



**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL
INDUCTION
LOG**

Company DOWNING-NELSON OIL COMPANY, INC.
Well GROVE #1-32
Field LACROSSE NORTHWEST
County RUSH
State KANSAS

Company DOWNING-NELSON OIL COMPANY, INC.
Well GROVE #1-32
Field LACROSSE NORTHWEST
County RUSH State KANSAS

Location: API # : 15-165-22045-0000
820' FSL & 1355' FEL
SE - NE - SW - SE
Permanent Datum GROUND LEVEL Elevation 2086
Log Measured From KELLY BUSHING & A.G.L.
Drilling Measured From KELLY BUSHING
Elevation
K.B. 2094
D.F. 2092
G.L. 2086

| | | | |
|------------------------------|---------------|--------------------|--|
| Date | 11/15/13 | | |
| Run Number | ONE | | |
| Depth Driller | 3917 | | |
| Depth Logger | 3920 | | |
| Bottom Logged Interval | 3918 | | |
| Top Log Interval | 0 | | |
| Casing Driller | 8 5/8" @ 1269 | | |
| Casing Logger | 1268 | | |
| Bit Size | 7 7/8 | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 3500 PPM | |
| Density / Viscosity | 9.0 / 65 | | |
| pH / Fluid Loss | 10.5 / 8.4 | | |
| Source of Sample | FLOWLINE | | |
| Rin @ Meas. Temp | 0.90 @ 84F | | |
| Rmf @ Meas. Temp | 0.68 @ 64F | | |
| Rmc @ Meas. Temp | 1.08 @ 84F | | |
| Source of Rmf / Rmc | MEASURED | | |
| Rin @ BHT | 0.66 @ 115F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | | | |
| Maximum Recorded Temperature | 115F | | |
| Equipment Number | 680 | | |
| Location | HAYS, KS. | | |
| Recorded By | JEFF GRONEMEG | | |
| Witnessed By | AL 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 NABORS COMPLETION & PRODUCTION SVCS. (785) 628-6395

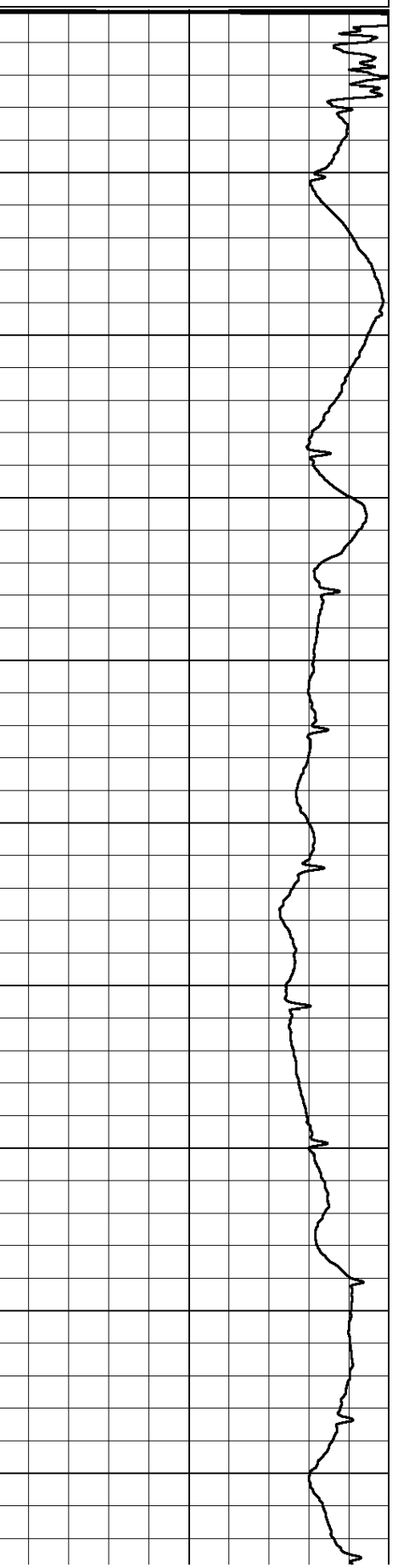
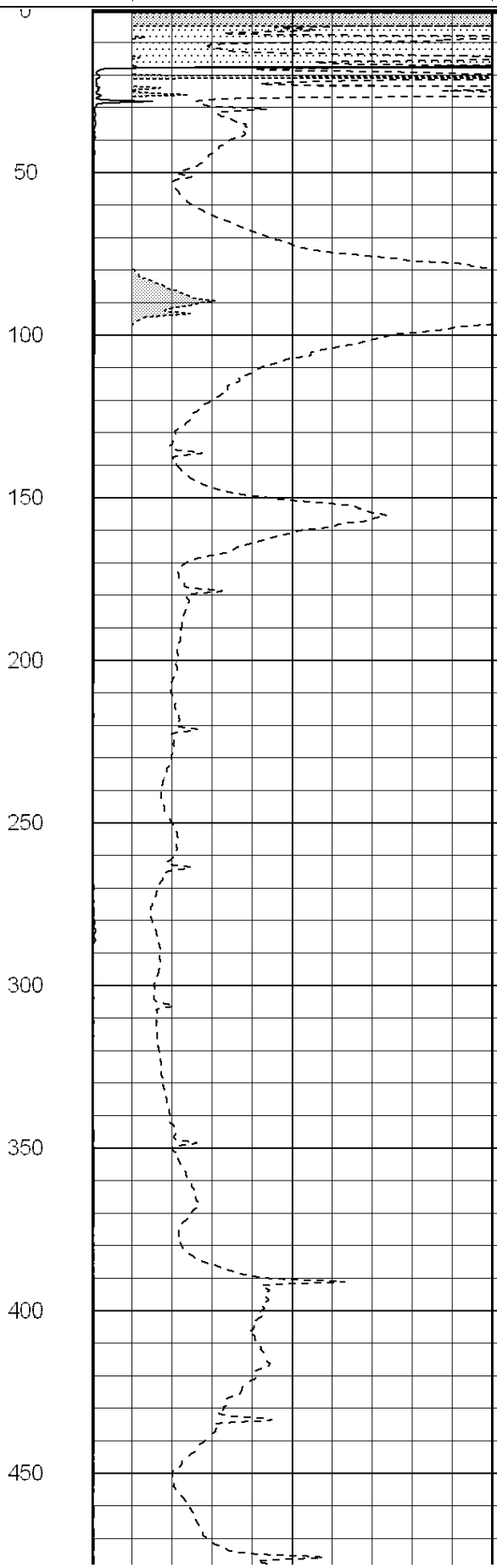
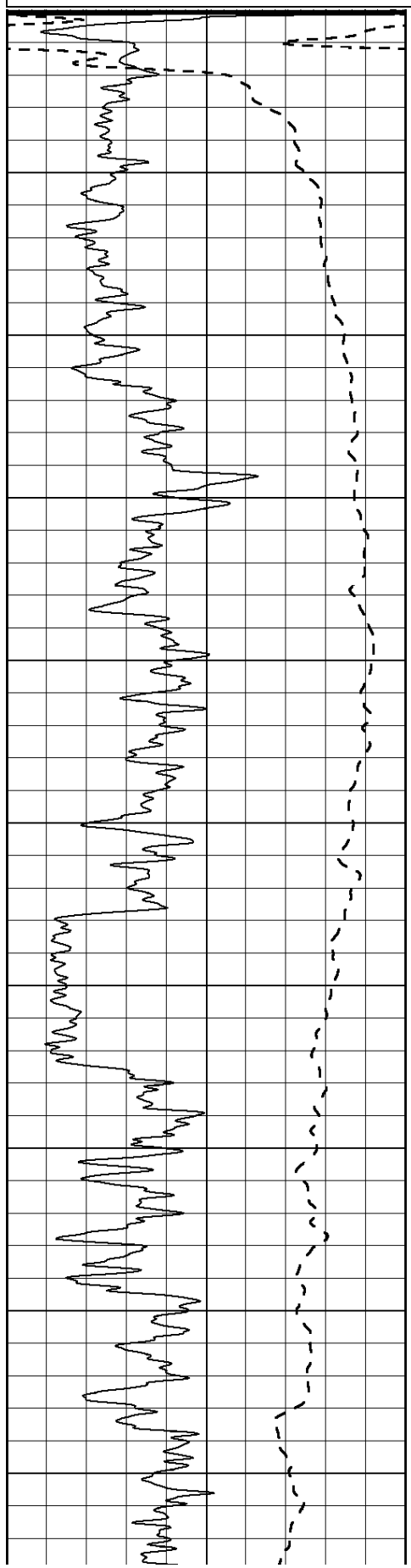
DIRECTIONS:
LACROSSE, KS - 1 MILE WEST TO CR 240 - 1 MILE SOUTH TO RD M
1/4 MILE WEST - NORTH INTO

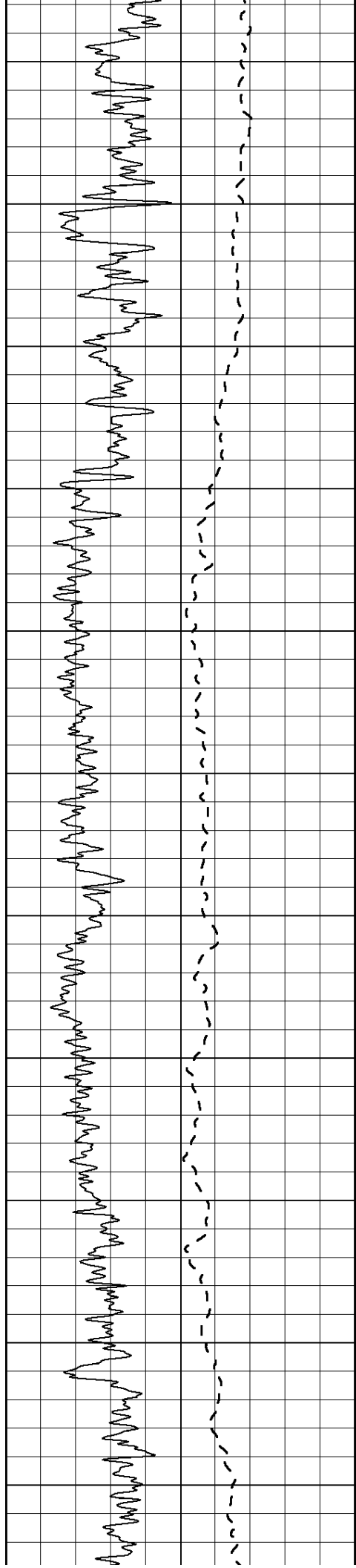
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|------|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| -100 | SP (mV) | 100 |

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





500

550

600

650

700

750

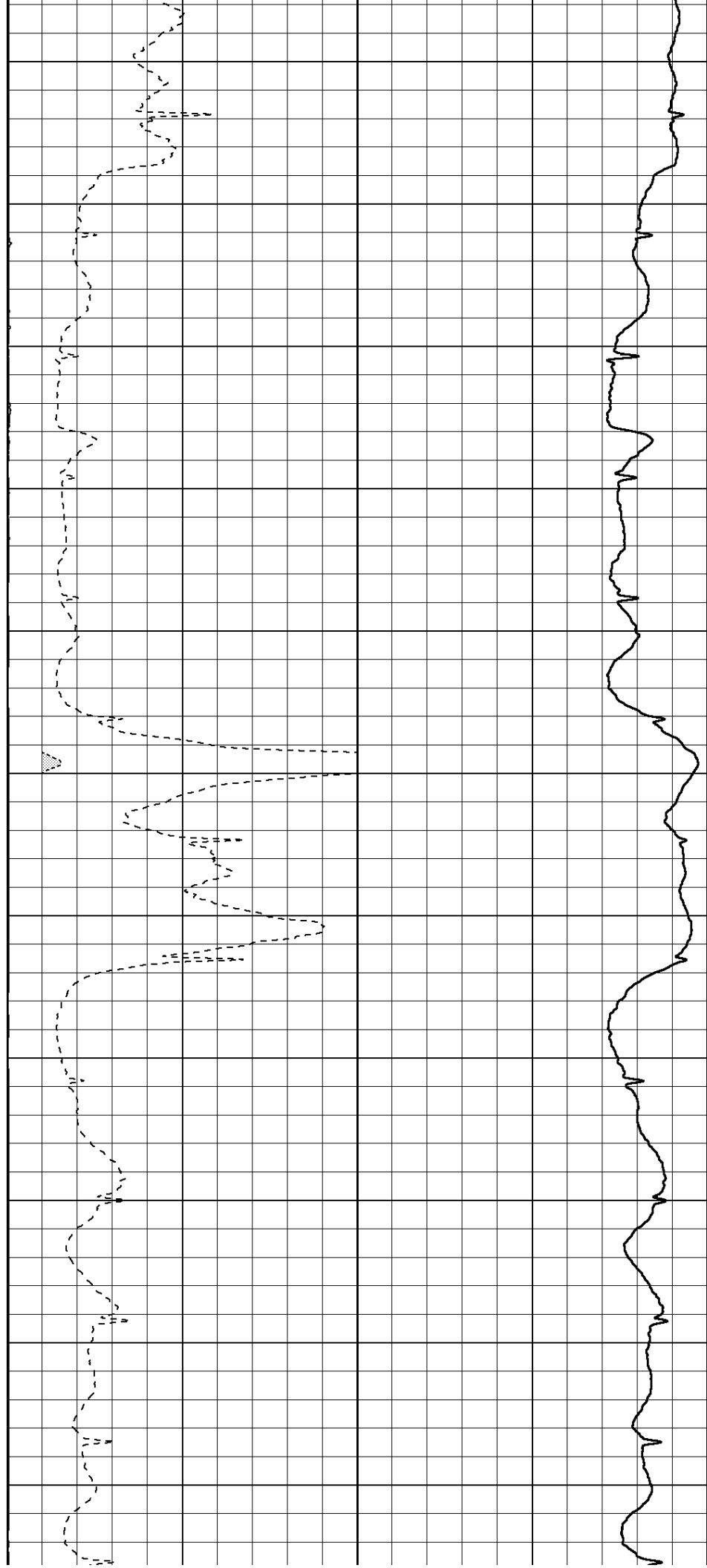
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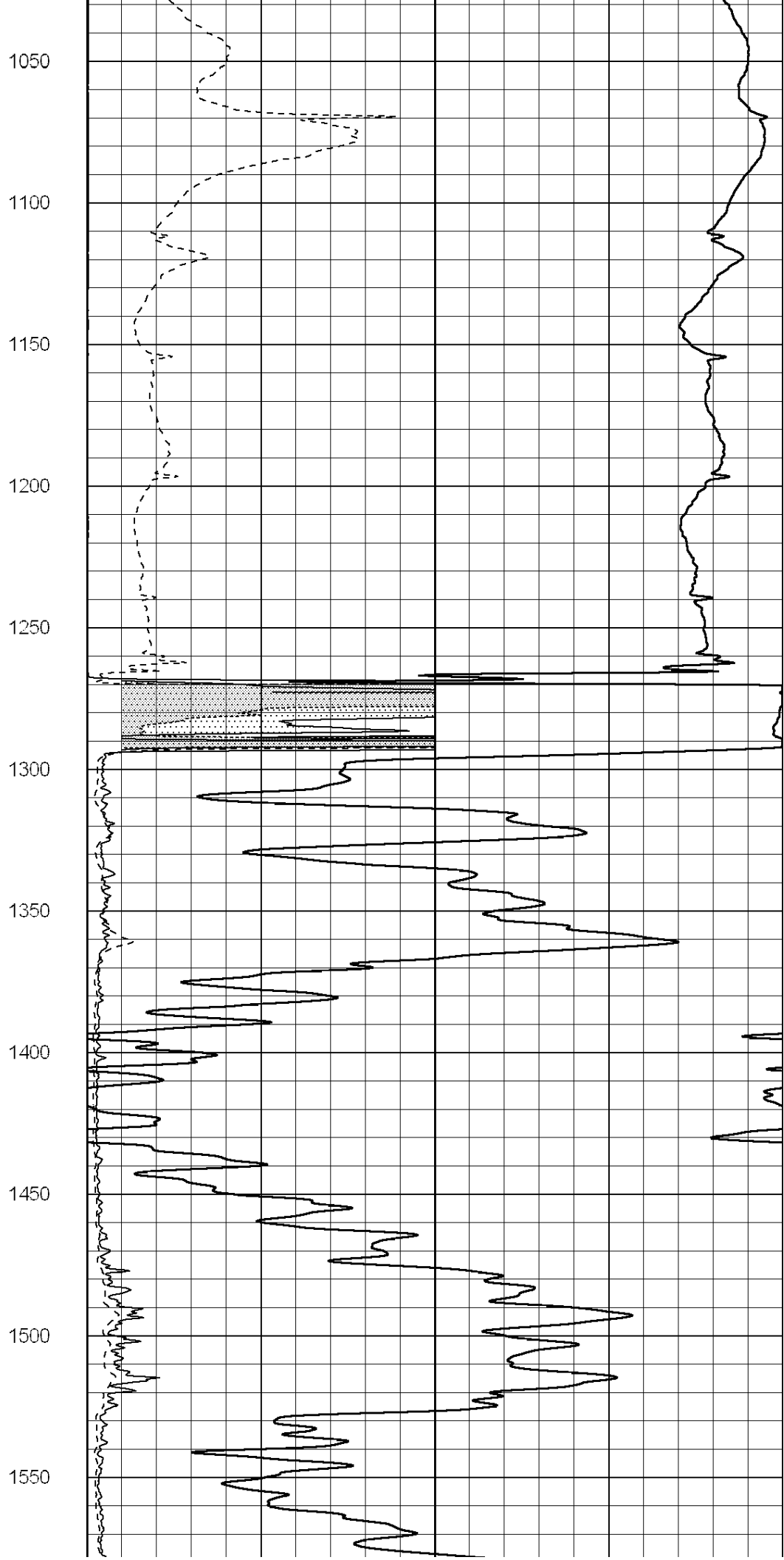
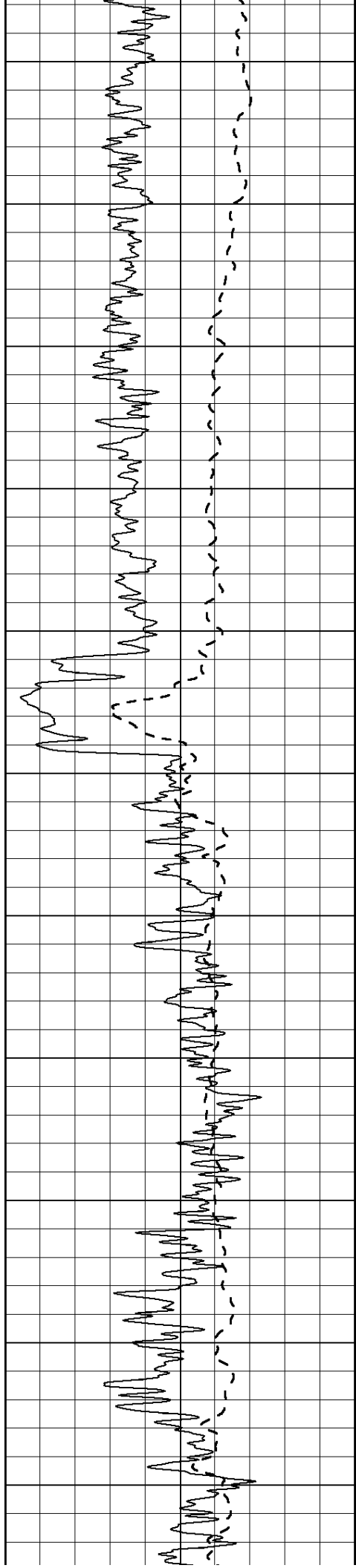
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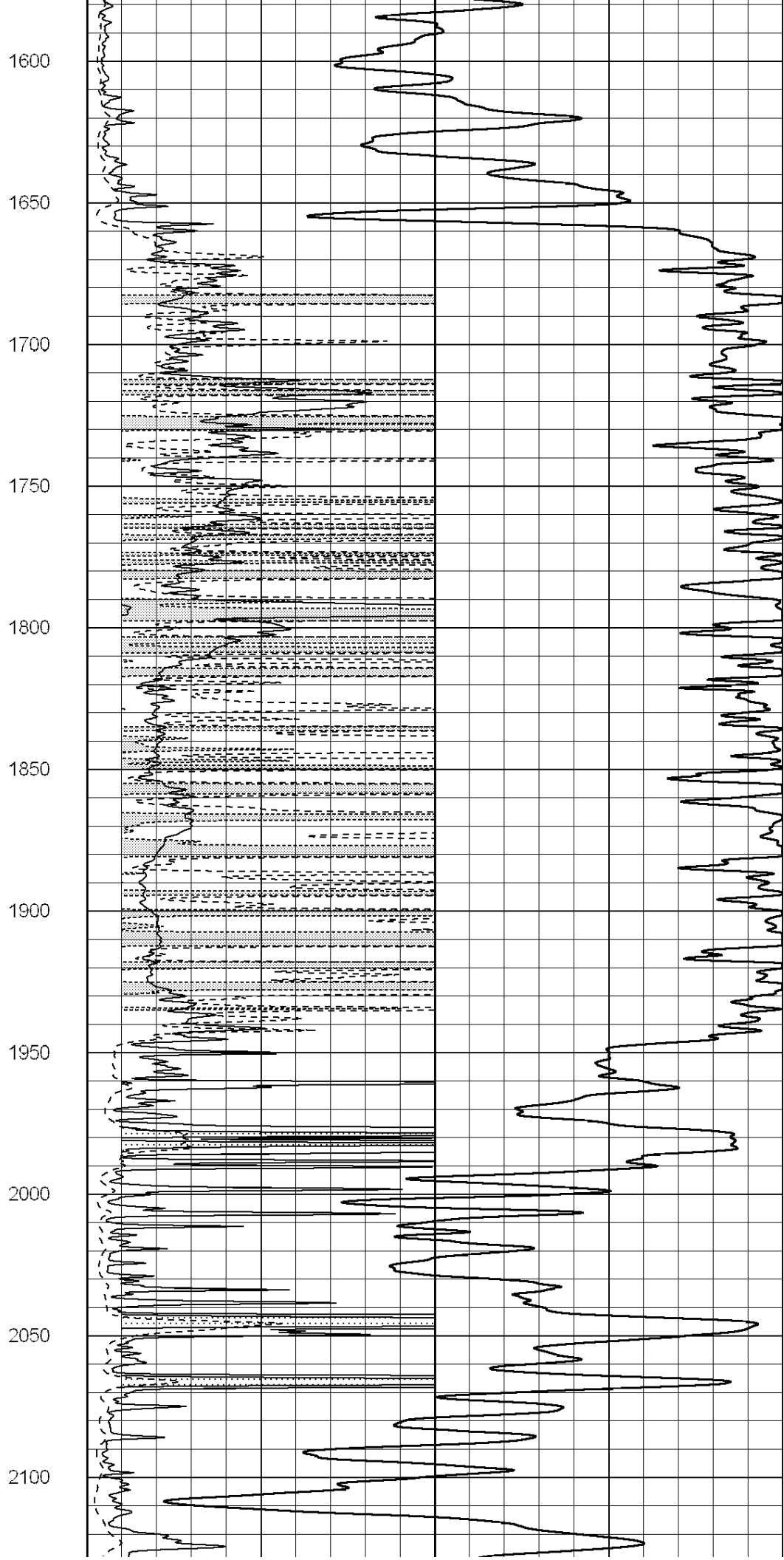
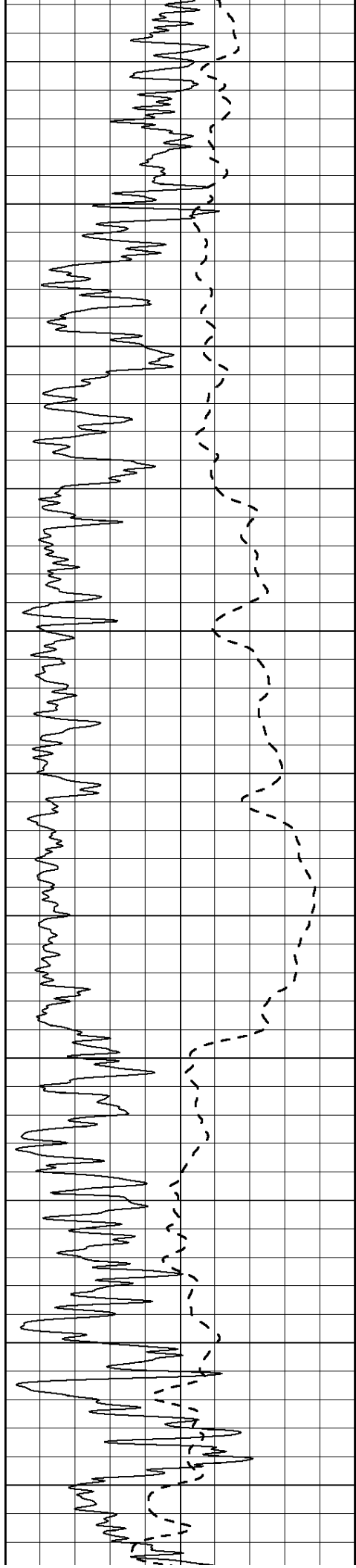
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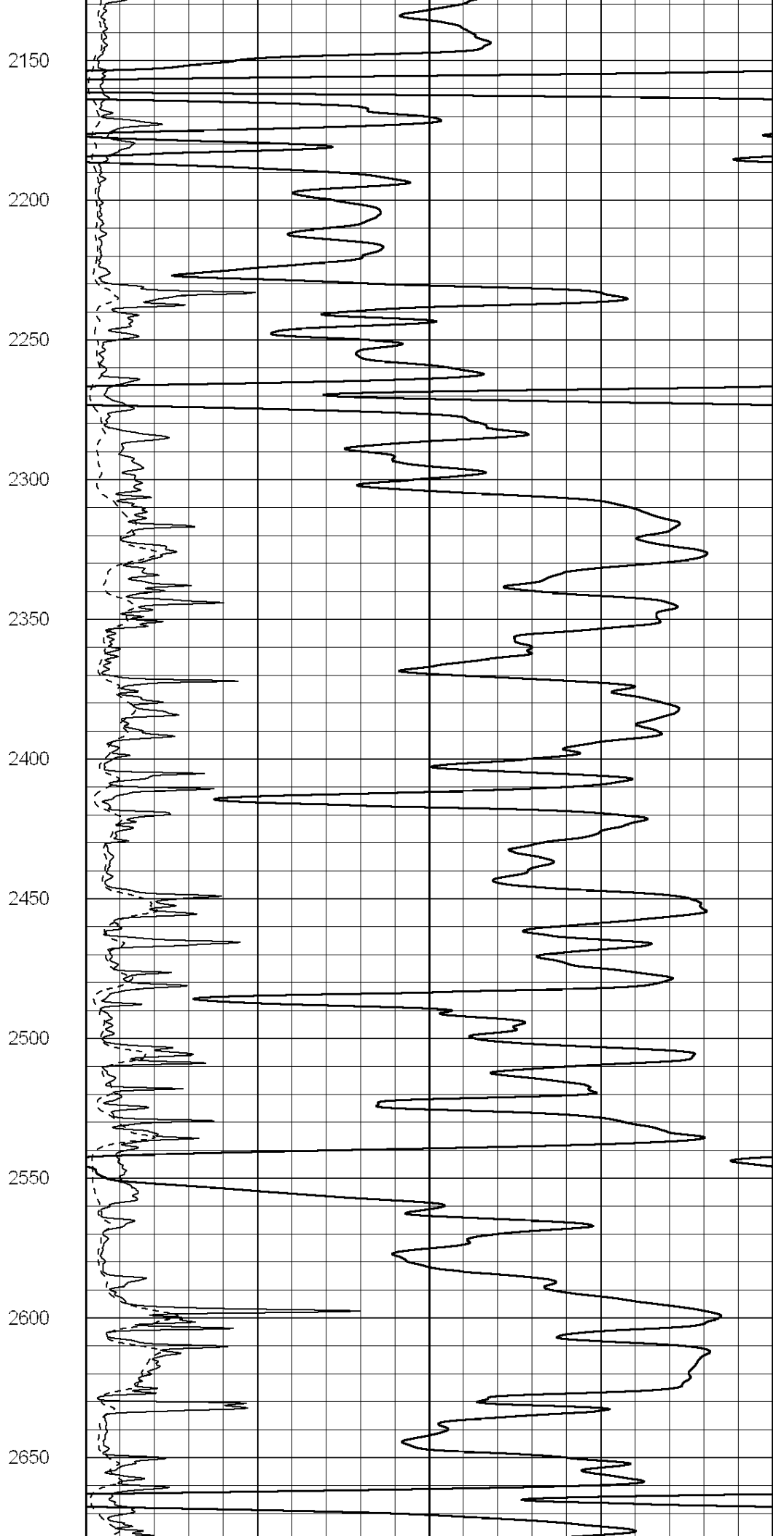
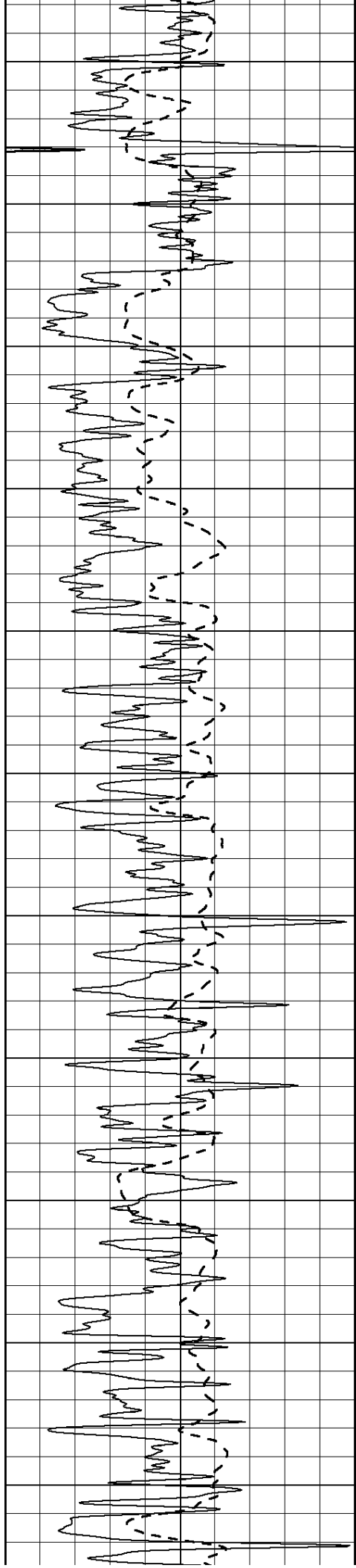
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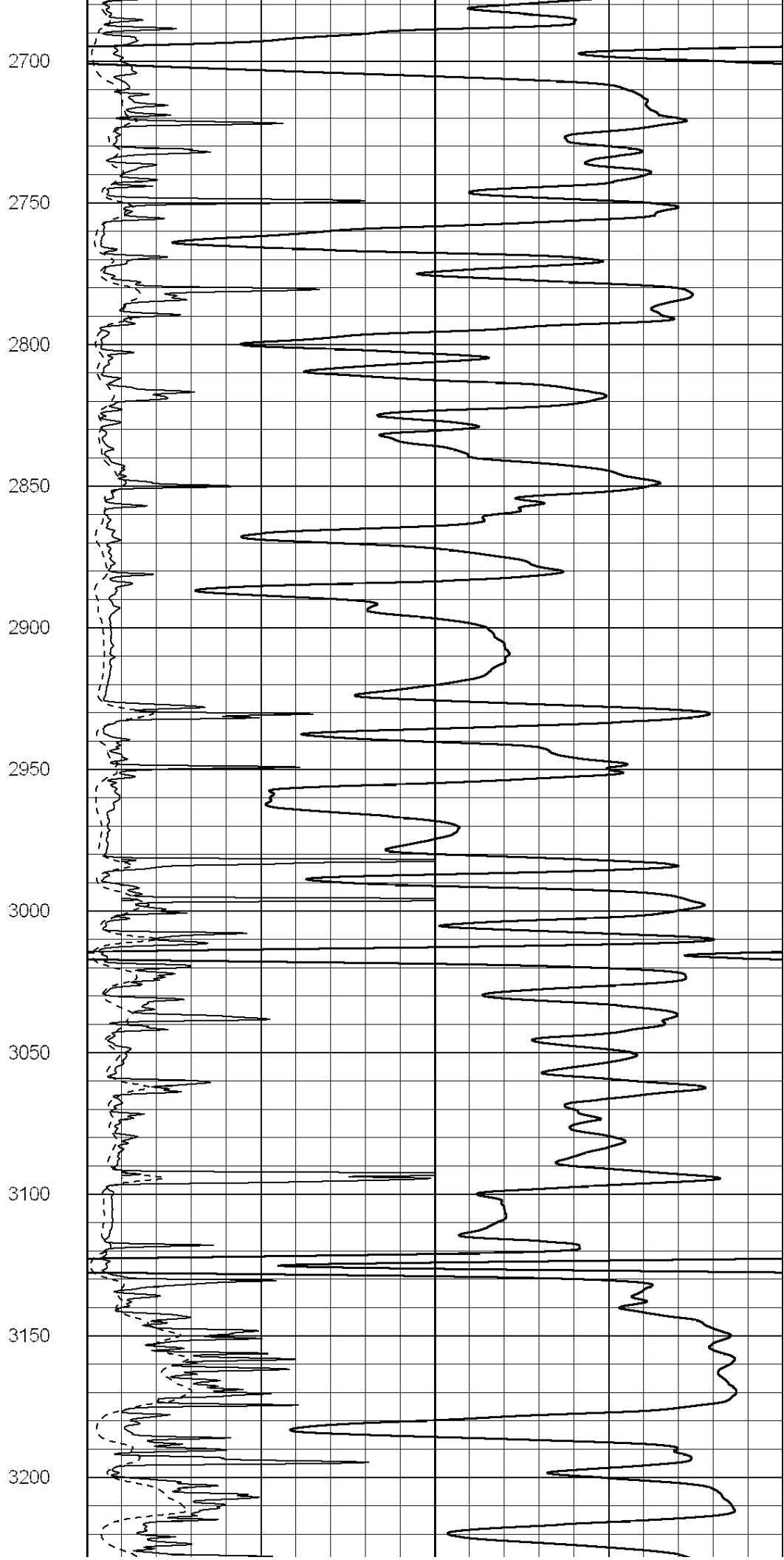
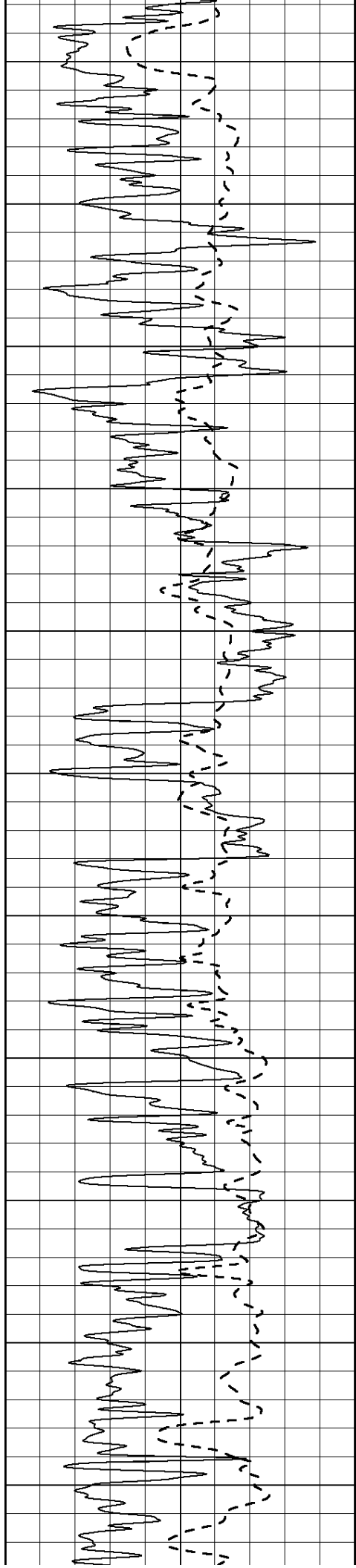
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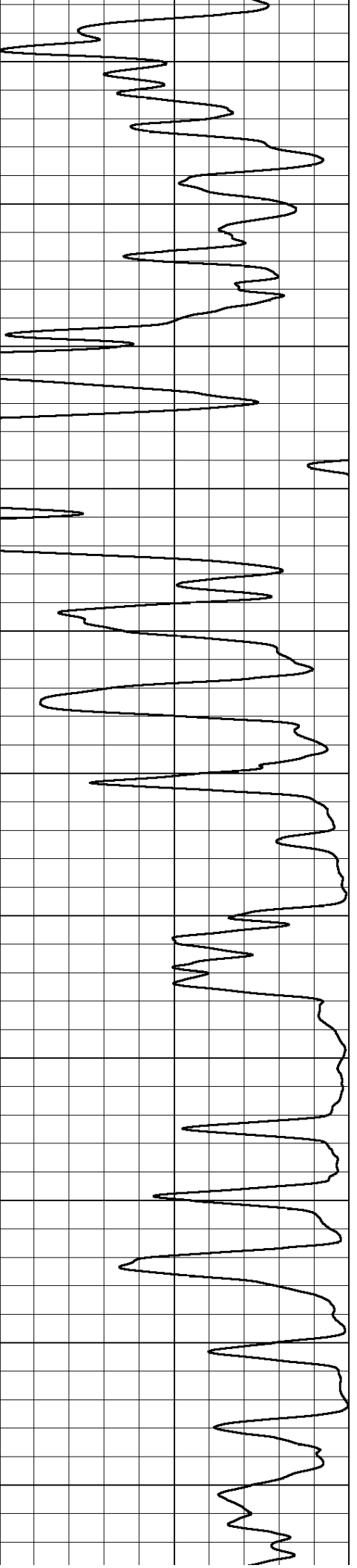
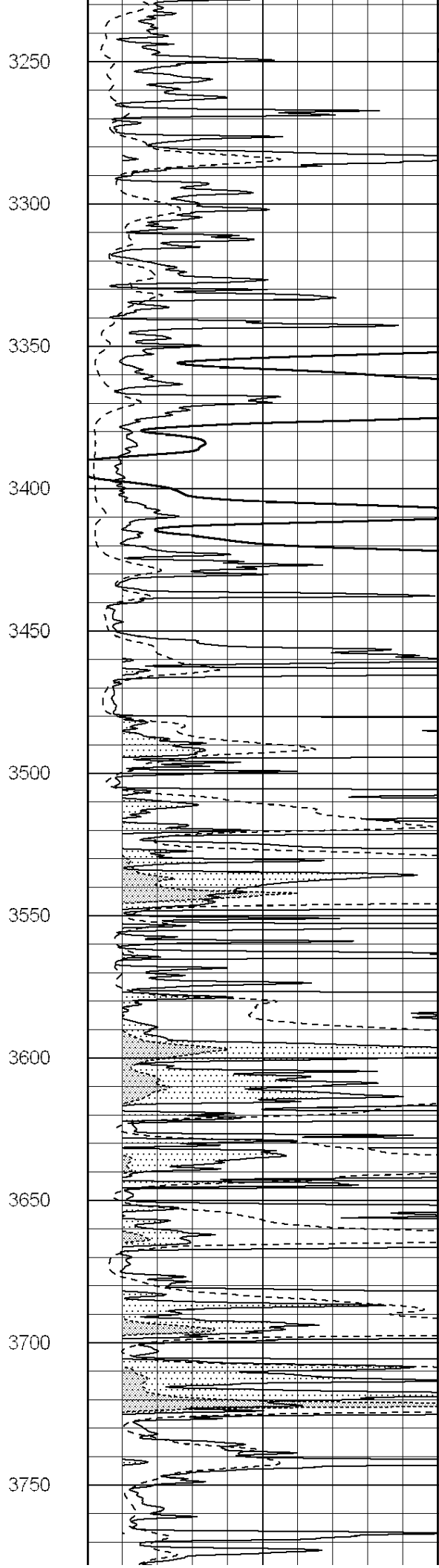
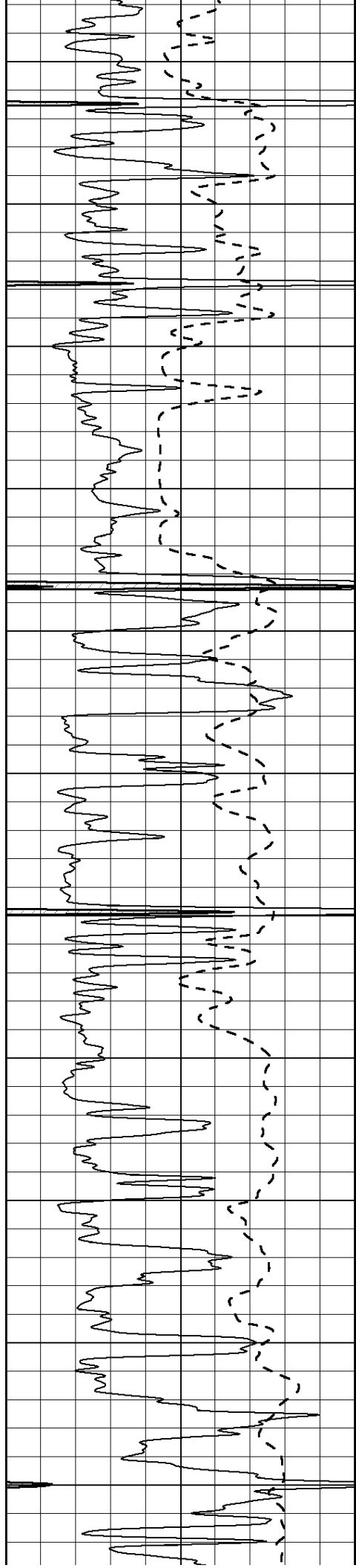


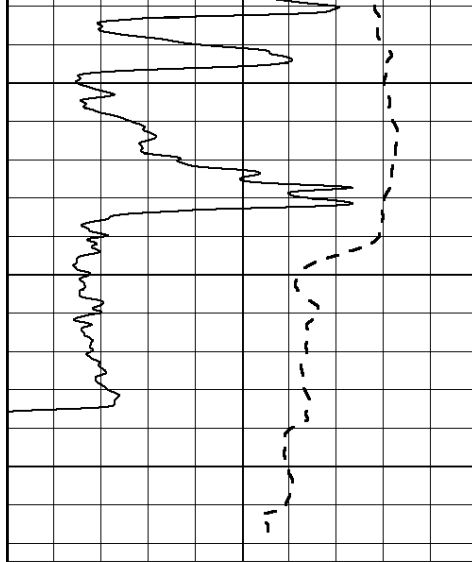




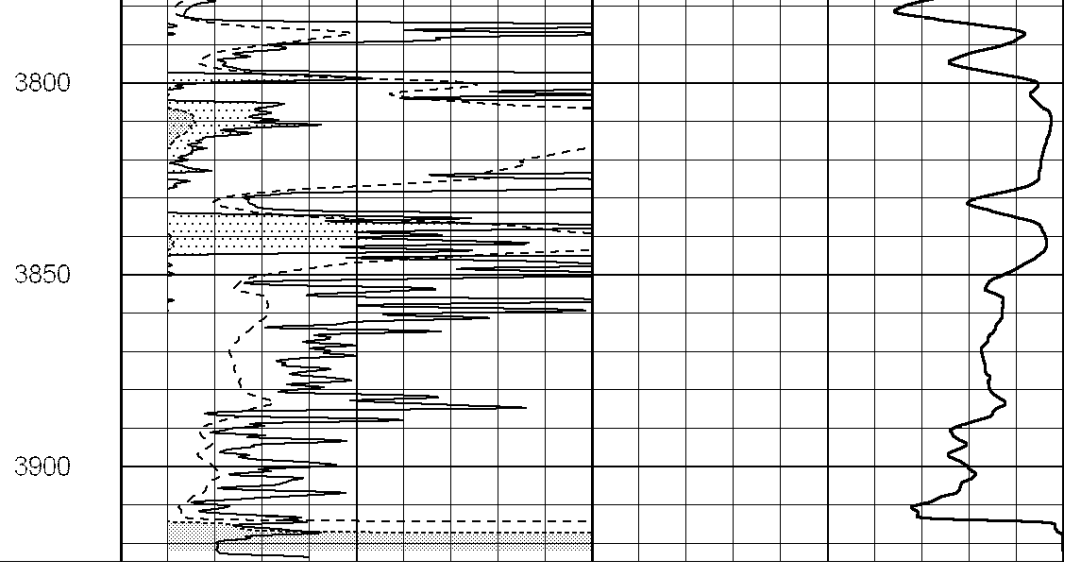








| | | |
|------|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| -100 | SP (mV) | 100 |

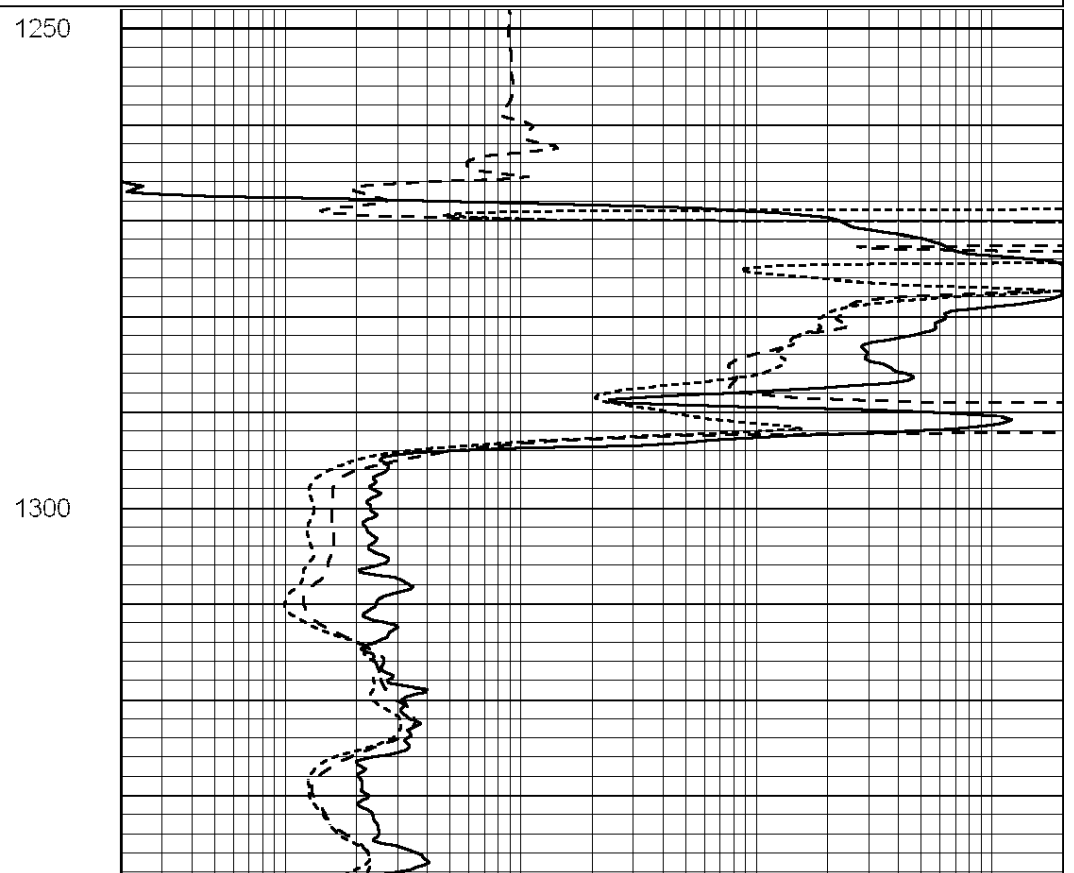
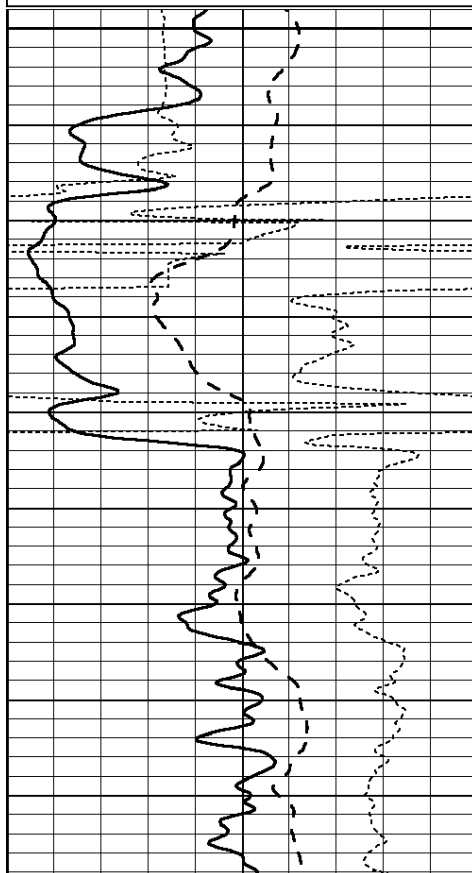


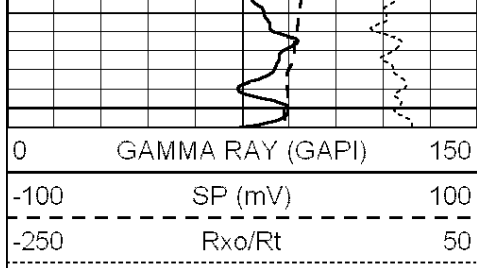
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|------|------------------------|-----|
| 0 | RLL3 (Ohm-m) | 50 |
| 0 | Deep Induction (Ohm-m) | 50 |
| 1000 | CILD (mmho/m) | 0 |
| 50 | RILD X10 (Ohm-m) | 500 |
| 50 | RLL3 X10 (Ohm-m) | 500 |

Database File: 012090ddn.db
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 Presentation Format: _dil
 Dataset Creation: Fri Nov 15 03:07:06 2013 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

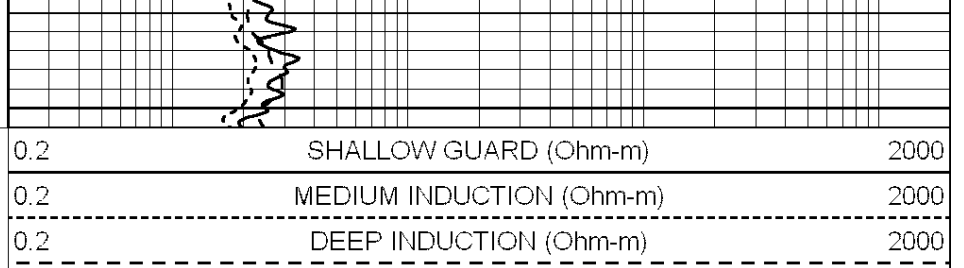
| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |

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

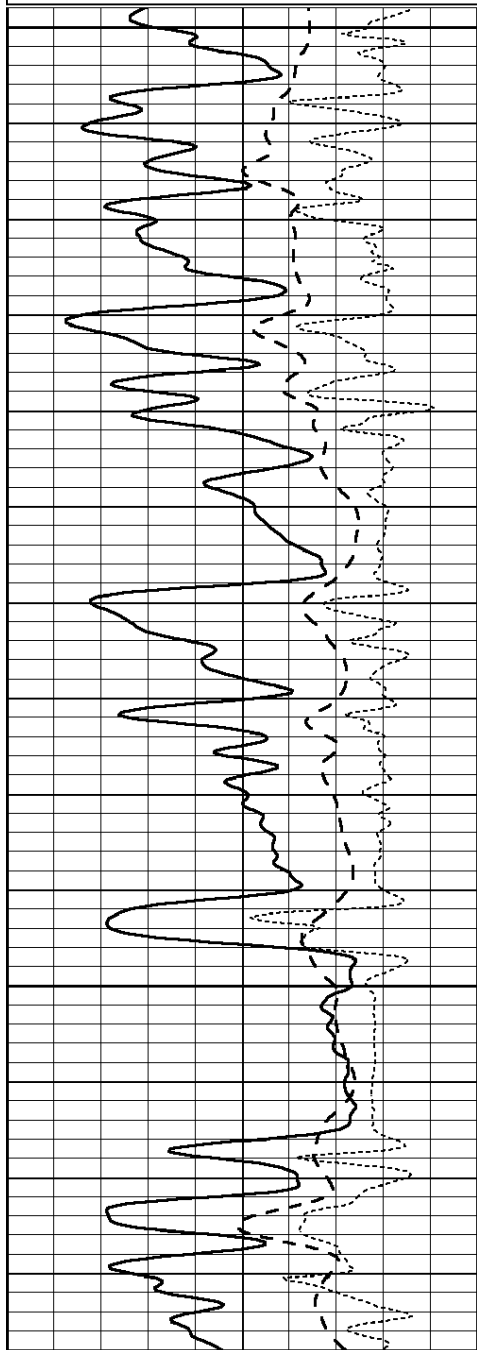
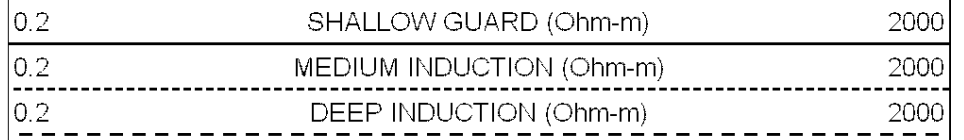
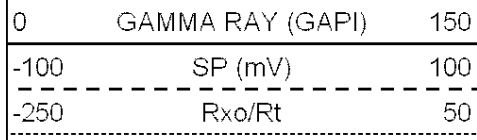




1350



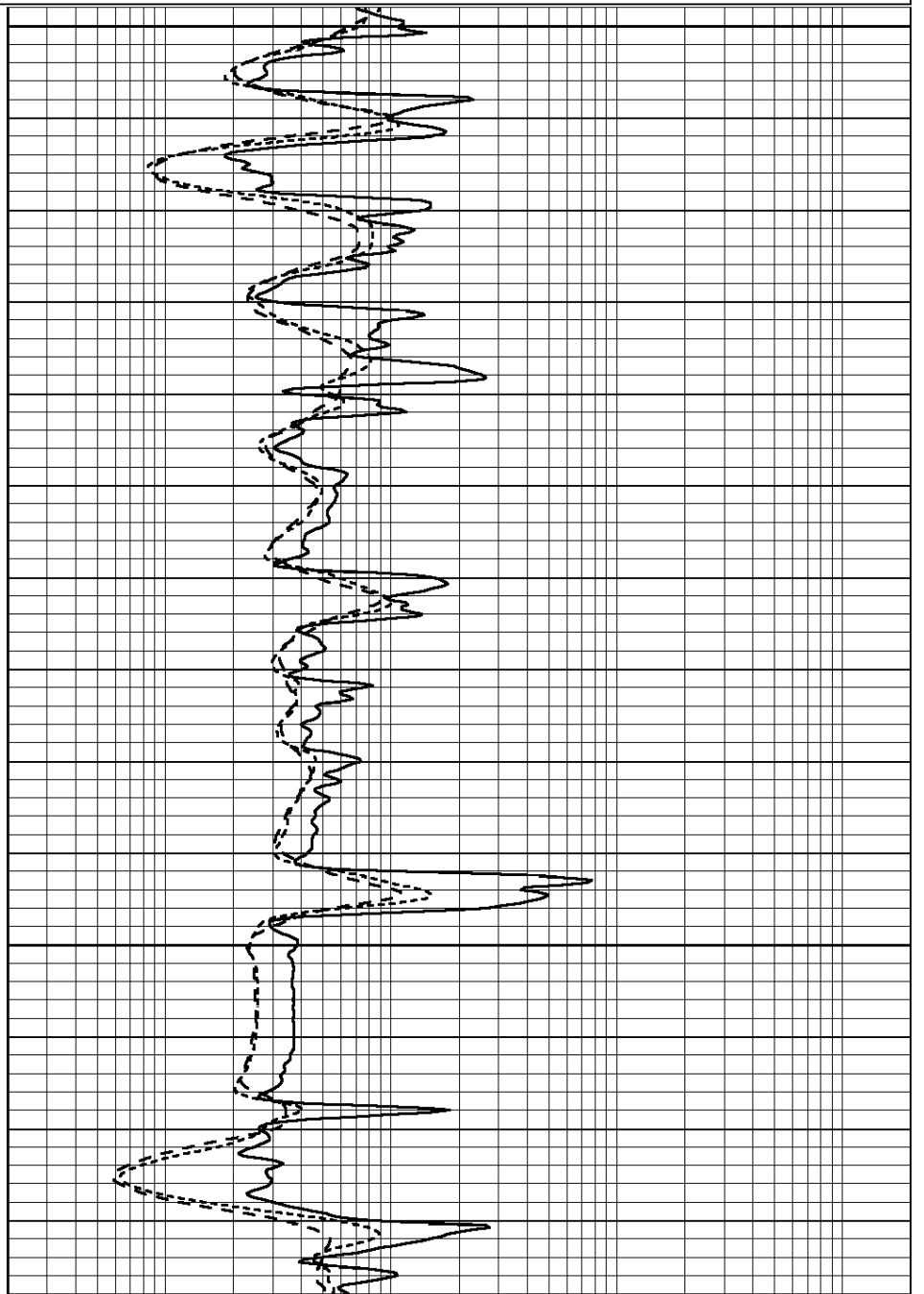
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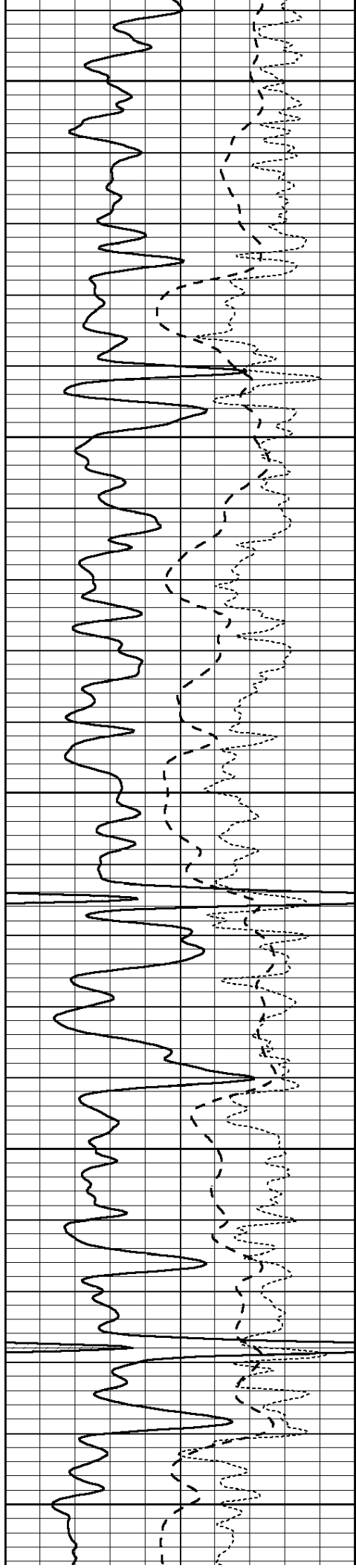


3000

3050

3100





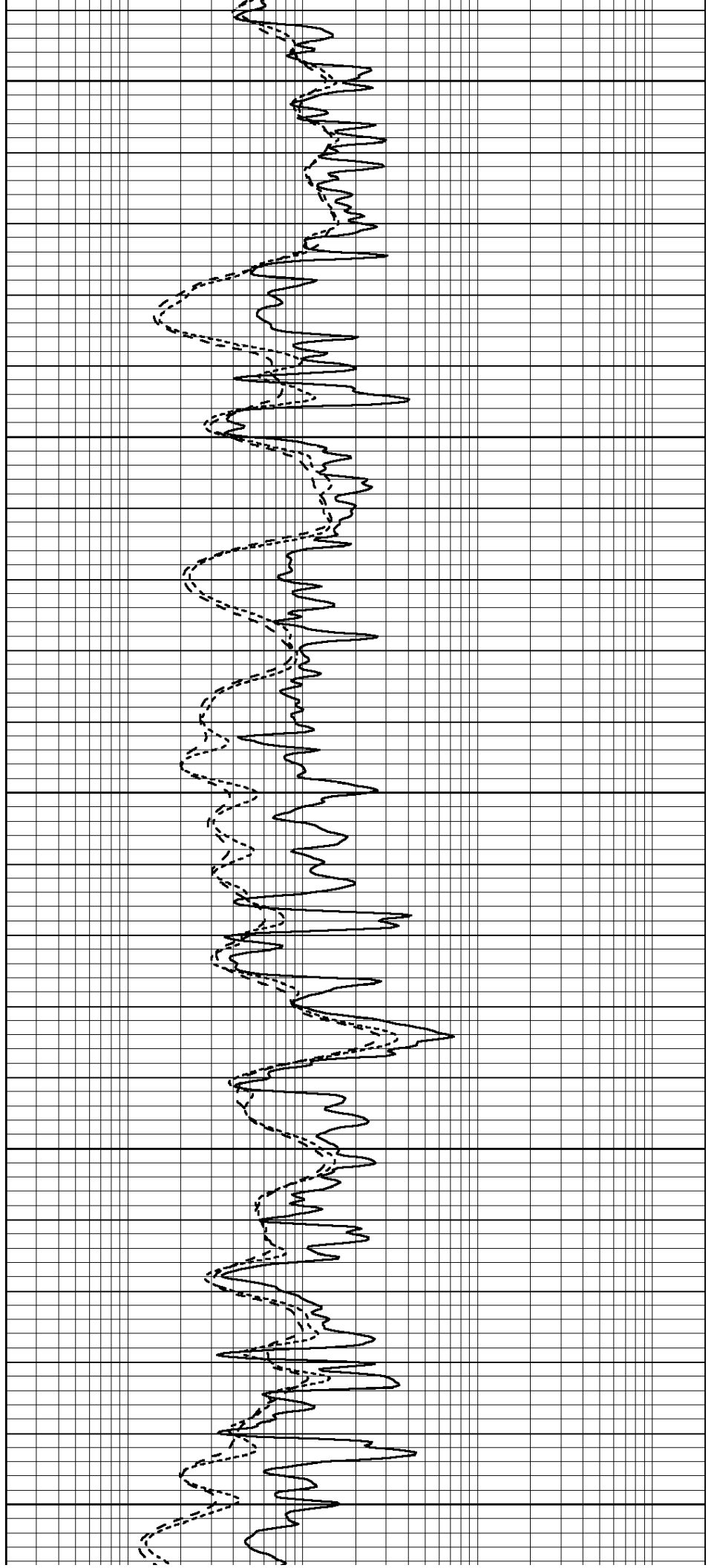
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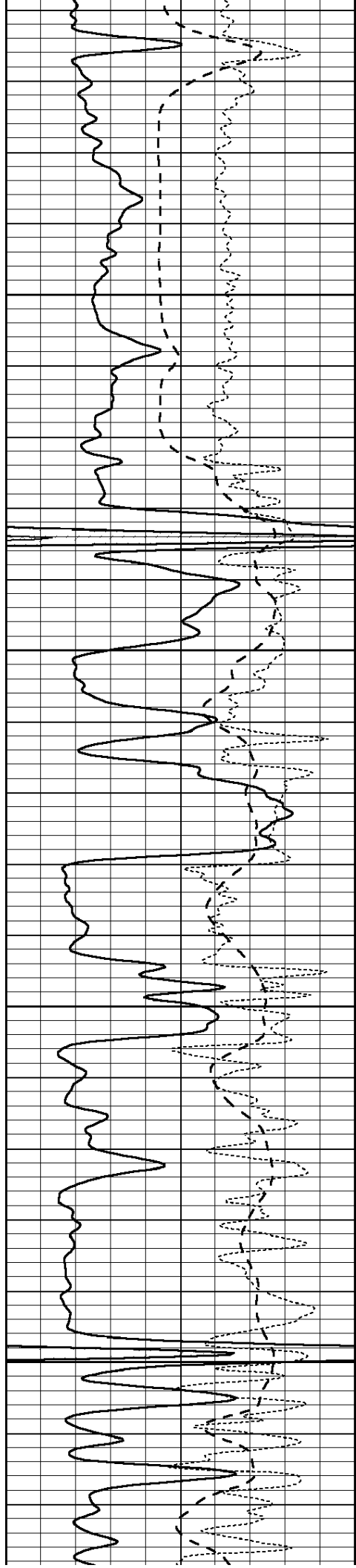
3200

3250

3300

3350



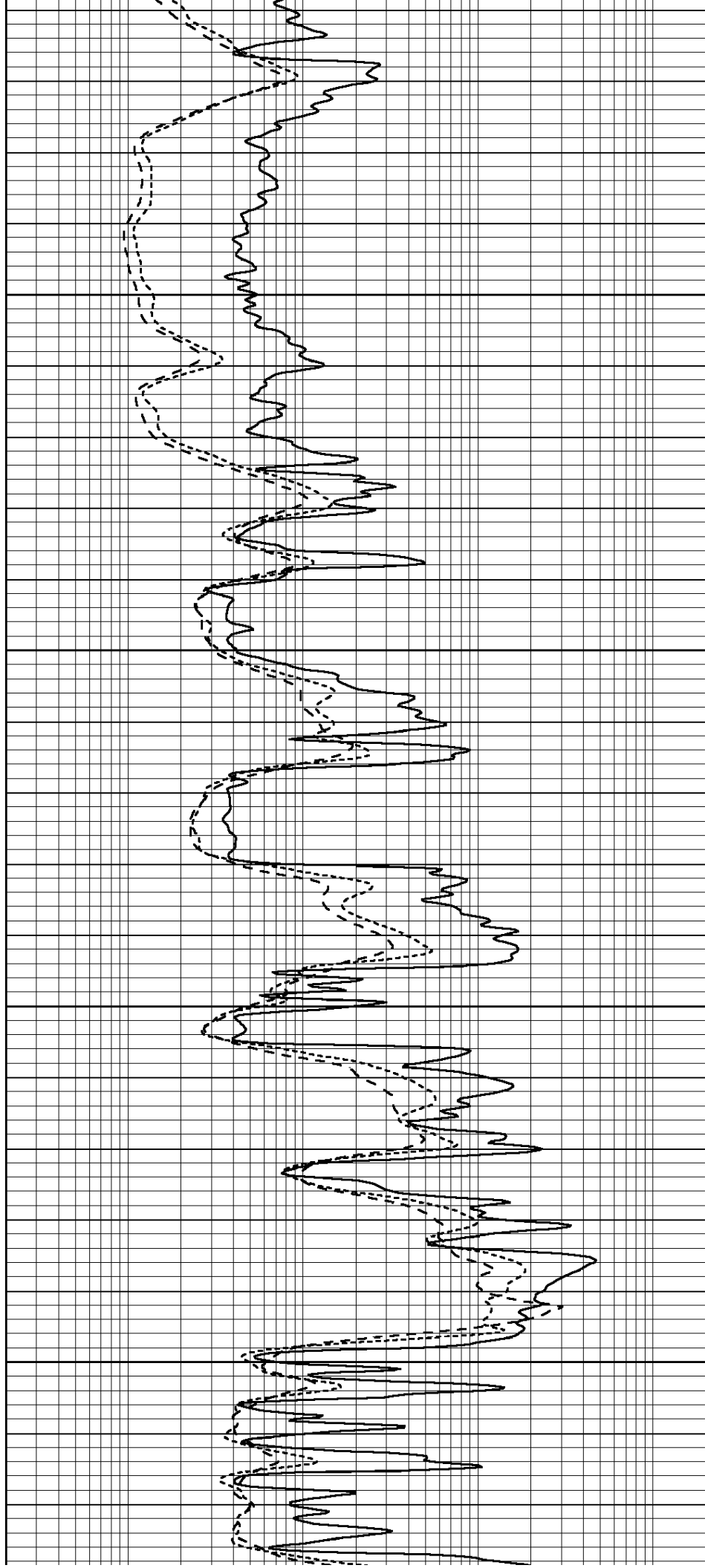


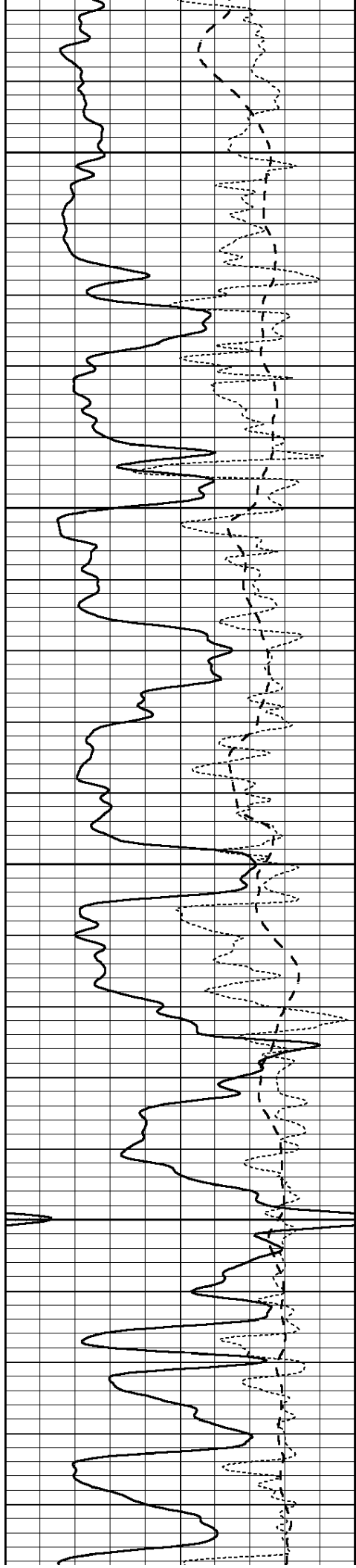
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3450

3500

3550



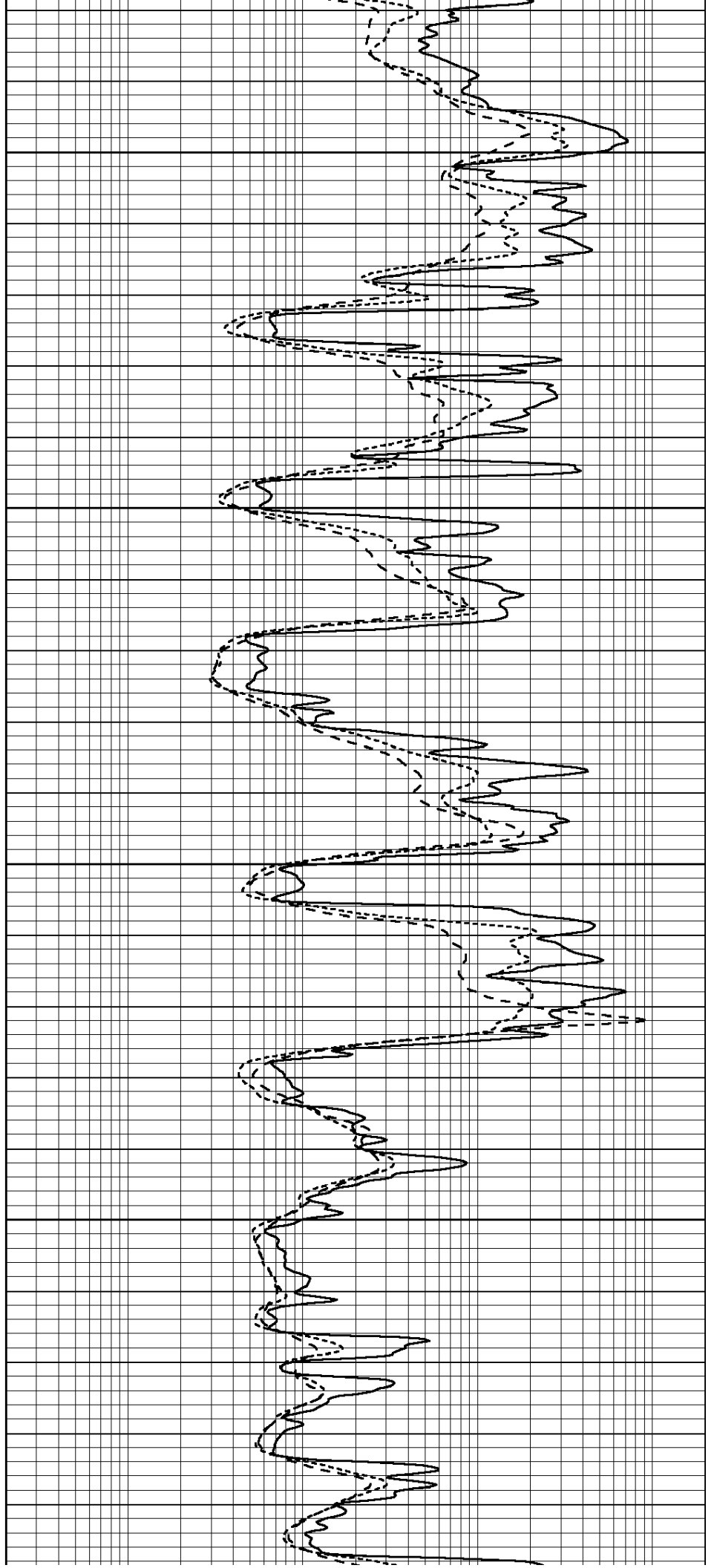


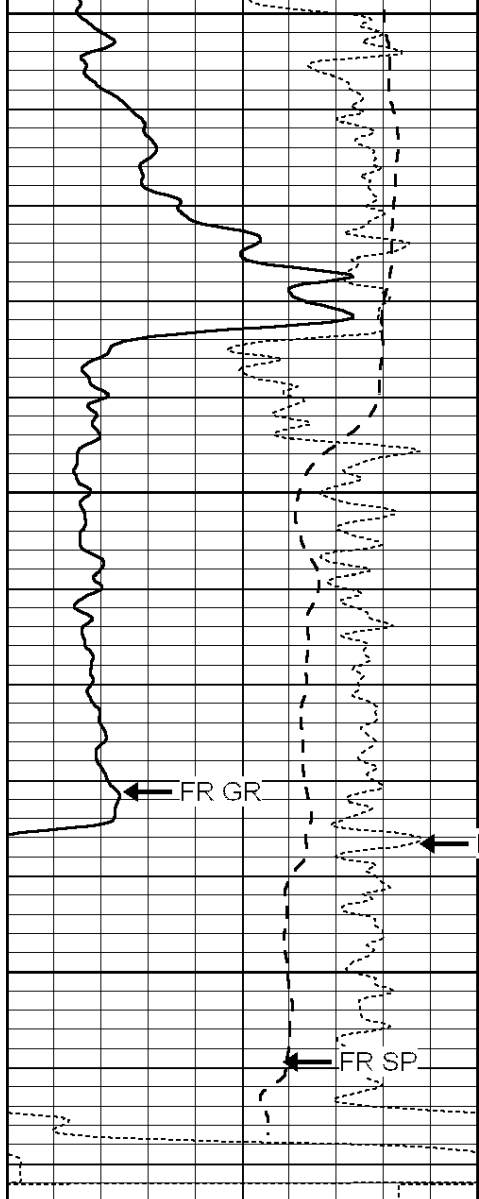
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3650

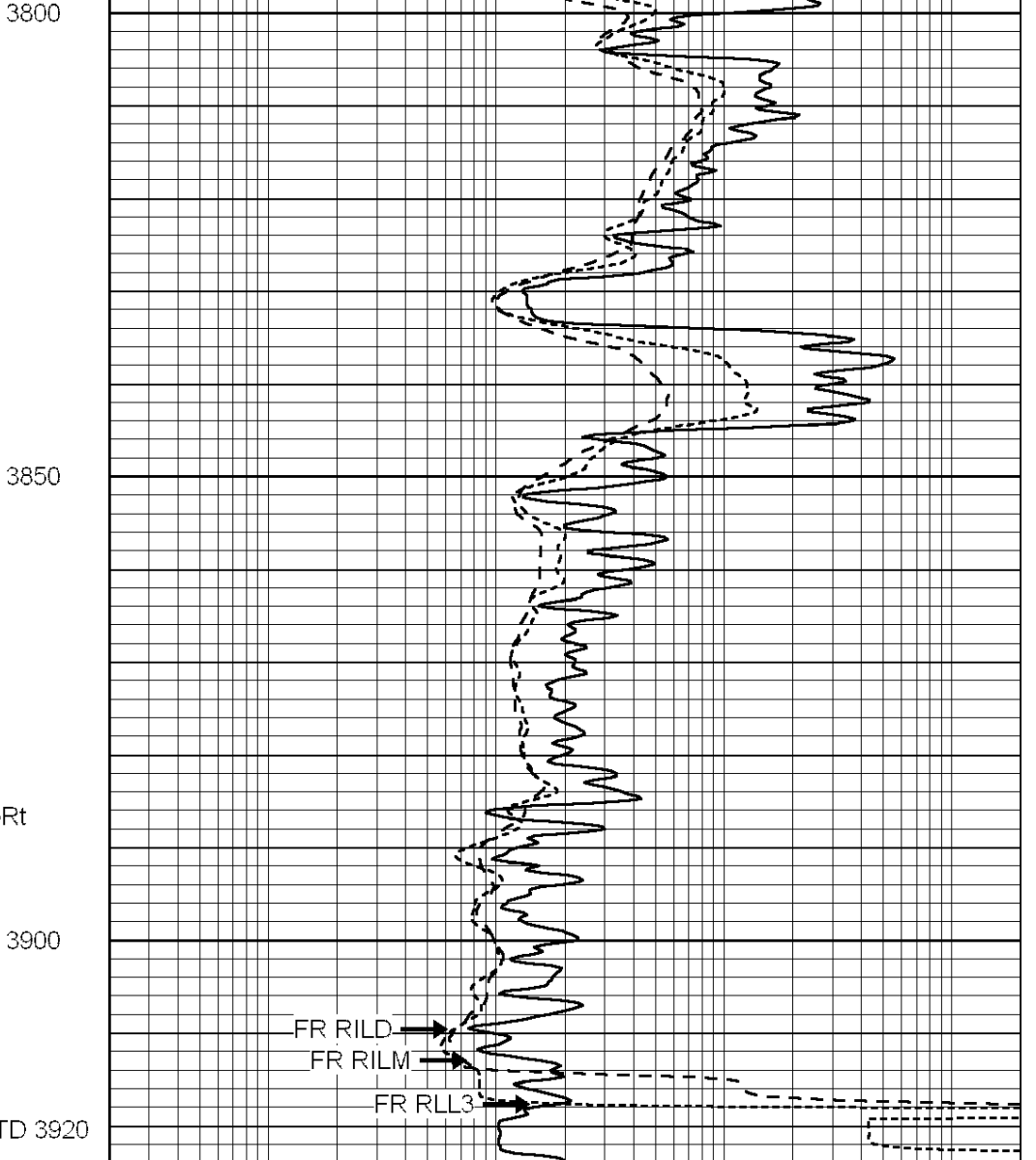
3700

3750





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



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

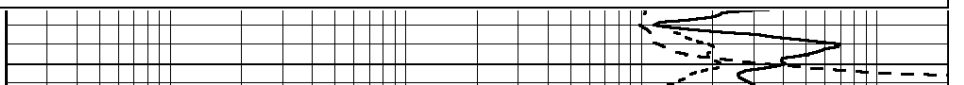
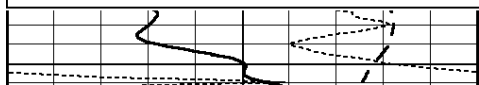


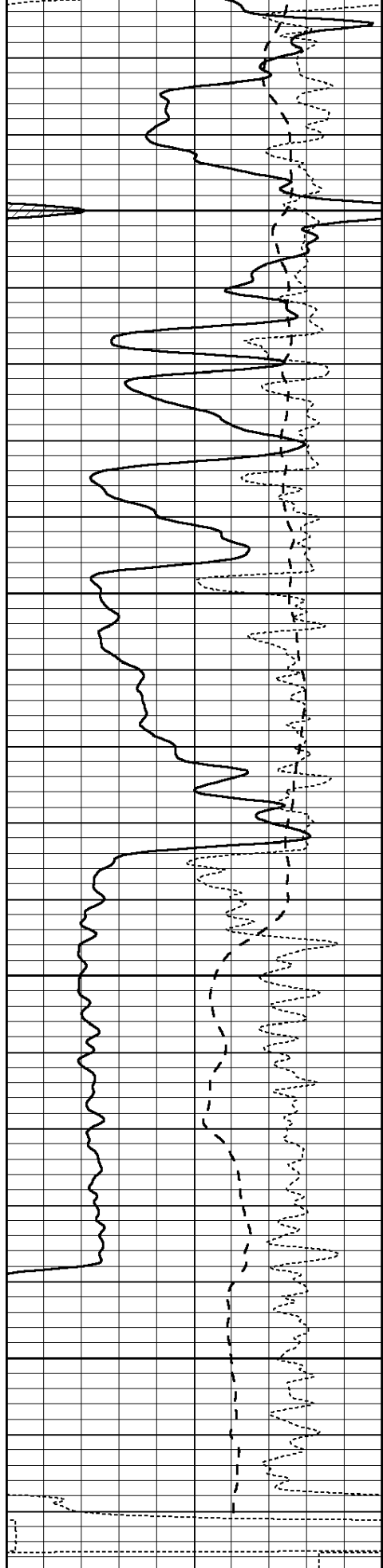
REPEAT SECTION

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 Presentation Format: _dil
 Dataset Creation: Fri Nov 15 01:37:59 2013 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 |

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





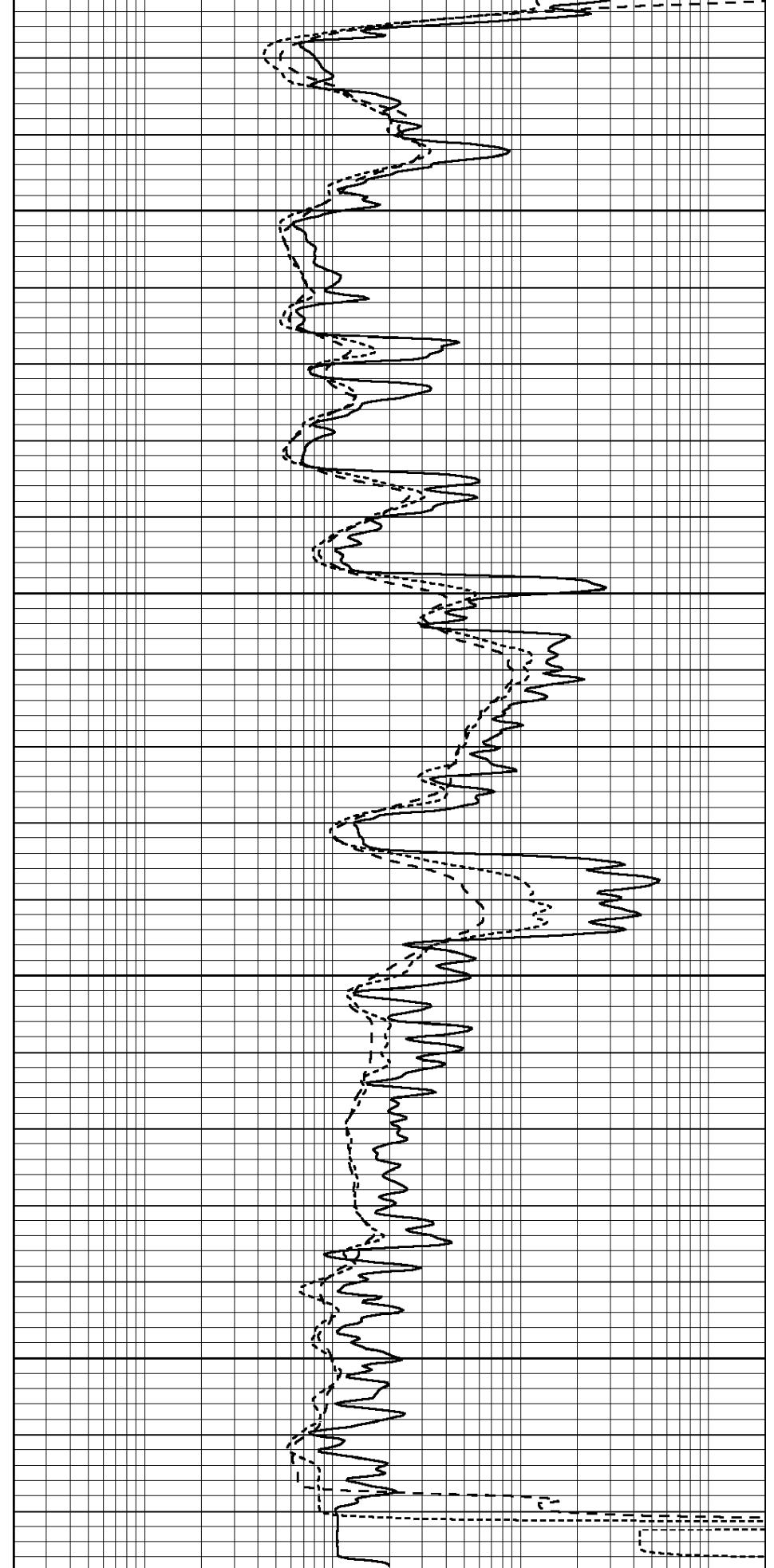
3750

3800

3850

3900

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



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

Calibration Report

Database File: 012090ddn.db
 Dataset Pathname: pass3.3
 Dataset Creation: Fri Nov 15 03:07:06 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 | | |

Compensated Density Calibration Report

Serial-Model: GEAR4-GEARHART
 Source / Verifier: 143 / 143
 Master Calibration Performed: Mon Mar 19 19:07:19 2012

Master Calibration

| | Density | | Far Detector | Near Detector | cps |
|---------------------|---------|------|-----------------------------|---------------|-----|
| | | g/cc | | | |
| Magnesium | 1.710 | g/cc | 1015.91 | 497.51 | cps |
| Aluminum | 2.600 | g/cc | 227.67 | 350.20 | cps |
| Spine Angle = 76.79 | | | Density/Spine Ratio = 0.579 | | |
| | Size | | Reading | | |
| Small Ring | 8.00 | in | 3.21 | V | |
| Large Ring | 14.00 | in | 5.46 | V | |

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: 080327
Tool Model: Probe1
Performed: Sun Jun 13 14:33:21 1993

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.4800 GAPI/cps