



DUAL INDUCTION LOG

Company H&C OIL OPERATING, INC.
 Well BAKEL UNIT #25 SIW
 Field DREIL
 County GRAHAM
 State KANSAS

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 Well BAKEL UNIT #25 SIW
 Field DREIL
 County GRAHAM State KANSAS

Location: API # : 15-065-24150-00-00
 1650 FNL & 380 FEL
 SEC 25 TWP 9S RGE 25W
 Permanent Datum GROUND LEVEL Elevation 2575'
 Log Measured From KELLY BUSHING 8' A.G.L.
 Drilling Measured From KELLY BUSHING
 Other Services CDL/CNL/MEL
 Elevation K.B. 2583
 D.F. 2581
 G.L. 2575

| | |
|------------------------------|-----------------|
| Date | 07/17/18 |
| Run Number | ONE |
| Depth Driller | 4185 |
| Depth Logger | 4188 |
| Bottom Logged Interval | 4187 |
| Top Log Interval | 50 |
| Casing Driller | 8 5/8@ 259 |
| Casing Logger | 259 |
| Bit Size | 7 7/8" |
| Type Fluid in Hole | CHEMICAL MUD |
| Density / Viscosity | 9.061 |
| pH / Fluid Loss | 10.5/6.4 |
| Source of Sample | FLOWLINE |
| Rm @ Meas. Temp | 1.3@86 |
| Rmt @ Meas. Temp | .98@86 |
| Rmc @ Meas. Temp | 1.56@86 |
| Source of Rmf / Rmc | MEASURED |
| Rm @ BHT | .92@117 |
| Time Circulation Stopped | 2 HOURS |
| Time Logger on Bottom | /// |
| Maximum Recorded Temperature | 117F |
| Equipment Number | 4010 |
| Location | HAYS, KANSAS |
| Recorded By | GUS PFANENSTIEL |
| Witnessed By | MARC DOWNING |

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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

THANK YOU FOR USING ELI WIRELINE, HAYS, KS. (785) 628-6395

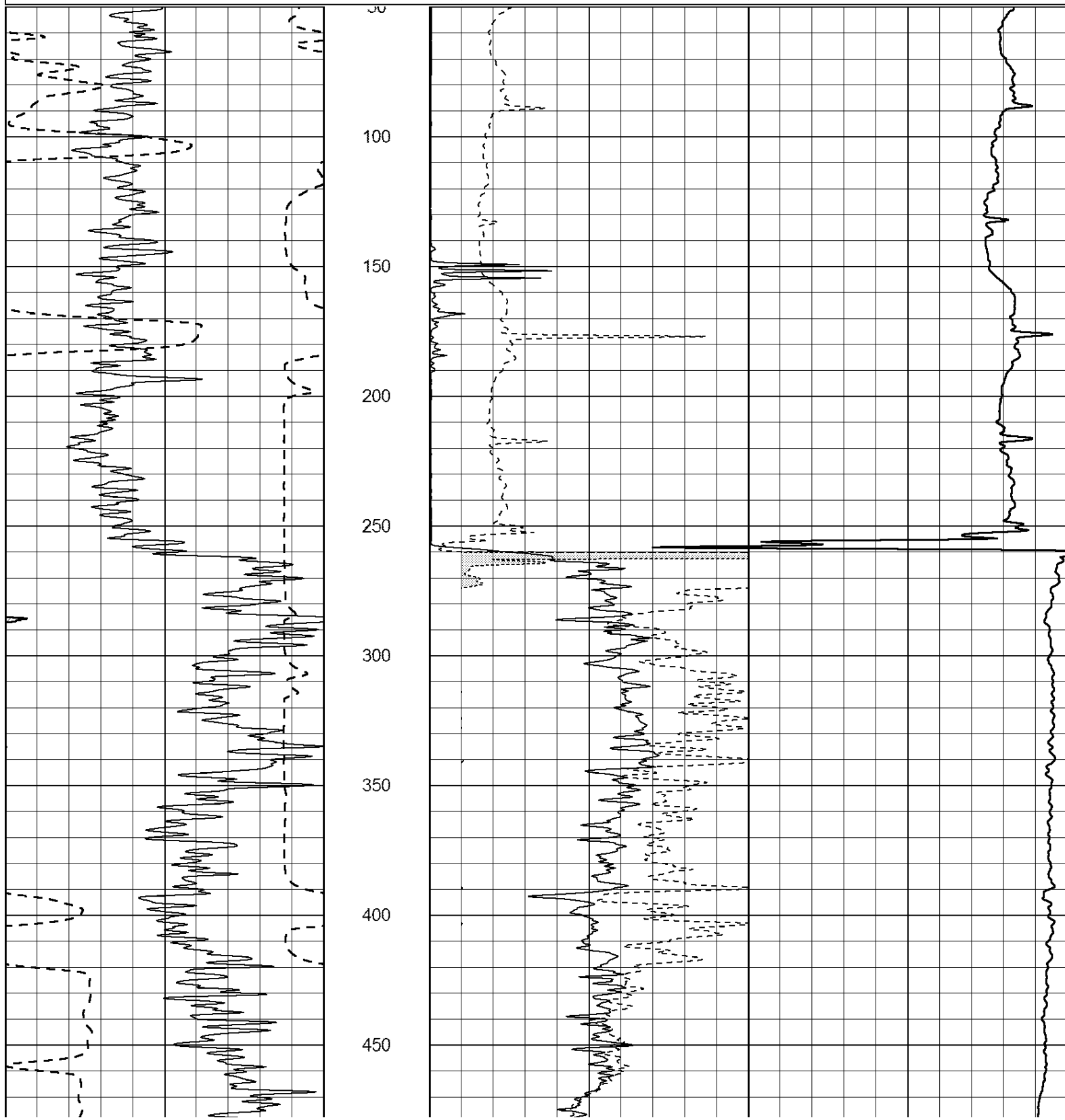
DIRECTIONS
 NORTH OF WAKEENEY TO REDLINE RD.
 WEST TO 160 RD., NORTH 1/2 MILE
 WEST INTO. AT TANKS

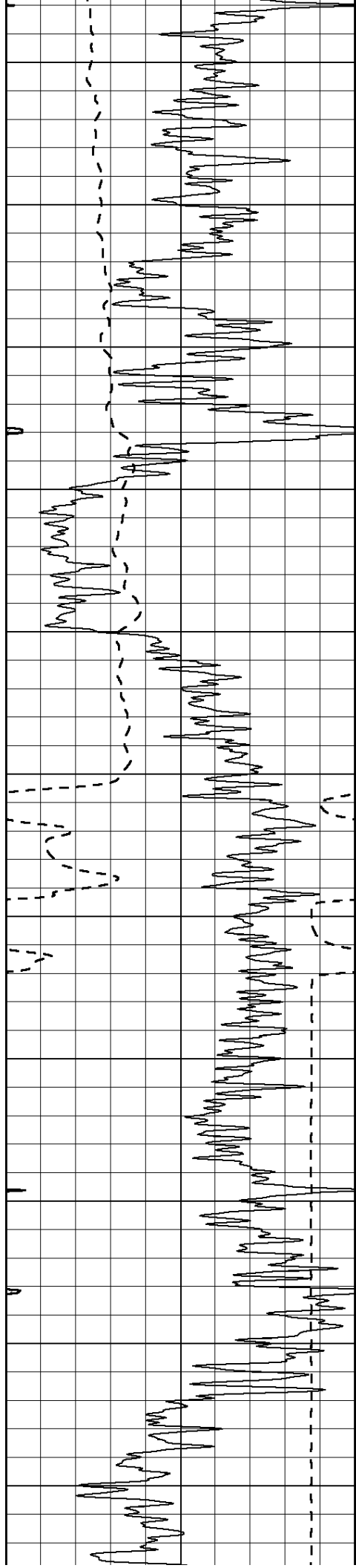


MAIN PASS

Database File: 2692ddn.db
 Dataset Pathname: pass3.1
 Presentation Format: _dil2
 Dataset Creation: Tue Jul 17 20:36:39 2018 by Calc Open-Cased 090629
 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 |
| 50 | RLL3 X10 (Ohm-m) | 500 | | | |





500

550

600

650

700

750

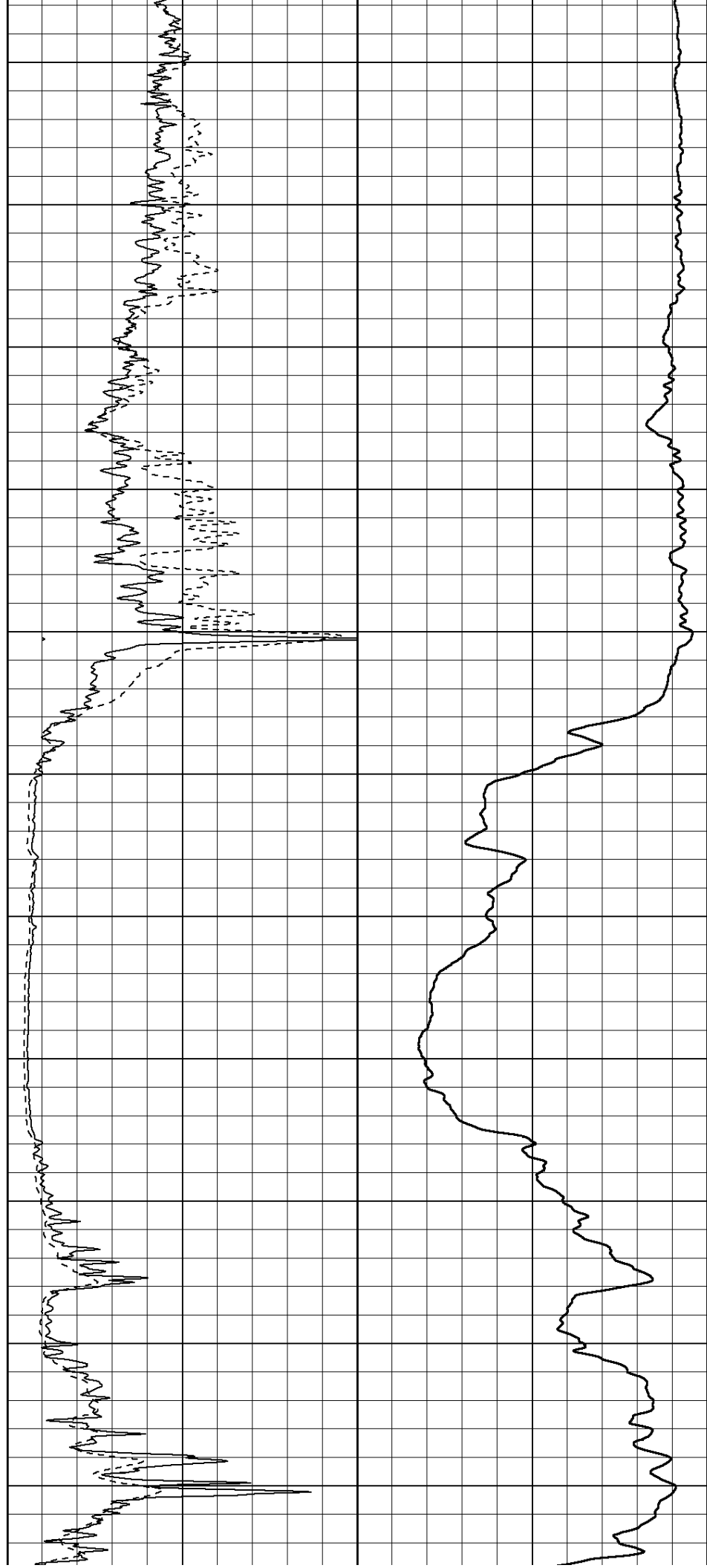
800

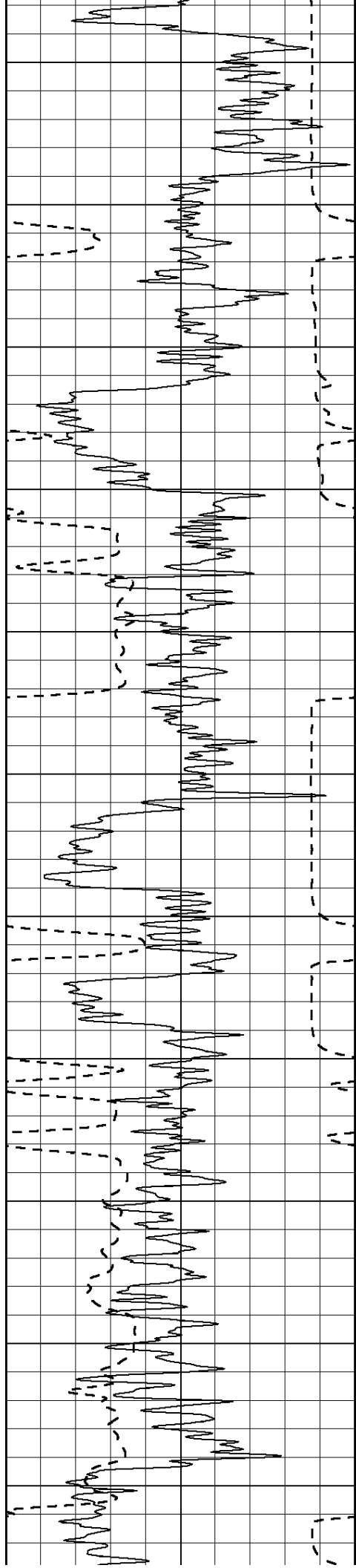
850

900

950

1000





1050

1100

1150

1200

1250

1300

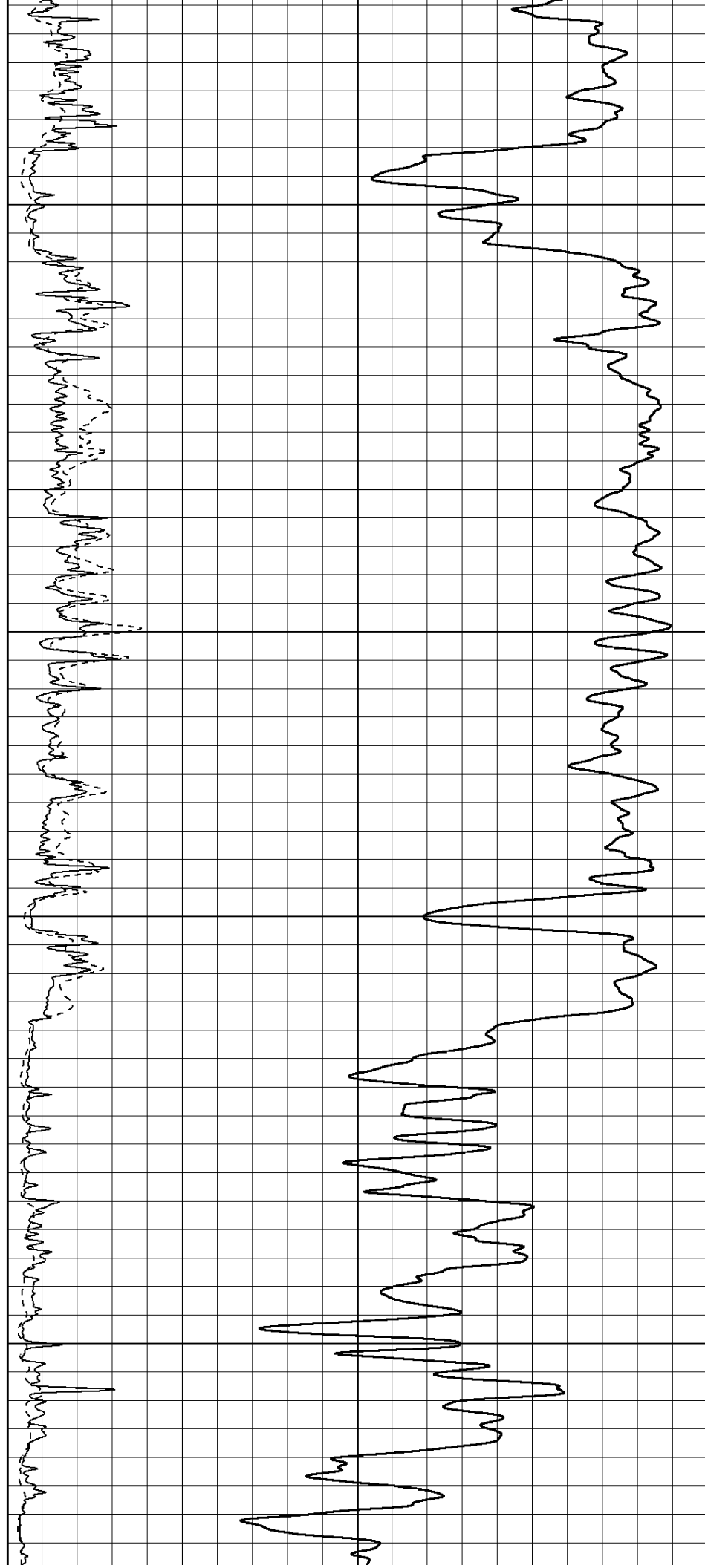
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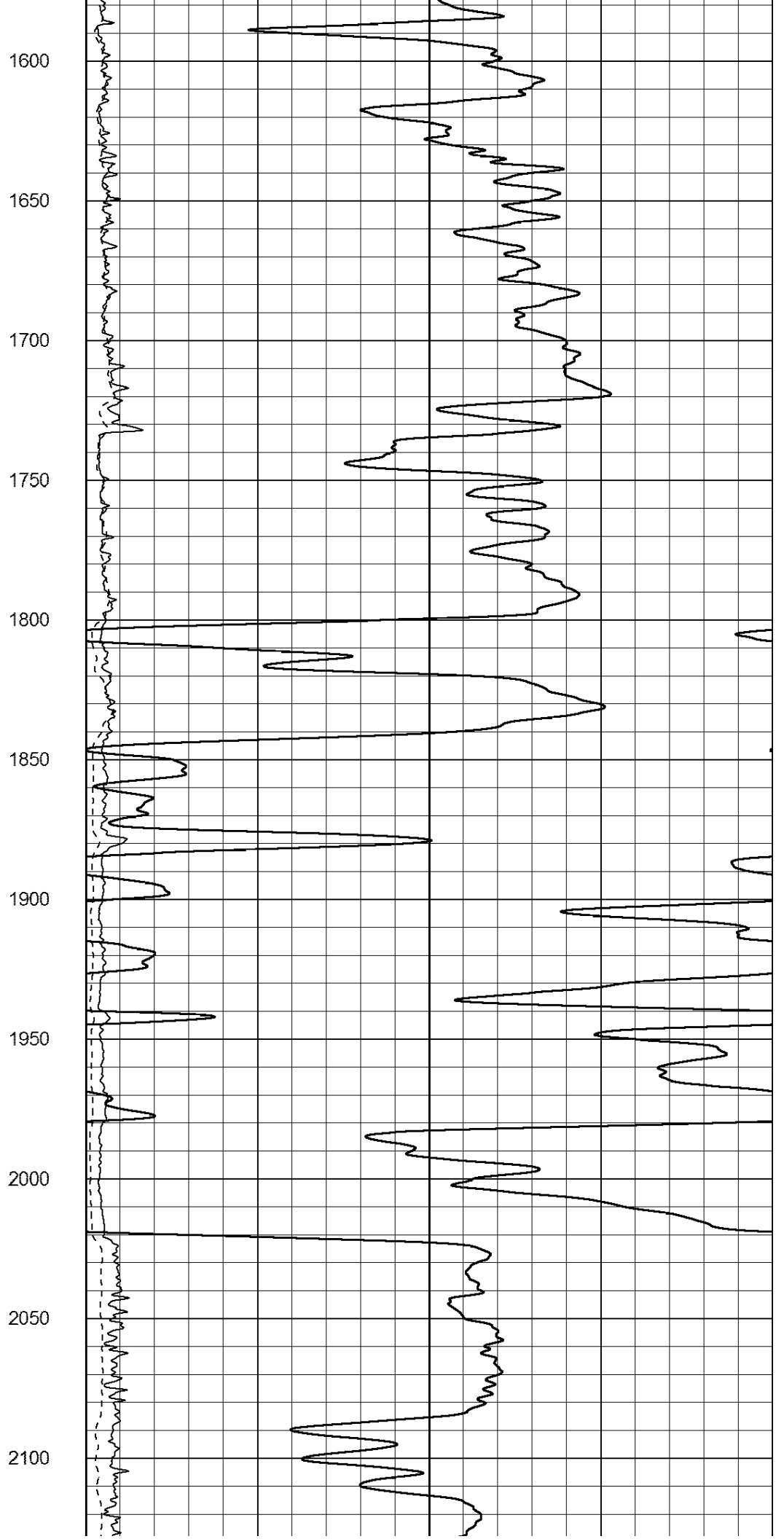
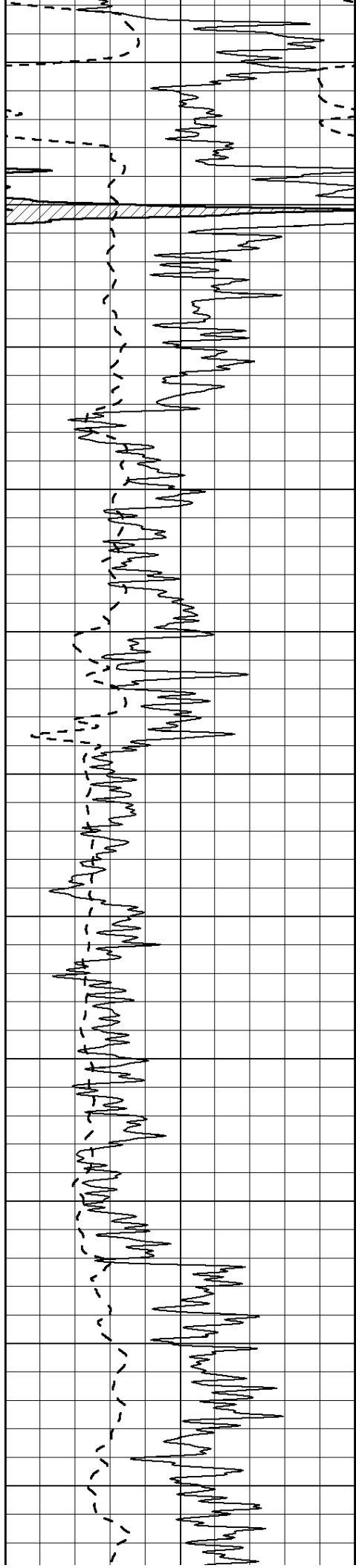
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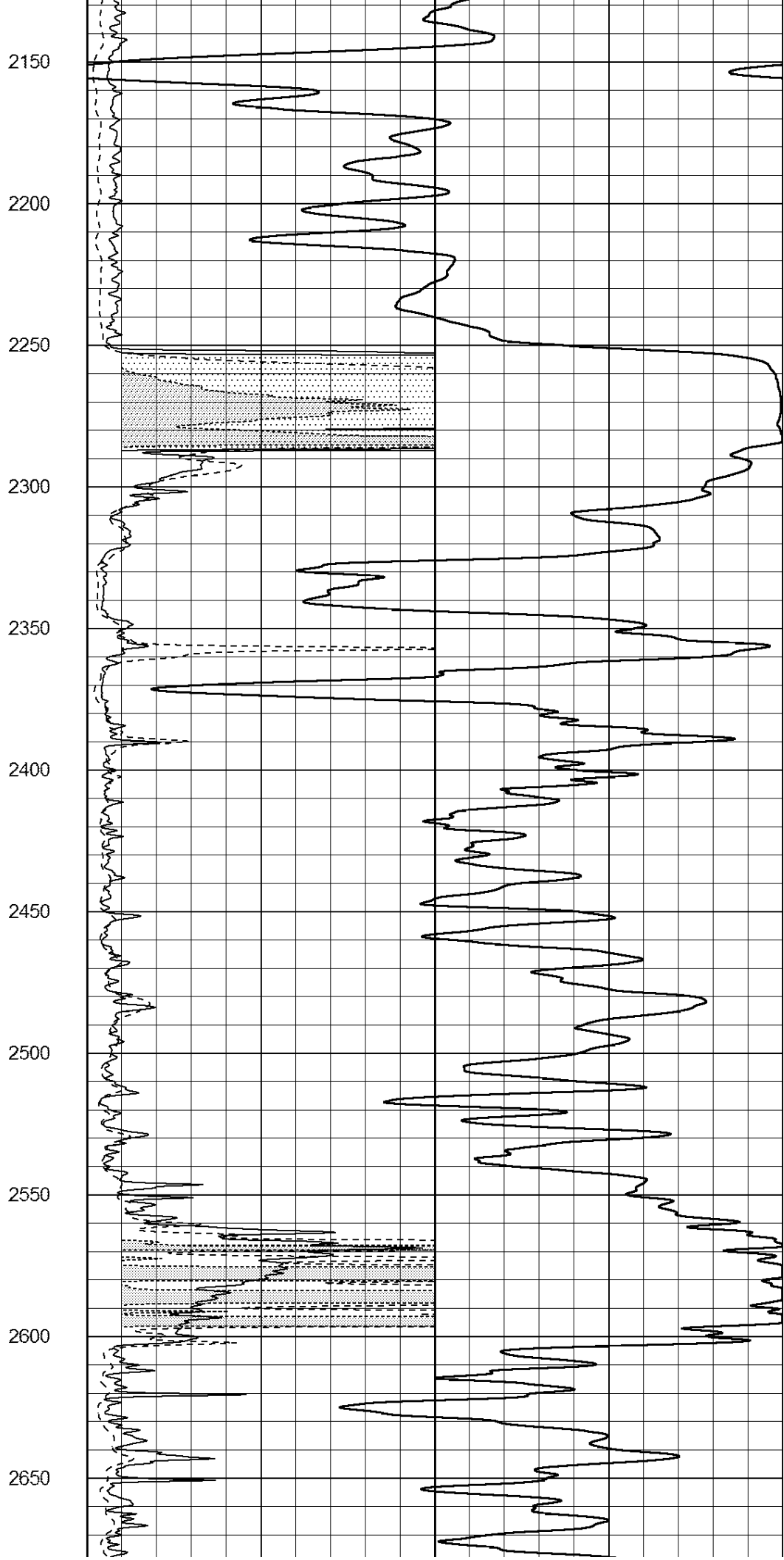
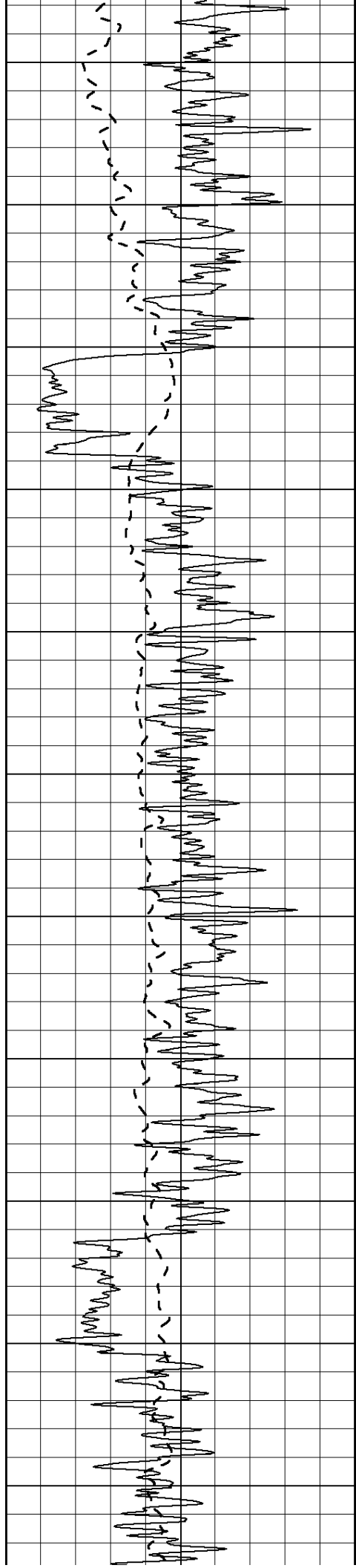
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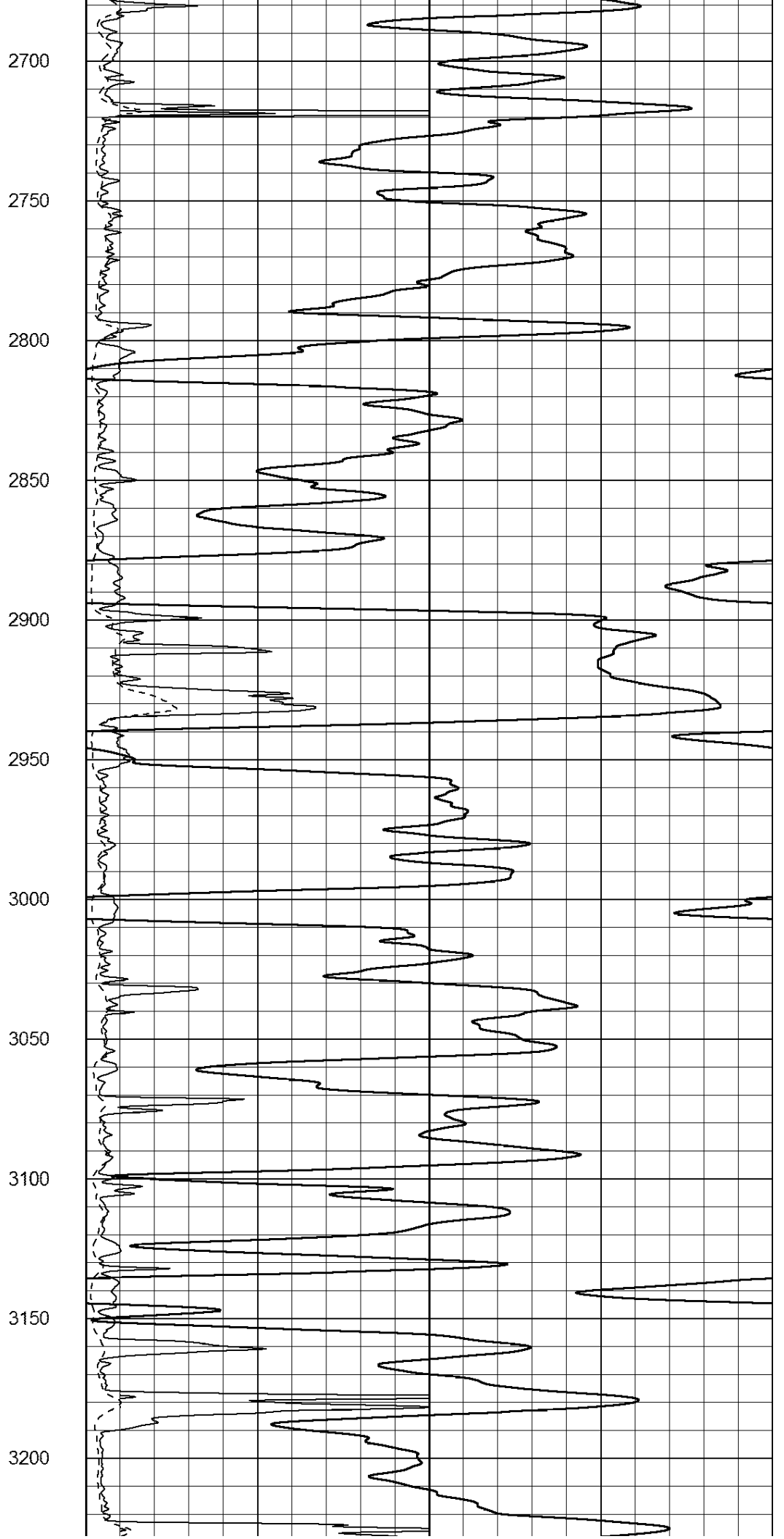
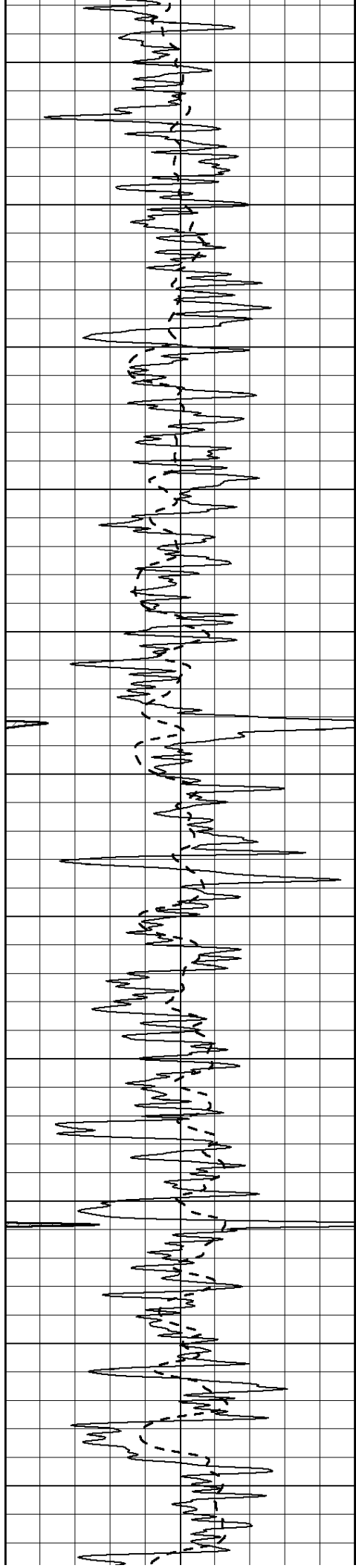
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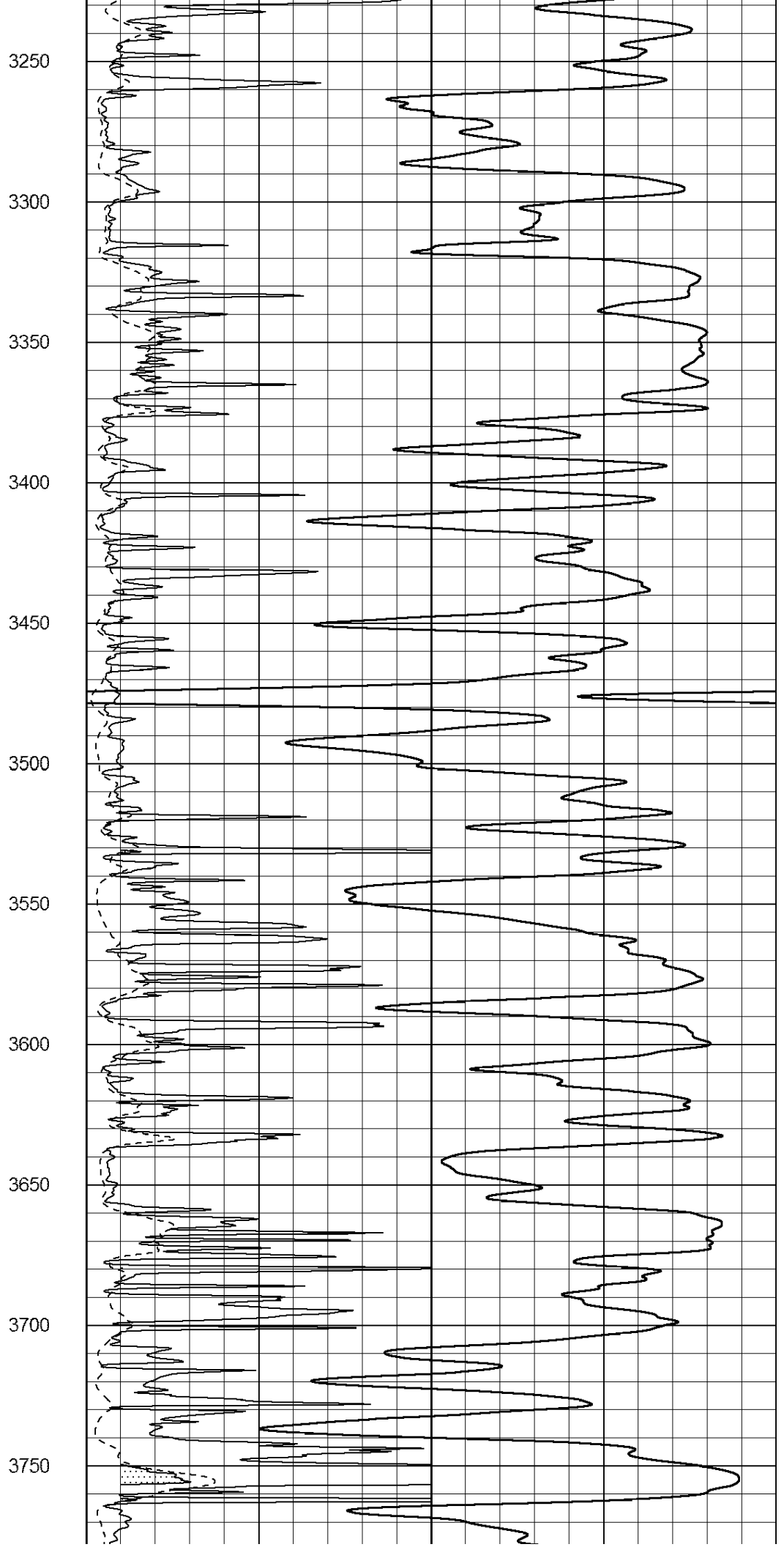
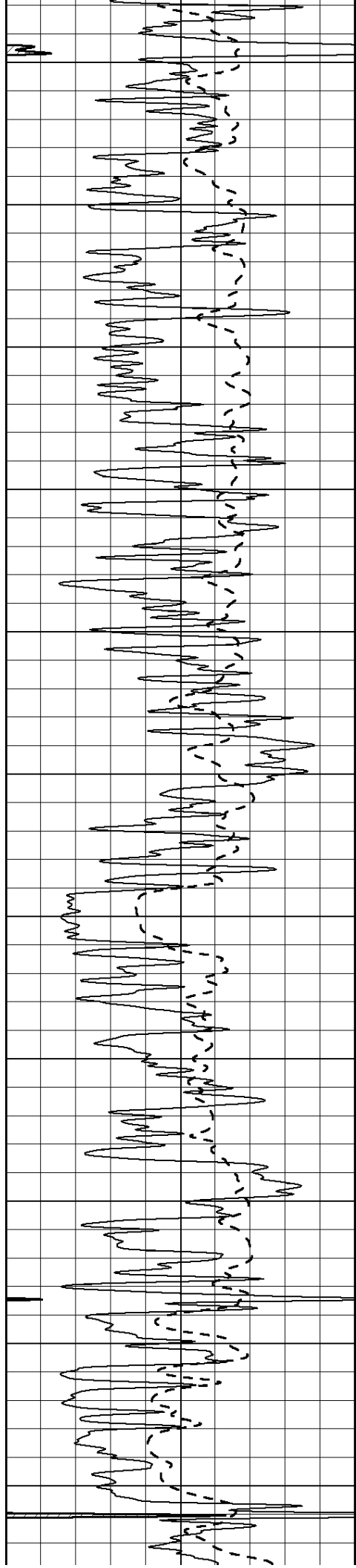
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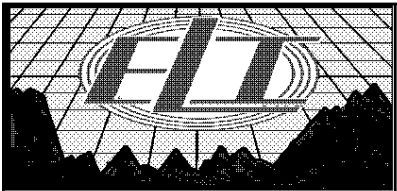
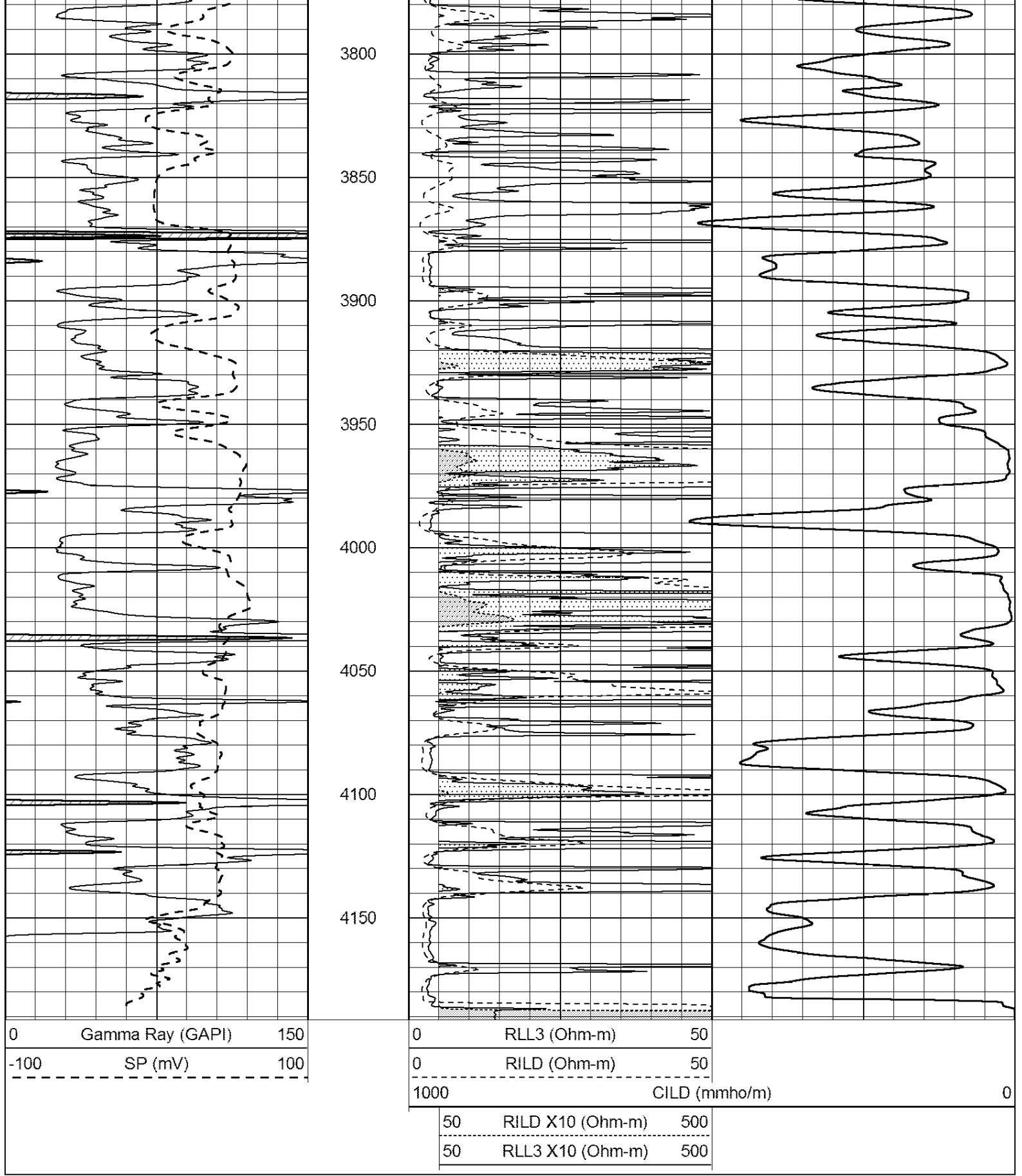












MAIN PASS

Dataset Pathname: pass3.1
 Presentation Format: _dil
 Dataset Creation: Tue Jul 17 20:36:39 2018 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

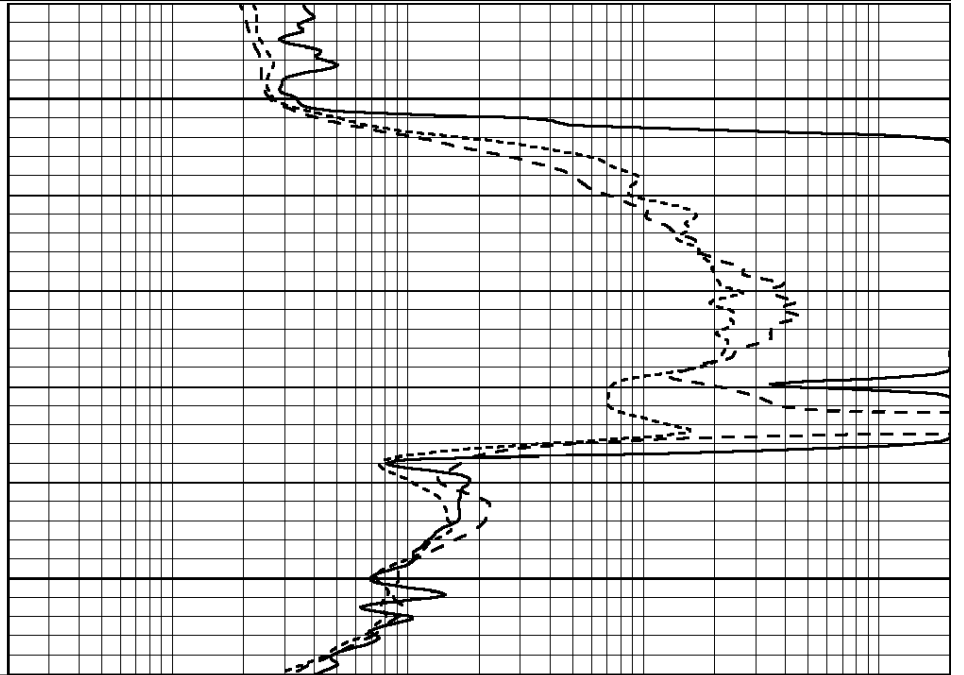
| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

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



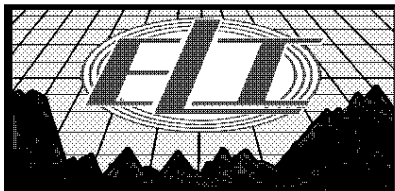
2250

2300



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

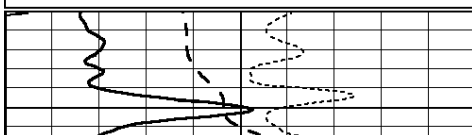


MAIN PASS

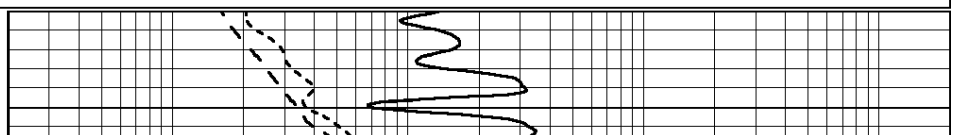
Database File: 2692ddn.db
 Dataset Pathname: pass3.1
 Presentation Format: _dil
 Dataset Creation: Tue Jul 17 20:36:39 2018 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

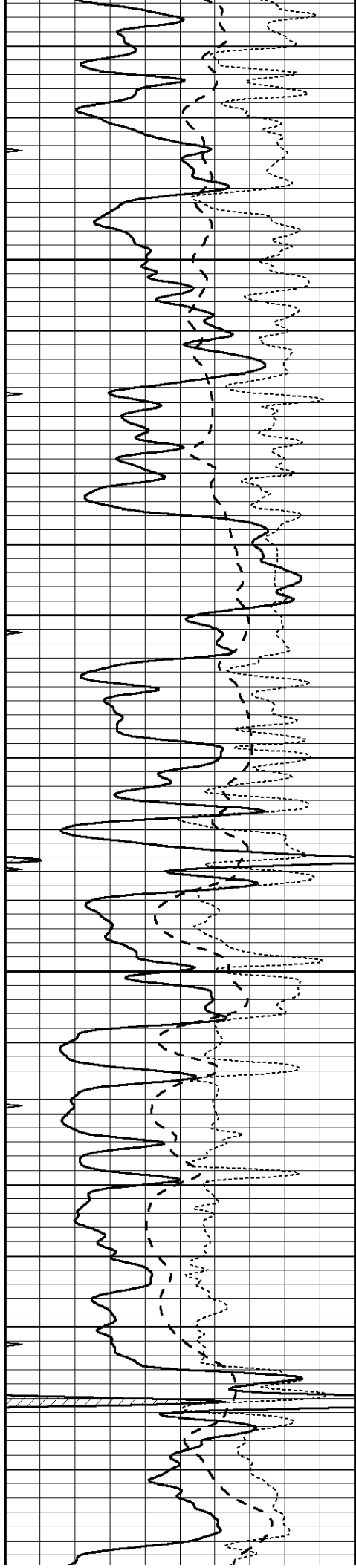
| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

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



3300



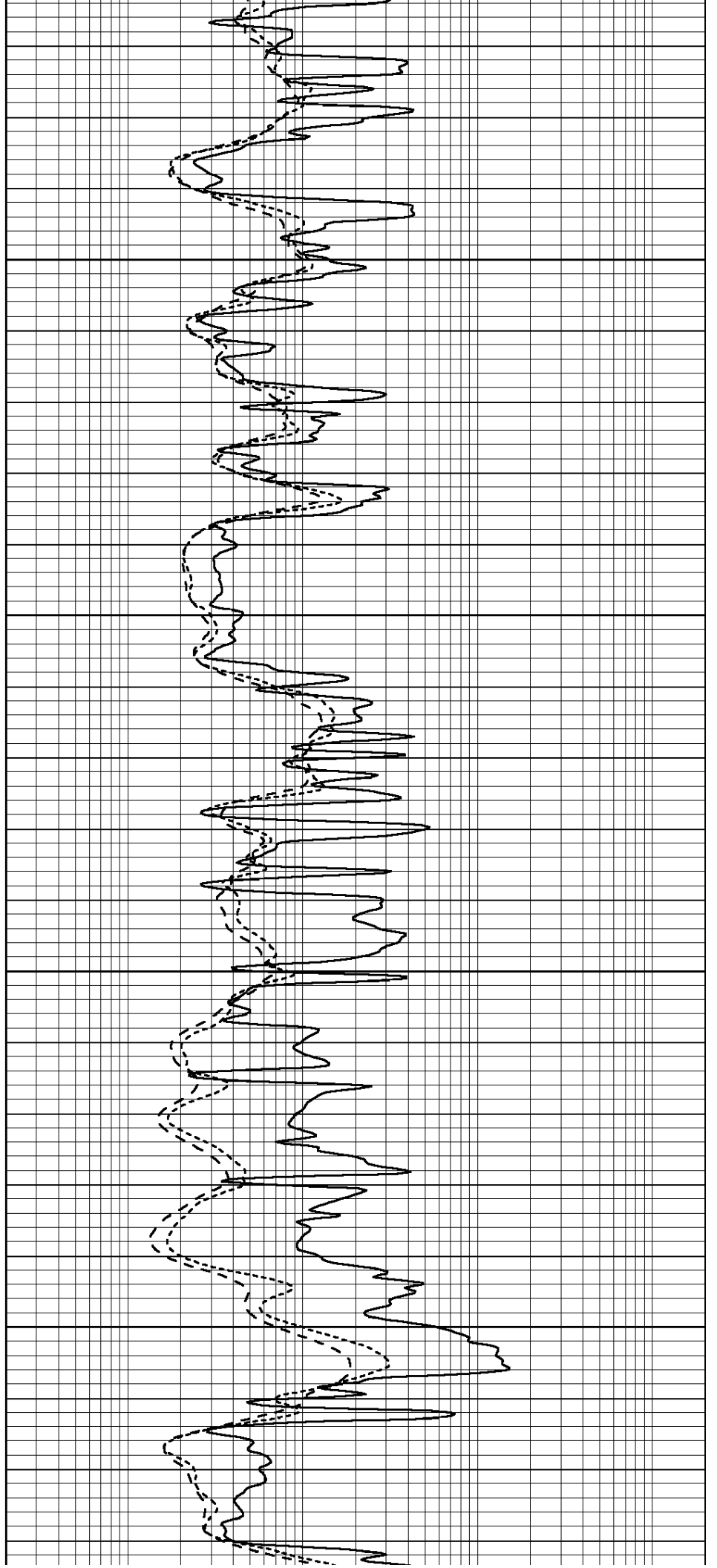


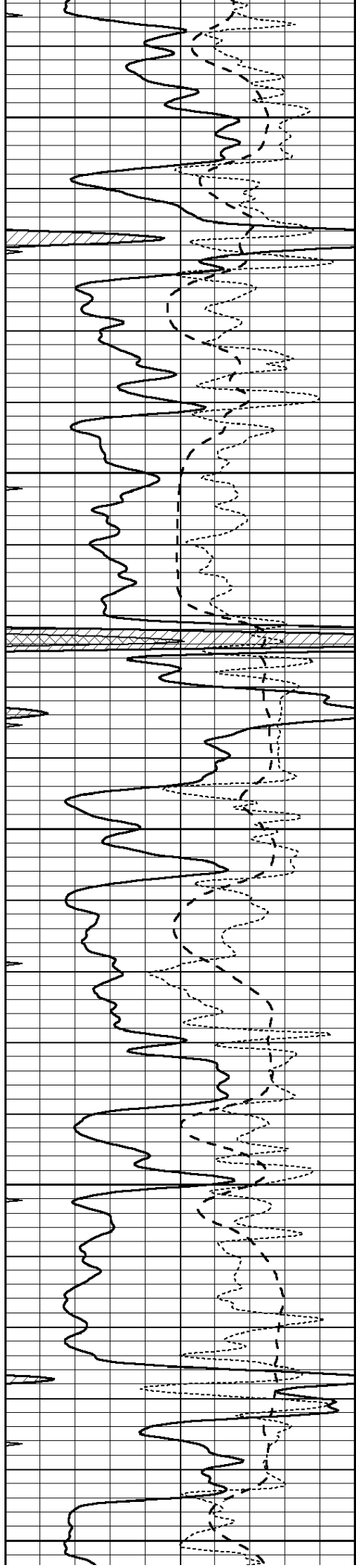
3600

3650

3700

3750





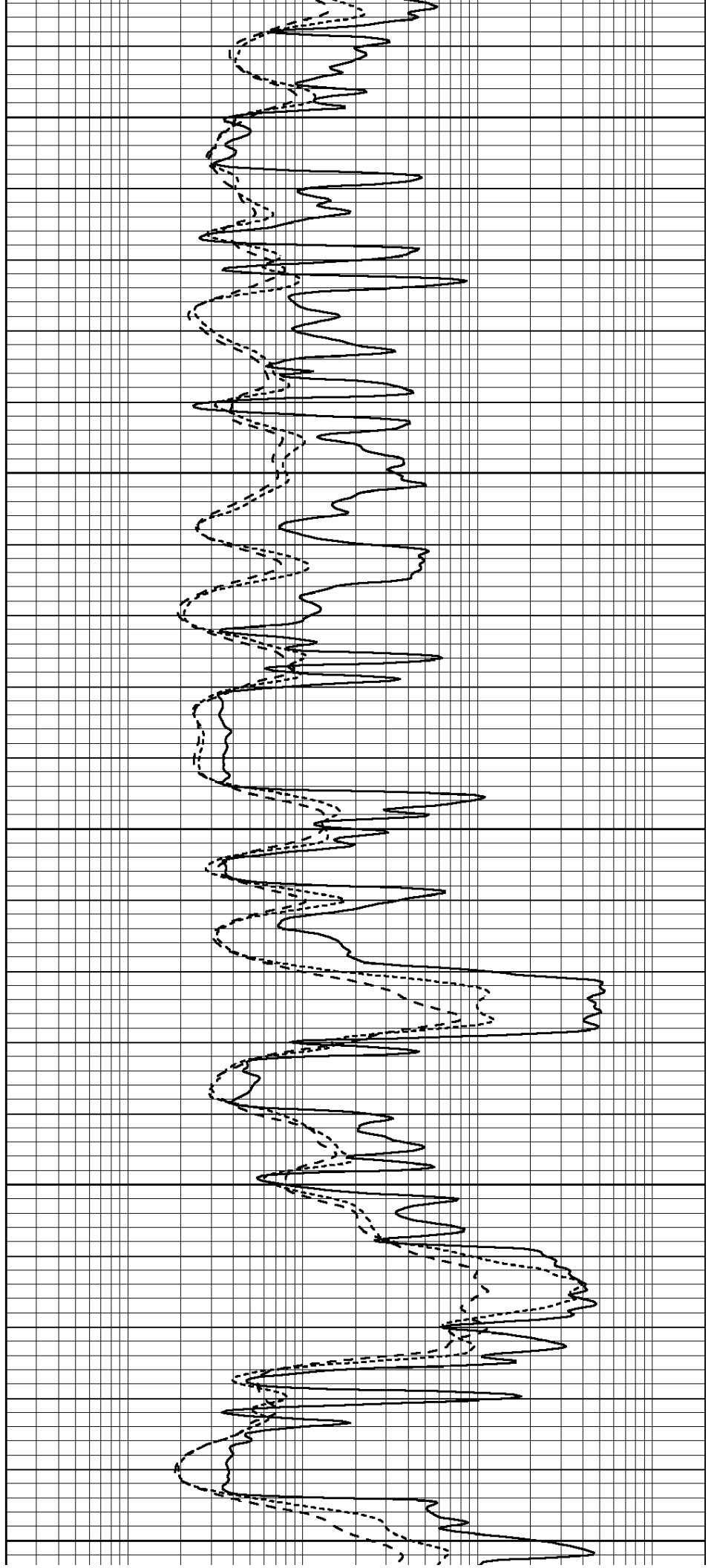
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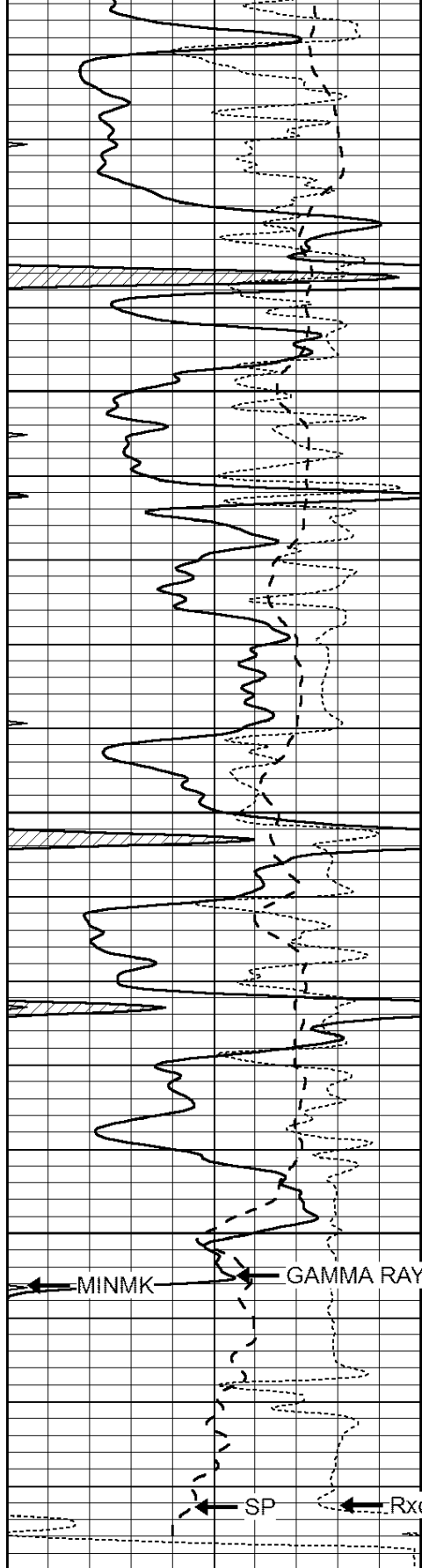
3850

3900

3950

4000



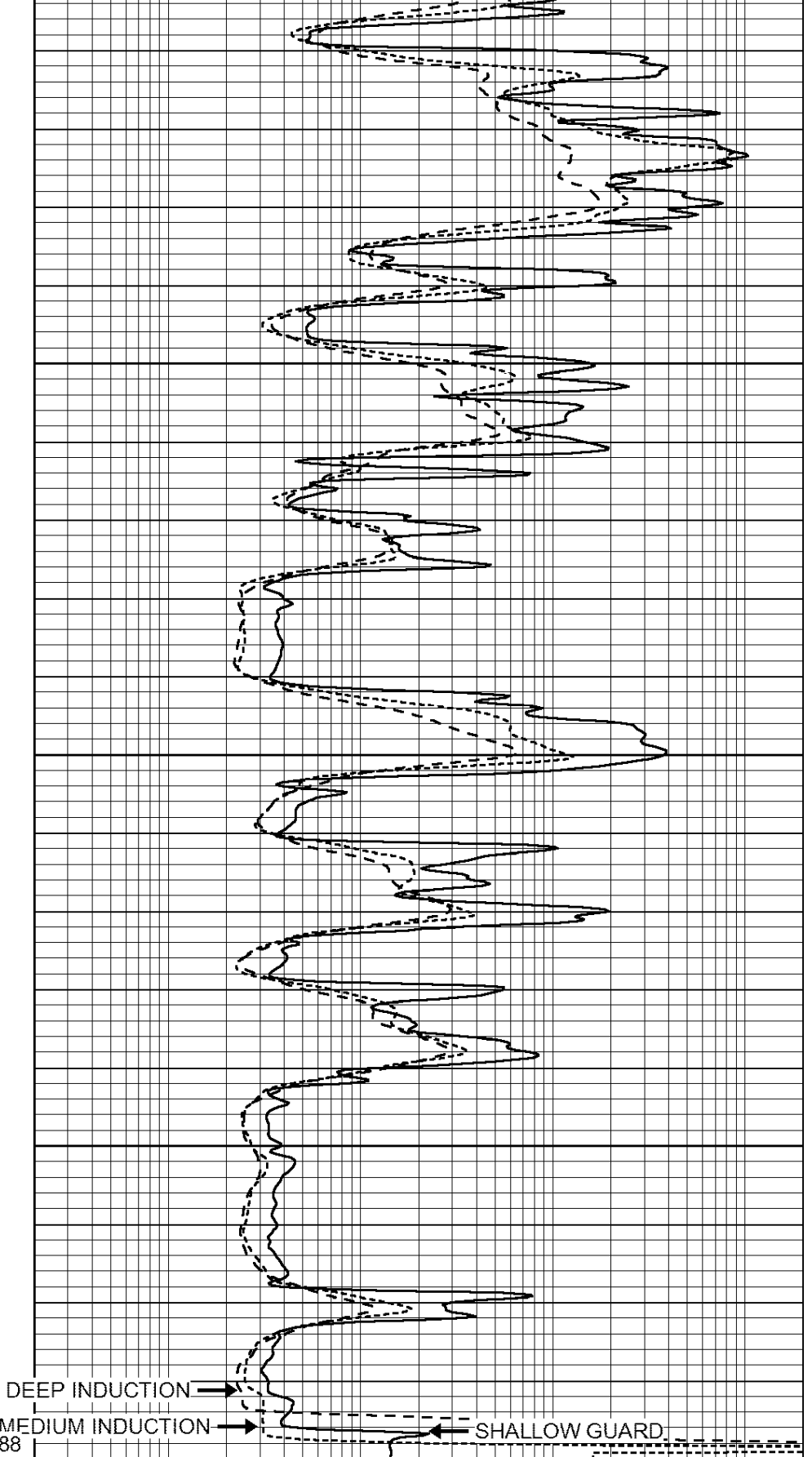


4050

4100

4150

LTD 4188



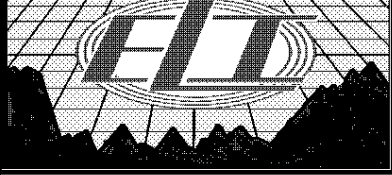
DEEP INDUCTION

MEDIUM INDUCTION

SHALLOW GUARD

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

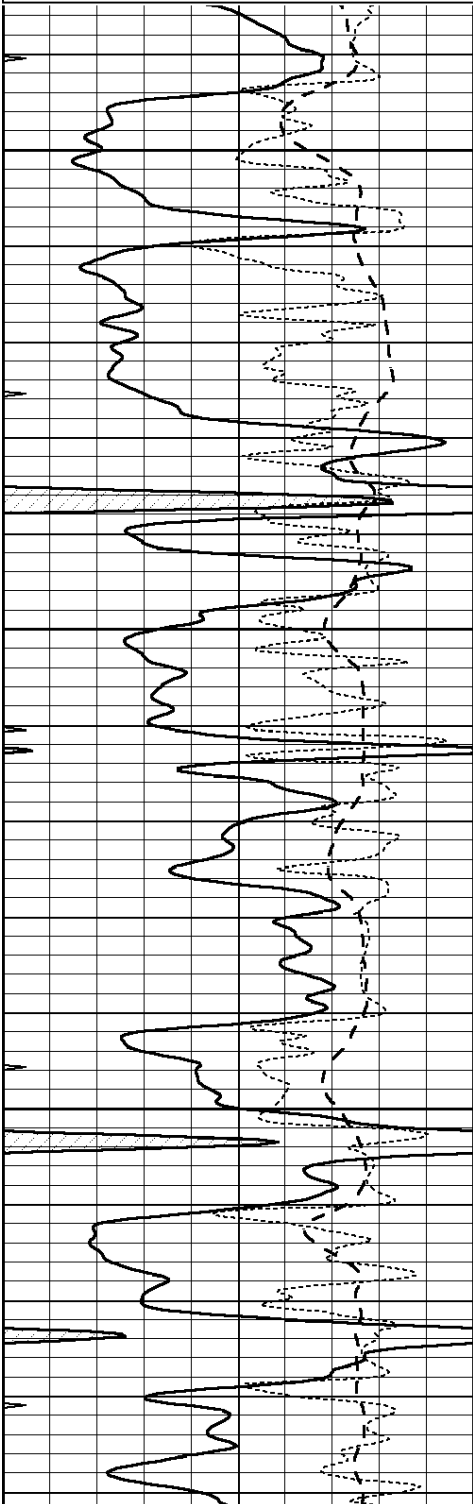


REPEAT SECTION

Database File: 2692ddn.db
 Dataset Pathname: pass2.1
 Presentation Format: _dil
 Dataset Creation: Tue Jul 17 19:59:56 2018 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

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

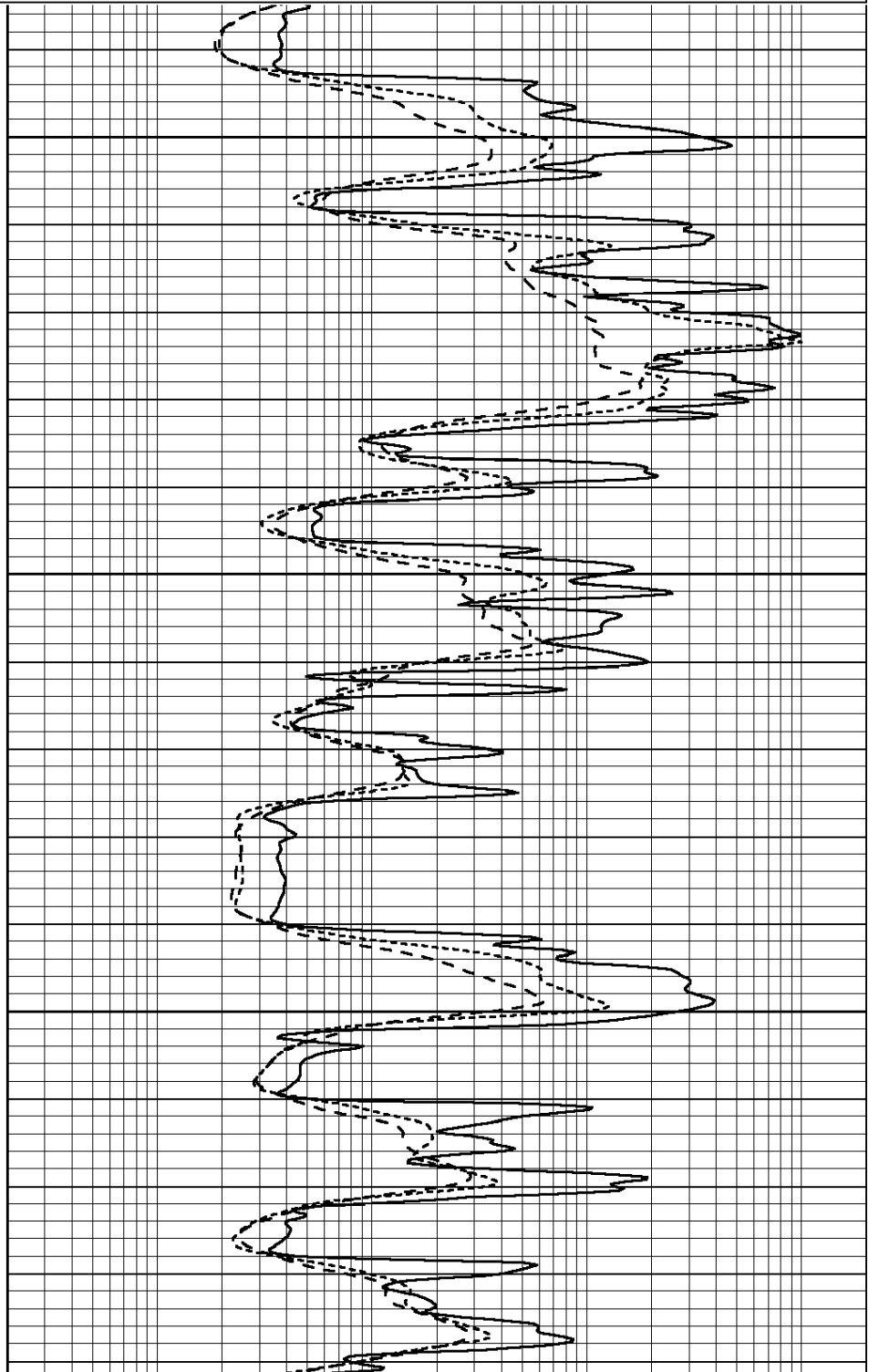
| | | |
|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

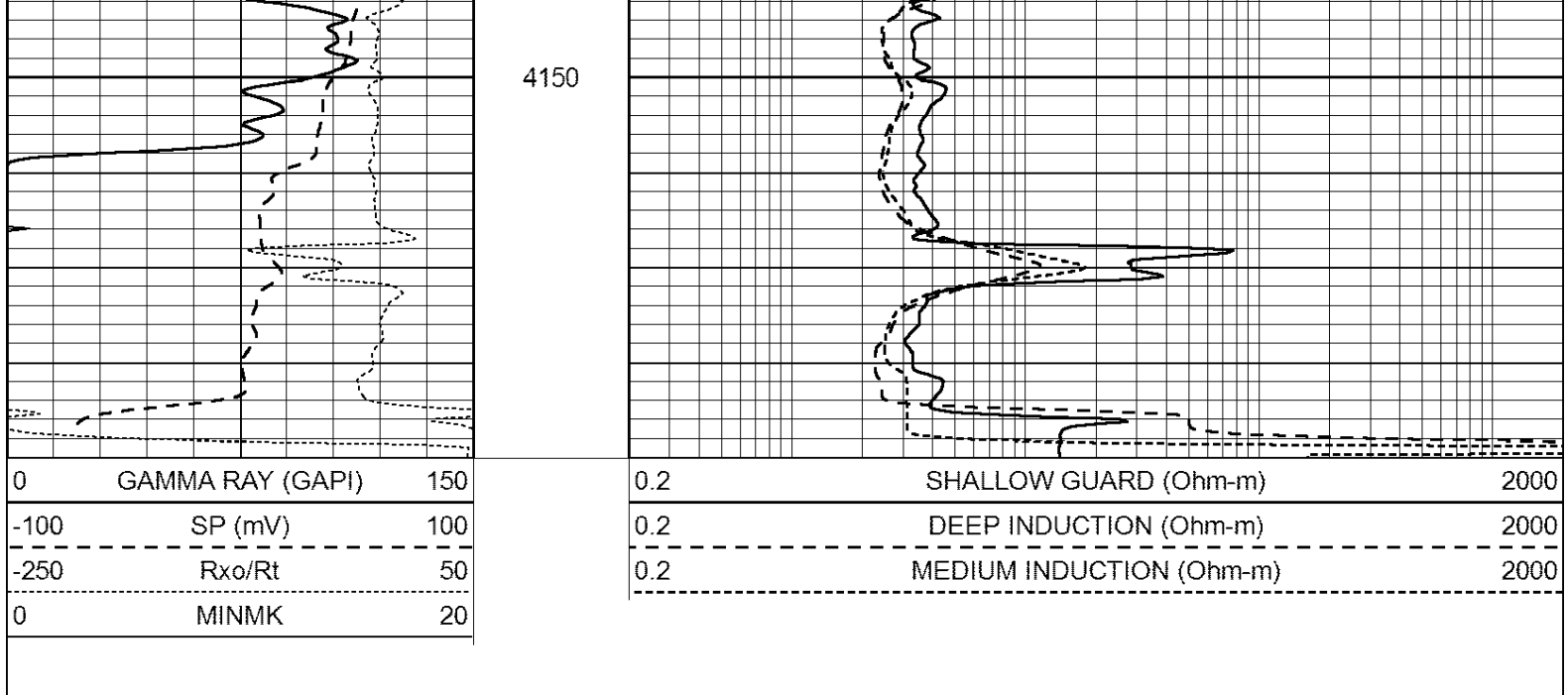


4000

4050

4100





Calibration Report

Database File: pe2.db
 Dataset Pathname: pass2
 Dataset Creation: Mon Aug 21 11:58:02 2017 by Log Open-Cased 090629

Dual Induction Calibration Report

Serial-Model: PROBE8-DILG
 Surface Cal Performed: Mon Aug 21 11:58:18 2017
 Downhole Cal Performed: Mon Aug 21 11:58:21 2017
 After Survey Verification Performed: Mon Aug 21 11:58:23 2017

Surface Calibration

| Loop: | Readings | | | | References | | Results | |
|-----------|----------|-------|---|-------|------------|--------|---------|---------|
| | Air | Loop | V | | Air | Loop | m | b |
| Deep | 0.015 | 0.648 | V | 0.000 | 400.000 | mmho/m | 620.000 | 0.000 |
| Medium | 0.029 | 0.796 | V | 0.000 | 464.000 | mmho/m | 590.000 | -12.000 |
| 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 | V | | 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 | V | | 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 1.000 mmho-m 0.000 Ohm-m 1.000 mmho-m

Litho Density Calibration Report
Serial: 002 Model: PRB

Master Calibration

Performed Mon Aug 21 11:56:41 2017

| | Background | Magnesium | Aluminum | Sandstone | |
|-------------|------------|-------------|----------|---------------------|---------|
| Window 1 | 833.6 | 7394.2 | 2287.3 | 8111.8 | cps |
| Window 2 | 768.9 | 6322.3 | 1995.6 | 6800.0 | cps |
| Window 3 | 621.5 | 3261.9 | 1186.4 | 3380.9 | cps |
| Window 4 | 184.2 | 185.7 | 184.9 | 184.8 | cps |
| Long Space | 0.0 | 5553.4 | 1226.6 | 6031.1 | cps |
| Short Space | 1.2 | 1307.5 | 903.9 | 1387.7 | cps |
| Rho | | 1.7100 | 2.5900 | 1.3800 | g/cc |
| Pe | | 0.0000 | 2.5700 | 1.5500 | |
| Rib Angle | : 46.3 | Rib Slope | : 1.045 | Density/Spine Ratio | : 0.566 |
| Spine Angle | : 76.3 | Spine Slope | : 4.090 | Spine Intercept | : -20.7 |

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 Long Space | cps cps | pu | pu |
| 2) | Short Space Long Space | cps cps | pu | |
| 3) | Short Space Long Space | cps 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: | GR6 | |
| Tool Model: | OPEN | |
| Performed: | Mon Aug 21 11:59:01 2017 | |
| Calibrator Value: | 150.0 | GAPI |
| Background Reading: | 0.0 | cps |
| Calibrator Reading: | 276.0 | cps |
| Sensitivity: | 0.5500 | GAPI/cps |