



**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL
INDUCTION
LOG**

Company DOWNING NELSON OIL COMPANY, INC.
Well HILLMAN #2-18
Field
County TREGO
State KANSAS

Company DOWNING NELSON OIL COMPANY, INC.
Well HILLMAN #2-18
Field
County TREGO State KANSAS

Location: API # : 15-195-22913-0000
585' FNL & 1175' FEL
SEC 18 TWP 11S RGE 24W
Permanent Datum GROUND LEVEL Elevation 2354
Log Measured From KELLY BUSHING 8' A.G.L.
Drilling Measured From KELLY BUSHING
Elevation
K.B. 2362
D.F. 2360
G.L. 2354

| | | | |
|------------------------------|-------------------|--------------------|--|
| Date | 2/16/14 | | |
| Run Number | ONE | | |
| Depth Driller | 3991 | | |
| Depth Logger | 3994 | | |
| Bottom Logged Interval | 3992 | | |
| Top Log Interval | 00 | | |
| Casing Driller | 8 5/8" @ 221 | | |
| Casing Logger | 220 | | |
| Bit Size | 7 7/8" | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 3000 PPM | |
| Density / Viscosity | 9.0/54 | | |
| pH / Fluid Loss | 10.5/8.0 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | .80 @ 70F | | |
| Rmt @ Meas. Temp | .60 @ 70F | | |
| Rmc @ Meas. Temp | .96 @ 70F | | |
| Source of Rmf / Rmc | MEASUREMENT | | |
| Rm @ BHT | .48 @ 116F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | | | |
| Maximum Recorded Temperature | 116F | | |
| Equipment Number | 4010 | | |
| Location | HAYS, KANSAS | | |
| Recorded By | JASON CAPPELLUCCI | | |
| Witnessed By | MARC DOWNING | | |

<<< 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:
WAKEENEY, KS. - NORTH TO B RD. - 8 WEST TO 180 RD. - 1 SOUTH - 1/4 WEST - SOUTH INTO



MAIN SECTION

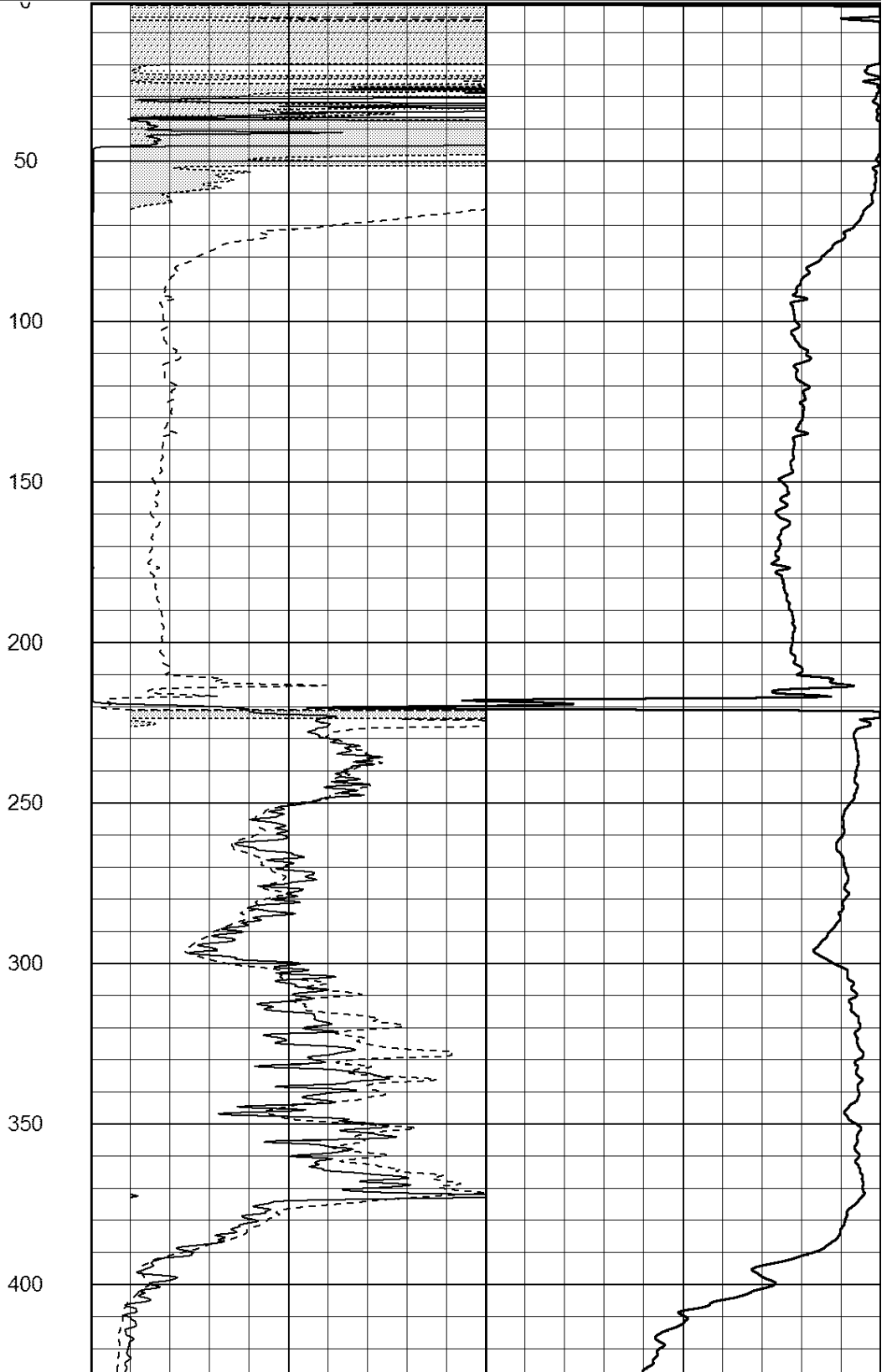
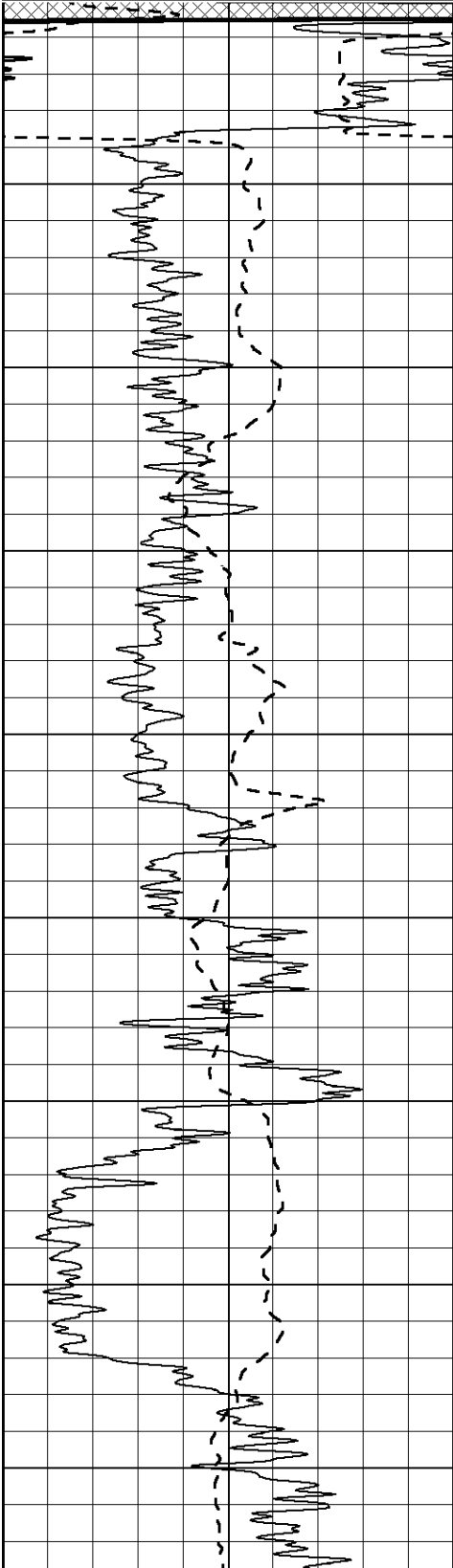
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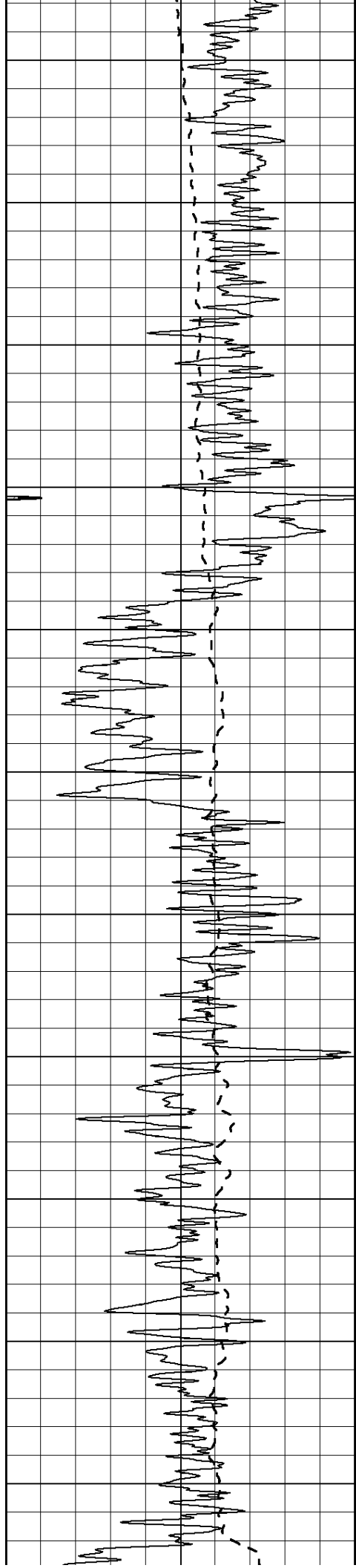
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|------|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| -100 | SP (mV) | 100 |

| | | |
|---|--------------|----|
| 0 | RLL3 (Ohm-m) | 50 |
| 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

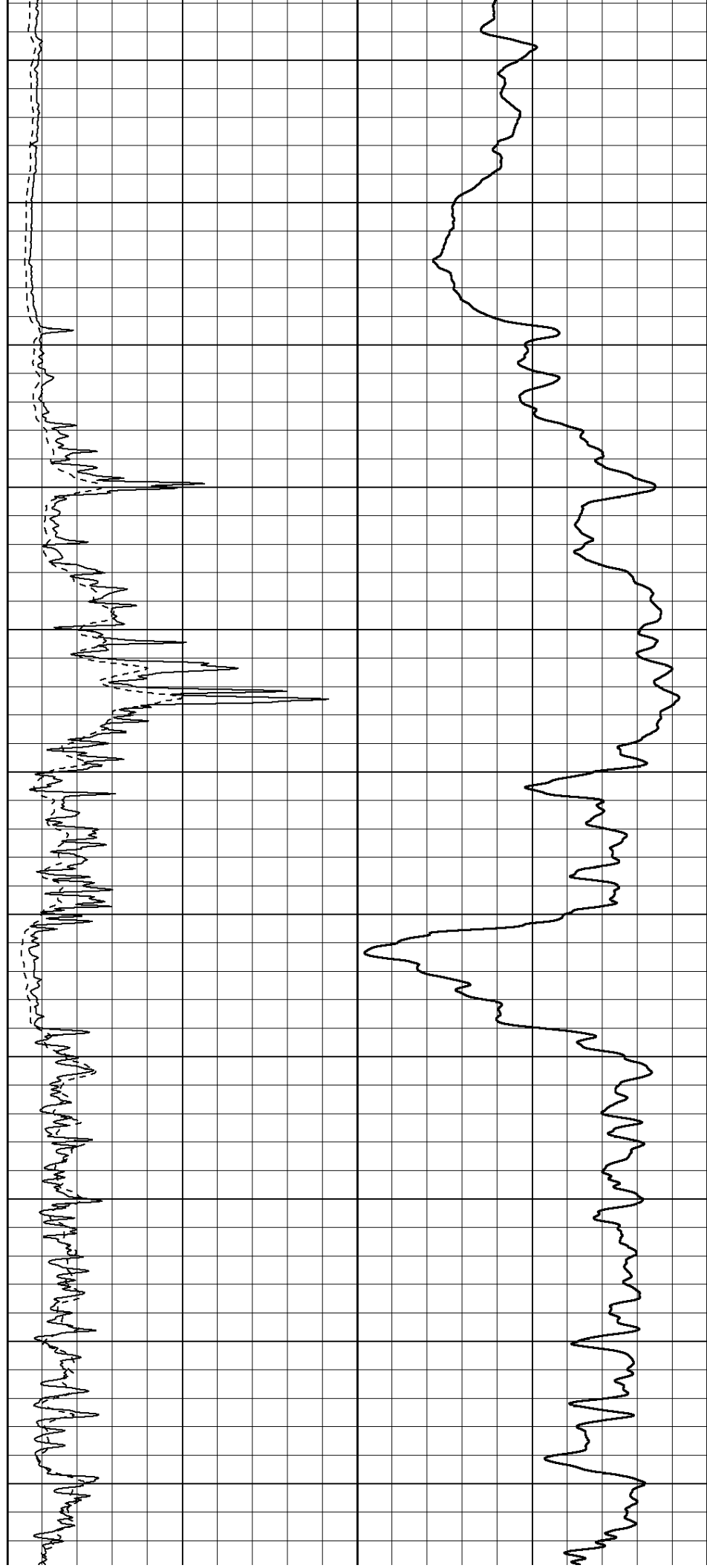
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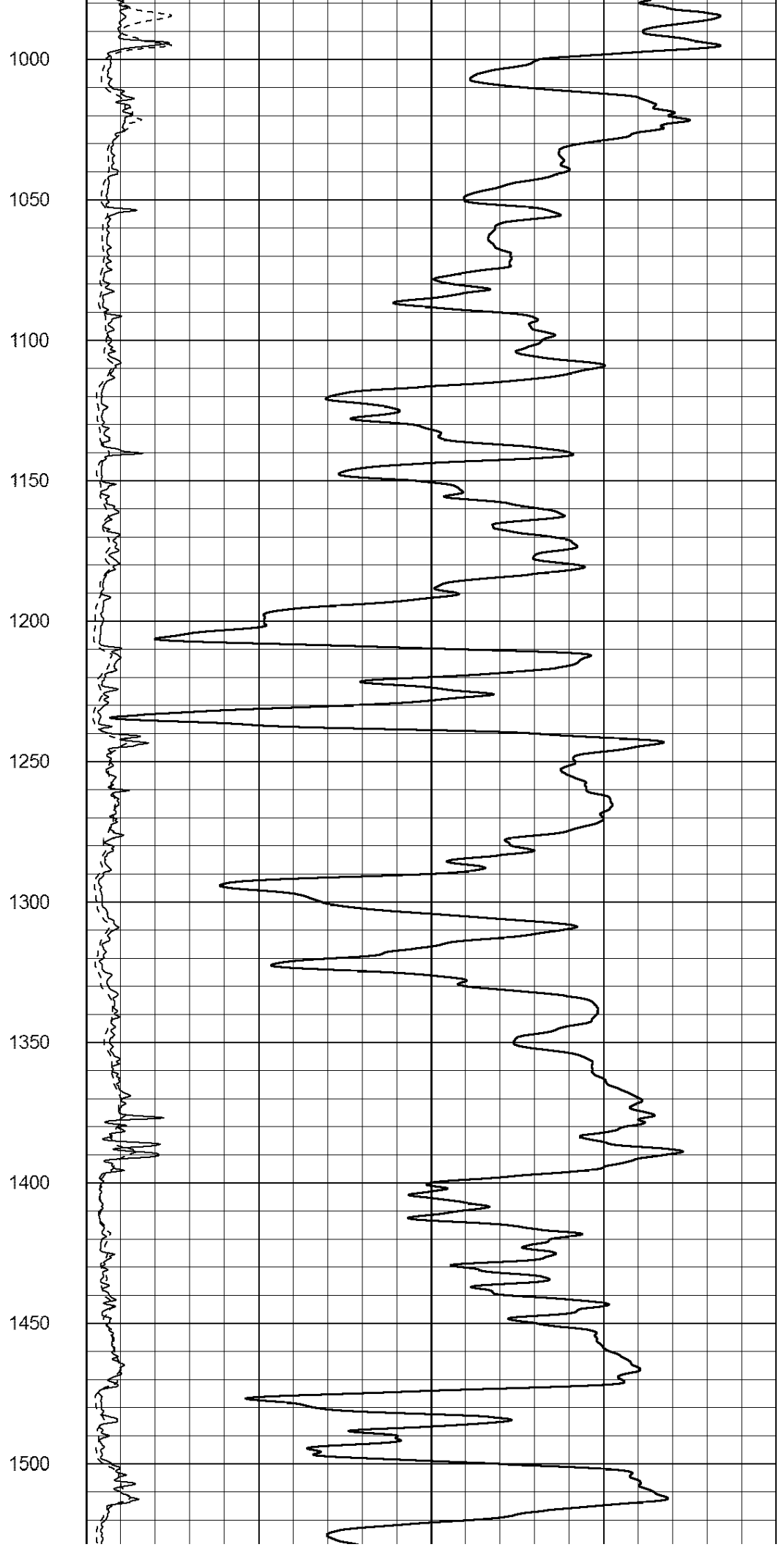
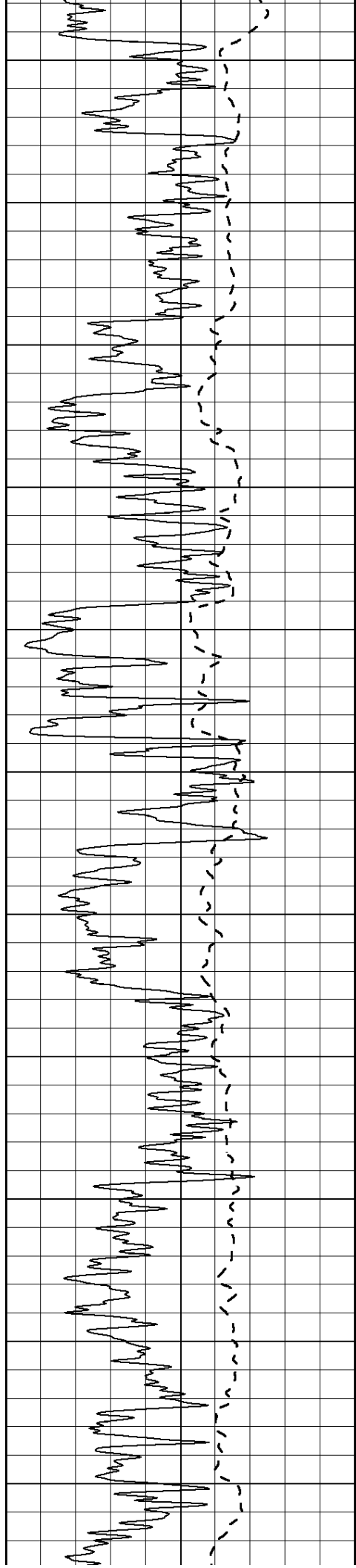
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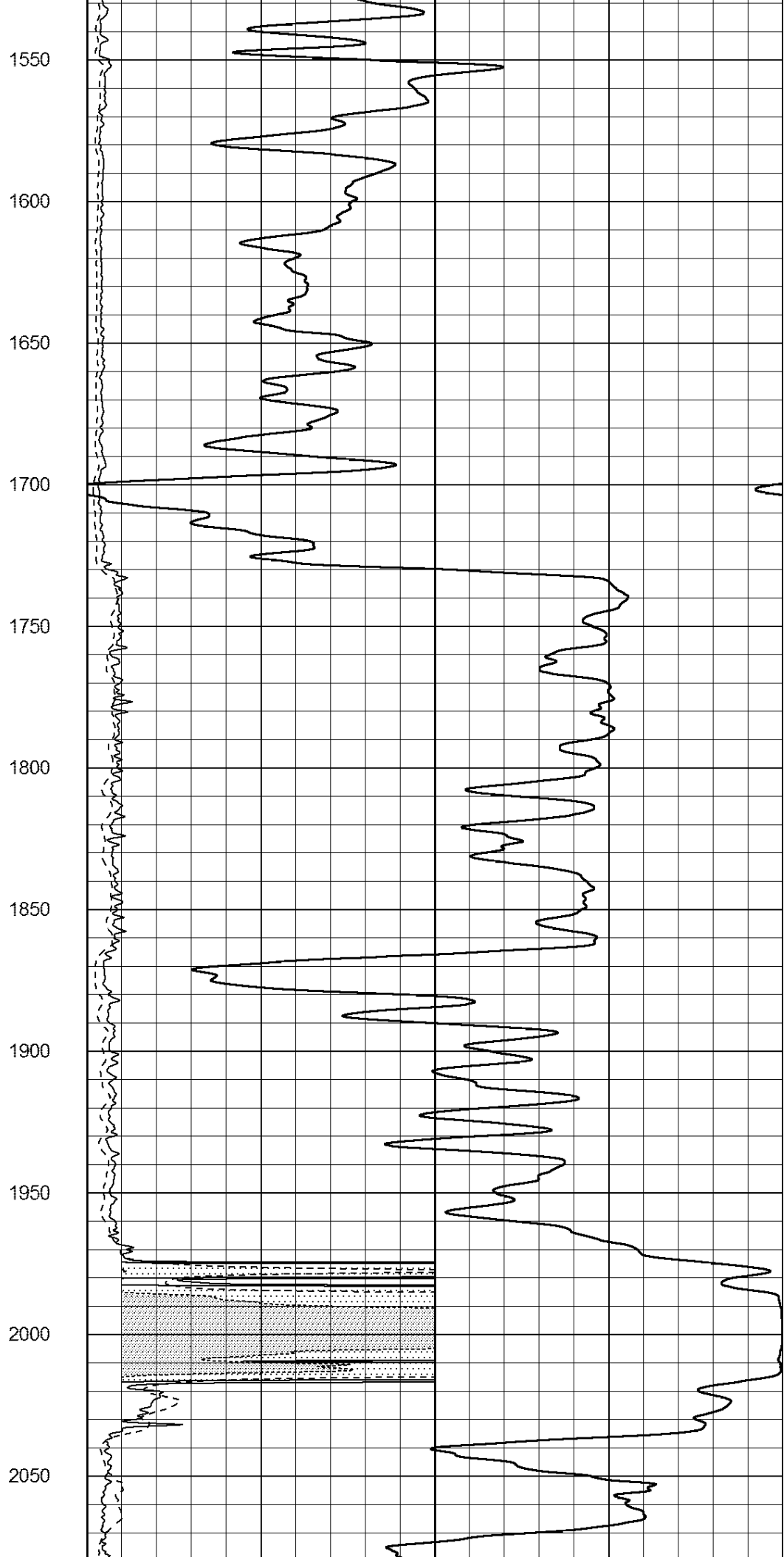
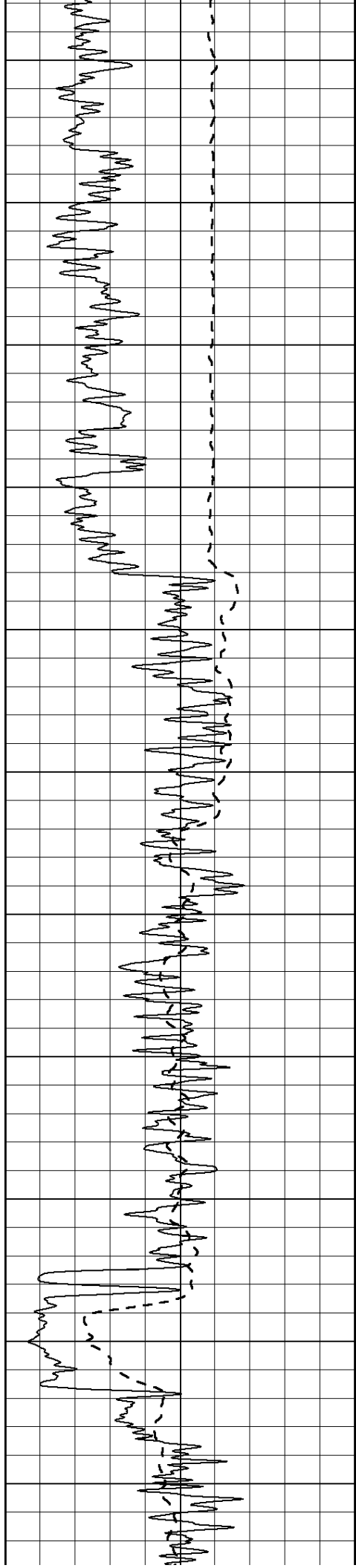
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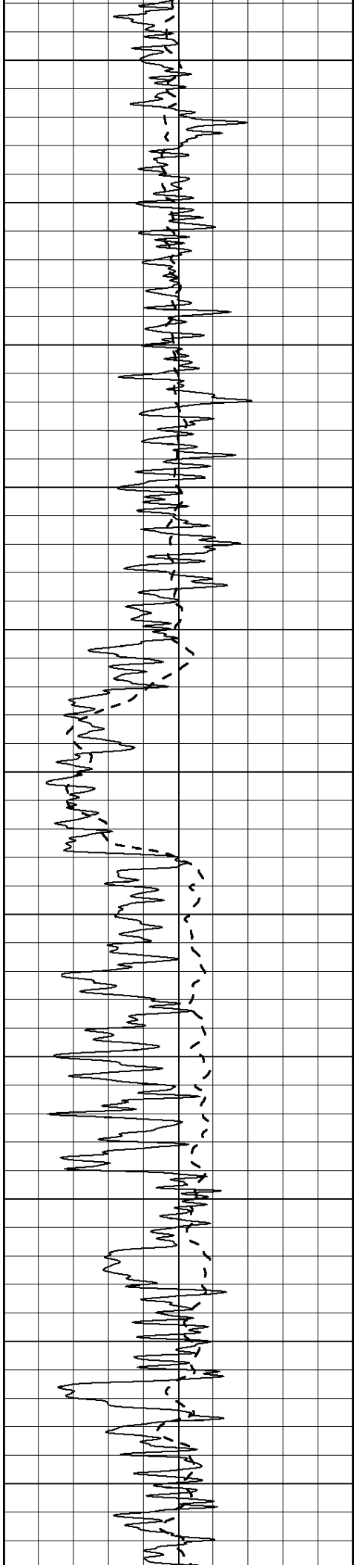
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950









2100

2150

2200

2250

2300

2350

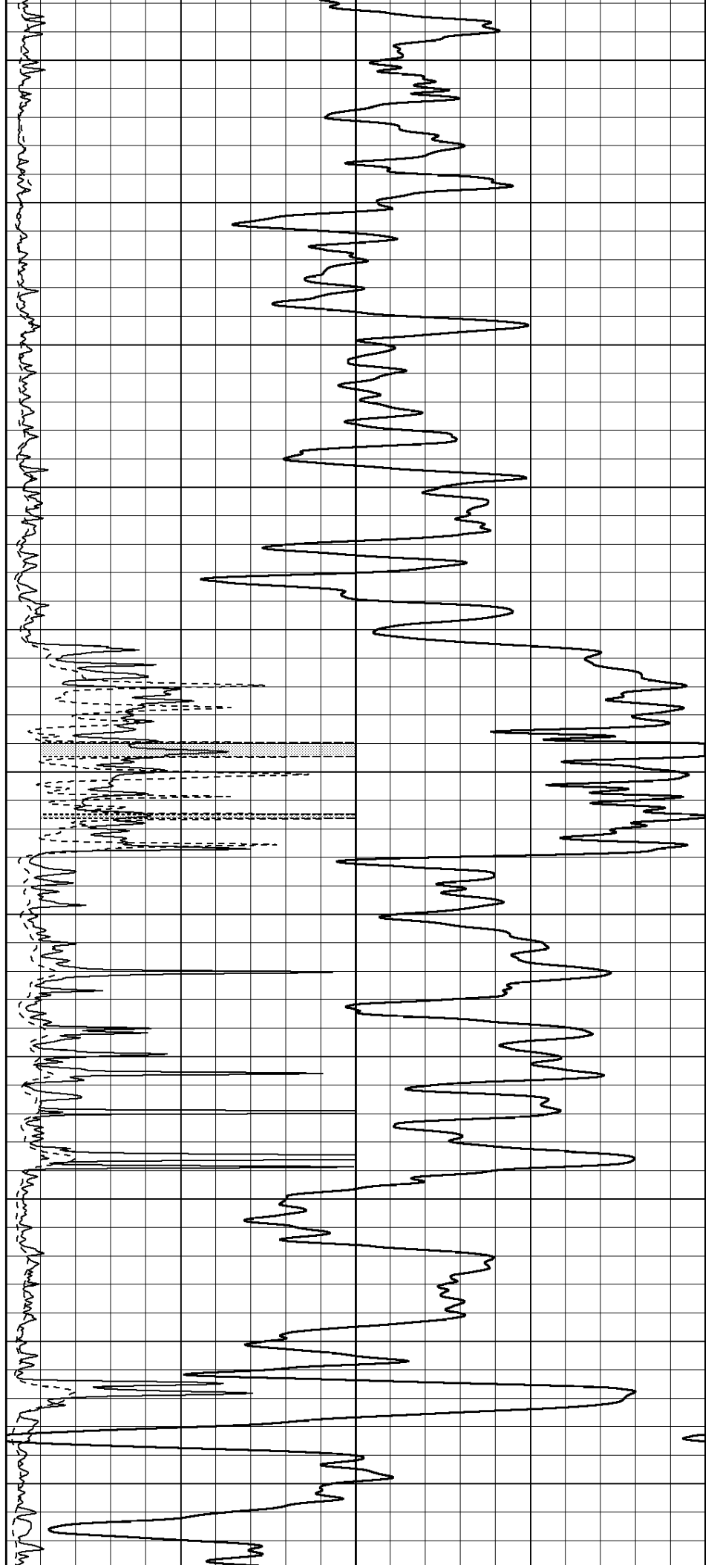
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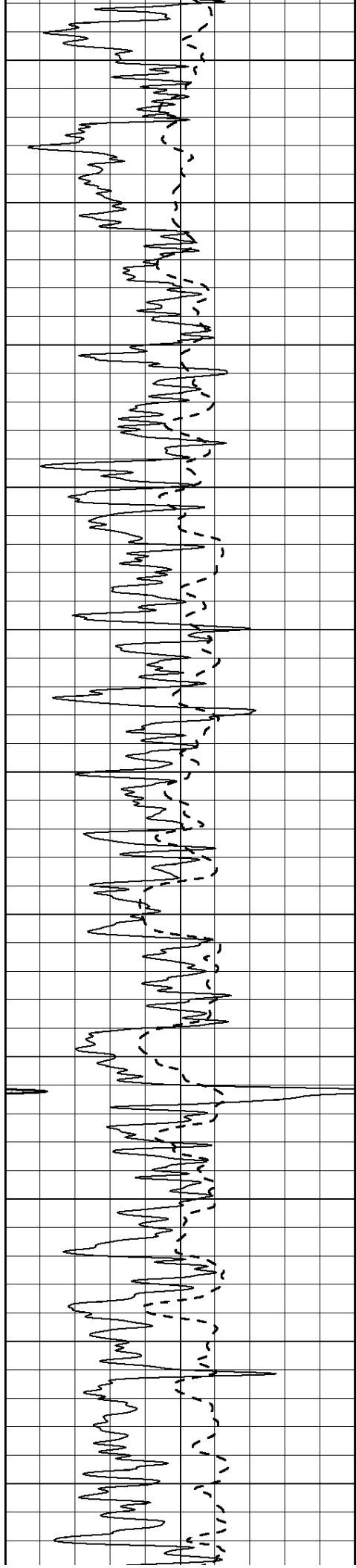
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2500

2550

2600





2650

2700

2750

2800

2850

2900

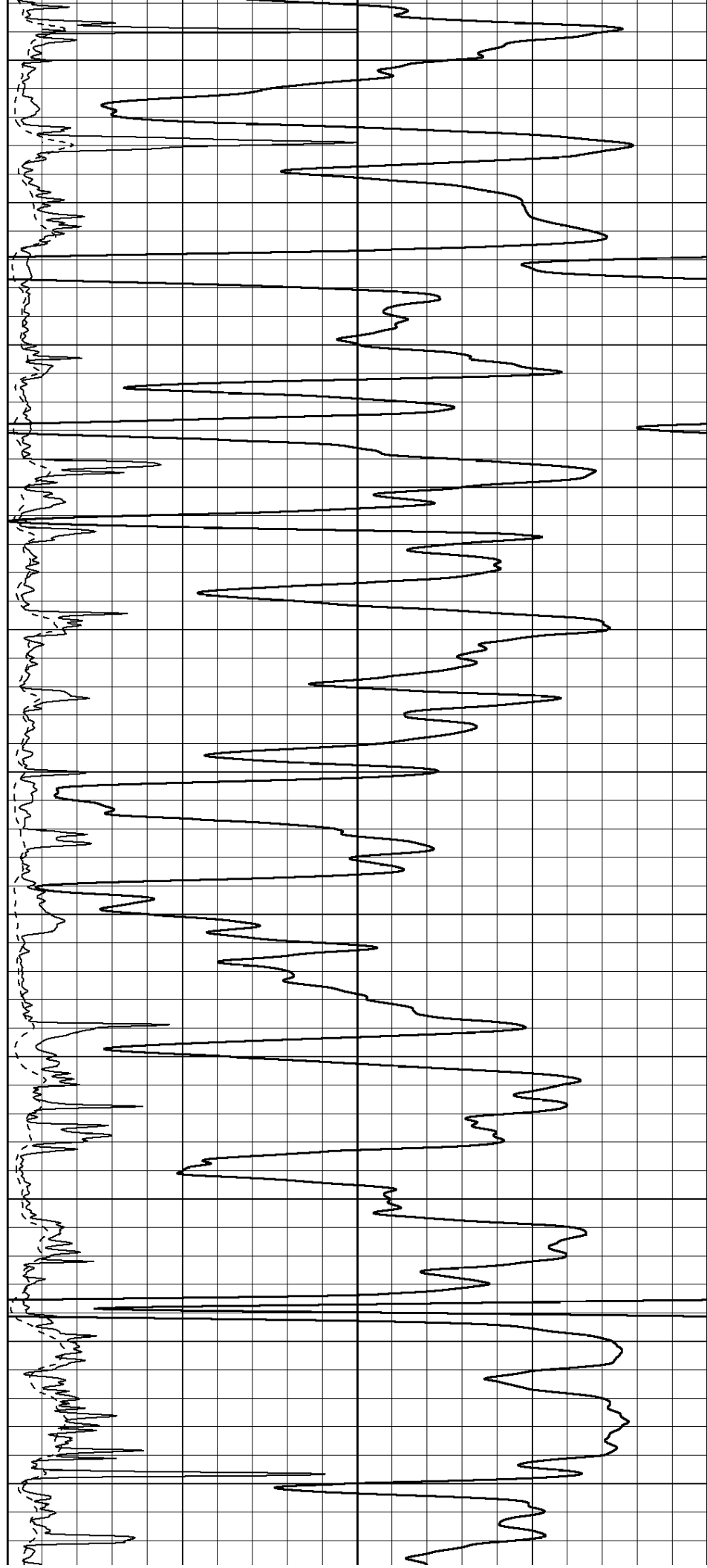
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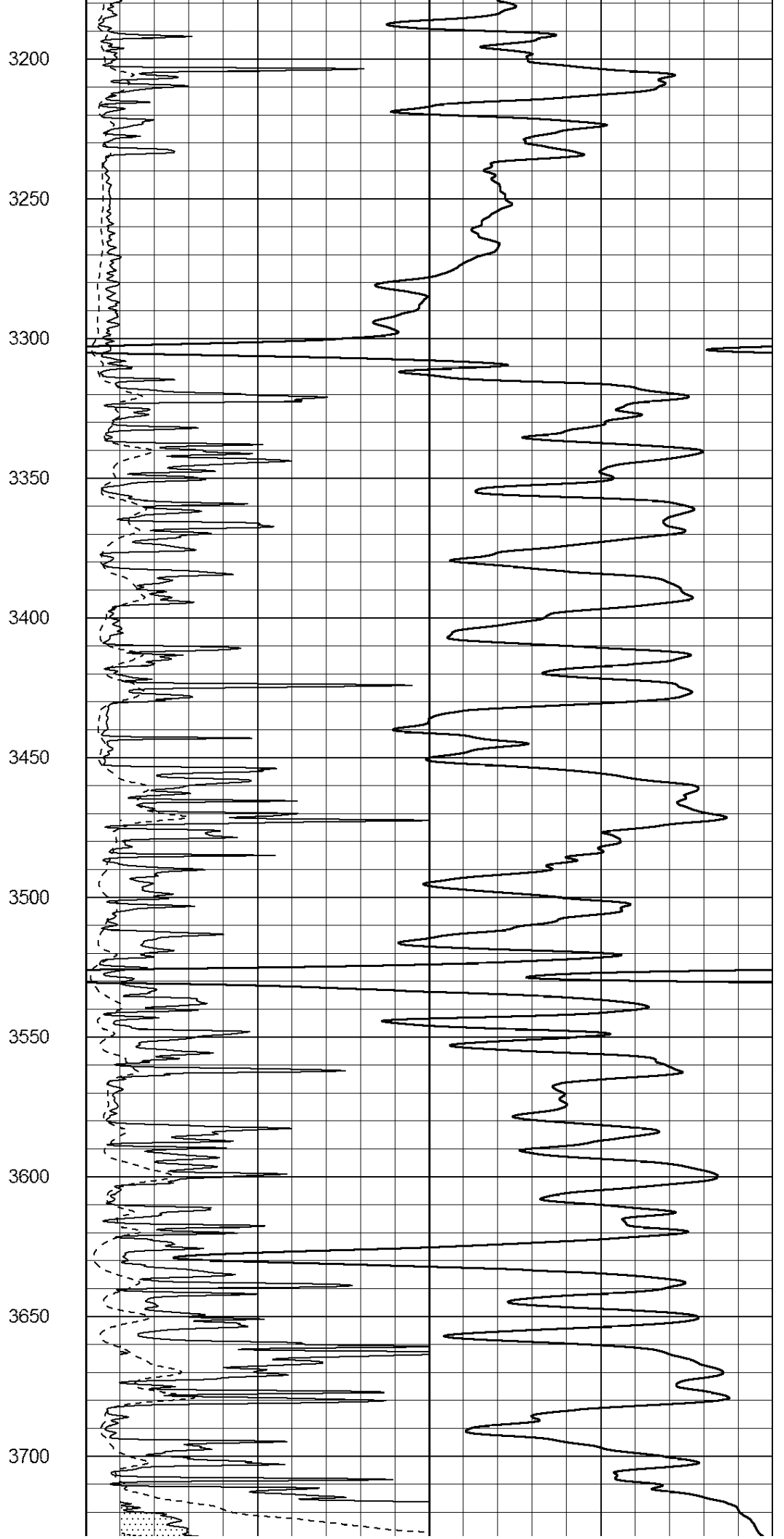
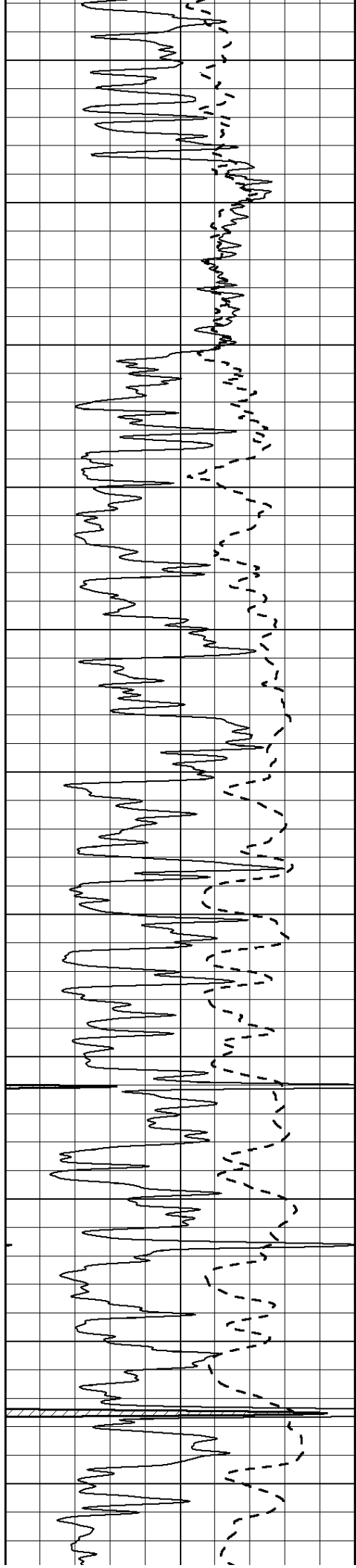
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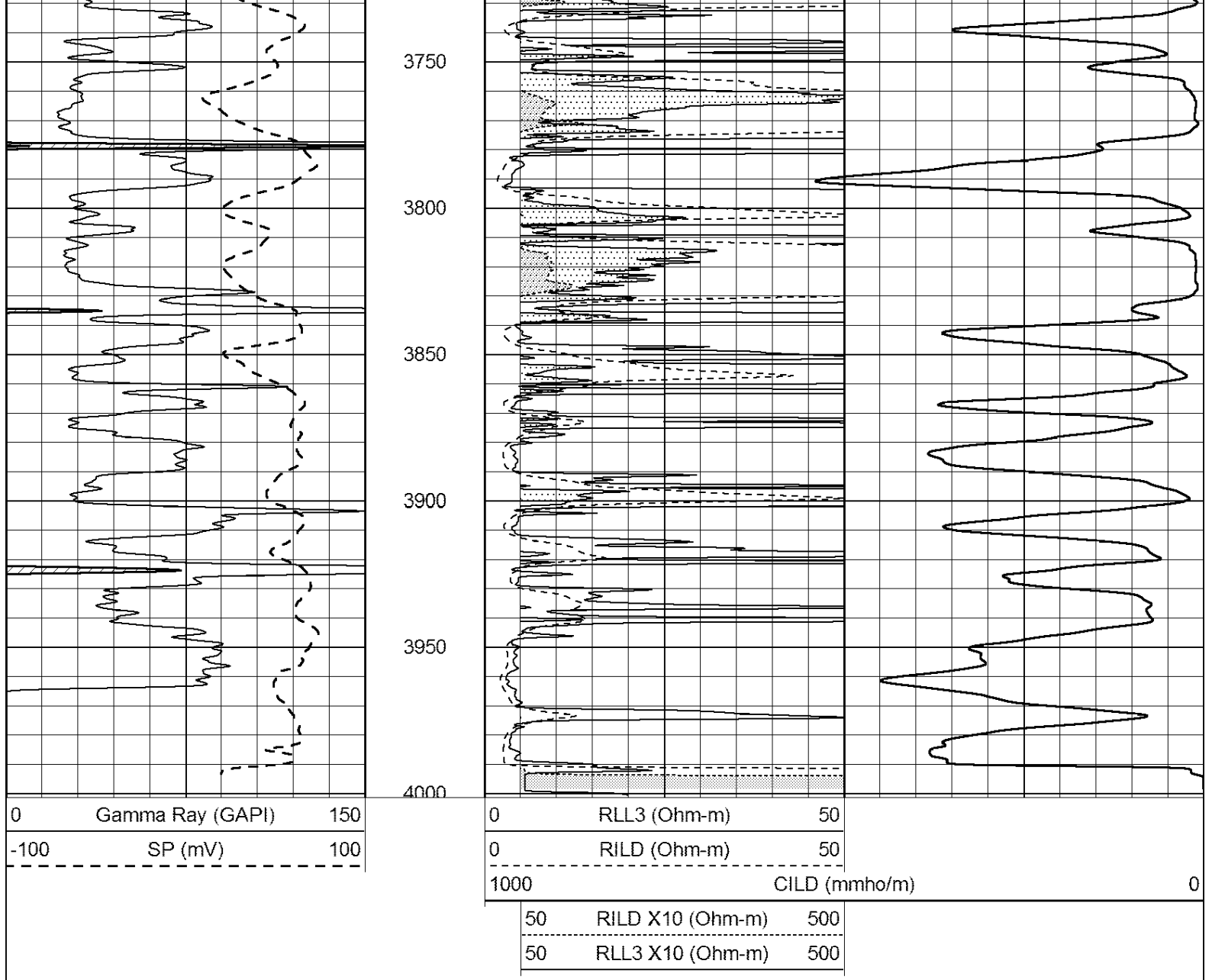
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3100

3150





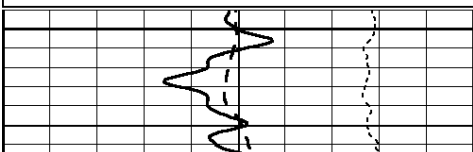


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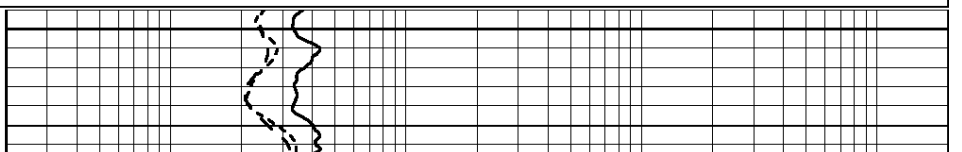
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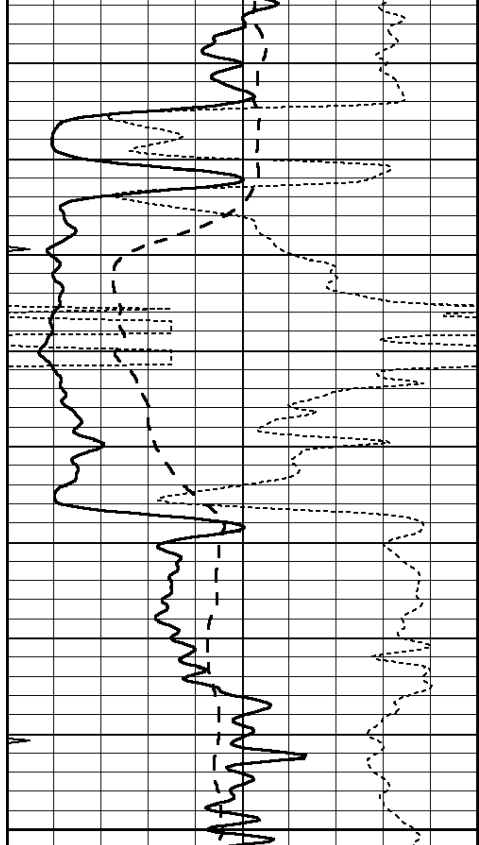
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|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

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



1950

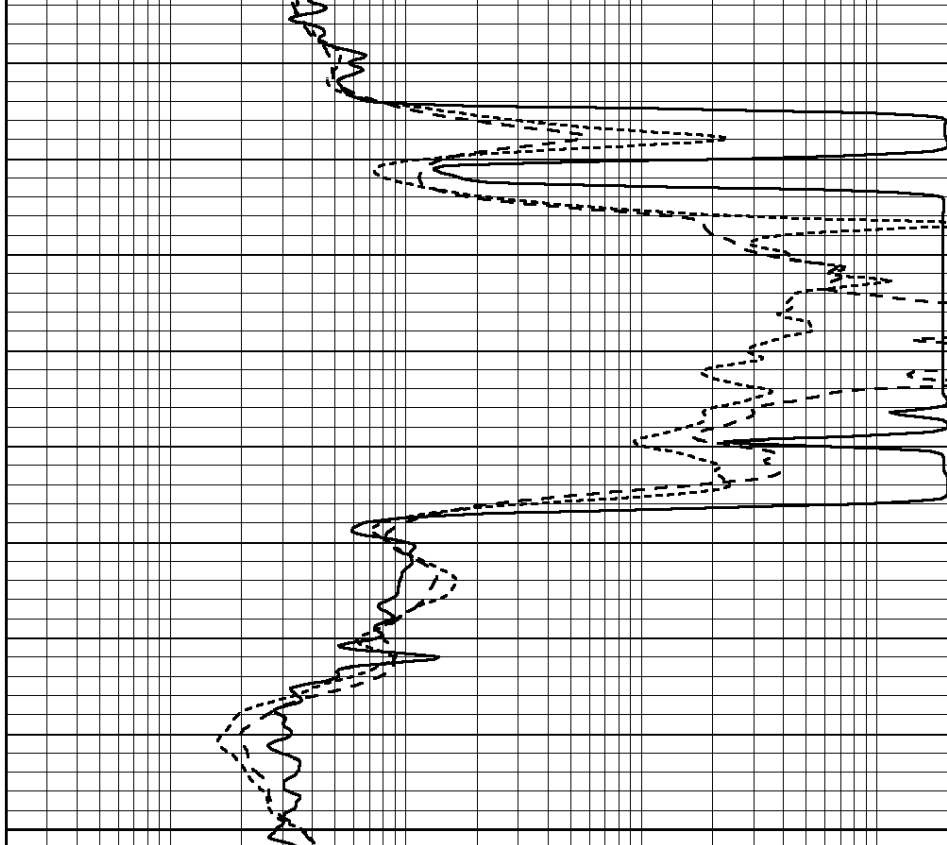




2000

2050

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

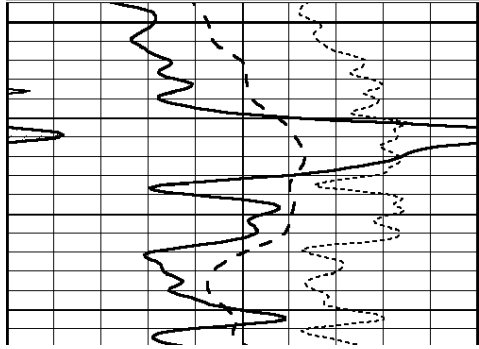


MAIN SECTION

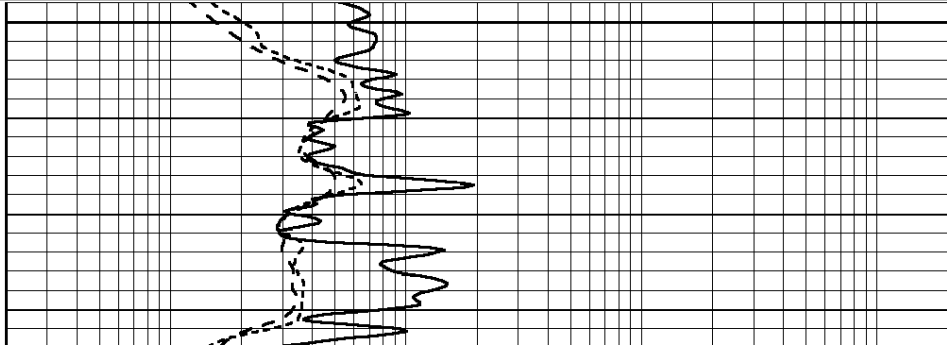
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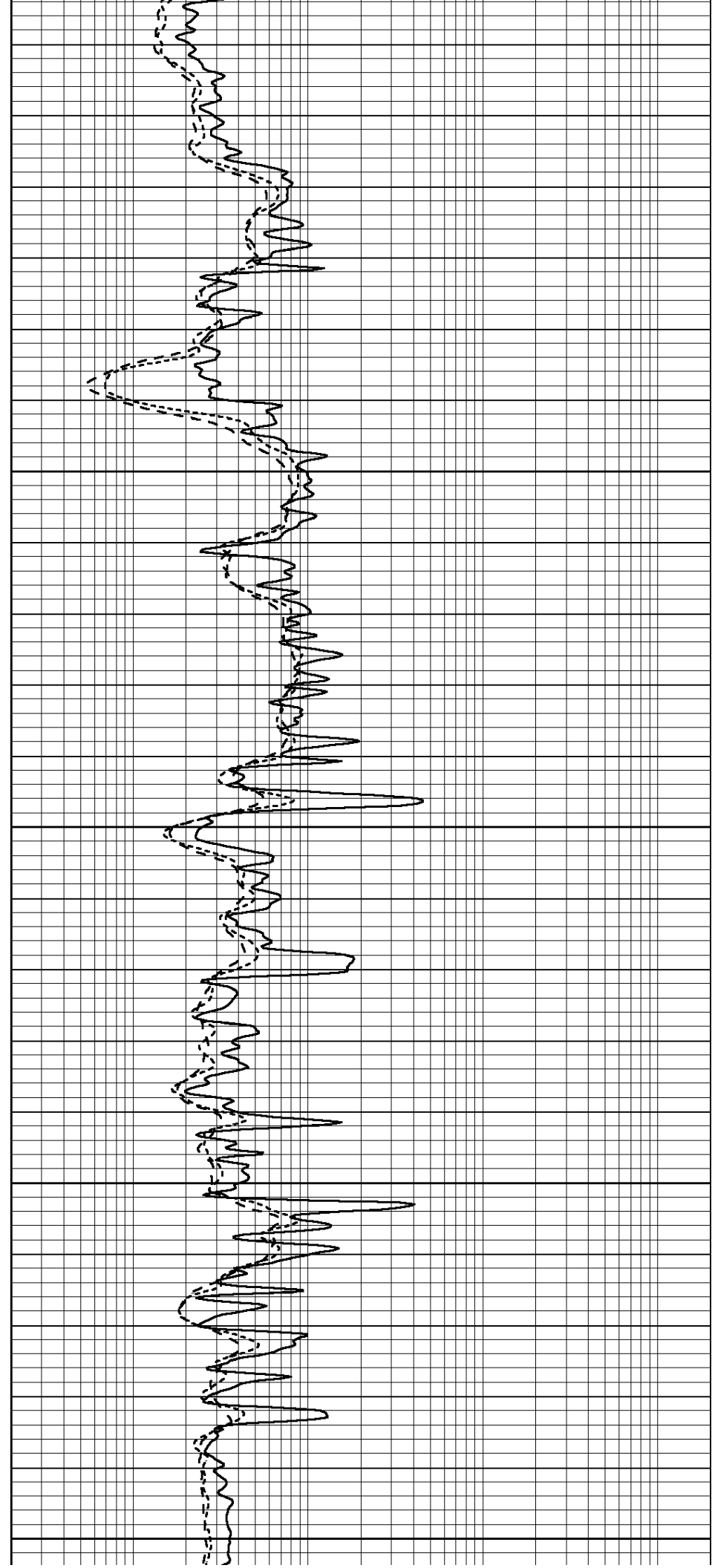
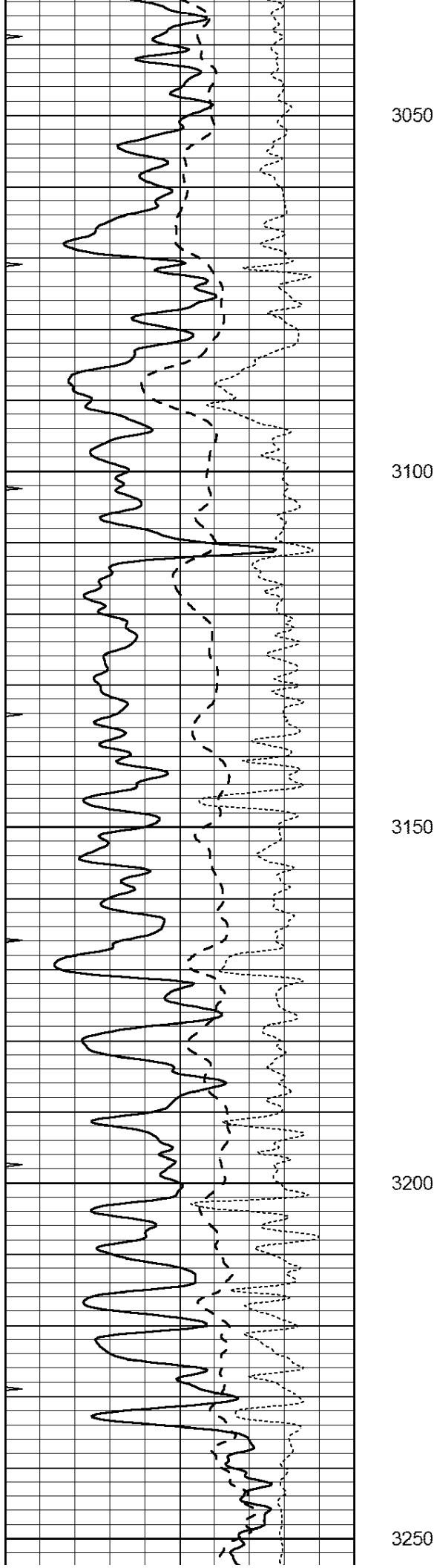
| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

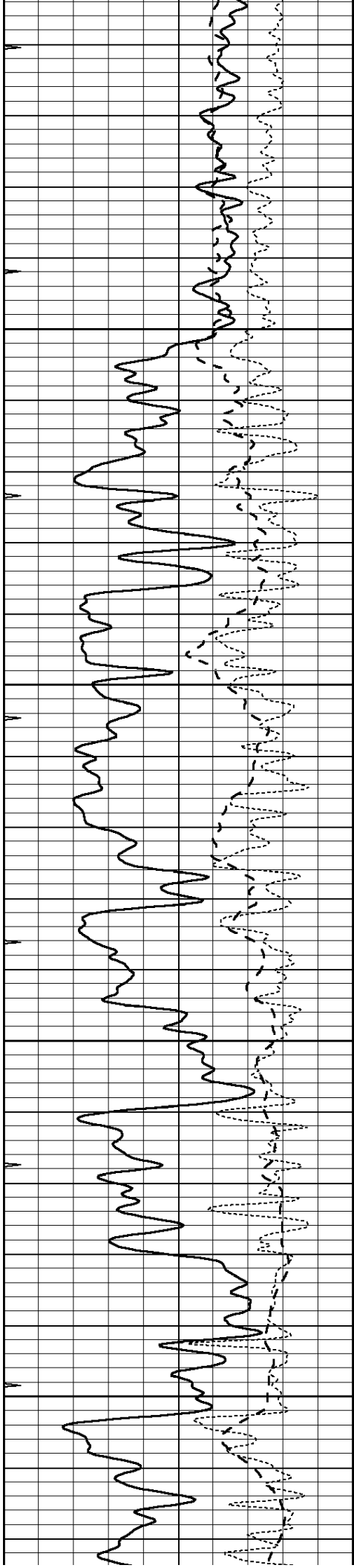
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|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |



3000





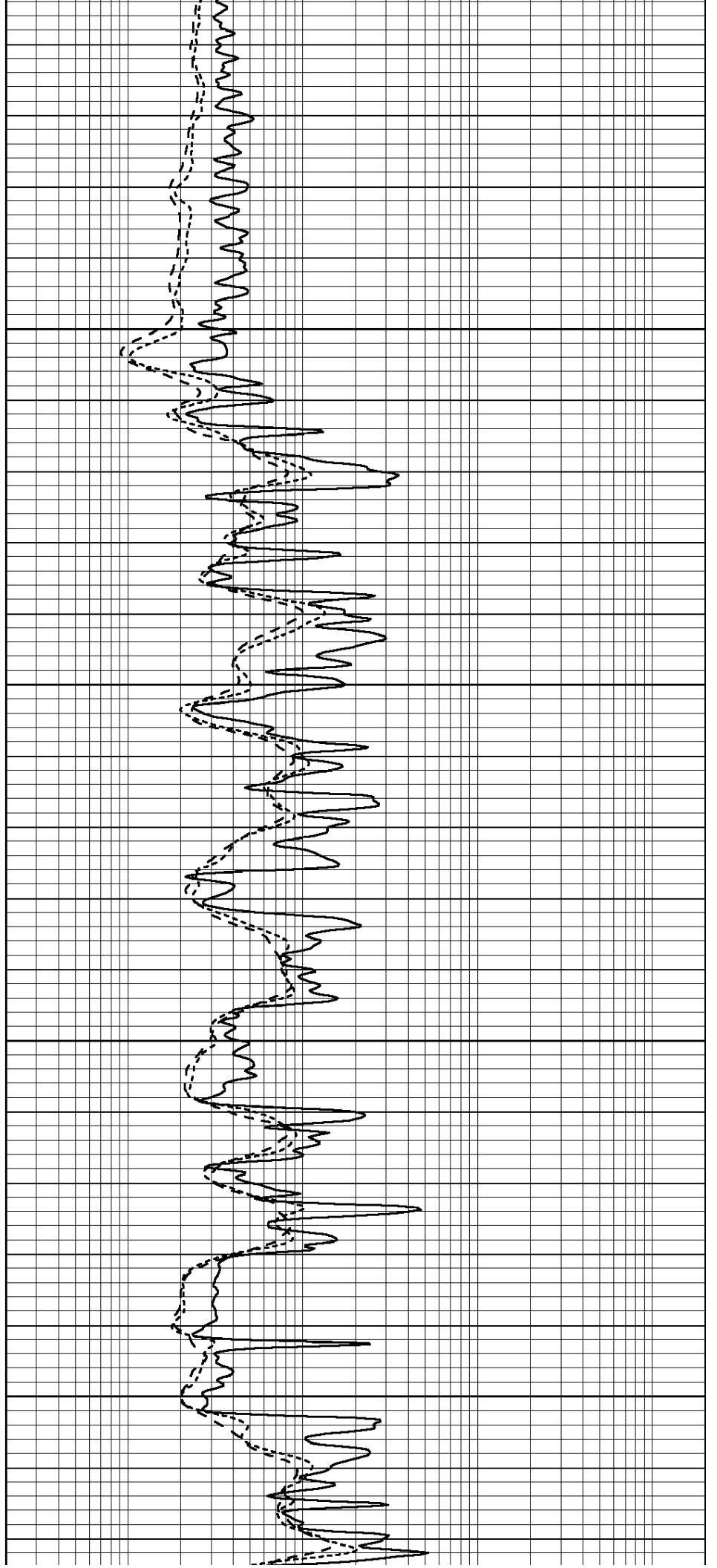


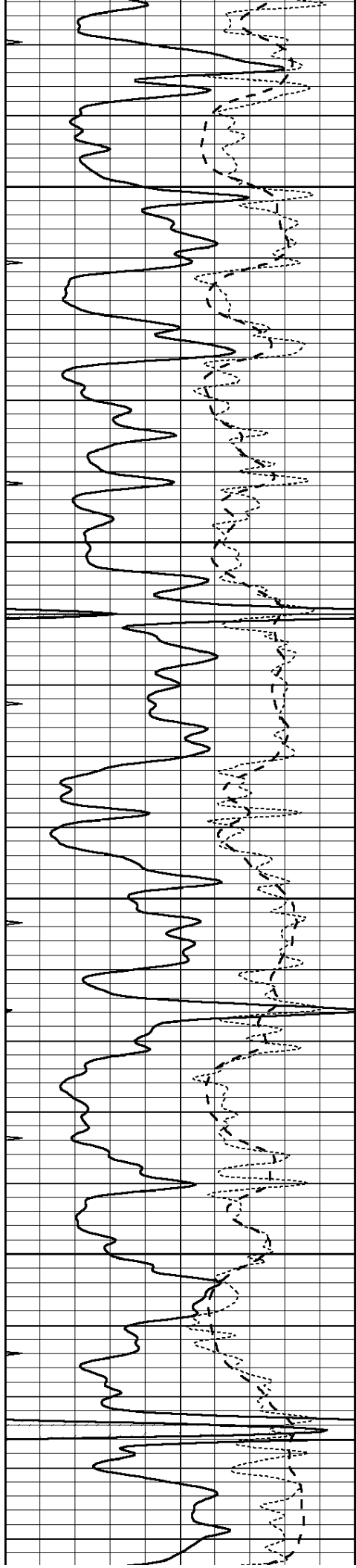
3300

3350

3400

3450



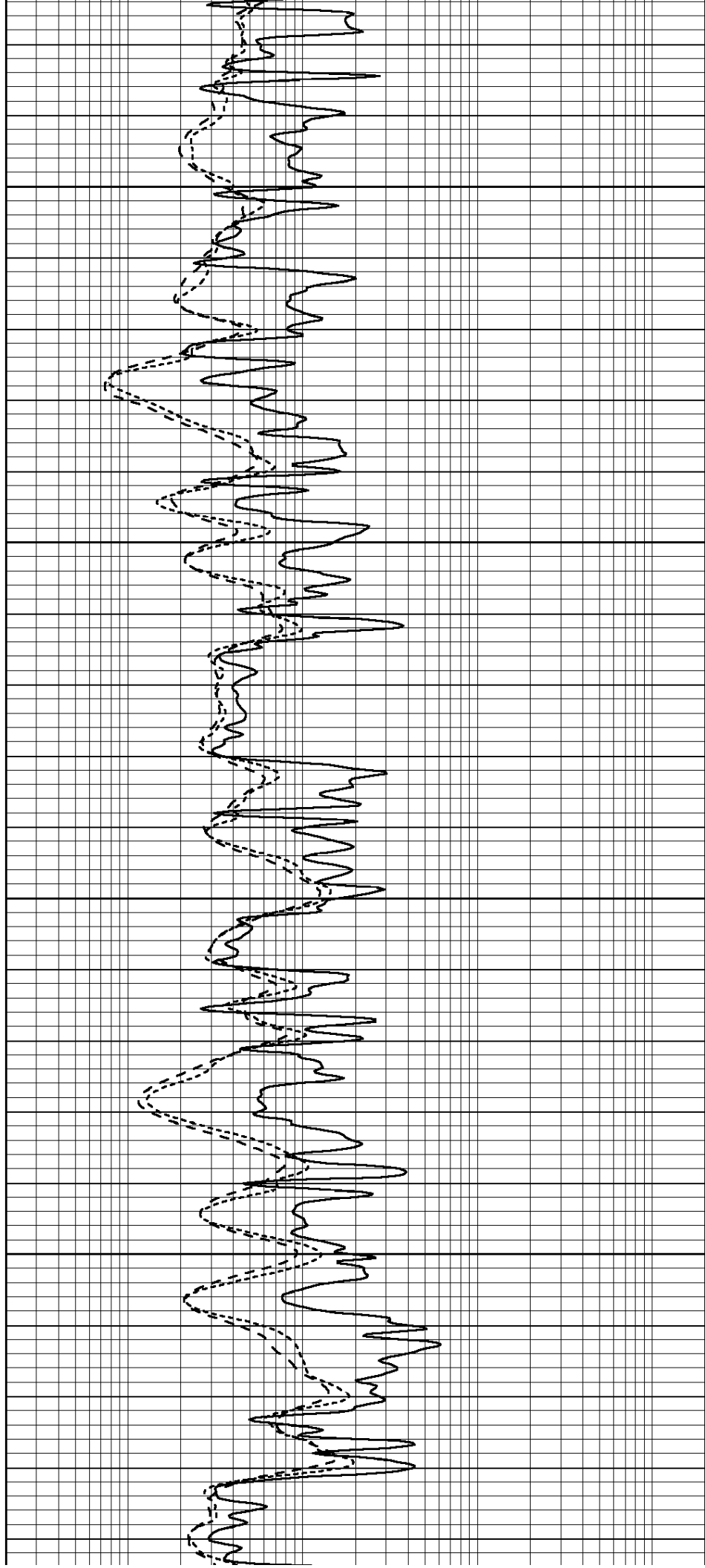


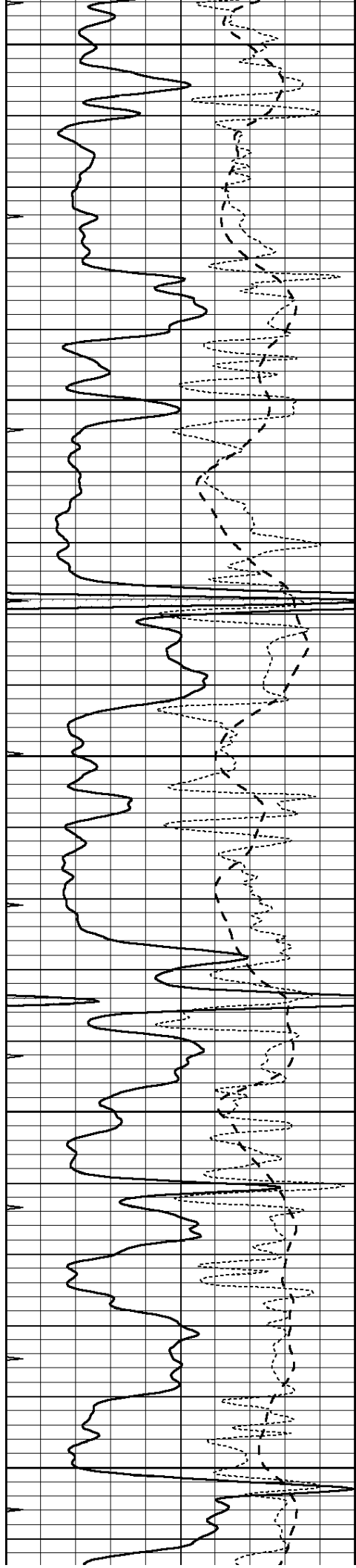
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3550

3600

3650





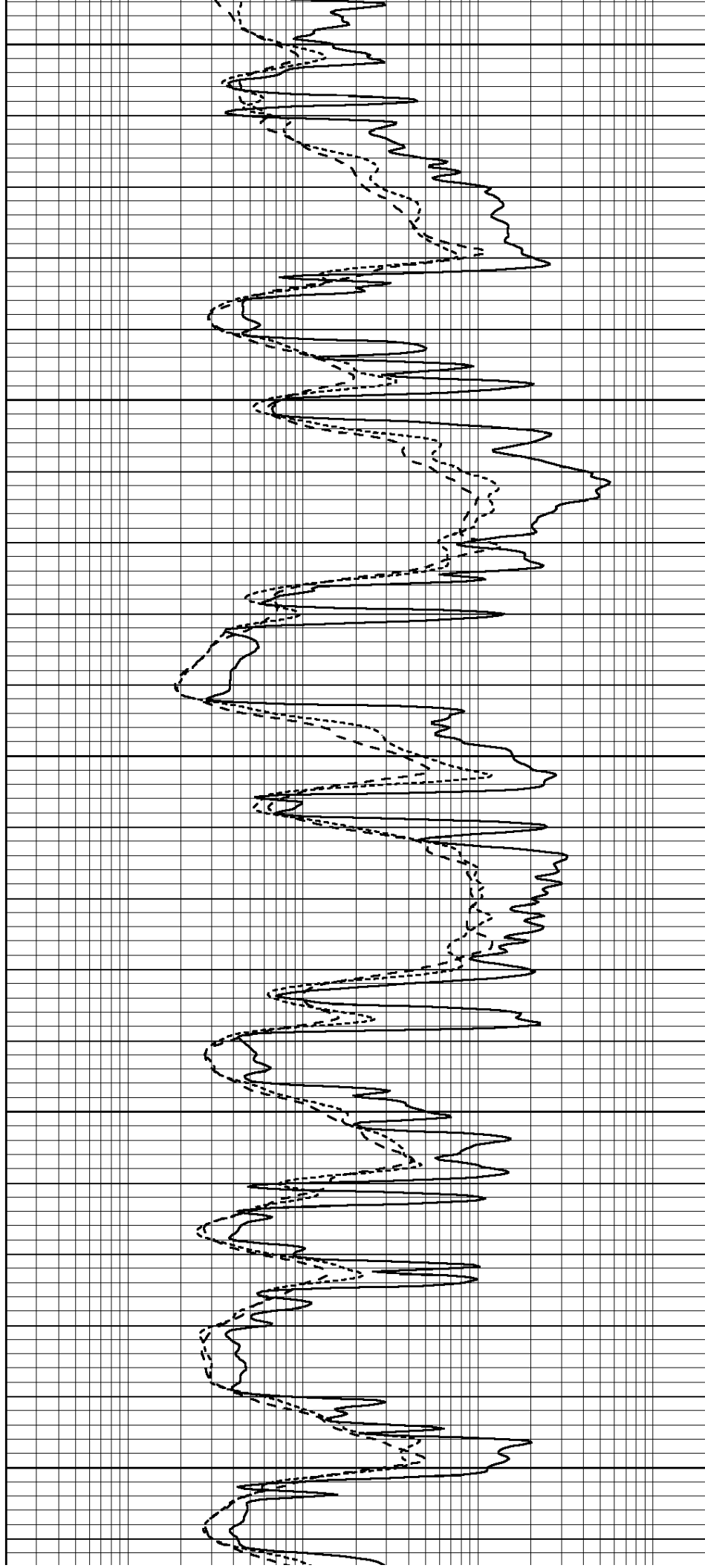
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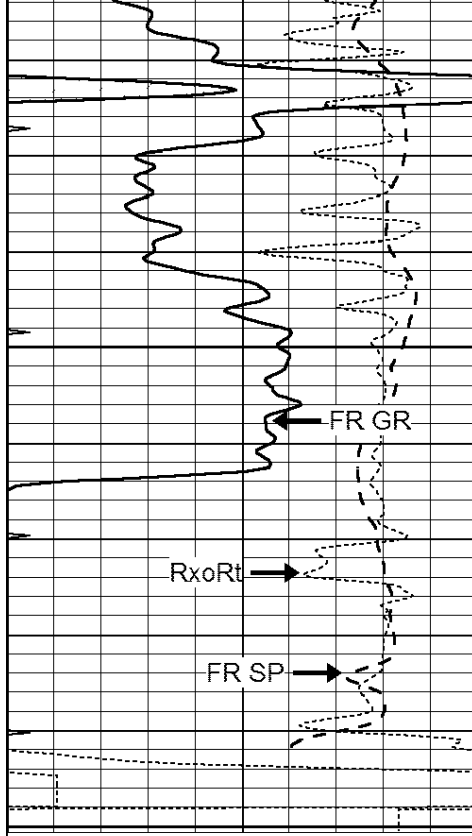
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3800

3850

3900



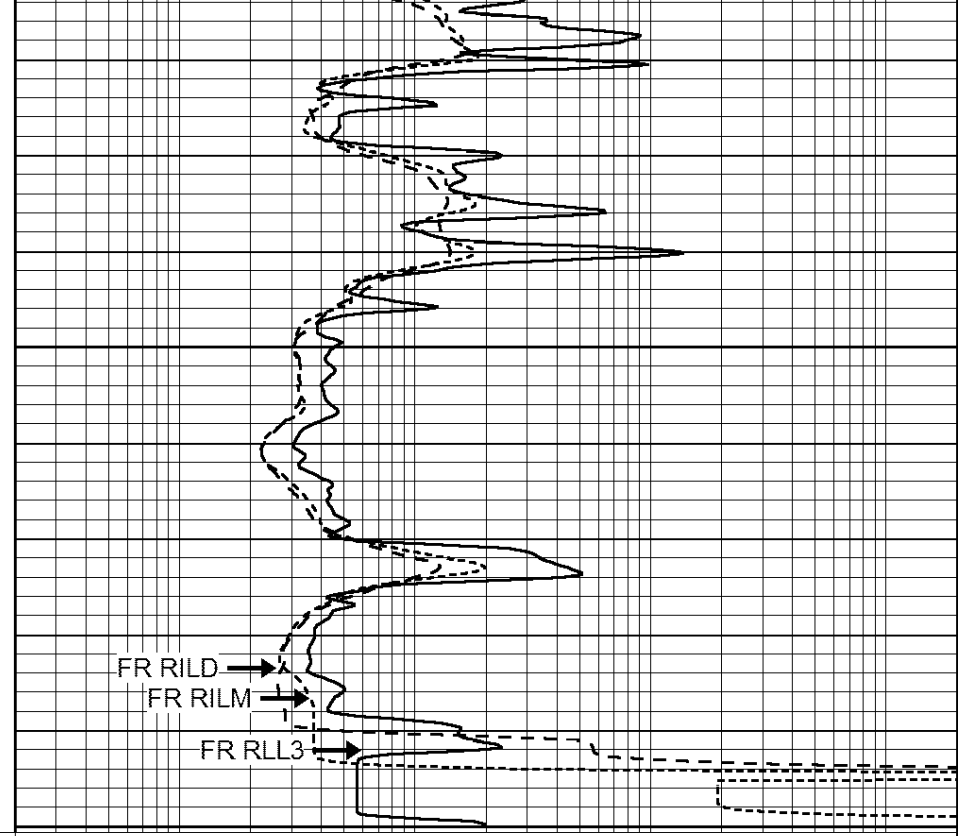


3950

LTD 3994

4000

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



FR RILD

FR RILM

FR RLL3

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

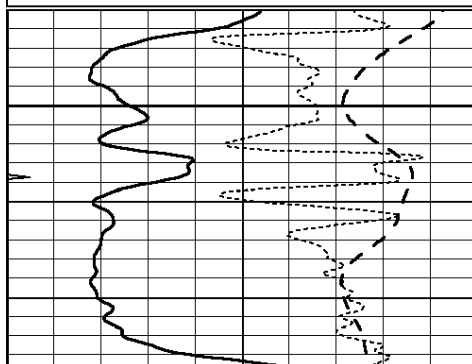


REPEAT SECTION

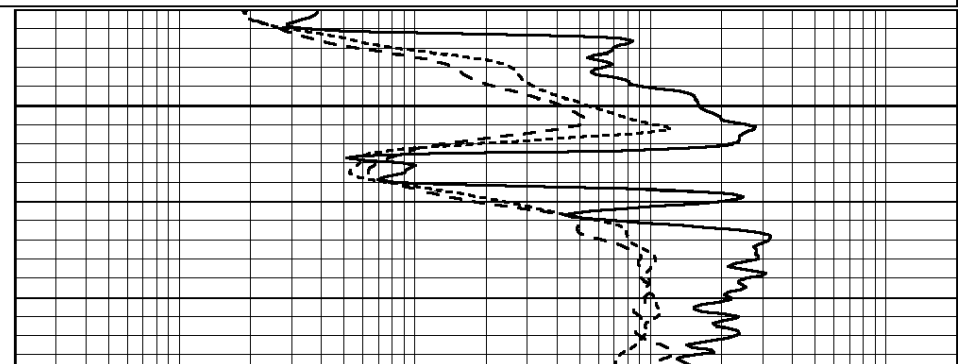
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 Charted by: Depth in Feet scaled 1:240

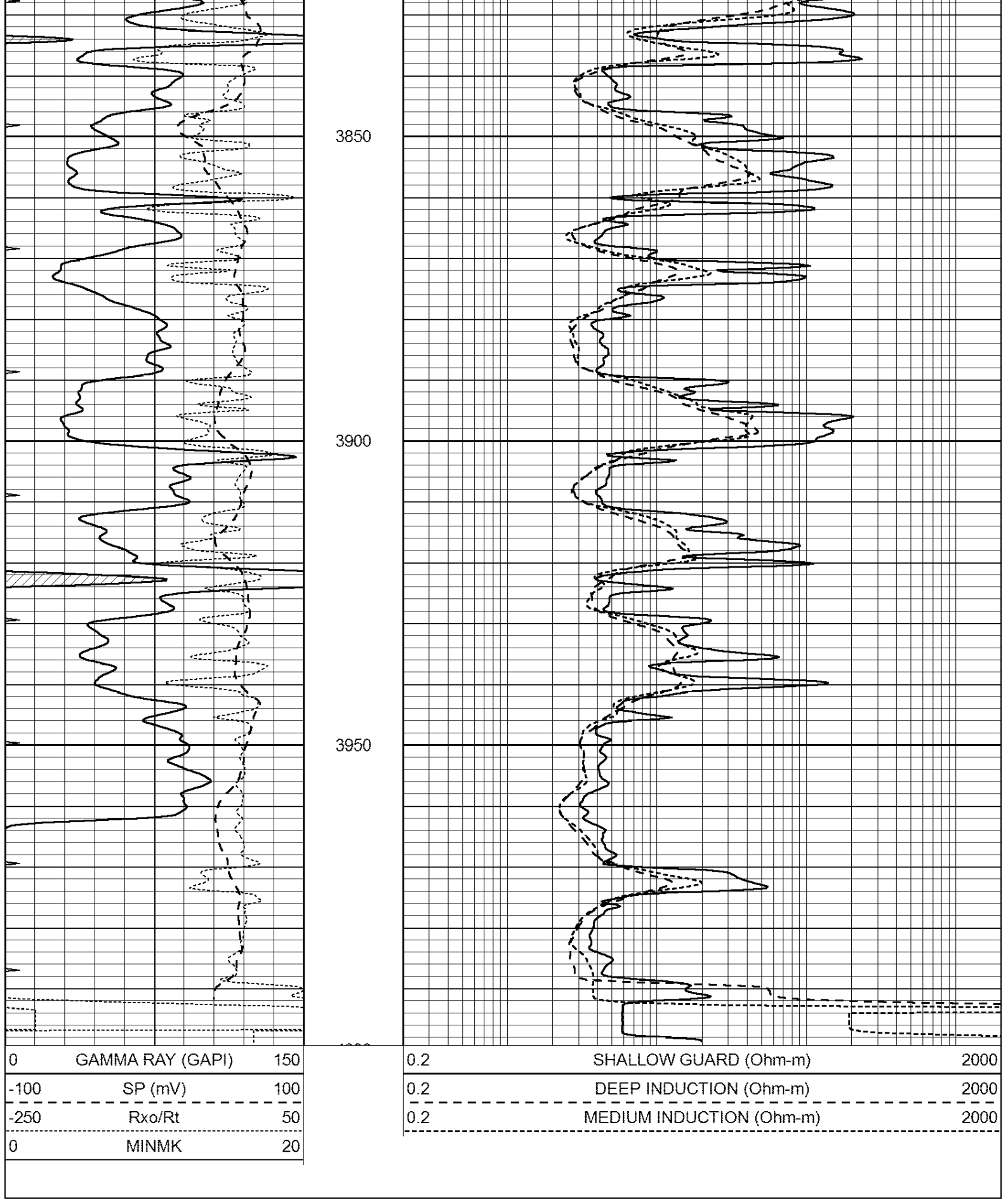
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| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

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



3800





Calibration Report

Database File: 23895ddn.db
 Dataset Pathname: pass2.1
 Dataset Creation: Sun Feb 16 22:20:35 2014 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

| Readings | | | References | | | | Results | |
|-----------|-------|-------|------------|-------|---------|--------|---------|---------|
| Loop: | 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: | GEAR3-GEARHART |
| Source / Verifier: | 143 / 143 |
| Master Calibration Performed: | Fri Jan 04 15:48:16 2013 |
| Before Survey Verification Performed: | |
| After Survey Verification Performed: | |

Master Calibration

| | Density | | Far Detector | Near Detector | |
|---------------------|---------|------|-----------------------------|---------------|-----|
| Magnesium | 1.710 | g/cc | 935.36 | 501.55 | cps |
| Aluminum | 2.580 | g/cc | 209.32 | 357.01 | cps |
| Spine Angle = 77.21 | | | Density/Spine Ratio = 0.567 | | |
| | Size | | Reading | | |
| Small Ring | 8.00 | in | 4.29 | V | |
| Large Ring | 14.00 | in | 6.24 | V | |

Before Survey Verification

| Target | Measured |
|--------|----------|
| g/cc | g/cc |
| a/cc | a/cc |

