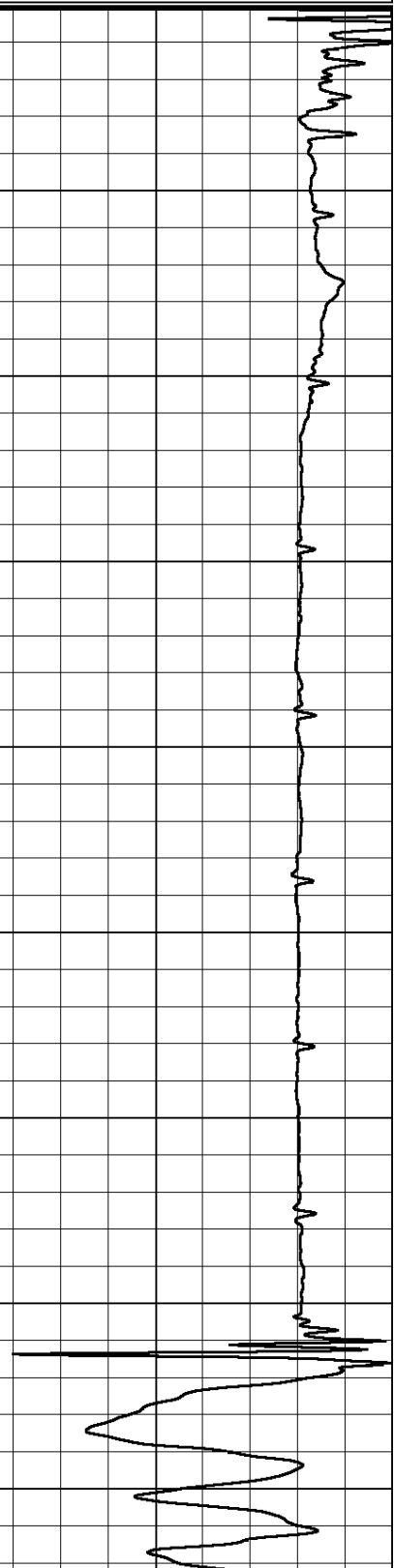
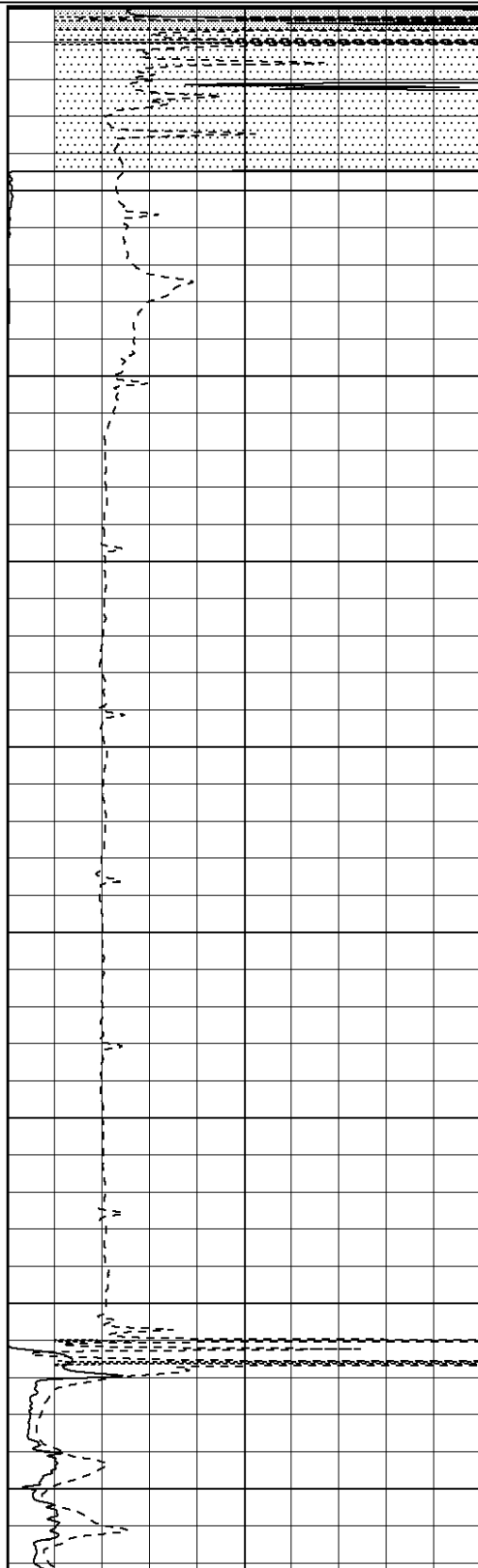
1000 CILD (mmho/m) 0

50 RILD X10 (Ohm-m) 500

50 RLL3 X10 (Ohm-m) 500



0  
50  
100  
150  
200  
250  
300  
350  
400



450

500

550

600

650

700

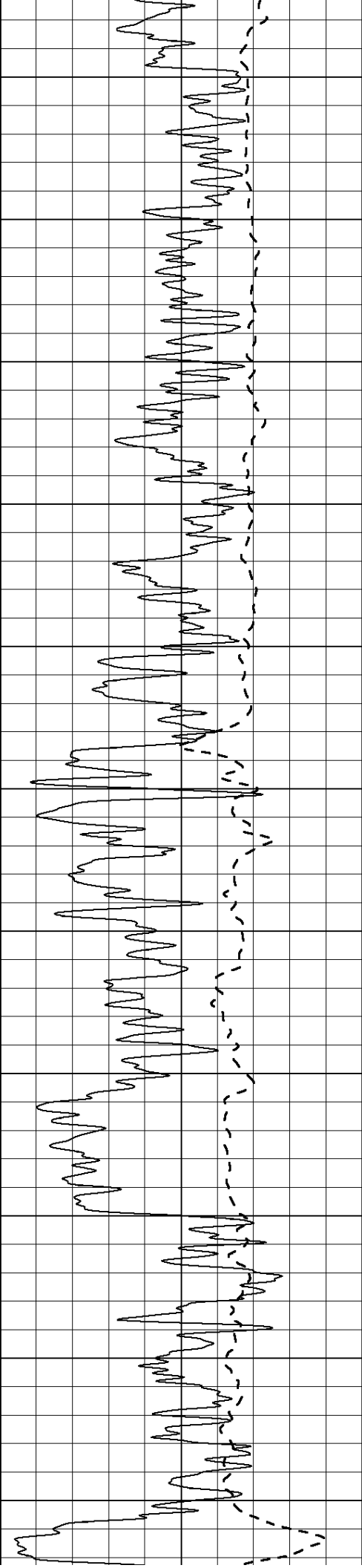
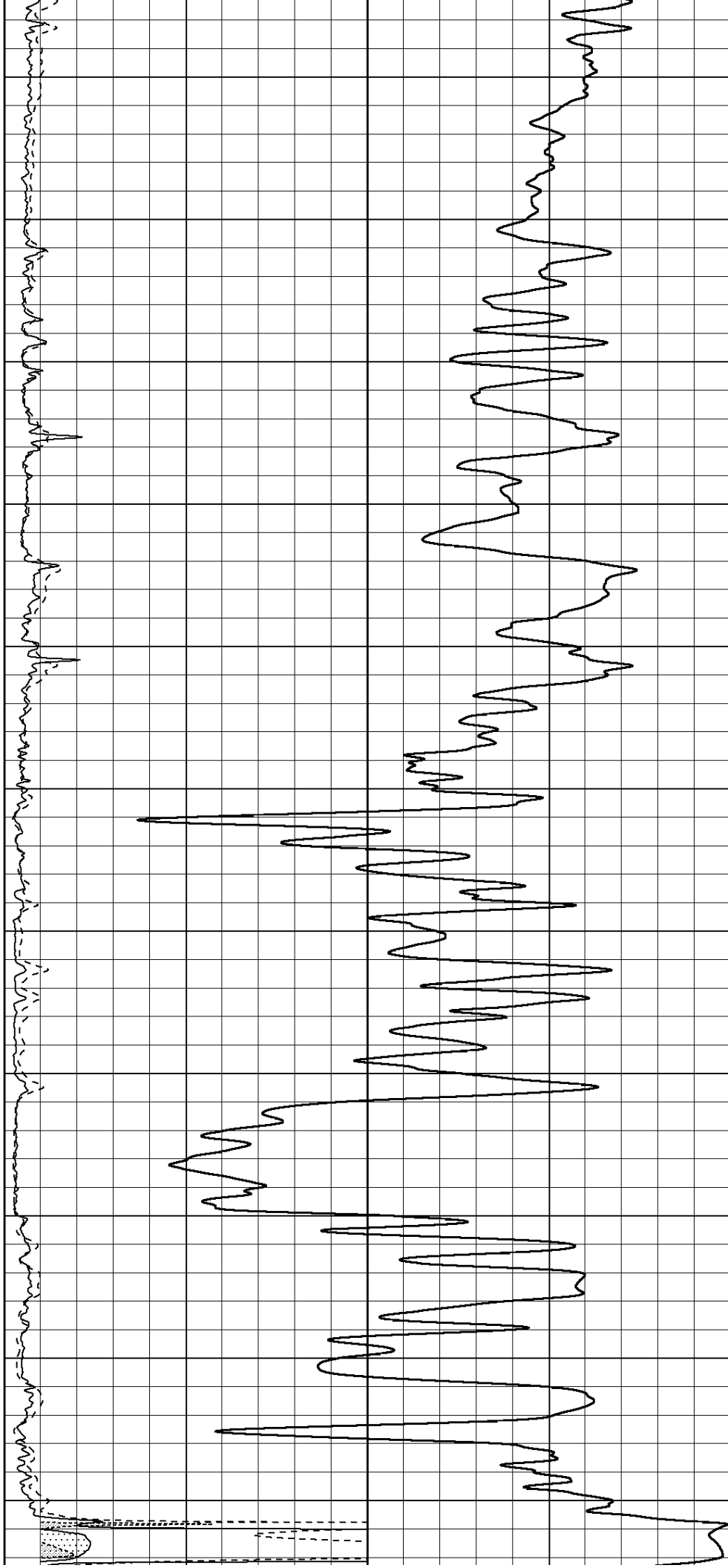
750

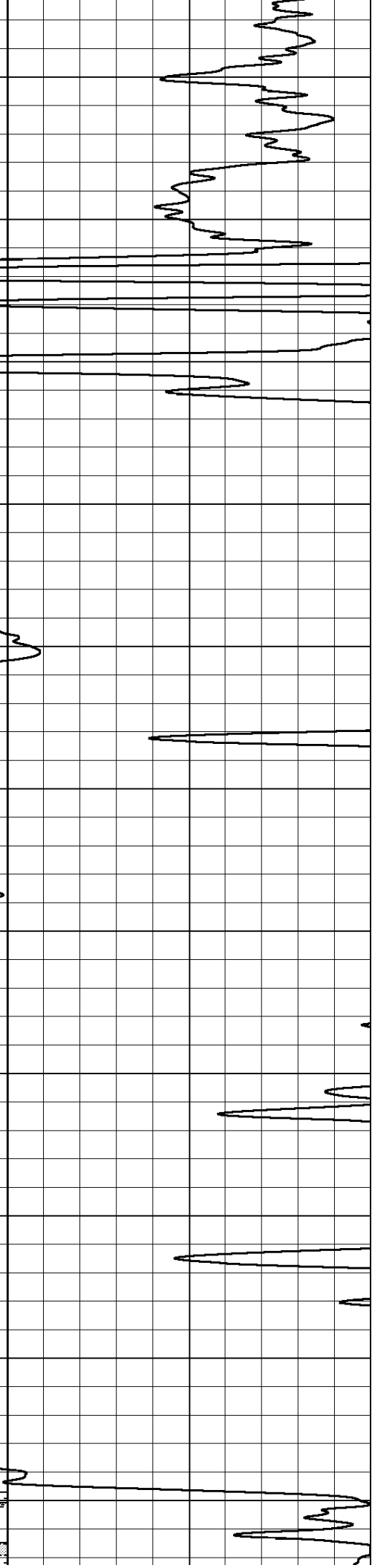
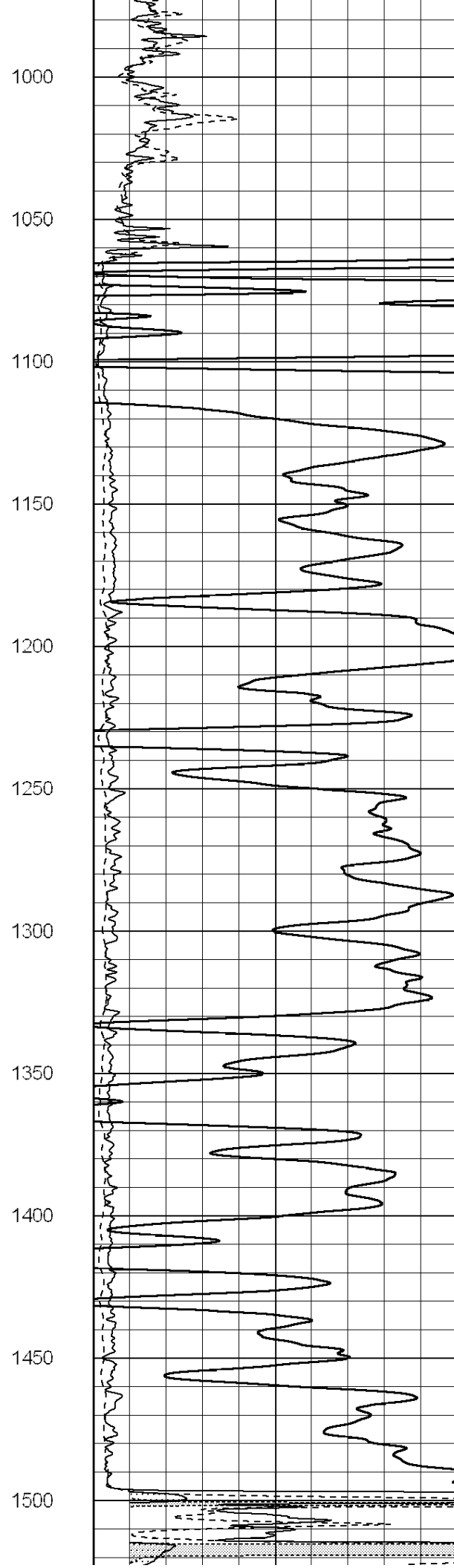
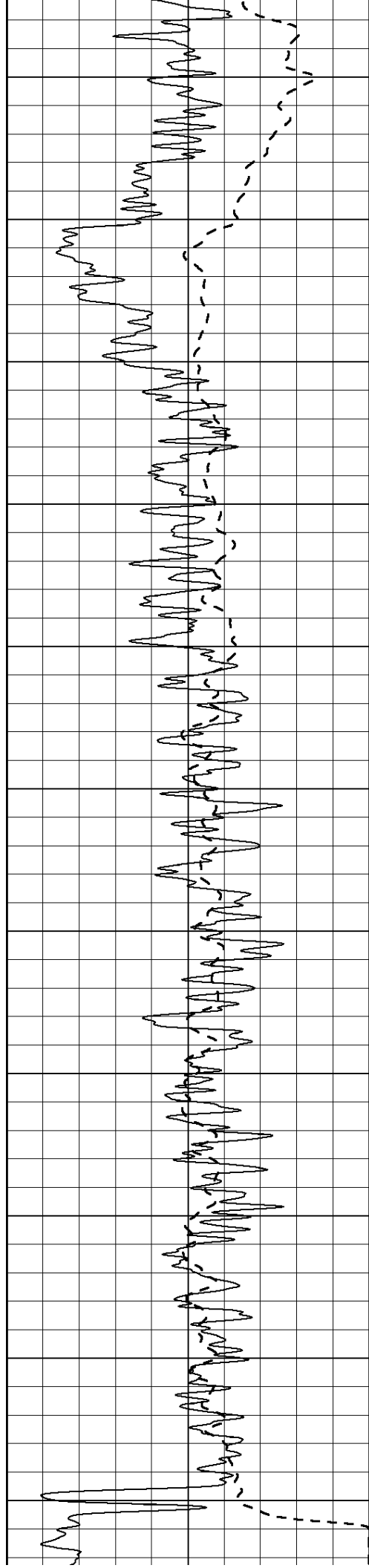
800

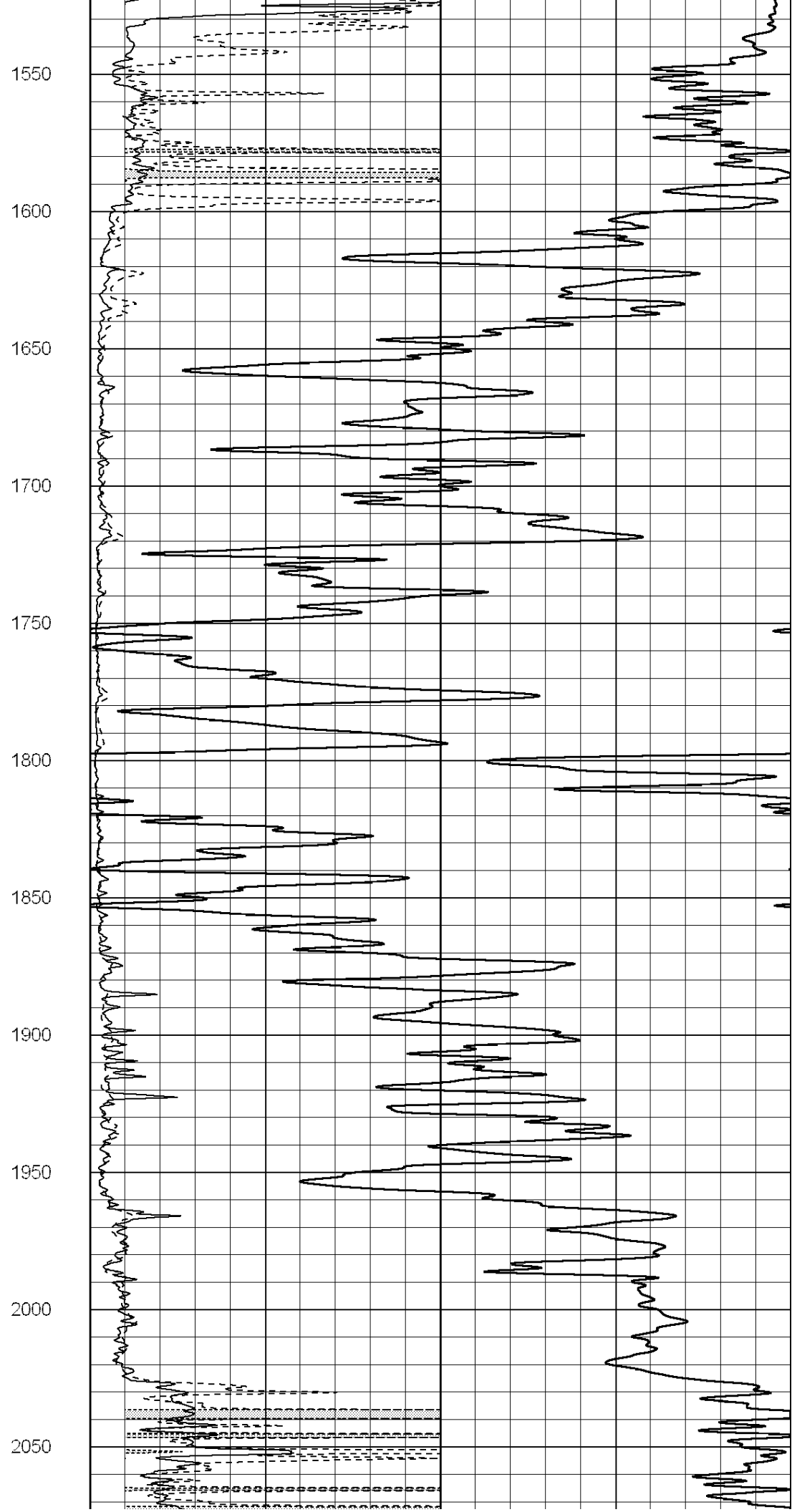
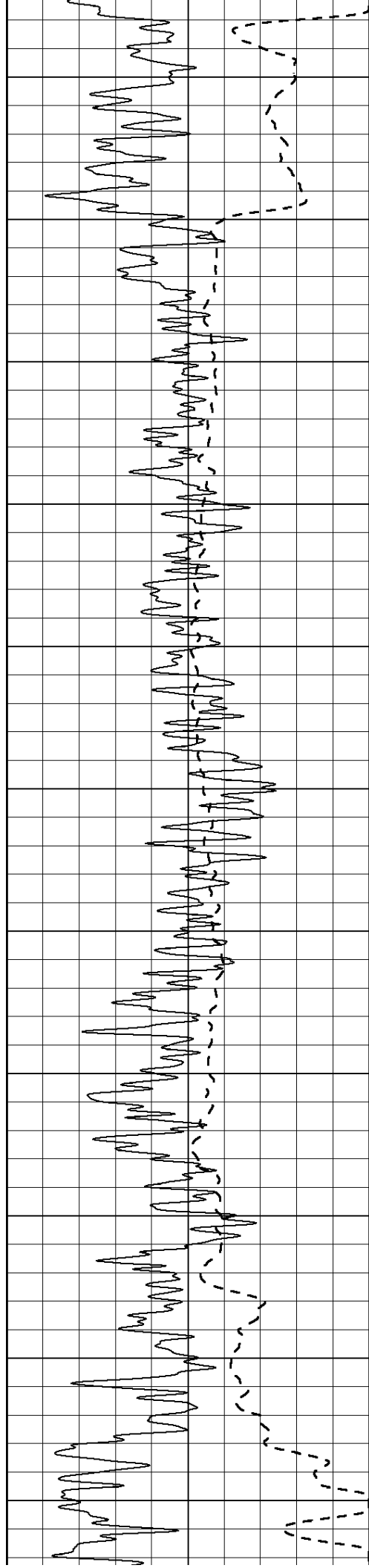
850

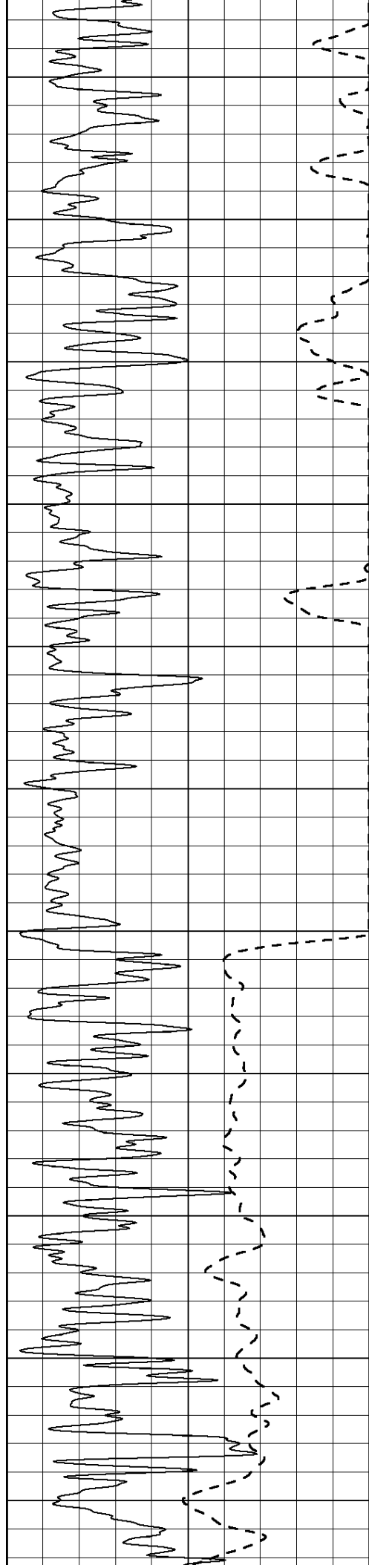
900

950









2100

2150

2200

2250

2300

2350

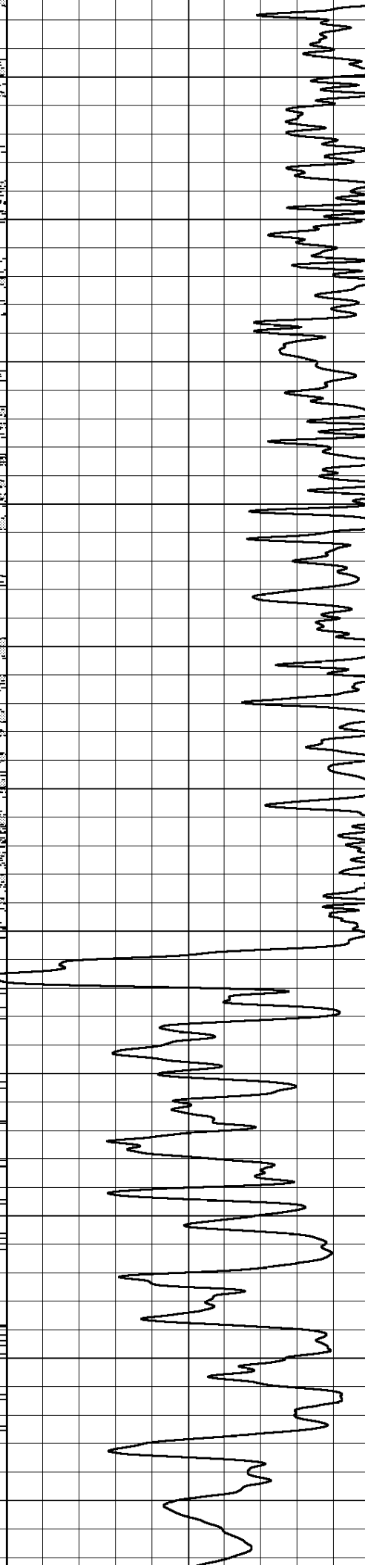
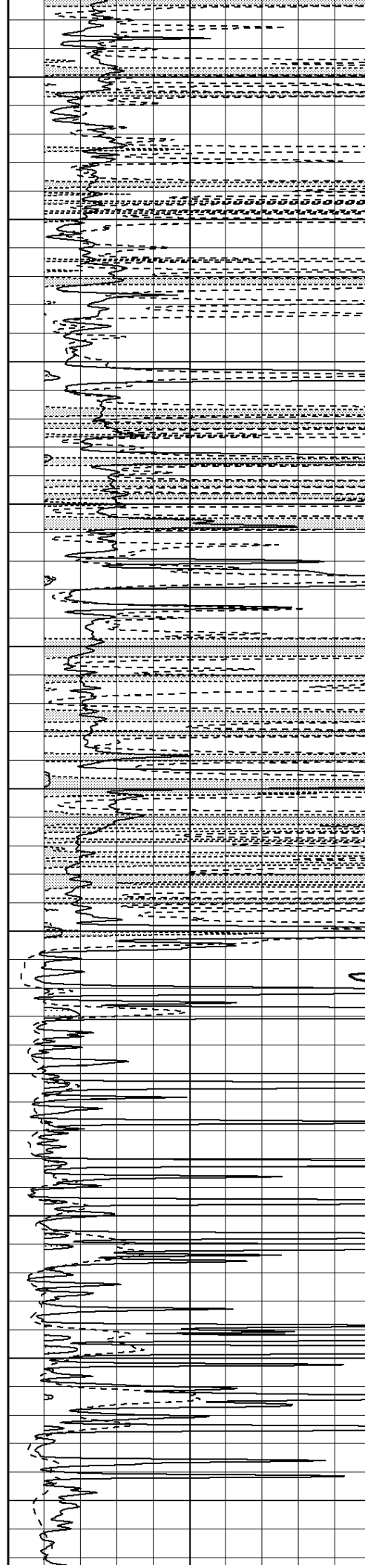
2400

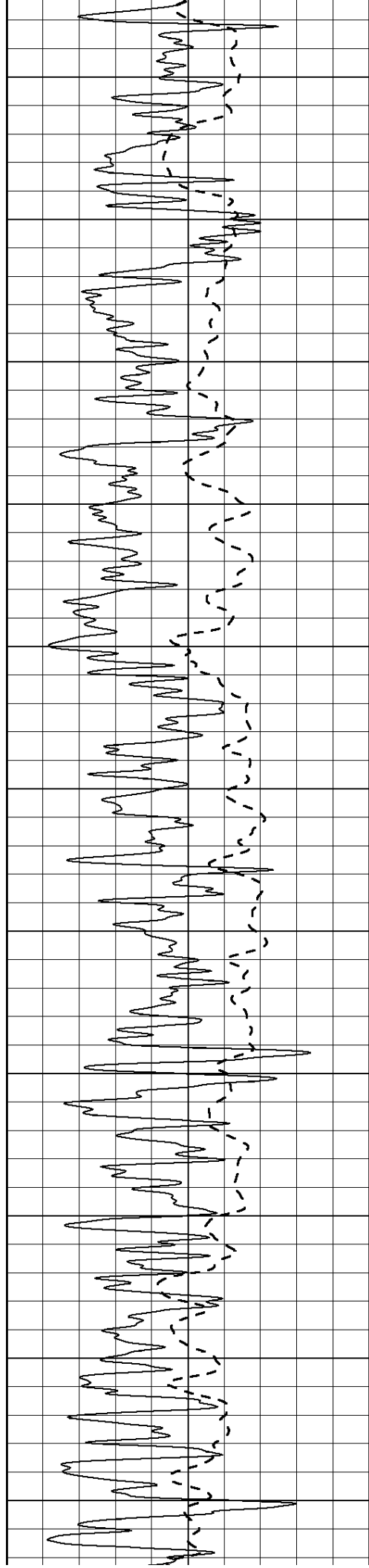
2450

2500

2550

2600





2650

2700

2750

2800

2850

2900

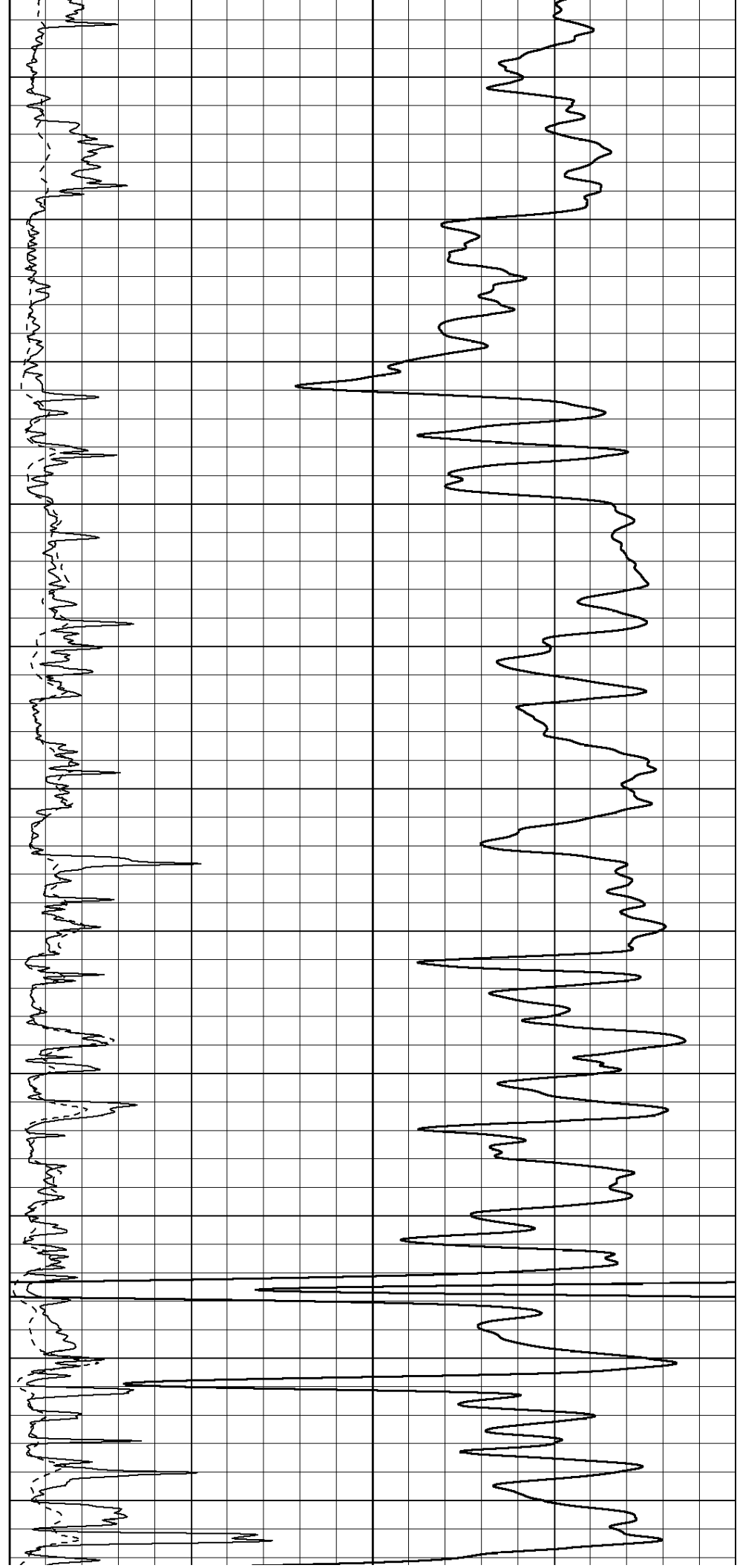
2950

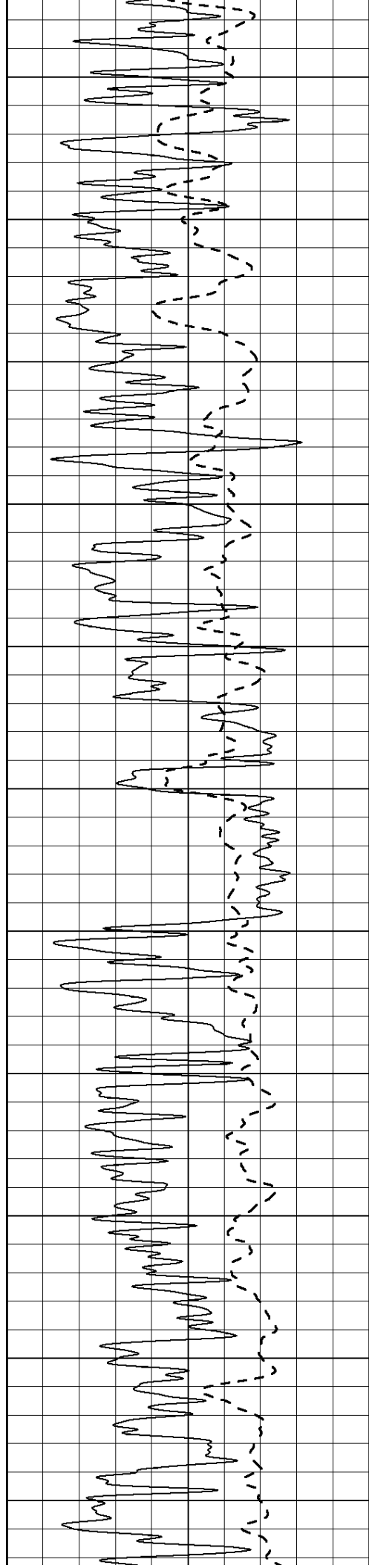
3000

3050

3100

3150





3200

3250

3300

3350

3400

3450

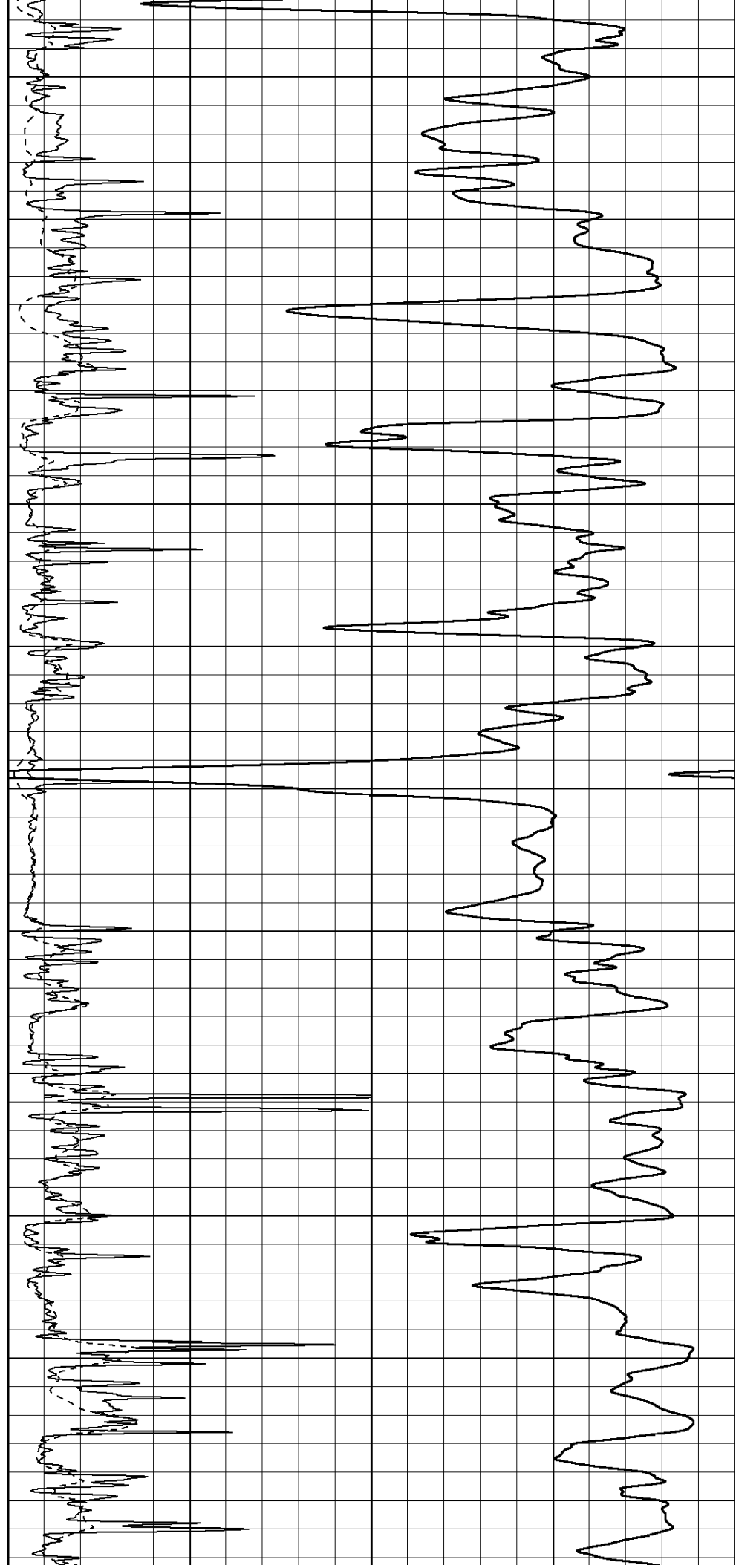
3500

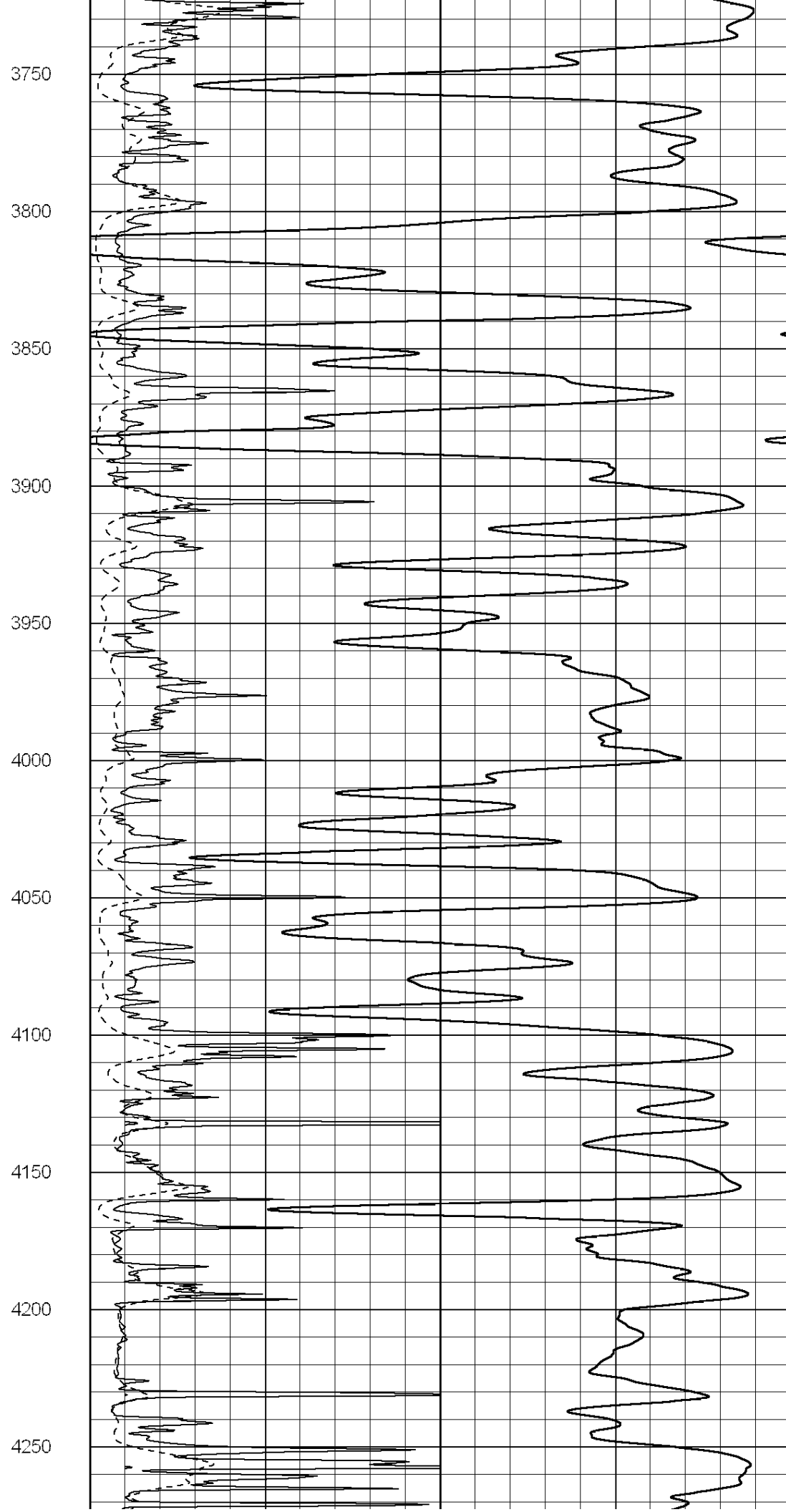
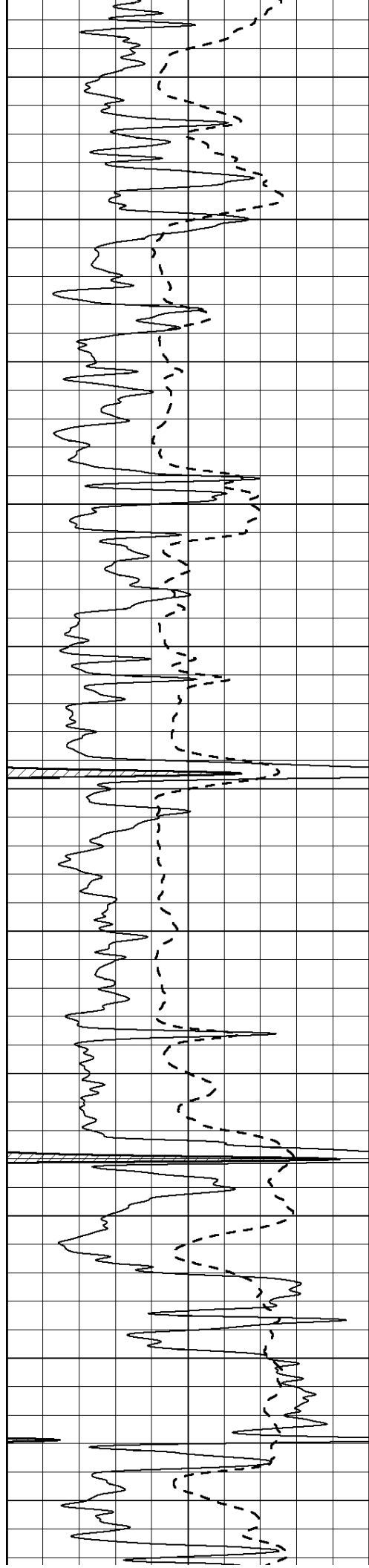
3550

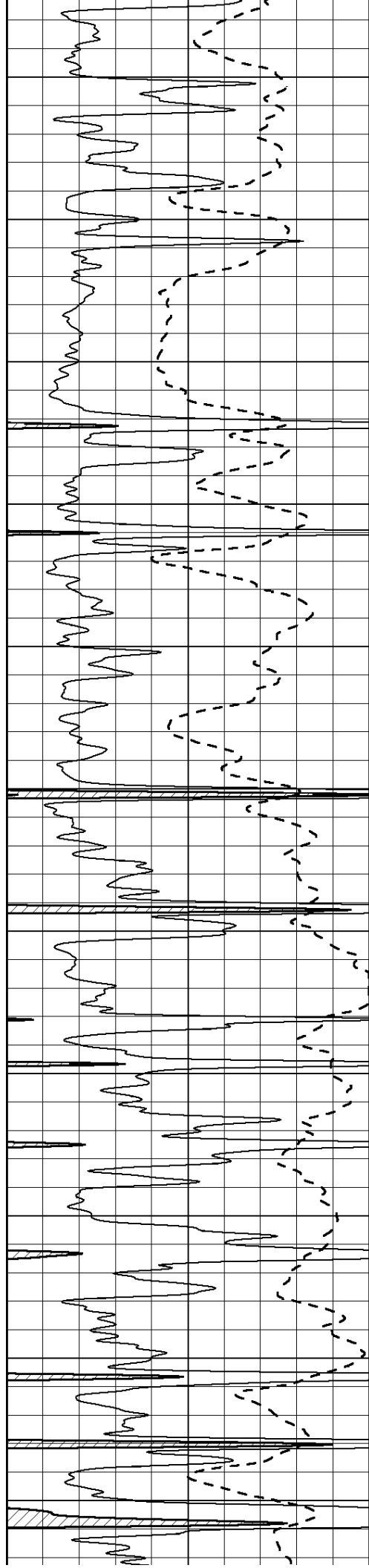
3600

3650

3700







4300

4350

4400

4450

4500

4550

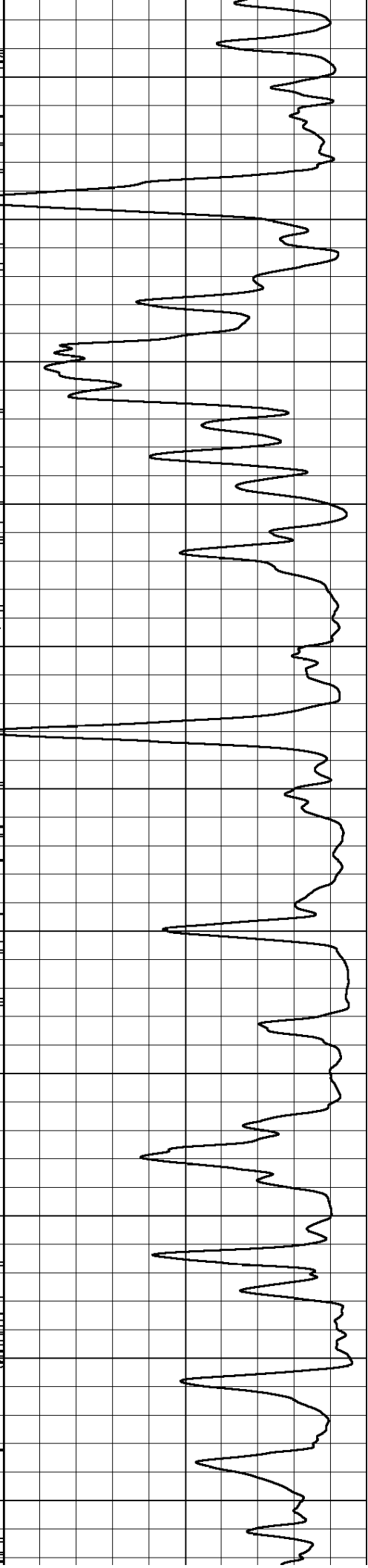
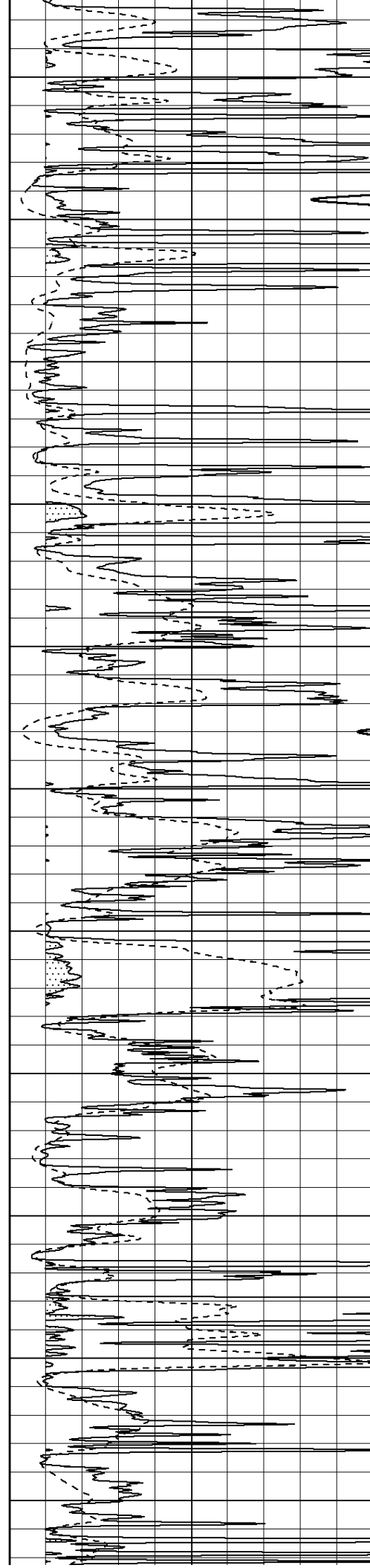
4600

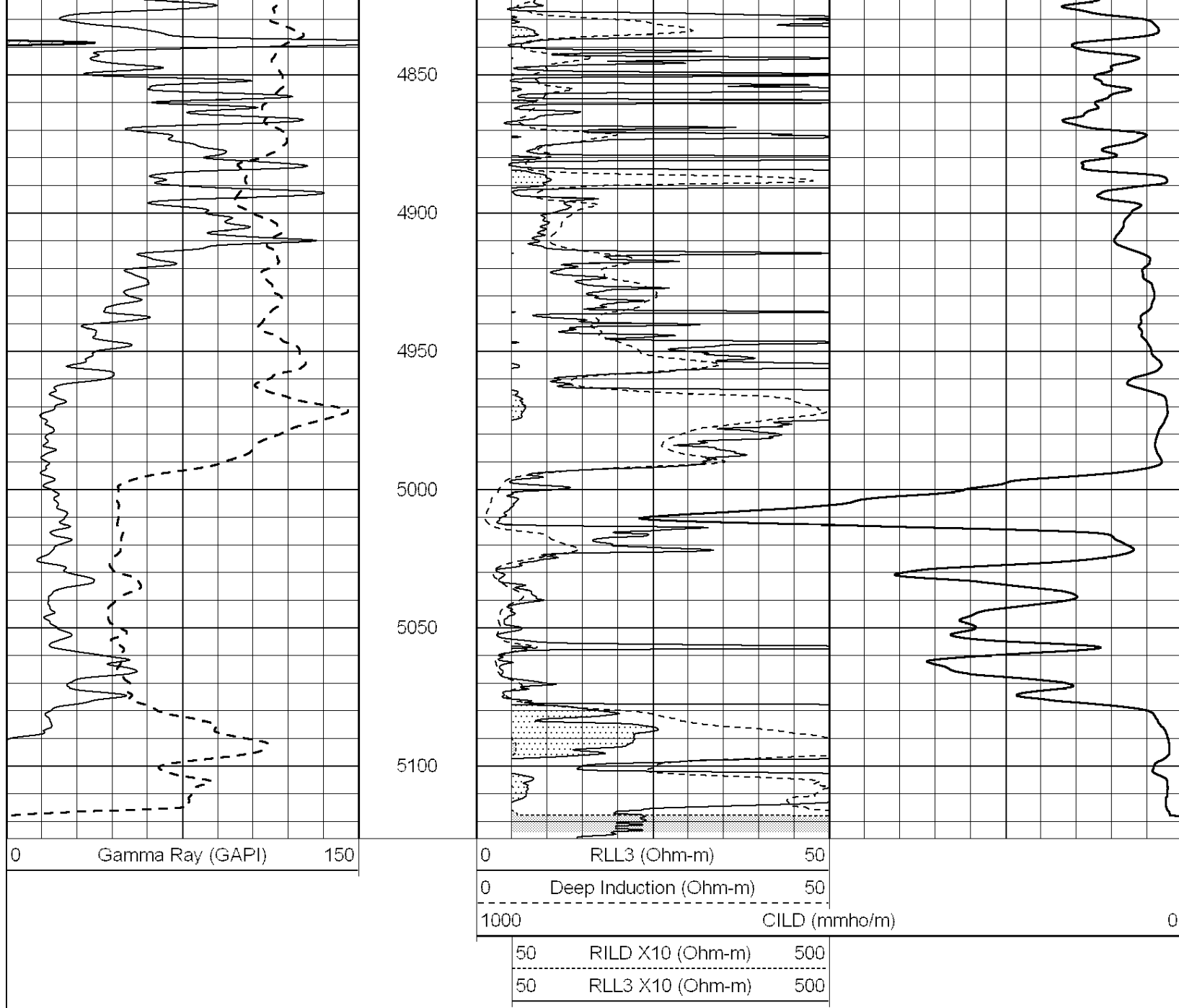
4650

4700

4750

4800

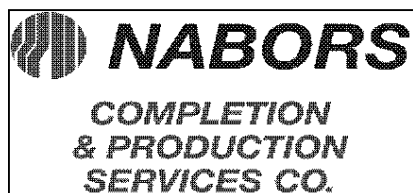
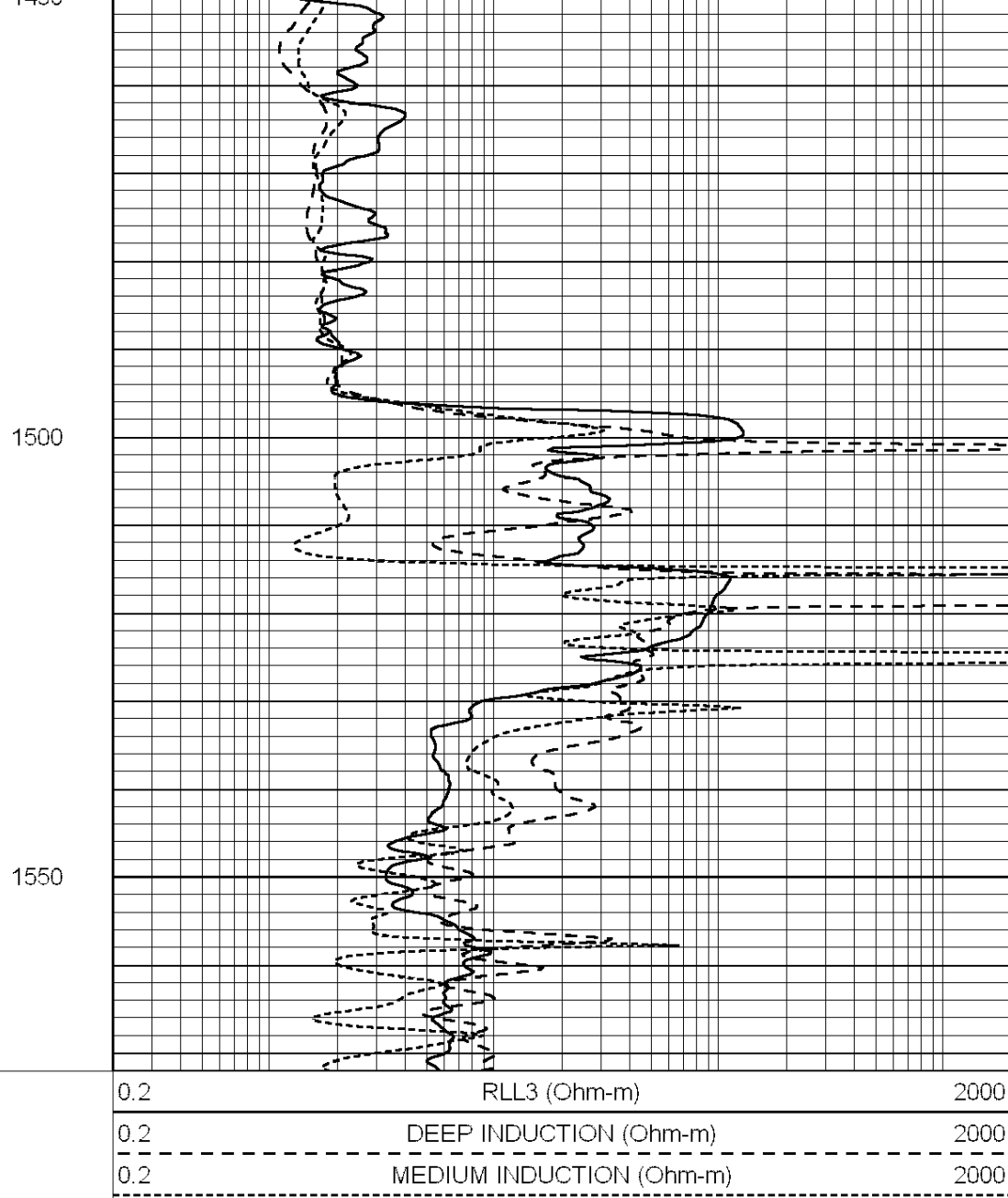
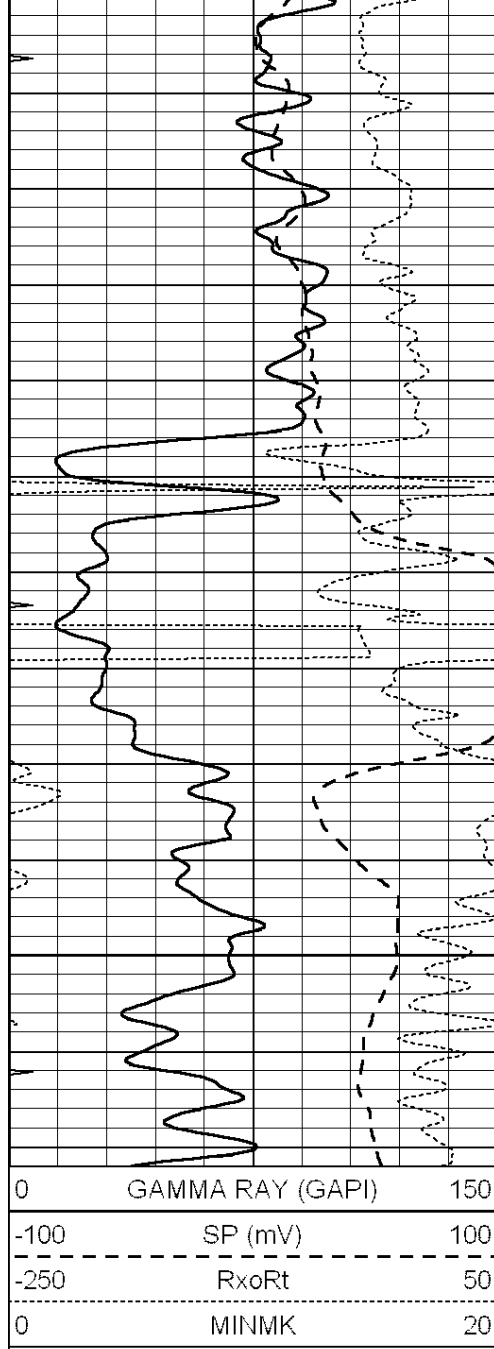




# MAIN SECTION

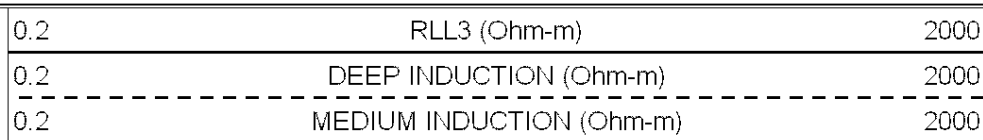
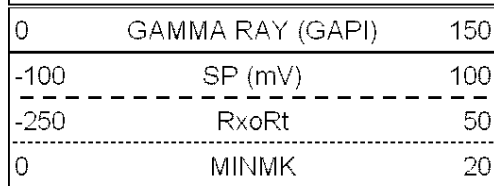
Database File: 010201ddn.db  
Dataset Pathname: pass5.1A  
Presentation Format: \_dil  
Dataset Creation: Mon Aug 12 04:31:37 2013  
Charted by: Depth in Feet scaled 1:240

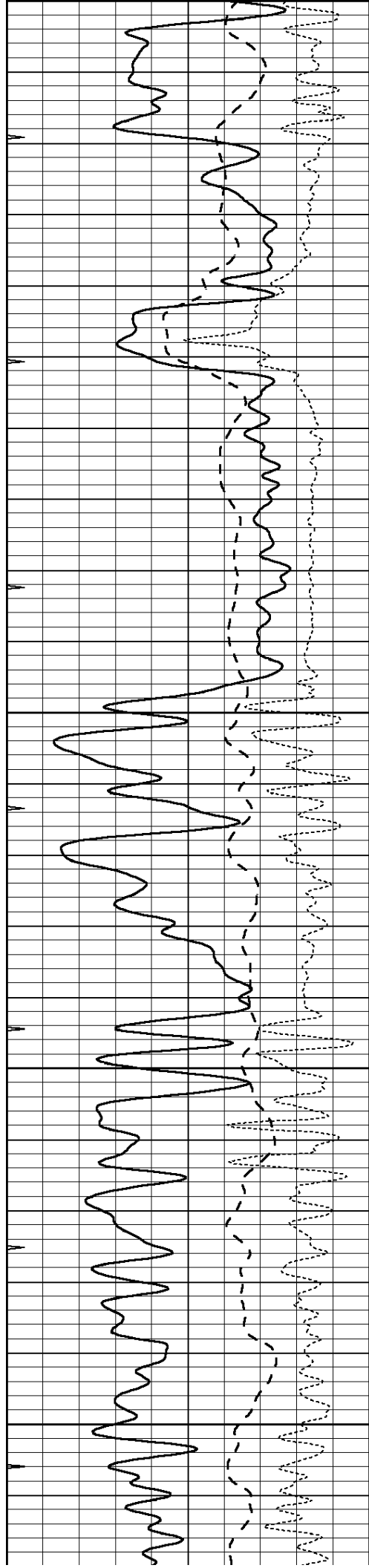
|      |                  |     |     |                          |      |
|------|------------------|-----|-----|--------------------------|------|
| 0    | GAMMA RAY (GAPI) | 150 | 0.2 | RLL3 (Ohm-m)             | 2000 |
| -100 | SP (mV)          | 100 | 0.2 | DEEP INDUCTION (Ohm-m)   | 2000 |
| -250 | RxoRt            | 50  | 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0    | MINMK            | 20  |     |                          |      |



# MAIN SECTION

Database File: 010201ddn.db  
 Dataset Pathname: pass5.1A  
 Presentation Format: \_dil  
 Dataset Creation: Mon Aug 12 04:31:37 2013  
 Charted by: Depth in Feet scaled 1:240





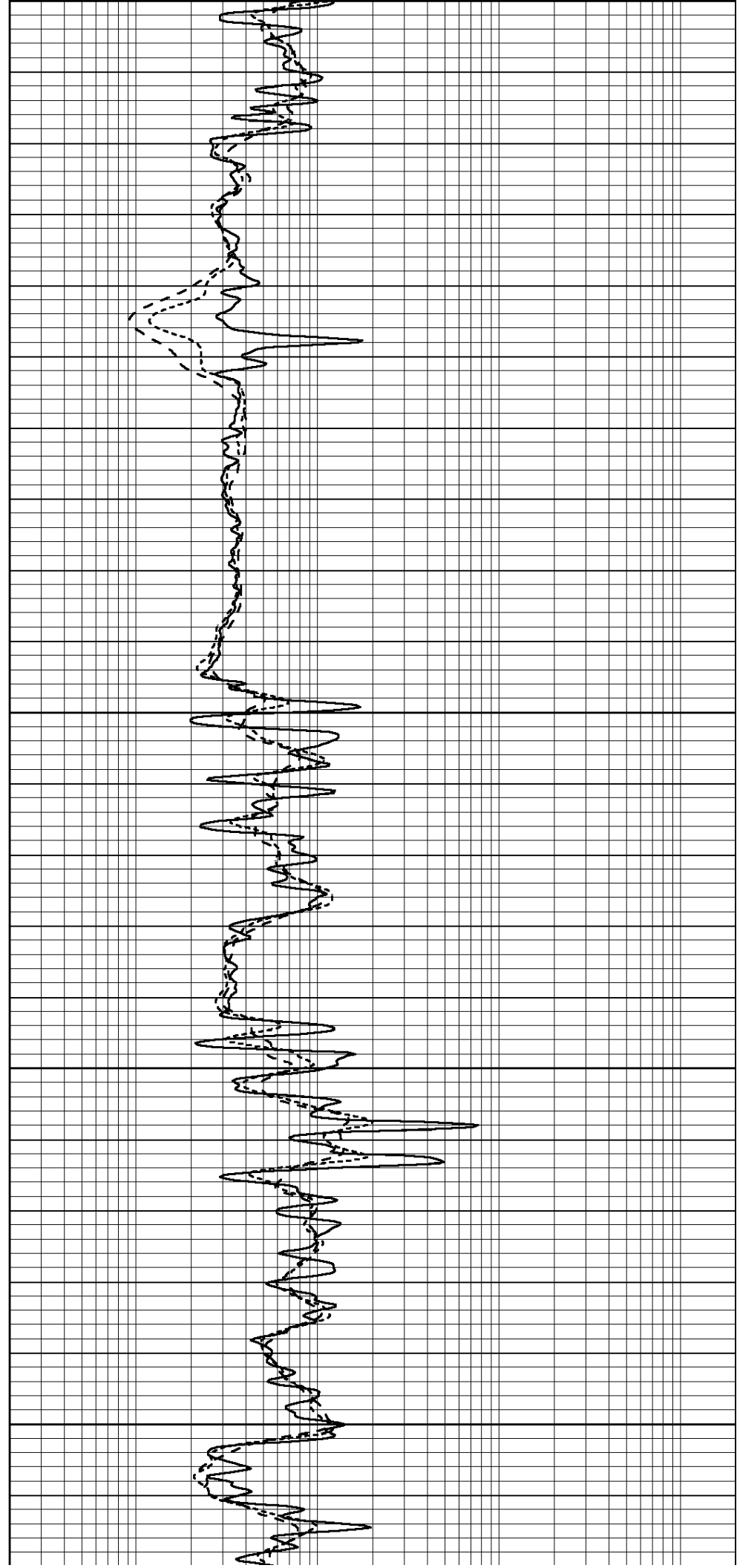
3400

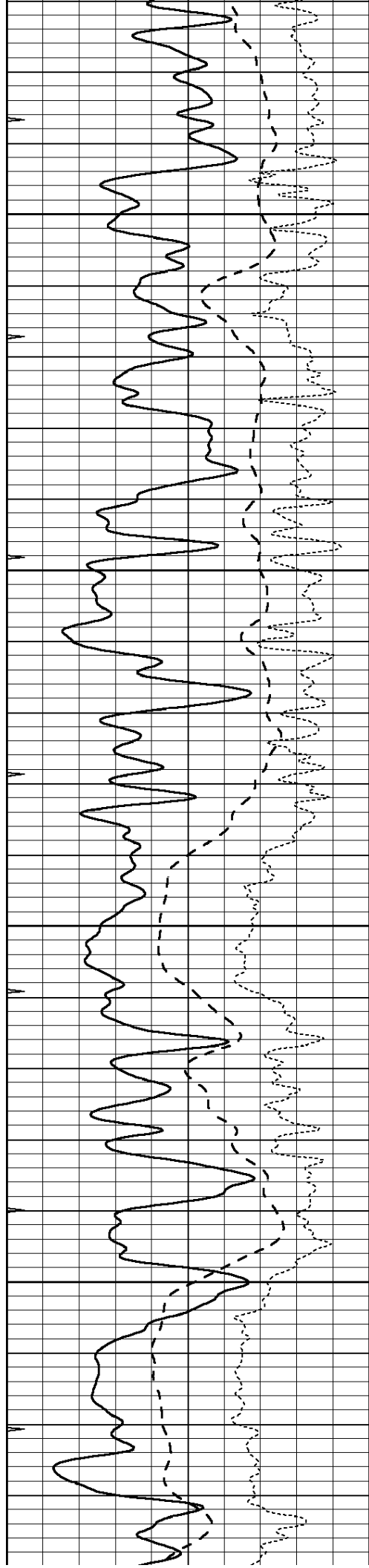
3450

3500

3550

3600



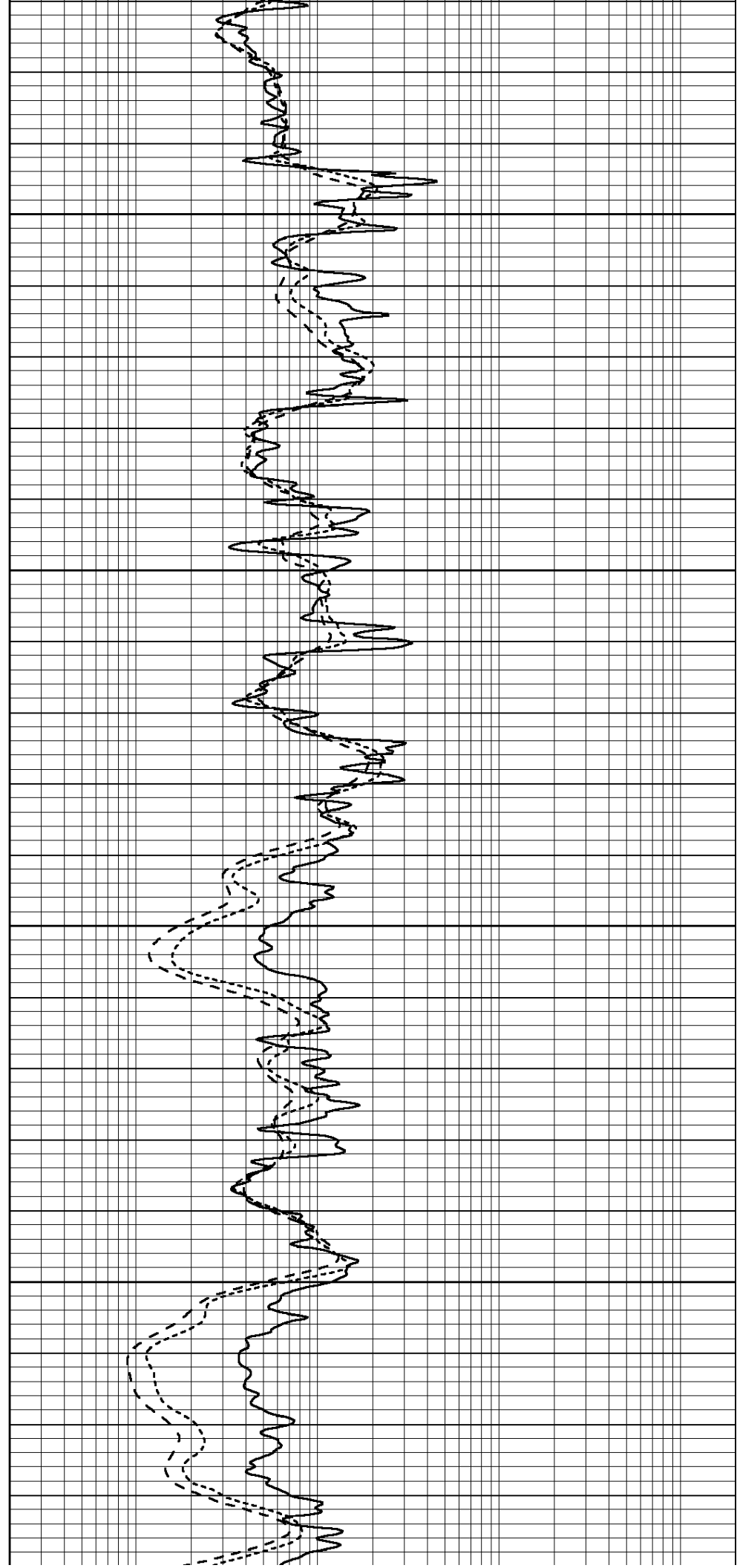


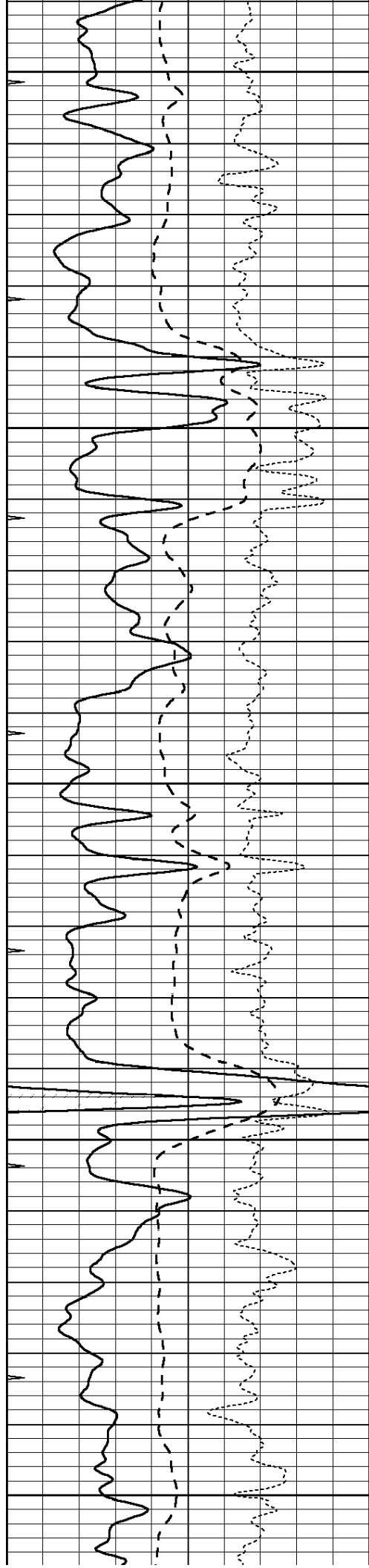
3650

3700

3750

3800





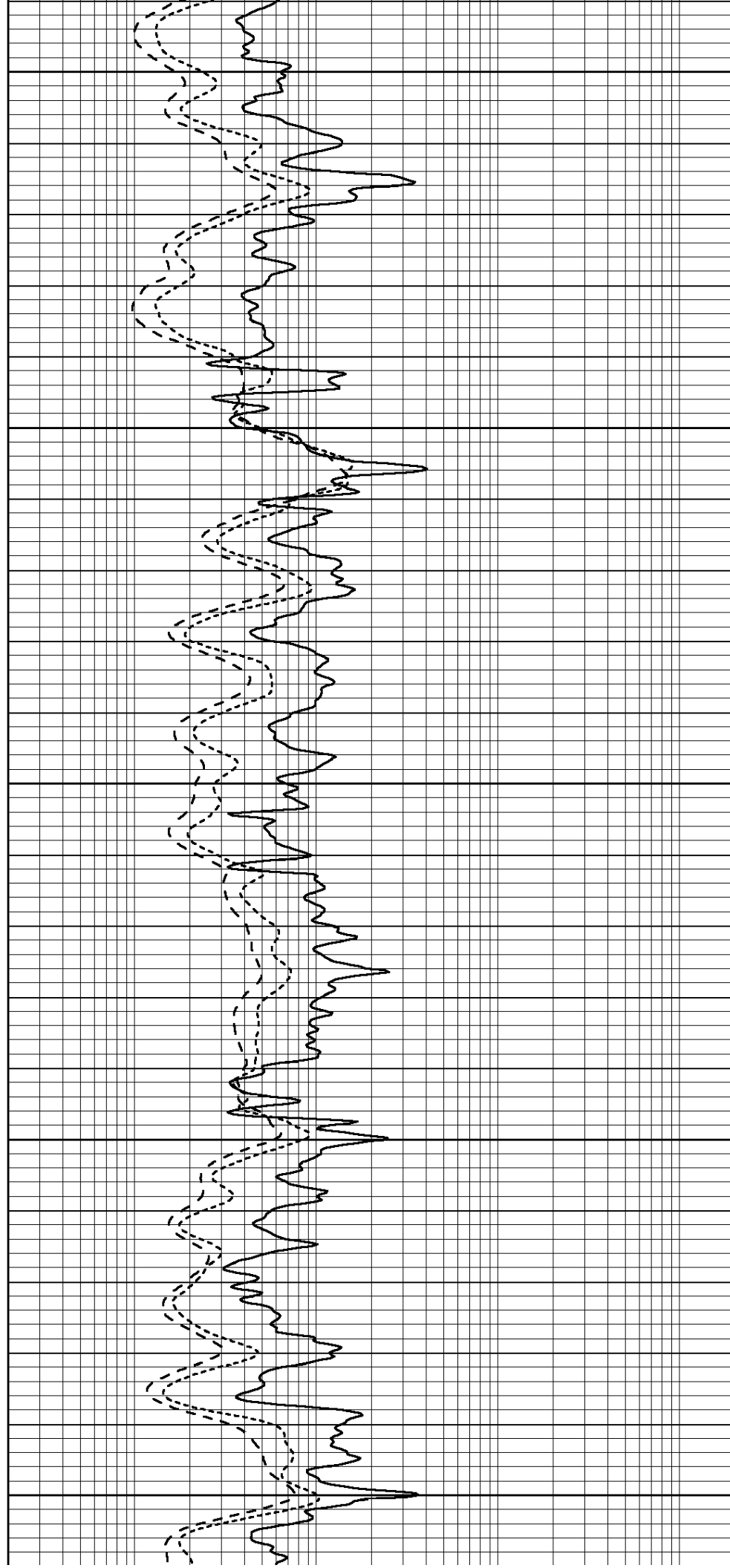
3850

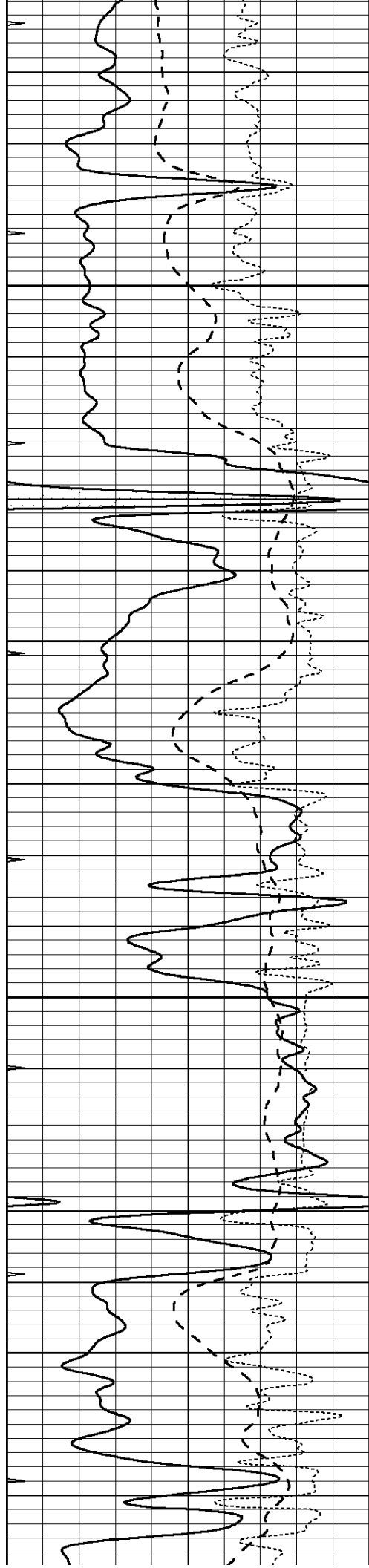
3900

3950

4000

4050



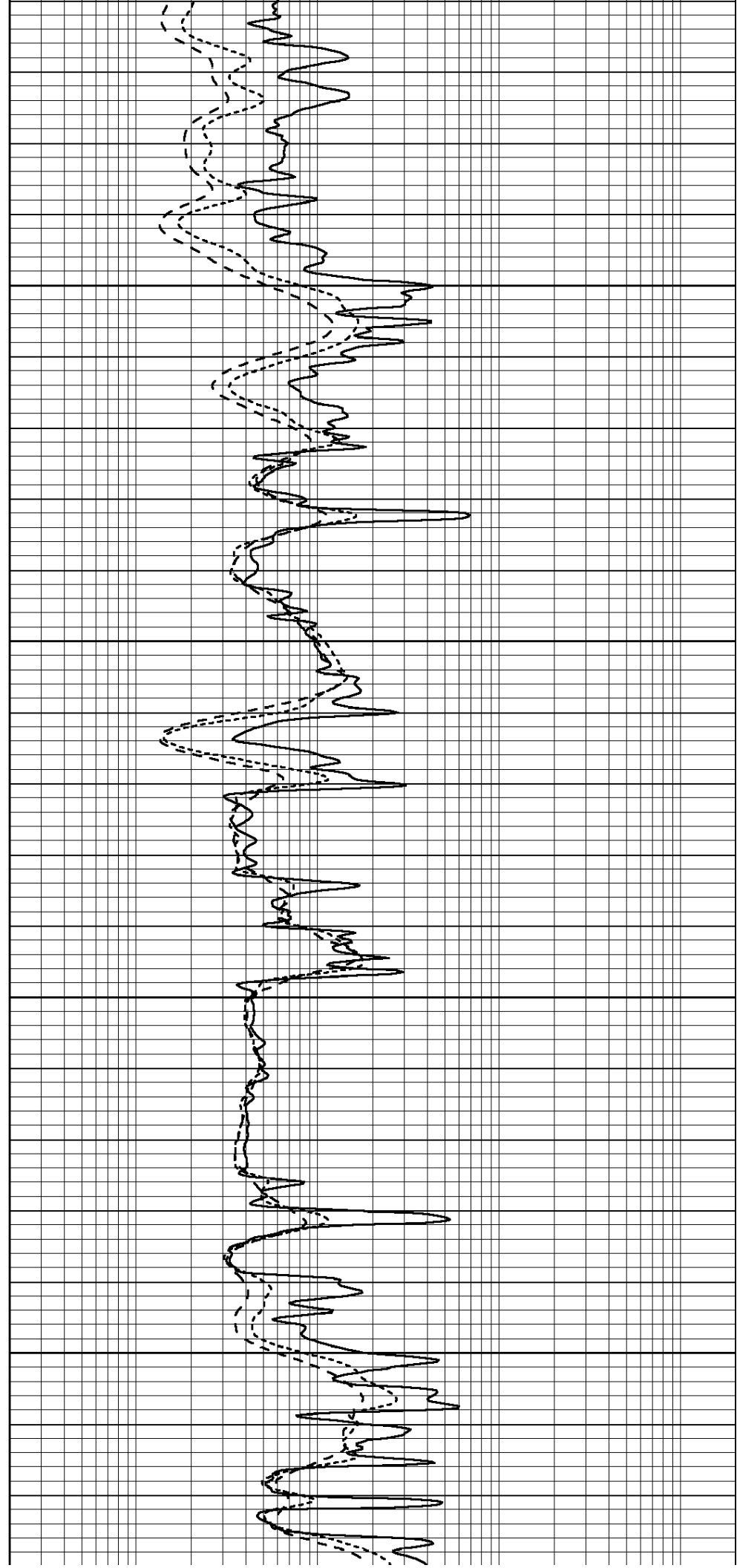


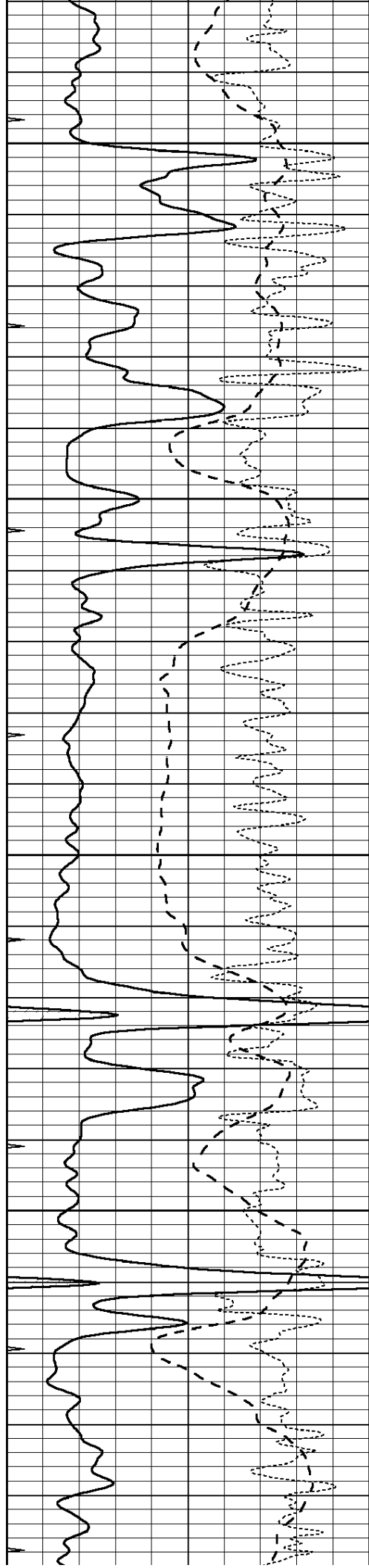
4100

4150

4200

4250





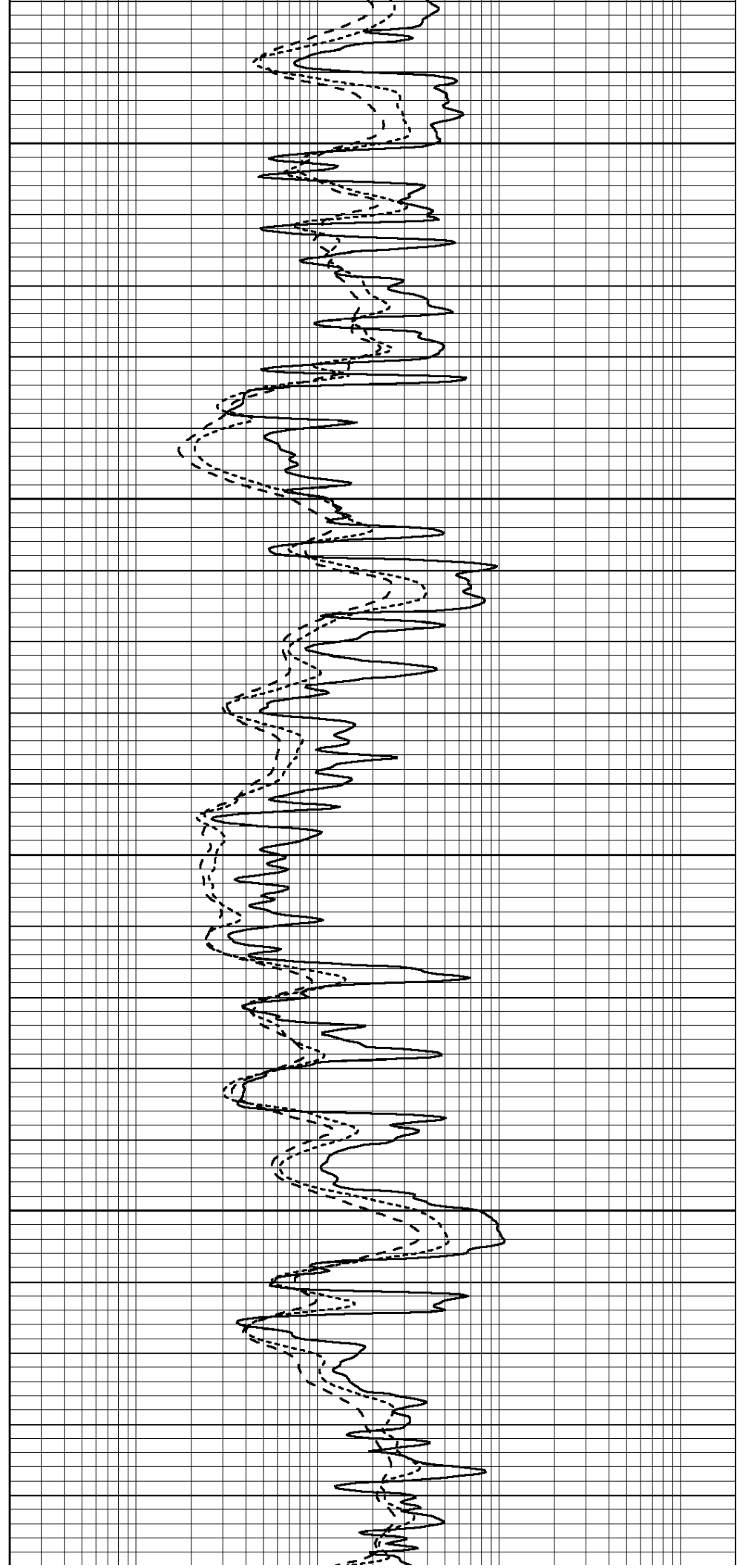
4300

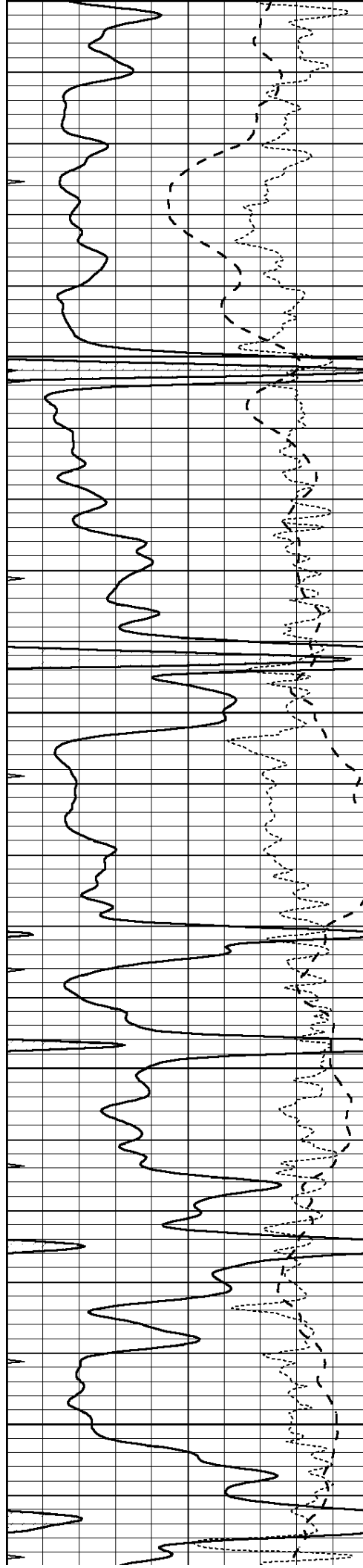
4350

4400

4450

4500





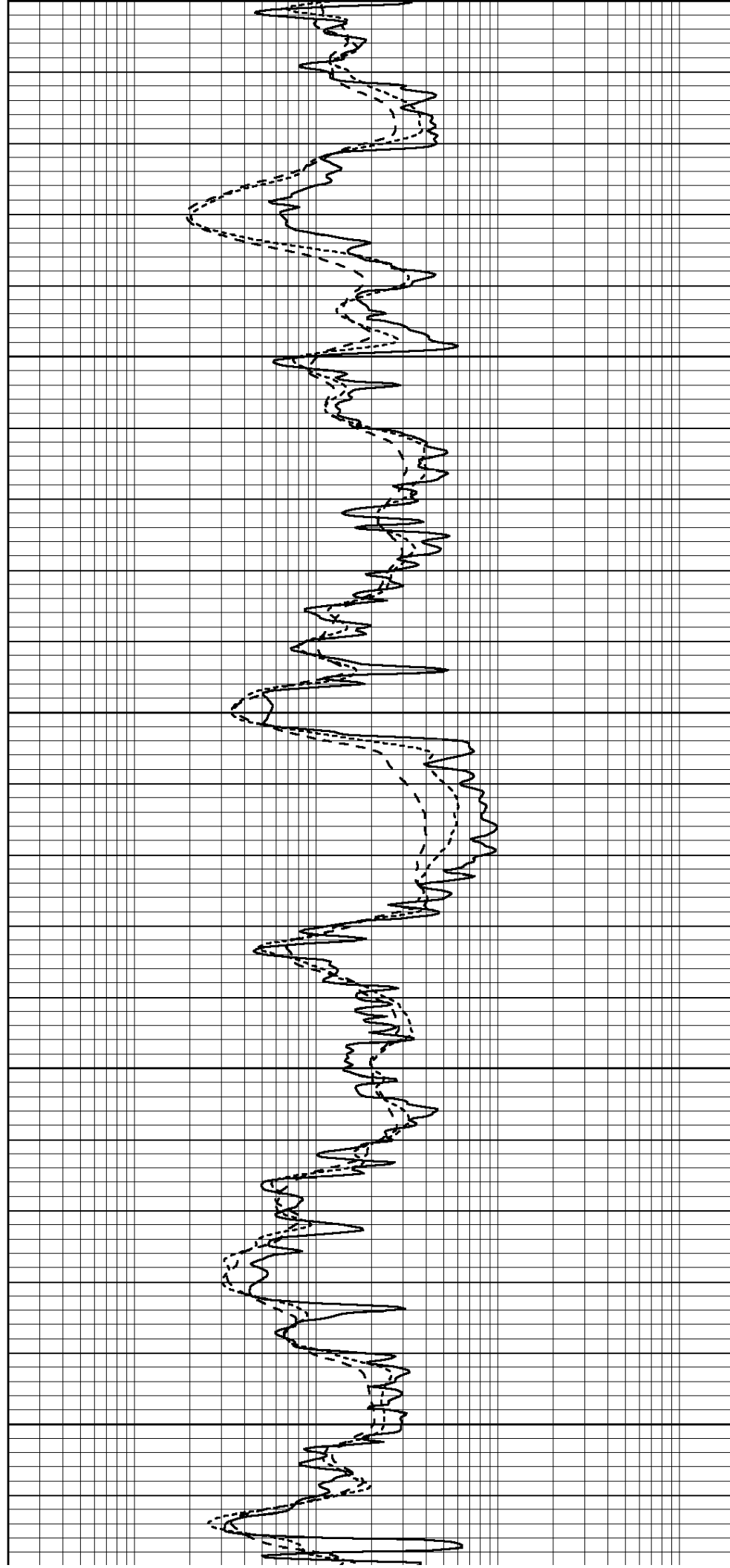
4500

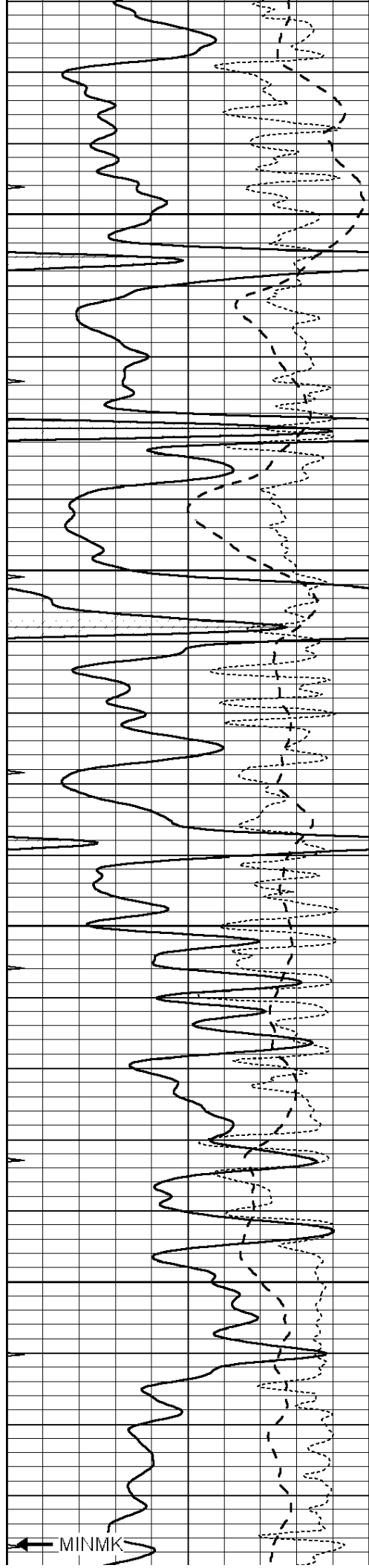
4550

4600

4650

4700



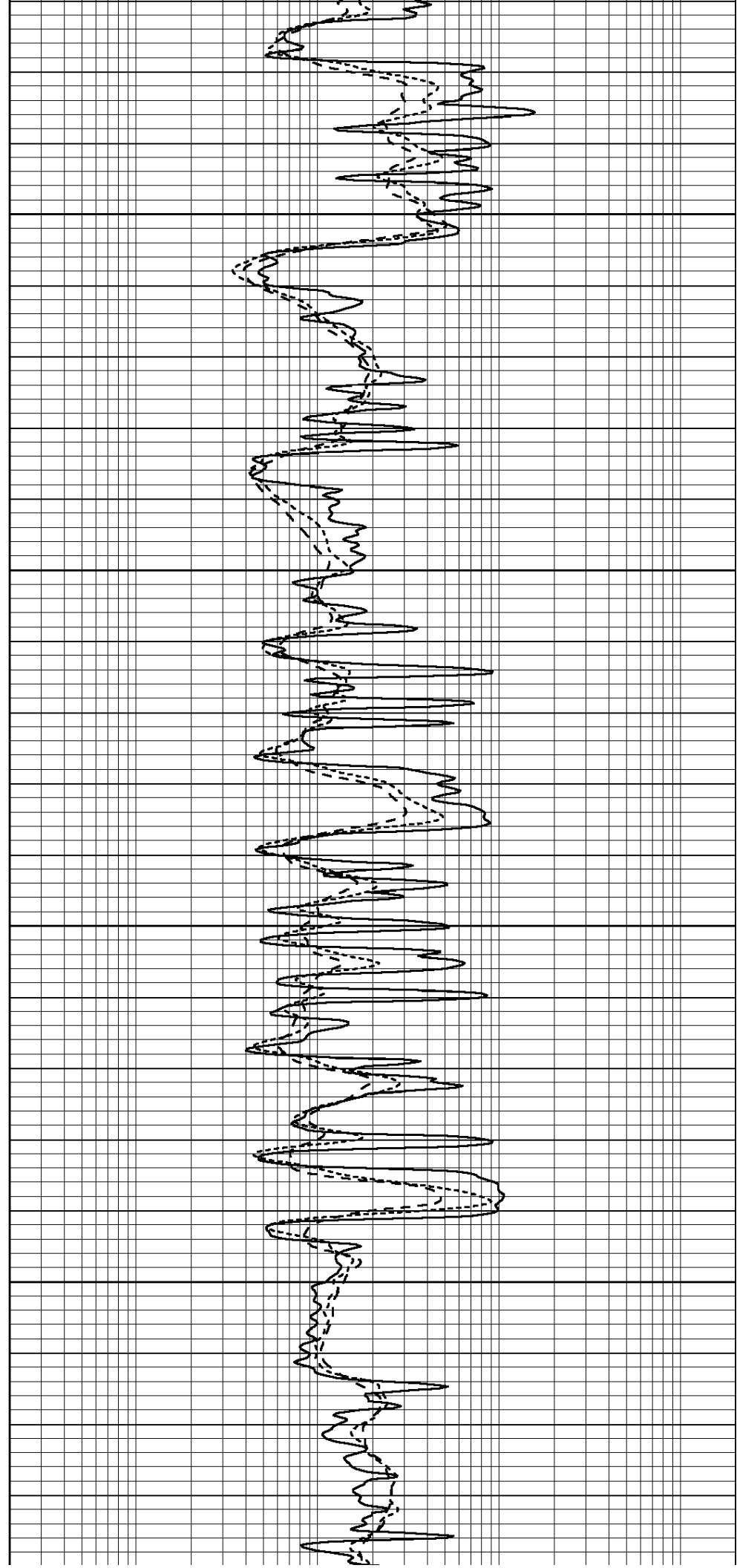


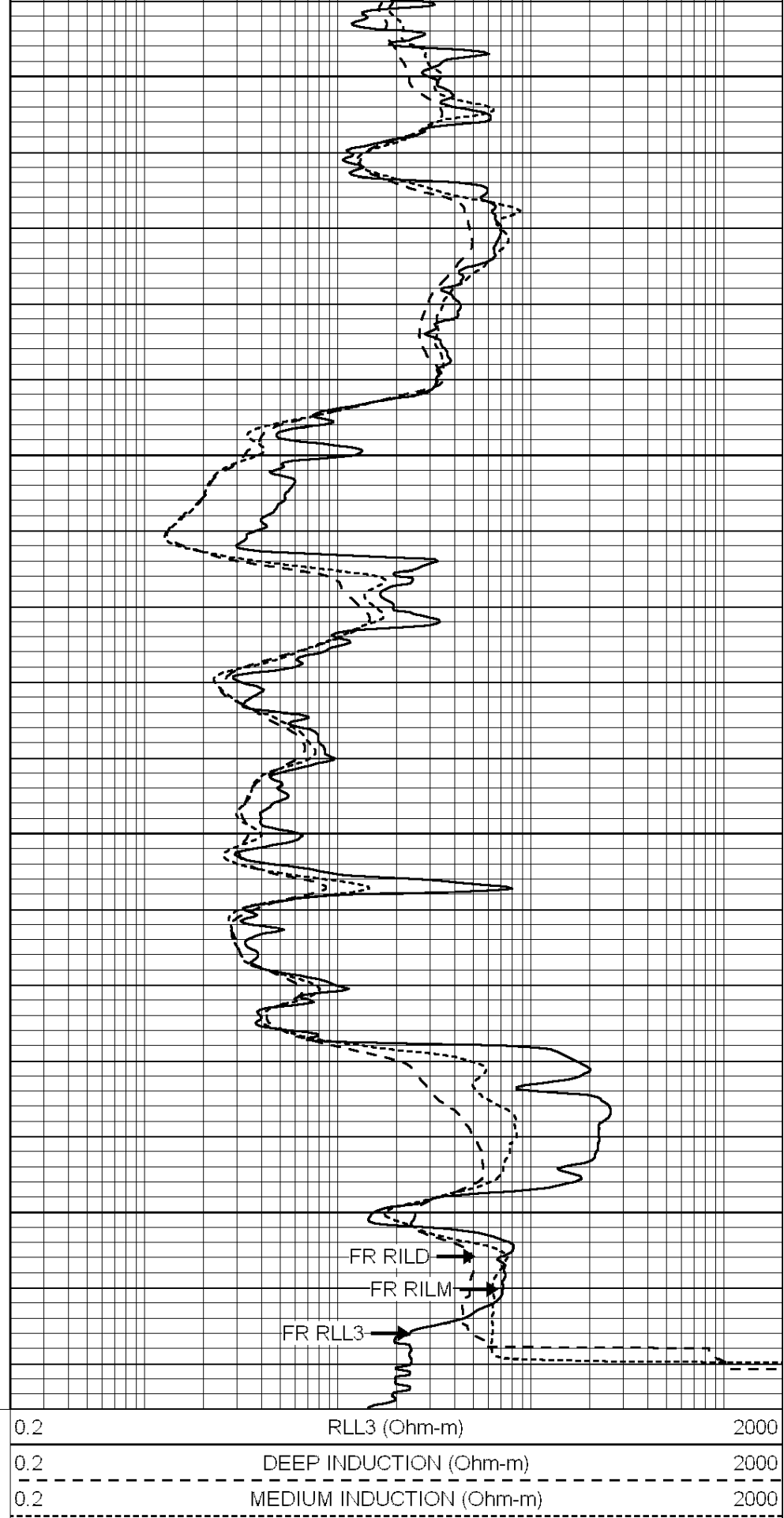
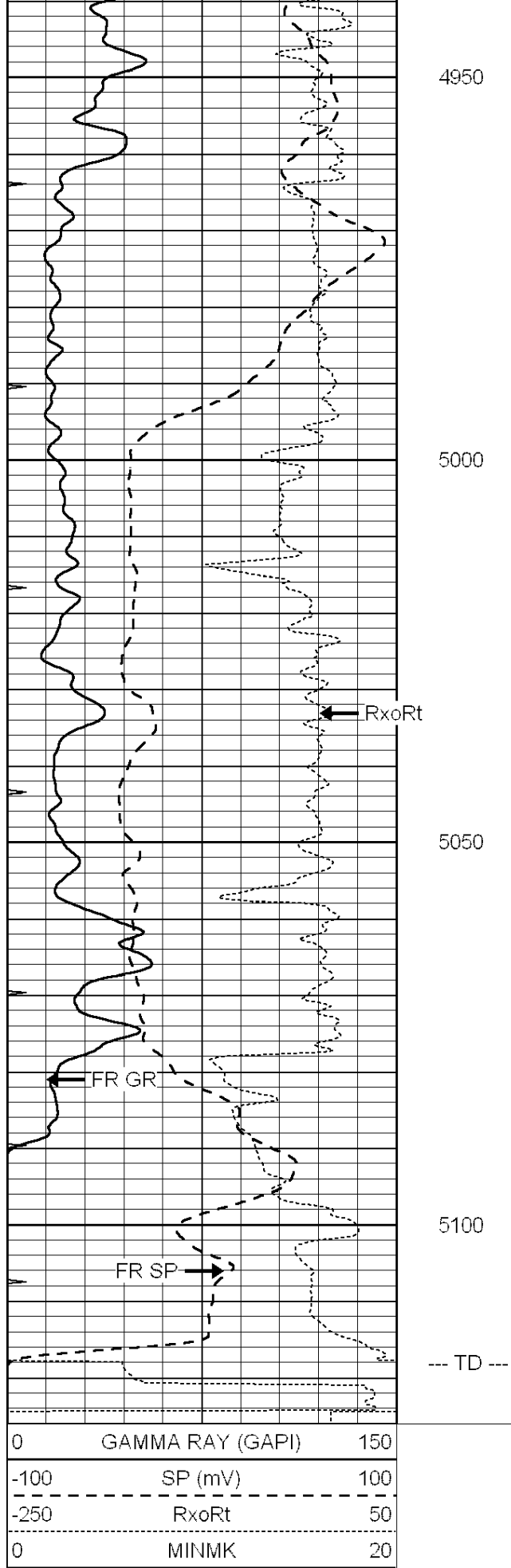
4750

4800

4850

4900

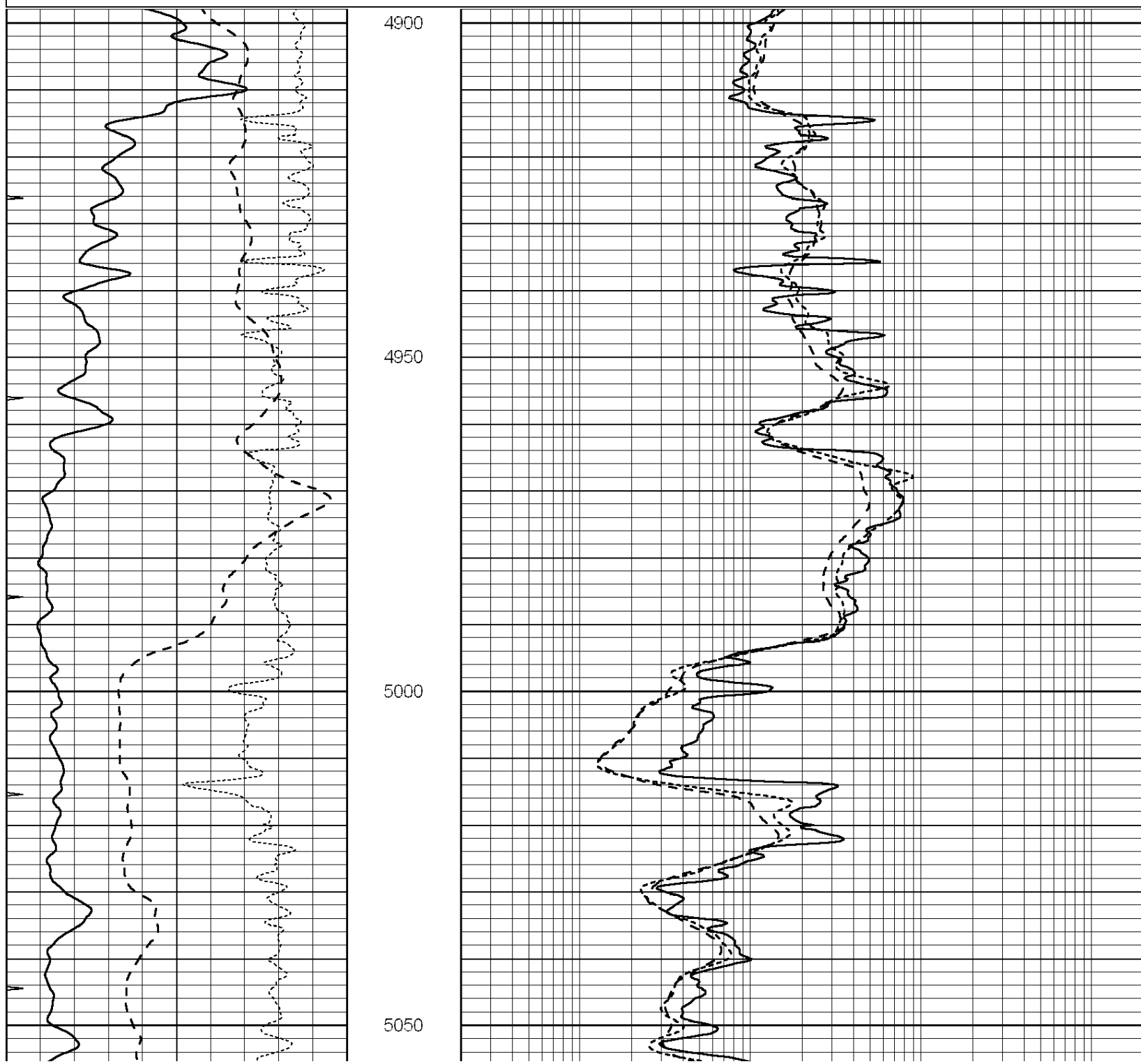


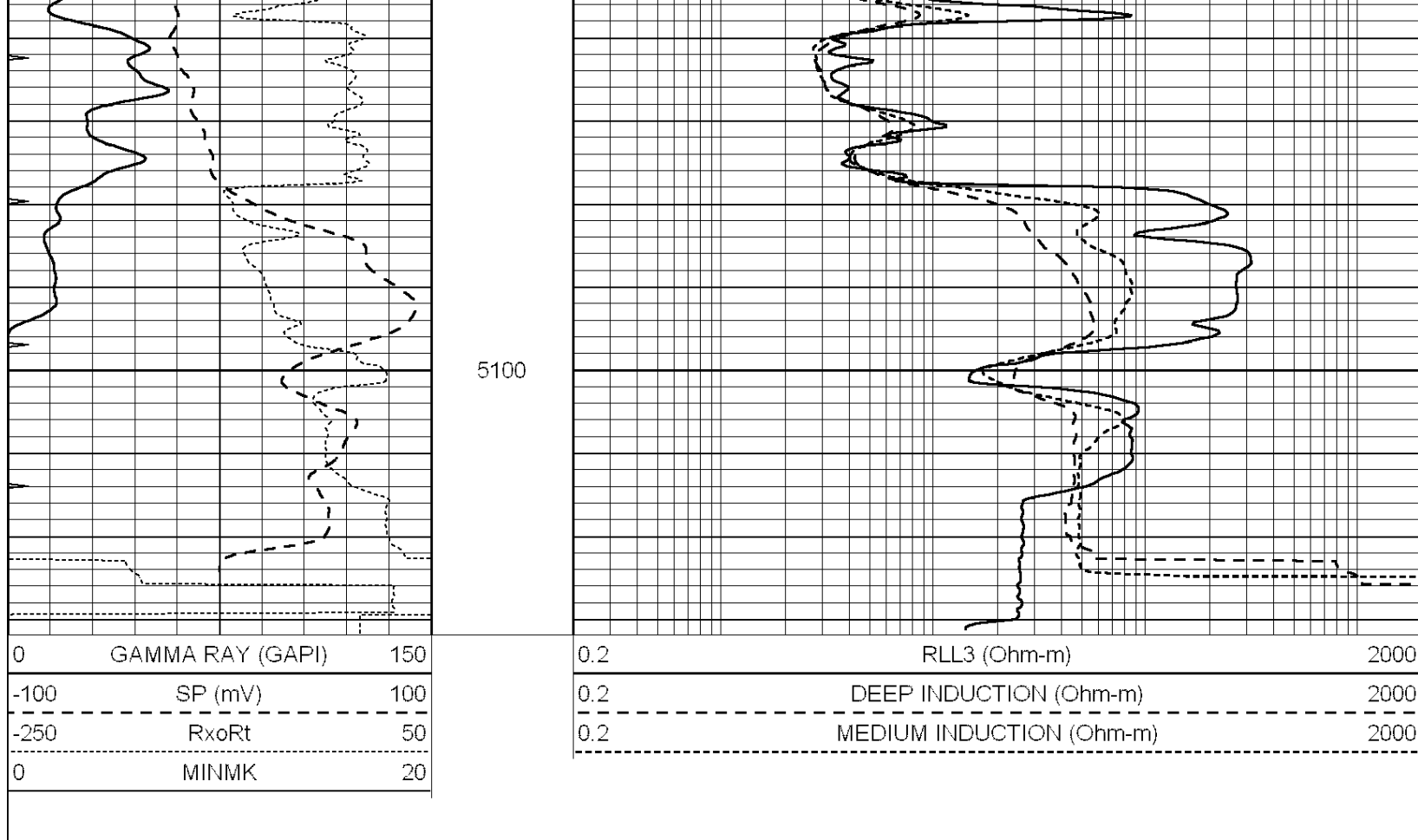


# REPEAT SECTION

Database File: 010201ddn.db  
 Dataset Pathname: pass2.4  
 Presentation Format: \_dil  
 Dataset Creation: Mon Aug 12 04:12:21 2013 by Calc Open-Cased 090629  
 Charted by: Depth in Feet scaled 1:240

|      |                  |     |     |                          |      |
|------|------------------|-----|-----|--------------------------|------|
| 0    | GAMMA RAY (GAPI) | 150 | 0.2 | RLL3 (Ohm-m)             | 2000 |
| -100 | SP (mV)          | 100 | 0.2 | DEEP INDUCTION (Ohm-m)   | 2000 |
| -250 | RxoRt            | 50  | 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0    | MINMK            | 20  |     |                          |      |





### Calibration Report

Database File: 010201ddn.db  
 Dataset Pathname: pass5.1A  
 Dataset Creation: Mon Aug 12 04:31:37 2013

### Dual Induction Calibration Report

Serial-Model: PROBE7-DILG  
 Surface Cal Performed: Mon Aug 12 03:46:05 2013  
 Downhole Cal Performed: Sat Jan 19 19:51:38 2013  
 After Survey Verification Performed: Sat Jan 19 19:51:38 2013

#### Surface Calibration

| Readings  |       |       |   | References |         |        | Results |         |
|-----------|-------|-------|---|------------|---------|--------|---------|---------|
| Loop:     | Air   | Loop  |   | Air        | Loop    |        | m       | b       |
| Deep      | 0.793 | 0.790 | V | 0.000      | 400.000 | mmho/m | 500.000 | 35.000  |
| Medium    | 0.992 | 1.002 | V | 0.000      | 464.000 | mmho/m | 560.000 | -8.000  |
| Internal: | Zero  | Cal   |   | Zero       | Cal     |        | m       | b       |
| Deep      | 0.041 | 0.642 | V | 0.000      | 400.000 | mmho/m | 664.874 | -27.011 |
| Medium    | 0.035 | 0.802 | V | 0.000      | 464.000 | mmho/m | 604.936 | -21.367 |

#### Downhole Calibration

| Readings |            |           |        | References |           |        | Results |         |
|----------|------------|-----------|--------|------------|-----------|--------|---------|---------|
|          | Zero       | Cal       |        | Zero       | Cal       |        | m'      | b'      |
| Deep     | 135384.000 | 27094.500 | mmho/m | 135400.000 | 27082.400 | mmho/m | 1.000   | -19.259 |
| Medium   | -47330.100 | -9381.740 | mmho/m | -47327.100 | -9389.280 | mmho/m | 1.000   | -10.154 |
| LL3      |            | 7.322     | V      |            | 1400.000  | Ohm-m  |         |         |
|          |            | 0.038     | V      |            | 20.000    | Ohm-m  |         |         |
|          |            | -7.273    | V      |            | 4000.000  | mmho-m |         |         |

| After Survey Verification |       |       | Readings |            | Targets   |        | Results |       |
|---------------------------|-------|-------|----------|------------|-----------|--------|---------|-------|
|                           | Zero  | Cal   |          | Zero       | Cal       |        | m'      | b'    |
| Deep                      | 0.000 | 0.000 | mmho/m   | 135384.000 | 27094.500 | mmho/m | 1.000   | 0.000 |
| Medium                    | 0.000 | 0.000 | mmho/m   | -47330.100 | -9381.740 | mmho/m | 1.000   | 0.000 |
| LL3                       |       | 0.000 | Ohm-m    |            | 1400.000  | Ohm-m  |         |       |
|                           |       | 0.000 | Ohm-m    |            | 20.000    | Ohm-m  |         |       |
|                           |       | 0.000 | mmho-m   |            | 4000.000  | mmho-m |         |       |

### Compensated Density Calibration Report

|                               |                          |
|-------------------------------|--------------------------|
| Serial-Model:                 | GEAR2-GEARHART           |
| Source / Verifier:            | 147 / 147                |
| Master Calibration Performed: | Mon Aug 12 03:45:04 2013 |

|                     |         |      |                             |              |               |
|---------------------|---------|------|-----------------------------|--------------|---------------|
| Master Calibration  |         |      |                             |              |               |
|                     | Density |      |                             | Far Detector | Near Detector |
| Magnesium           | 1.710   | g/cc |                             | 923.76       | 475.45 cps    |
| Aluminum            | 2.580   | g/cc |                             | 205.31       | 331.69 cps    |
| Spine Angle = 76.54 |         |      | Density/Spine Ratio = 0.563 |              |               |
|                     | Size    |      |                             | Reading      |               |
| Small Ring          | 8.40    | in   |                             | 5.48         | V             |
| Large Ring          | 14.00   | in   |                             | 7.58         | V             |

### Compensated Neutron Calibration Report

|                |        |
|----------------|--------|
| Serial Number: | NEU_4I |
| Tool Model:    | G      |

|             |          |     |        |     |               |
|-------------|----------|-----|--------|-----|---------------|
| CALIBRATION |          |     |        |     |               |
| Detector    | Readings |     | Target |     | Normalization |
| Short Space | 1.00     | cps | 1.00   | cps | 1.0000        |
| Long Space  | 1.00     | cps | 1.00   | cps | 1.0000        |

### Gamma Ray Calibration Report

|                     |                          |          |
|---------------------|--------------------------|----------|
| Serial Number:      | GR5                      |          |
| Tool Model:         | OPEN                     |          |
| Performed:          | Mon Aug 12 03:44:21 2013 |          |
| Calibrator Value:   | 1.0                      | GAPI     |
| Background Reading: | 0.0                      | cps      |
| Calibrator Reading: | 1.0                      | cps      |
| Sensitivity:        | 0.9000                   | GAPI/cps |