SUPERIOR WELL SERVICES

SUPERIOR
Hays,
Kansas

# DUAL INDUCTION LOG

Company O'BRIEN RESOURCES, LLC
Well #1 SNIDER 35
Field HEALY SW
County LANE State KANSAS
Location: API # : 15-101-22289-0000
1103' FSL & 991' FWL
SEC 35 TWP 16S RGE 30W
Permanent Datum GROUND LEVEL Elevation 2852
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING

Other Services
CDL/CNL/PE
MEL/SON

Elevation
K.B. 2857
D.F. 2855
G.L. 2852

| | | | |
|---|---|---|---|
| Date | 5/11/11 | | |
| Run Number | ONE | | |
| Depth Driller | 4650 | | |
| Depth Logger | 4651 | | |
| Bottom Logged Interval | 4649 | | |
| Top Log Interval | 0 | | |
| Casing Driller | 8 5/8" @ 256' | | |
| Casing Logger | 256' | | |
| Bit Size | 7 7/8 | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 2700 PPM | |
| Density / Viscosity | 9.3 / 49 | | |
| pH / Fluid Loss | 10.0 / 7.2 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | 0.90 @ 98F | | |
| Rmf @ Meas. Temp | 0.68 @ 98F | | |
| Rmc @ Meas. Temp | 1.08 @ 98F | | |
| Source of Rmf / Rmc | MEASURED | | |
| Rm @ BHT | 0.72 @ 122F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | | | |
| Maximum Recorded Temperature | 122F | | |
| Equipment Number | 680 | | |
| Location | HAYS, KS. | | |
| Recorded By | JEFF GRONEWEG | | |
| Witnessed By | KIM SHOEMAKER | | |

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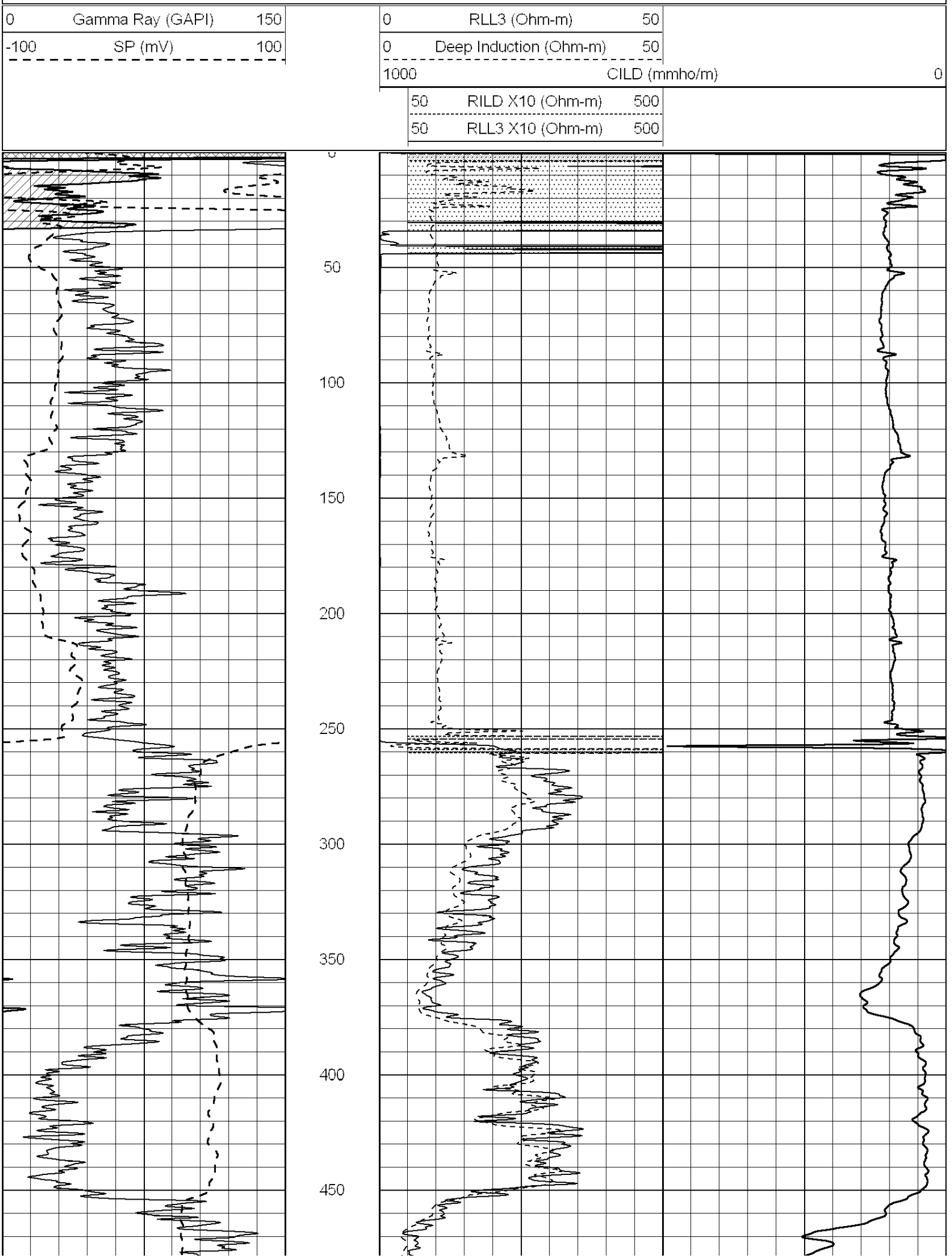
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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 SUPERIOR WELL SERVICE (785) 628-6395
DIRECTIONS
HEALY, KS - 1 1/4 MILES NORTH ON DODGE RD (HEALY OIL & GAS STATION)
EAST INTO

Database File: 007076pe.db
Dataset Pathname: pass3.2
Presentation Format: _dil2
Dataset Creation: Wed May 11 20:10:02 2011 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:600


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
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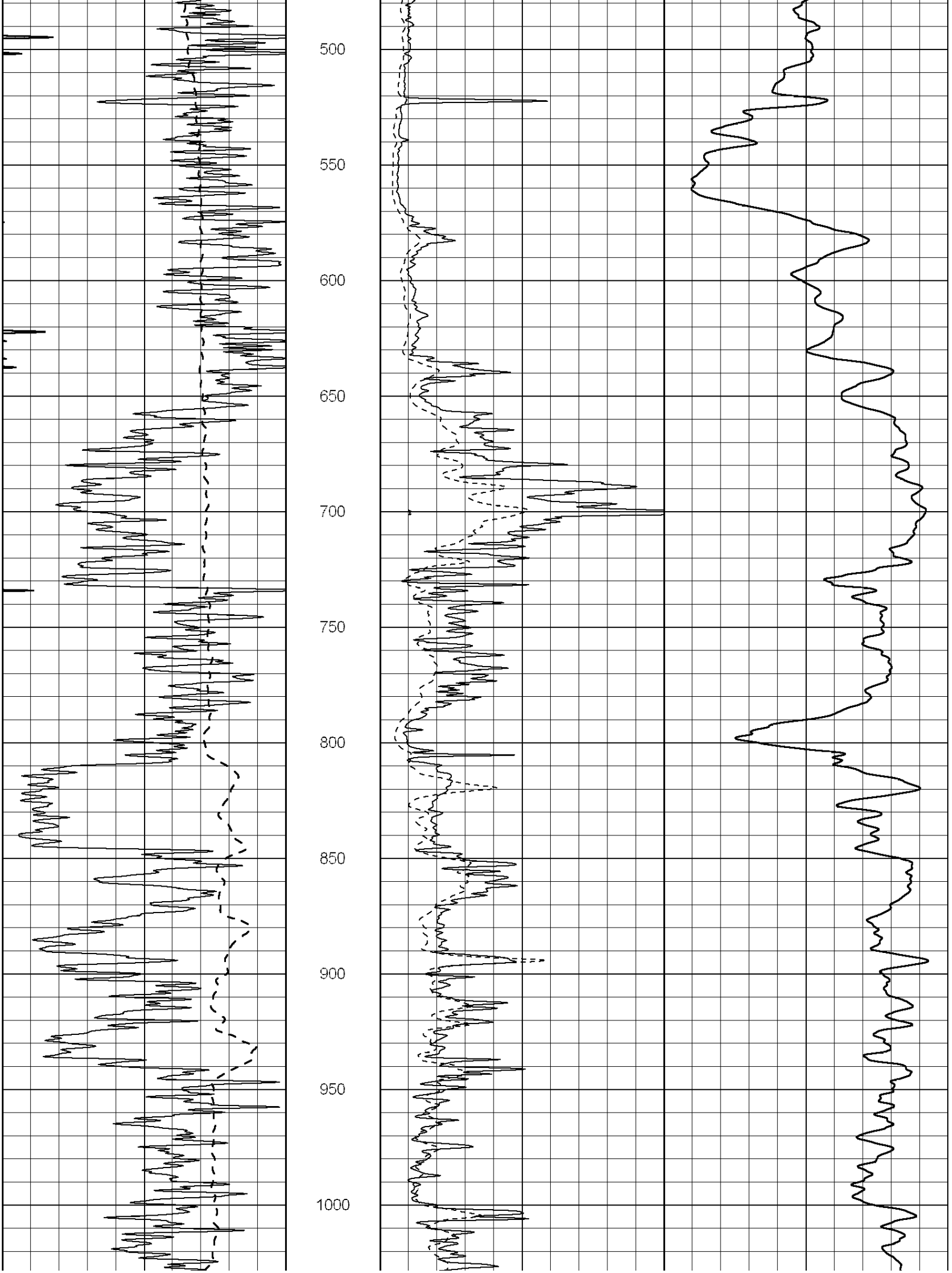
50
100
150
200
250
300
350
400
450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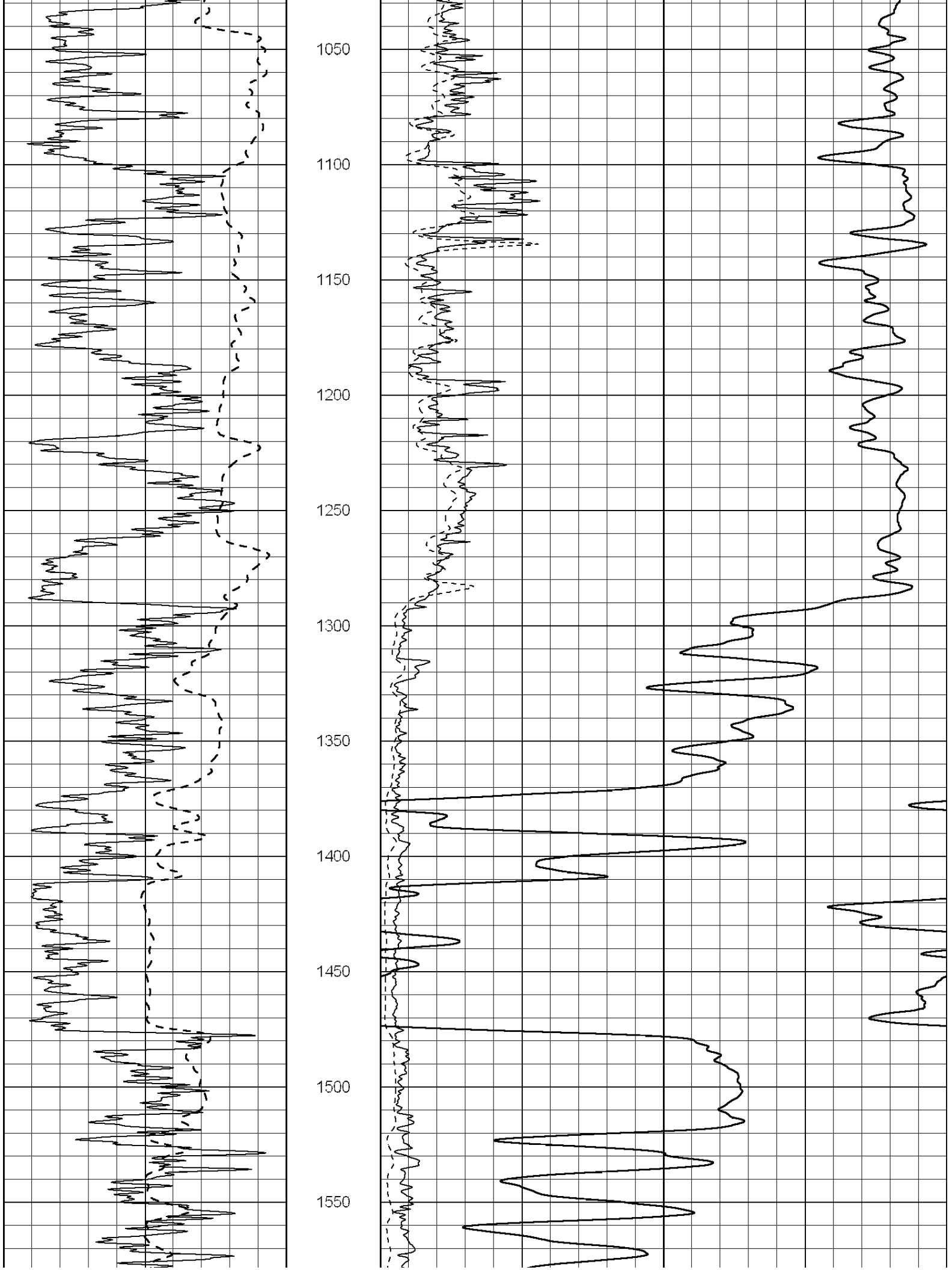
850
900
950
1000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1200
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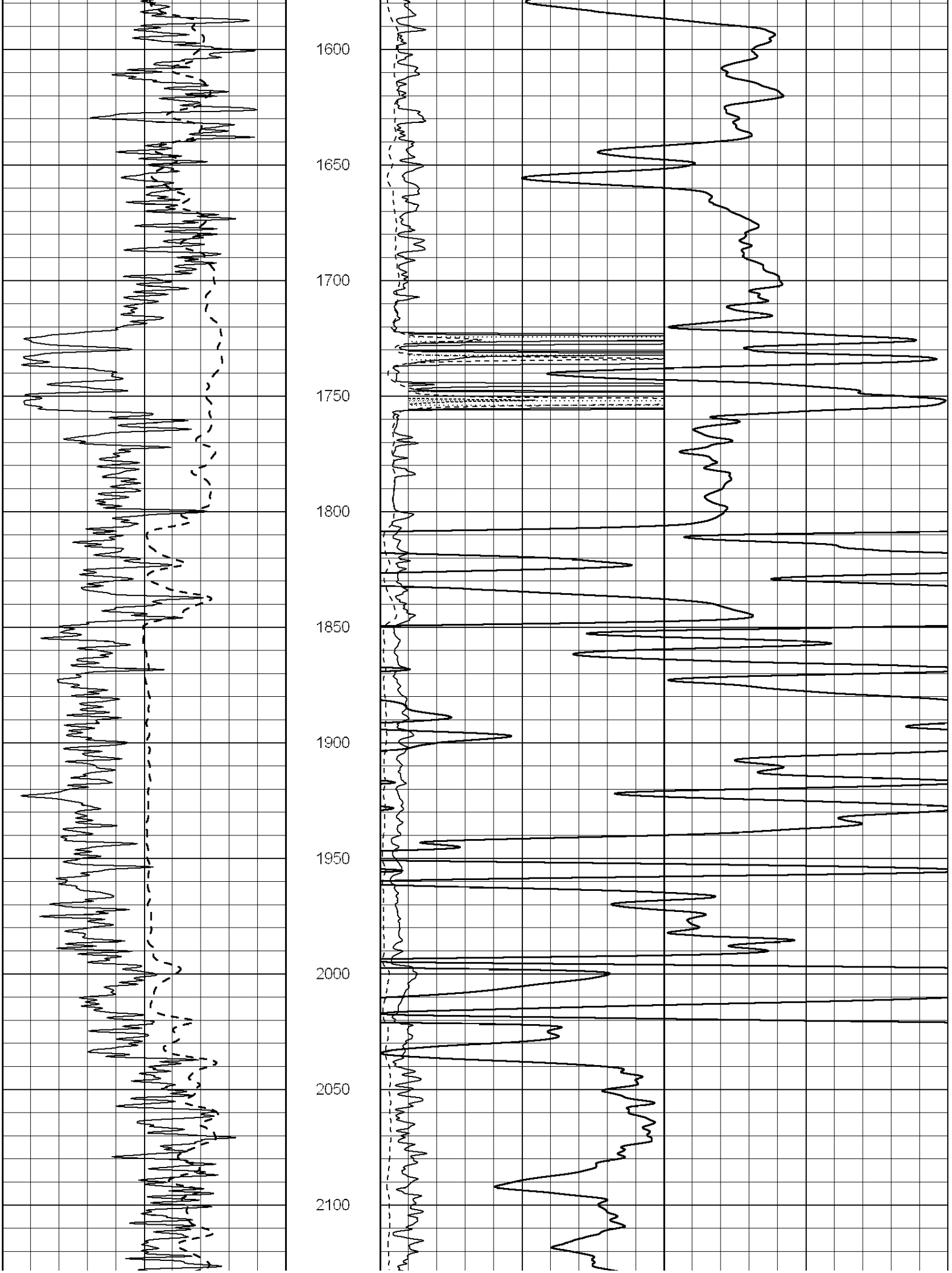
1300
1350
1400
1450
1500
1550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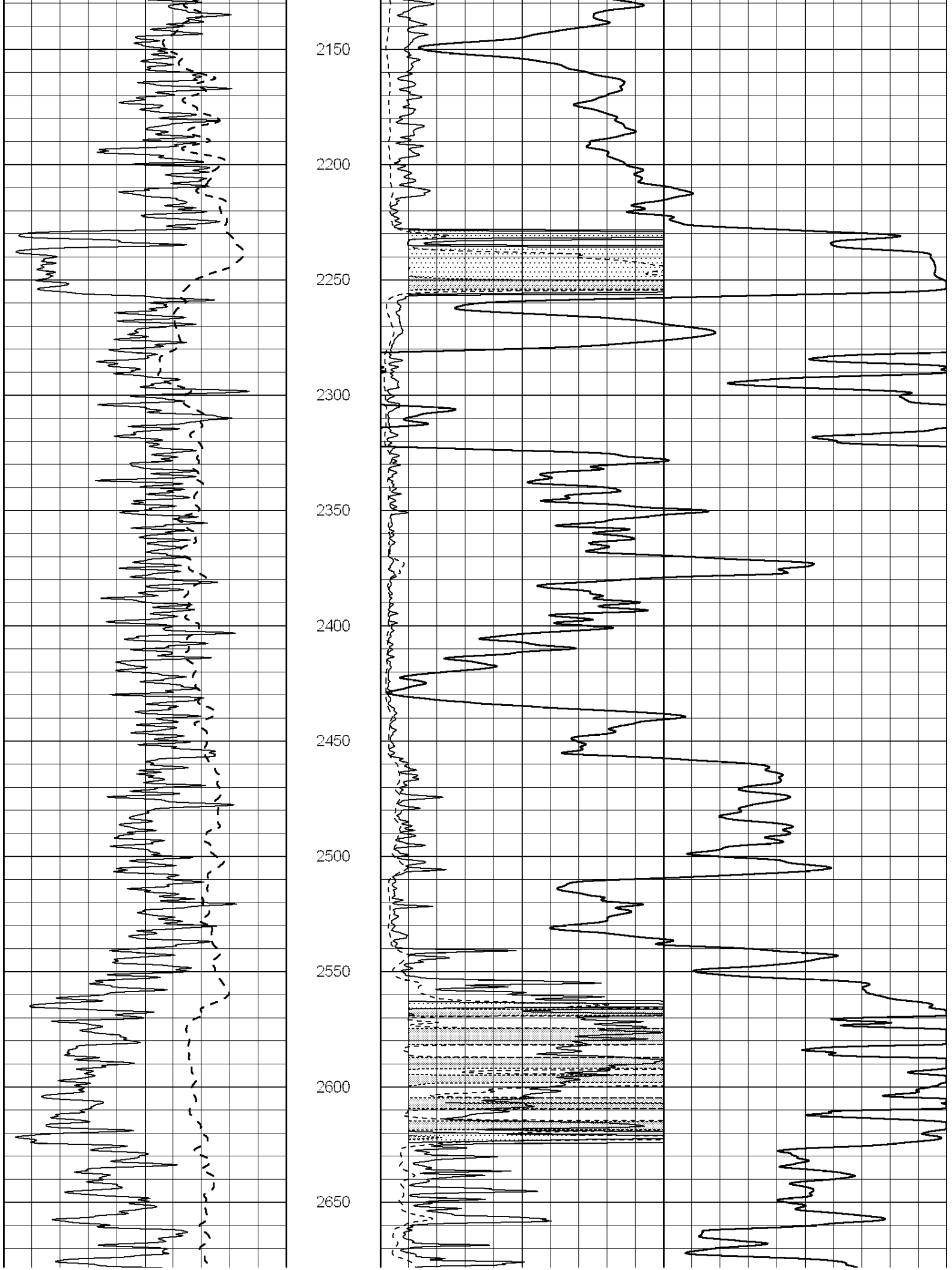
2050
2100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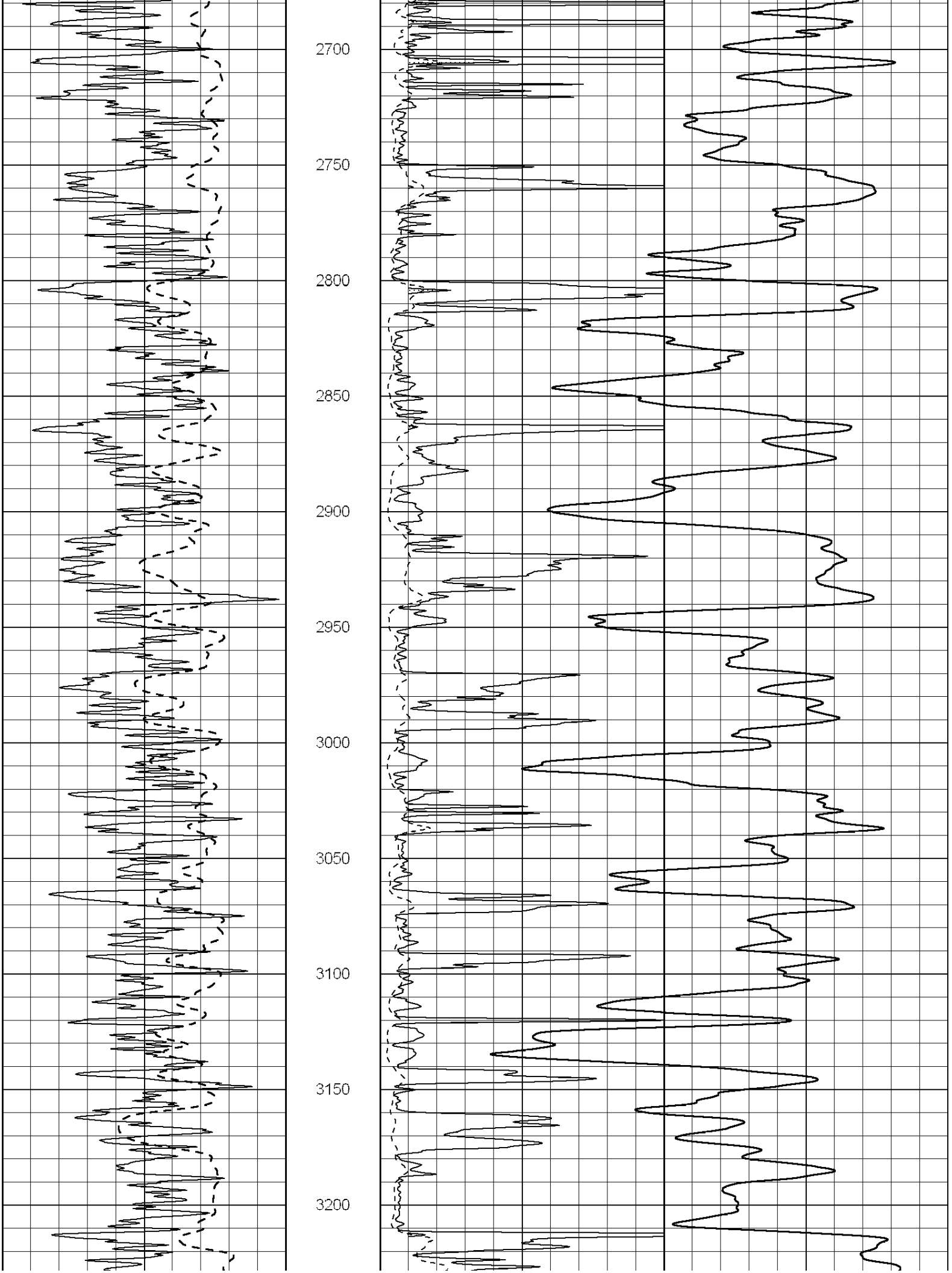
2600
2650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3000
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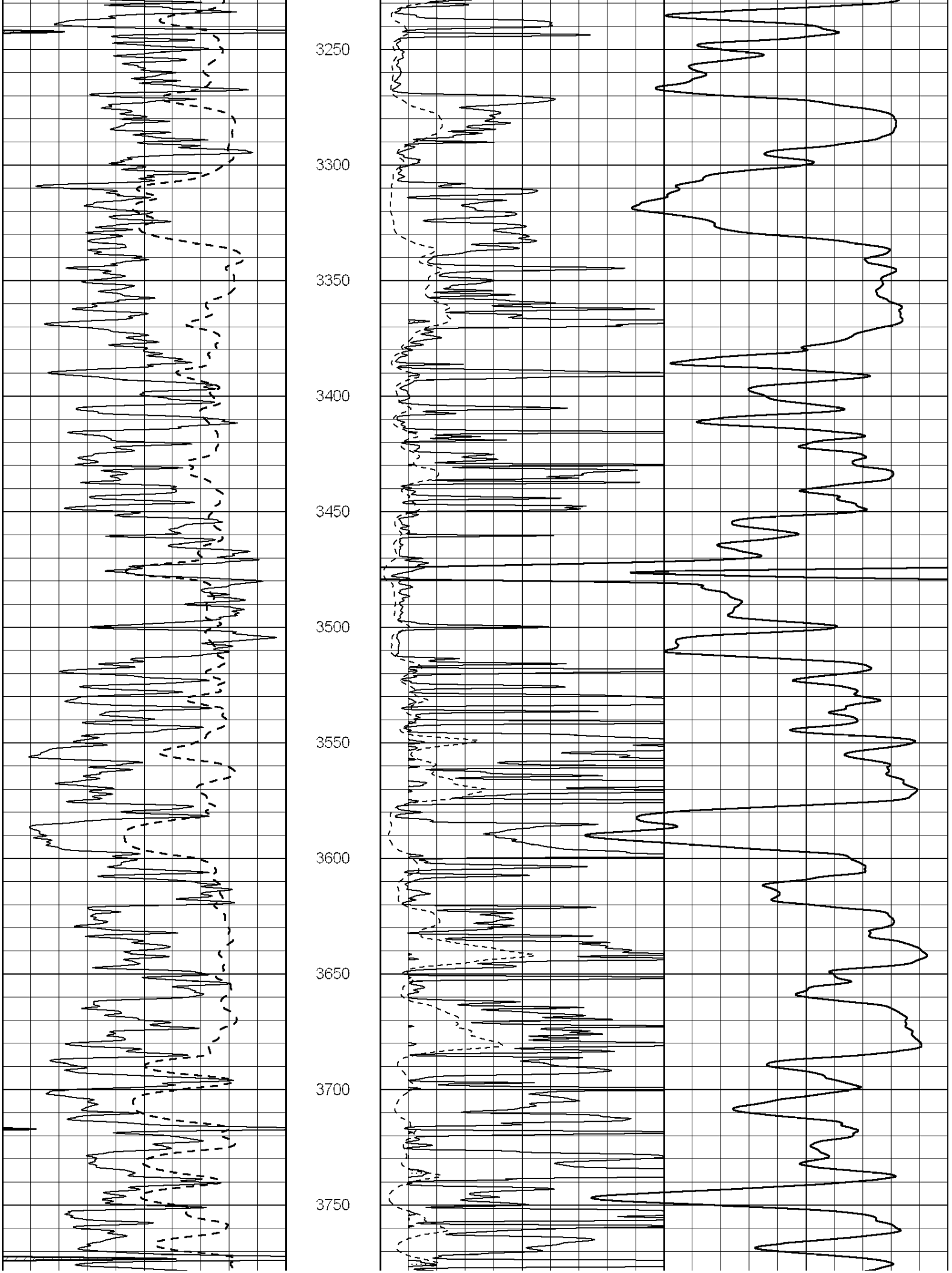
3100
3150
3200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3650
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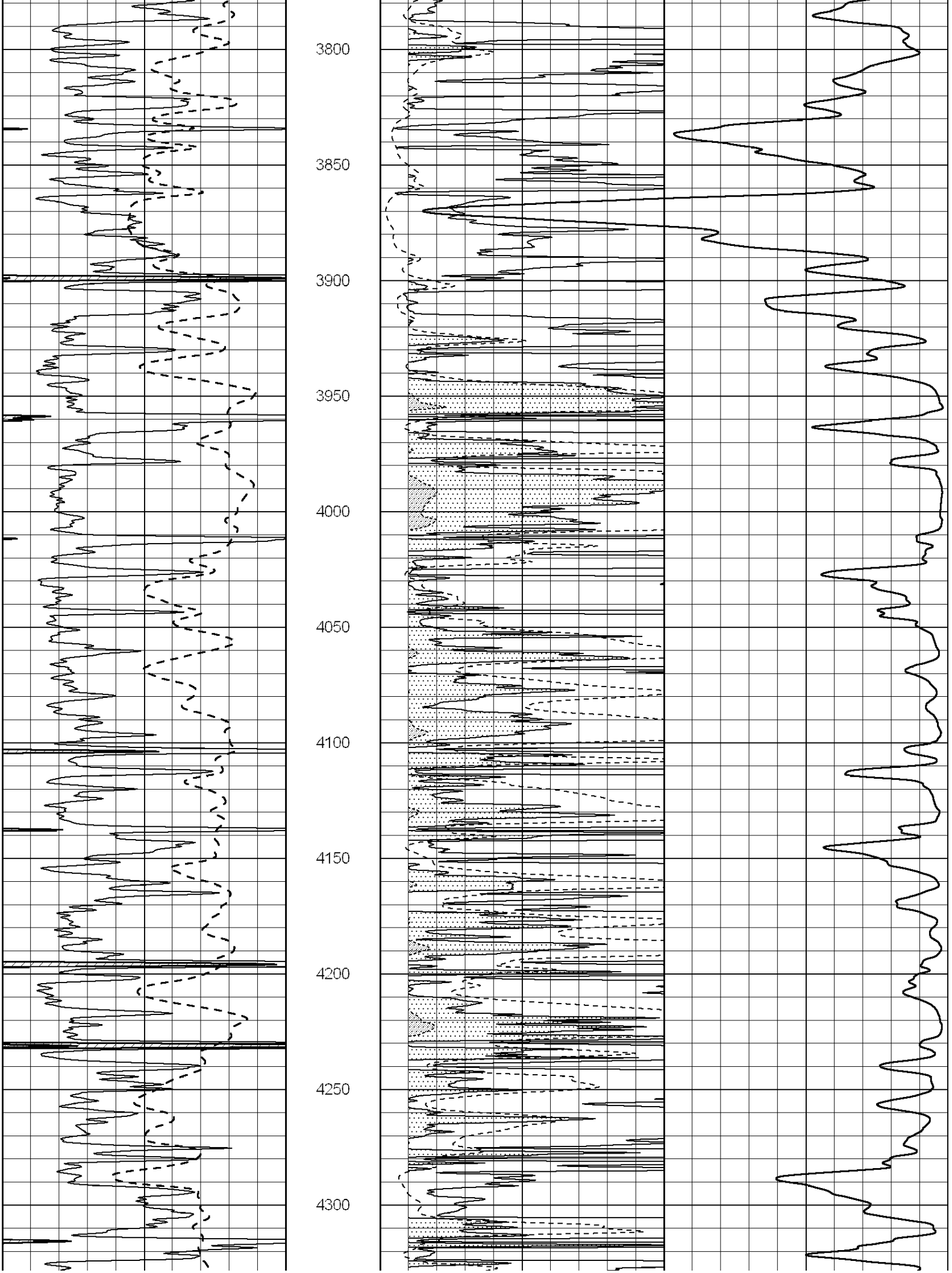
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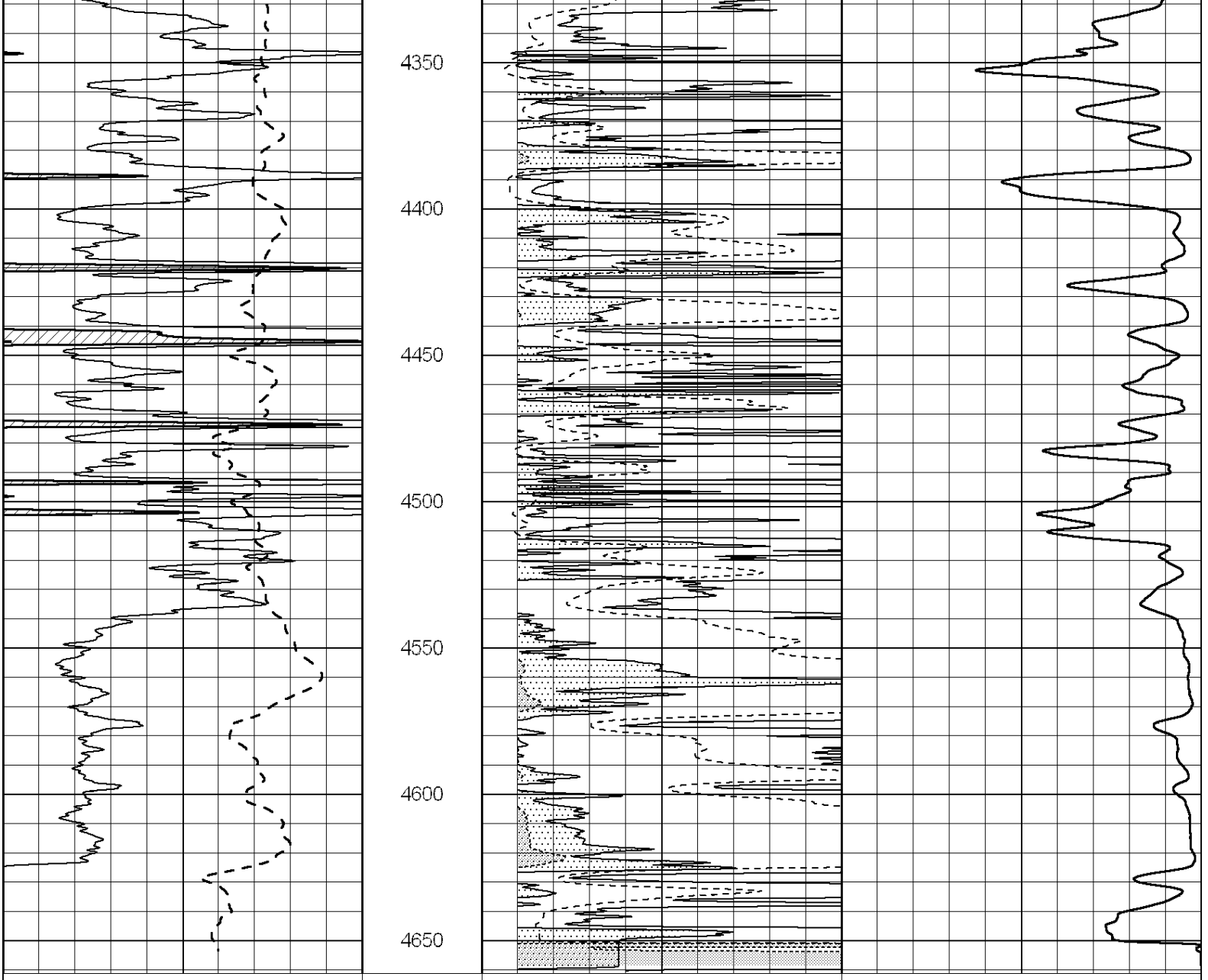
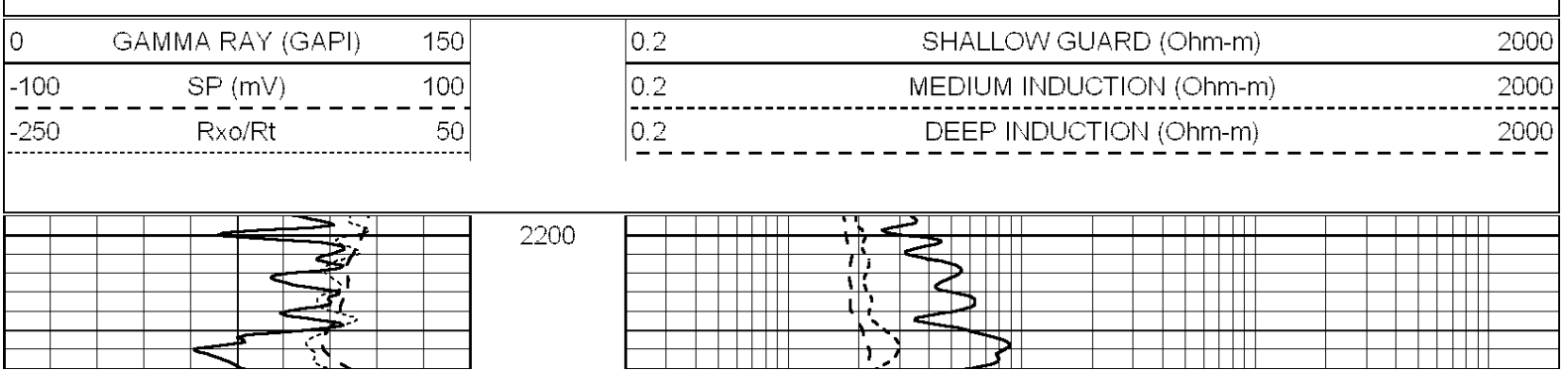
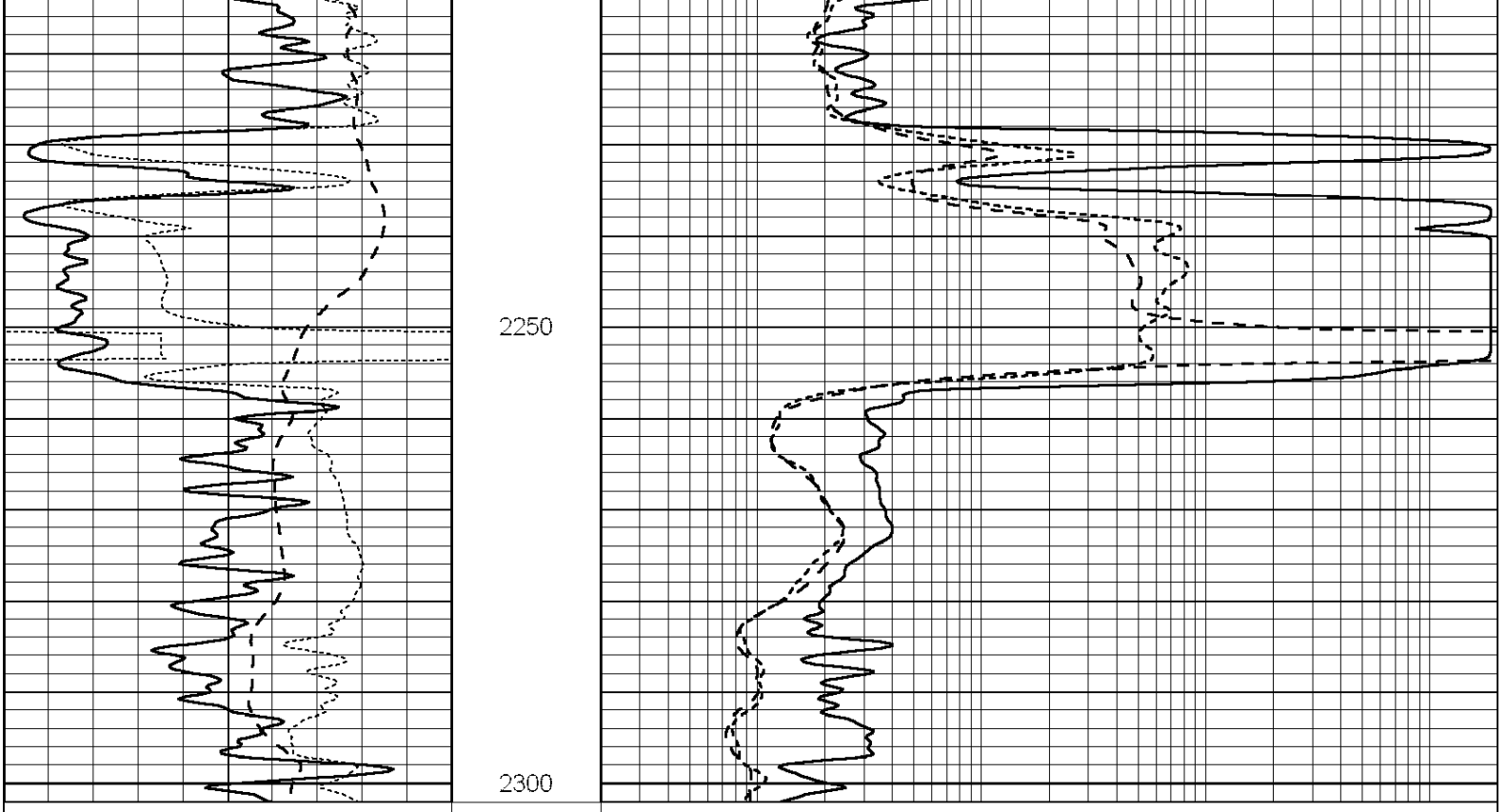
4150
4200
4250
4300




Database File: 007076pe.db
Dataset Pathname: pass3.2
Presentation Format: _dil
Dataset Creation: Wed May 11 20:10:02 2011 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240





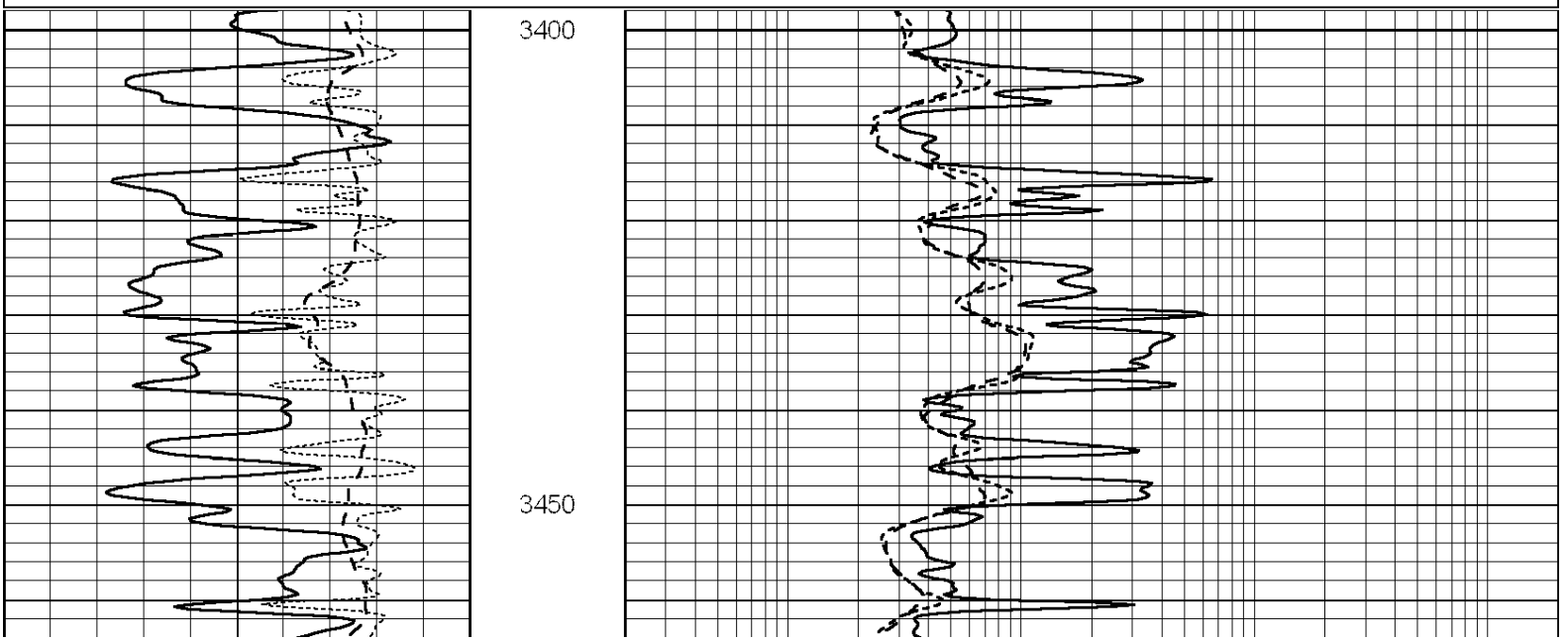

| | | |
|---|---|---|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |

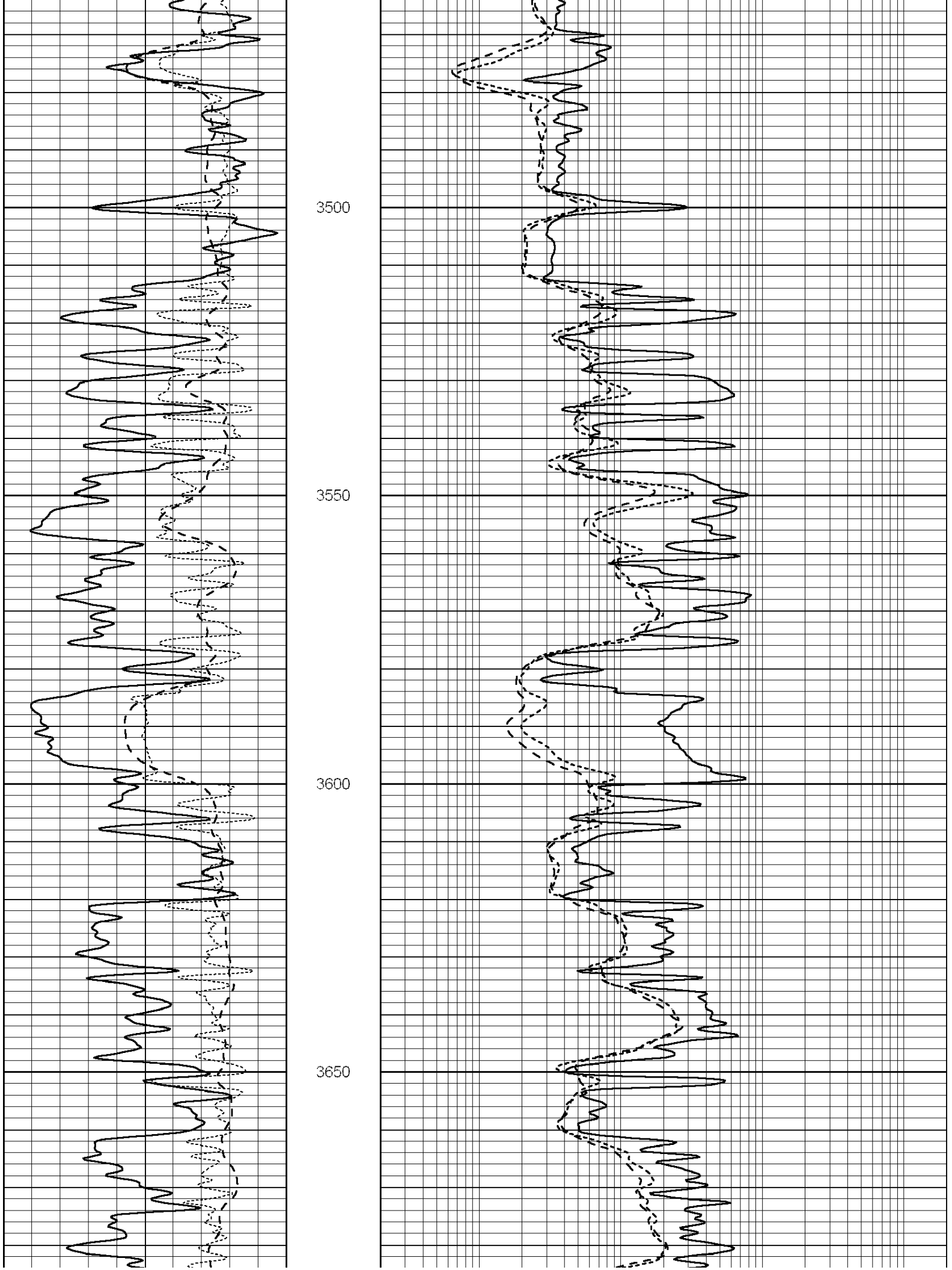
| | | |
|---|---|---|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |

Database File: 007076pe.db
Dataset Pathname: pass3.1
Presentation Format: _dil
Dataset Creation: Wed May 11 19:06:45 2011 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 |

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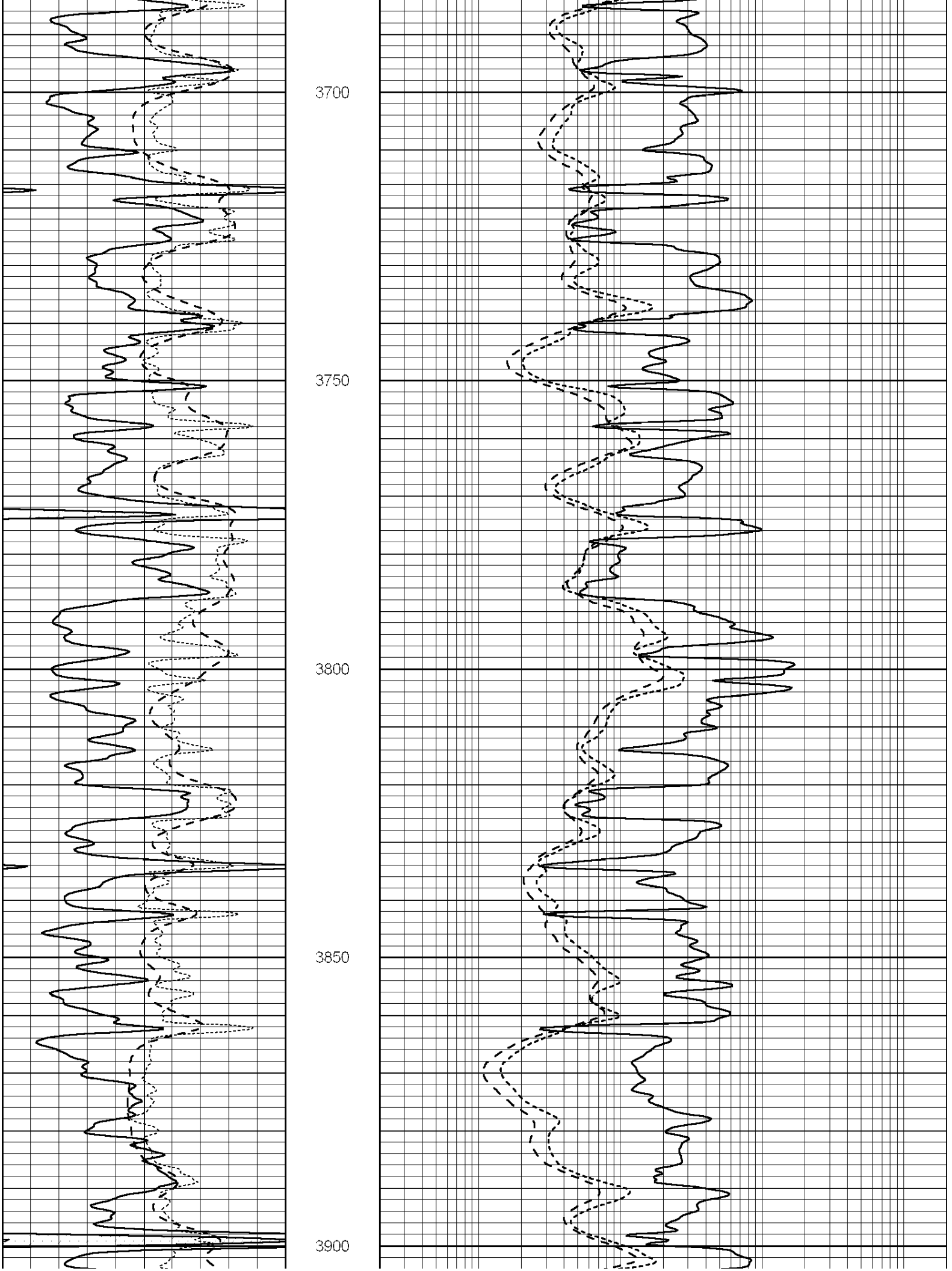
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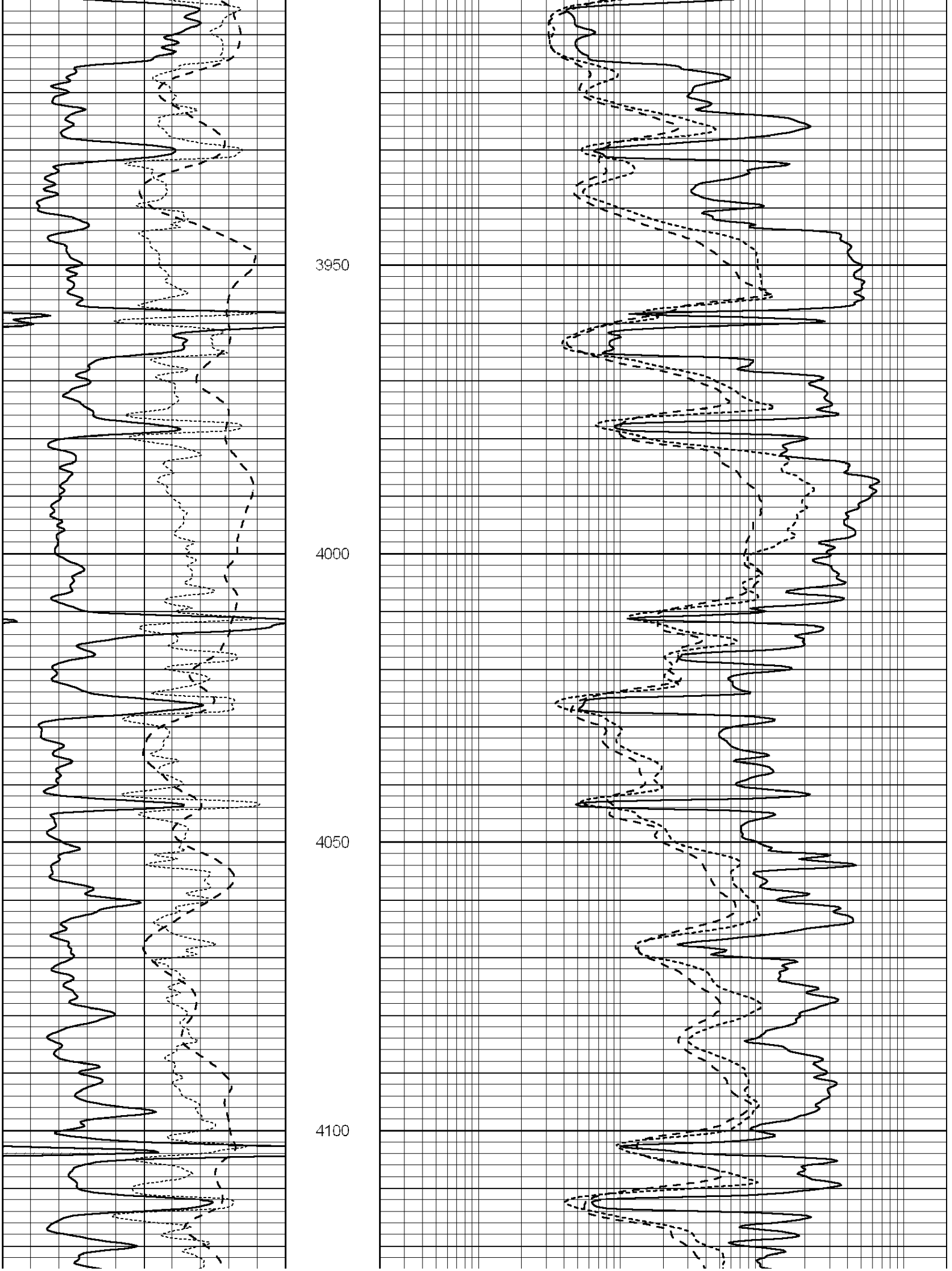
3900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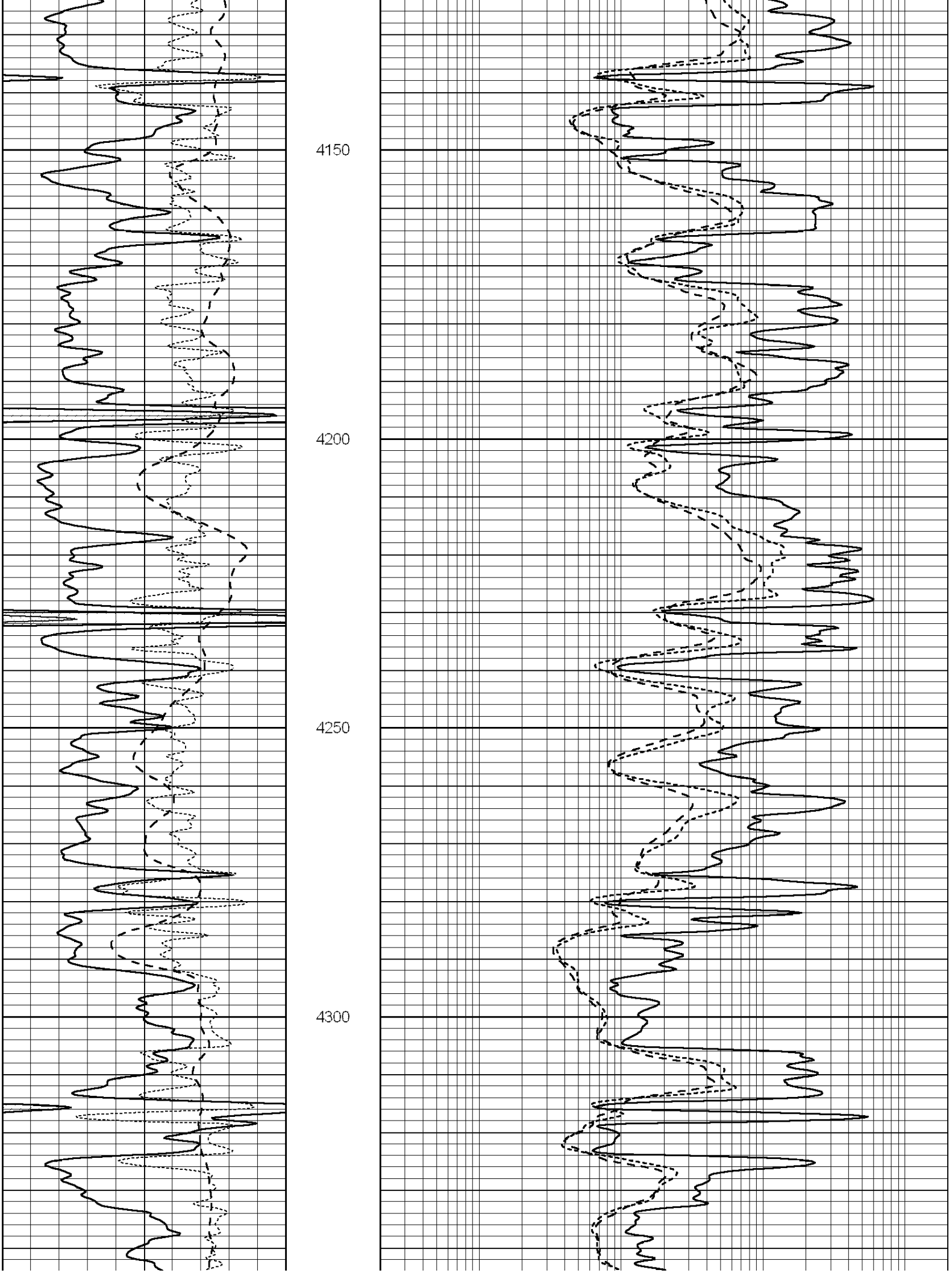
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4250
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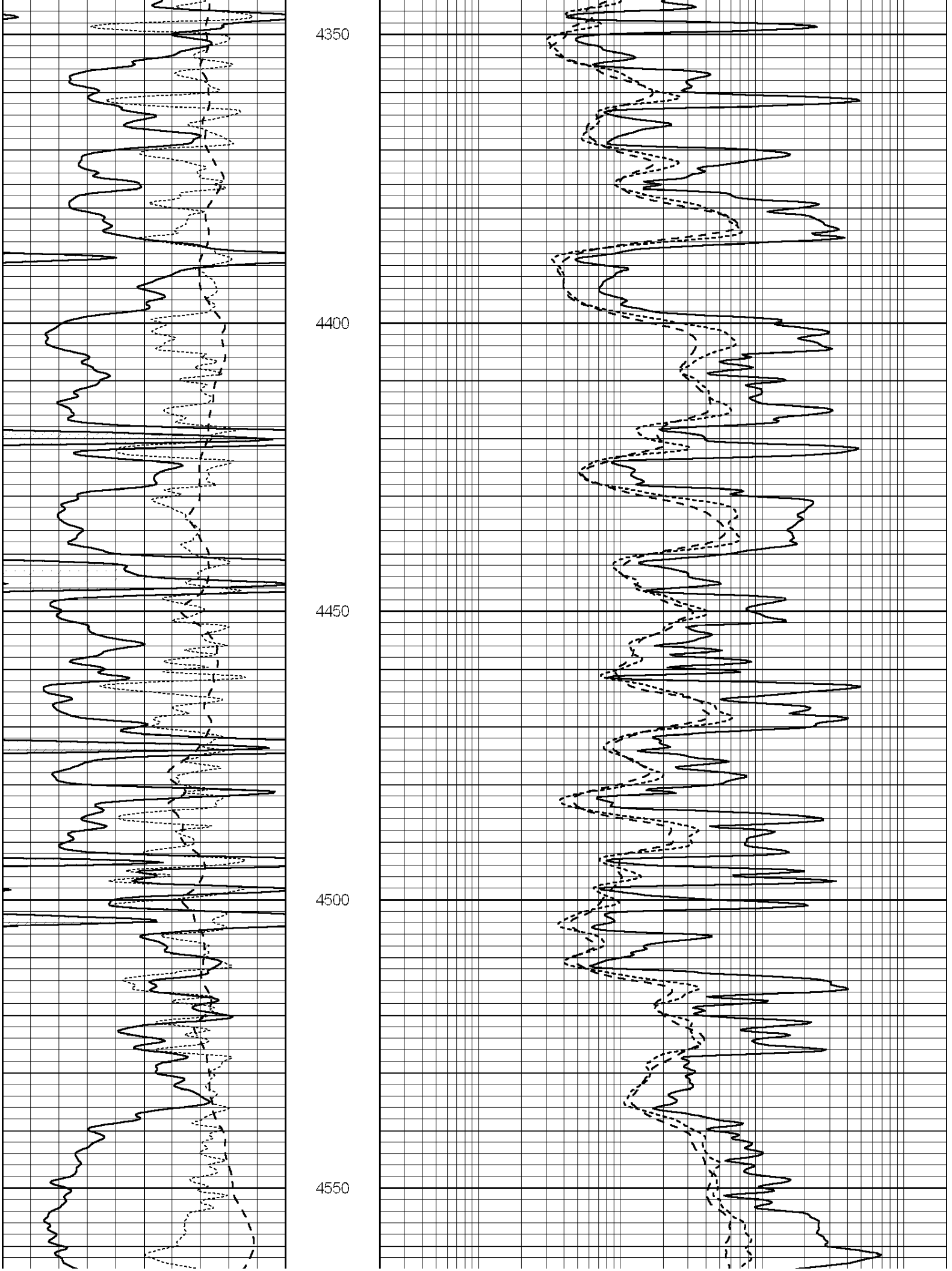
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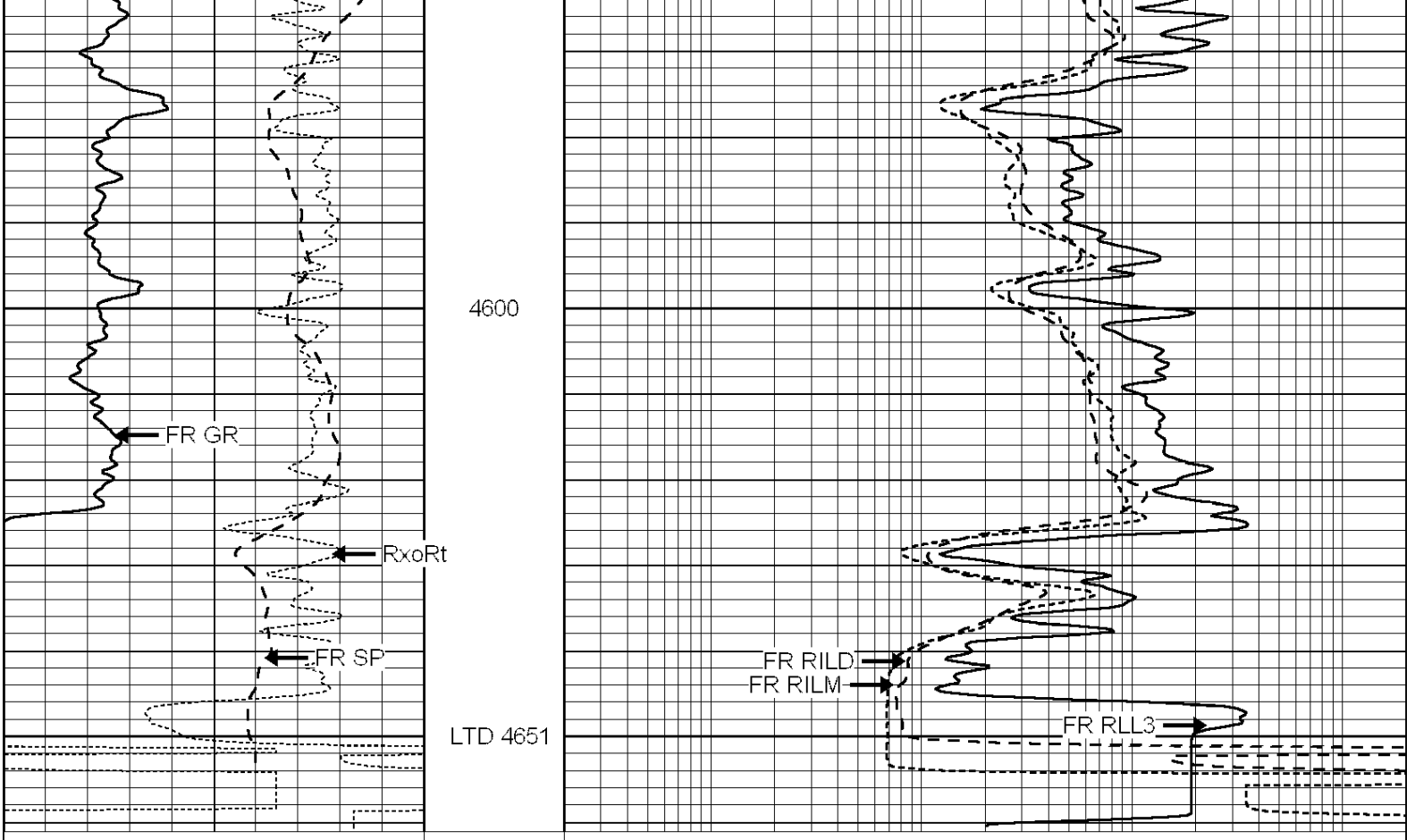
4550




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

SUPERIOR WELL SERVICES

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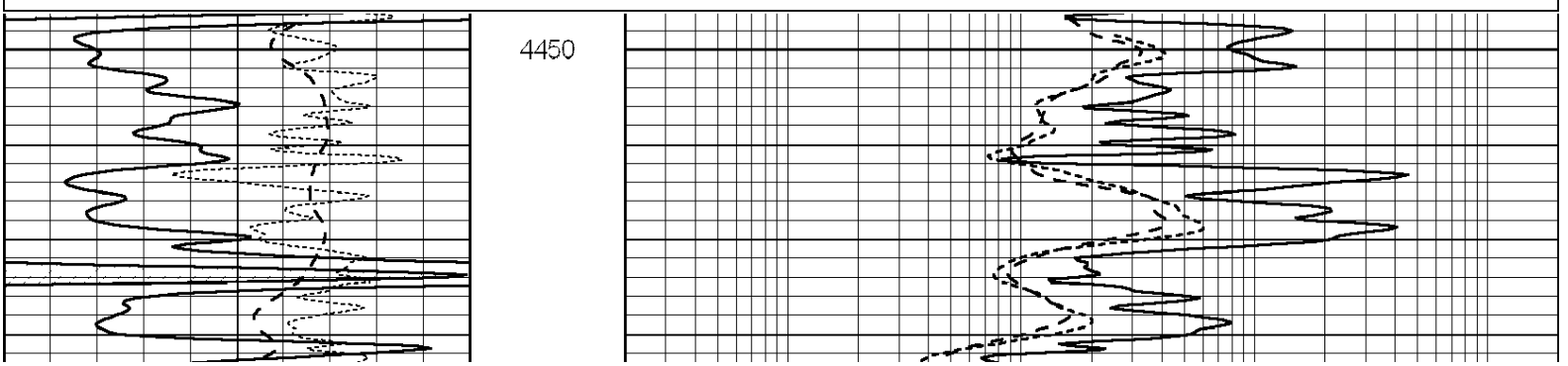
Kansas

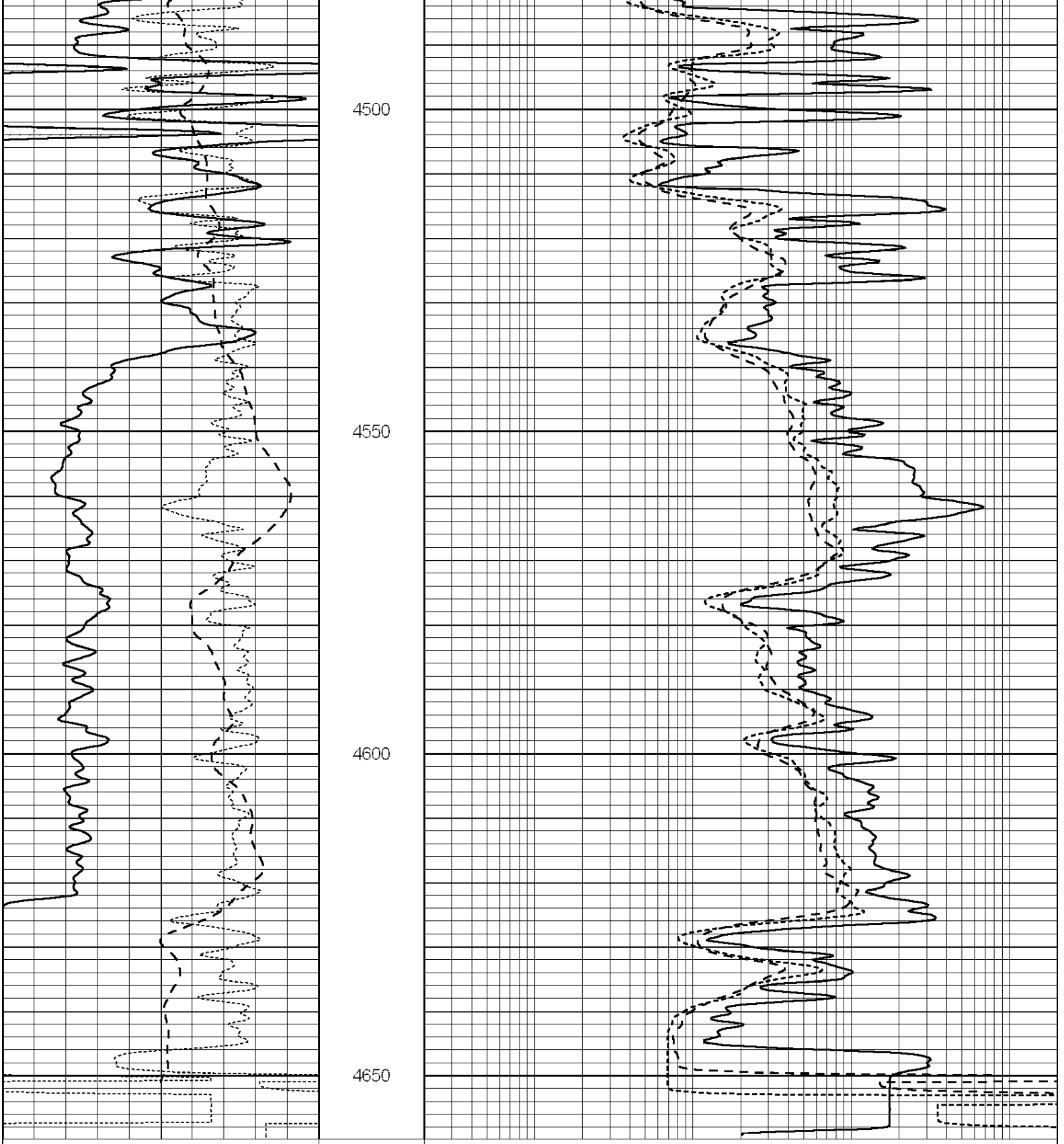
# REPEAT SECTION

| | |
|---|---|
| Database File: | 007076pe.db |
| Dataset Pathname: | pass2.1 |
| Presentation Format: | _dil |
| Dataset Creation: | Wed May 11 18:27:12 2011 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 |






Calibration Report

Database File: 007076pe.db
Dataset Pathname: pass3.2
Dataset Creation: Wed May 11 20:10:02 2011 by Calc Open-Cased 090629

## Dual Induction Calibration Report

| | |
|---|---|
| Serial-Model: | PROBE7-DILG |
| Surface Cal Performed: | Wed Jul 30 06:14:24 2008 |
| Downhole Cal Performed: | Mon Jul 28 12:02:56 2008 |
| After Survey Verification Performed: | Mon Jul 28 12:02:56 2008 |

### Surface Calibration

| | Readings | | | References | | | Results | |
|---|---|---|---|---|---|---|---|---|
| Loop: | Air | Loop | | Air | Loop | | m | b |
| Deep | -0.014 | 0.629 | V | 0.000 | 400.000 | mmho/m | 621.923 | 8.759 |
| Medium | 0.039 | 0.728 | V | 0.000 | 464.000 | mmho/m | 673.322 | -26.058 |
| 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: 002 Model: PRB
Performed Mon Oct 29 15:40:49 2007

### Litho Density Calibration

| | Background | Magnesium | Aluminum | Sandstone | |
|---|---|---|---|---|---|
| Window 1 | 1056.3 | 9118.0 | 2809.7 | 10378.4 | cps |
| Window 2 | 969.9 | 7671.9 | 2431.6 | 8565.8 | cps |
| Window 3 | 683.8 | 2939.8 | 1161.0 | 3161.8 | cps |
| Window 4 | 231.4 | 231.6 | 226.7 | 230.8 | cps |
| Long Space | 0.0 | 6702.0 | 1461.7 | 7595.9 | cps |
| Short Space | 1.2 | 1433.6 | 959.4 | 1568.6 | cps |
| Rho | | 1.7100 | 2.5900 | 1.3800 | g/cc |
| Pe | | | 2.5700 | 1.5500 | |

| | | | | | |
|---|---|---|---|---|---|
| Rib Angle | : 45.2 | Rib Slope | : 1.008 | Density/Spine Ratio | : 0.559 |
| Spine Angle | : 75.2 | Spine Slope | : 3.791 | Spine Intercept | : -18.7 |

### Caliper

| | Readings | Reference |
|---|---|---|
| Low Ref | 2.8 | 8.0 |
| High Ref | 5.0 | 14.0 |
| | Gain: 2.7 | Offset: -1.2 |

## Compensated Neutron Calibration Report

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 |

## Gamma Ray Calibration Report

Serial Number: #8
Tool Model: OPEN
Performed: Sun Apr 10 22:50:36 2011

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 175.0 cps

Sensitivity: 0.8971 GAPI/cps