

DUAL  
INDUCTION  
LOG

Company DEUTSCH OIL COMPANY  
Well ZINK #2-4  
Field BAUMAN  
County PRATT State KANSAS

Location: API # : 15-151-22454-0000

3630' FSL & 2310' FEL

SEC 4 TWP 26S RGE 11W

Permanent Datum GROUND LEVEL Elevation 1841  
Log Measured From KELLY BUSHING 7' A.G.L  
Drilling Measured From KELLY BUSHING

Other Services  
CDL/CNL  
MEL

Elevation  
K.B. 1848  
D.F. 1846  
G.L. 1841

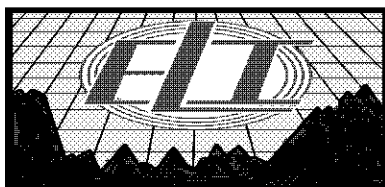
|                              |                   |                    |  |
|------------------------------|-------------------|--------------------|--|
| Date                         | 12/12/16          |                    |  |
| Run Number                   | ONE               |                    |  |
| Depth Driller                | 4150              |                    |  |
| Depth Logger                 | 4154              |                    |  |
| Bottom Logged Interval       | 4152              |                    |  |
| Top Log Interval             | 00                |                    |  |
| Casing Driller               | 8 5/8" @ 294'     |                    |  |
| Casing Logger                | 290               |                    |  |
| Bit Size                     | 7 7/8             |                    |  |
| Type Fluid in Hole           | CHEMICAL MUD      | CHLORIDES 5500 PPM |  |
| Density / Viscosity          | 9.0/46            |                    |  |
| pH / Fluid Loss              | 10.0/9.0          |                    |  |
| Source of Sample             | FLOWLINE          |                    |  |
| Rm @ Meas. Temp              | .65 @ 74F         |                    |  |
| Rmf @ Meas. Temp             | .48 @ 74F         |                    |  |
| Rmc @ Meas. Temp             | .78 @ 74F         |                    |  |
| Source of Rmf / Rmc          | MEASUREMENT       |                    |  |
| Rm @ BHT                     | .41 @ 117F        |                    |  |
| Time Circulation Stopped     | 2 HOURS           |                    |  |
| Time Logger on Bottom        | 2.15 P.M.         |                    |  |
| Maximum Recorded Temperature | 117F              |                    |  |
| Equipment Number             | 3802              |                    |  |
| Location                     | HAYS, KANSAS      |                    |  |
| Recorded By                  | JASON CAPPELLUCCI |                    |  |
| Witnessed By                 | AARON YOUNG       |                    |  |

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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 SERVICES, HAYS, KS. ( 785 ) 628-6395  
DIRECTIONS  
TURON, KS. - 4 WEST ON 110 RD. - 1/2 NORTH - WEST INTO



MAIN SECTION

Database File 1109ddn8.db  
Dataset Pathname pass4.2  
Presentation Format \_dil2  
Dataset Creation Mon Dec 12 15:51:29 2016  
Charted by Depth in Feet scaled 1:600

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

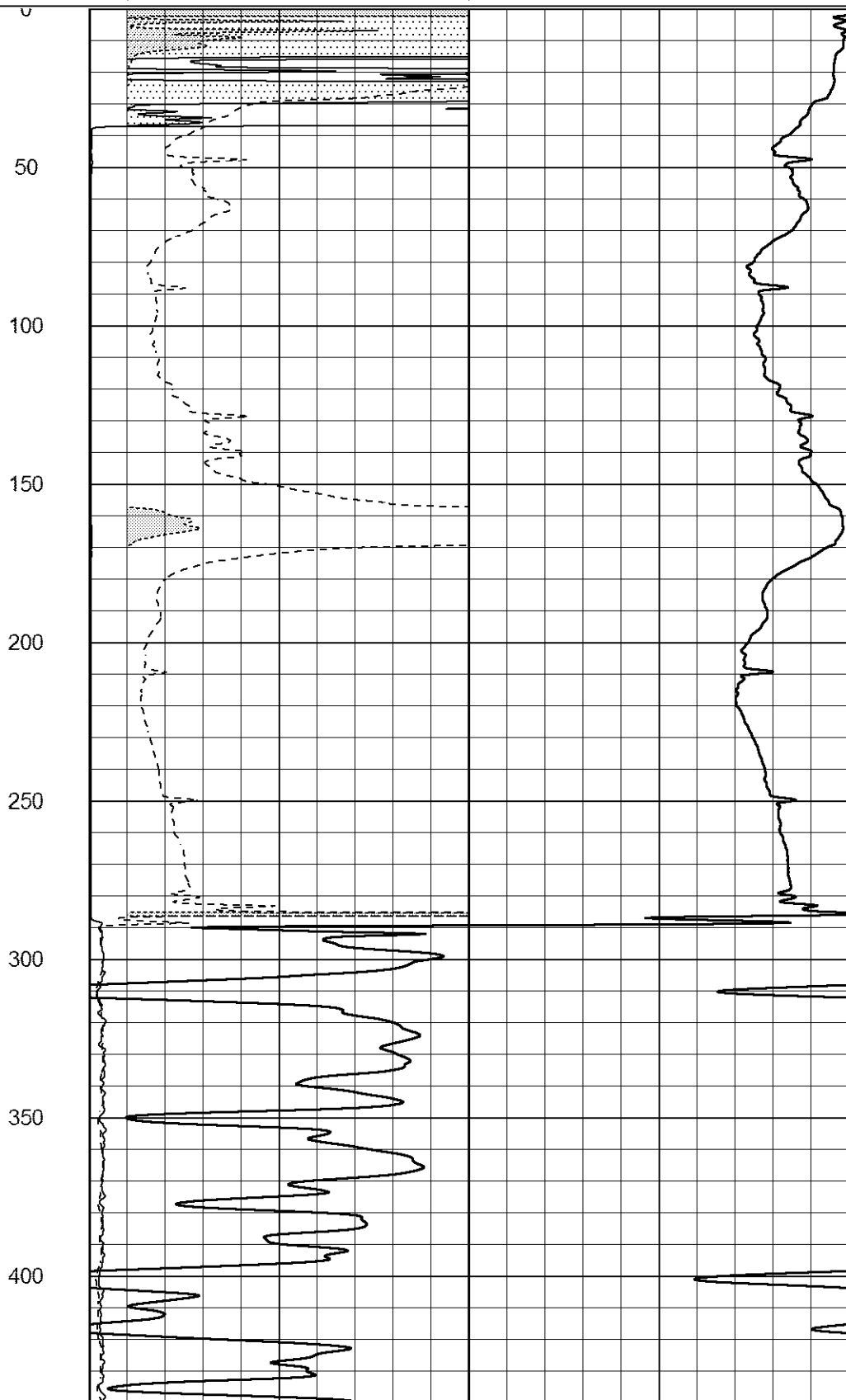
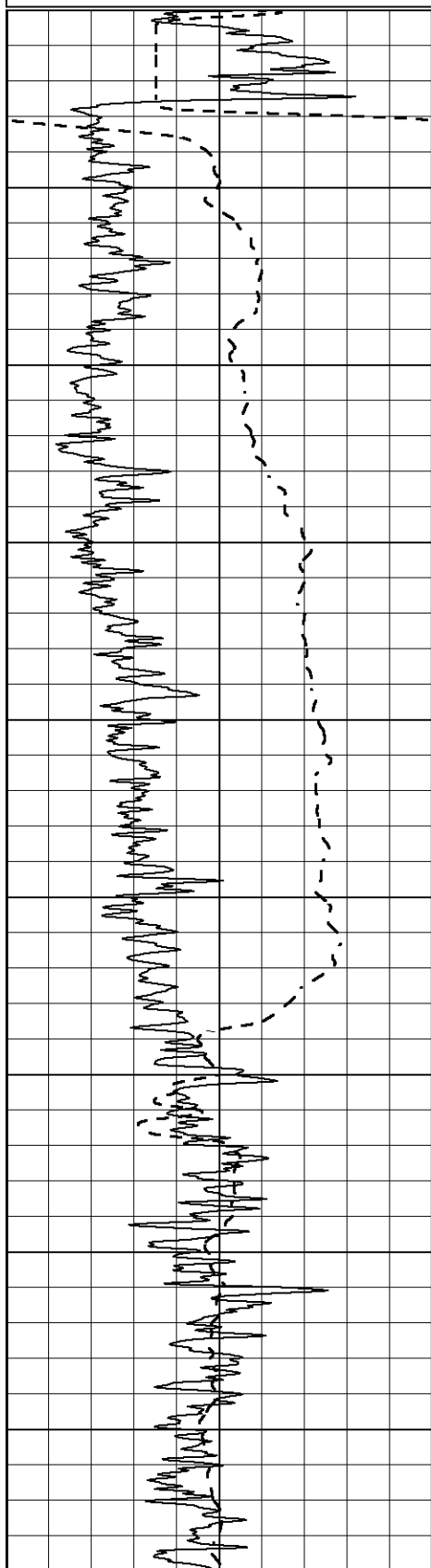
1000 CILD (mmho/m) 0

0 RLL3 (Ohm-m) 50

0 Deep Induction (Ohm-m) 50

50 RILD X10 (Ohm-m) 500

50 RLL3 X10 (Ohm-m) 500



450

500

550

600

650

700

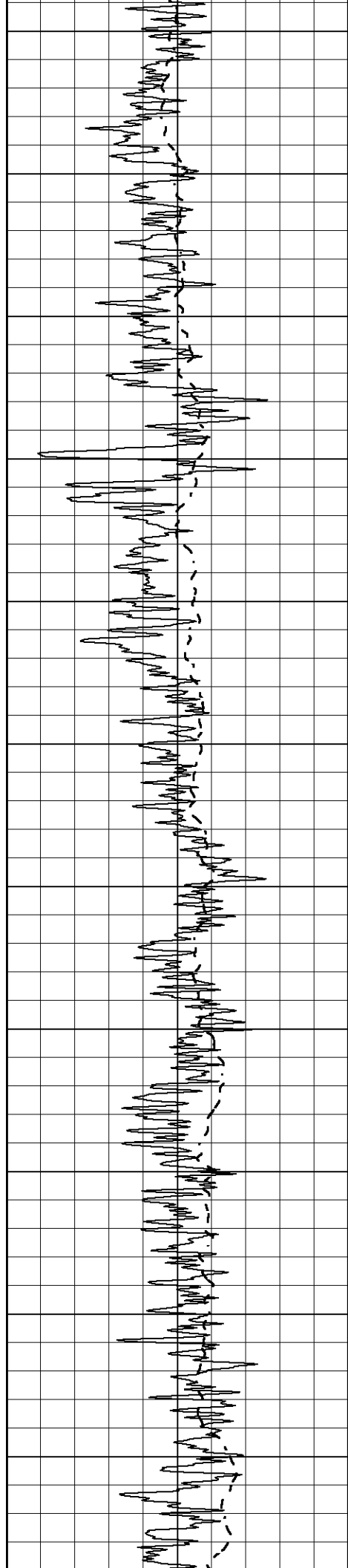
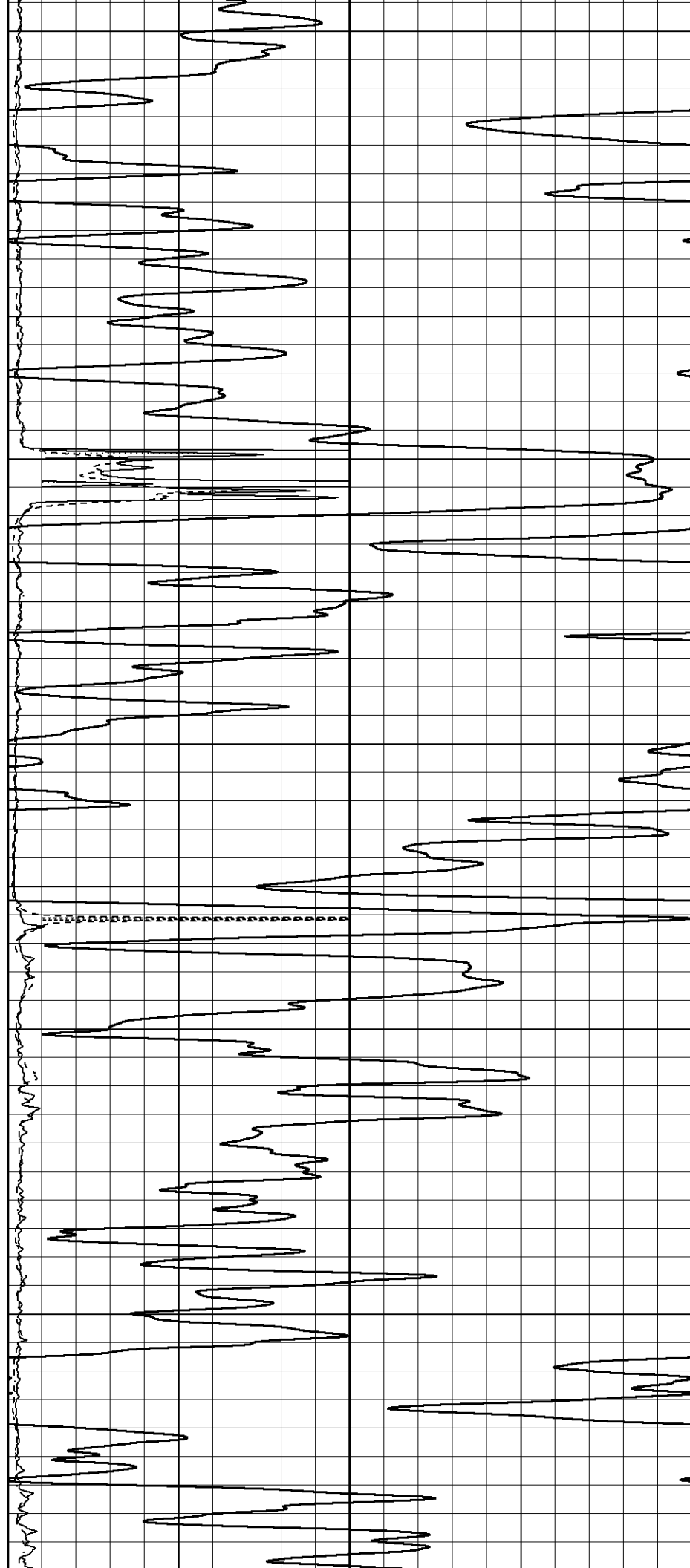
750

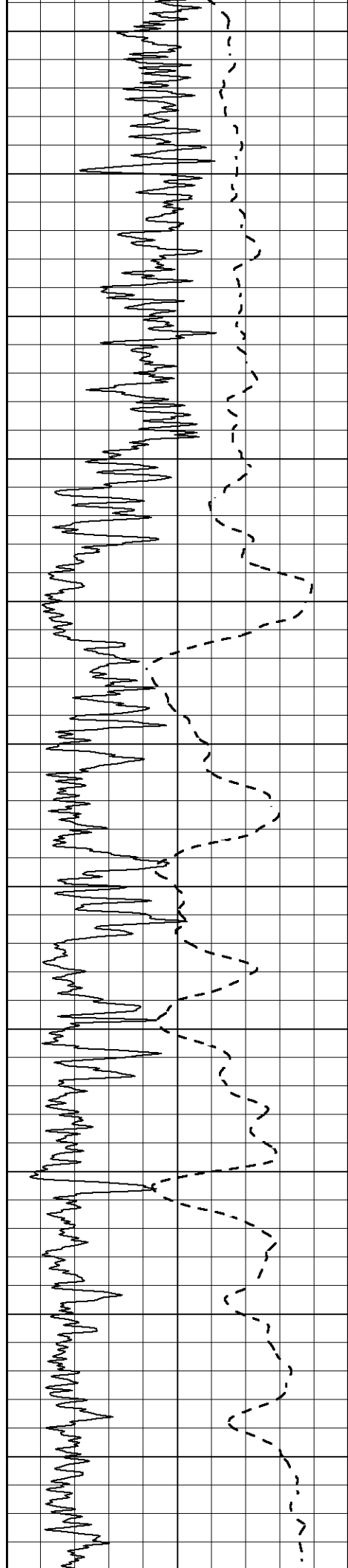
800

850

900

950





1000

1050

1100

1150

1200

1250

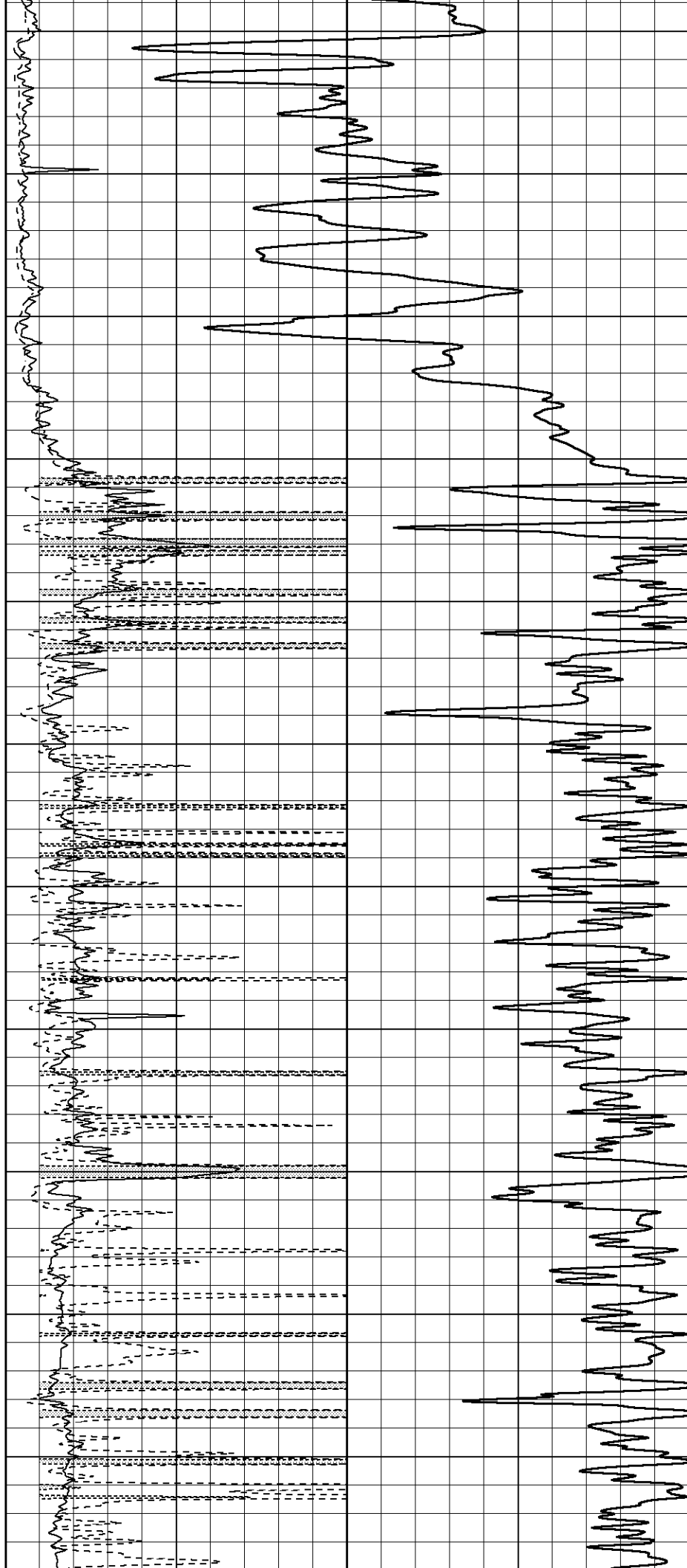
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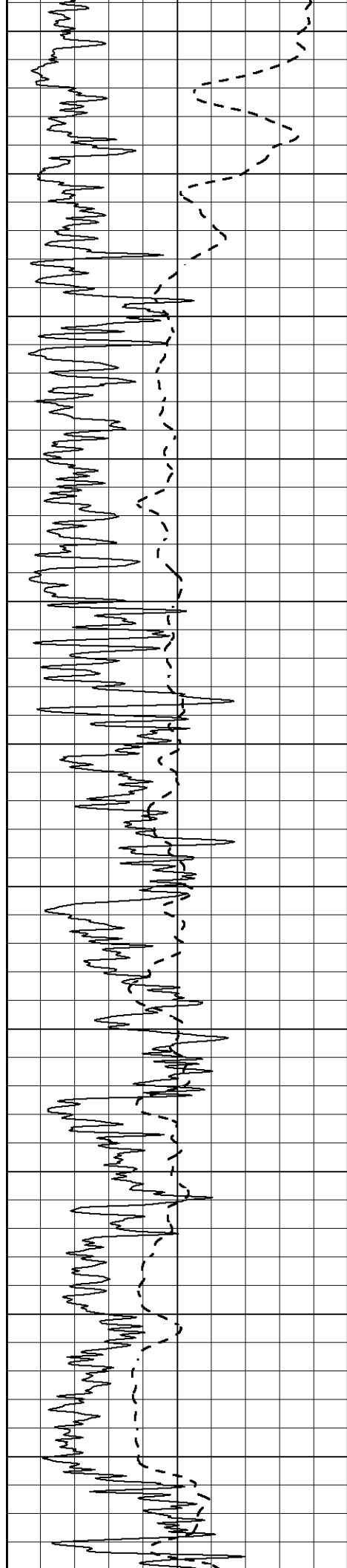
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1400

1450

1500





1550

1600

1650

1700

1750

1800

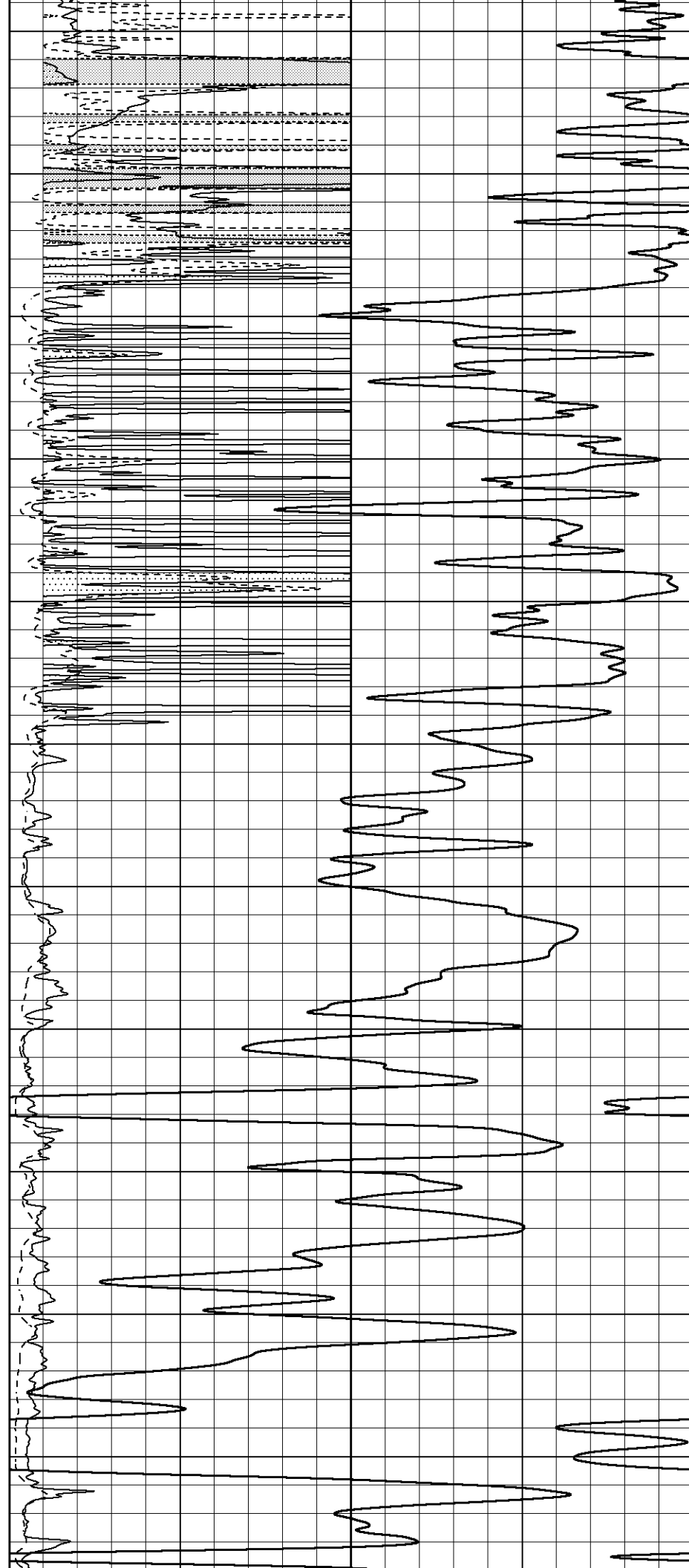
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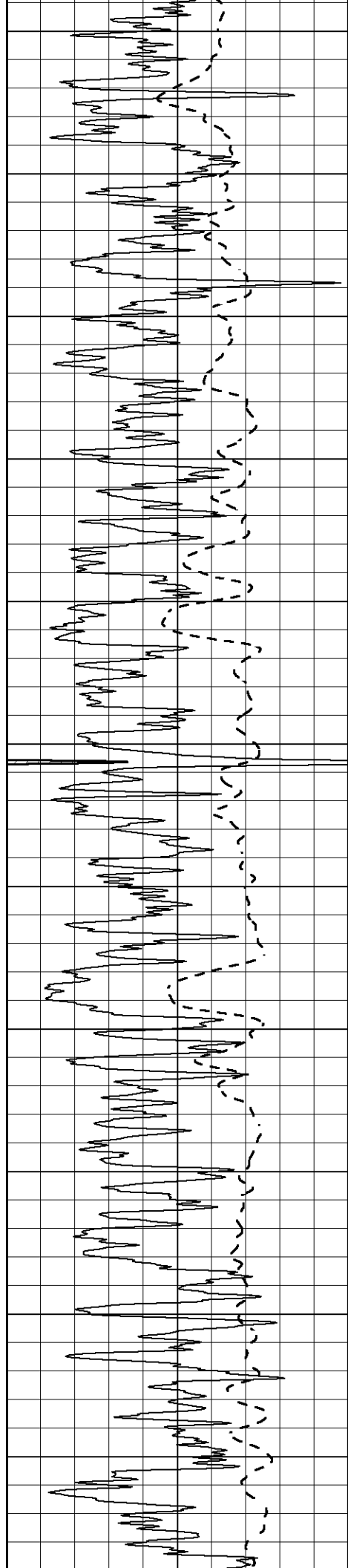
1900

1950

2000

2050





2100

2150

2200

2250

2300

2350

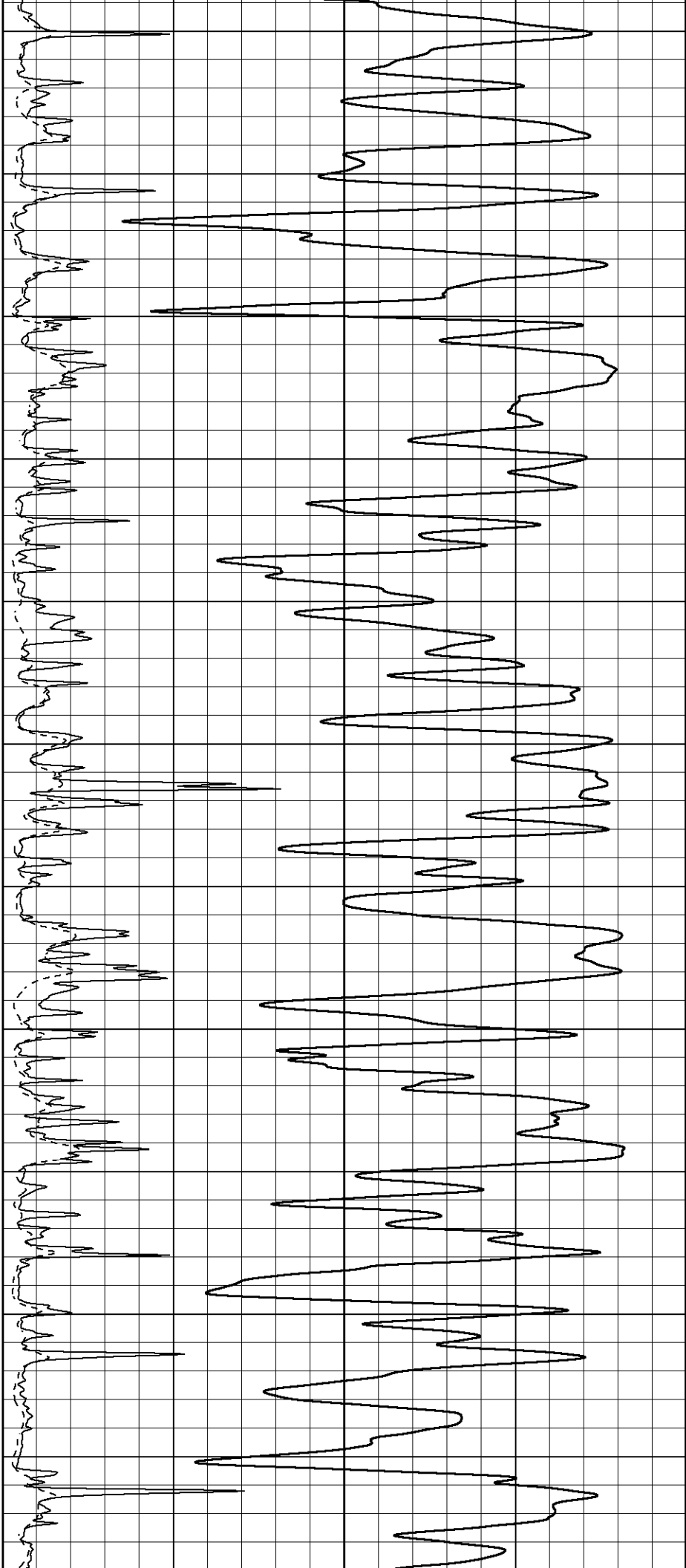
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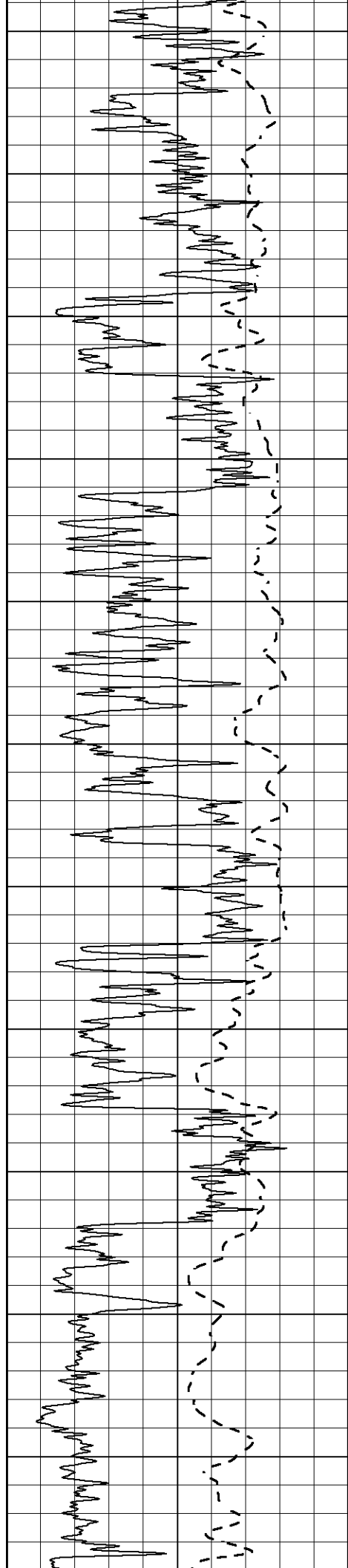
2450

2500

2550

2600





2650

2700

2750

2800

2850

2900

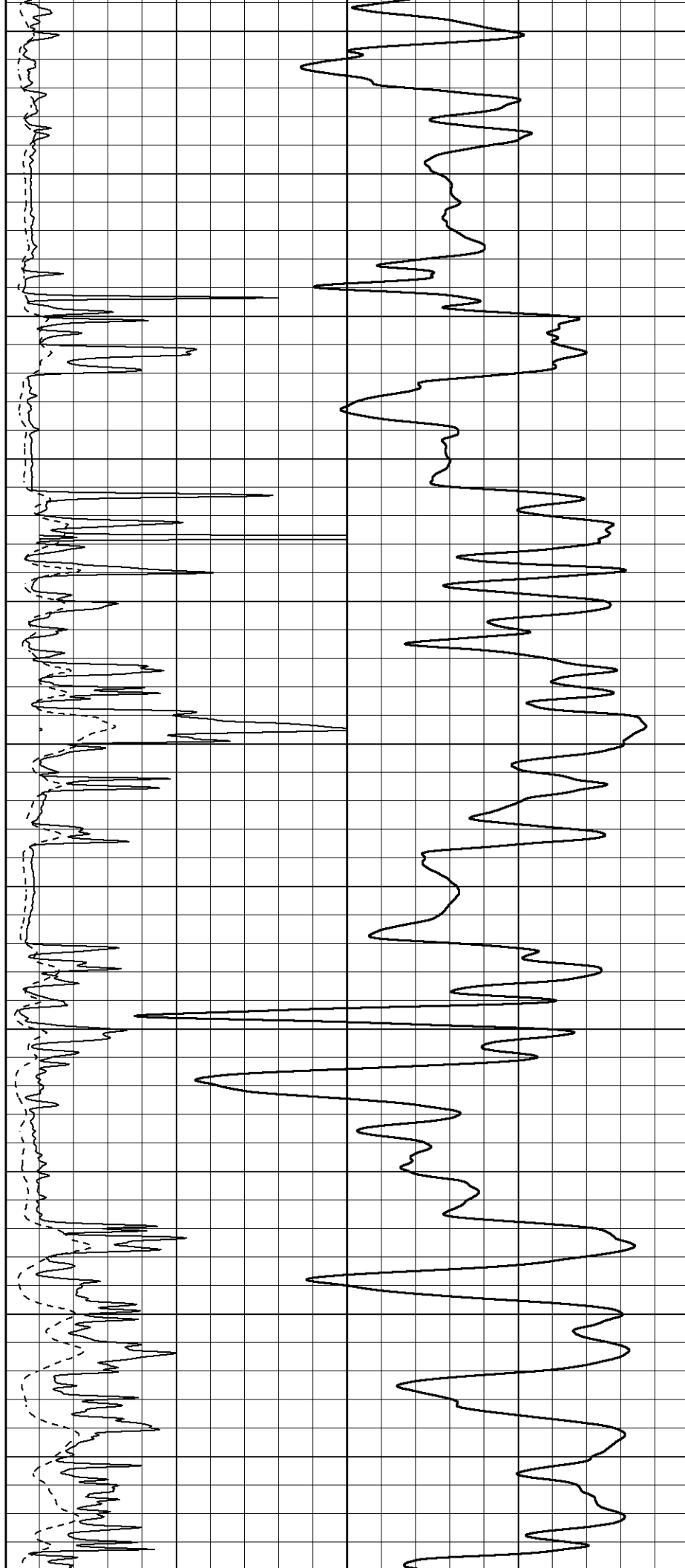
2950

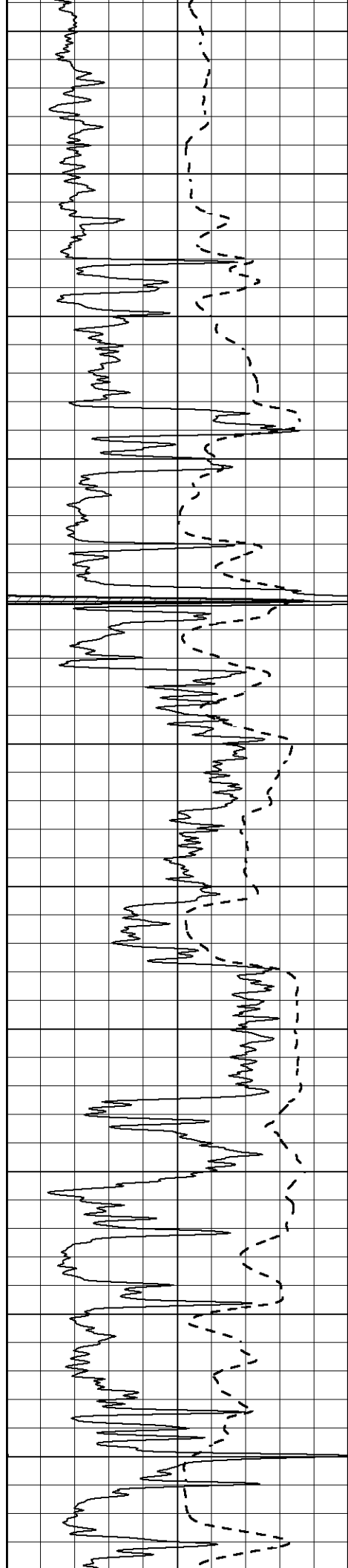
3000

3050

3100

3150





3200

3250

3300

3350

3400

3450

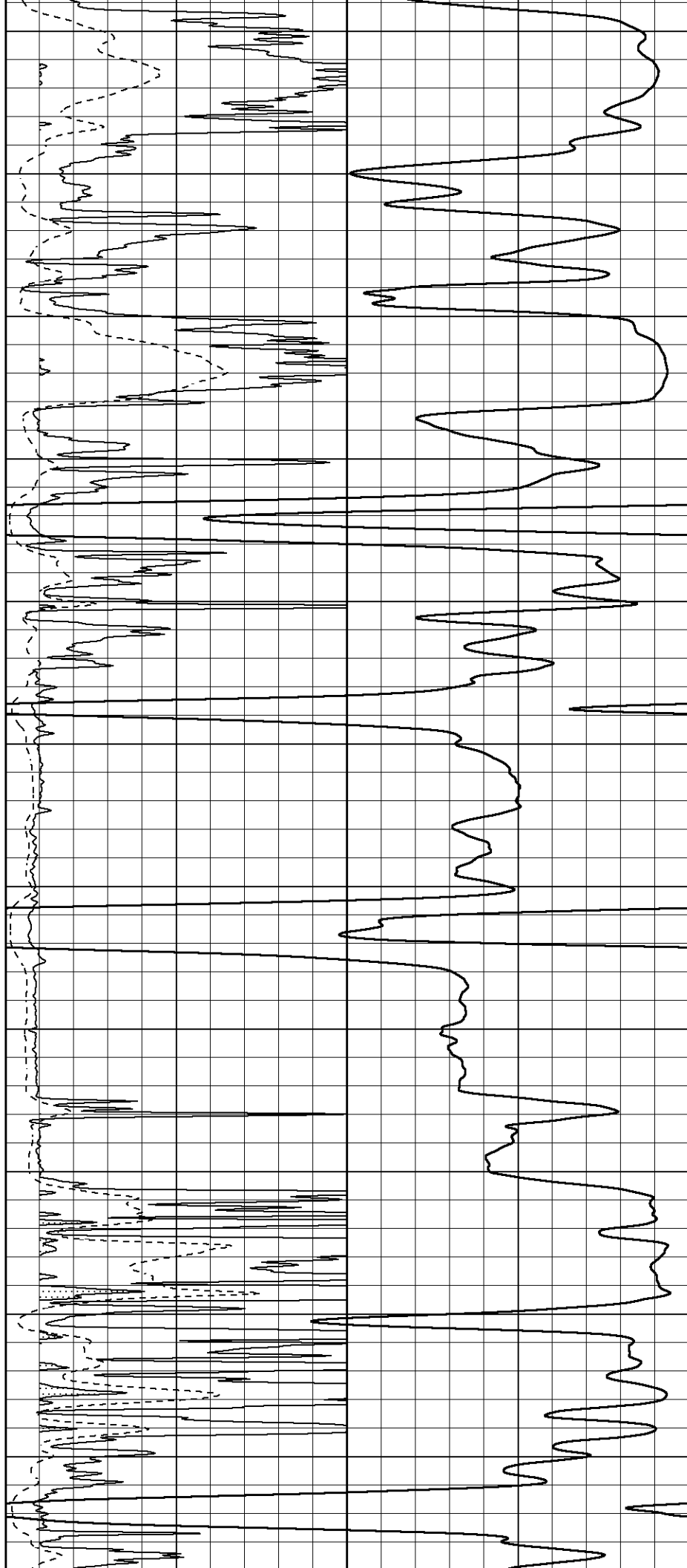
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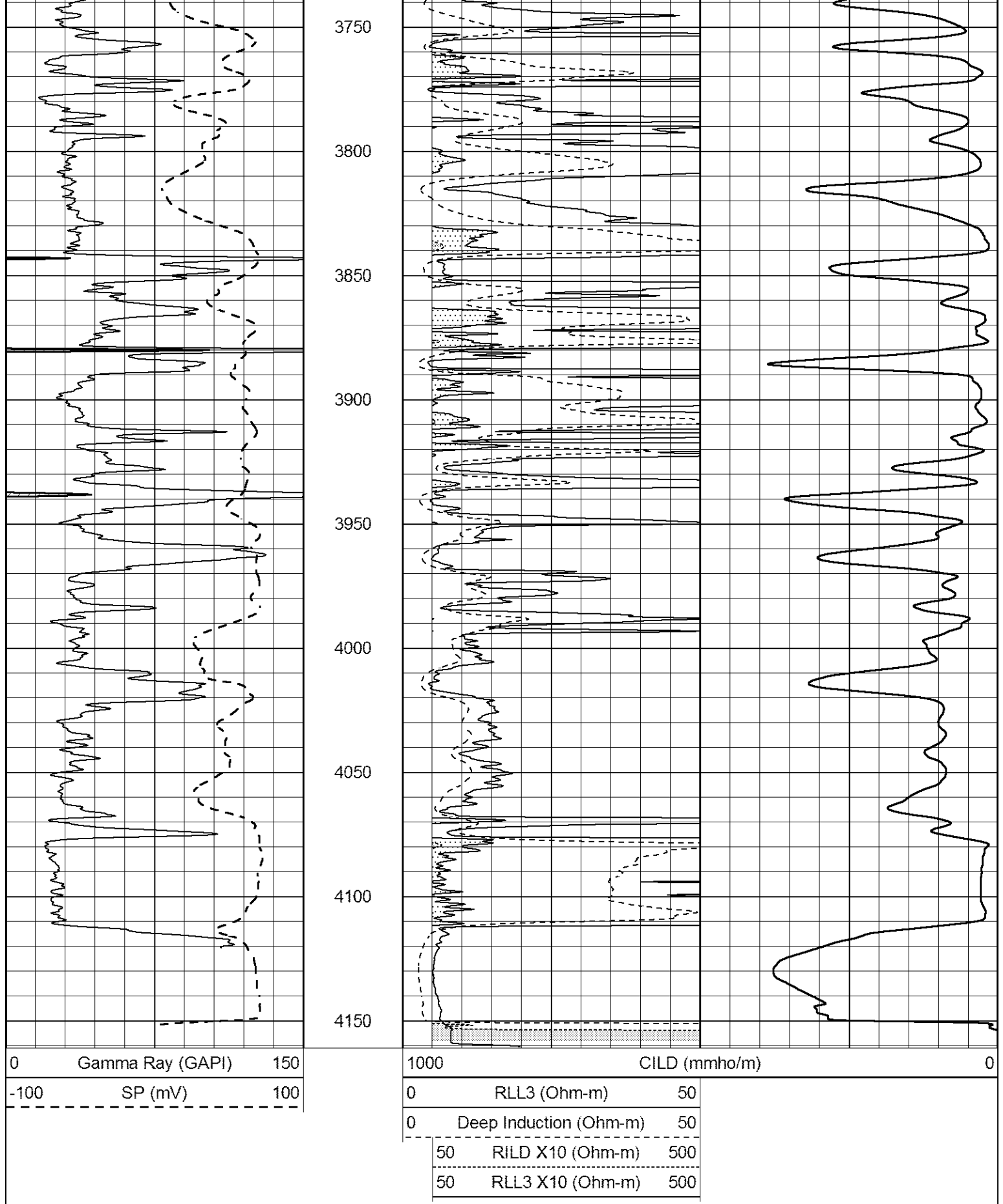
3550

3600

3650

3700



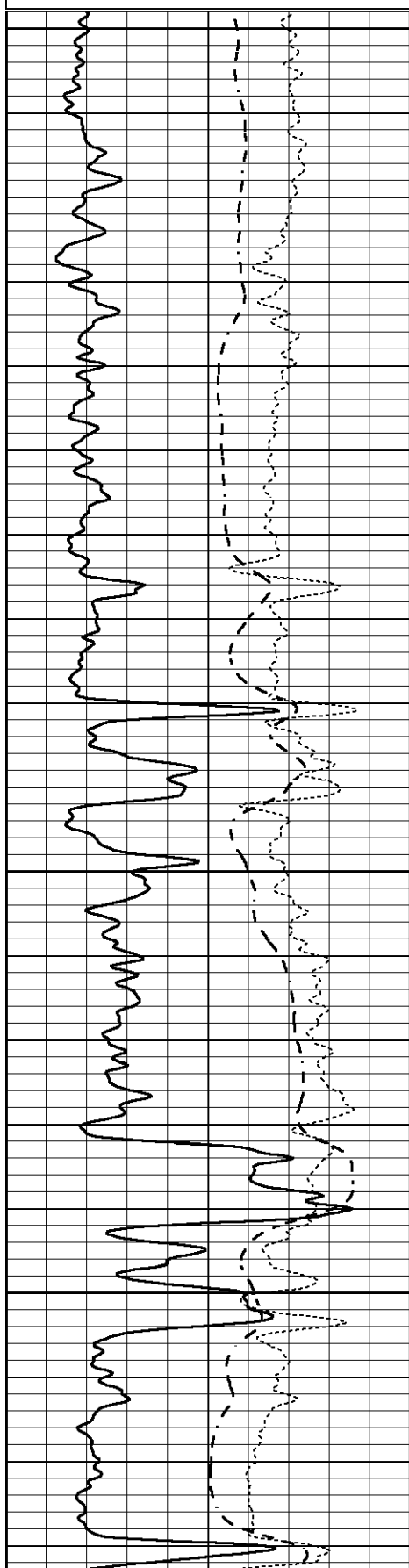


# MAIN SECTION

Database File 1109ddn8.db  
Dataset Pathname pass4.1  
Presentation Format \_dil  
Dataset Creation Mon Dec 12 14:56:49 2016  
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 |

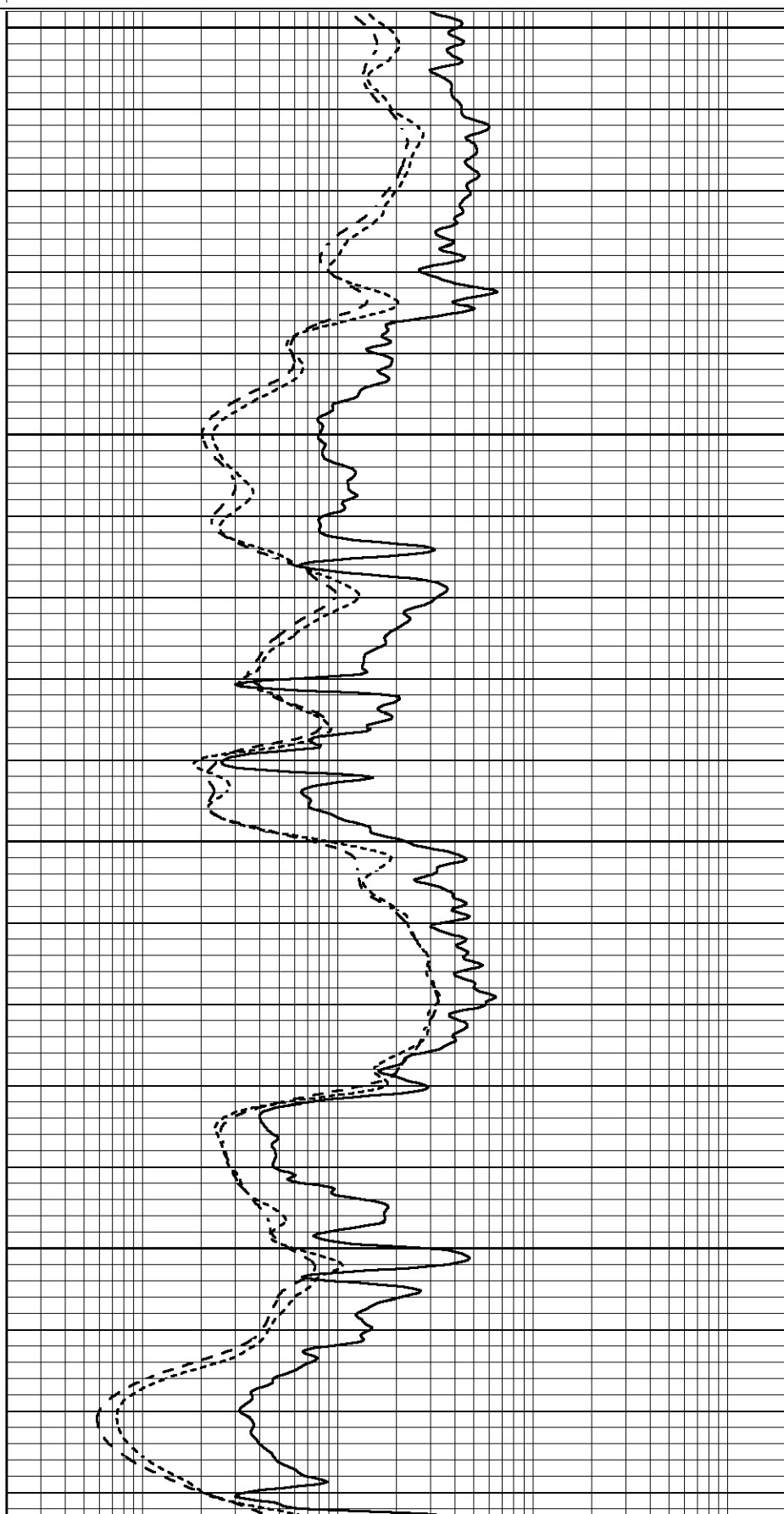


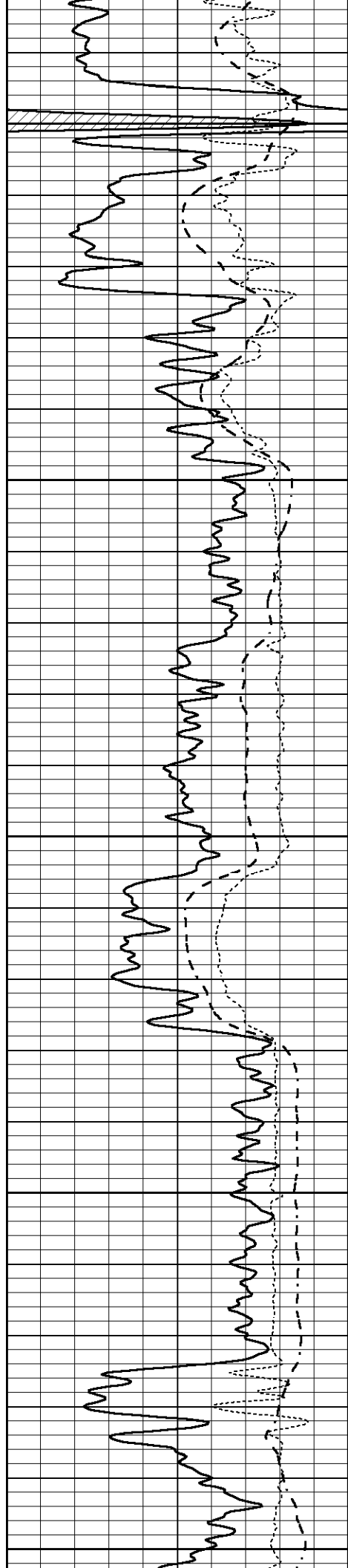
3200

3250

3300

3350





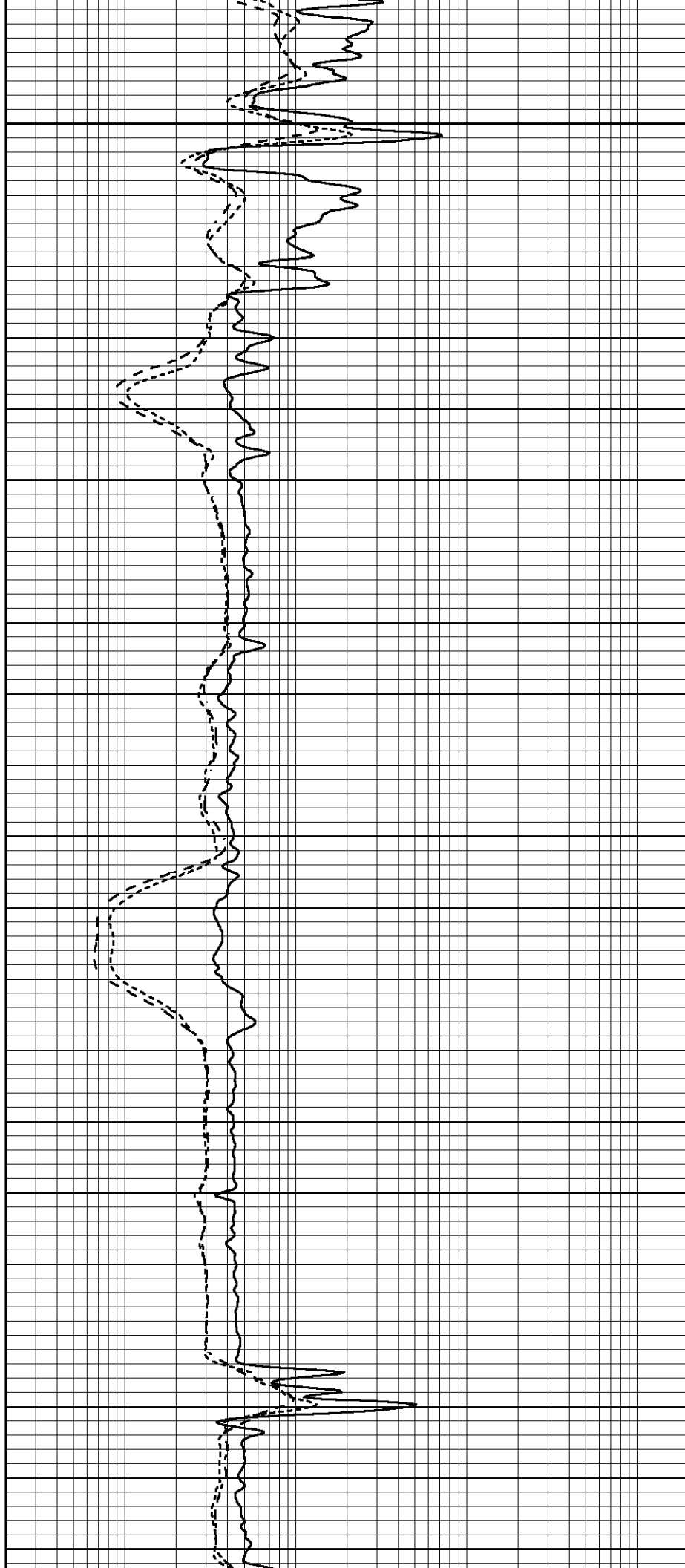
3400

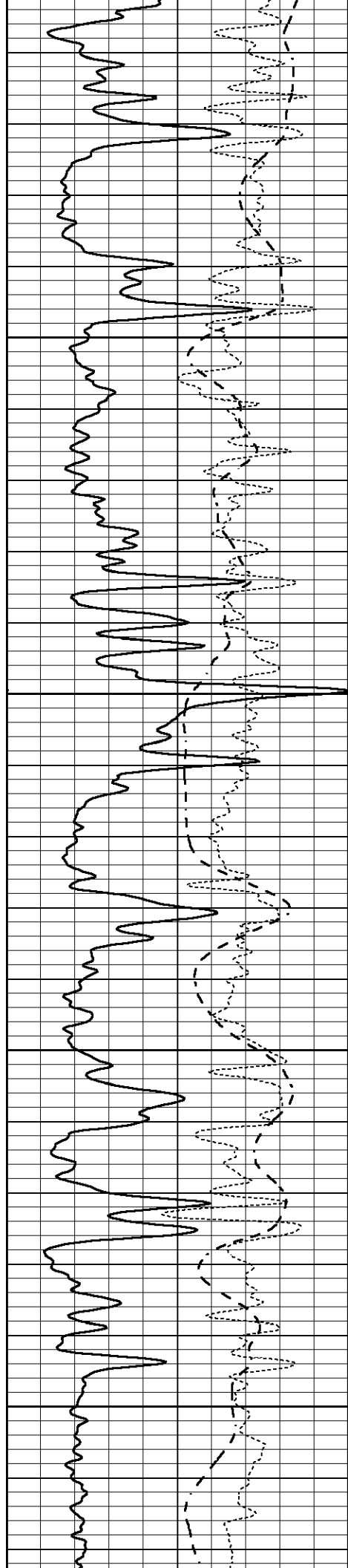
3450

3500

3550

3600



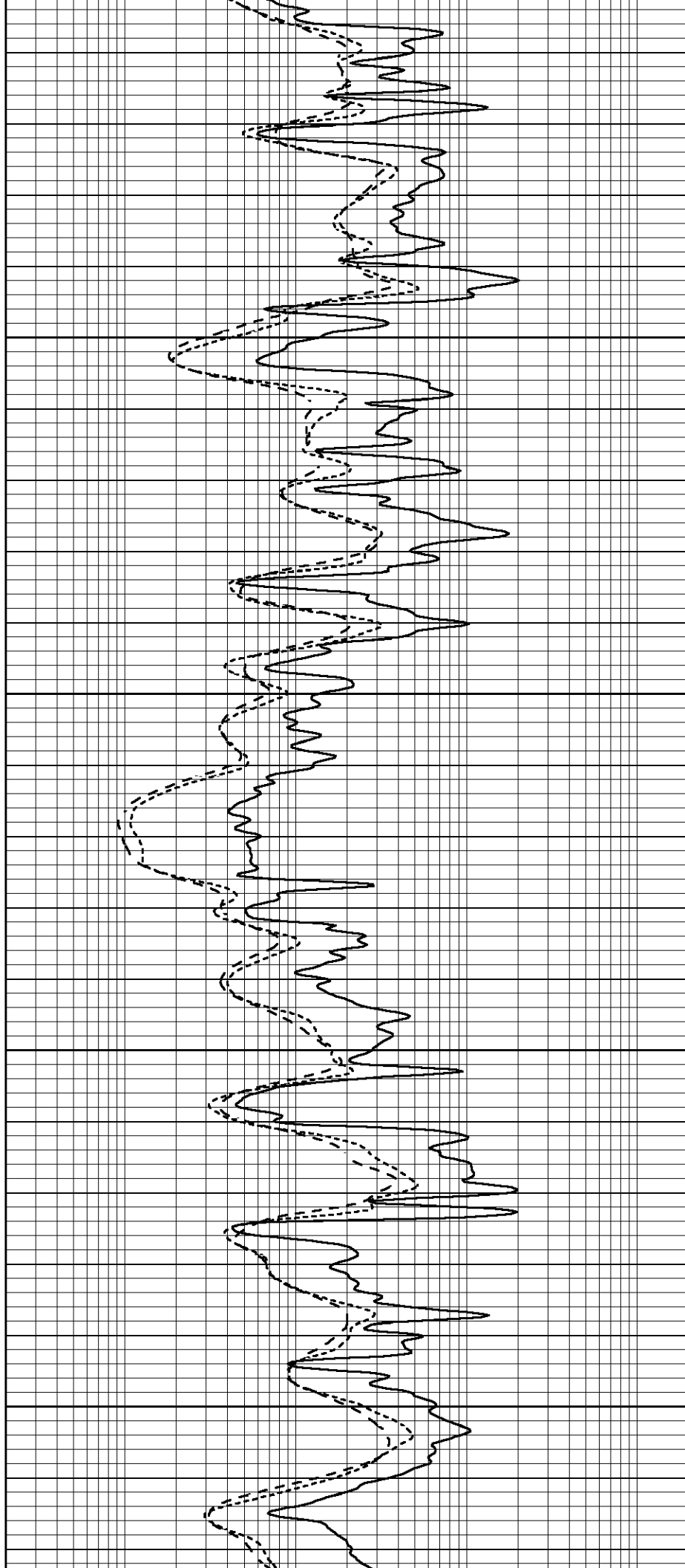


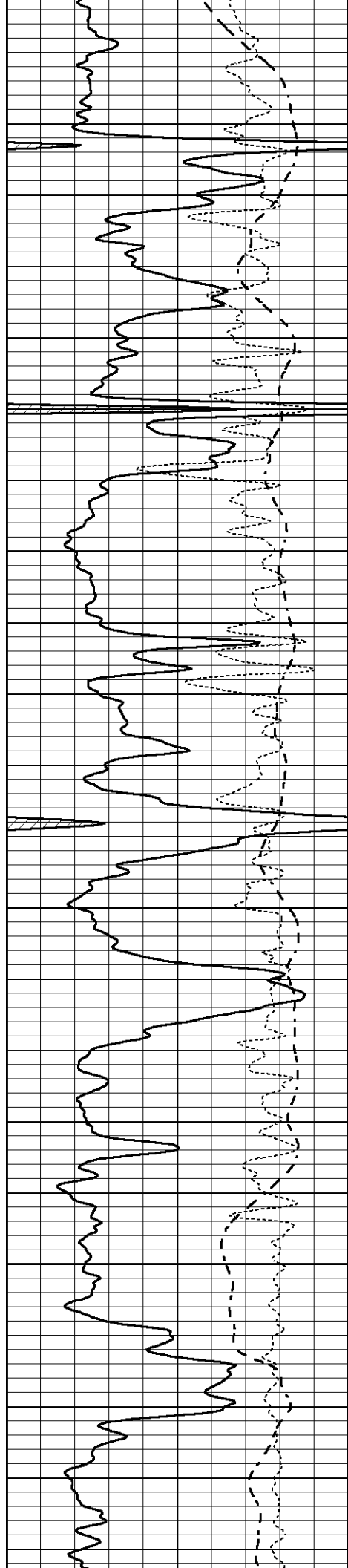
3650

3700

3750

3800



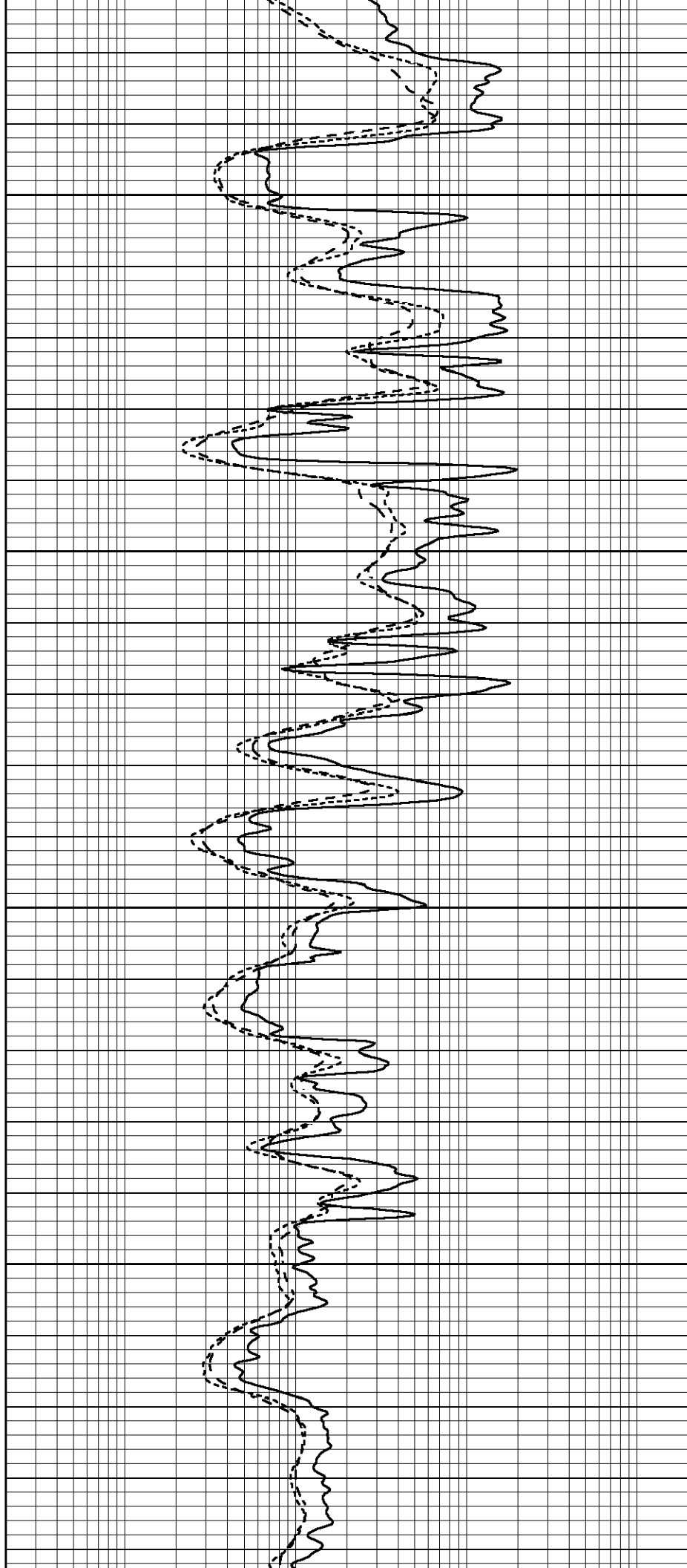


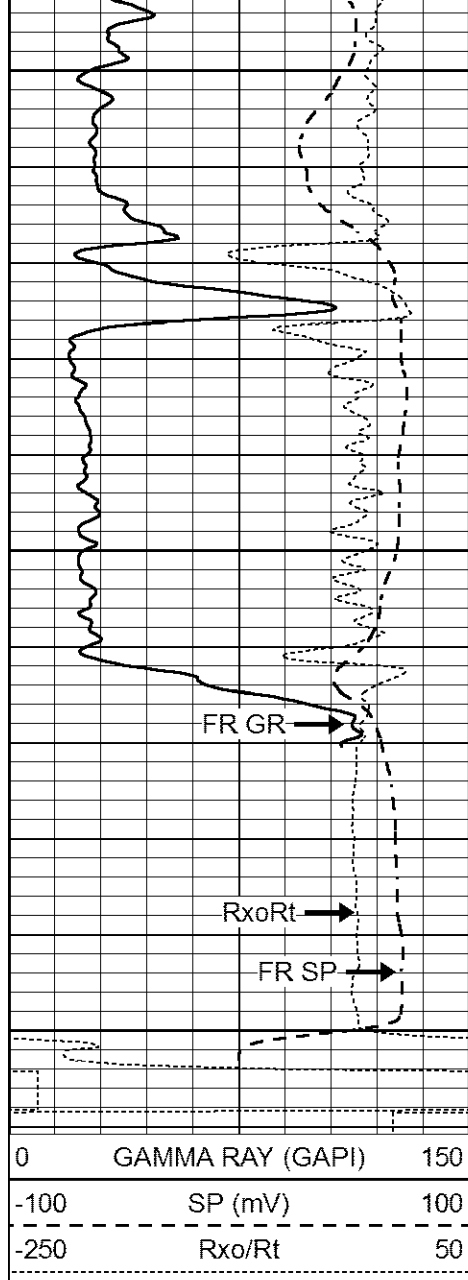
3850

3900

3950

4000

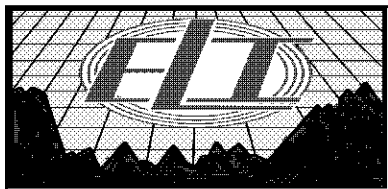
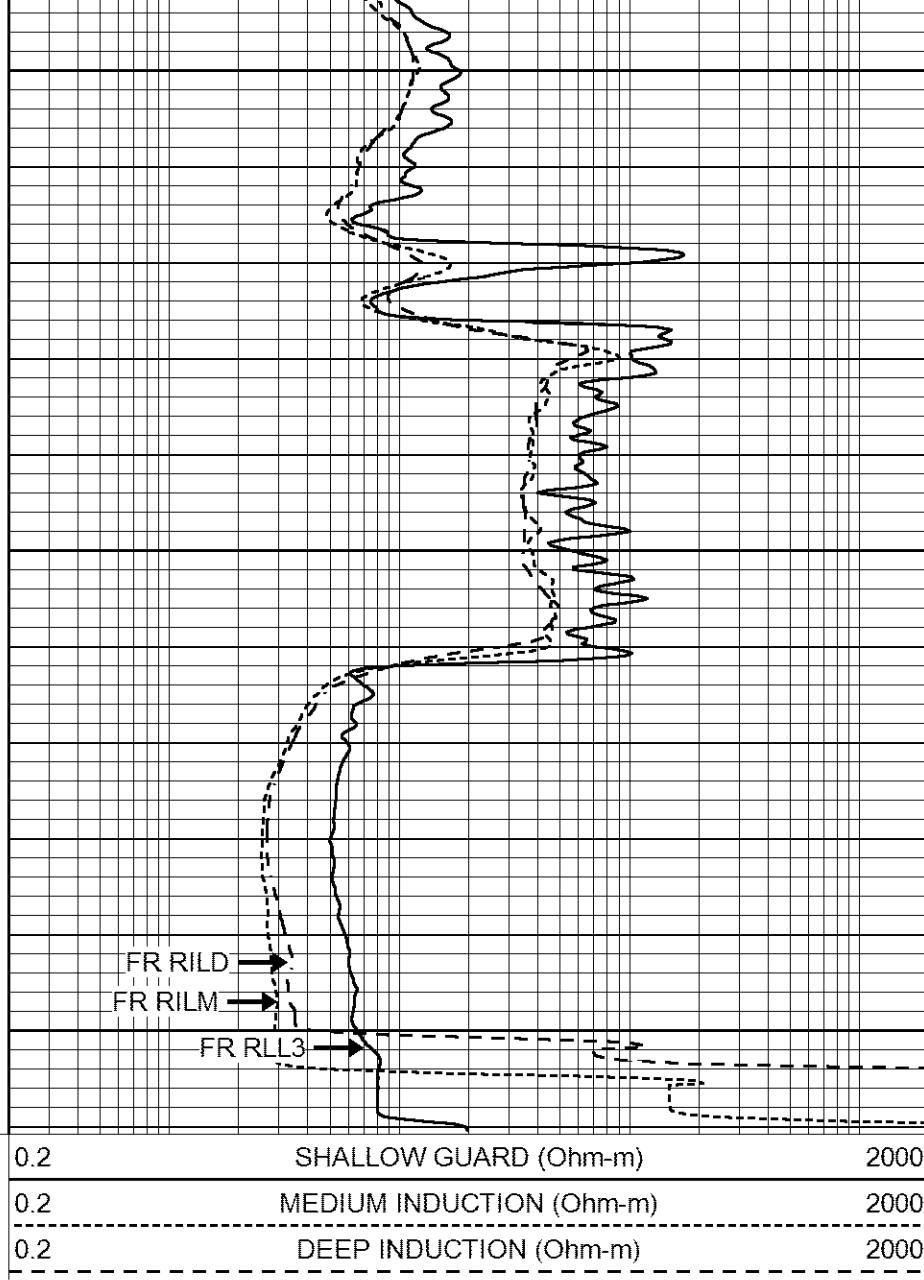




4050

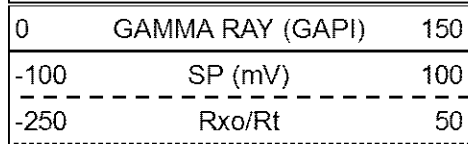
4100

4150  
LTD 4154

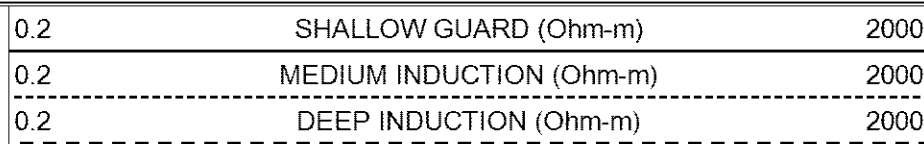


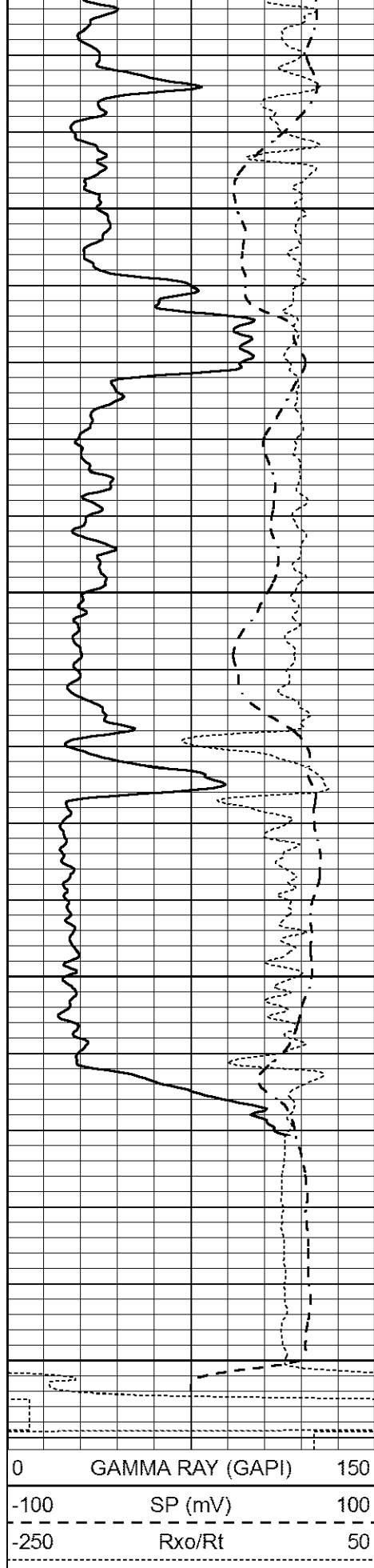
# REPEAT SECTION

Database File 1109ddn8.db  
 Dataset Pathname pass3.1  
 Presentation Format \_dil  
 Dataset Creation Mon Dec 12 14:43:30 2016  
 Charted by Depth in Feet scaled 1:240



3950



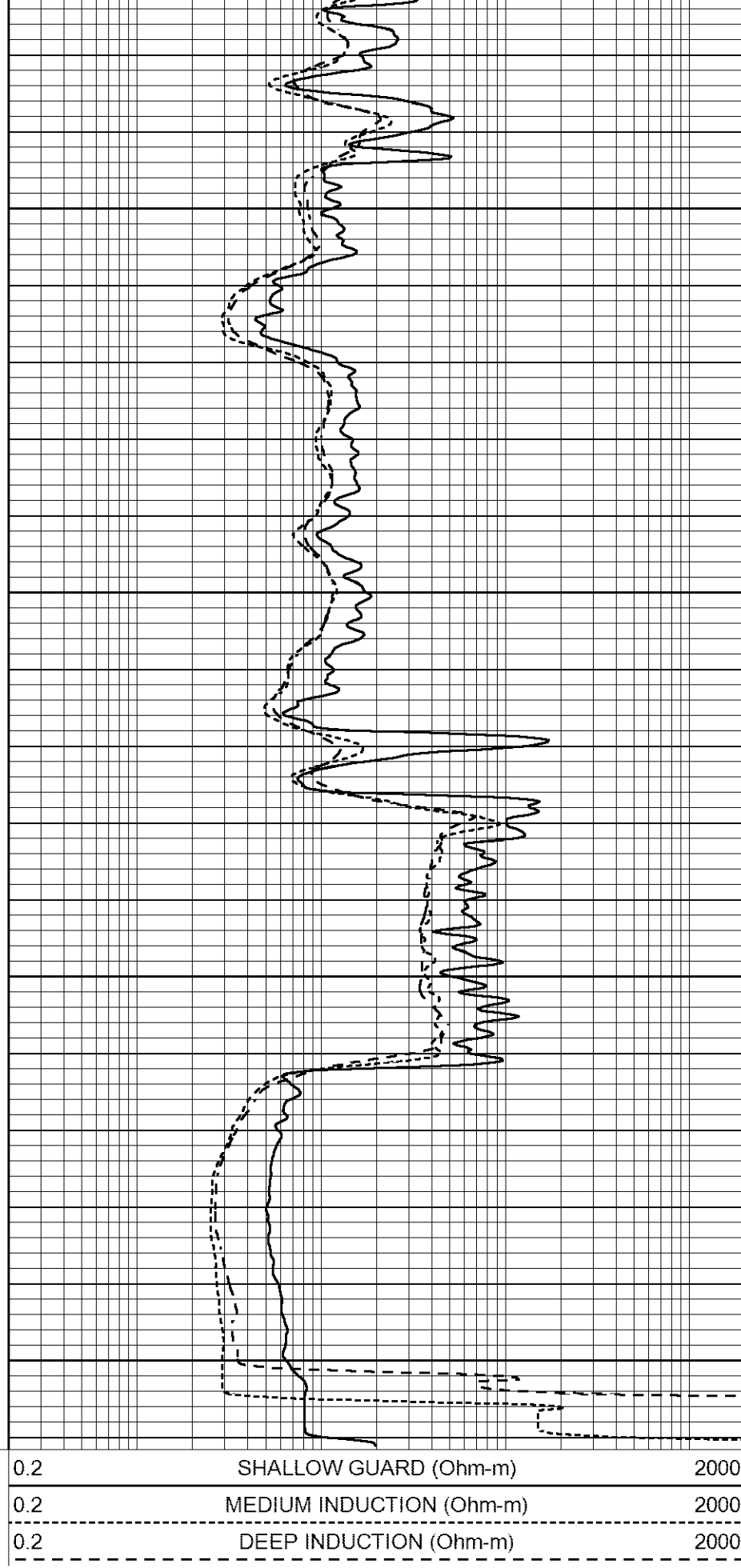


4000

4050

4100

4150



### Calibration Report

Database File 1109ddn8.db  
Dataset Pathname pass3.1

| Dual Induction Calibration Report    |               |           |              |                          |                                     |          |         |        |  |
|--------------------------------------|---------------|-----------|--------------|--------------------------|-------------------------------------|----------|---------|--------|--|
| Serial-Model:                        |               |           |              | FW1410-55-Probe          |                                     |          |         |        |  |
| Surface Cal Performed:               |               |           |              | Thu Mar 12 09:27:11 2015 |                                     |          |         |        |  |
| Downhole Cal Performed:              |               |           |              | Thu Mar 12 09:29:20 2015 |                                     |          |         |        |  |
| After Survey Verification Performed: |               |           |              | Thu Mar 12 09:29:20 2015 |                                     |          |         |        |  |
| Surface Calibration                  |               |           |              |                          |                                     |          |         |        |  |
| Readings                             |               |           | References   |                          |                                     |          | Results |        |  |
| Loop:                                | Air           | Loop      |              | Air                      | Loop                                |          | m       | b      |  |
| Deep                                 | 0.011         | 0.656     | V            | 1.000                    | 400.000                             | mmho/m   | 618.595 | -5.524 |  |
| Medium                               | -0.000        | 0.731     | V            | 1.000                    | 464.000                             | mmho/m   | 632.856 | 1.197  |  |
| Internal:                            | Zero          | Cal       |              | Zero                     | Cal                                 |          | m       | b      |  |
| Deep                                 | 0.007         | 0.649     | V            | 0.000                    | 400.000                             | mmho/m   | 623.784 | -4.595 |  |
| Medium                               | 0.004         | 0.743     | V            | 0.000                    | 464.000                             | mmho/m   | 627.284 | -2.251 |  |
| Downhole Calibration                 |               |           |              |                          |                                     |          |         |        |  |
| Readings                             |               |           | References   |                          |                                     |          | Results |        |  |
|                                      | Zero          | Cal       |              | Zero                     | Cal                                 |          | m'      | b'     |  |
| Deep                                 | -0.824        | 395.917   | mmho/m       | -0.976                   | 397.550                             | mmho/m   | 1.004   | -0.149 |  |
| Medium                               | 3.565         | 471.327   | mmho/m       | 3.468                    | 471.590                             | mmho/m   | 1.001   | -0.099 |  |
| LL3                                  |               | 7.503     | V            |                          | 1500.000                            | Ohm-m    |         |        |  |
|                                      |               | 0.001     | V            |                          | 20.000                              | Ohm-m    |         |        |  |
|                                      |               | -7.481    | V            |                          | 3745.000                            | mmho-m   |         |        |  |
| After Survey Verification            |               |           |              |                          |                                     |          |         |        |  |
| Readings                             |               |           | Targets      |                          |                                     |          | Results |        |  |
|                                      | Zero          | Cal       |              | Zero                     | Cal                                 |          | m'      | b'     |  |
| Deep                                 | 0.000         | 0.000     | mmho/m       | -0.824                   | 395.917                             | mmho/m   | 1.000   | 0.000  |  |
| Medium                               | 0.000         | 0.000     | mmho/m       | 3.565                    | 471.327                             | mmho/m   | 1.000   | 0.000  |  |
| LL3                                  |               | 0.000     | Ohm-m        |                          | 1500.000                            | Ohm-m    |         |        |  |
|                                      |               | 0.000     | Ohm-m        |                          | 20.000                              | Ohm-m    |         |        |  |
|                                      |               | 0.000     | mmho-m       |                          | 3745.000                            | mmho-m   |         |        |  |
| Litho Density Calibration Report     |               |           |              |                          |                                     |          |         |        |  |
| Serial: 140704                       |               |           |              |                          |                                     |          |         |        |  |
| Model: V4_10P                        |               |           |              |                          |                                     |          |         |        |  |
| Source Number: 74GBq-19              |               |           |              |                          |                                     |          |         |        |  |
| Master Calibration                   |               |           |              |                          | Performed: Wed Feb 11 18:53:41 2015 |          |         |        |  |
|                                      | Background    | Aluminum  | Magnesium    |                          |                                     |          |         |        |  |
| Window 1                             | 613.01        | 6027.40   | 27508.60     | cps                      |                                     |          |         |        |  |
| Window 2                             | 48.21         | 1424.77   | 7132.66      | cps                      |                                     |          |         |        |  |
| Window 4                             | 266.48        | 1373.19   | 5767.15      | cps                      |                                     |          |         |        |  |
| Window 5                             | 622.07        | 10090.30  | 18937.90     | cps                      |                                     |          |         |        |  |
| Window 6                             | 49.07         | 1682.84   | 3271.18      | cps                      |                                     |          |         |        |  |
| Window 8                             | 298.04        | 3248.38   | 5980.58      | cps                      |                                     |          |         |        |  |
| Bulk Density                         | -             | 2.6020    | 1.6830       | g/cc                     |                                     |          |         |        |  |
| Pe                                   | -             | 3.0000    | 2.5070       | b/e                      |                                     |          |         |        |  |
| LS Alpha:                            | : -1.8451     | SS Alpha: | : -0.7542    | LS CPE:                  |                                     | : 1.0882 |         |        |  |
| LS Beta:                             | : 138648.8473 | SS Beta:  | : 21960.9250 | SS CPE:                  |                                     | : 1.5181 |         |        |  |

|                                              |      |     |  |                                     |  |
|----------------------------------------------|------|-----|--|-------------------------------------|--|
| Before Survey Background Counts Verification |      |     |  | Performed: Wed Dec 31 18:00:00 1969 |  |
| Window 1                                     | 0.00 | cps |  |                                     |  |
| Window 2                                     | 0.00 | cps |  |                                     |  |
| Window 4                                     | 0.00 | cps |  |                                     |  |
| Window 5                                     | 0.00 | cps |  |                                     |  |
| Window 6                                     | 0.00 | cps |  |                                     |  |
| Window 8                                     | 0.00 | cps |  |                                     |  |

|                                             |      |     |  |                                     |  |
|---------------------------------------------|------|-----|--|-------------------------------------|--|
| After Survey Background Counts Verification |      |     |  | Performed: Wed Dec 31 18:00:00 1969 |  |
| Window 1                                    | 0.00 | cps |  |                                     |  |
| Window 2                                    | 0.00 | cps |  |                                     |  |
| Window 4                                    | 0.00 | cps |  |                                     |  |
| Window 5                                    | 0.00 | cps |  |                                     |  |
| Window 6                                    | 0.00 | cps |  |                                     |  |
| Window 8                                    | 0.00 | cps |  |                                     |  |

|                                  |          |                 |      |                                     |        |
|----------------------------------|----------|-----------------|------|-------------------------------------|--------|
| Lithodensity Caliper Calibration |          |                 |      | Performed: Wed Feb 11 18:53:41 2015 |        |
| Results                          | Readings | References (in) |      |                                     |        |
| Low                              | High     | Low             | High | Gain                                | Offset |
| 5123.0                           | 9461.6   | 8.5             | 14.0 | 0.0                                 | 1.4    |

|                                    |           |         |  |            |  |
|------------------------------------|-----------|---------|--|------------|--|
| Before Survey Caliper Verification |           |         |  | Performed: |  |
|                                    | Reference | Reading |  |            |  |
| Caliper (in)                       |           |         |  |            |  |

|                                   |           |         |  |            |  |
|-----------------------------------|-----------|---------|--|------------|--|
| After Survey Caliper Verification |           |         |  | Performed: |  |
|                                   | Reference | Reading |  |            |  |
| Caliper (in)                      |           |         |  |            |  |

|                                        |  |                |  |           |  |
|----------------------------------------|--|----------------|--|-----------|--|
| Compensated Neutron Calibration Report |  |                |  |           |  |
|                                        |  | Serial Number: |  | 080621PMC |  |
|                                        |  | Tool Model:    |  | NABORS    |  |

|                         |             |          |          |        |    |
|-------------------------|-------------|----------|----------|--------|----|
| 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:               |  | 070558                   |  |  |  |
| Tool Model:                  |  | Probe1                   |  |  |  |
| Performed:                   |  | Wed Jun 29 08:29:10 2016 |  |  |  |

|                     |        |          |
|---------------------|--------|----------|
| Calibrator Value:   | 1.0    | GAPI     |
| Background Reading: | 0.0    | cps      |
| Calibrator Reading: | 1.0    | cps      |
| Sensitivity:        | 0.3000 | GAPI/cps |