



**COMPLETION
& PRODUCTION
SERVICES CO.**

**COMPENSATED
DENSITY/NEUTRON
PE LOG**

| | | | |
|------------------------------|----------------|---|----------|
| Company | | CHIEFTAIN OIL COMPANY, INC. | |
| Well | | MOLZ #21 | |
| Field | | BARBER | |
| County | | KANSAS | |
| State | | KANSAS | |
| Company | | CHIEFTAIN OIL COMPANY, INC. | |
| Well | | MOLZ #21 | |
| Field | | BARBER | |
| County | | KANSAS | |
| State | | KANSAS | |
| Location: | | API #: 15-007-24057-0000 2300' FNL & 340' FEL NW - SE - SE - NE | |
| Permanent Datum | | GROUND LEVEL | |
| Log Measured From | | KELLY BUSHING 13' A.G.L. | |
| Drilling Measured From | | KELLY BUSHING | |
| Elevation | | 1387 | |
| Other Services | | DILMEL | |
| SEC 11 TWP 35S RGE 12W | | | |
| Date | 9/29/13 | | |
| Run Number | ONE | | |
| Depth Driller | 5610 | | |
| Depth Logger | 5611 | | |
| Bottom Logged Interval | 5587 | | |
| Top Log Interval | 3600 | | |
| Casing Driller | 13 3/8" @ 338' | | |
| Casing Logger | 334 | | |
| Bit Size | 7 7/8" | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES | 3800 PPM |
| Density / Viscosity | 9.3 / 62 | | |
| pH / Fluid Loss | 9.5 / 7.6 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | 1.5 @ 85F | | |
| Rmf @ Meas. Temp | 1.13 @ 85F | | |
| Rmc @ Meas. Temp | 1.8 @ 85F | | |
| Source of Rmf / Rmc | MEASUREMENT | | |
| Rm @ BHT | 0.98 @ 130F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | | | |
| Maximum Recorded Temperature | 130F | | |
| Equipment Number | 4010 | | |
| Location | HAYS, KANSAS | | |
| Recorded By | IAN MABB | | |
| Witnessed By | ARDEN RATZLAFF | | |

<<< Fold Here >>>

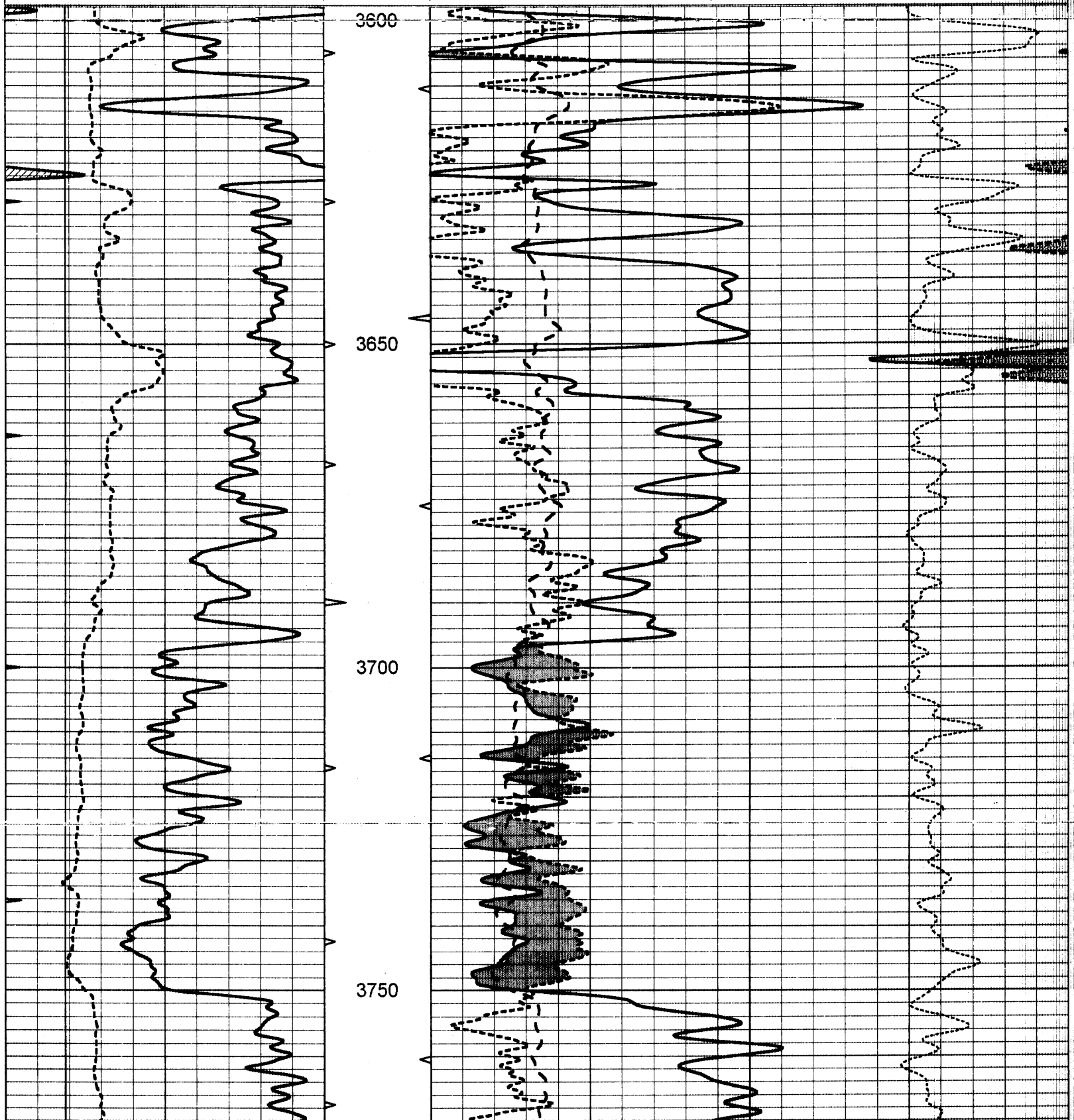
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs,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

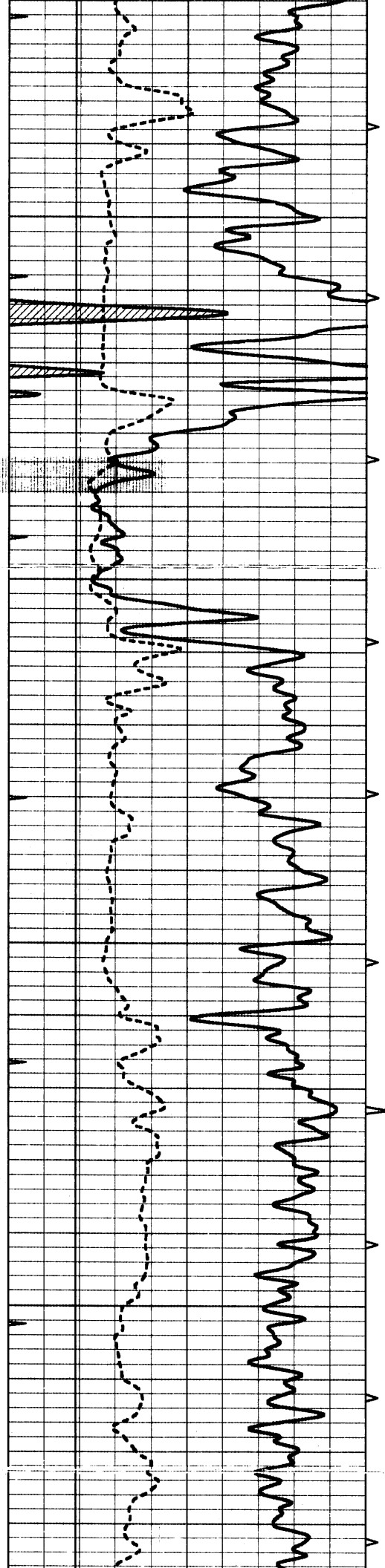
Comments

THANK YOU FOR USING NABORS, HAYS, KS. (785) 628-6395
 DIRECTIONS:
 HARDTNER, KS - 3 1/2 MILES EAST TO CLAIRMONT RD - 1/4 MILE NORTH
 WEST INTO

Database File: 011788pe.db
 Dataset Pathname: pass3.3
 Presentation Format: _ldt_neu
 Dataset Creation: Sun Sep 29 08:56:25 2013 by Calc Open-Cased 090629
 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 | | | |



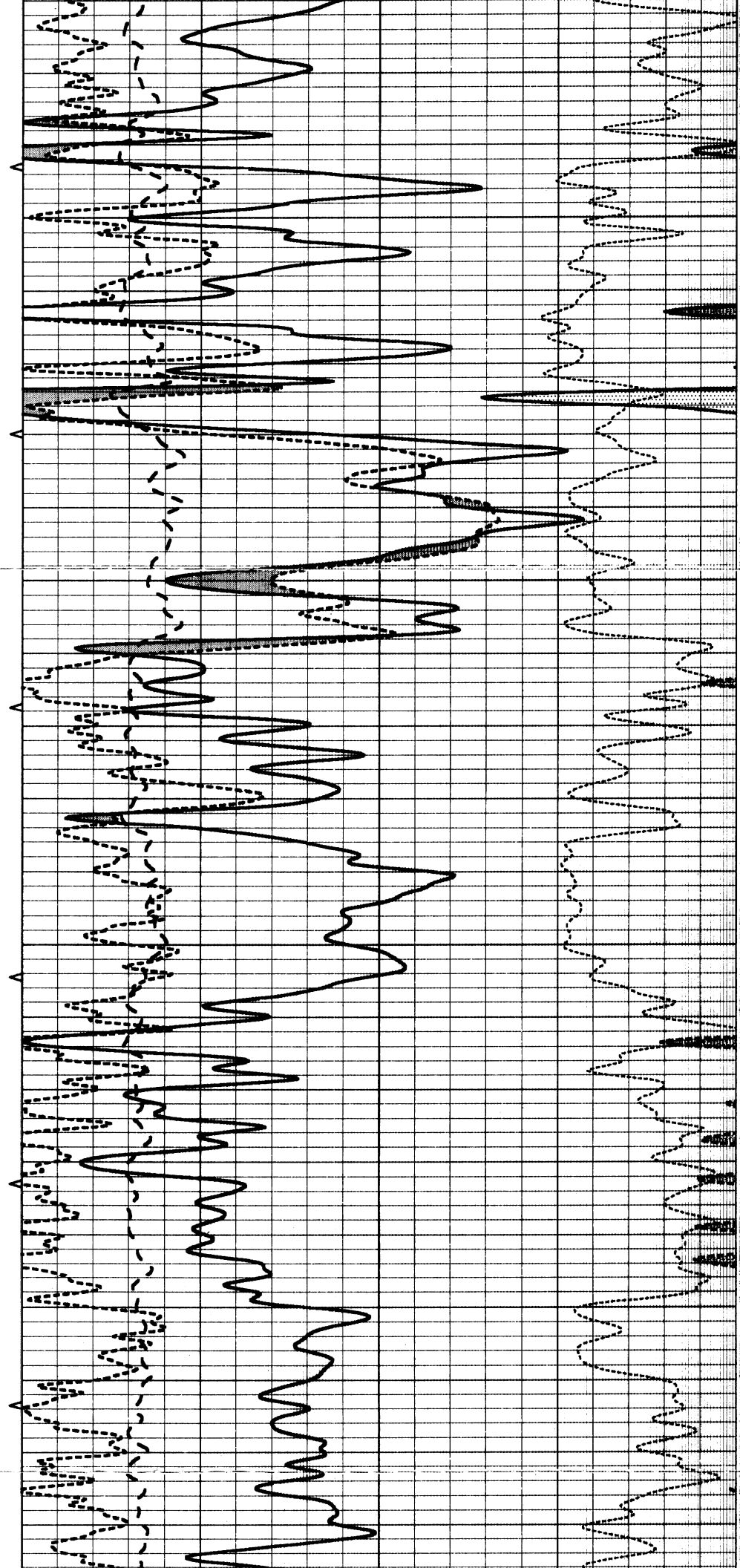


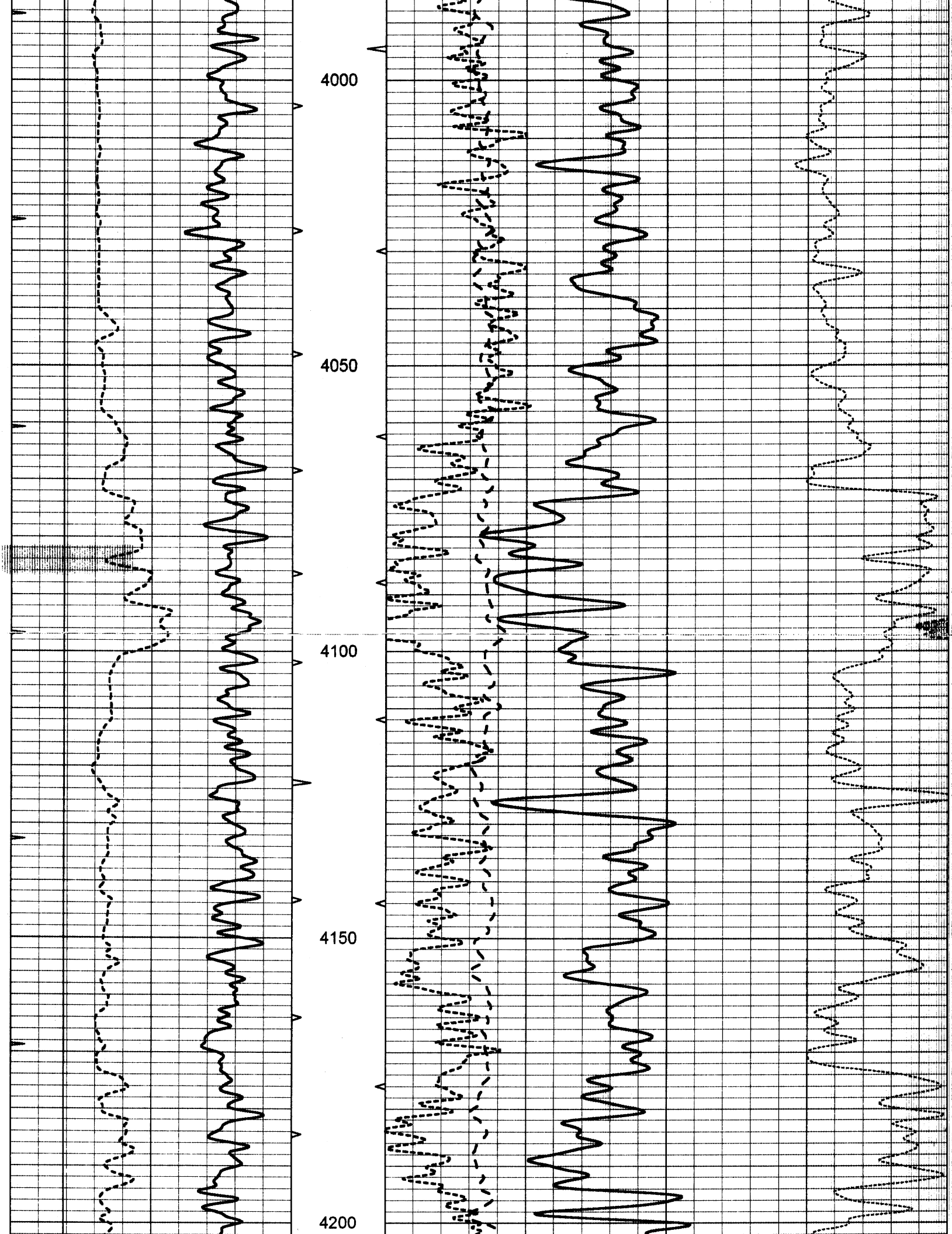
3800

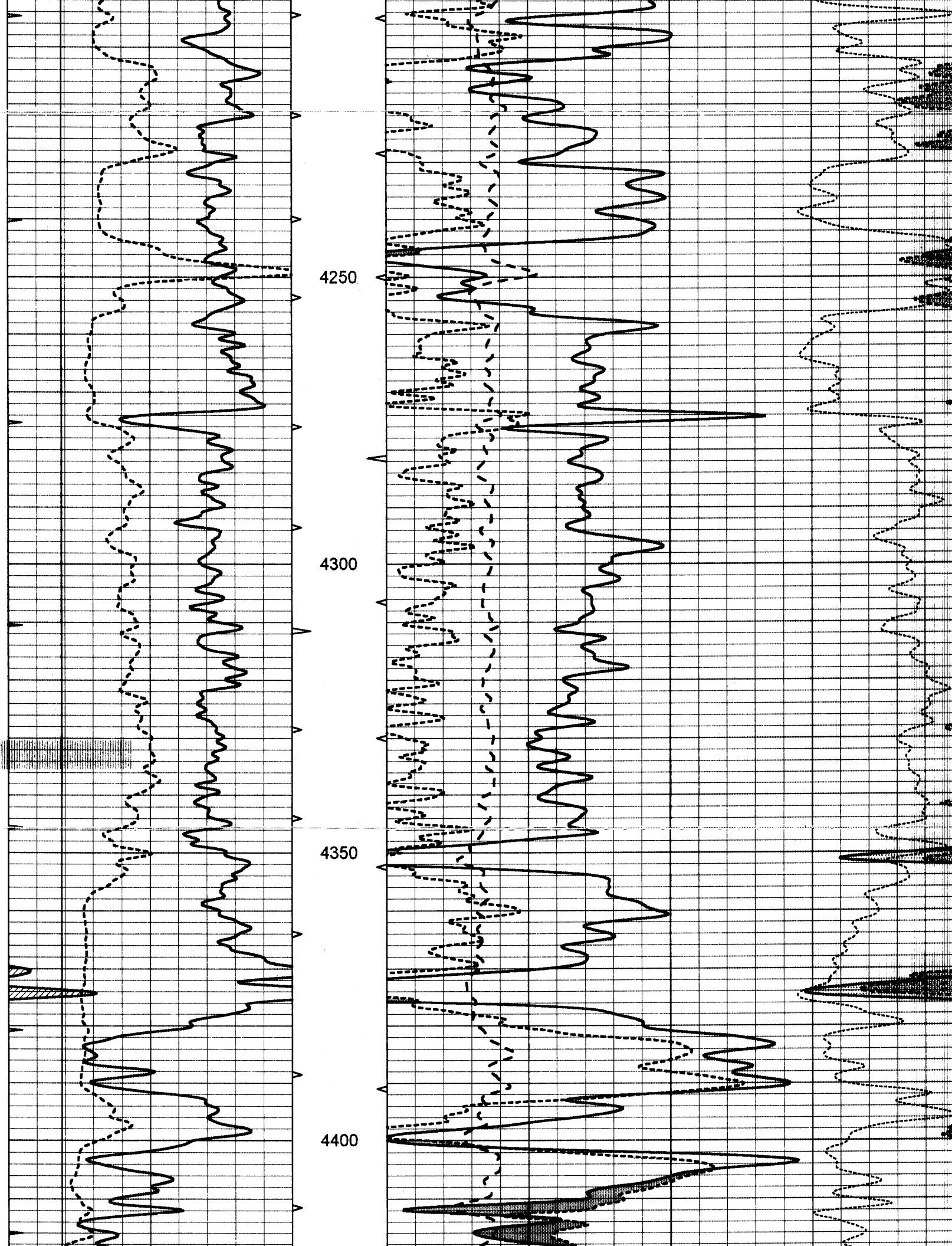
3850

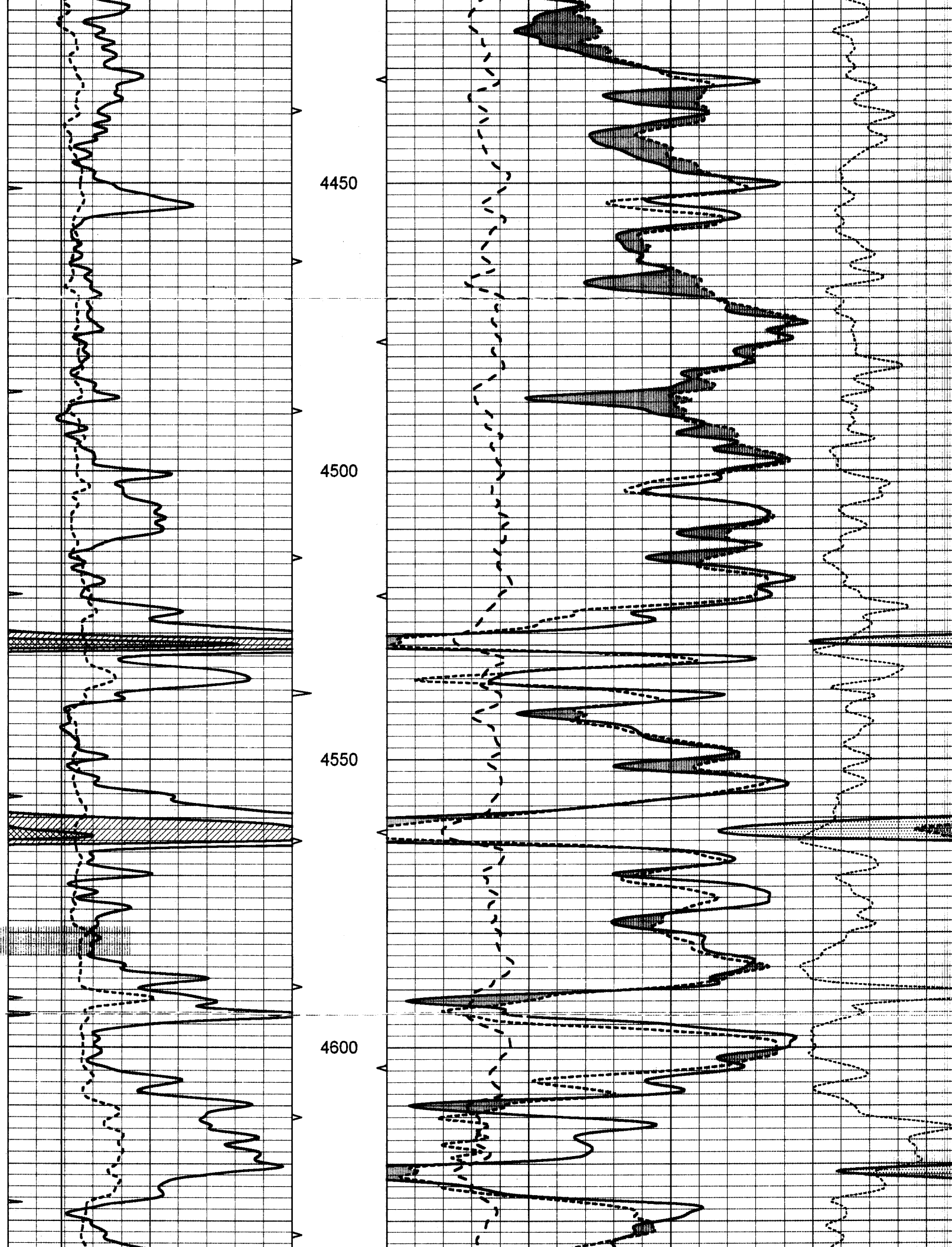
3900

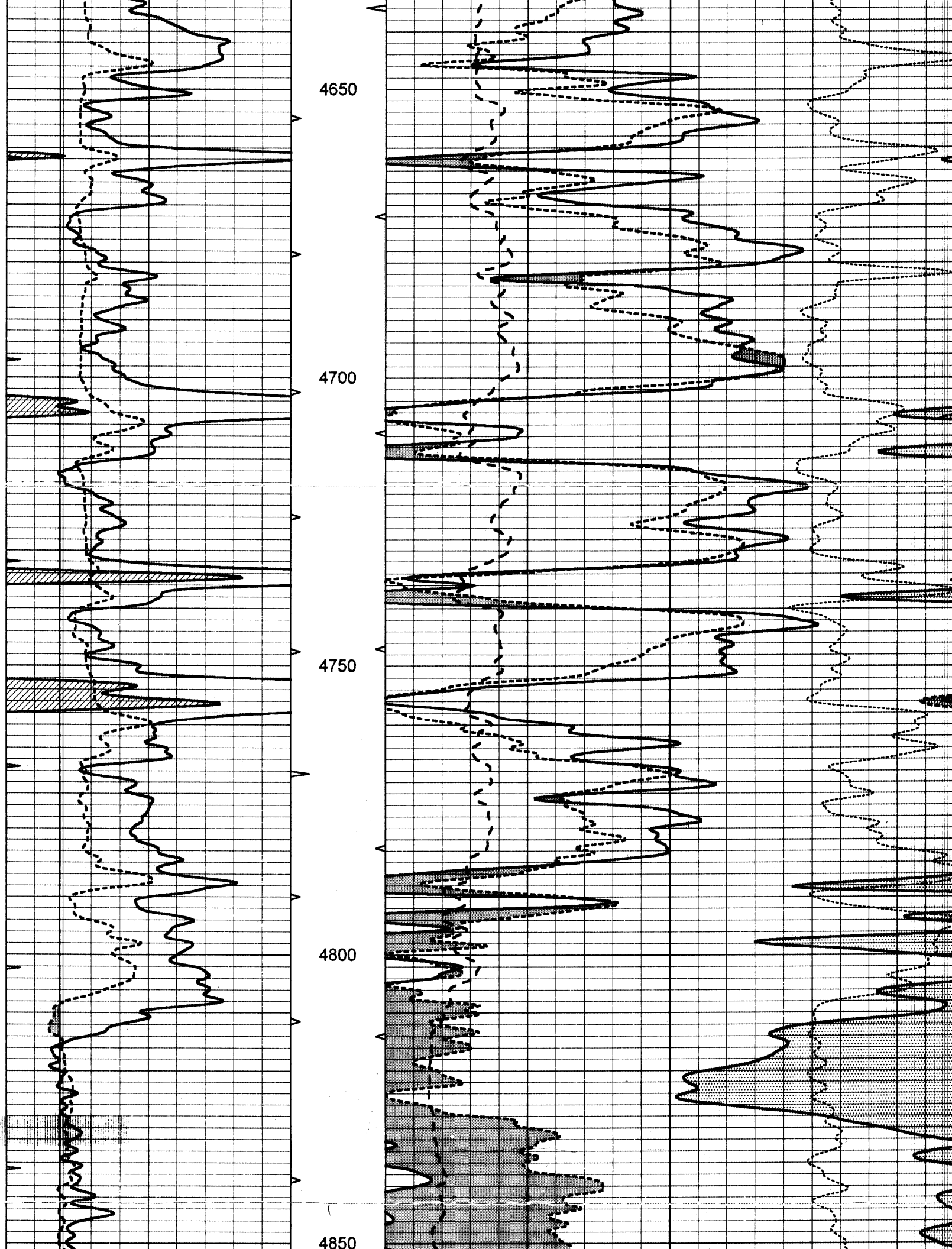
3950

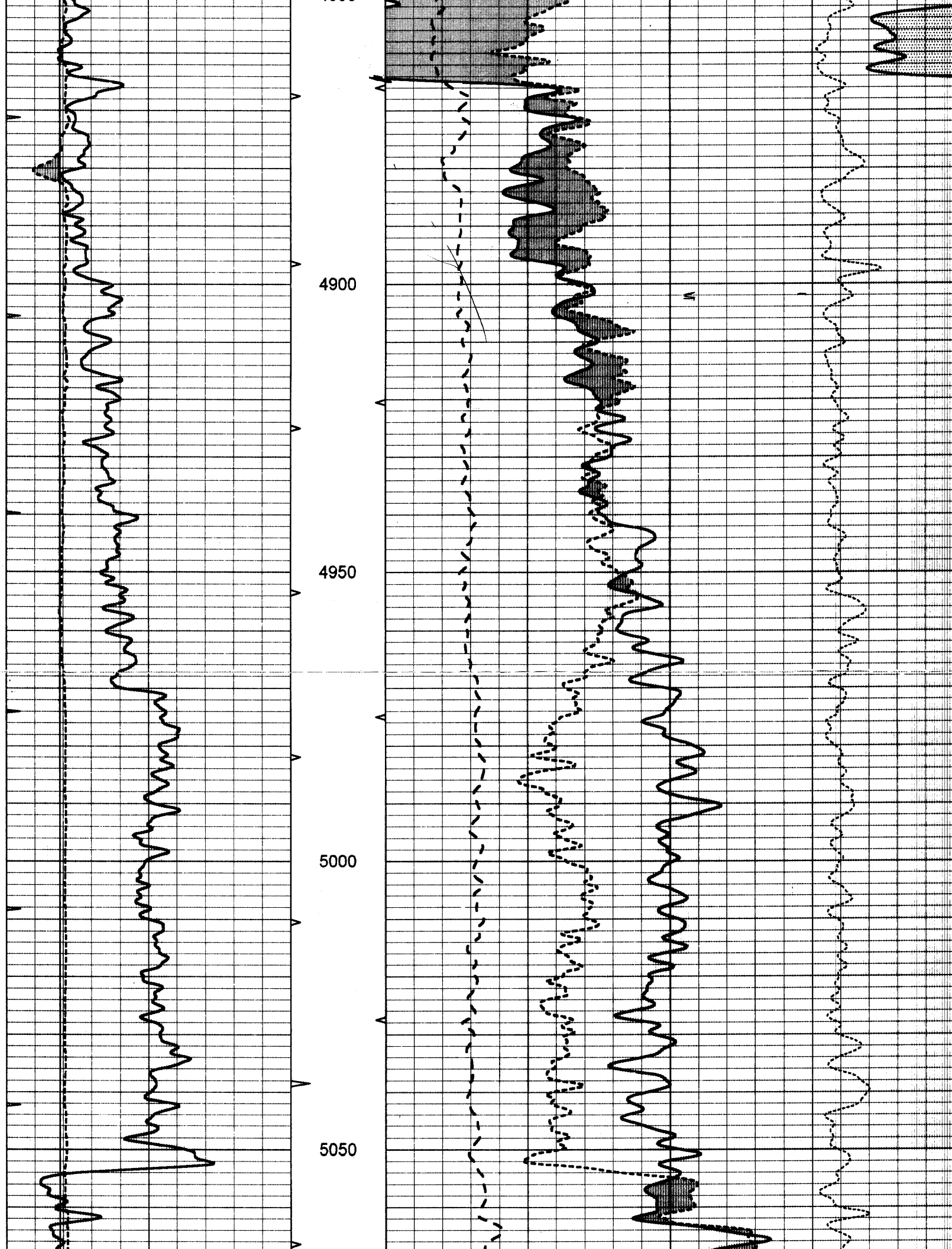


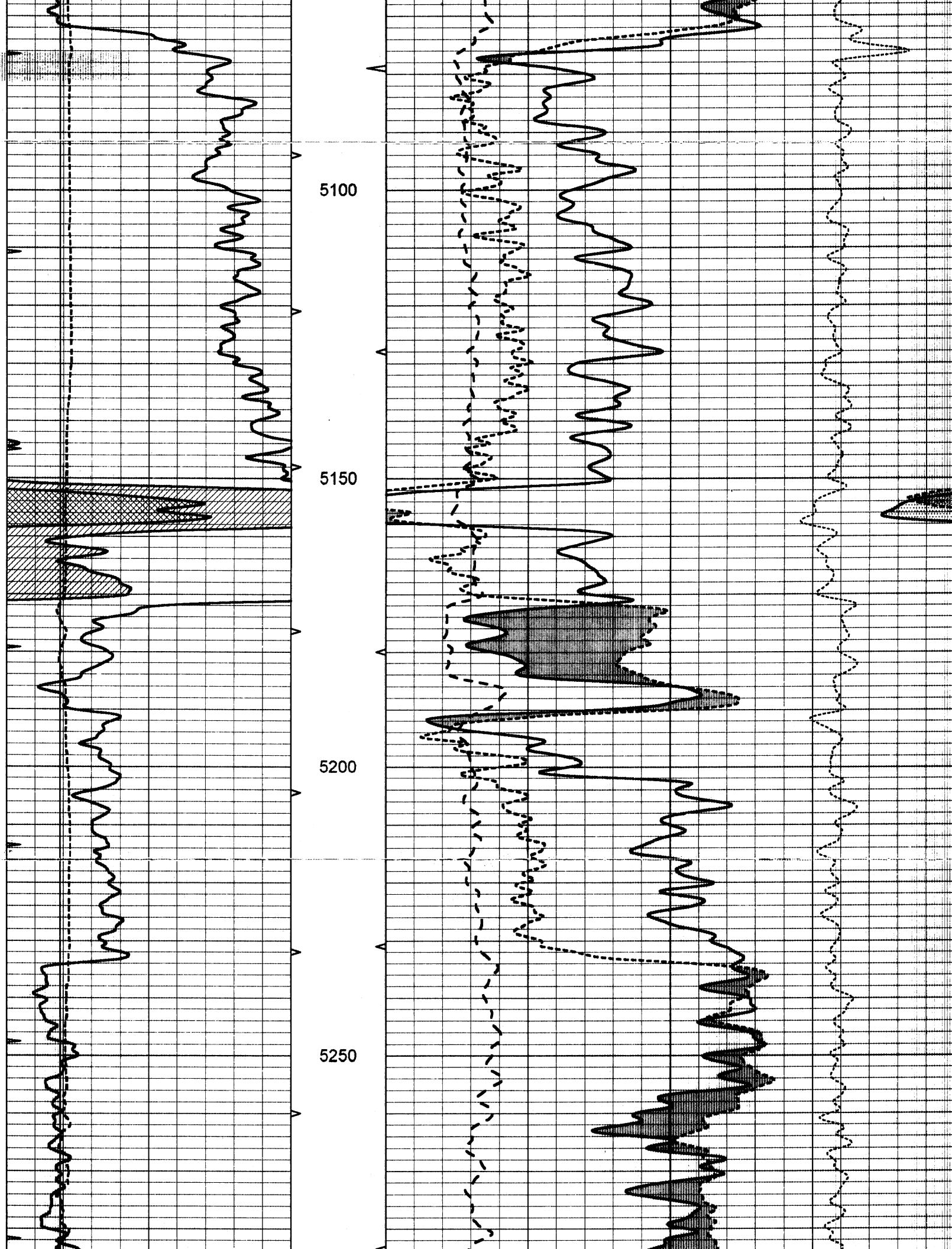


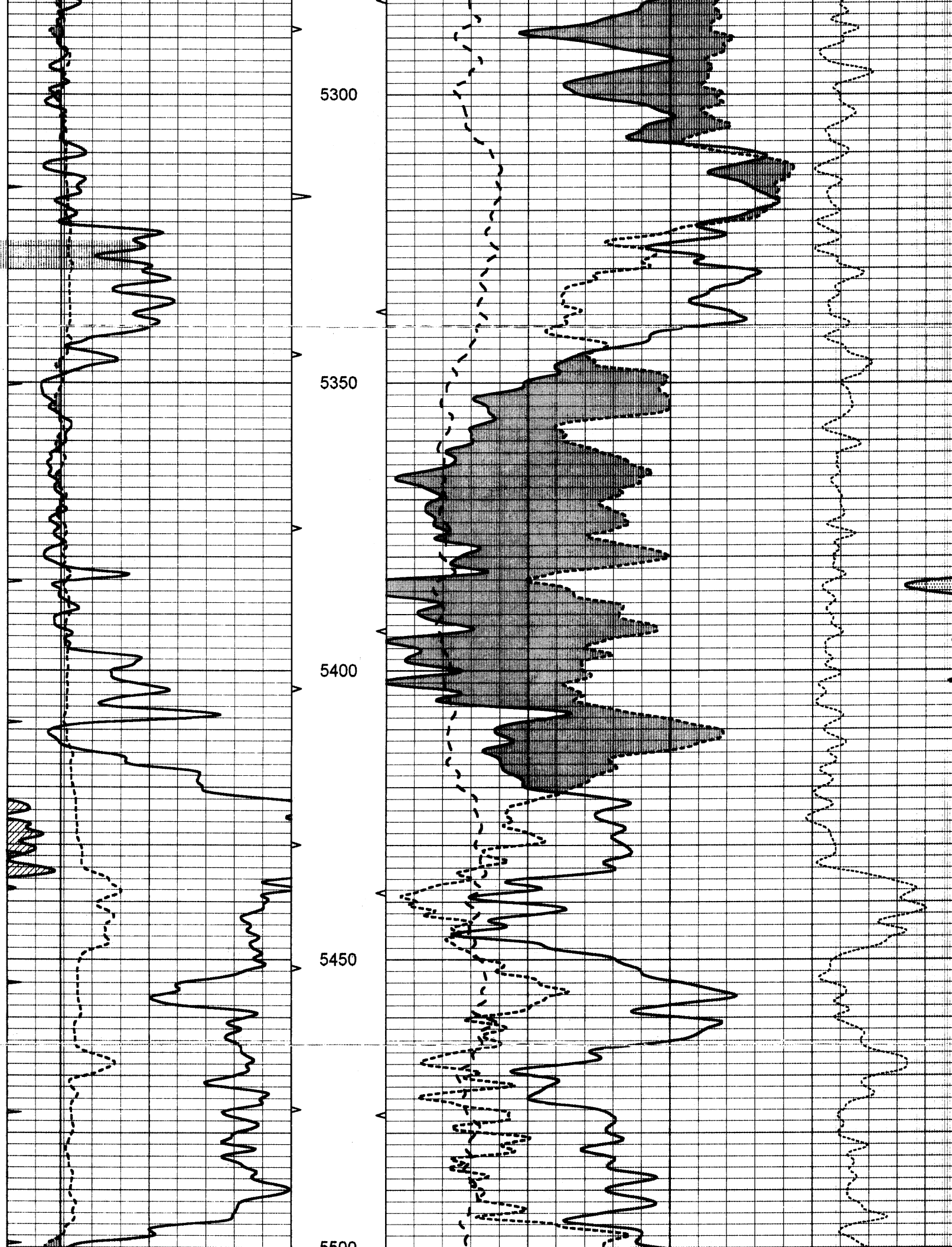


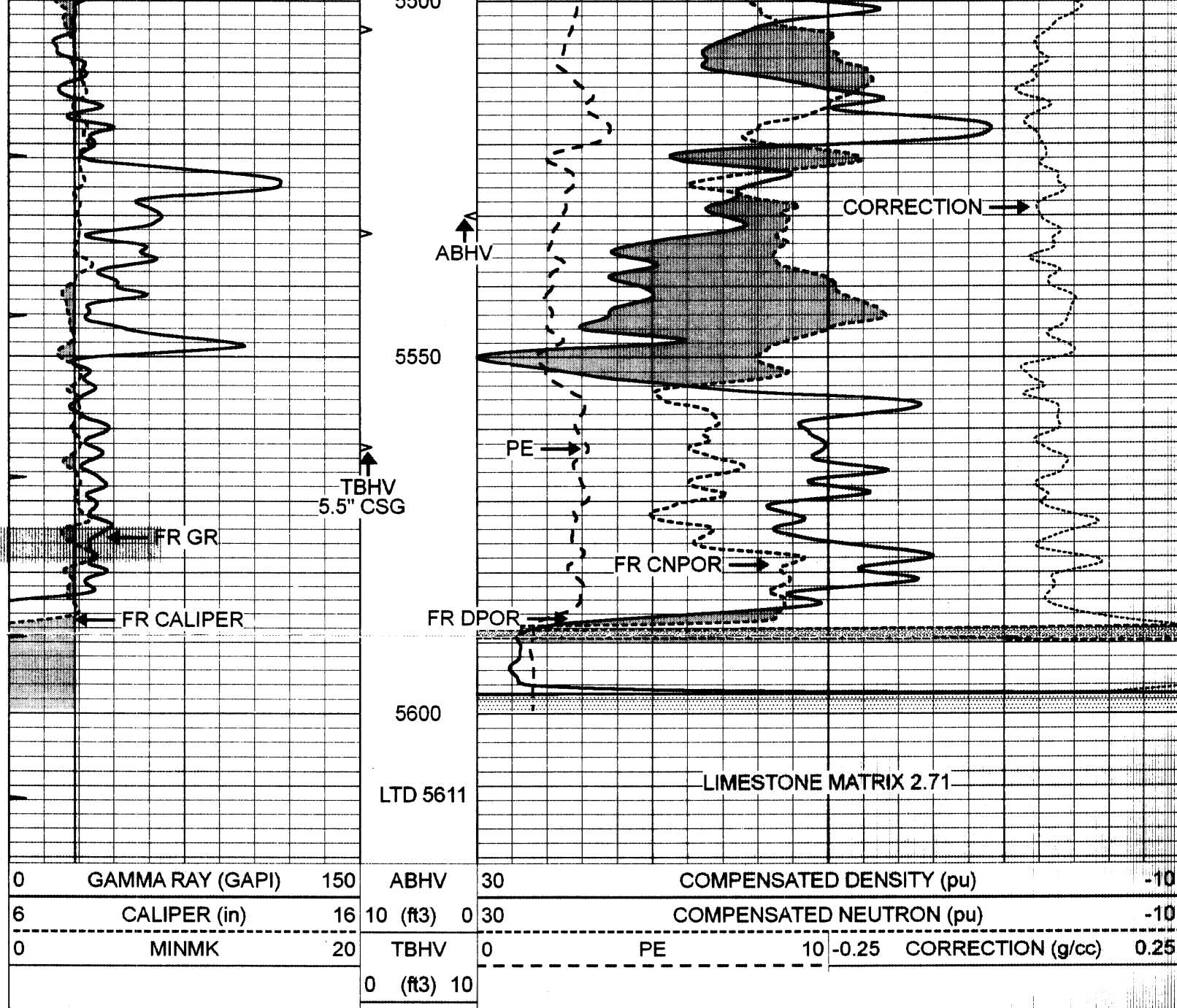












NABORS

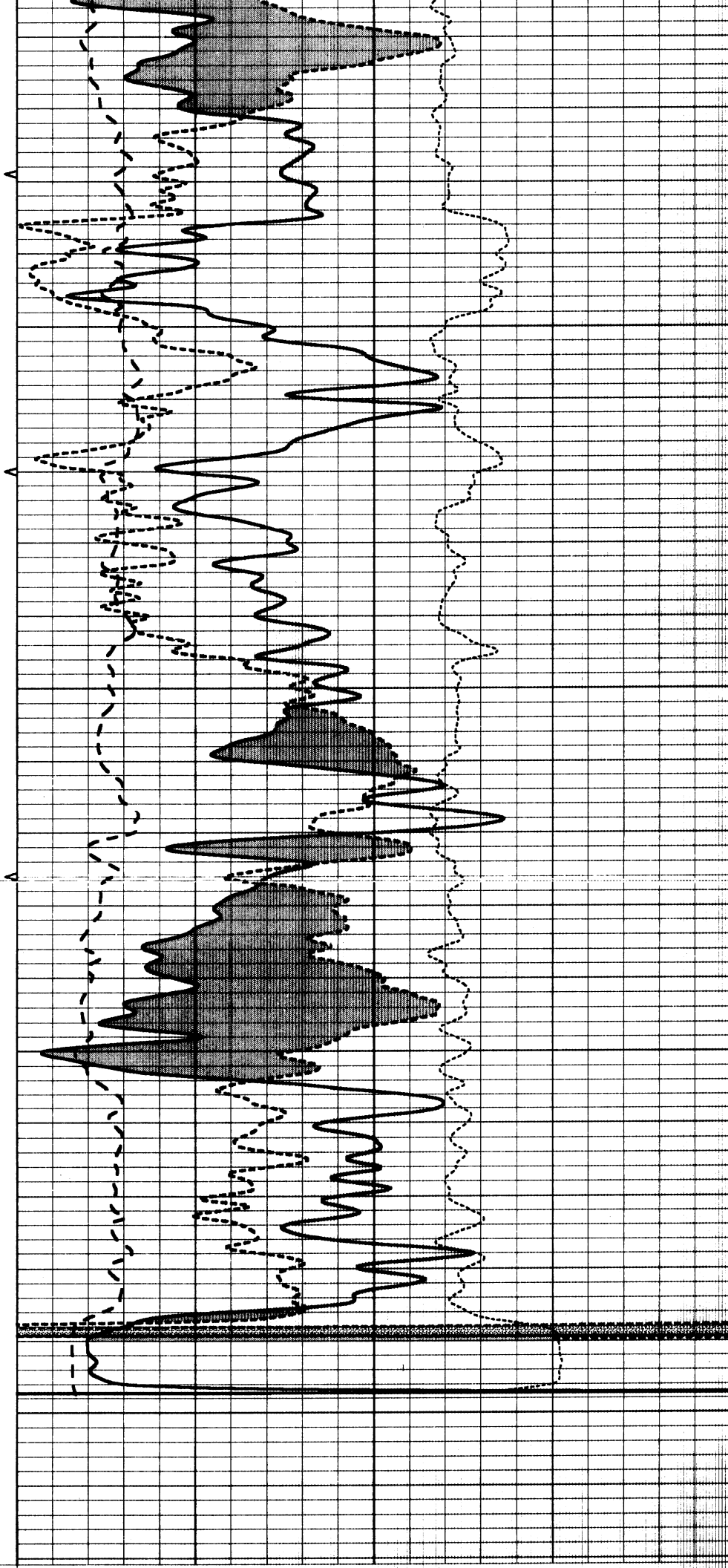
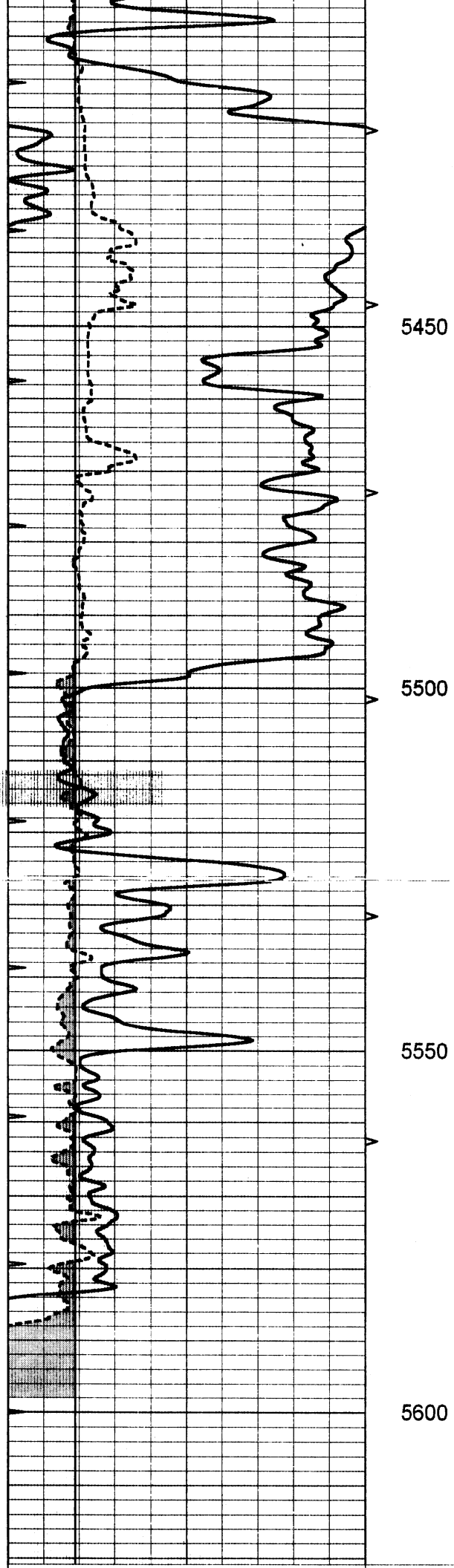
**COMPLETION
& PRODUCTION
SERVICES CO.**

REPEAT SECTION

Database File: 011788pe.db
 Dataset Pathname: pass2.3
 Presentation Format: _ldt_neu
 Dataset Creation: Sun Sep 29 07:16:49 2013 by Calc Open-Cased 090629
 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 | | |

5400



| | | | | | | | | |
|---|------------------|-----|----------|------|--------------------------|----|-------|------------------------|
| 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 | | | | |

Calibration Report

Database File: 011788pe.db
Dataset Pathname: pass3.3
Dataset Creation: Sun Sep 29 08:56:25 2013 by Calc Open-Cased 090629

Dual Induction Calibration Report

Serial-Model: PROBE8-DILG
Surface Cal Performed: Fri Aug 01 06:33:19 2008
Downhole Cal Performed: Mon Jul 28 11:08:27 2008
After Survey Verification Performed: Mon Jul 28 11:08:27 2008

Surface Calibration

| Loop: | Readings | | | | References | | | Results | |
|-----------|----------|-------|---|-------|------------|--------|---------|---------|---|
| | Air | Loop | | | Air | Loop | | m | b |
| Deep | 0.015 | 0.648 | V | 0.000 | 400.000 | mmho/m | 632.616 | -9.730 | |
| Medium | 0.029 | 0.796 | V | 0.000 | 464.000 | mmho/m | 605.049 | -17.680 | |
| Internal: | Zero | Cal | | Zero | Cal | | m | b | |
| Deep | 0.017 | 0.657 | V | 0.000 | 400.000 | mmho/m | 625.153 | -10.619 | |
| Medium | 0.016 | 0.757 | V | 0.000 | 464.000 | mmho/m | 625.992 | -9.739 | |

Downhole Calibration

| | Readings | | | | References | | | Results | |
|--------|----------|--------|--------|-------|------------|--------|-------|---------|----|
| | Zero | Cal | | | Zero | Cal | | m' | b' |
| Deep | 0.000 | 0.000 | mmho/m | 2.011 | 405.777 | mmho/m | 1.000 | 0.000 | |
| Medium | 0.000 | 0.000 | mmho/m | 7.590 | 503.393 | mmho/m | 1.000 | 0.000 | |
| LL3 | | 7.500 | V | | 1500.000 | Ohm-m | | | |
| | | 0.000 | V | | 20.000 | Ohm-m | | | |
| | | -7.200 | V | | 3800.000 | 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: 003 Model: PRB

Master Calibration

Performed Thu Jul 26 15:13:22 2007

| | Background | Magnesium | Aluminum | Sandstone | |
|----------|------------|-----------|----------|-----------|-----|
| Window 1 | 2128.0 | 9601.6 | 3737.0 | 10737.0 | cps |
| Window 2 | 1913.5 | 7519.1 | 3114.0 | 8210.1 | cps |
| Window 3 | 1668.2 | 5026.8 | 2370.0 | 5373.3 | cps |

| | | | | | |
|-------------|-------|--------|--------|--------|------|
| Window 4 | 492.7 | 497.5 | 492.3 | 491.1 | cps |
| Long Space | 0.0 | 5605.6 | 1200.5 | 6296.6 | cps |
| Short Space | 2.2 | 2279.3 | 1489.7 | 2489.1 | cps |
| Rho | | 1.7100 | 2.5900 | 1.3800 | g/cc |
| Pe | | 0.0000 | 2.5700 | 1.5500 | |

| | | | | | |
|-------------|--------|-------------|---------|---------------------|---------|
| Rib Angle | : 44.6 | Rib Slope | : 0.985 | Density/Spine Ratio | : 0.550 |
| Spine Angle | : 74.6 | Spine Slope | : 3.623 | Spine Intercept | : -19.4 |

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 | |

Compensated Neutron Calibration Report

Serial Number: 6I
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 |

PRE-SURVEY VERIFICATION

| | Detector | Readings | Measured | Target |
|----|-------------|----------|----------|--------|
| 1) | Short Space | cps | | |
| | Long Space | cps | pu | pu |
| 2) | Short Space | cps | | |
| | Long Space | cps | pu | |
| 3) | Short Space | cps | | |
| | Long Space | cps | pu | |

POST-SURVEY VERIFICATION

| | Detector | Readings | Measured | Target |
|----|---------------------------|------------|----------|--------|
| 1) | Short Space Long Space | cps cps | pu | pu |
| 2) | Short Space Long Space | cps cps | pu | pu |
| 3) | Short Space Long Space | cps cps | pu | pu |

Gamma Ray Calibration Report

Serial Number: #8
 Tool Model: OPEN
 Performed: Tue Jun 18 19:34:11 2013

 Calibrator Value: 150.0 GAPI

 Background Reading: 0.0 cps
 Calibrator Reading: 175.0 cps

 Sensitivity: 0.8371 GAPI/cps



