



# NABORS

**COMPLETION  
& PRODUCTION  
SERVICES CO.**

**COMPENSATED  
DENSITY / NEUTRON  
PE LOG**

|                              |                            |                |                                 |
|------------------------------|----------------------------|----------------|---------------------------------|
| Company                      | WOOLSEY OPERATING CO. LLC. | Company        | WOOLSEY OPERATING COMPANY, LLC. |
| Well                         | MILLER C #4                | Well           | MILLER C #4                     |
| Field                        | HARDTNER                   | Field          | HARDTNER                        |
| County                       | BARBER                     | County         | BARBER                          |
| State                        | KANSAS                     | State          | KANSAS                          |
| Location:                    | API # : 15-007-24065-0000  | Other Services | DIL                             |
| Permanent Datum              | GROUND LEVEL               | Elevation      | 1415                            |
| Log Measured From            | KELLY BUSHING 13' A.G.L.   | Elevation      | K.B. 1428                       |
| Drilling Measured From       | KELLY BUSHING              | Elevation      | D.F. 1426                       |
|                              |                            | Elevation      | G.L. 1415                       |
| Date                         | 9/13/13                    |                |                                 |
| Run Number                   | ONE                        |                |                                 |
| Depth Driller                | 5450                       |                |                                 |
| Depth Logger                 | 5449                       |                |                                 |
| Bottom Logged Interval       | 5425                       |                |                                 |
| Top Log Interval             | 1900                       |                |                                 |
| Casing Driller               | 13 3/8" @ 224'             |                |                                 |
| Casing Logger                | 224'                       |                |                                 |
| Bit Size                     | 7 7/8"                     |                |                                 |
| Type Fluid in Hole           | CHEMICAL MUD               | CHLORIDES      | 4,000 PPM                       |
| Density / Viscosity          | 9.1/60                     |                |                                 |
| pH / Fluid Loss              | 10.5/8.0                   |                |                                 |
| Source of Sample             | FLOWLINE                   |                |                                 |
| Rim @ Meas. Temp             | 0.59 @ 80F                 |                |                                 |
| Rmf @ Meas. Temp             | 0.44 @ 80F                 |                |                                 |
| Rmc @ Meas. Temp             | 0.71 @ 80F                 |                |                                 |
| Source of Rmf / Rmc          | MEASUREMENT                |                |                                 |
| Rim @ BHT                    | 0.37 @ 129F                |                |                                 |
| Time Circulation Stopped     | 3 HOURS                    |                |                                 |
| Time Logger on Bottom        |                            |                |                                 |
| Maximum Recorded Temperature | 129F                       |                |                                 |
| Equipment Number             | 4854                       |                |                                 |
| Location                     | HAYS, KANSAS               |                |                                 |
| Recorded By                  | JEFF GRONEMEG              |                |                                 |
| Witnessed By                 | BILL KLAVER                |                |                                 |

<<< Fold Here >>>

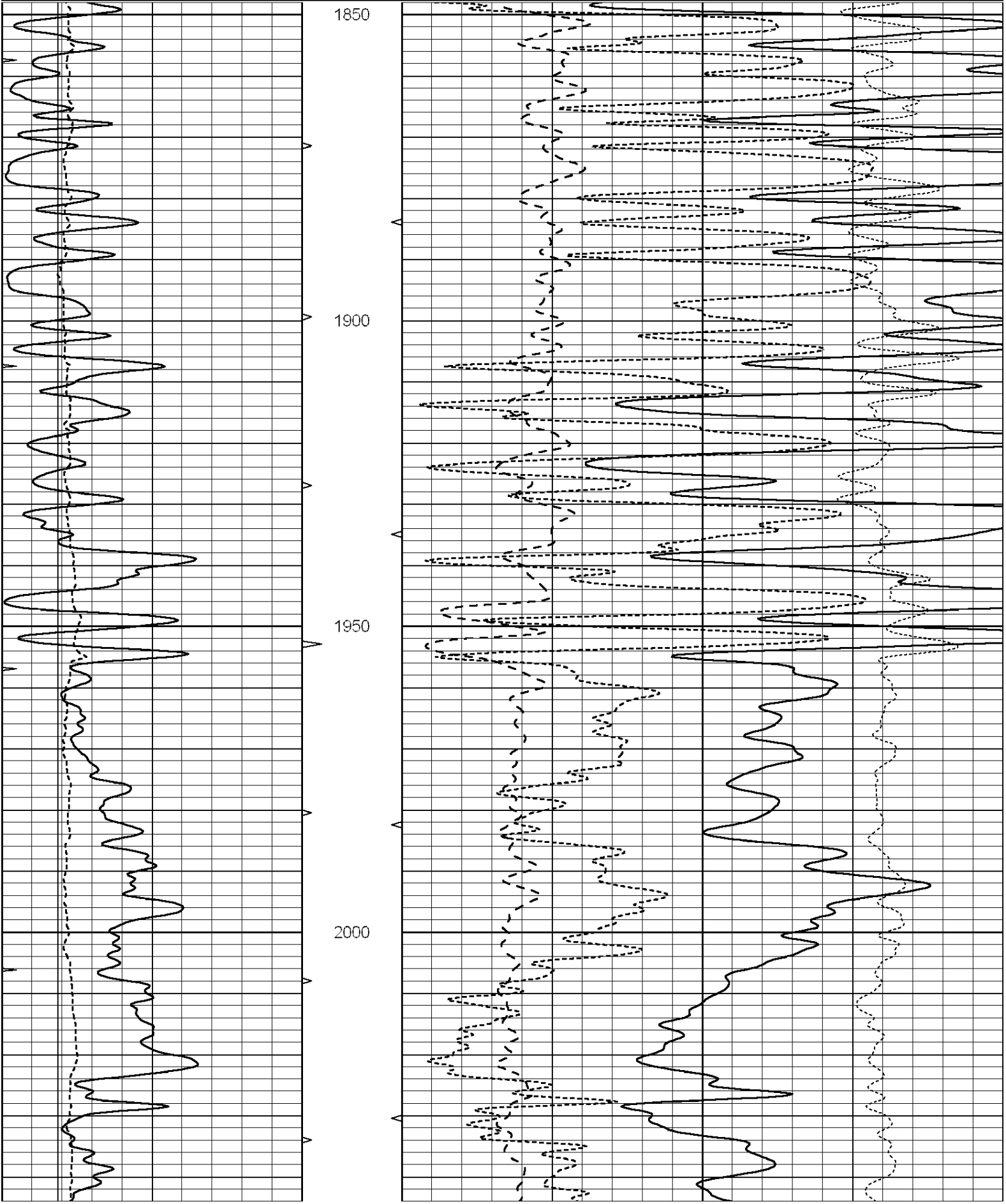
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.

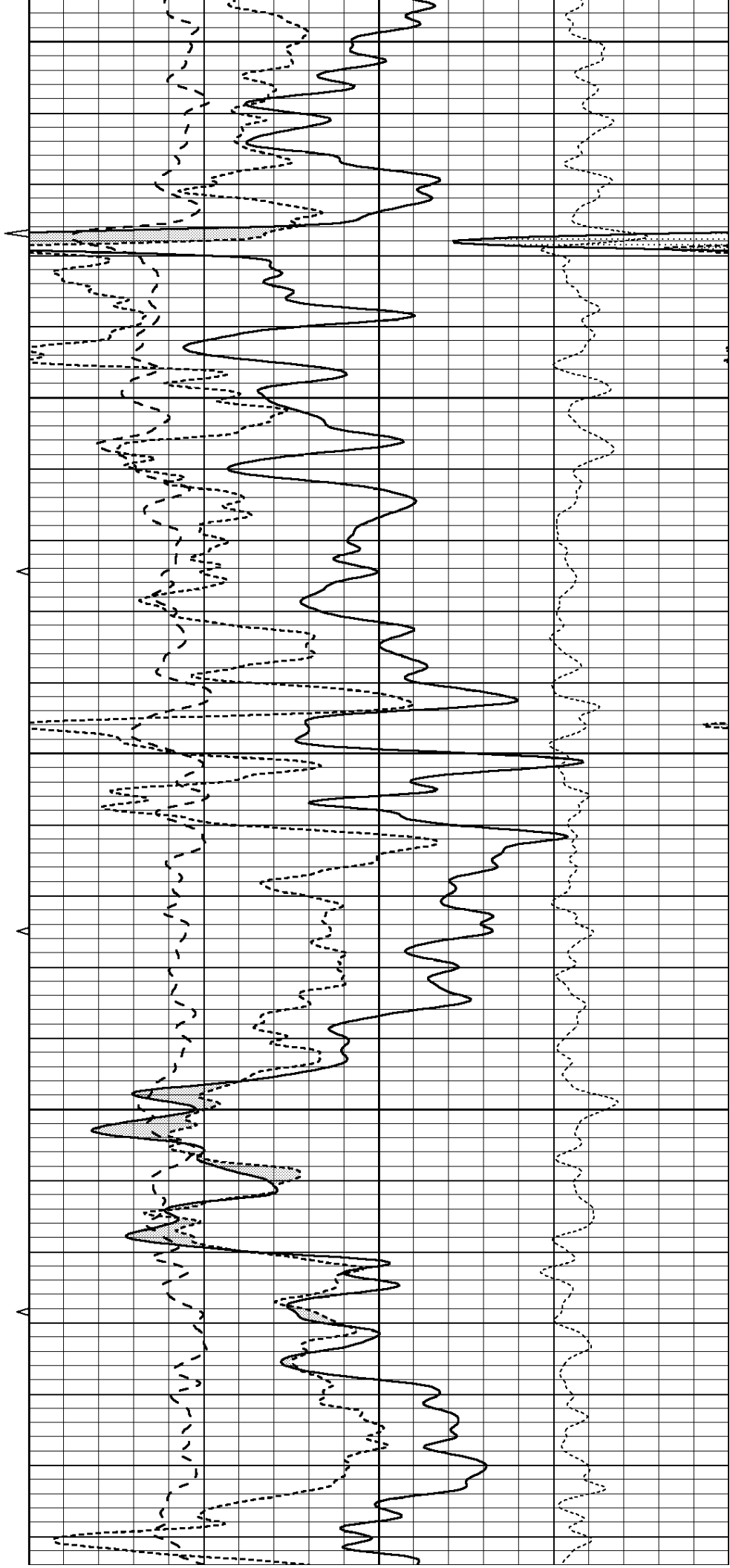
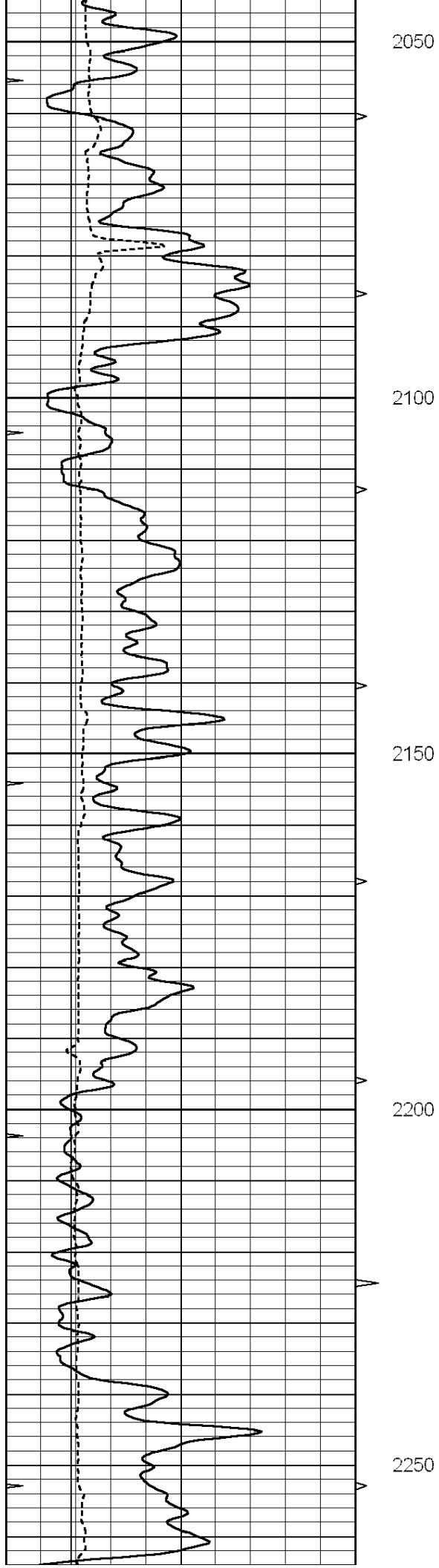
## Comments

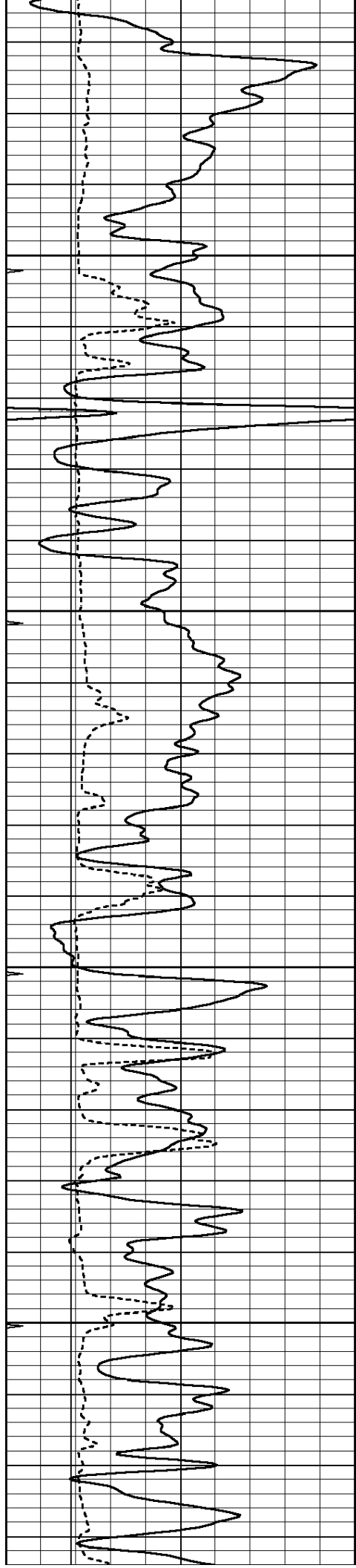
THANK YOU FOR USING "NABORS" HAYS, KANSAS (785) 628-6395  
DIRECTIONS  
HARDTNER, KS - 1 1/2 MILES EAST - NORTH INTO

Database File: 011671pe.db  
Dataset Pathname: pass3.3  
Presentation Format: \_ldt\_neu  
Dataset Creation: Sat Sep 14 01:21:24 2013 by Calc SOC 120430  
Charted by: Depth in Feet scaled 1:240

|             |                  |                             |            |            |                          |                          |       |                        |
|-------------|------------------|-----------------------------|------------|------------|--------------------------|--------------------------|-------|------------------------|
| Charted by: |                  | Depth in Feet scaled 1:2.15 |            |            |                          |                          |       |                        |
| 0           | GAMMA RAY (GAPI) | 150                         | ABHV       | 30         | COMPENSATED DENSITY (pu) |                          |       | -10                    |
| 6           | CALIPER (in)     | 16                          |            | 10 (ft3) 0 | 30                       | COMPENSATED NEUTRON (pu) |       |                        |
| -----       |                  |                             |            |            |                          |                          |       |                        |
| 0           | MINMK            | 20                          | TBHV       | 0          | PE                       | 10                       | -0.25 | CORRECTION (g/cc) 0.25 |
|             |                  |                             | 0 (ft3) 10 | -----      |                          |                          |       |                        |
|             |                  |                             |            |            |                          |                          |       |                        |





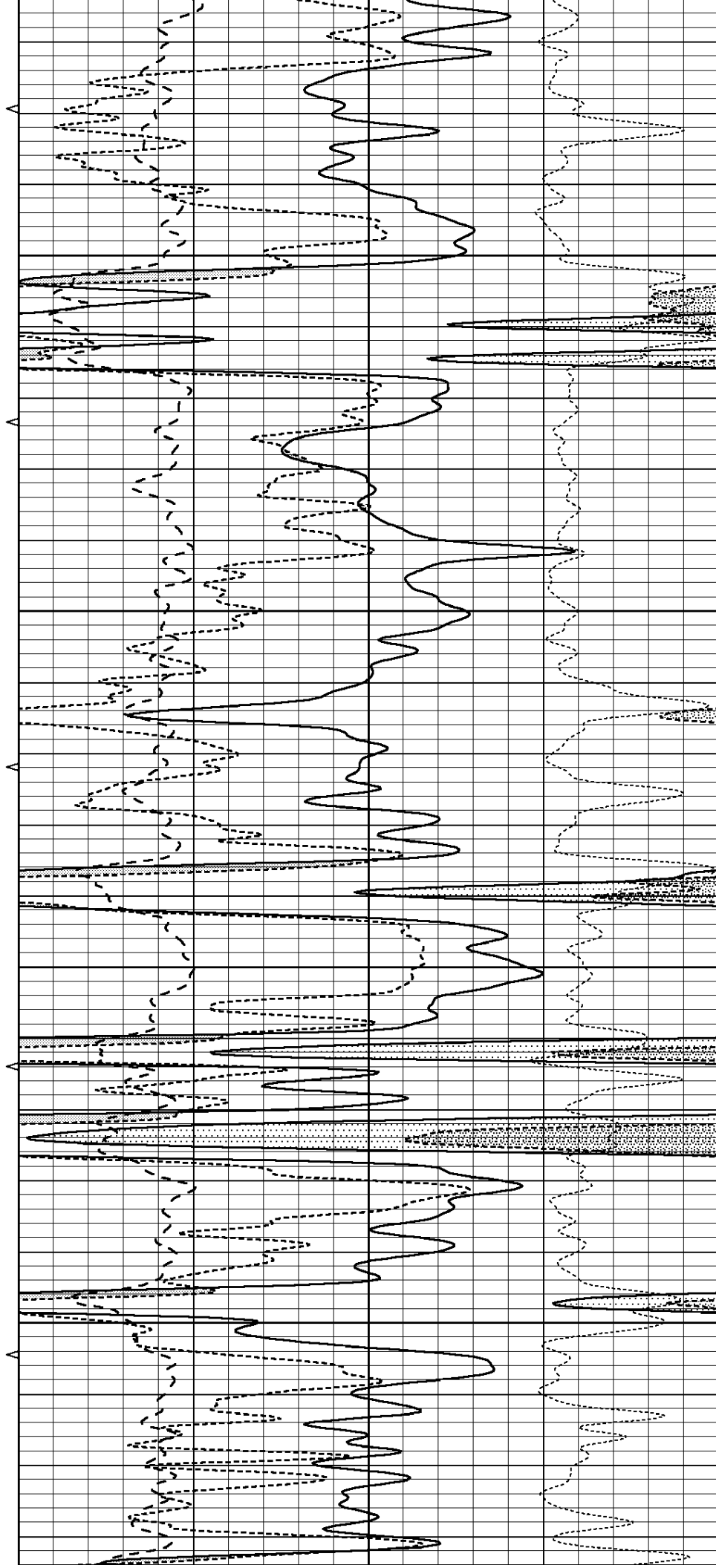


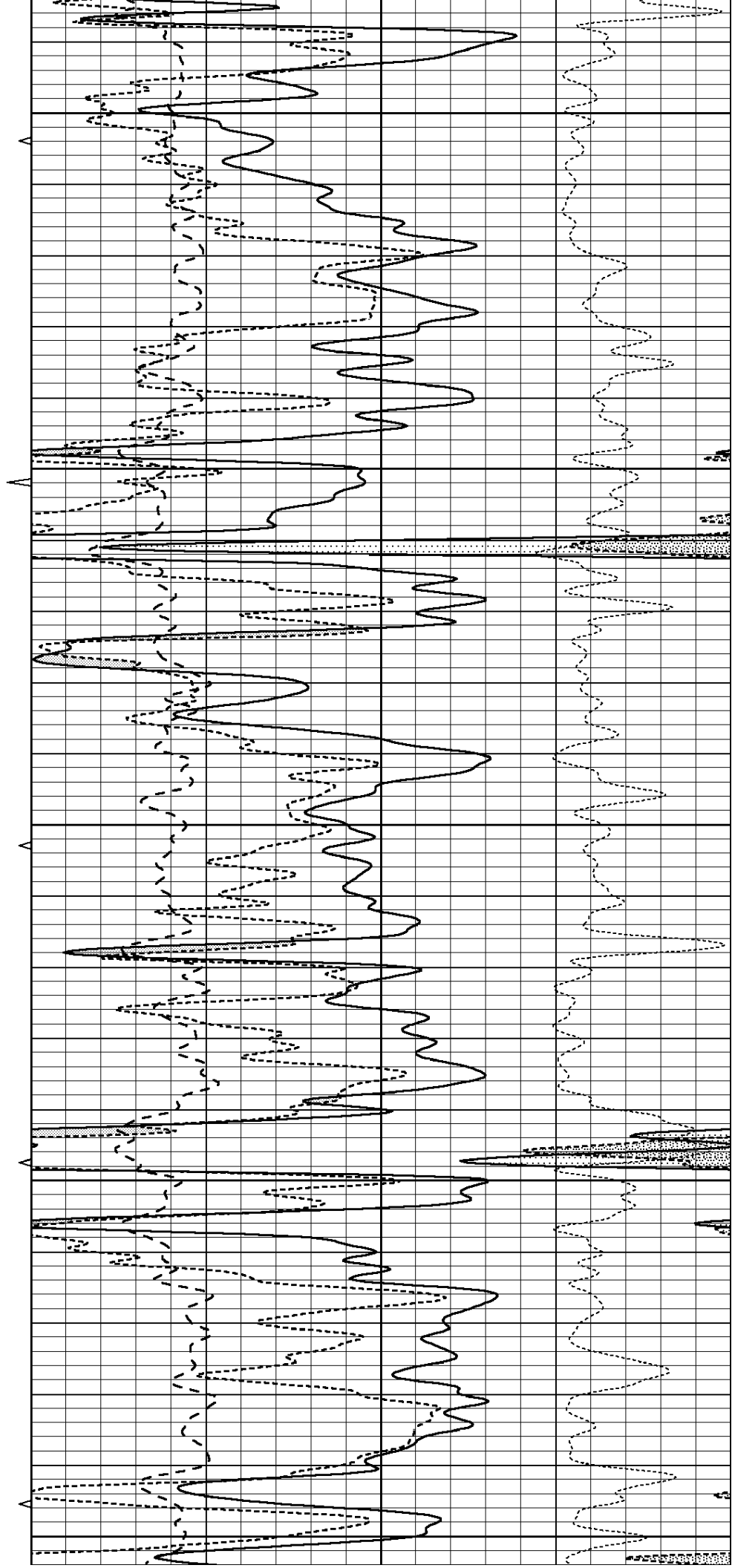
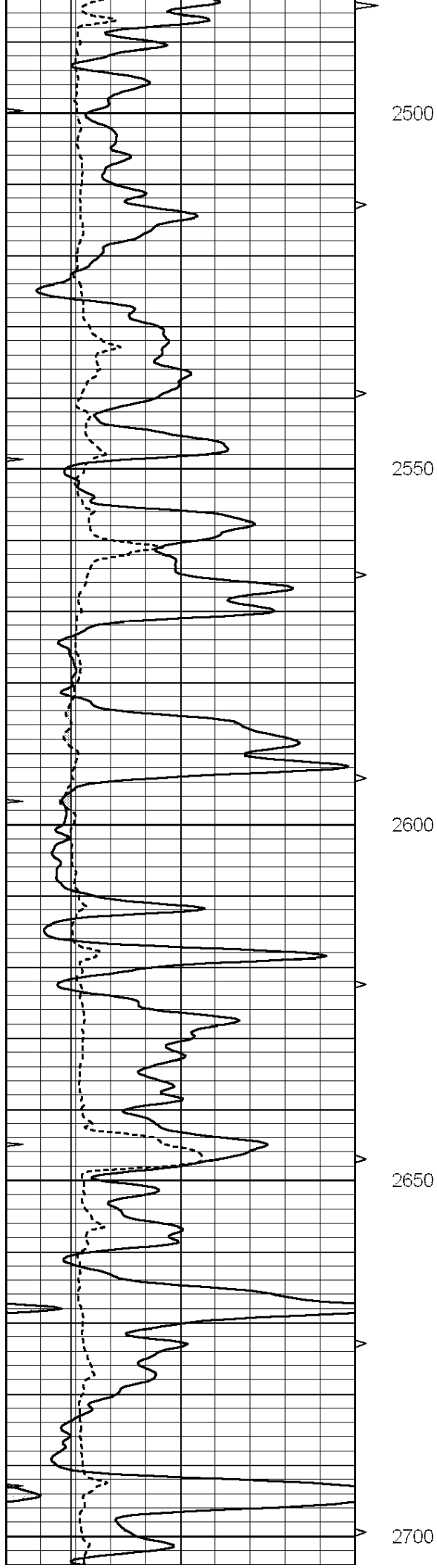
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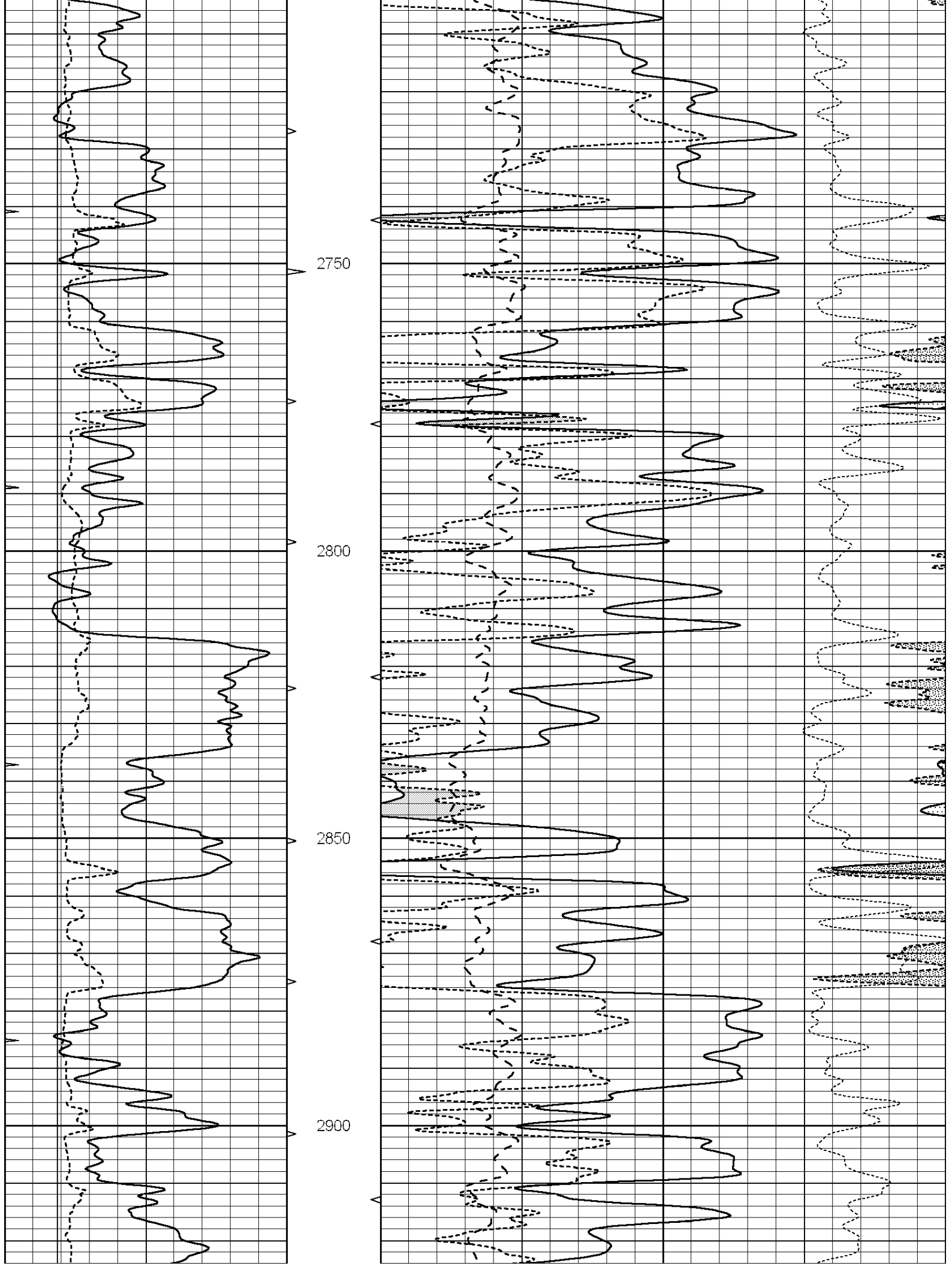
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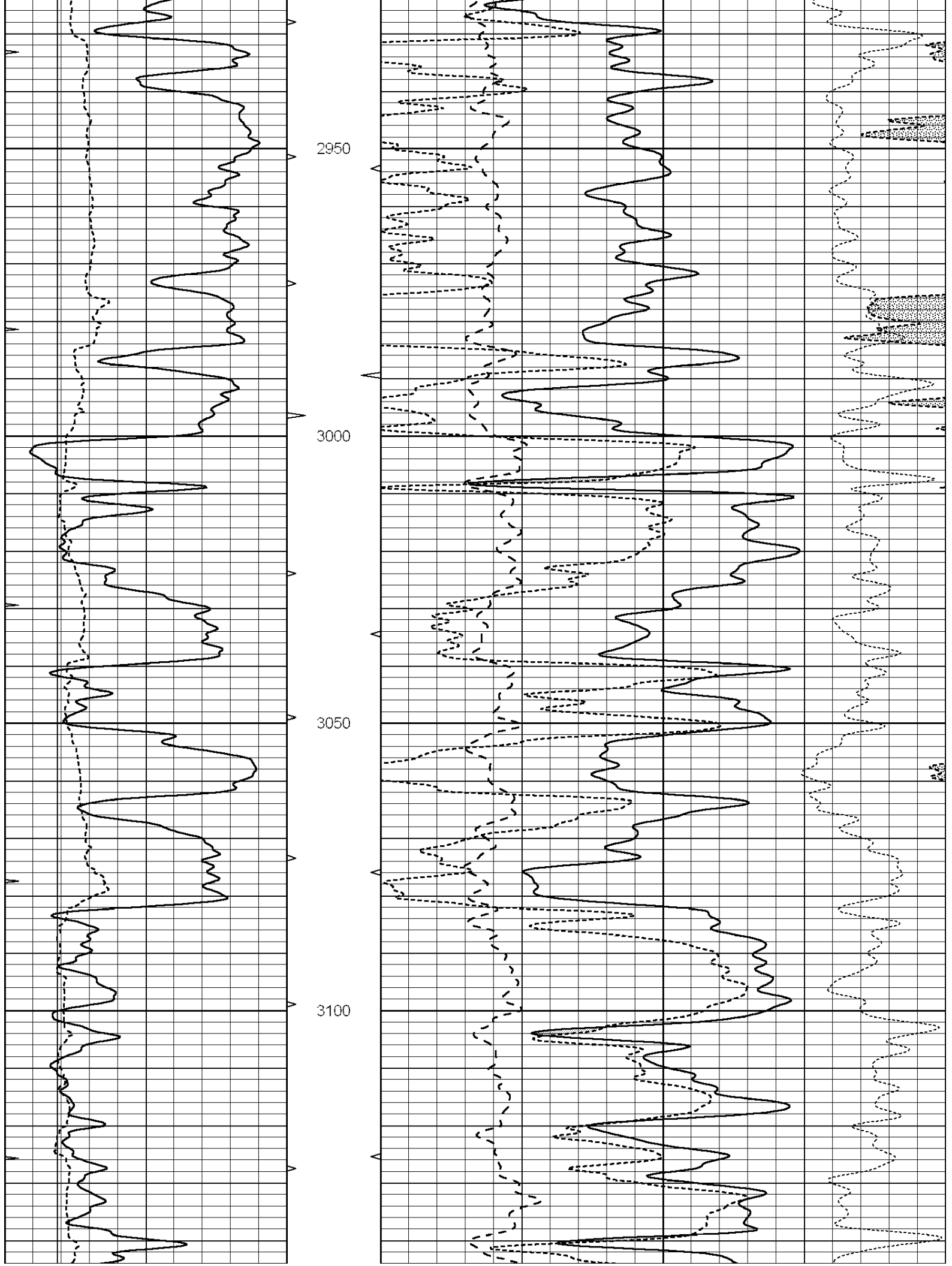
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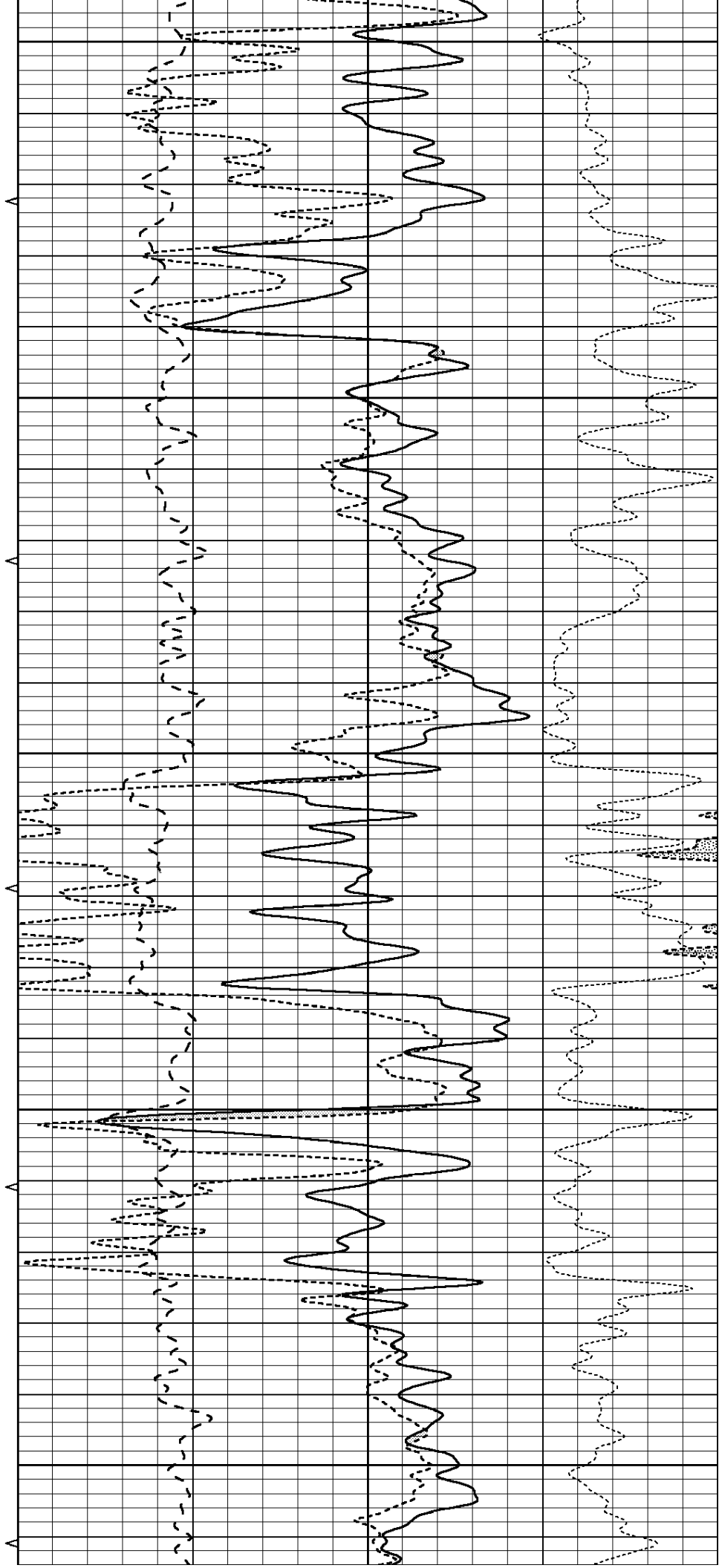
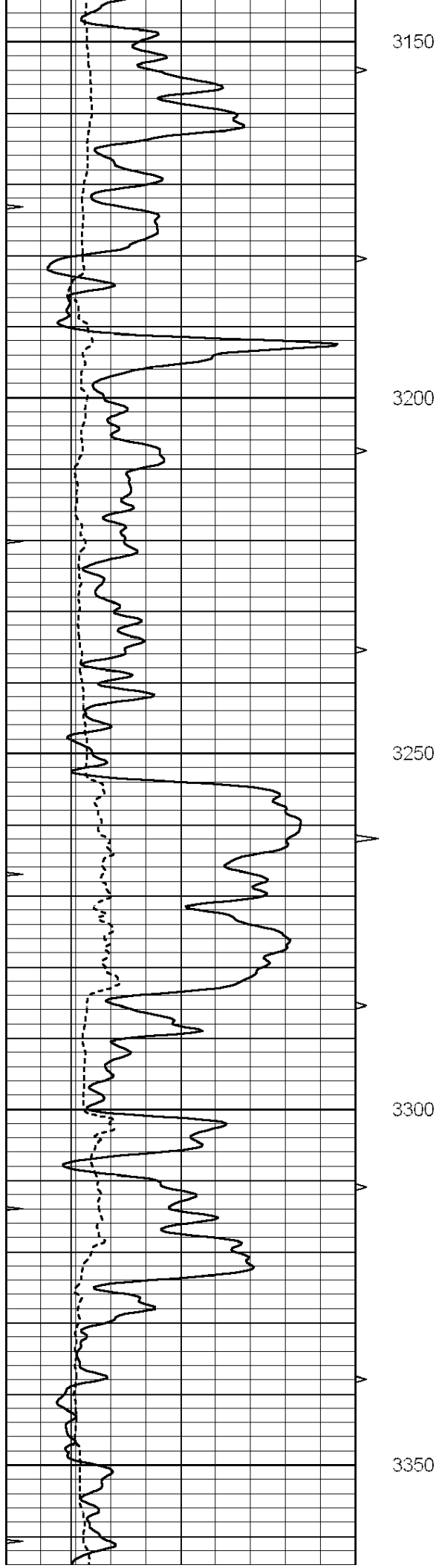
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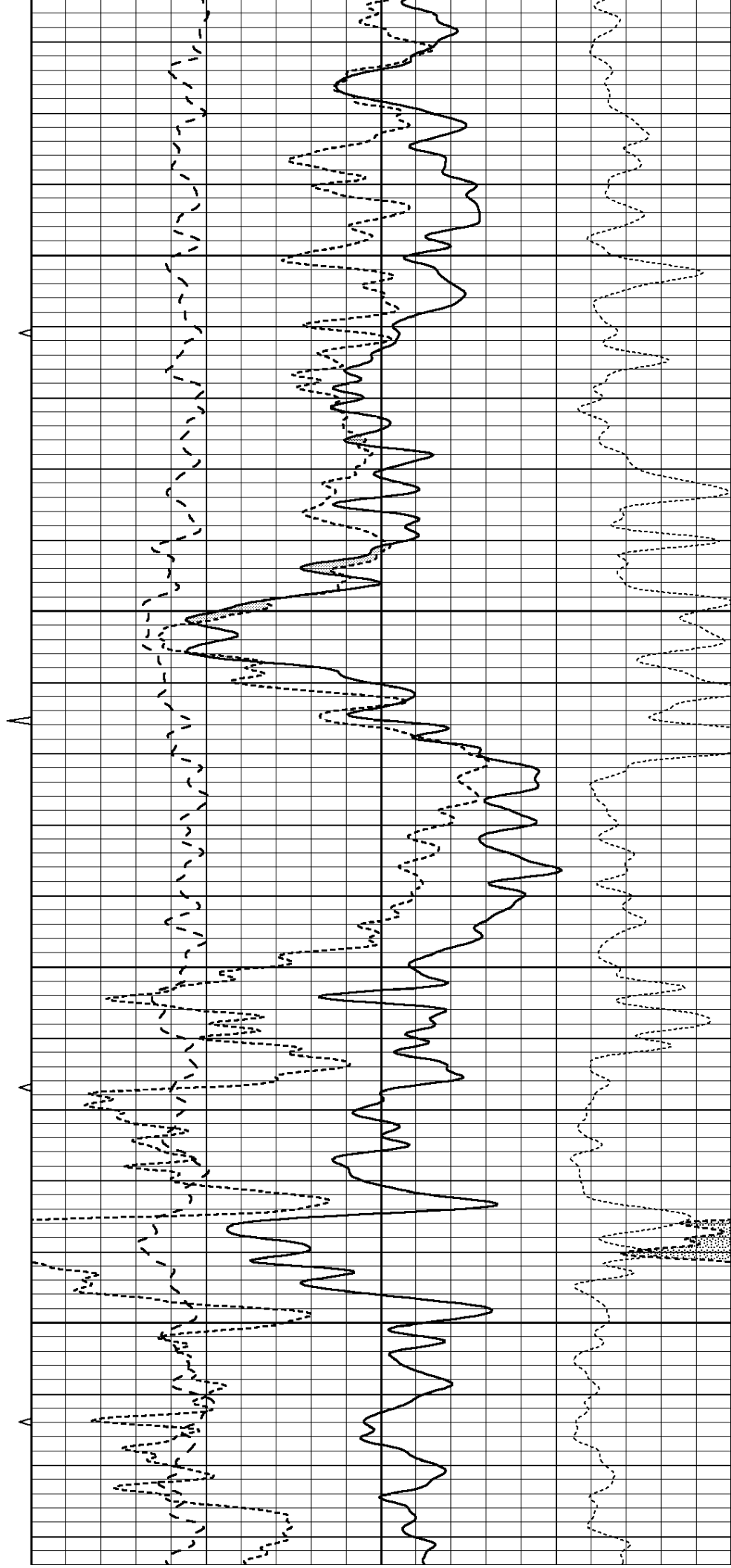
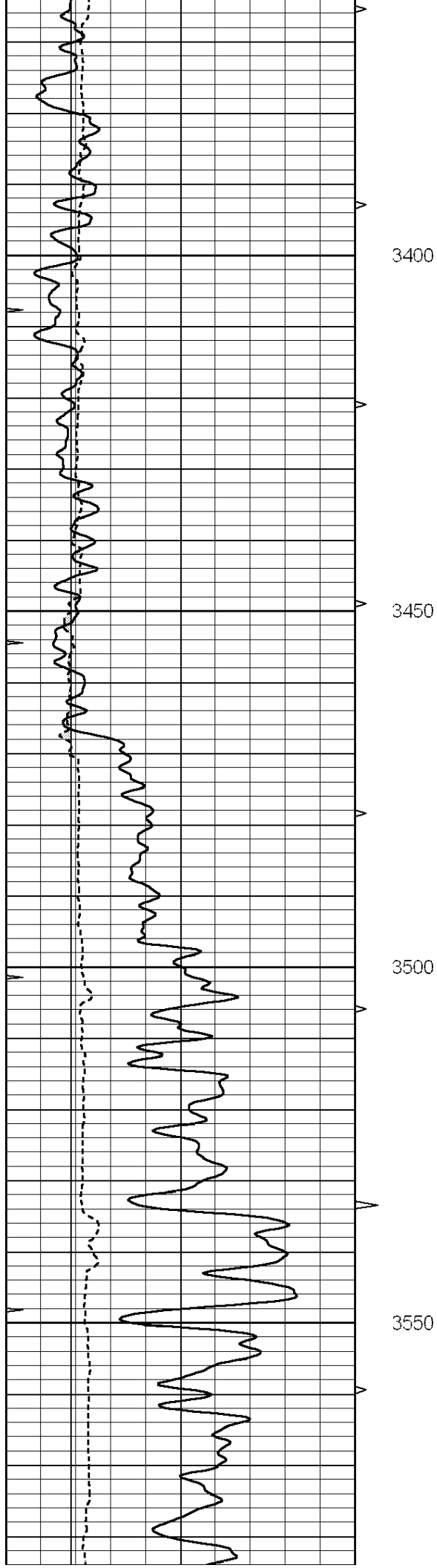


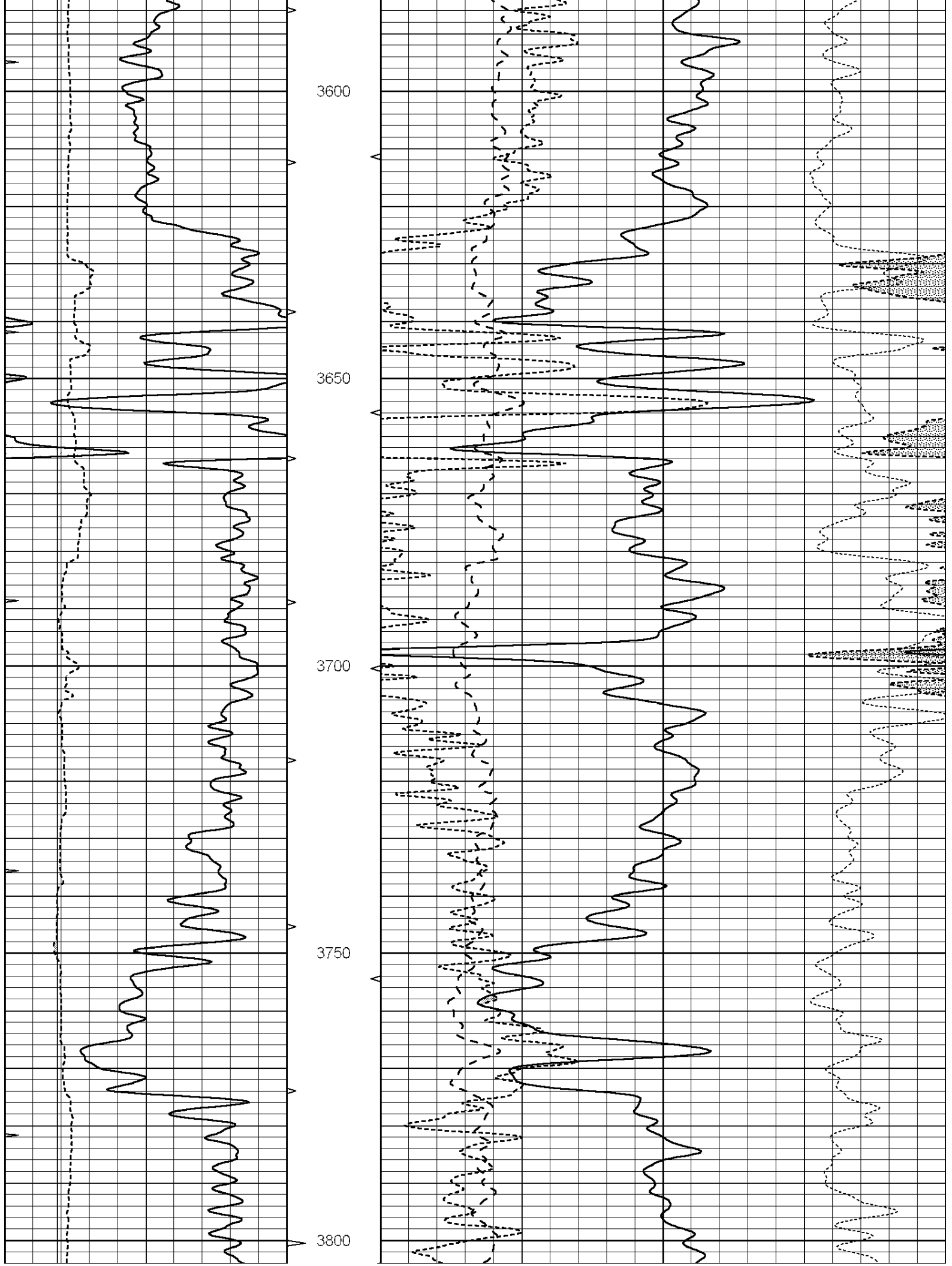


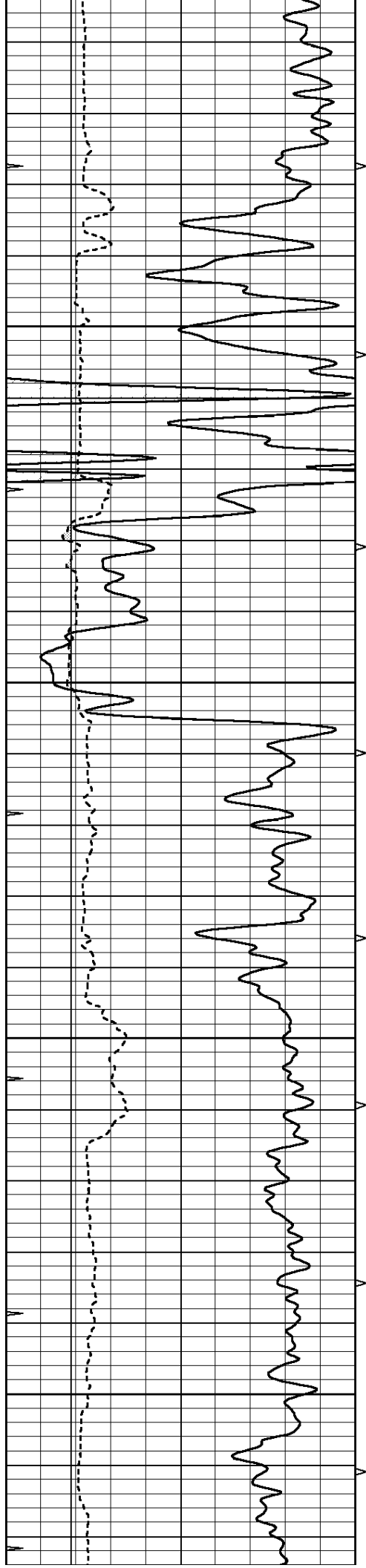










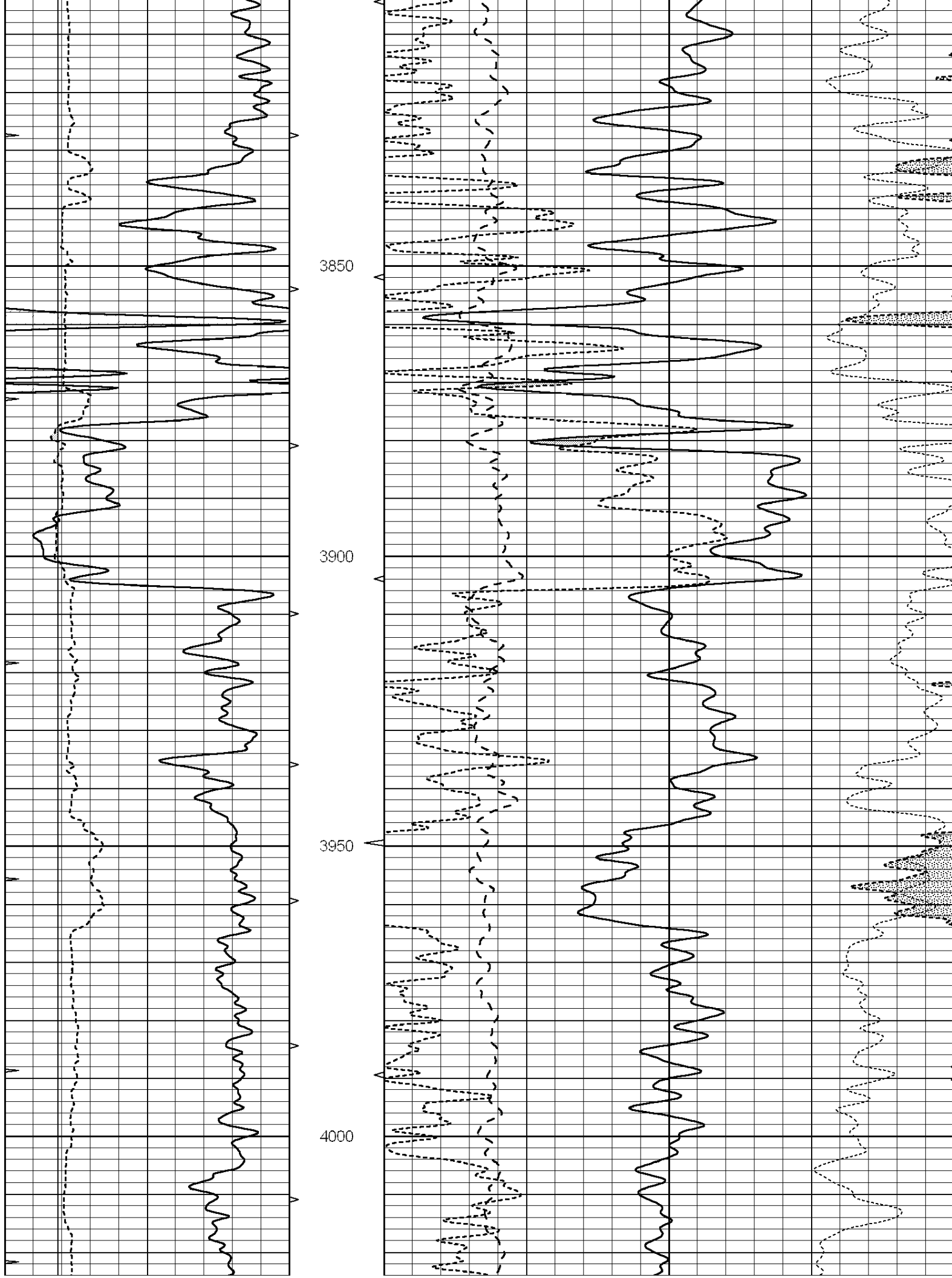
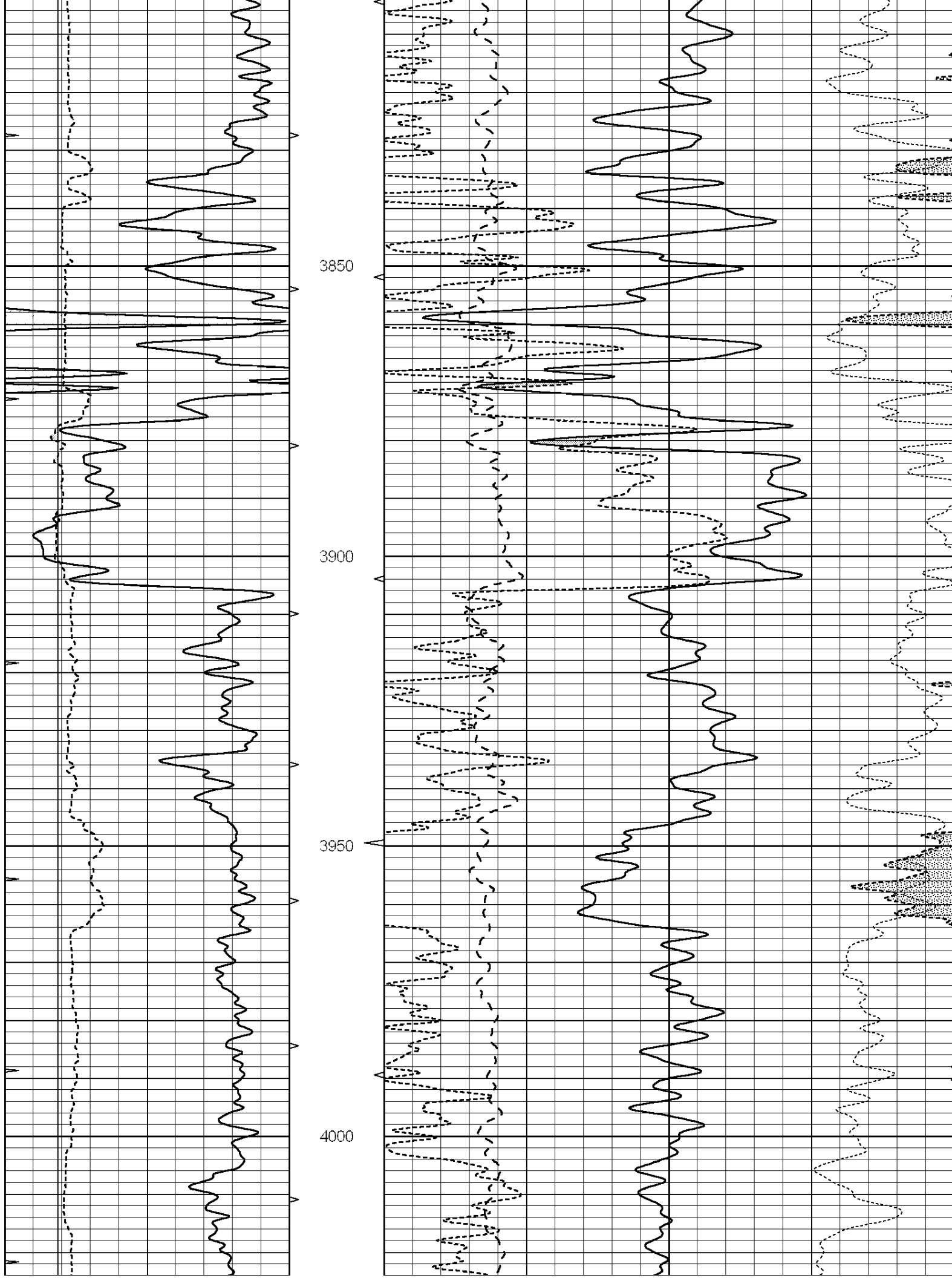
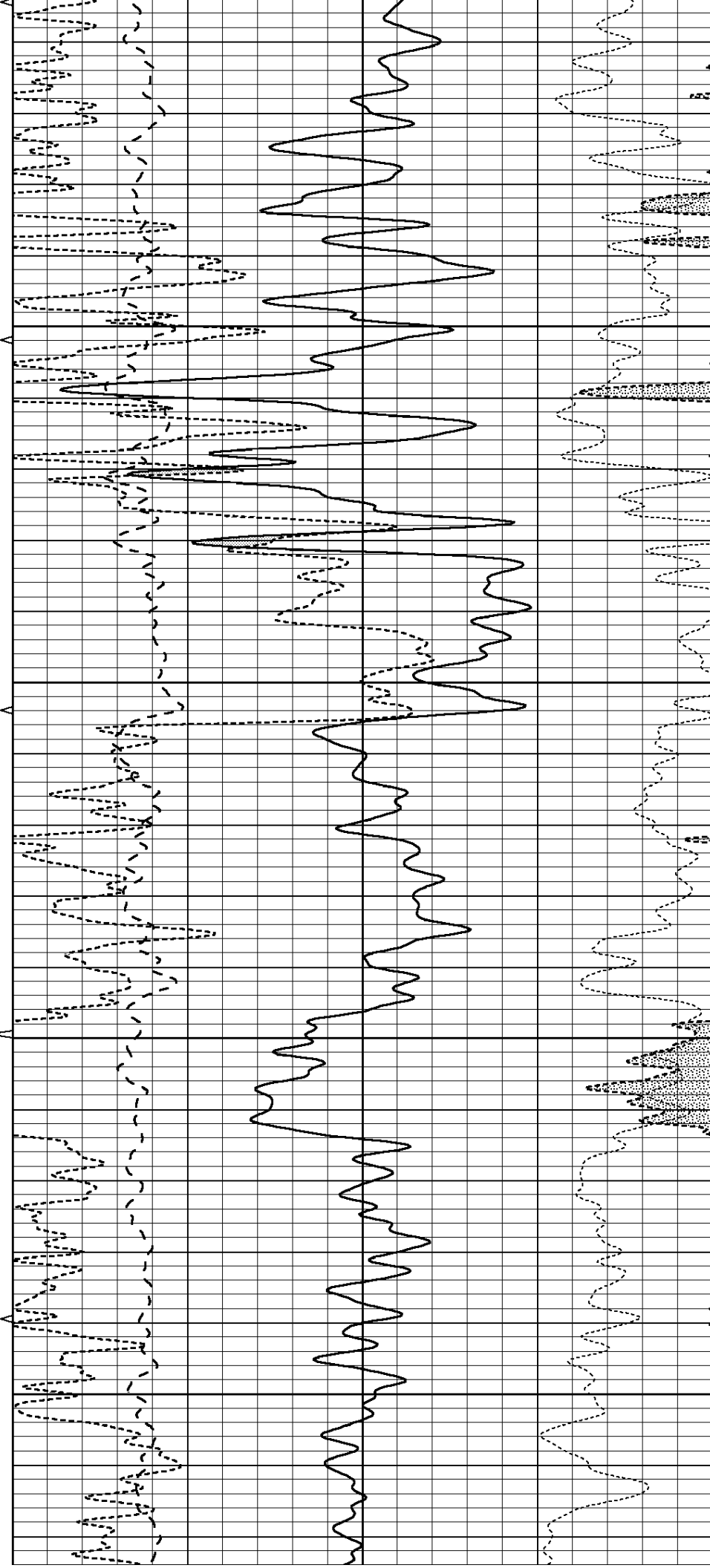


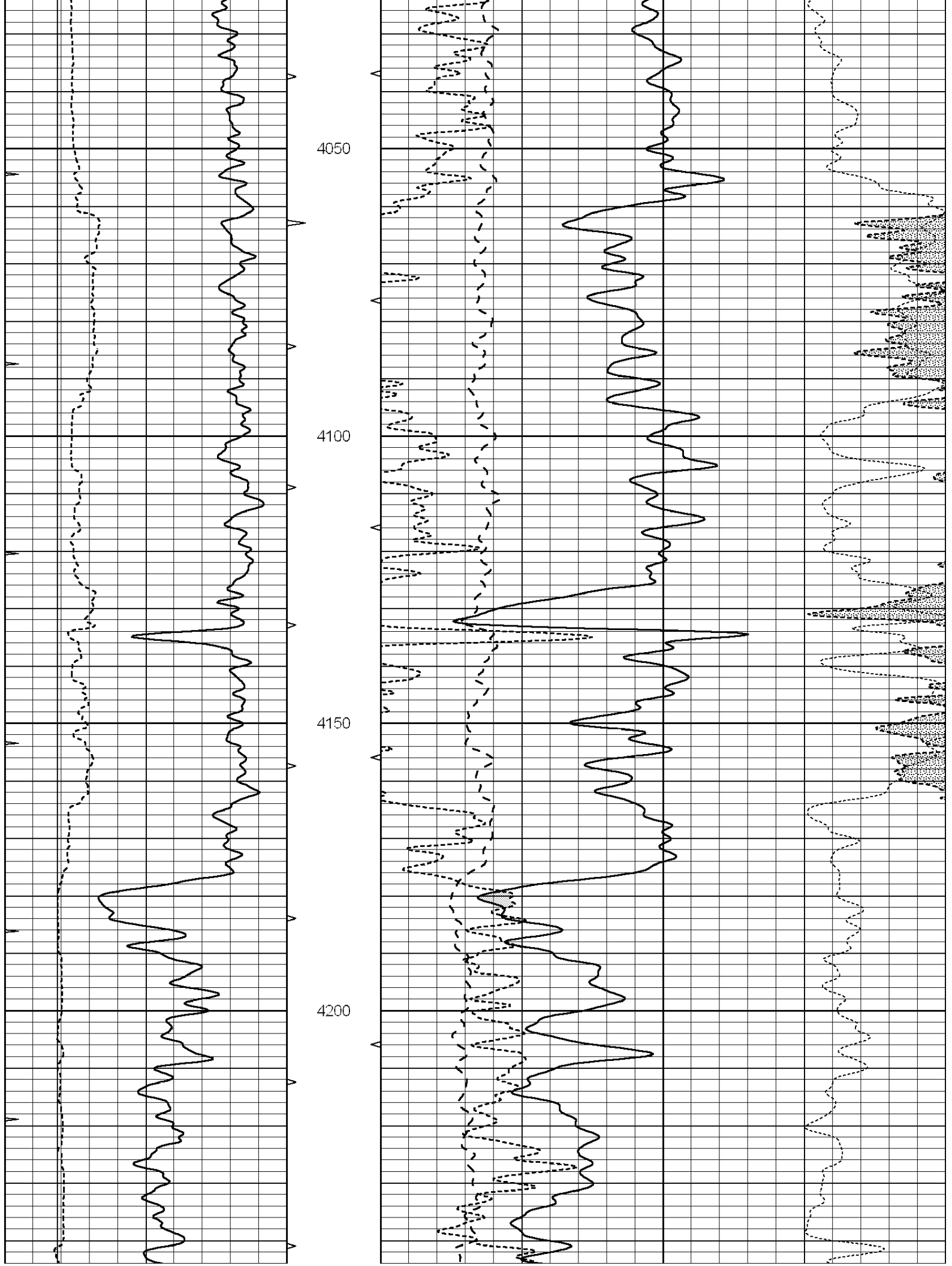
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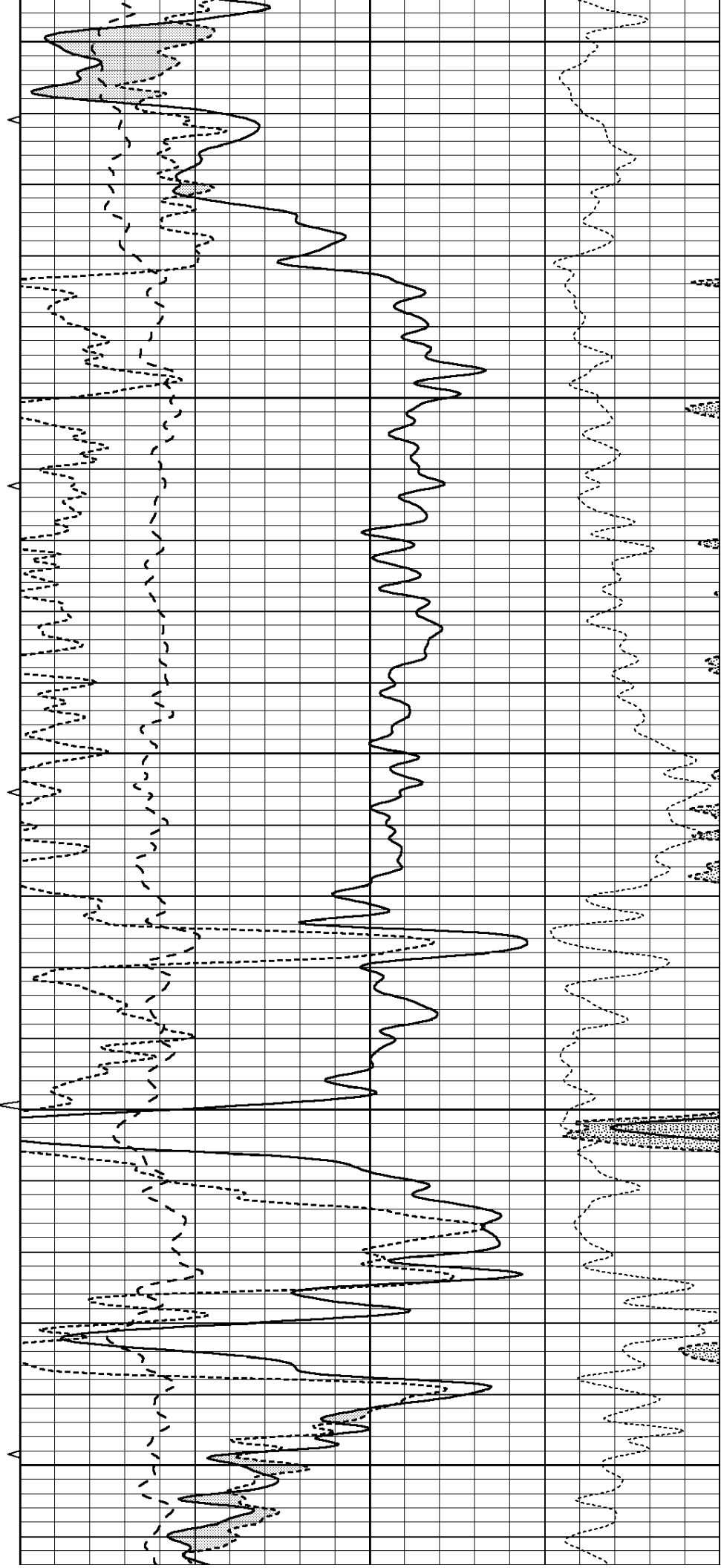
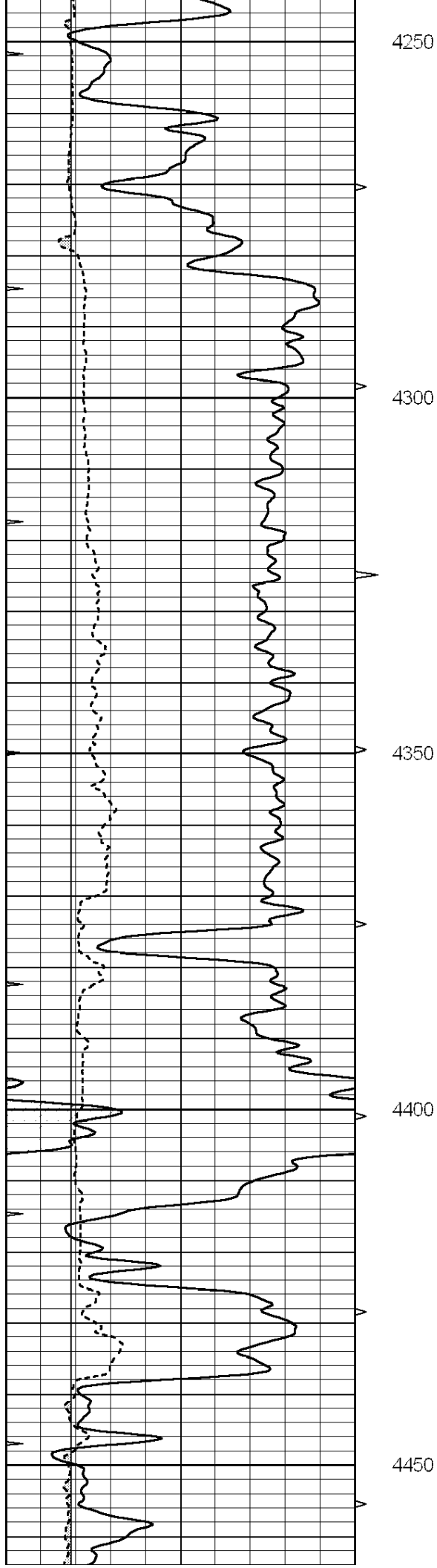
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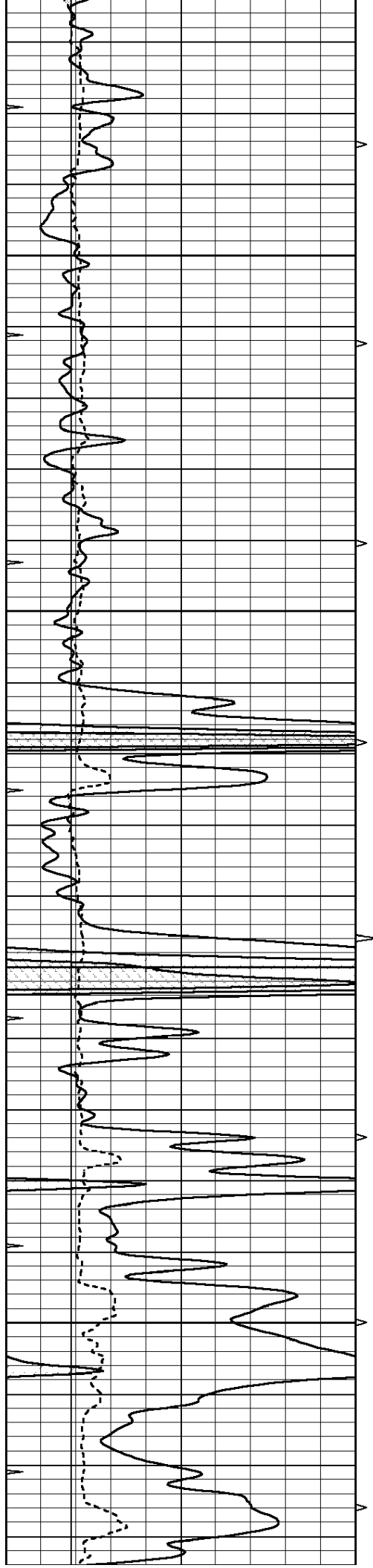
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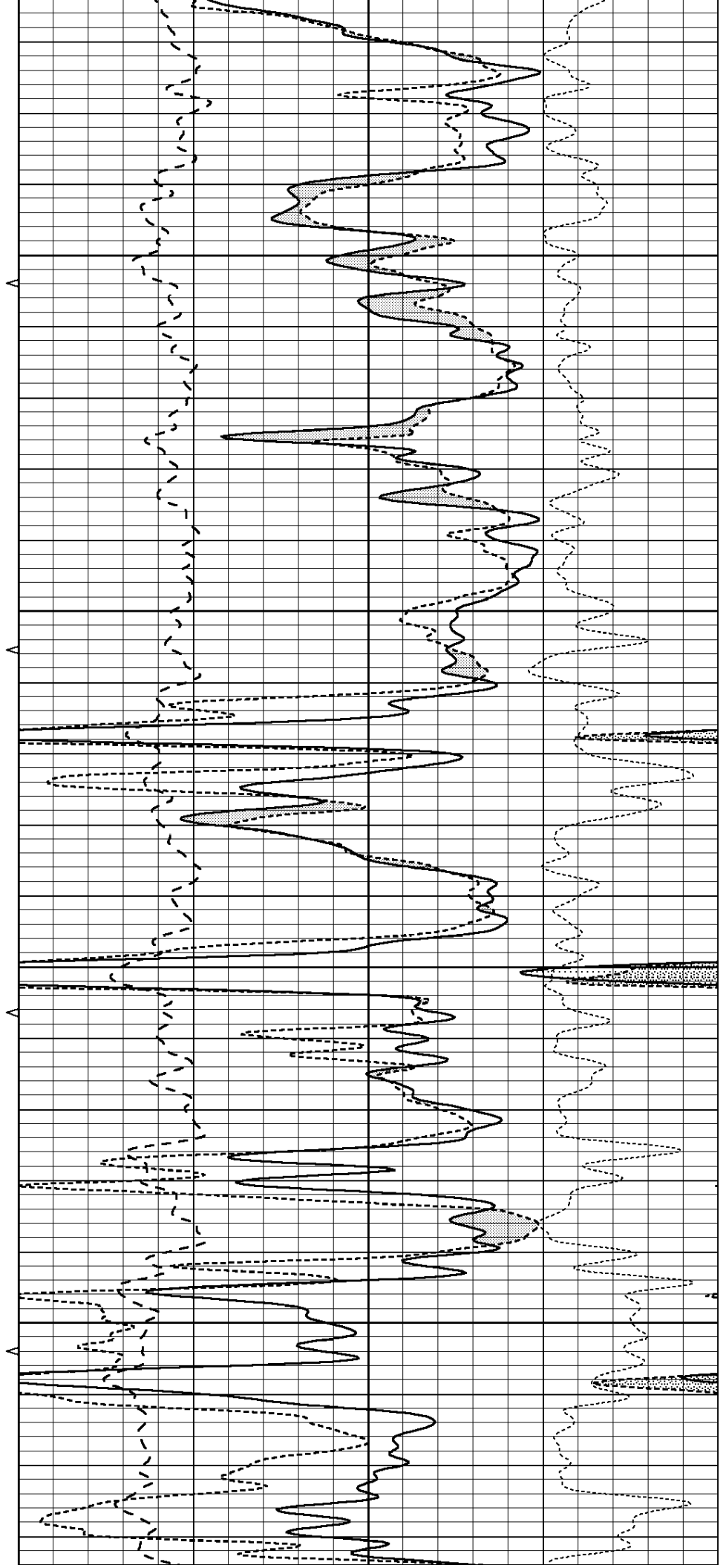


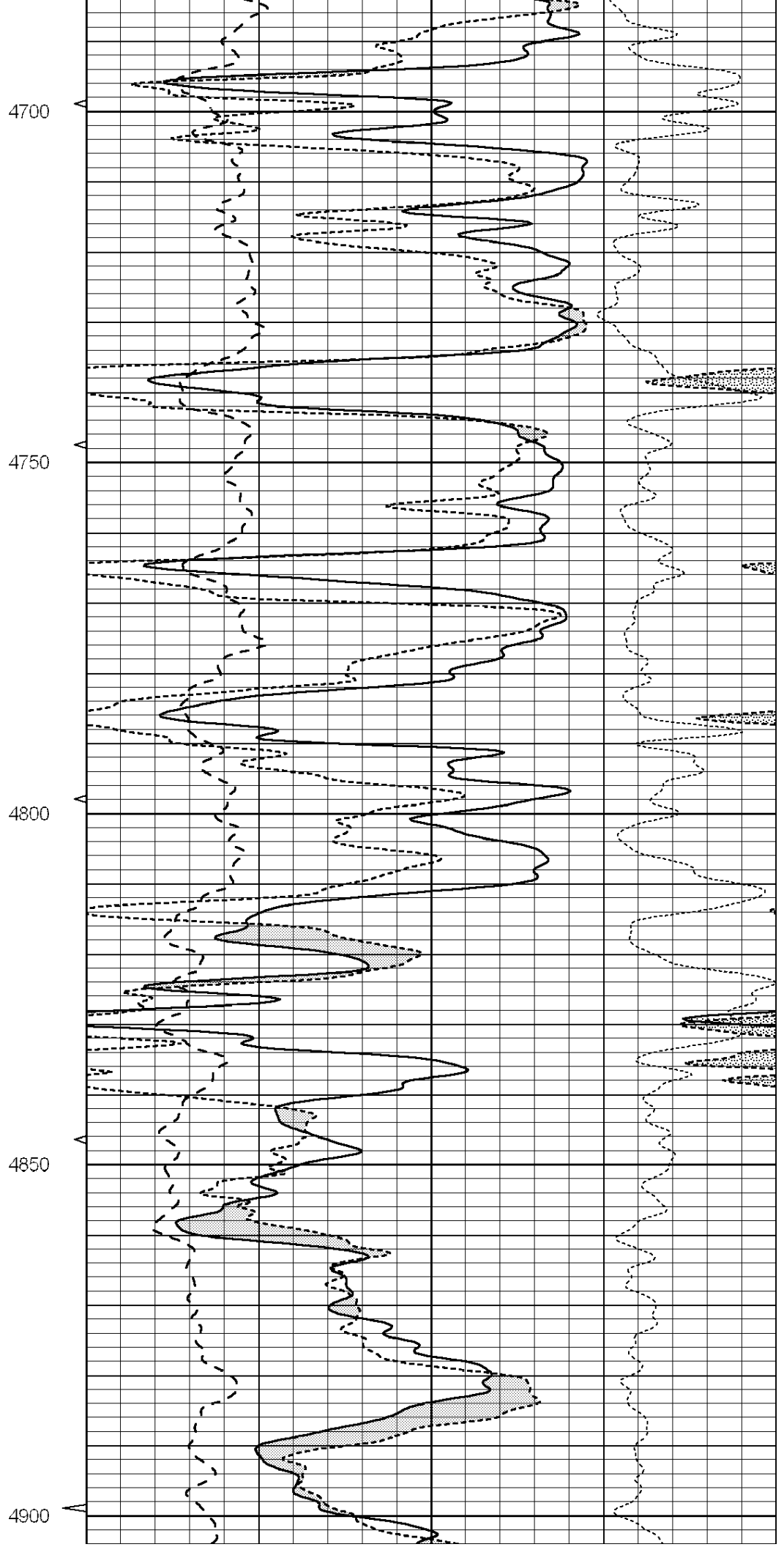
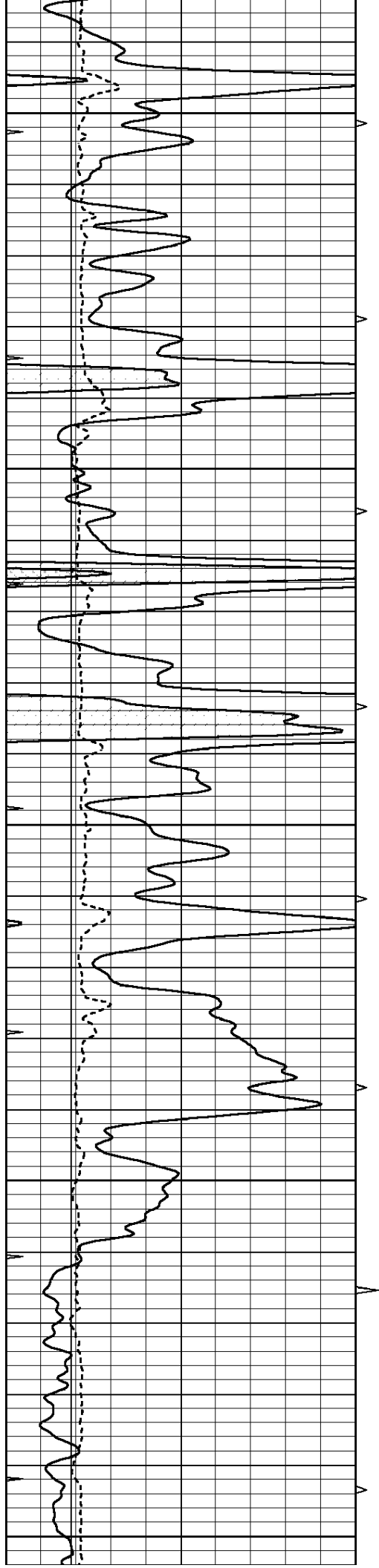
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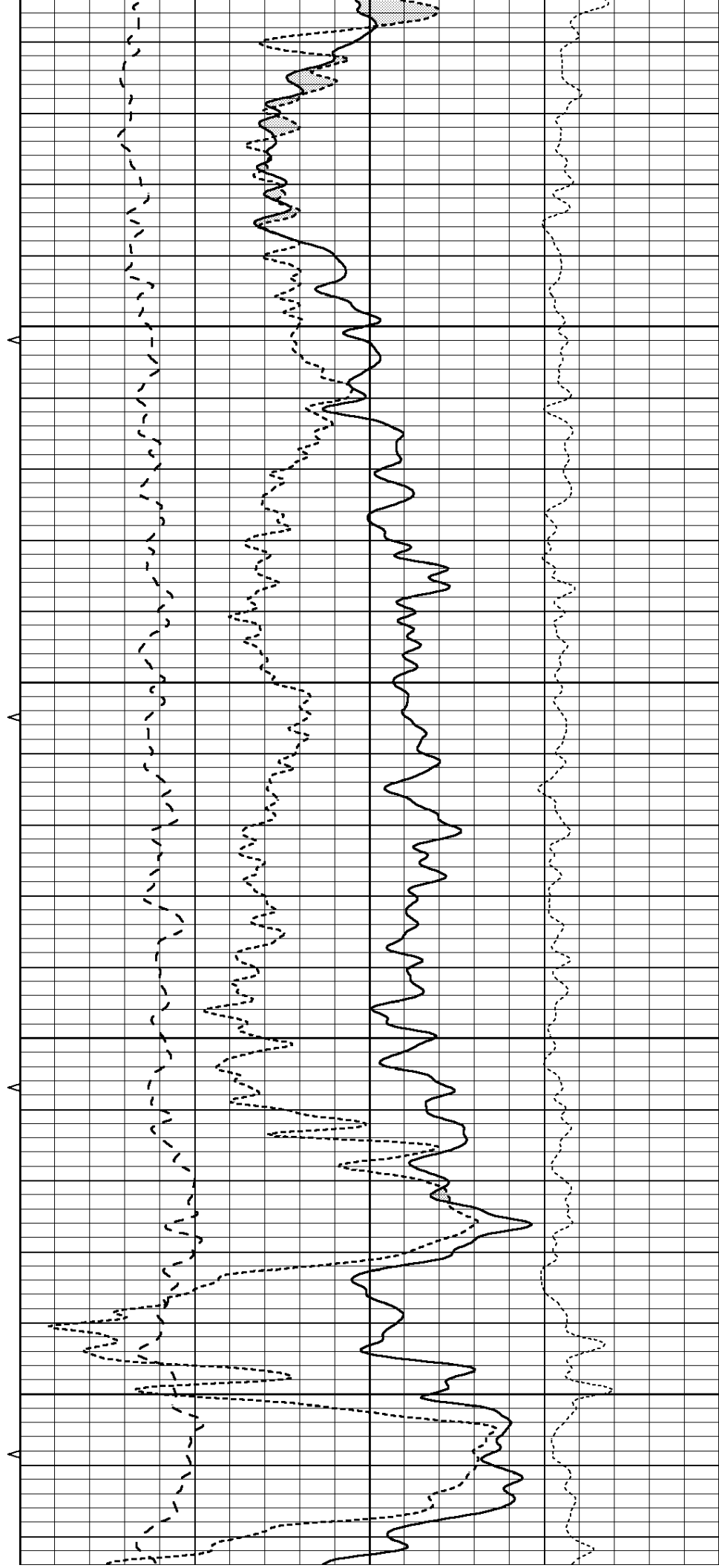
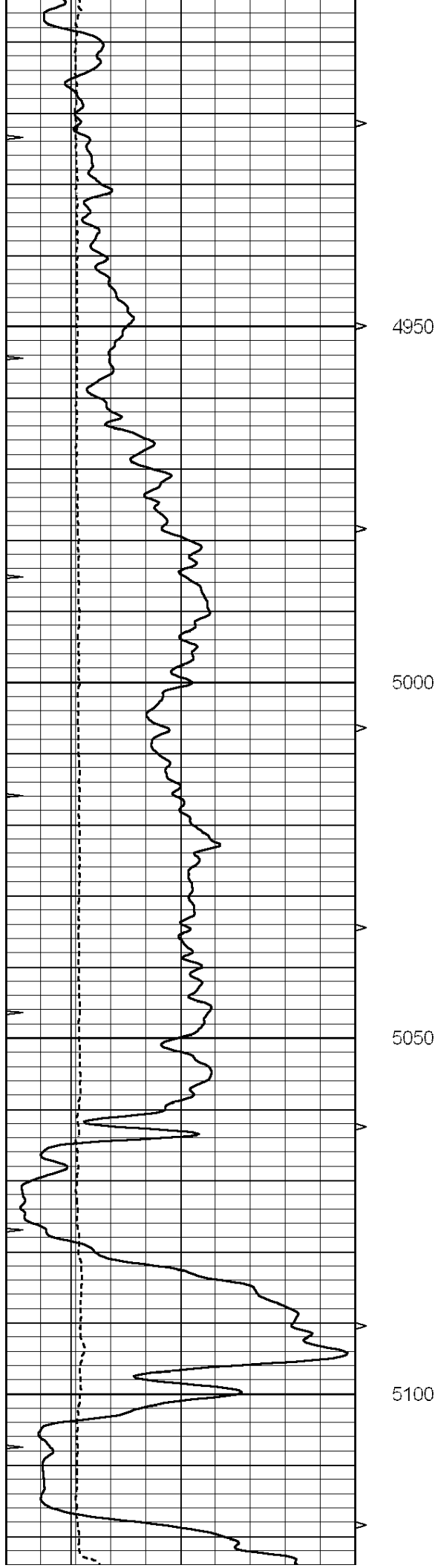
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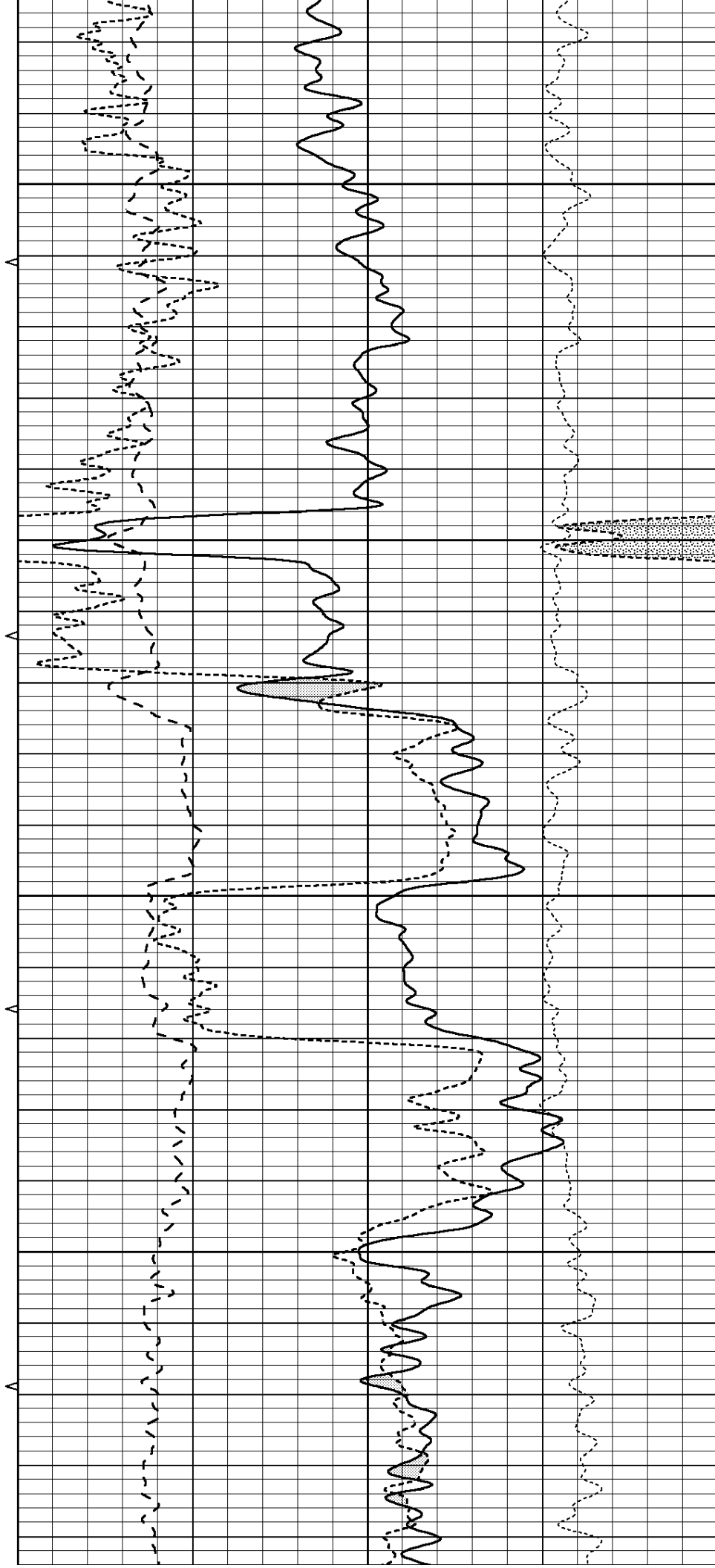
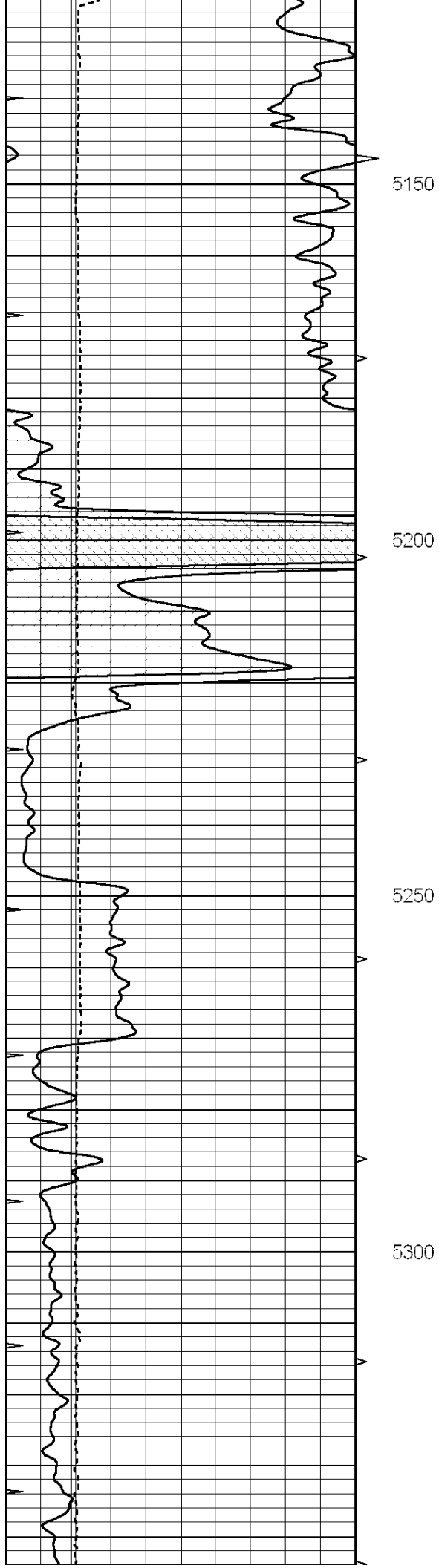
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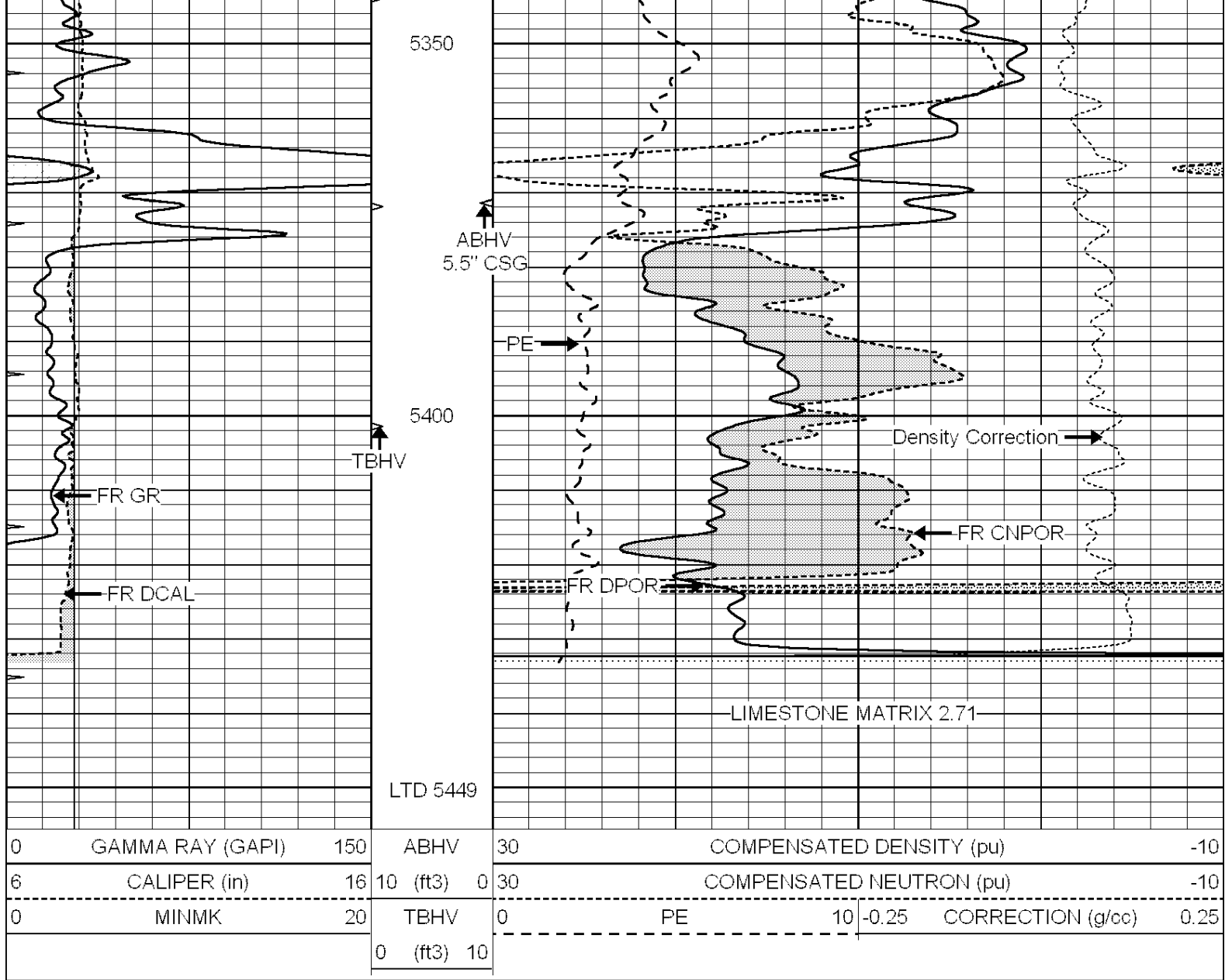










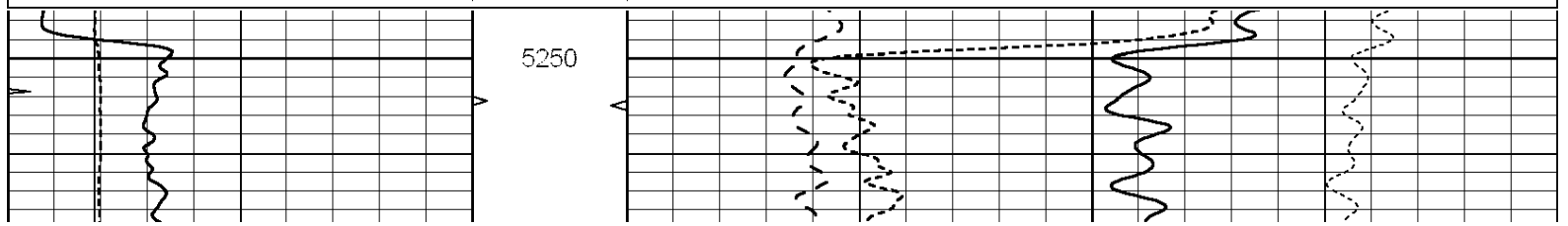


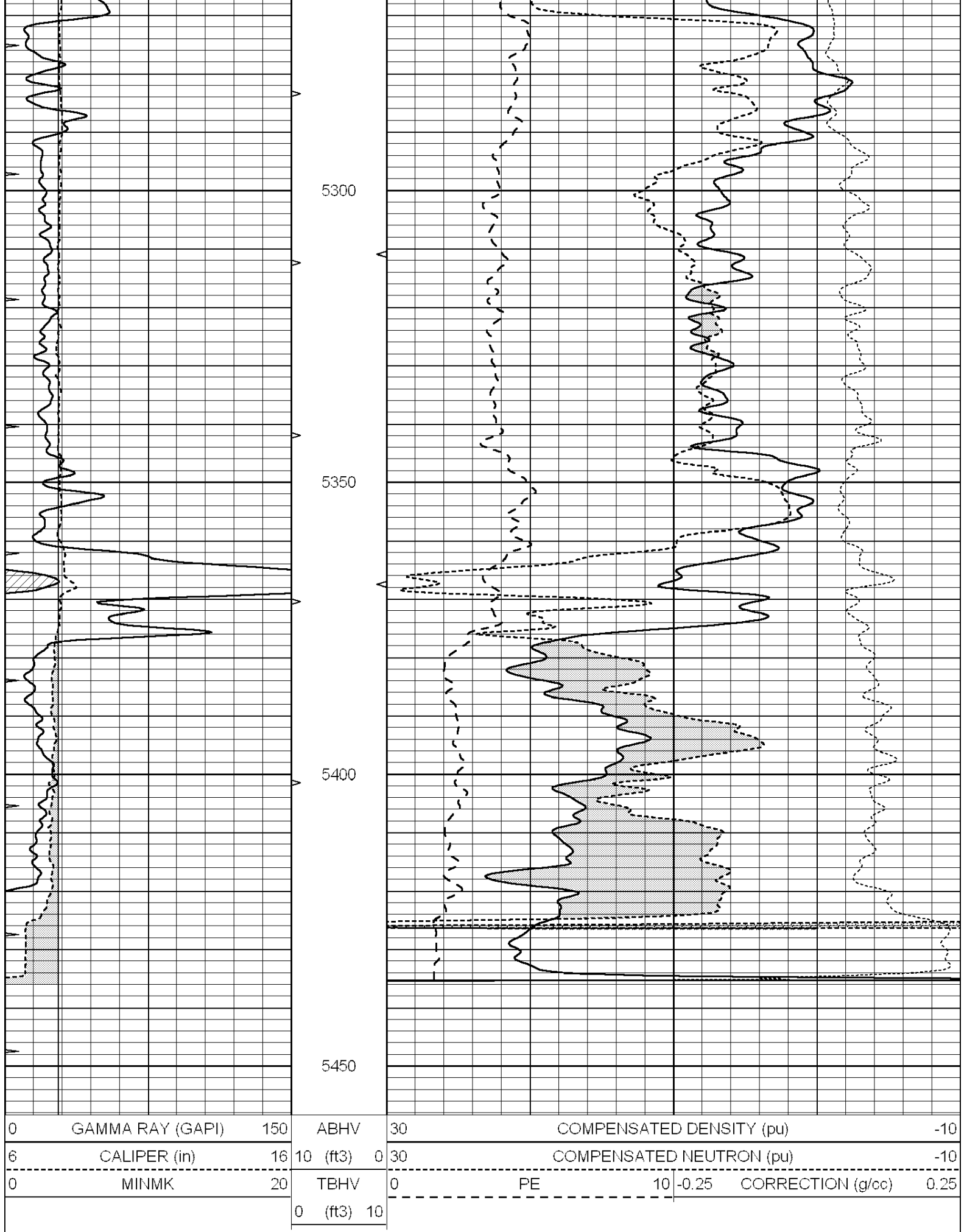
**NABORS**  
**COMPLETION  
 & PRODUCTION  
 SERVICES CO.**

# REPEAT SECTION

Database File: 011671pe.db  
 Dataset Pathname: pass2.4  
 Presentation Format: \_ldt\_neu  
 Dataset Creation: Fri Sep 13 23:46:02 2013 by Calc SOC 120430  
 Charted by: Depth in Feet scaled 1:240

|   |                  |     |          |      |                          |                                 |
|---|------------------|-----|----------|------|--------------------------|---------------------------------|
| 0 | GAMMA RAY (GAPI) | 150 | ABHV     | 30   | COMPENSATED DENSITY (pu) | -10                             |
| 6 | CALIPER (in)     | 16  | 10 (ft3) | 0 30 | COMPENSATED NEUTRON (pu) | -10                             |
| 0 | MINMK            | 20  | TBHV     | 0    | PE                       | 10 -0.25 CORRECTION (g/cc) 0.25 |
|   |                  |     | 0 (ft3)  | 10   |                          |                                 |





### Dual Induction Calibration Report

Serial-Model: PROBE9-DILG  
Surface Cal Performed: Wed Sep 11 02:02:23 2013  
Downhole Cal Performed: Mon Jul 28 12:02:56 2008  
After Survey Verification Performed: Mon Jul 28 12:02:56 2008

#### Surface Calibration

| Readings  |        |       |   | References |         |        | Results |         |
|-----------|--------|-------|---|------------|---------|--------|---------|---------|
| Loop:     | Air    | Loop  |   | Air        | Loop    |        | m       | b       |
| Deep      | -0.014 | 0.629 | V | 0.000      | 400.000 | mmho/m | 621.923 | -5.000  |
| Medium    | 0.039  | 0.728 | V | 0.000      | 464.000 | mmho/m | 640.000 | -11.000 |
| Internal: | Zero   | Cal   |   | Zero       | Cal     |        | m       | b       |
| Deep      | 0.011  | 0.610 | V | 0.000      | 400.000 | mmho/m | 667.135 | -7.256  |
| Medium    | 0.005  | 0.712 | V | 0.000      | 464.000 | mmho/m | 655.677 | -3.102  |

#### Downhole Calibration

| Readings |       |        |        | References |          |        | Results |       |
|----------|-------|--------|--------|------------|----------|--------|---------|-------|
|          | Zero  | Cal    |        | Zero       | Cal      |        | m'      | b'    |
| Deep     | 0.000 | 0.000  | mmho/m | 14.508     | 388.384  | mmho/m | 1.000   | 0.000 |
| Medium   | 0.000 | 0.000  | mmho/m | 166.367    | 504.400  | mmho/m | 1.000   | 0.000 |
| LL3      |       | 7.500  | V      |            | 1400.000 | Ohm-m  |         |       |
|          |       | 0.000  | V      |            | 20.000   | Ohm-m  |         |       |
|          |       | -7.200 | V      |            | 4000.000 | mmho-m |         |       |

#### After Survey Verification

| Readings |       |       |        | Targets |       |        | Results |       |
|----------|-------|-------|--------|---------|-------|--------|---------|-------|
|          | Zero  | Cal   |        | Zero    | Cal   |        | m'      | b'    |
| Deep     | 0.000 | 0.000 | mmho/m | 0.000   | 0.000 | mmho/m | 0.000   | 0.000 |
| Medium   | 0.000 | 0.000 | mmho/m | 0.000   | 0.000 | mmho/m | 0.000   | 0.000 |
| LL3      |       | 1.000 | Ohm-m  |         | 1.000 | Ohm-m  |         |       |
|          |       | 0.000 | Ohm-m  |         | 0.000 | Ohm-m  |         |       |
|          |       | 1.000 | mmho-m |         | 1.000 | mmho-m |         |       |

### Litho Density Calibration Report

Serial: 004N Model: PRB

#### Master Calibration

Performed Mon Jun 03 09:36:56 2013

|             | Background | Magnesium   | Aluminum | Sandstone           |         |
|-------------|------------|-------------|----------|---------------------|---------|
| Window 1    | 1417.6     | 10391.4     | 3464.6   | 11537.5             | cps     |
| Window 2    | 1295.0     | 8959.7      | 3050.1   | 9816.4              | cps     |
| Window 3    | 1105.1     | 5464.2      | 2051.0   | 5838.8              | cps     |
| Window 4    | 315.0      | 317.7       | 312.9    | 319.8               | cps     |
| Long Space  | 0.0        | 7664.6      | 1755.0   | 8521.3              | cps     |
| Short Space | 1.8        | 1582.4      | 1040.8   | 1699.4              | cps     |
| Rho         |            | 1.7100      | 2.5900   | 1.3800              | g/cc    |
| Pe          |            | 0.0000      | 2.5700   | 1.5500              |         |
| Rib Angle   | : 44.1     | Rib Slope   | : 0.970  | Density/Spine Ratio | : 0.574 |
| Spine Angle | : 74.1     | Spine Slope | : 3.519  | Spine Intercept     | : -17.0 |

#### Before Survey Verification

Performed Wed Dec 31 18:00:00 1969

|                     |     |        |        |        |      |
|---------------------|-----|--------|--------|--------|------|
| Window 1            | 0.0 | 0.0    | 0.0    | 0.0    | cps  |
| Window 2            | 0.0 | 0.0    | 0.0    | 0.0    | cps  |
| Window 3            | 0.0 | 0.0    | 0.0    | 0.0    | cps  |
| Window 4            | 0.0 | 0.0    | 0.0    | 0.0    | cps  |
| Long Space          | 0.0 | 0.0    | 0.0    | 0.0    | cps  |
| Short Space         | 0.0 | 0.0    | 0.0    | 0.0    | cps  |
| Measured Rho        |     | 0.0000 | 0.0000 | 0.0000 | g/cc |
| Measured Correction |     | 0.0000 | 0.0000 | 0.0000 | g/cc |
| Measured Pe         |     |        | 0.0000 | 0.0000 |      |

|                           |     |                                    |        |        |      |
|---------------------------|-----|------------------------------------|--------|--------|------|
| After Survey Verification |     | Performed Wed Dec 31 18:00:00 1969 |        |        |      |
|                           |     |                                    |        |        |      |
| Window 1                  | 0.0 | 0.0                                | 0.0    | 0.0    | cps  |
| Window 2                  | 0.0 | 0.0                                | 0.0    | 0.0    | cps  |
| Window 3                  | 0.0 | 0.0                                | 0.0    | 0.0    | cps  |
| Window 4                  | 0.0 | 0.0                                | 0.0    | 0.0    | cps  |
| Long Space                | 0.0 | 0.0                                | 0.0    | 0.0    | cps  |
| Short Space               | 0.0 | 0.0                                | 0.0    | 0.0    | cps  |
| Measured Rho              |     | 0.0000                             | 0.0000 | 0.0000 | g/cc |
| Measured Correction       |     | 0.0000                             | 0.0000 | 0.0000 | g/cc |
| Measured Pe               |     |                                    | 0.0000 | 0.0000 |      |

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Compensated Neutron Calibration Report

|                |        |
|----------------|--------|
| Serial Number: | 070808 |
| Tool Model:    | Probe  |

|                         |          |          |        |
|-------------------------|----------|----------|--------|
| PRE-SURVEY VERIFICATION |          |          |        |
| Detector                | Readings | Measured | Target |
| Short Space             | cps      |          |        |
| Long Space              | cps      | pu       | pu     |

|                          |          |          |        |
|--------------------------|----------|----------|--------|
| POST-SURVEY VERIFICATION |          |          |        |
| Detector                 | Readings | Measured | Target |
| Short Space              | cps      |          |        |
| Long Space               | cps      | pu       | pu     |

Gamma Ray Calibration Report

|                     |                          |          |
|---------------------|--------------------------|----------|
| Serial Number:      | 070559                   |          |
| Tool Model:         | OPEN_GR                  |          |
| Performed:          | Wed Jun 12 18:25:42 2013 |          |
| Calibrator Value:   | 1.0                      | GAPI     |
| Background Reading: | 0.0                      | cps      |
| Calibrator Reading: | 1.0                      | cps      |
| Sensitivity:        | 0.3500                   | GAPI/cps |