



**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL INDUCTION
LOG
(TIGHT HOLE)**

Company D & J OIL COMPANY, INC.
Well WICKED WITCH #1
Field WILDCAT
County NESS
State KANSAS

Company D & J OIL COMPANY, INC.
Well WICKED WITCH #1
Field WILDCAT
County NESS State KANSAS

Location: API # : 15-135-25693-0000
2310' FSL & 1650' FWL
NW - NE - SW
SEC 6 TWP 20S RGE 23W
Permanent Datum GROUND LEVEL Elevation 2309
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING
Other Services
CDL/CNL/PE
Elevation
K.B. 2314
D.F. 2312
G.L. 2309

| | |
|------------------------------|---------------|
| Date | 11/20/13 |
| Run Number | ONE |
| Depth Driller | 4535 |
| Depth Logger | 4537 |
| Bottom Logged Interval | 4535 |
| Top Log Interval | 00 |
| Casing Driller | 8 5/8"@217' |
| Casing Logger | 217 |
| Bit Size | 7 7/8" |
| Type Fluid in Hole | CHEMICAL MUD |
| Density / Viscosity | 9.3/60 |
| pH / Fluid Loss | 10.0/8.6 |
| Source of Sample | FLOWLINE |
| Rim @ Meas. Temp | .650@79F |
| Rmf @ Meas. Temp | .510@79F |
| Rmc @ Meas. Temp | .816@79F |
| Source of Rmf / Rmc | MEASUREMENT |
| Rim @ BHT | .419@121F |
| Time Circulation Stopped | 2.5 HOURS |
| Time Logger on Bottom | 2:30 P.M. |
| Maximum Recorded Temperature | 121F |
| Equipment Number | 4854 |
| Location | HAYS, KANSAS |
| Recorded By | JEFF LUEBBERS |
| Witnessed By | CURTIS COVERY |
| | JIMMY LESTER |

<<< 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

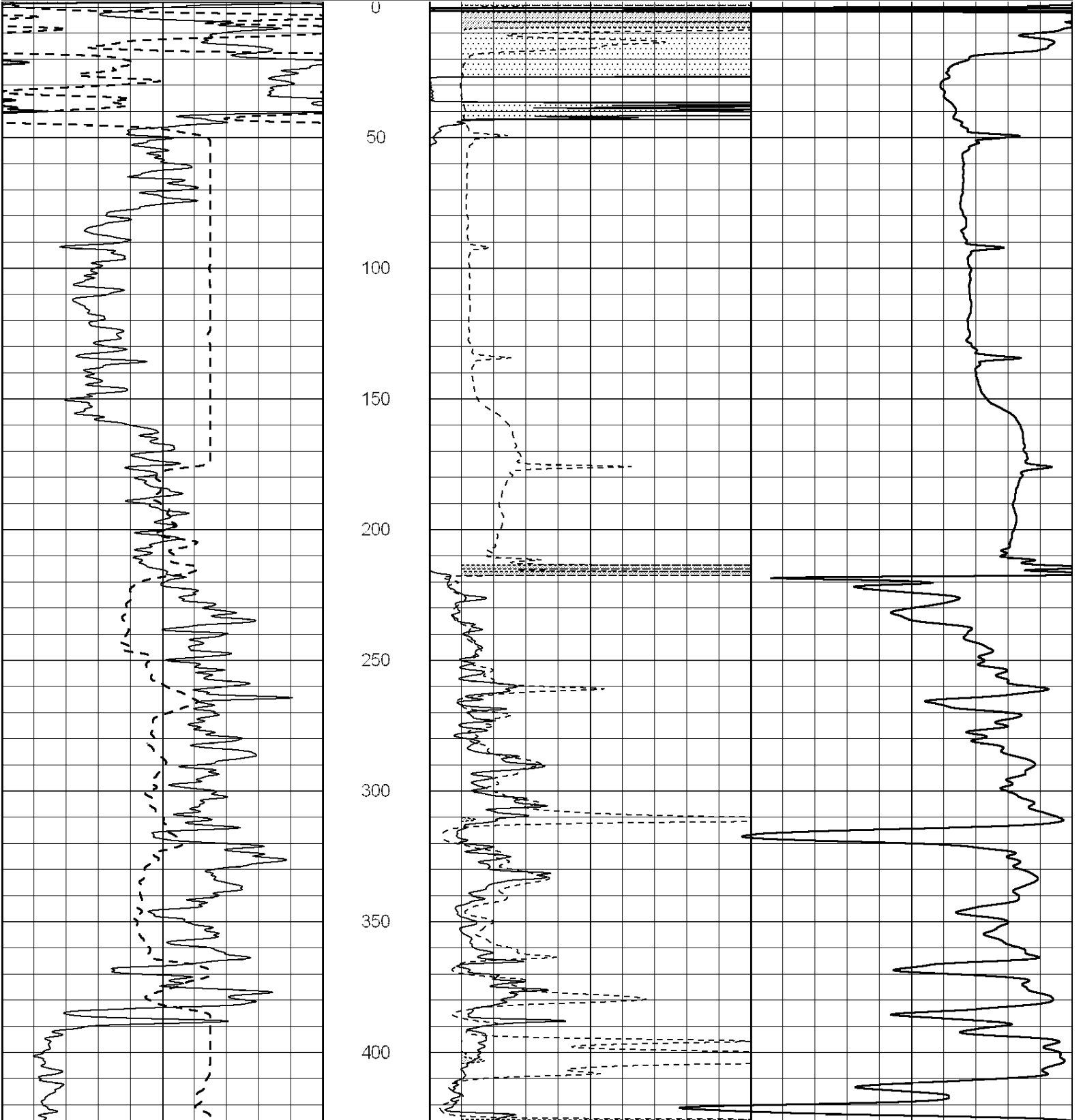
THANK YOU FOR USING "NABORS" HAYS, KANSAS (785) 628-6395
DIRECTIONS
NESS CITY, KS. (4 WAY STOP) 7S. ON HWY 283 TO "60TH RD.", 2W. TO "RD. Q", 1/2S., 1 1/2E. INTO BY
TANK BATTERY ON LEASE RD.

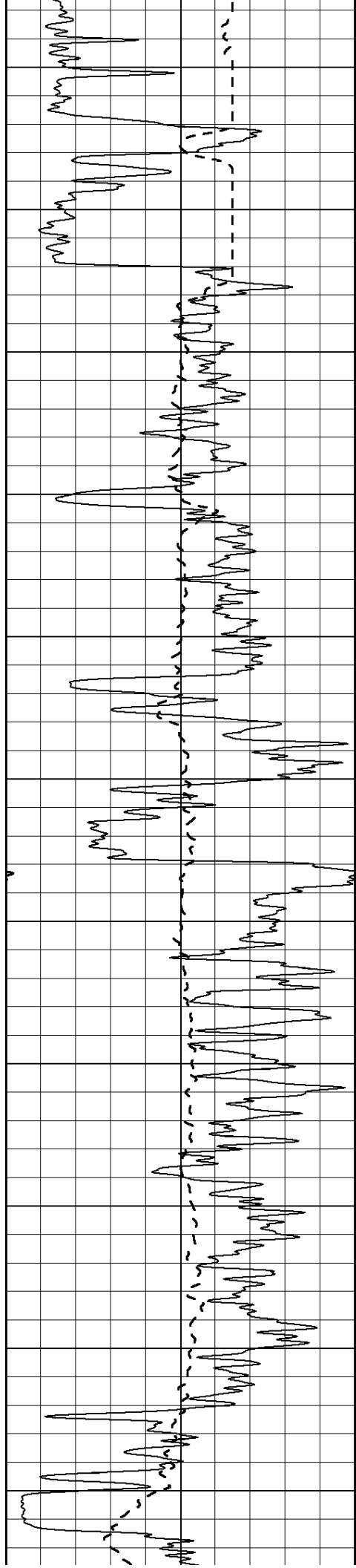


MAIN SECTION

Database File: 011812pe.db
 Dataset Pathname: pass3.9
 Presentation Format: dil2
 Dataset Creation: Wed Nov 20 15:57:26 2013 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:600

| | | | | | |
|-------|------------------|-----|-------|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 | 0 | RLL3 (Ohm-m) | 50 |
| -100 | SP (mV) | 100 | 0 | RILD (Ohm-m) | 50 |
| ----- | | | ----- | | |
| | | | 1000 | CILD (mmho/m) | 0 |
| | | | 50 | RILD X10 (Ohm-m) | 500 |
| | | | 50 | RLL3 X10 (Ohm-m) | 500 |





450

500

550

600

650

700

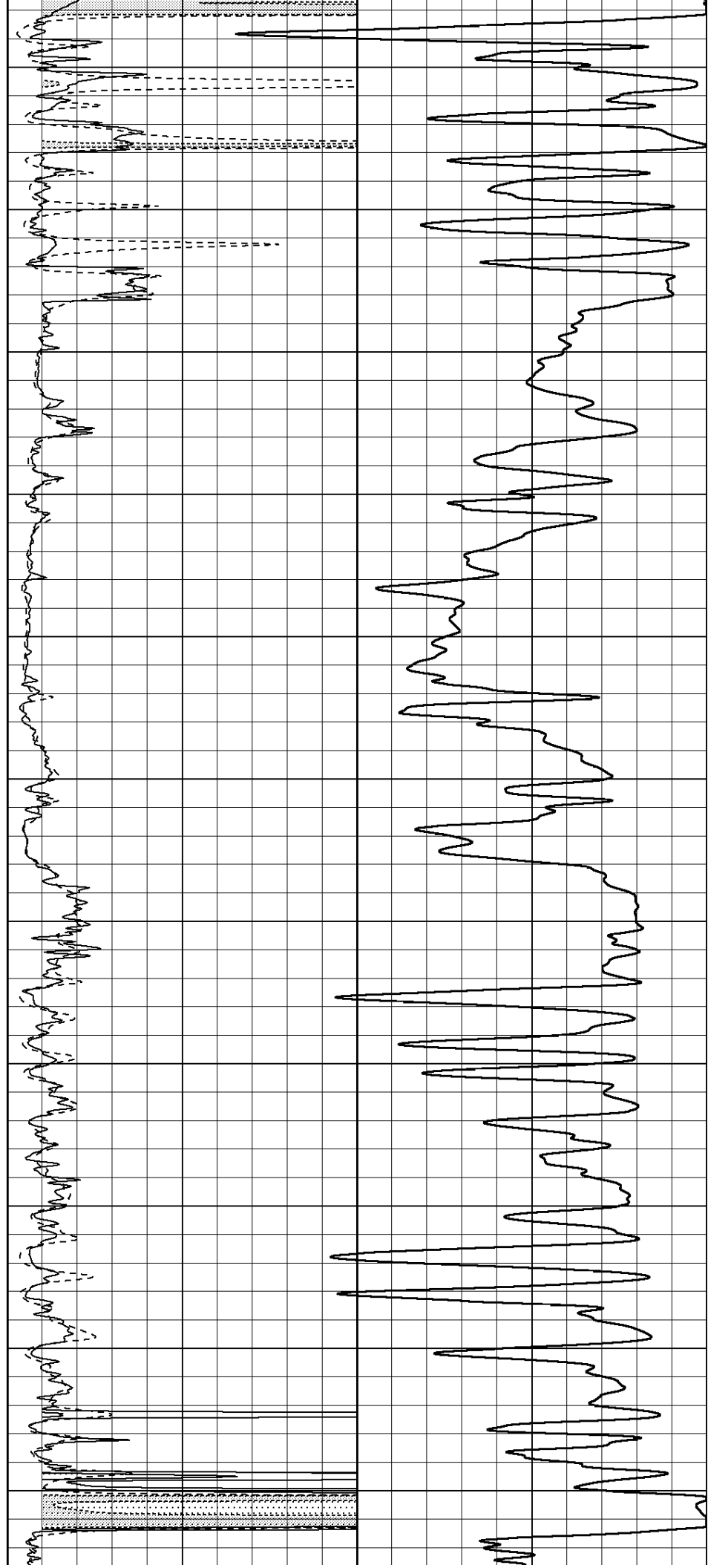
750

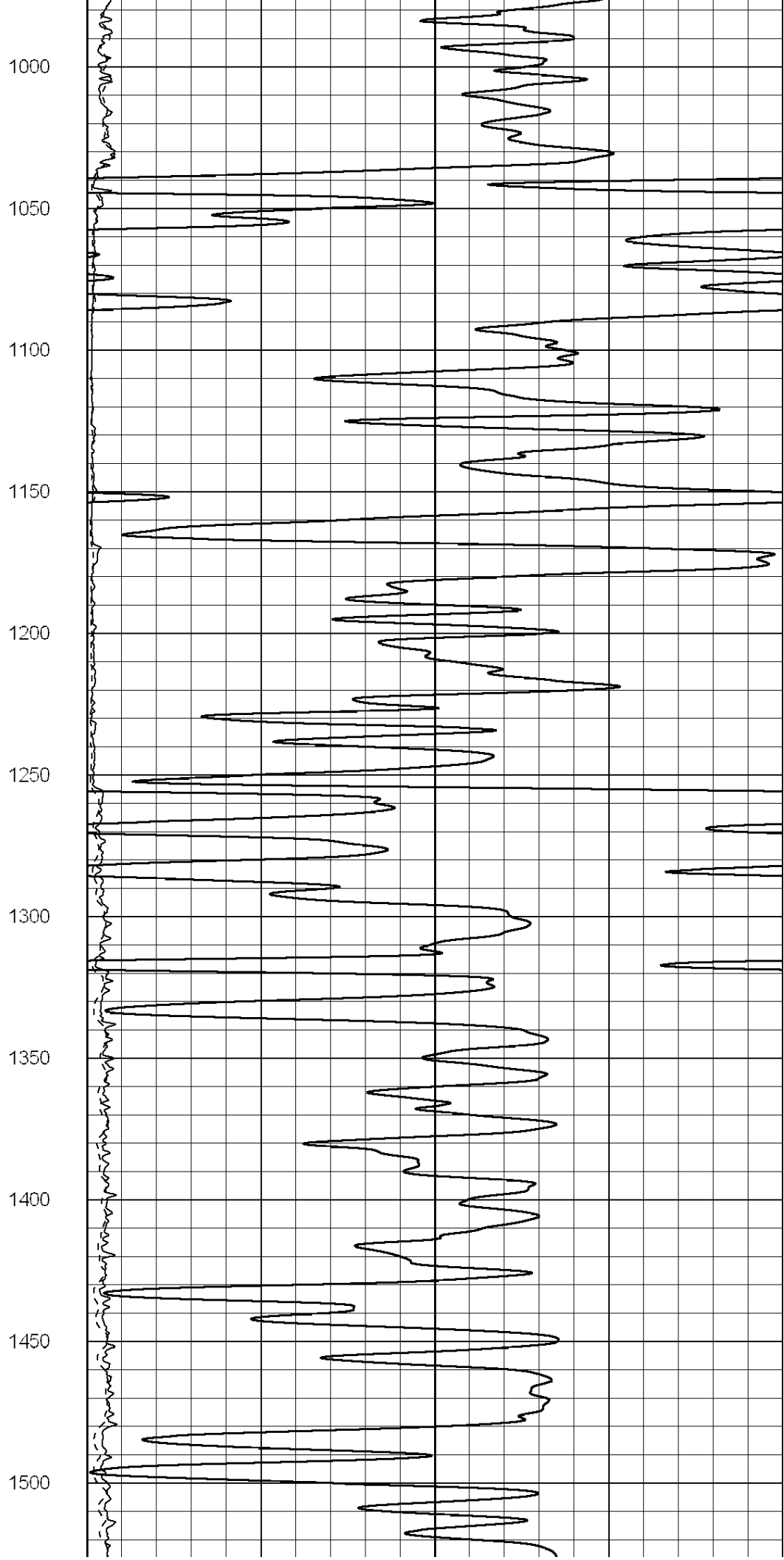
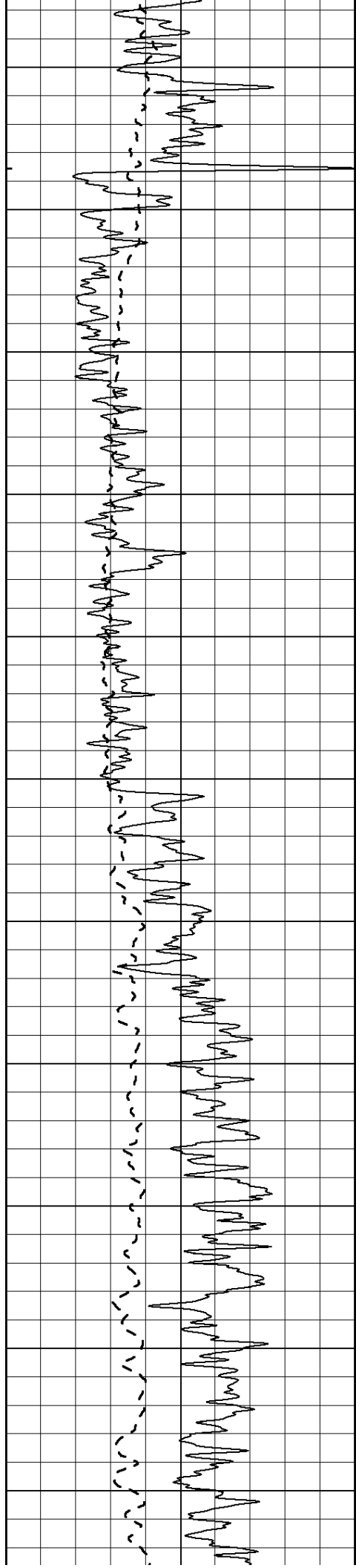
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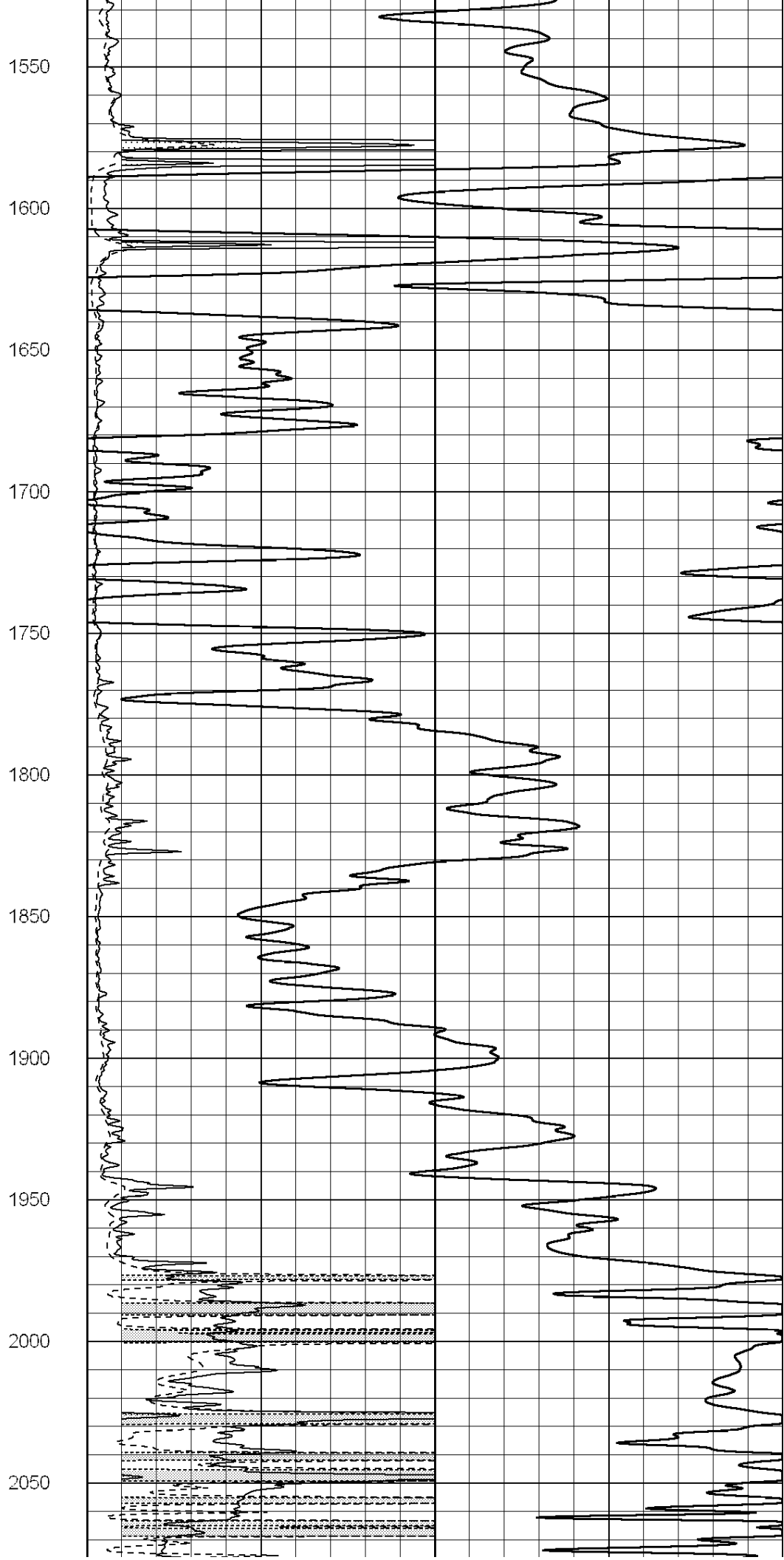
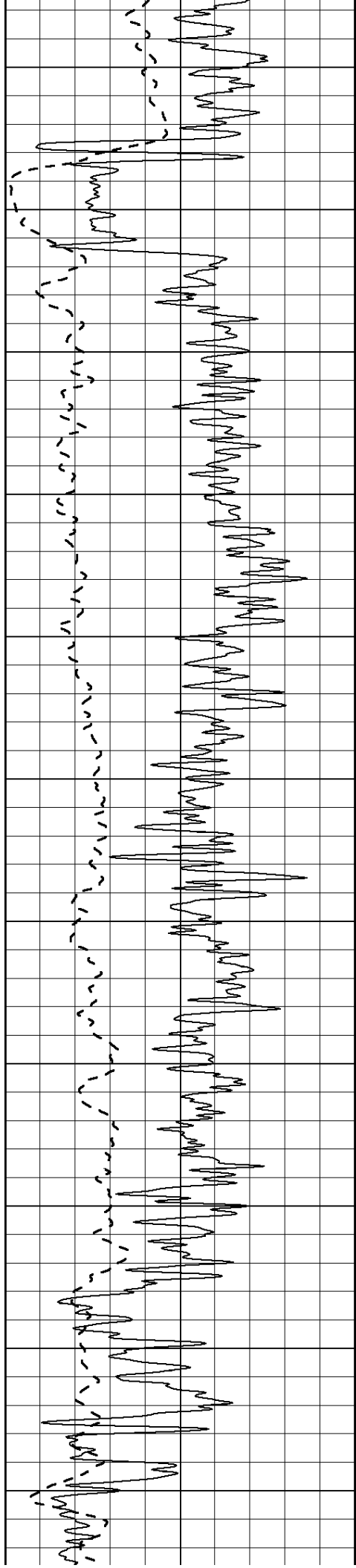
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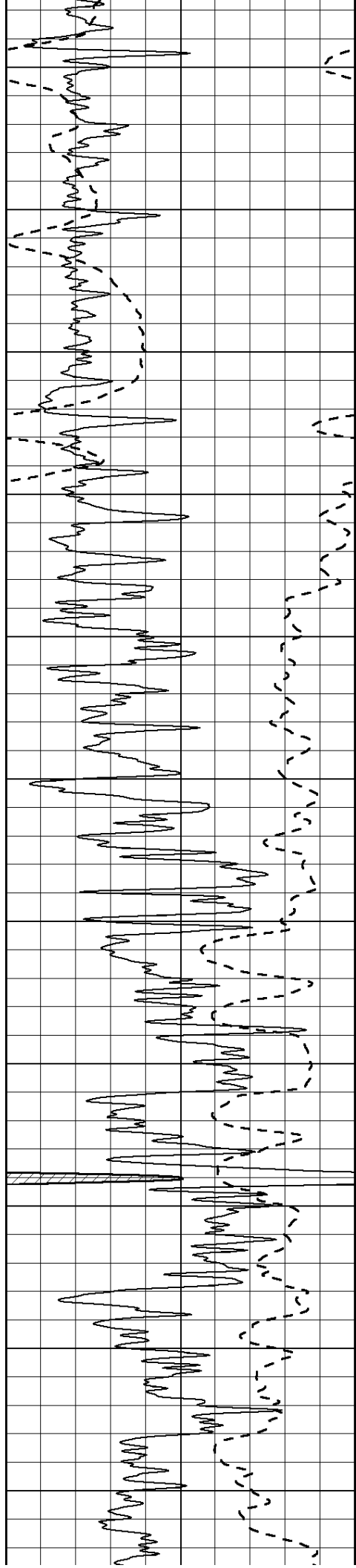
900

950









2100

2150

2200

2250

2300

2350

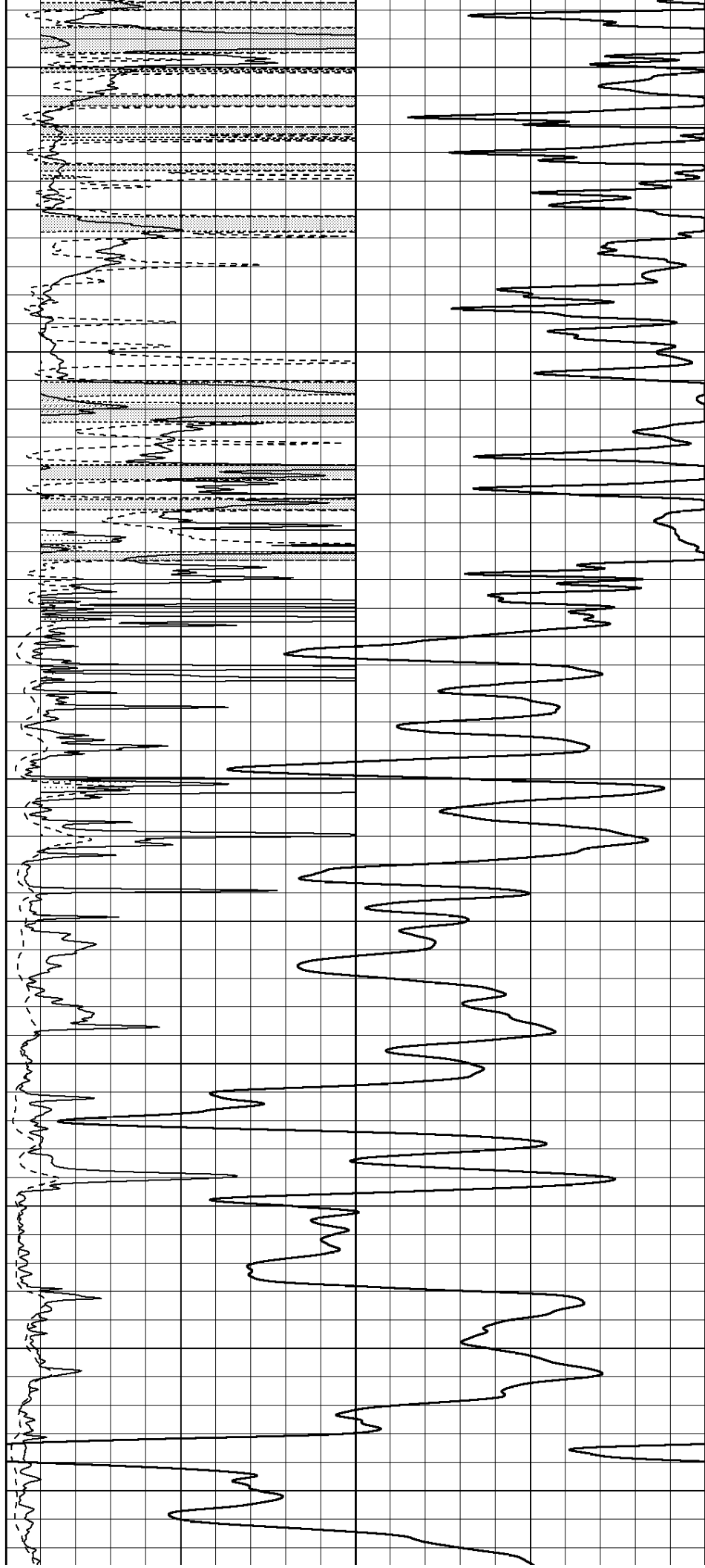
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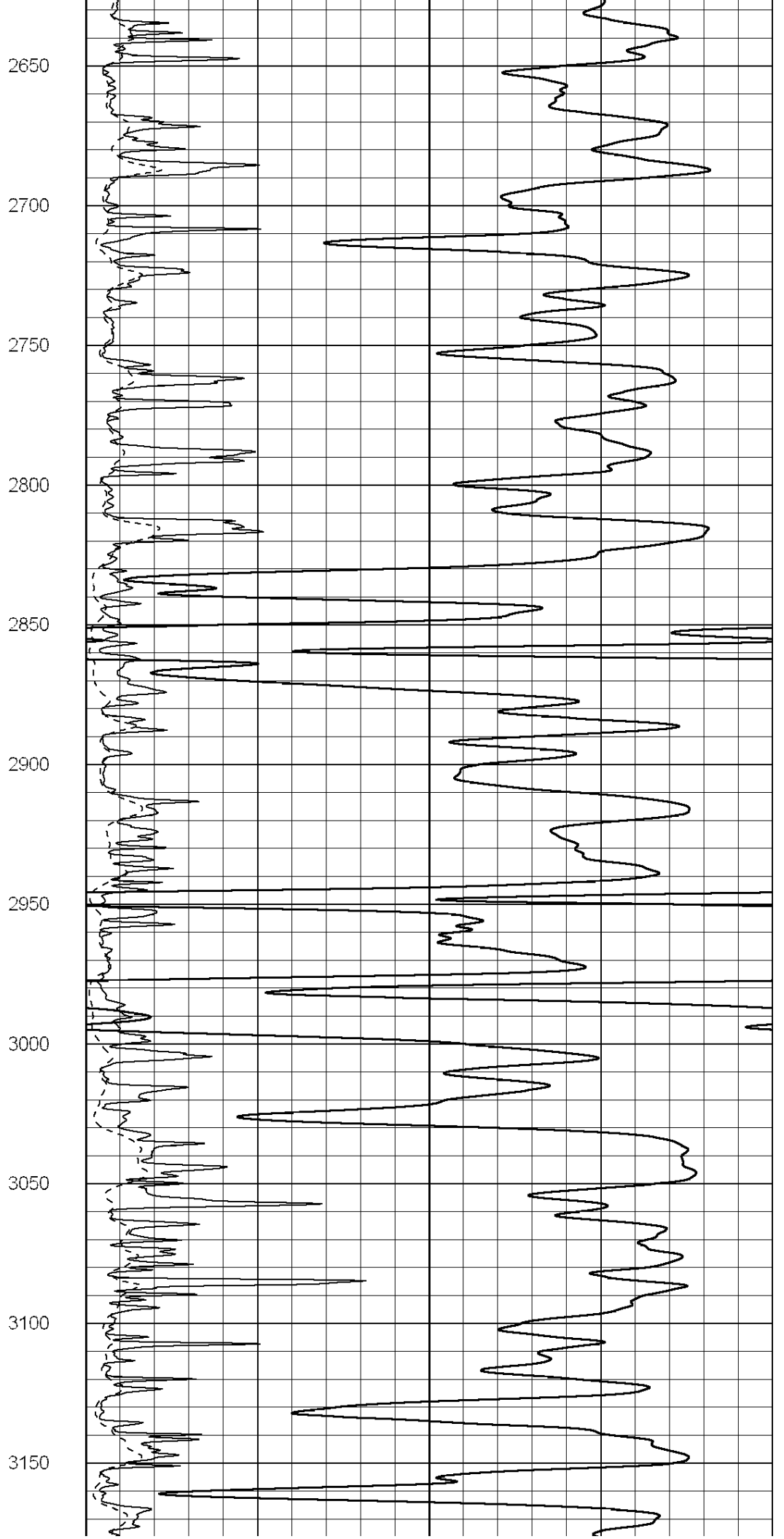
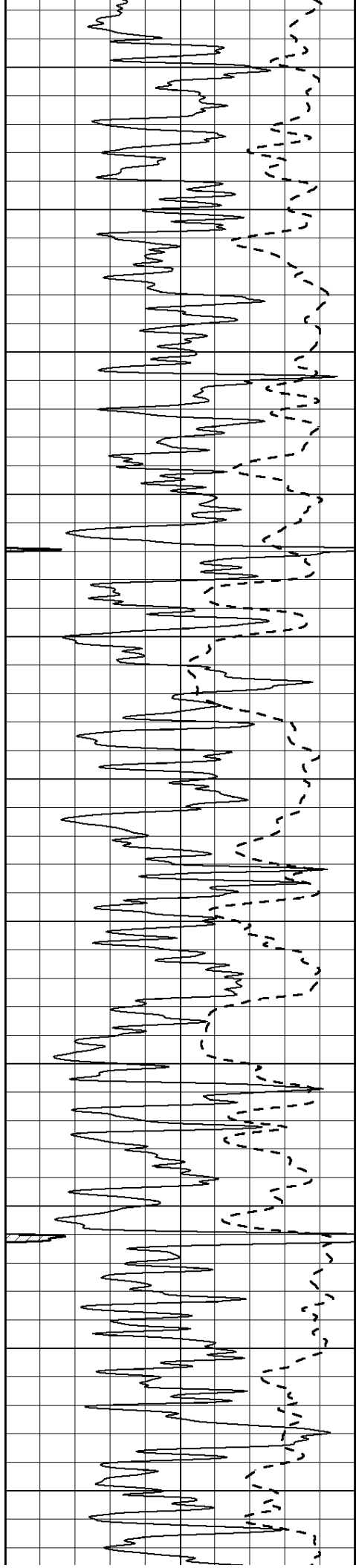
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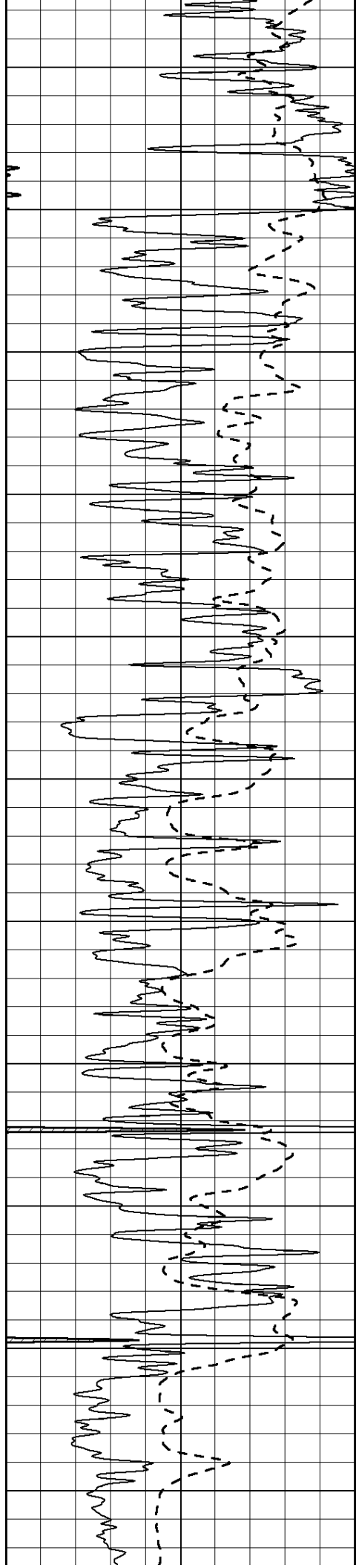
2500

2550

2600







3200

3250

3300

3350

3400

3450

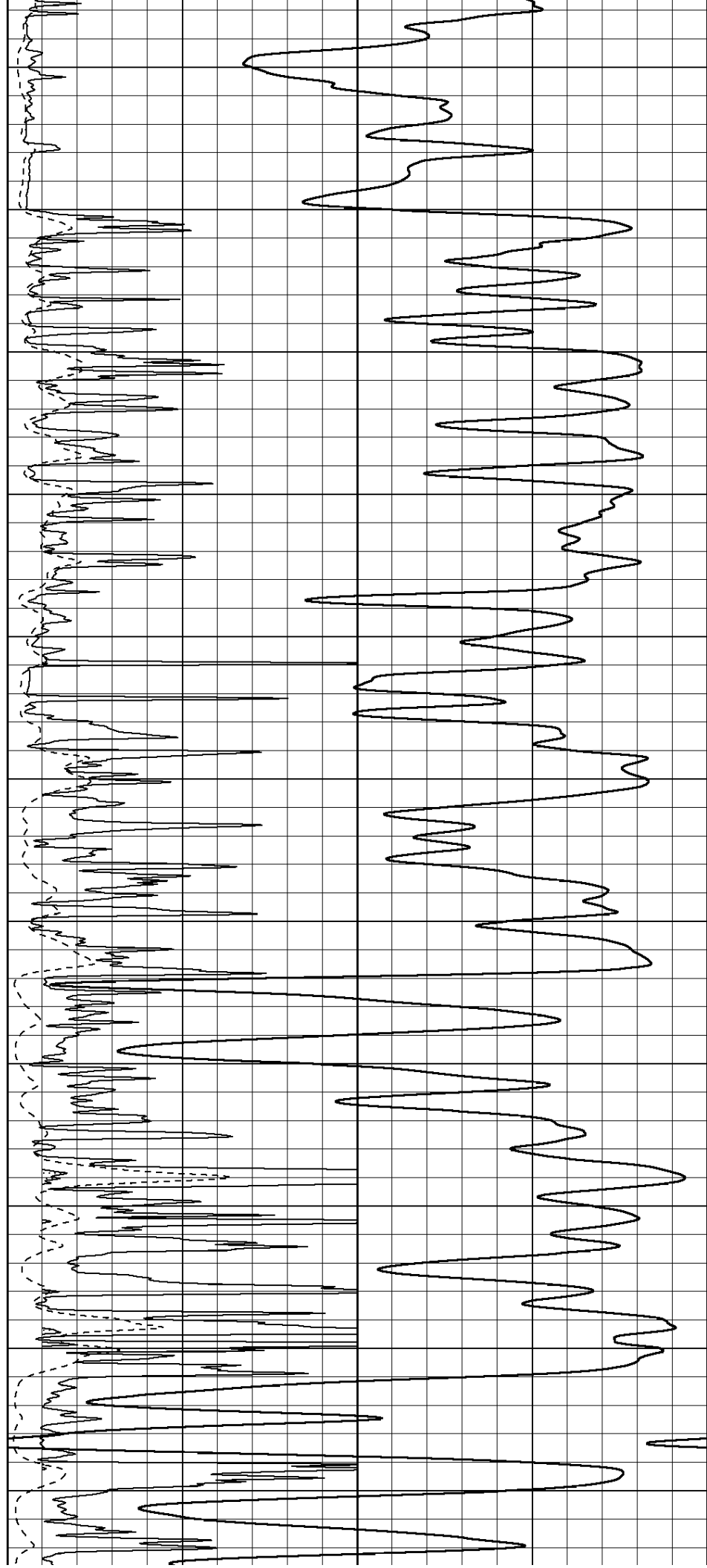
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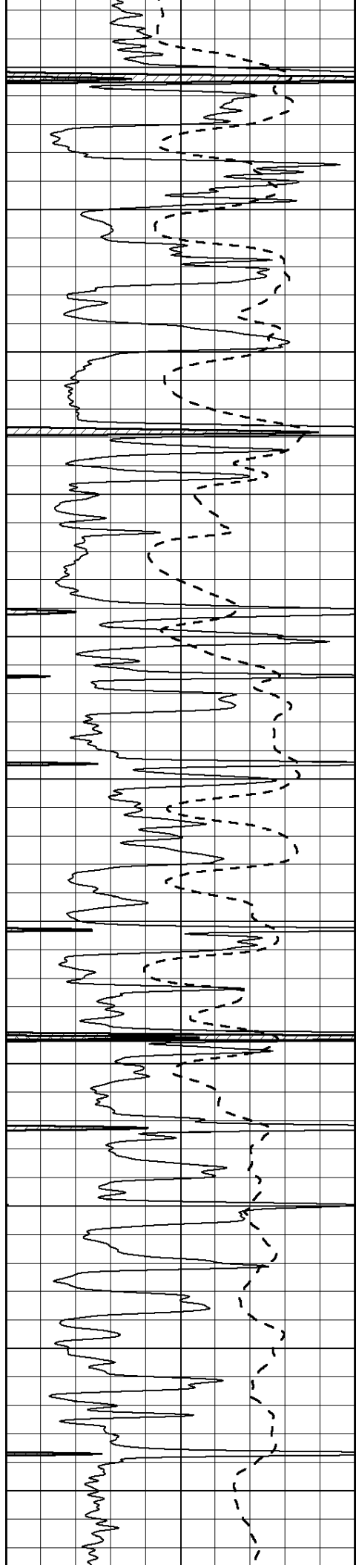
3550

3600

3650

3700





3750

3800

3850

3900

3950

4000

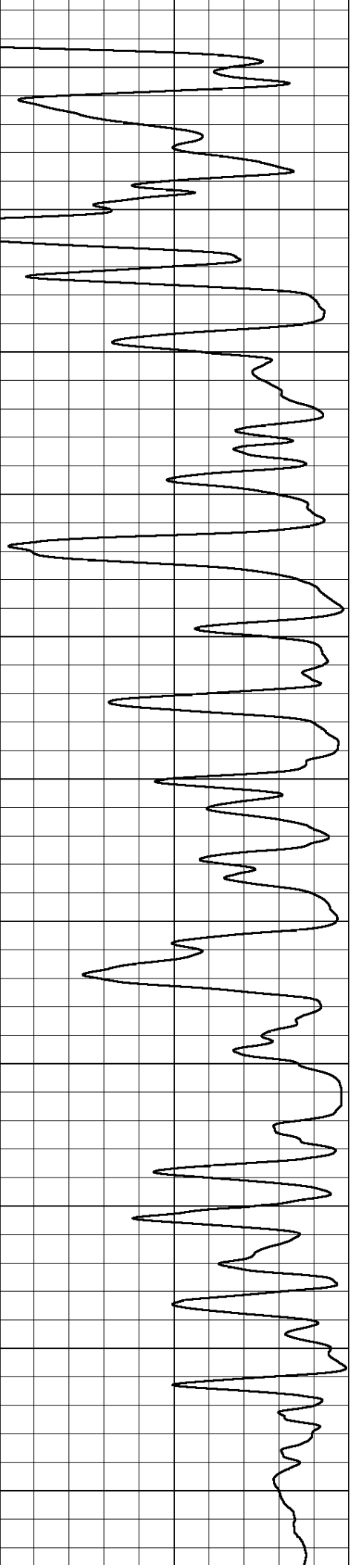
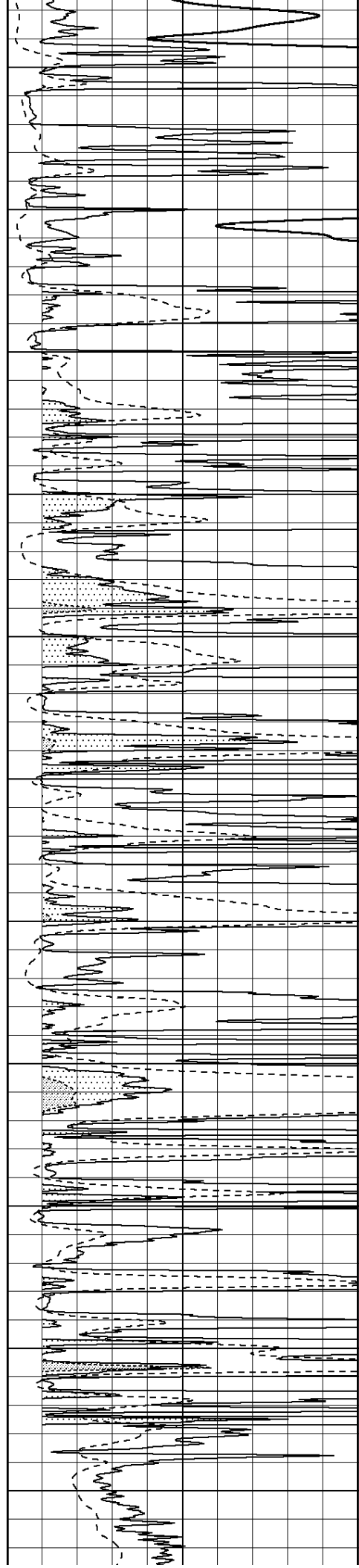
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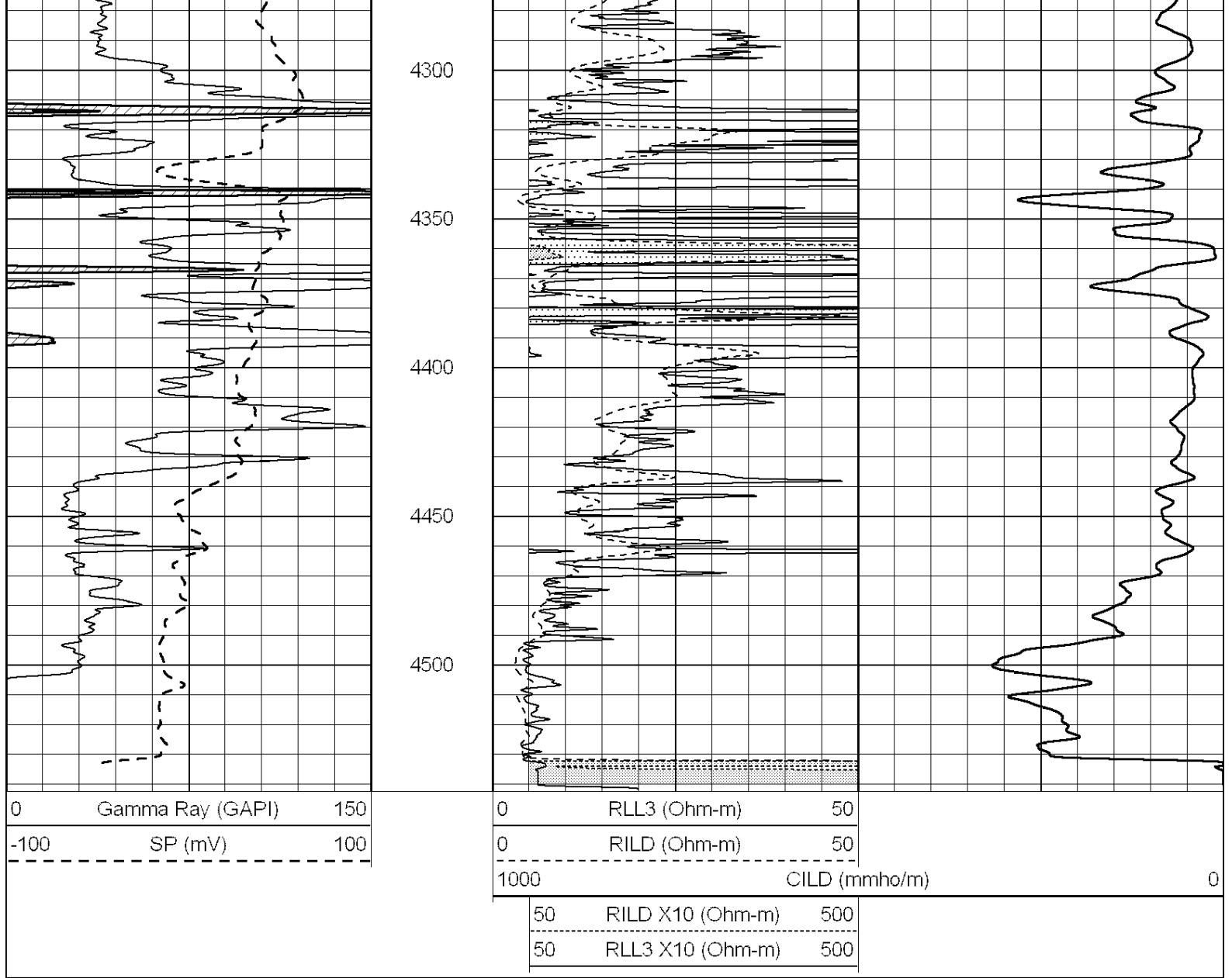
4100

4150

4200

4250



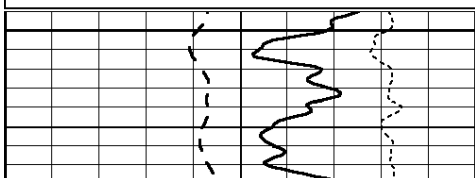


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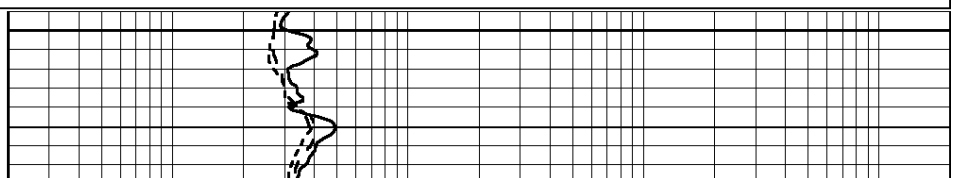
ANHYDRITE

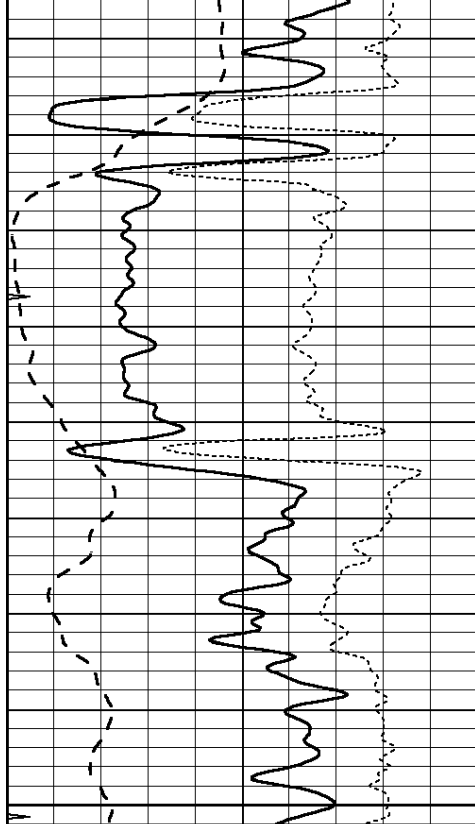
Database File: 011812pe.db
 Dataset Pathname: pass3.10
 Presentation Format: _dil
 Dataset Creation: Wed Nov 20 15:57:58 2013 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:240

| | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------|------------------|-----|------|---------|-----|------|--------|----|---|-------|----|--|-----|-----------------------|------|-----|------------------------|------|-----|--------------------------|------|--|
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: right;">0</td> <td style="width: 85%;">GAMMA RAY (GAPI)</td> <td style="width: 10%; text-align: left;">150</td> </tr> <tr> <td style="text-align: right;">-100</td> <td>SP (mV)</td> <td style="text-align: left;">100</td> </tr> <tr> <td style="text-align: right;">-250</td> <td>Rxo/Rt</td> <td style="text-align: left;">50</td> </tr> <tr> <td style="text-align: right;">0</td> <td>MINMK</td> <td style="text-align: left;">20</td> </tr> </table> | 0 | GAMMA RAY (GAPI) | 150 | -100 | SP (mV) | 100 | -250 | Rxo/Rt | 50 | 0 | MINMK | 20 | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: right;">0.2</td> <td style="width: 85%;">SHALLOW GUARD (Ohm-m)</td> <td style="width: 10%; text-align: left;">2000</td> </tr> <tr> <td style="text-align: right;">0.2</td> <td>DEEP INDUCTION (Ohm-m)</td> <td style="text-align: left;">2000</td> </tr> <tr> <td style="text-align: right;">0.2</td> <td>MEDIUM INDUCTION (Ohm-m)</td> <td style="text-align: left;">2000</td> </tr> </table> | 0.2 | SHALLOW GUARD (Ohm-m) | 2000 | 0.2 | DEEP INDUCTION (Ohm-m) | 2000 | 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 | |
| 0 | GAMMA RAY (GAPI) | 150 | | | | | | | | | | | | | | | | | | | | | |
| -100 | SP (mV) | 100 | | | | | | | | | | | | | | | | | | | | | |
| -250 | Rxo/Rt | 50 | | | | | | | | | | | | | | | | | | | | | |
| 0 | MINMK | 20 | | | | | | | | | | | | | | | | | | | | | |
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 | | | | | | | | | | | | | | | | | | | | | |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 | | | | | | | | | | | | | | | | | | | | | |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 | | | | | | | | | | | | | | | | | | | | | |



1550

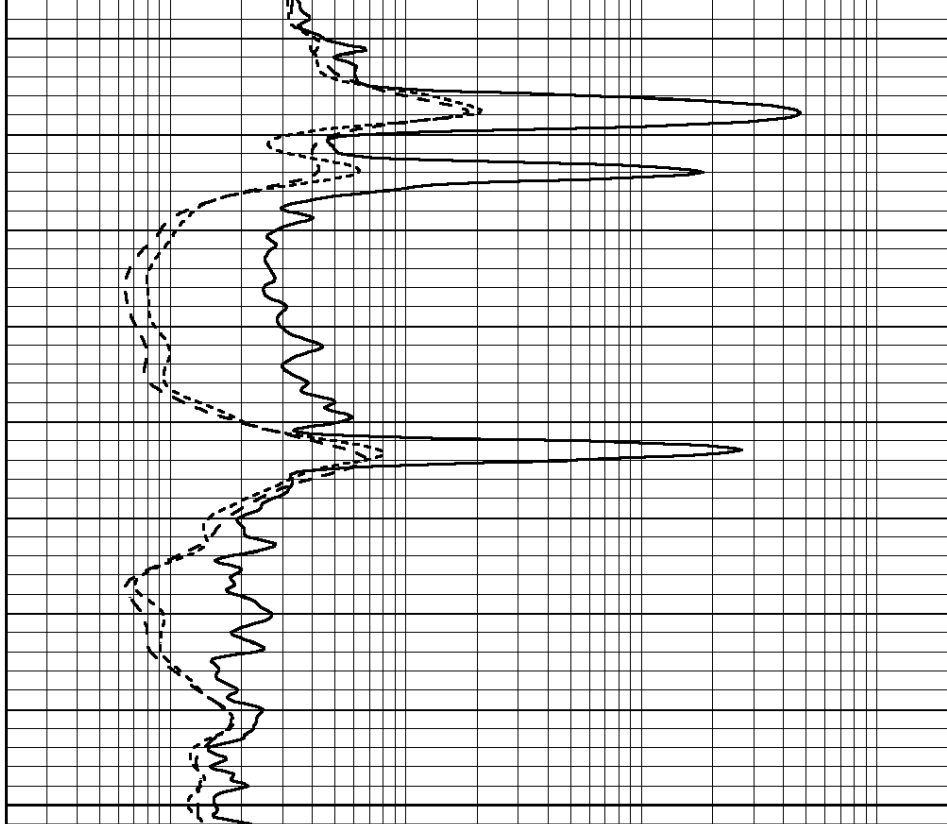




1600

1650

| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |



| | | |
|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

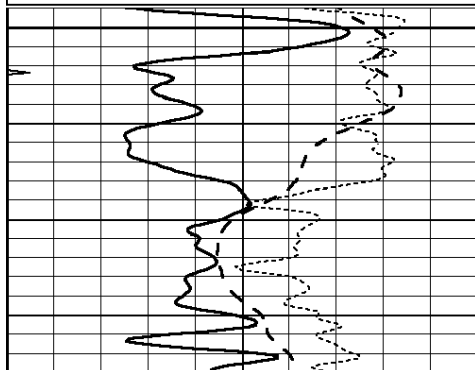


MAIN SECTION

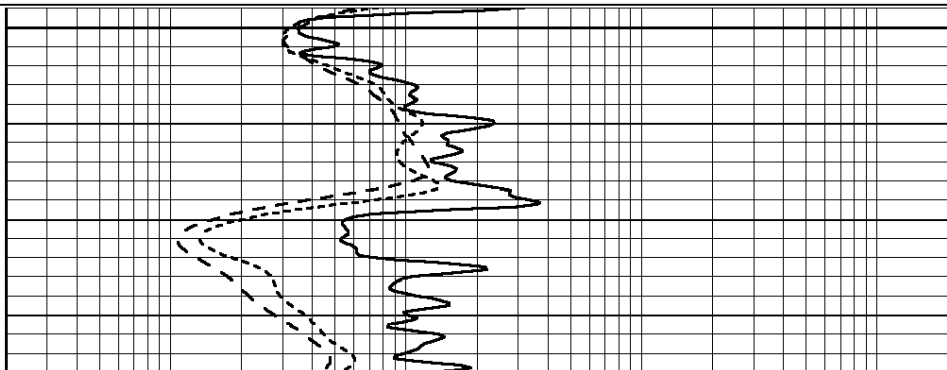
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 Presentation Format: dil
 Dataset Creation: Wed Nov 20 15:57:26 2013 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:240

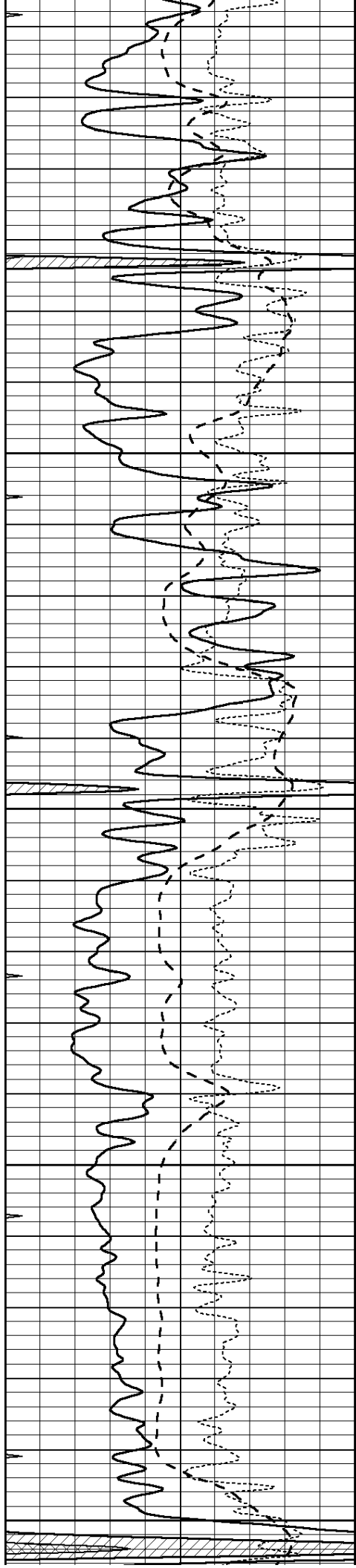
| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

| | | |
|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |



3500





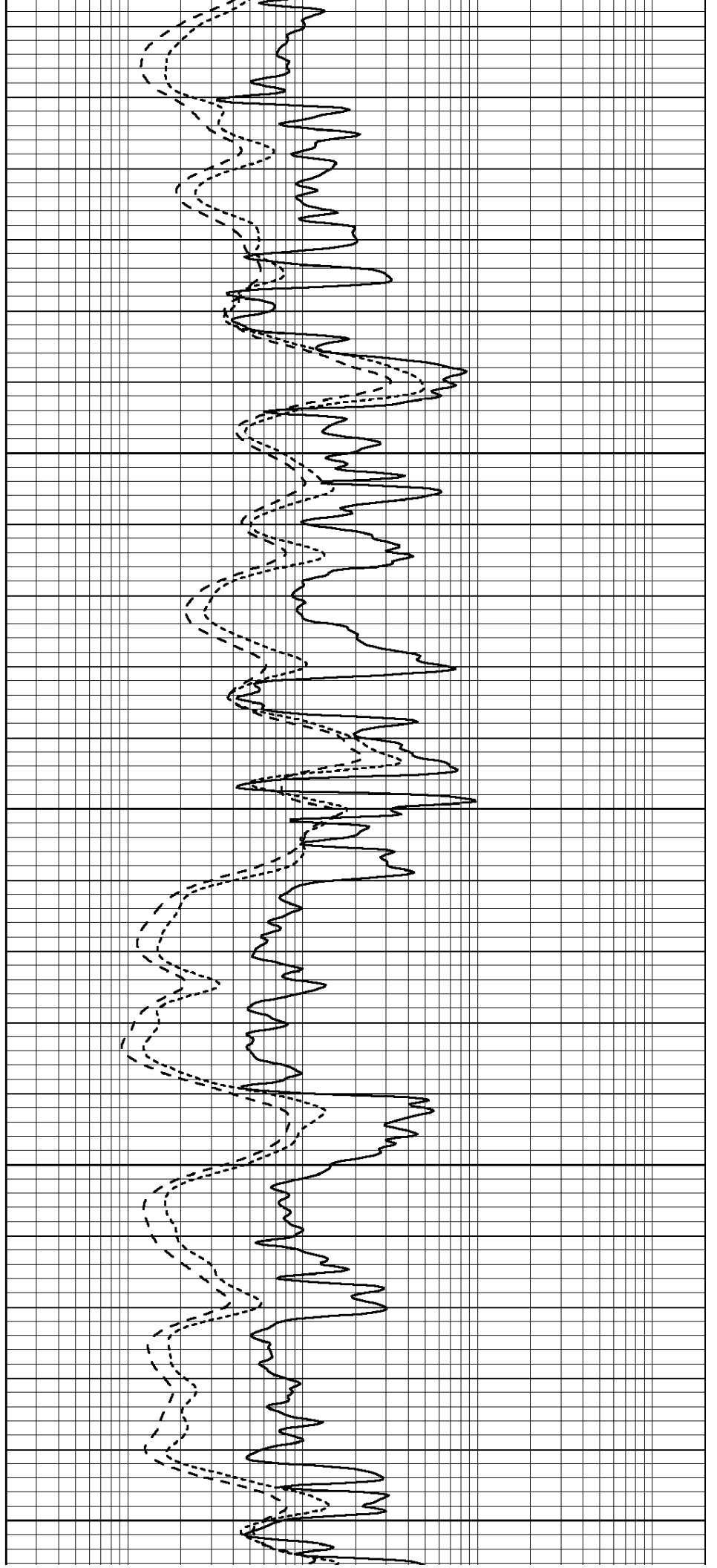
3550

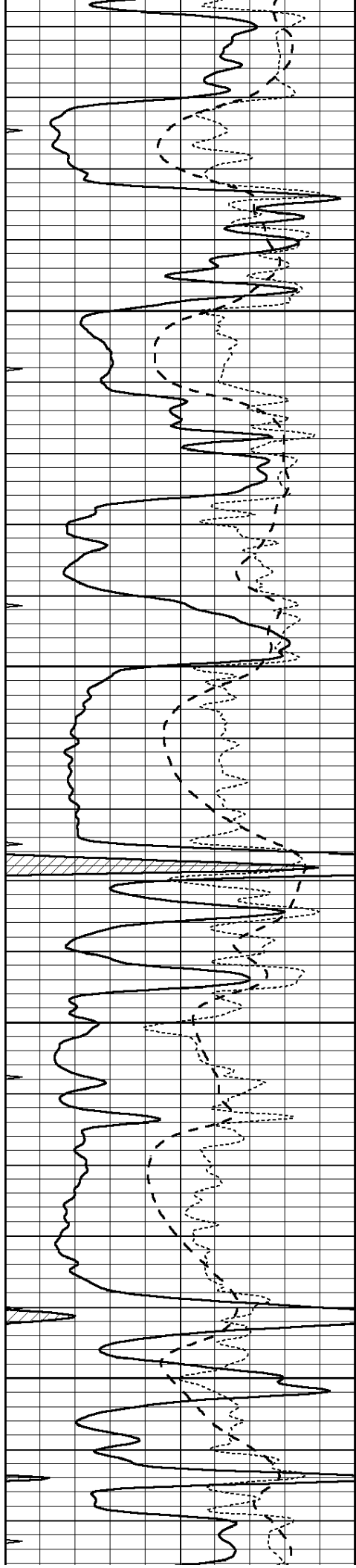
3600

3650

3700

3750



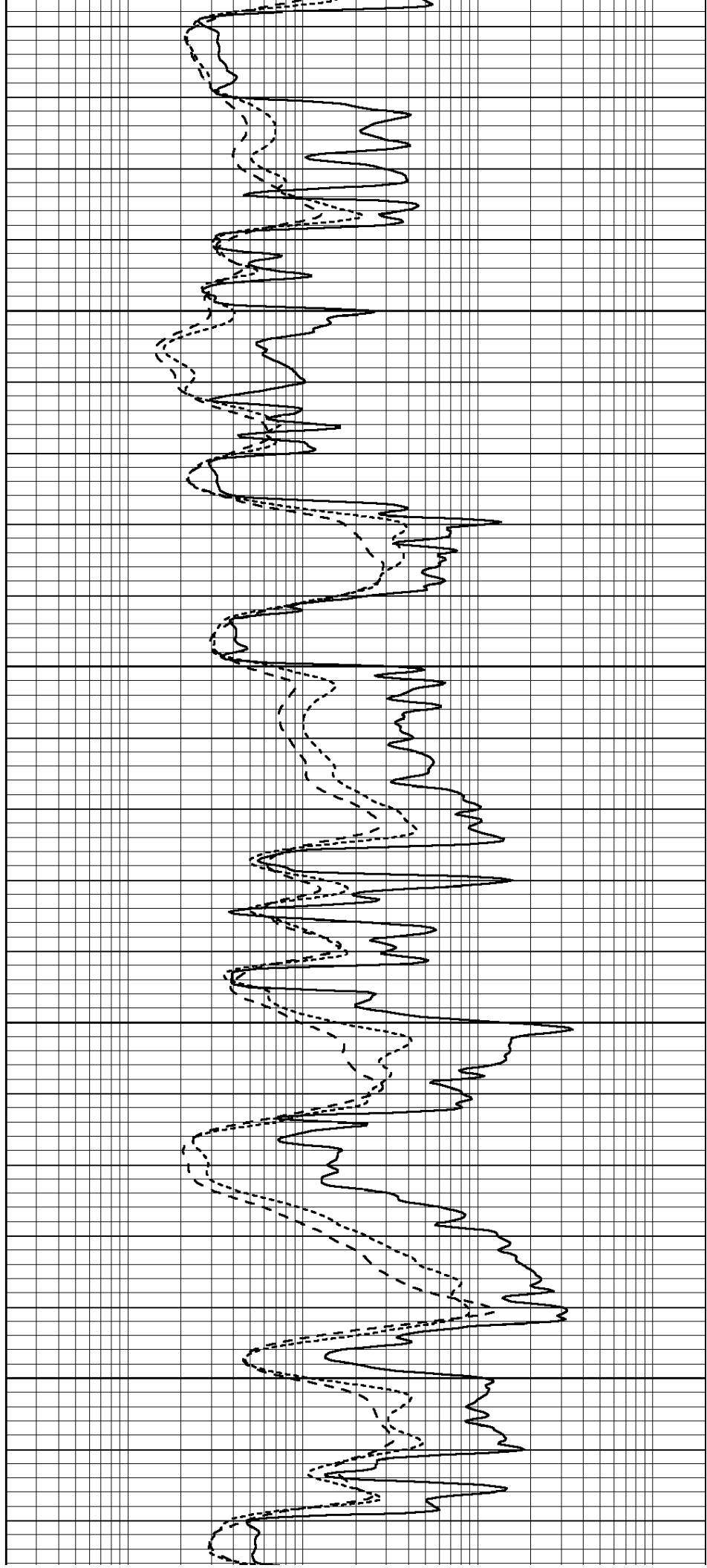


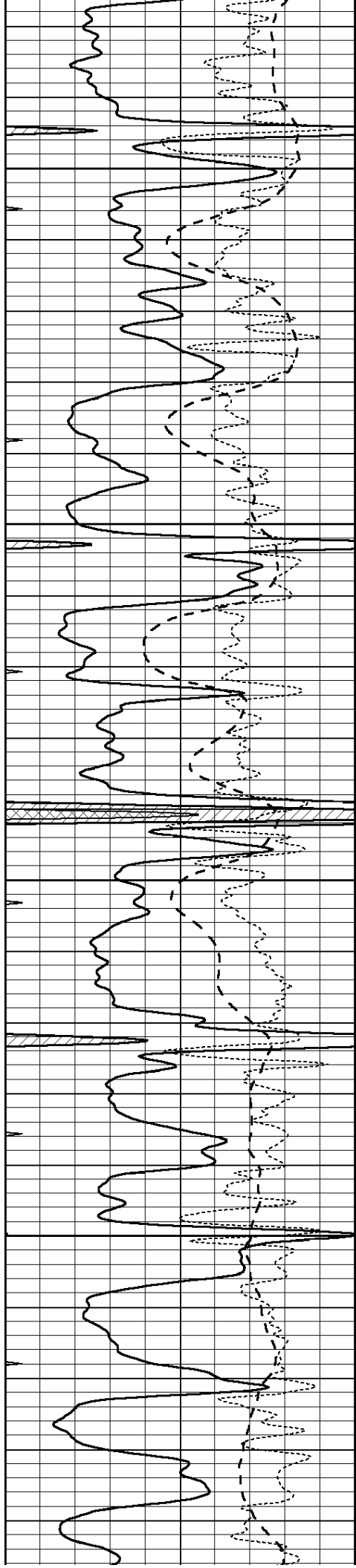
3800

3850

3900

3950



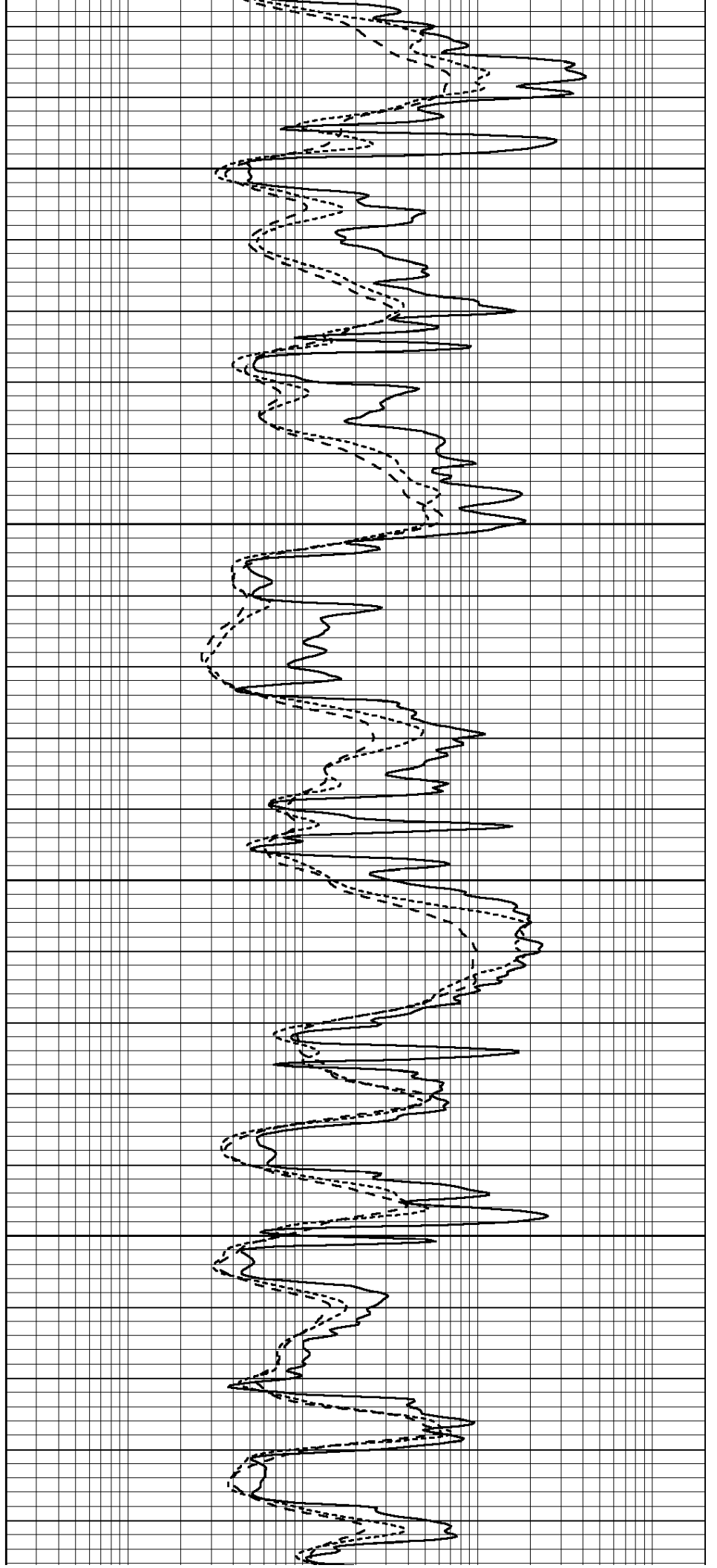


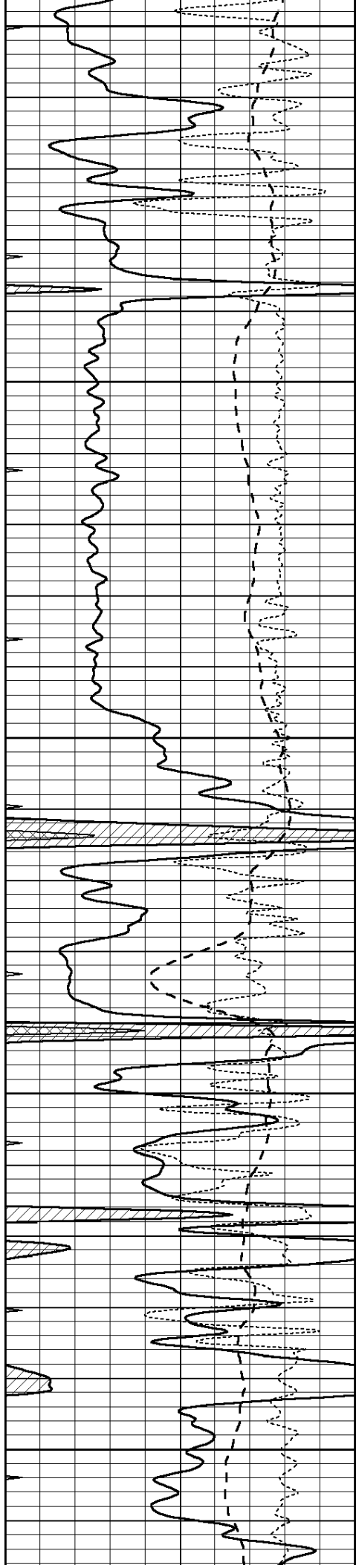
4000

4050

4100

4150





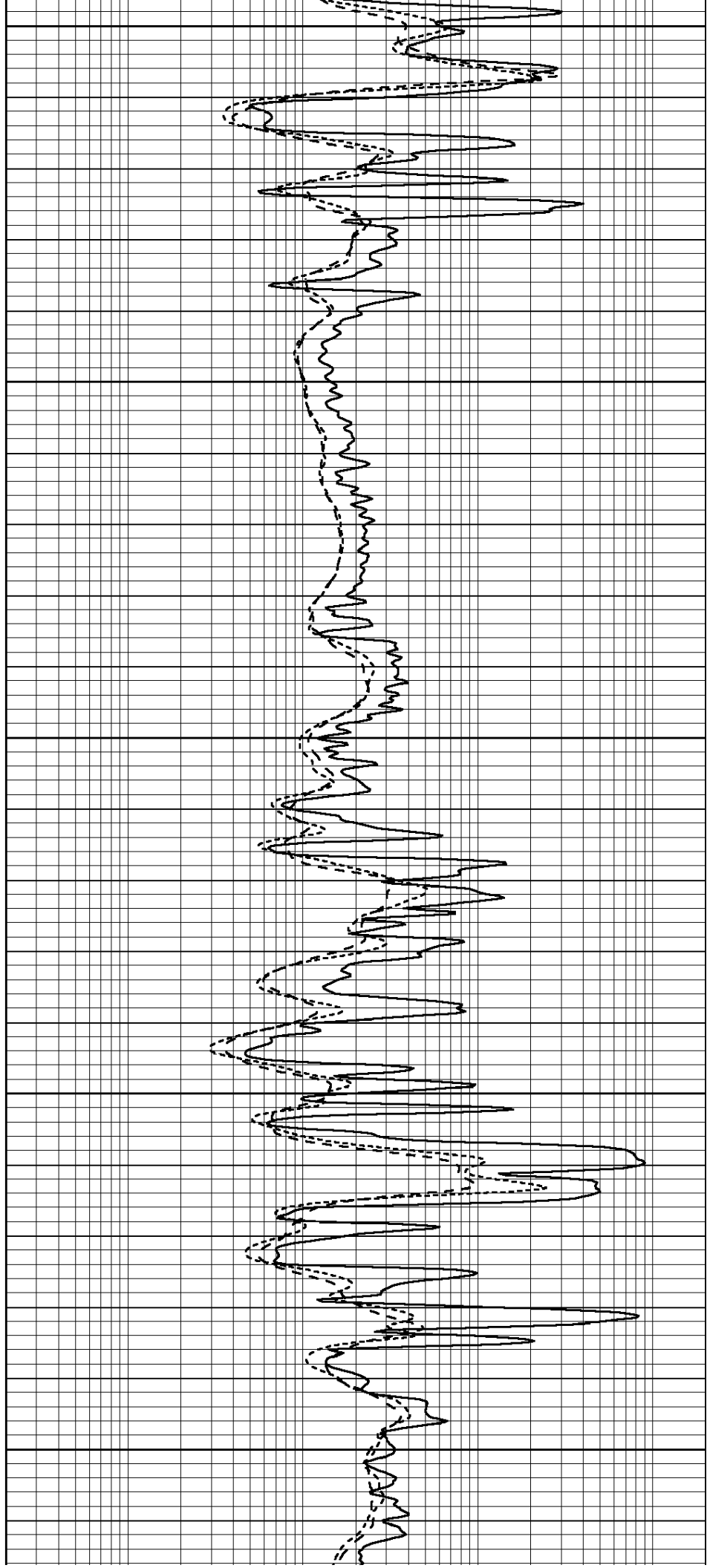
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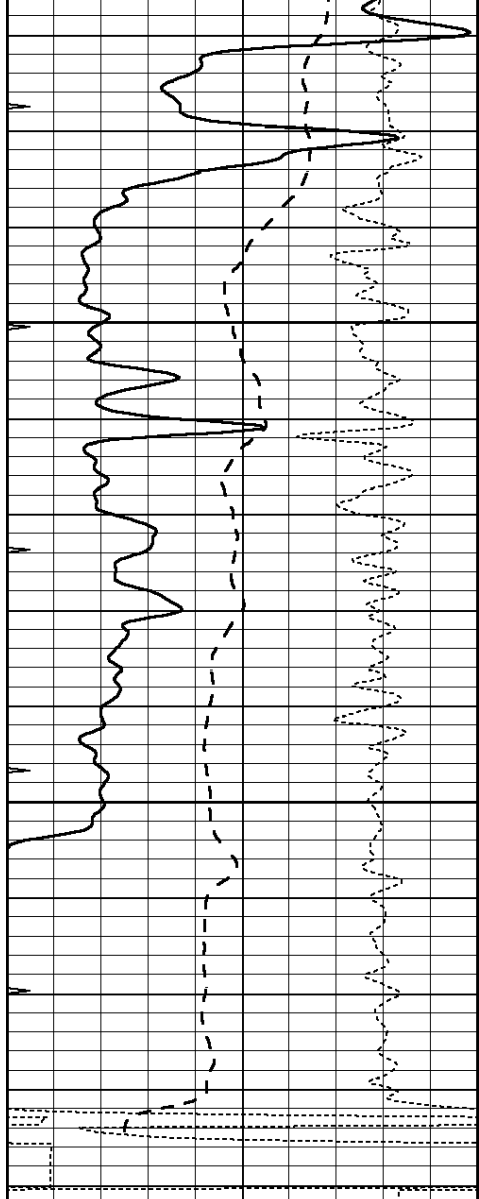
4250

4300

4350

4400

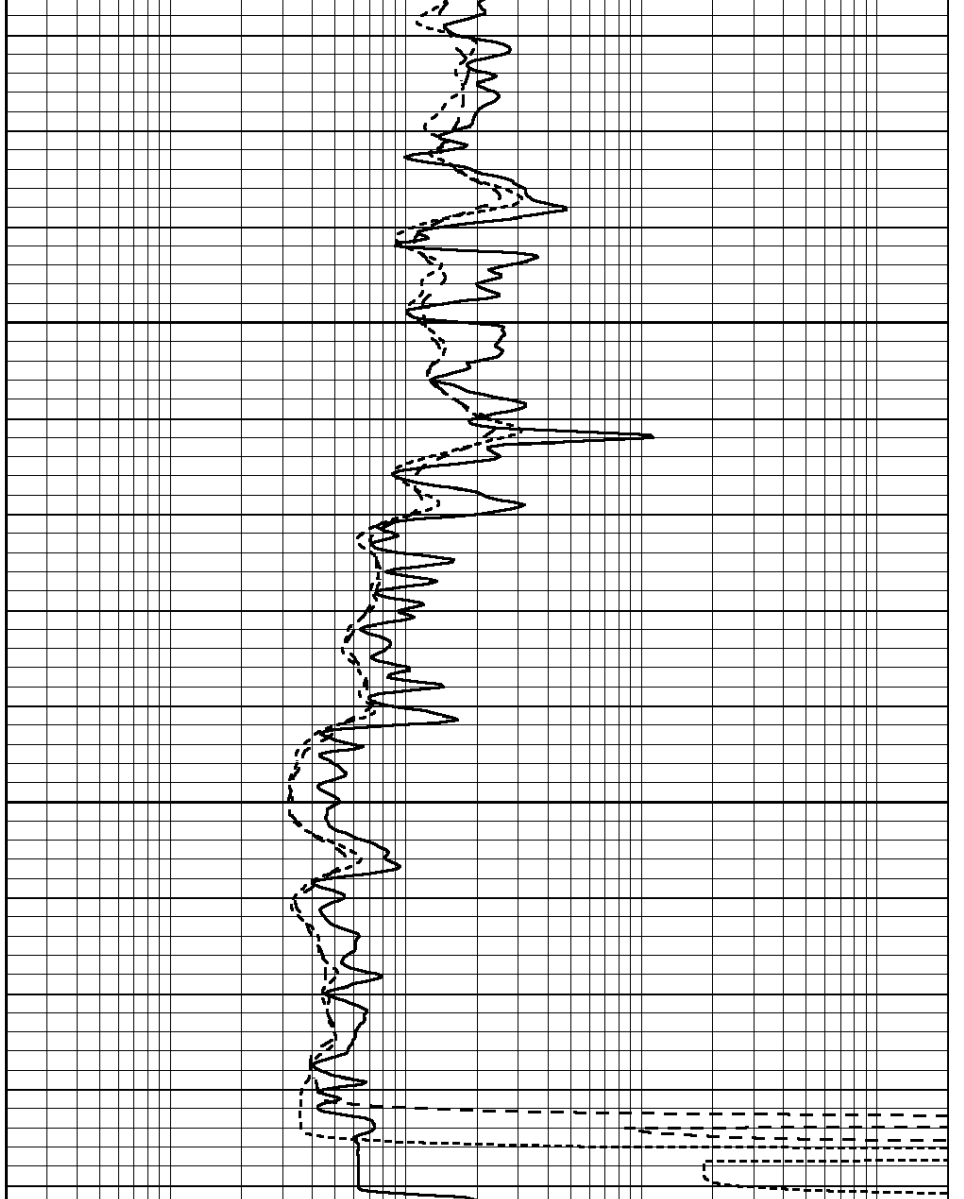




| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

4450

4500



| | | |
|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

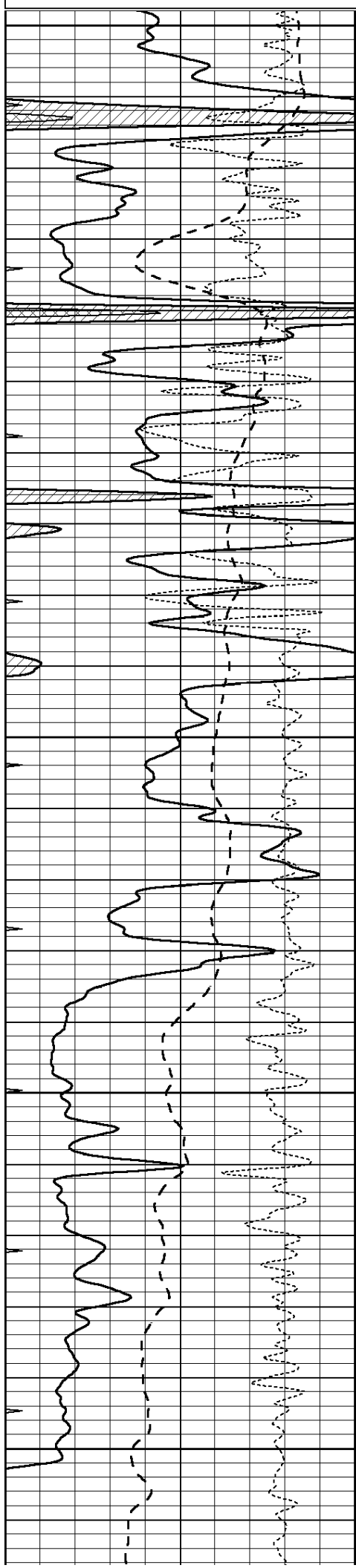


REPEAT SECTION

Database File: 011812pe.db
 Dataset Pathname: pass2.4
 Presentation Format: dil
 Dataset Creation: Wed Nov 20 15:58:53 2013 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:240

| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

| | | |
|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |



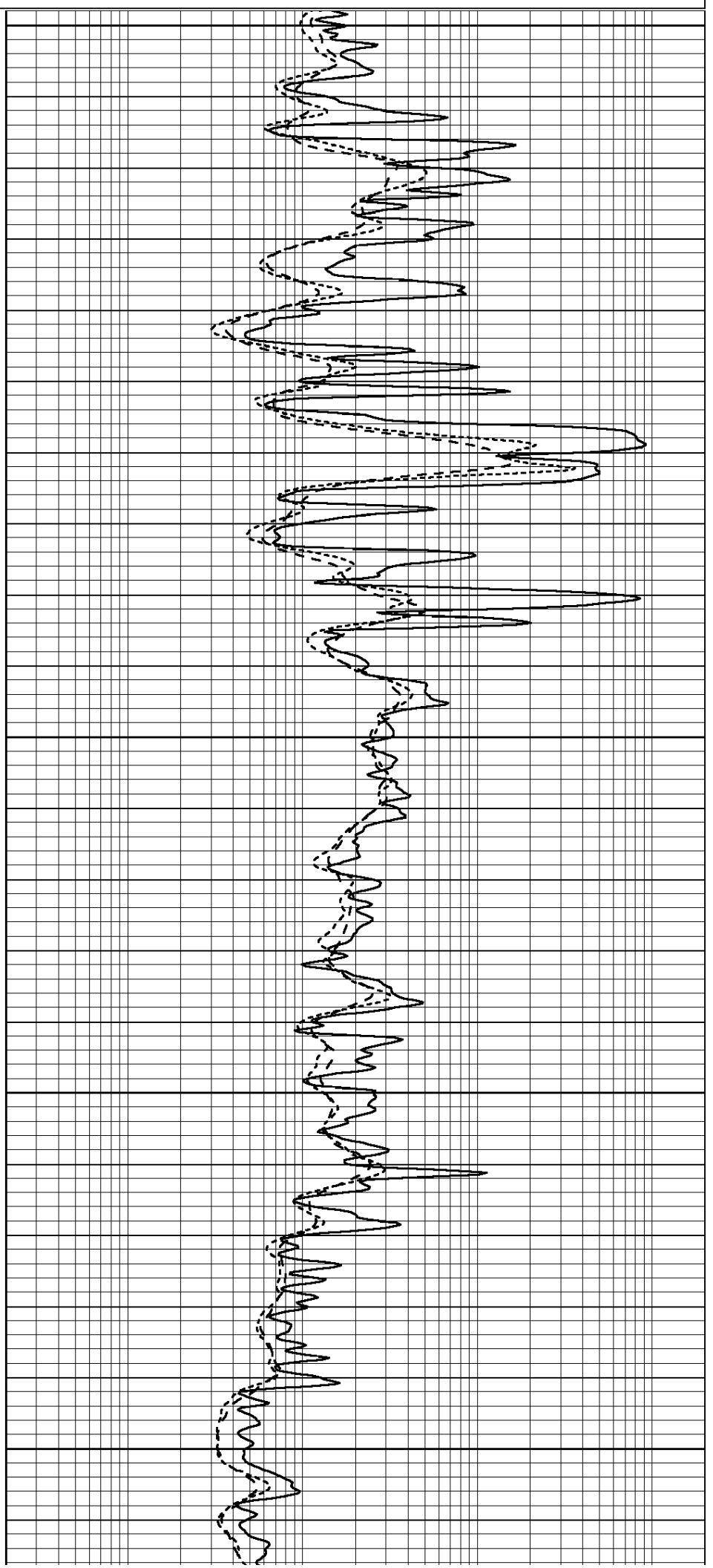
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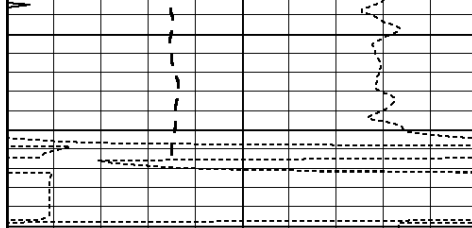
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4400

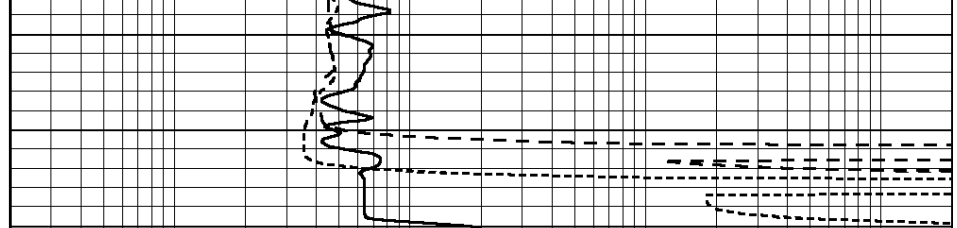
4450

4500





| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |



| | | |
|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

Calibration Report

Database File: 011812pe.db
 Dataset Pathname: pass3.9
 Dataset Creation: Wed Nov 20 15:57:26 2013 by Calc SOC 120430

Dual Induction Calibration Report

Serial-Model: PROBE9-DILG
 Surface Cal Performed: Tue Nov 19 06:44:33 2013
 Downhole Cal Performed: Mon Jul 28 12:02:56 2008
 After Survey Verification Performed: Mon Jul 28 12:02:56 2008

Surface Calibration

| Loop: | Readings | | | References | | | Results | |
|-----------|----------|-------|---|------------|---------|--------|---------|---------|
| | Air | Loop | | Air | Loop | | m | b |
| Deep | -0.014 | 0.629 | V | 0.000 | 400.000 | mmho/m | 650.000 | -20.000 |
| Medium | 0.039 | 0.728 | V | 0.000 | 464.000 | mmho/m | 640.000 | -20.000 |
| 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

| | 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 | |

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: Sun Nov 03 21:08:13 2013

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps

Calibrator Reading: 1.0 cps

Sensitivity: 0.3000 GAPI/cps